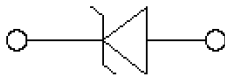
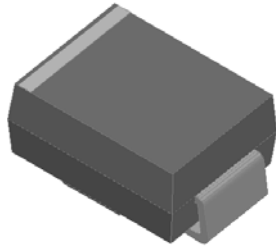
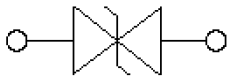
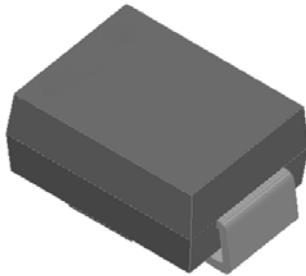


Surface Mount Transient Voltage Suppressors

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Data

- **Package:** DO-214AA (SMB)
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

■Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Max |
|---|----------------|------------------|----------------|
| Peak power dissipation, with a 10/1000us waveform ^{(1) (2)} (Fig.1) | P_{PPM} | W | 600 |
| Peak pulse current, with a 10/1000us waveform ⁽¹⁾ | I_{PPM} | A | See Next Table |
| Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$ | P_D | W | 5.0 |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾ | I_{FSM} | A | 100 |
| Operating junction and storage temperature range | T_J, T_{STG} | $^\circ\text{C}$ | -55 to +150 |
| Electrostatic Discharge (IEC61000-4-2 air discharge) | ESD | KV | ± 30 |
| Electrostatic Discharge (IEC61000-4-2 contact discharge) | | | |

■Electrical Characteristics ($T_a=25^\circ\text{C}$ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | VALUE |
|---|--------|------|---------|
| Maximum instantaneous forward voltage @ at 50A for unidirectional only ⁽³⁾ | V_F | V | 3.5/5.0 |



SMBJ SERIES

■ Thermal Characteristics (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Conditions | VALUE |
|-----------------------------|------------------|------|---------------------|-------|
| Thermal resistance(Typical) | R _{θJL} | °C/W | junction to lead | 20 |
| | R _{θJA} | °C/W | junction to ambient | 100 |

Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig.2.
- (2) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad areas
- (3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V.

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------------|--------------|--------------------|----------------------|-------------------------|----------------------------|---------------|
| SMBJ5.0A-SMBJ400CA | F1 | Approximate 0.0975 | 3000 | / | 48000 | 13" reel |
| SMBJ5.0A-SMBJ400CA | F2 | Approximate 0.0975 | 750 | 3000 | 24000 | 7" reel |
| SMBJ5.0A-SMBJ400CA | F3 | Approximate 0.0975 | 500 | 2000 | 16000 | 7" reel |

