PROTEK DEVICES
. . . engineered solutions for the transient environment™

SLVU2.8

ULTRA LOW CAPACITANCE SUBMINATURE TVS ARRAY

APPLICATIONS

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

SOT-23

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 1(Line-Gnd) & Level 2(Line-Line)

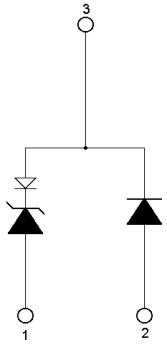
FEATURES

✔ 600 Watt Peak Pulse Power per Line(t_p=8/20µs)
✔ ESD Protection >25 kilovolts
✔ Protects 1 Unidirectional Line
✔ ***LOW STANDBY CURRENT < 1.0µA***
✔ ***LOW CAPACITANCE 2.5pF PER DIODE***

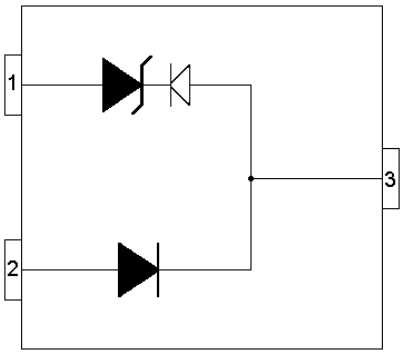
MECHANICAL CHARACTERISTICS

✔ Molded JEDEC SOT-23
✔ Weight 14 Milligrams (Approximate)
✔ Flammability Rating UL 94V-0
✔ 8 mm Tape and Reel Per EIA Standard 481-1-A
✔ Device Marking: Marking Code & Pin One Defined By DOT on Top of Package

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	A
Repetitive Peak Forward Current @ t_p=5µs, F=50kHz Pin 2 to 3	I_{FRM}	700	mA
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 (See Note 1)	DEVICE MARKING CODE	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM PUNCH THROUGH VOLTAGE @ I_{PT} = 2µA V_{PT} VOLTS	MINIMUM SNAP BACK VOLTAGE @ I_{SB} = 50mA V_{SB} VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @I_P = 2A V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @I_P = 5A V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @I_P = 30A V_C VOLTS
SLVU2.8	SLA	2.8	3.0	2.8	3.9	7.0	21.0

Note 1: Device measured from pin 3 to 1.

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
MAXIMUM CLAMPING VOLTAGE Pin 2 to1 (See Fig. 2) @I_P = 5A V_C VOLTS	TYPICAL CLAMPING VOLTAGE Pin 2 to1 (See Fig. 2) @I_P = 24A V_C VOLTS	MAXIMUM LEAKAGE CURRENT Pin 3 to 1 or Pin 2 to 1 @V_{WM} I_D µA	TYPICAL CAPACITANCE Pin 3 to 1 & 2 (Tied Together) 0V @ 1MHz C pF	TYPICAL CAPACITANCE Pin 2 to 1 3 N.C. 0V @ 1MHz C pF	MAXIMUM PEAK REVERSE VOLTAGE Pin 3 to 2 (See Note 1) @I_T = 10µA V_{RRM} VOLTS	MAXIMUM REVERSE LEAKAGE CURRENT Pin 3 to 2 (See Note 1) @V_{WM} = 2.8A I_{DR} µA	MAXIMUM FORWARD VOLTAGE Pin 2 to 3 (See Note 1) @I_F =1A T_P = 120µs V_F VOLTS
8.5	15.0	0.1	20	2.5	40	0.1	2

Note 1: Electrical characteristics for steering diodes.

