



SMCJ SERIES

Surface Mount Transient Voltage Suppressor



Voltage Range
5.0 to 170 Volts
1500 Watts Peak Power

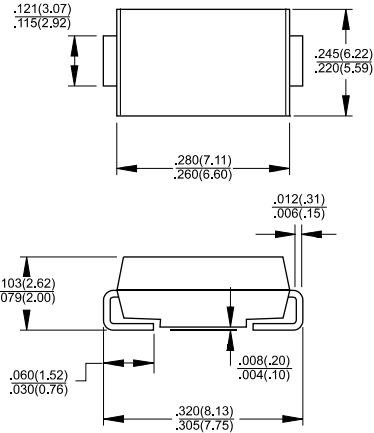
Features

- ✧ For surface mounted application
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Excellent clamping capability
- ✧ Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- ✧ Typical I_R less than 1 μ A above 10V
- ✧ High temperature soldering guaranteed:
250°C / 10 seconds at terminals
- ✧ Plastic material used carries Underwriters Laboratory
Flammability Classification 94V-0
- ✧ 1500 watts peak pulse power capability with a 10 X 1000 us
waveform by 0.01% duty cycle

Mechanical Data

- ✧ Case: Molded plastic
- ✧ Terminals: Solder plated
- ✧ Polarity: Indicated by cathode band
- ✧ Standard packaging: 16mm tape (EIA STD RS-481)
- ✧ Weight: 0.21gram

SMC/DO-214AB



Dimensions in inches and (millimeters)

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

| Type Number | Symbol | Value | Units |
|--|----------------|--------------|-------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$, $T_p=1\text{ms}$ (Note 1) | P_{PK} | Minimum 1500 | Watts |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2, 3) - Unidirectional Only | I_{FSM} | 100 | Amps |
| Maximum Instantaneous Forward Voltage at 100.0A for Unidirectional Only (Note 4) | V_F | 3.5 / 5.0 | Volts |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | °C |

- Notes: 1. Non-repetitive Current Pulse Per Fig. 3 and Derated above $T_A=25^\circ\text{C}$ Per Fig. 2.
 2. Mounted on 8.0mm² (.013mm Thick) Copper Pads to Each Terminal.
 3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minute Maximum.
 4. $V_F=3.5\text{V}$ on SMCJ5.0 thru SMCJ90 Devices and $V_F=5.0\text{V}$ on SMCJ100 thru SMCJ170 Devices.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types SMCJ5.0 through Types SMCJ170.
2. Electrical Characteristics Apply in Both Directions.

RATINGS AND CHARACTERISTIC CURVES (SMCJ SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

