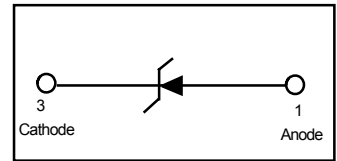
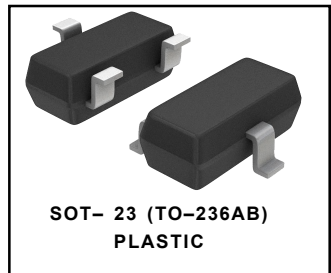


# Zener Voltage Regulator Diodes

- We declare that the material of product compliance with RoHS requirements.

## BZX84C SERIES



### MAXIMUM CASE TEMPERATURE FOR SOLDERING

PURPOSES: 260°C for 10 seconds

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board* $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225	mW
Thermal Resistance Junction to Ambient	$R_{QJA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate,** $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300	mW
Thermal Resistance Junction to Ambient	$R_{QJA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55to+125	$^\circ\text{C}$

\*\*FR-5 = 1.0 x 0.75 x 0.62 in.

\*\*Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

### Ordering Information

Device	Package	Shipping
BZX84C	SOT-23	3000/Tape&Reel

## GENERAL DATA — 225mW SOT-23

### ELECTRICAL CHARACTERISTICS – BZX84C SERIES (STANDARD TOLERANCE)

(Pinout: 1-Anode, 2-No Connection, 3-Cathode) ( $T_A = 25^\circ\text{C}$  unless otherwise noted,  $V_F = 0.90\text{ V Max. @ } I_F = 10\text{ mA}$ )

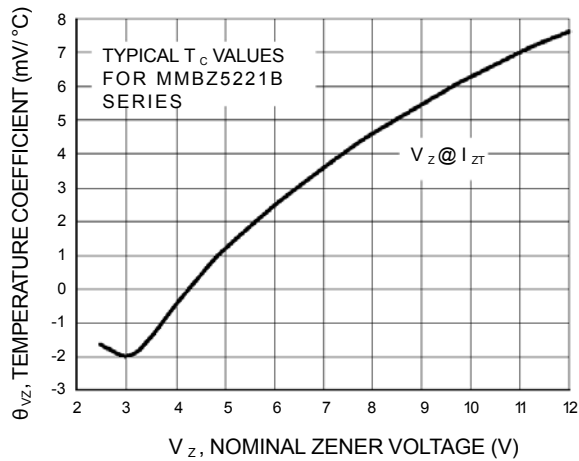
(Devices listed in **bold, italic** are ON Semiconductor Preferred devices.)

