ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



DESCRIPTION

The SRV3.3-4 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 SRV3.3-4 can clamp the effects of electrical fast transients on the power bus.

The SRV3.3-4 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 DFN-10 package configuration, which minimizes lead inductance to prevent overshoot voltages during high ESD current events. The SRV3.3-4 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, 8/20μs Level 2(Line-Gnd) & Level 3(Line-Line0
- 800 Watts Peak Pulse Power per Line(tp = 8/20µs)
- ESD Protection > 25 kilovolts
- · Low Clamping Voltage
- Protection for 4 Lines
- Ultra Low Capacitance: 3.5pF Typical
- RoHS Compliant
- REACH Compliant

MECHANICAL CHARACTERISTICS

- Molded JEDEC DFN-10 Package
- Approximate Weight: 7 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:

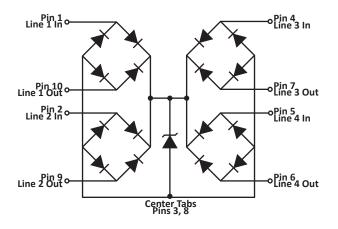
Pure-Tin - Sn, 100: 260-270°C

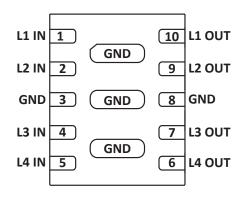
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

APPLICATIONS

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

CIRCUIT DIAGRAM AND PIN CONFIGURATION





MAXIMUM RATINGS @ 25°C Unless Otherwise Specified							
PARAMETER	SYMBOL	VALUE	UNITS				
Peak Pulse Power (tp = $8/20\mu$ s) - See Figure 1	P _{pp}	800	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}	40	Amps				

NOTES

1. Measured with I/O pins tied together.

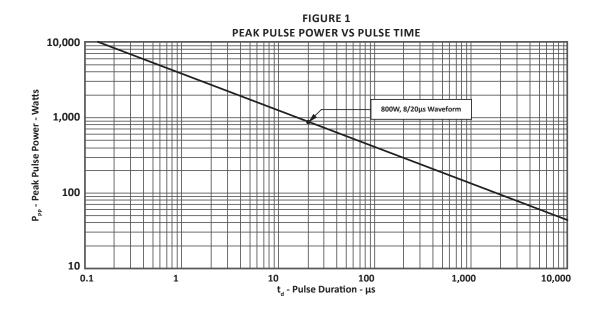
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified										
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (Note 1)	MINIMUM BREAKDOWN VOLTAGE (Note 1)	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1)	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1)	MAXIMUM LEAKAGE CURRENT (Note 1)	TYPICAL CAPACITANCE (Note 1)			
		V _{wM} VOLTS	@ 1mA V _(BR) VOLTS	@ I _p = 1A V _c VOLTS	@ I _p = 15A V _c VOLTS	@V _{wм} Ι _D μΑ	@0V, 1MHz C _{J(SD)} pF			
SRV3.3-4	S 5	3.3	3.9	6.5	12.5	0.5	3.5			

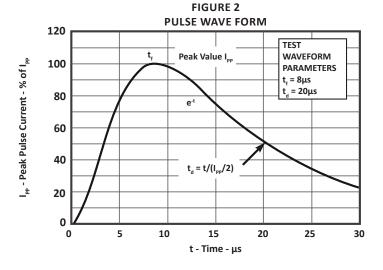
NOTES

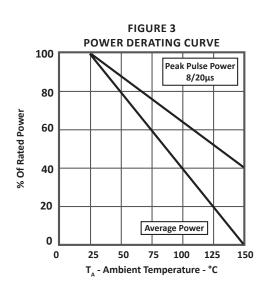
1. Measured from I/O pin to ground.

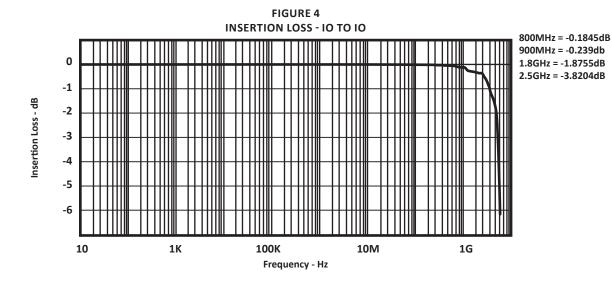
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
MAXIMUM	MUM MAXIMUM TYPICAL						
CLAMPING	CLAMPING CAPACITANC						
VOLTAGE	VOLTAGE I/O TO I/O						
(Fig. 2)	(Fig. 2)						
(Note 1)	(Note 1) (Note 2)						
@ I _p = 25A	A @ I						
·V _c	·V _c	C _{J(SD)}					
VOLTS	VOLTS	pF					
14.0	18.0	1.7					

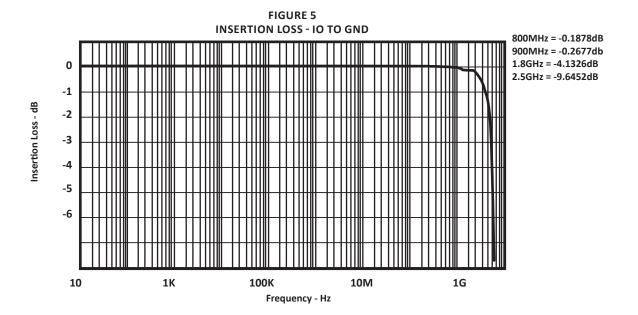
- Measured from I/O pin to ground.
 Measured with I/O pins tied together.

