

PSRDA3.3-4 thru PSRDA15-4

STEERING DIODE / TVS ARRAY COMBO

APPLICATIONS

- ✔ Ethernet 10/100 Base T
- ✓ Computer I/O Ports SCSI, FireWire & USB
- Set-Top Box Protection
- ✓ Video Card

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)
- ✔ Unidirectional Configuration
- ✔ Available in 4 Voltage Types: 3.3V to 15V
- ✔ Protects Up to Four (4) I/O Ports
- ✓ ESD Protection > 40 kilovolts
- ✔ LOW CAPACITANCE: 15pF
- ✔ RoHS Compliant in Lead-Free Versions

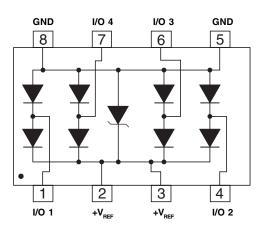
MECHANICAL CHARACTERISTICS

- ✔ Molded JEDEC SO-8 Package
- ✓ Weight 70 milligrams (Approximate)
- ✓ Available in Tin-Lead or Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:

Tin-Lead - Sn/Pb, 85/15: 240-245°C Pure-Tin - Sn, 100: 260-270°C

- ✓ 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





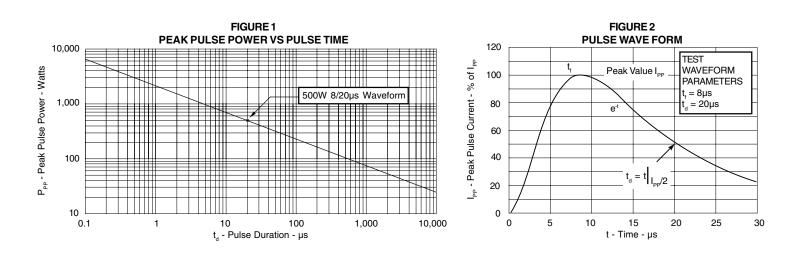
DEVICE CHARACTERISTICS

| MAXIMUN RATINGS @ 25°C Unless Otherwise Specified | | | | | | |
|---|------------------|----------------|-------|--|--|--|
| PARAMETER | SYMBOL | VALUE | UNITS | | | |
| Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1 | P _{PP} | 500 | Watts | | | |
| Operating Temperature | Tj | -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 or 5 to 1, 2, 3, 4, 6 and 7.

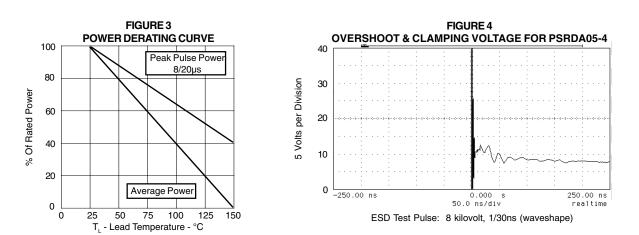
| ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified | | | | | | | | | |
|---|--------------------------|-------------------------------|-------------------------------------|--|--|--|--|--|--|
| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE | MINIMUM BREAKDOWN VOLTAGE | MAXIMUM 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 | | |
| PSRDA3.3-4 PSRDA05-4 PSRDA12-4 PSRDA15-4 | PRA PRB PRD PRE | 3.3 5.0 12.0 15.0 | 4.0 6.0 13.3 16.7 | 6.5 9.8 19.0 24.0 | 10.9V @ 43.0A 13.5V @ 42.0A 25.9V @ 21.0A 30.0V @ 17.0A | 125 20 1 1 | 15 15 15 15 | | |

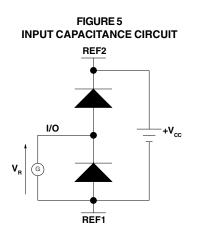
Note 1: Capacitance measured at $V_{WM} = V_{CC}$ connected between I/O pins to pin 8 and 5 (Gnd). $V_{R} = V_{WM}$ @ 1MHz. As shown in Figure 5, REF1 is connected to ground, REF2 is connected to + V_{CC} , and input applies to $V_{CC} = 5V$, $V_{sign} = mV$, F = 1 MHz.

