

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

## UPW

Miniature Sized, Low Impedance,  
High Reliability For  
Switching Power Supplies



Smaller



Low Impedance

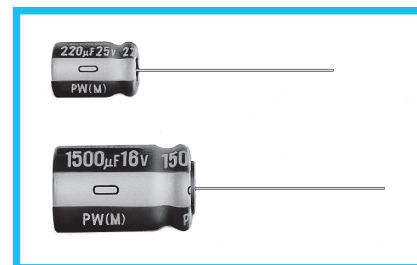
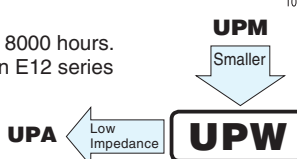


Long Life



Anti-Solvent  
Feature  
(Through  
100V only)

- Smaller case size and lower impedance than UPM.
- Low impedance and high reliability withstanding 2000 hours to 8000 hours.
- Capacitance ranges available based on the numerical values in E12 series under JIS.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.



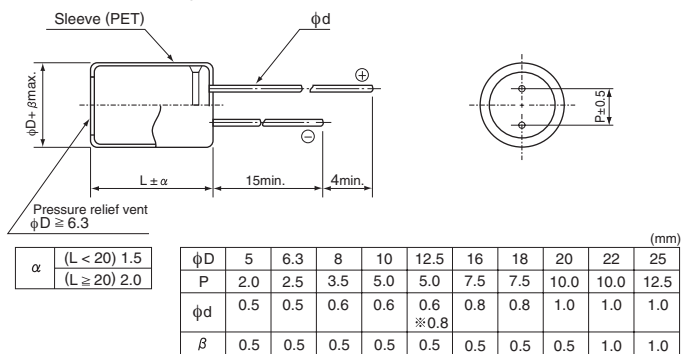
Valued marked with an ※ in the dimension table are scheduled to be discontinued and are not recommended for new designs.

## Specifications

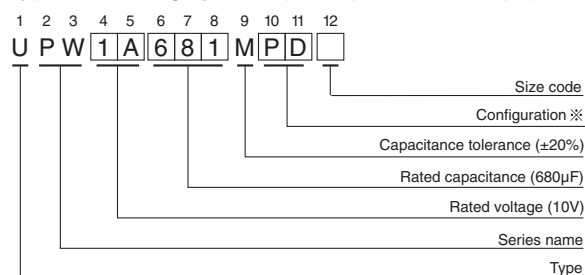
| Item                          | Performance Characteristics                                                                                                                                                                                                                 |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------|-----------|------------|-----------|------------------------|----------|----|-----|-------|-------|----------|----------|----------|----------|----------|----------|
| Category Temperature Range    | -55 to +105°C (6.3 to 100V), -40 to + 105°C (160 to 400V), -25 to +105°C (450V)                                                                                                                                                             |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Rated Voltage Range           | 6.3 to 450V                                                                                                                                                                                                                                 |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Rated Capacitance Range       | 0.47 to 15000μF                                                                                                                                                                                                                             |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                         |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Leakage Current ※             | Rated voltage (V)                                                                                                                                                                                                                           | 6.3 to 100                                                                                                                      |                                               |          |          |                                                                                                                                                                                                                                            | 160 to 450                                                                                                                              |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | Leakage current                                                                                                                                                                                                                             | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (μA), whichever is greater. |                                               |          |          |                                                                                                                                                                                                                                            | After 1 minute's application of rated voltage at 20°C, CV ≤ 1000: I = 0.1CV+40 (μA) or less.<br>CV > 1000: I = 0.04CV+100 (μA) or less. |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Tangent of loss angle (tan δ) | For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. Measurement frequency : 120Hz at 20°C                                                                                                                           |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | Rated voltage (V)                                                                                                                                                                                                                           | 6.3                                                                                                                             | 10                                            | 16       | 25       | 35                                                                                                                                                                                                                                         | 50                                                                                                                                      | 63   | 100       | 160 to 250 | 315 · 350 | 400 · 450              |          |    |     |       |       |          |          |          |          |          |          |
|                               | tan δ (max.)                                                                                                                                                                                                                                | 0.22                                                                                                                            | 0.19                                          | 0.16     | 0.14     | 0.12                                                                                                                                                                                                                                       | 0.10                                                                                                                                    | 0.09 | 0.08      | 0.15       | 0.20      | 0.25                   |          |    |     |       |       |          |          |          |          |          |          |
| Stability at Low Temperature  | 120Hz                                                                                                                                                                                                                                       |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | Rated voltage (V)                                                                                                                                                                                                                           |                                                                                                                                 | 6.3 · 10                                      | 16 · 25  | 35 · 50  | 63 · 100                                                                                                                                                                                                                                   | 160 · 200                                                                                                                               | 250  | 315 · 350 | 400        | 450       |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | Impedance ratio (max.)                                                                                                                                                                                                                      | Z(-25°C) / Z(+20°C)                                                                                                             | —                                             | —        | —        | —                                                                                                                                                                                                                                          | 3                                                                                                                                       | 3    | 4         | 6          | 15        |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               |                                                                                                                                                                                                                                             | Z(-40°C) / Z(+20°C)                                                                                                             | —                                             | —        | —        | —                                                                                                                                                                                                                                          | 4                                                                                                                                       | 6    | 8         | 10         | —         |                        |          |    |     |       |       |          |          |          |          |          |          |
| Z(-55°C) / Z(+20°C)           |                                                                                                                                                                                                                                             | 3                                                                                                                               | 3                                             | 3        | 3        | —                                                                                                                                                                                                                                          | —                                                                                                                                       | —    | —         | —          |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Endurance                     | The specifications listed below shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied at 105°C for the condition listed at right. The peak voltage shall not exceed the rated voltage. |                                                                                                                                 |                                               |          |          | <table><tr><td>Rated Voltage \ φD(mm)</td><td>φ5, φ6.3</td><td>φ8</td><td>φ10</td><td>φ12.5</td><td>≥ φ16</td></tr><tr><td>6.3~450V</td><td>2000hrs.</td><td>3000hrs.</td><td>5000hrs.</td><td>7000hrs.</td><td>8000hrs.</td></tr></table> |                                                                                                                                         |      |           |            |           | Rated Voltage \ φD(mm) | φ5, φ6.3 | φ8 | φ10 | φ12.5 | ≥ φ16 | 6.3~450V | 2000hrs. | 3000hrs. | 5000hrs. | 7000hrs. | 8000hrs. |
|                               |                                                                                                                                                                                                                                             |                                                                                                                                 |                                               |          |          | Rated Voltage \ φD(mm)                                                                                                                                                                                                                     | φ5, φ6.3                                                                                                                                | φ8   | φ10       | φ12.5      | ≥ φ16     |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | 6.3~450V                                                                                                                                                                                                                                    | 2000hrs.                                                                                                                        | 3000hrs.                                      | 5000hrs. | 7000hrs. | 8000hrs.                                                                                                                                                                                                                                   |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | Capacitance change                                                                                                                                                                                                                          |                                                                                                                                 | Within ±20% of the initial capacitance value  |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
|                               | tan δ                                                                                                                                                                                                                                       |                                                                                                                                 | 200% or less than the initial specified value |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Leakage current               |                                                                                                                                                                                                                                             | Less than or equal to the initial specified value                                                                               |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Shelf Life                    | After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.     |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |
| Marking                       | Printed with white color letter on dark brown sleeve.                                                                                                                                                                                       |                                                                                                                                 |                                               |          |          |                                                                                                                                                                                                                                            |                                                                                                                                         |      |           |            |           |                        |          |    |     |       |       |          |          |          |          |          |          |

## Radial Lead Type

※ I : Leakage Current (µA), C : Rated Capacitance (µF), V : Rated Voltage (V)



## Type numbering system (Example : 10V 680µF)



- Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Frequency coefficient of rated ripple current

| V          | Cap. (µF)     | Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|------------|---------------|-----------|------|-------|-------|------|---------------|
| 6.3 to 100 | 2.2 to 56     |           | 0.20 | 0.30  | 0.50  | 0.80 | 1.00          |
|            | 68 to 330     |           | 0.55 | 0.65  | 0.75  | 0.85 | 1.00          |
|            | 390 to 1000   |           | 0.70 | 0.75  | 0.80  | 0.90 | 1.00          |
|            | 1200 to 15000 |           | 0.80 | 0.85  | 0.90  | 0.95 | 1.00          |
| 160 to 450 | 0.47 to 220   |           | 0.80 | 1.00  | 1.25  | 1.40 | 1.60          |
|            | 330 to 470    |           | 0.90 | 1.00  | 1.10  | 1.13 | 1.15          |

※ Configuration

| φ D        | Pb-free leadwire<br>Pb-free PET sleeve |
|------------|----------------------------------------|
| 5          | DD                                     |
| 6.3        | ED                                     |
| 8 · 10     | PD                                     |
| 12.5 to 18 | HD                                     |
| 20 to 25   | RD                                     |

• Dimension table in next page.

