

## ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



**SOT-23-6 PACKAGE**

### DESCRIPTION

The SRV05-4 is a dual USB port protection array that features ultra low capacitance. This device can be used in applications such as video cards, SMART phones, Gigabit Ethernet and other computer interfaces. Designed for ESD protection, the SRV05-4 can clamp the effects of electrical fast transients on the power bus.

The SRV05-4 combines 8 low capacitance steering diodes for up to four individual data or transmission lines and one TVS diode for power bus protection. This device is available in the space-saving SOT-23-6 package configuration, which minimizes lead inductance to prevent overshoot voltages during high ESD current events. The SRV05-4 meets the IEC 61000-4-2, 61000-4-2 and 61000-4-5 requirements.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20 $\mu$ s - Level 2(Line-Gnd) & Level 3(Line-Line0)
- 500 Watts Peak Pulse Power per Line(tp = 8/20 $\mu$ s)
- ESD Protection > 25 kilovolts
- Low Clamping Voltage
- Protection for 4 Lines
- Ultra Low Capacitance: 3.5pF Typical (IO to GND)
- RoHS Compliant
- REACH Compliant

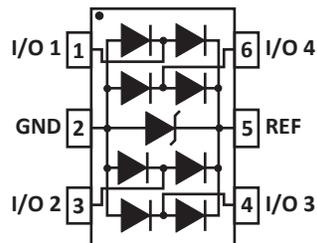
### APPLICATIONS

- Gigabit Ethernet
- SMART Phones
- Portable Electronics
- Video Card Interfaces
- USB 2.0 Interfaces
- DVI Interfaces

### MECHANICAL CHARACTERISTICS

- Molded JEDEC SOT-23-6 Package
- Approximate Weight: 16 milligrams
- Lead-Free Nickel Paladium Gold Plating
- Solder Reflow Temperature - 260-270°C
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

### PIN CONFIGURATION



**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 8/20μs) - See Figure 1	$P_{PP}$	500	Watts
Operating Temperature	$T_L$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
Forward Surge Rating (5ms @ 25°C, $I_F = 10mA$ )	$V_F$	0.5 Min. - 1.2 Max.	Volts
Peak Pulse Current (tp = 8/20μs) - Note 1	$I_{PP}$	30	Amps

**NOTES**

1. Across TVS only - pin 2 to pin 5.

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (Note 1)  $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE (Note 1)  @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1)  @ $I_p = 1A$ $V_C$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1)  @ $I_p = 5A$ $V_C$ VOLTS	MAXIMUM LEAKAGE CURRENT (Note 1)  @ $V_{WM}$ $I_D$ μA
SRV05-4	S5	5.0	6.0	12.0	15.0	5

**@ 25°C Unless Otherwise Specified**

TYPICAL CAPACITANCE I/O to GND	MAXIMUM CAPACITANCE I/O to GND	TYPICAL CAPACITANCE I/O to I/O	MAXIMUM CAPACITANCE I/O to I/O
@0V, 1MHz $C_{J(SD)}$ pF	@0V, 1MHz $C_{J(SD)}$ pF	@0V, 1MHz $C_{J(SD)}$ pF	@0V, 1MHz $C_{J(SD)}$ pF
3.5	5.0	2.5	4.0

