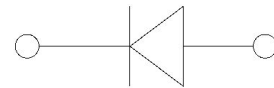
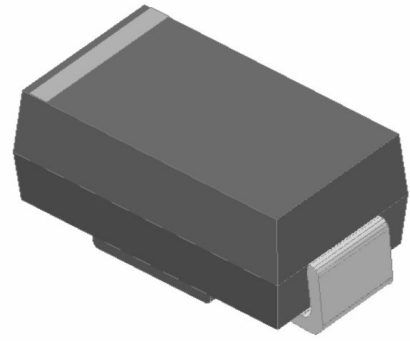


SMB3Z Series

3W SURFACE MOUNT POWER ZENER DIODE

■ Features

- 3.0W Power Dissipation
- Ideally Suited for Automated Assembly
- 3.3V - 250V Nominal Zener Voltage Range
- Standard VZ Tolerance is $\pm 5\%$
- ESD Rating of Class 3 ($>8\text{kV}$) per Human Body Model
- Lead-Free Finish; RoHS Compliant



■ Mechanical Data

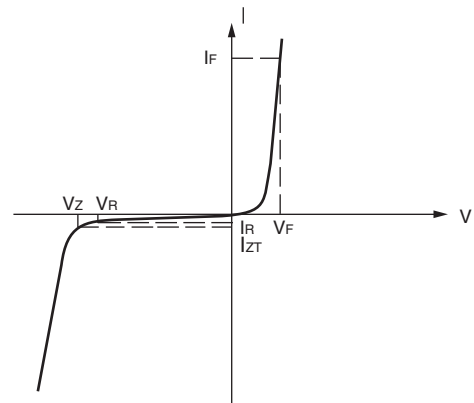
- Case: SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Copper Alloy Leadframe with Lead-Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band

| MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|--|-----------------------|-------------|------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Maximum steady state power dissipation at $T_L = 75^\circ\text{C}$ (fig. 1) ⁽¹⁾ | P_{tot} | 3000 | mW |
| Maximum steady state power dissipation at $T_A = 25^\circ\text{C}$ (fig. 1) ⁽²⁾ | P_{tot} | 500 | mW |
| Maximum instantaneous forward voltage at 200 mA for all types ⁽³⁾ | V_F | 1.5 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

Notes

- ⁽¹⁾ Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal
⁽²⁾ Mounted on minimum recommended pad layout
⁽³⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

| ELECTRICAL CHARACTERISTICS | |
|-----------------------------------|-------------------------------------|
| SYMBOL | PARAMETER |
| V_Z | Reverse Zener voltage at I_{ZT} |
| I_{ZT} | Reverse current |
| Z_{ZT} | Maximum Zener impedance at I_{ZT} |
| I_{ZK} | Reverse current |
| Z_{ZK} | Maximum Zener impedance at I_{ZK} |
| I_R | Reverse leakage current at V_R |
| V_R | Reverse voltage |
| I_F | Forward current |
| V_F | Forward voltage at I_F |
| I_{ZM} | Maximum DC Zener current |



