

200mW, 5% Tolerance SMD Zener Diodes

FEATURES

- Wide zener voltage range selection: 2.4V to 75V
- VZ tolerance selection of $\pm 5\%$
- Surface device type mountin
- 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

MECHANICAL DATA

- Case: SOD-323F
- Molding compound meets UL 94 V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: $4.02 \pm 0.5\text{mg}$ (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_Z	2.4-75	V
Test current I_{ZT}	5	mA
P_{tot}	200	mW
V_F at $I_F=10\text{mA}$	1	V
T_J Max.	150	$^{\circ}\text{C}$
Package	SOD-323F	
Configuration	Single dice	



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
Total power dissipation	P_{tot}	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	LIMIT	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	Ω	Ω	mA	μA	V
		Min.	Nom.	Max.		Max.	Max.		Max.	
BZT52C2V4S	1C	2.28	2.40	2.52	5	100	564	1	45	1
BZT52C2V7S	1D	2.57	2.70	2.84	5	100	564	1	18	1
BZT52C3V0S	1E	2.85	3.00	3.15	5	100	564	1	9	1
BZT52C3V3S	1F	3.14	3.30	3.47	5	95	564	1	4.5	1
BZT52C3V6S	1H	3.42	3.60	3.78	5	90	564	1	4.5	1
BZT52C3V9S	1J	3.71	3.90	4.10	5	90	564	1	2.7	1
BZT52C4V3S	1K	4.09	4.30	4.52	5	90	564	1	2.7	1
BZT52C4V7S	1M	4.47	4.70	4.94	5	80	470	1	2.7	2.0
BZT52C5V1S	1N	4.85	5.10	5.36	5	60	451	1	1.8	2.0
BZT52C5V6S	1P	5.32	5.60	5.88	5	40	376	1	0.9	2.0
BZT52C6V2S	1R	5.89	6.20	6.51	5	10	141	1	2.7	4.0
BZT52C6V8S	1X	6.46	6.80	7.14	5	15	75	1	1.8	4.0
BZT52C7V5S	1Y	7.11	7.50	7.86	5	15	75	1	0.9	5.0
BZT52C8V2S	1Z	7.79	8.20	8.61	5	15	75	1	0.63	5.0
BZT52C9V1S	2A	8.65	9.10	9.56	5	15	94	1	0.45	6.0
BZT52C10S	2B	9.50	10	10.50	5	20	141	1	0.18	7.0
BZT52C11S	2C	10.45	11	11.55	5	20	141	1	0.09	8.0
BZT52C12S	2D	11.40	12	12.60	5	25	141	1	0.09	8.0
BZT52C13S	2E	12.35	13	13.65	5	30	160	1	0.09	8.0
BZT52C15S	2F	14.25	15	15.75	5	30	188	1	0.045	10.5
BZT52C16S	2H	15.20	16	16.80	5	40	188	1	0.045	11.2
BZT52C18S	2J	17.10	18	18.90	5	45	212	1	0.045	12.6
BZT52C20S	2K	19.00	20	21.00	5	55	212	1	0.045	14.0
BZT52C22S	2M	20.90	22	23.10	5	55	235	1	0.045	15.4
BZT52C24S	2N	22.80	24	25.20	5	70	235	1	0.045	16.8
BZT52C27S	2P	25.65	27	28.35	2	80	282	0.5	0.045	18.9
BZT52C30S	2R	28.50	30	31.50	2	80	282	0.5	0.045	21.0
BZT52C33S	2X	31.35	33	34.65	2	80	306	0.5	0.045	23.0
BZT52C36S	2Y	34.20	36	37.80	2	90	329	0.5	0.045	25.2
BZT52C39S	2Z	37.05	39	40.95	2	130	329	0.5	0.045	27.3
BZT52C43S	3A	40.85	43	45.15	2	150	353	0.5	0.045	30.1
BZT52C47S	3B	44.65	47	49.35	2	170	353	0.5	0.045	33.0
BZT52C51S	3C	48.45	51	53.55	2	180	376	0.5	0.045	35.7
BZT52C56S	3D	53.20	56	58.80	2	200	400	0.5	0.045	39.2
BZT52C62S	3E	58.90	62	65.10	2	215	423	0.5	0.045	43.4
BZT52C68S	3F	64.60	68	71.40	2	240	447	0.5	0.045	47.6
BZT52C75S	3H	71.25	75	78.75	2	255	470	0.5	0.045	52.5

Notes:

1. The Zener Voltage (V_Z) is tested under pulse condition of 10ms.
2. The device numbers listed have a standard tolerance on the normal zener voltage of $\pm 5\%$.
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} .

