

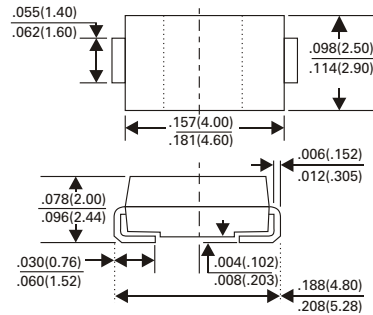
# SMAJ5.0A thru SMAJ440CA

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

STAND - OFF VOLTAGE - 5.0 TO 400 VOLTS  
400 Watt Peak Pulse Power



SMA/DO-214AC



Dimensions in inches and (millimeters)

### FEATURES

- For surface mount 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/10seconds at terminals
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0

### MECHANICAL DATA

Case : JEDEC DO-214AC molded plastic over glass passivated junction  
Terminals : Solder plated, solderable per MIL-STD-750, Method 2026  
Polarity : Color band denotes positive end (cathode) except Bidirectional  
Standard Package : 12mm tape (EIA STD EIA-481)  
Weight : 0.002 ounce, 0.061gram

### 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 ELECTRICAL 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) (Note 2, 3) | $I_{FSM}$          | 40             | Amps  |
| Operating junction and Storage Temperature Range                                                              | $I_J$<br>$T_{STG}$ | -55 to +150    | °C    |

#### NOTES :

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  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.

# SMAJ5.0A thru SMAJ440CA

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**STAND - OFF VOLTAGE - 5.0 TO 400 VOLTS**  
**400 Watt Peak Pulse Power**

| SMAJ<br>PART NUMBER |           | DEVICE<br>MARKING<br>CODE |    | REVERSE<br>STAND-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                                                   | 1.8                                      | 5                                                     |
| SMAJ45A             | SMAJ45CA  | CV                        | YV | 45.0                                             | 50.00                                               | 55.30                                               | 1                             | 72.7                                                   | 2.5                                      | 5                                                     |
| SMAJ48A             | SMAJ58CA  | 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                                                     |
| SMAJ180A            | SMAJ180CA | ST                        | VT | 180.0                                            | 201.00                                              | 222.00                                              | 1                             | 292.0                                                  | 1.4                                      | 5                                                     |
| SMAJ200A            | SMAJ200CA | SV                        | VV | 200.0                                            | 224.00                                              | 247.00                                              | 1                             | 324.0                                                  | 1.2                                      | 5                                                     |
| SMAJ220A            | SMAJ220CA | SX                        | VX | 220.0                                            | 246.00                                              | 272.00                                              | 1                             | 356.0                                                  | 1.1                                      | 5                                                     |
| SMAJ250A            | SMAJ250CA | SZ                        | VZ | 250.0                                            | 279.00                                              | 309.00                                              | 1                             | 405.0                                                  | 1.0                                      | 5                                                     |
| SMAJ300A            | SMAJ300CA | TE                        | UE | 300.0                                            | 335.00                                              | 371.00                                              | 1                             | 486.0                                                  | 0.8                                      | 5                                                     |
| SMAJ350A            | SMAJ350CA | TG                        | UG | 350.0                                            | 391.00                                              | 432.00                                              | 1                             | 567.0                                                  | 0.7                                      | 5                                                     |
| SMAJ400A            | SMAJ400CA | TK                        | UK | 400.0                                            | 447.00                                              | 494.00                                              | 1                             | 648.0                                                  | 0.6                                      | 5                                                     |
| SMAJ440A            | SMAJ440CA | TM                        | UM | 440.0                                            | 492.00                                              | 543.00                                              | 1                             | 713.0                                                  | 0.6                                      | 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 + 10%