# S-1711 Series

## 6.5 V INPUT, 150 mA, 2-CIRCUIT VOLTAGE REGULATOR

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The S-1711 Series is a 2-channel positive voltage regulator with a low dropout voltage, high-accuracy output voltage, and low current consumption (150 mA output current) developed based on CMOS technology.
A 1.0 µF small ceramic capacitor can be used, and a 2-circuit voltage regulator with ±1.0% high-accuracy output voltage is incorporated in SOT-23-6 or super-small SNT-6A package. A/ B/ E/ F type is provided with a discharge shunt function allowing high-speed output response when the ON/OFF pin is used.
Compared with the conventional 150 mA output current 2-channel CMOS voltage regulators, high-density mounting is realized by using super-small SNT-6A package and a small ceramic capacitor. Also, the low current consumption makes the S-1711 Series ideal for mobile devices.

## ■ Features

- Output voltage: 1.5 V to 5.5 V, selectable in 0.1 V step
- Input voltage: 2.0 V to 6.5 V
- Output voltage accuracy: ±1.0%
- Dropout voltage: 200 mV typ. (3.0 V output product, $I_{OUT}$ = 150 mA)
- Current consumption: During operation: 70 µA typ., 90 µA max. (Per circuit)
  During power-off: 0.1 µA typ., 1.0 µA max.
- Output current: Possible to output 150 mA ($V_{IN} \geq V_{OUT(S)}$ + 1.0 V)*1 (Per circuit)
- Input and output capacitors: A ceramic capacitor of 1.0 µF or more can be used.
- Ripple rejection: 70 dB typ. (f = 1.0 kHz)
- Built-in overcurrent protection circuit: Limits overcurrent of output transistor.
- Built-in ON/OFF circuit: Ensures long battery life.
  Discharge shunt function "available" / "unavailable" is selectable.
  Pull-down function "available" / "unavailable" is selectable.
- Operation temperature range: Ta = –40°C to +85°C
- Lead-free, Sn 100%, halogen-free*2

***1.** Attention should be paid to the power dissipation of the package when the output current is large.
***2.** Refer to "■ **Product Name Structure**" for details.

## ■ Applications

- Constant-voltage power supply for cellular phone
- Constant-voltage power supply for battery-powered device
- Constant-voltage power supply for home electric appliance

## ■ Packages

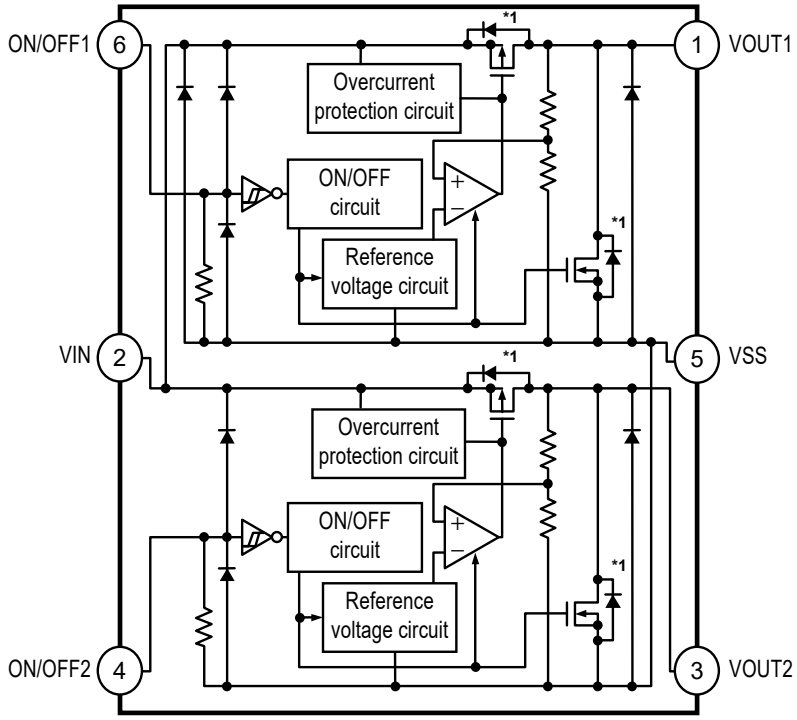
- SNT-6A
- SOT-23-6



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## ■ Block Diagrams

### 1. S-1711 Series A type

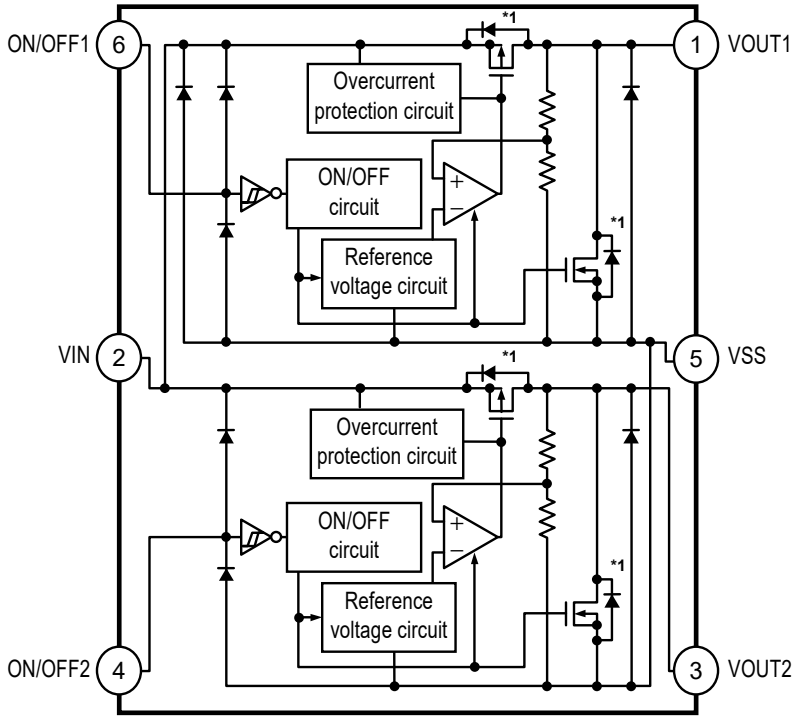



| Function | Status |
|---|---|
| ON/OFF logic | Active "H" |
| Discharge shunt function | Available |
| Pull-up resistor | None |
| Pull-down resistor | Available |

***1.** Parasitic diode

**Figure 1**

### 2. S-1711 Series B type




| Function | Status |
|---|---|
| ON/OFF logic | Active "H" |
| Discharge shunt function | Available |
| Pull-up resistor | None |
| Pull-down resistor | None |

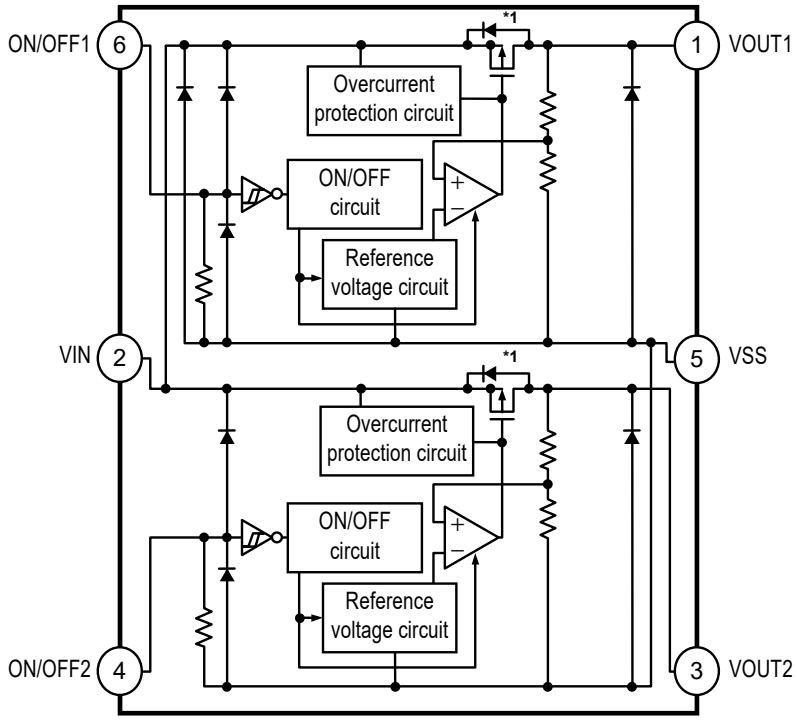
***1.** Parasitic diode

**Figure 2**



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### 3. S-1711 Series C type

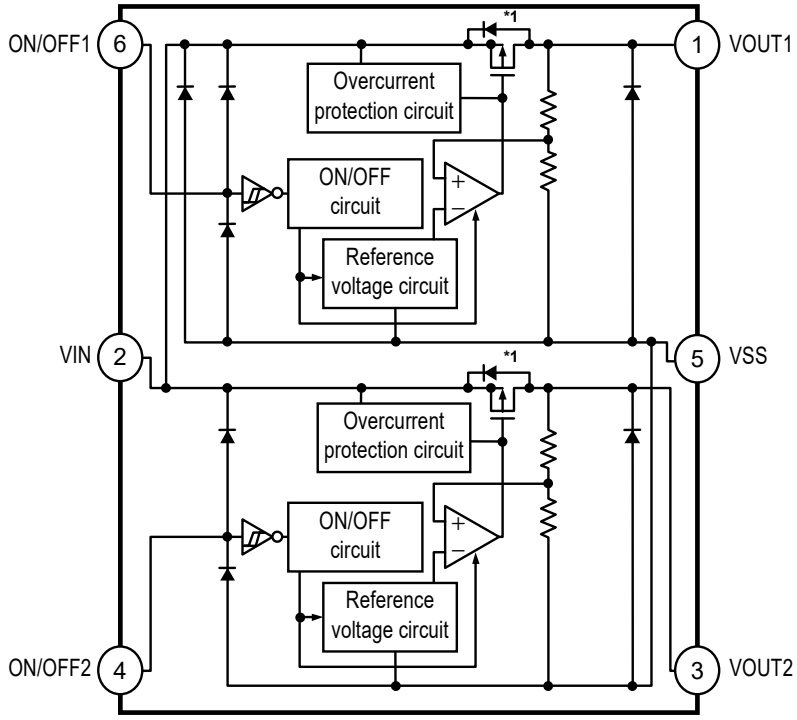



| Function | Status |
|---|---|
| ON/OFF logic | Active "H" |
| Discharge shunt function | None |
| Pull-up resistor | None |
| Pull-down resistor | Available |

***1.** Parasitic diode

**Figure 3**

### 4. S-1711 Series D type




| Function | Status |
|---|---|
| ON/OFF logic | Active "H" |
| Discharge shunt function | None |
| Pull-up resistor | None |
| Pull-down resistor | None |

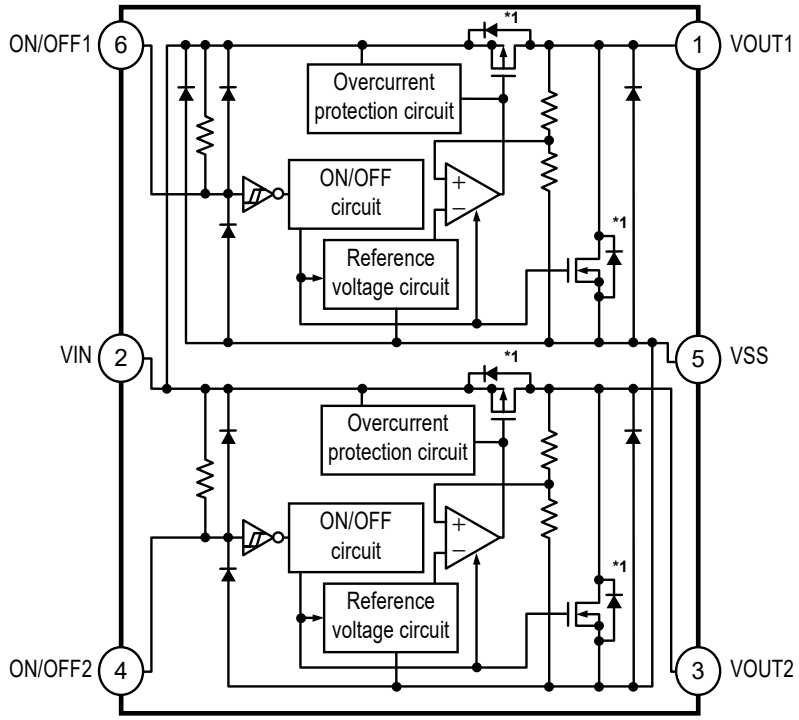
***1.** Parasitic diode

**Figure 4**



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### 5. S-1711 Series E type

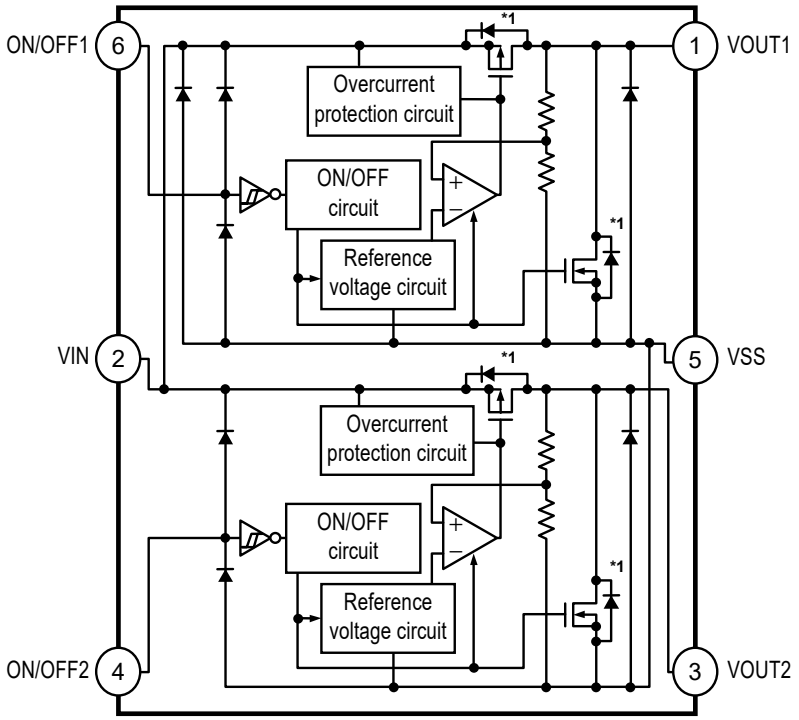



| Function | Status |
|---|---|
| ON/OFF logic | Active "L" |
| Discharge shunt function | Available |
| Pull-up resistor | Available |
| Pull-down resistor | None |

***1.** Parasitic diode

**Figure 5**

### 6. S-1711 Series F type




| Function | Status |
|---|---|
| ON/OFF logic | Active "L" |
| Discharge shunt function | Available |
| Pull-up resistor | None |
| Pull-down resistor | None |

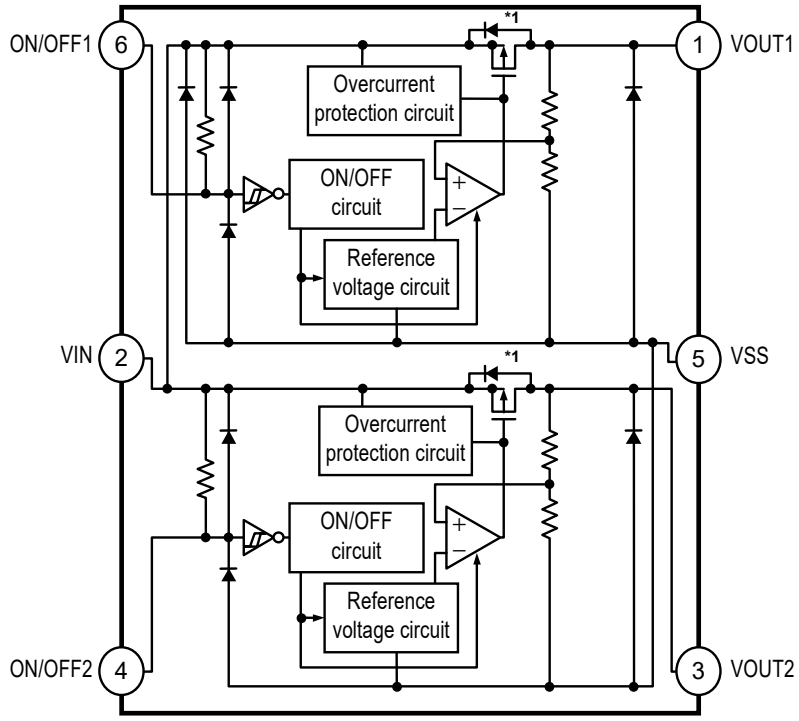
***1.** Parasitic diode

**Figure 6**



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### 7. S-1711 Series G type

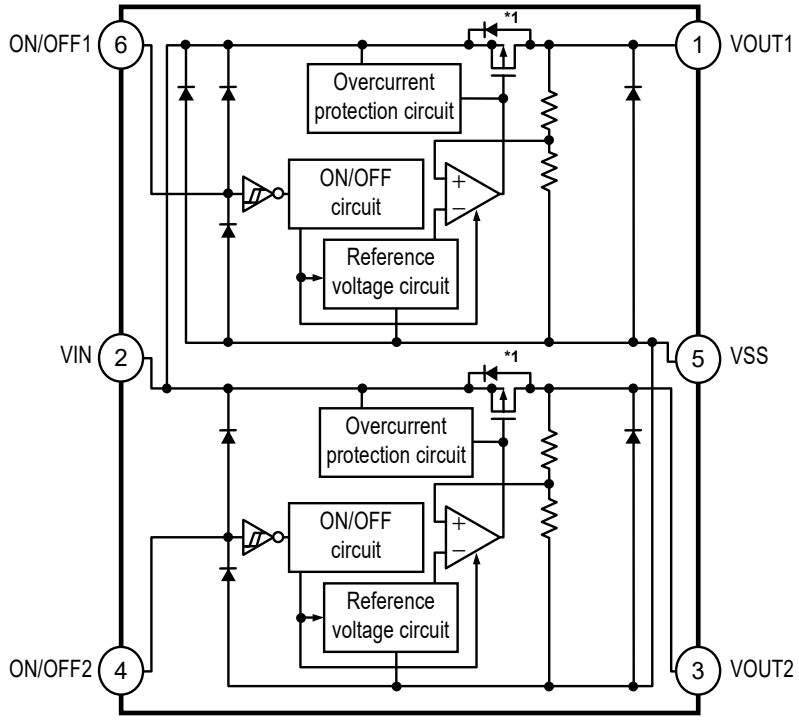



| Function | Status |
|---|---|
| ON/OFF logic | Active "L" |
| Discharge shunt function | None |
| Pull-up resistor | Available |
| Pull-down resistor | None |

