

BZX84CxxxET1G Series, SZBZX84CxxxET1G Series

Zener Voltage Regulators

225 mW SOT-23 Surface Mount

This series of Zener diodes is offered in the convenient, surface mount plastic SOT-23 package. These devices are designed to provide voltage regulation with minimum space requirement. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

Specification Features

- 225 mW Rating on FR-4 or FR-5 Board
- Zener Breakdown Voltage Range – 2.4 V to 75 V
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- Peak Power – 225 W (8 X 20 μ s)
- AEC-Q101 Qualified and PPAP Capable
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- Pb-Free Packages are Available*

Mechanical Characteristics

CASE: Void-free, transfer-molded, thermosetting plastic case

FINISH: Corrosion resistant finish, easily solderable

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:

260°C for 10 Seconds

POLARITY: Cathode indicated by polarity band

FLAMMABILITY RATING: UL 94 V-0

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Peak Power Dissipation @ 20 μ s (Note 1) @ $T_L \leq 25^\circ\text{C}$	P_{pk}	225	W
Total Power Dissipation on FR-5 Board, (Note 2) @ $T_A = 25^\circ\text{C}$ Derated above 25°C	P_D	225 1.8	mW $\text{mW}/^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Power Dissipation on Alumina Substrate, (Note 3) @ $T_A = 25^\circ\text{C}$ Derated above 25°C	P_D	300 2.4	mW $\text{mW}/^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

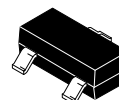
1. Nonrepetitive current pulse per Figure 9.
2. FR-5 = 1.0 X 0.75 X 0.62 in.
3. Alumina = 0.4 X 0.3 X 0.024 in, 99.5% alumina.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

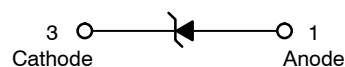


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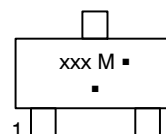
<http://onsemi.com>



**SOT-23
CASE 318
STYLE 8**



MARKING DIAGRAM



xxx = Device Code
M = Date Code*
▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

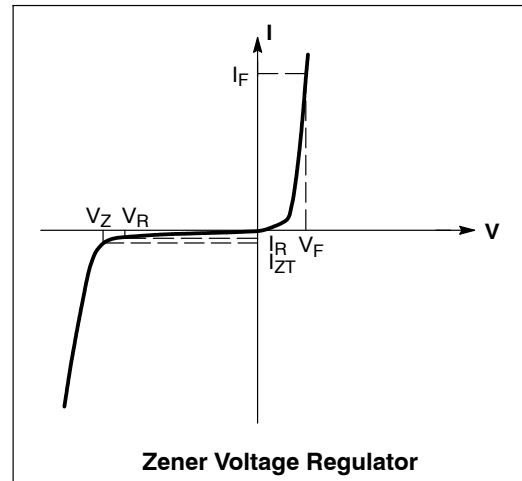
Device	Package	Shipping†
BZX84CxxxET1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
SZBZX84CxxxET1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
BZX84CxxxET3G	SOT-23 (Pb-Free)	

BZX84CxxxET1G Series, SZBZX84CxxxET1G Series

ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F
ΘV_Z	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$



