



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 μ 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 15kV (air), \pm 8kV (contact)
 - IEC 61000-4-5 (Lightning) 20A (8/20 μ 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



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.

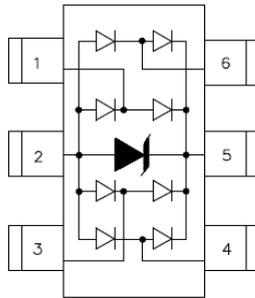
Maximum Ratings @T_A=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Peak Pulse Current (tp=8/20µs)	I _{PP}	20	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.)	°C
Operating Junction Temperature Range	T _J	-55 to + 125	°C
Storage Temperature Range	T _{STG}	-55 to + 150	°C

Electrical Characteristics:

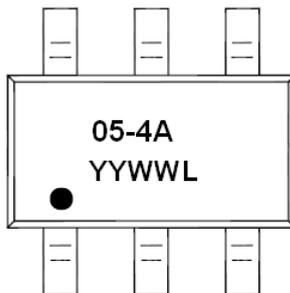
Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}	Pin 5 to 2	-	-	5	V
Reverse Breakdown Voltage	V _{BR}	@ I _t =1mA Pin 5 to 2	6	-	-	V
Forward Voltage	V _F	@ I _F =15mA, T = 25 °C	-	-	1.2	V
Reverse Leakage Current	I _R	@V _{RWM} = 5V, T = 25 °C Pin 5 to 2	-	2.3	5	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

Pin Configuration



SOT-23 6L (Top View)

Marking Diagram:

