

**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) ( $\mu\text{A}$ ) | MAXIMUM PEAK PULSE CURRENT $I_{PPM}$ (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 <sup>(1)</sup> | $R_{\theta JA}$ | 100   | °C/W |
| Typical thermal resistance, junction to lead                       | $R_{\theta JL}$ | 20    |      |

**Note**

<sup>(1)</sup> 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 <sup>(1)</sup> | 0.096           | 6.8 to 220        | 6.8 to 220 | H            | 750           | 7" diameter plastic tape and reel  |
| P6SMB6.8AHM3_A/H <sup>(1)</sup> |                 |                   |            |              |               |                                    |
| P6SMB6.8AHE3_A/I <sup>(1)</sup> | 0.096           | 6.8 to 220        | 6.8 to 220 | I            | 3200          | 13" diameter plastic tape and reel |
| P6SMB6.8AHM3_A/I <sup>(1)</sup> |                 |                   |            |              |               |                                    |
| P6SMB250AHM3_C/H <sup>(2)</sup> | 0.096           | 250 to 540        | -          | H            | 750           | 7" diameter plastic tape and reel  |
| P6SMB250AHM3_C/I <sup>(2)</sup> | 0.096           | 250 to 540        | -          | I            | 3200          | 13" diameter plastic tape and reel |

**Notes**

<sup>(1)</sup> \_A is available for P6SMB6.8(C)A to P6SMB220(C)A, AEC-Q101 qualified

