

1-Line Ultra Low Capacitance Bi-directional TVS Diode

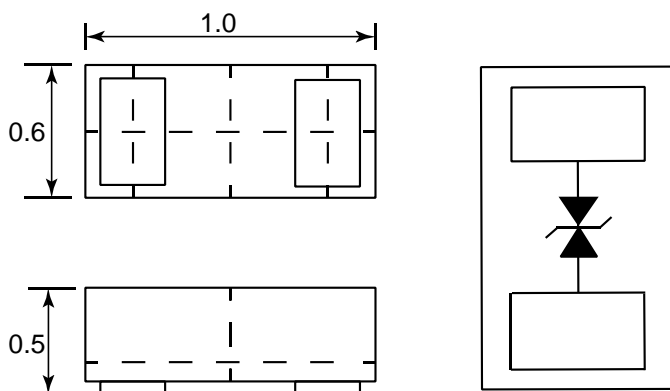
Description

PESDR0561P1A is a bi-directional TVS (Transient Voltage Suppressor). It has been specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge). PESDR0561P1A may be used to provide ESD protection up to ±30KV (contact discharge) according to IEC61000- 4-2, and withstand peak pulse current up to 15A (8/ 20µs) according to IEC61000-4-5. PESDR0561P1A is available in DFN1006-2package. Standard products are Pb-free and Halogen-free.

Features

- Ultra small package: 1.0x0.6x0.5mm
- Ultra low capacitance: 1.35pF typical
- Operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: ±30kV
Contact discharge: ±30kV
 - IEC61000-4-5 (Lightning)15A (8/20µs)
- RoHS Compliant

Dimensions and Pin Configuration



Package Dimensions

Circuit and Pin Schematic

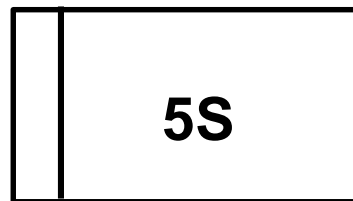
Mechanical Characteristics

- 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

- 10/100/1000 Ethernet
- STB
- Router
- Networking
- Modem

Marking Information



5S = Device Marking Code

Ordering Information

Part Number	Packaging	Reel Size
PESDR0561P1A	10000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	210	W
Peak Pulse Current (8/20μs)	I _{PP}	15	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	°C
Operating Temperature Range	T _{OP}	-40 ~ +85	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	
Breakdown Voltage	V _{BR}	6.0			V	I _T = 1mA
Reverse Leakage Current	I _R			0.1	uA	V _{RWM} =5V
Clamping voltage ¹⁾	V _{CL}		12		V	I _{PP} =16A, tp=100ns
Dynamic resistance ¹⁾	R _{DYN}		0.3		Ω	
Clamping Voltage ²⁾	V _C		12		V	V _{ESD} = 8kV
Clamping Voltage ³⁾	V _C			10	V	I _{PP} = 1A (8/20μs pulse)
Clamping Voltage ³⁾	V _C			14	V	I _{PP} = 15A (8/20μs pulse)
Junction Capacitance	C _J		1.35		pF	V _R = 0V, f = 1MHz

