

1-Line Low Capacitance Uni-directional TVS Diode

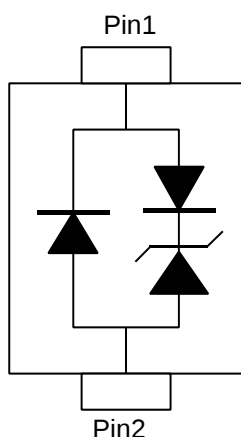
Description

The PESDR0501D5 is a very low capacitance TVS diode, to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The PESDR0501D5 complies with the IEC 61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into an ultra-small SOD-523 lead-free package. The small size and high ESD protection make PESDR0501D5 an ideal choice to protect cell phone, audio players, Ethernet and many other high-speed portable applications.

Features

- Protects one data line
- Operating voltage: 5V
- Ultra low clamping voltage
- Ultra low capacitance: 0.6pF
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 25\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC 61000-4-5 (Lightning) 5A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit and Pin Schematic

Mechanical Characteristics

- Package: SOD-523
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks, Desktops, Server
- USB 2.0 and USB 3.0 Interfaces
- Ethernet - 10/100/1000 Base T

Marking Information



5L = device marking code

Bar denotes cathode

Ordering Information

Part Number	Shipping	Reel Size
PESDR0501D5	3000/Tape & Reel	7 inch

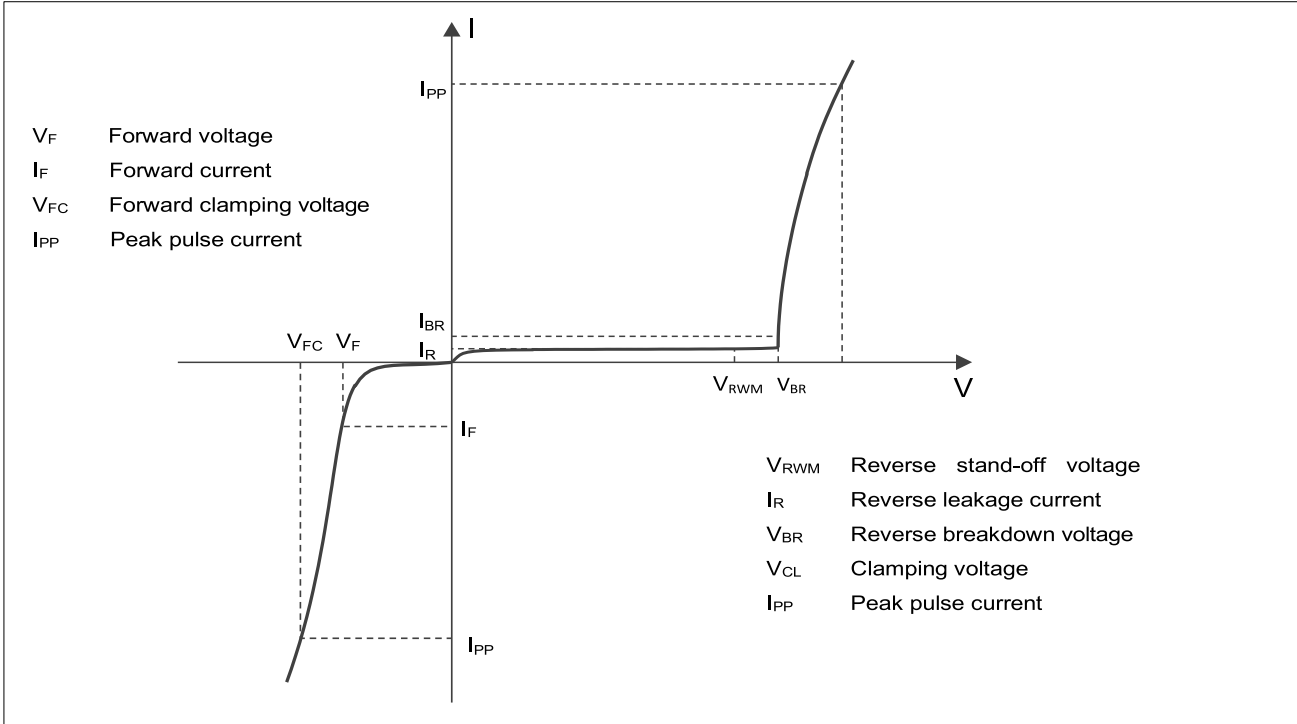
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	75	W
Peak Pulse Current (8/20μs)	I _{PP}	5	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±25	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Lead temperature	T _L	260	°C
Junction Temperature	T _J	125	°C
Operating Temperature Range	T _{OP}	-40 ~ +125	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