***1.** Parasitic diode

**Figure 7**

### 8. S-1711 Series H type




| Function | Status |
|---|---|
| ON/OFF logic | Active "L" |
| Discharge shunt function | None |
| Pull-up resistor | None |
| Pull-down resistor | None |

***1.** Parasitic diode

**Figure 8**



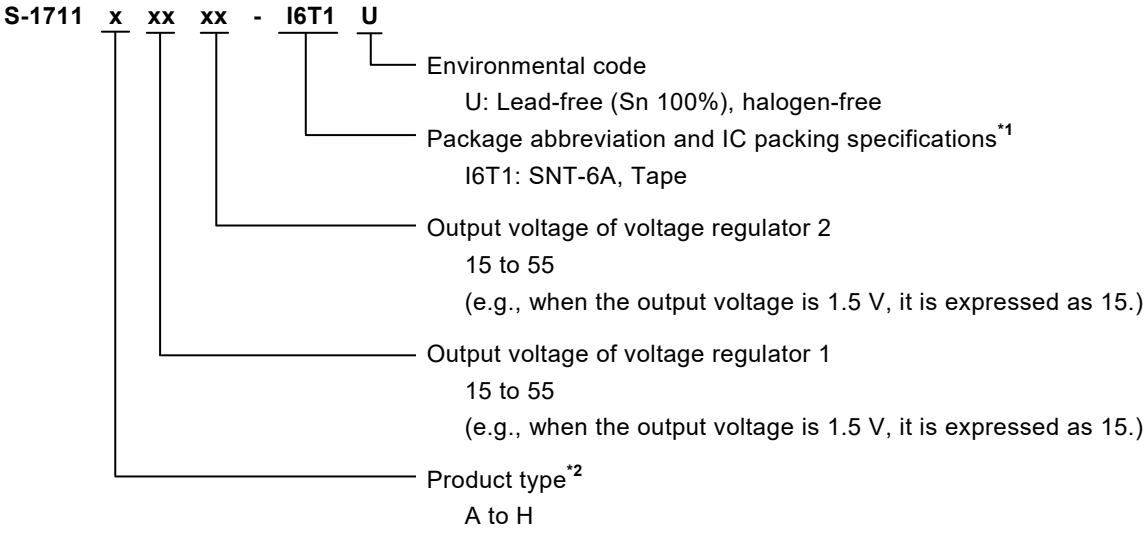
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## ■ Product Name Structure

Users can select the product type, output voltage, and package type for the S-1711 Series. Refer to "**1. Product name**" regarding the contents of product name, "**2. Function list of product type**" regarding the product type, "**3. Packages**" regarding the package drawings, "**4. Product name list**" regarding details of the product name.

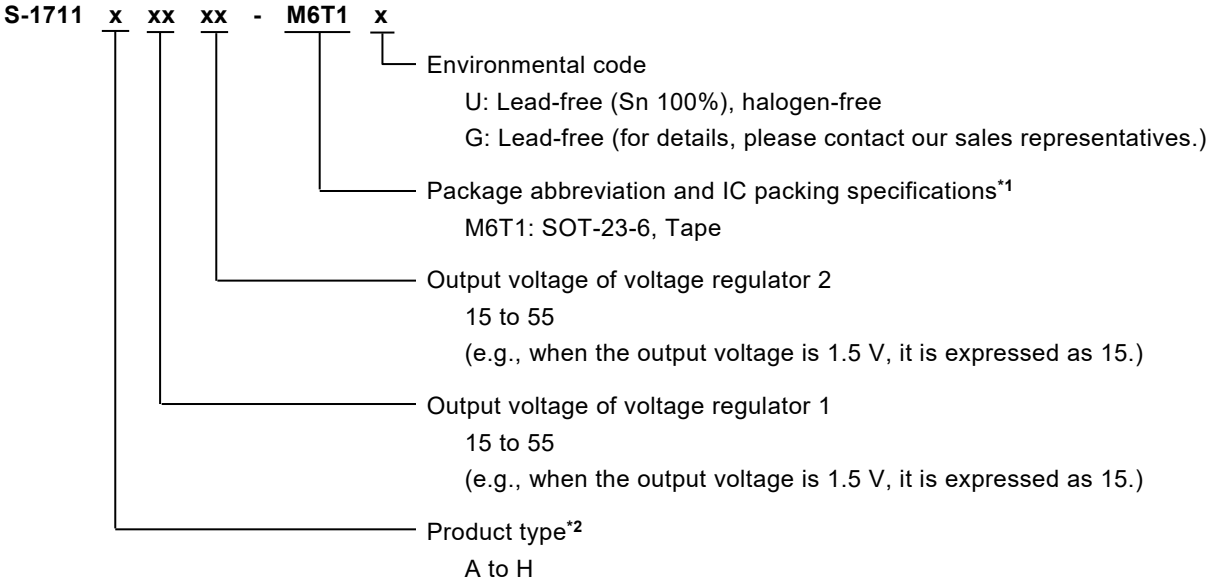
### 1. Product name

#### 1. 1 SNT-6A




***1.** Refer to the tape drawing.
***2.** Refer to "**2. Function list of product type**".

#### 1. 2 SOT-23-6




***1.** Refer to the tape drawing.
***2.** Refer to "**2. Function list of product type**".



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## 2. Function list of product type

**Table 1**

| Product Type | ON/OFF Logic | Discharge Shunt Function | Pull-up Resistor | Pull-down Resistor |
|---|---|---|---|---|
| A | Active “H” | Available | None | Available |
| B | Active “H” | Available | None | None |
| C | Active “H” | None | None | Available |
| D | Active “H” | None | None | None |
| E | Active “L” | Available | Available | None |
| F | Active “L” | Available | None | None |
| G | Active “L” | None | Available | None |
| H | Active “L” | None | None | None |

## 3. Packages

| Package Name | Drawing Code | | | |
|---|---|---|---|---|
| | Package | Tape | Reel | Land |
| SNT-6A | PG006-A-P-SD | PG006-A-C-SD | PG006-A-R-SD | PG006-A-L-SD |
| SOT-23-6 | MP006-A-P-SD | MP006-A-C-SD | MP006-A-R-SD | — |



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## 4. Product name list

### 4. 1 S-1711 Series A type

ON/OFF logic: Active "H" Pull-up Resistor: None
Discharge Shunt Function: Available Pull-down Resistor: Available

**Table 2 (1 / 2)**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 1.5 V ±1.0% | 1.5 V ±1.0% | S-1711A1515-I6T1U | S-1711A1515-M6T1x |
| 1.5 V ±1.0% | 1.8 V ±1.0% | S-1711A1518-I6T1U | — |
| 1.5 V ±1.0% | 2.6 V ±1.0% | S-1711A1526-I6T1U | — |
| 1.5 V ±1.0% | 2.8 V ±1.0% | S-1711A1528-I6T1U | S-1711A1528-M6T1x |
| 1.5 V ±1.0% | 2.85 V ±1.0% | S-1711A152J-I6T1U | — |
| 1.5 V ±1.0% | 2.9 V ±1.0% | — | S-1711A1529-M6T1x |
| 1.5 V ±1.0% | 3.3 V ±1.0% | S-1711A1533-I6T1U | S-1711A1533-M6T1x |
| 1.8 V ±1.0% | 1.5 V ±1.0% | S-1711A1815-I6T1U | S-1711A1815-M6T1x |
| 1.8 V ±1.0% | 1.8 V ±1.0% | S-1711A1818-I6T1U | S-1711A1818-M6T1x |
| 1.8 V ±1.0% | 2.5 V ±1.0% | — | S-1711A1825-M6T1x |
| 1.8 V ±1.0% | 2.7 V ±1.0% | S-1711A1827-I6T1U | S-1711A1827-M6T1x |
| 1.8 V ±1.0% | 2.75 V ±1.0% | S-1711A182H-I6T1U | S-1711A182H-M6T1x |
| 1.8 V ±1.0% | 2.7 V ±1.0% | S-1711A1828-I6T1U | S-1711A1828-M6T1x |
| 1.8 V ±1.0% | 2.85 V ±1.0% | S-1711A182J-I6T1U | S-1711A182J-M6T1x |
| 1.8 V ±1.0% | 2.9 V ±1.0% | S-1711A1829-I6T1U | S-1711A1829-M6T1x |
| 1.8 V ±1.0% | 3.0 V ±1.0% | S-1711A1830-I6T1U | S-1711A1830-M6T1x |
| 1.8 V ±1.0% | 3.2 V ±1.0% | — | S-1711A1832-M6T1x |
| 1.8 V ±1.0% | 3.3 V ±1.0% | S-1711A1833-I6T1U | S-1711A1833-M6T1x |
| 1.85 V ±1.0% | 2.8 V ±1.0% | S-1711A1J28-I6T1U | S-1711A1J28-M6T1x |
| 2.0 V ±1.0% | 4.5 V ±1.0% | — | S-1711A2045-M6T1x |
| 2.3 V ±1.0% | 3.2 V ±1.0% | S-1711A2332-I6T1U | — |
| 2.3 V ±1.0% | 3.3 V ±1.0% | S-1711A2333-I6T1U | — |
| 2.4 V ±1.0% | 2.4 V ±1.0% | S-1711A2424-I6T1U | S-1711A2424-M6T1x |
| 2.4 V ±1.0% | 2.5 V ±1.0% | S-1711A2425-I6T1U | S-1711A2425-M6T1x |
| 2.5 V ±1.0% | 1.5 V ±1.0% | S-1711A2515-I6T1U | S-1711A2515-M6T1x |
| 2.5 V ±1.0% | 1.8 V ±1.0% | S-1711A2518-I6T1U | S-1711A2518-M6T1x |
| 2.5 V ±1.0% | 2.2 V ±1.0% | — | S-1711A2522-M6T1x |
| 2.5 V ±1.0% | 2.5 V ±1.0% | S-1711A2525-I6T1U | S-1711A2525-M6T1x |
| 2.5 V ±1.0% | 2.8 V ±1.0% | S-1711A2528-I6T1U | S-1711A2528-M6T1x |
| 2.5 V ±1.0% | 2.9 V ±1.0% | — | S-1711A2529-M6T1x |
| 2.5 V ±1.0% | 3.3 V ±1.0% | S-1711A2533-I6T1U | S-1711A2533-M6T1x |
| 2.6 V ±1.0% | 1.8 V ±1.0% | — | S-1711A2618-M6T1x |
| 2.6 V ±1.0% | 2.6 V ±1.0% | S-1711A2626-I6T1U | — |
| 2.6 V ±1.0% | 2.8 V ±1.0% | S-1711A2628-I6T1U | — |
| 2.6 V ±1.0% | 2.9 V ±1.0% | S-1711A2629-I6T1U | — |
| 2.6 V ±1.0% | 3.0 V ±1.0% | S-1711A2630-I6T1U | — |
| 2.7 V ±1.0% | 1.8 V ±1.0% | — | S-1711A2718-M6T1x |
| 2.8 V ±1.0% | 1.5 V ±1.0% | S-1711A2815-I6T1U | S-1711A2815-M6T1x |
| 2.8 V ±1.0% | 1.8 V ±1.0% | S-1711A2818-I6T1U | S-1711A2818-M6T1x |
| 2.8 V ±1.0% | 1.9 V ±1.0% | — | S-1711A2819-M6T1x |
| 2.8 V ±1.0% | 2.5 V ±1.0% | — | S-1711A2825-M6T1x |



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**Table 2 (2 / 2)**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 2.8 V ±1.0% | 2.8 V ±1.0% | S-1711A2828-I6T1U | S-1711A2828-M6T1x |
| 2.8 V ±1.0% | 2.9 V ±1.0% | S-1711A2829-I6T1U | S-1711A2829-M6T1x |
| 2.8 V ±1.0% | 3.0 V ±1.0% | S-1711A2830-I6T1U | S-1711A2830-M6T1x |
| 2.8 V ±1.0% | 3.1 V ±1.0% | S-1711A2831-I6T1U | — |
| 2.8 V ±1.0% | 3.2 V ±1.0% | S-1711A2832-I6T1U | S-1711A2832-M6T1x |
| 2.8 V ±1.0% | 3.3 V ±1.0% | S-1711A2833-I6T1U | S-1711A2833-M6T1x |
| 2.85 V ±1.0% | 1.5 V ±1.0% | S-1711A2J15-I6T1U | — |
| 2.85 V ±1.0% | 1.8 V ±1.0% | S-1711A2J18-I6T1U | — |
| 2.85 V ±1.0% | 2.85 V ±1.0% | S-1711A2J2J-I6T1U | S-1711A2J2J-M6T1x |
| 2.85 V ±1.0% | 3.0 V ±1.0% | — | S-1711A2J30-M6T1x |
| 2.85 V ±1.0% | 3.3 V ±1.0% | S-1711A2J33-I6T1U | — |
| 2.9 V ±1.0% | 2.9 V ±1.0% | S-1711A2929-I6T1U | S-1711A2929-M6T1x |
| 2.9 V ±1.0% | 3.3 V ±1.0% | — | S-1711A2933-M6T1x |
| 3.0 V ±1.0% | 1.5 V ±1.0% | S-1711A3015-I6T1U | S-1711A3015-M6T1x |
| 3.0 V ±1.0% | 1.8 V ±1.0% | S-1711A3018-I6T1U | S-1711A3018-M6T1x |
| 3.0 V ±1.0% | 2.5 V ±1.0% | S-1711A3025-I6T1U | S-1711A3025-M6T1x |
| 3.0 V ±1.0% | 2.8 V ±1.0% | S-1711A3028-I6T1U | — |
| 3.0 V ±1.0% | 3.0 V ±1.0% | S-1711A3030-I6T1U | S-1711A3030-M6T1x |
| 3.0 V ±1.0% | 3.3 V ±1.0% | S-1711A3033-I6T1U | S-1711A3033-M6T1x |
| 3.1 V ±1.0% | 2.8 V ±1.0% | S-1711A3128-I6T1U | — |
| 3.3 V ±1.0% | 1.8 V ±1.0% | S-1711A3318-I6T1U | — |
| 3.3 V ±1.0% | 2.5 V ±1.0% | — | S-1711A3325-M6T1x |
| 3.3 V ±1.0% | 2.8 V ±1.0% | — | S-1711A3328-M6T1x |
| 3.3 V ±1.0% | 3.0 V ±1.0% | — | S-1711A3330-M6T1x |
| 3.3 V ±1.0% | 3.3 V ±1.0% | S-1711A3333-I6T1U | S-1711A3333-M6T1x |
| 3.3 V ±1.0% | 4.8 V ±1.0% | S-1711A3348-I6T1U | S-1711A3348-M6T1x |
| 3.3 V ±1.0% | 5.0 V ±1.0% | S-1711A3350-I6T1U | — |
| 3.4 V ±1.0% | 3.4 V ±1.0% | S-1711A3434-I6T1U | — |
| 4.0 V ±1.0% | 2.0 V ±1.0% | — | S-1711A4020-M6T1x |
| 5.0 V ±1.0% | 2.5 V ±1.0% | S-1711A5025-I6T1U | S-1711A5025-M6T1x |
| 5.0 V ±1.0% | 3.0 V ±1.0% | S-1711A5030-I6T1U | — |

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**2.** x: G or U
**3.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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### 4. 2 S-1711 Series B type

ON/OFF logic: Active “H” Pull-up Resistor: None
Discharge Shunt Function: Available Pull-down Resistor: None

