

Transient Voltage Suppressors for ESD Protection

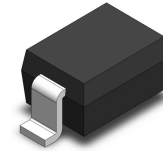
Low Capacitance

SE12D3D01GE

Features

- ◆ Working voltage : 12V
- ◆ Low capacitance: 1.0pF (Typical)
- ◆ Low leakage current: 0.5 μ A @ V_{RWM}
- ◆ Low clamping voltage
- ◆ Response Time is < 1 ns

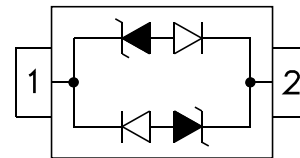
SOD-323



Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Microprocessor based equipment
- ◆ Personal Digital Assistants (PDA's)
- ◆ Notebooks, Desktops, and Servers

Pin Configuration



Mechanical Characteristics

- ◆ SOD-323 Package
- ◆ Molding Compound Flammability Rating : UL 94V-0
- ◆ Quantity Per Reel : 3,000pcs
- ◆ Reel Size : 7 inch

Absolute Maximum Rating

| Symbol | Parameter | Value | Units |
|-----------|---------------------------------|-------------|--------------|
| T_{LST} | Lead Soldering Temperature | 260 (10sec) | $^{\circ}$ C |
| T_{STG} | Storage Temperature Range | -55 to +150 | $^{\circ}$ C |
| T_{OPT} | Operating Temperature Range | -55 to +150 | $^{\circ}$ C |
| V_{ESD} | ESD per IEC 61000-4-2(Air) | \pm 30 | KV |
| | ESD per IEC 61000-4-2 (Contact) | \pm 30 | |

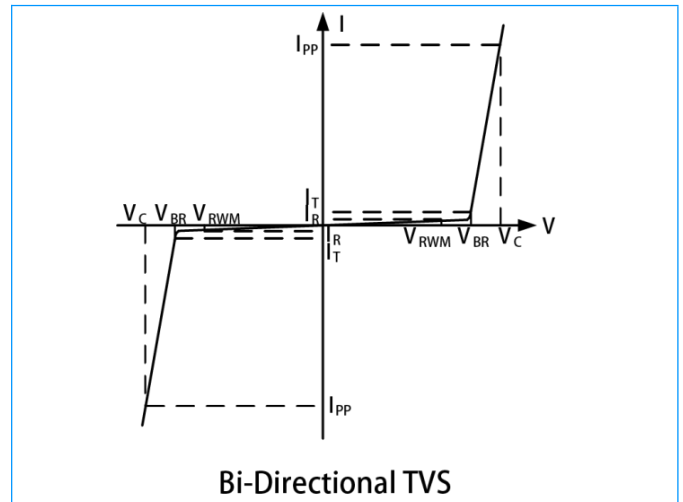
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I-V Curve Characteristics

| Symbol | Parameter |
|-----------|---------------------------------------------|
| I_{PP} | Maximum 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 |



Bi-Directional TVS

Electrical Characteristics (@ $T_A=25^\circ\text{C}$ Unless Otherwise Specified)

| Symbol | Test Condition | Minimum | Typical | Maximum | Units |
|-----------|------------------------------------------|---------|---------|---------|---------------|
| V_{RWM} | -- | -- | -- | 12 | V |
| I_R | $V_{RWM}=12\text{V}, T=25^\circ\text{C}$ | -- | -- | 0.5 | μA |
| V_{BR} | $I_T = 1\text{mA}$ | 13.3 | -- | -- | V |
| V_C | $I_{PP}=1\text{A}, t_p=8/20\mu\text{s}$ | -- | -- | 19 | V |
| V_C | $I_{PP}=8\text{A}, t_p=8/20\mu\text{s}$ | -- | -- | 26 | V |
| C_J | $V_R=0\text{V}, f=1\text{MHz}$ | -- | 1 | -- | pF |

