

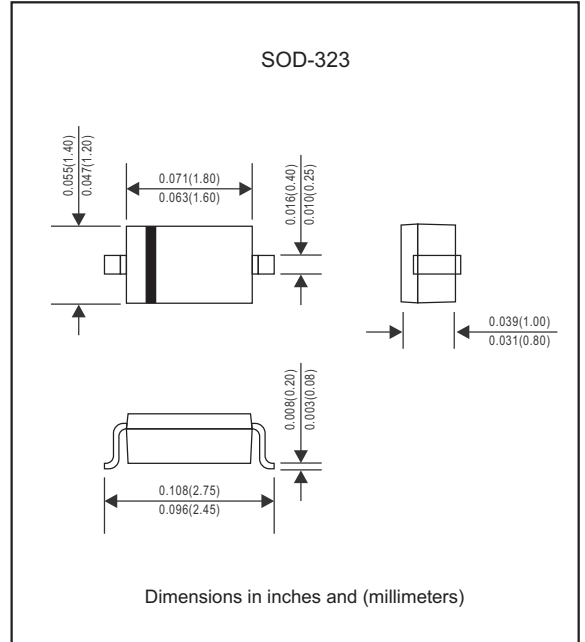
## Features

- Silicon epitaxial planar chip structure.
- Wide zener reverse voltage range 2.4V to 51V.
- Small package size for high density applications.
- Ideally suited for automated assembly processes.
- Pb-free package is available
- We declare that the material of product compliance with RoHS requirements.
- Compliant to Halogen-free

## Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

## Package outline



## Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 10 \text{ mA}$	$V_F$			0.9	V
Power dissipation	$T_A = 25^\circ\text{C}$ (note 1)	$P_D$			200	mW
Thermal resistance	Junction to ambient (note 1)	$R_{\theta JA}$		625		$^\circ\text{C}/\text{W}$
	Junction to case (note 1)	$R_{\theta JC}$		350		$^\circ\text{C}/\text{W}$
Operating junction temperature range		$T_J$	-55		+150	$^\circ\text{C}$
Storage temperature range		$T_{STG}$	-55		+150	$^\circ\text{C}$

