# Transient Suppression Diodes

## For General Purpose Use

## GENERAL DESCRIPTION

The SMAJ, SMBJ, and SMCJ Series are a poplar 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.

## FEATURES

- Glass passivated chip
- 400W, 600W and 1500W types (10/1000us)
- Low leakage
- Flat clamping
- Very fast response time
- Halogen Free
- ≤1µA leakage for 12V and up
- Lead-Free Terminations

## APPLICATIONS

- Consumer
- Industrial
- Telecom
- Computer

## HOW TO ORDER

| SMAJ | 12 | C | A |
|---|---|---|---|
| **Series** | **Voltage$_{WM}$** | **Polarity** | **Tolerance** |
| SMAJ = 400W<br>SMBJ = 600W<br>SMCJ = 1500W | 5V - 400V | C = Bi-directional<br>= Uni-directional | A = 5% Volage Tolerance |

## MAXIMUM RATINGS

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

NOTES:
1. Non-repetitive current pulse per Fig. 5 and derated above $T_A$ = 25ºC per Fig. 1
2. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

# Transient Suppression Diodes

## For General Purpose Use

### SMAJ SERIES PARAMETERS

| SMAJ Part Number | | Device Marking Code | | Working Peak Reverse Voltage $V_{RWM}$ | Breakdown Voltage $V_{BR}$ @$I_T$ | | | Maximum Clamping Voltage $V_C$ (V) | Maximum Reverse Surge Current | Maximum Reverse Leakage $I_R$ (µA) |
|---|---|---|---|---|---|---|---|---|---|---|
| UNI-POLAR | BI-POLAR | UNI | BI | (V) | Min. (V) | Max. (V) | IT (mA) | @ $I_{PP}$ | @10 x 1000µs | @$V_{RWM}$ |
| 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.

