

HIGH POWER LOW CAPACITANCE TVS HYBRID ARRAY



DESCRIPTION

The PTA03-3.3ULC is a high power, low capacitance TVS hybrid array; designed to protect high speed data line applications from the damaging effects of ESD, EFT and secondary transient threats. This device is available in an SOIC-8 package configuration and has a peak pulse power rating of 2000 Watts (8/20 μ s waveshape). The PTA03-3.3ULC is designed to provide low capacitance, even at higher temperatures ($T_j = 75^\circ\text{C}$), when connected in differential mode. This device meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air $\pm 15\text{kV}$, Contact $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 70A, 8/20 μ s
- 100A (2/10 μ s) per Bellcore GR1089 (Intra-Building)
- ESD Protection > 30kV, Contact per IEC 61000-4-2
- 2000 Watts Peak Pulse Power per Line ($t_p = 8/20\mu\text{s}$)
- Low Capacitance: Max 2.4pF (I/O to I/O)
- Telecom/Diode Bridge Configuration
- RoHS Compliant
- REACH Compliant

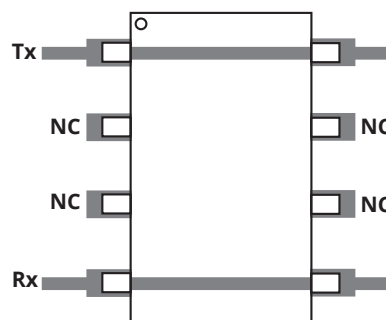
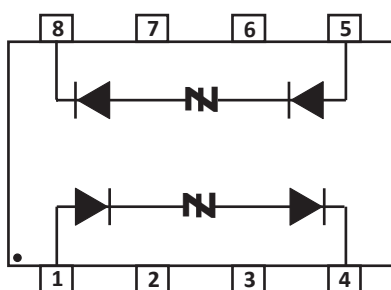
APPLICATIONS

- Ethernet 10/100/1000 Base T
- xDSL Interfaces
- Set Top Box Interfaces
- T1/E1 Line Cards
- ISDN U-Interfaces & ISDN S/T Interfaces

MECHANICAL CHARACTERISTICS

- Molded JEDEC SO-8 Package
- Approximate Weight: 70 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270 $^\circ\text{C}$
- 12mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

PIN CONFIGURATION



PCB layout configuration: Rail-to-Rail in differential mode.

TYPICAL DEVICE CHARACTERISTICS
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	2000	Watts

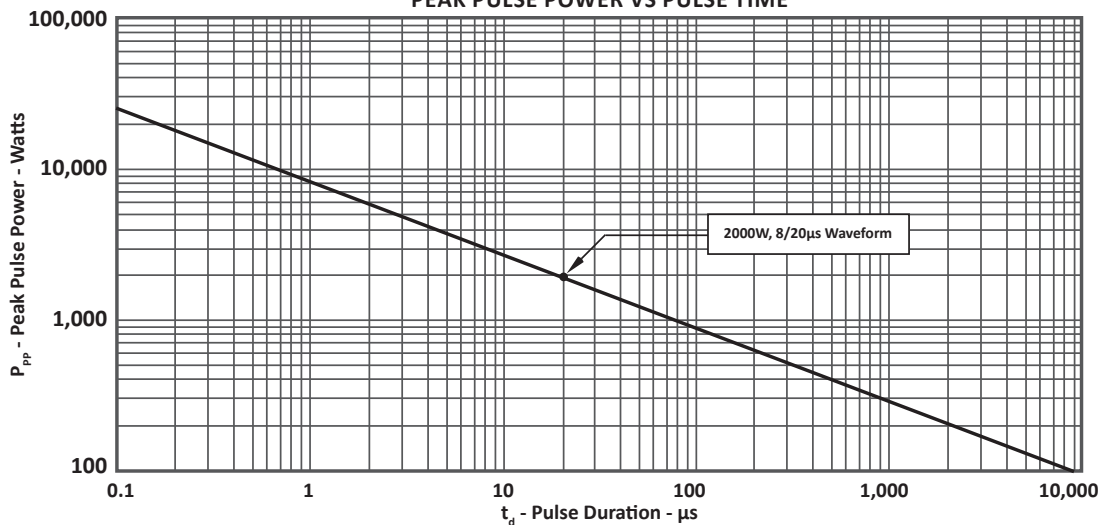
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM SNAPBACK VOLTAGE @50mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ $I_p = 70A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ 8/20 μs $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT (Note 1) @ V_{WM} I_D μA	MAXIMUM CAPACITANCE (Note 2) @0V, 1MHz C pF	MAXIMUM CAPACITANCE (Note 3) @0V, 1MHz C pF
PTA03-3.3ULC	PTA33	3.3	2.2	29.0	8.0V @ 10A	0.1	1.2	2.4

