

**Breakdown Voltage: 6.8 to 600 V**

**Peak Pulse Power: 600 W**

## Surface Mount Transient Voltage Suppressors

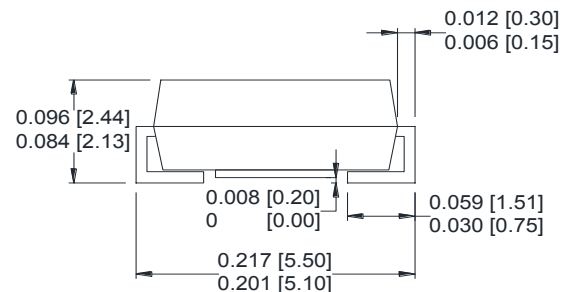
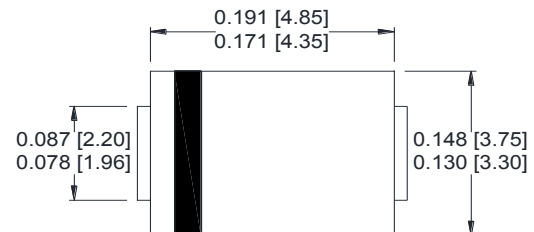
### Features

- Glass passivated chip
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- 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



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>                       | $P_{PP}$       | 600            | 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 $T_L = 75^{\circ}\text{C}$                        | $P_D$          | 5.0            | W                  |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 100            | A                  |
| Maximum instantaneous forward voltage at 25 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)**

