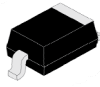


## SILICON PLANAR DUAL ZENER DIODES

## MM1Z2V0-MM1Z75



SOD-123

**SOD-123**  
**SMD Package**  
**RoHS compliant**

### FEATURES:

1. Small Plastic Package Suitable for Surface Mounted Design
2. Polarity: - Cathode indicated by polarity band
3. This product is available in AEC-Q101 Compliant and PPAP Capable also.

**Note:** For AEC-Q101 compliant products, please use suffix -AQ in the part number while ordering

### ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation	$P_D$	500	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55 to +150	°C

### THERMAL RESISTANCE

Thermal Resistance Junction to Ambient Air	$R_{th(j-a)}$	340	°C/W
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### ELECTRICAL CHARACTERISTICS at (Ta = 25 °C Unless otherwise specified)

Device	Marking Code	Zener Voltage Range <sup>3</sup>				Dynamic Impedance <sup>4</sup>		Reverse Leakage Current	
		$V_{Znom}$	$I_{ZT}$	$V_{ZT}$ (V)		$Z_{ZT}$ (W)	at $I_Z$	$I_R$ (mA)	$V_R$
		V	mA	Min	Max	Max	mA	Max	(V)
MM1Z2V0	4A	2.0	5	1.80	2.15	100	5	120	0.5
MM1Z2V2	4B	2.2	5	2.08	2.33	100	5	120	0.7
MM1Z2V4	4C	2.4	5	2.28	2.56	100	5	120	1.0
MM1Z2V7	4D	2.7	5	2.50	2.90	110	5	120	1.0
MM1Z3V0	4E	3.0	5	2.80	3.20	120	5	50	1.0
MM1Z3V3	4F	3.3	5	3.10	3.50	130	5	20	1.0
MM1Z3V6	4H	3.6	5	3.40	3.80	130	5	10	1.0
MM1Z3V9	4J	3.9	5	3.70	4.10	130	5	5.0	1.0
MM1Z4V3	4K	4.3	5	4.00	4.60	130	5	5.0	1.0
MM1Z4V7	4M	4.7	5	4.40	5.00	130	5	2.0	1.0
MM1Z5V1	4N	5.1	5	4.80	5.40	130	5	2.0	1.5
MM1Z5V6	4P	5.6	5	5.20	6.00	80	5	1.0	2.5

MM1Z2V0-75  
Rev02\_01042022E

**ELECTRICAL CHARACTERISTICS** at (Ta = 25 °C Unless otherwise specified)

Device	Marking Code	Zener Voltage Range <sup>1</sup>				Dynamic Impedance <sup>2</sup>		Reverse Leakage Current	
		V <sub>Znom</sub>	I <sub>ZT</sub>	V <sub>ZT</sub> (V)		Z <sub>ZT</sub> (W)	at I <sub>Z</sub>	I <sub>R</sub> (mA)	V <sub>R</sub>
		V	mA	Min	Max	Max	mA	Max	(V)
MM1Z6V2	4R	6.2	5	5.80	6.60	50	5	1.0	3.0
MM1Z6V8	4X	6.8	5	6.40	7.20	30	5	0.5	3.5
MM1Z7V5	4Y	7.5	5	7.00	7.90	30	5	0.5	4.0
MM1Z8V2	4Z	8.2	5	7.70	8.70	30	5	0.5	5.0
MM1Z9V1	5A	9.1	5	8.50	9.60	30	5	0.5	6.0
MM1Z10	5B	10	5	9.40	10.60	30	5	0.1	7.0
MM1Z11	5C	11	5	10.4	11.60	30	5	0.1	8.0
MM1Z12	5D	12	5	11.4	12.70	35	5	0.1	9.0
MM1Z13	5E	13	5	12.4	14.10	35	5	0.1	10
MM1Z15	5F	15	5	13.8	15.60	40	5	0.1	11
MM1Z16	5H	16	5	15.3	17.10	40	5	0.1	12
MM1Z18	5J	18	5	16.8	19.10	45	5	0.1	13
MM1Z20	5K	20	5	18.8	21.20	50	5	0.1	15
MM1Z22	5M	22	5	20.8	23.30	55	5	0.1	17
MM1Z24	5N	24	5	22.8	25.60	60	5	0.1	19
MM1Z27	5P	27	5	25.1	28.90	70	2	0.1	21
MM1Z30	5R	30	5	28.0	32.00	80	2	0.1	23
MM1Z33	5X	33	5	31.0	35.00	80	2	0.1	25
MM1Z36	5Y	36	5	34.0	38.00	90	2	0.1	27
MM1Z39	5Z	39	2.5	37.0	41.00	100	2	2.0	30
MM1Z43	6A	43	2.5	40.0	46.00	130	2	2.0	33
MM1Z47	6B	47	2.5	44.0	50.00	150	2	2.0	36
MM1Z51	6C	51	2.5	48.0	54.00	180	2	1.0	39
MM1Z56	6D	56	2.5	52.0	60.00	180	2	1.0	43
MM1Z62	6E	62	2.5	58.0	66.00	200	2	0.2	47
MM1Z68	6F	68	2.5	64.0	72.00	250	2	0.2	52
MM1Z75	6H	75	2.5	70.0	79.00	300	2	0.2	57

