SILIICON PLANAR ZENER DIODES

BZX55C2.4V ~ 75V

2.4V to 75V, 500mW

DO-35

DO-35 Leaded
Glass Axial Package
RoHS compliant

GENERAL DISCRIPTION:

Best suited for Industrial, Military and Space Applications. The glass passivated diode chip in the hermetically sealed glass package with double studs provides excellent stability and reliability.

FEATURES:

1. Very Sharp Reverse Characteristic
2. Low Reverse Current Level
3. Very High Stability
4. Low Noise
5. 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 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation [1]	P_{TA}	500	mW
Surge Power Dissipation Pulse Width=10 ms	P_S	5.0	W
Junction Temperature	T_j	175	°C
Storage Temperature	T_{stg}	-65 to +175	°C
Operating temp	T_{opt}	-65 to +175	°C
Thermal Resistance Junction to Ambient [2]	$R_{th(j-a)}$	0.3	°C/mW
Forward Voltage @ I_F=200mA	V_F	1.5	V

Note:

1. Lead length = 4.0mm, TL = 25°C
2. Lead length = 4.0mm, TL = constant

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

Device	Zener Voltage Range V_{ZT} @ I_{ZT} [1]		Zener Impedance Z_{ZT} @ I_{ZT} [1]	I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	Temp. Coeff	I_R @ V_R		V_R	I_{ZM} T_{amb} 50°C
	Min	Max	Max		Max			@25°C Max	@150° C Max		Max
	(V)	(V)	(Ω)	(mA)	(Ω)	(mA)	(%/°C)	(μA)	(μA)	(V)	(mA)
BZX55C2V4	2.28	2.56	85	5.0	600	1.0	-0.07	50	100	1.0	155
BZX55C2V7	2.50	2.90	85	5.0	600	1.0	-0.07	10	50	1.0	135
BZX55C3V0	2.80	3.20	85	5.0	600	1.0	-0.07	4.0	40	1.0	125
BZX55C3V3	3.10	3.50	85	5.0	600	1.0	-0.06	2.0	40	1.0	115
BZX55C3V6	3.40	3.80	85	5.0	600	1.0	-0.06	2.0	40	1.0	105
BZX55C3V9	3.70	4.10	85	5.0	600	1.0	-0.05	2.0	40	1.0	95
BZX55C4V3	4.00	4.60	75	5.0	600	1.0	-0.03	1.0	20	1.0	90
BZX55C4V7	4.40	5.00	60	5.0	600	1.0	-0.01	0.5	10	1.0	85
BZX55C5V1	4.80	5.40	35	5.0	550	1.0	0.01	0.1	2.0	1.0	80
BZX55C5V6	5.20	6.00	25	5.0	450	1.0	0.03	0.1	2.0	1.0	70
BZX55C6V2	5.80	6.60	10	5.0	200	1.0	0.04	0.1	2.0	2.0	64
BZX55C6V8	6.40	7.20	8	5.0	150	1.0	0.05	0.1	2.0	3.0	58
BZX55C7V5	7.00	7.90	7	5.0	50	1.0	0.06	0.1	2.0	5.0	53
BZX55C8V2	7.70	8.70	7	5.0	50	1.0	0.06	0.1	2.0	6.2	47
BZX55C9V1	8.50	9.60	10	5.0	50	1.0	0.07	0.1	2.0	6.8	43
BZX55C10	9.40	10.60	15	5.0	70	1.0	0.07	0.1	2.0	7.5	40
BZX55C11	10.40	11.60	20	5.0	70	1.0	0.07	0.1	2.0	8.2	36
BZX55C12	11.40	12.70	20	5.0	90	1.0	0.07	0.1	2.0	9.1	32
BZX55C13	12.40	14.10	26	5.0	110	1.0	0.08	0.1	2.0	10	29
BZX55C15	13.80	15.60	30	5.0	110	1.0	0.08	0.1	2.0	11	27
BZX55C16	15.30	17.10	40	5.0	170	1.0	0.08	0.1	2.0	12	24
BZX55C18	16.80	19.10	50	5.0	170	1.0	0.08	0.1	2.0	13	21
BZX55C20	18.80	21.20	55	5.0	220	1.0	0.08	0.1	2.0	15	20
BZX55C22	20.80	23.30	55	5.0	220	1.0	0.08	0.1	2.0	16	18
BZX55C24	22.80	25.60	80	5.0	220	1.0	0.09	0.1	2.0	18	16
BZX55C27	25.10	28.90	80	5.0	220	1.0	0.09	0.1	2.0	20	14
BZX55C30	28.00	32.00	80	5.0	220	1.0	0.09	0.1	2.0	22	13
BZX55C33	31.00	35.00	80	5.0	220	1.0	0.09	0.1	2.0	24	12
BZX55C36	34.00	38.00	80	5.0	220	1.0	0.09	0.1	2.0	27	11
BZX55C39	37.00	41.00	90	2.5	500	0.5	0.09	0.1	5.0	30	10
BZX55C43	40.00	46.00	90	2.5	600	0.5	0.09	0.1	5.0	33	9.2
BZX55C47	44.00	50.00	110	2.5	700	0.5	0.09	0.1	5.0	36	8.5
BZX55C51	48.00	54.00	125	2.5	700	0.5	0.09	0.1	10	39	7.8
BZX55C56	52.00	60.00	135	2.5	1000	0.5	0.09	0.1	10	43	7.0
BZX55C62	58.00	66.00	150	2.5	1000	0.5	0.09	0.1	10	47	6.4
BZX55C68	64.00	72.00	200	2.5	1000	0.5	0.09	0.1	10	51	5.9
BZX55C75	70.00	80.00	250	2.5	1500	0.5	0.09	0.1	10	56	5.3

