

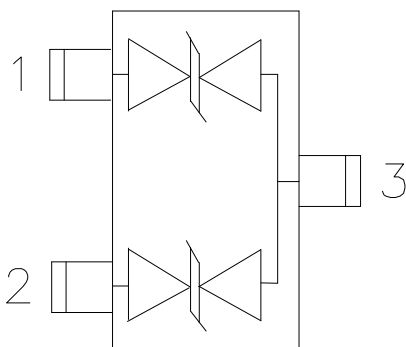
## Description

The AU0521S5 is a 2-line bi-directional low capacitance TVS diode array, 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 high-speed data lines. The AU0521S5 has a low capacitance with a typical value at 16pF, and 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 3-pin SOT-523 lead-free package. The small size, very low capacitance and high ESD surge protection make AU0521S5 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

## Features

- Very low capacitance: 16pF typical
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Small SOT-523 package
- Up to 2-line protects
- 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) 6A (8/20 $\mu\text{s}$ )
- RoHS Compliant

## Dimensions and Pin Configuration



Circuit and Pin Schematic

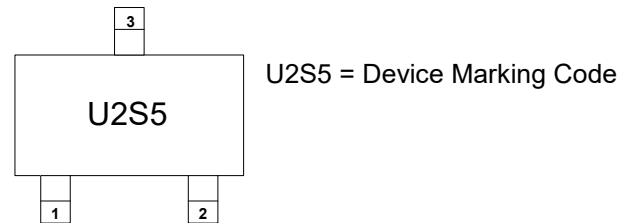
## Mechanical Characteristics

- Package: SOT-523
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Personal Digital Assistants
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players, Keypads, Side Keys, LCD
- USB 2.0

## Marking Information



## Ordering Information

| Part Number | Packaging        | Reel Size |
|-------------|------------------|-----------|
| AU0521S5    | 3000/Tape & Reel | 7 inch    |

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

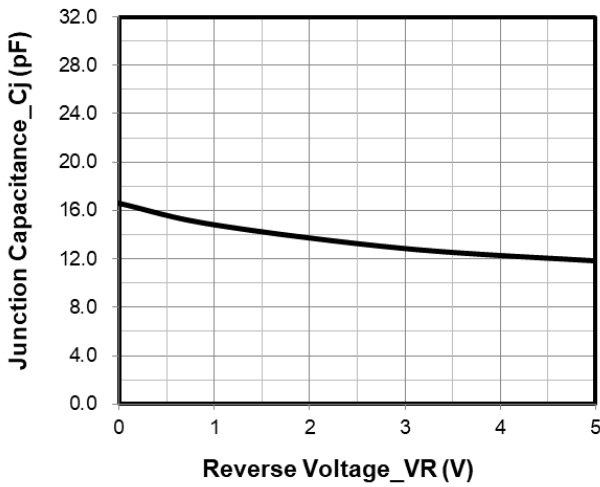
| Parameter  | Symbol | Value                | Unit             |
|--|--------|----------------------|------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )                         | Ppk    | 60                   | W                |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | VESD   | $\pm 30$<br>$\pm 30$ | kV               |
| 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)**

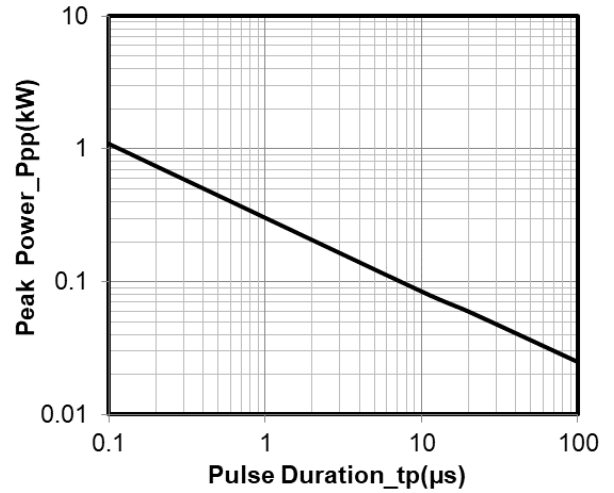
| Parameter               | Symbol | Min | Typ | Max | Unit          | Test Condition  |
|-------------------------|--------|-----|-----|-----|---------------|---|
| Reverse Working Voltage | VRWM   |     |     | 5   | V             |   |
| Breakdown Voltage       | VBR    | 6   |     |     | V             | IT = 1mA  |
| Reverse Leakage Current | IR     |     |     | 0.2 | $\mu\text{A}$ | VRWM = 5V   |
| Clamping Voltage        | VC     |     | 8   |     | V             | I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse), any I/O to pin 3 |
| Clamping Voltage        | VC     |     |     | 10  | V             | I <sub>PP</sub> = 6A (8 x 20 $\mu\text{s}$ pulse), any I/O to pin 3 |
| Junction Capacitance    | CJ     |     | 16  |     | pF            | VR = 0V, f = 1MHz, any I/O pin to pin 3                             |