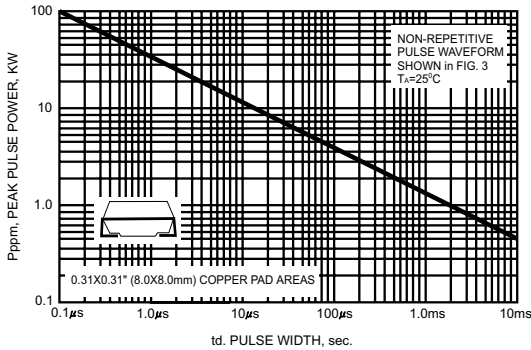


FIG.2- PULSE DERATING CURVE

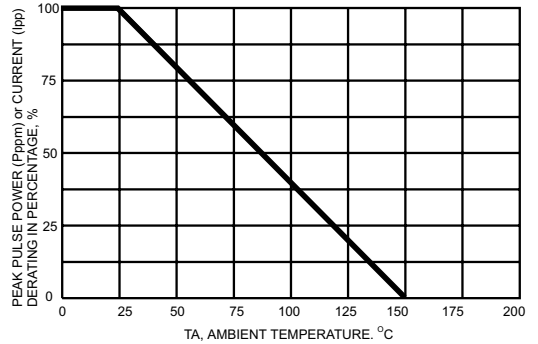


FIG.3- PULSE WAVEFORM

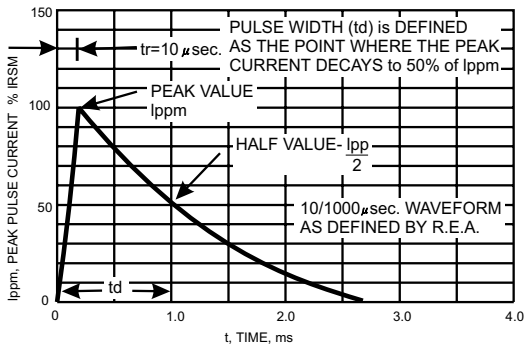


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

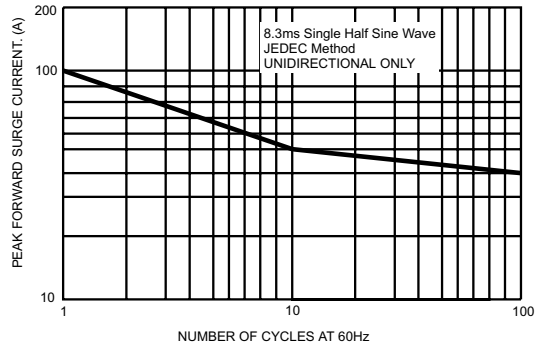


FIG.5- TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

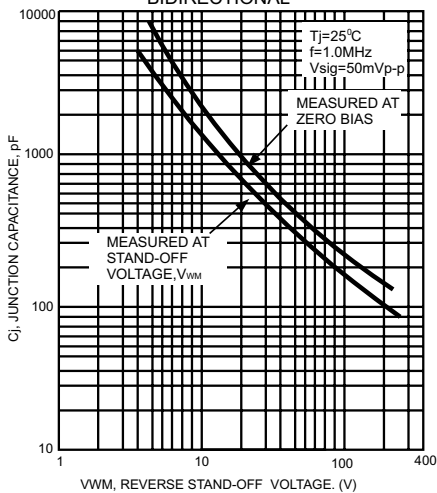
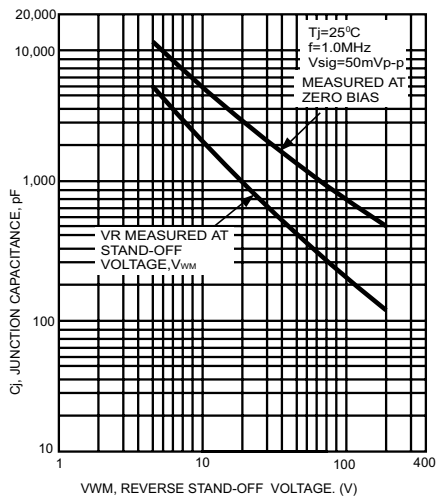