CAT.8100L

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>( at 20°C after<br>1 minute ) | Impedance (Ω)<br>max. |                  | Rated Ripple<br>(mArms) |                 | Part Number   |
|--------------------------------|---------------------------|------------------------|-------|----------------------------------------------------------|-----------------------|------------------|-------------------------|-----------------|---------------|
|                                |                           |                        |       |                                                          | 20°C/<br>100kHz       | —10°C/<br>100kHz | 105°C/<br>100kHz        | 105°C/<br>120Hz |               |
| 6.3<br>(0J)                    | 22                        | 5×11                   | 0.22  | 4.158                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW0J220MDD  |
|                                | 33                        | 5×11                   | 0.22  | 6.237                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW0J330MDD  |
|                                | 47                        | 5×11                   | 0.22  | 8.883                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW0J470MDD  |
|                                | 100                       | 5×11                   | 0.22  | 18.9                                                     | 0.60                  | 1.20             | 180                     | —               | ※UPW0J101MDD  |
|                                | 150                       | 6.3×11                 | 0.22  | 28.35                                                    | 0.25                  | 0.50             | 290                     | —               | ※UPW0J151MED  |
|                                | 220                       | 6.3×11                 | 0.22  | 41.58                                                    | 0.25                  | 0.50             | 290                     | —               | ※UPW0J221MED  |
|                                | 330                       | 6.3×11                 | 0.22  | 62.37                                                    | 0.25                  | 0.50             | 290                     | —               | ※UPW0J331MED  |
|                                | 330                       | 6.3×15                 | 0.22  | 62.37                                                    | 0.23                  | 0.46             | 430                     | —               | ※UPW0J331MED6 |
|                                | 470                       | 8×11.5                 | 0.22  | 88.83                                                    | 0.117                 | 0.234            | 555                     | —               | UPW0J471MPD   |
|                                | 560                       | 8×11.5                 | 0.22  | 105.84                                                   | 0.117                 | 0.234            | 555                     | —               | UPW0J561MPD   |
|                                | 680                       | 10×12.5                | 0.22  | 128.52                                                   | 0.090                 | 0.18             | 755                     | —               | UPW0J681MPD   |
|                                | 820                       | 8×15                   | 0.22  | 154.98                                                   | 0.085                 | 0.17             | 730                     | —               | UPW0J821MPD   |
|                                | 820                       | 10×12.5                | 0.22  | 154.98                                                   | 0.090                 | 0.18             | 755                     | —               | UPW0J821MPD6  |
|                                | 1000                      | 10×12.5                | 0.22  | 189                                                      | 0.090                 | 0.18             | 755                     | —               | UPW0J102MPD   |
|                                | 1200                      | 8×20                   | 0.22  | 226.8                                                    | 0.065                 | 0.13             | 995                     | —               | UPW0J122MPD   |
|                                | 1200                      | 10×16                  | 0.22  | 226.8                                                    | 0.068                 | 0.136            | 1050                    | —               | UPW0J122MPD6  |
|                                | 1500                      | 10×20                  | 0.22  | 283.5                                                    | 0.052                 | 0.104            | 1220                    | —               | UPW0J152MPD   |
|                                | 2200                      | 12.5×20                | 0.24  | 415.8                                                    | 0.038                 | 0.076            | 1655                    | —               | UPW0J222MHD   |
|                                | 2200                      | 10×25                  | 0.24  | 415.8                                                    | 0.045                 | 0.090            | 1440                    | —               | UPW0J222MPD6  |
|                                | 2700                      | 10×30.5                | 0.24  | 510.3                                                    | 0.035                 | 0.070            | 1815                    | —               | UPW0J272MPD   |
|                                | 3300                      | 12.5×20                | 0.26  | 623.7                                                    | 0.038                 | 0.076            | 1655                    | —               | UPW0J332MHD   |
|                                | 3900                      | 12.5×25                | 0.26  | 737.1                                                    | 0.030                 | 0.060            | 1945                    | —               | UPW0J392MHD   |
|                                | 4700                      | 16×25                  | 0.28  | 888.3                                                    | 0.022                 | 0.044            | 2555                    | —               | UPW0J472MHD   |
|                                | 4700                      | 12.5×30.5              | 0.28  | 888.3                                                    | 0.025                 | 0.050            | 2310                    | —               | UPW0J472MHD6  |
|                                | 5600                      | 12.5×35.5              | 0.30  | 1058.4                                                   | 0.022                 | 0.044            | 2510                    | —               | UPW0J562MHD   |
|                                | 5600                      | 16×20                  | 0.30  | 1058.4                                                   | 0.029                 | 0.058            | 2210                    | —               | UPW0J562MHD6  |
|                                | 6800                      | 16×25                  | 0.32  | 1285.2                                                   | 0.022                 | 0.044            | 2560                    | —               | UPW0J682MHD   |
|                                | 6800                      | 18×20                  | 0.32  | 1285.2                                                   | 0.028                 | 0.056            | 2490                    | —               | UPW0J682MHD6  |
|                                | 8200                      | 16×30.5                | 0.36  | 1549.8                                                   | 0.018                 | 0.036            | 3010                    | —               | UPW0J822MHD   |
|                                | 10000                     | 16×30.5                | 0.40  | 1890                                                     | 0.016                 | 0.032            | 3150                    | —               | UPW0J103MHD   |
|                                | 10000                     | 18×25                  | 0.40  | 1890                                                     | 0.020                 | 0.040            | 2740                    | —               | UPW0J103MHD6  |
|                                | 12000                     | 18×30.5                | 0.44  | 2268                                                     | 0.016                 | 0.032            | 3635                    | —               | UPW0J123MHD   |
|                                | 15000                     | 18×35.5                | 0.50  | 2835                                                     | 0.015                 | 0.030            | 3680                    | —               | UPW0J153MHD   |
| 10<br>(1A)                     | 22                        | 5×11                   | 0.19  | 6.6                                                      | 0.60                  | 1.20             | 180                     | —               | ※UPW1A220MDD  |
|                                | 33                        | 5×11                   | 0.19  | 9.9                                                      | 0.60                  | 1.20             | 180                     | —               | ※UPW1A330MDD  |
|                                | 47                        | 5×11                   | 0.19  | 14.1                                                     | 0.60                  | 1.20             | 180                     | —               | ※UPW1A470MDD  |
|                                | 82                        | 5×11                   | 0.19  | 24.6                                                     | 0.60                  | 1.20             | 180                     | —               | ※UPW1A820MDD  |
|                                | 100                       | 5×11                   | 0.19  | 30                                                       | 0.60                  | 1.20             | 180                     | —               | ※UPW1A101MDD  |
|                                | 150                       | 6.3×11                 | 0.19  | 45                                                       | 0.25                  | 0.50             | 290                     | —               | ※UPW1A151MED  |
|                                | 180                       | 6.3×11                 | 0.19  | 54                                                       | 0.25                  | 0.50             | 290                     | —               | ※UPW1A181MED  |
|                                | 220                       | 6.3×11                 | 0.19  | 66                                                       | 0.25                  | 0.50             | 290                     | —               | ※UPW1A221MED  |
|                                | 220                       | 6.3×15                 | 0.19  | 66                                                       | 0.23                  | 0.46             | 430                     | —               | ※UPW1A221MED6 |
|                                | 330                       | 8×11.5                 | 0.19  | 99                                                       | 0.117                 | 0.234            | 555                     | —               | UPW1A331MPD   |
|                                | 470                       | 8×11.5                 | 0.19  | 141                                                      | 0.117                 | 0.234            | 555                     | —               | UPW1A471MPD   |
|                                | 680                       | 10×12.5                | 0.19  | 204                                                      | 0.090                 | 0.18             | 760                     | —               | UPW1A681MPD   |
|                                | 680                       | 8×15                   | 0.19  | 204                                                      | 0.085                 | 0.17             | 730                     | —               | UPW1A681MPD6  |
|                                | 1000                      | 10×16                  | 0.19  | 300                                                      | 0.068                 | 0.136            | 1050                    | —               | UPW1A102MPD   |
|                                | 1000                      | 8×20                   | 0.19  | 300                                                      | 0.065                 | 0.13             | 995                     | —               | UPW1A102MPD6  |
|                                | 1200                      | 10×20                  | 0.19  | 360                                                      | 0.052                 | 0.104            | 1220                    | —               | UPW1A122MPD   |
|                                | 1500                      | 10×20                  | 0.19  | 450                                                      | 0.052                 | 0.104            | 1220                    | —               | UPW1A152MPD   |
|                                | 1500                      | 10×25                  | 0.19  | 450                                                      | 0.045                 | 0.090            | 1440                    | —               | UPW1A152MPD6  |
|                                | 2200                      | 12.5×20                | 0.21  | 660                                                      | 0.038                 | 0.076            | 1655                    | —               | UPW1A222MHD   |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).

