

ULTRA LOW CAPACITANCE TVS ARRAY

APPLICATIONS

- ✓ Ethernet - 10/100/1000 Base T
- ✓ Cellular Phones
- ✓ Audio/Video Inputs
- ✓ Handheld Electronics
- ✓ Personal Digital Assistant (PDA)

IEC COMPATIBILITY (EN61000-4)

- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20 μ s - Level 2(Line-Ground) & Level 3(Line-Line)

FEATURES

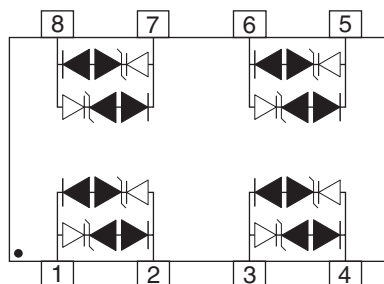
- ✓ 600 Watts Peak Pulse Power per Line ($t_p = 8/20\mu$ s)
- ✓ Provides Protection For Four Line Pairs
- ✓ ESD Protection > 40 kilovolts
- ✓ Low Leakage Current < 1.0 μ A
- ✓ Ultra Low Capacitance: 6pF Typical
- ✓ RoHS Compliant

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SO-8
- ✓ Weight 70 milligrams (Approximate)
- ✓ Available in Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270°C
- ✓ Consult Factory for Leaded Device Availability
- ✓ Flammability Rating UL 94V-0
- ✓ 12mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Marking Code, Logo, Date Code & Pin One Defined By Dot on Top of Package



PIN CONFIGURATION



DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 8/20µs) - See Fig. 1	P _{PP}	600	Watts
Peak Pulse Current (tp = 8/20µs)	I _{PP}	30	Amps
Lead Soldering Temperature	I _{FRM}	260	°C
Operating Temperature	T _L	-55 to 150	°C
Storage Temperature	T _{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (See Note 1) V _{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE (See Note 1) @ 1mA V _(BR) VOLTS	MINIMUM SNAPBACK VOLTAGE (See Note 1) @ I _{SB} = 50mA V _{SB} VOLTS	MAXIMUM CLAMPING VOLTAGE (See Note 1) (See Fig. 2)				MAXIMUM LEAKAGE CURRENT (See Note 1) @ V _{WM} I _D µA	TYPICAL CAPACITANCE (See Note 1) @ 0V, 1MHz C pF
					@ I _{PP} = 2A V _C VOLTS	@ I _{PP} = 5A V _C VOLTS	@ I _{PP} = 24A V _C VOLTS	@ I _{PP} = 30A V _C VOLTS		
SLVU2.8-8	SL8	2.8	3.0	2.8	5.5	8.5	15	17	1.0	6

Note 1: Device measured between pin 1 to 2, pin 3 to 4, pin 5 to 6 and pin 7 to 8.

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

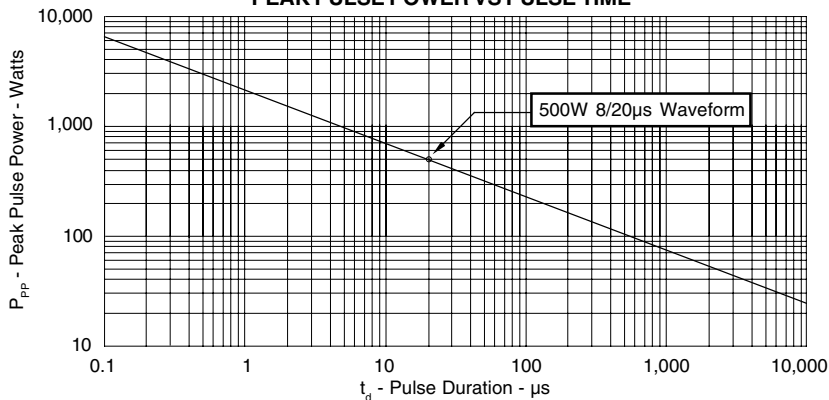
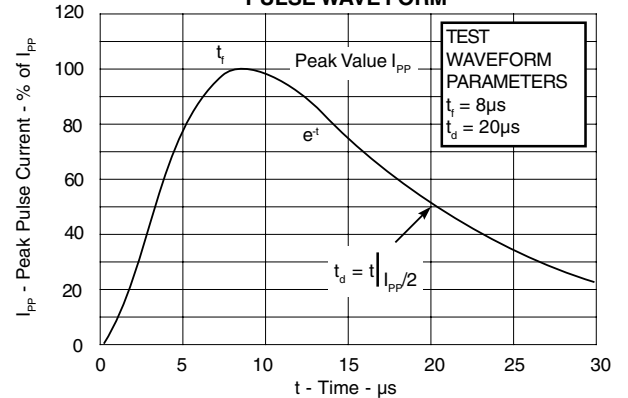
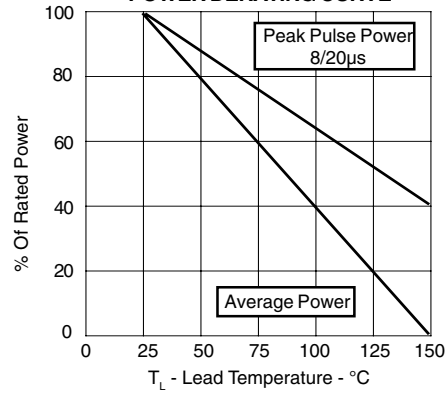


