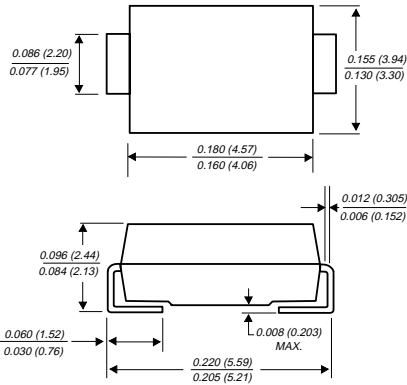


# SMBG AND SMBJ5.0 THRU 170CA

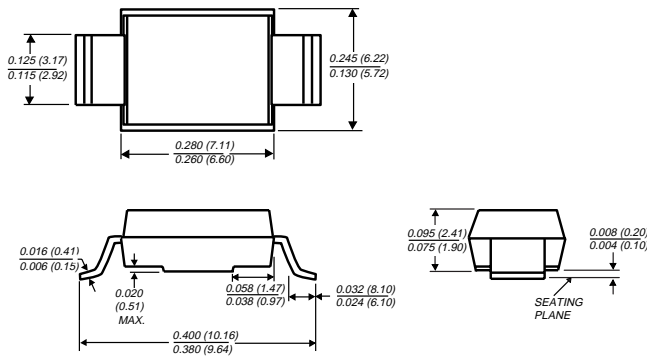
## SURFACE MOUNT TRANSZORB™ TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage - 5.0 to 170 Volts Peak Pulse Power - 600 Watts

**DO-214AA**  
MODIFIED J-BEND



**DO-215AA**  
GULL WING



Dimensions in inches and (millimeters)

### FEATURES

- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ For surface mounted applications in order to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Glass passivated junction
- ◆ Low incremental surge resistance
- ◆ 600W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- ◆ Excellent clamping capability
- ◆ Fast response time: typically less than 1.0ps from 0 volts to  $V_{(BR)}$  for unidirectional and 5.0ns for bidirectional types
- ◆ For devices with  $V_{(BR)} \geq 10V$ ,  $I_D$  are typically less than 1.0μA
- ◆ High temperature soldering guaranteed: 250°C/10 seconds at terminals



### MECHANICAL DATA

**Case:** JEDEC DO214AA / DO215AA molded plastic body over passivated junction

**Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026

**Polarity:** For unidirectional types the color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Mounting Position:** Any

**Weight:** 0.003 ounces, 0.093 gram

### DEVICES FOR BIDIRECTIONAL APPLICATIONS

For bidirectional use suffix C or CA for types SMB-5.0 thru SMB-170 (eg. SMBG5.0C, SMBJ170CA).

Electrical characteristics apply in both directions

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

|                                                                                                                                     | SYMBOLS                           | VALUE       | UNITS |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|-------|
| Peak pulse power dissipation with a 10/1000μs waveform (NOTES 1, 2, FIG. 1)                                                         | PPPM                              | Minimum 600 | Watts |
| Peak pulse current with a 10/1000μs waveform (NOTE 1)                                                                               | IPPM                              | SEE TABLE 1 | Amps  |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (NOTES 2, 3) - unidirectional only | IFSM                              | 100.0       | Amps  |
| Maximum instantaneous forward voltage at 50A (NOTE 3) unidirectional only                                                           | V <sub>F</sub>                    | 3.5         | Volts |
| Operating junction and storage temperature range                                                                                    | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |

**NOTES:**

- (1) Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal
- (3) Measured on 8.3ms single half sine-wave. For uni-directional devices only.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted) TABLE 1**