ORDERING INFORMATION

PART NO.	PACKING CODE	PACKING CODE SUFFIX(*)	PACKAGE	PACKING
BZT52CXXXS (Note 1)	RR	G	SOD-323F	3K / 7" Reel
	R9			10K / 13" Reel

Notes:

1. "xxx" defines voltage from 2.4V (BZT52C2V4S) to 75V (BZT52C75S)

*: optional available

EXAMPLE

EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
BZT52C2V4S RRG	BZT52C2V4S	RR	G	Green compound

CHARACTERISTICS CURVES

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

Fig.1 Typical Forward Characteristics

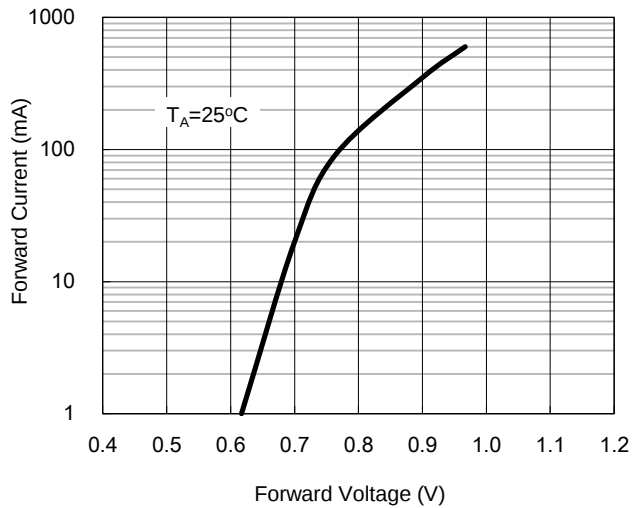


Fig. 2 Zener Breakdown Characteristics

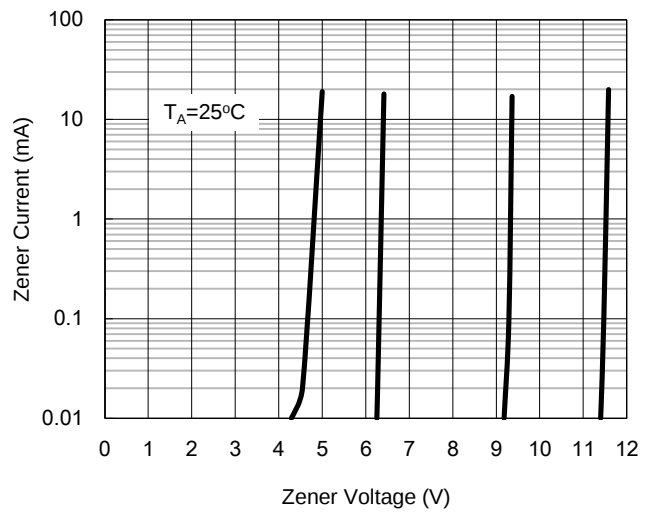


Fig. 3 Zener Breakdown Characteristics

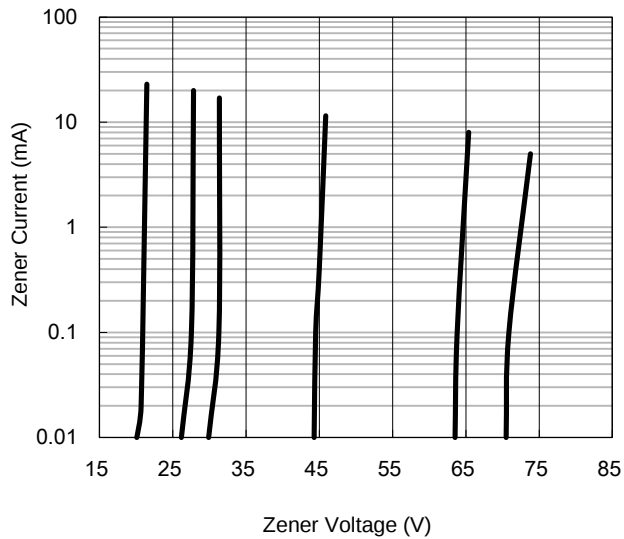
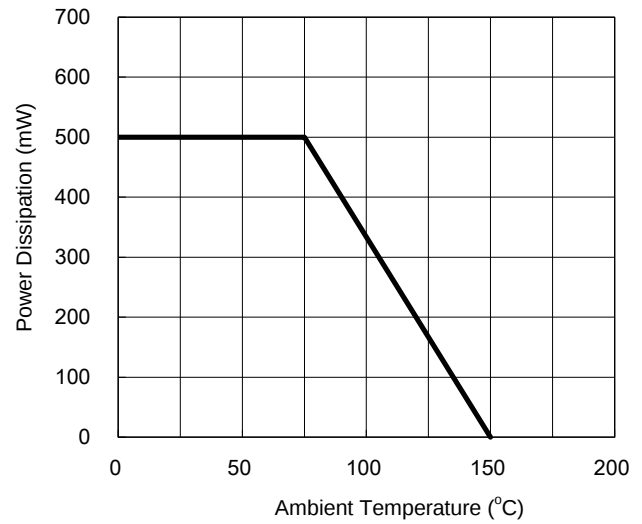


