Silicon Zener Diode

RoHS Compliant

Features

- Planar die construction
- 350mW power dissipation
- Zener voltages from 2.4V - 51V
- Ideally suited for automated assembly processes
- Epoxy meets UL 94 V-0 flammability rating
- Moisture sensitivity level 1
- Weight : 0.008 grams (approx.)

Max. Ratings and Electrical Characteristics

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

Parameter	Symbol	Rating	Units
Maximum Forward Voltage @ I_F = 10mA	V_F	0.9	V
Power Dissipation (Note A)	$P_{(AV)}$	350	mW
Operation and Storage Temperature	T_J, T_{STG}	-55 to +150	°C
Peak Forward Surge Current (Note B)	I_{FSM}	2	A
Thermal Resistance (Note C)	R_{thJA}	357	°C/W

Notes: A. Mounted on 5mm^2 (0.013mm thick) land areas.
B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
C. Valid provided the terminals are kept at ambient temperature.

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Part Number	Nominal Zener Voltage			Max. Zener Impedance				Max. Reverse Leakage Current		Marking
	Vz(V) @ IZT			ZZT @ IZT		ZZK @ IZK		I_R @ V_R		
	Nom.	Min.	Max.	Ω	mA	Ω	mA	µA	V	
BZX84C10	10	9.4	10.6	20	5	150	1	0.2	7	WG/Z9
BZX84C11	11	10.4	11.6	20	5	150	1	0.1	8	WH/Y1
BZX84C12	12	11.4	12.7	25	5	150	1	0.1	8	WI/Y2
BZX84C13	13	12.4	14.1	30	5	170	1	0.1	8	WK/Y3
BZX84C15	15	13.8	15.6	30	5	200	1	0.1	10.5	WL/Y4
BZX84C16	16	15.3	17.1	40	5	200	1	0.1	11.2	WM/Y5
BZX84C18	18	16.8	19.1	45	5	225	1	0.1	12.6	WN/Y6
BZX84C22	22	20.8	23.3	55	5	250	1	0.1	15.4	WP/Y8
BZX84C24	24	22.8	25.6	70	5	250	1	0.1	16.8	WR/Y9
BZX84C27	27	25.1	28.9	80	2	300	1	0.1	18.9	WS/Y10
BZX84C30	30	28	32	80	2	300	1	0.1	21	WT/Y11
BZX84C33	33	31	35	80	2	325	1	0.1	23.1	WU/Y12

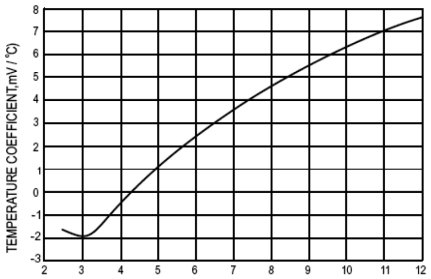
Silicon Zener Diode

Part Number	Nominal Zener Voltage			Max. Zener Impedance				Max. Reverse Leakage Current		Marking
	Vz(V) @ IZT			ZZT @ IZT		ZZK @ IZK		IR @ VR		
	Nom.	Min.	Max.	Ω	mA	Ω	mA	µA	V	
BZX84C36	36	34	38	90	2	350	1	0.1	25.2	WW/Y13
BZX84C39	39	37	41	130	2	350	1	0.1	27.3	WX/Y14
BZX84C47	47	44.65	49.35	170	5	375	1	0.1	32.9	WZ
BZX84C4V7	4.7	4.4	5	80	5	500	1	3	2	W8/Z1
BZX84C5V1	5.1	4.8	5.4	60	5	480	1	2	2	W9/Z2
BZX84C5V6	5.6	5.2	6	40	5	400	1	1	2	WA/Z3
BZX84C6V2	6.2	5.8	6.6	10	5	150	1	3	4	WB/Z4
BZX84C7V5	7.5	7	7.9	15	5	80	1	1	5	WD/Z6
BZX84C8V2	8.2	7.7	8.7	15	5	80	1	0.7	5	WE/Z7
BZX84C9V1	9.1	8.5	9.6	15	5	100	1	0.5	6	WF/Z8

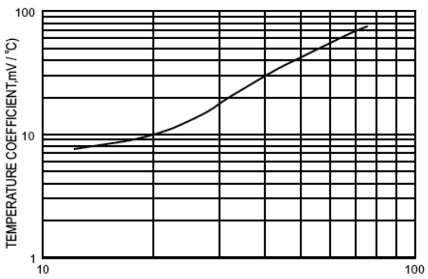
Notes:

1. Standard zener voltage tolerance is ±5% with a 'C' suffix and suffix 'B' is ±2% tolerance.
2. Zener Voltage (Vz) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (TL) AT 30°C from the diode body.
3. Zener Impedance (Zz) Derivation. The zener impedance os dervied from the 60 cycle ac voltage, which results when an AC current having an rms value equal to 10% of the DC zener current (Izt or Izk) is superimposed on Izt or Izk.
4. Surge Current (IR) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, Izt, per JEDEC registration.

