PROTEK DEVICES
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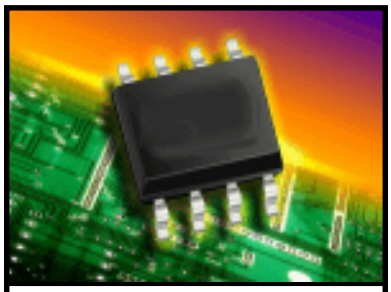
SLVU2.8-4

ULTRA LOW CAPACITANCE TVS ARRAY

APPLICATIONS



SO-8

- ✔ Ethernet 10/100/1000 Base T
- ✔ Cellular Phones
- ✔ Audio/Video Inputs
- ✔ Handheld Electronics
- ✔ Personnal Digital Assistants (PDAs)

IEC COMPATIBILITY (EN61000-4)

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

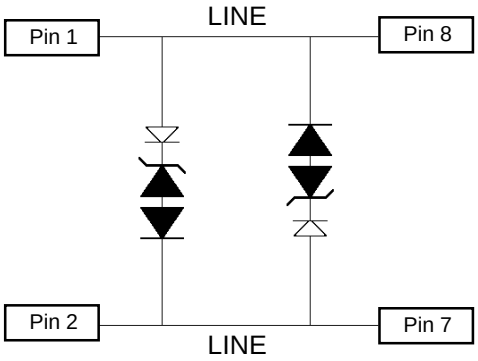
FEATURES

- ✔ 600 Watt Peak Pulse Power per Line(tp=8/20µs)
- ✔ Provides Protection For Two Line Pairs
- ✔ ***LOW STANDBY CURRENT < 1.0µA***
- ✔ ***ULTRA LOW CAPACITANCE 3pF PER DIODE***

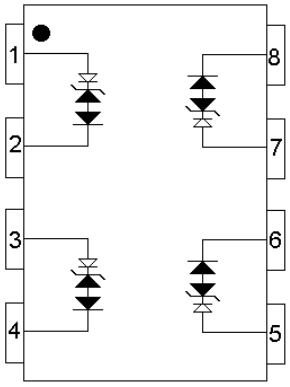
MECHANICAL CHARACTERISTICS

- ✔ Molded JEDEC SOIC-8
- ✔ Weight 66 Milligrams (Approximate)
- ✔ Flammability Rating UL 94V-0
- ✔ 12mm Tape and Reel Per EIA Standard 481
- ✔ Device Marking: Logo, Marking Code & Pin 1 Marked with DOT , Date Code

CIRCUIT DIAGRAM



PIN CONFIGURATION



DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (t_p = 8/20µs) - See Figure 1	P_{PP}	600	Watts
Peak Pulse Current (t_p = 8/20µs)	I_{PP}	30	Amps
Lead Soldering Temperature	I_{FRM}	260°C (10s)	°C
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified									
PART NUMBER	DEVICE MARKING CODE	RATED STAND-OFF VOLTAGE (See Note 1) V_{WM} VOLTS	MINIMUM PUNCH THROUGH VOLTAGE (See Note 1) @I_{PT} = 2µA V_{PT} VOLTS	MINIMUM SNAPBACK VOLTAGE (See Note 1) @I_{SB} = 50mA V_{SB} VOLTS	MAXIMUM CLAMPING VOLTAGE (See Note 1) (See Fig. 2) @I_P = 2A V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Note 1) (See Fig. 2) @I_P = 5A V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Note 1) (See Fig. 2) @I_P = 30A V_C VOLTS	MAXIMUM LEAKAGE CURRENT (See Note 1) @V_{WM} = 2.8A I_D µA	TYPICAL CAPACITANCE (See Note 1) 0 @ 1MHz C pF
SLVU2.8-4	SL4	2.8	3.0	2.8	6.5	8.5	21	0.1	3

