



3.0SMCJ SERIES

Surface Mount Transient Voltage Suppressor



Voltage Range
5.0 to 170 Volts
3000 Watts Peak Power

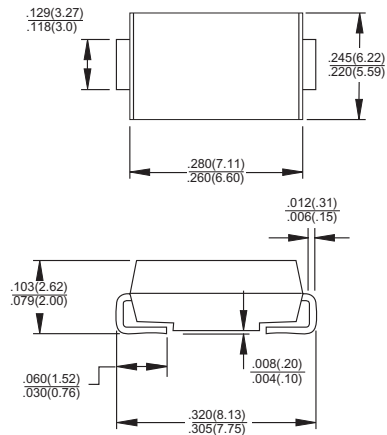
Features

- ✦ 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 $1 \mu A$ above 10V
- ✦ High temperature soldering guaranteed: $260^\circ C / 10$ seconds at terminals
- ✦ Plastic material used carries Underwriters Laboratory Flammability Classification 94V-0
- ✦ 3000 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 $25^\circ C$ ambient temperature unless otherwise specified.

| Type Number | Symbol | Value | Units |
|--|----------------|--------------|------------|
| Peak Power Dissipation at $T_A=25^\circ C$, $T_p=1ms$ (Note 1) | P_{PK} | Minimum 3000 | Watts |
| Steady State Power Dissipation | P_d | 5 | 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} | 200 | 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 | $^\circ C$ |

Notes: 1. Non-repetitive Current Pulse Per Fig. 3 and Derated above $T_A=25^\circ C$ Per Fig. 2.

2. Mounted on $8.0mm^2$ (.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. $V_F=3.5V$ on 3.0SMCJ5.0 thru 3.0SMCJ90 Devices and $V_F=5.0V$ on 3.0SMCJ100 thru 3.0SMCJ170 Devices.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types 3.0SMCJ5.0 through Types 3.0SMCJ170.

2. Electrical Characteristics Apply in Both Directions.

RATINGS AND CHARACTERISTIC CURVES (3.0SMCJ SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

