

## Zener Diodes



SMA (DO-214AC)

### ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V <sub>Z</sub> range nom.	3.3 to 100	V
Test current I <sub>ZT</sub>	2.7 to 80	mA
V <sub>BR</sub>	5.49 to 98	V
V <sub>WM</sub>	4.7 to 90	V
P <sub>PPM</sub>	40	W
T <sub>J</sub> max.	150	°C
V <sub>Z</sub> specification	Pulse current	
Circuit configuration	Single	
Polarity	Uni-directional	

### FEATURES

- High reliability
- Voltage range includes 37 breakdown voltages from 3.3 V to 100 V with  $\pm 2\%$  for BZG05B-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)



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

### APPLICATIONS

- Voltage stabilization

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZG05B-M-series	BZG05Bxxx-M3-08	1500 per 7" reel	6000/box
BZG05B-M-series	BZG05Bxxx-M3-18	6000 per 13" reel	6000/box
BZG05B-M-series	BZG05Bxxx-HM3-08	1500 per 7" reel	6000/box
BZG05B-M-series	BZG05Bxxx-HM3-18	6000 per 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)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Power dissipation	R <sub>thJA</sub> < 30 K/W, T <sub>amb</sub> = 60 °C	P <sub>tot</sub>	3000	mW	
	R <sub>thJA</sub> < 100 K/W, T <sub>amb</sub> = 25 °C	P <sub>tot</sub>	1250	mW	
Non repetitive peak surge power dissipation	t <sub>p</sub> = 100 $\mu$ s sq. pulse, T <sub>j</sub> = 25 °C prior to surge	P <sub>ZSM</sub>	60	W	
Junction to lead		R <sub>thJL</sub>	30	K/W	
Junction to ambient air	Mounted on epoxy-glass hard tissue, fig. 1a	R <sub>thJA</sub>	150	K/W	
	Mounted on epoxy-glass hard tissue, fig. 1b	R <sub>thJA</sub>	125	K/W	
	Mounted on Al-oxide-ceramic (Al <sub>2</sub> O <sub>3</sub> ), fig. 1b	R <sub>thJA</sub>	100	K/W	
Junction temperature		T <sub>j</sub>	150	°C	
Storage temperature range		T <sub>stg</sub>	-65 to +150	°C	
Operating temperature range		T <sub>op</sub>	-65 to +150	°C	
Forward voltage (max.)	I <sub>F</sub> = 0.2 A	V <sub>F</sub>	1.2	V	

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

PART NUMBER	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT	
	$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_{ZT2}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$	$Z_{ZK}$ at $I_{ZT2}$	$TC_{VZ}$ at $I_{ZT1}$	
	V			mA	mA	$\mu\text{A}$	V	$\Omega$		% / K	
	MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
BZG05B3V3-M	3.23	3.3	3.37	80	1	40	1	20	400	-0.08	-0.05
BZG05B3V6-M	3.53	3.6	3.67	60	1	20	1	20	500	-0.08	-0.05
BZG05B3V9-M	3.82	3.9	3.98	60	1	10	1	15	500	-0.07	-0.02
BZG05B4V3-M	4.21	4.3	4.39	50	1	3	1	13	500	-0.07	-0.01
BZG05B4V7-M	4.61	4.7	4.79	45	1	3	1	13	600	-0.03	0.04
BZG05B5V1-M	5.00	5.1	5.20	45	1	1	1.5	10	500	-0.01	0.04
BZG05B5V6-M	5.49	5.6	5.71	45	1	1	2	7	400	0	0.045
BZG05B6V2-M	6.08	6.2	6.32	35	1	1	3	4	300	0.01	0.055
BZG05B6V8-M	6.66	6.8	6.94	35	1	1	4	3.5	300	0.015	0.06
BZG05B7V5-M	7.35	7.5	7.65	35	0.5	1	4.5	3	200	0.02	0.065
BZG05B8V2-M	8.04	8.2	8.36	25	0.5	1	6.2	5	200	0.03	0.07
BZG05B9V1-M	8.92	9.1	9.28	25	0.5	1	6.8	5	200	0.035	0.075
BZG05B10-M	9.80	10	10.20	25	0.5	0.5	7	7	200	0.04	0.08
BZG05B11-M	10.78	11	11.22	20	0.5	0.5	8.2	8	300	0.045	0.08
BZG05B12-M	11.76	12	12.24	20	0.5	0.5	9.1	9	350	0.045	0.085
BZG05B13-M	12.74	13	13.26	20	0.5	0.5	10	10	400	0.05	0.085
BZG05B15-M	14.70	15	15.30	15	0.5	0.5	11	15	500	0.055	0.09
BZG05B16-M	15.68	16	16.32	15	0.5	0.5	12	15	500	0.055	0.09
BZG05B18-M	17.64	18	18.36	15	0.5	0.5	13	20	500	0.06	0.09
BZG05B20-M	19.60	20	20.40	10	0.5	0.5	15	24	600	0.06	0.09
BZG05B22-M	21.56	22	22.44	10	0.5	0.5	16	25	600	0.06	0.095
BZG05B24-M	23.52	24	24.48	10	0.5	0.5	18	25	600	0.06	0.095
BZG05B27-M	26.46	27	27.54	8	0.25	0.5	20	30	750	0.06	0.095
BZG05B30-M	29.40	30	30.60	8	0.25	0.5	22	30	1000	0.06	0.095
BZG05B33-M	32.34	33	33.66	8	0.25	0.5	24	35	1000	0.06	0.095
BZG05B36-M	35.28	36	36.72	8	0.25	0.5	27	40	1000	0.07	0.11
BZG05B39-M	38.22	39	39.78	6	0.25	0.5	30	50	1000	0.07	0.11
BZG05B43-M	42.14	43	43.86	6	0.25	0.5	33	50	1000	0.07	0.11
BZG05B47-M	46.06	47	47.94	4	0.25	0.5	36	90	1500	0.07	0.11
BZG05B51-M	49.98	51	52.02	4	0.25	0.5	39	115	1500	0.08	0.12
BZG05B56-M	54.88	56	57.12	4	0.25	0.5	43	120	2000	0.08	0.12
BZG05B62-M	60.76	62	63.24	4	0.25	0.5	47	125	2000	0.08	0.12
BZG05B68-M	66.64	68	69.36	4	0.25	0.5	51	130	2000	0.08	0.12
BZG05B75-M	73.50	75	76.50	4	0.25	0.5	56	135	2000	0.08	0.12
BZG05B82-M	80.36	82	83.64	2.7	0.25	0.5	62	200	3000	0.08	0.12
BZG05B91-M	89.18	91	92.82	2.7	0.25	0.5	68	250	3000	0.08	0.12
BZG05B100-M	98.00	100	102.00	2.7	0.25	0.5	75	350	3000	0.08	0.12

