

**Working Voltage: 5.0 to 440 V**  
**Peak Pulse Power: 600 W**

## Surface Mount Transient Voltage Suppressors

### Features

- Glass passivated chip
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

### Mechanical Data

- Case: Molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any



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

| Parameter   | Symbol         | Value          | UNIT             |
|---|----------------|----------------|------------------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                       | $P_{PP}$       | 600            | W                |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                           | $I_{PP}$       | See Next Table | A                |
| Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$                          | $P_D$          | 5.0            | W                |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 100            | A                |
| Maximum instantaneous forward voltage at 50 A for unidirectional only <sup>(3)</sup>        | $V_F$          | 3.5/5.0        | V                |
| Operating junction and storage temperature range  | $T_J, T_{STG}$ | -55 to +150    | $^\circ\text{C}$ |

#### Note:

(1)Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1

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

(3) $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

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



Fig. 1 - Pulse Derating Curve



Fig. 2 - Maximum Non-Repetitive Surge Current



Fig. 3 - Steady State Power Derating Curve



Fig. 4 - Peak Pulse Power Rating Curve



Fig. 5 - Pulse Waveform

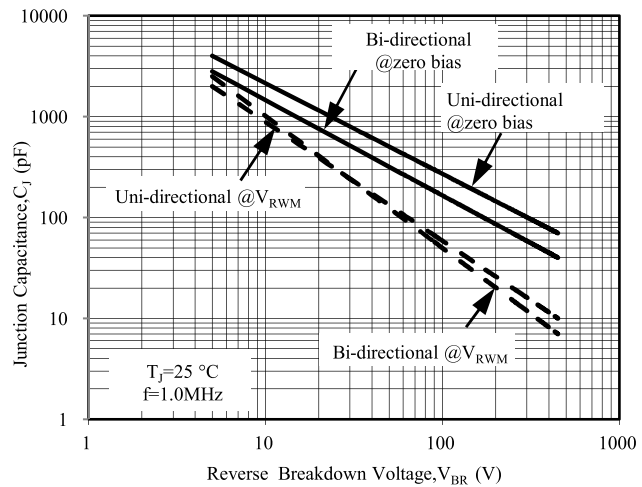


Fig. 6 - Typical Junction Capacitance

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

| Part Number<br>(Uni) | Part Number<br>(Bi) | Device<br>Marking<br>Code |    | Breakdown Voltage $V_{BR}$ @ $I_T$ |         |            | Maximum<br>Reverse<br>Leakage $I_R$<br>@ $V_{RWM}$<br>( $\mu\text{A}$ ) | Working<br>Peak Reverse<br>Voltage<br>$V_{RWM}$<br>(V) | Maximum<br>Reverse<br>Surge<br>Current $I_{PP}$<br>(A) | Maximum<br>Clamping<br>Voltage $V_C$<br>@ $I_{PP}$<br>(V) |
|----------------------|---------------------|---------------------------|----|------------------------------------|---------|------------|---|--|--|---|
|                      |                     | Uni                       | Bi | Min (V)                            | Max (V) | $I_T$ (mA) |   |  |  |   |
| SMBJ5.0              | SMBJ5.0C            | KD                        | AD | 6.40                               | 7.30    | 10         | 800   | 5.0  | 62.50  | 9.6   |
| SMBJ5.0A             | SMBJ5.0CA           | KE                        | AE | 6.40                               | 7.00    | 10         | 800   | 5.0  | 65.22  | 9.2   |
| SMBJ6.0              | SMBJ6.0C            | KF                        | AF | 6.67                               | 8.15    | 10         | 800   | 6.0  | 52.63  | 11.4  |
| SMBJ6.0A             | SMBJ6.0CA           | KG                        | AG | 6.67                               | 7.37    | 10         | 800   | 6.0  | 58.25  | 10.3  |
| SMBJ6.5              | SMBJ6.5C            | KH                        | AH | 7.22                               | 8.82    | 10         | 500   | 6.5  | 48.78  | 12.3  |
| SMBJ6.5A             | SMBJ6.5CA           | KK                        | AK | 7.22                               | 7.98    | 10         | 500   | 6.5  | 53.57  | 11.2  |
| SMBJ7.0              | SMBJ7.0C            | KL                        | AL | 7.78                               | 9.51    | 10         | 200   | 7.0  | 45.11  | 13.3  |
| SMBJ7.0A             | SMBJ7.0CA           | KM                        | AM | 7.78                               | 8.60    | 10         | 200   | 7.0  | 50.00  | 12.0  |