Zener Voltage Regulator



SMB3Z Series

| TYPE NO. | Nominal Zener Voltage | | | | Maximum Zener Impedance | | | Maximum Reverse Leakage Current | | Maximum DC Zener Current |
|-----------|-----------------------|-----------|-----------|-----------------|-------------------------|---------|-----------------|---------------------------------|-------|--------------------------|
| | VZmin@IZT | VZtyp@IZT | VZmax@IZT | I _{ZT} | ZZT@IZT | ZZK@IZT | I _{ZK} | IR@VR | | I _{Zm} |
| | (V) | (V) | (V) | (mA) | (Ω) | (Ω) | (mA) | (μA) | (V) | (mA) |
| SMB3Z3.3A | 3.14 | 3.3 | 3.47 | 227.3 | 10 | 500 | 1 | 100 | 1 | 817 |
| SMB3Z3.6A | 3.42 | 3.6 | 3.78 | 208.3 | 9 | 500 | 1 | 100 | 1 | 749 |
| SMB3Z3.9A | 3.71 | 3.9 | 4.1 | 192 | 4.5 | 400 | 1 | 100 | 1 | 691 |
| SMB3Z4.3A | 4.09 | 4.3 | 4.52 | 174 | 4.5 | 400 | 1 | 50 | 1 | 627 |
| SMB3Z4.7A | 4.47 | 4.7 | 4.94 | 160 | 4 | 500 | 1 | 50 | 1 | 573 |
| SMB3Z5.1A | 4.85 | 5.1 | 5.36 | 147 | 3.5 | 550 | 1 | 10 | 1 | 528 |
| SMB3Z5.6A | 5.32 | 5.6 | 5.88 | 134 | 2.5 | 600 | 1 | 10 | 2 | 481 |
| SMB3Z6.2A | 5.89 | 6.2 | 6.51 | 121 | 1.5 | 700 | 1 | 10 | 3 | 435 |
| SMB3Z6.8A | 6.46 | 6.8 | 7.14 | 110 | 2 | 700 | 1 | 10 | 4 | 393 |
| SMB3Z7.5A | 7.125 | 7.5 | 7.875 | 100 | 2 | 700 | 0.5 | 10 | 5 | 360 |
| SMB3Z8.2A | 7.79 | 8.2 | 8.61 | 91 | 2.3 | 700 | 0.5 | 10 | 6 | 330 |
| SMB3Z9.1A | 8.645 | 9.1 | 9.555 | 82 | 2.5 | 700 | 0.5 | 10 | 7 | 297 |
| SMB3Z10A | 9.5 | 10 | 10.5 | 75 | 3.5 | 700 | 0.25 | 10 | 7.6 | 270 |
| SMB3Z11A | 10.45 | 11 | 11.55 | 68 | 4 | 700 | 0.25 | 0.5 | 8.4 | 225 |
| SMB3Z12A | 11.4 | 12 | 12.6 | 63 | 4.5 | 700 | 0.25 | 0.5 | 9.1 | 246 |
| SMB3Z13A | 12.35 | 13 | 13.65 | 58 | 4.5 | 700 | 0.25 | 0.5 | 9.9 | 208 |
| SMB3Z14A | 13.3 | 14 | 14.7 | 53 | 5 | 700 | 0.25 | 0.5 | 10.6 | 193 |
| SMB3Z15A | 14.25 | 15 | 15.75 | 50 | 5.5 | 700 | 0.25 | 0.5 | 11.4 | 180 |
| SMB3Z16A | 15.2 | 16 | 16.8 | 47 | 5.5 | 700 | 0.25 | 0.5 | 12.2 | 169 |
| SMB3Z17A | 16.15 | 17 | 17.85 | 44 | 6 | 750 | 0.25 | 0.5 | 13 | 159 |
| SMB3Z18A | 17.1 | 18 | 18.9 | 42 | 6 | 750 | 0.25 | 0.5 | 13.7 | 150 |
| SMB3Z19A | 18.05 | 19 | 19.95 | 40 | 7 | 750 | 0.25 | 0.5 | 14.4 | 142 |
| SMB3Z20A | 19 | 20 | 21 | 37 | 7 | 750 | 0.25 | 0.5 | 15.2 | 135 |
| SMB3Z22A | 20.9 | 22 | 23.1 | 34 | 8 | 750 | 0.25 | 0.5 | 16.7 | 123 |
| SMB3Z24A | 22.8 | 24 | 25.2 | 31 | 9 | 750 | 0.25 | 0.5 | 18.2 | 112 |