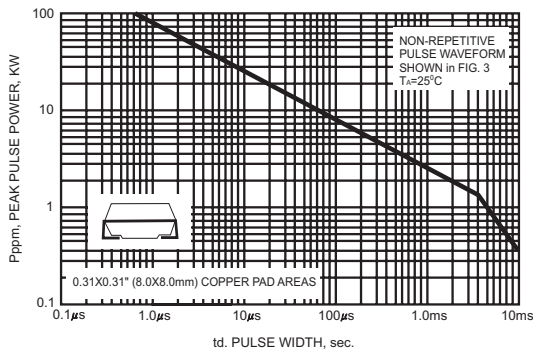


FIG.2- PULSE DERATING CURVE

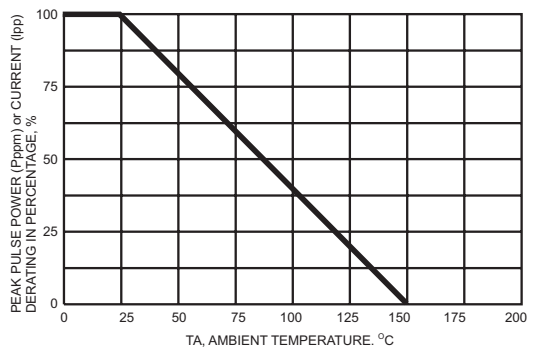


FIG.3- PULSE WAVEFORM

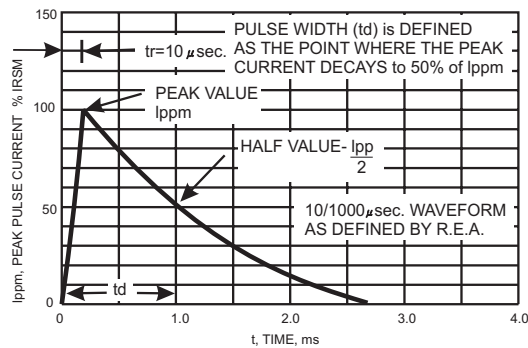


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

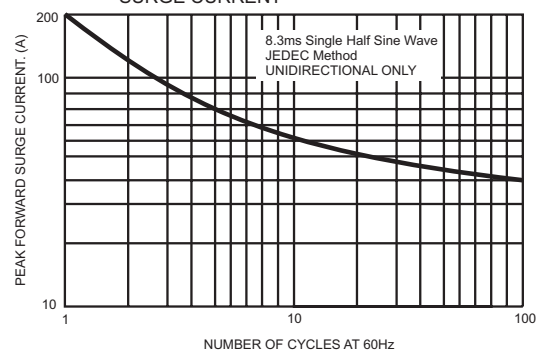


FIG.5- TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

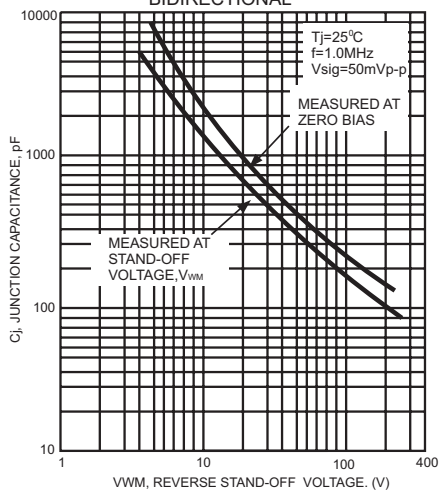
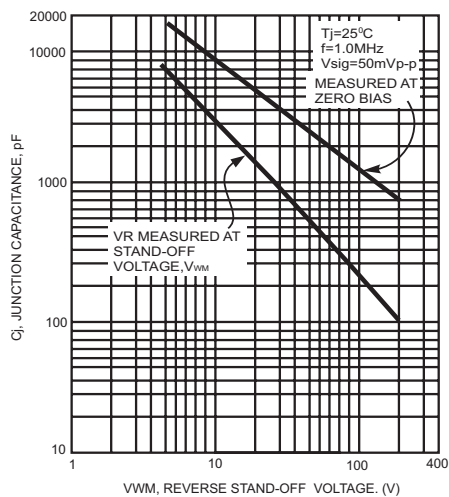


