

# SMAJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

VOLTAGE - 5.0 TO 170 Volts

400Watts Peak Pulse Power

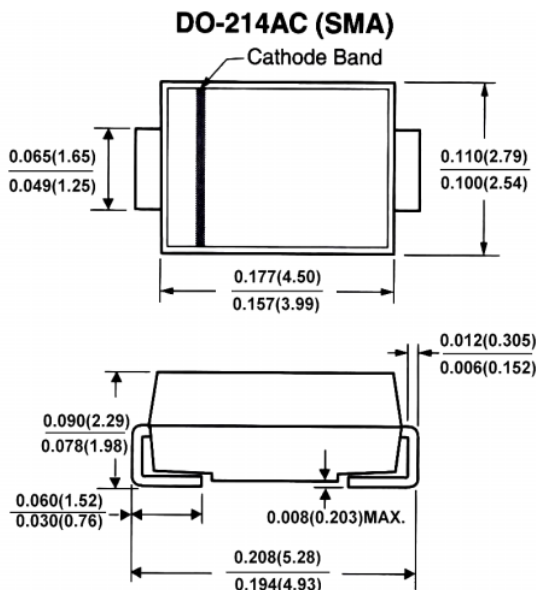
| SMAJ<br>PART NUMBER |           | DEVICE<br>MARKING<br>CODE |    | REVERSE<br>STAND-<br>OFF<br>VOLTAGE<br>$V_{RWM}(V)$ | BREAKDOWN<br>VOLTAGE<br>$V_{BR}(V)$<br>MIN.@ $I_T$ | BREAKDOWN<br>VOLTAGE<br>$V_{BR}(V)$<br>MAX.@ $I_T$ | TEST<br>CURRENT<br>$I_T$ (mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@ $I_{pp}$ $V_c(V)$ | PEAK<br>PULSE<br>CURRENT<br>$I_{pp}$ (A) | REVERSE<br>LEAKAGE<br>@ $V_{RWM}$<br>$I_R(\mu A)$ |
|---------------------|-----------|---------------------------|----|---|--|--|-------------------------------|---|--|---|
| UNI-POLAR           | BI-POLAR  | UNI                       | BI |   |  |  |                               |   |  |   |
| SMAJ5.0A            | SMAJ5.0CA | AE                        | WE | 5.0   | 6.40   | 7.00   | 10                            | 9.2   | 43.5                                     | 800   |
| SMAJ6.0A            | SMAJ6.0CA | AG                        | WG | 6.0   | 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 | 7.0   | 7.78   | 8.60   | 10                            | 12.0  | 33.3                                     | 200   |
| SMAJ7.5A            | SMAJ7.5CA | AP                        | WP | 7.5   | 8.33   | 9.21   | 1                             | 12.9  | 31.0                                     | 100   |
| SMAJ8.0A            | SMAJ8.0CA | AR                        | WR | 8.0   | 8.89   | 9.83   | 1                             | 13.6  | 29.4                                     | 50  |
| SMAJ8.5A            | SMAJ8.5CA | AT                        | WT | 8.5   | 9.44   | 10.40  | 1                             | 14.4  | 27.8                                     | 20  |
| SMAJ9.0A            | SMAJ9.0CA | AV                        | WV | 9.0   | 10.00  | 11.10  | 1                             | 15.4  | 26.0                                     | 10  |
| SMAJ10A             | SMAJ10CA  | AX                        | WX | 10.0  | 11.10  | 12.30  | 1                             | 17.0  | 23.5                                     | 5   |
| SMAJ11A             | SMAJ11CA  | AZ                        | WZ | 11.0  | 12.20  | 13.50  | 1                             | 18.2  | 22.0                                     | 5   |
| SMAJ12A             | SMAJ12CA  | BE                        | XE | 12.0  | 13.30  | 14.70  | 1                             | 19.9  | 20.1                                     | 5   |
| SMAJ13A             | SMAJ13CA  | BG                        | XG | 13.0  | 14.40  | 15.90  | 1                             | 21.5  | 18.6                                     | 5   |
| SMAJ14A             | SMAJ14CA  | BK                        | XK | 14.0  | 15.60  | 17.20  | 1                             | 23.2  | 17.2                                     | 5   |
| SMAJ15A             | SMAJ15CA  | BM                        | XM | 15.0  | 16.70  | 18.50  | 1                             | 24.4  | 16.4                                     | 5   |
| SMAJ16A             | SMAJ16CA  | BP                        | XP | 16.0  | 17.80  | 19.70  | 1                             | 26.0  | 15.4                                     | 5   |
| SMAJ17A             | SMAJ17CA  | BR                        | XR | 17.0  | 18.90  | 20.90  | 1                             | 27.6  | 14.5                                     | 5   |
| SMAJ18A             | SMAJ18CA  | BT                        | XT | 18.0  | 20.00  | 22.10  | 1                             | 29.2  | 13.7                                     | 5   |
| SMAJ20A             | SMAJ20CA  | BV                        | XV | 20.0  | 22.20  | 24.50  | 1                             | 32.4  | 12.3                                     | 5   |
| SMAJ22A             | SMAJ22CA  | BX                        | XY | 22.0  | 24.40  | 26.90  | 1                             | 35.5  | 11.3                                     | 5   |
| SMAJ24A             | SMAJ24CA  | BZ                        | XZ | 24.0  | 26.70  | 29.50  | 1                             | 38.9  | 10.3                                     | 5   |
| SMAJ26A             | SMAJ26CA  | CE                        | YE | 26.0  | 28.90  | 31.90  | 1                             | 42.1  | 9.5                                      | 5   |
| SMAJ28A             | SMAJ28CA  | CG                        | YG | 28.0  | 31.10  | 34.40  | 1                             | 45.4  | 8.8                                      | 5   |