Note 1: Mounted on FR-4 minimum pad

### Electrical characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part No.	Marking code	Zener voltage			Test current	Zener impedance			Leakage current		Typical Temperature Coefficient	
		$V_Z @ I_{ZT}$				$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R$	$V_R$	@ $I_{ZT}$ (mV/ $^{\circ}\text{C}$ )
		Min.(V)	Nom.(V)	Max.(V)	mA							
BZT52C2V4S	WX	2.2	2.4	2.6	5	100	600	1.0	50.0	1.0	-3.5	0
BZT52C2V7S	W1	2.5	2.7	2.9	5	100	600	1.0	20.0	1.0	-3.5	0
BZT52C3V0S	W2	2.8	3.0	3.2	5	95	600	1.0	10.0	1.0	-3.5	0
BZT52C3V3S	W3	3.1	3.3	3.5	5	95	600	1.0	5.0	1.0	-3.5	0
BZT52C3V6S	W4	3.4	3.6	3.8	5	90	600	1.0	5.0	1.0	-3.5	0
BZT52C3V9S	W5	3.7	3.9	4.1	5	90	600	1.0	3.0	1.0	-3.5	0
BZT52C4V3S	W6	4.0	4.3	4.6	5	90	600	1.0	3.0	1.0	-3.5	0
BZT52C4V7S	W7	4.4	4.7	5.0	5	80	500	1.0	3.0	2.0	-3.5	0.2
BZT52C5V1S	W8	4.8	5.1	5.4	5	60	480	1.0	2.0	2.0	-2.7	1.2
BZT52C5V6S	W9	5.2	5.6	6.0	5	40	400	1.0	1.0	2.0	-2.0	2.5
BZT52C6V2S	WA	5.8	6.2	6.6	5	10	150	1.0	3.0	4.0	0.4	3.7
BZT52C6V8S	WB	6.4	6.8	7.2	5	15	80	1.0	2.0	4.0	1.2	4.5
BZT52C7V5S	WC	7.0	7.5	7.9	5	15	80	1.0	1.0	5.0	2.5	5.3
BZT52C8V2S	WD	7.7	8.2	8.7	5	15	80	1.0	0.7	5.0	3.2	6.2
BZT52C9V1S	WE	8.5	9.1	9.6	5	15	100	1.0	0.5	6.0	3.8	7.0
BZT52C10S	WF	9.4	10	10.6	5	20	150	1.0	0.2	7.0	4.5	8.0
BZT52C11S	WG	10.4	11	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0
BZT52C12S	WH	11.4	12	12.7	5	25	150	1.0	0.1	8.0	6.0	10.0
BZT52C13S	WI	12.4	13	14.1	5	30	170	1.0	0.1	8.0	7.0	11.0
BZT52C15S	WJ	13.8	15	15.8	5	30	200	1.0	0.1	10.5	9.2	13.0
BZT52C16S	WK	15.3	16	17.1	5	40	200	1.0	0.1	11.2	10.4	14.0
BZT52C18S	WL	16.8	18	19.1	5	45	225	1.0	0.1	12.6	12.4	16.0
BZT52C20S	WM	18.8	20	21.2	5	55	225	1.0	0.1	14.0	14.4	18.0
BZT52C22S	WN	20.8	22	23.3	5	55	250	1.0	0.1	15.4	16.4	20.0
BZT52C24S	WO	22.8	24	25.6	5	70	250	1.0	0.1	16.8	18.4	22.0
BZT52C27S	WP	25.1	27	28.9	2	80	300	0.5	0.1	18.9	21.4	25.3
BZT52C30S	WQ	28.0	30	32.0	2	80	300	0.5	0.1	21.0	24.4	29.4
BZT52C33S	WR	31.0	33	35.0	2	80	325	0.5	0.1	23.1	27.4	33.4
BZT52C36S	WS	34.0	36	38.0	2	90	350	0.5	0.1	25.2	30.4	37.4
BZT52C39S	WT	37.0	39	41.0	2	130	350	0.5	0.1	27.3	33.4	41.2
BZT52C43S	WU	40.0	43	46.0	2	100	700	1.0	0.1	32.0	10.0	12.0
BZT52C47S	WV	44.0	47	50.0	2	100	750	1.0	0.1	35.0	10.0	12.0
BZT52C51S	WW	48.0	51	54.0	2	100	750	1.0	0.1	38.0	10.0	12.0

**Note:**

1. Tested with pulses, period = 5ms, pulse width = 300us.
2. When provided, otherwise, parts are provided with date code only, and type number identifications appears on reel only.
3. f=1KHz.

