

## 500mW, 5% Tolerance SMD Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.4V to 75V
- $V_Z$  tolerance selection of  $\pm 5\%$
- Surface mounting device (SMD) type
- 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

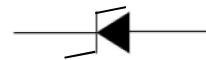
### APPLICATIONS

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

### MECHANICAL DATA

- Case: SOD-123F
- 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:  $8.85 \pm 0.5\text{mg}$  (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	2.4-75	V
Test current $I_{ZT}$	5	mA
$P_D$	500	mW
$V_F$ at $I_F=10\text{mA}$	1	V
$T_J$ Max.	150	$^{\circ}\text{C}$
Package	SOD-123F	
Configuration	Single die	



### 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	$P_D$	500	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	$R_{\theta JA}$	350	$^{\circ}\text{C/W}$

**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.	
BZT52C2V4	2V4Z	2.28	2.40	2.52	5	100	564	1	45	1.0
BZT52C2V7	2V7Z	2.57	2.70	2.84	5	100	564	1	18	1.0
BZT52C3V0	3V0Z	2.85	3.00	3.15	5	100	564	1	9	1.0
BZT52C3V3	3V3Z	3.14	3.30	3.47	5	95	564	1	4.5	1.0
BZT52C3V6	3V6Z	3.42	3.60	3.78	5	90	564	1	4.5	1.0
BZT52C3V9	3V9Z	3.71	3.90	4.10	5	90	564	1	2.7	1.0
BZT52C4V3	4V3Z	4.09	4.30	4.52	5	90	564	1	2.7	1.0
BZT52C4V7	4V7Z	4.47	4.70	4.94	5	80	470	1	2.7	2.0
BZT52C5V1	5V1Z	4.85	5.10	5.36	5	60	451	1	1.8	2.0
BZT52C5V6	5V6Z	5.32	5.60	5.88	5	40	376	1	0.9	2.0
BZT52C6V2	6V2Z	5.89	6.20	6.51	5	10	141	1	2.7	4.0
BZT52C6V8	6V8Z	6.46	6.80	7.14	5	15	75	1	1.8	4.0
BZT52C7V5	7V5Z	7.11	7.50	7.86	5	15	75	1	0.9	5.0
BZT52C8V2	8V2Z	7.79	8.20	8.61	5	15	75	1	0.63	5.0
BZT52C9V1	9V1Z	8.65	9.10	9.56	5	15	94	1	0.45	6.0
BZT52C10	10VZ	9.50	10.00	10.50	5	20	141	1	0.18	7.0
BZT52C11	11VZ	10.45	11.00	11.55	5	20	141	1	0.09	8.0
BZT52C12	12VZ	11.40	12.00	12.60	5	25	141	1	0.09	8.0
BZT52C13	13VZ	12.35	13.00	13.65	5	30	160	1	0.09	8.0
BZT52C15	15VZ	14.25	15.00	15.75	5	30	188	1	0.045	10.5
BZT52C16	16VZ	15.20	16.00	16.80	5	40	188	1	0.045	11.2
BZT52C18	18VZ	17.10	18.00	18.90	5	45	212	1	0.045	12.6
BZT52C20	20VZ	19.00	20.00	21.00	5	55	212	1	0.045	14.0
BZT52C22	22VZ	20.90	22.00	23.10	5	55	235	1	0.045	15.4
BZT52C24	24VZ	22.80	24.00	25.20	5	70	235	1	0.045	16.8
BZT52C27	27VZ	25.65	27.00	28.35	2	80	282	0.5	0.045	18.9
BZT52C30	30VZ	28.50	30.00	31.50	2	80	282	0.5	0.045	21.0
BZT52C33	33VZ	31.35	33.00	34.65	2	80	306	0.5	0.045	23.0
BZT52C36	36VZ	34.20	36.00	37.80	2	90	329	0.5	0.045	25.2
BZT52C39	39VZ	37.05	39.00	40.95	2	130	329	0.5	0.045	27.3
BZT52C43	43VZ	40.85	43.00	45.15	2	150	353	0.5	0.045	30.1
BZT52C47	47VZ	44.65	47.00	49.35	2	170	353	0.5	0.045	33.0
BZT52C51	51VZ	48.45	51.00	53.55	2	180	376	0.5	0.045	35.7
BZT52C56	56VZ	53.20	56.00	58.80	2	200	400	0.5	0.045	39.2
BZT52C62	62VZ	58.90	62.00	65.10	2	215	423	0.5	0.045	43.4
BZT52C68	68VZ	64.60	68.00	71.40	2	240	447	0.5	0.045	47.6
BZT52C75	75VZ	71.25	75.00	78.75	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  $\pm 5\%$ .
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 a 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>
BZT52Cxxx RHG	SOD-123F	3K / 7" Reel
BZT52Cxxx RH	SOD-123F	3K / 7" Reel

