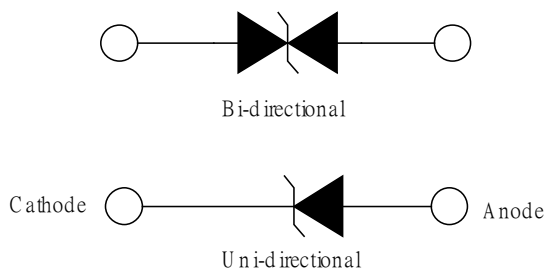


## Description

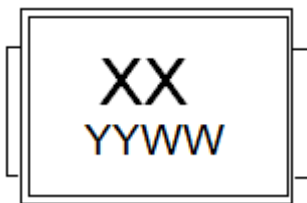
The SMAJ series are transient voltage suppressor designed to protect sensitive electronic equipment from damage induced by lightning and voltage transients.

## Device Schematic



Device Schematic

## Marking Information



XX = Device Marking Code

YYWW = Date Code

## Features

- \* 400W Peak Pulse Power (10/1000 $\mu$ s)
- \* Fast Response Time: <1ns
- \* Unidirectional or Bidirectional Configuration
- \* Low Profile Package
- \* Complies with following standards:
  - \* – IEC 61000-4-2 (ESD) immunity test
  - \* Air discharge:  $\pm$ 30kV
  - \* Contact discharge:  $\pm$ 30kV
  - \* – IEC61000-4-4 (EFT)
- \* RoHS Compliant
- \* Package: DO-214AC
- \* Lead Finish: Matte Tin

## Application

- \* Telecom
- \* Computer
- \* Industrial
- \* Consumer Electronics

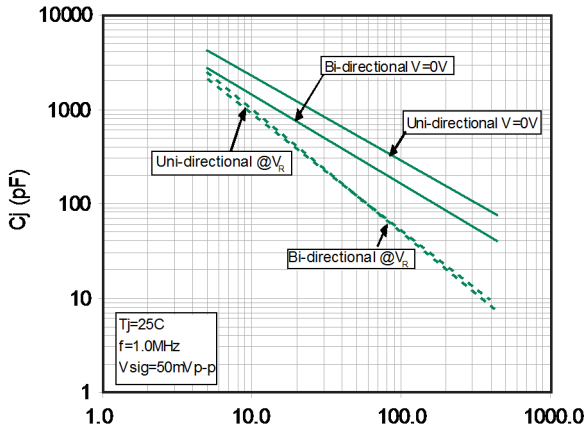
## Ordering Information

| Part Number | Packaging        | Reel Size |
|-------------|------------------|-----------|
| SMAJ        | 3000/Tape & Reel | 13 inch   |

