SD05T1 Series

Preferred Device

Transient Voltage Suppressor Diode

SOD−323 Zeners for ESD Protection

These Zener diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium.

Specification Features:

- Steady State Power Routing of 200 mW
- Peak Power − 350 W (8 × 20 μs)
- Low Leakage
- Cathode Indicated by Polarity Band
- Package Weight: 4.507 mg/wmt
- Meets IEC61000−4−2 Level 4, 15 kV (Air), 8 kV (Contact)
- Meets IEC6100−4−4 Level 4, 40 A
- Meets IEC6100−4−5 (Lightning), 24 A
- Meets 16 kV Human Body Model ESD Requirements
- Pb−Free Packages are Available

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

Use the Device Number to order the 7 inch/3,000 unit reel. Replace the “T1” with “T3” in the Device Number to order the 13 inch/10,000 unit reel.

ON Semiconductor®

http://onsemi.com

SOD−323
CASE 477
STYLE 1

MARKING DIAGRAM

xx = Specific Device Code
ZA = SD05T1
ZC = SD12T1
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
SD05T1	SOD−323	3000/Tape & Reel
SD05T1G	SOD−323 (Pb−Free)	3000/Tape & Reel
SD12T1	SOD−323	3000/Tape & Reel
SD12T1G	SOD−323 (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.

Preferred devices are recommended choices for future use and best overall value.

MAXIMUM RATINGS

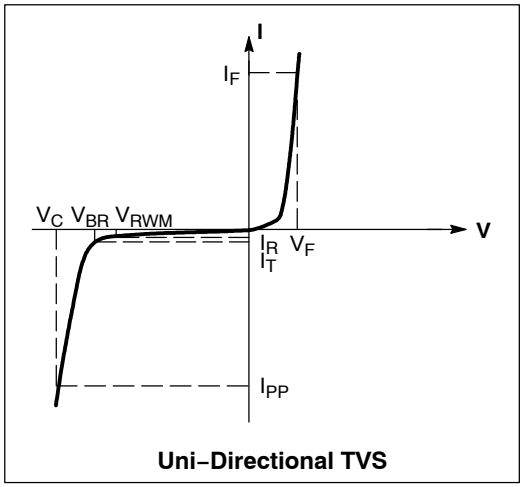
Rating	Symbol	Value	Unit
Peak Power Dissipation @ 20 μs (Note 1) @ $T_L \le 25°C$	P_{pk}	350	Watts
IEC 61000−4−2 (ESD) Air Contact		±15 ±8.0	kV
IEC 61000−4−4 (EFT)		40	A
ESD Voltage (Human Body Model (HBM) Waveform per IEC 61000−4−2)	V_{PP}	30	kV
Total Power Dissipation on FR−5 Board (Note 2) @ $T_A = 25°C$ Derate above 25°C	P_D	200 1.6	mW mW/°C
Thermal Resistance Junction−to−Ambient	$R_{\theta JA}$	635	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	°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.
*Other voltages may be available upon request.
1. Nonrepetitive current pulse, per Figure 6.
2. FR−5 = 1.0 x 0.75 x 0.62 in.

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

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



Uni−Directional TVS

ELECTRICAL CHARACTERISTICS

Device	V_{RWM} (V)	I_R @ V_{RWM} (μA)	V_{BR}, Breakdown Voltage (V) Min	V_{BR}, Breakdown Voltage (V) Max	I_T mA	V_C @ I_{PP} = 5 A (Note 3) (V)	Max I_{PP} (Note 3) (A)	V_C @ Max I_{PP} (Note 3) (V)	Max Capacitance (pF) V_R = 0 V f = 1.0 MHz
SD05T1, G	5.0	10	6.2	7.3	1.0	9.8	24	14.5	350
SD12T1, G	12	1.0	13.3	15.75	1.0	19	15	25	150

3. 8 × 20 μs pulse waveform.

