

## Voltage Regulator Diodes

### 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 definition



**Sub SMA**

### MECHANICAL DATA

**Case:** Sub SMA

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - green compound (halogen-free)

Base P/N with prefix "H" on packing code - AEC-Q101 qualified

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

with prefix "H" on packing code meet JESD 201 class 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.019g (approximately)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Forward voltage @ I <sub>F</sub> =0.2A	V <sub>F</sub>	1.2	Volts
Power dissipation at T <sub>L</sub> =80°C T <sub>A</sub> =25°C (Note 1)	P <sub>tot</sub>	2.3 1.0	Watts
Non-repetitive peak pulse power dissipation 100µs square pulse (Note 2)	P <sub>ZSM</sub>	300	Watts
Non-repetitive peak pulse power dissipation 10/1000µs waveform (BZD27C6V8P to BZD27C100P) (Note 2)	P <sub>RSM</sub>	150	Watts
Non-repetitive peak pulse power dissipation 10/1000µs waveform (BZD27C110P to BZD27C220P) (Note 2)	P <sub>RSM</sub>	100	Watts
Thermal resistance junction to ambient (Note 1)	R <sub>θJA</sub>	180	°C/W
Thermal resistance junction to lead	R <sub>θJL</sub>	30	°C/W
Operating and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

Note 1: Mounted on Cu-Pad size 5mm x 5mm

Note 2: T<sub>J</sub>=25°C prior to surge

ORDERING INFORMATION					
PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	PACKAGE	PACKING
BZD27CxxP (Note 1)	Prefix "H"	RU	Suffix "G"	Sub SMA	1,800 / 7" Plastic reel (8mm tape)
		RV		Sub SMA	3,000 / 7" Plastic reel (8mm tape)
		RT		Sub SMA	7,500 / 13" Paper reel (8mm tape)
		MT		Sub SMA	7,500 / 13" Plastic reel (8mm tape)
		RQ		Sub SMA	10,000 / 13" Paper reel (8mm tape)
		MQ		Sub SMA	10,000 / 13" Plastic reel (8mm tape)
		R3		Sub SMA	1,800 / 7" Plastic reel (12mm tape)
		RF		Sub SMA	3,000 / 7" Plastic reel (12mm tape)
		R2		Sub SMA	7,500 / 13" Paper reel (12mm tape)
		M2		Sub SMA	7,500 / 13" Plastic reel (12mm tape)
		RH		Sub SMA	10,000 / 13" Paper reel (12mm tape)
		MH		Sub SMA	10,000 / 13" Plastic reel (12mm tape)

Note 1: "xx" defines voltage from 6.8V (BZD27C6V8P) to 220V (BZD27C220P)

EXAMPLE					
PREFERRED P/N	PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	DESCRIPTION
BZD27C10P RU	BZD27C10P		RU		
BZD27C10P RUG	BZD27C10P		RU	G	Green compound
BZD27C10PHRU	BZD27C10P	H	RU		AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**  
(TA=25°C unless otherwise noted)

