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# SEMICONDUCTOR GENERAL CATALOG

## 半導体製品総覧表2017年7月版

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### MOSFETs / Junction FETs

### MOSFET / 接合形FET

Low Voltage MOSFETs / 低耐压MOSFET

Mid-High Voltage MOSFETs / 中高耐压MOSFET

Automotive MOSFETs / 車載MOSFET

Junction FETs / 接合形FET

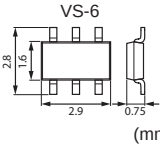
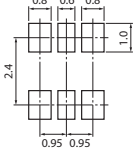
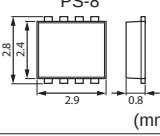
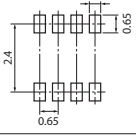
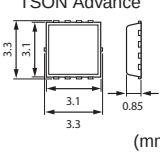
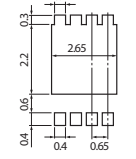
SiC MOSFETs / SiC MOSFET

Radio-Frequency MOSFETs / 高周波MOSFET

Low Voltage MOSFETs / 低耐圧MOSFET

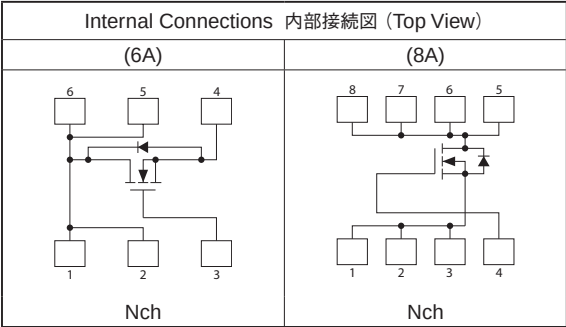
High-Speed Switching Series / 高速スイッチングシリーズ  
(Single N-Channel) / (シングルNチャンネル)

(1/5)

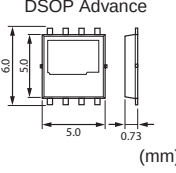
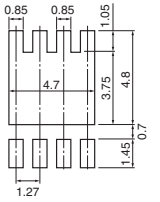
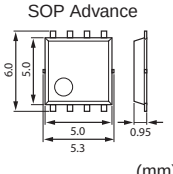
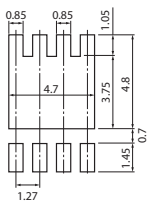
| Package                                                                                    | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|--------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------|----------------|----------------|--------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                            |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                |                |                |              |             |                      |                                                                                       |
| <br>(mm)   | TPC6008-H    | 30                       | ±20                  | 5.9                | 2.2 (2)            | 60                           | 74                        | 232            | 16             | 68             | 4.8          | U-MOSVI-H   | (6A)                 |    |
|                                                                                            | TPC6009-H    | 40                       | ±20                  | 5.3                | 2.2 (2)            | 81                           | 98                        | 225            | 13             | 54             | 4.7          | U-MOSVI-H   |                      |                                                                                       |
|                                                                                            | TPC6010-H    | 60                       | ±20                  | 6.1                | 2.2 (2)            | 59                           | 63                        | 640            | 24             | 95             | 12           | U-MOSVI-H   |                      |                                                                                       |
| <br>(mm)   | TPCP8007-H   | 60                       | ±20                  | 5                  | 1.68 (2)           | 57                           | 64                        | 640            | 25             | 90             | 11           | U-MOSVI-H   | (8A)                 |    |
| <br>(mm) | TPCC8067-H   | 30                       | ±20                  | 9                  | 15                 | 25                           | 33                        | 690            | 28             | 120            | 9.5          | U-MOSVII-H  | (8A)                 |  |
|                                                                                            | TPCC8066-H   |                          | ±20                  | 11                 | 17                 | 15                           | 19                        | 1100           | 49             | 190            | 15           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                            | TPCC8065-H   |                          | ±20                  | 13                 | 18                 | 11.4                         | 14.5                      | 1350           | 63             | 240            | 20           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                            | TPCC8068-H   |                          | ±20                  | 13                 | 17                 | 11.6                         | 16                        | 980            | 57             | 210            | 14           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                            | TPCC8064-H   |                          | ±20                  | 19                 | 30                 | 8.2                          | 10.6                      | 1600           | 78             | 290            | 23           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                            | TPCC8062-H   |                          | ±20                  | 27                 | 39                 | 5.6                          | 7.1                       | 2400           | 120            | 430            | 34           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                            | TPN11003NL   |                          | ±20                  | 31 (1)             | 19                 | 11                           | 16                        | 510            | 18             | 300            | 7.5          | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN8R903NL   |                          | ±20                  | 37 (1)             | 22                 | 8.9                          | 12.7                      | 630            | 21             | 350            | 9.8          | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN6R003NL   |                          | ±20                  | 56 (1)             | 32                 | 6                            | 8.3                       | 1050           | 37             | 600            | 17           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN4R303NL   |                          | ±20                  | 63 (1)             | 34                 | 4.3                          | 6.3                       | 1110           | 39             | 640            | 14.8         | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN5R203PL * | 40                       | ±20                  | 76 (1)             | 61                 | 5.2                          | 6.4                       | 1520           | 55             | 515            | 22           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN2R703NL   |                          | ±20                  | 90 (1)             | 42                 | 2.7                          | 4.1                       | 1600           | 53             | 890            | 21           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN2R903PL * |                          | ±20                  | 122 (1)            | 75                 | 2.9                          | 4.1                       | 1780           | 60             | 620            | 26           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN1R603PL * |                          | ±20                  | 188 (1)            | 104                | 1.6                          | 2.5                       | 2970           | 110            | 850            | 41           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN7R504PL * | 40                       | ±20                  | 68 (1)             | 61                 | 7.5                          | 10                        | 1570           | 35             | 380            | 24           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN3R704PL   |                          | ±20                  | 92 (1)             | 86                 | 3.7                          | 6                         | 1910           | 41             | 470            | 27           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN2R304PL   |                          | ±20                  | 100 (1)            | 104                | 2.3                          | 4                         | 2750           | 66             | 650            | 41           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN2R805PL * | 45                       | ±20                  | 139 (1)            | 104                | 2.8                          | 5                         | 2450           | 56             | 610            | 39           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN22006NH   | 60                       | ±20                  | 21 (1)             | 18                 | 22                           | —                         | 710            | 14             | 235            | 12           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN14006NH   |                          | ±20                  | 33 (1)             | 30                 | 14                           | —                         | 1000           | 25             | 310            | 15           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN11006NL   |                          | ±20                  | 37 (1)             | 30                 | 11.4                         | 17                        | 1500           | 23             | 350            | 23           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN7R506NH   |                          | ±20                  | 53 (1)             | 42                 | 7.5                          | —                         | 1410           | 28             | 480            | 22           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN11006PL * |                          | ±20                  | 54 (1)             | 61                 | 11.4                         | 18.1                      | 1250           | 25             | 225            | 17           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN7R006PL * |                          | ±20                  | 76 (1)             | 75                 | 7                            | 13.5                      | 1440           | 35             | 300            | 20           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN4R806PL * | 80                       | ±20                  | 105 (1)            | 104                | 4.8                          | 9.1                       | 2130           | 45             | 360            | 29           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TPN30008NH   |                          | ±20                  | 22 (1)             | 27                 | 30                           | —                         | 710            | 10             | 170            | 11           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN13008NH   |                          | ±20                  | 40 (1)             | 42                 | 13.3                         | —                         | 1230           | 20             | 290            | 18           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN3300ANH   |                          | ±20                  | 21 (1)             | 27                 | 33                           | —                         | 680            | 8.8            | 130            | 11           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN1600ANH   | 100                      | ±20                  | 36 (1)             | 42                 | 16                           | —                         | 1230           | 18             | 220            | 19           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN5900CNH   | 150                      | ±20                  | 18 (1)             | 39                 | 59                           | —                         | 460            | 3              | 80             | 7            | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN1110ENH   | 200                      | ±20                  | 13 (1)             | 39                 | 114                          | —                         | 460            | 3              | 55             | 7            | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TPN2010FNH   | 250                      | ±20                  | 9.9 (1)            | 39                 | 198                          | —                         | 460            | 3              | 45             | 7            | U-MOSVIII-H |                      |                                                                                       |

Note (1): I<sub>D</sub> (DC) (Silicon Limit)  
(2): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。

\*: New Product / 新製品



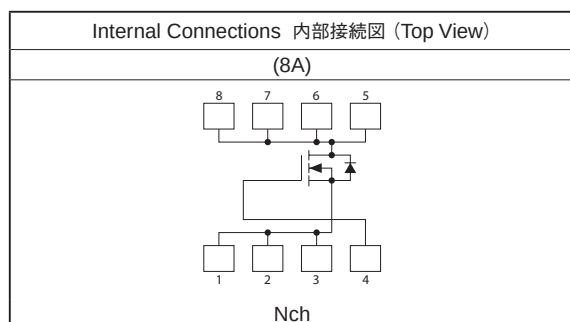
• The internal connection diagrams only show the general configurations of the circuits.  
• 内部接続図はイメージ図です。

| Package                                                                                     | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------|----------------|----------------|--------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                |                |                |              |             |                      |                                                                                       |
| <br>(mm)   | TPWR8503NL    | 30                       | ±20                  | 300 <sup>(1)</sup> | 142                | 0.85                         | 1.3                       | 5300           | 130            | 2700           | 74           | U-MOSVIII-H | (8A)                 |    |
|                                                                                             | TPWR6003PL    |                          | ±20                  | 412 <sup>(1)</sup> | 170                | 0.6                          | 0.84                      | 7700           | 220            | 2720           | 110          | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPWR8004PL    | 40                       | ±20                  | 340 <sup>(1)</sup> | 170                | 0.8                          | 1.35                      | 7370           | 58             | 1930           | 103          | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPW1R005PL *  | 45                       | ±20                  | 300 <sup>(1)</sup> | 170                | 0.99                         | 1.65                      | 7700           | 76             | 1860           | 122          | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPW1R306PL *  | 60                       | ±20                  | 260 <sup>(1)</sup> | 170                | 1.29                         | 2.3                       | 6250           | 80             | 1160           | 91           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPW2R508NH    | 75                       | ±20                  | 170 <sup>(1)</sup> | 142                | 2.5                          | —                         | 4600           | 50             | 1100           | 72           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPW4R008NH    | 80                       | ±20                  | 116                | 142                | 4                            | —                         | 4100           | 32             | 890            | 59           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPW4R50ANH    | 100                      | ±20                  | 92                 | 142                | 4.5                          | —                         | 4000           | 31             | 700            | 58           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPW1500CNH    | 150                      | ±20                  | 50 <sup>(1)</sup>  | 142                | 15.4                         | —                         | 1700           | 7              | 280            | 22           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPW2900ENH    | 200                      | ±20                  | 36 <sup>(1)</sup>  | 142                | 29                           | —                         | 1700           | 7              | 180            | 22           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPW5200FNH    | 250                      | ±20                  | 27 <sup>(1)</sup>  | 142                | 52                           | —                         | 1700           | 7              | 140            | 22           | U-MOSVIII-H |                      |                                                                                       |
| <br>(mm) | TPCA8068-H    | 30                       | ±20                  | 15                 | 21                 | 11.6                         | 16                        | 980            | 57             | 210            | 14           | U-MOSVII-H  | (8A)                 |  |
|                                                                                             | TPCA8065-H    |                          | ±20                  | 16                 | 25                 | 11.4                         | 14.5                      | 1350           | 63             | 240            | 20           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8064-H    |                          | ±20                  | 20                 | 32                 | 8.2                          | 10.6                      | 1600           | 78             | 290            | 23           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8063-H    |                          | ±20                  | 22                 | 35                 | 6.8                          | 8.7                       | 1900           | 93             | 340            | 27           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8062-H    |                          | ±20                  | 28                 | 42                 | 5.6                          | 7.1                       | 2400           | 120            | 430            | 34           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8059-H    |                          | ±20                  | 32                 | 45                 | 3.8                          | 4.8                       | 2900           | 150            | 530            | 41           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPH11003NL    |                          | ±20                  | 32 <sup>(1)</sup>  | 21                 | 11                           | 16                        | 510            | 18             | 300            | 7.5          | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPCA8091-H    |                          | ±20                  | 35                 | 25                 | 6                            | 8.4                       | 1410           | 110            | 280            | 20           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8058-H    |                          | ±20                  | 38                 | 52                 | 3                            | 3.8                       | 3600           | 200            | 680            | 51           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPH8R903NL    |                          | ±20                  | 38 <sup>(1)</sup>  | 24                 | 8.9                          | 12.7                      | 630            | 21             | 350            | 9.8          | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPCA8057-H    |                          | ±20                  | 42                 | 57                 | 2.6                          | 3.2                       | 4300           | 240            | 810            | 61           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8056-H    |                          | ±20                  | 48                 | 63                 | 2.2                          | 2.7                       | 5200           | 290            | 1000           | 74           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPCA8055-H    |                          | ±20                  | 56                 | 70                 | 1.9                          | 2.3                       | 6400           | 360            | 1200           | 91           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                             | TPH6R003NL    |                          | ±20                  | 57 <sup>(1)</sup>  | 34                 | 6                            | 8.3                       | 1050           | 37             | 600            | 17           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPH4R003NL    |                          | ±20                  | 68 <sup>(1)</sup>  | 36                 | 4                            | 6.2                       | 1110           | 39             | 640            | 14.8         | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPH3R203NL    |                          | ±20                  | 84 <sup>(1)</sup>  | 44                 | 3.2                          | 4.7                       | 1600           | 53             | 890            | 21           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPH4R803PL ** |                          | ±20                  | 90 <sup>(1)</sup>  | 69                 | 4.8                          | 6.2                       | 1520           | 55             | 515            | 22           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH2R903PL *  |                          | ±20                  | 124 <sup>(1)</sup> | 81                 | 2.9                          | 4.1                       | 1780           | 60             | 620            | 26           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH3R003PL *  |                          | ±20                  | 134 <sup>(1)</sup> | 90                 | 3                            | 4.2                       | 2940           | 88             | 850            | 50           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH1R403NL    |                          | ±20                  | 150 <sup>(1)</sup> | 64                 | 1.4                          | 2.1                       | 3400           | 93             | 1800           | 46           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPH2R003PL *  |                          | ±20                  | 180 <sup>(1)</sup> | 116                | 2                            | 2.6                       | 4930           | 135            | 1455           | 86           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPHR9003NL    |                          | ±20                  | 220 <sup>(1)</sup> | 78                 | 0.9                          | 1.4                       | 5300           | 130            | 2700           | 74           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | TPHR9203PL *  |                          | ±20                  | 280 <sup>(1)</sup> | 132                | 0.92                         | 1.29                      | 5800           | 190            | 1750           | 81           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPHR6503PL    |                          | ±20                  | 393 <sup>(1)</sup> | 170                | 0.65                         | 0.89                      | 7700           | 220            | 2720           | 110          | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPCA8052-H    | 40                       | ±20                  | 20                 | 30                 | 11.3                         | 13.1                      | 1620           | 85             | 280            | 25           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                             | TPCA8047-H    |                          | ±20                  | 32                 | 45                 | 7.3                          | 8.5                       | 2590           | 135            | 440            | 43           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                             | TPCA8046-H    |                          | ±20                  | 38                 | 45                 | 5.4                          | 6.3                       | 3545           | 185            | 600            | 55           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                             | TPCA8045-H    |                          | ±20                  | 46                 | 45                 | 3.6                          | 4.1                       | 5800           | 305            | 950            | 90           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                             | TPH7R204PL *  |                          | ±20                  | 72 <sup>(1)</sup>  | 69                 | 7.2                          | 9.7                       | 1570           | 35             | 380            | 24           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH6R004PL *  |                          | ±20                  | 87 <sup>(1)</sup>  | 81                 | 6                            | 8.4                       | 2100           | 50             | 470            | 30           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH3R704PL    |                          | ±20                  | 92                 | 81                 | 3.7                          | 6                         | 1910           | 41             | 470            | 27           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH3R704PC *  |                          | ±20                  | 118 <sup>(1)</sup> | 90                 | 3.7                          | 5.8                       | 2780           | 60             | 640            | 47           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH2R104PL *  |                          | ±20                  | 180 <sup>(1)</sup> | 116                | 2.1                          | 3.1                       | 4790           | 70             | 1050           | 78           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH1R204PB *  |                          | ±20                  | 240 <sup>(1)</sup> | 132                | 1.2                          | —                         | 4400           | 55             | 1300           | 62           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPH1R204PL    |                          | ±20                  | 246 <sup>(1)</sup> | 132                | 1.24                         | 2.1                       | 5500           | 93             | 1300           | 74           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | TPHR8504PL    |                          | ±20                  | 340 <sup>(1)</sup> | 170                | 0.85                         | 1.4                       | 7370           | 58             | 1930           | 103          | U-MOSIX-H   |                      |                                                                                       |

Note (1): I<sub>D</sub> (DC) (Silicon Limit)

\*: New Product / 新製品

\*\*: Under Development / 開発中

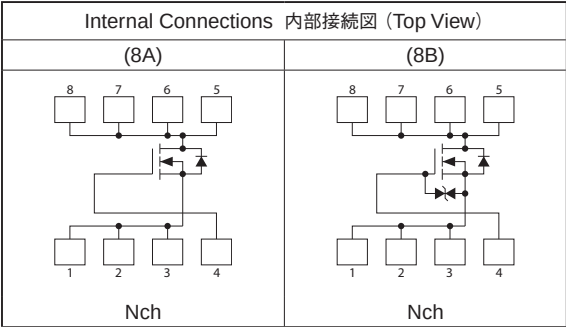


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

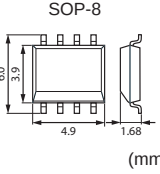
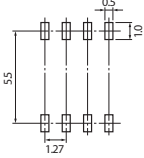
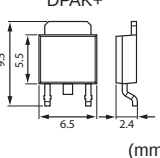
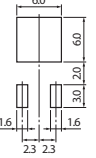
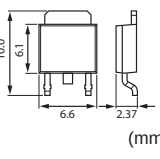
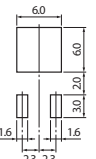
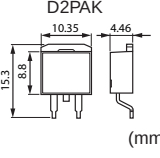
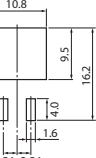
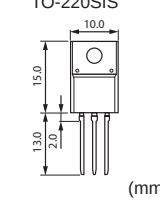
| Package                        | Part Number   | Absolute Maximum Ratings |         |         |        | RDS(ON) max (mΩ) |            | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm) |
|--------------------------------|---------------|--------------------------|---------|---------|--------|------------------|------------|----------------|----------------|----------------|--------------|-------------|----------------------|----------------------------|
|                                |               | VDS (V)                  | VGS (V) | ID (A)  | PD (W) | VGS =10 V        | VGS =4.5 V |                |                |                |              |             |                      |                            |
| (Continued from previous page) | TPH2R805PL *  | 45                       | ±20     | 150 (1) | 116    | 2.8              | 3.9        | 3980           | 45             | 980            | 73           | U-MOSIX-H   | (8A)                 |                            |
|                                | TPH1R405PL *  |                          | ±20     | 232 (1) | 132    | 1.4              | 2.3        | 4830           | 66             | 1210           | 74           | U-MOSIX-H   |                      |                            |
|                                | TPH1R005PL    |                          | ±20     | 280 (1) | 170    | 1.04             | 1.7        | 7700           | 76             | 1860           | 122          | U-MOSIX-H   |                      |                            |
|                                | TPCA8053-H    |                          | ±20     | 15      | 30     | 22.3             | 24         | 1620           | 60             | 200            | 25           | U-MOSVI-H   |                      |                            |
|                                | TPCA8049-H    | 60                       | ±20     | 28      | 45     | 10.4             | 11.2       | 3545           | 130            | 420            | 55           | U-MOSVI-H   |                      |                            |
|                                | TPH14006NH    |                          | ±20     | 34 (1)  | 32     | 14               | —          | 1000           | 25             | 310            | 16           | U-MOSVIII-H |                      |                            |
|                                | TPCA8048-H    |                          | ±20     | 35      | 45     | 6.6              | 7.1        | 5800           | 210            | 650            | 90           | U-MOSVI-H   |                      |                            |
|                                | TPH11006NL    |                          | ±20     | 40 (1)  | 34     | 11.4             | 17         | 1500           | 23             | 350            | 23           | U-MOSVIII-H |                      |                            |
|                                | TPH7R506NH    |                          | ±20     | 55 (1)  | 45     | 7.5              | —          | 1785           | 40             | 575            | 31           | U-MOSVIII-H |                      |                            |
|                                | TPH9R506PL *  |                          | ±20     | 68 (1)  | 81     | 9.5              | 15         | 1470           | 30             | 270            | 21           | U-MOSIX-H   |                      |                            |
|                                | TPH5R906NH    |                          | ±20     | 71 (1)  | 57     | 5.9              | —          | 2340           | 50             | 745            | 38           | U-MOSVIII-H |                      |                            |
|                                | TPH7R006PL *  |                          | ±20     | 79 (1)  | 81     | 7                | 13.5       | 1440           | 35             | 300            | 22           | U-MOSIX-H   |                      |                            |
|                                | TPH4R606NH    |                          | ±20     | 85 (1)  | 63     | 4.6              | —          | 3050           | 60             | 990            | 49           | U-MOSVIII-H |                      |                            |
|                                | TPH2R306NH    |                          | ±20     | 130 (1) | 78     | 2.3              | —          | 4700           | 55             | 1500           | 72           | U-MOSVIII-H |                      |                            |
|                                | TPH3R506PL *  |                          | ±20     | 135 (1) | 116    | 3.5              | 6.7        | 3400           | 50             | 600            | 55           | U-MOSIX-H   |                      |                            |
|                                | TPH2R506PL *  | 75                       | ±20     | 160 (1) | 132    | 2.5              | 4.4        | 4180           | 60             | 770            | 60           | U-MOSIX-H   |                      |                            |
|                                | TPH1R306PL    |                          | ±20     | 260 (1) | 170    | 1.34             | 2.3        | 6250           | 80             | 1160           | 91           | U-MOSIX-H   |                      |                            |
|                                | TPH2R608NH    |                          | ±20     | 168 (1) | 142    | 2.6              | —          | 4600           | 50             | 1100           | 72           | U-MOSVIII-H |                      |                            |
|                                | TPCA8051-H    |                          | ±20     | 28      | 45     | 9.4              | 9.8        | 5800           | 150            | 520            | 91           | U-MOSVI-H   |                      |                            |
|                                | TPH12008NH    | 80                       | ±20     | 44 (1)  | 48     | 12.3             | —          | 1490           | 16             | 330            | 22           | U-MOSVIII-H |                      |                            |
|                                | TPH8R008NH    |                          | ±20     | 63 (1)  | 61     | 8                | —          | 2300           | 23             | 520            | 35           | U-MOSVIII-H |                      |                            |
|                                | TPH4R008NH    |                          | ±20     | 100 (1) | 78     | 4                | —          | 4100           | 32             | 890            | 59           | U-MOSVIII-H |                      |                            |
|                                | TPH1400ANH    |                          | ±20     | 42 (1)  | 48     | 13.6             | —          | 1440           | 15             | 260            | 22           | U-MOSVIII-H |                      |                            |
|                                | TPH8R80ANH    | 100                      | ±20     | 59 (1)  | 61     | 8.8              | —          | 2180           | 21             | 410            | 33           | U-MOSVIII-H |                      |                            |
|                                | TPH6R30ANL *  |                          | ±20     | 66 (1)  | 54     | 6.3              | 10.3       | 3300           | 27             | 410            | 55           | U-MOSVIII-H |                      |                            |
|                                | TPH4R10ANL *  |                          | ±20     | 92 (1)  | 67     | 4.1              | 6.6        | 4850           | 29             | 640            | 75           | U-MOSVIII-H |                      |                            |
|                                | TPH4R50ANH    |                          | ±20     | 93 (1)  | 78     | 4.5              | —          | 4000           | 31             | 700            | 58           | U-MOSVIII-H |                      |                            |
|                                | TPH3R70APL ** | 150                      | +20/-16 | 150 (1) | 170    | 3.7              | 6.2        | 4850           | 29             | 640            | 67           | U-MOSIX-H   |                      |                            |
|                                | TPH5900CNH    |                          | ±20     | 18 (1)  | 42     | 59               | —          | 460            | 3              | 80             | 7            | U-MOSVIII-H |                      |                            |
|                                | TPH3300CNH    |                          | ±20     | 29 (1)  | 57     | 33               | —          | 810            | 3              | 140            | 10.6         | U-MOSVIII-H |                      |                            |
|                                | TPH1500CNH    |                          | ±20     | 50 (1)  | 78     | 15.4             | —          | 1700           | 7              | 280            | 22           | U-MOSVIII-H |                      |                            |
|                                | TPH1110ENH    | 200                      | ±20     | 13 (1)  | 42     | 114              | —          | 460            | 3              | 55             | 7            | U-MOSVIII-H |                      |                            |
|                                | TPH6400ENH    |                          | ±20     | 21 (1)  | 57     | 64               | —          | 810            | 3              | 90             | 11.2         | U-MOSVIII-H |                      |                            |
|                                | TPH2900ENH    |                          | ±20     | 36 (1)  | 78     | 29               | —          | 1700           | 7              | 180            | 22           | U-MOSVIII-H |                      |                            |
|                                | TPH2010FNH    |                          | ±20     | 10 (1)  | 42     | 198              | —          | 460            | 3              | 45             | 7            | U-MOSVIII-H |                      |                            |
|                                | TPH1110FNH    | 250                      | ±20     | 15 (1)  | 57     | 112              | —          | 810            | 3              | 75             | 11           | U-MOSVIII-H |                      |                            |
|                                | TPH5200FNH    |                          | ±20     | 27 (1)  | 78     | 52               | —          | 1700           | 7              | 140            | 22           | U-MOSVIII-H |                      |                            |
| (Continued on next page)       | TPC8067-H     | 30                       | ±20     | 9       | 1.9    | 25               | 33         | 690            | 28             | 120            | 9.5          | U-MOSVII-H  | (8A)                 |                            |
|                                | TPC8066-H     |                          | ±20     | 11      | 1.9    | 16               | 19         | 1100           | 49             | 190            | 15           | U-MOSVII-H  |                      |                            |
|                                | TPC8065-H     |                          | ±20     | 13      | 1.9    | 11.6             | 14.7       | 1350           | 63             | 240            | 20           | U-MOSVII-H  |                      |                            |
|                                | TP89R103NL    |                          | ±20     | 15 (1)  | 1.9    | 9.1              | 12.9       | 630            | 21             | 350            | 9.8          | U-MOSVIII-H |                      |                            |
|                                | TPC8064-H     |                          | ±20     | 16      | 1.9    | 8.4              | 10.8       | 1600           | 78             | 290            | 23           | U-MOSVII-H  |                      |                            |
|                                | TPC8063-H     |                          | ±20     | 17      | 1.9    | 7                | 8.9        | 1900           | 93             | 340            | 27           | U-MOSVII-H  |                      |                            |
|                                | TPC8055-H     |                          | ±20     | 18      | 1.9    | 2.1              | 2.5        | 6400           | 360            | 1200           | 91           | U-MOSVII-H  |                      |                            |
|                                | TPC8056-H     |                          | ±20     | 18      | 1.9    | 2.4              | 2.9        | 5200           | 290            | 1000           | 74           | U-MOSVII-H  |                      |                            |
|                                | TPC8057-H     |                          | ±20     | 18      | 1.9    | 2.8              | 3.4        | 4300           | 240            | 810            | 61           | U-MOSVII-H  |                      |                            |
|                                | TPC8058-H     |                          | ±20     | 18      | 1.9    | 3.2              | 4          | 3600           | 200            | 680            | 51           | U-MOSVII-H  |                      |                            |

Note (1): ID (DC) (Silicon Limit)

\*: New Product / 新製品  
\*\*: Under Development / 開発中



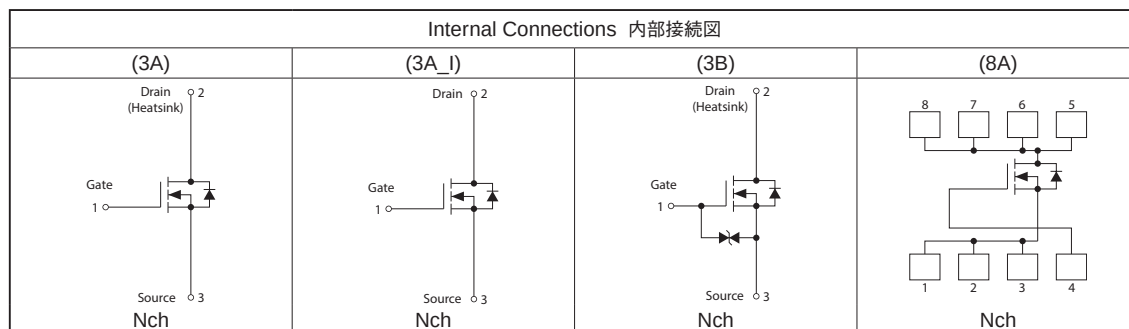
• The internal connection diagrams only show the general configurations of the circuits.  
• 内部接続図はイメージ図です。

| Package                                                                                                                  | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|--------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------|----------------|----------------|--------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                                          |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                |                |                |              |             |                      |                                                                                       |
| (Continued from previous page)<br> (mm) | TPC8059-H     | 30                       | ±20                  | 18                 | 1.9                | 4                            | 5                         | 2900           | 150            | 530            | 41           | U-MOSVII-H  | (8A)                 |    |
|                                                                                                                          | TPC8062-H     |                          | ±20                  | 18                 | 1.9                | 5.8                          | 7.3                       | 2400           | 120            | 430            | 34           | U-MOSVII-H  |                      |                                                                                       |
|                                                                                                                          | TP86R203NL    |                          | ±20                  | 19 <sup>(1)</sup>  | 1.9                | 6.2                          | 8.5                       | 1050           | 37             | 600            | 17           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                                                          | TPC8089-H     | 40                       | ±20                  | 7.2                | 1.9                | 32                           | 36                        | 850            | 40             | 145            | 14           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8052-H     |                          | ±20                  | 12                 | 1.9                | 11.5                         | 13.3                      | 1620           | 85             | 280            | 25           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8047-H     |                          | ±20                  | 16                 | 1.9                | 7.6                          | 8.8                       | 2590           | 135            | 440            | 43           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8045-H     | 60                       | ±20                  | 18                 | 1.9                | 3.9                          | 4.4                       | 5800           | 305            | 950            | 90           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8046-H     |                          | ±20                  | 18                 | 1.9                | 5.7                          | 6.6                       | 3545           | 185            | 600            | 57           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8053-H     |                          | ±20                  | 9                  | 1.9                | 22.5                         | 24.2                      | 1620           | 60             | 200            | 25           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8050-H     | 80                       | ±20                  | 11                 | 1.9                | 14.5                         | 15.6                      | 2590           | 95             | 300            | 41           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8049-H     |                          | ±20                  | 13                 | 1.9                | 10.7                         | 11.5                      | 3545           | 130            | 420            | 56           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8048-H     |                          | ±20                  | 16                 | 1.9                | 6.9                          | 7.4                       | 5800           | 210            | 650            | 87           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TPC8051-H     |                          | ±20                  | 13                 | 1.9                | 9.7                          | 10.1                      | 5800           | 150            | 520            | 85           | U-MOSVI-H   |                      |                                                                                       |
|  (mm)                                   | TK33S10N1H    | 100                      | ±20                  | 33                 | 125                | 9.7                          | —                         | 2050           | 140            | 1070           | 28           | U-MOSVIII-H | (3B)                 |    |
|  (mm)                                  | TK40P03M1     | 30                       | ±20                  | 40                 | 33                 | 10.8                         | 14.4                      | 1150           | 85             | 260            | 17.5         | U-MOSVI-H   | (3A)                 |   |
|                                                                                                                          | TK45P03M1     |                          | ±20                  | 45                 | 39                 | 9.7                          | 12                        | 1500           | 100            | 320            | 25           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TK50P03M1     |                          | ±20                  | 50                 | 47                 | 7.5                          | 9.8                       | 1700           | 125            | 380            | 25.3         | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TK20P04M1     | 40                       | ±20                  | 20                 | 27                 | 29                           | 34                        | 985            | 37             | 159            | 15           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TK40P04M1     |                          | ±20                  | 40                 | 47                 | 11                           | 13.4                      | 1920           | 90             | 310            | 29           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TK50P04M1     |                          | ±20                  | 50                 | 60                 | 8.7                          | 10.2                      | 2600           | 110            | 420            | 38           | U-MOSVI-H   |                      |                                                                                       |
|                                                                                                                          | TK3R1P04PL *  | 60                       | ±20                  | 130 <sup>(1)</sup> | 87                 | 3.1                          | 4.3                       | 4670           | 70             | 1000           | 60           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                                                          | TK6R7P06PL *  |                          | ±20                  | 74 <sup>(1)</sup>  | 66                 | 6.7                          | 11.1                      | 1990           | 45             | 350            | 26           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                                                          | TK4R4P06PL *  |                          | ±20                  | 106 <sup>(1)</sup> | 87                 | 4.4                          | 7.1                       | 3280           | 60             | 600            | 48.2         | U-MOSIX-H   |                      |                                                                                       |
|  (mm)                                 | TK65G10N1     | 100                      | ±20                  | 136 <sup>(1)</sup> | 156                | 4.5                          | —                         | 5400           | 42             | 950            | 81           | U-MOSVIII-H | (3A)                 |  |
|  (mm)                                 | TK3R1A04PL *  | 40                       | ±20                  | 82                 | 36                 | 3.1                          | 3.8                       | 4670           | 70             | 1000           | 63.4         | U-MOSIX-H   | (3A_I)               |                                                                                       |
|                                                                                                                          | TK30A06N1     |                          | ±20                  | 43 <sup>(1)</sup>  | 25                 | 15                           | —                         | 1050           | 33             | 400            | 16           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                                                          | TK8R2A06PL *  | 60                       | ±20                  | 50                 | 36                 | 8.2                          | 11.4                      | 1990           | 45             | 350            | 28           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                                                          | TK40A06N1     |                          | ±20                  | 60 <sup>(1)</sup>  | 30                 | 10.4                         | —                         | 1700           | 40             | 580            | 23           | U-MOSVIII-H |                      |                                                                                       |
|                                                                                                                          | TK4R3A06PL *  |                          | ±20                  | 68                 | 36                 | 4.3                          | 7.2                       | 3280           | 60             | 600            | 48.2         | U-MOSIX-H   |                      |                                                                                       |
|                                                                                                                          | TK3R3A06PL ** |                          | ±20                  | 160 <sup>(1)</sup> | 42                 | 3.3                          | 4.9                       | 5000           | 55             | 950            | 71           | U-MOSIX-H   |                      |                                                                                       |
|                                                                                                                          | TK58A06N1     |                          | ±20                  | 105 <sup>(1)</sup> | 35                 | 5.4                          | —                         | 3400           | 45             | 1120           | 46           | U-MOSVIII-H |                      |                                                                                       |
| (Continued on next page)                                                                                                 | TK100A06N1    |                          | ±20                  | 263 <sup>(1)</sup> | 45                 | 2.7                          | —                         | 10500          | 50             | 3500           | 140          | U-MOSVIII-H |                      |                                                                                       |

Note (1): I<sub>D</sub> (pC) (Silicon Limit)

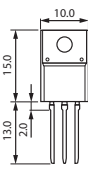
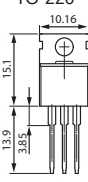
\*: New Product / 新製品

\*\*: Under Development / 開発中



• The internal connection diagrams only show the general configurations of the circuits.

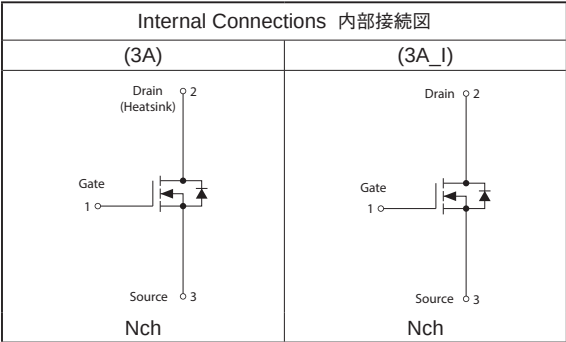
• 内部接続図はイメージ図です。

| Package                                                                                                                                                   | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------|----------------|----------------|--------------|-------------|----------------------|----------------------------|
|                                                                                                                                                           |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                |                |                |              |             |                      |                            |
| (Continued from previous page)<br><br><div>TO-220SIS<br/><br/>(mm)</div> | TK35A08N1     | 80                       | ±20                  | 55 <sup>(1)</sup>  | 30                 | 12.2                         | —                         | 1700           | 18             | 440            | 25           | U-MOSVIII-H | (3A_I)               |                            |
|                                                                                                                                                           | TK46A08N1     |                          | ±20                  | 80 <sup>(1)</sup>  | 35                 | 8.4                          | —                         | 2500           | 22             | 620            | 37           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK72A08N1     |                          | ±20                  | 157 <sup>(1)</sup> | 45                 | 4.5                          | —                         | 5500           | 38             | 1300           | 81           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK100A08N1    |                          | ±20                  | 214 <sup>(1)</sup> | 45                 | 3.2                          | —                         | 9000           | 52             | 2100           | 130          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK22A10N1     | 100                      | ±20                  | 52 <sup>(1)</sup>  | 30                 | 13.8                         | —                         | 1800           | 18             | 310            | 28           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK34A10N1     |                          | ±20                  | 75 <sup>(1)</sup>  | 35                 | 9.5                          | —                         | 2600           | 23             | 450            | 38           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK40A10N1     |                          | ±20                  | 90 <sup>(1)</sup>  | 35                 | 8.2                          | —                         | 3000           | 29             | 520            | 49           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK65A10N1     |                          | ±20                  | 148 <sup>(1)</sup> | 45                 | 4.8                          | —                         | 5400           | 42             | 950            | 81           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK100A10N1    |                          | ±20                  | 207 <sup>(1)</sup> | 45                 | 3.8                          | —                         | 8800           | 63             | 1500           | 140          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK32A12N1     | 120                      | ±20                  | 60 <sup>(1)</sup>  | 30                 | 13.8                         | —                         | 2000           | 13             | 330            | 34           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK42A12N1     |                          | ±20                  | 88 <sup>(1)</sup>  | 35                 | 9.4                          | —                         | 3100           | 16             | 490            | 52           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK56A12N1     |                          | ±20                  | 112 <sup>(1)</sup> | 45                 | 7.5                          | —                         | 4200           | 19             | 650            | 69           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK72A12N1     |                          | ±20                  | 179 <sup>(1)</sup> | 45                 | 4.5                          | —                         | 8100           | 30             | 1200           | 130          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
| <div>TO-220<br/><br/>(mm)</div>                                         | TK3R3E03GL    | 30                       | ±20                  | 147 <sup>(1)</sup> | 104                | 3.3                          | 4.1                       | 4350           | 260            | 710            | 67           | U-MOSVII-H  | (3A)                 |                            |
|                                                                                                                                                           | TK3R1E04PL *  | 40                       | ±20                  | 128 <sup>(1)</sup> | 87                 | 3.1                          | 3.8                       | 4670           | 70             | 1000           | 63.4         | U-MOSIX-H   |                      |                            |
|                                                                                                                                                           | TK30E06N1     | 60                       | ±20                  | 43 <sup>(1)</sup>  | 53                 | 15                           | —                         | 1050           | 33             | 400            | 16           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK40E06N1     |                          | ±20                  | 60 <sup>(1)</sup>  | 67                 | 10.4                         | —                         | 1700           | 40             | 580            | 23           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK3R2E06PL ** |                          | ±20                  | 160 <sup>(1)</sup> | 168                | 3.2                          | 4.7                       | 5000           | 55             | 950            | 71           | U-MOSIX-H   |                      |                            |
|                                                                                                                                                           | TK8R2E06PL *  |                          | ±20                  | 75 <sup>(1)</sup>  | 81                 | 8.2                          | 11.4                      | 1990           | 45             | 350            | 28           | U-MOSIX-H   |                      |                            |
|                                                                                                                                                           | TK58E06N1     | 80                       | ±20                  | 105 <sup>(1)</sup> | 110                | 5.4                          | —                         | 3400           | 45             | 1120           | 46           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK4R3E06PL *  |                          | ±20                  | 106 <sup>(1)</sup> | 87                 | 4.3                          | 7.2                       | 3280           | 60             | 600            | 48.2         | U-MOSIX-H   |                      |                            |
|                                                                                                                                                           | TK100E06N1    |                          | ±20                  | 263 <sup>(1)</sup> | 255                | 2.3                          | —                         | 10500          | 50             | 3500           | 140          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK35E08N1     | 80                       | ±20                  | 55                 | 72                 | 12.2                         | —                         | 1700           | 18             | 440            | 25           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK46E08N1     |                          | ±20                  | 80                 | 103                | 8.4                          | —                         | 2500           | 22             | 620            | 37           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK72E08N1     |                          | ±20                  | 157 <sup>(1)</sup> | 192                | 4.3                          | —                         | 5500           | 38             | 1300           | 81           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK100E08N1    |                          | ±20                  | 214 <sup>(1)</sup> | 255                | 3.2                          | —                         | 9000           | 52             | 2100           | 130          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK22E10N1     | 100                      | ±20                  | 52                 | 72                 | 13.8                         | —                         | 1800           | 18             | 310            | 28           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK34E10N1     |                          | ±20                  | 75                 | 103                | 9.5                          | —                         | 2600           | 23             | 450            | 38           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK40E10N1     |                          | ±20                  | 90                 | 126                | 8.2                          | —                         | 3000           | 29             | 520            | 49           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK65E10N1     |                          | ±20                  | 148 <sup>(1)</sup> | 192                | 4.8                          | —                         | 5400           | 42             | 950            | 81           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK100E10N1    |                          | ±20                  | 207 <sup>(1)</sup> | 255                | 3.4                          | —                         | 8800           | 63             | 1500           | 140          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK32E12N1     | 120                      | ±20                  | 60                 | 98                 | 13.8                         | —                         | 2000           | 13             | 330            | 34           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK42E12N1     |                          | ±20                  | 88                 | 140                | 9.4                          | —                         | 3100           | 16             | 490            | 52           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK56E12N1     |                          | ±20                  | 112 <sup>(1)</sup> | 168                | 7                            | —                         | 4200           | 19             | 650            | 69           | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           | TK72E12N1     |                          | ±20                  | 179 <sup>(1)</sup> | 255                | 4.4                          | —                         | 8100           | 30             | 1200           | 130          | U-MOSVIII-H |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |
|                                                                                                                                                           |               |                          |                      |                    |                    |                              |                           |                |                |                |              |             |                      |                            |

Note (1): I<sub>D</sub> (DC) (Silicon Limit)

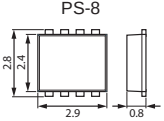
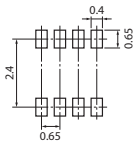
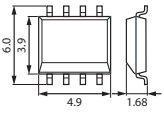
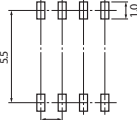
\*: New Product / 新製品

\*\*: Under Development / 開発中

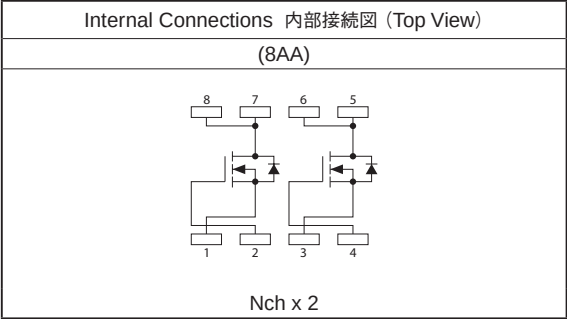


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Dual Channel) / (デュアルチャンネル)

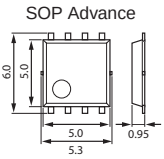
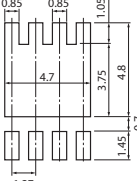
| Package                                                                                   | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                          |
|-------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|-------------------------------------------------------------------------------------|
|                                                                                           |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                            |                            |                            |                          |            |                      |                                                                                     |
| <br>(mm) | TPCP8205-H  | 30                       | ±20                  | 6.5                | 1.48<br>(1)        | 26                           | 29                        | 830                        | 53                         | 177                        | 13.8                     | U-MOSVI-H  | (8AA)                |  |
| <br>(mm) | TPC8224-H   | 30                       | ±20                  | 8                  | 1.5                | 26                           | 34                        | 690                        | 28                         | 120                        | 9.5                      | U-MOSVII-H | (8AA)                |  |
|                                                                                           | TPC8223-H   |                          | ±20                  | 9                  | 1.5                | 17                           | 21                        | 1190                       | 55                         | 210                        | 17                       | U-MOSVII-H |                      |                                                                                     |
|                                                                                           | TPC8227-H   | 40                       | ±20                  | 5.1                | 1.5                | 33                           | 40                        | 640                        | 35                         | 115                        | 10                       | U-MOSVI-H  |                      |                                                                                     |
|                                                                                           | TPC8228-H   | 60                       | ±20                  | 3.8                | 1.5                | 57                           | 64                        | 640                        | 25                         | 90                         | 11                       | U-MOSVI-H  |                      |                                                                                     |
|                                                                                           | TPC8229-H   | 80                       | ±20                  | 3.2                | 1.5                | 80                           | 87                        | 640                        | 17                         | 75                         | 11                       | U-MOSVI-H  |                      |                                                                                     |

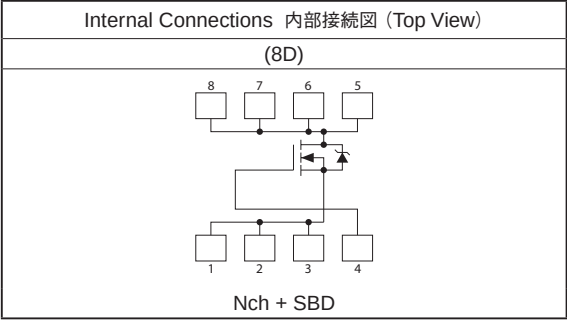
Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。



- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Built-in schottky Barrier Diode) / (SBD 混載品)

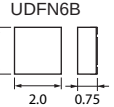
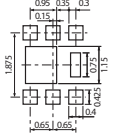
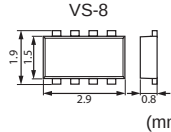
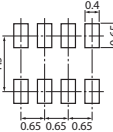
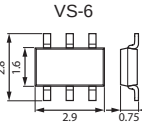
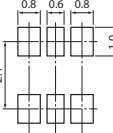
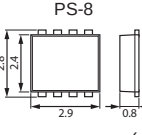
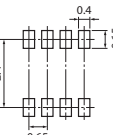
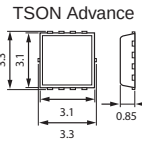
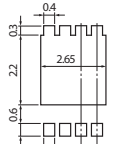
| Package                                                                                     | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V |                            |                            |                            |                          |            |                      |                                                                                       |
| <br>(mm) | TPCA8A11-H  | 30                       | ±20                  | 35                 | 52                 | 3.6                          | 4.6                       | 3200                       | 170                        | 600                        | 46                       | U-MOSVII-H | (8D)                 |  |
|                                                                                             | TPCA8A10-H  |                          | ±20                  | 40                 | 58                 | 3                            | 3.8                       | 4000                       | 200                        | 810                        | 57                       | U-MOSVII-H |                      |                                                                                       |
|                                                                                             | TPCA8A09-H  |                          | ±20                  | 51                 | 70                 | 2.3                          | 2.8                       | 5900                       | 250                        | 1100                       | 82                       | U-MOSVII-H |                      |                                                                                       |



- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

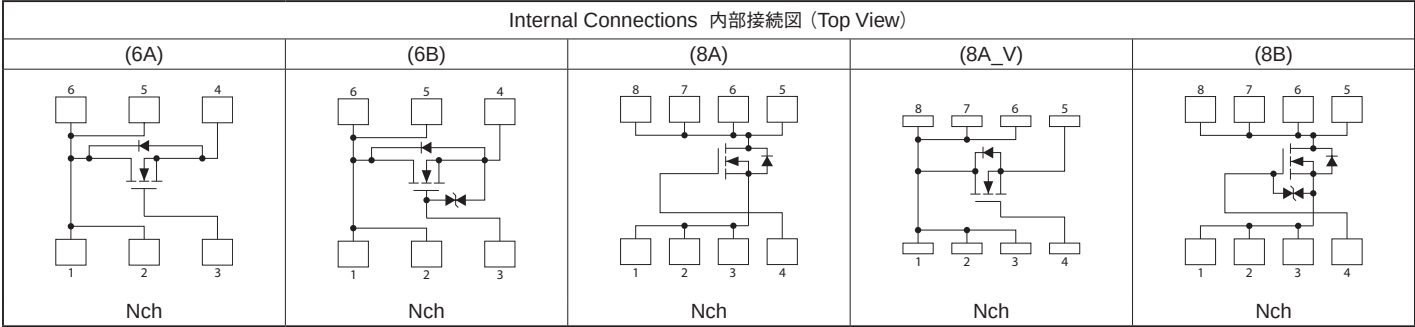
Low On-Resistance Series / 低オン抵抗シリーズ  
(Single N-Channel) / (シングルNチャネル)

(1/4)

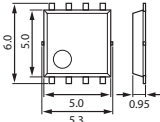
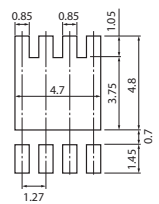
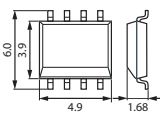
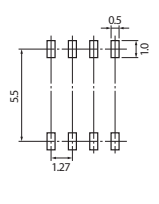
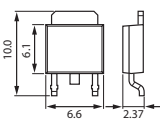
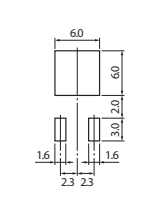
| Package                                                                                     | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |             |                      |                                                                                       |
| <br>(mm)   | SSM6K504NU * | 30                       | ±20                  | 9                  | 1.25               | 19.5                         | —                       | 26                        | —                         | —                         | 620                        | 42                         | 110                        | 4.8                      | U-MOSVII-H  | (6B)                 |    |
|                                                                                             | SSM6K513NU * |                          | ±20                  | 15                 | 1.25               | 8.9                          | —                       | 12                        | —                         | —                         | 1130                       | 52                         | 350                        | 7.5                      | U-MOSIX-H   |                      |                                                                                       |
|                                                                                             | SSM6K514NU * | 40                       | ±20                  | 12                 | 1.25               | 11.6                         | —                       | 17.3                      | —                         | —                         | 1110                       | 26                         | 245                        | 7.5                      | U-MOSIX-H   | (6B)                 |                                                                                       |
|                                                                                             | SSM6K341NU * | 60                       | ±20                  | 6                  | 1.28               | 36                           | —                       | 51                        | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H |                      |                                                                                       |
|                                                                                             | SSM6K361NU * | 100                      | ±20                  | 3.5                | 1.28               | 69                           | —                       | 92                        | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H |                      |                                                                                       |
| <br>(mm)    | TPCF8003     | 20                       | ±12                  | 7                  | 2.5 (1)            | —                            | —                       | 18                        | 34                        | —                         | 500                        | 155                        | 215                        | 9.5                      | U-MOSIV     | (8A_V)               |    |
|                                                                                             | TPCF8004     | 30                       | ±20                  | 7                  | 2.5 (1)            | 24                           | —                       | 30                        | —                         | —                         | 610                        | 34                         | 130                        | 9                        | U-MOSVII    |                      |                                                                                       |
| <br>(mm)   | TPC6012      | 20                       | ±12                  | 6                  | 2.2 (1)            | —                            | —                       | 20                        | 38                        | —                         | 630                        | 150                        | 180                        | 9                        | U-MOSIV     | (6A)                 |    |
|                                                                                             | TPC6067      | 30                       | ±20                  | 6                  | 2.2 (1)            | 23                           | —                       | 29                        | —                         | —                         | 610                        | 34                         | 130                        | 8                        | U-MOSVII    |                      |                                                                                       |
| <br>(mm) | TPCP8011     | 40                       | ±20                  | 5                  | 1.96 (1)           | 31.8                         | 51.2                    | —                         | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV     | (8B)                 |  |
|                                                                                             | TPCP8010     |                          | ±20                  | 6                  | 1.96 (1)           | 23.8                         | 38.4                    | —                         | —                         | —                         | 600                        | 75                         | 132                        | 13.1                     | U-MOSIV     |                      |                                                                                       |
|                                                                                             | TPCP8009     |                          | ±20                  | 10                 | 2.01 (1)           | 11.8                         | 19.5                    | —                         | —                         | —                         | 1250                       | 165                        | 265                        | 25.1                     | U-MOSIV     |                      |                                                                                       |
|                                                                                             | TPCP8013     | 60                       | ±20                  | 4                  | 1.96 (1)           | 51.8                         | 77.9                    | —                         | —                         | —                         | 515                        | 48                         | 86                         | 12                       | U-MOSIV     |                      |                                                                                       |
|                                                                                             | TPCP8012     |                          | ±20                  | 8                  | 2.01 (1)           | 20.2                         | 29.1                    | —                         | —                         | —                         | 1160                       | 120                        | 200                        | 26.6                     | U-MOSIV     |                      |                                                                                       |
| <br>(mm) | TPCC8093     | 20                       | ±12                  | 21                 | 30                 | —                            | —                       | 5.8                       | 9.5                       | —                         | 1860                       | 140                        | 365                        | 16                       | U-MOSVII    | (8A)                 |  |
|                                                                                             | TPCC8074     | 30                       | ±20                  | 20                 | 30                 | 6.3                          | —                       | 8.5                       | —                         | —                         | 1800                       | 88                         | 330                        | 25                       | U-MOSVII    |                      |                                                                                       |
|                                                                                             | TPCC8073     |                          | ±20                  | 27                 | 39                 | 4.5                          | —                       | 5.9                       | —                         | —                         | 2600                       | 130                        | 470                        | 37                       | U-MOSVII    |                      |                                                                                       |
|                                                                                             | TPN6R303NC   |                          | ±20                  | 43 (2)             | 19                 | 6.3                          | —                       | 8.4                       | —                         | —                         | 1370                       | 110                        | 420                        | 24                       | U-MOSVIII   |                      |                                                                                       |
|                                                                                             | TPN4R203NC   |                          | ±20                  | 53 (2)             | 22                 | 4.2                          | —                       | 6.4                       | —                         | —                         | 1370                       | 110                        | 420                        | 24                       | U-MOSVIII   |                      |                                                                                       |
|                                                                                             | TPN2R503NC   |                          | ±20                  | 85 (2)             | 35                 | 2.5                          | —                       | 4.1                       | —                         | —                         | 2230                       | 160                        | 650                        | 40                       | U-MOSVIII   |                      |                                                                                       |
|                                                                                             | TPN2R203NC   |                          | ±20                  | 100 (2)            | 42                 | 2.2                          | —                       | 3.6                       | —                         | —                         | 2230                       | 160                        | 650                        | 34                       | U-MOSVIII   |                      |                                                                                       |
|                                                                                             | TPCC8084     | 33                       | ±20                  | 21                 | 32                 | 6.7                          | —                       | 9                         | —                         | —                         | 1900                       | 98                         | 300                        | 27                       | U-MOSVII    | (8B)                 |                                                                                       |
|                                                                                             | TPCC8076     |                          | ±20                  | 27                 | 39                 | 4.6                          | —                       | 6.2                       | —                         | —                         | 2500                       | 120                        | 430                        | 34                       | U-MOSVII    |                      |                                                                                       |
|                                                                                             | TPCC8069     | 40                       | ±20                  | 30                 | 46.8               | 8.1                          | 14.1                    | —                         | —                         | —                         | 1640                       | 200                        | 340                        | 34                       | U-MOSIV     |                      |                                                                                       |
|                                                                                             | TPCC8070     | 60                       | ±20                  | 30                 | 46.8               | 13.5                         | 21.3                    | —                         | —                         | —                         | 1600                       | 150                        | 260                        | 34                       | U-MOSIV     |                      |                                                                                       |

Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。  
(2): I<sub>D</sub> (DC) (Silicon Limit)

\*: New Product / 新製品

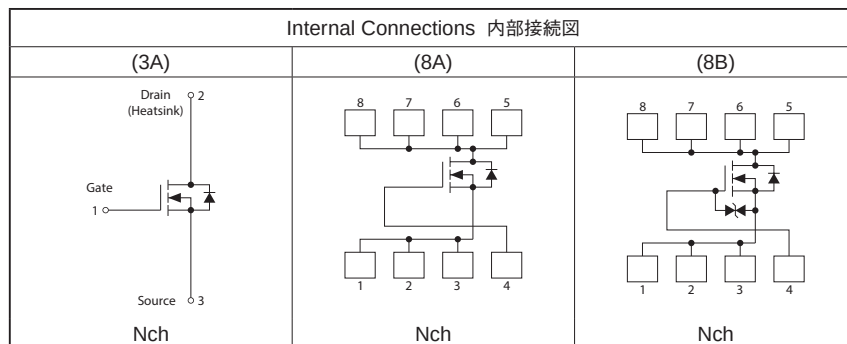


• The internal connection diagrams only show the general configurations of the circuits.  
• 内部接続図はイメージ図です。

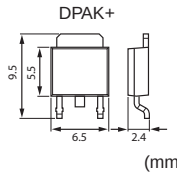
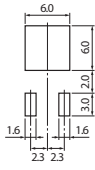
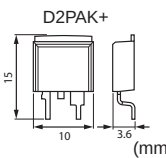
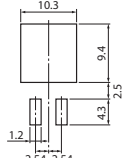
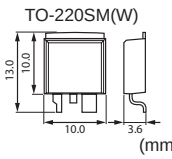
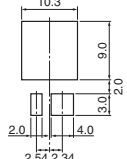
| Package                                                                                                                  | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series    | Internal Connections | Land Pattern Examples (mm)                                                           |                                                                                       |      |
|--------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-----------|----------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------|
|                                                                                                                          |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |           |                      |                                                                                      |                                                                                       |      |
| <div>SOP Advance</div>  <div>(mm)</div> | TPCA8082    | 30                       | ±20                  | 32                 | 45                 | 3.8                          | —                       | 4.8                       | —                         | —                         | 2900                       | 150                        | 530                        | 41                       | U-MOSVII  | (8A)                 |   |                                                                                       |      |
|                                                                                                                          | TPCA8081    |                          | ±20                  | 38                 | 52                 | 3                            | —                       | 3.8                       | —                         | —                         | 3600                       | 200                        | 680                        | 51                       | U-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8080    |                          | ±20                  | 42                 | 57                 | 2.6                          | —                       | 3.2                       | —                         | —                         | 4300                       | 240                        | 810                        | 61                       | U-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8088    |                          | ±20                  | 48                 | 63                 | 2.2                          | —                       | 2.7                       | —                         | —                         | 5200                       | 290                        | 1000                       | 74                       | U-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8087    |                          | ±20                  | 56                 | 70                 | 1.9                          | —                       | 2.3                       | —                         | —                         | 6400                       | 360                        | 1200                       | 91                       | U-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPHR9003NC  |                          | ±20                  | 220 <sup>(2)</sup> | 78                 | 0.9                          | —                       | 1.4                       | —                         | —                         | 5300                       | 130                        | 2700                       | 75                       | U-MOSVIII |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8075    | 33                       | ±20                  | 48                 | 63                 | 2.4                          | —                       | 3.1                       | —                         | —                         | 5200                       | 300                        | 970                        | 70                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8078    |                          | ±20                  | 54                 | 70                 | 2.1                          | —                       | 2.6                       | —                         | —                         | 6400                       | 370                        | 1200                       | 90                       | U-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8085    | 40                       | ±20                  | 40                 | 55                 | 5.7                          | 10.4                    | —                         | —                         | —                         | 2050                       | 250                        | 410                        | 41                       | U-MOSIV   |                      |                                                                                      | (8B)                                                                                  |      |
|                                                                                                                          | TPCA8083    |                          | ±20                  | 60                 | 84                 | 3.3                          | 5.6                     | —                         | —                         | —                         | 4540                       | 530                        | 900                        | 83                       | U-MOSIV   |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPCA8086    | 60                       | ±20                  | 35                 | 55                 | 11.2                         | 16.6                    | —                         | —                         | —                         | 1990                       | 170                        | 290                        | 41                       | U-MOSIV   |                      |                                                                                      |                                                                                       | (8B) |
|                                                                                                                          | TPCA8084    |                          | ±20                  | 60                 | 84                 | 5.3                          | 8                       | —                         | —                         | —                         | 4480                       | 400                        | 670                        | 83                       | U-MOSIV   |                      |                                                                                      |                                                                                       |      |
| <div>SOP-8</div>  <div>(mm)</div>     | TPC8092     | 30                       | ±20                  | 15                 | 1.9                | 9                            | —                       | 11.1                      | —                         | —                         | 1800                       | 88                         | 330                        | 25                       | U-MOSVII  | (8A)                 |  |                                                                                       |      |
|                                                                                                                          | TPC8074     |                          | ±20                  | 17                 | 1.9                | 6.5                          | —                       | 8.7                       | —                         | —                         | 1800                       | 88                         | 330                        | 25                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8086     |                          | ±20                  | 17                 | 1.9                | 6.4                          | —                       | 8.5                       | —                         | —                         | 1900                       | 90                         | 330                        | 26                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8073     |                          | ±20                  | 18                 | 1.9                | 4.7                          | —                       | 6.1                       | —                         | —                         | 2600                       | 130                        | 470                        | 37                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8080     |                          | ±20                  | 18                 | 1.9                | 2.8                          | —                       | 3.4                       | —                         | —                         | 4300                       | 240                        | 810                        | 61                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8081     |                          | ±20                  | 18                 | 1.9                | 3.2                          | —                       | 4                         | —                         | —                         | 3600                       | 200                        | 680                        | 51                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8082     |                          | ±20                  | 18                 | 1.9                | 4                            | —                       | 5                         | —                         | —                         | 2900                       | 150                        | 530                        | 41                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8085     |                          | ±20                  | 18                 | 1.9                | 4.7                          | —                       | 6.1                       | —                         | —                         | 2600                       | 130                        | 470                        | 37                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8087     |                          | ±20                  | 18                 | 1.9                | 2.1                          | —                       | 2.5                       | —                         | —                         | 6400                       | 360                        | 1200                       | 91                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8088     |                          | ±20                  | 18                 | 1.9                | 2.4                          | —                       | 2.9                       | —                         | —                         | 5200                       | 290                        | 1000                       | 74                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8084     | 33                       | ±20                  | 17                 | 1.9                | 6.9                          | —                       | 9.2                       | —                         | —                         | 1900                       | 98                         | 300                        | 27                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8075     |                          | ±20                  | 18                 | 1.9                | 2.6                          | —                       | 3.3                       | —                         | —                         | 5200                       | 300                        | 970                        | 70                       | U-MOSVII  | (8B)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8076     |                          | ±20                  | 18                 | 1.9                | 4.9                          | —                       | 6.5                       | —                         | —                         | 2500                       | 120                        | 430                        | 34                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
|                                                                                                                          | TPC8078     |                          | ±20                  | 18                 | 1.9                | 2.3                          | —                       | 2.8                       | —                         | —                         | 6400                       | 370                        | 1200                       | 90                       | U-MOSVII  | (8A)                 |                                                                                      |                                                                                       |      |
| <div>DPAK</div>  <div>(mm)</div>      | TK6R7P06PL  | **                       | 60                   | ±20                | 74 <sup>(2)</sup>  | 66                           | 6.7                     | —                         | 11.1                      | —                         | —                          | 1990                       | 45                         | 350                      | 26        | U-MOSIX-H            | (3A)                                                                                 |  |      |
|                                                                                                                          | TK8P25DA    | 250                      | ±20                  | 7.5                | 55                 | 500                          | —                       | —                         | —                         | —                         | 550                        | 5.1                        | 40                         | 16                       | π-MOSVII  |                      |                                                                                      |                                                                                       |      |
|                                                                                                                          | TK13P25D    |                          | ±20                  | 13                 | 96                 | 250                          | —                       | —                         | —                         | —                         | 1100                       | 8                          | 66                         | 25                       | π-MOSVII  |                      |                                                                                      |                                                                                       |      |

Note (2): I<sub>D</sub> (DC) (Silicon Limit)

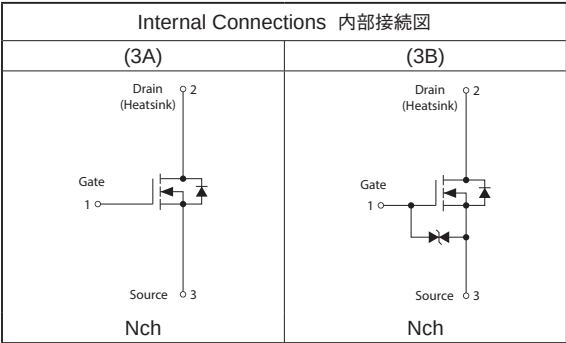
\*\*: Under Development / 開発中



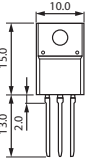
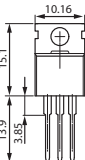
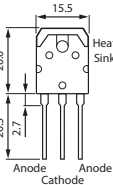
- The internal connection diagrams only show the general configurations of the circuits.
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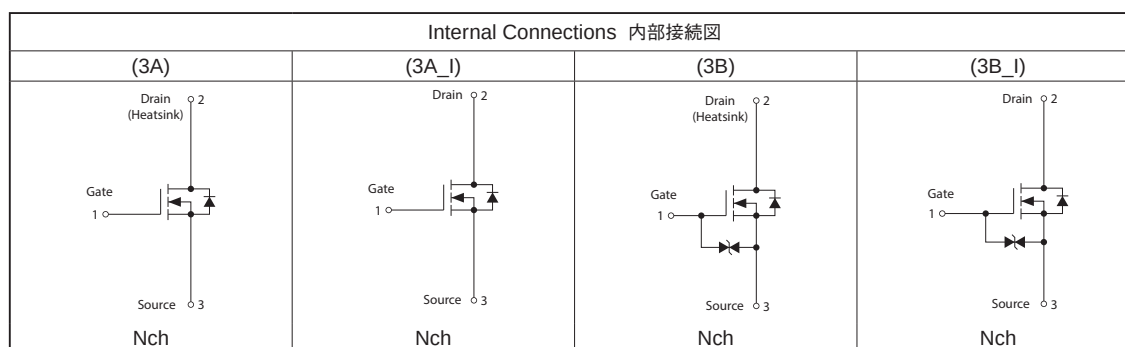
| Package                                                                                     | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |      |
|---------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|------|
|                                                                                             |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |             |                      |                                                                                       |      |
| <br>(mm)    | TK10S04K3L  | 40                       | ±20                  | 10                 | 25                 | 28                           | 54                      | —                         | —                         | —                         | 410                        | 55                         | 100                        | 10                       | U-MOSIV     | (3B)                 |    |      |
|                                                                                             | TK15S04N1L  |                          | ±20                  | 15                 | 46                 | 17.8                         | —                       | 37                        | —                         | —                         | 610                        | 50                         | 390                        | 10                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK20S04K3L  |                          | ±20                  | 20                 | 38                 | 14                           | 26                      | —                         | —                         | —                         | 820                        | 110                        | 190                        | 18                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK35S04K3L  |                          | ±20                  | 35                 | 58                 | 10.3                         | 15                      | —                         | —                         | —                         | 1370                       | 180                        | 320                        | 28                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK50S04K3L  |                          | ±20                  | 50                 | 68                 | 5.4                          | 10                      | —                         | —                         | —                         | 2010                       | 255                        | 435                        | 42                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK65S04K3L  |                          | ±20                  | 65                 | 88                 | 4.5                          | 7.9                     | —                         | —                         | —                         | 2800                       | 440                        | 680                        | 63                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK65S04N1L  |                          | ±20                  | 65                 | 107                | 4.3                          | —                       | 7.8                       | —                         | —                         | 2550                       | 130                        | 1430                       | 39                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK80S04K3L  |                          | ±20                  | 80                 | 100                | 3.1                          | 4.8                     | —                         | —                         | —                         | 4340                       | 570                        | 910                        | 87                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK100S04N1L |                          | ±20                  | 100                | 180                | 2.3                          | —                       | 4.5                       | —                         | —                         | 5490                       | 220                        | 3000                       | 76                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK1R4S04PB  |                          | ±20                  | 120                | 180                | 1.35                         | 1.9                     | —                         | —                         | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   |                      |                                                                                       |      |
|                                                                                             | TK8S06K3L   | 60                       | ±20                  | 8                  | 25                 | 54                           | 80                      | —                         | —                         | —                         | 400                        | 40                         | 80                         | 10                       | U-MOSIV     | (3B)                 |                                                                                       |      |
|                                                                                             | TK20S06K3L  |                          | ±20                  | 20                 | 38                 | 29                           | 40                      | —                         | —                         | —                         | 780                        | 75                         | 136                        | 18                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK25S06N1L  |                          | ±20                  | 25                 | 57                 | 18.5                         | —                       | 36.8                      | —                         | —                         | 855                        | 69                         | 490                        | 15                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK30S06K3L  |                          | ±20                  | 30                 | 58                 | 18                           | 30                      | —                         | —                         | —                         | 1350                       | 130                        | 230                        | 28                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK40S06N1L  |                          | ±20                  | 40                 | 88.2               | 10.5                         | —                       | 18                        | —                         | —                         | 1650                       | 107                        | 835                        | 26                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK45S06K3L  |                          | ±20                  | 45                 | 68                 | 10.5                         | 16.4                    | —                         | —                         | —                         | 1950                       | 185                        | 315                        | 41                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK60S06K3L  |                          | ±20                  | 60                 | 88                 | 8                            | 12.3                    | —                         | —                         | —                         | 2900                       | 280                        | 460                        | 60                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK80S06K3L  |                          | ±20                  | 80                 | 100                | 5.5                          | 7.8                     | —                         | —                         | —                         | 4200                       | 400                        | 650                        | 85                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK90S06N1L  |                          | ±20                  | 90                 | 157                | 3.3                          | —                       | 5.2                       | —                         | —                         | 5400                       | 350                        | 2630                       | 81                       | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK7S10N1Z   |                          | 100                  | ±20                | 7                  | 50                           | 48                      | —                         | —                         | —                         | —                          | 470                        | 36                         | 260                      | 7.1         | U-MOSVIII-H          |                                                                                       | (3A) |
| TK11S10N1L                                                                                  | ±20         | 11                       |                      | 65                 | 28                 | —                            | 50                      | —                         | —                         | 850                       | 67                         | 370                        | 15                         | U-MOSVIII-H              | (3B)        |                      |                                                                                       |      |
| TK33S10N1L                                                                                  | ±20         | 33                       |                      | 125                | 9.7                | —                            | 16.2                    | —                         | —                         | 2250                      | 145                        | 1010                       | 33                         | U-MOSVIII-H              |             |                      |                                                                                       |      |
| TK33S10N1Z                                                                                  | ±20         | 33                       |                      | 125                | 9.7                | —                            | —                       | —                         | —                         | 2050                      | 140                        | 1070                       | 28                         | U-MOSVIII-H              |             |                      |                                                                                       |      |
| TK40S10K3Z                                                                                  | ±20         | 40                       |                      | 93                 | 18                 | —                            | —                       | —                         | —                         | 3110                      | 245                        | 400                        | 61                         | U-MOSIV                  |             |                      |                                                                                       |      |
| TK55S10N1                                                                                   | ±20         | 55                       |                      | 157                | 6.5                | —                            | —                       | —                         | —                         | 3280                      | 210                        | 1520                       | 49                         | U-MOSVIII-H              | (3A)        |                      |                                                                                       |      |
| <br>(mm) | TK1R5R04PB  | *                        | 40                   | ±20                | 160                | 205                          | 1.5                     | 2.05                      | —                         | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   | (3A)                 |  |      |
| <br>(mm)  | TK100F04K3  | 40                       | ±20                  | 100                | 180                | 3                            | —                       | —                         | —                         | —                         | 4500                       | 900                        | 1100                       | 102                      | U-MOSIV     | (3A)                 |  |      |
|                                                                                             | TK100F04K3L |                          | ±20                  | 100                | 180                | 3                            | 4.5                     | —                         | —                         | —                         | 4980                       | 680                        | 1100                       | 105                      | U-MOSIV     | (3B)                 |                                                                                       |      |
|                                                                                             | TK150F04K3L |                          | ±20                  | 150                | 300                | 2.1                          | 3.2                     | —                         | —                         | —                         | 9400                       | 1200                       | 1900                       | 190                      | U-MOSIV     | (3A)                 |                                                                                       |      |
|                                                                                             | TK1R4F04PB  |                          | ±20                  | 160                | 205                | 1.35                         | 1.9                     | —                         | —                         | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   |                      |                                                                                       |      |
|                                                                                             | TK200F04N1L |                          | ±20                  | 200                | 375                | 0.9                          | 1.37                    | —                         | —                         | —                         | 14920                      | 650                        | 7680                       | 214                      | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TKR74F04PB  |                          | ±20                  | 250                | 375                | 0.74                         | 0.98                    | —                         | —                         | —                         | 14200                      | 1300                       | 9100                       | 227                      | U-MOSIX-H   |                      |                                                                                       |      |
|                                                                                             | TK100F06K3  | 60                       | ±20                  | 100                | 180                | 5                            | —                       | —                         | —                         | —                         | 4500                       | 600                        | 800                        | 98                       | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK130F06K3  |                          | ±20                  | 130                | 300                | 3.4                          | —                       | —                         | —                         | —                         | 8400                       | 1020                       | 1420                       | 170                      | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK80F08K3   | 75                       | ±20                  | 80                 | 300                | 4.3                          | —                       | —                         | —                         | —                         | 8200                       | 770                        | 1140                       | 175                      | U-MOSIV     |                      |                                                                                       |      |
|                                                                                             | TK160F10N1  | 100                      | ±20                  | 160                | 375                | 2.4                          | —                       | —                         | —                         | —                         | 8510                       | 500                        | 3960                       | 121                      | U-MOSVIII-H |                      |                                                                                       |      |
|                                                                                             | TK160F10N1L |                          | ±20                  | 160                | 375                | 2.4                          | 3.7                     | —                         | —                         | —                         | 10100                      | 610                        | 3900                       | 122                      | U-MOSVIII-H |                      |                                                                                       |      |

