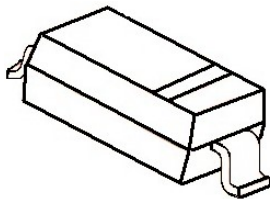




## SOD-123

## SOD-123 Plastic-Encapsulate Zener Diode



## 特征 Features

- 齐纳击穿阻抗低; Low Zener Impedance
- 最大功率耗散 500mW; Power Dissipation of 500mW
- 高稳定性和可靠性。High Stability and High Reliability

## 机械数据 Mechanical Data

- 封装: SOD-123 封装 SOD-123 Small Outline Plastic Package
- 极性: 色环端为负极 Polarity: Color band denotes cathode end
- 环氧树脂 UL 易燃等级 Epoxy UL: 94V-0
- 安装位置: 任意 Mounting Position: Any

极限值和温度特性(TA = 25°C 除非另有规定)

**Maximum Ratings & Thermal Characteristics** (Ratings at 25°C ambient temperature unless otherwise specified.)

| 参数 Parameters                                                                              | 符号 Symbol | 数值 Value          | 单位 Unit           |
|--------------------------------------------------------------------------------------------|-----------|-------------------|-------------------|
| 功率消耗 Power Dissipation                                                                     | Pd        | 500 <sup>1)</sup> | mW                |
| 正向压降 Forward Voltage @IF=10mA                                                              | Vf        | 0.9 <sup>2)</sup> | V                 |
| 存储温度 Storage temperature range                                                             | Ts        | -65-+150          | °C                |
| Thermal resistance junction to ambient air Warmewiderstand Sperrschicht<br>-umgebende Luft | RthA      | 400               | K/W <sup>1)</sup> |

1) Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>

2) Short duration test pulse used to minimize self-heating effect

3) f=1KHz

电特性 (TA = 25°C 除非另有规定)

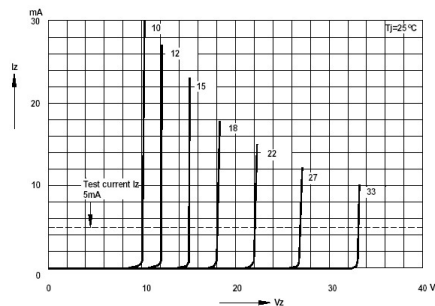
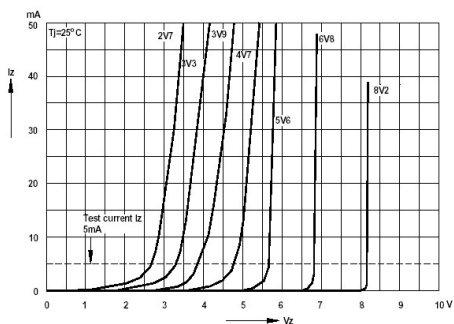
**Electrical Characteristics** (Ratings at 25°C ambient temperature unless otherwise specified.)

