

**1-Line Ultra Low Capacitance Uni-directional TVS Diode**

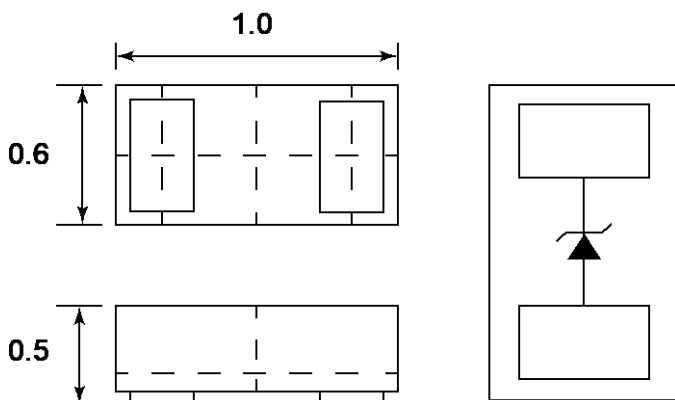
**Description**

The PESDR3301P1L 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 PESDR3301P1L has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC61000-4-2 (ESD) standard with ±20kV air and ±20kV contact discharge. It is assembled into an ultra-small 1.0x0.6x 0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make PESDR3301P1L an ideal choice to protect cellphone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0 and other high speed ports.

**Features**

- Ultra low capacitance: 0.6pF
- 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: ±20kV
    - Contact discharge: ±20kV
  - IEC 61000-4-5 (Lightning) 4A (8/20µs)
- RoHS Compliant

**Dimensions and Pin Configuration**



Package Dimensions

Circuit and Pin Schematic

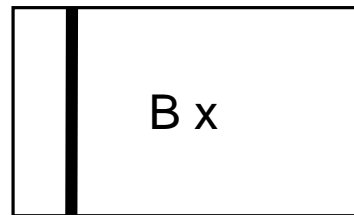
**Mechanical Characteristics**

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- 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**



**B x** = Device Marking Code  
Bar denotes cathode

**Ordering Information**

Part Number	Shipping	Reel Size
PESDR3301P1L	10000/Tape & Reel	7 inch

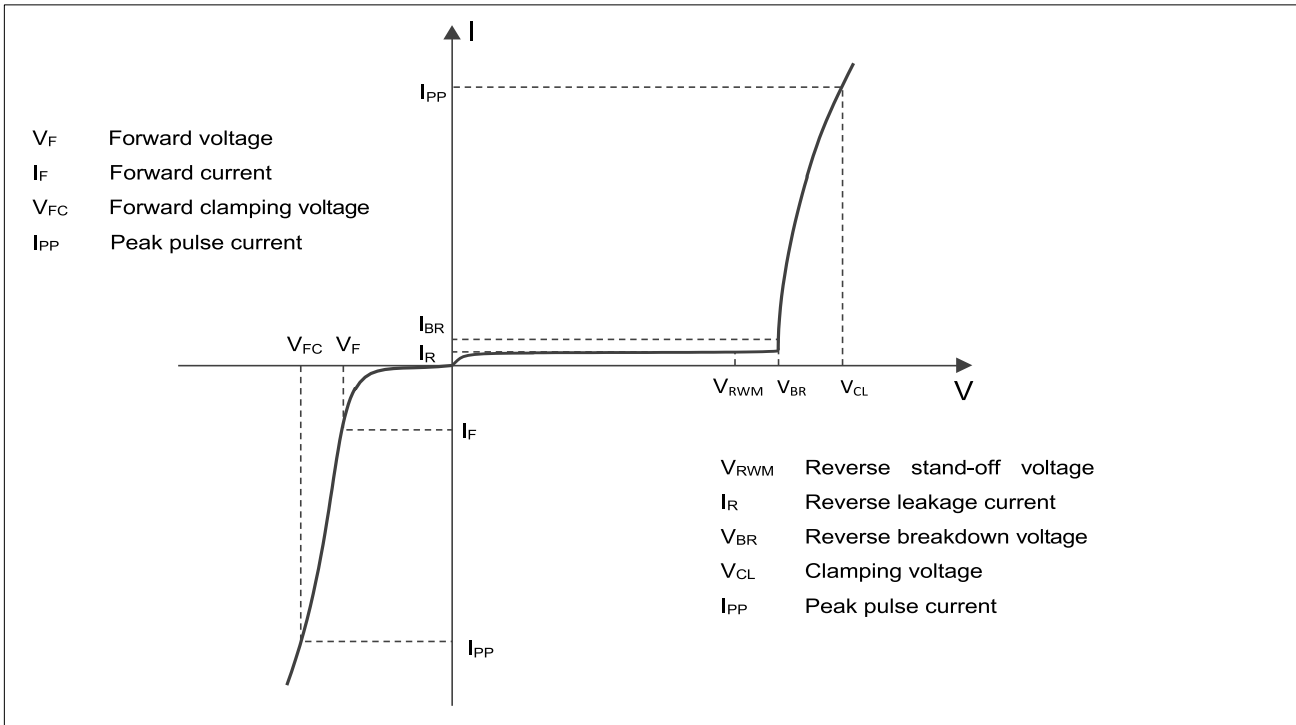
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P <sub>PK</sub>	56	W
Peak Pulse Current (8/20μs)	I <sub>PP</sub>	4	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±20	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Lead temperature	T <sub>L</sub>	260	°C
Operating Temperature Range	T <sub>OP</sub>	-40 ~ +85	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	°C

