

## 4-Line Low Capacitance TVS Diode Array

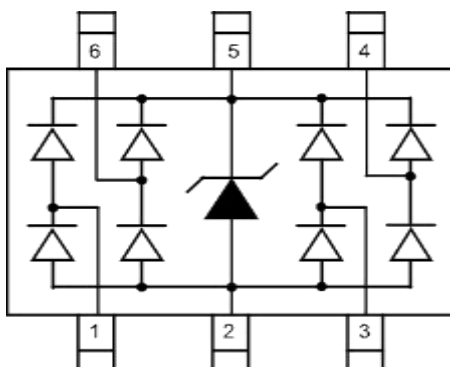
### Description

The PESDR0534S3 is a low capacitance TVS 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 PESDR0534S3 has an ultra-low capacitance with a typical value at 0.8pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 15\text{kV}$  air and  $\pm 8\text{kV}$  contact discharge. It is assembled into a 6-Pin lead-free SC-70 package. The combination of small size, ultra low capacitance, and high ESD capability make it ideal for use in application such as USB 3.0, multimedia, and other high speed ports .

### Features

- Low operating voltage: 5V
- Low clamping voltage
- No insertion loss to 10.0GHz
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 15\text{kV}$
    - Contact discharge:  $\pm 8\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 4A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Dimensions and Pin Configuration



Circuit and Pin Schematic

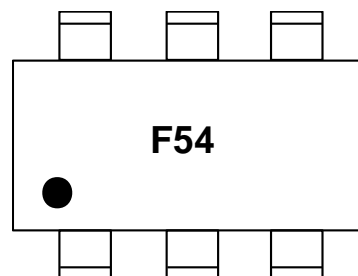
### Mechanical Characteristics

- Package: SOT-363 (SC-70)
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below

### Applications

- Digital Visual Interface (DVI)
- 10/100/1000 Ethernet
- USB 1.1/2.0/3.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box
- Projection TV

### Marking Information



**F54** = Device Marking Code  
 Dot denotes Pin1

### Ordering Information

Part Number	Shipping	Reel Size
PESDR0534S3	3000/Tape & Reel	7 inch

**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

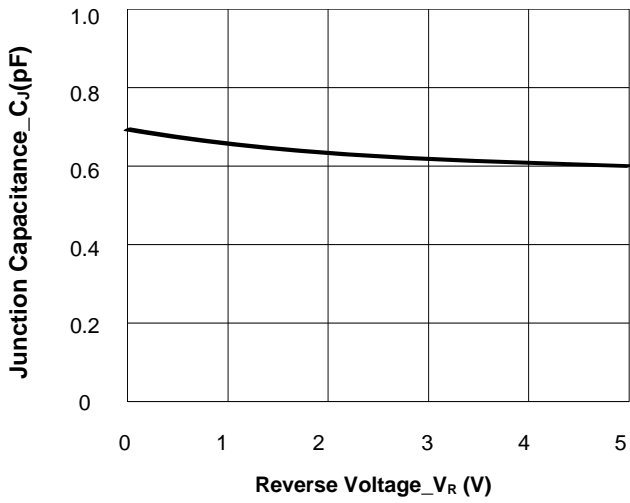
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P <sub>PK</sub>	60	W
Peak Pulse Current (8/20μs)	I <sub>PP</sub>	4	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±15	kV
ESD per IEC 61000-4-2 (Contact)		±8	
Operating Temperature Range	T <sub>OP</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