Device*	Device Marking	V <sub>Z1</sub> (Volts) @ I <sub>ZT1</sub> = 5 mA (Note 3)			Z <sub>ZT1</sub> (Ω) @ I <sub>ZT1</sub> = 5 mA	V <sub>Z2</sub> (V) @ I <sub>ZT2</sub> = 1 mA (Note 3)		Z <sub>ZT2</sub> (Ω) @ I <sub>ZT2</sub> = 10 mA	V <sub>Z3</sub> (V) @ I <sub>ZT3</sub> = 20 mA (Note 3)		Z <sub>ZT3</sub> (Ω) @ I <sub>ZT3</sub> = 20 mA	Max Reverse Leakage Current		θ <sub>VZ</sub> (mV/k) @ I <sub>ZT1</sub> = 5 mA		C (pF) @ V <sub>R</sub> = 0 f = 1 MHz
		Min	Nom	Max		Min	Max		Min	Max		I <sub>R</sub> (μA)	V <sub>R</sub> (Volts)	Min	Max	
BZX84C2V4	Z11	2.2	2.4	2.6	100	1.7	2.1	600	2.6	3.2	50	50	1	-3.5	0	450
BZX84C2V7	Z12	2.5	2.7	2.9	100	1.9	2.4	600	3	3.6	50	20	1	-3.5	0	450
BZX84C3V0	Z13	2.8	3	3.2	95	2.1	2.7	600	3.3	3.9	50	10	1	-3.5	0	450
BZX84C3V3	Z14	3.1	3.3	3.5	95	2.3	2.9	600	3.6	4.2	40	5	1	-3.5	0	450
BZX84C3V6	Z15	3.4	3.6	3.8	90	2.7	3.3	600	3.9	4.5	40	5	1	-3.5	0	450
BZX84C3V9	Z16	3.7	3.9	4.1	90	2.9	3.5	600	4.1	4.7	30	3	1	-3.5	-2.5	450
BZX84C4V3	W9	4	4.3	4.6	90	3.3	4	600	4.4	5.1	30	3	1	-3.5	0	450
<b>BZX84C4V7</b>	<b>Z1</b>	<b>4.4</b>	<b>4.7</b>	<b>5</b>	<b>80</b>	<b>3.7</b>	<b>4.7</b>	<b>500</b>	<b>4.5</b>	<b>5.4</b>	<b>15</b>	<b>3</b>	<b>2</b>	<b>-3.5</b>	<b>0.2</b>	<b>260</b>
<b>BZX84C5V1</b>	<b>Z2</b>	<b>4.8</b>	<b>5.1</b>	<b>5.4</b>	<b>60</b>	<b>4.2</b>	<b>5.3</b>	<b>480</b>	<b>5</b>	<b>5.9</b>	<b>15</b>	<b>2</b>	<b>2</b>	<b>-2.7</b>	<b>1.2</b>	<b>225</b>
<b>BZX84C5V6</b>	<b>Z3</b>	<b>5.2</b>	<b>5.6</b>	<b>6</b>	<b>40</b>	<b>4.8</b>	<b>6</b>	<b>400</b>	<b>5.2</b>	<b>6.3</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>-2.0</b>	<b>2.5</b>	<b>200</b>
<b>BZX84C6V2</b>	<b>Z4</b>	<b>5.8</b>	<b>6.2</b>	<b>6.6</b>	<b>10</b>	<b>5.6</b>	<b>6.6</b>	<b>150</b>	<b>5.8</b>	<b>6.8</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>0.4</b>	<b>3.7</b>	<b>185</b>
BZX84C6V8	Z5	6.4	6.8	7.2	15	6.3	7.2	80	6.4	7.4	6	2	4	1.2	4.5	155
BZX84C7V5	Z6	7	7.5	7.9	15	6.9	7.9	80	7	8	6	1	5	2.5	5.3	140
BZX84C8V2	Z7	7.7	8.2	8.7	15	7.6	8.7	80	7.7	8.8	6	0.7	5	3.2	6.2	135
BZX84C9V1	Z8	8.5	9.1	9.6	15	8.4	9.6	100	8.5	9.7	8	0.5	6	3.8	7.0	130
BZX84C10	Z9	9.4	10	10.6	20	9.3	10.6	150	9.4	10.7	10	0.2	7	4.5	8.0	130
BZX84C11	Y1	10.4	11	11.6	20	10.2	11.6	150	10.4	11.8	10	0.1	8	5.4	9.0	130