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

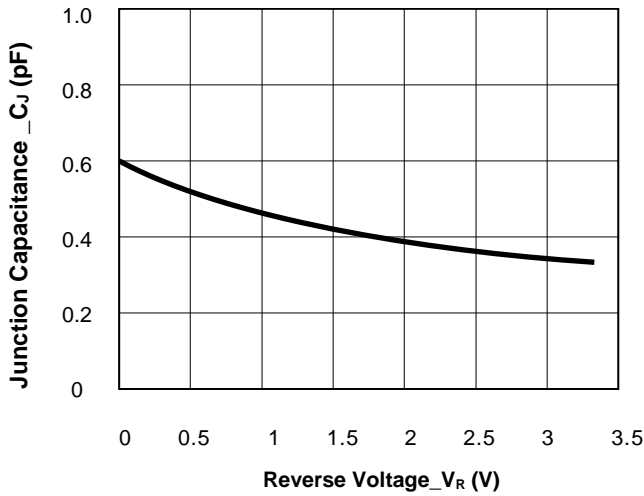
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			3.3	V	
Breakdown Voltage	V <sub>BR</sub>	4.0	4.5		V	I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			0.1	μA	V <sub>RWM</sub> = 3.3V
Clamping Voltage	V <sub>C</sub>			10	V	I <sub>PP</sub> = 1A (8/20μs pulse),
Clamping Voltage	V <sub>C</sub>			14	V	I <sub>PP</sub> = 4A (8/20μs pulse),
Junction Capacitance	C <sub>J</sub>		0.6		pF	V <sub>R</sub> = 0V, f = 1MHz

