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1W, 11V - 220V Zener Diode

FEATURES

- AEC-Q101 qualified
- Silicon zener diodes
- Low profile surface-mount package
- Zener and surge current specification
- Low leakage current
- Excellent stability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
V_Z	11 - 220	V
Test current I_{ZT}	5 - 50	mA
P_{tot}	1.0	W
$T_{J\ MAX}$	175	°C
Package	SOD-123W	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

APPLICATIONS

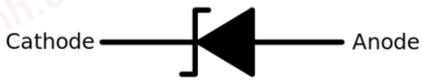
- Voltage regulating
- Reference voltage
- Protection circuit

MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.016g (approximately)



SOD-123W



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)				
PARAMETER		**SYMBOL**	**VALUE**	**UNIT**
Forward voltage @ I_F = 0.2A		V_F	1.0	V
Power dissipation	T_L = 80°C	P_{tot}	2.3	W
	T_A = 25°C(1)		1.0	W
Non-repetitive peak pulse power dissipation 100μs square pulse(2)		P_{ZSM}	300	W
Non-repetitive peak pulse power dissipation 10/1000μs waveform (BZD27C11PWH to BZD27C100PWH)		P_{RSM}	150	W
Non-repetitive peak pulse power dissipation 10/1000μs waveform (BZD27C110PWH to BZD27C220PWH)		P_{RSM}	100	W
Junction temperature		T_J	- 55 to +175	°C
Storage temperature		T_{STG}	- 55 to +175	°C

Notes:

1. Mounted on Cu-Pad size 5mm x 5mm
2. T_J = 25°C prior to surge

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THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\Theta JL}$	22	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	85	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	24	°C/W

ORDERING INFORMATION

ORDERING CODE(1)	PACKAGE	PACKING
BZD27CxPWH	SOD-123W	10,000 / Tape & Reel

Notes:
1. “x” defines voltage from 11V (BZD27C11PWH) to 220V (BZD27C220PWH)

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ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

Part number	Marking code	Zener voltage			Test current	Regulator impedance		Test current
		V_Z @ I_{ZT}(1)			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}
		V			mA	Ω	Ω	mA
		Min	Nom	Max		Max	Max	
BZD27C11PWH	N2	10.5	11	11.6	50	7	700	0.25
BZD27C12PWH	N3	11.4	12	12.6	50	7	700	0.25
BZD27C13PWH	N4	12.4	13	13.7	50	10	700	0.25
BZD27C15PWH	N5	14.3	15	15.8	50	10	700	0.25
BZD27C16PWH	N6	15.2	16	16.8	25	15	700	0.25
BZD27C18PWH	N7	17.1	18	18.9	25	15	750	0.25
BZD27C20PWH	P0	19	20	21	25	15	750	0.25
BZD27C22PWH	P1	20.9	22	23.1	25	15	750	0.25
BZD27C24PWH	P3	22.8	24	25.2	25	15	750	0.25
BZD27C27PWH	P4	25.7	27	28.4	25	15	1000	0.25
BZD27C30PWH	P5	28.5	30	31.5	25	15	1000	0.25
BZD27C33PWH	P6	31.4	33	34.7	25	15	1000	0.25
BZD27C36PWH	P7	34.2	36	37.8	10	40	1000	0.25
BZD27C39PWH	P8	37.1	39	41	10	40	1000	0.25
BZD27C43PWH	Q0	40.9	43	45.2	10	45	1500	0.25
BZD27C47PWH	Q1	44.7	47	49.4	10	45	1500	0.25
BZD27C51PWH	Q2	48.5	51	53.6	10	60	1500	0.25
BZD27C56PWH	Q5	53.2	56	58.8	10	60	2000	0.25
BZD27C62PWH	Q7	58.9	62	65.1	10	80	2000	0.25
BZD27C68PWH	R1	64.6	68	71.4	10	80	2000	0.25
BZD27C75PWH	R2	71.3	75	78.8	10	100	2000	0.25
BZD27C82PWH	R3	77.9	82	86.1	10	200	3000	0.25
BZD27C91PWH	R4	86.5	91	95.6	5	200	3000	0.25
BZD27C100PWH	R5	95	100	105	5	200	3000	0.25
BZD27C110PWH	R6	104.5	110	115.5	5	250	4000	0.25
BZD27C120PWH	R7	114	120	126	5	300	4500	0.25
BZD27C130PWH	R8	123.5	130	136.5	5	300	5000	0.25
BZD27C150PWH	R9	142.5	150	157.5	5	300	6000	0.25
BZD27C160PWH	R10	152	160	168	5	350	6500	0.25
BZD27C180PWH	R11	171	180	189	5	450	7000	0.25
BZD27C200PWH	R12	190	200	210	5	750	8000	0.25
BZD27C220PWH	R13	209	220	231	5	900	8500	0.25