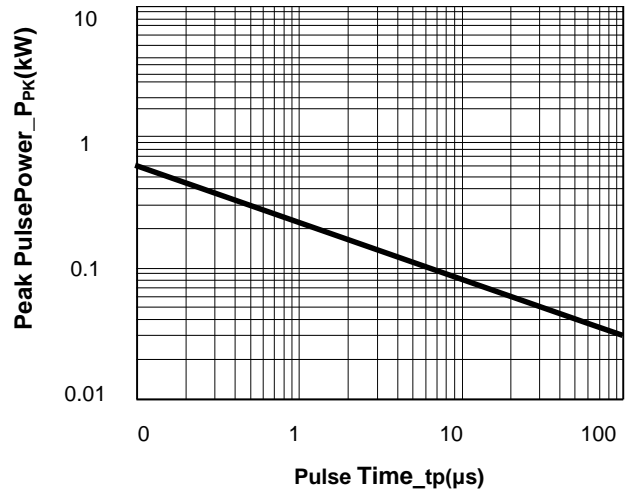
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			5	V	Any I/O pin to ground
Breakdown Voltage	V <sub>BR</sub>	6			V	I <sub>T</sub> = 1mA, any I/O pin to ground
Reverse Leakage Current	I <sub>R</sub>			1	μA	V <sub>RWM</sub> = 5V, any I/O pin to ground
Diode Forward Voltage	V <sub>F</sub>		0.9	1.2		I <sub>F</sub> =15mA
Clamping Voltage	V <sub>C</sub>		8	10	V	I <sub>PP</sub> = 1A (8/20μs pulse), any I/O pin to ground
Clamping Voltage	V <sub>C</sub>		12	15	V	I <sub>PP</sub> = 4A (8/20μs pulse), any I/O pin to ground
Junction Capacitance	C <sub>J</sub>		0.1	0.3	pF	V <sub>R</sub> = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C <sub>J</sub>		0.45	0.8	pF	V <sub>R</sub> = 0V, f = 1MHz, any I/O pin to ground

Note 1: I/O pins are Pin 1, 3, 4 and 6

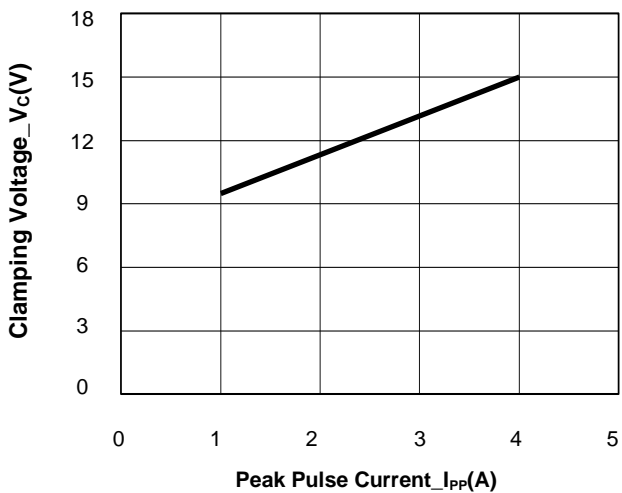
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



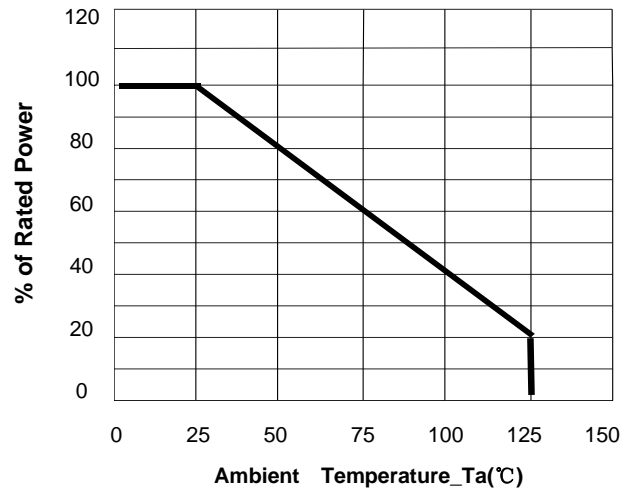
**Junction Capacitance vs. Reverse Voltage**



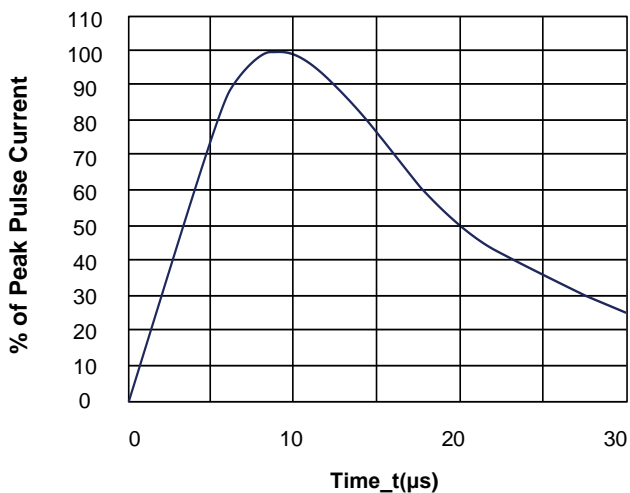
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**



