



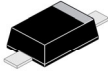
Continental Device India Pvt. Limited
An IATF 16949, ISO9001 and ISO 14001 Certified Company



SURFACE MOUNT SILICON ZENER DIODES

Volt 2.7V- 47V, Watt 500mW

MM1Z52XXB



SOD-123

MARKING: As Indicated below with Cathode Band

FEATURES:

1. This product is available in AEC-Q101 Qualified and PPAP Capable also.

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

SOD-123

Surface Mount

Plastic Package

RoHS compliant

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

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation at 25°C	P _{tot}	500	mW
Operating Junction Temperature	T _j	150	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C
Thermal Resistance Junction to Ambient Air	R _{θ(j-a)} ¹	350	°C/W
Thermal Resistance, Junction-to-Lead	R _{θ(jL)} ¹	150	°C/W
Forward Voltage Drop at I _F =10mA	V _F	0.9	V

Note: Thermal Resistance measurement obtained via infrared Scan Method.

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

Device	Zener Voltage +/-5% ¹			Dynamic Impedance ²				Reverse Leakage Current		Marking Code
	V at I _{ZT}			Z _{ZT} at I _{ZT}		Z _{ZK} at I _{ZK}		I _R at	V _R	
	(V)			(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	
	Nom.V	Min	Max	Max		Max		Max		
MM1Z5223B	2.7	2.57	2.84	30	20	1300	0.25	75	1.0	B4
MM1Z5225B	3.0	2.85	3.15	29	20	1600	0.25	50	1.0	C4
MM1Z5226B	3.3	3.14	3.47	28	20	1600	0.25	25	1.0	D4
MM1Z5227B	3.6	3.42	3.78	24	20	1700	0.25	15	1.0	E4
MM1Z5228B	3.9	3.71	4.10	23	20	1900	0.25	10	1.0	F4
MM1Z5229B	4.3	4.09	4.52	22	20	2000	0.25	5.0	1.0	H4
MM1Z5230B	4.7	4.47	4.94	19	20	1900	0.25	5.0	2.0	J4
MM1Z5231B	5.1	4.85	5.36	17	20	1600	0.25	5.0	2.0	K4
MM1Z5232B	5.6	5.32	5.88	11	20	1600	0.25	5.0	3.0	M4
MM1Z5234B	6.2	5.89	6.51	7	20	1000	0.25	5.0	4.0	N4
MM1Z5235B	6.8	6.46	7.14	5	20	750	0.25	3.0	5.0	P4
MM1Z5236B	7.5	7.13	7.88	6	20	500	0.25	3.0	6.0	R4
MM1Z5237B	8.2	7.79	8.61	8	20	500	0.25	3.0	6.5	X4

