

DATA SHEET

TRANSIENT VOLTAGE SUPPRESSORS – P6SMB SERIES

FEATURE

- ✧ For surface mounted applications in order to optimize board space.
- ✧ Low profile package.
- ✧ Built-in strain relief.
- ✧ Glass passivated junction.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ Repetition Rate (duty cycle):0.01%.
- ✧ Fast response time: typically less than 1.0ps from 0 Volts to VBR for unidirectional types.
- ✧ Typical IR less than 1 μ A above 10V.
- ✧ High Temperature soldering: 260°C/10 seconds at terminals.



SMB/DO-214AA

MECHANICAL DATE

- ✧ Case: JEDEC DO214AA. Molded plastic over glass passivated junction.
- ✧ Terminal: Solder plated, solderable per MIL-STD-750, Method 2026.
- ✧ Polarity: Color band denoted positive end (cathode) except Bidirectional.
- ✧ Standard Packaging: 12mm tape (EIA STD RS-481).
- ✧ Weight: 0.003 ounce, 0.093 grams.

DEVICES FOR BIPOLAR APPLICATION

For bidirectional use CA suffix for types P6SMB6.8CA thru types P6SMB550CA, electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

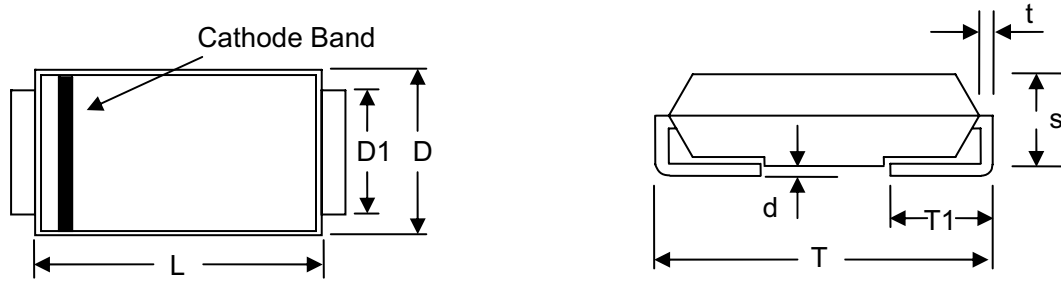
Ratings at 25°C ambient temperature unless otherwise specified.

| RATING | SYMBOL | VALUE | UNITS |
|--|-----------------------------------|-------------|-------|
| Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note1,Note2, Fig.1). | P _{PPM} | Minimum 600 | Watts |
| Peak Pulse Current of on 10/1000 μ s waveform.(Note1,Fig.3) | I _{PPM} | See Table | Amps |
| Steady State Power Dissipation at T _L =75°C,Lead lengths.375", (9.5mm) (Note2,Fig.5). | P _{M(AV)} | 5.0 | Watts |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note 3,Fig6). | I _{FSM} | 100 | Amps |
| Operating junction and Storage Temperature Range. | T _J , T _{STG} | -65 to +150 | °C |

Notes: 1. Non-repetitive current pulse, per Fig. 3 and derated above TA = 25°C per Fig. 2.

2. Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal.

3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

DIMENSIONS

SMB/DO-214AA

| Item | Millimeters | | Inches | |
|------|-------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| L | 4.06 | 4.57 | 0.160 | 0.180 |
| D | 3.30 | 3.94 | 0.130 | 0.155 |
| D1 | 1.95 | 2.20 | 0.077 | 0.086 |
| T | 5.21 | 5.59 | 0.205 | 0.220 |
| T1 | 0.76 | 1.52 | 0.030 | 0.060 |
| d | - | 0.203 | - | 0.008 |
| s | 2.13 | 2.44 | 0.084 | 0.096 |
| t | 0.152 | 0.305 | 0.006 | 0.012 |

