



# ESD5Z Series

## Transient Voltage Suppressors

### SOD-523 Plastic-Encapsulate ESD Protection Diodes

## DESCRIPTION

The ESD5Z Series is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications..

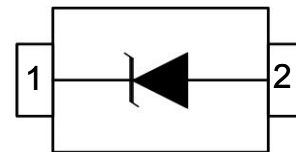
## Features

- ◆ IEC61000-4-2 Level 4 ESD Protection
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Working voltages : 2.5V,3.3V,5V,6V,7V, 12V,15V
- ◆ Low leakage current)

## Pin Configuration



## Circuit Diagram



## Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Microprocessor based equipment
- ◆ Personal Digital Assistants (PDA's)
- ◆ Notebooks, Desktops, and Servers
- ◆ Portable Instrumentation
- ◆ Peripherals

## Mechanical Characteristics

- ◆ Package: SOD-523
- ◆ Flammability Rating: UL 94V-0
- ◆ High temperature soldering guaranteed: 260 °C/10s
- ◆ Packaging: Tape and Reel

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

| Parameter   | Symbol                           | Value       | Unit |
|---|----------------------------------|-------------|------|
| ESD per IEC 61000-4-2 (Air)   | V <sub>ESD</sub>                 | ± 30        | kV   |
| ESD per IEC 61000-4-2 (Contact)                                       |                                  | ± 22        |      |
| ESD Voltage per human body model                                      | ESD                              | 16          | kV   |
| ESD Voltage per machine model   |                                  | 400         | V    |
| Total Power Dissipation on FR-5 Board (Note 1) @ T <sub>a</sub> =25°C | P <sub>D</sub>                   | 150         | mW   |
| Junction and Storage Temperature                                      | T <sub>J</sub> ,T <sub>STG</sub> | -55 to +150 | °C   |
| Lead Solder Temperature – Maximum (10 Second Duration)                | T <sub>L</sub>                   | 260(10S)    | °C   |

these ratings are limiting values above which the serviceability of the diode may be impaired

Note:1.FR-5=1.0x0.75x0.62 in

2.The above data above is for reference only.



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

| PART NUMBER | DEVICE MARKING | V <sub>RWM</sub><br>(V) | I <sub>R</sub><br>(μ) | V <sub>B</sub><br>(V) | I <sub>T</sub> | V <sub>C</sub><br>(V) |     | V <sub>C</sub><br>(V) |     | P <sub>PK</sub><br>(W) | C <sub>J</sub><br>(pF) |
|-------------|----------------|-------------------------|-----------------------|-----------------------|----------------|-----------------------|-----|-----------------------|-----|------------------------|------------------------|
|             |                | Max                     | M                     | Min                   | (mA)           | Max                   | @A  | Max                   | @A  | Max                    | Max                    |
| ESD5Z2V5    | ZD + code      | 2.5                     | 6.0                   | 4.0                   | 1              | 9.0                   | 5.0 | 11.5                  | 9.0 | 104                    | 145                    |
| ESD5Z3V3    | ZE + code      | 3.3                     | 0.90                  | 5.0                   | 1              | 10.0                  | 5.0 | 14.0                  | 7.5 | 1                      | 105                    |
| ESD5Z5V0    | ZF + code      | 5.0                     | 0.08                  | 6.2                   | 1              | 11.6                  | 5.0 | 15.0                  | 7.0 | 1                      | 80                     |
| ESD5Z6V0    | ZG + code      | 6.0                     | 0.05                  | 6.8                   | 1              | 13.5                  | 5.0 | 17.5                  | 6.0 | 1                      | 70                     |
| ESD5Z7V0    | ZH + code      | 7.0                     | 0.03                  | 7.5                   | 1              | 14.0                  | 5.0 | 18.0                  | 6.0 | 1                      | 65                     |
| ESD5Z12V    | ZM + code      | 12.0                    | 0.03                  | 14.1                  | 1              | 20.0                  | 1.0 | 26.0                  | 4.0 | 104                    | 45                     |
| ESD5Z15V    | ZN + code      | 15.0                    | 0.50                  | 16.0                  | 1              | 23.0                  | 1.0 | 30.0                  | 4.0 | 120                    | 28                     |

The above data are for reference only.

