

# Zener Diodes

## MM3Z2V4B-MM3Z75VB

### Features

- Wide Zener Voltage Range Selection, 2.4 V to 75 V
- $V_Z$  Tolerance Selection of  $\pm 2\%$  (B Series)
- Very Small and Thin SMD Package
- Matte Tin(Sn) Finish, Pb-Free

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

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

### ELECTRICAL CHARACTERISTICS

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

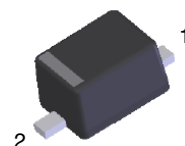
| Symbol | Parameter/Test Condition               | Min | Typ | Max | Unit |
|--------|----------------------------------------|-----|-----|-----|------|
| $V_F$  | Forward Voltage / $I_F = 10\text{ mA}$ | -   | -   | 1.0 | V    |

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.



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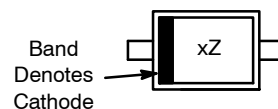


SOD-323FL  
CASE 477AB

### CONNECTION DIAGRAM



### MARKING DIAGRAM



xZ = Specific Device Code  
x = 0-9, A-Z, -, =,  $\equiv$ , <, >

### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

# MM3Z2V4B–MM3Z75VB

**PRODUCT TABLE** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Device Type | Device Marking | $V_Z$ (V) @ $I_{ZT}$ |     |       | $Z_{ZT}(\wedge)$<br>@ $I_{ZT}$ | $I_{ZT}$<br>(mA) | $Z_{ZK}(\wedge)$<br>@ $I_{ZK}$ | $I_{ZK}$<br>(mA) | $I_R$ ( $\mu\text{A}$ )<br>@ $V_R$ | $V_R$<br>(V) |
|-------------|----------------|----------------------|-----|-------|--------------------------------|------------------|--------------------------------|------------------|------------------------------------|--------------|
|             |                | Min                  | Typ | Max   | Max                            | –                | Max                            | –                | Max                                | –            |
| MM3Z2V4B    | 0Z             | 2.35                 | 2.4 | 2.45  | 94                             | 5                | 564                            | 1                | 45                                 | 1            |
| MM3Z2V7B    | 1Z             | 2.65                 | 2.7 | 2.75  | 94                             | 5                | 564                            | 1                | 18                                 | 1            |
| MM3Z3V0B    | 2Z             | 2.94                 | 3.0 | 3.06  | 89                             | 5                | 564                            | 1                | 9                                  | 1            |
| MM3Z3V3B    | 3Z             | 3.23                 | 3.3 | 3.37  | 89                             | 5                | 564                            | 1                | 4.5                                | 1            |
| MM3Z3V6B    | 4Z             | 3.53                 | 3.6 | 3.67  | 84                             | 5                | 564                            | 1                | 4.5                                | 1            |
| MM3Z3V9B    | 5Z             | 3.82                 | 3.9 | 3.98  | 84                             | 5                | 564                            | 1                | 2.7                                | 1            |
| MM3Z4V3B    | 6Z             | 4.21                 | 4.3 | 4.39  | 84                             | 5                | 564                            | 1                | 2.7                                | 1            |
| MM3Z4V7B    | 7Z             | 4.61                 | 4.7 | 4.79  | 75                             | 5                | 470                            | 1                | 2.7                                | 2            |
| MM3Z5V1B    | 8Z             | 5.00                 | 5.1 | 5.20  | 56                             | 5                | 451                            | 1                | 1.8                                | 2            |
| MM3Z5V6B    | 9Z             | 5.49                 | 5.6 | 5.71  | 37                             | 5                | 376                            | 1                | 0.9                                | 2            |
| MM3Z6V2B    | AZ             | 6.08                 | 6.2 | 6.32  | 9                              | 5                | 141                            | 1                | 2.7                                | 4            |
| MM3Z6V8B    | BZ             | 6.66                 | 6.8 | 6.94  | 14                             | 5                | 75                             | 1                | 1.8                                | 4            |
| MM3Z7V5B    | CZ             | 7.35                 | 7.5 | 7.65  | 14                             | 5                | 75                             | 1                | 0.9                                | 5            |
| MM3Z8V2B    | DZ             | 8.04                 | 8.2 | 8.36  | 14                             | 5                | 75                             | 1                | 0.63                               | 5            |
| MM3Z9V1B    | EZ             | 8.92                 | 9.1 | 9.28  | 14                             | 5                | 94                             | 1                | 0.45                               | 6            |
