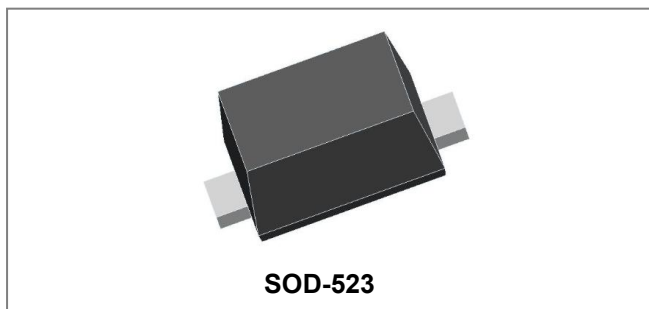




# THE DATASHEET OF CESD5V0D5



## CESD3V3D5 THRU CESD24VD5 ESD Protection Diodes



### Description

The CESD3V3D5 THRU CESD24VD5 is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space is at a premium.

### Schematic & Pin Configuration



### Mechanical Data

- Stand-off Voltage: 3.3 V-24V
- Low Leakage
- Response Time is Typically < 1 ns
- ESD Rating of Class 3B per Human Body Model
- IEC61000-4-2 Level 4 ESD Protection
- These are Pb-Free Devices

### Maximum Ratings @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

| Parameter  | Symbol          | Value  | Units                       |
|--|-----------------|--|-----------------------------|
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$       | $\pm 25$<br>$\pm 25$   | kV                          |
| Peak Pulse Power (Note 1)                                      | $P_{PP}$        | 210(CESD3V3D5)<br>170(CESD5V0D5)<br>220(CESD12VD5)<br>323(CESD15VD5)<br>330(CESD24VD5) | W                           |
| Thermal Resistance Junction-to-Ambient                         | $R_{\theta JA}$ | 833  | $^{\circ}\text{C}/\text{W}$ |
| Lead Solder Temperature - Maximum (10 Second Duration)         | $T_L$           | 260  | $^{\circ}\text{C}$          |
| Operating Junction Temperature Range                           | $T_J$           | -55 to + 150   | $^{\circ}\text{C}$          |
| Storage Temperature Range                                      | $T_{STG}$       | -55 to + 150   | $^{\circ}\text{C}$          |

Note1. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

## Electrical Characteristics@25°C

| 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 @ $I_F$                        |
| C         | Max. Capacitance @ $V_R=0$ and $f=1\text{MHz}$ |

| Device*   | Device Marking | $V_{RWM}$ (V) | $I_R(\mu\text{A})$ @ $V_{RWM}$ | $V_{BR}$ (V) @ $I_T$ (Note 2) |      | $I_T$ | $I_{pp}$ (A)* | $V_C$ (V) @ Max $I_{pp}$ * | C(pF) |
|-----------|----------------|---------------|--------------------------------|-------------------------------|------|-------|---------------|----------------------------|-------|
|           |                | Max.          | Max.                           | Min.                          | Max. | mA    | Max.          | Max.                       | Typ.  |
| CESD3V3D5 | ZE             | 3.3           | 1                              | 5.0                           | 5.9  | 1.0   | 16            | 13                         | 120   |
| CESD5V0D5 | ZF             | 5.0           | 10                             | 6.2                           | 7.3  | 1.0   | 13            | 13                         | 95    |
| CESD12VD5 | ZM             | 12            | 1                              | 14.1                          | 16.5 | 1.0   | 9             | 24                         | 45    |
| CESD15VD5 | ZP             | 15            | 1                              | 16.7                          | 20   | 1.0   | 9.5           | 34                         | 48    |
| CESD24VD5 | ZY             | 24            | 1                              | 26.7                          | 33   | 1.0   | 7.5           | 44                         | 36    |

\*Other voltages available upon request.