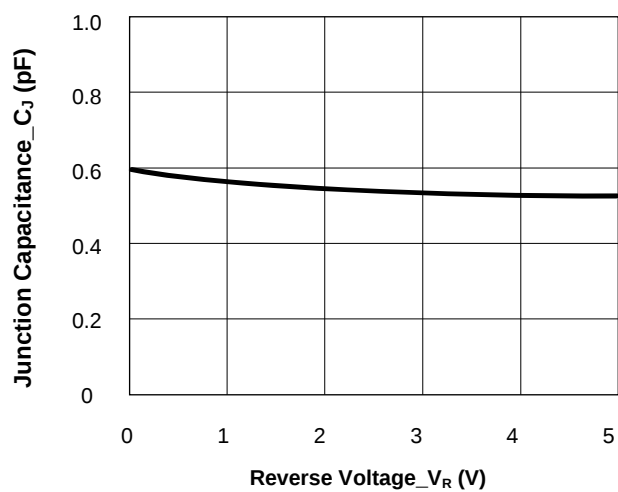
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	
Breakdown Voltage	V _{BR}	6			V	I _T = 1mA
Reverse Leakage Current	I _R			0.5	μA	V _{RWM} = 5V
Clamping Voltage	V _C			10	V	I _{PP} = 1A (8/20μs pulse)
Clamping Voltage	V _C			15	V	I _{PP} = 5A (8/20μs pulse)
Junction Capacitance	C _J		0.6	0.8	pF	V _R = 0V, f = 1MHz, between I/O pins

Electrical characteristics (T_A = 25°C, unless otherwise noted)

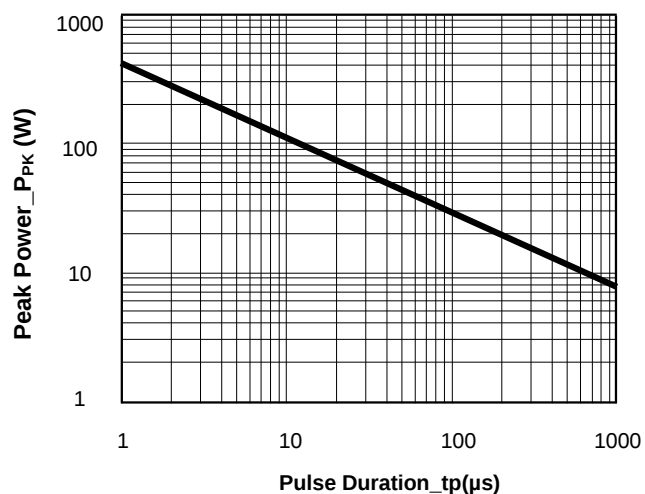


Definitions of electrical characteristics

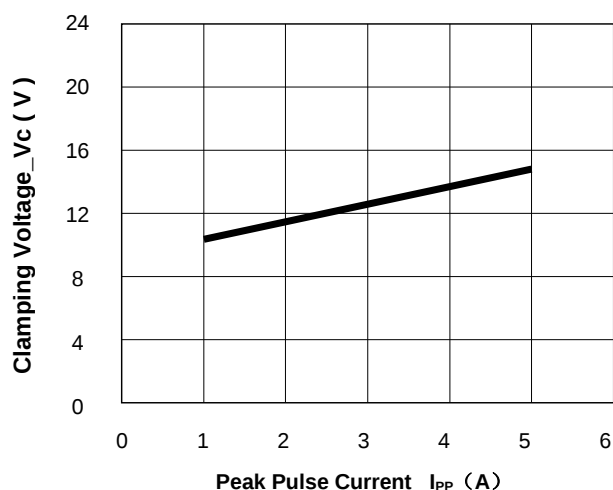
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