Characteristic Curves

Fig1. 8/20 μs Pulse Waveform

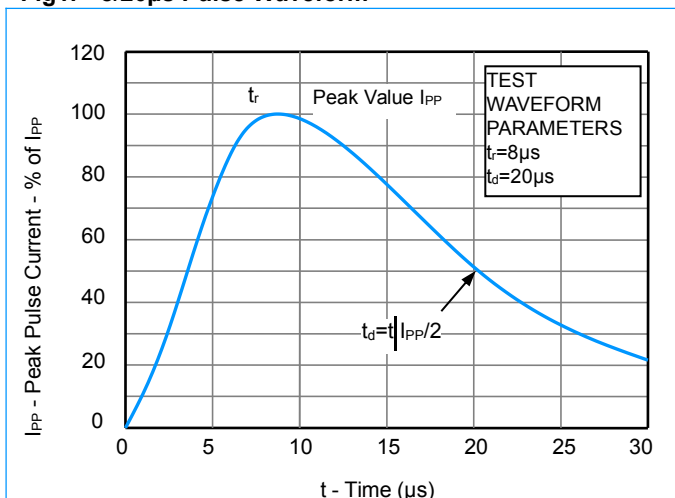
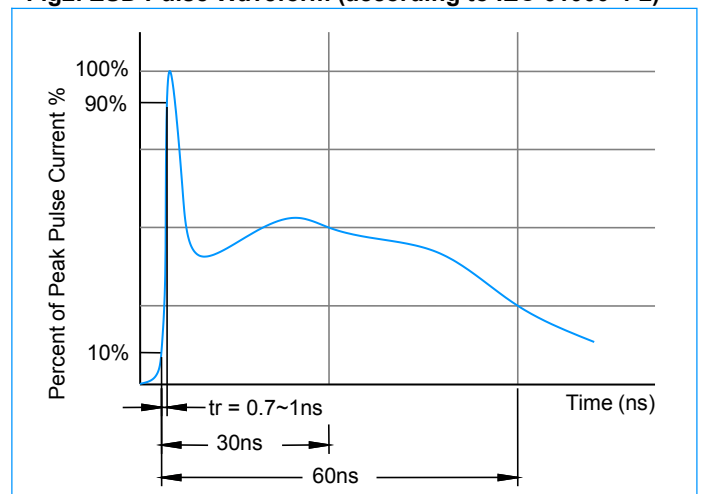


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)



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Characteristic Curves (Continue)

Fig3. ESD Clamping (+8KV Contac per IEC61000-4-2)