**Note:**

1. Forward Voltage at I<sub>F</sub>=10mA <0.9V
2. Tolerance Approximately +/- 5%
3. V<sub>Z</sub> is tested with pulse (20ms)
4. Z<sub>ZT</sub> is measured at I<sub>Z</sub> by given a very small A.C current signal.

### Recommended Reflow Solder Profiles

The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

Figure 1 shows the recommended solder profile for devices that have Pb-free terminal plating, and where a Pb-free solder is used.

Figure 2 shows the recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

Figure 1

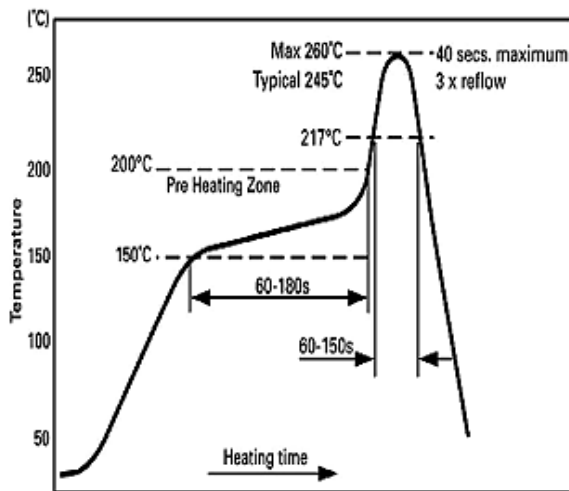
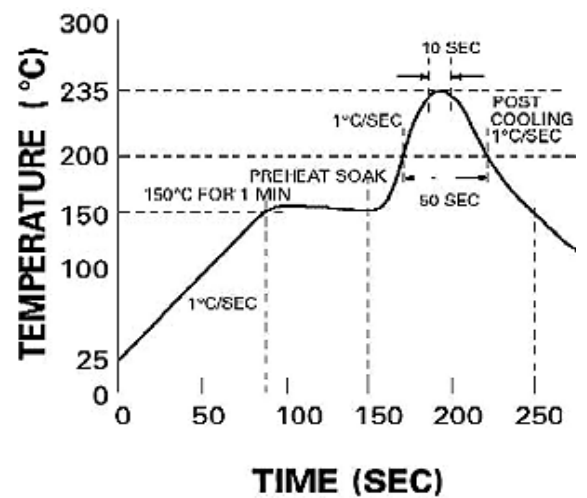