| Device  | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance <sup>3)</sup> |          |     | Maximum Reverse Current |     | Typical Temperature coefficient @ IZTC=mV/°C |     | Test Current IZTC |
|---------|---------|---------------------|--------|--------|-----|---------------------------------------|----------|-----|-------------------------|-----|----------------------------------------------|-----|-------------------|
|         |         | Vz@Izt              |        |        | Izt | Zzt @Izt                              | Zzk @Izk | Izk | IR                      | VR  | Min                                          | Max |                   |
|         |         | Nom(V)              | Min(V) | Max(V) | mA  | Ω                                     |          | mA  | μA                      | V   |                                              |     |                   |
| MM1Z2V0 | WY      | 2.0                 | 1.80   | 2.15   | 5   | 150                                   | 600      | 1.0 | 100                     | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z2V4 | WX      | 2.4                 | 2.2    | 2.6    | 5   | 100                                   | 600      | 1.0 | 50                      | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z2V7 | W1      | 2.7                 | 2.5    | 2.9    | 5   | 100                                   | 600      | 1.0 | 20                      | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z3V0 | W2      | 3.0                 | 2.8    | 3.2    | 5   | 95                                    | 600      | 1.0 | 10                      | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z3V3 | W3      | 3.3                 | 3.1    | 3.5    | 5   | 95                                    | 600      | 1.0 | 5                       | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z3V6 | W4      | 3.6                 | 3.4    | 3.8    | 5   | 90                                    | 600      | 1.0 | 5                       | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z3V9 | W5      | 3.9                 | 3.7    | 4.1    | 5   | 90                                    | 600      | 1.0 | 3                       | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z4V3 | W6      | 4.3                 | 4.0    | 4.6    | 5   | 90                                    | 600      | 1.0 | 3                       | 1.0 | -3.5                                         | 0   | 5                 |
| MM1Z4V7 | W7      | 4.7                 | 4.4    | 5.0    | 5   | 80                                    | 500      | 1.0 | 3                       | 2.0 | -3.5                                         | 0.2 | 5                 |
| MM1Z5V1 | W8      | 5.1                 | 4.8    | 5.4    | 5   | 60                                    | 480      | 1.0 | 2                       | 2.0 | -2.7                                         | 1.2 | 5                 |
| MM1Z5V6 | W9      | 5.6                 | 5.2    | 6.0    | 5   | 40                                    | 400      | 1.0 | 1                       | 2.0 | -2.0                                         | 2.5 | 5                 |
| MM1Z6V2 | WA      | 6.2                 | 5.8    | 6.6    | 5   | 10                                    | 150      | 1.0 | 3                       | 4.0 | 0.4                                          | 3.7 | 5                 |
| MM1Z6V8 | WB      | 6.8                 | 6.4    | 7.2    | 5   | 15                                    | 80       | 1.0 | 2                       | 4.0 | 1.2                                          | 4.5 | 5                 |
| MM1Z7V5 | WC      | 7.5                 | 7.0    | 7.9    | 5   | 15                                    | 80       | 1.0 | 1                       | 5.0 | 2.5                                          | 5.3 | 5                 |
| MM1Z8V2 | WD      | 8.2                 | 7.7    | 8.7    | 5   | 15                                    | 80       | 1.0 | 0.7                     | 5.0 | 3.2                                          | 6.2 | 5                 |
| MM1Z9V1 | WE      | 9.1                 | 8.5    | 9.6    | 5   | 15                                    | 100      | 1.0 | 0.5                     | 6.0 | 3.8                                          | 7.0 | 5                 |
| MM1Z10V | WF      | 10                  | 9.4    | 10.6   | 5   | 20                                    | 150      | 1.0 | 0.2                     | 7.0 | 4.5                                          | 8.0 | 5                 |

