

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

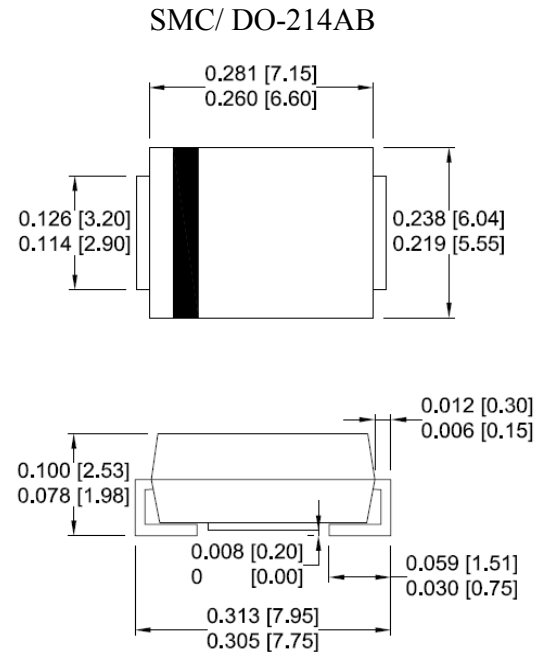
Surface Mount Transient Voltage Suppressors

Features

- Glass passivated chip
- 1500 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- High reliability application and automotive grade AEC Q101 qualified
- 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



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 μ s waveform ⁽¹⁾ | P_{PP} | 1500 | W |
| Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾ | 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 ⁽²⁾ | I_{FSM} | 200 | A |
| Maximum instantaneous forward voltage at 100 A for unidirectional only ⁽³⁾ | 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)

