

Breakdown Voltage: 13 to 200 V
Peak Pulse Power: 600 W

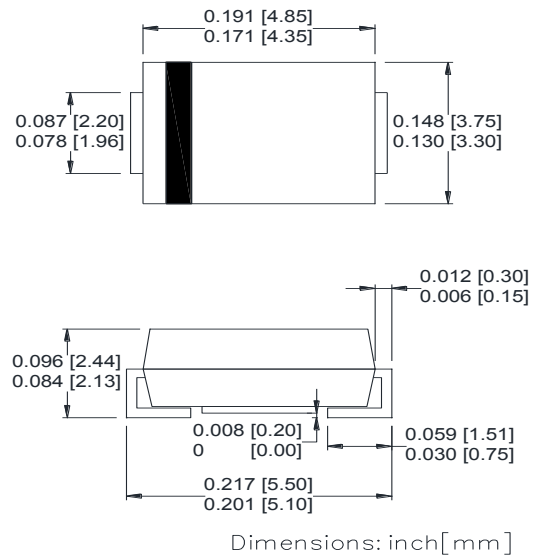
Features

- Glass passivated chip
- 600 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

SMB/ DO-214AA



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} | 600 | 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 | 5.0 | W |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾ | I_{FSM} | 100 | A |
| Maximum instantaneous forward voltage at 25 A for unidirectional only | V_F | 3.5 | V |
| Operating junction and storage temperature range ($V_{BR} \leq 47\text{V}$) | T_J, T_{STG} | - 55 to +175 | $^{\circ}\text{C}$ |
| Operating junction and storage temperature range ($V_{BR} > 47\text{V}$) | | - 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

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) | | | | |
| TPSMB13A | TPSMB13CA | 13AA | 13CA | 12.35 | 13.65 | 1 | 1 | 11.1 | 32.97 | 18.2 |
| TPSMB15A | TPSMB15CA | 15AA | 15CA | 14.25 | 15.75 | 1 | 1 | 12.8 | 28.30 | 21.2 |
| TPSMB16A | TPSMB16CA | 16AA | 16CA | 15.20 | 16.80 | 1 | 1 | 13.6 | 26.67 | 22.5 |
| TPSMB18A | TPSMB18CA | 18AA | 18CA | 17.10 | 18.90 | 1 | 1 | 15.3 | 23.81 | 25.2 |
| TPSMB20A | TPSMB20CA | 20AA | 20CA | 19.00 | 21.00 | 1 | 1 | 17.1 | 21.66 | 27.7 |
| TPSMB22A | TPSMB22CA | 22AA | 22CA | 20.90 | 23.10 | 1 | 1 | 18.8 | 19.61 | 30.6 |
| TPSMB24A | TPSMB24CA | 24AA | 24CA | 22.80 | 25.20 | 1 | 1 | 20.5 | 18.07 | 33.2 |
| TPSMB27A | TPSMB27CA | 27AA | 27CA | 25.65 | 28.35 | 1 | 1 | 23.1 | 16.00 | 37.5 |
| TPSMB30A | TPSMB30CA | 30AA | 30CA | 28.50 | 31.50 | 1 | 1 | 25.6 | 14.49 | 41.4 |
| TPSMB33A | TPSMB33CA | 33AA | 33CA | 31.35 | 34.65 | 1 | 1 | 28.2 | 13.13 | 45.7 |