| SMBJ7.5              | SMBJ7.5C            | KN                        | AN | 8.33                               | 10.20   | 1          | 100   | 7.5  | 41.96  | 14.3  |
| SMBJ7.5A             | SMBJ7.5CA           | KP                        | AP | 8.33                               | 9.21    | 1          | 100   | 7.5  | 46.51  | 12.9  |
| SMBJ8.0              | SMBJ8.0C            | KQ                        | AQ | 8.89                               | 10.90   | 1          | 50  | 8.0  | 40.00  | 15.0  |
| SMBJ8.0A             | SMBJ8.0CA           | KR                        | AR | 8.89                               | 9.83    | 1          | 50  | 8.0  | 44.12  | 13.6  |
| SMBJ8.5              | SMBJ8.5C            | KS                        | AS | 9.44                               | 11.50   | 1          | 10  | 8.5  | 37.74  | 15.9  |
| SMBJ8.5A             | SMBJ8.5CA           | KT                        | AT | 9.44                               | 10.40   | 1          | 10  | 8.5  | 41.67  | 14.4  |
| SMBJ9.0              | SMBJ9.0C            | KU                        | AU | 10.00                              | 12.20   | 1          | 5   | 9.0  | 35.50  | 16.9  |
| SMBJ9.0A             | SMBJ9.0CA           | KV                        | AV | 10.00                              | 11.10   | 1          | 5   | 9.0  | 38.96  | 15.4  |
| SMBJ10               | SMBJ10C             | KW                        | AW | 11.10                              | 13.60   | 1          | 5   | 10.0   | 31.91  | 18.8  |
| SMBJ10A              | SMBJ10CA            | KX                        | AX | 11.10                              | 12.30   | 1          | 5   | 10.0   | 35.29  | 17.0  |
| SMBJ11               | SMBJ11C             | KY                        | AY | 12.20                              | 14.90   | 1          | 1   | 11.0   | 29.85  | 20.1  |
| SMBJ11A              | SMBJ11CA            | KZ                        | AZ | 12.20                              | 13.50   | 1          | 1   | 11.0   | 32.97  | 18.2  |
| SMBJ12               | SMBJ12C             | LD                        | BD | 13.30                              | 16.30   | 1          | 1   | 12.0   | 27.27  | 22.0  |
| SMBJ12A              | SMBJ12CA            | LE                        | BE | 13.30                              | 14.70   | 1          | 1   | 12.0   | 30.15  | 19.9  |
| SMBJ13               | SMBJ13C             | LF                        | BF | 14.40                              | 17.60   | 1          | 1   | 13.0   | 25.21  | 23.8  |
| SMBJ13A              | SMBJ13CA            | LG                        | BG | 14.40                              | 15.90   | 1          | 1   | 13.0   | 27.91  | 21.5  |
| SMBJ14               | SMBJ14C             | LH                        | BH | 15.60                              | 19.10   | 1          | 1   | 14.0   | 23.26  | 25.8  |
| SMBJ14A              | SMBJ14CA            | LK                        | BK | 15.60                              | 17.20   | 1          | 1   | 14.0   | 25.86  | 23.2  |
| SMBJ15               | SMBJ15C             | LL                        | BL | 16.70                              | 20.40   | 1          | 1   | 15.0   | 22.30  | 26.9  |
| SMBJ15A              | SMBJ15CA            | LM                        | BM | 16.70                              | 18.50   | 1          | 1   | 15.0   | 24.59  | 24.4  |
| SMBJ16               | SMBJ16C             | LN                        | BN | 17.80                              | 21.80   | 1          | 1   | 16.0   | 20.83  | 28.8  |
| SMBJ16A              | SMBJ16CA            | LP                        | BP | 17.80                              | 19.70   | 1          | 1   | 16.0   | 23.08  | 26.0  |
