

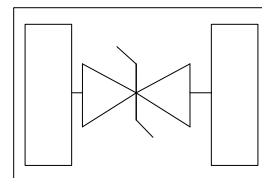
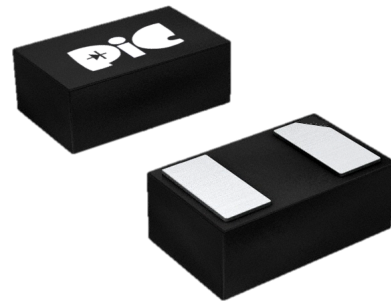
➤ General Description

The PAE1521P1 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The PAE1521P1 has an ultra-low capacitance with a typical value at 0.3pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 20\text{kV}$ air and $\pm 15\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make PAE1521P1 an ideal choice to protect cell phone and high-power USB.

➤ Feature

- Ultra small package: 1.0 x0.6 x0.5mm
- Ultra low capacitance: 0.3pF typical
- Ultra low leakage : nA level
- Operating voltage : 15V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge : $\pm 20\text{kV}$
 - Contact discharge : $\pm 15\text{kV}$
 - IEC61000-4-5 (Lightning) 2.5A(8/20 μs)
- RoHS Compliant

➤ DFN-1006



➤ Application

- Cellular Handsets and Accessories
- Serial ATA
- MDDI Ports
- USB Ports
- PCI Express and Serial SATA Ports

➤ Mechanical Characteristics

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020

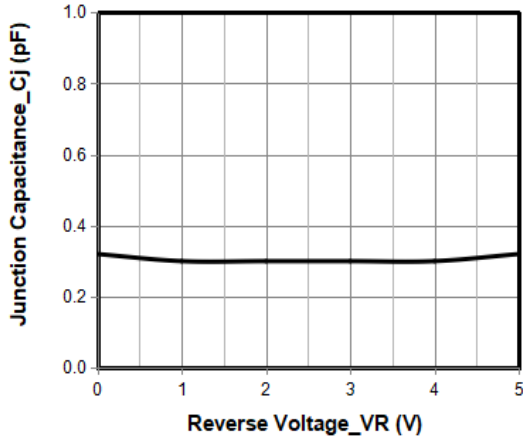
➤ **Maximum Ratings (T_A=25°C Unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	P _{pk}	90	W
Peak Pulse Current(8/20μs)	I _{PP}	2.5	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±20	kV
ESD per IEC 61000-4-2 (Contact)		±15	
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

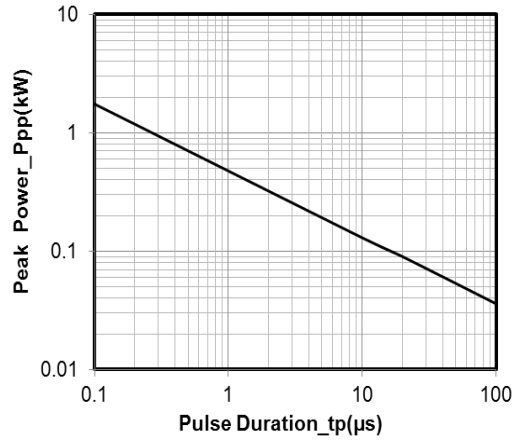
➤ **Electrical Characteristics (T_A=25°C Unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			15	V	
Breakdown Voltage	V _{BR}	16.7			V	I _T = 1mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 15V
Clamping Voltage	V _C			26	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V _C			35	V	I _{PP} = 2.5A (8 x 20μs pulse)
Junction Capacitance	C _J		0.3	0.5	pF	V _R = 0V, f = 1MHz

