

1-Line Bi-directional TVS Diode

Description

The STVSB4V5D3 is a bi-directional high power TVS diode, to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The STVSB4V5D3 complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small lead -free SOD-323 package. The small size and high ESD protection make STVSB4V5D3 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Small SOD-323 package
- Protects one data or power line
- Operating Voltage: 4.5V
- High peak pulse current capability
- Ultra low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 140A (8/20 μs)
- RoHS Compliant

Mechanical Characteristics

- Package: SOD-323
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020

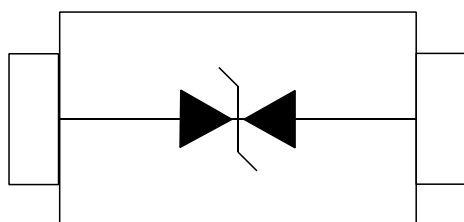
Applications

- Mobile Phones and Accessories
- Battery Protection
- Power Supply Protection
- Hand Held Portable Applications
- Peripherals

Ordering Information

Part Number	Shipping	Reel Size
STVSB4V5D3	3000/Tape & Reel	7 inch

Dimensions and Pin Configuration



Circuit Diagram

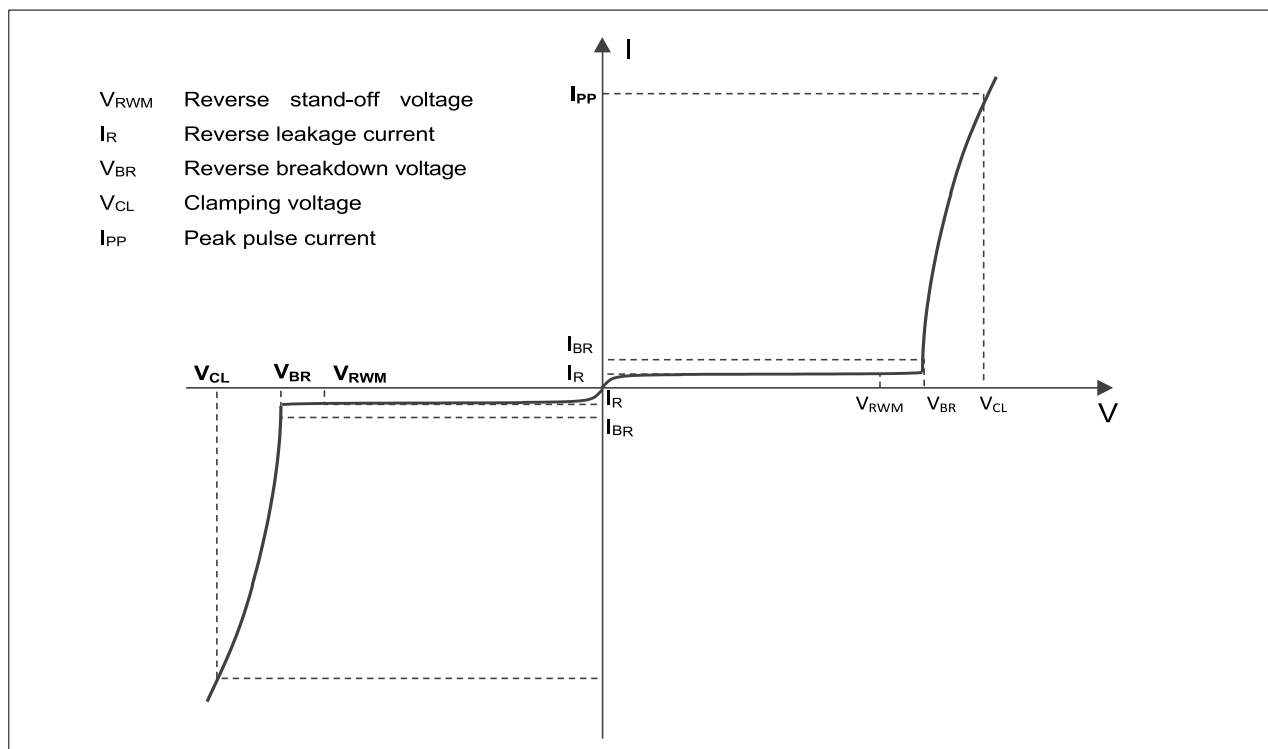
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	2380	W
Peak Pulse Current (8/20μs)	I _{PP}	140	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	kV
Lead temperature	T _L	260	°C
Operating Temperature Range	T _{OP}	-40 ~ +85	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