\*: New Product / 新製品



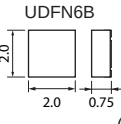
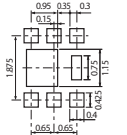
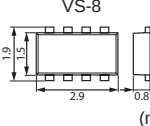
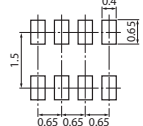
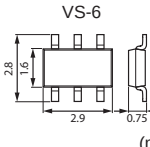
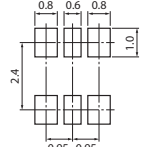
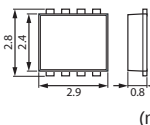
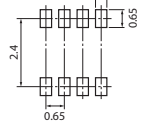
- The internal connection diagrams only show the general configurations of the circuits.
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| Package                                                                                                                 | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series                 | Internal Connections | Land Pattern Examples (mm) |
|-------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------------------|----------------------|----------------------------|
|                                                                                                                         |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |                        |                      |                            |
| <div>TO-220SIS</div>  <div>(mm)</div>  | TK50A04K3   | 40                       | ±20                  | 50                 | 42                 | 3.5                          | —                       | —                         | —                         | —                         | 4500                       | 900                        | 1100                       | 102                      | U-MOSIV                | (3A_I)               |                            |
|                                                                                                                         | TK80A04K3L  |                          | ±20                  | 80                 | 48                 | 2.4                          | 3.5                     | —                         | —                         | —                         | —                          | 9400                       | 1200                       | 1900                     | 190                    | U-MOSIV              |                            |
|                                                                                                                         | TK80A08K3   | 75                       | ±20                  | 80                 | 40                 | 4.5                          | —                       | —                         | —                         | —                         | 8200                       | 770                        | 1140                       | 175                      | U-MOSIV                | (3A_I)               |                            |
|                                                                                                                         | TK9A20DA    | 200                      | ±20                  | 8.5                | 30                 | 400                          | —                       | —                         | —                         | —                         | 550                        | 5.6                        | 40                         | 14                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK15A20D    |                          | ±20                  | 15                 | 35                 | 180                          | —                       | —                         | —                         | —                         | 1050                       | 9                          | 80                         | 26                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK20A20D    |                          | ±20                  | 20                 | 45                 | 109                          | —                       | —                         | —                         | —                         | 1650                       | 14                         | 120                        | 43                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK25A20D    |                          | ±20                  | 25                 | 45                 | 70                           | —                       | —                         | —                         | —                         | 2550                       | 21                         | 180                        | 60                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK8A25DA    | 250                      | ±20                  | 7.5                | 30                 | 500                          | —                       | —                         | —                         | —                         | 550                        | 5.1                        | 40                         | 16                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK13A25D    |                          | ±20                  | 13                 | 35                 | 250                          | —                       | —                         | —                         | —                         | 1100                       | 8                          | 66                         | 25                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK17A25D    |                          | ±20                  | 17                 | 45                 | 150                          | —                       | —                         | —                         | —                         | 1650                       | 12                         | 110                        | 43                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK20A25D    |                          | ±20                  | 20                 | 45                 | 100                          | —                       | —                         | —                         | —                         | 2550                       | 14                         | 150                        | 55                       | π-MOSVII               |                      |                            |
|                                                                                                                         | TK18A30D    | 300                      | ±20                  | 18                 | 45                 | 139                          | —                       | —                         | —                         | —                         | 2600                       | 17                         | 140                        | 60                       | π-MOSVII               |                      |                            |
| <div>TO-220</div>  <div>(mm)</div>    | TK18E10K3   | 100                      | ±20                  | 18                 | 71                 | 42                           | —                       | —                         | —                         | —                         | 1580                       | 135                        | 200                        | 33                       | U-MOSIV                | (3A)                 |                            |
|                                                                                                                         | TK13E25D    | 250                      | ±20                  | 13                 | 102                | 250                          | —                       | —                         | —                         | —                         | 1100                       | 8                          | 66                         | 25                       | π-MOSVII               |                      |                            |
| <div>TO-3P(N)</div>  <div>(mm)</div> | TK70J04K3Z  | 40                       | ±20                  | 70                 | 125                | 4.1                          | —                       | —                         | —                         | —                         | 4500                       | 800                        | 1150                       | 100                      | U-MOSIV                | (3B)                 |                            |
|                                                                                                                         | TK75J04K3Z  |                          | ±20                  | 75                 | 150                | 3                            | —                       | —                         | —                         | —                         | —                          | 8450                       | 1480                       | 2060                     | 190                    | U-MOSIV              |                            |
|                                                                                                                         | 2SK2313     | 60                       | ±20                  | 60                 | 150                | 11                           | —                       | —                         | —                         | —                         | 5400                       | 920                        | 2600                       | 170                      | L <sup>2</sup> -π-MOSV | (3A)                 |                            |
|                                                                                                                         | TK70J06K3   |                          | ±20                  | 70                 | 125                | 6                            | —                       | —                         | —                         | —                         | 4500                       | 600                        | 800                        | 98                       | U-MOSIV                |                      |                            |
|                                                                                                                         | TK40J20D    | 200                      | ±20                  | 40                 | 260                | 44                           | —                       | —                         | —                         | —                         | 4300                       | 30                         | 280                        | 100                      | π-MOSVII               |                      |                            |
|                                                                                                                         | TK70J20D    |                          | ±20                  | 70                 | 410                | 27                           | —                       | —                         | —                         | —                         | 6950                       | 50                         | 450                        | 160                      | π-MOSVII               |                      |                            |
|                                                                                                                         | TK30J25D    | 250                      | ±20                  | 30                 | 260                | 60                           | —                       | —                         | —                         | —                         | 4300                       | 30                         | 250                        | 100                      | π-MOSVII               |                      |                            |
|                                                                                                                         | TK60J25D    |                          | ±20                  | 60                 | 410                | 38                           | —                       | —                         | —                         | —                         | 7000                       | 44                         | 400                        | 160                      | π-MOSVII               |                      |                            |
| TK50J30D                                                                                                                | 300         | ±20                      | 50                   | 410                | 52                 | —                            | —                       | —                         | —                         | 7000                      | 50                         | 345                        | 160                        | π-MOSVII                 |                        |                      |                            |



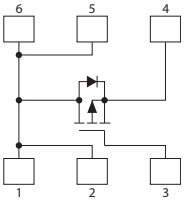
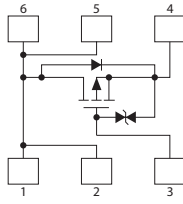
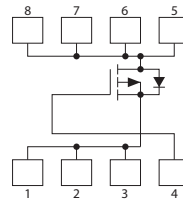
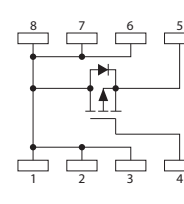
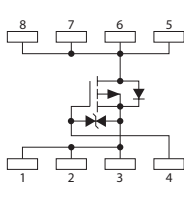
• The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

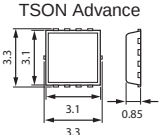
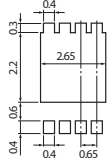
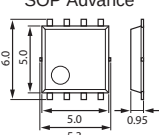
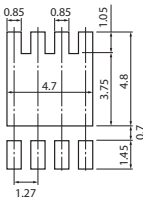
| Package                                                                                    | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                            |  |
|--------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|----------|----------------------|---------------------------------------------------------------------------------------|--|
|                                                                                            |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |          |                      |                                                                                       |  |
| <br>(mm)  | SSM6J512NU * | -12                      | ±10                  | -10                | 1.25               | —                            | —                       | 18.7                      | 25.7                      | 40.1                      | 1400                       | 225                        | 250                        | 19.5                     | U-MOSVII | (6b)                 |    |  |
|                                                                                            | SSM6J505NU * |                          | ±6                   | -12                | 1.25               | —                            | —                       | 12                        | 16                        | 21                        | 2700                       | 800                        | 800                        | 37.6                     | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | SSM6J511NU * |                          | ±10                  | -14                | 1.25               | —                            | —                       | 10                        | 13.5                      | 19.2                      | 3350                       | 570                        | 590                        | 47                       | U-MOSVII |                      |                                                                                       |  |
|                                                                                            | SSM6J502NU   | -20                      | ±8                   | -6                 | 1                  | —                            | —                       | 23.1                      | 28.3                      | 38.4                      | 1800                       | 190                        | 205                        | 24.8                     | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | SSM6J503NU   |                          | ±8                   | -6                 | 1                  | —                            | —                       | 32.4                      | 41.7                      | 57.9                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | SSM6J501NU   |                          | ±8                   | -10                | 1                  | —                            | —                       | 15.3                      | 19                        | 26.5                      | 2600                       | 280                        | 290                        | 29.9                     | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | SSM6J507NU * | -30                      | +20/-25              | -10                | 1.25               | 20                           | —                       | 28                        | —                         | —                         | 1150                       | 185                        | 210                        | 13.6                     | U-MOSVI  |                      |                                                                                       |  |
| <br>(mm)   | TPCF8105     | -20                      | ±12                  | -6                 | 2.5 (1)            | —                            | —                       | 30                        | 41                        | 100                       | 1100                       | 160                        | 190                        | 17                       | U-MOSVI  | (8a_V)               |    |  |
|                                                                                            | TPCF8108     |                          | ±12                  | -7                 | 2.5 (1)            | —                            | —                       | 26                        | 37                        | 95                        | 1320                       | 180                        | 210                        | 19                       | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | TPCF8107     | -30                      | +20/-25              | -6                 | 2.5 (1)            | 28                           | —                       | 38                        | —                         | —                         | 970                        | 170                        | 200                        | 22                       | U-MOSVI  |                      |                                                                                       |  |
| <br>(mm)   | TPC6130      | -20                      | ±12                  | -2.8               | 2.2 (1)            | —                            | —                       | 106                       | 164                       | —                         | 360                        | 47                         | 63                         | 5.1                      | U-MOSVI  | (6a)                 |    |  |
|                                                                                            | TPC6113      |                          | ±12                  | -5                 | 2.2 (1)            | —                            | —                       | 55                        | 85                        | —                         | 690                        | 93                         | 117                        | 10                       | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | TPC6111      |                          | ±8                   | -5.5               | 2.2 (1)            | —                            | —                       | 40                        | 57                        | 80                        | 700                        | 100                        | 140                        | 10                       | U-MOSV   | (6b)                 |                                                                                       |  |
|                                                                                            | TPC6110      | -30                      | +20/-25              | -4.5               | 2.2 (1)            | 56                           | —                       | 77                        | —                         | —                         | 510                        | 85                         | 110                        | 14                       | U-MOSVI  | (6a)                 |                                                                                       |  |
| <br>(mm) | TPCP8105     | -20                      | ±12                  | -7.2               | 1.68 (1)           | —                            | —                       | 17                        | 23                        | 60                        | 2280                       | 296                        | 340                        | 28                       | U-MOSVI  | (8b)                 |  |  |
|                                                                                            | TPCP8106     | -30                      | +20/-25              | -5.2               | 1.68 (1)           | 33                           | —                       | 44                        | —                         | —                         | 870                        | 150                        | 190                        | 19                       | U-MOSVI  | (8a)                 |                                                                                       |  |
|                                                                                            | TPCP8109     | -40                      | +10/-20              | -4.5               | 1.96 (1)           | 52.3                         | 76.8                    | —                         | —                         | —                         | 810                        | 85                         | 130                        | 18                       | U-MOSVI  | (8b)                 |                                                                                       |  |
|                                                                                            | TPCP8107     |                          | +10/-20              | -8                 | 2.01 (1)           | 18                           | 26.8                    | —                         | —                         | —                         | 2160                       | 238                        | 292                        | 44.6                     | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | TPCP8111     | -60                      | +10/-20              | -3                 | 1.96 (1)           | 117                          | 158.4                   | —                         | —                         | —                         | 760                        | 60                         | 90                         | 17                       | U-MOSVI  |                      |                                                                                       |  |
|                                                                                            | TPCP8110     |                          | +10/-20              | -5                 | 2.01 (1)           | 39.5                         | 53.2                    | —                         | —                         | —                         | 2075                       | 150                        | 205                        | 45                       | U-MOSVI  |                      |                                                                                       |  |

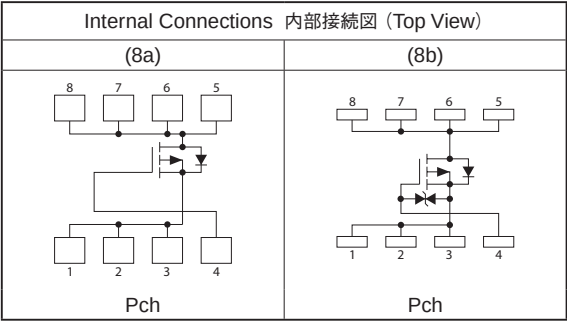
Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。

\*: New Product / 新製品

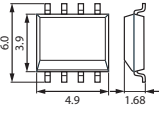
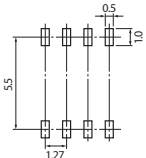
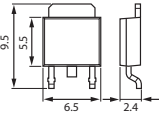
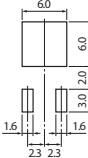
| Internal Connections 内部接続図 (Top View)                                                      |                                                                                            |                                                                                            |                                                                                             |                                                                                              |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| (6a)                                                                                       | (6b)                                                                                       | (8a)                                                                                       | (8a_V)                                                                                      | (8b)                                                                                         |
| <br>Pch | <br>Pch | <br>Pch | <br>Pch | <br>Pch |

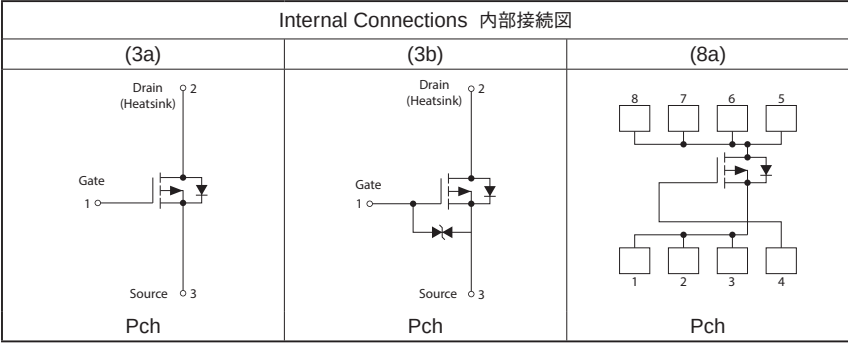
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                   | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                           |
|---------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|----------------------|--------------------------------------------------------------------------------------|
|                                                                                                                           |             | V <sub>BSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |         |                      |                                                                                      |
| <div>TSON Advance</div>  <div>(mm)</div> | TPCC8136    | -20                      | ±12                  | -9.4               | 18                 | —                            | —                       | 16                        | 22                        | 60                        | 2350                       | 330                        | 360                        | 36                       | U-MOSVI | (8a)                 |   |
|                                                                                                                           | TPCC8137    |                          | ±12                  | -13                | 30                 | —                            | —                       | 10                        | 16                        | 52                        | 2990                       | 400                        | 435                        | 43                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCC8138    |                          | ±12                  | -18                | 39                 | —                            | —                       | 7.5                       | 11                        | 42                        | 4165                       | 575                        | 620                        | 63                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPN4R712MD  |                          | ±12                  | -36                | 42                 | —                            | —                       | 4.7                       | 8.1                       | —                         | 4300                       | 640                        | 700                        | 65                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCC8131    | -30                      | +20/-25              | -10                | 20                 | 17.6                         | —                       | 23                        | —                         | —                         | 1700                       | 280                        | 320                        | 40                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCC8103    |                          | ±20                  | -18                | 27                 | 12                           | —                       | —                         | —                         | —                         | 1600                       | 340                        | 490                        | 38                       | U-MOSV  |                      |                                                                                      |
|                                                                                                                           | TPCC8104    |                          | +20/-25              | -20                | 27                 | 8.8                          | —                       | 12.4                      | —                         | —                         | 2260                       | 430                        | 485                        | 58                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCC8105    |                          | +20/-25              | -23                | 30                 | 7.8                          | —                       | 10.4                      | —                         | —                         | 3240                       | 520                        | 580                        | 76                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCC8106    | -40                      | +10/-20              | -30                | 46.8               | 12.3                         | 18.9                    | —                         | —                         | —                         | 3100                       | 320                        | 390                        | 66                       | U-MOSVI | (8b)                 |                                                                                      |
| TPCC8107                                                                                                                  | -60         | +10/-20                  | -25                  | 46.8               | 30.5               | 42.9                         | —                       | —                         | —                         | 2930                      | 230                        | 270                        | 63                         | U-MOSVI                  |         |                      |                                                                                      |
| <div>SOP Advance</div>  <div>(mm)</div> | TPH1R712MD  | -20                      | ±12                  | -60                | 78                 | —                            | —                       | 1.7                       | 2.7                       | —                         | 10900                      | 1550                       | 2010                       | 182                      | U-MOSVI | (8a)                 |  |
|                                                                                                                           | TPCA8131    | -30                      | +20/-25              | -13                | 27                 | 17                           | —                       | 22                        | —                         | —                         | 1700                       | 280                        | 320                        | 40                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8109    |                          | +20/-25              | -24                | 30                 | 9                            | —                       | 13                        | —                         | —                         | 2400                       | 400                        | 460                        | 56                       | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8128    |                          | +20/-25              | -34                | 45                 | 4.8                          | —                       | 6.7                       | —                         | —                         | 4800                       | 800                        | 900                        | 115                      | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8120    |                          | +20/-25              | -45                | 45                 | 3                            | —                       | 4                         | —                         | —                         | 7420                       | 1180                       | 1440                       | 190                      | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8121    |                          | +10/-20              | -45                | 54                 | 3                            | —                       | 4                         | —                         | —                         | 7420                       | 1180                       | 1440                       | 190                      | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8124    | -40                      | +10/-20              | -35                | 55                 | 10.5                         | 14.6                    | —                         | —                         | —                         | 3570                       | 370                        | 450                        | 77                       | U-MOSVI | (8b)                 |                                                                                      |
|                                                                                                                           | TPCA8122    |                          | +10/-20              | -60                | 84                 | 5                            | 7.2                     | —                         | —                         | —                         | 7340                       | 770                        | 980                        | 152                      | U-MOSVI |                      |                                                                                      |
|                                                                                                                           | TPCA8125    |                          | -60                  | +10/-20            | -25                | 55                           | 25.5                    | 34.4                      | —                         | —                         | —                          | 3650                       | 260                        | 320                      | 78      |                      |                                                                                      |
|                                                                                                                           | TPCA8123    | +10/-20                  |                      | -50                | 84                 | 11.1                         | 14.9                    | —                         | —                         | —                         | 7000                       | 540                        | 680                        | 163                      | U-MOSVI |                      |                                                                                      |

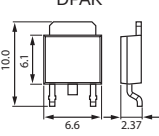
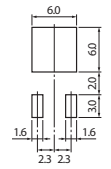
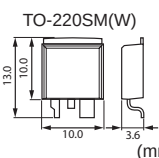
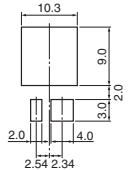
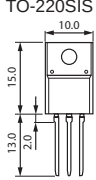


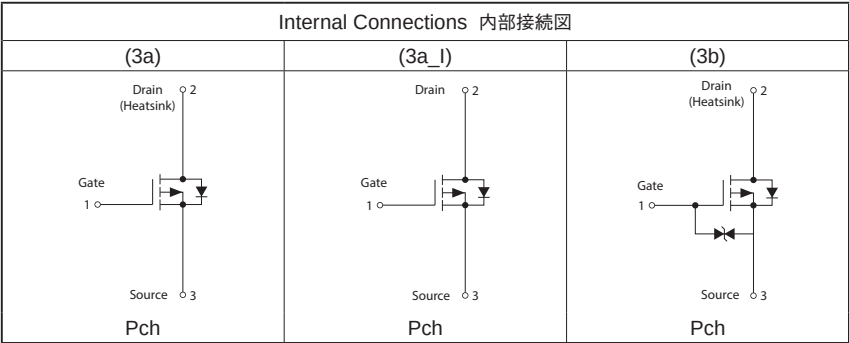
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| Package                                                                                                                      | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                            |
|------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                                              |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |         |                      |                                                                                       |
| <div><div>SOP-8</div><div>(mm)</div></div>   | TPC8129     | -30                      | +20/-25              | -9                 | 1.9                | 22                           | —                       | 28                        | —                         | —                         | 1650                       | 260                        | 300                        | 39                       | U-MOSVI | (8a)                 |    |
|                                                                                                                              | TPC8125     |                          | +20/-25              | -10                | 1.9                | 13                           | —                       | 17                        | —                         | —                         | 2580                       | 430                        | 490                        | 64                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8123     |                          | +20/-25              | -11                | 1.9                | 9                            | —                       | 12.5                      | —                         | —                         | 2940                       | 460                        | 520                        | 68                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8126     |                          | +20/-25              | -11                | 1.9                | 10                           | —                       | 14                        | —                         | —                         | 2400                       | 400                        | 460                        | 56                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8127     |                          | +20/-25              | -13                | 1.9                | 6.5                          | —                       | 8.9                       | —                         | —                         | 3800                       | 620                        | 710                        | 92                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8128     |                          | +20/-25              | -16                | 1.9                | 5                            | —                       | 6.9                       | —                         | —                         | 4800                       | 800                        | 900                        | 115                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8120     |                          | +20/-25              | -18                | 1.9                | 3.2                          | —                       | 4.2                       | —                         | —                         | 7420                       | 1180                       | 1440                       | 180                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8134     | -40                      | +20/-25              | -5                 | 1.9                | 52                           | —                       | 66                        | —                         | —                         | 890                        | 100                        | 130                        | 20                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8132     |                          | +20/-25              | -7                 | 1.9                | 25                           | —                       | 33                        | —                         | —                         | 1580                       | 190                        | 230                        | 34                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8133     |                          | +20/-25              | -9                 | 1.9                | 15                           | —                       | 18                        | —                         | —                         | 2900                       | 350                        | 410                        | 64                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TPC8124     |                          | +20/-25              | -12                | 1.9                | 8                            | —                       | 10                        | —                         | —                         | 4750                       | 540                        | 620                        | 104                      | U-MOSVI |                      |                                                                                       |
| <div><div>DPAK+</div><div>(mm)</div></div> | TJ10S04M3L  | -40                      | +10/-20              | -10                | 27                 | 44                           | 62                      | —                         | —                         | —                         | 930                        | 90                         | 140                        | 19                       | U-MOSVI | (3b)                 |  |
|                                                                                                                              | TJ20S04M3L  |                          | +10/-20              | -20                | 41                 | 22.2                         | 32                      | —                         | —                         | —                         | 1850                       | 180                        | 250                        | 37                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ40S04M3L  |                          | +10/-20              | -40                | 68                 | 9.1                          | 13                      | —                         | —                         | —                         | 4140                       | 410                        | 510                        | 83                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ60S04M3L  |                          | +10/-20              | -60                | 90                 | 6.3                          | 9.4                     | —                         | —                         | —                         | 6510                       | 570                        | 780                        | 125                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ80S04M3L  |                          | +10/-20              | -80                | 100                | 5.2                          | 7.9                     | —                         | —                         | —                         | 7770                       | 740                        | 970                        | 158                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ8S06M3L   | -60                      | +10/-20              | -8                 | 27                 | 104                          | 130                     | —                         | —                         | —                         | 890                        | 60                         | 100                        | 19                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ15S06M3L  |                          | +10/-20              | -15                | 41                 | 50                           | 63                      | —                         | —                         | —                         | 1770                       | 130                        | 180                        | 36                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ30S06M3L  |                          | +10/-20              | -30                | 68                 | 21.8                         | 28                      | —                         | —                         | —                         | 3950                       | 270                        | 360                        | 80                       | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ50S06M3L  |                          | +10/-20              | -50                | 90                 | 13.8                         | 17.4                    | —                         | —                         | —                         | 6290                       | 410                        | 560                        | 124                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ60S06M3L  |                          | +10/-20              | -60                | 100                | 11.2                         | 14.5                    | —                         | —                         | —                         | 7760                       | 530                        | 690                        | 156                      | U-MOSVI |                      |                                                                                       |
|                                                                                                                              | TJ15S10M3   | -100                     | +10/-20              | -15                | 75                 | 130                          | —                       | —                         | —                         | —                         | 3200                       | 135                        | 190                        | 69                       | U-MOSVI | (3a)                 |                                                                                       |



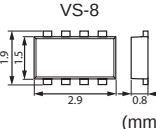
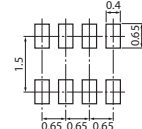
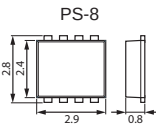
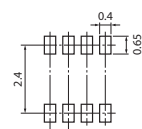
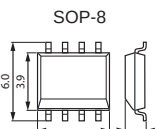
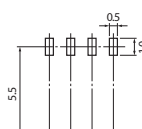
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                           | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                          |  |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|----------------------|-------------------------------------------------------------------------------------|--|
|                                                                                                                                   |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |         |                      |                                                                                     |  |
| <div><div>DPAK</div><div>(mm)</div></div>        | TJ15P04M3   | -40                      | ±20                  | -15                | 29                 | 36                           | —                       | 48                        | —                         | —                         | 1100                       | 130                        | 170                        | 26                       | U-MOSVI | (3a)                 |  |  |
| <div><div>TO-220SM(W)</div><div>(mm)</div></div> | TJ100F04M3L | -40                      | +10/-20              | -100               | 250                | 3.6                          | 5.4                     | —                         | —                         | —                         | 9500                       | 1000                       | 1550                       | 250                      | U-MOSVI | (3b)                 |  |  |
|                                                                                                                                   | TJ200F04M3L |                          | +10/-20              | -200               | 375                | 1.8                          | 2.6                     | —                         | —                         | —                         | 12800                      | 1150                       | 2400                       | 460                      | U-MOSVI | (3a)                 |                                                                                     |  |
|                                                                                                                                   | TJ100F06M3L | -60                      | +10/-20              | -100               | 250                | 7.1                          | 10.7                    | —                         | —                         | —                         | 9000                       | 700                        | 1100                       | 250                      | U-MOSVI | (3b)                 |                                                                                     |  |
|                                                                                                                                   | TJ150F06M3L |                          | +10/-20              | -150               | 300                | 5.6                          | 6.1                     | —                         | —                         | —                         | 12500                      | 880                        | 1750                       | 420                      | U-MOSVI |                      |                                                                                     |  |
| <div><div>TO-220SIS</div><div>(mm)</div></div>  | TJ9A10M3    | -100                     | ±20                  | -9                 | 19                 | 170                          | —                       | —                         | —                         | —                         | 2900                       | 120                        | 150                        | 47                       | U-MOSVI | (3a_I)               |                                                                                     |  |
|                                                                                                                                   | TJ11A10M3   |                          | ±20                  | -11                | 24                 | 130                          | —                       | —                         | —                         | —                         | 3200                       | 135                        | 190                        | 69                       | U-MOSVI |                      |                                                                                     |  |

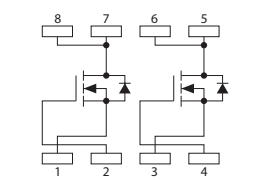
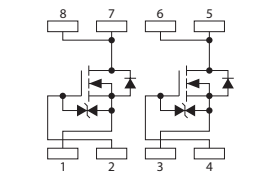
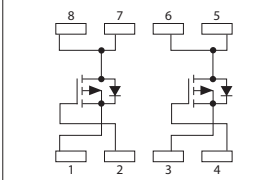
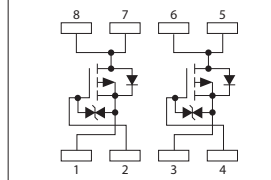
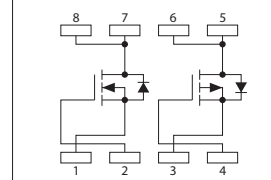
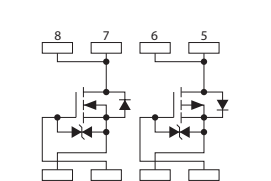


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Dual Channel / Complementary) / (デュアルチャネル / コンプリメンタリ)

| Package                                                                                    | Polarity    | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                            |       |  |  |
|--------------------------------------------------------------------------------------------|-------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|---------------------------------------------------------------------------------------|-------|--|--|
|                                                                                            |             |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |            |                      |                                                                                       |       |  |  |
| <br>(mm)   | P-ch x 2    | TPCF8305    | -20                      | ±12                  | -4                 | 1.35               | —                            | —                       | 58                        | 83                        | 265                       | 680                        | 85                         | 108                        | 9.2                      | U-MOSVI    | (8aa)                |    |       |  |  |
|                                                                                            |             | TPCF8306    | -30                      | +20/-25              | -3.2               | 1.35               | 72                           | —                       | 120                       | —                         | —                         | 390                        | 65                         | 85                         | 10                       | U-MOSVI    |                      |                                                                                       |       |  |  |
| <br>(mm)   | N-ch x 2    | TPCP8206    | 20                       | ±12                  | 6                  | 1.48<br>(1)        | —                            | —                       | 24                        | 35                        | —                         | 630                        | 47                         | 144                        | 5.8                      | U-MOSVII   | (8AA)                |    |       |  |  |
|                                                                                            |             | TPCP8204    | 30                       | ±20                  | 4.2                | 1.48<br>(1)        | 50                           | —                       | 77                        | —                         | —                         | 190                        | 45                         | 65                         | 4.6                      | U-MOSIV    |                      |                                                                                       |       |  |  |
|                                                                                            |             | TPCP8207    | 40                       | ±20                  | 5                  | 1.77<br>(1)        | 36.3                         | 62.8                    | —                         | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV    |                      |                                                                                       |       |  |  |
|                                                                                            | P-ch x 2    | TPCP8303    | —                        | ±8                   | -3.8               | 1.48<br>(1)        | —                            | —                       | 46                        | 60                        | 90                        | 640                        | 100                        | 140                        | 10                       | U-MOSV     | (8bb)                |                                                                                       |       |  |  |
|                                                                                            |             | TPCP8306    | -20                      | ±12                  | -4                 | 1.48<br>(1)        | —                            | —                       | 58                        | 83                        | 265                       | 680                        | 85                         | 108                        | 9.2                      | U-MOSVI    |                      |                                                                                       | (8aa) |  |  |
|                                                                                            |             | TPCP8305    | —                        | ±12                  | -6                 | 1.48<br>(1)        | —                            | —                       | 30                        | 42                        | —                         | 1500                       | 215                        | 250                        | 21.5                     | U-MOSVI    |                      |                                                                                       |       |  |  |
|                                                                                            | N-ch + P-ch | TPCP8404    | 30                       | ±20                  | 4                  | 1.48<br>(1)        | 50                           | —                       | 80                        | —                         | —                         | 190                        | 45                         | 60                         | 4.6                      | U-MOSIV    | (8Aa)                |                                                                                       |       |  |  |
|                                                                                            |             |             | -30                      | ±20                  | -4                 | 1.48<br>(1)        | 50                           | —                       | 80                        | —                         | —                         | 510                        | 110                        | 170                        | 13                       | U-MOSV     |                      |                                                                                       |       |  |  |
|                                                                                            |             | TPCP8405    | 30                       | ±20                  | 6.5                | 1.48<br>(1)        | 26                           | —                       | 29                        | —                         | —                         | 830                        | 53                         | 177                        | 13.8                     | U-MOSVI-H  | (8Aa)                |                                                                                       |       |  |  |
|                                                                                            |             |             | -30                      | ±20                  | -6                 | 1.48<br>(1)        | 31.3                         | —                       | 42                        | —                         | —                         | 1075                       | 190                        | 234                        | 24.1                     | U-MOSVI    |                      |                                                                                       |       |  |  |
|                                                                                            |             | TPCP8407    | 40                       | ±20                  | 5                  | 1.77<br>(1)        | 36.3                         | 62.8                    | —                         | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV    | (8Bb)                |                                                                                       |       |  |  |
|                                                                                            |             |             | -40                      | +10/-20              | -4                 | 1.77<br>(1)        | 56.8                         | 82.2                    | —                         | —                         | —                         | 810                        | 85                         | 130                        | 18                       | U-MOSVI    |                      |                                                                                       |       |  |  |
|                                                                                            |             | TPCP8406    | 40                       | ±20                  | 6                  | 1.48<br>(1)        | 32                           | —                       | 36                        | —                         | —                         | 850                        | 40                         | 142                        | 13.7                     | U-MOSVI-H  | (8Aa)                |                                                                                       |       |  |  |
|                                                                                            |             |             | -40                      | ±20                  | -5                 | 1.48<br>(1)        | 43.2                         | —                       | 53.4                      | —                         | —                         | 1105                       | 133                        | 166                        | 24.2                     | U-MOSVI    |                      |                                                                                       |       |  |  |
| <br>(mm) | N-ch + P-ch | TPC8407     | 30                       | ±20                  | 9                  | 1.5                | 17                           | —                       | 21                        | —                         | —                         | 1190                       | 55                         | 210                        | 17                       | U-MOSVII-H | (8Aa)                |  |       |  |  |
|                                                                                            |             |             | -30                      | ±20                  | -7.4               | 1.5                | 23                           | —                       | 29                        | —                         | —                         | 1650                       | 260                        | 300                        | 39                       | U-MOSVI    |                      |                                                                                       |       |  |  |
|                                                                                            |             | TPC8408     | 40                       | ±20                  | 6.1                | 1.5                | 32                           | —                       | 36                        | —                         | —                         | 850                        | 40                         | 145                        | 14                       | U-MOSVI-H  |                      |                                                                                       |       |  |  |
|                                                                                            |             |             | -40                      | ±20                  | -5.3               | 1.5                | 43                           | —                       | 53                        | —                         | —                         | 1105                       | 135                        | 165                        | 24                       | U-MOSVI    |                      |                                                                                       |       |  |  |

Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5秒。

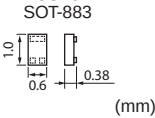
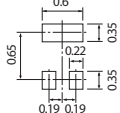
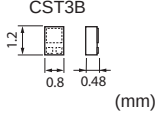
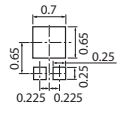
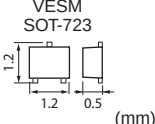
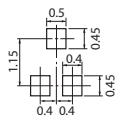
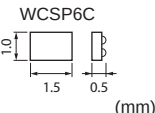
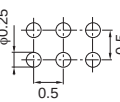
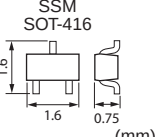
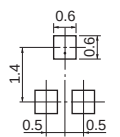
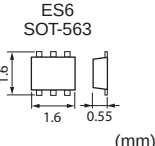
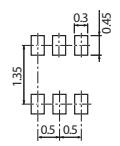
| Internal Connections 内部接続図 (Top View)                                                           |                                                                                                |                                                                                                |                                                                                                 |                                                                                                    |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| (8AA)                                                                                           | (8BB)                                                                                          | (8aa)                                                                                          | (8bb)                                                                                           | (8Aa)                                                                                              |
| <br>Nch x 2   | <br>Nch x 2 | <br>Pch x 2 | <br>Pch x 2 | <br>Nch + Pch |
| <br>Nch + Pch |                                                                                                |                                                                                                |                                                                                                 |                                                                                                    |

- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

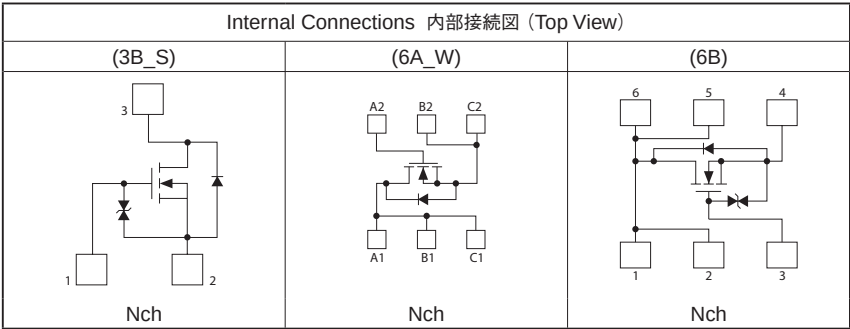
Small-Package Series / 小型パッケージシリーズ

(Semi-Power Type : Single N-Channel) / (セミパワータイプ：シングルNチャネル)

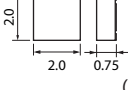
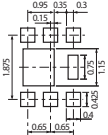
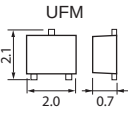
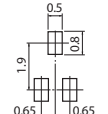
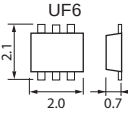
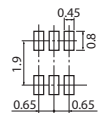
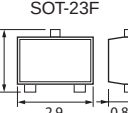
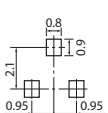
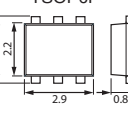
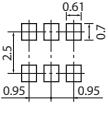
(1/2)

| Package                                                                                     | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                       |
| <br>(mm)   | SSM3K56CT *  | 20                       | ±8                   | 0.8                | 0.5                | —                            | 235                       | —                       | 300                       | 480                       | 840                       | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H | (3B_S)               |    |
|                                                                                             | SSM3K56ACT * |                          | ±8                   | 1.4                | 0.5                | —                            | 235                       | —                       | 300                       | 480                       | 840                       | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H |                      |                                                                                       |
| <br>(mm)   | SSM3K59CTB * | 40                       | ±12                  | 2                  | 1                  | —                            | 228                       | —                       | 268                       | 420                       | —                         | 130                        | 7.5                        | 26                         | 1.1                      | U-MOSVII-H | (3B_S)               |    |
| <br>(mm)   | SSM3K56MFV * | 20                       | ±8                   | 0.8                | 0.5                | —                            | 235                       | —                       | 300                       | 480                       | 840                       | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H | (3B_S)               |    |
| <br>(mm)  | SSM6K781G *  | 12                       | ±8                   | 7                  | 1.6                | —                            | 18                        | —                       | 23.2                      | 47.4                      | 124                       | 600                        | 120                        | 250                        | 5.4                      | U-MOSVII-H | (6A_W)               |   |
| <br>(mm) | SSM3K56FS *  | 20                       | ±8                   | 0.8                | 0.5                | —                            | 235                       | —                       | 300                       | 480                       | 840                       | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H | (3B_S)               |  |
| <br>(mm) | SSM6K204FE   | 20                       | ±10                  | 2                  | 0.5                | —                            | —                         | 126                     | 164                       | 214                       | 307                       | 195                        | 29                         | 35                         | 3.4                      | U-MOSIII   | (6B)                 |  |
|                                                                                             | SSM6K211FE   |                          | ±10                  | 3.2                | 0.5                | —                            | 47                        | —                       | 59                        | 82                        | 118                       | 510                        | 85                         | 98                         | 10.8                     | U-MOSIII   |                      |                                                                                       |
|                                                                                             | SSM6K208FE   | 30                       | ±12                  | 1.9                | 0.5                | —                            | —                         | 133                     | 177                       | 296                       | —                         | 123                        | 18                         | 43                         | 1.9                      | U-MOSIII   |                      |                                                                                       |
|                                                                                             | SSM6K202FE   |                          | ±12                  | 2.3                | 0.5                | —                            | —                         | 85                      | 101                       | 145                       | —                         | 270                        | 47                         | 56                         | —                        | U-MOSIII   |                      |                                                                                       |
|                                                                                             | SSM6K217FE   | 40                       | ±12                  | 1.8                | 0.5                | —                            | 208                       | —                       | 248                       | 400                       | —                         | 130                        | 7.5                        | 26                         | 1.1                      | U-MOSVII-H |                      |                                                                                       |

\*: New Product / 新製品



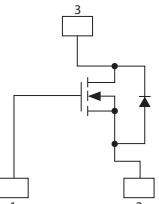
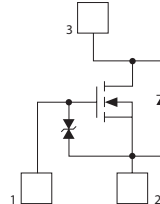
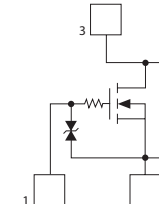
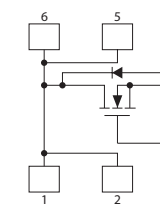
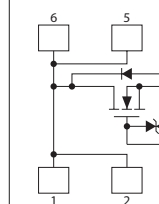
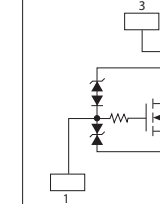
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                           |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|--------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|---------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                        |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |             |                      |                                                                                       |
| <br>UDFN6B<br>(mm)    | SSM6K504NU *  | 30                       | ±20                  | 9                  | 1.25               | 19.5                         | 26                        | —                       | —                         | —                         | —                         | 620                        | 42                         | 110                        | 4.8                      | U-MOSVII-H  | (6B)                 |    |
|                                                                                                        | SSM6K513NU *  |                          | ±20                  | 15                 | 1.25               | 8.9                          | 12                        | —                       | —                         | —                         | —                         | 1130                       | 52                         | 350                        | 7.5                      | U-MOSIX-H   | (6A)                 |                                                                                       |
|                                                                                                        | SSM6K514NU *  | 40                       | ±20                  | 12                 | 1.25               | 11.6                         | 17.3                      | —                       | —                         | —                         | —                         | 1110                       | 26                         | 245                        | 7.5                      | U-MOSIX-H   | (6B)                 |                                                                                       |
|                                                                                                        | SSM6K341NU *  | 60                       | ±20                  | 6                  | 1.28               | 36                           | 51                        | 69                      | —                         | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H |                      |                                                                                       |
|                                                                                                        | SSM6K361NU *  | 100                      | ±20                  | 3.5                | 1.28               | 69                           | 92                        | —                       | —                         | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H |                      |                                                                                       |
| <br>UFM<br>(mm)       | SSM3K62TU *   | 20                       | ±8                   | 0.8                | 0.5                | —                            | 57                        | —                       | 68                        | 89                        | 139                       | 177                        | 17                         | 52                         | 2                        | U-MOSVII-H  | (3C_S)               |    |
|                                                                                                        | SSM3K122TU    |                          | ±10                  | 2                  | 0.5                | —                            | —                         | 123                     | 161                       | 211                       | 304                       | 195                        | 29                         | 35                         | 3.4                      | U-MOSIII    | (3B_S)               |                                                                                       |
|                                                                                                        | SSM3K121TU    |                          | ±10                  | 3.2                | 0.5                | —                            | —                         | 48                      | 63                        | 93                        | 140                       | 400                        | 60                         | 68                         | 5.9                      | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM3K123TU    |                          | ±10                  | 4.2                | 0.5                | —                            | —                         | 28                      | 32                        | 43                        | 66                        | 1010                       | 150                        | 162                        | 13.6                     | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM3K127TU    | 30                       | ±12                  | 2                  | 0.5                | —                            | —                         | 123                     | 167                       | 286                       | —                         | 123                        | 18                         | 43                         | 1.5                      | U-MOSIII    | (3A_S)               |                                                                                       |
|                                                                                                        | SSM3K116TU    |                          | ±12                  | 2.2                | 0.5                | —                            | 100                       | —                       | 135                       | —                         | —                         | 245                        | 33                         | 41                         | —                        | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM3K119TU    |                          | ±12                  | 2.5                | 0.5                | —                            | —                         | 74                      | 90                        | 134                       | —                         | 270                        | 47                         | 56                         | —                        | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM3K131TU    |                          | ±20                  | 6                  | 0.5                | 27.6                         | 41.5                      | —                       | —                         | —                         | —                         | 450                        | 77                         | 120                        | 10.1                     | U-MOSIV     | (3A_S)               |                                                                                       |
|                                                                                                        | SSM3K2615TU * | 60                       | ±20                  | 2                  | 0.8                | 300                          | —                         | 440                     | —                         | —                         | —                         | 150                        | 25                         | 70                         | 6                        | π-MOSV      | (3C_S)               |                                                                                       |
|                                                                                                        | SSM3K341TU *  |                          | ±20                  | 6                  | 1                  | 36                           | 51                        | 69                      | —                         | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H | (3B_S)               |                                                                                       |
| SSM3K361TU *                                                                                           | 100           | ±20                      | 3.5                  | 1                  | 69                 | 92                           | —                         | —                       | —                         | —                         | 430                       | 22                         | 160                        | 3.2                        | U-MOSVIII-H              |             |                      |                                                                                       |
| <br>UF6<br>(mm)      | SSM6K403TU    | 20                       | ±10                  | 4.2                | 0.5                | —                            | —                         | 28                      | 32                        | 43                        | 66                        | 1050                       | 160                        | 175                        | 16.8                     | U-MOSIII    | (6B)                 |   |
|                                                                                                        | SSM6K404TU    |                          | ±10                  | 3                  | 0.5                | —                            | —                         | 55                      | 70                        | 100                       | 147                       | 400                        | 60                         | 68                         | 5.9                      | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM6K405TU    |                          | ±10                  | 2                  | 0.5                | —                            | —                         | 126                     | 164                       | 214                       | 307                       | 195                        | 29                         | 35                         | 3.4                      | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM6K406TU    | 30                       | ±20                  | 4.4                | 0.5                | 25                           | 38.5                      | —                       | —                         | —                         | —                         | 490                        | 105                        | 143                        | 12.4                     | U-MOSIV     |                      |                                                                                       |
|                                                                                                        | SSM6K407TU    | 60                       | ±20                  | 2                  | 0.5                | 300                          | —                         | 440                     | —                         | —                         | —                         | 150                        | 25                         | 70                         | 6                        | π-MOSV      |                      |                                                                                       |
| <br>SOT-23F<br>(mm) | SSM3K344R *   | 20                       | ±8                   | 3                  | 1                  | —                            | 71                        | —                       | 91                        | 139                       | 232                       | 153                        | 15                         | 37                         | 2                        | U-MOSVII-H  | (3B_S)               |  |
|                                                                                                        | SSM3K345R *   |                          | ±8                   | 4                  | 1                  | —                            | 33                        | —                       | 45                        | 74                        | 108                       | 410                        | 40                         | 85                         | 3.6                      | U-MOSVI     |                      |                                                                                       |
|                                                                                                        | SSM3K336R *   | 30                       | ±20                  | 3                  | 1                  | 95                           | 140                       | —                       | —                         | —                         | —                         | 126                        | 8                          | 26                         | 1.7                      | U-MOSVII-H  |                      |                                                                                       |
|                                                                                                        | SSM3K329R     |                          | ±12                  | 3.5                | 1                  | —                            | —                         | 126                     | 170                       | 289                       | —                         | 123                        | 18                         | 43                         | 1.5                      | U-MOSIII    |                      |                                                                                       |
|                                                                                                        | SSM3K324R *   |                          | ±12                  | 4                  | 1                  | —                            | 56                        | —                       | 72                        | 109                       | —                         | 200                        | 13                         | 40                         | 2.2                      | U-MOSVII-H  |                      |                                                                                       |
|                                                                                                        | SSM3K333R     |                          | ±20                  | 6                  | 1                  | 28                           | 42                        | —                       | —                         | —                         | —                         | 436                        | 28                         | 77                         | 3.4                      | U-MOSVII-H  | (3B_S)               |                                                                                       |
|                                                                                                        | SSM3K335R     | 38                       | ±20                  | 6                  | 1                  | 38                           | 56                        | —                       | —                         | —                         | —                         | 340                        | 20                         | 60                         | 2.7                      | U-MOSVII-H  | (3B_S)               |                                                                                       |
|                                                                                                        | SSM3K337R *   |                          | ±20                  | 2                  | 1                  | 150                          | 176                       | 200                     | —                         | —                         | —                         | 120                        | 7.2                        | 33                         | 3                        | U-MOSIV     | (3ZC_2)              |                                                                                       |
|                                                                                                        | SSM3K339R *   | 40                       | ±12                  | 2                  | 1                  | —                            | 198                       | —                       | 238                       | 390                       | —                         | 130                        | 7.5                        | 26                         | 1.1                      | U-MOSVII-H  | (3B_S)               |                                                                                       |
|                                                                                                        | SSM3K2615R *  | 60                       | ±20                  | 2                  | 1                  | 300                          | —                         | 440                     | —                         | —                         | —                         | 150                        | 25                         | 70                         | 6                        | π-MOSV      | (3C_S)               |                                                                                       |
|                                                                                                        | SSM3K318R *   |                          | ±20                  | 2.5                | 1                  | 107                          | 145                       | —                       | —                         | —                         | —                         | 235                        | 23                         | 31                         | 7                        | U-MOSIV     | (3B_S)               |                                                                                       |
|                                                                                                        | SSM3K341R *   |                          | ±20                  | 6                  | 1.2                | 36                           | 51                        | 69                      | —                         | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H |                      |                                                                                       |
|                                                                                                        | SSM3K361R *   | 100                      | ±20                  | 3.5                | 1.2                | 69                           | 92                        | —                       | —                         | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H | (3C_S)               |                                                                                       |
| <br>TSOP6F<br>(mm)  | SSM6K809R **  | 60                       | ±20                  | 6                  | 1.5                | 36                           | 51                        | 69                      | —                         | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H | (6B)                 |  |
|                                                                                                        | SSM6K810R **  | 100                      | ±20                  | 3.5                | 1.5                | 69                           | 92                        | —                       | —                         | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H |                      |                                                                                       |

\*: New Product / 新製品

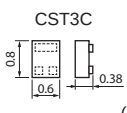
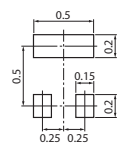
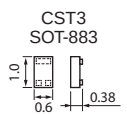
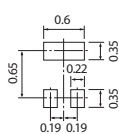
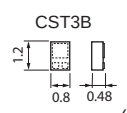
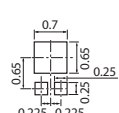
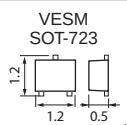
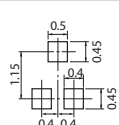
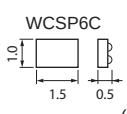
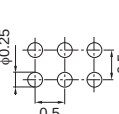
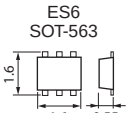
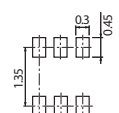
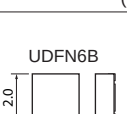
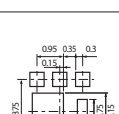
\*\*: Under Development / 開発中

Internal Connections 内部接続図 (Top View)

| (3A_S)                                                                                  | (3B_S)                                                                                  | (3C_S)                                                                                  | (6A)                                                                                    | (6B)                                                                                      | (3ZC_2)                                                                                        |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|  Nch |  Nch |  Nch |  Nch |  Nch |  Nch + ZD |

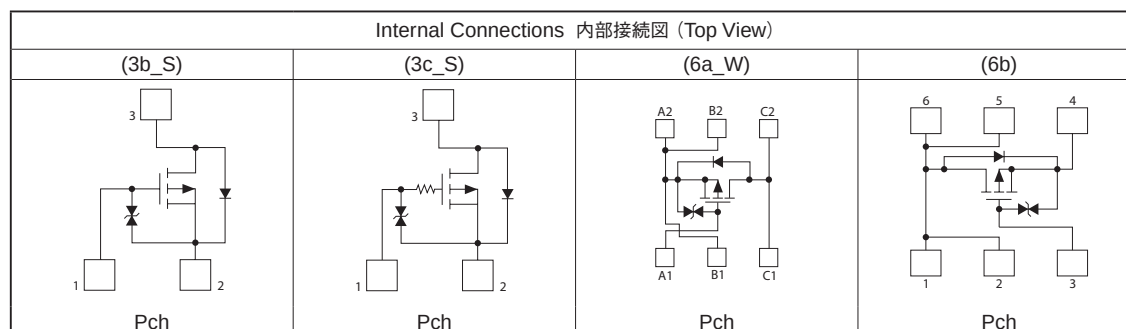
• The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

| Package                                                                                     | Part Number |     | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|-------------|-----|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|----------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |             |     | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V    | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |          |                      |                                                                                       |
| <br>(mm)   | SSM3J64CTC  | **  | -12                      | ±10                  | -1                 | 0.5                | 450                          | —                       | 600                       | 900                       | 4000                      | TBD                        | TBD                        | TBD                        | TBD                      | U-MOSVII | (3c_S)               |    |
|                                                                                             | SSM3J65CTC  | **  | -20                      | ±10                  | -0.7               | 0.5                | 1400                         | —                       | 2100                      | 2900                      | 4000                      | TBD                        | TBD                        | TBD                        | TBD                      | U-MOSVII |                      |                                                                                       |
| <br>(mm)   | SSM3J56ACT  | *   | -20                      | ±8                   | -1.4               | 0.5                | 390                          | —                       | 480                       | 660                       | 900                       | 100                        | 10                         | 16                         | 1.6                      | U-MOSVI  | (3c_S)               |    |
| <br>(mm)   | SSM3J46CTB  |     | -20                      | ±8                   | -2                 | 1                  | 103                          | —                       | 133                       | 178                       | 250                       | 290                        | 32                         | 44                         | 4.7                      | U-MOSVI  | (3b_S)               |    |
| <br>(mm)  | SSM3J56MFV  |     | -20                      | ±8                   | -0.8               | 0.5                | 390                          | —                       | 480                       | 660                       | 900                       | 100                        | 10                         | 16                         | 1.6                      | U-MOSVI  | (3b_S)               |   |
| <br>(mm) | SSM6J771G   | *   | -20                      | ±12                  | -5                 | 1.6                | 35                           | —                       | 47.5                      | —                         | —                         | 870                        | 120                        | 150                        | 9.8                      | U-MOSVI  | (6a_W)               |  |
| <br>(mm) | SSM6J216FE  | *   | -12                      | ±8                   | -4.8               | 0.5                | 32                           | —                       | 39.3                      | 56                        | 88.1                      | 1040                       | 180                        | 200                        | 12.7                     | U-MOSVI  | (6b)                 |  |
|                                                                                             | SSM6J213FE  |     |                          | ±8                   | -2.6               | 0.5                | 103                          | —                       | 133                       | 178                       | 250                       | 290                        | 32                         | 44                         | 4.7                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J215FE  | *   | -20                      | ±8                   | -3.4               | 0.5                | 59                           | —                       | 79                        | 104                       | 154                       | 630                        | 60                         | 75                         | 10.4                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J212FE  |     |                          | ±8                   | -4                 | 0.5                | 40.7                         | —                       | 49                        | 65.4                      | 94                        | 970                        | 109                        | 127                        | 14.1                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J207FE  |     |                          | ±20                  | -1.4               | 0.5                | —                            | 491                     | —                         | —                         | —                         | 137                        | 20                         | 39                         | —                        | U-MOSII  |                      |                                                                                       |
| <br>(mm) | SSM6J214FE  |     | -30                      | ±12                  | -3.6               | 0.5                | 57                           | —                       | 77.6                      | 149.6                     | —                         | 560                        | 65                         | 80                         | 7.9                      | U-MOSVI  | (6b)                 |  |
|                                                                                             | SSM6J512NU  | *   | ±10                      | -10                  | 1.25               | 18.7               | —                            | 25.7                    | 40.1                      | —                         | 1400                      | 225                        | 250                        | 19.5                       | U-MOSVII                 |          |                      |                                                                                       |
|                                                                                             | SSM6J505NU  | *   | -12                      | ±6                   | -12                | 1.25               | 12                           | —                       | 16                        | 21                        | 30                        | 2700                       | 800                        | 800                        | 37.6                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J511NU  | *   |                          | ±10                  | -14                | 1.25               | 10                           | —                       | 13.5                      | 19.2                      | —                         | 3350                       | 570                        | 590                        | 47                       | U-MOSVII |                      |                                                                                       |
|                                                                                             | SSM6J502NU  |     |                          | ±8                   | -6                 | 1                  | 23.1                         | —                       | 28.3                      | 38.4                      | 60.5                      | 1800                       | 190                        | 205                        | 24.8                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J503NU  |     | -20                      | ±8                   | -6                 | 1                  | 32.4                         | —                       | 41.7                      | 57.9                      | 89.6                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J501NU  |     |                          | ±8                   | -10                | 1                  | 15.3                         | —                       | 19                        | 26.5                      | 43                        | 2600                       | 280                        | 290                        | 29.9                     | U-MOSVI  |                      |                                                                                       |
| SSM6J507NU                                                                                  | *           | -30 | +20/-25                  | -10                  | 1.25               | 28                 | 32                           | —                       | —                         | —                         | 1150                      | 185                        | 210                        | 13.6                       | U-MOSVI                  |          |                      |                                                                                       |

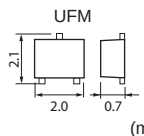
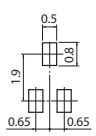
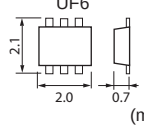
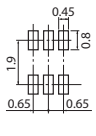
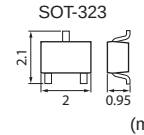
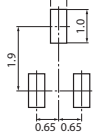
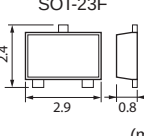
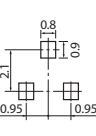
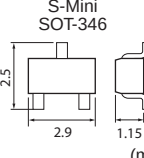
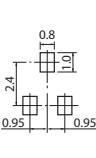
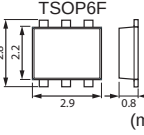
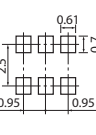
\*: New Product / 新製品

\*\*: Under Development / 開発中



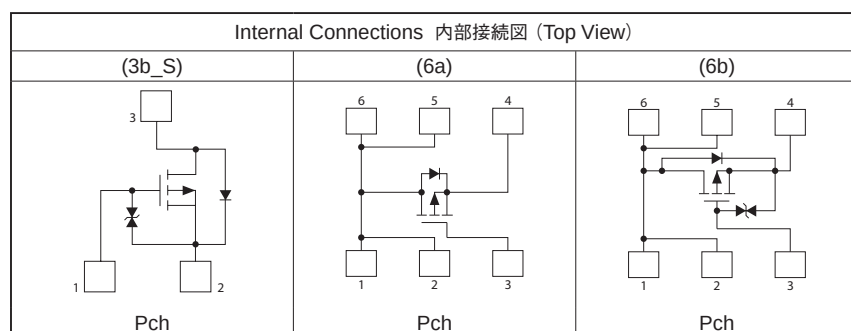
• The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

| Package                                                                                     | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|----------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |             | V <sub>BSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V    | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |          |                      |                                                                                       |
| <br>(mm)   | SSM3J132TU  | -12                      | ±6                   | -5.4               | 0.5                | 17                           | —                       | 21                        | 29                        | 39                        | 2700                       | 525                        | 525                        | 33                       | U-MOSVI  | (3b_S)               |    |
|                                                                                             | SSM3J135TU  | —                        | ±8                   | -3                 | 0.5                | 103                          | —                       | 132                       | 180                       | 260                       | 270                        | 32                         | 40                         | 4.6                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J134TU  | —                        | ±8                   | -3.2               | 0.5                | 93                           | —                       | 123                       | 168                       | 240                       | 290                        | 32                         | 44                         | 4.7                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J130TU  | —                        | ±8                   | -4.4               | 0.5                | 25.8                         | —                       | 31                        | 41.1                      | 63.2                      | 1800                       | 190                        | 205                        | 24.8                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J133TU  | —                        | ±8                   | -5.5               | 0.5                | 29.8                         | —                       | 39.7                      | 56                        | 88.4                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  |                      |                                                                                       |
| <br>(mm)   | SSM6J50TU   | —                        | ±10                  | -2.5               | 0.5                | 64                           | —                       | 100                       | —                         | —                         | 800                        | 120                        | 160                        | —                        | U-MOSIV  | (6b)                 |    |
|                                                                                             | SSM6J412TU  | -20                      | ±8                   | -4                 | 1                  | 42.7                         | —                       | 51.4                      | 67.8                      | 99.6                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J414TU  | —                        | ±8                   | -6                 | 1                  | 22.5                         | —                       | 26                        | 36                        | 54                        | 1650                       | 90                         | 220                        | 23.1                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM6J402TU  | —                        | ±20                  | -2                 | 0.5                | —                            | 225                     | —                         | —                         | —                         | 280                        | 45                         | 80                         | 5.3                      | U-MOSII  |                      |                                                                                       |
|                                                                                             | SSM6J410TU  | -30                      | ±20                  | -2.1               | 0.5                | —                            | 393                     | —                         | —                         | —                         | 120                        | 21                         | 32                         | 2.9                      | U-MOSIII |                      |                                                                                       |
|                                                                                             | SSM6J401TU  | —                        | ±20                  | -2.5               | 0.5                | —                            | 145                     | —                         | —                         | —                         | 730                        | 90                         | 110                        | 16                       | U-MOSIII |                      |                                                                                       |
| <br>(mm)   | SSM3J112TU  | —                        | ±20                  | -1.1               | 0.5                | —                            | 790                     | —                         | —                         | —                         | 86                         | 14                         | 25                         | —                        | U-MOSII  | (3b_S)               |    |
|                                                                                             | SSM3J118TU  | -30                      | ±20                  | -1.4               | 0.5                | —                            | 480                     | —                         | —                         | —                         | 137                        | 20                         | 39                         | —                        | U-MOSII  |                      |                                                                                       |
|                                                                                             | SSM3J117TU  | —                        | ±20                  | -2                 | 0.5                | —                            | 225                     | —                         | —                         | —                         | 280                        | 45                         | 80                         | —                        | U-MOSII  |                      |                                                                                       |
| <br>(mm) | SSM3J338R   | -12                      | ±10                  | -6                 | 1                  | 20.2                         | —                       | 27.9                      | 45.3                      | —                         | 1400                       | 225                        | 250                        | 19.5                     | U-MOSVII | (3b_S)               |  |
|                                                                                             | SSM3J327R   | —                        | ±8                   | -3.9               | 1                  | 93                           | —                       | 123                       | 168                       | 240                       | 290                        | 32                         | 44                         | 4.6                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J331R   | —                        | ±8                   | -4                 | 1                  | 55                           | —                       | 75                        | 100                       | 150                       | 630                        | 60                         | 75                         | 10.4                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J328R   | -20                      | ±8                   | -6                 | 1                  | 29.8                         | —                       | 39.7                      | 56                        | 88.4                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J355R   | —                        | ±10                  | -6                 | 1                  | 30.1                         | —                       | 38.8                      | 52.3                      | —                         | 1030                       | 94                         | 113                        | 16.6                     | U-MOSVII |                      |                                                                                       |
|                                                                                             | SSM3J358R   | —                        | ±10                  | -6                 | 1                  | 25.3                         | —                       | 32.8                      | 49.3                      | —                         | 1331                       | 118                        | 135                        | 38.5                     | U-MOSVII |                      |                                                                                       |
|                                                                                             | SSM3J334R   | —                        | ±20                  | -4                 | 1                  | 105                          | 136                     | —                         | —                         | —                         | 280                        | 40                         | 55                         | 5.9                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J340R   | -30                      | +20/-25              | -4                 | 1                  | 73                           | 86                      | —                         | —                         | —                         | 492                        | 75                         | 97                         | 6.2                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J332R   | —                        | ±12                  | -6                 | 1                  | 50                           | —                       | 72                        | 144                       | —                         | 560                        | 65                         | 80                         | 8.2                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J356R   | —                        | +10/-20              | -2                 | 1                  | 360                          | 400                     | —                         | —                         | —                         | 330                        | 25                         | 40                         | 8.3                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J351R   | -60                      | +10/-20              | -3.5               | 1                  | 164                          | 184                     | —                         | —                         | —                         | 660                        | 50                         | 70                         | 15.1                     | U-MOSVI  |                      |                                                                                       |
| <br>(mm) | SSM3J325F   | —                        | ±8                   | -2                 | 0.6                | 150                          | —                       | 179                       | 231                       | 311                       | 270                        | 32                         | 40                         | 4.6                      | U-MOSVI  | (3b_S)               |  |
|                                                                                             | SSM3J352F   | -20                      | ±12                  | -2                 | 0.6                | 136                          | —                       | 199                       | 443                       | —                         | 210                        | 31                         | 39                         | 5.1                      | U-MOSVI  |                      |                                                                                       |
|                                                                                             | SSM3J353F   | -30                      | +20/-25              | -2                 | 0.6                | 232                          | 274                     | —                         | —                         | —                         | 159                        | 23                         | 30                         | 3.4                      | U-MOSVI  |                      |                                                                                       |
| <br>(mm) | SSM6J801R   | -20                      | +6/-8                | -6                 | 1.5                | 32.5                         | —                       | 39.7                      | 56                        | 88.4                      | 840                        | 99                         | 118                        | 12.8                     | U-MOSVI  | (6b)                 |  |
|                                                                                             | SSM6J808R   | **                       | +10/-20              | -7                 | 1.5                | 54                           | —                       | —                         | —                         | —                         | 1105                       | 133                        | 166                        | 24.2                     | U-MOSVI  | (6a)                 |                                                                                       |

\*: New Product / 新製品

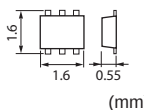
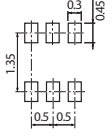
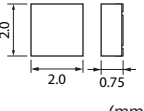
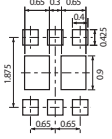
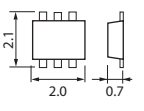
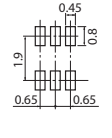
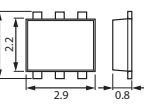
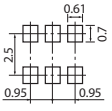
\*\*: Under Development / 開発中



• The internal connection diagrams only show the general configurations of the circuits.

