

**SESD5L5V**  
**ESD Protection Diode With Ultra-Low Capacitance**

Revision:A

**General Description**

The ESD5L5V is designed to protect voltage sensitive components that require ultra-low capacitance from ESD and transient voltage events. Excellent clamping capability, low capacitance, 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 low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed and antenna line applications.

**Features**

- Ultra Low Capacitance 0.5 pF
- Low Clamping Voltage
- Small Body Outline Dimensions:
- Stand-off Voltage: 5 V
- Low Leakage
- Response Time is Typically < 1.0 ns
- IEC61000-4-2 Level 4 ESD Protection
- This is a Pb-Free Device

**Complies with the following standards**

**IEC61000-4-2**

**Level 4 15 kV (air discharge)**

**8 kV (contact discharge)**

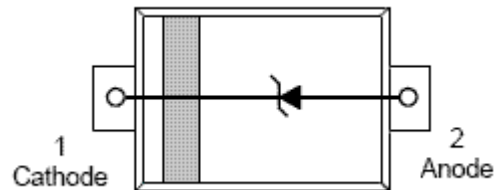
**MIL STD 883E - Method 3015-7 Class 3**

**25 kV HBM (Human Body Model)**

**Functional diagram**



**SOD-523**



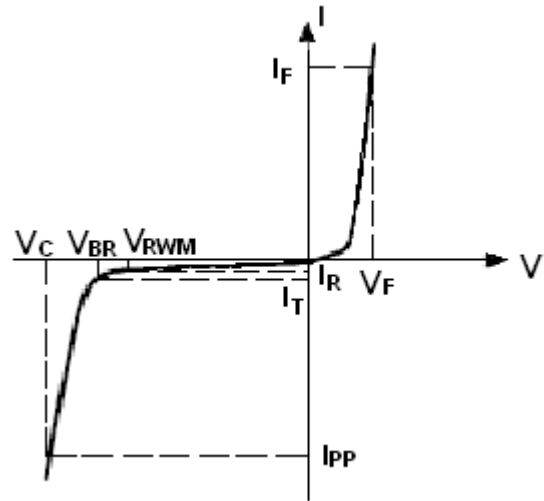
**Maximum Ratings**

| Parameter   | Symbol               | Value      | Unit       |
|---|----------------------|------------|------------|
| IEC 61000-4-2 (ESD) Contact                                 |                      | 8          | kV         |
| ESD Voltage   | Per Human Body Model | 25         | kV         |
|   | Per Machine Model    | 400        | V          |
| Peak Pulse Power ( $t_p = 8/20\mu s$ ) @ $T_A = 25^\circ C$ | $P_D$                | 100        | W          |
| Junction and Storage Temperature Range                      | $T_J, T_{STG}$       | -55 to 150 | $^\circ C$ |
| Lead Solder Temperature – Maximum (10 Second Duration)      | $T_L$                | 260        | $^\circ C$ |

# SESD5L5V

## Electrical Parameter

| Symbol    | Parameter                                   |
|-----------|---|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $I_T$     | Test Current                                |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_F$     | Forward Current                             |
| $V_F$     | Forward Voltage @ $I_F$                     |



## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted, $V_F=0.9\text{V Max.}$ @ $I_F=10\text{mA}$ for all types)

| Part Numbers | $V_{BR}$ | $I_T$ | $V_{RWM}$ | $I_R$ | $V_F$ | $I_F$ | $C$          |
|--------------|----------|-------|-----------|-------|-------|-------|--------------|
|              | Min.     |       |           |       | Max.  |       | Max. (Note1) |
|              | V        |       |           |       | V     |       | pF           |
| SESD5L5V     | 6.0      | 1.0   | 5         | 1     | 1.0   | 10    | 0.9          |

1. Capacitance is measured at  $f=1\text{MHz}$ ,  $V_R=0\text{V}$ ,  $T_A=25^\circ\text{C}$ .
2.  $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .
3. For test procedure see Figures 3 and 4 and Application Note AND8307/D.