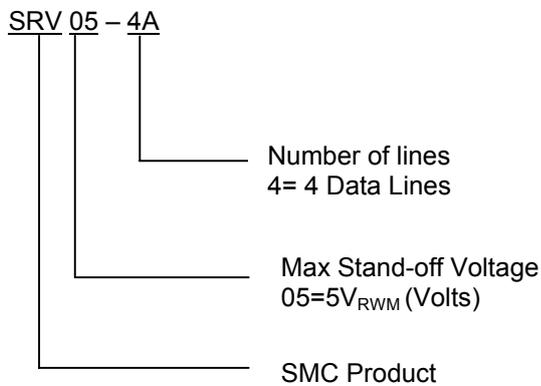


Where 05-4A is SRV05-4A

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

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

Part Name Information



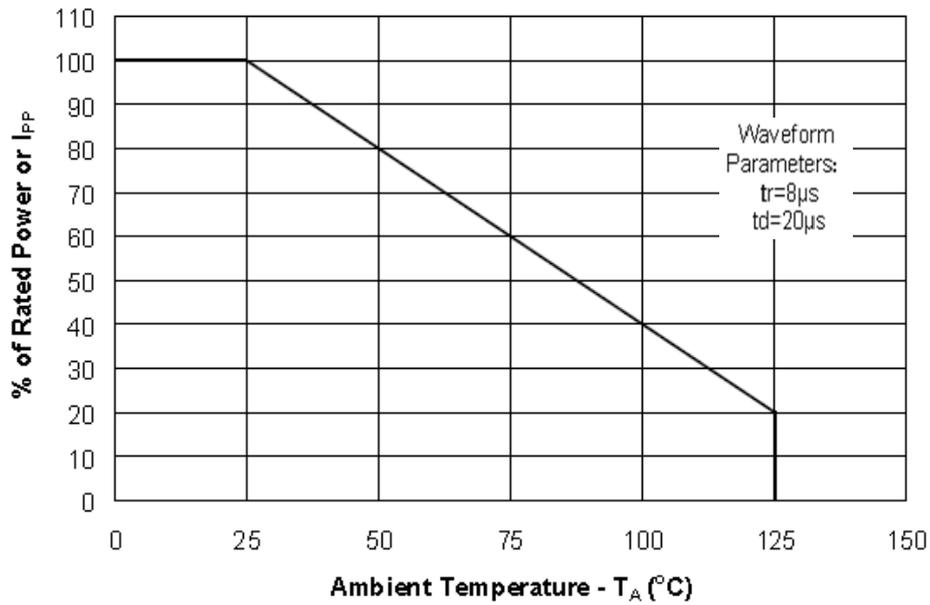


Fig.1 Power Derating Curve

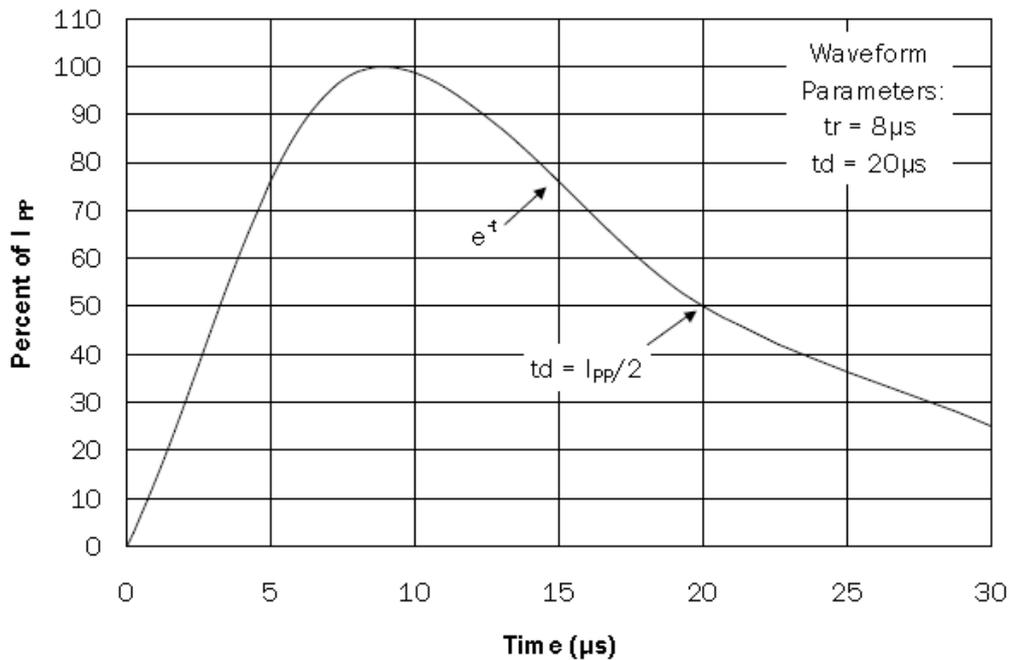


Fig.2 Pulse Waveform

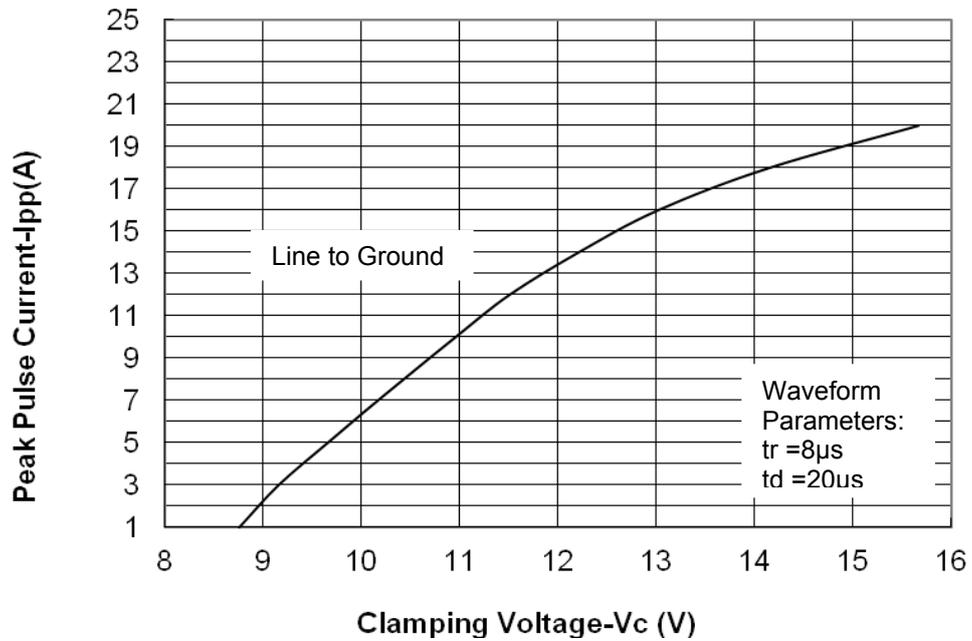


Fig. 3 Typical Clamping Voltage vs. Peak Pulse

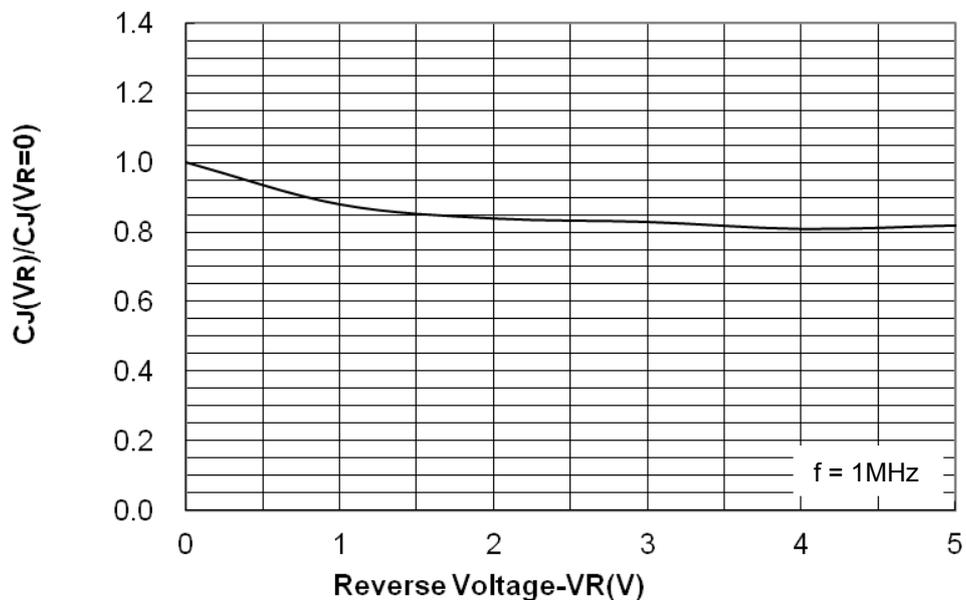