FIG.6- TYPICAL JUNCTION CAPACITANCE



ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Device Type Modified "J" Bend Lead | Device Marking Code | Breakdown Voltage V(BR) (Volts) (Note 1) (MIN / MAX) | Test Current at I _t (mA) | Stand-off voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} (Note 3) I _b (μ A) | Maximum Peak Pulse Surge Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) |
|--|---------------------------|--|---|---|---|---|--|
| SMCJ5.0 | GDD | 6.40 / 7.3 | 10.0 | 5.0 | 1000 | 164.0 | 9.6 |
| SMCJ5.0A | GDE | 6.40 / 7.0 | 10.0 | 5.0 | 1000 | 171.0 | 9.2 |
| SMCJ6.0 | GDF | 6.67 / 8.15 | 10.0 | 6.0 | 1000 | 138.0 | 11.4 |
| SMCJ6.0A | GDG | 6.67 / 7.37 | 10.0 | 6.0 | 1000 | 152.0 | 10.3 |
| SMCJ6.5 | GDH | 7.22 / 8.82 | 10.0 | 6.5 | 500 | 128.0 | 12.3 |
| SMCJ6.5A | GDK | 7.22 / 7.98 | 10.0 | 6.5 | 500 | 140.0 | 11.2 |
| SMCJ7.0 | GDL | 7.78 / 9.51 | 10.0 | 7.0 | 200 | 118.0 | 13.3 |
| SMCJ7.0A | GDM | 7.78 / 8.60 | 10.0 | 7.0 | 200 | 131.0 | 12.0 |
| SMCJ7.5 | GDN | 8.33 / 10.3 | 1.0 | 7.5 | 100 | 110.0 | 14.3 |
| SMCJ7.5A | GDP | 8.33 / 9.21 | 1.0 | 7.5 | 100 | 122.0 | 12.9 |
| SMCJ8.0 | GDQ | 8.89 / 10.9 | 1.0 | 8.0 | 50 | 105.0 | 15.0 |
| SMCJ8.0A | GDR | 8.89 / 9.83 | 1.0 | 8.0 | 50 | 115.0 | 13.6 |
| SMCJ8.5 | GDS | 9.44 / 11.5 | 1.0 | 8.5 | 20 | 99.0 | 15.9 |
| SMCJ8.5A | GDT | 9.44 / 10.4 | 1.0 | 8.5 | 20 | 109.0 | 14.4 |
| SMCJ9.0 | GDU | 10.0 / 12.2 | 1.0 | 9.0 | 10 | 93.0 | 16.9 |
| SMCJ9.0A | GDV | 10.0 / 11.1 | 1.0 | 9.0 | 10 | 102.0 | 15.4 |
| SMCJ10 | GDW | 11.1 / 13.6 | 1.0 | 10.0 | 5.0 | 83.0 | 18.8 |
| SMCJ10A | GDX | 11.1 / 12.3 | 1.0 | 10.0 | 5.0 | 92.0 | 17.0 |
| SMCJ11 | GDY | 12.2 / 14.9 | 1.0 | 11.0 | 5.0 | 78.0 | 20.1 |
| SMCJ11A | GDZ | 12.2 / 13.5 | 1.0 | 11.0 | 5.0 | 86.0 | 18.2 |
| SMCJ12 | GED | 13.3 / 16.3 | 1.0 | 12.0 | 5.0 | 71.0 | 22.0 |
| SMCJ12A | GEE | 13.3 / 14.7 | 1.0 | 12.0 | 5.0 | 79.0 | 19.9 |
| SMCJ13 | GEF | 14.4 / 17.6 | 1.0 | 13.0 | 5.0 | 66.0 | 23.8 |