| SMBJ17               | SMBJ17C             | LQ                        | BQ | 18.90                              | 23.10   | 1          | 1   | 17.0   | 19.67  | 30.5  |
| SMBJ17A              | SMBJ17CA            | LR                        | BR | 18.90                              | 20.90   | 1          | 1   | 17.0   | 21.74  | 27.6  |
| SMBJ18               | SMBJ18C             | LS                        | BS | 20.00                              | 24.40   | 1          | 1   | 18.0   | 18.63  | 32.2  |
| SMBJ18A              | SMBJ18CA            | LT                        | BT | 20.00                              | 22.10   | 1          | 1   | 18.0   | 20.55  | 29.2  |
| SMBJ19               | SMBJ19C             | LA                        | BA | 21.13                              | 25.76   | 1          | 1   | 19.0   | 17.64  | 34.0  |
| SMBJ19A              | SMBJ19CA            | LB                        | BB | 21.10                              | 23.30   | 1          | 1   | 19.0   | 19.49  | 30.8  |
| SMBJ20               | SMBJ20C             | LU                        | BU | 22.20                              | 27.10   | 1          | 1   | 20.0   | 16.76  | 35.8  |
| SMBJ20A              | SMBJ20CA            | LV                        | BV | 22.20                              | 24.50   | 1          | 1   | 20.0   | 18.52  | 32.4  |
| SMBJ22               | SMBJ22C             | LW                        | BW | 24.40                              | 29.80   | 1          | 1   | 22.0   | 15.23  | 39.4  |
| SMBJ22A              | SMBJ22CA            | LX                        | BX | 24.40                              | 26.90   | 1          | 1   | 22.0   | 16.90  | 35.5  |
| SMBJ24               | SMBJ24C             | LY                        | BY | 26.70                              | 32.60   | 1          | 1   | 24.0   | 13.95  | 43.0  |
| SMBJ24A              | SMBJ24CA            | LZ                        | BZ | 26.70                              | 29.50   | 1          | 1   | 24.0   | 15.42  | 38.9  |
| SMBJ26               | SMBJ26C             | MD                        | CD | 28.90                              | 35.30   | 1          | 1   | 26.0   | 12.88  | 46.6  |
| SMBJ26A              | SMBJ26CA            | ME                        | CE | 28.90                              | 31.90   | 1          | 1   | 26.0   | 14.25  | 42.1  |
| SMBJ28               | SMBJ28C             | MF                        | CF | 31.10                              | 38.00   | 1          | 1   | 28.0   | 12.00  | 50.0  |
| SMBJ28A              | SMBJ28CA            | MG                        | CG | 31.10                              | 34.40   | 1          | 1   | 28.0   | 13.22  | 45.4  |
| SMBJ30               | SMBJ30C             | MH                        | CH | 33.30                              | 40.70   | 1          | 1   | 30.0   | 11.21  | 53.5  |
| SMBJ30A              | SMBJ30CA            | MK                        | CK | 33.30                              | 36.80   | 1          | 1   | 30.0   | 12.40  | 48.4  |
| SMBJ33               | SMBJ33C             | ML                        | CL | 36.70                              | 44.90   | 1          | 1   | 33.0   | 10.17  | 59.0  |
| SMBJ33A              | SMBJ33CA            | MM                        | CM | 36.70                              | 40.60   | 1          | 1   | 33.0   | 11.26  | 53.3  |
| SMBJ36               | SMBJ36C             | MN                        | CN | 40.00                              | 48.90   | 1          | 1   | 36.0   | 9.33   | 64.3  |
| SMBJ36A              | SMBJ36CA            | MP                        | CP | 40.00                              | 44.20   | 1          | 1   | 36.0   | 10.33  | 58.1  |

