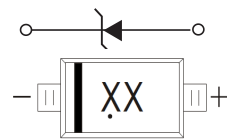


**SOD-123**



**Features**

- I Pb-Free Packages are Available
- I Wide Zener Reverse Voltage Range
- I Small Package Size for High Density Applications
- I ESD Rating of Class 3 (>16 kV) per Human Body Model

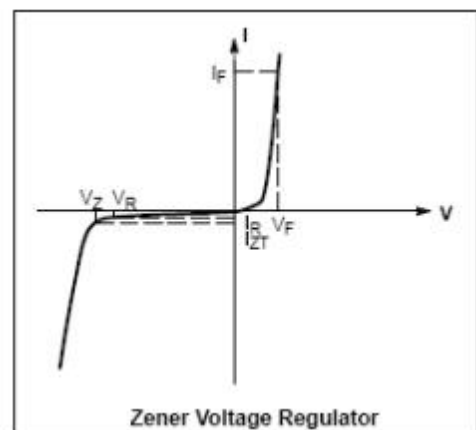
**Maximum Ratings ( $T_a = 25^\circ\text{C}$  unless otherwise specified )**

| Characteristic                                   | Symbol          | Value      | Unit               |
|--------------------------------------------------|-----------------|------------|--------------------|
| Forward voltage(note2) @ $I_F = 10\text{mA}$     | $V_F$           | 0.9        | V                  |
| Power Dissipation(note1)                         | $P_D$           | 500        | mW                 |
| Thermal Resistance, Junction to Ambient Air      | $R_{\theta JA}$ | 250        | $^\circ\text{C/W}$ |
| Operation Junction and Storage Temperature Range | $T_J, T_{stg}$  | -55 ~ +150 | $^\circ\text{C}$   |

Notes:1. Mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with  $T_a = 25^\circ\text{C}$ .  
2. Tested with pulses,  $T_p \leq 1.0\text{ms}$ .

**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)**

| symbol   | Parameter                        |
|----------|----------------------------------|
| $V_Z$    | Reverse zener voltage @ $I_{ZT}$ |
| $I_{ZT}$ | Reverse current                  |
| $I_R$    | Reverse leakage current @ $V_R$  |
| $V_R$    | Reverse voltage                  |
| $I_F$    | Forward current                  |
| $V_F$    | Forward voltage @ $I_F$          |



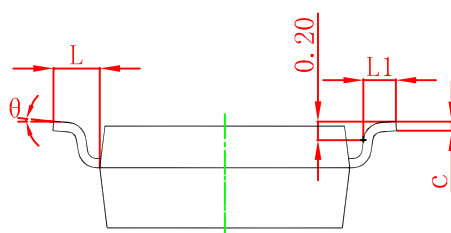
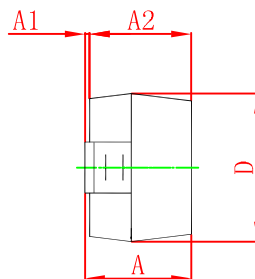
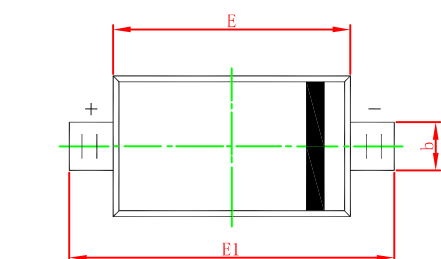
# ELECTRICAL CHARACTERISTICS