**Table 3**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 1.5 V ±1.0% | 1.8 V ±1.0% | S-1711B1518-I6T1U | S-1711B1518-M6T1x |
| 1.5 V ±1.0% | 2.8 V ±1.0% | S-1711B1528-I6T1U | — |
| 1.5 V ±1.0% | 2.9 V ±1.0% | — | S-1711B1529-M6T1x |
| 1.8 V ±1.0% | 2.5 V ±1.0% | S-1711B1825-I6T1U | S-1711B1825-M6T1x |
| 1.8 V ±1.0% | 2.8 V ±1.0% | S-1711B1828-I6T1U | S-1711B1828-M6T1x |
| 1.8 V ±1.0% | 3.2 V ±1.0% | — | S-1711B1832-M6T1x |
| 1.8 V ±1.0% | 3.3 V ±1.0% | S-1711B1833-I6T1U | S-1711B1833-M6T1x |
| 2.5 V ±1.0% | 1.5 V ±1.0% | — | S-1711B2515-M6T1x |
| 2.5 V ±1.0% | 1.8 V ±1.0% | S-1711B2518-I6T1U | S-1711B2518-M6T1x |
| 2.5 V ±1.0% | 2.8 V ±1.0% | S-1711B2528-I6T1U | S-1711B2528-M6T1x |
| 2.6 V ±1.0% | 1.8 V ±1.0% | — | S-1711B2618-M6T1x |
| 2.7 V ±1.0% | 1.8 V ±1.0% | — | S-1711B2718-M6T1x |
| 2.8 V ±1.0% | 1.5 V ±1.0% | S-1711B2815-I6T1U | S-1711B2815-M6T1x |
| 2.8 V ±1.0% | 1.8 V ±1.0% | S-1711B2818-I6T1U | S-1711B2818-M6T1x |
| 2.8 V ±1.0% | 2.5 V ±1.0% | — | S-1711B2825-M6T1x |
| 2.8 V ±1.0% | 2.8 V ±1.0% | S-1711B2828-I6T1U | S-1711B2828-M6T1x |
| 2.8 V ±1.0% | 3.3 V ±1.0% | S-1711B2833-I6T1U | — |
| 3.0 V ±1.0% | 3.0 V ±1.0% | — | S-1711B3030-M6T1x |
| 3.0 V ±1.0% | 3.3 V ±1.0% | S-1711B3033-I6T1U | S-1711B3033-M6T1x |
| 3.0 V ±1.0% | 3.6 V ±1.0% | — | S-1711B3036-M6T1x |
| 3.3 V ±1.0% | 3.3 V ±1.0% | S-1711B3333-I6T1U | S-1711B3333-M6T1x |

**Remark 1.** Please contact our sales representatives for products other than the above.
**2.** x: G or U
**3.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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### 4. 3 S-1711 Series C type

ON/OFF logic: Active “H” Pull-up Resistor: None
Discharge Shunt Function: None Pull-down Resistor: Available

**Table 4**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 1.5 V ±1.0% | 1.5 V ±1.0% | S-1711C1515-I6T1U | S-1711C1515-M6T1x |
| 1.8 V ±1.0% | 1.5 V ±1.0% | S-1711C1815-I6T1U | S-1711C1815-M6T1x |
| 1.8 V ±1.0% | 2.5 V ±1.0% | — | S-1711C1825-M6T1x |
| 1.8 V ±1.0% | 2.7 V ±1.0% | S-1711C1827-I6T1U | S-1711C1827-M6T1x |
| 1.8 V ±1.0% | 2.75 V ±1.0% | S-1711C182H-I6T1U | S-1711C182H-M6T1x |
| 1.8 V ±1.0% | 2.8 V ±1.0% | S-1711C1828-I6T1U | — |
| 1.8 V ±1.0% | 3.2 V ±1.0% | — | S-1711C1832-M6T1x |
| 1.85 V ±1.0% | 2.8 V ±1.0% | S-1711C1J28-I6T1U | S-1711C1J28-M6T1x |
| 2.4 V ±1.0% | 2.4 V ±1.0% | S-1711C2424-I6T1U | S-1711C2424-M6T1x |
| 2.4 V ±1.0% | 2.5 V ±1.0% | S-1711C2425-I6T1U | S-1711C2425-M6T1x |
| 2.5 V ±1.0% | 1.5 V ±1.0% | S-1711C2515-I6T1U | S-1711C2515-M6T1x |
| 2.5 V ±1.0% | 1.8 V ±1.0% | S-1711C2518-I6T1U | S-1711C2518-M6T1x |
| 2.5 V ±1.0% | 2.5 V ±1.0% | S-1711C2525-I6T1U | S-1711C2525-M6T1x |
| 2.8 V ±1.0% | 1.5 V ±1.0% | S-1711C2815-I6T1U | S-1711C2815-M6T1x |
| 2.8 V ±1.0% | 1.8 V ±1.0% | S-1711C2818-I6T1U | S-1711C2818-M6T1x |
| 2.8 V ±1.0% | 2.8 V ±1.0% | S-1711C2828-I6T1U | S-1711C2828-M6T1x |
| 2.8 V ±1.0% | 2.9 V ±1.0% | S-1711C2829-I6T1U | S-1711C2829-M6T1x |
| 2.8 V ±1.0% | 3.0 V ±1.0% | S-1711C2830-I6T1U | S-1711C2830-M6T1x |
| 2.8 V ±1.0% | 3.3 V ±1.0% | S-1711C2833-I6T1U | S-1711C2833-M6T1x |
| 2.85 V ±1.0% | 2.85 V ±1.0% | S-1711C2J2J-I6T1U | S-1711C2J2J-M6T1x |
| 2.9 V ±1.0% | 2.9 V ±1.0% | S-1711C2929-I6T1U | S-1711C2929-M6T1x |
| 3.0 V ±1.0% | 1.5 V ±1.0% | S-1711C3015-I6T1U | S-1711C3015-M6T1x |
| 3.0 V ±1.0% | 1.8 V ±1.0% | S-1711C3018-I6T1U | S-1711C3018-M6T1x |
| 3.0 V ±1.0% | 2.5 V ±1.0% | S-1711C3025-I6T1U | S-1711C3025-M6T1x |
| 3.0 V ±1.0% | 3.0 V ±1.0% | S-1711C3030-I6T1U | S-1711C3030-M6T1x |
| 3.0 V ±1.0% | 3.3 V ±1.0% | S-1711C3033-I6T1U | S-1711C3033-M6T1x |
| 3.1 V ±1.0% | 3.1 V ±1.0% | — | S-1711C3131-M6T1x |

**Remark 1.** Please contact our sales representatives for products other than the above.
**2.** x: G or U
**3.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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### 4. 4 S-1711 Series D type

ON/OFF logic: Active “H” Pull-up Resistor: None
Discharge Shunt Function: None Pull-down Resistor: None

**Table 5**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 1.8 V ±1.0% | 2.5 V ±1.0% | — | S-1711D1825-M6T1x |
| 1.8 V ±1.0% | 2.6 V ±1.0% | — | S-1711D1826-M6T1x |
| 1.8 V ±1.0% | 2.8 V ±1.0% | S-1711D1828-I6T1U | S-1711D1828-M6T1x |
| 1.8 V ±1.0% | 3.2 V ±1.0% | — | S-1711D1832-M6T1x |
| 1.9 V ±1.0% | 2.5 V ±1.0% | S-1711D1925-I6T1U | S-1711D1925-M6T1x |
| 2.5 V ±1.0% | 1.8 V ±1.0% | S-1711D2518-I6T1U | S-1711D2518-M6T1x |
| 2.5 V ±1.0% | 2.8 V ±1.0% | S-1711D2528-I6T1U | S-1711D2528-M6T1x |
| 2.5 V ±1.0% | 2.85 V ±1.0% | S-1711D252J-I6T1U | — |
| 2.6 V ±1.0% | 2.9 V ±1.0% | — | S-1711D2629-M6T1x |
| 2.8 V ±1.0% | 1.5 V ±1.0% | S-1711D2815-I6T1U | S-1711D2815-M6T1x |
| 2.85 V ±1.0% | 2.85 V ±1.0% | S-1711D2J2J-I6T1U | — |
| 4.2 V ±1.0% | 3.0 V ±1.0% | — | S-1711D4230-M6T1x |

### 4. 5 S-1711 Series E type

ON/OFF logic: Active “L” Pull-up Resistor: Available
Discharge Shunt Function: Available Pull-down Resistor: None

**Table 6**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 1.8 V ±1.0% | 3.3 V ±1.0% | — | S-1711E1833-M6T1x |
| 2.8 V ±1.0% | 1.8 V ±1.0% | S-1711E2818-I6T1U | S-1711E2818-M6T1x |
| 3.3 V ±1.0% | 3.3 V ±1.0% | — | S-1711E3333-M6T1x |

### 4. 6 S-1711 Series F type

ON/OFF logic: Active “L” Pull-up Resistor: None
Discharge Shunt Function: Available Pull-down Resistor: None

**Table 7**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 2.8 V ±1.0% | 1.8 V ±1.0% | S-1711F2818-I6T1U | — |

**Remark 1.** Please contact our sales representatives for products other than the above.
**2.** x: G or U
**3.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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### 4. 7 S-1711 Series G type

ON/OFF logic: Active “L” Pull-up Resistor: Available
Discharge Shunt Function: None Pull-down Resistor: None

**Table 8**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 2.8 V ±1.0% | 3.0 V ±1.0% | S-1711G2830-I6T1U | — |

### 4. 8 S-1711 Series H type

ON/OFF logic: Active “L” Pull-up Resistor: None
Discharge Shunt Function: None Pull-down Resistor: None

**Table 9**

| Voltage Regulator 1 Output Voltage | Voltage Regulator 2 Output Voltage | SNT-6A | SOT-23-6 |
|---|---|---|---|
| 2.5 V ±1.0% | 1.8 V ±1.0% | — | S-1711H2518-M6T1x |

**Remark 1.** Please contact our sales representatives for products other than the above.
**2.** x: G or U
**3.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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## ■ Pin Configurations

### 1. SNT-6A

Top view




**Figure 9**

**Table 10**

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VOUT1 | Output voltage pin 1 |
| 2 | VIN | Input voltage pin |
| 3 | VOUT2 | Output voltage pin 2 |
| 4 | ON/OFF2 | ON/OFF pin 2 |
| 5 | VSS | GND pin |
| 6 | ON/OFF1 | ON/OFF pin 1 |

### 2. SOT-23-6

Top view

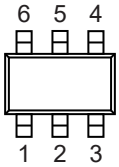



**Figure 10**

**Table 11**

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VOUT1 | Output voltage pin 1 |
| 2 | VIN | Input voltage pin |
| 3 | VOUT2 | Output voltage pin 2 |
| 4 | ON/OFF2 | ON/OFF pin 2 |
| 5 | VSS | GND pin |
| 6 | ON/OFF1 | ON/OFF pin 1 |



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## ■ Absolute Maximum Ratings

**Table 12**

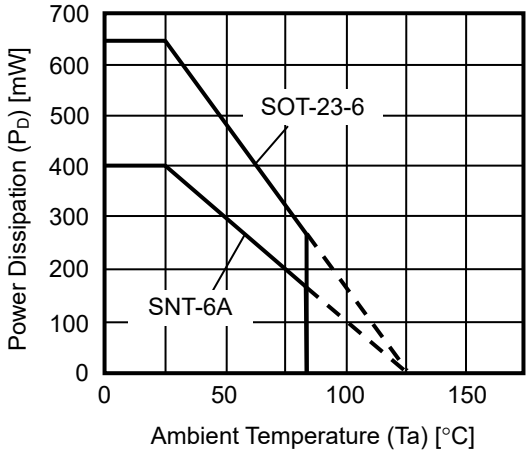
(Ta = 25°C unless otherwise specified)

| Item | | Symbol | Absolute Maximum Rating | Unit |
|---|---|---|---|---|
| Input voltage | | $V_{IN}$ | $V_{SS}$–0.3 to $V_{SS}$+7 | V |
| | | $V_{ON/OFF1}$, $V_{ON/OFF2}$ | $V_{SS}$–0.3 to $V_{IN}$+0.3 | V |
| Output voltage | | $V_{OUT1}$, $V_{OUT2}$ | $V_{SS}$–0.3 to $V_{IN}$+0.3 | V |
| Power dissipation | SNT-6A | $P_D$ | 400*1 | mW |
| | SOT-23-6 | | 300 (When not mounted on board) | mW |
| | | | 650*1 | mW |
| Operation ambient temperature | | $T_{opr}$ | –40 to +85 | °C |
| Storage temperature | | $T_{stg}$ | –40 to +125 | °C |

***1.** When mounted on board
[Mounted board]
(1) Board size: 114.3 mm × 76.2 mm × t1.6 mm
(2) Name: JEDEC STANDARD51-7

**Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.**

**(1) When mounted on board**




**(2) When not mounted on board**

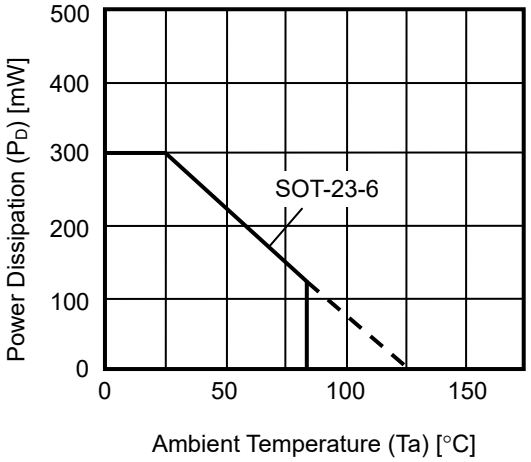



**Figure 11 Power Dissipation of Package**



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## ■ Electrical Characteristics

**Table 13**

Total (2 circuits) (Ta = 25°C unless otherwise specified)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Test Circuit |
|---|---|---|---|---|---|---|---|
| Current consumption | $I_{SS}$ | $V_{IN}$ = 6.5 V, no load | — | 140 | 180 | µA | 1 |

Voltage regulator 1 or Voltage regulator 2 (Per circuit) (Ta = 25°C unless otherwise specified)

| Item | Symbol | Condition | | Min. | Typ. | Max. | Unit | Test Circuit |
|---|---|---|---|---|---|---|---|---|
| Output voltage*1 | $V_{OUT(E)}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, $I_{OUT}$ = 30 mA | | $V_{OUT(S)}$ × 0.99 | $V_{OUT(S)}$ | $V_{OUT(S)}$ × 1.01 | V | 2, 3 |
| Output current*2 | $I_{OUT}$ | $V_{IN}$ ≥ $V_{OUT(S)}$ + 1.0 V | | 150*5 | — | — | mA | 4, 5 |
| Dropout voltage*3 | $V_{drop}$ | $I_{OUT}$ = 150 mA | $V_{OUT(S)}$ = 1.5 V | 0.50 | 0.54 | 0.58 | V | 2, 3 |
| | | | $V_{OUT(S)}$ = 1.6 V | 0.40 | 0.44 | 0.48 | V | 2, 3 |
| | | | $V_{OUT(S)}$ = 1.7 V | 0.30 | 0.34 | 0.39 | V | 2, 3 |
| | | | 1.8 V ≤ $V_{OUT(S)}$ ≤ 2.0 V | 0.20 | 0.26 | 0.39 | V | 2, 3 |
| | | | 2.1 V ≤ $V_{OUT(S)}$ ≤ 2.7 V | — | 0.24 | 0.36 | V | 2, 3 |
| | | | 2.8 V ≤ $V_{OUT(S)}$ ≤ 5.5 V | — | 0.20 | 0.35 | V | 2, 3 |
| Line regulation | $\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}$ | $V_{OUT(S)}$ + 0.5 V ≤ $V_{IN}$ ≤ 6.5 V, $I_{OUT}$ = 30 mA | | — | 0.02 | 0.1 | % / V | 2, 3 |
| Load regulation | $\Delta V_{OUT2}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, 1.0 mA ≤ $I_{OUT}$ ≤ 150 mA | | — | 20 | 40 | mV | 2, 3 |
| Output voltage temperature coefficient*4 | $\frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, $I_{OUT}$ = 30 mA, −40°C ≤ Ta ≤ +85°C | | — | ±100 | — | ppm / °C | 2, 3 |
| Current consumption during operation | $I_{SS1}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, ON/OFF pin = ON, no load | | — | 70 | 90 | µA | 1 |
| Current consumption during power-off | $I_{SS2}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, ON/OFF pin = OFF, no load | | — | 0.1 | 1.0 | µA | 1 |
| Input voltage | $V_{IN}$ | — | | 2.0 | — | 6.5 | V | 1 |
| ON/OFF pin input voltage "H" | $V_{SH}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, $R_L$ = 1.0 kΩ | | 1.5 | — | — | V | 6, 7 |
| ON/OFF pin input voltage "L" | $V_{SL}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, $R_L$ = 1.0 kΩ | | — | — | 0.3 | V | 6, 7 |
| ON/OFF pin input current "H" | $I_{SH}$ | $V_{IN}$ = 6.5 V, $V_{ON/OFF}$ = 6.5 V | A/ C type | 1.0 | 2.5 | 4.2 | µA | 6, 7 |
| | | | B/ D/ E/ F/ G/ H type | −0.1 | — | 0.1 | µA | |
| ON/OFF pin input current "L" | $I_{SL}$ | $V_{IN}$ = 6.5 V, $V_{ON/OFF}$ = 0 V | E/ G type | 1.0 | 2.5 | 4.2 | µA | 6, 7 |
| | | | A/ B/ C/ D/ F/ H type | −0.1 | — | 0.1 | µA | |
| Ripple rejection | $\lvert RR \rvert$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, f = 1.0 kHz, $\Delta V_{rip}$ = 0.5 Vrms, $I_{OUT}$ = 30 mA | | — | 70 | — | dB | 8, 9 |
| Short-circuit current | $I_{short}$ | $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V, ON/OFF pin = ON, $V_{OUT}$ = 0 V | | — | 170 | — | mA | 4, 5 |

S-1711 Series A/B/E/F type (With discharge shunt function)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Test Circuit |
|---|---|---|---|---|---|---|---|
| Discharge shunt resistance during power-off | $R_{LOW}$ | $V_{OUT}$ = 0.1 V, $V_{IN}$ = 6.5 V | — | 100 | — | Ω | 4, 5 |

S-1711 Series A/C/E/G type (With pull-up/pull-down resistor)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Test Circuit |
|---|---|---|---|---|---|---|---|
| Power-off pull-up/pull-down resistor | $R_{PD}$ | — | 1.0 | 2.6 | 5.0 | MΩ | 6, 7 |



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***1.** $V_{OUT(S)}$: Set output voltage
$V_{OUT(E)}$: Actual output voltage
Output voltage when fixing $I_{OUT}$(=30 mA) and inputting $V_{OUT(S)}$ + 1.0 V

***2.** The output current at which the output voltage becomes 95% of $V_{OUT(E)}$ after gradually increasing the output current.

