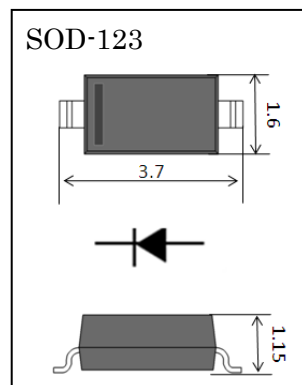


## Zener Diodes / DATA SHEET

## MMSZ5221B–MMSZ5267B Series

- ◇ Constant Voltage control
- ◇ Wide Voltage Range Selection 2.4V to 75V
- ◇ RoHS compliant / Green EMC
- ◇ Matte Tin (Sn) Lead finish
- ◇ Cathode Band / Device marking  
Refer to table list



## Absolute Maximum Ratings (Ta = 25 °C)

| Symbol    | Parameter                 | Value       | Units |
|-----------|---------------------------|-------------|-------|
| $P_D$     | Power Dissipation         | 500         | mW    |
| $T_J$     | Junction Temperature      | 150         | °C    |
| $T_{STG}$ | Storage Temperature       | -55 to +125 | °C    |
| $I_{ZM}$  | Maximum Regulator Current | $P_D/V_Z$   | mA    |

## Electrical Characteristics (Ta = 25 °C)

| Type Number | Device Marking | $V_Z$ (V) @ $I_{ZT}^{*1}$ |        |        | $I_{ZT}$<br>mA | $Z_{ZT}@I_{ZT}$<br>$\Omega$ | $Z_{ZK}@I_{ZK}$<br>$\Omega$ | $I_{zk}$<br>(mA) | $I_R$<br>( $\mu$ A) | $V_R$<br>(V) |
|-------------|----------------|---------------------------|--------|--------|----------------|-----------------------------|-----------------------------|------------------|---------------------|--------------|
|             |                | Nom(V)                    | Min(V) | Max(V) |                |                             |                             |                  |                     |              |
| MMSZ5221B   | C1             | 2.4                       | 2.28   | 2.52   | 20             | 30                          | 1200                        | 0.25             | 100                 | 1.0          |
| MMSZ5222B   | C2             | 2.5                       | 2.38   | 2.63   | 20             | 30                          | 1200                        | 0.25             | 100                 | 1.0          |
| MMSZ5223B   | C3             | 2.7                       | 2.57   | 2.84   | 20             | 30                          | 1300                        | 0.25             | 75                  | 1.0          |
| MMSZ5225B   | C5             | 3.0                       | 2.85   | 3.15   | 20             | 30                          | 1600                        | 0.25             | 50                  | 1.0          |
| MMSZ5226B   | G1             | 3.3                       | 3.14   | 3.47   | 20             | 28                          | 1600                        | 0.25             | 25                  | 1.0          |
| MMSZ5227B   | G2             | 3.6                       | 3.42   | 3.78   | 20             | 24                          | 1700                        | 0.25             | 15                  | 1.0          |
| MMSZ5228B   | G3             | 3.9                       | 3.71   | 4.10   | 20             | 23                          | 1900                        | 0.25             | 10                  | 1.0          |
| MMSZ5229B   | G4             | 4.3                       | 4.09   | 4.52   | 20             | 22                          | 2000                        | 0.25             | 5                   | 1.0          |
| MMSZ5230B   | G5             | 4.7                       | 4.47   | 4.94   | 20             | 19                          | 1900                        | 0.25             | 5                   | 2.0          |
| MMSZ5231B   | E1             | 5.1                       | 4.85   | 5.36   | 20             | 17                          | 1600                        | 0.25             | 5                   | 2.0          |
| MMSZ5232B   | E2             | 5.6                       | 5.32   | 5.88   | 20             | 11                          | 1600                        | 0.25             | 5                   | 3.0          |
| MMSZ5233B   | E3             | 6.0                       | 5.70   | 6.30   | 20             | 7                           | 1600                        | 0.25             | 5                   | 3.5          |