| TPSMB36A | TPSMB36CA | 36AA | 36CA | 34.20 | 37.80 | 1 | 1 | 30.8 | 12.02 | 49.9 |
| TPSMB39A | TPSMB39CA | 39AA | 39CA | 37.05 | 40.95 | 1 | 1 | 33.3 | 11.13 | 53.9 |
| TPSMB43A | TPSMB43CA | 43AA | 43CA | 40.85 | 45.15 | 1 | 1 | 36.8 | 10.12 | 59.3 |
| TPSMB47A | TPSMB47CA | 47AA | 47CA | 44.65 | 49.35 | 1 | 1 | 40.2 | 9.26 | 64.8 |
| TPSMB51A | TPSMB51CA | 51AA | 51CA | 48.45 | 53.55 | 1 | 1 | 43.6 | 8.56 | 70.1 |
| TPSMB56A | TPSMB56CA | 56AA | 56CA | 53.20 | 58.80 | 1 | 1 | 47.8 | 7.79 | 77.0 |
| TPSMB62A | TPSMB62CA | 62AA | 62CA | 58.90 | 65.10 | 1 | 1 | 53.0 | 7.06 | 85.0 |
| TPSMB68A | TPSMB68CA | 68AA | 68CA | 64.60 | 71.40 | 1 | 1 | 58.1 | 6.52 | 92.0 |
| TPSMB75A | TPSMB75CA | 75AA | 75CA | 71.25 | 78.75 | 1 | 1 | 64.1 | 5.83 | 103.0 |
| TPSMB82A | TPSMB82CA | 82AA | 82CA | 77.90 | 86.10 | 1 | 1 | 70.1 | 5.31 | 113.0 |
| TPSMB91A | TPSMB91CA | 91AA | 91CA | 86.45 | 95.55 | 1 | 1 | 77.8 | 4.80 | 125.0 |
| TPSMB100A | TPSMB100CA | 100AA | 100CA | 95.00 | 105.00 | 1 | 1 | 85.5 | 4.38 | 137.0 |
| TPSMB110A | TPSMB110CA | 110AA | 110CA | 104.50 | 115.50 | 1 | 1 | 94.0 | 3.95 | 152.0 |
| TPSMB120A | TPSMB120CA | 120AA | 120CA | 114.00 | 126.00 | 1 | 1 | 102.0 | 3.64 | 165.0 |
| TPSMB130A | TPSMB130CA | 130AA | 130CA | 123.50 | 136.50 | 1 | 1 | 111.0 | 3.35 | 179.0 |
| TPSMB150A | TPSMB150CA | 150AA | 150CA | 142.50 | 157.50 | 1 | 1 | 128.0 | 2.90 | 207.0 |
| TPSMB160A | TPSMB160CA | 160AA | 160CA | 152.00 | 168.00 | 1 | 1 | 136.0 | 2.74 | 219.0 |
| TPSMB170A | TPSMB170CA | 170AA | 170CA | 161.50 | 178.50 | 1 | 1 | 145.0 | 2.56 | 234.0 |
| TPSMB180A | TPSMB180CA | 180AA | 180CA | 171.00 | 189.00 | 1 | 1 | 154.0 | 2.44 | 246.0 |
| TPSMB200A | TPSMB200CA | 200AA | 200CA | 190.00 | 210.00 | 1 | 1 | 171.0 | 2.19 | 274.0 |