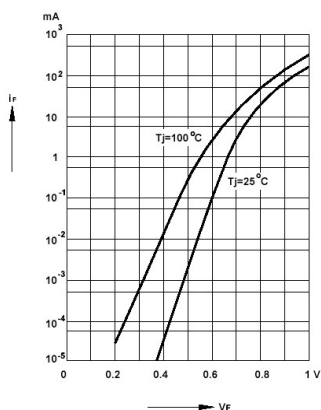


| Device  | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance |          |     | Maximum Reverse Current |      | Typical Temperature coefficient @ IZTC=mV/°C |      | Test Current IZTC |
|---------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|------|----------------------------------------------|------|-------------------|
|         |         | Vz@Izt              |        |        | Izt | Zzt @Izt                | Zzk @Izk | Izk | IR                      | VR   |                                              |      |                   |
|         |         | Nom(V)              | Min(V) | Max(V) | mA  | Ω                       |          | mA  | uA                      | V    | Min                                          | Max  |                   |
| MM1Z11V | WG      | 11                  | 10.4   | 11.6   | 5   | 20                      | 150      | 1.0 | 0.1                     | 8.0  | 5.4                                          | 9.0  | 5                 |
| MM1Z12V | WH      | 12                  | 11.4   | 12.7   | 5   | 25                      | 150      | 1.0 | 0.1                     | 8.0  | 6.0                                          | 10.0 | 5                 |
| MM1Z13V | WI      | 13                  | 12.4   | 14.1   | 5   | 30                      | 170      | 1.0 | 0.1                     | 8.0  | 7.0                                          | 11.0 | 5                 |
| MM1Z15V | WJ      | 15                  | 13.8   | 15.6   | 5   | 30                      | 200      | 1.0 | 0.1                     | 10.5 | 9.2                                          | 13.0 | 5                 |
| MM1Z16V | WK      | 16                  | 15.3   | 17.1   | 5   | 40                      | 200      | 1.0 | 0.1                     | 11.2 | 10.4                                         | 14.0 | 5                 |
| MM1Z18V | WL      | 18                  | 16.8   | 19.1   | 5   | 45                      | 225      | 1.0 | 0.1                     | 12.6 | 12.4                                         | 16.0 | 5                 |
| MM1Z20V | WM      | 20                  | 18.8   | 21.2   | 5   | 55                      | 225      | 1.0 | 0.1                     | 14.0 | 14.4                                         | 18.0 | 5                 |
| MM1Z22V | WN      | 22                  | 20.8   | 23.3   | 5   | 55                      | 250      | 1.0 | 0.1                     | 15.4 | 16.4                                         | 20.0 | 5                 |
| MM1Z24V | WO      | 24                  | 22.8   | 25.6   | 5   | 70                      | 250      | 1.0 | 0.1                     | 16.8 | 18.4                                         | 22.0 | 5                 |
| MM1Z27V | WP      | 27                  | 25.1   | 28.9   | 2   | 80                      | 300      | 0.5 | 0.1                     | 18.9 | 21.4                                         | 25.3 | 2                 |
| MM1Z30V | WQ      | 30                  | 28.0   | 32.0   | 2   | 80                      | 300      | 0.5 | 0.1                     | 21.0 | 24.4                                         | 29.4 | 2                 |
| MM1Z33V | WR      | 33                  | 31.0   | 35.0   | 2   | 80                      | 325      | 0.5 | 0.1                     | 23.1 | 27.4                                         | 33.4 | 2                 |
| MM1Z36V | WS      | 36                  | 34.0   | 38.0   | 2   | 90                      | 350      | 0.5 | 0.1                     | 25.2 | 30.4                                         | 37.4 | 2                 |
| MM1Z39V | WT      | 39                  | 37.0   | 41.0   | 2   | 130                     | 350      | 0.5 | 0.1                     | 27.3 | 33.4                                         | 41.2 | 2                 |
| MM1Z43V | WU      | 43                  | 40.0   | 46.0   | 2   | 100                     | 700      | 1.0 | 0.1                     | 32.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z47V | WV      | 47                  | 44.0   | 50.0   | 2   | 100                     | 750      | 1.0 | 0.1                     | 35.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z51V | WW      | 51                  | 48.0   | 54.0   | 2   | 125                     | 750      | 1.0 | 0.1                     | 38.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z56V | XW      | 56                  | 52.0   | 60.0   | 2   | 135                     | 700      | 1.0 | 0.1                     | 39.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z62V | 6E      | 62                  | 58.0   | 66.0   | 2   | 200                     | 1000     | 1.0 | 0.2                     | 47.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z68V | 6F      | 68                  | 64.0   | 72.0   | 2   | 250                     | 1000     | 1.0 | 0.2                     | 52.0 | 10.0                                         | 12.0 | 5                 |
| MM1Z75V | 6H      | 75                  | 70.0   | 79.0   | 2   | 300                     | 1000     | 1.0 | 0.2                     | 57   | 10.0                                         | 12.0 | 5                 |

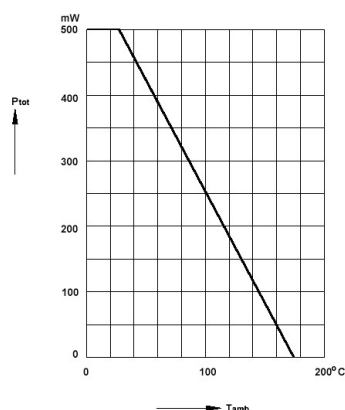
### Breakdown characteristics at Tj=constant (pulsed)