Notes:

1. Pulse test with PW = 30ms

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ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

Part number	Marking code	Zener voltage			Test current	Clamping Voltage		Leakage current		Temperature coefficient of Zener voltage	
		V_Z @ I_{ZT}(1)			I_{ZT}	Vc	@I_{RSM}(2)	I_R @ V_R(1)		αV_Z @ I_{ZT}	
		V			mA	V	A	μA	V	% / °C	
		Min	Nom	Max		Max		Max		Min	Max
BZD27C11PWH	N2	10.5	11	11.6	50	15.7	9.6	4.0	8.2	0.05	0.10
BZD27C12PWH	N3	11.4	12	12.6	50	17.0	8.8	3.0	9.1	0.05	0.10
BZD27C13PWH	N4	12.4	13	13.7	50	18.9	7.9	2.0	10	0.05	0.10
BZD27C15PWH	N5	14.3	15	15.8	50	20.9	7.2	1.0	11	0.05	0.10
BZD27C16PWH	N6	15.2	16	16.8	25	22.9	6.6	1.0	12	0.06	0.11
BZD27C18PWH	N7	17.1	18	18.9	25	25.6	5.9	1.0	13	0.06	0.11
BZD27C20PWH	P0	19	20	21	25	28.4	5.3	1.0	15	0.06	0.11
BZD27C22PWH	P1	20.9	22	23.1	25	31.0	4.8	1.0	16	0.06	0.11
BZD27C24PWH	P3	22.8	24	25.2	25	33.8	4.4	1.0	18	0.06	0.11
BZD27C27PWH	P4	25.7	27	28.4	25	38.1	3.9	1.0	20	0.06	0.11
BZD27C30PWH	P5	28.5	30	31.5	25	42.2	3.6	1.0	22	0.06	0.11
BZD27C33PWH	P6	31.4	33	34.7	25	46.2	3.2	1.0	24	0.07	0.12
BZD27C36PWH	P7	34.2	36	37.8	10	50.1	3.0	1.0	27	0.07	0.12
BZD27C39PWH	P8	37.1	39	41	10	54.1	2.8	1.0	30	0.07	0.12
BZD27C43PWH	Q0	40.9	43	45.2	10	60.7	2.5	1.0	33	0.08	0.13
BZD27C47PWH	Q1	44.7	47	49.4	10	65.5	2.3	1.0	36	0.08	0.13
BZD27C51PWH	Q2	48.5	51	53.6	10	70.8	2.1	1.0	39	0.08	0.13
BZD27C56PWH	Q5	53.2	56	58.8	10	78.6	1.9	1.0	43	0.09	0.13
BZD27C62PWH	Q7	58.9	62	65.1	10	86.5	1.7	1.0	47	0.09	0.13
BZD27C68PWH	R1	64.6	68	71.4	10	94.4	1.6	1.0	51	0.09	0.13
BZD27C75PWH	R2	71.3	75	78.8	10	103.5	1.5	1.0	56	0.09	0.13
BZD27C82PWH	R3	77.9	82	86.1	10	114	1.3	1.0	62	0.09	0.13
BZD27C91PWH	R4	86.5	91	95.6	5	126	1.2	1.0	68	0.09	0.13
BZD27C100PWH	R5	95	100	105	5	139	1.1	1.0	75	0.09	0.13
BZD27C110PWH	R6	104.5	110	115.5	5	150	1.0	1.0	82	0.09	0.13
BZD27C120PWH	R7	114	120	126	5	152	0.65	1.0	91	0.09	0.13
BZD27C130PWH	R8	123.5	130	136.5	5	185	0.81	1.0	100	0.09	0.13
BZD27C150PWH	R9	142.5	150	157.5	5	205	0.73	1.0	110	0.09	0.13
BZD27C160PWH	R10	152	160	168	5	224	0.67	1.0	120	0.09	0.13
BZD27C180PWH	R11	171	180	189	5	229	0.43	1.0	130	0.09	0.13
BZD27C200PWH	R12	190	200	210	5	254	0.39	1.0	150	0.09	0.13
BZD27C220PWH	R13	209	220	231	5	279	0.35	1.0	160	0.09	0.13

