

## Ultra Low Capacitance ESD Protection Array

### DESCRIPTION

The GSRV05-4 has a low capacitance of 0.4pF maximum and operates with virtually no insertion loss to 1GHz. This makes the device ideal for protection of high-speed data lines such as USB 2.0, Firewire, DVI, and gigabit Ethernet interfaces. The low capacitance array configuration allows the user to protect four high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges. They may be used to meet the ESD immunity requirements of IEC61000-4-2, Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge).

This device has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and lightning.

### ORDERING INFORMATION

- ✧ Device: GSRV05-4
- ✧ Package: SOT-23-6L
- ✧ Marking: V05
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

### FEATURES

- ✧ Protects four I/O lines and one Vcc line
- ✧ Low capacitance
- ✧ Working voltages : 5V
- ✧ Low leakage current
- ✧ Low capacitance for high-speed interfaces
- ✧ No insertion loss to 2.0GHz
- ✧ Response Time is  $< 1\text{ ns}$
- ✧ Solid-state silicon avalanche technology
- ✧ ROHS compliant

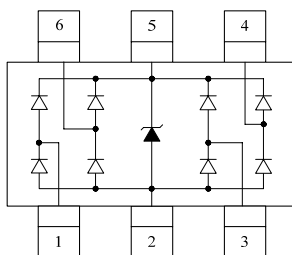
### MACHANICAL DATA

- ✧ SOT-23-6L package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:  $260^{\circ}\text{C}/10\text{s}$
- ✧ Reel size: 7 inch

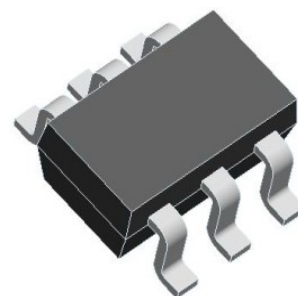
### APPLICATIONS

- ✧ Digital Visual Interface (DVI)
- ✧ USB 1.1/2.0/OTG
- ✧ IEEE 1394 Firewire Ports
- ✧ Notebooks & Handhelds
- ✧ Projection TV & Monitors
- ✧ Set-top box
- ✧ Flat Panel Displays
- ✧ PCI Express

### PIN CONFIGURATION



### PACKAGE OUTLINE



### ABSOLUTE MAXIMUM RATING

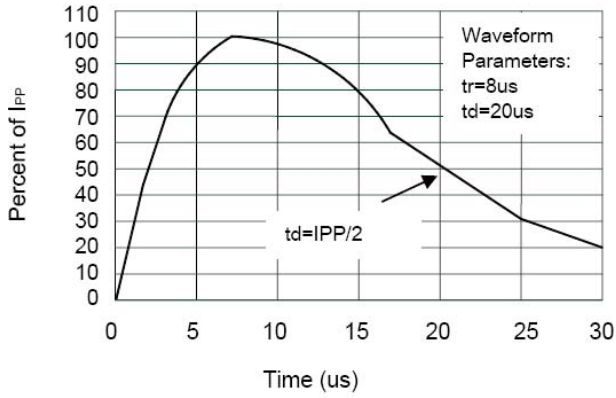
Symbol	Parameter	Value	Units
$P_{PK}$	Peak Pulse Power (8/20 $\mu$ s)	150	W
$I_{PP}$	Peak Pulse Current (8/20 $\mu$ s)	5	A
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 15$ $\pm 8$	kV
$T_{OPT}$	Operating Temperature	-55/+150	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C

### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}$ C)

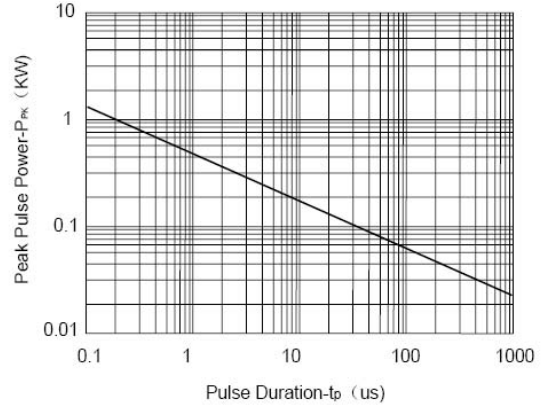
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage	Any I/O pin to GND			5.0	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1mA$ Any I/O pin to GND	6.0			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 5V$ Any I/O pin to GND			1	$\mu$ A
$V_F$	Diode Forward Voltage	$I_F = 15mA$			1.2	V
$V_{C1}$	Clamping Voltage 1	$I_{PP} = 1A, t_p = 8/20\mu s$ Any I/O pin to GND			15	V
$V_{C2}$	Clamping Voltage 2	$I_{PP} = 5A, t_p = 8/20\mu s$ Any I/O pin to GND			28	V
$C_{J1}$	Junction Capacitance 1	$V_R = 0V, f = 1MHz$ Between I/O pins			0.4	pF
$C_{J2}$	Junction Capacitance 2	$V_R = 0V, f = 1MHz$ Any I/O pin to GND			0.8	pF

