

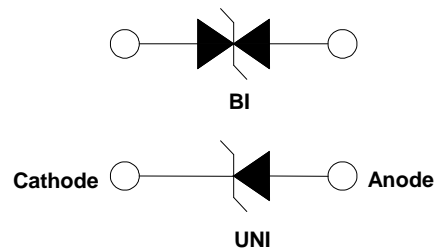
**Mechanical Data**

- I Case: Molded plastic
- I Epoxy: UL 94V-0 rate flame retardant
- I Lead: Solderable per MIL-STD-750, method 2026
- I Polarity: Color band denotes cathode end except Bipolar
- I Mounting position: Any

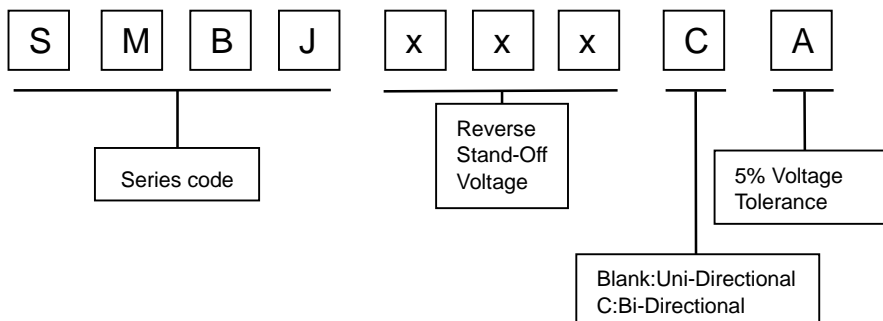
**Features**

- I Fast response time
- I Low incremental surge resistance
- I Matte tin lead-free Plated
- I Halogen free and RoHS compliant
- I Typical IR less than 1µA above 10V
- I Compatible with industrial standard package DO-214AA
- I For surface mounted applications to optimize board space
- I 600W peak pulse power capability with at 10/1000µs waveform, repetition rate (duty cycle): 0.01%
- I High temperature soldering:260°C/10 seconds at terminals

**Electrical symbol**



**Part Number Code**



**Mechanical Characteristics**

| Rating   | Symbol                            | Value      | Units |
|--|-----------------------------------|------------|-------|
| Peak Pulse Power Dissipation at T <sub>A</sub> =25°C by 10/1000µs Waveform (Fig.2)(Note 1), (Note 2) | P <sub>PP</sub>                   | 600        | W     |
| Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =75°C(Fig.6)                               | P <sub>D</sub>                    | 5.0        | W     |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)                                     | I <sub>FSM</sub>                  | 100        | A     |
| Maximum instantaneous forward voltage at 50 A for unidirectional only <sup>(3)</sup>                 | V <sub>F</sub>                    | 3.5/5.0    | V     |
| Operating Temperature Range Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub> | -55 to 150 | °C    |

Notes:

1. Non-repetitive current pulse, per Fig.4 and derated above T<sub>A</sub>=25°C per Fig. 3.
2. Mounted on 5.0x5.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

