

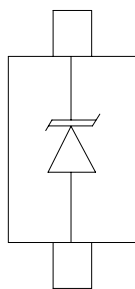
Description

The DC0501D9 is an uni-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 line. The DC0501D9 complies with the IEC61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small lead-free SOD-923 package. The small size and high ESD surge protection make DC0501D9 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Mechanical Characteristics

- ◆ Package: SOD-923
- ◆ 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

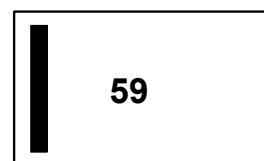
Features

- ◆ Protects one data or power line
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 5V
- ◆ 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) 8A (8/20 μs)
- ◆ RoHS Compliant

Applications

- ◆ Cellular Handsets and Accessories
- ◆ Personal Digital Assistants
- ◆ Notebooks and Handhelds
- ◆ Portable Instrumentation
- ◆ Digital Cameras
- ◆ Peripherals
- ◆ Audio Players
- ◆ Keypads, Side Keys, LCD Displays

Marking Information



59 = Device Marking Code

Bar denotes cathode

Ordering Information

| Part Number | Marking | Packaging | Reel Size |
|-------------|---------|------------------|-----------|
| DC0501D9 | 59 | 8000/Tape & Reel | 7 inch |

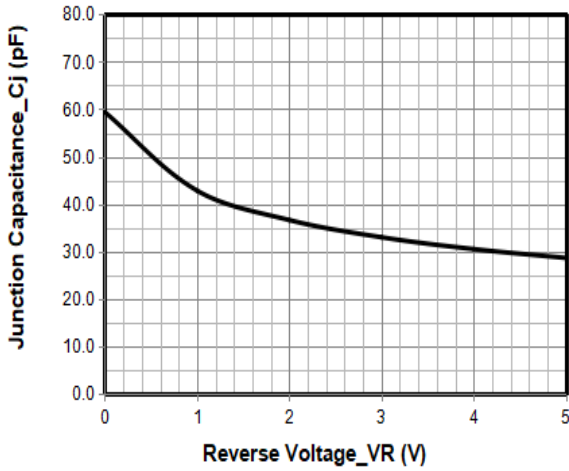
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|------------------|-------------|--------------------|
| Peak Pulse Power(8/20 μs) | Ppk | 100 | W |
| Peak Pulse Current(8/20 μs) | I _{PP} | 8 | A |
| 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 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T _{stg} | -55 to +150 | $^{\circ}\text{C}$ |

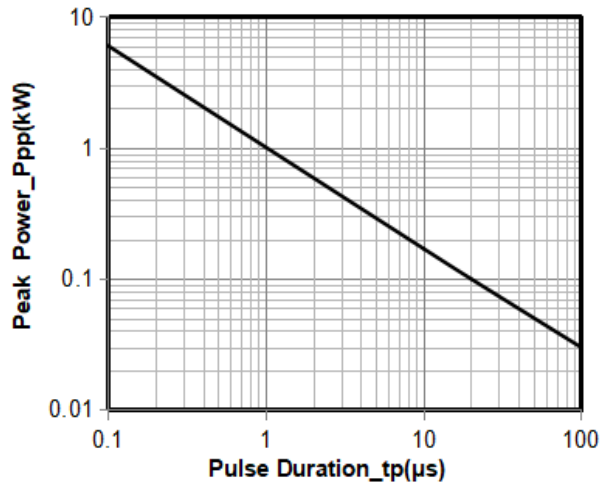
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|-----|---------------|---|
| Reverse Working Voltage | V _{RWM} | | | 5 | V | Pin 1 to Pin 2 |
| Breakdown Voltage | V _{BR} | 6 | | 8.5 | V | I _T = 1mA, Pin 1 to Pin 2 |
| Reverse Leakage Current | I _R | | | 0.2 | μA | V _{RWM} = 5V, Pin 1 to Pin 2 |
| Forward Voltage | V _F | | 1.0 | 1.2 | V | I _F = 10mA, Pin 2 to Pin 1 |
| Clamping Voltage | V _C | | | 12 | V | I _{PP} = 8A (8 x 20 μs pulse), Pin 1 to Pin 2 |
| Junction Capacitance | C _J | | 60 | | pF | V _R = 0V, f = 1MHz |

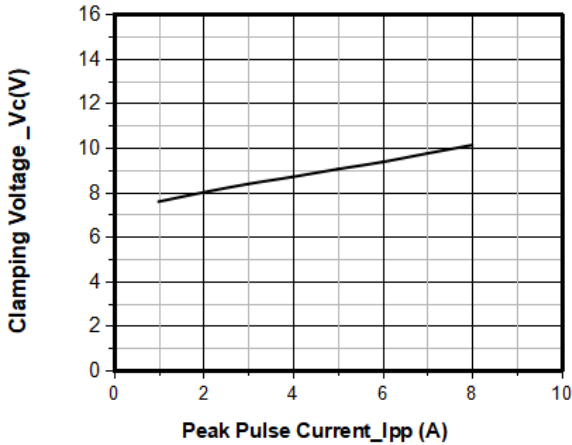
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



