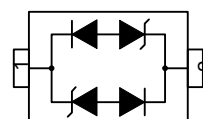
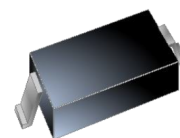


## 1-Line Ultra Low Capacitance Bi-directional TVS Diode

### Description

The BTUC03VD323B is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The BTUC03VD323B has an ultra-low capacitance with a typical value at 1pF, and 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 a SOD-323 lead-free package. The small size, ultra-low capacitance and high ESD surge protection make BTUC03VD323B an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

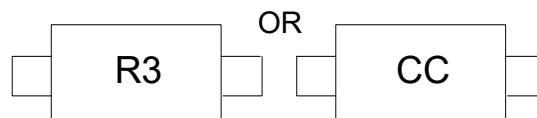


**SOD-323**

### Features

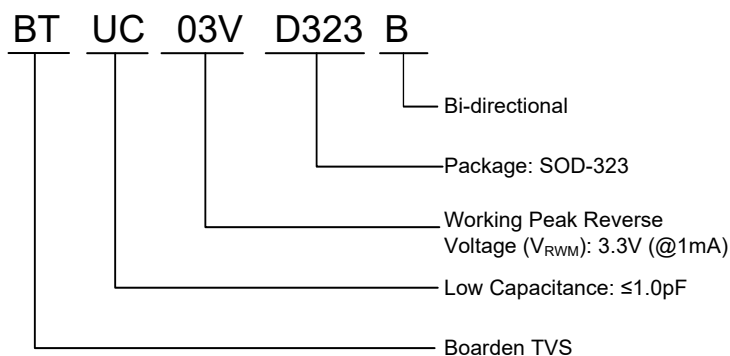
- Ultra low capacitance: 1pF typical
- Ultra low leakage: nA level
- Operating voltage: 3.3V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30\text{kV}$
    - Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 21A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Marking Information



Device Marking Code

### Part Numbering System



### Applications

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports
- Digital Visual Interface (DVI)
- PCI Express and Serial SATA Ports
- Ethernet 10/100/1000 Base T

**Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$  unless otherwise specified)**

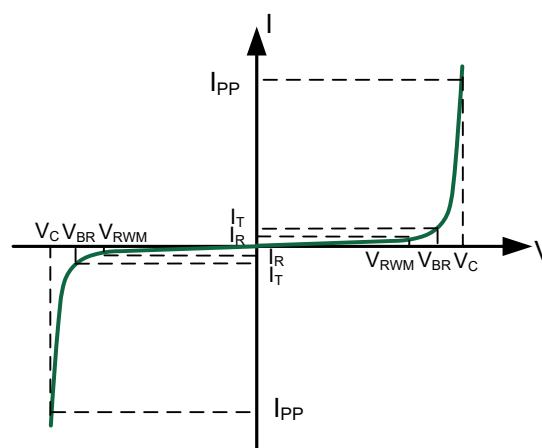
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	350	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	21	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 30$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 30$	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			3.3	V	
Breakdown Voltage	V <sub>BR</sub>	5			V	I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			0.2	$\mu\text{A}$	V <sub>RWM</sub> = 3.3V
Clamping Voltage	V <sub>C</sub>			7	V	I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	V <sub>C</sub>			17	V	I <sub>PP</sub> = 21A (8 x 20 $\mu\text{s}$ pulse)
Junction Capacitance	C <sub>J</sub>		1		pF	V <sub>R</sub> = 0V, f = 1MHz

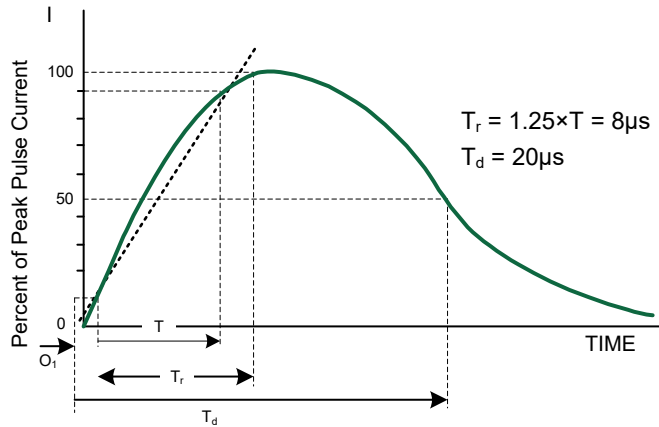
**IV Curve Characteristics**

Symbol	Parameter
V <sub>RWM</sub>	Working Peak Reverse Voltage
I <sub>R</sub>	Maximum Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>BR</sub>	Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current

