

# Transient Suppression Diodes

## For General Purpose Use



### GENERAL DESCRIPTION

The SMAJ, SMBJ, and SMCJ Series are a popular format of general purpose transient voltage suppression diodes. They are based on the low leakage, high reliability, but low cost glass passivated chip rectifier technology.

### APPLICATIONS

- Glass passivated chip
- 400W, 600W and 1500W types (10/1000us)
- Low leakage
- Flat clamping
- Very fast response time
- Halogen Free
- $\leq 1\mu\text{A}$  leakage for 12V and up
- Lead-Free Terminations

### FEATURES

- Consumer
- Industrial
- Telecom
- Computer

### HOW TO ORDER

**SMAJ**



**Series**

SMAJ = 400W  
SMBJ = 600W  
SMCJ = 1500W

**12**



**Voltage<sub>WM</sub>**  
5V - 440V

**CA**



**C** = Bi-directional, 5% Voltage Tolerance  
**A** = Uni-directional, 5% Voltage Tolerance

### MAXIMUM RATINGS

| Characteristic Test Description  | Symbol         | SMAJ       | SMBJ      | SMCJ      | UNITS |
|--|----------------|------------|-----------|-----------|-------|
| Peak power dissipation with a 10/1000us waveform <sup>1</sup>                            | $P_{PPM}$      | 400        | 600       | 1500      | Watts |
| Peak pulse current with a 10/1000us waveform <sup>1</sup>                                | $I_{PPM}$      | See tables |           |           | Amps  |
| Power dissipation on infinite heat sink at TL = 75°C                                     | $P_D$          | 1.0        | 5.0       | 6.5       | Watts |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only <sup>2</sup> | $I_{FSM}$      | 40         | 100       | 200       | Amps  |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | -55 ~ 150  | -55 ~ 150 | -55 ~ 150 | °C    |
| Typical thermal resistance junction to air   | $\theta_{JA}$  | 120        | 100       | 75        | °C/W  |
| Typical thermal resistance junction to case  | $\theta_{JC}$  | 30         | 20        | 15        | °C/W  |

NOTES:

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

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

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### SMAJ SERIES PARAMETERS

| SMAJ Part Number |           | Device Marking Code |    | Working Peak Reverse Voltage $V_{RWM}$ (V) | Breakdown Voltage $V_{BR}@I_T$ |          |            | Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$ | Maximum Reverse Surge Current @10 x 1000 $\mu$ s | Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_{RWM}$ |
|------------------|-----------|---------------------|----|--|--------------------------------|----------|------------|---|--|--|
| UNI-POLAR        | BI-POLAR  | UNI                 | BI |  | Min. (V)                       | Max. (V) | $I_T$ (mA) |   |  |  |
| SMAJ5.0A         | SMAJ5.0CA | AE                  | WE | 5  | 6.4                            | 7        | 10         | 9.2   | 43.48  | 800  |
| SMAJ6.0A         | SMAJ6.0CA | AG                  | WG | 6  | 6.7                            | 7.37     | 10         | 10.3  | 38.83  | 800  |
| SMAJ6.5A         | SMAJ6.5CA | AK                  | WK | 6.5  | 7.2                            | 7.98     | 10         | 11.2  | 35.71  | 500  |
| SMAJ7.0A         | SMAJ7.0CA | AM                  | WM | 7  | 7.8                            | 8.6      | 10         | 12  | 33.33  | 200  |
| SMAJ7.5A         | SMAJ7.5CA | AP                  | WP | 7.5  | 8.3                            | 9.21     | 1          | 12.9  | 31.01  | 100  |
| SMAJ8.0A         | SMAJ8.0CA | AR                  | WR | 8  | 8.9                            | 9.83     | 1          | 13.6  | 29.41  | 50   |
| SMAJ8.5A         | SMAJ8.5CA | AT                  | WT | 8.5  | 9.4                            | 10.4     | 1          | 14.4  | 27.78  | 10   |
| SMAJ9.0A         | SMAJ9.0CA | AV                  | WV | 9  | 10                             | 11.1     | 1          | 15.4  | 25.97  | 1  |
| SMAJ10A          | SMAJ10CA  | AX                  | WX | 10   | 11.1                           | 12.3     | 1          | 17  | 23.53  | 1  |
| SMAJ11A          | SMAJ11CA  | AZ                  | WZ | 11   | 12.2                           | 13.5     | 1          | 18.2  | 21.98  | 1  |
| SMAJ12A          | SMAJ12CA  | BE                  | XE | 12   | 13.3                           | 14.7     | 1          | 19.9  | 20.1   | 1  |
| SMAJ13A          | SMAJ13CA  | BG                  | XG | 13   | 14.4                           | 15.9     | 1          | 21.5  | 18.6   | 1  |
| SMAJ14A          | SMAJ14CA  | BK                  | XK | 14   | 15.6                           | 17.2     | 1          | 23.2  | 17.24  | 1  |
| SMAJ15A          | SMAJ15CA  | BM                  | XM | 15   | 16.7                           | 18.5     | 1          | 24.4  | 16.39  | 1  |
| SMAJ16A          | SMAJ16CA  | BP                  | XP | 16   | 17.8                           | 19.7     | 1          | 26  | 15.38  | 1  |
| SMAJ17A          | SMAJ17CA  | BR                  | XR | 17   | 18.9                           | 20.9     | 1          | 27.6  | 14.49  | 1  |
| SMAJ18A          | SMAJ18CA  | BT                  | XT | 18   | 20                             | 22.1     | 1          | 29.2  | 13.7   | 1  |
| SMAJ19A          | SMAJ19CA  | BB                  | XB | 19   | 21.1                           | 23.3     | 1          | 30.8  | 13   | 1  |
| SMAJ20A          | SMAJ20CA  | BV                  | XV | 20   | 22.2                           | 24.5     | 1          | 32.4  | 12.35  | 1  |
| SMAJ22A          | SMAJ22CA  | BX                  | XX | 22   | 24.4                           | 26.9     | 1          | 35.5  | 11.27  | 1  |