<sup>(2)</sup> \_C is available for P6SMB250A to P6SMB540A, AEC-Q101 qualified

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

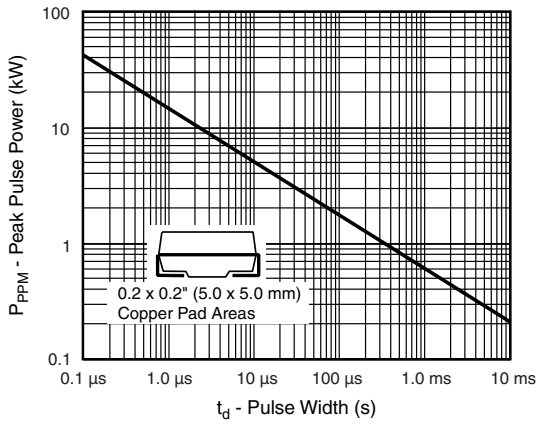


Fig. 1 - Peak Pulse Power Rating Curve

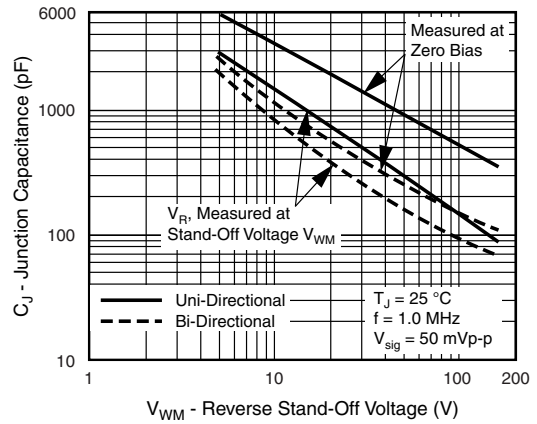


Fig. 4 - Typical Junction Capacitance

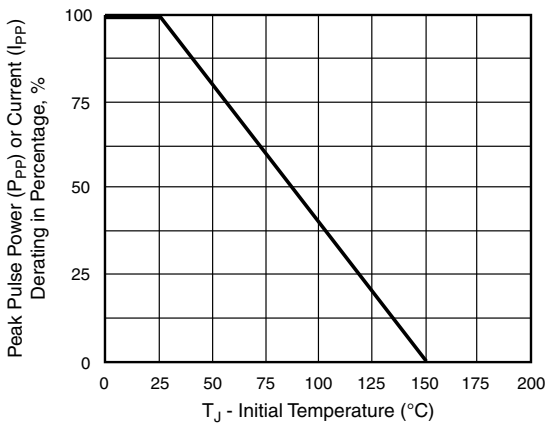


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

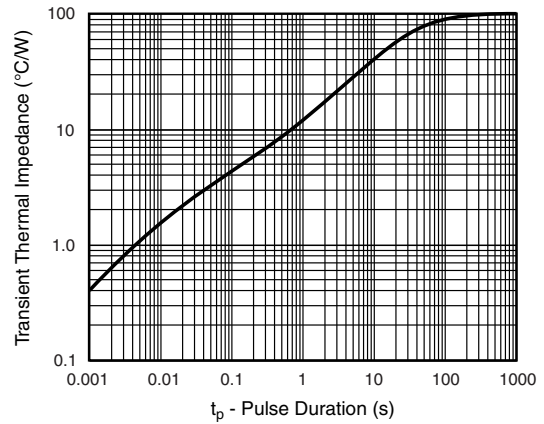


Fig. 5 - Typical Transient Thermal Impedance

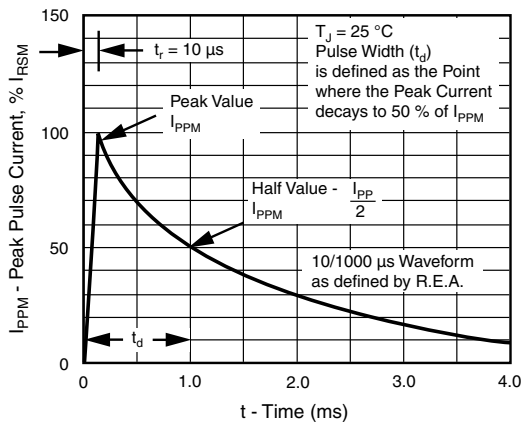


Fig. 3 - Pulse Waveform

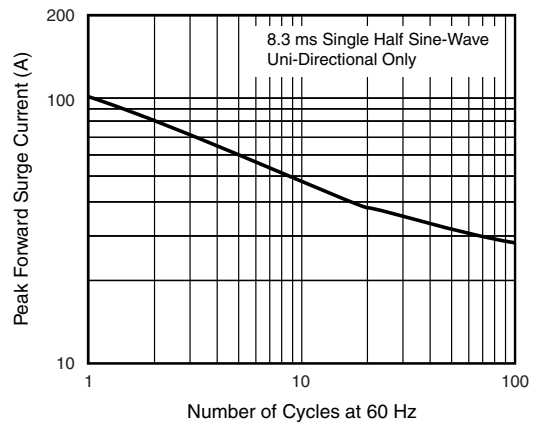
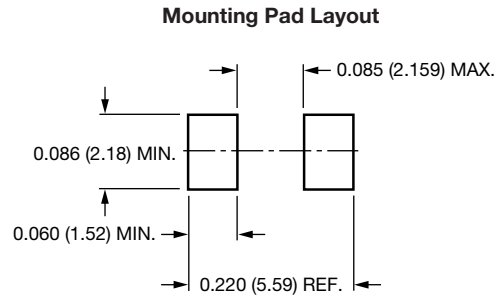
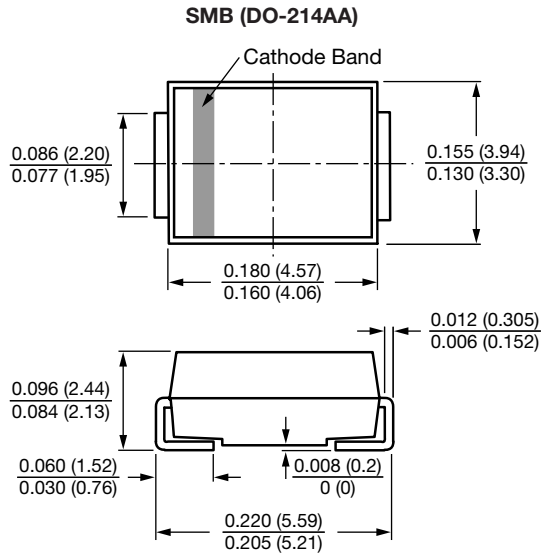


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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