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ELECTRICAL CHARACTERISTICS

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

Device*	Device Marking	V _{Z1} (V) @ I _{ZT1} = 5 mA (Note 4)			Z _{VT1} (Ω) @ I _{ZT1} = 5 mA	V _{Z2} (V) @ I _{ZT2} = 1 mA (Note 4)		Z _{VT2} (Ω) @ I _{ZT2} = 1 mA	V _{Z3} (V) @ I _{ZT3} = 20 mA (Note 4)		Z _{VT3} (Ω) @ I _{ZT3} = 20 mA	Max Reverse Leakage Current I _R @ V _R (V) μA		θ _{VZ} (mV/k) @ I _{ZT1} = 5 mA		C (pF) @ V _R = 0 f = 1 MHz
		Min	Nom	Max		Min	Max		Min	Max		I _R	V _R	Min	Max	
BZX84C2V4ET1G	BA1	2.2	2.4	2.6	100	1.7	2.1	600	2.6	3.2	50	50	1.0	-3.5	0	450
BZX84C2V7ET1G	BA2	2.5	2.7	2.9	100	1.9	2.4	600	3.0	3.6	50	20	1.0	-3.5	0	450
BZX84C3V0ET1G	BA3	2.8	3.0	3.2	95	2.1	2.7	600	3.3	3.9	50	10	1.0	-3.5	0	450
BZX84C3V3ET1G	BA4	3.1	3.3	3.5	95	2.3	2.9	600	3.6	4.2	40	5.0	1.0	-3.5	0	450
BZX84C3V6ET1G	BA5	3.4	3.6	3.8	90	2.7	3.3	600	3.9	4.5	40	5.0	1.0	-3.5	0	450
BZX84C3V9ET1G	BA6	3.7	3.9	4.1	90	2.9	3.5	600	4.1	4.7	30	3.0	1.0	-3.5	-2.5	450
BZX84C4V3ET1G	BA7	4.0	4.3	4.6	90	3.3	4.0	600	4.4	5.1	30	3.0	1.0	-3.5	0	450
BZX84C4V7ET1G	BA9	4.4	4.7	5.0	80	3.7	4.7	500	4.5	5.4	15	3.0	2.0	-3.5	0.2	260
BZX84C5V1ET1G	BB1	4.8	5.1	5.4	60	4.2	5.3	480	5.0	5.9	15	2.0	2.0	-2.7	1.2	225
BZX84C5V6ET1G	BB2	5.2	5.6	6.0	40	4.8	6.0	400	5.2	6.3	10	1.0	2.0	-2	2.5	200
BZX84C6V2ET1G	BB3	5.8	6.2	6.6	10	5.6	6.6	150	5.8	6.8	6	3.0	4.0	0.4	3.7	185
BZX84C6V8ET1G	BB4	6.4	6.8	7.2	15	6.3	7.2	80	6.4	7.4	6	2.0	4.0	1.2	4.5	155
BZX84C7V5ET1G	BB5	7.0	7.5	7.9	15	6.9	7.9	80	7.0	8.0	6					

TYPICAL CHARACTERISTICS

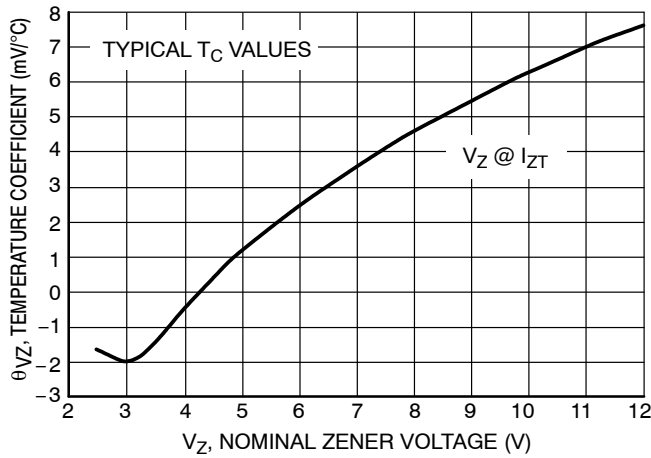


Figure 1. Temperature Coefficients
(Temperature Range -55°C to +150°C)

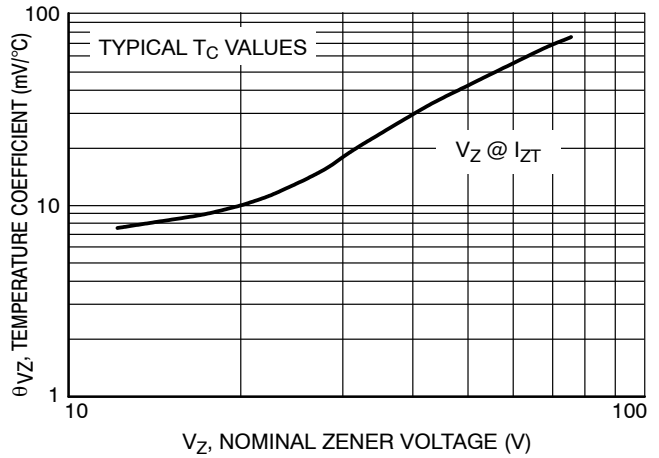


Figure 2. Temperature Coefficients
(Temperature Range -55°C to +150°C)

