

**Breakdown Voltage: 12 to 91 V**  
**Peak Pulse Power: 1500 W**

## Surface Mount Transient Voltage Suppressors

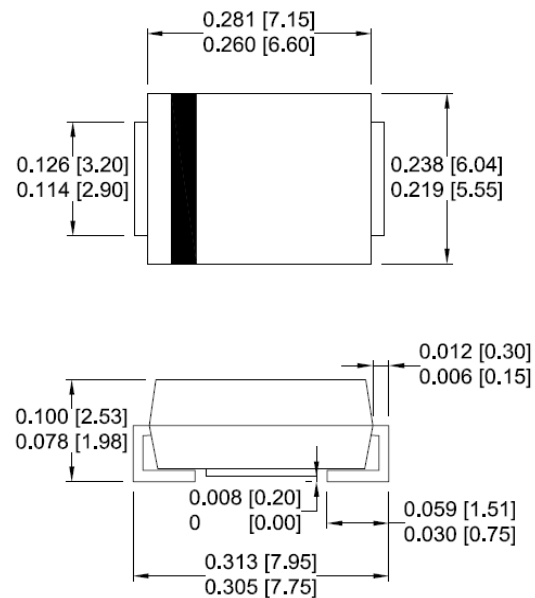
### Features

- Glass passivated chip
- 1500 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- High reliability application and automotive grade
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

### Mechanical Data

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

SMC/ DO-214AB



Dimensions: inch[mm]

### Maximum Ratings( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                                                   | Symbol         | Value          | Unit             |
|---------------------------------------------------------------------------------------------|----------------|----------------|------------------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                       | $P_{PP}$       | 1500           | W                |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                           | $I_{PP}$       | See Next Table | A                |
| Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$                          | $P_D$          | 6.5            | W                |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 200            | A                |
| Maximum instantaneous forward voltage at 100 A for unidirectional only <sup>(3)</sup>       | $V_F$          | 3.5/5.0        | V                |
| Operating junction and storage temperature range                                            | $T_J, T_{STG}$ | -55 to +150    | $^\circ\text{C}$ |

#### Note:

(1)Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  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) $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

