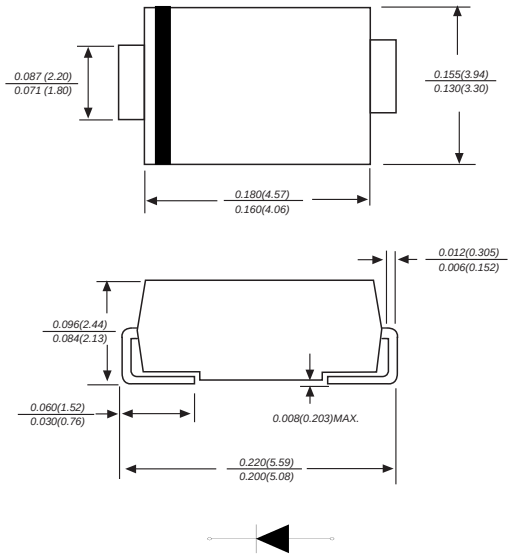
# SMB5913B~SMB5956B

3W Surface Mount Zener Diodes

## Features

- Glass passivated chip
- Built-in strain relief
- Low inductance
- High peak reverse power dissipation
- Low reverse leakage
- For use in stabilizing and clipping with high power rating
- RoHS compliant
- P/N suffix V means AEC- 101 qualified, e.g: SMB5913BV

**DO-214AA/SMB**




Dimensions in inches and (millimeters)

## Mechanical Data

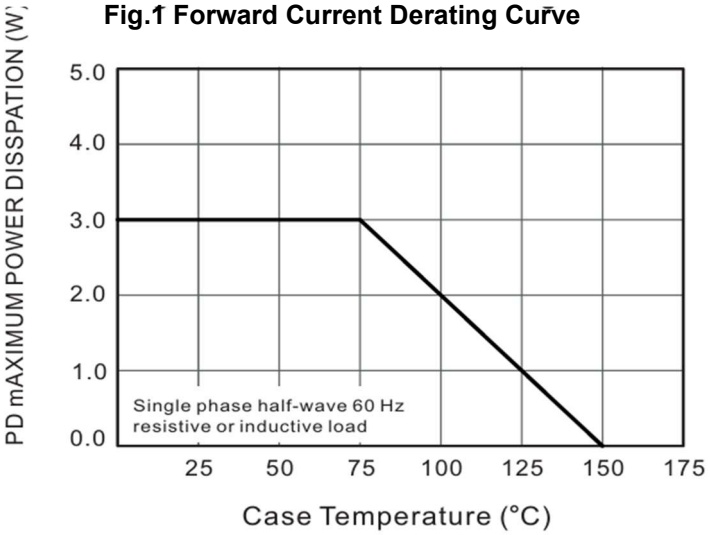
- Case: SMB Molded plastic
- Lead: Solderable per MIL-STD-750, method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

## Maximum Ratings And Electrical Characteristics

Ratings at 25 C ambient temperature unless otherwise specified.

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation at T =75°C | $P_D$ | 3.0 | W |
| Forward Voltage at IF = 200 mA | $V_F$ | 1.5 | V |
| Junction Temperature Range | $T_J$ | - 55 to + 150 | °C |
| Storage Temperature Range | $T_S$ | - 55 to + 150 | °C |

