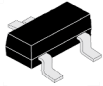
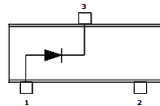


SILICON PLANAR VOLTAGE REGULATOR DIODE

BZX84CXXX



SOT-23



SOT-23
SMD Package
Plastic Package
RoHS compliant

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.

APPLICATIONS: Low voltage general purpose voltage regulator diode

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

PARAMETER	SYMBOL	VALUE	UNIT
Working Voltage Tolerance		±5	%
Repetitive Peak Forward Current	I_{FRM}	250	mA
Repetitive Peak Working Current	I_{ZRM}	250	mA
Power Dissipation upto Ta=25°C	P_D^1	300	mW
Power Dissipation upto Tc=25°C	P_D^2	250	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-65 to +150	°C
Thermal Resistance Junction to Ambient	$R_{th(j-a)}^1$	420	K/W

ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

(Forward Voltage at VF <0.9V at 10mA and <1.5V at 200mA)

Device	Working Voltage ³		Differential Resistance	Temperature Coefficient		Differential Resistance	I_R	at V_R	Marking
	$V_Z (+5\%)$		rdiff	S_Z		rdiff			
	(V)		(Ω)	(mV/K)		(Ω)	μA	(V)	
	at I_Z test=5mA		at I_Z test=5mA	at I_Z test=5mA		at I_Z test=1mA			
	MIN	MAX	MAX	MIN	MAX	MAX	MAX		
BZX84C2V4	2.20	2.60	100	-3.5		600	50	1.0	Z11
BZX84C2V7	2.50	2.90	100	-3.5		600	20	1.0	Z12
BZX84C3V0	2.80	3.20	95	-3.5		600	10	1.0	Z13
BZX84C3V3	3.10	3.50	95	-3.5		600	5.0	1.0	Z14
BZX84C3V6	3.40	3.80	90	-3.5		600	5.0	1.0	Z15
BZX84C3V9	3.70	4.10	90	-3.5		600	3.0	1.0	Z16
BZX84C4V3	4.00	4.60	90	-3.5		600	3.0	1.0	Z17

BZX84CXXX

Rev02 02082023E



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ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

(Forward Voltage at VF <0.9V at 10mA and <1.5V at 200mA)

Device	Working Voltage ³		Differential Resistance	Temperature Coefficient		Differential Resistance	I _R	at V _R	Marking
	V _Z (+ 5%)		rdiff	S _Z		rdiff			
	(V)		(Ω)	(mV/K)		(Ω)	μA	(V)	
	at I _Z test=5mA		at I _Z test=5mA	at I _Z test=5mA		at I _Z test=1mA			
	MIN	MAX	MAX	MIN	MAX	MAX	MAX		
BZX84C4V7	4.40	5.00	80	-3.5	0.2	500	3.0	2.0	Z1
BZX84C5V1	4.80	5.40	60	-2.7	1.2	480	2.0	2.0	Z2
BZX84C5V6	5.20	6.00	40	-2.0	2.5	400	1.0	2.0	Z3
BZX84C6V2	5.80	6.60	10	0.4	3.7	150	3.0	4.0	Z4
BZX84C6V8	6.40	7.20	15	1.2	4.5	80	2.0	4.0	Z5
BZX84C7V5	7.00	7.90	15	2.5	5.3	80	1.0	5.0	Z6
BZX84C8V2	7.70	8.70	15	3.2	6.2	80	0.7	5.0	Z7
BZX84C9V1	8.50	9.60	15	3.8	7.0	100	0.5	6.0	Z8
BZX84C10	9.40	10.60	20	4.5	8.0	150	0.2	7.0	Z9
BZX84C11	10.40	11.60	20	5.4	9.0	150	0.1	8.0	Y1
BZX84C12	11.40	12.70	25	6	10	150	0.1	8.0	Y2
BZX84C13	12.40	14.10	30	7	11	170	0.1	8.0	Y3
BZX84C15	13.80	15.60	30	9.2	13	200	0.05	10.5	Y4
BZX84C16	15.30	17.10	40	10.4	14	200	0.05	11.2	Y5
BZX84C18	16.80	19.10	45	12.4	16	225	0.05	12.6	Y6
BZX84C20	18.80	21.20	55	14.4	18	225	0.05	14.0	Y7
BZX84C22	20.80	23.30	55	16.4	20	250	0.05	15.4	Y8
BZX84C24	22.80	25.60	70	18.4	22	250	0.05	16.8	Y9
	at I _Z test=2mA		at I _Z Test=2mA	at I _Z Test=2mA		at I _Z Test=0.5mA			
BZX84C27	25.10	28.90	80	21.4	25.3	300	0.05	18.9	Y10
BZX84C30	28.00	32.00	80	24.4	29.4	300	0.05	21	Y11
BZX84C33	31.00	35.00	80	27.4	33.4	325	0.05	23.1	Y12
BZX84C36	34.00	38.00	90	30.4	37.4	350	0.05	25.2	Y13
BZX84C39	37.00	41.00	130	33.4	41.2	350	0.05	27.3	Y14
BZX84C43	40.00	46.00	150	37.6	46.6	375	0.05	30.1	Y15
BZX84C47	44.00	50.00	170	42	51.8	375	0.05	32.9	Y16
BZX84C51	48.00	54.00	180	46.6	57.2	400	0.05	35.7	Y17
BZX84C56	52.00	60.00	200	52.2	63.8	425	0.05	39.2	Y18
BZX84C62	58.00	66.00	215	58.8	71.6	450	0.05	43.4	Y19
BZX84C68	64.00	72.00	240	65.6	79.8	475	0.05	47.6	Y20
BZX84C75	70.00	79.00	255	73.4	88.6	500	0.05	52.5	Y21

