

# Zener Diodes

## MM3Z2V4C - MM3Z75VC

### Features

- Wide Zener Voltage Range Selection, 2.4 V to 75 V
- VZ Tolerance Selection of  $\pm 5\%$  (C Series)
- Very Small and Thin SMD Package
- Matte Tin(Sn) Finish
- These Devices are Pb-Free and are RoHS Compliant

### 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               |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

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

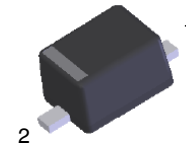
NOTE: Device mounted on PCB with minimum land pad.

### ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  unless otherwise specified)

| Symbol | Parameter                              | Min | Typ | Max | Units |
|--------|----------------------------------------|-----|-----|-----|-------|
| $V_F$  | Forward Voltage / $I_F = 10\text{ mA}$ | –   | –   | 1.0 | V     |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

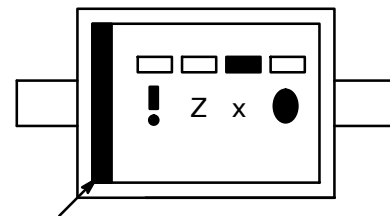


SOD-323FL  
CASE 477AB

### CONNECTION DIAGRAM



### MARKING DIAGRAM



Cathode

- = Calendar Year
- ! = Site Location
- Zx = Specific Device Code  
x = 1, 2, 3
- = Payweek

### ORDERING INFORMATION

| Device                      | Package                | Shipping†           |
|-----------------------------|------------------------|---------------------|
| Refer to Product Table List | SOD-323FL<br>(Pb-Free) | 3,000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MM3Z2V4C – MM3Z75VC

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Device Type | Device Marking | V <sub>Z</sub> (V) @ I <sub>ZT</sub> |      |       | Z <sub>VT</sub> (Ω) @ I <sub>ZT</sub> | I <sub>ZT</sub> (mA) | Z <sub>ZK</sub> (Ω) @ I <sub>ZK</sub> | I <sub>ZK</sub> (mA) | I <sub>R</sub> (μA) @ V <sub>R</sub> | V <sub>R</sub> (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               |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. The Zener Voltage (V<sub>Z</sub>) is tested under pulse condition of 10 ms.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of ±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<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed to I<sub>ZT</sub> or I<sub>ZK</sub>.

