



January 2010

# MM3Z2V4C-MM3Z75VC

## Zener Diodes

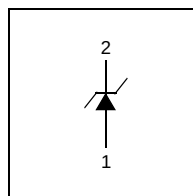
### Features

- Wide Zener Voltage Range Selection, 2.4V to 75V
- VZ Tolerance Selection of  $\pm 5\%$  (C Series)
- Very Small and Thin SMD package
- Matte Tin(Sn) finish, Pb Free



\* Band Denotes Cathode **SOD-323F**

Connection Diagram



### Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                    | Value       | Units            |
|-----------|------------------------------|-------------|------------------|
| $P_D$     | Power Dissipation            | 200         | mW               |
| $T_{STG}$ | Storage Temperature Range    | -65 to +150 | $^\circ\text{C}$ |
| $T_J$     | Maximum Junction Temperature | 150         | $^\circ\text{C}$ |
| $I_{ZM}$  | Maximum Regulator Current    | $P_D/V_Z$   | mA               |

\* These ratings are limiting values above which the serviceability of the diode may be impaired.

### Thermal Characteristics

| Symbol          | Parameter                               | Value | Unit               |
|-----------------|-----------------------------------------|-------|--------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 595   | $^\circ\text{C/W}$ |

\* Device mounted on PCB with minimum land pad.

### Electrical Characteritics $T_A = 25^\circ\text{C}$ unless otherwise specified

| Symbol | Parameter/ Test condition              | Min. | Typ. | Max. | Unit |
|--------|----------------------------------------|------|------|------|------|
| $V_F$  | Forward Voltage / $I_F = 10\text{ mA}$ | --   | --   | 1.0  | V    |

### Package Marking and Ordering Information

| Device Marking              | Device                      | Package  | Packing     | Reel Size | Tape Width | Quantity |
|-----------------------------|-----------------------------|----------|-------------|-----------|------------|----------|
| Refer to Product table list | Refer to Product table list | SOD-323F | Tape & Reel | 7'        | 12mm       | 3,000    |