Note:

1. Device mounted on a ceramic alumna
2. Device mounted on an FR5 printed circuit board
3. Pulse Test 20ms ≤ tp ≤ 50ms

BZX84CXXX
Rev02 02082023E

TYPICAL CHARACTERISTICS CURVES

Fig 1: Power Derating Curve

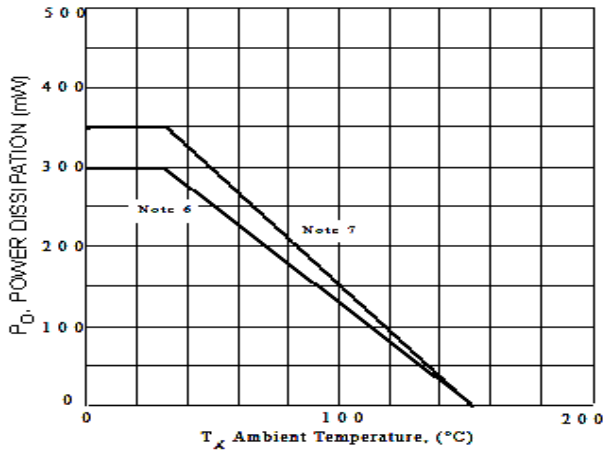


Fig 2: Typical Zener Breakdown Characteristics

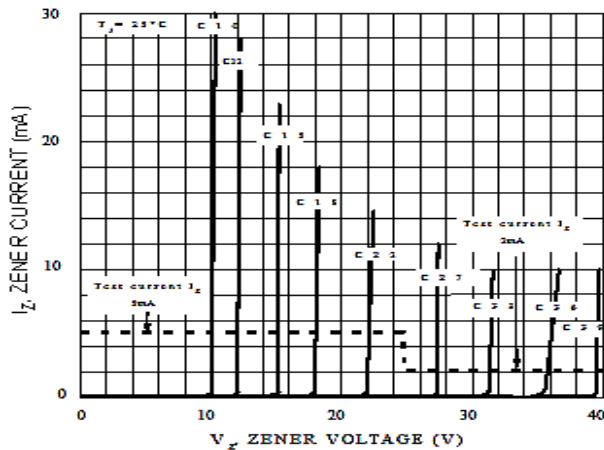