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

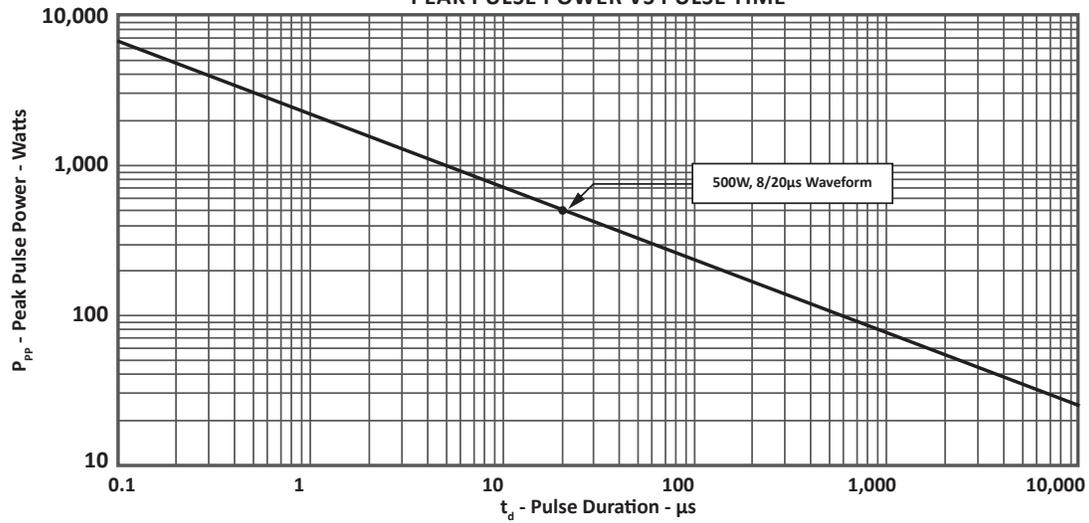
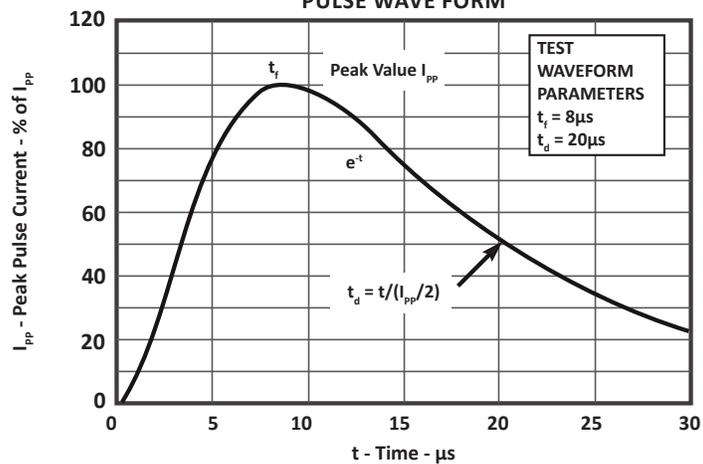
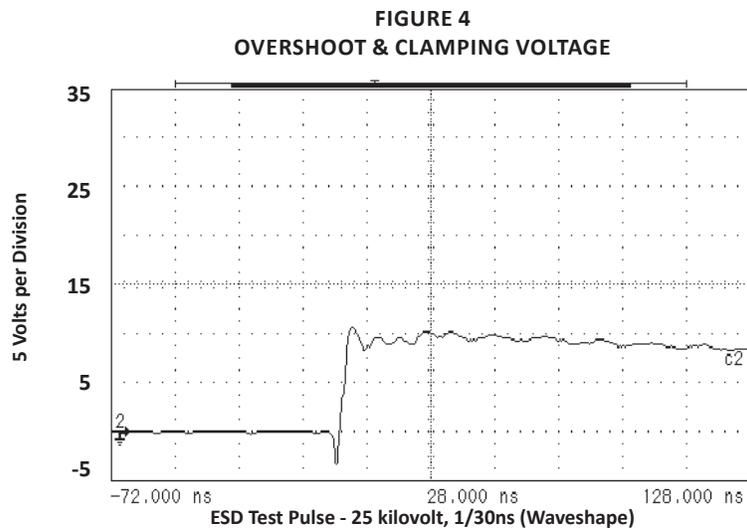
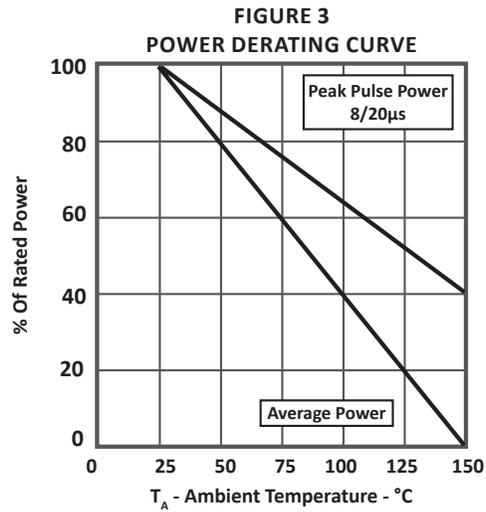


FIGURE 2  
PULSE WAVE FORM

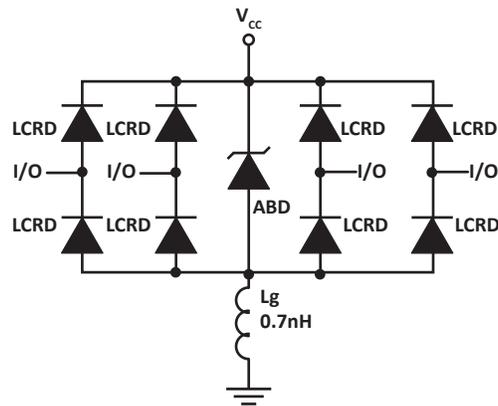


## TYPICAL DEVICE CHARACTERISTICS



## SPICE MODEL

FIGURE 1  
SPICE MODEL



LCABD - Low Capacitance Avalanche Breakdown Diode (TVS)

