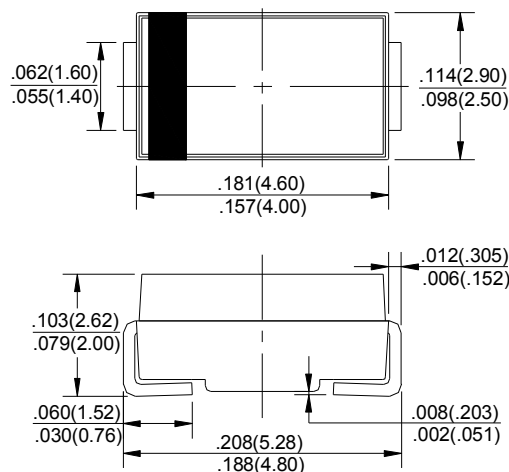


## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

### FEATURES

- Glass Passivated Die Construction
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-O

### SMA(DO-214AC)



Dimensions in inches and (millimeters)

### MECHANICAL DATA

- Case : JEDEC SMA(DO-214AC), Transfer Molded Epoxy
- Terminals : Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity : Cathode Band Except Bi-Directional

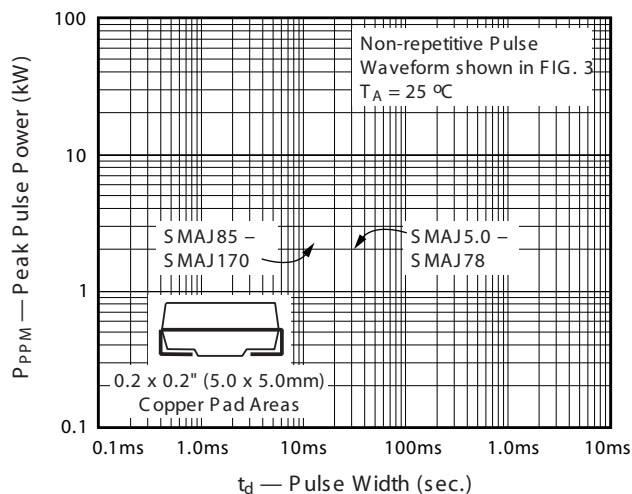
### Maximum Ratings and Electrical Characteristics @T<sub>A</sub>=25°C unless otherwise specified

| Characteristic                                                                                               | Symbol                            | Value       | Unit |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Peak Pulse Power Dissipation 10/1000μS Waveform (Note 1, 2) Figure 3                                         | PPPM                              | 400 Minimum | W    |
| Peak Pulse Current on 10/1000μS Waveform (Note 1) Figure 4                                                   | IPPM                              | See Table 1 | A    |
| Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 2, 3) | IFSM                              | 40          | A    |
| Operating and Storage Temperature Range                                                                      | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

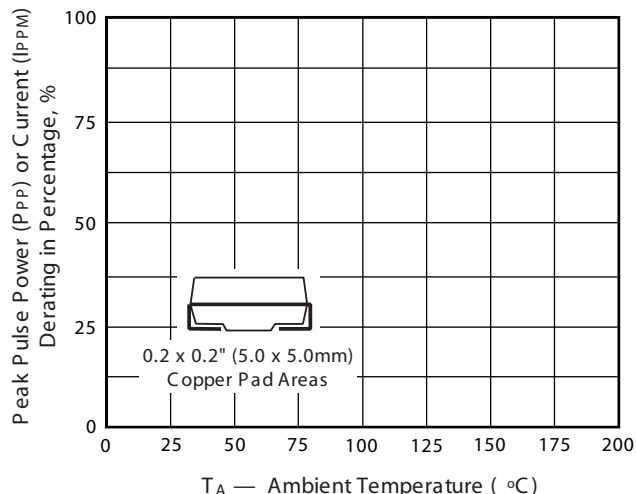
Note: 1. Non-repetitive current pulse per Figure 4 and derated above T<sub>A</sub> = 25°C per Figure 1.

2. Mounted on 5.0mm<sup>2</sup> (0.013mm thick) land area.

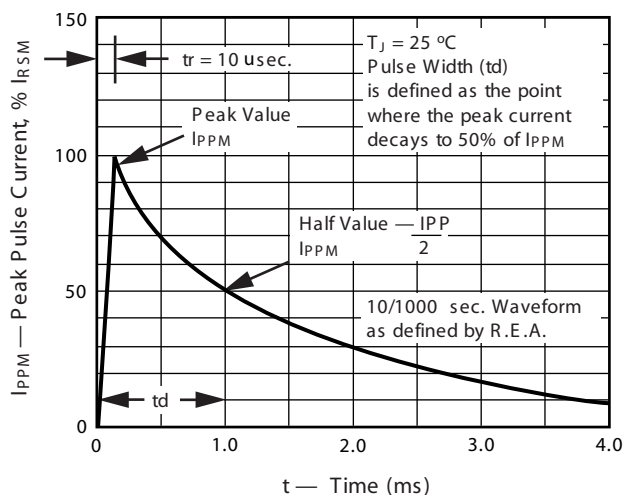
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum.