Note:

1. Pulse Condition : 20ms ≤ tp ≤50ms . Duty Cycle <2%

TYPICAL CHARACTERISTIC CURVES

Fig 1: Thermal Resistance vs. Lead Length

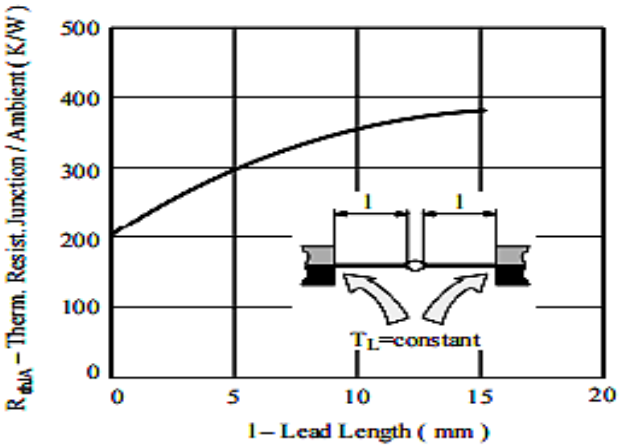


Fig 2: Total Power Dissipation vs. Ambient Temperature

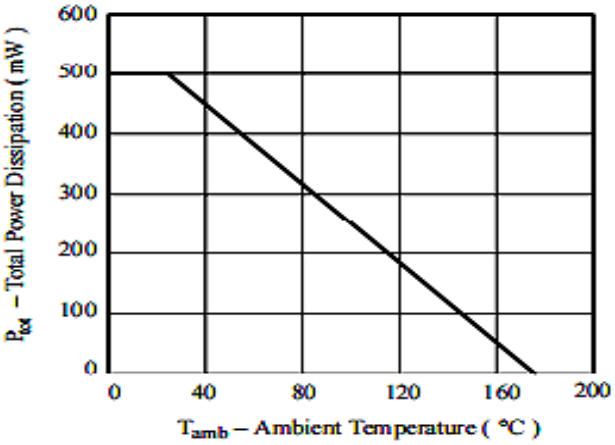


Fig 3: Typical Change of Working Voltage under Operating Conditions at T_{amb}=25°C