### Electrical Characteristics

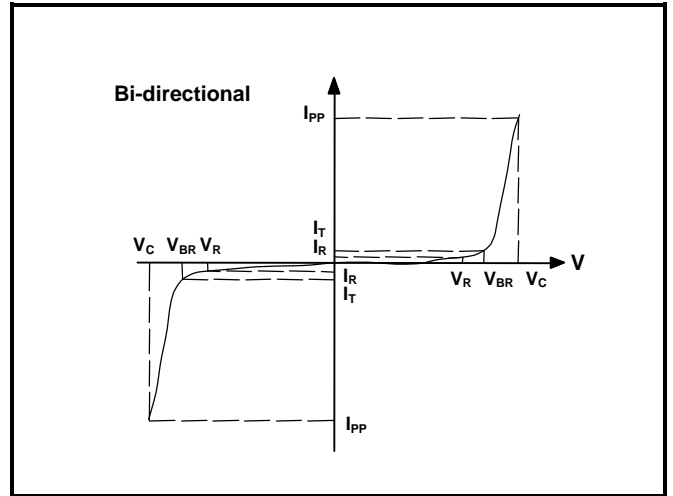
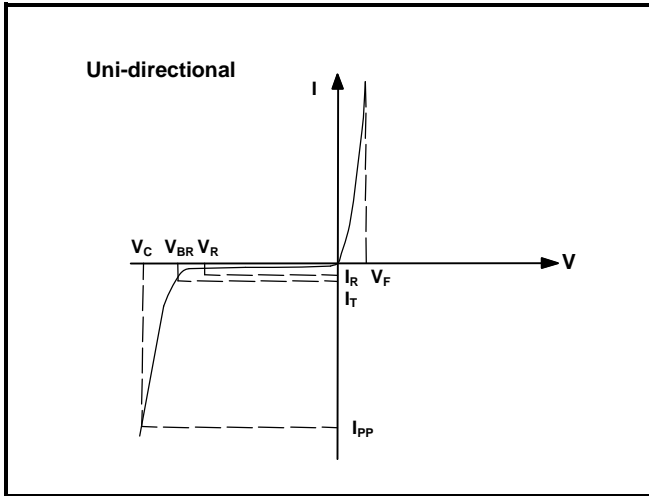
| Type Number |           | Marking |    | Reverse Stand-Off Voltage | Breakdown Voltage |                                 | Test Current | Max. Clamping Voltage<br>10/1000µs | Max. Peak Pulse Current<br>10/1000µs | Reverse Leakage |
|-------------|-----------|---------|----|---------------------------|-------------------|---------------------------------|--------------|------------------------------------|--------------------------------------|-----------------|
|             |           |         |    |                           | V <sub>RWM</sub>  | V <sub>BR</sub> @I <sub>T</sub> |              |                                    |                                      |                 |
|             |           |         |    | UNI                       |                   | BI                              | UNI          | BI                                 | V                                    | Min             |
|             |           |         |    | V                         | V                 | V                               | mA           | V                                  | A                                    | µA              |
| SMBJ5.0A    | SMBJ5.0CA | KE      | AE | 5.0                       | 6.40              | 7.07                            | 10           | 9.2                                | 65.2                                 | 500             |
| SMBJ6.0A    | SMBJ6.0CA | KG      | AG | 6.0                       | 6.67              | 7.37                            | 10           | 10.3                               | 58.3                                 | 300             |
| SMBJ6.5A    | SMBJ6.5CA | KK      | AK | 6.5                       | 7.22              | 7.98                            | 10           | 11.2                               | 53.6                                 | 200             |
| SMBJ7.0A    | SMBJ7.0CA | KM      | AM | 7.0                       | 7.78              | 8.60                            | 10           | 12.0                               | 50.0                                 | 100             |
| SMBJ7.5A    | SMBJ7.5CA | KP      | AP | 7.5                       | 8.33              | 9.21                            | 1            | 12.9                               | 46.6                                 | 50              |
| SMBJ8.0A    | SMBJ8.0CA | KR      | AR | 8.0                       | 8.89              | 9.83                            | 1            | 13.6                               | 44.2                                 | 50              |
| SMBJ8.5A    | SMBJ8.5CA | KT      | AT | 8.5                       | 9.44              | 10.4                            | 1            | 14.4                               | 41.7                                 | 30              |
| SMBJ9.0A    | SMBJ9.0CA | KV      | AV | 9.0                       | 10.00             | 11.1                            | 1            | 15.4                               | 39.0                                 | 30              |
| SMBJ10A     | SMBJ10CA  | KX      | AX | 10.0                      | 11.10             | 12.3                            | 1            | 17.0                               | 35.3                                 | 3               |
| SMBJ11A     | SMBJ11CA  | KZ      | AZ | 11.0                      | 12.20             | 13.5                            | 1            | 18.2                               | 33.0                                 | 1               |
| SMBJ12A     | SMBJ12CA  | LE      | BE | 12.0                      | 13.30             | 14.7                            | 1            | 19.9                               | 30.2                                 | 1               |
| SMBJ13A     | SMBJ13CA  | LG      | BG | 13.0                      | 14.40             | 15.9                            | 1            | 21.5                               | 28.0                                 | 1               |
