

**1-Line, Bi-directional, Ultra-low Capacitance**

**Description**

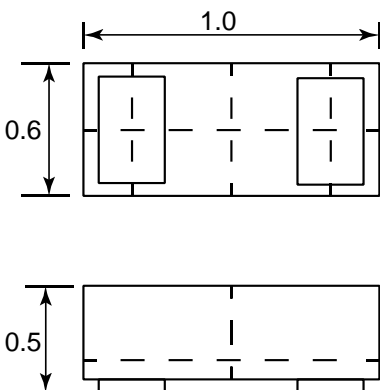
PESDR5511P1A is an ultra-low capacitance TVS (Transient Voltage Suppressor) designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).

PESDR5511P1A may be used to provide ESD protection up to ±20KV air and ±15KV contact discharge according to IEC61000-4-2, and withstand peak pulse current up to 5A (8/20µs) according to IEC61000-4-5.

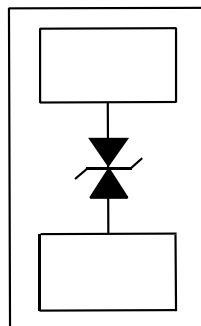
**Features**

- Ultra small package: 1.0x0.6x0.5mm
- Protects one data or power line
- Low operating voltage: 5.0V
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±20kV
    - Contact discharge: ±15kV
  - IEC61000-4-5 (Lightning)5A (8/20µs)
- RoHS Compliant

**Dimensions and Pin Configuration**



Package Dimensions



Circuit and Pin Schematic

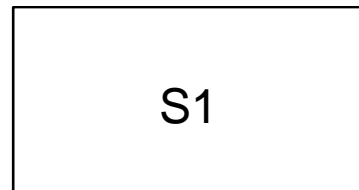
**Mechanical Characteristics**

- 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**

- USB 2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and e SATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks

**Marking Information**



S1 = Device Marking Code

**Ordering Information**

Part Number	Shipping	Reel Size
PESDR5511P1A	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>	40	W
Peak Pulse Current (8/20μs)	I <sub>PP</sub>	5	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±20	kV
ESD per IEC 61000-4-2 (Contact)		±15	
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>			5.0	V	
Breakdown Voltage	V <sub>BR</sub>	8.0	11.0		V	I <sub>T</sub> = 1mA
Holding Voltage	V <sub>H</sub>	2.6		4.0	V	I <sub>H</sub> =100mA
Reverse Leakage Current	I <sub>R</sub>			0.1	μA	V <sub>RWM</sub> = 5.0V
Clamping voltage <sup>1)</sup>	V <sub>CL</sub>		8.5		V	I <sub>PP</sub> = 16A, t <sub>p</sub> = 100ns
Dynamic resistance <sup>1)</sup>	R <sub>DYN</sub>		0.35		Ω	
Clamping voltage <sup>2)</sup>	V <sub>CL</sub>		8.5		V	V <sub>ESD</sub> = 8kV
Clamping Voltage <sup>3)</sup>	V <sub>C</sub>		5.0	6.5	V	I <sub>PP</sub> = 1A (8/20μs pulse)
Clamping Voltage <sup>3)</sup>	V <sub>C</sub>		6.0	8.0	V	I <sub>PP</sub> = 5A (8/20μs pulse)
Junction Capacitance	C <sub>J</sub>		0.50	0.60	pF	V <sub>R</sub> = 0V, f = 1MHz

