

1-Line Ultra Low Capacitance Uni-directional TVS Diode

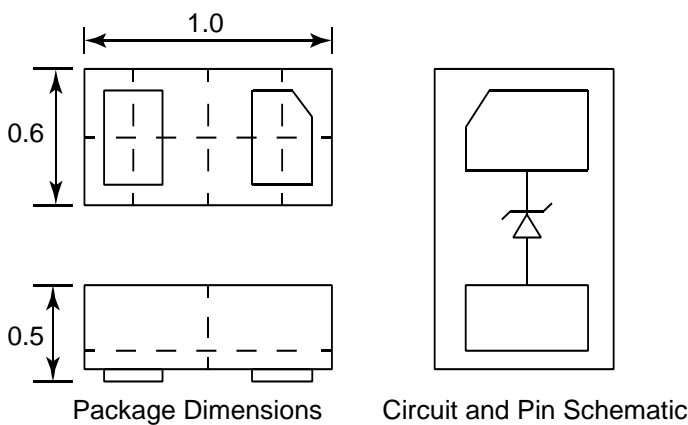
Description

The PESDR0501P1L 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 PESDR0501P1L has an ultra-low capacitance with a typical value at 0.4pF, 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 PESDR0501P1L an ideal choice to protect cellphone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0 and other high speed ports.

Features

- Ultra low capacitance: 0.4pF
- Low operating voltage: 5 V
- 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) 4A (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



5U = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDR0501P1L	10000/Tape & Reel	7 inch

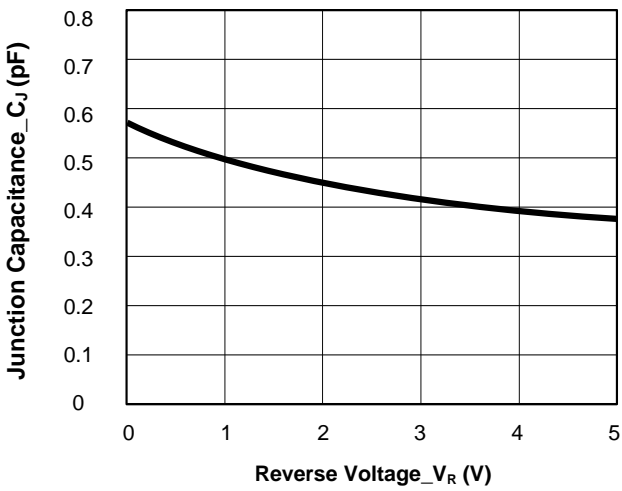
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	52	W
Peak Pulse Current (8/20 μs)	I_{PP}	4	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 25 ± 25	kV
Operating Temperature Range	T_{OP}	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

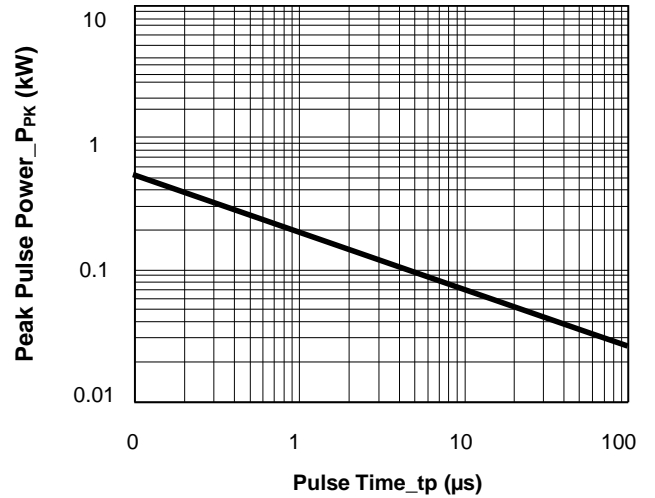
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	Pin1 to Pin 2
Breakdown Voltage	V_{BR}	7.0			V	$I_T = 1\text{mA}$, Pin1 to Pin 2
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 5\text{V}$, $T_A=25^{\circ}\text{C}$, Pin2 to Pin 1
Clamping Voltage	V_C			8.9	V	$I_{PP} = 1\text{A}$ (8/20 μs pulse), Pin1 to Pin 2
Clamping Voltage	V_C			13	V	$I_{PP} = 4\text{A}$ (8/20 μs pulse), Pin1 to Pin 2
Junction Capacitance	C_J		0.4	0.6	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$, Pin1 to Pin 2