If there is no size code in the part number, please add size code "1" and then add the appropriate code.

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D×L (mm) | tan $\delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Impedance ( $\Omega$ )<br>max. |                  | Rated Ripple<br>(mArms) |                 | Part Number  |
|--------------------------------|---------------------------------|------------------------------|--------------|--------------------------------------------------------------|--------------------------------|------------------|-------------------------|-----------------|--------------|
|                                |                                 |                              |              |                                                              | 20°C/<br>100kHz                | −10°C/<br>100kHz | 105°C/<br>100kHz        | 105°C/<br>120Hz |              |
| 10<br>(1A)                     | 2200                            | 10×30.5                      | 0.21         | 660                                                          | 0.035                          | 0.070            | 1815                    | —               | UPW1A222MPD6 |
|                                | 2700                            | 12.5×25                      | 0.21         | 810                                                          | 0.030                          | 0.060            | 1945                    | —               | UPW1A272MHD  |
|                                | 3300                            | 12.5×25                      | 0.23         | 990                                                          | 0.030                          | 0.060            | 1950                    | —               | UPW1A332MHD  |
|                                | 3300                            | 12.5×30.5                    | 0.23         | 990                                                          | 0.025                          | 0.050            | 2310                    | —               | UPW1A332MHD6 |
|                                | 3900                            | 12.5×35.5                    | 0.23         | 1170                                                         | 0.022                          | 0.044            | 2510                    | —               | UPW1A392MHD  |
|                                | 3900                            | 16×20                        | 0.23         | 1170                                                         | 0.029                          | 0.058            | 2210                    | —               | UPW1A392MHD6 |
|                                | 4700                            | 16×25                        | 0.25         | 1410                                                         | 0.022                          | 0.044            | 2555                    | —               | UPW1A472MHD  |
|                                | 5600                            | 16×25                        | 0.27         | 1680                                                         | 0.022                          | 0.044            | 2560                    | —               | UPW1A562MHD  |
|                                | 5600                            | 18×20                        | 0.27         | 1680                                                         | 0.028                          | 0.056            | 2490                    | —               | UPW1A562MHD6 |
|                                | 6800                            | 16×30.5                      | 0.29         | 2040                                                         | 0.018                          | 0.036            | 3010                    | —               | UPW1A682MHD  |
|                                | 6800                            | 18×25                        | 0.29         | 2040                                                         | 0.020                          | 0.040            | 2740                    | —               | UPW1A682MHD6 |
|                                | 8200                            | 16×35.5                      | 0.33         | 2460                                                         | 0.016                          | 0.032            | 3150                    | —               | UPW1A822MHD  |
|                                | 8200                            | 18×30.5                      | 0.33         | 2460                                                         | 0.016                          | 0.032            | 3635                    | —               | UPW1A822MHD6 |
|                                | 10000                           | 18×35.5                      | 0.37         | 3000                                                         | 0.015                          | 0.030            | 3680                    | —               | UPW1A103MHD  |
|                                | 15000                           | 18×40                        | 0.47         | 4500                                                         | 0.014                          | 0.028            | 3800                    | —               | UPW1A153MHD  |
| 16<br>(1C)                     | 10                              | 5×11                         | 0.16         | 4.8                                                          | 0.60                           | 1.20             | 180                     | —               | ※UPW1C100MDD |
|                                | 22                              | 5×11                         | 0.16         | 10.56                                                        | 0.60                           | 1.20             | 180                     | —               | ※UPW1C220MDD |
|                                | 33                              | 5×11                         | 0.16         | 15.84                                                        | 0.60                           | 1.20             | 180                     | —               | ※UPW1C330MDD |
|                                | 47                              | 5×11                         | 0.16         | 22.56                                                        | 0.60                           | 1.20             | 180                     | —               | ※UPW1C470MDD |
|                                | 56                              | 5×11                         | 0.16         | 26.88                                                        | 0.60                           | 1.20             | 180                     | —               | ※UPW1C560MDD |
|                                | 100                             | 6.3×11                       | 0.16         | 48                                                           | 0.25                           | 0.50             | 290                     | —               | ※UPW1C101MED |
|                                | 120                             | 6.3×11                       | 0.16         | 57.6                                                         | 0.25                           | 0.50             | 290                     | —               | ※UPW1C121MED |
|                                | 150                             | 6.3×11                       | 0.16         | 72                                                           | 0.25                           | 0.50             | 290                     | —               | ※UPW1C151MED |
|                                | 180                             | 6.3×15                       | 0.16         | 86.4                                                         | 0.23                           | 0.46             | 430                     | —               | ※UPW1C181MED |
|                                | 220                             | 8×11.5                       | 0.16         | 105.6                                                        | 0.117                          | 0.234            | 555                     | —               | UPW1C221MPD  |
|                                | 330                             | 8×11.5                       | 0.16         | 158.4                                                        | 0.117                          | 0.234            | 555                     | —               | UPW1C331MPD  |
|                                | 470                             | 10×12.5                      | 0.16         | 225.6                                                        | 0.090                          | 0.18             | 760                     | —               | UPW1C471MPD  |
|                                | 470                             | 8×15                         | 0.16         | 225.6                                                        | 0.085                          | 0.17             | 730                     | —               | UPW1C471MPD6 |
|                                | 680                             | 10×16                        | 0.16         | 326.4                                                        | 0.068                          | 0.136            | 1050                    | —               | UPW1C681MPD  |
|                                | 680                             | 8×20                         | 0.16         | 326.4                                                        | 0.065                          | 0.13             | 995                     | —               | UPW1C681MPD6 |
|                                | 820                             | 10×20                        | 0.16         | 393.6                                                        | 0.052                          | 0.104            | 1220                    | —               | UPW1C821MPD  |
|                                | 1000                            | 10×20                        | 0.16         | 480                                                          | 0.052                          | 0.104            | 1220                    | —               | UPW1C102MPD  |
|                                | 1200                            | 10×25                        | 0.16         | 576                                                          | 0.045                          | 0.090            | 1440                    | —               | UPW1C122MPD  |
|                                | 1500                            | 12.5×20                      | 0.16         | 720                                                          | 0.038                          | 0.076            | 1655                    | —               | UPW1C152MHD  |
|                                | 1500                            | 10×30.5                      | 0.16         | 720                                                          | 0.035                          | 0.070            | 1815                    | —               | UPW1C152MPD6 |
|                                | 2200                            | 12.5×25                      | 0.18         | 1056                                                         | 0.030                          | 0.060            | 1945                    | —               | UPW1C222MHD  |
|                                | 2700                            | 12.5×30.5                    | 0.18         | 1296                                                         | 0.025                          | 0.050            | 2310                    | —               | UPW1C272MHD  |
|                                | 2700                            | 16×20                        | 0.18         | 1296                                                         | 0.029                          | 0.058            | 2210                    | —               | UPW1C272MHD6 |
|                                | 3300                            | 16×25                        | 0.20         | 1584                                                         | 0.022                          | 0.044            | 2555                    | —               | UPW1C332MHD  |
|                                | 3300                            | 12.5×35.5                    | 0.20         | 1584                                                         | 0.022                          | 0.044            | 2510                    | —               | UPW1C332MHD6 |
|                                | 3900                            | 16×25                        | 0.20         | 1872                                                         | 0.022                          | 0.044            | 2560                    | —               | UPW1C392MHD  |
|                                | 3900                            | 18×20                        | 0.20         | 1872                                                         | 0.028                          | 0.056            | 2490                    | —               | UPW1C392MHD6 |
|                                | 4700                            | 16×30.5                      | 0.22         | 2256                                                         | 0.018                          | 0.036            | 3010                    | —               | UPW1C472MHD  |
|                                | 4700                            | 18×25                        | 0.22         | 2256                                                         | 0.020                          | 0.040            | 2740                    | —               | UPW1C472MHD6 |
|                                | 5600                            | 16×35.5                      | 0.24         | 2688                                                         | 0.016                          | 0.032            | 3150                    | —               | UPW1C562MHD  |
|                                | 5600                            | 18×30.5                      | 0.24         | 2688                                                         | 0.016                          | 0.032            | 3635                    | —               | UPW1C562MHD6 |
|                                | 6800                            | 18×35.5                      | 0.26         | 3264                                                         | 0.015                          | 0.030            | 3680                    | —               | UPW1C682MHD  |
|                                | 8200                            | 18×35.5                      | 0.30         | 3936                                                         | 0.015                          | 0.030            | 3680                    | —               | UPW1C822MHD  |
|                                | 10000                           | 18×40                        | 0.34         | 4800                                                         | 0.014                          | 0.028            | 3800                    | —               | UPW1C103MHD  |
| 25<br>(1E)                     | 4.7                             | 5×11                         | 0.14         | 4                                                            | 0.60                           | 1.20             | 180                     | —               | ※UPW1E4R7MDD |
|                                | 10                              | 5×11                         | 0.14         | 7.5                                                          | 0.60                           | 1.20             | 180                     | —               | ※UPW1E100MDD |
|                                | 22                              | 5×11                         | 0.14         | 16.5                                                         | 0.60                           | 1.20             | 180                     | —               | ※UPW1E220MDD |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).