## SMAJ SERIES RATINGS AND CHARACTERISTICS

**FIG 1. PULSE DERATING CURVE**

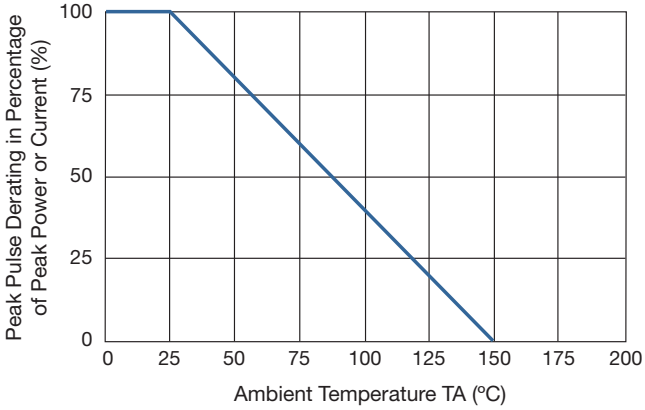



**FIG 2. MAXIMUM NON-REPETITIVE**

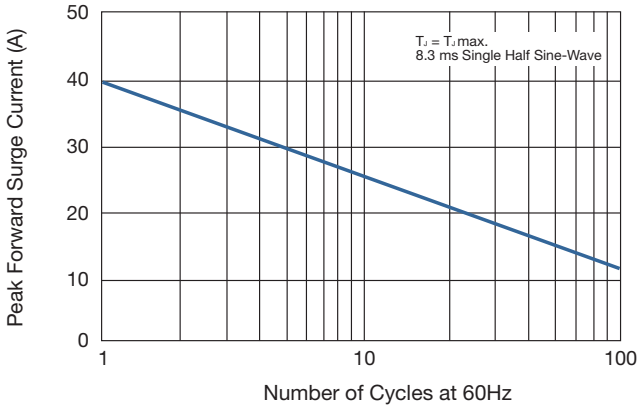



**FIG 3. STEADY STATE POWER DERATING CURVE**

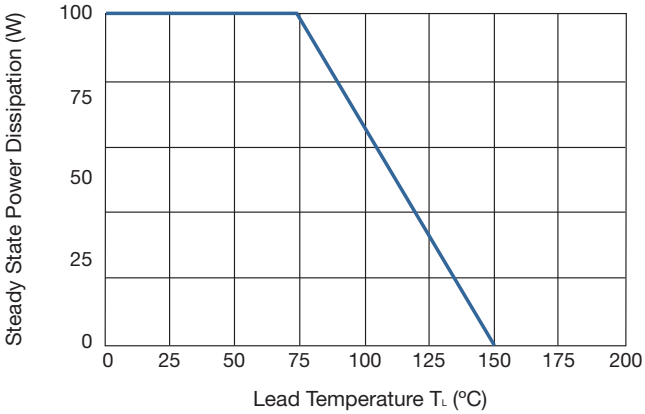



**FIG 4. PEAK PULSE POWER RATING CURVE**

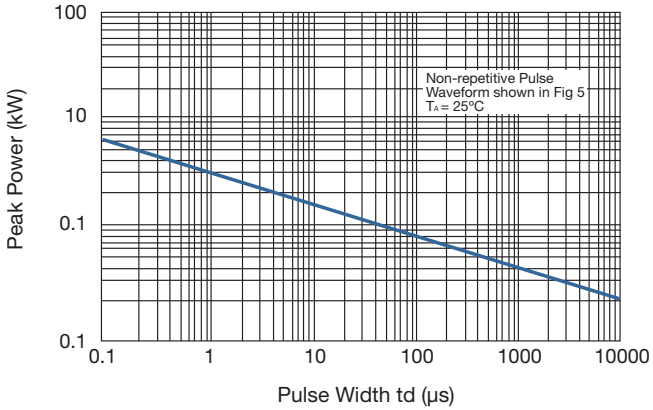
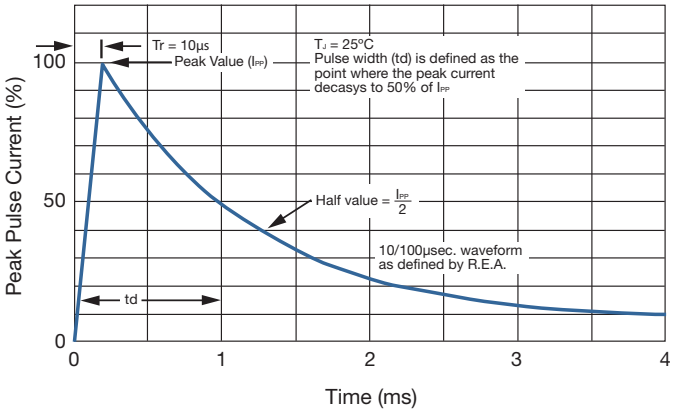



**FIG 5. PULSE WAVEFORM**



### SMBJ SERIES PARAMETERS

| SMBJ Part Number | | Device Marking Code | | Working Peak Reverse Voltage $V_{RWM}$ | Breakdown Voltage $V_{BR}$ @$I_T$ | | | Maximum Clamping Voltage $V_C$ (V) | Maximum Reverse Surge Current | Maximum Reverse Leakage $I_R$ (µA) |
|---|---|---|---|---|---|---|---|---|---|---|
| UNI-POLAR | BI-POLAR | UNI | BI | (V) | Min. (V) | Max. (V) | IT (mA) | @ $I_{PP}$ | @10 x 1000µs | @$V_{RWM}$ |
| SMBJ5.0A | SMBJ5.0CA | KE | AE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 65.22 | 800 |
| SMBJ6.0A | SMBJ6.0CA | KG | AG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 58.25 | 800 |
| SMBJ6.5A | SMBJ6.5CA | KK | AK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 53.57 | 500 |
| SMBJ7.0A | SMBJ7.0CA | KM | AM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 50.00 | 200 |
| SMBJ7.5A | SMBJ7.5CA | KP | AP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 46.51 | 100 |
