

## Product Summary

$V_{BR}$ (MIN)	$I_{PP}$ (MAX)	$C_T$ (TYP)
13V	15A	106pF

## Description

The DIODES™ SD12A is a unidirectional 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  $\pm 30$ kV, Contact  $\pm 30$ kV
- 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](mailto:contact@diodes.com) 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 (E3)
- Weight: 0.004 grams (Approximate)

SOD323



Top View



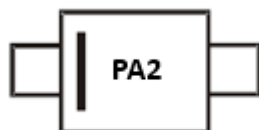
Device Schematic

## Ordering Information (Note 4)

Part Number	Package	Marking Code	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
SD12A-7	SOD323	PA2	7	8	3000	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



PA2 = Product Type Marking Code  
Bar Denotes Pin 1

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power	P <sub>PP</sub>	360	W	8/20μs, per Figure 3
Peak Pulse Current	I <sub>PP</sub>	15	A	8/20μs, per Figure 3
ESD Protection – Contact Discharge	V <sub>ESD_CONTACT</sub>	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V <sub>ESD_AIR</sub>	±30	kV	IEC 61000-4-2 Standard

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P <sub>D</sub>	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V <sub>RWM</sub>	—	—	12.0	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	1	3	μA	V <sub>RWM</sub> = 12.0V
Breakdown Voltage	V <sub>BR</sub>	13.0	—	—	V	I <sub>R</sub> = 1mA
Clamping Voltage	V <sub>CL</sub>	—	—	18	V	I <sub>PP</sub> = 1A, t <sub>P</sub> = 8/20μs
		—	—	22		I <sub>PP</sub> = 10A, t <sub>P</sub> = 8/20μs
		—	—	24		I <sub>PP</sub> = 15A, t <sub>P</sub> = 8/20μs
Channel Input Capacitance	C <sub>T</sub>	—	106	—	pF	V <sub>R</sub> = 0V, f = 1MHz

- Notes:
5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, 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.