MM1Z5223B_5261B
Rev05_02082023EM



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

Device	Zener Voltage +/-5% ¹			Dynamic Impedance ²				Reverse Leakage Current		Marking Code
	V at I _{ZT}			Z _{ZT} at I _{ZT}		Z _{ZK} at I _{ZK}		I _R at	V _R	
	(V)			(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	
	Nom.V	Min	Max	Max		Max		Max		
MM1Z5239B	9.1	8.65	9.56	10	20	600	0.25	3.0	7.0	Y4
MM1Z5240B	10	9.50	10.50	17	20	600	0.25	3.0	8.0	Z4
MM1Z5241B	11	10.45	11.55	22	20	600	0.25	2.0	8.4	A5
MM1Z5242B	12	11.40	12.60	30	20	600	0.25	1.0	9.1	B5
MM1Z5243B	13	12.35	13.65	13	9.5	600	0.25	0.5	9.9	C5
MM1Z5245B	15	14.25	15.75	16	8.5	600	0.25	0.1	11	D5
MM1Z5246B	16	15.20	16.80	17	7.8	600	0.25	0.1	12	E5
MM1Z5248B	18	17.10	18.90	21	7.0	600	0.25	0.1	14	F5
MM1Z5249B	19	18.05	19.95	23	6.6	600	0.25	0.1	14	K9
MM1Z5250B	20	19.00	21.00	25	6.2	600	0.25	0.1	15	H5
MM1Z5251B	22	20.90	23.10	29	5.6	600	0.25	0.1	17	J5
MM1Z5252B	24	22.80	25.20	33	5.2	600	0.25	0.1	18	K5
MM1Z5253B	25	23.75	26.25	35	5.0	600	0.25	0.1	19	M9
MM1Z5254B	27	25.65	28.35	41	4.6	600	0.25	0.1	21	M5
MM1Z5256B	30	28.50	31.50	49	4.2	600	0.25	0.1	23	N5
MM1Z5257B	33	31.35	34.65	58	3.8	700	0.25	0.1	25	P5
MM1Z5258B	36	34.20	37.80	70	3.4	700	0.25	0.1	27	R5
MM1Z5259B	39	37.05	40.95	80	3.2	800	0.25	0.1	30	X5
MM1Z5260B	43	40.85	45.15	93	3.0	900	0.25	0.1	33	Y5
MM1Z5261B	47	44.65	49.35	105	2.7	1000	0.25	0.1	36	Z5

Note:

- V_Z is tested with pulses (20ms)
- Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the AC current applied.
The specified limits are for I_{Z(AC)}=0.1 I_{Z(DC)} with the AC frequency =1 KHz