***3.** $V_{drop} = V_{IN1} - (V_{OUT3} \times 0.98)$
$V_{OUT3}$ is the output voltage when $V_{IN} = V_{OUT(S)} + 1.0$ V and $I_{OUT}$ = 150 mA.
$V_{IN1}$ is the input voltage at which the output voltage becomes 98% of $V_{OUT3}$ after gradually decreasing the input voltage.

***4.** A change in the temperature of the output voltage [mV/°C] is calculated using the following equation.

$$\frac{\Delta V_{OUT}}{\Delta Ta}\ [\text{mV/°C}]^{*1} = V_{OUT(S)}\ [\text{V}]^{*2} \times \frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}\ [\text{ppm/°C}]^{*3} \div 1000$$

***1.** Change in temperature of output voltage
***2.** Set output voltage
***3.** Output voltage temperature coefficient

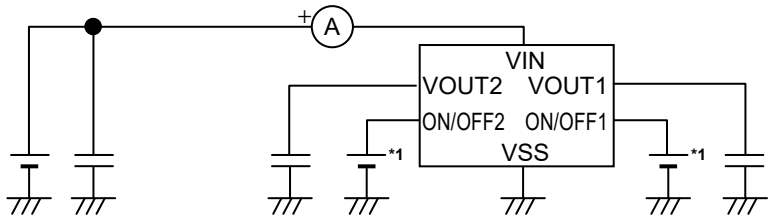
***5.** The output current can be at least this value.
Due to restrictions on the package power dissipation, this value may not be satisfied. Attention should be paid to the power dissipation of the package when the output current is large.
This specification is guaranteed by design.



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## ■ Test Circuits

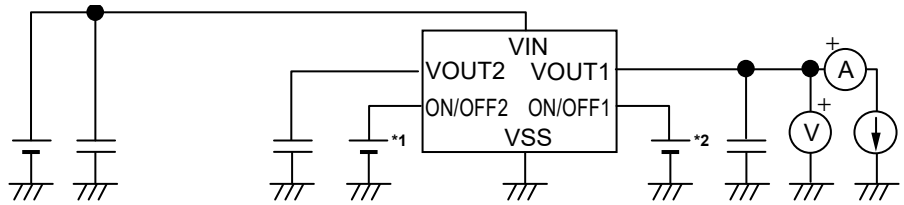
1.




***1.** Set to $V_{IN}$ or GND

**Figure 12**

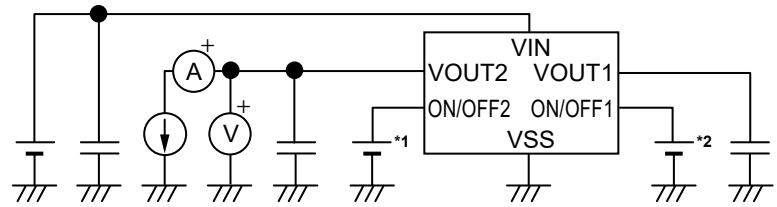
2.




***1.** Set to OFF
***2.** Set to ON

**Figure 13**

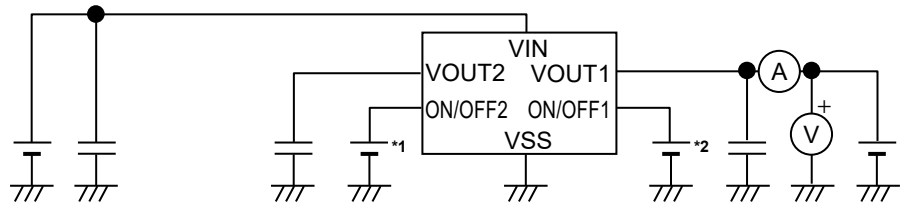
3.




***1.** Set to ON
***2.** Set to OFF

**Figure 14**

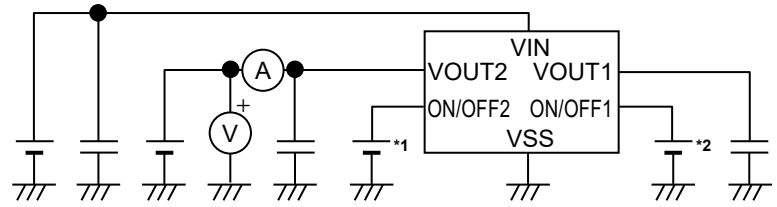
4.




***1.** Set to OFF
***2.** Set to $V_{IN}$ or GND

**Figure 15**

5.



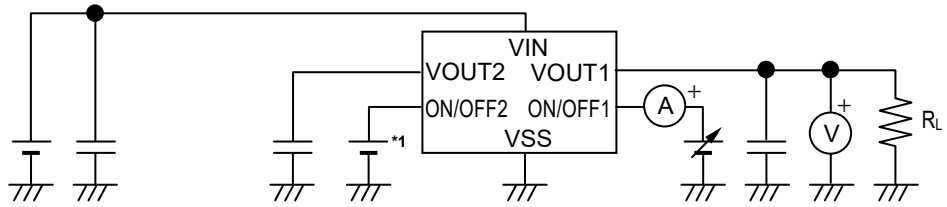

***1.** Set to $V_{IN}$ or GND
***2.** Set to OFF

**Figure 16**



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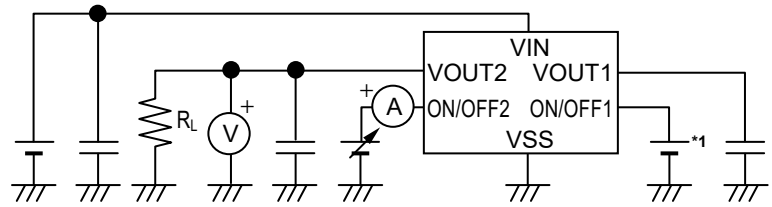
6.




*1. Set to OFF

Figure 17

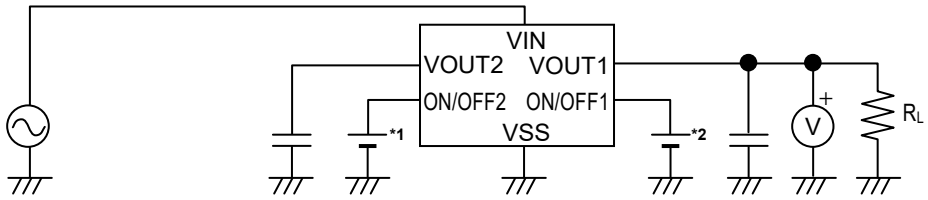
7.




*1. Set to OFF

Figure 18

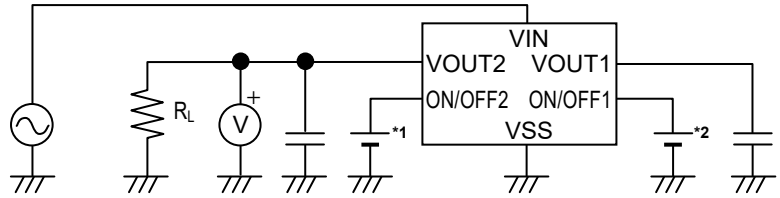
8.




*1. Set to OFF
*2. Set to ON

Figure 19

9.



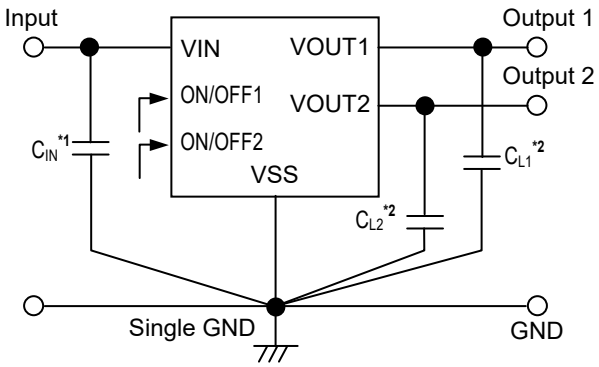

*1. Set to ON
*2. Set to OFF

Figure 20



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## ■ Standard Circuit




***1.** $C_{IN}$ is a capacitor for stabilizing the input.
***2.** A ceramic capacitor of 1.0 µF or more can be used for $C_{L1}$ and $C_{L2}$.

**Figure 21**

**Caution The above connection diagram and constants will not guarantee successful operation. Perform thorough evaluation using the actual application to set the constants.**

## ■ Condition of Application

| | |
|---|---|
| Input capacitor ($C_{IN}$): | 1.0 µF or more |
| Output capacitor ($C_{L1}$, $C_{L2}$): | 1.0 µF or more |
| ESR of output capacitor: | 1.0 Ω or less |

**Caution Generally a series regulator may cause oscillation, depending on the selection of external parts. Confirm that no oscillation occurs in the application for which the above capacitors are used.**
**Use input/output capacitor which has good temperature characteristics (conforming to the ceramic capacitor EIA X5R (JIS B) characteristics).**

## ■ Selection of Input and Output Capacitors ($C_{IN}$, $C_{L1}$, $C_{L2}$)

The S-1711 Series requires an output capacitor between the VOUT and VSS pins for phase compensation. Operation is stabilized by a ceramic capacitor with an output capacitance of 1.0 µF or more in the entire temperature range. When using an OS capacitor, a tantalum capacitor, or an aluminum electrolytic capacitor, the capacitance must be 1.0 µF or more, and the ESR must be 1.0 Ω or less.
The value of the output overshoot or undershoot transient response varies depending on the value of the output capacitor. The required capacitance of the input capacitor differs depending on the application.
The recommended capacitance for an application is $C_{IN} \geq 1.0$ µF, $C_{L1} \geq 1.0$ µF, $C_{L2} \geq 1.0$ µF; however, when selecting the output capacitor, perform sufficient evaluation, including evaluation of temperature characteristics, on the actual device.



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## ■ Explanation of Terms

### 1. Low dropout voltage regulator

This voltage regulator has the low dropout voltage due to its built-in low on-resistance transistor.

### 2. Low ESR

A capacitor whose ESR (Equivalent Series Resistance) is low. The S-1711 Series enables use of a low ESR capacitor, such as a ceramic capacitor, for the output capacitor $C_{L1}$, $C_{L2}$. ESR of 1.0 Ω or less can be used.

### 3. Output voltage ($V_{OUT}$)

The accuracy of the output voltage is ensured at ±1.0% under the specified conditions of fixed input voltage*1, fixed output current, and fixed temperature.

***1.** Differs depending on the product.

**Caution If the above conditions change, the output voltage value may vary and exceed the accuracy range of the output voltage. Refer to "■ Electrical Characteristics" and "■ Characteristics (Typical Data) (Per circuit)" for details.**

### 4. Line regulation $\left(\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}\right)$

Indicates the dependency of the output voltage on the input voltage. That is, the values show how much the output voltage changes due to a change in the input voltage with the output current remaining unchanged.

### 5. Load regulation ($\Delta V_{OUT2}$)

Indicates the dependency of the output voltage on the output current. That is, the values show how much the output voltage changes due to a change in the output current with the input voltage remaining unchanged.

### 6. Dropout voltage ($V_{drop}$)

Indicates the difference between input voltage ($V_{IN1}$) and the output voltage when; decreasing input voltage ($V_{IN}$) gradually until the output voltage has dropped out to the value of 98% of output voltage ($V_{OUT3}$), which is at $V_{IN}$ = $V_{OUT(S)}$ + 1.0 V.

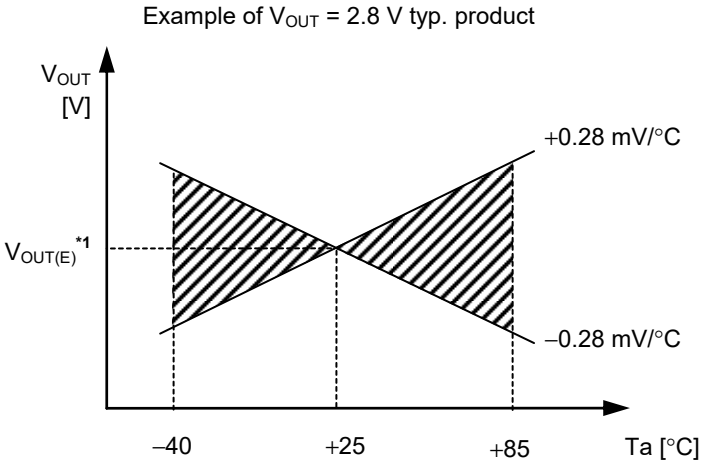
$V_{drop} = V_{IN1} - (V_{OUT3} \times 0.98)$



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### 7. Output voltage temperature coefficient $\left(\frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}\right)$

The shaded area in **Figure 22** is the range where $V_{OUT}$ varies in the operation temperature range when the output voltage temperature coefficient is ±100 ppm/°C.




***1.** $V_{OUT(E)}$ is the value of the output voltage measured at Ta = +25°C.

**Figure 22**

A change in the temperature of the output voltage [mV/°C] is calculated using the following equation.

$$\frac{\Delta V_{OUT}}{\Delta Ta}\ [mV/°C]^{*1} = V_{OUT(S)}\ [V]^{*2} \times \frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}\ [ppm/°C]^{*3} \div 1000$$

***1.** Change in temperature of output voltage
***2.** Set output voltage
***3.** Output voltage temperature coefficient

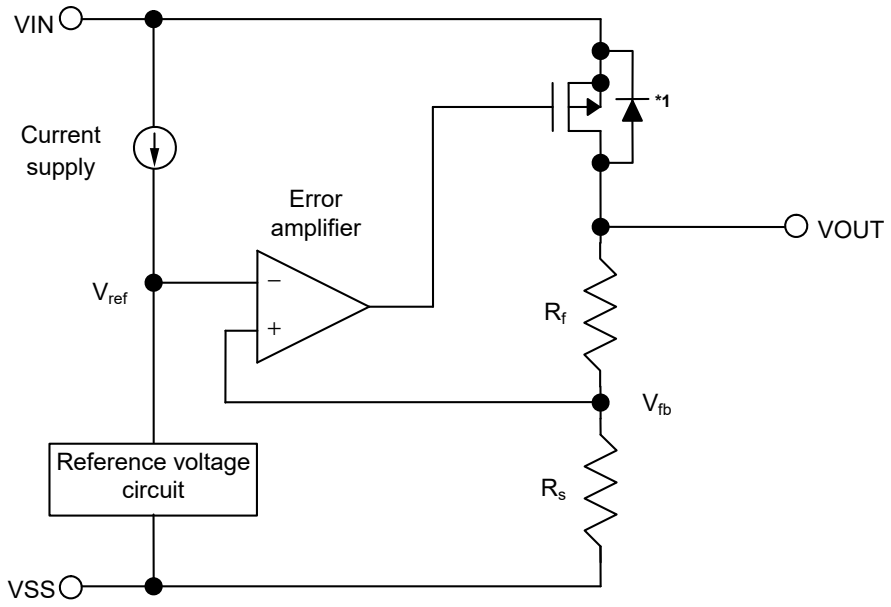


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# ■ Operation

## 1. Basic operation

**Figure 23** shows the block diagram of the S-1711 Series.
The error amplifier compares the reference voltage ($V_{ref}$) with feedback voltage ($V_{fb}$), which is the output voltage resistance-divided by feedback resistors ($R_s$ and $R_f$). It supplies the gate voltage necessary to maintain the constant output voltage which is not influenced by the input voltage and temperature change, to the output transistor.




***1**. Parasitic diode

**Figure 23**

## 2. Output transistor

In the S-1711 Series, a low on-resistance P-channel MOS FET is used as the output transistor.
Be sure that $V_{OUT}$ does not exceed $V_{IN}$ + 0.3 V to prevent the voltage regulator from being damaged due to reverse current flowing from the VOUT pin through a parasitic diode to the VIN pin, when the potential of $V_{OUT}$ became higher than $V_{IN}$.



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### 3. ON/OFF pin 1 and 2

These pins start and stop the regulator.

When the ON/OFF pin is set to OFF level, the entire internal circuit stops operating, and the built-in P-channel MOS FET output transistor between the VIN pin and the VOUT pin is turned off, reducing current consumption significantly.
Since the S-1711 Series A/ B/ E/ F type has a built-in discharge shunt circuit to discharge the output capacitance, the VOUT pin is forcibly set to $V_{SS}$ level. In the S-1711 Series C/ D/ G/ H type, the VOUT pin is set to $V_{SS}$ level through several hundred kΩ internal divided resistors between the VOUT pin and the VSS pin. Note that the current consumption increases when a voltage of 0.3 V to $V_{IN}$ – 0.3 V is applied to the ON/OFF pin.

The ON/OFF pin is configured as shown in **Figure 24** and **Figure 25**. In the S-1711 Series A/ C/ E/ G type, the ON/OFF pin is internally pulled up or pulled down to the VSS pin in the floating status, so the VOUT pin is set to the $V_{SS}$ level. In the S-1711 Series B/ D/ F/ H type, the ON/OFF pin is not internally pulled up or pulled down, so do not use the ON/OFF pin in the floating status. When not using the ON/OFF pin, connect it to the VIN pin in the product B/ D type, and connect it to the VSS pin in F/ H type.

**Table 14**

| Product Type | ON/OFF Pin | Internal Circuit | VOUT Pin Voltage | Current Consumption |
|---|---|---|---|---|
| A/ B/ C/ D | "H": ON | Operate | Set value | $I_{SS1}$*1 |
| A/ B/ C/ D | "L": OFF | Stop | $V_{SS}$ level | $I_{SS2}$ |
| E/ F/ G/ H | "H": OFF | Stop | $V_{SS}$ level | $I_{SS2}$ |
| E/ F/ G/ H | "L": ON | Operate | Set value | $I_{SS1}$*1 |

***1**. Note that the IC's current consumption increases as much as current flows into the pull-up/pull-down resistor when; the ON/OFF pin is connected to the VIN pin in the A/ C type, the ON/OFF pin is connected to the VSS pin in the E/ G type (Refer to **Figure 24**).

