Voltage Regulators, Peak Power Zener Surge Rated, 600 Watt

BZG03C15 Series

The SMA series is supplied in **onsemi**'s exclusive, cost-effective, highly reliable SURMETIC package and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications. This new line of 1.5 watt Zener diodes offers the following advantages:

Specification Features

- Standard Zener Breakdown Voltage − 15 V to 150 V
- Peak Power 600 Watts @ 100 μs
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- Response Time is Typically < 1.0 ns
- Flat Handling Surface for Accurate Placement
- Package Design for Top Slide or Bottom Circuit Board Mounting
- Low Profile Package
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Mechanical Characteristics

CASE: Void-free, transfer-molded plastic

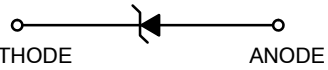
FINISH: All external surfaces are corrosion resistant and leads are readily solderable

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES: 260°C for 10 Seconds

POLARITY: Cathode indicated by molded polarity notch or polarity band

MOUNTING POSITION: Any

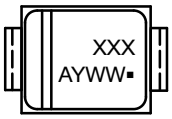
PLASTIC SURFACE MOUNT ZENER VOLTAGE REGULATORS 600 WATTS PEAK POWER





SMA
CASE 403D

MARKING DIAGRAM



XXX	= Specific Device Code (See Table on Page 2)
A	= Assembly Location
Y	= Year
WW	= Work Week
▪	= Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
BZG03C15G	SMA (Pb−Free)	5000/Tape & Reel
BZG03C150G	SMA (Pb−Free)	5000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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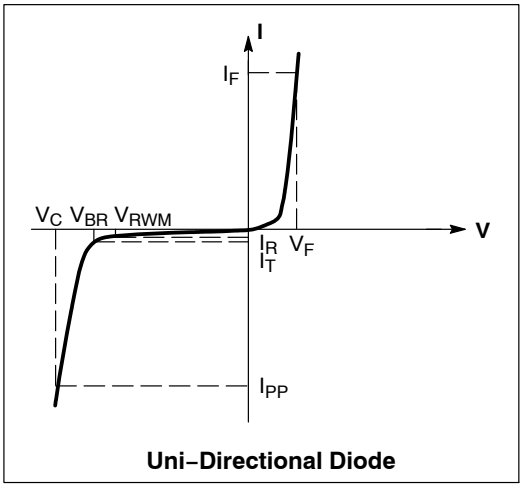
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Power Dissipation (Note 1) @ T_L = 25°C, t_P = 100 μs	P_{ZSM}	600	W
DC Power Dissipation @ T_L = 75°C Measured Zero Lead Length (Note 2) Derate Above 75°C Thermal Resistance, Junction−to−Lead	P_D $R_{\theta JL}$	1.5 20 50	W mW/°C °C/W
Forward Surge Current (Note 3) @ T_A = 25°C	I_{FSM}	40	A
Operating and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. 100 μs, non−repetitive square pulse
2. 1 in. square copper pad, FR−4 board
3. 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum



Uni−Directional Diode

SYMBOLS DEFINITIONS

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 1.2 V Max. @ I_F = 0.5 A for all types)

Device*	Device Marking	V_{RWM} (Note 4)	I_R @ V_{RWM}	Breakdown Voltage				Z_{zt} @ I_T	
				V_{BR} (V) (Note 5)			@ I_T	Typ	Max
		Volts	μA	Min	Nom	Max	mA	Ω	Ω
BZG03C15, G	G15	11	1	13.8	15.0	15.6	50	5.0	10.0
BZG03C150, G	G150	110	1	138	150	156	5	130	300

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
4. A transient suppressor is normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal to or greater than the DC or continuous peak operating voltage level
5. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C

*The "G" suffix indicates Pb−Free package available.