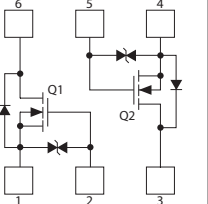
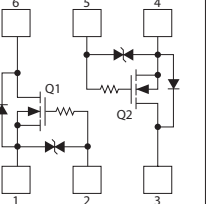
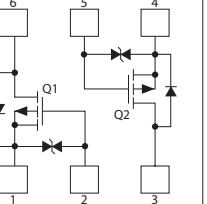
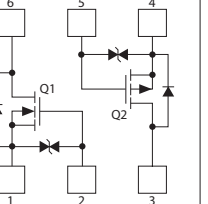
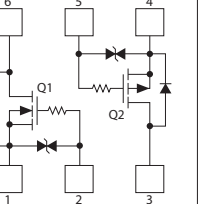
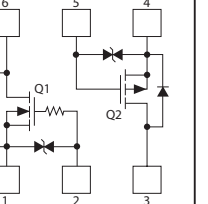
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## (Semi-Power Type: Dual Channel/Complementary) / (セミパワータイプ:デュアルチャネル/コンプリメンタリ)

| Package                                                                                                                         | Polarity    | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |          |
|---------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|----------|
|                                                                                                                                 |             |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V    | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |             |                      |                                                                                       |          |
| <div>ES6<br/>SOT-563</div>  <div>(mm)</div>    | N-ch x 2    | SSM6N56FE *  | 20                       | ±8                   | 0.8                | 0.25               | 235                          | —                       | 300                       | 480                       | 840                       | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H  | (6BB)                |    |          |
|                                                                                                                                 | P-ch x 2    | SSM6P41FE    | −20                      | ±8                   | −0.72              | 0.15               | 300                          | —                       | 440                       | 670                       | 1040                      | 110                        | 20                         | 28                         | 1.76                     | U-MOSV      | (6bb)                |                                                                                       |          |
|                                                                                                                                 | N-ch + P-ch | SSM6L14FE    | 20                       | ±10                  | 0.8                | 0.15               | 240                          | —                       | 330                       | 450                       | 600                       | 90                         | 15                         | 21                         | 2                        | U-MOSIII    | (6Cb)                |                                                                                       |          |
|                                                                                                                                 |             |              | −20                      | ±8                   | −0.72              | 0.15               | 300                          | —                       | 440                       | 670                       | 1040                      | 110                        | 20                         | 28                         | 1.76                     | U-MOSV      |                      |                                                                                       |          |
| <div>UDFN6<br/>SOT-1118</div>  <div>(mm)</div> | N-ch x 2    | SSM6N61NU *  | 20                       | ±8                   | 4                  | 1                  | 33                           | —                       | 45                        | 74                        | 108                       | 410                        | 40                         | 85                         | 3.6                      | U-MOSVII-H  | (6BB)                |    |          |
|                                                                                                                                 |             | SSM6N55NU *  |                          | ±20                  | 4                  | 1                  | 64                           | —                       | —                         | —                         | —                         | 280                        | 20                         | 53                         | 2.5                      | U-MOSVII-H  |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6N57NU *  | 30                       | ±12                  | 4                  | 1                  | 39.1                         | —                       | 53                        | 82                        | —                         | 310                        | 20                         | 52                         | 3.2                      | U-MOSVII-H  |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6N58NU *  |                          | ±12                  | 4                  | 1                  | 84                           | —                       | 117                       | 180                       | —                         | 129                        | 13                         | 34                         | 1.8                      | U-MOSVII-H  |                      |                                                                                       |          |
|                                                                                                                                 | P-ch x 2    | SSM6P47NU    | −20                      | ±8                   | −4                 | 1                  | 95                           | —                       | 125                       | 170                       | 242                       | 290                        | 32                         | 44                         | 4.6                      | U-MOSVI     | (6bb)                |                                                                                       |          |
|                                                                                                                                 |             | SSM6P49NU    |                          | ±12                  | −4                 | 1                  | 56                           | —                       | 76                        | 157                       | —                         | 480                        | 76                         | 90                         | 6.74                     | U-MOSVI     |                      |                                                                                       |          |
|                                                                                                                                 | N-ch + P-ch | SSM6L61NU    | 20                       | ±8                   | 4                  | 1                  | —                            | 33                      | 45                        | 74                        | 108                       | 410                        | 40                         | 85                         | 3.6                      | U-MOSVII-H  | (6Bb)                |                                                                                       |          |
|                                                                                                                                 |             |              | −20                      | ±12                  | −4                 | 1                  | 56                           | —                       | 76                        | 157                       | —                         | 480                        | 76                         | 90                         | 6.74                     | U-MOSVI     |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6L63NU ** | 30                       | ±20                  | 4                  | 1                  | 48 (typ.)                    | —                       | —                         | —                         | —                         | 280                        | 20                         | 53                         | 2.5                      | U-MOSVII-H  | (6Cc)                |                                                                                       |          |
|                                                                                                                                 |             |              | −30                      | ±20                  | −4                 | 1                  | 80 (typ.)                    | —                       | —                         | —                         | —                         | 280                        | 40                         | 55                         | 5.9                      | U-MOSVII-H  |                      |                                                                                       |          |
| <div>UF6</div>  <div>(mm)</div>              | N-ch x 2    | SSM6N62TU    | 20                       | ±8                   | 0.8                | 0.5                | 85                           | —                       | 98                        | 120                       | 173                       | 177                        | 17                         | 52                         | 2                        | U-MOSVII-H  | (6BB)                |  |          |
|                                                                                                                                 |             | SSM6N39TU    |                          |                      | ±10                | 1.6                | 0.5                          | —                       | 119                       | 139                       | 190                       | 247                        | 260                        | 37                         | 45                       | 7.5         |                      |                                                                                       | U-MOSIII |
|                                                                                                                                 |             | SSM6N40TU    |                          | 30                   | ±20                | 1.6                | 0.5                          | —                       | 182                       | —                         | —                         | —                          | 180                        | 27                         | 34                       | 5.1         |                      |                                                                                       | U-MOSIII |
|                                                                                                                                 | P-ch x 2    | SSM6P54TU    | −20                      | ±8                   | −1.2               | 0.5                | —                            | —                       | 228                       | 350                       | 555                       | 331                        | 39                         | 48                         | 7.7                      | U-MOSIV     | (6bb)                |                                                                                       |          |
|                                                                                                                                 |             | SSM6P39TU    |                          | ±8                   | −1.5               | 0.5                | —                            | 213                     | 294                       | 430                       | —                         | 250                        | 35                         | 43                         | 6.4                      | U-MOSIII    |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6P40TU    | −30                      | ±20                  | −1.4               | 0.5                | —                            | 403                     | —                         | —                         | —                         | 120                        | 21                         | 32                         | 2.9                      | U-MOSIII    |                      |                                                                                       |          |
|                                                                                                                                 | N-ch + P-ch | SSM6L39TU    | 20                       | ±10                  | 1.6                | 0.5                | —                            | 119                     | 139                       | 190                       | 247                       | 260                        | 37                         | 45                         | 7.5                      | U-MOSIII    | (6Bb)                |                                                                                       |          |
|                                                                                                                                 |             |              | −20                      | ±8                   | −1.5               | 0.5                | —                            | 213                     | 294                       | 430                       | —                         | 250                        | 35                         | 43                         | 6.4                      | U-MOSIII    |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6L12TU    | 30                       | ±12                  | 0.5                | 0.5                | 145                          | —                       | 180                       | —                         | —                         | 245                        | 33                         | 41                         | —                        | U-MOSIII    | (6Cc)                |                                                                                       |          |
|                                                                                                                                 |             |              | −20                      | ±12                  | −0.5               | 0.5                | —                            | 260                     | 430                       | —                         | —                         | 218                        | 42                         | 52                         | —                        | U-MOSIII    |                      |                                                                                       |          |
|                                                                                                                                 |             | SSM6L40TU    | 30                       | ±20                  | 1.6                | 0.5                | —                            | 182                     | —                         | —                         | —                         | 180                        | 27                         | 34                         | 5.1                      | U-MOSIII    | (6Bb)                |                                                                                       |          |
|                                                                                                                                 |             |              | −30                      | ±20                  | −1.4               | 0.5                | —                            | 403                     | —                         | —                         | —                         | 120                        | 21                         | 32                         | 2.9                      | U-MOSIII    |                      |                                                                                       |          |
| <div>TSOP6F</div>  <div>(mm)</div>           | N-ch x 2    | SSM6N813R ** | 100                      | ±20                  | 3.5                | 1.5                | 157                          | TBD                     | —                         | —                         | —                         | 242                        | 7                          | TBD                        | TBD                      | U-MOSVIII-H | (6CC)                |  |          |
|                                                                                                                                 |             | SSM6N815R ** |                          | ±20                  | 2                  | 1.5                | 110                          | 150                     | —                         | —                         | —                         | 290                        | 16                         | 108                        | TBD                      | U-MOSVIII-H | (6BB)                |                                                                                       |          |

\*: New Product / 新製品

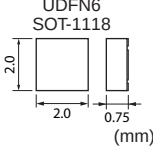
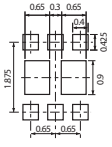
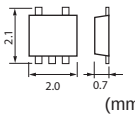
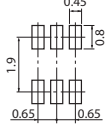
\*\*: Under Development / 開発中

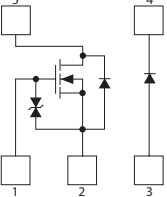
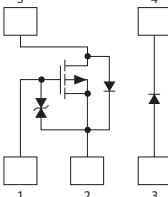
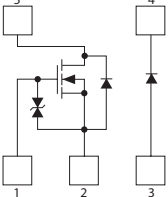
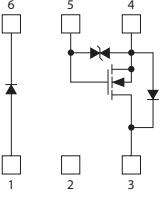
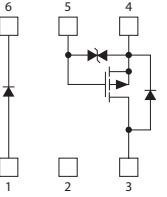
| Internal Connections 内部接続図 (Top View)                                                          |                                                                                                |                                                                                                |                                                                                                   |                                                                                                    |                                                                                                    |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| (6BB)                                                                                          | (6CC)                                                                                          | (6bb)                                                                                          | (6Bb)                                                                                             | (6Cc)                                                                                              | (6Cb)                                                                                              |
| <br>Nch x 2 | <br>Nch x 2 | <br>Pch x 2 | <br>Nch + Pch | <br>Nch + Pch | <br>Nch + Pch |

• The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

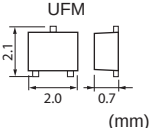
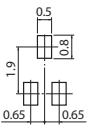
(Semi-Power Type: Built-in Diode) / (セミパワータイプ: ダイオード混載品)

| Package                                                                                                       | Polarity               | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                          |  |
|---------------------------------------------------------------------------------------------------------------|------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|-------------------------------------------------------------------------------------|--|
|                                                                                                               |                        |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V    | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                     |  |
| <br>UDFN6<br>SOT-1118<br>(mm) | N-ch + SBD             | SSM6H19NU   | 40                       | ±12                  | 2                  | 1                  | 198                          | —                       | 238                       | 390                       | —                         | 130                        | 7.5                        | 26                         | 1.1                      | U-MOSVII-H | (6SB)                |  |  |
|                                                                                                               | P-ch + SBD             | SSM6G18NU   | −20                      | ±8                   | −2                 | 1                  | 112                          | —                       | 143                       | 185                       | 261                       | 270                        | 32                         | 40                         | 4.6                      | U-MOSVI    | (6Sb)                |                                                                                     |  |
| <br>UFV<br>(mm)               | N-ch + SBD             | SSM5H08TU   | 20                       | ±12                  | 1.5                | 0.5                | —                            | 160                     | 220                       | —                         | —                         | 125                        | 17                         | 42                         | —                        | U-MOSIII   | (5BS)                |  |  |
|                                                                                                               |                        | SSM5H01TU   |                          | ±20                  | 1.4                | 0.5                | —                            | 450                     | —                         | —                         | —                         | 106                        | 15                         | 28                         | —                        | U-MOSIII   |                      |                                                                                     |  |
|                                                                                                               |                        | SSM5H11TU   | 30                       | ±20                  | 1.6                | 0.5                | —                            | 182                     | —                         | —                         | —                         | 180                        | 27                         | 34                         | 5.1                      | U-MOSIII   |                      |                                                                                     |  |
|                                                                                                               |                        | SSM5H16TU   |                          | ±12                  | 1.9                | 0.5                | —                            | 133                     | 177                       | 296                       | —                         | 123                        | 18                         | 43                         | 1.9                      | U-MOSIII   |                      |                                                                                     |  |
|                                                                                                               | P-ch + SBD             | SSM5G02TU   | −12                      | ±12                  | −1                 | 0.5                | —                            | 160                     | 240                       | —                         | —                         | 310                        | 70                         | 110                        | —                        | U-MOSII    | (5bS)                |                                                                                     |  |
|                                                                                                               |                        | SSM5G09TU   |                          | ±8                   | −1.5               | 0.5                | —                            | 130                     | 200                       | —                         | —                         | 550                        | 155                        | 170                        | —                        | U-MOSIII   |                      |                                                                                     |  |
|                                                                                                               |                        | SSM5G11TU   | −30                      | ±20                  | −1.4               | 0.5                | —                            | 403                     | —                         | —                         | —                         | 120                        | 21                         | 32                         | 2.9                      | U-MOSIII   |                      |                                                                                     |  |
|                                                                                                               | N-ch + Switching Diode | SSM5H90ATU  | 20                       | ±10                  | 2.4                | 0.5                | —                            | 65                      | 89                        | —                         | —                         | 200                        | 13                         | 40                         | 2.2                      | U-MOSVII-H | (5BW)                |                                                                                     |  |

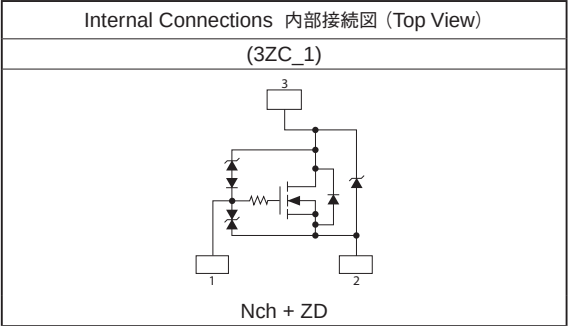
| Internal Connections 内部接続図 (Top View)                                                            |                                                                                                  |                                                                                                              |                                                                                                   |                                                                                                    |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| (5BS)                                                                                            | (5bS)                                                                                            | (5BW)                                                                                                        | (6SB)                                                                                             | (6Sb)                                                                                              |
| <br>Nch + SBD | <br>Pch + SBD | <br>Nch + Switching Diode | <br>Nch + SBD | <br>Pch + SBD |

- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

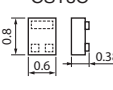
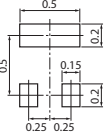
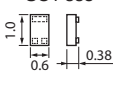
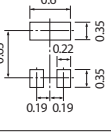
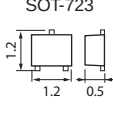
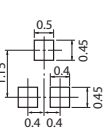
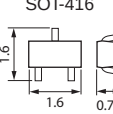
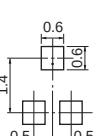
(Semi-Power Type: Built-in Zener Diode) / (セミパワータイプ: ZD 混載品)

| Package                                                                                   | Polarity     | Part Number | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                          |
|-------------------------------------------------------------------------------------------|--------------|-------------|--------------------------|----------------------|--------------------|--------------------|------------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|----------------------|-------------------------------------------------------------------------------------|
|                                                                                           |              |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V    | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |         |                      |                                                                                     |
| <br>(mm) | N-ch + Zener | SSM3H137TU  | 34                       | ±20                  | 2                  | 0.8                | 280                          | 295                     | —                         | —                         | —                         | 119                        | 8                          | 40                         | 3                        | U-MOSIV | (3ZC_1)              |  |

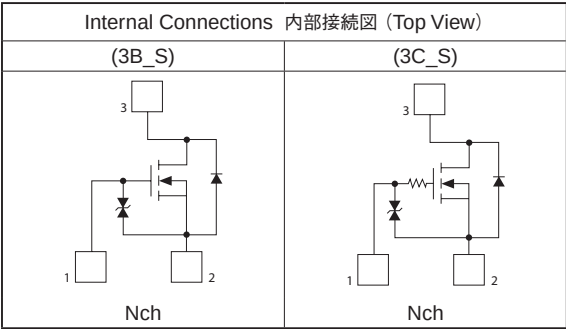
\*: New Product / 新製品



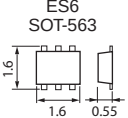
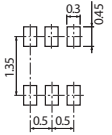
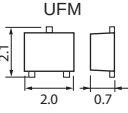
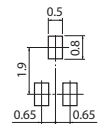
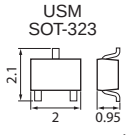
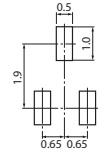
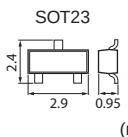
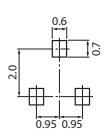
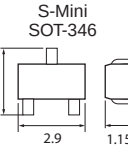
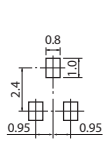
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                                   | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (Ω) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                                       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|-----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|--------------------------------------------------------------------------------------------------|--|
|                                                                                                                                           |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V   | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                                  |  |
| <div>CST3C</div> <div></div> <div>(mm)</div>             | SSM3K16CTC *  | 20                       | ±10                  | 0.2                | 0.5                | 2.2                         | —                       | 3                         | 4                         | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   | (3C_S)               | <div></div>   |  |
|                                                                                                                                           | SSM3K35CTC    |                          | ±10                  | 0.25               | 0.5                | 1.1                         | —                       | 1.6                       | 2.4                       | 3.1                       | 18                         | 5                          | 6                          | 0.34                     | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K15ACTC * | 30                       | ±20                  | 0.1                | 0.5                | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K72CTC *  | 60                       | ±20                  | 0.15               | 0.5                | 4.7                         | —                       | —                         | —                         | —                         | 11                         | 0.7                        | 3                          | 0.27                     | U-MOSVII-H |                      |                                                                                                  |  |
| <div>CST3<br/>SOT-883</div> <div></div> <div>(mm)</div>  | SSM3K16CT     | 20                       | ±10                  | 0.1                | 0.1                | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (3C_S)               | <div></div>   |  |
|                                                                                                                                           | SSM3K35CT     |                          | ±10                  | 0.18               | 0.1                | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K37CT     |                          | ±10                  | 0.2                | 0.1                | 2.2                         | —                       | 3.02                      | 4.05                      | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K15ACT    | 30                       | ±20                  | 0.1                | 0.1                | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K72KCT *  | 60                       | ±20                  | 0.4                | 0.5                | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                                  |  |
| <div>VESM<br/>SOT-723</div> <div></div> <div>(mm)</div>  | SSM3K16FV     | 20                       | ±10                  | 0.1                | 0.15               | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (3C_S)               | <div></div>   |  |
|                                                                                                                                           | SSM3K35MFV    |                          | ±10                  | 0.18               | 0.15               | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K35AMFV * |                          | ±10                  | 0.25               | 0.15               | 1.1                         | —                       | 1.6                       | 2.4                       | 3.1                       | 18                         | 5                          | 6                          | 0.34                     | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K37MFV    |                          | ±10                  | 0.25               | 0.15               | 2.2                         | —                       | 3.02                      | 4.05                      | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K36MFV    |                          | ±10                  | 0.5                | 0.15               | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K56MFV *  | 30                       | ±8                   | 0.8                | 0.15               | 0.235                       | —                       | 0.3                       | 0.48                      | 0.84                      | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H | (3B_S)               |                                                                                                  |  |
|                                                                                                                                           | SSM3K15AMFV   |                          | ±20                  | 0.1                | 0.15               | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   | (3C_S)               |                                                                                                  |  |
|                                                                                                                                           | SSM3K44MFV    |                          | ±20                  | 0.1                | 0.15               | —                           | 4                       | 7                         | —                         | —                         | 8.5                        | 5.3                        | 9.4                        | —                        | π-MOSVI    | (3C_S)               |                                                                                                  |  |
| <div>SSM<br/>SOT-416</div> <div></div> <div>(mm)</div> | SSM3K16FS     | 20                       | ±10                  | 0.1                | 0.1                | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (3C_S)               | <div></div> |  |
|                                                                                                                                           | SSM3K35FS     |                          | ±10                  | 0.18               | 0.1                | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K37FS     |                          | ±10                  | 0.2                | 0.1                | 2.2                         | —                       | 3.02                      | 4.05                      | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K35AFS *  |                          | ±10                  | 0.25               | 0.15               | 1.1                         | —                       | 1.6                       | 2.4                       | 3.1                       | 18                         | 5                          | 6                          | 0.34                     | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K36FS     |                          | ±10                  | 0.5                | 0.15               | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K56FS *   | 30                       | ±8                   | 0.8                | 0.15               | 0.235                       | —                       | 0.3                       | 0.48                      | 0.84                      | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H | (3B_S)               |                                                                                                  |  |
|                                                                                                                                           | SSM3K15AFS    |                          | ±20                  | 0.1                | 0.1                | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   | (3C_S)               |                                                                                                  |  |
|                                                                                                                                           | SSM3K44FS     |                          | ±20                  | 0.1                | 0.15               | —                           | 4                       | 7                         | —                         | —                         | 8.5                        | 5.3                        | 9.4                        | —                        | π-MOSVI    |                      |                                                                                                  |  |
|                                                                                                                                           | SSM3K72CFs *  | 60                       | ±20                  | 0.17               | 0.15               | 4.7                         | —                       | —                         | —                         | —                         | 11                         | 0.7                        | 3                          | 0.27                     | U-MOSVII-H | (3C_S)               |                                                                                                  |  |
|                                                                                                                                           | SSM3K72KFs *  |                          | ±20                  | 0.3                | 0.15               | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                                  |  |

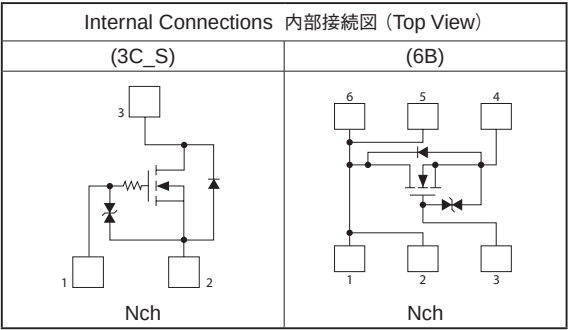
\*: New Product / 新製品



- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

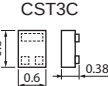
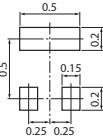
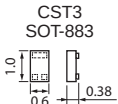
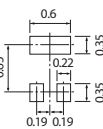
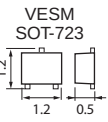
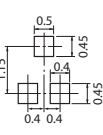
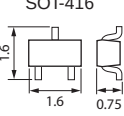
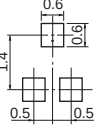
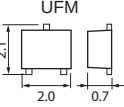
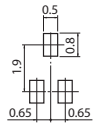
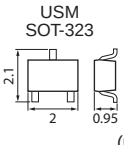
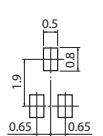
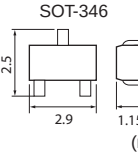
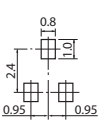
| Package                                                                                     | Part Number  | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (Ω) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------|--------------|--------------------------|----------------------|--------------------|--------------------|-----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                             |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V   | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                       |
| <br>(mm)   | SSM6K24FE    | 30                       | ±12                  | 0.5                | 0.5                | 0.145                       | —                       | 0.18                      | —                         | —                         | 245                        | 33                         | 41                         | —                        | U-MOSIII   | (6B)                 |    |
| <br>(mm)   | SSM3K36TU    | 20                       | ±10                  | 0.5                | 0.5                | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   | (3C_S)               |    |
| <br>(mm)   | SSM3K16FU    | 20                       | ±10                  | 0.1                | 0.15               | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (3C_S)               |    |
|                                                                                             | SSM3K15AFU   | 30                       | ±20                  | 0.1                | 0.15               | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   |                      |                                                                                       |
|                                                                                             | SSM3K48FU    |                          | ±20                  | 0.1                | 0.15               | —                           | 3.2                     | 5.4                       | —                         | —                         | 15.1                       | 7.8                        | 12.4                       | —                        | U-MOSIII   |                      |                                                                                       |
|                                                                                             | SSM3K09FU    |                          | ±20                  | 0.4                | 0.15               | —                           | 1.2                     | —                         | —                         | —                         | 20                         | 7                          | 16                         | —                        | π-MOSVI    |                      |                                                                                       |
|                                                                                             | SSM3K17FU    | 50                       | ±7                   | 0.1                | 0.15               | —                           | 20                      | 40                        | —                         | —                         | 7                          | 3                          | 7                          | —                        | π-MOSV     |                      |                                                                                       |
|                                                                                             | SSM3K7002CFU | 60                       | ±20                  | 0.17               | 0.15               | 4.7                         | —                       | —                         | —                         | —                         | 11                         | 0.7                        | 3                          | 0.27                     | U-MOSVII-H |                      |                                                                                       |
|                                                                                             | SSM3K7002KFU |                          | ±20                  | 0.4                | 0.15               | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                       |
| <br>(mm)  | T2N7002AK    | 60                       | ±20                  | 0.2                | 0.32               | 4.7                         | —                       | —                         | —                         | —                         | 11                         | 0.7                        | 3                          | 0.27                     | U-MOSVII-H | (3C_S)               |   |
|                                                                                             | T2N7002BK    |                          | ±20                  | 0.4                | 0.32               | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                       |
| <br>(mm) | SSM3K15F     | 30                       | ±20                  | 0.1                | 0.2                | —                           | 4                       | 7                         | —                         | —                         | 7.8                        | 3.6                        | 8.8                        | —                        | π-MOSVI    | (3C_S)               |  |
|                                                                                             | SSM3K7002KF  | 60                       | ±20                  | 0.4                | 0.27               | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                       |

\*: New Product / 新製品

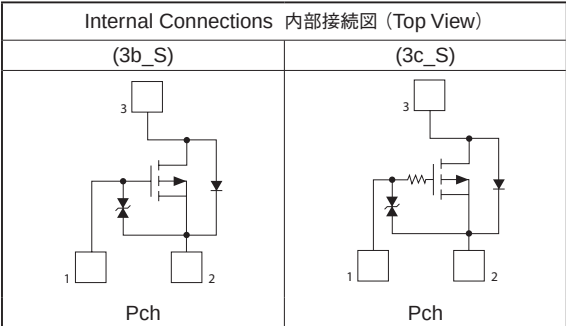


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Small-Signal Type: Single P-Channel) / (小信号スタンダードタイプ: シングルPチャネル)

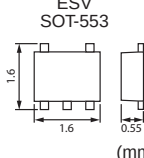
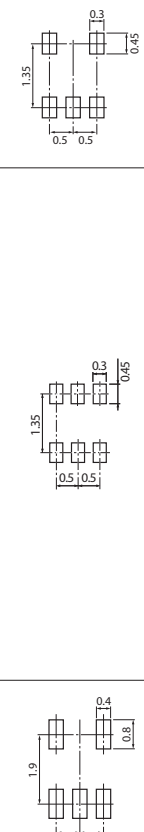
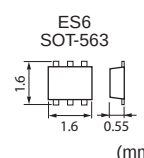
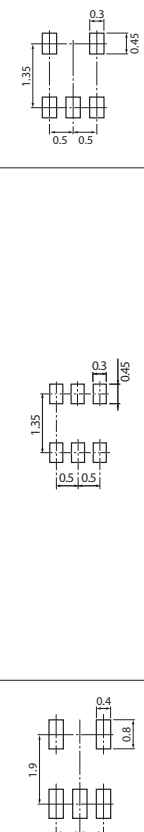
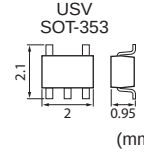
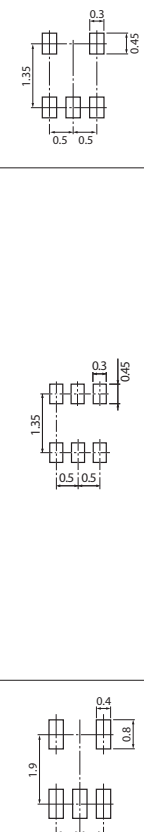
| Package                                                                                                                                  | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (Ω) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                                       |  |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|-----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|----------|----------------------|--------------------------------------------------------------------------------------------------|--|
|                                                                                                                                          |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V   | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |          |                      |                                                                                                  |  |
| <div>CST3C</div> <div></div> <div>(mm)</div>            | SSM3J35CTC *  | -20                      | ±10                  | -0.25              | 0.5                | 1.4                         | —                       | 2.1                       | 2.9                       | 4                         | 21                         | 2                          | 6                          | —                        | U-MOSVII | (3c_S)               | <div></div>   |  |
| <div>CST3 SOT-883</div> <div></div> <div>(mm)</div>     | SSM3J35CT     | -20                      | ±10                  | -0.1               | 0.1                | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI  | (3c_S)               | <div></div>   |  |
|                                                                                                                                          | SSM3J15CT     | -30                      | ±20                  | -0.1               | 0.1                | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI  |                      |                                                                                                  |  |
| <div>VESM SOT-723</div> <div></div> <div>(mm)</div>     | SSM3J16FV     | -20                      | ±10                  | -0.1               | 0.15               | —                           | 8                       | 12                        | —                         | 45                        | 11                         | 3.7                        | 10                         | —                        | π-MOSVI  | (3c_S)               | <div></div>   |  |
|                                                                                                                                          | SSM3J35MFV    |                          | ±10                  | -0.1               | 0.15               | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI  |                      |                                                                                                  |  |
|                                                                                                                                          | SSM3J35AMFV * |                          | ±10                  | -0.25              | 0.5                | 1.4                         | —                       | 2.1                       | 2.9                       | 4                         | 21                         | 2                          | 6                          | —                        | U-MOSVII | (3b_S)               |                                                                                                  |  |
|                                                                                                                                          | SSM3J56MFV    |                          | ±8                   | -0.8               | 0.15               | 0.39                        | —                       | 0.48                      | 0.66                      | 0.9                       | 100                        | 10                         | 16                         | 1.6                      | U-MOSVI  | (3c_S)               |                                                                                                  |  |
|                                                                                                                                          | SSM3J15FV     | -30                      | ±20                  | -0.1               | 0.15               | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI  | (3c_S)               |                                                                                                  |  |
| <div>SSM SOT-416</div> <div></div> <div>(mm)</div>     | SSM3J35FS     | -20                      | ±10                  | -0.1               | 0.1                | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI  | (3c_S)               | <div></div>  |  |
|                                                                                                                                          | SSM3J35AFS *  |                          | ±10                  | -0.25              | 0.15               | 1.4                         | —                       | 2.1                       | 2.9                       | 4                         | 21                         | 2                          | 6                          | —                        | U-MOSVII |                      |                                                                                                  |  |
|                                                                                                                                          | SSM3J36FS     |                          | ±8                   | -0.33              | 0.15               | 1.31                        | —                       | —                         | 2.7                       | 3.6                       | 43                         | 6.1                        | 10.3                       | 1.2                      | U-MOSIII |                      |                                                                                                  |  |
|                                                                                                                                          | SSM3J15FS     | -30                      | ±20                  | -0.1               | 0.1                | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI  |                      |                                                                                                  |  |
| <div>UFM</div> <div></div> <div>(mm)</div>            | SSM3J36TU     | -20                      | ±8                   | -0.33              | 0.5                | 1.31                        | —                       | —                         | 2.7                       | 3.6                       | 43                         | 6.1                        | 10.3                       | 1.2                      | U-MOSIII | (3c_S)               | <div></div> |  |
| <div>USM SOT-323</div> <div></div> <div>(mm)</div>    | SSM3J16FU     | -20                      | ±10                  | -0.1               | 0.15               | —                           | 8                       | 12                        | —                         | 45                        | 11                         | 3.7                        | 10                         | —                        | π-MOSVI  | (3c_S)               | <div></div> |  |
|                                                                                                                                          | SSM3J15FU     | -30                      | ±20                  | -0.1               | 0.15               | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI  |                      |                                                                                                  |  |
|                                                                                                                                          | SSM3J09FU     |                          | ±20                  | -0.2               | 0.15               | —                           | 4.2                     | —                         | —                         | —                         | 22                         | 5                          | 14                         | —                        | π-MOSVI  |                      |                                                                                                  |  |
| <div>S-Mini SOT-346</div> <div></div> <div>(mm)</div> | SSM3J15F      | -30                      | ±20                  | -0.1               | 0.2                | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI  | (3c_S)               | <div></div> |  |
|                                                                                                                                          | 2SJ168        | -60                      | ±20                  | -0.2               | 0.2                | —                           | —                       | —                         | —                         | —                         | 73                         | 15                         | 48                         | —                        |          | (3b_S)               |                                                                                                  |  |
|                                                                                                                                          | SSM3J168F *   |                          | +10/-20              | -0.4               | 0.6                | 1.9                         | 2                       | —                         | —                         | —                         | 82                         | 5.5                        | 13                         | 3                        | U-MOSVI  |                      |                                                                                                  |  |

\*: New Product / 新製品

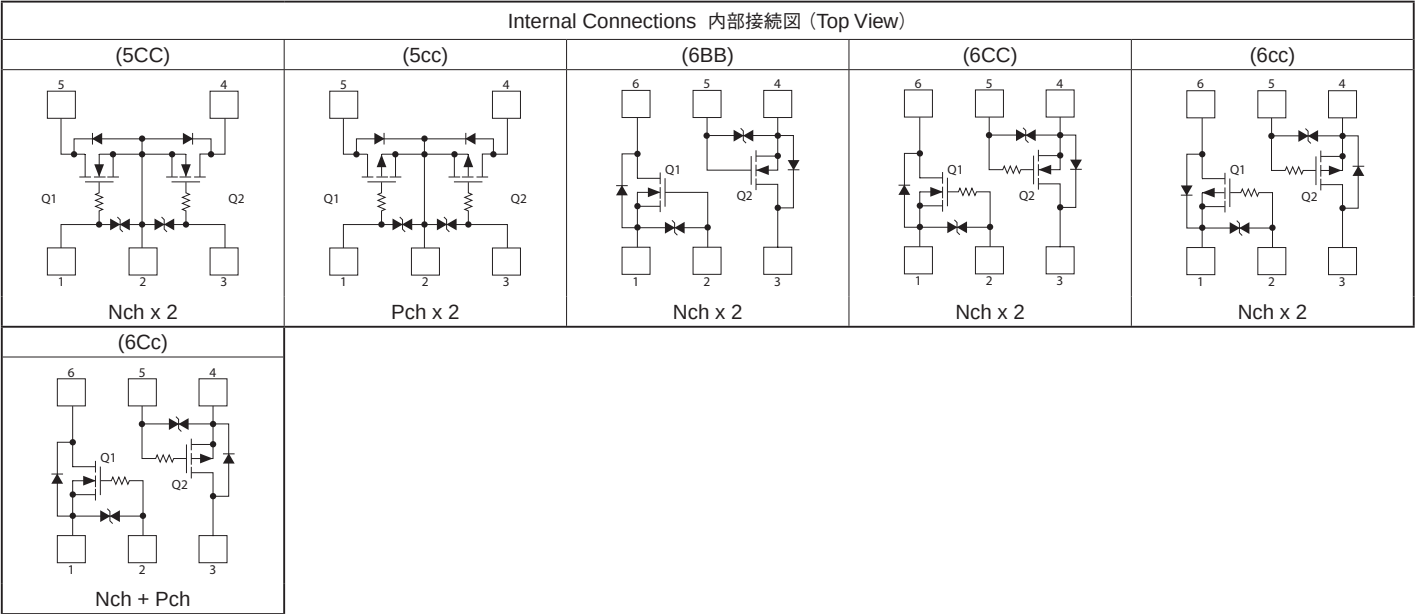


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Small-Signal Type: Dual Channel/Complementary) / (小信号スタンダードタイプ: デュアルチャネル/コンプリメンタリ) (1/2)

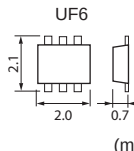
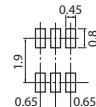
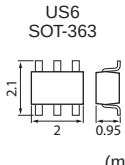
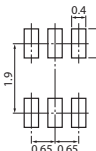
| Package                                                                                     | Polarity    | Part Number   | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (Ω) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                           |  |
|---------------------------------------------------------------------------------------------|-------------|---------------|--------------------------|----------------------|--------------------|--------------------|-----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|--------------------------------------------------------------------------------------|--|
|                                                                                             |             |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V   | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                      |  |
| <br>(mm)   | N-ch x 2    | SSM5N16FE     | 20                       | ±10                  | 0.1                | 0.15               | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (5CC)                |  |  |
|                                                                                             |             | SSM5N15FE     | 30                       | ±20                  | 0.1                | 0.15               | —                           | 4                       | 7                         | —                         | —                         | 7.8                        | 3.6                        | 8.8                        | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             | P-ch x 2    | SSM5P16FE     | −20                      | ±10                  | −0.1               | 0.15               | —                           | 8                       | 12                        | —                         | 45                        | 11                         | 3.7                        | 10                         | —                        | π-MOSVI    | (5cc)                |                                                                                      |  |
| <br>(mm)   | N-ch x 2    | SSM6N16FE     | 20                       | ±10                  | 0.1                | 0.15               | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (6CC)                |  |  |
|                                                                                             |             | SSM6N35FE     |                          | ±10                  | 0.18               | 0.15               | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             |             | SSM6N35AFE *  |                          | ±10                  | 0.25               | 0.15               | 1.1                         | —                       | 1.6                       | 2.4                       | 3.1                       | 18                         | 5                          | 6                          | 0.34                     | U-MOSIII   |                      |                                                                                      |  |
|                                                                                             |             | SSM6N37FE     |                          | ±10                  | 0.25               | 0.15               | 2.2                         | —                       | 3.02                      | 4.05                      | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   |                      |                                                                                      |  |
|                                                                                             |             | SSM6N36FE     | 30                       | ±10                  | 0.5                | 0.15               | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   | (6BB)                |                                                                                      |  |
|                                                                                             |             | SSM6N56FE *   |                          | ±8                   | 0.8                | 0.15               | 0.235                       | —                       | 0.3                       | 0.48                      | 0.84                      | 55                         | 6                          | 16                         | 1                        | U-MOSVII-H |                      |                                                                                      |  |
|                                                                                             |             | SSM6N15AFE    |                          | ±20                  | 0.1                | 0.15               | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   | (6CC)                |                                                                                      |  |
|                                                                                             |             | SSM6N44FE     |                          | ±20                  | 0.1                | 0.15               | —                           | 4                       | 7                         | —                         | —                         | 8.5                        | 5.3                        | 9.4                        | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             | P-ch x 2    | SSM6N7002BFE  | 60                       | ±20                  | 0.2                | 0.15               | 3.3                         | —                       | —                         | —                         | —                         | 17                         | 1.9                        | 3.6                        | —                        | U-MOSIV    | (6cc)                |                                                                                      |  |
|                                                                                             |             | SSM6P35FE     | −20                      | ±10                  | −0.1               | 0.15               | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             |             | SSM6P35AFE ** |                          | ±10                  | −0.25              | 0.15               | 1.4                         | —                       | 2.1                       | 2.9                       | 4                         | 21                         | 2                          | 6                          | —                        | U-MOSVII   |                      |                                                                                      |  |
|                                                                                             |             | SSM6P36FE     |                          | ±8                   | −0.33              | 0.15               | 1.31                        | —                       | —                         | 2.7                       | 3.6                       | 43                         | 6.1                        | 10.3                       | 1.2                      | U-MOSIII   |                      |                                                                                      |  |
|                                                                                             | N-ch + P-ch | SSM6P15FE     | −30                      | ±20                  | −0.1               | 0.15               | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI    | (6Cc)                |                                                                                      |  |
|                                                                                             |             | SSM6L35FE     | 20                       | ±10                  | 0.18               | 0.15               | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             |             | SSM6L36FE     | −20                      | ±10                  | −0.1               | 0.15               | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             |             | SSM6L36FE     | 20                       | ±10                  | 0.5                | 0.15               | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   |                      |                                                                                      |  |
|                                                                                             |             | SSM6L36FE     | −20                      | ±8                   | −0.33              | 0.15               | 1.31                        | —                       | —                         | 2.7                       | 3.6                       | 43                         | 6.1                        | 10.3                       | 1.2                      | U-MOSIII   |                      |                                                                                      |  |
| <br>(mm) | N-ch x 2    | SSM5N16FU     | 20                       | ±10                  | 0.1                | 0.2                | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (5CC)                |  |  |
|                                                                                             |             | SSM5N15FU     | 30                       | ±20                  | 0.1                | 0.2                | —                           | 4                       | 7                         | —                         | —                         | 7.8                        | 3.6                        | 8.8                        | —                        | π-MOSVI    |                      |                                                                                      |  |
|                                                                                             | P-ch x 2    | SSM5P15FU     | −30                      | ±20                  | −0.1               | 0.2                | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI    | (5cc)                |                                                                                      |  |

\*: New Product / 新製品  
\*\*: Under Development / 開発中



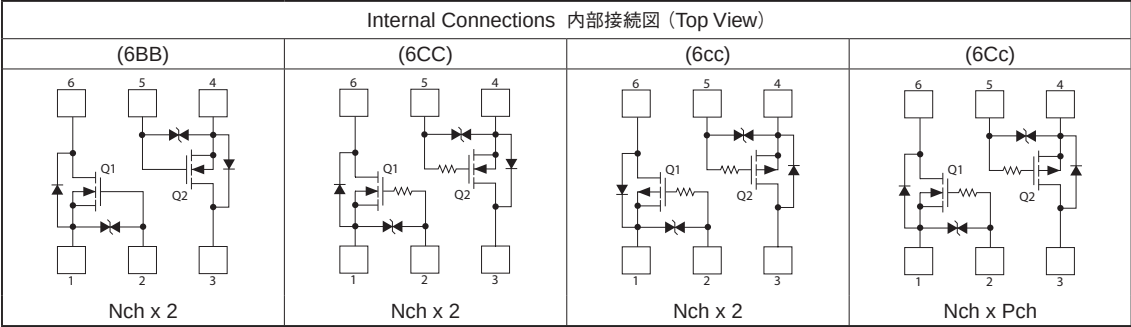
・ The internal connection diagrams only show the general configurations of the circuits.  
・ 内部接続図はイメージ図です。

(Small-Signal Type: Dual Channel/Complementary) / (小信号スタンダードタイプ:デュアルチャネル/コンプリメンタリ) (2/2)

| Package                                                                                   | Polarity    | Part Number    | Absolute Maximum Ratings |                      |                    |                    | R <sub>DS(ON)</sub> max (Ω) |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series     | Internal Connections | Land Pattern Examples (mm)                                                           |
|-------------------------------------------------------------------------------------------|-------------|----------------|--------------------------|----------------------|--------------------|--------------------|-----------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|------------|----------------------|--------------------------------------------------------------------------------------|
|                                                                                           |             |                | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | V <sub>GS</sub>   = 4.5 V   | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                            |                            |                            |                          |            |                      |                                                                                      |
| <br>(mm)  | N-ch x 2    | SSM6N36TU      | 20                       | ±10                  | 0.5                | 0.5                | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   | (6CC)                |   |
|                                                                                           |             | SSM6N62TU      |                          | ±8                   | 0.8                | 0.5                | 0.085                       | —                       | 0.098                     | 0.12                      | 0.173                     | 177                        | 17                         | 52                         | 2                        | U-MOSVII-H | (6BB)                |                                                                                      |
|                                                                                           |             | SSM6N24TU      | 30                       | ±12                  | 0.5                | 0.5                | 0.145                       | —                       | 0.18                      | —                         | —                         | 245                        | 33                         | 41                         | —                        | U-MOSIII   | (6cc)                |                                                                                      |
|                                                                                           | P-ch x 2    | SSM6P36TU      | −20                      | ±8                   | −0.33              | 0.5                | 1.31                        | —                       | —                         | 2.7                       | 3.6                       | 43                         | 6.1                        | 10.3                       | 1.2                      | U-MOSIII   | (6Cc)                |                                                                                      |
|                                                                                           | N-ch + P-ch | SSM6L12TU      | 30                       | ±12                  | 0.5                | 0.5                | 0.145                       | —                       | 0.18                      | —                         | —                         | 245                        | 33                         | 41                         | —                        | U-MOSIII   | (6Cc)                |                                                                                      |
|                                                                                           |             |                | −20                      | ±12                  | −0.5               | 0.5                | —                           | 0.26                    | 0.43                      | —                         | —                         | 218                        | 42                         | 52                         | —                        | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | SSM6L36TU      | 20                       | ±10                  | 0.5                | 0.5                | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | −20            | ±8                       | −0.33                | 0.5                | 1.31               | —                           | —                       | 2.7                       | 3.6                       | 43                        | 6.1                        | 10.3                       | 1.2                        | U-MOSIII                 |            |                      |                                                                                      |
| <br>(mm) | N-ch x 2    | SSM6N16FU      | 20                       | ±10                  | 0.1                | 0.2                | —                           | 3                       | 4                         | —                         | 15                        | 9.3                        | 4.5                        | 9.8                        | —                        | π-MOSVI    | (6CC)                |  |
|                                                                                           |             | SSM6N35FU      |                          | ±10                  | 0.18               | 0.2                | —                           | 3                       | 4                         | —                         | 8                         | 9.5                        | 4.1                        | 9.5                        | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             | SSM6N35AFU *   |                          | ±10                  | 0.25               | 0.285              | 1.1                         | —                       | 1.6                       | 2.4                       | 3.1                       | 18                         | 5                          | 6                          | 0.34                     | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | SSM6N37FU      |                          | ±10                  | 0.25               | 0.3                | 2.2                         | —                       | 3.02                      | 4.05                      | 5.6                       | 12                         | 4.1                        | 5.5                        | —                        | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | SSM6N43FU      |                          | ±10                  | 0.5                | 0.2                | 0.66                        | —                       | 0.85                      | 1.14                      | 1.52                      | 46                         | 7.3                        | 10.8                       | 1.23                     | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             | SSM6N15AFU     | 30                       | ±20                  | 0.1                | 0.3                | —                           | 3.6                     | 6                         | —                         | —                         | 13.5                       | 6.5                        | 8                          | —                        | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | SSM6N44FU      |                          | ±20                  | 0.1                | 0.2                | —                           | 4                       | 7                         | —                         | —                         | 8.5                        | 5.3                        | 9.4                        | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             | SSM6N48FU      |                          | ±20                  | 0.1                | 0.3                | —                           | 3.2                     | 5.4                       | —                         | —                         | 15.1                       | 7.8                        | 12.4                       | —                        | U-MOSIII   |                      |                                                                                      |
|                                                                                           |             | SSM6N09FU      |                          | ±20                  | 0.4                | 0.3                | —                           | 1.2                     | —                         | —                         | —                         | 20                         | 7                          | 16                         | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             | SSM6N17FU      | 50                       | ±7                   | 0.1                | 0.2                | —                           | 20                      | 40                        | —                         | —                         | 7                          | 3                          | 7                          | —                        | π-MOSV     |                      |                                                                                      |
|                                                                                           | P-ch x 2    | SSM6N7002CFU * | 60                       | ±20                  | 0.17               | 0.285              | 4.7                         | —                       | —                         | —                         | —                         | 11                         | 0.7                        | 3                          | 0.27                     | U-MOSVII-H | (6cc)                |                                                                                      |
|                                                                                           |             | SSM6N7002KFU * |                          | ±20                  | 0.3                | 0.285              | 1.75                        | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H |                      |                                                                                      |
|                                                                                           |             |                |                          |                      |                    |                    |                             |                         |                           |                           |                           |                            |                            |                            |                          |            |                      |                                                                                      |
|                                                                                           | N-ch + P-ch | SSM6P35FU      | −20                      | ±10                  | −0.1               | 0.2                | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI    | (6Cc)                |                                                                                      |
|                                                                                           |             | SSM6P35AFU **  |                          | ±10                  | −0.25              | 0.285              | 1.4                         | —                       | 2.1                       | 2.9                       | 4                         | 21                         | 2                          | 6                          | —                        | U-MOSVII   |                      |                                                                                      |
|                                                                                           |             | SSM6P15FU      | −30                      | ±20                  | −0.1               | 0.2                | —                           | 12                      | 32                        | —                         | —                         | 9.1                        | 3.5                        | 8.6                        | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             | SSM6L09FU      | 30                       | ±20                  | 0.4                | 0.3                | —                           | 1.2                     | —                         | —                         | —                         | 20                         | 7                          | 16                         | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             |                | −30                      | ±20                  | −0.2               | 0.3                | —                           | 4.2                     | —                         | —                         | —                         | 22                         | 5                          | 14                         | —                        | π-MOSVI    |                      |                                                                                      |
|                                                                                           |             |                | SSM6L35FU                | 20                   | ±10                | 0.18               | 0.2                         | —                       | 3                         | 4                         | —                         | 8                          | 9.5                        | 4.1                        | 9.5                      | —          | π-MOSVI              |                                                                                      |
|                                                                                           |             |                | −20                      | ±10                  | −0.1               | 0.2                | —                           | 8                       | 11                        | —                         | 22                        | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI    |                      |                                                                                      |

\*: New Product / 新製品

\*\*\*: Under Development / 開発中



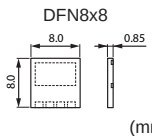
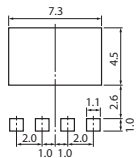
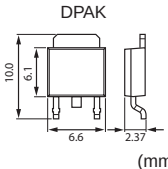
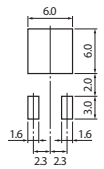
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Mid-High Voltage MOSFETs / 中高耐压 MOSFET

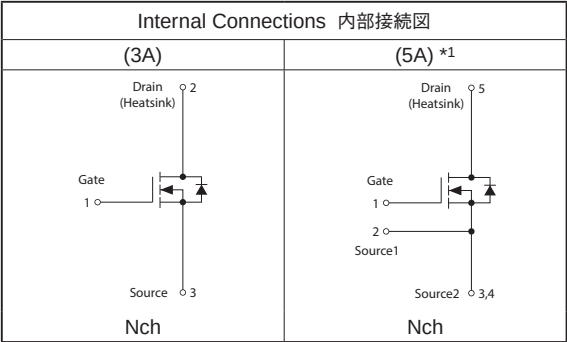
DTMOS Series / DTMOS シリーズ

(Single N-Channel) / (シングルNチャネル)

(1/5)

| Package                                                                                     | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series         | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm)                                                      |
|---------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|----------------|------------------------------|---------------------------------------------------------------------------------------|
|                                                                                             |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |                |                              |                                                                                       |
| <br>(mm)   | TK10V60W    | 600                      | ±30                     | 9.7                   | 83.3                  | 0.38                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        | (5A)                         |    |
|                                                                                             | TK12V60W    |                          | ±30                     | 11.5                  | 104                   | 0.3                                                            | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK16V60W    |                          | ±30                     | 15.8                  | 139                   | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK16V60W5   |                          | ±30                     | 15.8                  | 139                   | 0.245                                                          | 1350                             | 4                                | 35                               | 43                             | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK20V60W    |                          | ±30                     | 20                    | 156                   | 0.17                                                           | 1680                             | 7                                | 40                               | 48                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK20V60W5   |                          | ±30                     | 20                    | 156                   | 0.19                                                           | 1800                             | 5.5                              | 45                               | 55                             | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK25V60X    |                          | ±30                     | 25                    | 180                   | 0.135                                                          | 2400                             | 6                                | 60                               | 40                             | DTMOSIV-H      |                              |                                                                                       |
|                                                                                             | TK25V60X5   |                          | ±30                     | 25                    | 180                   | 0.15                                                           | 2400                             | 6                                | 60                               | 60                             | DTMOSIV-H(HSD) |                              |                                                                                       |
|                                                                                             | TK31V60W    |                          | ±30                     | 30.8                  | 240                   | 0.098                                                          | 3000                             | 9.5                              | 70                               | 86                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK31V60W5   |                          | ±30                     | 30.8                  | 240                   | 0.109                                                          | 3000                             | 9.5                              | 70                               | 105                            | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK31V60X    |                          | ±30                     | 30.8                  | 240                   | 0.098                                                          | 3000                             | 7                                | 70                               | 65                             | DTMOSIV-H      |                              |                                                                                       |
|                                                                                             | TK14V65W    | 650                      | ±30                     | 13.7                  | 139                   | 0.28                                                           | 1300                             | 4                                | 35                               | 35                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK17V65W    |                          | ±30                     | 17.3                  | 156                   | 0.21                                                           | 1800                             | 7                                | 40                               | 45                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK22V65X5 * |                          | ±30                     | 22                    | 180                   | 0.17                                                           | 2400                             | 6                                | 60                               | 50                             | DTMOSIV-H(HSD) |                              |                                                                                       |
|                                                                                             | TK28V65W    |                          | ±30                     | 27.6                  | 240                   | 0.12                                                           | 3000                             | 8                                | 70                               | 75                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK28V65W5 * |                          | ±30                     | 27.6                  | 240                   | 0.14                                                           | 3000                             | 8                                | 70                               | 90                             | DTMOSIV(HSD)   |                              |                                                                                       |
| <br>(mm) | TK10P50W    | 500                      | ±30                     | 9.7                   | 80                    | 0.43                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        | (3A)                         |  |
|                                                                                             | TK12P50W    |                          | ±30                     | 11.5                  | 100                   | 0.34                                                           | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK5P60W5    | 600                      | ±30                     | 4.5                   | 60                    | 0.99                                                           | 370                              | 1                                | 11                               | 11.5                           | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK5P60W     |                          | ±30                     | 5.4                   | 60                    | 0.9                                                            | 380                              | 1.5                              | 10                               | 10.5                           | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK6P60W     |                          | ±30                     | 6.2                   | 60                    | 0.82                                                           | 390                              | 1.7                              | 12                               | 12                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK560P60Y * |                          | ±30                     | 7                     | 60                    | 0.56                                                           | 380                              | 2.5                              | 18                               | 14.5                           | DTMOSV         |                              |                                                                                       |
|                                                                                             | TK7P60W     |                          | ±30                     | 7                     | 60                    | 0.6                                                            | 490                              | 1.7                              | 13                               | 15                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK7P60W5    |                          | ±30                     | 7                     | 60                    | 0.67                                                           | 490                              | 1.7                              | 13                               | 16                             | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK8P60W     |                          | ±30                     | 8                     | 80                    | 0.5                                                            | 570                              | 2.5                              | 16                               | 18.5                           | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK8P60W5    |                          | ±30                     | 8                     | 80                    | 0.56                                                           | 590                              | 1.7                              | 16                               | 22                             | DTMOSIV(HSD)   |                              |                                                                                       |
|                                                                                             | TK10P60W    |                          | ±30                     | 9.7                   | 80                    | 0.43                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK380P60Y * |                          | ±30                     | 9.7                   | 80                    | 0.38                                                           | 590                              | 2.5                              | 23                               | 20                             | DTMOSV         |                              |                                                                                       |
|                                                                                             | TK12P60W    |                          | ±30                     | 11.5                  | 100                   | 0.34                                                           | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK290P60Y * |                          | ±30                     | 11.5                  | 100                   | 0.29                                                           | 730                              | 2.5                              | 26                               | 25                             | DTMOSV         |                              |                                                                                       |
|                                                                                             | TK5P65W     | 650                      | ±30                     | 5.2                   | 60                    | 1.22                                                           | 380                              | 1.5                              | 10                               | 10.5                           | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK6P65W     |                          | ±30                     | 5.8                   | 60                    | 1.05                                                           | 390                              | 1.7                              | 12                               | 11                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK7P65W     |                          | ±30                     | 6.8                   | 60                    | 0.8                                                            | 490                              | 1.7                              | 13                               | 15                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK560P65Y * |                          | ±30                     | 7                     | 60                    | 0.56                                                           | 380                              | 2.5                              | 18                               | 14.5                           | DTMOSV         |                              |                                                                                       |
|                                                                                             | TK8P65W     |                          | ±30                     | 7.8                   | 80                    | 0.67                                                           | 570                              | 2.5                              | 16                               | 16                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK9P65W     |                          | ±30                     | 9.3                   | 80                    | 0.56                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK380P65Y * |                          | ±30                     | 9.7                   | 80                    | 0.38                                                           | 590                              | 2.5                              | 23                               | 20                             | DTMOSV         |                              |                                                                                       |
|                                                                                             | TK11P65W    |                          | ±30                     | 11.1                  | 100                   | 0.44                                                           | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                       |
|                                                                                             | TK290P65Y * |                          | ±30                     | 11.5                  | 100                   | 0.29                                                           | 730                              | 2.5                              | 26                               | 25                             | DTMOSV         |                              |                                                                                       |

\*: New Product / 新製品

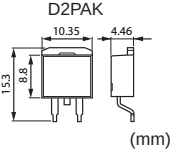
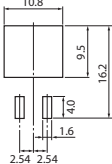
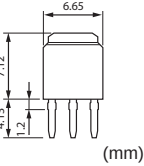
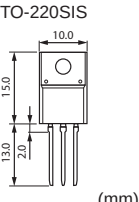


(\*1) Notice : Please use the source1 pin for gate input signal return. Make sure that the main current flows into the source2 pins.

(\*1) ご注意 : ソース1はゲート入力信号のリターン用として使用してください。主電流はソース2を流すように配線パターンを設計してください。

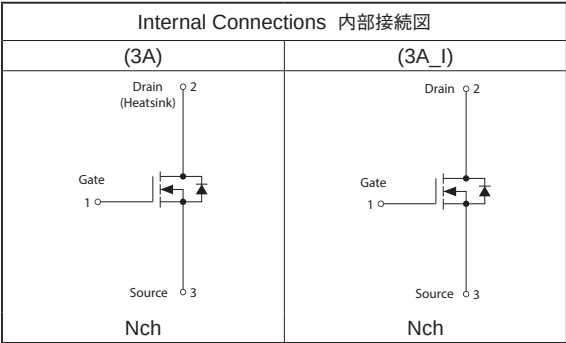
・ The internal connection diagrams only show the general configurations of the circuits.

・ 内部接続図はイメージ図です。

| Package                                                                                     | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series         | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm)                                                    |
|---------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|----------------|------------------------------|-------------------------------------------------------------------------------------|
|                                                                                             |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |                |                              |                                                                                     |
| <br>(mm)    | TK16G60W    | 600                      | ±30                     | 15.8                  | 130                   | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        | (3A)                         |  |
|                                                                                             | TK16G60W5   |                          | ±30                     | 15.8                  | 130                   | 0.23                                                           | 1350                             | 4                                | 35                               | 43                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK20G60W    |                          | ±30                     | 20                    | 165                   | 0.155                                                          | 1680                             | 7                                | 40                               | 48                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK14G65W    | 650                      | ±30                     | 13.7                  | 130                   | 0.25                                                           | 1300                             | 4                                | 35                               | 35                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK14G65W5   |                          | ±30                     | 13.7                  | 130                   | 0.3                                                            | 1300                             | 4                                | 35                               | 40                             | DTMOSIV(HSD)   |                              |                                                                                     |
| <br>(mm)   | TK5Q60W     | 600                      | ±30                     | 5.4                   | 60                    | 0.9                                                            | 380                              | 1.5                              | 10                               | 10.5                           | DTMOSIV        | (3A)                         |                                                                                     |
|                                                                                             | TK6Q60W     |                          | ±30                     | 6.2                   | 60                    | 0.82                                                           | 390                              | 1.7                              | 12                               | 12                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK7Q60W     |                          | ±30                     | 7                     | 60                    | 0.6                                                            | 490                              | 1.7                              | 13                               | 15                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK8Q60W     |                          | ±30                     | 8                     | 80                    | 0.5                                                            | 570                              | 2.5                              | 16                               | 18.5                           | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK10Q60W    |                          | ±30                     | 9.7                   | 80                    | 0.43                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK12Q60W    |                          | ±30                     | 11.5                  | 100                   | 0.34                                                           | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK5Q65W     | 650                      | ±30                     | 5.2                   | 60                    | 1.22                                                           | 380                              | 1.5                              | 10                               | 10.5                           | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK6Q65W     |                          | ±30                     | 5.8                   | 60                    | 1.05                                                           | 390                              | 1.7                              | 12                               | 11                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK7Q65W     |                          | ±30                     | 6.8                   | 60                    | 0.8                                                            | 490                              | 1.7                              | 13                               | 15                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK8Q65W     |                          | ±30                     | 7.8                   | 80                    | 0.67                                                           | 570                              | 2.5                              | 16                               | 16                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK9Q65W     |                          | ±30                     | 9.3                   | 80                    | 0.56                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK11Q65W    |                          | ±30                     | 11.1                  | 100                   | 0.44                                                           | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                     |
| <br>(mm) | TK10A50W    | 500                      | ±30                     | 9.7                   | 30                    | 0.38                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        | (3A_I)                       |                                                                                     |
|                                                                                             | TK12A50W    |                          | ±30                     | 11.5                  | 35                    | 0.3                                                            | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK19A50W    |                          | ±30                     | 18.5                  | 40                    | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK5A60W5    | 600                      | ±30                     | 4.5                   | 30                    | 0.95                                                           | 370                              | 1                                | 11                               | 11.5                           | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK5A60W     |                          | ±30                     | 5.4                   | 30                    | 0.9                                                            | 380                              | 1.5                              | 10                               | 10.5                           | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK6A60W     |                          | ±30                     | 6.2                   | 30                    | 0.75                                                           | 390                              | 1.7                              | 12                               | 12                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK560A60Y * |                          | ±30                     | 7                     | 30                    | 0.56                                                           | 380                              | 2.5                              | 18                               | 14.5                           | DTMOSV         |                              |                                                                                     |
|                                                                                             | TK7A60W     |                          | ±30                     | 7                     | 30                    | 0.6                                                            | 490                              | 1.7                              | 13                               | 15                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK7A60W5    |                          | ±30                     | 7                     | 30                    | 0.65                                                           | 490                              | 1.7                              | 13                               | 16                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK8A60W     |                          | ±30                     | 8                     | 30                    | 0.5                                                            | 570                              | 2.5                              | 16                               | 18.5                           | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK8A60W5    |                          | ±30                     | 8                     | 30                    | 0.54                                                           | 590                              | 1.7                              | 16                               | 22                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK10A60W    |                          | ±30                     | 9.7                   | 30                    | 0.38                                                           | 700                              | 2.3                              | 20                               | 20                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK10A60W5   |                          | ±30                     | 9.7                   | 30                    | 0.45                                                           | 720                              | 2                                | 20                               | 25                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK380A60Y * |                          | ±30                     | 9.7                   | 30                    | 0.38                                                           | 590                              | 2.5                              | 23                               | 20                             | DTMOSV         |                              |                                                                                     |
|                                                                                             | TK12A60W    |                          | ±30                     | 11.5                  | 35                    | 0.3                                                            | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK290A60Y * |                          | ±30                     | 11.5                  | 35                    | 0.29                                                           | 730                              | 2.5                              | 26                               | 25                             | DTMOSV         |                              |                                                                                     |
|                                                                                             | TK16A60W    |                          | ±30                     | 15.8                  | 40                    | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK16A60W5   |                          | ±30                     | 15.8                  | 40                    | 0.23                                                           | 1350                             | 4                                | 35                               | 43                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK20A60W    |                          | ±30                     | 20                    | 45                    | 0.155                                                          | 1680                             | 7                                | 40                               | 48                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK20A60W5   |                          | ±30                     | 20                    | 45                    | 0.175                                                          | 1800                             | 5.5                              | 45                               | 55                             | DTMOSIV(HSD)   |                              |                                                                                     |
|                                                                                             | TK25A60X    |                          | ±30                     | 25                    | 45                    | 0.125                                                          | 2400                             | 6                                | 60                               | 40                             | DTMOSIV-H      |                              |                                                                                     |
|                                                                                             | TK25A60X5   |                          | ±30                     | 25                    | 45                    | 0.14                                                           | 2400                             | 6                                | 60                               | 60                             | DTMOSIV-H(HSD) |                              |                                                                                     |
|                                                                                             | TK31A60W    |                          | ±30                     | 30.8                  | 45                    | 0.088                                                          | 3000                             | 9.5                              | 70                               | 86                             | DTMOSIV        |                              |                                                                                     |
|                                                                                             | TK39A60W    |                          | ±30                     | 38.8                  | 50                    | 0.065                                                          | 4100                             | 10                               | 90                               | 110                            | DTMOSIV        |                              |                                                                                     |

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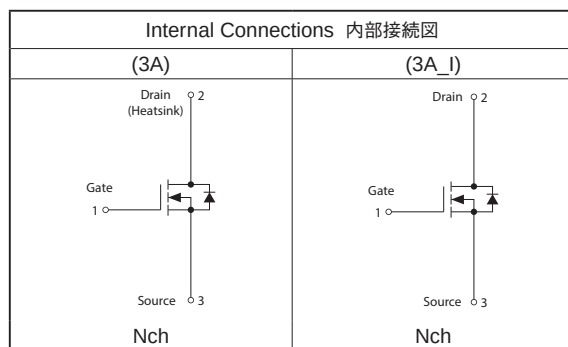
\*: New Product / 新製品



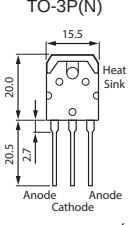
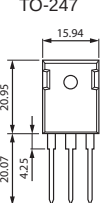
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

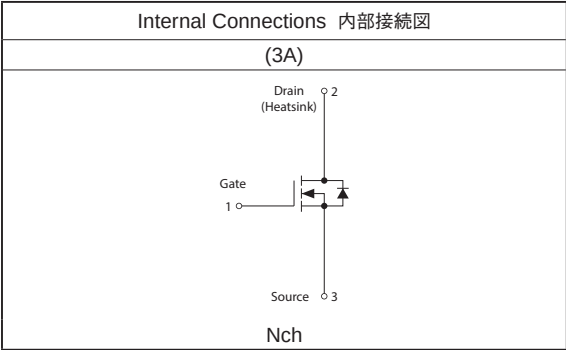
| Package                        | Part Number | Absolute Maximum Ratings |                  |              |              | $R_{DS(ON)}$<br>max ( $\Omega$ )<br>$ V_{GS}  = 10\text{ V}$ | $C_{iss}$<br>typ.<br>(pF) | $C_{rss}$<br>typ.<br>(pF) | $C_{oss}$<br>typ.<br>(pF) | $Q_g$<br>typ.<br>(nC) | Series         | Internal<br>Con-<br>nec-<br>tions | Land Pattern<br>Examples<br>(mm) |
|--------------------------------|-------------|--------------------------|------------------|--------------|--------------|--------------------------------------------------------------|---------------------------|---------------------------|---------------------------|-----------------------|----------------|-----------------------------------|----------------------------------|
|                                |             | $V_{DSS}$<br>(V)         | $V_{GSS}$<br>(V) | $I_D$<br>(A) | $P_D$<br>(W) |                                                              |                           |                           |                           |                       |                |                                   |                                  |
| (Continued from previous page) | TK5A65W     | 650                      | $\pm 30$         | 5.2          | 30           | 1.2                                                          | 380                       | 1.5                       | 10                        | 10.5                  | DTMOSIV        | (3A_I)                            |                                  |
|                                | TK6A65W     |                          | $\pm 30$         | 5.8          | 30           | 1                                                            | 390                       | 1.7                       | 12                        | 11                    | DTMOSIV        |                                   |                                  |
|                                | TK7A65W     |                          | $\pm 30$         | 6.8          | 30           | 0.78                                                         | 490                       | 1.7                       | 13                        | 15                    | DTMOSIV        |                                   |                                  |
|                                | TK560A65Y * |                          | $\pm 30$         | 7            | 30           | 0.56                                                         | 380                       | 2.5                       | 18                        | 14.5                  | DTMOSV         |                                   |                                  |
|                                | TK8A65W     |                          | $\pm 30$         | 7.8          | 30           | 0.65                                                         | 570                       | 2.5                       | 16                        | 16                    | DTMOSIV        |                                   |                                  |
|                                | TK9A65W     |                          | $\pm 30$         | 9.3          | 30           | 0.5                                                          | 700                       | 2.3                       | 20                        | 20                    | DTMOSIV        |                                   |                                  |
|                                | TK380A65Y * |                          | $\pm 30$         | 9.7          | 30           | 0.38                                                         | 590                       | 2.5                       | 23                        | 20                    | DTMOSV         |                                   |                                  |
|                                | TK11A65W    |                          | $\pm 30$         | 11.1         | 35           | 0.39                                                         | 890                       | 2.8                       | 23                        | 25                    | DTMOSIV        |                                   |                                  |
|                                | TK290A65Y * |                          | $\pm 30$         | 11.5         | 35           | 0.29                                                         | 730                       | 2.5                       | 26                        | 25                    | DTMOSV         |                                   |                                  |
|                                | TK14A65W    |                          | $\pm 30$         | 13.7         | 40           | 0.25                                                         | 1300                      | 4                         | 35                        | 35                    | DTMOSIV        |                                   |                                  |
|                                | TK14A65W5   |                          | $\pm 30$         | 13.7         | 40           | 0.3                                                          | 1300                      | 4                         | 35                        | 40                    | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK17A65W    |                          | $\pm 30$         | 17.3         | 45           | 0.2                                                          | 1800                      | 7                         | 40                        | 45                    | DTMOSIV        |                                   |                                  |
|                                | TK17A65W5   |                          | $\pm 30$         | 17.3         | 45           | 0.23                                                         | 1800                      | 5.5                       | 45                        | 50                    | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK22A65X *  |                          | $\pm 30$         | 22           | 45           | 0.15                                                         | 2400                      | 6                         | 60                        | 50                    | DTMOSIV-H      |                                   |                                  |
|                                | TK22A65X5 * |                          | $\pm 30$         | 22           | 45           | 0.16                                                         | 2400                      | 6                         | 60                        | 50                    | DTMOSIV-H(HSD) |                                   |                                  |
|                                | TK28A65W    |                          | $\pm 30$         | 27.6         | 45           | 0.11                                                         | 3000                      | 8                         | 70                        | 75                    | DTMOSIV        |                                   |                                  |
|                                | TK35A65W    |                          | $\pm 30$         | 35           | 50           | 0.08                                                         | 4100                      | 9                         | 90                        | 100                   | DTMOSIV        |                                   |                                  |
|                                | TK35A65W5   |                          | $\pm 30$         | 35           | 50           | 0.095                                                        | 4100                      | 9                         | 90                        | 115                   | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK7A80W *   | 800                      | $\pm 20$         | 6.5          | 35           | 0.95                                                         | 700                       | 1.2                       | 20                        | 13                    | DTMOSIV        |                                   |                                  |
|                                | TK10A80W *  |                          | $\pm 20$         | 9.5          | 40           | 0.55                                                         | 1150                      | 2                         | 27                        | 19                    | DTMOSIV        |                                   |                                  |
|                                | TK12A80W    |                          | $\pm 20$         | 11.5         | 45           | 0.45                                                         | 1400                      | 3                         | 29                        | 23                    | DTMOSIV        |                                   |                                  |
|                                | TK17A80W    |                          | $\pm 20$         | 17           | 45           | 0.29                                                         | 2050                      | 2                         | 42                        | 32                    | DTMOSIV        |                                   |                                  |
|                                |             |                          |                  |              |              |                                                              |                           |                           |                           |                       |                |                                   |                                  |
|                                | TK10E60W    | 600                      | $\pm 30$         | 9.7          | 100          | 0.38                                                         | 700                       | 2.3                       | 20                        | 20                    | DTMOSIV        | (3A)                              |                                  |
|                                | TK12E60W    |                          | $\pm 30$         | 11.5         | 110          | 0.3                                                          | 890                       | 2.8                       | 23                        | 25                    | DTMOSIV        |                                   |                                  |
|                                | TK16E60W    |                          | $\pm 30$         | 15.8         | 130          | 0.19                                                         | 1350                      | 4                         | 35                        | 38                    | DTMOSIV        |                                   |                                  |
|                                | TK16E60W5   |                          | $\pm 30$         | 15.8         | 130          | 0.23                                                         | 1350                      | 4                         | 35                        | 43                    | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK20E60W    |                          | $\pm 30$         | 20           | 165          | 0.155                                                        | 1680                      | 7                         | 40                        | 48                    | DTMOSIV        |                                   |                                  |
|                                | TK20E60W5   |                          | $\pm 30$         | 20           | 165          | 0.175                                                        | 1800                      | 5.5                       | 45                        | 55                    | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK25E60X    |                          | $\pm 30$         | 25           | 180          | 0.125                                                        | 2400                      | 6                         | 60                        | 40                    | DTMOSIV-H      |                                   |                                  |
|                                | TK25E60X5   |                          | $\pm 30$         | 25           | 180          | 0.14                                                         | 2400                      | 6                         | 60                        | 60                    | DTMOSIV-H(HSD) |                                   |                                  |
|                                | TK31E60W    | 650                      | $\pm 30$         | 30.8         | 230          | 0.088                                                        | 3000                      | 9.5                       | 70                        | 86                    | DTMOSIV        |                                   |                                  |
|                                | TK31E60X    |                          | $\pm 30$         | 30.8         | 230          | 0.088                                                        | 3000                      | 7                         | 70                        | 65                    | DTMOSIV-H      |                                   |                                  |
|                                | TK14E65W    |                          | $\pm 30$         | 13.7         | 130          | 0.25                                                         | 1300                      | 4                         | 35                        | 35                    | DTMOSIV        |                                   |                                  |
|                                | TK14E65W5   |                          | $\pm 30$         | 13.7         | 130          | 0.3                                                          | 1300                      | 4                         | 35                        | 40                    | DTMOSIV(HSD)   |                                   |                                  |
|                                | TK17E65W    | 800                      | $\pm 30$         | 17.3         | 165          | 0.2                                                          | 1800                      | 7                         | 40                        | 45                    | DTMOSIV        |                                   |                                  |
|                                | TK28E65W    |                          | $\pm 30$         | 27.6         | 230          | 0.11                                                         | 3000                      | 8                         | 70                        | 75                    | DTMOSIV        |                                   |                                  |
|                                | TK7E80W *   |                          | $\pm 20$         | 6.5          | 110          | 0.95                                                         | 700                       | 1.2                       | 20                        | 13                    | DTMOSIV        |                                   |                                  |
|                                | TK10E80W *  |                          | $\pm 20$         | 9.5          | 130          | 0.55                                                         | 1150                      | 2                         | 27                        | 19                    | DTMOSIV        |                                   |                                  |
|                                | TK12E80W    |                          | $\pm 20$         | 11.5         | 165          | 0.45                                                         | 1400                      | 3                         | 29                        | 23                    | DTMOSIV        |                                   |                                  |
|                                | TK17E80W    |                          | $\pm 20$         | 17           | 180          | 0.29                                                         | 2050                      | 2                         | 42                        | 32                    | DTMOSIV        |                                   |                                  |

\*: New Product / 新製品



- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                                   | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series         | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm) |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|----------------|------------------------------|----------------------------------|
|                                                                                                                                           |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |                |                              |                                  |
| <div><div>TO-3P(N)</div><div></div><div>(mm)</div></div> | TK12J60W    | 600                      | ±30                     | 11.5                  | 110                   | 0.3                                                            | 890                              | 2.8                              | 23                               | 25                             | DTMOSIV        | (3A)                         |                                  |
|                                                                                                                                           | TK16J60W    |                          | ±30                     | 15.8                  | 130                   | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK16J60W5   |                          | ±30                     | 15.8                  | 130                   | 0.23                                                           | 1350                             | 4                                | 35                               | 43                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK20J60W    |                          | ±30                     | 20                    | 165                   | 0.155                                                          | 1680                             | 7                                | 40                               | 48                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK20J60W5   |                          | ±30                     | 20                    | 165                   | 0.175                                                          | 1800                             | 5.5                              | 45                               | 55                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK31J60W    |                          | ±30                     | 30.8                  | 230                   | 0.088                                                          | 3000                             | 9.5                              | 70                               | 86                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK31J60W5   |                          | ±30                     | 30.8                  | 230                   | 0.099                                                          | 3000                             | 9.5                              | 70                               | 105                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK39J60W    |                          | ±30                     | 38.8                  | 270                   | 0.065                                                          | 4100                             | 10                               | 90                               | 110                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK39J60W5   |                          | ±30                     | 38.8                  | 270                   | 0.074                                                          | 4100                             | 10                               | 90                               | 135                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK62J60W    |                          | ±30                     | 61.8                  | 400                   | 0.04                                                           | 6500                             | 20                               | 140                              | 180                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK62J60W5   |                          | ±30                     | 61.8                  | 400                   | 0.045                                                          | 6500                             | 16                               | 140                              | 205                            | DTMOSIV(HSD)   |                              |                                  |
| <div><div>TO-247</div><div></div><div>(mm)</div></div>  | TK16N60W    | 600                      | ±30                     | 15.8                  | 130                   | 0.19                                                           | 1350                             | 4                                | 35                               | 38                             | DTMOSIV        | (3A)                         |                                  |
|                                                                                                                                           | TK16N60W5   |                          | ±30                     | 15.8                  | 130                   | 0.23                                                           | 1350                             | 4                                | 35                               | 43                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK20N60W    |                          | ±30                     | 20                    | 165                   | 0.155                                                          | 1680                             | 7                                | 40                               | 48                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK20N60W5   |                          | ±30                     | 20                    | 165                   | 0.175                                                          | 1800                             | 5.5                              | 45                               | 55                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK25N60X    |                          | ±30                     | 25                    | 180                   | 0.125                                                          | 2400                             | 6                                | 60                               | 40                             | DTMOSIV-H      |                              |                                  |
|                                                                                                                                           | TK25N60X5   |                          | ±30                     | 25                    | 180                   | 0.14                                                           | 2400                             | 6                                | 60                               | 60                             | DTMOSIV-H(HSD) |                              |                                  |
|                                                                                                                                           | TK31N60W    |                          | ±30                     | 30.8                  | 230                   | 0.088                                                          | 3000                             | 9.5                              | 70                               | 86                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK31N60W5   |                          | ±30                     | 30.8                  | 230                   | 0.099                                                          | 3000                             | 9.5                              | 70                               | 105                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK31N60X    |                          | ±30                     | 30.8                  | 230                   | 0.088                                                          | 3000                             | 7                                | 70                               | 65                             | DTMOSIV-H      |                              |                                  |
|                                                                                                                                           | TK39N60W    |                          | ±30                     | 38.8                  | 270                   | 0.065                                                          | 4100                             | 10                               | 90                               | 110                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK39N60W5   |                          | ±30                     | 38.8                  | 270                   | 0.074                                                          | 4100                             | 10                               | 90                               | 135                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK39N60X    |                          | ±30                     | 38.8                  | 270                   | 0.065                                                          | 4100                             | 8                                | 90                               | 85                             | DTMOSIV-H      |                              |                                  |
|                                                                                                                                           | TK62N60W    |                          | ±30                     | 61.8                  | 400                   | 0.04                                                           | 6500                             | 20                               | 140                              | 180                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK62N60W5   |                          | ±30                     | 61.8                  | 400                   | 0.045                                                          | 6500                             | 16                               | 140                              | 205                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK62N60X    |                          | ±30                     | 61.8                  | 400                   | 0.04                                                           | 6500                             | 15                               | 140                              | 135                            | DTMOSIV-H      |                              |                                  |
|                                                                                                                                           | TK14N65W    | 650                      | ±30                     | 13.7                  | 130                   | 0.25                                                           | 1300                             | 4                                | 35                               | 35                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK14N65W5   |                          | ±30                     | 13.7                  | 130                   | 0.3                                                            | 1300                             | 4                                | 35                               | 40                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK17N65W    |                          | ±30                     | 17.3                  | 165                   | 0.2                                                            | 1800                             | 7                                | 40                               | 45                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK28N65W    |                          | ±30                     | 27.6                  | 230                   | 0.11                                                           | 3000                             | 8                                | 70                               | 75                             | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK28N65W5   |                          | ±30                     | 27.6                  | 230                   | 0.13                                                           | 3000                             | 8                                | 70                               | 90                             | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK35N65W    |                          | ±30                     | 35                    | 270                   | 0.08                                                           | 4100                             | 9                                | 90                               | 100                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK35N65W5   |                          | ±30                     | 35                    | 270                   | 0.095                                                          | 4100                             | 9                                | 90                               | 115                            | DTMOSIV(HSD)   |                              |                                  |
|                                                                                                                                           | TK49N65W    |                          | ±30                     | 49.2                  | 400                   | 0.055                                                          | 6500                             | 15                               | 140                              | 160                            | DTMOSIV        |                              |                                  |
|                                                                                                                                           | TK49N65W5   |                          | ±30                     | 49.2                  | 400                   | 0.057                                                          | 6500                             | 15                               | 140                              | 185                            | DTMOSIV(HSD)   |                              |                                  |

