

## Zener Diodes



SMA (DO-214AC)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

### FEATURES

- High reliability
- Voltage range includes 35 breakdown voltages from 10 V to 270 V with  $\pm 2\%$  for BZG03B-M-series
- Fits onto 5 mm SMD footpads
- Wave and reflow solderable
- AEC-Q101 qualified available
- Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
- Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### APPLICATIONS

- Voltage stabilization

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
$V_Z$ range nom.	10 to 270	V
Test current $I_{ZT}$	2 to 50	mA
$V_{BR}$	9.8 to 264	V
$V_{WM}$	8.2 to 220	V
$P_{PPM}$	300	W
$T_J$ max.	150	$^{\circ}C$
$V_Z$ specification	Pulse current	
Circuit configuration	Single	
Polarity	Uni-directional	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZG03B-M-series	BZG03Bxxx-M3-08	1500 (7" reel)	6000/box
BZG03B-M-series	BZG03Bxxx-M3-18	6000 (13" reel)	6000/box
BZG03B-M-series	BZG03Bxxx-HM3-08	1500 (7" reel)	6000/box
BZG03B-M-series	BZG03Bxxx-HM3-18	6000 (13" reel)	6000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SMA (DO-214AC)	73 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 $^{\circ}C$ /10 s at terminals

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}C$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	$R_{thJA} < 25\text{ K/W}$ , $T_{amb} = 75\text{ }^{\circ}C$	$P_{tot}$	3000	mW
	$R_{thJA} < 100\text{ K/W}$ , $T_{amb} = 25\text{ }^{\circ}C$	$P_{tot}$	1250	mW
Non repetitive peak surge power dissipation	$t_p = 100\text{ }\mu s$ sq.pulse, $T_j = 25\text{ }^{\circ}C$ prior to surge	$P_{ZSM}$	600	W
Junction to lead		$R_{thJL}$	25	K/W
Junction to ambient air	Mounted on epoxy-glass hard tissue, fig. 1a	$R_{thJA}$	150	K/W
	Mounted on epoxy-glass hard tissue, fig. 1b	$R_{thJA}$	125	K/W
	Mounted on Al-oxide-ceramic ( $Al_2O_3$ ), fig. 1b	$R_{thJA}$	100	K/W
Junction temperature		$T_j$	150	$^{\circ}C$
Storage temperature range		$T_{stg}$	-65 to +150	$^{\circ}C$
Forward voltage (max.)	$I_F = 0.5\text{ A}$	$V_F$	1.2	V