### Forward characteristics

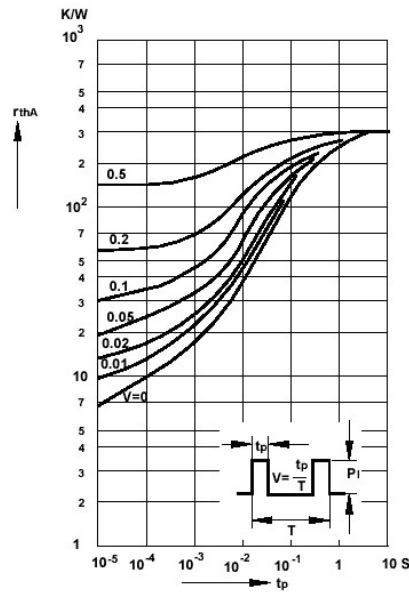


### Admissible power dissipation versus ambient temperature

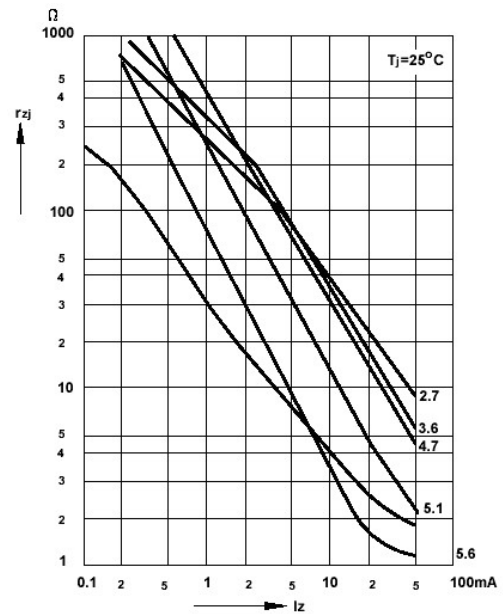




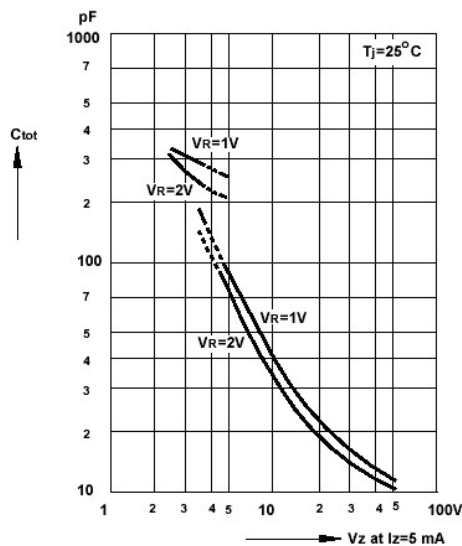
Pulse thermal resistance versus pulse duration