Figure 2



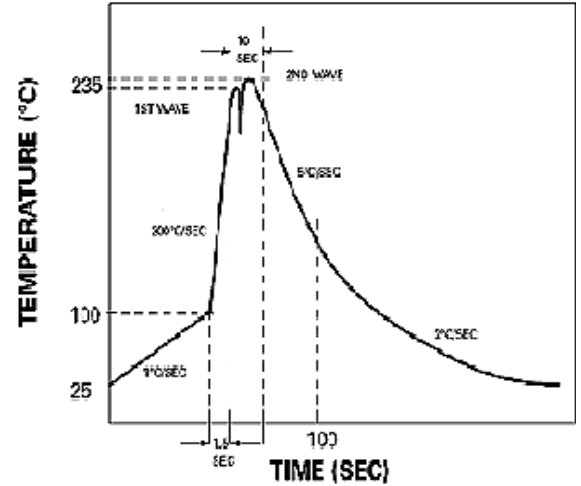
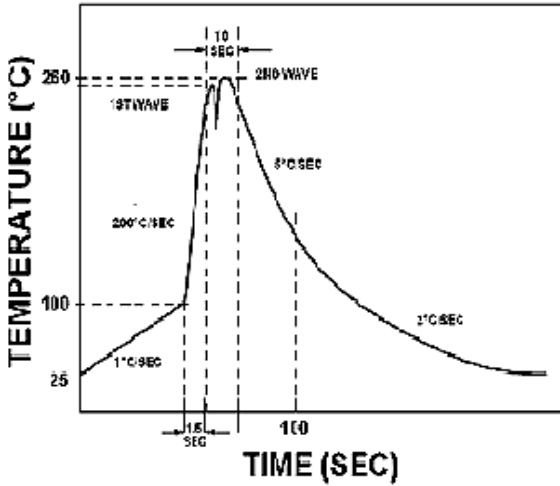
### Reflow profiles in tabular form

Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
<b>Preheat</b>		
– Temperature Range	150-170°C	150-200°C
– Time	60-180 seconds	60-180 seconds
Time maintained above:		
– Temperature	200°C	217°C
– Tim	30-50 seconds	60-150 seconds
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	40 seconds
Ramp-Down Rate	3°C/second max.	6°C/second max

### Recommended Wave Solder Profiles

The Recommended solder Profile For Devices with Pb-free terminal plating where a Pb-free solder is used

The Recommended solder Profile For Devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with leaded solder



### Wave Profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-free System
Average Ramp-Up Rate	~200°C/second	~200°C/second
Heating rate during preheat	Typical 1-2, Max 4°C/sec	Typical 1-2, Max 4°C/Sec
Final preheat Temperature	Within 125°C of Solder Temp	Within 125°C of Solder Temp
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	10 seconds
Ramp-Down Rate	5°C/second max.	5°C/second max.

