

1-Line Bidirectional ESD Protection Diode

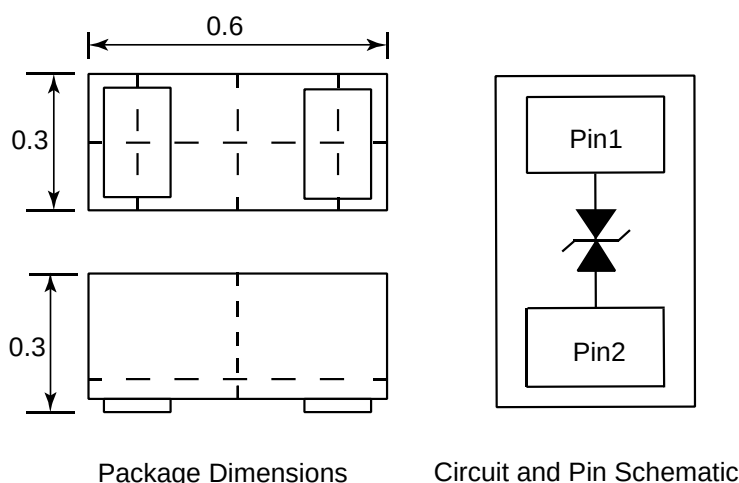
Description

The PESDR3311P0 is an Bi-directional TVS diode, 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 PESDR3311P0 has an ultra-low capacitance with a typical value at 0.45pF, and complies with the IEC61000-4-2 (ESD) standard with $\pm 20\text{kV}$ air and $\pm 15\text{kV}$ contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make PESDR3311P0 an ideal choice to protect cellphone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0 and other high speed ports.

Features

- Ultra small package: 0.6x0.3x0.3mm
- Very low capacitance
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 3.3V
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 20\text{kV}$
 - Contact discharge: $\pm 15\text{kV}$
 - IEC61000-4-5 (Lightning) 4A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



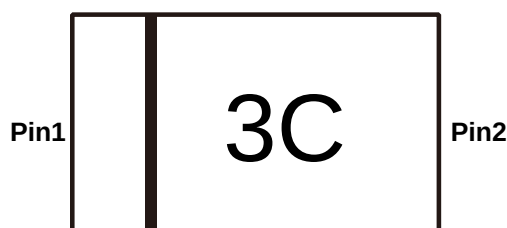
Mechanical Characteristics

- Package: DFN0603-2 (0.6x0.3x0.3mm)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports
- Digital Video Interface (DVI)
- PCI Express and Serial SATA Ports

Marking Information



3C = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDR3311P0	10000/Tape & Reel	7 inch

