

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

| PART NUMBER | DEVICE MARKING CODE | | BREAKDOWN VOLTAGE V_{BR} AT I_T ⁽¹⁾ (V) | | TEST CURRENT I_T (mA) | STAND-OFF VOLTAGE V_{WM} (V) | MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D ⁽³⁾ (μA) | MAXIMUM PEAK PULSE CURRENT I_{PPM} ⁽²⁾ (A) | MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V) | MAXIMUM TEMPERATURE COEFFICIENT OF V_{BR} ($\%/^\circ\text{C}$) |
|-------------|---------------------|------|--|------|-------------------------|--------------------------------|--|---|---|---|
| | UNI | BI | MIN. | MAX. | | | | | | |
| P6SMB6.8A | 6V8A | 6V8C | 6.45 | 7.14 | 10 | 5.80 | 1000 | 57.1 | 10.5 | 0.057 |
| P6SMB7.5A | 7V5A | 7V5C | 7.13 | 7.88 | 10 | 6.40 | 500 | 53.1 | 11.3 | 0.061 |
| P6SMB8.2A | 8V2A | 8V2C | 7.79 | 8.61 | 10 | 7.02 | 200 | 49.6 | 12.1 | 0.065 |
| P6SMB9.1A | 9V1A | 9V1C | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 44.8 | 13.4 | 0.068 |
| P6SMB10A | 10A | 10C | 9.50 | 10.5 | 1.0 | 8.55 | 10 | 41.4 | 14.5 | 0.073 |
| P6SMB11A | 11A | 11C | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 38.5 | 15.6 | 0.075 |
| P6SMB12A | 12A | 12C | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 35.9 | 16.7 | 0.078 |
| P6SMB13A | 13A | 13C | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 33.0 | 18.2 | 0.081 |
| P6SMB15A | 15A | 15C | 14.3 | 15.8 | 1.0 | 12.8 | 1.0 | 28.3 | 21.2 | 0.084 |
| P6SMB16A | 16A | 16C | 15.2 | 16.8 | 1.0 | 13.6 | 1.0 | 26.7 | 22.5 | 0.086 |
| P6SMB18A | 18A | 18C | 17.1 | 18.9 | 1.0 | 15.3 | 1.0 | 23.8 | 25.2 | 0.088 |
| P6SMB20A | 20A | 20C | 19.0 | 21.0 | 1.0 | 17.1 | 1.0 | 21.7 | 27.7 | 0.090 |
| P6SMB22A | 22A | 22C | 20.9 | 23.1 | 1.0 | 18.8 | 1.0 | 19.6 | 30.6 | 0.092 |
| P6SMB24A | 24A | 24C | 22.8 | 25.2 | 1.0 | 20.5 | 1.0 | 18.1 | 33.2 | 0.094 |
| P6SMB27A | 27A | 27C | 25.7 | 28.4 | 1.0 | 23.1 | 1.0 | 16.0 | 37.5 | 0.096 |
| P6SMB30A | 30A | 30C | 28.5 | 31.5 | 1.0 | 25.6 | 1.0 | 14.5 | 41.4 | 0.097 |
| P6SMB33A | 33A | 33C | 31.4 | 34.7 | 1.0 | 28.2 | 1.0 | 13.1 | 45.7 | 0.098 |
| P6SMB36A | 36A | 36C | 34.2 | 37.8 | 1.0 | 30.8 | 1.0 | 12.0 | 49.9 | 0.099 |
