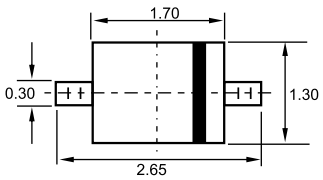
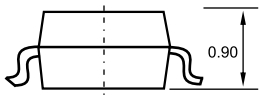
# MM3Z2V4S-MM3Z39S

**Surface Mount Zener Diode**

**$V_Z$ : 2.4 - 39 Volts**
**$P_D$ : 300 mWatts**

**SOD-323**




**Dimensions in inches and (millimeters)**

## Features

- Planar Die Construction
- Ultra-Small Surface Mount Package
- General Purpose
- Ideally suited for Automated Assembly Processes

## Mechanical Data

- Case: SOD-323, Plastic
- Case Material - UL Flammability Classification Rating 94V-0
- Polarity: Cathode Band
- Weight: 0.004 grams (approx.

## Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

### Maximum Ratings

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Forward Voltage (Note 1) @ $I_F$ = 10mA | $V_F$ | 0.9 | V |
| Power Dissipation | $P_d$ | 300 | mW |
| Thermal Resistance, Junction to Ambient Air | $R_{\theta JA}$ | 625 | °C/W |
| Operating and Storage Temperature Range | $T_j$, $T_{STG}$ | -65 to +150 | °C |

Notes: 1. Short duration pulse test used to minimize self-heating effect.

# MM3Z2V4S-MM3Z39S

**Surface Mount Zener Diode**

## ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

| Type Number | Marking Code | Zener Voltage | | | | Zener Impedance | | | Leakage Current | | @$V_Z$(Mv/k) @$I_{ZT}$ | | C @$V_R$=0, f=1MHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_Z$(Volts) | | | @$I_{ZT}$ | $Z_{ZT}$@$I_{ZT}$ | $Z_{ZK}$@$I_{ZK}$ | | $I_R$ | @$V_R$ | | | |
| | | Min | Nom | Max | mA | Ω | Ω | mA | μA | V | Min | Max | pF |
| MM3Z2V4S | T2 | 2.29 | 2.4 | 2.51 | 5 | 100 | 1000 | 0.5 | 50 | 1.0 | -3.5 | 0 | 450 |
| MM3Z2V7S | T3 | 2.59 | 2.7 | 2.81 | 5 | 100 | 1000 | 0.5 | 20 | 1.0 | -3.5 | 0 | 450 |
| MM3Z3V0S | T4 | 2.90 | 3.0 | 3.11 | 5 | 100 | 1000 | 0.5 | 10 | 1.0 | -3.5 | 0 | 450 |
| MM3Z3V3S | T5 | 3.32 | 3.3 | 3.53 | 5 | 95 | 1000 | 0.5 | 5 | 1.0 | -3.5 | 0 | 450 |
| MM3Z3V6S | T6 | 3.49 | 3.6 | 3.71 | 5 | 90 | 1000 | 0.5 | 5 | 1.0 | -3.5 | 0 | 450 |
| MM3Z3V9S | T7 | 3.89 | 3.9 | 4.16 | 5 | 90 | 1000 | 0.5 | 3 | 1.0 | -3.5 | -2.5 | 450 |
| MM3Z4V3S | T8 | 4.17 | 4.3 | 4.43 | 5 | 90 | 1000 | 0.5 | 3 | 1.0 | -3.5 | 0 | 450 |