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

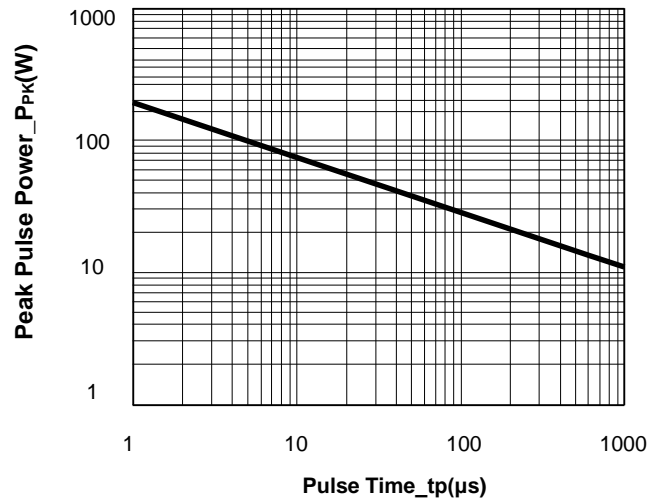


Definitions of electrical characteristics

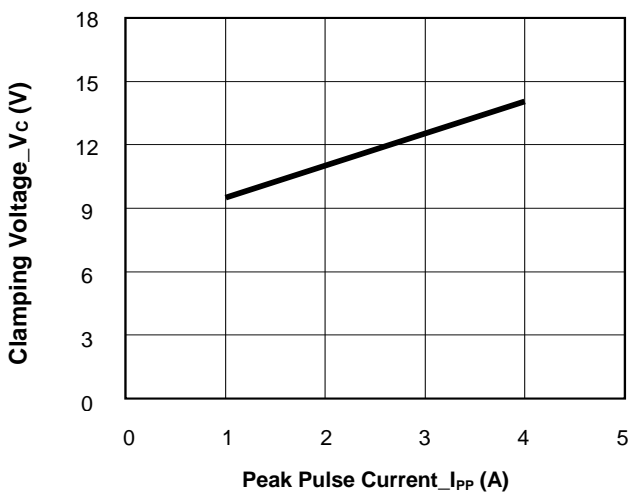
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



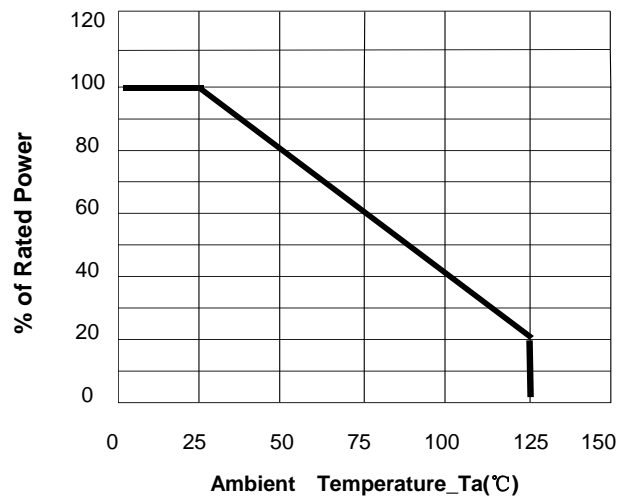
**Junction Capacitance vs. Reverse Voltage**



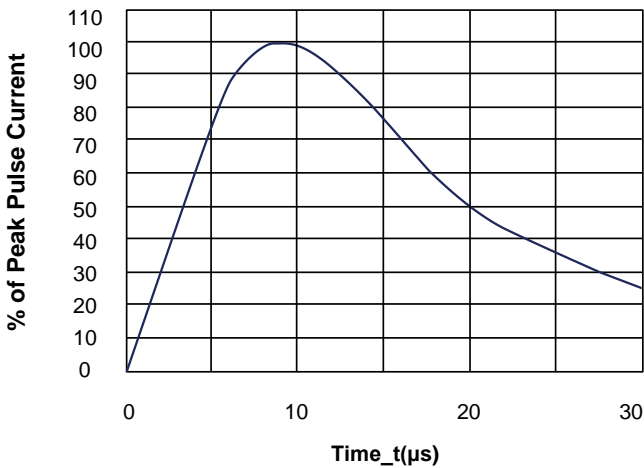
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

