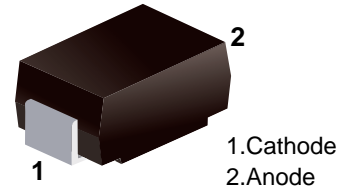


## SMAJ Series

### ■ Transient Voltage Suppressor Diodes

#### ■ Features

- For surface mounted applications in order to optimize board space.
- Low profile package
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability



#### ■ Simplified outline(SMA)

##### Top View



#### ■ Maximum Ratings and Electrical characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter   | Symbol                   | Value                | Unit                      |
|---|--------------------------|----------------------|---------------------------|
| Peak Pulse Power Dissipation on $T_A=25^\circ\text{C}$ (Note 1,2,4, Fig1) | $P_{PPM}$                | 400                  | W                         |
| Peak Forward Surge Current (Note 3, Fig 4)                                | $I_{FSM}$<br>(UNI)       | 60                   | A                         |
| Peak Pulse Current on 10/1000 us waveform (Note 1, Fig 3)                 | $I_{PPM}$                | see Table 1          | A                         |
| ESD Voltage per IEC6100-4-2<br>Contact<br>Air                             | $V_{ESD1}$<br>$V_{ESD2}$ | $\pm 30$<br>$\pm 30$ | kV                        |
| Typical Thermal Resistance Junction to Ambient(Note 2)                    | $R_{\theta JA}$          | 30                   | $^\circ\text{C}/\text{W}$ |
| Operating Junction Temperature and Storage Temperature Range              | $T_j, T_{stg}$           | -65 ~ +150           | $^\circ\text{C}$          |

#### NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
2. Mounted on  $5\text{mm}^2$  copper pads to each terminal.
3. Peak Forward Surge Current : 8.3ms single half sine-wave Superimposed on rated load (JEDEC method).
4. Peak pulse power waveform is 10/1000 $\mu\text{s}$ .

