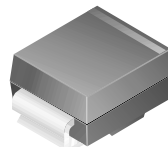


## Transient Voltage Suppressors SMBJ5V0(C)A - SMBJ170(C)A

### Features

- Glass passivated junction.
- 600W 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.



**SMB/DO-214AA**

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.

## 600 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                                     | 600         | 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) | 100         | 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)

## Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise noted

| Uni-directional<br>Bi-directional (C)<br>Device | Part<br>Marking* | Reverse<br>Stand-off<br>Voltage<br>V <sub>RWM</sub> (V) | Breakdown<br>Voltage<br>V <sub>BR</sub> (V) |       | Test<br>Current<br>I <sub>T</sub> (mA) | Clamping<br>Voltage<br>@ I <sub>PPM</sub><br>V <sub>C</sub> (V) | Peak<br>Pulse<br>Current<br>I <sub>PPM</sub> (A) | Reverse<br>Leakage<br>@ V <sub>RWM</sub><br>I <sub>R</sub> (uA)** |
|-------------------------------------------------|------------------|---------------------------------------------------------|---------------------------------------------|-------|----------------------------------------|-----------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------|
|                                                 |                  |                                                         | min                                         | max   |                                        |                                                                 |                                                  |                                                                   |
| SMBJ5V0(C)A                                     | KE               | 5.0                                                     | 6.40                                        | 7.0   | 10                                     | 9.2                                                             | 65.2                                             | 800                                                               |
| SMBJ6V0(C)A                                     | KG               | 6.0                                                     | 6.67                                        | 7.37  | 10                                     | 10.3                                                            | 58.3                                             | 800                                                               |
| SMBJ6V5(C)A                                     | KK(AK)           | 6.5                                                     | 7.22                                        | 7.98  | 10                                     | 11.2                                                            | 53.6                                             | 500                                                               |
| SMBJ7V0(C)A                                     | KM               | 7.0                                                     | 7.78                                        | 8.60  | 10                                     | 12.0                                                            | 50.0                                             | 200                                                               |
| SMBJ7V5(C)A                                     | KP(AP)           | 7.5                                                     | 8.33                                        | 9.21  | 1                                      | 12.9                                                            | 46.5                                             | 100                                                               |
| SMBJ8V0(C)A                                     | KR(AR)           | 8.0                                                     | 8.89                                        | 9.83  | 1                                      | 13.6                                                            | 44.1                                             | 50                                                                |
| SMBJ8V5(C)A                                     | KT(AT)           | 8.5                                                     | 9.44                                        | 10.4  | 1                                      | 14.4                                                            | 41.7                                             | 20                                                                |
| SMBJ9V0(C)A                                     | KV(AV)           | 9.0                                                     | 10.0                                        | 11.1  | 1                                      | 15.4                                                            | 39.0                                             | 10                                                                |
| SMBJ10(C)A                                      | KX(AX)           | 10                                                      | 11.1                                        | 12.8  | 1                                      | 17.0                                                            | 35.3                                             | 5                                                                 |
| SMBJ11(C)A                                      | KZ               | 11                                                      | 12.2                                        | 13.5  | 1                                      | 18.2                                                            | 33.0                                             | 5                                                                 |
| SMBJ12(C)A                                      | LE(BE)           | 12                                                      | 13.3                                        | 14.7  | 1                                      | 19.9                                                            | 30.2                                             | 5                                                                 |
| SMBJ13(C)A                                      | LG               | 13                                                      | 14.4                                        | 15.9  | 1                                      | 21.5                                                            | 27.9                                             | 5                                                                 |
| SMBJ14(C)A                                      | LK(BK)           | 14                                                      | 15.6                                        | 17.2  | 1                                      | 23.2                                                            | 25.9                                             | 5                                                                 |
| SMBJ15(C)A                                      | LM(BM)           | 15                                                      | 16.7                                        | 18.5  | 1                                      | 24.4                                                            | 24.6                                             | 5                                                                 |
| SMBJ16(C)A                                      | LP(LM)           | 16                                                      | 17.8                                        | 19.7  | 1                                      | 26.0                                                            | 23.1                                             | 5                                                                 |
| SMBJ17(C)A                                      | LR               | 17                                                      | 18.9                                        | 20.9  | 1                                      | 27.6                                                            | 21.7                                             | 5                                                                 |
| SMBJ18(C)A                                      | LT(BT)           | 18                                                      | 20.0                                        | 22.1  | 1                                      | 29.2                                                            | 20.5                                             | 5                                                                 |
| SMBJ20(C)A                                      | LV               | 20                                                      | 22.2                                        | 24.5  | 1                                      | 32.4                                                            | 18.5                                             | 5                                                                 |
| SMBJ22(C)A                                      | LX(BX)           | 22                                                      | 24.4                                        | 26.9  | 1                                      | 35.5                                                            | 16.9                                             | 5                                                                 |
| SMBJ24(C)A                                      | LZ(BZ)           | 24                                                      | 26.7                                        | 29.5  | 1                                      | 38.9                                                            | 15.4                                             | 5                                                                 |
| SMBJ26(C)A                                      | ME(CE)           | 26                                                      | 28.9                                        | 31.9  | 1                                      | 42.1                                                            | 14.3                                             | 5                                                                 |