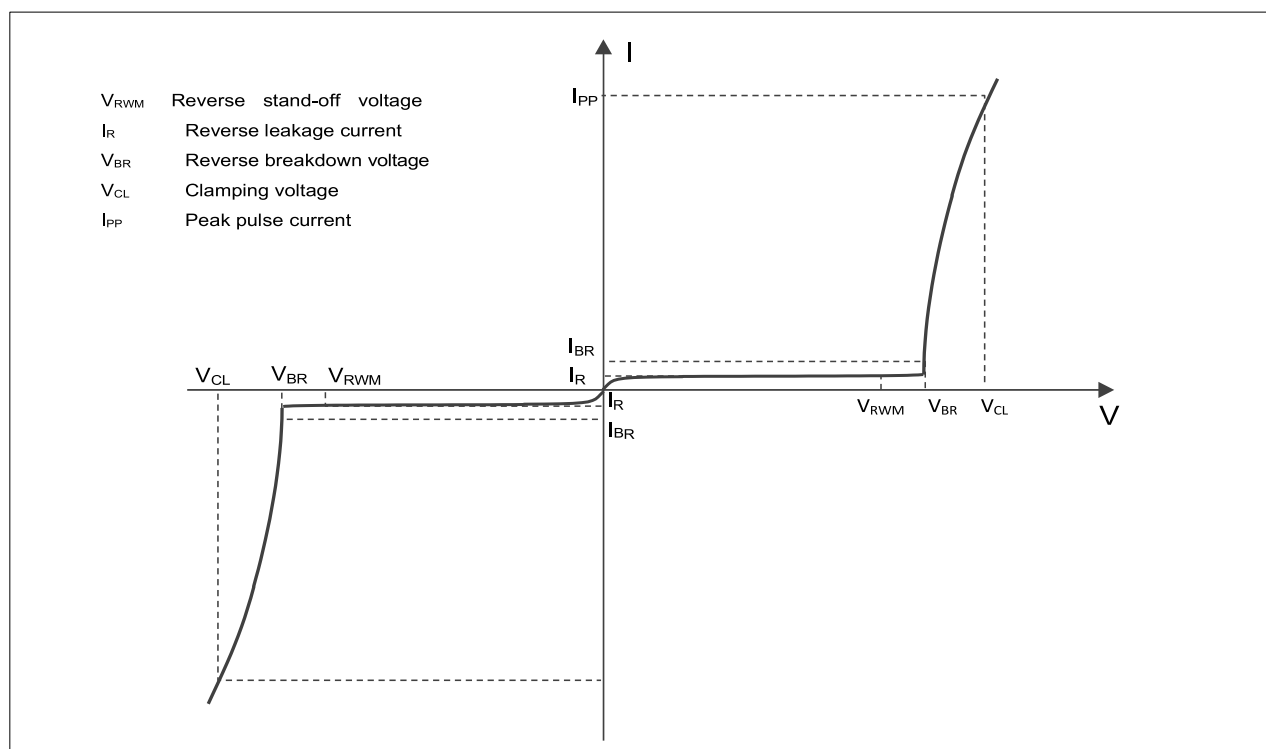
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	100	W
Peak Pulse Current (8/20 μs)	I_{PP}	4	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 20	kV
ESD per IEC 61000-4-2 (Contact)		± 15	
Lead temperature	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_J	125	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	$-40 \sim +125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

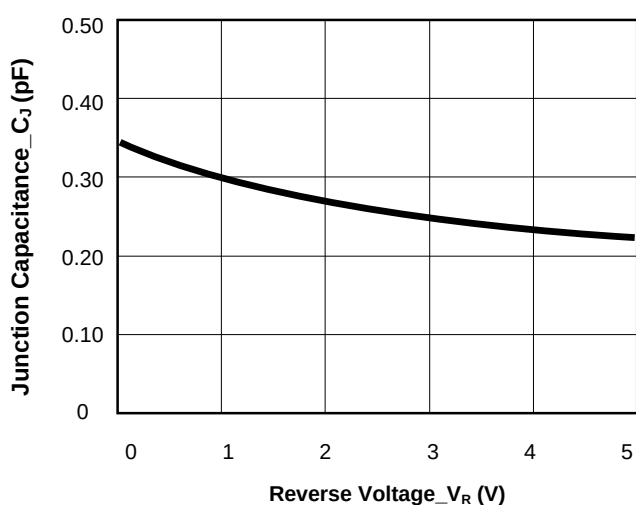
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	5.0	6.0	8.0	V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.2	μA	$V_{RWM} = 3.3\text{V}$
Clamping Voltage ³⁾	V_C			11	V	$I_{PP} = 1\text{A}(8/20\mu\text{s pulse})$
Clamping Voltage ³⁾	V_C			20	V	$I_{PP} = 4\text{A}(8/20\mu\text{s pulse})$
Junction Capacitance	C_J		0.35		pF	$V_R = 0\text{V}, f = 1\text{MHz}$