| SMBJ8.0A | SMBJ8.0CA | KR | AR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 44.12 | 50 |
| SMBJ8.5A | SMBJ8.5CA | KT | AT | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 41.67 | 10 |
| SMBJ9.0A | SMBJ9.0CA | KV | AV | 9.0 | 10.0 | 11.1 | 1 | 15.4 | 38.96 | 1 |
| SMBJ10A | SMBJ10CA | KX | AX | 10 | 11.1 | 12.3 | 1 | 17.0 | 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 | 26.0 | 23.08 | 1 |
| SMBJ17A | SMBJ17CA | LR | BR | 17 | 18.9 | 20.9 | 1 | 27.6 | 21.74 | 1 |
| SMBJ18A | SMBJ18CA | LT | BT | 18 | 20.0 | 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 | 16.90 | 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 | 12.40 | 1 |
| SMBJ33A | SMBJ33CA | MM | CM | 33 | 36.7 | 40.6 | 1 | 53.3 | 11.26 | 1 |
| SMBJ36A | SMBJ36CA | MP | CP | 36 | 40.0 | 44.2 | 1 | 58.1 | 10.33 | 1 |
| SMBJ40A | SMBJ40CA | MR | CR | 40 | 44.4 | 49.1 | 1 | 64.5 | 9.30 | 1 |
| SMBJ43A | SMBJ43CA | MT | CT | 43 | 47.8 | 52.8 | 1 | 69.4 | 8.65 | 1 |
| SMBJ45A | SMBJ45CA | MV | CV | 45 | 50.0 | 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 | 60.0 | 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 | 6.20 | 1 |
| SMBJ64A | SMBJ64CA | NM | DM | 64 | 71.1 | 78.6 | 1 | 103 | 5.83 | 1 |
| SMBJ70A | SMBJ70CA | NP | DP | 70 | 77.8 | 86.0 | 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 | 3.70 | 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.

