

1-Line Bi-directional TVS Diode

Description

The PESDR0561D3 is a 5V bi-direction 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 PESDR0561D3 has a low capacitance with a typical value at 1.0pF, and complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharged It is assembled into a lead-free SOD-323 package. The small size, low capacitance and high ESD protection make PESDR0561D3 an ideal choice to protect cellphone, digital video interfaces and other high speed ports.

Features

- 310W Peak Pulse Power per Line (tp = 8/20µs)
- Ultra low capacitance: 1.0pF typical
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Protects one power line or data line
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: ±30Kv
 - Contact discharge: ±30kV
 - IEC 61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 17A (8/20µs)
- RoHS Compliant

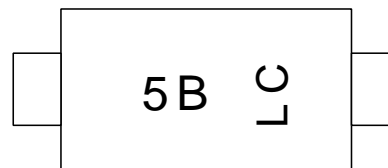
Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below

Applications

- Ethernet - 10/100/1000 Base T
- Cellular Phones
- Handheld - Wireless Systems
- Personal Digital Assistant (PDA)
- USB Interface

Marking Information

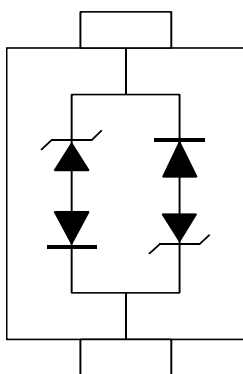


5B = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDR0561D3	3000/Tape &Reel	7 inch

Dimensions and Pin Configuration



Circuit and Pin Schematic

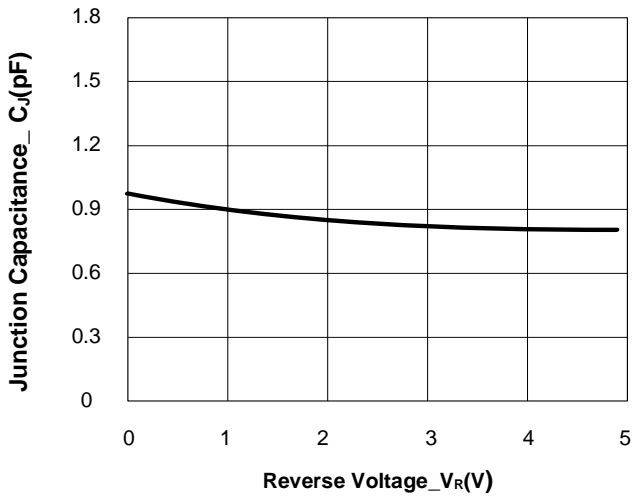
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	310	W
Peak Pulse Current (8/20 μs)	I_{PP}	17	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	kV
Operating Temperature Range	T_{OP}	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

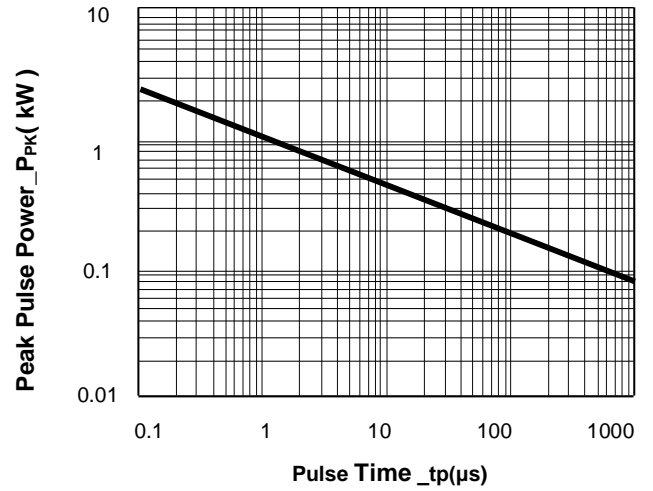
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			500	nA	$V_{RWM} = 5.0\text{V}$
Clamping Voltage	V_C			9.8	V	$I_{PP} = 1\text{A}$ (8/20 μs pulse)
Clamping Voltage	V_C			18.5	V	$I_{PP} = 17\text{A}$ (8/20 μs pulse)
ESD Clamping Voltage	V_C			8.5		$I_{PP} = 4\text{A}$ ($t_p = 0.2/100\text{ns}$)
ESD Clamping Voltage	V_C			12		$I_{PP} = 16\text{A}$ ($t_p = 0.2/100\text{ns}$)
Junction Capacitance	C_J		1.0	1.35	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

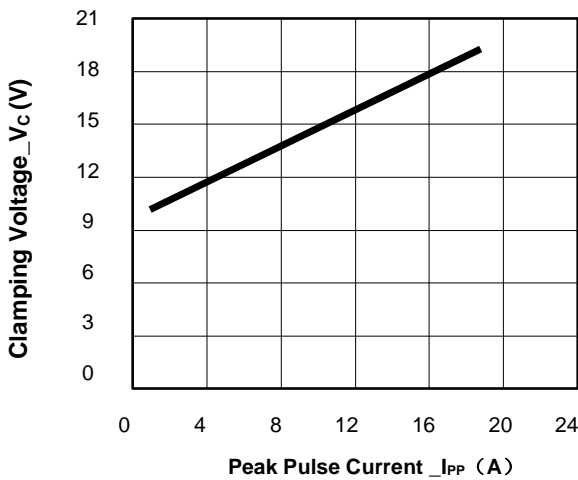
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