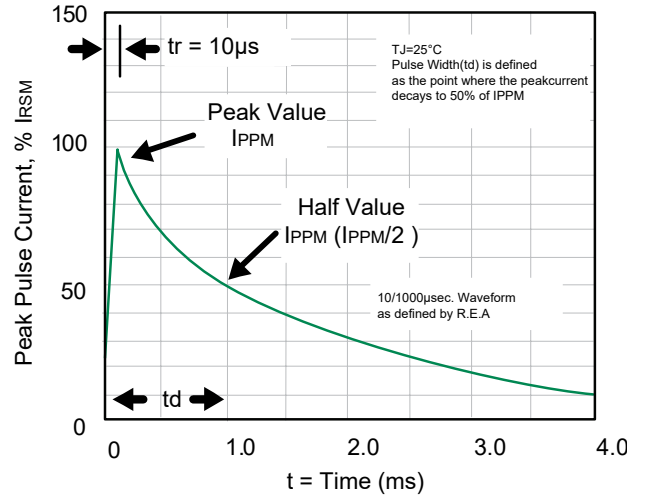
## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Part Number (Uni) | Part Number (Bi) | Marking |    | Reverse Stand off Voltage VR (Volts) | Breakdown Voltage VBR (Volts) @ IT |      | Test Current IT (mA) | Maximum Clamping Voltage VC @ Ipp (V) | Maximum Peak Pulse Current Ipp (A) | Maximum Reverse Leakage IR @ VR ( $\mu\text{A}$ ) |
|-------------------|------------------|---------|----|--------------------------------------|------------------------------------|------|----------------------|---------------------------------------|------------------------------------|---|
|                   |                  | UNI     | BI |                                      | MIN                                | MAX  |                      |                                       |                                    |   |
| SMAJ5.0A          | SMAJ5.0CA        | AE      | WE | 5                                    | 6.4                                | 7    | 10                   | 9.2                                   | 43.5                               | 800   |
| SMAJ6.0A          | SMAJ6.0CA        | AG      | WG | 6                                    | 6.67                               | 7.37 | 10                   | 10.3                                  | 38.8                               | 800   |
| SMAJ6.5A          | SMAJ6.5CA        | AK      | WK | 6.5                                  | 7.22                               | 7.98 | 10                   | 11.2                                  | 35.7                               | 500   |
| SMAJ7.0A          | SMAJ7.0CA        | AM      | WM | 7                                    | 7.78                               | 8.6  | 10                   | 12                                    | 33.3                               | 200   |
| SMAJ7.5A          | SMAJ7.5CA        | AP      | WP | 7.5                                  | 8.33                               | 9.21 | 1                    | 12.9                                  | 31                                 | 100   |
| SMAJ8.0A          | SMAJ8.0CA        | AR      | WR | 8                                    | 8.89                               | 9.83 | 1                    | 13.6                                  | 29.4                               | 50  |
| SMAJ8.5A          | SMAJ8.5CA        | AT      | WT | 8.5                                  | 9.44                               | 10.4 | 1                    | 14.4                                  | 27.8                               | 20  |
| SMAJ9.0A          | SMAJ9.0CA        | AV      | WV | 9                                    | 10                                 | 11.1 | 1                    | 15.4                                  | 26                                 | 10  |
| SMAJ10A           | SMAJ10CA         | AX      | WX | 10                                   | 11.1                               | 12.3 | 1                    | 17                                    | 23.5                               | 5   |
| SMAJ11A           | SMAJ11CA         | AZ      | WZ | 11                                   | 12.2                               | 13.5 | 1                    | 18.2                                  | 22                                 | 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                                  | 17.2                               | 1   |
| SMAJ15A           | SMAJ15CA         | BM      | XM | 15                                   | 16.7                               | 18.5 | 1                    | 24.4                                  | 16.4                               | 1   |
| SMAJ16A           | SMAJ16CA         | BP      | XP | 16                                   | 17.8                               | 19.7 | 1                    | 26                                    | 15.4                               | 1   |
| SMAJ17A           | SMAJ17CA         | BR      | XR | 17                                   | 18.9                               | 20.9 | 1                    | 27.6                                  | 14.5                               | 1   |
| SMAJ18A           | SMAJ18CA         | BT      | XT | 18                                   | 20                                 | 22.1 | 1                    | 29.2                                  | 13.7                               | 1   |
| SMAJ20A           | SMAJ20CA         | BV      | XV | 20                                   | 22.2                               | 24.5 | 1                    | 32.4                                  | 12.3                               | 1   |
| SMAJ22A           | SMAJ22CA         | BX      | XX | 22                                   | 24.4                               | 26.9 | 1                    | 35.5                                  | 11.3                               | 1   |
| SMAJ24A           | SMAJ24CA         | BZ      | XZ | 24                                   | 26.7                               | 29.5 | 1                    | 38.9                                  | 10.3                               | 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                                  | 8.8                                | 1   |
| SMAJ30A           | SMAJ30CA         | CK      | YK | 30                                   | 33.3                               | 36.8 | 1                    | 48.4                                  | 8.3                                | 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                                  | 6.9                                | 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                                  | 5.8                                | 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                                  | 5.2                                | 1   |