**Electrical Characteristics**  $T_A=25^\circ\text{C}$  unless otherwise noted

| Device Type | Device Marking  | $V_Z$ (V) @ $I_{ZT}$ |      |       | $Z_{ZT}(\Omega)$ @ $I_{ZT}$ | $I_{ZT}$ (mA) | $Z_{ZK}(\Omega)$ @ $I_{ZK}$ | $I_{ZK}$ (mA) | $I_R(\mu\text{A})$ @ $V_R$ | $V_R$ (V) |
|-------------|-----------------|----------------------|------|-------|-----------------------------|---------------|-----------------------------|---------------|----------------------------|-----------|
|             |                 | Min.                 | Typ. | Max.  | Max.                        | -             | Max.                        | -             | Max                        | -         |
| MM3Z2V4C    | Z0              | 2.28                 | 2.4  | 2.52  | 94                          | 5             | 564                         | 1             | 45                         | 1         |
| MM3Z2V7C    | Z1              | 2.57                 | 2.7  | 2.84  | 94                          | 5             | 564                         | 1             | 18                         | 1         |
| MM3Z3V0C    | Z2              | 2.85                 | 3    | 3.15  | 89                          | 5             | 564                         | 1             | 9                          | 1         |
| MM3Z3V3C    | Z3              | 3.14                 | 3.3  | 3.47  | 89                          | 5             | 564                         | 1             | 4.5                        | 1         |
| MM3Z3V6C    | Z4              | 3.42                 | 3.6  | 3.78  | 84                          | 5             | 564                         | 1             | 4.5                        | 1         |
| MM3Z3V9C    | Z5              | 3.71                 | 3.9  | 4.1   | 84                          | 5             | 564                         | 1             | 2.7                        | 1         |
| MM3Z4V3C    | Z6              | 4.09                 | 4.3  | 4.52  | 84                          | 5             | 564                         | 1             | 2.7                        | 1         |
| MM3Z4V7C    | Z7              | 4.47                 | 4.7  | 4.94  | 75                          | 5             | 470                         | 1             | 2.7                        | 2         |
| MM3Z5V1C    | Z8              | 4.85                 | 5.1  | 5.36  | 56                          | 5             | 451                         | 1             | 1.8                        | 2         |
| MM3Z5V6C    | Z9              | 5.32                 | 5.6  | 5.88  | 37                          | 5             | 376                         | 1             | 0.9                        | 2         |
| MM3Z6V2C    | ZA              | 5.89                 | 6.2  | 6.51  | 9                           | 5             | 141                         | 1             | 2.7                        | 4         |
| MM3Z6V8C    | ZB              | 6.46                 | 6.8  | 7.14  | 14                          | 5             | 75                          | 1             | 1.8                        | 4         |
| MM3Z7V5C    | ZC              | 7.11                 | 7.5  | 7.86  | 14                          | 5             | 75                          | 1             | 0.9                        | 5         |
| MM3Z8V2C    | ZD              | 7.79                 | 8.2  | 8.61  | 14                          | 5             | 75                          | 1             | 0.63                       | 5         |
| MM3Z9V1C    | ZE              | 8.65                 | 9.1  | 9.56  | 14                          | 5             | 94                          | 1             | 0.45                       | 6         |
| MM3Z10VC    | ZF              | 9.5                  | 10   | 10.5  | 18                          | 5             | 141                         | 1             | 0.18                       | 7         |
| MM3Z11VC    | ZG              | 10.45                | 11   | 11.55 | 18                          | 5             | 141                         | 1             | 0.09                       | 8         |
| MM3Z12VC    | ZH              | 11.4                 | 12   | 12.6  | 23                          | 5             | 141                         | 1             | 0.09                       | 8         |
| MM3Z13VC    | ZJ              | 12.35                | 13   | 13.65 | 28                          | 5             | 160                         | 1             | 0.09                       | 8         |
| MM3Z15VC    | ZK              | 14.25                | 15   | 15.75 | 28                          | 5             | 188                         | 1             | 0.045                      | 10.5      |
| MM3Z16VC    | ZL              | 15.2                 | 16   | 16.8  | 37                          | 5             | 188                         | 1             | 0.045                      | 11.2      |
| MM3Z18VC    | ZM              | 17.1                 | 18   | 18.9  | 42                          | 5             | 212                         | 1             | 0.045                      | 12.6      |
| MM3Z20VC    | ZN              | 19                   | 20   | 21    | 51                          | 5             | 212                         | 1             | 0.045                      | 14        |
| MM3Z22VC    | ZP              | 20.9                 | 22   | 23.1  | 51                          | 5             | 235                         | 1             | 0.045                      | 15.4      |
| MM3Z24VC    | ZR              | 22.8                 | 24   | 25.2  | 65                          | 5             | 235                         | 1             | 0.045                      | 16.8      |
| MM3Z27VC    | ZS              | 25.65                | 27   | 28.35 | 75                          | 2             | 282                         | 0.5           | 0.045                      | 18.9      |
| MM3Z30VC    | ZT              | 28.5                 | 30   | 31.5  | 75                          | 2             | 282                         | 0.5           | 0.045                      | 21        |
| MM3Z33VC    | ZU              | 31.35                | 33   | 34.65 | 75                          | 2             | 306                         | 0.5           | 0.045                      | 23        |
| MM3Z36VC    | ZV              | 34.2                 | 36   | 37.8  | 84                          | 2             | 329                         | 0.5           | 0.045                      | 25.2      |
| MM3Z39VC    | ZW              | 37.05                | 39   | 40.95 | 122                         | 2             | 329                         | 0.5           | 0.045                      | 27.3      |
| MM3Z43VC    | ZX              | 40.85                | 43   | 45.15 | 141                         | 2             | 353                         | 0.5           | 0.045                      | 30.1      |
| MM3Z47VC    | ZY              | 44.65                | 47   | 49.35 | 160                         | 2             | 353                         | 0.5           | 0.045                      | 33        |
| MM3Z51VC    | Z <sub>⏟</sub>  | 48.45                | 51   | 53.55 | 169                         | 2             | 376                         | 0.5           | 0.045                      | 35.7      |
| MM3Z56VC    | Z <sub>==</sub> | 53.2                 | 56   | 58.8  | 188                         | 2             | 400                         | 0.5           | 0.045                      | 39.2      |
| MM3Z62VC    | Z <sub>≡</sub>  | 58.9                 | 62   | 65.1  | 202                         | 2             | 423                         | 0.5           | 0.045                      | 43.4      |
| MM3Z68VC    | Z>              | 64.6                 | 68   | 71.4  | 226                         | 2             | 447                         | 0.5           | 0.045                      | 47.6      |
| MM3Z75VC    | Z<              | 71.25                | 75   | 78.75 | 240                         | 2             | 470                         | 0.5           | 0.045                      | 52.5      |

## Notes :

1. The Zener Voltage ( $V_Z$ ) is tested under pulse condition of 10mS.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ .
3. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