LCRD: Low Capacitance Rectifier Diode

Lg - Lead Inductance

TABLE 1 - SPICE PARAMETERS

PARAMETER	UNIT	ABD(TVS)	LCRD
BV	V	6.0	200
IBV	$\mu\text{A}$	1	0.01
$C_{jo}$	pF	230	3
$I_s$	A	1E-11	1E-13
Vj	V	0.6	0.6
M	-	0.33	0.33
N	-	1	1
$R_s$	Ohms	0.014	0.31
TT	s	1E-9	1E-9
EG	eV	1.11	1.11

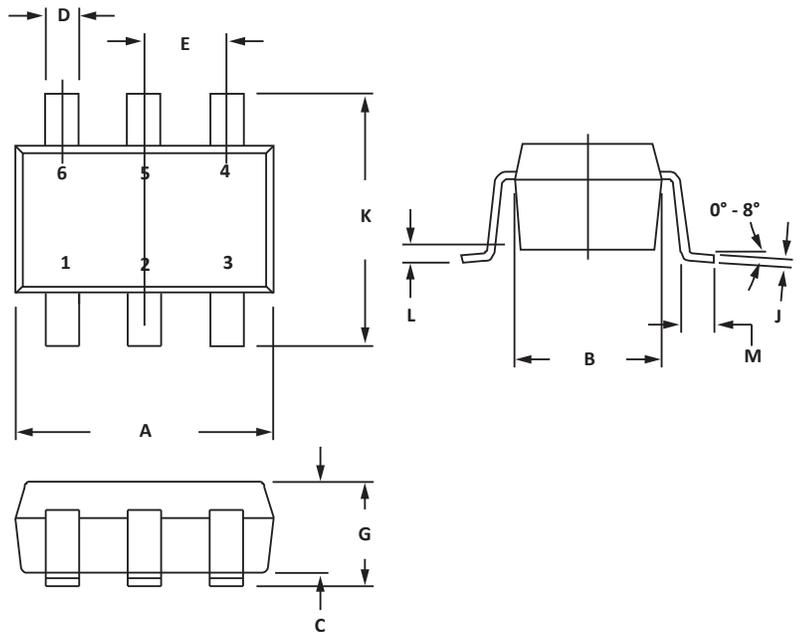
## SOT-23-6 PACKAGE INFORMATION

### OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.05	0.110	0.120
B	1.50	1.75	0.059	0.070
C	0.90	1.30	0.036	0.051
D	0.30	0.40	0.012	0.016
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

#### NOTES

- Controlling dimension: inches.
- Dimensioning and tolerances per ANSI Y14.5M, 1985.
- Dimensions are exclusive of mold flash and metal burrs.

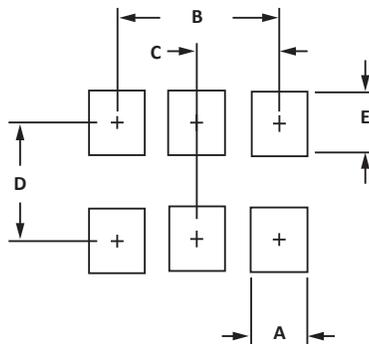


### PAD LAYOUT DIMENSIONS

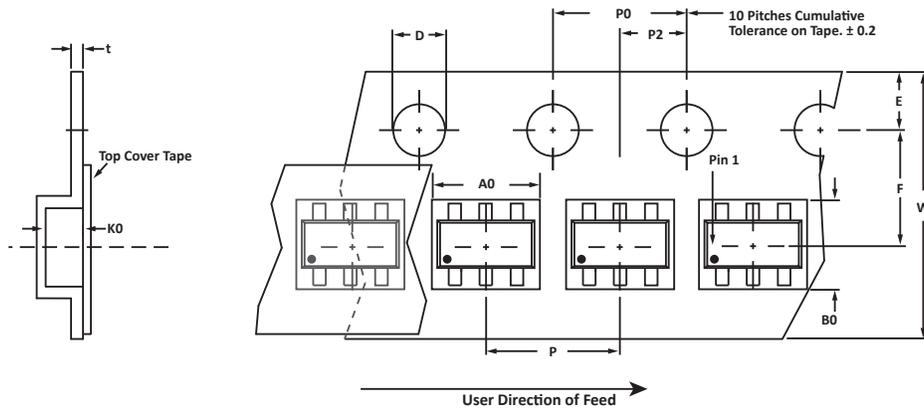
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

#### NOTES

- Controlling dimension: inches.



## TAPE AND REEL



### SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	3.20 ± 0.10	3.20 ± 0.10	1.65 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

#### NOTES

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T7 = 7" Reel - 3,000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2) and pin one defined by dot on package.

Package outline, pad layout and tape specifications per document number 06013.R5 2/11

### ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
SRV05-4	-P	-T7	3,000	7"	n/a

This device is only available in a Lead-Free configuration.

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 20 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers high performance interface and linear products. They include analog switches; multiplexers; LED drivers; LED wafer die for ESD protection; audio control ICs; RF and related high frequency products.

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