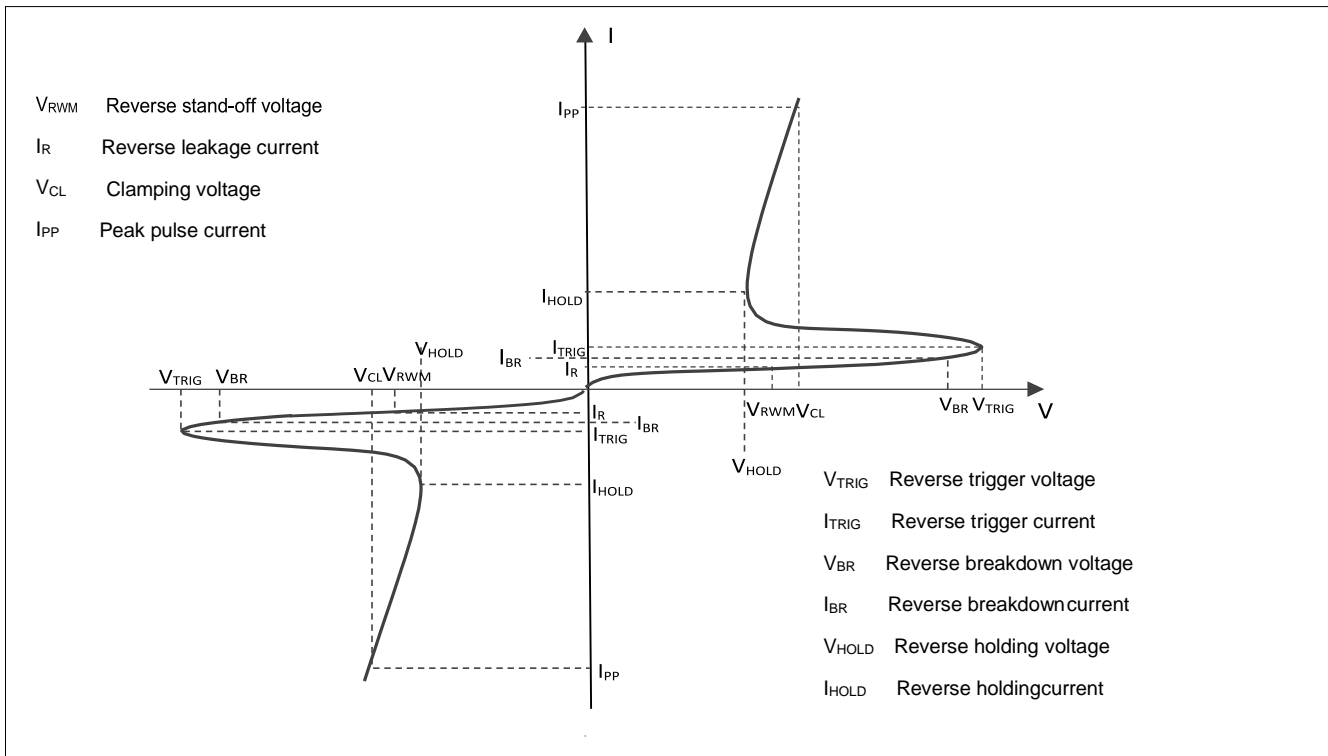
Notes:

1) TLP parameter: Z<sub>0</sub> = 50Ω, t<sub>p</sub> = 100ns, t<sub>r</sub> = 2ns, averaging window from 60ns to 80ns. R<sub>DYN</sub> is calculated from 4A to 16A.

2) Contact discharge mode, according to IEC61000-4-2.

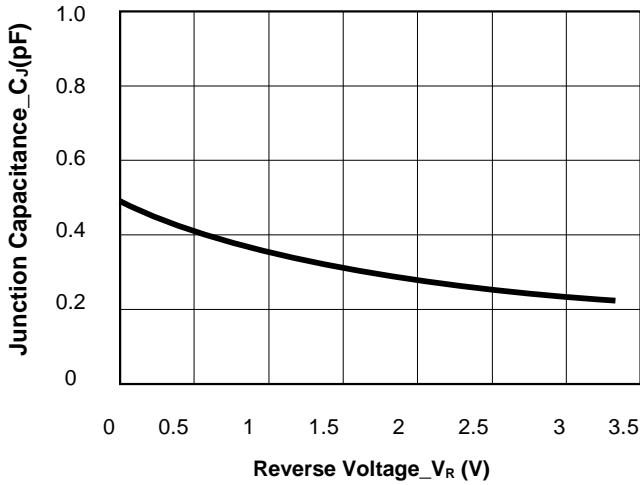
3) Non-repetitive current pulse, according to IEC61000-4-5.

