

# BZG03C15 Series

## 600 Watt Peak Power Zener Surge Rated Voltage Regulators

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
- Pb-Free Packages are Available

### 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

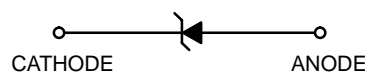
**POLARITY:** Cathode indicated by molded polarity notch or polarity band

**MOUNTING POSITION:** Any



**ON Semiconductor®**

## PLASTIC SURFACE MOUNT ZENER VOLTAGE REGULATORS 600 WATTS PEAK POWER



**SMA  
CASE 403D  
PLASTIC**

### MARKING DIAGRAM



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

### ORDERING INFORMATION

Device	Package	Shipping†
BZG03C15	SMA	5000/Tape & Reel
BZG03C15G	SMA (Pb-Free)	5000/Tape & Reel
BZG03C150	SMA	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

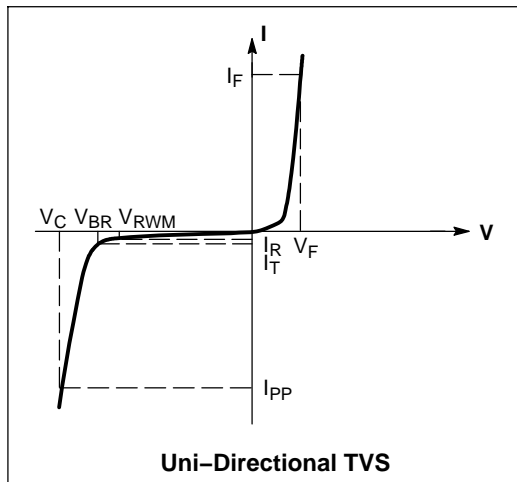
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## MAXIMUM RATINGS

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	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, 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),  $PW = 8.3 \text{ ms}$ , 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) Volts	$I_R @ V_{RWM}$ $\mu\text{A}$	Breakdown Voltage			$Z_{zt} @ I_T$		
				$V_{BR} (V)$ (Note 5)			@ $I_T$ mA	Typ $\Omega$	Max $\Omega$
				Min	Nom	Max			
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.