| Device Type<br>Gull Wing<br>Lead | Device Type<br>Modified<br>"J" Bend Lead | Device<br>Marking<br>Code |    | Breakdown<br>Voltage<br>V <sub>(BR)</sub> (Volts)<br>(NOTE 1)<br>(MIN /MAX) | Test<br>Current<br>at I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub> (Volts) | Maximum<br>Reverse<br>Leakage I <sub>D</sub><br>at V <sub>WM</sub><br>(µA) (NOTE 3) | Maximum<br>Peak Pulse<br>Surge<br>Current I <sub>PPM</sub><br>(NOTE 2) (Amps) | Maximum<br>Clamping<br>Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|----------------------------------|------------------------------------------|---------------------------|----|-----------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                  |                                          | UNI                       | BI |                                                                             |                                           |                                                 |                                                                                     |                                                                               |                                                                              |
| SMBG5.0                          | SMBJ5.0                                  | KD                        | KD | 6.40 / 7.82                                                                 | 10                                        | 5.0                                             | 800                                                                                 | 62.5                                                                          | 9.6                                                                          |
| SMBG5.0A                         | SMBJ5.0A                                 | KE                        | KE | 6.40 / 7.07                                                                 | 10                                        | 5.0                                             | 800                                                                                 | 65.2                                                                          | 9.2                                                                          |
| SMBG6.0                          | SMBJ6.0                                  | KF                        | KF | 6.67 / 8.15                                                                 | 10                                        | 6.0                                             | 800                                                                                 | 52.6                                                                          | 11.4                                                                         |
| SMBG6.0A                         | SMBJ6.0A                                 | KG                        | KG | 6.67 / 7.37                                                                 | 10                                        | 6.0                                             | 800                                                                                 | 58.3                                                                          | 10.3                                                                         |
| SMBG6.5                          | SMBJ6.5                                  | KH                        | AH | 7.22 / 8.82                                                                 | 10                                        | 6.5                                             | 500                                                                                 | 48.8                                                                          | 12.3                                                                         |
| SMBG6.5A                         | SMBJ6.5A                                 | KK                        | AK | 7.22 / 7.98                                                                 | 10                                        | 6.5                                             | 500                                                                                 | 53.6                                                                          | 11.2                                                                         |
| SMBG7.0                          | SMBJ7.0                                  | KL                        | KL | 7.78 / 9.51                                                                 | 10                                        | 7.0                                             | 200                                                                                 | 45.1                                                                          | 13.3                                                                         |
| SMBG7.0A                         | SMBJ7.0A                                 | KM                        | KM | 7.78 / 8.60                                                                 | 10                                        | 7.0                                             | 200                                                                                 | 50.0                                                                          | 12.0                                                                         |
| SMBG7.5                          | SMBJ7.5                                  | KN                        | AN | 8.33 / 10.2                                                                 | 1.0                                       | 7.5                                             | 100                                                                                 | 42.0                                                                          | 14.3                                                                         |
| SMBG7.5A                         | SMBJ7.5A                                 | KP                        | AP | 8.33 / 9.21                                                                 | 1.0                                       | 7.5                                             | 100                                                                                 | 46.5                                                                          | 12.9                                                                         |
| SMBG8.0                          | SMBJ8.0                                  | KQ                        | AQ | 8.89 / 10.9                                                                 | 1.0                                       | 8.0                                             | 50                                                                                  | 40.0                                                                          | 15.0                                                                         |
| SMBG8.0A                         | SMBJ8.0A                                 | KR                        | AR | 8.89 / 9.83                                                                 | 1.0                                       | 8.0                                             | 50                                                                                  | 44.1                                                                          | 13.6                                                                         |
| SMBG8.5                          | SMBJ8.5                                  | KS                        | AS | 9.44 / 11.5                                                                 | 1.0                                       | 8.5                                             | 20                                                                                  | 37.7                                                                          | 15.9                                                                         |
| SMBG8.5A                         | SMBJ8.5A                                 | KT                        | AT | 9.44 / 10.4                                                                 | 1.0                                       | 8.5                                             | 20                                                                                  | 41.7                                                                          | 14.4                                                                         |
| SMBG9.0                          | SMBJ9.0                                  | KU                        | AU | 10.0 / 12.2                                                                 | 1.0                                       | 9.0                                             | 10                                                                                  | 35.5                                                                          | 16.9                                                                         |
| SMBG9.0A                         | SMBJ9.0A                                 | KV                        | AV | 10.0 / 11.1                                                                 | 1.0                                       | 9.0                                             | 10                                                                                  | 39.0                                                                          | 15.4                                                                         |
| SMBG10                           | SMBJ10                                   | KW                        | AW | 11.1 / 13.6                                                                 | 1.0                                       | 10                                              | 5.0                                                                                 | 31.9                                                                          | 18.8                                                                         |
| SMBG10A                          | SMBJ10A                                  | KX                        | AX | 11.1 / 12.3                                                                 | 1.0                                       | 10                                              | 5.0                                                                                 | 35.3                                                                          | 17.0                                                                         |