ELECTRICAL CHARACTERISTICS

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage NIN.@I _T | Breakdown Voltage MAX.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|------------|---------------------|------|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| UNT-POLAR | BI-POLAR | UNI | BI | V _{RWM} (V) | V _{BR MIN. (V)} | V _{BR MAX. (V)} | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (μA) |
| P6SMB6.8A | P6SMB6.8CA | 6V8A | 6V8C | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 |
| P6SMB7.5A | P6SMB7.5CA | 7V5A | 7V5C | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 |
| P6SMB8.2A | P6SMB8.2CA | 8V2A | 8V2C | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 |
| P6SMB9.1A | P6SMB9.1CA | 9V1A | 9V1C | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 |
| P6SMB10A | P6SMB10CA | 10A | 10C | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 |
| P6SMB11A | P6SMB11CA | 11A | 11C | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 |
| P6SMB12A | P6SMB12CA | 12A | 12C | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 36.5 | 5 |
| P6SMB13A | P6SMB13CA | 13A | 13C | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 33.5 | 1 |
| P6SMB15A | P6SMB15CA | 15A | 15C | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 28.8 | 1 |
| P6SMB16A | P6SMB16CA | 16A | 16C | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 1 |
| P6SMB18A | P6SMB18CA | 18A | 18C | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 24.2 | 1 |
| P6SMB20A | P6SMB20CA | 20A | 20C | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 22.0 | 1 |
| P6SMB22A | P6SMB22CA | 22A | 22C | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 1 |
| P6SMB24A | P6SMB24CA | 24A | 24C | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 1 |
| P6SMB27A | P6SMB27CA | 27A | 27C | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 16.3 | 1 |

ELECTRICAL CHARACTERISTICS

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage NIN.@IT | Breakdown Voltage MAX.@IT | Test Current | Maximum Clamping Voltage @IPP | Peak Pulse Current | Reverse Leakage @VRWM |
|-------------|------------|---------------------|------|---------------------------|---------------------------|---------------------------|--------------|-------------------------------|--------------------|-----------------------|
| UNT-POLAR | BI-POLAR | UNI | BI | VRWM(V) | VBR MIN.(V) | VBR MAX.(V) | IT(mA) | VC(V) | IPP(A) | IR(μA) |
| P6SMB30A | P6SMB30CA | 30A | 30C | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 1 |
| P6SMB33A | P6SMB33CA | 33A | 33C | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 13.3 | 1 |
| P6SMB36A | P6SMB36CA | 36A | 36C | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 12.2 | 1 |
| P6SMB39A | P6SMB39CA | 39A | 39C | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 11.3 | 1 |
| P6SMB43A | P6SMB43CA | 43A | 43C | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 10.3 | 1 |
| P6SMB47A | P6SMB47CA | 47A | 47C | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 9.4 | 1 |
| P6SMB51A | P6SMB51CA | 51A | 51C | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 8.7 | 1 |
| P6SMB56A | P6SMB56CA | 56A | 56C | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 7.9 | 1 |
| P6SMB62A | P6SMB62CA | 62A | 62C | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 7.2 | 1 |
| P6SMB68A | P6SMB68CA | 68A | 68C | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 6.6 | 1 |
| P6SMB75A | P6SMB75CA | 75A | 75C | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 5.9 | 1 |
| P6SMB82A | P6SMB82CA | 82A | 82C | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 5.4 | 1 |
| P6SMB91A | P6SMB91CA | 91A | 91C | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 1 |
| P6SMB100A | P6SMB100CA | 100A | 100C | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 1 |
| P6SMB110A | P6SMB110CA | 110A | 110C | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 1 |
| P6SMB120A | P6SMB120CA | 120A | 120C | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 1 |
| P6SMB130A | P6SMB130CA | 130A | 130C | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 1 |
| P6SMB150A | P6SMB150CA | 150A | 150C | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 1 |
| P6SMB160A | P6SMB160CA | 160A | 160C | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 1 |
| P6SMB170A | P6SMB170CA | 170A | 170C | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 1 |
| P6SMB180A | P6SMB180CA | 180A | 180C | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 1 |
| P6SMB200A | P6SMB200CA | 200A | 200C | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 1 |
| P6SMB220A | P6SMB220CA | 220A | 220C | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 1 |
| P6SMB250A | P6SMB250CA | 250A | 250C | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.8 | 1 |
| P6SMB300A | P6SMB300CA | 300A | 300C | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 1 |
| P6SMB350A | P6SMB350CA | 350A | 350C | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.3 | 1 |
| P6SMB400A | P6SMB400CA | 400A | 400C | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.1 | 1 |
| P6SMB440A | P6SMB440CA | 440A | 440C | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 1.0 | 1 |
| P6SMB480A | P6SMB480CA | 480A | 480C | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 0.9 | 1 |
| P6SMB510A | P6SMB510CA | 510A | 510C | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.9 | 1 |
| P6SMB530A | P6SMB530CA | 530A | 530C | 450.00 | 503.50 | 556.50 | 1 | 725.0 | 0.8 | 1 |
| P6SMB540A | P6SMB540CA | 540A | 540C | 459.00 | 513.00 | 567.00 | 1 | 740.0 | 0.8 | 1 |
| P6SMB550A | P6SMB550CA | 550A | 550C | 467.00 | 522.50 | 577.50 | 1 | 760.0 | 0.8 | 1 |