**Fig.1 Forward Current Derating Curve**



# SMB5913B~SMB5956B

## 3W Surface Mount Zener Diodes

**Characteristics at Ta = 25°C**

**(TL = 30°C unless otherwise noted, VF = 1.5 V Max. @ IF = 200 mA(DC) for all types)**

| Type | Marking | Nominal Zener Voltage (3) | | | | Zener Impedance (4) | | | Leakage Current | | Maximum DC Zener Current |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_z$ | | | $I_{ZT}$ | $Z_{ZT}$@ $I_{ZT}$ | $Z_{ZK}$@ $I_{ZK}$ | | $I_R$ @ $V_R$ | | |
| | | Min ( V ) | Nom ( V ) (2) | Max ( V ) | (mA) | (Ω) | (Ω) | (mA) | ( μA ) | ( V ) | $I_{ZM}$(mA)(DC) |
| SMB5913B | 913B | 3.13 | 3.3 | 3.47 | 227.3 | 10 | 500 | 1 | 100 | 1 | 817 |
| SMB5914B | 914B | 3.42 | 3.6 | 3.78 | 208.3 | 9 | 500 | 1 | 100 | 1 | 749 |
| SMB5915B | 915B | 3.70 | 3.9 | 4.10 | 192.0 | 4.5 | 500 | 1 | 100 | 1 | 691 |
| SMB5916B | 916B | 4.08 | 4.3 | 4.52 | 174.0 | 4.5 | 500 | 1 | 50 | 1 | 627 |
| SMB5917B | 917B | 4.46 | 4.7 | 4.94 | 160.0 | 4 | 500 | 1 | 50 | 1 | 573 |
| SMB5918B | 918B | 4.84 | 5.1 | 5.36 | 147.0 | 3.5 | 550 | 1 | 10 | 1 | 528 |
| SMB5919B | 919B | 5.32 | 5.6 | 5.88 | 134.0 | 2.5 | 600 | 1 | 10 | 2 | 481 |
| SMB5920B | 920B | 5.89 | 6.2 | 6.51 | 121.0 | 1.5 | 700 | 1 | 10 | 3 | 435 |
| SMB5921B | 921B | 6.46 | 6.8 | 7.14 | 110.0 | 2 | 700 | 1 | 10 | 4 | 393 |
| SMB5922B | 922B | 7.12 | 7.5 | 7.88 | 100 | 2 | 700 | 0.5 | 10 | 5 | 360 |
| SMB5923B | 923B | 7.79 | 8.2 | 8.61 | 91.0 | 2.3 | 700 | 0.5 | 10 | 6 | 330 |
| SMB5924B | 924B | 8.64 | 9.1 | 9.56 | 82.0 | 2.5 | 700 | 0.5 | 10 | 7 | 297 |
| SMB5925B | 925B | 9.5 | 10 | 10.5 | 75.0 | 3.5 | 700 | 0.25 | 10 | 7.6 | 270 |
| SMB5926B | 926B | 10.45 | 11 | 11.55 | 68.0 | 4.0 | 700 | 0.25 | 1 | 8.4 | 246 |
| SMB5927B | 927B | 11.4 | 12 | 12.6 | 63.0 | 4.5 | 700 | 0.25 | 1 | 9.1 | 225 |
| SMB5928B | 928B | 12.35 | 13 | 13.65 | 58.0 | 4.5 | 700 | 0.25 | 1 | 9.9 | 208 |
| SMB5929B | 929B | 14.25 | 15 | 15.75 | 50.0 | 5.5 | 700 | 0.25 | 1 | 11.4 | 180 |
| SMB5930B | 930B | 15.2 | 16 | 16.8 | 47.0 | 5.5 | 700 | 0.25 | 1 | 12.2 | 169 |
| SMB5931B | 931B | 17.1 | 18 | 18.9 | 42.0 | 6 | 750 | 0.25 | 1 | 13.7 | 150 |
| SMB5932B | 932B | 19 | 20 | 21 | 37.0 | 7 | 750 | 0.25 | 1 | 15.2 | 135 |
| SMB5933B | 933B | 20.9 | 22 | 23.1 | 34.0 | 8 | 750 | 0.25 | 1 | 16.7 | 123 |
| SMB5934B | 934B | 22.8 | 24 | 25.2 | 31.0 | 9 | 750 | 0.25 | 1 | 18.2 | 112 |
| SMB5935B | 935B | 25.65 | 27 | 28.35 | 28.0 | 10 | 750 | 0.25 | 1 | 20.6 | 100 |
| SMB5936B | 936B | 28.5 | 30 | 31.5 | 25.0 | 16 | 1000 | 0.25 | 1 | 22.5 | 90 |
| SMB5937B | 937B | 31.35 | 33 | 34.65 | 23.0 | 20 | 1000 | 0.25 | 1 | 25.1 | 82 |
| SMB5938B | 938B | 34.2 | 36 | 37.8 | 21.0 | 22 | 1000 | 0.25 | 1 | 27.4 | 75 |
| SMB5939B | 939B | 37.05 | 39 | 40.95 | 19.0 | 28 | 1000 | 0.25 | 1 | 29.7 | 69 |
| SMB5940B | 940B | 40.85 | 43 | 45.15 | 17.0 | 33 | 1500 | 0.25 | 1 | 32.7 | 63 |
| SMB5941B | 941B | 44.65 | 47 | 49.35 | 16.0 | 38 | 1500 | 0.25 | 1 | 35.6 | 57 |
| SMB5942B | 942B | 48.45 | 51 | 53.55 | 15.0 | 45 | 1500 | 0.25 | 1 | 38.8 | 53 |
| SMB5943B | 943B | 53.2 | 56 | 58.8 | 13.0 | 50 | 2000 | 0.25 | 1 | 42.6 | 48 |
| SMB5944B | 944B | 58.9 | 62 | 65.1 | 12.0 | 55 | 2000 | 0.25 | 1 | 47.1 | 44 |
| SMB5945B | 945B | 64.6 | 68 | 71.4 | 11.0 | 70 | 2000 | 0.25 | 1 | 51.7 | 40 |
| SMB5946B | 946B | 71.25 | 75 | 78.75 | 10.0 | 85 | 2000 | 0.25 | 1 | 56 | 36 |
| SMB5947B | 947B | 77.9 | 82 | 86.1 | 9.1 | 95 | 3000 | 0.25 | 1 | 62.2 | 33 |
| SMB5948B | 948B | 86.45 | 91 | 95.55 | 8.2 | 115 | 3000 | 0.25 | 1 | 69.2 | 30 |
| SMB5949B | 949B | 95 | 100 | 105 | 7.5 | 160 | 3000 | 0.25 | 1 | 76 | 27 |
| SMB5950B | 950B | 104.5 | 110 | 115.5 | 6.8 | 225 | 4000 | 0.25 | 1 | 83.6 | 25 |
| SMB5951B | 951B | 114 | 120 | 126 | 6.3 | 300 | 4500 | 0.25 | 1 | 91.2 | 22 |
| SMB5952B | 952B | 123.5 | 130 | 136.5 | 5.8 | 375 | 5000 | 0.25 | 1 | 98.8 | 21 |
| SMB5953B | 953B | 142.5 | 150 | 157.5 | 5.0 | 550 | 6000 | 0.25 | 1 | 114 | 18 |
| SMB5954B | 954B | 152 | 160 | 168 | 4.7 | 625 | 6500 | 0.25 | 1 | 121.6 | 17 |
| SMB5955B | 955B | 171 | 180 | 189 | 4.2 | 700 | 7000 | 0.25 | 1 | 136.8 | 15 |
| SMB5956B | 956B | 190 | 200 | 210 | 3.7 | 875 | 8000 | 0.25 | 1 | 152 | 13 |