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)										
PART NUMBER	ZENER VOLTAGE RANGE			TEST CURRENT	REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
	$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$		$TK_{VZ}$ at $I_{ZT1}$	
	V			mA	$\mu\text{A}$	V	$\Omega$		%K	
	MIN.	NOM.	MAX.		MAX.		TYP.	MAX.	MIN.	MAX.
BZG03B10-M	9.80	10	10.20	50	10	7.5	2	4	0.05	0.09
BZG03B11-M	10.78	11	11.22	50	4	8.2	4	7	0.05	0.1
BZG03B12-M	11.76	12	12.24	50	3	9.1	4	7	0.05	0.1
BZG03B13-M	12.74	13	13.26	50	2	10	5	10	0.05	0.1
BZG03B15-M	14.70	15	15.30	50	1	11	5	10	0.05	0.1
BZG03B16-M	15.68	16	16.32	25	1	12	6	15	0.06	0.11
BZG03B18-M	17.64	18	18.36	25	1	13	6	15	0.06	0.11
BZG03B20-M	19.60	20	20.40	25	1	15	6	15	0.06	0.11
BZG03B22-M	21.56	22	22.44	25	1	16	6	15	0.06	0.11
BZG03B24-M	23.52	24	24.48	25	1	18	7	15	0.06	0.11
BZG03B27-M	26.46	27	27.54	25	1	20	7	15	0.06	0.11
BZG03B30-M	29.40	30	30.60	25	1	22	8	15	0.06	0.11
BZG03B33-M	32.34	33	33.66	25	1	24	8	15	0.06	0.11
BZG03B36-M	35.28	36	36.72	10	1	27	21	40	0.06	0.11
BZG03B39-M	38.22	39	39.78	10	1	30	21	40	0.06	0.11
BZG03B43-M	42.14	43	43.86	10	1	33	24	45	0.07	0.12
BZG03B47-M	46.06	47	47.94	10	1	36	24	45	0.07	0.12
BZG03B51-M	49.98	51	52.02	10	1	39	25	60	0.07	0.12
BZG03B56-M	54.88	56	57.12	10	1	43	25	60	0.07	0.12
BZG03B62-M	60.76	62	63.24	10	1	47	25	80	0.08	0.13
BZG03B68-M	66.64	68	69.36	10	1	51	25	80	0.08	0.13
BZG03B75-M	73.50	75	76.50	10	1	56	30	100	0.08	0.13
BZG03B82-M	80.36	82	83.64	10	1	62	30	100	0.08	0.13
BZG03B91-M	89.18	91	92.82	5	1	68	60	200	0.09	0.13
BZG03B100-M	98.00	100	102.00	5	1	75	60	200	0.09	0.13
BZG03B110-M	107.80	110	112.20	5	1	82	80	250	0.09	0.13
BZG03B120-M	117.60	120	122.40	5	1	91	80	250	0.09	0.13
BZG03B130-M	127.40	130	132.60	5	1	100	110	300	0.09	0.13
BZG03B150-M	147.00	150	153.00	5	1	110	130	300	0.09	0.13
BZG03B160-M	156.80	160	163.20	5	1	120	150	350	0.09	0.13
BZG03B180-M	176.40	180	183.60	5	1	130	180	400	0.09	0.13
BZG03B200-M	196.00	200	204.00	5	1	150	200	500	0.09	0.13
BZG03B220-M	215.60	220	224.40	2	1	160	350	750	0.09	0.13
BZG03B240-M	235.20	240	244.80	2	1	180	400	850	0.09	0.13
BZG03B270-M	264.60	270	275.40	2	1	200	450	1000	0.09	0.13

**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)



Fig. 1 - Boards for  $R_{thJA}$  Definition (Copper Overlay 35  $\mu$ )