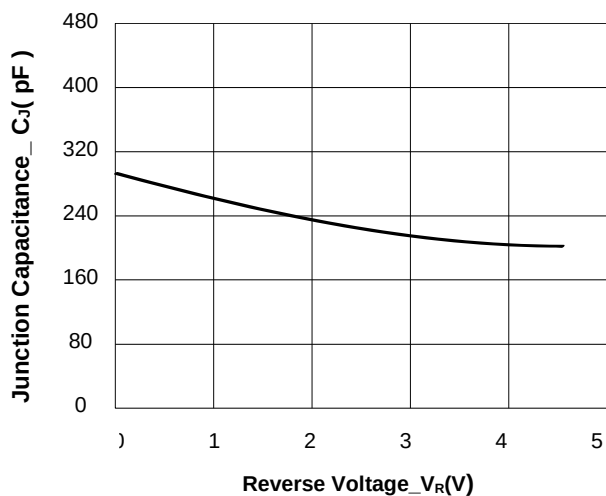
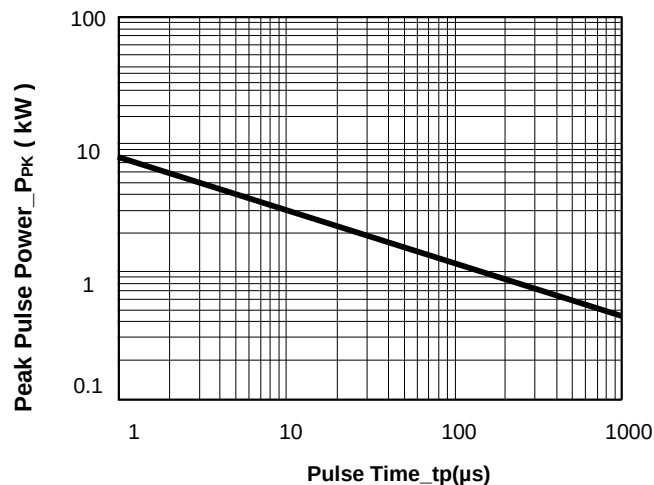
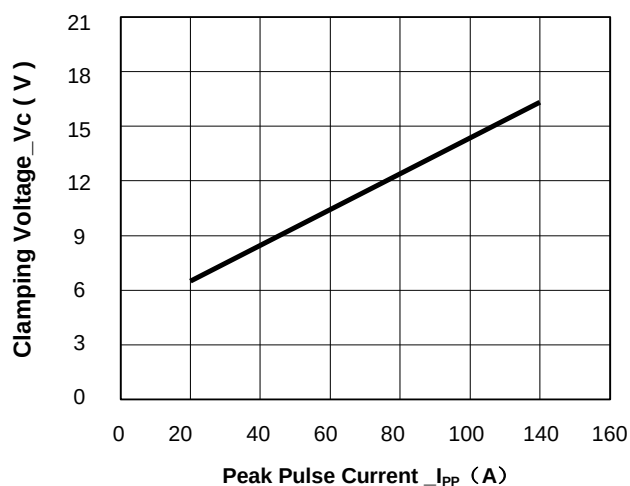
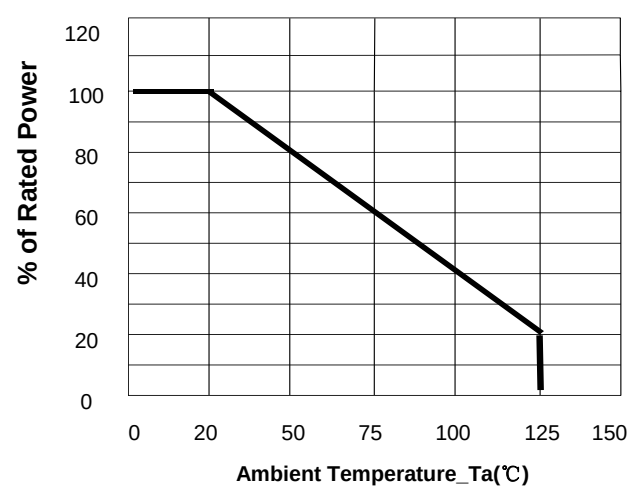
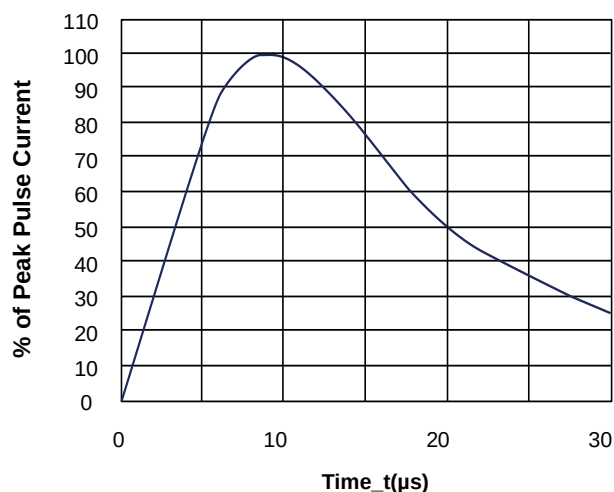
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			4.5	V	
Breakdown Voltage	V _{BR}	4.7			V	I _T = 1mA
Reverse Leakage Current	I _R			1.0	μA	V _{RWM} = 4.5V
Clamping Voltage	V _C			7.5	V	I _{PP} = 20A (8/20μs pulse)
Clamping Voltage	V _C			17	V	I _{PP} = 140A (8/20μs pulse)
Junction Capacitance	C _J		300		pF	V _R = 0V, f = 1MHz