<b>BZX84C12</b>	<b>Y2</b>	<b>11.4</b>	<b>12</b>	<b>12.7</b>	<b>25</b>	<b>11.2</b>	<b>12.7</b>	<b>150</b>	<b>11.4</b>	<b>12.9</b>	<b>10</b>	<b>0.1</b>	<b>8</b>	<b>6.0</b>	<b>10.0</b>	<b>130</b>
BZX84C13	Y3	12.4	13	14.1	30	12.3	14	170	12.5	14.2	15	0.1	8	7.0	11.0	120
BZX84C15	Y4	13.8	15	15.6	30	13.7	15.5	200	13.9	15.7	20	0.05	10.5	9.2	13.0	110
BZX84C16	Y5	15.3	16	17.1	40	15.2	17	200	15.4	17.2	20	0.05	11.2	10.4	14.0	105
<b>BZX84C18</b>	<b>Y6</b>	<b>16.8</b>	<b>18</b>	<b>19.1</b>	<b>45</b>	<b>16.7</b>	<b>19</b>	<b>225</b>	<b>16.9</b>	<b>19.2</b>	<b>20</b>	<b>0.05</b>	<b>12.6</b>	<b>12.4</b>	<b>16.0</b>	<b>100</b>
BZX84C20	Y7	18.8	20	21.2	55	18.7	21.1	225	18.9	21.4	20	0.05	14	14.4	18.0	85
BZX84C22	Y8	20.8	22	23.3	55	20.7	23.2	250	20.9	23.4	25	0.05	15.4	16.4	20.0	85
BZX84C24	Y9	22.8	24	25.6	70	22.7	25.5	250	22.9	25.7	25	0.05	16.8	18.4	22.0	80
Device	Device Marking	V <sub>Z1</sub> Below @ I <sub>ZT1</sub> = 2 mA			Z <sub>ZT1</sub> Below @ I <sub>ZT1</sub> = 2 mA	V <sub>Z2</sub> Below @ I <sub>ZT2</sub> = 0.1 mA		Z <sub>ZT2</sub> Below @ I <sub>ZT2</sub> = 0.5 mA	V <sub>Z3</sub> Below @ I <sub>ZT3</sub> = 10 mA		Z <sub>ZT3</sub> Below @ I <sub>ZT3</sub> = 10 mA	Max Reverse Leakage Current		θ <sub>VZ</sub> (mV/k) Below @ I <sub>ZT1</sub> = 2 mA		C (pF) @ V <sub>R</sub> = 0 f = 1 MHz
		Min	Nom	Max		Min	Max		Min	Max		I <sub>R</sub> (μA)	V <sub>R</sub> (V)	Min	Max	
BZX84C27	Y10	25.1	27	28.9	80	25	28.9	300	25.2	29.3	45	0.05	18.9	21.4	25.3	70
BZX84C30	Y11	28	30	32	80	27.8	32	300	28.1	32.4	50	0.05	21	24.4	29.4	70
BZX84C33	Y12	31	33	35	80	30.8	35	325	31.1	35.4	55	0.05	23.1	27.4	33.4	70
BZX84C36	Y13	34	36	38	90	33.8	38	350	34.1	38.4	60	0.05	25.2	30.4	37.4	70
BZX84C39	Y14	37	39	41	130	36.7	41	350	37.1	41.5	70	0.05	27.3	33.4	41.2	45
BZX84C43	Y15	40	43	46	150	39.7	46	375	40.1	46.5	80	0.05	30.1	37.6	46.6	40
BZX84C47	Y16	44	47	50	170	43.7	50	375	44.1	50.5	90	0.05	32.9	42.0	51.8	40
BZX84C51	Y17	48	51	54	180	47.6	54	400	48.1	54.6	100	0.05	35.7	46.6	57.2	40
BZX84C56	Y18	52	56	60	200	51.5	60	425	52.1	60.8	110	0.05	39.2	52.2	63.8	40
BZX84C62	Y19	58	62	66	215	57.4	66	450	58.2	67	120	0.05	43.4	58.8	71.6	35
BZX84C68	Y20	64	68	72	240	63.4	72	475	64.2	73.2	130	0.05	47.6	65.6	79.8	35
BZX84C75	Y21	70	75	79	255	69.4	79	500	70.3	80.2	140	0.05	52.5	73.4	88.6	35

