

1-Line Ultra Low Capacitance Uni-directional TVS Diode

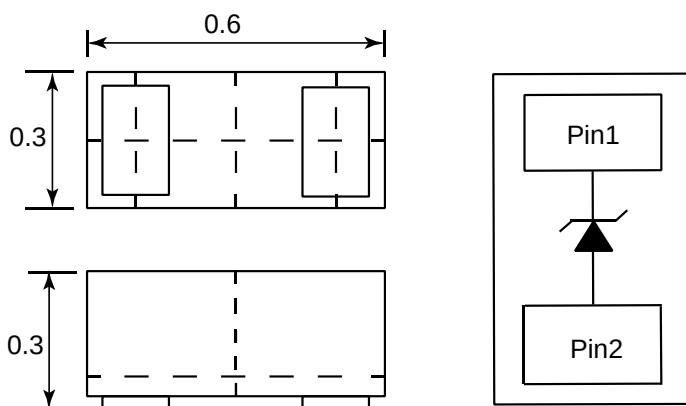
Description

The PESDR3301P0 is an uni-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 PESDR3301P0 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 $\pm 20\text{kV}$ 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 PESDR3301P0 an ideal choice to protect cellphone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0 and other high speed ports.

Features

- Ultra low capacitance: 0.45pF
- Low operating voltage: 3.3V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 20\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC 61000-4-5 (Lightning) 4A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Package Dimensions

Circuit and Pin Schematic

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



3R= Device Marking Code

Bar denotes cathode

Ordering Information

Part Number	Shipping	Reel Size
PESDR3301P0	10000/Tape & Reel	7 inch

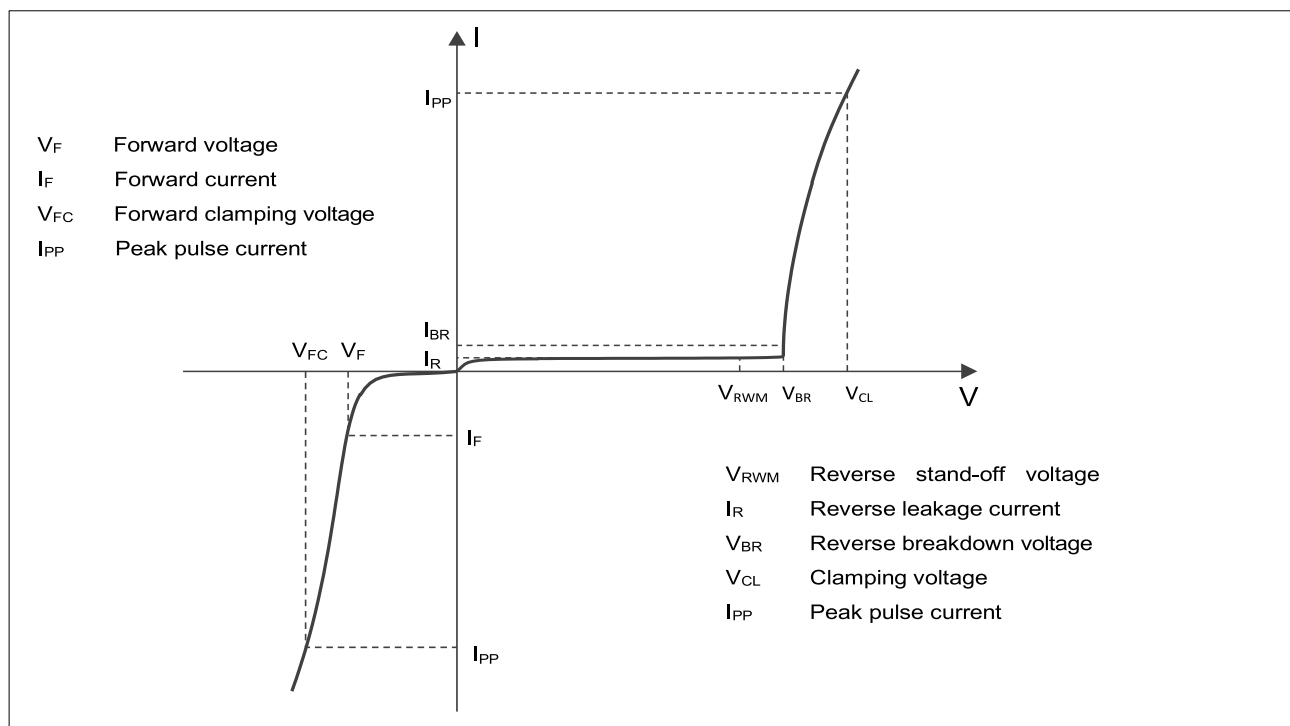
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	56	W
Peak Pulse Current (8/20μs)	I _{PP}	4	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±20	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Lead temperature	T _L	260	°C
Junction Temperature	T _J	125	°C
Operating Temperature Range	T _{OP}	-40 ~ +125	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

