



**THE DATASHEET OF  
BZD27C13P RVG**



## 1W, 10V - 220V Voltage Regulator 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
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: Sub SMA
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As indicated by Cathode band
- Weight: 19mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	10 - 220	V
$P_{tot}$	1.0	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	Volts
Power dissipation at $T_L=73^\circ\text{C}$ $T_A=25^\circ\text{C}$ (Note 1)	$P_{tot}$	2.3	Watts
		1.0	
Non-repetitive peak pulse power dissipation 100 $\mu\text{s}$ square pulse (Note 2)	$P_{ZSM}$	300	Watts
Non-repetitive peak pulse power dissipation 10/1000 $\mu\text{s}$ waveform (BZD27C10P to BZD27C100P)	$P_{RSM}$	150	Watts
Non-repetitive peak pulse power dissipation 10/1000 $\mu\text{s}$ waveform (BZD27C110P to BZD27C220P)	$P_{RSM}$	100	Watts
Operating and storage temperature range	$T_J, T_{STG}$	-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</b> (Note 1, 2)	<b>PACKAGE</b>	<b>PACKING</b>
BZD27CxxPHRUG	Sub SMA	1,800 / 7" Plastic reel (8mm tape)
BZD27CxxPHRVG	Sub SMA	3,000 / 7" Plastic reel (8mm tape)
BZD27CxxPHRTG	Sub SMA	7,500 / 13" Paper reel (8mm tape)
BZD27CxxPHMTG	Sub SMA	7,500 / 13" Plastic reel (8mm tape)
BZD27CxxPHRQG	Sub SMA	10,000 / 13" Paper reel (8mm tape)
BZD27CxxPHMQG	Sub SMA	10,000 / 13" Plastic reel (8mm tape)
BZD27CxxPHR3G	Sub SMA	1,800 / 7" Plastic reel (12mm tape)
BZD27CxxPHRFG	Sub SMA	3,000 / 7" Plastic reel (12mm tape)
BZD27CxxPHR2G	Sub SMA	7,500 / 13" Paper reel (12mm tape)
BZD27CxxPHM2G	Sub SMA	7,500 / 13" Plastic reel (12mm tape)
BZD27CxxPHRHG	Sub SMA	10,000 / 13" Paper reel (12mm tape)
BZD27CxxPHMHG	Sub SMA	10,000 / 13" Plastic reel (12mm tape)
BZD27CxxP RUG	Sub SMA	1,800 / 7" Plastic reel (8mm tape)
BZD27CxxP RVG	Sub SMA	3,000 / 7" Plastic reel (8mm tape)
BZD27CxxP RTG	Sub SMA	7,500 / 13" Paper reel (8mm tape)
BZD27CxxP MTG	Sub SMA	7,500 / 13" Plastic reel (8mm tape)
BZD27CxxP RQG	Sub SMA	10,000 / 13" Paper reel (8mm tape)
BZD27CxxP MQG	Sub SMA	10,000 / 13" Plastic reel (8mm tape)
BZD27CxxP R3G	Sub SMA	1,800 / 7" Plastic reel (12mm tape)
BZD27CxxP RFG	Sub SMA	3,000 / 7" Plastic reel (12mm tape)
BZD27CxxP R2G	Sub SMA	7,500 / 13" Paper reel (12mm tape)
BZD27CxxP M2G	Sub SMA	7,500 / 13" Plastic reel (12mm tape)
BZD27CxxP RHG	Sub SMA	10,000 / 13" Paper reel (12mm tape)
BZD27CxxP MHG	Sub SMA	10,000 / 13" Plastic reel (12mm tape)

**Note :**

- "xx" defines voltage from 10V (BZD27C10P) to 220V (BZD27C220P)
- "H" means AEC-Q101 qualified.

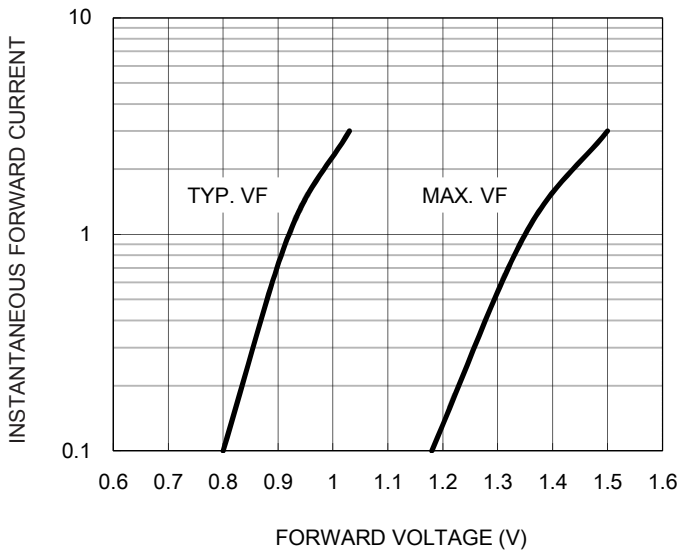
**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Part number	Marking code	Working Voltage (Note 1)			Differential Resistance		Temperature Coefficient		Test current	Reverse Current@ Reverse Voltage	
		$V_Z @ I_{ZT}$			$r_{diff} @ I_Z$		$ALPH_Z @ I_Z$		$I_{ZT}$	$I_R$	$V_R$
		V			$\Omega$		%/°C		mA	$\mu\text{A}$	V
		Min.	Nom.	Max.	Typ.	Max.	Max.	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

