Technical Data
Data Sheet N1763, REV. A

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 (8x20µs) 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) ±15kV (air), ±8kV (contact)
- IEC 61000-4-5 (Lightning) 20A (8/20µs)
- 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

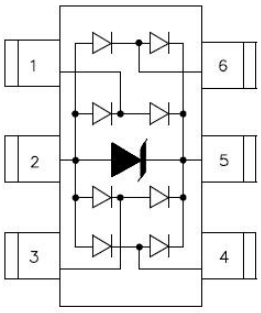
Mechanical Characteristics

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

Applications

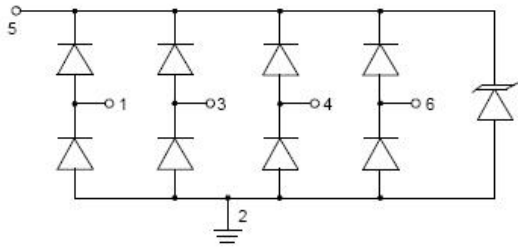
- USB 2.0 Power and Data Line Protection
- Video Graphics Cards
- Monitors and Flat Panel Displays
- Digital Visual Interface (DVI)
- 10/100 Ethernet
- Notebook Computers
- SIM Ports
- IEEE 1394 Firewire Ports

Pin Configuration



SOT-23 6L (Top View)

Circuit Diagram



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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°C unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Current (tp=8/20μs)	I_{PP}	20	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	15 8	KV
Lead Soldering Temperature	T_L	260(10 sec.)	°C
Operating Junction Temperature Range	T_J	-55 to + 125	°C
Storage Temperature Range	T_{STG}	-55 to + 150	°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_t=1mA Pin 5 to 2	6	-	-	V
Forward Voltage	VF	@ I_F=15mA, T = 25 ℃	-	-	1.2	V
Reverse Leakage Current	I_R	@V_{RWM} = 5V, T = 25 ℃ Pin 5 to 2	-	2.3	5	μA
Clamping Voltage	V_C	@I_{PP} = 1A, tp=8/20μs Any I/O pin to ground	-	8.75	12.5	V
Clamping Voltage	V_C	@I_{PP} = 5A, tp=8/20μs Any I/O pin to ground	-	9.79	17.5	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz Any I/O pin to ground	-	3.2	5	pF
		@V_R = 0V, f_{SIG} = 1MHz Between I/O pins	-	1.5	-	pF

