

GSE8L50C

Surface Mount TVS For ESD Protection Diode With Ultra-Low Capacitance

Product Description

The GSE8L50C is designed to protect voltage sensitive components that require ultra-low capacitance from ESD and transient voltage events. Excellent clamping capability, low capacitance, 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 low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed and antenna in applications.

Features

- Ultra Low Capacitance : 0.5 pF
- Low Clamping Voltage
- Small Body Outline Dimensions : 0.039" x 0.024" (1.00 mm x 0.60 mm)
- Low Body Height : 0.016" (0.4mm)
- Stand-off Voltage : 5V
- Low Leakage
- Response Time is Typically < 1.0 ns
- IEC61000-4-2 Level 4 ESD Protection
- Lead(Pb)-Free
- Device Meets MSL 1 Requirements

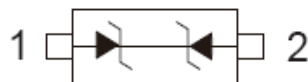
Applications

- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Digital Cameras
- MP3/MP4/PMP Players

Packages & Pin Assignments



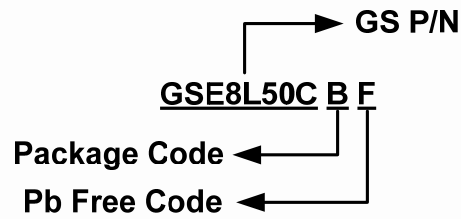
SOD-882



Marking Information

| Part Number | Package | Part Marking |
|-------------|---------|--------------|
| GSE8L50CBF | SOD-882 | N |

Ordering Information



| Part Number | Package | Quantity |
|-------------|---------|-----------|
| GSE8L50CBF | SOD-882 | 10000 PCS |

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

| Symbol | Parameter | Typical | Unit |
|------------------|--|-------------|------|
| P _D | Total Power Dissipation on FR-5 Board | 150 | mW |
| V _{PP} | ESD per IEC61000-4-2 (Air) | ±8 | KV |
| V _{PP} | ESD per IEC61000-4-2 (Contact) | ±8 | KV |
| T _J | Operating Junction Temperature Range | -55 to +150 | °C |
| T _{STG} | Storage Temperature Range | -55 to +150 | °C |
| T _L | Lead Solder Temperature-Maximum (10 second Duration) | 260 | °C |

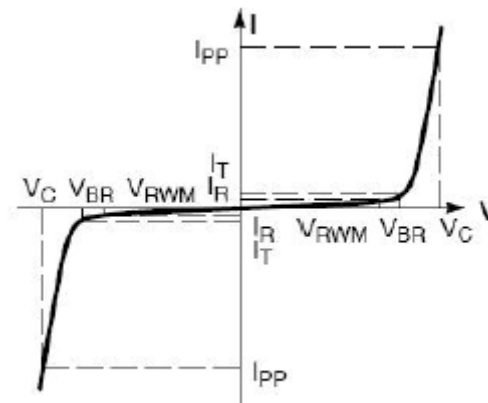
Note : Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Electrical Characteristics

(T_A=25°C Unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|---------------------------|--|-----|-----|------|------|
| V _{RWM} | Reverse Working Voltage | | | | 5 | V |
| V _{BR} | Reverse Breakdown Voltage | I _T =1mA | 5.4 | | | V |
| I _R | Reverse Leakage Current | V _{RWM} =5V, t _p =8/20us | | | 1.0 | μA |
| V _C | Positive Clamping Voltage | I _{PP} =1A, t _p =8/20us | | | 12.9 | V |
| C _J | Junction Capacitance | V _R =0V, f=1MHz | | 0.5 | 0.9 | pF |

Electrical Parameter



Bi-Directional TVS

| 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 |
| P_{PK} | Peak Power Dissipation |
| C | Capacitance @ $V_R=0V$ and $f=1.0MHz$ |