MM1Z5223B_5261B
Rev05_02082023EM

TYPICAL CHARACTERISTICS CURVES

Figure 1. Power Dissipation vs Ambient Temperature

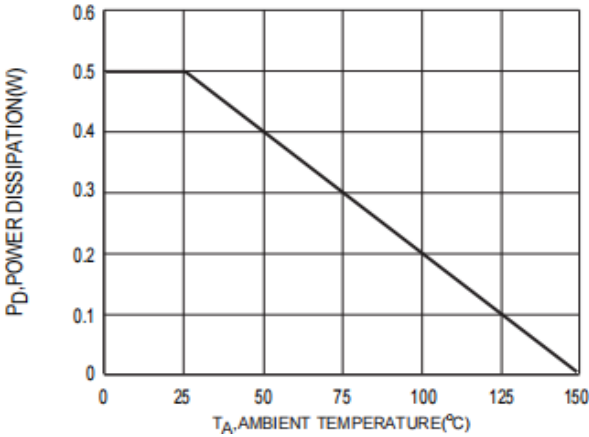


Figure 2. Zener Voltage vs Zener Impedance

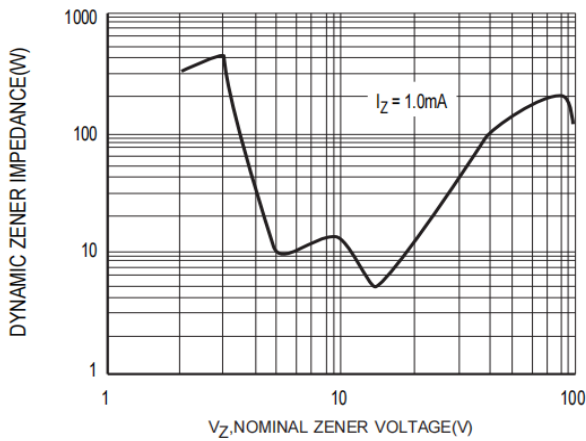


Figure 3. Zener Breakdown Characteristics

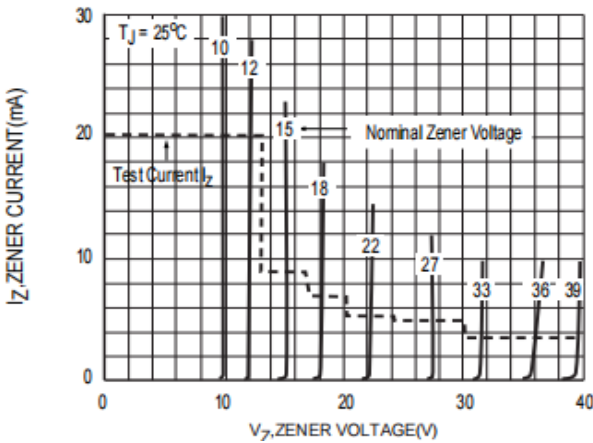


Figure 4. Typical Capacitance

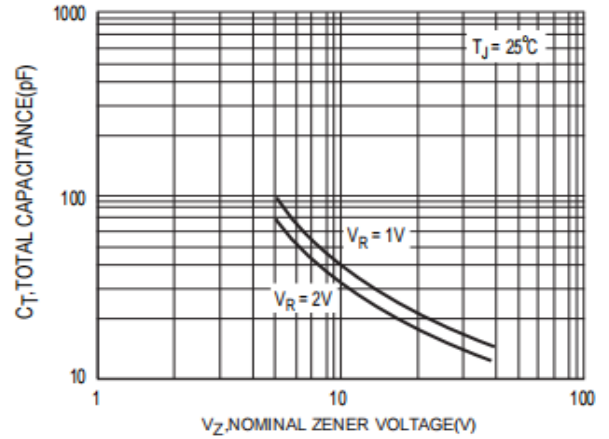


Figure 5. Zener Breakdown Characteristics

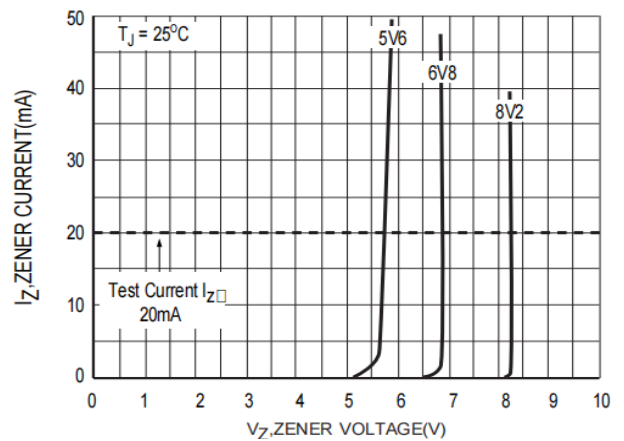
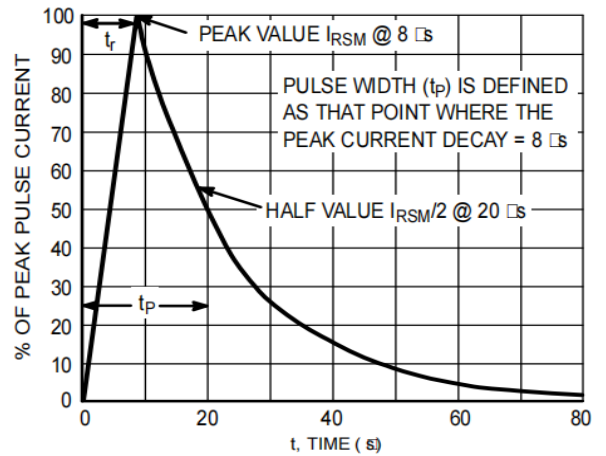


Figure 6. 8 x 20 s Pulse Waveform





TYPICAL CHARACTERISTICS CURVES

Figure 7. Temperature coefficients (Temperature Range -55 ~ 150°C)