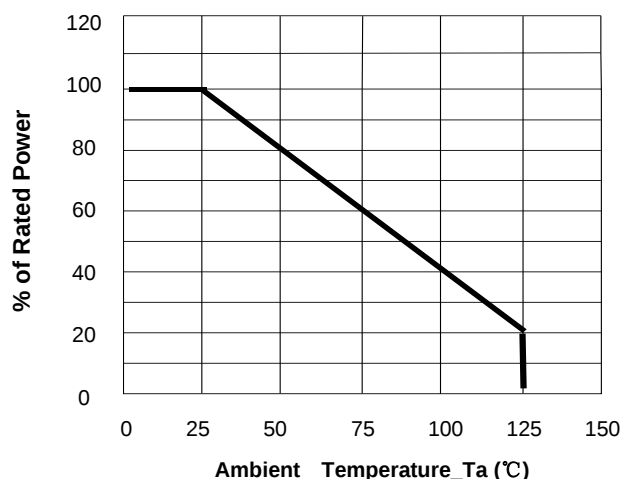
Junction Capacitance vs. Reverse Voltage



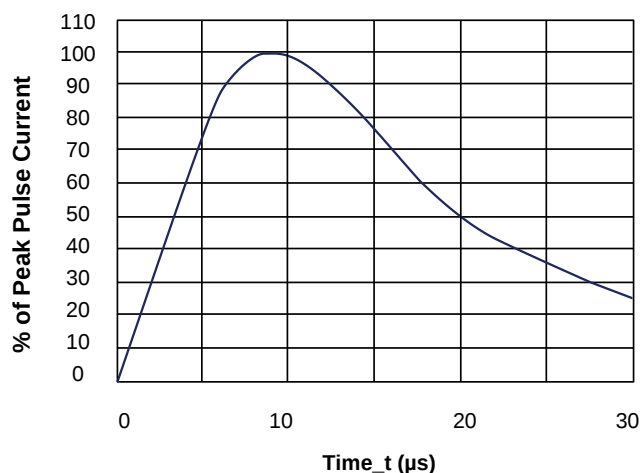
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

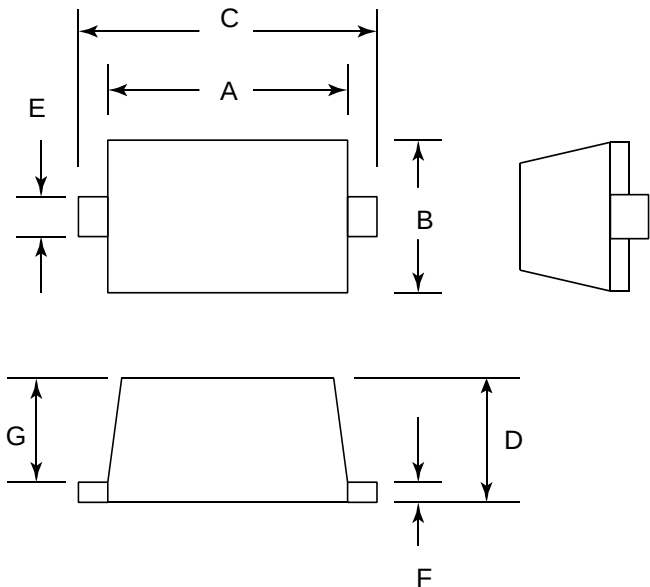


Power Derating Curve



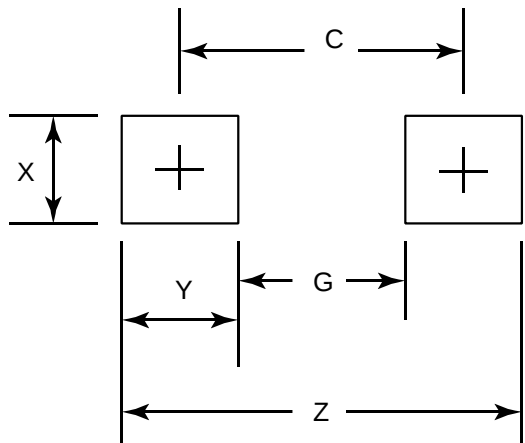
8/20 μs Pulse Waveform

SOD-523 Package Outline Drawing



SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.10	1.30	0.043	0.051
B	0.70	0.90	0.028	0.035
C	1.50	1.70	0.059	0.067
D	0.50	0.70	0.020	0.028
E	0.25	0.35	0.010	0.014
F	0.10	0.20	0.004	0.008
G	0.40	0.50	0.016	0.020

