



# SMAJxx(C)A Series

Surface Mount Transient Voltage Suppressor Rectifiers

Reverse Voltage 5.0 ~ 550 V

400 Watt Peak Pulse Power



## Features

- Glass passivated chip
- 400 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- Lead and body according with RoHS standard

## Mechanical Data

- Case: DO214AC/(SMA) Molded plastic
- Lead: Solderable per MIL-STD-750, method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

Maximum Ratings & Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter  | Symbols                           | Value          | Unit |
|--|-----------------------------------|----------------|------|
| Peak power dissipation with a 10/1000 us waveform <sup>(1)</sup>                           | P <sub>PP</sub>                   | 400            | W    |
| Peak pulse current with a 10/1000 us waveform <sup>(1)</sup>                               | I <sub>PP</sub>                   | See Next Table | A    |
| Power dissipation on infinite heatsink at TL = 75 °C                                       | P <sub>D</sub>                    | 3.0            | W    |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | I <sub>FSM</sub>                  | 40             | A    |
| Maximum instantaneous forward voltage at 25 A for unidirectional only <sup>(3)</sup>       | V <sub>F</sub>                    | 3.5/6.5        | V    |
| Operating junction and storage temperature range   | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C   |

Note:

1)Non-repetitive current pulse per Fig.5 and derated above TA= 25 °C per Fig.1 ;

2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum ;

3)V<sub>F</sub><3.5V for devices of VBR<200V and V<sub>F</sub><6.5V for devices of VBR>201V.



