

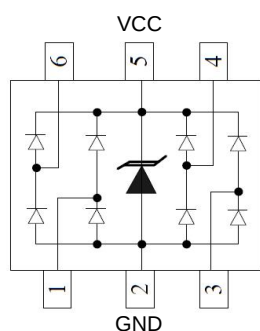
Description

The SRV05-4 is a low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The SRV05-4 complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a 6-lead SOT23-6 lead-free package. The leads are finished with lead-free matte tin. Each device will protect up to four high-speed lines. 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

- Ultra low capacitance: 1.5pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Working voltage: 5V
- Low clamping voltage
- Up to 4 data lines and one power line protects
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 12A (8/20 μs)
- RoHS Compliant

Dimensions & Symbol (Unit: mm Max)



SOT-23-6L (Top View)

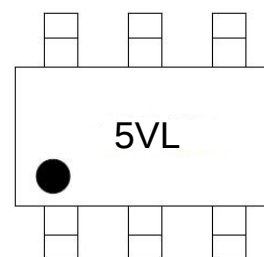
Mechanical Characteristics

- Package: SOT23-6
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- USB 2.0 power and data line
- Monitors and flat panel displays
- Set-top box and digital TV
- Video graphics cards
- Digital video interface (DVI)
- Notebook Computers
- SIM Ports
- 10/100 Ethernet
- IEEE 1394 firewire ports

Marking Information



Dot denotes Pin1

Details marking code reference customer approval list

Ordering information

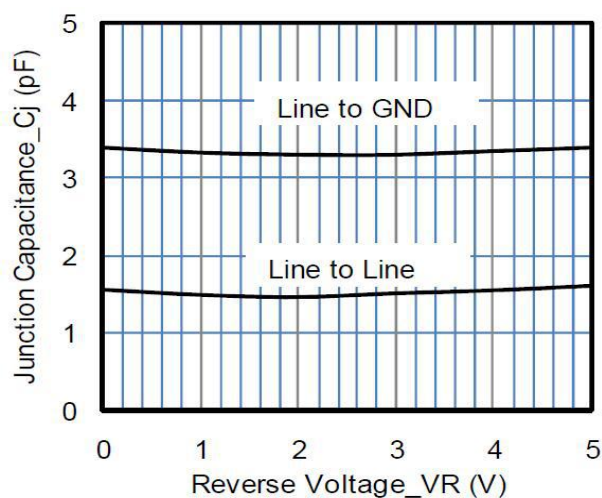
Part Number	Packaging	Reel Size
SRV05-4	3000/Tape & Reel	7 inch

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P _{ppp}	300	W
Peak Pulse Current (8/20μs)	I _{pp}	12	A
ESD per IEC 61000-4-2 (Air)	VESD	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

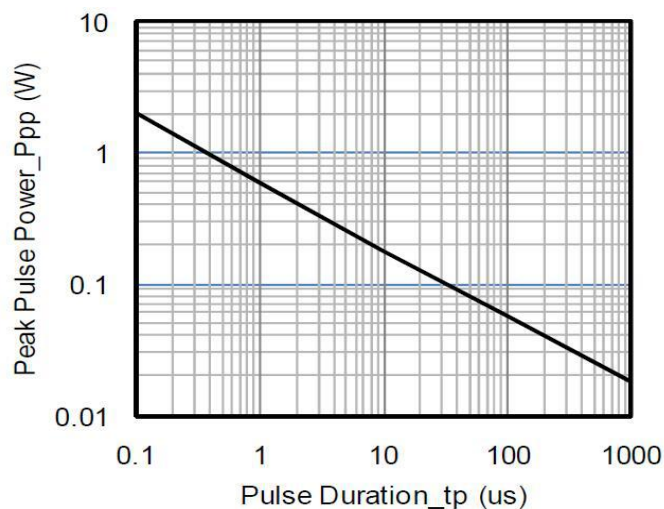
Electrical Characteristics (T_A=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	
Breakdown Voltage	V _{BR}	6			V	I _T = 1mA
Reverse Leakage Current	I _R			5	μA	V _{RWM} = 5.0V
Forward Voltage	V _F			1.2	V	I _T = 10mA
Clamping Voltage	V _C			15	V	I _{PP} = 1A (8 x 20μs pulse) pin5 to pin2
Clamping Voltage	V _C			25	V	I _{PP} = 12A (8 x 20μs pulse) pin5 to pin2
Junction Capacitance	C _J		1.5		pF	Between I/O pins V _R =0V, f=1MHZ
Junction Capacitance	C _J		3.0	5.0	pF	I/O pins and Ground V _R =0V, f=1MHZ

