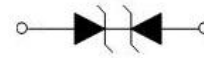




## DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multilayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.



**SOD-523**

## FEATURES

- Bi-directional ESD protection of one line
- Reverse stand-off voltage: 36V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

## APPLICATIONS

- Computers and peripherals
- Control & monitoring systems
- Audio and video equipment
- Cellular handsets and accessories
- Portable electronics
- Set-top box
- Other electronics equipments communication systems

## MARKING





**MAXIMUM RATINGS ( Ta=25°C unless otherwise noted )**

| Parameter  | Symbol         | Limit      | Unit |
|--|----------------|------------|------|
| IEC 61000-4-2 ESD Voltage                              | Air Model      | ±30        | kV   |
|  | Contact Model  | ±30        |      |
| JESD22-A114-B ESD Voltage<br>Body Model                | Per Human      | ±15        |      |
| ESD Voltage<br>Machine Model                           |                | ±0.4       |      |
| Peak Pulse Power                                       | $P_{PP}^{(2)}$ | 300        | W    |
| Peak Pulse Current                                     | $I_{PP}^{(2)}$ | 4          | A    |
| Lead Solder Temperature - Maximum (10 Second Duration) | $T_L$          | 260        | °C   |
| Operation Junction and Storage Temperature Range       | $T_J, T_{stg}$ | -55 ~ +150 | °C   |

(1).Device stressed with ten non-repetitive ESD pulses.

(2).Non-repetitive current pulse 8/20µs exponential decay waveform according to IEC61000-4-5.

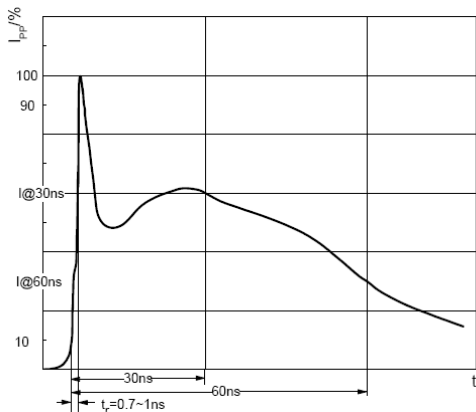
**ESD standards compliance**

**IEC61000-4-2 Standard**

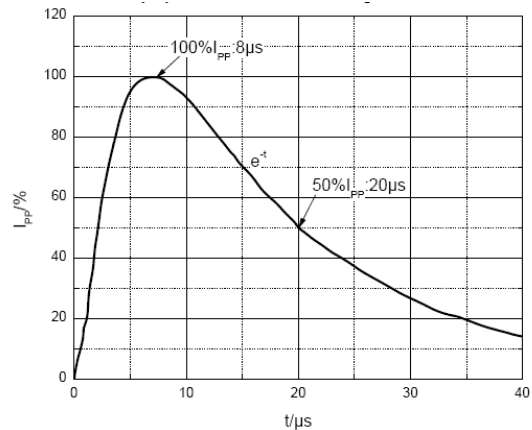
| Contact Discharge |                 | Air Discharge |                 |
|-------------------|-----------------|---------------|-----------------|
| Level             | Test Voltage kV | Level         | Test Voltage kV |
| 1                 | 2               | 1             | 2               |
| 2                 | 4               | 2             | 4               |
| 3                 | 6               | 3             | 8               |
| 4                 | 8               | 4             | 15              |

**JESD22-A114-B Standard**

| ESD Class | Human Body Discharge V |
|-----------|------------------------|
| 0         | 0~249                  |
| 1A        | 250~499                |
| 1B        | 500~999                |
| 1C        | 1000~1999              |
| 2         | 2000~3999              |
| 3A        | 4000~7999              |
| 3B        | 8000~15999             |



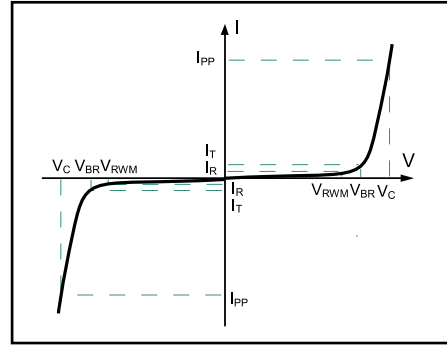
ESD pulse waveform according to IEC61000-4-2



8/20µs pulse waveform according to IEC 61000-4-5

## ELECTRICAL PARAMETER

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



V-I characteristics for a Bi-directional TVS

## ELECTRICAL CHARACTERISTICS (Ta = 25°C unless otherwise specified)

| Parameter                | Symbol          | Test conditions  | Min | Typ | Max | Unit    |
|--------------------------|-----------------|------------------|-----|-----|-----|---------|
| Reverse standoff voltage | $V_{RWM}^{(1)}$ |                  |     |     | 36  | V       |
| Reverse leakage current  | $I_R$           | $V_{RWM}=36V$    |     |     | 1.0 | $\mu A$ |
| Breakdown voltage        | $V_{(BR)}$      | $I_T=1mA$        | 40  |     | 48  | V       |
| Clamping voltage         | $V_C^{(2)}$     | $I_{PP}=4.0A$    |     |     | 70  | V       |
| Junction capacitance     | $C_J$           | $V_R=0V, f=1MHz$ |     |     | 15  | pF      |

