

## SRV05-4A TVS Arrays

### 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 (VC/VRWM) 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)  $\pm$ 15kV (air),  $\pm$ 8kV (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, VC/VRWM, ensures superior protection
- High reverse surge current, IPP, 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

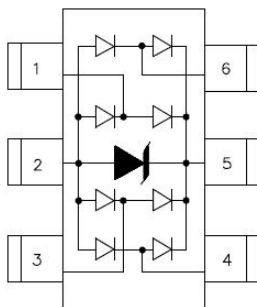
### Mechanical Characteristics

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

### Applications

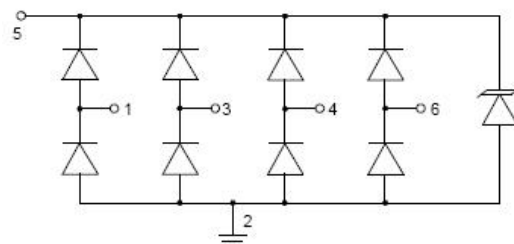
- USB 2.0 Power and Data Line Protection
- Video Graphics Cards
- Monitors and Flat Panel Displays
- Digital Visual Interface (DVI)
- 10/100 Ethernet
- Notebook Computers
- SIM Ports
- IEEE 1394 Firewire Ports

### Pin Configuration



SOT-23 6L (Top View)

### Circuit Diagram



## 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.

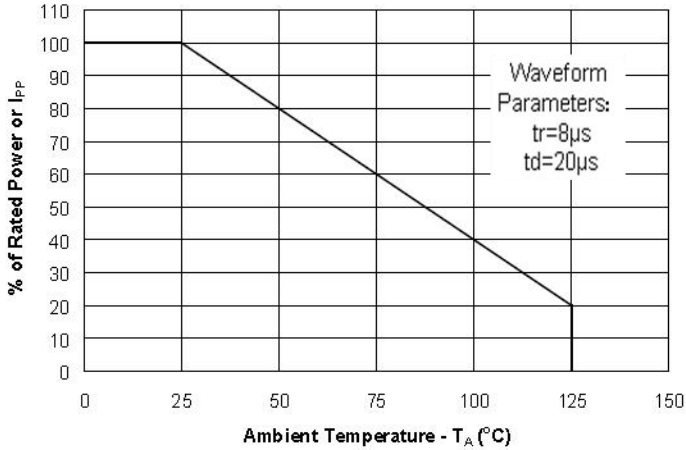
## Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Current ( $t_p=8/20\mu\text{s}$ )	$I_{PP}$	12	A
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	15	KV
ESD per IEC 61000-4-2 (Contact)		8	
Lead Soldering Temperature	$T_L$	260(10 sec.)	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to + 125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to + 150	$^\circ\text{C}$