Continued next page

## Zener Diode

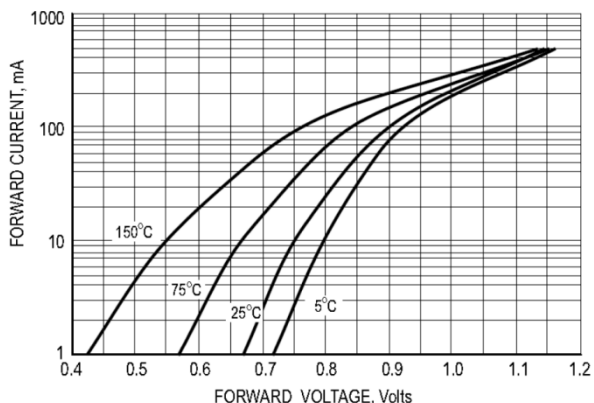
## 稳压二极管

| Type<br>Number | Device<br>Marking | Vz (V) @I <sub>ZT</sub> <sup>*1</sup> |        |        | I <sub>ZT</sub><br>mA | Z <sub>ZT</sub> @I <sub>ZT</sub> | Z <sub>ZK</sub> @I <sub>ZK</sub> | I <sub>zk</sub><br>(mA) | I <sub>R</sub><br>( $\mu$ A) | V <sub>R</sub><br>(V) |
|----------------|-------------------|---------------------------------------|--------|--------|-----------------------|----------------------------------|----------------------------------|-------------------------|------------------------------|-----------------------|
|                |                   | Nom(V)                                | Min(V) | Max(V) |                       |                                  |                                  |                         |                              |                       |
| MMSZ5234B      | E4                | 6.2                                   | 5.89   | 6.51   | 20                    | 7                                | 1000                             | 0.25                    | 5                            | 4.0                   |
| MMSZ5235B      | E5                | 6.8                                   | 6.46   | 7.14   | 20                    | 5                                | 750                              | 0.25                    | 3                            | 5.0                   |
| MMSZ5236B      | F1                | 7.5                                   | 7.13   | 7.88   | 20                    | 6                                | 500                              | 0.25                    | 3                            | 6.0                   |
| MMSZ5237B      | F2                | 8.2                                   | 7.79   | 8.61   | 20                    | 8                                | 500                              | 0.25                    | 3                            | 6.5                   |
| MMSZ5238B      | F3                | 8.7                                   | 8.27   | 9.14   | 20                    | 8                                | 600                              | 0.25                    | 3                            | 6.5                   |
| MMSZ5239B      | F4                | 9.1                                   | 8.65   | 9.56   | 20                    | 10                               | 600                              | 0.25                    | 3                            | 7.0                   |
| MMSZ5240B      | F5                | 10                                    | 9.50   | 10.50  | 20                    | 17                               | 600                              | 0.25                    | 3                            | 8.0                   |
| MMSZ5241B      | H1                | 11                                    | 10.45  | 11.55  | 20                    | 22                               | 600                              | 0.25                    | 2.0                          | 8.4                   |
| MMSZ5242B      | H2                | 12                                    | 11.40  | 12.60  | 20                    | 30                               | 600                              | 0.25                    | 1.0                          | 9.1                   |
| MMSZ5243B      | H3                | 13                                    | 12.35  | 13.65  | 9.5                   | 13                               | 600                              | 0.25                    | 0.5                          | 9.9                   |
| MMSZ5244B      | H4                | 14                                    | 13.30  | 14.70  | 9.0                   | 15                               | 600                              | 0.25                    | 0.1                          | 10                    |
| MMSZ5245B      | H5                | 15                                    | 14.25  | 15.75  | 8.5                   | 16                               | 600                              | 0.25                    | 0.1                          | 11                    |
| MMSZ5246B      | J1                | 16                                    | 15.20  | 16.80  | 7.8                   | 17                               | 600                              | 0.25                    | 0.1                          | 12                    |
| MMSZ5247B      | J2                | 17                                    | 16.15  | 17.85  | 7.4                   | 19                               | 600                              | 0.25                    | 0.1                          | 13                    |
| MMSZ5248B      | J3                | 18                                    | 17.10  | 18.90  | 7.0                   | 21                               | 600                              | 0.25                    | 0.1                          | 14                    |
| MMSZ5250B      | J5                | 20                                    | 19.00  | 21.00  | 6.2                   | 25                               | 600                              | 0.25                    | 0.1                          | 15                    |
| MMSZ5251B      | K1                | 22                                    | 20.90  | 23.10  | 5.6                   | 29                               | 600                              | 0.25                    | 0.1                          | 17                    |
| MMSZ5252B      | K2                | 24                                    | 22.80  | 25.20  | 5.2                   | 33                               | 600                              | 0.25                    | 0.1                          | 18                    |
| MMSZ5253B      | K3                | 25                                    | 23.75  | 26.25  | 5.0                   | 35                               | 600                              | 0.25                    | 0.1                          | 19                    |
| MMSZ5254B      | K4                | 27                                    | 25.65  | 28.35  | 5.0                   | 41                               | 600                              | 0.25                    | 0.1                          | 21                    |
| MMSZ5255B      | K5                | 28                                    | 26.60  | 29.40  | 4.5                   | 44                               | 600                              | 0.25                    | 0.1                          | 21                    |
| MMSZ5256B      | M1                | 30                                    | 28.50  | 31.50  | 4.2                   | 49                               | 600                              | 0.25                    | 0.1                          | 23                    |
| MMSZ5257B      | M2                | 33                                    | 31.35  | 34.65  | 3.8                   | 58                               | 700                              | 0.25                    | 0.1                          | 25                    |
| MMSZ5258B      | M3                | 36                                    | 34.20  | 37.80  | 3.4                   | 70                               | 700                              | 0.25                    | 0.1                          | 27                    |
| MMSZ5259B      | M4                | 39                                    | 37.05  | 40.95  | 3.2                   | 80                               | 800                              | 0.25                    | 0.1                          | 30                    |
| MMSZ5260B      | M5                | 43                                    | 40.85  | 45.15  | 3.0                   | 93                               | 900                              | 0.25                    | 0.1                          | 33                    |
| MMSZ5261B      | N1                | 47                                    | 44.65  | 49.35  | 2.7                   | 105                              | 1000                             | 0.25                    | 0.1                          | 36                    |
| MMSZ5262B      | N2                | 51                                    | 48.45  | 53.55  | 2.5                   | 125                              | 1100                             | 0.25                    | 0.1                          | 39                    |
| MMSZ5263B      | M8                | 56                                    | 53.2   | 58.8   | 2.2                   | 150                              | 1300                             | 0.25                    | 0.1                          | 43                    |
| MMSZ5265B      | N5                | 62                                    | 58.9   | 65.1   | 2.0                   | 185                              | 1400                             | 0.25                    | 0.1                          | 47                    |

