

1-Line , Bi-directional, Transient Voltage Suppressors

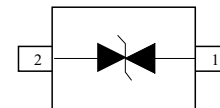
Descriptions

The ESD5B010TA is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components that may be subjected to ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning. It is particularly well-suited for cellular phones, portable device, digital cameras, power supplies and many other portable applications because of its small package and low weight.



SOD-523

The ESD5B010TA is available in SOD-523 package. Standard products are Pb-free and Halogen-free.



Circuit diagram

Features

- Stand-off voltage: $\pm 5V$ Max
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 20kV$ air discharge $\pm 15kV$ contact discharge IEC61000-4-5 (Surge): 2 A (8/20 μs)
- Solid-state silicon technology
- Low leakage current

Applications

- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Digital Cameras
- Car entertainment systems, car dashboard

Order information

| Device | Package | Shipping | Mark |
|------------|---------|----------------|------|
| ESD5B010TA | SOD-523 | 5000/Tape&Reel | L5 |

Absolute maximum ratings

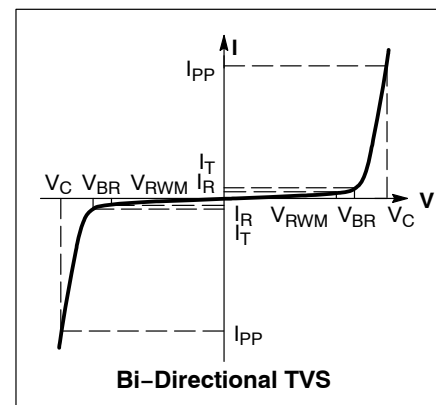
| Parameter | Symbol | Rating | Unit |
|---|-----------|----------|-------------|
| Peak pulse current ($t_p = 8/20\mu s$) | I_{PP} | 2 | A |
| ESD according to IEC61000-4-2 air discharge | V_{ESD} | ± 20 | kV |
| ESD according to IEC61000-4-2 contact discharge | | ± 15 | |
| Operating temperature | T_{OP} | -40~85 | $^{\circ}C$ |
| Operation junction temperature | T_J | 125 | $^{\circ}C$ |
| Lead temperature | T_L | 260 | $^{\circ}C$ |
| Storage temperature | T_{STG} | -55~150 | $^{\circ}C$ |

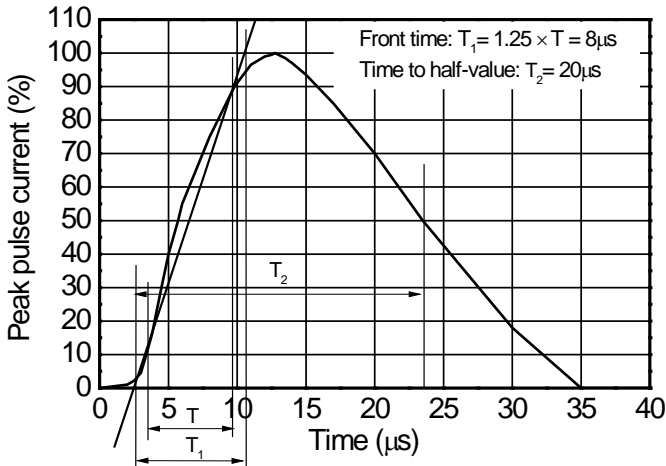
Electrical characteristics (TA=25 oC, unless otherwise noted)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------------|-----------|-----------------------|------|------|------|---------|
| Reverse stand-off voltage | V_{RWM} | | | | 5.0 | V |
| Reverse leakage current | I_R | $V_{RWM} = 5 V$ | | | 0.5 | μA |
| Reveres breakdown voltage | V_{BR} | $I_T=1mA$ | 5.5 | | 8.5 | V |
| Clamping voltage | V_C | $I_{PP}=2A t=8/20 us$ | | 13.0 | 15.0 | V |
| Junction capacitance | C_J | $V_R = 0V, f = 1MHz$ | | 1.0 | 1.5 | pF |