Fig 3: Typical Total Capacitance vs Normal Zener Voltage

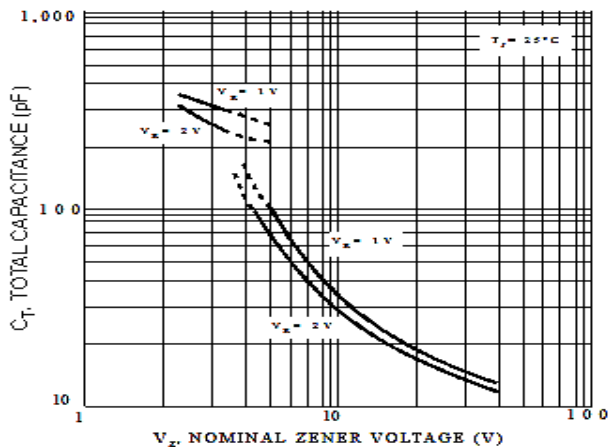


Fig 4: Typical Zener Breakdown Characteristics

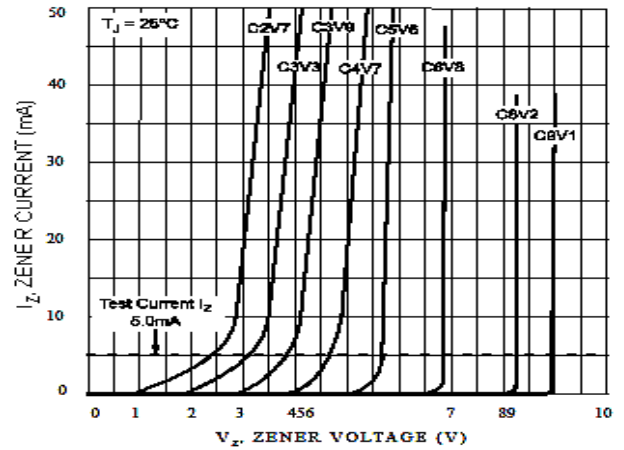


Fig 5: Typical Zener Breakdown Characteristics

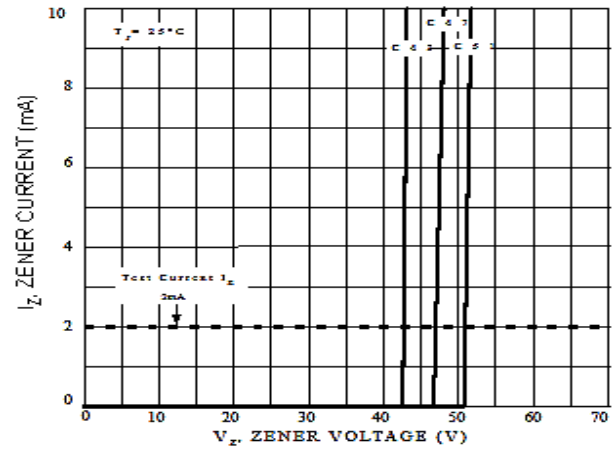
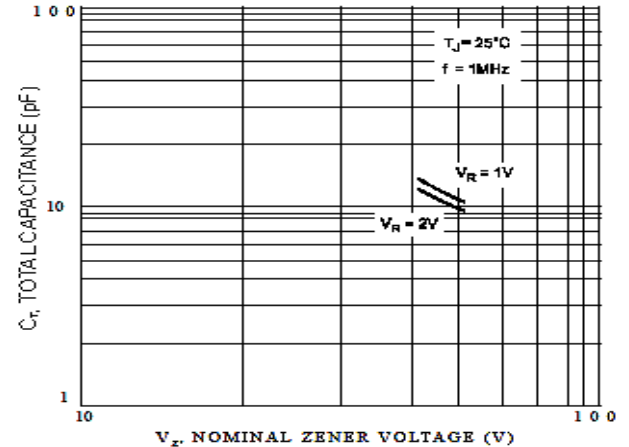
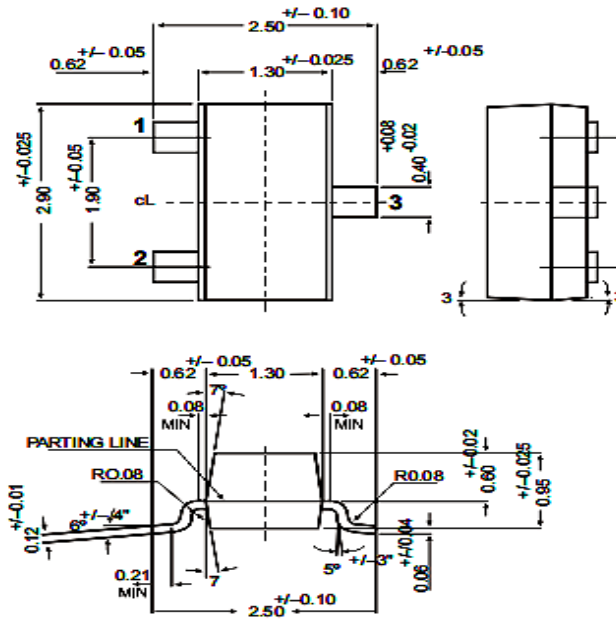