| MM3Z10VB    | FZ             | 9.80                 | 10  | 10.20 | 18                             | 5                | 141                            | 1                | 0.18                               | 7            |
| MM3Z11VB    | GZ             | 10.78                | 11  | 11.22 | 18                             | 5                | 141                            | 1                | 0.09                               | 8            |
| MM3Z12VB    | HZ             | 11.76                | 12  | 12.24 | 23                             | 5                | 141                            | 1                | 0.09                               | 8            |
| MM3Z13VB    | JZ             | 12.74                | 13  | 13.26 | 28                             | 5                | 160                            | 1                | 0.09                               | 8            |
| MM3Z15VB    | KZ             | 14.70                | 15  | 15.30 | 28                             | 5                | 188                            | 1                | 0.045                              | 10.5         |
| MM3Z16VB    | LZ             | 15.68                | 16  | 16.32 | 37                             | 5                | 188                            | 1                | 0.045                              | 11.2         |
| MM3Z18VB    | MZ             | 17.64                | 18  | 18.36 | 42                             | 5                | 212                            | 1                | 0.045                              | 12.6         |
| MM3Z20VB    | NZ             | 19.60                | 20  | 20.40 | 51                             | 5                | 212                            | 1                | 0.045                              | 14.0         |
| MM3Z22VB    | PZ             | 21.56                | 22  | 22.44 | 51                             | 5                | 235                            | 1                | 0.045                              | 15.4         |
| MM3Z24VB    | RZ             | 23.52                | 24  | 24.48 | 65                             | 5                | 235                            | 1                | 0.045                              | 16.8         |
| MM3Z27VB    | SZ             | 26.46                | 27  | 27.54 | 75                             | 2                | 282                            | 0.5              | 0.045                              | 18.9         |
| MM3Z30VB    | TZ             | 29.40                | 30  | 30.60 | 75                             | 2                | 282                            | 0.5              | 0.045                              | 21.0         |
| MM3Z33VB    | UZ             | 32.34                | 33  | 33.66 | 75                             | 2                | 306                            | 0.5              | 0.045                              | 23.0         |
| MM3Z36VB    | VZ             | 35.28                | 36  | 36.72 | 84                             | 2                | 329                            | 0.5              | 0.045                              | 25.2         |
| MM3Z39VB    | WZ             | 38.22                | 39  | 39.78 | 122                            | 2                | 329                            | 0.5              | 0.045                              | 27.3         |
| MM3Z43VB    | XZ             | 42.14                | 43  | 43.86 | 141                            | 2                | 353                            | 0.5              | 0.045                              | 30.1         |
| MM3Z47VB    | YZ             | 46.06                | 47  | 47.94 | 160                            | 2                | 353                            | 0.5              | 0.045                              | 33.0         |
| MM3Z51VB    | _Z             | 49.98                | 51  | 52.02 | 169                            | 2                | 376                            | 0.5              | 0.045                              | 35.7         |
| MM3Z56VB    | =Z             | 54.88                | 56  | 57.12 | 188                            | 2                | 400                            | 0.5              | 0.045                              | 39.2         |
| MM3Z62VB    | ≡Z             | 60.76                | 62  | 63.24 | 202                            | 2                | 423                            | 0.5              | 0.045                              | 43.4         |
| MM3Z68VB    | >Z             | 66.64                | 68  | 69.36 | 226                            | 2                | 447                            | 0.5              | 0.045                              | 47.6         |
| MM3Z75VB    | <Z             | 73.5                 | 75  | 76.50 | 240                            | 2                | 470                            | 0.5              | 0.045                              | 52.5         |

1. The Zener voltage ( $V_Z$ ) is tested under pulse condition of 10 mS.
2. The device numbers listed have a standard tolerance on the nominal Zener voltage of  $\pm 2\%$ .
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  $I_{ZK}$ .