| SMAJ51A           | SMAJ51CA         | CZ      | YZ | 51                                   | 56.7                               | 62.7 | 1                    | 82.4                                  | 4.9                                | 1   |
| SMAJ54A           | SMAJ54CA         | RE      | ZE | 54                                   | 60                                 | 66.3 | 1                    | 87.1                                  | 4.6                                | 1   |
| SMAJ58A           | SMAJ58CA         | RG      | ZG | 58                                   | 64.4                               | 71.2 | 1                    | 93.6                                  | 4.3                                | 1   |
| SMAJ60A           | SMAJ60CA         | RK      | ZK | 60                                   | 66.7                               | 73.7 | 1                    | 96.8                                  | 4.1                                | 1   |
| SMAJ64A           | SMAJ64CA         | RM      | ZM | 64                                   | 71.1                               | 78.6 | 1                    | 103                                   | 3.9                                | 1   |
| SMAJ70A           | SMAJ70CA         | RP      | ZP | 70                                   | 77.8                               | 86   | 1                    | 113                                   | 3.5                                | 1   |
| SMAJ75A           | SMAJ75CA         | RR      | ZR | 75                                   | 83.3                               | 92.1 | 1                    | 121                                   | 3.3                                | 1   |
| SMAJ78A           | SMAJ78CA         | RT      | ZT | 78                                   | 86.7                               | 95.8 | 1                    | 126                                   | 3.2                                | 1   |
| SMAJ85A           | SMAJ85CA         | RV      | ZV | 85                                   | 94.4                               | 104  | 1                    | 137                                   | 2.9                                | 1   |
| SMAJ90A           | SMAJ90CA         | RX      | ZX | 90                                   | 100                                | 111  | 1                    | 146                                   | 2.7                                | 1   |
| SMAJ100A          | SMAJ100CA        | RZ      | ZZ | 100                                  | 111                                | 123  | 1                    | 162                                   | 2.5                                | 1   |
| SMAJ110A          | SMAJ110CA        | SE      | VE | 110                                  | 122                                | 135  | 1                    | 177                                   | 2.3                                | 1   |
| SMAJ120A          | SMAJ120CA        | SG      | VG | 120                                  | 133                                | 147  | 1                    | 193                                   | 2.1                                | 1   |
| SMAJ130A          | SMAJ130CA        | SK      | VK | 130                                  | 144                                | 159  | 1                    | 209                                   | 1.9                                | 1   |
| SMAJ150A          | SMAJ150CA        | SM      | VM | 150                                  | 167                                | 185  | 1                    | 243                                   | 1.6                                | 1   |
| SMAJ160A          | SMAJ160CA        | SP      | VP | 160                                  | 178                                | 197  | 1                    | 259                                   | 1.5                                | 1   |
| SMAJ170A          | SMAJ170CA        | SR      | VR | 170                                  | 189                                | 209  | 1                    | 275                                   | 1.5                                | 1   |
| SMAJ180A          | SMAJ180CA        | ST      | VT | 180                                  | 201                                | 222  | 1                    | 292                                   | 1.4                                | 1   |
| SMAJ200A          | SMAJ200CA        | SV      | VV | 200                                  | 224                                | 247  | 1                    | 324                                   | 1.2                                | 1   |
| SMAJ220A          | SMAJ220CA        | SX      | VX | 220                                  | 246                                | 272  | 1                    | 356                                   | 1.1                                | 1   |
| SMAJ250A          | SMAJ250CA        | SZ      | VZ | 250                                  | 279                                | 309  | 1                    | 405                                   | 1                                  | 1   |
| SMAJ300A          | SMAJ300CA        | TE      | UE | 300                                  | 335                                | 371  | 1                    | 486                                   | 0.8                                | 1   |
| SMAJ350A          | SMAJ350CA        | TG      | UG | 350                                  | 391                                | 432  | 1                    | 567                                   | 0.7                                | 1   |
| SMAJ400A          | SMAJ400CA        | TK      | UK | 400                                  | 447                                | 494  | 1                    | 648                                   | 0.6                                | 1   |
| SMAJ440A          | SMAJ440CA        | TM      | UM | 440                                  | 492                                | 543  | 1                    | 713                                   | 0.6                                | 1   |

