

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 μ 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

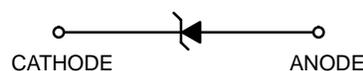
MOUNTING POSITION: Any



ON Semiconductor®

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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 Brochure, BRD8011/D.

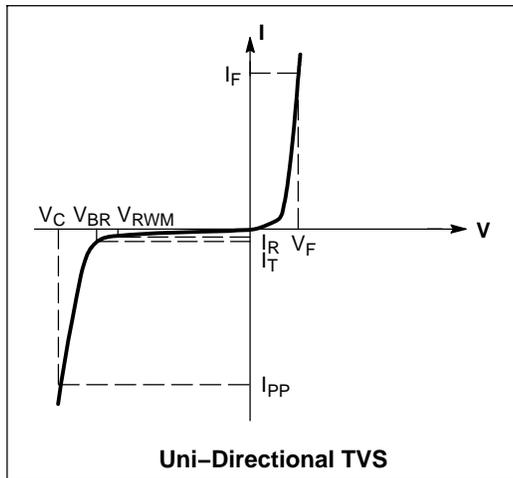
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MAXIMUM RATINGS

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°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 μs , 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	$I_R @ V_{RWM}$ μA	Breakdown Voltage			$Z_{zt} @ I_T$		
				$V_{BR} (V)$ (Note 5)			@ I_T mA	Typ Ω	Max Ω
				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°C

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

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RATING AND TYPICAL CHARACTERISTIC CURVES

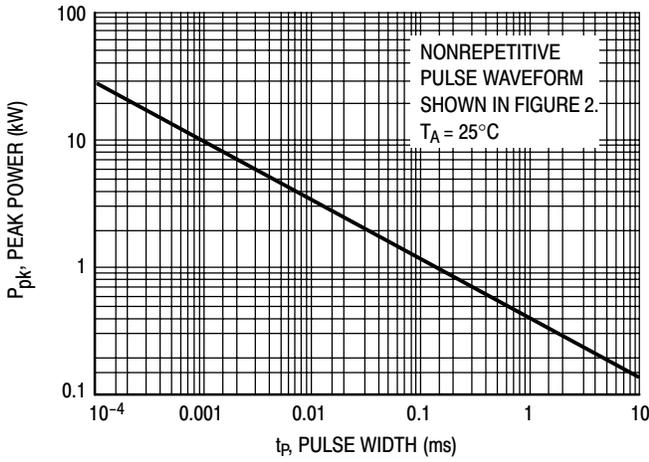


Figure 1. Pulse Rating Curve

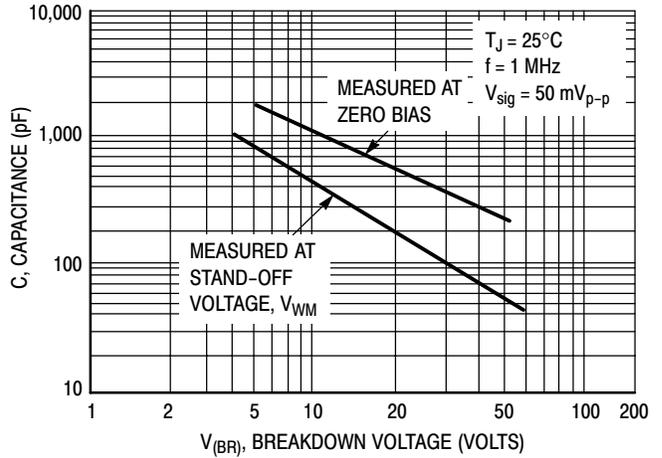


Figure 3. Typical Junction Capacitance

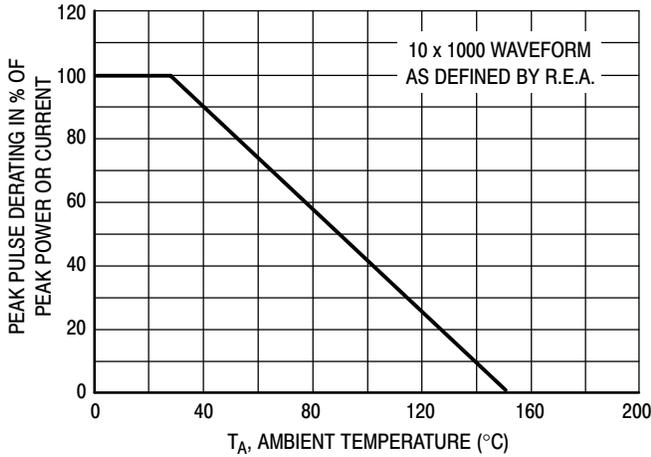


Figure 2. Pulse Derating Curve

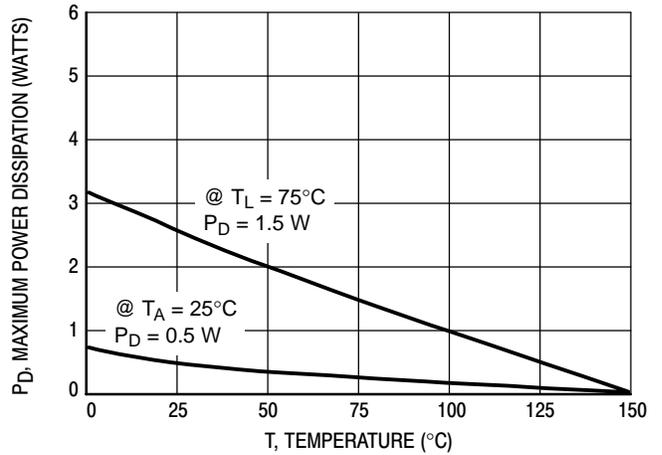
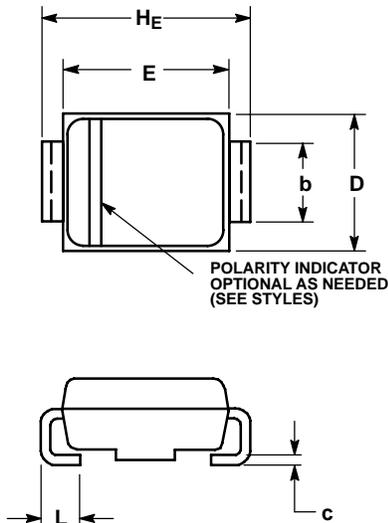


Figure 4. Steady State Power Derating

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PACKAGE DIMENSIONS

SMA CASE 403D-02 ISSUE C

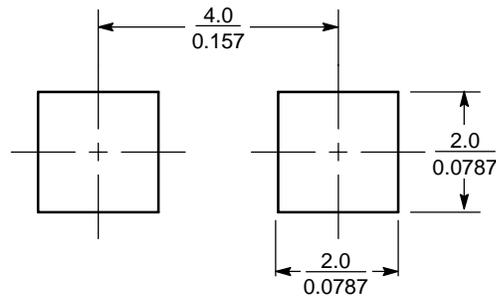


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

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.

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