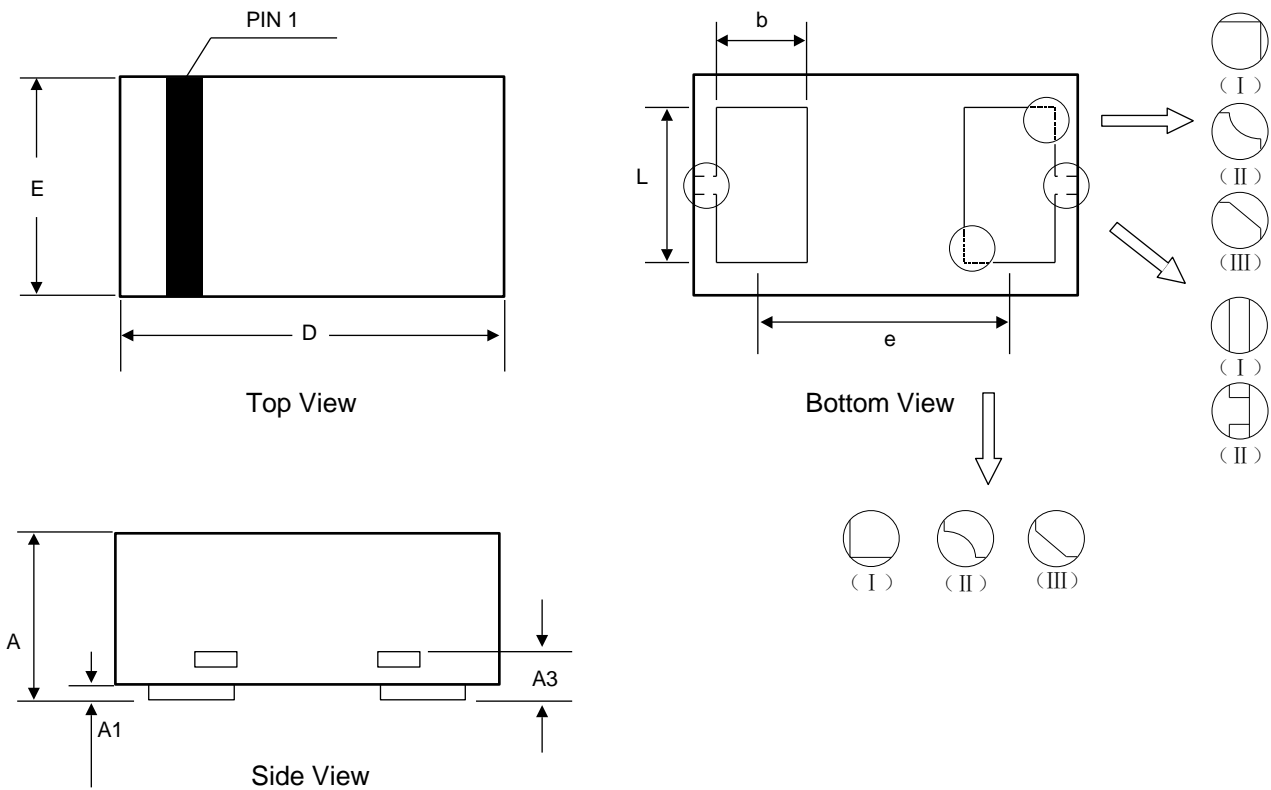


**Power Derating Curve**



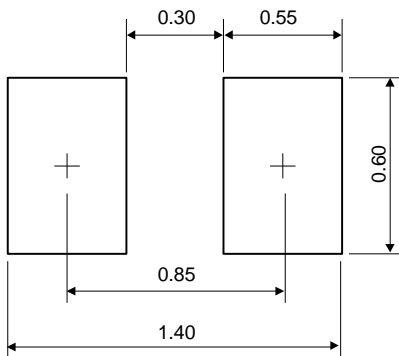
**8/20μs Pulse Waveform**

**DFN1006-2 Package Outline Drawing**



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.550
A1	0.000	0.020	0.050
A3	0.125 Ref.		
D	0.950	1.000	1.075
E	0.490	0.600	0.675
b	0.200	0.250	0.300
L	0.450	0.500	0.550
e	0.650 BSC		

