

1SMF5920BT1G

Product Preview

2.5 Watt Zener Diode in Flat Lead Package

This complete new line of 2.5 Watt Zener Diodes are offered in highly efficient micro miniature and space saving surface mount design. Because of its small size, it is ideal for use in cellular phones, portable devices, business machines and many other industrial/consumer applications.

Features

- Zener Breakdown Voltage: 6.2 V
- Low Leakage < 5 μ A
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- Small Footprint – Footprint Area of 8.45 mm²
- Low Profile – Maximum Height of 1.0 mm
- Supplied in 8 mm Tape and Reel – 3,000 Units per Reel
- Cathode Indicated by Polarity Band
- Lead Orientation in Tape: Cathode Lead to Sprocket Holes
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic
Epoxy Meets UL 94 V-0

LEAD FINISH: 100% Matte Sn (Tin)

MOUNTING POSITION: Any

QUALIFIED MAX REFLOW TEMPERATURE: 260°C

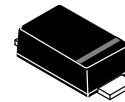
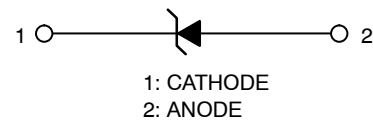
Device Meets MSL 1 Requirements



ON Semiconductor[®]

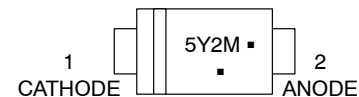
<http://onsemi.com>

PLASTIC SURFACE MOUNT 2.5 WATT ZENER DIODE 6.2 VOLTS



**SOD-123FL
CASE 498
PLASTIC**

MARKING DIAGRAM



5Y2 = Device Code

M = Date Code

▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
1SMF5920BT1G	SOD-123FL (Pb-Free)	3000/Tape & Reel

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

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

1SMF5920BT1G

MAXIMUM RATINGS

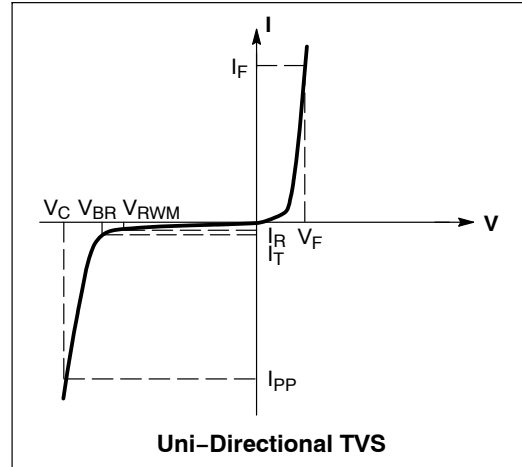
Rating	Symbol	Value	Unit
DC Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1) Derate above 25°C	P_D	350	mW
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	2.9	$\text{mW}/^\circ\text{C}$
Thermal Resistance, Junction-to-Lead	$R_{\theta JL}$	350	$^\circ\text{C}/\text{W}$
Maximum DC Power Dissipation (Notes 1 and 2)	P_D	30	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Mounted with recommended minimum pad size, PC board FR-4.
2. At lead temperature 75°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 1.5\text{ V Max.}$ @ $I_F = 200\text{ mA}$ for all types)

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 ($T_L = 30^\circ\text{C}$ unless otherwise noted, $V_F = 1.25\text{ Volts}$ @ 200 mA)

Device	Device Marking	Zener Voltage (Note 3)			I_{ZT} (mA)	$I_R @ V_R$ (μA)	V_R (V)	$Z_{ZT} @ I_{ZT}$ (Note 4) (Ω)	$Z_{ZK} @ I_{ZK}$ (Note 4) (Ω)	I_{ZK} (mA)
		$V_Z @ I_{ZT}$ (Volts)								
		Min	Nom	Max						
1SMF5920BT1G	5Y2	5.89	6.2	6.51	60.5	5.0	4.0	2.0	200	1.0

3. Zener voltage is measured with the device junction in thermal equilibrium with an ambient temperature of 25°C .
4. Zener Impedance Derivation Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the AC current applied. The specified limits are for $I_Z(\text{ac}) = 0.1 I_Z(\text{dc})$ with the ac frequency = 60 Hz.