If there is no size code in the part number, please add size code "1" and then add the appropriate code.

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>( at 20°C after<br>1 minute ) | Impedance (Ω)<br>max. |                  | Rated Ripple<br>(mArms) |                 | Part Number   |
|--------------------------------|---------------------------|------------------------|-------|----------------------------------------------------------|-----------------------|------------------|-------------------------|-----------------|---------------|
|                                |                           |                        |       |                                                          | 20°C/<br>100kHz       | —10°C/<br>100kHz | 105°C/<br>100kHz        | 105°C/<br>120Hz |               |
| 25<br>(1E)                     | 33                        | 5×11                   | 0.14  | 24.75                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1E330MDD  |
|                                | 39                        | 5×11                   | 0.14  | 29.25                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1E390MDD  |
|                                | 47                        | 5×11                   | 0.14  | 35.25                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1E470MDD  |
|                                | 82                        | 6.3×11                 | 0.14  | 61.5                                                     | 0.25                  | 0.50             | 290                     | —               | ※UPW1E820MED  |
|                                | 100                       | 6.3×11                 | 0.14  | 75                                                       | 0.25                  | 0.50             | 290                     | —               | ※UPW1E101MED  |
|                                | 120                       | 6.3×15                 | 0.14  | 90                                                       | 0.23                  | 0.46             | 430                     | —               | ※UPW1E121MED  |
|                                | 150                       | 8×11.5                 | 0.14  | 112.5                                                    | 0.117                 | 0.234            | 555                     | —               | UPW1E151MPD   |
|                                | 220                       | 8×11.5                 | 0.14  | 165                                                      | 0.117                 | 0.234            | 555                     | —               | UPW1E221MPD   |
|                                | 330                       | 10×12.5                | 0.14  | 247.5                                                    | 0.090                 | 0.18             | 760                     | —               | UPW1E331MPD   |
|                                | 330                       | 8×15                   | 0.14  | 247.5                                                    | 0.085                 | 0.17             | 730                     | —               | UPW1E331MPD6  |
|                                | 470                       | 10×16                  | 0.14  | 352.5                                                    | 0.068                 | 0.136            | 1050                    | —               | UPW1E471MPD   |
|                                | 470                       | 8×20                   | 0.14  | 352.5                                                    | 0.065                 | 0.13             | 995                     | —               | UPW1E471MPD6  |
|                                | 560                       | 10×20                  | 0.14  | 420                                                      | 0.052                 | 0.104            | 1220                    | —               | UPW1E561MPD   |
|                                | 680                       | 10×20                  | 0.14  | 510                                                      | 0.052                 | 0.104            | 1220                    | —               | UPW1E681MPD   |
|                                | 820                       | 10×25                  | 0.14  | 615                                                      | 0.045                 | 0.090            | 1440                    | —               | UPW1E821MPD   |
|                                | 1000                      | 12.5×20                | 0.14  | 750                                                      | 0.038                 | 0.076            | 1660                    | —               | UPW1E102MHD   |
|                                | 1000                      | 10×30.5                | 0.14  | 750                                                      | 0.035                 | 0.070            | 1815                    | —               | UPW1E102MPD6  |
|                                | 1500                      | 16×25                  | 0.14  | 1125                                                     | 0.022                 | 0.044            | 2555                    | —               | UPW1E152MHD   |
|                                | 1500                      | 12.5×25                | 0.14  | 1125                                                     | 0.030                 | 0.060            | 1950                    | —               | UPW1E152MHD6  |
|                                | 1800                      | 12.5×30.5              | 0.14  | 1350                                                     | 0.025                 | 0.050            | 2310                    | —               | UPW1E182MHD   |
|                                | 1800                      | 16×20                  | 0.14  | 1350                                                     | 0.029                 | 0.058            | 2210                    | —               | UPW1E182MHD6  |
|                                | 2200                      | 16×25                  | 0.16  | 1650                                                     | 0.022                 | 0.044            | 2555                    | —               | UPW1E222MHD   |
|                                | 2200                      | 18×20                  | 0.16  | 1650                                                     | 0.028                 | 0.056            | 2490                    | —               | UPW1E222MHD6  |
|                                | 2200                      | 12.5×35.5              | 0.16  | 1650                                                     | 0.022                 | 0.044            | 2510                    | —               | UPW1E222MHD3  |
|                                | 2700                      | 16×25                  | 0.16  | 2025                                                     | 0.022                 | 0.044            | 2555                    | —               | UPW1E272MHD   |
|                                | 3300                      | 16×30.5                | 0.18  | 2475                                                     | 0.018                 | 0.036            | 3010                    | —               | UPW1E332MHD   |
|                                | 3300                      | 18×25                  | 0.18  | 2475                                                     | 0.020                 | 0.040            | 2740                    | —               | UPW1E332MHD6  |
|                                | 3900                      | 16×35.5                | 0.18  | 2925                                                     | 0.016                 | 0.032            | 3150                    | —               | UPW1E392MHD   |
|                                | 3900                      | 18×30.5                | 0.18  | 2925                                                     | 0.016                 | 0.032            | 3635                    | —               | UPW1E392MHD6  |
|                                | 4700                      | 18×35.5                | 0.20  | 3525                                                     | 0.015                 | 0.030            | 3680                    | —               | UPW1E472MHD   |
|                                | 6800                      | 18×40                  | 0.24  | 5100                                                     | 0.014                 | 0.028            | 3800                    | —               | UPW1E682MHD   |
| 35<br>(1V)                     | 4.7                       | 5×11                   | 0.12  | 4.935                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1V47R7MDD |
|                                | 10                        | 5×11                   | 0.12  | 10.5                                                     | 0.60                  | 1.20             | 180                     | —               | ※UPW1V100MDD  |
|                                | 22                        | 5×11                   | 0.12  | 23.1                                                     | 0.60                  | 1.20             | 180                     | —               | ※UPW1V220MDD  |
|                                | 27                        | 5×11                   | 0.12  | 28.35                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1V270MDD  |
|                                | 33                        | 5×11                   | 0.12  | 34.65                                                    | 0.60                  | 1.20             | 180                     | —               | ※UPW1V330MDD  |
|                                | 47                        | 6.3×11                 | 0.12  | 49.35                                                    | 0.25                  | 0.50             | 290                     | —               | ※UPW1V470MED  |
|                                | 56                        | 6.3×11                 | 0.12  | 58.8                                                     | 0.25                  | 0.50             | 290                     | —               | ※UPW1V560MED  |
|                                | 82                        | 6.3×15                 | 0.12  | 86.1                                                     | 0.23                  | 0.46             | 430                     | —               | ※UPW1V820MED  |
|                                | 100                       | 8×11.5                 | 0.12  | 105                                                      | 0.117                 | 0.234            | 555                     | —               | UPW1V101MPD   |
|                                | 150                       | 8×11.5                 | 0.12  | 157.5                                                    | 0.117                 | 0.234            | 555                     | —               | UPW1V151MPD   |
|                                | 220                       | 10×12.5                | 0.12  | 231                                                      | 0.090                 | 0.18             | 760                     | —               | UPW1V221MPD   |
|                                | 220                       | 8×15                   | 0.12  | 231                                                      | 0.085                 | 0.17             | 730                     | —               | UPW1V221MPD6  |
|                                | 330                       | 10×16                  | 0.12  | 346.5                                                    | 0.068                 | 0.136            | 1050                    | —               | UPW1V331MPD   |
|                                | 330                       | 8×20                   | 0.12  | 346.5                                                    | 0.065                 | 0.13             | 995                     | —               | UPW1V331MPD6  |
|                                | 390                       | 10×20                  | 0.12  | 409.5                                                    | 0.052                 | 0.104            | 1220                    | —               | UPW1V391MPD   |
|                                | 470                       | 10×20                  | 0.12  | 493.5                                                    | 0.052                 | 0.104            | 1220                    | —               | UPW1V471MPD   |
|                                | 560                       | 10×25                  | 0.12  | 588                                                      | 0.045                 | 0.090            | 1440                    | —               | UPW1V561MPD   |
|                                | 680                       | 12.5×20                | 0.12  | 714                                                      | 0.038                 | 0.076            | 1660                    | —               | UPW1V681MHD   |
|                                | 680                       | 10×30.5                | 0.12  | 714                                                      | 0.035                 | 0.070            | 1815                    | —               | UPW1V681MPD6  |
|                                | 1000                      | 12.5×25                | 0.12  | 1050                                                     | 0.030                 | 0.060            | 1950                    | —               | UPW1V102MHD   |
|                                | 1200                      | 12.5×30.5              | 0.12  | 1260                                                     | 0.025                 | 0.050            | 2310                    | —               | UPW1V122MHD   |
|                                | 1200                      | 16×20                  | 0.12  | 1260                                                     | 0.029                 | 0.058            | 2210                    | —               | UPW1V122MHD6  |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).

