



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001/ISO 45001 Certified Company

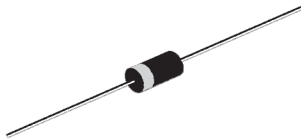


5W AXIAL LEAD ZENER DIODES

Zener Voltage 3.3 ~ 200 V

1N53XXB SERIES

**DO-15 AXIAL LEAD
Plastic Package
RoHS compliant**



DO-15

FEATURES:

1. Glass passivated chip
2. Built-in strain relief
3. Low inductance
4. High peak reverse power dissipation
5. Low reverse leakage
6. For use in stabilizing and clipping with high power rating
7. RoHS compliant
8. This product is available in AEC-Q101 Compliant and PPAP Capable also

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

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	VALUE	UNIT
DC Power dissipation at $T_L = 75^\circ\text{C}$ ¹	P_D	5	W
Maximum forward voltage at $I_f = 1.0\text{A}$	V_F	1.2	V
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Note:

1. T_L = Lead temperature at 3/8" (9.5mm) from body

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

Part Number	Nominal Zener voltage @I _T			I _{ZT}	Maximum Zener Impedance			Maximum Reverse Leakage Current		Maximum DC Zener Current
	V _{Z AVE}	V _{Z MIN}	V _{Z MAX}		Z _{ZT MAX}	Z _{ZK MAX}	I _{ZK}	I _{R @V_R}	V _R	I _{ZM}
	V				Ω			mA	μA	V
1N5333B	3.3	3.14	3.47	380	3.0	400	1.0	300	1.0	1437
1N5334B	3.6	3.42	3.78	350	2.5	500	1.0	150	1.0	1317
1N5335B	3.9	3.71	4.10	320	2.0	500	1.0	50	1.0	1216
1N5336B	4.3	4.09	4.52	290	2.0	500	1.0	10	1.0	1103
1N5337B	4.7	4.47	4.94	260	2.0	450	1.0	5	1.0	1009
1N5338B	5.1	4.85	5.36	240	1.5	400	1.0	1	1.0	930
1N5339B	5.6	5.32	5.88	220	1.0	400	1.0	1	2.0	856
1N5340B	6.0	5.70	6.30	200	1.0	300	1.0	1	3.0	790
1N5341B	6.2	5.89	6.51	200	1.0	200	1.0	1	3.0	765
1N5342B	6.8	6.46	7.14	175	1.0	200	1.0	10	5.2	700
1N5343B	7.5	7.13	7.88	175	1.5	200	1.0	10	5.7	630
1N5344B	8.2	7.79	8.61	150	1.5	200	1.0	10	6.2	580
1N5345B	8.7	8.27	9.14	150	2.0	200	1	10	6.6	545
1N5346B	9.1	8.65	9.56	150	2.0	150	1	7.5	6.9	520
1N5347B	10.0	9.50	10.50	125	2.0	125	1	5	7.6	475
1N5348B	11.0	10.45	11.55	125	2.5	125	1	5	8.4	430
1N5349B	12.0	11.40	12.60	100	2.5	125	1	2	9.1	395
1N5350B	13.0	12.35	13.65	100	2.5	100	1	1	9.9	365
1N5351B	14.0	13.30	14.70	100	2.5	75	1	1	10.6	340
1N5352B	15.0	14.25	15.75	75	2.5	75	1	1	11.5	315
1N5353B	16.0	15.20	16.80	75	2.5	75	1	1	12.2	295
1N5354B	17.0	16.15	17.85	70	2.5	75	1	0.5	12.9	280
1N5355B	18.0	17.10	18.90	65	2.5	75	1	0.5	13.7	265
1N5356B	19.0	18.05	19.95	65	3.0	75	1	0.5	14.4	250
1N5357B	20.0	19.00	21.00	65	3.0	75	1	0.5	15.2	237
1N5358B	22.0	20.90	23.10	50	3.5	75	1	0.5	16.7	216
1N5359B	24.0	22.80	25.20	50	3.5	100	1	0.5	18.2	198
1N5360B	25.0	23.75	26.25	50	4.0	110	1	0.5	19.0	190
1N5361B	27.0	25.65	28.35	50	5.0	120	1	0.5	20.6	176
1N5362B	28.0	26.60	29.40	50	6.0	130	1	0.5	21.2	170
1N5363B	30.0	28.50	31.50	40	8.0	140	1	0.5	22.8	158
1N5364B	33.0	31.35	34.65	40	10.0	150	1	0.5	25.1	144
1N5365B	36.0	34.20	37.80	30	11.0	160	1	0.5	27.4	132