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

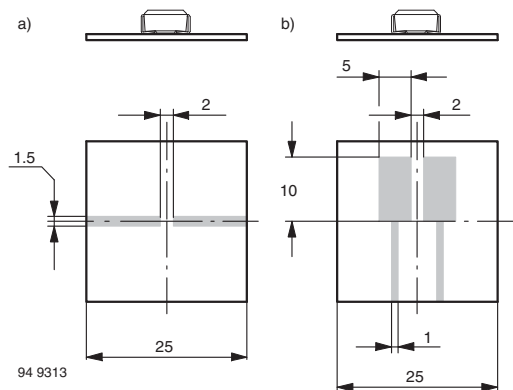


Fig. 1 - Boards for  $R_{thJA}$  Definition (Copper Overlay 35  $\mu$ )

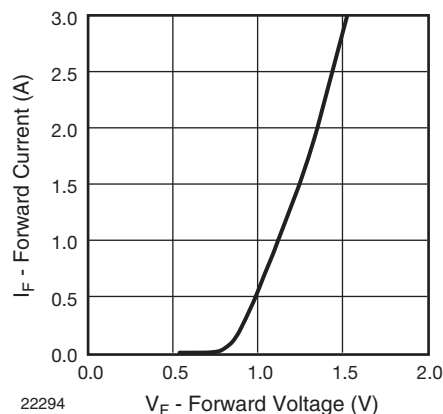


Fig. 3 - Forward Current vs. Forward Voltage

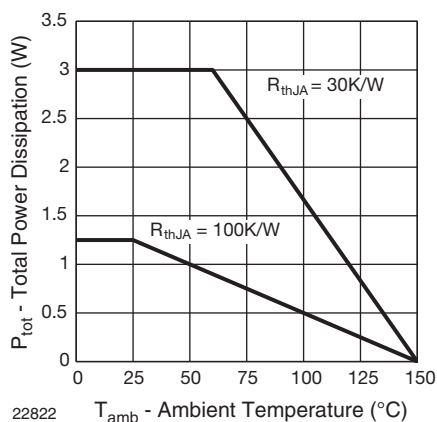


Fig. 2 - Typ. Total Power Dissipation vs. Ambient Temperature