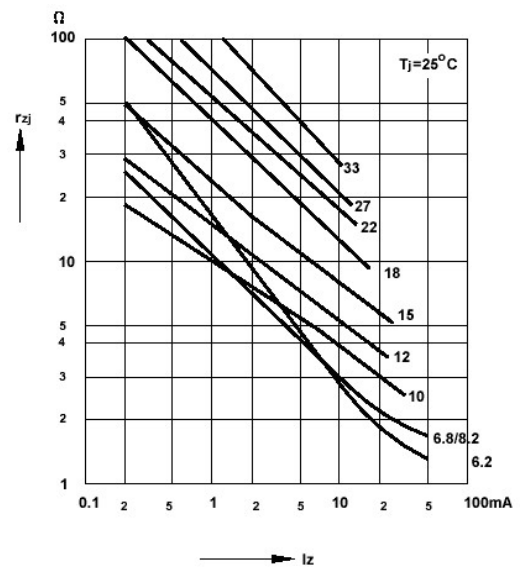
Dynamic resistance versus Zener current



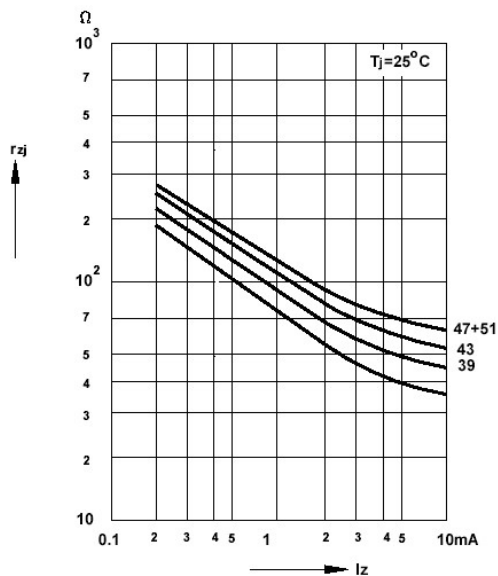
Capacitance versus Zener voltage



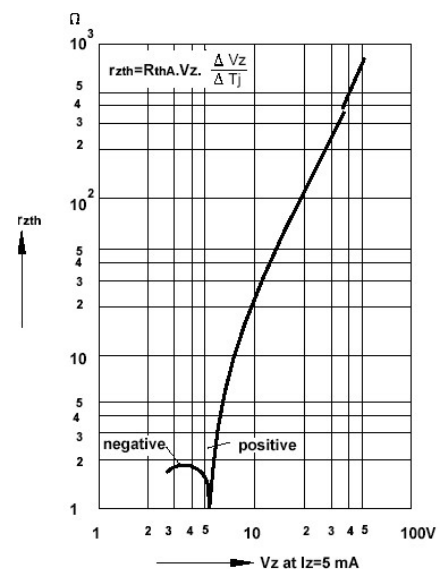
Dynamic resistance versus Zener current



Dynamic resistance versus Zener current

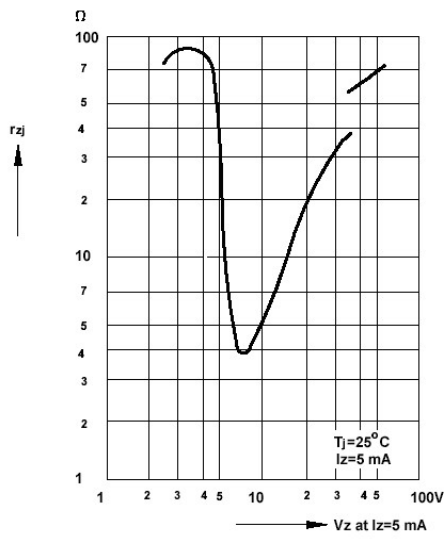


Thermal differential resistance versus Zener voltage

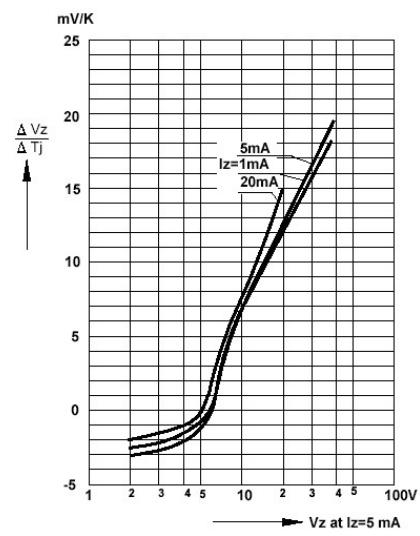




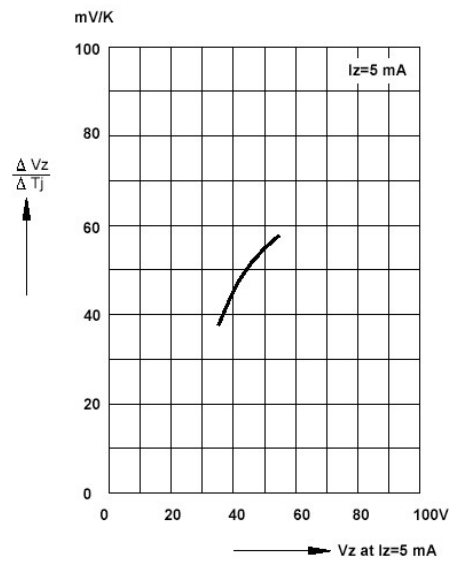
Dynamic resistance versus Zener voltage



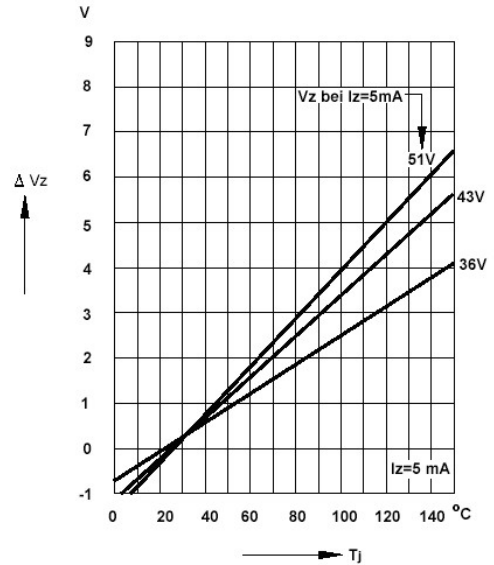
Temperature dependence of Zener voltage versus Zener voltage