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Part Number	Nominal Zener voltage @I _T			I _{ZT}	Maximum Zener Impedance			Maximum Reverse Leakage Current		Maximum DC Zener Current
	V _{Z AVE}	V _{Z MIN}	V _{Z MAX}		Z _{ZT} MAX @I _{ZT}	Z _{ZK} MAX @I _{ZK}	I _{ZK}	I _R @V _R	V _R	I _{ZM}
	V				Ω		mA	μA	V	mA
1N5366B	39.0	37.05	40.95	30	14	170	1	0.5	29.7	122
1N5367B	43.0	40.85	45.15	30	20	190	1	0.5	32.7	110
1N5368B	47.0	44.65	49.35	25	25	210	1	0.5	35.8	100
1N5369B	51.0	48.45	53.55	25	27	230	1	0.5	38.8	93
1N5370B	56.0	53.20	58.80	20	35	280	1	0.5	42.6	86
1N5371B	60.0	57.00	63.00	20	40	350	1	0.5	45.5	79
1N5372B	62.0	58.90	65.10	20	42	400	1	0.5	47.1	76
1N5373B	68.0	64.60	71.40	20	44	500	1	0.5	51.7	70
1N5374B	75.0	71.25	78.75	20	45	620	1	0.5	56	63
1N5375B	82.0	77.90	86.10	15	65	720	1	0.5	62.2	58
1N5376B	87.0	82.65	91.35	15	75	760	1	0.5	66	54.5
1N5377B	91.0	86.45	95.55	15	75	760	1	0.5	69.2	52.5
1N5378B	100.0	95.00	105.00	12	90	800	1	0.5	76	47.5
1N5379B	110.0	104.50	115.50	12	125	1000	1	0.5	83.6	43
1N5380B	120.0	114.00	126.00	10	170	1150	1	0.5	91.2	39.5
1N5381B	130.0	123.50	136.50	10	190	1250	1	0.5	98.8	36.6
1N5382B	140.0	133.00	147.00	8	230	1500	1	0.5	106	34
1N5383B	150.0	142.50	157.50	8	330	1500	1	0.5	114	31.6
1N5384B	160.0	152.50	168.00	8	350	1650	1	0.5	122	29.4
1N5385B	170.0	161.50	178.50	8	380	1750	1	0.5	129	28
1N5386B	180.0	171.00	189.00	5	430	1750	1	0.5	127	26.4
1N5387B	190.0	180.00	199.50	5	450	1850	1	0.5	144	25
1N5388B	200.0	190.00	210.00	5	480	1850	1	0.5	152	23.6

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TYPICAL CHARACTERISTICS CURVES