If there is no size code in the part number, please add size code "1" and then add the appropriate code.

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D×L (mm) | tan $\delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Impedance ( $\Omega$ )<br>max. |                  | Rated Ripple<br>(mArms) |                 | Part Number  |
|--------------------------------|---------------------------------|------------------------------|--------------|--------------------------------------------------------------|--------------------------------|------------------|-------------------------|-----------------|--------------|
|                                |                                 |                              |              |                                                              | 20°C/<br>100kHz                | -10°C/<br>100kHz | 105°C/<br>100kHz        | 105°C/<br>120Hz |              |
| 35<br>(1V)                     | 1500                            | 16×25                        | 0.12         | 1575                                                         | 0.022                          | 0.044            | 2555                    | —               | UPW1V152MHD  |
|                                | 1500                            | 12.5×35.5                    | 0.12         | 1575                                                         | 0.022                          | 0.044            | 2510                    | —               | UPW1V152MHD6 |
|                                | 1800                            | 16×25                        | 0.12         | 1890                                                         | 0.022                          | 0.044            | 2555                    | —               | UPW1V182MHD  |
|                                | 1800                            | 18×20                        | 0.12         | 1890                                                         | 0.028                          | 0.056            | 2490                    | —               | UPW1V182MHD6 |
|                                | 2200                            | 16×30.5                      | 0.14         | 2310                                                         | 0.018                          | 0.036            | 3010                    | —               | UPW1V222MHD  |
|                                | 2200                            | 18×25                        | 0.14         | 2310                                                         | 0.020                          | 0.040            | 2740                    | —               | UPW1V222MHD6 |
|                                | 2700                            | 16×35.5                      | 0.14         | 2835                                                         | 0.016                          | 0.032            | 3150                    | —               | UPW1V272MHD  |
|                                | 2700                            | 18×30.5                      | 0.14         | 2835                                                         | 0.016                          | 0.032            | 3635                    | —               | UPW1V272MHD6 |
|                                | 3300                            | 18×35.5                      | 0.16         | 3465                                                         | 0.015                          | 0.030            | 3680                    | —               | UPW1V332MHD  |
|                                | 4700                            | 18×40                        | 0.18         | 4935                                                         | 0.014                          | 0.028            | 3800                    | —               | UPW1V472MHD  |
| 50<br>(1H)                     | 2.2                             | 5×11                         | 0.10         | 4                                                            | 3.00                           | 6.00             | 55                      | —               | ※UPW1H2R2MDD |
|                                | 3.3                             | 5×11                         | 0.10         | 4.95                                                         | 2.60                           | 5.20             | 65                      | —               | ※UPW1H3R3MDD |
|                                | 4.7                             | 5×11                         | 0.10         | 7.05                                                         | 2.30                           | 4.60             | 90                      | —               | ※UPW1H4R7MDD |
|                                | 10                              | 5×11                         | 0.10         | 15                                                           | 1.40                           | 2.80             | 120                     | —               | ※UPW1H100MDD |
|                                | 18                              | 5×11                         | 0.10         | 27                                                           | 1.30                           | 2.60             | 155                     | —               | ※UPW1H180MDD |
|                                | 22                              | 5×11                         | 0.10         | 33                                                           | 1.20                           | 2.40             | 170                     | —               | ※UPW1H220MDD |
|                                | 33                              | 6.3×11                       | 0.10         | 49.5                                                         | 0.43                           | 0.86             | 300                     | —               | ※UPW1H330MED |
|                                | 47                              | 6.3×11                       | 0.10         | 70.5                                                         | 0.43                           | 0.86             | 300                     | —               | ※UPW1H470MED |
|                                | 56                              | 6.3×15                       | 0.10         | 84                                                           | 0.40                           | 0.80             | 360                     | —               | ※UPW1H560MED |
|                                | 82                              | 8×11.5                       | 0.10         | 123                                                          | 0.234                          | 0.468            | 485                     | —               | UPW1H820MPD  |
|                                | 100                             | 8×11.5                       | 0.10         | 150                                                          | 0.234                          | 0.468            | 485                     | —               | UPW1H101MPD  |
|                                | 120                             | 8×15                         | 0.10         | 180                                                          | 0.155                          | 0.31             | 635                     | —               | UPW1H121MPD  |
|                                | 120                             | 10×12.5                      | 0.10         | 180                                                          | 0.162                          | 0.324            | 620                     | —               | UPW1H121MPD6 |
|                                | 150                             | 10×12.5                      | 0.10         | 225                                                          | 0.162                          | 0.324            | 615                     | —               | UPW1H151MPD  |
|                                | 180                             | 8×20                         | 0.10         | 270                                                          | 0.12                           | 0.24             | 860                     | —               | UPW1H181MPD  |
|                                | 180                             | 10×16                        | 0.10         | 270                                                          | 0.119                          | 0.238            | 850                     | —               | UPW1H181MPD6 |
|                                | 220                             | 10×16                        | 0.10         | 330                                                          | 0.119                          | 0.238            | 850                     | —               | UPW1H221MPD  |
|                                | 220                             | 10×20                        | 0.10         | 330                                                          | 0.090                          | 0.18             | 1030                    | —               | UPW1H221MPD6 |
|                                | 270                             | 10×25                        | 0.10         | 405                                                          | 0.082                          | 0.164            | 1200                    | —               | UPW1H271MPD  |
|                                | 330                             | 10×20                        | 0.10         | 495                                                          | 0.090                          | 0.18             | 1030                    | —               | UPW1H331MPD  |
|                                | 330                             | 10×30.5                      | 0.10         | 495                                                          | 0.060                          | 0.12             | 1610                    | —               | UPW1H331MPD6 |
|                                | 390                             | 12.5×20                      | 0.10         | 585                                                          | 0.063                          | 0.126            | 1480                    | —               | UPW1H391MHD  |
|                                | 470                             | 12.5×20                      | 0.10         | 705                                                          | 0.060                          | 0.12             | 1500                    | —               | UPW1H471MHD  |
|                                | 560                             | 12.5×25                      | 0.10         | 840                                                          | 0.050                          | 0.10             | 1832                    | —               | UPW1H561MHD  |
|                                | 680                             | 12.5×25                      | 0.10         | 1020                                                         | 0.050                          | 0.10             | 1840                    | —               | UPW1H681MHD  |
|                                | 680                             | 16×20                        | 0.10         | 1020                                                         | 0.048                          | 0.096            | 1840                    | —               | UPW1H681MHD6 |
|                                | 820                             | 12.5×35.5                    | 0.10         | 1230                                                         | 0.034                          | 0.068            | 2290                    | —               | UPW1H821MHD  |
|                                | 820                             | 18×20                        | 0.10         | 1230                                                         | 0.042                          | 0.084            | 2420                    | —               | UPW1H821MHD6 |
|                                | 1000                            | 16×25                        | 0.10         | 1500                                                         | 0.034                          | 0.068            | 2235                    | —               | UPW1H102MHD  |
|                                | 1200                            | 16×30.5                      | 0.10         | 1800                                                         | 0.028                          | 0.056            | 2700                    | —               | UPW1H122MHD  |
|                                | 1200                            | 18×25                        | 0.10         | 1800                                                         | 0.029                          | 0.058            | 2610                    | —               | UPW1H122MHD6 |
|                                | 1500                            | 16×30.5                      | 0.10         | 2250                                                         | 0.028                          | 0.056            | 2700                    | —               | UPW1H152MHD  |
|                                | 1500                            | 16×35.5                      | 0.10         | 2250                                                         | 0.025                          | 0.050            | 2790                    | —               | UPW1H152MHD6 |
|                                | 1800                            | 18×30.5                      | 0.10         | 2700                                                         | 0.025                          | 0.050            | 3000                    | —               | UPW1H182MHD  |
|                                | 2200                            | 18×35.5                      | 0.12         | 3300                                                         | 0.023                          | 0.046            | 3100                    | —               | UPW1H222MHD  |
| 63<br>(1J)                     | 4.7                             | 5×11                         | 0.09         | 8.883                                                        | 4.70                           | 9.40             | 68                      | —               | ※UPW1J4R7MDD |
|                                | 6.8                             | 5×11                         | 0.09         | 12.852                                                       | 2.50                           | 5.00             | 95                      | —               | ※UPW1J6R8MDD |
|                                | 10                              | 5×11                         | 0.09         | 18.9                                                         | 2.10                           | 4.20             | 110                     | —               | ※UPW1J100MDD |
|                                | 12                              | 5×11                         | 0.09         | 22.68                                                        | 2.00                           | 4.00             | 145                     | —               | ※UPW1J120MDD |
|                                | 15                              | 6.3×11                       | 0.09         | 28.35                                                        | 1.20                           | 2.40             | 160                     | —               | ※UPW1J150MED |