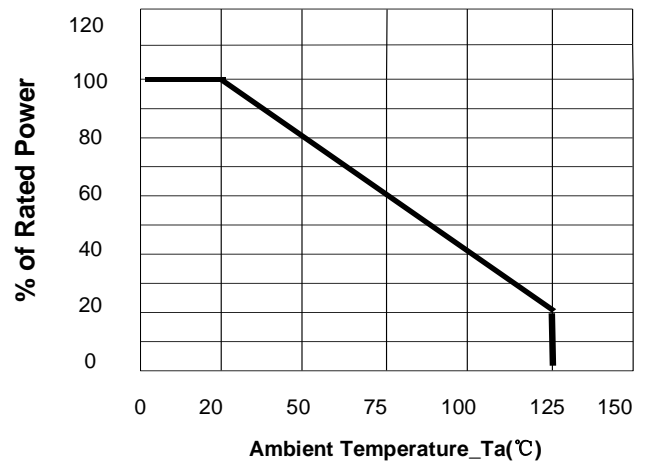
Junction Capacitance vs. Reverse Voltage



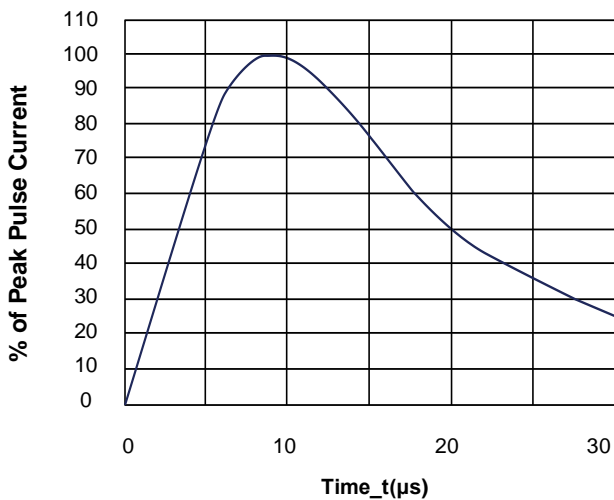
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

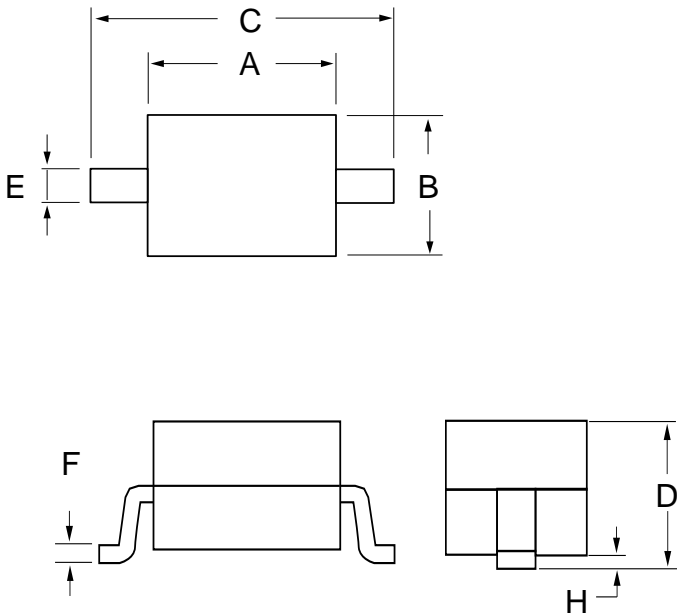


Power Derating Curve



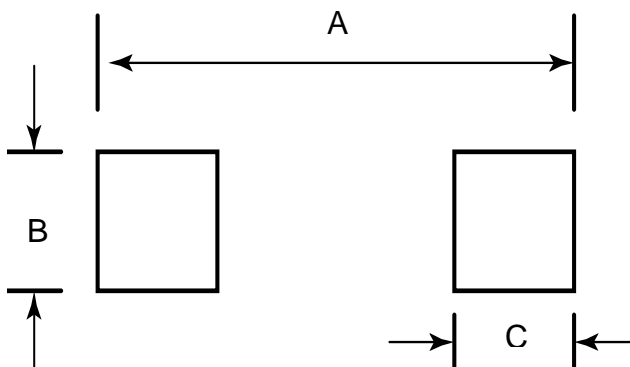
8/20 μs Pulse Waveform

SOD-323 Package Outline Drawing



SYM	DIMENSIONS				
	MILLIMETERS			INCHES	
	MIN	NOM	MAX	MIN	MAX
A	1.50	1.65	1.80	0.060	0.071
B	1.20	1.30	1.40	0.045	0.054
C	2.30	2.50	2.70	0.090	0.107
D	-	-	1.10	-	0.043
E	0.30	-	0.40	0.012	0.016
F	0.10	-	0.25	0.004	0.010
H	-	-	0.10	-	0.004

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031