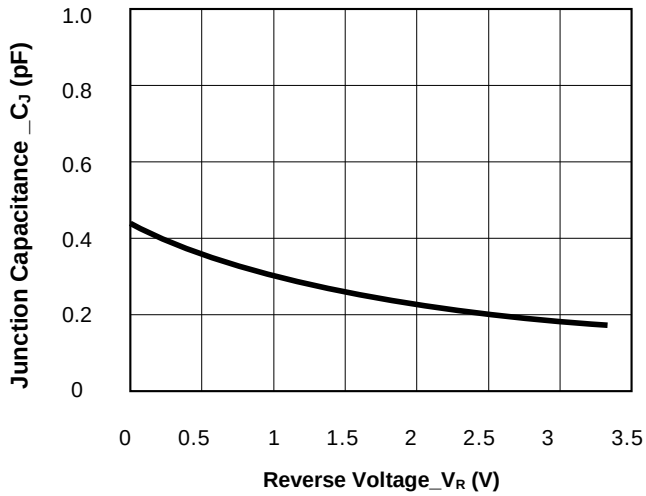
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Breakdown Voltage	V _{BR}	4.0	4.8		V	I _T = 1mA
Reverse Leakage Current	I _R			0.1	μA	V _{RWM} = 3.3V
Forward Voltage	V _F			1.2	V	I _F =15mA
Clamping Voltage	V _C			10	V	I _{PP} = 1A (8/20μs pulse),
Clamping Voltage	V _C			14	V	I _{PP} = 4A (8/20μs pulse),
Junction Capacitance	C _J		0.45	0.8	pF	V _R = 0V, f = 1MHz

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

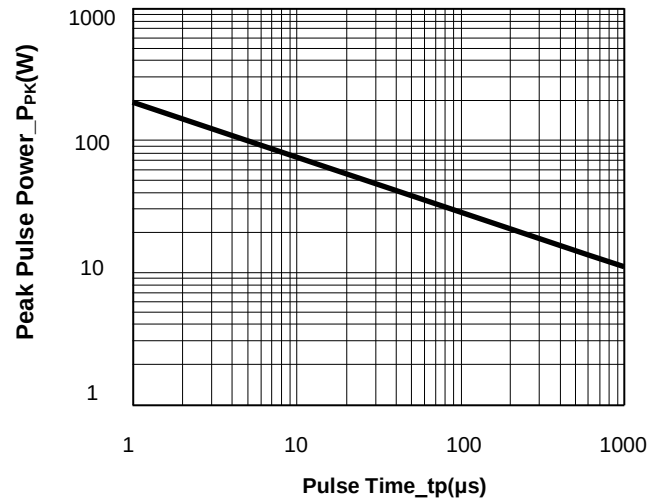


Definitions of electrical characteristics

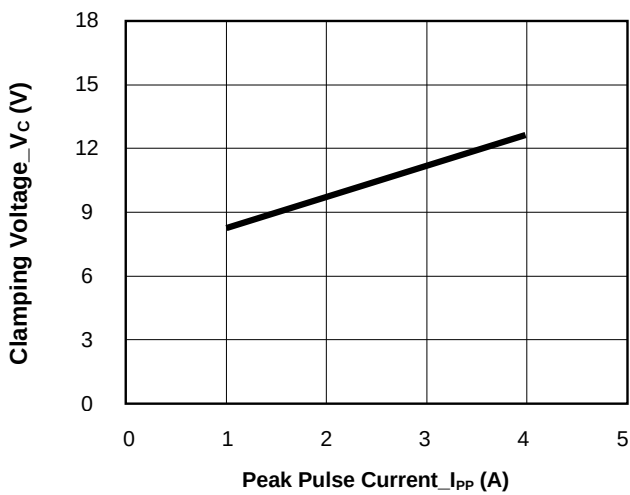
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



