

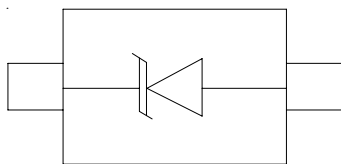
## Description

The DFP1501D5 is an uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The DFP1501D5 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 SOD-523 lead-free package. The small size and high ESD surge protection make DFP1501D5 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

## Mechanical Characteristics

- ◆ Package: SOD-523
- ◆ Lead Finish: Matte Tin
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

## Dimensions and Pin Configuration



Circuit and Pin Schematic

## Features

- ◆ Protects one line
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 15V
- ◆ Low clamping voltage
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30\text{kV}$
    - Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 4A (8/20 $\mu\text{s}$ )
- ◆ ROHS Compliant

## Applications

- ◆ Cellular Handsets and Accessories
- ◆ Personal Digital Assistants
- ◆ Notebooks, Desktops, Servers
- ◆ Portable Instrumentation
- ◆ Printers
- ◆ Analog Inputs
- ◆ Video equipment
- ◆ Communication systems
- ◆ Laser Diode Protection

## Marking Information



15P = Device Marking  
Code Bar denotes Cathode

## Ordering Information

| Part Number | Marking | Packaging        | Reel Size |
|-------------|---------|------------------|-----------|
| DFP1501D5   | 15P     | 3000/Tape & Reel | 7 inch    |

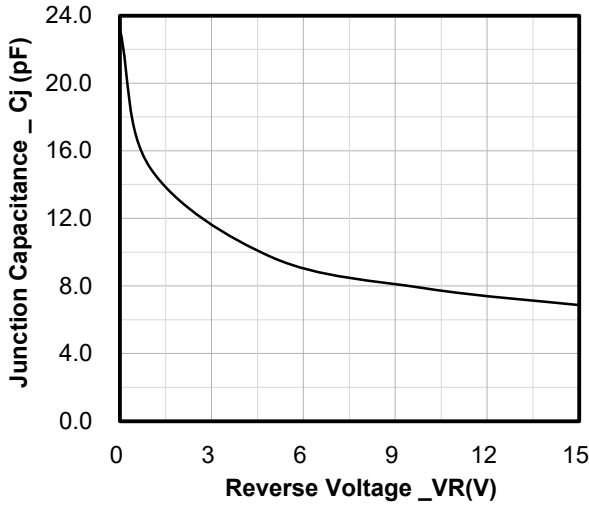
### **Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)**

| Parameter                                | Symbol | Value       | Unit               |
|--|--------|-------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )   | Ppk    | 120         | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ ) | Ipp    | 4           | A                  |
| ESD per IEC 61000-4-2 (Air)              | VESD   | $\pm 30$    | kV                 |
| ESD per IEC 61000-4-2 (Contact)          |        | $\pm 30$    |                    |
| Operating Temperature Range              | TJ     | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range                | Tstg   | -55 to +150 | $^{\circ}\text{C}$ |

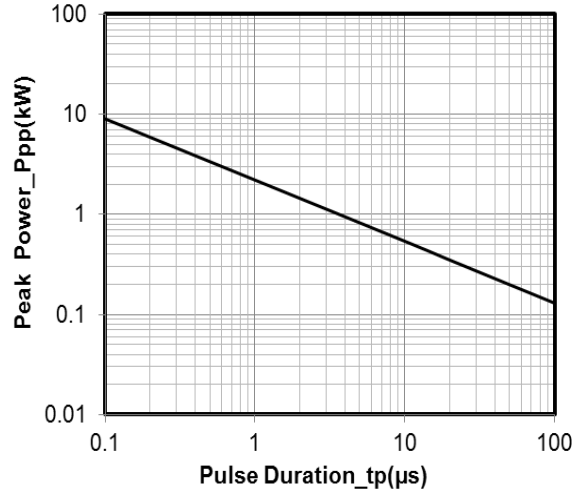
### **Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)**