| SMBG11                           | SMBJ11                                   | KY                        | KY | 12.2 / 14.9                                                                 | 1.0                                       | 11                                              | 5.0                                                                                 | 29.9                                                                          | 20.1                                                                         |
| SMBG11A                          | SMBJ11A                                  | KZ                        | KZ | 12.2 / 13.5                                                                 | 1.0                                       | 11                                              | 5.0                                                                                 | 33.0                                                                          | 18.2                                                                         |
| SMBG12                           | SMBJ12                                   | LD                        | BD | 13.3 / 16.3                                                                 | 1.0                                       | 12                                              | 5.0                                                                                 | 27.3                                                                          | 22.0                                                                         |
| SMBG12A                          | SMBJ12A                                  | LE                        | BE | 13.3 / 14.7                                                                 | 1.0                                       | 12                                              | 5.0                                                                                 | 30.2                                                                          | 19.9                                                                         |
| SMBG13                           | SMBJ13                                   | LF                        | LF | 14.4 / 17.6                                                                 | 1.0                                       | 13                                              | 5.0                                                                                 | 25.2                                                                          | 23.8                                                                         |
| SMBG13A                          | SMBJ13A                                  | LG                        | LG | 14.4 / 15.9                                                                 | 1.0                                       | 13                                              | 5.0                                                                                 | 27.9                                                                          | 21.5                                                                         |
| SMBG14                           | SMBJ14                                   | LH                        | BH | 15.6 / 19.1                                                                 | 1.0                                       | 14                                              | 5.0                                                                                 | 23.3                                                                          | 25.8                                                                         |
| SMBG14A                          | SMBJ14A                                  | LK                        | BK | 15.6 / 17.2                                                                 | 1.0                                       | 14                                              | 5.0                                                                                 | 25.9                                                                          | 23.2                                                                         |
| SMBG15                           | SMBJ15                                   | LL                        | BL | 16.7 / 20.4                                                                 | 1.0                                       | 15                                              | 5.0                                                                                 | 22.3                                                                          | 26.9                                                                         |
| SMBG15A                          | SMBJ15A                                  | LM                        | BM | 16.7 / 18.5                                                                 | 1.0                                       | 15                                              | 5.0                                                                                 | 24.6                                                                          | 24.4                                                                         |
| SMBG16                           | SMBJ16                                   | LN                        | LN | 17.8 / 21.8                                                                 | 1.0                                       | 16                                              | 5.0                                                                                 | 20.8                                                                          | 28.8                                                                         |
| SMBG16A                          | SMBJ16A                                  | LP                        | LM | 17.8 / 19.7                                                                 | 1.0                                       | 16                                              | 5.0                                                                                 | 23.1                                                                          | 26.0                                                                         |
| SMBG17                           | SMBJ17                                   | LQ                        | LQ | 18.9 / 23.1                                                                 | 1.0                                       | 17                                              | 5.0                                                                                 | 19.7                                                                          | 30.5                                                                         |
| SMBG17A                          | SMBJ17A                                  | LR                        | LR | 18.9 / 20.9                                                                 | 1.0                                       | 17                                              | 5.0                                                                                 | 21.7                                                                          | 27.6                                                                         |
| SMBG18                           | SMBJ18                                   | LS                        | BS | 20.0 / 24.4                                                                 | 1.0                                       | 18                                              | 5.0                                                                                 | 18.6                                                                          | 32.2                                                                         |
| SMBG18A                          | SMBJ18A                                  | LT                        | BT | 20.0 / 22.1                                                                 | 1.0                                       | 18                                              | 5.0                                                                                 | 20.5                                                                          | 29.2                                                                         |
| SMBG20                           | SMBJ20                                   | LU                        | LU | 22.2 / 27.1                                                                 | 1.0                                       | 20                                              | 5.0                                                                                 | 16.8                                                                          | 35.8                                                                         |
| SMBG20A                          | SMBJ20A                                  | LV                        | LV | 22.2 / 24.5                                                                 | 1.0                                       | 20                                              | 5.0                                                                                 | 18.5                                                                          | 32.4                                                                         |
| SMBG22                           | SMBJ22                                   | LW                        | BW | 24.4 / 29.8                                                                 | 1.0                                       | 22                                              | 5.0                                                                                 | 15.2                                                                          | 39.4                                                                         |
| SMBG22A                          | SMBJ22A                                  | LX                        | BX | 24.4 / 26.9                                                                 | 1.0                                       | 22                                              | 5.0                                                                                 | 16.9                                                                          | 35.5                                                                         |
| SMBG24                           | SMBJ24                                   | LY                        | BY | 26.7 / 32.6                                                                 | 1.0                                       | 24                                              | 5.0                                                                                 | 14.0                                                                          | 43.0                                                                         |