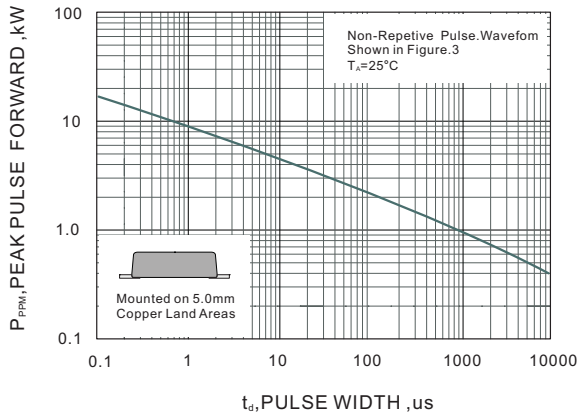
## SMAJ Series

Characteristics at Ta = 25°C

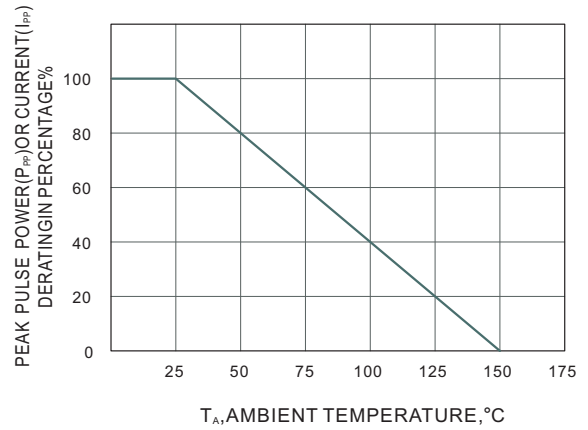
Table 1

| Type     |           | Reverse Stand-off Voltage | Breakdown Voltage                |      | Test Current   | Reverse Leakage                   | Max. Clamp Voltage               | Peak Pulse Current | Package              |    |
|----------|-----------|---------------------------|----------------------------------|------|----------------|-----------------------------------|----------------------------------|--------------------|----------------------|----|
|          |           |                           | V <sub>BR</sub> @ I <sub>T</sub> |      |                |                                   |                                  |                    | SMA                  |    |
|          |           | V <sub>RRM</sub>          | Min                              | Max  | I <sub>T</sub> | I <sub>R</sub> @ V <sub>RRM</sub> | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>    | Device Marking Ccode |    |
| UNI      | BI        | V                         | V                                | V    | mA             | µA                                | V                                | A                  | UNI                  | BI |
| SMAJ5.0A | SMAJ5.0CA | 5                         | 6.4                              | 7    | 10             | 800                               | 9.2                              | 43.5               | AE                   | WE |
| SMAJ6.0A | SMAJ6.0CA | 6                         | 6.67                             | 7.37 | 10             | 800                               | 10.3                             | 38.8               | AG                   | WG |
| SMAJ6.5A | SMAJ6.5CA | 6.5                       | 7.22                             | 7.98 | 10             | 500                               | 11.2                             | 35.7               | AK                   | WK |
| SMAJ7.0A | SMAJ7.0CA | 7                         | 7.78                             | 8.6  | 10             | 200                               | 12.0                             | 33.3               | AM                   | WM |
| SMAJ7.5A | SMAJ7.5CA | 7.5                       | 8.33                             | 9.21 | 1              | 100                               | 12.9                             | 31.0               | AP                   | WP |
| SMAJ8.0A | SMAJ8.0CA | 8                         | 8.89                             | 9.83 | 1              | 50                                | 13.6                             | 29.4               | AR                   | WR |
| SMAJ8.5A | SMAJ8.5CA | 8.5                       | 9.44                             | 10.4 | 1              | 20                                | 14.4                             | 27.8               | AT                   | WT |
| SMAJ9.0A | SMAJ9.0CA | 9                         | 10                               | 11.1 | 1              | 10                                | 15.4                             | 26.0               | AV                   | WV |
| SMAJ10A  | SMAJ10CA  | 10                        | 11.1                             | 12.3 | 1              | 5                                 | 17.0                             | 23.5               | AX                   | WX |
| SMAJ11A  | SMAJ11CA  | 11                        | 12.2                             | 13.5 | 1              | 1                                 | 18.2                             | 22.0               | AZ                   | WZ |
| SMAJ12A  | SMAJ12CA  | 12                        | 13.3                             | 14.7 | 1              | 1                                 | 19.9                             | 20.1               | BE                   | XE |
| SMAJ13A  | SMAJ13CA  | 13                        | 14.4                             | 15.9 | 1              | 1                                 | 21.5                             | 18.6               | BG                   | XG |
| SMAJ14A  | SMAJ14CA  | 14                        | 15.6                             | 17.2 | 1              | 1                                 | 23.2                             | 17.2               | BK                   | XK |
| SMAJ15A  | SMAJ15CA  | 15                        | 16.7                             | 18.5 | 1              | 1                                 | 24.4                             | 16.4               | BM                   | XM |
| SMAJ16A  | SMAJ16CA  | 16                        | 17.8                             | 19.7 | 1              | 1                                 | 26.0                             | 15.4               | BP                   | XP |
| SMAJ17A  | SMAJ17CA  | 17                        | 18.9                             | 20.9 | 1              | 1                                 | 27.6                             | 14.5               | BR                   | XR |
| SMAJ18A  | SMAJ18CA  | 18                        | 20                               | 22.1 | 1              | 1                                 | 29.2                             | 13.7               | BT                   | XT |
| SMAJ20A  | SMAJ20CA  | 20                        | 22.2                             | 24.5 | 1              | 1                                 | 32.4                             | 12.3               | BV                   | XV |
| SMAJ22A  | SMAJ22CA  | 22                        | 24.4                             | 26.9 | 1              | 1                                 | 35.5                             | 11.3               | BX                   | XX |
| SMAJ24A  | SMAJ24CA  | 24                        | 26.7                             | 29.5 | 1              | 1                                 | 38.9                             | 10.3               | BZ                   | XZ |
| SMAJ26A  | SMAJ26CA  | 26                        | 28.9                             | 31.9 | 1              | 1                                 | 42.1                             | 9.5                | CE                   | YE |
| SMAJ28A  | SMAJ28CA  | 28                        | 31.1                             | 34.4 | 1              | 1                                 | 45.4                             | 8.8                | CG                   | YG |
| SMAJ30A  | SMAJ30CA  | 30                        | 33.3                             | 36.8 | 1              | 1                                 | 48.4                             | 8.3                | CK                   | YK |
| SMAJ33A  | SMAJ33CA  | 33                        | 36.7                             | 40.6 | 1              | 1                                 | 53.3                             | 7.5                | CM                   | YM |