# MM3Z2V4B-MM3Z75VB

## TYPICAL PERFORMANCE CHARACTERISTICS

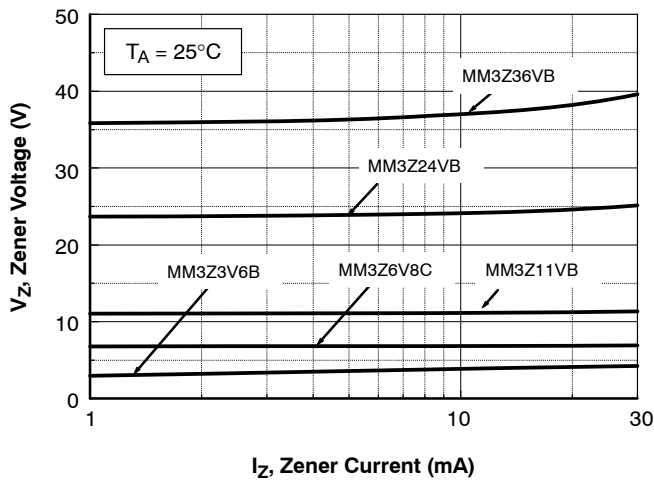


Figure 1. Zener Current vs. Zener Voltage

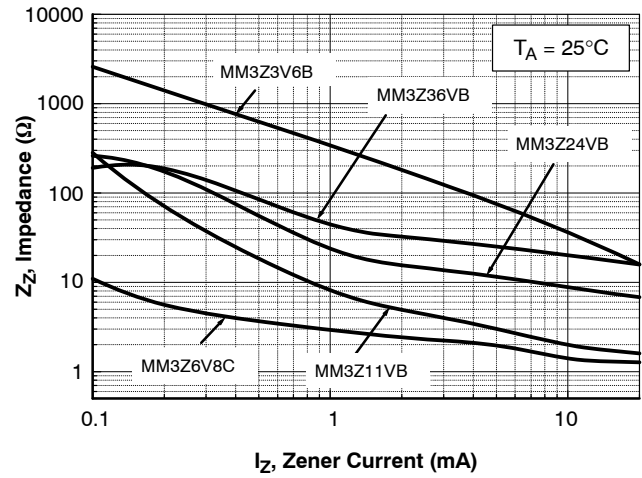


Figure 2. Zener Current vs. Zener Impedance

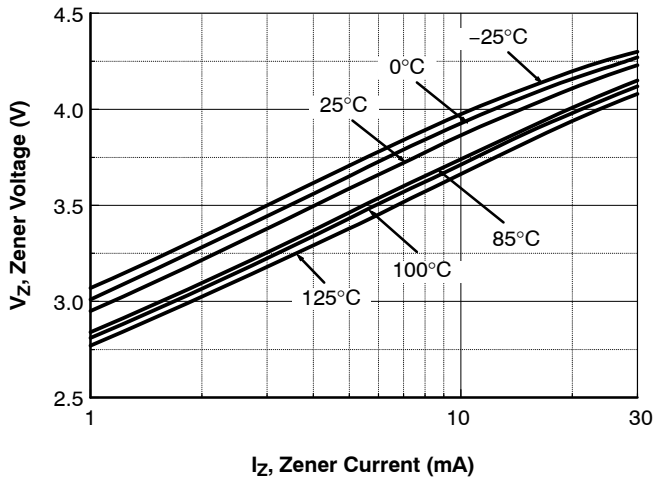


Figure 3. MM3Z3V6B – Zener Current vs. Zener Voltage

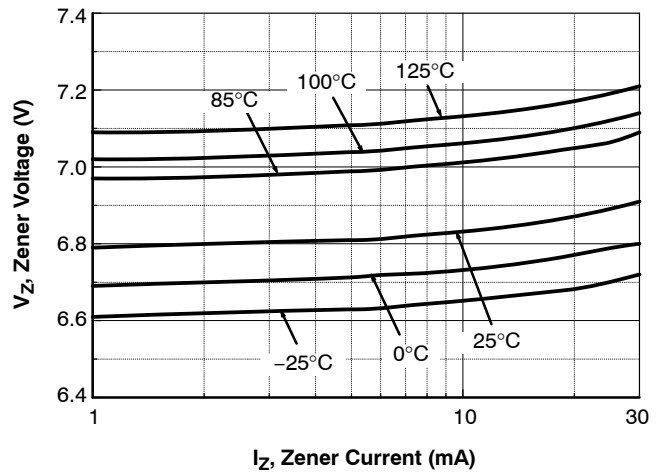


Figure 4. MM3Z6V8C – Zener Current vs. Zener Voltage

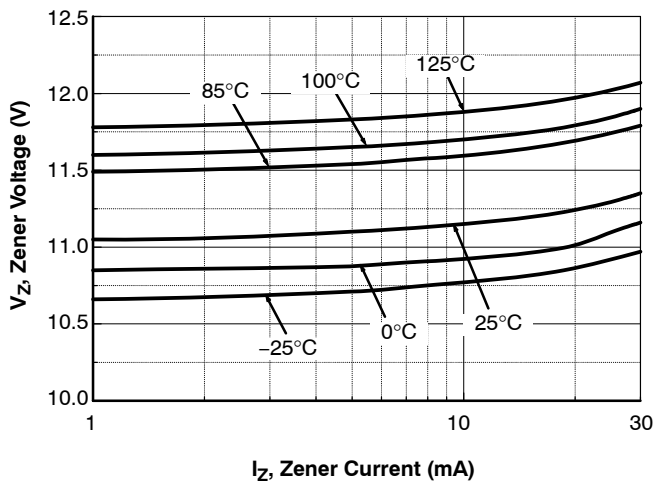


Figure 5. MM3Z11VB – Zener Current vs. Zener Voltage

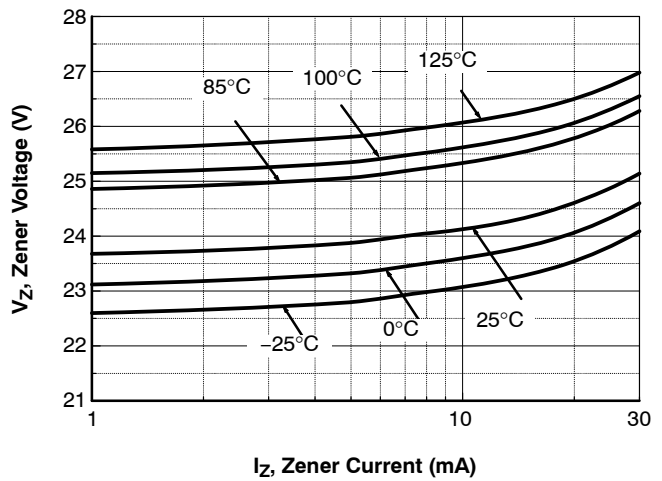


Figure 6. MM3Z24VB – Zener Current vs. Zener Voltage

## MM3Z2V4B–MM3Z75VB

### TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

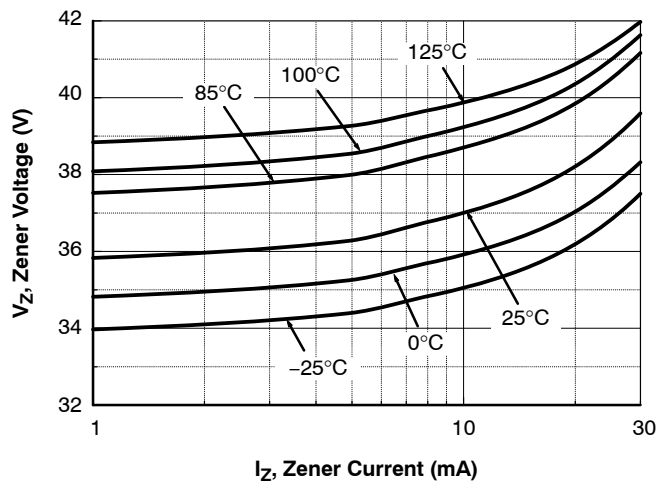


Figure 7. MM3Z36VB – Zener Current vs. Zener Voltage

# MM3Z2V4B–MM3Z75VB

## ORDERING INFORMATION

| Device   | Package                | Shipping <sup>†</sup> |
|----------|------------------------|-----------------------|
| MM3Z10VB | SOD–323FL<br>(Pb–Free) | 3000 / Tape & Reel    |
| MM3Z11VB |                        |                       |
| MM3Z12VB |                        |                       |
