

Product Summary

V _{BR} (Min)	I _{PP} (Max)	C _T (Typ)
4V	50A	400pF

Description

The SD03 is a uni-directional ESD protector, featuring high ESD surge capability and low clamping voltage. The proprietary clamping capability protects overvoltage stress on power, control, or data lines and prevents downstream components from damages. It effectively protects single-line interface against 30kV electrostatic discharge (IEC61000-4-2 standard).

Applications

- Computer peripherals
- Switches & buttons
- Medical equipment
- Computing applications
- Display panels
- Industries

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30kV$, Contact $\pm 30kV$
- Ultra-Low Channel Input Capacitance
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SOD323
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208^③
- Weight: 0.004 grams (Approximate)

SOD323



Top View



Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking Code	Reel Size (Inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
SD03-7	SOD323	PA1	7	8	3,000	Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

Option A: Made in Chengdu

Option B: Made in Eris

PA1 or PA1 = Product Type Marking Code
Cathode Bar Denotes Pin1

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power	P_{PP}	480	W	8/20 μs , per Figure 3
Peak Pulse Current	I_{PP}	50	A	8/20 μs , per Figure 3
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	± 30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_AIR}	± 30	kV	IEC 61000-4-2 Standard

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	500	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	3.3	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	—	1	μA	$V_R = 3.3\text{V}$
Breakdown Voltage	V_{BR}	4.0	—	—	V	$I_R = 1\text{mA}$
Clamping Voltage	V_{CL}	—	—	7	V	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$
		—	—	8		$I_{PP} = 10\text{A}, t_p = 8/20\mu\text{s}$
		—	—	9.6		$I_{PP} = 50\text{A}, t_p = 8/20\mu\text{s}$
Channel Input Capacitance	C_T	—	400	—	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

Notes:

- 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
- 6. Short duration pulse test used to minimize self-heating effect.