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

## Ratings and Characteristics Curves

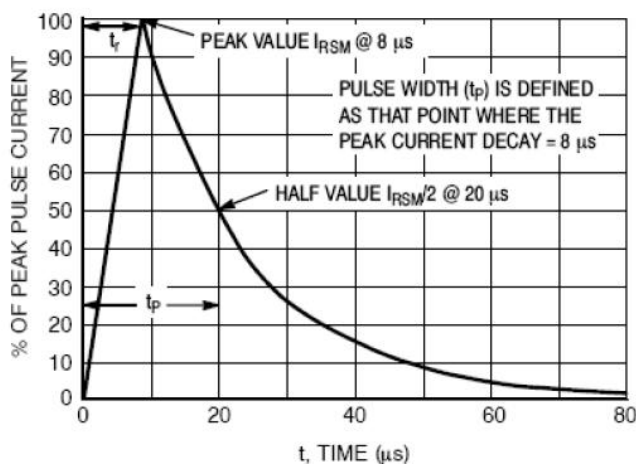


Figure 1. 8 x 20 µs Pulse Waveform

### Ordering Information

| Device      | Package              | Shipping       |
|-------------|----------------------|----------------|
| CESD Series | SOD-523<br>(Pb-Free) | 8000pcs / reel |

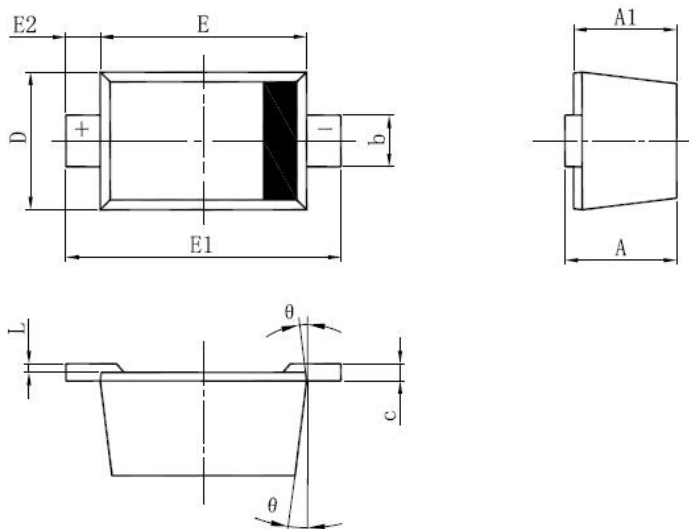
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

### Marking Diagram



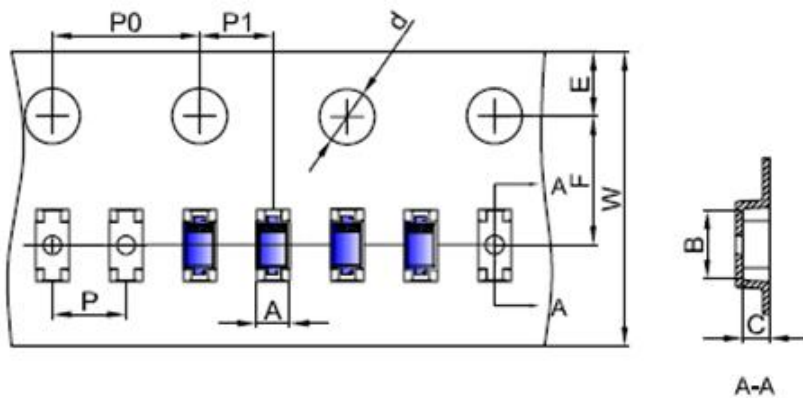
ZF = Device Marking

### Mechanical Dimensions SOD-523



| SYMBOL | Millimeters |       | 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     | 0.200REF    |       | 0.08REF |       |
| L      | 0.010       | 0.070 | 0.001   | 0.003 |
| θ      | 7° REF      |       | 7° REF  |       |

### Carrier Tape Specification SOD-523



| SYMBOL | Millimeters |      |
|--------|-------------|------|
|        | Min.        | Max. |
| A      | 0.85        | 0.95 |
| B      | 1.89        | 1.99 |
| C      | 0.68        | 0.78 |
| d      | 1.40        | 1.60 |
| E      | 1.65        | 1.85 |
| F      | 3.40        | 3.60 |
| P      | 1.90        | 2.10 |
| P0     | 3.90        | 4.10 |
| P1     | 1.90        | 2.10 |
| W      | 7.90        | 8.30 |



CESD3V3D5  
THRU  
CESD24VD5

Technical Data  
Data Sheet N1872, Rev. C



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