| SMAJ24A          | SMAJ24CA  | BZ                  | XZ | 24   | 26.7                           | 29.5     | 1          | 38.9  | 10.28  | 1  |
| SMAJ26A          | SMAJ26CA  | CE                  | YE | 26   | 28.9                           | 31.9     | 1          | 42.1  | 9.5  | 1  |
| SMAJ28A          | SMAJ28CA  | CG                  | YG | 28   | 31.1                           | 34.4     | 1          | 45.4  | 8.81   | 1  |
| SMAJ30A          | SMAJ30CA  | CK                  | YK | 30   | 33.3                           | 36.8     | 1          | 48.4  | 8.26   | 1  |
| SMAJ33A          | SMAJ33CA  | CM                  | YM | 33   | 36.7                           | 40.6     | 1          | 53.3  | 7.5  | 1  |
| SMAJ36A          | SMAJ36CA  | CP                  | YP | 36   | 40                             | 44.2     | 1          | 58.1  | 6.88   | 1  |
| SMAJ40A          | SMAJ40CA  | CR                  | YR | 40   | 44.4                           | 49.1     | 1          | 64.5  | 6.2  | 1  |
| SMAJ43A          | SMAJ43CA  | CT                  | YT | 43   | 47.8                           | 52.8     | 1          | 69.4  | 5.76   | 1  |
| SMAJ45A          | SMAJ45CA  | CV                  | YV | 45   | 50                             | 55.3     | 1          | 72.7  | 5.5  | 1  |
| SMAJ48A          | SMAJ48CA  | CX                  | YX | 48   | 53.3                           | 58.9     | 1          | 77.4  | 5.17   | 1  |
| SMAJ51A          | SMAJ51CA  | CZ                  | YZ | 51   | 56.7                           | 62.7     | 1          | 82.4  | 4.85   | 1  |
| SMAJ54A          | SMAJ54CA  | RE                  | ZE | 54   | 60                             | 66.3     | 1          | 87.1  | 4.59   | 1  |
| SMAJ58A          | SMAJ58CA  | RG                  | ZG | 58   | 64.4                           | 71.2     | 1          | 93.6  | 4.27   | 1  |
| SMAJ60A          | SMAJ60CA  | RK                  | ZK | 60   | 66.7                           | 73.7     | 1          | 96.8  | 4.13   | 1  |
| SMAJ64A          | SMAJ64CA  | RM                  | ZM | 64   | 71.1                           | 78.6     | 1          | 103   | 3.88   | 1  |
| SMAJ70A          | SMAJ70CA  | RP                  | ZP | 70   | 77.8                           | 86       | 1          | 113   | 3.54   | 1  |
| SMAJ75A          | SMAJ75CA  | RR                  | ZR | 75   | 83.3                           | 92.1     | 1          | 121   | 3.31   | 1  |
| SMAJ78A          | SMAJ78CA  | RT                  | ZT | 78   | 86.7                           | 95.8     | 1          | 126   | 3.17   | 1  |
| SMAJ80A          | SMAJ80CA  | RB                  | ZB | 80   | 88.8                           | 97.6     | 1          | 130   | 3.09   | 1  |
| SMAJ85A          | SMAJ85CA  | RV                  | ZV | 85   | 94.4                           | 104      | 1          | 137   | 2.92   | 1  |
| SMAJ90A          | SMAJ90CA  | RX                  | ZX | 90   | 100                            | 111      | 1          | 146   | 2.74   | 1  |
| SMAJ100A         | SMAJ100CA | RZ                  | ZZ | 100  | 111                            | 123      | 1          | 162   | 2.47   | 1  |
| SMAJ110A         | SMAJ110CA | SE                  | VE | 110  | 122                            | 135      | 1          | 177   | 2.26   | 1  |
| SMAJ120A         | SMAJ120CA | SG                  | VG | 120  | 133                            | 147      | 1          | 193   | 2.07   | 1  |
| SMAJ130A         | SMAJ130CA | SK                  | VK | 130  | 144                            | 159      | 1          | 209   | 1.91   | 1  |
| SMAJ140A         | SMAJ140CA | SB                  | VB | 140  | 155                            | 171      | 1          | 227   | 1.76   | 1  |
| SMAJ150A         | SMAJ150CA | SM                  | VM | 150  | 167                            | 185      | 1          | 243   | 1.65   | 1  |
| SMAJ160A         | SMAJ160CA | SP                  | VP | 160  | 178                            | 197      | 1          | 259   | 1.54   | 1  |
| SMAJ170A         | SMAJ170CA | SR                  | VR | 170  | 189                            | 209      | 1          | 275   | 1.45   | 1  |
| SMAJ180A         | SMAJ180CA | ST                  | VT | 180  | 200                            | 220      | 1          | 292   | 1.37   | 1  |
| SMAJ190A         | SMAJ190CA | SV                  | VV | 190  | 211                            | 232      | 1          | 308   | 1.3  | 1  |
| SMAJ200A         | SMAJ200CA | SW                  | VW | 200  | 224                            | 247      | 1          | 324   | 1.23   | 1  |
| SMAJ220A         | SMAJ220CA | SX                  | VX | 220  | 246                            | 272      | 1          | 356   | 1.12   | 1  |
| SMAJ250A         | SMAJ250CA | SZ                  | VZ | 250  | 279                            | 309      | 1          | 405   | 0.99   | 1  |
| SMAJ300A         | SMAJ300CA | DE                  | HE | 300  | 335                            | 371      | 1          | 486   | 0.82   | 1  |
| SMAJ350A         | SMAJ350CA | DG                  | HG | 350  | 391                            | 432      | 1          | 567   | 0.71   | 1  |
| SMAJ400A         | SMAJ400CA | DK                  | HK | 400  | 447                            | 494      | 1          | 648   | 0.62   | 1  |
| SMAJ440A         | SMAJ440CA | DM                  | HM | 440  | 492                            | 543      | 1          | 713   | 0.56   | 1  |