| SMBJ14A     | SMBJ14CA  | LK      | BK | 14.0                      | 15.60             | 17.2                            | 1            | 23.2                               | 25.9                                 | 1               |
| SMBJ15A     | SMBJ15CA  | LM      | BM | 15.0                      | 16.70             | 18.5                            | 1            | 24.4                               | 24.6                                 | 1               |
| SMBJ16A     | SMBJ16CA  | LP      | BP | 16.0                      | 17.80             | 19.7                            | 1            | 26.0                               | 23.1                                 | 1               |
| SMBJ17A     | SMBJ17CA  | LR      | BR | 17.0                      | 18.90             | 20.9                            | 1            | 27.6                               | 21.8                                 | 1               |
| SMBJ18A     | SMBJ18CA  | LT      | BT | 18.0                      | 20.00             | 22.1                            | 1            | 29.2                               | 20.6                                 | 1               |
| SMBJ20A     | SMBJ20CA  | LV      | BV | 20.0                      | 22.20             | 24.5                            | 1            | 32.4                               | 18.6                                 | 1               |
| SMBJ22A     | SMBJ22CA  | LX      | BX | 22.0                      | 24.40             | 26.9                            | 1            | 35.5                               | 16.9                                 | 1               |
| SMBJ24A     | SMBJ24CA  | LZ      | BZ | 24.0                      | 26.70             | 29.5                            | 1            | 38.9                               | 15.5                                 | 1               |
| SMBJ26A     | SMBJ26CA  | ME      | CE | 26.0                      | 28.90             | 31.9                            | 1            | 42.1                               | 14.3                                 | 1               |
| SMBJ28A     | SMBJ28CA  | MG      | CG | 28.0                      | 31.10             | 34.4                            | 1            | 45.4                               | 13.3                                 | 1               |
| SMBJ30A     | SMBJ30CA  | MK      | CK | 30.0                      | 33.30             | 36.8                            | 1            | 48.4                               | 12.4                                 | 1               |
| SMBJ33A     | SMBJ33CA  | MM      | CM | 33.0                      | 36.70             | 40.6                            | 1            | 53.3                               | 11.3                                 | 1               |
| SMBJ36A     | SMBJ36CA  | MP      | CP | 36.0                      | 40.00             | 44.2                            | 1            | 58.1                               | 10.4                                 | 1               |
| SMBJ40A     | SMBJ40CA  | MR      | CR | 40.0                      | 44.40             | 49.1                            | 1            | 64.5                               | 9.3                                  | 1               |
| SMBJ43A     | SMBJ43CA  | MT      | CT | 43.0                      | 47.80             | 52.8                            | 1            | 69.4                               | 8.7                                  | 1               |
| SMBJ45A     | SMBJ45CA  | MV      | CV | 45.0                      | 50.00             | 55.3                            | 1            | 72.7                               | 8.3                                  | 1               |
| SMBJ48A     | SMBJ48CA  | MX      | CX | 48.0                      | 53.30             | 58.9                            | 1            | 77.4                               | 7.8                                  | 1               |
| SMBJ51A     | SMBJ51CA  | MZ      | CZ | 51.0                      | 56.70             | 62.7                            | 1            | 82.4                               | 7.3                                  | 1               |

