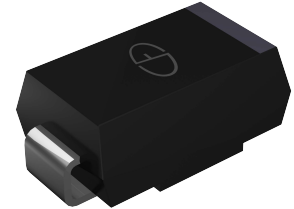


Features

- 3000 W peak pulse power capability with a 10/1000 μ s waveform
- Excellent clamping capability
- Fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum Solder dip 275°C, 10s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



DO-214AB(SMC)



Applications

For use in sensitive electronics protection against voltage transients induced by lightning or inductive load switching. Key applications include protection of I/O interfaces, industrial and LED lighting applications, DC power buses, and other vulnerable circuits used in consumer electronics.

For bi-directional devices, use suffix C or CA (e.g.3.0SMCJ7.0CA). Electrical characteristics apply in both directions.

Mechanical Data

Case: DO-214AB (SMC)

Molding compound meets UL 94 V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

Marking: Laser marking band denotes cathode end or device code; Unidirectional-Device Code and Cathode Band; Bidirectional-Device Code Only

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|-----------------------------------|----------------|------|
| Peak pulse power dissipation with a 10/1000 μ s waveform (1) (Fig. 3) | P _{PPM} | 3000 | W |
| Peak power pulse current with a 10/1000 μ s waveform (1) (Fig. 1) | I _{PPM} | See Next Table | A |
| Peak forward surge current 8.3 ms single half sine-wave (2) | I _{FSM} | 250 | A |
| Power dissipation on infinite heatsink at T _L = 75 °C (Fig. 6) | P _D | 6.0 | W |
| Maximum instantaneous forward voltage at 100A (2) | V _F | 3.5 | V |
| Typical Thermal Resistance junction to case | R _{θJC} | 49 | °C/W |
| Operating junction and storage temperature range | T _J , T _{STG} | - 65 to + 175 | °C |

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25 °C per Fig. 2

(2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors

Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

For bi-directional devices, use suffix CA (e.g. 3.0SMCJ7.0CA). Electrical characteristics apply in both directions