FIG. 1 TYPICAL FORWARD CHARACTERISTICS

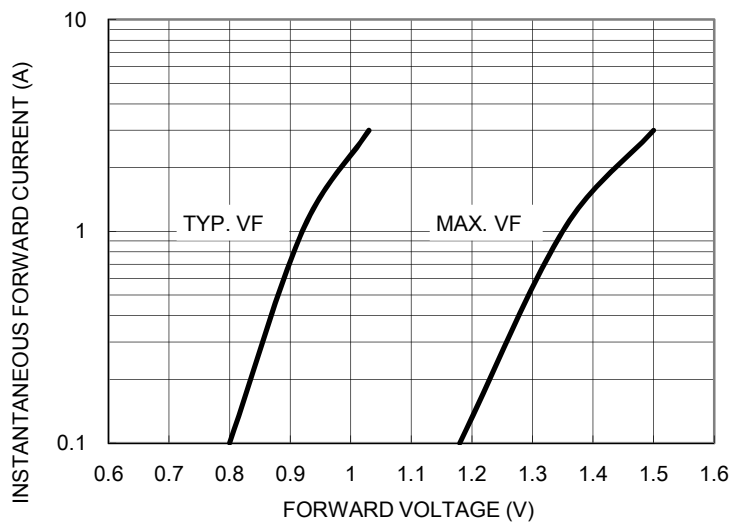


FIG. 2 TYP. DIODE CAPACITANCE vs REVERSE VOLTAGE

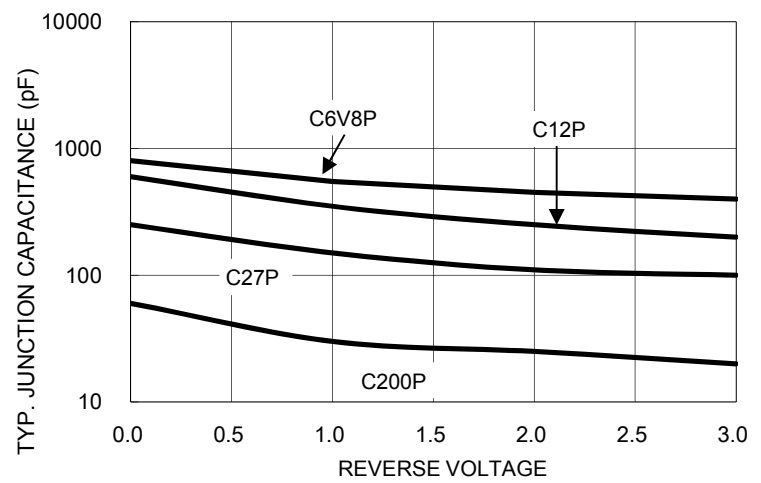


FIG. 3 POWER DISSIPATION vs AMBIENT TEMPERATURE

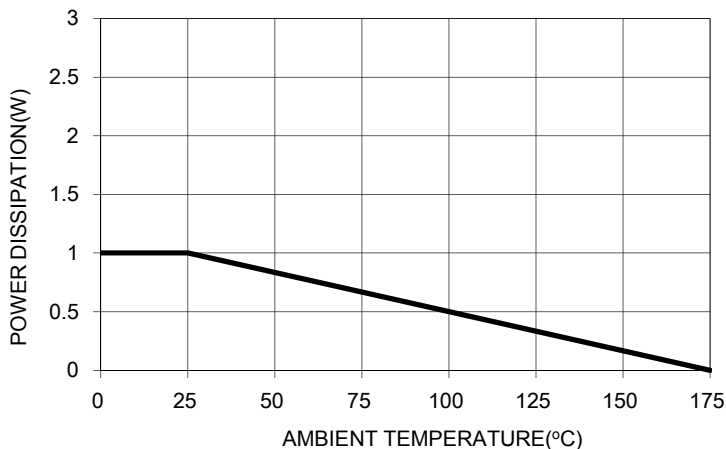
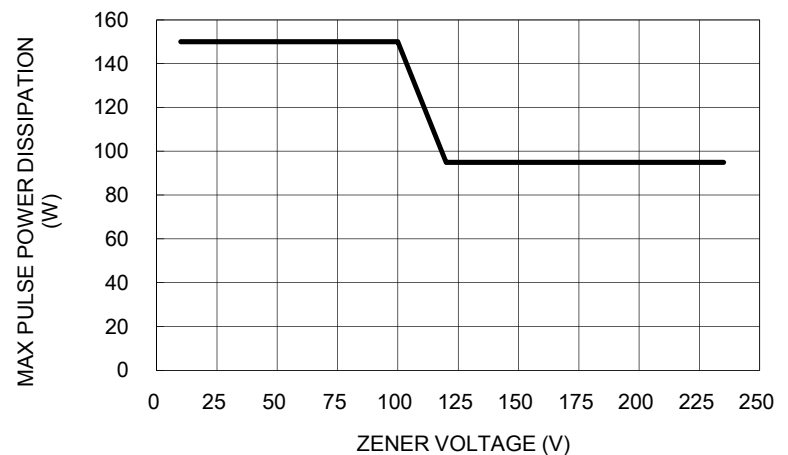