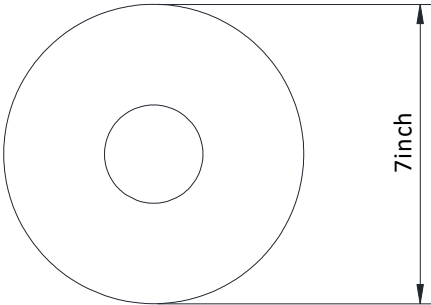
Suggested Land Pattern



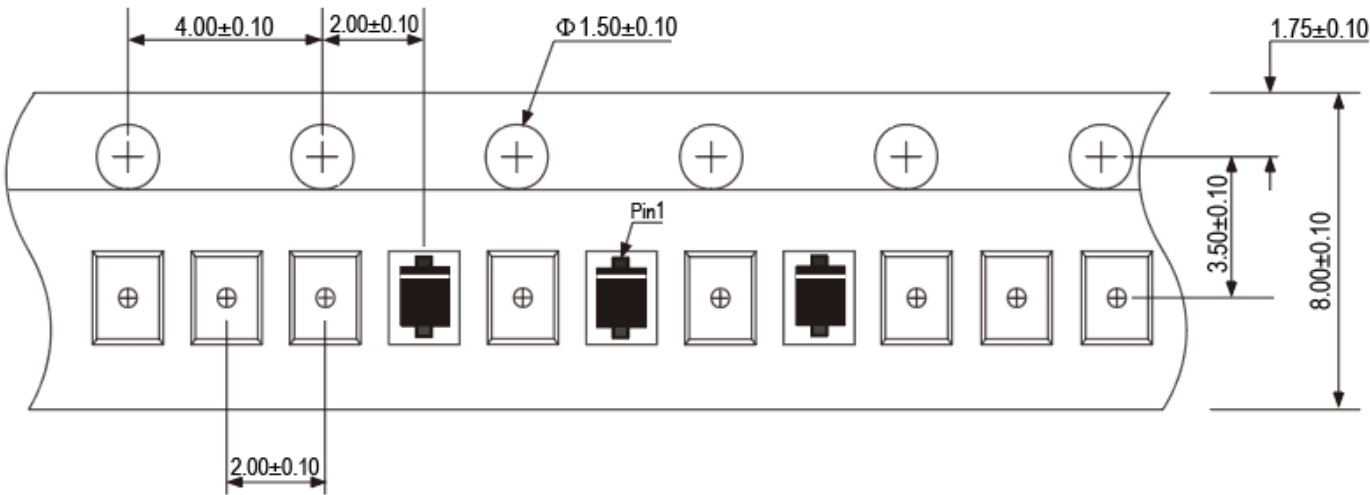
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	1.70	0.067
G	1.10	0.043
X	0.80	0.031
Y	0.60	0.024
Z	2.30	0.091

TAPE AND REEL INFORMATION

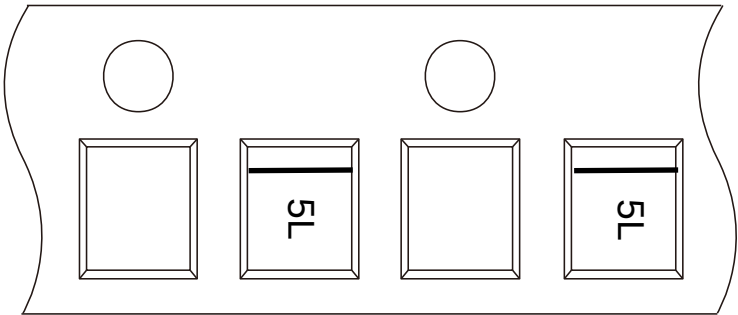
Reel Dimensions



Tape Dimensions



Unit:mm



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User Direction of Feed

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