

# Voltage Regulators, Peak Power Zener Surge Rated, 600 Watt

## BZG03C15 Series

The SMA series is supplied in ON Semiconductor'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  $\mu$ s
- 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

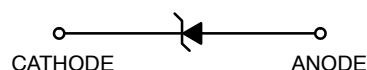
**MOUNTING POSITION:** Any



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## 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 <sup>†</sup>
BZG03C15G	SMA (Pb-Free)	5000/Tape & Reel
BZG03C150G	SMA (Pb-Free)	5000/Tape & Reel

<sup>†</sup>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.

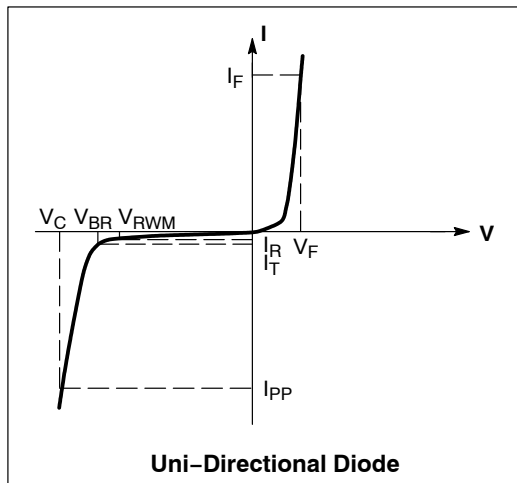
## BZG03C15 Series

### MAXIMUM RATINGS

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

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.

- 100  $\mu\text{s}$ , non-repetitive square pulse
- 1 in. square copper pad, FR-4 board
- 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum



### 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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 1.2\ \text{V}$ Max. @ $I_F = 0.5\ \text{A}$ 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	$\mu\text{A}$	Min	Nom	Max	mA	$\Omega$	$\Omega$
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

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  $25^\circ\text{C}$

\*The "G" suffix indicates Pb-Free package available.

