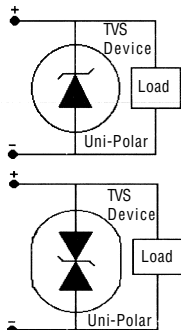


# 5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

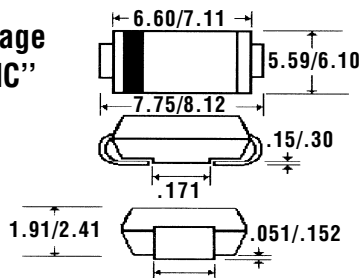
**SMCJ5.0...170**

## Description



## Mechanical Dimensions

Package  
"SMC"



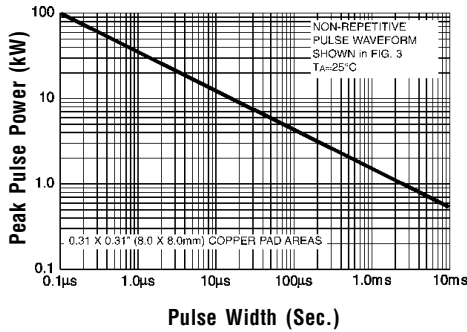
## Features

- 1500 WATT PEAK POWER PROTECTION
- EXCELLENT CLAMPING CAPABILITY
- FAST RESPONSE TIME
- TYPICAL  $I_R < 1\mu A$  ABOVE 10V
- GLASS PASSIVATED CHIP CONSTRUCTION
- MEETS UL SPECIFICATION 94V-0

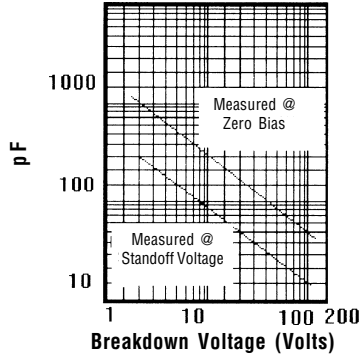
| Electrical Characteristics @ 25°C.   | SMCJ5.0...170 | Units          |
|--|---------------|----------------|
| <b>Maximum Ratings</b>   |               |                |
| Peak Power Dissipation... $P_{PK}$<br>$T_p = 1mS$ (Note 5)   | 1500 Min.     | Watts          |
| Steady State Power Dissipation... $P_D$<br>@ $T_T = 75^\circ C$ (Note 2)   | 5             | Watts          |
| Non-Repetitive Peak Forward Surge Current... $I_{FSM}$<br>@ Rated Load Conditions, 8.3 mS, 1/2 Sine Wave, Single Phase<br>(Note 3) | 100           | Amps           |
| Weight... $G_{RM}$   | 0.20          | Grams          |
| Soldering Requirements (Time & Temp)... $S_T$<br>@ 250°C   | 11 Sec.       | Min. to Solder |
| Operating & Storage Temperature Range... $T_J, T_{STRG}$   | -65 to 175    | °C             |

- NOTES:**
1. For Bi-Directional Applications, Use C or CA. Electrical Characteristics Apply in Both Directions.
  2. Mounted on 8mm Copper Pads to Each Terminal.
  3. 8.3 mS, 1/2 Sine Wave, Single Phase Duty Cycle, @ 4 Pulses Per Minute Maximum.
  4.  $V_{BR}$  Measured After It Applies for 300 uS.  $I_T =$  Square Wave Pulse or Equivalent.
  5. Non-Repetitive Current Pulse. Per Fig. 3 and Derated Above  $T_A = 25^\circ C$  per Fig. 2.

