



# SMAJ Transient Voltage Suppressor Diode Series

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## Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Unidirectional Device |         | Bidirectional Device |         | Breakdown Voltage $V_{BR}$ (Volts) |      |              | Working Peak Reverse Voltage | Maximum Reverse Leakage @ $V_{RWM}$ | Maximum Reverse Voltage @ $I_{RSM}$ | Maximum Reverse Surge Current |
|-----------------------|---------|----------------------|---------|------------------------------------|------|--------------|------------------------------|-------------------------------------|-------------------------------------|-------------------------------|
| Part No.              | Marking | Part No.             | Marking | Min.                               | Max. | @ $I_T$ (mA) | $V_{RWM}$ (V)                | $I_R$ ( $\mu\text{A}$ )             | $V_{RSM}$ (V)                       | $I_{RSM}$ (A)                 |
| SMAJ5.0A              | HE      | SMAJ5.0CA            | TE      | 6.40                               | 7.00 | 10           | 5.0                          | 800                                 | 9.2                                 | 43.5                          |
| SMAJ6.0A              | HG      | SMAJ6.0CA            | TG      | 6.67                               | 7.37 | 10           | 6.0                          | 800                                 | 10.3                                | 38.8                          |
| SMAJ6.5A              | HK      | SMAJ6.5CA            | TK      | 7.22                               | 7.98 | 10           | 6.5                          | 500                                 | 11.2                                | 35.7                          |
| SMAJ7.0A              | HM      | SMAJ7.0CA            | TM      | 7.78                               | 8.60 | 10           | 7.0                          | 200                                 | 12.0                                | 33.3                          |
| SMAJ7.5A              | HP      | SMAJ7.5CA            | TP      | 8.33                               | 9.21 | 1.0          | 7.5                          | 100                                 | 12.9                                | 31.0                          |
| SMAJ8.0A              | HR      | SMAJ8.0CA            | TR      | 8.89                               | 9.83 | 1.0          | 8.0                          | 50                                  | 13.6                                | 29.4                          |
| SMAJ8.5A              | HT      | SMAJ8.5CA            | TT      | 9.44                               | 10.4 | 1.0          | 8.5                          | 20                                  | 14.4                                | 27.8                          |
| SMAJ9.0A              | HV      | SMAJ9.0CA            | TV      | 10.0                               | 11.1 | 1.0          | 9.0                          | 10                                  | 15.4                                | 26.0                          |
| SMAJ10A               | HX      | SMAJ10CA             | TX      | 11.1                               | 12.3 | 1.0          | 10                           | 5                                   | 17.0                                | 23.5                          |
| SMAJ11A               | HZ      | SMAJ11CA             | TZ      | 12.2                               | 13.5 | 1.0          | 11                           | 1.0                                 | 18.2                                | 22.0                          |
| SMAJ12A               | IE      | SMAJ12CA             | UE      | 13.3                               | 14.7 | 1.0          | 12                           | 1.0                                 | 19.9                                | 20.1                          |
| SMAJ13A               | IG      | SMAJ13CA             | UG      | 14.4                               | 15.9 | 1.0          | 13                           | 1.0                                 | 21.5                                | 18.6                          |
| SMAJ14A               | IK      | SMAJ14CA             | UK      | 15.6                               | 17.2 | 1.0          | 14                           | 1.0                                 | 23.2                                | 17.2                          |
| SMAJ15A               | IM      | SMAJ15CA             | UM      | 16.7                               | 18.5 | 1.0          | 15                           | 1.0                                 | 24.4                                | 16.4                          |
| SMAJ16A               | IP      | SMAJ16CA             | UP      | 17.8                               | 19.7 | 1.0          | 16                           | 1.0                                 | 26.0                                | 15.3                          |
| SMAJ17A               | IR      | SMAJ17CA             | UR      | 18.9                               | 20.9 | 1.0          | 17                           | 1.0                                 | 27.6                                | 14.5                          |
| SMAJ18A               | IT      | SMAJ18CA             | UT      | 20.0                               | 22.1 | 1.0          | 18                           | 1.0                                 | 29.2                                | 13.7                          |
| SMAJ20A               | IV      | SMAJ20CA             | UV      | 22.2                               | 24.5 | 1.0          | 20                           | 1.0                                 | 32.4                                | 12.3                          |
| SMAJ22A               | IX      | SMAJ22CA             | UX      | 24.4                               | 26.9 | 1.0          | 22                           | 1.0                                 | 35.5                                | 11.3                          |
| SMAJ24A               | IZ      | SMAJ24CA             | UZ      | 26.7                               | 29.5 | 1.0          | 24                           | 1.0                                 | 38.9                                | 10.3                          |
| SMAJ26A               | JE      | SMAJ26CA             | VE      | 28.9                               | 31.9 | 1.0          | 26                           | 1.0                                 | 42.1                                | 9.5                           |
| SMAJ28A               | JG      | SMAJ28CA             | VG      | 31.1                               | 34.4 | 1.0          | 28                           | 1.0                                 | 45.4                                | 8.8                           |
| SMAJ30A               | JK      | SMAJ30CA             | VK      | 33.3                               | 36.8 | 1.0          | 30                           | 1.0                                 | 48.4                                | 8.3                           |
| SMAJ33A               | JM      | SMAJ33CA             | VM      | 36.7                               | 40.6 | 1.0          | 33                           | 1.0                                 | 53.3                                | 7.5                           |
| SMAJ36A               | JP      | SMAJ36CA             | VP      | 40                                 | 44.2 | 1.0          | 36                           | 1.0                                 | 58.1                                | 6.9                           |
| SMAJ40A               | JR      | SMAJ40CA             | VR      | 44.4                               | 49.1 | 1.0          | 40                           | 1.0                                 | 64.5                                | 6.2                           |