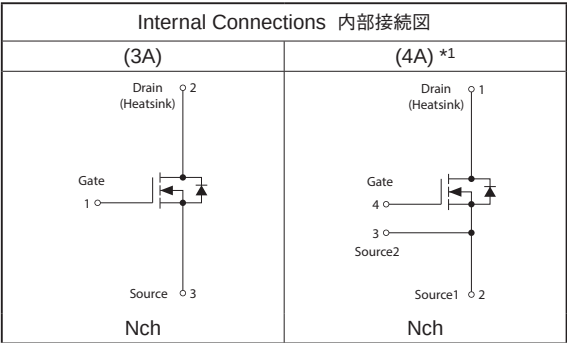


- The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

| Package                                          | Part Number | Absolute Maximum Ratings |                  |              |              | $R_{DS(ON)}$<br>max (Ω)<br>$ V_{GS}  = 10\text{ V}$ | $C_{iss}$<br>typ.<br>(pF) | $C_{rss}$<br>typ.<br>(pF) | $C_{oss}$<br>typ.<br>(pF) | $Q_g$<br>typ.<br>(nC) | Series | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm) |
|--------------------------------------------------|-------------|--------------------------|------------------|--------------|--------------|-----------------------------------------------------|---------------------------|---------------------------|---------------------------|-----------------------|--------|------------------------------|----------------------------------|
|                                                  |             | $V_{DSS}$<br>(V)         | $V_{GSS}$<br>(V) | $I_D$<br>(A) | $P_D$<br>(W) |                                                     |                           |                           |                           |                       |        |                              |                                  |
| <div>TO-247-4L</div> <div></div> <div>(mm)</div> | TK25Z60X    | *                        | 600              | ±30          | 25           | 180                                                 | 0.125                     | 2400                      | 6                         | 60                    | 40     | (4A)                         |                                  |
|                                                  | TK31Z60X    | *                        |                  | ±30          | 30.8         | 230                                                 | 0.088                     | 3000                      | 7                         | 70                    | 65     |                              |                                  |
|                                                  | TK39Z60X    | *                        |                  | ±30          | 38.8         | 270                                                 | 0.065                     | 4100                      | 8                         | 90                    | 85     |                              |                                  |
|                                                  | TK62Z60X    | *                        |                  | ±30          | 61.8         | 400                                                 | 0.04                      | 6500                      | 15                        | 140                   | 135    |                              |                                  |
| <div>TO-3P(L)</div> <div></div> <div>(mm)</div>  | TK100L60W   |                          | 600              | ±30          | 100          | 797                                                 | 0.018                     | 15000                     | 50                        | 320                   | 360    | (3A)                         |                                  |

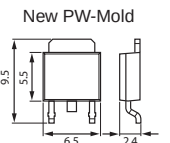
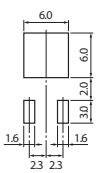
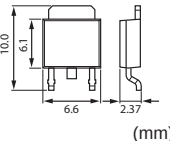
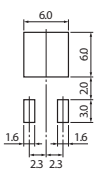
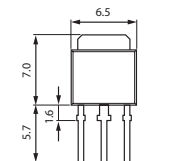
\*: New Product / 新製品

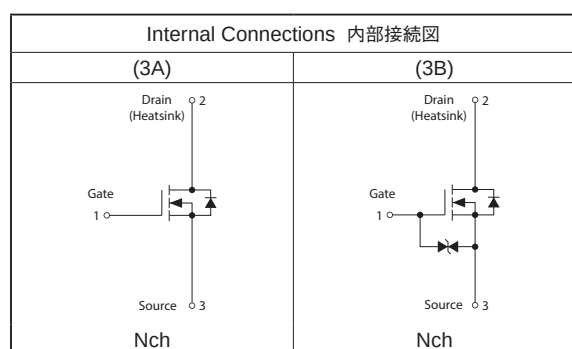


- (\*1) Notice : Please use the source1 pin for gate input signal return. Make sure that the main current flows into the source2 pins.
- (\*1) ご注意：ソース1はゲート入力信号のリターン用として使用してください。主電流はソース2を流すように配線パターンを設計してください。
- ・ The internal connection diagrams only show the general configurations of the circuits.
  - ・ 内部接続図はイメージ図です。

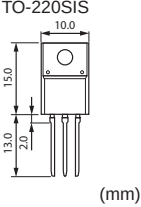
**$\pi$ -MOS Series /  $\pi$ -MOSシリーズ**  
(Single N-Channel) / (シングルNチャネル)

(1/4)

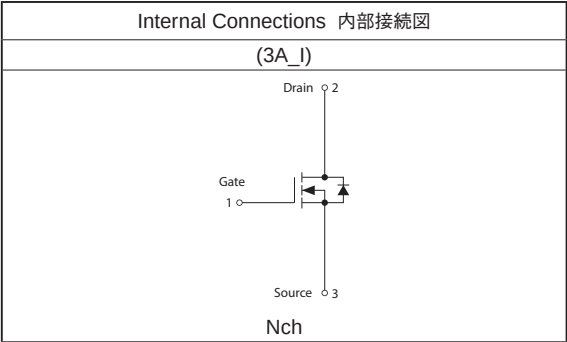
| Package                                                                                                    | Part Number | Absolute Maximum Ratings |                  |              |              | $R_{DS(ON)}$<br>max ( $\Omega$ )<br>  $V_{GS}$   =<br>10 V | Ciss<br>typ.<br>(pF) | Crss<br>typ.<br>(pF) | Coss<br>typ.<br>(pF) | Qg<br>typ.<br>(nC) | Series         | Internal<br>Connections | Land Pattern<br>Examples<br>(mm)                                                    |
|------------------------------------------------------------------------------------------------------------|-------------|--------------------------|------------------|--------------|--------------|------------------------------------------------------------|----------------------|----------------------|----------------------|--------------------|----------------|-------------------------|-------------------------------------------------------------------------------------|
|                                                                                                            |             | $V_{DSS}$<br>(V)         | $V_{GSS}$<br>(V) | $I_D$<br>(A) | $P_D$<br>(W) |                                                            |                      |                      |                      |                    |                |                         |                                                                                     |
| New PW-Mold<br><br>(mm)    | TK2P60D     | 600                      | $\pm 30$         | 2            | 60           | 4.3                                                        | 280                  | 1.5                  | 30                   | 7                  | $\pi$ -MOSVII  | (3A)                    |  |
|                                                                                                            | TK1P90A     | 900                      | $\pm 30$         | 1            | 20           | 9                                                          | 320                  | 10                   | 35                   | 13                 | $\pi$ -MOSIV   | (3B)                    |                                                                                     |
| DPAK<br><br>(mm)           | TK3P50D     | 500                      | $\pm 30$         | 3            | 60           | 3                                                          | 280                  | 1.5                  | 30                   | 7                  | $\pi$ -MOSVII  | (3A)                    |  |
|                                                                                                            | TK4P50D     |                          | $\pm 30$         | 4            | 80           | 2                                                          | 380                  | 3                    | 45                   | 9                  | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK5P50D     |                          | $\pm 30$         | 5            | 80           | 1.5                                                        | 490                  | 3                    | 55                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK7P50D     |                          | $\pm 30$         | 7            | 100          | 1.22                                                       | 600                  | 4                    | 70                   | 12                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK5P53D     | 525                      | $\pm 30$         | 5            | 80           | 1.5                                                        | 540                  | 3                    | 60                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK6P53D     |                          | $\pm 30$         | 6            | 100          | 1.3                                                        | 600                  | 4                    | 70                   | 12                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK4P55DA    | 550                      | $\pm 30$         | 3.5          | 80           | 2.45                                                       | 380                  | 2.5                  | 45                   | 9                  | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK4P55D     |                          | $\pm 30$         | 4            | 80           | 1.88                                                       | 490                  | 3                    | 55                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK4P60DA    | 600                      | $\pm 30$         | 3.5          | 80           | 2.2                                                        | 490                  | 3                    | 55                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK4P60DB    |                          | $\pm 30$         | 3.7          | 80           | 2                                                          | 540                  | 3                    | 60                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK4P60D     |                          | $\pm 30$         | 4            | 100          | 1.7                                                        | 600                  | 4                    | 70                   | 12                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK3P80E     | 800                      | $\pm 30$         | 3            | 80           | 4.9                                                        | 500                  | 4                    | 40                   | 12                 | $\pi$ -MOSVIII |                         |                                                                                     |
|                                                                                                            | TK2P90E     | 900                      | $\pm 30$         | 2            | 80           | 5.9                                                        | 500                  | 4                    | 40                   | 12                 | $\pi$ -MOSVIII |                         |                                                                                     |
| New PW-Mold2<br><br>(mm) | TK2Q60D     | 600                      | $\pm 30$         | 2            | 60           | 4.3                                                        | 280                  | 1.5                  | 30                   | 7                  | $\pi$ -MOSVII  | (3A)                    |                                                                                     |
|                                                                                                            | TK4Q60DA    |                          | $\pm 30$         | 3.5          | 80           | 2.2                                                        | 490                  | 3                    | 55                   | 11                 | $\pi$ -MOSVII  |                         |                                                                                     |
|                                                                                                            | TK1Q90A     | 900                      | $\pm 30$         | 1            | 20           | 9                                                          | 320                  | 10                   | 35                   | 13                 | $\pi$ -MOSIV   | (3B)                    |                                                                                     |



- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

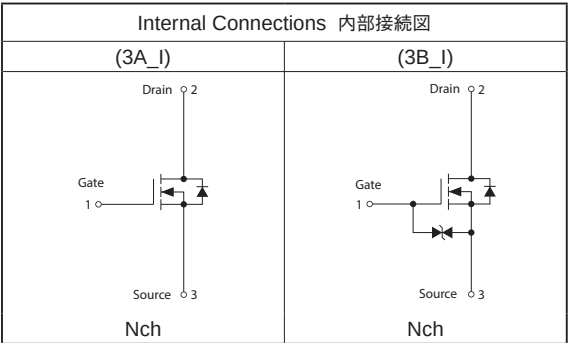
| Package                                                                                    | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series   | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm) |
|--------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|----------|------------------------------|----------------------------------|
|                                                                                            |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |          |                              |                                  |
| <br>(mm) | TK5A45DA    | 450                      | ±30                     | 4.5                   | 30                    | 1.75                                                           | 380                              | 2.5                              | 45                               | 9                              | π-MOSVII | (3A_I)                       |                                  |
|                                                                                            | TK6A45DA    |                          | ±30                     | 5.5                   | 35                    | 1.35                                                           | 490                              | 3                                | 55                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK7A45DA    |                          | ±30                     | 6.5                   | 35                    | 1.2                                                            | 540                              | 3                                | 60                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK8A45D     |                          | ±30                     | 8                     | 35                    | 0.9                                                            | 700                              | 4                                | 80                               | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK9A45D     |                          | ±30                     | 9                     | 40                    | 0.77                                                           | 800                              | 4                                | 100                              | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK11A45D    |                          | ±30                     | 11                    | 40                    | 0.62                                                           | 1050                             | 5                                | 100                              | 20                             | π-MOSVII |                              |                                  |
|                                                                                            | TK12A45D    |                          | ±30                     | 12                    | 45                    | 0.52                                                           | 1200                             | 6                                | 120                              | 24                             | π-MOSVII |                              |                                  |
|                                                                                            | TK13A45D    |                          | ±30                     | 13                    | 45                    | 0.46                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII |                              |                                  |
|                                                                                            | TK19A45D    |                          | ±30                     | 19                    | 50                    | 0.25                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII |                              |                                  |
|                                                                                            | TK4A50D     | 500                      | ±30                     | 4                     | 30                    | 2                                                              | 380                              | 2.5                              | 45                               | 9                              | π-MOSVII |                              |                                  |
|                                                                                            | TK5A50D     |                          | ±30                     | 5                     | 35                    | 1.5                                                            | 490                              | 3                                | 55                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK6A50D     |                          | ±30                     | 6                     | 35                    | 1.4                                                            | 540                              | 3                                | 60                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK7A50D     |                          | ±30                     | 7                     | 35                    | 1.22                                                           | 600                              | 4                                | 70                               | 12                             | π-MOSVII |                              |                                  |
|                                                                                            | TK8A50DA    |                          | ±30                     | 7.5                   | 35                    | 1.04                                                           | 700                              | 4                                | 80                               | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK8A50D     |                          | ±30                     | 8                     | 40                    | 0.85                                                           | 800                              | 4                                | 100                              | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK10A50D    |                          | ±30                     | 10                    | 45                    | 0.72                                                           | 1050                             | 5                                | 100                              | 20                             | π-MOSVII |                              |                                  |
|                                                                                            | TK11A50D    |                          | ±30                     | 11                    | 45                    | 0.6                                                            | 1200                             | 6                                | 120                              | 24                             | π-MOSVII |                              |                                  |
|                                                                                            | TK12A50D    |                          | ±30                     | 12                    | 45                    | 0.52                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII |                              |                                  |
|                                                                                            | TK13A50DA   |                          | ±30                     | 12.5                  | 45                    | 0.47                                                           | 1550                             | 7                                | 165                              | 28                             | π-MOSVII |                              |                                  |
|                                                                                            | TK13A50D    |                          | ±30                     | 13                    | 45                    | 0.4                                                            | 1800                             | 9                                | 190                              | 38                             | π-MOSVII |                              |                                  |
|                                                                                            | TK15A50D    |                          | ±30                     | 15                    | 50                    | 0.3                                                            | 2300                             | 10                               | 250                              | 40                             | π-MOSVII |                              |                                  |
|                                                                                            | TK18A50D    |                          | ±30                     | 18                    | 50                    | 0.27                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII |                              |                                  |
|                                                                                            | TK4A53D     | 525                      | ±30                     | 4                     | 35                    | 1.7                                                            | 490                              | 3                                | 55                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK5A53D     |                          | ±30                     | 5                     | 35                    | 1.5                                                            | 540                              | 3                                | 60                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK6A53D     |                          | ±30                     | 6                     | 35                    | 1.3                                                            | 600                              | 4                                | 70                               | 12                             | π-MOSVII |                              |                                  |
|                                                                                            | TK12A53D    |                          | ±30                     | 12                    | 45                    | 0.58                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII |                              |                                  |
|                                                                                            | TK4A55DA    | 550                      | ±30                     | 3.5                   | 30                    | 2.45                                                           | 380                              | 2.5                              | 45                               | 9                              | π-MOSVII |                              |                                  |
|                                                                                            | TK4A55D     |                          | ±30                     | 4                     | 35                    | 1.88                                                           | 490                              | 3                                | 55                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK5A55D     |                          | ±30                     | 5                     | 35                    | 1.7                                                            | 540                              | 3                                | 60                               | 11                             | π-MOSVII |                              |                                  |
|                                                                                            | TK6A55DA    |                          | ±30                     | 5.5                   | 35                    | 1.48                                                           | 600                              | 4                                | 70                               | 12                             | π-MOSVII |                              |                                  |
|                                                                                            | TK7A55D     |                          | ±30                     | 7                     | 35                    | 1.25                                                           | 700                              | 4                                | 80                               | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK8A55DA    |                          | ±30                     | 7.5                   | 40                    | 1.07                                                           | 800                              | 4                                | 100                              | 16                             | π-MOSVII |                              |                                  |
|                                                                                            | TK9A55DA    |                          | ±30                     | 8.5                   | 40                    | 0.86                                                           | 1050                             | 5                                | 100                              | 20                             | π-MOSVII |                              |                                  |
|                                                                                            | TK10A55D    |                          | ±30                     | 10                    | 45                    | 0.72                                                           | 1200                             | 6                                | 120                              | 24                             | π-MOSVII |                              |                                  |
|                                                                                            | TK11A55D    |                          | ±30                     | 11                    | 45                    | 0.63                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII |                              |                                  |
|                                                                                            | TK12A55D    |                          | ±30                     | 12                    | 45                    | 0.57                                                           | 1550                             | 7                                | 165                              | 28                             | π-MOSVII |                              |                                  |
|                                                                                            | TK13A55DA   |                          | ±30                     | 12.5                  | 45                    | 0.48                                                           | 1800                             | 9                                | 190                              | 38                             | π-MOSVII |                              |                                  |
|                                                                                            | TK14A55D    |                          | ±30                     | 14                    | 50                    | 0.37                                                           | 2300                             | 10                               | 250                              | 40                             | π-MOSVII |                              |                                  |
|                                                                                            | TK16A55D    |                          | ±30                     | 16                    | 50                    | 0.33                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII |                              |                                  |

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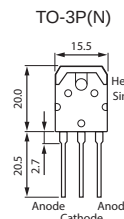
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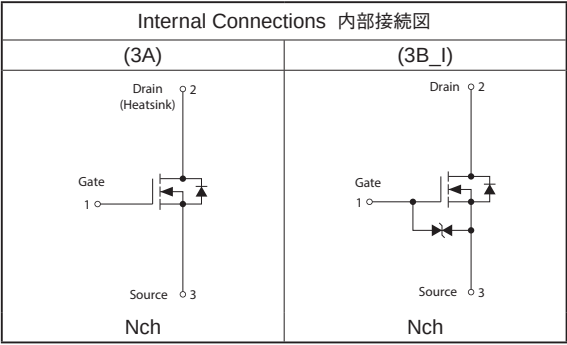
| Package                                                                                                                                                                                                                  | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series    | Internal<br>Con-<br>nec-<br>tions | Land Pattern<br>Examples<br>(mm) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|-----------|-----------------------------------|----------------------------------|
|                                                                                                                                                                                                                          |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |           |                                   |                                  |
| <div>(Continued from previous page)</div> <div><div>TO-220SIS</div><div><div><div>15.0</div><div>10.0</div><div>2.0</div><div>13.0</div></div><div><div>1</div><div>2</div><div>3</div></div></div><div>(mm)</div></div> | TK3A60DA    | 600                      | ±30                     | 2.5                   | 30                    | 2.8                                                            | 380                              | 2.5                              | 45                               | 9                              | π-MOSVII  | (3A_I)                            |                                  |
|                                                                                                                                                                                                                          | TK4A60DA    |                          | ±30                     | 3.5                   | 35                    | 2.2                                                            | 490                              | 3                                | 55                               | 11                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK4A60DB    |                          | ±30                     | 3.7                   | 35                    | 2                                                              | 540                              | 3                                | 60                               | 11                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK4A60D     |                          | ±30                     | 4                     | 35                    | 1.7                                                            | 600                              | 4                                | 70                               | 12                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK5A60D     |                          | ±30                     | 5                     | 35                    | 1.43                                                           | 700                              | 4                                | 80                               | 16                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK6A60D     |                          | ±30                     | 6                     | 40                    | 1.25                                                           | 800                              | 4                                | 100                              | 16                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK8A60DA    |                          | ±30                     | 7.5                   | 45                    | 1                                                              | 1050                             | 5                                | 100                              | 20                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK9A60D     |                          | ±30                     | 9                     | 45                    | 0.83                                                           | 1200                             | 6                                | 120                              | 24                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK10A60D    |                          | ±30                     | 10                    | 45                    | 0.75                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK11A60D    |                          | ±30                     | 11                    | 45                    | 0.65                                                           | 1550                             | 7                                | 165                              | 28                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK12A60D    |                          | ±30                     | 12                    | 45                    | 0.55                                                           | 1800                             | 9                                | 190                              | 38                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK13A60D    |                          | ±30                     | 13                    | 50                    | 0.43                                                           | 2300                             | 10                               | 250                              | 40                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK15A60D    |                          | ±30                     | 15                    | 50                    | 0.37                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK2A65D     | 650                      | ±30                     | 2                     | 30                    | 3.26                                                           | 380                              | 2.5                              | 45                               | 9                              | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK3A65DA    |                          | ±30                     | 2.5                   | 35                    | 2.51                                                           | 490                              | 3                                | 55                               | 11                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK3A65D     |                          | ±30                     | 3                     | 35                    | 2.25                                                           | 540                              | 3                                | 60                               | 11                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK4A65DA    |                          | ±30                     | 3.5                   | 35                    | 1.9                                                            | 600                              | 4                                | 70                               | 12                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK5A65DA    |                          | ±30                     | 4.5                   | 35                    | 1.67                                                           | 700                              | 4                                | 70                               | 16                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK5A65D     |                          | ±30                     | 5                     | 40                    | 1.43                                                           | 800                              | 4                                | 100                              | 16                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK6A65D     |                          | ±30                     | 6                     | 45                    | 1.11                                                           | 1050                             | 5                                | 100                              | 20                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK7A65D     |                          | ±30                     | 7                     | 45                    | 0.98                                                           | 1200                             | 6                                | 120                              | 24                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK8A65D     |                          | ±30                     | 8                     | 45                    | 0.84                                                           | 1350                             | 6                                | 135                              | 25                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK11A65D    |                          | ±30                     | 11                    | 45                    | 0.7                                                            | 1700                             | 8                                | 157                              | 30                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK12A65D    |                          | ±30                     | 12                    | 50                    | 0.54                                                           | 2300                             | 10                               | 200                              | 40                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK13A65D    |                          | ±30                     | 13                    | 50                    | 0.47                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII  |                                   |                                  |
|                                                                                                                                                                                                                          | TK4A80E     | 800                      | ±30                     | 4                     | 35                    | 3.5                                                            | 650                              | 6                                | 55                               | 15                             | π-MOSVIII |                                   |                                  |
|                                                                                                                                                                                                                          | TK5A80E     |                          | ±30                     | 5                     | 40                    | 2.4                                                            | 950                              | 8                                | 75                               | 20                             | π-MOSVIII |                                   |                                  |
|                                                                                                                                                                                                                          | 2SK4013     |                          | ±30                     | 6                     | 45                    | 1.7                                                            | 1400                             | 30                               | 130                              | 45                             | π-MOSIV   | (3B_I)                            |                                  |
|                                                                                                                                                                                                                          | TK6A80E     |                          | ±30                     | 6                     | 45                    | 1.7                                                            | 1350                             | 10                               | 110                              | 32                             | π-MOSVIII | (3A_I)                            |                                  |
|                                                                                                                                                                                                                          | TK10A80E    |                          | ±30                     | 10                    | 50                    | 1                                                              | 2000                             | 15                               | 150                              | 46                             | π-MOSVIII |                                   |                                  |
|                                                                                                                                                                                                                          | 2SK3566     | 900                      | ±30                     | 2.5                   | 40                    | 6.4                                                            | 470                              | 10                               | 50                               | 12                             | π-MOSIV   | (3B_I)                            |                                  |
|                                                                                                                                                                                                                          | TK3A90E     |                          | ±30                     | 2.5                   | 35                    | 4.6                                                            | 650                              | 6                                | 55                               | 15                             | π-MOSVIII | (3A_I)                            |                                  |
|                                                                                                                                                                                                                          | 2SK3564     |                          | ±30                     | 3                     | 40                    | 4.3                                                            | 700                              | 15                               | 75                               | 17                             | π-MOSIV   | (3B_I)                            |                                  |
|                                                                                                                                                                                                                          | 2SK3798     |                          | ±30                     | 4                     | 40                    | 3.5                                                            | 800                              | 20                               | 85                               | 26                             | π-MOSIV   |                                   |                                  |
|                                                                                                                                                                                                                          | TK5A90E     |                          | ±30                     | 4.5                   | 40                    | 3.1                                                            | 950                              | 8                                | 75                               | 20                             | π-MOSVIII | (3A_I)                            |                                  |
|                                                                                                                                                                                                                          | 2SK3565     |                          | ±30                     | 5                     | 45                    | 2.5                                                            | 1150                             | 20                               | 100                              | 28                             | π-MOSIV   | (3B_I)                            |                                  |
|                                                                                                                                                                                                                          | 2SK3742     |                          | ±30                     | 5                     | 45                    | 2.5                                                            | 1150                             | 20                               | 110                              | 25                             | π-MOSIV   |                                   |                                  |
|                                                                                                                                                                                                                          | 2SK4014     |                          | ±30                     | 6                     | 45                    | 2                                                              | 1400                             | 30                               | 130                              | 45                             | π-MOSIV   |                                   |                                  |
|                                                                                                                                                                                                                          | TK7A90E     |                          | ±30                     | 7                     | 45                    | 2                                                              | 1350                             | 10                               | 110                              | 32                             | π-MOSVIII | (3A_I)                            |                                  |
|                                                                                                                                                                                                                          | 2SK3799     |                          | ±30                     | 8                     | 50                    | 1.3                                                            | 2200                             | 45                               | 190                              | 60                             | π-MOSIV   | (3B_I)                            |                                  |
|                                                                                                                                                                                                                          | TK9A90E     |                          | ±30                     | 9                     | 50                    | 1.3                                                            | 2000                             | 15                               | 150                              | 46                             | π-MOSVIII | (3A_I)                            |                                  |



- The internal connection diagrams only show the general configurations of the circuits.

• 内部接続図はイメージ図です。

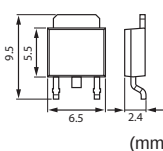
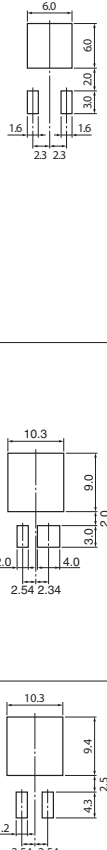
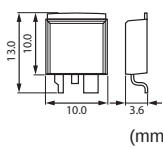
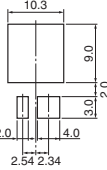
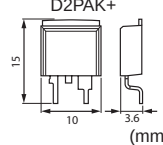
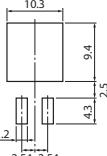
| Package                                                                                                                          | Part Number | Absolute Maximum Ratings |                         |                       |                       | R <sub>DS(ON)</sub><br>max (Ω)<br> V <sub>GS</sub>   =<br>10 V | C <sub>iss</sub><br>typ.<br>(pF) | C <sub>rss</sub><br>typ.<br>(pF) | C <sub>oss</sub><br>typ.<br>(pF) | Q <sub>g</sub><br>typ.<br>(nC) | Series    | Internal<br>Conne-<br>ctions | Land Pattern<br>Examples<br>(mm) |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------------------|-----------------------|-----------------------|----------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|-----------|------------------------------|----------------------------------|
|                                                                                                                                  |             | V <sub>DSS</sub><br>(V)  | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | P <sub>D</sub><br>(W) |                                                                |                                  |                                  |                                  |                                |           |                              |                                  |
| <div>TO-3P(N)</div> <div></div> <div>(mm)</div> | TK15J50D    | 500                      | ±30                     | 15                    | 210                   | 0.4                                                            | 1800                             | 9                                | 190                              | 38                             | π-MOSVII  | (3A)                         |                                  |
|                                                                                                                                  | TK20J50D    |                          | ±30                     | 20                    | 280                   | 0.27                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII  |                              |                                  |
|                                                                                                                                  | TK12J55D    | 550                      | ±30                     | 12                    | 190                   | 0.57                                                           | 1550                             | 7                                | 165                              | 28                             | π-MOSVII  |                              |                                  |
|                                                                                                                                  | TK16J55D    |                          | ±30                     | 16                    | 250                   | 0.37                                                           | 2300                             | 10                               | 250                              | 40                             | π-MOSVII  |                              |                                  |
|                                                                                                                                  | TK19J55D    |                          | ±30                     | 19                    | 280                   | 0.33                                                           | 2600                             | 11                               | 280                              | 45                             | π-MOSVII  |                              |                                  |
|                                                                                                                                  | 2SK3633     | 800                      | ±30                     | 7                     | 150                   | 1.7                                                            | 1500                             | 25                               | 140                              | 35                             | π-MOSIV   | (3B_I)                       |                                  |
|                                                                                                                                  | TK10J80E    |                          | ±30                     | 10                    | 250                   | 1                                                              | 2000                             | 15                               | 150                              | 46                             | π-MOSVIII | (3A)                         |                                  |
|                                                                                                                                  | 2SK3700     | 900                      | ±30                     | 5                     | 150                   | 2.5                                                            | 1150                             | 20                               | 100                              | 28                             | π-MOSIV   | (3B_I)                       |                                  |
|                                                                                                                                  | 2SK4115     |                          | ±30                     | 7                     | 150                   | 2                                                              | 1650                             | 30                               | 140                              | 45                             | π-MOSIV   | (3A)                         |                                  |
|                                                                                                                                  | TK7J90E     |                          | ±30                     | 7                     | 200                   | 2                                                              | 1350                             | 10                               | 110                              | 32                             | π-MOSVIII |                              |                                  |
|                                                                                                                                  | TK9J90E     |                          | ±30                     | 9                     | 250                   | 1.3                                                            | 2000                             | 15                               | 150                              | 46                             | π-MOSVIII |                              |                                  |
|                                                                                                                                  | 2SK4207     |                          | ±30                     | 13                    | 150                   | 0.95                                                           | 2790                             | 25                               | 300                              | 45                             | π-MOSIV   | (3B_I)                       |                                  |



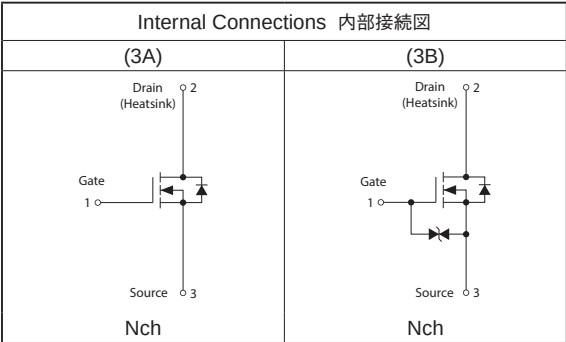
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Automotive MOSFETs / 車載 MOSFET

Automotive Power MOSFETs / 車載パワー MOSFET  
(Single N-Channel) / (シングルNチャネル)

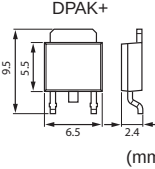
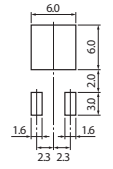
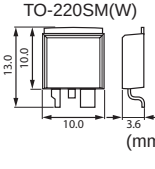
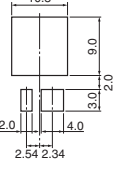
| Package                                                                                    | Part Number   | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|--------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                            |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V |                            |                            |                            |                          |             |                      |                                                                                       |
| <br>(mm)   | TK15S04N1L    | 40                       | ±20                  | 15                 | 46                 | 175                  | 17.8                         | —                       | 37                        | 610                        | 50                         | 390                        | 10                       | U-MOSVIII-H | (3B)                 |   |
|                                                                                            | TK35S04K3L    |                          | ±20                  | 35                 | 58                 | 175                  | 10.3                         | 15                      | —                         | 1370                       | 180                        | 320                        | 28                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK65S04N1L    |                          | ±20                  | 65                 | 107                | 175                  | 4.3                          | —                       | 7.8                       | 2550                       | 130                        | 1430                       | 39                       | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TK100S04N1L   |                          | ±20                  | 100                | 180                | 175                  | 2.3                          | —                       | 4.5                       | 5490                       | 220                        | 3000                       | 76                       | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TK1R4S04PB    |                          | ±20                  | 120                | 180                | 175                  | 1.35                         | 1.9                     | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TK8S06K3L     | 60                       | ±20                  | 8                  | 25                 | 175                  | 54                           | 80                      | —                         | 400                        | 40                         | 80                         | 10                       | U-MOSIV     | (3B)                 |                                                                                       |
|                                                                                            | TK20S06K3L    |                          | ±20                  | 20                 | 38                 | 175                  | 29                           | 40                      | —                         | 780                        | 75                         | 136                        | 18                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK25S06N1L    |                          | ±20                  | 25                 | 57                 | 175                  | 18.5                         | —                       | 36.8                      | 855                        | 69                         | 490                        | 15                       | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TK30S06K3L    |                          | ±20                  | 30                 | 58                 | 175                  | 18                           | 30                      | —                         | 1350                       | 130                        | 230                        | 28                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK45S06K3L    |                          | ±20                  | 45                 | 68                 | 175                  | 10.5                         | 16.4                    | —                         | 1950                       | 185                        | 315                        | 41                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK60S06K3L    |                          | ±20                  | 60                 | 88                 | 175                  | 8                            | 12.3                    | —                         | 2900                       | 280                        | 460                        | 60                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK90S06N1L    | 100                      | ±20                  | 90                 | 157                | 175                  | 3.3                          | —                       | 5.2                       | 5400                       | 350                        | 2630                       | 81                       | U-MOSVIII-H | (3A)                 |                                                                                       |
|                                                                                            | TK7S10N1Z     |                          | ±20                  | 7                  | 50                 | 175                  | 48                           | —                       | —                         | 470                        | 36                         | 260                        | 7.1                      | U-MOSVIII-H | (3B)                 |                                                                                       |
|                                                                                            | TK11S10N1L *  |                          | ±20                  | 11                 | 65                 | 175                  | 28                           | —                       | 50                        | 850                        | 67                         | 370                        | 15                       | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TK33S10N1L    |                          | ±20                  | 33                 | 125                | 175                  | 9.7                          | —                       | 16.2                      | 2250                       | 145                        | 1010                       | 33                       | U-MOSVIII-H |                      |                                                                                       |
| TK33S10N1Z                                                                                 | ±20           |                          | 33                   | 125                | 175                | 9.7                  | —                            | —                       | 2050                      | 140                        | 1070                       | 28                         | U-MOSVIII-H              |             |                      |                                                                                       |
| TK55S10N1                                                                                  | ±20           |                          | 55                   | 157                | 175                | 6.5                  | —                            | —                       | 3280                      | 210                        | 1520                       | 49                         | U-MOSVIII-H              | (3A)        |                      |                                                                                       |
| <br>(mm) | TK100F04K3    | 40                       | ±20                  | 100                | 180                | 175                  | 3                            | —                       | —                         | 4500                       | 900                        | 1100                       | 102                      | U-MOSIV     | (3A)                 |  |
|                                                                                            | TK100F04K3L   |                          | ±20                  | 100                | 180                | 175                  | 3                            | 4.5                     | —                         | 4980                       | 680                        | 1100                       | 105                      | U-MOSIV     | (3B)                 |                                                                                       |
|                                                                                            | TK150F04K3L   |                          | ±20                  | 150                | 300                | 175                  | 2.1                          | 3.2                     | —                         | 9400                       | 1200                       | 1900                       | 190                      | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK1R4F04PB *  |                          | ±20                  | 160                | 205                | 175                  | 1.35                         | 1.9                     | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   |                      |                                                                                       |
|                                                                                            | TK200F04N1L * |                          | ±20                  | 200                | 375                | 175                  | 0.9                          | 1.37                    | —                         | 14920                      | 650                        | 7680                       | 214                      | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TKR74F04PB *  | ±20                      | 250                  | 375                | 175                | 0.74                 | 0.98                         | —                       | 14200                     | 1300                       | 9100                       | 227                        | U-MOSIX-H                |             |                      |                                                                                       |
|                                                                                            | TK100F06K3    | 60                       | ±20                  | 100                | 180                | 175                  | 5                            | —                       | —                         | 4500                       | 600                        | 800                        | 98                       | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK130F06K3    |                          | ±20                  | 130                | 300                | 175                  | 3.4                          | —                       | —                         | 8400                       | 1020                       | 1420                       | 170                      | U-MOSIV     |                      |                                                                                       |
|                                                                                            | TK80F08K3     | 75                       | ±20                  | 80                 | 300                | 175                  | 4.3                          | —                       | —                         | 8200                       | 770                        | 1140                       | 175                      | U-MOSIV     | (3A)                 |                                                                                       |
|                                                                                            | TK160F10N1 *  | 100                      | ±20                  | 160                | 375                | 175                  | 2.4                          | —                       | —                         | 8510                       | 500                        | 3960                       | 121                      | U-MOSVIII-H |                      |                                                                                       |
|                                                                                            | TK160F10N1L * |                          | ±20                  | 160                | 375                | 175                  | 2.4                          | 3.7                     | —                         | 10100                      | 610                        | 3900                       | 122                      | U-MOSVIII-H |                      |                                                                                       |
| <br>(mm) | TK1R5R04PB *  | 40                       | ±20                  | 160                | 205                | 175                  | 1.5                          | 2.05                    | —                         | 5500                       | 490                        | 3400                       | 103                      | U-MOSIX-H   | (3A)                 |  |

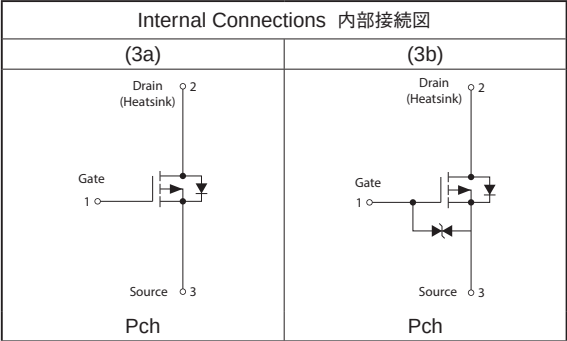
\*: New Product / 新製品



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- 内部接続図はイメージ図です。

(Single P-Channel) / (シングルPチャンネル)

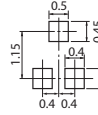
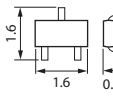
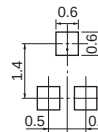
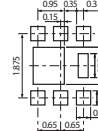
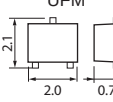
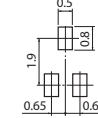
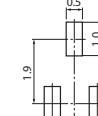
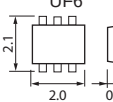
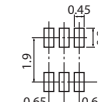
| Package                                                                                                                     | Part Number | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                           |  |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|----------------|----------------|----------------|--------------|---------|----------------------|--------------------------------------------------------------------------------------|--|
|                                                                                                                             |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V |                |                |                |              |         |                      |                                                                                      |  |
| <div><p>DPAK+</p></div> <p>(mm)</p>        | TJ10S04M3L  | -40                      | +10/-20              | -10                | 27                 | 175                  | 44                           | 62                      | —                         | 930            | 90             | 140            | 19           | U-MOSVI | (3b)                 |   |  |
|                                                                                                                             | TJ20S04M3L  |                          | +10/-20              | -20                | 41                 | 175                  | 22.2                         | 32                      | —                         | 1850           | 180            | 250            | 37           | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ40S04M3L  |                          | +10/-20              | -40                | 68                 | 175                  | 9.1                          | 13                      | —                         | 4140           | 410            | 510            | 83           | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ60S04M3L  |                          | +10/-20              | -60                | 90                 | 175                  | 6.3                          | 9.4                     | —                         | 6510           | 570            | 780            | 125          | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ80S04M3L  |                          | +10/-20              | -80                | 100                | 175                  | 5.2                          | 7.9                     | —                         | 7770           | 740            | 970            | 158          | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ8S06M3L   | -60                      | +10/-20              | -8                 | 27                 | 175                  | 104                          | 130                     | —                         | 890            | 60             | 100            | 19           | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ15S06M3L  |                          | +10/-20              | -15                | 41                 | 175                  | 50                           | 63                      | —                         | 1770           | 130            | 180            | 36           | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ30S06M3L  |                          | +10/-20              | -30                | 68                 | 175                  | 21.8                         | 28                      | —                         | 3950           | 270            | 360            | 80           | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ50S06M3L  |                          | +10/-20              | -50                | 90                 | 175                  | 13.8                         | 17.4                    | —                         | 6290           | 410            | 560            | 124          | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ60S06M3L  |                          | +10/-20              | -60                | 100                | 175                  | 11.2                         | 14.5                    | —                         | 7760           | 530            | 690            | 156          | U-MOSVI |                      |                                                                                      |  |
|                                                                                                                             | TJ15S10M3   | -100                     | +10/-20              | -15                | 75                 | 175                  | 130                          | —                       | —                         | 3200           | 135            | 190            | 69           | U-MOSVI | (3a)                 |                                                                                      |  |
| <div><p>TO-220SM(W)</p></div> <p>(mm)</p> | TJ100F04M3L | -40                      | +10/-20              | -100               | 250                | 175                  | 3.6                          | 5.4                     | —                         | 9500           | 1000           | 1550           | 250          | U-MOSVI | (3b)                 |  |  |
|                                                                                                                             | TJ200F04M3L |                          | +10/-20              | -200               | 375                | 175                  | 1.8                          | 2.6                     | —                         | 12800          | 1150           | 2400           | 460          | U-MOSVI | (3a)                 |                                                                                      |  |
|                                                                                                                             | TJ100F06M3L | -60                      | +10/-20              | -100               | 250                | 175                  | 7.1                          | 10.7                    | —                         | 9000           | 700            | 1100           | 250          | U-MOSVI | (3b)                 |                                                                                      |  |
|                                                                                                                             | TJ150F06M3L |                          | +10/-20              | -150               | 300                | 175                  | 5.6                          | 6.1                     | —                         | 12500          | 880            | 1750           | 420          | U-MOSVI |                      |                                                                                      |  |



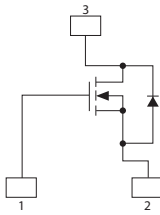
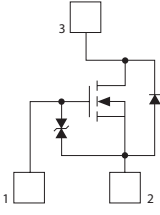
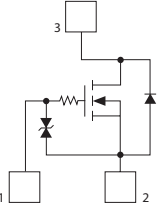
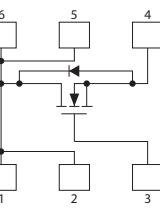
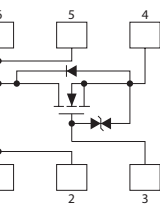
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Automotive Small-Package Series / 車載小型パッケージシリーズ  
(Single N-Channel) / (シングルNチャンネル)

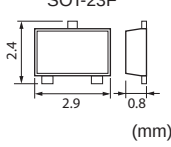
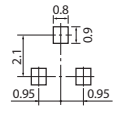
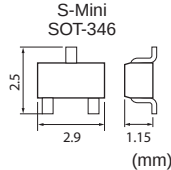
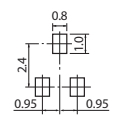
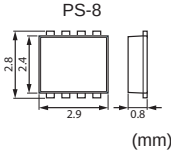
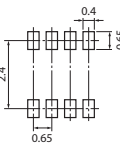
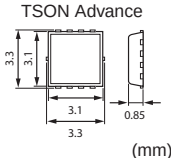
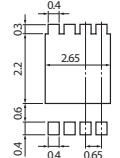
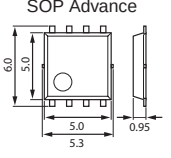
(1/2)

| Package                                                                                                                        | Part Number    | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                         |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                          |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                |                | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>B</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |             |                      |                                                                                     | V <sub>GS</sub>   = 1.5 V                                                             |
| <div>VESM<br/>SOT-723</div>  <div>(mm)</div>  | SSM3K16FV      | 20                       | ±10                  | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 15000                      | 9.3                        | 4.5                        | 9.8                      | —           | π-MOSVI              | (3C_S)                                                                              |    |
|                                                                                                                                | SSM3K35MFV     |                          | ±10                  | 0.18               | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000                       | 9.5                        | 4.1                        | 9.5                      | —           | π-MOSVI              |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K36MFV     |                          | ±10                  | 0.5                | 0.15               | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520                       | 46                         | 7.3                        | 10.8                     | 1.23        | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K56MFV *   |                          | ±8                   | 0.8                | 0.15               | 150                  | —                            | —                       | 235                       | —                       | 300                       | 480                       | 840                        | 55                         | 6                          | 16                       | 1           | U-MOSVII-H           |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K44MFV     | 30                       | ±20                  | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 4000                    | 7000                      | —                         | —                          | 8.5                        | 5.3                        | 9.4                      | —           | π-MOSVI              | (3C_S)                                                                              |                                                                                       |
| <div>SSM<br/>SOT-416</div>  <div>(mm)</div>   | SSM3K16FS      | 20                       | ±10                  | 0.1                | 0.1                | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 15000                      | 9.3                        | 4.5                        | 9.8                      | —           | π-MOSVI              | (3C_S)                                                                              |    |
|                                                                                                                                | SSM3K35FS      |                          | ±10                  | 0.18               | 0.1                | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000                       | 9.5                        | 4.1                        | 9.5                      | —           | π-MOSVI              |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K36FS      |                          | ±10                  | 0.5                | 0.15               | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520                       | 46                         | 7.3                        | 10.8                     | 1.23        | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K56FS *    |                          | ±8                   | 0.8                | 0.15               | 150                  | —                            | —                       | 235                       | —                       | 300                       | 480                       | 840                        | 55                         | 6                          | 16                       | 1           | U-MOSVII-H           |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K44FS      | 30                       | ±20                  | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 4000                    | 7000                      | —                         | —                          | 8.5                        | 5.3                        | 9.4                      | —           | π-MOSVI              | (3C_S)                                                                              |                                                                                       |
|                                                                                                                                | SSM3K72KFS *   | 60                       | ±20                  | 0.3                | 0.15               | 150                  | 1500                         | —                       | 1750                      | —                       | —                         | —                         | —                          | 26                         | 1.3                        | 5.5                      | 0.39        | U-MOSVII-H           |                                                                                     |                                                                                       |
| <div>UDFN6B</div>  <div>(mm)</div>            | SSM6K504NU *   | 30                       | ±20                  | 9                  | 1.25               | 150                  | 19.5                         | —                       | 26                        | —                       | —                         | —                         | 620                        | 42                         | 110                        | 4.8                      | U-MOSVII-H  | (6B)                 |  |                                                                                       |
|                                                                                                                                | SSM6K513NU *   |                          | ±20                  | 15                 | 1.25               | 150                  | 8.9                          | —                       | 12                        | —                       | —                         | —                         | 1130                       | 52                         | 350                        | 7.5                      | U-MOSIX-H   | (6A)                 |                                                                                     |                                                                                       |
|                                                                                                                                | SSM6K514NU *   | 40                       | ±20                  | 12                 | 1.25               | 150                  | 11.6                         | —                       | 17.3                      | —                       | —                         | —                         | 1110                       | 26                         | 245                        | 7.5                      | U-MOSIX-H   | (6A)                 |                                                                                     |                                                                                       |
| <div>UFM</div>  <div>(mm)</div>             | SSM3K36TU      | 20                       | ±10                  | 0.5                | 0.5                | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520                       | 46                         | 7.3                        | 10.8                     | 1.23        | U-MOSIII             | (3C_S)                                                                              |  |
|                                                                                                                                | SSM3K62TU *    |                          | ±8                   | 0.8                | 0.5                | 150                  | —                            | —                       | 57                        | —                       | 68                        | 89                        | 139                        | 177                        | 17                         | 52                       | 2           | U-MOSVII-H           | (3B_S)                                                                              |                                                                                       |
|                                                                                                                                | SSM3K122TU     |                          | ±10                  | 2                  | 0.5                | 150                  | —                            | —                       | —                         | 123                     | 161                       | 211                       | 304                        | 195                        | 29                         | 35                       | 3.4         | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K121TU     |                          | ±10                  | 3.2                | 0.5                | 150                  | —                            | —                       | —                         | 48                      | 63                        | 93                        | 140                        | 400                        | 60                         | 68                       | 5.9         | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K123TU     | 30                       | ±10                  | 4.2                | 0.5                | 150                  | —                            | —                       | —                         | 28                      | 32                        | 43                        | 66                         | 1010                       | 150                        | 162                      | 13.6        | U-MOSIII             | (3B_S)                                                                              |                                                                                       |
|                                                                                                                                | SSM3K127TU     |                          | ±12                  | 2                  | 0.5                | 150                  | —                            | —                       | —                         | 123                     | 167                       | 286                       | —                          | 123                        | 18                         | 43                       | 1.5         | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K116TU     |                          | ±12                  | 2.2                | 0.5                | 150                  | —                            | —                       | 100                       | —                       | 135                       | —                         | —                          | 245                        | 33                         | 41                       | —           | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K119TU     |                          | ±12                  | 2.5                | 0.5                | 150                  | —                            | —                       | —                         | 74                      | 90                        | 134                       | —                          | 270                        | 47                         | 56                       | —           | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K131TU     | 60                       | ±20                  | 6                  | 0.5                | 150                  | 27.6                         | —                       | 41.5                      | —                       | —                         | —                         | —                          | 450                        | 77                         | 120                      | 10.1        | U-MOSIV              | (3A_S)                                                                              |                                                                                       |
|                                                                                                                                | SSM3K2615TU *  |                          | ±20                  | 2                  | 0.8                | 150                  | 300                          | —                       | —                         | 440                     | —                         | —                         | —                          | 150                        | 25                         | 70                       | 6           | π-MOSV               | (3C_S)                                                                              |                                                                                       |
|                                                                                                                                | SSM3K341TU *   |                          | ±20                  | 6                  | 1                  | 175                  | 36                           | —                       | 51                        | 69                      | —                         | —                         | —                          | 550                        | 35                         | 300                      | 9.3         | U-MOSVIII-H          | (3B_S)                                                                              |                                                                                       |
| SSM3K361TU *                                                                                                                   | 100            | ±20                      | 3.5                  | 1                  | 175                | 69                   | —                            | 92                      | —                         | —                       | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H |                      |                                                                                     |                                                                                       |
| <div>USM<br/>SOT-323</div>  <div>(mm)</div> | SSM3K16FU      | 20                       | ±10                  | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 15000                      | 9.3                        | 4.5                        | 9.8                      | —           | π-MOSVI              | (3C_S)                                                                              |  |
|                                                                                                                                | SSM3K09FU      | 30                       | ±20                  | 0.4                | 0.15               | 150                  | 700                          | —                       | —                         | 1200                    | —                         | —                         | —                          | 20                         | 7                          | 16                       | —           | π-MOSVI              |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K17FU      | 50                       | ±7                   | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 20000                   | 40000                     | —                         | —                          | 7                          | 3                          | 7                        | —           | π-MOSV               |                                                                                     |                                                                                       |
|                                                                                                                                | SSM3K7002KFU * | 60                       | ±20                  | 0.4                | 0.15               | 150                  | 1500                         | —                       | 1750                      | —                       | —                         | —                         | —                          | 26                         | 1.3                        | 5.5                      | 0.39        | U-MOSVII-H           |                                                                                     |                                                                                       |
| <div>UF6</div>  <div>(mm)</div>             | SSM6K404TU     | 20                       | ±10                  | 3                  | 0.5                | 150                  | —                            | —                       | —                         | 55                      | 70                        | 100                       | 147                        | 400                        | 60                         | 68                       | 5.9         | U-MOSIII             | (6B)                                                                                |  |
|                                                                                                                                | SSM6K403TU     |                          | ±10                  | 4.2                | 0.5                | 150                  | —                            | —                       | —                         | 28                      | 32                        | 43                        | 66                         | 1050                       | 160                        | 175                      | 16.8        | U-MOSIII             |                                                                                     |                                                                                       |
|                                                                                                                                | SSM6K406TU     | 30                       | ±20                  | 4.4                | 0.5                | 150                  | 25                           | —                       | 38.5                      | —                       | —                         | —                         | —                          | 490                        | 105                        | 143                      | 12.4        | U-MOSIV              |                                                                                     |                                                                                       |
|                                                                                                                                | SSM6K407TU     | 60                       | ±20                  | 2                  | 0.5                | 150                  | 300                          | —                       | —                         | 440                     | —                         | —                         | —                          | 150                        | 25                         | 70                       | 6           | π-MOSV               |                                                                                     |                                                                                       |

\*: New Product / 新製品

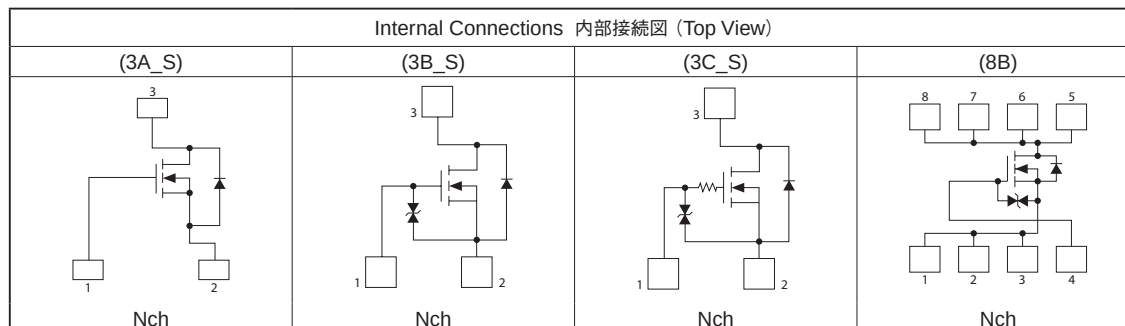
| Internal Connections 内部接続図 (Top View)                                                      |                                                                                            |                                                                                            |                                                                                             |                                                                                              |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| (3A_S)                                                                                     | (3B_S)                                                                                     | (3C_S)                                                                                     | (6A)                                                                                        | (6B)                                                                                         |
| <br>Nch | <br>Nch | <br>Nch | <br>Nch | <br>Nch |

- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

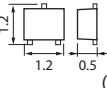
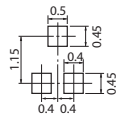
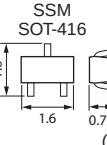
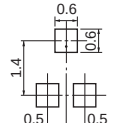
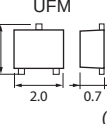
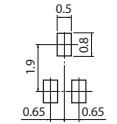
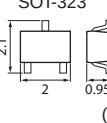
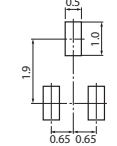
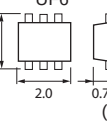
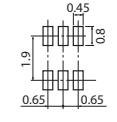
| Package                                                                                                  | Part Number   | Absolute Maximum Ratings |                      |                    |                    |                      |                          | R <sub>DS(ON)</sub> max (mΩ) |                           |                         |                           |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series      | Internal Connections | Land Pattern Examples (mm)                                                            |
|----------------------------------------------------------------------------------------------------------|---------------|--------------------------|----------------------|--------------------|--------------------|----------------------|--------------------------|------------------------------|---------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|-------------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                          |               | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>Gs</sub>   = 10 V | V <sub>Gs</sub>   = 6 V      | V <sub>Gs</sub>   = 4.5 V | V <sub>Gs</sub>   = 4 V | V <sub>Gs</sub>   = 2.5 V | V <sub>Gs</sub>   = 1.8 V | V <sub>Gs</sub>   = 1.5 V |                            |                            |                            |                          |             |                      |                                                                                       |
|  SOT-23F<br>(mm)        | SSM3K336R *   | 30                       | ±20                  | 3                  | 1                  | 150                  | 95                       | —                            | 140                       | —                       | —                         | —                         | —                         | 126                        | 8                          | 26                         | 1.7                      | U-MOSVII-H  | (3B_S)               |    |
|                                                                                                          | SSM3K329R     |                          | ±12                  | 3.5                | 1                  | 150                  | —                        | —                            | —                         | 126                     | 170                       | 289                       | —                         | 123                        | 18                         | 43                         | 1.5                      | U-MOSIII    | (3A_S)               |                                                                                       |
|                                                                                                          | SSM3K333R     |                          | ±20                  | 6                  | 1                  | 150                  | 28                       | —                            | 42                        | —                       | —                         | —                         | —                         | 436                        | 28                         | 77                         | 3.4                      | U-MOSVII-H  | (3A_S)               |                                                                                       |
|                                                                                                          | SSM3K335R     |                          | ±20                  | 6                  | 1                  | 150                  | 38                       | —                            | 56                        | —                       | —                         | —                         | —                         | 340                        | 20                         | 60                         | 2.7                      | U-MOSVII-H  | (3B_S)               |                                                                                       |
|                                                                                                          | SSM3K2615R *  | 60                       | ±20                  | 2                  | 1                  | 150                  | 300                      | —                            | —                         | 440                     | —                         | —                         | —                         | 150                        | 25                         | 70                         | 6                        | π-MOSV      | (3C_S)               |                                                                                       |
|                                                                                                          | SSM3K318R *   |                          | ±20                  | 2.5                | 1                  | 150                  | 107                      | —                            | 145                       | —                       | —                         | —                         | —                         | 235                        | 23                         | 31                         | 7                        | U-MOSIV     | (3B_S)               |                                                                                       |
|                                                                                                          | SSM3K341R *   |                          | ±20                  | 6                  | 1.2                | 175                  | 36                       | —                            | 51                        | 69                      | —                         | —                         | —                         | 550                        | 35                         | 300                        | 9.3                      | U-MOSVIII-H | (3B_S)               |                                                                                       |
|                                                                                                          | SSM3K361R *   | 100                      | ±20                  | 3.5                | 1.2                | 175                  | 69                       | —                            | 92                        | —                       | —                         | —                         | —                         | 430                        | 22                         | 160                        | 3.2                      | U-MOSVIII-H | (3C_S)               |                                                                                       |
|  S-Mini SOT-346<br>(mm) | SSM3K15F      | 30                       | ±20                  | 0.1                | 0.2                | 150                  | —                        | —                            | —                         | 4000                    | 7000                      | —                         | —                         | 7.8                        | 3.6                        | 8.8                        | —                        | π-MOSVI     | (3C_S)               |    |
|                                                                                                          | SSM3K7002KF * | 60                       | ±20                  | 0.4                | 0.27               | 150                  | 1500                     | —                            | 1750                      | —                       | —                         | —                         | —                         | 26                         | 1.3                        | 5.5                        | 0.39                     | U-MOSVII-H  |                      |                                                                                       |
|  PS-8<br>(mm)          | TPCP8011      | 40                       | ±20                  | 5                  | 1.96<br>(1)        | 175                  | 31.8                     | 51.2                         | —                         | —                       | —                         | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV     | (8B)                 |   |
|                                                                                                          | TPCP8010      |                          | ±20                  | 6                  | 1.96<br>(1)        | 175                  | 23.8                     | 38.4                         | —                         | —                       | —                         | —                         | —                         | 600                        | 75                         | 132                        | 13.1                     | U-MOSIV     |                      |                                                                                       |
|                                                                                                          | TPCP8009      |                          | ±20                  | 10                 | 2.01<br>(1)        | 175                  | 11.8                     | 19.5                         | —                         | —                       | —                         | —                         | —                         | 1250                       | 165                        | 265                        | 25.1                     | U-MOSIV     |                      |                                                                                       |
|                                                                                                          | TPCP8013      | 60                       | ±20                  | 4                  | 1.96<br>(1)        | 175                  | 51.8                     | 77.9                         | —                         | —                       | —                         | —                         | —                         | 515                        | 48                         | 86                         | 12                       | U-MOSIV     |                      |                                                                                       |
|                                                                                                          | TPCP8012      |                          | ±20                  | 8                  | 2.01<br>(1)        | 175                  | 20.2                     | 29.1                         | —                         | —                       | —                         | —                         | —                         | 1160                       | 120                        | 200                        | 26.6                     | U-MOSIV     |                      |                                                                                       |
|  TSOP Advance<br>(mm) | TPCC8069      | 40                       | ±20                  | 30                 | 46.8               | 175                  | 8.1                      | 14.1                         | —                         | —                       | —                         | —                         | —                         | 1640                       | 200                        | 340                        | 34                       | U-MOSIV     | (8B)                 |  |
|                                                                                                          | TPCC8070      | 60                       | ±20                  | 30                 | 46.8               | 175                  | 13.5                     | 21.3                         | —                         | —                       | —                         | —                         | —                         | 1600                       | 150                        | 260                        | 34                       | U-MOSIV     |                      |                                                                                       |
|  SOP Advance<br>(mm)  | TPCA8085      | 40                       | ±20                  | 40                 | 55                 | 175                  | 5.7                      | 10.4                         | —                         | —                       | —                         | —                         | —                         | 2050                       | 250                        | 410                        | 41                       | U-MOSIV     | (8B)                 |  |
|                                                                                                          | TPCA8083      |                          | ±20                  | 60                 | 84                 | 175                  | 3.3                      | 5.6                          | —                         | —                       | —                         | —                         | —                         | 4540                       | 530                        | 900                        | 83                       | U-MOSIV     |                      |                                                                                       |
|                                                                                                          | TPCA8086      | 60                       | ±20                  | 35                 | 55                 | 175                  | 11.2                     | 16.6                         | —                         | —                       | —                         | —                         | —                         | 1990                       | 170                        | 290                        | 41                       | U-MOSIV     |                      |                                                                                       |
|                                                                                                          | TPCA8084      |                          | ±20                  | 60                 | 84                 | 175                  | 5.3                      | 8                            | —                         | —                       | —                         | —                         | —                         | 4480                       | 400                        | 670                        | 83                       | U-MOSIV     |                      |                                                                                       |

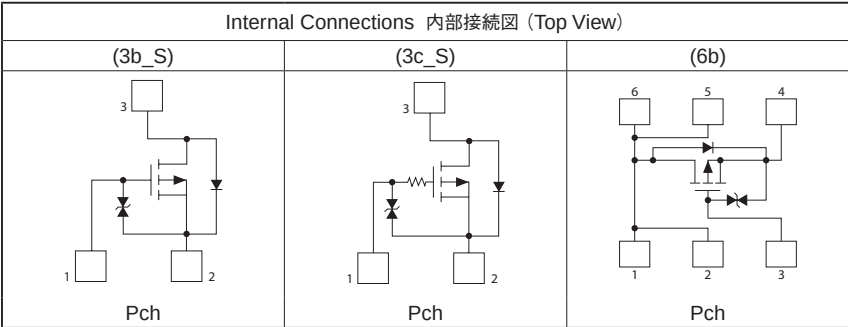
Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。

\*: New Product / 新製品

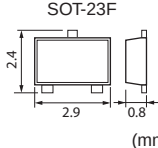
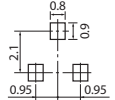
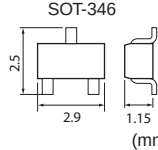
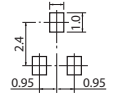
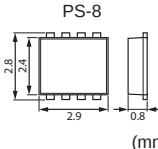
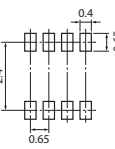
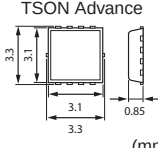
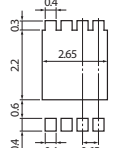
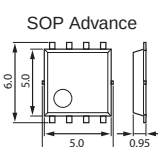
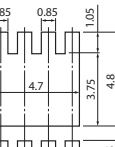


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                        | Part Number | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                         |                           |                           |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                            |
|--------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------|----------------|----------------|--------------|----------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V | V <sub>GS</sub>   = 1.5 V |                |                |                |              |          |                      |                                                                                       |
| <div>VESM<br/>SOT-723</div>  <div>(mm)</div>  | SSM3J16FV   | -20                      | ±10                  | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 8000                    | 12000                     | —                         | 45000                     | 11             | 3.7            | 10             | —            | π-MOSVI  | (3c_S)               |    |
|                                                                                                                                | SSM3J35MFV  |                          | ±10                  | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 8000                    | 11000                     | —                         | 22000                     | 12.2           | 6.5            | 10.4           | —            | π-MOSVI  |                      |                                                                                       |
|                                                                                                                                | SSM3J15FV   | -30                      | ±20                  | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 12000                   | 32000                     | —                         | —                         | 9.1            | 3.5            | 8.6            | —            | π-MOSVI  |                      |                                                                                       |
| <div>SSM<br/>SOT-416</div>  <div>(mm)</div>   | SSM3J35FS   | -20                      | ±10                  | -0.1               | 0.1                | 150                  | —                            | —                       | —                         | 8000                    | 11000                     | —                         | 22000                     | 12.2           | 6.5            | 10.4           | —            | π-MOSVI  | (3c_S)               |    |
|                                                                                                                                | SSM3J36FS   |                          | ±8                   | -0.33              | 0.15               | 150                  | —                            | —                       | 1310                      | —                       | —                         | 2700                      | 3600                      | 43             | 6.1            | 10.3           | 1.2          | U-MOSIII |                      |                                                                                       |
|                                                                                                                                | SSM3J15FS   | -30                      | ±20                  | -0.1               | 0.1                | 150                  | —                            | —                       | —                         | 12000                   | 32000                     | —                         | —                         | 9.1            | 3.5            | 8.6            | —            | π-MOSVI  |                      |                                                                                       |
| <div>UFM</div>  <div>(mm)</div>               | SSM3J36TU   | -20                      | ±8                   | -0.33              | 0.5                | 150                  | —                            | —                       | 1310                      | —                       | —                         | 2700                      | 3600                      | 43             | 6.1            | 10.3           | 1.2          | U-MOSIII | (3c_S)               |    |
|                                                                                                                                | SSM3J112TU  | -30                      | ±20                  | -1.1               | 0.5                | 150                  | 390                          | —                       | —                         | 790                     | —                         | —                         | —                         | 86             | 14             | 25             | —            | U-MOSII  | (3b_S)               |                                                                                       |
|                                                                                                                                | SSM3J118TU  |                          | ±20                  | -1.4               | 0.5                | 150                  | 240                          | —                       | —                         | 480                     | —                         | —                         | —                         | 137            | 20             | 39             | —            | U-MOSII  |                      |                                                                                       |
|                                                                                                                                | SSM3J117TU  |                          | ±20                  | -2                 | 0.5                | 150                  | 117                          | —                       | —                         | 225                     | —                         | —                         | —                         | 280            | 45             | 80             | —            | U-MOSII  |                      |                                                                                       |
| <div>USM<br/>SOT-323</div>  <div>(mm)</div> | SSM3J16FU   | -20                      | ±10                  | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 8000                    | 12000                     | —                         | 45000                     | 11             | 3.7            | 10             | —            | π-MOSVI  | (3c_S)               |  |
|                                                                                                                                | SSM3J15FU   | -30                      | ±20                  | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 12000                   | 32000                     | —                         | —                         | 9.1            | 3.5            | 8.6            | —            | π-MOSVI  |                      |                                                                                       |
|                                                                                                                                | SSM3J09FU   |                          | ±20                  | -0.2               | 0.15               | 150                  | 2700                         | —                       | —                         | 4200                    | —                         | —                         | —                         | 22             | 5              | 14             | —            | π-MOSVI  |                      |                                                                                       |
| <div>UF6</div>  <div>(mm)</div>             | SSM6J50TU   | -20                      | ±10                  | -2.5               | 0.5                | 150                  | —                            | —                       | 64                        | —                       | 100                       | —                         | —                         | 800            | 120            | 160            | —            | U-MOSIV  | (6b)                 |  |
|                                                                                                                                | SSM6J402TU  | -30                      | ±20                  | -2                 | 0.5                | 150                  | 117                          | —                       | —                         | 225                     | —                         | —                         | —                         | 280            | 45             | 80             | 5.3          | U-MOSII  |                      |                                                                                       |
|                                                                                                                                | SSM6J410TU  |                          | ±20                  | -2.1               | 0.5                | 150                  | 216                          | —                       | —                         | 393                     | —                         | —                         | —                         | 120            | 21             | 32             | 2.9          | U-MOSIII |                      |                                                                                       |
|                                                                                                                                | SSM6J401TU  |                          | ±20                  | -2.5               | 0.5                | 150                  | 73                           | —                       | —                         | 145                     | —                         | —                         | —                         | 730            | 90             | 110            | 16           | U-MOSIII |                      |                                                                                       |

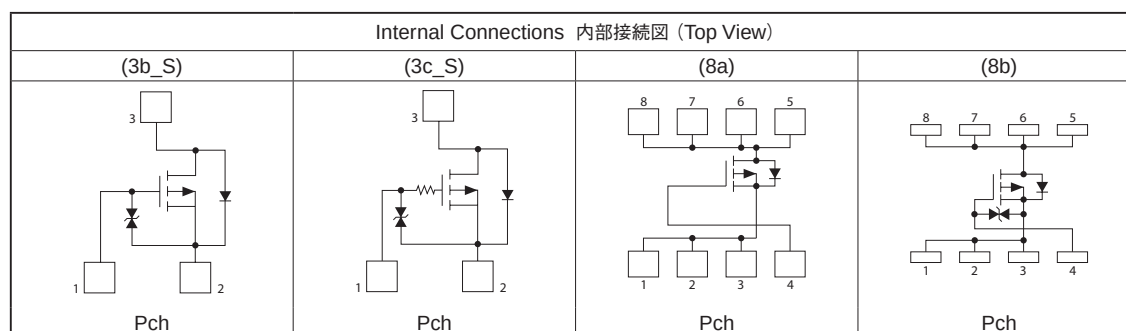


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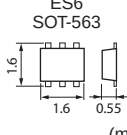
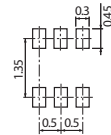
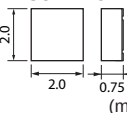
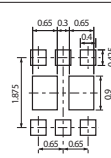
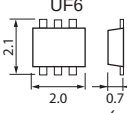
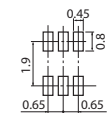
| Package                                                                                                                      | Part Number | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                         |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series | Internal Connections | Land Pattern Examples (mm) |                                                                                       |  |
|------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------|----------------------|----------------------------|---------------------------------------------------------------------------------------|--|
|                                                                                                                              |             | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |        |                      |                            | V <sub>GS</sub>   = 1.5 V                                                             |  |
| <div><p>SOT-23F</p><p>(mm)</p></div>        | SSM3J356R * | -60                      | +10/-20              | -2                 | 1                  | 150                  | 300                          | —                       | 360                       | 400                     | —                         | —                         | —                          | 330                        | 25                         | 40                       | 8.3    | U-MOSVI              | (3b_S)                     |    |  |
|                                                                                                                              | SSM3J351R * |                          | +10/-20              | -3.5               | 1                  | 150                  | 134                          | —                       | 164                       | 184                     | —                         | —                         | —                          | 660                        | 50                         | 70                       | 15.1   | U-MOSVI              |                            |                                                                                       |  |
| <div><p>S-Mini SOT-346</p><p>(mm)</p></div> | SSM3J15F    | -30                      | ±20                  | -0.1               | 0.2                | 150                  | —                            | —                       | —                         | 12000                   | 32000                     | —                         | —                          | 9.1                        | 3.5                        | 8.6                      | —      | π-MOSVI              | (3c_S)                     |    |  |
|                                                                                                                              | SSM3J168F * | -60                      | +10/-20              | -0.4               | 0.6                | 150                  | 1550                         | —                       | 1900                      | 2000                    | —                         | —                         | —                          | 82                         | 5.5                        | 13                       | 3      | U-MOSVI              | (3b_S)                     |                                                                                       |  |
| <div><p>PS-8</p><p>(mm)</p></div>           | TPCP8109    | -40                      | +10/-20              | -4.5               | 1.96 (1)           | 175                  | 52.3                         | 76.8                    | —                         | —                       | —                         | —                         | —                          | 810                        | 85                         | 130                      | 18     | U-MOSVI              | (8b)                       |    |  |
|                                                                                                                              | TPCP8107    |                          | +10/-20              | -8                 | 2.01 (1)           | 175                  | 18                           | 26.8                    | —                         | —                       | —                         | —                         | —                          | 2160                       | 238                        | 292                      | 44.6   | U-MOSVI              |                            |                                                                                       |  |
|                                                                                                                              | TPCP8111    | -60                      | +10/-20              | -3                 | 1.96 (1)           | 175                  | 117                          | 158.4                   | —                         | —                       | —                         | —                         | —                          | 760                        | 60                         | 90                       | 17     | U-MOSVI              |                            |                                                                                       |  |
|                                                                                                                              | TPCP8110    |                          | +10/-20              | -5                 | 2.01 (1)           | 175                  | 39.5                         | 53.2                    | —                         | —                       | —                         | —                         | —                          | 2075                       | 150                        | 205                      | 45     | U-MOSVI              |                            |                                                                                       |  |
| <div><p>TSOn Advance</p><p>(mm)</p></div> | TPCC8106    | -40                      | +10/-20              | -30                | 46.8               | 175                  | 12.3                         | 18.9                    | —                         | —                       | —                         | —                         | —                          | 3100                       | 320                        | 390                      | 66     | U-MOSVI              | (8b)                       |  |  |
|                                                                                                                              | TPCC8107    | -60                      | +10/-20              | -25                | 46.8               | 175                  | 30.5                         | 42.9                    | —                         | —                       | —                         | —                         | —                          | 2930                       | 230                        | 270                      | 63     | U-MOSVI              |                            |                                                                                       |  |
| <div><p>SOP Advance</p><p>(mm)</p></div>  | TPCA8121    | -30                      | +10/-20              | -45                | 45                 | 175                  | 3                            | —                       | 4                         | —                       | —                         | —                         | —                          | 7420                       | 1180                       | 1440                     | 190    | U-MOSVI              | (8a)                       |  |  |
|                                                                                                                              | TPCA8124    | -40                      | +10/-20              | -35                | 55                 | 175                  | 10.5                         | 14.6                    | —                         | —                       | —                         | —                         | —                          | 3570                       | 370                        | 450                      | 77     | U-MOSVI              | (8b)                       |                                                                                       |  |
|                                                                                                                              | TPCA8122    |                          | +10/-20              | -60                | 84                 | 175                  | 5                            | 7.2                     | —                         | —                       | —                         | —                         | —                          | 7340                       | 770                        | 980                      | 152    | U-MOSVI              |                            |                                                                                       |  |
|                                                                                                                              | TPCA8125    | -60                      | +10/-20              | -25                | 55                 | 175                  | 25.5                         | 34.4                    | —                         | —                       | —                         | —                         | —                          | 3650                       | 260                        | 320                      | 78     | U-MOSVI              |                            |                                                                                       |  |
|                                                                                                                              | TPCA8123    |                          | +10/-20              | -50                | 84                 | 175                  | 11.1                         | 14.9                    | —                         | —                       | —                         | —                         | —                          | 7000                       | 540                        | 680                      | 163    | U-MOSVI              |                            |                                                                                       |  |

Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。

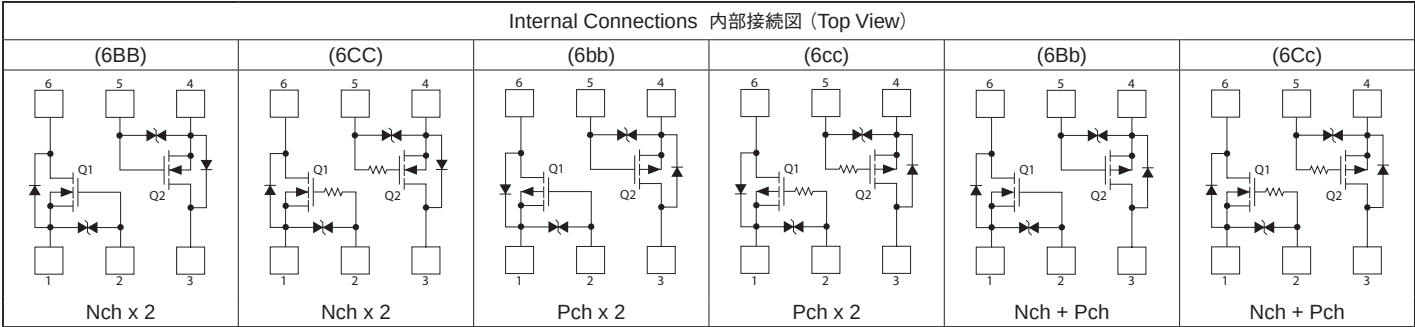
\*: New Product / 新製品



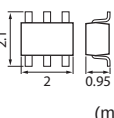
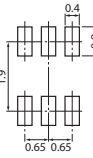
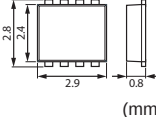
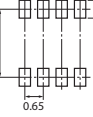
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                       | Polarity    | Part Number | Absolute Maximum Ratings |                     |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                         |                           |                           | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series   | Internal Connections | Land Pattern Examples (mm)                                                            |
|---------------------------------------------------------------------------------------------------------------|-------------|-------------|--------------------------|---------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---------------------------|----------------|----------------|----------------|--------------|----------|----------------------|---------------------------------------------------------------------------------------|
|                                                                                                               |             |             | V <sub>DS</sub> (V)      | V <sub>GS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                |                |                |              |          |                      |                                                                                       |
| <br>ES6<br>SOT-563<br>(mm)    | N-ch x 2    | SSM6N16FE   | 20                       | ±10                 | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 15000          | 9.3            | 4.5            | 9.8          | —        | π-MOSVI              |    |
|                                                                                                               |             | SSM6N35FE   |                          | ±10                 | 0.18               | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000           | 9.5            | 4.1            | 9.5          | —        | π-MOSVI              |                                                                                       |
|                                                                                                               |             | SSM6N36FE   |                          | ±10                 | 0.5                | 0.15               | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520           | 46             | 7.3            | 10.8         | 1.23     | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6N56FE * |                          | ±8                  | 0.8                | 0.25               | 150                  | —                            | —                       | 235                       | —                       | 300                       | 480                       | 840            | 55             | 6              | 16           | 1        | U-MOSVII-H           |                                                                                       |
|                                                                                                               |             | SSM6N44FE   | 30                       | ±20                 | 0.1                | 0.15               | 150                  | —                            | —                       | —                         | 4000                    | 7000                      | —                         | —              | 8.5            | 5.3            | 9.4          | —        | π-MOSVI              |                                                                                       |
|                                                                                                               | P-ch x 2    | SSM6P35FE   | -20                      | ±10                 | -0.1               | 0.15               | 150                  | —                            | —                       | —                         | 8000                    | 11000                     | —                         | 22000          | 12.2           | 6.5            | 10.4         | —        | π-MOSVI              |                                                                                       |
|                                                                                                               |             | SSM6P36FE   |                          | ±8                  | -0.33              | 0.15               | 150                  | —                            | —                       | 1310                      | —                       | —                         | 2700                      | 3600           | 43             | 6.1            | 10.3         | 1.2      | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6P15FE   |                          | -30                 | ±20                | -0.1               | 0.15                 | 150                          | —                       | —                         | —                       | 12000                     | 32000                     | —              | —              | 9.1            | 3.5          | 8.6      | —                    | π-MOSVI                                                                               |
|                                                                                                               | N-ch + P-ch | SSM6L35FE   | 20                       | ±10                 | 0.18               | 0.15               | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000           | 9.5            | 4.1            | 9.5          | —        | π-MOSVI              |                                                                                       |
|                                                                                                               |             |             |                          | -20                 | ±10                | -0.1               | 0.15                 | 150                          | —                       | —                         | —                       | 8000                      | 11000                     | —              | 22000          | 12.2           | 6.5          | 10.4     | —                    | π-MOSVI                                                                               |
|                                                                                                               |             | 20          |                          | ±10                 | 0.5                | 0.15               | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520           | 46             | 7.3            | 10.8         | 1.23     | U-MOSIII             |                                                                                       |
| SSM6L36FE                                                                                                     | -20         | ±8          |                          | -0.33               | 0.15               | 150                | —                    | —                            | 1310                    | —                         | —                       | 2700                      | 3600                      | 43             | 6.1            | 10.3           | 1.2          | U-MOSIII |                      |                                                                                       |
| <br>UDFN6<br>SOT-1118<br>(mm) | N-ch x 2    | SSM6N61NU * | 20                       | ±8                  | 4                  | 1                  | 150                  | —                            | —                       | 33                        | —                       | 45                        | 74                        | 108            | 410            | 40             | 85           | 3.6      | U-MOSVII-H           |    |
|                                                                                                               |             | SSM6N55NU * | 30                       | ±20                 | 4                  | 1                  | 150                  | 46                           | —                       | 64                        | —                       | —                         | —                         | —              | 280            | 20             | 53           | 2.5      | U-MOSVII-H           |                                                                                       |
| <br>UF6<br>(mm)             | N-ch x 2    | SSM6N36TU   | 20                       | ±10                 | 0.5                | 0.5                | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520           | 46             | 7.3            | 10.8         | 1.23     | U-MOSIII             |  |
|                                                                                                               |             | SSM6N62TU   |                          | ±8                  | 0.8                | 0.5                | 150                  | —                            | —                       | 85                        | —                       | 98                        | 120                       | 173            | 177            | 17             | 52           | 2        | U-MOSVII-H           |                                                                                       |
|                                                                                                               |             | SSM6N39TU   |                          | ±10                 | 1.6                | 0.5                | 150                  | —                            | —                       | —                         | 119                     | 139                       | 190                       | 247            | 260            | 37             | 45           | 7.5      | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6N24TU   |                          | ±12                 | 0.5                | 0.5                | 150                  | —                            | —                       | 145                       | —                       | 180                       | —                         | —              | 245            | 33             | 41           | —        | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6N40TU   | 30                       | ±20                 | 1.6                | 0.5                | 150                  | 122                          | —                       | —                         | 182                     | —                         | —                         | —              | 180            | 27             | 34           | 5.1      | U-MOSIII             |                                                                                       |
|                                                                                                               | P-ch x 2    | SSM6P36TU   | -20                      | ±8                  | -0.33              | 0.5                | 150                  | —                            | —                       | 1310                      | —                       | —                         | 2700                      | 3600           | 43             | 6.1            | 10.3         | 1.2      | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6P54TU   |                          | ±8                  | -1.2               | 0.5                | 150                  | —                            | —                       | —                         | 228                     | 350                       | 555                       | 331            | 39             | 48             | 7.7          | U-MOSIV  |                      |                                                                                       |
|                                                                                                               |             | SSM6P39TU   |                          | ±8                  | -1.5               | 0.5                | 150                  | —                            | —                       | —                         | 213                     | 294                       | 430                       | —              | 250            | 35             | 43           | 6.4      | U-MOSIII             |                                                                                       |
|                                                                                                               |             | SSM6P40TU   |                          | -30                 | ±20                | -1.4               | 0.5                  | 150                          | 226                     | —                         | —                       | 403                       | —                         | —              | —              | 120            | 21           | 32       | 2.9                  | U-MOSIII                                                                              |
|                                                                                                               | N-ch + P-ch | SSM6L12TU   | 30                       | ±12                 | 0.5                | 0.5                | 150                  | —                            | —                       | 145                       | —                       | 180                       | —                         | —              | 245            | 33             | 41           | —        | U-MOSIII             |                                                                                       |
|                                                                                                               |             |             |                          | -20                 | ±12                | -0.5               | 0.5                  | 150                          | —                       | —                         | —                       | 260                       | 430                       | —              | —              | 218            | 42           | 52       | —                    | U-MOSIII                                                                              |
|                                                                                                               |             | SSM6L36TU   | 20                       | ±10                 | 0.5                | 0.5                | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520           | 46             | 7.3            | 10.8         | 1.23     | U-MOSIII             |                                                                                       |
|                                                                                                               |             |             |                          | -20                 | ±8                 | -0.33              | 0.5                  | 150                          | —                       | —                         | 1310                    | —                         | —                         | 2700           | 3600           | 43             | 6.1          | 10.3     | 1.2                  | U-MOSIII                                                                              |
|                                                                                                               |             | SSM6L39TU   | 20                       | ±10                 | 1.6                | 0.5                | 150                  | —                            | —                       | —                         | 119                     | 139                       | 190                       | 247            | 260            | 37             | 45           | 7.5      | U-MOSIII             |                                                                                       |
|                                                                                                               |             |             |                          | -20                 | ±8                 | -1.5               | 0.5                  | 150                          | —                       | —                         | —                       | 213                       | 294                       | 430            | —              | 250            | 35           | 43       | 6.4                  | U-MOSIII                                                                              |
|                                                                                                               |             | SSM6L40TU   | 30                       | ±20                 | 1.6                | 0.5                | 150                  | 122                          | —                       | —                         | 182                     | —                         | —                         | —              | 180            | 27             | 34           | 5.1      | U-MOSIII             |                                                                                       |
|                                                                                                               |             |             |                          | -30                 | ±20                | -1.4               | 0.5                  | 150                          | 226                     | —                         | —                       | 403                       | —                         | —              | —              | 120            | 21           | 32       | 2.9                  | U-MOSIII                                                                              |

\*: New Product / 新製品

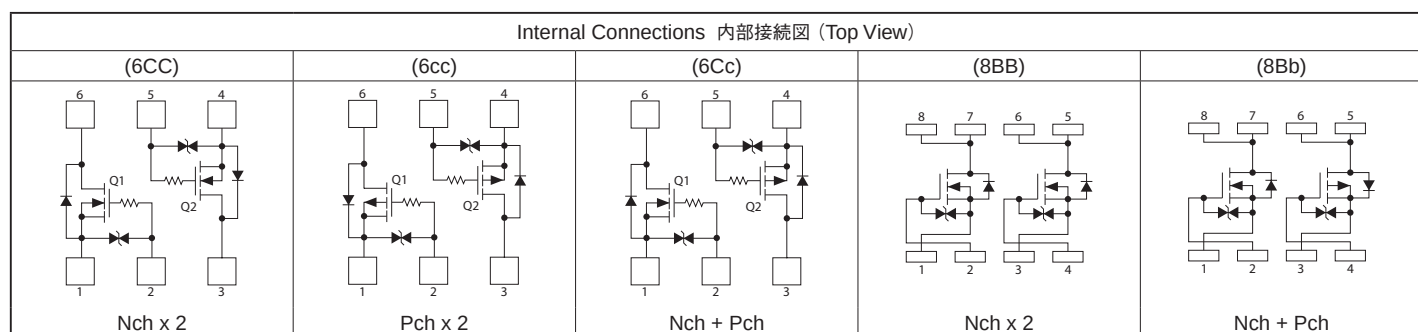


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| Package                                                                                                                                        | Polarity    | Part Number    | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                         |                           |                         |                           |                           | C <sub>iss</sub> typ. (pF) | C <sub>rss</sub> typ. (pF) | C <sub>oss</sub> typ. (pF) | Q <sub>g</sub> typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                          |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                |             |                | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>GS</sub>   = 10 V     | V <sub>GS</sub>   = 6 V | V <sub>GS</sub>   = 4.5 V | V <sub>GS</sub>   = 4 V | V <sub>GS</sub>   = 2.5 V | V <sub>GS</sub>   = 1.8 V |                            |                            |                            |                          |         |                      |                                                                                     | V <sub>GS</sub>   = 1.5 V                                                           |
| <div>US6</div> <div>SOT-363</div> <div></div> <div>(mm)</div> | N-ch x 2    | SSM6N35FU      | 20                       | ±10                  | 0.18               | 0.2                | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000                       | 9.5                        | 4.1                        | 9.5                      | —       | π-MOSVI              | (6CC)                                                                               |  |
|                                                                                                                                                |             | SSM6N43FU      |                          | ±10                  | 0.5                | 0.2                | 150                  | —                            | —                       | 660                       | —                       | 850                       | 1140                      | 1520                       | 46                         | 7.3                        | 10.8                     | 1.23    | π-MOSVI              |                                                                                     |                                                                                     |
|                                                                                                                                                |             | SSM6N44FU      | 30                       | ±20                  | 0.1                | 0.2                | 150                  | —                            | —                       | —                         | 4000                    | 7000                      | —                         | —                          | 8.5                        | 5.3                        | 9.4                      | —       | π-MOSVI              |                                                                                     |                                                                                     |
|                                                                                                                                                |             | SSM6N17FU      | 50                       | ±7                   | 0.1                | 0.2                | 150                  | —                            | —                       | —                         | 20000                   | 40000                     | —                         | —                          | 7                          | 3                          | 7                        | —       | π-MOSV               |                                                                                     |                                                                                     |
|                                                                                                                                                |             | SSM6N7002KFU * | 60                       | ±20                  | 0.3                | 0.5                | 150                  | 1500                         | —                       | 1750                      | —                       | —                         | —                         | —                          | 26                         | 1.3                        | 5.5                      | 0.39    | U-MOSVII-H           |                                                                                     |                                                                                     |
|                                                                                                                                                | P-ch x 2    | SSM6P35FU      | -20                      | ±10                  | -0.1               | 0.2                | 150                  | —                            | —                       | —                         | 8000                    | 11000                     | —                         | 22000                      | 12.2                       | 6.5                        | 10.4                     | —       | π-MOSVI              | (6cc)                                                                               |                                                                                     |
|                                                                                                                                                |             | SSM6P15FU      | -30                      | ±20                  | -0.1               | 0.2                | 150                  | —                            | —                       | —                         | 12000                   | 32000                     | —                         | —                          | 9.1                        | 3.5                        | 8.6                      | —       | π-MOSVI              |                                                                                     |                                                                                     |
|                                                                                                                                                | N-ch + P-ch | SSM6L35FU      | 20                       | ±10                  | 0.18               | 0.2                | 150                  | —                            | —                       | —                         | 3000                    | 4000                      | —                         | 8000                       | 9.5                        | 4.1                        | 9.5                      | —       | π-MOSVI              | (6Cc)                                                                               |                                                                                     |
| -20                                                                                                                                            |             |                | ±10                      | -0.1                 | 0.2                | 150                | —                    | —                            | —                       | 8000                      | 11000                   | —                         | 22000                     | 12.2                       | 6.5                        | 10.4                       | —                        | π-MOSVI |                      |                                                                                     |                                                                                     |
| <div>PS-8</div> <div></div> <div>(mm)</div>                   | N-ch x 2    | TPCP8207       | 40                       | ±20                  | 5                  | 1.77<br>(1)        | 175                  | 36.3                         | 62.8                    | —                         | —                       | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV | (8BB)                |  |                                                                                     |
|                                                                                                                                                | N-ch + P-ch | TPCP8407       | 40                       | ±20                  | 5                  | 1.77<br>(1)        | 175                  | 36.3                         | 62.8                    | —                         | —                       | —                         | —                         | 505                        | 66                         | 115                        | 11.8                     | U-MOSIV | (8Bb)                |                                                                                     |                                                                                     |
|                                                                                                                                                |             |                | -40                      | +10/-20              | -4                 | 1.77<br>(1)        | 175                  | 56.8                         | 82.2                    | —                         | —                       | —                         | —                         | —                          | 810                        | 85                         | 130                      | 18      |                      |                                                                                     | U-MOSVI                                                                             |

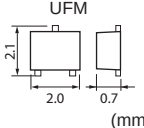
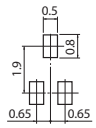
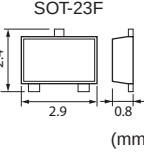
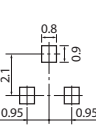
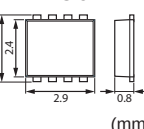
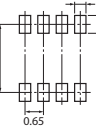
Note (1): Device mounted on a glass board. t = 5 seconds. / ガラスエポキシ基板。t = 5 秒。

\*: New Product / 新製品

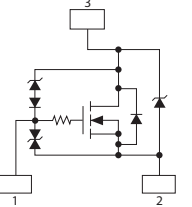
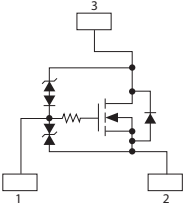
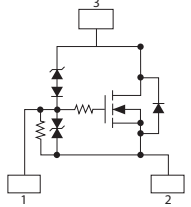
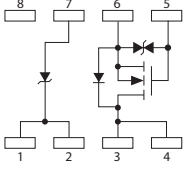


- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

(Semi-Power Type: Built-in Zener Diode) / (セミパワータイプ: ZD混載品)

| Package                                                                                  | Polarity     | Part Number  | Absolute Maximum Ratings |                      |                    |                    |                      | R <sub>DS(ON)</sub> max (mΩ) |                          |                            |                          |                            |                            |                            | Ciss typ. (pF) | Crss typ. (pF) | Coss typ. (pF) | Qg typ. (nC) | Series  | Internal Connections | Land Pattern Examples (mm)                                                          |
|------------------------------------------------------------------------------------------|--------------|--------------|--------------------------|----------------------|--------------------|--------------------|----------------------|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------|----------------|----------------|--------------|---------|----------------------|-------------------------------------------------------------------------------------|
|                                                                                          |              |              | V <sub>DSS</sub> (V)     | V <sub>GSS</sub> (V) | I <sub>D</sub> (A) | P <sub>D</sub> (W) | T <sub>ch</sub> (°C) | V <sub>Gs1</sub>   = 10 V    | V <sub>Gs1</sub>   = 6 V | V <sub>Gs1</sub>   = 4.5 V | V <sub>Gs1</sub>   = 4 V | V <sub>Gs1</sub>   = 2.5 V | V <sub>Gs1</sub>   = 1.8 V | V <sub>Gs1</sub>   = 1.5 V |                |                |                |              |         |                      |                                                                                     |
| <br>(mm) | N-ch + Zener | SSM3H137TU * | 34                       | ±20                  | 2                  | 0.8                | 150                  | 240                          | —                        | 280                        | 295                      | —                          | —                          | —                          | 119            | 8              | 40             | 3            | U-MOSIV | (3ZC_1)              |  |
| <br>(mm) | N-ch + Zener | SSM3K337R *  | 38                       | ±20                  | 2                  | 1                  | 150                  | 150                          | —                        | 176                        | 200                      | —                          | —                          | —                          | 120            | 7.2            | 33             | 3            | U-MOSIV | (3ZC_2)              |  |
|                                                                                          |              | SSM3K347R *  |                          | ±20                  | 2                  | 1                  | 150                  | 340                          | —                        | 410                        | 480                      | —                          | —                          | —                          | 86             | 13             | 27             | 2.5          | U-MOSIV | (3ZC_3)              |  |
| <br>(mm) | N-ch + Zener | TPCP8R01     | 60                       | ±20                  | 2                  | 0.5                | 150                  | 300                          | —                        | —                          | 440                      | —                          | —                          | —                          | 140            | 20             | 65             | 5            | π-MOSV  | (8ZB)                |  |

\*: New Product / 新製品

| Internal Connections 内部接続図 (Top View)                                                           |                                                                                                 |                                                                                                 |                                                                                                  |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| (3ZC_1)                                                                                         | (3ZC_2)                                                                                         | (3ZC_3)                                                                                         | (8ZB)                                                                                            |
| <br>Nch + ZD | <br>Nch + ZD | <br>Nch + ZD | <br>Nch + ZD |

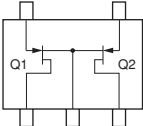
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Junction FETs / 接合形FET

(Single Type) / (シングルタイプ)

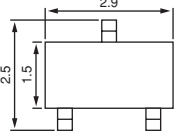
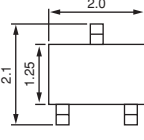
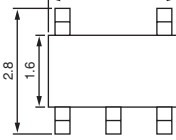
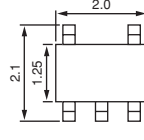
| Classification  | V <sub>GDS</sub> (V)<br>Max | I <sub>G</sub> (mA)<br>Max | I <sub>DSS</sub> (mA) | Y <sub>fs</sub>   (mS)<br>Min | S-MINI (SC-59) |     | USM (SC-70) |     |
|-----------------|-----------------------------|----------------------------|-----------------------|-------------------------------|----------------|-----|-------------|-----|
|                 |                             |                            |                       |                               | Nch            | Pch | Nch         | Pch |
| General-purpose | -50                         | 10                         | 0.3 to 6.5            | 1.2                           | 2SK208         |     | 2SK879      |     |
|                 | -50                         | 10                         | 1.2 to 14             | 4                             | 2SK209         | —   | 2SK880      | —   |

(Dual Type) / (デュアルタイプ)

| Classification  | V <sub>GDS</sub> (V) | I <sub>G</sub> (mA) | I <sub>DSS</sub> (mA) | Y <sub>fs</sub>   (mS)<br>Min | SMV     |         | USV     |         | Internal Connections                                                                |
|-----------------|----------------------|---------------------|-----------------------|-------------------------------|---------|---------|---------|---------|-------------------------------------------------------------------------------------|
|                 |                      |                     |                       |                               | Nch x 2 | Pch x 2 | Nch x 2 | Pch x 2 |                                                                                     |
| General-purpose | -50                  | 10                  | 1.2 to 14             | 4                             | 2SK2145 | —       | 2SK3320 | —       |  |

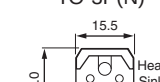
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Package Lineup / パッケージラインアップ

| S-MINI (SC-59)                                                                             | USM (SC-70)                                                                                | SMV                                                                                        | USV                                                                                        |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) |

SiC MOSFETs / SiC MOSFET

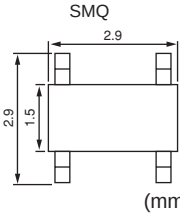
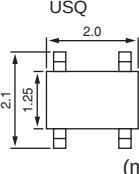
SiC MOSFETs / SiC MOSFET

| Circuit Configuration |        | Absolute Maximum ratings |                       | Electrical Characteristics<br>(Ta = 25°C) |                        |                       |                     | <div><div>TO-3P(N)</div><div>(mm)</div></div> |
|-----------------------|--------|--------------------------|-----------------------|-------------------------------------------|------------------------|-----------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|                       |        | V <sub>DS</sub><br>(V)   | I <sub>D</sub><br>(A) | R <sub>DS(ON)</sub> (mΩ)                  |                        |                       | Q <sub>g</sub> (nC) |                                                                                                                                   |
|                       |        |                          |                       | Max                                       | V <sub>GS</sub><br>(V) | I <sub>D</sub><br>(A) |                     |                                                                                                                                   |
| Nch                   | Single | 1200                     | (47)                  | (69)                                      | (20)                   | (23.1)                | (75)                | TW069J120B **                                                                                                                     |

\*\* : Under development / 開発中

Radio-Frequency MOSFETs / 高周波MOSFET

Radio-Frequency Small-Signal MOSFETs / 高周波小信号MOSFET

| Part Number | Package                                                                                          | Applications                      | Electrical Characteristics (Ta = 25°C) |                     |                     |                       |                             | Marking | Equivalent Product (Leaded Type) |
|-------------|--------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------|---------------------|---------------------|-----------------------|-----------------------------|---------|----------------------------------|
|             |                                                                                                  |                                   | V <sub>DS</sub> (V)                    | I <sub>D</sub> (mA) | P <sub>D</sub> (mW) | I <sub>DSS</sub> (mA) | Y <sub>fs</sub>   (mS) Typ. |         |                                  |
| 3SK291      | <br>SMQ<br>(mm) | UHF-band radio-frequency amps     | 12.5                                   | 30                  | 150                 | 0 to 0.1              | 26                          | UF      | —                                |
| 3SK292      |                                                                                                  | VHF/UHF-band radio-frequency amps | 12.5                                   | 30                  | 150                 | 0 to 0.1              | 23.5                        | UV      | —                                |
| 3SK293      | <br>USQ<br>(mm) | UHF-band radio-frequency amps     | 12.5                                   | 30                  | 100                 | 0 to 0.1              | 26                          | UF      | —                                |
| 3SK294      |                                                                                                  | VHF/UHF-band radio-frequency amps | 12.5                                   | 30                  | 100                 | 0 to 0.1              | 23.5                        | UV      | —                                |

Radio-Frequency Power MOSFETs / 高周波パワーMOSFET

| Part Number | Package | Applications                | Absolute Maximum Ratings (Tc = 25°C) |                       |                       | Min   | Po (W)                 |            |                       |
|-------------|---------|-----------------------------|--------------------------------------|-----------------------|-----------------------|-------|------------------------|------------|-----------------------|
|             |         |                             | V <sub>DSS</sub><br>(V)              | P <sub>D</sub><br>(W) | I <sub>D</sub><br>(A) |       | Test Conditions        |            |                       |
|             |         |                             |                                      |                       |                       |       | V <sub>DS</sub><br>(V) | f<br>(MHz) | P <sub>i</sub><br>(W) |
| RFM08U9X    | PW-X    | UHF/VHF Professional radios | 36                                   | 20                    | 5                     | 7.5   | 9.6                    | 520        | 0.5                   |
| 2SK3075     | PW-X    |                             | 30                                   | 20                    | 5                     | 7.5   | 9.6                    | 520        | 0.5                   |
| 2SK3074     | PW-MINI |                             | 30                                   | 3                     | 1                     | 0.63  | 9.6                    | 520        | 0.02                  |
| RFM12U7X    | PW-X    |                             | 20                                   | 20                    | 4                     | 11.5  | 7.2                    | 520        | 1.0                   |
| RFM07U7X    | PW-X    |                             | 16                                   | 20                    | 3                     | 7.0   | 7.2                    | 450 to 530 | 0.5                   |
| RFM06U3X *  | PW-X    |                             | 16                                   | 20                    | 5                     | 5.0   | 3.6                    | 520        | 0.5                   |
| RFM01U7P    | PW-MINI |                             | 20                                   | 3                     | 1                     | 1.0   | 7.2                    | 520        | 0.1                   |
| 2SK3476     | PW-X    |                             | 20                                   | 20                    | 3                     | 7.0   | 7.2                    | 520        | 0.5                   |
| 2SK3475     | PW-MINI |                             | 20                                   | 3                     | 1                     | 0.63  | 7.2                    | 520        | 0.02                  |
| RFM04U6P    | PW-MINI | GMRS                        | 16                                   | 7                     | 2                     | 3.5   | 6.0                    | 470        | 0.2                   |
| 2SK4037     | PW-X    |                             | 12                                   | 20                    | 3                     | 3.55  | 6.0                    | 470        | 0.3                   |
| 2SK2854     | PW-MINI | UHF and VHF radio           | 10                                   | 0.5                   | 0.5                   | 0.2   | 6.0                    | 849        | 0.02                  |
| 2SK3079A    | PW-X    | FRS/GMRS                    | 10                                   | 20                    | 3                     | 2.24  | 4.5                    | 470        | 0.1                   |
| 2SK3756     | PW-MINI |                             | 7.5                                  | 3                     | 1                     | 1.26  | 4.5                    | 470        | 0.1                   |
| 2SK3078A    | PW-MINI |                             | 10                                   | 3                     | 0.5                   | 0.63  | 4.5                    | 470        | 0.1                   |
| 2SK3078     | PW-MINI |                             | 10                                   | 3                     | 0.5                   | 0.5   | 4.8                    | 915        | 0.02                  |
| 2SK3077     | USQ     | Driver                      | 10                                   | 0.25                  | 0.1                   | 0.032 | 4.8                    | 915        | 0.001                 |
| RFM03U3P *  | PW-MINI | GMRS                        | 16                                   | 7                     | 2.5                   | 2.3   | 3.6                    | 520        | 0.1                   |
| RFM00U7U    | USQ     | Driver                      | 20                                   | 0.25                  | 0.1                   | 0.1   | 7.2                    | 520        | 0.01                  |

\*: New product / 新製品

# SEMICONDUCTOR GENERAL CATALOG

## 半導体製品総覧表2017年7月版

### Diodes ダイオード

TVS Diodes (ESD Protection Diodes) / TVSダイオード (ESD保護用ダイオード)

SiC Schottky Barrier Diodes / SiCショットキバリアダイオード

Schottky Barrier Diodes / ショットキバリアダイオード

Rectifiers / 整流用ダイオード

Switching Diodes / スイッチングダイオード

Zener Diodes / ツェナーダイオード

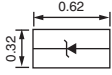
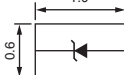
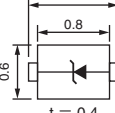
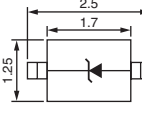
Variable Capacitance Diodes / 可変容量ダイオード

Radio-Frequency Switching Diodes / 高周波スイッチ用ダイオード

# TVS Diodes (ESD Protection Diodes) / TVSダイオード (ESD保護用ダイオード)

## TVS Diodes (ESD Protection Diodes) / TVSダイオード (ESD保護用ダイオード)

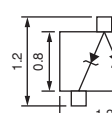
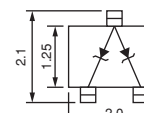
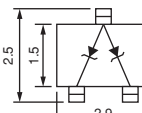
(Standard Type, Unidirectional) / (スタンダードタイプ, 単方向)

| Protected Lines                                            | 1 Line                                                                            |                                                                                   |                                                                                   |                                                                                   | V <sub>Z</sub><br>(V) |                 | I <sub>R</sub><br>(μA) |                 | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------|-----------------|------------------------|-----------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-962<br>(SL2)                                                                  | SOD-882<br>(CST2)                                                                 | SOD-923                                                                           | SOD-323<br>(USC)                                                                  |                       |                 |                        |                 |                        |                 |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  |  | Typ.                  | @I <sub>Z</sub> | Max                    | @V <sub>R</sub> | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                            | (mm)                                                                              | (mm)                                                                              | (mm)                                                                              | (mm)                                                                              |                       |                 |                        |                 |                        |                 |                                                           |
| Part Number                                                | DF2S5.1ASL *                                                                      | DF2S5.1CT                                                                         | DF2S5.1FS                                                                         | —                                                                                 | 5.1                   | 5               | 1                      | 1.5             | 45                     | 0               | ±30 kV                                                    |
|                                                            | DF2S5.6ASL *                                                                      | DF2S5.6CT                                                                         | DF2S5.6FS                                                                         | —                                                                                 | 5.6                   |                 | 1                      | 3.5             | 40                     | 0               |                                                           |
|                                                            | DF2S6.2ASL *                                                                      | DF2S6.2CT                                                                         | DF2S6.2FS                                                                         | —                                                                                 | 6.2                   |                 | 2.5                    | 5               | 32                     | 0               |                                                           |
|                                                            | DF2S6.8ASL *                                                                      | DF2S6.8CT                                                                         | DF2S6.8FS                                                                         | —                                                                                 | 6.8                   |                 | 0.5                    | 5               | 25                     | 0               |                                                           |
|                                                            | DF2S8.2ASL *                                                                      | DF2S8.2CT                                                                         | DF2S8.2FS                                                                         | —                                                                                 | 8.2                   |                 | 0.5                    | 6.5             | 20                     | 0               |                                                           |
|                                                            | —                                                                                 | —                                                                                 | DF2S10FS                                                                          | —                                                                                 | 10                    |                 | 0.5                    | 8               | 16                     | 0               | ±20 kV                                                    |
|                                                            | —                                                                                 | —                                                                                 | DF2S12FS                                                                          | DF2S12FU                                                                          | 12                    |                 | 0.05                   | 9               | 15                     | 0               |                                                           |
|                                                            | —                                                                                 | DF2S16CT                                                                          | DF2S16FS                                                                          | —                                                                                 | 16                    |                 | 0.5                    | 12              | 10                     | 0               |                                                           |
|                                                            | —                                                                                 | —                                                                                 | —                                                                                 | —                                                                                 | 18                    |                 | 0.5                    | 14              | 10                     | 0               | ±12 kV                                                    |
|                                                            | —                                                                                 | DF2S20CT                                                                          | DF2S20FS                                                                          | —                                                                                 | 20                    |                 | 0.5                    | 15              | 9                      | 0               |                                                           |
|                                                            | —                                                                                 | —                                                                                 | DF2S24FS                                                                          | —                                                                                 | 24                    |                 | 0.5                    | 19              | 8.5                    | 0               | ±10 kV                                                    |
|                                                            | —                                                                                 | DF2S30CT                                                                          | DF2S30FS                                                                          | —                                                                                 | 30                    | 2               | 0.5                    | 23              | 7 <sup>(2)</sup>       | 0               | ±8 kV                                                     |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*: New product / 新製品

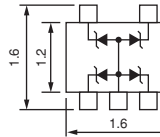
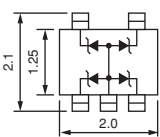
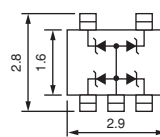
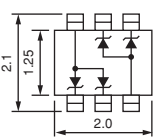
(2): DF2S30CT : 7.2 pF(typ.)@0 V

| Protected Lines                                            | 2 Lines                                                                             |                                                                                     |                                                                                     |                                                                                     | V <sub>Z</sub><br>(V) |                 | I <sub>R</sub><br>(μA) |                  | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------|------------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-883<br>(CST3)                                                                   | SOT-723<br>(VESM)                                                                   | SOT-323<br>(USM)                                                                    | SOT-346<br>(S-Mini)                                                                 |                       |                 |                        |                  |                        |                 |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  |  | Typ.                  | @I <sub>Z</sub> | Max                    | @V <sub>R</sub>  | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                            | (mm)                                                                                | (mm)                                                                                | (mm)                                                                                | (mm)                                                                                |                       | (mA)            |                        | (V)              |                        | (V)             |                                                           |
| Part Number                                                | DF3A3.3CT                                                                           | DF3A3.3FV                                                                           | DF3A3.3FU                                                                           | —                                                                                   | 3.3                   | 5               | 20 <sup>(2)</sup>      | 1 <sup>(2)</sup> | 115                    | 0               | ±30 kV                                                    |
|                                                            | DF3A3.6CT                                                                           | DF3A3.6FV                                                                           | DF3A3.6FU                                                                           | —                                                                                   | 3.6                   | 5               | 10 <sup>(3)</sup>      | 1 <sup>(3)</sup> | 110                    | 0               |                                                           |
|                                                            | DF3A5.6CT                                                                           | DF3A5.6FV                                                                           | DF3A5.6FU                                                                           | DF3A5.6F                                                                            | 5.6                   | 5               | 1                      | 2.5              | 65                     | 0               |                                                           |
|                                                            | DF3A6.2CT                                                                           | DF3A6.2FV                                                                           | DF3A6.2FU                                                                           | DF3A6.2F                                                                            | 6.2                   | 5               | 1                      | 3                | 55                     | 0               |                                                           |
|                                                            | DF3A6.8CT                                                                           | DF3A6.8FV                                                                           | DF3A6.8FU                                                                           | DF3A6.8F                                                                            | 6.8                   | 5               | 0.5                    | 5                | 45                     | 0               |                                                           |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

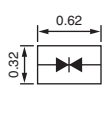
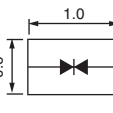
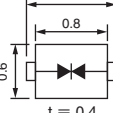
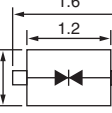
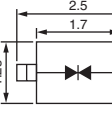
(2): DF3A3.3FV : 100 μA(Max)@1.5 V

(3): DF3A3.6FV : 100 μA(Max)@1.8 V

| Protected Lines                                            | 4 Lines                                                                             |                                                                                     |                                                                                     |                                                                                     | V <sub>Z</sub><br>(V) |                 | I <sub>R</sub><br>(μA) |                 | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------|-----------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-553<br>(ESV)                                                                    | SOT-353<br>(USV)                                                                    | SOT-25<br>(SMV)                                                                     | SOT-363<br>(US6)                                                                    |                       |                 |                        |                 |                        |                 |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  |  | Typ.                  | @I <sub>Z</sub> | Max                    | @V <sub>R</sub> | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                            | (mm)                                                                                | (mm)                                                                                | (mm)                                                                                | (mm)                                                                                |                       | (mA)            |                        | (V)             |                        | (V)             |                                                           |
| Part Number                                                | DF5A3.3JE                                                                           | DF5A3.3FU                                                                           | DF5A3.3F                                                                            | —                                                                                   | 3.3                   | 5               | 20                     | 1               | 115                    | 0               | ±30 kV                                                    |
|                                                            | DF5A3.6JE                                                                           | DF5A3.6FU                                                                           | DF5A3.6F                                                                            | —                                                                                   | 3.6                   | 5               | 10                     | 1               | 110                    | 0               |                                                           |
|                                                            | DF5A5.6JE                                                                           | DF5A5.6FU                                                                           | DF5A5.6F                                                                            | —                                                                                   | 5.6                   | 5               | 1                      | 2.5             | 65                     | 0               |                                                           |
|                                                            | DF5A6.2JE                                                                           | DF5A6.2FU                                                                           | DF5A6.2F                                                                            | —                                                                                   | 6.2                   | 5               | 1                      | 3               | 55                     | 0               |                                                           |
|                                                            | DF5A6.8JE                                                                           | DF5A6.8FU                                                                           | DF5A6.8F                                                                            | DF6A6.8FU                                                                           | 6.8                   | 5               | 0.5                    | 5               | 45                     | 0               |                                                           |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

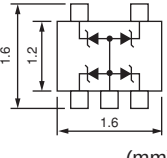
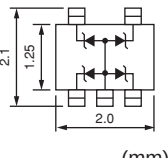
## (Standard Type, Bidirectional) / (スタンダードタイプ, 双方向)

| Protected Lines                                            | Single Type                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | V <sub>BR</sub><br>(V) |                          | I <sub>R</sub><br>( $\mu$ A) |                          | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|--------------------------|------------------------------|--------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-962<br>(SL2)                                                                  | SOD-882<br>(CST2)                                                                 | SOD-923                                                                           | SOD-523<br>(ESC)                                                                  | SOD-323<br>(USC)                                                                  |                        |                          |                              |                          |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  |  |  | Typ.                   | @I <sub>BR</sub><br>(mA) | Max                          | @V <sub>RWM</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | —                                                                                 | —                                                                                 | —                                                                                 | DF2B6.8E                                                                          | —                                                                                 | 6.8                    | 1                        | 0.5                          | 5                        | 15                     | 0                      | ±8 kV                                                     |
|                                                            | —                                                                                 | DF2B6.8ACT                                                                        | DF2B6.8AFS                                                                        | —                                                                                 | —                                                                                 | 6.8                    | 1                        | 0.5                          | 5                        | 9                      | 0                      | ±30 kV                                                    |
|                                                            | DF2B7SL                                                                           | —                                                                                 | —                                                                                 | —                                                                                 | —                                                                                 | 6.8                    | 1                        | 0.5                          | 5.3                      | 6                      | 0                      | ±17 kV                                                    |
|                                                            | DF2B7ASL *                                                                        | DF2B7ACT *                                                                        | DF2B7AFS *                                                                        | DF2B7AE *                                                                         | DF2B7AFU *                                                                        | 6.8                    | 1                        | 0.1                          | 5.5                      | 8.5                    | 0                      | ±30 kV                                                    |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

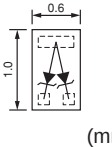
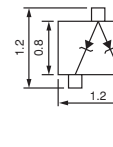
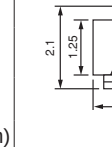
\*: New product / 新製品

## (High-Speed Type) / (ハイスピードタイプ)

| Protected Lines                                            | 4 Lines                                                                            |                                                                                    | V <sub>Z</sub><br>(V) |                         | I <sub>R</sub><br>( $\mu$ A) |                        | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------|-------------------------|------------------------------|------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-553<br>(ESV)                                                                   | SOT-353<br>(USV)                                                                   |                       |                         |                              |                        |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  | Typ.                  | @I <sub>Z</sub><br>(mA) | Max                          | @V <sub>R</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF5A3.6CJE                                                                         | DF5A3.6CFU                                                                         | 3.6                   | 5                       | 100                          | 1.8                    | 52                     | 0                      |                                                           |
|                                                            | DF5A5.6CJE                                                                         | DF5A5.6CFU                                                                         | 5.6                   | 5                       | 1                            | 3.5                    | 29                     | 0                      | ±30 kV                                                    |
|                                                            | DF5A6.2CJE                                                                         | DF5A6.2CFU                                                                         | 6.2                   | 5                       | 2.5                          | 5                      | 25                     | 0                      | ±25 kV                                                    |
|                                                            | DF5A6.8CJE                                                                         | DF5A6.8CFU                                                                         | 6.8                   | 5                       | 0.5                          | 5                      | 23                     | 0                      |                                                           |

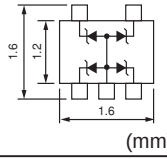
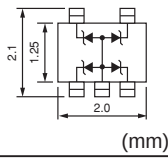
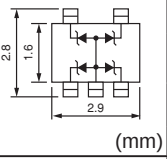
Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

## (Super-High-Speed Type) / (スーパーハイスピードタイプ)

| Protected Lines                                            | 2 Lines                                                                             |                                                                                     |                                                                                     | V <sub>Z</sub><br>(V) |                         | I <sub>R</sub><br>( $\mu$ A) |                        | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|-------------------------|------------------------------|------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-883<br>(CST3)                                                                   | SOT-723<br>(VESM)                                                                   | SOT-323<br>(USM)                                                                    |                       |                         |                              |                        |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  | Typ.                  | @I <sub>R</sub><br>(mA) | Max                          | @V <sub>R</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | —                                                                                   | DF3A5.6LFV                                                                          | DF3A5.6LFU                                                                          | 5.6                   | 5                       | 1                            | 3.5                    | 8                      | 0                      |                                                           |
|                                                            | —                                                                                   | DF3A6.2LFV                                                                          | DF3A6.2LFU                                                                          | 6.2                   | 5                       | 2.5                          | 5                      | 6.5                    | 0                      | ±8 kV                                                     |
|                                                            | DF3A6.8LCT                                                                          | DF3A6.8LFV                                                                          | DF3A6.8LFU                                                                          | 6.8                   | 5                       | 0.5                          | 5                      | 6 <sup>(2)</sup>       | 0                      |                                                           |

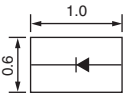
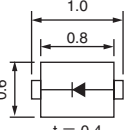
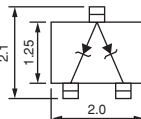
Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

(2): DF3A6.8LCT : 5.5 pF(typ.)@0 V

| Protected Lines                                            | 4 Lines                                                                             |                                                                                     |                                                                                     | V <sub>Z</sub><br>(V) |                         | I <sub>R</sub><br>( $\mu$ A) |                        | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|-------------------------|------------------------------|------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-553<br>(ESV)                                                                    | SOT-353<br>(USV)                                                                    | SOT-25<br>(SMV)                                                                     |                       |                         |                              |                        |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  | Typ.                  | @I <sub>Z</sub><br>(mA) | Max                          | @V <sub>R</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF5A5.6LJE                                                                          | DF5A5.6LFU                                                                          | —                                                                                   | 5.6                   | 5                       | 1                            | 3.5                    | 8                      | 0                      |                                                           |
|                                                            | DF5A6.2LJE                                                                          | DF5A6.2LFU                                                                          | —                                                                                   | 6.2                   | 5                       | 2.5                          | 5                      | 6.5                    | 0                      | ±8 kV                                                     |
|                                                            | DF5A6.8LJE                                                                          | DF5A6.8LFU                                                                          | DF5A6.8LF                                                                           | 6.8                   | 5                       | 0.5                          | 5                      | 6                      | 0                      |                                                           |

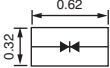
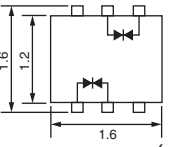
Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

TVS Diodes (ESD Protection Diodes) / TVSダイオード (ESD保護用ダイオード)  
(Ultra-High-Speed Type, Unidirectional) / (ウルトラハイスピードタイプ, 単方向)

| Protected Lines                                            | 4 Lines                                                                           |                                                                                   | 2 Lines                                                                           | V <sub>BR</sub><br>(V) |      |                          | I <sub>R</sub><br>(μA) |                          | C <sub>t</sub><br>(pF) |      |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|------|--------------------------|------------------------|--------------------------|------------------------|------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-882<br>(CST2)                                                                 | SOD-923                                                                           | SOT-323<br>(USM)                                                                  |                        |      |                          |                        |                          |                        |      |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  | Min                    | Typ. | @I <sub>BR</sub><br>(mA) | Max                    | @V <sub>RWM</sub><br>(V) | Max                    | Typ. | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF2S6.8UCT                                                                        | DF2S6.8UFS                                                                        | —                                                                                 | 5.3                    | 6.8  | 1                        | 0.5                    | 5                        | —                      | 1.6  | 0                      |                                                           |
|                                                            | —                                                                                 | —                                                                                 | DF3A6.8UFU                                                                        | 5.3                    | 6.8  | 1                        | 0.5                    | 5                        | 2.5                    | —    | 0                      |                                                           |
|                                                            | DF2S24UCT                                                                         | —                                                                                 | —                                                                                 | 22                     | 24   | 1                        | 0.5                    | 19                       | —                      | 1.6  | 0                      | ±8 kV                                                     |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

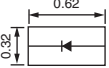
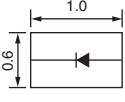
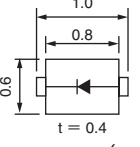
(Ultra-High-Speed Type, Bidirectional) / (ウルトラハイスピード, 双方向)

| Protected Lines                                            | 2 Lines                                                                           | 1 Line                                                                            | V <sub>BR</sub><br>(V) |                          | I <sub>R</sub><br>(μA) |                          | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|--------------------------|------------------------|--------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-962<br>(SL2)                                                                  | —<br>(ES6)                                                                        |                        |                          |                        |                          |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  | Min                    | @I <sub>BR</sub><br>(mA) | Max                    | @V <sub>RWM</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF2B6USL *                                                                        | DF6D6UFE *                                                                        | 5.7                    | 1                        | 0.1                    | 5.5                      | 1.5                    | 0                      | ±10 kV                                                    |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

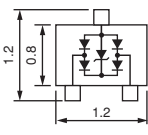
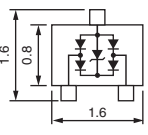
\*: New product / 新製品

(Extra-High-Speed Type, Unidirectional) / (エクストラハイスピードタイプ, 単方向)

| Protected Lines                                            | 1 Line                                                                              |                                                                                     |                                                                                     | V <sub>BR</sub><br>(V) |                          | I <sub>R</sub><br>(μA) |                          | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|--------------------------|------------------------|--------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-962<br>(SL2)                                                                    | SOD-882<br>(CST2)                                                                   | SOD-923                                                                             |                        |                          |                        |                          |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  | Min                    | @I <sub>BR</sub><br>(mA) | Max                    | @V <sub>RWM</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF2S5M4SL *                                                                         | DF2S5M4CT *                                                                         | —                                                                                   | 3.7                    | 1                        | 0.1                    | 3.6                      | 0.35                   | 0                      | ±20 kV                                                    |
|                                                            | DF2S6M4SL *                                                                         | DF2S6M4CT *                                                                         | —                                                                                   | 5.6                    | 2 μA                     | 0.1                    | 5.5                      | 0.35                   | 0                      | ±20 kV                                                    |
|                                                            | DF2S7MSL *                                                                          | —                                                                                   | DF2S6.8MFS *                                                                        | 6                      | 5                        | 0.5                    | 5                        | 0.5                    | 0                      | ±12 kV                                                    |

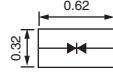
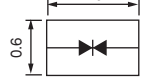
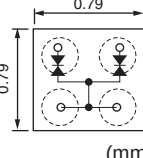
Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*: New product / 新製品

| Protected Lines                                            | 2 Lines                                                                             |                                                                                     | V <sub>BR</sub><br>(V) |                          | I <sub>R</sub><br>(μA) |                          | C <sub>t</sub><br>(pF) |                        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|--------------------------|------------------------|--------------------------|------------------------|------------------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOT-723<br>(VESM)                                                                   | SOT-416<br>(SSM)                                                                    |                        |                          |                        |                          |                        |                        |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  | Min                    | @I <sub>BR</sub><br>(mA) | Max                    | @V <sub>RWM</sub><br>(V) | Typ.                   | @V <sub>R</sub><br>(V) |                                                           |
| Part Number                                                | DF3D6.8MFV                                                                          | DF3D6.8MS                                                                           | 6                      | 5                        | 0.5                    | 5                        | 0.5                    | 0                      | ±8 kV                                                     |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

## (Extra-High-Speed Type, Bidirectional) / (エクストラハイスピードタイプ, 双方向)

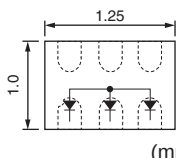
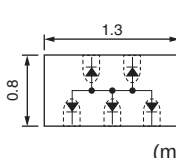
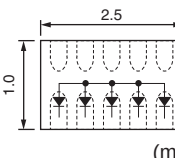
| Protected Lines                                            | 1 Line                                                                            |                                                                                   |                                                                                   | 2 Lines                                                                           | V <sub>BR</sub><br>(V) |                  | I <sub>R</sub><br>(μA) |                   | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|------------------|------------------------|-------------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                  | SOD-992<br>(CL2)                                                                  | SOD-962<br>(SL2)                                                                  | SOD-882<br>(CST2)                                                                 | —<br>(WCSP4)                                                                      |                        |                  |                        |                   |                        |                 |                                                           |
| Package Dimensions and Internal Connections <sup>(1)</sup> |  |  |  |  | Min                    | @I <sub>BR</sub> | Max                    | @V <sub>RWM</sub> | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                            | (mm)                                                                              | (mm)                                                                              | (mm)                                                                              | (mm)                                                                              |                        | (mA)             |                        | (V)               |                        | (V)             |                                                           |
| Part Number                                                | DF2B7M2CL *                                                                       | DF2B7M2SL *                                                                       | (DF2B6.8M1ACT)                                                                    | DF4D7M2G *                                                                        | 6                      | 1                | 0.05 (0.5)             | 5                 | 0.2 (0.3)              | 0               | ±12 kV                                                    |
|                                                            | —                                                                                 | —                                                                                 | (DF2B12M1CT)                                                                      | —                                                                                 | 10                     | 1                | 0.05                   | 8                 | 0.2 (0.3)              | 0               | ±8 kV                                                     |
|                                                            | DF2B7M3CL **                                                                      | DF2B7M3SL *                                                                       | —                                                                                 | —                                                                                 | 6                      | 1                | 0.5                    | 5.5               | 0.1                    | 0               | ±12 kV                                                    |
|                                                            | DF2B5M4CL **                                                                      | DF2B5M4SL *                                                                       | DF2B5M4CT *                                                                       | —                                                                                 | 4                      | 1                | 0.1                    | 3.6               | 0.2                    | 0               | ±20 kV                                                    |
|                                                            | DF2B6M4CL **                                                                      | DF2B6M4SL *                                                                       | DF2B6M4CT *                                                                       | —                                                                                 | 5.6                    | 1                | 0.1                    | 5.5               | 0.2                    | 0               | ±20 kV                                                    |
|                                                            | —                                                                                 | DF2B20M4SL *                                                                      | —                                                                                 | —                                                                                 | 19.5                   | 1                | 0.1                    | 18.5              | 0.2                    | 0               | ±15 kV                                                    |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*: New product / 新製品

\*\*: Under development / 開発中

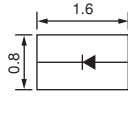
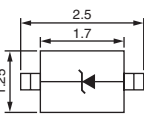
## (Extra-High-Speed Type, Flow-Through) / (エクストラハイスピードタイプ, フロースルー)

| Protected Lines                                                     | 2 Lines                                                                            |                                                                                    | 4 Lines                                                                            |     | V <sub>BR</sub><br>(V) |     | I <sub>R</sub><br>(μA) |      | C <sub>t</sub><br>(pF) |        | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----|------------------------|-----|------------------------|------|------------------------|--------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                           | —<br>(DFN6)                                                                        | —<br>(DFN5)                                                                        | —<br>(DFN10)                                                                       |     |                        |     |                        |      |                        |        |                                                           |
| Package Dimensions<br>and<br>Internal<br>Connections <sup>(1)</sup> |  |  |  | Min | @I <sub>BR</sub>       | Max | @V <sub>RWM</sub>      | Typ. | @V <sub>R</sub>        |        |                                                           |
|                                                                     | (mm)                                                                               | (mm)                                                                               | (mm)                                                                               |     | (mA)                   |     | (V)                    |      | (V)                    |        |                                                           |
| Part Number                                                         | DF6D7M1N                                                                           | —                                                                                  | DF10G7M1N                                                                          | 6   | 1                      | 0.5 | 5                      | 0.3  | 0                      | ±12 kV |                                                           |
|                                                                     | —                                                                                  | DF5G7M2N *                                                                         | —                                                                                  | 6   | 1                      | 0.5 | 5.5                    | 0.2  | 0                      |        |                                                           |
|                                                                     | DF6D5M4N *                                                                         | DF5G5M4N *                                                                         | DF10G5M4N *                                                                        | 4   | 1                      | 0.1 | 3.6                    | 0.2  | 0                      | ±20 kV |                                                           |
|                                                                     | DF6D6M4N *                                                                         | DF5G6M4N *                                                                         | DF10G6M4N *                                                                        | 5.6 | 1                      | 0.1 | 5.5                    | 0.2  | 0                      |        |                                                           |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*: New product / 新製品

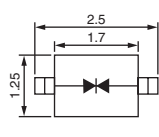
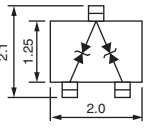
## (Surge Protection Type, Unidirectional) / (サージ保護タイプ, 単方向)

| Protected Lines                                                     | 1 Line                                                                              |                                                                                     | V <sub>BR</sub><br>(V) |                   | I <sub>R</sub><br>(μA) |                   | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|-------------------|------------------------|-------------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                           | —<br>(CST2C)                                                                        | SOD-323<br>(USC)                                                                    |                        |                   |                        |                   |                        |                 |                                                           |
| Package Dimensions<br>and<br>Internal<br>Connections <sup>(1)</sup> |  |  | Min                    | @ I <sub>BR</sub> | Max                    | @V <sub>RWM</sub> | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                                     | (mm)                                                                                | (mm)                                                                                |                        | (mA)              |                        | (V)               |                        | (V)             |                                                           |
| Part Number                                                         | DF2S6P2CTC**                                                                        | DF2S6P2FU**                                                                         | 5.6                    | 1                 | 0.1                    | 55                | 600                    | 0               | ±30 kV                                                    |
|                                                                     | DF2S12P2CTC**                                                                       | DF2S12P2FU**                                                                        | 10.5                   | 1                 | 0.1                    | 10                | 350                    | 0               | ±30 kV                                                    |
|                                                                     | DF2S14P2CTC**                                                                       | DF2S14P2FU**                                                                        | 12.9                   | 1                 | 0.1                    | 12.6              | 270                    | 0               | ±30 kV                                                    |
|                                                                     | DF2S23P2CTC**                                                                       | DF2S23P2FU**                                                                        | 21.5                   | 1                 | 0.1                    | 21                | 160                    | 0               | ±30 kV                                                    |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*\*: Under development / 開発中

## (Automotive Interface Applications, Bidirectional) / (車載インタフェース向け, 双方向)

| Protected Lines                                                  | 1 Line                                                                              | 2 Lines                                                                             | V <sub>BR</sub><br>(V) |                  | I <sub>R</sub><br>(μA) |                   | C <sub>t</sub><br>(pF) |                 | ESD Immunity<br>(IEC 61000-4-2, Contact Discharge)<br>Min |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|------------------|------------------------|-------------------|------------------------|-----------------|-----------------------------------------------------------|
| Package Name<br>(toshiba)                                        | SOD-323<br>(USC)                                                                    | SOT-232<br>(USM)                                                                    |                        |                  |                        |                   |                        |                 |                                                           |
| Package Dimensions<br>and<br>Internal Connections <sup>(1)</sup> |  |  | Min                    | @I <sub>BR</sub> | Max                    | @V <sub>RWM</sub> | Typ.                   | @V <sub>R</sub> |                                                           |
|                                                                  | (mm)                                                                                | (mm)                                                                                |                        | (mA)             |                        | (V)               |                        | (V)             |                                                           |
| Part Number                                                      | DF2B18FU *                                                                          | DF3D18FU *                                                                          | 16.2                   | 1                | 0.1                    | 12                | 9                      | 0               | ±30 kV                                                    |
|                                                                  | DF2B29FU *                                                                          | DF3D29FU *                                                                          | 26                     | 1                | 0.1                    | 24                | 9                      | 0               | ±25 kV                                                    |
|                                                                  | DF2B36FU *                                                                          | DF3D36FU *                                                                          | 32                     | 1                | 0.1                    | 28                | 7                      | 0               | ±20 kV                                                    |

Note (1): The internal connection diagrams only show the general configurations of the circuits. / 内部接続図はイメージ図です。

\*: New product / 新製品

SiC Schottky Barrier Diodes / SiCショットキバリアダイオード

SiC Schottky Barrier Diodes / SiCショットキバリアダイオード

| Design | Absolute Maximum Ratings |                | Package                 | Part Number | Electrical Characteristics (Ta = 25°C ) |     |                    |           |
|--------|--------------------------|----------------|-------------------------|-------------|-----------------------------------------|-----|--------------------|-----------|
|        | VRRM<br>(V)              | IF (DC)<br>(A) |                         |             | VF (V)                                  |     | Cj (pF)            | IRRM (μA) |
|        |                          |                |                         |             | @IF (DC)                                |     | @650V/1 MHz        | @VRRM     |
|        |                          |                |                         |             | Typ.                                    | Max | Typ.               | Max       |
| 1 st   | 650                      | 12             | TO-220-2L               | TRS12E65C   | 1.54                                    | 1.7 | 65                 | 90        |
|        |                          | 12             | TO-220F-2L<br>Isolation | TRS12A65C   | 1.54                                    | 1.7 | 65                 | 90        |
|        |                          | 16             |                         | TRS16A65C   | 1.5                                     | 1.7 | 88                 | 90        |
|        |                          | 12             | TO-247                  | TRS12N65D   | 1.5                                     | 1.7 | 35 <sup>(1)</sup>  | 90        |
|        |                          | 16             |                         | TRS16N65D   | 1.5                                     | 1.7 | 44 <sup>(1)</sup>  | 90        |
|        |                          | 20             |                         | TRS20N65D   | 1.5                                     | 1.7 | 55 <sup>(1)</sup>  | 90        |
|        |                          | 24             |                         | TRS24N65D   | 1.54                                    | 1.7 | 65 <sup>(1)</sup>  | 90        |
|        | 1200                     | 20             | TO-3P (N)               | TRS20J120C  | 1.5                                     | 1.7 | 105 <sup>(2)</sup> | 90        |
| 2 nd   | 650                      | 2              | TO-220-2L               | TRS2E65F    | 1.45                                    | 1.6 | 8.7                | 20        |
|        |                          | 3              |                         | TRS3E65F    | 1.45                                    | 1.6 | 12                 | 20        |
|        |                          | 4              |                         | TRS4E65F    | 1.45                                    | 1.6 | 16                 | 20        |
|        |                          | 6              |                         | TRS6E65F    | 1.45                                    | 1.6 | 22                 | 30        |
|        |                          | 8              |                         | TRS8E65F    | 1.45                                    | 1.6 | 28                 | 40        |
|        |                          | 10             |                         | TRS10E65F   | 1.45                                    | 1.6 | 36                 | 50        |
|        |                          | 4              | TO-220F-2L<br>Isolation | TRS4A65F    | 1.45                                    | 1.6 | 16                 | 20        |
|        |                          | 6              |                         | TRS6A65F    | 1.45                                    | 1.6 | 22                 | 30        |
|        |                          | 8              |                         | TRS8A65F    | 1.45                                    | 1.6 | 28                 | 40        |
|        |                          | 10             |                         | TRS10A65F   | 1.45                                    | 1.6 | 36                 | 50        |
|        |                          | 2              | DPAK                    | TRS2P65F    | 1.45                                    | 1.6 | 8.7                | 20        |
|        |                          | 3              |                         | TRS3P65F    | 1.45                                    | 1.6 | 12                 | 20        |
|        |                          | 4              |                         | TRS4P65F    | 1.45                                    | 1.6 | 16                 | 20        |
|        |                          | 6              |                         | TRS6P65F    | 1.45                                    | 1.6 | 22                 | 30        |
|        |                          | 8              |                         | TRS8P65F    | 1.45                                    | 1.6 | 28                 | 40        |
|        |                          | 10             |                         | TRS10P65F   | 1.45                                    | 1.6 | 36                 | 50        |

Note (1): Per diode / 2素子中 1素子あたりの値

(2): @VR = 600 V/fH = 1 MHz

Packages / パッケージ

| Package     | TO-220-2L   | TO-220F-2L  | TO-247      | TO-3P(N)    |
|-------------|-------------|-------------|-------------|-------------|
| <p>(mm)</p> | <p>(mm)</p> | <p>(mm)</p> | <p>(mm)</p> | <p>(mm)</p> |

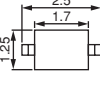
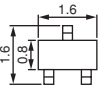
## Schottky Barrier Diodes / ショットキバリアダイオード

### Schottky Barrier Diodes (SBDs) / 整流用ショットキバリアダイオード (SBD)

|                             |     | Package | Peak Repetitive Reverse Voltage (V) |                                                                                                                          |                                                      |                              |
|-----------------------------|-----|---------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|
|                             |     |         | 20                                  | 30                                                                                                                       | 40                                                   | 60                           |
| Average Forward Current (A) | 0.7 | US-FLAT |                                     |                                                                                                                          | <b>CUS03</b>                                         | <b>CUS04</b>                 |
|                             | 1   | US-FLAT | <b>CUS05</b><br><b>CUS06</b>        | <b>CUS01</b><br><b>CUS02</b><br><b>CUS10I30A</b>                                                                         | <b>CUS10I40A</b>                                     |                              |
|                             |     | S-FLAT  | <b>CRS06</b>                        | <b>CRS01</b><br><b>CRS03</b><br><b>CRS05</b><br><b>CRS11</b><br><b>CRS10I30A</b><br><b>CRS10I30B</b><br><b>CRS10I30C</b> | <b>CRS04</b><br><b>CRS10I40A</b><br><b>CRS10I40B</b> | <b>CRS12</b><br><b>CRS13</b> |
|                             |     | M-FLAT  |                                     | <b>CMS08</b><br><b>CMS09</b><br><b>CMS10I30A</b>                                                                         | <b>CMS10</b><br><b>CMS10I40A</b>                     |                              |
|                             | 1.5 | US-FLAT |                                     | <b>CUS15I30A</b>                                                                                                         |                                                      |                              |
|                             |     | S-FLAT  |                                     | <b>CRS08</b><br><b>CRS09</b><br><b>CRS15I30A</b><br><b>CRS15I30B</b>                                                     | <b>CRS15I40A</b>                                     |                              |
|                             |     | M-FLAT  |                                     |                                                                                                                          | <b>CMS15I40A</b>                                     |                              |
|                             | 2   | S-FLAT  |                                     | <b>CRS14</b><br><b>CRS20I30A</b><br><b>CRS20I30B</b>                                                                     | <b>CRS20I40A</b><br><b>CRS20I40B</b>                 |                              |
|                             |     | M-FLAT  |                                     | <b>CMS06</b><br><b>CMS07</b><br><b>CMS17</b><br><b>CMS20I30A</b>                                                         | <b>CMS11</b><br><b>CMS20I40A</b>                     | <b>CMS14</b>                 |
|                             | 3   | S-FLAT  |                                     | <b>CRS15</b><br><b>CRS30I30A</b>                                                                                         | <b>CRS30I40A</b>                                     |                              |
|                             |     | M-FLAT  |                                     | <b>CMS01</b><br><b>CMS03</b><br><b>CMS30I30A</b>                                                                         | <b>CMS16</b><br><b>CMS30I40A</b>                     | <b>CMS15</b>                 |
|                             | 5   | M-FLAT  |                                     | <b>CMS04</b><br><b>CMS05</b>                                                                                             |                                                      |                              |

- The products shown in bold are manufactured in offshore fabs.
- 太字製品は当社海外工場にて生産しております。

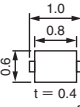
Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes /  
小信号ショットキバリアダイオード, 複合ショットキバリアダイオード

| Absolute Maximum Ratings |         | Electrical Characteristics (Ta = 25°C) |      |          |         |         | CST2                                                                                      | SOD-923                                                                                   | ESC                                                                                       | USC                                                                                         | VESM                                                                                        | SSM                                                                                         |
|--------------------------|---------|----------------------------------------|------|----------|---------|---------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| VR (V)                   | Io (mA) | VF (V)                                 |      | @IF (mA) | IR (μA) |         | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) |
|                          |         | Typ.                                   | Max  |          | Max     | @VR (V) |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |
| 10                       | 50      | 0.63                                   | 1.0  | 50       | 0.5     | 10      |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |
| 10                       | 100     | 0.23                                   | 0.3  | 5        | 20      | 10      |                                                                                           |                                                                                           | 1SS389                                                                                    | 1SS367                                                                                      |                                                                                             |                                                                                             |
|                          |         | 0.35                                   | 0.5  | 100      |         |         |                                                                                           |                                                                                           |          |          |                                                                                             |                                                                                             |
| 10                       | 100     | 0.23                                   | 0.3  | 5        | 20      | 10      |                                                                                           |                                                                                           |                                                                                           |                                                                                             | 1SS385FV                                                                                    | 1SS385                                                                                      |
|                          |         | 0.35                                   | 0.5  | 100      |         |         |                                                                                           |                                                                                           |                                                                                           |                                                                                             |          |          |
| 10                       | 100     | 0.23                                   | 0.3  | 5        | 20      | 10      |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |
|                          |         | 0.35                                   | 0.5  | 100      |         |         |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |
| 20                       | 50      | 0.33                                   | —    | 1        | 0.5     | 20      | 1SS413CT                                                                                  | 1SS413                                                                                    | 1SS405                                                                                    | 1SS406                                                                                      |                                                                                             |                                                                                             |
|                          |         | 0.5                                    | 0.55 | 50       |         |         |          |          |          |          |                                                                                             |                                                                                             |
| 20                       | 200     | 0.42                                   | 0.5  | 200      | 50      | 20      |                                                                                           |                                                                                           | 1SS424                                                                                    |                                                                                             |                                                                                             |                                                                                             |
|                          |         |                                        |      |          |         |         |                                                                                           |                                                                                           |        |                                                                                             |                                                                                             |                                                                                             |
| 20                       | 300     | 0.16                                   | —    | 1        | 50      | 20      |                                                                                           |                                                                                           |                                                                                           | 1SS404                                                                                      |                                                                                             |                                                                                             |
|                          |         | 0.38                                   | 0.45 | 300      |         |         |                                                                                           |                                                                                           |                                                                                           |        |                                                                                             |                                                                                             |
| 40                       | 100     | 0.28                                   | —    | 1        | 5       | 40      |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |
|                          |         | 0.54                                   | 0.6  | 100      |         |         |                                                                                           |                                                                                           |                                                                                           |                                                                                             |                                                                                             |                                                                                             |

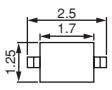
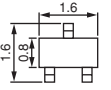
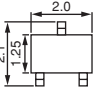
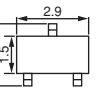
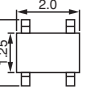
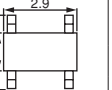
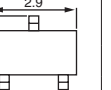
- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

| USM (SC-70)                                                                               | S-MINI (SC-59)                                                                            | USQ                                                                                       | SMQ (SC-61)                                                                               | US6 (SOT-363)                                                                             | SM6 (SC-74)                                                                               | Remarks                                |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------|
| <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) |                                        |
|                                                                                           | 1SS321                                                                                    |                                                                                           |                                                                                           |                                                                                           |                                                                                           | Low leakage current,<br>Common cathode |
|                                                                                           |          |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                        |
| 1SS395                                                                                    | 1SS394                                                                                    | 1SS384                                                                                    | 1SS391                                                                                    | HN2S01FU                                                                                  | HN2S01F                                                                                   | Low $V_F$ ,<br>Independent diodes      |
|          |          |          |          |          |          |                                        |
| 1SS378                                                                                    | 1SS377                                                                                    |                                                                                           |                                                                                           |                                                                                           |                                                                                           | Low $V_F$ ,<br>Common cathode          |
|          |          |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                        |
| 1SS372                                                                                    | 1SS374                                                                                    |                                                                                           |                                                                                           |                                                                                           |                                                                                           | Low $V_F$ ,<br>Series-connected        |
|          |          |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                        |
|                                                                                           |                                                                                           | 1SS402                                                                                    |                                                                                           | HN2S03FU                                                                                  |                                                                                           | Low leakage current,<br>High-speed SW  |
|                                                                                           |                                                                                           |          |                                                                                           |          |                                                                                           |                                        |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           | Low $I_R$                              |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                        |
| 1SS401                                                                                    |                                                                                           |                                                                                           |                                                                                           | HN2S04FU                                                                                  |                                                                                           | Low $V_F$ ,<br>High current            |
|        |                                                                                           |                                                                                           |                                                                                           |        |                                                                                           |                                        |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           | HN2S02FU                                                                                  |                                                                                           | Standard                               |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |        |                                                                                           |                                        |

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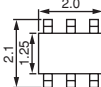
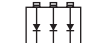
| Absolute<br>Maximum<br>Ratings |      | Electrical<br>Characteristics<br>(Ta = 25°C ) |                |             |         |    |                                                                                   | SL2                                                                                 | CST2                                                                                | CST2C                                                                             | SOD-923                                                                               | CST2B                                                                                 | ESC                                                                                   |
|--------------------------------|------|-----------------------------------------------|----------------|-------------|---------|----|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                |      | VF (V)                                        |                | @IF<br>(mA) | IR (μA) |    | @VR<br>(V)                                                                        |    |    |  |    |    |    |
|                                |      | Typ.                                          | Max            |             | Max     |    |                                                                                   | (mm)                                                                                | (mm)                                                                                | (mm)                                                                              | (mm)                                                                                  | (mm)                                                                                  | (mm)                                                                                  |
| 30                             | 100  | 0.38                                          | 0.5            | 100         | 20      | 10 |                                                                                   |                                                                                     | 1SS416CT                                                                            |                                                                                   | 1SS416                                                                                |                                                                                       |                                                                                       |
|                                |      |                                               |                |             | 50      | 30 |                                                                                   |                                                                                     |    |                                                                                   |    |                                                                                       |                                                                                       |
| 30                             | 100  | 0.27                                          | 0.3            | 10          | 7       | 10 | DSF01S30SL *                                                                      |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      | 0.41                                          | 0.5            | 100         | 50      | 30 |  |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 100  | 0.37                                          | 0.5            | 10          | 0.35    | 10 | DSR01S30SL *                                                                      |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      | 0.51                                          | 0.62           | 100         | 0.7     | 30 |  |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 200  | 0.52                                          | 0.6            | 200         | 5       | 30 |                                                                                   | CTS520                                                                              |                                                                                     |                                                                                   |                                                                                       |                                                                                       | CES520                                                                                |
|                                |      |                                               |                |             |         |    |                                                                                   |    |                                                                                     |                                                                                   |                                                                                       |                                                                                       |    |
| 30                             | 200  | 0.45                                          | 0.5            | 200         | 30      | 30 |                                                                                   | CTS521                                                                              |                                                                                     |                                                                                   |                                                                                       |                                                                                       | CES521                                                                                |
|                                |      |                                               |                |             |         |    |                                                                                   |    |                                                                                     |                                                                                   |                                                                                       |                                                                                       |    |
| 30                             | 200  | 0.45                                          | 0.58           | 100         | 2       | 25 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 500  | 0.38                                          | 0.45<br>(0.47) | 500         | 50      | 30 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       | CBS05F30                                                                              |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |  |                                                                                       |
| 30                             | 500  | 0.41                                          | 0.47           | 500         | 300     | 30 |                                                                                   | CTS05S30 *                                                                          |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |  |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 800  | 0.40                                          | 0.45           | 800         | 50      | 30 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 1000 | 0.43                                          | 0.5            | 1000        | 50      | 30 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 30                             | 1000 | 0.37                                          | 0.45           | 1000        | 500     | 30 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       | CBS10S30 *                                                                            |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |  |                                                                                       |
| 30                             | 1500 | 0.33                                          | 0.4            | 1000        | 500     | 30 |                                                                                   |                                                                                     | CCS15S30                                                                            |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      | 0.39                                          | —              | 1500        |         |    |                                                                                   |                                                                                     |  |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 100  | 0.54<br>(0.56)                                | 0.6<br>(0.62)  | 100         | 5       | 40 |                                                                                   | (1SS417CT)                                                                          |                                                                                     |                                                                                   | (1SS417)                                                                              |                                                                                       | CES388                                                                                |
|                                |      |                                               |                |             |         |    |                                                                                   |  |                                                                                     |                                                                                   |  |                                                                                       |  |
| 40                             | 100  | 0.54                                          | 0.6            | 100         | 5       | 40 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 100  | 0.54<br>(0.56)                                | 0.6<br>(0.62)  | 100         | 5       | 40 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 500  | 0.53<br>(0.56)                                | 0.6            | 500         | 50      | 40 |                                                                                   | CTS05S40 *                                                                          |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |  |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 1000 | 0.45<br>(0.48)                                | 0.50<br>(0.55) | 1000        | 150     | 40 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       | (CBS10S40) *                                                                          |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |  |                                                                                       |
| 40                             | 1000 | 0.60<br>(0.63)                                | 0.67<br>(0.7)  | 1000        | 20      | 40 |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       | (CBS10F40) *                                                                          |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |                                                                                     |                                                                                     |                                                                                   |                                                                                       |  |                                                                                       |
| 40                             | 1000 | 0.74                                          | 0.81           | 500         | 15      | 40 |                                                                                   | CTS05F40 *                                                                          |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      |                                               |                |             |         |    |                                                                                   |  |                                                                                     |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 1500 | 0.40                                          | 0.45           | 1000        | 200     | 40 |                                                                                   |                                                                                     | CCS15S40 *                                                                          |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      | 0.47                                          | 0.55           | 1500        |         |    |                                                                                   |                                                                                     |  |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
| 40                             | 1500 | 0.50                                          | 0.55           | 1000        | 25      | 40 |                                                                                   |                                                                                     | CCS15F40 *                                                                          |                                                                                   |                                                                                       |                                                                                       |                                                                                       |
|                                |      | 0.59                                          | 0.64           | 1500        |         |    |                                                                                   |                                                                                     |  |                                                                                   |                                                                                       |                                                                                       |                                                                                       |