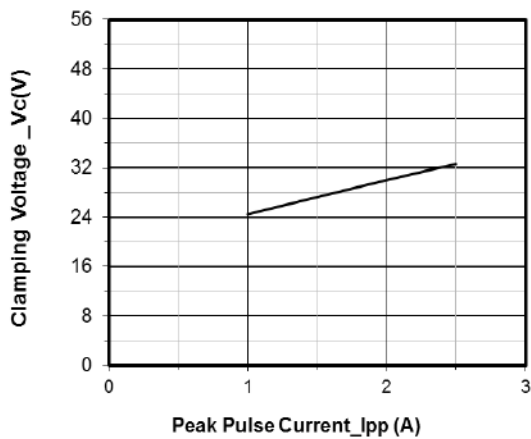
➤ Typical Characteristics



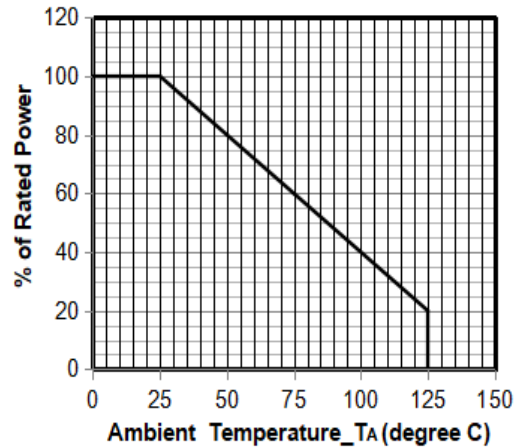
Junction Capacitance vs. Reverse Voltage



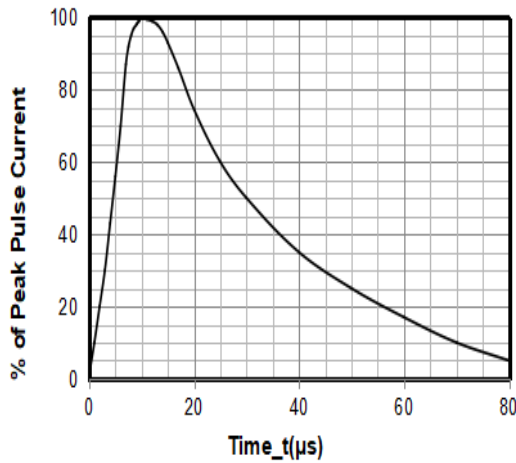
Peak Pulse Power vs. Pulse Time



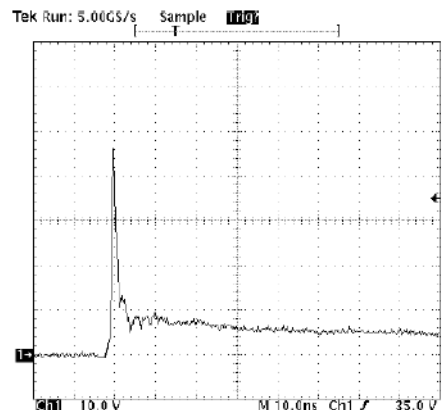
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

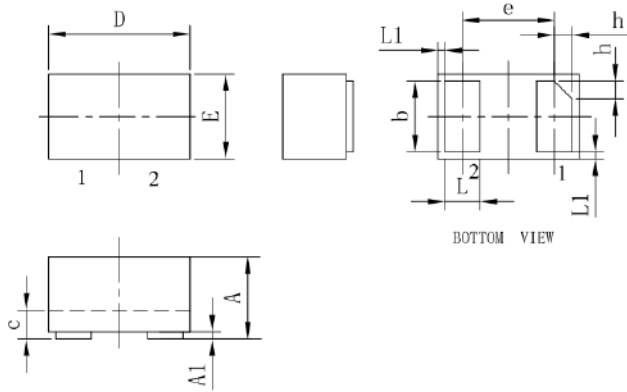


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

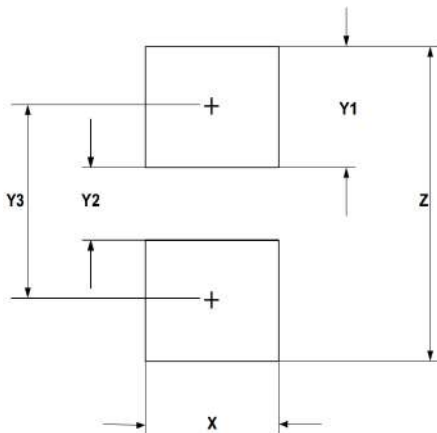
8 kV Contact per IEC61000-4-2

➤ Package Information (DFN1006)