| SMAJ43A               | JT      | SMAJ43CA             | VT      | 47.8                               | 52.8 | 1.0          | 43                           | 1.0                                 | 69.4                                | 5.8                           |
| SMAJ45A               | JV      | SMAJ45CA             | VV      | 50                                 | 55.3 | 1.0          | 45                           | 1.0                                 | 72.7                                | 5.5                           |
| SMAJ48A               | JX      | SMAJ48CA             | VX      | 53.3                               | 58.9 | 1.0          | 48                           | 1.0                                 | 77.4                                | 5.2                           |
| SMAJ51A               | JZ      | SMAJ51CA             | VZ      | 56.7                               | 62.7 | 1.0          | 51                           | 1.0                                 | 82.4                                | 4.9                           |
| SMAJ54A               | RE      | SMAJ54CA             | WE      | 60                                 | 66.3 | 1.0          | 54                           | 1.0                                 | 87.1                                | 4.6                           |
| SMAJ58A               | RG      | SMAJ58CA             | WG      | 64.4                               | 71.2 | 1.0          | 58                           | 1.0                                 | 93.6                                | 4.3                           |
| SMAJ60A               | RK      | SMAJ60CA             | WK      | 66.7                               | 73.7 | 1.0          | 60                           | 1.0                                 | 96.8                                | 4.1                           |
| SMAJ64A               | RM      | SMAJ64CA             | WM      | 71.1                               | 78.6 | 1.0          | 64                           | 1.0                                 | 103                                 | 3.9                           |
| SMAJ70A               | RP      | SMAJ70CA             | WP      | 77.8                               | 86.0 | 1.0          | 70                           | 1.0                                 | 113                                 | 3.5                           |
| SMAJ75A               | RR      | SMAJ75CA             | WR      | 83.3                               | 92.1 | 1.0          | 75                           | 1.0                                 | 121                                 | 3.3                           |
| SMAJ78A               | RT      | SMAJ78CA             | WT      | 86.7                               | 95.8 | 1.0          | 78                           | 1.0                                 | 126                                 | 3.2                           |
| SMAJ85A               | RV      | SMAJ85CA             | VV      | 94.4                               | 104  | 1.0          | 85                           | 1.0                                 | 137                                 | 2.9                           |
| SMAJ90A               | RX      | SMAJ90CA             | WX      | 100                                | 111  | 1.0          | 90                           | 1.0                                 | 146                                 | 2.7                           |
| SMAJ100A              | RZ      | SMAJ100CA            | WZ      | 111                                | 123  | 1.0          | 100                          | 1.0                                 | 162                                 | 2.5                           |
| SMAJ110A              | SE      | SMAJ110CA            | XE      | 122                                | 135  | 1.0          | 110                          | 1.0                                 | 177                                 | 2.3                           |
| SMAJ120A              | SG      | SMAJ120CA            | XG      | 133                                | 147  | 1.0          | 120                          | 1.0                                 | 193                                 | 2.1                           |
| SMAJ130A              | SK      | SMAJ130CA            | XK      | 144                                | 159  | 1.0          | 130                          | 1.0                                 | 209                                 | 1.9                           |
| SMAJ150A              | SM      | SMAJ150CA            | XM      | 167                                | 185  | 1.0          | 150                          | 1.0                                 | 243                                 | 1.6                           |
| SMAJ160A              | SP      | SMAJ160CA            | XP      | 178                                | 197  | 1.0          | 160                          | 1.0                                 | 259                                 | 1.5                           |
| SMAJ170A              | SR      | SMAJ170CA            | XR      | 189                                | 209  | 1.0          | 170                          | 1.0                                 | 275                                 | 1.5                           |
| SMAJ180A              | ST      | SMAJ180CA            | XT      | 201                                | 222  | 1.0          | 180                          | 1.0                                 | 292                                 | 1.4                           |
| SMAJ200A              | SV      | SMAJ200CA            | XV      | 224                                | 247  | 1.0          | 200                          | 1.0                                 | 324                                 | 1.2                           |
| SMAJ220A              | SX      | SMAJ220CA            | XX      | 246                                | 272  | 1.0          | 220                          | 1.0                                 | 356                                 | 1.1                           |
| SMAJ250A              | SZ      | SMAJ250CA            | XZ      | 279                                | 309  | 1.0          | 250                          | 1.0                                 | 405                                 | 1.0                           |
| SMAJ300A              | FE      | SMAJ300CA            | GE      | 335                                | 371  | 1.0          | 300                          | 1.0                                 | 486                                 | 0.8                           |
| SMAJ350A              | FG      | SMAJ350CA            | GG      | 391                                | 432  | 1.0          | 350                          | 1.0                                 | 567                                 | 0.7                           |
| SMAJ400A              | FK      | SMAJ400CA            | GK      | 447                                | 494  | 1.0          | 400                          | 1.0                                 | 648                                 | 0.6                           |
| SMAJ434A              | 434U    | SMAJ434CA            | 434D    | 485                                | 535  | 1.0          | 434                          | 1.0                                 | 698                                 | 0.6                           |
| SMAJ440A              | FM      | SMAJ440CA            | GM      | 492                                | 543  | 1.0          | 440                          | 1.0                                 | 713                                 | 0.6                           |
| SMAJ495A              | 495U    | SMAJ495CA            | 495D    | 522                                | 578  | 1.0          | 495                          | 1.0                                 | 760                                 | 0.5                           |