**(1) S-1711 Series A/ C/ E/ G Type**

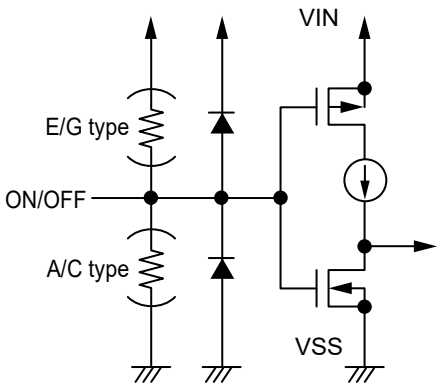



**Figure 24**

**(2) S-1711 Series B/ D/ F/ H Type**

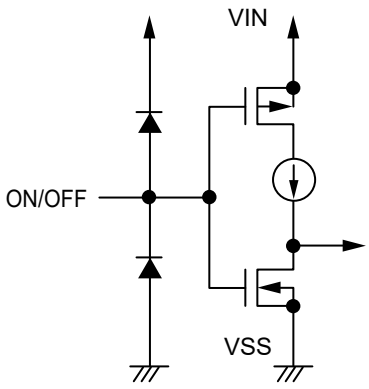


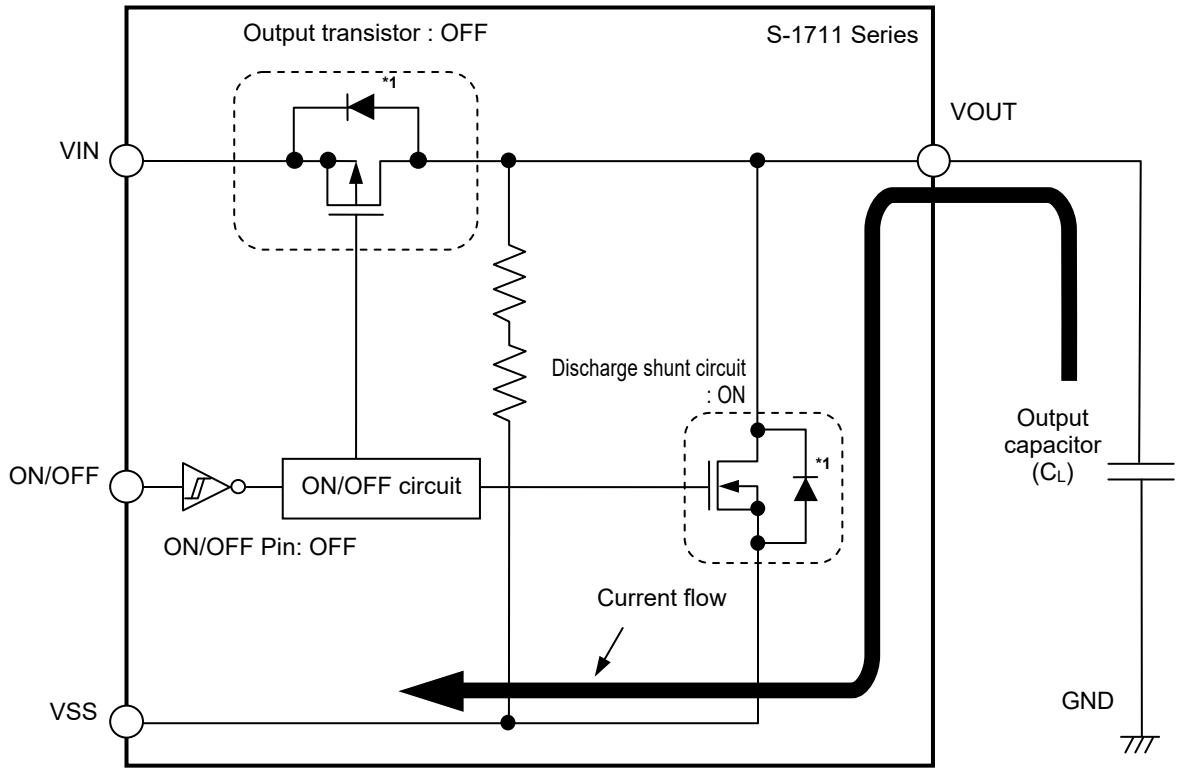

**Figure 25**



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### 4. Discharge shunt function (S-1711 Series A/ B/ E/ F type)

The S-1711 Series A/ B/ E/ F type has a built-in discharge shunt circuit to discharge the output capacitance. When the ON/OFF pin is set to OFF level, turns the output transistor off, and turns the discharge shunt circuit on so that the output capacitor discharges. These types allow the VOUT pin to reach $V_{SS}$ level faster than the S-1711 Series C / D / G / H type that does not have a discharge shunt circuit.




***1**. Parasitic diode

**Figure 26**

### 5. Pull-down/pull-up resistor (S-1711 Series A/ C/ E/ G type)

In the S-1711 Series A/ C/ E/ G type, the ON/OFF pin is internally pulled up to the VIN pin or pulled down to the VSS pin in the floating status, so the VOUT pin is set to the $V_{SS}$ level.

Note that the IC's current consumption increases as much as current flows into the pull-up / pull-down resistor when; the ON / OFF pin is connected to the VIN pin in the A / C type, the ON / OFF pin is connected to the VSS pin in the E / G type.



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## ■ Precautions

- Wiring patterns for the VIN pin, the VOUT pin and GND should be designed so that the impedance is low. When mounting an output capacitor between the VOUT pin and the VSS pin ($C_{L1}$, $C_{L2}$) and a capacitor for stabilizing the input between the VIN pin and the VSS pin ($C_{IN}$), the distance from the capacitors to these pins should be as short as possible.
- Note that generally the output voltage may increase when a series regulator is used at low load current (1.0 mA or less).
- Note that generally the output voltage may increase due to the leakage current from an output driver when a series regulator is used at high temperature.
- Generally a series regulator may cause oscillation, depending on the selection of external parts. The following conditions are recommended for the S-1711 Series. However, be sure to perform sufficient evaluation under the actual usage conditions for selection, including evaluation of temperature characteristics.

  Input capacitor ($C_{IN}$): 1.0 μF or more
  Output capacitor ($C_{L1}$, $C_{L2}$): 1.0 μF or more
  Equivalent series resistance (ESR): 1.0 Ω or less

  Use input/output capacitor which has good temperature characteristics (conforming to the ceramic capacitor EIA X5R (JIS B) characteristics).

- The voltage regulator may oscillate when the impedance of the power supply is high and the input capacitance is small or an input capacitor is not connected.
- If the output capacitance is small, power supply's fluctuation and the characteristics of load fluctuation become worse. Sufficiently evaluate the output voltage's fluctuation with the actual device.
- Overshoot may occur in the output voltage momentarily if the voltage is rapidly raised at power-on or when the power supply fluctuates. Sufficiently evaluate the output voltage at power-on with the actual device.
- The application conditions for the input voltage, the output voltage, and the load current should not exceed the package power dissipation.
- Do not apply an electrostatic discharge to this IC that exceeds the performance ratings of the built-in electrostatic protection circuit.
- In determining the output current, attention should be paid to the output current value specified in **Table 13** in "■ **Electrical Characteristics**" and footnote ***5** of the table.
- ABLIC Inc. claims no responsibility for any disputes arising out of or in connection with any infringement by products including this IC of patents owned by a third party.

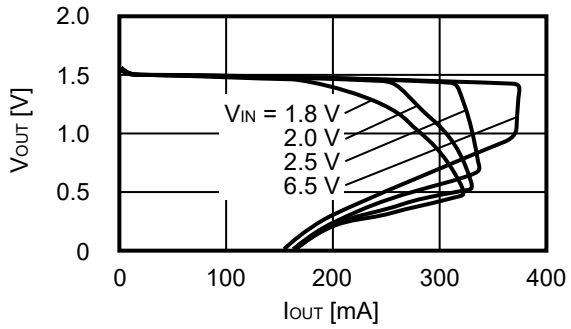


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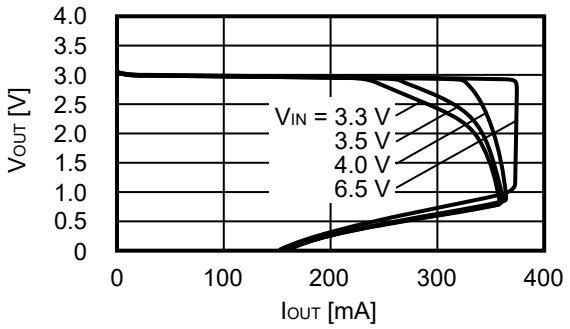
## ■ Characteristics (Typical Data) (Per circuit)

### 1. Output Voltage vs. Output Current (When Load Current Increases) (Ta = 25°C)

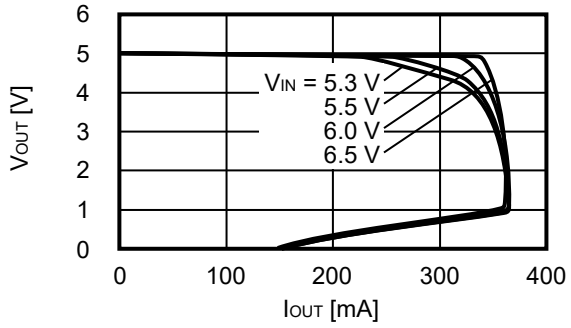
$V_{OUT}$ = 1.5 V




$V_{OUT}$ = 3.0 V



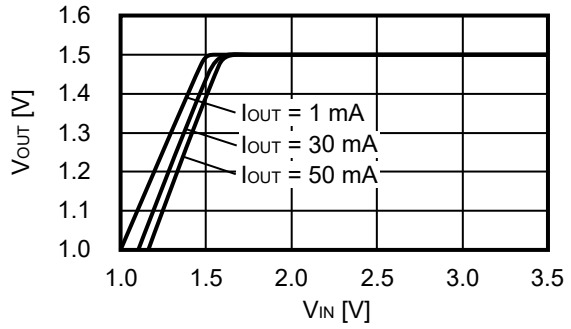

$V_{OUT}$ = 5.0 V



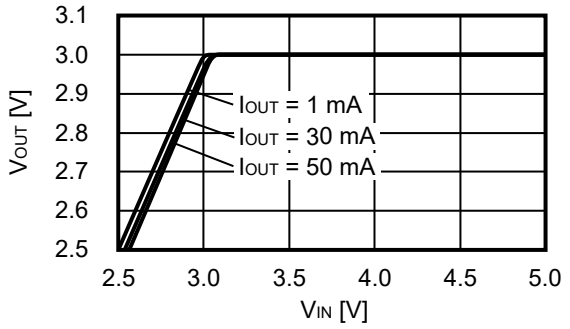

**Remark** In determining the output current, attention should be paid to the following.
**1.** The minimum output current value and footnote ***5** specified in **Table 13** in the "■ **Electrical Characteristics**"
**2.** The package power dissipation

### 2. Output Voltage vs. Input Voltage (Ta = 25°C)

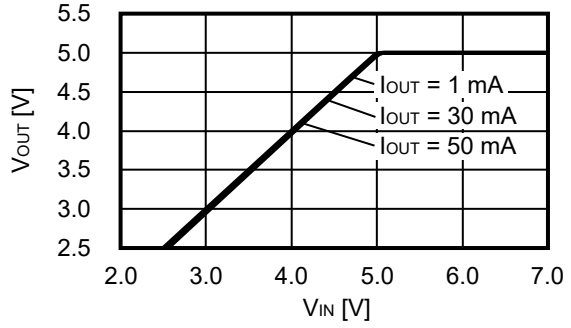
$V_{OUT}$ = 1.5 V




$V_{OUT}$ = 3.0 V




$V_{OUT}$ = 5.0 V

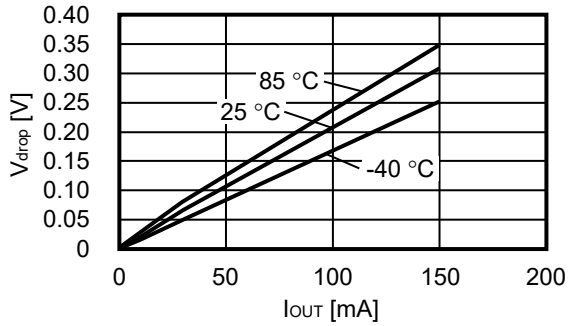




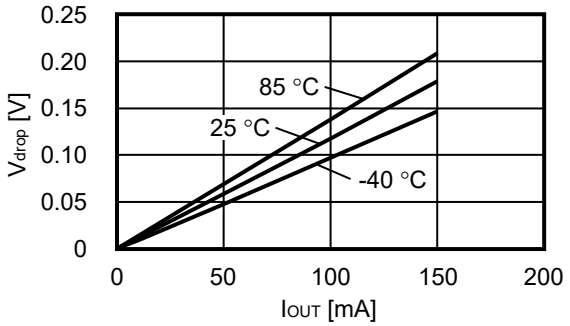

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### 3. Dropout Voltage vs. Output Current

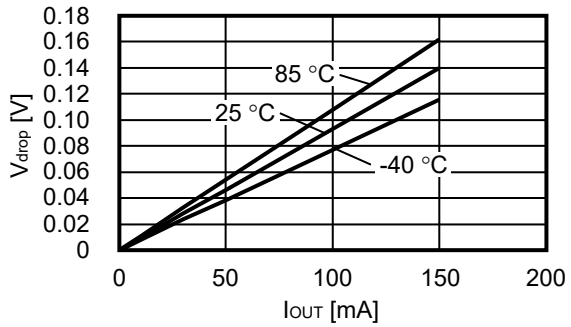
$V_{OUT}$ = 1.5 V



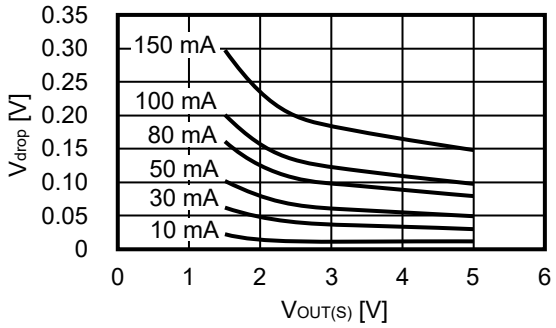

$V_{OUT}$ = 3.0 V




$V_{OUT}$ = 5.0 V




### 4. Dropout Voltage vs. Set Output Voltage

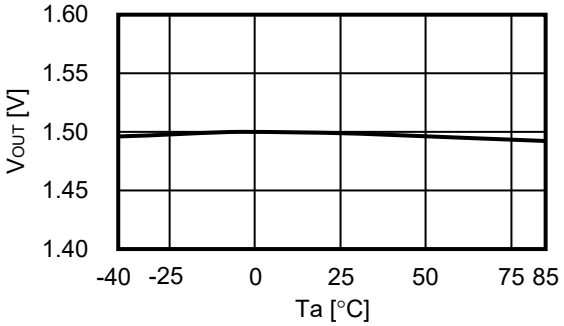




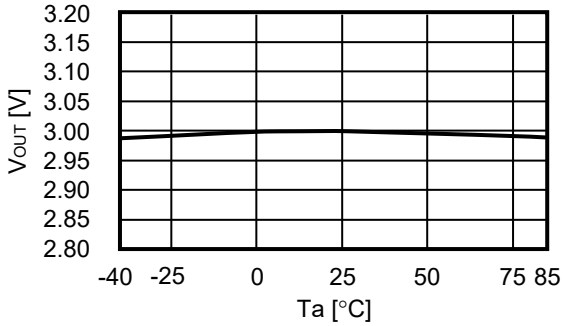

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### 5. Output Voltage vs. Ambient Temperature