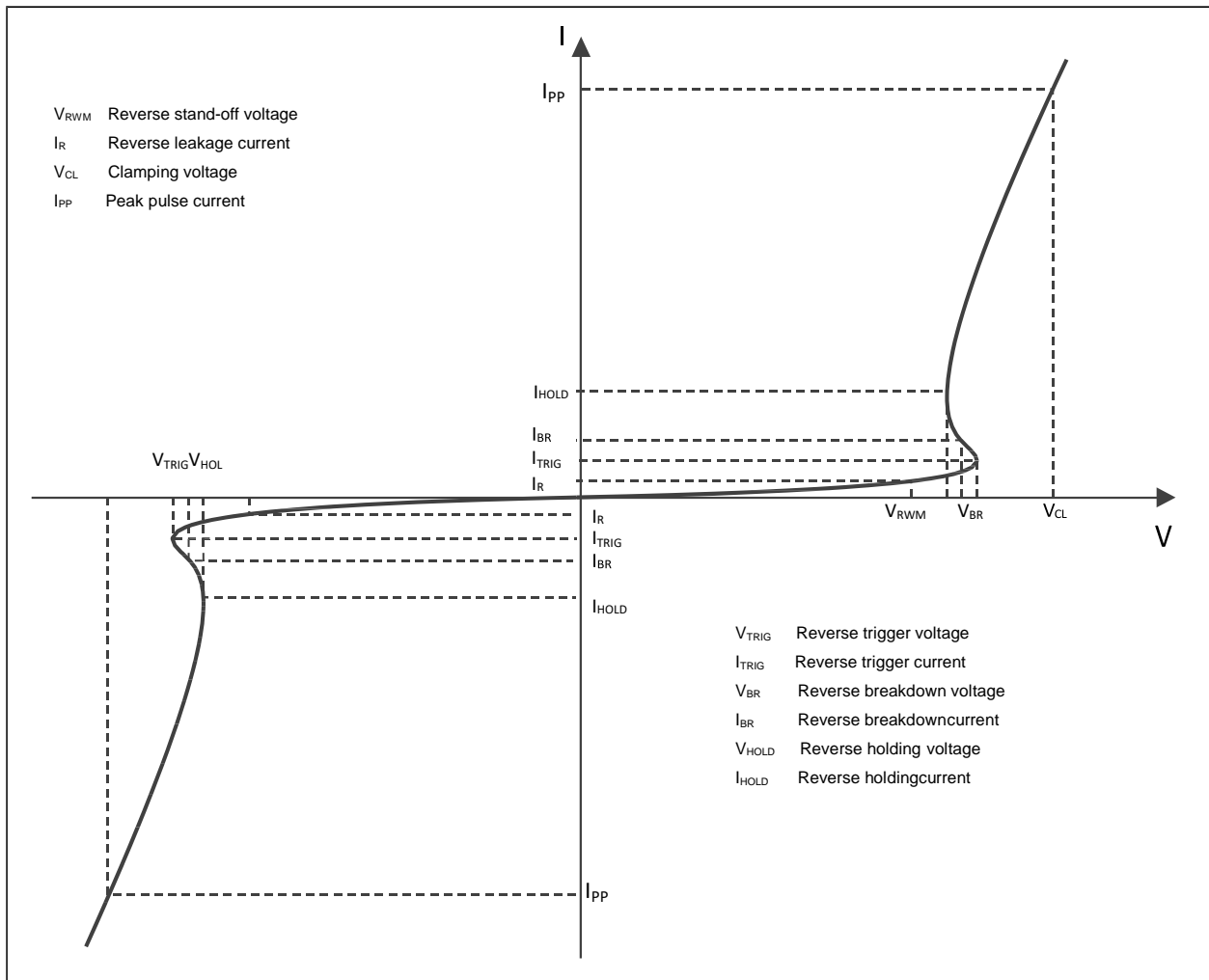
Notes:

1) TLP parameter: Z₀ = 50Ω, tp = 100ns, tr = 2ns, averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.

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

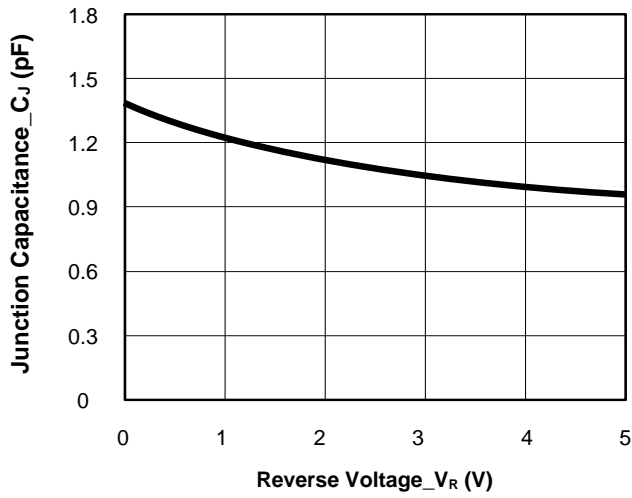
3) Non-repetitive current pulse, according to IEC61000-4-5.