NOTES

- For an 8/20 μs waveform, apply positive pulse between pin 1 to pin 4 and pin 5 to pin 8, individually.
- Measured between IO pins (pin 1 to pin 4 and pin 5 to pin 8).
- Measured between IO pins 1 and 4, connecting via PCB trace; pin 1 to 8 and pin 4 to 5 (see page 1).

FIGURE 1
PEAK PULSE POWER VS PULSE TIME



TYPICAL DEVICE CHARACTERISTICS

FIGURE 2
PULSE WAVE FORM

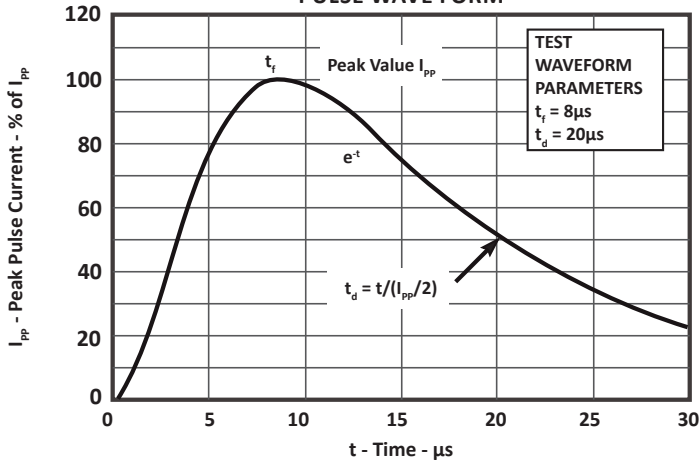


FIGURE 3
POWER DERATING CURVE 8X20 μs

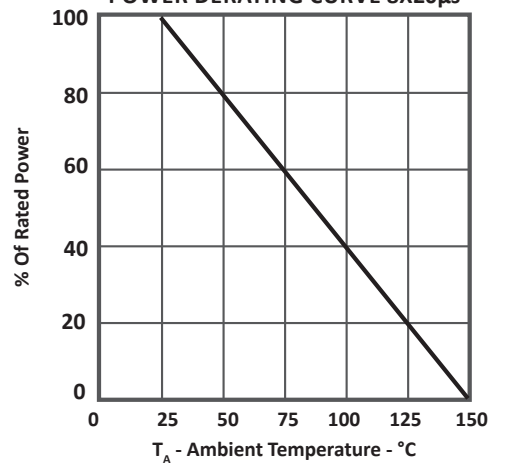
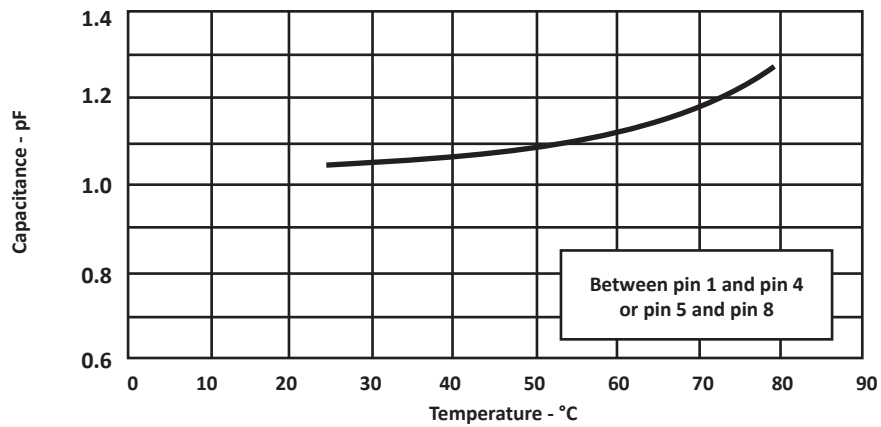