NOTES:

1. Suffix "A" denotes 5% tolerance device.
2. Add suffix "CA" after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 10 volts and under, the  $I_R$  limit is double.

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### SMAJ SERIES RATINGS AND CHARACTERISTICS

FIG 1. PULSE DERATING CURVE

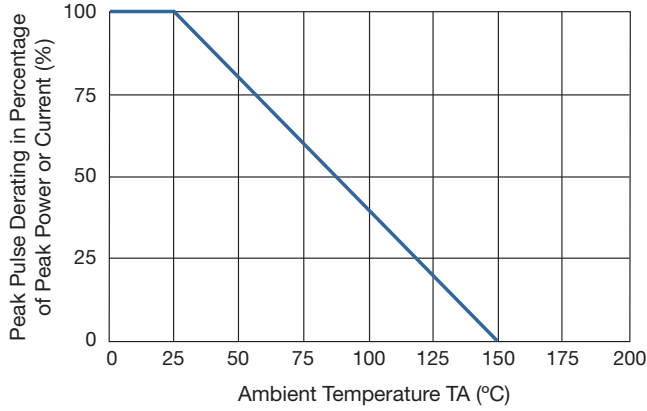


FIG 2. MAXIMUM NON-REPETITIVE

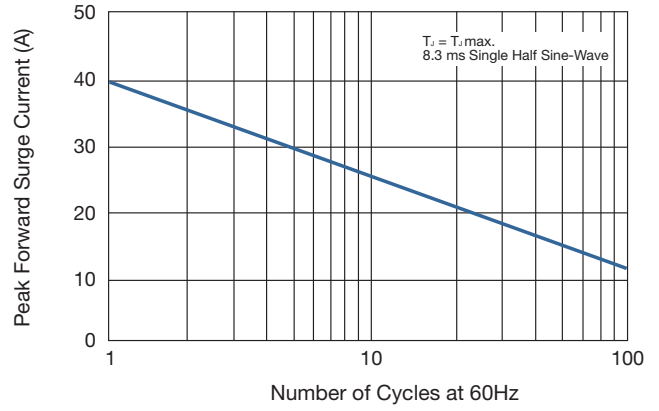


FIG 3. STEADY STATE POWER DERATING CURVE

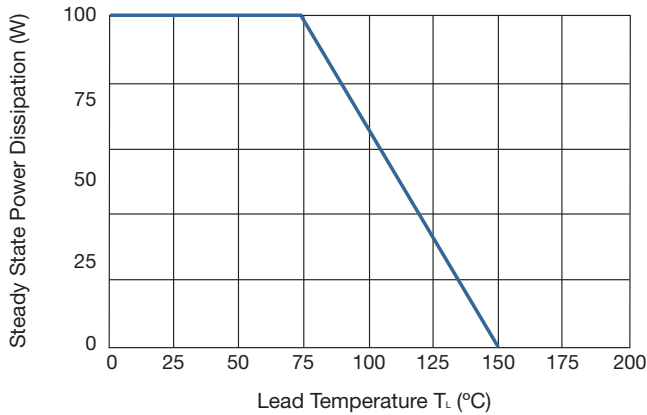


FIG 4. PEAK PULSE POWER RATING CURVE

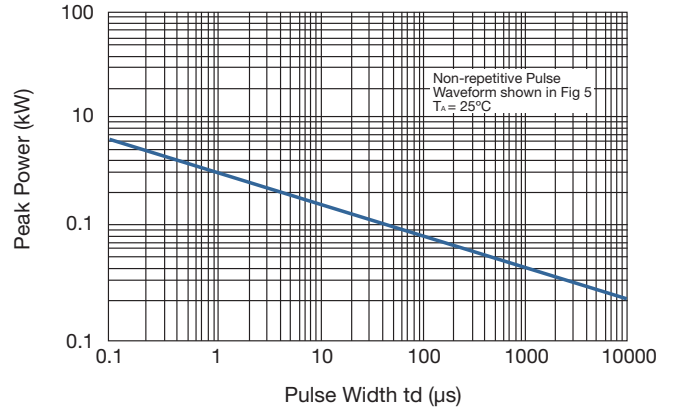
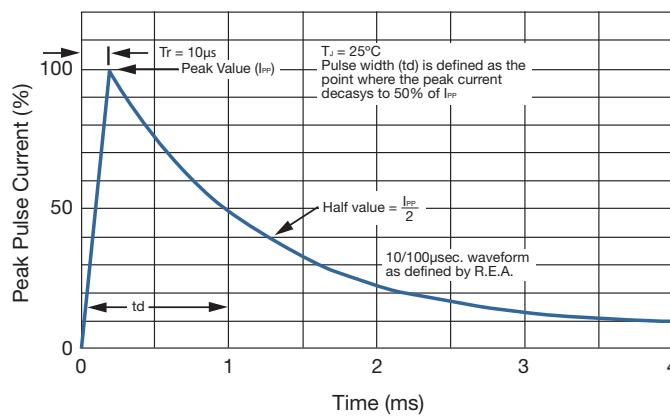