| P6SMB39A | 39A | 39C | 37.1 | 41.0 | 1.0 | 33.3 | 1.0 | 11.1 | 53.9 | 0.100 |
| P6SMB43A | 43A | 43C | 40.9 | 45.2 | 1.0 | 36.8 | 1.0 | 10.1 | 59.3 | 0.101 |
| P6SMB47A | 47A | 47C | 44.7 | 49.4 | 1.0 | 40.2 | 1.0 | 9.3 | 64.8 | 0.101 |
| P6SMB51A | 51A | 51C | 48.5 | 53.6 | 1.0 | 43.6 | 1.0 | 8.6 | 70.1 | 0.102 |
| P6SMB56A | 56A | 56C | 53.2 | 58.8 | 1.0 | 47.8 | 1.0 | 7.8 | 77.0 | 0.103 |
| P6SMB62A | 62A | 62C | 58.9 | 65.1 | 1.0 | 53.0 | 1.0 | 7.1 | 85.0 | 0.104 |
| P6SMB68A | 68A | 68C | 64.6 | 71.4 | 1.0 | 58.1 | 1.0 | 6.5 | 92.0 | 0.104 |
| P6SMB75A | 75A | 75C | 71.3 | 78.8 | 1.0 | 64.1 | 1.0 | 5.8 | 103 | 0.105 |
| P6SMB82A | 82A | 82C | 77.9 | 86.1 | 1.0 | 70.1 | 1.0 | 5.3 | 113 | 0.105 |
| P6SMB91A | 91A | 91C | 86.5 | 95.5 | 1.0 | 77.8 | 1.0 | 4.8 | 125 | 0.106 |
| P6SMB100A | 100A | 100C | 95.0 | 105 | 1.0 | 85.5 | 1.0 | 4.4 | 137 | 0.106 |
| P6SMB110A | 110A | 110C | 105 | 116 | 1.0 | 94.0 | 1.0 | 3.9 | 152 | 0.107 |
| P6SMB120A | 120A | 120C | 114 | 126 | 1.0 | 102 | 1.0 | 3.6 | 165 | 0.107 |
| P6SMB130A | 130A | 130C | 124 | 137 | 1.0 | 111 | 1.0 | 3.4 | 179 | 0.107 |
| P6SMB150A | 150A | 150C | 143 | 158 | 1.0 | 128 | 1.0 | 2.9 | 207 | 0.108 |
| P6SMB160A | 160A | 160C | 152 | 168 | 1.0 | 136 | 1.0 | 2.7 | 219 | 0.108 |
| P6SMB170A | 170A | 170C | 162 | 179 | 1.0 | 145 | 1.0 | 2.6 | 234 | 0.108 |
| P6SMB180A | 180A | 180C | 171 | 189 | 1.0 | 154 | 1.0 | 2.4 | 246 | 0.108 |
| P6SMB200A | 200A | 200C | 190 | 210 | 1.0 | 171 | 1.0 | 2.2 | 274 | 0.108 |
| P6SMB220A | 220A | 220C | 209 | 231 | 1.0 | 185 | 1.0 | 1.8 | 328 | 0.108 |
| P6SMB250A | 250A | - | 237 | 263 | 1.0 | 214 | 1.0 | 1.74 | 344 | 0.110 |
| P6SMB300A | 300A | - | 285 | 315 | 1.0 | 256 | 1.0 | 1.45 | 414 | 0.110 |
| P6SMB350A | 350A | - | 333 | 368 | 1.0 | 300 | 1.0 | 1.24 | 482 | 0.110 |
| P6SMB400A | 400A | - | 380 | 420 | 1.0 | 342 | 1.0 | 1.10 | 548 | 0.110 |
| P6SMB440A | 440A | - | 418 | 462 | 1.0 | 376 | 1.0 | 1.00 | 602 | 0.110 |
| P6SMB480A | 480A | - | 456 | 504 | 1.0 | 408 | 1.0 | 0.91 | 658 | 0.110 |
| P6SMB510A | 510A | - | 485 | 535 | 1.0 | 434 | 1.0 | 0.86 | 698 | 0.110 |
| P6SMB540A | 540A | - | 513 | 567 | 1.0 | 459 | 1.0 | 0.81 | 740 | 0.110 |