**Recommended PCB Layout (Unit: mm)**

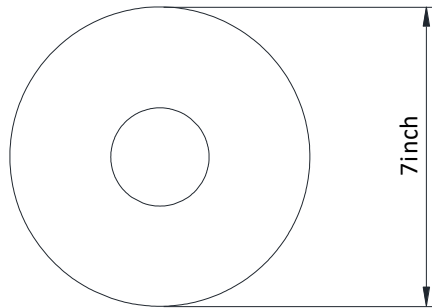


**Notes:**

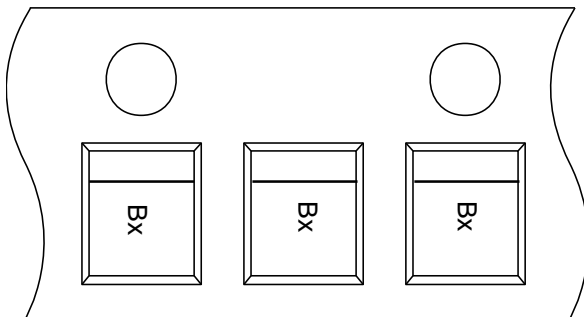
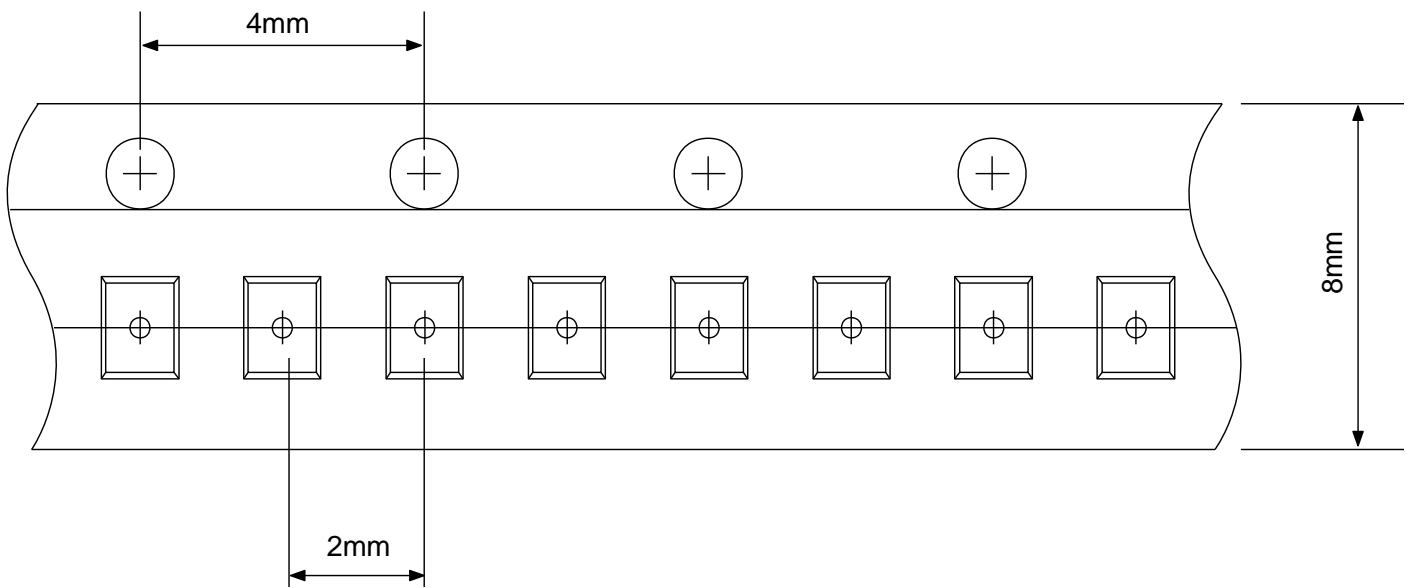
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**TAPE AND REEL INFORMATION**

Reel Dimensions



Tape Dimensions




User Direction of Feed

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