## Typical Performance Characteristics

Figure 1. Zener current vs. Zener Voltage

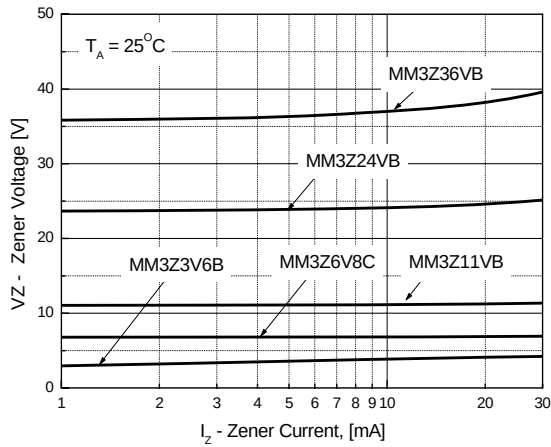


Figure 2. Zener current vs. Zener Impedance

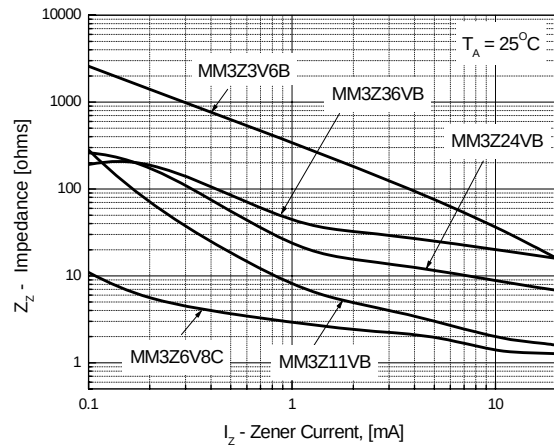


Figure 3. MM3Z3V6B  
Zener current vs. Zener Voltage

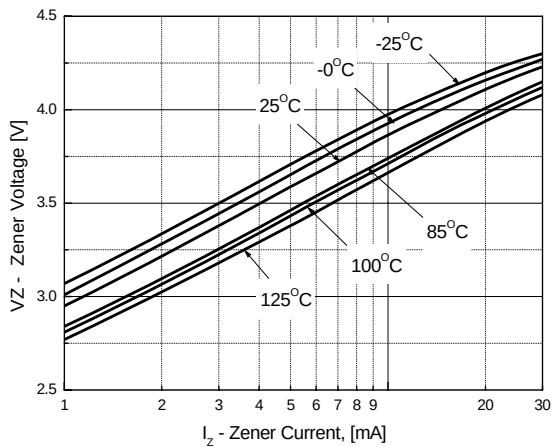


Figure 4. MM3Z6V8C  
Zener current vs. Zener Voltage

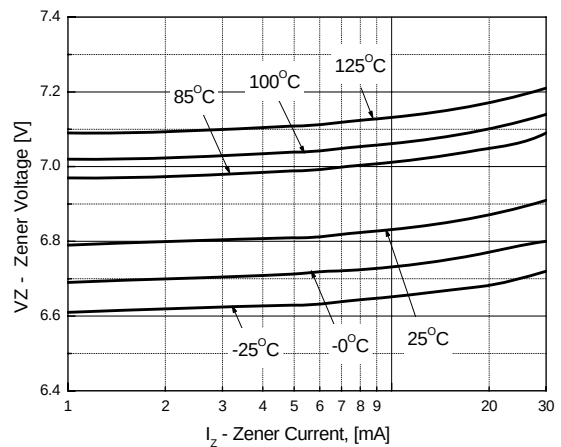


Figure 5. MM3Z11VB  
Zener current vs. Zener Voltage

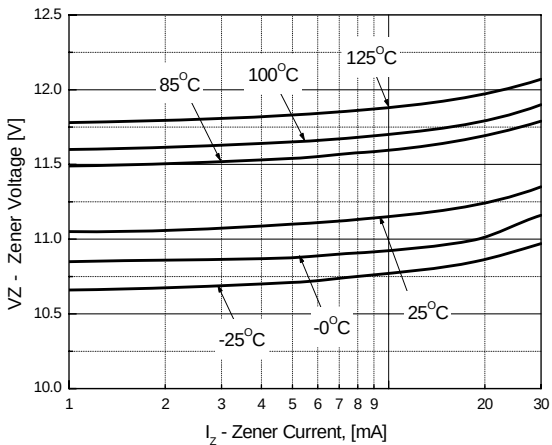
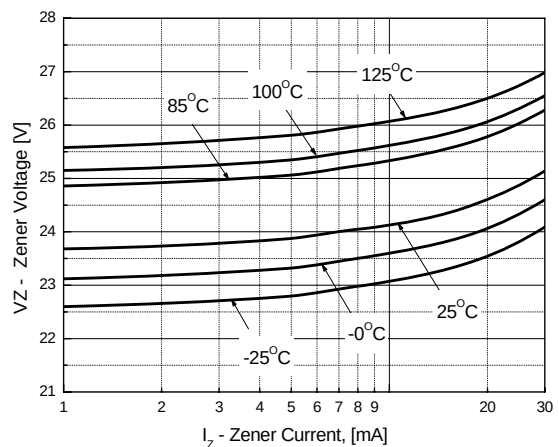
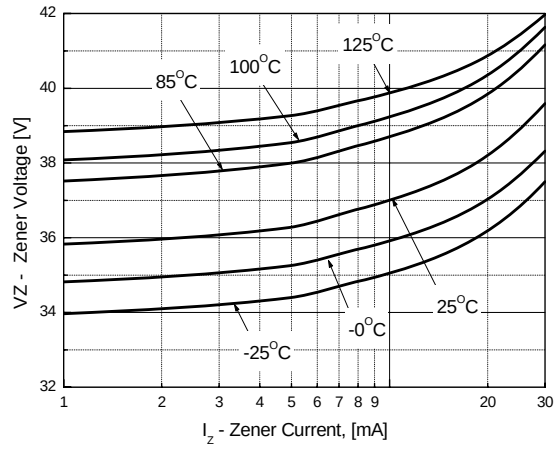