| SMBJ28(C)A                                      | MG               | 28                                                      | 31.1                                        | 34.4  | 1                                      | 45.4                                                            | 13.2                                             | 5                                                                 |
| SMBJ30(C)A                                      | MK(CK)           | 30                                                      | 33.3                                        | 36.8  | 1                                      | 48.4                                                            | 12.4                                             | 5                                                                 |
| SMBJ33(C)A                                      | MM(CM)           | 33                                                      | 36.7                                        | 40.6  | 1                                      | 53.3                                                            | 11.3                                             | 5                                                                 |
| SMBJ36(C)A                                      | MP(CP)           | 36                                                      | 40.0                                        | 44.2  | 1                                      | 58.1                                                            | 10.3                                             | 5                                                                 |
| SMBJ40(C)A                                      | MR(CR)           | 40                                                      | 44.4                                        | 49.1  | 1                                      | 64.5                                                            | 9.3                                              | 5                                                                 |
| SMBJ43(C)A                                      | MT(CT)           | 43                                                      | 47.8                                        | 52.8  | 1                                      | 69.4                                                            | 8.6                                              | 5                                                                 |
| SMBJ45(C)A                                      | MV               | 45                                                      | 50.0                                        | 55.3  | 1                                      | 72.7                                                            | 8.3                                              | 5                                                                 |
| SMBJ48(C)A                                      | MX               | 48                                                      | 53.3                                        | 58.9  | 1                                      | 77.4                                                            | 7.8                                              | 5                                                                 |
| SMBJ51(C)A                                      | MZ               | 51                                                      | 56.7                                        | 62.7  | 1                                      | 82.4                                                            | 7.3                                              | 5                                                                 |
| SMBJ54(C)A                                      | NE               | 54                                                      | 60.0                                        | 66.3  | 1                                      | 87.1                                                            | 6.9                                              | 5                                                                 |
| SMBJ58(C)A                                      | NG               | 58                                                      | 64.4                                        | 71.2  | 1                                      | 93.6                                                            | 6.4                                              | 5                                                                 |
| SMBJ60(C)A                                      | NK               | 60                                                      | 66.7                                        | 73.7  | 1                                      | 96.8                                                            | 6.2                                              | 5                                                                 |
| SMBJ64(C)A                                      | NM               | 64                                                      | 71.1                                        | 78.6  | 1                                      | 103.0                                                           | 5.8                                              | 5                                                                 |
| SMBJ70(C)A                                      | NP               | 70                                                      | 77.8                                        | 86.0  | 1                                      | 113.0                                                           | 5.3                                              | 5                                                                 |
| SMBJ75(C)A                                      | NR               | 75                                                      | 83.3                                        | 92.1  | 1                                      | 121.0                                                           | 5.0                                              | 5                                                                 |
| SMBJ78(C)A                                      | NT               | 78                                                      | 86.7                                        | 95.8  | 1                                      | 126.0                                                           | 4.8                                              | 5                                                                 |
| SMBJ85(C)A                                      | NV               | 85                                                      | 94.4                                        | 104.0 | 1                                      | 137.0                                                           | 4.4                                              | 5                                                                 |
| SMBJ90(C)A                                      | NX               | 90                                                      | 100.0                                       | 111.0 | 1                                      | 146.0                                                           | 4.1                                              | 5                                                                 |
| SMBJ100(C)A                                     | NZ               | 100                                                     | 111.0                                       | 123.0 | 1                                      | 162.0                                                           | 3.7                                              | 5                                                                 |
| SMBJ110(C)A                                     | PE               | 110                                                     | 122.0                                       | 135.0 | 1                                      | 177.0                                                           | 3.4                                              | 5                                                                 |
| SMBJ120(C)A                                     | PG               | 120                                                     | 133.0                                       | 147.0 | 1                                      | 193.0                                                           | 3.1                                              | 5                                                                 |
| SMBJ130(C)A                                     | PK               | 130                                                     | 144.0                                       | 159.0 | 1                                      | 209.0                                                           | 2.9                                              | 5                                                                 |
| SMBJ150(C)A                                     | PM               | 150                                                     | 167.0                                       | 185.0 | 1                                      | 243.0                                                           | 2.5                                              | 5                                                                 |
| SMBJ160(C)A                                     | PP               | 160                                                     | 178.0                                       | 197.0 | 1                                      | 259.0                                                           | 2.3                                              | 5                                                                 |
| SMBJ170(C)A                                     | PR               | 170                                                     | 189.0                                       | 209.0 | 1                                      | 275.0                                                           | 2.2                                              | 5                                                                 |

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

\*\* For bidirectional parts with V<sub>RWM</sub> < 10V, the I<sub>R</sub> max limit is doubled.