| Device Type | Marking Code | | Breakdown Voltage $V_{(BR)}$ (Volts) ⁽¹⁾ | | Test Current at I_T (mA) | Stand-off Voltage V_{WM} (V) | Maximum Reverse Leakage at V_{WM} I_R (μ A) | | Maximum Peak Pulse surge current I_{PP} ⁽²⁾ (A) _M | Maximum Clamping Voltage at I_{PPM} V_C (Volts) |
|-------------|--------------|-----|---|-------|----------------------------|--------------------------------|--|-----|---|---|
| | UNI | BI | Min. | Max. | | | UNI | BI | | |
| | | | | | | | | | | |
| 3.0SMCJ7.0 | HDL | IDL | 7.78 | 9.36 | 10 | 7 | 200 | 400 | 225.6 | 13.3 |
| 3.0SMCJ7.0A | HDM | IDM | 7.78 | 8.45 | 10 | 7 | 200 | 400 | 250 | 12 |
| 3.0SMCJ7.5 | HDN | IDN | 8.33 | 10.17 | 1 | 7.5 | 100 | 200 | 209.8 | 14.3 |
| 3.0SMCJ7.5A | HDP | IDP | 8.33 | 9.08 | 1 | 7.5 | 100 | 200 | 232.6 | 12.9 |
| 3.0SMCJ8.0 | HDQ | IDQ | 8.89 | 10.8 | 1 | 8 | 50 | 100 | 220 | 13.7 |
| 3.0SMCJ8.0A | HDR | IDR | 8.89 | 9.73 | 1 | 8 | 50 | 100 | 220.6 | 13.6 |
| 3.0SMCJ8.5 | HDS | IDS | 9.44 | 11.42 | 1 | 8.5 | 25 | 50 | 188.8 | 15.9 |
| 3.0SMCJ8.5A | HDT | IDT | 9.44 | 10.32 | 1 | 8.5 | 25 | 50 | 208.4 | 14.4 |
| 3.0SMCJ9.0 | HDU | IDU | 10 | 12.1 | 1 | 9 | 10 | 20 | 177.4 | 16.9 |
| 3.0SMCJ9.0A | HDV | IDV | 10 | 11 | 1 | 9 | 10 | 20 | 194.8 | 15.4 |
| 3.0SMCJ10 | HDW | IDW | 11.1 | 13.6 | 1 | 10 | 5 | 5 | 159.6 | 18.8 |
| 3.0SMCJ10A | HDX | IDX | 11.1 | 12.3 | 1 | 10 | 5 | 5 | 176.4 | 17 |
| 3.0SMCJ11 | HDY | IDY | 12.2 | 14.9 | 1 | 11 | 5 | 5 | 149.2 | 20.1 |
| 3.0SMCJ11A | HDZ | IDZ | 12.2 | 13.5 | 1 | 11 | 5 | 5 | 184.88 | 16.3 |
| 3.0SMCJ12 | HED | IED | 13.3 | 16.4 | 1 | 12 | 5 | 5 | 136.4 | 22 |
| 3.0SMCJ12A | HEE | IEE | 13.3 | 14.8 | 1 | 12 | 5 | 5 | 150.6 | 20 |
| 3.0SMCJ13 | HEF | IEF | 14.4 | 17.7 | 1 | 13 | 5 | 5 | 126 | 24 |
| 3.0SMCJ13A | HEG | IEG | 14.4 | 16 | 1 | 13 | 5 | 5 | 139.4 | 21.6 |
| 3.0SMCJ14 | HEH | IEH | 15.6 | 19.3 | 1 | 14 | 5 | 5 | 116.2 | 25.9 |
| 3.0SMCJ14A | HEK | IEK | 15.6 | 17.4 | 1 | 14 | 5 | 5 | 129.4 | 23.2 |
| 3.0SMCJ15 | HEL | IEL | 16.7 | 20.6 | 1 | 15 | 5 | 5 | 111.6 | 26.9 |
| 3.0SMCJ15A | HEM | IEM | 16.7 | 18.7 | 1 | 15 | 5 | 5 | 123 | 24.4 |
| 3.0SMCJ16 | HEN | IEN | 17.8 | 22.1 | 1 | 16 | 5 | 5 | 104.2 | 28.8 |
| 3.0SMCJ16A | HEP | IEP | 17.8 | 20 | 1 | 16 | 5 | 5 | 115.4 | 26 |
| 3.0SMCJ17 | HEQ | IEQ | 18.9 | 23.4 | 1 | 17 | 5 | 5 | 98.4 | 30.5 |
| 3.0SMCJ17A | HER | IER | 18.9 | 21.2 | 1 | 17 | 5 | 5 | 106.6 | 28.2 |
| 3.0SMCJ18 | HES | IES | 20 | 24.8 | 1 | 18 | 5 | 5 | 93.2 | 32.2 |
| 3.0SMCJ18A | HET | IET | 20 | 22.8 | 1 | 18 | 5 | 5 | 102.8 | 29.2 |
| 3.0SMCJ20 | HEU | IEU | 22.2 | 27.6 | 1 | 20 | 5 | 5 | 83.8 | 35.8 |
| 3.0SMCJ20A | HEV | IEV | 22.2 | 25 | 1 | 20 | 5 | 5 | 92.6 | 32.4 |

3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors

Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

Electrical Characteristics (T_A=25°C unless otherwise specified)