TYPICAL CHARACTERISTICS

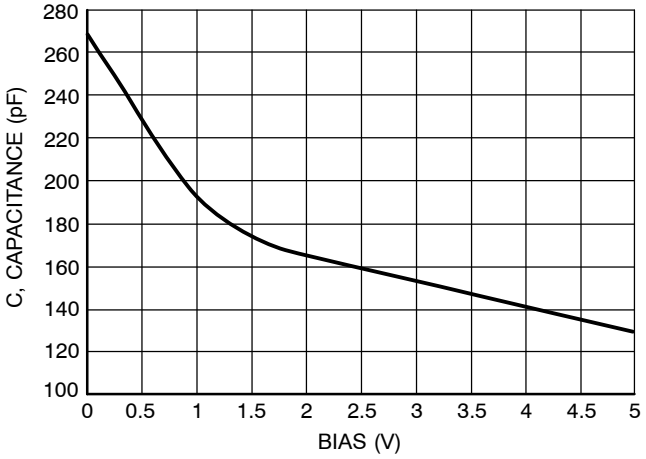


Figure 1. SD05 Typical Capacitance versus Bias Voltage

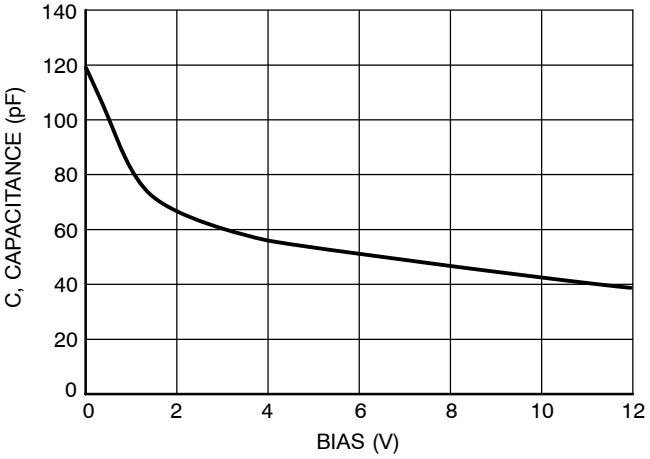


Figure 2. SD12 Typical Capacitance versus Bias Voltage

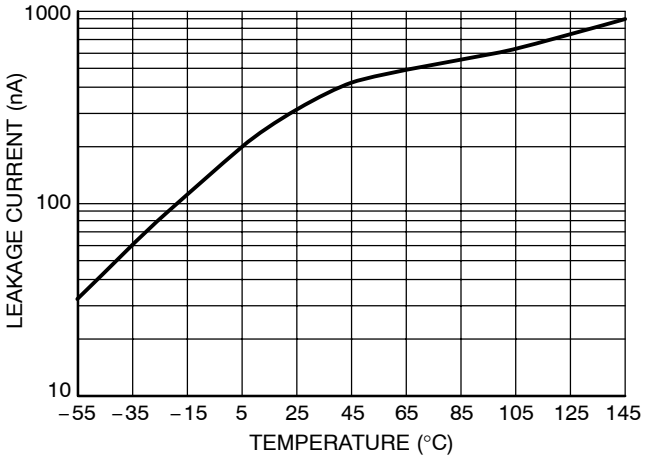


Figure 3. SD05 Typical Leakage Current versus Temperature

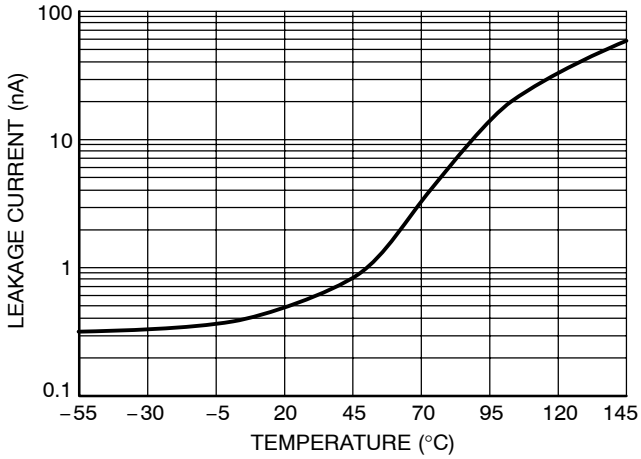


Figure 4. SD12 Typical Leakage Current versus Temperature

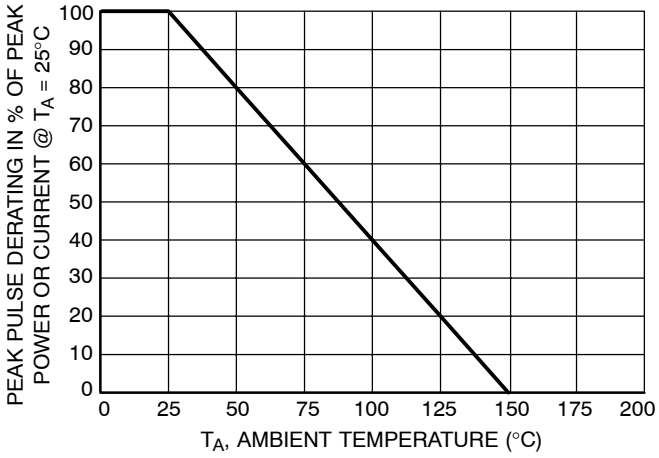


Figure 5. Pulse Derating Curve

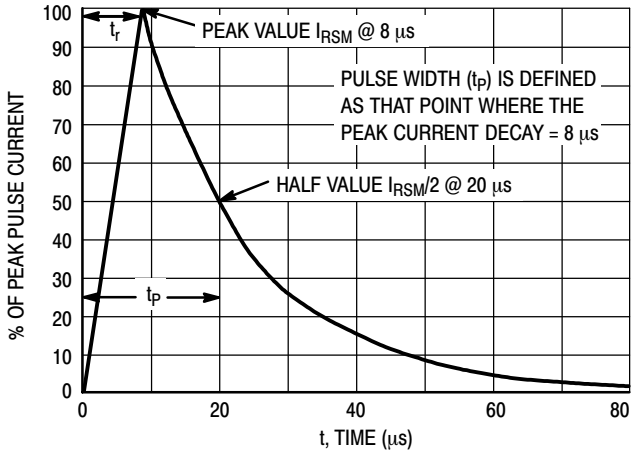
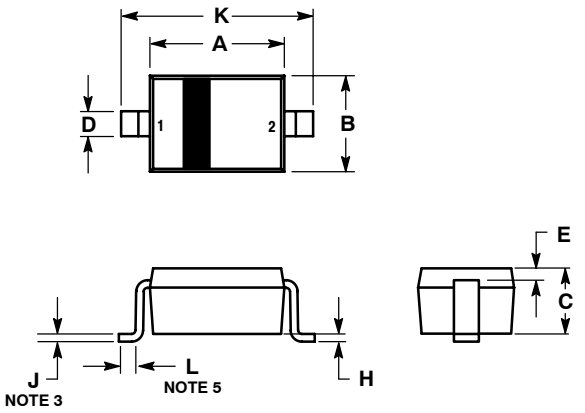


Figure 6. 8 × 20 μs Pulse Waveform

PACKAGE DIMENSIONS

SOD−323
CASE 477−02
ISSUE E

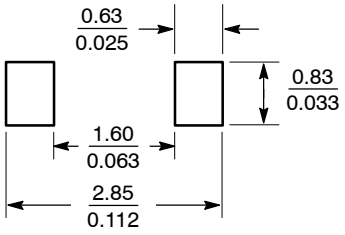


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	1.60	1.80	0.063	0.071
B	1.15	1.35	0.045	0.053
C	0.80	1.00	0.031	0.039
D	0.25	0.40	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.00	0.10	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.30	2.70	0.091	0.106
L	0.075	−−−	0.003	−−−

STYLE 1:
PIN 1. CATHODE
2. ANODE

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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
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ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.

SD05T1/D