FIG 5. PULSE WAVEFORM



# Transient Suppression Diodes

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### SMBJ SERIES PARAMETERS

| SMBJ Part Number |           | Device Marking Code |    | Working Peak Reverse Voltage<br>$V_{RWM}$ (V) | Breakdown Voltage<br>$V_{BR}@I_T$ |          |            | Maximum Clamping Voltage $V_C$ (V)<br>@ $I_{PP}$ | Maximum Reverse Surge Current<br>@10 x 1000 $\mu$ s | Maximum Reverse Leakage $I_R$ ( $\mu$ A)<br>@ $V_{RWM}$ |
|------------------|-----------|---------------------|----|---|-----------------------------------|----------|------------|--|---|---|
| UNI-POLAR        | BI-POLAR  | UNI                 | BI |   | Min. (V)                          | Max. (V) | $I_T$ (mA) |  |   |   |
| SMBJ5.0A         | SMBJ5.0CA | KE                  | AE | 5   | 6.4                               | 7        | 10         | 9.2  | 65.22   | 800   |
| SMBJ6.0A         | SMBJ6.0CA | KG                  | AG | 6   | 6.7                               | 7.37     | 10         | 10.3   | 58.25   | 800   |
| SMBJ6.5A         | SMBJ6.5CA | KK                  | AK | 6.5   | 7.2                               | 7.98     | 10         | 11.2   | 53.57   | 500   |
| SMBJ7.0A         | SMBJ7.0CA | KM                  | AM | 7   | 7.8                               | 8.6      | 10         | 12   | 50  | 200   |
| SMBJ7.5A         | SMBJ7.5CA | KP                  | AP | 7.5   | 8.3                               | 9.21     | 1          | 12.9   | 46.51   | 100   |
| SMBJ8.0A         | SMBJ8.0CA | KR                  | AR | 8   | 8.9                               | 9.83     | 1          | 13.6   | 44.12   | 50  |
| SMBJ8.5A         | SMBJ8.5CA | KT                  | AT | 8.5   | 9.4                               | 10.4     | 1          | 14.4   | 41.67   | 10  |
| SMBJ9.0A         | SMBJ9.0CA | KV                  | AV | 9   | 10                                | 11.1     | 1          | 15.4   | 38.96   | 1   |
| SMBJ10A          | SMBJ10CA  | KX                  | AX | 10  | 11.1                              | 12.3     | 1          | 17   | 35.29   | 1   |
| SMBJ11A          | SMBJ11CA  | KZ                  | AZ | 11  | 12.2                              | 13.5     | 1          | 18.2   | 32.97   | 1   |
| SMBJ12A          | SMBJ12CA  | LE                  | BE | 12  | 13.3                              | 14.7     | 1          | 19.9   | 30.15   | 1   |
| SMBJ13A          | SMBJ13CA  | LG                  | BG | 13  | 14.4                              | 15.9     | 1          | 21.5   | 27.91   | 1   |
| SMBJ14A          | SMBJ14CA  | LK                  | BK | 14  | 15.6                              | 17.2     | 1          | 23.2   | 25.86   | 1   |
| SMBJ15A          | SMBJ15CA  | LM                  | BM | 15  | 16.7                              | 18.5     | 1          | 24.4   | 24.59   | 1   |
| SMBJ16A          | SMBJ16CA  | LP                  | BP | 16  | 17.8                              | 19.7     | 1          | 26   | 23.08   | 1   |
| SMBJ17A          | SMBJ17CA  | LR                  | BR | 17  | 18.9                              | 20.9     | 1          | 27.6   | 21.74   | 1   |
| SMBJ18A          | SMBJ18CA  | LT                  | BT | 18  | 20                                | 22.1     | 1          | 29.2   | 20.55   | 1   |
| SMBJ19A          | SMBJ19CA  | LB                  | BB | 19  | 21.1                              | 23.3     | 1          | 30.8   | 19.49   | 1   |
| SMBJ20A          | SMBJ20CA  | LV                  | BV | 20  | 22.2                              | 24.5     | 1          | 32.4   | 18.52   | 1   |
| SMBJ22A          | SMBJ22CA  | LX                  | BX | 22  | 24.4                              | 26.9     | 1          | 35.5   | 16.9  | 1   |
| SMBJ24A          | SMBJ24CA  | LZ                  | BZ | 24  | 26.7                              | 29.5     | 1          | 38.9   | 15.42   | 1   |
| SMBJ26A          | SMBJ26CA  | ME                  | CE | 26  | 28.9                              | 31.9     | 1          | 42.1   | 14.25   | 1   |
| SMBJ28A          | SMBJ28CA  | MG                  | CG | 28  | 31.1                              | 34.4     | 1          | 45.4   | 13.22   | 1   |
| SMBJ30A          | SMBJ30CA  | MK                  | CK | 30  | 33.3                              | 36.8     | 1          | 48.4   | 12.4  | 1   |
| SMBJ33A          | SMBJ33CA  | MM                  | CM | 33  | 36.7                              | 40.6     | 1          | 53.3   | 11.26   | 1   |
| SMBJ36A          | SMBJ36CA  | MP                  | CP | 36  | 40                                | 44.2     | 1          | 58.1   | 10.33   | 1   |
| SMBJ40A          | SMBJ40CA  | MR                  | CR | 40  | 44.4                              | 49.1     | 1          | 64.5   | 9.3   | 1   |
| SMBJ43A          | SMBJ43CA  | MT                  | CT | 43  | 47.8                              | 52.8     | 1          | 69.4   | 8.65  | 1   |
| SMBJ45A          | SMBJ45CA  | MV                  | CV | 45  | 50                                | 55.3     | 1          | 72.7   | 8.25  | 1   |
| SMBJ48A          | SMBJ48CA  | MX                  | CX | 48  | 53.3                              | 58.9     | 1          | 77.4   | 7.75  | 1   |
| SMBJ51A          | SMBJ51CA  | MZ                  | CZ | 51  | 56.7                              | 62.7     | 1          | 82.4   | 7.28  | 1   |
| SMBJ54A          | SMBJ54CA  | NE                  | DE | 54  | 60                                | 66.3     | 1          | 87.1   | 6.89  | 1   |
| SMBJ58A          | SMBJ58CA  | NG                  | DG | 58  | 64.4                              | 71.2     | 1          | 93.6   | 6.41  | 1   |
| SMBJ60A          | SMBJ60CA  | NK                  | DK | 60  | 66.7                              | 73.7     | 1          | 96.8   | 6.2   | 1   |
| SMBJ64A          | SMBJ64CA  | NM                  | DM | 64  | 71.1                              | 78.6     | 1          | 103  | 5.83  | 1   |
| SMBJ70A          | SMBJ70CA  | NP                  | DP | 70  | 77.8                              | 86       | 1          | 113  | 5.31  | 1   |
| SMBJ75A          | SMBJ75CA  | NR                  | DR | 75  | 83.3                              | 92.1     | 1          | 121  | 4.96  | 1   |
| SMBJ78A          | SMBJ78CA  | NT                  | DT | 78  | 86.7                              | 95.8     | 1          | 126  | 4.76  | 1   |
| SMBJ80A          | SMBJ80CA  | NB                  | DB | 80  | 88.8                              | 97.6     | 1          | 130  | 4.63  | 1   |
| SMBJ85A          | SMBJ85CA  | NV                  | DV | 85  | 94.4                              | 104      | 1          | 137  | 4.38  | 1   |
| SMBJ90A          | SMBJ90CA  | NX                  | DX | 90  | 100                               | 111      | 1          | 146  | 4.11  | 1   |
| SMBJ100A         | SMBJ100CA | NZ                  | DZ | 100   | 111                               | 123      | 1          | 162  | 3.7   | 1   |
| SMBJ110A         | SMBJ110CA | PE                  | EE | 110   | 122                               | 135      | 1          | 177  | 3.39  | 1   |
| SMBJ120A         | SMBJ120CA | PG                  | EG | 120   | 133                               | 147      | 1          | 193  | 3.11  | 1   |
| SMBJ130A         | SMBJ130CA | PK                  | EK | 130   | 144                               | 159      | 1          | 209  | 2.87  | 1   |
| SMBJ140A         | SMBJ140CA | PB                  | EB | 140   | 155                               | 171      | 1          | 227  | 2.65  | 1   |
| SMBJ150A         | SMBJ150CA | PM                  | EM | 150   | 167                               | 185      | 1          | 243  | 2.47  | 1   |
| SMBJ160A         | SMBJ160CA | PP                  | EP | 160   | 178                               | 197      | 1          | 259  | 2.32  | 1   |
| SMBJ170A         | SMBJ170CA | PR                  | ER | 170   | 189                               | 209      | 1          | 275  | 2.18  | 1   |
| SMBJ180A         | SMBJ180CA | PT                  | ET | 180   | 200                               | 220      | 1          | 292  | 2.06  | 1   |
| SMBJ190A         | SMBJ190CA | PV                  | EV | 190   | 211                               | 232      | 1          | 308  | 1.95  | 1   |
| SMBJ200A         | SMBJ200CA | PW                  | EW | 200   | 224                               | 247      | 1          | 324  | 1.85  | 1   |
| SMBJ220A         | SMBJ220CA | PX                  | EX | 220   | 246                               | 272      | 1          | 356  | 1.69  | 1   |
| SMBJ250A         | SMBJ250CA | PZ                  | EZ | 250   | 279                               | 309      | 1          | 405  | 1.48  | 1   |
| SMBJ300A         | SMBJ300CA | QE                  | FE | 300   | 335                               | 371      | 1          | 486  | 1.23  | 1   |
| SMBJ350A         | SMBJ350CA | QG                  | FG | 350   | 391                               | 432      | 1          | 567  | 1.06  | 1   |
| SMBJ400A         | SMBJ400CA | QK                  | FK | 400   | 447                               | 494      | 1          | 648  | 0.93  | 1   |
| SMBJ440A         | SMBJ440CA | QM                  | FM | 440   | 492                               | 543      | 1          | 713  | 0.84  | 1   |

NOTES:

1. Suffix "A" denotes 5% tolerance device.
2. Add suffix "CA" after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 10 volts and under, the  $I_R$  limit is double.

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### SMBJ SERIES RATINGS AND CHARACTERISTICS