## SMBJ SERIES RATINGS AND CHARACTERISTICS

**FIG 1. PULSE DERATING CURVE**

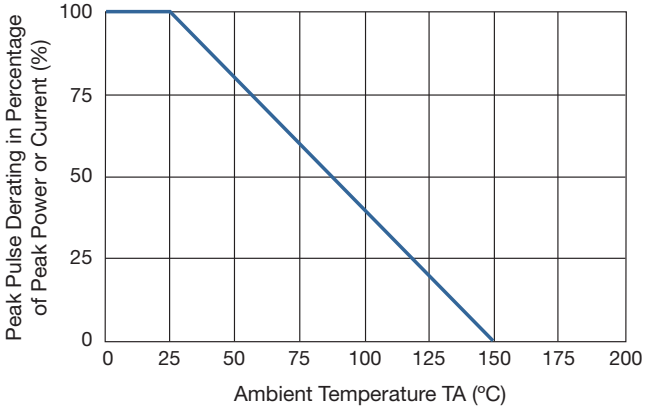



**FIG 2. MAXIMUM NON-REPETITIVE**

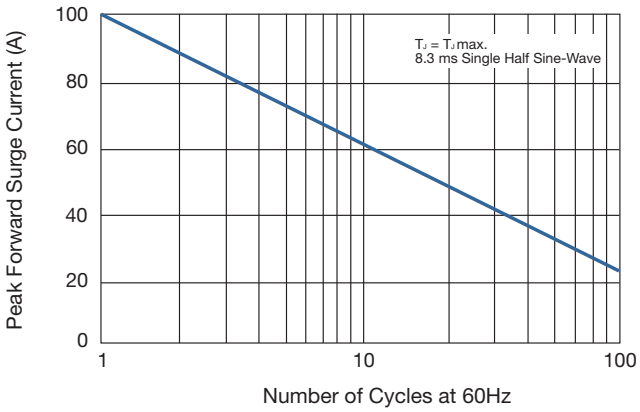



**FIG 3. STEADY STATE POWER DERATING CURVE**

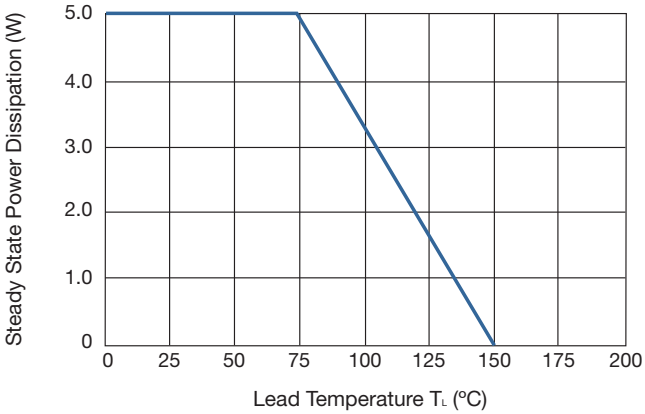



**FIG 4. PEAK PULSE POWER RATING CURVE**

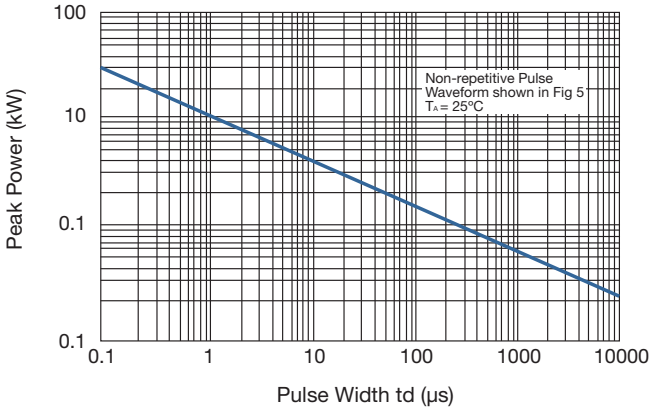
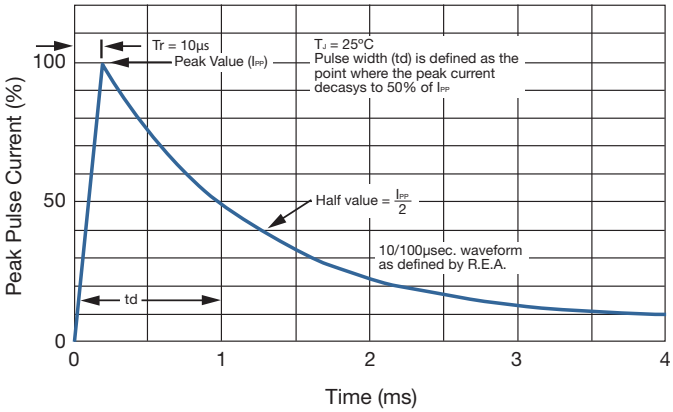