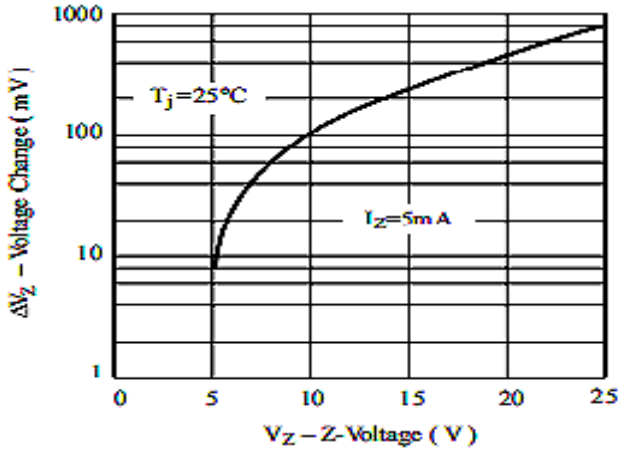


Fig 4: Typical Change of Working Voltage vs. Junction Temperature

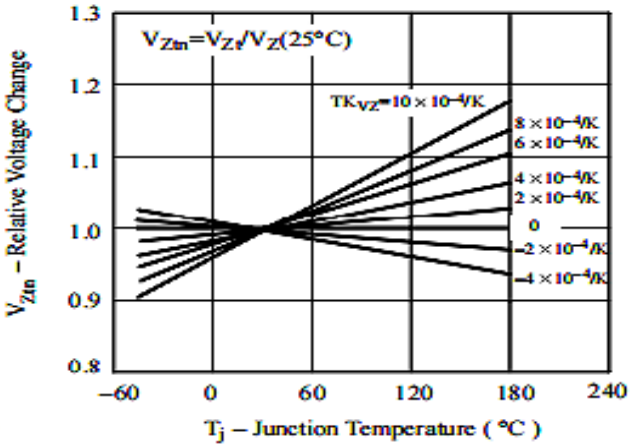


Fig 5: Temperature Coefficient of Vz vs. Z–Voltage

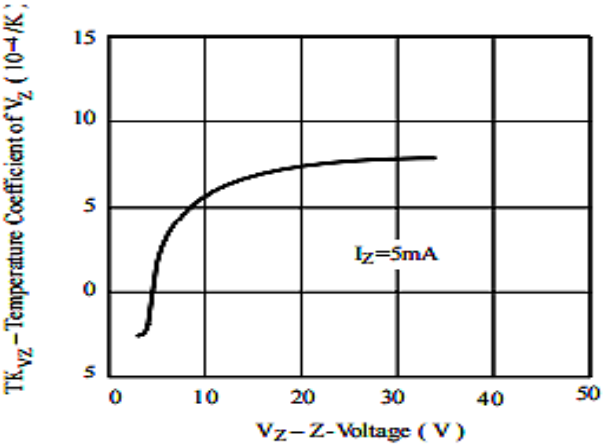
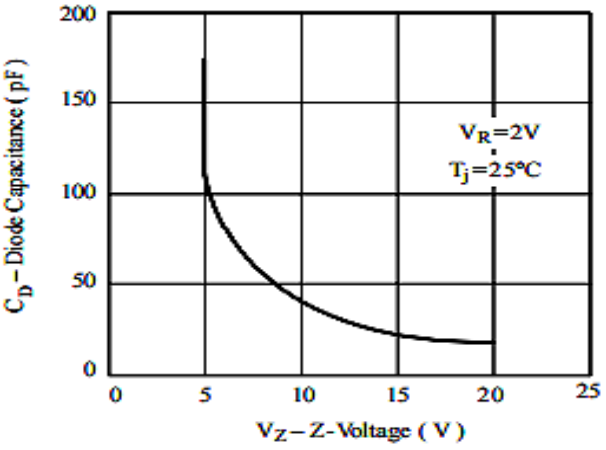


