

## Description

The LE0521D5 is a 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 line. The LE0521D5 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 LE0521D5 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

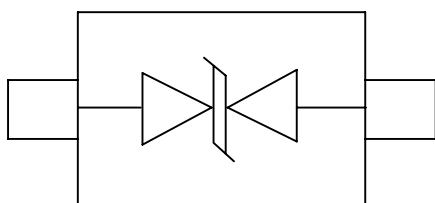
## Features

- ◆ 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 $\mu\text{s}$ )
- ◆ 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

## Dimensions and Pin Configuration



Circuit and Pin Schematic

## Marking Information



5B = Device Marking Code

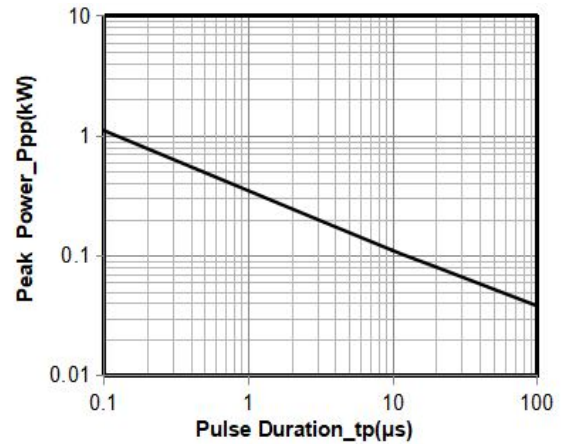
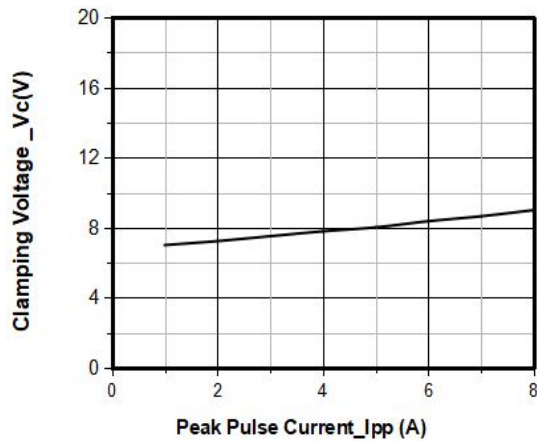
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

| Parameter                       | Symbol           | Value       | Unit |
|---------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20μs)       | Ppk              | 80          | W    |
| Peak Pulse Current (8/20μs)     | I <sub>PP</sub>  | 8           | A    |
| ESD per IEC 61000-4-2 (Air)     | V <sub>ESD</sub> | ±30         | kV   |
| ESD per IEC 61000-4-2 (Contact) |                  | ±30         |      |
| Operating Temperature Range     | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range       | T <sub>stg</sub> | -55 to +150 | °C   |

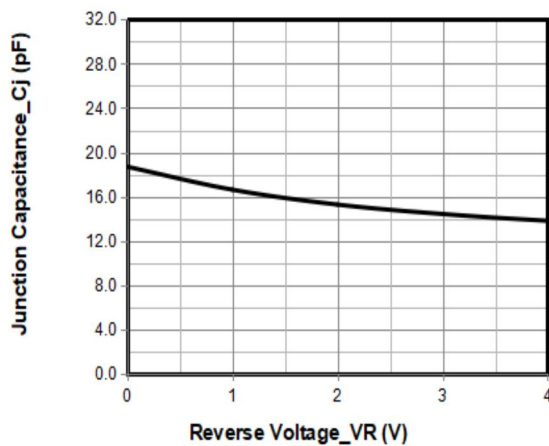
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

| Parameter               | Symbol           | Min | Typ | Max | Unit | Test Condition                |
|-------------------------|------------------|-----|-----|-----|------|-------------------------------|
| Reverse Working Voltage | V <sub>RWM</sub> |     |     | 5   | V    |                               |
| Breakdown Voltage       | V <sub>BR</sub>  | 6   |     | 8   | V    | I <sub>T</sub> = 1mA          |
| Reverse Leakage Current | I <sub>R</sub>   |     |     | 0.2 | μA   | V <sub>RWM</sub> = 5V         |
| Clamping Voltage        | V <sub>C</sub>   |     |     | 8   | V    | I <sub>PP</sub> = 1A          |
| Clamping Voltage        | V <sub>C</sub>   |     |     | 10  | V    | I <sub>PP</sub> = 8A          |
| Junction Capacitance    | C <sub>J</sub>   |     |     | 20  | pF   | V <sub>R</sub> = 0V, f = 1MHz |

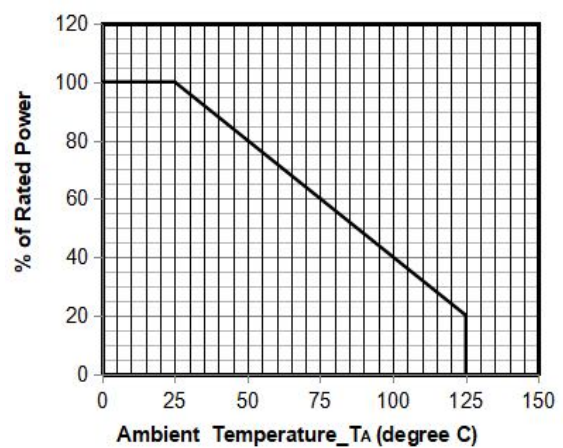
### Typical Performance Characteristics (TA=25°C unless otherwise Specified)



