# Unidirectional and Bidirectional
## Surface Mount Transient Voltage Suppressor

### Features:

- Rating to 200V $V_{BR}$
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL recognition 94V-0
- Typical IR less than 1μA above 10V
- Fast response time : typically less than 1.0ns for Uni-direction, less than 5.0ns fo Bi-direction, from 0 Volts to BV min

### Mechanical Data:

| | |
|---|---|
| Case | : Molded Plastic |
| Polarity | : Cathode band denotes uni-directional device<br>No cathode band denotes bi-directional device |
| Weight | : 0.002 ounces, 0.053 grams |
| Reverse Voltage | : 5 to 170 Volts |
| Power Dissipation | : 400 Watts |

### Maximum Ratings and Electrical Characteristics:

Rating at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

| Characteristics | Symbol | Values | Unit |
|---|---|---|---|
| Peak Power Dissipation at $T_A$ = 25°C<br>TP = 1ms (Note 1, 2) | $P_{PK}$ | Min. 400 | Watts |
| Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave<br>Super Imposed on Rated Load (JEDEC Method) | $I_{FSM}$ | 40 | Amps |
| Steady State Power Dissipation at $T_L$ = 75°C | $P_{M(AV)}$ | 1 | Watts |
| Max. Instantaneous Forward Voltage<br>at 50A for Uni-Directional Devices Only (Note 3) | $V_F$ | 3.5 | Volts |
| Operating Temperature Range | $T_J$ | -55 to +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +175 | °C |

**Notes:**

1. Non-repetitive current pulse ,per Fig. 3 and derated above $T_A$ = 25°C per Fig. 1.
2. Thermal Resistance junction to Lead.
3. 8.3ms single half-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).

| Part Number | | Working Peak Reverse Voltage | Breakdown Voltage VBR Volts | | | Max. Reverse Voltage at $I_{RSM}$ (Clamping Voltage) | Max. Reverse Surge Current | Max. Reverse Leakage at $V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|
| Device Unidirectional | Device Bidirectional | $V_{RWM}$ (V) | Min. (V) | Max. (V) | It(mA) | $V_{RSM}$ (V) | $I_{RSM}$ (Amps) | IR (µA) |
| SMAJ10A+ | SMAJ10CA+ | 10 | 11.1 | 12.3 | 1 | 17 | 23.5 | 5/10 |
| - | SMAJ11CA+ | 11 | 12.2 | 13.5 | 1 | 18.2 | 22 | 5 |
| SMAJ120A+ | - | 120 | 133 | 147 | 1 | 193 | 2 | 5 |
| SMAJ12A+ | SMAJ12CA+ | 12 | 13.3 | 14.7 | 1 | 19.9 | 20.1 | 5 |
| SMAJ13A+ | SMAJ13CA+ | 13 | 14.4 | 15.9 | 1 | 21.5 | 18.6 | 5 |
| SMAJ150A+ | SMAJ150CA+ | 150 | 167 | 185 | 1 | 243 | 1.6 | 5 |
| SMAJ15A+ | SMAJ15CA+ | 15 | 16.7 | 18.5 | 1 | 24.4 | 16.4 | 5 |
| SMAJ16A+ | - | 16 | 17.8 | 19.7 | 1 | 26 | 15.3 | 5 |
| SMAJ18A+ | SMAJ18CA+ | 18 | 20 | 22.1 | 1 | 29.2 | 13.7 | 5 |
| SMAJ20A+ | SMAJ20CA+ | 20 | 22.2 | 24.5 | 1 | 32.4 | 12.3 | 5 |
| SMAJ22A+ | - | 22 | 24.4 | 26.9 | 1 | 35.5 | 11.2 | 5 |
| SMAJ24A+ | SMAJ24CA+ | 24 | 26.7 | 29.5 | 1 | 38.9 | 10.3 | 5 |
| SMAJ26A+ | SMAJ26CA+ | 26 | 28.9 | 31.9 | 1 | 42.1 | 9.5 | 5 |
| SMAJ28A+ | - | 28 | 31.1 | 34.4 | 1 | 45.4 | 8.8 | 5 |
| SMAJ30A+ | SMAJ30CA+ | 30 | 33.3 | 36.8 | 1 | 48.4 | 8.3 | 5 |
| SMAJ33A+ | SMAJ33CA+ | 33 | 36.7 | 40.6 | 1 | 53.3 | 7.5 | 5 |
| SMAJ36A+ | SMAJ36CA+ | 36 | 40 | 44.2 | 1 | 58.1 | 6.9 | 5 |
| SMAJ40A+ | SMAJ40CA+ | 40 | 44.4 | 49.1 | 1 | 64.5 | 6.2 | 5 |
| - | SMAJ43CA+ | 43 | 47.8 | 52.8 | 1 | 69.4 | 5.7 | 5 |
| - | SMAJ48CA+ | 48 | 53.3 | 58.9 | 1 | 77.4 | 5.2 | 5 |
| SMAJ5.0A+ | SMAJ5.0CA+ | 5 | 6.4 | 7 | 10 | 9.2 | 43.5 | 800/1600 |
| SMAJ51A+ | SMAJ51CA+ | 51 | 56.7 | 62.7 | 1 | 82.4 | 4.9 | 5 |
| SMAJ54A+ | SMAJ54CA+ | 54 | 60 | 66.3 | 1 | 87.1 | 4.6 | 5 |
| SMAJ58A+ | SMAJ58CA+ | 58 | 64.4 | 71.2 | 1 | 93.6 | 4.3 | 5 |
| SMAJ6.0A+ | - | 6 | 6.67 | 7.37 | 10 | 10.3 | 38.8 | 800/1600 |
| SMAJ6.5A+ | - | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 35.7 | 500/1000 |
| SMAJ60A+ | - | 60 | 66.7 | 73.7 | 1 | 96.8 | 4.1 | 5 |
| SMAJ64A+ | - | 64 | 71.1 | 78.6 | 1 | 103 | 3.9 | 5 |
| - | SMAJ7.0CA+ | 7 | 7.78 | 8.6 | 10 | 12 | 33.3 | 200/400 |
| SMAJ7.5A+ | - | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 31 | 100/200 |
| SMAJ8.5A+ | - | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 27.7 | 10/20 |
| - | SMAJ9.0CA+ | 9 | 10 | 11.1 | 1 | 15.4 | 26 | 5/10 |

