

## SOD-523 Plastic-Encapsulate ESD Protection Diodes

### DESCRIPTION

The ESD5B5CM is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, 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 small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, VGA, DVI, SDI and other high speed line applications.

This device has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

### Features

- ◆ Peak power dissipation: 400W (8/20μs)
- ◆ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Low leakage current
- ◆ Low capacitance
- ◆ Working voltages : 5.0V
- ◆ Meets MSL 1 Requirements

### Pin Configuration



### Circuit Diagram



### Applications

CC

| Parameter                                              | Symbol           | Value        | Unit |
|--------------------------------------------------------|------------------|--------------|------|
| ESD per IEC 61000-4-2 (Air)                            | VESD             | ± 30         | KV   |
| ESD per IEC 61000-4-2 (Contact)                        |                  | ± 30         |      |
| Peak Pulse Power(8/20us )                              | PPP              | 400          | W    |
| Operating Temperature                                  | T <sub>OPT</sub> | -55 to +150  | °C   |
| Storage Temperature                                    | T <sub>STG</sub> | -55 to +150  | °C   |
| Lead Solder Temperature – Maximum (10 Second Duration) | T <sub>L</sub>   | 260(10 sec.) | °C   |

The above data are for reference only.

**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

| Symbol           | Parameter                 | Test Condition                                                  | Min | Typ | Max | Units         |
|------------------|---------------------------|-----------------------------------------------------------------|-----|-----|-----|---------------|
| $V_{\text{RWM}}$ | Reverse Working Voltage   |                                                                 |     |     | 5.0 | V             |
| $V_{\text{BR}}$  | Reverse Breakdown Voltage | $I_{\text{T}} = 1\text{mA}$                                     | 5.8 |     | 7.8 | V             |
| $I_{\text{R}}$   | Reverse Leakage Current   | $V_{\text{RWM}} = 5\text{V}$                                    |     |     | 1.0 | $\mu\text{A}$ |
| $V_{\text{C}}$   | Clamping Voltage          | $I_{\text{PP}} = 1\text{A}$ , $t_{\text{p}} = 8/20\mu\text{s}$  |     |     | 9.8 | V             |
| $V_{\text{C}}$   | Clamping Voltage          | $I_{\text{PP}} = 20\text{A}$ , $t_{\text{p}} = 8/20\mu\text{s}$ |     | 15  | 20  | V             |
| $C_{\text{J}}$   | Junction Capacitance      | $V_{\text{R}} = 0\text{V}$ , $f = 1\text{MHz}$                  |     | 33  | 40  | pF            |

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## ELECTRICAL CHARACTERISTICS CURVE

Fig 1 8/20 $\mu$ s Waveform per IEC61000-4-5

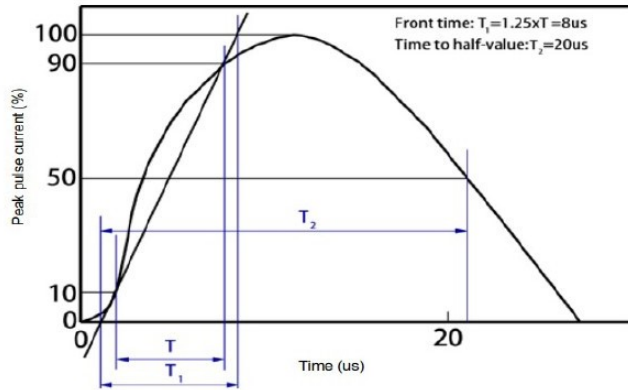


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

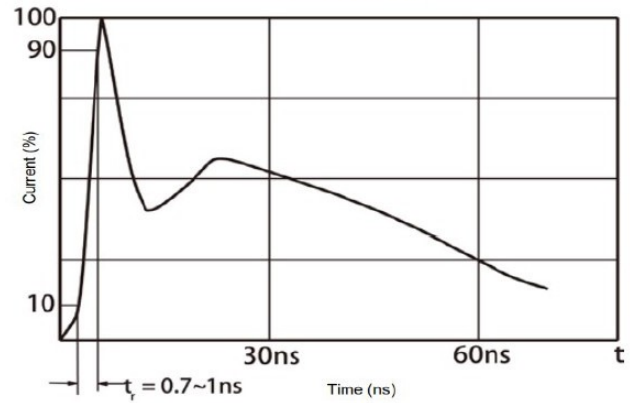


Fig 3 Voltage vs Capacitance

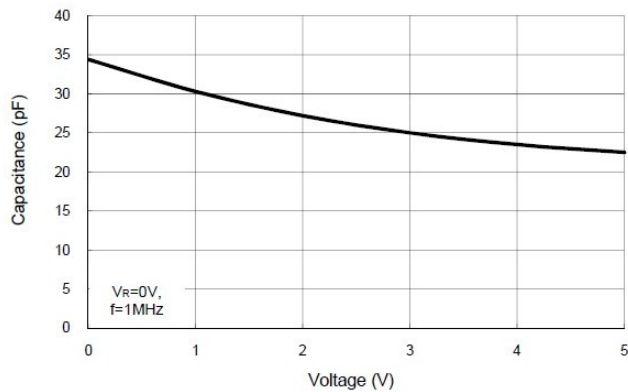
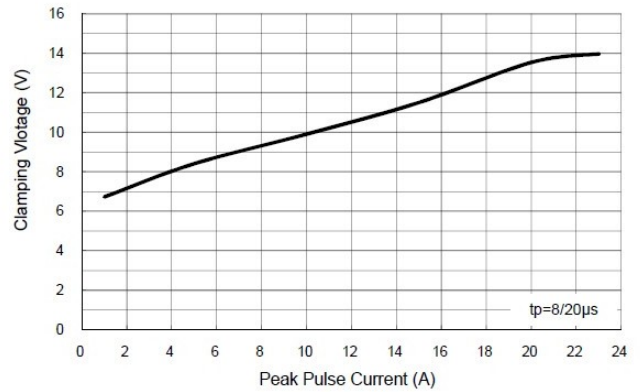


Fig 4 Clamping Voltage vs Peak Pulse Current



The curve above is for reference only.