## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Forward Voltage @ $I_F$ = 200mA | $V_F$ | 1.5 | V |
| Zener Current (See Page 3) | $I_{ZM}$ | $P_D$ / $V_Z$ | mA |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation @$T_L$ = +75°C<br>Derate Above +75°C (Note 5) | $P_D$ | 3.0<br>40 | W<br>mW/°C |
| Thermal Resistance - Junction to Terminal (Note 5) | $R_{\theta JT}$ | 25 | °C/W |
| Power Dissipation @$T_A$ = +25°C<br>Derate Above +25°C (Note 5) | $P_D$ | 550<br>4.4 | mW<br>mW/°C |
| Thermal Resistance - Junction to Ambient (Note 5) | $R_{\theta JA}$ | 226 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 to +150 | °C |

Note: 5. Device mounted on FR-4 PCB; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com.


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## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Type Number | Marking Code | Zener Voltage Range (Note 6) | | | Test Current | Maximum Zener Impedance (Note 7) | | | Maximum Reverse Current (Note 6) | | $I_{ZM\ Max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{Z\ @}\ I_{ZT}$ | | | $I_{ZT}$ | $Z_{ZT\ @}\ I_{ZT}$ | $Z_{ZK\ @}\ I_{ZK}$ | | $I_R$ @ $V_R$ | | |
| | | Min (V) | Typ (V) | Max (V) | mA | Ω | Ω | mA | μA | V | mA |
| 1SMB5913B | B913 | 3.13 | 3.3 | 3.47 | 113.6 | 10 | 500 | 1 | 100 | 1 | 454 |
| 1SMB5914B | B914 | 3.42 | 3.6 | 3.78 | 104.2 | 9 | 500 | 1 | 75 | 1 | 416 |
| 1SMB5915B | B915 | 3.7 | 3.9 | 4.1 | 96.1 | 7.5 | 500 | 1 | 25 | 1 | 384 |
| 1SMB5916B | B916 | 4.08 | 4.3 | 4.52 | 87.2 | 6 | 500 | 1 | 5 | 1 | 348 |
| 1SMB5917B | B917 | 4.46 | 4.7 | 4.94 | 79.8 | 5 | 500 | 1 | 5 | 1.5 | 319 |
| 1SMB5920B | B920 | 5.89 | 6.2 | 6.51 | 60.5 | 2 | 200 | 1 | 5 | 4 | 241 |
| 1SMB5921B | B921 | 6.46 | 6.8 | 7.14 | 55.1 | 2.5 | 200 | 1 | 5 | 5.2 | 220 |
| 1SMB5922B | B922 | 7.12 | 7.5 | 7.88 | 50 | 3 | 400 | 0.5 | 5 | 6 | 200 |
| 1SMB5923B | B923 | 7.79 | 8.2 | 8.61 | 45.7 | 3.5 | 400 | 0.5 | 5 | 6.5 | 182 |
| 1SMB5924B | B924 | 8.64 | 9.1 | 9.56 | 41.2 | 4 | 500 | 0.5 | 5 | 7 | 164 |
| 1SMB5925B | B925 | 9.5 | 10 | 10.5 | 37.5 | 4.5 | 500 | 0.25 | 5 | 8 | 150 |
| 1SMB5926B | B926 | 10.45 | 11 | 11.55 | 34.1 | 5.5 | 550 | 0.25 | 1 | 8.4 | 136 |
| 1SMB5927B | B927 | 11.4 | 12 | 12.6 | 31.2 | 6.5 | 550 | 0.25 | 1 | 9.1 | 125 |
| 1SMB5928B | B928 | 12.35 | 13 | 13.65 | 28.8 | 7 | 550 | 0.25 | 1 | 9.9 | 115 |
| 1SMB5929B | B929 | 14.25 | 15 | 15.75 | 25 | 9 | 600 | 0.25 | 1 | 11.4 | 100 |
