

## SOD-123 SURFACE MOUNT SILICON ZENER DIODES

### Features

- Low Zener Impedance
- Power Dissipation of 500mW
- High Stability and High Reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

### Applications

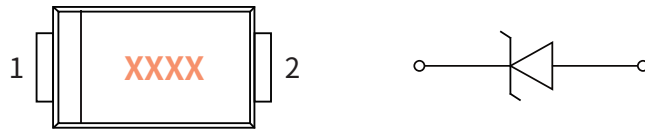
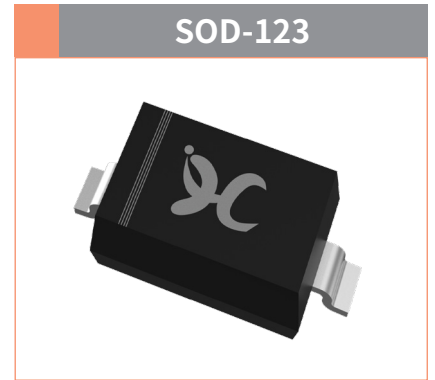
Zener diode is generally used as reference voltage sources in regulated power supplies or as protective diode in overvoltage protection circuits.

### Mechanical Data

- Case: SOD-123  
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Cathode line denotes the cathode end

### Function Diagram

**Zener Diode**  
2.0 to 75 Volts  
**Power Dissipation**  
1 Watts

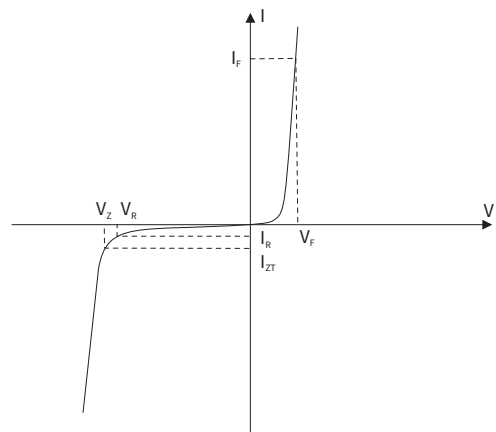


### Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                           | SYMBOL          | UNIT  | VALUE      |
|-------------------------------------|-----------------|-------|------------|
| Power Dissipation                   | $P_D$           | mW    | 500        |
| Forward Voltage @ $I_F=10\text{mA}$ | $V_F$           | V     | 0.9        |
| Storage Temperature                 | $T_{stg}$       | °C    | -55 ~ +150 |
| Junction Temperature                | $T_J$           | °C    | -55 ~ +150 |
| Typical Thermal Resistance          | $R_{\theta JA}$ | °C /W | 340        |

### Electrical Parameter

| SYMBOL   | PARAMETER                          |
|----------|------------------------------------|
| $V_Z$    | Reverse zener voltage @ $I_{ZT}$   |
| $I_{ZT}$ | Reverse current                    |
| $Z_{ZT}$ | Maximum Zener Impedance @ $I_{ZT}$ |
| $I_{ZK}$ | Reverse Current                    |
| $Z_{ZK}$ | Maximum Zener Impedance @ $I_{ZK}$ |
| $I_R$    | Reverse leakage current @ $V_R$    |
| $V_R$    | Reverse voltage                    |
| $I_F$    | Forward current                    |
| $V_F$    | Forward voltage @ $I_F$            |



# MM1Z2V0 THRU MM1Z75

SURFACE MOUNT ZENER DIODES

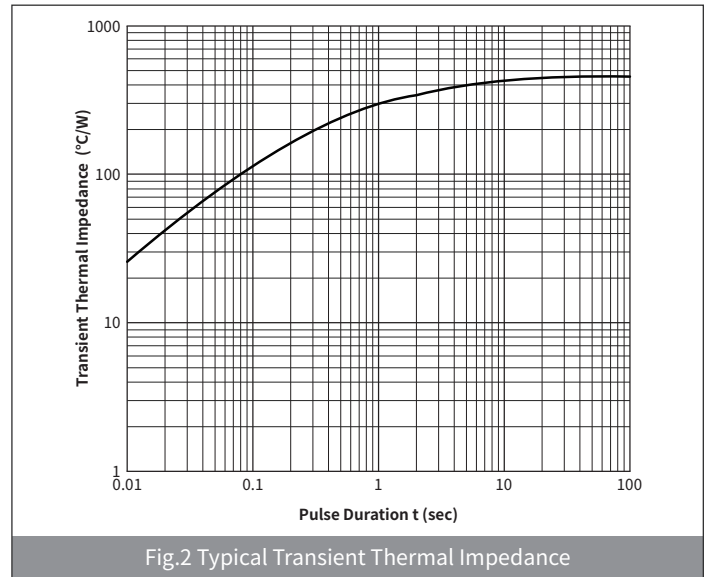
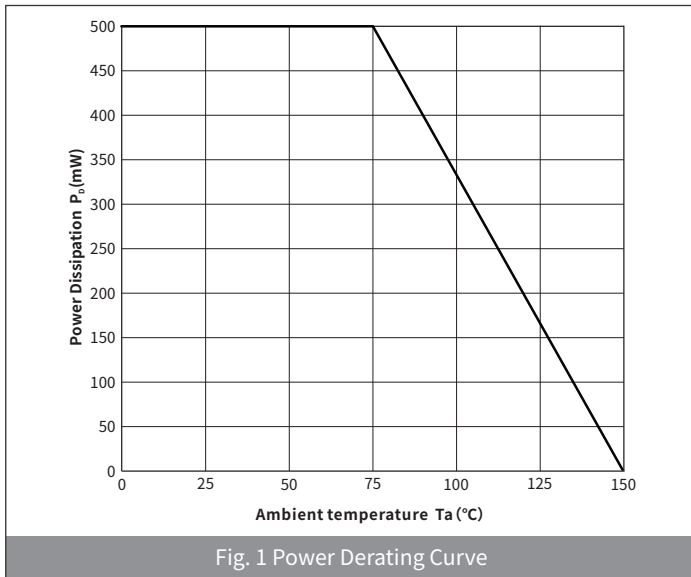
## ● Electrical Characteristics (Ta=25°C Unless otherwise noted)