# BZG03C15 Series

## RATING AND TYPICAL CHARACTERISTIC CURVES

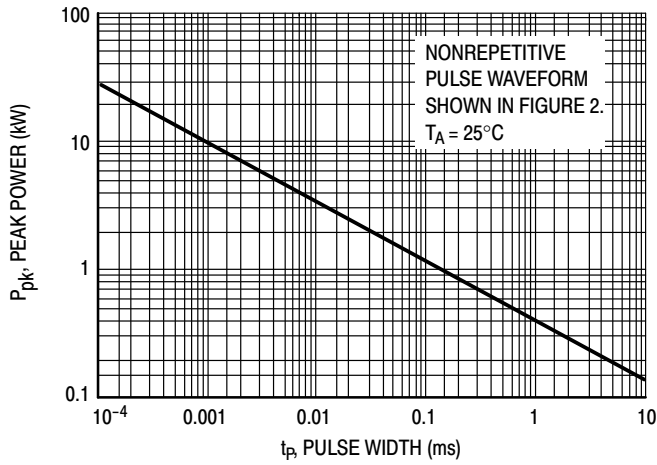


Figure 1. Pulse Rating Curve

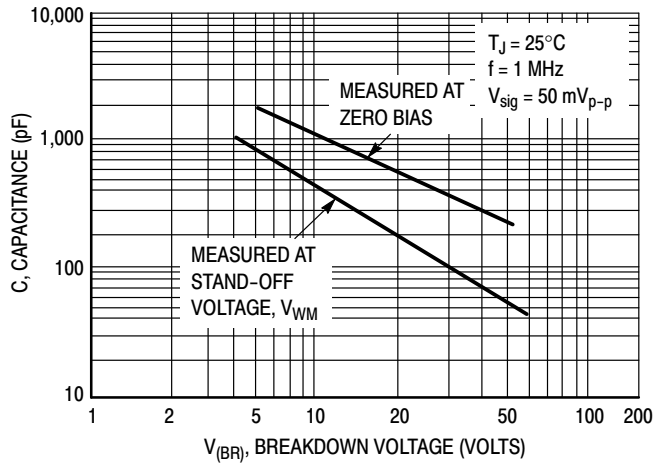


Figure 3. Typical Junction Capacitance

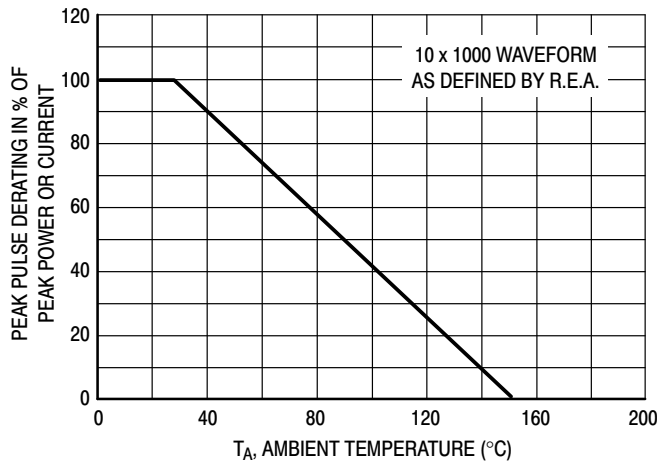


Figure 2. Pulse Derating Curve

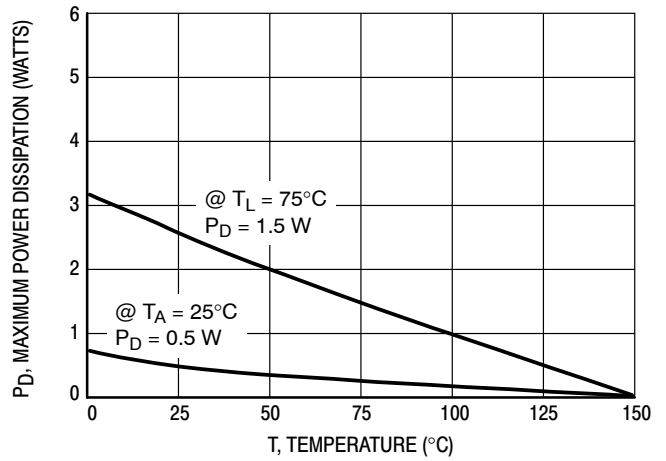


Figure 4. Steady State Power Derating

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

ON Semiconductor®



STYLE 1

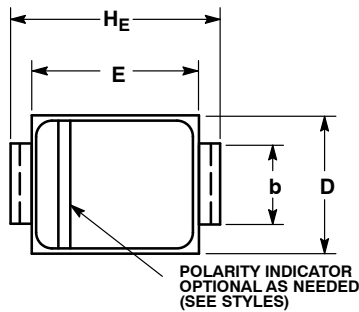


STYLE 2

SCALE 1:1

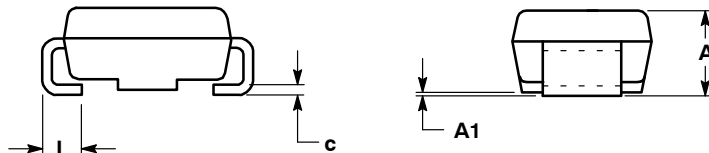
### SMA CASE 403D ISSUE H

DATE 23 SEP 2015

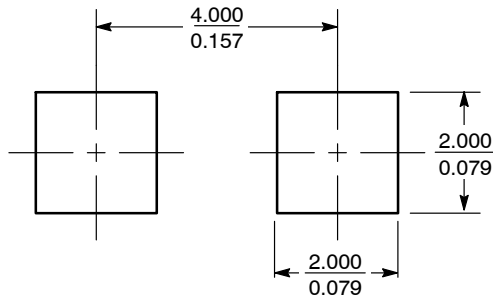


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L.

DIM	MILLIMETERS			INCHES		
	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



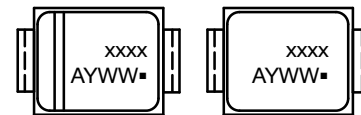
### SOLDERING FOOTPRINT\*



SCALE 8:1 (mm/inches)

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

### 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.

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

STYLE 2:  
NO POLARITY

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DESCRIPTION:	SMA	PAGE 1 OF 1

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