

# Surface Mount Zener Diode

## BZT52C Series

• **Electrical Characteristics @ T<sub>A</sub>=25** unless otherwise specified

500mW, SOD-123

Type Number	Marking Code	Zener Voltage Range (Note 2)				Maximum Zener Impedance (Note 3)			Maximum Reverse Current (Note 2)		Temperature Coefficient of Zener Voltage @ I <sub>ZT</sub> = 5 mA mV /	
		V <sub>Z</sub>			@I <sub>ZT</sub>	Z <sub>ZT</sub> @I <sub>ZT</sub>	Z <sub>ZK</sub> @I <sub>ZK</sub>		I <sub>R</sub>	V <sub>R</sub>	Min	Max
		Min	Nom	Max			Ω	Ω				
		V	V	V	mA	Ω	Ω	mA	μA	V	Min	Max
BZT52C2V4	WX	2.2	2.4	2.6	5	100	600	1.0	50	1.0	-3.5	0
BZT52C2V7	W1	2.5	2.7	2.9	5	100	600	1.0	20	1.0	-3.5	0
BZT52C3V0	W2	2.8	3.0	3.2	5	95	600	1.0	10	1.0	-3.5	0
BZT52C3V3	W3	3.1	3.3	3.5	5	95	600	1.0	5	1.0	-3.5	0
BZT52C3V6	W4	3.4	3.6	3.8	5	90	600	1.0	5	1.0	-3.5	0
BZT52C3V9	W5	3.7	3.9	4.1	5	90	600	1.0	3	1.0	-3.5	0
BZT52C4V3	W6	4.0	4.3	4.6	5	90	600	1.0	3	1.0	-3.5	0
BZT52C4V7	W7	4.4	4.7	5.0	5	80	500	1.0	3	2.0	-3.5	0.2
BZT52C5V1	W8	4.8	5.1	5.4	5	60	480	1.0	2	2.0	-2.7	1.2
BZT52C5V6	W9	5.2	5.6	6.0	5	40	400	1.0	1	2.0	-2.0	2.5
BZT52C6V2	WA	5.8	6.2	6.6	5	10	150	1.0	3	4.0	0.4	3.7
BZT52C6V8	WB	6.4	6.8	7.2	5	15	80	1.0	2	4.0	1.2	4.5
BZT52C7V5	WC	7.0	7.5	7.9	5	15	80	1.0	1	5.0	2.5	5.3
BZT52C8V2	WD	7.7	8.2	8.7	5	15	80	1.0	0.7	5.0	3.2	6.2
BZT52C9V1	WE	8.5	9.1	9.6	5	15	100	1.0	0.5	6.0	3.8	7.0
BZT52C10	WF	9.4	10	10.6	5	20	150	1.0	0.2	7.0	4.5	8.0
BZT52C11	WG	10.4	11	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0
BZT52C12	WH	11.4	12	12.7	5	25	150	1.0	0.1	8.0	6.0	10.0
BZT52C13	WI	12.4	13	14.1	5	30	170	1.0	0.1	8.0	7.0	11.0
BZT52C15	WJ	13.8	15	15.6	5	30	200	1.0	0.1	10.5	9.2	13.0
BZT52C16	WK	15.3	16	17.1	5	40	200	1.0	0.1	11.2	10.4	14.0
BZT52C18	WL	16.8	18	19.1	5	45	225	1.0	0.1	12.6	12.4	16.0
BZT52C20	WM	18.8	20	21.2	5	55	225	1.0	0.1	14.0	14.4	18.0
BZT52C22	WN	20.8	22	23.3	5	55	250	1.0	0.1	15.4	16.4	20.0
BZT52C24	WO	22.8	24	25.6	5	70	250	1.0	0.1	16.8	18.4	22.0
BZT52C27	WP	25.1	27	28.9	2	80	300	0.5	0.1	18.9	21.4	25.3
BZT52C30	WQ	28.0	30	32.0	2	80	300	0.5	0.1	21.0	24.4	29.4
BZT52C33	WR	31.0	33	35.0	2	80	325	0.5	0.1	23.1	27.4	33.4
BZT52C36	WS	34.0	36	38.0	2	90	350	0.5	0.1	25.2	30.4	37.4
BZT52C39	WT	37.0	39	41.0	2	130	350	0.5	0.1	27.3	33.4	41.2
BZT52C43	WU	40.0	43	46.0	5	100	700	1.0	0.1	32.0	10.0	12.0
BZT52C47	WV	44.0	47	50.0	5	100	750	1.0	0.1	35.0	10.0	12.0
BZT52C51	WW	48.0	51	54.0	5	100	750	1.0	0.1	38.0	10.0	12.0