FIGURE 4
TYPICAL CAPACITANCE VS TEMPERATURE
(0V BIAS, 1MHZ)



TYPICAL DEVICE CHARACTERISTICS

FIGURE 5
TYPICAL CAPACITANCE VS BIAS
(@T_J = 70°C)

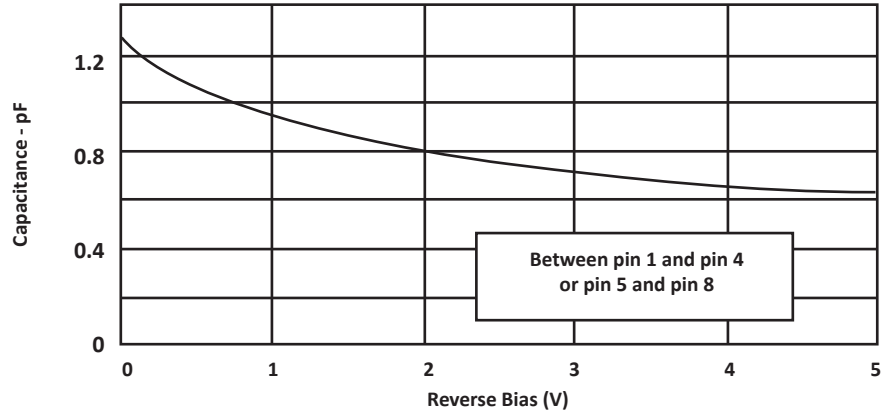
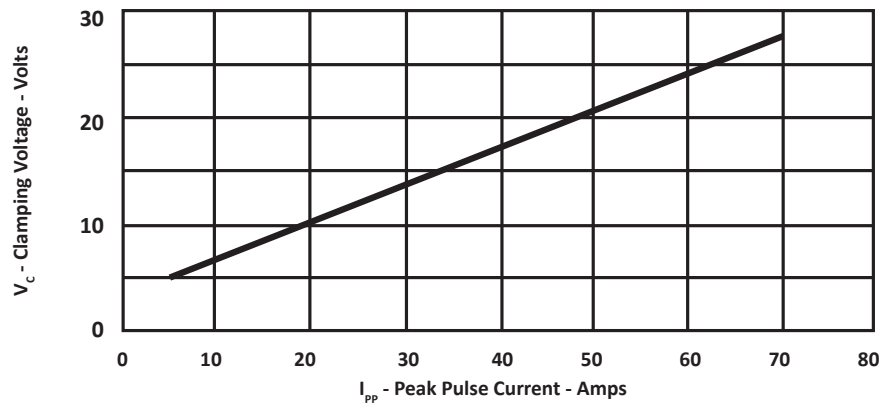


FIGURE 6
CLAMPING VOLTAGE VS PEAK PULSE CURRENT
(8/20μs)