| SMBG24A                          | SMBJ24A                                  | LZ                        | BZ | 26.7 / 29.5                                                                 | 1.0                                       | 24                                              | 5.0                                                                                 | 15.4                                                                          | 38.9                                                                         |
| SMBG26                           | SMBJ26                                   | MD                        | CD | 28.9 / 35.3                                                                 | 1.0                                       | 26                                              | 5.0                                                                                 | 12.9                                                                          | 46.6                                                                         |
| SMBG26A                          | SMBJ26A                                  | ME                        | CE | 28.9 / 31.9                                                                 | 1.0                                       | 26                                              | 5.0                                                                                 | 14.3                                                                          | 42.1                                                                         |
| SMBG28                           | SMBJ28                                   | MF                        | MF | 31.1 / 38.0                                                                 | 1.0                                       | 28                                              | 5.0                                                                                 | 12.0                                                                          | 50.0                                                                         |
| SMBG28A                          | SMBJ28A                                  | MG                        | MG | 31.1 / 34.4                                                                 | 1.0                                       | 28                                              | 5.0                                                                                 | 13.2                                                                          | 45.4                                                                         |
| SMBG30                           | SMBJ30                                   | MH                        | CH | 33.3 / 40.7                                                                 | 1.0                                       | 30                                              | 5.0                                                                                 | 11.2                                                                          | 53.5                                                                         |
| SMBG30A                          | SMBJ30A                                  | MK                        | CK | 33.3 / 36.8                                                                 | 1.0                                       | 30                                              | 5.0                                                                                 | 12.4                                                                          | 48.4                                                                         |
| SMBG33                           | SMBJ33                                   | ML                        | CL | 36.7 / 44.9                                                                 | 1.0                                       | 33                                              | 5.0                                                                                 | 10.2                                                                          | 59.0                                                                         |
| SMBG33A                          | SMBJ33A                                  | MM                        | CM | 36.7 / 40.6                                                                 | 1.0                                       | 33                                              | 5.0                                                                                 | 11.3                                                                          | 53.3                                                                         |
| SMBG36                           | SMBJ36                                   | MN                        | CN | 40.0 / 48.9                                                                 | 1.0                                       | 36                                              | 5.0                                                                                 | 9.3                                                                           | 64.3                                                                         |
| SMBG36A                          | SMBJ36A                                  | MP                        | CP | 40.0 / 44.2                                                                 | 1.0                                       | 36                                              | 5.0                                                                                 | 10.3                                                                          | 58.1                                                                         |
| SMBG40                           | SMBJ40                                   | MQ                        | CQ | 44.4 / 54.3                                                                 | 1.0                                       | 40                                              | 5.0                                                                                 | 8.4                                                                           | 71.4                                                                         |
| SMBG40A                          | SMBJ40A                                  | MR                        | CR | 44.4 / 49.1                                                                 | 1.0                                       | 40                                              | 5.0                                                                                 | 9.3                                                                           | 64.5                                                                         |
| SMBG43                           | SMBJ43                                   | MS                        | CS | 47.8 / 58.4                                                                 | 1.0                                       | 43                                              | 5.0                                                                                 | 7.8                                                                           | 76.7                                                                         |
| SMBG43A                          | SMBJ43A                                  | MT                        | CT | 47.8 / 52.8                                                                 | 1.0                                       | 43                                              | 5.0                                                                                 | 8.6                                                                           | 69.4                                                                         |
| SMBG45                           | SMBJ45                                   | MU                        | MU | 50.0 / 61.1                                                                 | 1.0                                       | 45                                              | 5.0                                                                                 | 7.5                                                                           | 80.3                                                                         |
| SMBG45A                          | SMBJ45A                                  | MV                        | MV | 50.0 / 55.3                                                                 | 1.0                                       | 45                                              | 5.0                                                                                 | 8.3                                                                           | 72.7                                                                         |
| SMBG48                           | SMBJ48                                   | MW                        | MW | 53.3 / 65.1                                                                 | 1.0                                       | 48                                              | 5.0                                                                                 | 7.0                                                                           | 85.5                                                                         |
| SMBG48A                          | SMBJ48A                                  | MX                        | MX | 53.3 / 58.9                                                                 | 1.0                                       | 48                                              | 5.0                                                                                 | 7.8                                                                           | 77.4                                                                         |
| SMBG51                           | SMBJ51                                   | MY                        | MY | 56.7 / 69.3                                                                 | 1.0                                       | 51                                              | 5.0                                                                                 | 6.6                                                                           | 91.1                                                                         |
| SMBG51A                          | SMBJ51A                                  | MZ                        | MZ | 56.7 / 62.7                                                                 | 1.0                                       | 51                                              | 5.0                                                                                 | 7.3                                                                           | 82.4                                                                         |



## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted) TABLE 1 (Cont'd)

| Device Type<br>Gull Wing<br>Lead | Device Type<br>Modified<br>"J" Bend Lead | Device<br>Marking<br>Code |    | Breakdown<br>Voltage<br>V <sub>(BR)</sub> (Volts)<br>(NOTE 1)<br>(Min / Max) | Test<br>Current<br>at I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub> (Volts) | Maximum<br>Reverse<br>Leakage I <sub>D</sub><br>at V <sub>WM</sub><br>(μA)(NOTE 3) | Maximum<br>Peak Pulse<br>Surge<br>Current I <sub>PPM</sub><br>(NOTE 2) (Amps) | Maximum<br>Clamping<br>Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|----------------------------------|------------------------------------------|---------------------------|----|------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                  |                                          | UNI                       | BI |                                                                              |                                           |                                                 |                                                                                    |                                                                               |                                                                              |
| SMBG54                           | SMBJ54                                   | ND                        | ND | 60.0 / 73.3                                                                  | 1.0                                       | 54                                              | 5.0                                                                                | 6.2                                                                           | 96.3                                                                         |
| SMBG54A                          | SMBJ54A                                  | NE                        | NE | 60.0 / 66.3                                                                  | 1.0                                       | 54                                              | 5.0                                                                                | 6.9                                                                           | 87.1                                                                         |
| SMBG58                           | SMBJ58                                   | NF                        | NF | 64.4 / 78.7                                                                  | 1.0                                       | 58                                              | 5.0                                                                                | 5.8                                                                           | 103                                                                          |
| SMBG58A                          | SMBJ58A                                  | NG                        | NG | 64.4 / 71.2                                                                  | 1.0                                       | 58                                              | 5.0                                                                                | 6.4                                                                           | 93.6                                                                         |
| SMBG60                           | SMBJ60                                   | NH                        | NH | 66.7 / 81.5                                                                  | 1.0                                       | 60                                              | 5.0                                                                                | 5.6                                                                           | 107                                                                          |
| SMBG60A                          | SMBJ60A                                  | NK                        | NK | 66.7 / 73.7                                                                  | 1.0                                       | 60                                              | 5.0                                                                                | 6.2                                                                           | 96.8                                                                         |
| SMBG64                           | SMBJ64                                   | NL                        | NL | 71.1 / 86.9                                                                  | 1.0                                       | 64                                              | 5.0                                                                                | 5.3                                                                           | 114                                                                          |
| SMBG64A                          | SMBJ64A                                  | NM                        | NM | 71.1 / 78.6                                                                  | 1.0                                       | 64                                              | 5.0                                                                                | 5.8                                                                           | 103                                                                          |
| SMBG70                           | SMBJ70                                   | NN                        | NN | 77.8 / 95.1                                                                  | 1.0                                       | 70                                              | 5.0                                                                                | 4.8                                                                           | 125                                                                          |
| SMBG70A                          | SMBJ70A                                  | NP                        | NP | 77.8 / 86.0                                                                  | 1.0                                       | 70                                              | 5.0                                                                                | 5.3                                                                           | 113                                                                          |
| SMBG75                           | SMBJ75                                   | NQ                        | NQ | 83.3 / 102                                                                   | 1.0                                       | 75                                              | 5.0                                                                                | 4.5                                                                           | 134                                                                          |
| SMBG75A                          | SMBJ75A                                  | NR                        | NR | 83.3 / 92.1                                                                  | 1.0                                       | 75                                              | 5.0                                                                                | 5.0                                                                           | 121                                                                          |
| SMBG78                           | SMBJ78                                   | NS                        | NS | 86.7 / 106                                                                   | 1.0                                       | 78                                              | 5.0                                                                                | 4.3                                                                           | 139                                                                          |
| SMBG78A                          | SMBJ78A                                  | NT                        | NT | 86.7 / 95.8                                                                  | 1.0                                       | 78                                              | 5.0                                                                                | 4.8                                                                           | 126                                                                          |
| SMBG85                           | SMBJ85                                   | NU                        | NU | 94.4 / 115                                                                   | 1.0                                       | 85                                              | 5.0                                                                                | 4.0                                                                           | 151                                                                          |
