

**FEATURES**

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available  
- Automotive ordering code: base P/NHE3 or P/NHM3

**MECHANICAL DATA**

**Case:** SMB (DO-214AA)

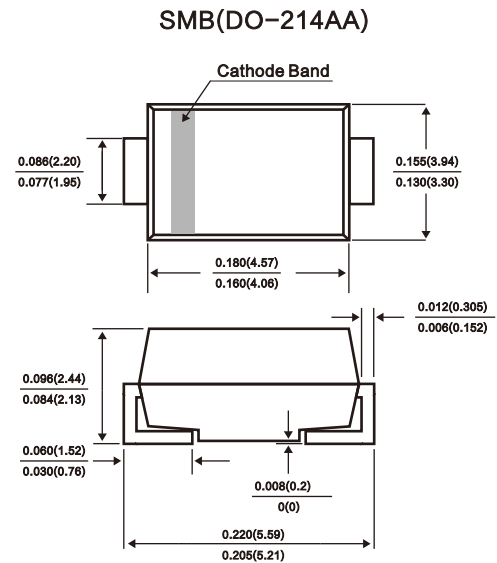
Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant, commercial grade  
 Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade  
 Base P/NHE3 - RoHS-compliant and AEC-Q101 qualified  
 Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102  
 E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** for uni-directional types the band denotes cathode end, no marking on bi-directional types

**DEVICES FOR BI-DIRECTION APPLICATIONS**

For bi-directional devices use CA suffix (e.g. SMBJ10CA).  
 Electrical characteristics apply in both directions.



Dimensions in inches and (millimeters)

| PRIMARY CHARACTERISTICS                 |                                 |
|---|---------------------------------|
| V <sub>BR</sub> (bi-directional)        | 6.4 V to 231 V                  |
| V <sub>BR</sub> (uni-directional)       | 6.4 V to 231 V                  |
| V <sub>WM</sub>                         | 5.0 V to 188 V                  |
| P <sub>PPM</sub>                        | 600 W                           |
| I <sub>FSM</sub> (uni-directional only) | 100 A                           |
| T <sub>J</sub> max.                     | 150 °C                          |
| Polarity                                | Uni-directional, bi-directional |
| Package                                 | SMB (DO-214AA)                  |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                             |                                   |                |      |
|---|-----------------------------------|----------------|------|
| PARAMETER   | SYMBOL                            | VALUE          | UNIT |
| Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (fig. 1)     | P <sub>PPM</sub>                  | 600            | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                           | I <sub>PPM</sub>                  | See next table | A    |
| Peak forward surge current 8.3 ms single half sine-wave uni-directional only <sup>(2)</sup> | I <sub>FSM</sub>                  | 100            | A    |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C   |

**Notes**

- <sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above T<sub>A</sub> = 25 °C per fig. 2
- <sup>(2)</sup> Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