Fig 6: Typical Total Capacitance vs Normal Zener Voltage



PACKAGE DETAILS

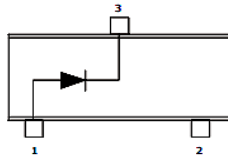
SOT-23 SMD Package



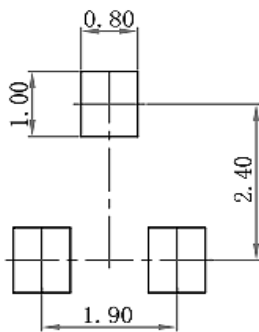
All dimensions are in mm

Pin Configuration

1. Anode
2. NC
3. Cathode



SOT-23 Suggested Pad Layout



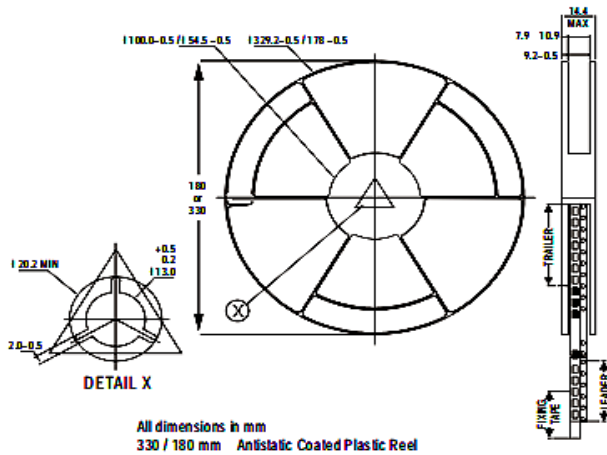
Note

1. Controlling Dimensions: in Millimeters.
2. General Tolerance: ± 0.05 mm
3. The Pad Layout is For Reference Purposes Only.

All dimensions are in mm

SOT-23 Package Reel Information

Reel specifications for Packing (13"/7" reels)

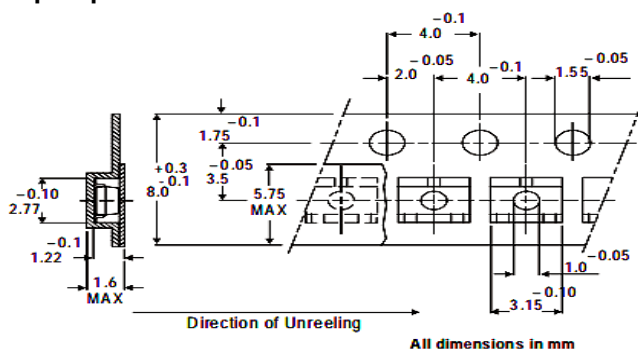


Size of Tape	8mm	8mm
Size of reel	330mm (13")	180mm (7")
No. of Device	10,000 Pcs	3,000 Pcs

NOTES:

1. The bandoier of 330mm reel contains at least 10,000 device.
2. The bandoier of 180mm reel contains at least 3,000 device.
3. No more than 0.5% missing device/reel 50 empty compartments for 330mm reel. 15 empty compartments for 180mm reel.
4. Three consecutive empty places might be found provided this gap is followed by 6 consecutive
5. The carrier tape (leader) starts with at least 75 empty positions (equivalent to 330 mm). In order to fix the carrier tape a self adhesive tape of 20 to 50 mm is applied. At the end of the bandolier at least 40 empty positions (equivalent to 160 mm) are there.