| SMAJ30A             | SMAJ30CA  | CK                        | YK | 30.0  | 33.30  | 36.80  | 1                             | 48.4  | 8.3                                      | 5   |
| SMAJ33A             | SMAJ33CA  | CM                        | YM | 33.0  | 36.70  | 40.60  | 1                             | 53.3  | 7.5                                      | 5   |
| SMAJ36A             | SMAJ36CA  | CP                        | YP | 36.0  | 40.00  | 44.20  | 1                             | 58.1  | 6.9                                      | 5   |
| SMAJ40A             | SMAJ40CA  | CR                        | YR | 40.0  | 44.40  | 49.10  | 1                             | 64.5  | 6.2                                      | 5   |
| SMAJ43A             | SMAJ43CA  | CT                        | YT | 43.0  | 47.80  | 52.80  | 1                             | 69.4  | 5.8                                      | 5   |
| SMAJ45A             | SMAJ45CA  | CV                        | YV | 45.0  | 50.00  | 55.30  | 1                             | 72.7  | 5.5                                      | 5   |
| SMAJ48A             | SMAJ48CA  | CX                        | YX | 48.0  | 53.30  | 58.90  | 1                             | 77.4  | 5.2                                      | 5   |
| SMAJ51A             | SMAJ51CA  | CZ                        | YZ | 51.0  | 56.70  | 62.70  | 1                             | 82.4  | 4.9                                      | 5   |
| SMAJ54A             | SMAJ54CA  | RE                        | ZE | 54.0  | 60.00  | 66.30  | 1                             | 87.1  | 4.6                                      | 5   |
| SMAJ58A             | SMAJ58CA  | RG                        | ZG | 58.0  | 64.40  | 71.20  | 1                             | 93.6  | 4.3                                      | 5   |
| SMAJ60A             | SMAJ60CA  | RK                        | ZK | 60.0  | 66.70  | 73.70  | 1                             | 96.8  | 4.1                                      | 5   |
| SMAJ64A             | SMAJ64CA  | RM                        | ZM | 64.0  | 71.10  | 78.60  | 1                             | 103.0   | 3.9                                      | 5   |
| SMAJ70A             | SMAJ70CA  | RP                        | ZP | 70.0  | 77.80  | 86.00  | 1                             | 113.0   | 3.5                                      | 5   |
| SMAJ75A             | SMAJ75CA  | RR                        | ZR | 75.0  | 83.30  | 92.10  | 1                             | 121.0   | 3.3                                      | 5   |
| SMAJ78A             | SMAJ78CA  | RT                        | ZT | 78.0  | 86.70  | 95.80  | 1                             | 126.0   | 3.2                                      | 5   |
| SMAJ85A             | SMAJ85CA  | RV                        | ZV | 85.0  | 94.40  | 104.00   | 1                             | 137.0   | 2.9                                      | 5   |
| SMAJ90A             | SMAJ90CA  | RX                        | ZX | 90.0  | 100.00   | 111.00   | 1                             | 146.0   | 2.7                                      | 5   |
| SMAJ100A            | SMAJ100CA | RZ                        | ZZ | 100.0   | 111.00   | 123.00   | 1                             | 162.0   | 2.5                                      | 5   |
| SMAJ110A            | SMAJ110CA | SE                        | VE | 110.0   | 122.00   | 135.00   | 1                             | 177.0   | 2.3                                      | 5   |
| SMAJ120A            | SMAJ120CA | SG                        | VG | 120.0   | 133.00   | 147.00   | 1                             | 193.0   | 2.1                                      | 5   |
| SMAJ130A            | SMAJ130CA | SK                        | VK | 130.0   | 144.00   | 159.00   | 1                             | 209.0   | 1.9                                      | 5   |
| SMAJ150A            | SMAJ150CA | SM                        | VM | 150.0   | 167.00   | 185.00   | 1                             | 243.0   | 1.6                                      | 5   |
| SMAJ160A            | SMAJ160CA | SP                        | VP | 160.0   | 178.00   | 197.00   | 1                             | 259.0   | 1.5                                      | 5   |
| SMAJ170A            | SMAJ170CA | SR                        | VR | 170.0   | 189.00   | 209.00   | 1                             | 275.0   | 1.5                                      | 5   |