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.450	0.500	0.550	0.018	0.020	0.022
A1	0.000	0.020	0.050	0.000	0.001	0.002
b	0.450	0.50	0.550	0.018	0.020	0.022
c	0.120	0.150	0.180	0.005	0.006	0.007
D	0.950	1.000	1.050	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05REF			0.002REF		
h	0.07	0.12	0.17	0.003	0.005	0.007

Suggested Land Pattern

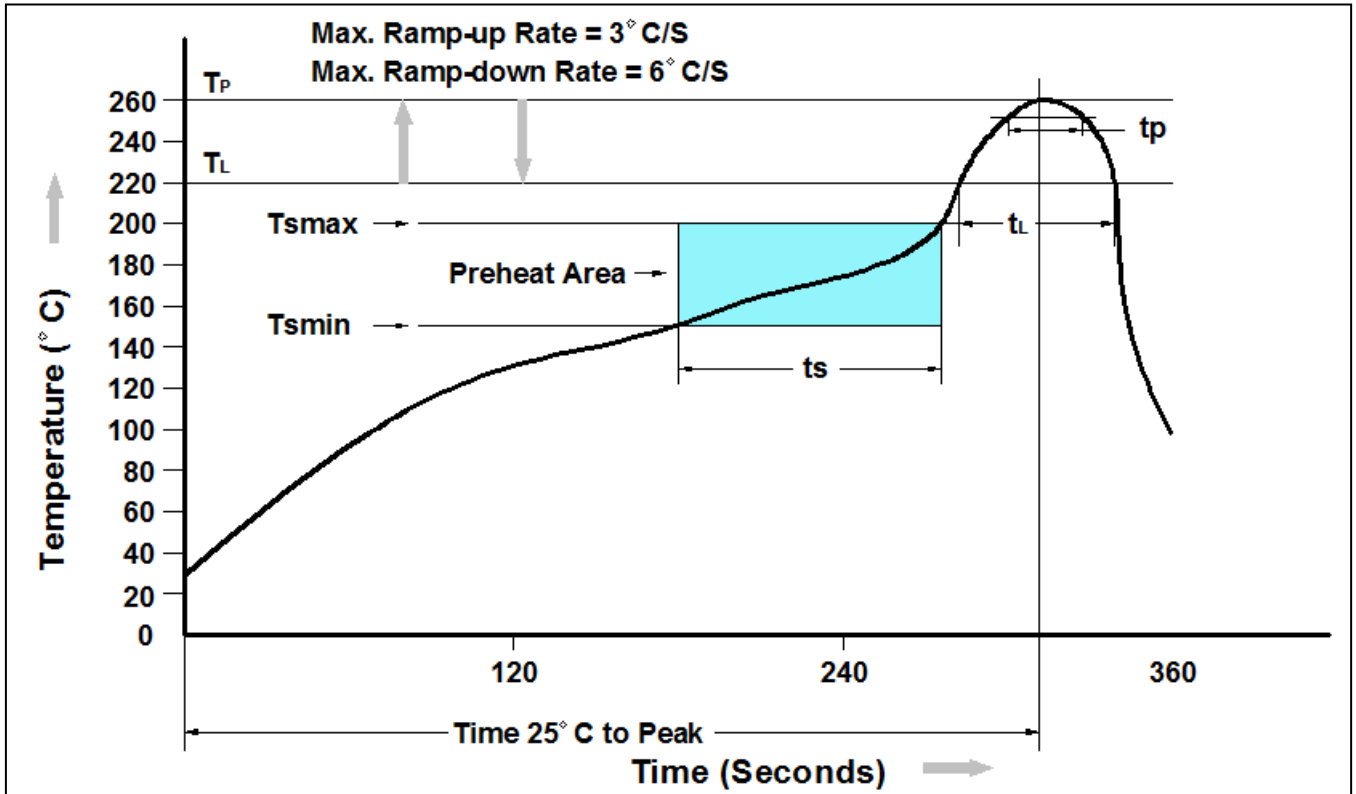


SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052

➤ Ordering Information

Part Number	Description	Quantity
PAE1521P1	DFN1006 Reel	10000 pcs

➤ Recommmend IR Reflow Soldering Thermal Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T Amin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (T Amin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

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