Fig 6: Diode Capacitance vs. Zener Voltage



TYPICAL CHARACTERISTIC CURVES

Fig 7: Forward Current vs. Forward Voltage

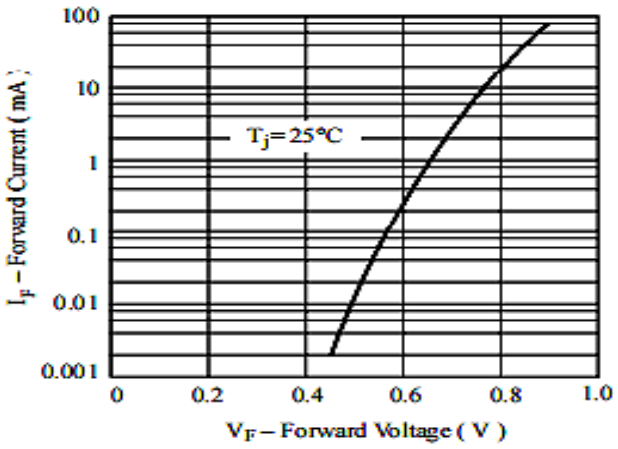


Fig 8: Z–Current vs. Z–Voltage

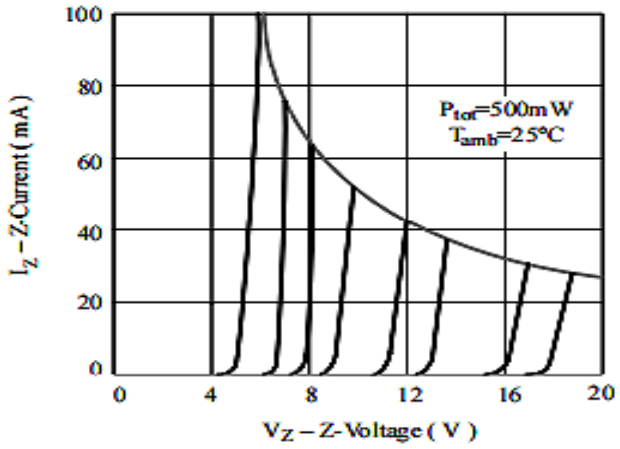


Fig 9: Z–Current vs. Z–Voltage

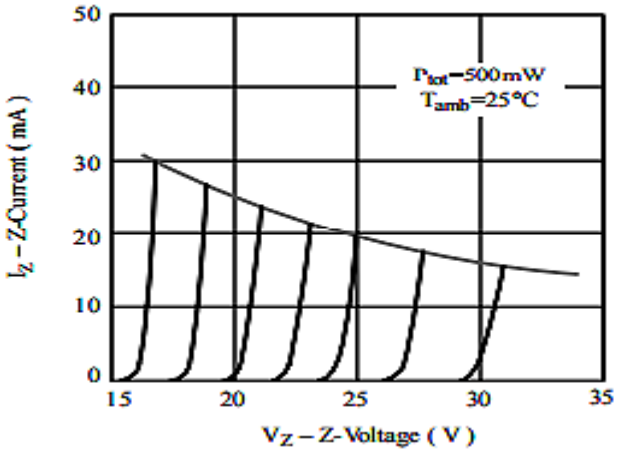


Fig 10: Differential Z–Resistance vs. Z–Voltage

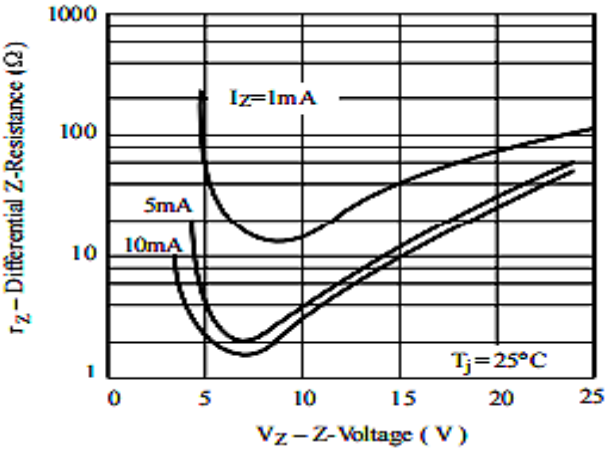
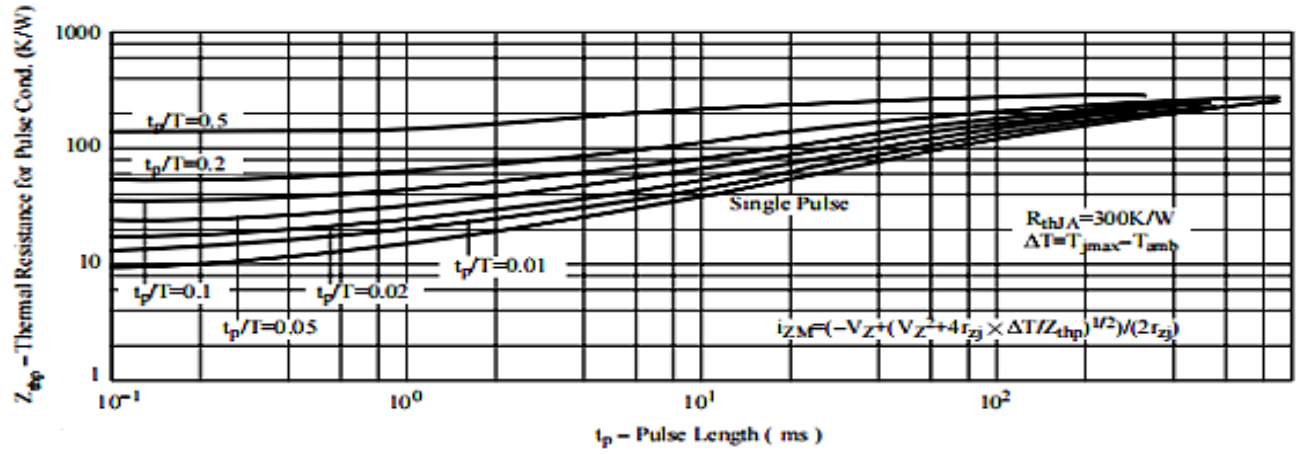


