

2-Line Ultra-Low Capacitance TVS Diode Array

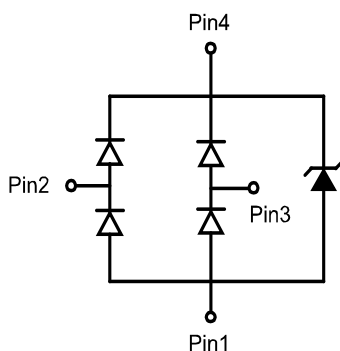
Description

The PESDR0552S1 is a 2-line ultra-low capacitance TVS diode array, 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 PESDR0552S1 has a very low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a 4-pin SOT-143 lead-free package. The small size, very low capacitance and high ESD protection make PESDR0552S1 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

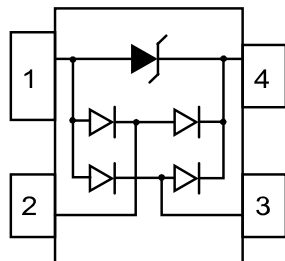
Features

- Ultra low capacitance: 0.4pF typical IO to IO
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- 4-pin SOT-143 package
- Protects two data lines and one power line
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 6A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit Diagram



Pin Schematic

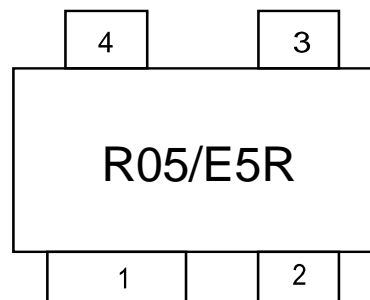
Mechanical Characteristics

- Package: SOT-143
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Marking Information: See Below

Applications

- FireWire & USB
- Sensitive Analog Inputs
- Portable Electronics
- LAN/WAN equipment
- Video Line Protection
- Microcontroller Input Protection