Note 1: I/O pins are Pin 1, 2

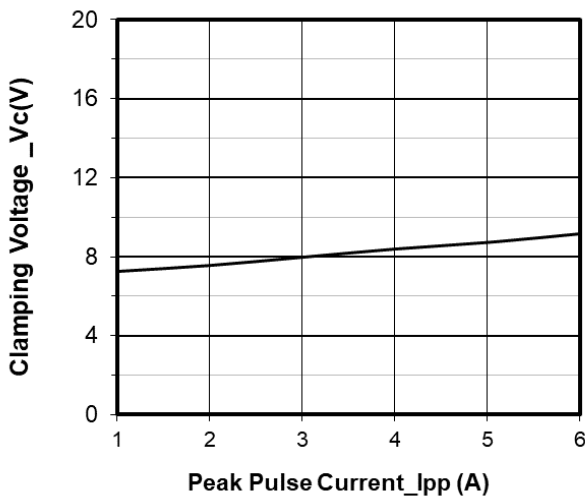
**Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)**



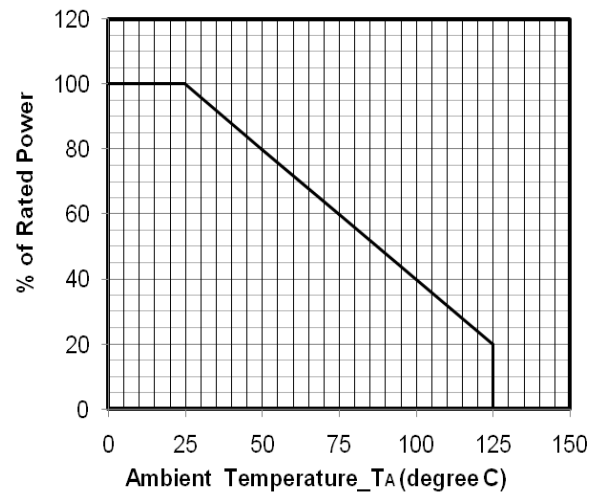
**Junction Capacitance vs. Reverse Voltage**



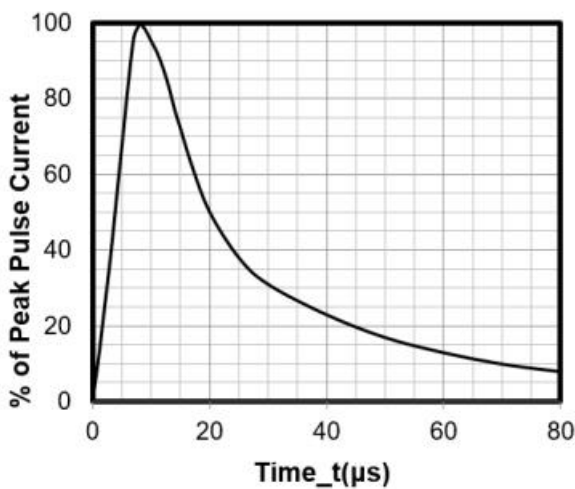
**Peak Pulse Power vs. Pulse Time**



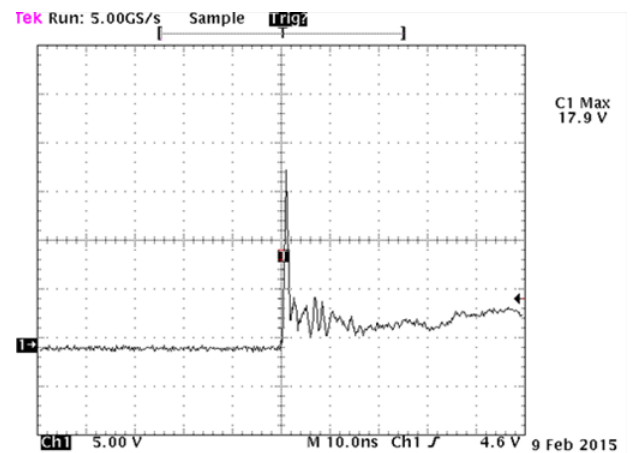
**Clamping Voltage vs. Peak Pulse Current ( $t_p = 8/20\mu\text{s}$ )**