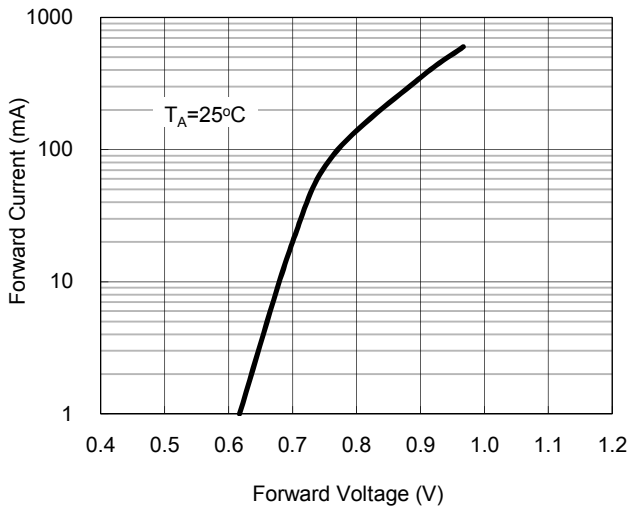
**Note:**

1. "xxx" defines voltage from 2.4V (BZT52C2V4) to 75V (BZT52C75)

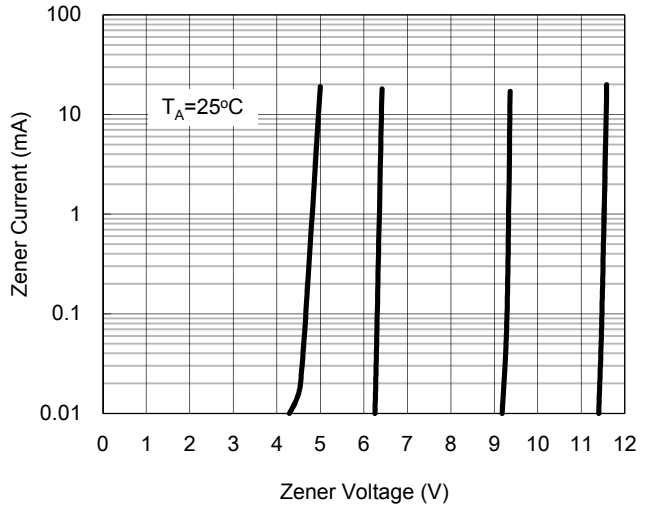
**CHARACTERISTICS CURVES**

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

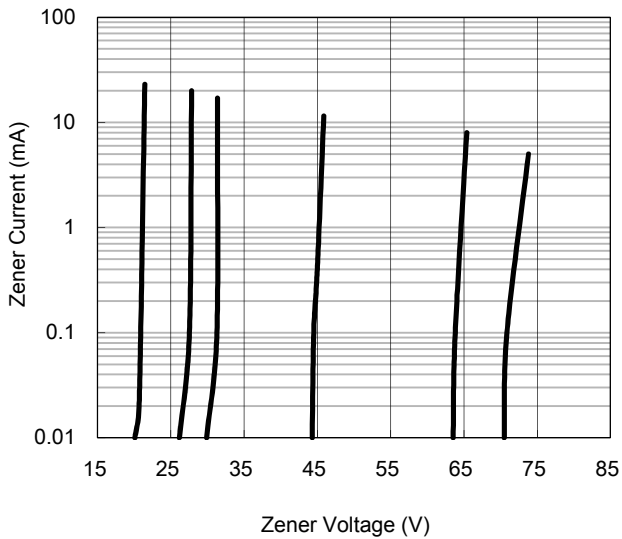
**Fig.1 Typical Forward Characteristics**



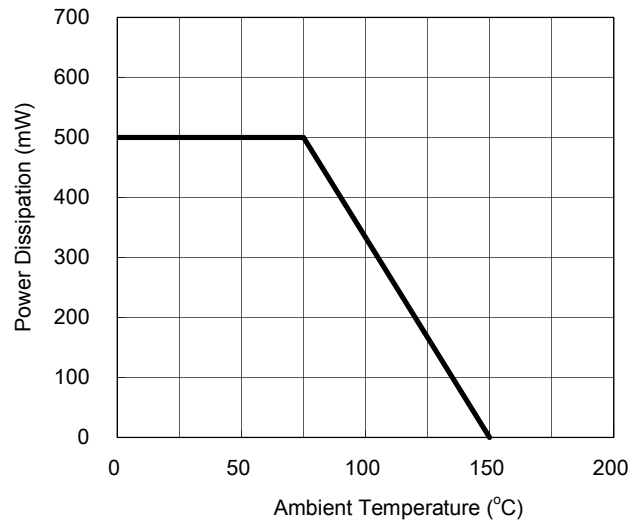
**Fig. 2 Zener Breakdown Characteristics**



