

**4-Lines Ultra Low Capacitance TVS Array**

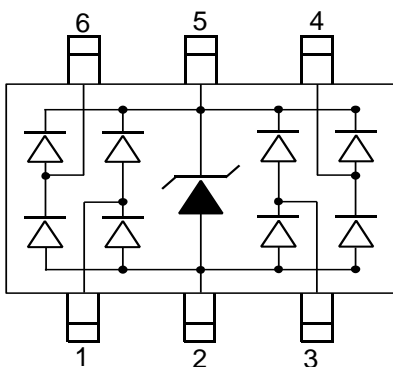
**Description**

The SRV05-4L is designed to protect I/O lines sensitive to capacitive load, such as USB 2.0, ethernet, Digital Video Interface (DVI) and so on, from damage due to Electrostatic Discharge (ESD). It incorporates four pairs of ultralow capacitance rail-to-rail ESD protection diodes plus a Zener diode to provide protection to signal and supply components. The complies with the IEC 61000-4-2(ESD) with  $\pm 20\text{kV}$  air and  $\pm 15\text{kV}$  contact discharge. Protection is supply voltage independent due to the rail-to-rail diodes being connected to the Zener diode. The device is encapsulated in a small 6-lead SOT23-6 Surface-Mounted Device (SMD) plastic package

**Features**

- ESD Protect for 4 high-speed I/O channels
- Ultralow capacitance: 0.6pF typical
- Ultralow leakage: nA level
- Low operating voltage: 5 V
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 20\text{kV}$
    - Contact discharge:  $\pm 15\text{kV}$
  - IEC 61000-4-5 (Lightning) 4A (8/20 $\mu\text{s}$ )
- RoHS Compliant

• **Dimensions and Pin Configuration**



Circuit Diagram

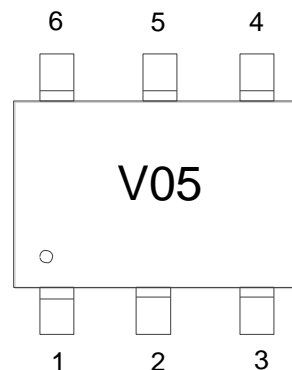
**Mechanical Characteristics**

- Package: SOT23-6
- Case Material: “Green” Molding Compound.
- Marking Information: See Below

**Applications**

- Video Graphics Cards
- USB2.0 Power and Data lines protection
- 10/100/1000 Ethernet
- Notebooks and PC Computers
- Monitors and Flat Panel Displays
- Digital Video Interface (DVI)

**Marking Information**



**V05**= Device Marking Code  
Dot denotes Pin1

**Ordering Information**

Part Number	Shipping	Reel Size
SRV05-4L	3000/Tape &Reel	7 inch

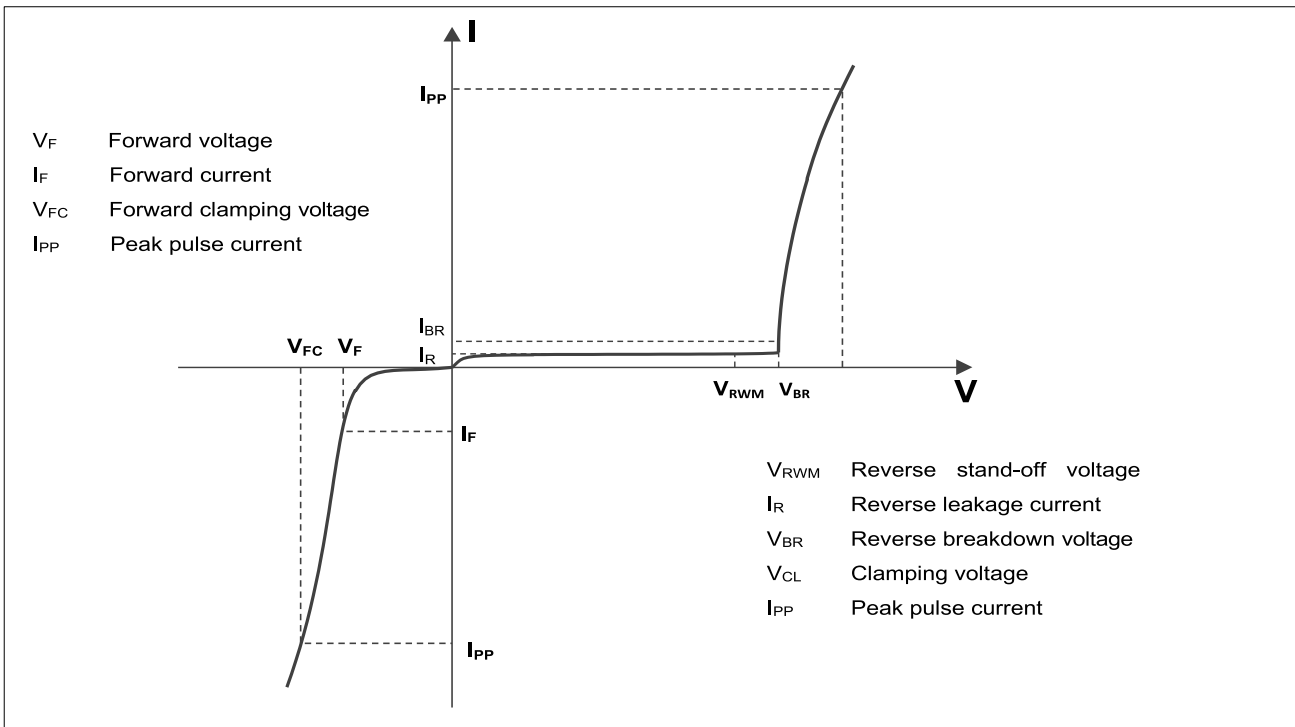
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PK}$	60	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PPM}$	4	A
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	$\pm 20$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 15$	kV
Lead temperature	$T_L$	260	$^{\circ}\text{C}$
Operating Temperature Range	$T_{OP}$	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