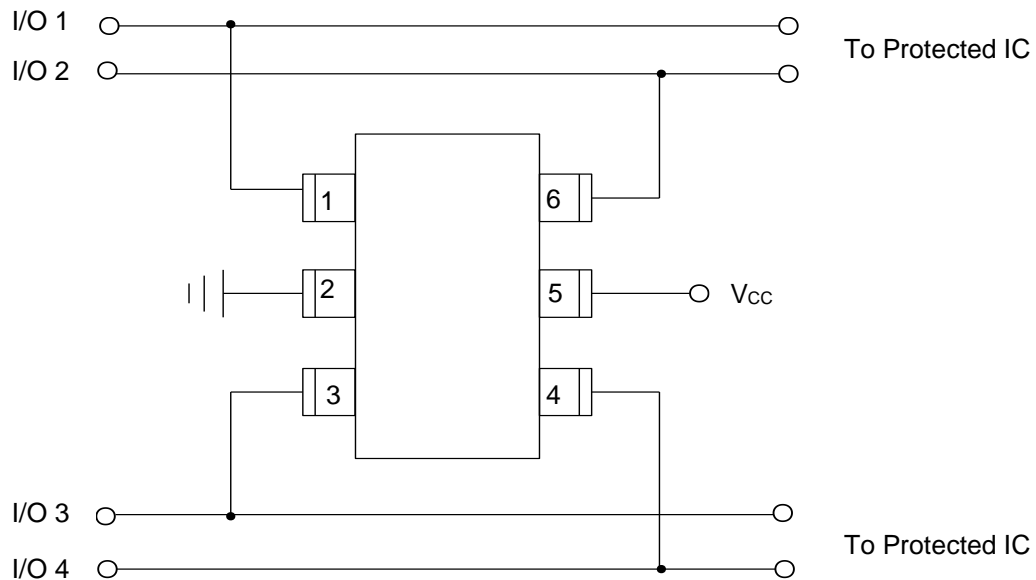
**Power Derating Curve**



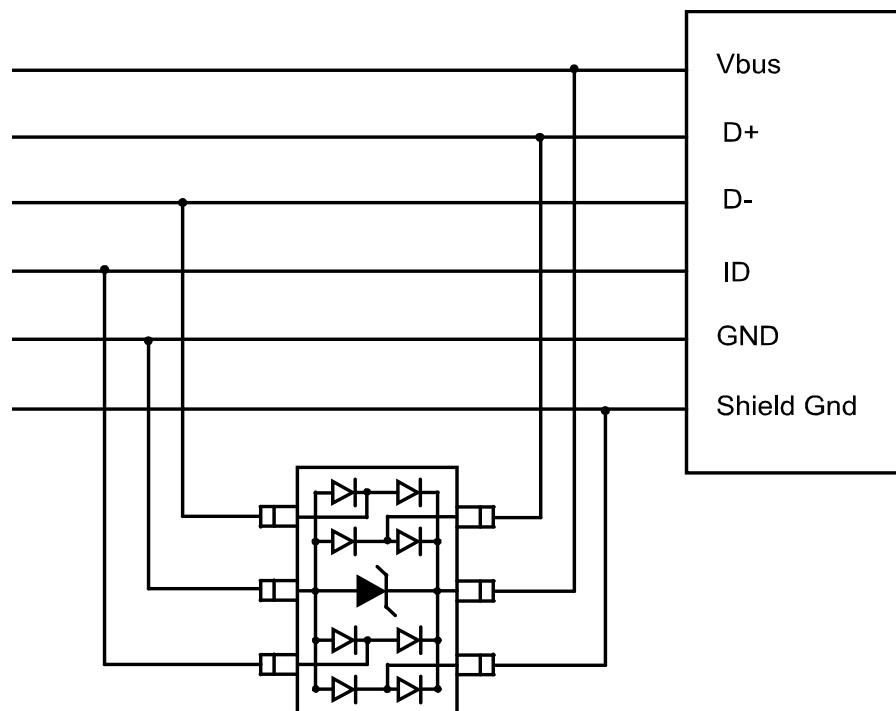
**8/20μs Pulse Waveform**

**Typical Application**

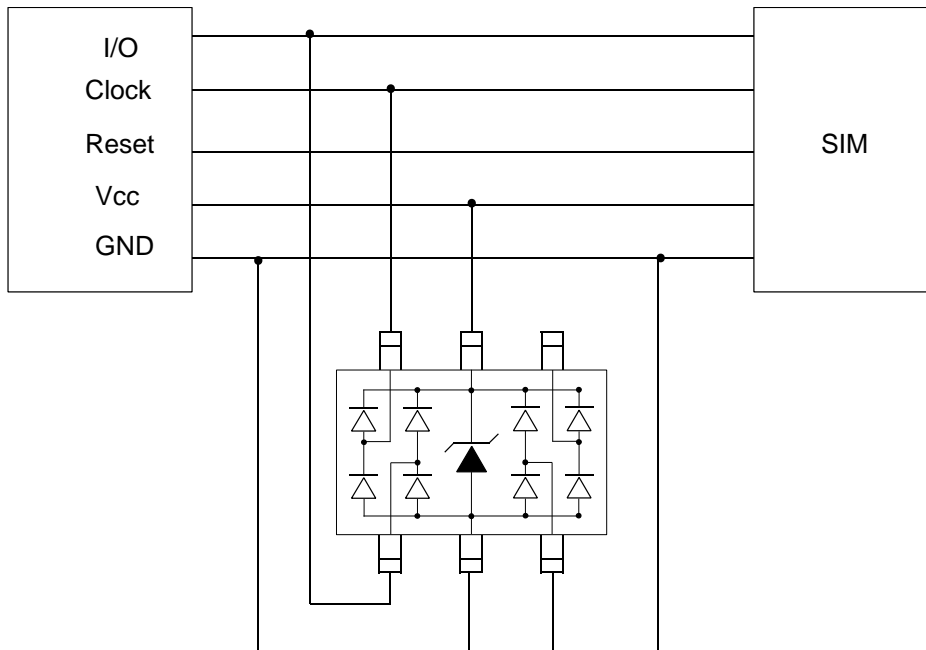
The PESDR0534S3 is designed to protect four data lines from transient over-voltages by clamping them to fixed reference. When the voltage on the protected line exceeds the reference voltage (plus diode  $V_F$ ) the steering diodes are forward biased, conducting the