| Device Type | Marking Code | | Breakdown Voltage V _(BR) (Volts) ⁽¹⁾ | | Test Current at I _T (mA) | Stand-off Voltage V _{WM} (V) | Maximum Reverse Leakage at V _{WM} I _R (μ A) | | Maximum Peak Pulse surge current I _{PP} ⁽²⁾ (A) _M | Maximum Clamping Voltage at I _{PPM} V _C (Volts) |
|-------------|--------------|-----|---|------|--|---|--|----|--|---|
| | UNI | BI | Min. | Max. | | | UNI | BI | | |
| | | | | | | | | | | |
| 3.0SMCJ22 | HEW | IEW | 24.4 | 30.4 | 1 | 22 | 5 | 5 | 76.2 | 39.4 |
| 3.0SMCJ22A | HEX | IEX | 24.4 | 27.5 | 1 | 22 | 5 | 5 | 84.4 | 35.7 |
| 3.0SMCJ24 | HEY | IEY | 26.7 | 33.3 | 1 | 24 | 5 | 5 | 69.8 | 43 |
| 3.0SMCJ24A | HEZ | IEZ | 26.7 | 30.2 | 1 | 24 | 5 | 5 | 77.2 | 38.9 |
| 3.0SMCJ26 | HFD | IFD | 28.9 | 36.1 | 1 | 26 | 5 | 5 | 64.4 | 46.6 |
| 3.0SMCJ26A | HFE | IFE | 28.9 | 32.7 | 1 | 26 | 5 | 5 | 71.2 | 42.3 |
| 3.0SMCJ28 | HFF | IFF | 31.1 | 38.9 | 1 | 28 | 5 | 5 | 60 | 50 |
| 3.0SMCJ28A | HFG | IFG | 31.1 | 35.3 | 1 | 28 | 5 | 5 | 66 | 45.6 |
| 3.0SMCJ30 | HFH | IFH | 33.3 | 41.7 | 1 | 30 | 5 | 5 | 56 | 53.6 |
| 3.0SMCJ30A | HFJ | IFJ | 33.3 | 37.8 | 1 | 30 | 5 | 5 | 62 | 48.4 |
| 3.0SMCJ33 | HFL | IFL | 36.7 | 46 | 1 | 33 | 5 | 5 | 50.4 | 59.8 |
| 3.0SMCJ33A | HFM | IFM | 36.7 | 41.7 | 1 | 33 | 5 | 5 | 56.2 | 53.7 |
| 3.0SMCJ36 | HFN | IFN | 40 | 50.2 | 1 | 36 | 5 | 5 | 46.6 | 64.6 |
| 3.0SMCJ36A | HFP | IFP | 40 | 45.5 | 1 | 36 | 5 | 5 | 51.6 | 58.2 |
| 3.0SMCJ40 | HFQ | IFQ | 44.4 | 55.8 | 1 | 40 | 5 | 5 | 42 | 71.5 |
| 3.0SMCJ40A | HFR | IFR | 44.4 | 50.6 | 1 | 40 | 5 | 5 | 46.4 | 64.7 |
| 3.0SMCJ43 | HFS | IFS | 47.8 | 60 | 1 | 43 | 5 | 5 | 39.2 | 76.7 |
| 3.0SMCJ43A | HFT | IFT | 47.8 | 54.4 | 1 | 43 | 5 | 5 | 43.2 | 69.5 |
| 3.0SMCJ45 | HFU | IFU | 50 | 62.8 | 1 | 45 | 5 | 5 | 37.4 | 80.3 |
| 3.0SMCJ45A | HFV | IFV | 50 | 57 | 1 | 45 | 5 | 5 | 41.2 | 72.9 |
| 3.0SMCJ48 | HFV | IFV | 53.3 | 67 | 1 | 48 | 5 | 5 | 35 | 85.8 |
| 3.0SMCJ48A | HFX | IFX | 53.3 | 60.8 | 1 | 48 | 5 | 5 | 38.8 | 77.4 |
| 3.0SMCJ51 | HFY | IFY | 56.7 | 71.3 | 1 | 51 | 5 | 5 | 37 | 81.5 |
| 3.0SMCJ51A | HFZ | IFZ | 56.7 | 64.7 | 1 | 51 | 5 | 5 | 36.4 | 82.5 |
| 3.0SMCJ54 | HGD | IGD | 60 | 75.5 | 1 | 54 | 5 | 5 | 31.2 | 96.3 |
| 3.0SMCJ54A | HGE | IGE | 60 | 68.5 | 1 | 54 | 5 | 5 | 34.4 | 87.5 |
| 3.0SMCJ58 | HGF | IGF | 64.4 | 81.1 | 1 | 58 | 5 | 5 | 29.2 | 103 |
| 3.0SMCJ58A | HGG | IGG | 64.4 | 73.6 | 1 | 58 | 5 | 5 | 32 | 94 |
| 3.0SMCJ60 | HGH | IGH | 66.7 | 84 | 1 | 60 | 5 | 5 | 28 | 107.5 |
| 3.0SMCJ60A | HGK | IGK | 66.7 | 76.2 | 1 | 60 | 5 | 5 | 31 | 97 |

3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors
 Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

Electrical Characteristics (T_A=25°C unless otherwise specified)