### ELECTRICAL CHARACTERISTICS CURVE

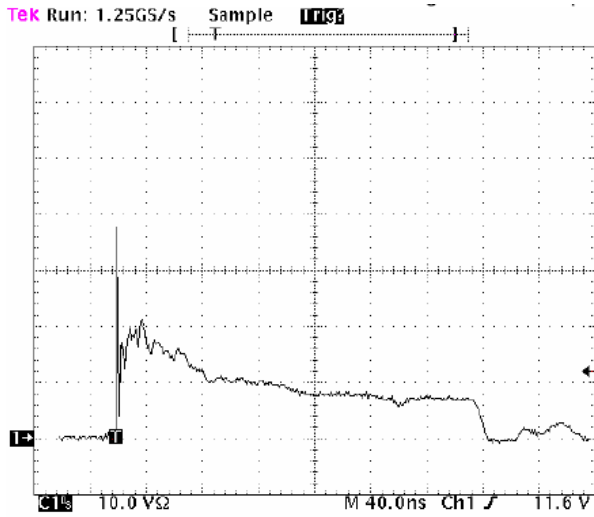


Figure 1. ESD Clamping Voltage Screenshot  
Positive 8 kV contact per IEC 61000-4-2

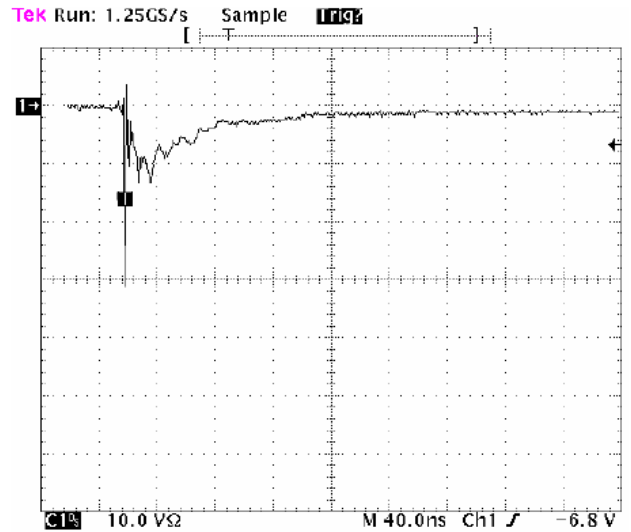


Figure 2. ESD Clamping Voltage Screenshot  
Negative 8 kV contact per IEC 61000-4-2

The above data are for reference only.

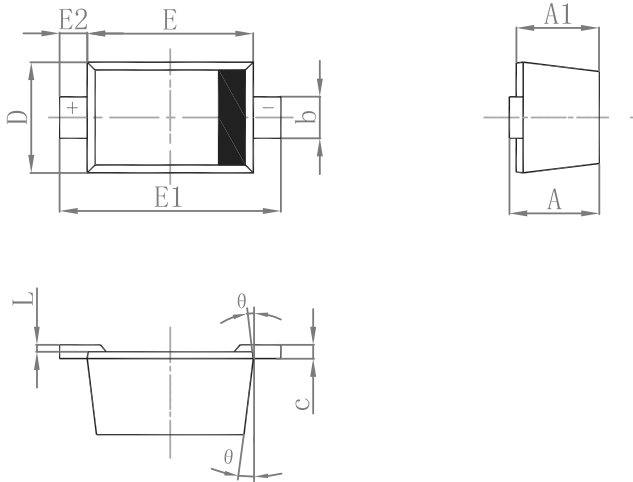


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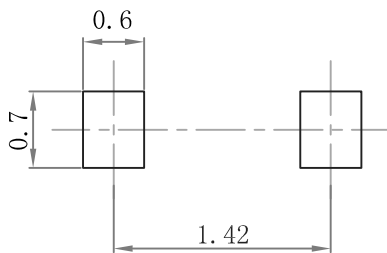
### Outline Drawing

#### SOD-523 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.510                     | 0.770 | 0.020                | 0.031 |
| A1     | 0.500                     | 0.700 | 0.020                | 0.028 |
| b      | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 0.750                     | 0.850 | 0.030                | 0.033 |
| E      | 1.100                     | 1.300 | 0.043                | 0.051 |
| E1     | 1.500                     | 1.700 | 0.059                | 0.067 |
| E2     | 0.200 REF                 |       | 0.008 REF            |       |
| L      | 0.010                     | 0.070 | 0.001                | 0.003 |
| K      | 7° REF                    |       | 7° REF               |       |

### Suggested Pad Layout



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### PACKAGE SPECIFICATIONS

| Package | Reel Size | Reel DIA. (mm) | Q'TY/Reel (pcs) | Box Size (mm) | QTY/Box (pcs) | Carton Size (mm) | Q'TY/Carton (pcs) |
|---------|-----------|----------------|-----------------|---------------|---------------|------------------|-------------------|
| SOD-523 | 7'        | 178            | 3000            | 183×188×80    | 18,000        | 386×265×215      | 108,000           |

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