| DEVICE TYPE MODIFIED<br>"J" BEND LEAD | DEVICE MARKING CODE |    | BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ <sup>(1)</sup> (V) |      | TEST CURRENT $I_T$ (mA) | STAND-OFF VOLTAGE $V_{WM}$ (V) | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ ) <sup>(3)</sup> | MAXIMUM PEAK PULSE SURGE CURRENT $I_{PPM}$ (A) <sup>(2)</sup> | MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ (V) |
|---------------------------------------|---------------------|----|--|------|-------------------------|--------------------------------|--|---|---|
|                                       | UNI                 | BI | MIN.   | MAX. |                         |                                |  |   |   |
| SMBJ5.0A(CA)                          | KE                  | KE | 6.40   | 7.07 | 10                      | 5.0                            | 800  | 65.2  | 9.2                                       |
| SMBJ6.0A(CA)                          | KG                  | KG | 6.67   | 7.37 | 10                      | 6.0                            | 800  | 58.3  | 10.3                                      |
| SMBJ6.5A(CA)                          | KK                  | AK | 7.22   | 7.98 | 10                      | 6.5                            | 500  | 53.6  | 11.2                                      |
| SMBJ6.8A(CA)                          | 8A                  | 8C | 6.45   | 7.14 | 10                      | 5.80                           | 1000   | 57.1  | 10.5                                      |
| SMBJ7.0A(CA)                          | KM                  | KM | 7.78   | 8.60 | 10                      | 7.0                            | 200  | 50.0  | 12.0                                      |
| SMBJ7.5A(CA)                          | KP                  | AP | 8.33   | 9.21 | 1.0                     | 7.5                            | 100  | 46.5  | 12.9                                      |
| SMBJ8.0A(CA)                          | KR                  | AR | 8.89   | 9.83 | 1.0                     | 8.0                            | 50   | 44.1  | 13.6                                      |
| SMBJ8.5A(CA)                          | KT                  | AT | 9.44   | 10.4 | 1.0                     | 8.5                            | 20   | 41.7  | 14.4                                      |
| SMBJ9.0A(CA)                          | KV                  | AV | 10.0   | 11.1 | 1.0                     | 9.0                            | 10   | 39.0  | 15.4                                      |
| SMBJ10A(CA)                           | KX                  | AX | 11.1   | 12.3 | 1.0                     | 10                             | 5.0  | 35.3  | 17.0                                      |
| SMBJ11A(CA)                           | KZ                  | KZ | 12.2   | 13.5 | 1.0                     | 11                             | 5.0  | 33.0  | 18.2                                      |
| SMBJ12A(CA)                           | LE                  | BE | 13.3   | 14.7 | 1.0                     | 12                             | 5.0  | 30.2  | 19.9                                      |
| SMBJ13A(CA)                           | LG                  | LG | 14.4   | 15.9 | 1.0                     | 13                             | 1.0  | 27.9  | 21.5                                      |
| SMBJ14A(CA)                           | LK                  | BK | 15.6   | 17.2 | 1.0                     | 14                             | 1.0  | 25.9  | 23.2                                      |
| SMBJ15A(CA)                           | LM                  | BM | 16.7   | 18.5 | 1.0                     | 15                             | 1.0  | 24.6  | 24.4                                      |
| SMBJ16A(CA)                           | LP                  | LM | 17.8   | 19.7 | 1.0                     | 16                             | 1.0  | 23.1  | 26.0                                      |
| SMBJ17A(CA)                           | LR                  | LR | 18.9   | 20.9 | 1.0                     | 17                             | 1.0  | 21.7  | 27.6                                      |
| SMBJ18A(CA)                           | LT                  | BT | 20.0   | 22.1 | 1.0                     | 18                             | 1.0  | 20.5  | 29.2                                      |
| SMBJ20A(CA)                           | LV                  | LV | 22.2   | 24.5 | 1.0                     | 20                             | 1.0  | 18.5  | 32.4                                      |
| SMBJ22A(CA)                           | LX                  | BX | 24.4   | 26.9 | 1.0                     | 22                             | 1.0  | 16.9  | 35.5                                      |
| SMBJ24A(CA)                           | LZ                  | BZ | 26.7   | 29.5 | 1.0                     | 24                             | 1.0  | 15.4  | 38.9                                      |
| SMBJ26A(CA)                           | ME                  | CE | 28.9   | 31.9 | 1.0                     | 26                             | 1.0  | 14.3  | 42.1                                      |
