

# SEMICONDUCTOR

## TECHNICAL DATA

225 mW SOT-23

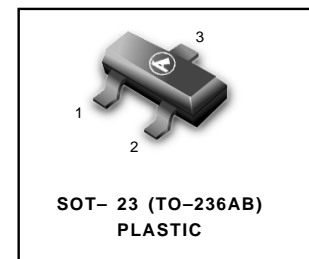
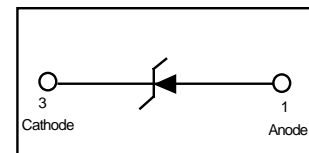
Zener Voltage Regulator Diodes  
**GENERAL DATA APPLICABLE TO ALL  
 SERIES IN THIS GROUP**

**Zener Voltage  
 Regulator Diodes**

**MAXIMUM CASE TEMPERATURE FOR SOLDERING**

**PURPOSES:** 260°C for 10 seconds

**LBZX84C2V4LT1  
 SERIES  
 225mW  
 SOT-23**



### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board* T <sub>A</sub> = 25°C	P <sub>D</sub>	225	mW
Derate above 25°C		1.8	mW/°C
Thermal Resistance Junction to Ambient	R <sub>QJA</sub>	556	°C/W
Total Device Dissipation Alumina Substrate,** T <sub>A</sub> = 25°C	P <sub>D</sub>	300	mW
Derate above 25°C		2.4	mW/°C
Thermal Resistance Junction to Ambient	R <sub>QJA</sub>	417	°C/W
Junction and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	150	°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.

GENERAL DATA — 225mW SOT-23

ELECTRICAL CHARACTERISTICS

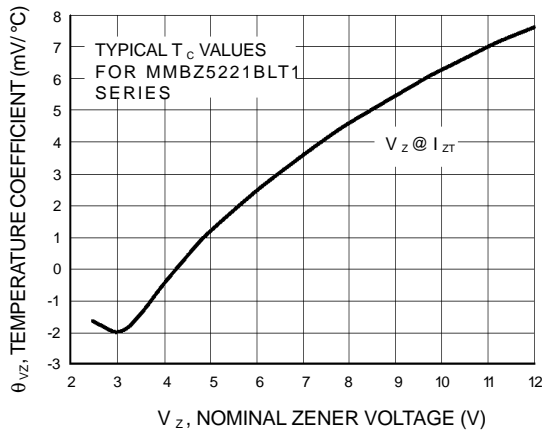
(Pinout: 1-Anode, 2-NC, 3-Cathode) ( $V_F = 0.9V$  Max @  $I_F = 10$  mA for all types)