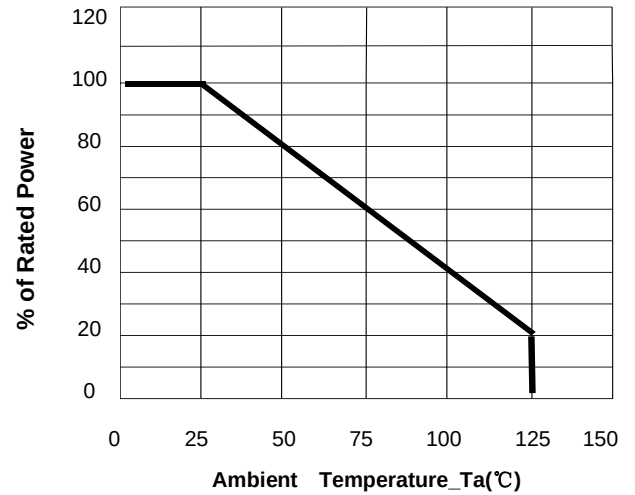
Junction Capacitance vs. Reverse Voltage



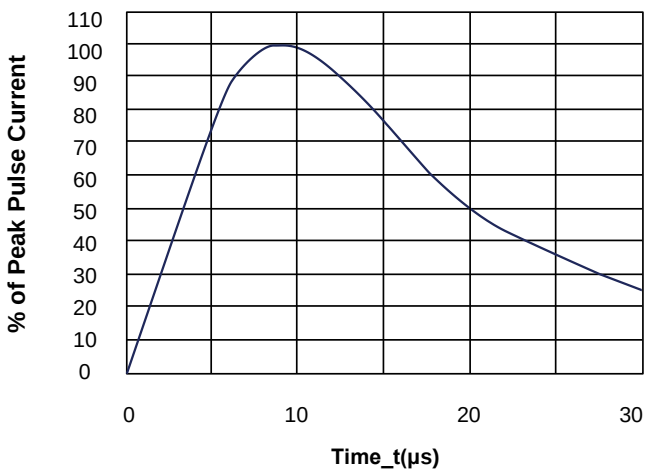
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