Notes

- (1) Pulse test: $t_p \leq 50\text{ ms}$
(2) Surge current waveform per fig. 3 and derate per fig. 2
(3) For bi-directional types with V_{WM} of 10 V and less, the I_D limit is doubled
(4) All terms and symbols are consistent with ANSI/IEEE CA62.35
(5) $V_F = 3.5\text{ V}$ at $I_F = 50\text{ A}$ (unidirectional only)

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

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|-----------------|-------|------|
| Typical thermal resistance, junction to ambient air ⁽¹⁾ | $R_{\theta JA}$ | 100 | °C/W |
| Typical thermal resistance, junction to lead | $R_{\theta JL}$ | 20 | |

Note

⁽¹⁾ Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | VOLTAGE RANGE (V) | | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|---------------------------------|-----------------|-------------------|------------|--------------|---------------|------------------------------------|
| | | UNI | BI | | | |
| P6SMB6.8A-E3/52 | 0.096 | 6.8 to 220 | 6.8 to 220 | 52 | 750 | 7" diameter plastic tape and reel |
| P6SMB6.8A-M3/52 | 0.096 | 6.8 to 540 | 6.8 to 220 | 52 | 750 | 7" diameter plastic tape and reel |
| P6SMB6.8A-E3/5B | 0.096 | 6.8 to 220 | 6.8 to 220 | 5B | 3200 | 13" diameter plastic tape and reel |
| P6SMB6.8A-M3/5B | 0.096 | 6.8 to 540 | 6.8 to 220 | 5B | 3200 | 13" diameter plastic tape and reel |
| P6SMB6.8AHE3_A/H ⁽¹⁾ | 0.096 | 6.8 to 220 | 6.8 to 220 | H | 750 | 7" diameter plastic tape and reel |
| P6SMB6.8AHM3_A/H ⁽¹⁾ | | | | | | |
| P6SMB6.8AHE3_A/I ⁽¹⁾ | 0.096 | 6.8 to 220 | 6.8 to 220 | I | 3200 | 13" diameter plastic tape and reel |
| P6SMB6.8AHM3_A/I ⁽¹⁾ | | | | | | |
| P6SMB250AHM3_C/H ⁽²⁾ | 0.096 | 250 to 540 | - | H | 750 | 7" diameter plastic tape and reel |
| P6SMB250AHM3_C/I ⁽²⁾ | 0.096 | 250 to 540 | - | I | 3200 | 13" diameter plastic tape and reel |

Notes

⁽¹⁾ _A is available for P6SMB6.8(C)A to P6SMB220(C)A, AEC-Q101 qualified

⁽²⁾ _C is available for P6SMB250A to P6SMB540A, AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