| SMCJ13A | GEG | 14.4 / 15.9 | 1.0 | 13.0 | 5.0 | 73.0 | 21.5 |
| SMCJ14 | GEH | 15.6 / 19.1 | 1.0 | 14.0 | 5.0 | 61.0 | 25.8 |
| SMCJ14A | GEK | 15.6 / 17.2 | 1.0 | 14.0 | 5.0 | 67.0 | 23.2 |
| SMCJ15 | GEL | 16.7 / 20.4 | 1.0 | 15.0 | 5.0 | 58.0 | 26.9 |
| SMCJ15A | GEM | 16.7 / 18.5 | 1.0 | 15.0 | 5.0 | 64.0 | 24.4 |
| SMCJ16 | GEN | 17.8 / 21.8 | 1.0 | 16.0 | 5.0 | 54.0 | 28.8 |
| SMCJ16A | GEP | 17.8 / 19.7 | 1.0 | 16.0 | 5.0 | 60.0 | 26.0 |
| SMCJ17 | GEQ | 18.9 / 23.1 | 1.0 | 17.0 | 5.0 | 51.0 | 30.5 |
| SMCJ17A | GER | 18.9 / 20.9 | 1.0 | 17.0 | 5.0 | 57.0 | 27.6 |
| SMCJ18 | GES | 20.0 / 24.4 | 1.0 | 18.0 | 5.0 | 48.0 | 32.2 |
| SMCJ18A | GET | 20.0 / 22.1 | 1.0 | 18.0 | 5.0 | 53.0 | 29.2 |
| SMCJ20 | GEU | 22.2 / 27.1 | 1.0 | 20.0 | 5.0 | 43.0 | 35.8 |
| SMCJ20A | GEV | 22.2 / 24.5 | 1.0 | 20.0 | 5.0 | 48.0 | 32.4 |
| SMCJ22 | GEW | 24.4 / 29.8 | 1.0 | 22.0 | 5.0 | 39.0 | 39.4 |
| SMCJ22A | GEX | 24.4 / 26.9 | 1.0 | 22.0 | 5.0 | 44.0 | 35.5 |
| SMCJ24 | GEY | 26.7 / 32.6 | 1.0 | 24.0 | 5.0 | 36.0 | 43.0 |
| SMCJ24A | GEZ | 26.7 / 29.5 | 1.0 | 24.0 | 5.0 | 40.0 | 38.9 |
| SMCJ26 | GFD | 28.9 / 35.3 | 1.0 | 26.0 | 5.0 | 33.0 | 46.6 |
| SMCJ26A | GFE | 28.9 / 31.9 | 1.0 | 26.0 | 5.0 | 37.0 | 42.1 |
| SMCJ28 | GFF | 31.1 / 38.0 | 1.0 | 28.0 | 5.0 | 31.0 | 50.0 |
| SMCJ28A | GFG | 31.1 / 34.4 | 1.0 | 28.0 | 5.0 | 34.0 | 45.4 |
| SMCJ30 | GFH | 33.3 / 40.7 | 1.0 | 30.0 | 5.0 | 29.0 | 53.5 |
| SMCJ30A | GFK | 33.3 / 36.8 | 1.0 | 30.0 | 5.0 | 32.0 | 48.4 |
| SMCJ33 | GFL | 36.7 / 44.9 | 1.0 | 33.0 | 5.0 | 26.0 | 59.0 |
| SMCJ33A | GFM | 36.7 / 40.6 | 1.0 | 33.0 | 5.0 | 29.0 | 53.3 |
| SMCJ36 | GFN | 40.0 / 48.9 | 1.0 | 36.0 | 5.0 | 24.0 | 64.3 |
| SMCJ36A | GFP | 40.0 / 44.2 | 1.0 | 36.0 | 5.0 | 27.0 | 58.1 |
| SMCJ40 | GFQ | 44.4 / 54.3 | 1.0 | 40.0 | 5.0 | 22.0 | 71.4 |
| SMCJ40A | GFR | 44.4 / 49.1 | 1.0 | 40.0 | 5.0 | 24.0 | 64.5 |
| SMCJ43 | GFS | 47.8 / 58.4 | 1.0 | 43.0 | 5.0 | 20.0 | 76.7 |
| SMCJ43A | GFT | 47.8 / 52.8 | 1.0 | 43.0 | 5.0 | 22.0 | 69.4 |