| 1SMB5930B | B930 | 15.2 | 16 | 16.8 | 23.4 | 10 | 600 | 0.25 | 1 | 12.2 | 93 |
| 1SMB5931B | B931 | 17.1 | 18 | 18.9 | 20.8 | 12 | 650 | 0.25 | 1 | 13.7 | 83 |
| 1SMB5932B | B932 | 19 | 20 | 21 | 18.7 | 14 | 650 | 0.25 | 1 | 15.2 | 75 |
| 1SMB5933B | B933 | 20.9 | 22 | 23.1 | 17 | 17.5 | 650 | 0.25 | 1 | 16.7 | 68 |
| 1SMB5934B | B934 | 22.8 | 24 | 25.2 | 15.6 | 19 | 700 | 0.25 | 1 | 18.2 | 62 |
| 1SMB5935B | B935 | 25.65 | 27 | 28.35 | 13.9 | 23 | 700 | 0.25 | 1 | 20.6 | 55 |
| 1SMB5936B | B936 | 28.5 | 30 | 31.5 | 12.5 | 28 | 750 | 0.25 | 1 | 22.8 | 50 |
| 1SMB5937B | B937 | 31.35 | 33 | 34.65 | 11.4 | 33 | 800 | 0.25 | 1 | 25.1 | 45 |
| 1SMB5938B | B938 | 34.2 | 36 | 37.8 | 10.4 | 38 | 850 | 0.25 | 1 | 27.4 | 41 |
| 1SMB5939B | B939 | 37.05 | 39 | 40.95 | 9.6 | 45 | 900 | 0.25 | 1 | 29.7 | 38 |
| 1SMB5940B | B940 | 40.85 | 43 | 45.15 | 8.7 | 53 | 950 | 0.25 | 1 | 32.7 | 34 |
| 1SMB5941B | B941 | 44.65 | 47 | 49.35 | 8 | 67 | 1000 | 0.25 | 1 | 35.8 | 31 |
| 1SMB5942B | B942 | 48.45 | 51 | 53.55 | 7.3 | 70 | 1100 | 0.25 | 1 | 38.8 | 29 |
| 1SMB5943B | B943 | 53.2 | 56 | 58.8 | 6.7 | 86 | 1300 | 0.25 | 1 | 42.6 | 26 |
| 1SMB5944B | B944 | 58.9 | 62 | 65.1 | 6 | 100 | 1500 | 0.25 | 1 | 47.1 | 24 |
| 1SMB5945B | B945 | 64.6 | 68 | 71.4 | 5.5 | 120 | 1700 | 0.25 | 1 | 51.7 | 22 |
| 1SMB5946B | B946 | 71.25 | 75 | 78.75 | 5 | 140 | 2000 | 0.25 | 1 | 56 | 20 |
| 1SMB5947B | B947 | 77.9 | 82 | 86.1 | 4.6 | 160 | 2500 | 0.25 | 1 | 62.2 | 18 |
| 1SMB5948B | B948 | 86.45 | 91 | 95.55 | 4.1 | 200 | 3000 | 0.25 | 1 | 69.2 | 16 |
| 1SMB5949B | B949 | 95 | 100 | 105 | 3.7 | 250 | 3100 | 0.25 | 1 | 76 | 15 |
| 1SMB5950B | B950 | 104.5 | 110 | 115.5 | 3.4 | 300 | 4000 | 0.25 | 1 | 83.6 | 13 |
| 1SMB5951B | B951 | 114 | 120 | 128 | 3.1 | 380 | 4500 | 0.25 | 1 | 91.2 | 12 |
| 1SMB5952B | B952 | 123.5 | 130 | 136.5 | 2.9 | 450 | 5000 | 0.25 | 1 | 98.8 | 11 |
| 1SMB5953B | B953 | 142.5 | 150 | 157.5 | 2.5 | 600 | 6000 | 0.25 | 1 | 114 | 10 |
| 1SMB5954B | B954 | 152 | 160 | 168 | 2.3 | 700 | 6500 | 0.25 | 1 | 121.6 | 9 |
| 1SMB5955B | B955 | 171 | 180 | 189 | 2.1 | 900 | 7000 | 0.25 | 1 | 136.8 | 8 |
| 1SMB5956B | B956 | 190 | 200 | 210 | 1.9 | 1200 | 8000 | 0.25 | 1 | 152 | 7 |

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. ZENER IMPEDANCE ($Z_Z$) DERIVATION $Z_{ZT}$ and $Z_{ZK}$ are measured by dividing the AC voltage drop across the device by the AC current applied. The specified limits are for $I_{Z(AC)}$ = 0.1 $I_{Z(DC)}$ with the AC frequency = 60 Hz.