| MM3Z4V7S | T9 | 4.55 | 4.7 | 4.75 | 5 | 80 | 800 | 0.5 | 3 | 2.0 | -3.5 | 0.2 | 260 |
| MM3Z5V1S | TA | 4.98 | 5.1 | 5.20 | 5 | 60 | 500 | 0.5 | 2 | 2.0 | -2.7 | 1.2 | 225 |
| MM3Z5V6S | TC | 5.49 | 5.6 | 5.73 | 5 | 40 | 200 | 0.5 | 1 | 2.0 | -2.0 | 2.5 | 200 |
| MM3Z6V2S | TE | 6.06 | 6.2 | 6.33 | 5 | 10 | 100 | 0.5 | 3 | 4.0 | 0.4 | 3.7 | 185 |
| MM3Z6V8S | TF | 6.65 | 6.8 | 6.93 | 5 | 15 | 160 | 0.5 | 2 | 4.0 | 1.2 | 4.5 | 155 |
| MM3Z7V5S | TG | 7.28 | 7.5 | 7.60 | 5 | 15 | 160 | 0.5 | 1 | 5.0 | 2.5 | 5.3 | 140 |
| MM3Z8V2S | TH | 8.02 | 8.2 | 8.36 | 5 | 15 | 160 | 0.5 | 0.7 | 5.0 | 3.2 | 6.2 | 135 |
| MM3Z9V1S | TK | 8.85 | 9.1 | 9.23 | 5 | 15 | 160 | 0.5 | 0.5 | 6.0 | 3.8 | 7.0 | 130 |
| MM3Z10S | WB | 9.80 | 10 | 10.20 | 5 | 15 | 160 | 0.5 | 0.5 | 6.0 | 4.5 | 8.0 | 130 |
| MM3Z11S | WC | 10.78 | 11 | 11.22 | 5 | 20 | 160 | 0.5 | 0.1 | 8.0 | 5.4 | 9.0 | 130 |
| MM3Z12S | TN | 11.74 | 12 | 12.24 | 5 | 25 | 80 | 0.5 | 0.1 | 8.0 | 6.0 | 10 | 130 |
| MM3Z13S | TQ | 12.91 | 13 | 13.49 | 5 | 30 | 160 | 0.5 | 0.1 | 8.0 | 7.0 | 11 | 120 |
| MM3Z15S | TP | 14.34 | 15 | 14.98 | 5 | 40 | 80 | 0.5 | 0.10 | 11.0 | 9.2 | 13 | 110 |
| MM3Z16S | TU | 15.85 | 16 | 16.51 | 5 | 40 | 80 | 0.5 | 0.05 | 11.2 | 10.4 | 14 | 105 |
| MM3Z18S | TW | 17.56 | 18 | 18.35 | 5 | 45 | 80 | 0.5 | 0.05 | 12.6 | 12.4 | 16 | 100 |
| MM3Z20S | U8 | 19.48 | 20 | 20.46 | 5 | 55 | 100 | 0.5 | 0.05 | 14.0 | 14.4 | 18 | 85 |
| MM3Z22S | WP | 21.54 | 22 | 22.47 | 5 | 55 | 100 | 0.5 | 0.05 | 15.4 | 16.4 | 20 | 85 |
| MM3Z24S | WT | 23.72 | 24 | 24.78 | 5 | 70 | 120 | 0.5 | 0.05 | 16.8 | 18.4 | 22 | 80 |
| MM3Z27S | WQ | 26.19 | 27 | 27.53 | 5 | 80 | 300 | 0.5 | 0.05 | 18.9 | 21.4 | 25.3 | 70 |
| MM3Z30S | WV | 29.19 | 30 | 30.69 | 5 | 80 | 300 | 0.5 | 0.05 | 21.0 | 24.4 | 29.4 | 70 |
| MM3Z33S | WR | 32.15 | 33 | 33.79 | 5 | 80 | 300 | 0.5 | 0.05 | 23.2 | 27.4 | 33.4 | 70 |
| MM3Z36S | WU | 35.07 | 36 | 36.87 | 5 | 90 | 500 | 0.5 | 0.05 | 25.2 | 30.4 | 37.4 | 70 |
| MM3Z39S | WN | 38.22 | 39 | 39.78 | 2 | 130 | 500 | 0.5 | 0.05 | 27.3 | 33.4 | 41.2 | 45 |

## TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

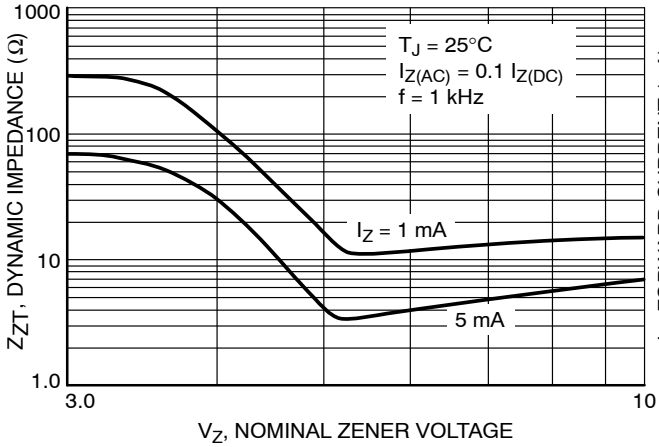



**Figure 1. Effect of Zener Voltage on Zener Impedance**

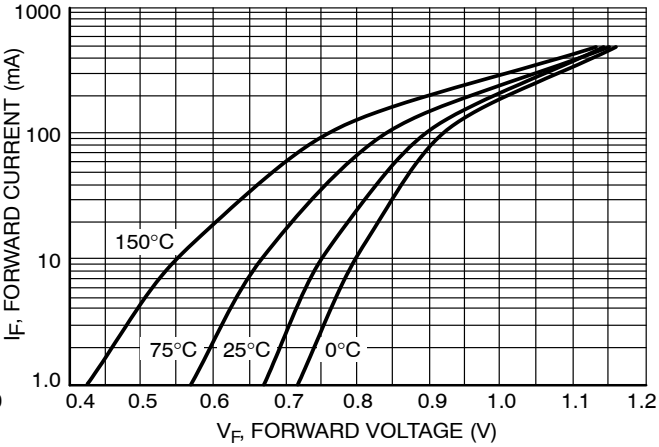



**Figure 2. Typical Forward Voltage**

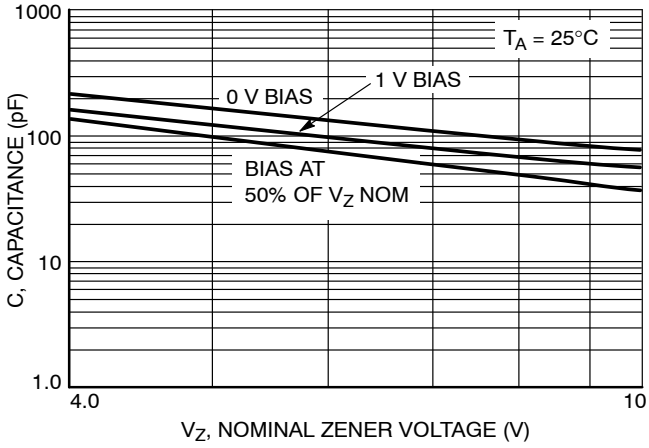



**Figure 3. Typical Capacitance**

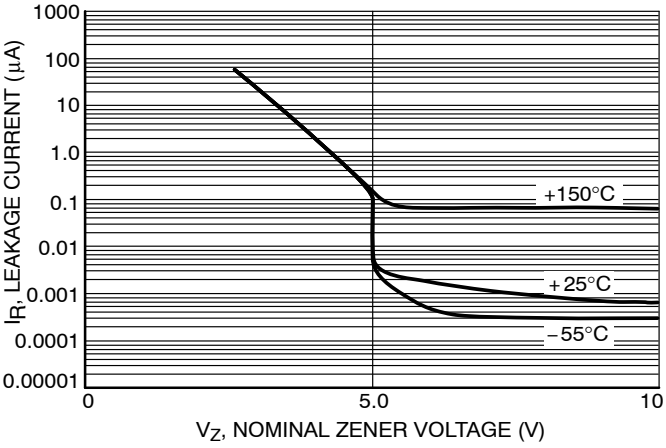



**Figure 4. Typical Leakage Current**

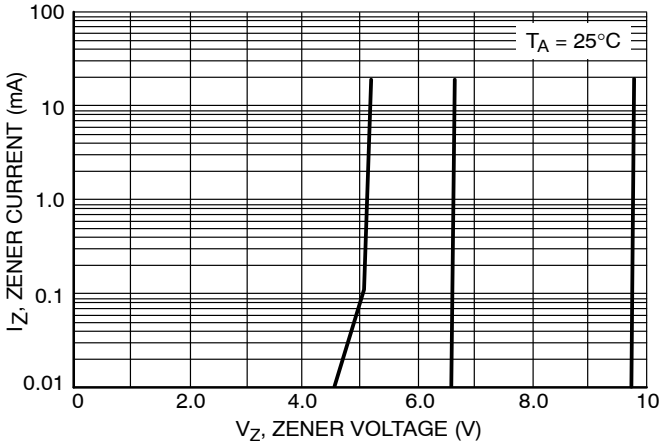



**Figure 5. Zener Voltage versus Zener Current ($V_Z$ Up to 9 V)**

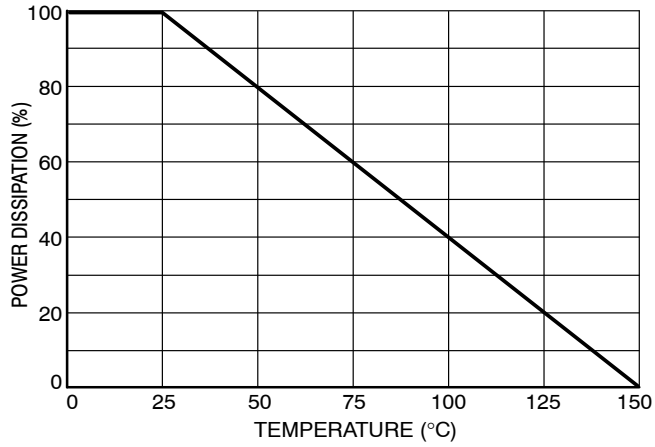



**Figure 6. Steady State Power Derating**

| PACKAGE | SPQ/PCS | CARTON SPQ/PCS | CARTON SIZE/CM | CARTON GW/KG | CARTON NW/KG |
|---|---|---|---|---|---|
| SOD-323 | 3000/REEL | 180000 | 44X44X22 | 9.00 | 8.00 |