

1-Line Bi-directional TVS Diode

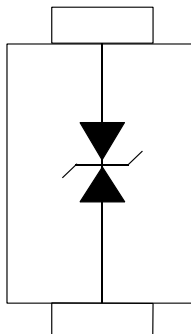
Description

The PESDU0781D1F is an 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 data and power lines. The PESDU0781D1F 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 a SOD-123FL lead-free package. The small size and high ESD/surge protection make PESDU0781D1F an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Protects one data or power line
- Ultra low leakage: nA level
- Low operating voltage: 7V
- Ultra 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) 200A (8/20 μs)
- RoHS Compliant

Pin Configuration



Circuit and Pin Schematic

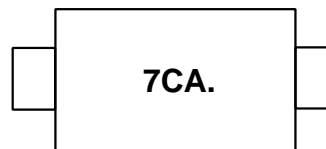
Mechanical Characteristics

- Package: SOD-123FL
- 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

Applications

- Fast-charge battery chargers
- Power management system
- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals

Marking Information



7CA. = Device Marking Code

Ordering Information

| Part Number | Packaging | Real Size |
|--------------|------------------|-----------|
| PESDU0781D1F | 3000/Tape & Reel | 7 inch |

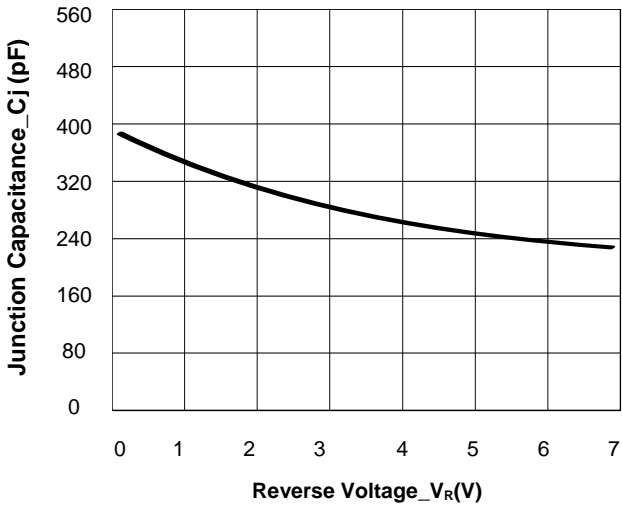
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (8/20μs) | P _{PK} | 5000 | W |
| Peak Pulse Current (8/20μs) | I _{PP} | 200 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ±30 ±30 | kV |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

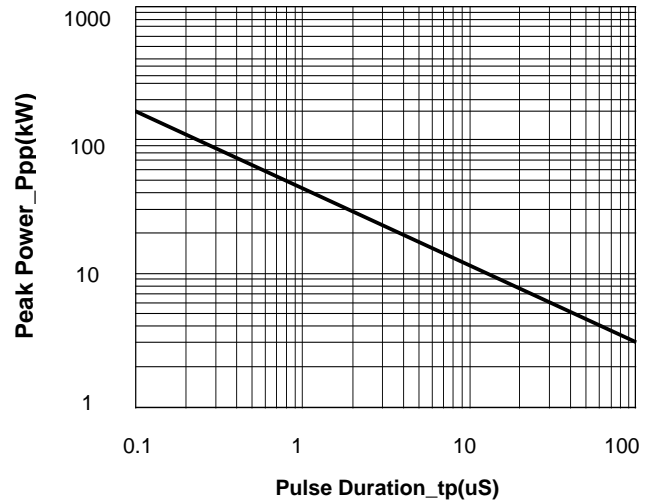
Electrical Characteristics (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---------------------------|------------------|-----|-----|-----|------|---|
| Reverse Working Voltage | V _{RWM} | | | 7 | V | |
| Reverse Breakdown Voltage | V _{BR} | 7.5 | | | | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 5 | μA | V _{RWM} = 7V |
| Clamping Voltage | V _C | | | 9 | V | I _{PP} = 5A (8 x 20μs pulse) |
| ESD Clamping Voltage | V _C | | 20 | 25 | | I _{PP} = 200A (8 x 20μs pulse) |
| Junction Capacitance | C _J | | 400 | | pF | V _R = 0V, f = 1MHz |

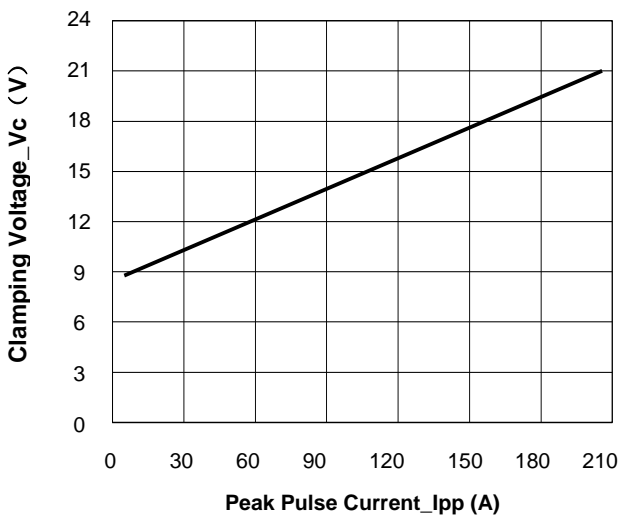
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