## Electrical Characteristics

| Type Number |           | Marking |    | Reverse Stand-Off Voltage | Breakdown Voltage |       | Test Current | Max. Clamping Voltage<br>10/1000µs | Max. Peak Pulse Current<br>10/1000µs | Reverse Leakage |
|-------------|-----------|---------|----|---------------------------|-------------------|-------|--------------|------------------------------------|--------------------------------------|-----------------|
|             |           |         |    |                           | $V_{BR} @ I_T$    |       |              |                                    |                                      |                 |
|             |           |         |    | $V_{RWM}$                 | Min               | Max   | $I_T$        | $V_C @ I_{PP}$                     | $I_{PP}$                             | $I_R @ V_{RWM}$ |
| UNI         | BI        | UNI     | BI | V                         | V                 | V     | mA           | V                                  | A                                    | µA              |
| SMBJ54A     | SMBJ54CA  | NE      | DE | 54.0                      | 60.00             | 66.3  | 1            | 87.1                               | 6.9                                  | 1               |
| SMBJ58A     | SMBJ58CA  | NG      | DG | 58.0                      | 64.40             | 71.2  | 1            | 93.6                               | 6.5                                  | 1               |
| SMBJ60A     | SMBJ60CA  | NK      | DK | 60.0                      | 66.70             | 73.7  | 1            | 96.8                               | 6.2                                  | 1               |
| SMBJ64A     | SMBJ64CA  | NM      | DM | 64.0                      | 71.10             | 78.6  | 1            | 103.0                              | 5.9                                  | 1               |
| SMBJ70A     | SMBJ70CA  | NP      | DP | 70.0                      | 77.80             | 86.0  | 1            | 113.0                              | 5.3                                  | 1               |
| SMBJ75A     | SMBJ75CA  | NR      | DR | 75.0                      | 83.30             | 92.1  | 1            | 121.0                              | 5.0                                  | 1               |
| SMBJ78A     | SMBJ78CA  | NT      | DT | 78.0                      | 86.70             | 95.8  | 1            | 126.0                              | 4.8                                  | 1               |
| SMBJ85A     | SMBJ85CA  | NV      | DV | 85.0                      | 94.40             | 104.0 | 1            | 137.0                              | 4.4                                  | 1               |
| SMBJ90A     | SMBJ90CA  | NX      | DX | 90.0                      | 100.0             | 111.0 | 1            | 146.0                              | 4.1                                  | 1               |
| SMBJ100A    | SMBJ100CA | NZ      | DZ | 100.0                     | 111.0             | 123.0 | 1            | 162.0                              | 3.7                                  | 1               |
| SMBJ110A    | SMBJ110CA | PE      | EE | 110.0                     | 122.0             | 135.0 | 1            | 177.0                              | 3.4                                  | 1               |
| SMBJ120A    | SMBJ120CA | PG      | EG | 120.0                     | 133.0             | 147.0 | 1            | 193.0                              | 3.1                                  | 1               |
| SMBJ130A    | SMBJ130CA | PK      | EK | 130.0                     | 144.0             | 159.0 | 1            | 209.0                              | 2.9                                  | 1               |
| SMBJ150A    | SMBJ150CA | PM      | EM | 150.0                     | 167.0             | 185.0 | 1            | 243.0                              | 2.5                                  | 1               |
| SMBJ160A    | SMBJ160CA | PP      | EP | 160.0                     | 178.0             | 197.0 | 1            | 259.0                              | 2.3                                  | 1               |
| SMBJ170A    | SMBJ170CA | PR      | ER | 170.0                     | 189.0             | 209.0 | 1            | 275.0                              | 2.2                                  | 1               |
| SMBJ180A    | SMBJ180CA | PT      | ET | 180.0                     | 201.0             | 222.0 | 1            | 292.0                              | 2.1                                  | 1               |
| SMBJ190A    | SMBJ190CA | PV      | EV | 190.0                     | 209.0             | 243.0 | 1            | 306.0                              | 2.0                                  | 1               |
| SMBJ200A    | SMBJ200CA | PX      | EX | 200.0                     | 224.0             | 247.0 | 1            | 324.0                              | 1.9                                  | 1               |
| SMBJ210A    | SMBJ210CA | PZ      | EZ | 210.0                     | 231.0             | 268.0 | 1            | 340.0                              | 1.8                                  | 1               |
| SMBJ220A    | SMBJ220CA | QE      | FE | 220.0                     | 246.0             | 272.0 | 1            | 356.0                              | 1.7                                  | 1               |
| SMBJ250A    | SMBJ250CA | QG      | FG | 250.0                     | 279.0             | 309.0 | 1            | 405.0                              | 1.5                                  | 1               |
| SMBJ300A    | SMBJ300CA | QK      | FK | 300.0                     | 335.0             | 371.0 | 1            | 486.0                              | 1.3                                  | 1               |
| SMBJ350A    | SMBJ350CA | QM      | FM | 350.0                     | 391.0             | 432.0 | 1            | 567.0                              | 1.1                                  | 1               |
| SMBJ400A    | SMBJ400CA | QP      | FP | 400.0                     | 447.0             | 494.0 | 1            | 648.0                              | 0.9                                  | 1               |
| SMBJ440A    | SMBJ440CA | QR      | FR | 440.0                     | 492.0             | 543.0 | 1            | 713.0                              | 0.9                                  | 1               |
| SMBJ500A    | SMBJ500CA | QV      | FV | 500.0                     | 558.0             | 618.0 | 1            | 762.0                              | 0.8                                  | 1               |