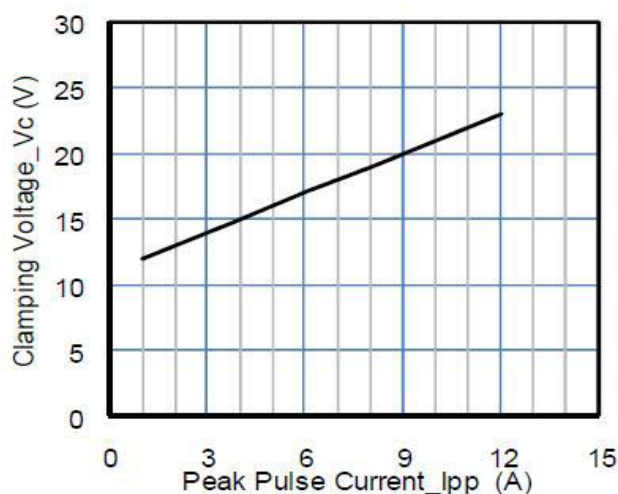
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



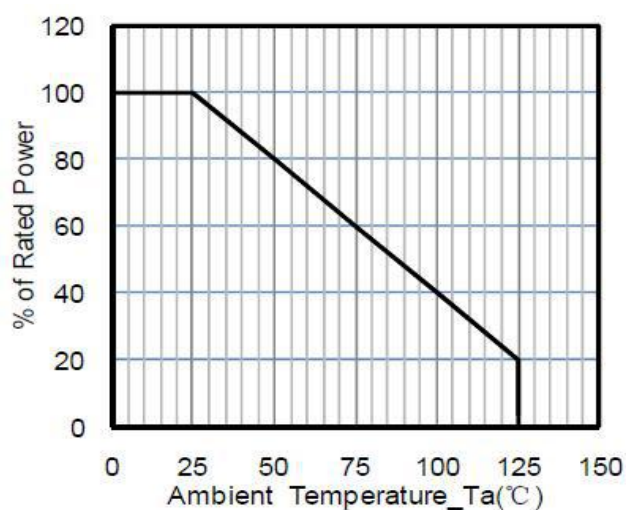
Junction Capacitance vs. Reverse Voltage



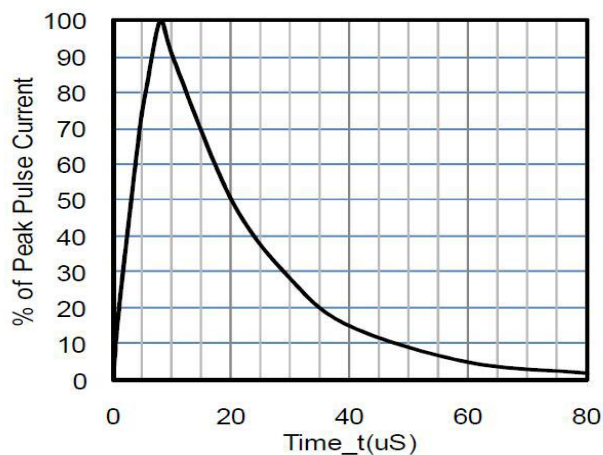
Peak Pulse Power vs. Pulse Time



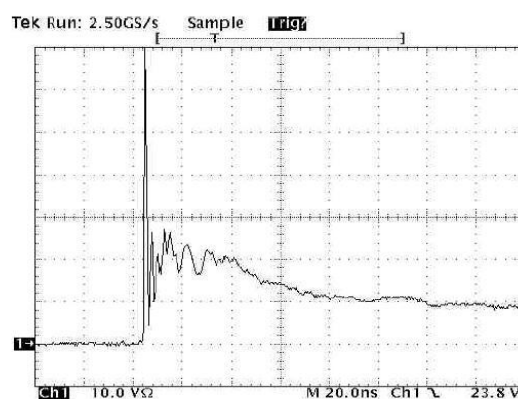
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20uS Pulse Waveform