Fig 1: Power Temperature Derating Curve

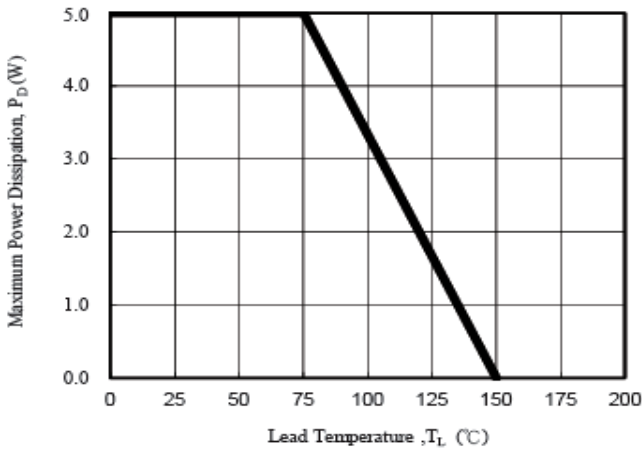


Fig 3: Typical Thermal Resistance vs. Lead Length

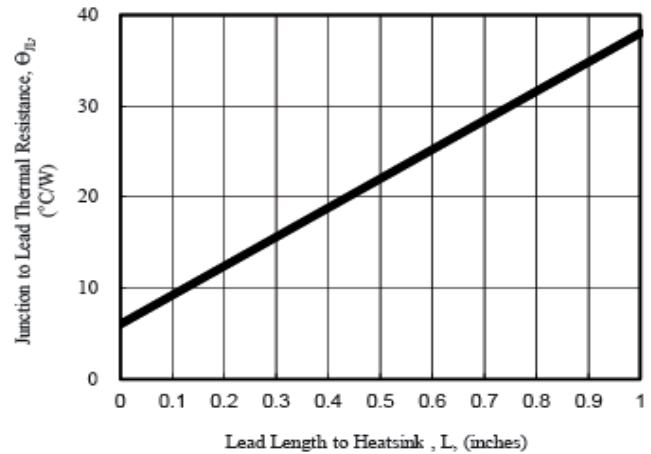


Fig. 2 Temperature Coefficient vs. Zener Voltage

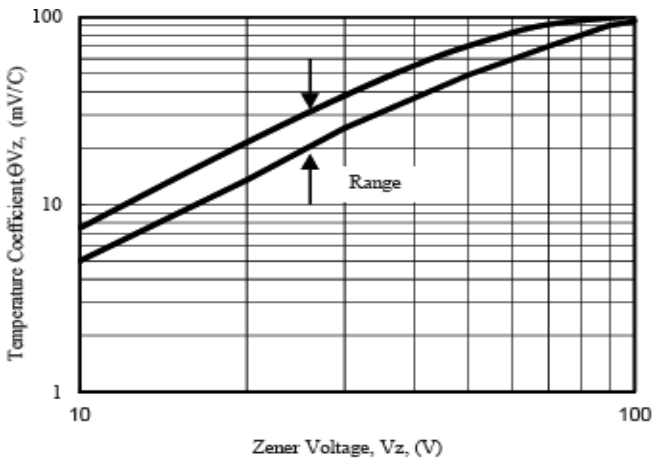


Fig 4: Typical Thermal Resistance

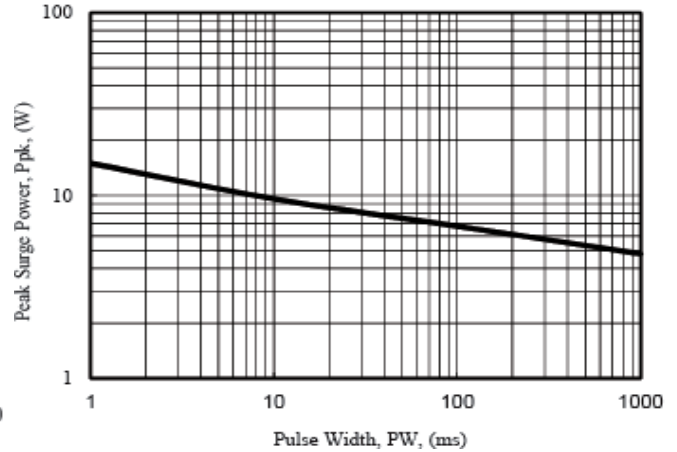
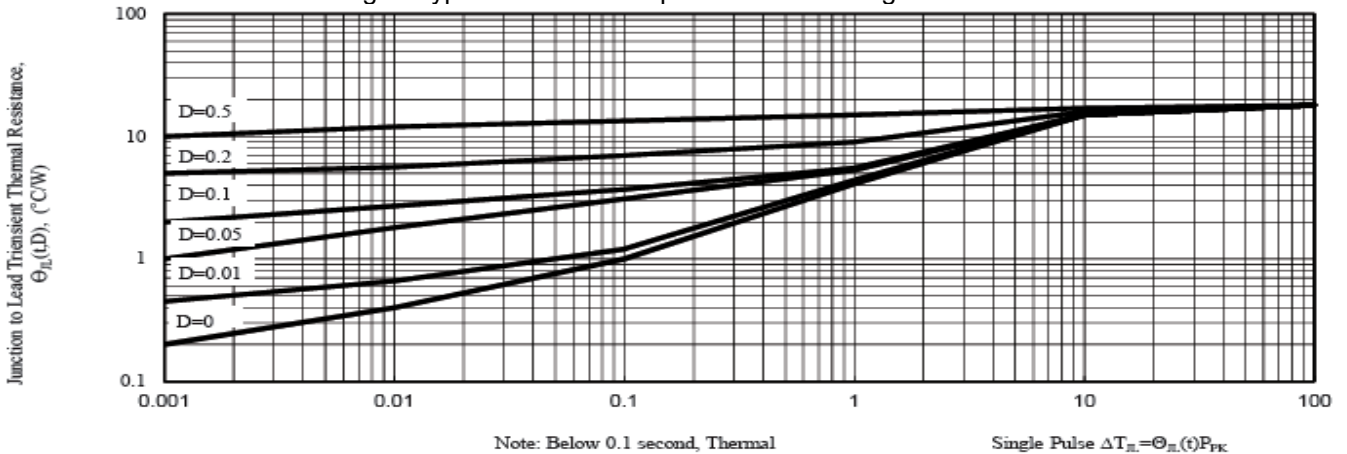


Fig 5: Typical Thermal Response L. Lead Length 3/8 inch





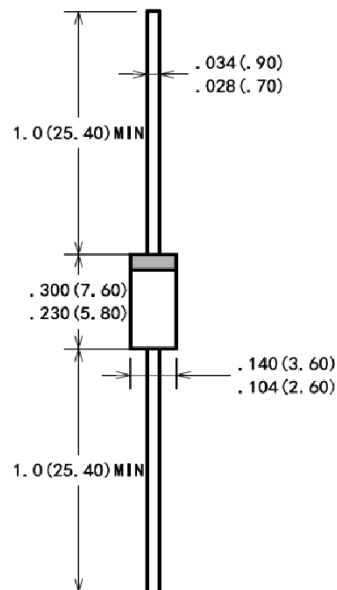
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PACKAGE DETAILS

DO-15 Axial Plastic Package



All Dimensions are in inches(mm)

Mechanical Data

1. Case: DO-15 Molded plastic
2. Lead: Solderable per MIL-STD-750, method 2026
3. Epoxy: UL 94V-0 rate flame retardant
4. Polarity: Color band denotes cathode end
5. Mounting position: Any
6. System: Accreditation through IATF16949 System
7. High reliability grade (AECQ101 qualified)

