# **ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY**



#### DESCRIPTION

The SRV05-4-A 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-A can clamp the effects of electrical fast transients on the power bus.

The SRV05-4-A 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. SRV05-4-A meets the IEC 61000-4-2, 61000-4-2 and 61000-4-5 requirements with ESD measured at ±30kV contact and air discharge.

#### **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): 12A, 8/20μs Level 2(Line-Gnd) & Level 3(Line-Line0
- 250 Watts Peak Pulse Power per Line(tp = 8/20µs)
- ESD Protection > 25 kilovolts
- · Low Clamping Voltage
- Protection for 4 Lines
- Ultra Low Capacitance (Typical): 3.0pF I/O to GND, 1.5pF I/O to I/O
- RoHS Compliant
- REACH Compliant

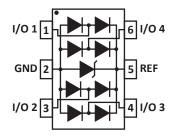
## **MECHANICAL CHARACTERISTICS**

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

# **APPLICATIONS**

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

## **PIN CONFIGURATION**



# **TYPICAL DEVICE CHARACTERISTICS**

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified								
PARAMETER SYMBOL VALUE								
Peak Pulse Power (tp = 8/20μs) - See Figure 1	P <sub>pp</sub>	250	Watts					
Operating Temperature	T <sub>L</sub>	-55 to 125	°C					
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C					
Forward Surge Rating (5ms @ 25°C, I <sub>F</sub> = 10mA)	V <sub>F</sub>	0.5 Min 1.2 Max.	Volts					
Peak Pulse Current (tp = 8/20μs) - Note 1	I <sub>PP</sub>	12	Amps					

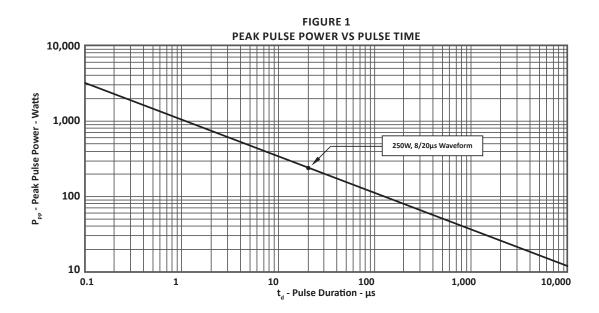
#### **NOTES**

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

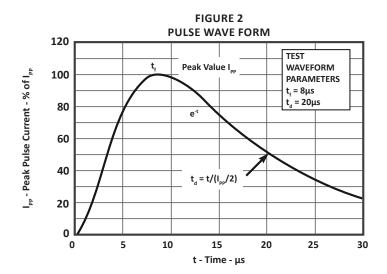
	ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified											
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (Note 1)  V WM VOLTS	MINIMUM BREAKDOWN VOLTAGE (Note 1)  @ 1mA V(BR) VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ I <sub>p</sub> = 1A V <sub>c</sub> VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ I <sub>p</sub> = 5A V <sub>c</sub> VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ I <sub>p</sub> = 12A V <sub>c</sub> VOLTS	MAXIMUM LEAKAGE CURRENT (Note 1) @V <sub>wm</sub> Ι <sub>D</sub> μΑ	TYPICAL CAPACITANCE (I/O - GND)  @0V, 1MHz C pF	TYPICAL CAPACITANCE (I/O - I/O)  @0V, 1MHz C pF			
SRV05-4-A	S5A	5.0	6.0	12.5	17.5	21.0	1.0	3.0	1.5			

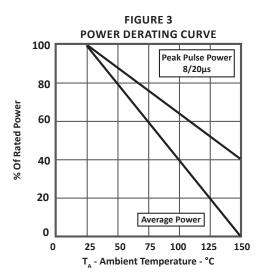
## NOTES

1. Measured from I/O pin to ground.



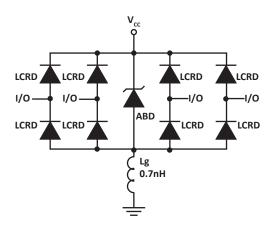
# TYPICAL DEVICE CHARACTERISTICS





# **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	μΑ	1	0.01				
C <sub>jo</sub>	pF	230	3				
I <sub>s</sub>	А	1E-11	1E-13				
Vj	V	0.6	0.6				
М	-	0.33	0.33				
N	-	1	1				
R <sub>s</sub>	Ohms	0.014	0.31				
TT	S	1E-9	1E-9				
EG	eV	1.11	1.11				



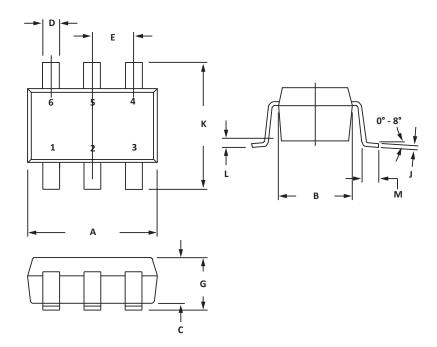
# PROTEK DEVICES Only One Name Means ProTek Tion\*

# **SOT-23-6 PACKAGE INFORMATION**

	OUTLINE DIMENSIONS									
DIM	MILLIN	IETERS	INCHES							
DIIVI	MIN	MAX	MIN	MAX						
Α	2.80	3.05	0.110	0.120						
В	1.50	1.75	0.059	0.070						
С	0.90	1.30	0.036	0.051						
D	0.30	0.40	0.012	0.016						
Е	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						
К	2.60	3.00	0.102	0.118						
L	0.0	0.15	0.0	0.006						
М	0.30	0.60	0.012	0.024						

## NOTES

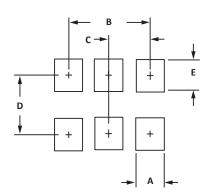
- 1. Controlling dimension: inches.
- 2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
- 3. Dimensions are exclusive of mold flash and metal burrs.



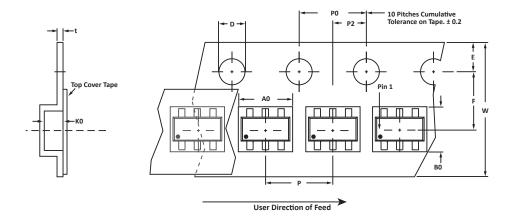
PAD LAYOUT DIMENSIONS							
DIM	MILLIMETERS	INCHES					
DIIVI	NOMINAL	NOMINAL					
А	0.70	0.028					
В	1.90	0.074					
С	0.95	0.037					
D	2.40	0.094					
E	1.00	0.039					

#### NOTES

1. Controlling dimension: inches.



# **TAPE AND REEL**



SPECIFICATIONS												
REEL DIA.	TAPE WIDTH	A0	В0	КО	D	E	F	w	P0	P2	Р	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.

ORDERING INFORMATION								
BASE PART NUMBER LEADFREE SUFFIX TAPE SUFFIX QTY/REEL REEL SIZE TUBE QTY								
SRV05-4-A	N/A	-T7	3,000	7"	N/A			
This device is only available in a Lead-Free configuration.								



## COMPANY INFORMATION

#### **COMPANY PROFILE**

In business more than 25 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 LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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