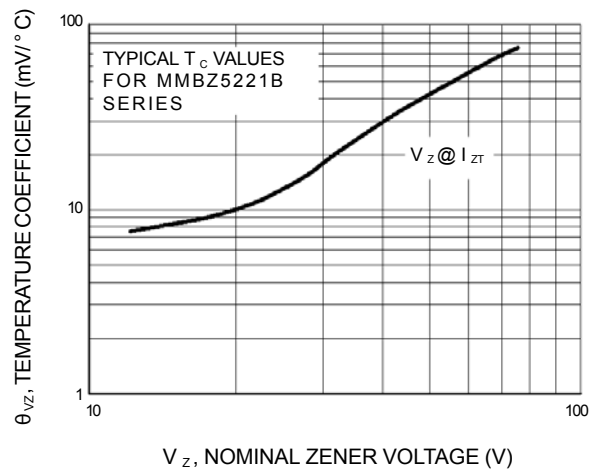
Zener voltage is measured with a pulse test current  $I_Z$  at an ambient temperature of  $25^\circ\text{C}$ .

## GENERAL DATA — 225mW SOT-23

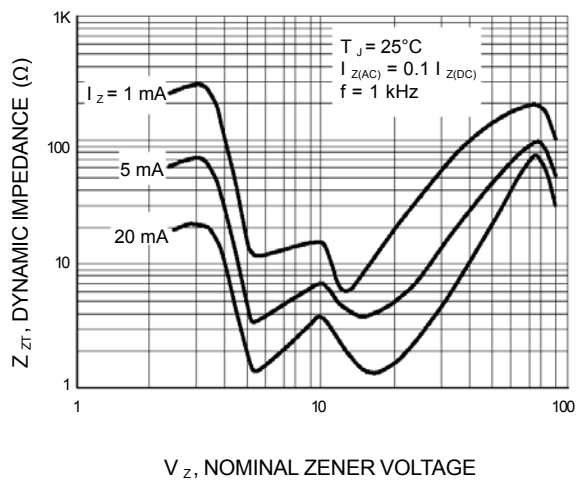
### TYPICAL CHARACTERISTICS



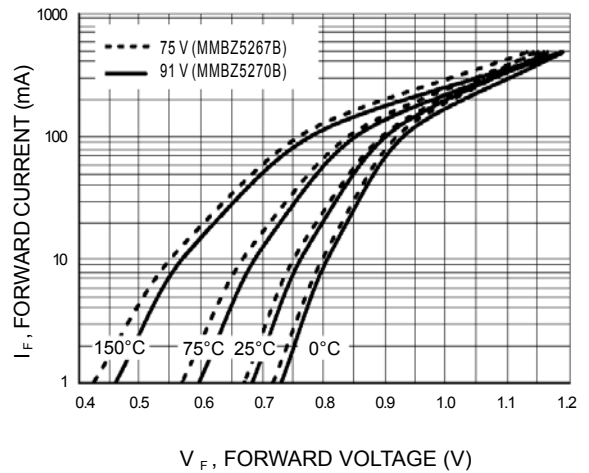
**Figure 1. Temperature Coefficients**  
(Temperature Range  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ )



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



**Figure 3. Effect of Zener Voltage on Zener Impedance**



**Figure 4. Typical Forward Voltage**

## GENERAL DATA — 225mW SOT-23

### TYPICAL CHARACTERISTICS

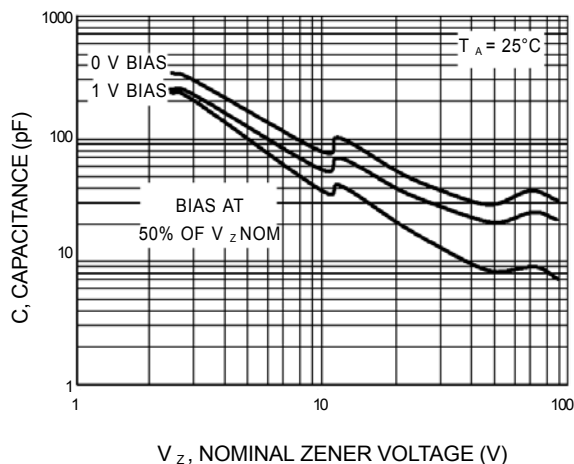


Figure 5. Typical Capacitance

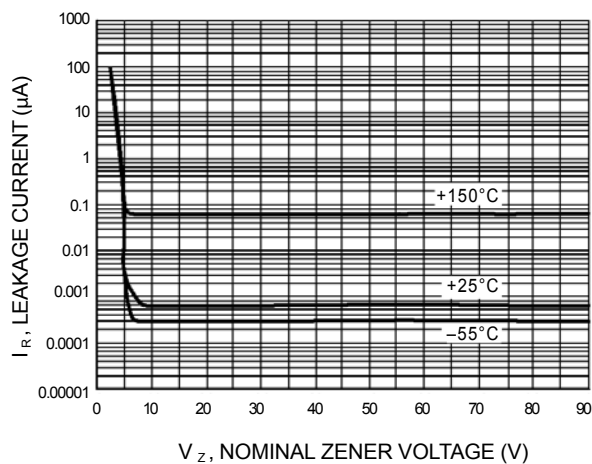


Figure 6. Typical Leakage Current

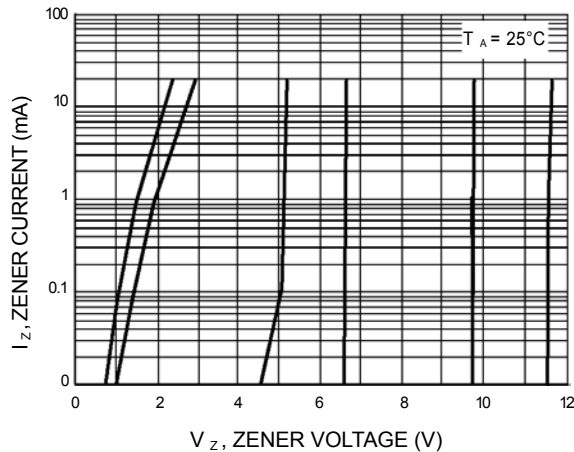


Figure 7. Zener Voltage versus Zener Current ( $V_Z$  Up to 12 V)