| Type Number | Type Code | Nominal Zener Voltage |         |         |                 | Zener Impedance                |                              | Leakage Current    |  |
|-------------|-----------|-----------------------|---------|---------|-----------------|--------------------------------|------------------------------|--------------------|--|
|             |           | V <sub>Z</sub>        |         |         | I <sub>ZT</sub> | Z <sub>ZT@I<sub>ZT</sub></sub> | I <sub>R@V<sub>R</sub></sub> |                    |  |
|             |           | Min.(V)               | Nom.(V) | Max.(V) | (mA)            | Z <sub>ZT</sub> (Ω)            | I <sub>R</sub> (μA)          | V <sub>R</sub> (V) |  |
| MM1Z2V0     | 4A        | 1.8                   | 2.0     | 2.15    | 5               | 100                            | 120                          | 0.5                |  |
| MM1Z2V2     | 4B        | 2.08                  | 2.2     | 2.33    | 5               | 100                            | 120                          | 0.7                |  |
| MM1Z2V4     | 4C        | 2.28                  | 2.4     | 2.56    | 5               | 100                            | 120                          | 1                  |  |
| MM1Z2V7     | 4D        | 2.5                   | 2.7     | 2.9     | 5               | 110                            | 120                          | 1                  |  |
| MM1Z3V0     | 4E        | 2.8                   | 3.0     | 3.2     | 5               | 120                            | 50                           | 1                  |  |
| MM1Z3V3     | 4F        | 3.1                   | 3.3     | 3.5     | 5               | 130                            | 20                           | 1                  |  |
| MM1Z3V6     | 4H        | 3.4                   | 3.6     | 3.8     | 5               | 130                            | 10                           | 1                  |  |
| MM1Z3V9     | 4J        | 3.7                   | 3.9     | 4.1     | 5               | 130                            | 5                            | 1                  |  |
| MM1Z4V3     | 4K        | 4                     | 4.3     | 4.6     | 5               | 130                            | 5                            | 1                  |  |
| MM1Z4V7     | 4M        | 4.4                   | 4.7     | 5       | 5               | 130                            | 2                            | 1                  |  |
| MM1Z5V1     | 4N        | 4.8                   | 5.1     | 5.4     | 5               | 130                            | 2                            | 1.5                |  |
| MM1Z5V6     | 4P        | 5.2                   | 5.6     | 6       | 5               | 80                             | 1                            | 2.5                |  |
| MM1Z6V2     | 4R        | 5.8                   | 6.2     | 6.6     | 5               | 50                             | 1                            | 3                  |  |
| MM1Z6V8     | 4X        | 6.4                   | 6.8     | 7.2     | 5               | 30                             | 0.5                          | 3.5                |  |
| MM1Z7V5     | 4Y        | 7                     | 7.5     | 7.9     | 5               | 30                             | 0.5                          | 4                  |  |
| MM1Z8V2     | 4Z        | 7.7                   | 8.2     | 8.7     | 5               | 30                             | 0.5                          | 5                  |  |
| MM1Z9V1     | 5A        | 8.5                   | 9.1     | 9.6     | 5               | 30                             | 0.5                          | 6                  |  |
| MM1Z10      | 5B        | 9.4                   | 10      | 10.6    | 5               | 30                             | 0.1                          | 7                  |  |
| MM1Z11      | 5C        | 10.4                  | 11      | 11.6    | 5               | 30                             | 0.1                          | 8                  |  |
| MM1Z12      | 5D        | 11.4                  | 12      | 12.7    | 5               | 35                             | 0.1                          | 9                  |  |
| MM1Z13      | 5E        | 12.4                  | 13      | 14.1    | 5               | 35                             | 0.1                          | 10                 |  |
| MM1Z15      | 5F        | 13.8                  | 15      | 15.6    | 5               | 40                             | 0.1                          | 11                 |  |
| MM1Z16      | 5H        | 15.3                  | 16      | 17.1    | 5               | 40                             | 0.1                          | 12                 |  |
| MM1Z18      | 5J        | 16.8                  | 18      | 19.1    | 5               | 45                             | 0.1                          | 13                 |  |
| MM1Z20      | 5K        | 18.8                  | 20      | 21.2    | 5               | 50                             | 0.1                          | 15                 |  |
| MM1Z22      | 5M        | 20.8                  | 22      | 23.3    | 5               | 55                             | 0.1                          | 17                 |  |
| MM1Z24      | 5N        | 22.8                  | 24      | 25.6    | 5               | 60                             | 0.1                          | 19                 |  |
| MM1Z27      | 5P        | 25.1                  | 27      | 28.9    | 5               | 70                             | 0.1                          | 21                 |  |
| MM1Z30      | 5R        | 28                    | 30      | 32      | 5               | 80                             | 0.1                          | 23                 |  |
| MM1Z33      | 5X        | 31                    | 33      | 35      | 5               | 80                             | 0.1                          | 25                 |  |
| MM1Z36      | 5Y        | 34                    | 36      | 38      | 5               | 90                             | 0.1                          | 27                 |  |
| MM1Z39      | 5Z        | 37                    | 39      | 41      | 2.5             | 100                            | 2                            | 30                 |  |
| MM1Z43      | 6A        | 40                    | 43      | 46      | 3.7             | 150                            | 1                            | 52                 |  |