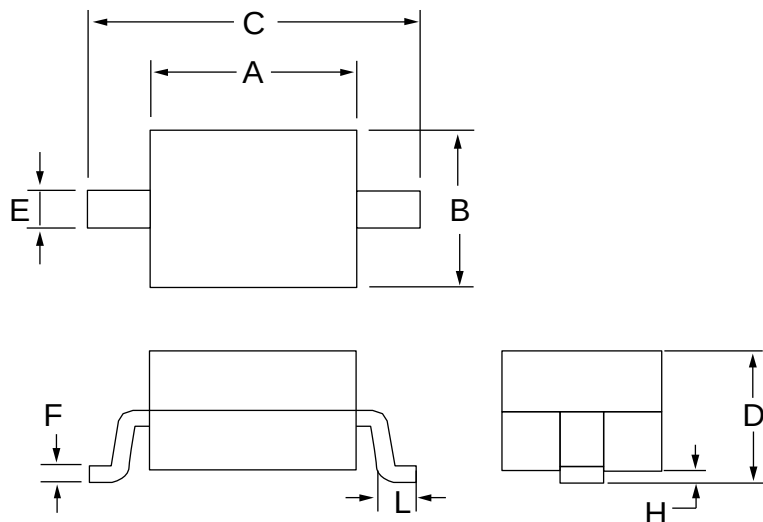
Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)



Definitions of electrical characteristics

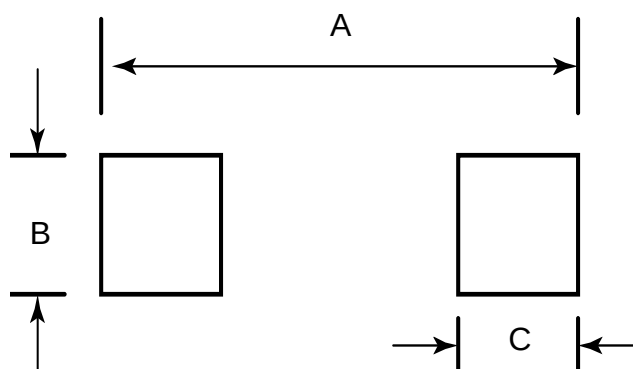
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

Junction Capacitance vs. Reverse Voltage

Peak Pulse Power vs. Pulse Time

Clamping Voltage vs. Peak Pulse Current

Power Derating Curve

8/20 μs Pulse Waveform

SOD-323 Package Outline Drawing



SYM	DIMENSIONS				
	MILLIMETERS			INCHES	
	MIN	NOM	MAX	MIN	MAX
A	1.50	1.65	1.80	0.060	0.071
B	1.20	1.30	1.40	0.045	0.054
C	2.30	2.50	2.70	0.090	0.107
D	-		1.10	-	0.043
E	0.30		0.40	0.012	0.016
F	0.10		0.25	0.004	0.010
L	0.20		0.40	0.008	0.016
H	-		0.10	-	0.004

