

1SMB5913B - 1SMB5956B

SILICON ZENER DIODES

V_Z : 3.3 - 200 Volts

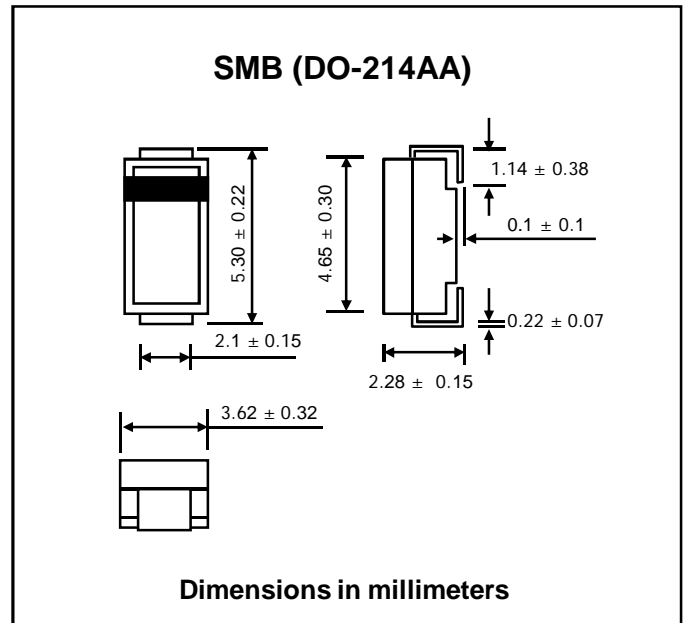
P_D : 3.0 Watts

FEATURES :

- * Complete Voltage Range 3.3 to 200 Volts
- * High peak reverse power dissipation
- * Flat handling surface for accurate placement
- * Low leakage current
- * **Pb / RoHS Free**

MECHANICAL DATA

- * Case : SMB Molded plastic
- * Epoxy : UL94V-0 rate flame retardant
- * Lead : Lead Formed for Surface Mount
- * Polarity : Color band denotes cathode end
- * Mounting position : Any
- * Weight : 0.108 gram



MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|------------------|---------------|-------|
| Maximum Steady State Power Dissipation at T _L = 75°C, Measured at Zero Lead Length Derate Above 75 °C | P _D | 3.0 | W |
| Thermal Resistance From Junction to Lead | R _{θJL} | 40 | mW/°C |
| Maximum Steady State Power Dissipation at Ta = 25 °C Measured at Zero Lead Length Derate Above 25 °C | P _D | 25 | °C/W |
| Thermal Resistance From Junction to Ambient | R _{θJA} | 550 | mW |
| Maximum Forward Voltage at I _F = 200 mA | V _F | 4.4 | mW/°C |
| Junction Temperature Range | T _J | 226 | °C/W |
| Storage Temperature Range | T _{stg} | 1.5 | Volts |
| | | - 65 to + 150 | °C |
| | | - 65 to + 150 | °C |