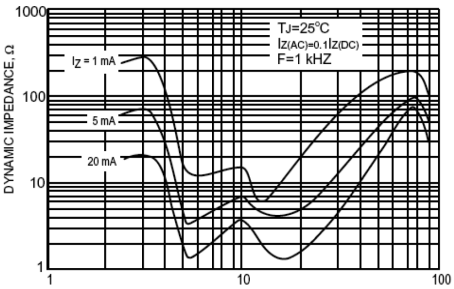
Rating and Characteristic Curves



TYPICAL REVERSE CURRENT

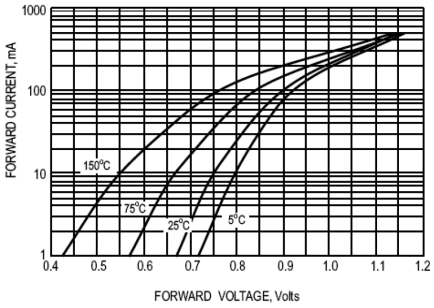


TEMPERATURE COEFFICIENTS

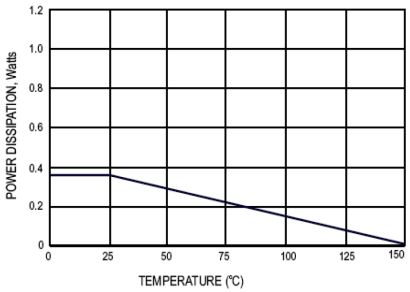


EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

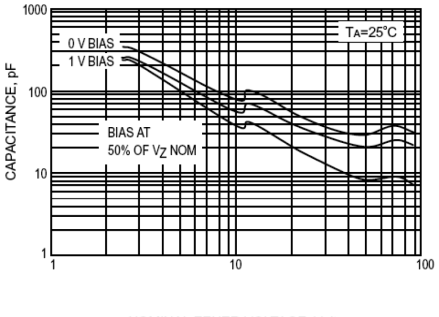
Silicon Zener Diode



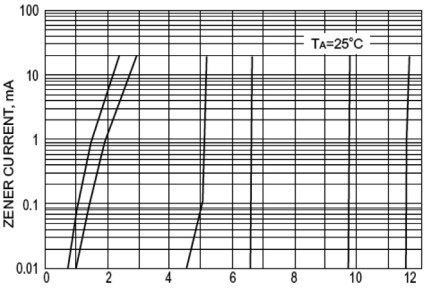
TYPICAL FORWARD VOLTAGE



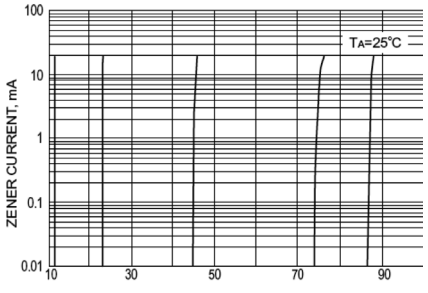
STEADY STATE POWER DERATING



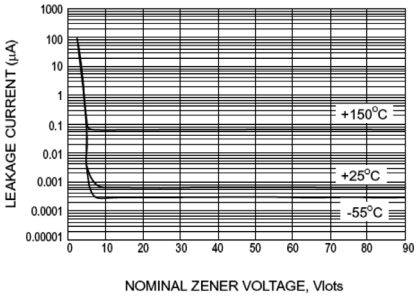
TYPICAL CAPACITANCE



ZENER VOLTAGE V.S. ZENER CURRENT

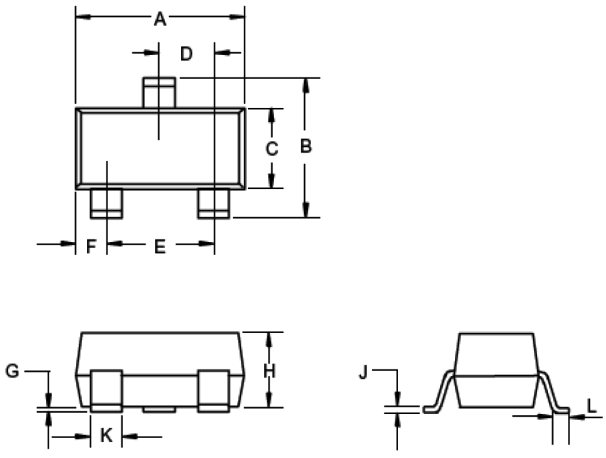


ZENER VOLTAGE V.S. ZENER CURRENT



TYPICAL LEAKGE CURRENT

Dimension:



SOT-23		
Dim.	**Min.**	**Max.**
A	2.8	3.04
B	2.1	2.64
C	1.2	1.4
D	0.89	1.03
E	1.78	2.05
F	0.45	0.6
G	0.013	0.1
H	0.89	1.12
J	0.085	0.18
K	0.37	0.51
L	0.2	0.5

Dimensions : Millimetres

Part Number Table

Description	Part Number
Silicon Zener Diode	BZX84C10
	BZX84C11
	BZX84C12
	BZX84C13
	BZX84C15
	BZX84C16
	BZX84C18
	BZX84C22
	BZX84C24
	BZX84C27
	BZX84C30

Description	Part Number
Silicon Zener Diode	BZX84C33
	BZX84C36
	BZX84C39
	BZX84C47
	BZX84C4V7
	BZX84C5V1
	BZX84C5V6
	BZX84C6V2
	BZX84C7V5
	BZX84C8V2
	BZX84C9V1