

1-Line Ultra Low Capacitance Uni-directional TVS Diode

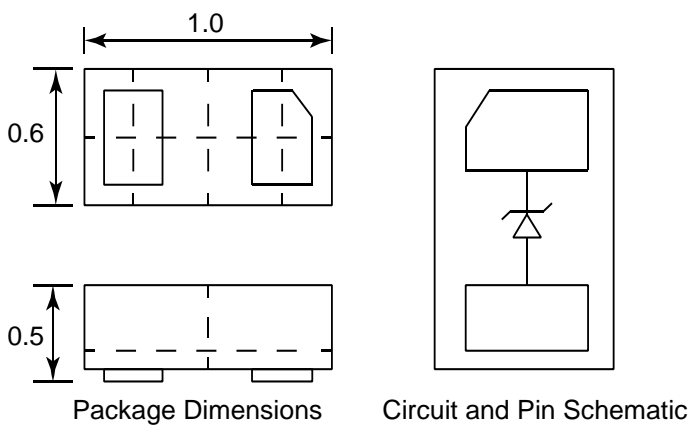
Description

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 0.3pF, and complies with the IEC 6100 0-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm 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: 0.3pF
- 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: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC 61000-4-4 (EFT) 40A (5/50ns)
 - IEC 61000-4-5 (Lightning) 5A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Mechanical Characteristics

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 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

Ordering Information

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

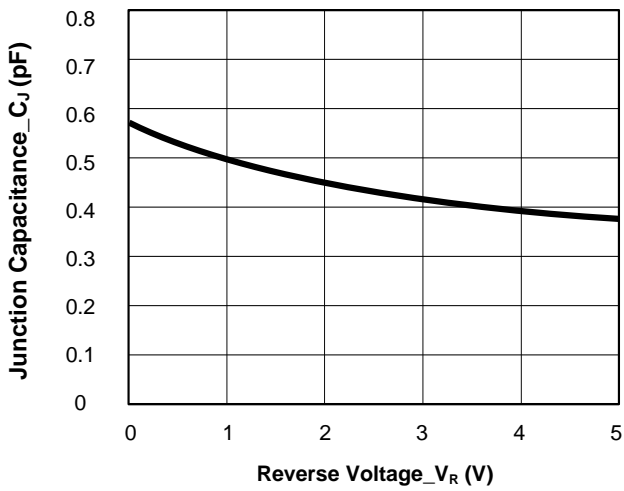
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	60	W
Peak Pulse Current (8/20μs)	I _{PP}	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±30 ±30	kV
Operating Temperature Range	T _{OP}	-55 to +125	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

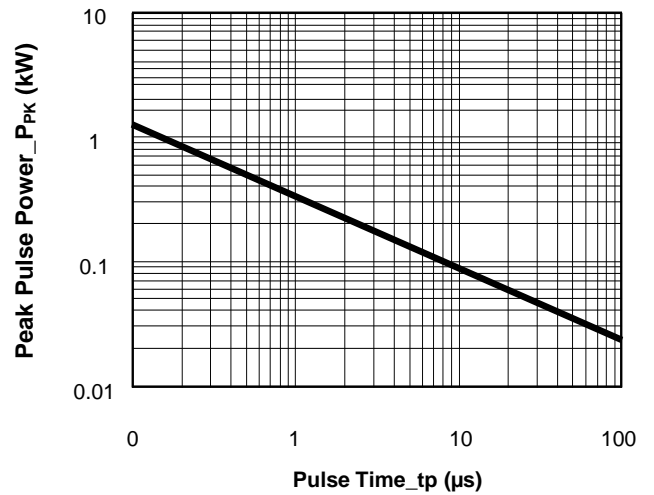
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	Pin1 to Pin 2
Breakdown Voltage	V _{BR}	4.0		6.0	V	I _T = 1mA, Pin1 to Pin 2
Reverse Leakage Current	I _R			1	μA	V _{RWM} = 3.3V, T _A =25°C, Pin2 to Pin 1
Clamping Voltage	V _C		5.3	7.5	V	I _{PP} = 1A (8/20μs pulse), Pin1 to Pin 2
Clamping Voltage	V _C		6.5	12	V	I _{PP} = 5A (8/20μs pulse), Pin1 to Pin 2
Junction Capacitance	C _J		0.3	0.6	pF	V _R = 0V, f = 1MHz, Pin1 to Pin 2

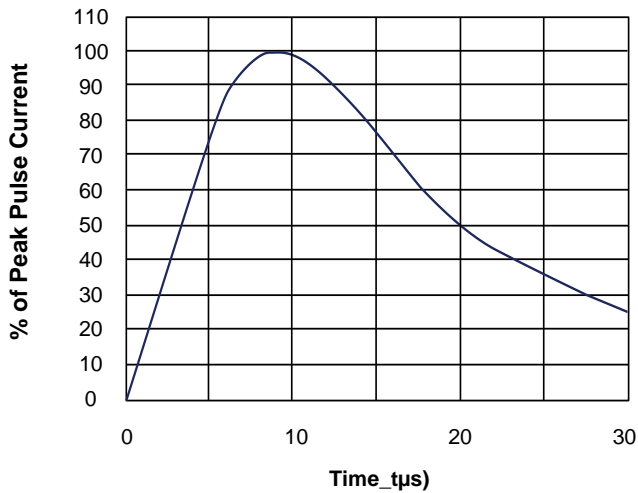
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