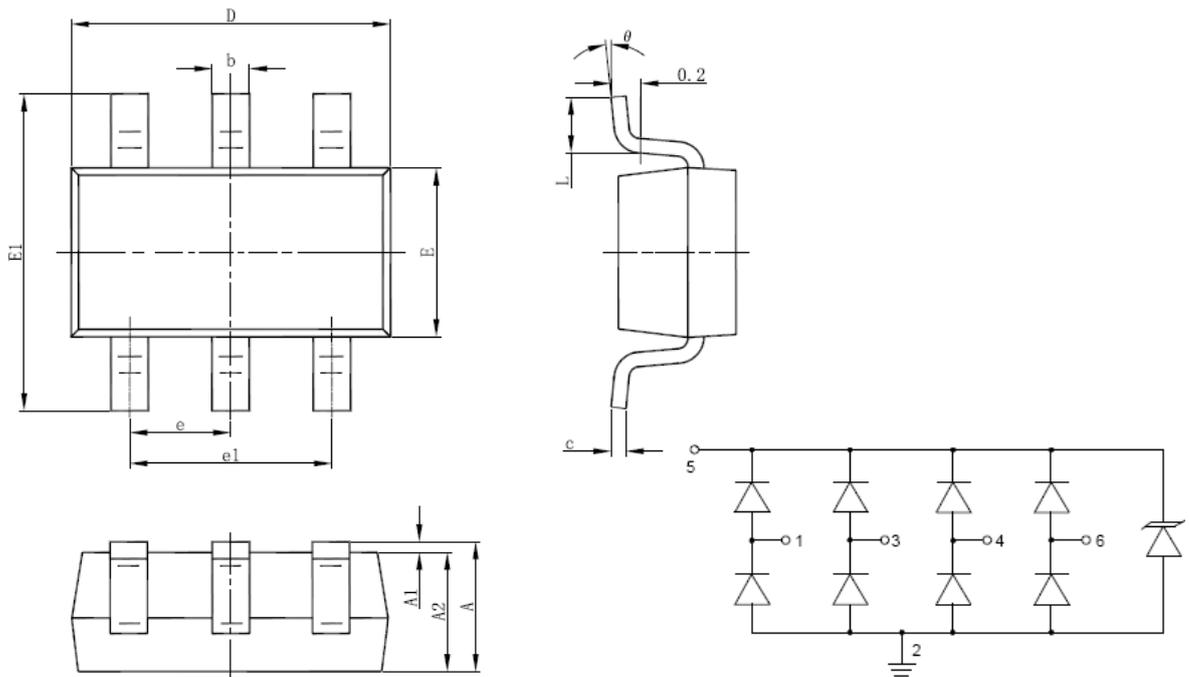


Fig. 4 Normalized Capacitance vs. Reverse Voltage

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

Technical Data
Data Sheet N1763 REV.-

Green Products

DISCLAIMER:

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC - Sangdest Microelectronics (Nanjing) Co., Ltd sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC - Sangdest Microelectronics (Nanjing) Co., Ltd assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..