| SMBG85A                          | SMBJ85A                                  | NV                        | NV | 94.4 / 104                                                                   | 1.0                                       | 85                                              | 5.0                                                                                | 4.4                                                                           | 137                                                                          |
| SMBG90                           | SMBJ90                                   | NW                        | NW | 100 / 122                                                                    | 1.0                                       | 90                                              | 5.0                                                                                | 3.8                                                                           | 160                                                                          |
| SMBG90A                          | SMBJ90A                                  | NX                        | NX | 100 / 111                                                                    | 1.0                                       | 90                                              | 6.0                                                                                | 4.1                                                                           | 146                                                                          |
| SMBG100                          | SMBJ100                                  | NY                        | NY | 111 / 136                                                                    | 1.0                                       | 100                                             | 5.0                                                                                | 3.4                                                                           | 179                                                                          |
| SMBG100A                         | SMBJ100A                                 | NZ                        | NZ | 111 / 123                                                                    | 1.0                                       | 100                                             | 5.0                                                                                | 3.7                                                                           | 162                                                                          |
| SMBG110                          | SMBJ110                                  | PD                        | PD | 122 / 149                                                                    | 1.0                                       | 110                                             | 5.0                                                                                | 3.1                                                                           | 196                                                                          |
| SMBG110A                         | SMBJ110A                                 | PE                        | PE | 122 / 135                                                                    | 1.0                                       | 110                                             | 5.0                                                                                | 3.4                                                                           | 177                                                                          |
| SMBG120                          | SMBJ120                                  | PF                        | PF | 133 / 163                                                                    | 1.0                                       | 120                                             | 5.0                                                                                | 2.8                                                                           | 214                                                                          |
| SMBG120A                         | SMBJ120A                                 | PG                        | PG | 133 / 147                                                                    | 1.0                                       | 120                                             | 5.0                                                                                | 3.1                                                                           | 193                                                                          |
| SMBG130                          | SMBJ130                                  | PH                        | PH | 144 / 176                                                                    | 1.0                                       | 130                                             | 5.0                                                                                | 2.6                                                                           | 231                                                                          |
| SMBG130A                         | SMBJ130A                                 | PK                        | PK | 144 / 159                                                                    | 1.0                                       | 130                                             | 5.0                                                                                | 2.9                                                                           | 209                                                                          |
| SMBG150                          | SMBJ150                                  | PL                        | PL | 167 / 204                                                                    | 1.0                                       | 150                                             | 5.0                                                                                | 2.2                                                                           | 268                                                                          |
| SMBG150A                         | SMBJ150A                                 | PM                        | PM | 167 / 185                                                                    | 1.0                                       | 150                                             | 5.0                                                                                | 2.5                                                                           | 243                                                                          |
| SMBG160                          | SMBJ160                                  | PN                        | PN | 178 / 218                                                                    | 1.0                                       | 160                                             | 5.0                                                                                | 2.1                                                                           | 287                                                                          |
| SMBG160A                         | SMBJ160A                                 | PP                        | PP | 178 / 197                                                                    | 1.0                                       | 160                                             | 5.0                                                                                | 2.3                                                                           | 259                                                                          |
| SMBG170                          | SMBJ170                                  | PQ                        | PQ | 189 / 231                                                                    | 1.0                                       | 170                                             | 5.0                                                                                | 2.0                                                                           | 304                                                                          |
| SMBG170A                         | SMBJ170A                                 | PR                        | PR | 189 / 209                                                                    | 1.0                                       | 170                                             | 5.0                                                                                | 2.2                                                                           | 275                                                                          |