Marking Information



R05/E5R= Device Marking Code

Pin1 is ground

Ordering Information

Part Number	Shipping	Reel Size
PESDR0552S1	3000/Tape & Reel	7 inch

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

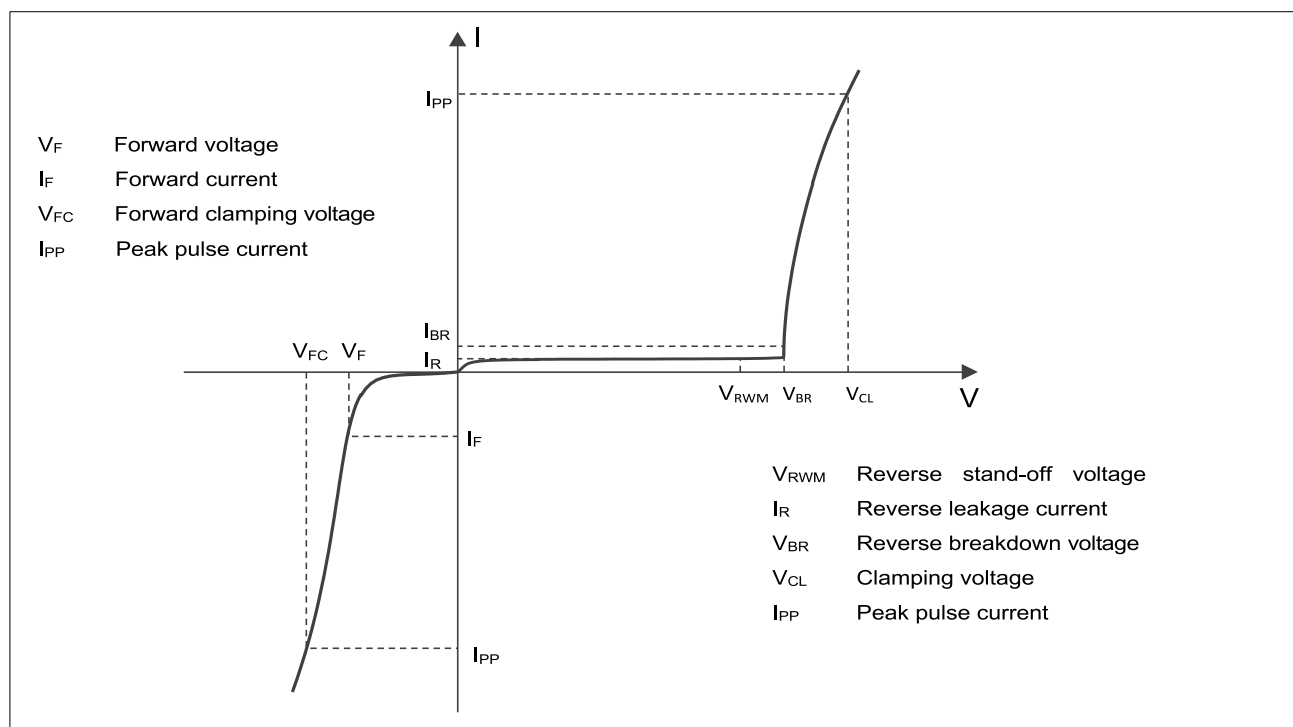
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	100	W
Peak Pulse Current (8/20 μs)	I_{PP}	6	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Lead temperature	T_L	260	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	$-40 \sim +85$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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	V	Any I/O pin to ground
Breakdown Voltage	V_{BR}	6			V	$I_T = 1\text{mA}$, any I/O pin to ground
Reverse Leakage Current	I_R			0.1	μA	$V_{RWM} = 5\text{V}$, any I/O pin to ground
Clamping Voltage	V_C			10	V	$I_{PP} = 1\text{A}$ (8/20 μs pulse), any I/O pin to ground
Clamping Voltage	V_C		14	20	V	$I_{PP} = 6\text{A}$ (8/20 μs pulse), any I/O pin to ground
Junction Capacitance	C_J		0.4	0.45	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$, between I/O pins
Junction Capacitance	C_J		0.8	0.9	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$, any I/O pin to ground