Note: I/O pins are pin 1,3,4,6.

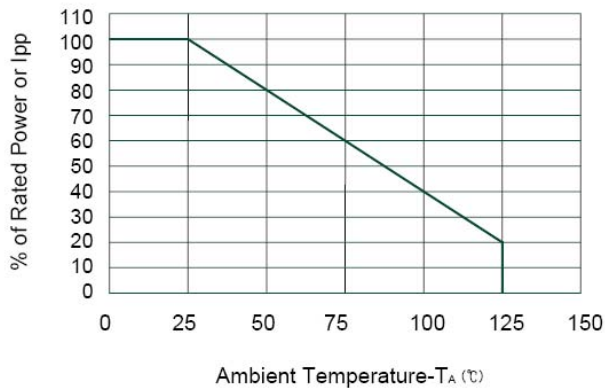
## ELECTRICAL CHARACTERISTICS CURVE



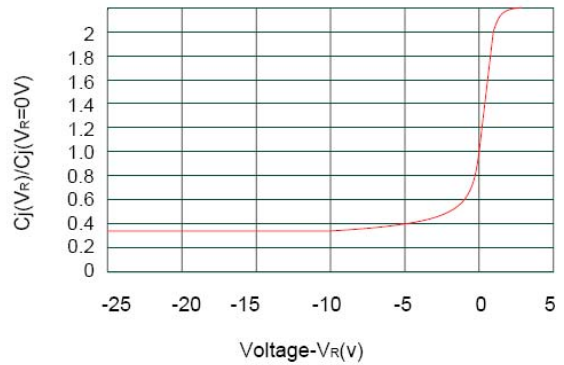
**Pulse Waveform**



**Non-Repetitive Peak Pulse Power vs. Pulse Time**

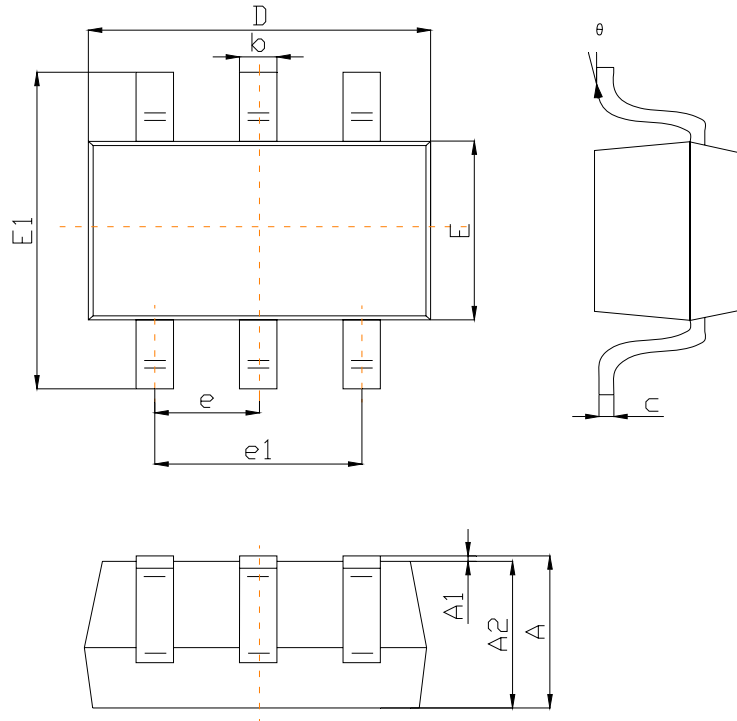


**Power Derating Curve**



**Junction Capacitance vs. Reverse Voltage**

### SOT-23-6L PACKAGE OUTLINE DIMENSIONS



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		0.004
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
	0°	8°	0°	8°