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

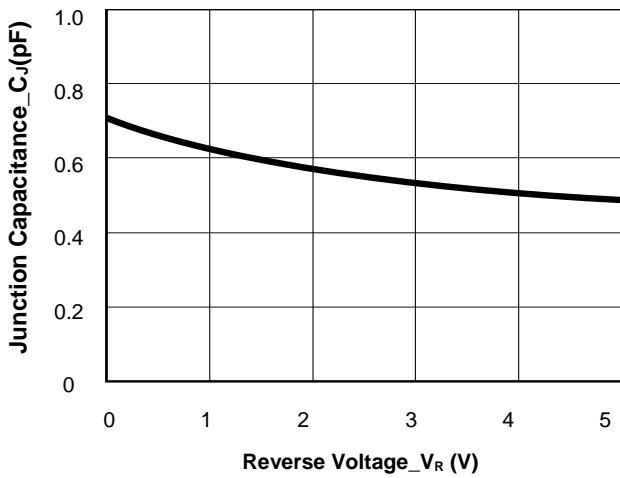
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	$V_{RWM}$			5	V	
Reverse Breakdown Voltage	$V_{BR}$	6.0		8.5	V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			100	nA	$V_{RWM} = 5\text{V}$
Clamping Voltage (I/O-GND)	$V_C$			10.0	V	$I_{PP} = 1\text{A}$ (8/20 $\mu\text{s}$ pulse)
Clamping Voltage (I/O-GND)	$V_C$			15.0	V	$I_{PP} = 4\text{A}$ (8/20 $\mu\text{s}$ pulse)
Junction Capacitance	$C_J$		0.3	0.4	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ (I/O to I/O)
Junction Capacitance	$C_J$		0.6	0.7	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ (I/O to GND)

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

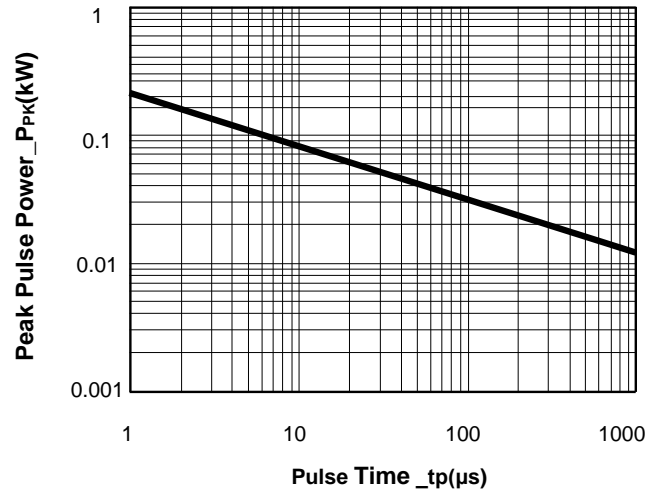


Definitions of electrical characteristics

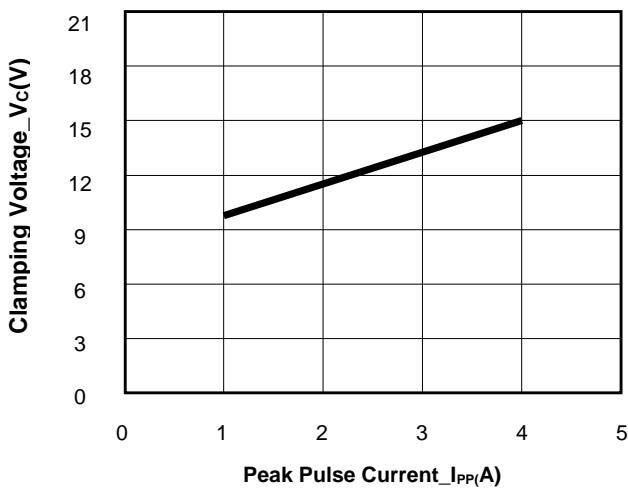
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