# SMAJxx(C)A Series

| Part Number |           | Device Marking Code |    | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR} @ I_T$ |         | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Max. Peak Pulse Current | Max. Reverse Leakage @ $V_{RWM}$ |
|-------------|-----------|---------------------|----|---------------------------|----------------------------------|---------|--------------|----------------------------------|-------------------------|----------------------------------|
| UNI-POLAR   | BI-POLAR  | UNI                 | BI | $V_{RWM}(V)$              | Min.(V)                          | Max.(V) | $I_T(mA)$    | $V_{C MAX.}(V)$                  | $I_{PP}(A)$             | $I_R(\mu A)$                     |
| 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                    | 1                                |
| SMAJ12A     | SMAJ12CA  | BE                  | XE | 12.0                      | 13.30                            | 14.70   | 1            | 19.9                             | 20.1                    | 1                                |
| SMAJ13A     | SMAJ13CA  | BG                  | XG | 13.0                      | 14.40                            | 15.90   | 1            | 21.5                             | 18.6                    | 1                                |
| SMAJ14A     | SMAJ14CA  | BK                  | XK | 14.0                      | 15.60                            | 17.20   | 1            | 23.2                             | 17.2                    | 1                                |
| SMAJ15A     | SMAJ15CA  | BM                  | XM | 15.0                      | 16.70                            | 18.50   | 1            | 24.4                             | 16.4                    | 1                                |
| SMAJ16A     | SMAJ16CA  | BP                  | XP | 16.0                      | 17.80                            | 19.70   | 1            | 26.0                             | 15.4                    | 1                                |
| SMAJ17A     | SMAJ17CA  | BR                  | XR | 17.0                      | 18.90                            | 20.90   | 1            | 27.6                             | 14.5                    | 1                                |
| SMAJ18A     | SMAJ18CA  | BT                  | XT | 18.0                      | 20.00                            | 22.10   | 1            | 29.2                             | 13.7                    | 1                                |
| SMAJ20A     | SMAJ20CA  | BV                  | XV | 20.0                      | 22.20                            | 24.50   | 1            | 32.4                             | 12.3                    | 1                                |
| SMAJ22A     | SMAJ22CA  | BX                  | XX | 22.0                      | 24.40                            | 26.90   | 1            | 35.5                             | 11.3                    | 1                                |
| SMAJ24A     | SMAJ24CA  | BZ                  | XZ | 24.0                      | 26.70                            | 29.50   | 1            | 38.9                             | 10.3                    | 1                                |
| SMAJ26A     | SMAJ26CA  | CE                  | YE | 26.0                      | 28.90                            | 31.90   | 1            | 42.1                             | 9.5                     | 1                                |
| SMAJ28A     | SMAJ28CA  | CG                  | YG | 28.0                      | 31.10                            | 34.40   | 1            | 45.4                             | 8.8                     | 1                                |
| SMAJ30A     | SMAJ30CA  | CK                  | YK | 30.0                      | 33.50                            | 36.80   | 1            | 48.4                             | 8.3                     | 1                                |
| SMAJ33A     | SMAJ33CA  | CM                  | YM | 33.0                      | 36.70                            | 40.60   | 1            | 53.3                             | 7.5                     | 1                                |
| SMAJ36A     | SMAJ36CA  | CP                  | YP | 36.0                      | 40.00                            | 44.20   | 1            | 58.1                             | 6.9                     | 1                                |
| SMAJ40A     | SMAJ40CA  | CR                  | YR | 40.0                      | 44.40                            | 49.10   | 1            | 64.5                             | 6.2                     | 1                                |
| SMAJ43A     | SMAJ43CA  | CT                  | YT | 43.0                      | 47.80                            | 52.80   | 1            | 69.4                             | 5.8                     | 1                                |
| SMAJ45A     | SMAJ45CA  | CV                  | YV | 45.0                      | 50.00                            | 55.30   | 1            | 72.7                             | 5.5                     | 1                                |
| SMAJ48A     | SMAJ48CA  | CX                  | YX | 48.0                      | 53.30                            | 58.90   | 1            | 77.4                             | 5.2                     | 1                                |
| SMAJ51A     | SMAJ51CA  | CZ                  | YZ | 51.0                      | 56.70                            | 62.70   | 1            | 82.4                             | 4.9                     | 1                                |
| SMAJ54A     | SMAJ54CA  | RE                  | ZE | 54.0                      | 60.00                            | 66.30   | 1            | 87.1                             | 4.6                     | 1                                |
| SMAJ58A     | SMAJ58CA  | RG                  | ZG | 58.0                      | 64.40                            | 71.20   | 1            | 93.6                             | 4.3                     | 1                                |
| SMAJ60A     | SMAJ60CA  | RK                  | ZK | 60.0                      | 66.70                            | 73.70   | 1            | 96.8                             | 4.1                     | 1                                |
