

## Description

The SRV05-4A is a low capacitance TVS (Transient Voltage Suppressor) array designed to protect sensitive semiconductor components from electrical overstress when interfaced to high-speed data lines. The low capacitance (1.5pF typical I/O to I/O) of the SRV05-4A ensures negligible signal attenuation at data rates up to 3.5GHz. The solid-state construction ensures fast clamping of electrical overstress transients resulting from ESD (electrostatic discharge), EFT (Electrical Fast Transients) or CDE (Cable Discharge Events).

In addition to low capacitance, the SRV05-4A provides superior surge current capability and excellent voltage clamping performance. The surge current capability (8x20 $\mu$ s) is rated at 20A; approximately 50% higher than industry norms. Furthermore, the tight clamping ratio ( $V_C/V_{RWM}$ ) of 1.75 (typical at 1A) ensures harmful transients are clamped quickly and close to the normal working voltage of the circuit. The super tight clamping ratio is 30% better than industry norms and ensures superior protection of sensitive integrated circuits.

The SRV05-4A is in a 6-lead SOT-23 package. The leads are finished with lead-free matte tin. Each device will protect up to four high-speed lines. They may be used to meet the ESD immunity requirements of IEC 61000-4-2. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as 10/100 Ethernet, USB 2.0, and video interfaces.

## Features

- ESD protection in accordance with:  
IEC 61000-4-2 (ESD)  $\pm 15$ kV (air),  $\pm 8$ kV (contact)  
IEC 61000-4-5 (Lightning) 20A (8/20 $\mu$ s)  
IEC 61000-4-4 (EFT) 40A (5/50ns)
- Array of surge rated diodes with internal TVS Diode
- Tight clamping ratio,  $V_C/V_{RWM}$ , ensures superior protection
- High reverse surge current,  $I_{PP}$ , capability
- Low idle current minimizes standby power consumption
- Small package saves board space
- Protects four I/O lines
- Low capacitance: 1.5pF typical (I/O to I/O)
- Low clamping voltage
- Low operating voltage: 5V
- Solid-state silicon-avalanche technology

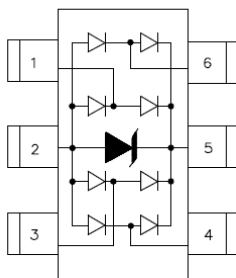
## Mechanical Characteristics

- JEDEC SOT-23 6L package
- Pb-Free, Halogen Free, RoHS/WEEE Compliant
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel

## Applications

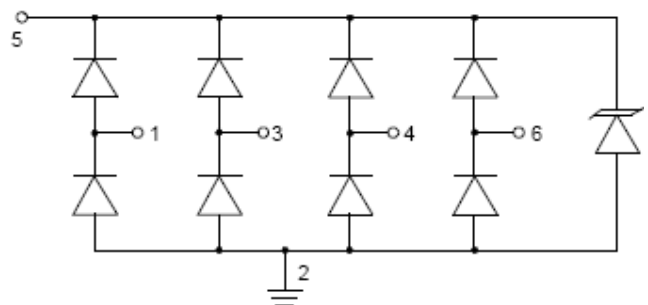
- USB 2.0 Power and Data Line Protection
- Video Graphics Cards
- Monitors and Flat Panel Displays
- Digital Visual Interface (DVI)
- 10/100 Ethernet
- Notebook Computers
- SIM Ports
- IEEE 1394 Firewire Ports

## Pin Configuration



SOT-23 6L (Top View)

## Circuit Diagram



- China - Germany - Korea - Singapore - United States •
- <http://www.smc-diodes.com> - [sales@smc-diodes.com](mailto:sales@smc-diodes.com) •



Ordering Information:

Device	Package	Shipping
SRV05-4A	SOT-23 6L (Pb-Free)	3000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

Maximum Ratings @T<sub>A</sub>=25°C unless otherwise specified

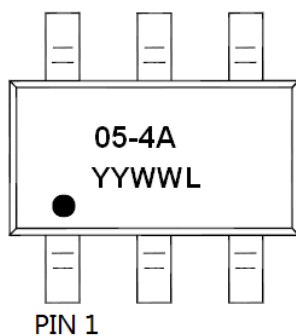
Parameter	Symbol	Value	Unit
Peak Pulse Current (tp=8/20µs)	I <sub>PP</sub>	20	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	15	KV
ESD per IEC 61000-4-2 (Contact)		8	
Lead Soldering Temperature	T <sub>L</sub>	260(10 sec.)	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to + 125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to + 150	°C