## Typical Characteristics

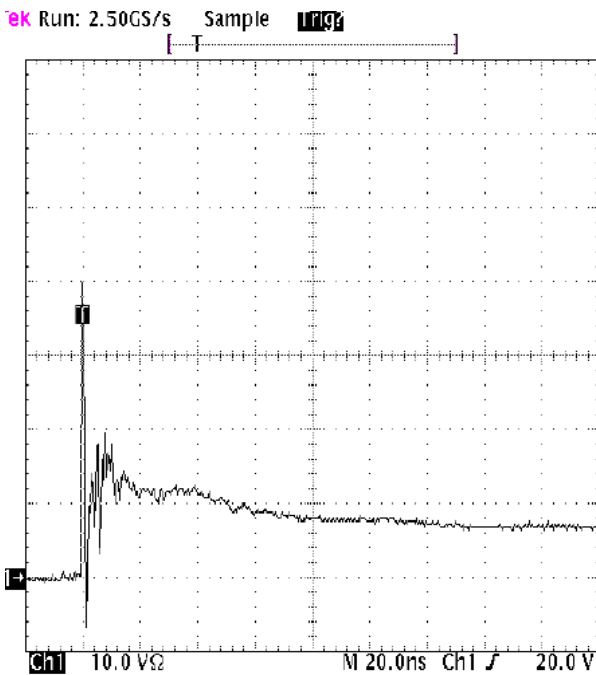


Fig 1. Positive 8kV contact per IEC  
61000-4-2-SESD5L5V

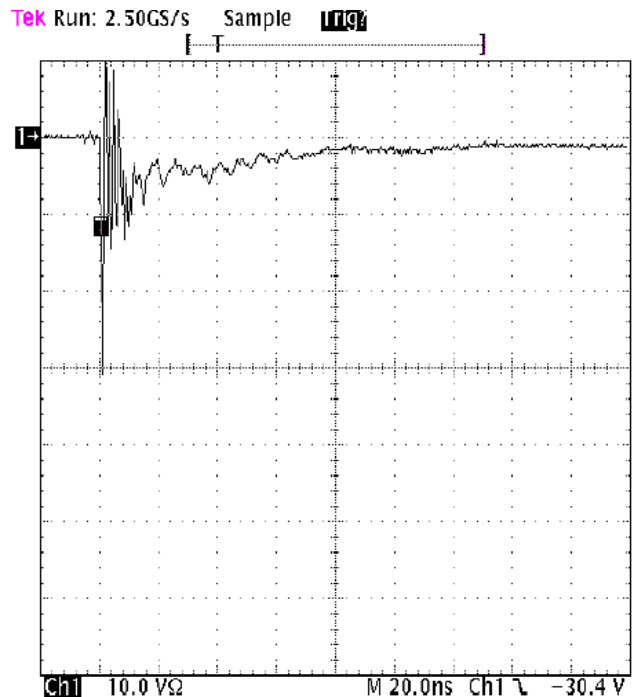


Fig 2. Negative 8kV contact per IEC  
61000-4-2-SESD5L5V

# SESD5L5V

IEC 61000-4-2 Spec.

| Level | Test Voltage (kV) | First Peak Current (A) | Current at 30 ns (A) | Current at 60 ns (A) |
|-------|-------------------|------------------------|----------------------|----------------------|
| 1     | 2                 | 7.5                    | 4                    | 2                    |
| 2     | 4                 | 15                     | 8                    | 4                    |
| 3     | 6                 | 22.5                   | 12                   | 6                    |
| 4     | 8                 | 30                     | 16                   | 8                    |

