

1-Line Ultra Low Capacitance Bi-directional TVS Diode

Features

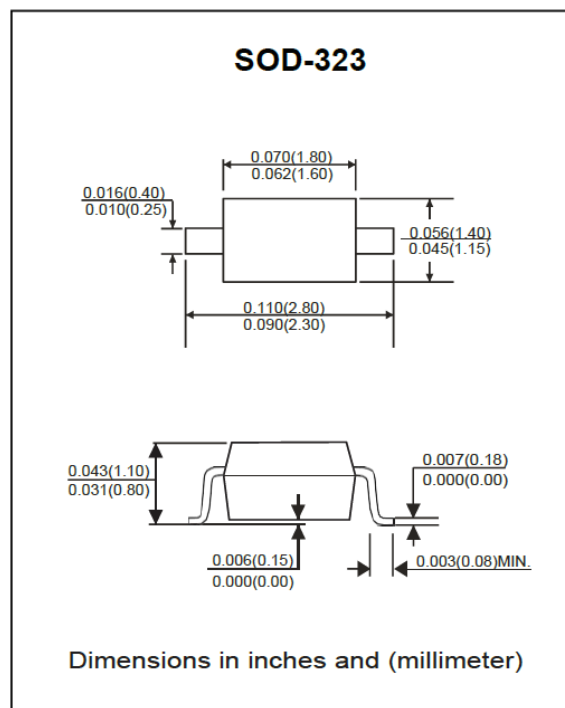
- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- IEC 61000-4-4 (EFT)40A (5/50ns)
- IEC 61000-4-5 (Lightning) 21A (8/20 μs)
- 340W peak pulse power (8/20 μs)
- Protects one power line or data line
- Operating voltage: 3.3V
- Low clamping voltage
- Low leakage current
- Response Time is < 1 ns

Applications

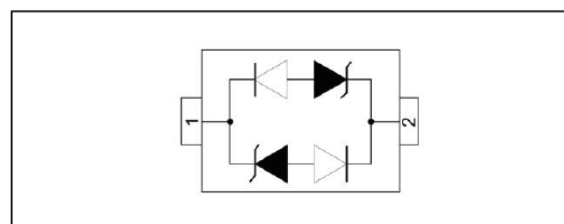
- Portable Instrumentation
- Ethernet 10/100/1000
- Wireless Systems
- Smart Phones
- Peripherals
- USB Interface

Mechanical Characteristics

- Package: SOD-323
- Flammability Rating: UL 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- High temperature soldering guaranteed: 260°C/10s
- Material: Halogen free



Circuit Diagram

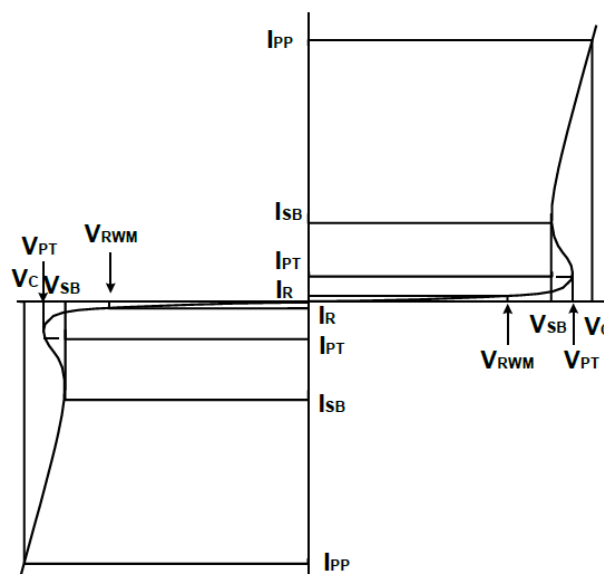


Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{PP}	340	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	KV
ESD per IEC 61000-4-2 (Contact)		± 30	KV
Operating Temperature Range	T_{OPT}	-55 to + 125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to + 150	$^\circ\text{C}$
Lead Soldering Temperature	T_L	260	$^\circ\text{C}$

Electrical Parameters ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{PT}	Punch-through Breakdown Voltage @ I_{PT}
V_{SB}	Snap-Back Voltage @ I_{SB}
I_{SB}	Snap-Back Current
I_{PT}	Test Current



Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Reverse Standoff Voltage	V_{RWM}				3.3	V
Punch-Through Voltage	V_{PT}	$I_{PT} = 2\mu\text{A}$	3.5			V
Snap-Back Voltage	V_{SB}	$I_{SB} = 50\text{mA}$	2.8			V
Reverse leakage current	I_R	$V_{RWM} = 3.3\text{V}$			0.2	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			5.0	V
Clamping Voltage	V_C	$I_{PP} = 21\text{A}, t_p = 8/20\mu\text{s}$			16	V
Junction capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		1.0		pF

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

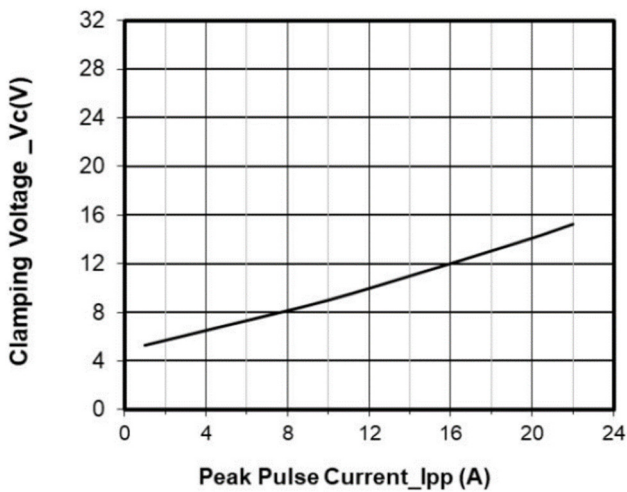


Figure 1: Clamping Voltage vs. Peak Pulse Current

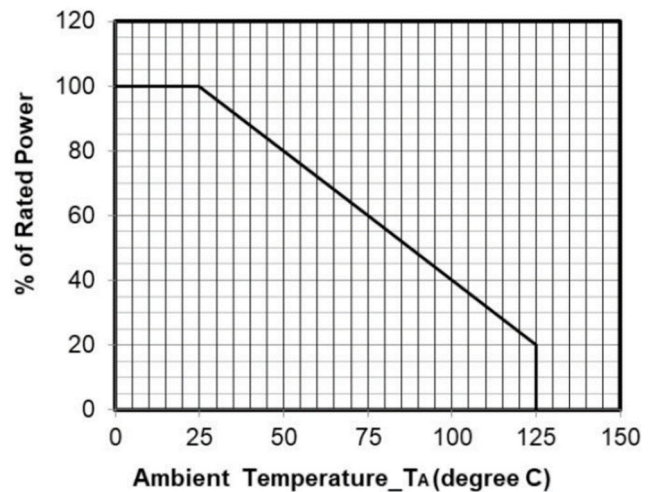


Figure 2: Power Derating Curve

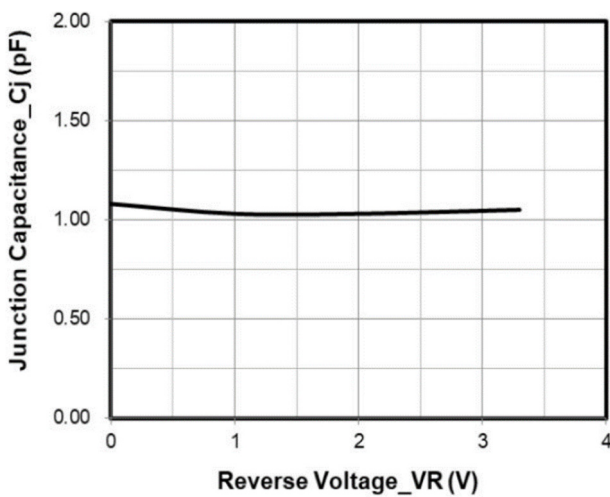


Figure 3: Junction Capacitance vs. Reverse Voltage

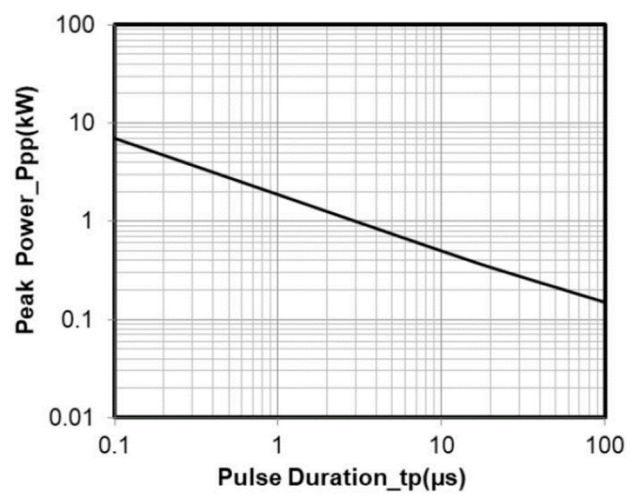


Figure 4: Peak Pulse Power vs. Pulse Time

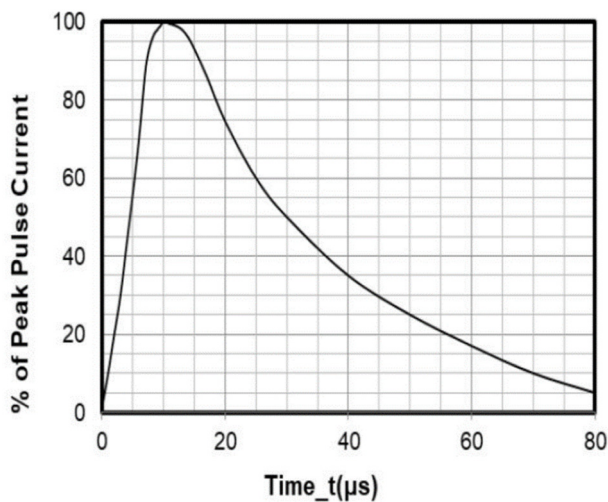


Figure 5: 8 X 20μs Pulse Waveform

