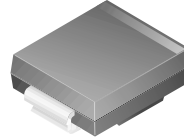


## Transient Voltage Suppressors SMCJ5V0(C)A - SMCJ170(C)A

### Features

- Glass passivated junction.
- 1500 W Peak Pulse Power capability on 10/1000  $\mu$ s waveform.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0 ps from 0 volts to BV for unidirectional and 5.0 ns for bidirectional.
- Typical  $I_R$  less than 1.0  $\mu$ A above 10V.
- UL certificate #E326243 and E210467.
- UL94V-0 Flammability Classification.



**SMC/DO-214AB**  
COLOR BAND DENOTES CATHODE ON UNIDIRECTIONAL DEVICES ONLY. NO COLOR BAND ON BIDIRECTIONAL DEVICES.

### DEVICES FOR BIPOLAR APPLICATIONS

- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

## 1500 Watt Transient Voltage Suppressors

### Absolute Maximum Ratings\* $T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Value       | Units            |
|-----------|--|-------------|------------------|
| $P_{PPM}$ | Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform                                     | 1500        | W                |
| $I_{PPM}$ | Peak Pulse Current on 10/1000 $\mu$ s waveform   | see table   | A                |
| $I_{FSM}$ | Non-repetitive Peak Forward Surge Current superimposed on rated load (JEDEC method) (Note 1) | 200         | A                |
| $T_{stg}$ | Storage Temperature Range  | -55 to +150 | $^\circ\text{C}$ |
| $T_J$     | Operating Junction Temperature   | + 150       | $^\circ\text{C}$ |

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**Note 1:** Measured on 8.3 ms single half-sine wave or equivalent square wave; Duty cycle = 4 pulses per minute maximum.

# Transient Voltage Suppressors

(continued)