T<sub>a</sub>=25°C unless otherwise specified

| Part Number | Marking | Zener Voltage (Notes 1) |     |       |                  | Leakage Current                |       |
|-------------|---------|-------------------------|-----|-------|------------------|--------------------------------|-------|
|             |         | V <sub>Z</sub> (Volts)  |     |       | @I <sub>ZT</sub> | I <sub>R</sub> @V <sub>R</sub> |       |
|             |         | Min                     | Nom | Max   | μA               | μA                             | Volts |
| MMSZ4678    | CC      | 1.71                    | 1.8 | 1.89  | 50               | 7.5                            | 1     |
| MMSZ4679    | CD      | 1.90                    | 2.0 | 2.10  | 50               | 5                              | 1     |
| MMSZ4680    | CE      | 2.09                    | 2.2 | 2.31  | 50               | 4                              | 1     |
| MMSZ4681    | CF      | 2.28                    | 2.4 | 2.52  | 50               | 2                              | 1     |
| MMSZ4682    | CH      | 2.565                   | 2.7 | 2.835 | 50               | 1                              | 1     |
| MMSZ4683    | CJ      | 2.85                    | 3.0 | 3.15  | 50               | 0.8                            | 1     |
| MMSZ4684    | CK      | 3.13                    | 3.3 | 3.47  | 50               | 7.5                            | 1.5   |
| MMSZ4685    | CM      | 3.42                    | 3.6 | 3.78  | 50               | 7.5                            | 2     |
| MMSZ4686    | CN      | 3.70                    | 3.9 | 4.10  | 50               | 5                              | 2     |
| MMSZ4687    | CP      | 4.09                    | 4.3 | 4.52  | 50               | 4                              | 2     |
| MMSZ4688    | CT      | 4.47                    | 4.7 | 4.94  | 50               | 10                             | 3     |
| MMSZ4689    | CU      | 4.85                    | 5.1 | 5.36  | 50               | 10                             | 3     |
| MMSZ4690    | CV      | 5.32                    | 5.6 | 5.88  | 50               | 10                             | 4     |
| MMSZ4691    | CA      | 5.89                    | 6.2 | 6.51  | 50               | 10                             | 5     |
| MMSZ4692    | CX      | 6.46                    | 6.8 | 7.14  | 50               | 10                             | 5.1   |
| MMSZ4693    | CY      | 7.13                    | 7.5 | 7.88  | 50               | 10                             | 5.7   |
| MMSZ4694    | CZ      | 7.79                    | 8.2 | 8.61  | 50               | 1                              | 6.2   |
| MMSZ4695    | DC      | 8.27                    | 8.7 | 9.14  | 50               | 1                              | 6.6   |
| MMSZ4698    | DD      | 8.65                    | 9.1 | 9.56  | 50               | 1                              | 6.9   |
| MMSZ4697    | DE      | 9.50                    | 10  | 10.50 | 50               | 1                              | 7.6   |
| MMSZ4698    | DF      | 10.45                   | 11  | 11.55 | 50               | 0.05                           | 8.4   |
| MMSZ4699    | DH      | 11.40                   | 12  | 12.60 | 50               | 0.05                           | 9.1   |
| MMSZ4700    | DJ      | 12.35                   | 13  | 13.65 | 50               | 0.05                           | 9.8   |
| MMSZ4701    | DK      | 13.30                   | 14  | 14.70 | 50               | 0.05                           | 10.6  |
| MMSZ4702    | DM      | 14.25                   | 15  | 15.75 | 50               | 0.05                           | 11.4  |
| MMSZ4703    | DN      | 15.20                   | 16  | 16.80 | 50               | 0.05                           | 12.1  |
| MMSZ4704    | DP      | 16.15                   | 17  | 17.85 | 50               | 0.05                           | 12.9  |
| MMSZ4705    | DT      | 17.10                   | 18  | 18.90 | 50               | 0.05                           | 13.6  |
| MMSZ4706    | DU      | 18.05                   | 19  | 19.95 | 50               | 0.05                           | 14.4  |
| MMSZ4707    | DV      | 19.00                   | 20  | 21.00 | 50               | 0.01                           | 15.2  |
| MMSZ4708    | DA      | 20.90                   | 22  | 23.10 | 50               | 0.01                           | 16.7  |
| MMSZ4709    | DX      | 22.80                   | 24  | 25.20 | 50               | 0.01                           | 18.2  |
| MMSZ4710    | DY      | 23.75                   | 25  | 26.25 | 50               | 0.01                           | 19.0  |
| MMSZ4711    | EA      | 25.65                   | 27  | 28.35 | 50               | 0.01                           | 20.4  |
| MMSZ4712    | EC      | 26.60                   | 28  | 29.40 | 50               | 0.01                           | 21.2  |
| MMSZ4713    | ED      | 28.50                   | 30  | 31.50 | 50               | 0.01                           | 22.8  |
| MMSZ4714    | EE      | 31.35                   | 33  | 34.65 | 50               | 0.01                           | 25.0  |
| MMSZ4715    | EF      | 34.20                   | 36  | 37.80 | 50               | 0.01                           | 27.3  |
| MMSZ4716    | EH      | 37.05                   | 39  | 40.95 | 50               | 0.01                           | 29.6  |
| MMSZ4717    | EJ      | 40.85                   | 43  | 45.15 | 50               | 0.01                           | 32.6  |

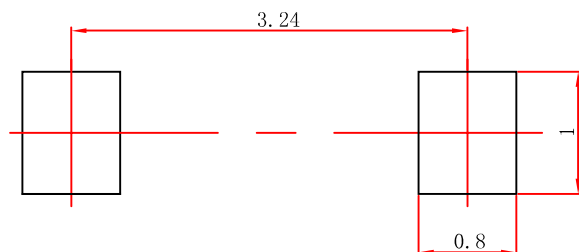
1.Nominal Zener voltage is measured with the device junction in thermal equilibrium at T<sub>L</sub>=30°C±1°C

## SOD-123 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.450                     | 0.650 | 0.018                | 0.026 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.600                     | 2.800 | 0.102                | 0.110 |
| E1     | 3.550                     | 3.850 | 0.140                | 0.152 |
| L      | 0.500 REF                 |       | 0.020 REF            |       |
| L1     | 0.250                     | 0.450 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOD-123 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.