### NOTES:

- (1) V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs square wave pulse or equivalent
- (2) Surge current waveform per Fig. 3 and derate per Fig. 2
- (3) For bi-directional types having V<sub>WM</sub> of 10 Volts and less, the I<sub>D</sub> limit is doubled
- (4) For the bi-directional SMBG/SMBJ5.0CA, the maximum V<sub>(BR)</sub> is 7.25 Volts
- (5) All terms and symbols are consistent with ANSI/IEEE C62.35

## APPLICATION NOTES

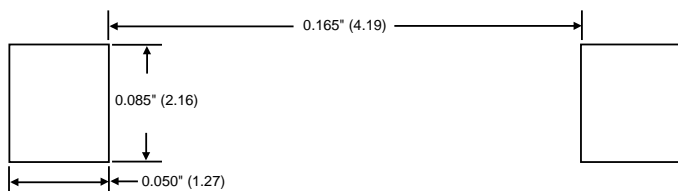
These surface mountable packages are designed specifically for transient voltage suppression. The wide leads assure a large surface contact for good heat dissipation, and a low resistance path for surge current flow to ground. These high speed transient voltage suppressors can be used to effectively protect sensitive components such as integrated circuits and MOS devices.

A 600W (SMB) device is normally selected when the threat of transients is from lightning-induced transients conducted via external leads or I/O lines. It is also used to protect against switching transients induced by large coils or industrial motors. System impedance at component level in a system is usually high enough to limit the current to within the peak pulse current (I<sub>PP</sub>) rating of this series.

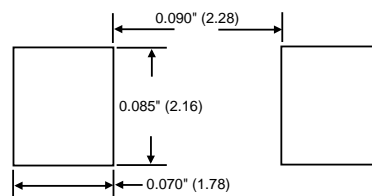
## RECOMMENDED PAD SIZES

The pad dimensions should be 0.010" (0.25mm) longer than the contact size, in the lead axis.  
This allows a solder fillet to form, see Fig. below. Contact factory for soldering methods.