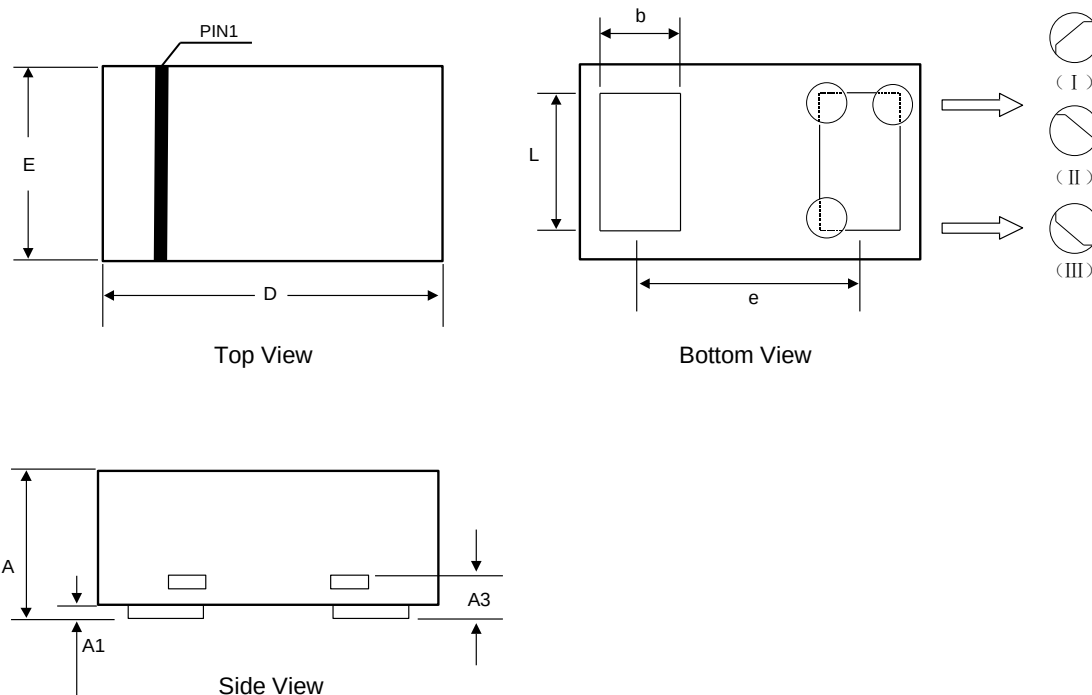


Power Derating Curve



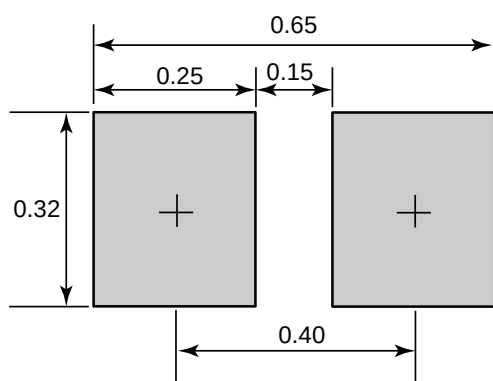
8/20 μs Pulse Waveform

DFN0603-2 Package Outline Drawing



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.230	0.300	0.350
A1	0.000	-	0.050
A3	0.102REF.		
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)

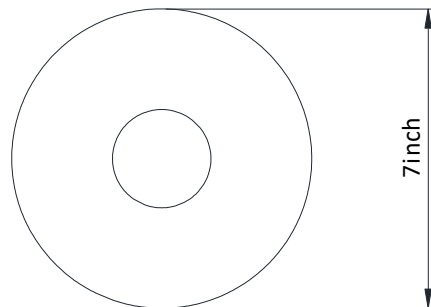


Notes:

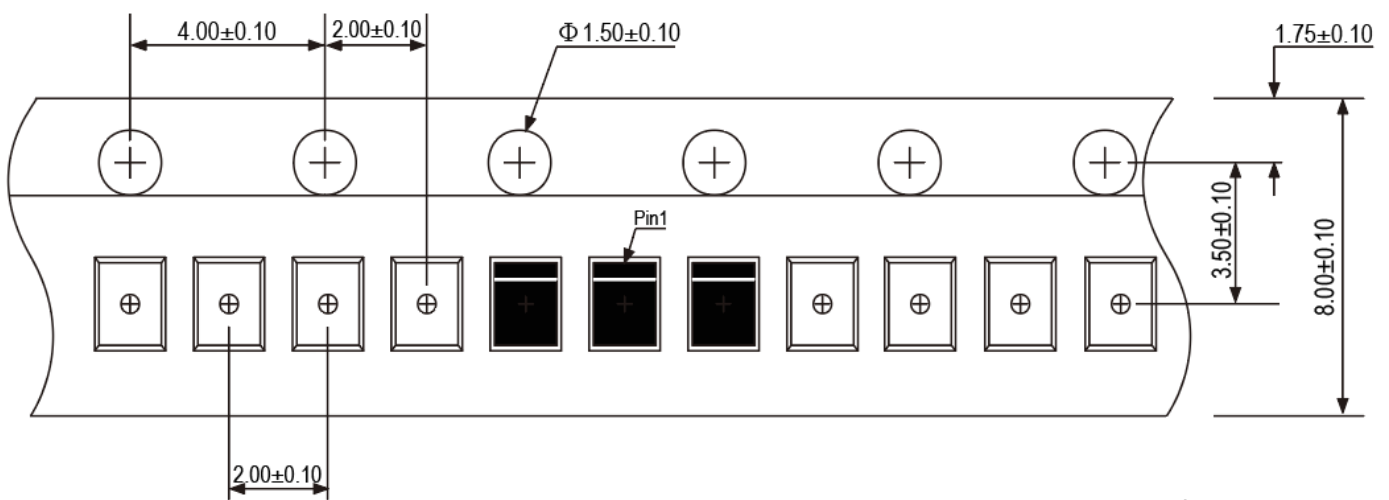
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

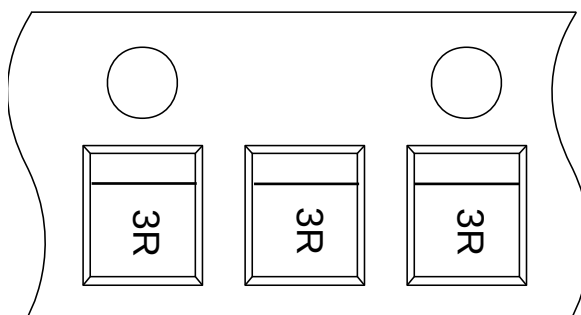
Reel Dimensions



Tape Dimensions



Unit:mm



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User Direction of Feed

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