FIG 1. PULSE DERATING CURVE

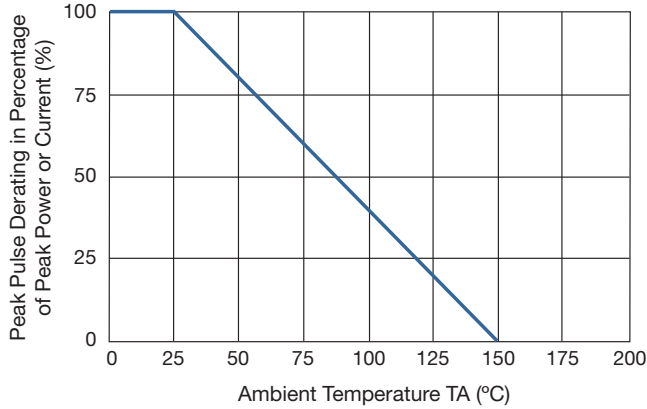


FIG 2. MAXIMUM NON-REPETITIVE

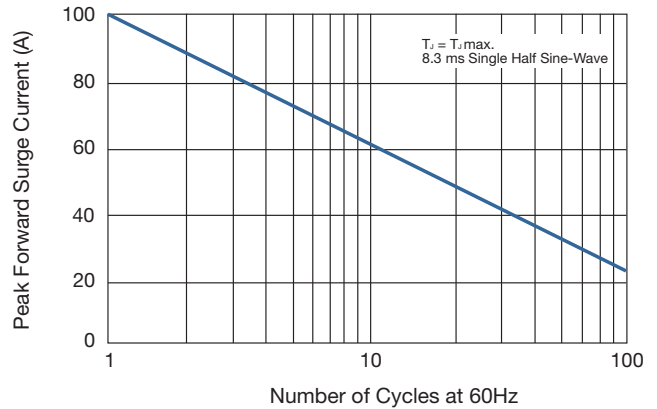


FIG 3. STEADY STATE POWER DERATING CURVE

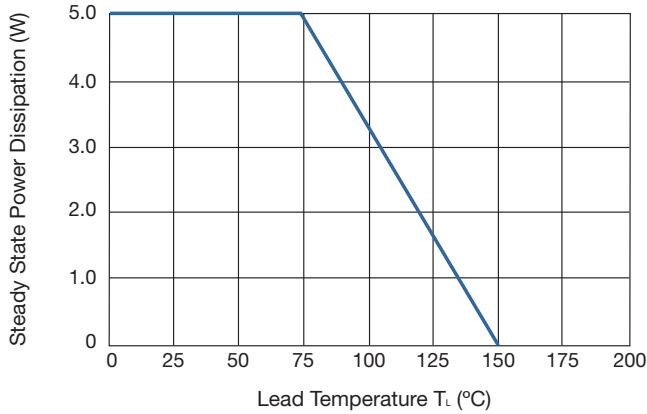


FIG 4. PEAK PULSE POWER RATING CURVE

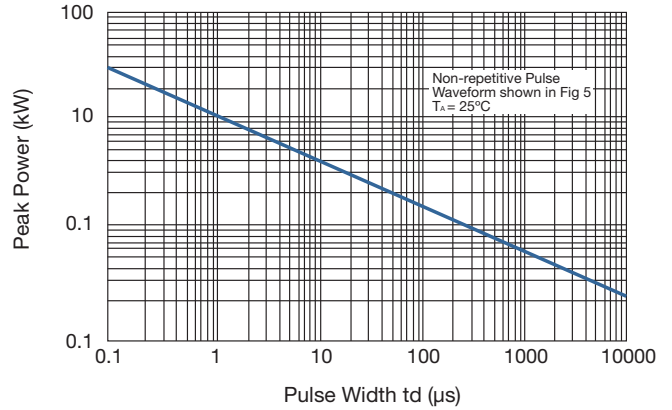
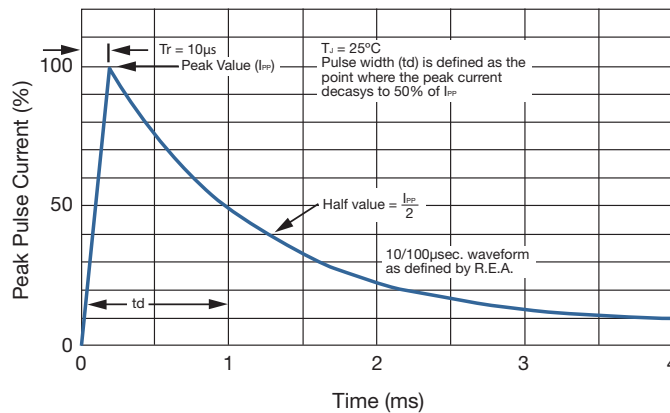