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## RATING AND TYPICAL CHARACTERISTIC CURVES

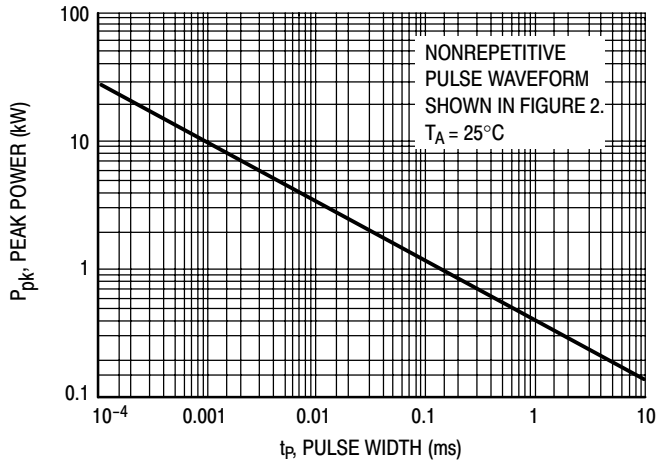


Figure 1. Pulse Rating Curve

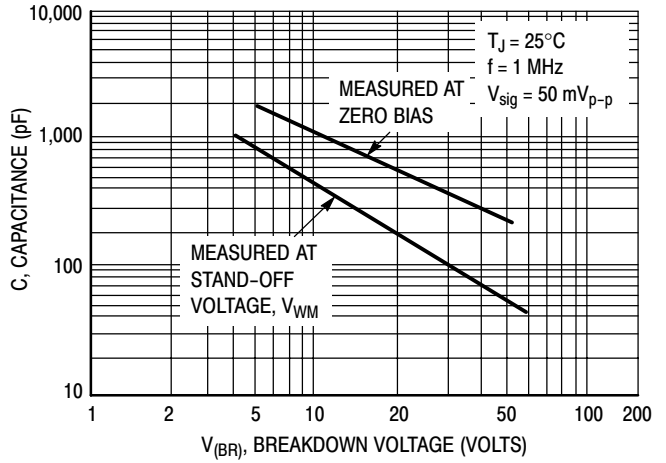


Figure 3. Typical Junction Capacitance

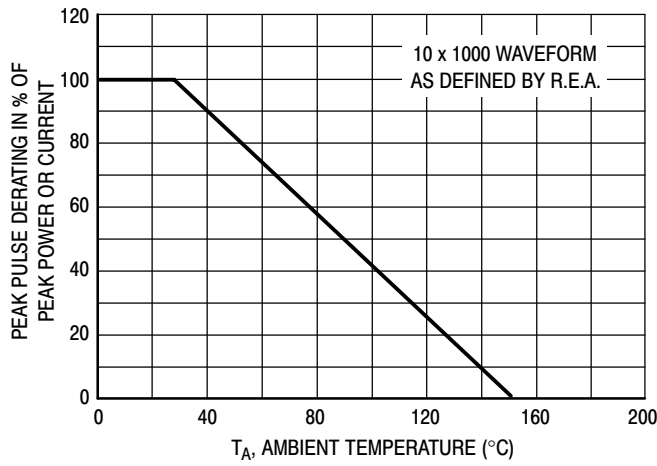


Figure 2. Pulse Derating Curve

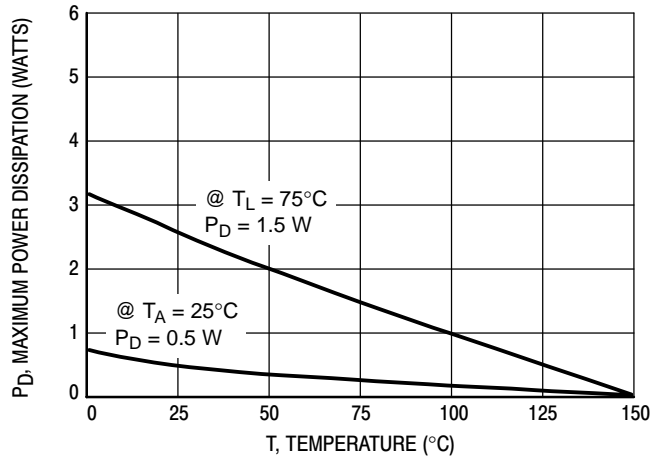
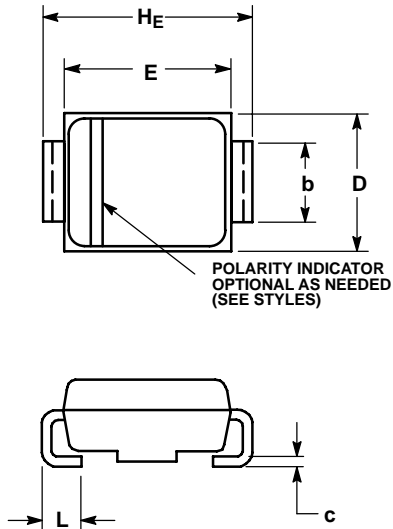


Figure 4. Steady State Power Derating

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## PACKAGE DIMENSIONS

### SMA CASE 403D-02 ISSUE C

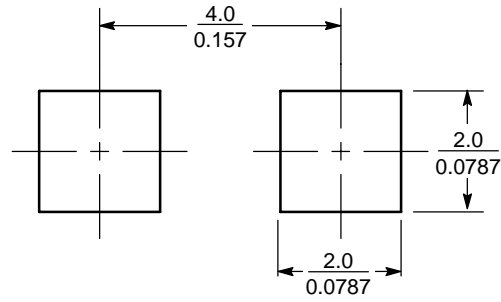


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.91	2.16	2.41	0.075	0.085	0.095
A1	0.05	0.10	0.15	0.002	0.004	0.006
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

### SOLDERING FOOTPRINT\*



SCALE 8:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