**FIG 5. PULSE WAVEFORM**



### SMCJ SERIES PARAMETERS

| SMCJ Part Number | | Device Marking Code | | Working Peak Reverse Voltage $V_{RWM}$ | Breakdown Voltage $V_{BR}$ @$I_T$ | | | Maximum Clamping Voltage $V_C$ (V) | Maximum Reverse Surge Current | Maximum Reverse Leakage $I_R$ (µA) |
|---|---|---|---|---|---|---|---|---|---|---|
| UNI-POLAR | BI-POLAR | UNI | BI | (V) | Min. (V) | Max. (V) | IT (mA) | @ $I_{PP}$ | @10 x 1000µs | @$V_{RWM}$ |
| SMCJ5.0A | SMCJ5.0CA | GDE | BDE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 163.0 | 1000 |
| SMCJ6.0A | SMCJ6.0CA | GDG | BDG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 145.6 | 1000 |
| SMCJ6.5A | SMCJ6.5CA | GDK | BDK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 133.9 | 500 |
| SMCJ7.0A | SMCJ7.0CA | GDM | BDM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 125.0 | 200 |
| SMCJ7.5A | SMCJ7.5CA | GDP | BDP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 116.3 | 100 |
| SMCJ8.0A | SMCJ8.0CA | GDR | BDR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 110.3 | 50 |
| SMCJ8.5A | SMCJ8.5CA | GDT | BDT | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 104.2 | 20 |
| SMCJ9.0A | SMCJ9.0CA | GDV | BDV | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 97.4 | 10 |
| SMCJ10A | SMCJ10CA | GDX | BDX | 10 | 11.10 | 12.30 | 1 | 17.0 | 88.2 | 1 |
| SMCJ11A | SMCJ11CA | GDZ | BDZ | 11 | 12.20 | 13.50 | 1 | 18.2 | 82.4 | 1 |
| SMCJ12A | SMCJ12CA | GEE | BEE | 12 | 13.30 | 14.70 | 1 | 19.9 | 75.4 | 1 |
| SMCJ13A | SMCJ13CA | GEG | BEG | 13 | 14.40 | 15.90 | 1 | 21.5 | 69.8 | 1 |
| SMCJ14A | SMCJ14CA | GEK | BEK | 14 | 15.60 | 17.20 | 1 | 23.2 | 64.7 | 1 |
| SMCJ15A | SMCJ15CA | GEM | BEM | 15 | 16.70 | 18.50 | 1 | 24.4 | 61.5 | 1 |
| SMCJ16A | SMCJ16CA | GEP | BEP | 16 | 17.80 | 19.70 | 1 | 26.0 | 57.7 | 1 |
| SMCJ17A | SMCJ17CA | GER | BER | 17 | 18.90 | 20.90 | 1 | 27.6 | 54.3 | 1 |
| SMCJ18A | SMCJ18CA | GET | BET | 18 | 20.00 | 22.10 | 1 | 29.2 | 51.4 | 1 |
| SMCJ19A | SMCJ19CA | GEB | BEB | 19 | 21.10 | 23.30 | 1 | 30.8 | 48.7 | 1 |
| SMCJ20A | SMCJ20CA | GEV | BEV | 20 | 22.20 | 24.50 | 1 | 32.4 | 46.3 | 1 |
| SMCJ22A | SMCJ22CA | GEX | BEX | 22 | 24.40 | 26.90 | 1 | 35.5 | 42.3 | 1 |
| SMCJ24A | SMCJ24CA | GEZ | BEZ | 24 | 26.70 | 29.50 | 1 | 38.9 | 38.6 | 1 |
| SMCJ26A | SMCJ26CA | GFE | BFE | 26 | 28.90 | 31.90 | 1 | 42.1 | 35.6 | 1 |
| SMCJ28A | SMCJ28CA | GFG | BFG | 28 | 31.10 | 34.40 | 1 | 45.4 | 33.0 | 1 |
| SMCJ30A | SMCJ30CA | GFK | BFK | 30 | 33.30 | 36.80 | 1 | 48.4 | 31.0 | 1 |
| SMCJ33A | SMCJ33CA | GFM | BFM | 33 | 36.70 | 40.60 | 1 | 53.3 | 28.1 | 1 |