## Ratings and Characteristic Curves

FIG.1-PULSE DERATING CURVE

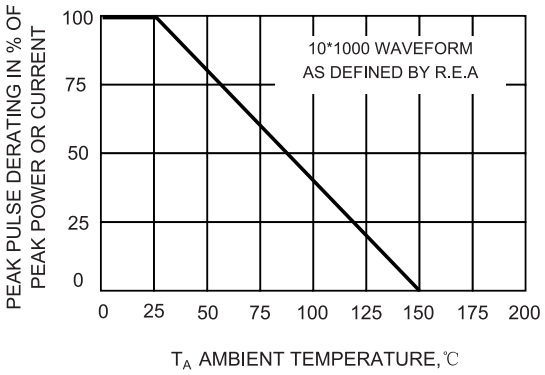



FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

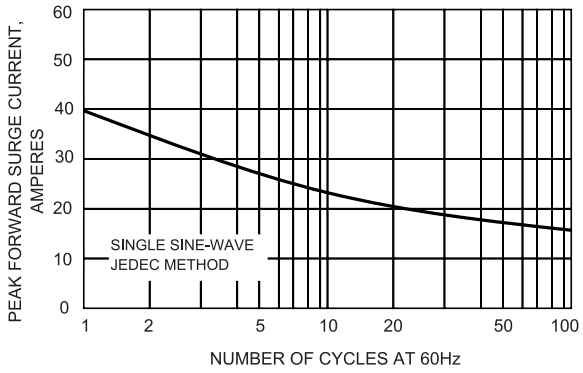



FIG.3-PULSE WAVEFORM

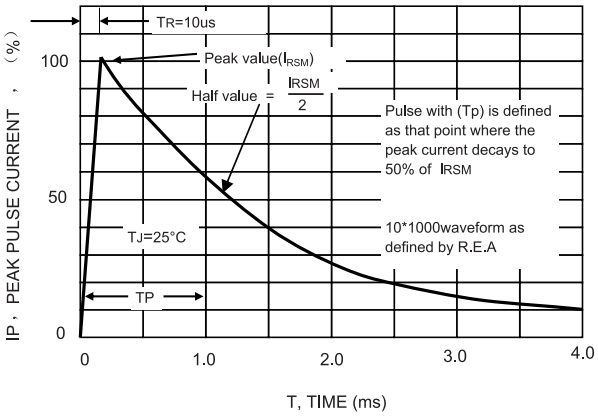



FIG.4-TYPICAL JUNCTION CAPACITANCE

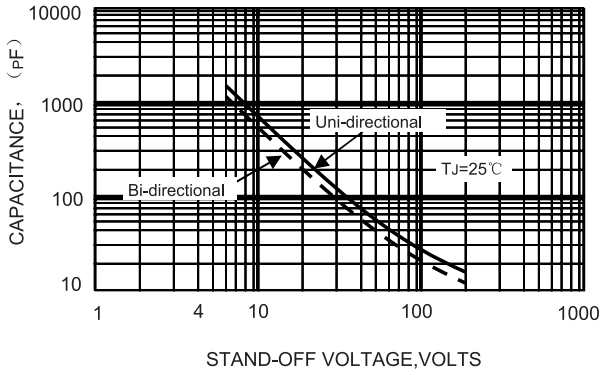



FIG.5-PULSE RATING CURVE

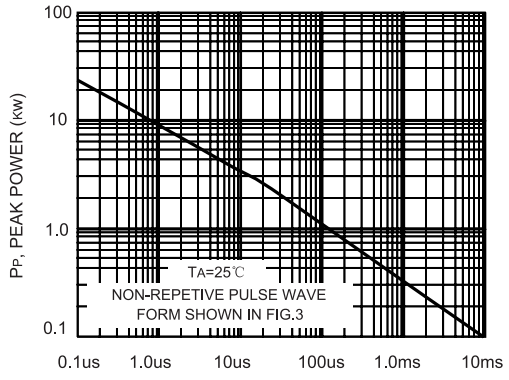
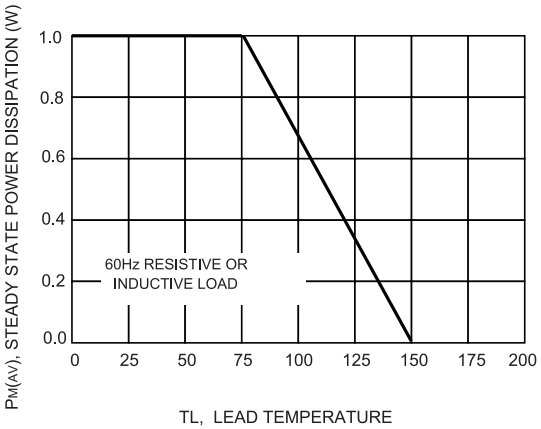
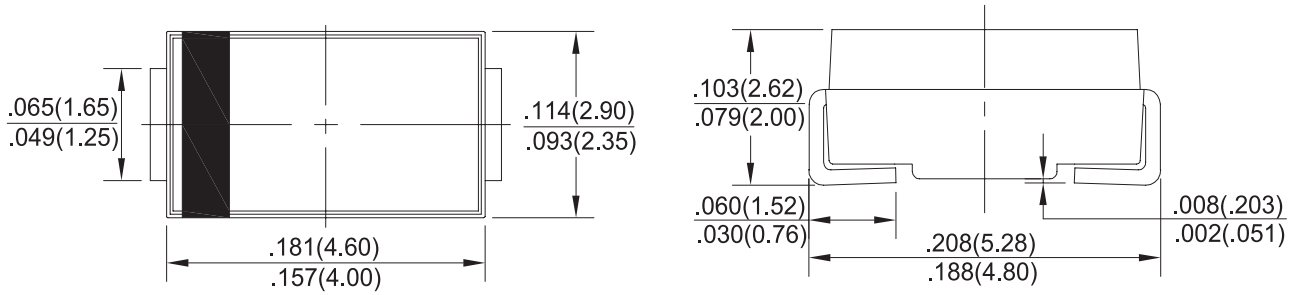



FIG.6-STEADY STATE POWER DERATING CURVE



## Dimensions:

**SMA**




Dimensions : Inches (Millimetres)

## Part Number Table

| Description | Part Number |
|---|---|
| Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors | SMAJ10A+ |
| | SMAJ10CA+ |
| | SMAJ11CA+ |
| | SMAJ120A+ |
| | SMAJ12A+ |
| | SMAJ12CA+ |
| | SMAJ13A+ |