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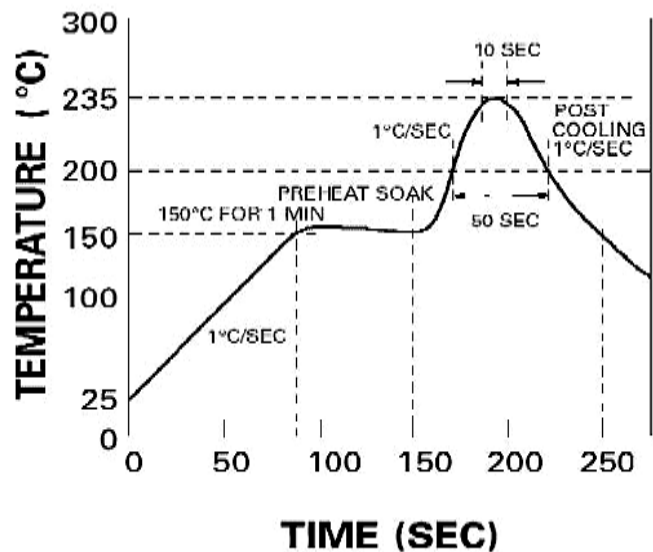
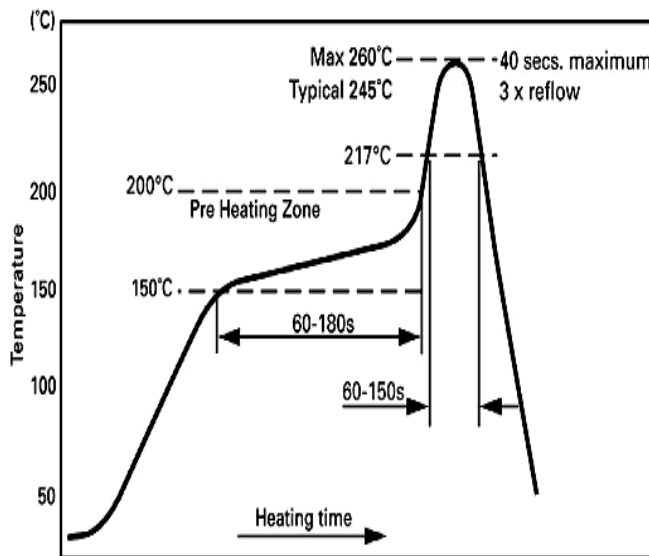
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Recommended Reflow Solder Profiles

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.



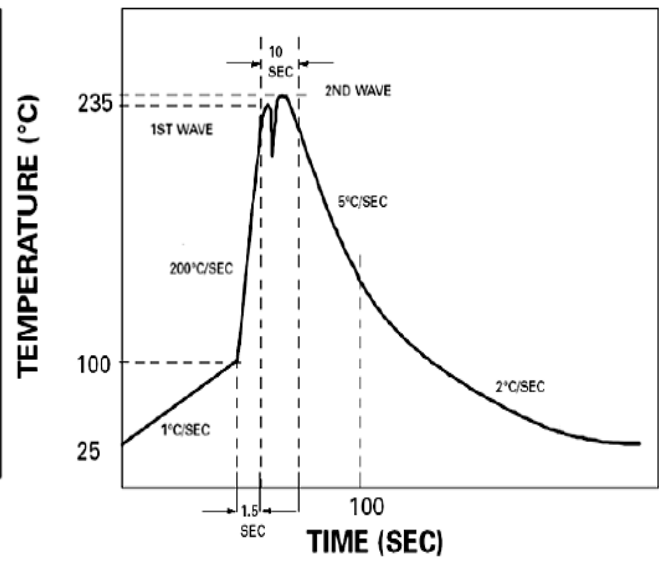
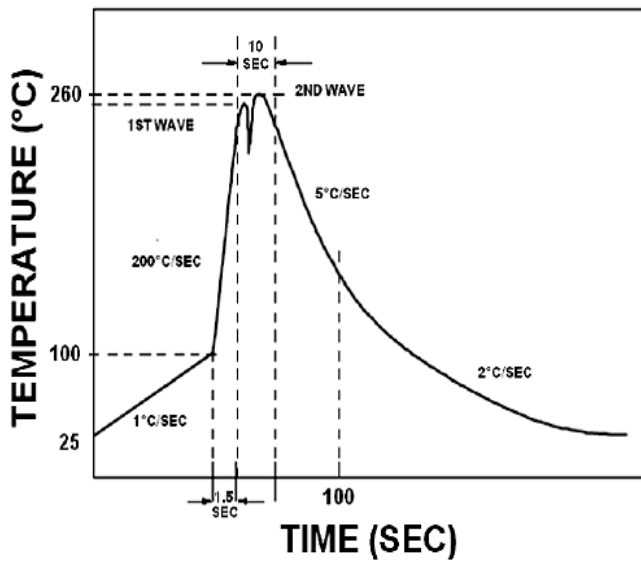
Reflow profiles in tabular form

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 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.



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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 commended 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



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