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

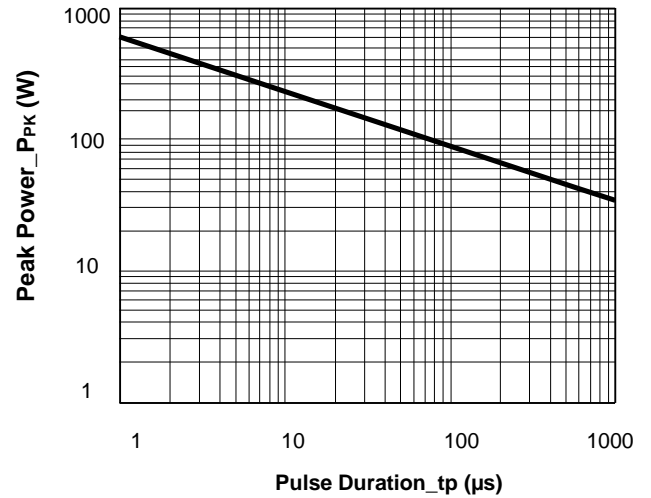


Definitions of electrical characteristics

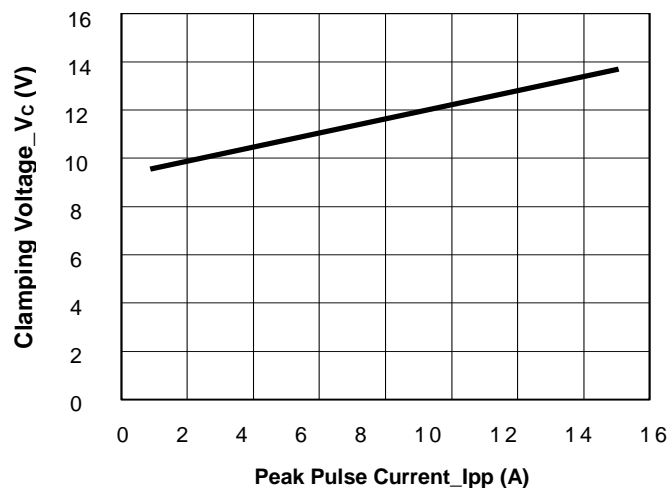
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



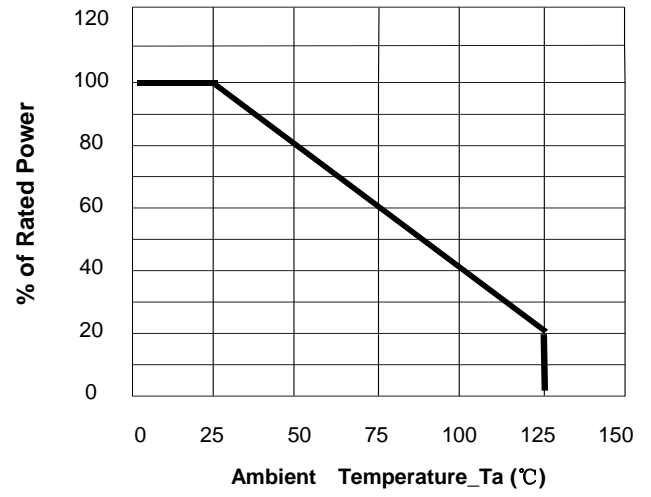
Junction Capacitance vs. Reverse Voltage