| SMAJ36A  | SMAJ36CA  | 36                        | 40                               | 44.2 | 1              | 1                                 | 58.1                             | 6.9                | CP                   | YP |
| SMAJ40A  | SMAJ40CA  | 40                        | 44.4                             | 49.1 | 1              | 1                                 | 64.5                             | 6.2                | CR                   | YR |
| SMAJ43A  | SMAJ43CA  | 43                        | 47.8                             | 52.8 | 1              | 1                                 | 69.4                             | 5.8                | CT                   | YT |
| SMAJ45A  | SMAJ45CA  | 45                        | 50                               | 55.3 | 1              | 1                                 | 72.7                             | 5.5                | CV                   | YV |
| SMAJ48A  | SMAJ48CA  | 48                        | 53.3                             | 58.9 | 1              | 1                                 | 77.4                             | 5.2                | CX                   | YX |
| SMAJ51A  | SMAJ51CA  | 51                        | 56.7                             | 62.7 | 1              | 1                                 | 82.4                             | 4.9                | CZ                   | YZ |
| SMAJ54A  | SMAJ54CA  | 54                        | 60                               | 66.3 | 1              | 1                                 | 87.1                             | 4.6                | RE                   | ZE |
| SMAJ58A  | SMAJ58CA  | 58                        | 64.4                             | 71.2 | 1              | 1                                 | 93.6                             | 4.3                | RG                   | ZG |
| SMAJ60A  | SMAJ60CA  | 60                        | 66.7                             | 73.7 | 1              | 1                                 | 96.8                             | 4.1                | RK                   | ZK |
| SMAJ64A  | SMAJ64CA  | 64                        | 71.1                             | 78.6 | 1              | 1                                 | 103.0                            | 3.9                | RM                   | ZM |
| SMAJ70A  | SMAJ70CA  | 70                        | 77.8                             | 86   | 1              | 1                                 | 113.0                            | 3.5                | RP                   | ZP |
| SMAJ75A  | SMAJ75CA  | 75                        | 83.3                             | 92.1 | 1              | 1                                 | 121.0                            | 3.3                | RR                   | ZR |
| SMAJ78A  | SMAJ78CA  | 78                        | 86.7                             | 95.8 | 1              | 1                                 | 126.0                            | 3.2                | RT                   | ZT |
| SMAJ85A  | SMAJ85CA  | 85                        | 94.4                             | 104  | 1              | 1                                 | 137.0                            | 2.9                | RV                   | ZV |
| SMAJ90A  | SMAJ90CA  | 90                        | 100                              | 111  | 1              | 1                                 | 146.0                            | 2.7                | RX                   | ZX |
| SMAJ100A | SMAJ100CA | 100                       | 111                              | 123  | 1              | 1                                 | 162.0                            | 2.5                | RZ                   | ZZ |
| SMAJ110A | SMAJ110CA | 110                       | 122                              | 135  | 1              | 1                                 | 177.0                            | 2.3                | SE                   | VE |
| SMAJ120A | SMAJ120CA | 120                       | 133                              | 147  | 1              | 1                                 | 193.0                            | 2.1                | SG                   | VG |
| SMAJ130A | SMAJ130CA | 130                       | 144                              | 159  | 1              | 1                                 | 209.0                            | 1.9                | SK                   | VK |
| SMAJ150A | SMAJ150CA | 150                       | 167                              | 185  | 1              | 1                                 | 243.0                            | 1.6                | SM                   | VM |
| SMAJ160A | SMAJ160CA | 160                       | 178                              | 197  | 1              | 1                                 | 259.0                            | 1.5                | SP                   | VP |
| SMAJ170A | SMAJ170CA | 170                       | 189                              | 209  | 1              | 1                                 | 275.0                            | 1.5                | SR                   | VR |
| SMAJ180A | SMAJ180CA | 180                       | 201                              | 222  | 1              | 1                                 | 292.0                            | 1.4                | ST                   | VT |
| SMAJ200A | SMAJ200CA | 200                       | 224                              | 247  | 1              | 1                                 | 324.0                            | 1.2                | SV                   | VV |
| SMAJ220A | SMAJ220CA | 220                       | 246                              | 272  | 1              | 1                                 | 356.0                            | 1.1                | SX                   | VX |
| SMAJ250A | SMAJ250CA | 250                       | 279                              | 309  | 1              | 1                                 | 405.0                            | 1.0                | SZ                   | VZ |
| SMAJ300A | SMAJ300CA | 300                       | 335                              | 371  | 1              | 1                                 | 486.0                            | 0.8                | TE                   | UE |
| SMAJ350A | SMAJ350CA | 350                       | 391                              | 432  | 1              | 1                                 | 567.0                            | 0.7                | TG                   | UG |
| SMAJ400A | SMAJ400CA | 400                       | 447                              | 494  | 1              | 1                                 | 648.0                            | 0.6                | TK                   | UK |
| SMAJ440A | SMAJ440CA | 440                       | 492                              | 543  | 1              | 1                                 | 713.0                            | 0.6                | TM                   | UM |

