

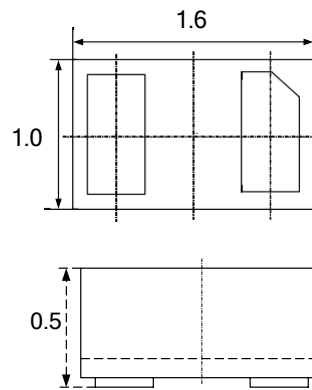
➤ General Description

The PAE2471P6 is an Uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast re-sponse time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The PAE2471P6 complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small 1.6x1.0x0.5mm lead-free DFN package. The small size and high ESD surge protection make PAE2471P6 an ideal choice to protect cell phone, digital cameras, audio play-ers and many other portable applications.

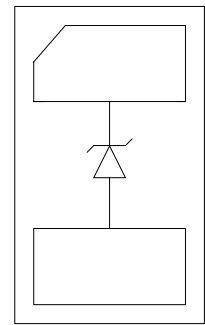
➤ Feature

- Small package: 1.6x1.0x0.5mm
- Protects one data or power line
- Operating Voltage: 24V
- High peak pulse current capability
- Ultra low clamping voltage
- 2-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 25-150A(8/20 μs)
- RoHS Compliant

➤ DFN1610-2



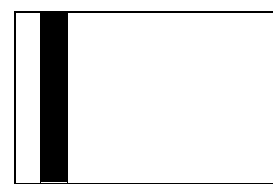
Package Dimensions



Circuit and Pin Schematic

➤ Mechanical Characteristics

- Package: DFN1610-2
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below



Bar denotes Cathode

➤ Application

- Mobile Phones and Accessories
- Battery Protection
- USB VBus
- Power Line Protection
- Hand Held Portable Applications

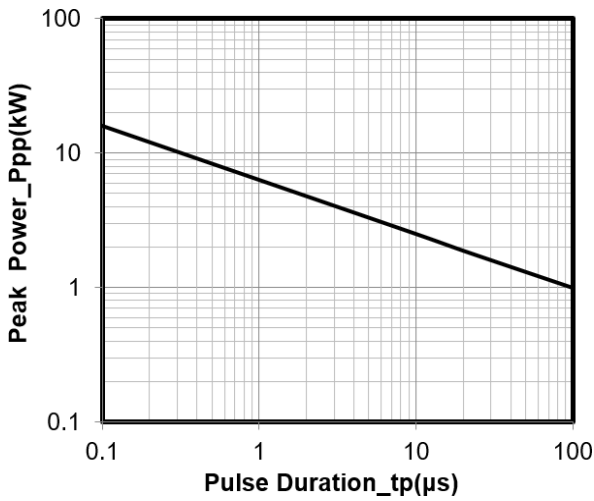
➤ **Maximum Ratings (T_A=25°C Unless otherwise specified)**

| Parameter | Symbol | Value | Unit |
|---------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20μs) | P _{pk} | 1875 | W |
| ESD per IEC 61000-4-2 (Air) | V _{ESD} | ±30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ±30 | |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

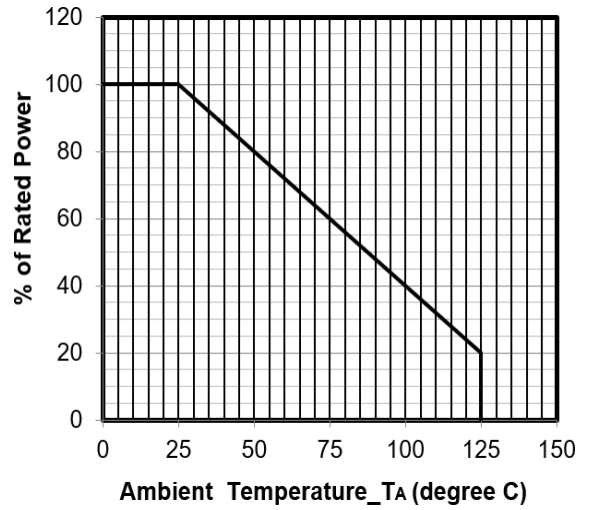
➤ **Electrical Characteristics (T_A=25°C Unless otherwise specified)**

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|------|-----|------|------|--|
| Reverse Working Voltage | V _{RWM} | | | 24 | V | |
| Breakdown Voltage | V _{BR} | 26.7 | | | V | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 0.1 | μA | V _{RWM} = 24V |
| Forward Voltage | V _F | | | 1.2 | V | I _F = 10mA |
| Peak Pulse Current | I _{PP} | | | 35 | A | t _p = 8/20μs |
| Clamping Voltage | V _C | | | 42 | V | I _{PP} = 10A (8 x 20μs pulse) |
| Clamping Voltage | V _C | | | 53.5 | V | I _{PP} = 35A (8 x 20μs pulse) |
| Junction Capacitance | C _J | | | 200 | pF | V _R = 0V, f = 1MHz |