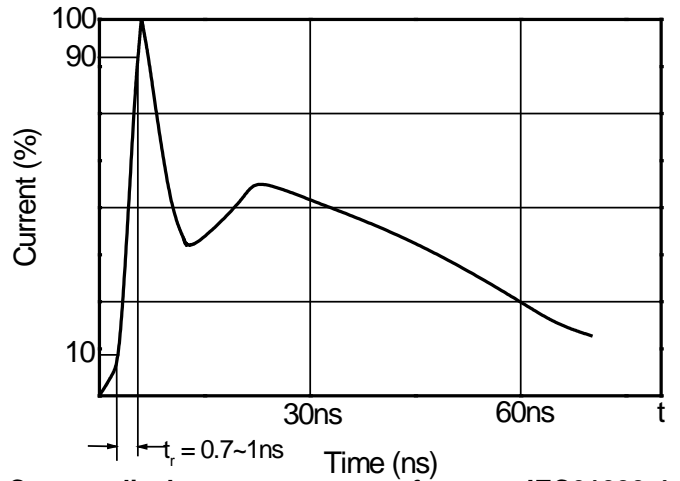
Electrical performance curve

| Symbol | Parameter |
|-----------|-------------------------------------|
| V_{RWM} | Peak Reverse Working Voltage |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{BR} | Breakdown Voltage @ I_T |
| I_T | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_C | Clamping Voltage @ I_{PP} |
| P_{PP} | Peak Pulse Power |
| C_J | Junction Capacitance |
| I_F | Forward Current |
| V_F | Forward Voltage @ I_F |

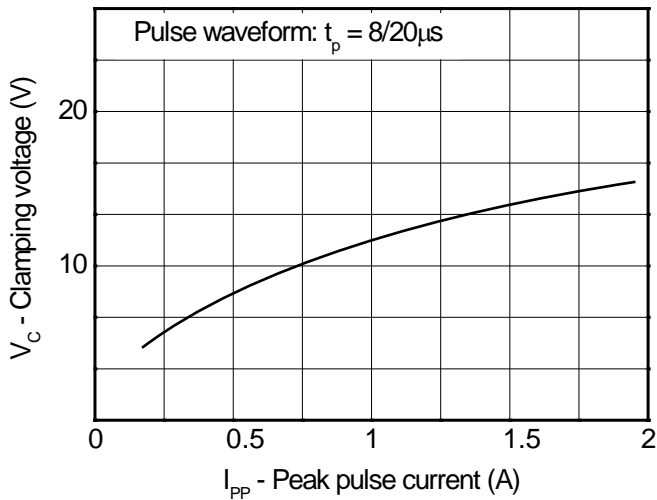




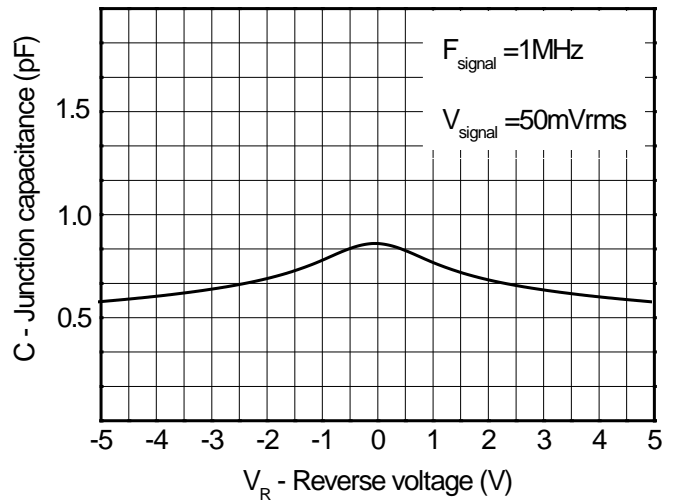
8/20μs waveform per IEC61000-4-5



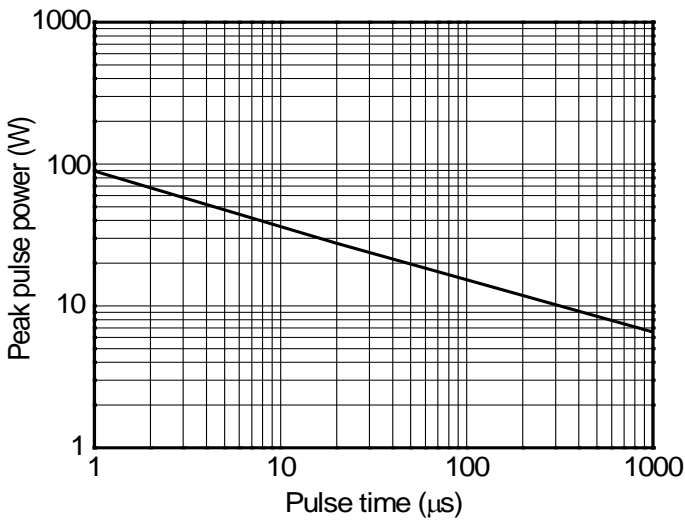
Contact discharge current waveform per IEC61000-4-2