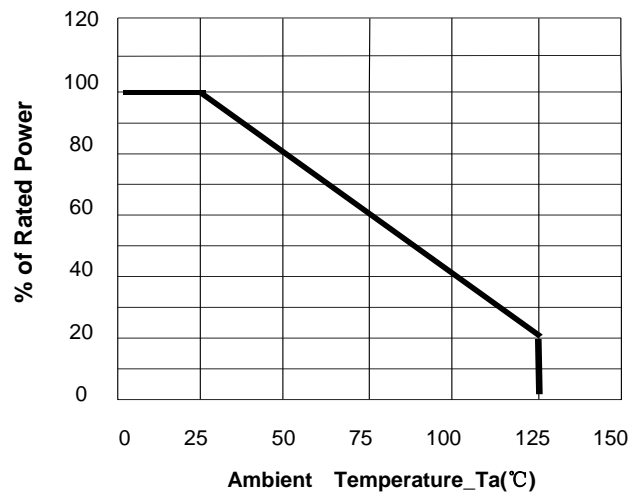
**Junction Capacitance vs. Reverse Voltage**



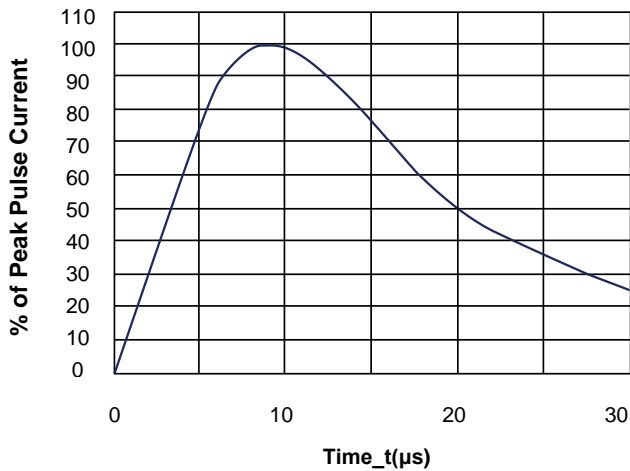
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