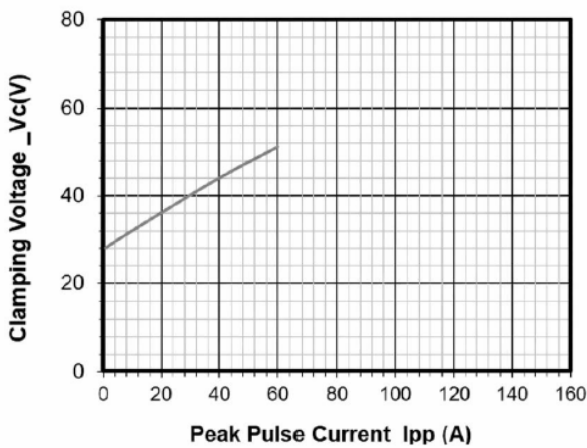
➤ Typical Characteristics



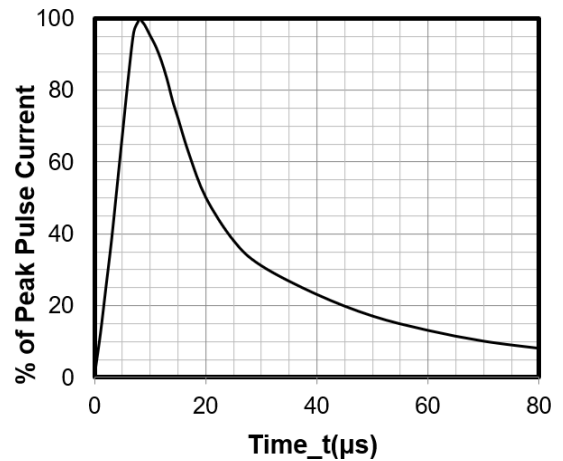
Junction Capacitance vs. Reverse Voltage



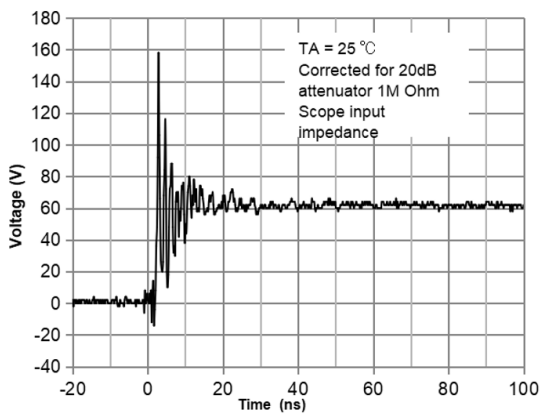
Power Derating Curve



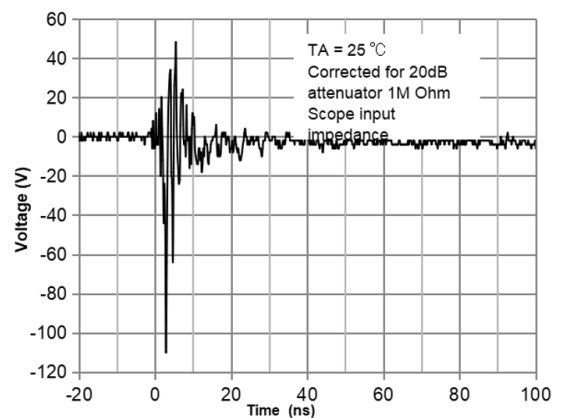
Clamping Voltage vs. Peak Pulse Current ($t_p = 8/20\mu$ s)