transient current away from the sensitive circuitry. Data lines are connected at pins 1, 3, 4 and 6. The negative reference (REF1) is connected at pin 2. This pin should be connected directly to a ground plane on the board for best results. The path length is kept as short as possible to minimize parasitic inductance. The positive reference (REF2) is connected at pin 5.



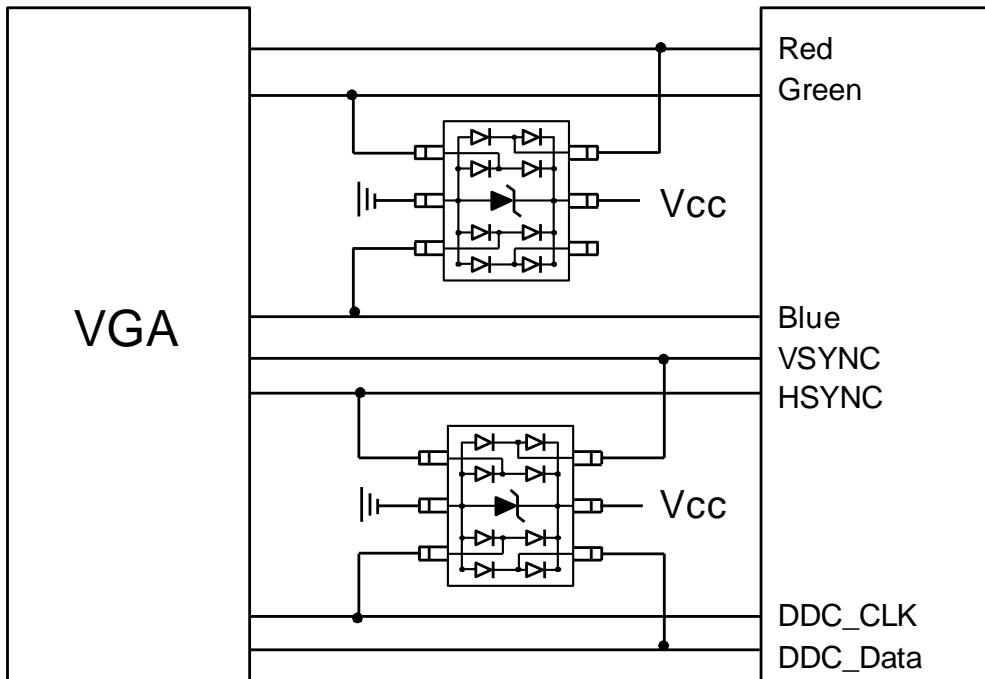
**PESDR0534S3 on USB OTG Carkit Application**