FIG 5. PULSE WAVEFORM



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## For General Purpose Use

### SMCJ SERIES PARAMETERS

| SMBJ Part Number |           | Device Marking Code |     | Working Peak Reverse Voltage<br>$V_{RWM}$ (V) | Breakdown Voltage<br>$V_{BR}@I_T$ |          |            | Maximum Clamping Voltage $V_C$ (V)<br>@ $I_{PP}$ | Maximum Reverse Surge Current<br>@10 x 1000 $\mu$ s | Maximum Reverse Leakage $I_R$ ( $\mu$ A)<br>@ $V_{RWM}$ |
|------------------|-----------|---------------------|-----|---|-----------------------------------|----------|------------|--|---|---|
| UNI-POLAR        | BI-POLAR  | UNI                 | BI  |   | Min. (V)                          | Max. (V) | $I_T$ (mA) |  |   |   |
| SMCJ5.0A         | SMCJ5.0CA | GDE                 | BDE | 5   | 6.4                               | 7        | 10         | 9.2  | 163   | 800   |
| SMCJ6.0A         | SMCJ6.0CA | GDG                 | BDG | 6   | 6.7                               | 7.37     | 10         | 10.3   | 145.6   | 800   |
| SMCJ6.5A         | SMCJ6.5CA | GDK                 | BDK | 6.5   | 7.2                               | 7.98     | 10         | 11.2   | 133.9   | 500   |
| SMCJ7.0A         | SMCJ7.0CA | GDM                 | BDM | 7   | 7.8                               | 8.6      | 10         | 12   | 125   | 200   |
| SMCJ7.5A         | SMCJ7.5CA | GDP                 | BDP | 7.5   | 8.3                               | 9.21     | 1          | 12.9   | 116.3   | 100   |
| SMCJ8.0A         | SMCJ8.0CA | GDR                 | BDR | 8   | 8.9                               | 9.83     | 1          | 13.6   | 110.3   | 50  |
| SMCJ8.5A         | SMCJ8.5CA | GDT                 | BDT | 8.5   | 9.4                               | 10.4     | 1          | 14.4   | 104.2   | 10  |
| SMCJ9.0A         | SMCJ9.0CA | GDV                 | BDV | 9   | 10                                | 11.1     | 1          | 15.4   | 97.4  | 5   |
| SMCJ10A          | SMCJ10CA  | GDX                 | BDX | 10  | 11.1                              | 12.3     | 1          | 17   | 88.2  | 5   |
| SMCJ11A          | SMCJ11CA  | GDZ                 | BDZ | 11  | 12.2                              | 13.5     | 1          | 18.2   | 82.4  | 5   |
| SMCJ12A          | SMCJ12CA  | GEE                 | BEE | 12  | 13.3                              | 14.7     | 1          | 19.9   | 75.4  | 5   |
| SMCJ13A          | SMCJ13CA  | GEG                 | BEG | 13  | 14.4                              | 15.9     | 1          | 21.5   | 69.8  | 5   |
| SMCJ14A          | SMCJ14CA  | GEK                 | BEK | 14  | 15.6                              | 17.2     | 1          | 23.2   | 64.7  | 5   |
| SMCJ15A          | SMCJ15CA  | GEM                 | BEM | 15  | 16.7                              | 18.5     | 1          | 24.4   | 61.5  | 5   |
| SMCJ16A          | SMCJ16CA  | GEP                 | BEP | 16  | 17.8                              | 19.7     | 1          | 26   | 57.7  | 5   |
| SMCJ17A          | SMCJ17CA  | GER                 | BER | 17  | 18.9                              | 20.9     | 1          | 27.6   | 54.3  | 5   |
| SMCJ18A          | SMCJ18CA  | GET                 | BET | 18  | 20                                | 22.1     | 1          | 29.2   | 51.4  | 5   |
| SMCJ19A          | SMCJ19CA  | GEB                 | BEB | 19  | 21.1                              | 23.3     | 1          | 30.8   | 48.7  | 5   |
| SMCJ20A          | SMCJ20CA  | GEV                 | BEV | 20  | 22.2                              | 24.5     | 1          | 32.4   | 46.3  | 5   |
| SMCJ22A          | SMCJ22CA  | GEX                 | BEX | 22  | 24.4                              | 26.9     | 1          | 35.5   | 42.3  | 5   |
| SMCJ24A          | SMCJ24CA  | GEZ                 | BEZ | 24  | 26.7                              | 29.5     | 1          | 38.9   | 38.6  | 5   |
| SMCJ26A          | SMCJ26CA  | GFE                 | BFE | 26  | 28.9                              | 31.9     | 1          | 42.1   | 35.6  | 5   |
| SMCJ28A          | SMCJ28CA  | GFG                 | BFG | 28  | 31.1                              | 34.4     | 1          | 45.4   | 33  | 5   |
| SMCJ30A          | SMCJ30CA  | GFK                 | BFK | 30  | 33.3                              | 36.8     | 1          | 48.4   | 31  | 5   |
| SMCJ33A          | SMCJ33CA  | GFM                 | BFM | 33  | 36.7                              | 40.6     | 1          | 53.3   | 28.1  | 5   |
| SMCJ36A          | SMCJ36CA  | GFP                 | BFP | 36  | 40                                | 44.2     | 1          | 58.1   | 25.8  | 5   |
| SMCJ40A          | SMCJ40CA  | GFR                 | BFR | 40  | 44.4                              | 49.1     | 1          | 64.5   | 23.3  | 5   |
| SMCJ43A          | SMCJ43CA  | GFT                 | BFT | 43  | 47.8                              | 52.8     | 1          | 69.4   | 21.6  | 5   |
| SMCJ45A          | SMCJ45CA  | GFV                 | BFV | 45  | 50                                | 55.3     | 1          | 72.7   | 20.6  | 5   |
| SMCJ48A          | SMCJ48CA  | GFX                 | BFX | 48  | 53.3                              | 58.9     | 1          | 77.4   | 19.4  | 5   |
| SMCJ51A          | SMCJ51CA  | GFZ                 | BFZ | 51  | 56.7                              | 62.7     | 1          | 82.4   | 18.2  | 5   |
| SMCJ54A          | SMCJ54CA  | GGE                 | BGE | 54  | 60                                | 66.3     | 1          | 87.1   | 17.2  | 5   |
| SMCJ58A          | SMCJ58CA  | GGG                 | BGG | 58  | 64.4                              | 71.2     | 1          | 93.6   | 16  | 5   |
| SMCJ60A          | SMCJ60CA  | GGK                 | BGK | 60  | 66.7                              | 73.7     | 1          | 96.8   | 15.5  | 5   |
| SMCJ64A          | SMCJ64CA  | GGM                 | BGM | 64  | 71.1                              | 78.6     | 1          | 103  | 14.6  | 5   |
| SMCJ70A          | SMCJ70CA  | GGP                 | BGP | 70  | 77.8                              | 86       | 1          | 113  | 13.3  | 5   |
| SMCJ75A          | SMCJ75CA  | GGR                 | BGR | 75  | 83.3                              | 92.1     | 1          | 121  | 12.4  | 5   |
| SMCJ78A          | SMCJ78CA  | GGT                 | BGT | 78  | 86.7                              | 95.8     | 1          | 126  | 11.9  | 5   |
| SMCJ80A          | SMCJ80CA  | GGB                 | BGB | 80  | 88.8                              | 97.6     | 1          | 130  | 11.6  | 5   |
| SMCJ85A          | SMCJ85CA  | GGV                 | BGV | 85  | 94.4                              | 104      | 1          | 137  | 10.9  | 5   |
| SMCJ90A          | SMCJ90CA  | GGX                 | BGX | 90  | 100                               | 111      | 1          | 146  | 10.3  | 5   |
| SMCJ100A         | SMCJ100CA | GGZ                 | BGZ | 100   | 111                               | 123      | 1          | 162  | 9.3   | 5   |
| SMCJ110A         | SMCJ110CA | GHE                 | BHE | 110   | 122                               | 135      | 1          | 177  | 8.5   | 5   |
| SMCJ120A         | SMCJ120CA | GHG                 | BHG | 120   | 133                               | 147      | 1          | 193  | 7.8   | 5   |
| SMCJ130A         | SMCJ130CA | GHK                 | BHK | 130   | 144                               | 159      | 1          | 209  | 7.2   | 5   |
| SMCJ140A         | SMCJ140CA | GHB                 | BHB | 140   | 155                               | 171      | 1          | 227  | 6.6   | 5   |
| SMCJ150A         | SMCJ150CA | GHM                 | BHM | 150   | 167                               | 185      | 1          | 243  | 6.2   | 5   |
| SMCJ160A         | SMCJ160CA | GHP                 | BHP | 160   | 178                               | 197      | 1          | 259  | 5.8   | 5   |
| SMCJ170A         | SMCJ170CA | GHR                 | BHR | 170   | 189                               | 209      | 1          | 275  | 5.5   | 5   |
| SMCJ180A         | SMCJ180CA | GHT                 | BHT | 180   | 200                               | 220      | 1          | 292  | 5.1   | 5   |
| SMCJ190A         | SMCJ190CA | GHV                 | BHV | 190   | 211                               | 232      | 1          | 308  | 4.9   | 5   |
| SMCJ200A         | SMCJ200CA | GHW                 | BHW | 200   | 224                               | 247      | 1          | 324  | 4.6   | 5   |
| SMCJ220A         | SMCJ220CA | GHX                 | BHX | 220   | 246                               | 272      | 1          | 356  | 4.2   | 5   |
| SMCJ250A         | SMCJ250CA | GHZ                 | BHZ | 250   | 279                               | 309      | 1          | 405  | 3.7   | 5   |
| SMCJ300A         | SMCJ300CA | GJE                 | BJE | 300   | 335                               | 371      | 1          | 486  | 3.1   | 5   |
| SMCJ350A         | SMCJ350CA | GJG                 | BJG | 350   | 391                               | 432      | 1          | 567  | 2.6   | 5   |
| SMCJ400A         | SMCJ400CA | GJK                 | BJK | 400   | 447                               | 494      | 1          | 648  | 2.3   | 5   |
| SMCJ440A         | SMCJ440CA | GJM                 | BJM | 440   | 492                               | 543      | 1          | 713  | 2.1   | 5   |

NOTES:

1. Suffix "A" denotes 5% tolerance device.
2. Add suffix "CA" after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 10 volts and under, the  $I_R$  limit is double.