ELECTRICAL CHARACTERISTICS

Rating at $T_L = 30\text{ }^\circ\text{C}$ unless otherwise specified

| TYPE | Nominal Zener Voltage | | Maximum Zener Impedance | | | Maximum Reverse Leakage Current | | Maximum DC Zener Current |
|-----------|-----------------------|----------|-------------------------|-------------------|----------|---------------------------------|-------|--------------------------|
| | $V_Z @ I_{ZT}$ | I_{ZT} | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK}$ | I_{ZK} | $I_R @ V_R$ | | I_{ZM} |
| | (V) | (mA) | (Ω) | (Ω) | (mA) | (μA) | (V) | (mA) |
| 1SMB5913B | 3.3 | 113.6 | 10 | 500 | 1.0 | 100 | 1.0 | 454 |
| 1SMB5914B | 3.6 | 104.2 | 9.0 | 500 | 1.0 | 75 | 1.0 | 416 |
| 1SMB5915B | 3.9 | 96.1 | 7.5 | 500 | 1.0 | 25 | 1.0 | 384 |
| 1SMB5916B | 4.3 | 87.2 | 6.0 | 500 | 1.0 | 5.0 | 1.0 | 348 |
| 1SMB5917B | 4.7 | 79.8 | 5.0 | 500 | 1.0 | 5.0 | 1.5 | 319 |
| 1SMB5918B | 5.1 | 73.5 | 4.0 | 400 | 1.0 | 5.0 | 2.0 | 294 |
| 1SMB5919B | 5.6 | 66.9 | 2.0 | 300 | 1.0 | 5.0 | 3.0 | 267 |
| 1SMB5920B | 6.2 | 60.5 | 2.0 | 200 | 1.0 | 5.0 | 4.0 | 241 |
| 1SMB5921B | 6.8 | 55.1 | 2.5 | 200 | 1.0 | 5.0 | 5.2 | 220 |
| 1SMB5922B | 7.5 | 50.0 | 3.0 | 400 | 0.5 | 5.0 | 6.0 | 200 |
| 1SMB5923B | 8.2 | 45.7 | 3.5 | 400 | 0.5 | 5.0 | 6.5 | 182 |
| 1SMB5924B | 9.1 | 41.2 | 4.0 | 500 | 0.5 | 5.0 | 7.0 | 164 |
| 1SMB5925B | 10 | 37.5 | 4.5 | 500 | 0.25 | 5.0 | 8.0 | 150 |
| 1SMB5926B | 11 | 34.1 | 5.5 | 550 | 0.25 | 1.0 | 8.4 | 136 |
| 1SMB5927B | 12 | 31.2 | 6.5 | 550 | 0.25 | 1.0 | 9.1 | 125 |
| 1SMB5928B | 13 | 28.8 | 7.0 | 550 | 0.25 | 1.0 | 9.9 | 115 |
| 1SMB5929B | 15 | 25.0 | 9.0 | 600 | 0.25 | 1.0 | 11.4 | 100 |
| 1SMB5930B | 16 | 23.4 | 10 | 600 | 0.25 | 1.0 | 12.2 | 93 |
| 1SMB5931B | 18 | 20.8 | 12 | 650 | 0.25 | 1.0 | 13.7 | 83 |
| 1SMB5932B | 20 | 18.7 | 14 | 650 | 0.25 | 1.0 | 15.2 | 75 |
| 1SMB5933B | 22 | 17.0 | 17.5 | 650 | 0.25 | 1.0 | 16.7 | 68 |
| 1SMB5934B | 24 | 15.6 | 19 | 700 | 0.25 | 1.0 | 18.2 | 62 |
| 1SMB5935B | 27 | 13.9 | 23 | 700 | 0.25 | 1.0 | 20.6 | 55 |
| 1SMB5936B | 30 | 12.5 | 26 | 750 | 0.25 | 1.0 | 22.8 | 50 |
| 1SMB5937B | 33 | 11.4 | 33 | 800 | 0.25 | 1.0 | 25.1 | 45 |
| 1SMB5938B | 36 | 10.4 | 38 | 850 | 0.25 | 1.0 | 27.4 | 41 |
| 1SMB5939B | 39 | 9.6 | 45 | 900 | 0.25 | 1.0 | 29.7 | 38 |
| 1SMB5940B | 43 | 8.7 | 53 | 950 | 0.25 | 1.0 | 32.7 | 34 |
| 1SMB5941B | 47 | 8.0 | 67 | 1000 | 0.25 | 1.0 | 35.8 | 31 |
| 1SMB5942B | 51 | 7.3 | 70 | 1100 | 0.25 | 1.0 | 38.8 | 29 |
| 1SMB5943B | 56 | 6.7 | 86 | 1300 | 0.25 | 1.0 | 42.6 | 26 |
| 1SMB5944B | 62 | 6.0 | 100 | 1500 | 0.25 | 1.0 | 47.1 | 24 |
| 1SMB5945B | 68 | 5.5 | 120 | 1700 | 0.25 | 1.0 | 51.7 | 22 |
| 1SMB5946B | 75 | 5.0 | 140 | 2000 | 0.25 | 1.0 | 56.0 | 20 |
| 1SMB5947B | 82 | 4.6 | 160 | 2500 | 0.25 | 1.0 | 62.2 | 18 |
| 1SMB5948B | 91 | 4.1 | 200 | 3000 | 0.25 | 1.0 | 69.2 | 16 |
| 1SMB5949B | 100 | 3.7 | 250 | 3100 | 0.25 | 1.0 | 76.0 | 15 |
| 1SMB5950B | 110 | 3.4 | 300 | 4000 | 0.25 | 1.0 | 83.6 | 13 |
| 1SMB5951B | 120 | 3.1 | 380 | 4500 | 0.25 | 1.0 | 91.2 | 12 |
| 1SMB5952B | 130 | 2.9 | 450 | 5000 | 0.25 | 1.0 | 98.8 | 11 |
| 1SMB5953B | 150 | 2.5 | 600 | 6000 | 0.25 | 1.0 | 114.0 | 10 |
| 1SMB5954B | 160 | 2.3 | 700 | 6500 | 0.25 | 1.0 | 121.6 | 9.0 |
| 1SMB5955B | 180 | 2.1 | 900 | 7000 | 0.25 | 1.0 | 136.8 | 8.0 |
| 1SMB5956B | 200 | 1.9 | 1900 | 9990 | 0.25 | 1.0 | 152.0 | 7.0 |

Note :

(1) Suffix " B " indicates $\pm 5\%$ tolerance, suffix " A " indicates $\pm 10\%$ tolerance.