Notes:

- Valid provided that device terminals are keep at ambient temperature
- Test with pulses. period = 5 ms, pulse width = 300 μA
- f = 1 K Hz

• **Maximum Ratings @ T<sub>A</sub>=25** unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1), Derate above 25	P <sub>d</sub>	500	mW
Forward Voltage (Note 2) @ I <sub>F</sub> = 10 mA	V <sub>F</sub>	0.9	V
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	305	/ W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 ~ +150	

Notes:

- Device mounted on ceramic PCB; 7.6mm×9.4mm×0.87mm with pad areas 25mm<sup>2</sup>.
- Short duration test pulse used in minimize self-heating effect.
- f = 1 K Hz

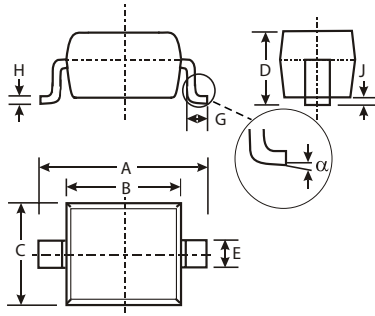
● **Features**

- . RoHS Compliant
- . Standard Zener Breakdown Voltage Range: 2.4V to 51V
- . Steady State Power Rating of 500 mW
- . Small Body Outline Dimensions: 2.70 mm x 1.60 mm
- . Low Body Height: 1.05 mm
- . Package Weight: 10.00 mg / unit
- . ESD Rating of Class 3 ( > 16 KV ) per Human Body Model

● **Mechanical Data**

- . Case: SOD-123, Void-Free, Transfer-Molded Plastic
- . Finish: All External Surfaces are Corrosion Resistant
- . Maximum Case Temperature for Soldering Purpose: 260 for 10 Seconds
- . Polarity: Cathode Indicated by Polarity Band
- . Flammability Rating: UL94V-0
- . Mounting Position: Any

● **Outline**



SOD-123		
Dim	Min	Max
A	3.60	3.80
B	2.60	2.80
C	1.55	1.65
D	1.05 Typical	
E	0.50	0.60
G	0.25	0.45
H	0.10	0.15
J	0.05 Typical	
α	0°	8°
All Dimensions in mm		

• Electrical Characteristic Curves @  $T_A=25$

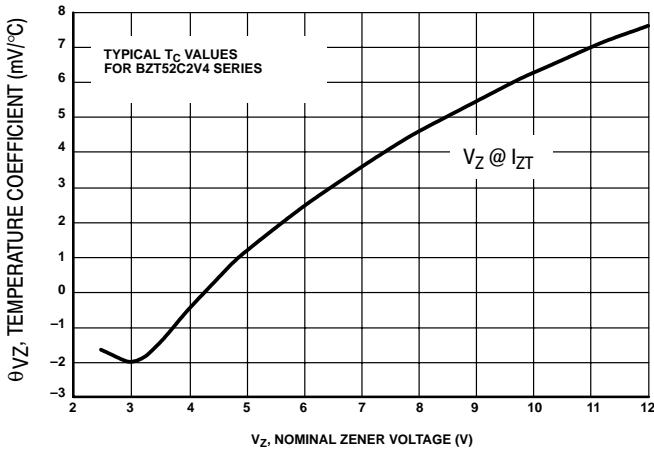


Figure 1. Temperature Coefficients (Temperature Range  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ )

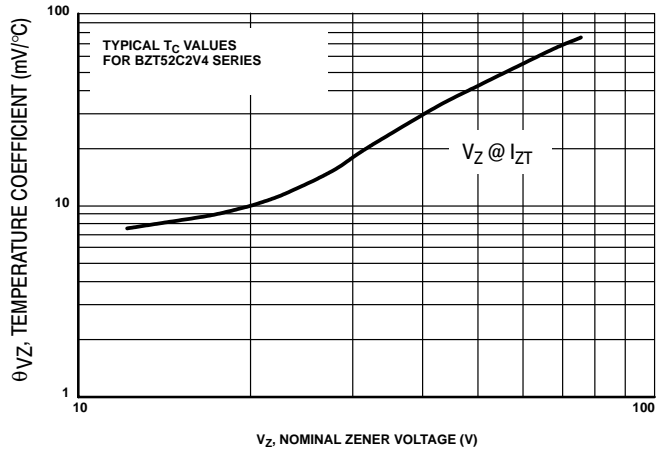


Figure 2. Temperature Coefficients (Temperature Range  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ )

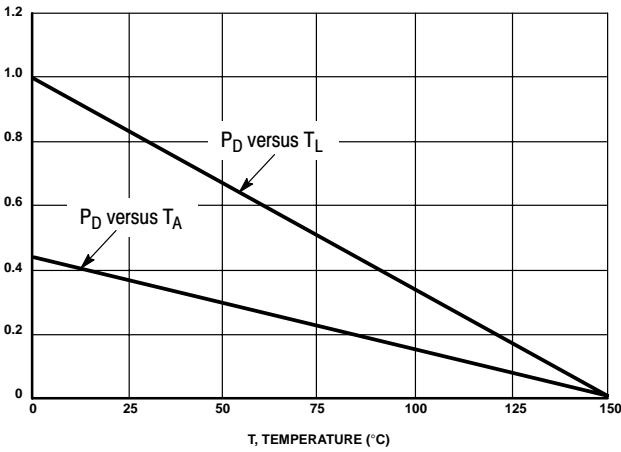


Figure 3. Steady State Power Derating

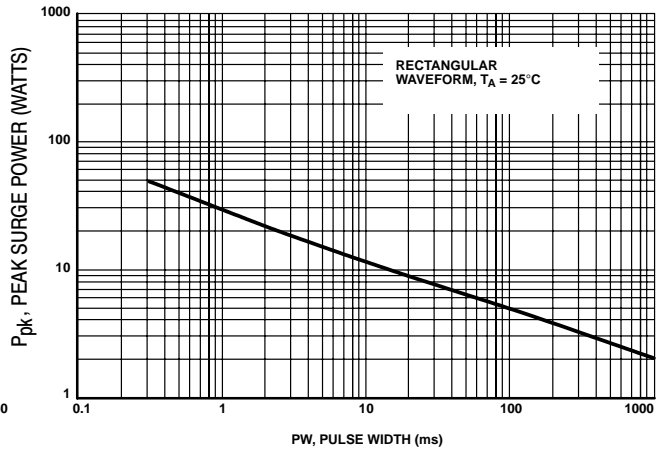


Figure 4. Maximum Nonrepetitive Surge Power

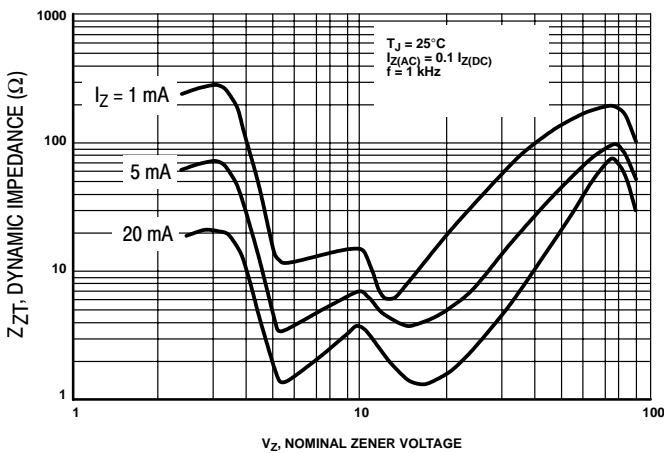


Figure 5. Effect of Zener Voltage on Zener Impedance

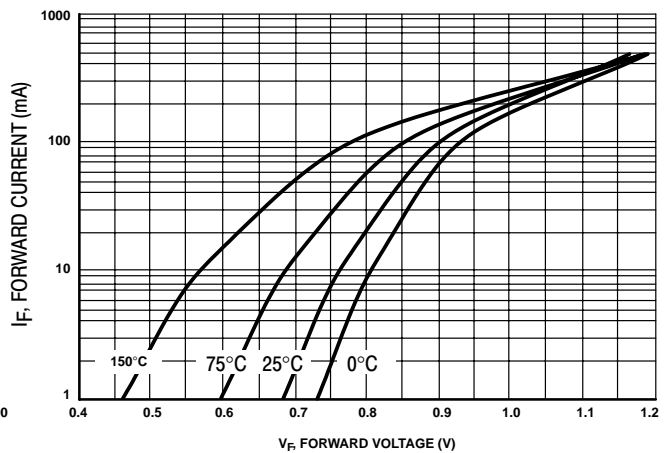


Figure 6. Typical Forward Voltage