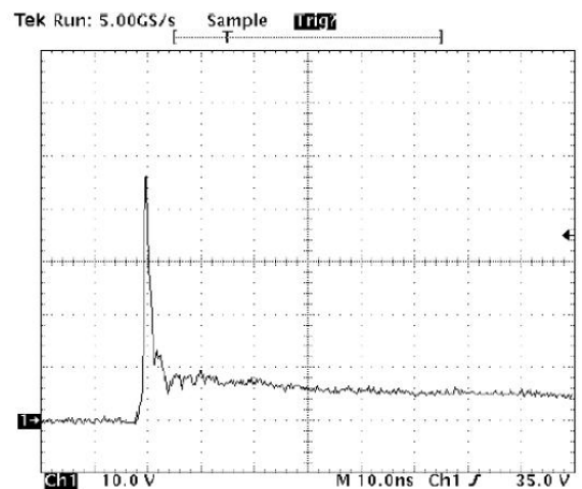
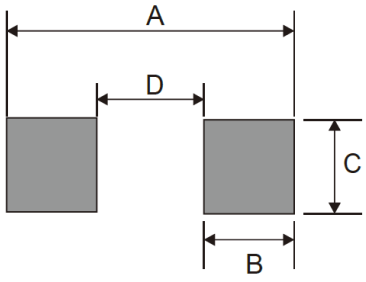


Figure 6: ESD Clamping Voltage
8 kV Contact per IEC61000-4-2

Suggested PAD Layout

Symbol	SOD-323	
	(mm)	(inch)
A	2.86	0.113
B	0.63	0.025
C	0.83	0.033
D	1.60	0.063



The diagram illustrates the suggested pad layout for the SOD-323 package. It shows two rectangular pads. Dimension A is the total width between the centerlines of the two pads. Dimension B is the width of the right pad. Dimension C is the height of the right pad. Dimension D is the distance between the right edge of the left pad and the left edge of the right pad.

Marking Code

Part Number	Marking Code
STCS3033BL	R3



The diagram shows a square package with two small rectangular tabs on opposite sides. The marking code 'R3' is printed in the center of the package.

Ordering information

Part Number	Package	Base qty	Reel Size	Delivery mode
		(pcs)	(inch)	
STCS3033BL	SOD-323	3,000	7	Tape and reel