

STEERING DIODE / TVS ARRAY COMBO

APPLICATIONS

- ✓ Ethernet - 10/100 Base T
- ✓ FireWire
- ✓ Wireless Communications
- ✓ USB Interface

IEC COMPATIBILITY (EN61000-4)

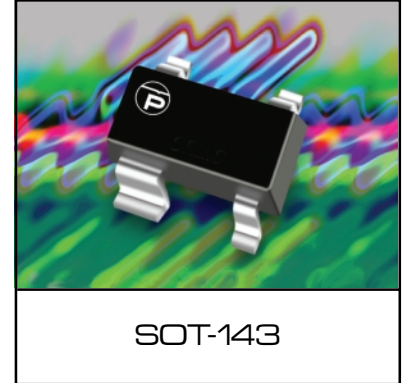
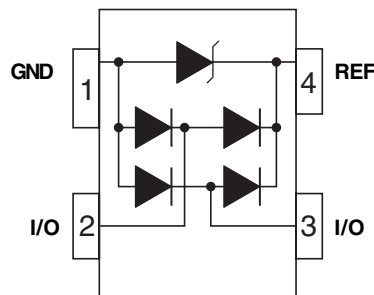
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20 μ s - Level 2(Line-Gnd) & Level 3(Line-Line)

FEATURES

- ✓ 500 Watts Peak Power per Line (tp = 8/20 μ s)
- ✓ ESD Protection > 25 kilovolts
- ✓ Low Clamping Voltage
- ✓ Unidirectional Configuration
- ✓ **PROTECTS 2 I/O PORTS & POWER SUPPLY**
- ✓ **LOW CAPACITANCE: 10pF**

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SO-143
- ✓ Weight 35 milligrams (Approximate)
- ✓ Flammability rating UL 94V-0
- ✓ 8mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Marking Code

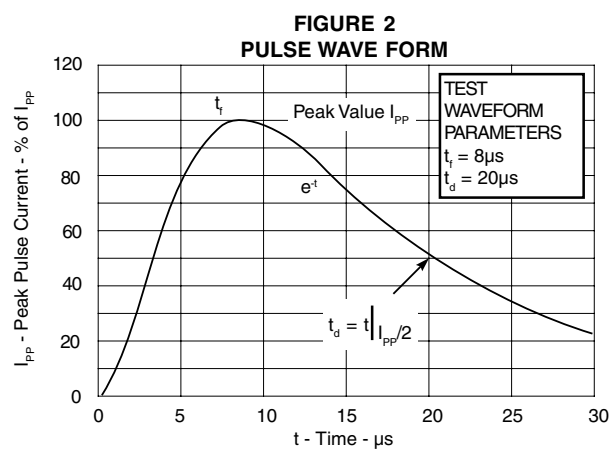
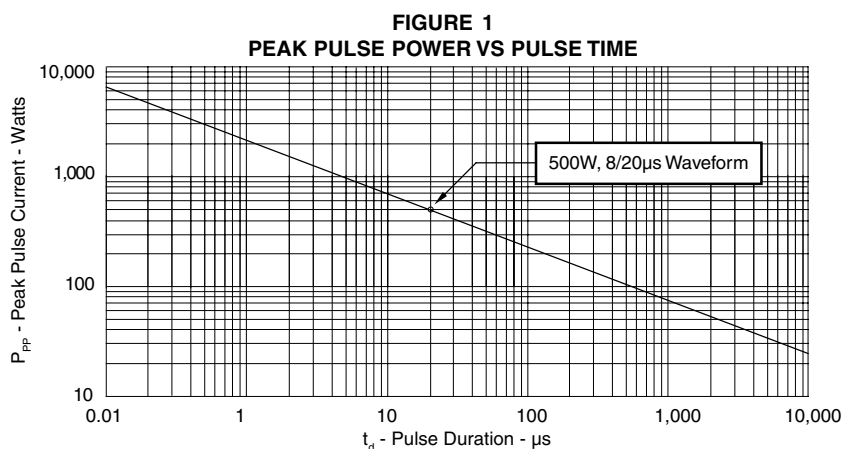
**PIN CONFIGURATION**