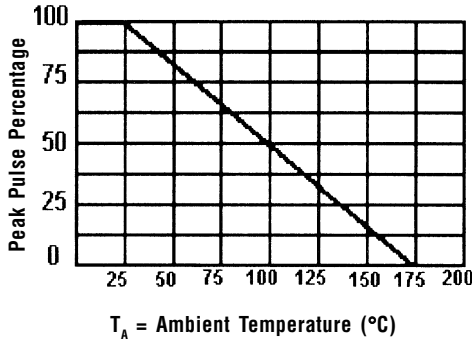
**Fig. 1 Pulse Rating Curve**



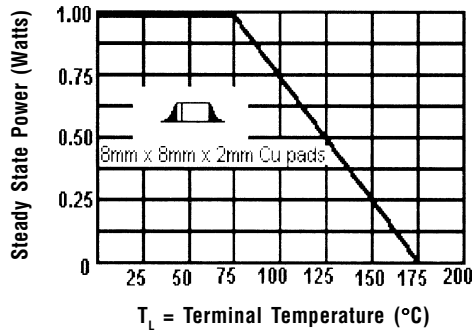
**Fig. 4 Typical Junction Capacitance**



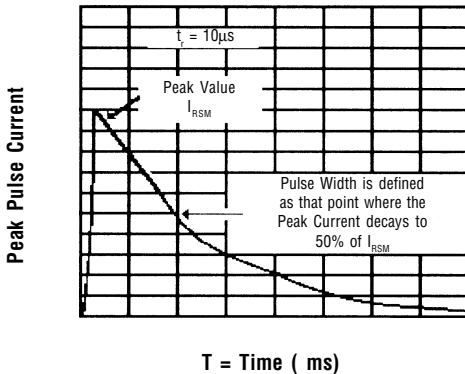
**Fig. 2 Pulse Derating Curve**



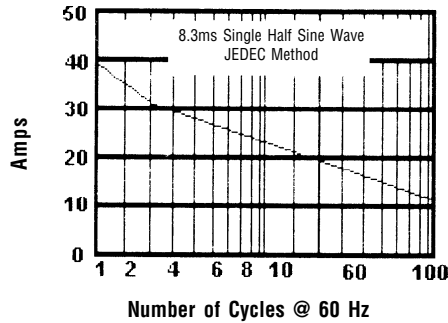
**Fig. 5 Steady State Power Derating**



**Fig. 3 Pulse Waveform**



**Fig. 6 Maximum Non-Repetitive Surge Current**



Ratings at 25 Deg. C ambient temperature unless otherwise specified.

Single Phase Half Wave, 60 HZ Resistive or Inductive Load.

For Capacitive Load, Derate Current by 20%.