# Transient Suppression Diodes

## For General Purpose Use



### SMCJ SERIES RATINGS AND CHARACTERISTICS

FIG 1. PULSE DERATING CURVE

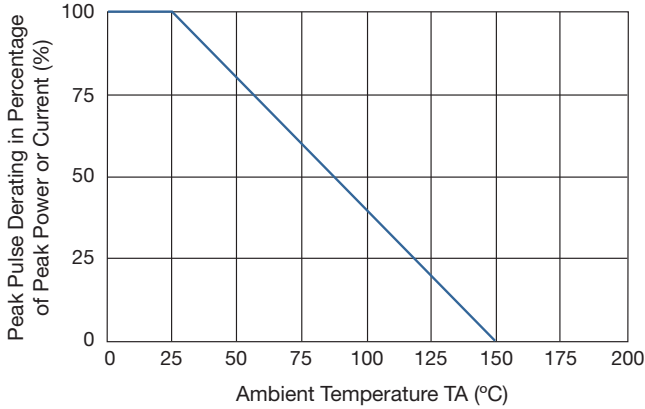


FIG 2. MAXIMUM NON-REPETITIVE

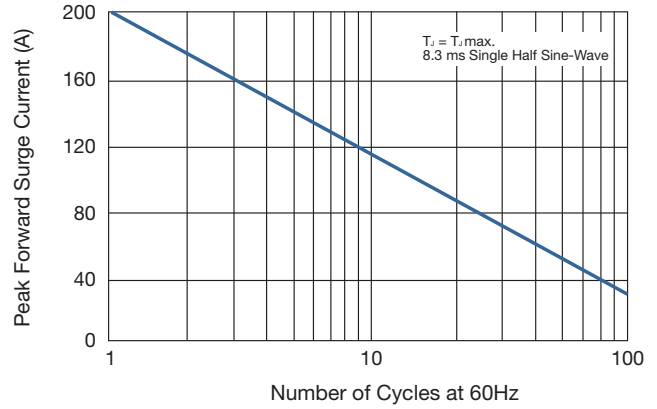


FIG 3. STEADY STATE POWER DERATING CURVE

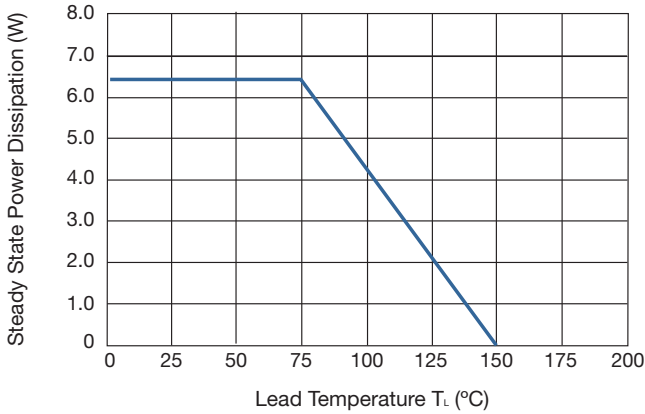


FIG 4. PEAK PULSE POWER RATING CURVE

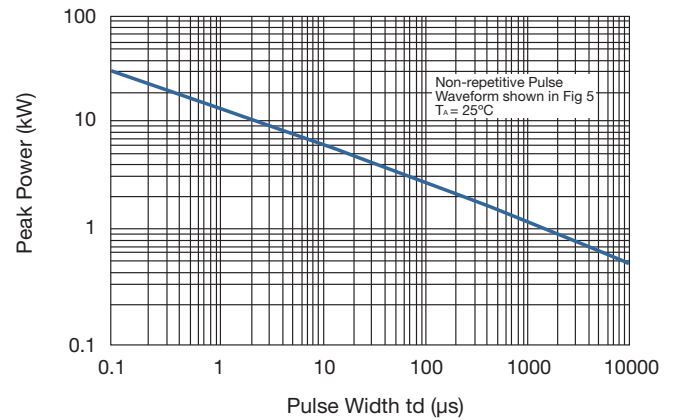
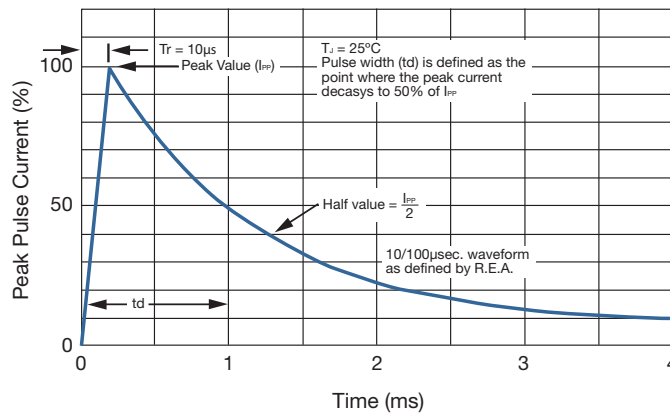


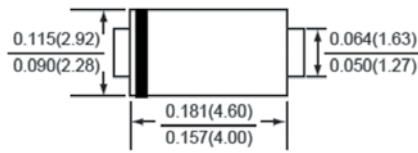
FIG 5. PULSE WAVEFORM



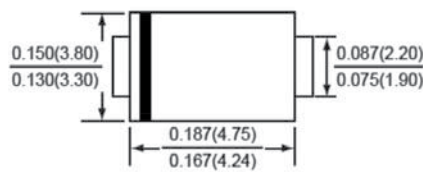
# Transient Suppression Diodes

## For General Purpose Use

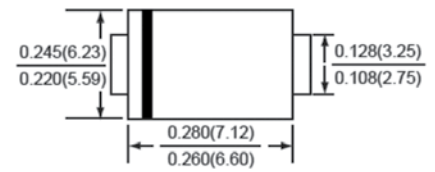
### COMPONENT DIMENSIONS



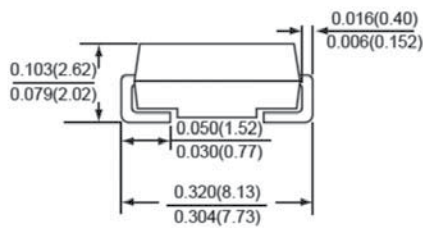
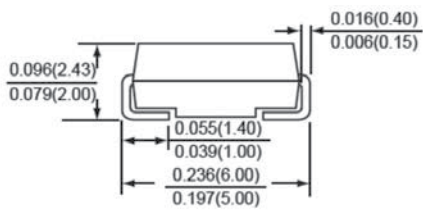
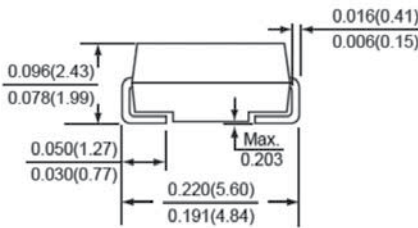
SMA/DO-214AC



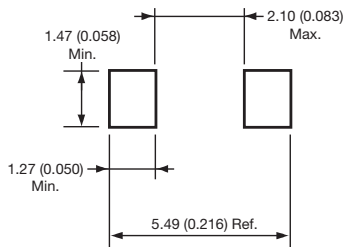
SMB/DO-214AA



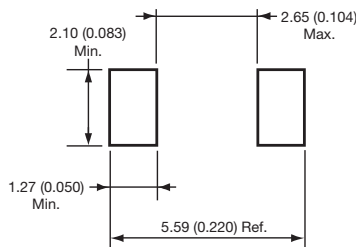
SMC/DO-214AB



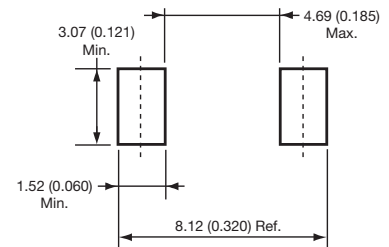
### RECOMMENDED PAD DIMENSIONS



DO-214AC (SMA)