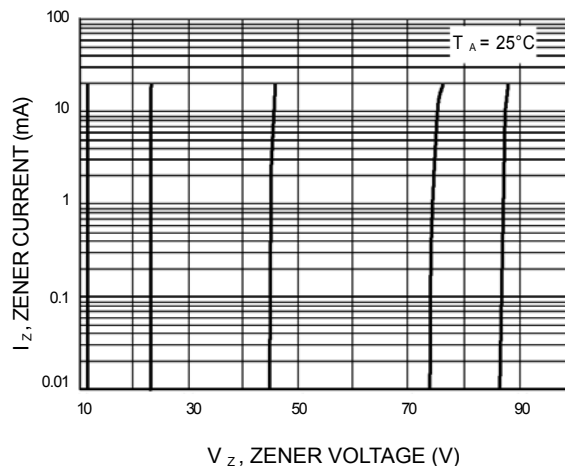
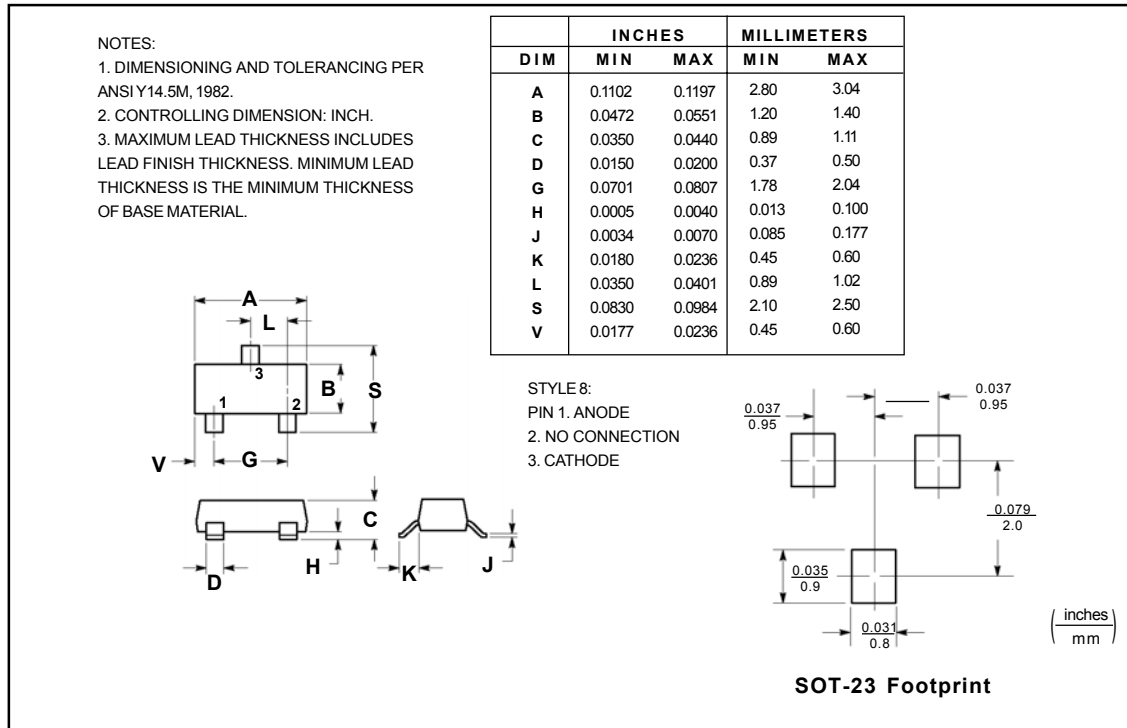


Figure 8. Zener Voltage versus Zener Current (12 V to 91 V)

## GENERAL DATA — 225 mW SOT-23

### Zener Voltage Regulator Diodes — Surface Mounted

#### 225 mW SOT-23



(Refer to Section 10 for Surface Mount, Thermal Data and Footprint Information.)

#### MULTIPLE PACKAGE QUANTITY (MPQ) REQUIREMENTS

Package Option	Type No. Suffix	MPQ (Units)
Tape and Reel	T1	3K