# 5.0V to 170V SMD TRANSIENT VOLTAGE SUPPRESSORS

**SMCJ5.0...170**

| DEVICE   | Breakdown Voltage          |       |                 | Working Peak Reverse Voltage<br>$V_{RWM}$ (V) | Maximum Reverse Leakage @ $V_{RWM}$<br>$I_R$ ( $\mu$ A) | Peak Pulse Current<br>$I_{PP}$ (A)<br>(Note 2) | Maximum Clamping Voltage @ $I_{PP}$<br>$V_C$ (V) | Maximum Temperature Coefficient of $V_{BR}$<br>% / $^{\circ}$ C | Case Marking |
|----------|----------------------------|-------|-----------------|---|---|--|--|---|--------------|
|          | $V_{BR}$<br>Volts (Note 1) |       | @ $I_T$<br>(mA) |   |   |  |  |   |              |
|          | Min.                       | Max.  |                 |   |   |  |  |   |              |
| SMCJ5.0  | 6.40                       | 7.55  | 10.00           | 5.00  | 1000  | 156.2  | 9.60   | 0.061   | GDD          |
| SMCJ5.0A | 6.40                       | 7.25  | 10.00           | 5.00  | 1000  | 163.0  | 9.20   | 0.061   | GDE          |
| SMCJ6.0  | 6.67                       | 8.45  | 10.00           | 6.00  | 1000  | 131.6  | 11.40  | 0.065   | GDF          |
| SMCJ6.0A | 6.67                       | 7.67  | 10.00           | 6.00  | 1000  | 145.6  | 10.30  | 0.065   | GDG          |
| SMCJ6.5  | 7.22                       | 9.14  | 10.00           | 6.50  | 500   | 122.0  | 12.30  | 0.068   | GDH          |
| SMCJ6.5A | 7.22                       | 8.30  | 10.00           | 6.50  | 500   | 133.9  | 11.20  | 0.068   | GDK          |
| SMCJ7.0  | 7.78                       | 9.86  | 10.00           | 7.00  | 200   | 112.8  | 13.30  | 0.073   | GDL          |
| SMCJ7.0A | 7.78                       | 8.95  | 10.00           | 7.00  | 200   | 125.0  | 12.00  | 0.073   | GDM          |
| SMCJ7.5  | 8.33                       | 10.67 | 1.00            | 7.50  | 100   | 104.9  | 14.30  | 0.075   | GDN          |
| SMCJ7.5A | 8.33                       | 9.58  | 1.00            | 7.50  | 100   | 116.3  | 12.90  | 0.075   | GDP          |
| SMCJ8.0  | 8.89                       | 11.30 | 1.00            | 8.00  | 50.00   | 100.0  | 15.00  | 0.076   | GDQ          |
| SMCJ8.0A | 8.89                       | 10.20 | 1.00            | 8.00  | 50.00   | 110.3  | 13.60  | 0.078   | GDR          |
| SMCJ8.5  | 9.44                       | 11.90 | 1.00            | 8.50  | 20.00   | 95.3   | 15.90  | 0.081   | GDS          |
| SMCJ8.5A | 9.44                       | 10.80 | 1.00            | 8.50  | 20.00   | 104.2  | 14.40  | 0.081   | GDT          |
| SMCJ9.0  | 10.00                      | 12.60 | 1.00            | 9.00  | 10.00   | 88.7   | 16.90  | 0.084   | GDU          |
| SMCJ9.0A | 10.00                      | 11.50 | 1.00            | 9.00  | 10.00   | 97.4   | 15.40  | 0.084   | GDV          |
| SMCJ10   | 11.10                      | 11.50 | 1.00            | 10.00   | 5.00  | 79.8   | 18.80  | 0.086   | GDW          |
| SMCJ10A  | 11.10                      | 13.50 | 1.00            | 10.00   | 5.00  | 88.2   | 17.00  | 0.086   | GDX          |
| SMCJ11   | 12.20                      | 15.40 | 1.00            | 11.00   | 5.00  | 74.6   | 20.10  | 0.088   | GDY          |
| SMCJ11A  | 12.20                      | 14.00 | 1.00            | 11.00   | 5.00  | 82.4   | 18.20  | 0.088   | GDZ          |
| SMCJ12   | 13.30                      | 16.90 | 1.00            | 12.00   | 5.00  | 68.2   | 22.00  | 0.090   | GED          |
| SMCJ12A  | 13.30                      | 15.30 | 1.00            | 12.00   | 5.00  | 75.3   | 19.90  | 0.090   | GEE          |
| SMCJ13   | 14.40                      | 18.20 | 1.00            | 13.00   | 5.00  | 63.0   | 23.80  | 0.092   | GEF          |
| SMCJ13A  | 14.40                      | 16.50 | 1.00            | 13.00   | 5.00  | 69.7   | 21.50  | 0.092   | GEG          |
| SMCJ14   | 15.60                      | 19.80 | 1.00            | 14.00   | 5.00  | 58.1   | 25.80  | 0.094   | GEH          |
| SMCJ14A  | 15.60                      | 17.90 | 1.00            | 14.00   | 5.00  | 64.7   | 23.20  | 0.094   | GEK          |
| SMCJ15   | 16.70                      | 21.10 | 1.00            | 15.00   | 5.00  | 55.8   | 26.90  | 0.096   | GEL          |
| SMCJ15A  | 16.70                      | 19.20 | 1.00            | 15.00   | 5.00  | 61.5   | 24.40  | 0.096   | GEM          |
| SMCJ16   | 17.80                      | 22.60 | 1.00            | 16.00   | 5.00  | 52.1   | 28.80  | 0.097   | GEN          |
| SMCJ16A  | 17.80                      | 20.50 | 1.00            | 16.00   | 5.00  | 57.7   | 26.00  | 0.097   | GEP          |
| SMCJ17   | 18.90                      | 23.90 | 1.00            | 17.00   | 5.00  | 49.2   | 30.50  | 0.098   | GEQ          |
| SMCJ17A  | 18.90                      | 21.70 | 1.00            | 17.00   | 5.00  | 53.3   | 27.60  | 0.098   | GER          |
| SMCJ18   | 20.00                      | 25.30 | 1.00            | 18.00   | 5.00  | 46.6   | 32.20  | 0.099   | GES          |
| SMCJ18A  | 20.00                      | 25.30 | 1.00            | 18.00   | 5.00  | 51.4   | 29.20  | 0.099   | GET          |
| SMCJ20   | 22.20                      | 28.10 | 1.00            | 20.00   | 5.00  | 41.9   | 35.80  | 0.100   | GEU          |
| SMCJ20A  | 22.20                      | 25.50 | 1.00            | 20.00   | 5.00  | 46.3   | 32.40  | 0.100   | GEV          |
| SMCJ22   | 24.40                      | 30.90 | 1.00            | 22.00   | 5.00  | 38.1   | 39.40  | 0.101   | GEW          |
| SMCJ22A  | 24.40                      | 28.00 | 1.00            | 22.00   | 5.00  | 42.2   | 35.50  | 0.101   | GEX          |
| SMCJ24   | 26.70                      | 33.80 | 1.00            | 24.00   | 5.00  | 34.9   | 43.00  | 0.101   | GEY          |
| SMCJ24A  | 26.70                      | 30.70 | 1.00            | 24.00   | 5.00  | 38.6   | 38.90  | 0.101   | GEZ          |
| SMCJ26   | 28.90                      | 36.60 | 1.00            | 26.00   | 5.00  | 32.2   | 46.60  | 0.102   | GFD          |
| SMCJ26A  | 28.90                      | 33.20 | 1.00            | 26.00   | 5.00  | 35.6   | 42.10  | 0.102   | GFE          |