SMCJ5V0(C)A - SMCJ170(C)A

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

| Uni-directional<br>Bi-directional (C)<br>Device | Part<br>Marking* | Reverse<br>Stand-off<br>Voltage<br>$V_{RWM}$ (V) | Breakdown<br>Voltage<br>$V_{BR}$ (V) |       | Test<br>Current<br>$I_T$ (mA) | Clamping<br>Voltage<br>@ $I_{PPM}$<br>$V_C$ (V) | Peak Pulse<br>Current<br>$I_{PPM}$ (A) | Reverse<br>Leakage<br>@ $V_{RWM}$<br>$I_R$ (uA)** |
|---|------------------|--|--------------------------------------|-------|-------------------------------|---|--|---|
|   |                  |  | min                                  | max   |                               |   |  |   |
| SMCJ5V0(C)A                                     | GDE              | 5.0  | 6.40                                 | 7.0   | 10                            | 9.2   | 163.0                                  | 1000  |
| SMCJ6V0(C)A                                     | GDG              | 6.0  | 6.67                                 | 7.37  | 10                            | 10.3  | 145.6                                  | 1000  |
| SMCJ6V5(C)A                                     | GDK              | 6.5  | 7.22                                 | 7.98  | 10                            | 11.2  | 133.9                                  | 500   |
| SMCJ7V0(C)A                                     | GDM              | 7.0  | 7.78                                 | 8.60  | 10                            | 12.0  | 125.0                                  | 200   |
| SMCJ7V5(C)A                                     | GDP              | 7.5  | 8.33                                 | 9.21  | 1                             | 12.9  | 116.3                                  | 100   |
| SMCJ8V0(C)A                                     | GDR              | 8.0  | 8.89                                 | 9.83  | 1                             | 13.6  | 110.3                                  | 50  |
| SMCJ8V5(C)A                                     | GDT              | 8.5  | 9.44                                 | 10.4  | 1                             | 14.4  | 104.2                                  | 20  |
| SMCJ9V0(C)A                                     | GDV              | 9.0  | 10.0                                 | 11.1  | 1                             | 15.4  | 97.4                                   | 10  |
| SMCJ10(C)A                                      | GDY              | 10   | 11.1                                 | 12.3  | 1                             | 17.0  | 88.2                                   | 5   |
| SMCJ11(C)A                                      | GDZ              | 11   | 12.2                                 | 13.5  | 1                             | 18.2  | 82.4                                   | 5   |
| SMCJ12(C)A                                      | GEE              | 12   | 13.3                                 | 14.7  | 1                             | 19.9  | 75.3                                   | 5   |
| SMCJ13(C)A                                      | GEG              | 13   | 14.4                                 | 15.9  | 1                             | 21.5  | 69.8                                   | 5   |
| SMCJ14(C)A                                      | GEK              | 14   | 15.6                                 | 17.2  | 1                             | 23.2  | 64.7                                   | 5   |
| SMCJ15(C)A                                      | GEM              | 15   | 16.7                                 | 18.5  | 1                             | 24.4  | 61.5                                   | 5   |
| SMCJ16(C)A                                      | GEP              | 16   | 17.8                                 | 19.7  | 1                             | 26.0  | 57.7                                   | 5   |
| SMCJ17(C)A                                      | GER              | 17   | 18.9                                 | 20.9  | 1                             | 27.6  | 54.3                                   | 5   |
| SMCJ18(C)A                                      | GET              | 18   | 20.0                                 | 22.1  | 1                             | 29.2  | 51.4                                   | 5   |
| SMCJ20(C)A                                      | GEV              | 20   | 22.2                                 | 24.5  | 1                             | 32.4  | 46.3                                   | 5   |
| SMCJ22(C)A                                      | GEX              | 22   | 24.4                                 | 26.9  | 1                             | 35.5  | 42.3                                   | 5   |
| SMCJ24(C)A                                      | GEZ              | 24   | 26.7                                 | 29.5  | 1                             | 38.9  | 38.6                                   | 5   |
| SMCJ26(C)A                                      | GFE              | 26   | 28.9                                 | 31.9  | 1                             | 42.1  | 35.6                                   | 5   |
| SMCJ28(C)A                                      | GFG              | 28   | 31.1                                 | 34.4  | 1                             | 45.4  | 33.0                                   | 5   |
| SMCJ30(C)A                                      | GFK              | 30   | 33.3                                 | 36.8  | 1                             | 48.4  | 31.0                                   | 5   |
| SMCJ33(C)A                                      | GFM              | 33   | 36.7                                 | 40.6  | 1                             | 53.3  | 28.1                                   | 5   |
| SMCJ36(C)A                                      | GFP              | 36   | 40.0                                 | 44.2  | 1                             | 58.1  | 25.8                                   | 5   |
| SMCJ40(C)A                                      | GFR              | 40   | 44.4                                 | 49.1  | 1                             | 64.5  | 23.3                                   | 5   |
| SMCJ43(C)A                                      | GFT              | 43   | 47.8                                 | 52.8  | 1                             | 69.4  | 21.6                                   | 5   |
| SMCJ45(C)A                                      | GFV              | 45   | 50.0                                 | 55.3  | 1                             | 72.7  | 20.6                                   | 5   |
| SMCJ48(C)A                                      | GFX              | 48   | 53.3                                 | 58.9  | 1                             | 77.4  | 19.4                                   | 5   |
| SMCJ51(C)A                                      | GFZ              | 51   | 56.7                                 | 62.7  | 1                             | 82.4  | 18.2                                   | 5   |
| SMCJ54(C)A                                      | GGE              | 54   | 60.0                                 | 66.3  | 1                             | 87.1  | 17.2                                   | 5   |
| SMCJ58(C)A                                      | GGG              | 58   | 64.4                                 | 71.2  | 1                             | 93.6  | 16.0                                   | 5   |
| SMCJ60(C)A                                      | GGK              | 60   | 66.7                                 | 73.7  | 1                             | 96.8  | 15.5                                   | 5   |
| SMCJ64(C)A                                      | GGM              | 64   | 71.1                                 | 78.6  | 1                             | 103.0   | 14.6                                   | 5   |
| SMCJ70(C)A                                      | GGP              | 70   | 77.8                                 | 86.0  | 1                             | 113.0   | 13.3                                   | 5   |
| SMCJ75(C)A                                      | GGR              | 75   | 83.3                                 | 92.1  | 1                             | 121.0   | 12.4                                   | 5   |
| SMCJ78(C)A                                      | GGT              | 78   | 86.7                                 | 95.8  | 1                             | 126.0   | 11.9                                   | 5   |
| SMCJ85(C)A                                      | GGV              | 85   | 94.4                                 | 104.0 | 1                             | 137.0   | 10.9                                   | 5   |
| SMCJ90(C)A                                      | GGX              | 90   | 100.0                                | 111.0 | 1                             | 146.0   | 10.3                                   | 5   |
| SMCJ100(C)A                                     | GGZ              | 100  | 111.0                                | 123.0 | 1                             | 162.0   | 9.3                                    | 5   |
| SMCJ110(C)A                                     | GHE              | 110  | 122.0                                | 135.0 | 1                             | 177.0   | 8.5                                    | 5   |
| SMCJ120(C)A                                     | GHG              | 120  | 133.0                                | 147.0 | 1                             | 193.0   | 7.8                                    | 5   |
| SMCJ130(C)A                                     | GHK              | 130  | 144.0                                | 159.0 | 1                             | 209.0   | 7.2                                    | 5   |
| SMCJ150(C)A                                     | GHM              | 150  | 167.0                                | 185.0 | 1                             | 243.0   | 6.2                                    | 5   |
| SMCJ160(C)A                                     | GHP              | 160  | 178.0                                | 197.0 | 1                             | 259.0   | 5.8                                    | 5   |
| SMCJ170(C)A                                     | GHR              | 170  | 189.0                                | 209.0 | 1                             | 275.0   | 5.5                                    | 5   |

