

## 200mW, 2% Tolerance SMD Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.4V to 75V
- $V_Z$  tolerance selection of  $\pm 2\%$
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Low voltage stabilizers or voltage references
- Adapters
- On-board DC/DC converter

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	2.4-75	V
$P_D$	200	mW
$V_F$ at $I_F=10\text{mA}$	1	V
$T_J$ Max.	150	$^{\circ}\text{C}$
Package	SOD-323F	
Configuration	Single die	



### MECHANICAL DATA

- Case: SOD-323F
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight:  $4.02 \pm 0.5\text{mg}$  (approximately)



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

PARAMETER	SYMBOL	VALUE	UNIT
Forward voltage @ $I_F=10\text{mA}$	$V_F$	1	V
Power dissipation	$P_D$	200	mW
Junction temperature range	$T_J$	-65 to +150	$^{\circ}\text{C}$
Storage temperature range	$T_{STG}$	-65 to +150	$^{\circ}\text{C}$

### THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PART NUMBER	MARKING CODE	ZENER VOLTAGE			TEST CURRENT	REGULAR IMPEDANCE		TEST CURRENT	LEAKAGE CURRENT	
		$V_Z @ I_{ZT}$			$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R @ V_R$	
		V			mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V
		Min.	Nom.	Max.		Max.	Max.		Max.	
BZT52B2V4S	OZ	2.35	2.40	2.45	5	100	564	1	45	1
BZT52B2V7S	1Z	2.65	2.70	2.75	5	100	564	1	18	1
BZT52B3V0S	2Z	2.94	3.00	3.06	5	100	564	1	9	1
BZT52B3V3S	3Z	3.23	3.30	3.37	5	95	564	1	4.5	1
BZT52B3V6S	4Z	3.53	3.60	3.67	5	90	564	1	4.5	1
BZT52B3V9S	5Z	3.82	3.90	3.98	5	90	564	1	2.7	1
BZT52B4V3S	6Z	4.21	4.30	4.39	5	90	564	1	2.7	1
BZT52B4V7S	7Z	4.61	4.70	4.79	5	80	470	1	2.7	2.0
BZT52B5V1S	8Z	5.00	5.10	5.20	5	60	451	1	1.8	2.0
BZT52B5V6S	9Z	5.49	5.60	5.71	5	40	376	1	0.9	2.0
BZT52B6V2S	AZ	6.08	6.20	6.32	5	10	141	1	2.7	4.0
BZT52B6V8S	BZ	6.66	6.80	6.94	5	15	75	1	1.8	4.0
BZT52B7V5S	CZ	7.35	7.50	7.65	5	15	75	1	0.9	5.0
BZT52B8V2S	DZ	8.04	8.20	8.36	5	15	75	1	0.63	5.0
BZT52B9V1S	EZ	8.92	9.10	9.28	5	15	94	1	0.45	6.0
BZT52B10S	FZ	9.80	10.00	10.20	5	20	141	1	0.18	7.0
BZT52B11S	GZ	10.78	11.00	11.22	5	20	141	1	0.09	8.0
BZT52B12S	HZ	11.76	12.00	12.24	5	25	141	1	0.09	8.0
BZT52B13S	JZ	12.74	13.00	13.26	5	30	160	1	0.09	8.0
BZT52B15S	KZ	14.70	15.00	15.30	5	30	188	1	0.045	10.5
BZT52B16S	LZ	15.68	16.00	16.32	5	40	188	1	0.045	11.2
BZT52B18S	MZ	17.64	18.00	18.36	5	45	212	1	0.045	12.6
BZT52B20S	NZ	19.60	20.00	20.40	5	55	212	1	0.045	14.0
BZT52B22S	PZ	21.56	22.00	22.44	5	55	235	1	0.045	15.4
BZT52B24S	RZ	23.52	24.00	24.48	5	70	235	1	0.045	16.8
BZT52B27S	SZ	26.46	27.00	27.54	2	80	282	0.5	0.045	18.9
BZT52B30S	TZ	29.40	30.00	30.60	2	80	282	0.5	0.045	21.0
BZT52B33S	UZ	32.34	33.00	33.66	2	80	306	0.5	0.045	23.0
BZT52B36S	VZ	35.28	36.00	36.72	2	90	329	0.5	0.045	25.2
BZT52B39S	WZ	38.22	39.00	39.78	2	130	329	0.5	0.045	27.3
BZT52B43S	XZ	42.14	43.00	43.86	2	150	353	0.5	0.045	30.1
BZT52B47S	YZ	46.06	47.00	47.94	2	170	353	0.5	0.045	33.0
BZT52B51S	-Z	49.98	51.00	52.02	2	180	376	0.5	0.045	35.7
BZT52B56S	=Z	54.88	56.00	57.12	2	200	400	0.5	0.045	39.2
BZT52B62S	≡Z	60.76	62.00	63.24	2	215	423	0.5	0.045	43.4
BZT52B68S	>Z	66.64	68.00	69.36	2	240	447	0.5	0.045	47.6
BZT52B75S	<Z	73.50	75.00	76.50	2	255	470	0.5	0.045	52.5