Fig.4 Power Dissipation Curve



CHARACTERISTICS CURVES

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

Fig.5 Typical Capacitance

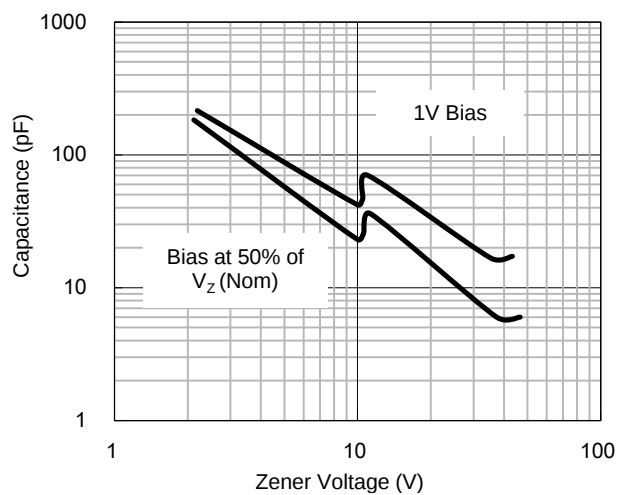
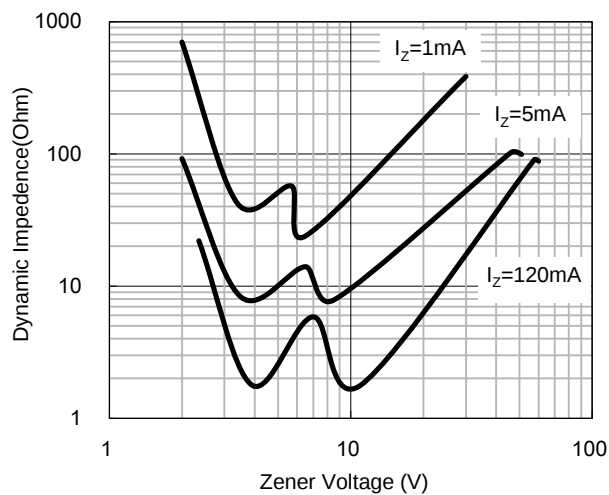
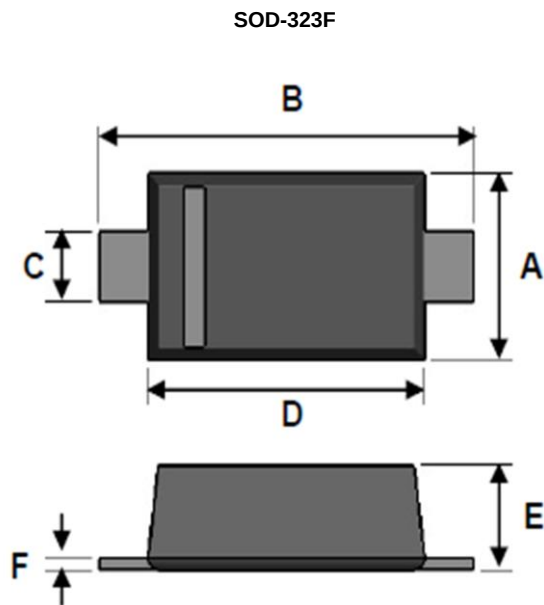


Fig.6 Effect of Zener Voltage on Impedance

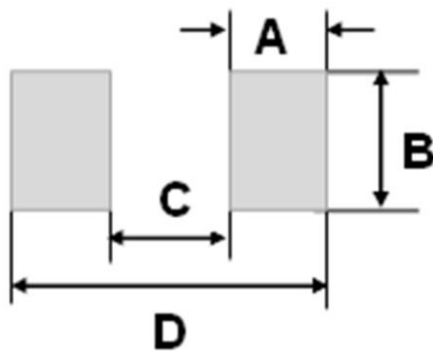


PACKAGE OUTLINE DIMENSION



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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