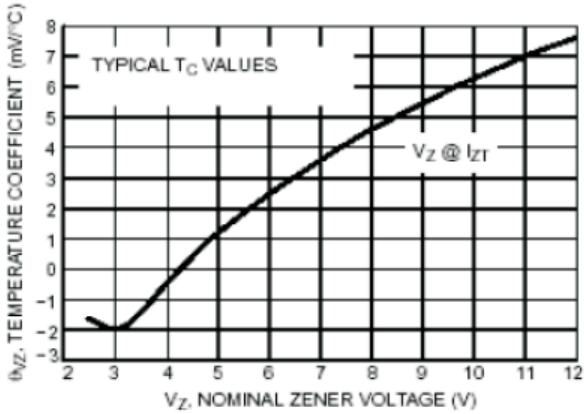


Figure 8. Temperature coefficients (Temperature Range -55 ~ 150°C)

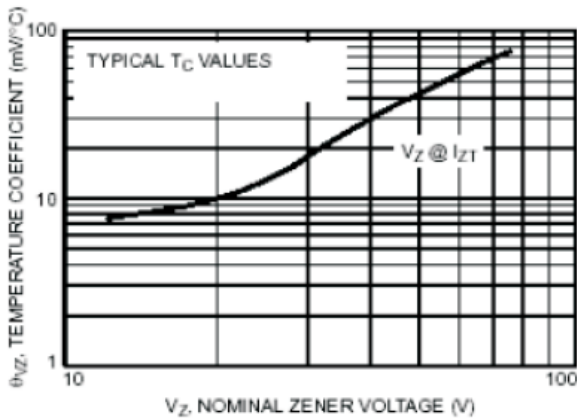
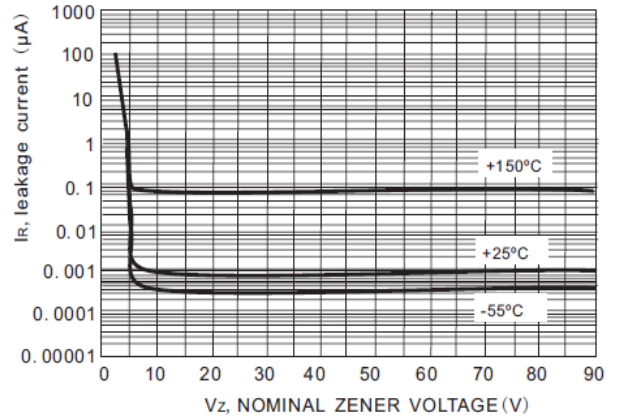


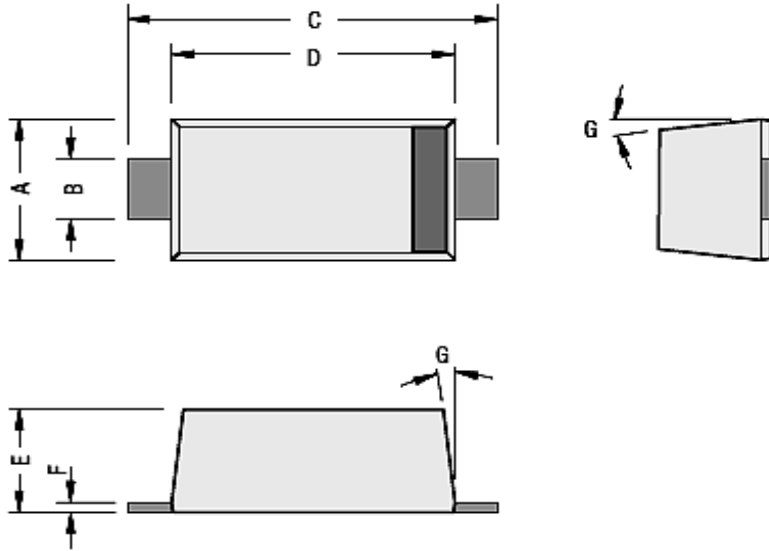
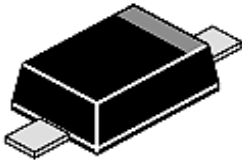
Figure 9. Typical Leakage Current