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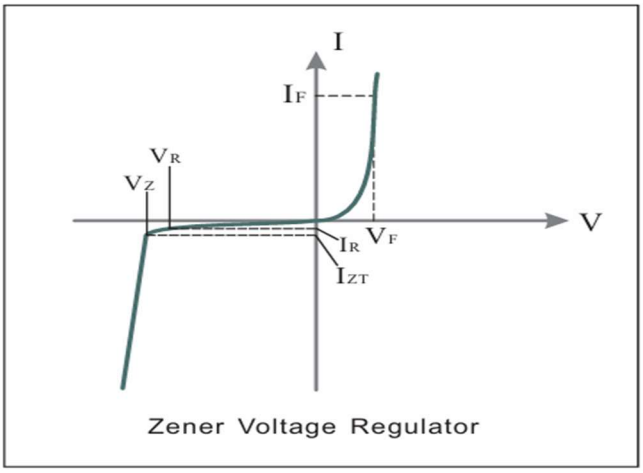
ELECTRICAL CHARACTERISTICS

(TL = 30°C unless otherwise noted, VF = 1.5 V Max. @ IF = 200 mA(DC) for all types)

| Symbol | Parameter |
|---|---|
| Vz | Reverse Zener Voltage @ $I_{ZT}$ |
| $I_{ZT}$ | Reverse Current |
| $Z_{ZT}$ | Maximum Zener Impedance @ $I_{ZT}$ |
| $I_{ZK}$ | Reverse Current |
| $Z_{ZK}$ | Maximum Zener Impedance @ $I_{ZK}$ |
| $I_R$ | Reverse Leakage Current @ $V_R$ |
| $V_R$ | Reverse Voltage |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage @ $I_F$ |
| $I_{ZM}$ | Maximum DC Zener Current |



Zener Voltage Regulator

Notes:

1. Tolerance and type number designation the type numbers listed indicate a tolerance of 5%;
2. Zener voltage (Vz) measurement Nominal Zener v oltage is measured with the device junction in thermal equilibrium with ambient temperature 25°C;
3. Zener impedance (Zz) derivation : ZZT and ZZK are measured by dividing the AC voltage drop across the device by the AC current applied.The specified limits are for Iz(AC) = 0.1 Iz(DC) with the AC frequency = 60 H.