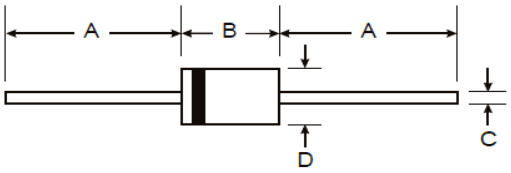
Fig 11: Thermal Response



BZX55C2V4_75V
Rev09_04032024GL/WW

PACKAGE DETAILS

DO-35 Glass Axial Package



DIM	MIN	MAX
A	25.4	--
B	--	4.0
C	--	0.6
D	--	2.0

All Dimensions are in mm

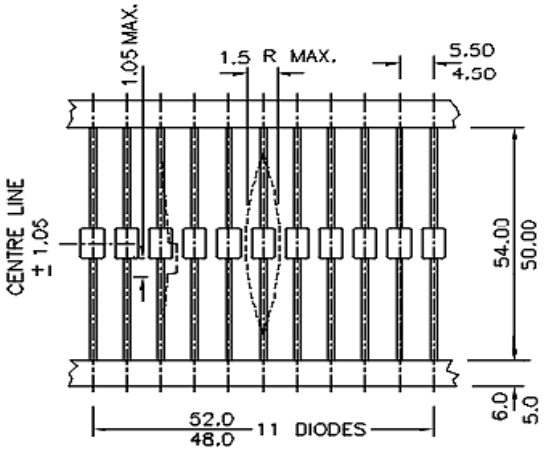
Note:

Cathode is Marked by Band

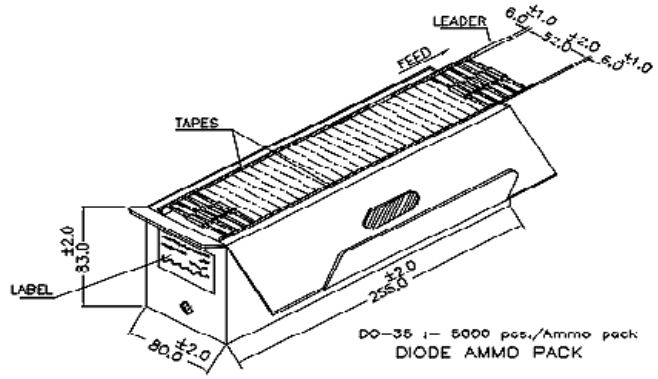
Mechanical Data

1. Case: DO-35, Glass
2. Terminals: Solderable per MIL-STD-202, Method 208
3. Polarity: Cathode Band
4. Approx. Weight: 0.13 grams

DO-35, 52mm Taping Specification



All Dimensions are in mm



52mm Taping Specification

1. T & A Indicates Axial Tape & Ammo Packing (52 mm Tape Spacing)
2. 300 mm(min) leader tape on every spool
3. No. of empty places allowed 0.25% without Consecutive empty places
4. Ends of leads shall preferably not protrude beyond the tapes
5. Components shall be help sufficiently in the tape or tapes so that they can not come free in normal handling.