Notes: For bidirectional type having VRWM of 10 volts and less, the IR limit is double.

RATINGS AND CHARACTERISTIC CURVES (TA=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

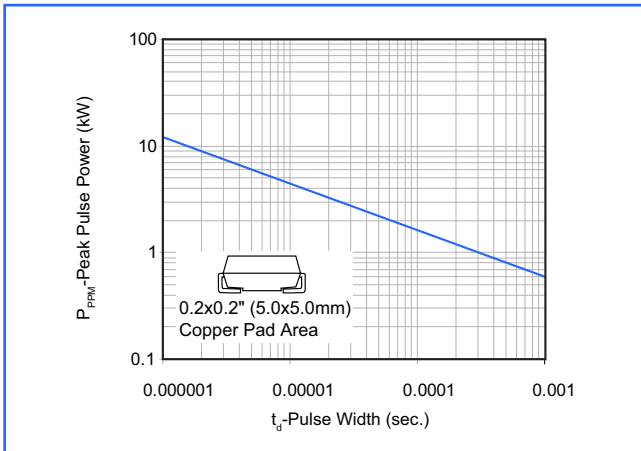


Figure 2 - Pulse Derating Curve

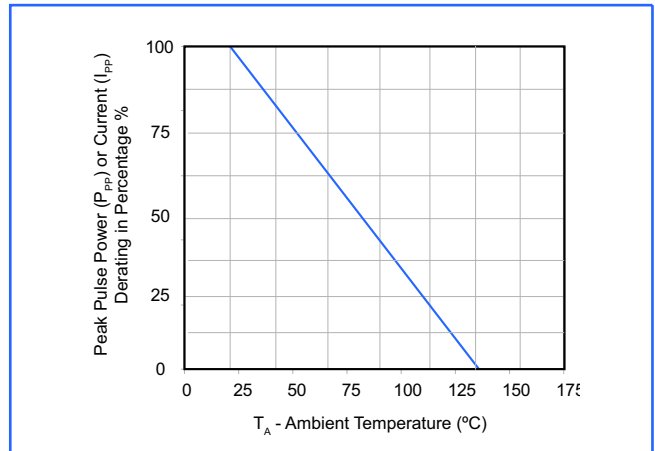


Figure 3 - Pulse Waveform

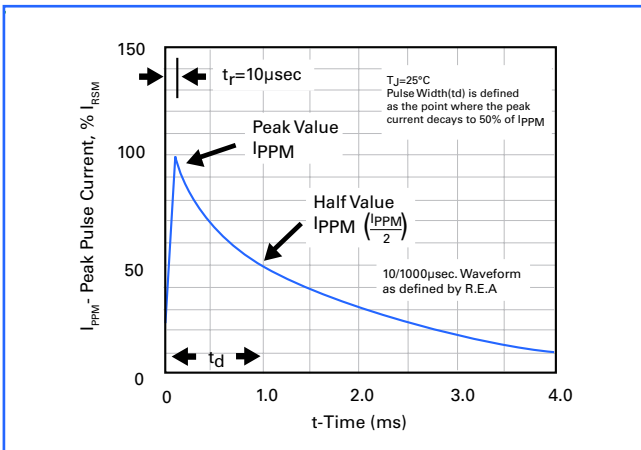


Figure 4 - Typical Junction Capacitance

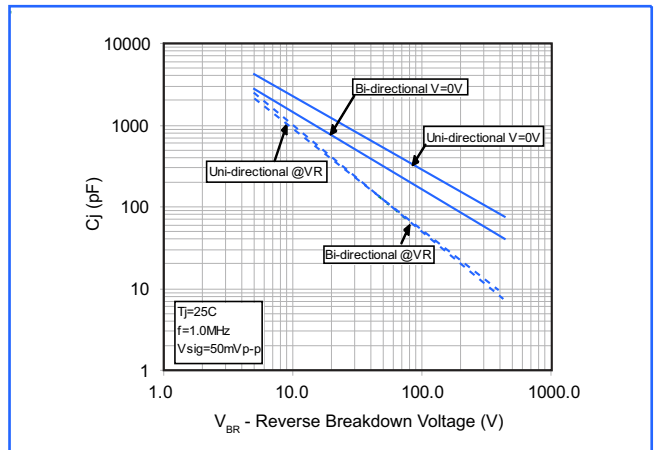