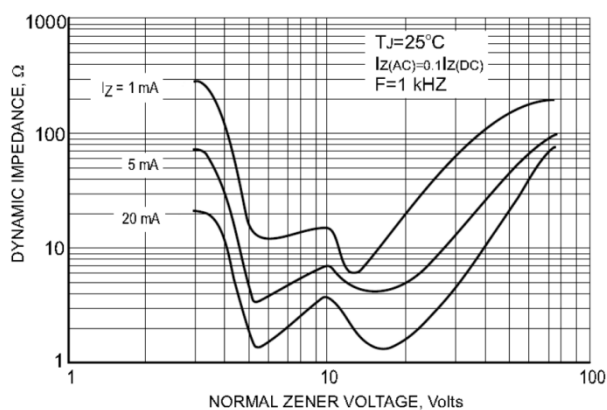
|           |    |    |       |       |     |     |      |      |     |    |
|-----------|----|----|-------|-------|-----|-----|------|------|-----|----|
| MMSZ5267B | P2 | 75 | 71.25 | 78.75 | 1.7 | 270 | 1700 | 0.25 | 0.1 | 56 |
|-----------|----|----|-------|-------|-----|-----|------|------|-----|----|

\*1 Pulse width = 10 ms

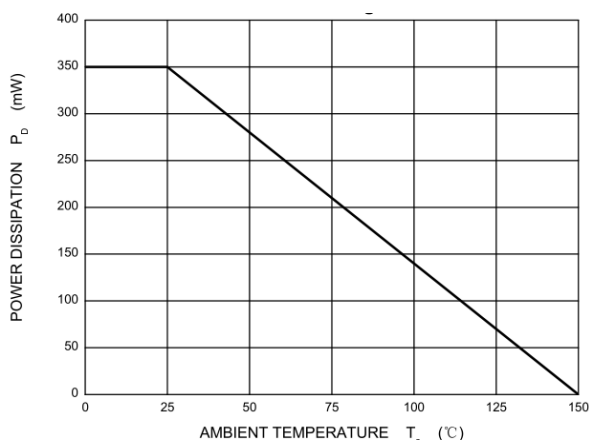
**Typical Characteristics**



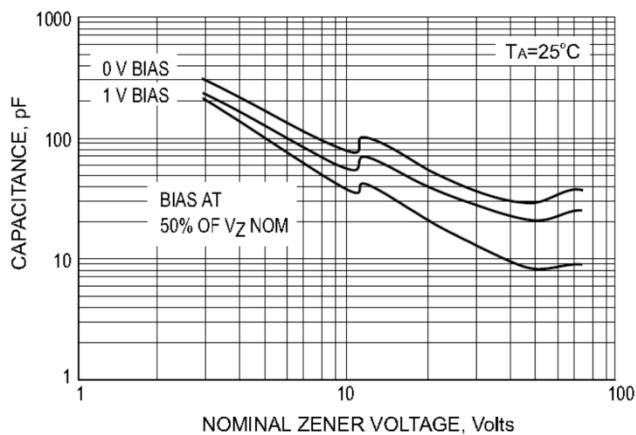
**TYPICAL FORWARD VOLTAGE**



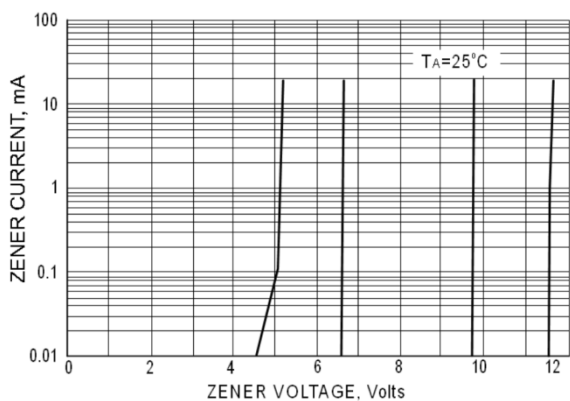
**EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**



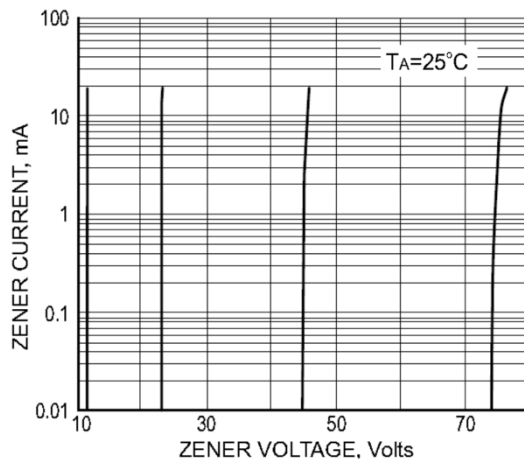
**POWER DISSIPATION VS. AMBIENT TEMP**



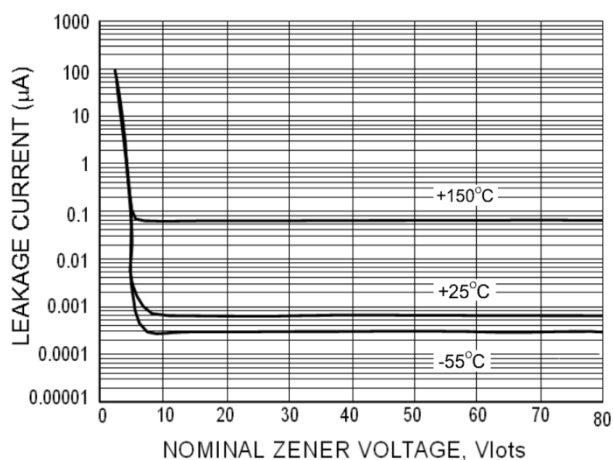
**TYPICAL CAPACITANCE**



**ZENER BREAKDOWN CHARACTERISTICS**



**ZENER BREAKDOWN CHARACTERISTICS**



TYPICAL LEAKGE CURRENT

Ordering Information

| Device      | Package | Shipping                        | Tape wide | Emboss pitch | Tape specification | Notes |
|-------------|---------|---------------------------------|-----------|--------------|--------------------|-------|
| MMSZ Series | SOD123  | Tape & Reel<br>3000pcs /7" Reel | 8 mm      | 4 mm         | Conductive         |       |

Package Dimensions

Package outline : SOD-123

| Unit | A    | A1   | A2   | b    | c    | D    | E    | E1   | L             | L1   | $\theta$ |
|------|------|------|------|------|------|------|------|------|---------------|------|----------|
| Max. | 1.25 | 0.10 | 1.15 | 0.65 | 0.15 | 1.70 | 2.80 | 3.85 | 0.500<br>REF. | 0.45 | 8°       |
| Min. | 1.05 | 0.00 | 1.05 | 0.45 | 0.08 | 1.50 | 2.60 | 3.55 |               | 0.25 | 0°       |

**SOD123 Package Outline**

**Land Pattern Recommendation**

Note:

1. Halogen free,EMC
2. Pb free solder
3. Lead thickness includes solder plating
4. Lead frame: A42
5. Other Tolerance:  $\pm 0.05$
6. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
7. Unit: mm

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