Ratings and Characteristics Curves

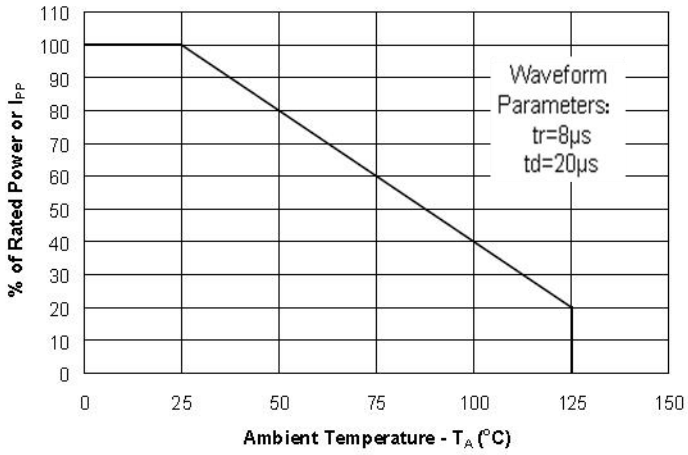

Fig.1 Power Derating Curve

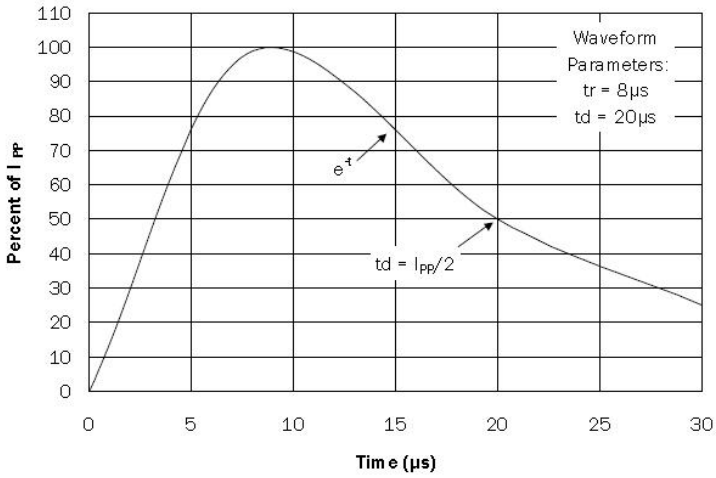

Fig.2 Pulse Waveform

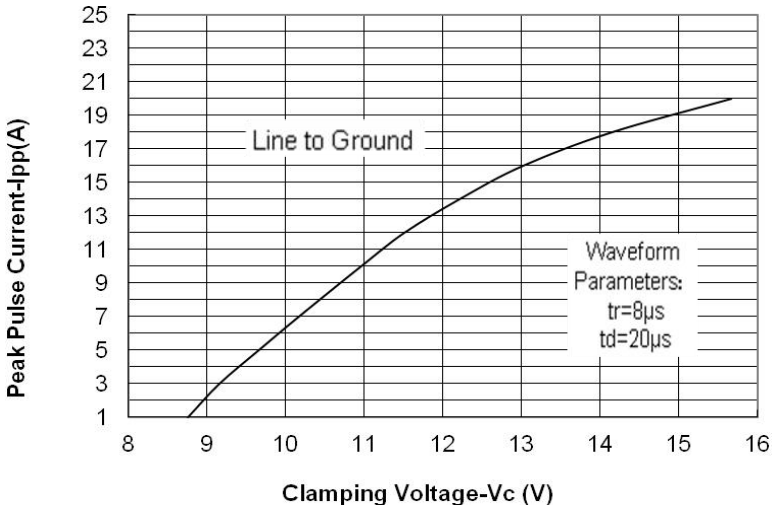

Fig. 3 Clamping Voltage vs. Peak Pulse Current

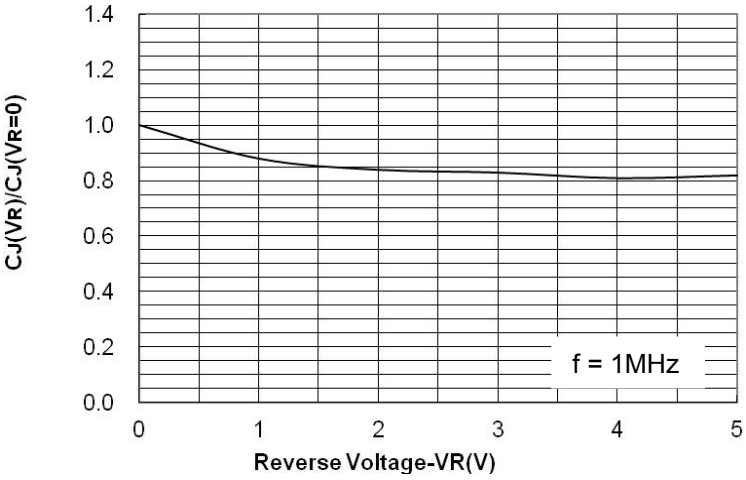

Fig. 4 Normalized Capacitance vs. Reverse Voltage

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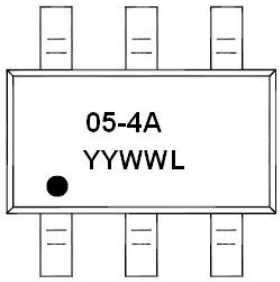
RoHS

Part Name Information

SRV 05 - 4A

- 4A: Number of lines 4=4Data Lines
- 05: Max Stand-off Voltage 05=5V_{RWM} (Volts)
- SRV: TVS Arrays Product

Marking Diagram

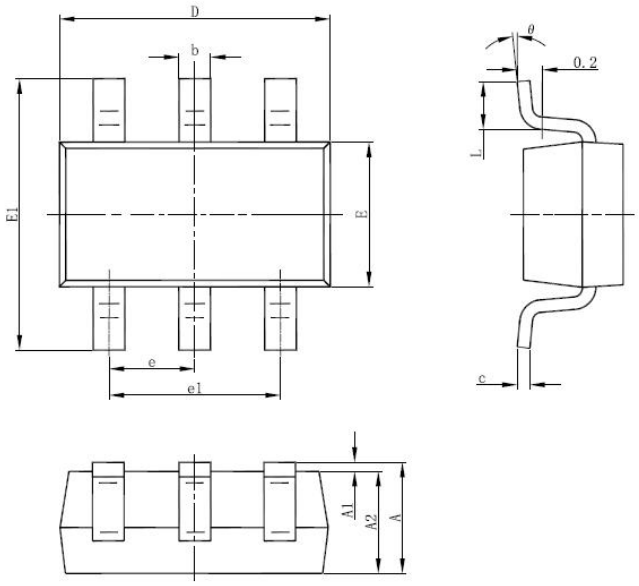


Where 05-4A is SRV05-4A

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

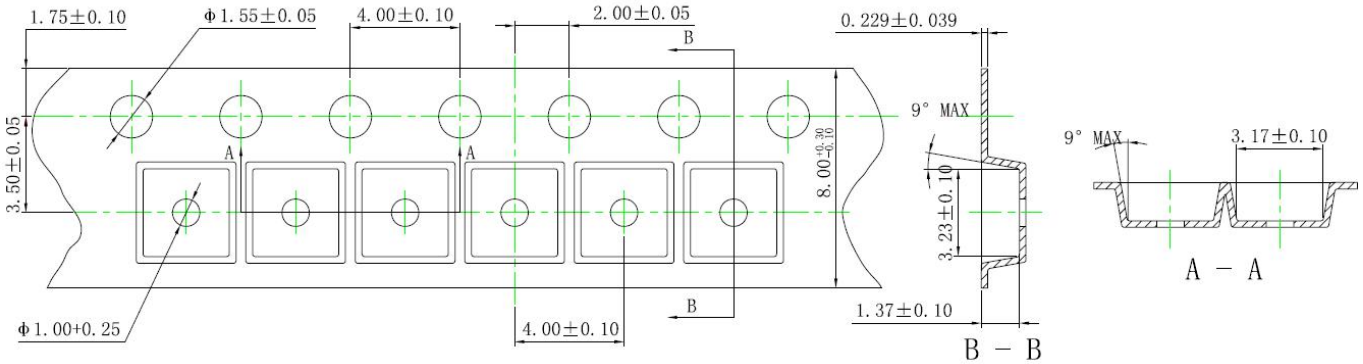
Cautions: Molding resin
Epoxy resin UL:94V-0

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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