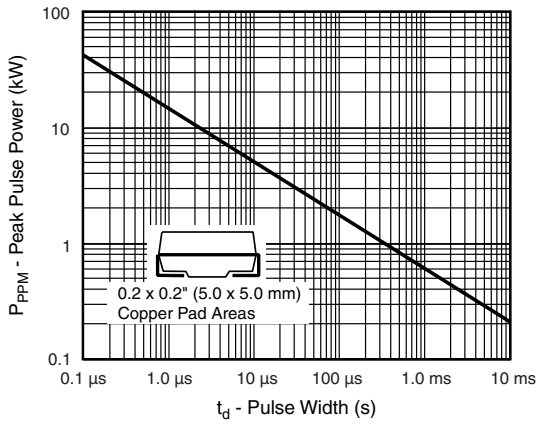


Fig. 1 - Peak Pulse Power Rating Curve

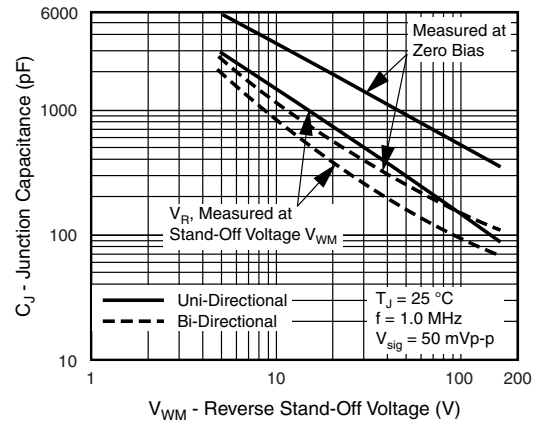


Fig. 4 - Typical Junction Capacitance

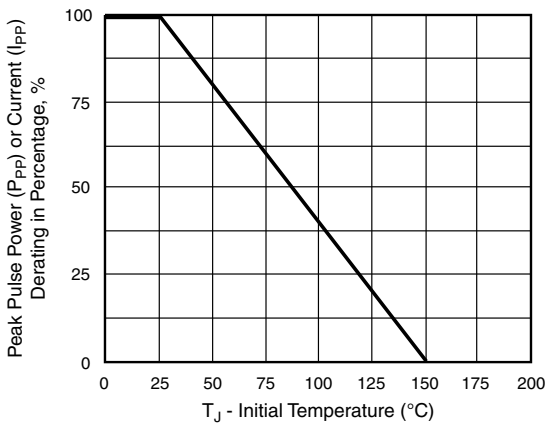


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

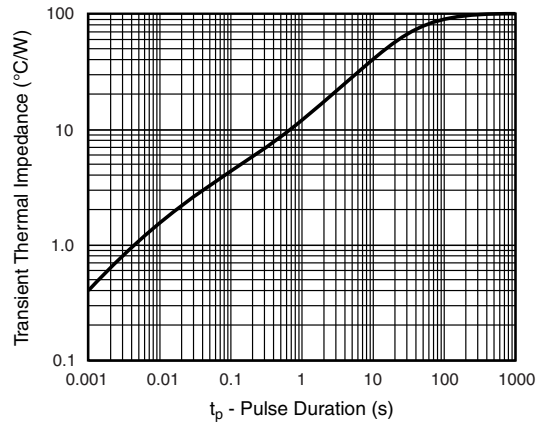


Fig. 5 - Typical Transient Thermal Impedance

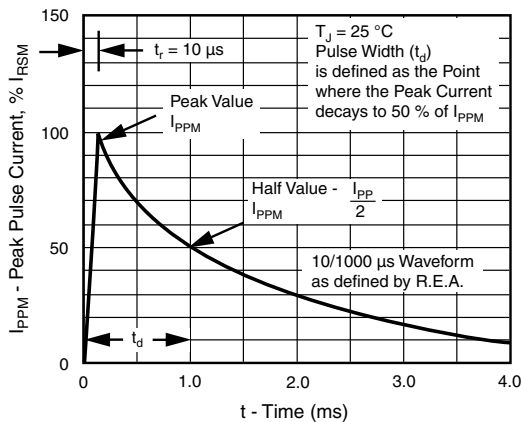


Fig. 3 - Pulse Waveform

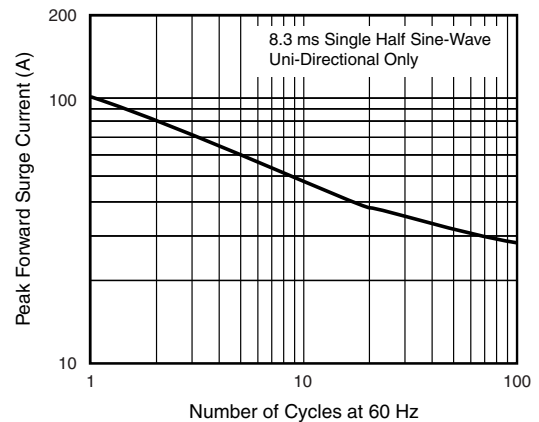
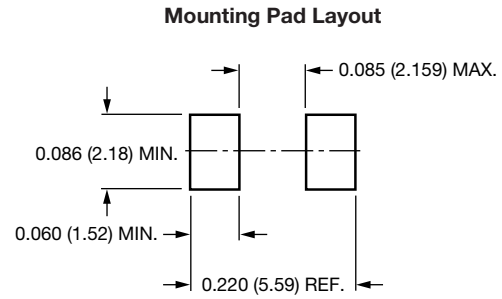
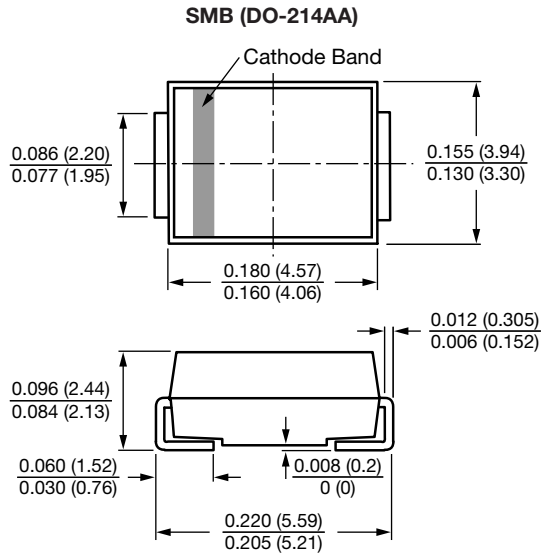


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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