- The VF ratings enclosed in parentheses are for those devices whose part numbers are enclosed in parentheses.
- The internal connection diagrams only show the general configurations of the circuits.
- ( ) 内品種はVF特性が異なります。
- 内部接続図はイメージ図です。

|                                                                                                    | USC<br><br>(mm) | SSM<br><br>(mm) | USM (SC-70)<br><br>(mm) | S-MINI (SC-59)<br><br>(mm) | USQ<br><br>(mm) | SMQ (SC-61)<br><br>(mm) | SOT23<br><br>(mm) | Remarks                                             |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
|                                                                                                    |                                                                                                  | 1SS422<br>      |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $V_F$                                           |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $V_F$                                           |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $I_R$                                           |
| CUS520<br>        |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $I_R$                                           |
| CUS521<br>        |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $V_F$                                           |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            | TBAT54 *                                                                                             | Low $I_R$ ,<br>single                               |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            | TBAT54A *                                                                                            | Low $I_R$ ,<br>common anode                         |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            | TBAT54C *                                                                                            | Low $I_R$ ,<br>common cathode                       |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            | TBAT54S *                                                                                            | Low $I_R$ ,<br>series-connected                     |
| (CUS551V30)<br> |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | Low $V_F$                                           |
| CUS05S30 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
| CUS08F30<br>    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single Improved<br>$V_F$ and $I_R$ |
| CUS10F30<br>    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single Improved<br>$V_F$ and $I_R$ |
| CUS10S30 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
| CUS15S30 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
| CUS357<br>      |                                                                                                  |                                                                                                  | 1SS322<br>            | 1SS294<br>               | 1SS383<br>    | 1SS319<br>            |                                                                                                      | Standard,<br>Independent diodes                     |
|                                                                                                    |                                                                                                  |                                                                                                  | 1SS393<br>            | 1SS392<br>               |                                                                                                  |                                                                                                            |                                                                                                      | Standard,<br>common cathode                         |
|                                                                                                    | (1SS423)<br>  |                                                                                                  |                                                                                                          | 1SS396<br>               |                                                                                                  |                                                                                                            |                                                                                                      | Standard,<br>series-connected                       |
| CUS05S40 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
| CUS10S40 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
| CUS10F40 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single Improved<br>$V_F$ and $I_R$ |
| CUS05F40 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single Improved<br>$V_F$ and $I_R$ |
| CUS15S40 *                                                                                         |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single, very Low- $V_F$            |
|                                                                                                    |                                                                                                  |                                                                                                  |                                                                                                          |                                                                                                             |                                                                                                  |                                                                                                            |                                                                                                      | High current,<br>single Improved<br>$V_F$ and $I_R$ |

\*: New product / 新製品

Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes / 小信号ショットキバリアダイオード, 複合ショットキバリアダイオード

| Absolute Maximum Ratings |            | Electrical Characteristics<br>(Ta = 25°C ) |               |             |         |         | ESV                                                                                       | UFV                                                                                        | US6                                                                                         | Remarks                                       |
|--------------------------|------------|--------------------------------------------|---------------|-------------|---------|---------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------|
| VR<br>(V)                | IO<br>(mA) | VF (V)                                     |               | @IF<br>(mA) | IR (μA) |         | <br>(mm) | <br>(mm) | <br>(mm) |                                               |
|                          |            | Typ.                                       | Max           |             | Max     | @VR (V) |                                                                                           |                                                                                            |                                                                                             |                                               |
| 30                       | 1000       | 0.47                                       | 0.57          | 1000        | 50      | 30      |                                                                                           | CVJ10F30                                                                                   |                                                                                             | High current,<br>single Improved<br>VF and IR |
| 40                       | 100        | 0.54<br>(0.56)                             | 0.6<br>(0.62) | 100         | 5       | 40      | HN2S02JE                                                                                  |                                                                                            | HN2S02FU                                                                                    |                                               |
|                          |            |                                            |               |             |         |         |          |                                                                                            |          |                                               |

- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Radio-Frequency Schottky Barrier Diodes / 高周波用ショットキバリアダイオード

| Part Number | Applications        | VR<br>♣VRM<br>(V) | IF<br>(mA) | VF(Typ.) |            | Cτ(Typ.) |           | Package         |
|-------------|---------------------|-------------------|------------|----------|------------|----------|-----------|-----------------|
|             |                     |                   |            | (V)      | IF<br>(mA) | (pF)     | VR<br>(V) |                 |
| 1SS154      | VHF to S band mixer | 6                 | 30         | 0.5      | 10         | 0.8      | 0         | S-Mini (Single) |
| 1SS271      |                     | 6                 | 30         | 0.5      | 10         | 0.8      | 0         | S-Mini (Twin)   |
| 1SS295      | UHF MIXER           | 4                 | 30         | 0.25     | 2          | 0.6      | 0.2       | S-Mini (Twin)   |
| 1SS315      |                     | ♣5                | 30         | 0.25     | 2          | 0.6      | 0.2       | USC             |
| JDH2S01FS   |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | fSC             |
| JDH3D01S    |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | SSM (Twin)      |
| JDH3D01FV   |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | VESM (Twin)     |
| JDH2S02FS   |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | fSC             |
| JDH2S02SC   |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | SC2             |
| JDH2S02SL * |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | SL2             |

\*: New product / 新製品

Rectifiers / 整流用ダイオード

General-Purpose Rectifiers / 一般整流用ダイオード

| Average Forward Current (A) | Package | Peak Repetitive Reverse Voltage (V)         |                              |              | Remarks            |
|-----------------------------|---------|---------------------------------------------|------------------------------|--------------|--------------------|
|                             |         | 400                                         | 600                          | 800          |                    |
| 0.7                         | HM-FLAT | HMG02                                       |                              |              | Independent 2-in-1 |
|                             | S-FLAT  | <b>CRG07</b>                                |                              |              |                    |
| 1                           | S-FLAT  | <b>CRG03</b><br><b>CRG09</b> <sup>(1)</sup> | <b>CRG04</b>                 | <b>CRG05</b> |                    |
|                             | M-FLAT  | <b>CMG05</b><br><b>CMG07</b>                | <b>CMG06</b><br><b>CMG08</b> |              |                    |
| 2                           | M-FLAT  | <b>CMG02</b>                                | <b>CMG03</b>                 |              |                    |

Note (1): High ESD protection / 高静電気耐量タイプ

- ・ The products shown in bold are manufactured in offshore fabs.
- ・ 太字製品は当社海外工場にて生産しております。

(For Strobe Discharge Circuits) / (ストロボフラッシュ放電回路用)

| Peak Repetitive Forward Current | Peak Repetitive Reverse Voltage | Part Number  | Package | Remarks          |
|---------------------------------|---------------------------------|--------------|---------|------------------|
| I <sub>FRM</sub> (A)            | V <sub>RRM</sub> (V)            |              |         |                  |
| 150                             | 400                             | <b>CMC02</b> | M-FLAT  | CM = 500 $\mu$ F |

- ・ The products shown in bold are manufactured in offshore fabs.
- ・ 太字製品は当社海外工場にて生産しております。

Super-Fast-Recovery Diodes (S-FRDs) / 超高速整流用ダイオード (S-FRD)

| Average Forward Current (A) | Package | Reverse Recovery Time trr (ns) (Max) | Peak Repetitive Reverse Voltage (V) |              |              |                |
|-----------------------------|---------|--------------------------------------|-------------------------------------|--------------|--------------|----------------|
|                             |         |                                      | 600                                 | 800          | 900          | 1000           |
| 0.5                         | S-FLAT  | 100                                  |                                     | <b>CRF02</b> |              |                |
|                             | M-FLAT  |                                      |                                     | <b>CMF04</b> | <b>CMF03</b> | <b>CMF05</b> ☆ |
| 0.7                         | S-FLAT  |                                      | <b>CRF03</b>                        |              |              |                |
| 1                           | M-FLAT  |                                      | <b>CMF02</b>                        |              |              |                |
| 2                           | M-FLAT  |                                      | <b>CMF01</b>                        |              |              |                |

☆: Dry-packed / 防湿梱包品

- ・ The products shown in bold are manufactured in offshore fabs.
- ・ 太字製品は当社海外工場にて生産しております。

High-Efficiency Diodes (HEDs) / 高速高効率ダイオード (HED)

| Average Forward Current (A) | Package | Reverse Recovery Time trr (ns) (Max) | Peak Repetitive Reverse Voltage (V) |
|-----------------------------|---------|--------------------------------------|-------------------------------------|
|                             |         |                                      | 200                                 |
| 0.5                         | S-FLAT  | 35                                   | <b>CRH02</b>                        |
|                             | S-FLAT  |                                      | <b>CRH01</b>                        |
| 1                           | M-FLAT  |                                      | <b>CMH04</b>                        |
| 2                           | M-FLAT  | 35                                   | <b>CMH07</b>                        |
| 3                           |         | 35                                   | <b>CMH01</b>                        |

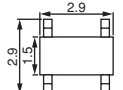
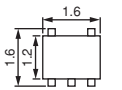
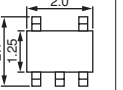
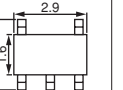
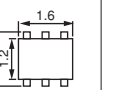
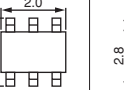
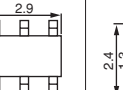
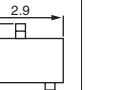
- ・ The products shown in bold are manufactured in offshore fabs.
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Switching Diodes / スイッチングダイオード

Small-Signal Switching Diodes and Multiple Switching Diodes /  
小信号スイッチングダイオード, 複合スイッチングダイオード

| $V_R$<br>(V) | $I_O$<br>(mA) | trr<br>(ns)           | CST2<br><br>(mm) | SOD-923<br><br>(mm) | ESC<br><br>(mm) | USC<br><br>(mm) | CST3<br><br>(mm) | VESM<br><br>(mm) | SSM<br><br>(mm) | USM (SC-70)<br><br>(mm) | S-MINI (SC-59)<br><br>(mm) | USQ<br><br>(mm) |
|--------------|---------------|-----------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 30           | 100           | —                     |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS307<br>                 |                                                                                                    |
| 80           | 100           | —                     |                                                                                                   |                                                                                                      | 1SS307E *<br>   |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   | 1SS412<br>              | 1SS379<br>                 |                                                                                                    |
| 80           | 100           | 1.6<br>Typ.           |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   | 1SS360<br>      | 1SS300<br>              | 1SS181<br>                 |                                                                                                    |
| 80           | 100           | 1.6<br>Typ.           |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  | 1SS361CT<br>     | 1SS361FV<br>     | 1SS361<br>      | 1SS301<br>              | 1SS184<br>                 |                                                                                                    |
| 80           | 100<br>(80)   | 1.6<br>Typ.           |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   | 1SS362FV<br>     | (1SS362)<br>    | 1SS302A *<br>           | 1SS226<br>                 |                                                                                                    |
| 80           | 100<br>(80)   | 1.6<br>Typ.           | 1SS387CT<br>     |                                                                                                      | 1SS387<br>      | 1SS352<br>      |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS193<br>                 | 1SS382<br>      |
|              |               |                       |                                                                                                   | 1SS427<br>         |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS196<br>                |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS187<br>               |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS190<br>               |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
| 80           | 100           | 1.6<br>Typ.           |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
| 80           | 215           | 4.0<br>Max            |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
| 100          | 215           | 4.0<br>Max            |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   | BAV99W *<br>          |                                                                                                               |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
|              |               |                       |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
| 100          | 250           | 3.0<br>Max            |                                                                                                   |                                                                                                      | BAS516 *<br>  | BAS316 *<br>  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            |                                                                                                               |                                                                                                    |
| 200          | 100           | 10<br>(30)<br>Typ.    |                                                                                                   |                                                                                                      |                                                                                                  | 1SS403<br>    |                                                                                                   |                                                                                                   |                                                                                                   | 1SS370<br>            | 1SS250<br>               |                                                                                                    |
| 400          | 100           | 500<br>(1500)<br>Typ. |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   | 1SS397<br>            |                                                                                                               |                                                                                                    |
| 400          | 100           | 500<br>Typ.           |                                                                                                   |                                                                                                      |                                                                                                  |                                                                                                  |                                                                                                   |                                                                                                   |                                                                                                   |                                                                                                            | 1SS398<br>               |                                                                                                    |

- The  $I_O$  ratings enclosed in parentheses are for those devices whose part numbers are enclosed in parentheses.
- The internal connection diagrams only show the general configurations of the circuits.
- ( ) 内の品種は $I_O$ の定格が異なります。
- 内部接続図はイメージ図です。

| SMQ (SC-61)                                                                               | ESV                                                                                       | USV                                                                                       | SMV (SC-74A)                                                                              | ES6                                                                                       | US6                                                                                        | SM6 (SC-74)                                                                                 | SOT23                                                                                       | Remarks                                                      |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) | <br>(mm) |                                                              |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | Low leakage current,<br>Single                               |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | Low leakage current,<br>Series-connected                     |
|                                                                                           |                                                                                           | HN4D01JU                                                                                  | 1SS308                                                                                    | HN1D01FE                                                                                  | HN1D01FU                                                                                   | HN1D01F                                                                                     |                                                                                             | High-speed switching,<br>Common anode                        |
|                                                                                           |                                                                                           | HN4D02JU                                                                                  | 1SS309                                                                                    | HN1D02FE                                                                                  | HN1D02FU                                                                                   | HN1D02F                                                                                     |                                                                                             | High-speed switching,<br>Common cathode                      |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           | HN1D04FU                                                                                   |                                                                                             |                                                                                             | High-speed switching,<br>Series-connected                    |
| 1SS272                                                                                    | HN2D01JE                                                                                  |                                                                                           |                                                                                           |                                                                                           | (HN2D01FU)                                                                                 | (HN2D01F)                                                                                   |                                                                                             | High-speed switching,<br>Independent diodes                  |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           | (HN2D02FU)                                                                                 |                                                                                             |                                                                                             | High-speed switching,<br>Independent diodes                  |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | High-speed switching,<br>Independent diodes                  |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | High-speed switching,<br>Independent diodes                  |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           | HN1D03FU                                                                                   | HN1D03F                                                                                     |                                                                                             | High-speed switching,<br>Common cathode<br>+<br>Common anode |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             | TBAW56 *                                                                                    | High-speed switching,<br>Common anode                        |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             | TBAS16 *                                                                                    | Low leakage current,<br>Single                               |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             | BAV99 *                                                                                     | Low leakage current,<br>Series-connected                     |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             | BAV70 *                                                                                     | High-speed switching,<br>Common cathode                      |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | High-speed switching,<br>Independent diodes                  |
| (1SS306)                                                                                  |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | High breakdown voltage,<br>Independent diodes                |
| 1SS399                                                                                    |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            | HN2D03F                                                                                     |                                                                                             | High breakdown voltage,<br>Independent diodes                |
|                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                             |                                                                                             | High breakdown voltage,<br>Series-connected                  |

\*: New product / 新製品

Zener Diodes / ツェナーダイオード

Zener Diodes / ツェナーダイオード

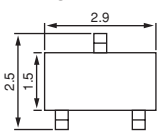
| Power Dissipation P (W)     | 0.7          | 1.0           | 2.0          |
|-----------------------------|--------------|---------------|--------------|
| Package                     | S-FLAT       | M-FLAT        | M-FLAT       |
| Zener Voltage Vz (V) (typ.) |              |               |              |
| 6.2                         | <b>CRY62</b> |               |              |
| 6.8                         | <b>CRY68</b> |               |              |
| 8.2                         | <b>CRY82</b> |               |              |
| 10                          | <b>CRZ10</b> |               |              |
| 12                          | <b>CRZ12</b> | <b>CMZB12</b> | <b>CMZ12</b> |
| 13                          | <b>CRZ13</b> | <b>CMZB13</b> | <b>CMZ13</b> |
| 15                          | <b>CRZ15</b> | <b>CMZB15</b> | <b>CMZ15</b> |
| 16                          | <b>CRZ16</b> |               | <b>CMZ16</b> |
| 18                          | <b>CRZ18</b> | <b>CMZB18</b> | <b>CMZ18</b> |
| 20                          | <b>CRZ20</b> | <b>CMZB20</b> | <b>CMZ20</b> |
| 24                          | <b>CRZ24</b> | <b>CMZB24</b> | <b>CMZ24</b> |
| 27                          | <b>CRZ27</b> | <b>CMZB27</b> | <b>CMZ27</b> |
| 30                          | <b>CRZ30</b> | <b>CMZB30</b> | <b>CMZ30</b> |
| 33                          | <b>CRZ33</b> | <b>CMZB33</b> | <b>CMZ33</b> |
| 36                          | <b>CRZ36</b> | <b>CMZB36</b> | <b>CMZ36</b> |
| 39                          | <b>CRZ39</b> | <b>CMZB39</b> | <b>CMZ39</b> |
| 43                          |              | <b>CMZB43</b> | <b>CMZ43</b> |
| 47                          |              | <b>CMZB47</b> | <b>CMZ47</b> |
| 51                          |              | <b>CMZB51</b> | <b>CMZ51</b> |
| 68                          |              | <b>CMZB68</b> |              |
| 75                          |              | <b>CMZB75</b> |              |
| 82                          |              | <b>CMZB82</b> |              |

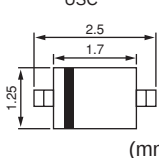
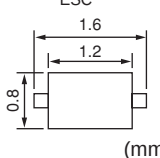
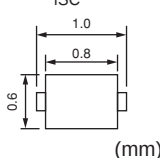
- The products shown in bold are manufactured in offshore fabs.
- 太字製品は当社海外工場にて生産しております。

## Variable Capacitance Diodes / 可変容量ダイオード

### Variable Capacitance Diodes / 可変容量ダイオード

(Diodes for Electronic Tuning) / (電子同調用)

| Part Number |  | $V_R$<br>(V) | $C_T$<br>(pF) | $V_R$ (V) | $C_T$<br>(pF) | $V_R$ (V) | Applications                   |
|-------------|-----------------------------------------------------------------------------------|--------------|---------------|-----------|---------------|-----------|--------------------------------|
| Package     |                                                                                   |              |               |           |               |           |                                |
| S-MINI      |                                                                                   |              |               |           |               |           |                                |
| 1SV228      | (mm)                                                                              | 15           | 28.5 to 32.5  | 3         | 11.7 to 13.7  | 8         | FM car radios, portable radios |

| Part Number                                                                                           |                                                                                                       |                                                                                                       | V <sub>R</sub><br>(V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | Applications |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------|------------------------|--------------------|------------------------|--------------------|--------------|
| Package                                                                                               |                                                                                                       |                                                                                                       |                       |                        |                    |                        |                    |              |
| <div><br/>(mm)</div> | <div><br/>(mm)</div> | <div><br/>(mm)</div> |                       |                        |                    |                        |                    |              |
| 1SV324                                                                                                | 1SV325                                                                                                |                                                                                                       | 10                    | 44 to 49.5             | 1                  | 9.2 to 12.2            | 4                  | VCXO         |
|                                                                                                       | JDV2S36E                                                                                              |                                                                                                       | 10                    | 44 to 49.5             | 1                  | 5.4 to 7.3             | 6                  | VCXO         |
| 1SV262                                                                                                | 1SV282                                                                                                |                                                                                                       | 34                    | 33 to 38               | 2                  | 2.6 to 3.0             | 25                 | CATV tuners  |
| 1SV322                                                                                                | 1SV323                                                                                                |                                                                                                       | 10                    | 26.5 to 29.5           | 1                  | 6 to 7.1               | 4                  | VCXO         |
| 1SV304                                                                                                | 1SV305                                                                                                |                                                                                                       | 10                    | 17.3 to 19.3           | 1                  | 5.3 to 6.6             | 4                  | VHF/UHF VCO  |
| 1SV270                                                                                                | 1SV281                                                                                                |                                                                                                       | 10                    | 15 to 17               | 1                  | 7.3 to 8.7             | 4                  | VHF/UHF VCO  |
| 1SV229                                                                                                | 1SV279                                                                                                | JDV2S41FS                                                                                             | 15                    | 14 to 16               | 2                  | 5.5 to 6.5             | 10                 | VHF/UHF VCO  |
| 1SV310                                                                                                | 1SV311                                                                                                | JDV2S09FS                                                                                             | 10                    | 9.7 to 11.1            | 1                  | 4.45 to 5.45           | 4                  | VHF/UHF VCO  |
|                                                                                                       | 1SV314                                                                                                | JDV2S10FS                                                                                             | 10                    | 7.3 to 8.4             | 0.5                | 2.75 to 3.4            | 2.5                | VHF/UHF VCO  |
| 1SV277                                                                                                | 1SV285                                                                                                | JDV2S07FS                                                                                             | 10                    | 4.0 to 4.9             | 1                  | 1.85 to 2.35           | 4                  | VHF/UHF VCO  |
| 1SV239                                                                                                | 1SV280                                                                                                |                                                                                                       | 15                    | 3.8 to 4.7             | 2                  | 1.5 to 2.0             | 10                 | L Band VCO   |

## Radio-Frequency Switching Diodes / 高周波スイッチ用ダイオード

### Radio-Frequency Switching Diodes / 高周波スイッチ用ダイオード

| Part Number | Applications   |        | $V_R$<br>(V) | $I_R$ (Max)         |              | $V_F$ (Max)  |               | $C_T$ (Typ.)  |              | $r_s$ (Typ.)          |               |              | Package |
|-------------|----------------|--------|--------------|---------------------|--------------|--------------|---------------|---------------|--------------|-----------------------|---------------|--------------|---------|
|             |                |        |              | $I_R$<br>( $\mu$ A) | $V_R$<br>(V) | $V_F$<br>(V) | $I_F$<br>(mA) | $C_T$<br>(pF) | $V_R$<br>(V) | $r_s$<br>( $\Omega$ ) | $I_F$<br>(mA) | $f$<br>(MHz) |         |
| 1SS314      | TV band switch | Single | 30           | 0.1                 | 15           | 0.85         | 2             | 0.7           | 6            | 0.5                   | 2             | 100          | USC     |
| 1SS381      |                |        | 30           | 0.1                 | 15           | 0.85         | 2             | 0.7           | 6            | 0.5                   | 2             | 100          | ESC     |
| 1SS268      |                | Twin   | 30           | 0.1                 | 15           | 0.85         | 2             | 0.8           | 6            | 0.6                   | 2             | 100          | S-Mini  |
| 1SS269      |                |        | 30           | 0.1                 | 15           | 0.85         | 2             | 0.8           | 6            | 0.6                   | 2             | 100          | S-Mini  |
| 1SS312      |                |        | 30           | 0.1                 | 15           | 0.85         | 2             | 0.8           | 6            | 0.6                   | 2             | 100          | USM     |
| 1SS313      |                |        | 30           | 0.1                 | 15           | 0.85         | 2             | 0.8           | 6            | 0.6                   | 2             | 100          | USM     |
| 1SS364      |                |        | 30           | 0.1                 | 15           | 0.85         | 2             | 0.85          | 6            | 0.6                   | 2             | 100          | SSM     |
| 1SV128      | Switch, ATT    | Single | 50           | 0.1                 | 50           | 0.95 (Typ.)  | 50            | 0.25          | 50           | 3                     | 10            | 100          | S-MINI  |
| JDP2S12CR   |                |        | 180          | 10                  | 50           | 1.0          | 50            | 1.0           | 40           | 0.4                   | 10            | 100          | S-FLAT  |
| 1SV307      |                |        | 30           | 0.1                 | 30           | 1.0          | 50            | 0.3           | 1            | 1                     | 10            | 100          | USC     |
| 1SV271      |                |        | 50           | 0.1                 | 50           | 1.0          | 50            | 0.25          | 50           | 3                     | 10            | 100          | USC     |
| 1SV308      |                |        | 30           | 0.1                 | 30           | 1.0          | 50            | 0.3           | 1            | 1                     | 10            | 100          | ESC     |
| JDP2S04E    |                |        | 50           | 0.1                 | 50           | 1.0          | 50            | 0.25          | 50           | 3                     | 10            | 100          | ESC     |
| JDP2S02AFS  |                |        | 30           | 0.1                 | 30           | 0.94         | 50            | 0.3           | 1            | 1                     | 10            | 100          | fSC     |
| JDP2S02ACT  |                | Switch | 30           | 0.1                 | 30           | 1.0          | 50            | 0.3           | 1            | 1                     | 10            | 100          | CST2    |
| JDP2S08SC   |                |        | 30           | 0.1                 | 30           | 0.95         | 50            | 0.21          | 1            | 1                     | 10            | 100          | SC2     |
| 1SV172      |                | Twin   | 50           | 0.1                 | 50           | 0.95 (Typ.)  | 50            | 0.25          | 50           | 3                     | 10            | 100          | S-MINI  |
| JDP3C04TU   |                |        | 50           | 0.1                 | 50           | 0.95         | 50            | 0.3           | 1            | 3                     | 10            | 100          | UFM     |
| JDP3C02AU   |                |        | 30           | 0.05                | 30           | 0.89 (Typ.)  | 50            | 0.28          | 1            | 1.06                  | 10            | 100          | USM     |
| JDP3C13U    |                |        | 30           | 0.1                 | 30           | 1.0          | 50            | 0.24          | 1            | 2.1                   | 10            | 100          | USM     |

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# SEMICONDUCTOR GENERAL CATALOG

## 半導体製品総覧表2017年7月版

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### Optical Semiconductor Devices

### 光半導体

Photocouplers / フォトカプラ

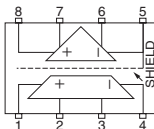
Photorelays / フォトリレー

Photocouplers for Automotive / 車載用フォトカプラ

Fiber-Coupler (TOSLINK™) / ファイバカプラ(トスリンク®)

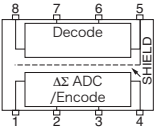
Photocouplers / フォトカプラ

Isolation Amplifier / アイソレーションアンプ  
(Analog output) / (アナログ出力)

| Part Number | Pin Configuration                                                                 | Package       | Features                                                                                  | Gain error<br>Ta = 25°C | Non Linearity<br>INL <sub>200</sub><br>Ta = 25°C | Input offset<br>Voltage | Supply Current<br>Input (I <sub>DD1</sub> )/<br>Output (I <sub>DD2</sub> )<br>(mA) | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |  |  |
|-------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------|-------------------------|------------------------------------------------------------------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|--|--|
|             |                                                                                   |               |                                                                                           | Rank<br>Max             | Typ.                                             | Typ.                    | Max                                                                                |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |  |  |
| TLP7820     |  | SO8L<br>(LF4) | Analog output<br>Isolation amplifier<br>Gain = 8.2 (typ.)<br>T <sub>opr</sub> (max) 105°C | ±0.5%<br>±1%<br>±3%     | 0.02%                                            | 0.9 mV                  | 12/10                                                                              | 5000                      | ○                               | ○    | ○                  | ○                  | ○   |  |  |
| TLP7920     |                                                                                   | DIP8          | Analog output<br>Isolation amplifier<br>Gain = 8.2 (typ.)<br>T <sub>opr</sub> (max) 105°C |                         |                                                  | 0.73 mV                 |                                                                                    |                           | ○                               | ○    | ○                  | ○                  | ○   |  |  |
| TLP7920F    |                                                                                   | DIP8 F Type   | Analog output<br>Isolation amplifier<br>Gain = 8.2 (typ.)<br>T <sub>opr</sub> (max) 105°C |                         |                                                  |                         |                                                                                    |                           | ○                               | ○    | ○                  | ○                  | ○   |  |  |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

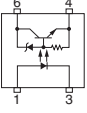
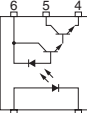
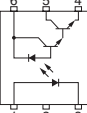
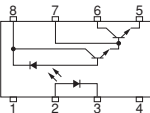
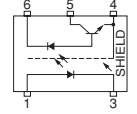
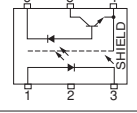
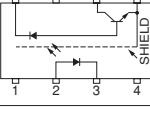
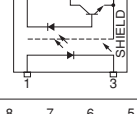
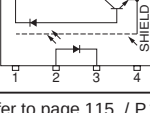
(Digital output) / (デジタル出力)

| Part Number | Pin Configuration                                                                   | Package       | Features                                                                             | SNDR<br>Ta = 25°C | SNR<br>Ta = 25°C | INL<br>(LSB) | Supply Current<br>Input (I <sub>DD1</sub> )/<br>Output (I <sub>DD2</sub> )<br>(mA) | BVs<br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------|-------------------|------------------|--------------|------------------------------------------------------------------------------------|----------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                                                                                     |               |                                                                                      | Typ.              | Typ.             | Typ.         | Max                                                                                |                                        | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP7830     |  | SO8L<br>(LF4) | 1 bit Digital & CLK<br>output<br>Isolation amplifier<br>T <sub>opr</sub> (max) 105°C | 75 dB             | 80 dB            | 4            | 12/8.0                                                                             | 5000                                   | ○                               | ○    | ○                  | ○                  | ○   |
| TLP7930     |                                                                                     | DIP8          | 1 bit Digital & CLK<br>output<br>Isolation amplifier<br>T <sub>opr</sub> (max) 105°C |                   |                  |              |                                                                                    |                                        | ○                               | ○    | ○                  | ○                  | ○   |
| TLP7930F    |                                                                                     | DIP8 F Type   | 1 bit Digital & CLK<br>output<br>Isolation amplifier<br>T <sub>opr</sub> (max) 105°C |                   |                  |              |                                                                                    |                                        | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

# IC Output / IC出力

(High Speed Communications) / (高速通信用)

| Part Number | Pin Configuration                                                                   | Package      | Features                                                                                      | Data Rate<br>(Typ. @NRZ) | Output/CTR | @I <sub>F(IN)</sub><br>(mA) | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------|--------------------------|------------|-----------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                                                                                     |              |                                                                                               |                          |            |                             |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2301     |    | 4 pin SO6    | Reinforced insulation<br>Low input drive current<br>Analog signal output                      | 20k bit/s                | 50% Min    | 1                           | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2701     |                                                                                     | 4 pin SO6L   | Reinforced insulation<br>Low input drive current<br>Analog signal output                      | 20k bit/s                | 50% Min    | 1                           | 5000                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2303     |    | 5 pin SO6    | Reinforced insulation<br>Low input drive current<br>Analog signal output                      | 100k bit/s               | 900% Min   | 0.5                         | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2703     |    | SO6L         | Reinforced insulation<br>Low input drive current<br>Analog signal output                      | 100k bit/s               | 900% Min   | 0.5                         | 5000                      | ○                               | ○    | ○                  | ○                  | △   |
| TLP2403     |   | SO8          | SO8 version of the<br>TLP553                                                                  | 300k bit/s               | 400% Min   | 0.5                         | 3750                      | ○                               | ○    | ○                  |                    |     |
| TLP109      |  | 5 pin SO6    | Reinforced insulation<br>Analog signal output                                                 | 1M bit/s                 | 20% Min    | 16                          | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP719      |  | SDIP6        | Direct drive of an IPM<br>Analog signal output                                                | 1M bit/s                 | 20% Min    | 16                          | 5000                      | ○                               | ○    | ○                  |                    |     |
| TLP719F     |                                                                                     | SDIP6 F Type |                                                                                               |                          |            |                             |                           |                                 |      |                    |                    |     |
| TLP759      |  | DIP8         | IEC950 design standard<br>version of the TLP559<br>Analog signal output                       | 1M bit/s                 | 20% Min    | 16                          | 5000                      | ○                               | ○    | ○                  |                    |     |
| TLP759F     |                                                                                     | DIP8 F Type  |                                                                                               |                          |            |                             |                           |                                 |      |                    |                    |     |
| TLP2309     |  | 5 pin SO6    | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 110°C<br>Analog signal output | 1M bit/s                 | 15% Min    | 10                          | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2409     |  | SO8          | Topr (max) 125°C<br>SO8 version of the<br>TLP109                                              | 1M bit/s                 | 20% Min    | 16                          | 3750                      | ○                               | ○    | ○                  |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

## IC Output / IC出力

(High Speed Communications) / (高速通信用)

| Part Number   | Pin Configuration | Package      | Features                                                                                      | Data Rate<br>(Typ. @NRZ) | Output/CTR                           | @ I <sub>F(IN)</sub><br>(mA)    | BV <sub>s</sub><br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|---------------|-------------------|--------------|-----------------------------------------------------------------------------------------------|--------------------------|--------------------------------------|---------------------------------|---------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|               |                   |              |                                                                                               |                          |                                      |                                 |                                       | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2530       |                   | DIP8         | Dual channel version of the 6N135 and the TLP550                                              | 1M bit/s                 | 7% Min                               | 16                              | 2500                                  | ○                               | ○    |                    |                    |     |
| TLP2531       |                   | DIP8         | Dual channel version of the 6N136 and the TLP550                                              | 1M bit/s                 | 19% Min                              | 16                              | 2500                                  | ○                               | ○    |                    |                    |     |
| TLP2709       |                   | SO6L         | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 110°C<br>Analog signal output | 1M bit/s                 | 15% Min                              | 10                              | 5000                                  | △                               | △    | △                  | △                  | △   |
| TLP2709 (LF4) |                   | SO6L F Type  |                                                                                               |                          |                                      |                                 |                                       |                                 |      |                    |                    |     |
| TLP715        |                   | SDIP6        | Direct drive of an IPM                                                                        | 5M bit/s                 | Totempole output<br>(Buffer logic)   | I <sub>FLH</sub> = 3<br>(max)   | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP715F       |                   | SDIP6 F Type |                                                                                               |                          |                                      |                                 |                                       |                                 |      |                    |                    |     |
| TLP718        |                   | SDIP6        | Direct drive of an IPM                                                                        | 5M bit/s                 | Totempole output<br>(Inverter logic) | I <sub>FHL</sub> = 3<br>(max)   | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP718F       |                   | SDIP6 F Type |                                                                                               |                          |                                      |                                 |                                       |                                 |      |                    |                    |     |
| TLP2105       |                   | SO8          | Dual channel version of the TLP105                                                            | 5M bit/s                 | Totempole output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.6<br>(max) | 2500                                  | ○                               | ○    | ○                  |                    |     |
| TLP2108       |                   | SO8          | Dual channel version of the TLP108                                                            | 5M bit/s                 | Totempole output<br>(Inverter logic) | I <sub>FHL</sub> = 1.6<br>(max) | 2500                                  | ○                               | ○    | ○                  |                    |     |
| TLP2110       |                   | SO8          | Dual channel version of the TLP2310                                                           | 5M bit/s                 | Totempole output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.0<br>(max) | 2500                                  | ○                               | ○    | ○                  |                    |     |
| TLP2310       |                   | 5 pin SO6    | Reinforced insulation<br>Ultra low consumption                                                | 5M bit/s                 | Totempole output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.0<br>(max) | 3750                                  | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2355       |                   | 5 pin SO6    | Reinforced insulation<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM              | 5M bit/s                 | Totempole output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.6<br>(max) | 3750                                  | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2358       |                   | 5 pin SO6    | Reinforced insulation<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM              | 5M bit/s                 | Totempole output<br>(Inverter logic) | I <sub>FHL</sub> = 1.6<br>(max) | 3750                                  | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

\*\*: Under development / 開発中

| Part Number | Pin Configuration | Package     | Features                                                                                                     | Data Rate<br>(Typ. @NRZ) | Output/CTR                             | @I <sub>F(IN)</sub><br>(mA)   | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|-------------|--------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------|-------------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |             |                                                                                                              |                          |                                        |                               |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2395     |                   | 5 pin SO6   | AC input version of the TLP2355                                                                              | 5M bit/s                 | Totempole output (Buffer logic)        | I <sub>FLH</sub> = ±2.3 (max) | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2398     |                   | 5 pin SO6   | AC input version of the TLP2358                                                                              | 5M bit/s                 | Totempole output (Inverter logic)      | I <sub>FHL</sub> = ±2.3 (max) | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2405     |                   | SO8         | Low input current<br>SO8 version of the TLP105<br>Direct drive of an IPM                                     | 5M bit/s                 | Totempole output (Buffer logic)        | I <sub>FLH</sub> = 1.6 (max)  | 3750                      | ○                               | ○    | ○                  |                    |     |
| TLP2408     |                   | SO8         | Low input current<br>SO8 version of the TLP108<br>Direct drive of an IPM                                     | 5M bit/s                 | Totempole output (Inverter logic)      | I <sub>FHL</sub> = 1.6 (max)  | 3750                      | ○                               | ○    | ○                  |                    |     |
| TLP2710     |                   | SO6L        | Reinforced insulation<br>Ultra low consumption<br>SO6L version of the TLP2310                                | 5M bit/s                 | Totempole output (Buffer logic)        | I <sub>FLH</sub> = 1.0 (max)  | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2955     |                   | DIP8        | T <sub>opr</sub> (max) 125°C<br>Low input current<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM | 5M bit/s                 | Totempole output (Buffer logic)        | I <sub>FLH</sub> = 1.6 (max)  | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2955F    |                   | DIP8 F Type |                                                                                                              |                          |                                        |                               |                           |                                 |      |                    |                    |     |
| TLP2958     |                   | DIP8        | T <sub>opr</sub> (max) 125°C<br>Low input current<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM | 5M bit/s                 | Totempole output (Inverter logic)      | I <sub>FHL</sub> = 1.6 (max)  | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2958F    |                   | DIP8 F Type |                                                                                                              |                          |                                        |                               |                           |                                 |      |                    |                    |     |
| TLP2345     |                   | 5 pin SO6   | Reinforced insulation<br>High-speed<br>Direct drive of an IPM                                                | 10M bit/s                | Totempole output (Buffer logic)        | I <sub>FLH</sub> = 1.6 (max)  | 3750                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2348     |                   | 5 pin SO6   | Reinforced insulation<br>High-speed<br>Direct drive of an IPM                                                | 10M bit/s                | Totempole output (Inverter logic)      | I <sub>FHL</sub> = 1.6 (max)  | 3750                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2362     |                   | 5 pin SO6   | Reinforced insulation<br>T <sub>opr</sub> (max) 125°C<br>10 Mbps standard                                    | 10M bit/s                | Open-collector output (Inverter logic) | I <sub>FHL</sub> = 5 (max)    | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

\*: New product / 新製品

# IC Output / IC出力

(High Speed Communications) / (高速通信用)

| Part Number | Pin Configuration | Package                        | Features                                                                                                            | Data Rate<br>(Typ. @NRZ) | Output/CTR                                | @I <sub>F(IN)</sub><br>(mA)      | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------|----------------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |                                |                                                                                                                     |                          |                                           |                                  |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2391     |                   | 5 pin SO6                      | Reinforced insulation<br>3.3-V/5-V power supplies<br>AC input version of the TLP2361                                | 10M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = ±2.5<br>(max) | 3750                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2662     |                   | DIP8                           | 3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Dual channel version of the TLP2962                                 | 10M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)    | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2662F    |                   | DIP8 F Type                    |                                                                                                                     |                          |                                           |                                  |                           |                                 |      |                    |                    |     |
| TLP2745     |                   | SO6L                           | Reinforced insulation<br>High-speed<br>Direct drive of an IPM<br>SO6L version of the TLP2345                        | 10M bit/s                | Totempole output<br>(Buffer logic)        | I <sub>FHL</sub> = 1.6<br>(max)  | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2748     |                   | SO6L                           | Reinforced insulation<br>High-speed<br>Direct drive of an IPM<br>SO6L version of the TLP2348                        | 10M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max)  | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2962     |                   | DIP8                           | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                        | 15M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)    | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2962F    |                   | DIP8 F Type                    |                                                                                                                     |                          |                                           |                                  |                           |                                 |      |                    |                    |     |
| TLPN137     |                   | DIP8                           | High-speed                                                                                                          | 10M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)    | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2118E    |                   | SO8                            | Dual channel version<br>equivalent for the TLP118                                                                   | 15M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)    | 2500                      | ○                               | ○    | ○                  |                    |     |
| TLP2161     |                   | 2 channels in<br>SO8           | 3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Low input current<br>Low power consumption                          | 15M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max)  | 2500                      | ○                               | ○    | ○                  |                    |     |
| TLP2261     |                   | 2 channels in<br>SO8L<br>(LF4) | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Low input current<br>Low power consumption | 15M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max)  | 5000                      | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

| Part Number     | Pin Configuration | Package                  | Features                                                                                                                                           | Data Rate<br>(Typ. @NRZ) | Output/CTR                                | @I <sub>F(IN)</sub><br>(mA)     | BV's<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-----------------|-------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------|---------------------------------|----------------------------|---------------------------------|------|--------------------|--------------------|-----|
|                 |                   |                          |                                                                                                                                                    |                          |                                           |                                 |                            | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2361         |                   | 5 pin SO6                | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Low input current<br>Low power consumption                                | 15M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max) | 3750                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2761 *       |                   | SO6L                     | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Low input current<br>Low power consumption<br>SO6L version of the TLP2361 | 15M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max) | 5000                       | ○                               | ○    | ○                  | ○                  |     |
| TLP2761 (LF4) * |                   | SO6L F Type              |                                                                                                                                                    |                          |                                           |                                 |                            | △                               | △    | △                  | △                  | △   |
| TLP116A         |                   | 5 pin SO6                | Reinforced insulation<br>Ultra-high-speed                                                                                                          | 20M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 5<br>(max)   | 3750                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP118          |                   | 5 pin SO6                | Reinforced insulation<br>Topr (max) 125°C<br>Ultra-high-speed                                                                                      | 20M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2066         |                   | 5 pin MFSOP6             | 3.3-V power supply                                                                                                                                 | 20M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 5<br>(max)   | 3750                       | ○                               |      | ○                  |                    | ○   |
| TLP2160         |                   | 2 channels in SO8        | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                                                       | 20M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 3.5<br>(max) | 2500                       | ○                               | ○    | ○                  |                    |     |
| TLP2168         |                   | SO8                      | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                                                       | 20M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 2500                       | ○                               | ○    | ○                  |                    |     |
| TLP2366         |                   | 5 pin SO6                | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                              | 20M bit/s                | Totempole output<br>(Inverter logic)      | I <sub>FHL</sub> = 3.5<br>(max) | 3750                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2368         |                   | 5 pin SO6                | Reinforced insulation<br>Topr (max) 125°C<br>Ultra-high-speed<br>20 Mbps standard                                                                  | 20M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2270 *       |                   | 2 channels in SO8L (LF4) | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Ultra Low input current<br>Ultra Low consumption                          | 20M bit/s                | Totempole output<br>(Buffer logic)        | I <sub>FLH</sub> = 1.0<br>(max) | 5000                       | ○                               | ○    | ○                  | △                  | △   |
| TLP2370 *       |                   | 5pin SO6                 | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Ultra Low input current<br>Ultra Low consumption                          | 20M bit/s                | Totempole output<br>(Buffer logic)        | I <sub>FLH</sub> = 1.0<br>(max) | 3750                       | ○                               | ○    | ○                  | ○                  |     |
| TLP2770 *       |                   | SO6L                     | Reinforced insulation<br>3.3-V/5-V power supplies<br>Topr (max) 125°C<br>Ultra Low input current<br>Ultra Low consumption                          | 20M bit/s                | Totempole output<br>(Buffer logic)        | I <sub>FLH</sub> = 1.0<br>(max) | 5000                       | ○                               | ○    | ○                  | ○                  |     |
| TLP2418         |                   | SO8                      | Topr (max) 125°C<br>High-speed<br>SO8 version of the TLP118                                                                                        | 20M bit/s                | Open-collector output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                       | ○                               | ○    | ○                  |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

# IC Output / IC出力

(High Speed Communications) / (高速通信用)

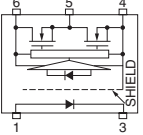
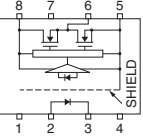
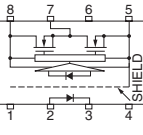
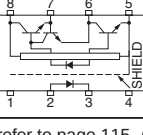
| Part Number      | Pin Configuration | Package         | Features                                                                                                              | Data Rate<br>(Typ. @NRZ) | Output/CTR                                   | @I <sub>F(IN)</sub><br>(mA)     | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|------------------|-------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------|---------------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|                  |                   |                 |                                                                                                                       |                          |                                              |                                 |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP2466          |                   | SO8             | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 20M bit/s                | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 3.5<br>(max) | 3750                      | ○                               | ○    | ○                  |                    |     |
| TLP2468          |                   | SO8             | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 20M bit/s                | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                      | ○                               | ○    | ○                  |                    |     |
| TLP2766          |                   | SDIP6           | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 20M bit/s                | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 3.5<br>(max) | 5000                      | ○                               | ○    | ○                  |                    |     |
| TLP2766F         |                   | SDIP6<br>F Type |                                                                                                                       |                          |                                              |                                 |                           |                                 |      |                    |                    |     |
| TLP2768          |                   | SDIP6           | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 20M bit/s                | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 5000                      | ○                               | ○    | ○                  |                    |     |
| TLP2768F         |                   | SDIP6<br>F Type |                                                                                                                       |                          |                                              |                                 |                           |                                 |      |                    |                    |     |
| TLP2768A *       |                   | SO6L            | (reinforced insulation)<br>Topr (max) 125°C<br>Ultra-high-speed<br>20 Mbps standard<br>SO6L version of the<br>TLP2368 | 20M bit/s                | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 5000                      | ○                               | ○    | ○                  | ○                  |     |
| TLP2768A (LF4) * |                   | SO6L<br>F Type  |                                                                                                                       |                          |                                              |                                 |                           | △                               | △    | △                  | △                  | △   |
| TLP2167 **       |                   | SO8             | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 50M bit/s                | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 4<br>(max)   | 2500                      | △                               | △    | △                  |                    |     |
| TLP2367 *        |                   | 5 pin SO6       | (reinforced insulation)<br>3.3-V/5-V power supplies<br>Topr (max) 125°C                                               | 50M bit/s                | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 4<br>(max)   | 3750                      | ○                               | ○    | ○                  |                    | ○   |
| TLP2767 *        |                   | SO6L            | 3.3-V/5-V power supplies<br>Topr (max) 125°C                                                                          | 50M bit/s                | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 4<br>(max)   | 5000                      | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

\*\* : Under development / 開発中

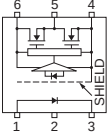
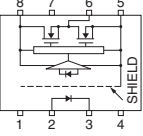
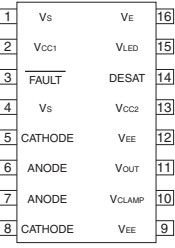
## (IGBT / MOSFET Gate Drive) / (IGBT / MOSFET 出力用)

| Part Number       | Pin Configuration                                                                   | Package     | Features                                                                                          | Data Rate<br>(Typ. @NRZ)                                                                       | Output/CTR                           | @I <sub>F(IN)</sub><br>(mA)  | BV's<br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------------|-------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------|-----------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|                   |                                                                                     |             |                                                                                                   |                                                                                                |                                      |                              |                                         | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP151A           |    | 5 pin SO6   | Reinforced insulation<br>Topr (max) 110°C<br>Direct drive of a small-power IGBT/MOSFET            | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  |     |
| TLP152            |                                                                                     | 5 pin SO6   | Reinforced insulation<br>Topr (max) 100°C<br>Direct drive of a medium-power IGBT/MOSFET           | Propagation delay time<br>t <sub>pHL</sub> = 0.19 μs (max)<br>t <sub>pLH</sub> = 0.17 μs (max) | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 7.5 (max) | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP155<br>TLP155E |                                                                                     | 5 pin SO6   | Reinforced insulation<br>Topr (max) 100°C<br>Direct drive of a small-power IGBT/MOSFET            | Propagation delay time<br>0.2 μs (max)                                                         | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 7.5 (max) | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP250H           |  | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Wide V <sub>CC</sub> 10 to 30 V<br>Topr (max) 125°C | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  |     |
| TLP250HF          |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP350            |                                                                                     | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation                               | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  |                    | ○   |
| TLP350F           |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP350H           |                                                                                     | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C           | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP350HF          |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP351            |                                                                                     | DIP8        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation                                | Propagation delay time<br>0.7 μs (max)                                                         | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  |                    |     |
| TLP351F           |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP351A           |                                                                                     | DIP8        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation                                | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  |     |
| TLP351AF          |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP351H           |                                                                                     | DIP8        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C            | Propagation delay time<br>0.7 μs (max)                                                         | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP351HF          |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP352            |                                                                                     | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C           | Propagation delay time<br>0.2 μs (max)                                                         | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP352F           |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP358            |  | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation                               | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±6 A (max)   | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  |     |
| TLP358F           |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP358H           |                                                                                     | DIP8        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C           | Propagation delay time<br>0.5 μs (max)                                                         | Peak output current:<br>±6 A (max)   | I <sub>FLH</sub> = 5 (max)   | 3750                                    | ○                               | ○    | ○                  | ○                  | ○   |
| TLP358HF          |                                                                                     | DIP8 F Type |                                                                                                   |                                                                                                |                                      |                              |                                         |                                 |      |                    |                    |     |
| TLP557            |  | DIP8        | Direct drive of a power transistor                                                                | Propagation delay time<br>5 μs (max)                                                           | Constant current output:<br>±0.3 A   | I <sub>FLH</sub> = 5 (max)   | 2500                                    | ○                               | ○    |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

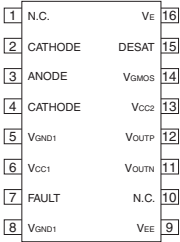
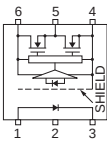
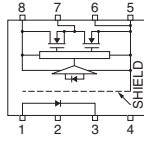
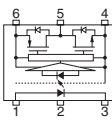
## IC Output / IC 出力

(IGBT / MOSFET Gate Drive) / (IGBT / MOSFET 出力用)

| Part Number | Pin Configuration                                                                   | Package      | Features                                                                                                                                                                                                                                                           | Data Rate<br>(Typ. @NRZ)                | Output/CTR                           | @I <sub>FLH</sub> (IN)<br>(mA) | BV <sub>s</sub><br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------|--------------------------------|---------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                                                                                     |              |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP700      |    | SDIP6        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>SDIP version of the TLP350                                                                                                                                                                  | Propagation delay time<br>0.5 μs (max)  | Peak output current:<br>±2.0 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP700F     |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP700A     |                                                                                     | SDIP6        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>SDIP version of the TLP352                                                                                                                                                                  | Propagation delay time<br>0.2 μs (max)  | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    | ○   |
| TLP700AF    |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP700H     |                                                                                     | SDIP6        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C<br>SDIP version of the TLP350H                                                                                                                                             | Propagation delay time<br>0.5 μs (max)  | Peak output current:<br>±2.5 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP700HF    |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP701      |                                                                                     | SDIP6        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation<br>SDIP version of the TLP351                                                                                                                                                                   | Propagation delay time<br>0.7 μs (max)  | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP701F     |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP701A     |                                                                                     | SDIP6        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation<br>SDIP version of the TLP351A                                                                                                                                                                  | Propagation delay time<br>0.5 μs (max)  | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP701AF    |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP701H     |                                                                                     | SDIP6        | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C<br>SDIP version of the TLP351H                                                                                                                                              | Propagation delay time<br>0.7 μs (max)  | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)     | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP701HF    |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP705A     |                                                                                     | SDIP6        | Direct drive of a small-power IGBT/MOSFET<br>High-speed<br>Low power dissipation                                                                                                                                                                                   | Propagation delay time<br>0.2 μs (max)  | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 7.5 (max)   | 5000                                  | ○                               | ○    | ○                  |                    |     |
| TLP705AF    |                                                                                     | SDIP6 F Type |                                                                                                                                                                                                                                                                    |                                         |                                      |                                |                                       |                                 |      |                    |                    |     |
| TLP2451A    |  | SO8          | Direct drive of a small-power IGBT/MOSFET<br>Low power dissipation<br>Topr (max) 125°C<br>SO8 version of the TLP351A                                                                                                                                               | Propagation delay time<br>0.5 μs (max)  | Peak output current:<br>±0.6 A (max) | I <sub>FLH</sub> = 5 (max)     | 3750                                  | ○                               | ○    | ○                  |                    |     |
| TLP5214 *   |  | SO16L        | Smart gate drive<br>photocoupler<br>Overcurrent protection<br>Soft shutdown<br>Direct drive of a medium-power IGBT/MOSFET<br>Topr (max) 110°C<br>Rail to Rail output<br>Active miller clamp                                                                        | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±4.0 A       | I <sub>FLH</sub> = 6 (max)     | 5000                                  | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5214A *  |                                                                                     | SO16L        | Smart gate drive<br>photocoupler<br>Overcurrent protection<br>Feature with DESAT<br>leading edge blanking time,<br>filtering time<br>Soft shutdown<br>Direct drive of a medium-power IGBT/MOSFET<br>Topr (max) 110°C<br>Rail to Rail output<br>Active miller clamp | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±4.0 A       | I <sub>FLH</sub> = 6 (max)     | 5000                                  | ○                               | ○    | ○                  | ○                  | △   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

| Part Number   | Pin Configuration                                                                        | Package     | Features                                                                                                                                                                               | Data Rate<br>(Typ. @NRZ)                | Output/<br>CTR                 | @I <sub>F(IN)</sub><br>(mA) | BV's<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|---------------|------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------|-----------------------------|----------------------------|---------------------------------|------|--------------------|--------------------|-----|
|               |                                                                                          |             |                                                                                                                                                                                        |                                         |                                |                             |                            | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP5231       | **<br>  | SO16L       | Smart gate drive photocoupler<br>Dual power output stages with active timing control<br>Overcurrent protection<br>Soft shutdown<br>T <sub>opr</sub> (max) 110°C<br>Rail to Rail output | Propagation delay time<br>0.3 μs (max)  | Peak output current:<br>±1.0 A | I <sub>FLH</sub> = 5 (max)  | 5000                       | △                               | △    | △                  | △                  | △   |
| TLP5701       |         | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>SO6L version of the TLP351A<br>T <sub>opr</sub> (max) 110°C                                                                              | Propagation delay time<br>0.5 μs (max)  | Peak output current:<br>±0.6 A | I <sub>FLH</sub> = 5 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5701 (LF4) |                                                                                          | SO6L F Type |                                                                                                                                                                                        |                                         |                                |                             |                            |                                 |      |                    |                    |     |
| TLP5702       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>Low power dissipation<br>SO6L version of the TLP352<br>T <sub>opr</sub> (max) 110°C                                                      | Propagation delay time<br>0.2 μs (max)  | Peak output current:<br>±2.5 A | I <sub>FLH</sub> = 5 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5702 (LF4) |                                                                                          | SO6L F Type |                                                                                                                                                                                        |                                         |                                |                             |                            |                                 |      |                    |                    |     |
| TLP5832       | **<br> | SO8L        | Direct drive of a medium-power IGBT/MOSFET<br>Low Power dissipation<br>T <sub>opr</sub> (max) 110°C<br>SO8L version of TLP5702                                                         | Propagation delay time<br>0.2 μs (max)  | Peak output current:<br>±2.5 A | I <sub>FLH</sub> = 5 (max)  | 5000                       | △                               | △    | △                  | △                  | △   |
| TLP5751       |       | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>Rail to Rail output<br>T <sub>opr</sub> (max) 110°C                                                                                      | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±1.0 A | I <sub>FLH</sub> = 4 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5751 (LF4) |                                                                                          | SO6L F Type |                                                                                                                                                                                        |                                         |                                |                             |                            |                                 |      |                    |                    |     |
| TLP5752       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>Rail to Rail output<br>T <sub>opr</sub> (max) 110°C                                                                                      | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±2.5 A | I <sub>FLH</sub> = 4 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5752 (LF4) |                                                                                          | SO6L F Type |                                                                                                                                                                                        |                                         |                                |                             |                            |                                 |      |                    |                    |     |
| TLP5754       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>Rail to Rail output<br>T <sub>opr</sub> (max) 110°C                                                                                      | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±4.0 A | I <sub>FLH</sub> = 4 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5754 (LF4) |                                                                                          | SO6L F Type |                                                                                                                                                                                        |                                         |                                |                             |                            |                                 |      |                    |                    |     |
| TLP5771       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>V <sub>CC</sub> = 10 V (min),<br>T <sub>opr</sub> (max) 110°C<br>Rail to Rail output                                                     | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±1.0 A | I <sub>FLH</sub> = 2 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5772       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>V <sub>CC</sub> = 10 V (min),<br>T <sub>opr</sub> (max) 110°C<br>Rail to Rail output                                                     | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±2.5 A | I <sub>FLH</sub> = 2 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |
| TLP5774       |                                                                                          | SO6L        | Direct drive of a medium-power IGBT/MOSFET<br>V <sub>CC</sub> = 10 V (min),<br>T <sub>opr</sub> (max) 110°C<br>Rail to Rail output                                                     | Propagation delay time<br>0.15 μs (max) | Peak output current:<br>±4.0 A | I <sub>FLH</sub> = 2 (max)  | 5000                       | ○                               | ○    | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

\*\* : Under development / 開発中

# IC Output / IC出力 (IPM Drive) / (IPM駆動用)

| Part Number     | Pin Configuration | Package      | Features                                                                                             | Data Rate<br>(Typ. @NRZ)                     | Output/CTR                                   | @I <sub>F(IN)</sub><br>(mA)     | BV <sub>s</sub><br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-----------------|-------------------|--------------|------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------|---------------------------------|----------------------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|                 |                   |              |                                                                                                      |                                              |                                              |                                 |                                                    | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP104          |                   | 5 pin SO6    | Reinforced insulation<br>Topr (max) 125°C<br>Direct drive of an IPM                                  | Propagation<br>delay time<br>550 ns (max)    | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                                               | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2704 *       |                   | SO6L         | Reinforced insulation<br>Topr (max) 125°C<br>Direct drive of an IPM<br>SO6L version of the<br>TLP104 | Propagation<br>delay time<br>550 ns (max)    | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 5000                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2704 (LF4) * |                   | SO6L F Type  |                                                                                                      |                                              |                                              |                                 |                                                    | △                               | △    | △                  | △                  | △   |
| TLP109 (IGM)    |                   | 5 pin SO6    | Reinforced insulation<br>Direct drive of an IPM                                                      | Propagation<br>delay time<br>0.8 μs<br>(max) | 25% Min                                      | 10                              | 3750                                               | ○                               | ○    | ○                  | ○                  | ○   |
| TLP714          |                   | SDIP6        | SDIP version of the<br>TLP104<br>Direct drive of an IPM                                              | Propagation<br>delay time<br>550 ns<br>(max) | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 5000                                               | ○                               | ○    | ○                  |                    |     |
| TLP714F         |                   | SDIP6 F Type |                                                                                                      |                                              |                                              |                                 |                                                    |                                 |      |                    |                    |     |
| TLP754          |                   | DIP8         | DIP8 version of the<br>TLP104<br>Direct drive of an IPM                                              | Propagation<br>delay time<br>550 ns<br>(max) | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 5000                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP754F         |                   | DIP8 F Type  |                                                                                                      |                                              |                                              |                                 |                                                    |                                 |      |                    |                    |     |
| TLP759 (IGM)    |                   | DIP8         | IEC950 design<br>standard version of the<br>TLP559<br>SEMKO-approved<br>Direct drive of an IPM       | Propagation<br>delay time<br>0.8 μs<br>(max) | 25% Min                                      | 10                              | 5000                                               | ○                               | ○    | ○                  |                    |     |
| TLP759F (IGM)   |                   | DIP8 F Type  |                                                                                                      |                                              |                                              |                                 |                                                    |                                 |      |                    |                    |     |
| TLP2404         |                   | SO8          | Topr (max) 125°C<br>SO8 version of the<br>TLP104<br>Direct drive of an IPM                           | Propagation<br>delay time<br>550 ns<br>(max) | Open-collector<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 5<br>(max)   | 3750                                               | ○                               | ○    | ○                  |                    |     |
| TLP2345         |                   | 5 pin SO6    | Reinforced insulation<br>High-speed<br>Direct drive of an IPM                                        | Propagation<br>delay time<br>120 ns<br>(max) | Totempole<br>output<br>(Buffer logic)        | I <sub>FLH</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2348         |                   | 5 pin SO6    | Reinforced insulation<br>High-speed<br>Direct drive of an IPM                                        | Propagation<br>delay time<br>120 ns<br>(max) | Totempole<br>output<br>(Inverter logic)      | I <sub>FHL</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2735 **      |                   | SO6L         | Reinforced insulation<br>High-speed<br>Direct drive of an IPM<br>Topr (max) 125°C<br>UVLO            | Propagation<br>delay time<br>100 ns<br>(max) | Totempole<br>output<br>(Buffer logic)        | I <sub>FLH</sub> = 3.0<br>(max) | 5000                                               | △                               | △    | △                  | △                  | △   |
| TLP2745 *       |                   | SO6L         | Reinforced insulation<br>High-speed<br>Direct drive of an IPM<br>SO6L version of the<br>TLP2345      | Propagation<br>delay time<br>120 ns<br>(max) | Totempole<br>output<br>(Buffer logic)        | I <sub>FLH</sub> = 1.6<br>(max) | 5000                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2748 *       |                   | SO6L         | Reinforced insulation<br>High-speed<br>Direct drive of an IPM<br>SO6L version of the<br>TLP2348      | Propagation<br>delay time<br>120 ns<br>(max) | Totempole<br>output<br>(Inverter logic)      | I <sub>FLH</sub> = 1.6<br>(max) | 5000                                               | ○                               | ○    | ○                  | ○                  |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

\*\*: Under development / 開発中

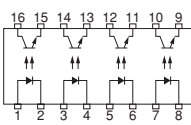
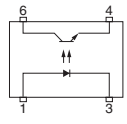
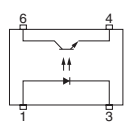
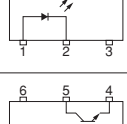
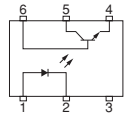
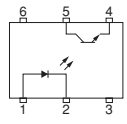
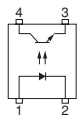
| Part Number | Pin Configuration | Package      | Features                                                                                         | Data Rate<br>(Typ. @NRZ)                     | Output/CTR                              | @I <sub>F(IN)</sub><br>(mA)     | BV <sub>s</sub><br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|--------------|--------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------|---------------------------------|----------------------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |              |                                                                                                  |                                              |                                         |                                 |                                                    | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP719      |                   | SDIP6        | Direct drive of an IPM<br>Analog signal output                                                   | Propagation<br>delay time<br>0.8 μs<br>(max) | 20% Min                                 | 16                              | 5000                                               | ○                               | ○    | ○                  |                    |     |
| TLP719F     |                   | SDIP6 F Type |                                                                                                  |                                              |                                         |                                 |                                                    |                                 |      |                    |                    |     |
| TLP2355     |                   | 5 pin SO6    | Reinforced insulation<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM                 | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2358     |                   | 5 pin SO6    | Reinforced insulation<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM                 | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  | ○                  | ○   |
| TLP2405     |                   | SO8          | Low input current<br>SO8 version of the<br>TLP105<br>Direct drive of an IPM                      | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  |                    |     |
| TLP2408     |                   | SO8          | Low input current<br>SO8 version of the<br>TLP108<br>Direct drive of an IPM                      | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 1.6<br>(max) | 3750                                               | ○                               | ○    | ○                  |                    |     |
| TLP715      |                   | SDIP6        | Direct drive of an IPM                                                                           | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Buffer logic)   | I <sub>FLH</sub> = 3<br>(max)   | 5000                                               | ○                               | ○    | ○                  |                    |     |
| TLP715F     |                   | SDIP6 F Type |                                                                                                  |                                              |                                         |                                 |                                                    |                                 |      |                    |                    |     |
| TLP718      |                   | SDIP6        | Direct drive of an IPM                                                                           | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 3<br>(max)   | 5000                                               | ○                               | ○    | ○                  |                    |     |
| TLP718F     |                   | SDIP6 F Type |                                                                                                  |                                              |                                         |                                 |                                                    |                                 |      |                    |                    |     |
| TLP2955     |                   | DIP8         | Topr (max) 125°C<br>Low input current<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Buffer logic)   | I <sub>FLH</sub> = 1.6<br>(max) | 5000                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2955F    |                   | DIP8 F Type  |                                                                                                  |                                              |                                         |                                 |                                                    |                                 |      |                    |                    |     |
| TLP2958     |                   | DIP8         | Topr (max) 125°C<br>Low input current<br>V <sub>CC</sub> = 3.0 to 20 V<br>Direct drive of an IPM | Propagation<br>delay time<br>250 ns<br>(max) | Totempole<br>output<br>(Inverter logic) | I <sub>FHL</sub> = 1.6<br>(max) | 5000                                               | ○                               | ○    | ○                  | ○                  |     |
| TLP2958F    |                   | DIP8 F Type  |                                                                                                  |                                              |                                         |                                 |                                                    |                                 |      |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

# Transistor Output / トランジスタ出力 (DC Input) / (DC 入力)

| Part Number | Pin Configuration | Package   | Features                                                                   | CTR  |            |            |                                                | V <sub>CEO</sub><br>(V) | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|-----------|----------------------------------------------------------------------------|------|------------|------------|------------------------------------------------|-------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |           |                                                                            | Rank | Min<br>(%) | Max<br>(%) | @ I <sub>F</sub> / V <sub>CE</sub><br>(mA) (V) |                         |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP183      |                   | 4 pin SO6 | Reinforced insulation<br>Low input drive current<br>Topr = 125°C (max)     | —    | 50         | 600        | 0.5/5                                          | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                            | Y    | 50         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | YH   | 75         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GR   | 100        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRL  | 100        | 200        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRH  | 150        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GB   | 100        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | BL   | 200        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
| TLP185 (SE) |                   | 4 pin SO6 | Reinforced insulation<br>General-purpose                                   | —    | 50         | 600        | 5/5                                            | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                            | Y    | 50         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | YH   | 75         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GR   | 100        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRL  | 100        | 200        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRH  | 150        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GB   | 100        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | BL   | 200        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
| TLP188      |                   | 4 pin SO6 | Reinforced insulation<br>High V <sub>CEO</sub><br>V <sub>CEO</sub> = 350 V | —    | 50         | 600        | 5/5                                            | 350                     | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                            | GB   | 100        |            |                                                |                         |                           |                                 |      |                    |                    |     |
| TLP291-4    |                   | SO16      | 4-channel version<br>equivalent of the<br>TLP291<br>Lead pitch: 1.27 mm    | —    | 50         | 400        | 5/5                                            | 80                      | 2500                      | ○                               | ○    | ○                  |                    | ○   |
|             |                   |           |                                                                            | GB   | 100        | 400        |                                                |                         |                           |                                 |      |                    |                    |     |
| TLP291 (SE) |                   | SO4       | Reinforced insulation<br>Lead pitch: 1.27 mm                               | —    | 50         | 600        | 5/5                                            | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                            | Y    | 50         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | YH   | 75         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GR   | 100        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRL  | 100        | 200        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRH  | 150        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GB   | 100        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | BL   | 200        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
| TLP293      |                   | SO4       | Reinforced insulation<br>Low input drive current<br>Topr = 125°C (max)     | —    | 50         | 600        | 0.5/5                                          | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                            | Y    | 50         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | YH   | 75         | 150        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GR   | 100        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRL  | 100        | 200        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GRH  | 150        | 300        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | GB   | 100        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                            | BL   | 200        | 600        |                                                |                         |                           |                                 |      |                    |                    |     |
|             |                   | SO4       | Reinforced insulation<br>Low input drive current<br>Topr = 125°C (max)     | BLL  | 200        | 400        |                                                |                         |                           |                                 |      |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

| Part Number            | Pin Configuration                                                                   | Package     | Features                                                                                                                                                      | CTR  |            |            |                                               | V <sub>CEO</sub><br>(V) | BV <sub>s</sub><br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|------------------------|-------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|------------|-----------------------------------------------|-------------------------|----------------------------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|                        |                                                                                     |             |                                                                                                                                                               | Rank | Min<br>(%) | Max<br>(%) | @I <sub>F</sub> / V <sub>CE</sub><br>(mA) (V) |                         |                                                    | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP293-4 *             |    | SO16        | Reinforced insulation<br>4-channel version<br>equivalent of the<br>TLP293<br>Lead pitch: 1.27 mm<br>Low input drive current<br>T <sub>opr</sub> = 125°C (max) | LA   | 50         | 600        | 0.5/5                                         | 80                      | 3750                                               | ○                               | ○    | ○                  | ○                  | ○   |
|                        |                                                                                     |             |                                                                                                                                                               | LGB  | 100        |            |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP383 *               |    | 4 pin SO6L  | Guarantees a<br>creepage and<br>clearance distance of<br>8 mm (min)<br>Low input drive current<br>T <sub>opr</sub> = 125°C (max)                              | —    | 50         | 600        | 0.5/5                                         | 80                      | 5000                                               | ○                               | ○    | ○                  | ○                  | ○   |
|                        |                                                                                     |             |                                                                                                                                                               | Y    | 50         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | YH   | 75         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GR   | 100        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRL  | 100        | 200        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRH  | 150        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | BL   | 200        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP385 *               |   | 4 pin SO6L  | Guarantees a<br>creepage and<br>clearance distance of<br>8 mm (min)                                                                                           | —    | 50         | 600        | 5/5                                           | 80                      | 5000                                               | ○                               | ○    | ○                  | ○                  | ○   |
|                        |                                                                                     |             |                                                                                                                                                               | Y    | 50         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | YH   | 75         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GR   | 100        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRL  | 100        | 200        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRH  | 150        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | BL   | 200        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP388 *               |  | 4 pin SO6L  | Reinforced insulation<br>High V <sub>CEO</sub><br>V <sub>CEO</sub> = 350 V                                                                                    | —    | 50         | 600        | 5/5                                           | 350                     | 5000                                               | ○                               | ○    | ○                  | ○                  | ○   |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        |            |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP731                 |  | DIP6        | Internal base<br>connection                                                                                                                                   | —    | 50         | 600        | 5/5                                           | 55                      | 4000                                               | ○                               | ○    | ○                  |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GR   | 100        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP732                 |  | DIP6        | No internal base<br>connection                                                                                                                                | —    | 50         | 600        | 5/5                                           | 55                      | 4000                                               | ○                               | ○    | ○                  |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GR   | 100        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP785 <sup>(3)</sup>  |  | DIP4        | High isolation voltage                                                                                                                                        | —    | 50         | 600        | 5/5                                           | 80                      | 5000                                               | ○                               | ○    | ○                  |                    | ○   |
|                        |                                                                                     |             |                                                                                                                                                               | Y    | 50         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | YH   | 75         | 150        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GR   | 100        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRL  | 100        | 200        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GRH  | 150        | 300        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | GB   | 100        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
|                        |                                                                                     |             |                                                                                                                                                               | BL   | 200        | 600        |                                               |                         |                                                    |                                 |      |                    |                    |     |
| TLP785F <sup>(3)</sup> |                                                                                     | DIP4 F Type |                                                                                                                                                               | BLL  | 200        | 400        |                                               |                         |                                                    |                                 |      |                    |                    |     |

Note (1),(3),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

## Transistor Output / トランジスタ出力 (AC Input) / (AC入力)

| Part Number | Pin Configuration | Package   | Features                                                                                                                             | CTR  |            |            |                                               | V <sub>CEO</sub><br>(V) | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|------|------------|------------|-----------------------------------------------|-------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |           |                                                                                                                                      | Rank | Min<br>(%) | Max<br>(%) | @I <sub>F</sub> / V <sub>CE</sub><br>(mA) (V) |                         |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP182      |                   | 4 pin SO6 | Reinforced insulation<br>Low input drive current<br>T <sub>opr</sub> = 125°C (max)                                                   | —    | 50         | 600        | ±0.5/5                                        | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                                                                                      | Y    | 50         | 150        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GR   | 100        | 300        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GB   | 100        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | BL   | 200        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
| TLP184 (SE) |                   | 4 pin SO6 | Reinforced insulation                                                                                                                | —    | 50         | 600        | ±5/5                                          | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                                                                                      | Y    | 50         | 150        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GR   | 100        | 300        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GB   | 100        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | BL   | 200        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
| TLP290-4    |                   | SO16      | 4-channel version<br>equivalent of the<br>TLP290<br>Lead pitch: 1.27 mm                                                              | —    | 50         | 400        | ±5/5                                          | 80                      | 2500                      | ○                               | ○    | ○                  |                    | ○   |
|             |                   |           |                                                                                                                                      | GB   | 100        |            |                                               |                         |                           |                                 |      |                    |                    |     |
| TLP290 (SE) |                   | SO4       | Reinforced insulation<br>Lead pitch: 1.27 mm                                                                                         | —    | 50         | 600        | ±5/5                                          | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                                                                                      | Y    | 50         | 150        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GR   | 100        | 300        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GB   | 100        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | BL   | 200        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
| TLP292      |                   | SO4       | Reinforced insulation<br>Low input drive current<br>T <sub>opr</sub> = 125°C (max)                                                   | —    | 50         | 600        | ±0.5/5                                        | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                                                                                      | Y    | 50         | 150        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GR   | 100        | 300        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | GB   | 100        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
|             |                   |           |                                                                                                                                      | BL   | 200        | 600        |                                               |                         |                           |                                 |      |                    |                    |     |
| TLP292-4 *  |                   | SO16      | 4-channel version<br>equivalent of the<br>TLP292<br>Lead pitch: 1.27 mm<br>Low input drive current<br>T <sub>opr</sub> = 125°C (max) | LA   | 50         | 600        | ±0.5/5                                        | 80                      | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
|             |                   |           |                                                                                                                                      | LGB  | 100        |            |                                               |                         |                           |                                 |      |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

## (Darlington Transistor Output) / (ダーリントントランジスタ出力)

| Part Number | Pin Configuration | Package    | Features                                       | CTR        |                                               | V <sub>CE(sat)</sub> |                                          | V <sub>CEO</sub><br>(V) | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|------------|------------------------------------------------|------------|-----------------------------------------------|----------------------|------------------------------------------|-------------------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |            |                                                | Min<br>(%) | @I <sub>F</sub> / V <sub>CE</sub><br>(mA) (V) | Max<br>(V)           | @I <sub>C</sub> / I <sub>F</sub><br>(mA) |                         |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP187      |                   | 4 pin SO6  | Reinforced insulation<br>High V <sub>CEO</sub> | 1000       | 1/1                                           | 1.2                  | 100/10                                   | 300                     | 3750                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP387 *    |                   | 4 pin SO6L | Reinforced insulation<br>High V <sub>CEO</sub> | 1000       | 1/1                                           | 1.2                  | 100/10                                   | 300                     | 5000                      | ○                               | ○    | ○                  | ○                  | ○   |
| TLP627      |                   | DIP4       | High V <sub>CEO</sub>                          | 1000       | 1/1                                           | 1.2                  | 100/10                                   | 300                     | 5000                      | ○                               | ○    | ○                  |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

\*: New product / 新製品

# Triac Output / トライアック出力

| Part Number | V <sub>DRM</sub><br>(V) | Output<br>Type | Pin<br>Configuration | Package                | I <sub>FT</sub> (mA) |      | V <sub>TM</sub> (V) |                          | BV <sub>s</sub><br>1 Minute<br>(V <sub>rms</sub> ) | Features | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------------|----------------|----------------------|------------------------|----------------------|------|---------------------|--------------------------|----------------------------------------------------|----------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                         |                |                      |                        | Max                  | Rank | Max                 | @I <sub>TM</sub><br>(mA) |                                                    |          | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP525G     | 400                     | NZC            |                      | DIP4                   | 10                   | —    | 3.0                 | 100                      | 2500                                               |          | ○                               | ○   |                    |                    |     |
| TLP265J     | 600                     | NZC            |                      | 4pin SO6               | 10                   | —    | 2.8                 | 70                       | 3750                                               | (A)      | ○                               | ○   | ○                  | ○                  | ○   |
| TLP267J     |                         |                |                      |                        | 7                    | IFT7 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP360J     |                         |                |                      | DIP4                   | 3                    | —    | 2.8                 | 70                       | 3750                                               | (A)      | ○                               | ○   | ○                  | ○                  | ○   |
| TLP360JF    |                         |                |                      |                        | 2                    | IFT2 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP3052A    |                         | ZC             |                      | 5pin DIP6              | 10                   | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3052AF   |                         |                |                      | 5pin DIP6 F Type       | 10                   | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP266J     |                         |                |                      | 4pin SO6               | 10                   | —    | 2.8                 | 70                       | 3750                                               | (A)      | ○                               | ○   | ○                  | ○                  | ○   |
| TLP268J     |                         |                |                      |                        | 7                    | IFT7 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP163J     |                         |                |                      | 4pin MFSO6 (cut)       | 3                    | —    | 2.8                 | 70                       | 2500                                               | (C)      | ○                               | ○   |                    |                    |     |
| TLP361J     |                         |                |                      |                        | 2                    | IFT2 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP363J     |                         |                |                      | DIP4                   | 10                   | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP361JF    |                         |                |                      |                        | 7                    | IFT7 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP363JF    |                         |                |                      | DIP4 F Type            | 10                   | —    | 3.0                 | 100                      | 5000                                               | (C)      | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3062A    |                         |                |                      |                        | 7                    | IFT7 |                     |                          |                                                    |          |                                 |     |                    |                    |     |
| TLP3062AF   |                         |                |                      | 5pin DIP6              | 10                   | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3064(S)  |                         |                |                      | 5pin DIP6 F Type       | 10                   | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3064(S)  |                         |                |                      | 5pin DIP6 (cut)        | 3                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  |     |
| TLP3064F(S) |                         |                |                      | 5pin DIP6 (cut) F Type | 3                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  |     |
| TLP3073     | 800                     | NZC            |                      | 5pin DIP6              | 5                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3073F    |                         |                |                      | 5pin DIP6 F Type       | 5                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3083     |                         | ZC             |                      | 5pin DIP6              | 5                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |
| TLP3083F    |                         |                |                      | 5pin DIP6 F Type       | 5                    | —    | 3.0                 | 100                      | 5000                                               |          | ○                               | ○   | ○                  | ○                  | ○   |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

(A): Reinforced insulation / 強化絶縁対応

(B): Impulse noise immunity V<sub>IN</sub> = 1500 V (typ.) / インパルスノイズ耐量 V<sub>IN</sub> = 1500 V (typ.)