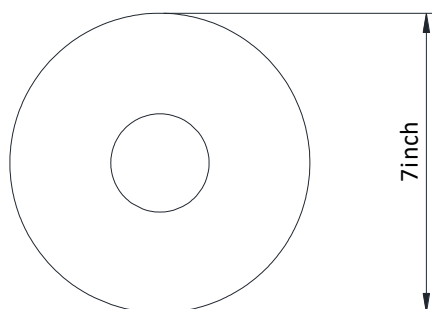
Suggested Land Pattern



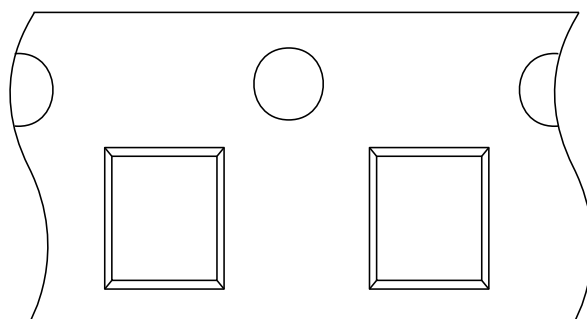
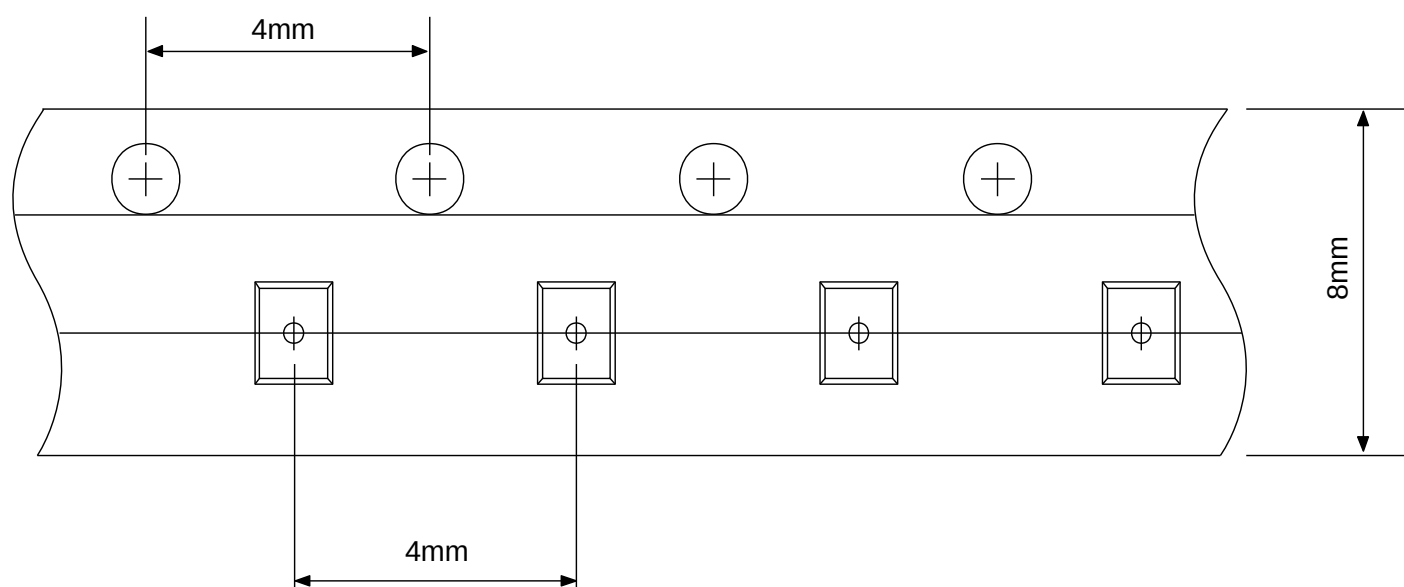
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



User Direction of Feed