Electrical Characteristics:

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	Pin 5 to 2	-	-	5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	@ I <sub>t</sub> =1mA Pin 5 to 2	6	-	-	V
Forward Voltage	V <sub>F</sub>	@ I <sub>F</sub> =15mA, T = 25 °C	-	-	1.2	V
Reverse Leakage Current	I <sub>R</sub>	@V <sub>RWM</sub> = 5V, T = 25 °C Pin 5 to 2	-	2.3	5	µA
Clamping Voltage	V <sub>C</sub>	@I <sub>PP</sub> = 1A, tp=8/20µs Any I/O pin to ground	-	8.75	12.5	V
Clamping Voltage	V <sub>C</sub>	@I <sub>PP</sub> = 5A, tp=8/20µs Any I/O pin to ground	-	9.79	17.5	V
Junction Capacitance	C <sub>j</sub>	@V <sub>R</sub> = 0V, f <sub>SIG</sub> = 1MHz Any I/O pin to ground	-	3.2	5	pF
		@V <sub>R</sub> = 0V, f <sub>SIG</sub> = 1MHz Between I/O pins	-	1.5	-	pF

**Technical Data**  
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**Marking Diagram:**

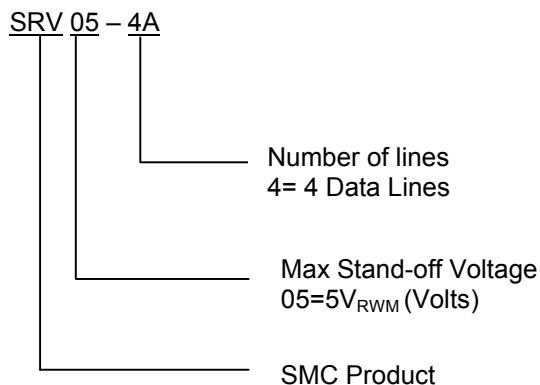


Where 05-4A is SRV05-4A

05-4A	= Part Name
YY	= Year
WW	= Week
L	= Lot Number

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

**Part Name Information#**



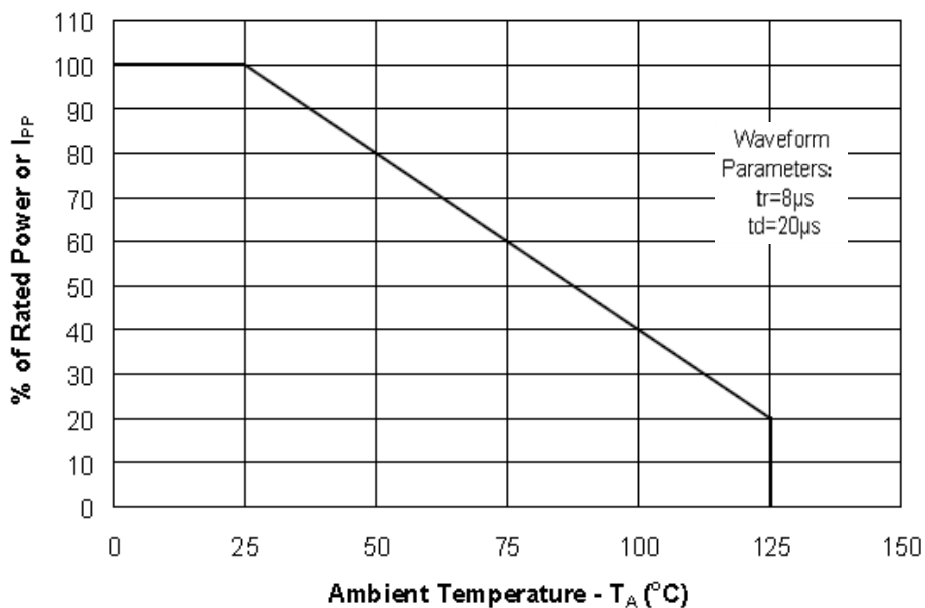


Fig.1 Power Derating Curve