## TYPICAL PERFORMANCE CHARACTERISTICS

# MM3Z2V4C – MM3Z75VC

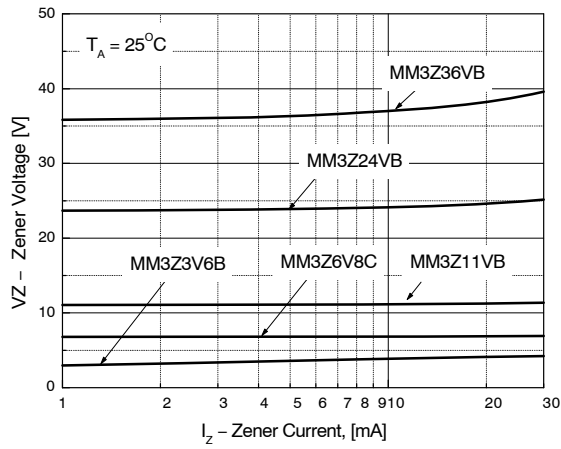


Figure 1. Zener Current vs. Zener Voltage

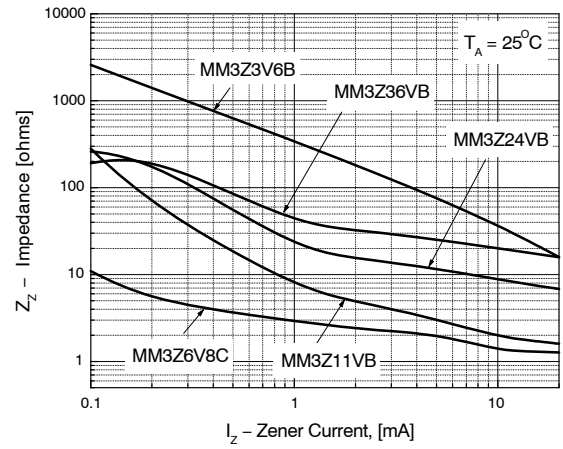


Figure 2. Zener Current vs. Zener Impedance

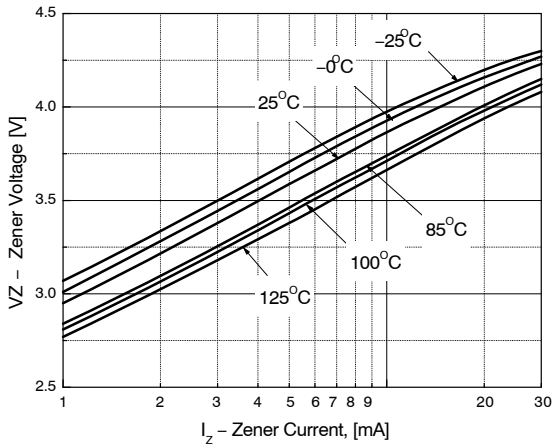


Figure 3. MM3Z3V6B  
Zener Current vs. Zener Voltage

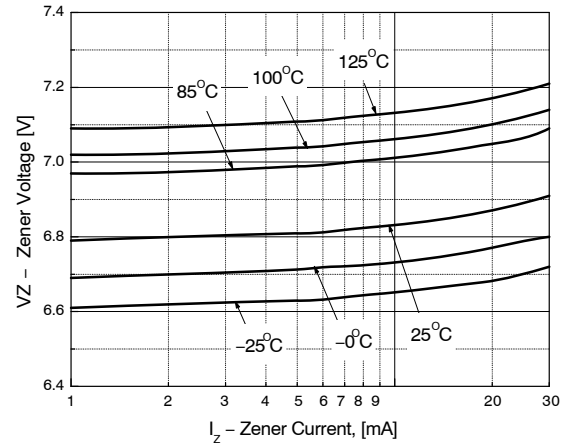


Figure 4. MM3Z6V8B  
Zener Current vs. Zener Voltage

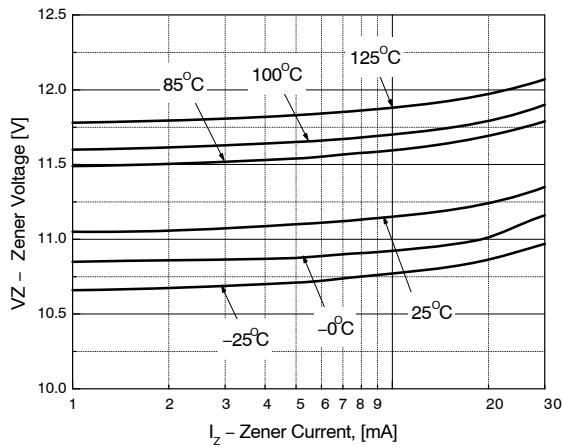


Figure 5. MM3Z11VB  
Zener Current vs. Zener Voltage

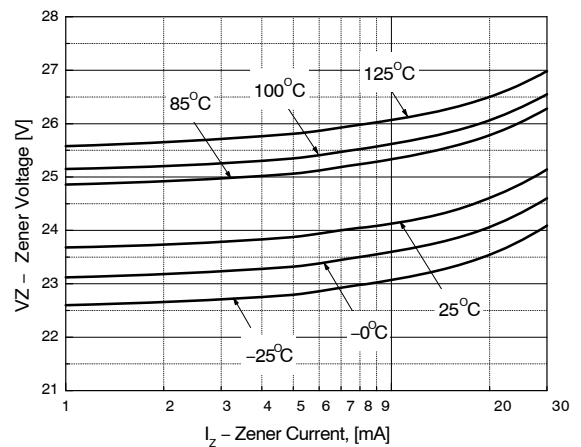
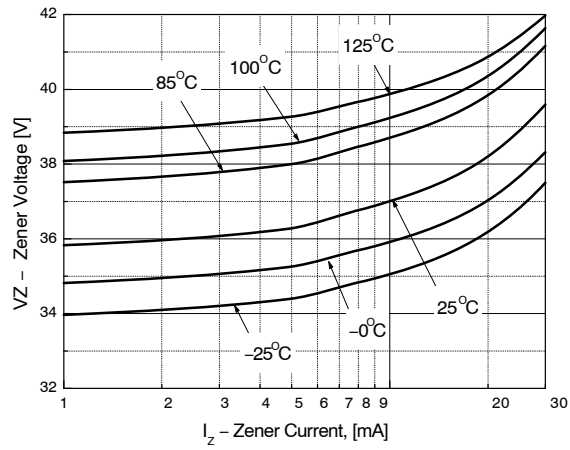


