



## 200mW Surface Mount Zener Diode

## BZT52CXXXS



SOD-323

**SOD-323**  
**Surface Mount**  
**Plastic Package**  
**RoHS compliant**

### FEATURES:

1. Low Zener Impedance
2. 200mW; Power Dissipation of 200mW
3. High Stability and High Reliability

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

DESCRIPTION	SYMBOL	VALUE	UNIT
Power Dissipation	$P_d^1$	200	mW
Forward Voltage @IF=10mA	$V_f^2$	0.9	V
Storage Temperature Range	$T_{stg}$	-65 to +150	°C

### Note:

1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>
2. Short duration test pulse used to minimize self-heating effect
3. f=1KHz

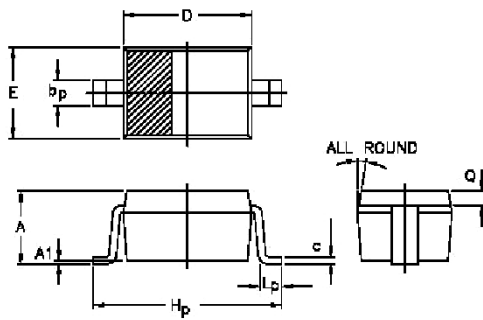
**ELECTRICAL CHARACTERISTICS** (at Ta = 25 °C Unless otherwise specified) V<sub>F</sub> @ 100mA <1.0 V

Device	Zener Voltage Range			Maximum Zener Impedance 3			Maximum Reverse Current		Typical Temperature coefficient @ I <sub>ZTC</sub> (mV/°C)		Test Current I <sub>ZTC</sub> (mA)	Marking Code	
	V <sub>Z</sub> @ I <sub>ZT</sub>			I <sub>ZT</sub> (mA)	Z <sub>ZT</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>	I <sub>ZK</sub> (mA)	I <sub>R</sub> (μA)	V <sub>R</sub> (V)	min			max
	(V)				(Ω)			(μA)	(V)				
	Nom	min	max										
BZT52C2V0S	2.0	1.80	2.15	5	150	600	1.0	100	1.0	-3.5	0	5	WY
BZT52C2V4S	2.4	2.2	2.6	5	100	600	1.0	50	1.0	-3.5	0	5	WX
BZT52C2V7S	2.7	2.5	2.9	5	100	600	1.0	20	1.0	-3.5	0	5	W1
BZT52C3V0S	3.0	2.8	3.2	5	95	600	1.0	10	1.0	-3.5	0	5	W2
BZT52C3V3S	3.3	3.1	3.5	5	95	600	1.0	5	1.0	-3.5	0	5	W3
BZT52C3V6S	3.6	3.4	3.8	5	90	600	1.0	5	1.0	-3.5	0	5	W4
BZT52C3V9S	3.9	3.7	4.1	5	90	600	1.0	3	1.0	-3.5	0	5	W5
BZT52C4V3S	4.3	4.0	4.6	5	90	600	1.0	3	1.0	-3.5	0	5	W6
BZT52C4V7S	4.7	4.4	5.0	5	80	500	1.0	3	2.0	-3.5	0.2	5	W7
BZT52C5V1S	5.1	4.8	5.4	5	60	480	1.0	2	2.0	-2.7	1.2	5	W8
BZT52C5V6S	5.6	5.2	6.0	5	40	400	1.0	1	2.0	-2.0	2.5	5	W9
BZT52C6V2S	6.2	5.8	6.6	5	10	150	1.0	0.7	4.0	0.4	3.7	5	WA
BZT52C6V8S	6.8	6.4	7.2	5	15	80	1.0	0.5	4.0	1.2	4.5	5	WB
BZT52C7V5S	7.5	7.0	7.9	5	15	80	1.0	0.2	5.0	2.5	5.3	5	WC
BZT52C8V2S	8.2	7.7	8.7	5	15	80	1.0	0.1	5.0	3.2	6.2	5	WD
BZT52C9V1S	9.1	8.5	9.6	5	15	100	1.0	0.1	6.0	3.8	7.0	5	WE
BZT52C10S	10	9.4	10.6	5	20	150	1.0	0.1	7.0	4.5	8.0	5	WF
BZT52C11S	11	10.4	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0	5	WG
BZT52C12S	12	11.4	12.7	5	20	150	1.0	0.1	8.0	6.0	10.0	5	WH
BZT52C13S	13	12.4	14.1	5	25	170	1.0	0.1	8.0	7.0	11.0	5	WI
BZT52C15S	15	13.8	15.6	5	30	200	1.0	0.1	10.5	9.2	13.0	5	WJ
BZT52C16S	16	15.3	17.1	5	30	200	1.0	0.1	11.2	10.4	14.0	5	WK
BZT52C18S	18	16.8	19.1	5	40	225	1.0	0.1	12.6	12.4	16.0	5	WL
BZT52C20S	20	18.8	21.2	5	45	225	1.0	0.1	14.0	14.4	18.0	5	WM
BZT52C22S	22	20.8	23.3	5	55	250	1.0	0.1	15.4	16.4	20.0	5	WN
BZT52C24S	24	22.8	25.6	5	70	250	1.0	0.1	16.8	18.4	22.0	2	WO
BZT52C27S	27	25.1	28.9	2	80	300	0.5	0.1	18.9	21.4	25.3	2	WP
BZT52C30S	30	28.0	32.0	2	80	300	0.5	0.1	21.0	24.4	29.4	2	WQ
BZT52C33S	33	31.0	35.0	2	80	325	0.5	0.1	23.1	27.4	33.4	2	WR
BZT52C36S	36	34.0	38.0	2	90	350	0.5	0.1	25.2	30.4	37.4	2	WS
BZT52C39S	39	37.0	41.0	2	130	350	0.5	0.1	27.3	33.4	41.2	2	WT