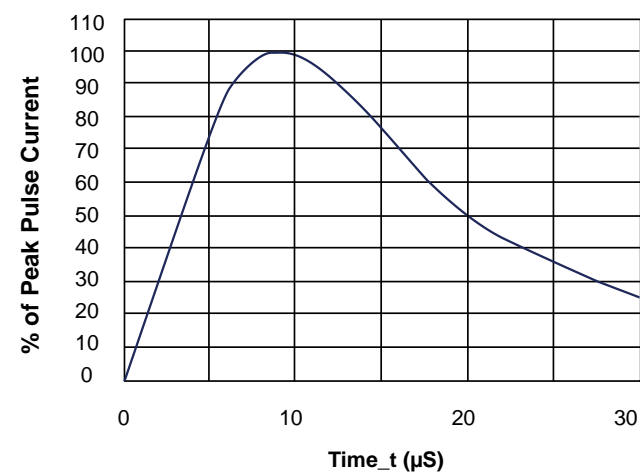
Peak Pulse Power vs. Pulse Time



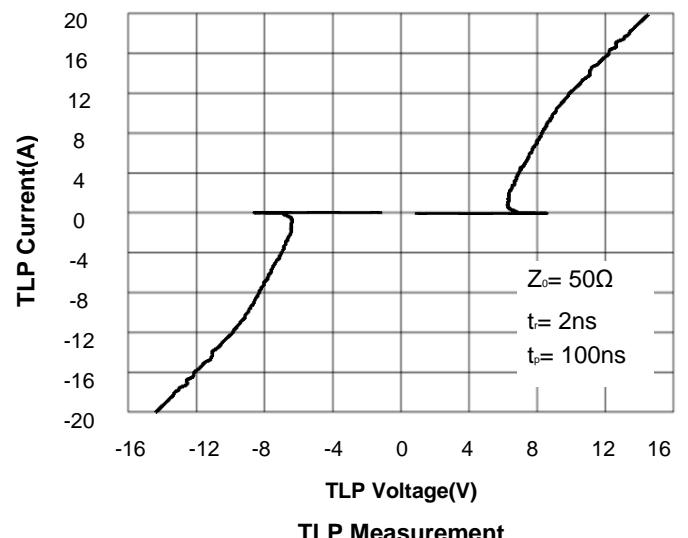
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

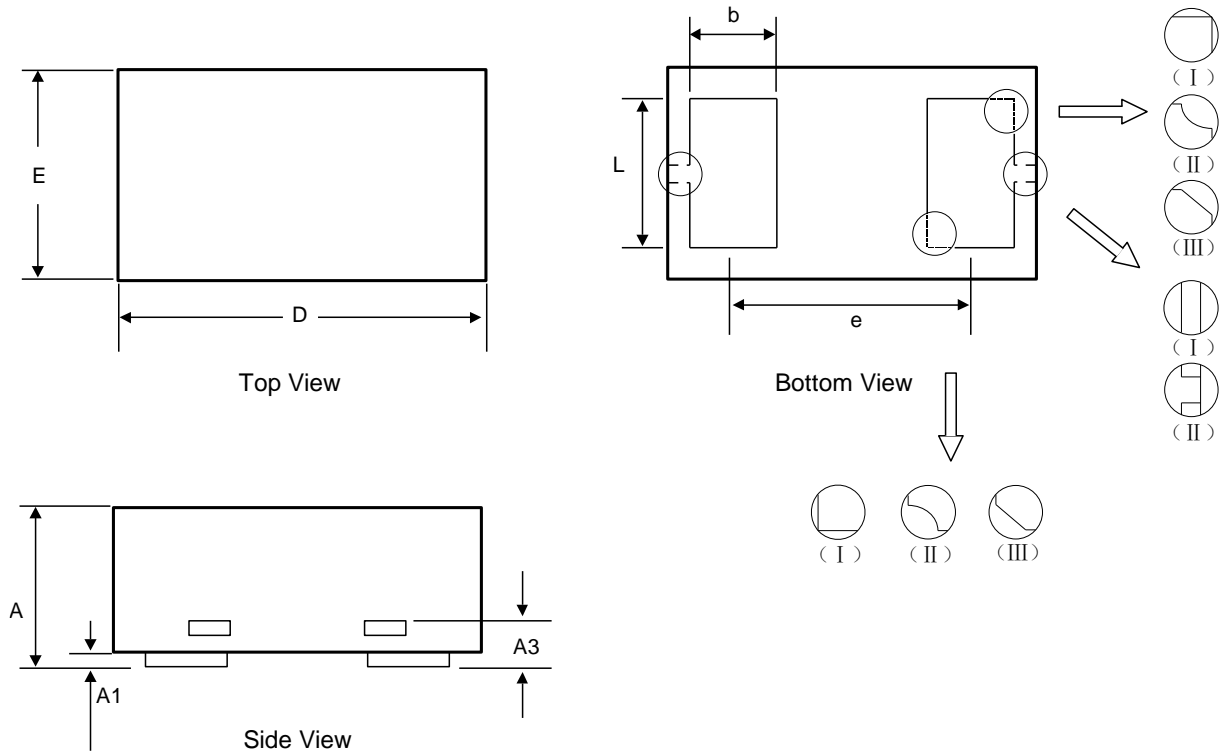


8/20μS Pulse Waveform



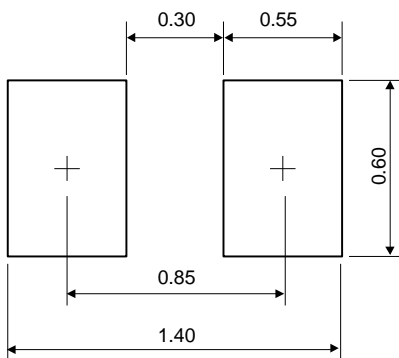
TLP Measurement

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)