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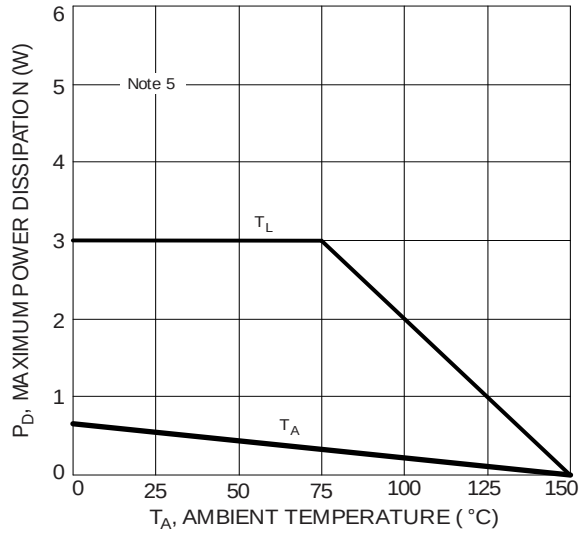


Figure Power Dissipation vs. Ambient Temperature

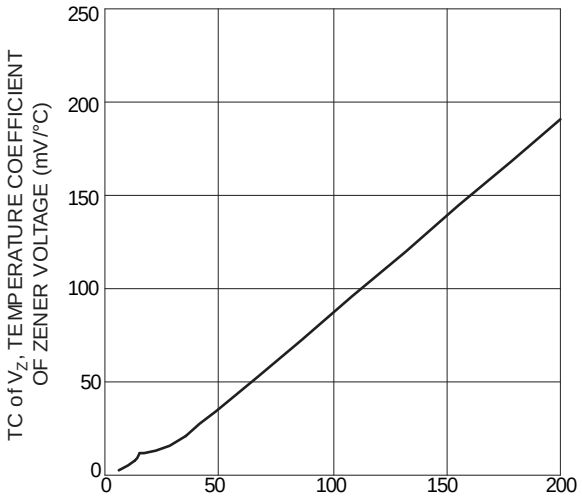


Figure 2 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage

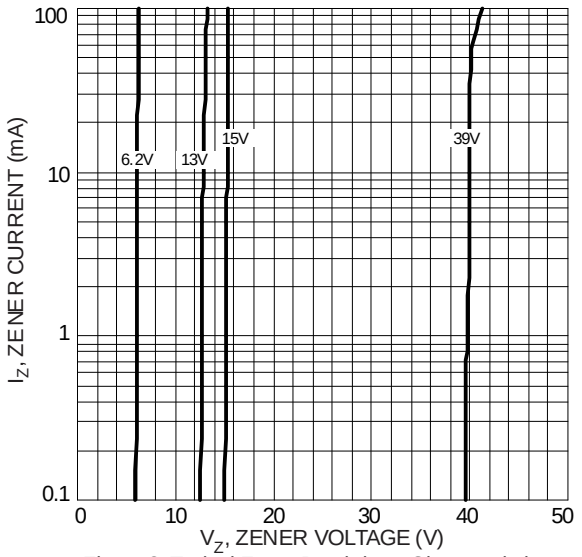


Figure 3 Typical Zener Breakdown Characteristics