| Device Type | Marking Code | | Breakdown Voltage V _(BR) (Volts) ⁽¹⁾ | | Test Current at I _T (mA) | Stand-off Voltage V _{WM} (V) | Maximum Reverse Leakage at V _{WM} I _R (uA) | | Maximum Peak Pulse surge current I _{PP} ⁽²⁾ (A) _M | Maximum Clamping Voltage at I _{PPM} V _C (Volts) |
|-------------|--------------|-----|--|-------|-------------------------------------|---------------------------------------|--|----|--|---|
| | UNI | BI | Min. | Max. | | | UNI | BI | | |
| | | | | | | | | | | |
| 3.0SMCJ64 | HGL | IGL | 71.1 | 89.6 | 1 | 64 | 5 | 5 | 26.4 | 114 |
| 3.0SMCJ64A | HGM | IGM | 71.1 | 81.3 | 1 | 64 | 5 | 5 | 29.2 | 103 |
| 3.0SMCJ70 | HGN | IGN | 77.8 | 98.1 | 1 | 70 | 5 | 5 | 24 | 125 |
| 3.0SMCJ70A | HGP | IGP | 77.8 | 89 | 1 | 70 | 5 | 5 | 26.8 | 112.1 |
| 3.0SMCJ75 | HGQ | IGQ | 83.3 | 105.2 | 1 | 75 | 5 | 5 | 22.4 | 134 |
| 3.0SMCJ75A | HGR | IGR | 83.3 | 95.3 | 1 | 75 | 5 | 5 | 24.8 | 121 |
| 3.0SMCJ78 | HGS | IGS | 86.7 | 109.3 | 1 | 78 | 5 | 5 | 21.6 | 139 |
| 3.0SMCJ78A | HGT | IGT | 86.7 | 99.2 | 1 | 78 | 5 | 5 | 22.8 | 132 |
| 3.0SMCJ85 | HGU | IGU | 94.4 | 118.7 | 1 | 85 | 5 | 5 | 19.8 | 152 |
| 3.0SMCJ85A | HGV | IGV | 94.4 | 107.7 | 1 | 85 | 5 | 5 | 20.8 | 145 |
| 3.0SMCJ90 | HGW | IGW | 100 | 126 | 1 | 90 | 5 | 5 | 18.8 | 160 |
| 3.0SMCJ90A | HGX | IGX | 100 | 115 | 1 | 90 | 5 | 5 | 20.6 | 146 |
| 3.0SMCJ100 | HGY | IGY | 111 | 140.5 | 1 | 100 | 5 | 5 | 16.6 | 181 |
| 3.0SMCJ100A | HGZ | IGZ | 111 | 127.5 | 1 | 100 | 5 | 5 | 18.6 | 162 |
| 3.0SMCJ110 | HHD | IHD | 122 | 154 | 1 | 110 | 5 | 5 | 15.4 | 196 |
| 3.0SMCJ110A | HHE | IHE | 122 | 140 | 1 | 110 | 5 | 5 | 16.8 | 179 |
| 3.0SMCJ120 | HHF | IHF | 133 | 168.5 | 1 | 120 | 5 | 5 | 14 | 215 |
| 3.0SMCJ120A | HHG | IHG | 133 | 152.5 | 1 | 120 | 5 | 5 | 15.6 | 193 |
| 3.0SMCJ130 | HHH | IHH | 144 | 182 | 1 | 130 | 5 | 5 | 13 | 231 |
| 3.0SMCJ130A | HHK | IHK | 144 | 165 | 1 | 130 | 5 | 5 | 14.4 | 209 |
| 3.0SMCJ150 | HHL | IHL | 167 | 211 | 1 | 150 | 5 | 5 | 11.2 | 268 |
| 3.0SMCJ150A | HHM | IHM | 167 | 192 | 1 | 150 | 5 | 5 | 12.4 | 243 |
| 3.0SMCJ160 | HHN | IHN | 178 | 225.5 | 1 | 160 | 5 | 5 | 10.4 | 289 |
| 3.0SMCJ160A | HHP | IHP | 178 | 204.5 | 1 | 160 | 5 | 5 | 11.6 | 259 |
| 3.0SMCJ170 | HHQ | IHQ | 189 | 239 | 1 | 170 | 5 | 5 | 9.8 | 307 |
| 3.0SMCJ170A | HHR | IHR | 189 | 217 | 1 | 170 | 5 | 5 | 11 | 273 |

Notes:

- (1) Pulse test: t_p ≤ 50 ms
- (2) Surge current waveform per Fig. 3 and derated per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35