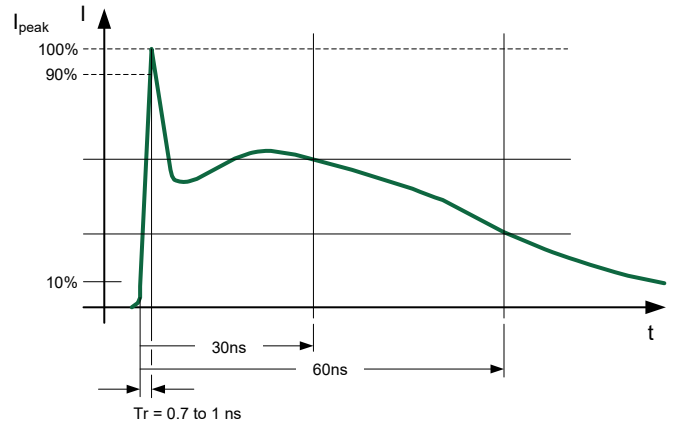


Bi-Directional TVS

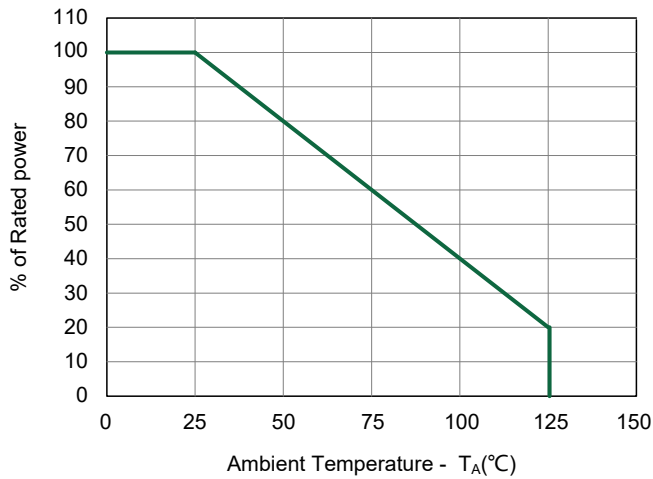
Typical characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)