Type Number	Marking	Zener Voltage $V_{z1}$ (Volts) @ $I_{ZT1}=5mA$ (Note 1)			Max Zener Impedance $Z_{ZT1}$ (Ohms) @ $I_{ZT1}=5mA$	Max Reverse Leakage Current		Zener Voltage $V_{z2}$ (Volts) @ $I_{ZT2}=1mA$ (Note1)		Max Zener Impedance $Z_{ZT2}$ (Ohms) @ $I_{ZT2}=1mA$	Zener Voltage $V_{z3}$ (Volts) @ $I_{ZT3}=20mA$ (Note 1)		Max Zener Impedance $Z_{ZT3}$ (Ohms) @ $I_{ZT3}=20mA$	$d_{vz}/dt$ (mv/k) @ $i_{ZT1}=5mA$		CpF Max @ $VR=0$ f=1MHz
		Nom	Min	Max		$I_R$ @ $V_R$ $\mu A$	Volts	Min	Max		Min	Max		Min	Max	
LBZX84C2V4LT1	Z11	2.4	2.2	2.6	100	50	1	1.7	2.1	600	2.6	3.2	50	-3.5	0	450
LBZX84C2V7LT1	Z12	2.7	2.5	2.9	100	20	1	1.9	2.4	600	3	3.6	50	-3.5	0	450
LBZX84C3V0LT1	Z13	3	2.8	3.2	95	10	1	2.1	2.7	600	3.3	3.9	50	-3.5	0	450
LBZX84C3V3LT1	Z14	3.3	3.1	3.5	95	5	1	2.3	2.9	600	3.6	4.2	40	-3.5	0	450
LBZX84C3V6LT1	Z15	3.6	3.4	3.8	90	5	1	2.7	3.3	600	3.9	4.5	40	-3.5	0	450
LBZX84C3V9LT1	Z16	3.9	3.7	4.1	90	3	1	2.9	3.5	600	4.1	4.7	30	-3.5	-2.5	450
LBZX84C4V3LT1	W9	4.3	4	4.6	90	3	1	3.3	4	600	4.4	5.1	30	-3.5	0	450
LBZX84C4V7LT1	Z1	4.7	4.4	5	80	3	2	3.7	4.7	500	4.5	5.4	15	-3.5	0.2	260
LBZX84C5V1LT1	Z2	5.1	4.8	5.4	60	2	2	4.2	5.3	480	5	5.9	15	-2.7	1.2	225
LBZX84C5V6LT1	Z3	5.6	5.2	6	40	1	2	4.8	6	400	5.2	6.3	10	-2.0	2.5	200
LBZX84C6V2LT1	Z4	6.2	5.8	6.6	10	3	4	5.6	6.6	150	5.8	6.8	6	0.4	3.7	185
LBZX84C6V8LT1	Z5	6.8	6.4	7.2	15	2	4	6.3	7.2	80	6.4	7.4	6	1.2	4.5	155
LBZX84C7V5LT1	Z6	7.5	7	7.9	15	1	5	6.9	7.9	80	7	8	6	2.5	5.3	140
LBZX84C8V2LT1	Z7	8.2	7.7	8.7	15	0.7	5	7.6	8.7	80	7.7	8.8	6	3.2	6.2	135
LBZX84C9V1LT1	Z8	9.1	8.5	9.6	15	0.5	6	8.4	9.6	100	8.5	9.7	8	3.8	7.0	130
LBZX84C10LT1	Z9	10	9.4	10.6	20	0.2	7	9.3	10.6	150	9.4	10.7	10	4.5	8.0	130
LBZX84C11LT1	Y1	11	10.4	11.6	20	0.1	8	10.2	11.6	150	10.4	11.8	10	5.4	9.0	130
LBZX84C12LT1	Y2	12	11.4	12.7	25	0.1	8	11.2	12.7	150	11.4	12.9	10	6.0	10.0	130
LBZX84C13LT1	Y3	13	12.4	14.1	30	0.1	8	12.3	14	170	12.5	14.2	15	7.0	11.0	120
LBZX84C15LT1	Y4	15	13.8	15.6	30	0.05	10.5	13.7	15.5	200	13.9	15.7	20	9.2	13.0	110
LBZX84C16LT1	Y5	16	15.3	17.1	40	0.05	11.2	15.2	17	200	15.4	17.2	20	10.4	14.0	105
LBZX84C18LT1	Y6	18	16.8	19.1	45	0.05	12.6	16.7	19	225	16.9	19.2	20	12.4	16.0	100
LBZX84C20LT1	Y7	20	18.8	21.2	55	0.05	14	18.7	21.1	225	18.9	21.4	20	14.4	18.0	85
LBZX84C22LT1	Y8	22	20.8	23.3	55	0.05	15.4	20.7	23.2	250	20.9	23.4	25	16.4	20.0	85
LBZX84C24LT1	Y9	24	22.8	25.6	70	0.05	16.8	22.7	25.5	250	22.9	25.7	25	18.4	22.0	80
LBZX84C27LT1	Y10	27	25.1	28.9	80	0.05	18.9	25	28.9	300	25.2	29.3	45	21.4	25.3	70
LBZX84C30LT1	Y11	30	28	32	80	0.05	21	27.8	32	300	28.1	32.4	50	24.4	29.4	70
LBZX84C33LT1	Y12	33	31	35	80	0.05	23.1	30.8	35	325	31.1	35.4	55	27.4	33.4	70
LBZX84C36LT1	Y13	36	34	38	90	0.05	25.2	33.8	38	350	34.1	38.4	60	30.4	37.4	70
LBZX84C39LT1	Y14	39	37	41	130	0.05	27.3	36.7	41	350	37.1	41.5	70	33.4	41.2	45
LBZX84C43LT1	Y15	43	40	46	150	0.05	30.1	39.7	46	375	40.1	46.5	80	37.6	46.6	40
LBZX84C47LT1	Y16	47	44	50	170	0.05	32.9	43.7	50	375	44.1	50.5	90	42.0	51.8	40
LBZX84C51LT1	Y17	51	48	54	180	0.05	35.7	47.6	54	400	48.1	54.6	100	46.6	57.2	40
LBZX84C56LT1	Y18	56	52	60	200	0.05	39.2	51.5	60	425	52.1	60.8	110	52.2	63.8	40
LBZX84C62LT1	Y19	62	58	66	215	0.05	43.4	57.4	66	450	58.2	67	120	58.8	71.6	35
LBZX84C68LT1	Y20	68	64	72	240	0.05	47.6	63.4	72	475	64.2	73.2	130	65.6	79.8	35
LBZX84C75LT1	Y21	75	70	79	255	0.05	52.5	69.4	79	500	70.3	80.2	140	73.4	88.6	35

