

PSRDA3.3-6 thru PSRDA05-6

STEERING DIODE / TVS ARRAY COMBO

APPLICATIONS

- ✓ Ethernet 10/100 Base T
- ✓ Computer I/O Ports SCSI, FireWire & USB
- ✓ Set-Top Box Protection
- ✓ VGA Video Interface
- ✓ Industrial Controls

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)

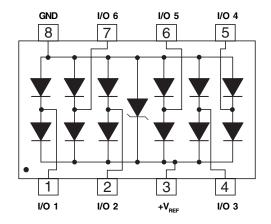
FEATURES

- ✓ Bidirectional Configuration
- ✓ Available in 3.3V & 5V
- ✔ Protects Up to Six (6) Lines
- ✓ ESD Protection > 40 kilovolts
- **✓ LOW CAPACITANCE: 15pF**

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SO-8 Package
- ✓ Weight 15 milligrams (Approximate)
- ✓ Flammability rating UL 94V-0
- ✓ 12mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Logo, Marking Code, Date Code & Pin One Defined By Dot on Top of Package

PINCONFIGURATION





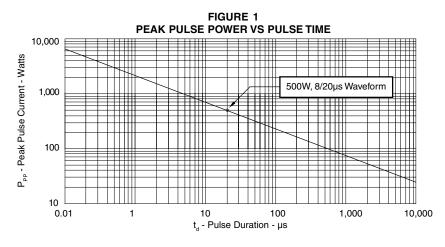
DEVICE CHARACTERISTICS

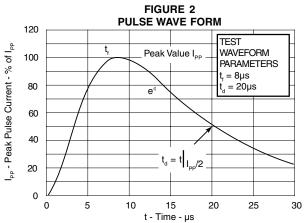
MAXIMUN RATINGS @ 25°C Unless Otherwise Specified							
PARAMETER	SYMBOL	VALUE	UNITS				
Peak Pulse Power (t _p = 8/20μs) - See Figure 1	P _{PP}	500	Watts				
Operating Temperature	T _J	-55°C to 150°C	°C				
Storage Temperature	T _{STG}	-55°C to 150°C	°C				
Maximum Forward Voltage @ 100mA (See Note 1)	V_{F}	1.1	Volts				

Note 1: Measured between pins 8 to 1, 2, 3, 4, 5, 6 or 7.

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 Figure 5)
		V _{wm} VOLTS	@ 1mA V _(BR) VOLTS	@ I _P = 1A V _C VOLTS	@ 8/20µs V _C @ I _{PP}	@ V _{wм} Ι _D μΑ	@ 0V, 1 MHz C _{j(SD)} pF
PSRDA3.3-6 PSRDA05-6	SGG SGH	3.3 5.0	4.0 6.0	6.5 9.8	10.9V @ 43.0A 13.5V @ 42.0A		15 15

Note 1: Capacitance measured at $V_{\text{WM}} = V_{\text{CC}}$ connected between I/O pins to pin 8(Gnd). $V_{\text{R}} = V_{\text{WM}}$ @ 1MHz. As shown in Figure 5, REF1 is connected to ground, REF2 is connected to + V_{CC} , and input applies to $V_{\text{CC}} = 5V$, $V_{\text{sign}} = 30\text{mV}$, $V_{\text{R}} = V_{\text{WM}} = 10$ MHz.