FIG.6- TYPICAL JUNCTION CAPACITANCE



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 (uA) | Maximum Peak Pulse Surge Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) |
|------------------------------------|---------------------|--|-------------------------------------|---|---|---|---|
| 3.0SMCJ5.0 | HDD | 6.40 / 7.3 | 10 | 5.0 | 1000 | 312.5 | 9.6 |
| 3.0SMCJ5.0A | HDE | 6.40 / 7.0 | 10 | 5.0 | 1000 | 326.0 | 9.2 |
| 3.0SMCJ6.0 | HDF | 6.67 / 8.15 | 10 | 6.0 | 1000 | 263.2 | 11.4 |
| 3.0SMCJ6.0A | HDG | 6.67 / 7.37 | 10 | 6.0 | 1000 | 291.3 | 10.3 |
| 3.0SMCJ6.5 | HDH | 7.22 / 8.82 | 10 | 6.5 | 500 | 243.9 | 12.3 |
| 3.0SMCJ6.5A | HDK | 7.22 / 7.98 | 10 | 6.5 | 500 | 267.9 | 11.2 |
| 3.0SMCJ7.0 | HDL | 7.78 / 9.51 | 10 | 7.0 | 200 | 225.6 | 13.3 |
| 3.0SMCJ7.0A | HDM | 7.78 / 8.60 | 10 | 7.0 | 200 | 250.0 | 12.0 |
| 3.0SMCJ7.5 | HDN | 8.33 / 10.2 | 1.0 | 7.5 | 100 | 209.8 | 14.3 |
| 3.0SMCJ7.5A | HDP | 8.33 / 9.21 | 1.0 | 7.5 | 100 | 232.6 | 12.9 |
| 3.0SMCJ8.0 | HDQ | 8.89 / 10.9 | 1.0 | 8.0 | 50 | 200.0 | 15.0 |
| 3.0SMCJ8.0A | HDR | 8.89 / 9.83 | 1.0 | 8.0 | 50 | 220.6 | 13.6 |
| 3.0SMCJ8.5 | HDS | 9.44 / 11.5 | 1.0 | 8.5 | 25 | 188.6 | 15.9 |
| 3.0SMCJ8.5A | HDT | 9.44 / 10.4 | 1.0 | 8.5 | 25 | 208.4 | 14.4 |
| 3.0SMCJ9.0 | HDU | 10.0 / 12.2 | 1.0 | 9.0 | 10 | 177.4 | 16.9 |
| 3.0SMCJ9.0A | HDV | 10.0 / 11.1 | 1.0 | 9.0 | 10 | 194.8 | 15.4 |
| 3.0SMCJ10 | HDW | 11.1 / 13.6 | 1.0 | 10 | 5.0 | 159.6 | 18.8 |
| 3.0SMCJ10A | HDX | 11.1 / 12.3 | 1.0 | 10 | 5.0 | 176.4 | 17.0 |
| 3.0SMCJ11 | HDY | 12.2 / 14.9 | 1.0 | 11 | 5.0 | 149.2 | 20.1 |
| 3.0SMCJ11A | HDZ | 12.2 / 13.5 | 1.0 | 11 | 5.0 | 164.8 | 18.2 |
| 3.0SMCJ12 | HED | 13.3 / 16.3 | 1.0 | 12 | 5.0 | 136.4 | 22.0 |
| 3.0SMCJ12A | HEE | 13.3 / 14.7 | 1.0 | 12 | 5.0 | 150.6 | 19.9 |
| 3.0SMCJ13 | HEF | 14.4 / 17.6 | 1.0 | 13 | 5.0 | 126.0 | 23.8 |
| 3.0SMCJ13A | HEG | 14.4 / 15.9 | 1.0 | 13 | 5.0 | 139.4 | 21.5 |
| 3.0SMCJ14 | HEH | 15.6 / 19.1 | 1.0 | 14 | 2.0 | 116.2 | 25.8 |
| 3.0SMCJ14A | HEK | 15.6 / 17.2 | 1.0 | 14 | 2.0 | 129.4 | 23.2 |
| 3.0SMCJ15 | HEL | 16.7 / 20.4 | 1.0 | 15 | 2.0 | 111.6 | 26.9 |
| 3.0SMCJ15A | HEM | 16.7 / 18.5 | 1.0 | 15 | 2.0 | 123.0 | 24.4 |
| 3.0SMCJ16 | HEN | 17.8 / 21.8 | 1.0 | 16 | 2.0 | 104.2 | 28.8 |