| SMCJ36A | SMCJ36CA | GFP | BFP | 36 | 40.00 | 44.20 | 1 | 58.1 | 25.8 | 1 |
| SMCJ40A | SMCJ40CA | GFR | BFR | 40 | 44.40 | 49.10 | 1 | 64.5 | 23.3 | 1 |
| SMCJ43A | SMCJ43CA | GFT | BFT | 43 | 47.80 | 52.80 | 1 | 69.4 | 21.6 | 1 |
| SMCJ45A | SMCJ45CA | GFV | BFV | 45 | 50.00 | 55.30 | 1 | 72.7 | 20.6 | 1 |
| SMCJ48A | SMCJ48CA | GFX | BFX | 48 | 53.30 | 58.90 | 1 | 77.4 | 19.4 | 1 |
| SMCJ51A | SMCJ51CA | GFZ | BFZ | 51 | 56.70 | 62.70 | 1 | 82.4 | 18.2 | 1 |
| SMCJ54A | SMCJ54CA | GGE | BGE | 54 | 60.00 | 66.30 | 1 | 87.1 | 17.2 | 1 |
| SMCJ58A | SMCJ58CA | GGG | BGG | 58 | 64.40 | 71.20 | 1 | 93.6 | 16.0 | 1 |
| SMCJ60A | SMCJ60CA | GGK | BGK | 60 | 66.70 | 73.70 | 1 | 96.8 | 15.5 | 5 |
| SMCJ64A | SMCJ64CA | GGM | BGM | 64 | 71.10 | 78.60 | 1 | 103 | 14.6 | 1 |
| SMCJ70A | SMCJ70CA | GGP | BGP | 70 | 77.80 | 86.00 | 1 | 113 | 13.3 | 1 |
| SMCJ75A | SMCJ75CA | GGR | BGR | 75 | 83.30 | 92.10 | 1 | 121 | 12.4 | 1 |
| SMCJ78A | SMCJ78CA | GGT | BGT | 78 | 86.70 | 95.80 | 1 | 126 | 11.9 | 1 |
| SMCJ80A | SMCJ80CA | GGB | BGB | 80 | 88.80 | 97.60 | 1 | 130 | 11.6 | 1 |
| SMCJ85A | SMCJ85CA | GGV | BGV | 85 | 94.40 | 104 | 1 | 137 | 10.9 | 1 |
| SMCJ90A | SMCJ90CA | GGX | BGX | 90 | 100 | 111 | 1 | 146 | 10.3 | 1 |
| SMCJ100A | SMCJ100CA | GGZ | BGZ | 100 | 111 | 123 | 1 | 162 | 9.3 | 1 |
| SMCJ110A | SMCJ110CA | GHE | BHE | 110 | 122 | 135 | 1 | 177 | 8.5 | 1 |
| SMCJ120A | SMCJ120CA | GHG | BHG | 120 | 133 | 147 | 1 | 193 | 7.8 | 1 |
| SMCJ130A | SMCJ130CA | GHK | BHK | 130 | 144 | 159 | 1 | 209 | 7.2 | 1 |
| SMCJ140A | SMCJ140CA | GHB | BHB | 140 | 155 | 171 | 1 | 227 | 6.6 | 1 |
| SMCJ150A | SMCJ150CA | GHM | BHM | 150 | 167 | 185 | 1 | 243 | 6.2 | 1 |
| SMCJ160A | SMCJ160CA | GHP | BHP | 160 | 178 | 197 | 1 | 259 | 5.8 | 1 |
| SMCJ170A | SMCJ170CA | GHR | BHR | 170 | 189 | 209 | 1 | 275 | 5.5 | 1 |
| SMCJ180A | SMCJ180CA | GHT | BHT | 180 | 200 | 220 | 1 | 291 | 5.1 | 1 |
| SMCJ190A | SMCJ190CA | GHV | BHV | 190 | 211 | 232 | 1 | 308 | 4.9 | 1 |
| SMCJ200A | SMCJ200CA | GHW | BHW | 200 | 224 | 247 | 1 | 324 | 4.6 | 1 |
| SMCJ220A | SMCJ220CA | GHX | BHX | 220 | 246 | 272 | 1 | 356 | 4.2 | 1 |
| SMCJ250A | SMCJ250CA | GHZ | BHZ | 250 | 279 | 309 | 1 | 405 | 3.7 | 1 |
| SMCJ300A | SMCJ300CA | GJE | BJE | 300 | 335 | 371 | 1 | 486 | 3.1 | 1 |
| SMCJ350A | SMCJ350CA | GJG | BJG | 350 | 391 | 432 | 1 | 567 | 2.6 | 1 |
| SMCJ400A | SMCJ400CA | GJK | BJK | 400 | 447 | 494 | 1 | 648 | 2.3 | 1 |
| SMCJ440A | SMCJ440CA | GJM | BJM | 440 | 492 | 543 | 1 | 713 | 2.1 | 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.

