

Small Signal Product

**500mW, 2% Tolerance SMD Zener Diode**

FEATURES

- Wide zener voltage range selection : 2.4V to 75V
- Surface mount device type
- Moisture sensitivity level 1
- Pb free and RoHS compliant
- $V_Z$  Tolerance Selection of  $\pm 2\%$
- Matte tin (Sn) lead finish with Nickel (Ni) under plate
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



SOD-123F



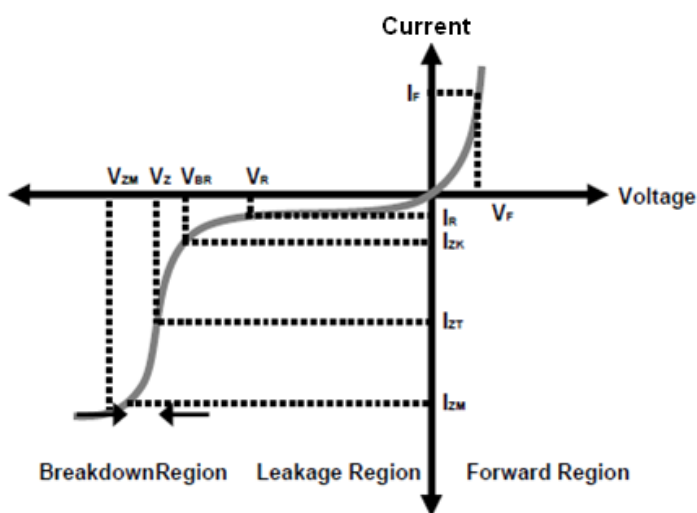
MECHANICAL DATA

- Case: Flat lead SOD-123 small outline plastic package
- Terminal: Matte tin plated, lead free, solderable per MIL-STD-202, Method 208 guaranteed
- High temperature soldering guaranteed: 260°C/10s
- Polarity: Indicated by cathode band
- Weight : 8.85 ± 0.5mg

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Forward voltage @ I <sub>F</sub> = 10mA	V <sub>F</sub>	1	V
Power dissipation	P <sub>D</sub>	500	mW
Thermal resistance from junction to ambient (Note 1)	R <sub>θJA</sub>	350	°C/W
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>STG</sub>	- 65 to +150	°C

Notes: 1. Valid provided that electrodes are kept at ambient temperature

ZENER I vs. V CHARACTERISTICS



- V<sub>BR</sub> : Voltage at I<sub>ZK</sub>
- I<sub>ZK</sub> : Test current for voltage V<sub>BR</sub>
- Z<sub>ZK</sub> : Dynamic impedance at I<sub>ZK</sub>
- I<sub>ZT</sub> : Test current for voltage V<sub>Z</sub>
- V<sub>Z</sub> : Voltage at current I<sub>ZT</sub>
- Z<sub>ZT</sub> : Dynamic impedance at I<sub>ZT</sub>
- I<sub>ZM</sub> : Maximum steady state current
- V<sub>ZM</sub> : Voltage at I<sub>ZM</sub>

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ELECTRICAL CHARACTERISTICS

(Ratings at  $T_A=25^\circ\text{C}$  ambient temperature unless otherwise specified,  
and  $V_F$  Forward Voltage = 1V Maximum @  $I_F = 10\text{ mA}$  for all part numbers)