Figure 5 - Steady State Power Dissipation Derating Curve

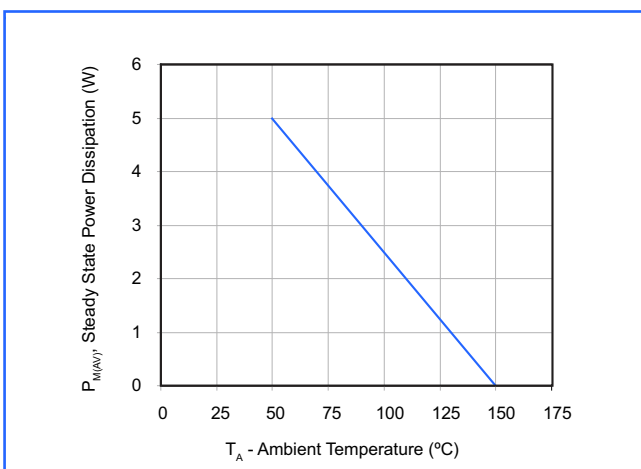
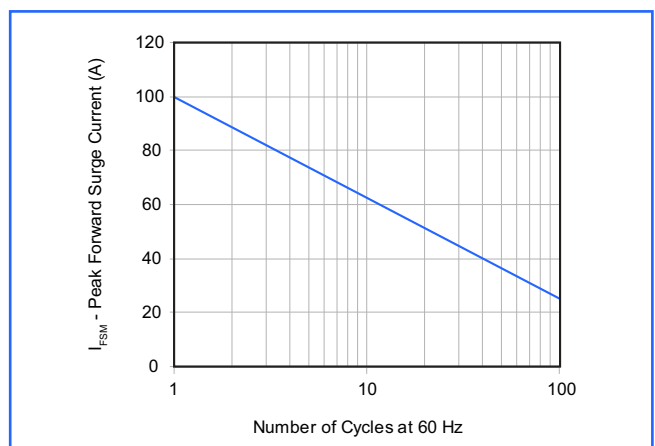


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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[MPLAD30KP43CAE3](#) [SMAJ43A-TP](#) [D5V0F6U8LP33-7](#) [TVS5501V10MUT5G](#) [5.0SMLJ24CA-TP](#) [SMAJ110CA-TP](#) [MPLAD15KP75CAE3](#)
[MMAD1103e3/TR13](#) [DFLT40AQ-7](#)