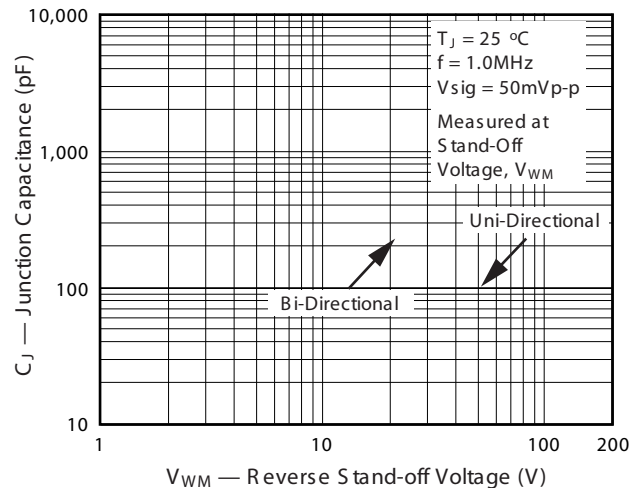
**FIG.1 – Peak Pulse Power Rating Curve**



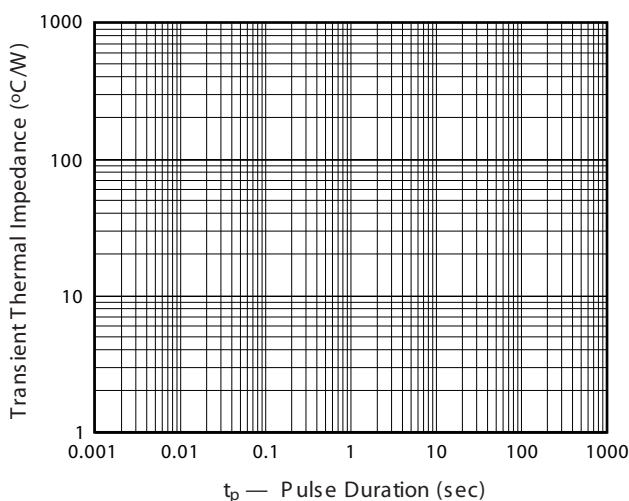
**FIG.2 – Pulse Derating Curve**



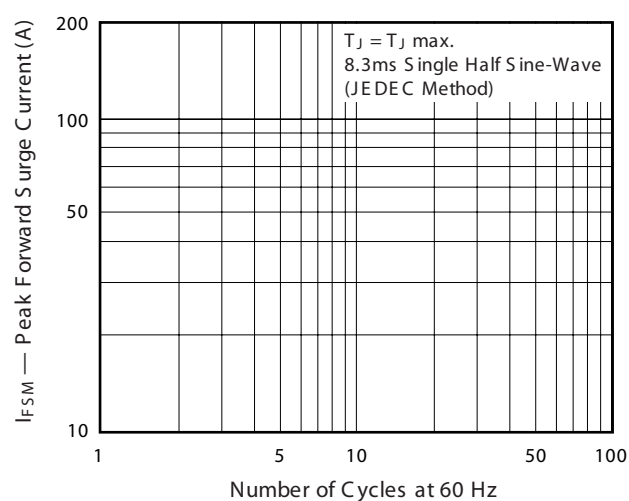
**FIG.3 – Pulse Waveform**



**FIG.4 – Typical Junction Capacitance**



**FIG.5 – Typical Transient Thermal Impedance**



**FIG.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**

## Electrical characteristics

| SMAJ<br>PART NUMBER |             | DEVICE<br>MARKING<br>CODE |    | REVERSE<br>STAND-<br>OFF<br>VOLTAGE<br>$V_{RWM}(V)$ | BREAK DOWN<br>VOLTAGE         |                               | TEST<br>CURRE<br>NT<br>$I_T$ (mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@ $I_{pp}$ Vc(V) | PEAK<br>PULSE<br>CURRENT<br>$I_{pp}$ (A) | REVERSE<br>LEAKAGE<br>@ $V_{RWM}$<br>$I_R(\mu A)(3)$ |
|---------------------|-------------|---------------------------|----|-----------------------------------------------------|-------------------------------|-------------------------------|-----------------------------------|----------------------------------------------------|------------------------------------------|------------------------------------------------------|
| UNI- POLAR          | BI-POLAR(1) | UNI                       | BI |                                                     | $V_{BR}(V)(1)$<br>MIN.@ $I_T$ | $V_{BR}(V)(2)$<br>MAX.@ $I_T$ |                                   |                                                    |                                          |                                                      |
| 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                        | XX | 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                                                    |

NOTE: 1. Suffix C denotes Bi-direction device, Suffix A denotes the  $V_{BR}$  is  $\pm 5\%$  for parts without A, the  $V_{BR}$  is  $\pm 10\%$ .

2.  $V_{BR}$  measured with  $I_T$  Current pulse=300us.

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

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