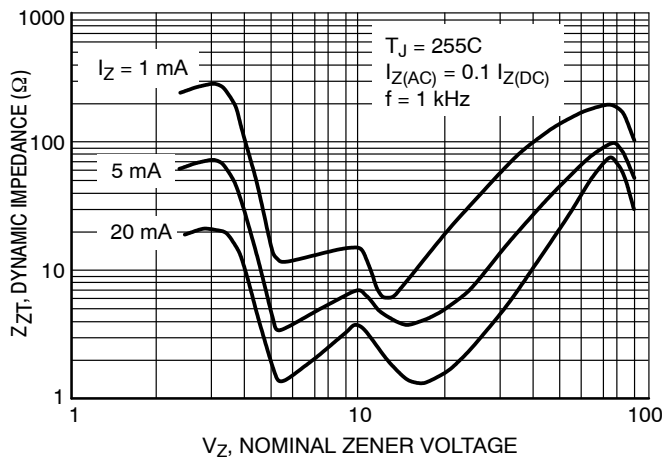


Figure 3. Effect of Zener Voltage on
Zener Impedance

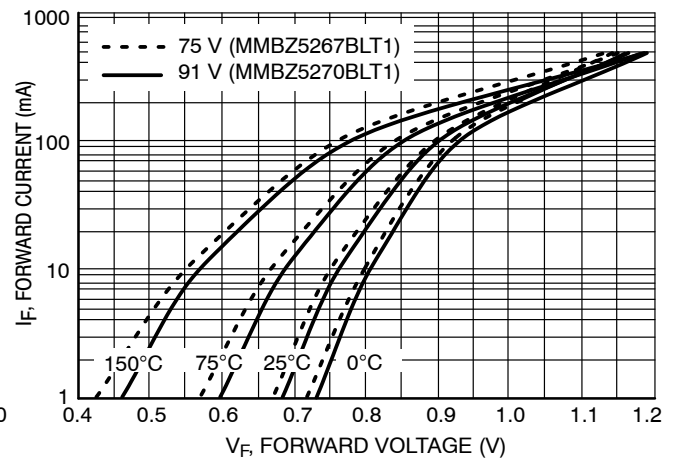


Figure 4. Typical Forward Voltage

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TYPICAL CHARACTERISTICS

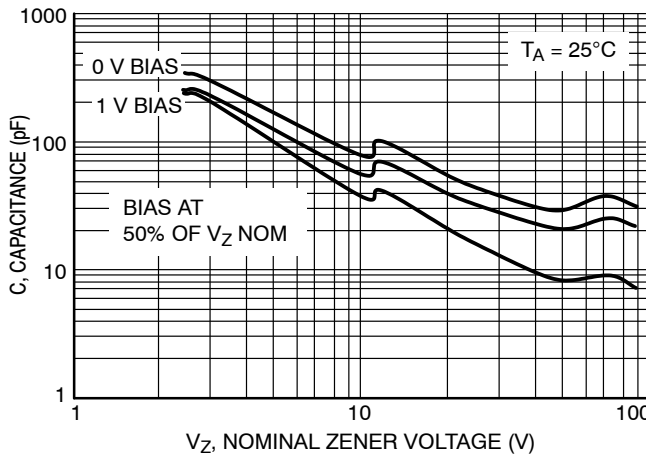


Figure 5. Typical Capacitance

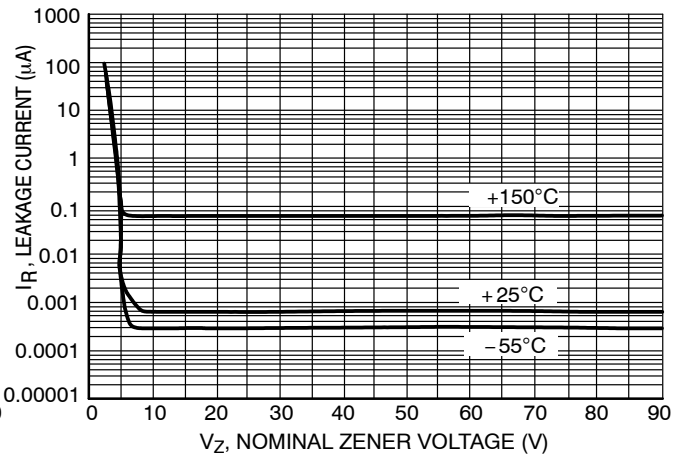


Figure 6. Typical Leakage Current

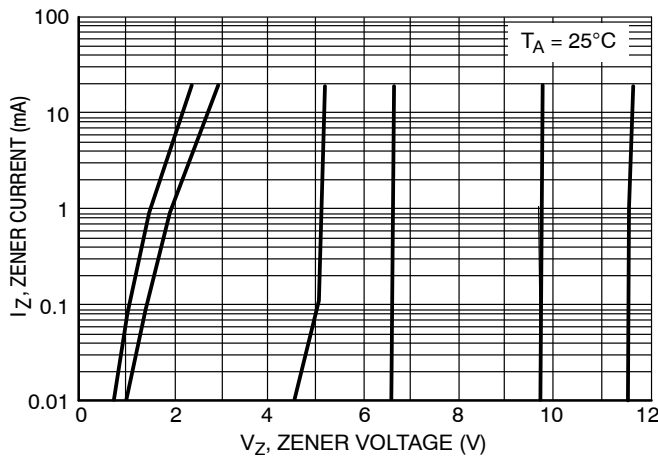


Figure 7. Zener Voltage versus Zener Current (V_Z Up to 12 V)