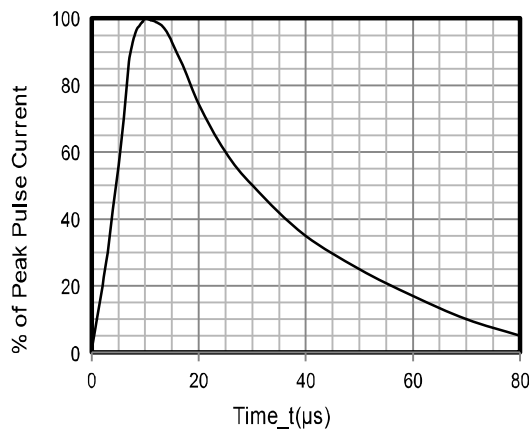
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time

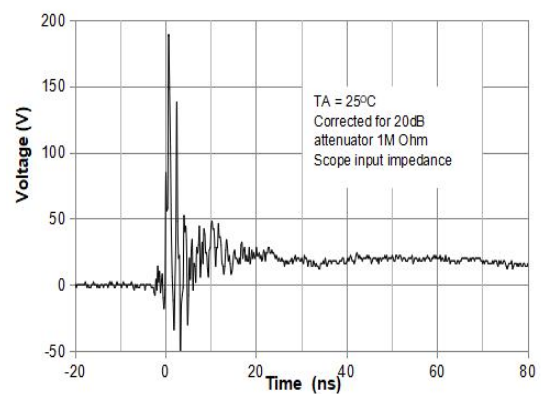


Clamping Voltage vs. Peak Pulse Current ( $t_p = 8/20\mu$ s)



8 X 20 $\mu$ s Pulse Waveform

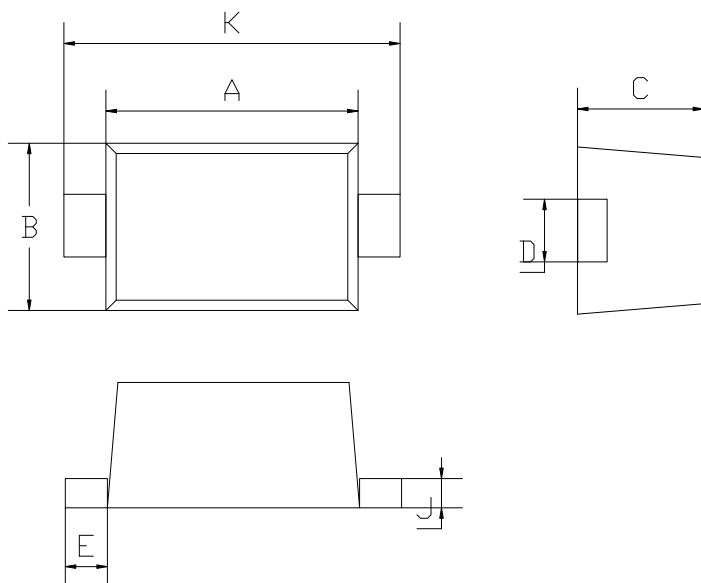
Power Derating Curve



ESD Clamping Voltage

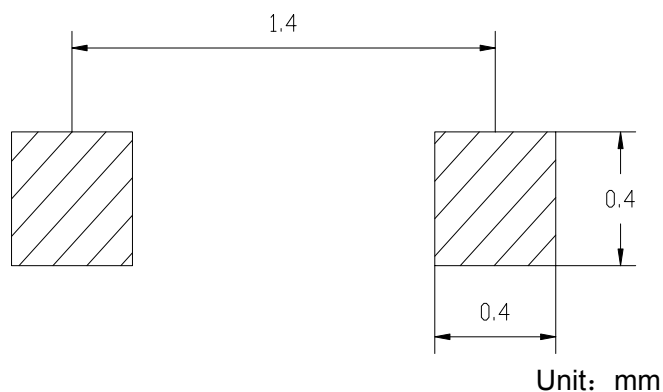
8 kV Contact per IEC61000-4-2

### Package Outline Dimensions



| SOD-523              |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 1.10 | 1.30 |
| B                    | 0.70 | 0.90 |
| C                    | 0.50 | 0.70 |
| D                    | 0.25 | 0.35 |
| E                    | 0.15 | 0.25 |
| J                    | 0.05 | 0.15 |
| K                    | 1.50 | 1.70 |
| All Dimensions in mm |      |      |

### Suggested Pad Layout



### Ordering Information

| TYPE     | REEL     | Reel Size | Box        | Carton      |
|----------|----------|-----------|------------|-------------|
| LE0521D5 | 3000 pcs | 7 Inch    | 45,000 pcs | 180,000 pcs |