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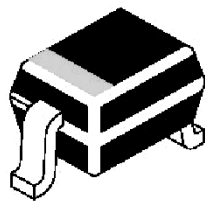
# PACKAGE DETAILS

## SOD-323 PACKAGE



DIM	MIN.	MAX.
A	0.95	1.05
A1	0.0	0.1
bp	0.3	0.4
c	0.127	0.135
D	1.65	1.75
E	1.2	1.3
Hp	2.3	2.7
Lp	0.2	0.4
Q	0.15	0.25

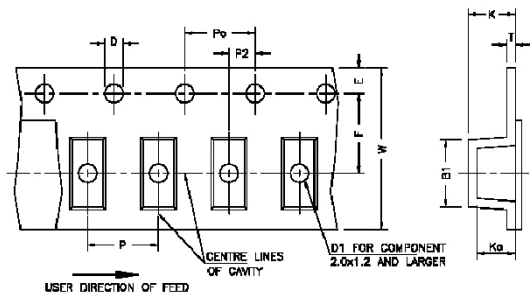
Cathode is marked by Band



All dimensions are in mm

# PACKING DETAILS

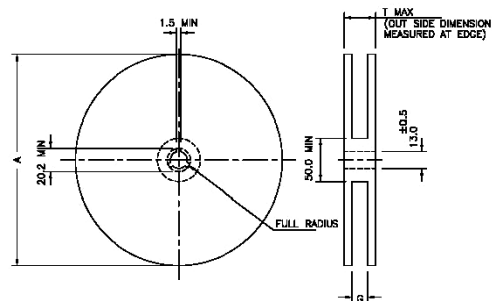
EMBOSSED TAPE & REEL DATA FOR DISCRETES CARRIER TAPE SPECIFICATIONS



DIMENSIONS										
TAPE SIZE	B1 MAX	D	D1	E	F	K	Pp	P2	T MAX	W MAX
8.0	4.65	1.5 ±0.1	1.0 MIN	1.75 ±0.1	3.5 ±0.05	2.4 MAX	4.0 ±0.1	2.0 ±0.1	0.8	8.3

ALL DIMENSIONS ARE IN mm

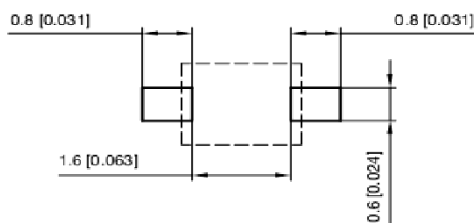
EMBOSSED TAPE & REEL DATA FOR DISCRETES



DIMENSIONS			
SIZE	A MAX	Ø	T MAX
8.0	330.0	8.4 +1.5	-0.0

ALL DIMENSIONS ARE IN mm  
DEVICES PER REEL :- 10,000 Pcs

## Recommended footprint



All dimensions are in mm(inches)

BZT52CXXXS  
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# TYPICAL CHARACTERISTIC CURVES