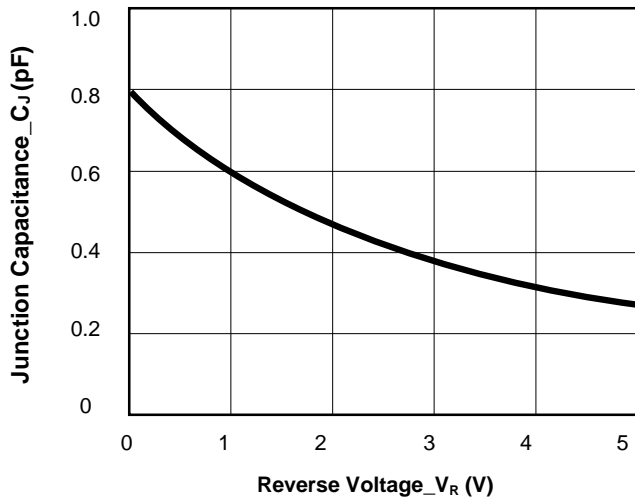
Note 1: I/O pins are pin 2 & 3

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

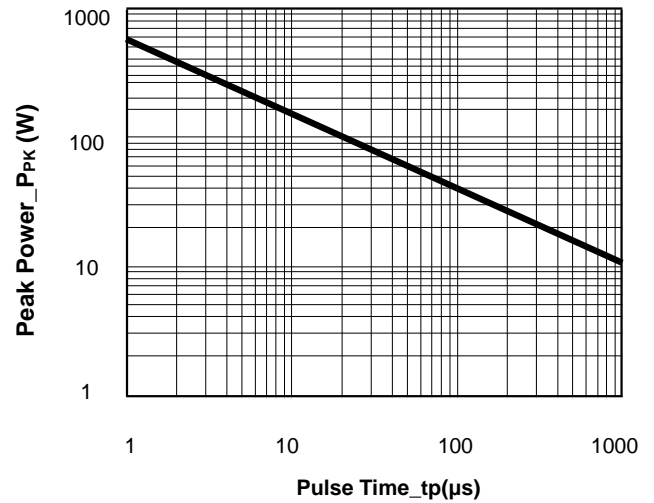


Definitions of electrical characteristics

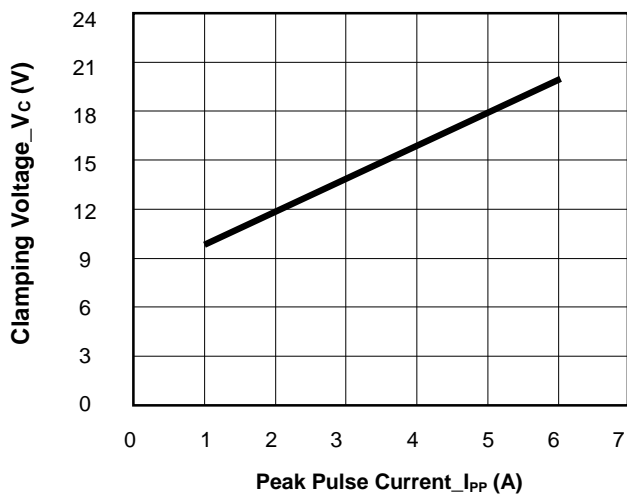
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



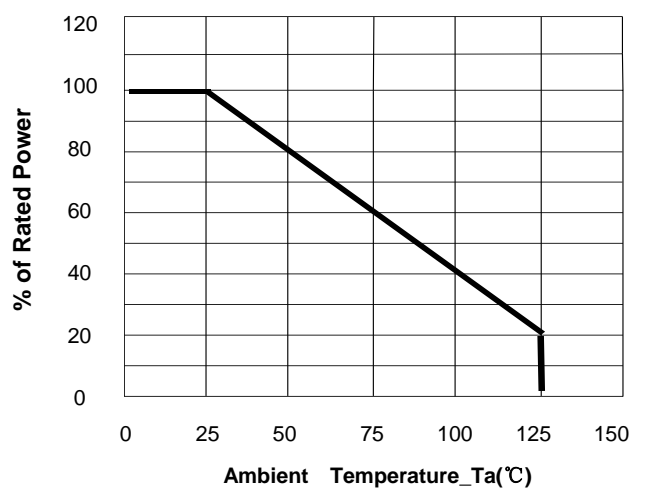
Junction Capacitance vs. Reverse Voltage



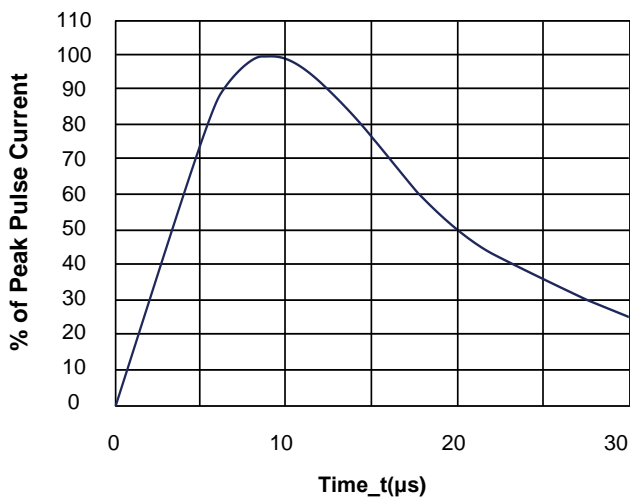
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