## SMCJ SERIES RATINGS AND CHARACTERISTICS

**FIG 1. PULSE DERATING CURVE**

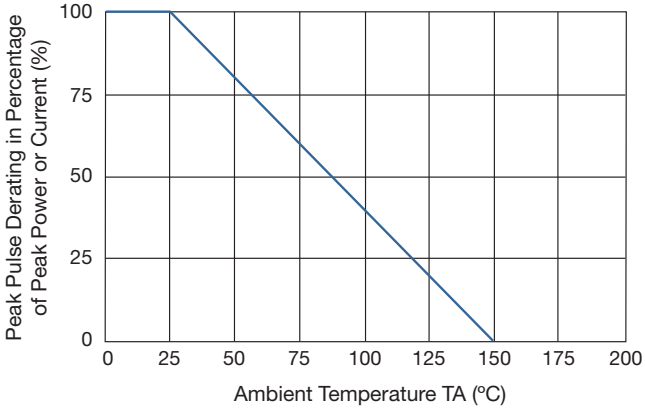



**FIG 2. MAXIMUM NON-REPETITIVE**

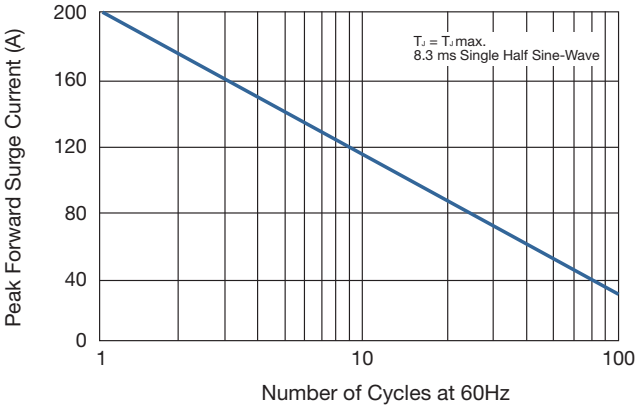



**FIG 3. STEADY STATE POWER DERATING CURVE**

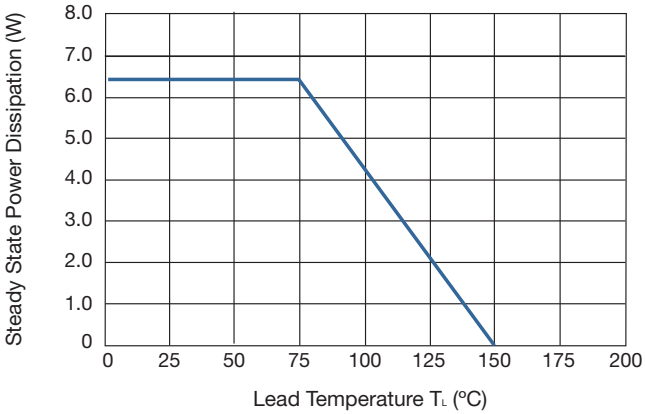



**FIG 4. PEAK PULSE POWER RATING CURVE**

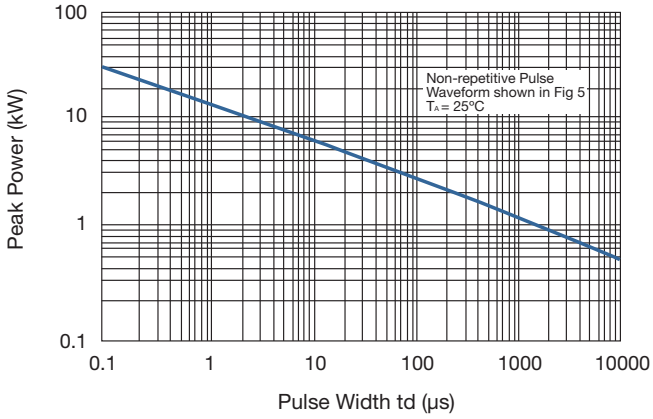
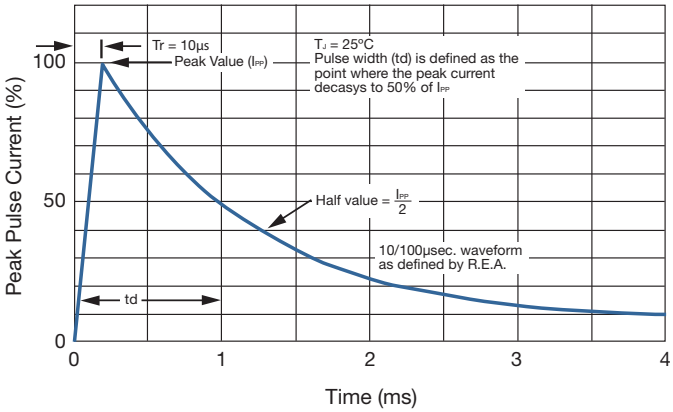
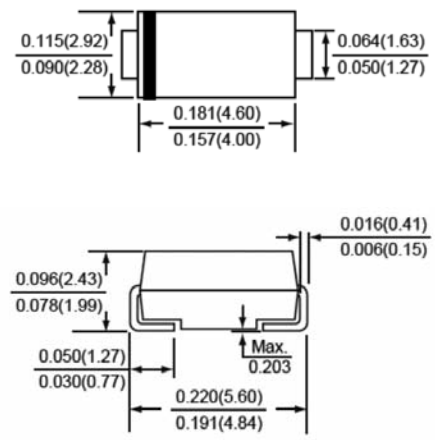