For bidirectional type having  $V_{RWM}$  of 10 volts and less, the  $I_R$  limit is double.

For parts without A , the  $V_{BR}$  is  $\pm 10\%$

## SMAJ SERIES

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-5.0 TO 170 Volts 400 Watt Peak Pulse Power



Dimensions in inches and (millimeters)

#### FEATURES

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition Rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to V(BR) for unidirectional types
- Typical IR less than 1mA above 10V
- High Temperature soldering: 250°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-O

#### MECHANICAL DATA

- Case:** JEDEC DO214AC. Molded plastic over glass passivated junction
- Terminal:** Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity:** Color band denoted positive end (cathode) except Bidirectional
- Standard Packaging:** 12mm tape (EIA STD RS-481)
- Weight:** 0.002 ounce, 0.061 gram

#### DEVICES FOR BIPOLAR APPLICATION

For Bidirectional use C or CA Suffix for types SMAJ5.0 thru types SMAJ170 (e.g. SMAJ5.0C , SMAJ170CA)  
Electrical characteristics apply in both directions

#### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.

| RATING   | SYMBOL         | VALUE           | UNITS |
|--|----------------|-----------------|-------|
| Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note 1,2 ,FIG.1)                                 | $P_{PPM}$      | Minimum<br>400  | Watts |
| Peak Pulse Current of on 10/1000 $\mu$ s waveform (Note 1,FIG.3)   | $I_{PPM}$      | SEE<br>TABLE 1  | Amps  |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note2,3) | $I_{FSM}$      | 40              | Amps  |
| Operating junction and Storage Temperature Range   | $T_J, T_{STG}$ | -55 to +<br>150 |       |

**Notes :** 1.Non-repetitive current pulse , per Fig. 3 and derated above  $T_A = 25$  °C per Fig. 2 .

2.Mounted on 5.0mm<sup>2</sup> (0.03mm thick) Copper Pads to each terminal

3.8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

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## RATINGS AND CHARACTERISTIC CURVES

**Ratings and Characteristic Curves** ( $T_A=25$  unless otherwise noted)

