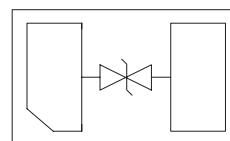


1-Line Ultra Low Capacitance Bi-directional TVS Diode

Description

The BTUC12V0603B 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 BTUC12V0603B has an ultra-low capacitance with a typical value at 0.3pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into a DFN0603-2 lead-free package. The small size, ultra-low capacitance and high ESD surge protection make BTUC12V0603B an ideal choice to protect cell phone, digital video interfaces and other high speed ports.



DFN0603-2

Features

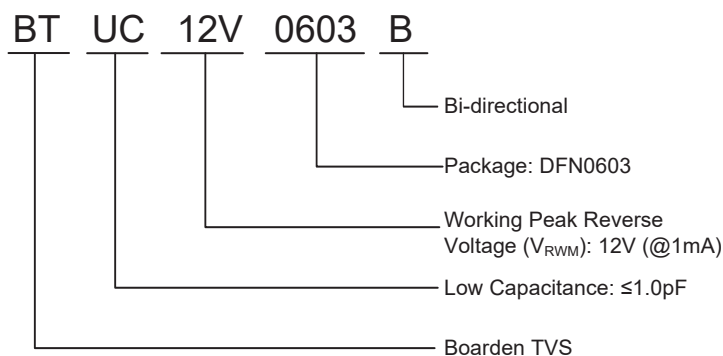
- Ultra low capacitance: 0.3pF typical
- Ultra low leakage: nA level
- Operating voltage: 12V
- Low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 25\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-5 (Lightning) 2.5A (8/20 μs)
- 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

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

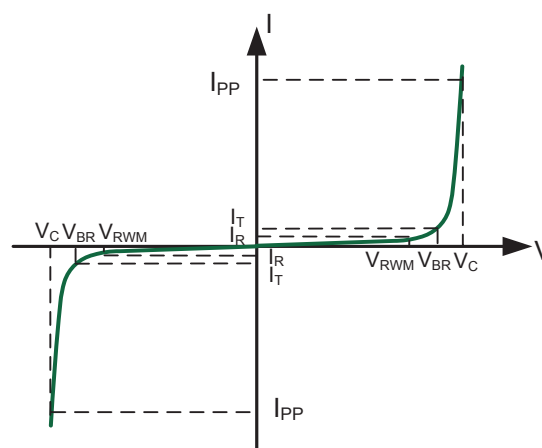
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	80	W
Peak Pulse Current (8/20 μs)	I _{PP}	2.5	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	± 25	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Operating Temperature Range	T _J	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T _{stg}	-55 to +150	$^{\circ}\text{C}$