| 3.0SMCJ16A | HEP | 17.8 / 19.7 | 1.0 | 16 | 2.0 | 115.4 | 26.0 |
| 3.0SMCJ17 | HEQ | 18.9 / 23.1 | 1.0 | 17 | 2.0 | 98.4 | 30.5 |
| 3.0SMCJ17A | HER | 18.9 / 20.9 | 1.0 | 17 | 2.0 | 106.6 | 27.6 |
| 3.0SMCJ18 | HES | 20.0 / 24.4 | 1.0 | 18 | 2.0 | 93.2 | 32.2 |
| 3.0SMCJ18A | HET | 20.0 / 22.1 | 1.0 | 18 | 2.0 | 102.8 | 29.2 |
| 3.0SMCJ20 | HEU | 22.2 / 27.1 | 1.0 | 20 | 2.0 | 83.8 | 35.8 |
| 3.0SMCJ20A | HEV | 22.2 / 24.5 | 1.0 | 20 | 2.0 | 92.6 | 32.4 |
| 3.0SMCJ22 | HEW | 24.4 / 29.8 | 1.0 | 22 | 2.0 | 74.2 | 39.4 |
| 3.0SMCJ22A | HEX | 24.4 / 26.9 | 1.0 | 22 | 2.0 | 84.4 | 35.5 |
| 3.0SMCJ24 | HEY | 26.7 / 32.6 | 1.0 | 24 | 2.0 | 69.8 | 43.0 |
| 3.0SMCJ24A | HEZ | 26.7 / 29.5 | 1.0 | 24 | 2.0 | 77.2 | 38.9 |
| 3.0SMCJ26 | HFD | 28.9 / 35.3 | 1.0 | 26 | 2.0 | 64.4 | 46.6 |
| 3.0SMCJ26A | HFE | 28.9 / 31.9 | 1.0 | 26 | 2.0 | 71.2 | 42.1 |
| 3.0SMCJ28 | HFF | 31.1 / 38.0 | 1.0 | 28 | 2.0 | 60.0 | 50.0 |
| 3.0SMCJ28A | HFG | 31.1 / 34.4 | 1.0 | 28 | 2.0 | 66.0 | 45.4 |
| 3.0SMCJ30 | HFH | 33.3 / 40.7 | 1.0 | 30 | 2.0 | 56.0 | 53.5 |
| 3.0SMCJ30A | HFK | 33.3 / 36.8 | 1.0 | 30 | 2.0 | 62.0 | 48.4 |
| 3.0SMCJ33 | HFL | 36.7 / 44.9 | 1.0 | 33 | 2.0 | 50.4 | 59.0 |
| 3.0SMCJ33A | HFM | 36.7 / 40.6 | 1.0 | 33 | 2.0 | 56.2 | 53.3 |
| 3.0SMCJ36 | HFN | 40.0 / 48.9 | 1.0 | 36 | 2.0 | 46.6 | 64.3 |
| 3.0SMCJ36A | HFP | 40.0 / 44.2 | 1.0 | 36 | 2.0 | 51.6 | 58.1 |
| 3.0SMCJ40 | HFQ | 44.4 / 54.3 | 1.0 | 40 | 2.0 | 42.0 | 71.4 |
| 3.0SMCJ40A | HFR | 44.4 / 49.1 | 1.0 | 40 | 2.0 | 46.4 | 64.5 |
| 3.0SMCJ43 | HFS | 47.8 / 58.4 | 1.0 | 43 | 2.0 | 39.2 | 76.7 |
| 3.0SMCJ43A | HFT | 47.8 / 52.8 | 1.0 | 43 | 2.0 | 43.2 | 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 ₀ (uA) | Maximum Peak Pulse Surge Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _C (Volts) |
|--|---------------------------|--|---|---|---|---|--|
| 3.0SMCJ45 | HFU | 50.0 / 61.1 | 1.0 | 45 | 2.0 | 37.4 | 80.3 |
| 3.0SMCJ45A | HFV | 50.0 / 55.3 | 1.0 | 45 | 2.0 | 41.2 | 72.7 |
| 3.0SMCJ48 | HFW | 53.3 / 65.1 | 1.0 | 48 | 2.0 | 35.0 | 85.5 |
| 3.0SMCJ48A | HFY | 53.3 / 58.9 | 1.0 | 48 | 2.0 | 38.8 | 77.4 |
| 3.0SMCJ51 | HFY | 56.7 / 69.3 | 1.0 | 51 | 2.0 | 37.0 | 91.1 |
| 3.0SMCJ51A | HFZ | 56.7 / 62.7 | 1.0 | 51 | 2.0 | 36.4 | 82.4 |