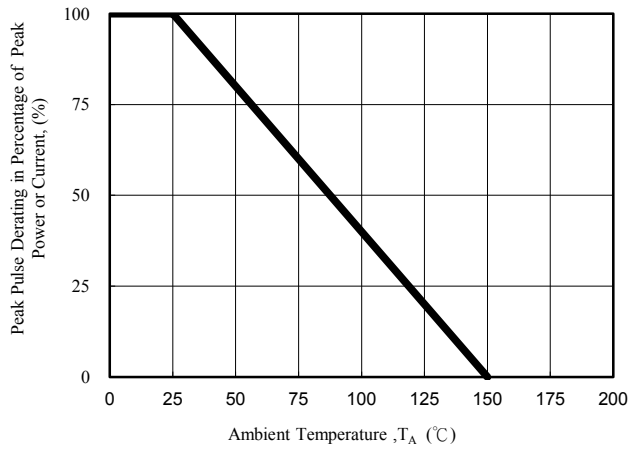


Fig. 1 - Pulse Derating Curve

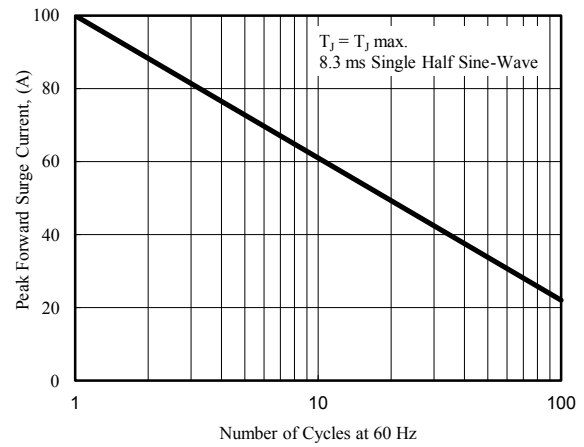


Fig. 2 - Maximum Non-Repetitive Surge Current

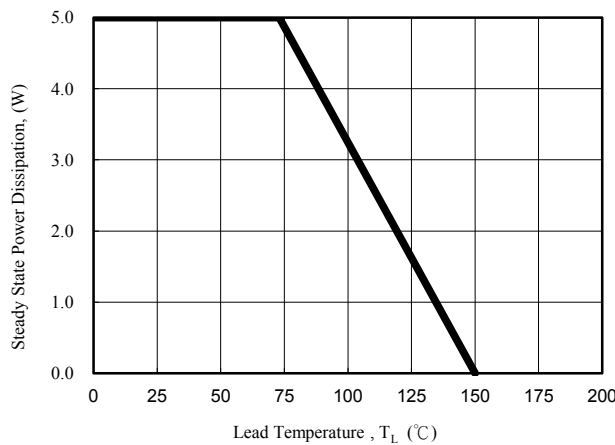


Fig. 3 - Steady State Power Derating Curve

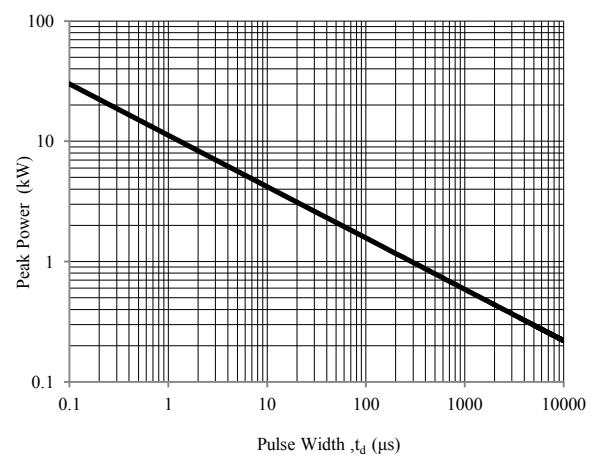


Fig. 4 - Peak Pulse Power Rating Curve

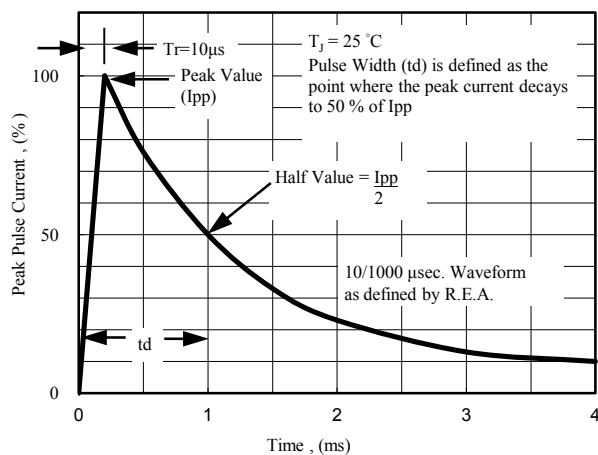


Fig. 5 - Pulse Waveform

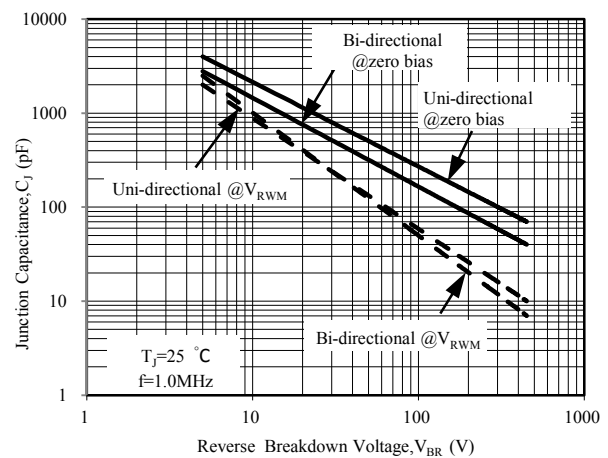


Fig. 6 - Typical Junction Capacitance

## 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) |                                                                         |                                                        |                                                        |                                                           |
| P6SMB6.8A            | P6SMB6.8CA          | 6V8A                      | 6V8C | 6.46                               | 7.14    | 10         | 1000                                                                    | 5.8                                                    | 57.14                                                  | 10.5                                                      |
| P6SMB7.5A            | P6SMB7.5CA          | 7V5A                      | 7V5C | 7.13                               | 7.88    | 10         | 500                                                                     | 6.4                                                    | 53.10                                                  | 11.3                                                      |
| P6SMB8.2A            | P6SMB8.2CA          | 8V2A                      | 8V2C | 7.79                               | 8.61    | 10         | 200                                                                     | 7.0                                                    | 49.59                                                  | 12.1                                                      |
| P6SMB9.1A            | P6SMB9.1CA          | 9V1A                      | 9V1C | 8.65                               | 9.56    | 1          | 50                                                                      | 7.8                                                    | 44.78                                                  | 13.4                                                      |
| P6SMB10A             | P6SMB10CA           | 10A                       | 10C  | 9.50                               | 10.50   | 1          | 10                                                                      | 8.6                                                    | 41.38                                                  | 14.5                                                      |
| P6SMB11A             | P6SMB11CA           | 11A                       | 11C  | 10.45                              | 11.55   | 1          | 5                                                                       | 9.4                                                    | 38.46                                                  | 15.6                                                      |
| P6SMB12A             | P6SMB12CA           | 12A                       | 12C  | 11.40                              | 12.60   | 1          | 5                                                                       | 10.2                                                   | 35.93                                                  | 16.7                                                      |
| P6SMB13A             | P6SMB13CA           | 13A                       | 13C  | 12.35                              | 13.65   | 1          | 1                                                                       | 11.1                                                   | 32.97                                                  | 18.2                                                      |
| P6SMB15A             | P6SMB15CA           | 15A                       | 15C  | 14.25                              | 15.75   | 1          | 1                                                                       | 12.8                                                   | 28.30                                                  | 21.2                                                      |
| P6SMB16A             | P6SMB16CA           | 16A                       | 16C  | 15.20                              | 16.80   | 1          | 1                                                                       | 13.6                                                   | 26.67                                                  | 22.5                                                      |
| P6SMB18A             | P6SMB18CA           | 18A                       | 18C  | 17.10                              | 18.90   | 1          | 1                                                                       | 15.3                                                   | 23.81                                                  | 25.2                                                      |
| P6SMB20A             | P6SMB20CA           | 20A                       | 20C  | 19.00                              | 21.00   | 1          | 1                                                                       | 17.1                                                   | 21.66                                                  | 27.7                                                      |
| P6SMB22A             | P6SMB22CA           | 22A                       | 22C  | 20.90                              | 23.10   | 1          | 1                                                                       | 18.8                                                   | 19.61                                                  | 30.6                                                      |
| P6SMB24A             | P6SMB24CA           | 24A                       | 24C  | 22.80                              | 25.20   | 1          | 1                                                                       | 20.5                                                   | 18.07                                                  | 33.2                                                      |
| P6SMB27A             | P6SMB27CA           | 27A                       | 27C  | 25.65                              | 28.35   | 1          | 1                                                                       | 23.1                                                   | 16.00                                                  | 37.5                                                      |