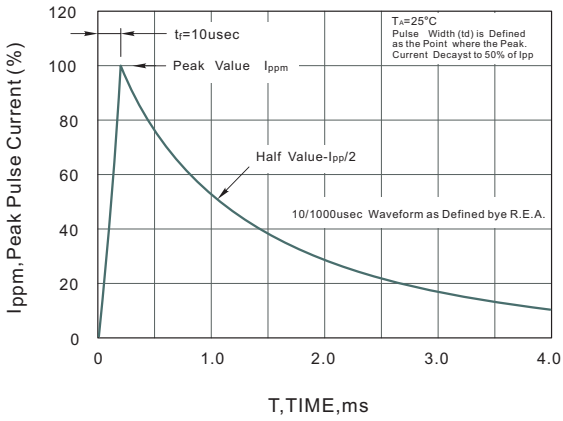
**Fig.1 Peak Pulse Power Rating Curve**



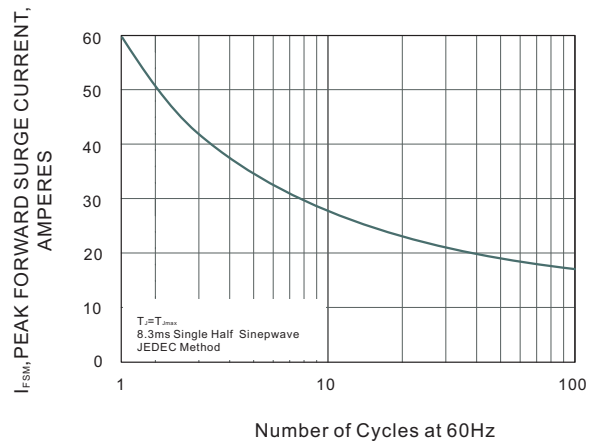
**Fig.2 Forward Current Derating Curve**



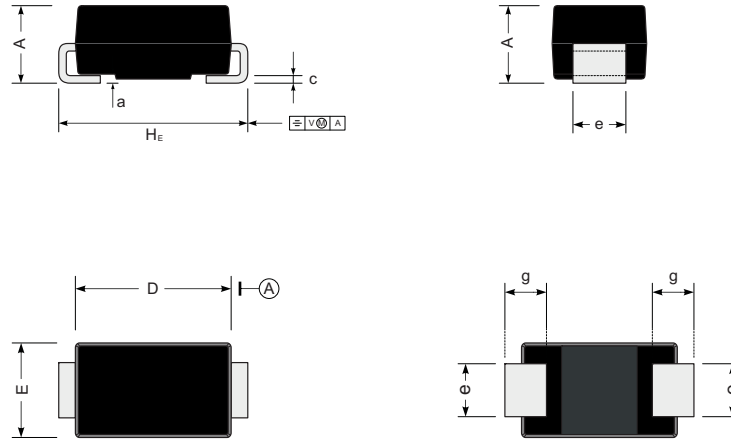
**Fig.3 Pulse Waveform**



**Fig.4 Maximum Non-Repetitive Peak Forward Surge Current**



■ SMA



| UNIT |     | A   | D   | E   | H <sub>E</sub> | c    | e   | g   | a   |
|------|-----|-----|-----|-----|----------------|------|-----|-----|-----|
| mm   | max | 2.2 | 4.5 | 2.7 | 5.2            | 0.31 | 1.6 | 1.5 | 0.3 |
|      | min | 1.9 | 4.0 | 2.3 | 4.7            | 0.15 | 1.3 | 0.9 |     |
| mil  | max | 87  | 181 | 106 | 205            | 12   | 63  | 59  | 12  |
|      | min | 75  | 157 | 91  | 185            | 6    | 51  | 35  |     |

■ The recommended mounting pad size

