



## 1-Line Unidirectional ESD Protection Diode

### General description

Unidirectional ElectroStatic Discharge (ESD) protection diode in a SOD523 plastic package designed to protect one transmission or data line from the damage caused by ESD and other transients

### Features and benefits

- Unidirectional ESD protection of one line
- Reverse stand-off voltage: 5.0V Max
- Low leakage current: nA Level
- Response time is typically < 1 ns
- Low clamping voltage:  $V_C < 18.6\text{ V}$  @  $I_{PP} = 9.4\text{ A}$
- ESD Protection: 30kV(air)/ 30kV(contact) ( IEC61000-4-2)
- Surge Protection: 9.4 A ( IEC 61000-4-5 8/20  $\mu\text{s}$ )

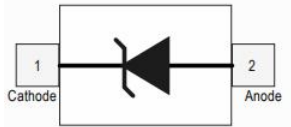
### Application information

- Cellular phones
- Portable devices
- Digital cameras
- Power supplies

### Ordering information

| Device   | Package | Marking | Packaging        |
|----------|---------|---------|------------------|
| ESD5Z5.0 | SOD523  | ZF      | 3000/Tape & Reel |

### Schematic & Pin configuration

| Simplified outline                                                                  | Graphic symbol                                                                       |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |

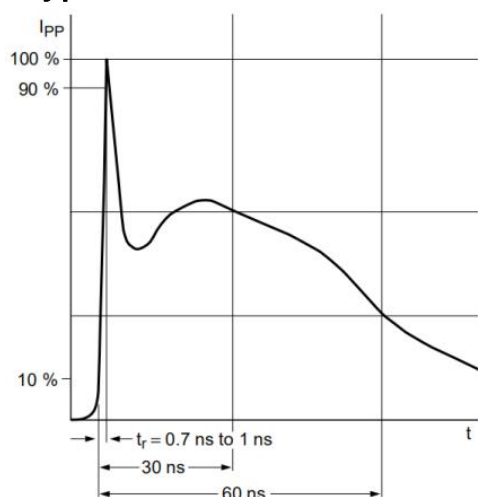
### Maximum Ratings ( $T_{OP} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| Parameter                                             | Symbol    | Value       | Unit               |
|-------------------------------------------------------|-----------|-------------|--------------------|
| Peak Pulse Power ( $t_p = 8/20\text{ }\mu\text{s}$ )  | $P_{PPM}$ | 174         | W                  |
| Peak Pulse Current( $t_p = 8/20\text{ }\mu\text{s}$ ) | $I_{PPM}$ | 9.4         | A                  |
| Maximum lead temperature for soldering during 10s     | $T_L$     | 260         | $^{\circ}\text{C}$ |
| Storage Temperature Range                             | $T_{stg}$ | -55 to +150 | $^{\circ}\text{C}$ |
| Operating Temperature Range                           | $T_{OP}$  | -40 to +125 | $^{\circ}\text{C}$ |
| Maximum junction temperature                          | $T_j$     | 150         | $^{\circ}\text{C}$ |
| ESD voltage IEC 61000-4-2 (air discharge)             | $V_{ESD}$ | 30          | kV                 |
| ESD voltage IEC 61000-4-2 (contact discharge)         | $V_{ESD}$ | 30          | kV                 |

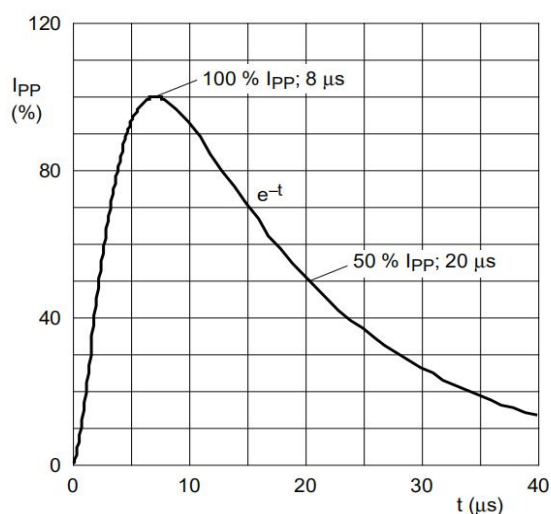
### Electrical Characteristics ( $T_{OP} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| Parameter                  | Symbol    | Min | Typ | Max  | Unit | Condition                                 |
|----------------------------|-----------|-----|-----|------|------|-------------------------------------------|
| Reverse Working Voltage    | $V_{RWM}$ | --  | --  | 5.0  | V    |                                           |
| Breakdown Voltage          | $V_{BR}$  | 6.2 | --  | 8.2  | V    | $I_T=1\text{mA}$                          |
| Leakage Current $I_{Leak}$ | $I_R$     | --  | --  | 100  | nA   | $V_{RWM}=5\text{V}$                       |
| Clamping Voltage           | $V_C$     | --  | --  | 18.6 | V    | $I_{PP}=9.4\text{A}, T_p=8/20\mu\text{s}$ |
| Junction Capacitance       | $C_J$     | --  | 60  | 80   | pF   | $V_R=0\text{V}, f=1\text{MHz}$            |

### Typical Electrical and Thermal Characteristics (Curves)



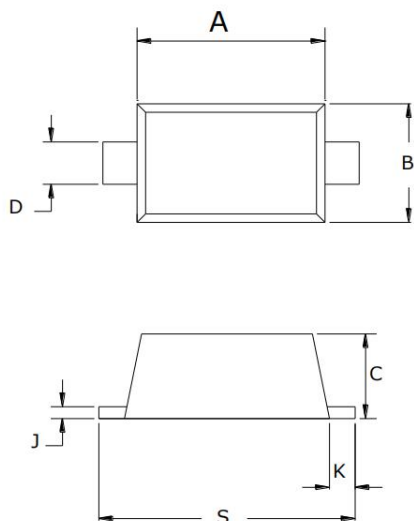
IEC61000-4-2 Waveform



IEC 61000-4-5 Waveform( 8/20 $\mu\text{s}$  pulse)

## Package Outline Dimensions

### SOD523



| SYMBOL | MILLIMETERS |      |      |
|--------|-------------|------|------|
|        | MIN         | NOR  | MAX  |
| A      | 1.10        | 1.20 | 1.30 |
| B      | 0.70        | 0.80 | 0.90 |
| C      | 0.60        | 0.65 | 0.70 |
| D      | 0.25        | 0.30 | 0.35 |
| J      | 0.08        | 0.11 | 0.15 |
| K      | 0.15        | 0.20 | 0.25 |
| S      | 1.50        | 1.60 | 1.70 |

## Soldering Footprint (mm)

