4-Line Ultra Low Capacitance TVS Array

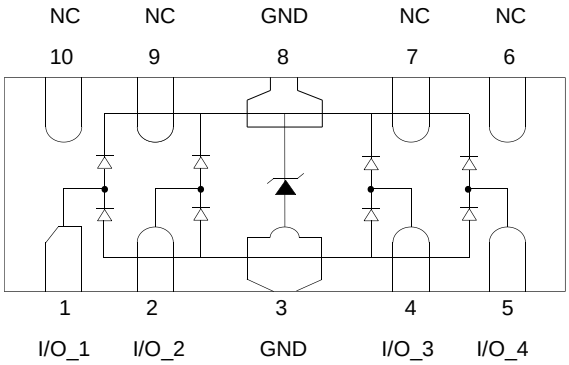
Description

The PESDR0524PA is an ultra-low capacitance TVS array, it is designed 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 PESDR0524PA has an ultra-low capacitance with a typical value at 0.35pF, and complies with the IEC61000- 4-2(ESD) standard with ±20kV air and ±20kV contact discharge. It is assembled into a 10 pin 2.5x1.0x0.5mm lead-free DFN package. The flow through style package allows for easy PCB layout and matched trace length necessary to maintain consistent impedance between high speed differential lines such as USB 3.0 and HDMI. The small size, ultra-low capacitance and high ESD protection make PESDR0524PA an ideal choice to protect HDMI, DDI, MDDI, USB3.0 and other highspeed ports.

Features

- Ultralow capacitance: 0.35pF typical (I/O to GND)
- Low operating voltage: 5V
- Low clamping voltage
- Up to 4 lines protects
- Leadless flow-through package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 10A (8/20μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit and Pin Schematic

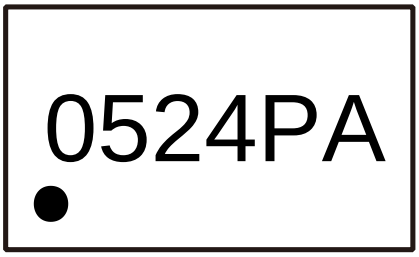
Mechanical Characteristics

- Package: DFN2510-10 (2.5×1.0×0.5mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- HDMI 1.4 & 2.0, USB 3.0 & 3.1 and MDDI ports
- Monitors and flat panel displays
- Set-top box and Digital TV
- Video graphics cards
- Digital Video Interface (DVI)
- Notebook Computers
- PCI Express and Serial SATA Ports

Marking Information



0524PA = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDR0524PA	3000/Tape & Reel	7 inch