# 5.0V to 170V GPP TRANSIENT VOLTAGE SUPPRESSORS

**SMCJ5.0 . . . 170**

| DEVICE   | Breakdown Voltage          |        |                 | Working Peak Reverse Voltage<br>$V_{RWM}$ (V) | Maximum Reverse Leakage @ $V_{RWM}$<br>$I_R$ ( $\mu$ A) | Peak Pulse Current<br>$I_{PP}$ (A)<br>(Note 2) | Maximum Clamping Voltage @ $I_{PP}$<br>$V_C$ (V) | Maximum Temperature Coefficient of $V_{BR}$<br>% / $^{\circ}$ C | Case Marking |
|----------|----------------------------|--------|-----------------|---|---|--|--|---|--------------|
|          | $V_{BR}$<br>Volts (Note 1) |        | @ $I_T$<br>(mA) |   |   |  |  |   |              |
|          | Min.                       | Max.   |                 |   |   |  |  |   |              |
| SMCJ28   | 31.10                      | 39.40  | 1.00            | 28.00   | 5.00  | 30.0   | 50.10  | 0.104   | GFF          |
| SMCJ28A  | 31.10                      | 35.80  | 1.00            | 28.00   | 5.00  | 33.0   | 45.40  | 0.104   | GFG          |
| SMCJ30   | 33.30                      | 42.20  | 1.00            | 30.00   | 5.00  | 28.0   | 53.50  | 0.104   | GFH          |
| SMCJ30A  | 33.30                      | 38.30  | 1.00            | 30.00   | 5.00  | 31.0   | 48.40  | 0.104   | GFK          |
| SMCJ33   | 36.70                      | 46.50  | 1.00            | 33.00   | 5.00  | 25.2   | 59.00  | 0.104   | GFL          |
| SMCJ33A  | 36.70                      | 42.20  | 1.00            | 33.00   | 5.00  | 28.1   | 53.30  | 0.104   | GFM          |
| SMCJ36   | 40.00                      | 50.70  | 1.00            | 36.00   | 5.00  | 23.3   | 64.30  | 0.104   | GFN          |
| SMCJ36A  | 40.00                      | 46.00  | 1.00            | 36.00   | 5.00  | 25.8   | 58.10  | 0.104   | GFP          |
| SMCJ40   | 44.40                      | 56.30  | 1.00            | 40.00   | 5.00  | 21.0   | 71.40  | 0.104   | GFQ          |
| SMCJ40A  | 44.40                      | 51.10  | 1.00            | 40.00   | 5.00  | 23.2   | 64.50  | 0.104   | GFR          |
| SMCJ43   | 47.80                      | 60.50  | 1.00            | 43.00   | 5.00  | 19.6   | 76.70  | 0.104   | GFS          |
| SMCJ43A  | 47.80                      | 54.90  | 1.00            | 43.00   | 5.00  | 21.6   | 69.40  | 0.104   | GFT          |
| SMCJ45   | 50.00                      | 63.30  | 1.00            | 45.00   | 5.00  | 18.7   | 80.30  | 0.104   | GFU          |
| SMCJ45A  | 50.00                      | 57.50  | 1.00            | 45.00   | 5.00  | 20.6   | 72.70  | 0.104   | GFV          |
| SMCJ48   | 53.30                      | 67.50  | 1.00            | 48.00   | 5.00  | 17.5   | 85.50  | 0.104   | GFW          |
| SMCJ48A  | 53.30                      | 61.30  | 1.00            | 48.00   | 5.00  | 19.4   | 77.40  | 0.104   | GFX          |
| SMCJ51   | 56.70                      | 71.80  | 1.00            | 51.00   | 5.00  | 18.5   | 91.10  | 0.104   | GFY          |
| SMCJ51A  | 56.70                      | 65.20  | 1.00            | 51.00   | 5.00  | 18.2   | 82.40  | 0.104   | GFZ          |
| SMCJ54   | 60.00                      | 76.00  | 1.00            | 54.00   | 5.00  | 15.6   | 96.30  | 0.104   | GGD          |
| SMCJ54A  | 60.00                      | 69.00  | 1.00            | 54.00   | 5.00  | 17.2   | 87.10  | 0.104   | GGE          |
| SMCJ58   | 64.40                      | 81.60  | 1.00            | 58.00   | 5.00  | 14.6   | 103.00   | 0.104   | GGF          |
| SMCJ58A  | 64.40                      | 74.10  | 1.00            | 58.00   | 5.00  | 16.0   | 93.60  | 0.104   | GGG          |