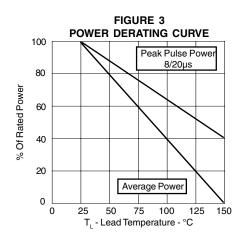


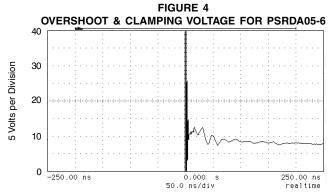


PSRDA3.3-6

PSRDA05-6

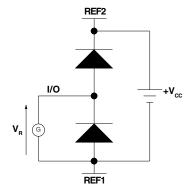
GRAPHS

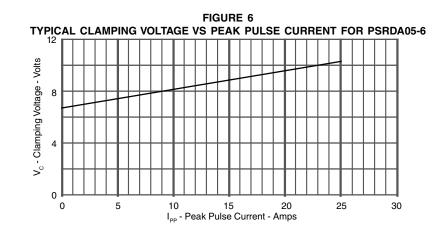


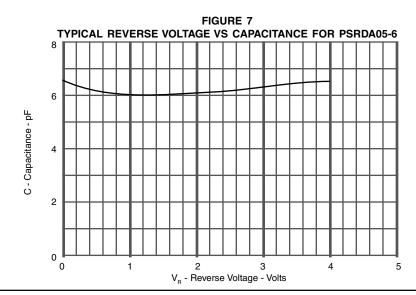


ESD Test Pulse: 8 kilovolt, 1/30ns (waveshape)

FIGURE 5
INPUT CAPACITANCE CIRCUIT







PSRDA3.3-6 thru PSRDA05-6

APPLICATION NOTE

The PSRDAxx-6 Series are low capacitance, bidirectional TVS arrays that are 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 8/20µs waveshape and offers ESD protection > 40kV.

DIFFERENTIAL-MODE CONFIGURATION (Figure 1)

Ideal for use in USB applications, the PSRDAxx-6 Series provides up to six (6) lines of protection in a differential mode configuration as depicted in Figure 1.

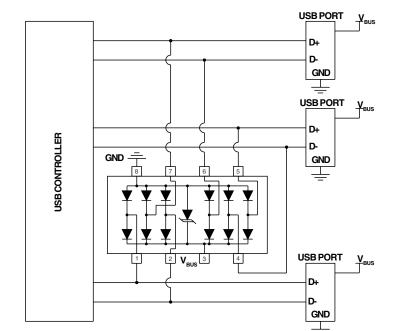
Circuit connectivity is as follows:

- ✔ Pins 1, 2, 4, 5, 6 and 7 are connected to the datalines.
- ✔ Pin 8 is connected to ground.
- Pin 3 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.



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Figure 1. Typical Differential-Mode USB Protection

05110.R3 8/03 4

PSRDA3.3-6

PSRDA05-6

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE 5 (0.25 MM) (M) B (M) -B-① R X 45° .0° - 10° (+) 0.010" (0.25 MM) M T B A S

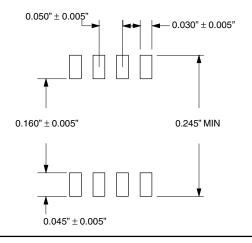
SO-8



PACKAGE DIMENSIONS

MILLIM	ETERS	INCHES		
MIN	MAX	MIN	MAX	
4.80	5.00	0.189	0.196	
3.80	4.00	0.150	0.157	
1.35	1.75	0.054	0.068	
0.35	0.49	0.014	0.019	
0.40	1.250	0.016	0.049	
1.27 BSC	1.27 BSC	0.05 BSC	0.05 BSC	
0.18	0.25	0.007	0.009	
0.10	0.25	0.004	0.008	
5.80	6.20	0.229	0.244	
0.25	0.50	0.010	0.019	
	MIN 4.80 3.80 1.35 0.35 0.40 1.27 BSC 0.18 0.10 5.80	4.80 5.00 3.80 4.00 1.35 1.75 0.35 0.49 0.40 1.250 1.27 BSC 0.18 0.25 0.10 0.25 5.80 6.20	MIN MAX MIN 4.80 5.00 0.189 3.80 4.00 0.150 1.35 1.75 0.054 0.35 0.49 0.014 0.40 1.250 0.016 1.27 BSC 0.05 BSC 0.18 0.25 0.007 0.10 0.25 0.004 5.80 6.20 0.229	

MOUNTINGPAD



NOTES

- T = Seating Plane and Datum Surface.
 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.

TAPE & REEL/BULK ORDERING NOMENCLATURE

- 1. Surface mount product is taped and reeled in accordance with EIA-481.
- 2. Suffix-T7 = 7 Inch Reel 1,000 pieces per 12mm tape, i.e., PSRDA05-6-T7.
- 3. Suffix-T13 = 13 Inch Reel 2,500 pieces per 12mm tape, i.e., PSRDA05-6-T13.
- 4. No Suffix = Product Shipped in Tubes of 98 pcs per Tube.

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

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ProTek Devices

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