| SMB3Z27A | 25.65 | 27 | 28.35 | 28 | 10 | 750 | 0.25 | 0.5 | 20.6 | 100 |
| SMB3Z30A | 28.5 | 30 | 31.5 | 25 | 16 | 1000 | 0.25 | 0.5 | 22.5 | 90 |
| SMB3Z33A | 31.35 | 33 | 34.65 | 23 | 20 | 1000 | 0.25 | 0.5 | 25.1 | 82 |
| SMB3Z36A | 34.2 | 36 | 37.8 | 21 | 22 | 1000 | 0.25 | 0.5 | 27.4 | 75 |
| SMB3Z39A | 37.05 | 39 | 40.95 | 19 | 28 | 1000 | 0.25 | 0.5 | 29.7 | 69 |
| SMB3Z43A | 40.85 | 43 | 45.15 | 17 | 33 | 1500 | 0.25 | 0.5 | 32.7 | 63 |
| SMB3Z47A | 44.65 | 47 | 49.35 | 16 | 38 | 1500 | 0.25 | 0.5 | 35.6 | 57 |
| SMB3Z51A | 48.45 | 51 | 53.55 | 15 | 45 | 1500 | 0.25 | 0.5 | 38.8 | 53 |
| SMB3Z56A | 53.2 | 56 | 58.8 | 13 | 50 | 2000 | 0.25 | 0.5 | 42.6 | 48 |
| SMB3Z62A | 58.9 | 62 | 65.1 | 12 | 55 | 2000 | 0.25 | 0.5 | 47.1 | 44 |
| SMB3Z68A | 64.6 | 68 | 71.4 | 11 | 70 | 2000 | 0.25 | 0.5 | 51.7 | 40 |
| SMB3Z75A | 71.25 | 75 | 78.75 | 10 | 85 | 2000 | 0.25 | 0.5 | 56 | 36 |
| SMB3Z82A | 77.9 | 82 | 86.1 | 9.1 | 95 | 3000 | 0.25 | 0.5 | 62.2 | 33 |
| SMB3Z91A | 86.45 | 91 | 95.55 | 8.2 | 115 | 3000 | 0.25 | 0.5 | 69.2 | 30 |
| SMB3Z100A | 95 | 100 | 105 | 7.5 | 160 | 3000 | 0.25 | 0.5 | 76 | 27 |
| SMB3Z110A | 104.5 | 110 | 115.5 | 6.8 | 225 | 4000 | 0.25 | 0.5 | 83.6 | 25 |
| SMB3Z120A | 114 | 120 | 126 | 6.3 | 300 | 4500 | 0.25 | 0.5 | 91.2 | 22 |
| SMB3Z130A | 123.5 | 130 | 136.5 | 5.8 | 375 | 5000 | 0.25 | 0.5 | 98.8 | 21 |
| SMB3Z140A | 133 | 140 | 147 | 5.3 | 475 | 5000 | 0.25 | 0.5 | 106.4 | 19 |
| SMB3Z150A | 142.5 | 150 | 157.5 | 5 | 550 | 6000 | 0.25 | 0.5 | 114 | 18 |
| SMB3Z160A | 152 | 160 | 168 | 4.7 | 625 | 6500 | 0.25 | 0.5 | 121.6 | 17 |
| SMB3Z170A | 161.5 | 170 | 178.5 | 4.4 | 650 | 7000 | 0.25 | 0.5 | 130.4 | 16 |
| SMB3Z180A | 171 | 180 | 189 | 4.2 | 700 | 7000 | 0.25 | 0.5 | 136.8 | 15 |
| SMB3Z190A | 180.5 | 190 | 199.5 | 4 | 800 | 8000 | 0.25 | 0.5 | 144.8 | 14 |
| SMB3Z200A | 190 | 200 | 210 | 3.7 | 875 | 8000 | 0.25 | 0.5 | 152 | 13 |
| SMB3Z210A | 199.5 | 210 | 220.5 | 3.5 | 950 | 8300 | 0.25 | 0.5 | 169 | 12.3 |
| SMB3Z220A | 209 | 220 | 231 | 3.3 | 1600 | 8500 | 0.25 | 0.5 | 178 | 11.6 |
| SMB3Z230A | 218.5 | 230 | 241.5 | 3.1 | 2000 | 9000 | 0.25 | 0.5 | 186 | 10.9 |
| SMB3Z240A | 228 | 240 | 252 | 2.9 | 2500 | 9000 | 0.25 | 0.5 | 195 | 10.2 |
| SMB3Z250A | 237.5 | 250 | 262.5 | 2.7 | 3000 | 9500 | 0.25 | 0.5 | 205 | 9.5 |