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

GRAPHS

FIGURE 1
Peak Pulse Power vs Pulse Time

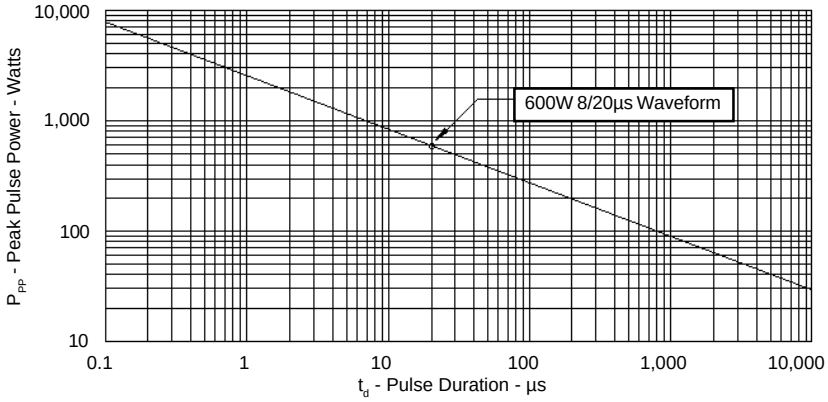


FIGURE 2
PULSE WAVE FORM

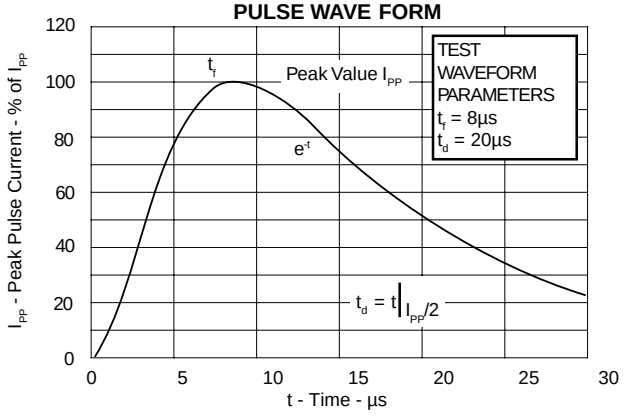


FIGURE 3
POWER DERATING CURVE

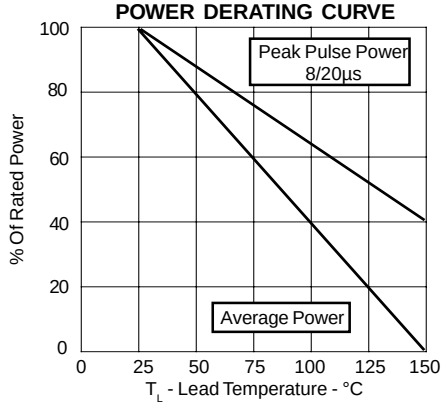
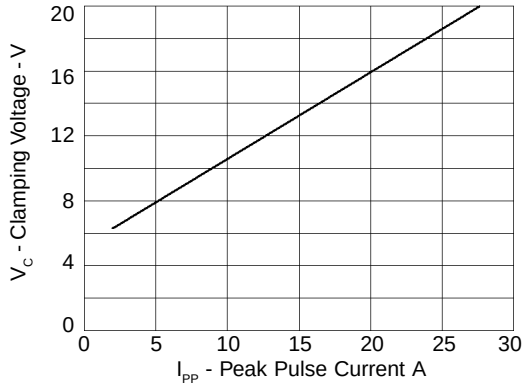


FIGURE 4
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT

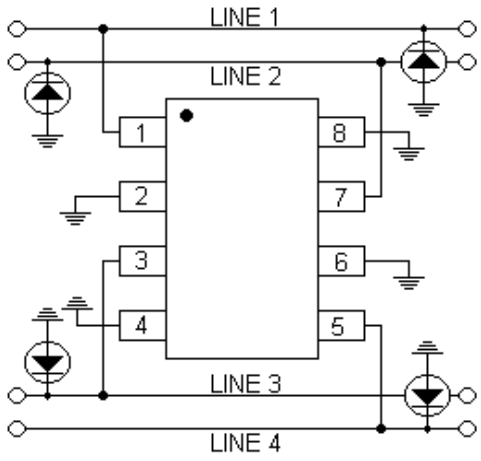


APPLICATION NOTES

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 SLVU2.8-4 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 unidirectional line requirements as well as bidirectional requirements either in a common mode or differential mode configuration.

UNIDIRECTIONAL CONFIGURATION CAPACITANCE 30 pF (Figure 1)

For unidirectional applications, a discrete diode must be added from the line to ground. Four lines can be protected as shown in Figure 1. For Line 1 protection, connect pin 1 to Line 1 and pin 2 to ground. For Line 2 protection, connect pin 7 to Line 2 and pin 8 to ground. For Line 3 protection, connect pin 3 to Line 3 and pin 4 to ground. For Line 4 protection, connect pin 5 to Line 4 and pin 6 to ground. When a positive voltage spike appears on the line the silicon TVS will be reversed bias taking the electrical threat from the line to ground and clamping the voltage at the rated V_C. If a negative transient occurs the threat is clamped to less than 1 volt, due to the forward voltage drop of the external diode.

