



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)



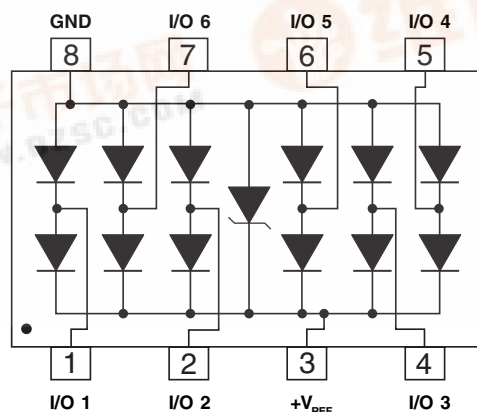
FEATURES

- ✓ 500 Watts Peak Pulse Power per Line (tp=8/20µs)
- ✓ Bidirectional Configuration
- ✓ Available in 3.3V & 5V
- ✓ Protects Up to Six (6) Lines
- ✓ ESD Protection > 40 kilovolts
- ✓ Low Capacitance: 15pF
- ✓ 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



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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_L	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Continuous Power Dissipation	P_{PC}	1000	mW
Maximum Forward Voltage @ 100mA (See Note 1)	V_F	1.1	Volts

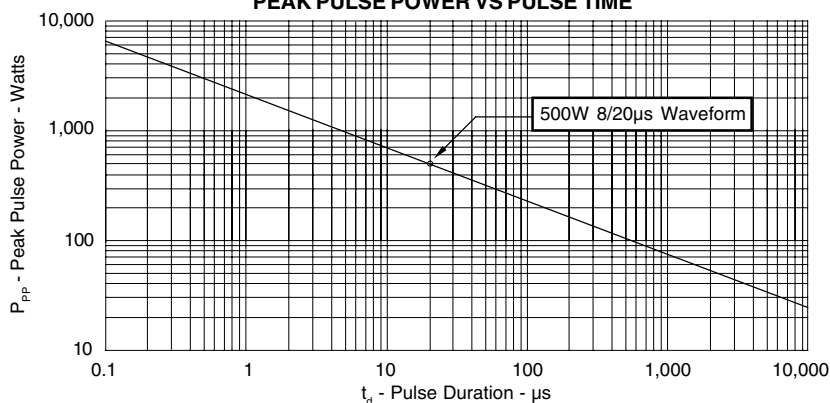
Note 1: Measured between pins 8 to 1, 2, 3, 4, 5, 6 or 7.

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

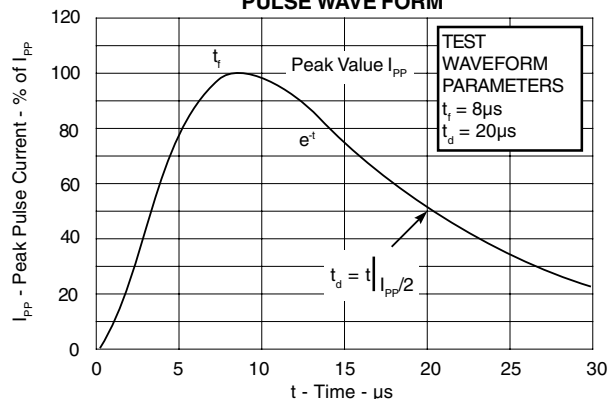
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM CAPACITANCE (See Note 1) (See Figure 5)
		V_{WM} VOLTS	@ 1mA $V_{(BR)}$ VOLTS	@ $I_P = 1A$ V_C VOLTS	@ 8/20 μs $V_C @ I_{PP}$	@ V_{WM} I_D μA	@ 0V, 1 MHz $C_{j(SD)}$ pF
PSRDA3.3-6	SGG	3.3	4.0	6.5	10.9V @ 43.0A	125	15
PSRDA05-6	SGH	5.0	6.0	9.8	13.5V @ 42.0A	20	15