FIGURE 2
PULSE WAVE FORM

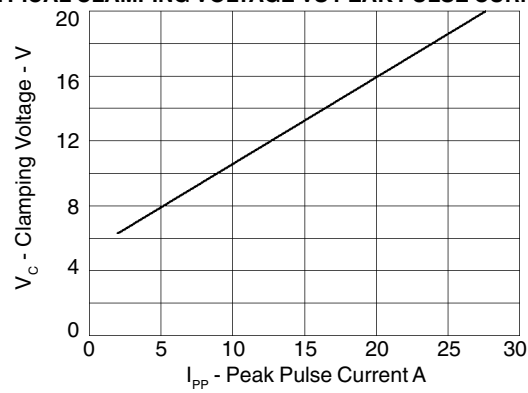


GRAPHS

**FIGURE 3
POWER DERATING CURVE**



**FIGURE 4
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT**



APPLICATION NOTE

Electronic equipment is susceptible to damage caused by Electrostatic Discharge (ESD), Electrical Fast Transients (EFT), and tertiary lightning effects. Knowing that equipment can be damaged, the SLVU2.8-8 was designed to provide the level of protection required to safe guard sensitive equipment. This product can be used in different configurations to provide a level of protection to meet bidirectional requirements either in a common-mode or differential-mode configuration.

BIDIRECTIONAL COMMON-MODE CONFIGURATION (Figure 1)

The SLVU2.8-8 provides up to four lines of protection in a common-mode configuration as depicted in figure 1.

Circuit connectivity is as follows:

- ✓ Line 1 is connected to Pin 1
- ✓ Line 2 is connected to Pin 8
- ✓ Line 3 is connected to Pin 5
- ✓ Line 4 is connected to Pin 4
- ✓ Pins 2, 3, 6 and 7 are connected to ground

BIDIRECTIONAL DIFFERENTIAL-MODE CONFIGURATION (Figure 2)

The SLVU2.8-8 provides up to four line pairs of protection in a differential-mode configuration as depicted in figure 2.

Circuit connectivity is as follows:

- ✓ Line Pair 1 is connected to Pins 1 & 2
- ✓ Line Pair 2 is connected to Pins 3 & 4
- ✓ Line Pair 3 is connected to Pins 7 & 8
- ✓ Line Pair 4 is connected to Pins 5 & 6

CIRCUIT BOARD LAYOUT RECOMMENDATIONS

Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following guidelines are recommended:

- ✓ The protection device should be placed near the input terminals or connectors, the device will divert the transient current immediately before it can be coupled into the nearby traces.
- ✓ The path length between the TVS device and the protected line should be minimized.
- ✓ All conductive loops including power and ground loops should be minimized.
- ✓ The transient current return path to ground should be kept as short as possible to reduce parasitic inductance.
- ✓ Ground planes should be used whenever possible. For multilayer PCBs, use ground vias.

Figure 1. Bidirectional Common-Mode Protection

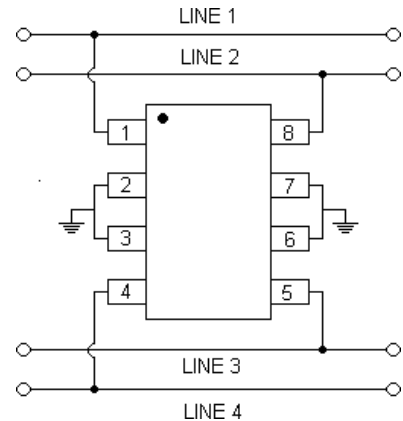
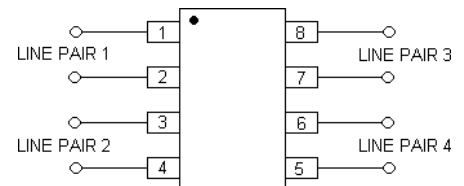


Figure 2. Bidirectional Differential-Mode Protection



SLVU2.8-8

SO-8 PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

MOUNTING PAD

SO-8

PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.250	0.016	0.049
G	1.27 BSC	1.27 BSC	0.05 BSC	0.05 BSC
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

NOTES

- T = Seating Plane and Datum Surface.
- Dimensions "A" and "B" are Datum.
- Dimensions "A" and "B" do not include mold protrusion.
- Maximum mold protrusion is 0.015" (0.380 mm) per side.
- Dimensioning and tolerances per ANSI Y14.5M, 1982.
- Dimensions are exclusive of mold flash and metal burrs.

TAPE & REEL/BULK ORDERING NOMENCLATURE

- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix-T7 = 7 Inch Reel - 1,000 pieces per 12mm tape, i.e. SLVU2.8-8-T7.
- Suffix-T13 = 13 Inch Reel - 2,500 pieces per 12mm tape, i.e., SLVU2.8-8-T13.
- Suffix - LF = Lead-Free, Pure-Tin Plating, i.e., SLVU2.8-8-LF-T7.
- No Suffix = Product Shipped in Tubes of 98 pcs per Tube.

Outline & Dimensions: Rev 1 - 11/01, 06009

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ProTek Devices
 2929 South Fair Lane, Tempe, AZ 85282
 Tel: 602-431-8101 Fax: 602-431-2288
 E-Mail: sales@protekdevices.com
 Web Site: www.protekdevices.com