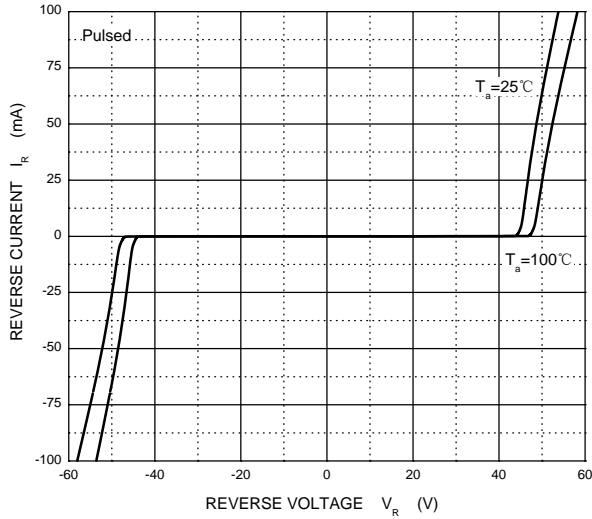
(1). Other voltages available upon request.

(2). Non-repetitive current pulse 8/20 $\mu s$  exponential decay waveform according to IEC61000-4-5

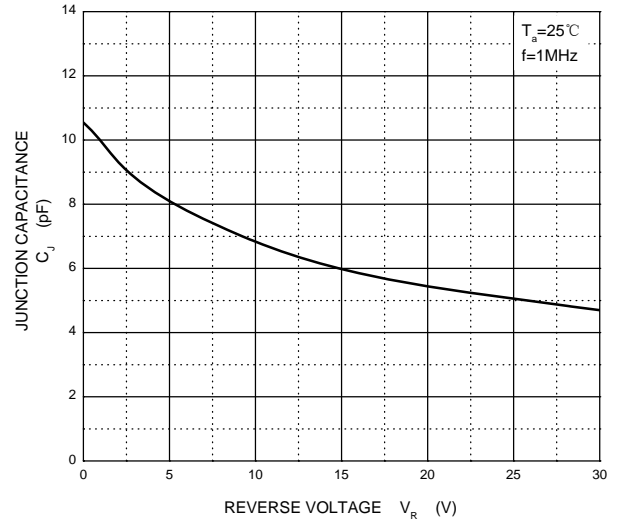


TYPICAL CHARACTERISTICS

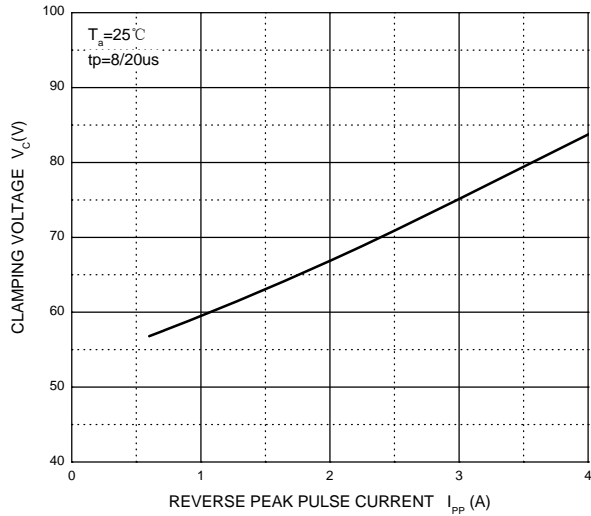
Reverse Characteristics



Capacitance Characteristics



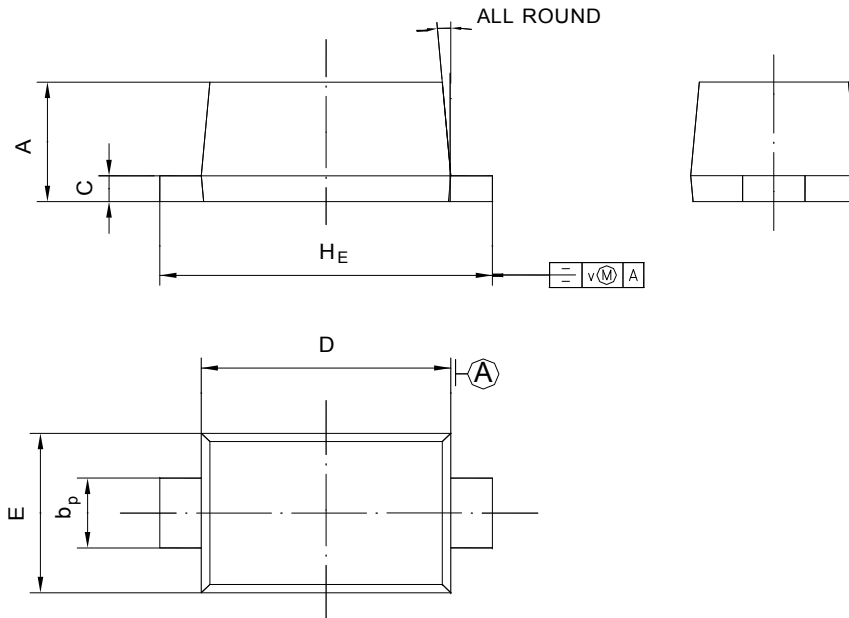
$V_C$  —  $I_{PP}$



**PACKAGE OUTLINE**

Plastic surface mounted package; 2 leads

SOD-523



| UNIT | A    | $b_p$ | C     | D    | E    | $H_E$ | V   | $\angle$ |
|------|------|-------|-------|------|------|-------|-----|----------|
| mm   | 0.68 | 0.4   | 0.135 | 1.25 | 0.85 | 1.7   | 0.1 | 5°       |
|      | 0.58 | 0.3   | 0.100 | 1.15 | 0.75 | 1.5   |     |          |