## TYPICAL CHARACTERISTICS CURVES

Fig 1: Breakdown characteristics

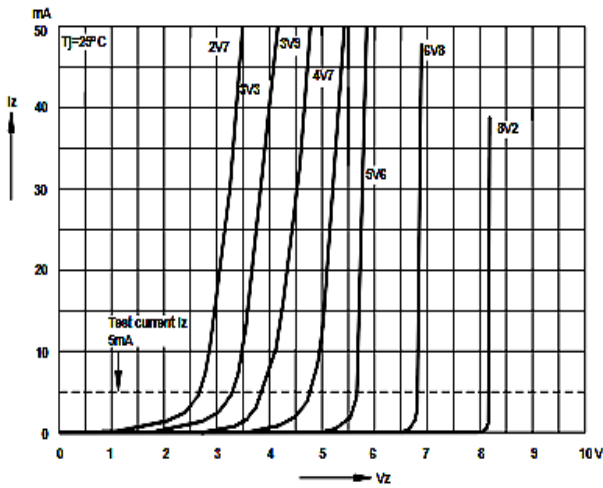


Fig 3: Breakdown characteristics

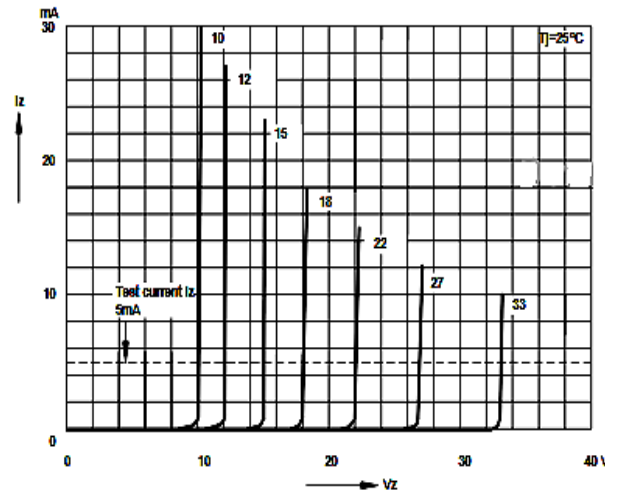
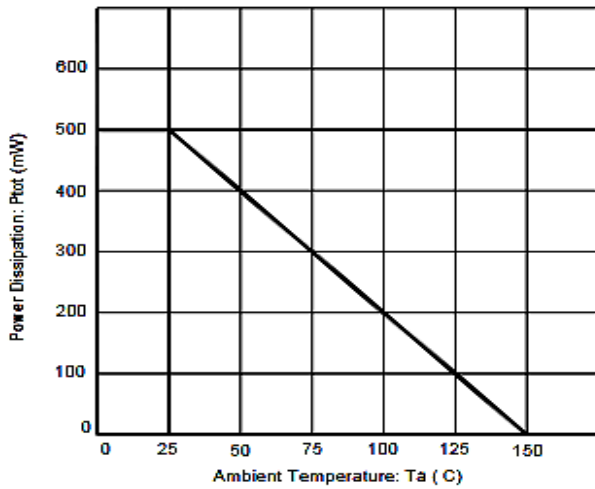
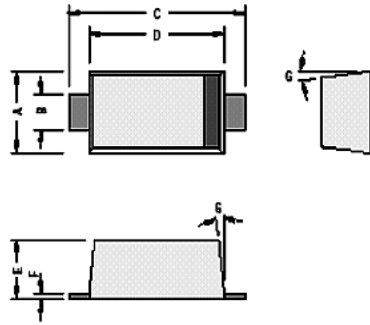


Fig 2: Power Dissipation vs Ambient Temperature



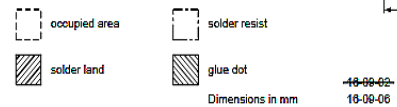
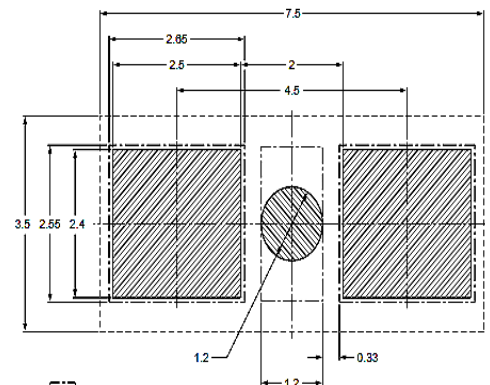
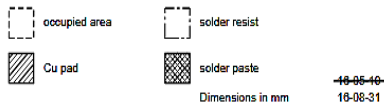
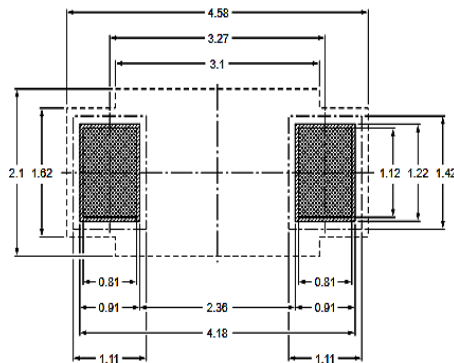
## PACKAGE DETAILS