3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors

Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

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

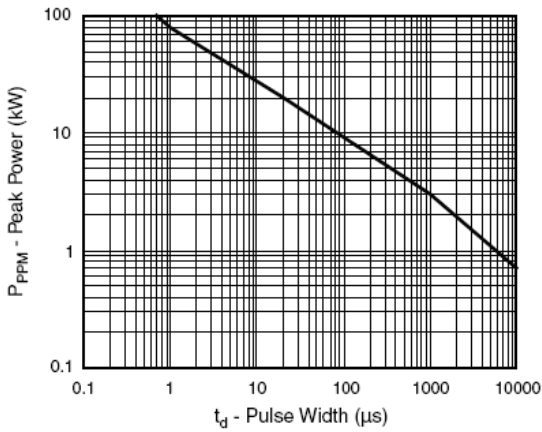


FIGURE 1-PEAK PULSE POWER VS PULSE TIME

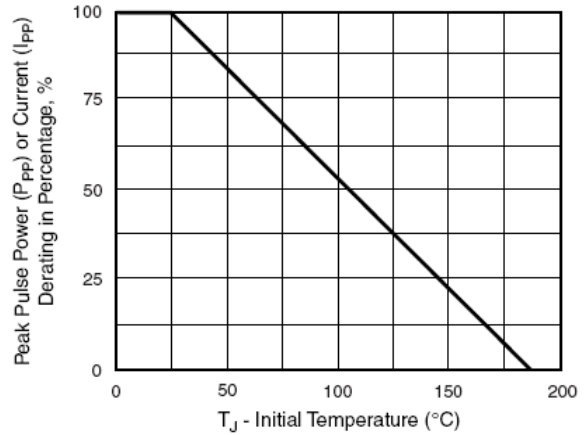


FIGURE 2 Pulse Power or Current vs. Initial Junction Temperature

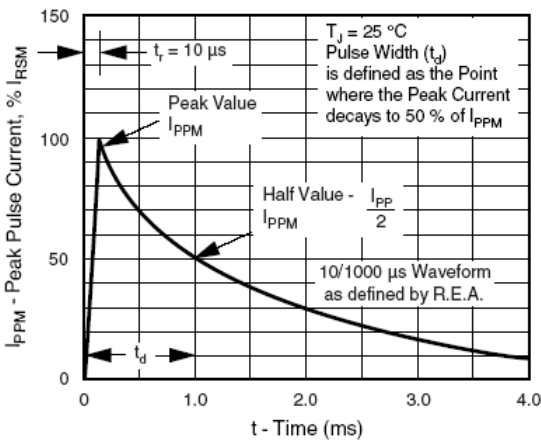


FIGURE 3-PULSE WAVEFORM

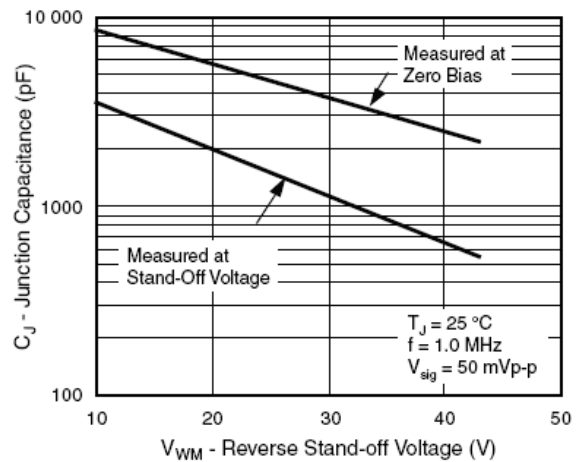


FIGURE 4 TYPICAL CAPACITANCE VS STAND-OFF VOLTAGE

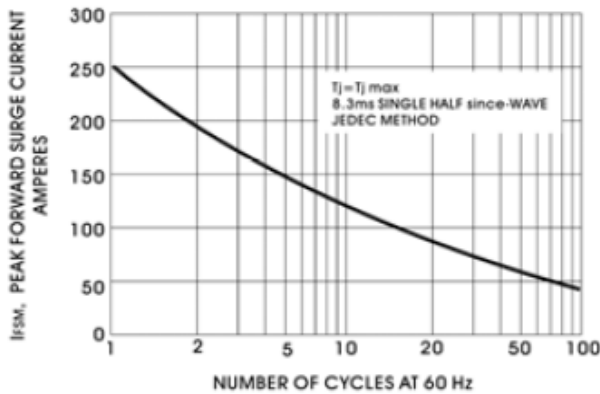


FIGURE 5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL

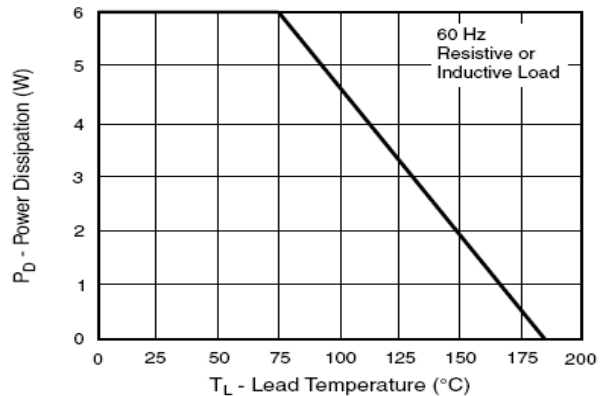


FIGURE 6 STEADY STATE POWER DERATING CURVE

3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors
 Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

Package Outline Dimensions

DO-214AB(SMC) dimensions in inches (millimeters)