| P6SMB30A             | P6SMB30CA           | 30A                       | 30C  | 28.50                              | 31.50   | 1          | 1                                                                       | 25.6                                                   | 14.49                                                  | 41.4                                                      |
| P6SMB33A             | P6SMB33CA           | 33A                       | 33C  | 31.35                              | 34.65   | 1          | 1                                                                       | 28.2                                                   | 13.13                                                  | 45.7                                                      |
| P6SMB36A             | P6SMB36CA           | 36A                       | 36C  | 34.20                              | 37.80   | 1          | 1                                                                       | 30.8                                                   | 12.02                                                  | 49.9                                                      |
| P6SMB39A             | P6SMB39CA           | 39A                       | 39C  | 37.05                              | 40.95   | 1          | 1                                                                       | 33.3                                                   | 11.13                                                  | 53.9                                                      |
| P6SMB43A             | P6SMB43CA           | 43A                       | 43C  | 40.85                              | 45.15   | 1          | 1                                                                       | 36.8                                                   | 10.12                                                  | 59.3                                                      |
| P6SMB47A             | P6SMB47CA           | 47A                       | 47C  | 44.65                              | 49.35   | 1          | 1                                                                       | 40.2                                                   | 9.26                                                   | 64.8                                                      |
| P6SMB51A             | P6SMB51CA           | 51A                       | 51C  | 48.45                              | 53.55   | 1          | 1                                                                       | 43.6                                                   | 8.56                                                   | 70.1                                                      |
| P6SMB56A             | P6SMB56CA           | 56A                       | 56C  | 53.20                              | 58.80   | 1          | 1                                                                       | 47.8                                                   | 7.79                                                   | 77.0                                                      |
| P6SMB62A             | P6SMB62CA           | 62A                       | 62C  | 58.90                              | 65.10   | 1          | 1                                                                       | 53.0                                                   | 7.06                                                   | 85.0                                                      |
| P6SMB68A             | P6SMB68CA           | 68A                       | 68C  | 64.60                              | 71.40   | 1          | 1                                                                       | 58.1                                                   | 6.52                                                   | 92.0                                                      |
| P6SMB75A             | P6SMB75CA           | 75A                       | 75C  | 71.25                              | 78.75   | 1          | 1                                                                       | 64.1                                                   | 5.83                                                   | 103.0                                                     |
| P6SMB82A             | P6SMB82CA           | 82A                       | 82C  | 77.90                              | 86.10   | 1          | 1                                                                       | 70.1                                                   | 5.31                                                   | 113.0                                                     |
| P6SMB91A             | P6SMB91CA           | 91A                       | 91C  | 86.45                              | 95.55   | 1          | 1                                                                       | 77.8                                                   | 4.80                                                   | 125.0                                                     |
| P6SMB100A            | P6SMB100CA          | 100A                      | 100C | 95.00                              | 105.00  | 1          | 1                                                                       | 85.5                                                   | 4.38                                                   | 137.0                                                     |
| P6SMB110A            | P6SMB110CA          | 110A                      | 110C | 104.50                             | 115.50  | 1          | 1                                                                       | 94.0                                                   | 3.95                                                   | 152.0                                                     |
| P6SMB120A            | P6SMB120CA          | 120A                      | 120C | 114.00                             | 126.00  | 1          | 1                                                                       | 102.0                                                  | 3.64                                                   | 165.0                                                     |