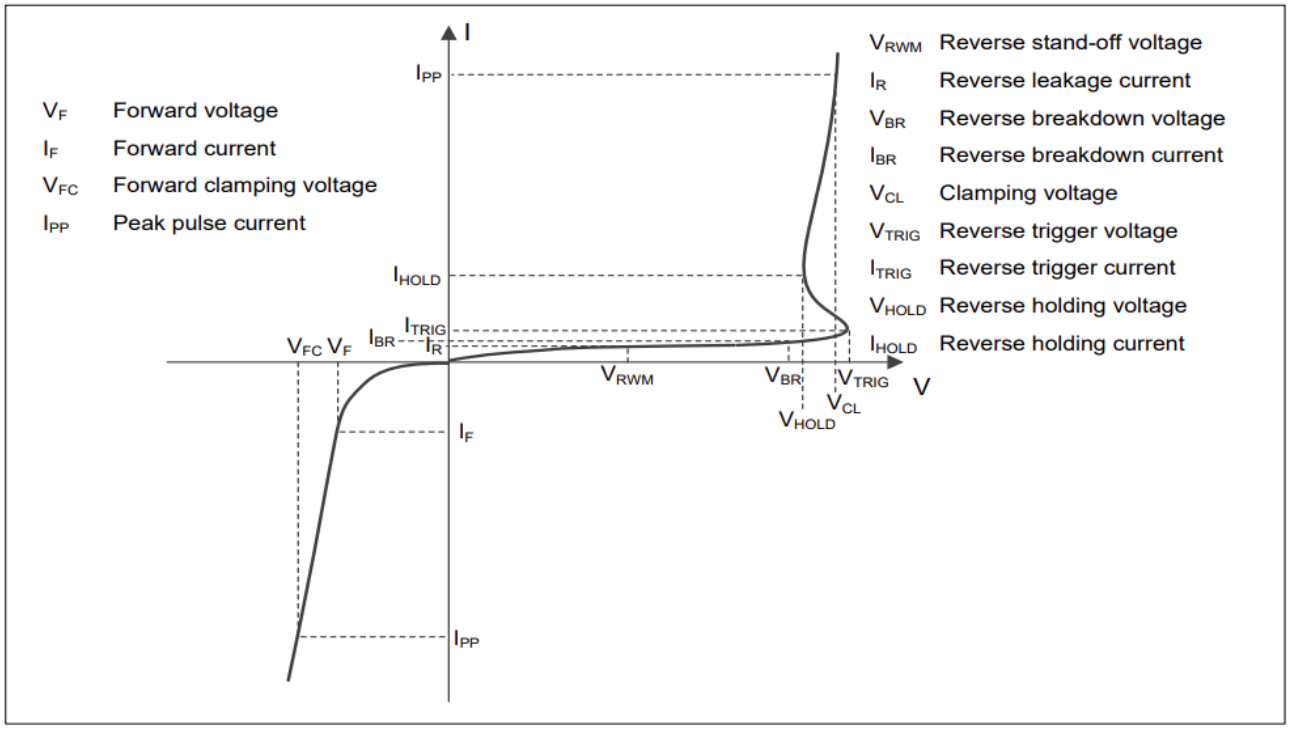
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P_{PK}	120	W
Peak Pulse Current (8/20μs)	I_{PP}	10	A
ESD per IEC 61000−4−2 (Air)	V_{ESD}	±30	kV
ESD per IEC 61000−4−2 (Contact)		±30	
Lead temperature	T_L	260	℃
Junction Temperature	T_J	125	℃
Operating Temperature Range	T_{OP}	−40 ~ +125	℃
Storage Temperature Range	T_{STG}	−55 ~ +150	℃

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

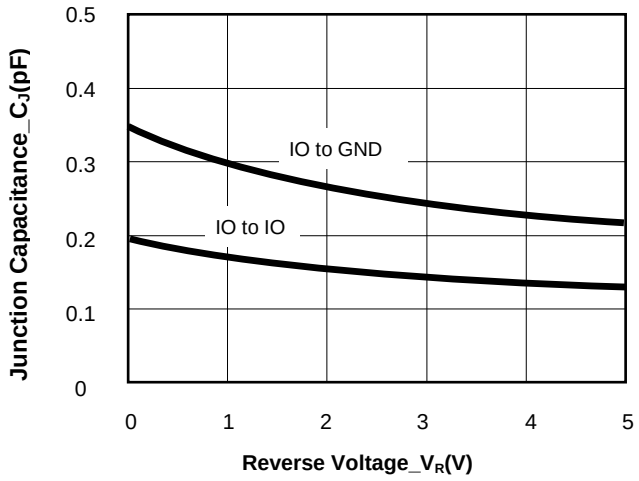
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6		9.5	V	I_T = 1mA
Reverse Leakage Current	I_R			0.1	μA	V_{RWM} = 5V
Forward Voltage	V_F			1.2	V	I_F=10mA
Clamping voltage [1)]	V_{CL}		11		V	IPP=16A, tp=100ns
Dynamic resistance[1)]	R_{DYN}		0.3		Ω	
Clamping Voltage[2)]	V_C		11		V	V_{ESD}= 8kV
Clamping Voltage[3)]	V_C			7	V	I_{PP} = 1A (8/20μs pulse)
Clamping Voltage[3)]	V_C			12	V	I_{PP} = 10A (8/20μs pulse)
Junction Capacitance	C_J		0.35	0.65	pF	V_R = 0V, f = 1MHz Between IO and GND
Junction Capacitance	C_J		0.2	0.4	pF	V_R = 0V, f = 1MHz Between IO and IO

Electrical characteristics (T_A = 25℃, unless otherwise noted)