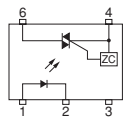
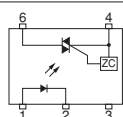
(C): Impulse noise immunity V<sub>IN</sub> = 2000 V (typ.) / インパルスノイズ耐量 V<sub>IN</sub> = 2000 V (typ.)

\*: New product / 新製品

NZC: Non Zero Cross

ZC: Zero Cross

Triac Output (Product for Japan) / トライアック出力 (日本国内向け製品)

| Part Number | V <sub>DRM</sub><br>(V) | Output<br>Type | Pin<br>Configuration                                                              | Package                   | I <sub>FT</sub> (mA) |      | V <sub>TM</sub> (V) |                          | BV <sub>s</sub><br>(V <sub>rms</sub> )<br>@1min. | Features | Safety Standards <sup>(1)</sup> |     |                    |                    |     |  |  |  |
|-------------|-------------------------|----------------|-----------------------------------------------------------------------------------|---------------------------|----------------------|------|---------------------|--------------------------|--------------------------------------------------|----------|---------------------------------|-----|--------------------|--------------------|-----|--|--|--|
|             |                         |                |                                                                                   |                           | Max                  | Rank | Max                 | @I <sub>TM</sub><br>(mA) |                                                  |          | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |  |  |  |
| TLP663J(S)  | 600                     | ZC             |  | 5pin DIP6 (cut)           | 10                   | —    | 3.0                 | 100                      | 5000                                             | (C)      | ○                               | ○   | ○                  | ○                  |     |  |  |  |
| TLP668J(S)  |                         |                |                                                                                   |                           | 3                    | —    | 3.0                 | 100                      | 5000                                             |          | ○                               | ○   | ○                  | ○                  |     |  |  |  |
| TLP663JF(S) |                         |                |                                                                                   | 5pin DIP6 (cut)<br>F Type | 10                   | —    | 3.0                 | 100                      | 5000                                             | (C)      | ○                               | ○   | ○                  | ○                  |     |  |  |  |
| TLP668JF(S) |                         |                |                                                                                   |                           | 3                    | —    | 3.0                 | 100                      | 5000                                             |          | ○                               | ○   | ○                  | ○                  |     |  |  |  |
| TLP669L(S)  | 800                     | ZC             |  | 5pin DIP6                 | 10                   | —    | 3.0                 | 100                      | 5000                                             | (B)      | ○                               | ○   | ○                  | ○                  |     |  |  |  |
| TLP669LF(S) |                         |                |                                                                                   |                           | 5                    | IFT5 |                     |                          |                                                  |          |                                 |     |                    |                    |     |  |  |  |
|             |                         |                |                                                                                   |                           | 10                   | —    | 3.0                 | 100                      | 5000                                             | (B)      | ○                               | ○   | ○                  | ○                  |     |  |  |  |
|             |                         |                |                                                                                   |                           | 5                    | IFT5 |                     |                          |                                                  |          |                                 |     |                    |                    |     |  |  |  |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

NZC: Non Zero Cross

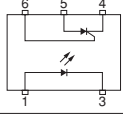
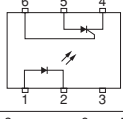
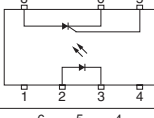
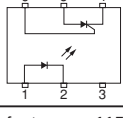
(A): Reinforced insulation / 強化絶縁対応

ZC: Zero Cross

(B): Impulse noise immunity V<sub>IN</sub> = 1500 V (typ.) / インパルスノイズ耐量 V<sub>IN</sub> = 1500 V (typ.)

(C): Impulse noise immunity V<sub>IN</sub> = 2000 V (typ.) / インパルスノイズ耐量 V<sub>IN</sub> = 2000 V (typ.)

Thyristor Output / サイリスタ出力

| Part Number | Pin Configuration                                                                   | Package      | Features                               | Trigger LED Current, I <sub>FT</sub> | Peak On-State Voltage, V <sub>TM</sub> |                       | Off-State Output Terminal Voltage V <sub>DRM</sub> (V) | BV <sub>s</sub> 1 Minute (Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------------------------------------------------------------------------|--------------|----------------------------------------|--------------------------------------|----------------------------------------|-----------------------|--------------------------------------------------------|---------------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                                                                                     |              |                                        | Max (mA)                             | Max (V)                                | @I <sub>TM</sub> (mA) |                                                        |                                 | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP148G     |   | 5 pin MFSOP6 | General-purpose                        | 10                                   | 1.45                                   | 100                   | 400                                                    | 2500                            | ○                               | ○    |                    |                    |     |
| TLP548J     |  | DIP6         | General-purpose<br>Low trigger current | 7                                    | 1.45                                   | 100                   | 600                                                    | 2500                            | ○                               |      |                    |                    |     |
| TLP549J     |  | 7 pin DIP8   | Long anode-cathode distance (SCR)      | 7                                    | 1.45                                   | 100                   | 600                                                    | 2500                            | ○                               |      |                    |                    |     |
| TLP748J     |  | DIP6         |                                        | 10                                   | 1.45                                   | 100                   | 600                                                    | 4000                            | ○                               | ○    | ○                  |                    |     |
| TLP748JF    |                                                                                     | DIP6 F Type  |                                        |                                      |                                        |                       |                                                        |                                 |                                 |      |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

# Photovoltaic Output / フォトボル出力

| Part Number | Pin Configuration | Package          | Features                                                                           | Short-Circuit Current (μA) |     |             | Open Voltage Voc (V) |             | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |
|-------------|-------------------|------------------|------------------------------------------------------------------------------------|----------------------------|-----|-------------|----------------------|-------------|---------------------------|---------------------------------|------|--------------------|--------------------|-----|
|             |                   |                  |                                                                                    | Rank                       | Min | @If<br>(mA) | Min                  | @If<br>(mA) |                           | UL                              | c-UL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP190B     |                   | 4 pin MFSOP6     |                                                                                    | —                          | 12  | 10          | 7                    | 10          | 2500                      | ○                               | ○    |                    |                    |     |
|             |                   |                  |                                                                                    | C20                        | 20  |             |                      |             |                           |                                 |      |                    |                    |     |
| TLP191B     |                   | 4 pin MFSOP6     | Built-in shunt resistor                                                            | —                          | 24  | 20          | 7                    | 20          | 2500                      | ○                               | ○    |                    |                    |     |
| TLP590B     |                   | 5 pin DIP6 (cut) | General-purpose                                                                    | —                          | 12  | 10          | 7                    | 10          | 2500                      | ○                               |      |                    |                    |     |
|             |                   |                  |                                                                                    | C20                        | 20  |             |                      |             |                           |                                 |      |                    |                    |     |
| TLP591B     |                   | 5 pin DIP6 (cut) | Built-in shunt resistor                                                            | —                          | 24  | 20          | 7                    | 20          | 2500                      | ○                               |      |                    |                    |     |
| TLP3902     |                   | 4 pin MFSOP6     | General-purpose                                                                    | —                          | 5   | 10          | 7                    | 10          | 2500                      | ○                               | ○    |                    |                    |     |
| TLP3904     |                   | SSOP4            | General-purpose                                                                    | —                          | 5   | 10          | 7                    | 10          | 1500                      | ○                               |      |                    |                    |     |
| TLP3905     |                   | 4 pin SO6        | General-purpose<br>T <sub>opr</sub> (max) 125°C                                    | —                          | 12  | 10          | 7                    | 10          | 3750                      | ○                               | ○    | ○                  | ○                  |     |
|             |                   |                  |                                                                                    | C20                        | 20  |             |                      |             |                           |                                 |      |                    |                    |     |
| TLP3906     |                   | 4 pin SO6        | General-purpose<br>T <sub>opr</sub> (max) 125°C<br>Built-in Discharging<br>Circuit | —                          | 12  | 10          | 7                    | 10          | 3750                      | ○                               | ○    | ○                  | ○                  |     |
|             |                   |                  |                                                                                    | C20                        | 20  |             |                      |             |                           |                                 |      |                    |                    |     |
| TLP3914     |                   | SSOP4            | High output                                                                        | —                          | 20  | 10          | 7                    | 10          | 1500                      | ○                               |      |                    |                    |     |
| TLP3924     |                   | SSOP4            | High open-circuit<br>voltage                                                       | —                          | 4   | 10          | 30                   | 10          | 1500                      | ○                               |      |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

Photorelays / フォトリレー

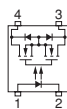
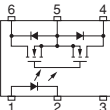
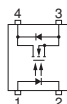
1-Form-A / 1a接点シリーズ

| Part Number | Pin Configuration | Package  | V <sub>OFF</sub><br>(V)<br>Min | I <sub>ON</sub><br>(A)<br>Max | R <sub>ON</sub> (Ω) |                         | I <sub>FT</sub><br>(mA)<br>Max | C <sub>OFF</sub><br>(pF)<br>Typ. | BV <sub>s</sub><br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------|----------|--------------------------------|-------------------------------|---------------------|-------------------------|--------------------------------|----------------------------------|---------------------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                   |          |                                |                               | Max                 | @I <sub>F</sub><br>(mA) |                                |                                  |                                       | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP3406S    |                   | S-VSON4  | 30                             | ±1.5                          | 0.2                 | 5                       | 3                              | 120                              | 500                                   |                                 |     |                    |                    |     |
| TLP3440S    |                   |          | 40                             | ±0.12                         | 1.4                 | 5                       | 3                              | 0.45                             | 500                                   |                                 |     |                    |                    |     |
| TLP3475S    |                   |          | 50                             | ±0.3                          | 1.5                 | 5                       | 3                              | 12                               | 500                                   |                                 |     |                    |                    |     |
| TLP3407S    |                   |          | 60                             | ±0.7                          | 0.6                 | 5                       | 3                              | 120                              | 500                                   |                                 |     |                    |                    |     |
| TLP3409S    |                   |          | 100                            | ±0.5                          | 1.2                 | 5                       | 3                              | 120                              | 500                                   |                                 |     |                    |                    |     |
| TLP3450     |                   | VSON4    | 20                             | ±0.2                          | 5                   | 5                       | 3                              | 0.8                              | 500                                   |                                 |     |                    |                    |     |
| TLP3431     |                   |          |                                | ±0.45                         | 1.2                 | 5                       | 3                              | 5                                | 500                                   |                                 |     |                    |                    |     |
| TLP3403     |                   |          |                                | ±1                            | 0.22                | 5                       | 3                              | 40                               | 500                                   |                                 |     |                    |                    |     |
| TLP3442     |                   |          | 40                             | ±0.1                          | 20                  | 5                       | 3                              | 0.3                              | 500                                   |                                 |     |                    |                    |     |
| TLP3440     |                   |          |                                | ±0.12                         | 14                  | 5                       | 3                              | 0.45                             | 500                                   |                                 |     |                    |                    |     |
| TLP3441     |                   |          |                                | ±0.14                         | 10                  | 5                       | 3                              | 0.7                              | 500                                   |                                 |     |                    |                    |     |
| TLP3475     |                   |          | 50                             | ±0.3                          | 1.5                 | 5                       | 3                              | 12                               | 500                                   |                                 |     |                    |                    |     |
| TLP3451     |                   |          | 60                             | ±0.12                         | 15                  | 5                       | 3                              | 0.7                              | 500                                   |                                 |     |                    |                    |     |
| TLP3412     |                   |          |                                | ±0.4                          | 1.5                 | 5                       | 3                              | 20                               | 500                                   |                                 |     |                    |                    |     |
| TLP3417     |                   |          | 80                             | ±0.12                         | 12                  | 5                       | 3                              | 5                                | 500                                   |                                 |     |                    |                    |     |
| TLP3419     |                   |          |                                | ±0.2                          | 8                   | 5                       | 3                              | 6.5                              | 500                                   |                                 |     |                    |                    |     |
| TLP3420     |                   |          | 100                            | ±0.1                          | 14                  | 5                       | 3                              | 6                                | 500                                   |                                 |     |                    |                    |     |
| TLP3330     |                   | USOP4    | 20                             | ±0.16                         | 8                   | 5                       | 3                              | 1                                | 500                                   | ○                               |     |                    |                    |     |
| TLP3350     |                   |          |                                | ±0.2                          | 5                   | 5                       | 3                              | 0.8                              | 500                                   | ○                               |     |                    |                    |     |
| TLP3303     |                   |          |                                | ±0.9                          | 0.22                | 5                       | 3                              | 40                               | 500                                   | ○                               |     |                    |                    |     |
| TLP3342     |                   |          | 40                             | ±0.1                          | 20                  | 5                       | 3                              | 0.3                              | 500                                   | ○                               |     |                    |                    |     |
| TLP3340     |                   |          |                                | ±0.12                         | 14                  | 5                       | 3                              | 0.45                             | 500                                   | ○                               |     |                    |                    |     |
| TLP3341     |                   |          |                                | ±0.14                         | 10                  | 5                       | 3                              | 0.7                              | 500                                   | ○                               |     |                    |                    |     |
| TLP3315     |                   |          | 50                             | ±0.3                          | 1.5                 | 5                       | 3                              | 10                               | 500                                   | ○                               |     |                    |                    |     |
| TLP3375     |                   |          |                                | ±0.3                          | 1.5                 | 5                       | 3                              | 12                               | 500                                   | ○                               |     |                    |                    |     |
| TLP3351     |                   |          | 60                             | ±0.12                         | 15                  | 5                       | 3                              | 0.7                              | 500                                   | ○                               |     |                    |                    |     |
| TLP3312     |                   |          |                                | ±0.4                          | 1.5                 | 5                       | 3                              | 20                               | 500                                   | ○                               |     |                    |                    |     |
| TLP3306     |                   |          | 75                             | ±0.4                          | 1.5                 | 5                       | 3                              | 30                               | 500                                   | ○                               |     |                    |                    |     |
| TLP3317     |                   |          | 80                             | ±0.12                         | 12                  | 5                       | 3                              | 5                                | 500                                   | ○                               |     |                    |                    |     |
| TLP3319     |                   |          |                                | ±0.2                          | 8                   | 5                       | 3                              | 6.5                              | 500                                   | ○                               |     |                    |                    |     |
| TLP3320     |                   |          | 100                            | ±0.1                          | 14                  | 5                       | 3                              | 6                                | 500                                   | ○                               |     |                    |                    |     |
| TLP3230     |                   | SSOP4    | 20                             | ±0.16                         | 8                   | 5                       | 4                              | 1                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP3250     |                   |          |                                | ±0.2                          | 5                   | 5                       | 3                              | 0.8                              | 1500                                  | ○                               |     |                    |                    |     |
| TLP3231     |                   |          |                                | ±0.45                         | 1.2                 | 5                       | 4                              | 5                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP3203     |                   |          |                                | ±0.9                          | 0.22                | 5                       | 3                              | 40                               | 1500                                  | ○                               |     |                    |                    |     |
| TLP3216     |                   |          | 40                             | ±0.12                         | 15                  | 5                       | 4                              | 1                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP3240     |                   |          |                                |                               | 14                  | 5                       | 3                              | 0.45                             | 1500                                  | ○                               |     |                    |                    |     |
| TLP3241     |                   |          |                                | ±0.14                         | 10                  | 5                       | 3                              | 0.7                              | 1500                                  | ○                               |     |                    |                    |     |
| TLP3214     |                   |          |                                | ±0.25                         | 3                   | 5                       | 4                              | 5                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP3215     |                   |          | 50                             | ±0.3                          | 1.5                 | 5                       | 4                              | 10                               | 1500                                  | ○                               |     |                    |                    |     |
| TLP3275     |                   |          |                                | ±0.3                          | 1.5                 | 5                       | 3                              | 12                               | 1500                                  | ○                               |     |                    |                    |     |
| TLP3212     |                   |          |                                | ±0.4                          | 1.5                 | 5                       | 5                              | 20                               | 1500                                  | ○                               |     |                    |                    |     |
| TLP3217     |                   |          | 80                             | ±0.12                         | 12                  | 5                       | 5                              | 5                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP3220     |                   |          | 100                            | ±0.08                         | 14                  | 10                      | 5                              | 6                                | 1500                                  | ○                               |     |                    |                    |     |
| TLP175A     |                   | 4pin SO6 | 60                             | ±0.1                          | 50                  | 2                       | 1                              | —                                | 3750                                  | ○                               | ○   | ○                  | ○                  | ○   |
| TLP172AM    |                   |          |                                | ±0.5                          | 2                   | 5                       | 3                              | —                                | 3750                                  | ○                               | ○   |                    |                    |     |
| TLP172GM    |                   |          | 350                            | ±0.11                         | 50                  | 5                       | 3                              | —                                | 3750                                  | ○                               | ○   |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

\*: New product / 新製品

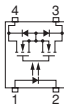
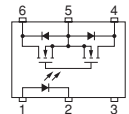
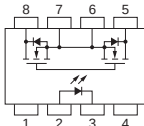
\*\*:: Under development / 開発中

| Part Number | Pin Configuration                                                                                      | Package     | V <sub>OFF</sub><br>(V)<br>Min | I <sub>ON</sub><br>(A)<br>Max | R <sub>ON</sub> (Ω) |                         | I <sub>FT</sub><br>(mA)<br>Max | BV <sub>s</sub><br>1 Minute<br>(V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|--------------------------------------------------------------------------------------------------------|-------------|--------------------------------|-------------------------------|---------------------|-------------------------|--------------------------------|----------------------------------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                                                                                                        |             |                                |                               | Max                 | @I <sub>F</sub><br>(mA) |                                |                                                    | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP3123     |                       | 2.54SOP4    | 40                             | ±1                            | 0.13                | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP170A     |                                                                                                        |             | 60                             | ±0.4                          | 2                   | 2                       | 1                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP171A     |                                                                                                        |             |                                |                               | 2                   | 0.5                     | 0.2                            | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP172A     |                                                                                                        |             |                                |                               | 2                   | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP3122     |                                                                                                        |             |                                | ±1                            | 0.7                 | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP3127 *   |                                                                                                        |             |                                | ±1.7                          | 0.13                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP170D     |                                                                                                        |             | 200                            | ±0.2                          | 8                   | 2                       | 1                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP171D     |                                                                                                        |             |                                |                               | 8                   | 0.5                     | 0.2                            | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP176D     |                                                                                                        |             |                                |                               | 8                   | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP170G     |                                                                                                        |             | 350                            | ±0.1                          | 50                  | 2                       | 1                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP172G     |                                                                                                        |             |                                | ±0.11                         | 50                  | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP174G     |                                                                                                        |             |                                | ±0.12                         | 35                  | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP176G     |                                                                                                        |             |                                |                               | 35                  | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP171GA    |                                                                                                        |             | 400                            | ±0.1                          | 35                  | 0.5                     | 0.2                            | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP174GA    |                                                                                                        |             |                                | ±0.12                         | 35                  | 5                       | 3                              | 1500                                               | ○                               |     |                    |                    |     |
| TLP176GA    |                                                                                                        |             |                                |                               | 35                  | 5                       | 3                              | 1500                                               | ○                               |     | ○                  |                    |     |
| TLP171J     |                                                                                                        |             | 600                            | ±0.07                         | 60                  | 0.5                     | 0.2                            | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP170J     |                                                                                                        |             |                                | ±0.09                         | 60                  | 2                       | 1                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP3100     |                      | 2.54SOP6    | 20                             | ±2.5                          | 0.05                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3106 *   |                                                                                                        |             | 30                             | ±4.0                          | 0.04                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3102     |                                                                                                        |             | 40                             | ±2.5                          | 0.06                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP192A     |                                                                                                        |             | 60                             | ±0.4                          | 2                   | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3103     |                                                                                                        |             |                                | ±2.3                          | 0.07                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3107 *   |                                                                                                        |             |                                | ±3.3                          | 0.06                | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3105     |                                                                                                        |             | 100                            | ±1.4                          | 0.2                 | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP3109 *   |                                                                                                        |             |                                | ±2.0                          | 0.07                | 5                       | 3                              | 1500                                               | △                               | △   |                    |                    |     |
| TLP197D     |                                                                                                        |             | 200                            | ±0.2                          | 8                   | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP192G     |                                                                                                        |             | 350                            | ±0.11                         | 50                  | 5                       | 3                              | 1500                                               | ○                               | ○   |                    |                    |     |
| TLP197G     |                                                                                                        |             |                                | ±0.12                         | 35                  | 5                       | 3                              | 1500                                               | ○                               | ○   | ○                  |                    |     |
| TLP197GA    |                                                                                                        |             | 400                            | ±0.12                         | 35                  | 5                       | 3                              | 1500                                               | ○                               |     |                    |                    |     |
| TLP225A     | <br>For DC use only | DIP4        | 60                             | 0.5                           | 1.1                 | 10                      | 5                              | 2500                                               | ○                               | ○   |                    |                    |     |
| TLP3553     | DIP4 F Type                                                                                            |             | 20                             | ±3                            | 0.08                | 5                       | 3                              | 2500                                               | ○                               | ○   |                    |                    |     |
| TLP241A *   |                                                                                                        | DIP4 F Type | 40                             | ±2.0                          | 0.15                | 5                       | 3                              | 5000                                               | ○                               | ○   | ○                  |                    |     |
| TLP241AF *  | ±2.5                                                                                                   |             |                                | 0.15                          | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP3554     | DIP4                                                                                                   | 60          | ±0.5                           | 2                             | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP222A     |                                                                                                        |             |                                | 2                             | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP227A     |                                                                                                        |             |                                | 2                             | 5                   | 3                       | 5000                           | ○                                                  | ○                               | ○   |                    | ○                  |     |
| TLP240A *   | DIP4 F Type                                                                                            | 100         | ±2                             | 0.2                           | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP240AF *  |                                                                                                        |             | ±1                             | 0.7                           | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP3555     | DIP4                                                                                                   | 200         | ±0.25                          | 8                             | 5                   | 3                       | 5000                           | ○                                                  | ○                               | ○   |                    | ○                  |     |
| TLP3556     |                                                                                                        |             | ±0.3                           | 8                             | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP240D *   | DIP4 F Type                                                                                            | 350         | ±0.12                          | ±0.1                          | 50                  | 5                       | 3                              | 5000                                               | ○                               | ○   | ○                  |                    | ○   |
| TLP240DF *  |                                                                                                        |             |                                | DIP4                          | 50                  | 5                       | 3                              | 2500                                               | ○                               | ○   |                    |                    |     |
| TLP222D     | 35                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP240G     | 35                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               | ○   |                    |                    |     |
| TLP240GF    | 50                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP222G     | 35                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP224G     | 35                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               | ○   |                    |                    |     |
| TLP227G     | 50                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |
| TLP228G     | 50                                                                                                     |             |                                |                               | 5                   | 3                       | 2500                           | ○                                                  | ○                               |     |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115 をご参照ください。

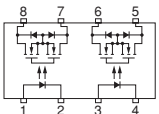
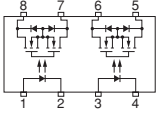
\*: New product / 新製品

1-Form-A / 1a接点シリーズ

| Part Number | Pin Configuration                                                                   | Package     | V <sub>OFF</sub> (V)<br>Min | I <sub>ON</sub> (A)<br>Max | R <sub>ON</sub> (Ω) |                      | I <sub>FT</sub> (mA)<br>Max | B <sub>V</sub> s<br>1 Minute (V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |      |                    |                    |     |  |  |
|-------------|-------------------------------------------------------------------------------------|-------------|-----------------------------|----------------------------|---------------------|----------------------|-----------------------------|--------------------------------------------------|---------------------------------|------|--------------------|--------------------|-----|--|--|
|             |                                                                                     |             |                             |                            | Max                 | @I <sub>F</sub> (mA) |                             |                                                  | UL                              | cUL  | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |  |  |
| TLP224GA    |    | DIP4        | 400                         | ±0.12                      | 35                  | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP227GA    |                                                                                     |             |                             |                            | 35                  | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP240GA *  |                                                                                     | DIP4 F Type |                             |                            | 35                  | 5                    | 3                           | 5000                                             | ○                               | ○    | ○                  | ○                  | ○   |  |  |
| TLP240GAF * |                                                                                     |             |                             |                            |                     |                      |                             |                                                  |                                 |      |                    |                    |     |  |  |
| TLP240J *   |                                                                                     | DIP4        | 600                         | ±0.09                      | 60                  | 5                    | 3                           | 5000                                             | ○                               | ○    | ○                  | ○                  | ○   |  |  |
| TLP240JF *  |                                                                                     | DIP4 F Type |                             |                            |                     |                      |                             |                                                  |                                 |      |                    |                    |     |  |  |
| TLP3543     |    | DIP6        | 20                          | ±4                         | 0.05                | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP3544     |                                                                                     |             | 40                          | ±3.5                       | 0.06                | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP592A     |                                                                                     |             | 60                          | ±0.5                       | 2                   | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP597A     |                                                                                     |             |                             |                            | 2                   | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP598AA    |                                                                                     |             |                             |                            | 2                   | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP3542     |                                                                                     |             |                             | ±2.5                       | 0.1                 | 10                   | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP3545     |                                                                                     |             |                             | ±3                         | 0.07                | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP3546     |                                                                                     |             | 100                         | ±2                         | 0.2                 | 5                    | 3                           | 2500                                             | ○                               | ○    |                    |                    |     |  |  |
| TLP592G     |                                                                                     |             | 350                         | ±0.12                      | 50                  | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP597G     |                                                                                     |             |                             |                            | 35                  | 5                    | 3                           | 2500                                             | ○                               |      | ○                  |                    |     |  |  |
| TLP597GA    |                                                                                     |             | 400                         | ±0.12                      | 35                  | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP797GA    |                                                                                     |             |                             |                            | 35                  | 5                    | 3                           | 5000                                             | ○                               | ○    | ○                  |                    |     |  |  |
| TLP797GAF   |                                                                                     | DIP6 F Type | 400                         | ±0.15                      | 12                  | 5                    | 3                           | 2500                                             | ○                               |      |                    |                    |     |  |  |
| TLP598GA    |                                                                                     | 12          |                             |                            | 5                   | 5                    | 5000                        | ○                                                | ○                               |      |                    |                    |     |  |  |
| TLP798GA    |                                                                                     | DIP6        | 600                         | ±0.1                       | 45                  | 10                   | 5                           | 5000                                             | ○                               | ○    | ○                  |                    |     |  |  |
| TLP797J     |                                                                                     |             |                             |                            |                     |                      |                             |                                                  |                                 |      |                    |                    |     |  |  |
| TLP797JF    |                                                                                     | DIP6 F Type | DIP8                        | ±5.0                       | 60                  | ±5.0                 | 0.05                        | 5                                                | 5                               | 2500 | ○                  | ○                  | △   |  |  |
| TLP3547 *   |  |             |                             |                            | 400                 | ±0.4                 | 5                           | 2                                                | 1                               | 2500 | ○                  | ○                  | △   |  |  |
| TLP3548 *   |                                                                                     |             |                             |                            | 600                 | ±0.6                 | 2                           | 5                                                | 5                               | 2500 | ○                  | ○                  | △   |  |  |
| TLP3549 *   |                                                                                     |             |                             |                            | 100                 | ±3                   | 0.15                        | 5                                                | 5                               | 2500 | ○                  | ○                  | △   |  |  |
| TLP3823 *   |                                                                                     |             |                             |                            | 200                 | ±1.5                 | 0.5                         | 5                                                | 5                               | 2500 | ○                  | ○                  | △   |  |  |
| TLP3825 *   |                                                                                     |             |                             |                            |                     |                      |                             |                                                  |                                 |      |                    |                    |     |  |  |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。 \*: New product / 新製品

2-Form-A / 2a接点シリーズ

| Part Number | Pin Configuration                                                                   | Package  | V <sub>OFF</sub> (V)<br>Min | I <sub>ON</sub> (A)<br>Max | R <sub>ON</sub> (Ω) |                      | I <sub>FT</sub> (mA)<br>Max | BV <sub>s</sub> 1 Minute (V <sub>rms</sub> ) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------------------------------------------------------------------------|----------|-----------------------------|----------------------------|---------------------|----------------------|-----------------------------|----------------------------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                                                                                     |          |                             |                            | Max                 | @I <sub>F</sub> (mA) |                             |                                              | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP202A     |  | 2.54SOP8 | 60                          | ±0.4                       | 2                   | 5                    | 3                           | 1500                                         | ○                               |     |                    |                    |     |
| TLP200D     |                                                                                     |          | 200                         | ±0.2                       | 8                   | 5                    | 3                           | 1500                                         | ○                               |     |                    |                    |     |
| TLP202G     |                                                                                     |          | 350                         | ±0.11                      | 50                  | 5                    | 3                           | 1500                                         | ○                               |     | ○                  |                    |     |
| TLP206G     |                                                                                     |          |                             | ±0.12                      | 35                  | 5                    | 3                           | 1500                                         | ○                               |     | ○                  |                    |     |
| TLP206GA    |                                                                                     |          | 400                         | ±0.12                      | 35                  | 5                    | 3                           | 1500                                         | ○                               |     | ○                  |                    |     |
| TLP222A-2   |  | DIP8     | 60                          | ±0.5                       | 2                   | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP227A-2   |                                                                                     |          |                             |                            | 2                   | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP222G-2   |                                                                                     |          | 350                         | ±0.12                      | 50                  | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP224G-2   |                                                                                     |          |                             |                            | 35                  | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP227G-2   |                                                                                     |          |                             |                            | 35                  | 5                    | 3                           | 2500                                         | ○                               | ○   | ○                  |                    |     |
| TLP228G-2   |                                                                                     |          |                             |                            | 50                  | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP224GA-2  |                                                                                     |          | 400                         | ±0.12                      | 35                  | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |
| TLP227GA-2  |                                                                                     |          |                             |                            | 35                  | 5                    | 3                           | 2500                                         | ○                               | ○   |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

## 1-Form-B / 1b接点シリーズ

| Part Number | Pin Configuration | Package  | V <sub>OFF</sub><br>(V)<br>Min | I <sub>ON</sub><br>(A)<br>Max | R <sub>ON</sub> (Ω) |                         | I <sub>FC</sub><br>(mA)<br>Max | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------|----------|--------------------------------|-------------------------------|---------------------|-------------------------|--------------------------------|---------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                   |          |                                |                               | Max                 | @I <sub>F</sub><br>(mA) |                                |                           | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP4176G    |                   | 2.54SOP4 | 350                            | ±0.12                         | 25                  | 0                       | 3                              | 1500                      | ○                               |     |                    |                    |     |
| TLP4197G    |                   | 2.54SOP6 | 350                            | ±0.12                         | 25                  | 0                       | 3                              | 1500                      | ○                               |     |                    |                    |     |
| TLP4227G    |                   | DIP4     | 350                            | ±0.15                         | 25                  | 0                       | 3                              | 2500                      | ○                               |     |                    |                    |     |
| TLP4597G    |                   | DIP6     | 350                            | ±0.15                         | 25                  | 0                       | 3                              | 2500                      | ○                               |     |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

## 2-Form-B / 2b接点シリーズ

| Part Number | Pin Configuration | Package  | V <sub>OFF</sub><br>(V)<br>Min | I <sub>ON</sub><br>(A)<br>Max | R <sub>ON</sub> (Ω) |                         | I <sub>FC</sub><br>(mA)<br>Max | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------|----------|--------------------------------|-------------------------------|---------------------|-------------------------|--------------------------------|---------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                   |          |                                |                               | Max                 | @I <sub>F</sub><br>(mA) |                                |                           | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP4206G    |                   | 2.54SOP8 | 350                            | ±0.12                         | 25                  | 0                       | 3                              | 1500                      | ○                               |     |                    |                    |     |
| TLP4227G-2  |                   | DIP8     | 350                            | ±0.15                         | 25                  | 0                       | 3                              | 2500                      | ○                               |     |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

## 1-Form-A, 1-Form-B / 1a1b接点シリーズ

| Part Number | Pin Configuration | Package  | V <sub>OFF</sub><br>(V) | I <sub>ON</sub><br>(A)<br>Max | R <sub>ON</sub> (Ω) |                         | I <sub>FT</sub> /I <sub>FC</sub><br>(mA)<br>Max | BVs<br>1 Minute<br>(Vrms) | Safety Standards <sup>(1)</sup> |     |                    |                    |     |
|-------------|-------------------|----------|-------------------------|-------------------------------|---------------------|-------------------------|-------------------------------------------------|---------------------------|---------------------------------|-----|--------------------|--------------------|-----|
|             |                   |          |                         |                               | Max                 | @I <sub>F</sub><br>(mA) |                                                 |                           | UL                              | cUL | VDE <sup>(5)</sup> | VDE <sup>(6)</sup> | CQC |
| TLP4026G    |                   | 2.54SOP8 | 350                     | ±0.12                         | 25                  | (A)                     | 3                                               | 1500                      |                                 |     |                    |                    |     |
| TLP4006G    |                   | DIP8     | 350                     | ±0.12                         | 25                  | (A)                     | 3                                               | 2500                      | ○                               |     |                    |                    |     |

Note (1),(5),(6): Please refer to page 115. / P.115をご参照ください。

(A): 1-Form-A: I<sub>F</sub> = 5 (mA), 1-Form-B: I<sub>F</sub> = 0 (mA)

## Photocouplers for Automotive / 車載用フォトカプラ

### IC Output / IC出力

(High Speed Communications) / (高速通信用)

| Part Number | Pin Configuration | Package   | Characteristics |                         |                                |                                         |                                         | Isolation Voltage<br>BVs (Vrms) | Clearance/<br>Creepage Distance |
|-------------|-------------------|-----------|-----------------|-------------------------|--------------------------------|-----------------------------------------|-----------------------------------------|---------------------------------|---------------------------------|
|             |                   |           | Output Type     | Data Rate<br>(Standard) | I <sub>FHL</sub> (max)<br>(mA) | T <sub>stg</sub> (°C)<br>(min) to (max) | T <sub>opr</sub> (°C)<br>(min) to (max) |                                 |                                 |
| TLX9304     |                   | 5 pin SO6 | Open collector  | 1 Mbps                  | 5                              | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9310     |                   | 5 pin SO6 | Totempole       | 5 Mbps                  | I <sub>FLH</sub> = 1 (max)     | −55 to 125                              | −40 to 105                              | 3750                            | 5 mm                            |
| TLX9378     |                   | 5 pin SO6 | Open collector  | 10 Mbps                 | 5                              | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9376     |                   | 5 pin SO6 | Totempole       | 20 Mbps                 | 4                              | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |

### Transistor Output / トランジスタ出力

(DC Input) / (DC入力)

| Part Number | Pin Configuration | Package   | Characteristics                                                                                      |                                                                                    |                               |                                         |                                         | Isolation Voltage<br>BVs (Vrms) | Clearance/<br>Creepage Distance |
|-------------|-------------------|-----------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------|-----------------------------------------|---------------------------------|---------------------------------|
|             |                   |           | I <sub>C</sub> /I <sub>F</sub> (%)<br>(min) to (max)<br>@I <sub>F</sub> (mA)/<br>V <sub>CE</sub> (V) | V <sub>CE</sub> (sat) (V)<br>(max)<br>@I <sub>C</sub> (mA)/<br>I <sub>F</sub> (mA) | V <sub>CEO</sub> (min)<br>(V) | T <sub>stg</sub> (°C)<br>(min) to (max) | T <sub>opr</sub> (°C)<br>(min) to (max) |                                 |                                 |
| TLX9000     |                   | SO4       | 100 to 900<br>@ 5/5                                                                                  | 0.4<br>@ 2.4/8                                                                     | 40                            | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9300     |                   | 4 pin SO6 | 100 to 900<br>@ 5/5                                                                                  | 0.4<br>@ 2.4/8                                                                     | 40                            | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9291A    |                   | SO4       | 50 to 600<br>@ 5/5                                                                                   | 0.4<br>@ 2.4/8                                                                     | 80                            | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9185A    |                   | 4 pin SO6 | 50 to 600<br>@ 5/5                                                                                   | 0.4<br>@ 2.4/8                                                                     | 80                            | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |

### Photovoltaic Output / フォトボル出力

| Part Number | Pin Configuration | Package   | Characteristics                                             |                                                       |                                         |                                         | Isolation Voltage<br>BVs (Vrms) | Clearance/<br>Creepage Distance |
|-------------|-------------------|-----------|-------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|-----------------------------------------|---------------------------------|---------------------------------|
|             |                   |           | Short-Circuit<br>Current (uA) (min)<br>@I <sub>F</sub> (mA) | Open Voltage<br>VOC (V) (min)<br>@I <sub>F</sub> (mA) | T <sub>stg</sub> (°C)<br>(min) to (max) | T <sub>opr</sub> (°C)<br>(min) to (max) |                                 |                                 |
| TLX9905     |                   | 4 pin SO6 | 12 @ 10                                                     | 7 @ 10                                                | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |
| TLX9906     |                   | 4 pin SO6 | 12 @ 10                                                     | 7 @ 10                                                | −55 to 150                              | −40 to 125                              | 3750                            | 5 mm                            |

### Photorelays / フォトリレー

(1-Form-A) / (1a接点)

| Part Number | Pin Configuration | Package   | OFF-State<br>Output Terminal<br>Voltage<br>V <sub>OFF</sub> (max)<br>(V) | ON-State<br>Current<br>I <sub>ON</sub> (max)<br>(mA) | ON-state<br>Resistance       |                                               | Trigger<br>LED<br>Current<br>I <sub>FT</sub> (max)<br>(mA) | Isolation Voltage<br>BVs (Vrms) | Clearance/<br>Creepage Distance |
|-------------|-------------------|-----------|--------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-----------------------------------------------|------------------------------------------------------------|---------------------------------|---------------------------------|
|             |                   |           |                                                                          |                                                      | R <sub>ON</sub> (max)<br>(Ω) | @I <sub>ON</sub> (mA)/<br>I <sub>F</sub> (mA) |                                                            |                                 |                                 |
| TLX9175J    |                   | 4 pin SO6 | 600                                                                      | 15                                                   | 335                          | 15/10                                         | 3                                                          | 3750                            | 5 mm                            |

## Reference

Note (1): Certified to safety standards. For details on certification status, contact your Toshiba sales representative.

UL/c-UL/CQC: ○: Approved △: Approval pending as of May 2017

VDE: ○: Approved (EN 60747-5-5 / EN 60065 / EN 60950-1-certified)

△: Approval pending as of May 2017

Specify VDE-certified devices with option V4 or D4

UL: Underwriters Laboratories (UL) is a safety consulting and certification company.

c-UL: c-UL Mark is the UL Mark for Canada.

VDE: VERBAND DEUTSCHER ELECTROTECHNISCHER e.V.

CQC: China Quality Certification center

(2): The products with the ranks Y and BL are limited in production. For details, please contact your local Toshiba sales representative.

(3): For details of the devices, please contact your local Toshiba sales representative.

(4): This product is for Japan.

(5): EN60747-5-5

(6): EN60065/EN60950-1

## 参照

Note (1): 安全規格適合品であることを示します。認定状況の詳細につきましては、当社営業窓口までお問い合わせください。

UL/c-UL/CQC: ○印は認定品、△印は申請中 (2017年5月現在)。

VDE : ○印は認定品 (EN 60747-5-5 / EN 60065 / EN 60950-1 適合)、△印は申請中 (2017年5月現在)。

オプション (V4) または (D4) にて、VDE 認定を指定してください。

UL : Underwriters Laboratories 米国安全規格

c-UL : CSA (Canadian Standards Association) 相当のカナダ向け米国安全規格

VDE : VERBAND DEUTSCHER ELECTROTECHNISCHER e.V.

CQC: China Quality Certification center 中国品質認証センター

(2): Yランク品およびBLランク品は生産上制限のある製品です。詳細につきましては当社営業窓口までお問い合わせください。

(3): 製品の詳細につきましては、当社営業窓口までお問い合わせください。

(4): 日本国内向け製品です。

(5): EN60747-5-5

(6): EN60065/EN60950-1

Fiber-Coupler (TOSLINK™) / ファイバカブラ (トスリンク®)

Simplex Optical Modules / 単方向光伝送モジュール  
(General-Purpose Optical Modules) / (汎用光モジュール)

| Transmitting Module                                         | Receiving Module                | Data Rate (NRZ, Mb/s) | Emission Wavelength (nm) | Transmission Distance (m) <sup>(1)</sup> | Pulse Width Distortion (ns) <sup>(1)</sup> | Supply Voltage (V) | Operating Temperature (°C) | Compatible Optical Connector | Compatible Optical Fiber (μm) | Compatible Optical Fiber with Fiber-Optic Connectors <sup>(7)</sup>         |
|-------------------------------------------------------------|---------------------------------|-----------------------|--------------------------|------------------------------------------|--------------------------------------------|--------------------|----------------------------|------------------------------|-------------------------------|-----------------------------------------------------------------------------|
| TOTX1350(F) <sup>(8)</sup><br>TOTX1350(V, F) <sup>(8)</sup> | TORX1350A(F)<br>TORX1350A(V, F) | DC to 10              | 650                      | Up to 100                                | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1353(F) <sup>(8)</sup><br>TOTX1353(V, F) <sup>(8)</sup> | TORX1353(F)<br>TORX1353(V, F)   | DC to 0.5             | 650                      | Up to 10                                 | —                                          | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1350(F) <sup>(8)</sup><br>TOTX1350(V, F) <sup>(8)</sup> | TORX1355(F)<br>TORX1355(V, F)   | DC to 10              | 650                      | Up to 10                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1950A(F) <sup>(2)</sup>                                 | TORX1950A(F)                    | DC to 10              | 650                      | Up to 50                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1951A(F)                                                | TORX1951A(F)                    | DC to 6               | 650                      | Up to 40                                 | ±55                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1952A(F)                                                | TORX1952A(F)                    | DC to 10              | 650                      | Up to 10                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>             |
| TOTX1960A(F)                                                | TORX1950A(F)                    | DC to 10              | 770                      | Up to 1000                               | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F05                      | PCF (200/230)                 | CF-1071 (HC-20/07) Series <sup>(5)</sup><br>OPC101HVQ Series <sup>(6)</sup> |

- Note (1): All values at Ta = 25°C / Ta = 25°Cの値です。
- (2): The external resistor value must be chosen based on the transmission distance. / 伝送距離により、外付け抵抗値を変える必要があります。
- (3): Manufactured by Asahi Kasei E-Materials. / 旭化成イーマテリアルズ株式会社の製品です。
- (4): Manufactured by Toray Industries, Inc. / 東レ株式会社の製品です。
- (5): Manufactured by Sumitomo Electric Industries (SEI), Ltd. / 住友電気工業株式会社の製品です。
- (6): Manufactured by Oki Electric Cable Co., Ltd. / 沖電線株式会社の製品です。
- (7): For details on optical fiber cables with connectors, contact the respective manufactures. / 光コネクタ付き光ファイバの詳細につきましては、各メーカーにお問い合わせください。
- (8): Since these modules contain only an LED, a drive circuit is required. / LEDのみの製品です。駆動回路が必要になります。
- ・ TOSLINK™ is a registered trademark of Toshiba Corporation in Japan and other countries.
  - ・ トスリンク®は、株式会社東芝の日本およびその他の国における登録商標です。

(High-Speed Optical Modules) / (高速通信用光モジュール)

| Transmitting Module | Receiving Module | Data Rate (NRZ, Mb/s) | Emission Wavelength (nm) | Transmission Distance (m) <sup>(1)</sup> | Supply Voltage (V) | Operating Temperature (°C) | Compatible Optical Connector | Compatible Optical Fiber (μm) | Compatible Optical Fiber with Fiber-Optic Connectors <sup>(7)</sup> |
|---------------------|------------------|-----------------------|--------------------------|------------------------------------------|--------------------|----------------------------|------------------------------|-------------------------------|---------------------------------------------------------------------|
| TOTX1701A(F)        | TORX1701A(F)     | 20 to 125             | 650                      | Up to 20 (APF)                           | 3.3 ± 0.3          | −10 to 70                  | JIS F05                      | APF (980/1000)<br>NA = 0.5    | LUCT1-TC1000-xxM <sup>(3)</sup><br>TOCP100-xxMBT <sup>(4)</sup>     |
|                     |                  |                       |                          | Up to 100 (GI-PCF)                       |                    |                            |                              | GI-PCF (200/230)              | CF-1071 (HG-20/08) Series <sup>(5)</sup>                            |

- Note (1): All values at Ta = 25°C / Ta = 25°Cの値です。
- (3): Manufactured by Asahi Kasei E-Materials. / 旭化成イーマテリアルズ株式会社の製品です。
- (4): Manufactured by Toray Industries, Inc. / 東レ株式会社の製品です。
- (5): Manufactured by Sumitomo Electric Industries (SEI), Ltd. / 住友電気工業株式会社の製品です。
- (7): For details on optical fiber cables with connectors, contact the respective manufactures. / 光コネクタ付き光ファイバの詳細につきましては、各メーカーにお問い合わせください。

## Duplex Modules / 双方向光伝送モジュール (General-Purpose Optical Modules) / (汎用光モジュール)

| Transceiving Module             | Data Rate (NRZ, Mb/s) | Emission Wavelength (nm) | Transmission Distance (m) <sup>(1)</sup> | Pulse Width Distortion (ns) <sup>(1)</sup> | Supply Voltage (V) | Operating Temperature (°C) | Compatible Optical Connector | Compatible Optical Fiber (μm) | Compatible Optical Fiber with Fiber-Optic Connectors <sup>(7)</sup>         |
|---------------------------------|-----------------------|--------------------------|------------------------------------------|--------------------------------------------|--------------------|----------------------------|------------------------------|-------------------------------|-----------------------------------------------------------------------------|
| TODX2350A(F) <sup>(9)</sup>     | DC to 10              | 650                      | Up to 100                                | ±30                                        | 5 ± 0.25           | −40 to 85                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2353(F) <sup>(9)</sup>      | DC to 0.5             | 650                      | Up to 10                                 | —                                          | 5 ± 0.25           | −40 to 85                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2355(F) <sup>(9)</sup>      | DC to 10              | 650                      | Up to 10                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2850A(F) <sup>(2) (8)</sup> | DC to 10              | 650                      | Up to 50                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2860A(F) <sup>(2) (8)</sup> | DC to 10              | 770                      | Up to 1000                               | ±30                                        | 5 ± 0.25           | −40 to 85                  | PN (JIS F07)                 | PCF (200/230)                 | CF-2071(HC-20/07) Series <sup>(5)</sup><br>OPC201HVQ Series <sup>(6)</sup>  |
| TODX2950A(F) <sup>(2)</sup>     | DC to 10              | 650                      | Up to 50                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F07                      | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2951A(F)                    | DC to 6               | 650                      | Up to 40                                 | ±55                                        | 5 ± 0.25           | −40 to 85                  | JIS F07                      | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2952A(F)                    | DC to 10              | 650                      | Up to 10                                 | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F07                      | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>            |
| TODX2960A(F)                    | DC to 10              | 770                      | Up to 1000                               | ±30                                        | 5 ± 0.25           | −40 to 85                  | JIS F07                      | PCF (200/230)                 | CF-2071 (HC-20/07) Series <sup>(5)</sup><br>OPC201HVQ Series <sup>(6)</sup> |

Note (1): All values at Ta = 25°C / Ta = 25°Cの値です。

(2): The external resistor value must be chosen based on the transmission distance. / 伝送距離により、外付け抵抗値を変える必要があります。

(3): Manufactured by Asahi Kasei E-Materials. / 旭化成イーマテリアルズ株式会社の製品です。

(4): Manufactured by Toray Industries, Inc. / 東レ株式会社の製品です。

(5): Manufactured by Sumitomo Electric Industries (SEI), Ltd. / 住友電気工業株式会社の製品です。

(6): Manufactured by Oki Electric Cable Co., Ltd. / 沖電線株式会社の製品です。

(7): For details on optical fiber cables with connectors, contact the respective manufactures. / 光コネクタ付き光ファイバの詳細につきましては、各メーカーにお問い合わせください。

(8): Housed in a ceramic package. / セラミックパッケージタイプの製品です。

(9): Since these modules contain only an LED, a drive circuit is required. / LEDのみの製品です。駆動回路が必要になります。

## (High-Speed Optical Modules) / (高速通信用光モジュール)

| Transceiving Module | Data Rate (NRZ, Mb/s) | Emission Wavelength (nm) | Transmission Distance (m) <sup>(1)</sup> | Supply Voltage (V) | Operating Temperature (°C) | Compatible Optical Connector | Compatible Optical Fiber (μm) | Compatible Optical Fiber with Fiber-Optic Connectors <sup>(7)</sup> |
|---------------------|-----------------------|--------------------------|------------------------------------------|--------------------|----------------------------|------------------------------|-------------------------------|---------------------------------------------------------------------|
| TODX2701A(F)        | 20 to 125             | 650                      | Up to 20 (APF)                           | 3.3 ± 0.3          | −10 to 70                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>    |
|                     |                       |                          | Up to 100 (GI-PCF)                       |                    |                            |                              | GI-PCF (200/230)              | CF-2071 (HG-20/08) Series <sup>(5)</sup>                            |
| TODX2901A(F)        | 20 to 150             | 650                      | Up to 20 (APF)                           | 3.3 ± 0.3          | −10 to 70                  | PN (JIS F07)                 | APF (980/1000) NA = 0.5       | LUCT2-TC1000W-xxM <sup>(3)</sup><br>TOCP200-xxMBT <sup>(4)</sup>    |

Note (1): All values at Ta = 25°C / Ta = 25°Cの値です。

(3): Manufactured by Asahi Kasei E-Materials. / 旭化成イーマテリアルズ株式会社の製品です。

(4): Manufactured by Toray Industries, Inc. / 東レ株式会社の製品です。

(5): Manufactured by Sumitomo Electric Industries (SEI), Ltd. / 住友電気工業株式会社の製品です。

(7): For details on optical fiber cables with connectors, contact the respective manufactures. / 光コネクタ付き光ファイバの詳細につきましては、各メーカーにお問い合わせください。

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# SEMICONDUCTOR GENERAL CATALOG

## 半導体製品総覧表2017年7月版

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### General-Purpose Logic ICs 汎用ロジックIC

Bus Switch / バススイッチ

Dual-Supply Level Shifters / 2 電源レベルシフタ

One-Gate Logic (L-MOS) / ワンゲートロジック( L-MOS)

CMOS Logic ICs / CMOS ロジックIC

Bus Switch / バススイッチ

Bus Switch / バススイッチ

| Series                           | Part Number      | Supply Voltage (V) | Features                                                                                                                                             |
|----------------------------------|------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| High-Speed Transmission Switches | PCI3212/3215     | 3.0 to 3.6         | Bus switches compliant with PCI Express 3.0 (8 Gbps)<br>Usable for high-speed Gbps interfacing, such as USB 3.0, DisplayPort 1.2 and SATA 3.0        |
|                                  | USB3212          | 1.65 to 1.95       | Bus switches compliant with USB 3.0 SuperSpeed (5 Gbps) transfer mode                                                                                |
| USB 2.0 Switches                 | USB40/42         | 2.3 to 4.3         | Bus switches compliant with USB 2.0 High-Speed (480 Mbps) transfer mode                                                                              |
| Low-Voltage Bus Switches         | MBL/WBL/SBLxxxxC | 1.65 to 3.6        | 3.3-V bus switches<br>Bus switches with lower switch capacitances than that of the previous MBLxxxxA                                                 |
| 5-V Bus Switches                 | WB/SBxxxxC       | 4.5 to 5.5         | 5-V bus switches<br>Consists of N-channel MOSFET transistors.<br>The SB66/67/3157 and WB66/67 consist of P-channel and N-channel MOSFET transistors. |

| Type                          | Configuration | #Circuits | Control Input        | Series    | Function Number |                             | Package |         |                |
|-------------------------------|---------------|-----------|----------------------|-----------|-----------------|-----------------------------|---------|---------|----------------|
|                               |               |           |                      |           | Low Cap.<br>5 V | Low Voltage/Low Cap.<br>3 V | Suffix  | Name    | Number of Pins |
| High Speed Switch             | SPDT          | Quad      | Active-low           | TC7PCIxxx |                 | 3212                        | MT      | TQFN20  | 20             |
|                               |               |           |                      |           |                 | 3215                        | MT      | TQFN20  | 20             |
| USB Switch                    | SPDT          | Quad      | Active-low           | TC7USBxxx |                 | 3212                        | WBG     | WCSP20  | 20             |
|                               |               | Dual      | Active-low           | TC7USBxxx |                 | 40                          | MU      | UQFN10  | 10             |
|                               |               |           |                      |           |                 |                             | FT      | TSSOP14 | 14             |
|                               |               |           | Active-low           |           |                 | 42                          | MU      | UQFN10  | 10             |
| Bus Switch                    | SPST          | Single    | Active-high          | TC7SBxxx  |                 | L66C                        | FU      | USV     | 5              |
|                               |               |           | Active-low           |           |                 | 66C, 67C                    | FU      | USV     | 5              |
|                               |               | Dual      | Active-high          | TC7WBxxx  |                 | 66C, 67C                    | FK      | US8     | 8              |
|                               |               |           | Active-low           |           |                 | L3305C<br>L3306C            | FK      | US8     | 8              |
|                               |               | Quad      | Active-low           | TC7MBxxx  |                 | L3125C<br>L3126C            | FT      | TSSOP14 | 14             |
|                               |               |           | Active-high          |           |                 |                             | FK      | US14    |                |
|                               |               | Octal     | Active-low           |           |                 | L3245C                      | FT      | TSSOP20 | 20             |
|                               |               |           | (for all 8 switches) |           |                 |                             | FK      | US20    |                |
| Multiplexer/<br>Demultiplexer | SPDT          | Single    | —                    | TC7SBxxx  |                 | 3157C                       | FU      | US6     | 6              |
|                               |               |           |                      |           |                 | 3157D                       | L6X     | MP6     | 6              |
|                               |               | Quad      | Active-low           | TC7MBxxx  |                 | L3257C                      | FT      | TSSOP16 | 16             |
|                               |               |           |                      |           |                 |                             | FK      | US16    |                |
|                               | SP4T          | Dual      | Active-low           |           |                 | L3253C                      | FT      | TSSOP16 | 16             |
|                               |               |           |                      |           |                 |                             | FK      | US16    |                |

Dual-Supply Level Shifters / 2電源レベルシフタ

Dual-Supply Level Shifters (Buffer) / 2電源レベルシフタ (バッファタイプ)

| Direction      | Part Number    | Number of Pins | Bit Width | Functions  |         |           |                 |                          |                   | TSSOP 48 | US16  | US8   | CST8  | UF6   | CST6C | MP6    |
|----------------|----------------|----------------|-----------|------------|---------|-----------|-----------------|--------------------------|-------------------|----------|-------|-------|-------|-------|-------|--------|
|                |                |                |           | Sleep Mode | Bushold | Low Noise | Series Resistor | A-Bus (V)                | B-Bus (V)         | xxxFT    | xxxFK | xxxFK | xxxFC | xxxTU | xxxFC | xxxL6X |
| Bidirectional  | TC74VCX163245  | 48             | 16        |            |         |           |                 | 2.5<br>3.3               | 1.8<br>2.5        | ○        |       |       |       |       |       |        |
|                | TC74VCX164245  |                |           |            |         |           |                 | 1.8<br>2.5               | 2.5<br>3.3        | ○        |       |       |       |       |       |        |
|                | TC74LCX163245  | 48             | 16        |            |         |           |                 | (5.5)                    | (2.5)<br>(3.3)    | ○        |       |       |       |       |       |        |
|                | TC74LCXR163245 | 48             | 16        |            |         |           | ○               | (5.5)                    | (2.5)<br>(3.3)    | ○        |       |       |       |       |       |        |
|                | TC74LCX164245  | 48             | 16        |            |         |           |                 | (2.5)<br>(3.3)           | (5.5)             | ○        |       |       |       |       |       |        |
|                | TC74LCXR164245 | 48             | 16        |            |         |           | ○               | (2.5)<br>(3.3)           | (5.5)             | ○        |       |       |       |       |       |        |
| Unidirectional | TC7SPN334      | 6              | 1         | ○          |         | ○         |                 | 1.2<br>1.5<br>1.8<br>2.5 | 1.8<br>2.5<br>3.3 |          |       |       |       |       |       | ○      |
|                | TC7SP3125      | 6              | 1         |            |         |           |                 | 1.2<br>1.5<br>1.8<br>2.5 | 1.8<br>2.5<br>3.3 |          |       |       |       | ○     |       |        |
|                | TC7SPN3125     | 6              | 1         |            |         | ○         |                 | 1.2<br>1.5<br>1.8<br>2.5 | 1.8<br>2.5<br>3.3 |          |       |       |       | ○     |       |        |

○: Available / 量産中。

- ・ For package dimensions and standard codes, please refer to pages 153 to 154.
- ・ パッケージの外観図および標準化コードは P.153, P.154 をご覧ください。

Dual-Supply Bidirectional Level Shifters Without a Direction Control Signal (Bus Switches) / 方向制御信号なし2電源双方向レベルシフタ (バススイッチタイプ)

| Configuration | #Circuits | Series    | Function Number         |                                        |                                                          | Number of Pins | TSSOP 14/16/20 | US8/14/16/20 | UF6   |
|---------------|-----------|-----------|-------------------------|----------------------------------------|----------------------------------------------------------|----------------|----------------|--------------|-------|
|               |           |           | 5 V ⇄ 1.8 V Level Shift | 5 V ⇄ 1.8 V Level-Shift Assist Circuit | 5 V ⇄ 1.8 V Level-Shift Assist Circuit Pull-Up Resistors |                | xxxFT          | xxxFK        | xxxTU |
| SPST          | 1         | TC7SPBxxx | 9306                    |                                        |                                                          | 6              |                |              | ○     |
|               |           |           | 9307                    |                                        |                                                          |                |                |              | ○     |
|               | 2         | TC7WPBxxx | 9307                    |                                        |                                                          | 8              |                | ○            |       |
|               |           |           | 9306                    |                                        |                                                          |                |                | ○            |       |
|               | 4         | TC7QPBxxx | 9307                    |                                        |                                                          | 14             | ○              | ○            |       |
|               |           |           | 9306                    |                                        |                                                          |                | ○              | ○            |       |
| SPDT          | 2         | TC7MPBxxx | 9307                    |                                        |                                                          | 20             | ○              | ○            |       |
|               |           |           | 9327                    |                                        |                                                          | 14             | ○              | ○            |       |
|               |           |           | 9326                    |                                        |                                                          |                | ○              | ○            |       |

○: Available / 量産中。

One-Gate Logic (L-MOS) / ワンゲートロジック (L-MOS)

|                                             |                                                    |                  |                              |                             |                             |                  |                  |
|---------------------------------------------|----------------------------------------------------|------------------|------------------------------|-----------------------------|-----------------------------|------------------|------------------|
|                                             | SHS Series                                         |                  |                              |                             |                             |                  |                  |
| Supply Voltage                              | 1.65 to 5.5 V                                      |                  | 1.8 to 5.5 V                 |                             | 1.65 to 5.5 V               |                  |                  |
| IOH /IOL                                    | 24 mA min @ Vcc = 3 V                              |                  |                              |                             |                             |                  |                  |
| tpLH/tpHL<br>(NAND gate)                    | 2.4 ns typ. @ Vcc = 3.3 V<br>CL = 15 pF, Ta = 25°C |                  |                              |                             |                             |                  |                  |
| Tolerant Input                              | ○                                                  |                  |                              |                             |                             |                  |                  |
| Power-Down<br>Protection Output             | ×                                                  | ○                |                              |                             |                             |                  |                  |
| Package                                     | fSV<br>(SOT-953)                                   | ESV<br>(SOT-553) | USV<br>(SOT-353)<br>(SC-88A) | SMV<br>(SOT-25)<br>(SC-74A) | US6<br>(SOT-363)<br>(SC-88) | US8<br>(SOT-765) | SM8<br>(SOT-505) |
| Functions                                   |                                                    |                  |                              |                             |                             |                  |                  |
| NAND                                        | TC7SZ00AFS                                         | TC7SZ00FE        | TC7SZ00FU                    | TC7SZ00F                    |                             | TC7WZ00FK        | TC7WZ00FU        |
| AND                                         | TC7SZ08AFS                                         | TC7SZ08FE        | TC7SZ08FU                    | TC7SZ08F                    |                             | TC7WZ08FK        | TC7WZ08FU        |
| AND<br>(Open-Drain)                         |                                                    |                  |                              |                             |                             |                  |                  |
| NOR                                         | TC7SZ02AFS                                         | TC7SZ02FE        | TC7SZ02FU                    | TC7SZ02F                    |                             | TC7WZ02FK        | TC7WZ02FU        |
| OR                                          | TC7SZ32AFS                                         | TC7SZ32FE        | TC7SZ32FU                    | TC7SZ32F                    |                             | TC7WZ32FK        | TC7WZ32FU        |
| Exclusive-OR                                | TC7SZ86AFS                                         | TC7SZ86FE        | TC7SZ86FU                    | TC7SZ86F                    |                             | TC7WZ86FK        | TC7WZ86FU        |
| Inverter                                    | TC7SZ04AFS                                         | TC7SZ04FE        | TC7SZ04FU                    | TC7SZ04F                    | TC7PZ04FU                   | TC7WZ04FK        | TC7WZ04FU        |
| Inverter <sup>(1)</sup><br>(Unbuffered)     | TC7SZU04AFS                                        | TC7SZU04FE       | TC7SZU04FU                   | TC7SZU04F                   |                             | TC7WZU04FK       | TC7WZU04FU       |
| Inverter <sup>(2)</sup><br>(Open-Drain)     | TC7SZ05AFS                                         | TC7SZ05FE        | TC7SZ05FU                    | TC7SZ05F                    | TC7PZ05FU                   | TC7WZ05FK        | TC7WZ05FU        |
| Non-Inverter <sup>(2)</sup><br>(Open-Drain) | TC7SZ07AFS                                         | TC7SZ07FE        | TC7SZ07FU                    | TC7SZ07F                    | TC7PZ07FU                   | TC7WZ07FK        | TC7WZ07FU        |
| Schmitt Inverter                            | TC7SZ14AFS                                         | TC7SZ14FE        | TC7SZ14FU                    | TC7SZ14F                    | TC7PZ14FU                   | TC7WZ14FK        | TC7WZ14FU        |
| Schmitt Buffer                              | TC7SZ17AFS                                         | TC7SZ17FE        | TC7SZ17FU                    | TC7SZ17F                    | TC7PZ17FU                   | TC7WZ17FK        | TC7WZ17FU        |
| Non-Inverter                                | TC7SZ34AFS                                         | TC7SZ34FE        | TC7SZ34FU                    | TC7SZ34F                    | TC7PZ34FU                   | TC7WZ34FK        | TC7WZ34FU        |
| Analog Switch                               |                                                    |                  |                              |                             |                             |                  |                  |
| Analog Multiplexer                          |                                                    |                  |                              |                             |                             |                  |                  |
| D-Type Flip-Flop<br>with Preset and Clear   |                                                    |                  |                              |                             |                             | TC7WZ74FK        | TC7WZ74FU        |
| D-Type Flip-Flop                            |                                                    |                  |                              |                             |                             |                  |                  |
| D-Type Flip-Flop                            |                                                    |                  |                              |                             |                             |                  |                  |
| D-Type Flip-Flop<br>with Clear              |                                                    |                  |                              |                             |                             |                  |                  |
| 3-State Buffer                              | TC7SZ125AFS                                        | TC7SZ125FE       | TC7SZ125FU                   | TC7SZ125F                   |                             | TC7WZ125FK       | TC7WZ125FU       |
| 3-State Buffer                              | TC7SZ126AFS                                        | TC7SZ126FE       | TC7SZ126FU                   | TC7SZ126F                   |                             | TC7WZ126FK       | TC7WZ126FU       |
| 3-State<br>Inverting Buffer                 |                                                    |                  |                              |                             |                             |                  |                  |
| 3-State Buffer                              |                                                    |                  |                              |                             |                             |                  |                  |
| Bus Transceiver                             |                                                    |                  |                              |                             |                             |                  |                  |
| Bus Transceiver<br>(Open-Drain)             |                                                    |                  |                              |                             |                             |                  |                  |
| Monostable<br>Multivibrator                 |                                                    |                  |                              |                             |                             |                  |                  |
| Digital Multiplexer                         |                                                    |                  |                              |                             |                             |                  |                  |
| 1-to-2 Decoder                              |                                                    |                  |                              |                             |                             |                  |                  |
| 2-to-4 Decoder                              |                                                    |                  |                              |                             |                             |                  |                  |

Note (1): The U04 function in all product series has no power-down protection on the output. / “U04”ファンクションは全てのシリーズにおいて、出力パワーダウンプロテクション機能なし

(2): The 05 and 07 functions in all product series has power-down protection on the output. / “05”と“07”ファンクションは全てのシリーズにおいて、出力パワーダウンプロテクション機能あり

| VHS Series                                                             |                             |                  |                  | VHS TTL-Level Input Series                                             |                             |
|------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------------------------------------------------------------|-----------------------------|
| 2 to 5.5 V                                                             |                             |                  |                  | 4.5 to 5.5 V                                                           |                             |
| 8 mA min @ V <sub>CC</sub> = 4.5 V                                     |                             |                  |                  |                                                                        |                             |
| 3.7 ns typ. @ V <sub>CC</sub> = 5 V, C <sub>L</sub> = 15 pF, Ta = 25°C |                             |                  |                  | 4.2 ns typ. @ V <sub>CC</sub> = 5 V, C <sub>L</sub> = 15 pF, Ta = 25°C |                             |
| ○                                                                      |                             |                  |                  |                                                                        |                             |
| ×                                                                      |                             |                  |                  |                                                                        |                             |
| USV<br>(SOT-353)<br>(SC-88A)                                           | SMV<br>(SOT-25)<br>(SC-74A) | US8<br>(SOT-765) | SM8<br>(SOT-505) | USV<br>(SOT-353)<br>(SC-88A)                                           | SMV<br>(SOT-25)<br>(SC-74A) |
| TC7SH00FU                                                              | TC7SH00F                    | TC7WH00FK        | TC7WH00FU        | TC7SET00FU                                                             | TC7SET00F                   |
| TC7SH08FU                                                              | TC7SH08F                    | TC7WH08FK        | TC7WH08FU        | TC7SET08FU                                                             | TC7SET08F                   |
| TC7SH09FU                                                              | TC7SH09F                    |                  |                  |                                                                        |                             |
| TC7SH02FU                                                              | TC7SH02F                    | TC7WH02FK        | TC7WH02FU        | TC7SET02FU                                                             | TC7SET02F                   |
| TC7SH32FU                                                              | TC7SH32F                    | TC7WH32FK        | TC7WH32FU        | TC7SET32FU                                                             | TC7SET32F                   |
| TC7SH86FU                                                              | TC7SH86F                    |                  |                  |                                                                        |                             |
| TC7SH04FU                                                              | TC7SH04F                    | TC7WH04FK        | TC7WH04FU        | TC7SET04FU                                                             | TC7SET04F                   |
| TC7SHU04FU                                                             | TC7SHU04F                   | TC7WHU04FK       | TC7WHU04FU       |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
| TC7SH14FU                                                              | TC7SH14F                    | TC7WH14FK        | TC7WH14FU        | TC7SET14FU                                                             | TC7SET14F                   |
| TC7SH17FU                                                              | TC7SH17F                    | TC7WH17FK        | TC7WH17FU        | TC7SET17FU                                                             | TC7SET17F                   |
| TC7SH34FU                                                              | TC7SH34F                    | TC7WH34FK        | TC7WH34FU        | TC7SET34FU                                                             | TC7SET34F                   |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             | TC7WH74FK        | TC7WH74FU        |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
| TC7SH125FU                                                             | TC7SH125F                   | TC7WH125FK       | TC7WH125FU       | TC7SET125FU                                                            | TC7SET125F                  |
| TC7SH126FU                                                             | TC7SH126F                   | TC7WH126FK       | TC7WH126FU       | TC7SET126FU                                                            | TC7SET126F                  |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             | TC7WH157FK       | TC7WH157FU       |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |
|                                                                        |                             |                  |                  |                                                                        |                             |