|                                | 22                              | 6.3×11                       | 0.09         | 41.58                                                        | 0.71                           | 1.42             | 250                     | —               | ※UPW1J220MED |
|                                | 33                              | 6.3×11                       | 0.09         | 62.37                                                        | 0.71                           | 1.42             | 250                     | —               | ※UPW1J330MED |
|                                | 39                              | 6.3×15                       | 0.09         | 73.71                                                        | 0.70                           | 1.40             | 330                     | —               | ※UPW1J390MED |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>( at 20°C after<br>1 minute ) | Impedance (Ω)<br>max. |                  | Rated Ripple<br>(mArms) |                 | Part Number  |
|--------------------------------|---------------------------|------------------------|-------|----------------------------------------------------------|-----------------------|------------------|-------------------------|-----------------|--------------|
|                                |                           |                        |       |                                                          | 20°C/<br>100kHz       | —10°C/<br>100kHz | 105°C/<br>100kHz        | 105°C/<br>120Hz |              |
| 63<br>(1J)                     | 47                        | 8×11.5                 | 0.09  | 88.83                                                    | 0.342                 | 0.684            | 405                     | —               | UPW1J470MPD  |
|                                | 68                        | 8×11.5                 | 0.09  | 128.52                                                   | 0.342                 | 0.684            | 405                     | —               | UPW1J680MPD  |
|                                | 100                       | 10×12.5                | 0.09  | 189                                                      | 0.256                 | 0.512            | 540                     | —               | UPW1J101MPD  |
|                                | 100                       | 8×15                   | 0.09  | 189                                                      | 0.23                  | 0.46             | 535                     | —               | UPW1J101MPD6 |
|                                | 120                       | 10×16                  | 0.09  | 226.8                                                    | 0.194                 | 0.388            | 600                     | —               | UPW1J121MPD  |
|                                | 150                       | 10×16                  | 0.09  | 283.5                                                    | 0.194                 | 0.388            | 660                     | —               | UPW1J151MPD  |
|                                | 180                       | 10×20                  | 0.09  | 340.2                                                    | 0.147                 | 0.294            | 890                     | —               | UPW1J181MPD  |
|                                | 180                       | 12.5×15                | 0.09  | 340.2                                                    | 0.15                  | 0.30             | 1020                    | —               | UPW1J181MHD6 |
|                                | 220                       | 10×20                  | 0.09  | 415.8                                                    | 0.147                 | 0.294            | 885                     | —               | UPW1J221MPD  |
|                                | 220                       | 10×25                  | 0.09  | 415.8                                                    | 0.13                  | 0.26             | 1050                    | —               | UPW1J221MPD6 |
|                                | 270                       | 16×15                  | 0.09  | 510.3                                                    | 0.090                 | 0.18             | 1410                    | —               | UPW1J271MHD  |
|                                | 330                       | 12.5×20                | 0.09  | 623.7                                                    | 0.085                 | 0.17             | 1290                    | —               | UPW1J331MHD  |
|                                | 390                       | 12.5×25                | 0.09  | 737.1                                                    | 0.070                 | 0.14             | 1720                    | —               | UPW1J391MHD  |
|                                | 390                       | 18×15                  | 0.09  | 737.1                                                    | 0.086                 | 0.172            | 1690                    | —               | UPW1J391MHD6 |
|                                | 470                       | 12.5×25                | 0.09  | 888.3                                                    | 0.070                 | 0.14             | 1720                    | —               | UPW1J471MHD  |
|                                | 470                       | 12.5×30.5              | 0.09  | 888.3                                                    | 0.055                 | 0.11             | 2090                    | —               | UPW1J471MHD6 |
|                                | 470                       | 16×20                  | 0.09  | 888.3                                                    | 0.059                 | 0.118            | 1770                    | —               | UPW1J471MHD3 |
|                                | 680                       | 16×25                  | 0.09  | 1285.2                                                   | 0.050                 | 0.10             | 2160                    | —               | UPW1J681MHD  |
|                                | 680                       | 12.5×35.5              | 0.09  | 1285.2                                                   | 0.047                 | 0.094            | 2270                    | —               | UPW1J681MHD6 |
|                                | 680                       | 18×20                  | 0.09  | 1285.2                                                   | 0.055                 | 0.11             | 2290                    | —               | UPW1J681MHD3 |
|                                | 820                       | 16×30.5                | 0.09  | 1549.8                                                   | 0.043                 | 0.086            | 2670                    | —               | UPW1J821MHD  |
|                                | 820                       | 18×25                  | 0.09  | 1549.8                                                   | 0.043                 | 0.086            | 2590                    | —               | UPW1J821MHD6 |
|                                | 1000                      | 16×30.5                | 0.09  | 1890                                                     | 0.043                 | 0.086            | 2770                    | —               | UPW1J102MHD  |
|                                | 1000                      | 16×35.5                | 0.09  | 1890                                                     | 0.036                 | 0.072            | 2770                    | —               | UPW1J102MHD6 |
|                                | 1200                      | 18×30.5                | 0.09  | 2268                                                     | 0.032                 | 0.064            | 2950                    | —               | UPW1J122MHD  |
|                                | 1500                      | 18×35.5                | 0.09  | 2835                                                     | 0.030                 | 0.060            | 3100                    | —               | UPW1J152MHD  |
|                                | 2200                      | 18×40                  | 0.11  | 4158                                                     | 0.028                 | 0.056            | 3200                    | —               | UPW1J222MHD  |
| 100<br>(2A)                    | 2.2                       | 5×11                   | 0.08  | 6.6                                                      | 9.80                  | 19.60            | 44                      | —               | ※UPW2A2R2MDD |
|                                | 3.3                       | 5×11                   | 0.08  | 9.9                                                      | 6.60                  | 13.20            | 58                      | —               | ※UPW2A3R3MDD |
|                                | 4.7                       | 5×11                   | 0.08  | 14.1                                                     | 4.60                  | 9.20             | 74                      | —               | ※UPW2A4R7MDD |
|                                | 6.8                       | 5×11                   | 0.08  | 20.4                                                     | 3.50                  | 7.00             | 95                      | —               | ※UPW2A6R8MDD |
|                                | 10                        | 6.3×11                 | 0.08  | 30                                                       | 1.80                  | 3.60             | 130                     | —               | ※UPW2A100MED |
|                                | 15                        | 8×11.5                 | 0.08  | 45                                                       | 0.83                  | 1.66             | 180                     | —               | UPW2A150MPD  |
|                                | 18                        | 6.3×15                 | 0.08  | 54                                                       | 0.80                  | 1.60             | 200                     | —               | ※UPW2A180MED |
|                                | 22                        | 8×11.5                 | 0.08  | 66                                                       | 0.68                  | 1.36             | 230                     | —               | UPW2A220MPD  |
|                                | 33                        | 10×12.5                | 0.08  | 99                                                       | 0.46                  | 0.92             | 320                     | —               | UPW2A330MPD  |
|                                | 33                        | 8×15                   | 0.08  | 99                                                       | 0.45                  | 0.90             | 360                     | —               | UPW2A330MPD6 |
|                                | 47                        | 10×16                  | 0.08  | 141                                                      | 0.37                  | 0.74             | 420                     | —               | UPW2A470MPD  |
|                                | 47                        | 8×20                   | 0.08  | 141                                                      | 0.37                  | 0.74             | 420                     | —               | UPW2A470MPD6 |
|                                | 68                        | 10×20                  | 0.08  | 204                                                      | 0.30                  | 0.60             | 490                     | —               | UPW2A680MPD  |
|                                | 82                        | 10×25                  | 0.08  | 246                                                      | 0.25                  | 0.50             | 540                     | —               | UPW2A820MPD  |
|                                | 100                       | 12.5×20                | 0.08  | 300                                                      | 0.18                  | 0.36             | 580                     | —               | UPW2A101MHD  |
|                                | 150                       | 12.5×25                | 0.08  | 450                                                      | 0.13                  | 0.26             | 710                     | —               | UPW2A151MHD  |
|                                | 180                       | 12.5×30.5              | 0.08  | 540                                                      | 0.12                  | 0.24             | 790                     | —               | UPW2A181MHD  |
|                                | 180                       | 16×20                  | 0.08  | 540                                                      | 0.13                  | 0.26             | 750                     | —               | UPW2A181MHD6 |
|                                | 220                       | 16×25                  | 0.08  | 660                                                      | 0.10                  | 0.20             | 890                     | —               | UPW2A221MHD  |
|                                | 220                       | 18×20                  | 0.08  | 660                                                      | 0.11                  | 0.22             | 850                     | —               | UPW2A221MHD6 |
|                                | 330                       | 16×25                  | 0.08  | 990                                                      | 0.090                 | 0.18             | 1080                    | —               | UPW2A331MHD  |
|                                | 390                       | 18×25                  | 0.08  | 1170                                                     | 0.083                 | 0.166            | 1260                    | —               | UPW2A391MHD  |
|                                | 470                       | 16×30.5                | 0.08  | 1410                                                     | 0.076                 | 0.152            | 1310                    | —               | UPW2A471MHD  |
|                                | 560                       | 18×30.5                | 0.08  | 1680                                                     | 0.068                 | 0.136            | 1370                    | —               | UPW2A561MHD  |
|                                | 680                       | 16×35.5                | 0.08  | 2040                                                     | 0.064                 | 0.128            | 1410                    | —               | UPW2A681MHD  |
|                                | 1000                      | 18×40                  | 0.08  | 3000                                                     | 0.047                 | 0.094            | 1520                    | —               | UPW2A102MHD  |