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

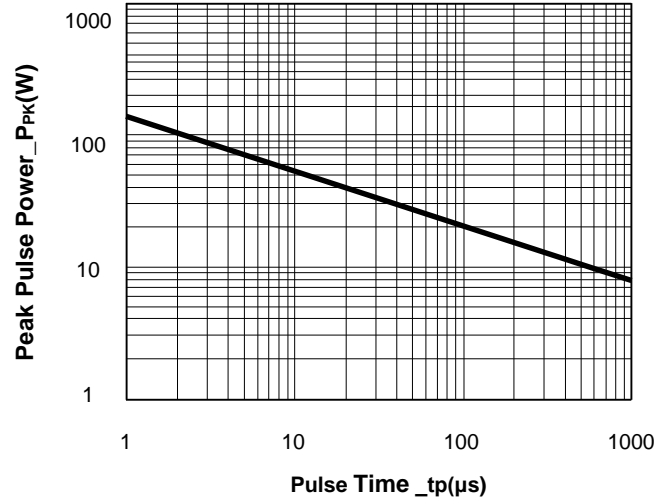


Definitions of electrical characteristics

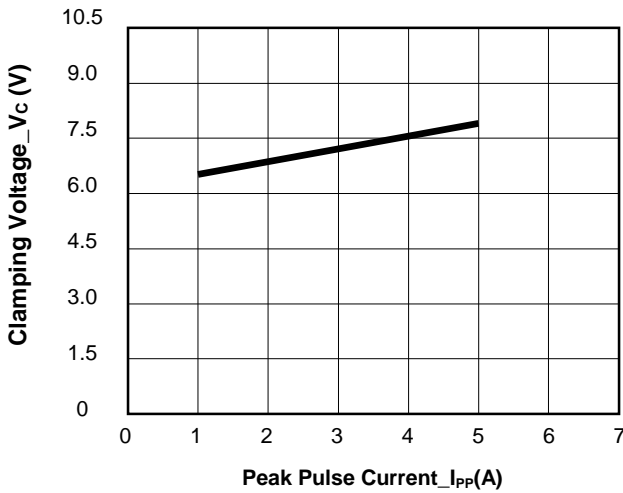
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



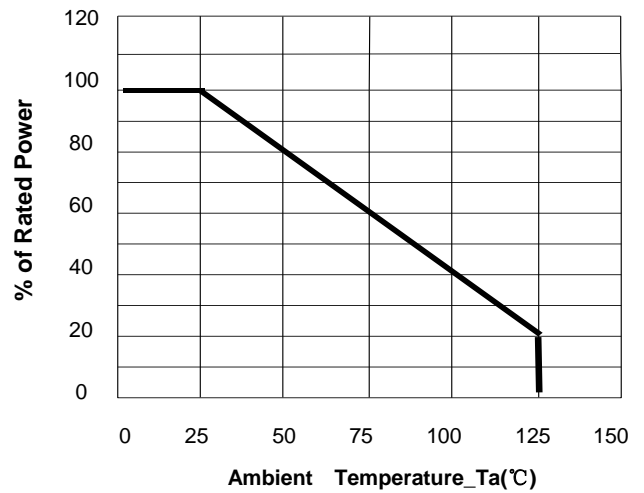
Junction Capacitance vs. Reverse Voltage