**Notes:**

1. The zener voltage ( $V_Z$ ) is tested under pulse condition of 30ms.
2. The device numbers listed have a standard tolerance on the normal zener voltage of  $\pm 2\%$ .
3. For detailed information on price, availability and delivery of normal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Taiwan Semiconductor representative.
4. The Zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an RMS value equal to 10% of the DC zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

<b>ORDERING INFORMATION</b>		
<b>PART NO.</b> (Note 1)	<b>PACKAGE</b>	<b>PACKING</b>
BZT52BxxxS RRG	SOD-323F	3K / 7" Reel
BZT52BxxxS RR	SOD-323F	3K / 7" Reel
BZT52BxxxS R9G	SOD-323F	10K / 13" Reel
BZT52BxxxS R9	SOD-323F	10K / 13" Reel

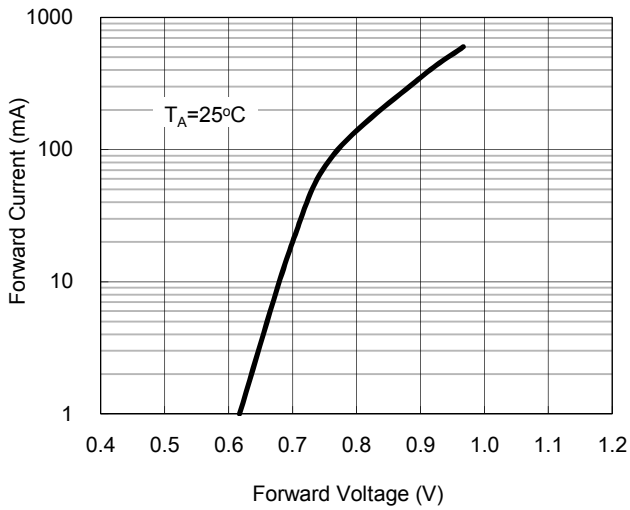
**Note:**

1. "xxx" defines voltage from 2.4V (BZT52B2V4S) to 75V (BZT52B75S)

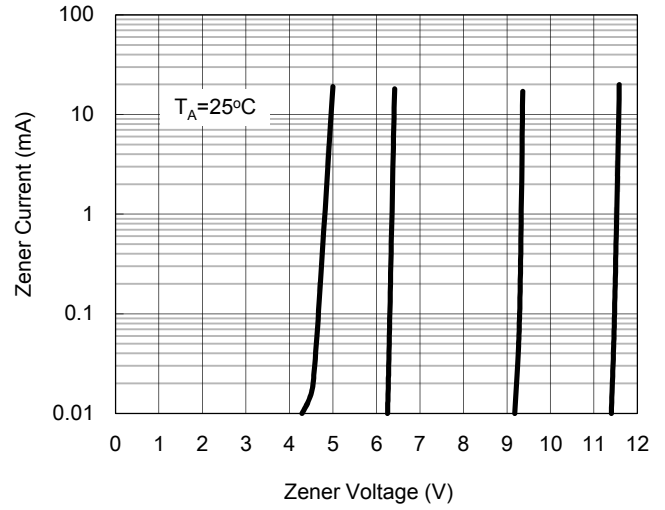
**CHARACTERISTICS CURVES**

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

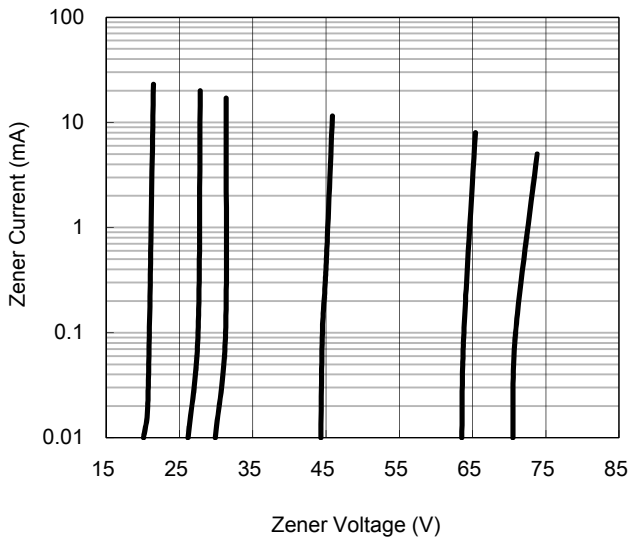
**Fig.1 Typical Forward Characteristics**



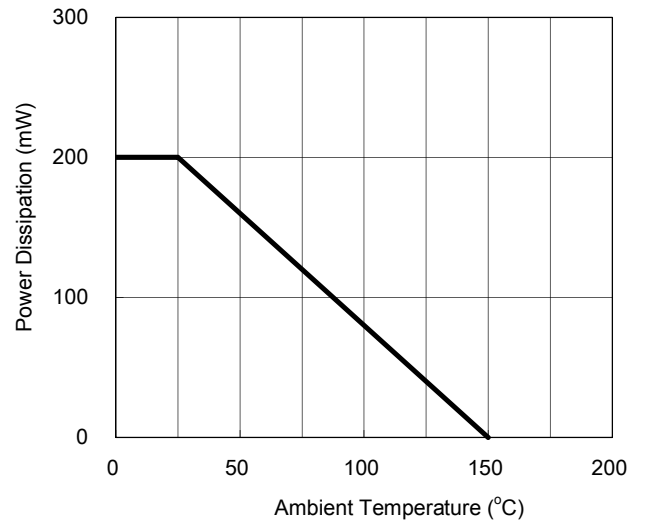
**Fig. 2 Zener Breakdown Characteristics**