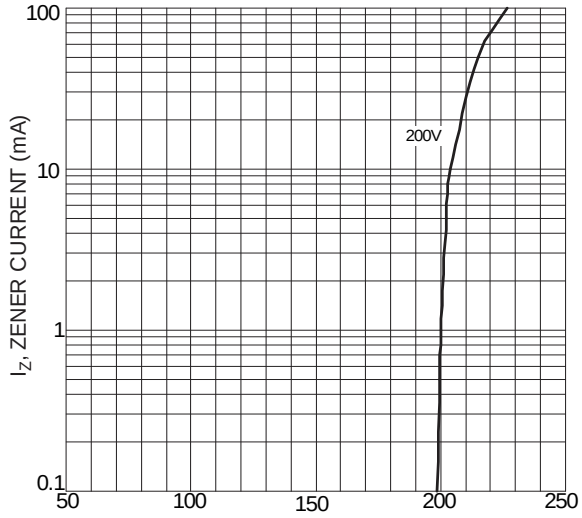


Figure 4 Typical Zener Breakdown Characteristics

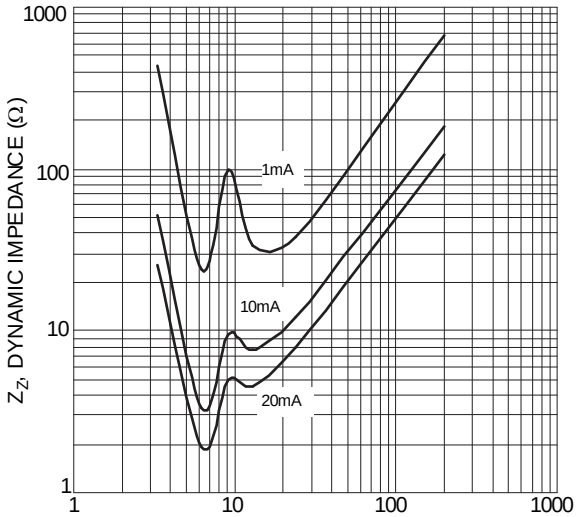


Figure 5 Effect of Zener Voltage

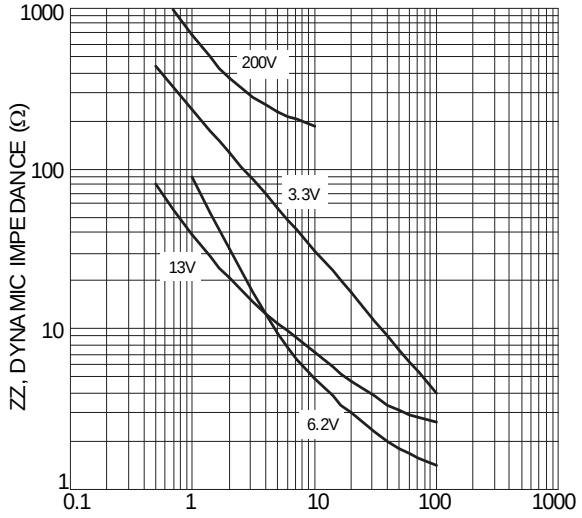


Figure 6 Effect of Zener Current


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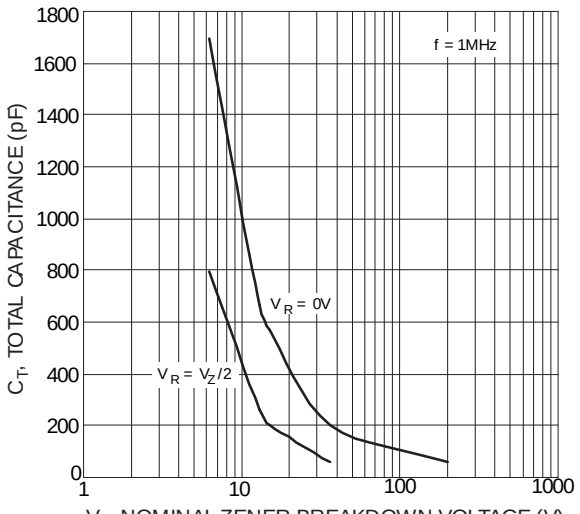