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CAT.8100L

UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>(at 20°C after<br>1 minute) | Rated Ripple<br>(mArms) |                 | Part Number   |
|--------------------------------|---------------------------|------------------------|-------|--------------------------------------------------------|-------------------------|-----------------|---------------|
|                                |                           |                        |       |                                                        | 105°C/<br>100kHz        | 105°C/<br>120Hz |               |
| 160<br>(2C)                    | 0.47                      | 6.3 × 11               | 0.15  | 47.52                                                  | —                       | 12              | ※UPW2CR47MED  |
|                                | 1                         | 6.3 × 11               | 0.15  | 56                                                     | —                       | 17              | ※UPW2C010MED  |
|                                | 2.2                       | 6.3 × 11               | 0.15  | 75.2                                                   | —                       | 25              | ※UPW2C2R2MED  |
|                                | 3.3                       | 8 × 11.5               | 0.15  | 92.8                                                   | —                       | 36              | ※UPW2C3R3MPD  |
|                                | 4.7                       | 8 × 11.5               | 0.15  | 115.2                                                  | —                       | 43              | ※UPW2C4R7MPD  |
|                                | 10                        | 10 × 12.5              | 0.15  | 164                                                    | —                       | 70              | ※UPW2C100MPD  |
|                                | 22                        | 10 × 20                | 0.15  | 240.8                                                  | —                       | 130             | ※UPW2C220MPD  |
|                                | 33                        | 12.5 × 20              | 0.15  | 311.2                                                  | —                       | 180             | ※UPW2C330MHD  |
|                                | 47                        | 12.5 × 25              | 0.15  | 400.8                                                  | —                       | 220             | ※UPW2C470MHD  |
|                                | 100                       | 16 × 25                | 0.15  | 740                                                    | —                       | 330             | ※UPW2C101MHD  |
|                                | 220                       | 18 × 35.5              | 0.15  | 1508                                                   | —                       | 500             | ※UPW2C221MHD  |
|                                | 220                       | 20 × 31                | 0.15  | 1508                                                   | —                       | 500             | ※UPW2C221MRD6 |
|                                | 330                       | 20 × 40                | 0.15  | 2212                                                   | —                       | 900             | ※UPW2C331MRD  |
|                                | 470                       | 22 × 50                | 0.15  | 3108                                                   | —                       | 1200            | ※UPW2C471MRD  |
| 200<br>(2D)                    | 0.47                      | 6.3 × 11               | 0.15  | 49.4                                                   | —                       | 12              | ※UPW2DR47MED  |
|                                | 1                         | 6.3 × 11               | 0.15  | 60                                                     | —                       | 17              | ※UPW2D010MED  |
|                                | 2.2                       | 6.3 × 11               | 0.15  | 84                                                     | —                       | 25              | ※UPW2D2R2MED  |
|                                | 3.3                       | 8 × 11.5               | 0.15  | 106                                                    | —                       | 36              | ※UPW2D3R3MPD  |
|                                | 4.7                       | 10 × 12.5              | 0.15  | 134                                                    | —                       | 50              | ※UPW2D4R7MPD  |
|                                | 10                        | 10 × 16                | 0.15  | 180                                                    | —                       | 80              | ※UPW2D100MPD  |
|                                | 22                        | 10 × 20                | 0.15  | 276                                                    | —                       | 140             | ※UPW2D220MPD  |
|                                | 33                        | 12.5 × 25              | 0.15  | 364                                                    | —                       | 190             | ※UPW2D330MHD  |
|                                | 47                        | 12.5 × 25              | 0.15  | 476                                                    | —                       | 220             | ※UPW2D470MHD  |
|                                | 100                       | 16 × 30.5              | 0.15  | 900                                                    | —                       | 335             | ※UPW2D101MHD  |
|                                | 220                       | 18 × 40                | 0.15  | 1860                                                   | —                       | 515             | ※UPW2D221MHD  |
|                                | 220                       | 20 × 35                | 0.15  | 1860                                                   | —                       | 515             | ※UPW2D221MRD6 |
|                                | 330                       | 22 × 40                | 0.15  | 2740                                                   | —                       | 1100            | ※UPW2D331MRD  |
|                                | 470                       | 22 × 50                | 0.15  | 3860                                                   | —                       | 1310            | ※UPW2D471MRD  |
| 250<br>(2E)                    | 0.47                      | 6.3 × 11               | 0.15  | 51.75                                                  | —                       | 12              | ※UPW2ER47MED  |
|                                | 1                         | 6.3 × 11               | 0.15  | 65                                                     | —                       | 17              | ※UPW2E010MED  |
|                                | 2.2                       | 8 × 11.5               | 0.15  | 95                                                     | —                       | 29              | ※UPW2E2R2MPD  |
|                                | 3.3                       | 10 × 12.5              | 0.15  | 122.5                                                  | —                       | 42              | ※UPW2E3R3MPD  |
|                                | 4.7                       | 10 × 12.5              | 0.15  | 147                                                    | —                       | 50              | ※UPW2E4R7MPD  |
|                                | 10                        | 10 × 20                | 0.15  | 200                                                    | —                       | 88              | ※UPW2E100MPD  |
|                                | 22                        | 12.5 × 25              | 0.15  | 320                                                    | —                       | 155             | ※UPW2E220MHD  |
|                                | 33                        | 12.5 × 25              | 0.15  | 430                                                    | —                       | 190             | ※UPW2E330MHD  |
|                                | 47                        | 16 × 25                | 0.15  | 570                                                    | —                       | 230             | ※UPW2E470MHD  |
|                                | 100                       | 18 × 35.5              | 0.15  | 1100                                                   | —                       | 340             | ※UPW2E101MHD  |
|                                | 100                       | 20 × 31                | 0.15  | 1100                                                   | —                       | 340             | ※UPW2E101MRD6 |
|                                | 220                       | 20 × 40                | 0.15  | 2300                                                   | —                       | 525             | ※UPW2E221MRD  |
|                                | 330                       | 22 × 50                | 0.15  | 3400                                                   | —                       | 1150            | ※UPW2E331MRD  |
|                                | 470                       | 25 × 50                | 0.15  | 4800                                                   | —                       | 1350            | ※UPW2E471MRD  |