■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage V _{BR} @I _T | | | Maximum Reverse Leakage I _R ⁽⁶⁾ @ V _{RWM} (μA) | Working Peak Reverse Voltage V _{RWM} (V) | Maximum Reverse Surge Current I _{PP} ⁽⁵⁾ (A) | Maximum Clamping Voltage V _c @ I _{PP} (V) |
|-------------------|--------------------------|---|---------|------------------------------------|---|---|--|---|
| | | Min(V) | Max (V) | I _T ⁽⁴⁾ (mA) | | | | |
| SMBJ5.0A | SMBJ5.0CA ⁽⁴⁾ | 6.4 | 7.07 | 10 | 800 | 5 | 65.22 | 9.2 |
| SMBJ6.0A | SMBJ6.0CA | 6.67 | 7.37 | 10 | 800 | 6 | 58.25 | 10.3 |
| SMBJ6.5A | SMBJ6.5CA | 7.22 | 7.98 | 10 | 500 | 6.5 | 53.57 | 11.2 |
| SMBJ7.0A | SMBJ7.0CA | 7.78 | 8.6 | 10 | 200 | 7 | 50 | 12 |
| SMBJ7.5A | SMBJ7.5CA | 8.33 | 9.21 | 1 | 100 | 7.5 | 46.51 | 12.9 |
| SMBJ8.0A | SMBJ8.0CA | 8.89 | 9.83 | 1 | 50 | 8 | 44.12 | 13.6 |
| SMBJ8.5A | SMBJ8.5CA | 9.44 | 10.4 | 1 | 10 | 8.5 | 41.67 | 14.4 |
| SMBJ9.0A | SMBJ9.0CA | 10 | 11.1 | 1 | 5 | 9 | 38.96 | 15.4 |
| SMBJ10A | SMBJ10CA | 11.1 | 12.3 | 1 | 5 | 10 | 35.29 | 17 |
| SMBJ11A | SMBJ11CA | 12.2 | 13.5 | 1 | 5 | 11 | 32.97 | 18.2 |
| SMBJ12A | SMBJ12CA | 13.3 | 14.7 | 1 | 5 | 12 | 30.15 | 19.9 |
| SMBJ13A | SMBJ13CA | 14.4 | 15.9 | 1 | 1 | 13 | 27.91 | 21.5 |
| SMBJ14A | SMBJ14CA | 15.6 | 17.2 | 1 | 1 | 14 | 25.86 | 23.2 |
| SMBJ15A | SMBJ15CA | 16.7 | 18.5 | 1 | 1 | 15 | 24.59 | 24.4 |
| SMBJ16A | SMBJ16CA | 17.8 | 19.7 | 1 | 1 | 16 | 23.08 | 26 |
| SMBJ17A | SMBJ17CA | 18.9 | 20.9 | 1 | 1 | 17 | 21.74 | 27.6 |
| SMBJ18A | SMBJ18CA | 20 | 22.1 | 1 | 1 | 18 | 20.55 | 29.2 |
| SMBJ19A | SMBJ19CA | 21.1 | 23.3 | 1 | 1 | 19 | 19.49 | 30.8 |
| SMBJ20A | SMBJ20CA | 22.2 | 24.5 | 1 | 1 | 20 | 18.52 | 32.4 |
| SMBJ22A | SMBJ22CA | 24.4 | 26.9 | 1 | 1 | 22 | 16.9 | 35.5 |
| SMBJ24A | SMBJ24CA | 26.7 | 29.5 | 1 | 1 | 24 | 15.42 | 38.9 |
| SMBJ26A | SMBJ26CA | 28.9 | 31.9 | 1 | 1 | 26 | 14.25 | 42.1 |
| SMBJ28A | SMBJ28CA | 31.1 | 34.4 | 1 | 1 | 28 | 13.22 | 45.4 |
| SMBJ30A | SMBJ30CA | 33.3 | 36.8 | 1 | 1 | 30 | 12.4 | 48.4 |
| SMBJ33A | SMBJ33CA | 36.7 | 40.6 | 1 | 1 | 33 | 11.26 | 53.3 |