| SMAJ64A     | SMAJ64CA  | RM                  | ZM | 64.0                      | 71.10                            | 78.60   | 1            | 103.0                            | 3.9                     | 1                                |
| SMAJ70A     | SMAJ70CA  | RP                  | ZP | 70.0                      | 77.80                            | 86.00   | 1            | 113.0                            | 3.5                     | 1                                |
| SMAJ75A     | SMAJ75CA  | RR                  | ZR | 75.0                      | 83.30                            | 92.10   | 1            | 121.0                            | 3.3                     | 1                                |
| SMAJ78A     | SMAJ78CA  | RT                  | ZT | 78.0                      | 86.70                            | 95.80   | 1            | 126.0                            | 3.2                     | 1                                |
| SMAJ85A     | SMAJ85CA  | RV                  | ZV | 85.0                      | 94.4                             | 104.0   | 1            | 137.0                            | 2.9                     | 1                                |
| SMAJ90A     | SMAJ90CA  | RX                  | ZX | 90.0                      | 100.0                            | 111.0   | 1            | 146.0                            | 2.7                     | 1                                |
| SMAJ100A    | SMAJ100CA | RZ                  | ZZ | 100.0                     | 111.0                            | 123.0   | 1            | 162.0                            | 2.5                     | 1                                |
| SMAJ110A    | SMAJ110CA | SE                  | VE | 110.0                     | 122.0                            | 135.0   | 1            | 177.0                            | 2.3                     | 1                                |
| SMAJ120A    | SMAJ120CA | SG                  | VG | 120.0                     | 133.0                            | 147.0   | 1            | 193.0                            | 2.1                     | 1                                |
| SMAJ130A    | SMAJ130CA | SK                  | VK | 130.0                     | 144.0                            | 159.0   | 1            | 209.0                            | 1.9                     | 1                                |
| SMAJ150A    | SMAJ150CA | SM                  | VM | 150.0                     | 167.0                            | 185.0   | 1            | 243.0                            | 1.6                     | 1                                |
| SMAJ160A    | SMAJ160CA | SP                  | VP | 160.0                     | 178.0                            | 197.0   | 1            | 259.0                            | 1.5                     | 1                                |
| SMAJ170A    | SMAJ170CA | SR                  | VR | 170.0                     | 189.0                            | 209.0   | 1            | 275.0                            | 1.5                     | 1                                |
| SMAJ180A    | SMAJ180CA | ST                  | VT | 180.0                     | 201.0                            | 222.0   | 1            | 292.0                            | 1.4                     | 1                                |
| SMAJ190A    | SMAJ190CA | SU                  | YU | 190.0                     | 209.0                            | 243.0   | 1            | 308.0                            | 1.3                     | 1                                |
| SMAJ200A    | SMAJ200CA | SV                  | VV | 200.0                     | 224.0                            | 247.0   | 1            | 324.0                            | 1.2                     | 1                                |
| SMAJ210A    | SMAJ210CA | SW                  | YW | 210.0                     | 231.0                            | 268.0   | 1            | 340.0                            | 1.2                     | 1                                |
| SMAJ220A    | SMAJ220CA | GX                  | VX | 220.0                     | 246.0                            | 272.0   | 1            | 356.0                            | 1.1                     | 1                                |
| SMAJ250A    | SMAJ250CA | SZ                  | VZ | 250.0                     | 279.0                            | 309.0   | 1            | 405.0                            | 1.0                     | 1                                |
| SMAJ300A    | SMAJ300CA | TE                  | UE | 300.0                     | 335.0                            | 371.0   | 1            | 486.0                            | 0.8                     | 1                                |
| SMAJ350A    | SMAJ350CA | TG                  | UG | 350.0                     | 391.0                            | 432.0   | 1            | 567.0                            | 0.7                     | 1                                |
| SMAJ400A    | SMAJ400CA | TK                  | UK | 400.0                     | 447.0                            | 494.0   | 1            | 648.0                            | 0.6                     | 1                                |
| SMAJ440A    | SMAJ440CA | TM                  | UM | 440.0                     | 492.0                            | 543.0   | 1            | 713.0                            | 0.6                     | 1                                |
| SMAJ480A    | SMAJ480CA | TP                  | UP | 480.0                     | 536.0                            | 593.0   | 1            | 750.0                            | 0.5                     | 1                                |
| SMAJ520A    | SMAJ520CA | TR                  | UR | 520.0                     | 578.0                            | 640.0   | 1            | 762.0                            | 0.5                     | 1                                |
| SMAJ550A    | SMAJ550CA | TT                  | UT | 550.0                     | 615.0                            | 680.0   | 1            | 860.0                            | 0.4                     | 1                                |