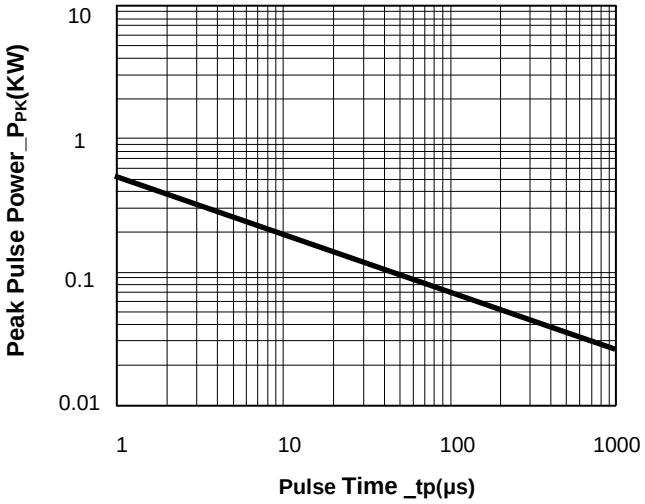


Definitions of electrical characteristics

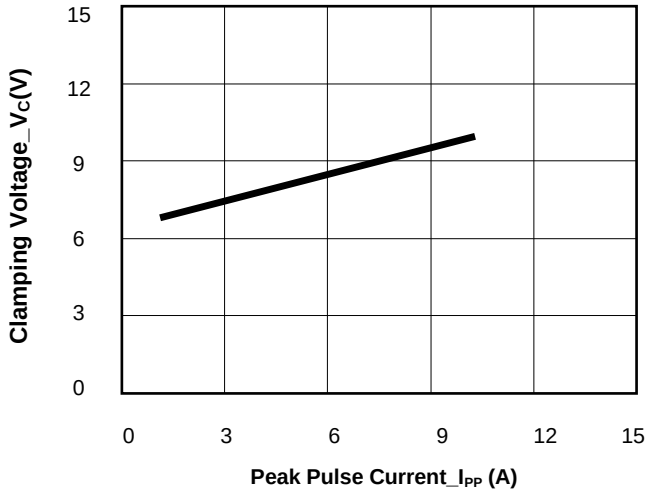
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



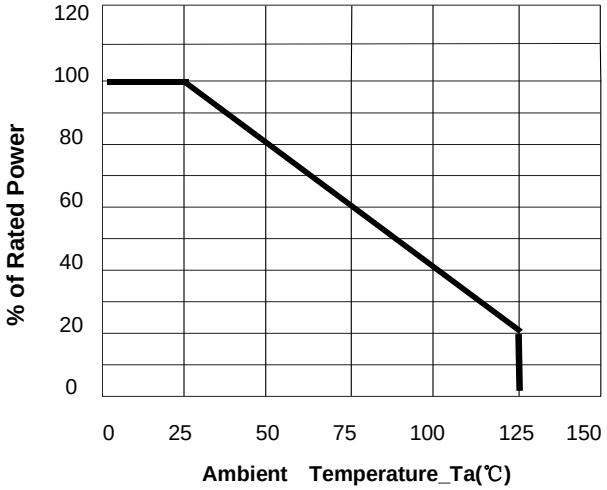
Junction Capacitance vs. Reverse Vlotage