PACKAGE DETAILS

SOD-123
 SMD Plastic Package

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

DIM	Min	Max
E	1.05	1.15
F	0.127	0.135
G	5°	

All Dimensions are in mm



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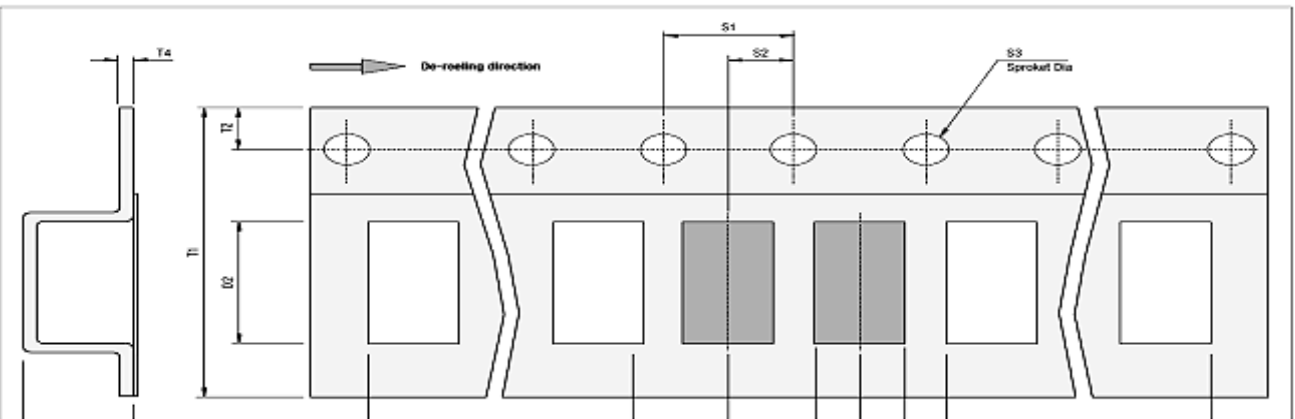


Packaging Specifications

T & A: Tape and Ammo Pack; T & R: Tape and Reel; Bulk: Loose in Poly Bags; Tube: Tube and Carton; K: 1,000

Package / Case Type	Packaging Type	Std. Packing Qty	Inner Carton			Outer Carton		
			Qty	Size L x W x H	Gross Weight	Qty	Size L x W x H	Gross Weight
				(cm)	(Kg)		(cm)	(Kg)
S0D-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 Specifications for SMD Packages



SMD Tape Specifications (8-12 mm)

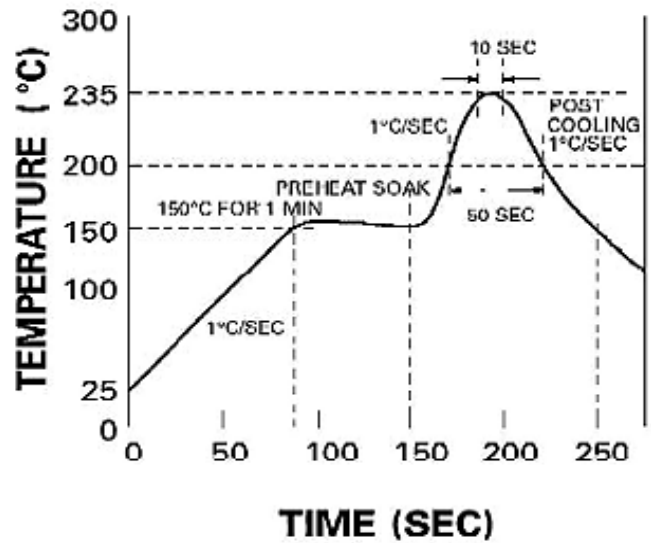
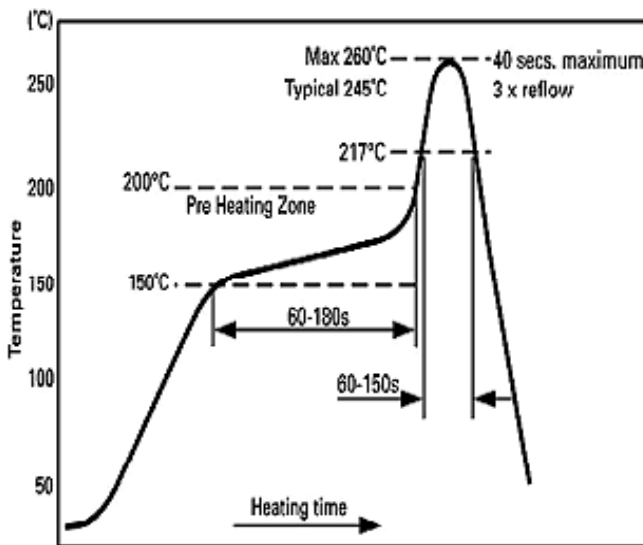
Device	D1	D2	D3	T1	T2	T3	T4	S1	S2	S3
						Max	Max			Dia
S0D-123	2.0±0.1	3.9±0.1	4.0±0.1	8.3±0.1	1.75±0.1	1.66	0.28	4.0±0.1	2.0±0.1	1.5±0.1