\* Color band denotes cathode on unidirectional devices only. No color band on bidirectional devices.

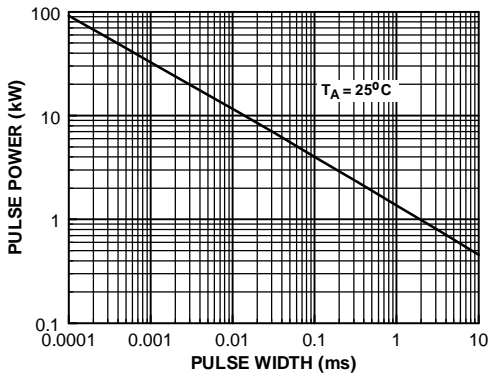
\*\* For bidirectional parts with  $V_{RWM} < 10V$ , the  $I_R$  max limit is doubled.

# Transient Voltage Suppressors (continued)

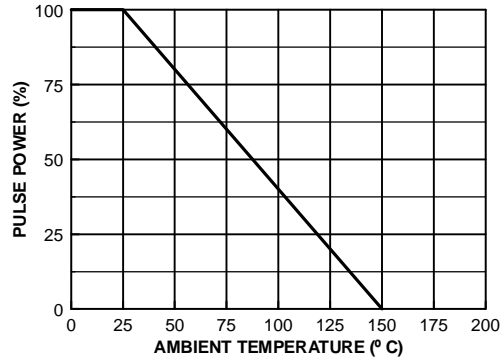
SMCJ5V0(C)A - SMCJ170(C)A

## Typical Characteristics

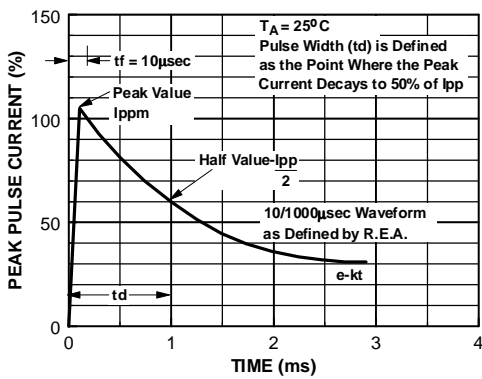
**Peak Pulse Power Rating Curve**



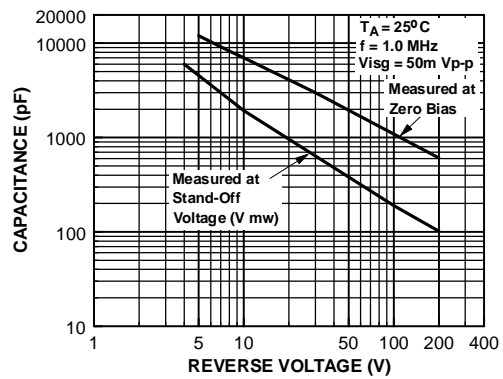
**Pulse Derating Curve**



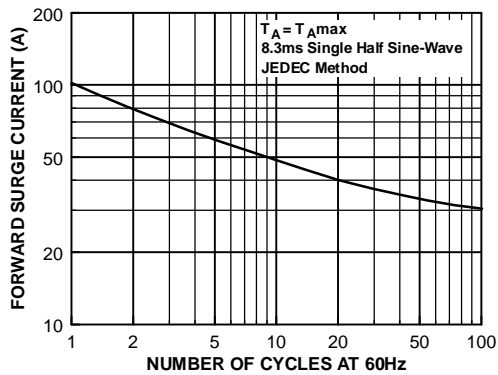
**Pulse Waveform**



**Junction Capacitance**



**Non-Repetitive Surge Current**



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