**Note:**

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is double

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

| Part Number (Uni) | Part Number (Bi) | Device Marking Code |    | Breakdown Voltage V <sub>BR</sub> @I <sub>T</sub> |         |                     | Maximum Reverse Leakage I <sub>R</sub> @V <sub>RWM</sub> (uA) | Working Peak Reverse Voltage V <sub>RWM</sub> (V) | Maximum Reverse Surge Current I <sub>PP</sub> (A) | Maximum Clamping Voltage V <sub>C</sub> @I <sub>PP</sub> (V) |
|-------------------|------------------|---------------------|----|---|---------|---------------------|---|---|---|--|
|                   |                  | Uni                 | Bi | Min (V)   | Max (V) | I <sub>T</sub> (mA) |   |   |   |  |
| SMBJ40            | SMBJ40C          | MQ                  | CQ | 44.40   | 54.30   | 1                   | 1   | 40.0  | 8.40  | 71.4   |
| SMBJ40A           | SMBJ40CA         | MR                  | CR | 44.40   | 49.10   | 1                   | 1   | 40.0  | 9.30  | 64.5   |
| SMBJ43            | SMBJ43C          | MS                  | CS | 47.80   | 58.40   | 1                   | 1   | 43.0  | 7.82  | 76.7   |
| SMBJ43A           | SMBJ43CA         | MT                  | CT | 47.80   | 52.80   | 1                   | 1   | 43.0  | 8.65  | 69.4   |
| SMBJ45            | SMBJ45C          | MU                  | CU | 50.00   | 61.10   | 1                   | 1   | 45.0  | 7.47  | 80.3   |
| SMBJ45A           | SMBJ45CA         | MV                  | CV | 50.00   | 55.30   | 1                   | 1   | 45.0  | 8.25  | 72.7   |
| SMBJ48            | SMBJ48C          | MW                  | CW | 53.30   | 65.10   | 1                   | 1   | 48.0  | 7.02  | 85.5   |
| SMBJ48A           | SMBJ48CA         | MX                  | CX | 53.30   | 58.90   | 1                   | 1   | 48.0  | 7.75  | 77.4   |
| SMBJ51            | SMBJ51C          | MY                  | CY | 56.70   | 69.30   | 1                   | 1   | 51.0  | 6.59  | 91.1   |
| SMBJ51A           | SMBJ51CA         | MZ                  | CZ | 56.70   | 62.70   | 1                   | 1   | 51.0  | 7.28  | 82.4   |
| SMBJ54            | SMBJ54C          | ND                  | DD | 60.00   | 73.30   | 1                   | 1   | 54.0  | 6.23  | 96.3   |
| SMBJ54A           | SMBJ54CA         | NE                  | DE | 60.00   | 66.30   | 1                   | 1   | 54.0  | 6.89  | 87.1   |
| SMBJ58            | SMBJ58C          | NF                  | DF | 64.40   | 78.70   | 1                   | 1   | 58.0  | 5.83  | 103.0  |
| SMBJ58A           | SMBJ58CA         | NG                  | DG | 64.40   | 71.20   | 1                   | 1   | 58.0  | 6.41  | 93.6   |
| SMBJ60            | SMBJ60C          | NH                  | DH | 66.70   | 81.50   | 1                   | 1   | 60.0  | 5.61  | 107.0  |
| SMBJ60A           | SMBJ60CA         | NK                  | DK | 66.70   | 73.70   | 1                   | 1   | 60.0  | 6.20  | 96.8   |
| SMBJ64            | SMBJ64C          | NL                  | DL | 71.10   | 86.90   | 1                   | 1   | 64.0  | 5.26  | 114.0  |
| SMBJ64A           | SMBJ64CA         | NM                  | DM | 71.10   | 78.60   | 1                   | 1   | 64.0  | 5.83  | 103.0  |
| SMBJ70            | SMBJ70C          | NN                  | DN | 77.80   | 95.10   | 1                   | 1   | 70.0  | 4.80  | 125.0  |
| SMBJ70A           | SMBJ70CA         | NP                  | DP | 77.80   | 86.00   | 1                   | 1   | 70.0  | 5.31  | 113.0  |
| SMBJ75            | SMBJ75C          | NQ                  | DQ | 83.30   | 102.00  | 1                   | 1   | 75.0  | 4.48  | 134.0  |
| SMBJ75A           | SMBJ75CA         | NR                  | DR | 83.30   | 92.10   | 1                   | 1   | 75.0  | 4.96  | 121.0  |
| SMBJ78            | SMBJ78C          | NS                  | DS | 86.70   | 106.00  | 1                   | 1   | 78.0  | 4.32  | 139.0  |
| SMBJ78A           | SMBJ78CA         | NT                  | DT | 86.70   | 95.80   | 1                   | 1   | 78.0  | 4.76  | 126.0  |
| SMBJ80            | SMBJ80C          | NA                  | DA | 88.96   | 108.80  | 1                   | 1   | 80.0  | 4.19  | 143.2  |
| SMBJ80A           | SMBJ80CA         | NB                  | DB | 88.80   | 97.60   | 1                   | 1   | 80.0  | 4.63  | 129.6  |
