

## 1W, 10V - 220V Zener Diode

### FEATURES

- 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

### APPLICATIONS

- Voltage regulating
- Reference voltage
- Protection circuit

### MECHANICAL DATA

- Case: Sub SMA
- 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: 0.019g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	10 - 220	V
Test current $I_{ZT}$	5 - 50	mA
$P_{tot}$	1	W
$T_{JMAX}$	175	°C
Package	Sub SMA	
Configuration	Single die	



Sub SMA



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Forward voltage @ $I_F = 0.2\text{A}$	$V_F$	1.2	V
Power dissipation	$P_{tot}$	$T_L = 73^\circ\text{C}$	2.3
		$T_A = 25^\circ\text{C}^{(1)}$	1.0
Non-repetitive peak pulse power dissipation 100 $\mu\text{s}$ square pulse <sup>(2)</sup>	$P_{ZSM}$	300	W
Non-repetitive peak pulse power dissipation 10/1000 $\mu\text{s}$ waveform (BZD27C10P to BZD27C100P)	$P_{RSM}$	150	W
Non-repetitive peak pulse power dissipation 10/1000 $\mu\text{s}$ waveform (BZD27C110P to BZD27C220P)	$P_{RSM}$	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.  $T_J = 25^\circ\text{C}$  prior to surge

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	44	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	88	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	48	°C/W

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
BZD27CxP	Sub SMA	10,000 / Tape & Reel

**Notes:**

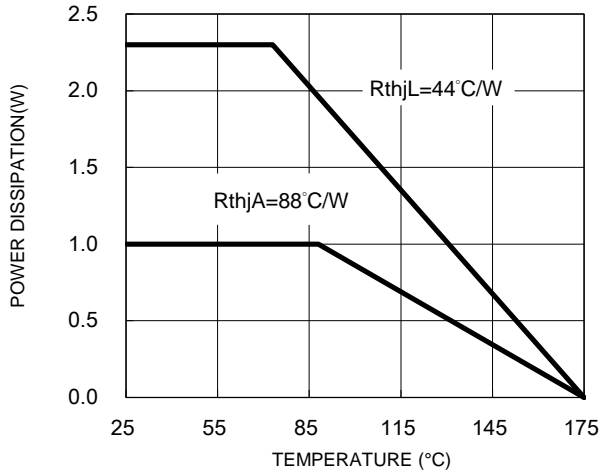
1. “x” defines voltage from 10V(BZD27C10P) to 220V(BZD27C220P)

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)											
Part number	Marking code	Working Voltage			Differential Resistance		Temperature Coefficient		Test Current	Reverse Current@ Reverse Voltage	
		$V_Z @ I_{ZT}$			$r_{dif} @ I_Z$		$\alpha_z @ I_Z$		$I_{ZT}$	$I_R$	$V_R$
		V			$\Omega$		%/°C		mA	$\mu\text{A}$	V
		Min	Nom	Max	Typ	Max	Min	Max		Max	
BZD27C10P	E1	9.4	10	10.6	2	4	0.05	0.09	50	7	7.5
BZD27C11P	E2	10.4	11	11.6	4	7	0.05	0.10	50	4	8.2
BZD27C12P	E3	11.4	12.05	12.7	4	7	0.05	0.10	50	3	9.1
BZD27C13P	E4	12.4	13.25	14.1	5	10	0.05	0.10	50	2	10
BZD27C15P	E5	13.8	14.7	15.6	5	10	0.05	0.10	25	1	11
BZD27C16P	E6	15.3	16.2	17.1	6	15	0.06	0.11	25	1	12
BZD27C18P	E7	16.8	17.95	19.1	6	15	0.06	0.11	25	1	13
BZD27C20P	E8	18.8	20	21.2	6	15	0.06	0.11	25	1	15
BZD27C22P	E9	20.8	22.05	23.3	6	15	0.06	0.11	25	1	16
BZD27C24P	F0	22.8	24.2	25.6	7	15	0.06	0.11	25	1	18
BZD27C27P	F1	25.1	27	28.9	7	15	0.06	0.11	25	1	20
BZD27C30P	F2	28	30	32	8	15	0.06	0.11	25	1	22
BZD27C33P	F3	31	33	35	8	15	0.06	0.11	25	1	24
BZD27C36P	F4	34	36	38	21	40	0.06	0.11	10	1	27
BZD27C39P	F5	37	39	41	21	40	0.06	0.11	10	1	30
BZD27C43P	F6	40	43	46	24	45	0.07	0.12	10	1	33
BZD27C47P	F7	44	47	50	24	45	0.07	0.12	10	1	36
BZD27C51P	F8	48	51	54	25	60	0.07	0.12	10	1	39
BZD27C56P	F9	52	56	60	25	60	0.07	0.12	10	1	43
BZD27C62P	G0	58	62	66	25	80	0.08	0.13	10	1	47
BZD27C68P	G1	64	68	72	25	80	0.08	0.13	10	1	51
BZD27C75P	G2	70	74.5	79	30	100	0.08	0.13	10	1	56
BZD27C82P	G3	77	82	87	60	200	0.08	0.13	10	1	62
BZD27C91P	G4	85	90.5	96	60	200	0.08	0.13	5	1	68
BZD27C100P	G5	94	100	106	60	200	0.09	0.13	5	1	75
BZD27C110P	G6	104	110	116	80	250	0.09	0.13	5	1	82
BZD27C120P	G7	114	120.5	127	150	300	0.09	0.13	5	1	91
BZD27C130P	G	124	132.5	141	150	300	0.09	0.13	5	1	100
BZD27C150P	G9	138	147	156	150	300	0.09	0.13	5	1	110
BZD27C160P	H0	153	162	171	150	350	0.09	0.13	5	1	120
BZD27C180P	H1	168	179.5	191	280	450	0.09	0.13	5	1	130
BZD27C200P	H2	188	200	212	350	750	0.09	0.13	5	1	150
BZD27C220P	H3	208	220.5	233	430	900	0.09	0.13	5	1	160