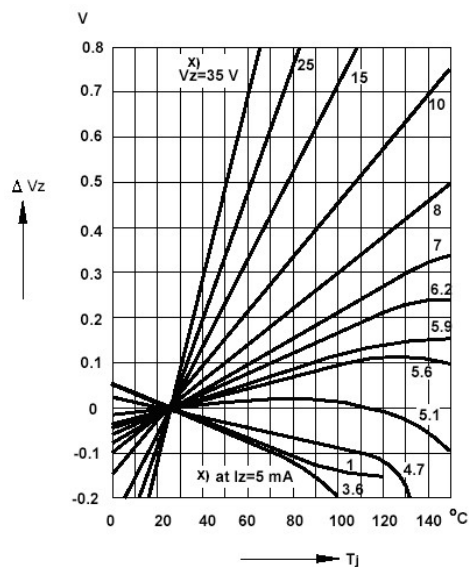
Temperature dependence of Zener voltage versus Zener voltage



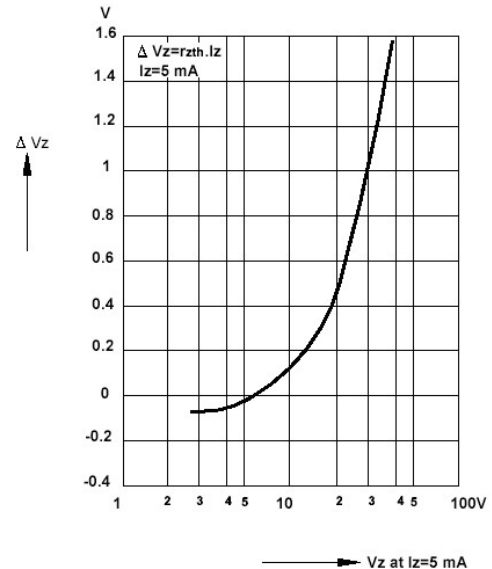
Change of Zener voltage versus junction temperature



Change of Zener voltage versus junction temperature

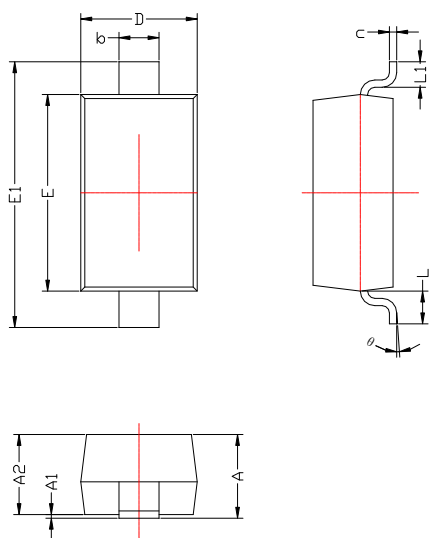


Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage





## SOD-123 PACKAGE OUTLINE Plastic surface mounted package

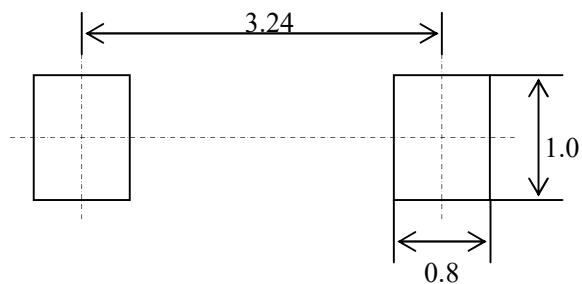


| SYMBOL | DIMENSIONS |       |
|--------|------------|-------|
|        | MIN.       | MAX.  |
| A      | 1.050      | 1.250 |
| A1     | 0.000      | 0.100 |
| A2     | 1.050      | 1.150 |
| b      | 0.450      | 0.650 |
| c      | 0.080      | 0.150 |
| D      | 1.500      | 1.700 |
| E      | 2.600      | 2.800 |
| E1     | 3.550      | 3.850 |
| L      | 0.500REF   |       |
| L1     | 0.250      | 0.450 |
| θ      | 0°         | 8°    |

### 焊盘设计参考

Precautions: PCB Design

Recommended land dimensions for SOD-123 diode. Electrode patterns for PCBs



中心距: 3.24

脚 宽: 0.55

焊盘宽: 1.00

脚 长: 0.50

焊盘长: 0.80

技术要求:

1, 塑封体尺寸: 2.70 X 1.60

2, 未注公差为:  $\pm 0.05$

3, 所有单位: mm