## Package Lineup / パッケージラインアップ

| Toshiba<br>Package Name       | fSV<br>(SOT-953)                                                                    | ESV<br>(SOT-553)                                                                    | USV<br>(SOT-353)<br>(SC-88A)                                                        | SMV<br>(SOT-25)<br>(SC-74A)                                                         | ES6<br>(SOT-563)                                                                     | US8<br>(SOT-765)                                                                      | SM8<br>(SOT-505)                                                                      |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Package<br>Dimensions<br>(mm) |  |  |  |  |  |  |  |

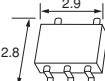
One-Gate Logic (L-MOS) / ワンゲートロジック (L-MOS)

|                                             |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
|---------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------|------------------------------|--------------------------------------------------|------------------|
|                                             | High-Speed Series                                                                                    |                             |                  |                  |                  | TTL-Level-Input Series       | Standard Series                                  |                  |
| Supply Voltage                              | 2 to 6 V                                                                                             |                             |                  |                  |                  | 4.5 to 5.5 V                 | 3 to 18 V                                        |                  |
| IOH /IOL                                    | 4 mA min (TC7W Series),<br>4 mA min (TTL-Level-Input Series),<br>@ Vcc = 4.5 V                       |                             |                  |                  |                  |                              | 0.42 mA min<br>@ Vcc = 5 V                       |                  |
| tpLH/tpHL<br>(NAND gate)                    | 6 ns typ. (TC7W Series),<br>10 ns typ. (TTL-Level-Input Series),<br>@ Vcc= 5 V, CL= 15 pF, Ta = 25°C |                             |                  |                  |                  |                              | 65 ns typ. @ Vcc = 5 V,<br>CL = 15 pF, Ta = 25°C |                  |
| Tolerant input                              | ×                                                                                                    |                             |                  |                  |                  |                              | ×                                                |                  |
| Power down<br>Protection output             | ×                                                                                                    |                             |                  |                  |                  |                              | ×                                                |                  |
| Package<br>Functions                        | USV<br>(SOT-353)<br>(SC-88A)                                                                         | SMV<br>(SOT-25)<br>(SC-74A) | US8<br>(SOT-765) | SM8<br>(SOT-505) | SM8<br>(SOT-505) |                              | SMV<br>(SOT-25)<br>(SC-74A)                      | SM8<br>(SOT-505) |
| NAND                                        | TC7S00FU                                                                                             | TC7S00F                     | TC7W00FK         | TC7W00FU         |                  |                              |                                                  |                  |
| AND                                         | TC7S08FU                                                                                             | TC7S08F                     | TC7W08FK         | TC7W08FU         |                  |                              |                                                  |                  |
| NOR                                         | TC7S02FU                                                                                             | TC7S02F                     |                  |                  |                  |                              |                                                  |                  |
| OR                                          | TC7S32FU                                                                                             | TC7S32F                     |                  |                  |                  |                              |                                                  |                  |
| Exclusive-OR                                |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Inverter                                    | TC7S04FU                                                                                             | TC7S04F                     | TC7W04FK         | TC7W04FU         |                  |                              |                                                  |                  |
| Inverter <sup>(1)</sup><br>(Unbuffered)     | TC7SU04FU                                                                                            | TC7SU04F                    | TC7WU04FK        | TC7WU04FU        |                  |                              |                                                  |                  |
| Inverter <sup>(2)</sup><br>(Open-Drain)     |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Non-Inverter <sup>(2)</sup><br>(Open-Drain) |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Schmitt Inverter                            | TC7S14FU                                                                                             | TC7SU14F                    | TC7W14FK         | TC7W14FU         |                  | TC4S584F                     |                                                  |                  |
| Schmitt Buffer                              |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Non-Inverter                                |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Analog Switch                               | TC7S66FU                                                                                             | TC7S66F                     | TC7W66FK         | TC7W66FU         |                  | TC4S66F<br>TC4S66FU<br>(USV) | TC4W66FU                                         |                  |
| Analog Multiplexer                          |                                                                                                      |                             | TC7W53FK         | TC7W53FU         |                  |                              | TC4W53FU                                         |                  |
| D-Type Flip-Flop<br>with Preset and Clear   |                                                                                                      |                             | TC7W74FK         | TC7W74FU         |                  |                              |                                                  |                  |
| D-Type Flip-Flop                            |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| D-Type Flip-Flop                            |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| D-Type Flip-Flop<br>with Clear              |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| 3-State Buffer                              |                                                                                                      |                             |                  | TC7W125FU        | TC7WT125FU       |                              |                                                  |                  |
| 3-State Buffer                              |                                                                                                      |                             |                  | TC7W126FU        | TC7WT126FU       |                              |                                                  |                  |
| 3-State<br>Inverting Buffer                 |                                                                                                      |                             |                  | TC7W240FU        | TC7WT240FU       |                              |                                                  |                  |
| 3-State Buffer                              |                                                                                                      |                             |                  | TC7W241FU        | TC7WT241FU       |                              |                                                  |                  |
| Bus Transceiver                             |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Bus Transceiver<br>(Open-Drain)             |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Monostable<br>Multivibrator                 |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| Digital Multiplexer                         |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| 1-to-2 Decoder                              |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |
| 2-to-4 Decoder                              |                                                                                                      |                             |                  |                  |                  |                              |                                                  |                  |

Note (1): The U04 function in all product series has no power-down protection on the output. / “U04” ファンクションは全てのシリーズにおいて、出力パワーダウンプロテクション機能なし

(2): The 05 and 07 functions in all product series has power-down protection on the output. / “05” と “07” ファンクションは全てのシリーズにおいて、出力パワーダウンプロテクション機能あり

Package Lineup / パッケージラインアップ

|                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Toshiba<br>Package Name    | USV<br>(SOT-353) (SC-88A)                                                           | SMV<br>(SOT-25) (SC-74A)                                                            | US8<br>(SOT-765)                                                                    | SM8<br>(SOT-505)                                                                    |
| Package Dimensions<br>(mm) |  |  |  |  |

## CMOS Logic ICs / CMOSロジックIC

### Low-Voltage CMOS Logic ICs / 低電圧CMOSロジックIC

(TC74VCX and TC74LCX Series) Quick Reference / (TC74VCX, TC74LCX シリーズ) 選択早見表

| Functions        |                 | VCX<br>(TC74VCXxxx Series)                           | LCX<br>(TC74LCXxxx Series)                                  |
|------------------|-----------------|------------------------------------------------------|-------------------------------------------------------------|
| Gates<br>Buffers | NAND            | VCX00                                                | LCX00                                                       |
|                  | NOR             | VCX02                                                | LCX02                                                       |
|                  | AND             | VCX08                                                | LCX08                                                       |
|                  | OR              | VCX32                                                | LCX32                                                       |
|                  | Inverter        | VCX04                                                | LCX04                                                       |
|                  | Bus Buffer      | VCX125, VCX2125, VCX244,<br>VCX2244, VCX541, VCX2541 | LCX125, LCX126, LCX240, LCX244,<br>LCX540, LCX541, LCX16244 |
|                  | Bus Transceiver | VCX245, VCX16245, VCXM16245, VCXR162245              | LCX245, LCX16245                                            |
|                  | Dual Supply     | VCX163245, VCX164245                                 | LCX163245, LCX164245,<br>LCXR163245, LCXR164245             |
|                  | Exclusive-OR    |                                                      | LCX86                                                       |
|                  | Schmitt Trigger | VCX14                                                | LCX14                                                       |
|                  | Open-Drain      |                                                      | LCX05, LCX07                                                |
| Flip-Flops       |                 | VCX574, VCX2574                                      | LCX74, LCX273, LCX374, LCX574                               |
| Latches          |                 |                                                      | LCX373, LCX573                                              |
| Decoders         |                 | VCX138                                               | LCX138                                                      |
| Multiplexers     | Digital         | VCX157, VCX257                                       | LCX157, LCX257                                              |
|                  | Analog          |                                                      |                                                             |

## CMOS Logic ICs / CMOSロジックIC

(TC74AC, TC74VHC, TC74HC and Standard Series) Quick Reference / (TC74AC, TC74VHC, TC74HC, スタンダードシリーズ) 選択早見表

| Functions           |                 |                | ACL<br>(TC74AC/ACTxxx Series)                                                            | VHS<br>(TC74VHC/VHCT/VHCVxxx Series)                                                                    |
|---------------------|-----------------|----------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Gates               | NAND            |                | AC00, ACT00                                                                              | VHC00, VHCT00A, VHC20                                                                                   |
|                     |                 | Open Drain     |                                                                                          | VHC03                                                                                                   |
|                     | NOR             |                | AC02                                                                                     | VHC02, VHC27                                                                                            |
|                     | AND             |                | AC08, ACT08                                                                              | VHC08, VHCT08A, VHC21                                                                                   |
|                     | OR              |                | ACT32                                                                                    | VHC32, VHCT32A                                                                                          |
|                     | Buffer          |                |                                                                                          |                                                                                                         |
|                     |                 | Open Drain     |                                                                                          |                                                                                                         |
|                     | Inverter        |                | AC04, ACT04                                                                              | VHC04, VHCT04A                                                                                          |
|                     |                 | Open Drain     | AC05                                                                                     | VHC05                                                                                                   |
|                     | Exclusive-OR    |                |                                                                                          | VHC86                                                                                                   |
|                     | Exclusive-NOR   |                |                                                                                          |                                                                                                         |
|                     | Schmitt         | NAND           |                                                                                          | VHC132                                                                                                  |
|                     |                 | Buffer         |                                                                                          | VHCV17                                                                                                  |
|                     |                 | Open Drain     |                                                                                          | VHCV07                                                                                                  |
|                     |                 | Inverter       | AC14, ACT14                                                                              | VHC14, VHCT14A, VHCV14                                                                                  |
|                     |                 |                | Open Drain                                                                               | VHCV05                                                                                                  |
| Buffers             | 3-State Buffer  | QUAD           |                                                                                          | VHC125, VHCT125A, VHC126, VHCT126A                                                                      |
|                     |                 | HEX            |                                                                                          |                                                                                                         |
|                     |                 | OCTAL          | AC240, ACT240, AC244, ACT244, AC245, ACT245, AC540, ACT540, AC541, ACT541, AC640, ACT640 | VHC240, VHCT240A, VHC244, VHCT244A, VHC540, VHCT540A, VHC541, VHCT541A, VHC245, VHCT245A                |
|                     | Schmitt         | Buffer         |                                                                                          | VHC9151, VHC9152                                                                                        |
|                     |                 | 3-State Buffer |                                                                                          | VHC9541, VHCT9541A, VHC9125, VHCT9125A, VHC9126, VHCT9126A, VHCV240, VHCV244, VHCV540, VHCV541, VHCV245 |
| Flip-Flops          |                 | DUAL           | AC74                                                                                     | VHC74                                                                                                   |
|                     |                 | QUAD           |                                                                                          |                                                                                                         |
|                     |                 | HEX            |                                                                                          | VHC174                                                                                                  |
|                     |                 | OCTAL          | AC273, ACT574                                                                            | VHC273, VHC374, VHC574, VHCT574A                                                                        |
|                     | Schmitt         |                |                                                                                          | VHC9273, VHCT9273, VHCV374, VHCV574                                                                     |
| Latches             |                 |                | ACT573                                                                                   | VHC373, VHC573, VHCT573A                                                                                |
|                     | Schmitt         |                |                                                                                          | VHCV373, VHCV573                                                                                        |
| Multivibrators      |                 |                |                                                                                          | VHC123A, VHC221A                                                                                        |
| Decoders            |                 |                | AC138                                                                                    | VHC138, VHCT138A, VHC139, VHC238                                                                        |
| Encoders            |                 |                |                                                                                          |                                                                                                         |
| Drivers             | LED             |                |                                                                                          |                                                                                                         |
|                     | LCD             |                |                                                                                          |                                                                                                         |
|                     | Others          |                |                                                                                          |                                                                                                         |
| Registers           | Shift           |                | AC164, AC166                                                                             | VHC164, VHC165, VHC595                                                                                  |
|                     | Schmitt         | Shift          |                                                                                          | VHC9164, VHC9595                                                                                        |
| Counters            | Binary          |                | AC161, AC163                                                                             | VHC161, VHC163, VHC393, VHC4040, VHC4020                                                                |
|                     | Decade          |                |                                                                                          |                                                                                                         |
|                     | N-Digit Decade  |                |                                                                                          |                                                                                                         |
|                     | Divider         |                |                                                                                          |                                                                                                         |
|                     | Others          |                |                                                                                          |                                                                                                         |
| Multiplexers        | Analog          |                |                                                                                          | VHC4051A, VHC4052A, VHC4053A                                                                            |
|                     | Digital         |                |                                                                                          | VHC153, VHC157                                                                                          |
| Arithmetic Circuits | Adder           |                |                                                                                          |                                                                                                         |
|                     | Comparator      |                |                                                                                          |                                                                                                         |
|                     | Parity Tree     |                |                                                                                          |                                                                                                         |
|                     | Rate Multiplier |                |                                                                                          |                                                                                                         |
| FIFO Memories       |                 |                |                                                                                          |                                                                                                         |
| Others              | Timer           |                |                                                                                          |                                                                                                         |
|                     | Analog Switch   |                |                                                                                          | VHC4066A                                                                                                |

| HS-C <sup>2</sup> MOS<br>(TC74HC/HCTxxx Series)                                               | Standard C <sup>2</sup> MOS<br>(TC4000/4500 Series) |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| HC00A, HC20A                                                                                  | 4011B                                               |
|                                                                                               |                                                     |
| HC02A                                                                                         | 4001B                                               |
| HC08A, HC21A                                                                                  | 4081B                                               |
| HC32A                                                                                         | 4071B                                               |
| HC4050A, HCT7007A                                                                             | 4050B                                               |
| HC07A                                                                                         |                                                     |
| HC04A, HCT04A, HCU04A, HC4049A                                                                | 4069UB, 4049B                                       |
| HC05A                                                                                         |                                                     |
|                                                                                               | 4030B                                               |
|                                                                                               |                                                     |
| HC132A                                                                                        | 4093B                                               |
|                                                                                               |                                                     |
|                                                                                               |                                                     |
| HC14A                                                                                         | 4584B                                               |
|                                                                                               |                                                     |
| HC125A, HC126A                                                                                |                                                     |
| HC365A, HC366A                                                                                |                                                     |
| HC240A, HCT240A, HC241A, HC244A, HCT244A, HC245A,<br>HC540A, HCT540A, HC541A, HCT541A, HC640A |                                                     |
|                                                                                               |                                                     |
| HC7240A, HC7244A                                                                              |                                                     |
| HC74A                                                                                         | 4013B                                               |
| HC175A                                                                                        |                                                     |
|                                                                                               |                                                     |
| HC273A, HC374A, HC574A                                                                        |                                                     |
|                                                                                               |                                                     |
| HC373A, HC573A                                                                                |                                                     |
|                                                                                               |                                                     |
| HC123A, HC423A, HC4538A                                                                       | 4538B                                               |
| HC42A, HC138A                                                                                 | 4511B                                               |
|                                                                                               |                                                     |
|                                                                                               | 4511B                                               |
|                                                                                               |                                                     |
| HC165A, HC595A                                                                                | 4021B, 4094B                                        |
|                                                                                               |                                                     |
| HC4020A, HC4040A, HC393                                                                       | 4520B, 4020B, 4040B                                 |
|                                                                                               |                                                     |
| HC4020A, HC4040A, HC4060A, HC7292A                                                            | 4020B, 4040B                                        |
|                                                                                               | 4017B                                               |
| HC4051A, HC4052A, HC4053A, HCT4053A                                                           | 4051B, 4052B, 4053B                                 |
| HC151A, HC153A, HC157A, HC251A, HC253A                                                        |                                                     |
|                                                                                               |                                                     |
|                                                                                               |                                                     |
|                                                                                               |                                                     |
|                                                                                               |                                                     |
|                                                                                               |                                                     |
| HC4066A                                                                                       | 4066B                                               |

CMOS Logic ICs / CMOSロジックIC  
(TC74AC, TC74VHC, TC74HC and Standard Series) / (TC74AC, TC74VHC, TC74HC, スタンダードシリーズ)

| No.<br>(xxx) | Number<br>of Pins | Functions                                          | Part Number | ACL         |             |                |             |             |                | VHS                    |                |             |
|--------------|-------------------|----------------------------------------------------|-------------|-------------|-------------|----------------|-------------|-------------|----------------|------------------------|----------------|-------------|
|              |                   |                                                    |             | TC74AC      |             |                | TC74ACT     |             |                | TC74VHC <sup>(2)</sup> |                |             |
|              |                   |                                                    | Package     | xxxP<br>DIP | xxxF<br>SOP | xxxFT<br>TSSOP | xxxP<br>DIP | xxxF<br>SOP | xxxFT<br>TSSOP | xxxF<br>SOP            | xxxFT<br>TSSOP | xxxFK<br>US |
| 00           | 14                | Quad 2-Input NAND Gate                             |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 02           | 14                | Quad 2-Input NOR Gate                              |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 03           | 14                | Quad 2-Input NAND Gate (Open-Drain)                |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 04           | 14                | Hex Inverter                                       |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| U04          | 14                | Hex Inverter                                       |             |             |             |                |             |             |                |                        |                |             |
| 05           | 14                | Hex Inverter (Open-Drain)                          |             | ○           | ○           |                |             |             |                | ○                      | ○              | ○           |
| 07           | 14                | Hex Buffer (Open-Drain)                            |             |             |             |                |             |             |                |                        |                |             |
| 08           | 14                | Quad 2-Input AND Gate                              |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 14           | 14                | Hex Schmitt Inverter                               |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 17           | 14                | Hex Schmitt buffer                                 |             |             |             |                |             |             |                |                        |                |             |
| 20           | 14                | Dual 4-Input NAND Gate                             |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 21           | 14                | Dual 4-Input AND Gate                              |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 27           | 14                | Triple 3-Input NOR Gate                            |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 32           | 14                | Quad 2-Input OR Gate                               |             |             |             |                | ○           | ○           | ○              | ○                      | ○              | ○           |
| 42           | 16                | BCD-to-Decimal Decoder                             |             |             |             |                |             |             |                |                        |                |             |
| 74           | 14                | Dual D-Type Flip-Flop with Preset and Clear        |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 86           | 14                | Quad Exclusive -OR Gate                            |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 123A         | 16                | Dual Monostable Multivibrator (tw out = 1.0 Cx·Rx) |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 125          | 14                | Quad Bus Buffer (3-State)                          |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 126          | 14                | Quad Bus Buffer (3-State)                          |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 132          | 14                | Quad 2-Input Schmitt NAND Gate                     |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 138          | 16                | 3-to-8 Line Decoder                                |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 139          | 16                | Dual 2-to-4 Line Decoder                           |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 151          | 16                | 8-Channel Multiplexer                              |             |             |             |                |             |             |                |                        |                |             |
| 153          | 16                | Dual 4-Channel Multiplexer                         |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 157          | 16                | Quad 2-Channel Multiplexer                         |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 161          | 16                | Sync. Binary Counter with Async. Clear             |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 163          | 16                | Sync. Binary Counter with Sync. Clear              |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 164          | 14                | 8-Bit Serial-In / Parallel-Out Shift Register      |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 165          | 16                | 8-Bit Parallel-In / Serial-Out Shift Register      |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 166          | 16                | 8-Bit Parallel-In / Serial-Out Shift Register      |             | ○           | ○           |                |             |             |                |                        |                |             |
| 173          | 16                | Quad D-Type Register (3-State)                     |             |             |             |                |             |             |                |                        |                |             |
| 174          | 16                | Hex D-Type Flip-Flop with Clear                    |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 175          | 16                | Quad D-Type Flip-Flop with Clear                   |             |             |             |                |             |             |                |                        |                |             |
| 191          | 16                | 4-Bit Binary Up/Down Counter                       |             |             |             |                |             |             |                |                        |                |             |
| 193          | 16                | Sync. Up/Down Binary Counter                       |             |             |             |                |             |             |                |                        |                |             |
| 221A         | 16                | Dual Monostable Multivibrator (tw out = 1.0 Cx·Rx) |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 237          | 16                | 3-to-8 Line Decoder/Latch                          |             |             |             |                |             |             |                |                        |                |             |
| 238          | 16                | 3-to-8 Line Decoder                                |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 240          | 20                | Octal Bus Buffer (3-State, Inverted)               |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 241          | 20                | Octal Bus Buffer (3-State)                         |             |             |             |                |             |             |                |                        |                |             |
| 244          | 20                | Octal Bus Buffer (3-State)                         |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 245          | 20                | Octal Bus Transceiver (3-State)                    |             | ○           | ○           | ○              | ○           | ○           | ○              | ○                      | ○              | ○           |
| 251          | 16                | 8-Channel Multiplexer (3-State)                    |             |             |             |                |             |             |                |                        |                |             |
| 253          | 16                | Dual 4-Channel Multiplexer (3-State)               |             |             |             |                |             |             |                |                        |                |             |
| 258          | 16                | Quad 2-Channel Multiplexer (3-State, Inverted)     |             |             |             |                |             |             |                |                        |                |             |
| 259          | 16                | 8-Bit Addressable Latch                            |             |             |             |                |             |             |                |                        |                |             |
| 273          | 20                | Octal D-Type Flip-Flop with Clear                  |             | ○           | ○           | ○              |             |             |                | ○                      | ○              | ○           |
| 365          | 16                | Hex Bus Buffer (3-State)                           |             |             |             |                |             |             |                |                        |                |             |
| 366          | 16                | Hex Bus Buffer (3-State, Inverted)                 |             |             |             |                |             |             |                |                        |                |             |
| 373          | 20                | Octal D-Type Latch (3-State)                       |             |             |             |                |             |             |                | ○                      | ○              | ○           |
| 374          | 20                | Octal D-Type Flip-Flop (3-State)                   |             |             |             |                |             |             |                | ○                      | ○              | ○           |

○: Available / 量産中。

Note (1): Part numbers are xxxA, not xxxAA. / 品番はxxxAAではなく、xxxAとなります。

(2): The part numbers of the ICs in a TSSOP package are 74xxx, not TC74xxx. / TSSOPの品番はTC74xxxではなく、74xxxとなります。

(3): The part numbers of the ICs in a SOIC package are 74xxx, not TC74xxx. / SOICの品番はTC74xxxではなく、74xxxとなります。

・ For package dimensions and standard codes, please refer to pages 153 to 154.

・ パッケージの外観図および標準化コードはP.153, P.154をご覧ください。

|  | VHS                     |        |        |                         |       | HS-C <sup>2</sup> MOS |       |      |        |                        |       |      |        | Standard C <sup>2</sup> MOS |       |        |
|--|-------------------------|--------|--------|-------------------------|-------|-----------------------|-------|------|--------|------------------------|-------|------|--------|-----------------------------|-------|--------|
|  | TC74VHCT <sup>(2)</sup> |        |        | TC74VHCV <sup>(2)</sup> |       | TC74HC <sup>(3)</sup> |       |      |        | TC74HCT <sup>(3)</sup> |       |      |        | TC                          |       |        |
|  | xxxAF                   | xxxAFT | xxxAFK | xxxFT                   | xxxFK | xxxAP                 | xxxAF | xxxD | xxxAFT | xxxAP                  | xxxAF | xxxD | xxxAFT | xxxBP                       | xxxBF | xxxBFT |
|  | SOP                     | TSSOP  | US     | TSSOP                   | US    | DIP                   | SOP   | SOIC | TSSOP  | DIP                    | SOP   | SOIC | TSSOP  | DIP                         | SOP   | TSSOP  |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    | ○      | ○                      | ○     | ○    |        |                             |       |        |
|  |                         |        |        | ○                       | ○     | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  | ○                       | ○      | ○      | ○                       | ○     | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  |                         |        |        | ○                       | ○     | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  | ○                       | ○      | ○      |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  | ○                       | ○      | ○      | ○                       | ○     | ○                     | ○     | ○    |        | ○                      | ○     | ○    |        |                             |       |        |
|  | ○                       | ○      | ○      | ○                       | ○     | ○                     | ○     | ○    |        | ○                      | ○     | ○    |        |                             |       |        |
|  | ○                       | ○      | ○      | ○                       | ○     | ○                     | ○     | ○    |        |                        |       | ○    |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        |        |                         |       | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        | ○      | ○                       | ○     | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |
|  |                         |        | ○      | ○                       | ○     | ○                     | ○     | ○    |        |                        |       |      |        |                             |       |        |

CMOS Logic ICs / CMOSロジックIC  
(TC74AC, TC74VHC, TC74HC and Standard Series) / (TC74AC, TC74VHC, TC74HC, スタンダードシリーズ)

| No.<br>(xxx) | Number<br>of Pins | Functions                                          | Part Number | ACL    |      |       |         |      |       | VHS                    |      |       |       |
|--------------|-------------------|----------------------------------------------------|-------------|--------|------|-------|---------|------|-------|------------------------|------|-------|-------|
|              |                   |                                                    |             | TC74AC |      |       | TC74ACT |      |       | TC74VHC <sup>(2)</sup> |      |       |       |
|              |                   |                                                    |             | xxxP   | xxxF | xxxFT | xxxP    | xxxF | xxxFT | xxxP                   | xxxF | xxxFT | xxxFK |
|              |                   |                                                    | Package     | DIP    | SOP  | TSSOP | DIP     | SOP  | TSSOP | DIP                    | SOP  | TSSOP | US    |
| 393          | 14                | Dual Binary Counter                                |             |        |      |       |         |      |       |                        |      |       |       |
| 423A         | 16                | Dual Monostable Multivibrator (tw out = 1.0 Cx·Rx) |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 521          | 20                | 8-Bit Equality Comparator                          |             |        |      |       |         |      |       |                        |      |       |       |
| 534          | 20                | Octal D-Type Flip-Flop (3-State, Inverted)         |             |        |      |       |         |      |       |                        |      |       |       |
| 540          | 20                | Octal Bus Buffer (3-State, Inverted)               |             | ○      | ○    | ○     | ○       | ○    | ○     |                        | ○    | ○     | ○     |
| 541          | 20                | Octal Bus Buffer (3-State)                         |             | ○      | ○    | ○     | ○       | ○    | ○     |                        | ○    | ○     | ○     |
| 573          | 20                | Octal D-Type Latch (3-State)                       |             |        |      |       | ○       | ○    | ○     |                        | ○    | ○     | ○     |
| 574          | 20                | Octal D-Type Flip-Flop (3-State)                   |             |        |      |       | ○       | ○    | ○     |                        | ○    | ○     | ○     |
| 594          | 16                | 8-Bit Shift Register with Output Register          |             |        |      |       |         |      |       |                        |      |       |       |
| 595          | 16                | 8-Bit Shift Register/Latch (3-State)               |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 640          | 20                | Octal Bus Transceiver (3-State, Inverted)          |             | ○      | ○    | ○     | ○       | ○    | ○     |                        |      |       |       |
| 4001         | 14                | Quad 2-Input Positive NOR Gate                     |             |        |      |       |         |      |       |                        |      |       |       |
| 4011         | 14                | Quad 2-Input Positive NAND Gate                    |             |        |      |       |         |      |       |                        |      |       |       |
| 4013         | 14                | Dual D-Type Flip-Flop                              |             |        |      |       |         |      |       |                        |      |       |       |
| 4017         | 16                | Decade Counter/Divider                             |             |        |      |       |         |      |       |                        |      |       |       |
| 4020         | 16                | 14-Stage Binary Counter                            |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4021         | 16                | 8-Bit Parallel-In, Serial-Out Shift Register       |             |        |      |       |         |      |       |                        |      |       |       |
| 4030         | 14                | Quad Exclusive-OR Gate                             |             |        |      |       |         |      |       |                        |      |       |       |
| 4040         | 16                | 12-Stage Binary Counter                            |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4049         | 16                | Hex-Inverting Buffer/Converter                     |             |        |      |       |         |      |       |                        |      |       |       |
| 4050         | 16                | Hex Non-Inverting Buffer/Converter                 |             |        |      |       |         |      |       |                        |      |       |       |
| 4051         | 16                | Single 8-Channel Analog Multiplexer/Demultiplexer  |             |        |      |       |         |      |       |                        |      |       |       |
| 4051A        | 16                | Single 8-Channel Analog Multiplexer/Demultiplexer  |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4052         | 16                | Dual 4-Channel Analog Multiplexer/Demultiplexer    |             |        |      |       |         |      |       |                        |      |       |       |
| 4052A        | 16                | Dual 4-Channel Analog Multiplexer/Demultiplexer    |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4053         | 16                | Triple 2-Channel Analog Multiplexer/Demultiplexer  |             |        |      |       |         |      |       |                        |      |       |       |
| 4053A        | 16                | Triple 2-Channel Analog Multiplexer/Demultiplexer  |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4060         | 16                | 14-Stage Binary Counter/Oscillator                 |             |        |      |       |         |      |       |                        |      |       |       |
| 4066         | 14                | Quad Bilateral Switch                              |             |        |      |       |         |      |       |                        |      |       |       |
| 4066A        | 14                | Quad Bilateral Switch                              |             |        |      |       |         |      |       |                        | ○    | ○     | ○     |
| 4069U        | 14                | Hex Inverter                                       |             |        |      |       |         |      |       |                        |      |       |       |
| 4071         | 14                | Quad 2-Input Positive OR Gate                      |             |        |      |       |         |      |       |                        |      |       |       |
| 4081         | 14                | Quad 2-Input AND Gate                              |             |        |      |       |         |      |       |                        |      |       |       |
| 4093         | 14                | Quad 2-Input NAND Schmitt Trigger                  |             |        |      |       |         |      |       |                        |      |       |       |
| 4094         | 16                | 8-Stage Shift-and-Store Bus Register               |             |        |      |       |         |      |       |                        |      |       |       |
| 4511         | 16                | BCD-to-7-Segment Latch/Decoder/Driver              |             |        |      |       |         |      |       |                        |      |       |       |
| 4520         | 16                | Dual Binary up Counter                             |             |        |      |       |         |      |       |                        |      |       |       |
| 4538         | 16                | Dual Precision Mono Multivibrator                  |             |        |      |       |         |      |       |                        |      |       |       |
| 4584         | 14                | Hex Schmitt Trigger                                |             |        |      |       |         |      |       |                        |      |       |       |
| 7007         | 14                | Hex Buffer                                         |             |        |      |       |         |      |       |                        |      |       |       |
| 7240         | 20                | Octal Bus Buffer (3-State, Inverted)               |             |        |      |       |         |      |       |                        |      |       |       |
| 7244         | 20                | Octal Bus Buffer (3-State)                         |             |        |      |       |         |      |       |                        |      |       |       |
| 7292         | 16                | Programmable Divider/Timer                         |             |        |      |       |         |      |       |                        |      |       |       |
| 9125         | 14                | 5-bit Universal Schmitt Buffer(3-State)            |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9126         | 14                | 5-bit Universal Schmitt Buffer(3-State)            |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9151         | 20                | 9-bit Universal Schmitt Buffer                     |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9152         | 20                | 9-bit Universal Schmitt Buffer                     |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9164         | 16                | 8-Bit Shift Register (P-IN/S-OUT, S-IN/P-OUT)      |             |        |      |       |         |      |       |                        |      | ○     | ○     |
| 9273         | 20                | Octal D-Type Flip-Flop with Clear                  |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9541         | 20                | Octal Universal Schmitt Buffer (3-State)           |             |        |      |       |         |      |       | ○                      |      | ○     | ○     |
| 9595         | 16                | 8-Bit Shift Register/Latch                         |             |        |      |       |         |      |       |                        |      | ○     | ○     |

○: Available / 量産中。

Note (1): Part numbers are xxxA, not xxxAA. / 品番は xxxAA ではなく、xxxA となります。

(2): The part numbers of the ICs in a TSSOP package are 74xxx, not TC74xxx. / TSSOP の品番は TC74xxx ではなく、74xxx となります。

(3): The part numbers of the ICs in a SOIC package are 74xxx, not TC74xxx. / SOIC の品番は TC74xxx ではなく、74xxx となります。

・ For package dimensions and standard codes, please refer to pages 153 to 154.

・ パッケージの外観図および標準化コードは P.153, P.154 をご覧ください。

|   | VHS                     |                      |                      |                      |                         |                  | HS-C <sup>2</sup> MOS |                  |                  |                  |                        |        |        |        | Standard C <sup>2</sup> MOS |                       |        |
|---|-------------------------|----------------------|----------------------|----------------------|-------------------------|------------------|-----------------------|------------------|------------------|------------------|------------------------|--------|--------|--------|-----------------------------|-----------------------|--------|
|   | TC74VHCT <sup>(2)</sup> |                      |                      |                      | TC74VHCV <sup>(2)</sup> |                  | TC74HC <sup>(3)</sup> |                  |                  |                  | TC74HCT <sup>(3)</sup> |        |        |        | TC                          |                       |        |
|   | xxxP                    | xxxAF                | xxxAFT               | xxxAFK               | xxxFT                   | xxxFK            | xxxAP                 | xxxAF            | xxxD             | xxxAFT           | xxxAP                  | xxxAF  | xxxD   | xxxAFT | xxxBP                       | xxxBF                 | xxxBFT |
|   | DIP                     | SOP                  | TSSOP                | US                   | TSSOP                   | US               | DIP                   | SOP              | SOIC             | TSSOP            | DIP                    | SOP    | SOIC   | TSSOP  | DIP                         | SOP                   | TSSOP  |
|   |                         |                      |                      |                      |                         |                  | ○<br>O(1)             | ○<br>O(1)        | ○                |                  |                        |        |        |        |                             |                       |        |
|   | ○<br>○<br>○<br>○        | ○<br>○<br>○<br>○     | ○<br>○<br>○<br>○     | ○<br>○<br>○<br>○     | ○<br>○<br>○<br>○        | ○<br>○<br>○<br>○ | ○<br>○<br>○<br>○      | ○<br>○<br>○<br>○ | ○<br>○<br>○<br>○ |                  | ○<br>○                 | ○<br>○ | ○<br>○ |        |                             |                       |        |
|   |                         |                      |                      |                      |                         |                  | ○<br>○                | ○<br>○           | ○<br>○           |                  |                        |        |        |        |                             |                       |        |
|   |                         |                      |                      |                      |                         |                  |                       |                  |                  |                  |                        |        |        |        | ○                           | ○                     | ○      |
|   |                         |                      |                      |                      |                         |                  | ○                     | ○                |                  |                  |                        |        |        |        | ○<br>○<br>○<br>○<br>○       | ○<br>○<br>○<br>○<br>○ | ○      |
|   |                         |                      |                      |                      |                         |                  |                       |                  |                  |                  |                        |        |        |        | ○<br>○                      | ○<br>○                |        |
|   |                         |                      |                      |                      |                         |                  | ○<br>○<br>○<br>○      | ○<br>○<br>○<br>○ | ○<br>○<br>○<br>○ | ○<br>○<br>○<br>○ |                        |        | ○      |        | ○<br>○<br>○<br>○<br>○       | ○<br>○<br>○<br>○<br>○ | ○      |
|   |                         |                      |                      |                      |                         |                  | ○<br>○                | ○<br>○           | ○<br>○           | ○<br>○           |                        | ○      | ○<br>○ | ○      | ○<br>○                      | ○<br>○                | ○<br>○ |
|   |                         |                      |                      |                      |                         |                  | ○<br>○                | ○<br>○           | ○<br>○           | ○<br>○           |                        |        |        |        | ○<br>○<br>○<br>○            | ○<br>○<br>○<br>○      | ○<br>○ |
|   |                         |                      |                      |                      |                         |                  |                       |                  |                  |                  |                        |        |        |        | ○<br>○<br>○                 | ○<br>○<br>○           |        |
|   |                         |                      |                      |                      |                         |                  | ○                     | ○                | ○                | ○                |                        |        |        |        | ○<br>○<br>○                 | ○<br>○<br>○           |        |
|   |                         |                      |                      |                      |                         |                  | ○<br>○<br>○           | ○<br>○<br>○      |                  |                  | ○                      | ○      |        |        | ○                           | ○                     |        |
| ○ |                         | ○<br>○<br><br>○<br>○ | ○<br>○<br><br>○<br>○ | ○<br>○<br><br>○<br>○ |                         |                  | ○<br>○<br>○           | ○<br>○<br>○      |                  |                  |                        |        |        |        |                             |                       |        |

Low-Voltage CMOS Logic ICs / 低電圧CMOSロジックIC  
(TC74VCX and TC74LCX Series) / (TC74VCX, TC74LCX シリーズ)

| No.<br>(xxx) | Number<br>of Pins | Functions                                                         | Part Number | Low-Voltage C <sup>2</sup> MOS |       |                        |       |       |
|--------------|-------------------|-------------------------------------------------------------------|-------------|--------------------------------|-------|------------------------|-------|-------|
|              |                   |                                                                   |             | TC74VCX                        |       | TC74LCX <sup>(1)</sup> |       |       |
|              |                   |                                                                   |             | xxxFT                          | xxxFK | xxxF                   | xxxFT | xxxFK |
|              |                   |                                                                   | Package     | TSSOP                          | US    | SOP                    | TSSOP | US    |
| 00           | 14                | Quad 2-Input NAND Gate                                            |             | ○                              | ○     | ○                      | ○     | ○     |
| 02           | 14                | Quad 2-Input NOR Gate                                             |             | ○                              | ○     | ○                      | ○     | ○     |
| 04           | 14                | Hex Inverter                                                      |             | ○                              | ○     | ○                      | ○     | ○     |
| 05           | 14                | Hex Inverter (Open-Drain)                                         |             |                                |       | ○                      | ○     | ○     |
| 07           | 14                | Hex Buffer (Open-Drain)                                           |             |                                |       | ○                      | ○     | ○     |
| 08           | 14                | Quad 2-Input AND Gate                                             |             | ○                              | ○     | ○                      | ○     | ○     |
| 14           | 14                | Hex Schmitt Inverter                                              |             | ○                              | ○     | ○                      | ○     | ○     |
| 32           | 14                | Quad 2-Input OR Gate                                              |             | ○                              | ○     | ○                      | ○     | ○     |
| 74           | 14                | Dual D-Type Flip-Flop with Preset and Clear                       |             |                                |       | ○                      | ○     | ○     |
| 86           | 14                | Quad Exclusive-OR Gate                                            |             |                                |       | ○                      | ○     | ○     |
| 125          | 14                | Quad Bus Buffer (3-State)                                         |             | ○                              | ○     | ○                      | ○     | ○     |
| 126          | 14                | Quad Bus Buffer (3-State)                                         |             |                                |       | ○                      | ○     | ○     |
| 2125         | 14                | Quad Bus Buffer with Series Resistor (3-State)                    |             | ○                              | ○     |                        |       |       |
| 138          | 16                | 3-to-8 Line Decoder                                               |             | ○                              | ○     | ○                      | ○     | ○     |
| 157          | 16                | Quad 2-Channel Multiplexer                                        |             | ○                              | ○     | ○                      | ○     | ○     |
| 174          | 16                | Hex D-Type Flip-Flop with Clear                                   |             |                                |       |                        |       |       |
| 240          | 20                | Octal Bus Buffer (3-State/Inverting)                              |             |                                |       | ○                      | ○     | ○     |
| 244          | 20                | Octal Bus Buffer (3-State)                                        |             | ○                              | ○     | ○                      | ○     | ○     |
| 2244         | 20                | Octal Bus Buffer with Series Resistor (3-State)                   |             | ○                              | ○     |                        |       |       |
| 245          | 20                | Octal Bus Transceiver (3-State)                                   |             | ○                              | ○     | ○                      | ○     | ○     |
| 257          | 16                | Quad 2-Channel Multiplexer (3-State)                              |             | ○                              | ○     | ○                      | ○     | ○     |
| 273          | 20                | Octal D-Type Flip-Flop with Clear                                 |             |                                |       | ○                      | ○     | ○     |
| 367          | 16                | Hex Bus Buffer (3-State)                                          |             |                                |       |                        |       |       |
| 373          | 20                | Octal D-Type Latch (3-State)                                      |             |                                |       | ○                      | ○     | ○     |
| 374          | 20                | Octal D-Type Flip-Flop (3-State)                                  |             |                                |       | ○                      | ○     | ○     |
| 540          | 20                | Octal Bus Buffer (3-State/Inverting)                              |             |                                |       | ○                      | ○     | ○     |
| 541          | 20                | Octal Bus Buffer (3-State)                                        |             | ○                              | ○     | ○                      | ○     | ○     |
| 2541         | 20                | Octal Bus Buffer with Series Resistor (3-State)                   |             | ○                              | ○     |                        |       |       |
| 573          | 20                | Octal D-Type Latch (3-State)                                      |             |                                |       | ○                      | ○     | ○     |
| 574          | 20                | Octal D-Type Flip-Flop (3-State)                                  |             | ○                              | ○     | ○                      | ○     | ○     |
| 2574         | 20                | Octal D-Type Flip-Flop with Series Resistor (3-State)             |             | ○                              | ○     |                        |       |       |
| 16244        | 48                | 16-Bit Bus Buffer (3-State)                                       |             |                                |       |                        | ○     |       |
| 16245        | 48                | 16-Bit Bus Transceiver (3-State)                                  |             | ○                              |       |                        | ○     |       |
| H16245       | 48                | 16-Bit Bus Transceiver with Bushold                               |             | ○                              |       |                        |       |       |
| R162245      | 48                | 16-Bit Bus Transceiver with Series Resistor (3-State)             |             | ○                              |       |                        |       |       |
| 163245       | 48                | Dual Supply 16-Bit Bus Transceiver (3-State)                      |             | ○                              |       |                        | ○     |       |
| R163245      | 48                | Dual Supply 16-Bit Bus Transceiver with Series Resistor (3-State) |             |                                |       |                        | ○     |       |
| 164245       | 48                | Dual Supply 16-Bit Bus Transceiver (3-State)                      |             | ○                              |       |                        | ○     |       |
| R164245      | 48                | Dual Supply 16-Bit Bus Transceiver with Series Resistor (3-State) |             |                                |       |                        | ○     |       |

○: Available / 量産中。

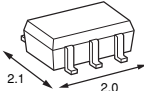
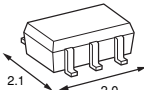
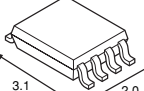
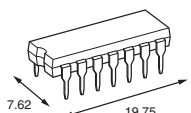
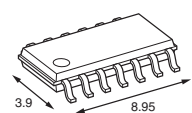
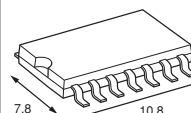
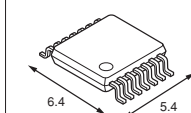
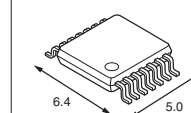
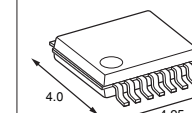
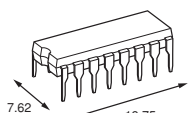
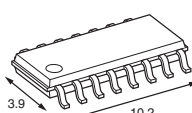
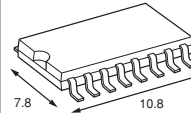
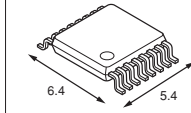
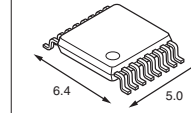
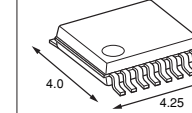
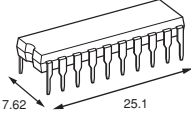
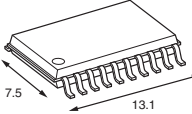
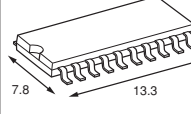
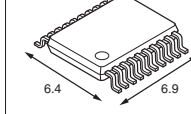
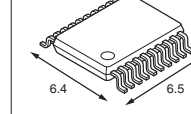
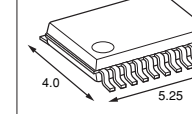
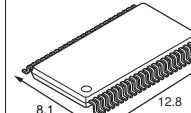
Note (1): The part numbers of the ICs in TSSOP14/16/20 packages are 74xxx, not TC74xxx. / TSSOP14, 16, 20の品番はTC74xxxではなく、74xxxとなります。

・ For package dimensions and standard codes, please refer to pages 153 to 154.

・ パッケージの外観図および標準化コードはP.153, P.154をご覧ください。

Package Dimensions (Unit: mm) For details, please refer to the relevant technical datasheets or databooks. /

パッケージ一覧表 (単位 mm) ※詳細値は TD およびデータブックを参照ください。

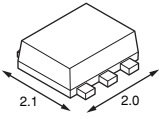
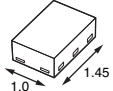
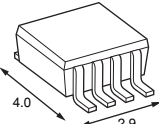
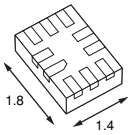
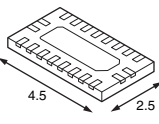
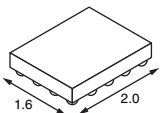
| Package<br>Pin | DIP (xxxP)                                                                          | SOIC (xxxD)                                                                         | SOP (xxxF)                                                                                         | TSSOP (xxxFT)                                                                                       | TSSOPxxB (xxxFT)                                                                                     | US<br>(xxxFU) 5, 6 pin<br>(xxxFK) 8, 14, 16, 20 pin                                                  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 5 pin          |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | <br>t = 1.0 max   |
| Standard Code  |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | SSOP5-P-0.65A                                                                                        |
| 6 pin          |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | <br>t = 1.0 max   |
| Standard Code  |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | SSOP6-P-0.65A                                                                                        |
| 8 pin          |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | <br>t = 0.8 max   |
| Standard Code  |                                                                                     |                                                                                     |                                                                                                    |                                                                                                     |                                                                                                      | SSOP8-P-0.50A                                                                                        |
| 14 pin         |   |   | <br>t = 1.9 max  | <br>t = 1.2 max  | <br>t = 1.2 max  | <br>t = 1.0 max  |
| Standard Code  | DIP14-P-300-2.54                                                                    | P-SOP14-0409-1.27-001                                                               | SOP14-P-300-1.27A                                                                                  | TSSOP14-P-0044-0.65A                                                                                | P-TSSOP14-0044-0.65-001                                                                              | VSSOP14-P-0030-0.50                                                                                  |
| 16 pin         |  |  | <br>t = 1.9 max | <br>t = 1.2 max | <br>t = 1.2 max | <br>t = 1.0 max |
| Standard Code  | DIP16-P-300-2.54A                                                                   | P-SOP16-0401-1.27-005                                                               | SOP16-P-300-1.27A                                                                                  | TSSOP16-P-0044-0.65A                                                                                | P-TSSOP16-0044-0.65-001                                                                              | VSSOP16-P-0030-0.50                                                                                  |
| 20 pin         |  |  | <br>t = 1.9 max | <br>t = 1.2 max | <br>t = 1.2 max | <br>t = 1.0 max |
| Standard Code  | DIP20-P-300-2.54A                                                                   | P-SOP20-0813-1.27-001                                                               | SOP20-P-300-1.27A                                                                                  | TSSOP20-P-0044-0.65A                                                                                | P-TSSOP20-0044-0.65-001                                                                              | VSSOP20-P-0030-0.50                                                                                  |
| 48 pin         |                                                                                     |                                                                                     |                                                                                                    | <br>t = 1.2 max |                                                                                                      |                                                                                                      |
| Standard Code  |                                                                                     |                                                                                     |                                                                                                    | TSSOP48-P-0061-0.50                                                                                 |                                                                                                      |                                                                                                      |

・ All values are typical.

・ 数値は標準値

Package Dimensions (Unit: mm) For details, please refer to the relevant technical datasheets or databooks. /

パッケージ一覧表 (単位 mm) ※詳細値はTDおよびデータブックを参照ください。

| Pin           | Package | UF (xxxTU) 6 pin<br>SM (xxxFU) 8 pin                                                              | MP (xxxL6X) 6 pin                                                                                | UQFN (xxxMU) 10, 12 pin<br>TQFN (xxxMT) 20, 56 pin                                                 | WCSP (xxxWBG) 20 pin                                                                                 |
|---------------|---------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 6 pin         |         | <br>t = 0.75 max | <br>t = 0.5 max |                                                                                                    |                                                                                                      |
| Standard Code |         | —                                                                                                 | MP6                                                                                              |                                                                                                    |                                                                                                      |
| 8 pin         |         | <br>t = 1.2 max  |                                                                                                  |                                                                                                    |                                                                                                      |
| Standard Code |         | SSOP8-P-0.65                                                                                      |                                                                                                  |                                                                                                    |                                                                                                      |
| 10 pin        |         |                                                                                                   |                                                                                                  | <br>t = 0.6 max   |                                                                                                      |
| Standard Code |         |                                                                                                   |                                                                                                  | P-UQFN10-0202-0.40-001                                                                             |                                                                                                      |
| 20 pin        |         |                                                                                                   |                                                                                                  | <br>t = 0.55 max | <br>t = 0.64 max |
| Standard Code |         |                                                                                                   |                                                                                                  | P-UQFN20-0305-0.50-001                                                                             | S-UFBGA20-0202-0.40-001                                                                              |

- All values are typical.
- 数値は標準値

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# SEMICONDUCTOR GENERAL CATALOG

## 半導体製品総覧表2017年7月版

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### Radio-Frequency Devices 高周波デバイス

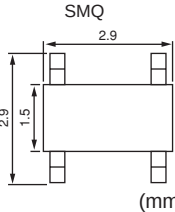
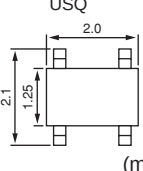
Radio-Frequency MOSFETs / 高周波MOSFET

WRadio-Frequency Bipolar Small-Signal Transistors / 高周波バイポーラ小信号トランジスタ

Radio-Frequency Diodes / 高周波ダイオード

Radio-Frequency MOSFETs / 高周波MOSFET

Radio-Frequency Small-Signal MOSFETs / 高周波小信号MOSFET

| Part Number | Package                                                                                   | Applications                      | Electrical Characteristics (Ta = 25°C) |                     |                     |                       |                             | Marking | Equivalent Product (Leaded Type) |
|-------------|-------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------|---------------------|---------------------|-----------------------|-----------------------------|---------|----------------------------------|
|             |                                                                                           |                                   | V <sub>DS</sub> (V)                    | I <sub>D</sub> (mA) | P <sub>D</sub> (mW) | I <sub>DSS</sub> (mA) | Y <sub>fs</sub>   (mS) Typ. |         |                                  |
| 3SK291      | <br>(mm) | UHF-band radio-frequency amps     | 12.5                                   | 30                  | 150                 | 0 to 0.1              | 26                          | UF      | —                                |
| 3SK292      |                                                                                           | VHF/UHF-band radio-frequency amps | 12.5                                   | 30                  | 150                 | 0 to 0.1              | 23.5                        | UV      | —                                |
| 3SK293      | <br>(mm) | UHF-band radio-frequency amps     | 12.5                                   | 30                  | 100                 | 0 to 0.1              | 26                          | UF      | —                                |
| 3SK294      |                                                                                           | VHF/UHF-band radio-frequency amps | 12.5                                   | 30                  | 100                 | 0 to 0.1              | 23.5                        | UV      | —                                |

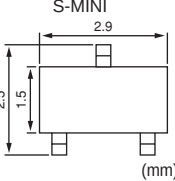
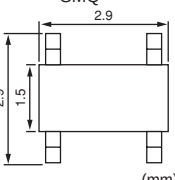
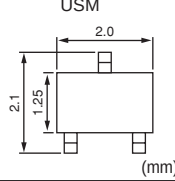
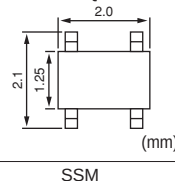
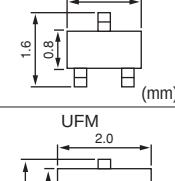
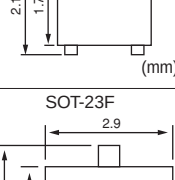
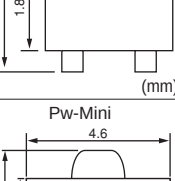
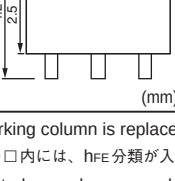
Radio-Frequency Power MOSFETs / 高周波パワーMOSFET

| Part Number | Package | Applications                | Absolute Maximum Ratings (Tc = 25°C) |                       |                       | Min   | Po (W)                 |            |                       |
|-------------|---------|-----------------------------|--------------------------------------|-----------------------|-----------------------|-------|------------------------|------------|-----------------------|
|             |         |                             | V <sub>DSS</sub><br>(V)              | P <sub>D</sub><br>(W) | I <sub>D</sub><br>(A) |       | Test Conditions        |            |                       |
|             |         |                             |                                      |                       |                       |       | V <sub>DS</sub><br>(V) | f<br>(MHz) | P <sub>i</sub><br>(W) |
| RFM08U9X    | PW-X    | UHF/VHF Professional radios | 36                                   | 20                    | 5                     | 7.5   | 9.6                    | 520        | 0.5                   |
| 2SK3075     | PW-X    |                             | 30                                   | 20                    | 5                     | 7.5   | 9.6                    | 520        | 0.5                   |
| 2SK3074     | PW-MINI |                             | 30                                   | 3                     | 1                     | 0.63  | 9.6                    | 520        | 0.02                  |
| RFM12U7X    | PW-X    |                             | 20                                   | 20                    | 4                     | 11.5  | 7.2                    | 520        | 1.0                   |
| RFM07U7X    | PW-X    |                             | 16                                   | 20                    | 3                     | 7.0   | 7.2                    | 450 to 530 | 0.5                   |
| RFM06U3X *  | PW-X    |                             | 16                                   | 20                    | 5                     | 5.0   | 3.6                    | 520        | 0.5                   |
| RFM01U7P    | PW-MINI |                             | 20                                   | 3                     | 1                     | 1.0   | 7.2                    | 520        | 0.1                   |
| 2SK3476     | PW-X    |                             | 20                                   | 20                    | 3                     | 7.0   | 7.2                    | 520        | 0.5                   |
| 2SK3475     | PW-MINI |                             | 20                                   | 3                     | 1                     | 0.63  | 7.2                    | 520        | 0.02                  |
| RFM04U6P    | PW-MINI | GMRS                        | 16                                   | 7                     | 2                     | 3.5   | 6.0                    | 470        | 0.2                   |
| 2SK4037     | PW-X    |                             | 12                                   | 20                    | 3                     | 3.55  | 6.0                    | 470        | 0.3                   |
| 2SK2854     | PW-MINI | UHF and VHF radio           | 10                                   | 0.5                   | 0.5                   | 0.2   | 6.0                    | 849        | 0.02                  |
| 2SK3079A    | PW-X    | FRS/GMRS                    | 10                                   | 20                    | 3                     | 2.24  | 4.5                    | 470        | 0.1                   |
| 2SK3756     | PW-MINI |                             | 7.5                                  | 3                     | 1                     | 1.26  | 4.5                    | 470        | 0.1                   |
| 2SK3078A    | PW-MINI |                             | 10                                   | 3                     | 0.5                   | 0.63  | 4.5                    | 470        | 0.1                   |
| 2SK3078     | PW-MINI |                             | 10                                   | 3                     | 0.5                   | 0.5   | 4.8                    | 915        | 0.02                  |
| 2SK3077     | USQ     | Driver                      | 10                                   | 0.25                  | 0.1                   | 0.032 | 4.8                    | 915        | 0.001                 |
| RFM03U3P *  | PW-MINI | GMRS                        | 16                                   | 7                     | 2.5                   | 2.3   | 3.6                    | 520        | 0.1                   |
| RFM00U7U    | USQ     | Driver                      | 20                                   | 0.25                  | 0.1                   | 0.1   | 7.2                    | 520        | 0.01                  |

\*: New product / 新製品

# Radio-Frequency Bipolar Small-Signal Transistors / 高周波バイポーラ小信号トランジスタ

## Radio-Frequency Bipolar Transistors / 高周波バイポーラトランジスタ

| Part Number | Package                                                                                                | Applications                                     | Absolute Maximum Ratings (Ta = 25°C) |                     |                     |                     | Marking <sup>(1)</sup> | TO-92 Equivalent Product | Remarks       |
|-------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------|---------------------|---------------------|---------------------|------------------------|--------------------------|---------------|
|             |                                                                                                        |                                                  | V <sub>CEO</sub> (V)                 | I <sub>C</sub> (mA) | P <sub>C</sub> (mW) | T <sub>J</sub> (°C) |                        |                          |               |
| 2SC5064     | S-MINI<br><br>(mm)    | VHF/UHF-band low-noise amps                      | 12                                   | 30                  | 150                 | 125                 | MA□                    | —                        | fr = 7 GHz    |
| 2SC5084     |                                                                                                        | VHF/UHF-band low-noise amps                      | 12                                   | 80                  | 150                 | 125                 | MC□                    | —                        | fr = 7 GHz    |
| 2SC5087     | SMQ<br><br>(mm)       | VHF/UHF-band low-noise amps                      | 12                                   | 80                  | 150                 | 125                 | C□                     | —                        | fr = 7 GHz    |
| 2SC5087R    |                                                                                                        | VHF/UHF-band low-noise amps                      | 12                                   | 80                  | 150                 | 125                 | ZP                     | —                        | fr = 8 GHz    |
| 2SC5065     | USM<br><br>(mm)       | VHF/UHF-band low-noise amps                      | 12                                   | 30                  | 100                 | 125                 | MA□                    | —                        | fr = 7 GHz    |
| 2SC5085     |                                                                                                        | VHF/UHF-band low-noise amps                      | 12                                   | 80                  | 100                 | 125                 | MC□                    | —                        | fr = 7 GHz    |
| 2SC5095     |                                                                                                        | VHF/UHF-band low-noise amps                      | 10                                   | 15                  | 100                 | 125                 | ME□                    | —                        | fr = 10 GHz   |
| 2SC5107     |                                                                                                        | VHF/UHF-band oscillators                         | 10                                   | 30                  | 100                 | 125                 | MF□                    | —                        | fr = 6 GHz    |
| MT3S16U     |                                                                                                        | UHF-band low-voltage oscillators and amps        | 5                                    | 60                  | 100                 | 125                 | T4                     | —                        | fr = 4 GHz    |
| MT4S03BU    | USQ<br><br>(mm)      | VHF/UHF-band low-noise amps                      | 5                                    | 40                  | 175 <sup>(3)</sup>  | 150                 | MR                     | —                        | fr = 12 GHz   |
| MT4S24U     |                                                                                                        | VHF/UHF-band low-noise amps                      | 5                                    | 50                  | 175 <sup>(3)</sup>  | 150                 | R8                     | —                        | fr = 14.5 GHz |
| 2SC4915     | SSM<br><br>(mm)     | FM-band radio-frequency amps                     | 30                                   | 20                  | 100                 | 125                 | Q□                     | 2SC1923                  | fr = 550 MHz  |
| 2SC5066     |                                                                                                        | VHF/UHF-band low-noise amps                      | 12                                   | 30                  | 100                 | 125                 | M1/M2                  | —                        | fr = 7 GHz    |
| 2SC5086     |                                                                                                        | VHF/UHF-band low-noise amps                      | 12                                   | 80                  | 100                 | 125                 | M5/M6                  | —                        | fr = 7 GHz    |
| MT3S20TU    | UFM<br><br>(mm)     | VHF/UHF-band low-noise amps, low-distortion amps | 12                                   | 80                  | 900 <sup>(3)</sup>  | 150                 | MU                     | —                        | fr = 7 GHz    |
| MT3S19R     | SOT-23F<br><br>(mm) | VHF/UHF-band low-noise amps, low-distortion amps | 6                                    | 80                  | 320 <sup>(2)</sup>  | 150                 | T6                     | —                        | fr = 13.5 GHz |
| MT3S20R     |                                                                                                        | VHF/UHF-band low-noise amps, low-distortion amps | 12                                   | 80                  | 320 <sup>(2)</sup>  | 150                 | MU                     | —                        | fr = 7.5 GHz  |
| MT3S20P     | Pw-Mini<br><br>(mm) | VHF/UHF-band low-noise amps, low-distortion amps | 12                                   | 80                  | 1800 <sup>(3)</sup> | 150                 | MU                     | —                        | fr = 7 GHz    |

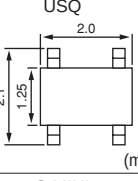
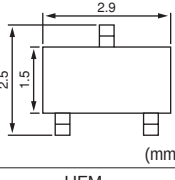
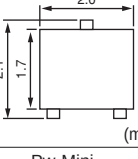
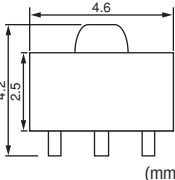
Note (1): □ in the Marking column is replaced by one of the following letters according to the hFE classification: R: Rank R, O: Rank O, Y: Rank Y /

現品表示欄の□内には、hFE分類が入ります。(Rランク→R、Oランク→O、Yランク→Y)

(2): When mounted on a glass-epoxy board / 基板実装時

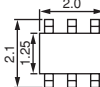
(3): When mounted on a ceramic board / セラミック基板実装時

## SiGe HBTs / SiGe HBT

| Part Number | Package                                                                            | Applications                                        | Absolute Maximum Ratings (Ta = 25°C) |                     |                     |                     | Marking | Remarks                                         |
|-------------|------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------|---------------------|---------------------|---------------------|---------|-------------------------------------------------|
|             |                                                                                    |                                                     | V <sub>CEO</sub> (V)                 | I <sub>C</sub> (mA) | P <sub>C</sub> (mW) | T <sub>J</sub> (°C) |         |                                                 |
| MT4S300U    |   | UHF/SHF-band low-noise amps                         | 4                                    | 50                  | 100                 | 150                 | P3      | f <sub>T</sub> = 26.5 GHz,<br>high ESD immunity |
| MT4S301U    |                                                                                    | UHF/SHF-band low-noise amps                         | 4                                    | 35                  | 100                 | 150                 | P4      | f <sub>T</sub> = 27.5 GHz,<br>high ESD immunity |
| MT3S111     |   | VHF/UHF-band low-noise amps,<br>low-distortion amps | 6                                    | 100                 | 700 <sup>(1)</sup>  | 150                 | R5      | f <sub>T</sub> = 11.5 GHz                       |
| MT3S113     |                                                                                    | VHF/UHF-band low-noise amps,<br>low-distortion amps | 5.3                                  | 100                 | 800 <sup>(1)</sup>  | 150                 | R7      | f <sub>T</sub> = 12.5 GHz                       |
| MT3S111TU   |   | VHF/UHF-band low-noise amps,<br>low-distortion amps | 6                                    | 100                 | 800 <sup>(1)</sup>  | 150                 | R5      | f <sub>T</sub> = 10 GHz                         |
| MT3S113TU   |                                                                                    |                                                     | 5.3                                  | 100                 | 900 <sup>(1)</sup>  | 150                 | R7      | f <sub>T</sub> = 11.2 GHz                       |
| MT3S111P    |  | VHF/UHF-band low-noise amps,<br>low-distortion amps | 6                                    | 100                 | 1000 <sup>(1)</sup> | 150                 | R5      | f <sub>T</sub> = 8 GHz                          |
| MT3S113P    |                                                                                    |                                                     | 5.3                                  | 100                 | 1600 <sup>(1)</sup> | 150                 | R7      | f <sub>T</sub> = 7.7 GHz                        |

Note (1): When mounted on a ceramic board / セラミック基盤実装時

Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes / 小信号ショットキバリアダイオード, 複合ショットキバリアダイオード

| Absolute Maximum Ratings |            | Electrical Characteristics<br>(Ta = 25°C ) |               |             |         |         | ESV                                                                                           | UFV                                                                                            | US6                                                                                             | Remarks                                       |
|--------------------------|------------|--------------------------------------------|---------------|-------------|---------|---------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------|
| VR<br>(V)                | IO<br>(mA) | VF (V)                                     |               | @IF<br>(mA) | IR (μA) |         | <br>(mm)     | <br>(mm)     | <br>(mm)     |                                               |
|                          |            | Typ.                                       | Max           |             | Max     | @VR (V) |                                                                                               |                                                                                                |                                                                                                 |                                               |
| 30                       | 1000       | 0.47                                       | 0.57          | 1000        | 50      | 30      |                                                                                               | CVJ10F30<br> |                                                                                                 | High current,<br>single Improved<br>VF and IR |
| 40                       | 100        | 0.54<br>(0.56)                             | 0.6<br>(0.62) | 100         | 5       | 40      | HN2S02JE<br> |                                                                                                | HN2S02FU<br> | Standard,<br>Independent diodes               |

- The internal connection diagrams only show the general configurations of the circuits.
- 内部接続図はイメージ図です。

Radio-Frequency Schottky Barrier Diodes / 高周波用ショットキバリアダイオード

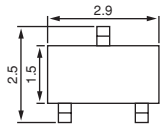
| Part Number | Applications        | VR<br>♣VRM<br>(V) | IF<br>(mA) | VF(Typ.) |            | Cτ(Typ.) |           | Package         |
|-------------|---------------------|-------------------|------------|----------|------------|----------|-----------|-----------------|
|             |                     |                   |            | (V)      | IF<br>(mA) | (pF)     | VR<br>(V) |                 |
| 1SS154      | VHF to S band mixer | 6                 | 30         | 0.5      | 10         | 0.8      | 0         | S-Mini (Single) |
| 1SS271      |                     | 6                 | 30         | 0.5      | 10         | 0.8      | 0         | S-Mini (Twin)   |
| 1SS295      | UHF MIXER           | 4                 | 30         | 0.25     | 2          | 0.6      | 0.2       | S-Mini (Twin)   |
| 1SS315      |                     | ♣5                | 30         | 0.25     | 2          | 0.6      | 0.2       | USC             |
| JDH2S01FS   |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | fSC             |
| JDH3D01S    |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | SSM (Twin)      |
| JDH3D01FV   |                     | 4                 | 25         | 0.25     | 2          | 0.6      | 0.2       | VESM (Twin)     |
| JDH2S02FS   |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | fSC             |
| JDH2S02SC   |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | SC2             |
| JDH2S02SL * |                     | 10                | 10         | 0.24     | 1          | 0.3      | 0.2       | SL2             |

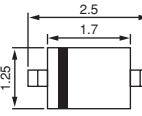
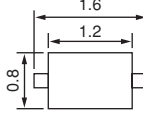
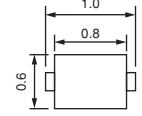
\*: New product / 新製品

## Variable Capacitance Diodes / 可変容量ダイオード

### Variable Capacitance Diodes / 可変容量ダイオード

(Diodes for Electronic Tuning) / (電子同調用)

| Part Number                                                                               | V <sub>R</sub><br>(V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | Applications                   |
|-------------------------------------------------------------------------------------------|-----------------------|------------------------|--------------------|------------------------|--------------------|--------------------------------|
| Package                                                                                   |                       |                        |                    |                        |                    |                                |
| <br>(mm) |                       |                        |                    |                        |                    |                                |
| 1SV228                                                                                    | 15                    | 28.5 to 32.5           | 3                  | 11.7 to 13.7           | 8                  | FM car radios, portable radios |

| Part Number                                                                               |                                                                                           |                                                                                           | V <sub>R</sub><br>(V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | C <sub>T</sub><br>(pF) | V <sub>R</sub> (V) | Applications |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------|------------------------|--------------------|------------------------|--------------------|--------------|
| Package                                                                                   |                                                                                           |                                                                                           |                       |                        |                    |                        |                    |              |
| <br>(mm) | <br>(mm) | <br>(mm) |                       |                        |                    |                        |                    |              |
| 1SV324                                                                                    | 1SV325                                                                                    |                                                                                           | 10                    | 44 to 49.5             | 1                  | 9.2 to 12.2            | 4                  | VCXO         |
|                                                                                           | JDV2S36E                                                                                  |                                                                                           | 10                    | 44 to 49.5             | 1                  | 5.4 to 7.3             | 6                  | VCXO         |
| 1SV262                                                                                    | 1SV282                                                                                    |                                                                                           | 34                    | 33 to 38               | 2                  | 2.6 to 3.0             | 25                 | CATV tuners  |
| 1SV322                                                                                    | 1SV323                                                                                    |                                                                                           | 10                    | 26.5 to 29.5           | 1                  | 6 to 7.1               | 4                  | VCXO         |
| 1SV304                                                                                    | 1SV305                                                                                    |                                                                                           | 10                    | 17.3 to 19.3           | 1                  | 5.3 to 6.6             | 4                  | VHF/UHF VCO  |
| 1SV270                                                                                    | 1SV281                                                                                    |                                                                                           | 10                    | 15 to 17               | 1                  | 7.3 to 8.7             | 4                  | VHF/UHF VCO  |
| 1SV229                                                                                    | 1SV279                                                                                    | JDV2S41FS                                                                                 | 15                    | 14 to 16               | 2                  | 5.5 to 6.5             | 10                 | VHF/UHF VCO  |
| 1SV310                                                                                    | 1SV311                                                                                    | JDV2S09FS                                                                                 | 10                    | 9.7 to 11.1            | 1                  | 4.45 to 5.45           | 4                  | VHF/UHF VCO  |
|                                                                                           | 1SV314                                                                                    | JDV2S10FS                                                                                 | 10                    | 7.3 to 8.4             | 0.5                | 2.75 to 3.4            | 2.5                | VHF/UHF VCO  |
| 1SV277                                                                                    | 1SV285                                                                                    | JDV2S07FS                                                                                 | 10                    | 4.0 to 4.9             | 1                  | 1.85 to 2.35           | 4                  | VHF/UHF VCO  |
| 1SV239                                                                                    | 1SV280                                                                                    |                                                                                           | 15                    | 3.8 to 4.7             | 2                  | 1.5 to 2.0             | 10                 | L Band VCO   |

## Radio-Frequency Switching Diodes / 高周波スイッチ用ダイオード

### Radio-Frequency Switching Diodes / 高周波スイッチ用ダイオード

| Part Number | Applications   |        | V <sub>R</sub><br>(V) | I <sub>R</sub> (Max)   |                       | V <sub>F</sub> (Max)  |                        | C <sub>T</sub> (Typ.)  |                       | r <sub>s</sub> (Typ.) |                        |            | Package |
|-------------|----------------|--------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|-----------------------|------------------------|------------|---------|
|             |                |        |                       | I <sub>R</sub><br>(μA) | V <sub>R</sub><br>(V) | V <sub>F</sub><br>(V) | I <sub>F</sub><br>(mA) | C <sub>T</sub><br>(pF) | V <sub>R</sub><br>(V) | r <sub>s</sub><br>(Ω) | I <sub>F</sub><br>(mA) | f<br>(MHz) |         |
| 1SS314      | TV band switch | Single | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.7                    | 6                     | 0.5                   | 2                      | 100        | USC     |
| 1SS381      |                |        | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.7                    | 6                     | 0.5                   | 2                      | 100        | ESC     |
| 1SS268      |                | Twin   | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.8                    | 6                     | 0.6                   | 2                      | 100        | S-Mini  |
| 1SS269      |                |        | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.8                    | 6                     | 0.6                   | 2                      | 100        | S-Mini  |
| 1SS312      |                |        | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.8                    | 6                     | 0.6                   | 2                      | 100        | USM     |
| 1SS313      |                |        | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.8                    | 6                     | 0.6                   | 2                      | 100        | USM     |
| 1SS364      |                |        | 30                    | 0.1                    | 15                    | 0.85                  | 2                      | 0.85                   | 6                     | 0.6                   | 2                      | 100        | SSM     |
| 1SV128      | Switch, ATT    | Single | 50                    | 0.1                    | 50                    | 0.95 (Typ.)           | 50                     | 0.25                   | 50                    | 3                     | 10                     | 100        | S-MINI  |
| JDP2S12CR   |                |        | 180                   | 10                     | 50                    | 1.0                   | 50                     | 1.0                    | 40                    | 0.4                   | 10                     | 100        | S-FLAT  |
| 1SV307      |                |        | 30                    | 0.1                    | 30                    | 1.0                   | 50                     | 0.3                    | 1                     | 1                     | 10                     | 100        | USC     |
| 1SV271      |                |        | 50                    | 0.1                    | 50                    | 1.0                   | 50                     | 0.25                   | 50                    | 3                     | 10                     | 100        | USC     |
| 1SV308      |                |        | 30                    | 0.1                    | 30                    | 1.0                   | 50                     | 0.3                    | 1                     | 1                     | 10                     | 100        | ESC     |
| JDP2S04E    |                |        | 50                    | 0.1                    | 50                    | 1.0                   | 50                     | 0.25                   | 50                    | 3                     | 10                     | 100        | ESC     |
| JDP2S02AFS  |                |        | 30                    | 0.1                    | 30                    | 0.94                  | 50                     | 0.3                    | 1                     | 1                     | 10                     | 100        | fSC     |
| JDP2S02ACT  |                | Switch | 30                    | 0.1                    | 30                    | 1.0                   | 50                     | 0.3                    | 1                     | 1                     | 10                     | 100        | CST2    |
| JDP2S08SC   |                |        | 30                    | 0.1                    | 30                    | 0.95                  | 50                     | 0.21                   | 1                     | 1                     | 10                     | 100        | SC2     |
| 1SV172      |                | Twin   | 50                    | 0.1                    | 50                    | 0.95 (Typ.)           | 50                     | 0.25                   | 50                    | 3                     | 10                     | 100        | S-MINI  |
| JDP3C04TU   |                |        | 50                    | 0.1                    | 50                    | 0.95                  | 50                     | 0.3                    | 1                     | 3                     | 10                     | 100        | UFM     |
| JDP3C02AU   |                |        | 30                    | 0.05                   | 30                    | 0.89 (Typ.)           | 50                     | 0.28                   | 1                     | 1.06                  | 10                     | 100        | USM     |
| JDP3C13U    |                |        | 30                    | 0.1                    | 30                    | 1.0                   | 50                     | 0.24                   | 1                     | 2.1                   | 10                     | 100        | USM     |

# SEMICONDUCTOR GENERAL CATALOG

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