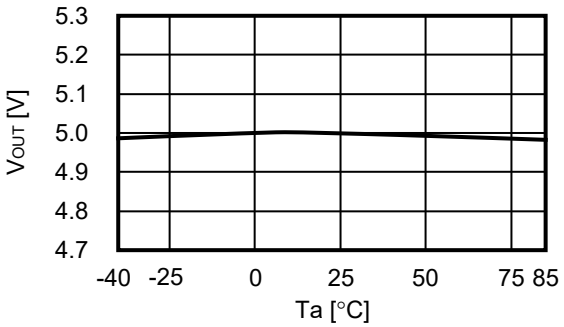
$V_{OUT}$ = 1.5 V




$V_{OUT}$ = 3.0 V

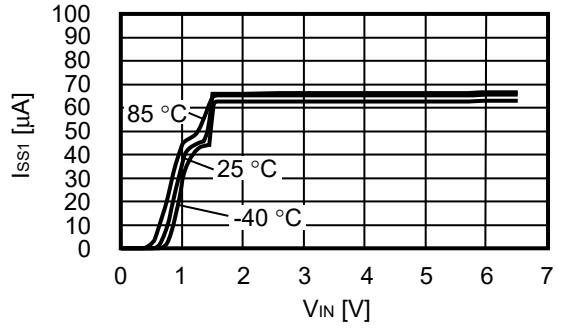



$V_{OUT}$ = 5.0 V

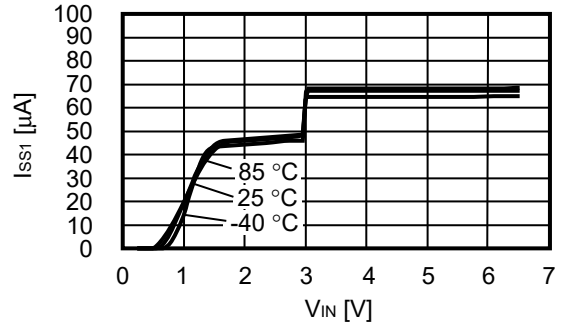



### 6. Current Consumption vs. Input Voltage

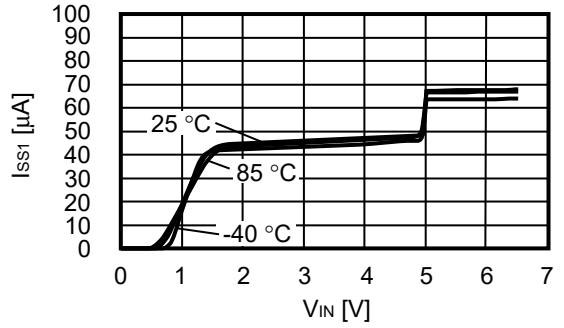
$V_{OUT}$ = 1.5 V




$V_{OUT}$ = 3.0 V




$V_{OUT}$ = 5.0 V

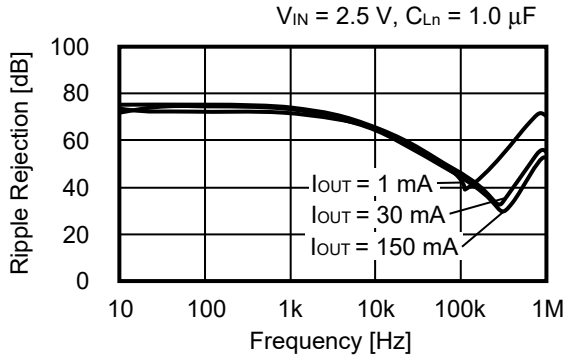




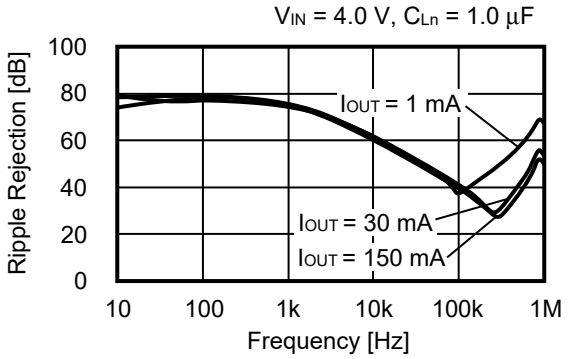

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## 7. Ripple Rejection (Ta = 25°C)

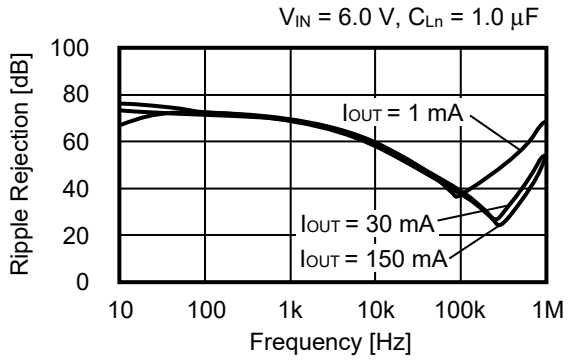
$V_{OUT}$ = 1.5 V




$V_{OUT}$ = 3.0 V




$V_{OUT}$ = 5.0 V




**Remark** $C_{Ln}$: Output capacitor set to the VOUTn pin externally (n = 1, 2)

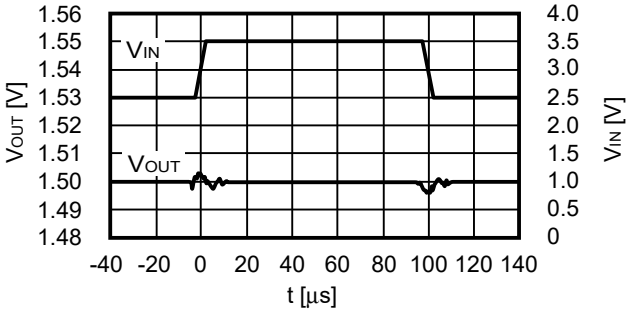


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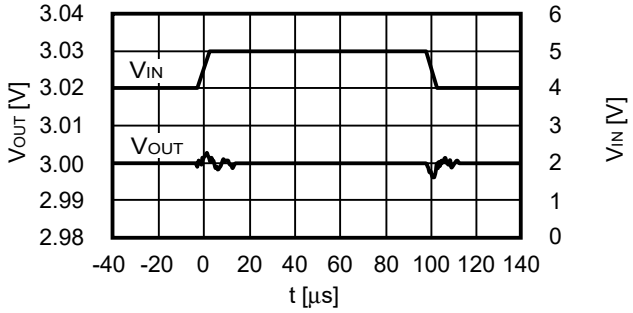
## ■ Reference Data (Per circuit)

### 1. Input Transient Response Characteristics (Ta = 25°C) Common to VR1 and 2

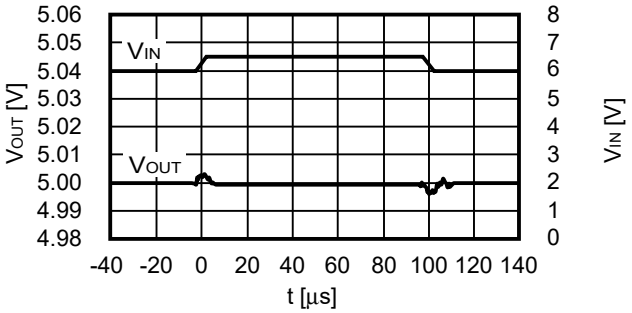
$V_{OUT}$ = 1.5 V
$I_{OUT}$ = 30 mA, $t_r = t_f$ = 5.0 µs, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF




$V_{OUT}$ = 3.0 V
$I_{OUT}$ = 30 mA, $t_r = t_f$ = 5.0 µs, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF

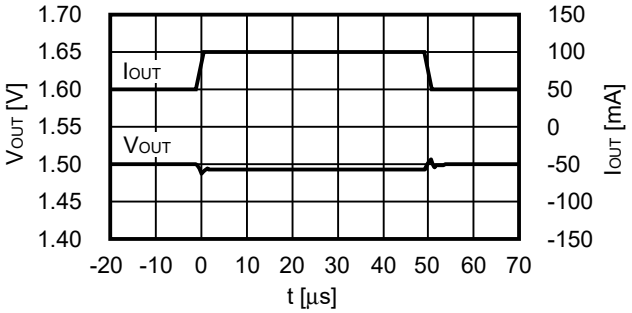



$V_{OUT}$ = 5.0 V
$I_{OUT}$ = 30 mA, $t_r = t_f$ = 5.0 µs, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF

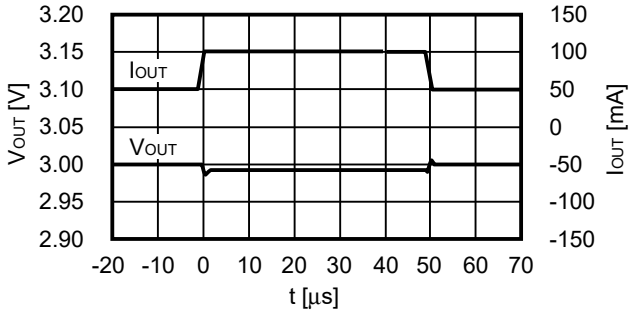



### 2. Load Transient Response Characteristics (Ta = 25°C)

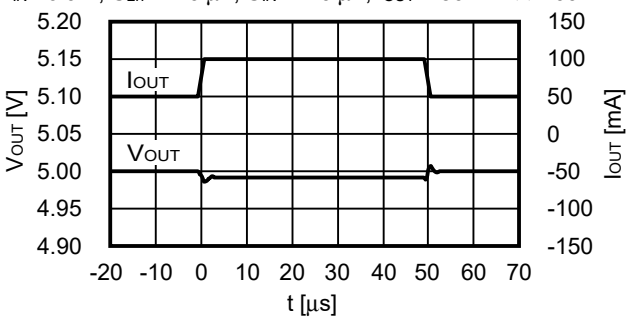
$V_{OUT}$ = 1.5 V
$V_{IN}$ = 2.5 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 50 mA ↔ 100 mA




$V_{OUT}$ = 3.0 V
$V_{IN}$ = 4.0 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 50 mA ↔ 100 mA




$V_{OUT}$ = 5.0 V
$V_{IN}$ =6.0 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 50 mA ↔ 100 mA



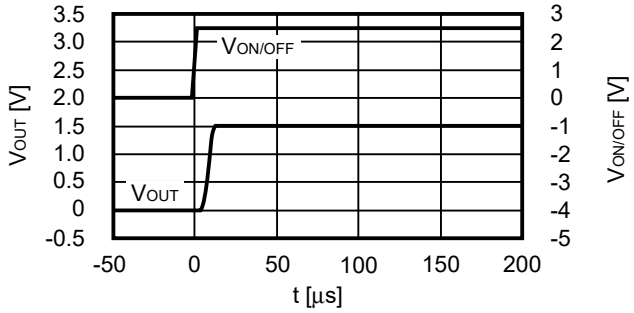

**Remark** $C_{Ln}$: Output capacitor set to the VOUTn pin externally (n = 1, 2)



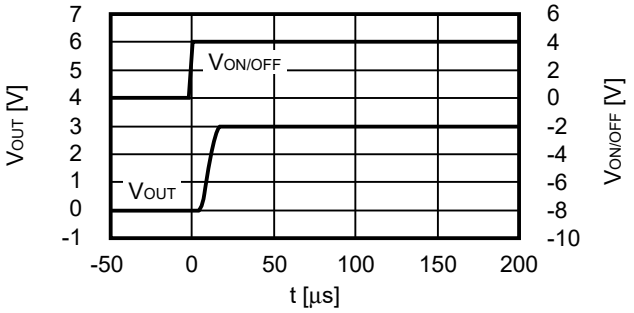
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### 3. ON / OFF Pin Transient Response Characteristics (Ta = 25°C)

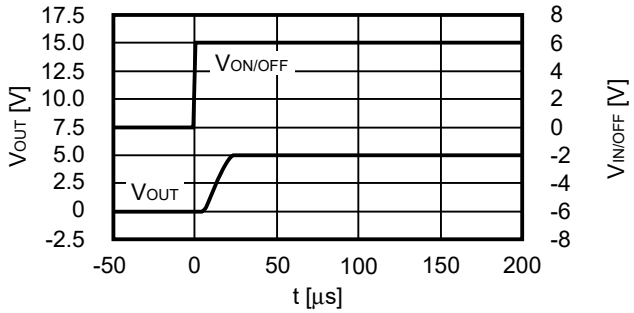
$V_{OUT}$ = 1.5 V
$V_{IN}$ = 2.5 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 100 mA




$V_{OUT}$ = 3.0 V
$V_{IN}$ = 4.0 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 100 mA




$V_{OUT}$ = 5.0 V
$V_{IN}$ = 6.0 V, $C_{Ln}$ = 1.0 µF, $C_{IN}$ = 1.0 µF, $I_{OUT}$ = 100 mA




### 4. Output Capacitance vs. Discharge Time Characteristics (Ta = 25°C)

**S-1711 Series A / B type (with discharge shunt function)**

$V_{IN}$ = $V_{OUT}$ + 1.0 V, $I_{OUT}$ = no load,
$V_{ON/OFF}$ = $V_{OUT}$ + 1.0 V → $V_{SS}$, $t_f$ = 1 µs

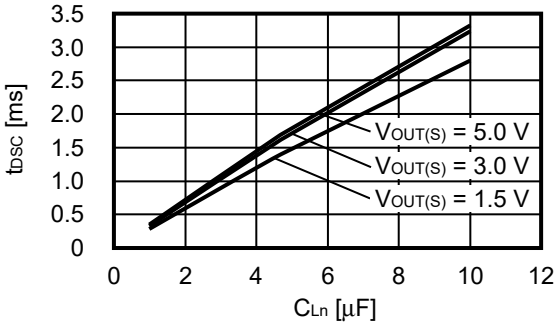



**Figure 27**

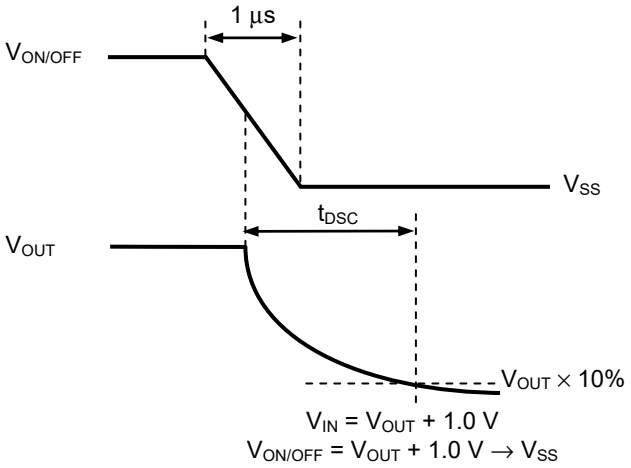



**Figure 28 Measurement Condition of Discharge Time**

**Remark** $C_{Ln}$: Output capacitor set to the VOUTn pin externally (n = 1, 2)

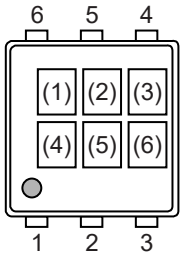


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## ■ Marking Specifications

### 1. SNT-6A

Top view




(1) to (3) : Product code (Refer to **Product name vs. Product code**)
(4) to (6) : Lot number

**Product name vs. Product code**

**(a) S-1711 Series A type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711A1515-I6T1U | Q | R | A |
| S-1711A1518-I6T1U | Q | Q | D |
| S-1711A1526-I6T1U | Q | V | T |
| S-1711A1528-I6T1U | Q | V | I |
| S-1711A152J-I6T1U | Q | Q | I |
| S-1711A1533-I6T1U | Q | V | W |
| S-1711A1815-I6T1U | Q | R | Y |
| S-1711A1818-I6T1U | Q | V | F |
| S-1711A1827-I6T1U | Q | R | P |
| S-1711A182H-I6T1U | Q | R | Q |
| S-1711A1828-I6T1U | Q | R | 5 |
| S-1711A182J-I6T1U | Q | V | S |
| S-1711A1829-I6T1U | Q | V | L |
| S-1711A1830-I6T1U | Q | V | H |
| S-1711A1833-I6T1U | Q | R | 7 |
| S-1711A1J28-I6T1U | Q | R | Z |
| S-1711A2332-I6T1U | Q | V | U |
| S-1711A2333-I6T1U | Q | V | V |
| S-1711A2424-I6T1U | Q | R | R |
| S-1711A2425-I6T1U | Q | R | S |
| S-1711A2515-I6T1U | Q | R | L |
| S-1711A2518-I6T1U | Q | R | E |
| S-1711A2525-I6T1U | Q | R | T |
| S-1711A2528-I6T1U | Q | V | D |
| S-1711A2533-I6T1U | Q | V | E |
| S-1711A2626-I6T1U | Q | V | M |
| S-1711A2628-I6T1U | Q | V | 7 |
| S-1711A2629-I6T1U | Q | V | 8 |

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711A2630-I6T1U | Q | V | 9 |
| S-1711A2815-I6T1U | Q | R | U |
| S-1711A2818-I6T1U | Q | R | V |
| S-1711A2828-I6T1U | Q | R | B |
| S-1711A2829-I6T1U | Q | R | 2 |
| S-1711A2830-I6T1U | Q | R | D |
| S-1711A2831-I6T1U | Q | Q | A |
| S-1711A2832-I6T1U | Q | R | F |
| S-1711A2833-I6T1U | Q | R | G |
| S-1711A2J15-I6T1U | Q | Q | F |
| S-1711A2J18-I6T1U | Q | Q | G |
| S-1711A2J2J-I6T1U | Q | R | H |
| S-1711A2J33-I6T1U | Q | Q | C |
| S-1711A2929-I6T1U | Q | R | J |
| S-1711A3015-I6T1U | Q | R | X |
| S-1711A3018-I6T1U | Q | R | W |
| S-1711A3025-I6T1U | Q | R | M |
| S-1711A3028-I6T1U | Q | V | Z |
| S-1711A3030-I6T1U | Q | R | K |
| S-1711A3033-I6T1U | Q | R | N |
| S-1711A3128-I6T1U | Q | Q | B |
| S-1711A3318-I6T1U | Q | V | R |
| S-1711A3333-I6T1U | Q | R | 3 |
| S-1711A3348-I6T1U | Q | V | J |
| S-1711A3350-I6T1U | Q | V | 2 |
| S-1711A3434-I6T1U | Q | V | 6 |
| S-1711A5025-I6T1U | Q | V | 3 |
| S-1711A5030-I6T1U | Q | R | 8 |



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**(b) S-1711 Series B type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711B1518-I6T1U | Q | U | H |
| S-1711B1528-I6T1U | Q | Z | C |
| S-1711B1825-I6T1U | Q | U | K |
| S-1711B1828-I6T1U | Q | U | B |
| S-1711B1833-I6T1U | Q | U | J |
| S-1711B2518-I6T1U | Q | U | A |
| S-1711B2528-I6T1U | Q | U | C |
| S-1711B2815-I6T1U | Q | U | D |
| S-1711B2818-I6T1U | Q | U | E |
| S-1711B2828-I6T1U | Q | U | F |
| S-1711B2833-I6T1U | Q | Z | D |
| S-1711B3033-I6T1U | Q | Z | A |
| S-1711B3333-I6T1U | Q | Z | B |