| SMBJ28A(CA)                           | MG                  | MG | 31.1   | 34.4 | 1.0                     | 28                             | 1.0  | 13.2  | 45.4                                      |
| SMBJ30A(CA)                           | MK                  | CK | 33.3   | 36.8 | 1.0                     | 30                             | 1.0  | 12.4  | 48.4                                      |
| SMBJ33A(CA)                           | MM                  | CM | 36.7   | 40.6 | 1.0                     | 33                             | 1.0  | 11.3  | 53.3                                      |
| SMBJ36A(CA)                           | MP                  | CP | 40.0   | 44.2 | 1.0                     | 36                             | 1.0  | 10.3  | 58.1                                      |
| SMBJ40A(CA)                           | MR                  | CR | 44.4   | 49.1 | 1.0                     | 40                             | 1.0  | 9.3   | 64.5                                      |
| SMBJ43A(CA)                           | MT                  | CT | 47.8   | 52.8 | 1.0                     | 43                             | 1.0  | 8.6   | 69.4                                      |
| SMBJ45A(CA)                           | MV                  | MV | 50.0   | 55.3 | 1.0                     | 45                             | 1.0  | 8.3   | 72.7                                      |
| SMBJ48A(CA)                           | MX                  | MX | 53.3   | 58.9 | 1.0                     | 48                             | 1.0  | 7.8   | 77.4                                      |
| SMBJ51A(CA)                           | MZ                  | MZ | 56.7   | 62.7 | 1.0                     | 51                             | 1.0  | 7.3   | 82.4                                      |
| SMBJ54A(CA)                           | NE                  | NE | 60.0   | 66.3 | 1.0                     | 54                             | 1.0  | 6.9   | 87.1                                      |
| SMBJ58A(CA)                           | NG                  | NG | 64.4   | 71.2 | 1.0                     | 58                             | 1.0  | 6.4   | 93.6                                      |
| SMBJ60A(CA)                           | NK                  | NK | 66.7   | 73.7 | 1.0                     | 60                             | 1.0  | 6.2   | 96.8                                      |
| SMBJ64A(CA)                           | NM                  | NM | 71.1   | 78.6 | 1.0                     | 64                             | 1.0  | 5.8   | 103                                       |
| SMBJ70A(CA)                           | NP                  | NP | 77.8   | 86.0 | 1.0                     | 70                             | 1.0  | 5.3   | 113                                       |
| SMBJ75A(CA)                           | NR                  | NR | 83.3   | 92.1 | 1.0                     | 75                             | 1.0  | 5.0   | 121                                       |
| SMBJ78A(CA)                           | NT                  | NT | 86.7   | 95.8 | 1.0                     | 78                             | 1.0  | 4.8   | 126                                       |
| SMBJ85A(CA)                           | NV                  | NV | 94.4   | 104  | 1.0                     | 85                             | 1.0  | 4.4   | 137                                       |
| SMBJ90A(CA)                           | NX                  | NX | 100  | 111  | 1.0                     | 90                             | 1.0  | 4.1   | 146                                       |
| SMBJ100A(CA)                          | NZ                  | NZ | 111  | 123  | 1.0                     | 100                            | 1.0  | 3.7   | 162                                       |
| SMBJ110A(CA)                          | PE                  | PE | 122  | 135  | 1.0                     | 110                            | 1.0  | 3.4   | 177                                       |
| SMBJ120A(CA)                          | PG                  | PG | 133  | 147  | 1.0                     | 120                            | 1.0  | 3.1   | 193                                       |
| SMBJ130A(CA)                          | PK                  | PK | 144  | 159  | 1.0                     | 130                            | 1.0  | 2.9   | 209                                       |
| SMBJ150A(CA)                          | PM                  | PM | 167  | 185  | 1.0                     | 150                            | 1.0  | 2.5   | 243                                       |
| SMBJ160A(CA)                          | PP                  | PP | 178  | 197  | 1.0                     | 160                            | 1.0  | 2.3   | 259                                       |
| SMBJ170A(CA)                          | PR                  | PR | 189  | 209  | 1.0                     | 170                            | 1.0  | 2.2   | 275                                       |
| SMBJ188A(CA)                          | PS                  | PS | 209  | 231  | 1.0                     | 188                            | 1.0  | 2.0   | 328                                       |