| 3.0SMCJ54 | HGD | 60.0 / 73.3 | 1.0 | 54 | 2.0 | 31.2 | 96.3 |
| 3.0SMCJ54A | HGE | 60.0 / 66.3 | 1.0 | 54 | 2.0 | 34.4 | 87.1 |
| 3.0SMCJ58 | HGF | 64.4 / 78.7 | 1.0 | 58 | 2.0 | 39.2 | 103 |
| 3.0SMCJ58A | HGG | 64.4 / 71.2 | 1.0 | 58 | 2.0 | 32.0 | 93.6 |
| 3.0SMCJ60 | HGH | 66.7 / 81.5 | 1.0 | 60 | 2.0 | 28.0 | 107 |
| 3.0SMCJ60A | HGK | 66.7 / 73.7 | 1.0 | 60 | 2.0 | 31.0 | 96.8 |
| 3.0SMCJ64 | HGL | 71.1 / 86.9 | 1.0 | 64 | 2.0 | 26.4 | 114 |
| 3.0SMCJ64A | HGM | 71.1 / 78.6 | 1.0 | 64 | 2.0 | 29.2 | 103 |
| 3.0SMCJ70 | HGN | 77.8 / 95.1 | 1.0 | 70 | 2.0 | 24.0 | 125 |
| 3.0SMCJ70A | HGP | 77.8 / 86.0 | 1.0 | 70 | 2.0 | 26.6 | 113 |
| 3.0SMCJ75 | HGQ | 83.3 / 102 | 1.0 | 75 | 2.0 | 22.4 | 134 |
| 3.0SMCJ75A | HGR | 83.3 / 92.1 | 1.0 | 75 | 2.0 | 24.8 | 121 |
| 3.0SMCJ78 | HGS | 86.7 / 106 | 1.0 | 78 | 2.0 | 21.6 | 139 |
| 3.0SMCJ78A | HGT | 86.7 / 95.8 | 1.0 | 78 | 2.0 | 22.8 | 126 |
| 3.0SMCJ85 | HGU | 94.4 / 115 | 1.0 | 85 | 2.0 | 19.8 | 151 |
| 3.0SMCJ85A | HGV | 94.4 / 104 | 1.0 | 85 | 2.0 | 20.8 | 137 |
| 3.0SMCJ90 | HGW | 100 / 122 | 1.0 | 90 | 2.0 | 18.8 | 160 |
| 3.0SMCJ90A | HGX | 100 / 111 | 1.0 | 90 | 2.0 | 20.6 | 146 |
| 3.0SMCJ100 | HGY | 111 / 136 | 1.0 | 100 | 2.0 | 16.8 | 179 |
| 3.0SMCJ100A | HGZ | 111 / 123 | 1.0 | 100 | 2.0 | 18.6 | 162 |
| 3.0SMCJ110 | HHD | 122 / 149 | 1.0 | 110 | 2.0 | 15.4 | 196 |
| 3.0SMCJ110A | HHE | 122 / 135 | 1.0 | 110 | 2.0 | 16.8 | 177 |
| 3.0SMCJ120 | HHF | 133 / 163 | 1.0 | 120 | 2.0 | 14.0 | 214 |
| 3.0SMCJ120A | HHG | 133 / 147 | 1.0 | 120 | 2.0 | 15.6 | 193 |
| 3.0SMCJ130 | HHH | 144 / 176 | 1.0 | 130 | 2.0 | 13.0 | 231 |
| 3.0SMCJ130A | HHK | 144 / 159 | 1.0 | 130 | 2.0 | 14.4 | 209 |
| 3.0SMCJ150 | HHL | 167 / 204 | 1.0 | 150 | 2.0 | 11.2 | 268 |
| 3.0SMCJ150A | HHM | 167 / 185 | 1.0 | 150 | 2.0 | 12.4 | 243 |
| 3.0SMCJ160 | HHN | 178 / 218 | 1.0 | 160 | 2.0 | 10.4 | 287 |
| 3.0SMCJ160A | HHP | 178 / 197 | 1.0 | 160 | 2.0 | 11.6 | 259 |
| 3.0SMCJ170 | HHQ | 189 / 231 | 1.0 | 170 | 2.0 | 9.8 | 304 |
| 3.0SMCJ170A | HHR | 189 / 209 | 1.0 | 170 | 2.0 | 11.0 | 275 |

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 I₀ limit is doubled
4. all terms and symbols are consistent with ANSI/IEEE C62.35