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNIT |
|---|---------------------------------|-------|------|
| Typical thermal resistance, junction to lead | R _{θJL} ⁽¹⁾ | 50 | °C/W |
| Typical thermal resistance, junction to ambient | R _{θJA} ⁽²⁾ | 250 | °C/W |

Notes

- (1) Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal
- (2) Mounted on minimum recommended pad layout



■ Characteristics(Typical)

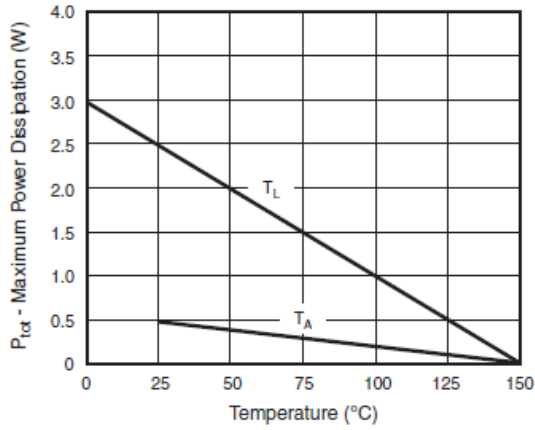


Fig. 1 - Steady State Power Derating

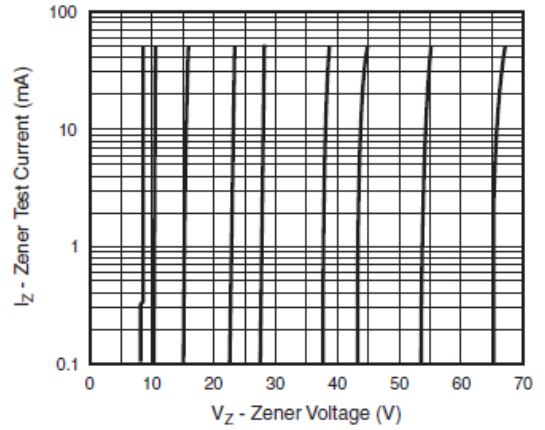


Fig. 3 - Typical Zener Voltage

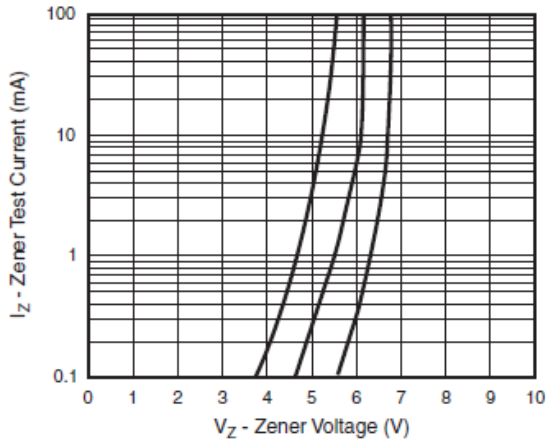


Fig. 2 - Typical Zener Voltage

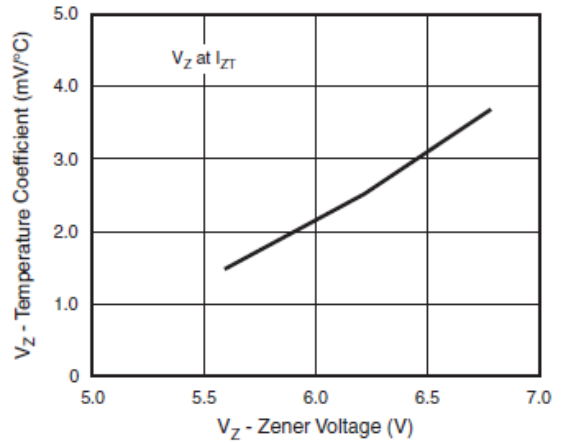


Fig. 4 - Typical Temperature Coefficients

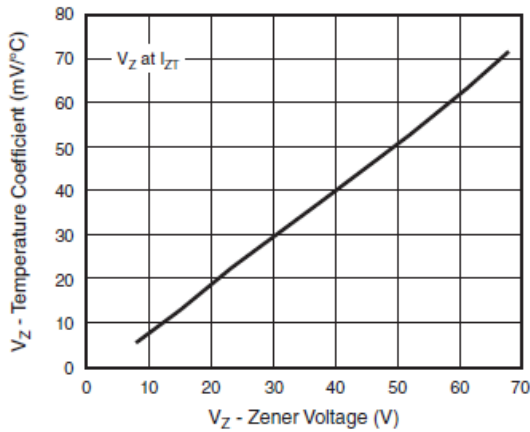


Fig. 5 - Typical Temperature Coefficients

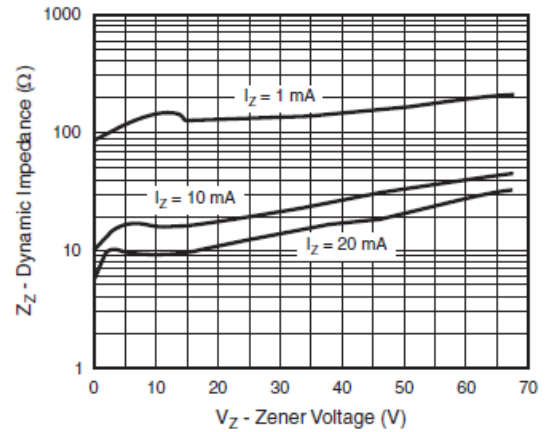


Fig. 7 - Typical Zener Impedance

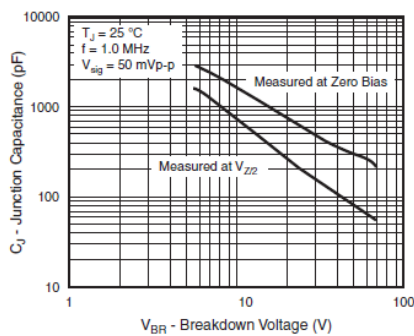


Fig. 6 - Typical Junction Capacitance



SMB3Z Series

■ Ordering Information (Example)

| PREFERED | PACKAGE CODE | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|--------------|----------------------|-------------------------|----------------------------|---------------|
| SMB3Z Series | SMB | 3000 | 6000 | 48000 | 13" reel |

■ Outline Dimensions