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UPW

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | tan $\delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Rated Ripple<br>(mArms) |                 | Part Number   |
|--------------------------------|---------------------------------|---------------------------------------|--------------|--------------------------------------------------------------|-------------------------|-----------------|---------------|
|                                |                                 |                                       |              |                                                              | 105°C/<br>100kHz        | 105°C/<br>120Hz |               |
| 315<br>(2F)                    | 0.47                            | 8 $\times$ 11.5                       | 0.20         | 54.805                                                       | —                       | 11              | ※UPW2FR47MPD  |
|                                | 1                               | 8 $\times$ 11.5                       | 0.20         | 71.5                                                         | —                       | 16              | ※UPW2F010MPD  |
|                                | 2.2                             | 10 $\times$ 12.5                      | 0.20         | 109.3                                                        | —                       | 28              | ※UPW2F2R2MPD  |
|                                | 3.3                             | 10 $\times$ 12.5                      | 0.20         | 141.58                                                       | —                       | 34              | ※UPW2F3R3MPD  |
|                                | 4.7                             | 10 $\times$ 16                        | 0.20         | 159.22                                                       | —                       | 45              | ※UPW2F4R7MPD  |
|                                | 10                              | 10 $\times$ 20                        | 0.20         | 226                                                          | —                       | 72              | ※UPW2F100MPD  |
|                                | 22                              | 12.5 $\times$ 25                      | 0.20         | 377.2                                                        | —                       | 120             | ※UPW2F220MHD  |
|                                | 33                              | 16 $\times$ 25                        | 0.20         | 515.8                                                        | —                       | 155             | ※UPW2F330MHD  |
|                                | 47                              | 16 $\times$ 35.5                      | 0.20         | 692.2                                                        | —                       | 190             | ※UPW2F470MHD  |
|                                | 100                             | 18 $\times$ 40                        | 0.20         | 1360                                                         | —                       | 285             | ※UPW2F101MHD  |
|                                | 100                             | 20 $\times$ 35                        | 0.20         | 1360                                                         | —                       | 285             | ※UPW2F101MRD6 |
|                                | 220                             | 22 $\times$ 50                        | 0.20         | 2872                                                         | —                       | 540             | ※UPW2F221MRD  |
| 350<br>(2V)                    | 0.47                            | 8 $\times$ 11.5                       | 0.20         | 56.45                                                        | —                       | 11              | ※UPW2VR47MPD  |
|                                | 1                               | 10 $\times$ 12.5                      | 0.20         | 75                                                           | —                       | 17              | ※UPW2V010MPD  |
|                                | 2.2                             | 10 $\times$ 16                        | 0.20         | 117                                                          | —                       | 31              | ※UPW2V2R2MPD  |
|                                | 3.3                             | 10 $\times$ 16                        | 0.20         | 146.2                                                        | —                       | 38              | ※UPW2V3R3MPD  |
|                                | 4.7                             | 10 $\times$ 20                        | 0.20         | 165.8                                                        | —                       | 49              | ※UPW2V4R7MPD  |
|                                | 10                              | 12.5 $\times$ 20                      | 0.20         | 240                                                          | —                       | 82              | ※UPW2V100MHD  |
|                                | 22                              | 16 $\times$ 25                        | 0.20         | 408                                                          | —                       | 130             | ※UPW2V220MHD  |
|                                | 33                              | 16 $\times$ 30.5                      | 0.20         | 562                                                          | —                       | 160             | ※UPW2V330MHD  |
|                                | 47                              | 18 $\times$ 35.5                      | 0.20         | 758                                                          | —                       | 200             | ※UPW2V470MHD  |
|                                | 47                              | 20 $\times$ 31                        | 0.20         | 758                                                          | —                       | 200             | ※UPW2V470MRD6 |
|                                | 100                             | 20 $\times$ 40                        | 0.20         | 1500                                                         | —                       | 290             | ※UPW2V101MRD  |
|                                | 220                             | 25 $\times$ 50                        | 0.20         | 3180                                                         | —                       | 550             | ※UPW2V221MRD  |
| 400<br>(2G)                    | 1                               | 10 $\times$ 12.5                      | 0.25         | 80                                                           | —                       | 16              | ※UPW2G010MPD  |
|                                | 2.2                             | 10 $\times$ 16                        | 0.25         | 128                                                          | —                       | 27              | ※UPW2G2R2MPD  |
|                                | 3.3                             | 10 $\times$ 20                        | 0.25         | 152.8                                                        | —                       | 36              | ※UPW2G3R3MPD  |
|                                | 4.7                             | 10 $\times$ 20                        | 0.25         | 175.2                                                        | —                       | 43              | ※UPW2G4R7MPD  |
|                                | 10                              | 12.5 $\times$ 25                      | 0.25         | 260                                                          | —                       | 72              | ※UPW2G100MHD  |
|                                | 22                              | 16 $\times$ 25                        | 0.25         | 452                                                          | —                       | 110             | ※UPW2G220MHD  |
|                                | 33                              | 16 $\times$ 30.5                      | 0.25         | 628                                                          | —                       | 140             | ※UPW2G330MHD  |
|                                | 47                              | 18 $\times$ 35.5                      | 0.25         | 852                                                          | —                       | 170             | ※UPW2G470MHD  |
|                                | 47                              | 20 $\times$ 31                        | 0.25         | 852                                                          | —                       | 170             | ※UPW2G470MRD6 |
|                                | 100                             | 22 $\times$ 50                        | 0.25         | 1700                                                         | —                       | 350             | ※UPW2G101MRD  |
| 450<br>(2W)                    | 1                               | 10 $\times$ 12.5                      | 0.25         | 85                                                           | —                       | 18              | ※UPW2W010MPD  |
|                                | 2.2                             | 10 $\times$ 20                        | 0.25         | 139                                                          | —                       | 29              | ※UPW2W2R2MPD  |
|                                | 3.3                             | 12.5 $\times$ 20                      | 0.25         | 159.4                                                        | —                       | 41              | ※UPW2W3R3MHD  |
|                                | 4.7                             | 12.5 $\times$ 20                      | 0.25         | 184.6                                                        | —                       | 49              | ※UPW2W4R7MHD  |
|                                | 10                              | 16 $\times$ 25                        | 0.25         | 280                                                          | —                       | 75              | ※UPW2W100MHD  |
|                                | 22                              | 16 $\times$ 30.5                      | 0.25         | 496                                                          | —                       | 115             | ※UPW2W220MHD  |
|                                | 33                              | 18 $\times$ 35.5                      | 0.25         | 694                                                          | —                       | 145             | ※UPW2W330MHD  |
|                                | 33                              | 20 $\times$ 31                        | 0.25         | 694                                                          | —                       | 145             | ※UPW2W330MRD6 |
|                                | 47                              | 20 $\times$ 40                        | 0.25         | 946                                                          | —                       | 175             | ※UPW2W470MRD  |
|                                | 100                             | 25 $\times$ 50                        | 0.25         | 1900                                                         | —                       | 350             | ※UPW2W101MRD  |

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- For formed lead or taped product specifications and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.