| SMCJ60   | 66.70                      | 84.50  | 1.00            | 60.00   | 5.00  | 14.0   | 107.00   | 0.104   | GGH          |
| SMCJ60A  | 66.70                      | 76.70  | 1.00            | 60.00   | 5.00  | 15.5   | 96.80  | 0.104   | GGK          |
| SMCJ64   | 71.10                      | 90.10  | 1.00            | 64.00   | 5.00  | 13.2   | 114.00   | 0.104   | GGL          |
| SMCJ64A  | 71.10                      | 81.80  | 1.00            | 64.00   | 5.00  | 14.6   | 103.00   | 0.104   | GGM          |
| SMCJ70   | 77.80                      | 98.60  | 1.00            | 70.00   | 5.00  | 12.0   | 125.00   | 0.104   | GGN          |
| SMCJ70A  | 77.80                      | 89.50  | 1.00            | 70.00   | 5.00  | 13.3   | 113.00   | 0.104   | GGP          |
| SMCJ75   | 83.30                      | 105.70 | 1.00            | 75.00   | 5.00  | 11.2   | 134.00   | 0.104   | GGQ          |
| SMCJ75A  | 83.30                      | 95.80  | 1.00            | 75.00   | 5.00  | 12.4   | 121.00   | 0.104   | GGR          |
| SMCJ78   | 86.70                      | 109.90 | 1.00            | 78.00   | 5.00  | 10.8   | 139.00   | 0.104   | GGS          |
| SMCJ78A  | 86.70                      | 99.70  | 1.00            | 78.00   | 5.00  | 11.4   | 126.00   | 0.104   | GGT          |
| SMCJ85   | 94.40                      | 119.20 | 1.00            | 85.00   | 5.00  | 9.9  | 151.00   | 0.104   | GGU          |
| SMCJ85A  | 94.40                      | 108.20 | 1.00            | 85.00   | 5.00  | 10.4   | 137.00   | 0.104   | GGV          |
| SMCJ90   | 100.00                     | 126.50 | 1.00            | 90.00   | 5.00  | 9.4  | 160.00   | 0.104   | GGW          |
| SMCJ90A  | 100.00                     | 115.50 | 1.00            | 90.00   | 5.00  | 10.3   | 146.00   | 0.104   | GGX          |
| SMCJ100  | 111.00                     | 141.00 | 1.00            | 100.00  | 5.00  | 8.4  | 179.00   | 0.104   | GGY          |
| SMCJ100A | 111.00                     | 128.00 | 1.00            | 100.00  | 5.00  | 9.3  | 162.00   | 0.104   | GGZ          |
| SMCJ110  | 122.00                     | 154.50 | 1.00            | 110.00  | 5.00  | 7.7  | 196.00   | 0.104   | GHD          |
| SMCJ110A | 122.00                     | 140.50 | 1.00            | 110.00  | 5.00  | 8.4  | 177.00   | 0.104   | GHE          |
| SMCJ120  | 133.00                     | 169.00 | 1.00            | 120.00  | 5.00  | 7.0  | 214.00   | 0.104   | GHF          |
| SMCJ120A | 133.00                     | 153.00 | 1.00            | 120.00  | 5.00  | 7.9  | 193.00   | 0.104   | GHG          |
| SMCJ130  | 144.00                     | 182.50 | 1.00            | 130.00  | 5.00  | 6.5  | 231.00   | 0.104   | GHH          |
| SMCJ130A | 144.00                     | 165.50 | 1.00            | 130.00  | 5.00  | 7.2  | 209.00   | 0.104   | GHK          |
| SMCJ150  | 167.00                     | 211.50 | 1.00            | 150.00  | 5.00  | 5.6  | 268.00   | 0.104   | GHL          |
| SMCJ150A | 167.00                     | 192.50 | 1.00            | 150.00  | 5.00  | 6.2  | 243.00   | 0.104   | GHM          |
| SMCJ160  | 178.00                     | 226.00 | 1.00            | 160.00  | 5.00  | 5.2  | 287.00   | 0.104   | GHN          |
| SMCJ160A | 178.00                     | 205.00 | 1.00            | 160.00  | 5.00  | 5.8  | 259.00   | 0.104   | GHP          |
| SMCJ170  | 189.00                     | 239.50 | 1.00            | 170.00  | 5.00  | 4.9  | 304.00   | 0.104   | GHQ          |
| SMCJ170A | 189.00                     | 217.50 | 1.00            | 170.00  | 5.00  | 5.5  | 275.00   | 0.104   | GHR          |