| Parameter               | Symbol | Min  | Typ | Max | Unit          | Test Condition                                    |
|-------------------------|--------|------|-----|-----|---------------|---|
| Reverse Working Voltage | VRWM   |      |     | 15  | V             |   |
| Breakdown Voltage       | VBR    | 16.7 |     |     | V             | IT = 1mA  |
| Reverse Leakage Current | IR     |      |     | 0.2 | $\mu\text{A}$ | VRWM = 15V  |
| Clamping Voltage        | VC     |      |     | 21  | V             | I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse) |
| Clamping Voltage        | VC     |      |     | 30  | V             | I <sub>PP</sub> = 4A (8 x 20 $\mu\text{s}$ pulse) |
| Junction Capacitance    | CJ     |      |     | 30  | pF            | VR = 0V, f = 1MHz                                 |

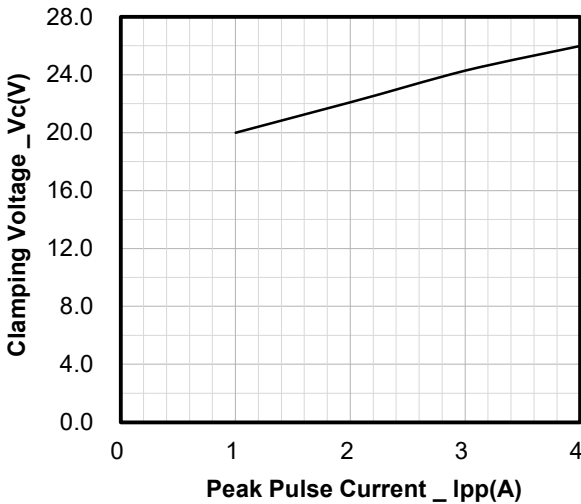
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



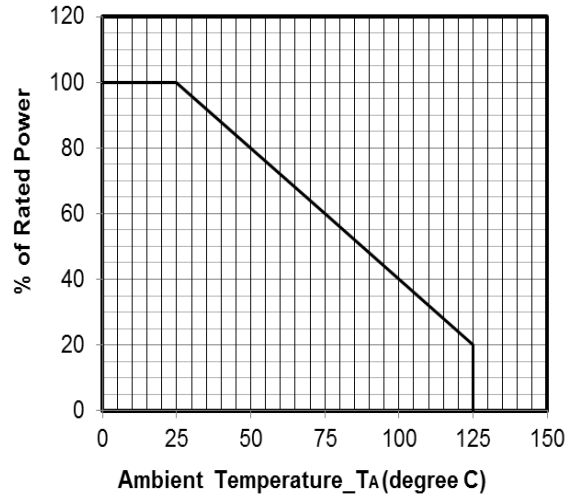
**Junction Capacitance vs. Reverse Voltage**



