## Description

The AU4581P6 is a bi-directional high power 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 data and power line. The AU4581P6 complies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. It is assembled into an ultra-small lead -free DFN1610-2 package. The small size and high ESD surge protection make AU4581P6 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

## Features

- Small DFN package
- Protects one data or power line
- Operating Voltage: 4.5V
- High peak pulse current capability
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 140A (8/20μs)
- RoHS Compliant

## Mechanical Characteristics

- Package: DFN1610-2
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

- Mobile Phones and Accessories
- Battery Protection
- Power Supply Protection
- Hand Held Portable Applications
- Peripherals

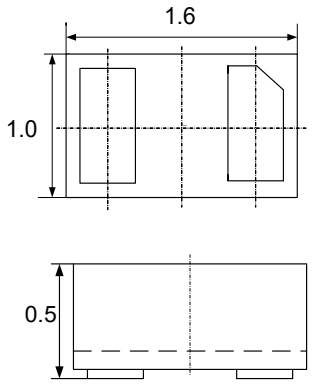
## Marking Information


48P: Device Marking Code

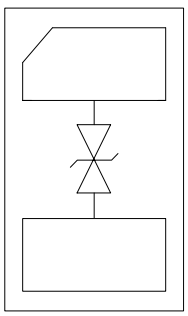
## Ordering Information

| Part Number | Marking | Packaging | Reel Size |
|---|---|---|---|
| AU4581P6 | 48P | 3000/Tape & Reel | 7 inch |

## Dimensions and Pin Configuration




Package Dimensions



Circuit and Pin Schematic

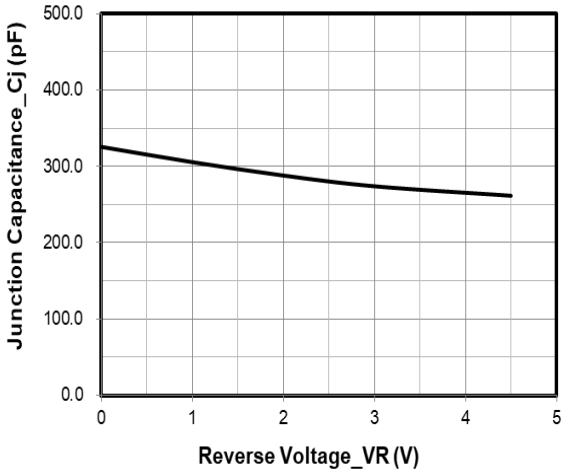
## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | Ppk | 2400 | W |
| Peak Pulse Current (8/20μs) | Ipp | 140 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±30<br>±30 | kV |
| Operating Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | Tstg | −55 to +150 | °C |

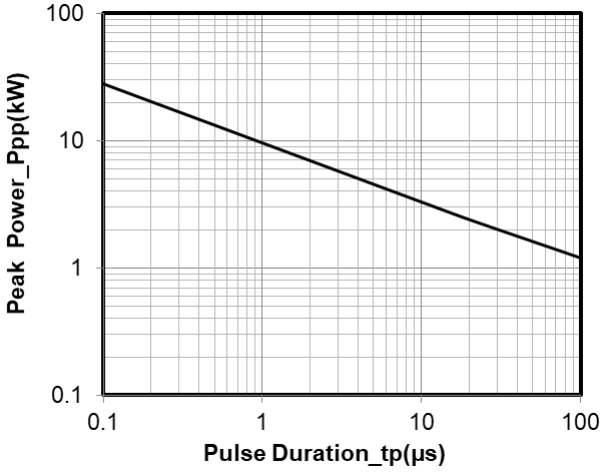
## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | 4.5 | V | |
| Breakdown Voltage | $V_{BR}$ | 4.7 | | | V | $I_T$ = 1mA |
| Reverse Leakage Current | $I_R$ | | | 1.0 | μA | $V_{RWM}$ = 4.5V |
| Clamping Voltage | $V_C$ | | | 7.5 | V | $I_{PP}$ = 20A (8 x 20μs pulse) |
| Clamping Voltage | $V_C$ | | | 17 | V | $I_{PP}$ = 140A (8 x 20μs pulse) |
| Junction Capacitance | $C_J$ | | 300 | | pF | VR = 0V, f = 1MHz |

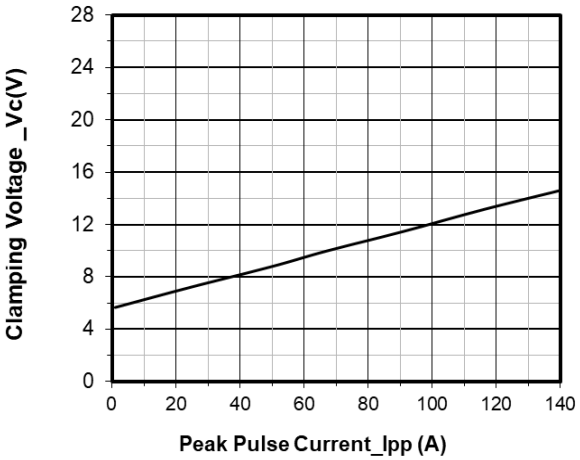
## Typical Performance Characteristics ($T_A$=25°C unless otherwise Specified)