**Rating and characteristic curves**

FIG. 1-EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

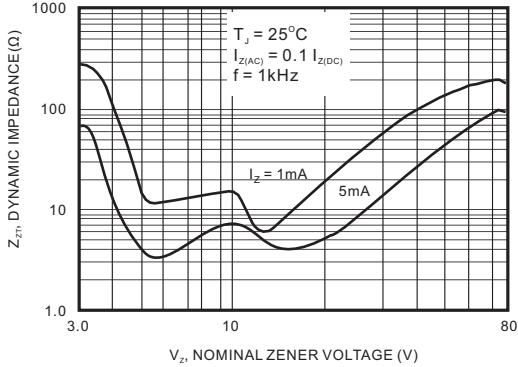


FIG. 2-TYPICAL FORWARD VOLTAGE

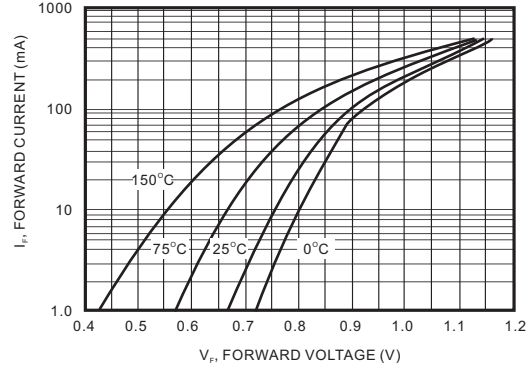


FIG. 3-TYPICAL CAPACITANCE

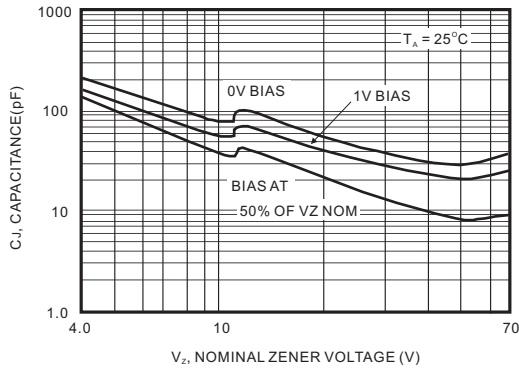


FIG. 4-TYPICAL LEAKAGE CURRENT

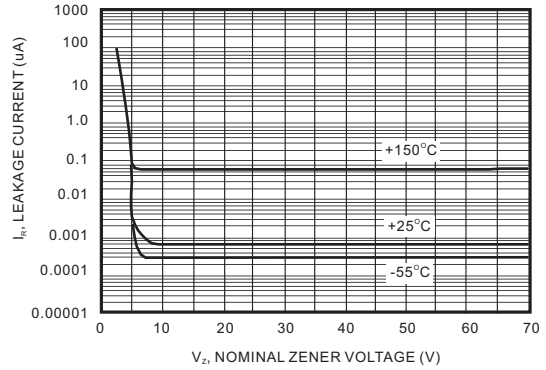


FIG. 5-ZENER VOLTAGE VERSUS ZENER CURRENT ( $V_z$  UP TO 12V)

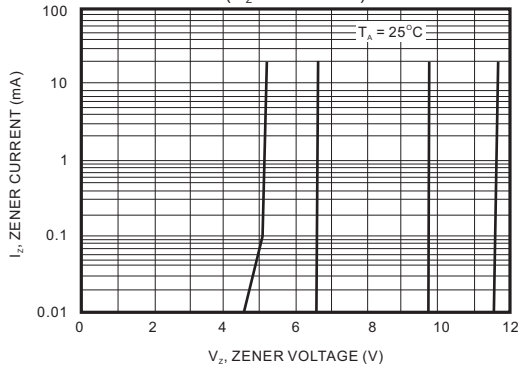


FIG. 6-ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 75V)

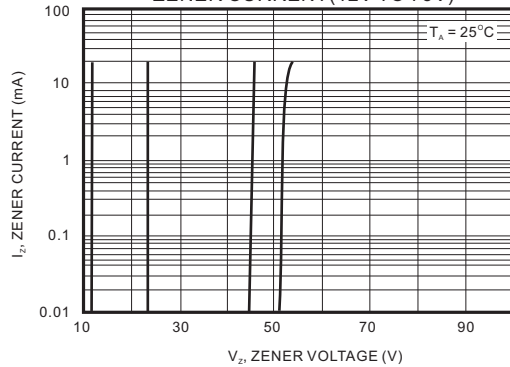
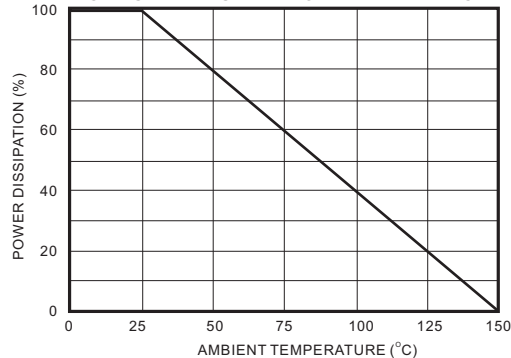