1SMF5920BT1G

TYPICAL CHARACTERISTICS

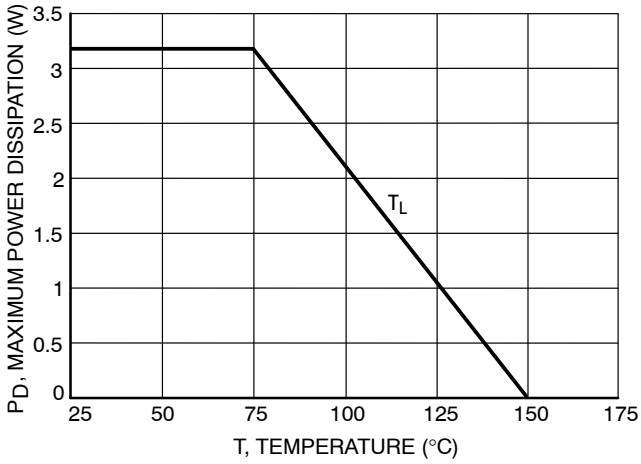


Figure 1. Steady State Power Derating

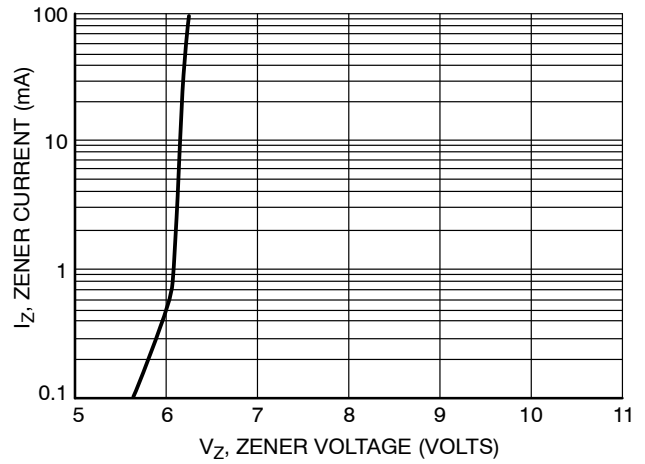


Figure 2. V_Z

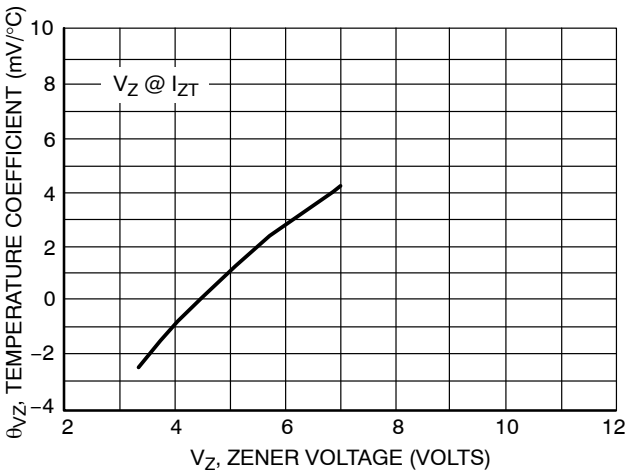


Figure 3. Zener Voltage

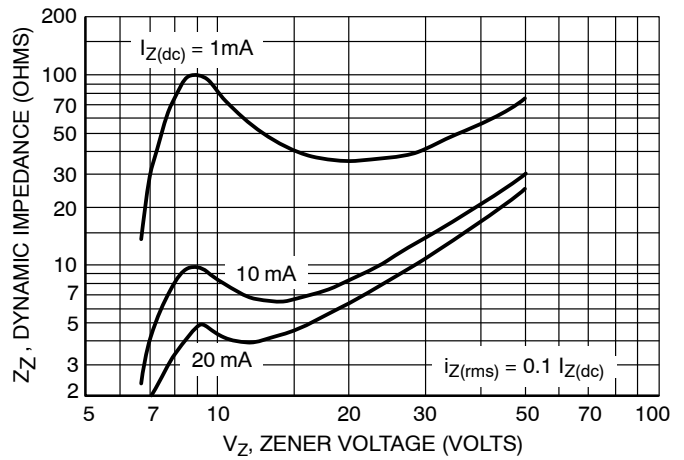


Figure 4. Effect of Zener Voltage

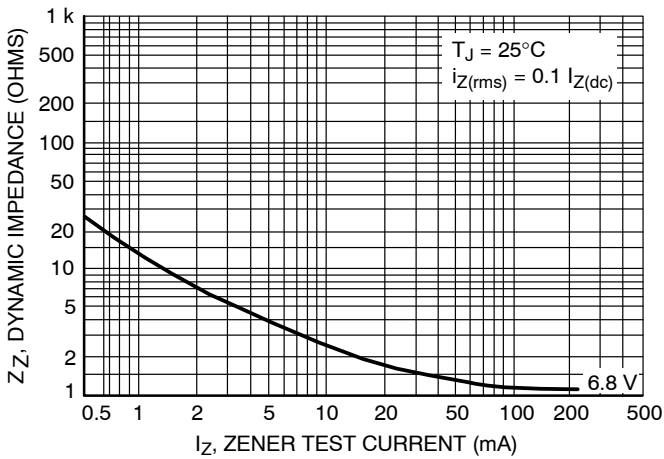


Figure 5. Effect of Zener Current

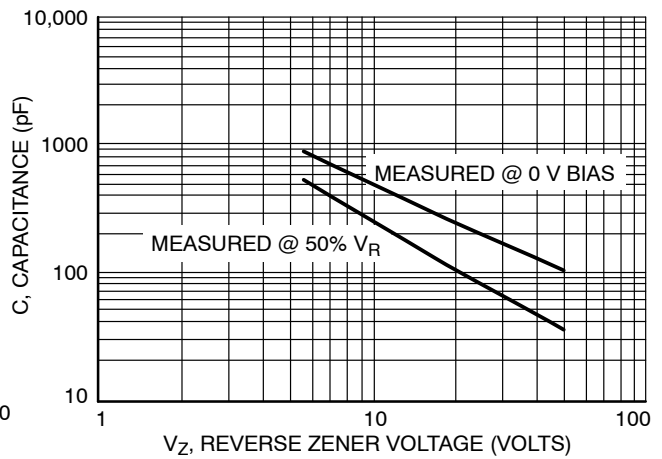
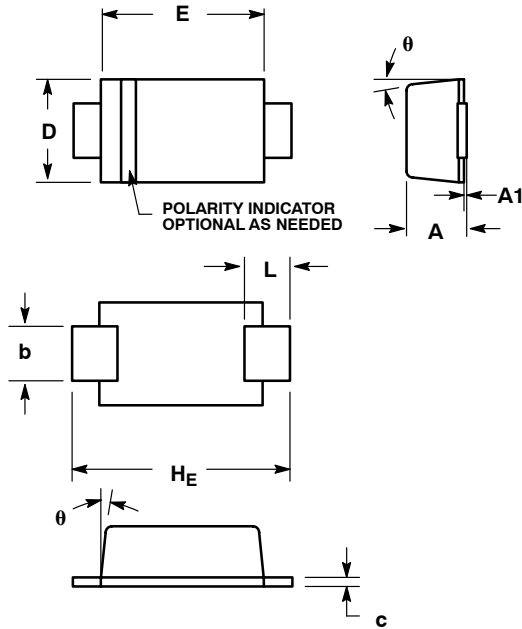


Figure 6. Capacitance versus Reverse Zener Voltage

1SMF5920BT1G

PACKAGE DIMENSIONS

SOD-123FL
CASE 498-01
ISSUE A

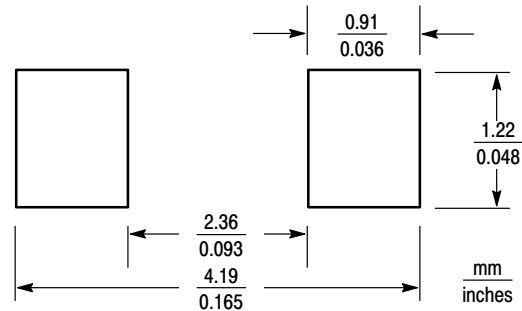


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
4. DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT SECTION OF THE LEAD: BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	0.95	1.00	0.035	0.037	0.039
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.70	0.90	1.10	0.028	0.035	0.043
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.50	1.65	1.80	0.059	0.065	0.071
E	2.50	2.70	2.90	0.098	0.106	0.114
L	0.55	0.75	0.95	0.022	0.030	0.037
HE	3.40	3.60	3.80	0.134	0.142	0.150
θ	0°	-	8°	0°	-	8°

SOLDERING FOOTPRINT*



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

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local Sales Representative