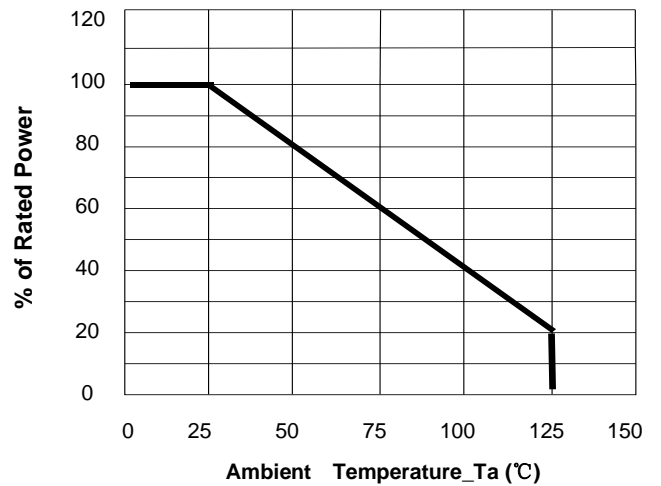
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time

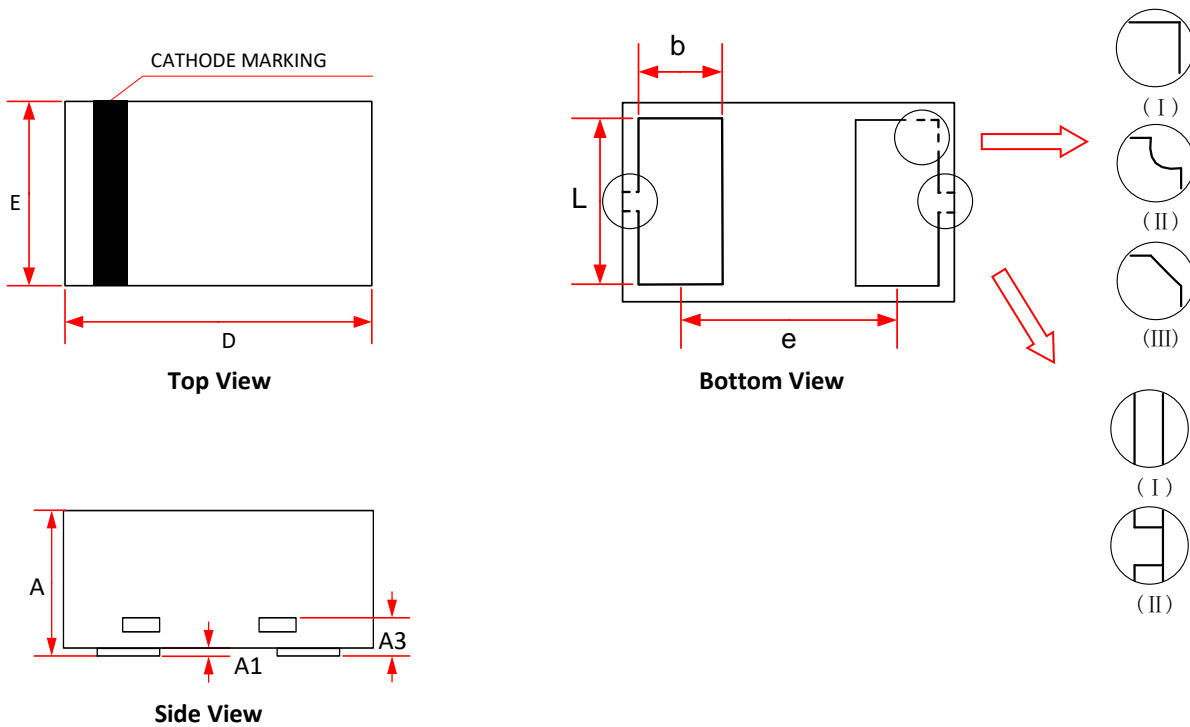


8/20μs Pulse Waveform



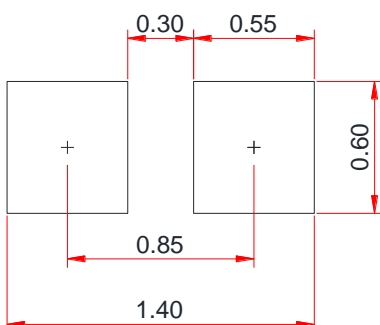
Power Derating Curve

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.