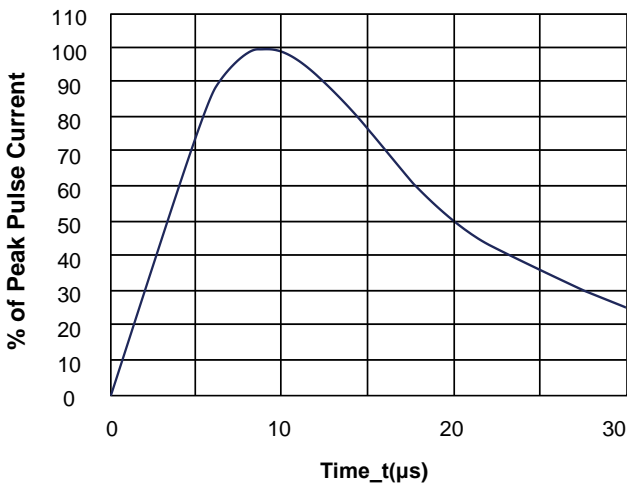
Peak Pulse Power vs. Pulse Time



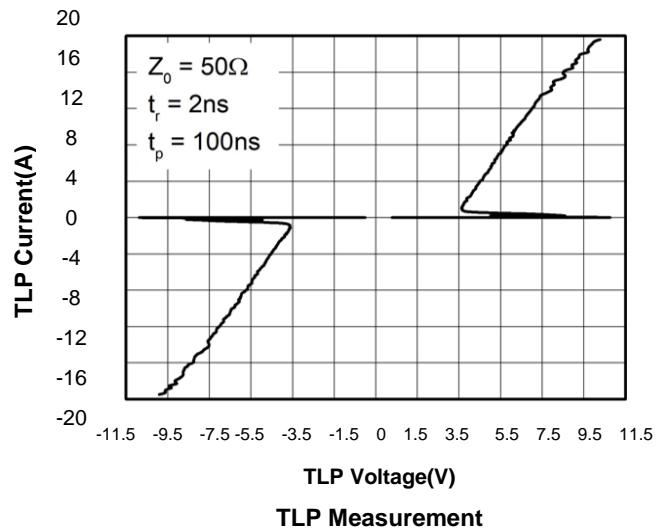
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