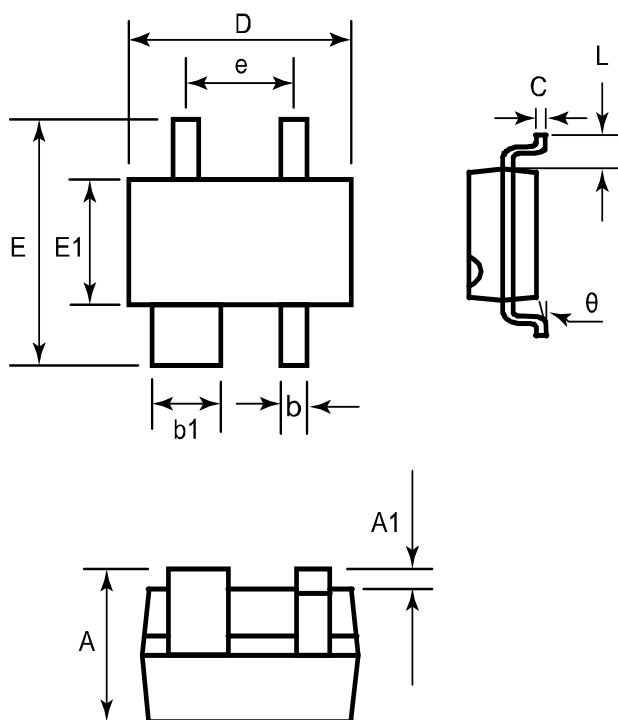


Power Derating Curve



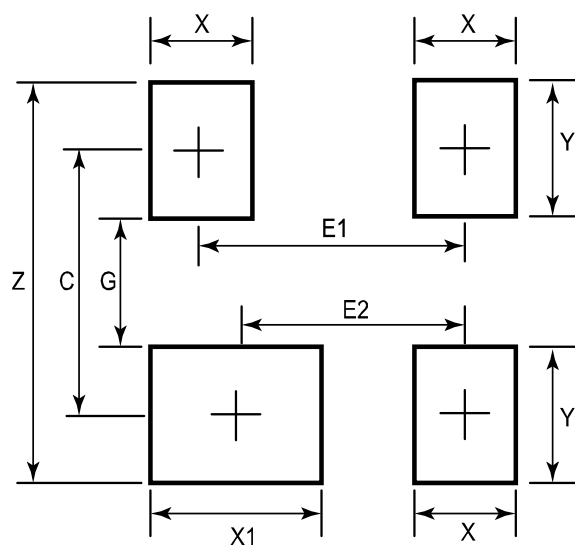
8/20 μs Pulse Waveform

SOT-143 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80		1.22	0.031		0.048
A1	0.013		0.15	0.00		0.006
b	0.30		0.51	0.011		0.020
b1	0.76		0.94	0.029		0.037
C	0.08		0.20	0.003		0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	2.10	2.37	2.64	0.082	0.093	0.104
E1	1.20	1.30	1.40	0.047	0.051	0.055
e	1.92 BSC			0.075BSC		
L	0.54 BSC			0.021BSC		
θ	0°		8°	0°		8°