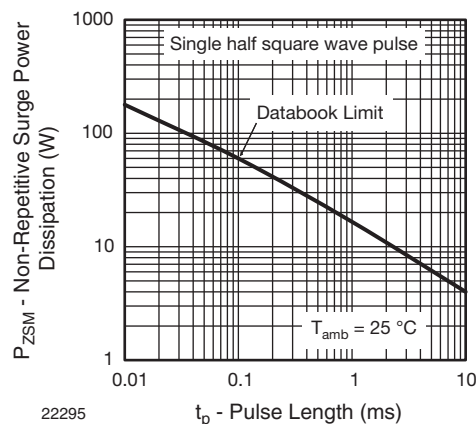


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

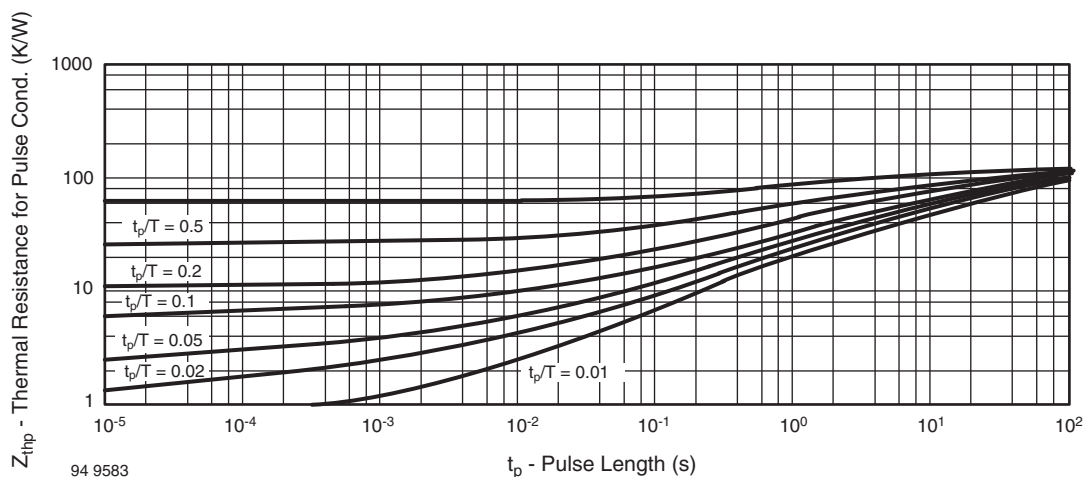
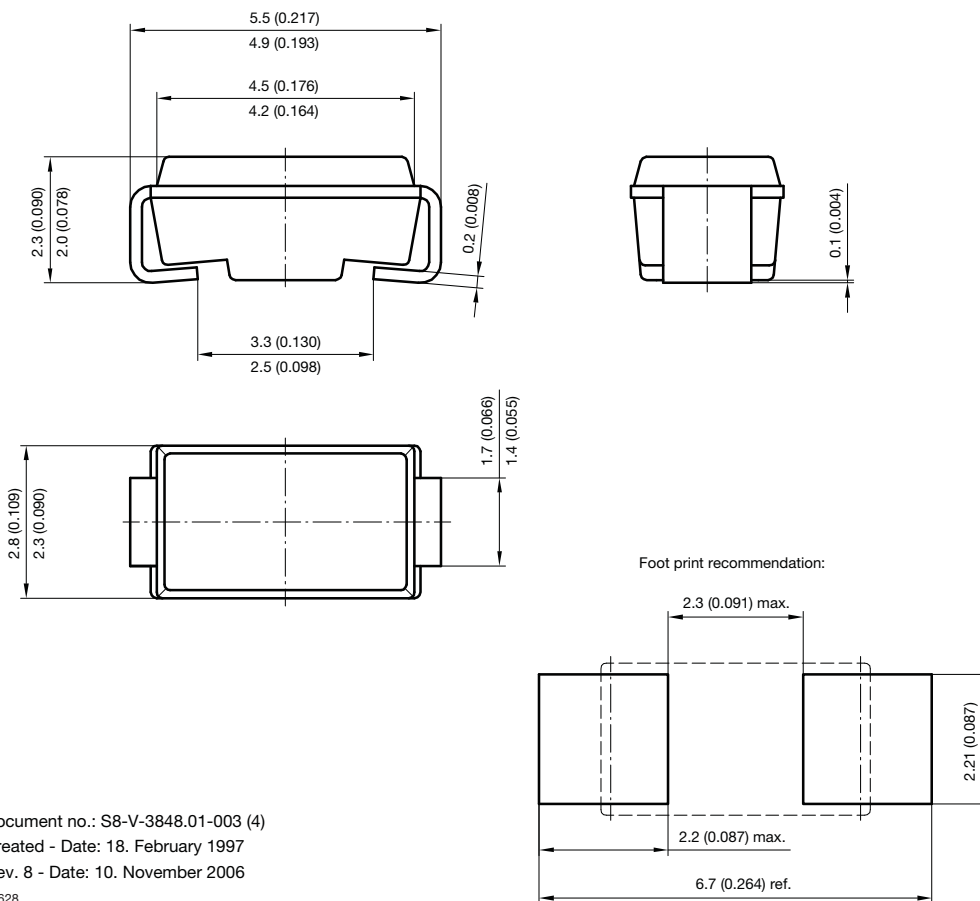


Fig. 5 - Thermal Response



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



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