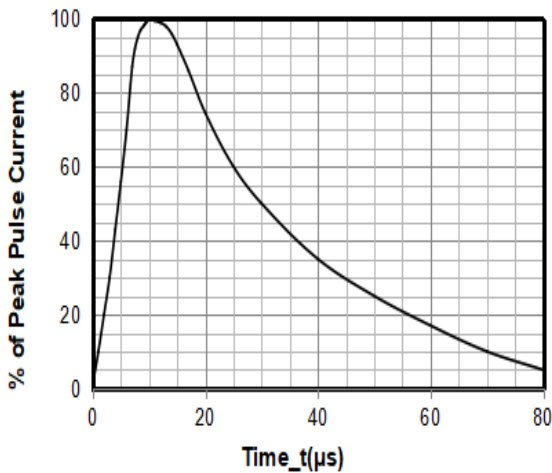
**Peak Pulse Power vs. Pulse Time**



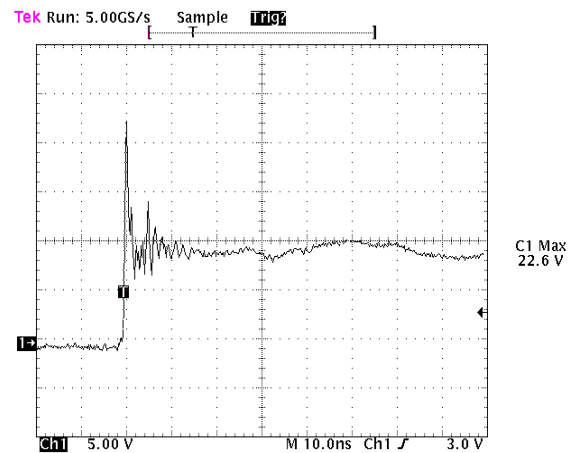
**Clamping Voltage vs. Peak Pulse Current**



**Power Derating Curve**



**8 X 20μs Pulse Waveform**

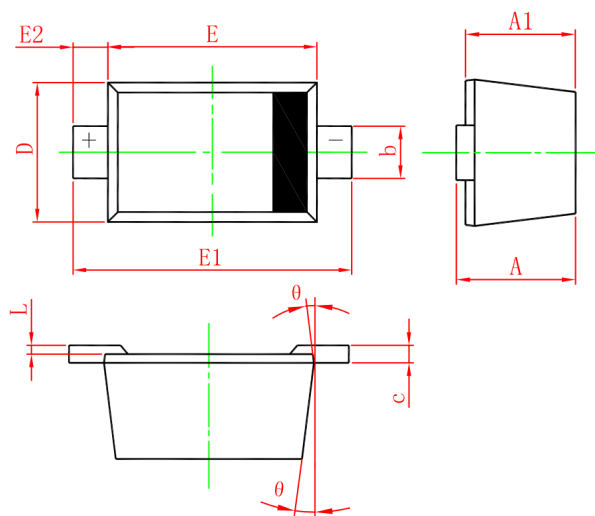


Note: Data is taken with a 10x attenuator

**ESD Clamping Voltage**

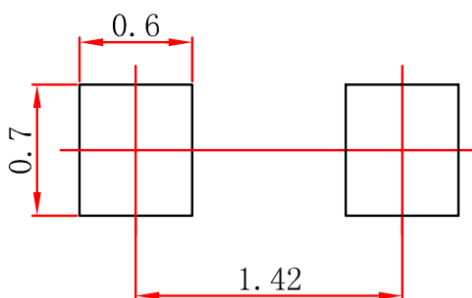
**+8 kV Contact per IEC61000-4-2**

## SOD-523 Package Outline Drawing



| SYM | DIMENSIONS  |     |      |          |     |       |
|-----|-------------|-----|------|----------|-----|-------|
|     | MILLIMETERS |     |      | INCHES   |     |       |
|     | MIN         | NOM | MAX  | MIN      | NOM | MAX   |
| A   | 0.51        | --  | 0.77 | 0.020    | --  | 0.031 |
| A1  | 0.50        | --  | 0.70 | 0.020    | --  | 0.028 |
| b   | 0.25        | --  | 0.35 | 0.010    | --  | 0.014 |
| c   | 0.08        | --  | 0.15 | 0.003    | --  | 0.006 |
| D   | 0.75        | --  | 0.85 | 0.030    | --  | 0.033 |
| E   | 1.10        | --  | 1.30 | 0.043    | --  | 0.051 |
| E1  | 1.50        | --  | 1.70 | 0.059    |     | 0.067 |
| E2  | 0.20REF     |     |      | 0.008REF |     |       |
| L   | 0.01        | --  | 0.07 | 0.001    | --  | 0.003 |
| Θ   | 7° REF      |     |      | 7° REF   |     |       |

## Suggested Land Pattern



Unit : mm

## Contact Information

Changzhou D-first Electronics CO.,Ltd.

www.first-electronic.com

Email: xhf@first-electronic.cn

Phone: +86 (0519) -8817 1671