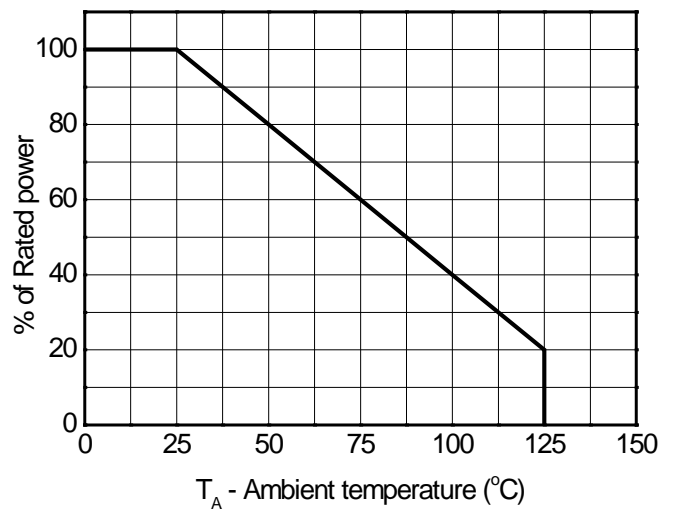
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverses voltage



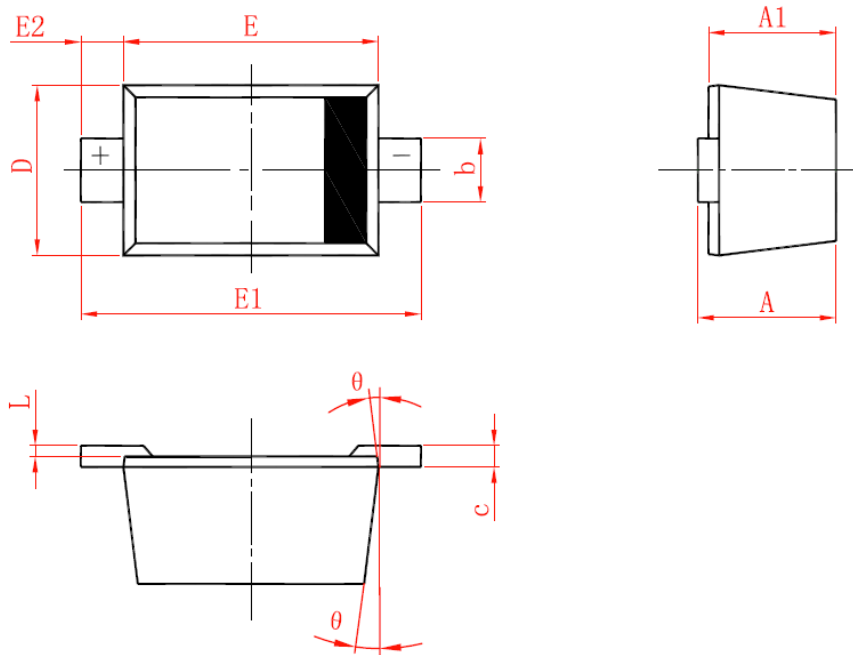
Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

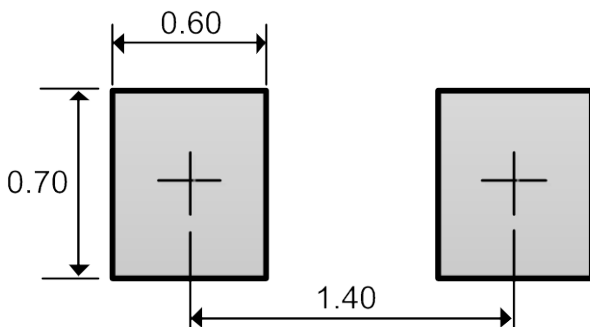
Package outline dimensions

SOD-523



| Symbol | Dimensions in millimeter | | |
|--------|--------------------------|-------|-------|
| | Min. | Typ. | Max. |
| A | 0.510 | 0.640 | 0.770 |
| A1 | 0.500 | 0.600 | 0.700 |
| b | 0.250 | 0.300 | 0.350 |
| c | 0.080 | 0.115 | 0.150 |
| D | 0.750 | 0.800 | 0.850 |
| E | 1.100 | 1.200 | 1.300 |
| E1 | 1.500 | 1.600 | 1.700 |
| E2 | 0.200 Ref | | |
| L | 0.010 | 0.040 | 0.070 |
| θ | 7° Ref | | |

Recommend land pattern (Unit: mm)



Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.