RATING AND CHARACTERISTIC CURVES (1SMB5913B - 1SMB5956B)

FIG. 1 - POWER TEMPERATURE DERATING CURVE

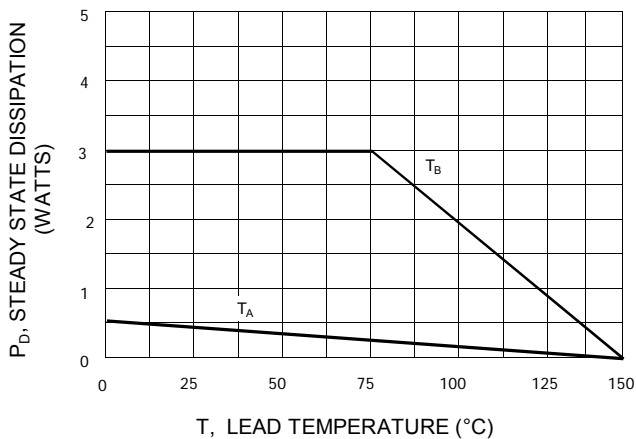


FIG. 3 - MAXIMUM SURGE POWER

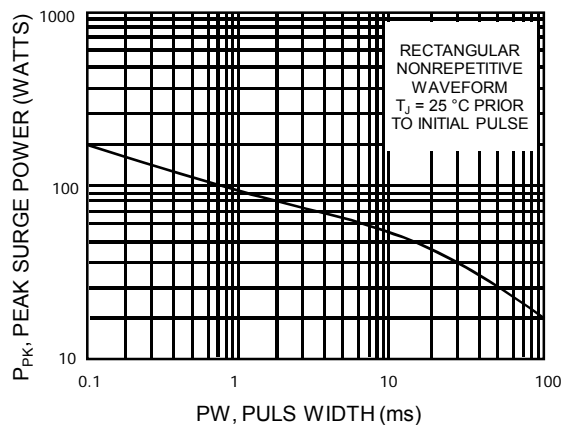


FIG. 5 - TEMPERATURE COEFFICIENT RANGES UNITS TO 12 VOLTS

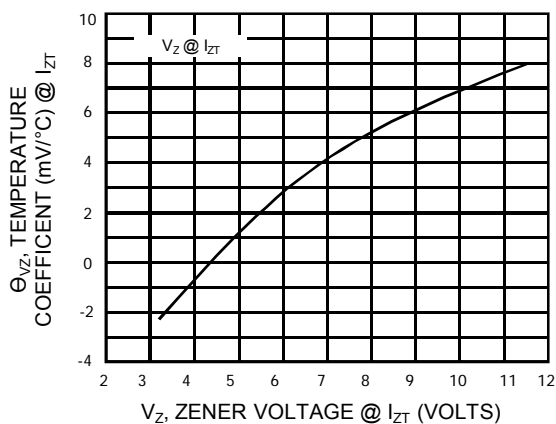


FIG. 6 - TEMPERATURE COEFFICIENT RANGES UNITS 10 TO 400 VOLTS

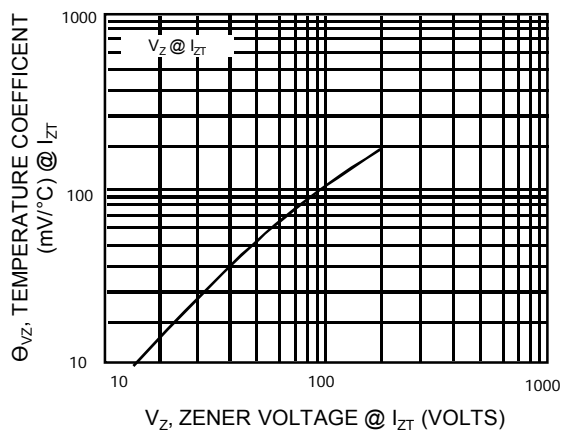


FIG. 7 - ZENER VOLTAGE VS. ZENER CURRENT V_Z = 3.3 thru 10 VOLTS

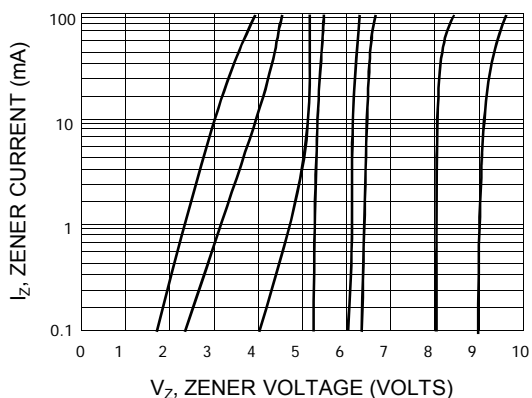
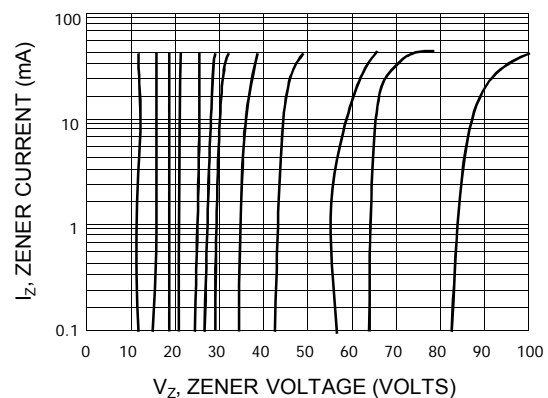


FIG. 8 - ZENER VOLTAGE VS. ZENER CURRENT V_Z = 12 thru 82 VOLTS



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