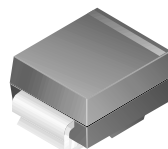




## Transient Voltage Suppressors SMBJ5V0(C)A - SMBJ170(C)A

### 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.
- UL certificate # E326243 and E210467.



**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                                                               | -55 to +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.

SMBJ5V0(C)A - SMBJ170(C)A

# Transient Voltage Suppressors

(continued)

SMBJ5V0(C)A - SMBJ170(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<br>Pulse<br>Current<br>$I_{PPM}$ (A) | Reverse<br>Leakage<br>@ $V_{RWM}$<br>$I_R$ (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               | 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               | 7.5                                              | 8.33                                 | 9.21  | 1                             | 12.9                                            | 46.5                                      | 100                                               |
| SMBJ8V0(C)A                                     | KR               | 8.0                                              | 8.89                                 | 9.83  | 1                             | 13.6                                            | 44.1                                      | 50                                                |
| SMBJ8V5(C)A                                     | KT               | 8.5                                              | 9.44                                 | 10.4  | 1                             | 14.4                                            | 41.7                                      | 20                                                |
| SMBJ9V0(C)A                                     | KV               | 9.0                                              | 10.0                                 | 11.1  | 1                             | 15.4                                            | 39.0                                      | 10                                                |
| SMBJ10(C)A                                      | KX               | 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               | 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               | 14                                               | 15.6                                 | 17.2  | 1                             | 23.2                                            | 25.9                                      | 5                                                 |
| SMBJ15(C)A                                      | LM               | 15                                               | 16.7                                 | 18.5  | 1                             | 24.4                                            | 24.6                                      | 5                                                 |
| SMBJ16(C)A                                      | LP               | 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               | 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               | 22                                               | 24.4                                 | 26.9  | 1                             | 35.5                                            | 16.9                                      | 5                                                 |
| SMBJ24(C)A                                      | LZ               | 24                                               | 26.7                                 | 29.5  | 1                             | 38.9                                            | 15.4                                      | 5                                                 |
| SMBJ26(C)A                                      | ME               | 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               | 30                                               | 33.3                                 | 36.8  | 1                             | 48.4                                            | 12.4                                      | 5                                                 |
| SMBJ33(C)A                                      | MM               | 33                                               | 36.7                                 | 40.6  | 1                             | 53.3                                            | 11.3                                      | 5                                                 |
| SMBJ36(C)A                                      | MP               | 36                                               | 40.0                                 | 44.2  | 1                             | 58.1                                            | 10.3                                      | 5                                                 |
| SMBJ40(C)A                                      | MR               | 40                                               | 44.4                                 | 49.1  | 1                             | 64.5                                            | 9.3                                       | 5                                                 |
| SMBJ43(C)A                                      | MT               | 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                                                 |

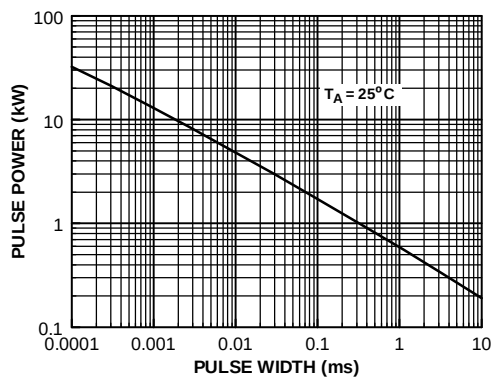
\* Color band denotes cathode on unidirectional devices only. No color band on bidirectional devices.

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

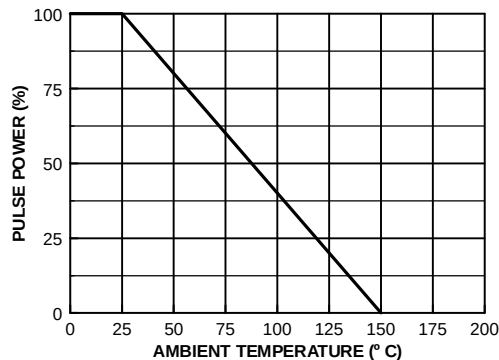
# Transient Voltage Suppressors (continued)

## Typical Characteristics

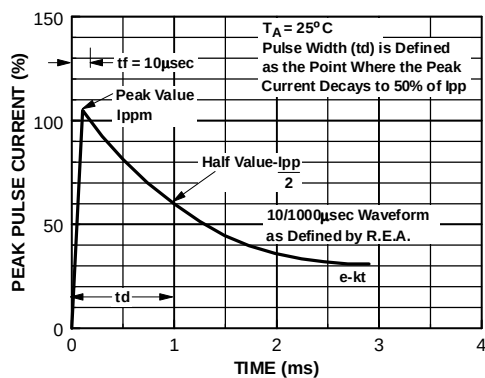
Peak Pulse Power Rating Curve



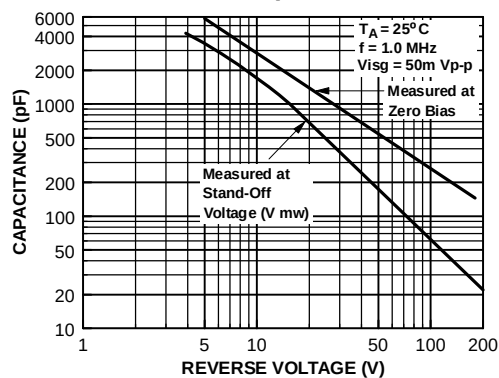
Pulse Derating Curve



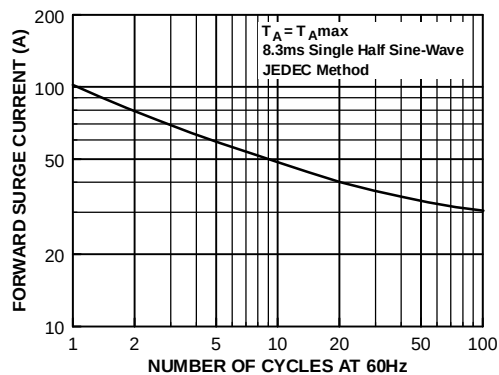
Pulse Waveform



Junction Capacitance



Non-Repetitive Surge Current



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| EnSigna™                             | I <sup>2</sup> C™   | OCX™               | RapidConfigure™     | UHC™            |
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