FIG. 4 MAXIMUM PULSE POWER DISSIPATION vs ZENER VOLTAGE



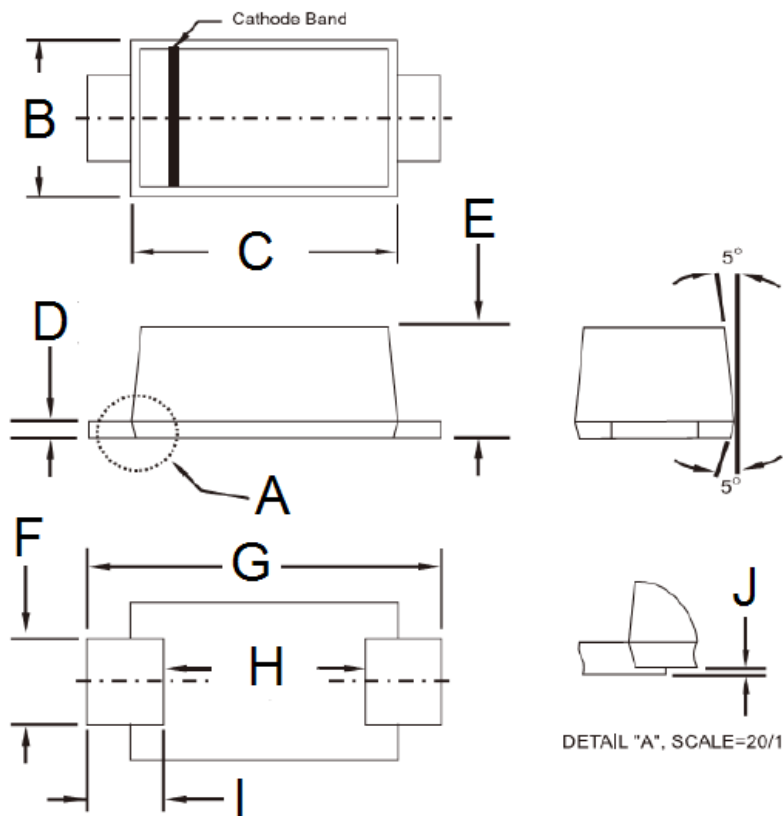
Device	Device Marking Code	Working Voltage (Note 1)		Differential Resistance		Temperature Coefficient		Test Current	Reverse Current@ Reverse Voltage	
		$V_Z @ I_{ZT}$		$r_{dif} @ I_Z$		$ALPH_Z @ I_Z$		$I_{ZT}$	$I_R$	$V_R$
		V		$\Omega$		%/°C		mA	$\mu A$	V
		Min.	Max.	Typ.	Max.	Min.	Max.		Max.	
BZD27C6V8P	D7	6.4	7.2	1	3	0	0.07	100	10	3
BZD27C7V5P	D8	7.0	7.9	1	2	0	0.07	100	50	3
BZD27C8V2P	D9	7.7	8.7	1	2	0.03	0.08	100	10	3
BZD27C9V1P	E0	8.5	9.6	2	4	0.03	0.08	50	10	5
BZD27C10P	E1	9.4	10.6	2	4	0.05	0.09	50	7	7.5
BZD27C11P	E2	10.4	11.6	4	7	0.05	0.10	50	4	8.2
BZD27C12P	E3	11.4	12.7	4	7	0.05	0.10	50	3	9.1
BZD27C13P	E4	12.4	14.1	5	10	0.05	0.10	50	2	10
BZD27C15P	E5	13.8	15.6	5	10	0.05	0.10	25	1	11
BZD27C16P	E6	15.3	17.1	6	15	0.06	0.11	25	1	12
BZD27C18P	E7	16.8	19.1	6	15	0.06	0.11	25	1	13
BZD27C20P	E8	18.8	21.2	6	15	0.06	0.11	25	1	15
BZD27C22P	E9	20.8	23.3	6	15	0.06	0.11	25	1	16
BZD27C24P	F0	22.8	25.6	7	15	0.06	0.11	25	1	18
BZD27C27P	F1	25.1	28.9	7	15	0.06	0.11	25	1	20
BZD27C30P	F2	28	32	8	15	0.06	0.11	25	1	22
BZD27C33P	F3	31	35	8	15	0.06	0.11	25	1	24
BZD27C36P	F4	34	38	21	40	0.06	0.11	10	1	27
BZD27C39P	F5	37	41	21	40	0.06	0.11	10	1	30
BZD27C43P	F6	40	46	24	45	0.07	0.12	10	1	33
BZD27C47P	F7	44	50	24	45	0.07	0.12	10	1	36
BZD27C51P	F8	48	54	25	60	0.07	0.12	10	1	39
BZD27C56P	F9	52	56	25	60	0.07	0.12	10	1	43
BZD27C62P	G0	58	66	25	80	0.08	0.13	10	1	47
BZD27C68P	G1	64	72	25	80	0.08	0.13	10	1	51
BZD27C75P	G2	70	79	30	100	0.08	0.13	10	1	56
BZD27C82P	G3	77	82	60	200	0.08	0.13	10	1	62
BZD27C91P	G4	85	91	60	200	0.08	0.13	5	1	68
BZD27C100P	G5	94	106	60	200	0.09	0.13	5	1	75
BZD27C110P	G6	104	116	80	250	0.09	0.13	5	1	82
BZD27C120P	G7	114	127	150	300	0.09	0.13	5	1	91
BZD27C130P	G	124	141	150	300	0.09	0.13	5	1	100
BZD27C150P	G9	138	156	150	300	0.09	0.13	5	1	110
BZD27C160P	H0	153	171	150	350	0.09	0.13	5	1	120
BZD27C180P	H1	168	191	280	450	0.09	0.13	5	1	130
BZD27C200P	H2	188	212	350	750	0.09	0.13	5	1	150
BZD27C220P	H3	208	233	430	900	0.09	0.13	5	1	160

Notes: 1. Pulse test:  $t_p \leq 5ms$ .