Device type	Marking code	Zener voltage range				Maximum zener impedance			Maximum reverse current	
		$V_Z @ I_{ZT}$			$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R$	$V_R$
		Min (V)	Nom (V)	Max (V)	mA	Ohm		mA	$\mu\text{A}$	V
BZT52B2V4	2V4B	2.35	2.40	2.45	5	100	564	1	45	1
BZT52B2V7	2V7B	2.65	2.70	2.75	5	100	564	1	18	1
BZT52B3V0	3V0B	2.94	3.00	3.06	5	100	564	1	9	1
BZT52B3V3	3V3B	3.23	3.30	3.37	5	95	564	1	4.5	1
BZT52B3V6	3V6B	3.53	3.60	3.67	5	90	564	1	4.5	1
BZT52B3V9	3V9B	3.82	3.90	3.98	5	90	564	1	2.7	1
BZT52B4V3	4V3B	4.21	4.30	4.39	5	90	564	1	2.7	1
BZT52B4V7	4V7B	4.61	4.70	4.79	5	80	470	1	2.7	2.0
BZT52B5V1	5V1B	5.00	5.10	5.20	5	60	451	1	1.8	2.0
BZT52B5V6	5V6B	5.49	5.60	5.71	5	40	376	1	0.9	2.0
BZT52B6V2	6V2B	6.08	6.20	6.32	5	10	141	1	2.7	4.0
BZT52B6V8	6V8B	6.66	6.80	6.94	5	15	75	1	1.8	4.0
BZT52B7V5	7V5B	7.35	7.50	7.65	5	15	75	1	0.9	5.0
BZT52B8V2	8V2B	8.04	8.20	8.36	5	15	75	1	0.63	5.0
BZT52B9V1	9V1B	8.92	9.10	9.28	5	15	94	1	0.45	6.0
BZT52B10	10VB	9.80	10.00	10.20	5	20	141	1	0.18	7.0
BZT52B11	11VB	10.78	11.00	11.22	5	20	141	1	0.09	8.0
BZT52B12	12VB	11.76	12.00	12.24	5	25	141	1	0.09	8.0
BZT52B13	13VB	12.74	13.00	13.26	5	30	160	1	0.09	8.0
BZT52B15	15VB	14.70	15.00	15.30	5	30	188	1	0.045	10.5
BZT52B16	16VB	15.68	16.00	16.32	5	40	188	1	0.045	11.2
BZT52B18	18VB	17.64	18.00	18.36	5	45	212	1	0.045	12.6
BZT52B20	20VB	19.60	20.00	20.40	5	55	212	1	0.045	14.0
BZT52B22	22VB	21.56	22.00	22.44	5	55	235	1	0.045	15.4
BZT52B24	24VB	23.52	24.00	24.48	5	70	235	1	0.045	16.8
BZT52B27	27VB	26.46	27.00	27.54	2	80	282	0.5	0.045	18.9
BZT52B30	30VB	29.40	30.00	30.60	2	80	282	0.5	0.045	21.0
BZT52B33	33VB	32.34	33.00	33.66	2	80	306	0.5	0.045	23.0
BZT52B36	36VB	35.28	36.00	36.72	2	90	329	0.5	0.045	25.2
BZT52B39	39VB	38.22	39.00	39.78	2	130	329	0.5	0.045	27.3
BZT52B43	43VB	42.14	43.00	43.86	2	150	353	0.5	0.045	30.1
BZT52B47	47VB	46.06	47.00	47.94	2	170	353	0.5	0.045	33.0
BZT52B51	51VB	49.98	51.00	52.02	2	180	376	0.5	0.045	35.7
BZT52B56	56VB	54.88	56.00	57.12	2	200	400	0.5	0.045	39.2
BZT52B62	62VB	60.76	62.00	63.24	2	215	423	0.5	0.045	43.4
BZT52B68	68VB	66.64	68.00	69.36	2	240	447	0.5	0.045	47.6
BZT52B75	75VB	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 10ms.
  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 is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

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RATINGS AND CHARACTERISTICS CURVES