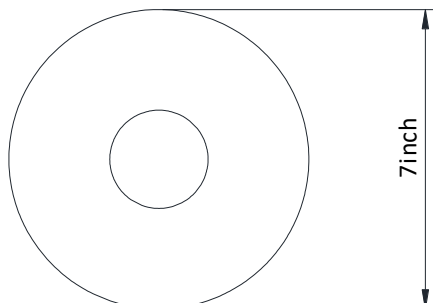
Suggested Land Pattern



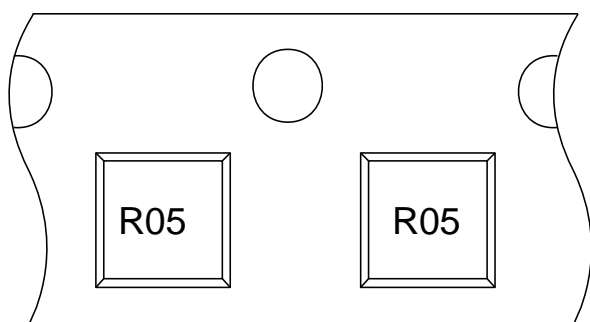
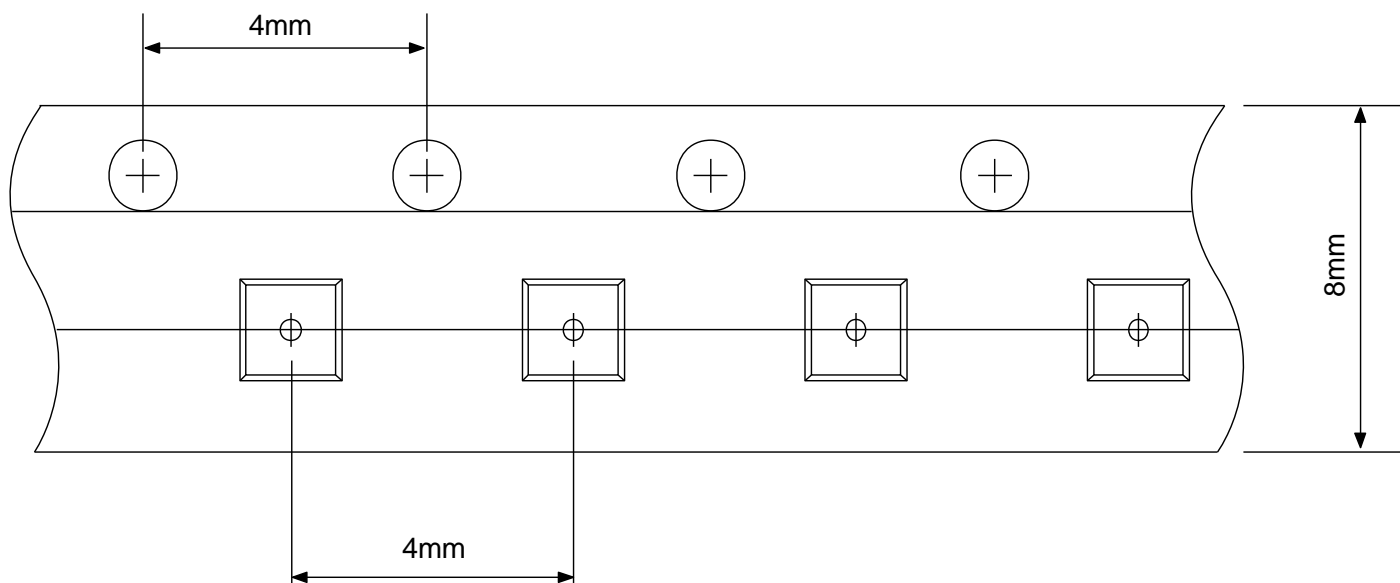
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.20	0.087
E1	1.92	0.076
E2	1.72	0.068
G	0.80	0.031
X	1.00	0.039
X1	1.20	0.047
Y	1.40	0.055
Z	3.60	0.141

TAPE AND REEL INFORMATION

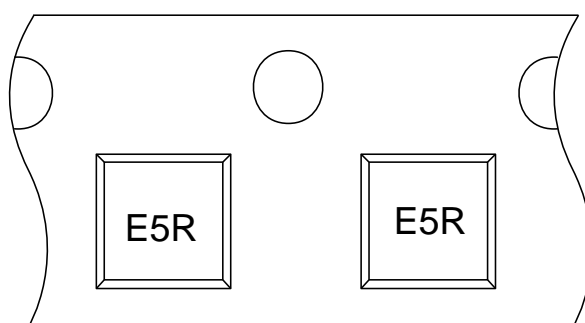
Reel Dimensions



Tape Dimensions



or




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  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.