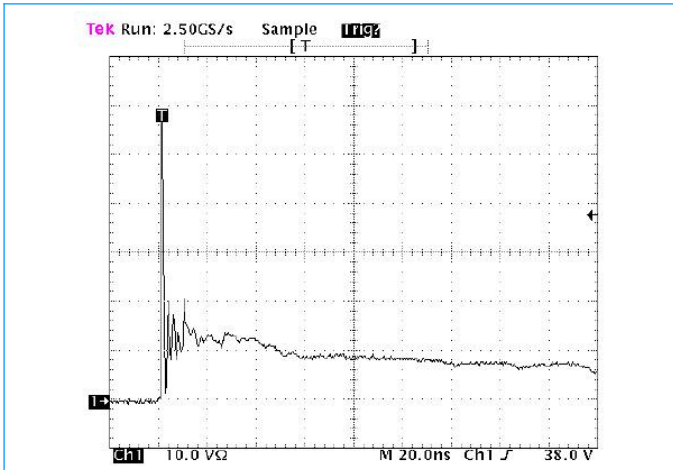
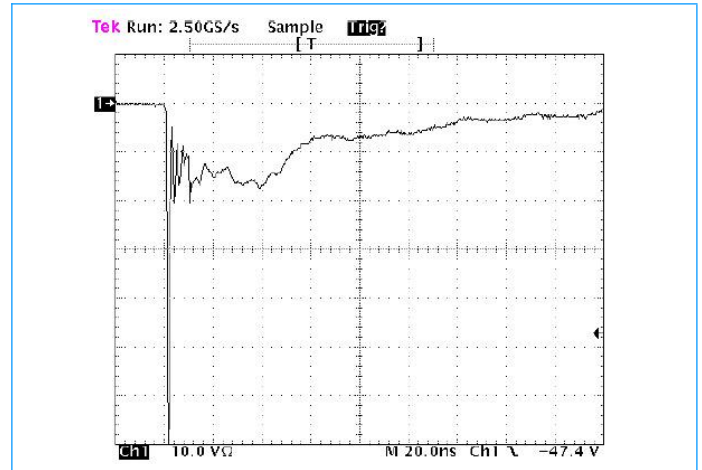
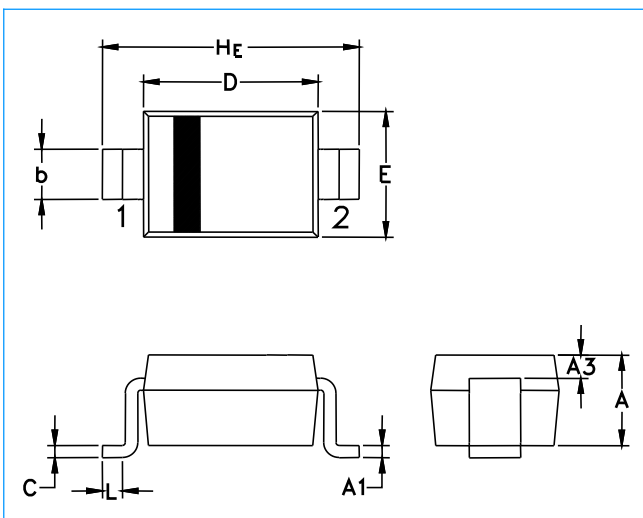


Fig4. ESD Clamping (-8KV Contac per IEC61000-4-2)

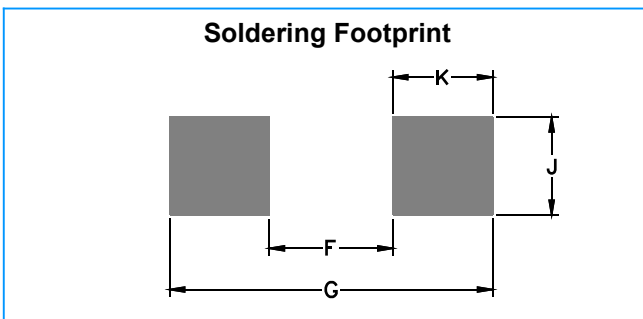


SOD-323 Package Outline & Dimensions



| Symbol | Millimeters | | | Inches | | |
|--------|-------------|------|-------|-----------|-------|-------|
| | Min. | Nom. | Max. | Min. | Nom. | Max. |
| A | 0.80 | 0.90 | 1.00 | 0.031 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A3 | 0.15 REF | | | 0.006 REF | | |
| b | 0.25 | 0.32 | 0.40 | 0.010 | 0.012 | 0.016 |
| C | 0.089 | 0.12 | 0.177 | 0.003 | 0.005 | 0.007 |
| D | 1.60 | 1.70 | 1.80 | 0.062 | 0.066 | 0.070 |
| E | 1.15 | 1.25 | 1.35 | 0.045 | 0.049 | 0.053 |
| L | 0.08 | -- | -- | 0.003 | -- | -- |
| HE | 2.30 | 2.50 | 2.70 | 0.090 | 0.098 | 0.105 |

Soldering Footprint



| Symbol | Millimeters | Inches |
|--------|-------------|--------|
| F | 1.60 | 0.063 |
| G | 2.85 | 0.112 |
| J | 0.83 | 0.033 |
| K | 0.63 | 0.025 |