**Ratings and Characteristics Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

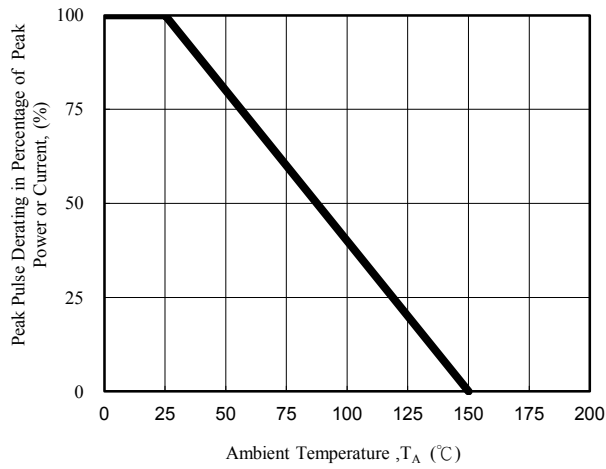


Fig. 1 - Pulse Derating Curve

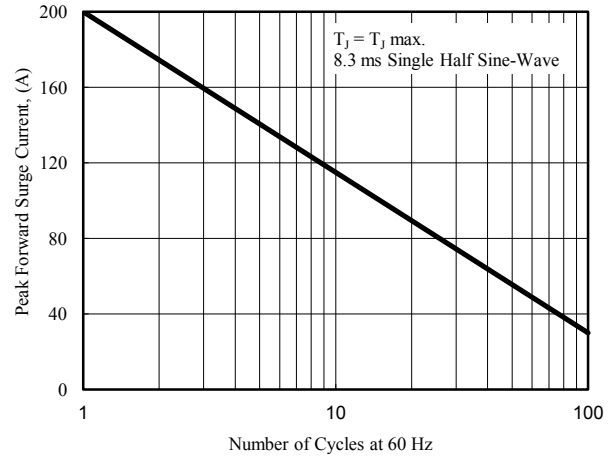


Fig. 2 - Maximum Non-Repetitive Surge Current

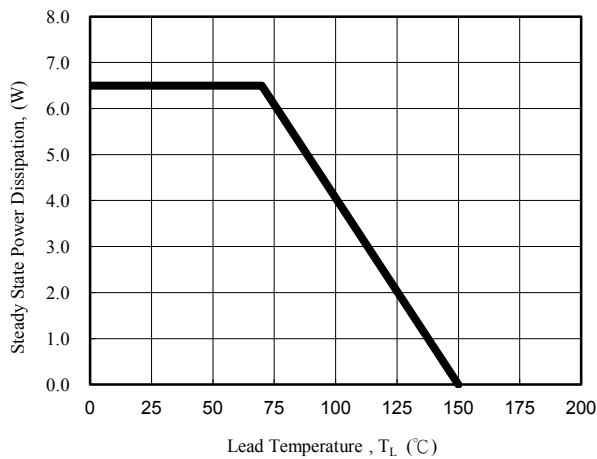


Fig. 3 - Steady State Power Derating Curve

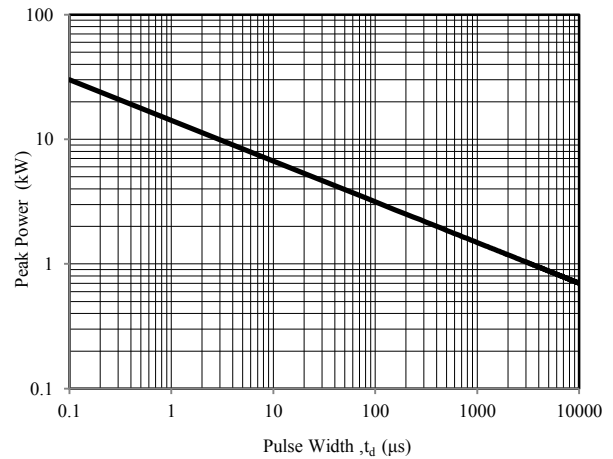


Fig. 4 - Peak Pulse Power Rating Curve

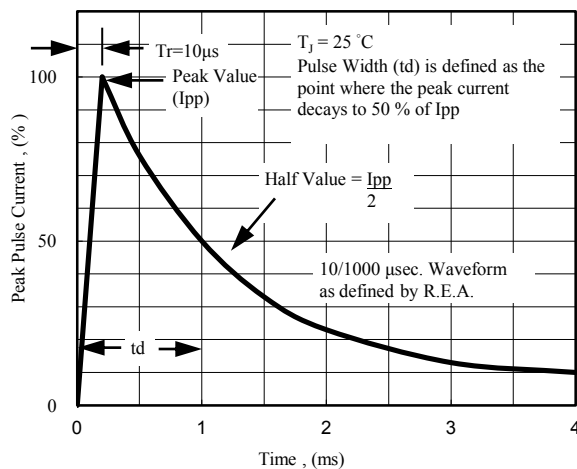


Fig. 5 - Pulse Waveform

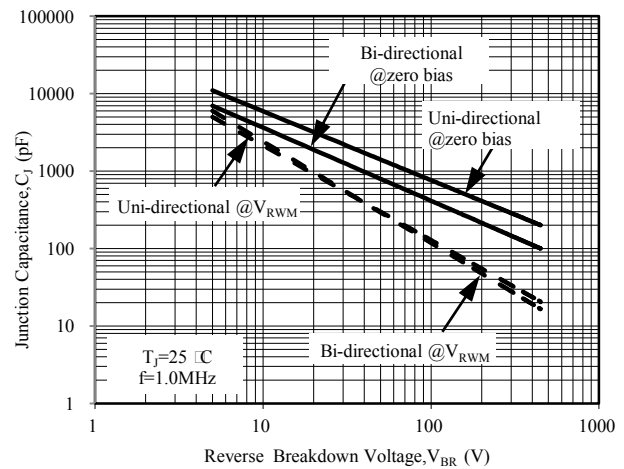


Fig. 6 - Typical Junction Capacitance

**Electrical Characteristics( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

| Part Number<br>(Uni) | Part Number<br>(Bi) | Device<br>Marking<br>Code |      | Breakdown Voltage $V_{BR}$ @ $I_T$ |         |            | Maximum<br>Reverse<br>Leakage $I_R$<br>@ $V_{RWM}$<br>( $\mu\text{A}$ ) | Working<br>Peak Reverse<br>Voltage<br>$V_{RWM}$<br>(V) | Maximum<br>Reverse<br>Surge<br>Current $I_{PP}$<br>(A) | Maximum<br>Clamping<br>Voltage $V_C$<br>@ $I_{PP}$<br>(V) |
|----------------------|---------------------|---------------------------|------|------------------------------------|---------|------------|-------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------|
|                      |                     | Uni                       | Bi   | Min (V)                            | Max (V) | $I_T$ (mA) |                                                                         |                                                        |                                                        |                                                           |
| TPSMC12A             | TPSMC12CA           | 12AA                      | 12CA | 11.40                              | 12.60   | 1          | 5                                                                       | 10.2                                                   | 89.82                                                  | 16.7                                                      |
| TPSMC13A             | TPSMC13CA           | 13AA                      | 13CA | 12.35                              | 13.65   | 1          | 1                                                                       | 11.1                                                   | 82.42                                                  | 18.2                                                      |
| TPSMC15A             | TPSMC15CA           | 15AA                      | 15CA | 14.25                              | 15.75   | 1          | 1                                                                       | 12.8                                                   | 70.75                                                  | 21.2                                                      |
| TPSMC16A             | TPSMC16CA           | 16AA                      | 16CA | 15.20                              | 16.80   | 1          | 1                                                                       | 13.6                                                   | 66.67                                                  | 22.5                                                      |
| TPSMC18A             | TPSMC18CA           | 18AA                      | 18CA | 17.10                              | 18.90   | 1          | 1                                                                       | 15.3                                                   | 59.52                                                  | 25.2                                                      |
| TPSMC20A             | TPSMC20CA           | 20AA                      | 20CA | 19.00                              | 21.00   | 1          | 1                                                                       | 17.1                                                   | 54.15                                                  | 27.7                                                      |
| TPSMC22A             | TPSMC22CA           | 22AA                      | 22CA | 20.90                              | 23.10   | 1          | 1                                                                       | 18.8                                                   | 49.02                                                  | 30.6                                                      |
| TPSMC24A             | TPSMC24CA           | 24AA                      | 24CA | 22.80                              | 25.20   | 1          | 1                                                                       | 20.5                                                   | 45.18                                                  | 33.2                                                      |
| TPSMC27A             | TPSMC27CA           | 27AA                      | 27CA | 25.65                              | 28.35   | 1          | 1                                                                       | 23.1                                                   | 40.00                                                  | 37.5                                                      |