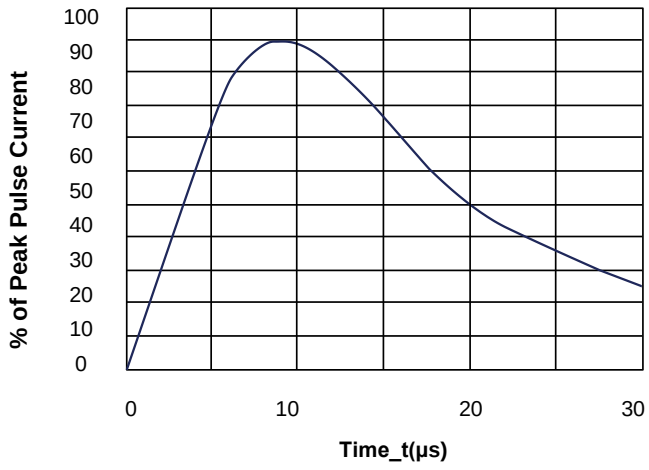
Peak Pulse Power vs. Pulse Time



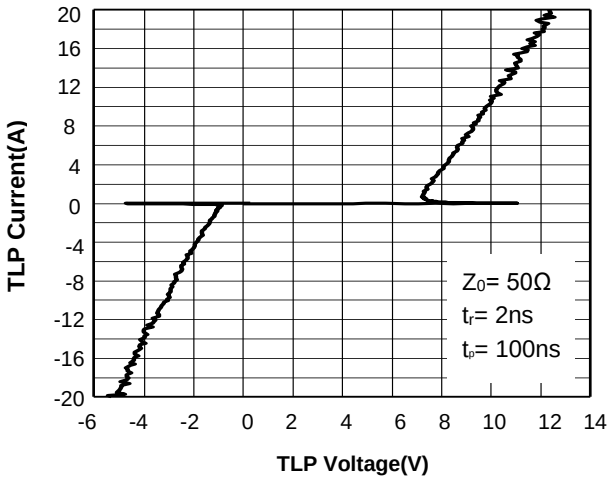
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

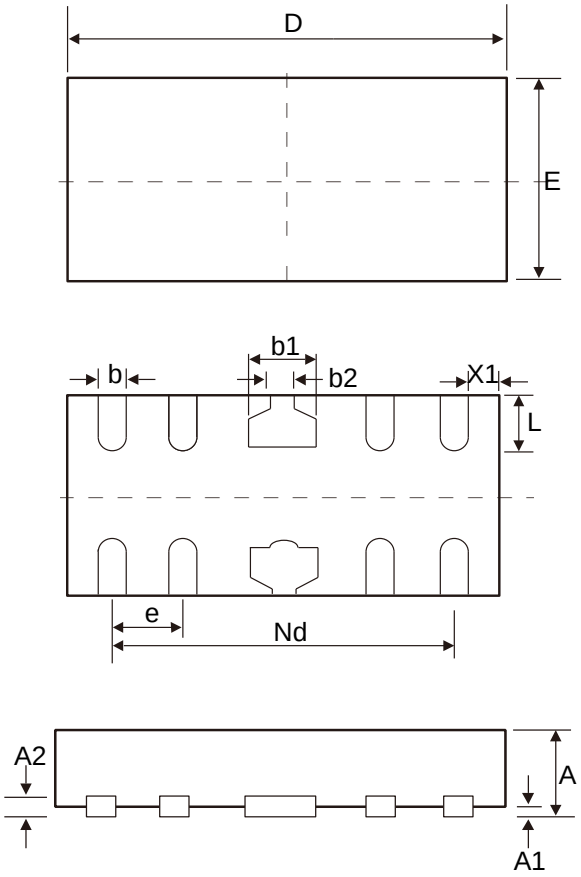


8/20μs Pulse Waveform



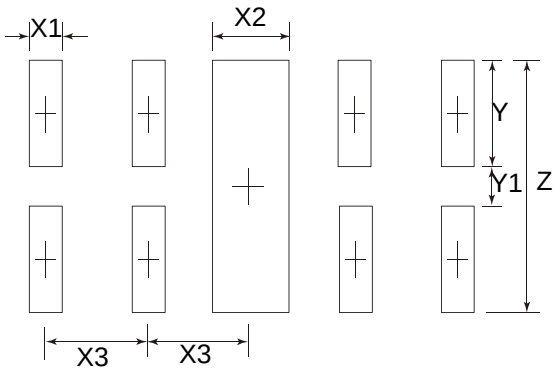
TLP Measurement

DFN2510-10 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
A1	0.00	0.02	0.05	0.000	0.001	0.002
A2	0.15 REF			0.006 REF		
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.35	0.40	0.45	0.014	0.016	0.018
b2	0.20REF			0.008 REF		
D	2.45	2.50	2.55	0.098	0.100	0.102
e	0.50BSC			0.020BSC		
Nd	2.00BSC			0.080BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.33	0.40	0.43	0.013	0.016	0.017
X1	0.12	0.15	0.18	0.005	0.006	0.007