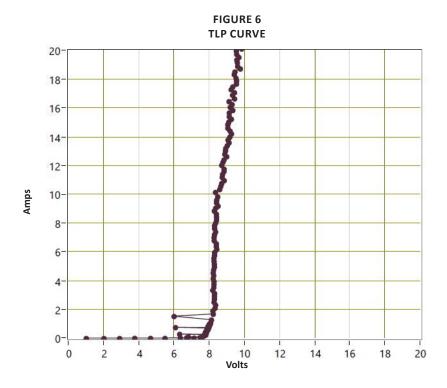












APPLICATION INFORMATION

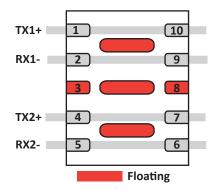


FIGURE 1 - DIFFERENTIAL-MODE PROTECTION

Figure 1 represents, rail-to-rail protection configuration for two differential-mode data line pairs - i.e., 10/100/1000 Base T Ethernet applications. Paralleling two I/O connections will provide superior protection - up to 800 Watts ($8/20\mu s$). Ground points are not necessary and should be left unconnected (floating). Device I/O to I/O off-state capacitance at 0Vdc and 1MHz signal will typically be at 2.8pF.

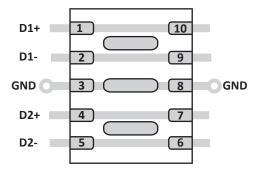


FIGURE 2 - COMMON-MODE PROTECTION

Figure 2 represents, rail-to-rail protection configuration for two common-mode data line pairs - i.e., USB, HDMI, DVI applications. Paralleling two I/O connections will provide superior protection - up to 800 Watts ($8/20\mu s$). Device I/O to ground off-state capacitance at 0Vdc and 1MHz signal will typically be at 5.5pF.

APPLICATION INFORMATION

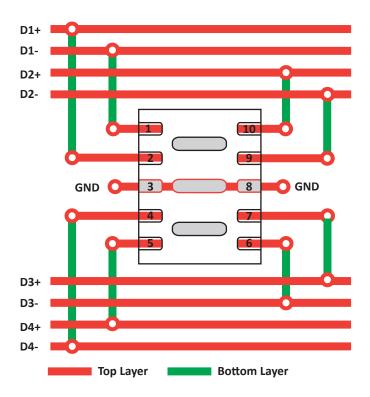


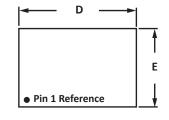
FIGURE 3 - COMMON-MODE PROTECTION

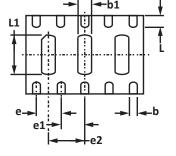
Figure 3 represents, protection configuration for four common-mode data line pairs - i.e., USB, HDMI, DVI or LVDS applications. Lines are connected through vias on the bottom PCB layer. Using this non-parallel configuration, the device provides superior protection - up to 400 Watts ($8/20\mu s$) - for each I/O. Device I/O to ground off-state capacitance at 0Vdc and 1MHz signal will typically be at 1.5pF.



PACKAGE INFORMATION

OUTLINE DIMENSIONS								
DIM	MILLIN	IETERS	INCHES					
DIIVI	MIN	MAX	MIN	MAX				
А	0.50	0.65	0.020	0.026				
A1	0.00	0.05	0.00	0.002				
A2	0.	15	0.0	006				
b	0.15	0.25	0.006	0.010				
b1	0.25	0.45	0.010	0.018				
D	2.90	3.10	0.114	0.122				
Е	1.90	2.10	0.075	0.083				
е	0.60 BSC 0.024 BSC							
e1	0.65	BSC	0.026 BSC					
e2	0.95	BSC	0.037	7 BSC				
L	0.25	0.35	0.010	0.014				
L1	0.95	1.05	0.037 0.041					

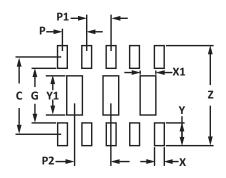




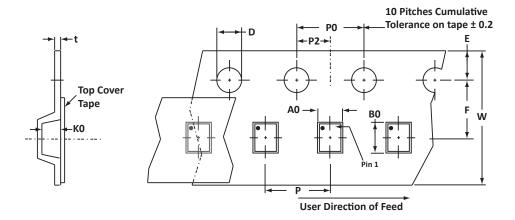
NOTES

- 1. Controlling dimension: millimeters.
- 2. Dimensioning and tolerances per ANSI Y14.M, 1985.

PAD LAYOUT DIMENSIONS								
DIM	MILLIMETERS	INCHES						
ואווט	NOMINAL	NOMINAL						
С	1.98	0.078						
G	1.40	0.056						
Р	0.60	0.024						
P1	0.65	0.026						
P2	0.95	0.037						
Х	0.25	0.010						
X1	0.40	0.016						
Υ	0.58	0.023						
Y1	1.00	0.039						
Z	2.56	0.101						
NOTES 1. Controlling dimension: millimeters.								



TAPE AND REEL



SPECIFICATIONS												
REEL DIA.	TAPE WIDTH	A0	В0	ко	D	E	F	W	P0	P2	Р	tmax
178mm (7")	8mm	2.24 ± 0.05	3.23 ± 0.05	0.93 ± 0.05	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).

ORDERING INFORMATION								
BASE PART NUMBER LEADFREE SUFFIX TAPE SUFFIX QTY/REEL REEL SIZE TU								
SRV3.3-4	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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