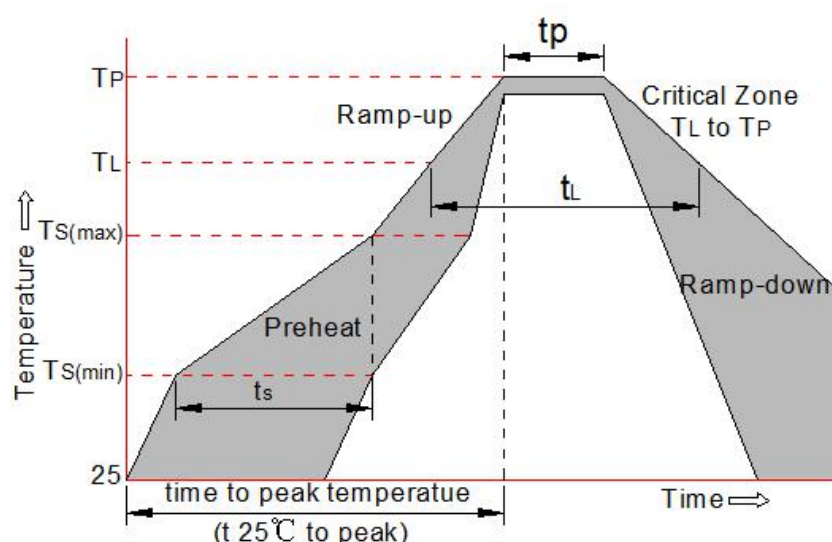


ESD Clamping Voltage

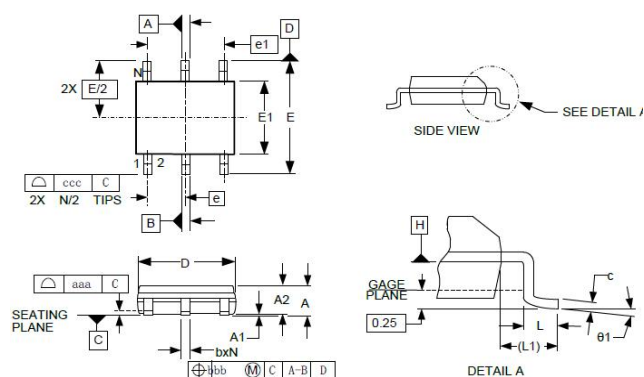
8 kV Contact per IEC61000-4-2

Soldering Parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C

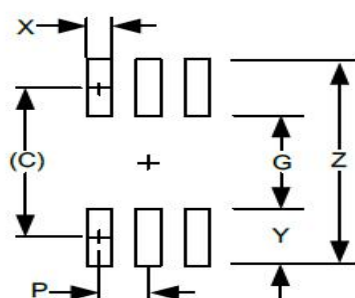


Package Mechanical Data



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	-	1.45	.035	-	.057
A1	0.00	-	0.15	.000	-	.006
A2	0.90	1.25	1.30	.035	.049	.051
b	0.35	-	0.50	.010	-	.020
c	0.08	-	0.20	.003	-	.007
D	2.80	2.90	3.00	.110	.114	.122
E	1.50	1.625	1.75	.060	.063	.069
E1	2.80 BSC			.110 BSC		
e	0.95 BSC			.037BSC		
e1	1.90BSC			.075BSC		
L	0.35	0.45	0.60	.013	.018	.024
L1	(0.60)			(.024)		
θ	0°	-	8°	0°	-	8°
N	6			6		
aaa	0.10			.004		
bbb	0.20			.008		
ccc	0.20			.008		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	(2.50)	(.098)
G	1.40	.055
P	0.95	.037
X	0.60	.024
Y	1.10	.043
Z	3.6	.141