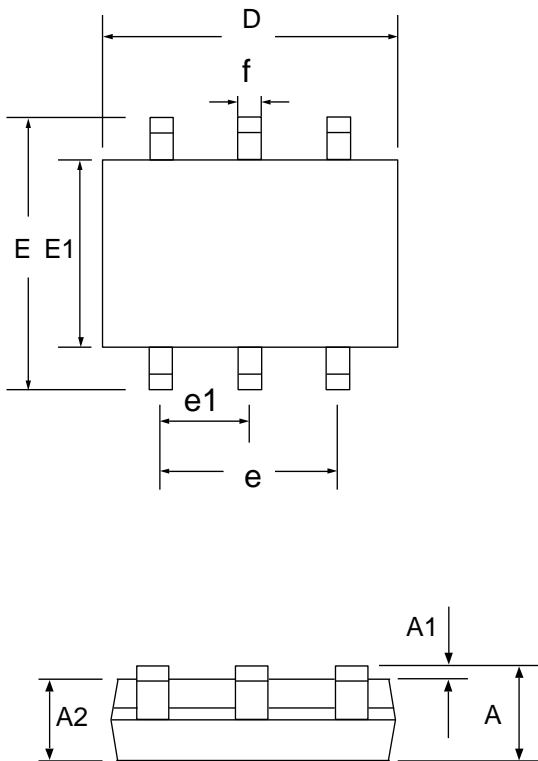
**PESDR0534S3 on SIM Port Application**



**PESDR0534S3 on VGA Port Application**

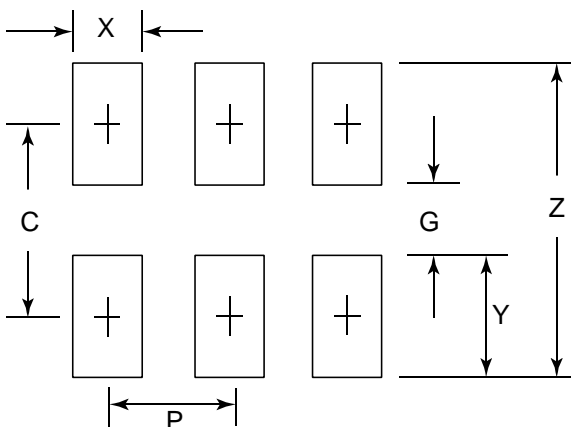


**SOT-363 Package Outline Drawing**



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A			1.10			0.043
A1			0.10			0.004
A2	0.70	0.90	1.00	0.028	0.035	0.039
D	1.80	2.00	2.20	0.071	0.079	0.087
E	2.10 BSC			0.083 BSC		
E1	1.15	1.25	1.35	0.045	0.049	0.053
e	1.30 BSC			0.051 BSC		
e1	0.65 BSC			0.026 BSC		
f			1.10	0.012		0.020

**Suggested Land Pattern**



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	1.85	0.073
G	1.00	0.039
P	0.65	0.026
X	0.40	0.016
Y	0.85	0.033
Z	2.70	0.106