### GULL-WING



### MODIFIED J-BEND



# MAXIMUM RATINGS AND CHARACTERISTIC CURVES SMBG AND SMBJ5.0 THRU 170CA

FIG. 1 - PEAK PULSE POWER RATING CURVE

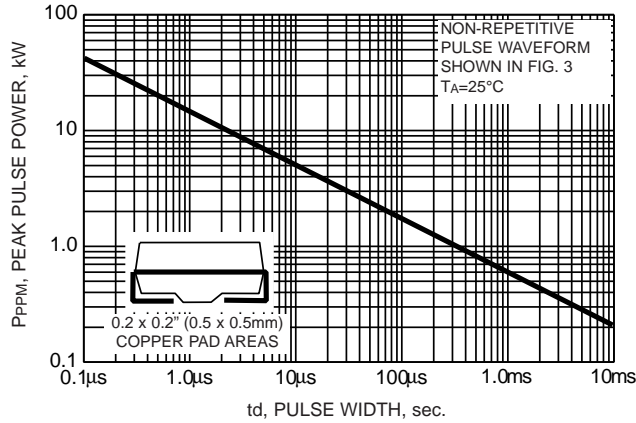


FIG. 2 - PULSE DERATING CURVE

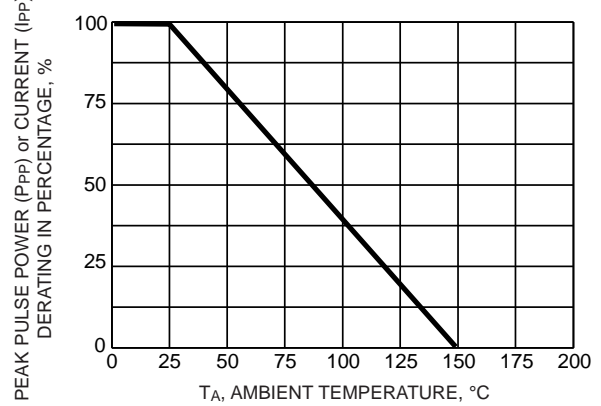


FIG. 3 - PULSE WAVEFORM

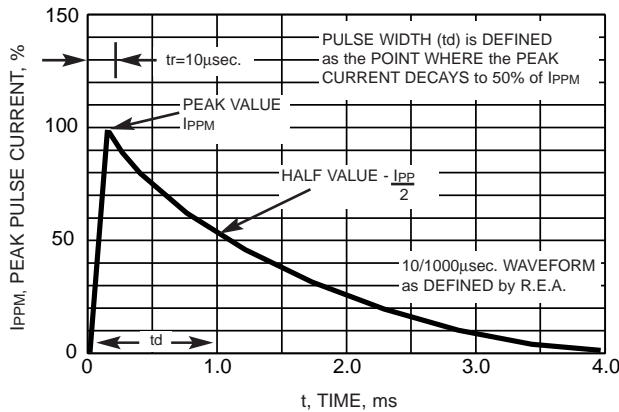


FIG. 4 - TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

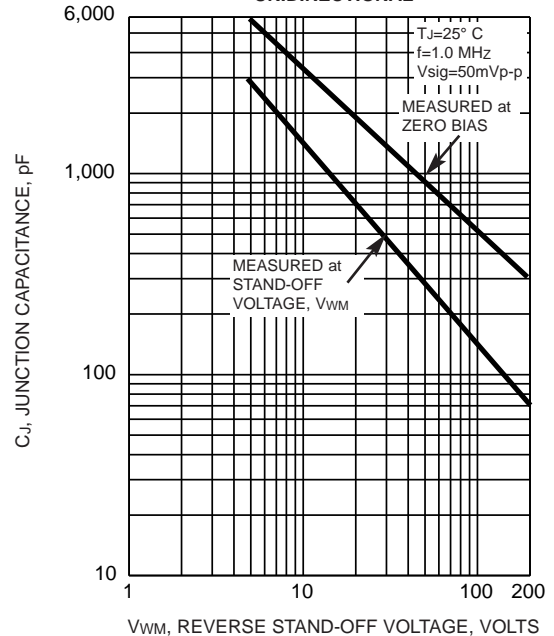


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

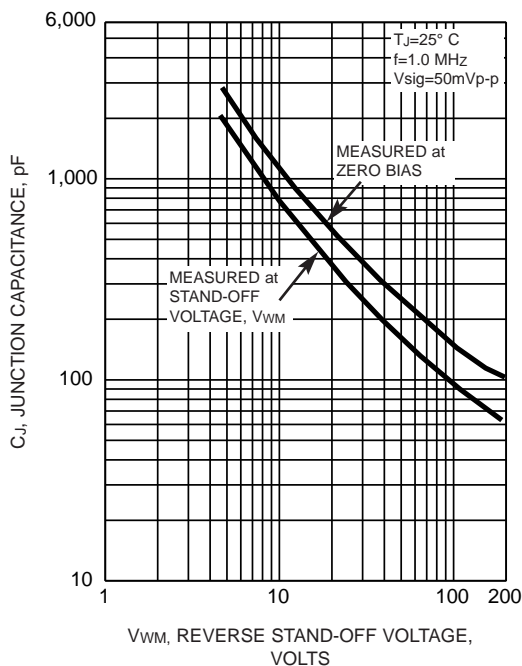


FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