● **Electrical Characteristics** (Ta=25°C Unless otherwise noted)

| Type Number | Type Code | Nominal Zener Voltage |         |         | Zener Impedance         | Leakage Current                  |                                |                    |
|-------------|-----------|-----------------------|---------|---------|-------------------------|----------------------------------|--------------------------------|--------------------|
|             |           | V <sub>Z</sub>        |         |         |                         | Z <sub>ZT</sub> @I <sub>ZT</sub> | I <sub>R</sub> @V <sub>R</sub> |                    |
|             |           | Min.(V)               | Nom.(V) | Max.(V) | I <sub>ZT</sub><br>(mA) | Z <sub>ZT</sub> (Ω)              | I <sub>R</sub> (μA)            | V <sub>R</sub> (V) |
| MM1Z43      | 6A        | 40                    | 43      | 46      | 2.5                     | 130                              | 2                              | 33                 |
| MM1Z47      | 6B        | 44                    | 47      | 50      | 2.5                     | 150                              | 2                              | 36                 |
| MM1Z51      | 6C        | 48                    | 51      | 54      | 2.5                     | 180                              | 1                              | 39                 |
| MM1Z56      | 6D        | 52                    | 56      | 60      | 2.5                     | 180                              | 1                              | 43                 |
| MM1Z62      | 6E        | 58                    | 62      | 66      | 2.5                     | 200                              | 0.2                            | 47                 |
| MM1Z68      | 6F        | 64                    | 68      | 72      | 2.5                     | 250                              | 0.2                            | 52                 |
| MM1Z75      | 6H        | 70                    | 75      | 79      | 2.5                     | 300                              | 0.2                            | 57                 |

● **Ratings And Characteristics Curves** (Ta=25°C Unless otherwise specified)



# MM1Z2V0 THRU MM1Z75

SURFACE MOUNT ZENER DIODES

## ● Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOD-123 | R1           | 0.012          | 3000      | 45000    | 180000      | 7"            |

## ● Package Outline Dimensions (SOT-23)

| Symbol   | Dimensions  |      |        |       |
|----------|-------------|------|--------|-------|
|          | Millimeters |      | Inches |       |
|          | Min.        | Max. | Min.   | Max.  |
| A        | 3.55        | 3.85 | 0.140  | 0.152 |
| B        | 2.55        | 2.85 | 0.100  | 0.112 |
| C        | 1.40        | 1.80 | 0.055  | 0.071 |
| D        | 0.95        | 1.35 | 0.140  | 0.152 |
| E        | 0.51        | 0.71 | 0.037  | 0.053 |
| F        | -           | 0.15 | -      | 0.006 |
| G        | 0.15        | 0.45 | 0.006  | 0.008 |
| H        | 0.08        | 0.25 | 0.003  | 0.010 |
| $\theta$ | -           | 8°   | -      | 8°    |

## ● Suggested Pad Layout

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min.        | Max. | Min.   | Max.  |
| J      | 0.91        | -    | 0.036  | -     |
| K      | -           | 2.36 | -      | 0.092 |
| M      | 1.22        | -    | 0.048  | -     |