## Ratings and Characteristics Curves (TA=25°C unless otherwise noted)

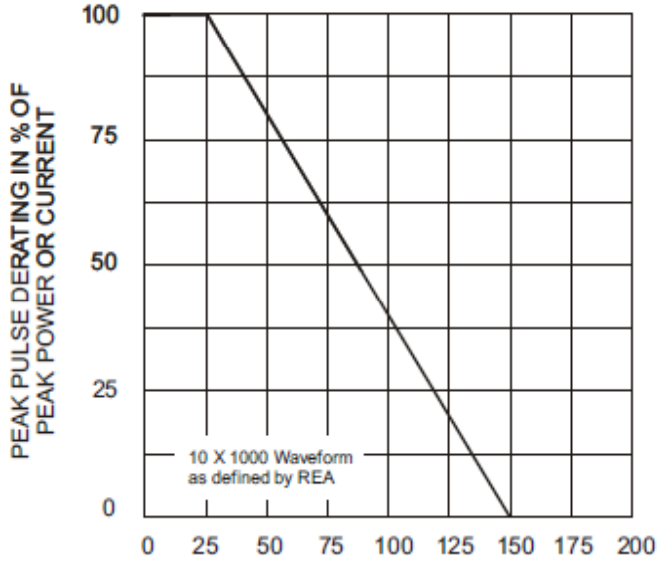


Fig. 1 - Pulse Derating Curve

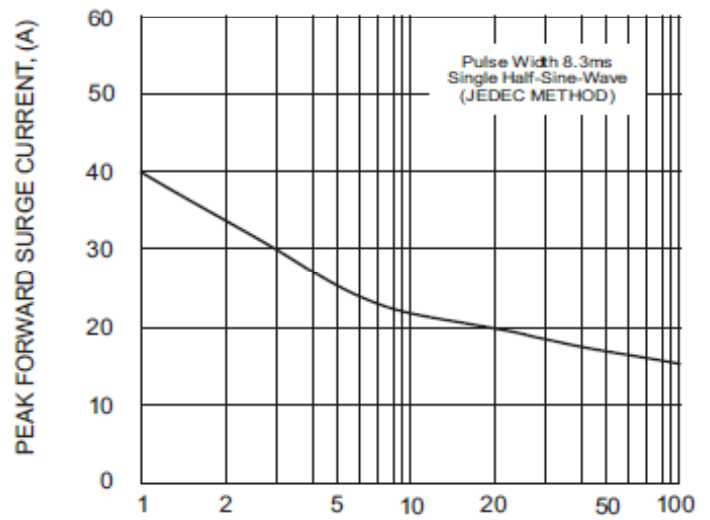


Fig. 2 - Maximum Non-Repetitive Surge Current

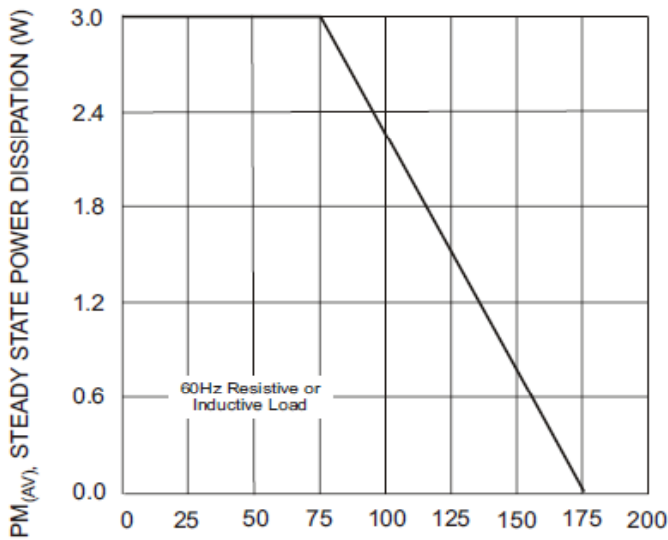


Fig. 3 - Steady State Power Derating Curve

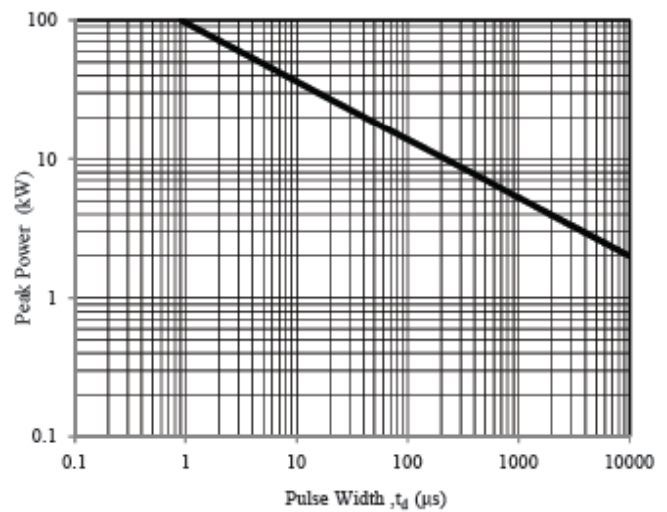


Fig. 4 - Peak Pulse Power Rating Curve

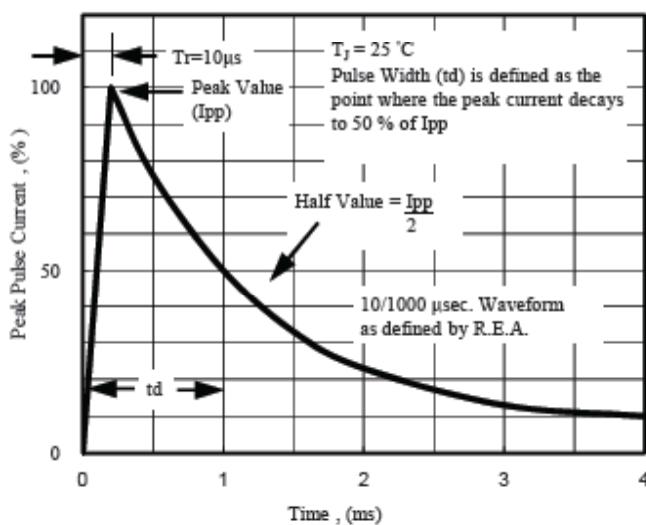


Fig. 5 - Pulse Waveform

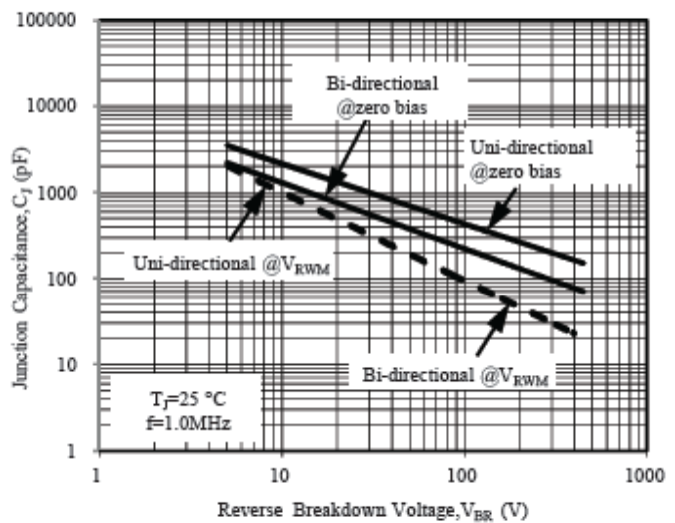


Fig. 6 - Typical Junction Capacitance

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