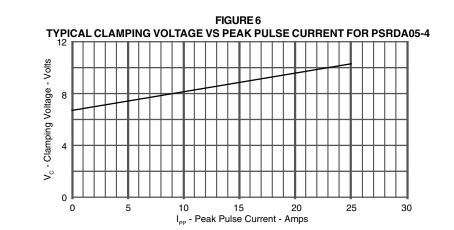


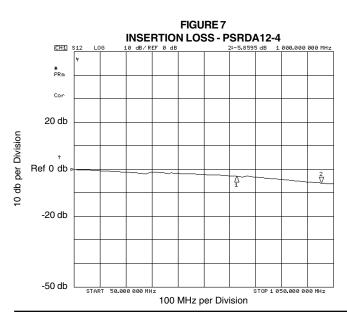
PSRDA3.3-4 thru PSRDA15-4

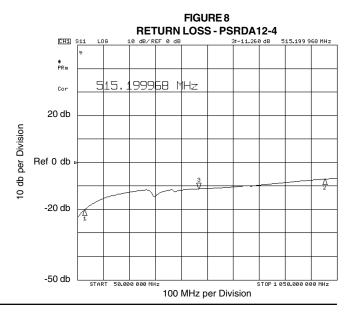
GRAPHS











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APPLICATION NOTE

The PSRDAxx-4 Series are low capacitance, unidirectional 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-4 Series provides up to four (4) lines of protection in a differential-mode configuration as depicted in Figure 1.

Circuit connectivity is as follows:

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

DIFFERENTIAL-MODE CONFIGURATION (Figure 2)

The PSRDAxx-4 Series also provides up to four (4) lines of protection in a differential-mode configuration as depicted in Figure 2 for T1/E1 applications.

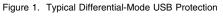
Circuit connectivity is as follows:

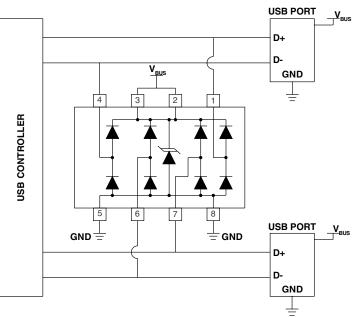
- ✓ Pins 1, 4, 6 and 7 are connected to the data lines.
- Pins 5 and 8 are connected to ground.
- ✓ Pins 2 and 3 are connected to the databus.

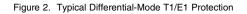
CIRCUIT BOARD LAYOUT RECOMMENDATIONS

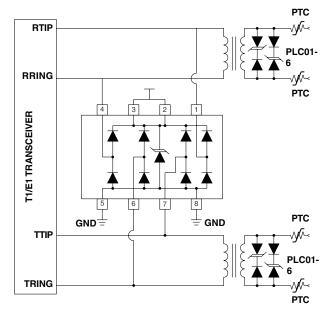
Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following guidelines are recommended:

- ✓ 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.

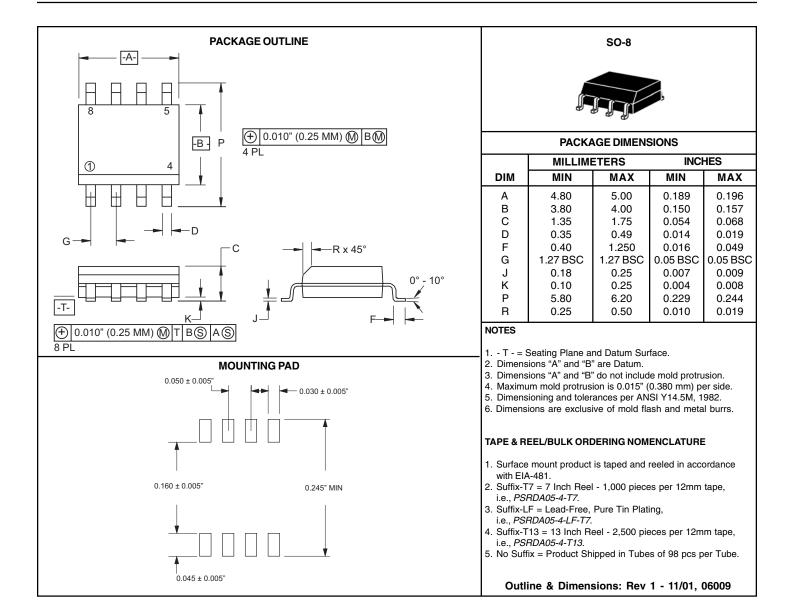








PACKAGE OUTLINE & DIMENSIONS



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ProTek Devices

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