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

Fig. 1 Typical Forward Characteristics

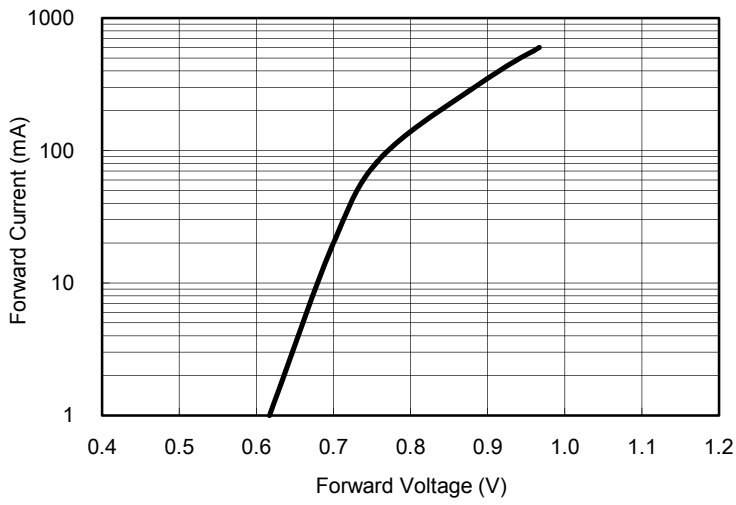


Fig. 2 Zener Breakdown Characteristics

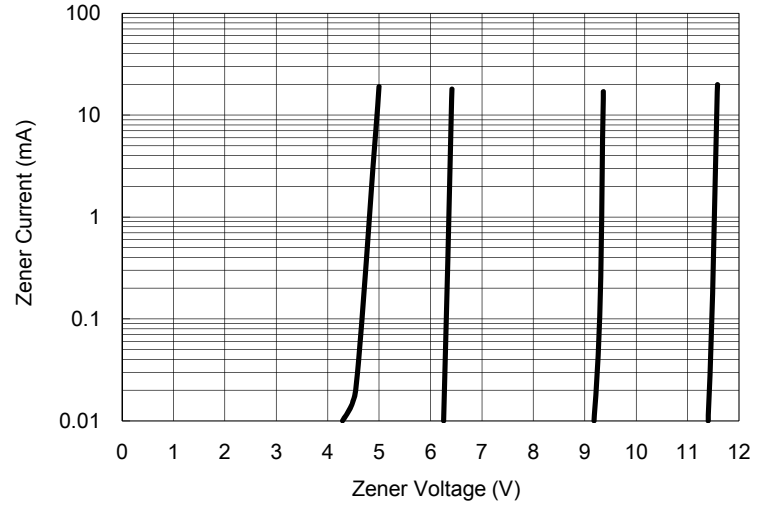


Fig. 3 Zener Breakdown Characteristics

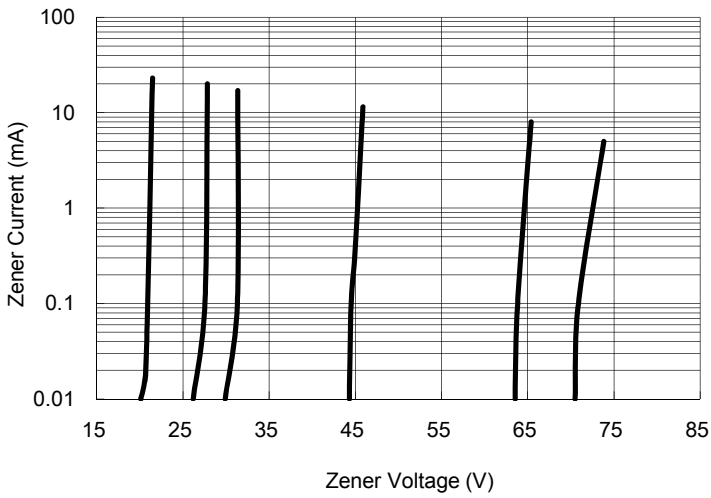


Fig. 4 Admissible Power Dissipation Curve

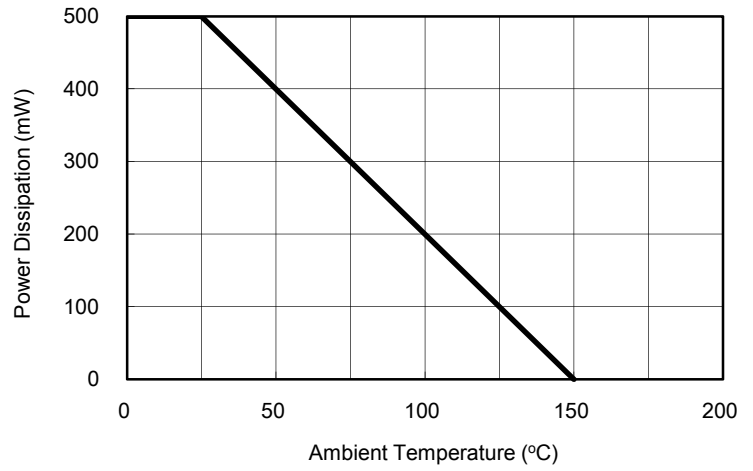


Fig. 5 Typical Capacitance

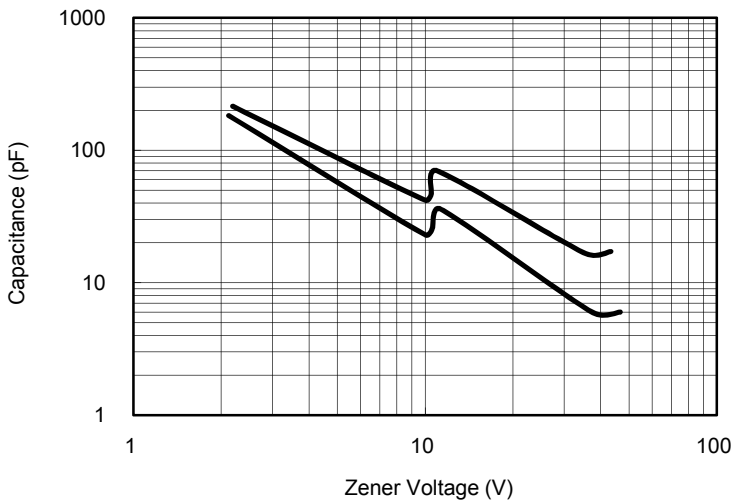
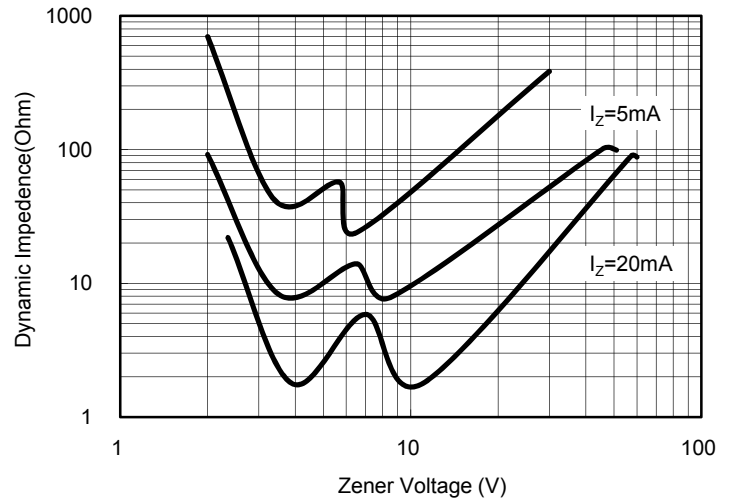


Fig. 6 Effect of Zener Voltage on Impedance



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**ORDERING INFORMATION**

PART NO.	PACKING CODE	PACKING CODE SUFFIX (*)	PACKAGE	PACKING
BZT52Bxxx (Note 1)	RH	G	SOD-123F	3K / 7" Reel