| SMBJ85            | SMBJ85C          | NU                  | DU | 94.40   | 115.00  | 1                   | 1   | 85.0  | 3.97  | 151.0  |
| SMBJ85A           | SMBJ85CA         | NV                  | DV | 94.40   | 104.00  | 1                   | 1   | 85.0  | 4.38  | 137.0  |
| SMBJ90            | SMBJ90C          | NW                  | DW | 100.00  | 122.00  | 1                   | 1   | 90.0  | 3.75  | 160.0  |
| SMBJ90A           | SMBJ90CA         | NX                  | DX | 100.00  | 111.00  | 1                   | 1   | 90.0  | 4.11  | 146.0  |
| SMBJ100           | SMBJ100C         | NY                  | DY | 111.00  | 136.00  | 1                   | 1   | 100.0   | 3.35  | 179.0  |
| SMBJ100A          | SMBJ100CA        | NZ                  | DZ | 111.00  | 123.00  | 1                   | 1   | 100.0   | 3.70  | 162.0  |
| SMBJ110           | SMBJ110C         | PD                  | ED | 122.00  | 149.00  | 1                   | 1   | 110.0   | 3.06  | 196.0  |
| SMBJ110A          | SMBJ110CA        | PE                  | EE | 122.00  | 135.00  | 1                   | 1   | 110.0   | 3.39  | 177.0  |
| SMBJ120           | SMBJ120C         | PF                  | EF | 133.00  | 163.00  | 1                   | 1   | 120.0   | 2.80  | 214.0  |
| SMBJ120A          | SMBJ120CA        | PG                  | EG | 133.00  | 147.00  | 1                   | 1   | 120.0   | 3.11  | 193.0  |
| SMBJ130           | SMBJ130C         | PH                  | EH | 144.00  | 176.00  | 1                   | 1   | 130.0   | 2.60  | 231.0  |
| SMBJ130A          | SMBJ130CA        | PK                  | EK | 144.00  | 159.00  | 1                   | 1   | 130.0   | 2.87  | 209.0  |
| SMBJ140           | SMBJ140C         | PA                  | EA | 155.68  | 190.40  | 1                   | 1   | 140.0   | 2.39  | 250.6  |
| SMBJ140A          | SMBJ140CA        | PB                  | EB | 155.00  | 171.00  | 1                   | 1   | 140.0   | 2.65  | 226.8  |
| SMBJ150           | SMBJ150C         | PL                  | EL | 167.00  | 204.00  | 1                   | 1   | 150.0   | 2.24  | 268.0  |
| SMBJ150A          | SMBJ150CA        | PM                  | EM | 167.00  | 185.00  | 1                   | 1   | 150.0   | 2.47  | 243.0  |
| SMBJ160           | SMBJ160C         | PN                  | EN | 178.00  | 218.00  | 1                   | 1   | 160.0   | 2.09  | 287.0  |
| SMBJ160A          | SMBJ160CA        | PP                  | EP | 178.00  | 197.00  | 1                   | 1   | 160.0   | 2.32  | 259.0  |
| SMBJ170           | SMBJ170C         | PQ                  | EQ | 189.00  | 231.00  | 1                   | 1   | 170.0   | 1.97  | 304.0  |
| SMBJ170A          | SMBJ170CA        | PR                  | ER | 189.00  | 209.00  | 1                   | 1   | 170.0   | 2.18  | 275.0  |
| SMBJ180           | SMBJ180C         | PS                  | ES | 200.16  | 244.80  | 1                   | 1   | 180.0   | 1.86  | 322.2  |
| SMBJ180A          | SMBJ180CA        | PT                  | ET | 200.00  | 220.00  | 1                   | 1   | 180.0   | 2.06  | 291.6  |
| SMBJ190           | SMBJ190C         | PU                  | EU | 211.28  | 258.40  | 1                   | 1   | 190.0   | 1.76  | 340.1  |
| SMBJ190A          | SMBJ190CA        | PV                  | EV | 211.00  | 232.00  | 1                   | 1   | 190.0   | 1.95  | 307.8  |
| SMBJ200A          | SMBJ200CA        | PW                  | EW | 224.00  | 247.00  | 1                   | 1   | 200.0   | 1.85  | 324.0  |
| SMBJ220A          | SMBJ220CA        | PX                  | EX | 246.00  | 272.00  | 1                   | 1   | 220.0   | 1.69  | 356.0  |
| SMBJ250A          | SMBJ250CA        | PZ                  | EZ | 279.00  | 309.00  | 1                   | 1   | 250.0   | 1.48  | 405.0  |
| SMBJ300A          | SMBJ300CA        | QE                  | FE | 335.00  | 371.00  | 1                   | 1   | 300.0   | 1.23  | 486.0  |
| SMBJ350A          | SMBJ350CA        | QG                  | FG | 391.00  | 432.00  | 1                   | 1   | 350.0   | 1.06  | 567.0  |
| SMBJ400A          | SMBJ400CA        | QK                  | FK | 447.00  | 494.00  | 1                   | 1   | 400.0   | 0.93  | 648.0  |
| SMBJ440A          | SMBJ440CA        | QM                  | FM | 492.00  | 543.00  | 1                   | 1   | 440.0   | 0.84  | 713.0  |

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