SOD - 123 SMD Plastic Package



DIM	MIN	MAX
A	1.55	1.65
B	0.50	0.60
C	3.70	3.90
D	2.60	2.70
E	1.05	1.15
F	0.127	0.135
G	5°	

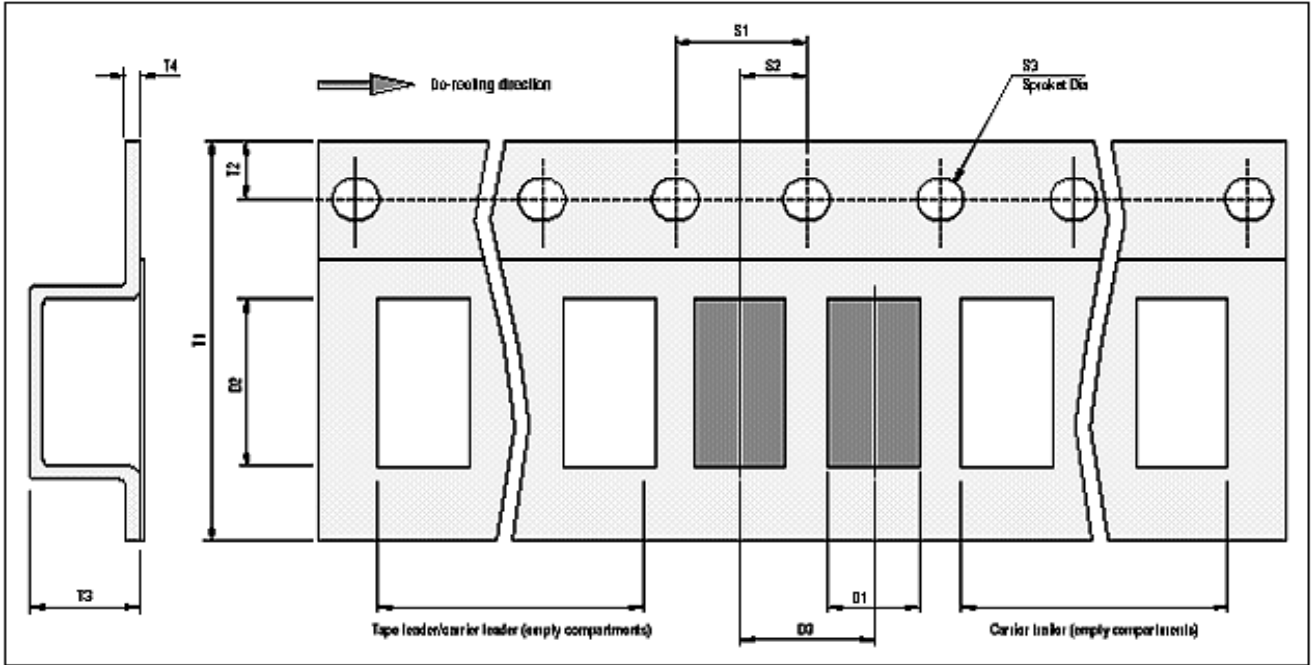
### Soldering footprint for SOD123



## Package Specification

Package / Case Type	Packaging Type	Std. Packing Qty	Inner Carton			Outer Carton		
			Qty	Size L x W x H (cm)	Gross Weight (Kg)	Qty	Size L x W x H (cm)	Gross Weight (Kg)
SMD Plastic Package								
SOD-123	T & R	3,000	24K	18.5 x 18.5 x 10.5	1.0	120K	54.5 x 20.2 x 20.2	4.8

### Packaging Tape Specification For SMD Package



### SMD Tape Specification (8 - 12 mm)

Device	D1	D2	D3	T1	T2	T3	T4	S1	S2	S3
						Max	Max			Dia
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
S0D-123	2.0±0.1	3.9±0.1	4.0±0.1	8.3±0.1	1.75±0.1	1.66	0.28	4.0±0.1	2.0±0.1	1.5±0.1



## Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

### Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

### Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.

For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	Time	Condition
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH





Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001 Certified Company



## Customer Notes

### Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

### Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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