| | SMAJ13CA+ |
| | SMAJ150A+ |
| | SMAJ150CA+ |
| | SMAJ15A+ |
| | SMAJ15CA+ |
| | SMAJ16A+ |
| | SMAJ18A+ |
| | SMAJ18CA+ |
| | SMAJ20A+ |
| | SMAJ20CA+ |

| Description | Part Number |
|---|---|
| Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors | SMAJ22A+ |
| | SMAJ24A+ |
| | SMAJ24CA+ |
| | SMAJ26A+ |
| | SMAJ26CA+ |
| | SMAJ28A+ |
| | SMAJ30A+ |
| | SMAJ30CA+ |
| | SMAJ33A+ |
| | SMAJ33CA+ |
| | SMAJ36A+ |
| | SMAJ36CA+ |
| | SMAJ40A+ |
| | SMAJ40CA+ |
| | SMAJ43CA+ |
| | SMAJ48CA+ |
| | SMAJ5.0A+ |

| Description | Part Number |
|---|---|
| Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors | SMAJ5.0CA+ |
| | SMAJ51A+ |
| | SMAJ51CA+ |
| | SMAJ54A+ |
| | SMAJ54CA+ |
| | SMAJ58A+ |
| | SMAJ58CA+ |
| | SMAJ6.0A+ |
| | SMAJ6.5A+ |
| | SMAJ60A+ |
| | SMAJ64A+ |
| | SMAJ7.0CA+ |
| | SMAJ7.5A+ |
| | SMAJ8.5A+ |
| | SMAJ9.0CA+ |