Fig. 1 - Forward Characteristics

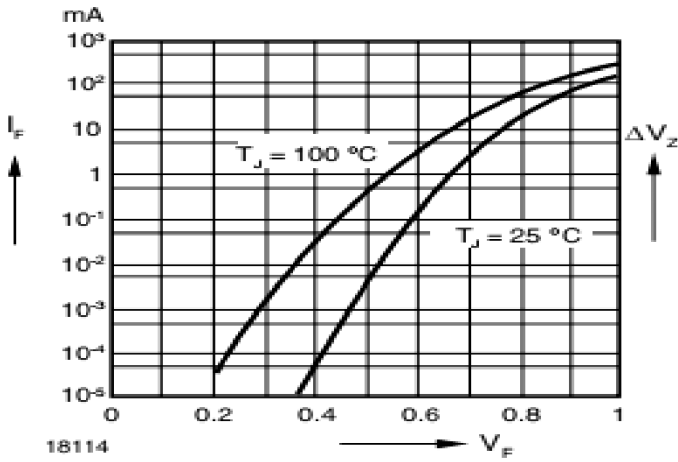


Fig. 4 - Change of Zener Voltage vs. Junction Temperature

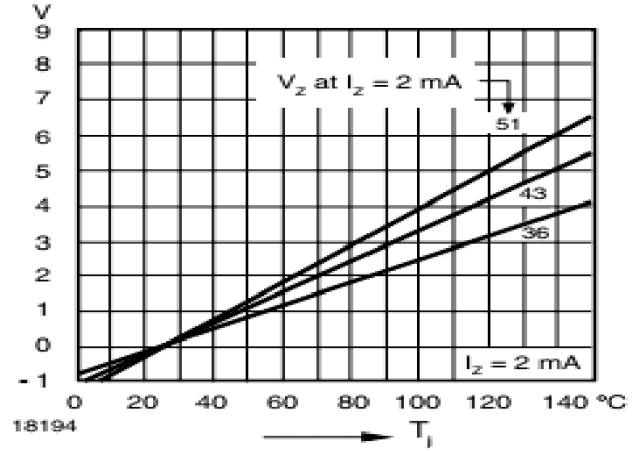


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

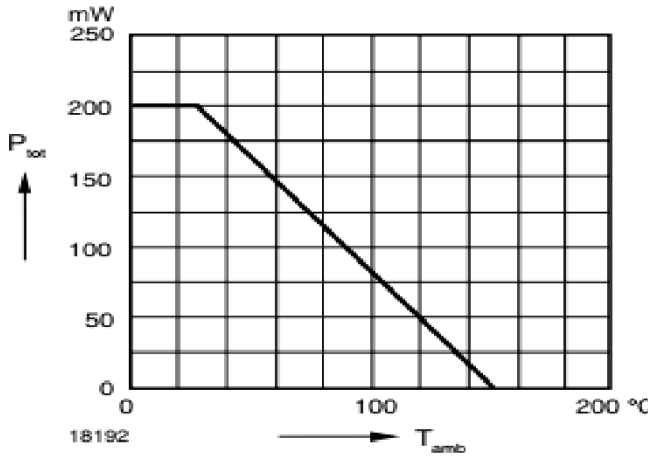


Fig. 5 - Thermal Differential Resistance vs. Zener Voltage

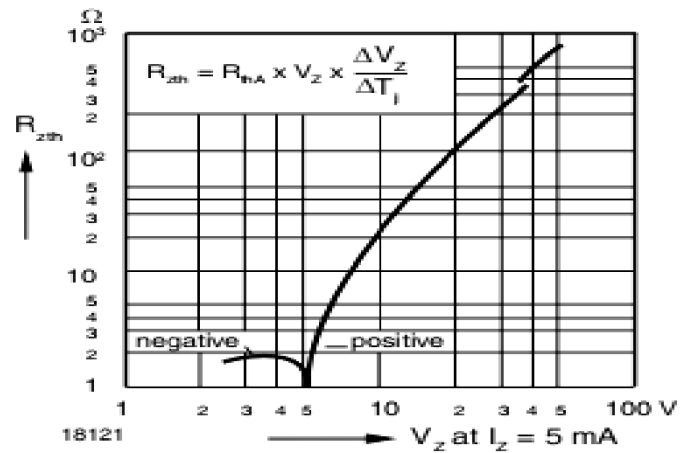


Fig. 3 - Dynamic Resistance vs. Zener

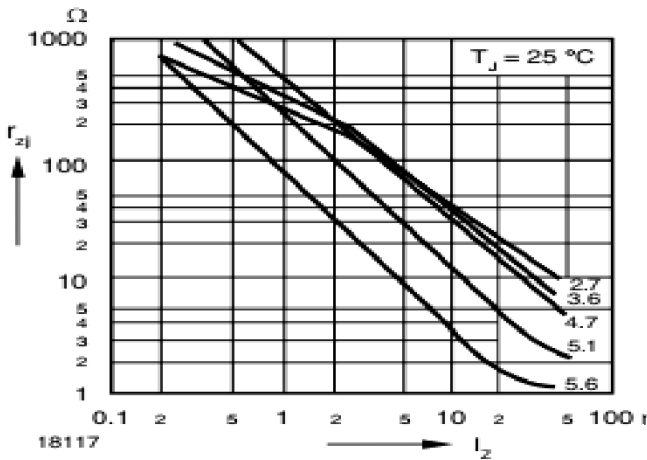
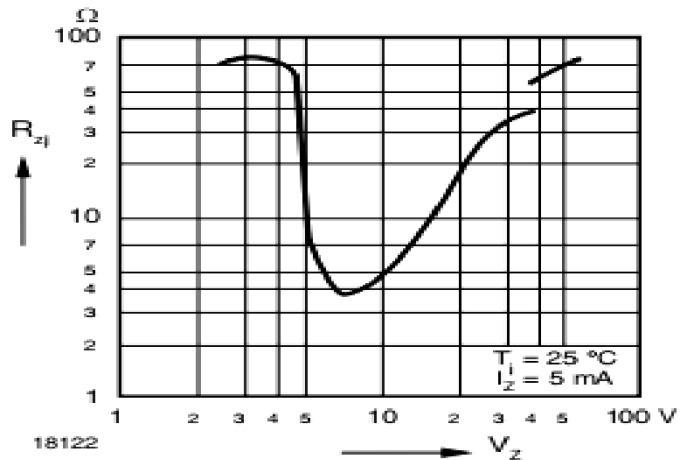