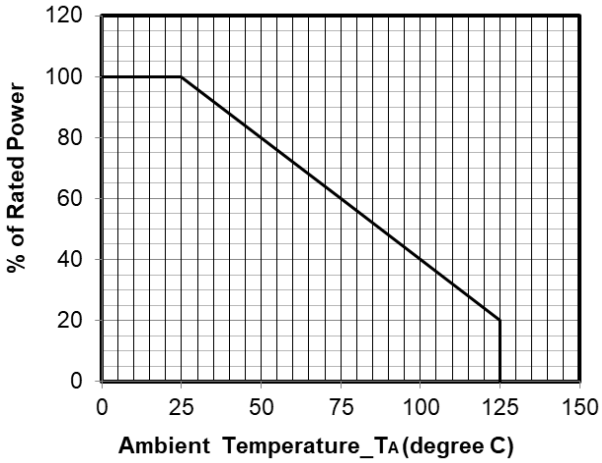

**Junction Capacitance vs. Reverse Voltage**



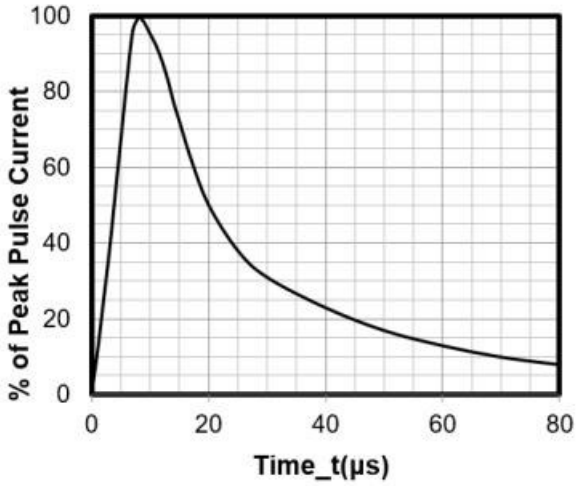

**Peak Pulse Power vs. Pulse Time**



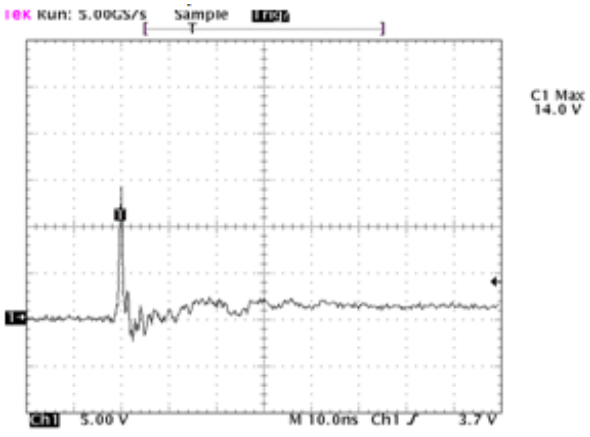

**Clamping Voltage vs. Peak Pulse Current (tp = 8/20μs)**




**Power Derating Curve**




**8 X 20μs Pulse Waveform**

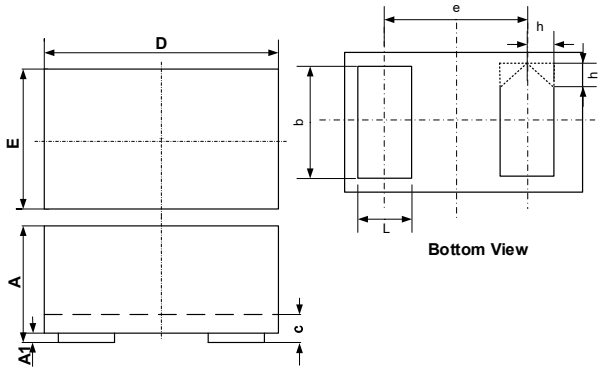



**Note：Data is taken with a 10x attenuator**

**ESD Clamping Voltage**

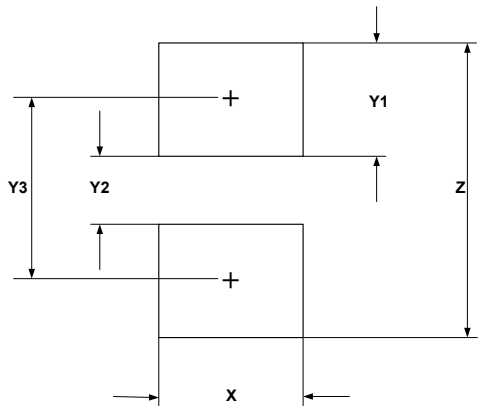
**8 kV Contact per IEC61000−4−2**

## DFN1610-2 Package Outline Drawing




| 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 |

## Contact Information

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