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RATING AND TYPICAL CHARACTERISTIC CURVES

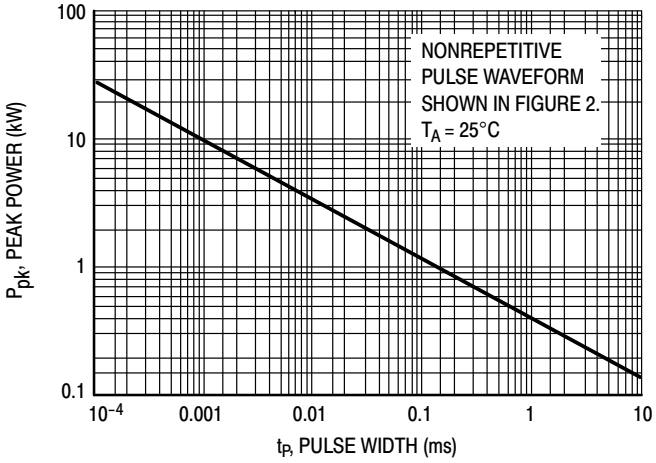

Figure 1. Pulse Rating Curve

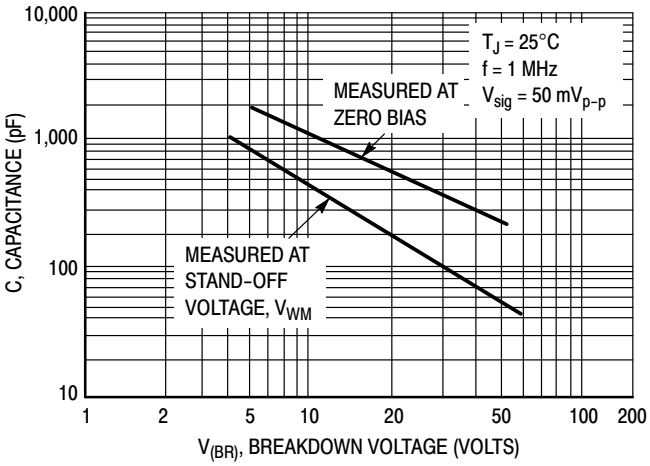

Figure 3. Typical Junction Capacitance

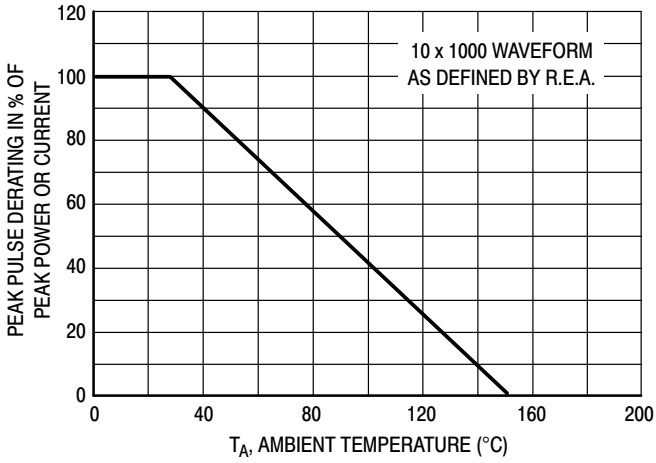

Figure 2. Pulse Derating Curve

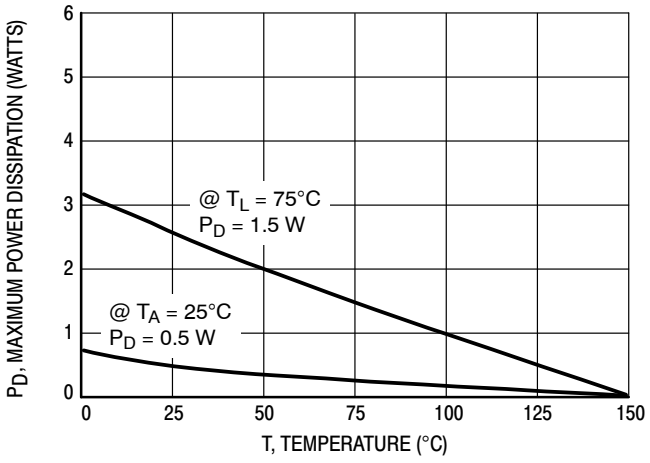

Figure 4. Steady State Power Derating

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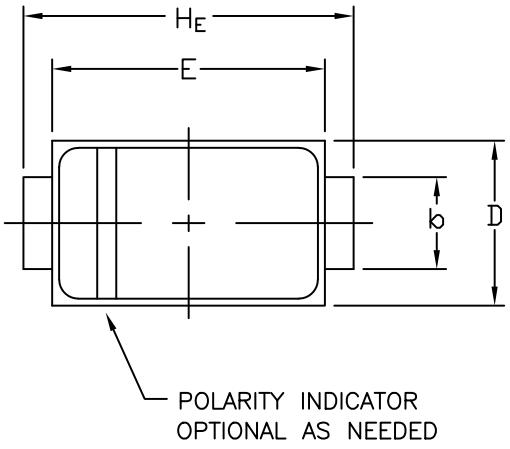
ISSUE J

DATE 22 OCT 2021



STYLE 1 STYLE 2

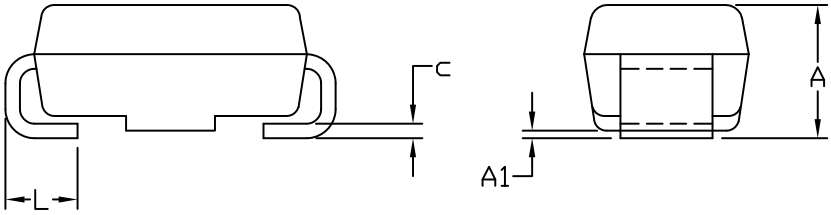
SCALE 1:1



NOTES:

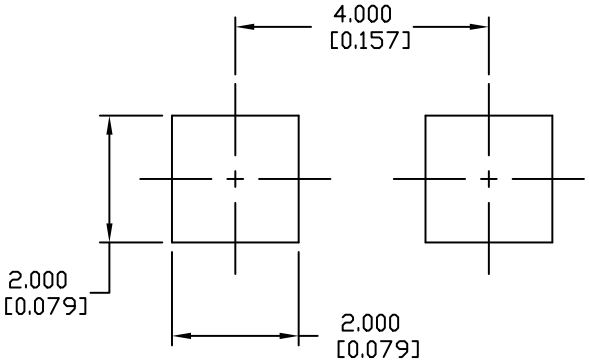
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L.

	MILLIMETERS			INCHES		
DIM	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.97	2.10	2.20	0.078	0.083	0.087
A1	0.05	0.10	0.20	0.002	0.004	0.008
b	1.27	1.45	1.63	0.050	0.057	0.064
c	0.15	0.28	0.41	0.006	0.011	0.016
D	2.29	2.60	2.92	0.090	0.103	0.115
E	4.06	4.32	4.57	0.160	0.170	0.180
HE	4.83	5.21	5.59	0.190	0.205	0.220
L	0.76	1.14	1.52	0.030	0.045	0.060



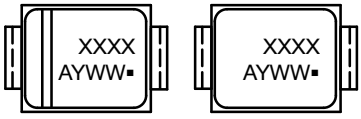
STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY



RECOMMENDED
MOUNTING FOOTPRINT

GENERIC
MARKING DIAGRAM*



STYLE 1 STYLE 2

XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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