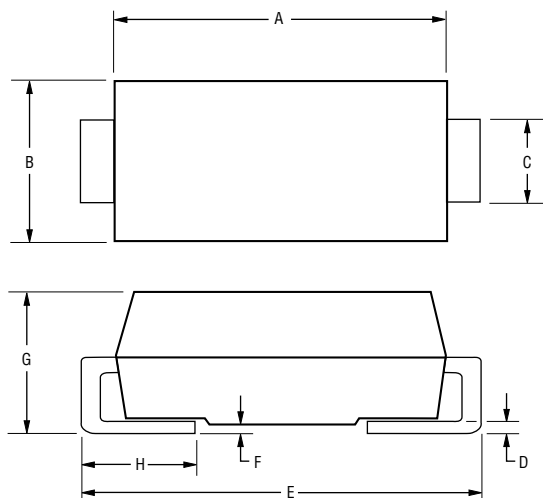
Notes: 1. Suffix 'A' denotes a 5 % tolerance unidirectional device. 3. For bidirectional devices with a  $V_R$  of 10 volts or less, the  $I_R$  limit is double.  
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

Specifications are subject to change without notice.  
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
Users should verify actual device performance in their specific applications.

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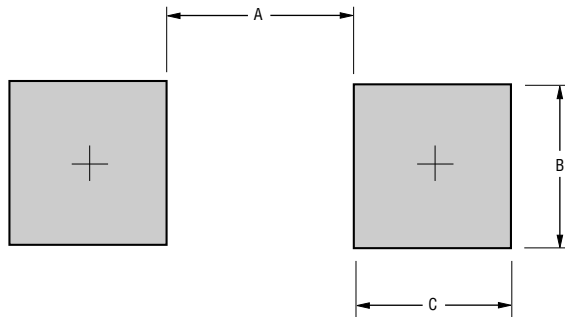
## Product Dimensions



| Dimension | SMA (DO-214AC)                         |
|-----------|----------------------------------------|
| A         | $\frac{3.99 - 4.57}{(0.157 - 0.180)}$  |
| B         | $\frac{2.29 - 2.92}{(0.090 - 0.115)}$  |
| C         | $\frac{1.25 - 1.65}{(0.049 - 0.065)}$  |
| D         | $\frac{0.15 - 0.31}{(0.006 - 0.112)}$  |
| E         | $\frac{4.83 - 5.59}{(0.190 - 0.220)}$  |
| F         | $\frac{0.05 - 0.203}{(0.002 - 0.008)}$ |
| G         | $\frac{1.98 - 2.62}{(0.078 - 0.103)}$  |
| H         | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$  |