DO-214AA (SMB)



DO-214AB (SMC)

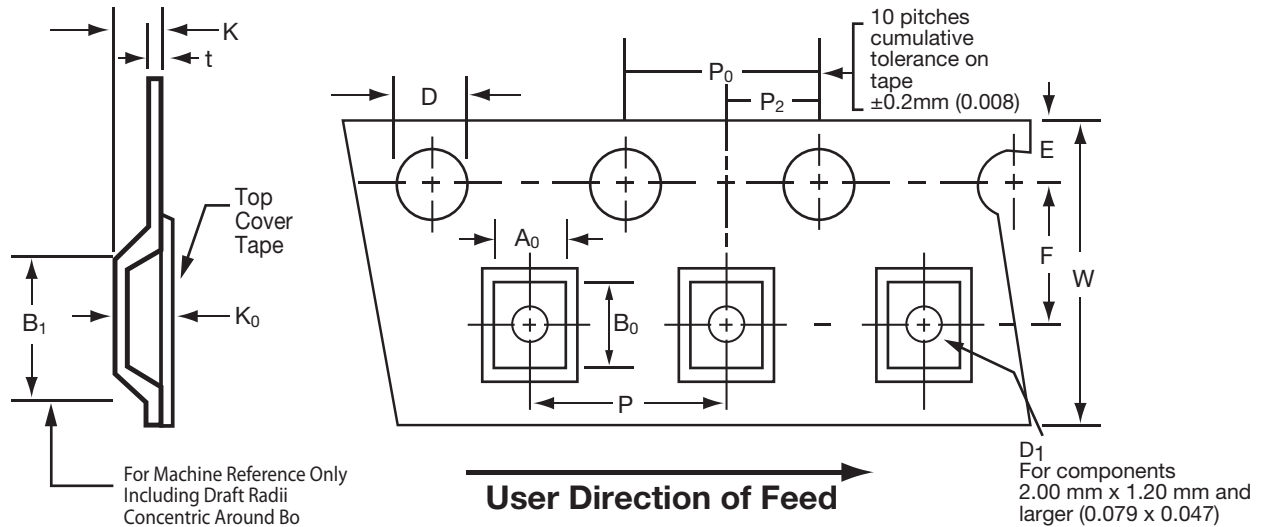


# Transient Suppression Diodes

## For General Purpose Use

### PACKAGING SPECIFICATIONS FOR SMA, SMB, SMC SERIES OR GENERAL PURPOSE TRANSIENT VOLTAGE SUPPRESSION DIODES

#### CARRIER TAPE

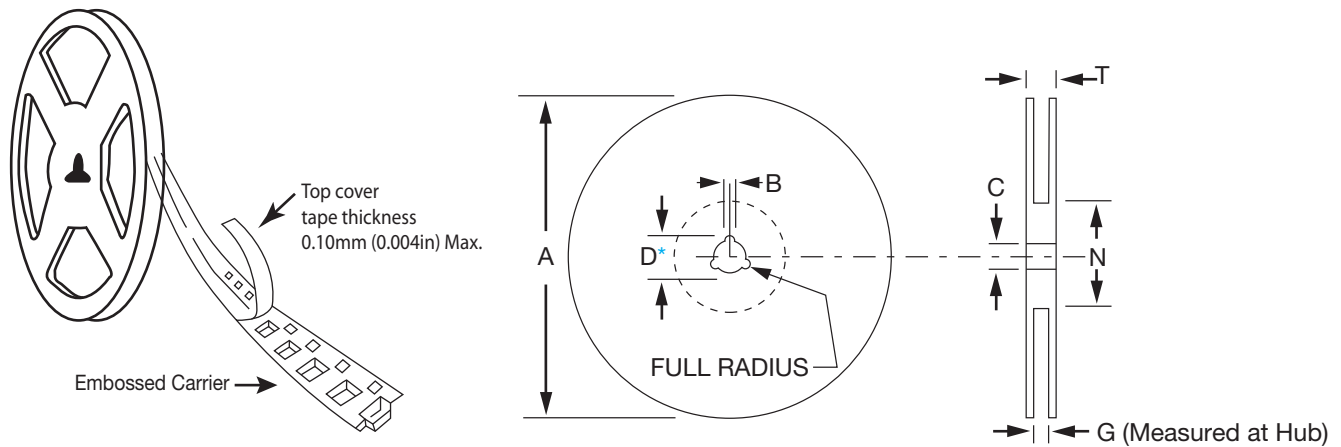


| Symbol   | Specifications |              |              |              |
|----------|----------------|--------------|--------------|--------------|
|          | Unit           | SMA          | SMB          | SMC          |
| W        | mm             | 12.0±0.3     | 12.0±0.3     | 16.0±0.3     |
| D        | mm             | 1.55±0.1-0.0 | 1.55±0.1-0.0 | 1.55±0.1-0.0 |
| E        | mm             | 1.75±0.10    | 1.75±0.10    | 1.75±0.10    |
| P0       | mm             | 4.0±0.10     | 4.0±0.10     | 4.0±0.10     |
| t (Max)  | mm             | 0.400        | 0.400        | 0.400        |
| A0       | mm             | 2.79±0.10    | 3.67±0.10    | 6.05±0.10    |
| B0       | mm             | 5.33±0.10    | 5.69±0.10    | 8.31±0.10    |
| K0       | mm             | 2.36±0.10    | 2.67±0.10    | 2.54±0.10    |
| B1 (Max) | mm             | 8.2          | 8.2          | 12.1         |
| D1 (Min) | mm             | 1.5          | 1.5          | 1.5          |
| F        | mm             | 5.5±0.05     | 5.5±0.05     | 5.5±0.05     |
| K (Max)  | mm             | 4.5          | 4.5          | 4.5          |
| P2       | mm             | 2.0±0.05     | 2.0±0.05     | 2.0±0.05     |
| P        | mm             | 4.0±0.10     | 8.0±0.10     | 8.0±0.10     |

# Transient Suppression Diodes

## For General Purpose Use

### REEL



| Symbol    | Specifications |               |               |               |
|-----------|----------------|---------------|---------------|---------------|
|           | Unit           | SMA           | SMB           | SMC           |
| Tape size | mm             | 12            | 12            | 16            |
| A         | inch           | 13            | 13            | 13            |
| B (max)   | mm             | 1.5           | 1.5           | 1.5           |
| C         | mm             | 13±0.2        | 13±0.2        | 13±0.2        |
| D (max)   | mm             | 20.2          | 20.2          | 20.2          |
| N (min)   | mm             | 50            | 50            | 50            |
| G         | mm             | 12.4 +2.0/0.0 | 12.4 +2.0/0.0 | 16.4 +2.0/0.0 |
| T (max)   | mm             | 18.4          | 18.4          | 22.4          |

### QUANTITIES

| Symbol          | Specifications |      |     |     |
|-----------------|----------------|------|-----|-----|
|                 | Unit           | SMA  | SMB | SMC |
| Qty per reel    | k              | 7.5  | 3   | 3   |
| Weight per reel | kg             | 0.85 | 0.6 | 1.2 |