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

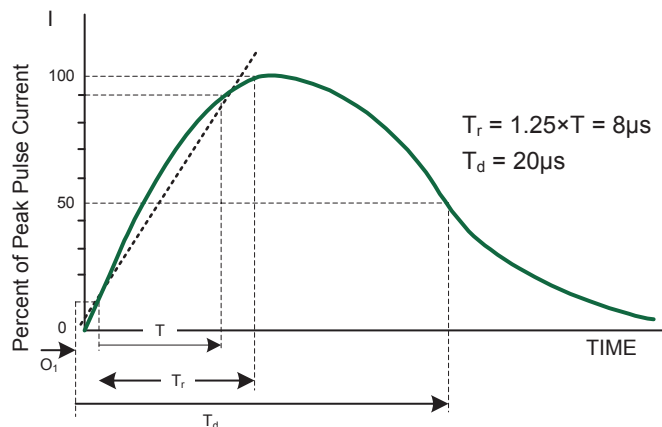
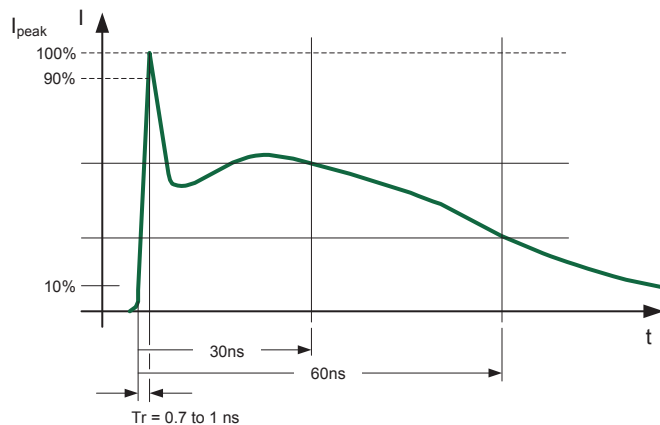
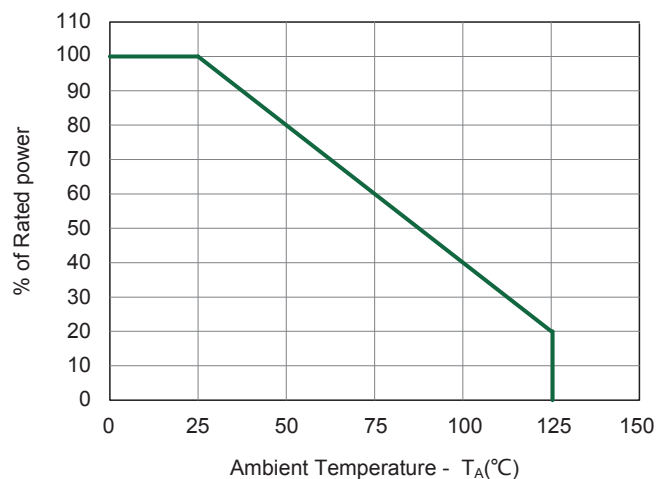
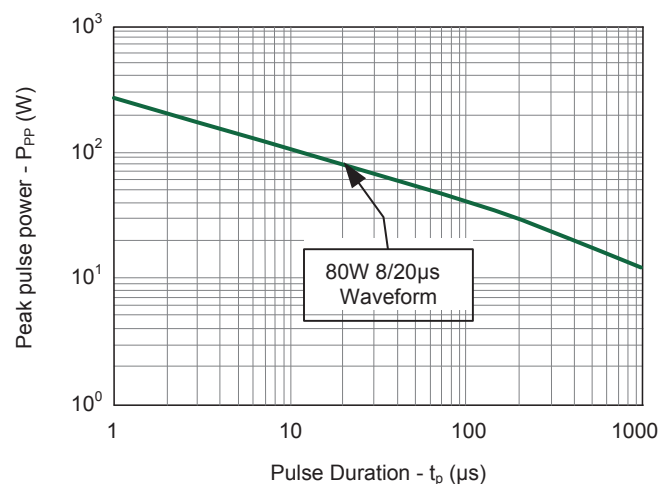
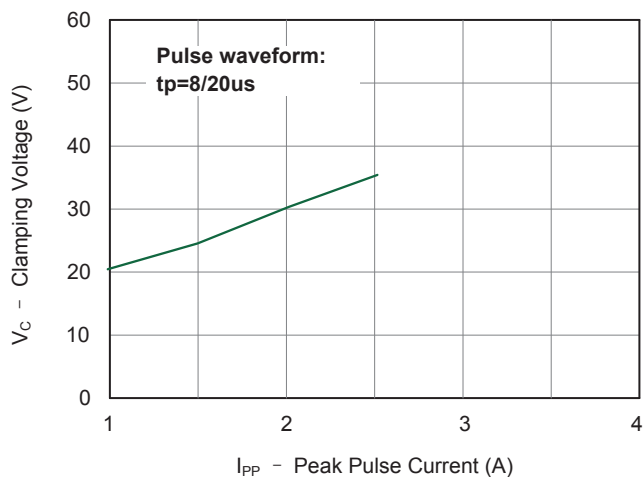
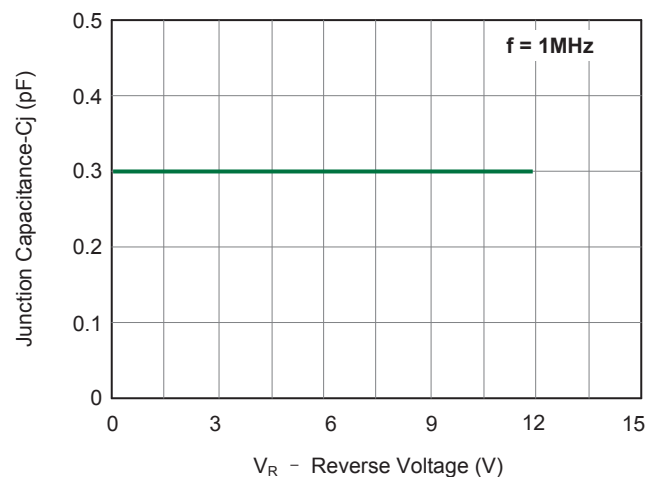
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			12	V	
Breakdown Voltage	V _{BR}	13.3			V	I _T = 1mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 12V
Clamping Voltage	V _C			21	V	I _{PP} = 1A (8 x 20 μs pulse)
Clamping Voltage	V _C			33	V	I _{PP} = 2.5A (8 x 20 μs pulse)
Junction Capacitance	C _J		0.3	0.5	pF	V _R = 0V, f = 1MHz

IV Curve Characteristics

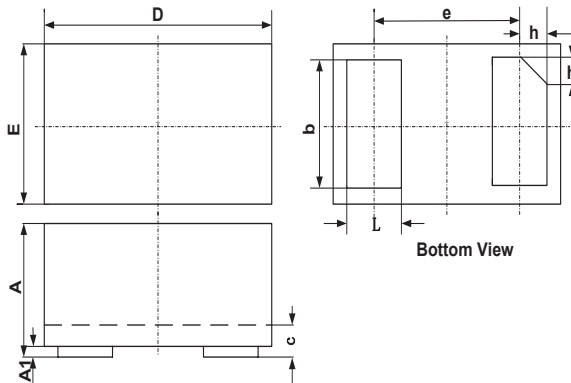
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
V _C	Clamping Voltage @ I _{PP}
I _{PP}	Maximum Reverse Peak Pulse Current



Bi-Directional TVS

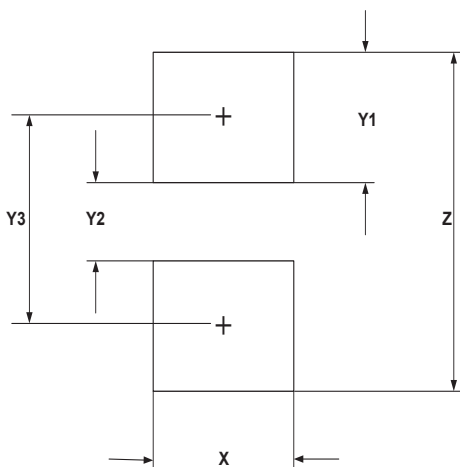
Typical characteristics ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

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

DFN0603-2 Package Outline Drawing



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1	0.000	0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

Ordering Information

Part Number	Packaging	Reel Size
BTUC12V0603B	10000/Tape & Reel	7 inch