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

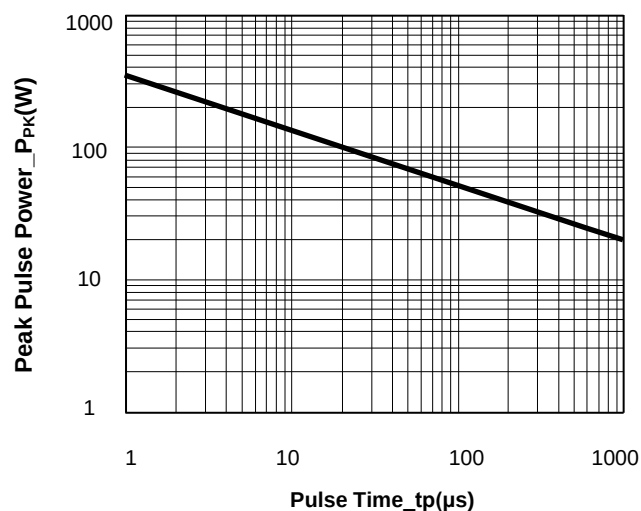


Definitions of electrical characteristics

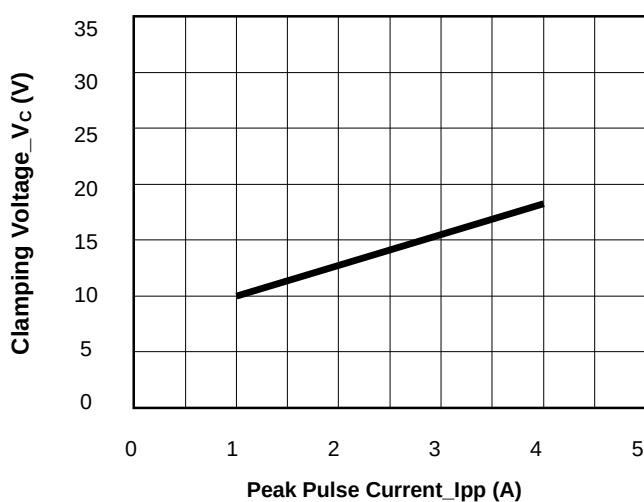
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



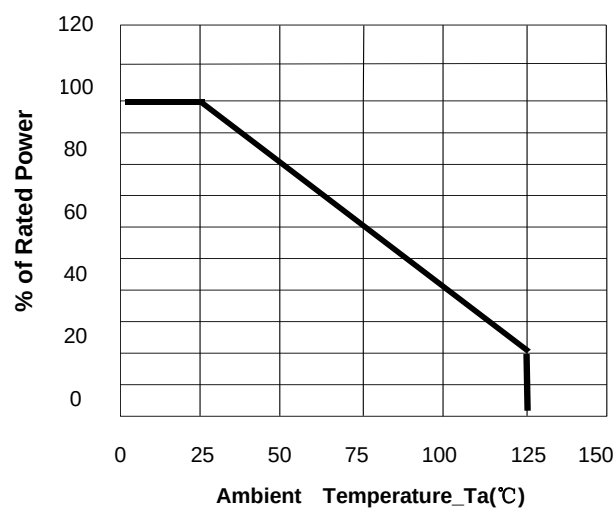
Junction Capacitance vs. Reverse Voltage



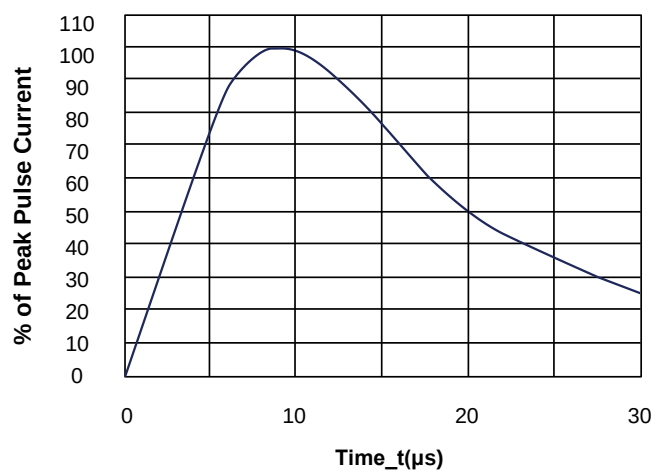
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