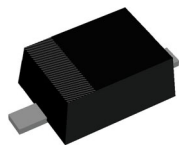
Figure 6. MM3Z24VB  
Zener Current vs. Zener Voltage

## MM3Z2V4C – MM3Z75VC

### TYPICAL PERFORMANCE CHARACTERISTICS

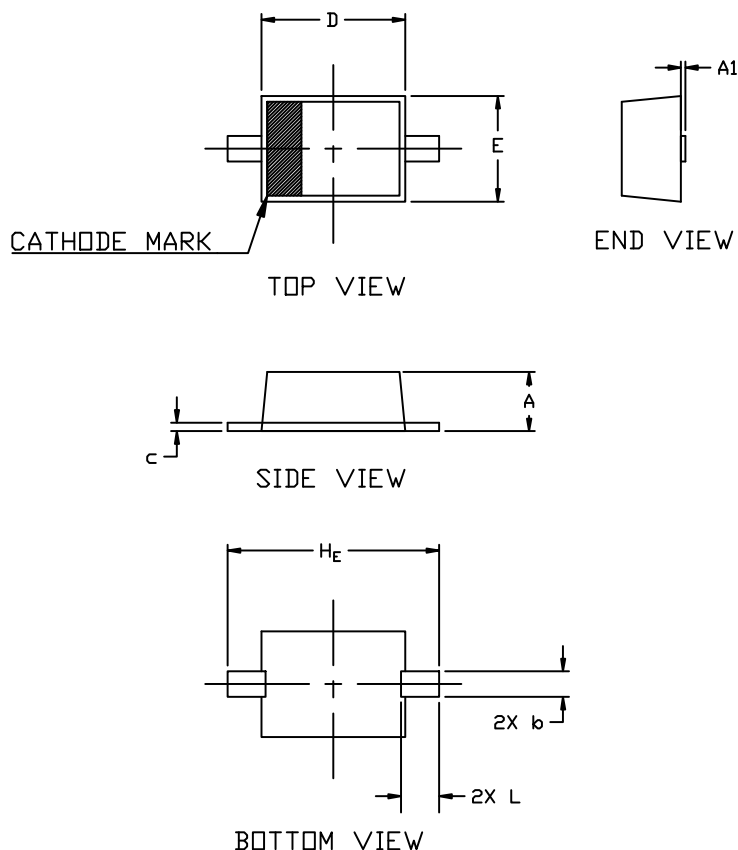


**Figure 7. MM3Z36VB**  
**Zener Current vs. Zener Voltage**



SOD-323FL  
CASE 477AB  
ISSUE A

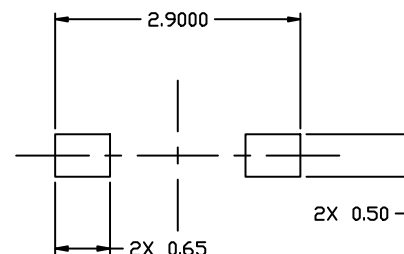
DATE 03 FEB 2023



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. LEAD THICKNESS INCLUDES LEAD FINISH.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM            | MILLIMETERS |      |      |
|----------------|-------------|------|------|
|                | MIN.        | NOM  | MAX. |
| A              | 0.60        | 0.70 | 0.90 |
| A1             | 0.00        | 0.05 | 0.10 |
| b              | 0.25        | 0.30 | 0.35 |
| c              | 0.05        | 0.10 | 0.20 |
| D              | 1.60        | 1.70 | 1.80 |
| E              | 1.15        | 1.25 | 1.35 |
| H <sub>E</sub> | 2.30        | 2.50 | 2.70 |
| L              | 0.35        | 0.45 | 0.55 |



RECOMMENDED  
MOUNTING FOOTPRINT

- \* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

|                  |             |                                                                                                                                                                                     |
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