



# Zener Diodes



SMA (DO-214AC)

## DESIGN SUPPORT TOOLS

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## FEATURES

- High reliability
- Voltage range 10 V to 270 V
- 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

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V <sub>Z</sub> range nom.	10 to 270	V
Test current I <sub>ZT</sub>	2 to 50	mA
V <sub>BR</sub>	9.4 to 251	V
V <sub>WM</sub>	8.2 to 220	V
P <sub>PPM</sub>	300	W
T <sub>J</sub> max.	150	°C
V <sub>Z</sub> specification	Pulse current	
Circuit configuration	Single	
Polarity	Uni-directional	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
BZG03C-M-series	BZG03Cxxx-M3-08	1500 (7" reel)	6000/box
BZG03C-M-series	BZG03Cxxx-M3-18	6000 (13" reel)	6000/box
BZG03C-M-series	BZG03Cxxx-HM3-08	1500 (7" reel)	6000/box
BZG03C-M-series	BZG03Cxxx-HM3-18	6000 (13" reel)	6000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND	MOISTURE SENSITIVITY	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> < 25 K/W	P <sub>tot</sub>	3000	mW
	R <sub>thJA</sub> < 100 K/W	P <sub>tot</sub>	1250	mW
Non repetitive peak surge power	t <sub>p</sub> = 100 μs sq.pulse, T <sub>j</sub> = 25 °C prior to surge	P <sub>ZSM</sub>	600	W
Junction to lead		R <sub>thJL</sub>	25	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> = 0.5 A	V <sub>F</sub>	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.
BZG03C10-M	9.4	10	10.6	50	10	7.5	2	4	0.05	0.09
BZG03C11-M	10.4	11	11.6	50	4	8.2	4	7	0.05	0.1
BZG03C12-M	11.4	12	12.7	50	3	9.1	4	7	0.05	0.1
BZG03C13-M	12.4	13	14.1	50	2	10	5	10	0.05	0.1
BZG03C15-M	13.8	15	15.6	50	1	11	5	10	0.05	0.1
BZG03C16-M	15.3	16	17.1	25	1	12	6	15	0.06	0.11
BZG03C18-M	16.8	18	19.1	25	1	13	6	15	0.06	0.11
BZG03C20-M	18.8	20	21.2	25	1	15	6	15	0.06	0.11
BZG03C22-M	20.8	22	23.3	25	1	16	6	15	0.06	0.11
BZG03C24-M	22.8	24	25.6	25	1	18	7	15	0.06	0.11
BZG03C27-M	25.1	27	28.9	25	1	20	7	15	0.06	0.11
BZG03C30-M	28	30	32	25	1	22	8	15	0.06	0.11
BZG03C33-M	31	33	35	25	1	24	8	15	0.06	0.11
BZG03C36-M	34	36	38	10	1	27	21	40	0.06	0.11
BZG03C39-M	37	39	41	10	1	30	21	40	0.06	0.11
BZG03C43-M	40	43	46	10	1	33	24	45	0.07	0.12
BZG03C47-M	44	47	50	10	1	36	24	45	0.07	0.12
BZG03C51-M	48	51	54	10	1	39	25	60	0.07	0.12
BZG03C56-M	52	56	60	10	1	43	25	60	0.07	0.12
BZG03C62-M	58	62	66	10	1	47	25	80	0.08	0.13
BZG03C68-M	64	68	72	10	1	51	25	80	0.08	0.13
BZG03C75-M	70	75	79	10	1	56	30	100	0.08	0.13
BZG03C82-M	77	82	87	10	1	62	30	100	0.08	0.13
BZG03C91-M	85	91	96	5	1	68	60	200	0.09	0.13
BZG03C100-M	94	100	106	5	1	75	60	200	0.09	0.13
BZG03C110-M	104	110	116	5	1	82	80	250	0.09	0.13
BZG03C120-M	114	120	127	5	1	91	80	250	0.09	0.13
BZG03C130-M	124	130	141	5	1	100	110	300	0.09	0.13
BZG03C150-M	138	150	156	5	1	110	130	300	0.09	0.13
BZG03C160-M	158	160	171	5	1	120	150	350	0.09	0.13
BZG03C180-M	168	180	191	5	1	130	180	400	0.09	0.13
BZG03C200-M	188	200	212	5	1	150	200	500	0.09	0.13
BZG03C220-M	208	220	233	2	1	160	350	750	0.09	0.13
BZG03C240-M	228	240	256	2	1	180	400	850	0.09	0.13
BZG03C270-M	251	270	289	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