Device	Rev. Breakdown Voltage	Test Current	Temperature Coefficient		Clamping Voltage		Reverse Current@ Stand-Off Voltage	
	$V_{(BR)}@I_{test}$	$I_{test}$	ALPHz@ $I_{test}$		$V_c$	@ $I_{RSM}$ (Note 1)	$I_R$	@ $V_{WM}$
	V	mA	%/ $^{\circ}C$		V	A	$\mu A$	V
	Min.		Min.	Max	Max.		Max.	
BZD27C7V5P	7	100	0	0.07	11.3	13.3	1500	6.2
BZD27C8V2P	7.7	100	0.03	0.08	12.3	12.2	1200	6.8
BZD27C9V1P	8.5	50	0.03	0.08	13.3	11.3	100	7.5
BZD27C10P	9.4	50	0.05	0.09	14.8	10.1	20	8.2
BZD27C11P	10.4	50	0.05	0.10	15.7	9.6	5	9.1
BZD27C12P	11.4	50	0.05	0.10	17	8.8	5	10
BZD27C13P	12.4	50	0.05	0.10	18.9	7.9	5	11
BZD27C15P	13.8	50	0.05	0.10	20.9	7.2	5	12
BZD27C16P	15.3	25	0.06	0.11	22.9	6.6	5	13
BZD27C18P	16.8	25	0.06	0.11	25.6	5.9	5	15
BZD27C20P	18.8	25	0.06	0.11	28.4	5.3	5	16
BZD27C22P	20.8	25	0.06	0.11	31	4.8	5	18
BZD27C24P	22.8	25	0.06	0.11	33.8	4.4	5	20
BZD27C27P	25.1	25	0.06	0.11	38.1	3.9	5	22
BZD27C30P	28	25	0.06	0.11	42.2	3.6	5	24
BZD27C33P	31	25	0.06	0.11	46.2	3.2	5	27
BZD27C36P	34	10	0.06	0.11	50.1	3	5	30
BZD27C39P	37	10	0.06	0.11	54.1	2.8	5	33
BZD27C43P	40	10	0.07	0.12	60.7	2.5	5	36
BZD27C47P	44	10	0.07	0.12	65.5	2.3	5	39
BZD27C51P	48	10	0.07	0.12	70.8	2.1	5	43
BZD27C56P	52	10	0.07	0.12	78.6	1.9	5	47
BZD27C62P	58	10	0.08	0.13	86.5	1.7	5	51
BZD27C68P	64	10	0.08	0.13	94.4	1.6	5	56
BZD27C75P	70	10	0.08	0.13	103.5	1.5	5	62
BZD27C82P	77	10	0.08	0.13	114	1.3	5	68
BZD27C91P	85	5	0.09	0.13	126	1.2	5	75
BZD27C100P	94	5	0.09	0.13	139	1.1	5	82
BZD27C110P	104	5	0.09	0.13	150	1	5	91
BZD27C120P	114	5	0.09	0.13	152	0.9	5	100
BZD27C130P	124	5	0.09	0.13	185	0.81	5	110
BZD27C150P	138	5	0.09	0.13	205	0.73	5	120
BZD27C160P	153	5	0.09	0.13	224	0.67	5	130
BZD27C180P	168	5	0.09	0.13	229	0.6	5	150
BZD27C200P	188	5	0.09	0.13	254	0.54	5	160
BZD27C220P	208	5	0.09	0.13	279	0.35	5	176

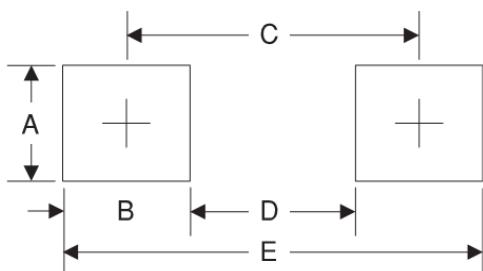
Notes: 1. Non-repetitive peak reverse current in accordance with "IEC 60-1, Section 8" (10/1000  $\mu s$  pulse)

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
- YW = Date Code
- F = Factory Code

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