Recommended 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.

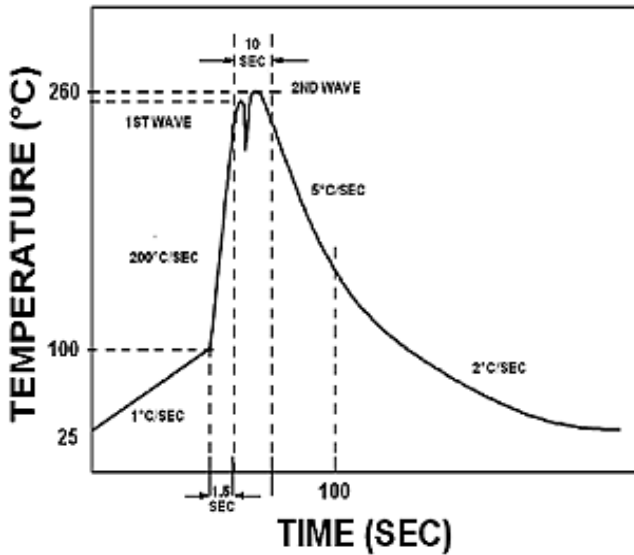


Reflow profiles in tabular form

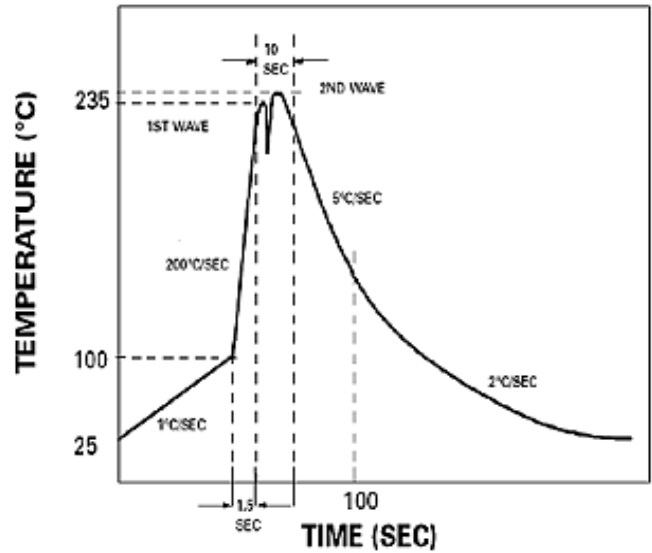
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat		
– Temperature Range	150-170°C	150-200°C
– Time	60-180 seconds	60-180 seconds
Time maintained above:		
– Temperature	200°C	217°C
– Time	30-50 seconds	60-150 seconds
Peak Temperature	235°C	260°C max.
Time 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	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.



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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



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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).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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