SMBJ SERIES

■Electrical Characteristics (T_a=25°C Unless otherwise specified)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage V _{BR} @I _T | | | Maximum Reverse Leakage I _R ⁽⁶⁾ @ V _{RWM} (μA) | Working Peak Reverse Voltage V _{RWM} (V) | Maximum Reverse Surge Current I _{PP} ⁽⁵⁾ (A) | Maximum Clamping Voltage V _c @ I _{PP} (V) |
|-------------------|------------------|---|---------|------------------------------------|---|---|--|---|
| | | Min(V) | Max (V) | I _T ⁽⁴⁾ (mA) | | | | |
| SMBJ36A | SMBJ36CA | 40 | 44.2 | 1 | 1 | 36 | 10.33 | 58.1 |
| SMBJ40A | SMBJ40CA | 44.4 | 49.1 | 1 | 1 | 40 | 9.3 | 64.5 |
| SMBJ43A | SMBJ43CA | 47.8 | 52.8 | 1 | 1 | 43 | 8.65 | 69.4 |
| SMBJ45A | SMBJ45CA | 50 | 55.3 | 1 | 1 | 45 | 8.25 | 72.7 |
| SMBJ48A | SMBJ48CA | 53.3 | 58.9 | 1 | 1 | 48 | 7.75 | 77.4 |
| SMBJ51A | SMBJ51CA | 56.7 | 62.7 | 1 | 1 | 51 | 7.28 | 82.4 |
| SMBJ54A | SMBJ54CA | 60 | 66.3 | 1 | 1 | 54 | 6.89 | 87.1 |
| SMBJ58A | SMBJ58CA | 64.4 | 71.2 | 1 | 1 | 58 | 6.41 | 93.6 |
| SMBJ60A | SMBJ60CA | 66.7 | 73.7 | 1 | 1 | 60 | 6.2 | 96.8 |
| SMBJ64A | SMBJ64CA | 71.1 | 78.6 | 1 | 1 | 64 | 5.83 | 103 |
| SMBJ70A | SMBJ70CA | 77.8 | 86 | 1 | 1 | 70 | 5.31 | 113 |
| SMBJ75A | SMBJ75CA | 83.3 | 92.1 | 1 | 1 | 75 | 4.96 | 121 |
| SMBJ78A | SMBJ78CA | 86.7 | 95.8 | 1 | 1 | 78 | 4.76 | 126 |
| SMBJ80A | SMBJ80CA | 88.8 | 97.6 | 1 | 1 | 80 | 4.63 | 129.6 |
| SMBJ85A | SMBJ85CA | 94.4 | 104 | 1 | 1 | 85 | 4.38 | 137 |
| SMBJ90A | SMBJ90CA | 100 | 111 | 1 | 1 | 90 | 4.11 | 146 |
| SMBJ100A | SMBJ100CA | 111 | 123 | 1 | 1 | 100 | 3.7 | 162 |
| SMBJ110A | SMBJ110CA | 122 | 135 | 1 | 1 | 110 | 3.39 | 177 |
| SMBJ120A | SMBJ120CA | 133 | 147 | 1 | 1 | 120 | 3.11 | 193 |
| SMBJ130A | SMBJ130CA | 144 | 159 | 1 | 1 | 130 | 2.87 | 209 |
| SMBJ140A | SMBJ140CA | 155 | 171 | 1 | 1 | 140 | 2.65 | 226.8 |
| SMBJ150A | SMBJ150CA | 167 | 185 | 1 | 1 | 150 | 2.47 | 243 |
| SMBJ160A | SMBJ160CA | 178 | 197 | 1 | 1 | 160 | 2.32 | 259 |
| SMBJ170A | SMBJ170CA | 189 | 209 | 1 | 1 | 170 | 2.18 | 275 |
| SMBJ180A | SMBJ180CA | 200 | 220 | 1 | 1 | 180 | 2.06 | 291.6 |
| SMBJ190A | SMBJ190CA | 211 | 232 | 1 | 1 | 190 | 1.95 | 307.8 |
| SMBJ200A | SMBJ200CA | 224 | 247 | 1 | 1 | 200 | 1.85 | 324 |
| SMBJ220A | SMBJ220CA | 246 | 272 | 1 | 1 | 220 | 1.69 | 356 |
| SMBJ250A | SMBJ250CA | 279 | 309 | 1 | 1 | 250 | 1.48 | 405 |
| SMBJ300A | SMBJ300CA | 335 | 371 | 1 | 1 | 300 | 1.23 | 486 |
| SMBJ350A | SMBJ350CA | 391 | 432 | 1 | 1 | 350 | 1.06 | 567 |
| SMBJ400A | SMBJ400CA | 447 | 494 | 1 | 1 | 400 | 0.93 | 648 |
| SMBJ440A | SMBJ440CA | 492 | 543 | 1 | 1 | 440 | 0.84 | 713 |