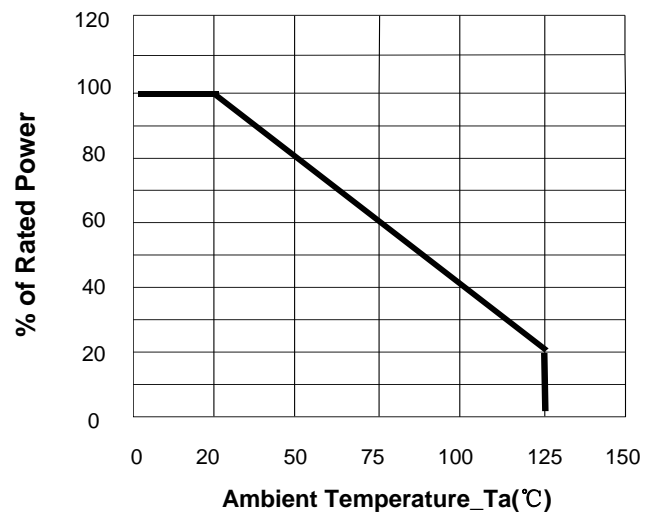
Junction Capacitance vs. Reverse Voltage



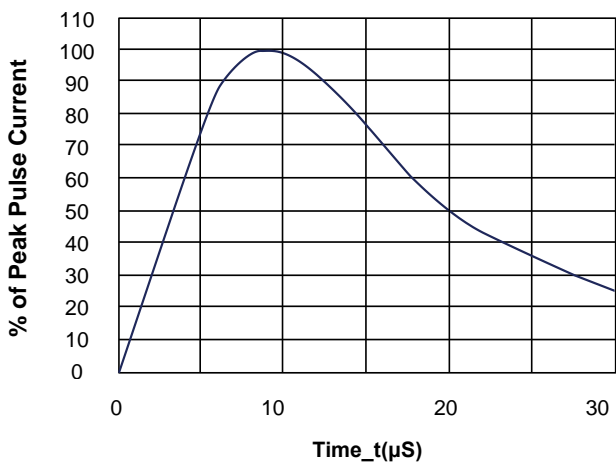
Peak Pulse Power vs. Pulse Time



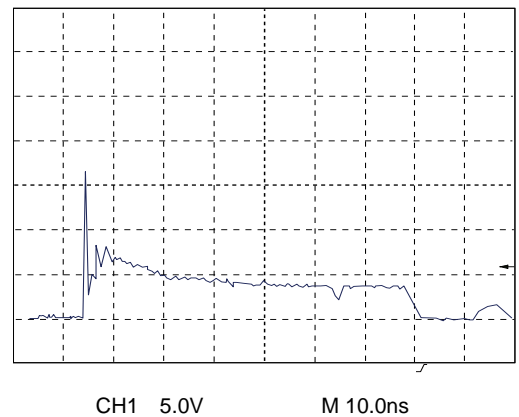
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

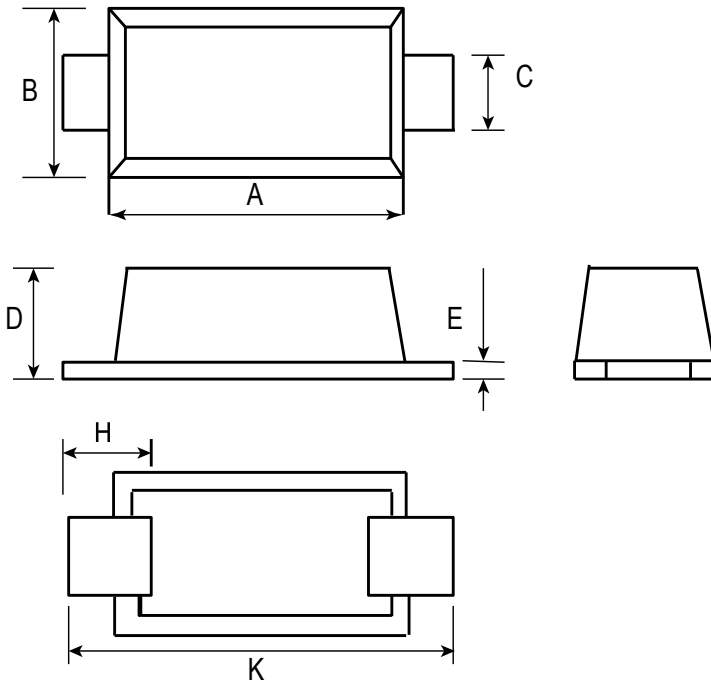


8 X 20uS Pulse Waveform



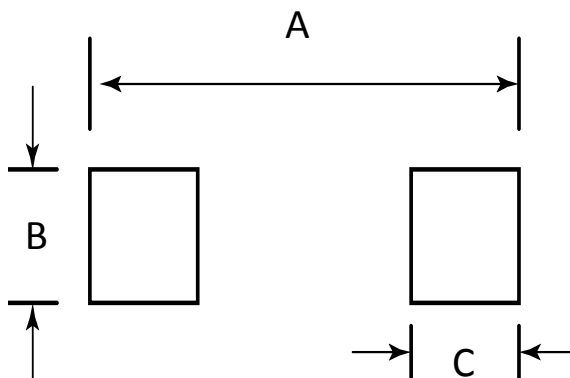
**ESD Clamping Voltage
8 kV Contact per IEC61000-4-2**

SOD-123FL Package Outline Drawing



| DIM | Millimeters | | |
|-----|-------------|------|------|
| | Min | Nom | Max |
| A | 2.70 | 2.80 | 2.90 |
| B | 1.80 | 1.90 | 2.00 |
| C | 0.80 | 1.00 | 1.20 |
| D | | | 1.40 |
| E | 0.10 | 0.20 | 0.30 |
| H | 0.35 | | 0.85 |
| K | 3.50 | | 3.90 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| A | 4.19 | 0.165 |
| B | 1.20 | 0.048 |
| C | 0.90 | 0.036 |