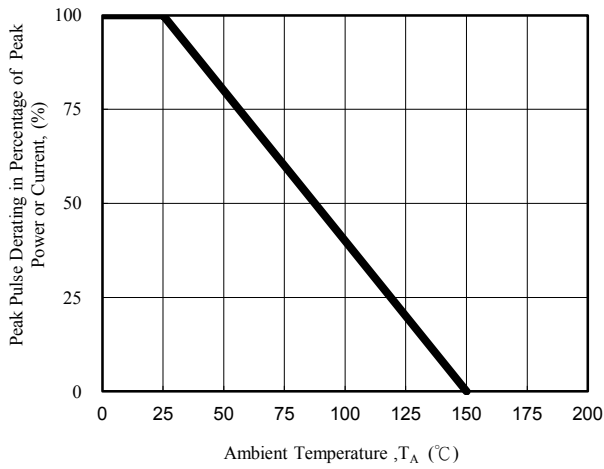


Fig. 1 - Pulse Derating Curve

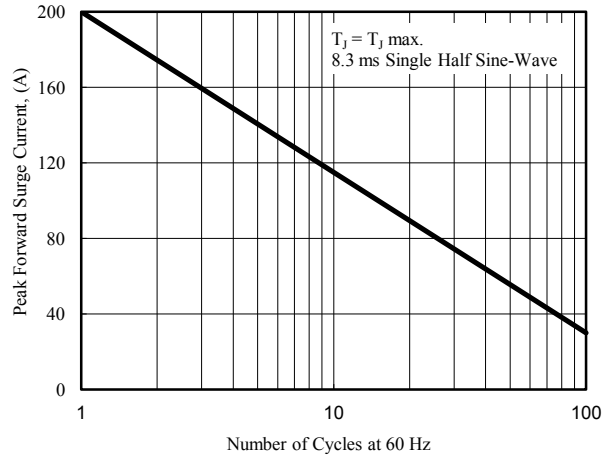


Fig. 2 - Maximum Non-Repetitive Surge Current

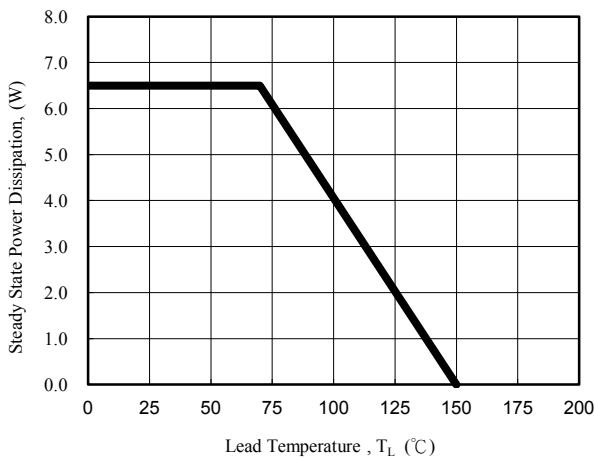


Fig. 3 - Steady State Power Derating Curve

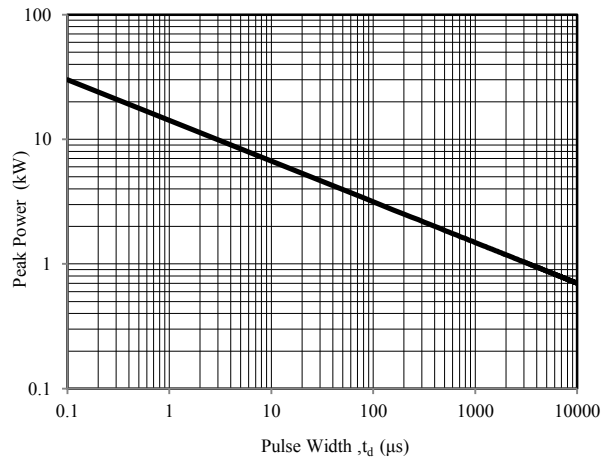


Fig. 4 - Peak Pulse Power Rating Curve

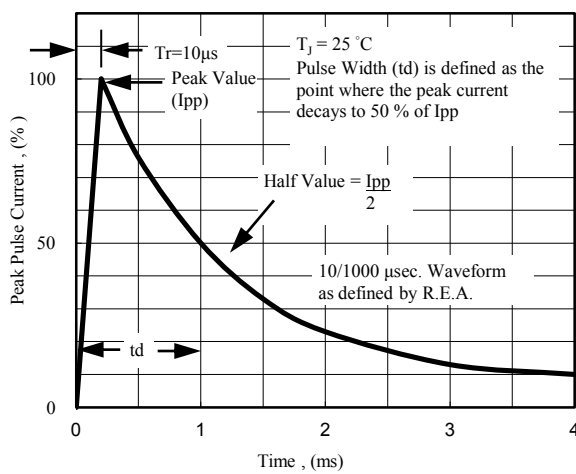


Fig. 5 - Pulse Waveform

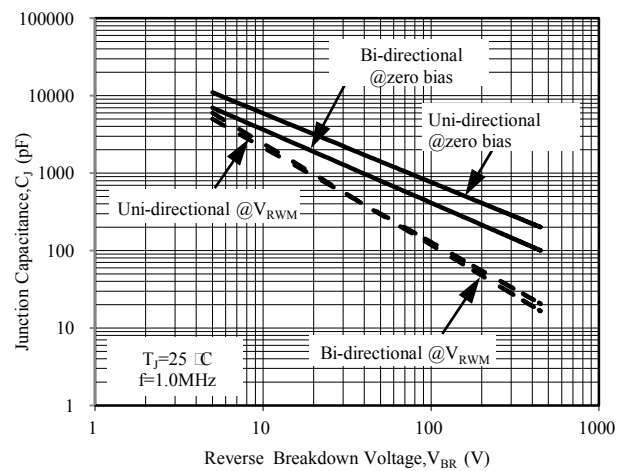


Fig. 6 - Typical Junction Capacitance

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

| Part Number (Uni) | Part Number (Bi) | Device Marking Code | | Breakdown Voltage V_{BR} @ I_T | | | Maximum Reverse Leakage I_R @ V_{RWM} (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current I_{PP} (A) | Maximum Clamping Voltage V_C @ I_{PP} (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