Notes: For bidirectional type having  $V_R$  of 10V and less, the  $I_R$  limit is double.

**I-V Curve Characteristics**



$P_{PPM}$  Peak Pulse Power Dissipation -- Max power dissipation

$V_R$  Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

$V_{BR}$  Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )

$V_C$  Clamping Voltage -- Peak voltage measured across the TVS at a specified  $I_{ppm}$  (peak impulse current)

$I_R$  Reverse Leakage Current -- Current measured at  $V_R$

$V_F$  Forward Voltage Drop for Uni-directional

**Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

Figure 1 - TVS Transients Clamping Waveform

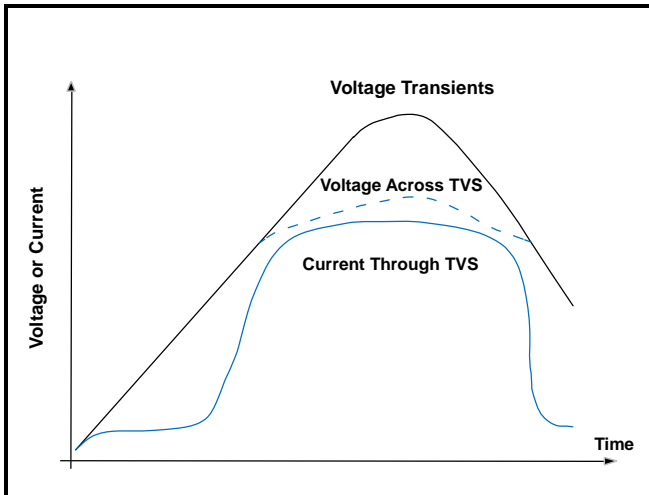
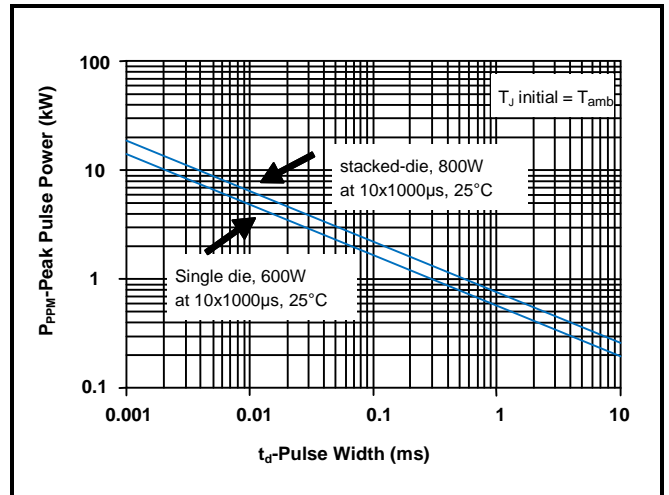