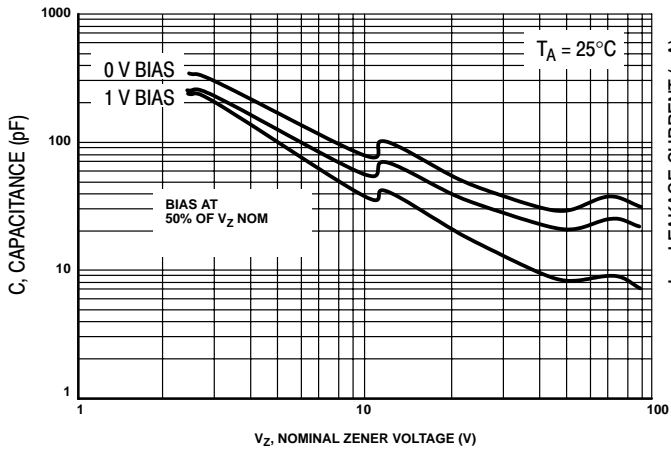


Figure 7. Typical Capacitance

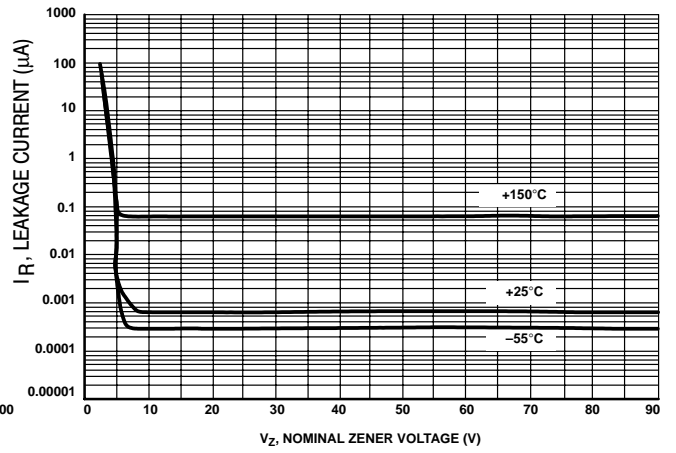


Figure 8. Typical Leakage Current

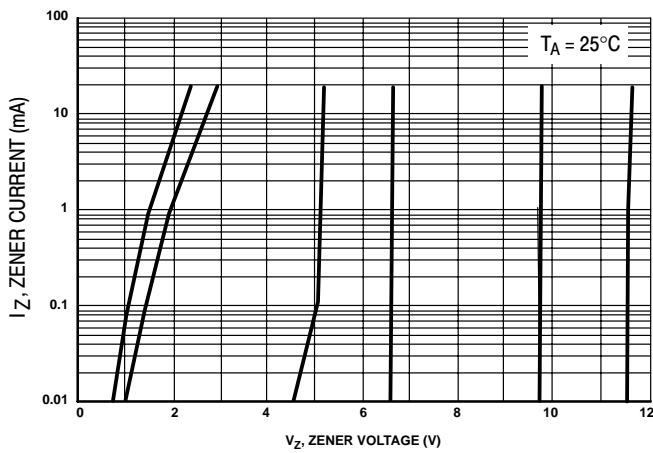


Figure 9. Zener Voltage versus Zener Current ( $V_Z$  Up to 12 V)

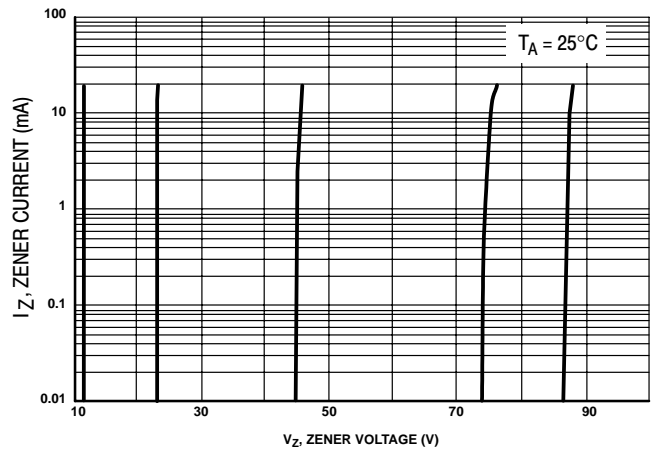


Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)