| P6SMB130A            | P6SMB130CA          | 130A                      | 130C | 123.50                             | 136.50  | 1          | 1                                                                       | 111.0                                                  | 3.35                                                   | 179.0                                                     |
| P6SMB150A            | P6SMB150CA          | 150A                      | 150C | 142.50                             | 157.50  | 1          | 1                                                                       | 128.0                                                  | 2.90                                                   | 207.0                                                     |
| P6SMB160A            | P6SMB160CA          | 160A                      | 160C | 152.00                             | 168.00  | 1          | 1                                                                       | 136.0                                                  | 2.74                                                   | 219.0                                                     |
| P6SMB170A            | P6SMB170CA          | 170A                      | 170C | 161.50                             | 178.50  | 1          | 1                                                                       | 145.0                                                  | 2.56                                                   | 234.0                                                     |
| P6SMB180A            | P6SMB180CA          | 180A                      | 180C | 171.00                             | 189.00  | 1          | 1                                                                       | 154.0                                                  | 2.44                                                   | 246.0                                                     |
| P6SMB200A            | P6SMB200CA          | 200A                      | 200C | 190.00                             | 210.00  | 1          | 1                                                                       | 171.0                                                  | 2.19                                                   | 274.0                                                     |
| P6SMB220A            | P6SMB220CA          | 220A                      | 220C | 209.00                             | 231.00  | 1          | 1                                                                       | 185.0                                                  | 1.83                                                   | 328.0                                                     |
| P6SMB250A            | P6SMB250CA          | 250A                      | 250C | 237.50                             | 262.50  | 1          | 1                                                                       | 214.0                                                  | 1.74                                                   | 344.0                                                     |
| P6SMB300A            | P6SMB300CA          | 300A                      | 300C | 285.00                             | 315.00  | 1          | 1                                                                       | 256.0                                                  | 1.45                                                   | 414.0                                                     |
| P6SMB350A            | P6SMB350CA          | 350A                      | 350C | 332.50                             | 367.50  | 1          | 1                                                                       | 299.3                                                  | 1.24                                                   | 482.0                                                     |
| P6SMB380A            | P6SMB380CA          | 380A                      | 380C | 361.00                             | 399.00  | 1          | 1                                                                       | 324.9                                                  | 1.14                                                   | 524.4                                                     |
| P6SMB400A            | P6SMB400CA          | 400A                      | 400C | 380.00                             | 420.00  | 1          | 1                                                                       | 342.0                                                  | 1.09                                                   | 548.0                                                     |
| P6SMB440A            | P6SMB440CA          | 440A                      | 440C | 418.00                             | 462.00  | 1          | 1                                                                       | 376.2                                                  | 0.99                                                   | 607.2                                                     |
| P6SMB500A            | P6SMB500CA          | 500A                      | 500C | 475.00                             | 525.00  | 1          | 1                                                                       | 427.5                                                  | 0.87                                                   | 690.0                                                     |
| P6SMB520A            | P6SMB520CA          | 520A                      | 520C | 494.00                             | 546.00  | 1          | 1                                                                       | 444.6                                                  | 0.84                                                   | 717.6                                                     |
| P6SMB550A            | P6SMB550CA          | 550A                      | 550C | 522.50                             | 577.50  | 1          | 1                                                                       | 470.3                                                  | 0.79                                                   | 759.0                                                     |
| P6SMB600A            | P6SMB600CA          | 600A                      | 600C | 570.00                             | 630.00  | 1          | 1                                                                       | 513.0                                                  | 0.72                                                   | 828.0                                                     |

### 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