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Device Type Modified "J" Bend Lead | Device Marking Code | Breakdown Voltage V _(BR) (Volts) (Note 1) (MIN / MAX) | Test Current at I _T (mA) | Stand-off voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} (Note 3) I _B (uA) | Maximum Peak Pulse Surge Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _C (Volts) |
|---------------------------------------|---------------------|---|-------------------------------------|--|--|--|--|
| SMCJ45 | GFU | 50.0 / 61.1 | 1.0 | 45.0 | 5.0 | 19.0 | 80.3 |
| SMCJ45A | GFV | 50.0 / 55.3 | 1.0 | 45.0 | 5.0 | 21.0 | 72.7 |
| SMCJ48 | GFW | 53.3 / 65.1 | 1.0 | 48.0 | 5.0 | 18.0 | 85.5 |
| SMCJ48A | GFX | 53.3 / 58.9 | 1.0 | 48.0 | 5.0 | 20.0 | 77.4 |
| SMCJ51 | GFY | 56.7 / 69.3 | 1.0 | 51.0 | 5.0 | 17.0 | 91.1 |
| SMCJ51A | GFZ | 56.7 / 62.7 | 1.0 | 51.0 | 5.0 | 19.0 | 82.4 |
| SMCJ54 | GGD | 60.0 / 73.3 | 1.0 | 54.0 | 5.0 | 16.0 | 96.3 |
| SMCJ54A | GGE | 60.0 / 66.3 | 1.0 | 54.0 | 5.0 | 18.0 | 87.1 |
| SMCJ58 | GGF | 64.4 / 78.7 | 1.0 | 58.0 | 5.0 | 15.0 | 103.0 |
| SMCJ58A | GGG | 64.4 / 71.2 | 1.0 | 58.0 | 5.0 | 16.0 | 93.6 |
| SMCJ60 | GGH | 66.7 / 81.5 | 1.0 | 60.0 | 5.0 | 14.0 | 107.0 |
| SMCJ60A | GGK | 66.7 / 73.7 | 1.0 | 60.0 | 5.0 | 16.0 | 96.8 |
| SMCJ64 | GGL | 71.1 / 86.9 | 1.0 | 64.0 | 5.0 | 13.8 | 114.0 |
| SMCJ64A | GGM | 71.1 / 78.6 | 1.0 | 64.0 | 5.0 | 15.0 | 103.0 |
| SMCJ70 | GGN | 77.8 / 95.1 | 1.0 | 70.0 | 5.0 | 12.6 | 125.0 |
| SMCJ70A | GGP | 77.8 / 86.0 | 1.0 | 70.0 | 5.0 | 13.9 | 113.0 |
| SMCJ75 | GGQ | 83.3 / 102 | 1.0 | 75.0 | 5.0 | 11.7 | 134.0 |
| SMCJ75A | GGR | 83.3 / 92.1 | 1.0 | 75.0 | 5.0 | 13.0 | 121.0 |
| MSJC78 | GGS | 86.7 / 106 | 1.0 | 78.0 | 5.0 | 11.3 | 139.0 |
| SMCJ78A | GGT | 86.7 / 95.8 | 1.0 | 78.0 | 5.0 | 12.5 | 126.0 |
| SMCJ85 | GGU | 94.4 / 115 | 1.0 | 85.0 | 5.0 | 10.4 | 151.0 |
| SMCJ85A | GGV | 94.4 / 104 | 1.0 | 85.0 | 5.0 | 11.5 | 137.0 |
| SMCJ90 | GGW | 100 / 122 | 1.0 | 90.0 | 5.0 | 9.8 | 160.0 |
| SMCJ90A | GGX | 100 / 111 | 1.0 | 90.0 | 5.0 | 10.7 | 146.0 |
| SMCJ100 | GGY | 111 / 136 | 1.0 | 100.0 | 5.0 | 8.8 | 179.0 |
| SMCJ100A | GGZ | 111 / 123 | 1.0 | 100.0 | 5.0 | 9.7 | 162.0 |
| SMCJ110 | GHD | 122 / 149 | 1.0 | 110.0 | 5.0 | 8.0 | 196.0 |
| SMCJ110A | GHE | 122 / 135 | 1.0 | 110.0 | 5.0 | 8.9 | 177.0 |
| SMCJ120 | GHF | 133 / 163 | 1.0 | 120.0 | 5.0 | 7.3 | 214.0 |
| SMCJ120A | GHG | 133 / 147 | 1.0 | 120.0 | 5.0 | 8.1 | 193.0 |
| SMCJ130 | GHH | 144 / 176 | 1.0 | 130.0 | 5.0 | 6.8 | 231.0 |
| SMCJ130A | GHK | 144 / 159 | 1.0 | 130.0 | 5.0 | 7.5 | 209.0 |
| SMCJ150 | GHL | 167 / 204 | 1.0 | 150.0 | 5.0 | 5.8 | 268.0 |
| SMCJ150A | GHM | 167 / 185 | 1.0 | 150.0 | 5.0 | 6.4 | 243.0 |
| SMCJ160 | GHN | 178 / 218 | 1.0 | 160.0 | 5.0 | 5.4 | 287.0 |
| SMCJ160A | GHP | 178 / 197 | 1.0 | 160.0 | 5.0 | 6.0 | 259.0 |
| SMCJ170 | GHQ | 189 / 231 | 1.0 | 170.0 | 5.0 | 5.1 | 304.0 |
| SMCJ170A | GHR | 189 / 209 | 1.0 | 170.0 | 5.0 | 5.7 | 275.0 |

Notes:

1. V_(BR) measured after I_T applied for 300us, I_T=Square wave pulse or equivalent.
2. Surge current waveform per Fig. 3 and derate per Figure 2.
3. For bidirectional types having V_{WM} of 10 Volts and less, the I_B limit is doubled
4. all terms and symbols are consistent with ANSI/IEEE C62.35