| TPSMC30A             | TPSMC30CA           | 30AA                      | 30CA | 28.50                              | 31.50   | 1          | 1                                                                       | 25.6                                                   | 36.23                                                  | 41.4                                                      |
| TPSMC33A             | TPSMC33CA           | 33AA                      | 33CA | 31.35                              | 34.65   | 1          | 1                                                                       | 28.2                                                   | 32.82                                                  | 45.7                                                      |
| TPSMC36A             | TPSMC36CA           | 36AA                      | 36CA | 34.20                              | 37.80   | 1          | 1                                                                       | 30.8                                                   | 30.06                                                  | 49.9                                                      |
| TPSMC39A             | TPSMC39CA           | 39AA                      | 39CA | 37.05                              | 40.95   | 1          | 1                                                                       | 33.3                                                   | 27.83                                                  | 53.9                                                      |
| TPSMC43A             | TPSMC43CA           | 43AA                      | 43CA | 40.85                              | 45.15   | 1          | 1                                                                       | 36.8                                                   | 25.30                                                  | 59.3                                                      |
| TPSMC47A             | TPSMC47CA           | 47AA                      | 47CA | 44.65                              | 49.35   | 1          | 1                                                                       | 40.2                                                   | 23.15                                                  | 64.8                                                      |
| TPSMC51A             | TPSMC51CA           | 51AA                      | 51CA | 48.45                              | 53.55   | 1          | 1                                                                       | 43.6                                                   | 21.40                                                  | 70.1                                                      |
| TPSMC56A             | TPSMC56CA           | 56AA                      | 56CA | 53.20                              | 58.80   | 1          | 1                                                                       | 47.8                                                   | 19.48                                                  | 77.0                                                      |
| TPSMC62A             | TPSMC62CA           | 62AA                      | 62CA | 58.90                              | 65.10   | 1          | 1                                                                       | 53.0                                                   | 17.65                                                  | 85.0                                                      |
| TPSMC68A             | TPSMC68CA           | 68AA                      | 68CA | 64.60                              | 71.40   | 1          | 1                                                                       | 58.1                                                   | 16.30                                                  | 92.0                                                      |
| TPSMC75A             | TPSMC75CA           | 75AA                      | 75CA | 71.25                              | 78.75   | 1          | 1                                                                       | 64.1                                                   | 14.56                                                  | 103.0                                                     |
| TPSMC82A             | TPSMC82CA           | 82AA                      | 82CA | 77.90                              | 86.10   | 1          | 1                                                                       | 70.1                                                   | 13.27                                                  | 113.0                                                     |
| TPSMC91A             | TPSMC91CA           | 91AA                      | 91CA | 86.45                              | 95.55   | 1          | 1                                                                       | 77.8                                                   | 12.00                                                  | 125.0                                                     |

**Note:**

1. The available parts are "A" type only, the parts without A ( $V_{BR}$  is  $\pm 10\%$ ) is not available
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is double