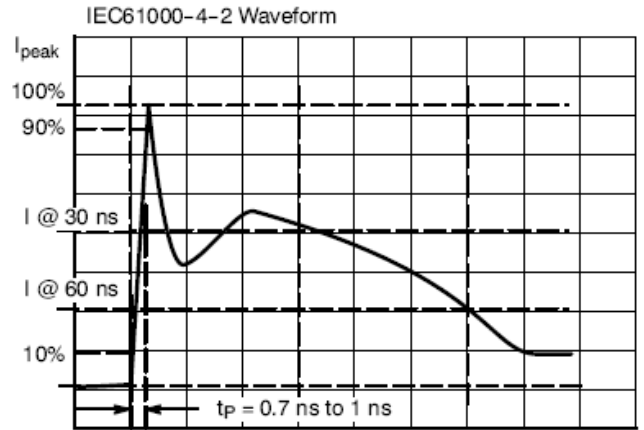


Figure 3. IEC61000-4-2 Spec

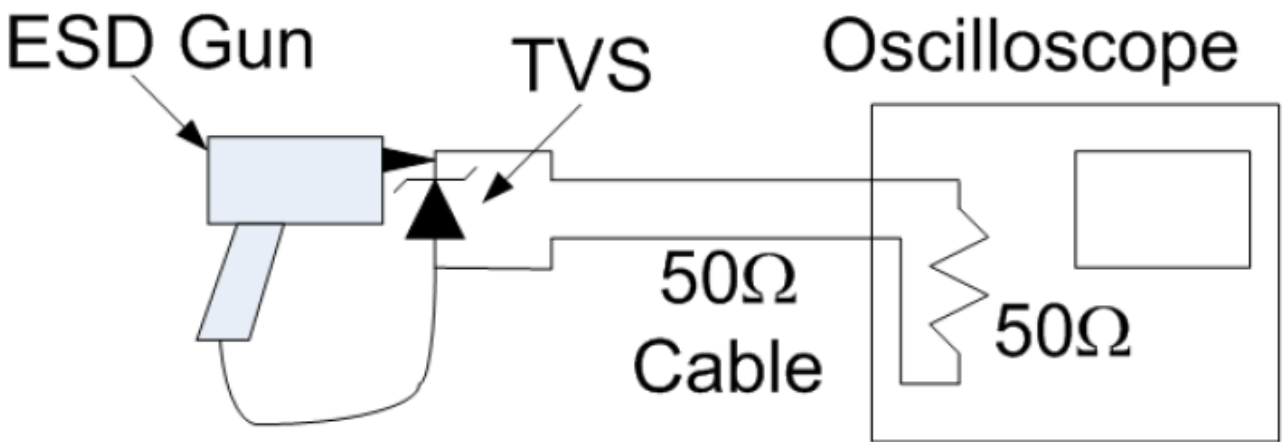
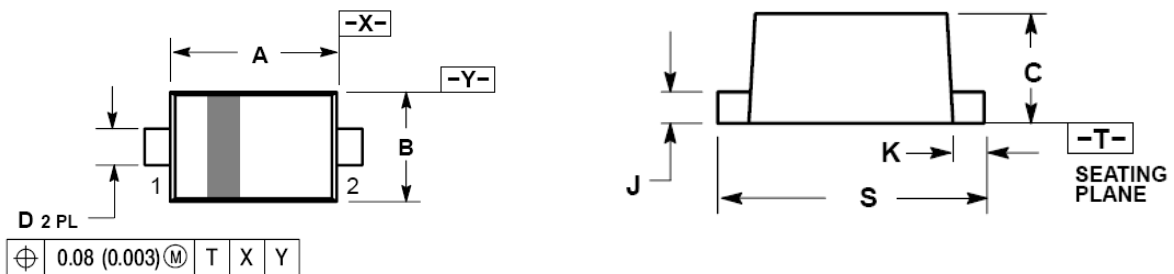


Figure 4. Diagram of ESD Test Setup

## SOD-523 Mechanical Data



| Dim | Millimeters |      |      | INCHES |        |        |
|-----|-------------|------|------|--------|--------|--------|
|     | MIN         | NOM  | MAX  | MIN    | NOM    | MAX    |
| A   | 1.10        | 1.20 | 1.30 | 0.043  | 0.047  | 0.051  |
| B   | 0.70        | 0.80 | 0.90 | 0.028  | 0.032  | 0.035  |
| C   | 0.50        | 0.60 | 0.70 | 0.020  | 0.024  | 0.028  |
| D   | 0.25        | 0.30 | 0.35 | 0.010  | 0.012  | 0.014  |
| J   | 0.07        | 0.14 | 0.20 | 0.0028 | 0.0055 | 0.0079 |
| K   | 0.15        | 0.20 | 0.25 | 0.006  | 0.008  | 0.010  |
| S   | 1.50        | 1.60 | 1.70 | 0.059  | 0.063  | 0.067  |

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