GRAPHS

FIGURE 1
Peak Pulse Power vs Pulse Time

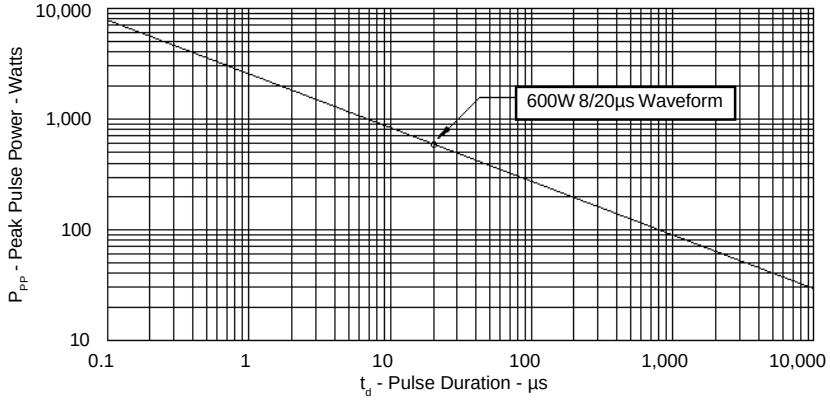


FIGURE 2
PULSE WAVE FORM

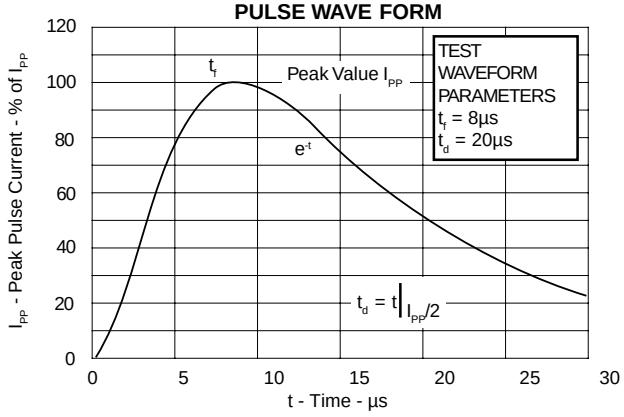


FIGURE 3
POWER DERATING CURVE

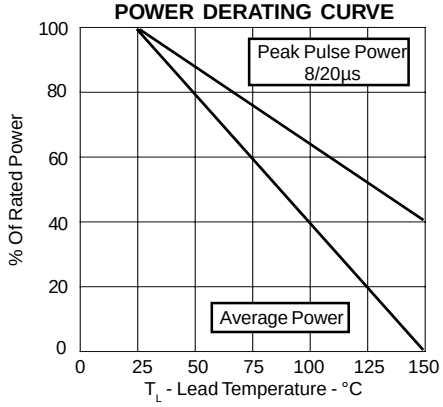
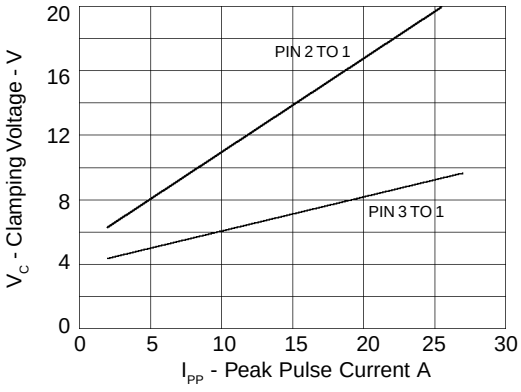


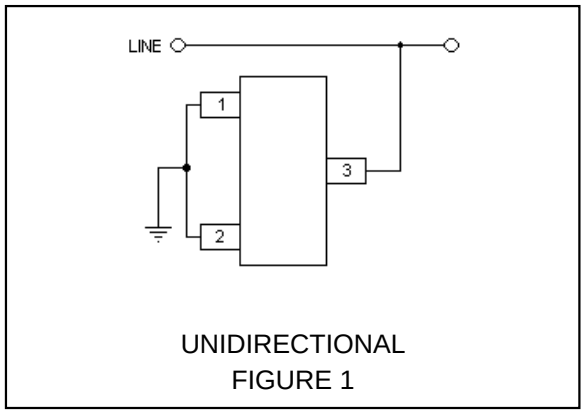
FIGURE 4
Typical Clamping Voltage vs Peak Pulse Current



APPLICATION NOTES

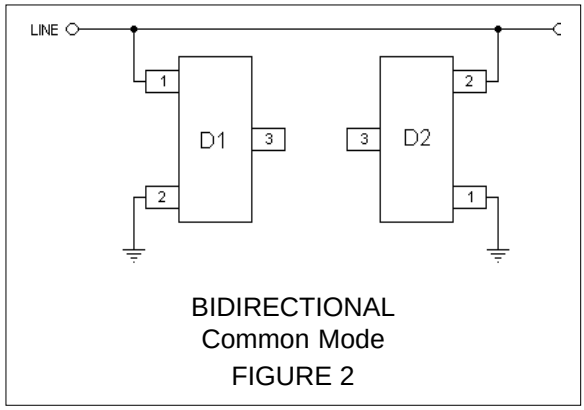
The SLVU2.8 is ideal for providing protection for electronic equipment that is susceptible to damage caused by Electrostatic Discharge (ESD), Electrical Fast Transients (EFT), and tertiary lightning effects. This product is unidirectional and provides either common or differential mode protection.

UNIDIRECTIONAL CONFIGURATION CAPACITANCE 20 pF (Figure 1)
For unidirectional applications pin three is connected to the line and pins 2 and 1 are connected to common ground. When a positive voltage spike appears on the line, the silicon TVS will be reverse biased 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 at the forward voltage drop of the diode that is connected between pins 3 and 2.