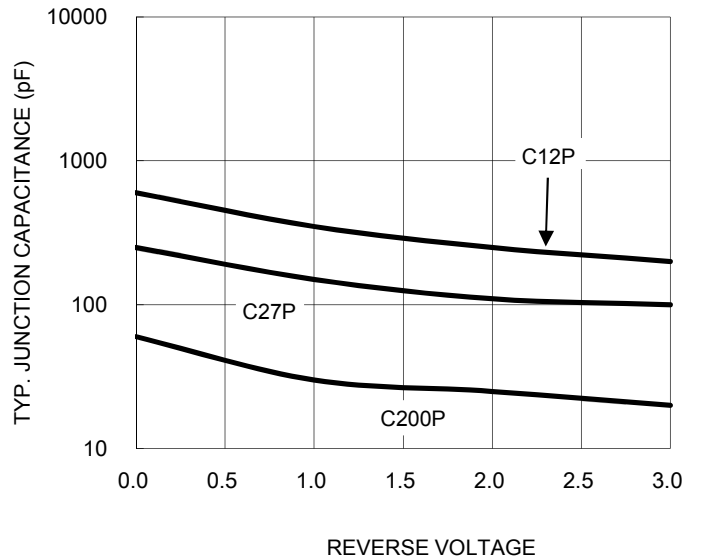
**CHARACTERISTICS CURVES**

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

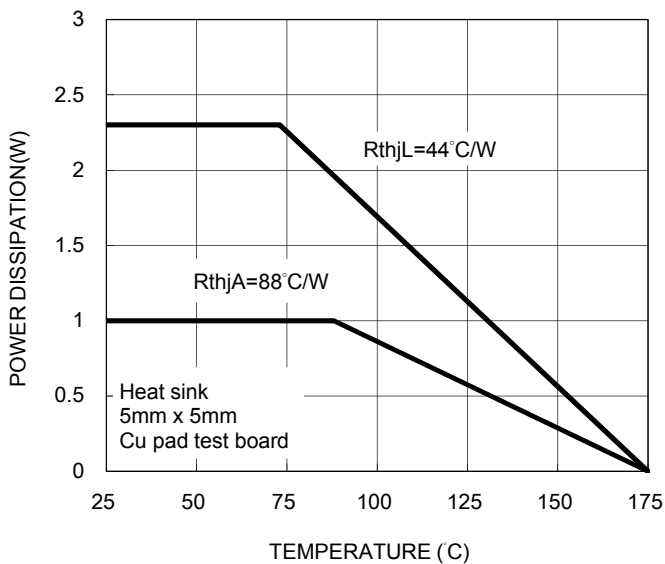
**Fig.1 TYPICAL FORWARD CHARACTERISTICS**



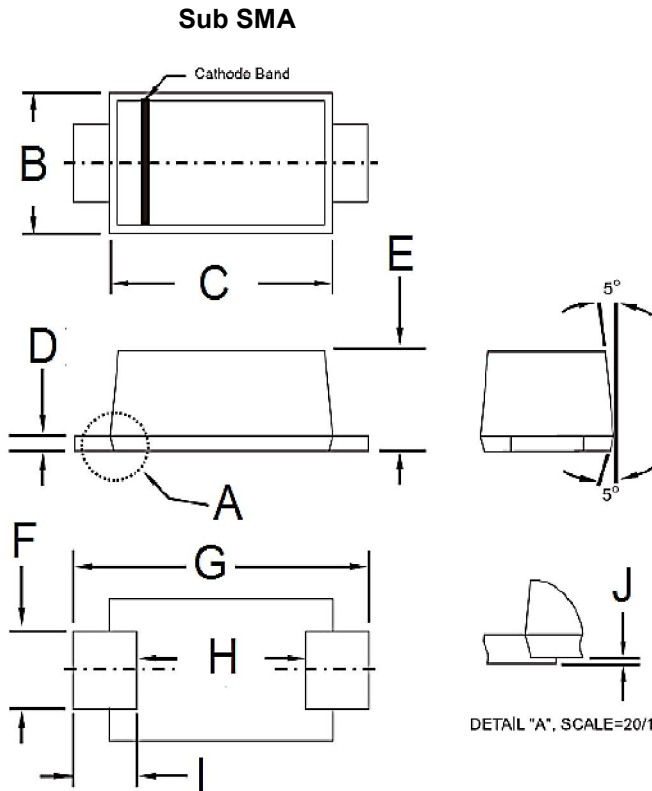
**Fig.2 TYP. DIODE CAPACITANCE vs REVERSE VOLTAGE**



**Fig.3 POWER DISSIPATION v.s TEMPERATURE**

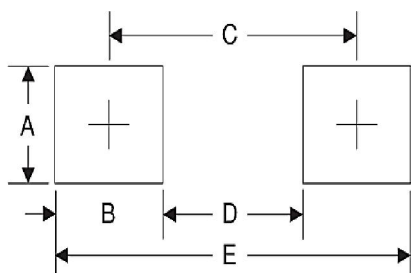


**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
B	1.70	1.90	0.067	0.075
C	2.70	2.90	0.106	0.114
D	0.16	0.30	0.006	0.012
E	1.23	1.43	0.048	0.056
F	0.80	1.20	0.031	0.047
G	3.40	3.80	0.134	0.150
H	2.45	2.60	0.096	0.102
I	0.35	0.85	0.014	0.033
J	0.00	0.10	0.000	0.004

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.4	0.055
B	1.2	0.047
C	3.1	0.122
D	1.9	0.075
E	4.3	0.169

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green compound Code
- YW = Date Code
- F = Factory Code

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