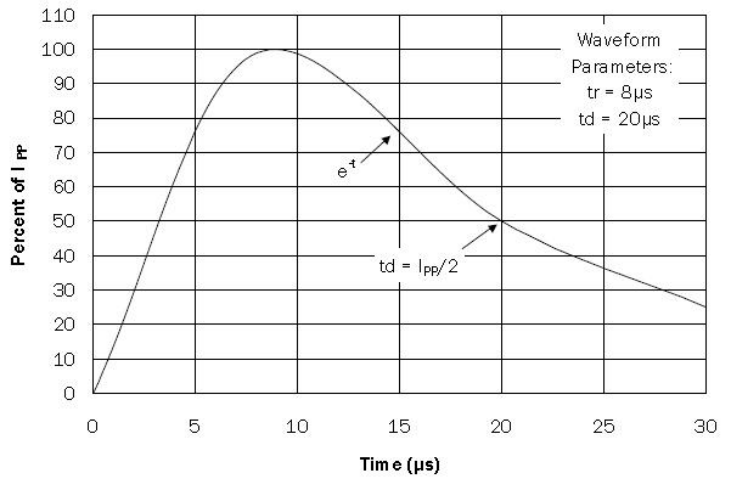
## Electrical Characteristics

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	$V_{RWM}$	Pin 5 to 2	-	-	5	V
Reverse Breakdown Voltage	$V_{BR}$	@ $I_L=1\text{mA}$ Pin 5 to 2	6	-	-	V
Forward Voltage	$V_F$	@ $I_F=15\text{mA}$ , $T = 25^\circ\text{C}$	-	-	1.2	V
Reverse Leakage Current	$I_R$	@ $V_{RWM} = 5\text{V}$ , $T = 25^\circ\text{C}$ Pin 5 to 2	-	-	5	$\mu\text{A}$
Clamping Voltage	$V_C$	@ $I_{PP} = 1\text{A}$ , $t_p=8/20\mu\text{s}$ Any I/O pin to ground	-	-	12.5	V
Clamping Voltage	$V_C$	@ $I_{PP} = 5\text{A}$ , $t_p=8/20\mu\text{s}$ Any I/O pin to ground	-	-	17.5	V
Junction Capacitance	$C_j$	@ $V_R = 0\text{V}$ , $f_{SIG} = 1\text{MHz}$ Any I/O pin to ground	-	3	5	pF
		@ $V_R = 0\text{V}$ , $f_{SIG} = 1\text{MHz}$ Between I/O pins	-	1.5	-	pF