Figure 7 Typical Total Capacitance vs. Nominal Zener Breakdown Voltage

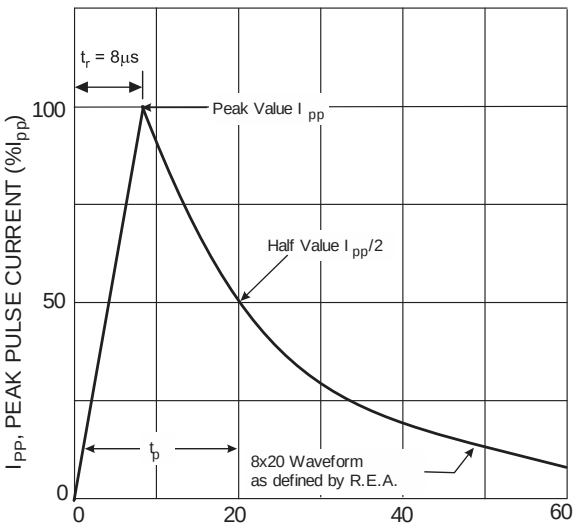



Figure 8 Pulse Waveform

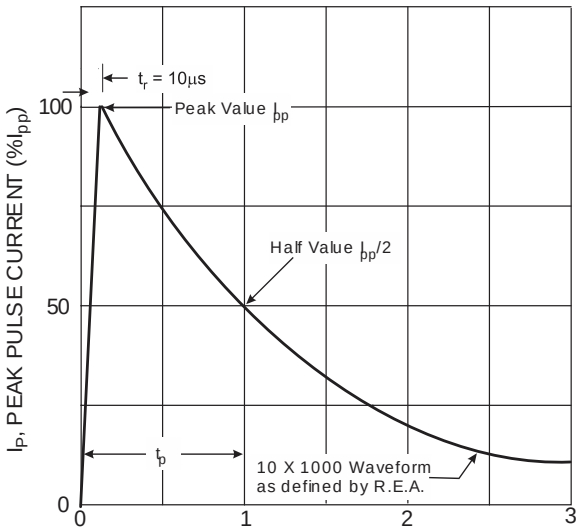



Figure 9 Pulse Waveform

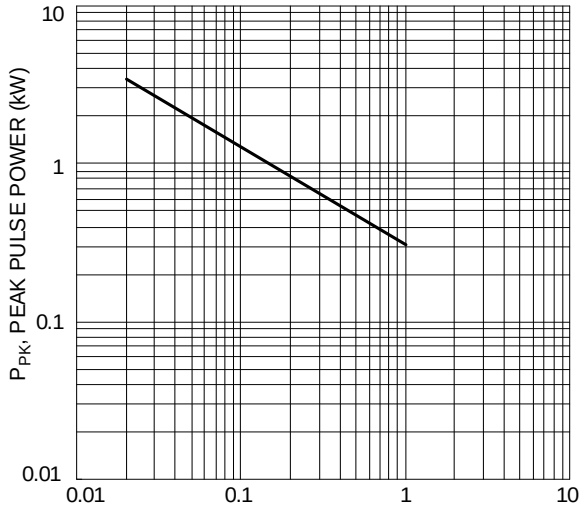
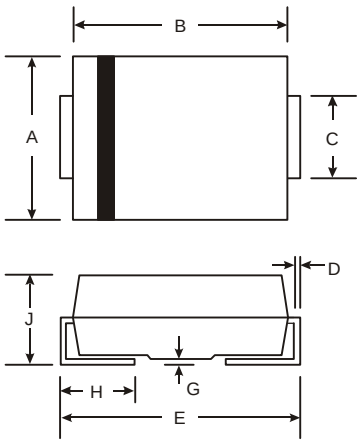



Figure 10 Max. Peak Pulse Power vs. Pulse Duration

## Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| SMB | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 3.30 | 3.94 |
| **B** | 4.06 | 4.57 |
| **C** | 1.96 | 2.21 |
| **D** | 0.15 | 0.31 |
| **E** | 5.00 | 5.59 |
| **G** | 0.05 | 0.20 |
| **H** | 0.76 | 1.52 |
| **J** | 2.00 | 2.50 |
| **All Dimensions in mm** | | |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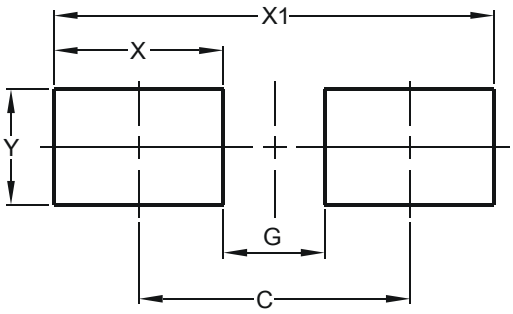
## Suggested Pad Layout

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| Dimensions | Value (in mm) |
|---|---|
| C | 4.30 |
| G | 1.80 |
| X | 2.50 |
| X1 | 6.80 |
| Y | 2.30 |

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