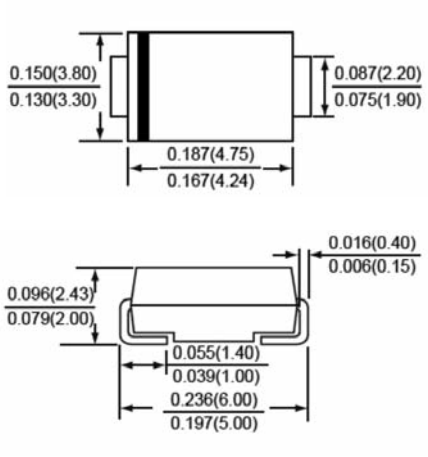

**FIG 5. PULSE WAVEFORM**



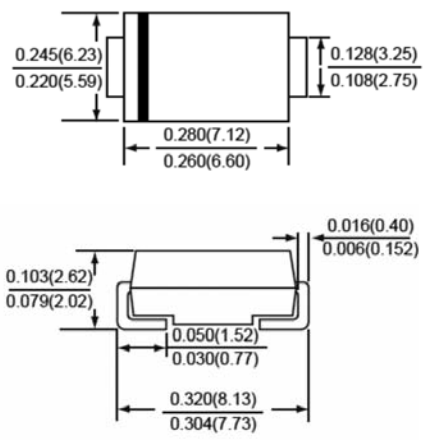
## COMPONENT DIMENSIONS




**SMA/DO-214AC**

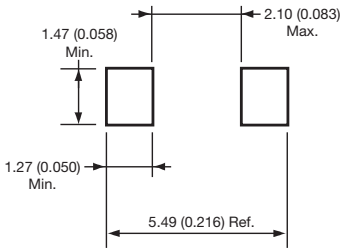



**SMA/DO-214AA**

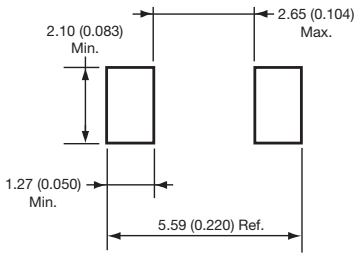



**SMA/DO-214AB**

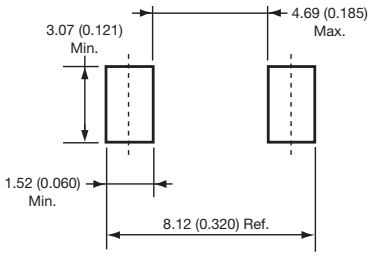
## RECOMMENDED PAD DIMENSIONS




**DO-214AC (SMA)**



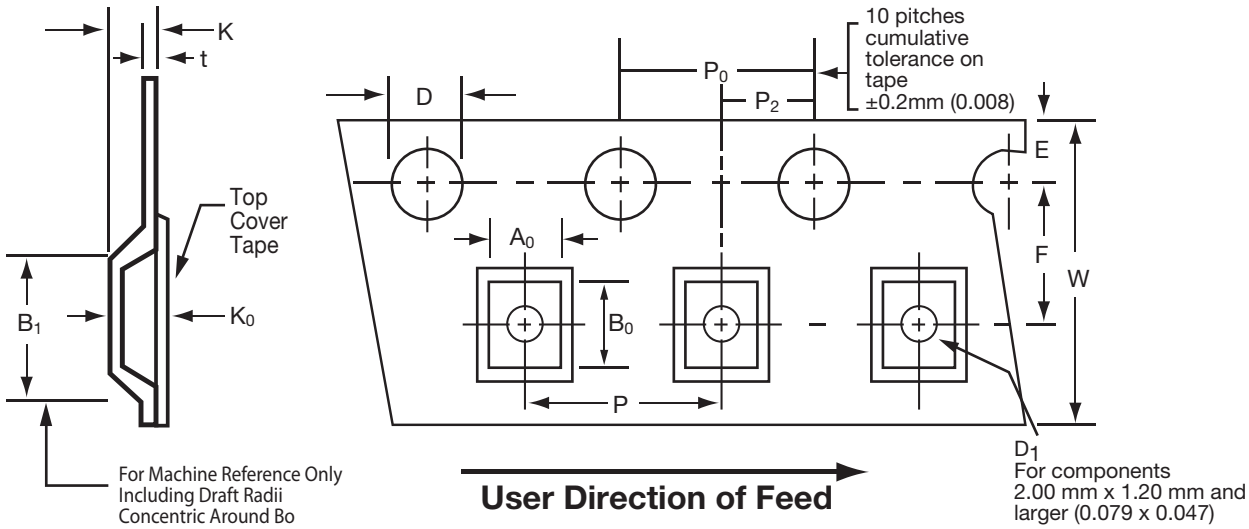

**DO-214AA (SMB)**




**DO-214AB (SMC)**

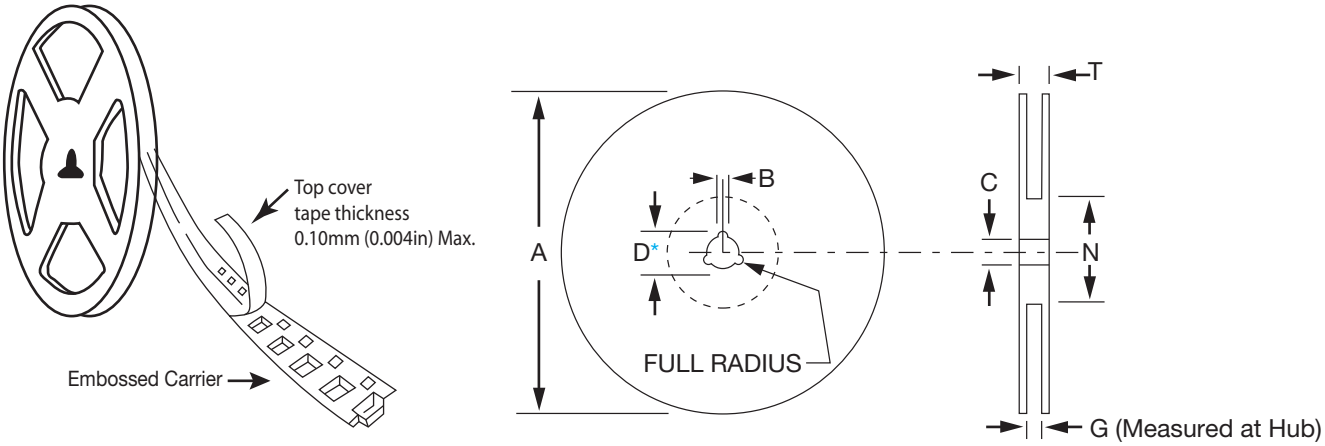
## PACKAGING SPECIFICATIONS FOR SMA, SMB, SMC SERIES OR GENERAL PURPOSE TRANSIENT VOLTAGE SUPPRESSION DIODES

### 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 | 7.5±0.05 |
| K (Max) | mm | 4.5 | 4.5 | 3.29 |
| 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 |

## 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 |