8 X 20 μ s Pulse Waveform

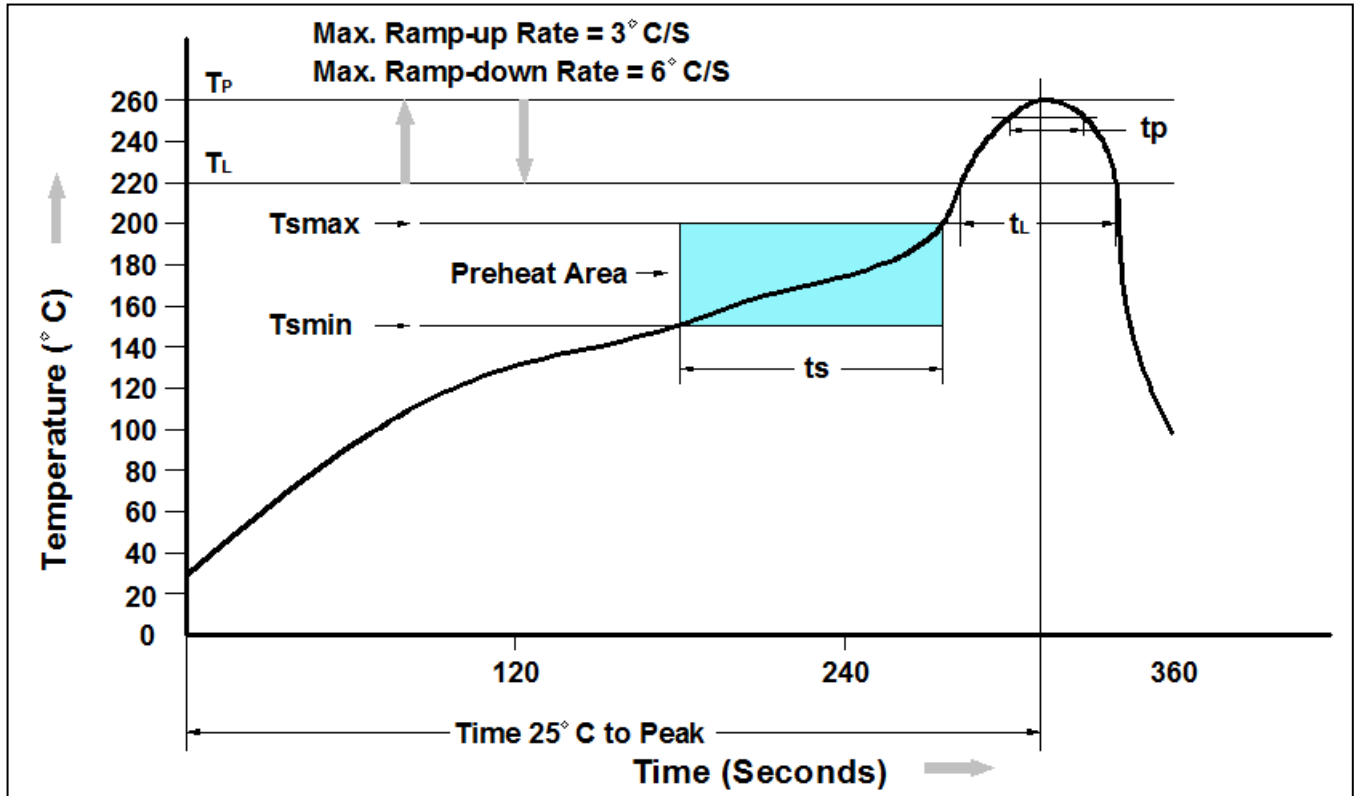


ESD Clamping Voltage
8 kV Contact per IEC61000-4-2



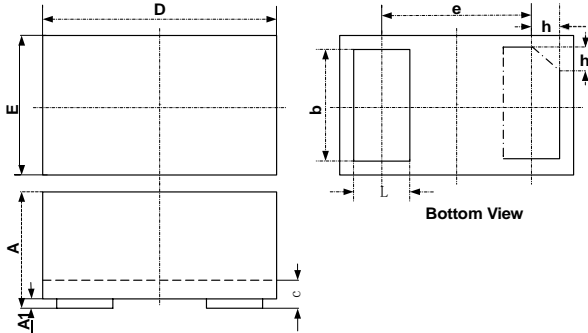
ESD Clamping Voltage
-8 kV Contact per IEC61000-4-2

➤ Recommmend IR Reflow Soldering Thermal Profile



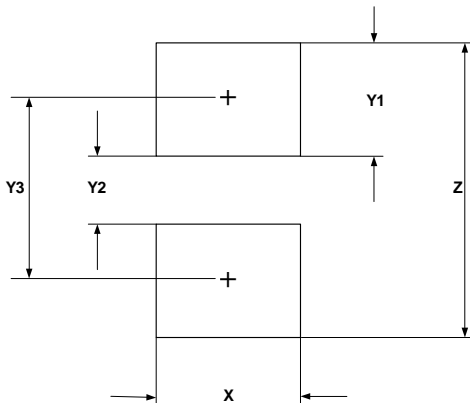
| Profile Feature | Pb-Free Assembly Profile |
|---|--------------------------|
| Temperature Min. (T Amin) | 150°C |
| Temperature Max. (Tsmax) | 200°C |
| Time (ts) from (T Amin to Tsmax) | 60-120 seconds |
| Average Ramp-up Rate (tL to tP) | 3°C/second max. |
| Liquidous Temperature (TL) | 217°C |
| 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. |

➤ Package Information (DFN1610-2)



| SYM | DIMENSIONS | | | | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| b | 0.75 | 0.80 | 0.85 | 0.030 | 0.032 | 0.034 |
| c | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| D | 1.55 | 1.60 | 1.65 | 0.062 | 0.064 | 0.066 |
| e | 1.10 BSC | | | 0.044 BSC | | |
| E | 0.95 | 1.00 | 1.05 | 0.038 | 0.040 | 0.042 |
| L | 0.35 | 0.40 | 0.45 | 0.014 | 0.016 | 0.018 |
| h | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| X | 1.00 | 0.040 |
| Y1 | 0.62 | 0.025 |
| Y2 | 0.60 | 0.024 |
| Y3 | 1.22 | 0.049 |
| Z | 1.85 | 0.074 |

➤ Ordering Information

| Part Number | Description | Quantity |
|-------------|------------------|----------|
| PAE2471P6 | DFN1610-2 / Reel | 3000 pcs |

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