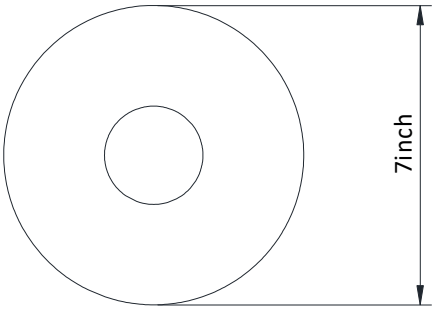
Suggested Land Pattern



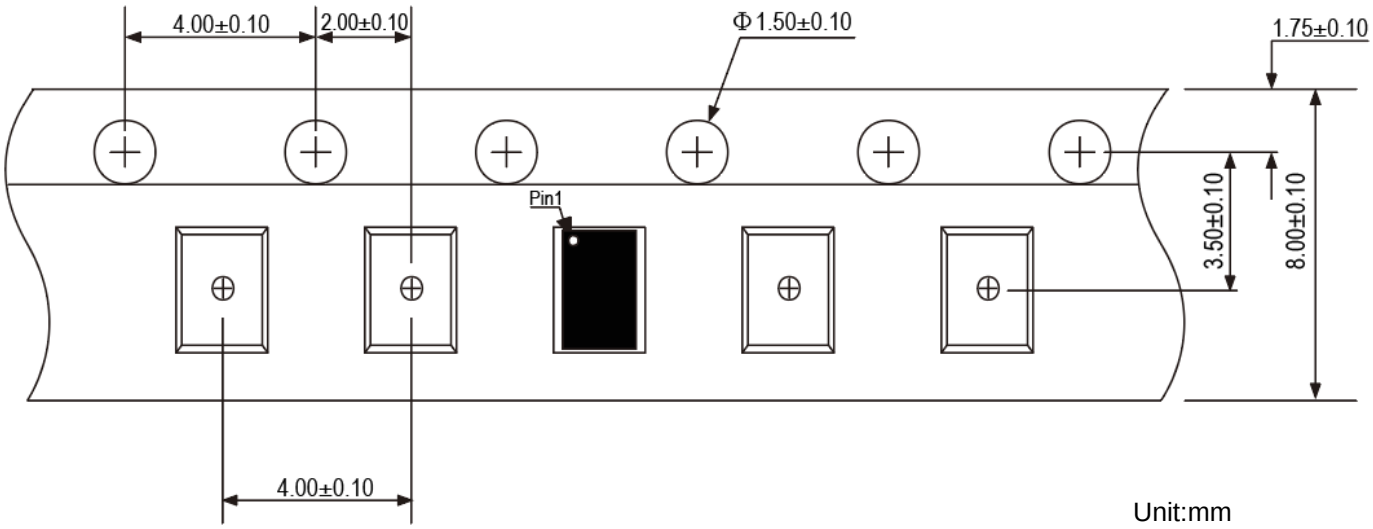
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X1	0.200	0.008
X2	0.400	0.016
X3	0.500	0.020
Y	0.600	0.024
Y1	0.200	0.024
Z	1.400	0.056

TAPE AND REEL INFORMATION

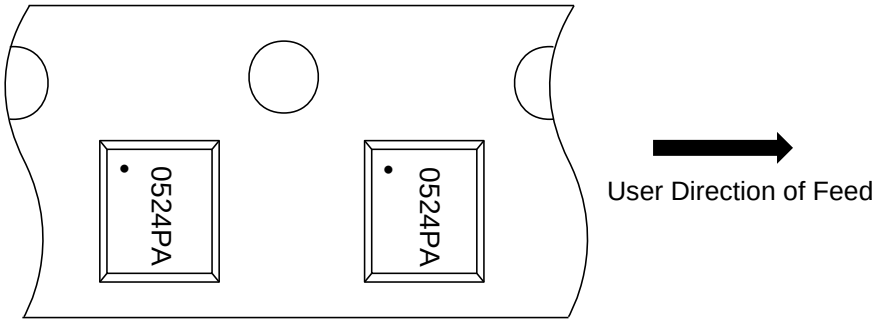
Reel Dimensions



Tape Dimensions



Unit:mm



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