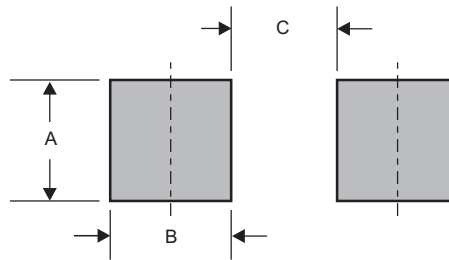
FIG. 7-STEADY STATE POWER DERATING



## Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

## Suggested solder pad layout

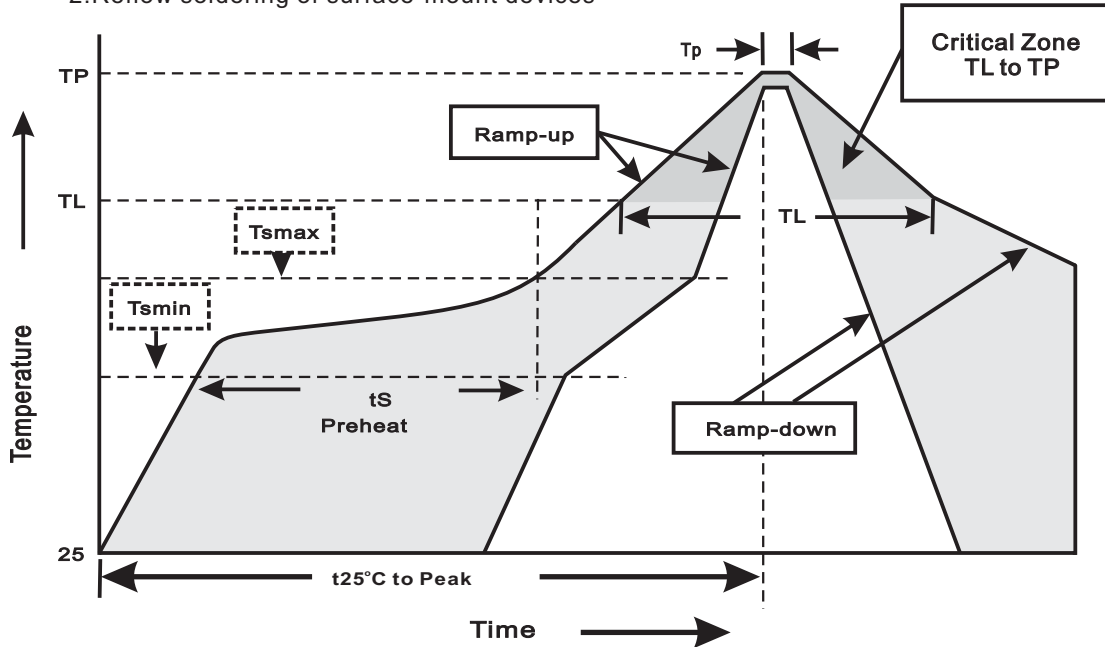


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

## Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )	<math><3^{\circ}\text{C}/\text{sec}</math>
Preheat -Temperature Min(T <sub>smmin</sub> ) -Temperature Max(T <sub>smmax</sub> ) -Time(min to max)(t <sub>s</sub> )	150°C 200°C 60~120sec
T <sub>smmax</sub> to T <sub>L</sub> -Ramp-upRate	<math><3^{\circ}\text{C}/\text{sec}</math>
Time maintained above: -Temperature(T <sub>L</sub> ) -Time(t <sub>L</sub> )	217°C 60~260sec
Peak Temperature(T <sub>P</sub> )	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t <sub>p</sub> )	10~30sec
Ramp-down Rate	<math><6^{\circ}\text{C}/\text{sec}</math>
Time 25°C to Peak Temperature	<math><6\text{minutes}</math>