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

**FIGURE 1
PEAK PULSE POWER VS PULSE TIME**

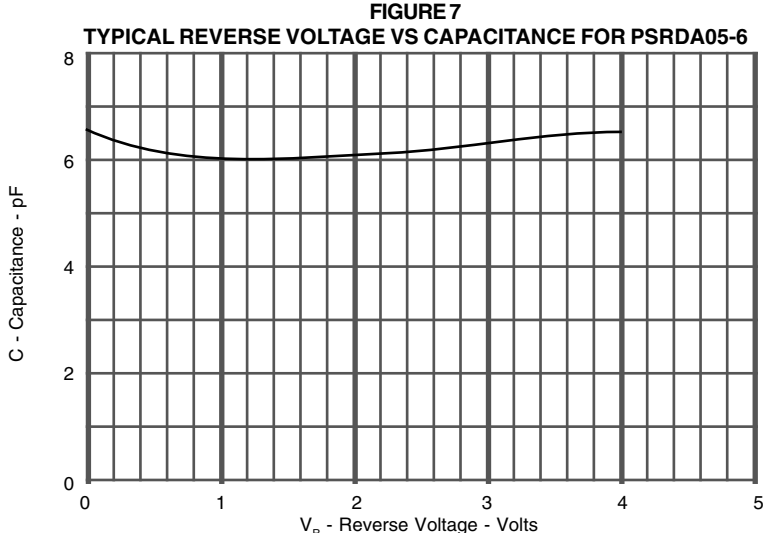
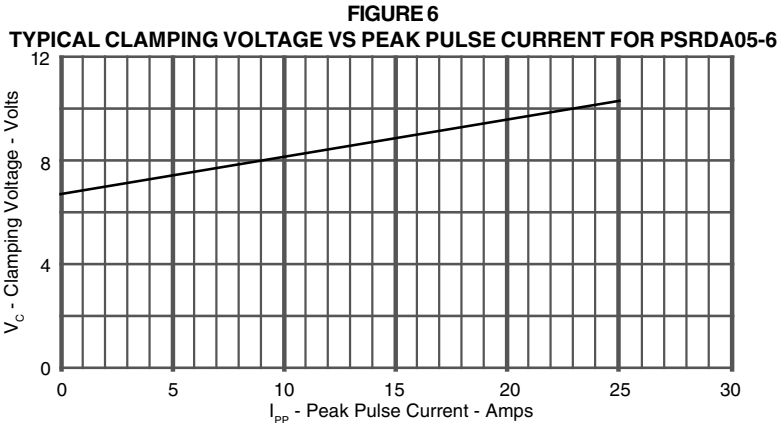
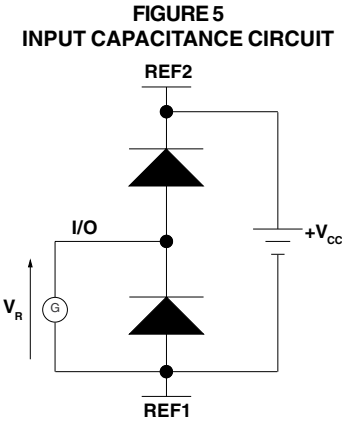
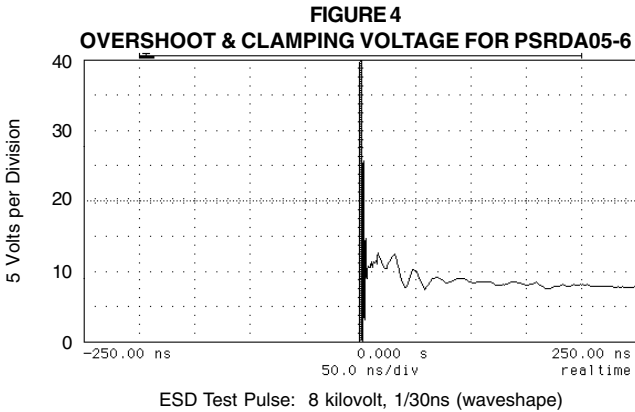
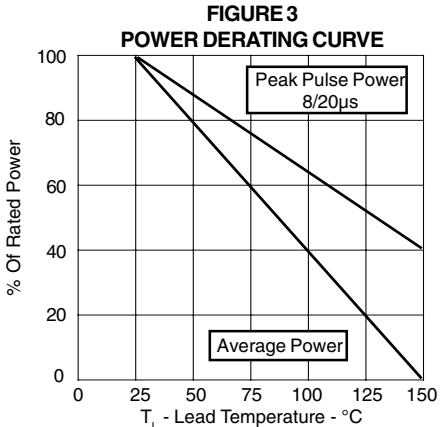


**FIGURE 2
PULSE WAVE FORM**



PSRDA3.3-6 thru PSRDA05-6

GRAPHS



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 8/20 μ s 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:

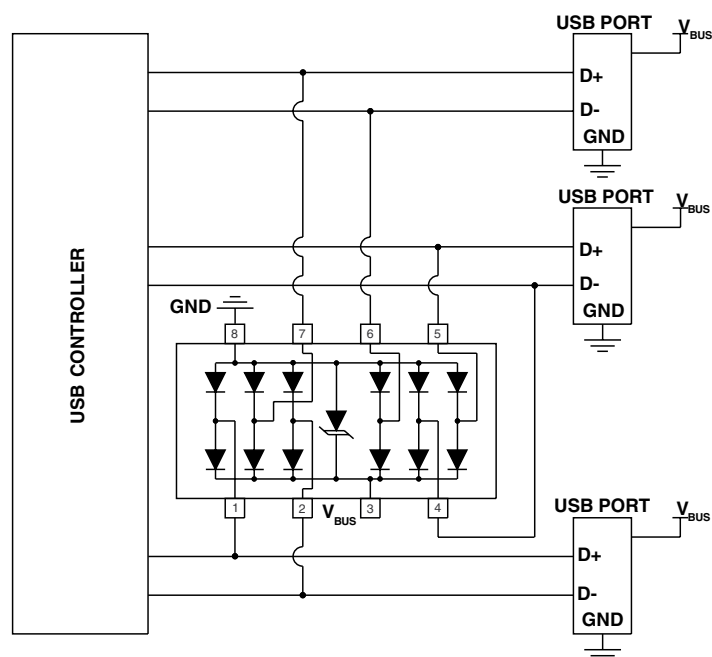
- ✓ Pins 1, 2, 4, 5, 6 and 7 are connected to the datalines.
- ✓ Pin 8 is connected to ground.
- ✓ Pin 3 is connected to the databus.

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.

Figure 1. Typical Differential-Mode USB Protection



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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. PSRDA05-6-T7.
- Suffix-T13 = 13 Inch Reel - 2,500 pieces per 12mm tape, i.e., PSRDA05-6-T13.
- Suffix - LF = Lead-Free, Pure-Tin Plating, i.e., PSRDA05-6-LF-T7.
- No Suffix = Product Shipped in Tubes of 98 pcs per Tube.

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

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