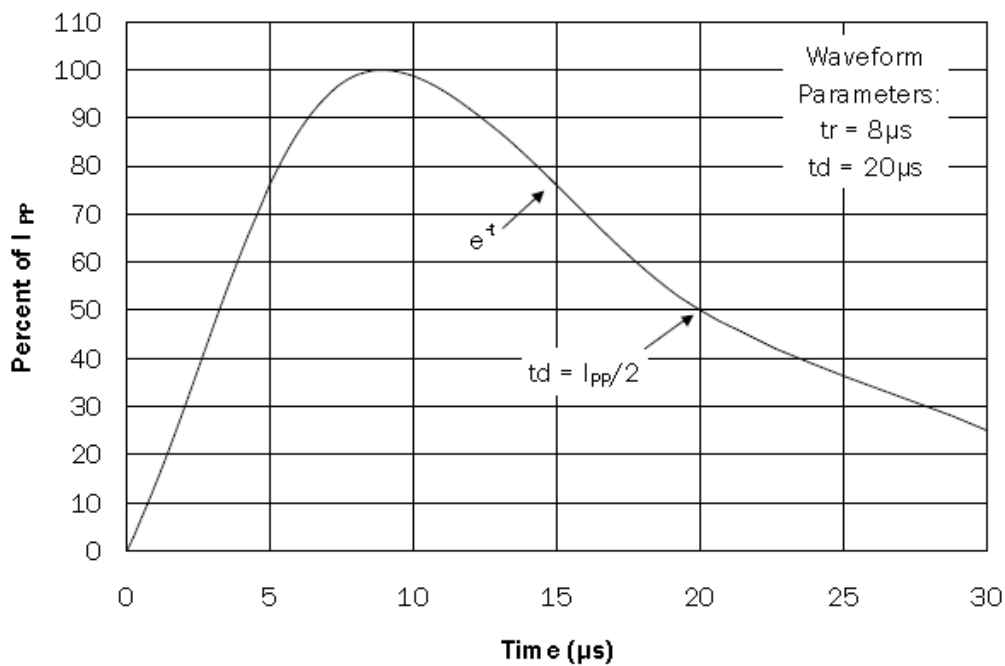


Fig.2 Pulse Waveform

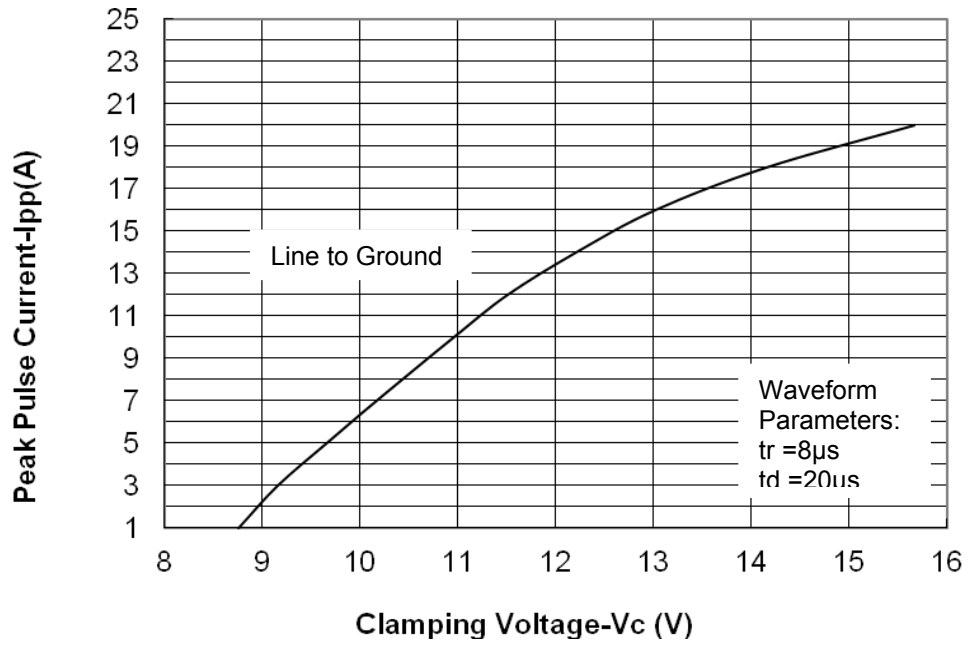


Fig. 3 Typical Clamping Voltage vs. Peak Pulse

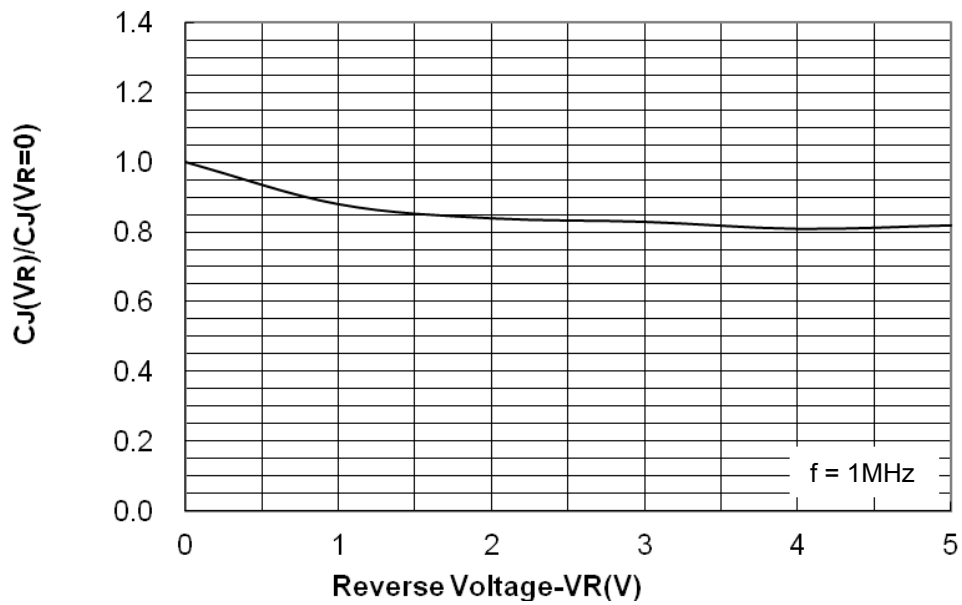
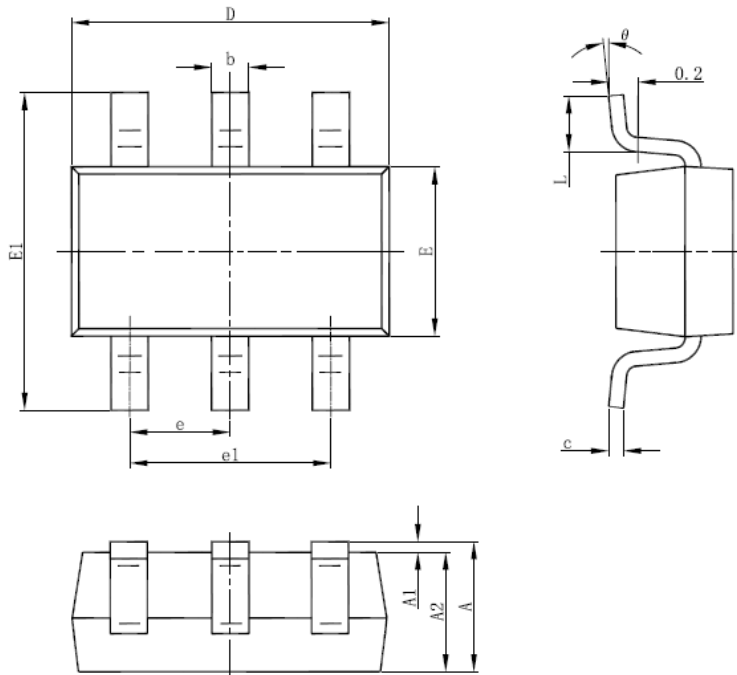


Fig. 4 Normalized Capacitance vs. Reverse Voltage

**Mechanical Dimensions (In mm/Inches):**


Symbol	Dimensions In Millimeters		Dimensions In 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°

**SOT-23 6L**



**SRV05-4A**

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**Green Products**

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