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Recommended Footprint



| Dimension | SMA (DO-214AC)         |
|-----------|------------------------|
| A (Max.)  | $\frac{2.70}{(0.106)}$ |
| B (Min.)  | $\frac{2.10}{(0.083)}$ |
| C (Min.)  | $\frac{1.27}{(0.050)}$ |

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Physical Specifications

Case .....Molded plastic per UL Class 94V-0  
Polarity..... Cathode band indicates unidirectional device  
No cathode band indicates bidirectional device  
Weight .....0.064 grams

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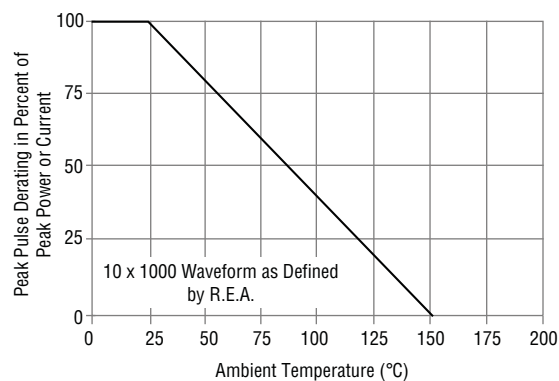
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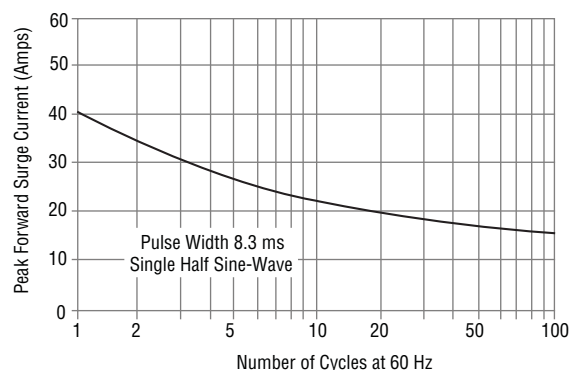
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## Rating & Characteristic Curves

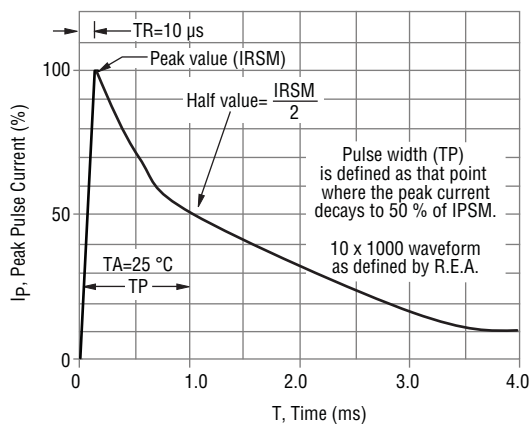
### Pulse Derating Curve



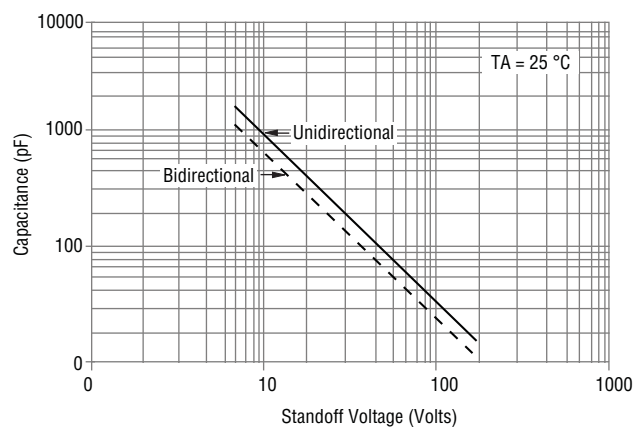
### Maximum Non-Repetitive Surge Current