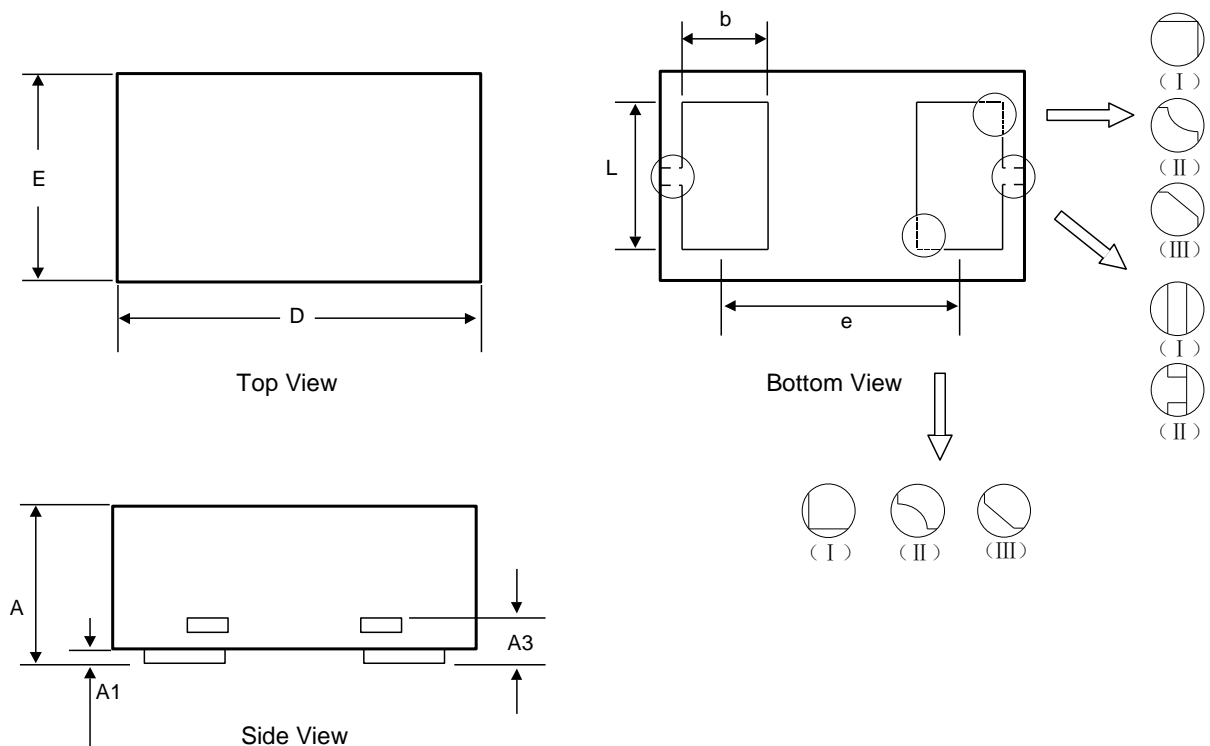


8/20μs Pulse Waveform



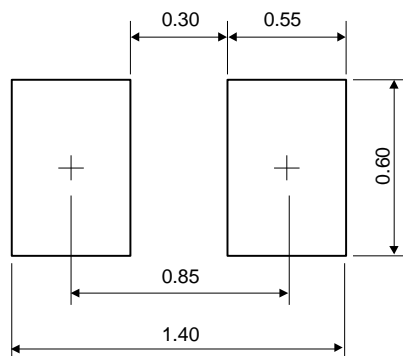
TLP Measurement

**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)**

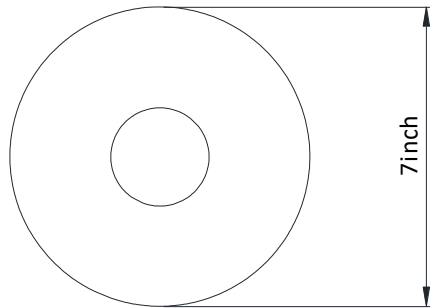


**Notes:**

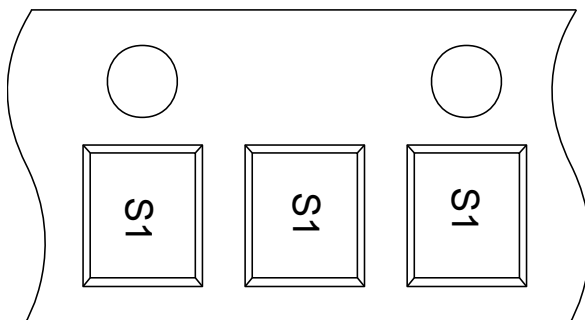
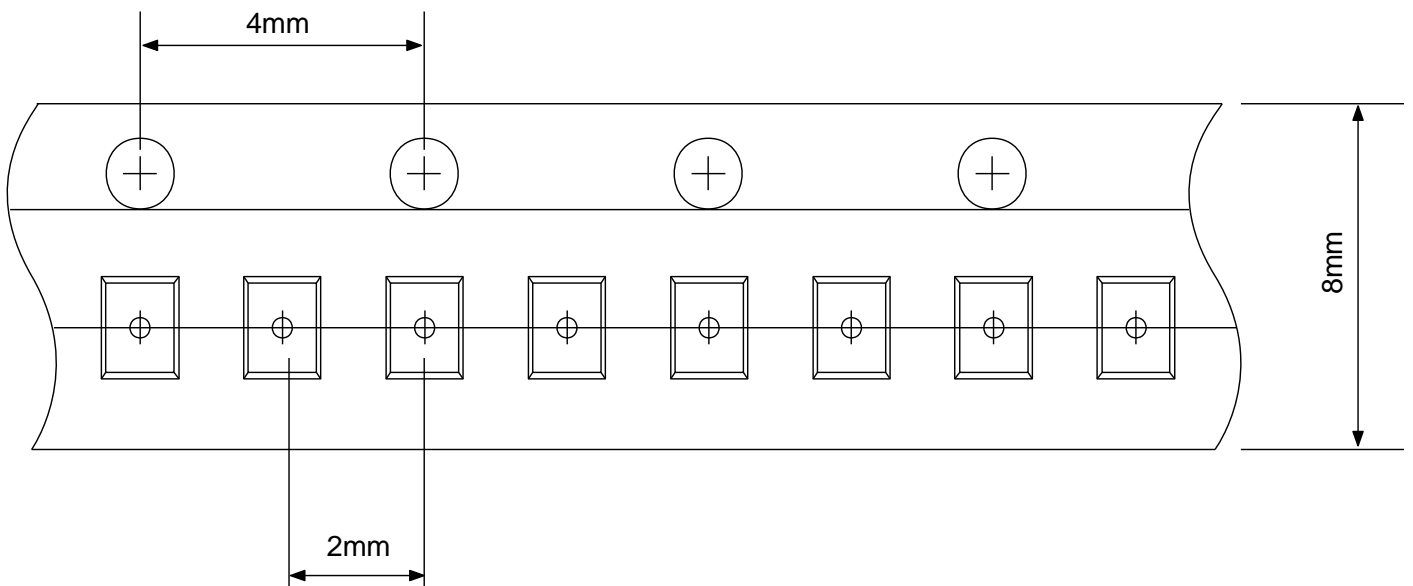
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**TAPE AND REEL INFORMATION**

Reel Dimensions



Tape Dimensions




User Direction of Feed

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