**(c) S-1711 Series C type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711C1515-I6T1U | Q | S | A |
| S-1711C1815-I6T1U | Q | S | B |
| S-1711C1827-I6T1U | Q | S | C |
| S-1711C182H-I6T1U | Q | S | D |
| S-1711C1828-I6T1U | Q | S | Z |
| S-1711C1J28-I6T1U | Q | S | E |
| S-1711C2424-I6T1U | Q | S | F |
| S-1711C2425-I6T1U | Q | S | G |
| S-1711C2515-I6T1U | Q | S | H |
| S-1711C2518-I6T1U | Q | S | I |
| S-1711C2525-I6T1U | Q | S | J |
| S-1711C2815-I6T1U | Q | S | K |
| S-1711C2818-I6T1U | Q | S | L |
| S-1711C2828-I6T1U | Q | S | M |
| S-1711C2829-I6T1U | Q | S | N |
| S-1711C2830-I6T1U | Q | S | O |
| S-1711C2833-I6T1U | Q | S | P |
| S-1711C2J2J-I6T1U | Q | S | Q |
| S-1711C2929-I6T1U | Q | S | R |
| S-1711C3015-I6T1U | Q | S | S |
| S-1711C3018-I6T1U | Q | S | T |
| S-1711C3025-I6T1U | Q | S | U |
| S-1711C3030-I6T1U | Q | S | V |
| S-1711C3033-I6T1U | Q | S | W |

**(d) S-1711 Series D type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711D1828-I6T1U | Q | U | N |
| S-1711D1925-I6T1U | Q | U | R |
| S-1711D2518-I6T1U | Q | U | O |
| S-1711D2528-I6T1U | Q | U | P |
| S-1711D252J-I6T1U | Q | U | Y |
| S-1711D2815-I6T1U | Q | U | Q |
| S-1711D2J2J-I6T1U | Q | U | U |

**(e) S-1711 Series E type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711E2818-I6T1U | Q | T | A |

**(f) S-1711 Series F type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711F2818-I6T1U | Q | T | F |

**(g) S-1711 Series G type**

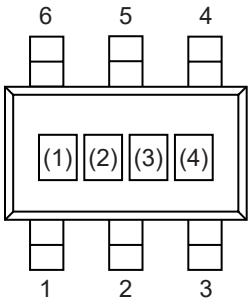
| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711G2830-I6T1U | Q | T | K |



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## 2. SOT-23-6

Top view




(1) to (3): Product code (Refer to **Product name vs. Product code**)
(4): Lot number

**Product name vs. Product code**

**(a) S-1711 Series A type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711A1515-M6T1x | Q | R | A |
| S-1711A1528-M6T1x | Q | V | I |
| S-1711A1529-M6T1x | Q | V | K |
| S-1711A1533-M6T1x | Q | V | W |
| S-1711A1815-M6T1x | Q | R | Y |
| S-1711A1818-M6T1x | Q | V | F |
| S-1711A1825-M6T1x | Q | R | 4 |
| S-1711A1827-M6T1x | Q | R | P |
| S-1711A182H-M6T1x | Q | R | Q |
| S-1711A1828-M6T1x | Q | R | 5 |
| S-1711A182J-M6T1x | Q | V | S |
| S-1711A1829-M6T1x | Q | V | L |
| S-1711A1830-M6T1x | Q | V | H |
| S-1711A1832-M6T1x | Q | V | N |
| S-1711A1833-M6T1x | Q | R | 7 |
| S-1711A1J28-M6T1x | Q | R | Z |
| S-1711A2045-M6T1x | Q | V | G |
| S-1711A2424-M6T1x | Q | R | R |
| S-1711A2425-M6T1x | Q | R | S |
| S-1711A2515-M6T1x | Q | R | L |
| S-1711A2518-M6T1x | Q | R | E |
| S-1711A2522-M6T1x | Q | V | O |
| S-1711A2525-M6T1x | Q | R | T |
| S-1711A2528-M6T1x | Q | V | D |
| S-1711A2529-M6T1x | Q | R | 9 |
| S-1711A2533-M6T1x | Q | V | E |
| S-1711A2618-M6T1x | Q | V | 4 |

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711A2718-M6T1x | Q | V | 5 |
| S-1711A2815-M6T1x | Q | R | U |
| S-1711A2818-M6T1x | Q | R | V |
| S-1711A2819-M6T1x | Q | V | P |
| S-1711A2825-M6T1x | Q | V | C |
| S-1711A2828-M6T1x | Q | R | B |
| S-1711A2829-M6T1x | Q | R | 2 |
| S-1711A2830-M6T1x | Q | R | D |
| S-1711A2832-M6T1x | Q | R | F |
| S-1711A2833-M6T1x | Q | R | G |
| S-1711A2J2J-M6T1x | Q | R | H |
| S-1711A2J30-M6T1x | Q | V | X |
| S-1711A2929-M6T1x | Q | R | J |
| S-1711A2933-M6T1x | Q | V | Y |
| S-1711A3015-M6T1x | Q | R | X |
| S-1711A3018-M6T1x | Q | R | W |
| S-1711A3025-M6T1x | Q | R | M |
| S-1711A3030-M6T1x | Q | R | K |
| S-1711A3033-M6T1x | Q | R | N |
| S-1711A3325-M6T1x | Q | V | A |
| S-1711A3328-M6T1x | Q | V | B |
| S-1711A3330-M6T1x | Q | R | 6 |
| S-1711A3333-M6T1x | Q | R | 3 |
| S-1711A3348-M6T1x | Q | V | J |
| S-1711A4020-M6T1x | Q | V | Q |
| S-1711A5025-M6T1x | Q | V | 3 |

**Remark 1.** x: G or U
**2.** Please select products of environmental code = U for Sn 100%, halogen-free products.



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**(b) S-1711 Series B type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711B1518-M6T1x | Q | U | H |
| S-1711B1529-M6T1x | Q | U | I |
| S-1711B1825-M6T1x | Q | U | K |
| S-1711B1828-M6T1x | Q | U | B |
| S-1711B1832-M6T1x | Q | U | M |
| S-1711B1833-M6T1x | Q | U | J |
| S-1711B2515-M6T1x | Q | U | G |
| S-1711B2518-M6T1x | Q | U | A |
| S-1711B2528-M6T1x | Q | U | C |
| S-1711B2618-M6T1x | Q | Z | G |
| S-1711B2718-M6T1x | Q | Z | H |
| S-1711B2815-M6T1x | Q | U | D |
| S-1711B2818-M6T1x | Q | U | E |
| S-1711B2825-M6T1x | Q | U | L |
| S-1711B2828-M6T1x | Q | U | F |
| S-1711B3030-M6T1x | Q | Z | I |
| S-1711B3033-M6T1x | Q | Z | A |
| S-1711B3036-M6T1x | Q | Z | F |
| S-1711B3333-M6T1x | Q | Z | B |

**(c) S-1711 Series C type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711C1515-M6T1x | Q | S | A |
| S-1711C1815-M6T1x | Q | S | B |
| S-1711C1825-M6T1x | Q | S | 2 |
| S-1711C1827-M6T1x | Q | S | C |
| S-1711C182H-M6T1x | Q | S | D |
| S-1711C1832-M6T1x | Q | S | X |
| S-1711C1J28-M6T1x | Q | S | E |
| S-1711C2424-M6T1x | Q | S | F |
| S-1711C2425-M6T1x | Q | S | G |
| S-1711C2515-M6T1x | Q | S | H |
| S-1711C2518-M6T1x | Q | S | I |
| S-1711C2525-M6T1x | Q | S | J |
| S-1711C2815-M6T1x | Q | S | K |
| S-1711C2818-M6T1x | Q | S | L |
| S-1711C2828-M6T1x | Q | S | M |
| S-1711C2829-M6T1x | Q | S | N |
| S-1711C2830-M6T1x | Q | S | O |
| S-1711C2833-M6T1x | Q | S | P |
| S-1711C2J2J-M6T1x | Q | S | Q |
| S-1711C2929-M6T1x | Q | S | R |
| S-1711C3015-M6T1x | Q | S | S |
| S-1711C3018-M6T1x | Q | S | T |
| S-1711C3025-M6T1x | Q | S | U |
| S-1711C3030-M6T1x | Q | S | V |
| S-1711C3033-M6T1x | Q | S | W |
| S-1711C3131-M6T1x | Q | S | Y |

**(d) S-1711 Series D type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711D1825-M6T1x | Q | U | S |
| S-1711D1826-M6T1x | Q | U | W |
| S-1711D1828-M6T1x | Q | U | N |
| S-1711D1832-M6T1x | Q | U | T |
| S-1711D1925-M6T1x | Q | U | R |
| S-1711D2518-M6T1x | Q | U | O |
| S-1711D2528-M6T1x | Q | U | P |
| S-1711D2629-M6T1x | Q | U | X |
| S-1711D2815-M6T1x | Q | U | Q |
| S-1711D4230-M6T1x | Q | U | V |

**(e) S-1711 Series E type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711E1833-M6T1x | Q | T | C |
| S-1711E2818-M6T1x | Q | T | A |
| S-1711E3333-M6T1x | Q | T | B |

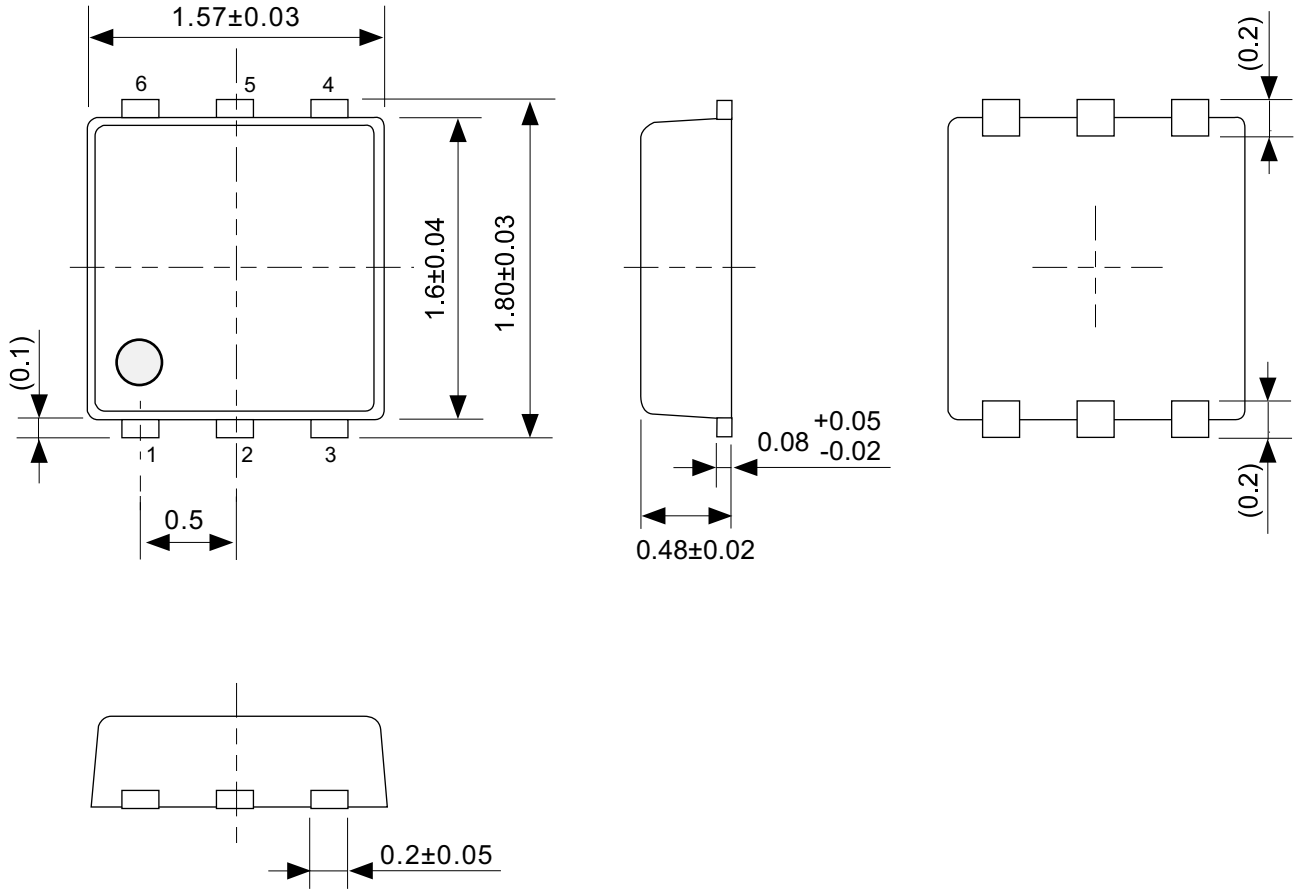
**(f) S-1711 Series H type**

| Product Name | Product code | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| S-1711H2518-M6T1x | Q | T | P |

**Remark 1.** x: G or U
**2.** Please select products of environmental code = U for Sn 100%, halogen-free products.



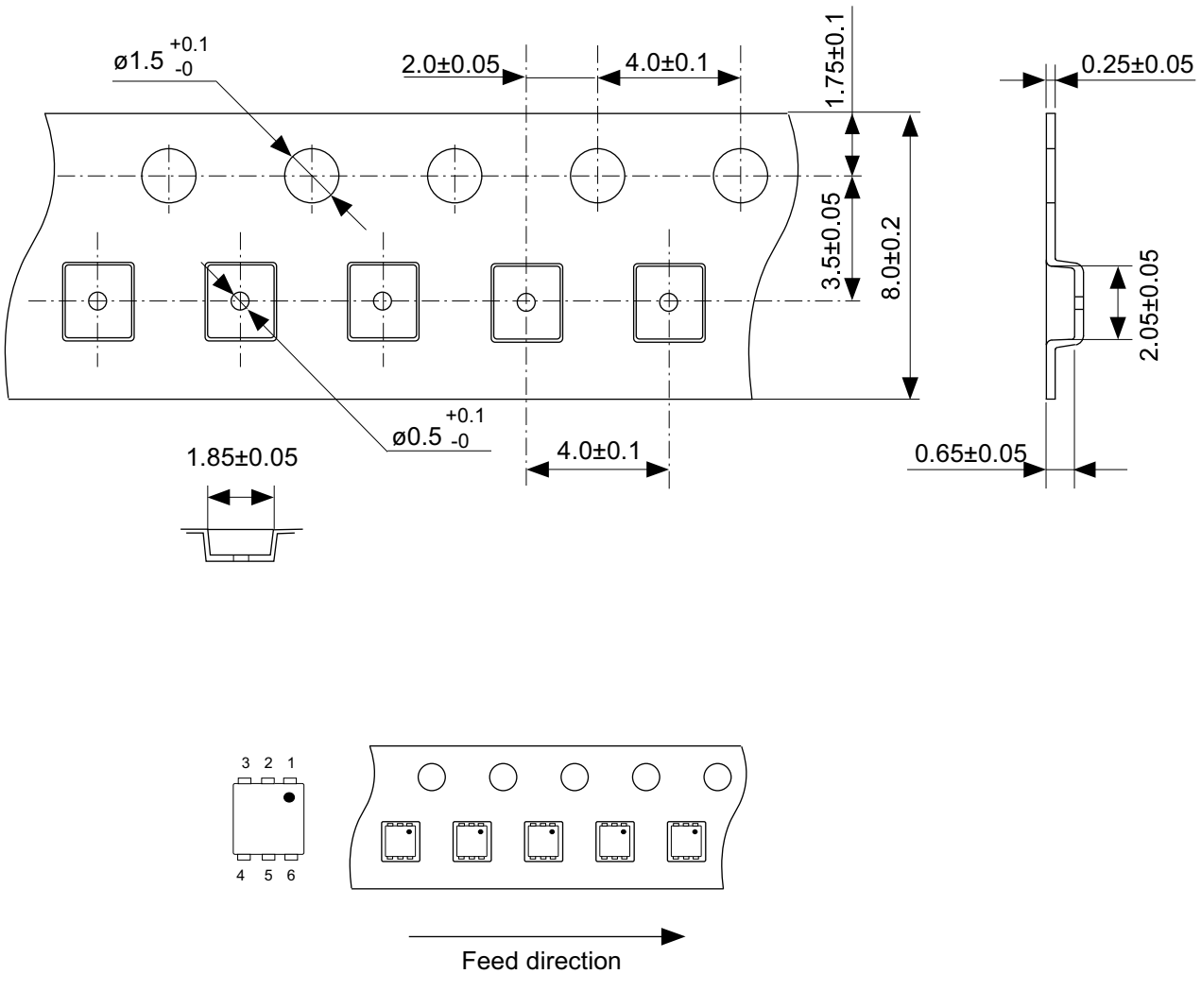
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No. PG006-A-P-SD-2.1

| | |
|---|---|
| TITLE | SNT-6A-A-PKG Dimensions |
| No. | PG006-A-P-SD-2.1 |
| ANGLE | |
| UNIT | mm |
| | |
| **ABLIC Inc.** | |