DEVICE CHARACTERISTICS

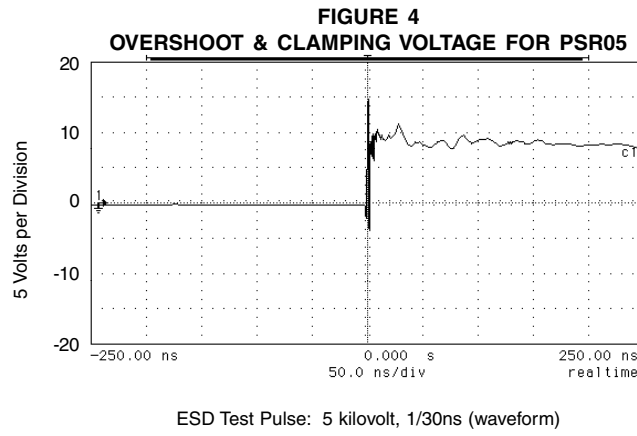
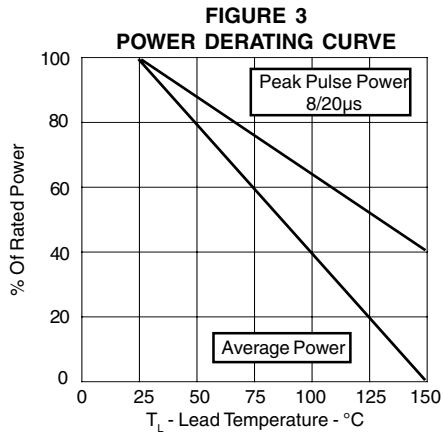
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	500	Watts
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C
Peak Forward Voltage - $I_F = 1A, 8/20\mu s$	V_F	1.5	Volts

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM CAPACITANCE (See Note 1) (See Fig. 5) (Per Data Line)
		V_{WM} VOLTS	@ 1A $V_{(BR)}$ VOLTS	@ $I_P = 1A$ V_C VOLTS	8/20 μs $V_C @ I_{PP}$ VOLTS	@ V_{WM} I_D μA	@ 0V, 1 MHz $C_{j(SD)}$ pF
PSR05	5A	5.0	6.0	9.8	20.0V @ 28.0A	5.0	10

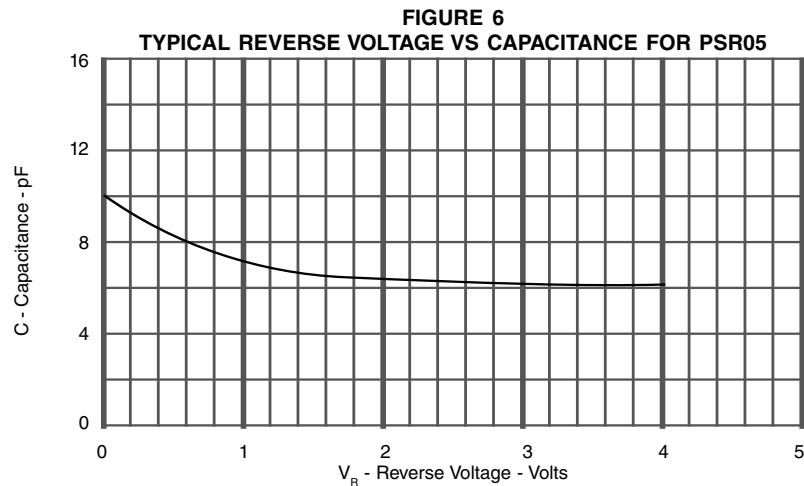
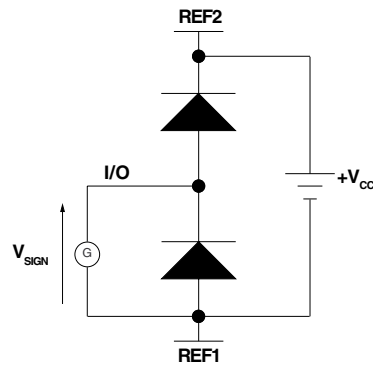
Note 1: As shown in Figure 5, REF 1 is connected to ground, REF 2 is connected to + V_{CC} and input applies to $V_{CC} = 5V, V_{sign} = 30mV, F = 1MHz$.