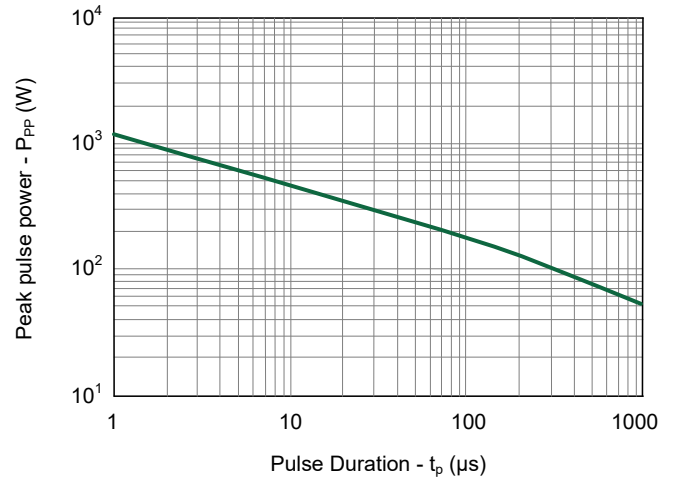
8/20µs Waveform per IEC61000-4-5



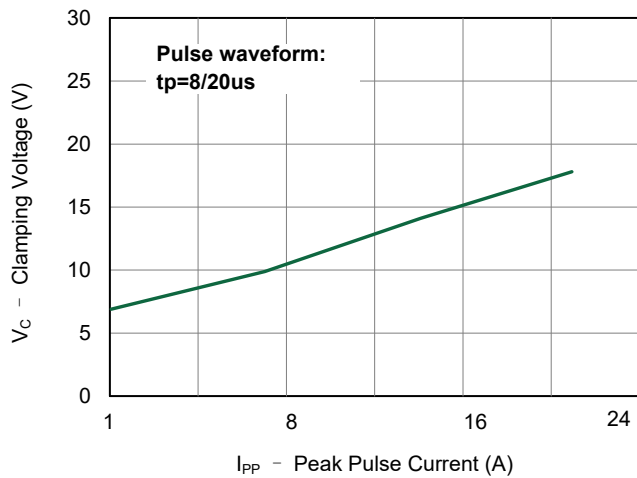
ESD Waveform per IEC61000-4-2



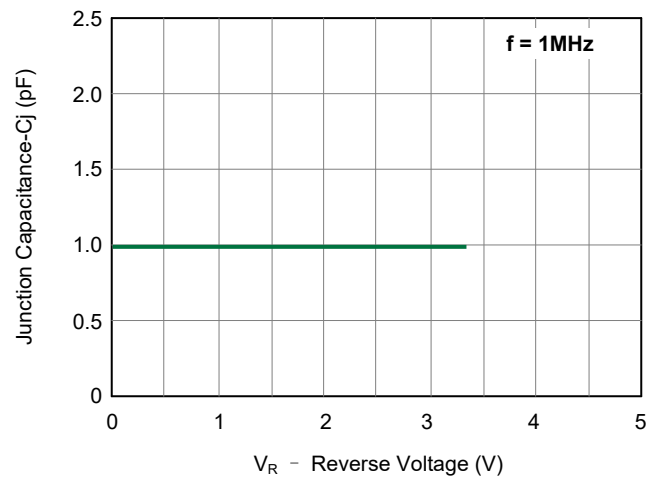
Power Derating vs. Ambient Temperature



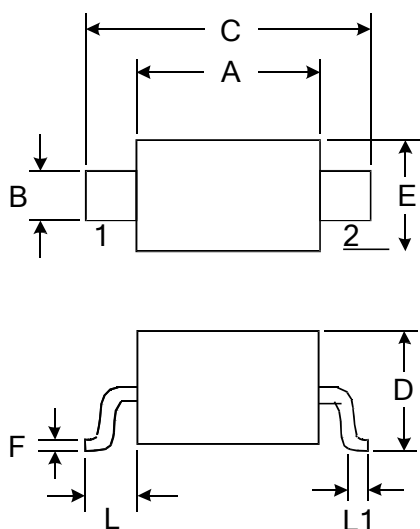
Non-repetitive Peak Pulse Power vs. Pulse Time



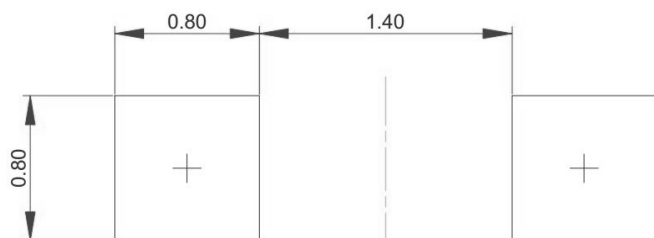
Clamping Voltage vs. Peak Pulse Current



Junction Capacitance vs. Reverse Voltage

**SOD-323 Package Outline Drawing**


SYMBOL	DIMENSIONS			
	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	1.600	1.800	0.063	0.071
B	0.250	0.350	0.010	0.014
C	2.500	2.700	0.098	0.106
D		1.150		0.043
E	1.200	1.400	0.047	0.055
F	0.080	0.150	0.003	0.006
L	0.475 REF		0.019REF	
L1	0.250	0.400	0.010	0.016
H	0.000	0.100	0.000	0.004

**Suggested Land Pattern**

**Unit: mm**
**Ordering Information**

Part Number	Packaging	Reel Size
BTUC03VD323B	3000/Tape & Reel	7 inch