SMBJ5V0(C)A - SMBJ170(C)A

# Transient Voltage Suppressors (continued)

## Typical Characteristics

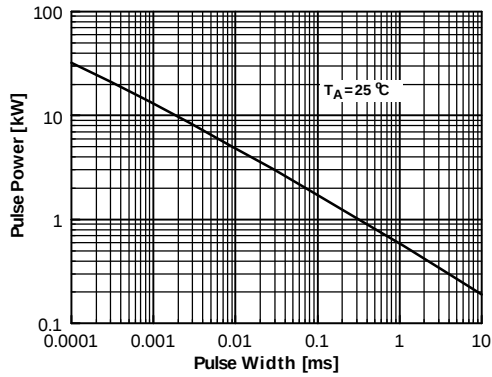


Figure 1. Peak Pulse Power Rating Curve

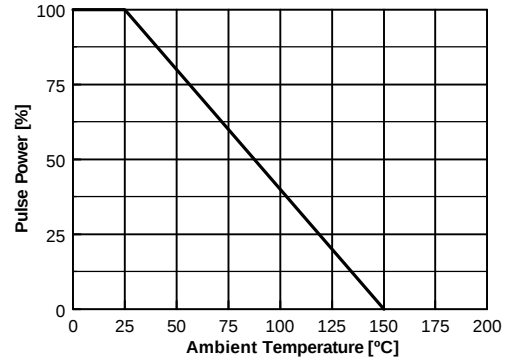


Figure 2. Pulse Derating Curve

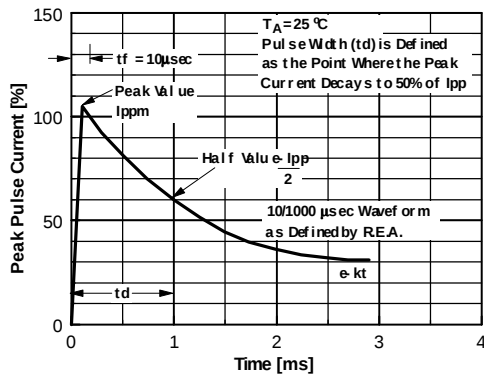


Figure 3. Pulse Waveform

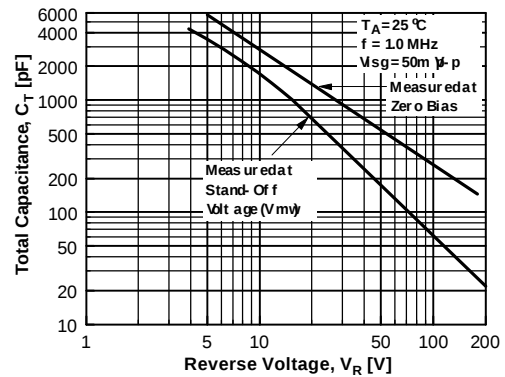


Figure 4. Total Capacitance

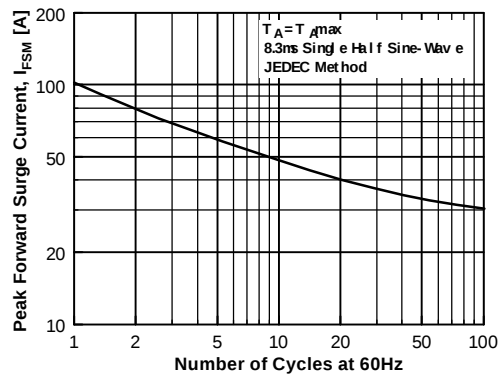


Figure 5. Non-Repetitive Surge Current

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| DOME™                | HiSeC™              | Power247™           | SuperSOT™-3      |           |
| EcoSPARK™            | I <sup>2</sup> C™   | PowerTrench®        | SuperSOT™-6      |           |
| E <sup>2</sup> CMOS™ | ISOPPLANAR™         | QFET™               | SuperSOT™-8      |           |
| EnSigna™             | LittleFET™          | QS™                 | SyncFET™         |           |
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