Figure 2 - Peak Pulse Power Rating Curve



Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 3 - Pulse Derating Curve

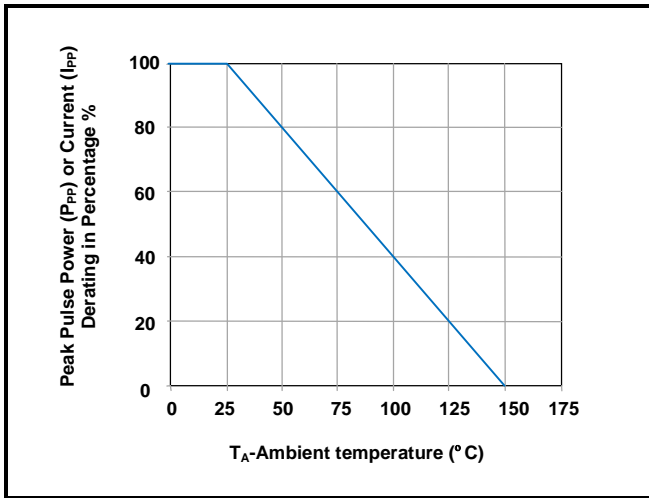


Figure 4 - Pulse Waveform

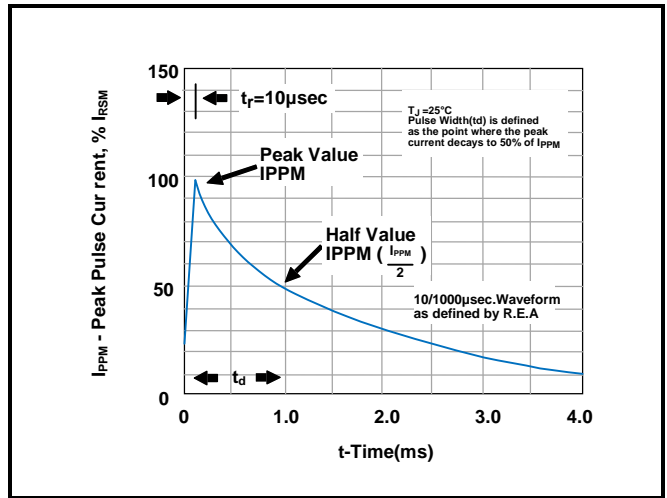


Figure 5 - Typical Junction Capacitance

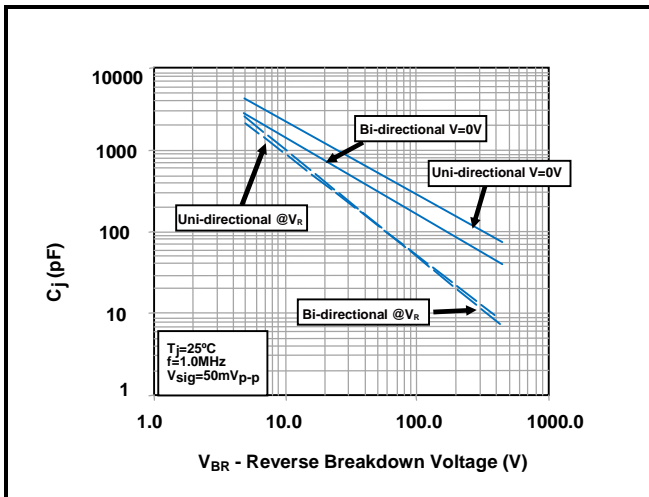


Figure 6 - Steady State Power Derating Curve

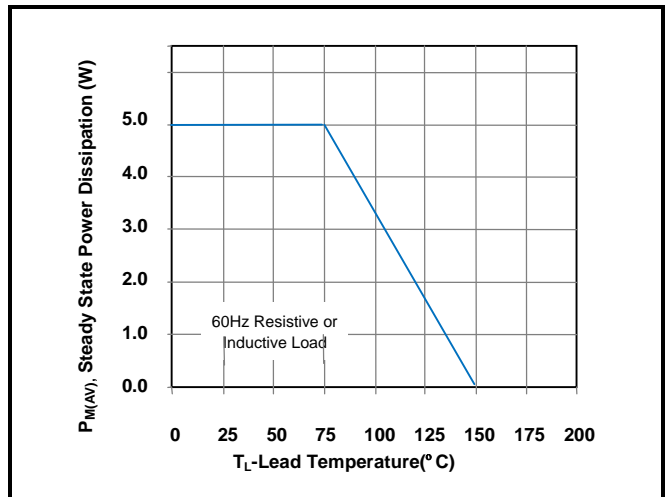
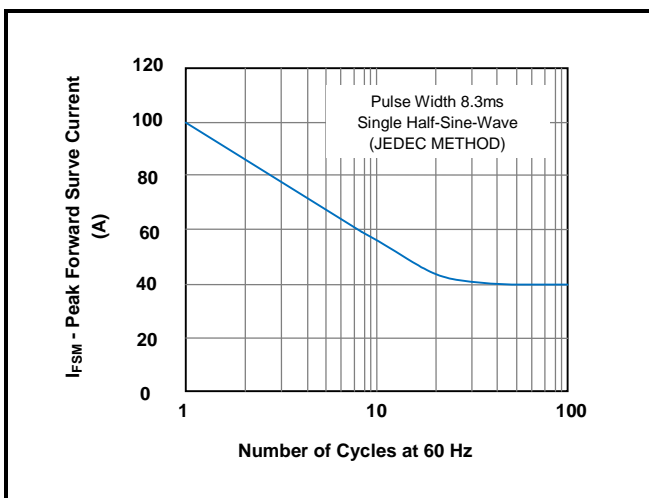
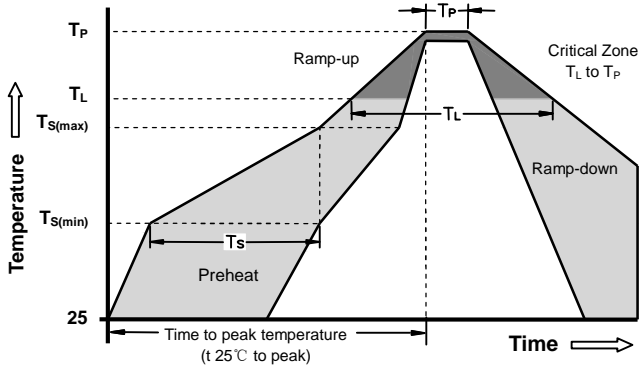


Figure 7 - Maximum Non-Repetitive Surge Current

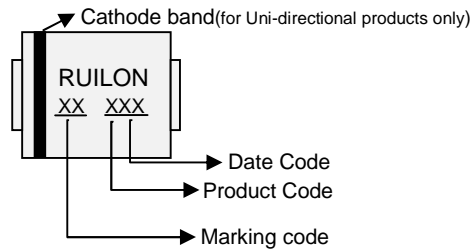


**Soldering Parameters - Reflow Soldering (Surface Mount Devices)**

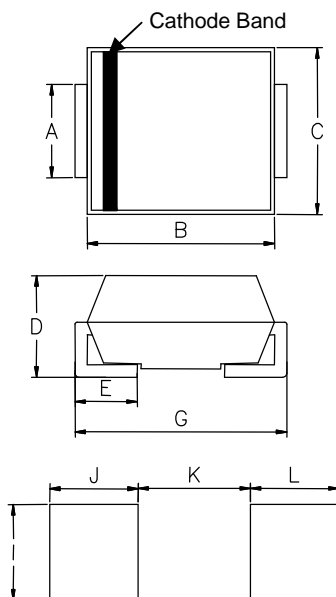


|  |                                   |                    |
|--|-----------------------------------|--------------------|
| Reflow Condition                                     |                                   | Pb - Free assembly |
| Pre Heat   | -Temperature Min ( $T_{s(min)}$ ) | 150°C              |
|  | -Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|  | - Time (min to max) ( $t_s$ )     | 60 -180 Seconds    |
| Average ramp up rate ( Liquids Temp $T_L$ ) to peak  |                                   | 3°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                 |                                   | 3°C/second max     |
| Reflow   | - Temperature ( $T_L$ ) (Liquids) | 217°C              |
|  | - Time (min to max) ( $t_s$ )     | 60 -150 Seconds    |
| Peak Temperature ( $T_P$ )                           |                                   | 260 +0/-5°C        |
| Time within 5°C of actual peak Temperature ( $t_p$ ) |                                   | 20 - 40 Seconds    |
| Ramp-down Rate                                       |                                   | 6°C/second max     |
| Time 25°C to peak Temperature ( $T_P$ )              |                                   | 8 minutes Max      |
| Do not exceed  |                                   | 260°C              |

