SD12CT1

ESD Protection Diode

Bi−directional ESD Protection with Ultra Low Clamping Voltage

The SD12C is designed to protect voltage sensitive components from ESD and transient events. Excellent clamping capability, low leakage, and fast response time, make this part ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications.

Specification Features:

- Peak Power − 350 W (8 × 20 μs)
- Low Leakage
- Low Clamping Voltage
- Small Package for use in Portable Electronics
- Meets IEC61000−4−2 Level 4
- Meets IEC6100−4−4 Level 4
- Meets 16 kV Human Body Model ESD Requirements
- These Devices are Pb−Free and are RoHS Compliant

Mechanical Characteristics:
CASE: Void-free, transfer-molded, thermosetting plastic Epoxy Meets UL 94, V−0
MOUNTING POSITION: Any
QUALIFIED MAX REFLOW TEMPERATURE: 260°C
Device Meets MSL 1 Requirements

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

ON Semiconductor®

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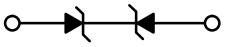
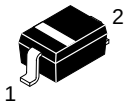




SOD−323
CASE 477
STYLE 1

MARKING DIAGRAM

ZK = Specific Device Code
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
SD12CT1G	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.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Power Dissipation @ 20 μs @ $T_L \le 25°C$	P_{pk}	350	W
IEC 61000−4−2 (ESD) Air Contact		±30 ±30	kV
IEC 61000−4−4 (EFT)		40	A
Total Device Dissipation FR−5 Board, (Note 1) @ $T_A = 25°C$ Derate above 25°C	P_D	200 1.5	mW mW/°C
Thermal Resistance from Junction−to−Ambient	$R_{\theta JA}$	635	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	°C

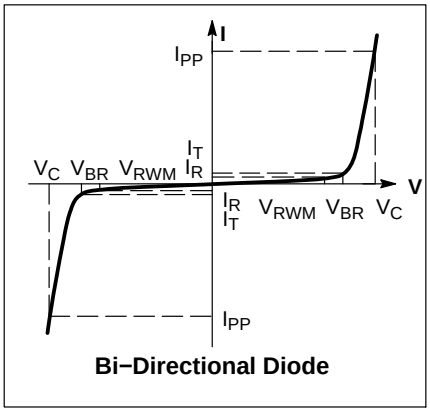
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Minimum Solder Footprint.

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
ΘV_{BR}	Maximum Temperature Variation of V_{BR}



Bi−Directional Diode

ELECTRICAL CHARACTERISTICS ($T_J = 25°C$, unless otherwise specified)

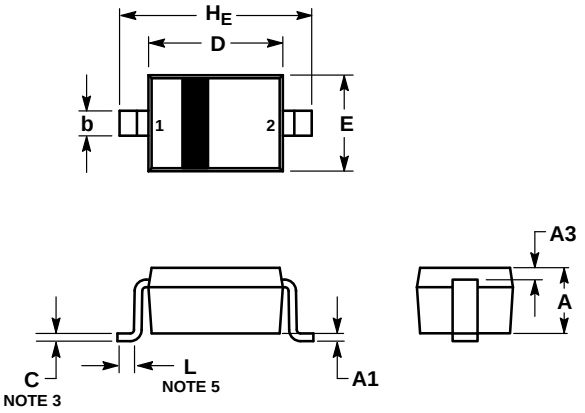
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse Working Voltage	(Note 2)	V_{RWM}			12	V
Breakdown Voltage	I_T = 1 mA, (Note 3)	V_{BR}	13.3			V
Reverse Leakage Current	V_{RWM} = 12 V	I_R			1.0	μA
Clamping Voltage Additional Clamping Voltage	I_{PP} = 5 A, (8 x 20 μsec Waveform) I_{PP} = 15 A, (8 x 20 μsec Waveform)	V_C			19 24	V
Maximum Peak Pulse Current	8 x 20 μsec Waveform	I_{PP}			15	A
Capacitance	V_R = 0 V, f = 1 MHz	C_j		64		pF
	V_R = 12 V, f = 1 MHz			36		

2. TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage level.
3. V_{BR} is measured at pulse test current I_T.

SD12CT1

PACKAGE DIMENSIONS

SOD−323
CASE 477−02
ISSUE H

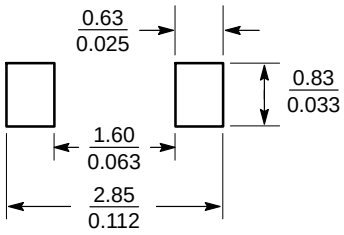


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS			INCHES		
DIM	**MIN**	**NOM**	**MAX**	**MIN**	**NOM**	**MAX**
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
H_E	2.30	2.50	2.70	0.090	0.098	0.105

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
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
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ON Semiconductor Website: **www.onsemi.com**

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