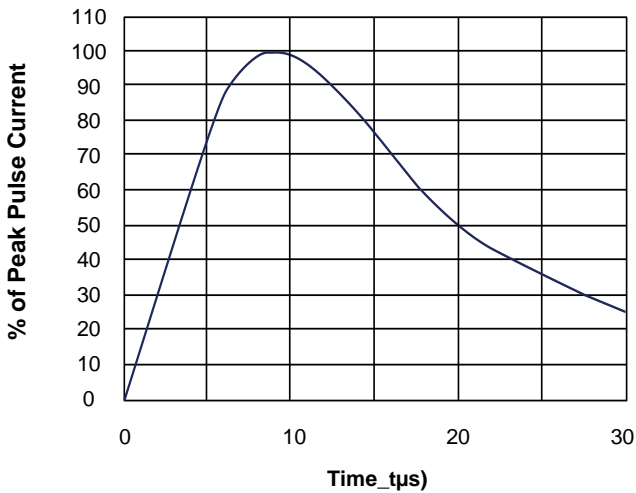
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



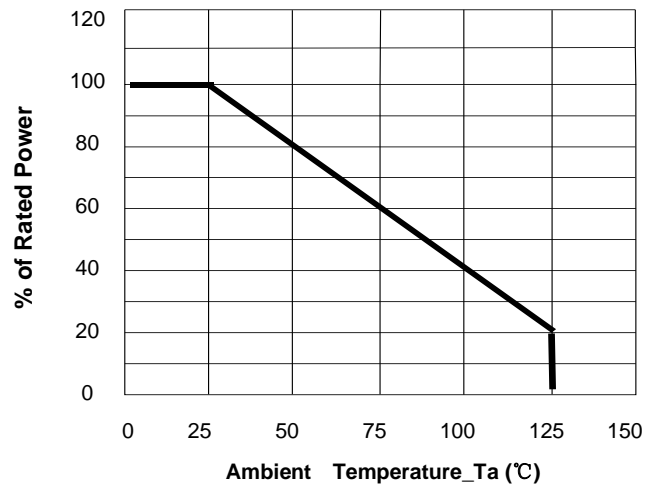
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time

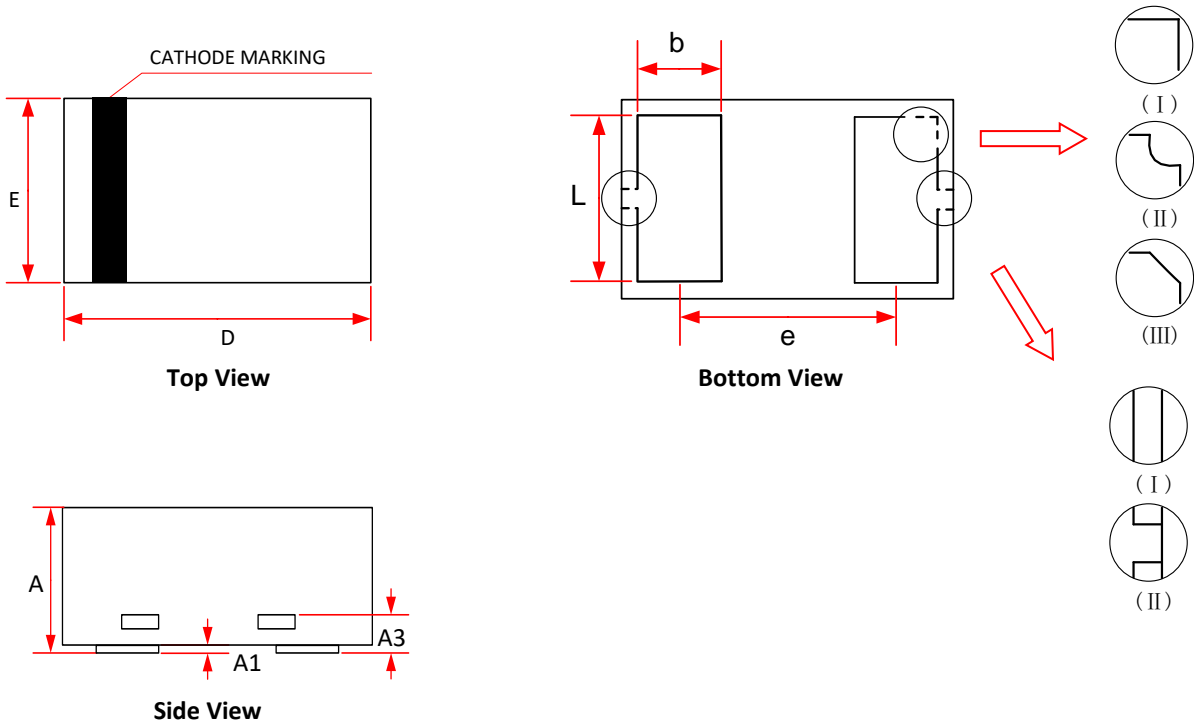


8/20μs Pulse Waveform



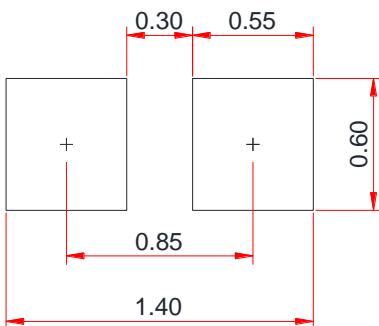
Power Derating Curve

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.