Note:

1. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices

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

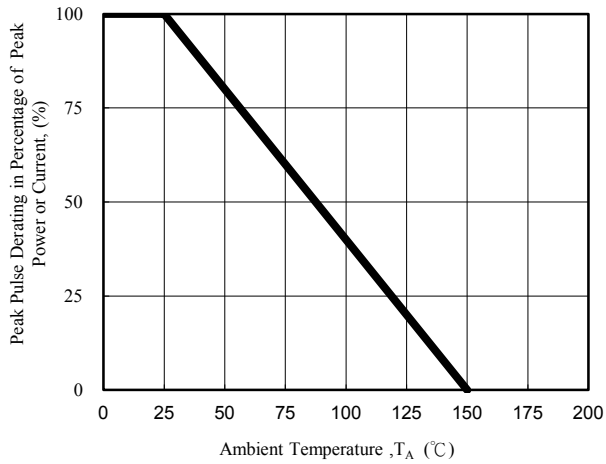


Fig. 1 - Pulse Derating Curve

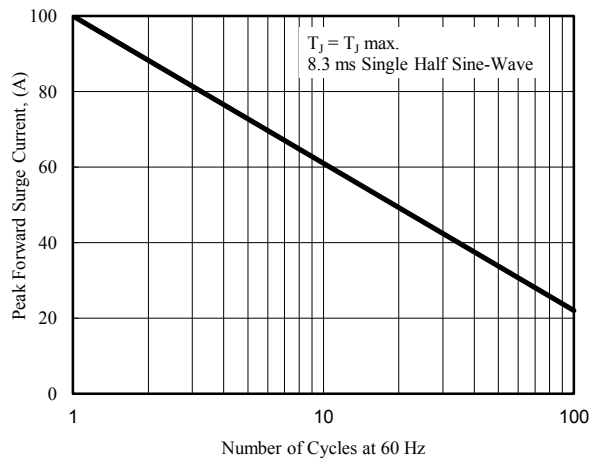


Fig. 2 - Maximum Non-Repetitive Surge Current

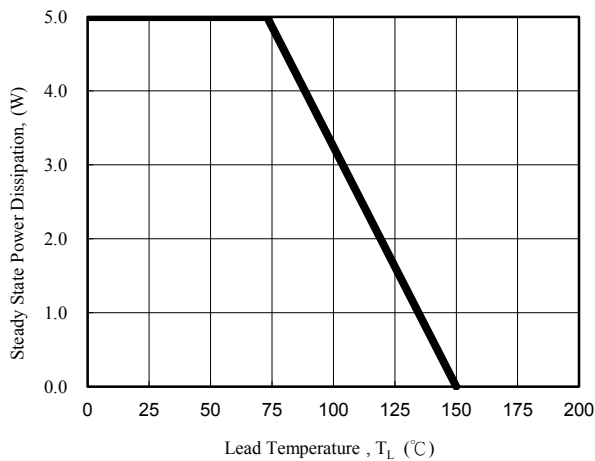


Fig. 3 - Steady State Power Derating Curve

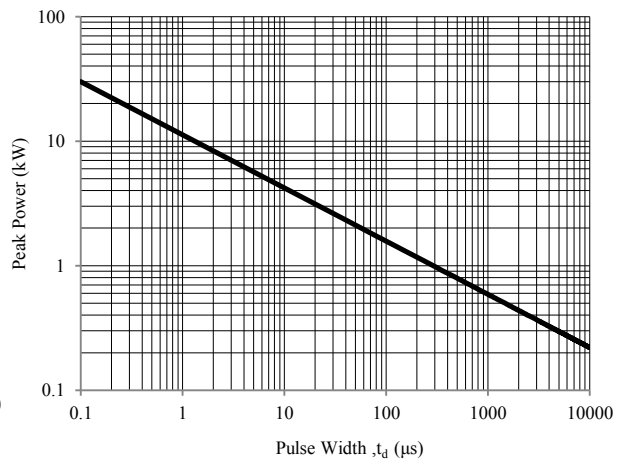


Fig. 4 - Peak Pulse Power Rating Curve

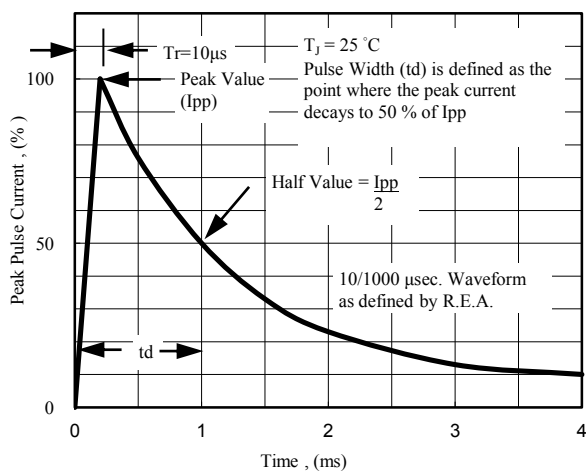


Fig. 5 - Pulse Waveform

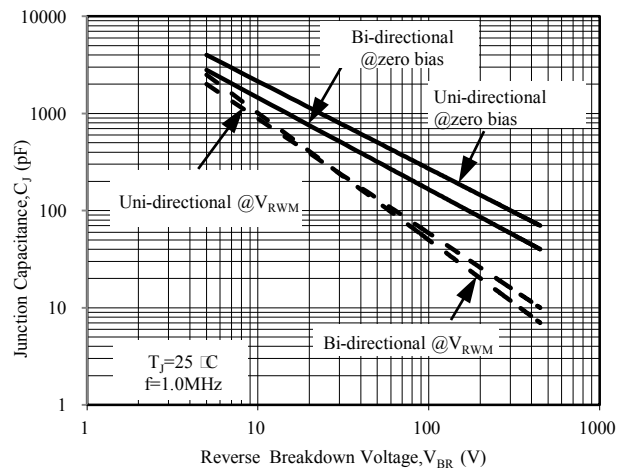


Fig. 6 - Typical Junction Capacitance

| PACKAGE | SPQ/PCS | CARTON SPQ/PCS | CARTON SIZE/CM | CARTON GW/KG | CARTON NW/KG |
|---------|-----------|-------------------|-------------------|-----------------|-----------------|
| SMB | 3000/REEL | 48000 | 36X35.8X36.5 | 12.00 | 11.00 |