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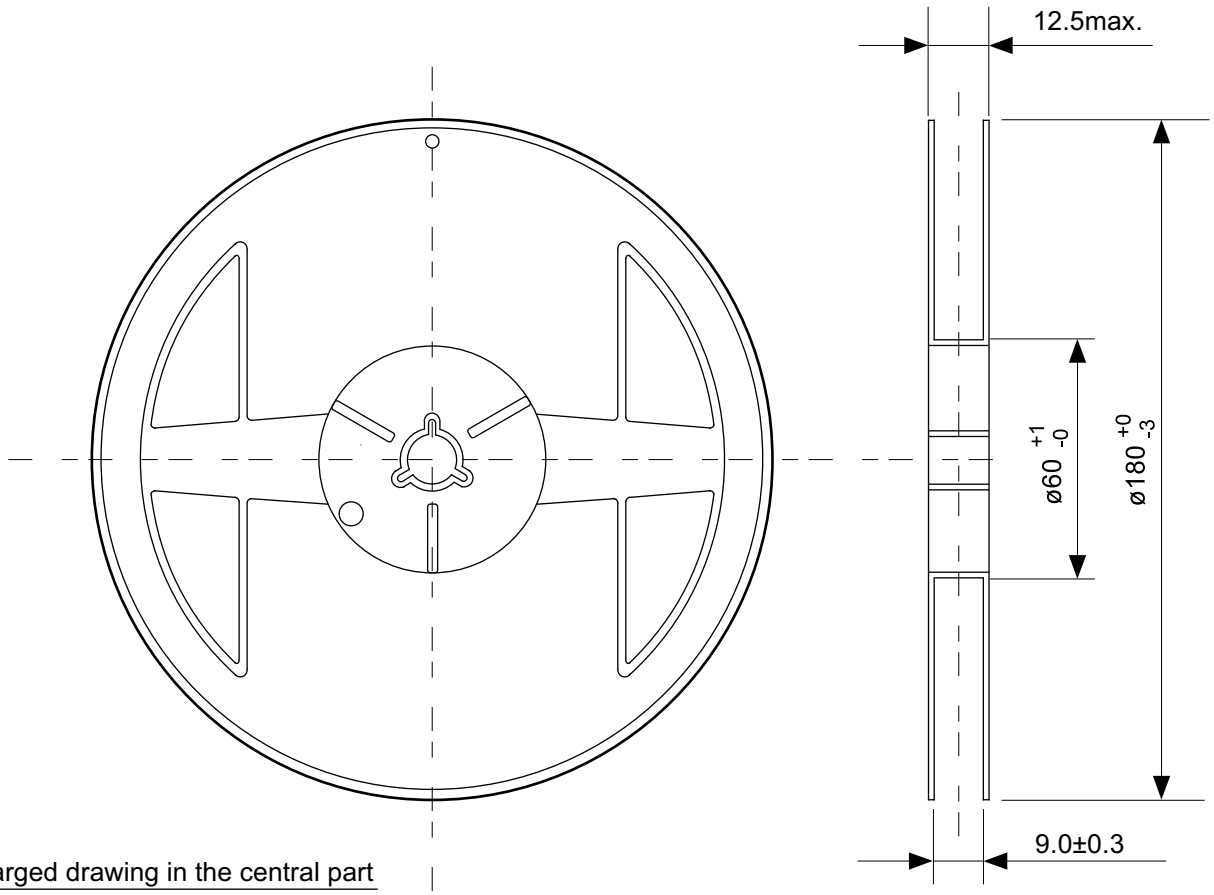




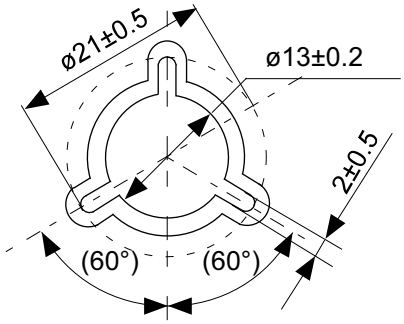
No. PG006-A-C-SD-2.0

| | |
|---|---|
| TITLE | SNT-6A-A-Carrier Tape |
| No. | PG006-A-C-SD-2.0 |
| ANGLE | |
| UNIT | mm |
| | |
| **ABLIC Inc.** | |

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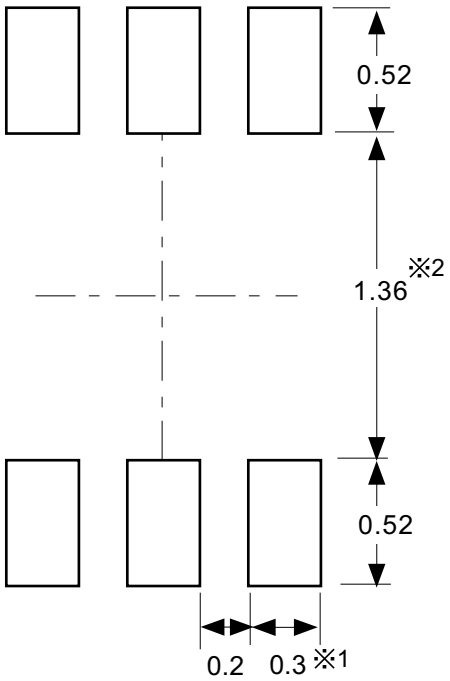

Enlarged drawing in the central part




No. PG006-A-R-SD-1.0

| | | | |
|---|---|---|---|
| TITLE | SNT-6A-A-Reel | | |
| No. | PG006-A-R-SD-1.0 | | |
| ANGLE | | QTY. | 5,000 |
| UNIT | mm | | |
| | | | |
| **ABLIC Inc.** | | | |

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※1. ランドパターンの幅に注意してください (0.25 mm min. / 0.30 mm typ.)。
※2. パッケージ中央にランドパターンを広げないでください (1.30 mm ~ 1.40 mm)。

注意 1. パッケージのモールド樹脂下にシルク印刷やハンダ印刷などしないでください。
2. パッケージ下の配線上のソルダーレジストなどの厚みをランドパターン表面から**0.03 mm** 以下にしてください。
3. マスク開口サイズと開口位置はランドパターンと合わせてください。
4. 詳細は〝**SNT**パッケージ活用の手引き〟を参照してください。

※1. Pay attention to the land pattern width (0.25 mm min. / 0.30 mm typ.).
※2. Do not widen the land pattern to the center of the package ( 1.30 mm ~ 1.40 mm ).

**Caution 1. Do not do silkscreen printing and solder printing under the mold resin of the package.**
**2. The thickness of the solder resist on the wire pattern under the package should be 0.03 mm or less from the land pattern surface.**
**3. Match the mask aperture size and aperture position with the land pattern.**
**4. Refer to "SNT Package User's Guide" for details.**

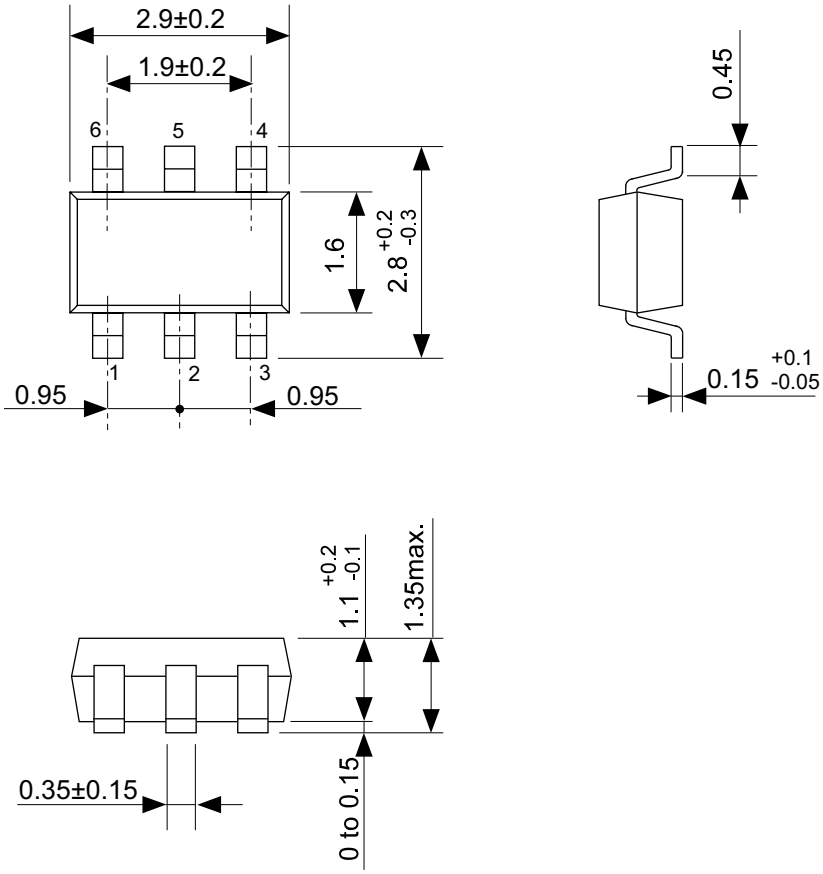
※1. 请注意焊盘模式的宽度 (0.25 mm min. / 0.30 mm typ.)。
※2. 请勿向封装中间扩展焊盘模式 (1.30 mm ~ 1.40 mm)。

**注意 1. 请勿在树脂型封装的下面印刷丝网、焊锡。**
**2. 在封装下、布线上的阻焊膜厚度 (从焊盘模式表面起) 请控制在 0.03 mm 以下。**
**3. 钢网的开口尺寸和开口位置请与焊盘模式对齐。**
**4. 详细内容请参阅 "SNT 封装的应用指南"。**

No. PG006-A-L-SD-4.1

| | |
|---|---|
| TITLE | SNT-6A-A<br>-Land Recommendation |
| No. | PG006-A-L-SD-4.1 |
| ANGLE | |
| UNIT | mm |
| | |
| **ABLIC Inc.** | |

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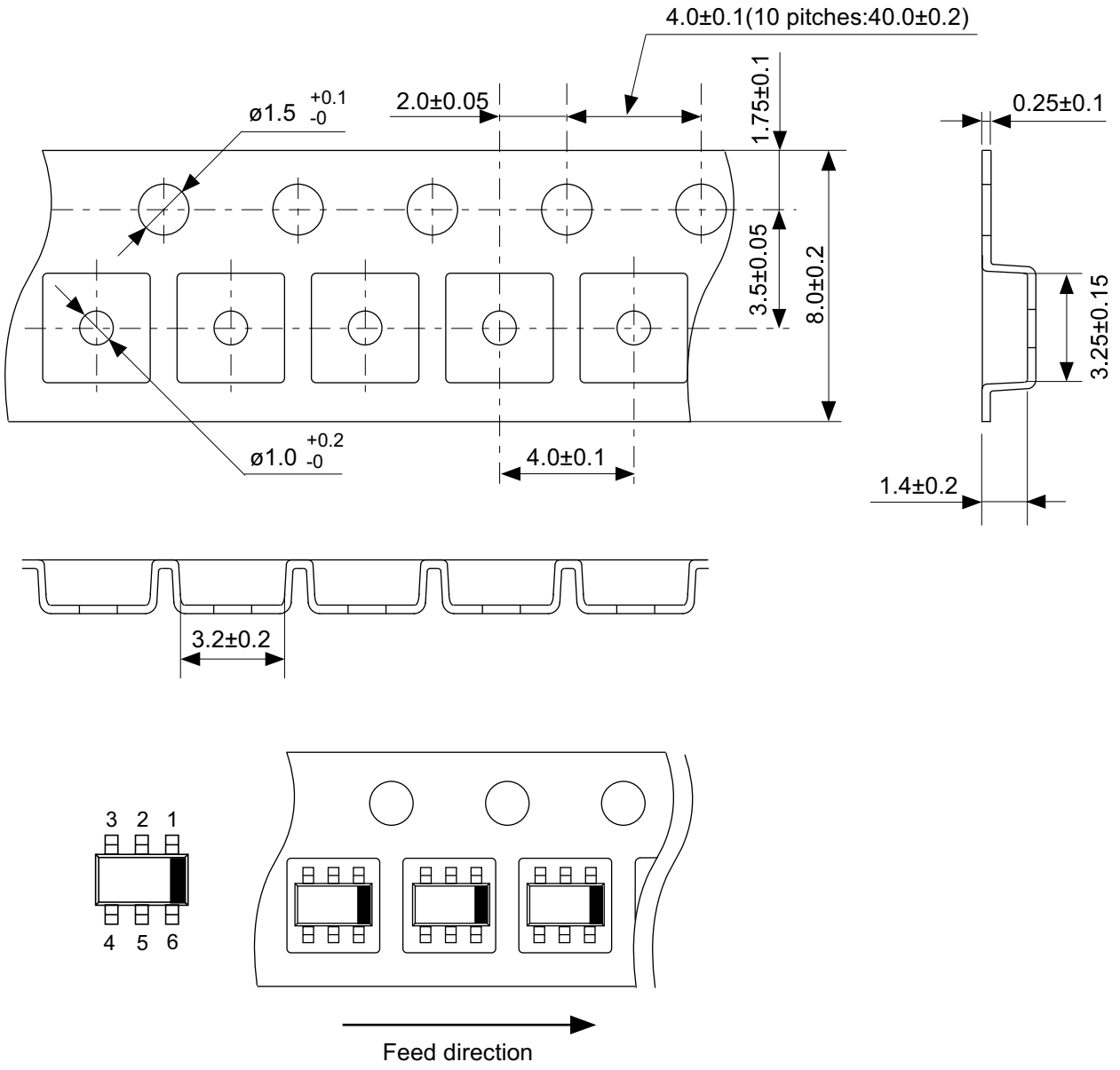



No. MP006-A-P-SD-2.1

| | |
|---|---|
| TITLE | SOT236-A-PKG Dimensions |
| No. | MP006-A-P-SD-2.1 |
| ANGLE | |
| UNIT | mm |
| | |

**ABLIC Inc.**

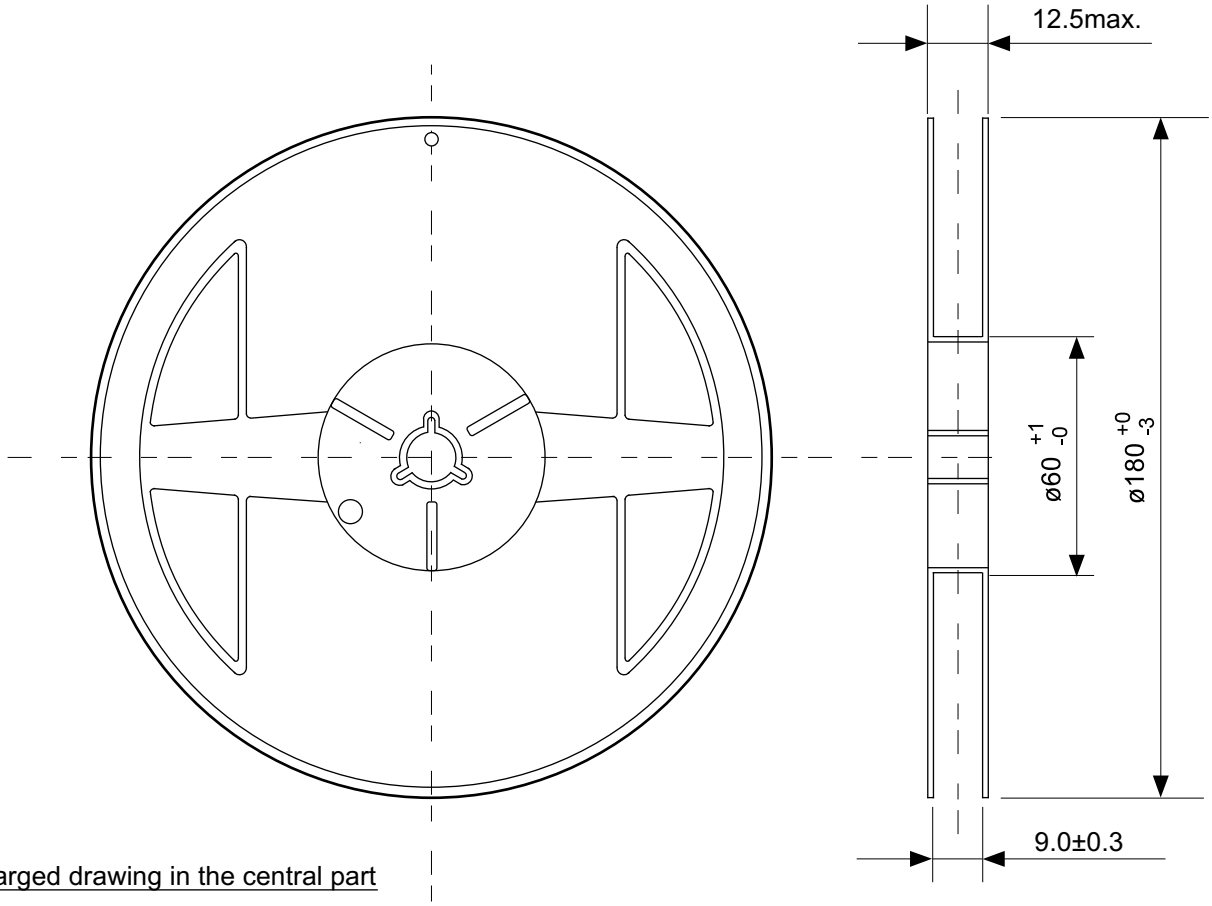
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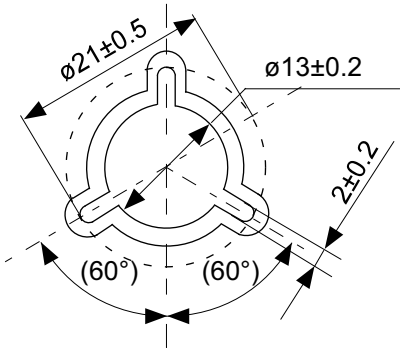

No. MP006-A-C-SD-3.1

| | |
|---|---|
| TITLE | SOT236-A-Carrier Tape |
| No. | MP006-A-C-SD-3.1 |
| ANGLE | |
| UNIT | mm |
| | |
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Enlarged drawing in the central part




No. MP006-A-R-SD-2.1

| | | | |
|---|---|---|---|
| TITLE | SOT236-A-Reel | | |
| No. | MP006-A-R-SD-2.1 | | |
| ANGLE | | QTY | 3,000 |
| UNIT | mm | | |
| | | | |
| **ABLIC Inc.** | | | |

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