GRAPHS



**FIGURE 5
INPUT CAPACITANCE CIRCUIT**



APPLICATION NOTE

The PSR05 is a low capacitance, bidirectional TVS array that is designed to protect I/O or high speed data lines from the damaging effects of ESD or EFT. This product series has a surge capability of 500 Watts P_{PP} per line for an 8/20 μ s waveform and offers ESD protection > 25kV.

COMMON-MODE CONFIGURATION (Figure 1)

Ideal for use in USB applications, two PSR05 devices provides up to two(2) lines of protection(per device) in a common-mode configuration as depicted in Figure 1.

Circuit connectivity is as follows:

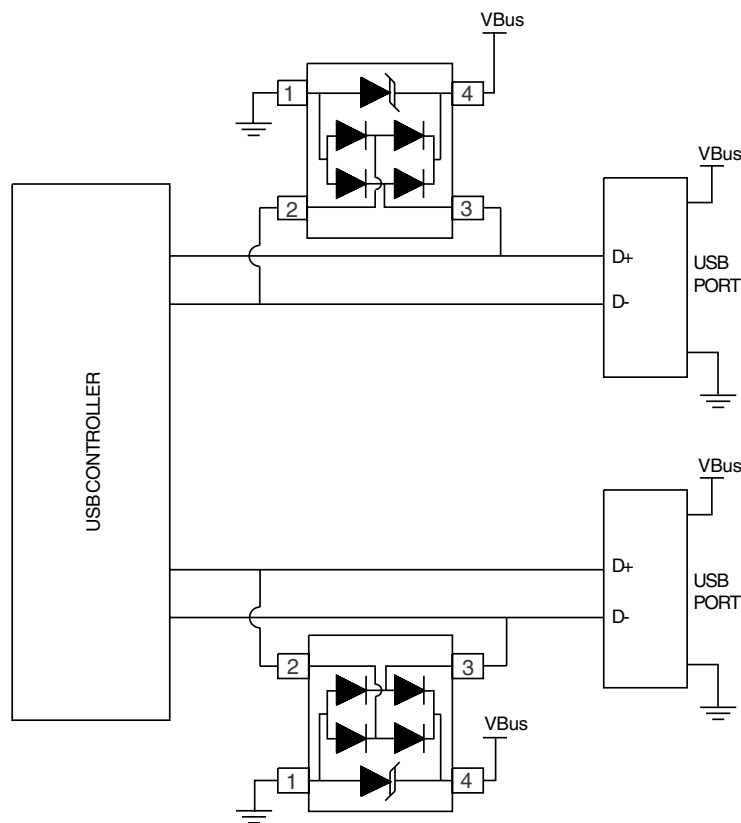
- ✓ Pins 2 and 3 are connected to the datalines.
- ✓ Pin 1 is connected to ground.
- ✓ Pin 4 is connected to the databus.

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. Typical Common-Mode USB Protection



PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

SOT-143

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.0120
B	1.20	1.39	0.047	0.055
C	0.84	1.14	0.033	0.045
D	0.39	0.50	0.015	0.020
F	0.79	0.93	0.031	0.037
G	1.78	2.03	0.070	0.080
H	0.013	0.10	0.0005	0.004
J	0.08	0.15	0.003	0.006
K	0.46	0.60	0.018	0.024
L	0.445	0.60	0.0175	0.024
R	0.72	0.83	0.028	0.033
S	2.11	2.48	0.083	0.098

MOUNTING PAD

TYPICAL		
DIM	Millimeters	Inches
1	2.85	0.112
2	2.00	0.079
3	1.80	0.071
4	1.90	0.075
5	1.05	0.041
6	2.75	0.108
7	1.20	0.047
8	0.80	0.031
9	0.85	0.033
10	0.85	0.033
11	0.85	0.033

NOTES

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

TAPE & REEL ORDERING NOMENCLATURE

1. Surface mount product is taped and reeled in accordance with EIA-481.
2. Suffix-T7 = 7 Inch Reel - 3,000 pieces per 8mm tape, i.e., *PSR05-T7*.
3. Suffix-T13 = 13 Inch Reel - 10,00 pieces per 8mm tape, i.e., *PSR05-T13*.

Outline & Dimensions: Rev 1 - 11/01, 06011

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