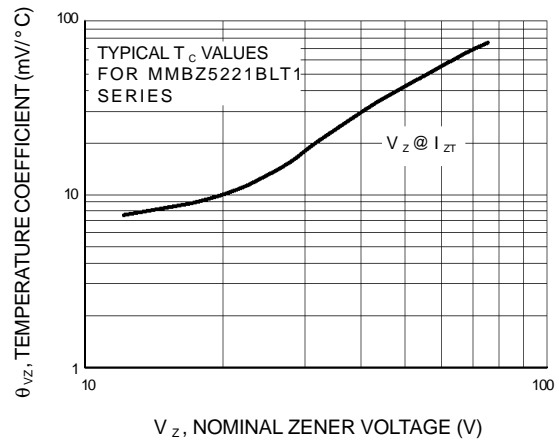
- NOTES: 1. Zener voltage is measured with a pulse test current ( $I_z$ ) applied at an ambient temperature of 25°C.  
 2. The zener impedance,  $Z_{ZT2}$ , for the 27 through 75 volt types is tested at 0.5 mA rather than the test current of 0.1 mA used for  $V_{z2}$ .

GENERAL DATA — 225mW SOT-23

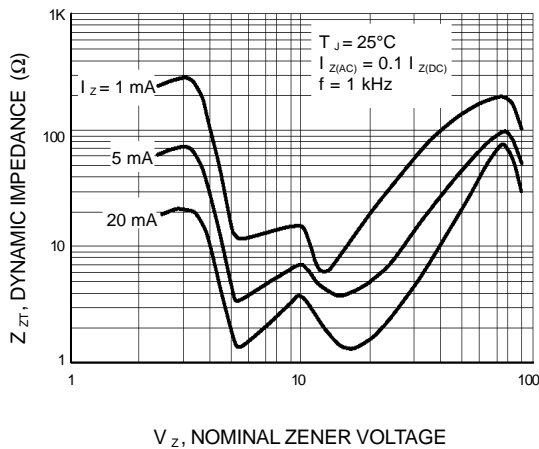
TYPICAL CHARACTERISTICS



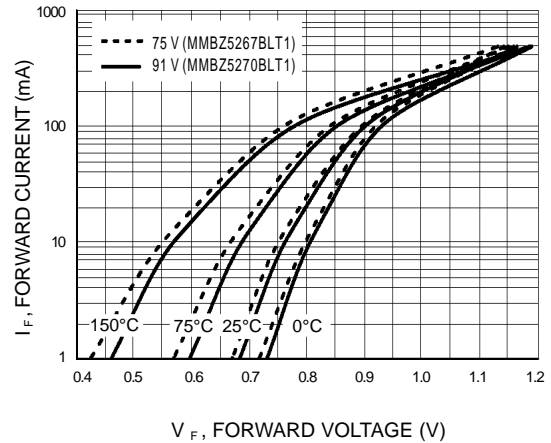
**Figure 1. Temperature Coefficients**  
(Temperature Range -55°C to +150°C)



**Figure 2. Temperature Coefficients**  
(Temperature Range -55°C to +150°C)



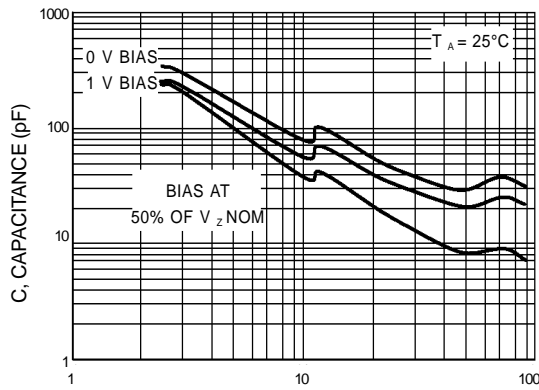
**Figure 3. Effect of Zener Voltage on Zener Impedance**