**Power Derating Curve**



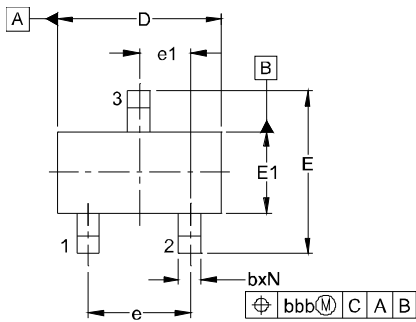
**8 X 20μs Pulse Waveform**



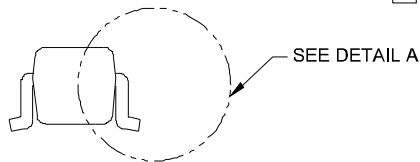
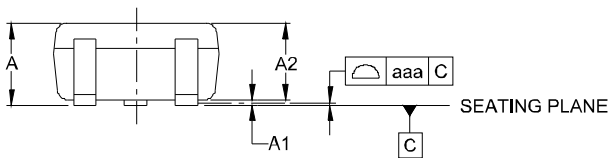
**Note: Data is taken with a 10x attenuator**

**ESD Clamping Voltage**

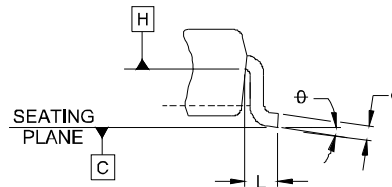
**+8 kV Contact per IEC61000-4-2**

**SOT-523 Package Outline Drawing**


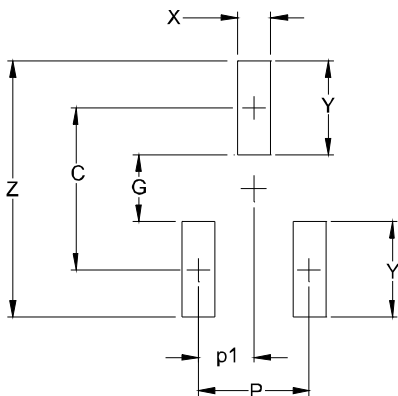
| DIM      | INCHES   |      |      | MILLIMETERS |      |      |
|----------|----------|------|------|-------------|------|------|
|          | MIN      | NOM  | MAX  | MIN         | NOM  | MAX  |
| A        | .023     | -    | .035 | 0.60        | -    | 0.90 |
| A1       | .000     | -    | .004 | 0.00        | -    | 0.10 |
| A2       | .023     | .030 | .031 | 0.60        | 0.75 | 0.80 |
| b        | .005     | -    | .012 | 0.15        | -    | 0.30 |
| c        | .003     | -    | .008 | 0.10        | -    | 0.20 |
| D        | .059     | .063 | .067 | 1.50        | 1.60 | 1.70 |
| E        | .057     | .063 | .069 | 1.45        | 1.60 | 1.75 |
| E1       | .029     | .031 | .033 | 0.75        | 0.80 | 0.85 |
| e        | .039 BSC |      |      | 1.00 BSC    |      |      |
| e1       | .020 BSC |      |      | 0.50 BSC    |      |      |
| L        | (.009)   |      |      | (0.22)      |      |      |
| N        | 3        |      |      | 3           |      |      |
| $\theta$ | 0°       | -    | 8°   | 0°          | -    | 8°   |
| aaa      | .004     |      |      | 0.10        |      |      |
| bbb      | .008     |      |      | 0.20        |      |      |



SIDE VIEW



DETAIL A

**Suggested Land Pattern**


| DIM | INCHES | MILLIMETERS |
|-----|--------|-------------|
| C   | (.055) | (1.40)      |
| P   | .039   | 1.00        |
| p1  | .020   | 0.50        |
| G   | .024   | 0.60        |
| X   | .016   | 0.40        |
| Y   | .031   | 0.80        |
| Z   | .087   | 2.20        |

**Contact Information**

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