**Notes**

- (1) Pulse test:  $t_p \leq 50\text{ ms}$
- (2) Surge current waveform per fig. 3 and derate per fig. 2
- (3) For bi-directional types having  $V_{WM}$  of 10 V and less, the  $I_D$  limit is doubled
- (4) All terms and symbols are consistent with ANSI/IEEE C62.35
- (5) For the bi-directional SMBJ5.0CA, the maximum  $V_{BR}$  is 7.25 V
- (6)  $V_F = 3.5\text{ V}$  max. at  $I_F = 50\text{ A}$  (uni-directional only)
- (\*) Underwriters laboratory recognition for the classification of protectors (QVGG2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

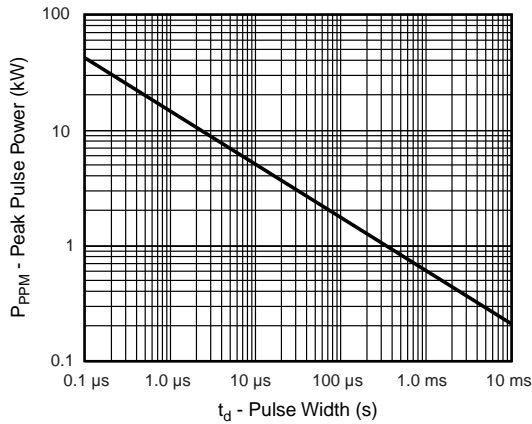


Fig. 1 - Peak Pulse Power Rating Curve

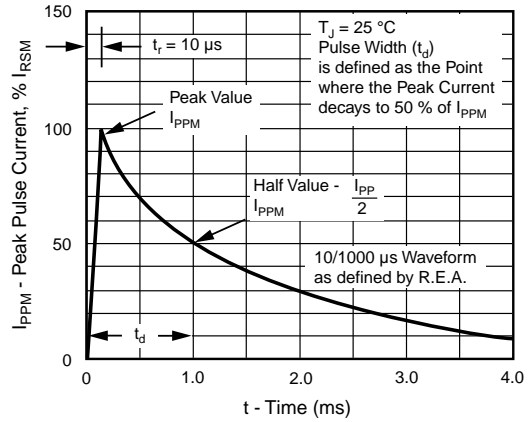


Fig. 3 - Pulse Waveform

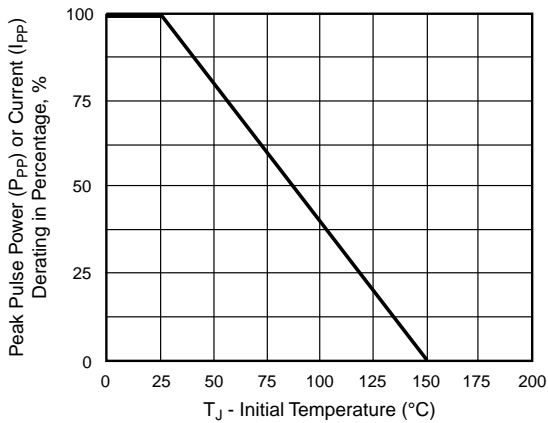


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

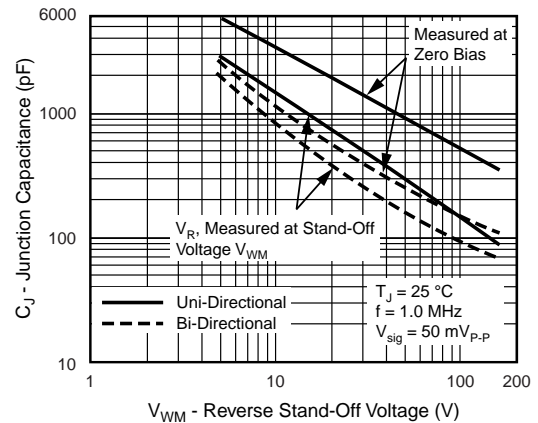


Fig. 4 - Typical Junction Capacitance

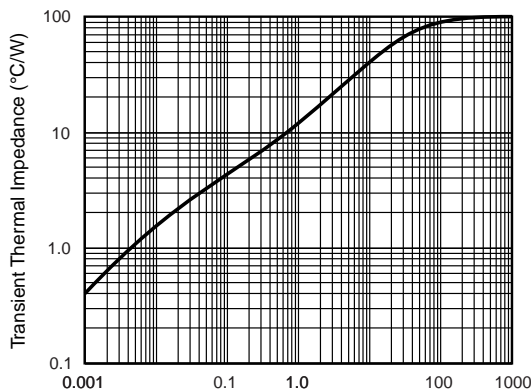


Fig. 5 - Typical Transient Thermal Impedance

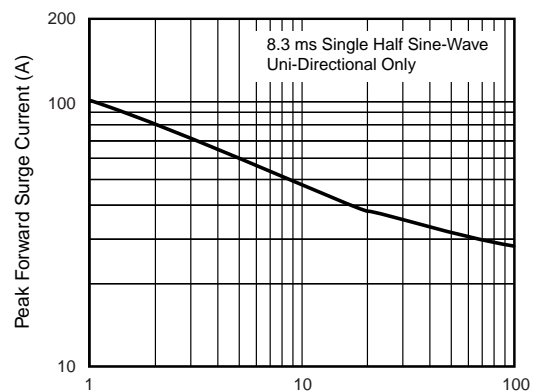


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current

**ORDERING INFORMATION**

| Order Code   | Package | Baseqty | Deliverymode  |
|--------------|---------|---------|---------------|
| UMW SMBJxxA  | SMB     | 750     | Tape and reel |
| UMW SMBJxxCA | SMB     | 750     | Tape and reel |

单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)