**Fig. 3 Zener Breakdown Characteristics**



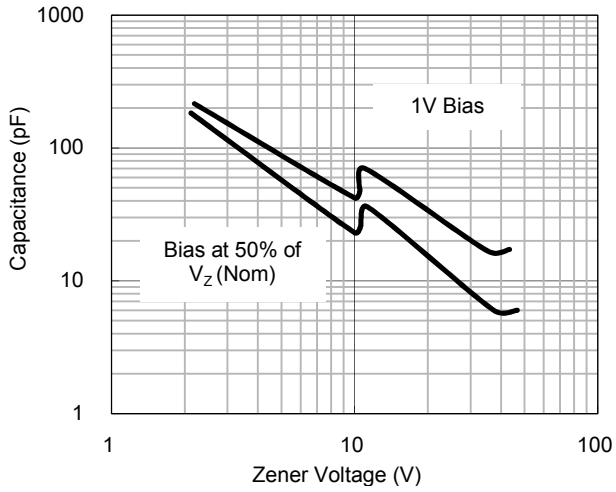
**Fig.4 Power Dissipation Curve**



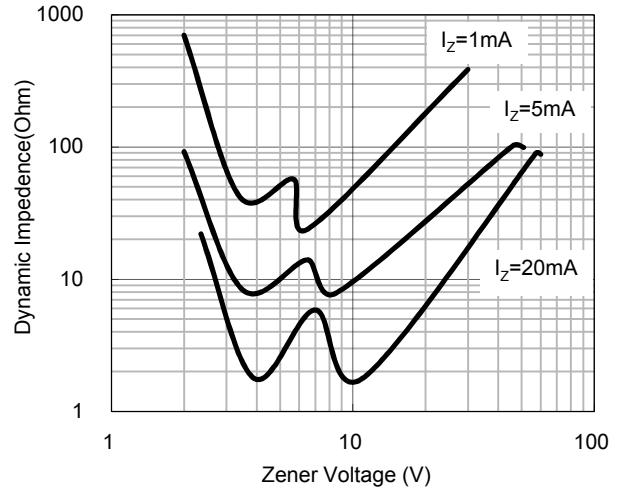
**CHARACTERISTICS CURVES**

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

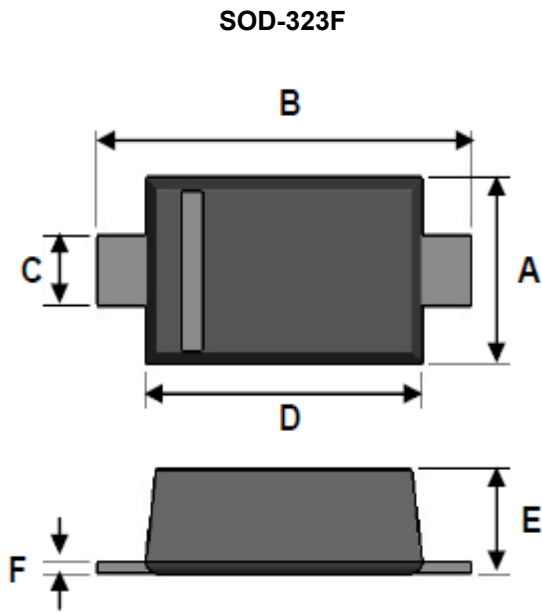
**Fig.5 Typical Capacitance**



**Fig.6 Effect of Zener Voltage on Impedance**

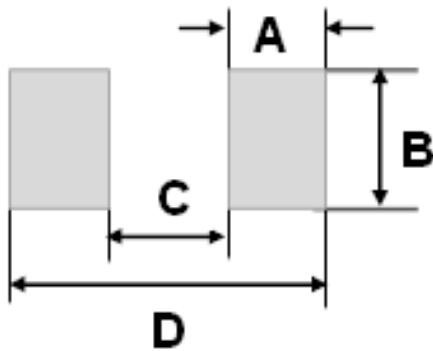


**PACKAGE OUTLINE DIMENSION**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.15	1.35	0.045	0.053
B	2.30	2.80	0.091	0.110
C	0.25	0.40	0.010	0.016
D	1.60	1.80	0.063	0.071
E	0.80	1.10	0.031	0.043
F	0.05	0.25	0.002	0.010

**SUGGEST PAD LAYOUT**



DIM.	Unit (mm)	Unit (inch)
	Typ.	Typ.
A	0.63	0.025
B	0.83	0.033
C	1.60	0.063
D	2.86	0.113

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