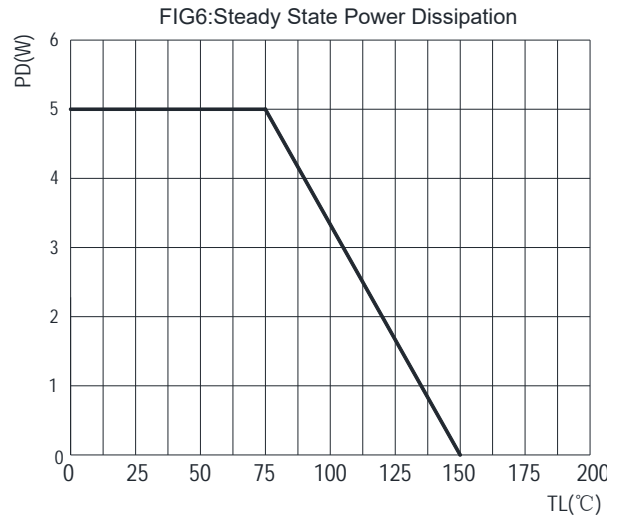
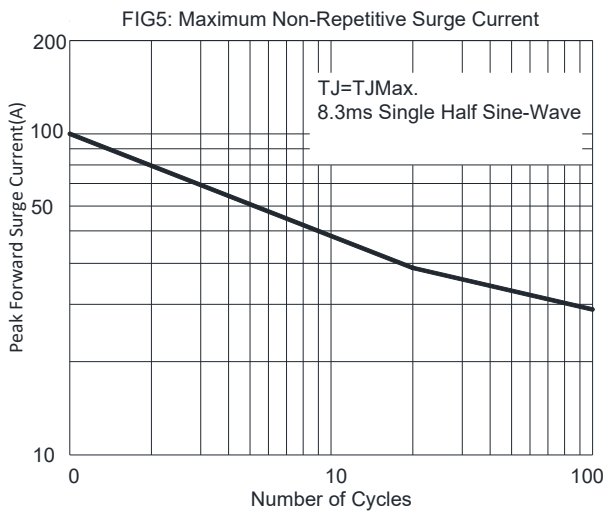
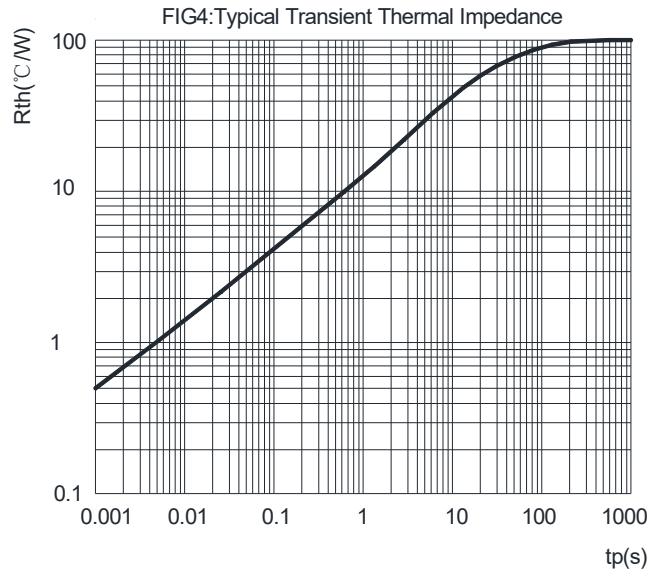
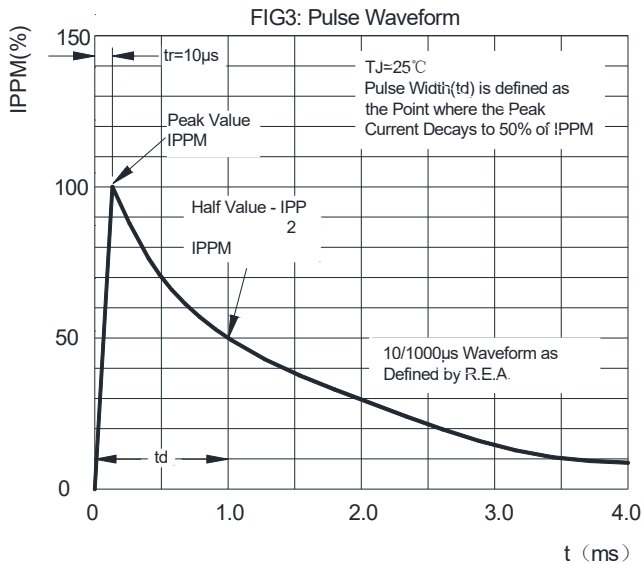
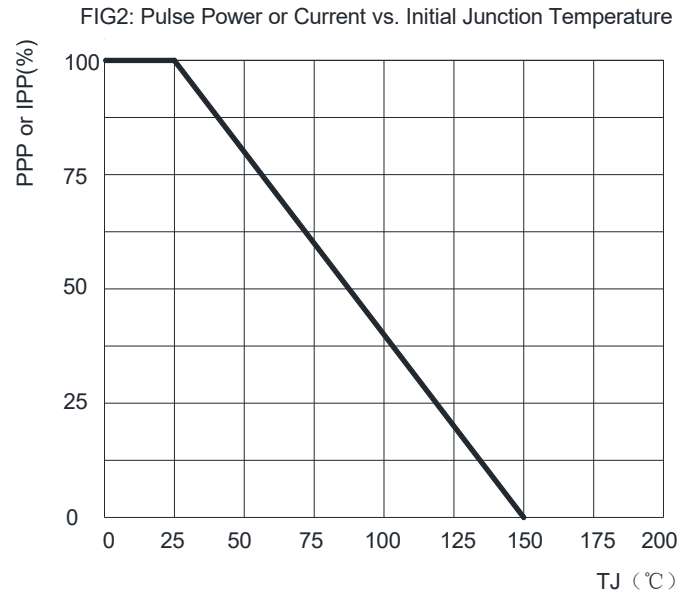
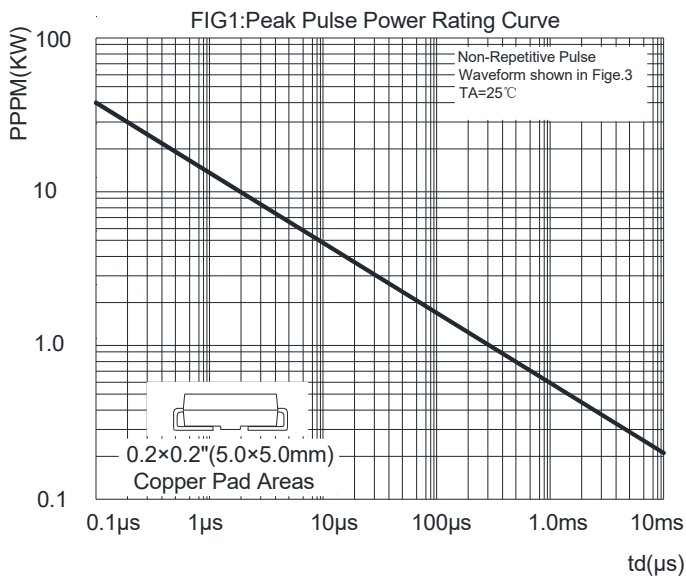
Notes:

- (4) Pulse test: t_p≤50ms.
- (5) Surge current waveform per Fig. 3 and derated per Fig.2.
- (6) For bi-directional types having V_{RWM} of 10 V and less, the I_R limit is doubled.
- (7) For the bi-directional SMBJ5.0CA, the maximum V_{BR} is 7.25 V.



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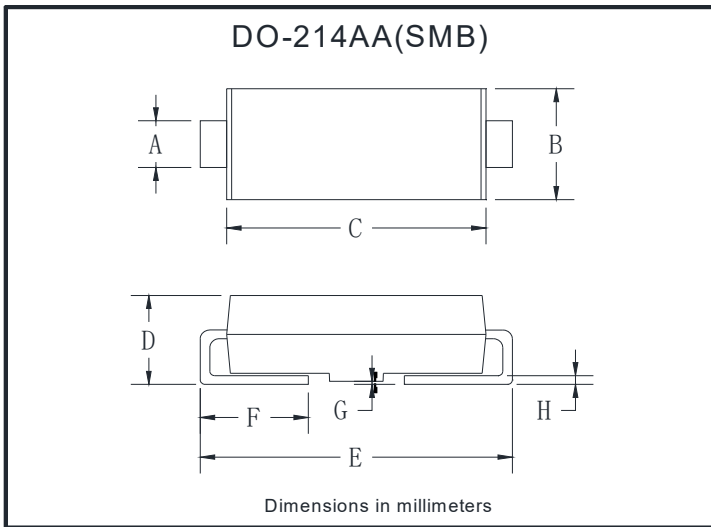
■ Characteristics (Typical)





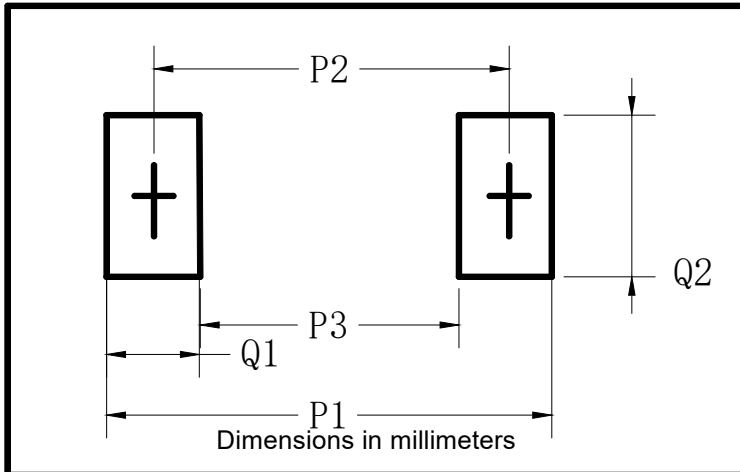
SMBJ SERIES

■ Outline Dimensions



| DO-214AA(SMB) | | |
|---------------|------|------|
| Dim | Min | Max |
| A | 1.85 | 2.15 |
| B | 3.30 | 3.94 |
| C | 4.05 | 4.75 |
| D | 1.99 | 2.61 |
| E | 5.21 | 5.59 |
| F | 0.90 | 1.41 |
| G | 0.05 | 0.20 |
| H | 0.15 | 0.31 |

■ Suggested pad layout



| DO-214AA(SMB) | |
|---------------|-------------|
| Dim | Millimeters |
| P1 | 6.8 |
| P2 | 4.3 |
| P3 | 1.8 |
| Q1 | 2.5 |
| Q2 | 2.3 |



SMBJ SERIES

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