Tape Specification for SOT-23 Surface Mount Device



Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
SOT-23 T&R	3K/reel	136 gm/3K pcs	3" x 7.5" x 7.5"	12.0K	17" x 15" x 13.5"	192.0K	12 kgs
	10K/reel	415 gm/10K pcs	9" x 9" x 9"	51.0K	19" x 19" x 19"	408.0K	28 kgs
			13" x 13" x 0.5"	10.0K	17" x 15" x 13.5"	300.0K	16 kgs

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

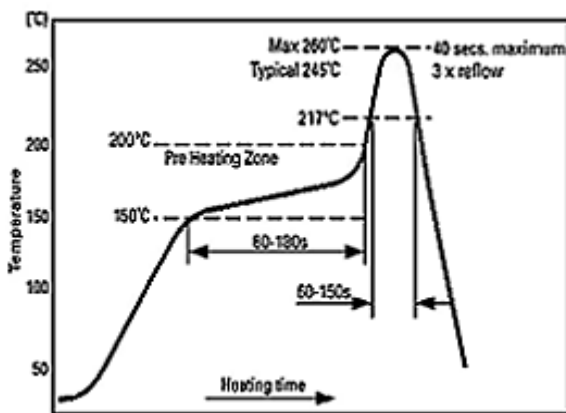
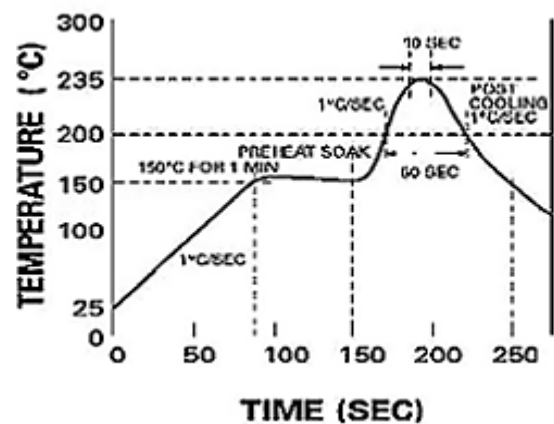


Figure 2



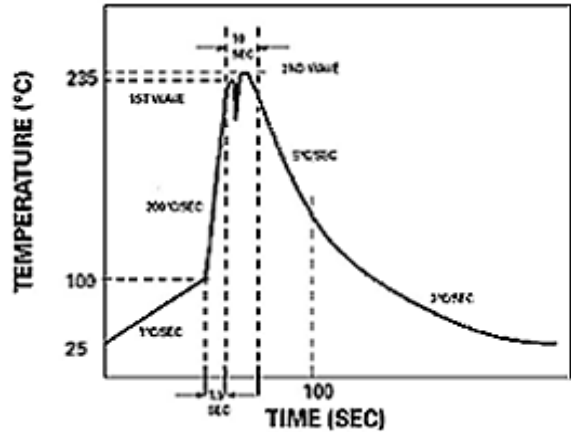
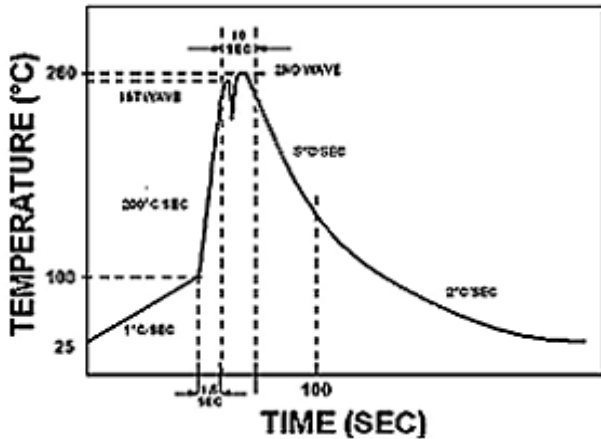
Reflow profiles in tabular form

Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat		
– Temperature Range	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	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 P	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

BZX84CXXX
Rev02 02082023E



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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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Rev02 02082023E