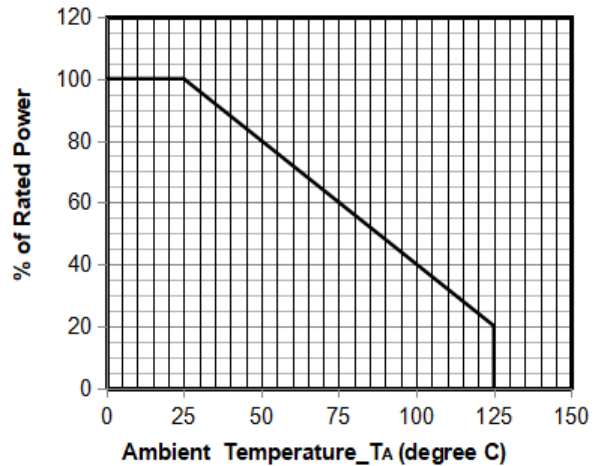
Junction Capacitance vs. Reverse Voltage



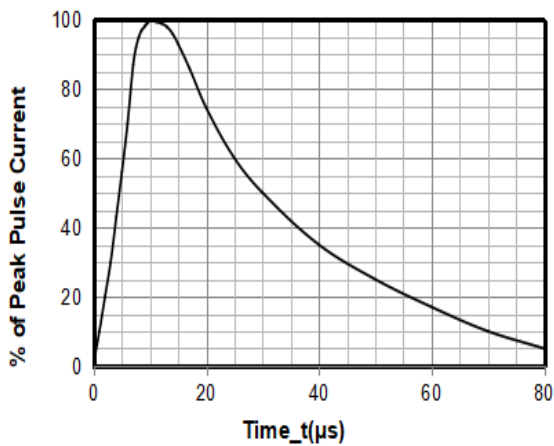
Peak Pulse Power vs. Pulse Time



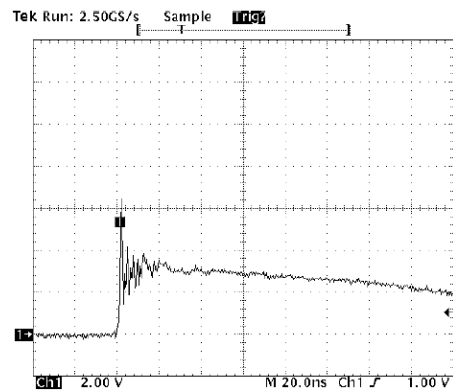
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



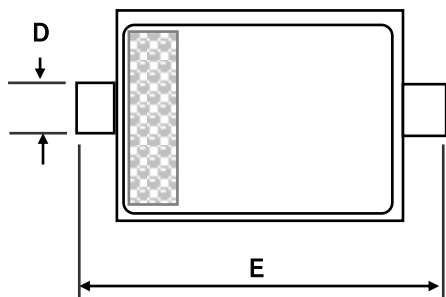
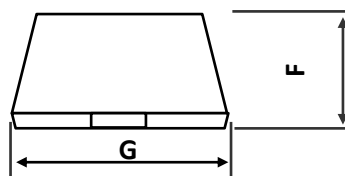
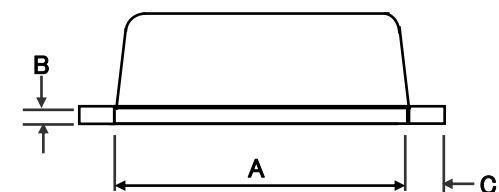
8 X 20μs Pulse Waveform



Note: Data is taken with a 10x attenuator

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

SOD-923 Package Outline Drawing



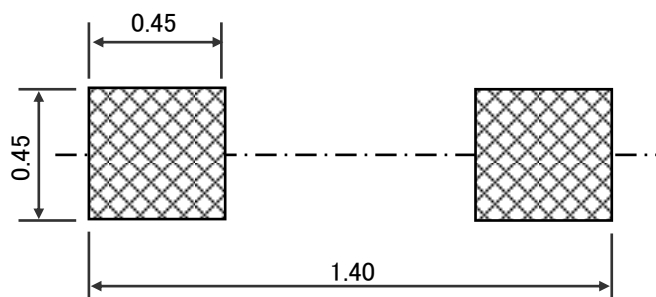
Dimensions

| Unit | A | B | C | D | E | F | G |
|------|------|------|------|------|------|------|------|
| Max. | 0.90 | 0.20 | 0.15 | 0.30 | 1.10 | 0.45 | 0.65 |
| Min. | 0.70 | 0.05 | 0.05 | 0.15 | 0.90 | 0.39 | 0.55 |

Unit: mm

SOD923 * Package Outline

Suggested Land Pattern



Contact Information

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