Fig. 3 - Forward Current vs. Forward Voltage



Fig. 2 - Total Power Dissipation vs. Ambient Temperature

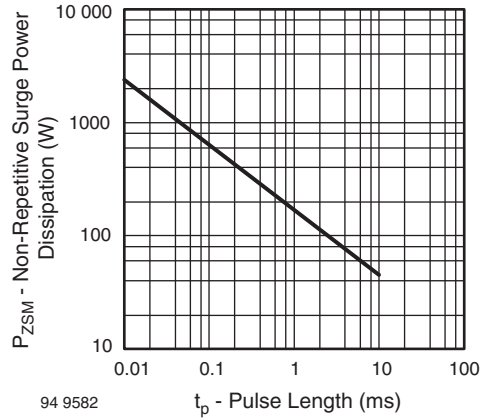


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

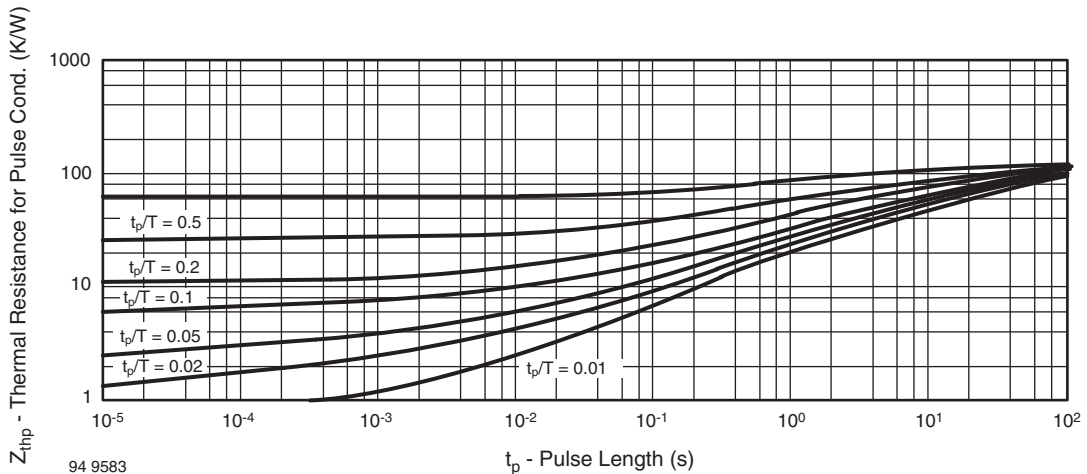
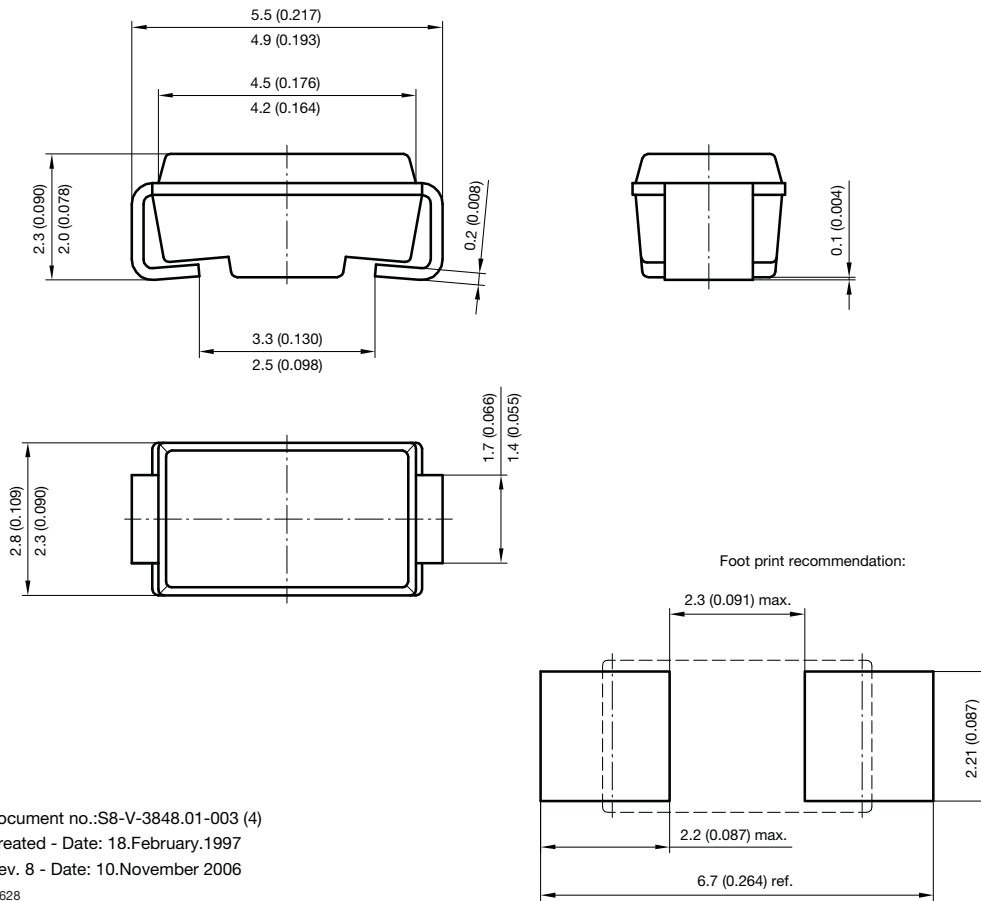


Fig. 5 - Thermal Response



## PACKAGE DIMENSIONS in millimeters (inches): SMA (DO-214AC)



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