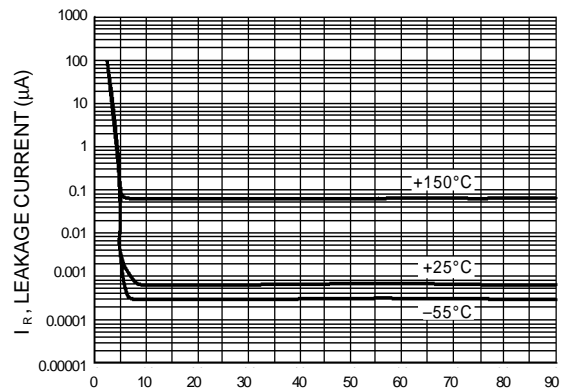
**Figure 4. Typical Forward Voltage**

GENERAL DATA — 225mW SOT-23

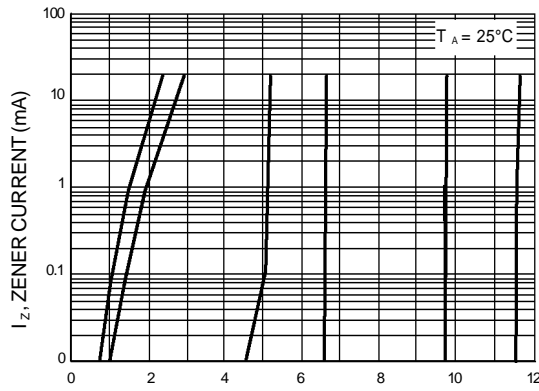
TYPICAL CHARACTERISTICS



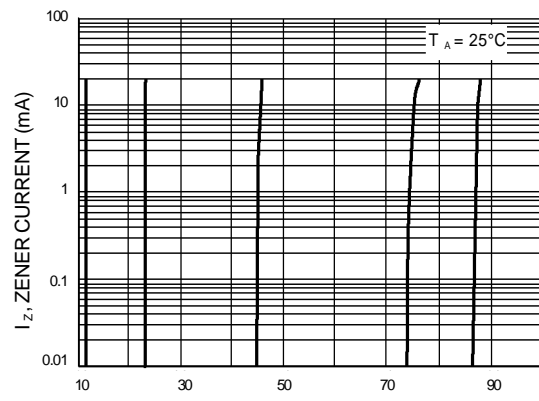
$V_Z$ , NOMINAL ZENER VOLTAGE (V)  
Figure 5. Typical Capacitance



$V_Z$ , NOMINAL ZENER VOLTAGE (V)  
Figure 6. Typical Leakage Current



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



$V_Z$ , ZENER VOLTAGE (V)  
Figure 8. Zener Voltage versus Zener Current  
(12 V to 91 V)

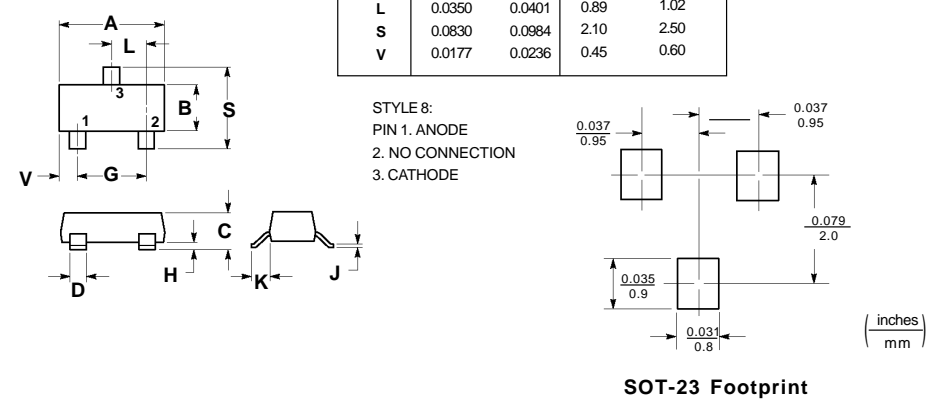
GENERAL DATA — 225 mW SOT-23

Zener Voltage Regulator Diodes — Surface Mounted

225 mW SOT-23

NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.  
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0180	0.0236	0.45	0.60
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.0984	2.10	2.50
V	0.0177	0.0236	0.45	0.60



STYLE 8:  
 PIN 1. ANODE  
 2. NO CONNECTION  
 3. CATHODE

SOT-23 Footprint

(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
Tape and Ammo	T3	10K

(Refer to Section 10 for more information on Packaging Specifications.)