Fig. 6 - Dynamic Resistance vs. Zener Voltage

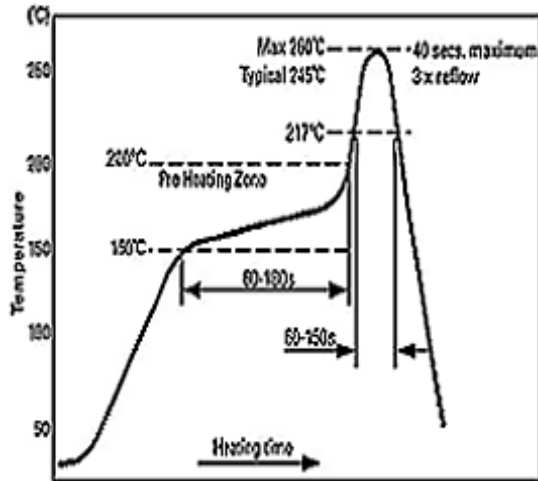


### Recommended Reflow Solder Profiles

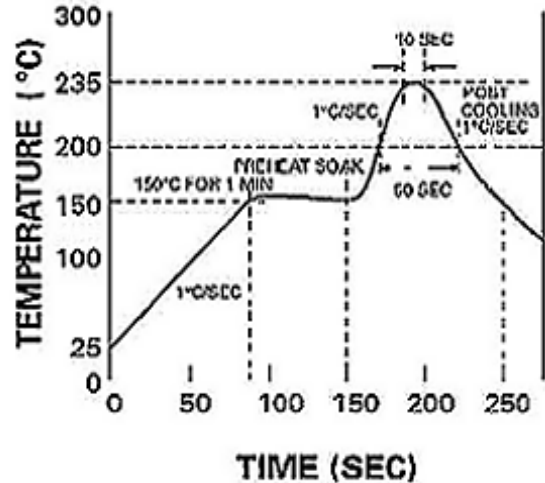
The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

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**

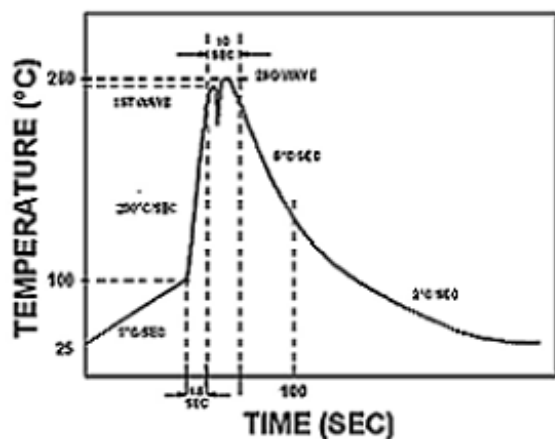


#### Reflow profiles in tabular form

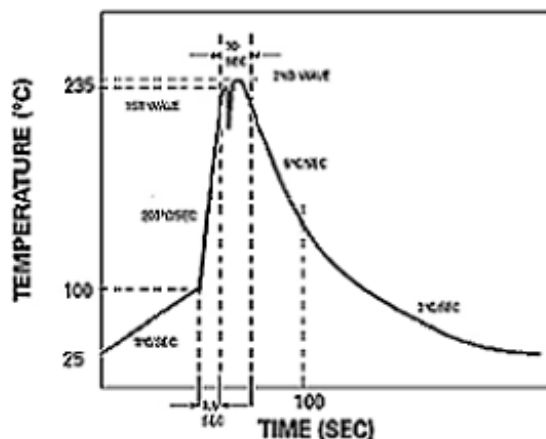
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
<b>Preheat</b>		
– Temperature Range	150-170°C	150-200°C
– Time	60-180 seconds	60-180 seconds
Time maintained above:		
– Temperature	200°C	217°C
– Time	30-50 seconds	60-150 seconds
Peak Temperature	235°C	260°C max.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

### **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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