Figure 6. MM3Z24VB  
Zener current vs. Zener Voltage



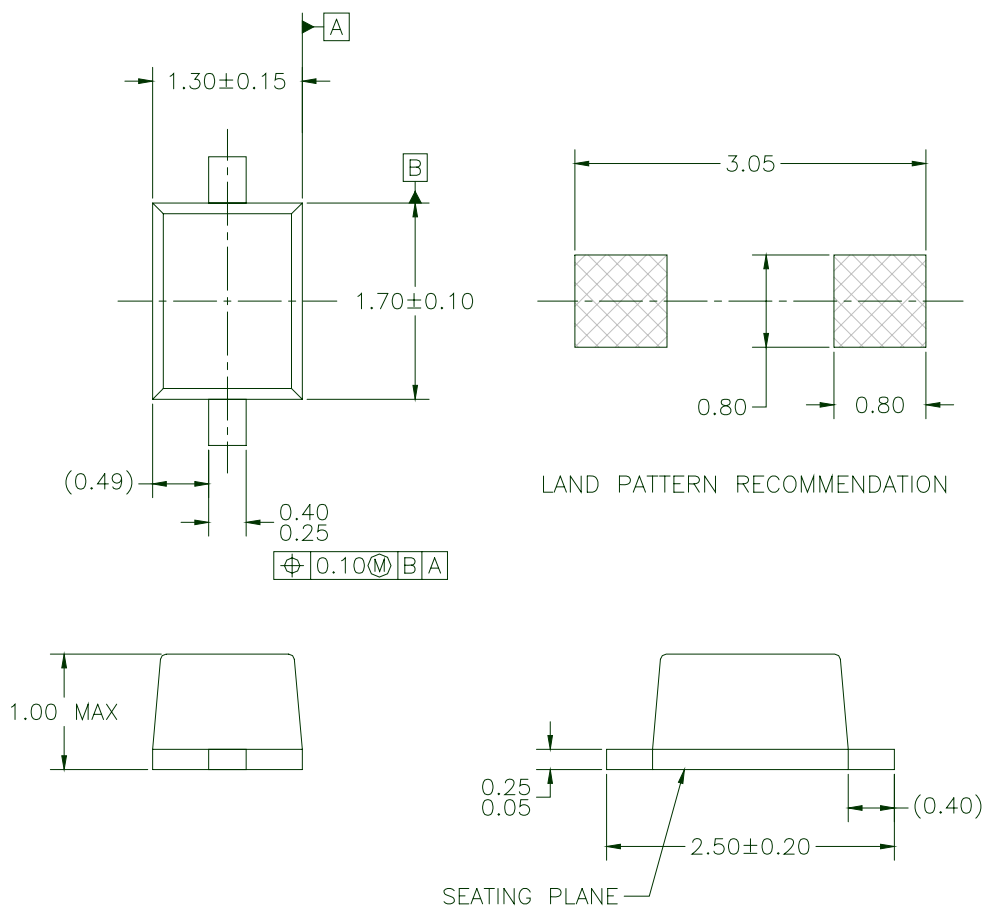
## Typical Performance Characteristics (Continued)

**Figure 7. MM3Z36VB**  
Zener current vs. Zener Voltage



# Package Dimensions

## SOD - 323F



NOTES: UNLESS OTHERWISE SPECIFIED

- A) THIS PACKAGE IS COMPLIANT TO JEITA SC90 STANDARD EXCEPT FOR THE OVERALL PACKAGE HEIGHT.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.



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