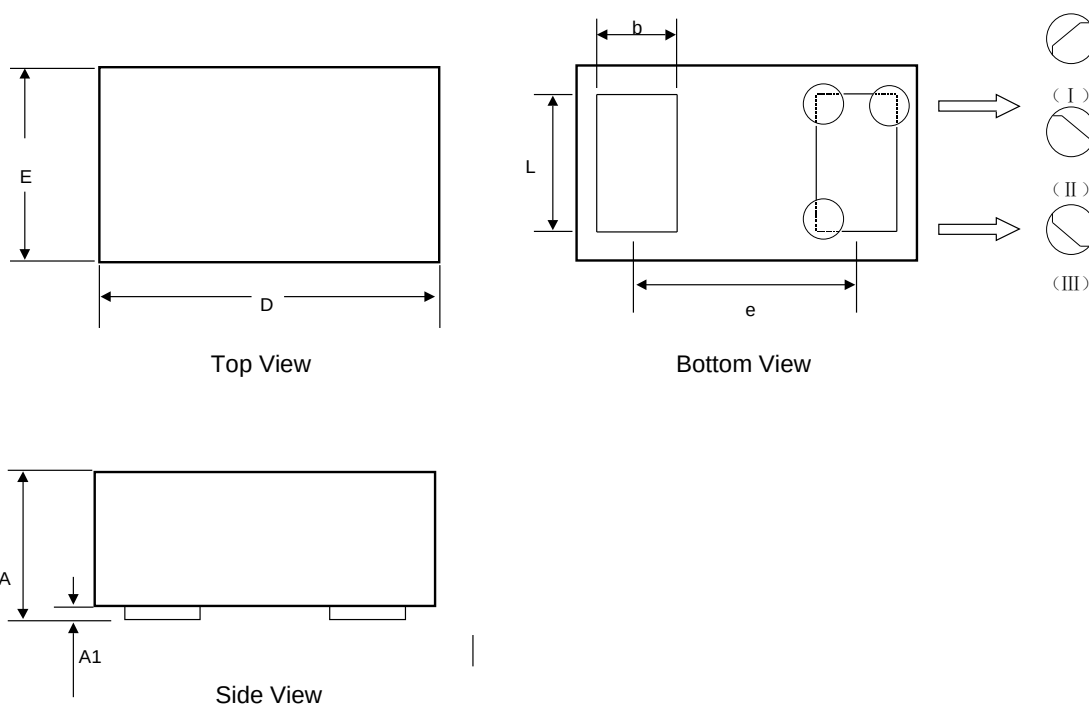


Power Derating Curve



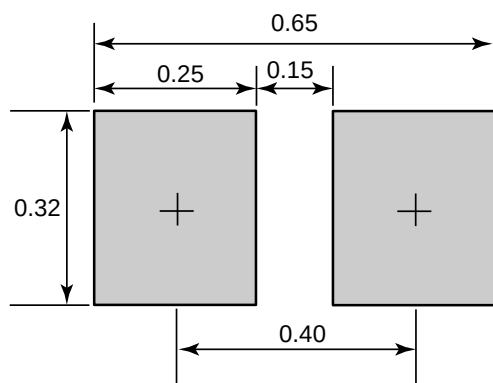
8/20μs Pulse Waveform

DFN0603-2 Package Outline Drawing



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.230	0.300	0.350
A1	0.000	-	0.050
D	0.550	0.600	0.670
E	0.250	0.300	0.370
b	0.160	0.190	0.230
L	0.215	0.245	0.275
e	0.360 BSC		

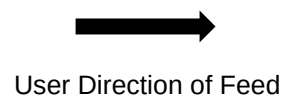
Recommended PCB Layout (Unit: mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

Reel Dimensions



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