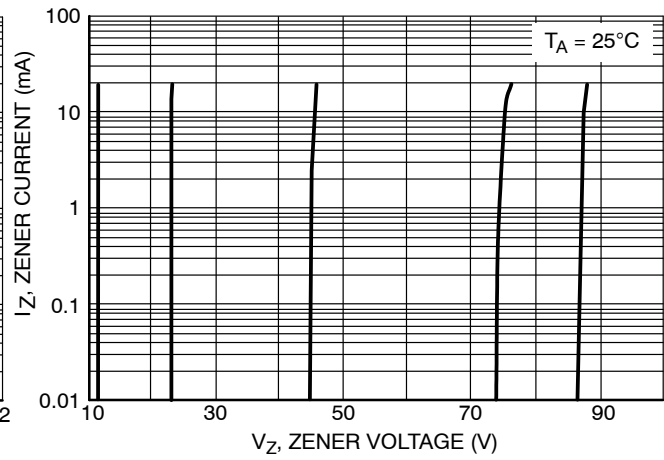


Figure 8. Zener Voltage versus Zener Current (12 V to 91 V)

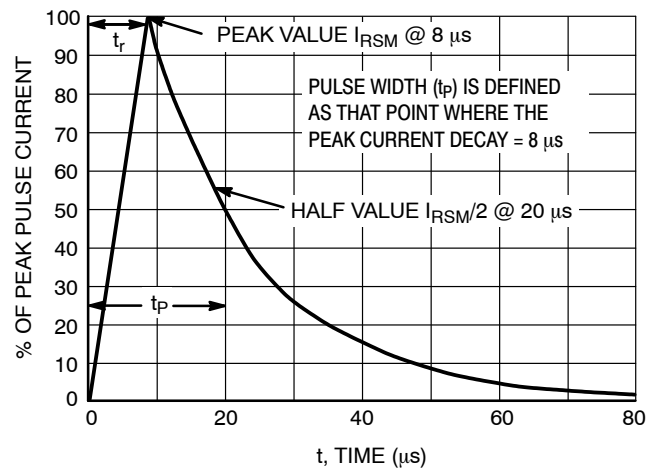
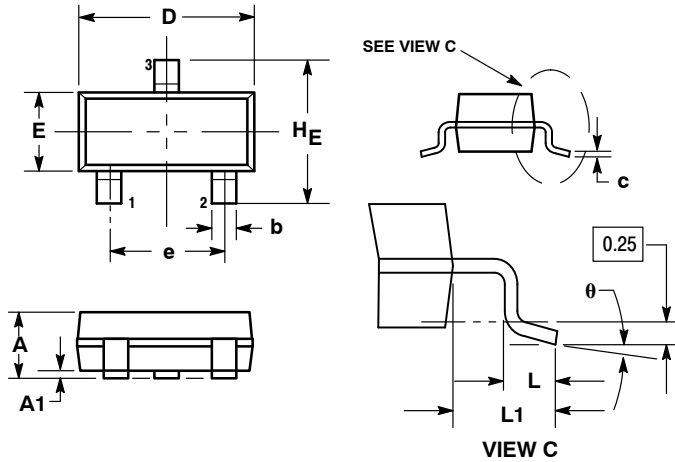


Figure 9. $8 \times 20 \mu\text{s}$ Pulse Waveform

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PACKAGE DIMENSIONS

SOT-23 (TO-236) CASE 318-08 ISSUE AP



NOTES:

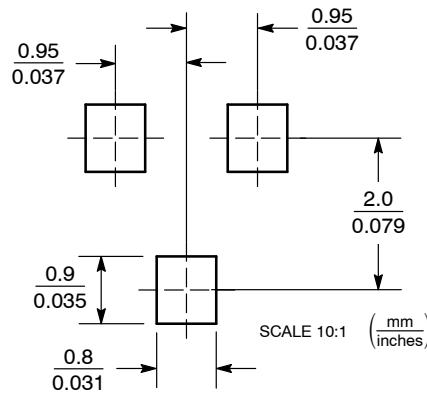
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.40	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

STYLE 8:

- PIN 1. ANODE
- 2. NO CONNECTION
- 3. CATHODE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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Как с нами связаться

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