**Fig. 3 Zener Breakdown Characteristics**



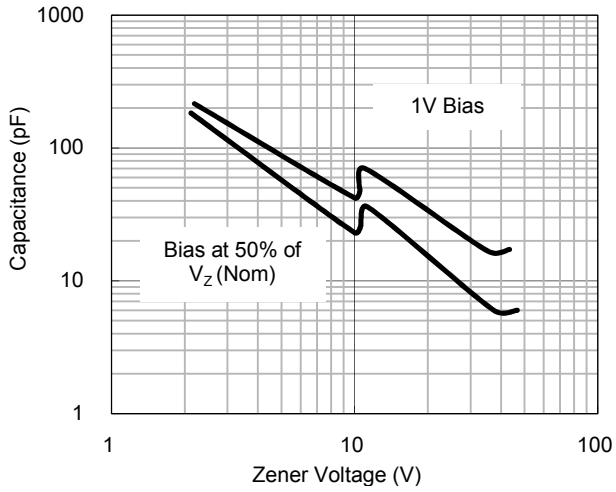
**Fig.4 Power Dissipation Curve**



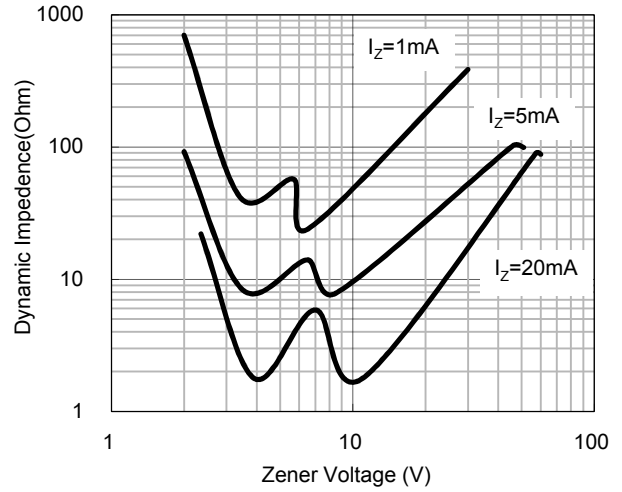
**CHARACTERISTICS CURVES**

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

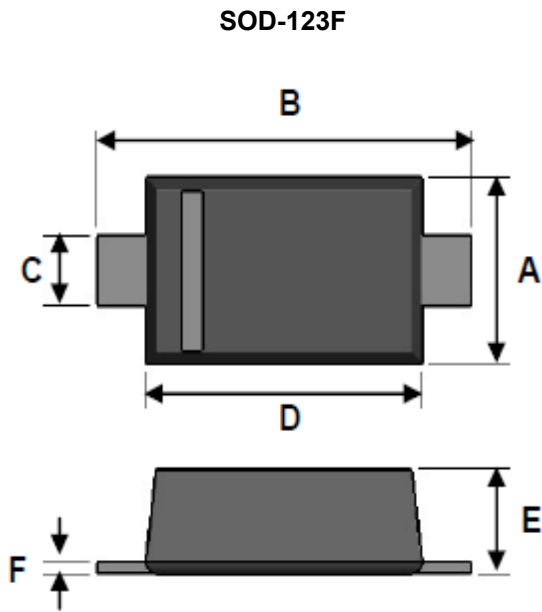
**Fig.5 Typical Capacitance**



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

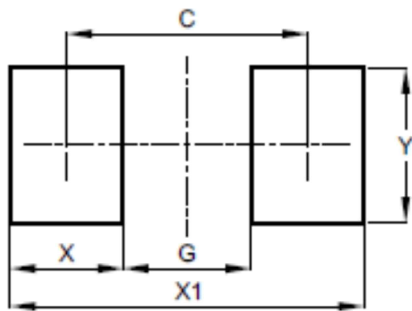


**PACKAGE OUTLINE DIMENSION**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.50	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

**SUGGEST PAD LAYOUT**



DIM.	Unit (mm)	Unit (inch)
	Min	Min
C	2.86	0.113
G	1.52	0.060
X	1.34	0.053
X1	4.20	0.165
Y	1.80	0.071

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.