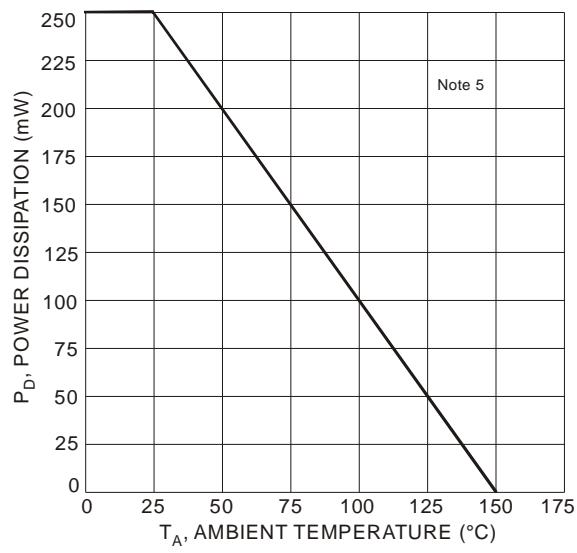


Figure 1 Power Derating Curve

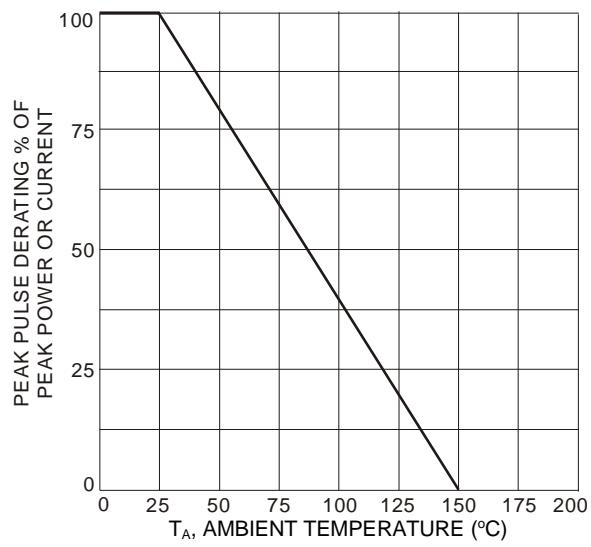


Figure 2 Pulse Derating Curve

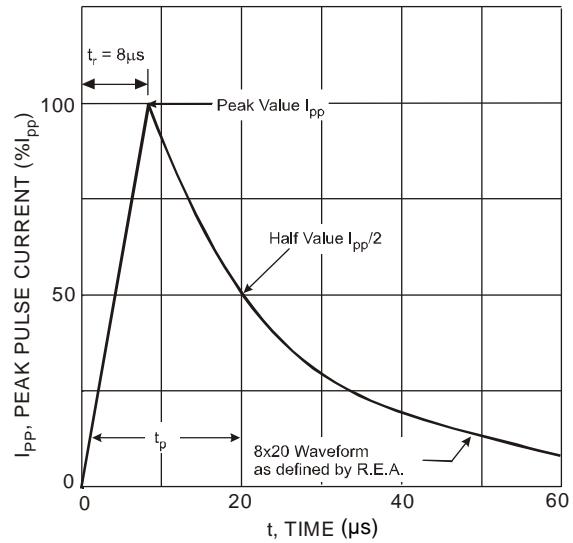


Figure 3 Typical 8 x 20μs Pulse Waveform

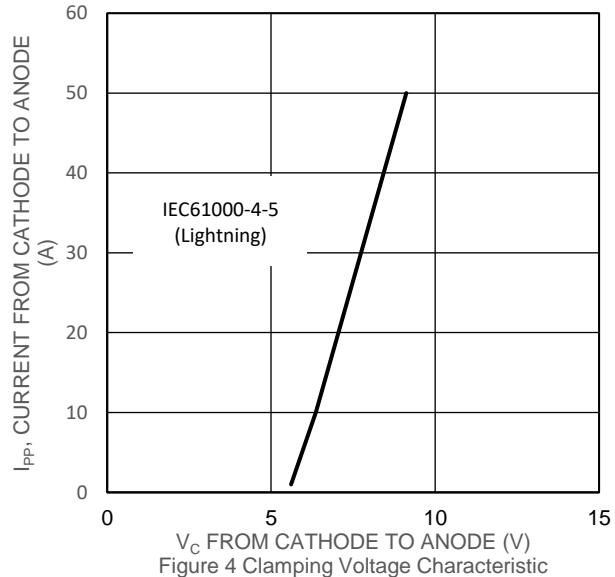
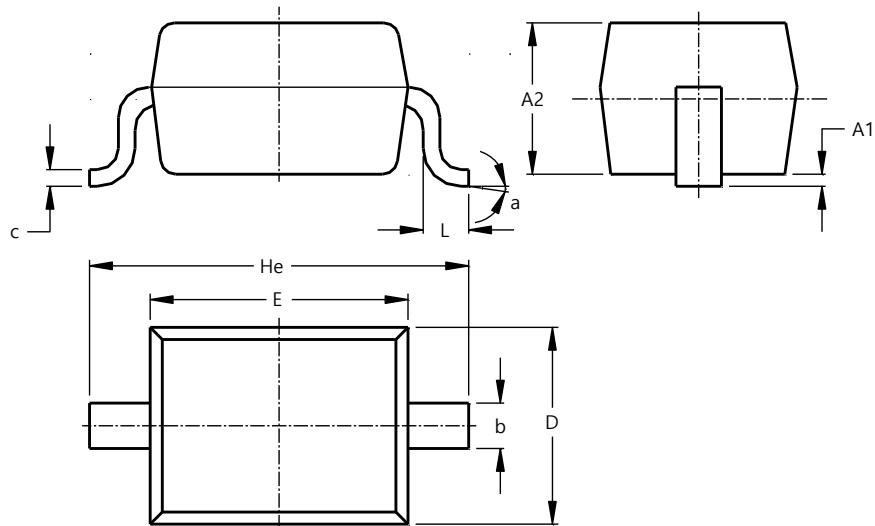


Figure 4 Clamping Voltage Characteristic
(t_p = 8/20μs)

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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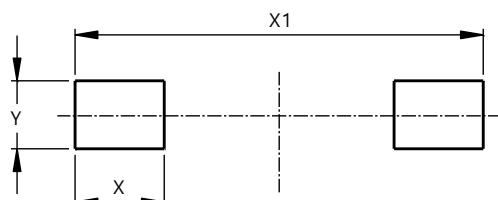
SOD323			
Dim	Min	Max	Typ
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0°	8°	--

All Dimensions in mm

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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Dimensions	Value (in mm)
X	0.590
X1	2.700
Y	0.450

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