Notes :

1. Pulse test with PW = 30ms
2. 10/1000μs waveform

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CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Steady State Power Derating Curve

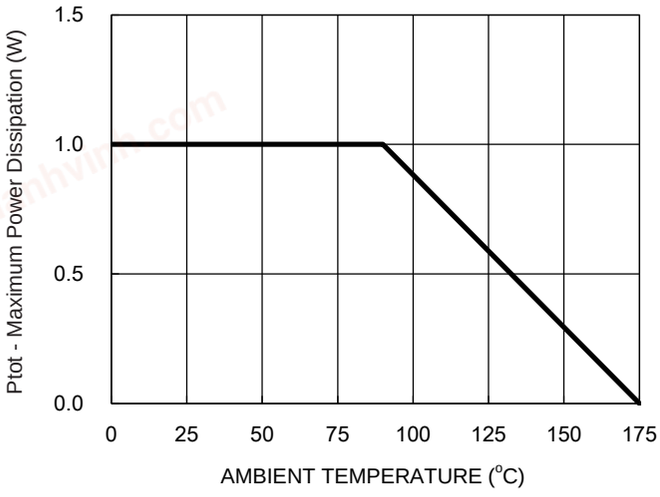


Fig.2 Typical Junction Capacitance

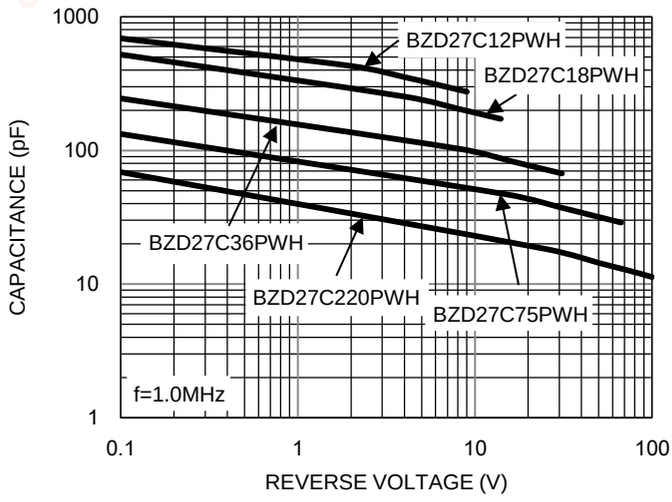


Fig.3 Typical Forward Characteristics

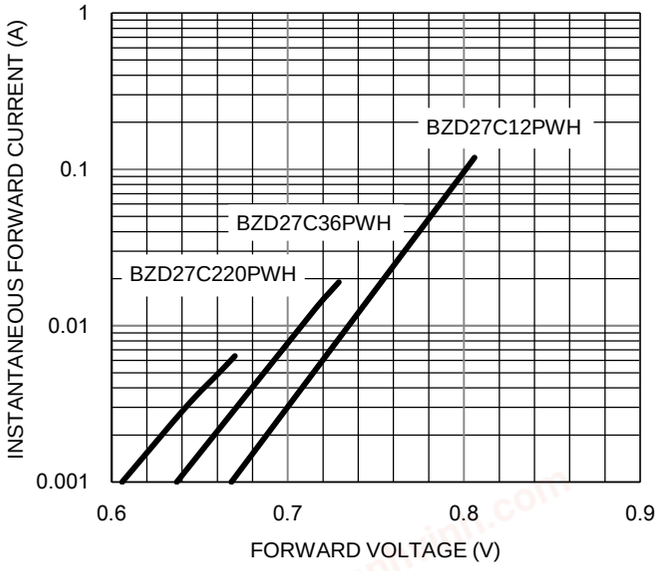
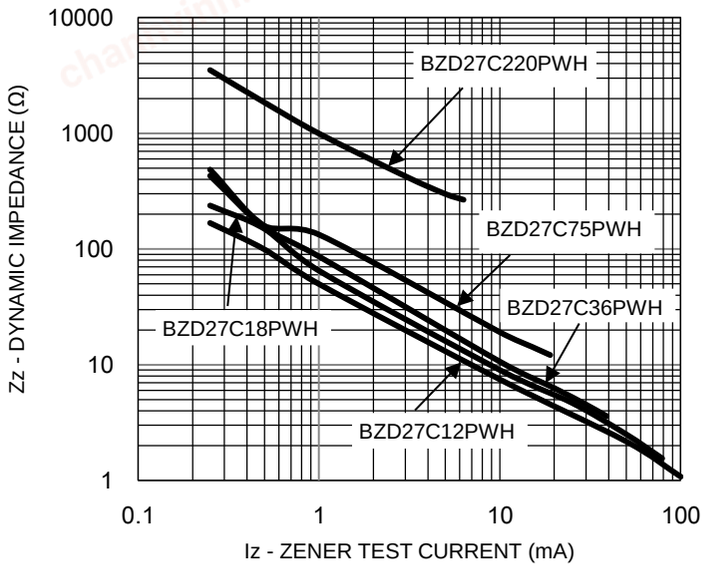


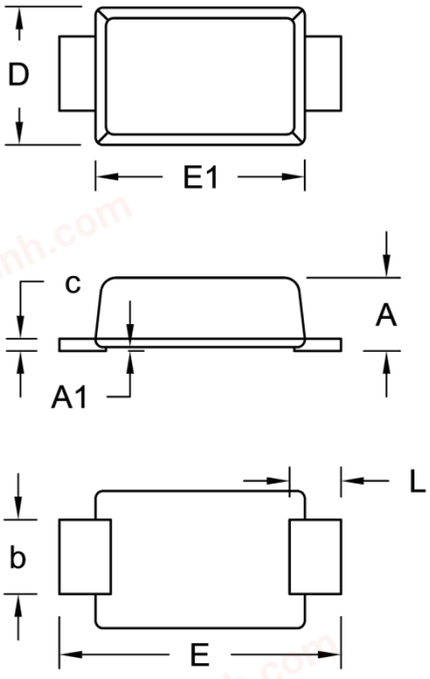
Fig.4 Typical Zener Impedance



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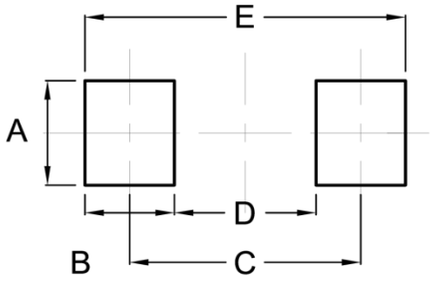
PACKAGE OUTLINE DIMENSIONS

SOD-123W



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.02	0.035	0.040
A1	0.00	0.10	0.000	0.004
b	0.90	1.05	0.035	0.041
c	0.10	0.22	0.004	0.009
D	1.70	1.90	0.067	0.075
E	3.60	3.80	0.142	0.150
E1	2.60	2.90	0.102	0.114
L	0.50	0.85	0.020	0.033

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.40	0.055
B	1.20	0.047
C	3.10	0.122
D	1.90	0.075
E	4.30	0.169

MARKING DIAGRAM



P/N = Marking Code
YW = Date Code
F = Factory Code

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