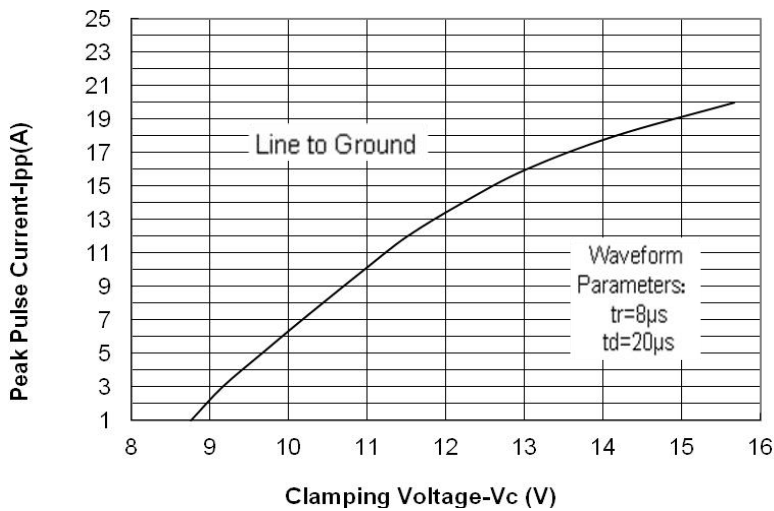
**Ratings and Characteristics Curves**



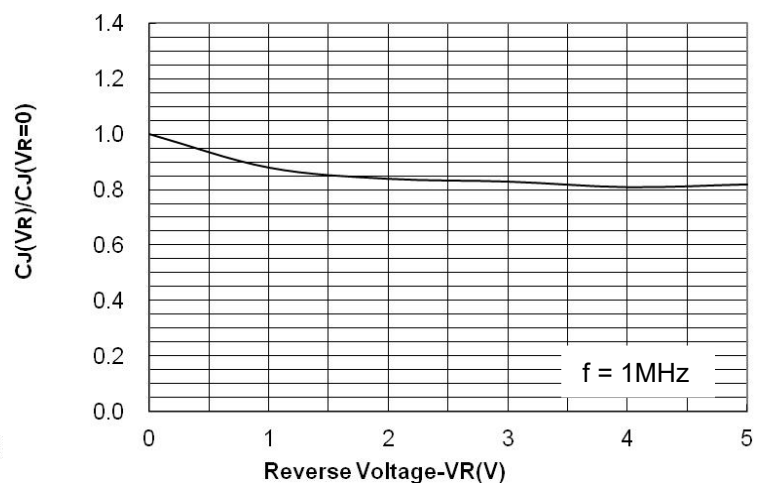
**Fig.1 Power Derating Curve**



**Fig.2 Pulse Waveform**

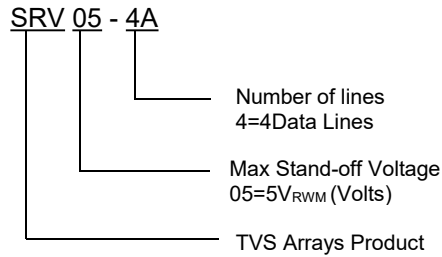


**Fig. 3 Clamping Voltage vs. Peak Pulse Current**

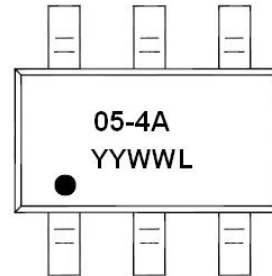


**Fig. 4 Normalized Capacitance vs. Reverse Voltage**

**Part Name Information**



**Marking Diagram**

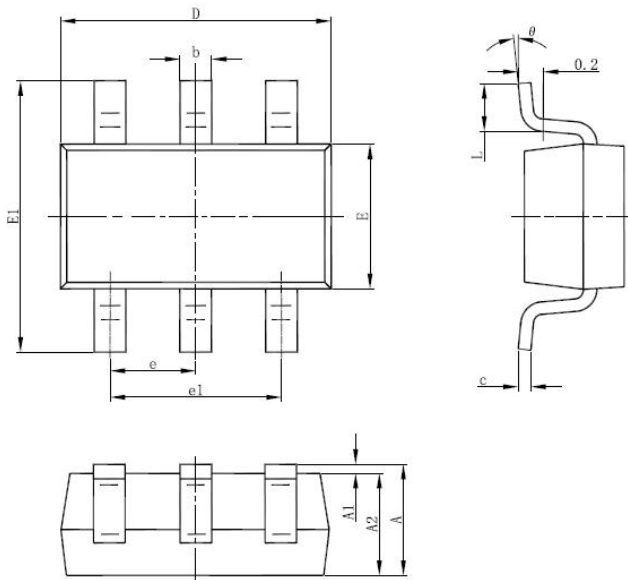


Where 05-4A is SRV05-4A

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

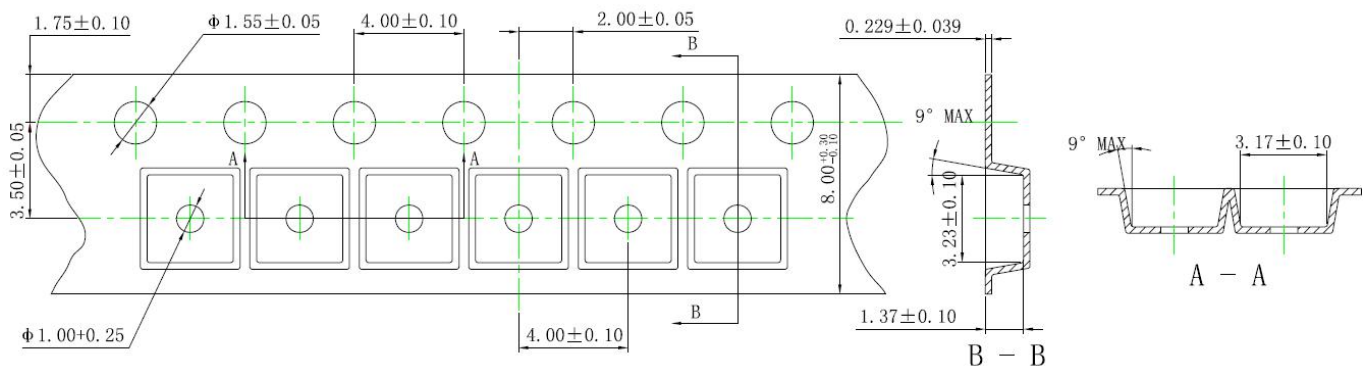
**Cautions:** Molding resin  
Epoxy resin UL:94V-0

**Mechanical Dimensions SOT-23 6L**



SYMBOL	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	1.05	1.25	0.041	0.049
A1	0.00	0.10	0.000	0.004
A2	1.05	1.15	0.041	0.045
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.00
D	2.82	3.02	0.111	0.119
E	1.50	1.70	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.80	2.00	0.071	0.079
L	0.300	0.60	0.012	0.024
θ	0°	8°	0°	8°

**Mechanical Dimensions SOT-23 6L**



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