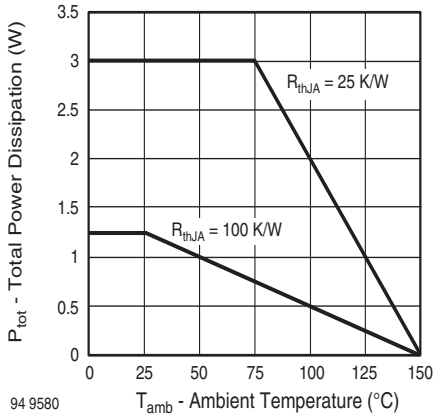


Fig. 2 - Total Power Dissipation vs. Ambient Temperature

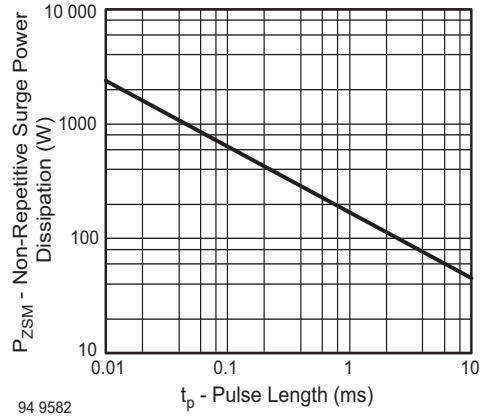


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

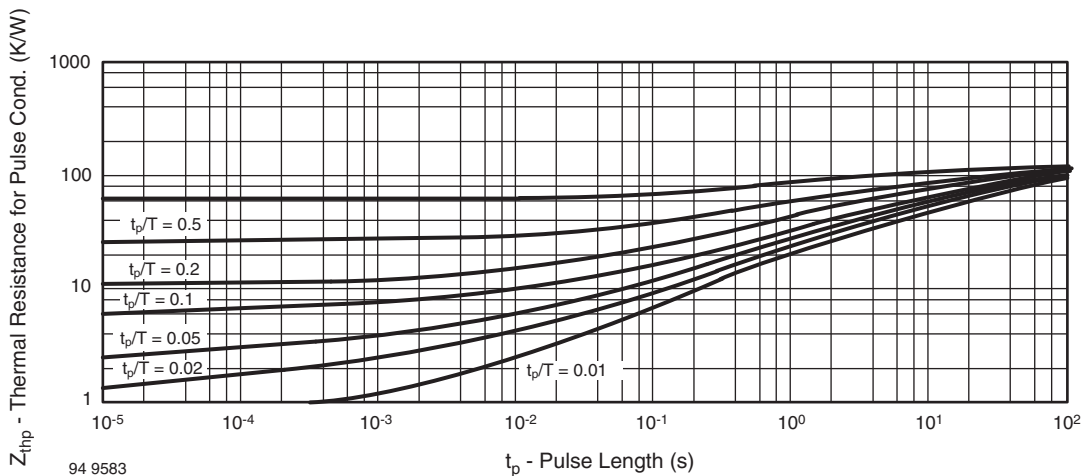
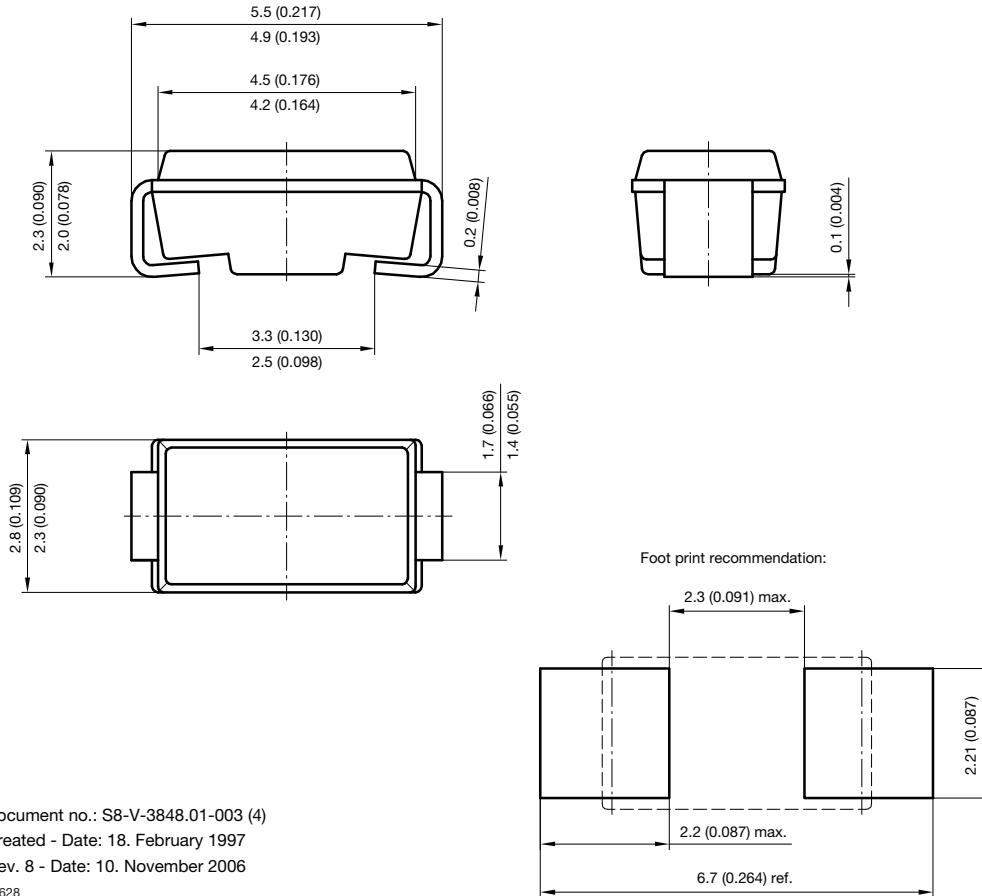


Fig. 5 - Thermal Response



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



Document no.: S8-V-3848.01-003 (4)  
Created - Date: 18. February 1997  
Rev. 8 - Date: 10. November 2006  
19628



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