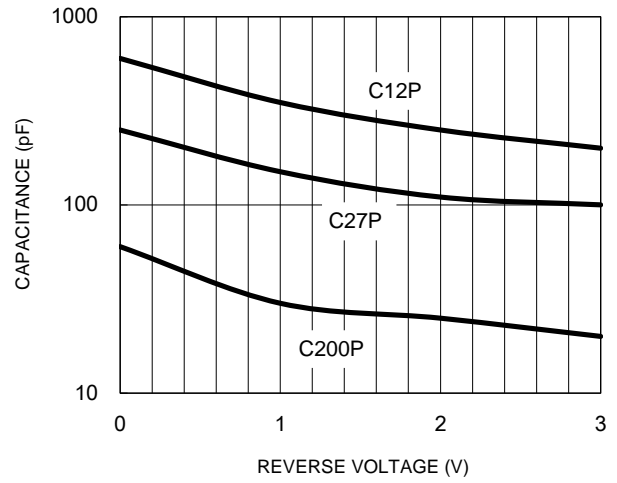
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

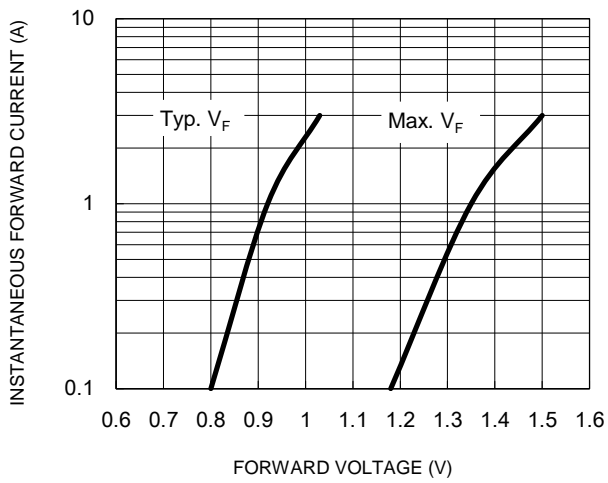
**Fig.1 Power Dissipation**



**Fig.2 Typical Junction Capacitance**

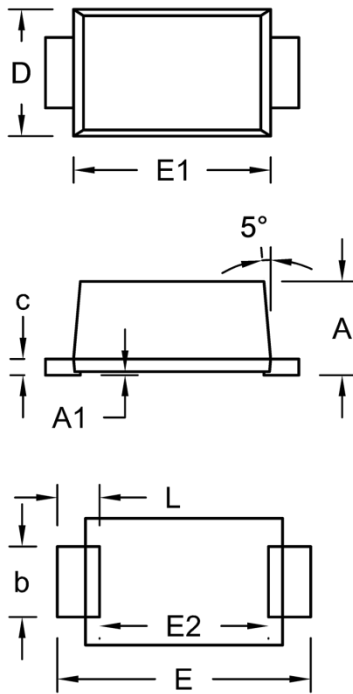


**Fig.3 Typical Forward Characteristics**



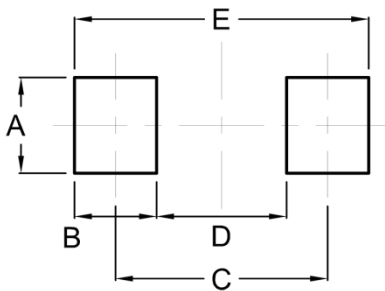
**PACKAGE OUTLINE DIMENSIONS**

Sub SMA



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.23	1.43	0.048	0.056
A1	0.00	0.10	0.000	0.004
b	0.80	1.20	0.031	0.047
c	0.16	0.30	0.006	0.012
D	1.70	1.90	0.067	0.075
E	3.40	3.80	0.134	0.150
E1	2.70	2.90	0.106	0.114
E2	2.45	2.60	0.096	0.102
L	0.35	0.85	0.014	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
- G = Green Compound
- YW = Date Code
- F = Factory Code

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