UNIDIRECTIONAL
FIGURE 1

BIDIRECTIONAL CONFIGURATION CAPACITANCE 5 pF (Figure 2)
For bidirectional common mode protection, two devices are connected in an opposing polarity configuration. Device D1 is configured with pin 1 to the line and pin 2 to ground while D2 in configured in an opposing configuration of pin 2 to the line and pin 1 to ground. If a positive transient is present on the line, D2 will be reverse biased, taking the threat to ground. If a negative transient is present, D1 is reversed bias, taking the threat to ground. The voltage will be clamped at the rated clamping voltage of the device.

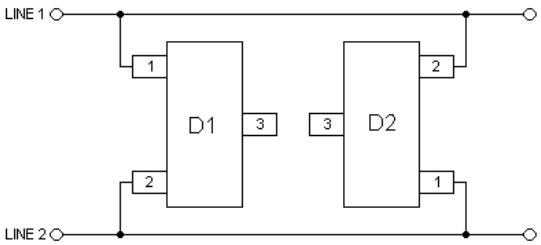


BIDIRECTIONAL
Common Mode
FIGURE 2

APPLICATION NOTES (CONTINUED)

BIDIRECTIONAL DIFFERENTIAL MODE CONFIGURATION 5 pF (Figure 3)

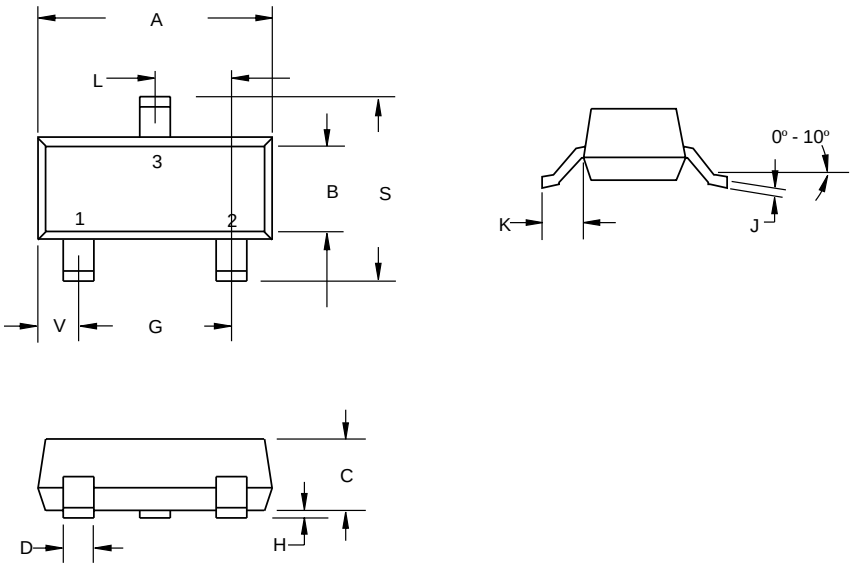
Bidirectional differential mode protection requires two devices connected in an anti parallel configuration. Device D1 pin 1 is connected to line 1 and pin 2 is connected to line 2. Device D2 is connected in the opposite direction pin 1 to line 2 and pin 2 to line 1. During negative transients, D1 will conduct from pin 2 to pin 1. During negative transients, D2 will conduct from pin 2 to pin 1, thus clamping at the specific voltage as defined. The loading capacitance of this configuration is 5 pF.



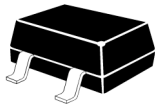
BIDIRECTIONAL
Differential Mode
Figure 3

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE



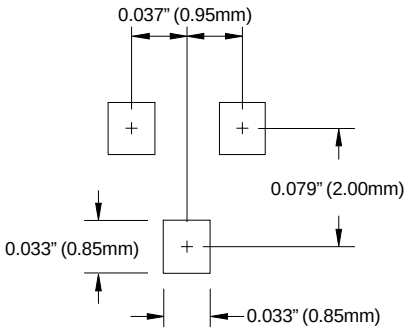
SOT-23



PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.11	0.0350	0.0440
D	0.37	0.50	0.0150	0.0200
G	1.78	2.04	0.0701	0.0807
H	0.013	0.100	0.0005	0.0040
J	0.085	0.177	0.0034	0.0070
K	0.45	0.60	0.0180	0.0236
L	0.89	1.02	0.0350	0.0401
S	2.10	2.50	0.0830	0.0984
V	0.45	0.60	0.0177	0.0236

MOUNTING PAD



NOTES:
1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.

06012 Rev 1 - 11/01

TAPE & REEL PACKAGING:
Surface mount product is taped and reeled in accordance with EIA-481, reel quantites and sizes are as follows:
7 Inch Reel - 3,000 pieces per reel; 13 Inch Reel - Not Available

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