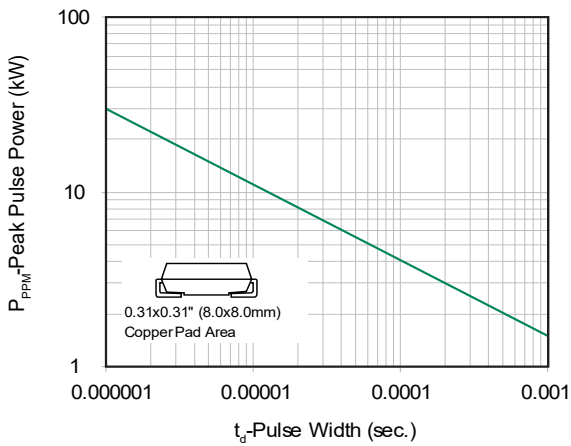
Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)



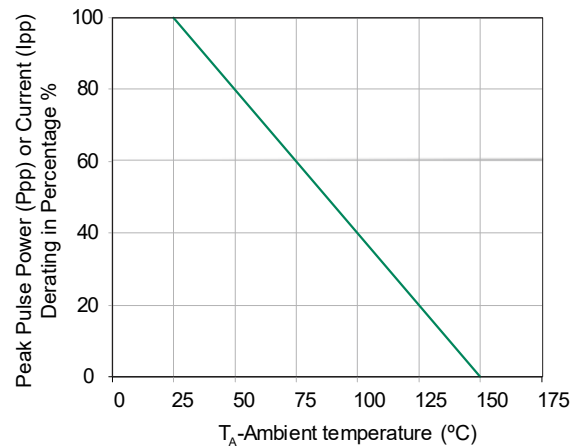
Typical Junction Capacitance



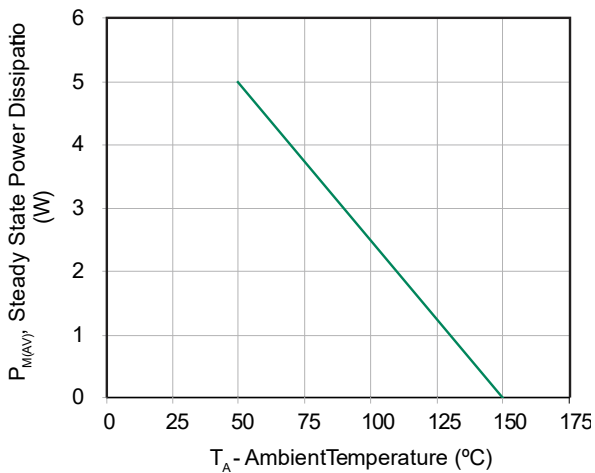
T r x T d Pulse Waveform



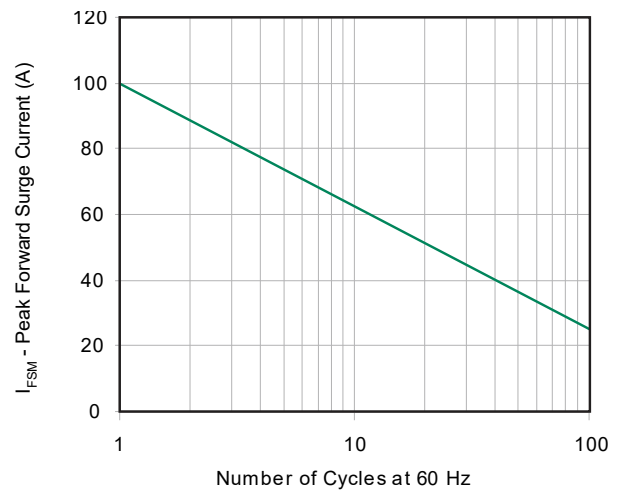
Peak Pulse Power Rating



Pulse Derating Curve

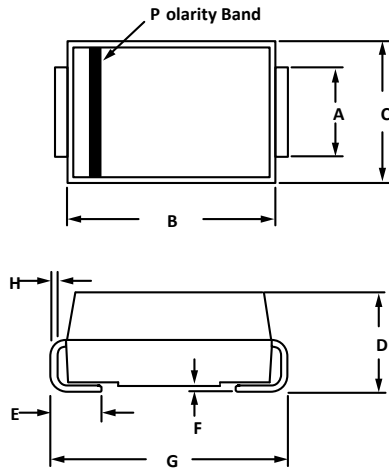


Steady State Power Dissipation Derating Curve



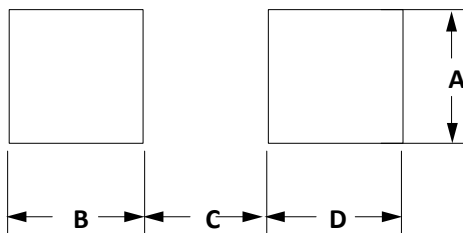
Peak Forward Surge Current

**DO-214AC (SMA) Package Outline Drawing** (Dimensions in millimeters)



| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.049  | 0.065 | 1.250       | 1.650 |
| B          | 0.157  | 0.177 | 3.990       | 4.500 |
| C          | 0.100  | 0.110 | 2.540       | 2.790 |
| D          | 0.078  | 0.090 | 1.980       | 2.290 |
| E          | 0.030  | 0.060 | 0.780       | 1.520 |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.194  | 0.208 | 4.930       | 5.280 |
| H          | 0.006  | 0.012 | 0.152       | 0.305 |

**Suggested Land Pattern**



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| A   | 1.80        | 0.070  |
| B   | 2.10        | 0.082  |
| C   | 2.30        | 0.090  |
| D   | 2.10        | 0.082  |

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