| MM3Z13VB |                        |                       |
| MM3Z15VB |                        |                       |
| MM3Z16VB |                        |                       |
| MM3Z18VB |                        |                       |
| MM3Z20VB |                        |                       |
| MM3Z22VB |                        |                       |
| MM3Z24VB |                        |                       |
| MM3Z27VB |                        |                       |
| MM3Z2V4B |                        |                       |
| MM3Z2V7B |                        |                       |
| MM3Z30VB |                        |                       |
| MM3Z33VB |                        |                       |
| MM3Z36VB |                        |                       |
| MM3Z39VB |                        |                       |
| MM3Z3V0B |                        |                       |
| MM3Z3V3B |                        |                       |
| MM3Z3V6B |                        |                       |
| MM3Z3V9B |                        |                       |
| MM3Z43VB |                        |                       |
| MM3Z47VB |                        |                       |
| MM3Z4V3B |                        |                       |
| MM3Z4V7B |                        |                       |
| MM3Z51VB |                        |                       |
| MM3Z56VB |                        |                       |
| MM3Z5V1B |                        |                       |
| MM3Z5V6B |                        |                       |
| MM3Z62VB |                        |                       |
| MM3Z68VB |                        |                       |
| MM3Z6V2B |                        |                       |
| MM3Z6V8B |                        |                       |
| MM3Z75VB |                        |                       |
| MM3Z7V5B |                        |                       |
| MM3Z8V2B |                        |                       |
| MM3Z9V1B |                        |                       |

<sup>†</sup>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.

# MECHANICAL CASE OUTLINE

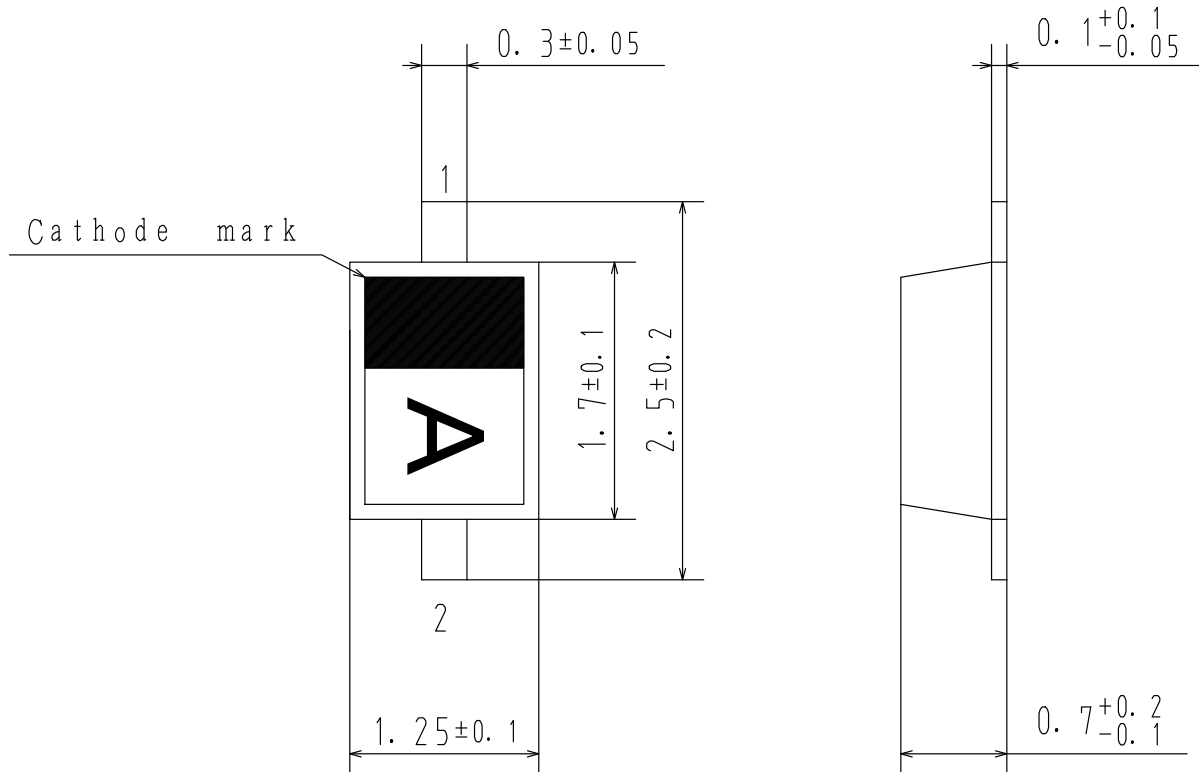
## PACKAGE DIMENSIONS

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