## DESCRIPTION

The ESD9L5.0 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

The ESD9L5.0 is available in SOD-923 Package.

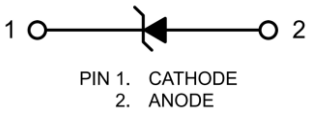
## FEATURE

- Ultra Low Capacitance 0.5 pF
- Low Clamping Voltage
- Small Body Outline Dimensions: 0.039″ x 0.024″ (1.00 mm x 0.60 mm)
- Low Body Height: 0.016″ (0.4 mm)
- Stand−off Voltage: 5 V
- Low Leakage
- Response Time is Typically < 1.0 ns
- IEC61000−4−2 Level 4 ESD Protection

## ORDERING INFORMATION

| Package Type | Part Number |
|---|---|
| SOD-923 | ESD9L5.0 |
| Note | SPQ: 8,000pcs/Reel |
| AiT provides all RoHS Compliant Products | |

## PIN DESCRIPTION


| PIN# | DESCRIPTION |
|---|---|
| 1 | CATHODE |
| 2 | ANODE |

## ABSOLUTE MAXIMUM RATINGS

$T_A$ = 25°C, unless otherwise noted.

| | | |
|---|---|---|
| IEC 61000−4−2 (ESD) | Contact | ±10 kV |
| | Air | ±15 kV |
| $P_D$, Total Device Dissipation, on FR−5 Board* | @ $T_A$ = 25℃ | 150mW |
| $T_J$, Junction Temperature Range | | -55℃~+150℃ |
| $T_{STG}$, Storage Temperature Range | | -55℃~+150℃ |
| $T_L$, Lead Solder Temperature – Maximum 10 Second Duration | | 260℃ |

*FR−5 = 1.0 x 0.75 x 0.62 inch.

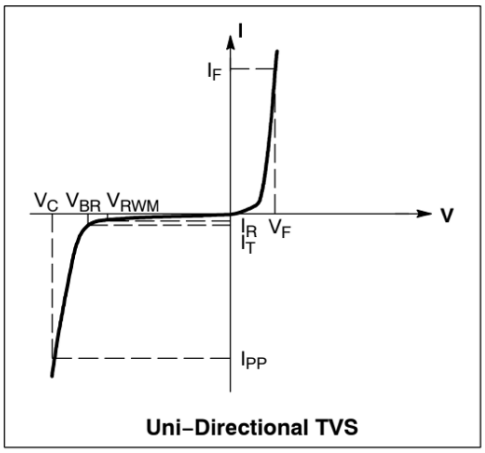
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

# ELECTRICAL CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS

$T_A$ = 25°C unless otherwise noted

| 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 @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage @ $I_F$ |
| $P_{pk}$ | Peak Power Dissipation |
| C | Capacitance @ $V_R$ = 0 and f = 1.0 MHz |



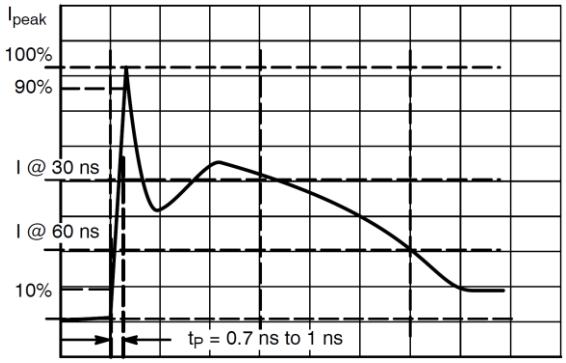
Uni−Directional TVS

$T_A$ = 25°C unless otherwise noted, $V_F$ = 1.0 V Max. @ $I_F$ = 10 mA

| Part Number | $V_{RWM}$ (V) | $I_R$ (μA) @ $V_{RWM}$ | *$V_{BR}$ (V) @ $I_T$ | $I_T$ | C (pF) | | $V_C$ (V) @ $I_{PP}$= 1 A | $V_C$ |
|---|---|---|---|---|---|---|---|---|
| | Max | Max | Min | mA | Typ | Max | Max | Per IEC61000−4−2 |
| ESD9L5.0 | 5.0 | 1.0 | 5.4 | 1.0 | 0.5 | 0.9 | 9.8 | Fig 1 & Fig 2 |

*$V_{BR}$ is measured with a pulse test current $I_T$ at an ambient temperature of 25°C.

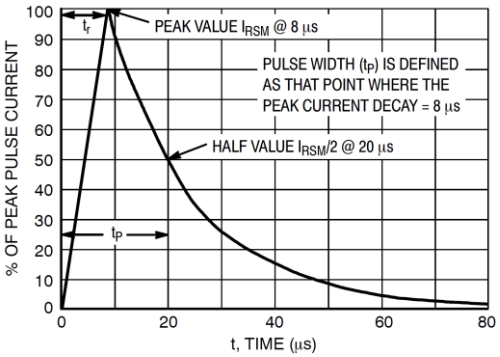
Fig 1. IEC61000−4−2 Waveform




| 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 |

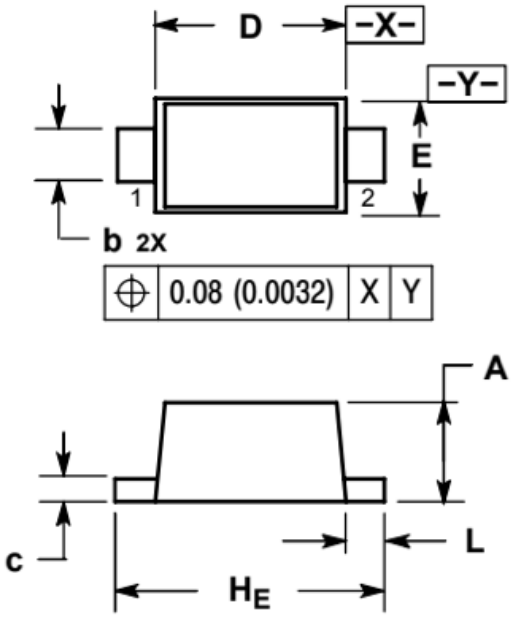
Table 1: IEC61000-4-2 spec

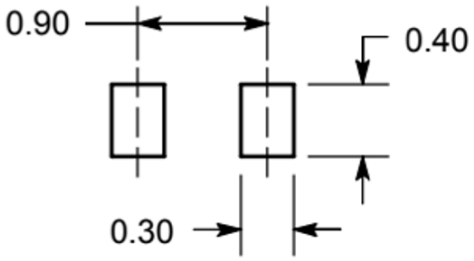
Fig 2. 8x20s Pulse Waveform



## PACKAGE INFORMATION

Dimension in SOD-923 Package (Unit: mm)




SOLDERING FOOTPRINT

| SYMBOL | MIN | MAX |
|---|---|---|
| A | 0.43 | 0.40 |
| b | 0.15 | 0.25 |
| c | 0.07 | 0.17 |
| D | 0.75 | 0.85 |
| E | 0.55 | 0.65 |
| $H_E$ | 0.95 | 1.05 |
| L | 0.05 | 0.15 |

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