Note 1: "xxx" is device code from "2V4" - "75", detail could follow the previous page

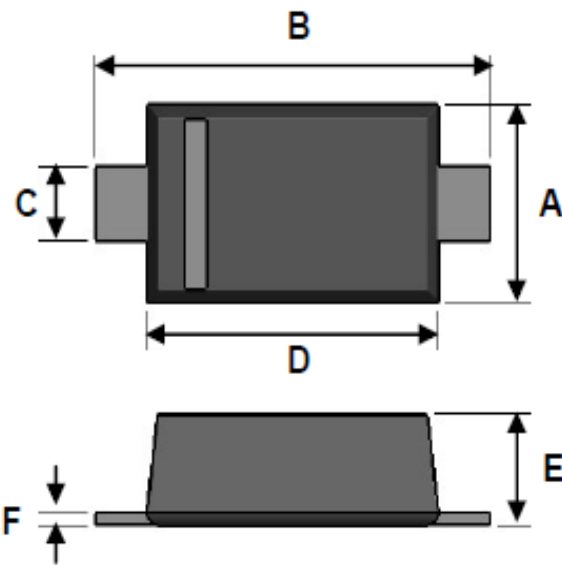
\*: Optional available, packing code with suffix "G" means green compound (halogen free)

**EXAMPLE**

EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
BZT52B2V4 RHG	BZT52B2V4	RH	G	Green compound

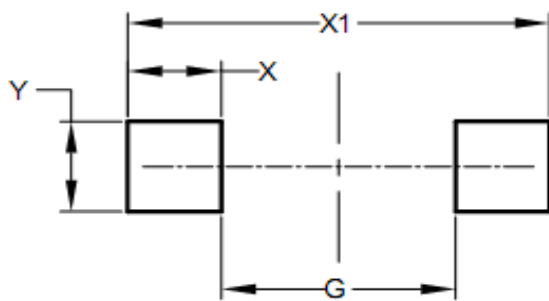
DIMENSIONS

**SOD-123F**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.50	1.70	0.059	0.067
B	3.30	3.90	0.130	0.154
C	0.50	0.70	0.020	0.028
D	2.50	2.70	0.098	0.106
E	0.80	1.15	0.031	0.045
F	0.05	0.20	0.002	0.008

SUGGESTED PAD LAYOUT



DIM.	Unit (mm)	Unit (inch)
	Typ.	Typ.
G	2.50	0.098
X	0.80	0.031
X1	4.10	0.161
Y	0.80	0.031

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