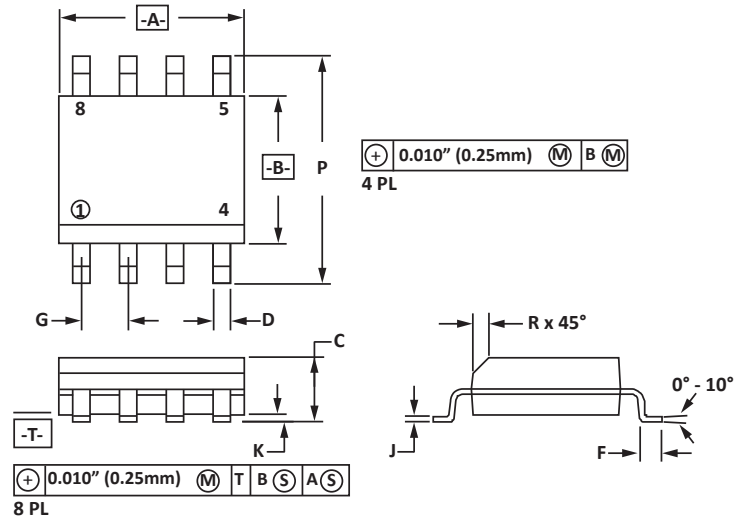
PACKAGE INFORMATION

OUTLINE 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	1.25	0.016	0.049
G	1.27 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" (0.380mm) per side.
- Dimensioning and tolerances per ANSI Y14.5M, 1982.
- Dimensions are exclusive of mold flash and metal burrs.

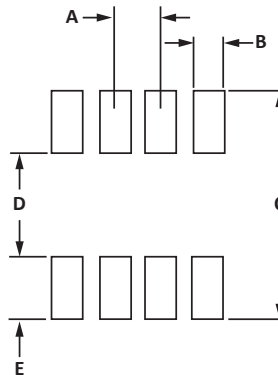


PAD LAYOUT DIMENSIONS

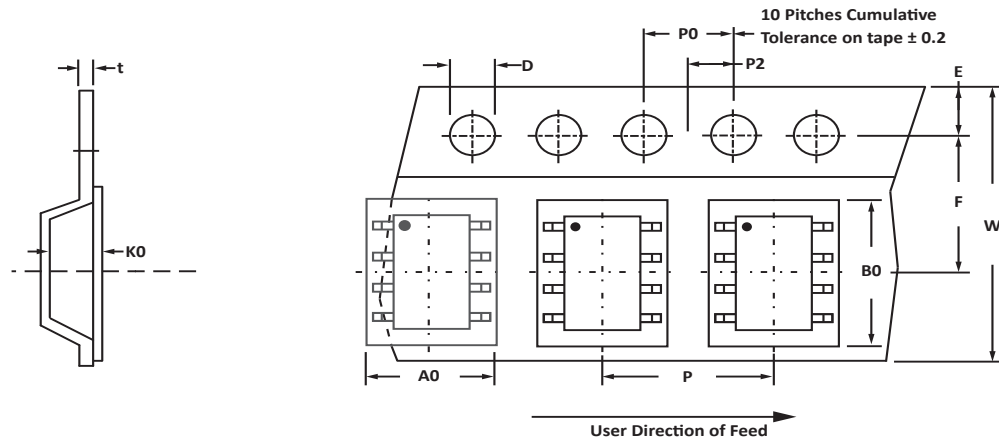
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.14	1.40	0.045	0.055
B	0.64	0.89	0.025	0.035
C	6.22	-	0.245	-
D	3.94	4.17	0.155	0.165
E	1.02	1.27	0.040	0.050

NOTES

- Controlling dimension: inches.



TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	t _{max}
178mm (7")	12mm	6.50 ± 0.10	5.40 ± 0.10	2.00 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.05	12.00 ± 0.30	4.00 ± 0.12	2.00 ± 0.10	8.00 ± 0.10	0.25

NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Marking on Part - marking code (see page 2), date code, logo and pin one defined by dot on top of package.

ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE
PTA03-3.3ULC	n/a	-T7	1,000	7"

This device is only available in a Lead-Free configuration.

COMPANY INFORMATION

COMPANY PROFILE

In business more than 30 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection that include Transient Voltage Suppressor (TVS) Arrays, Steering Diode Array Hybrids, High-power Components and Modules, as well as Steering Diodes, EMI Filter/TVS Arrays and Thyristor Surge Suppressors. These components deliver circuit protection in electronic systems from numerous overvoltage events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices is an ISO 9001 certified company.



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