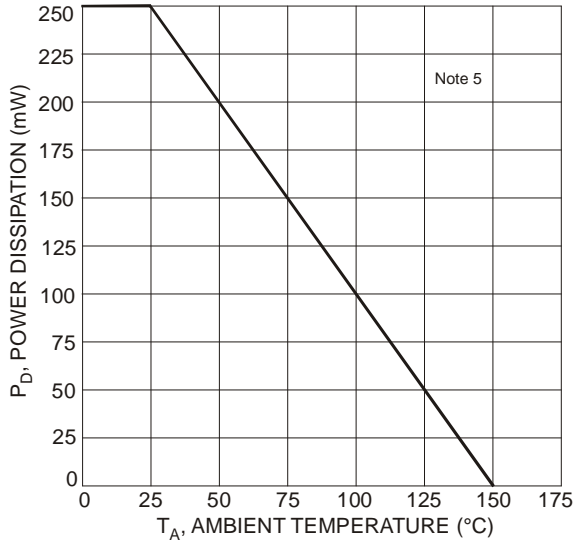


Figure 1 Power Derating Curve

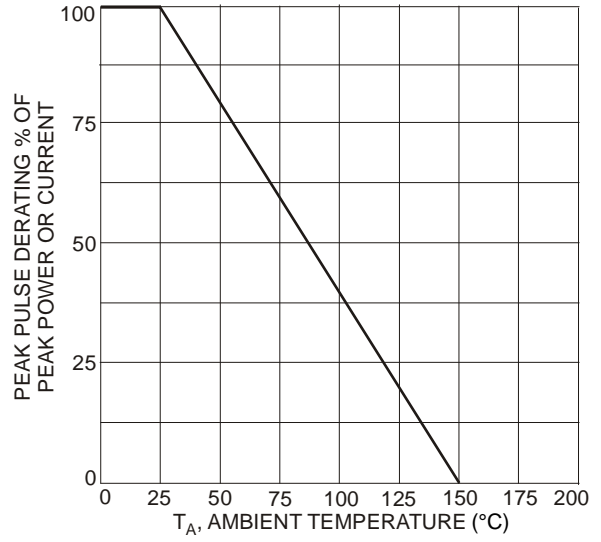


Figure 2 Pulse Derating Curve

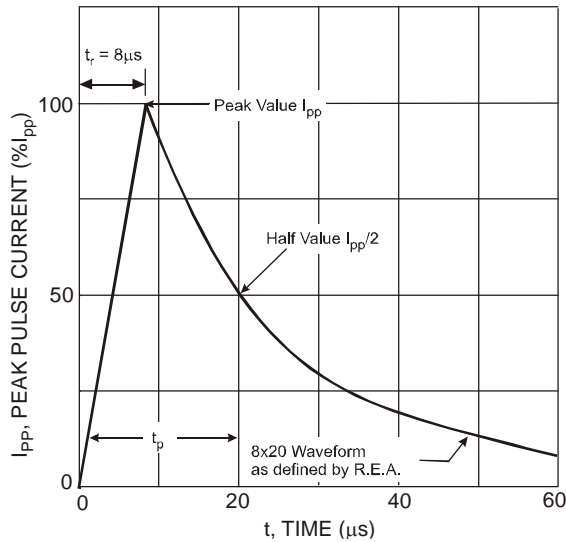


Figure 3 Typical 8 x 20µs Pulse Waveform

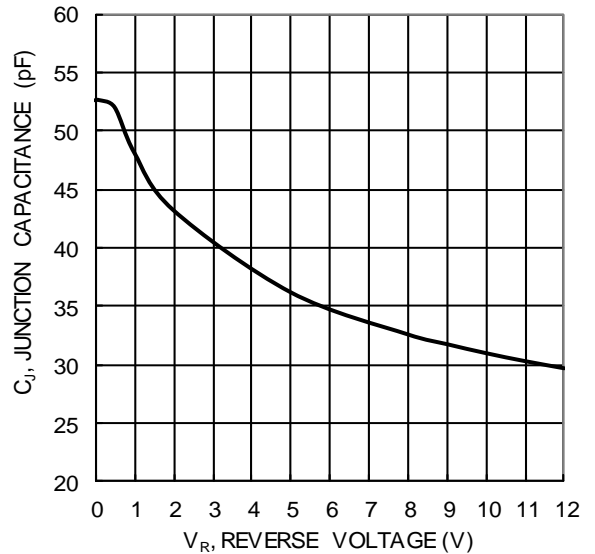


Figure 4 Typical Junction Capacitance

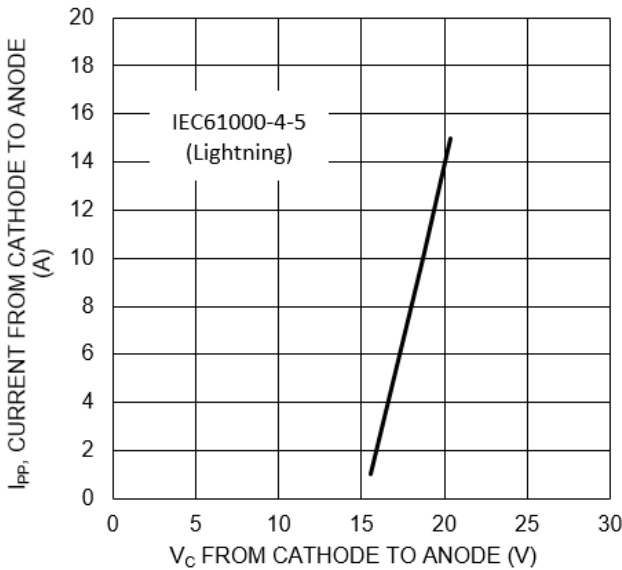
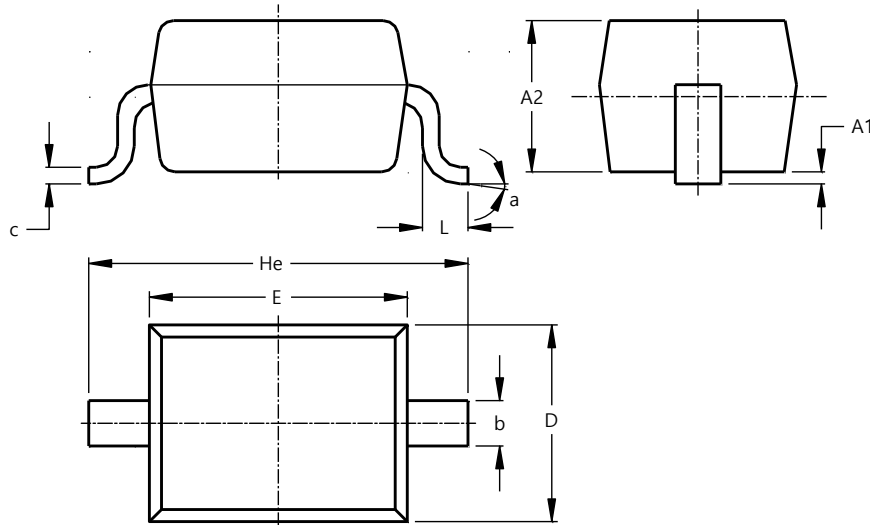


Figure 5 Clamping Voltage Characteristic ( $t_p = 8/20\mu s$ )

**Package Outline Dimensions**

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

**SOD323**

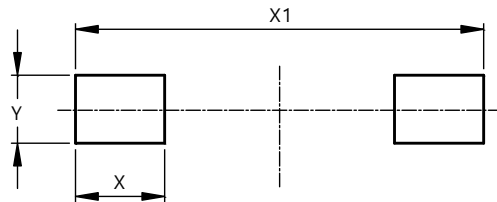


SOD323			
Dim	Min	Max	Typ
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**Suggested Pad Layout**

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

**SOD323**



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

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