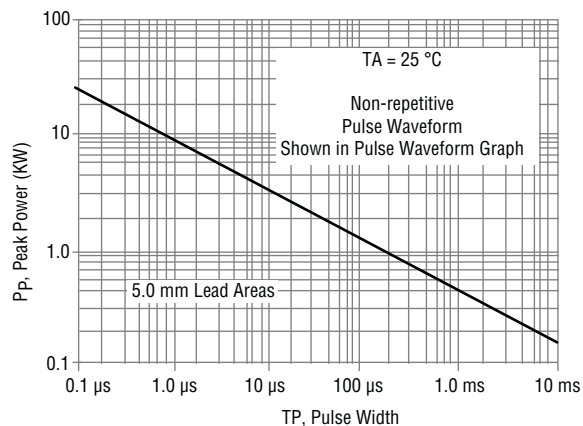
### Pulse Waveform



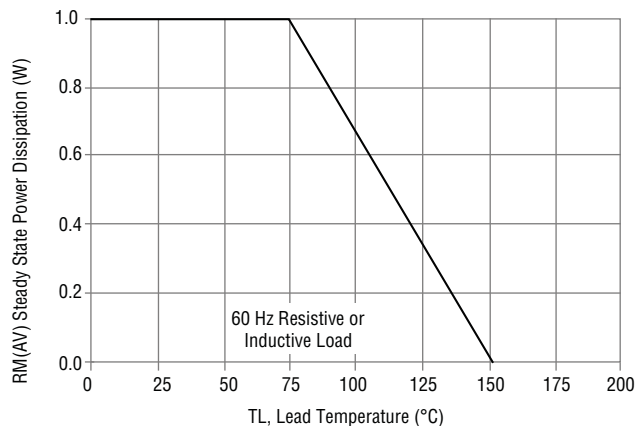
### Typical Junction Capacitance



### Pulse Rating Curve



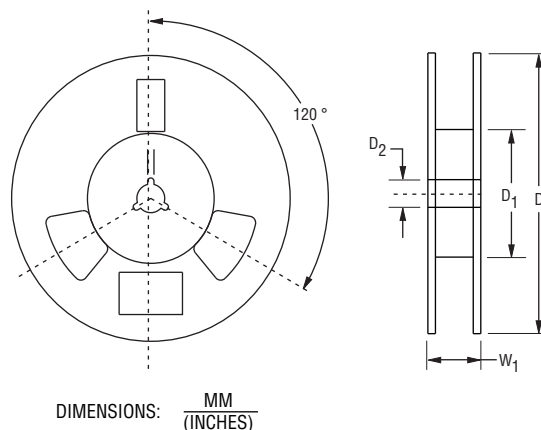
### Steady State Power Derating Curve



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The product will be dispensed in tape and reel format (see diagram below).



Devices are packed in accordance with EIA 481 standard specifications shown here.

| Item                   | Symbol         | SMA (DO-214AC)                             |
|------------------------|----------------|--------------------------------------------|
| Carrier Width          | A              | $\frac{2.90 \pm 0.20}{(0.114 \pm 0.008)}$  |
| Carrier Length         | B              | $\frac{5.50 \pm 0.20}{(0.217 \pm 0.008)}$  |
| Carrier Depth          | C              | $\frac{2.26 \pm 0.20}{(0.089 \pm 0.008)}$  |
| Sprocket Hole          | d              | $\frac{1.50 \pm 0.10}{(0.061 \pm 0.004)}$  |
| Reel Outside Diameter  | D              | $\frac{330}{(12.992)}$                     |
| Reel Inner Diameter    | D <sub>1</sub> | $\frac{50.0}{(1.969)}$ MIN.                |
| Feed Hole Diameter     | D <sub>2</sub> | $\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$  |
| Sprocket Hole Position | E              | $\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$  |
| Punch Hole Position    | F              | $\frac{5.50 \pm 0.05}{(0.217 \pm 0.002)}$  |
| Punch Hole Pitch       | P              | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$  |
| Sprocket Hole Pitch    | P <sub>0</sub> | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$  |
| Embossment Center      | P <sub>1</sub> | $\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$  |
| Overall Tape Thickness | T              | $\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$  |
| Tape Width             | W              | $\frac{12.00 \pm 0.30}{(0.472 \pm 0.012)}$ |
| Reel Width             | W <sub>1</sub> | $\frac{18.4}{(0.724)}$ MAX.                |
| Quantity per Reel      | --             | 5.000                                      |

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