**Part Marking System**

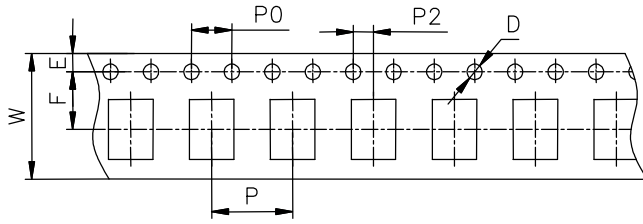


**Dimensions**

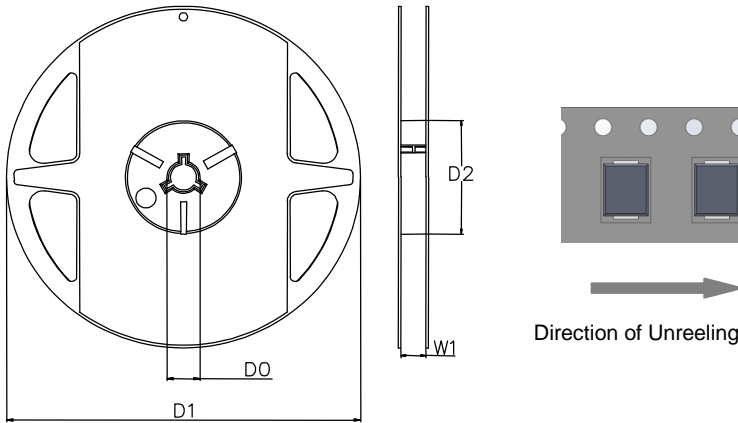


| DIM | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min         | Max  | Min    | Max   |
| A   | 1.80        | 2.20 | 0.071  | 0.086 |
| B   | 4.05        | 4.65 | 0.160  | 0.183 |
| C   | 3.30        | 3.94 | 0.130  | 0.155 |
| D   | 2.05        | 2.45 | 0.081  | 0.096 |
| E   | 0.76        | 1.52 | 0.030  | 0.060 |
| G   | 5.11        | 5.59 | 0.201  | 0.220 |
| I   | 2.26        | -    | 0.089  | -     |
| J   | 2.16        | -    | 0.085  | -     |
| K   | -           | 2.74 | -      | 0.107 |
| L   | 2.16        | -    | 0.085  | -     |

**Taping and Reel Specifications**



| Symbol | Millimeters  | Inches             |
|--------|--------------|--------------------|
| W      | 12±0.3       | 0.472±0.012        |
| P      | 8±0.1        | 0.315±0.004        |
| F      | 5.5±0.1      | 0.217±0.004        |
| E      | 1.75±0.1     | 0.069±0.004        |
| D      | 1.5+0.1/-0.0 | 0.059+0.004/-0.0   |
| P0     | 4±0.1        | 0.157±0.004        |
| P2     | 2±0.1        | 0.079±0.004        |
| D0     | 16.7±0.15    | 0.657±0.006        |
| D1     | 178±2        | 7.007±0.079        |
| D2     | 59.6+1/-2    | 2.346+0.039/-0.079 |
| W1     | 12.64±0.4    | 0.498±0.016        |



| Part Number | Component package | Quantity | Packaging option      | Packaging specification |
|-------------|-------------------|----------|-----------------------|-------------------------|
| SMBJXXXA/CA | DO-214AA(SMB)     | 500      | Tape&Reel-12mm/7"tape | EIA STD RS-481          |

单击下面可查看定价，库存，交付和生命周期等信息

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