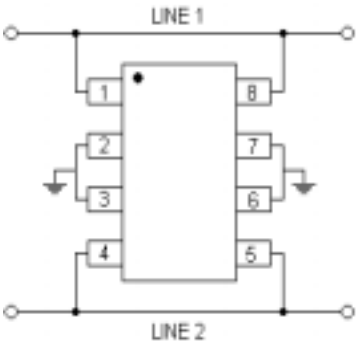


UNIDIRECTIONAL
Figure 1

External diode to ground is a low capacitance diode of less than 10pF

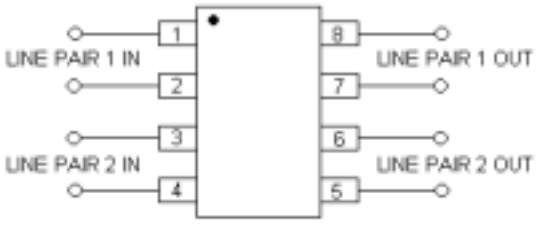
APPLICATION NOTES (CONTINUED)

BIDIRECTIONAL CONFIGURATION CAPACITANCE 6 pF (Figure 2)
For bidirectional common mode protection, two circuits are connected in an opposing polarity configuration. Line 1 requires protection of two opposing polarity circuits. This is accomplished by connecting pins 1 and 8 to Line 1 and pins 2 and 7 to ground in addition Line 2 also requires two opposing polarity circuits, which is accomplished by connecting pins 4 and 5 to Line 2 and pins 3 and 6 to ground. In this configuration, both positive and negative transients are effectively taken to ground. The line voltage will be clamped at the rated clamping voltage of the device.



BIDIRECTIONAL
Common Mode
Figure 2

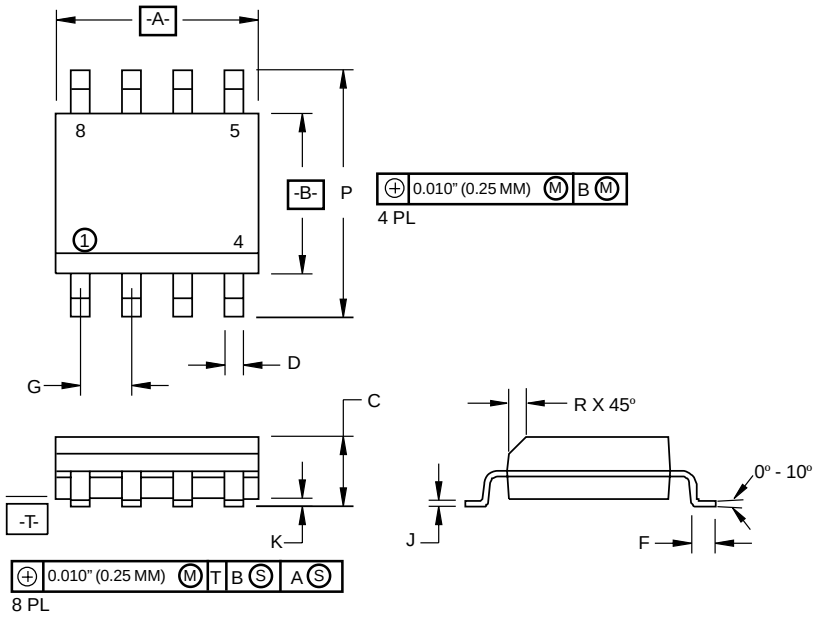
BIDIRECTIONAL DIFFERENTIAL MODE CONFIGURATION 6 pF (Figure 3)
Bidirectional differential mode protection requires two devices connected in an opposing polarity configuration between the line pairs. For protection of two line pairs connect pins 1, 8 and 2, 7 across Line pair 1 and pins 3, 6 and 4, 5 across Line pair 2. The loading capacitance of this configuration is 6 pF per line.



BIDIRECTIONAL
Differential Mode
Figure 3

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

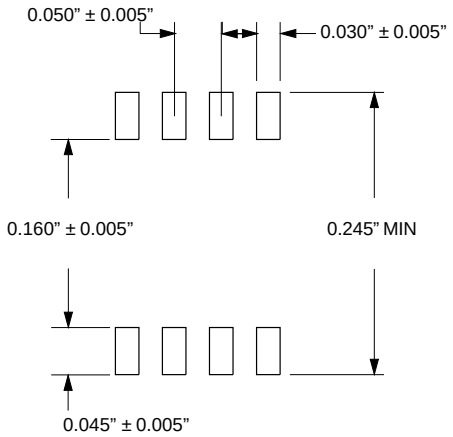


SO-8

PACKAGE DIMENSIONS

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES 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

MOUNTING PAD



NOTES:

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

06009 Rev 1 -11/01

PART NUMBER SUFFIXES USED FOR TAPE & REEL/BULK ORDERING:

Surface mount product is taped and reeled in accordance with EIA-481.
Suffix-T7 = 7 Inch Reel - 1,000 pieces per reel i.e.: SLVU2.8-4-T7
Suffix-T13 = 13 Inch Reel - 2,500 pieces per reel i.e: SLVU2.8-4-T13
No Suffix = Product Shipped in Tubes of 98 pcs per Tube

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