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Qty
DO-35 T&A	5K/ammo box	0.88kg/5K pcs	10"X3.5"X3.5"	5.0K	12.7"X12.7"X20"	125.0K	25Kgs

on request also available in 26 mm Tape and Ammo Pack

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

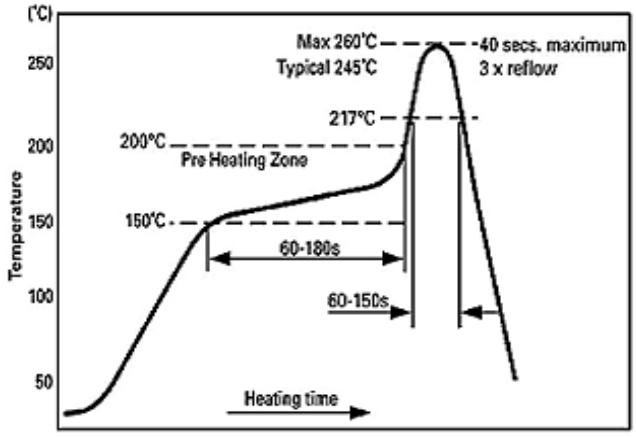
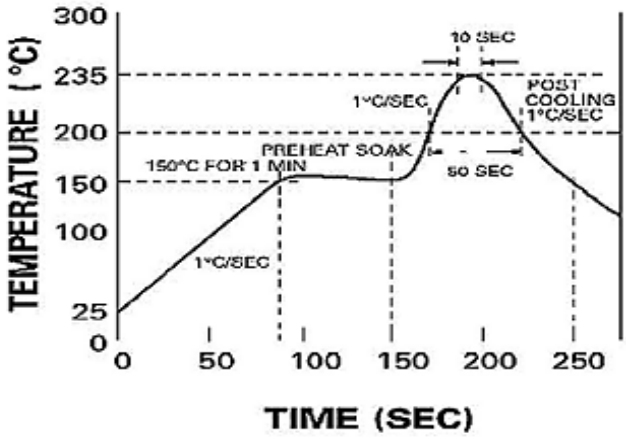


Figure 2

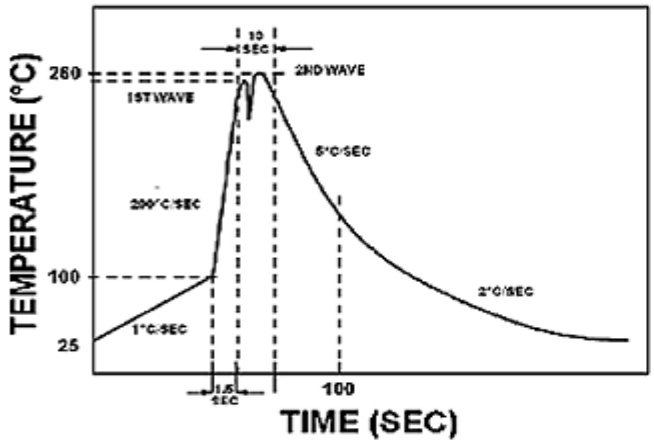


Reflow profiles in tabular form

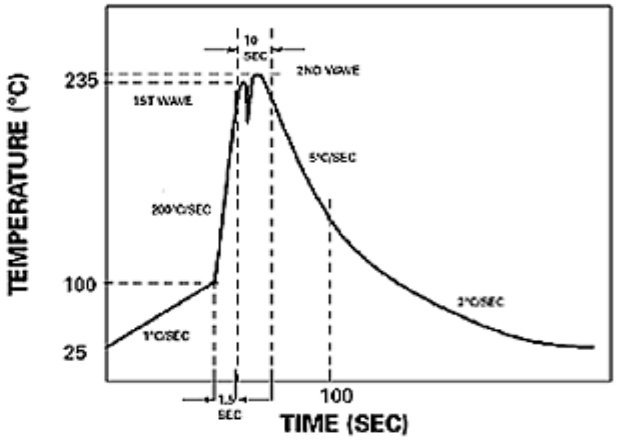
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Time	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time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

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

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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Continental Device India Pvt. Limited
C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone +91-11-2579 6150, 4141 1112 Fax +91-11-2579 5290, 4141 1119
email@cdil.com www.cdil.com
CIN No. U32109DL1964PTC004291