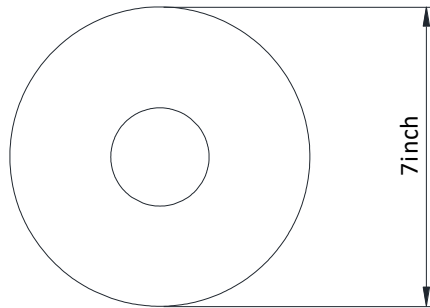


Notes:

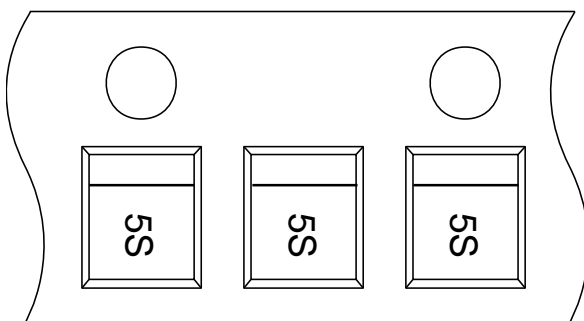
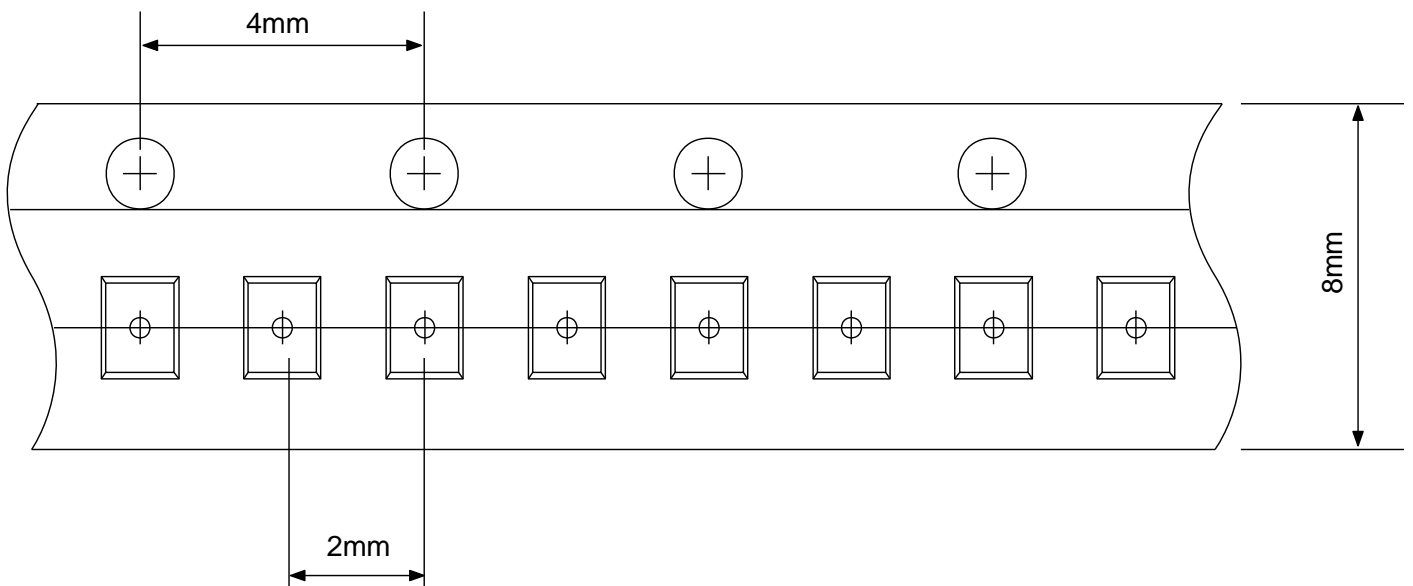
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



User Direction of Feed

IMPORTANT NOTICE

The information given in this document is believed to be accurate and reliable but shall in no event be regarded as a guarantee of conditions or characteristics. PN-Silicon assumes no responsibility for any errors in this document, or for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of PN-Silicon.

The product listed in this document are designed to be used with ordinary electronic equipment or devices and are not authorized to used with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, automotive and other safety device.)

The **PN SILICON** logo is a registered trademark of PN-Silicon co., ltd which reserves the right to make changes to the product or this document at any time without notice. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. PN-Silicon makes no warranty, representation or guarantee, express or implied, regarding the suitability of its products for any particular purpose. All rights reserved.