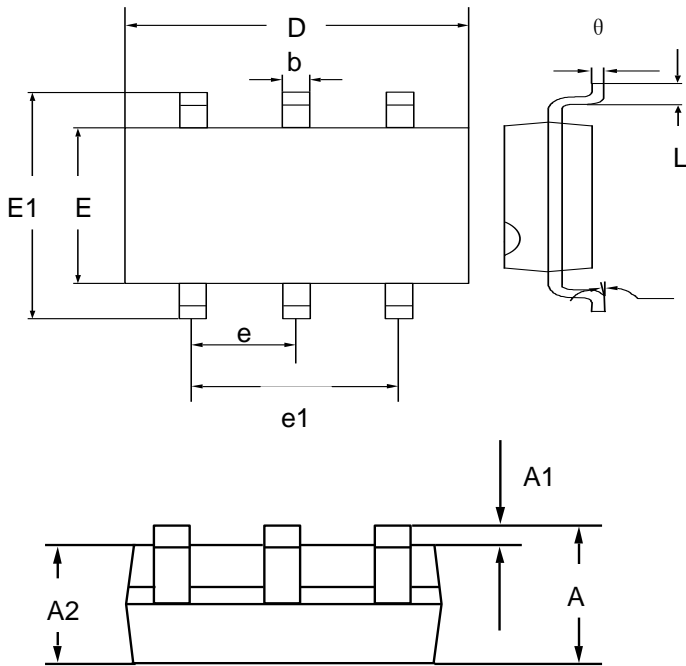


**Power Derating Curve**



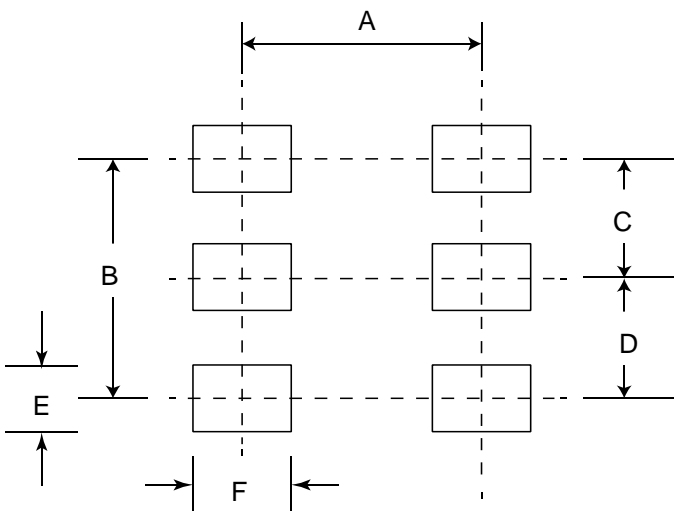
**8/20μs Pulse Waveform**

**SOT23-6 Package Outline Drawing**



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0	8°	0	8°

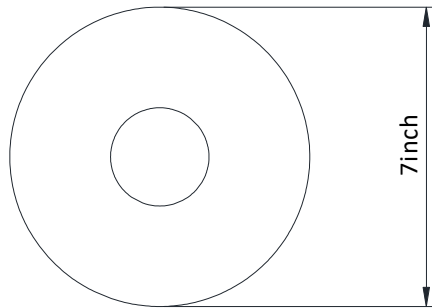
**Recommended Pad outline**



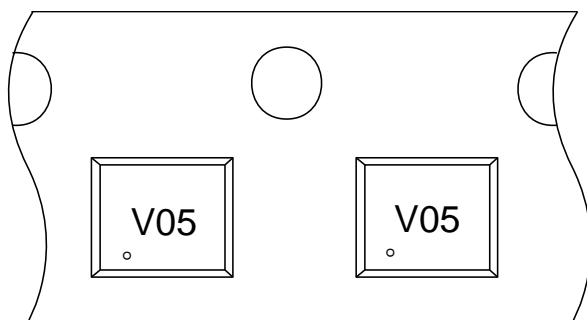
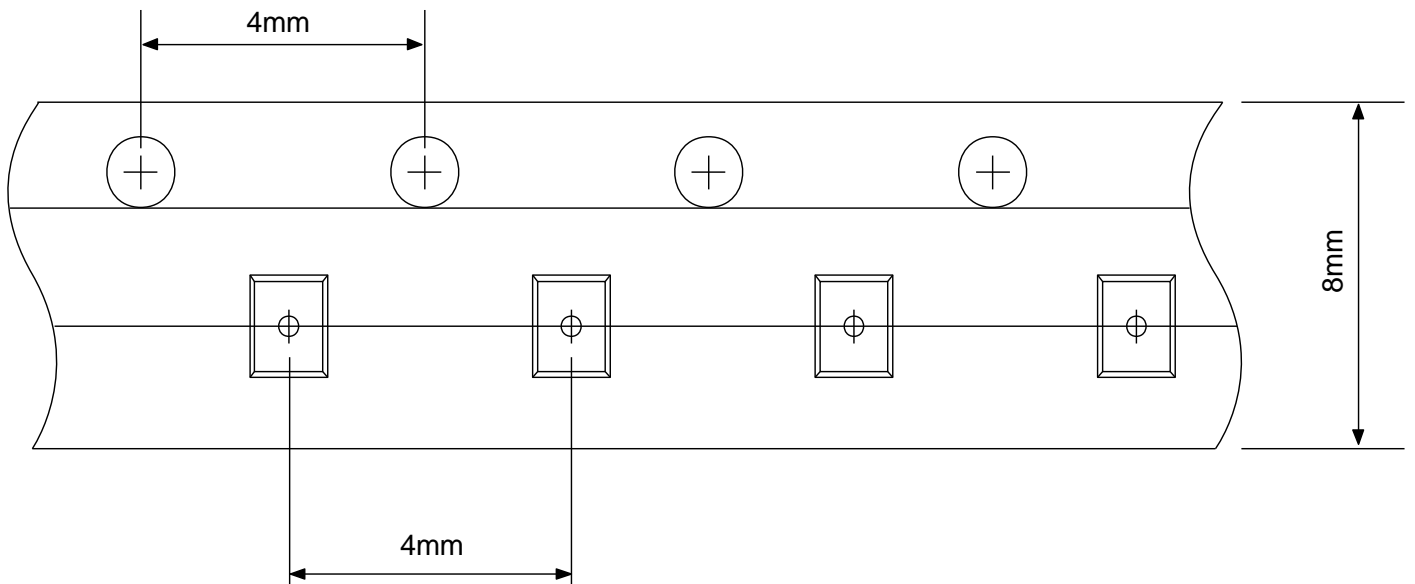
DIM	Millimeters		
	MIN	NOM	MAX
A	2.30	2.40	2.50
B	1.826	1.90	1.974
C	0.913	0.95	0.987
D	0.913	0.95	0.987
E	0.672	0.70	0.728
F	0.961	1.00	1.039

**TAPE AND REEL INFORMATION**

Reel Dimensions



Tape Dimensions




User Direction of Feed

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