Typical Performance Characteristics

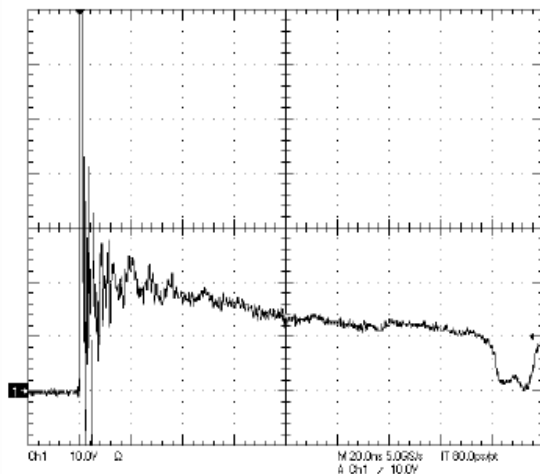


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000-4-2

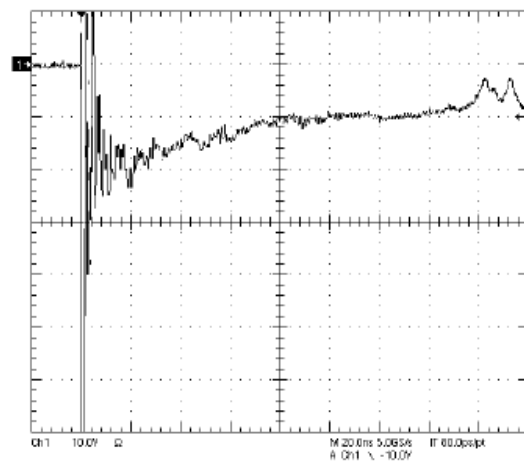


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV Contact per IEC61000-4-2

Typical Performance Characteristics (Continue)

IEC 61000-4-2 Spec.

| Level | Test Voltage (kV) | First Peak Current (A) | Current at 30 ns (A) | Current at 60 ns (A) |
|-------|-------------------|------------------------|----------------------|----------------------|
| 1 | 2 | 7.5 | 4 | 2 |
| 2 | 4 | 15 | 8 | 4 |
| 3 | 6 | 22.5 | 12 | 6 |
| 4 | 8 | 30 | 16 | 8 |

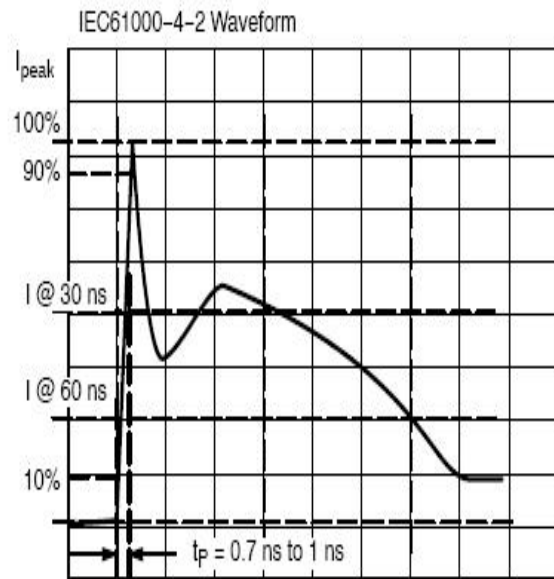


Figure 3. IEC61000-4-2 Spec

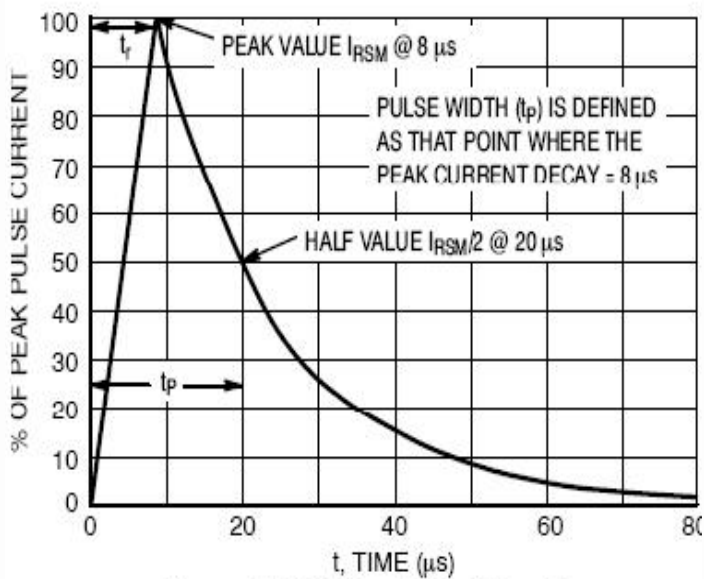
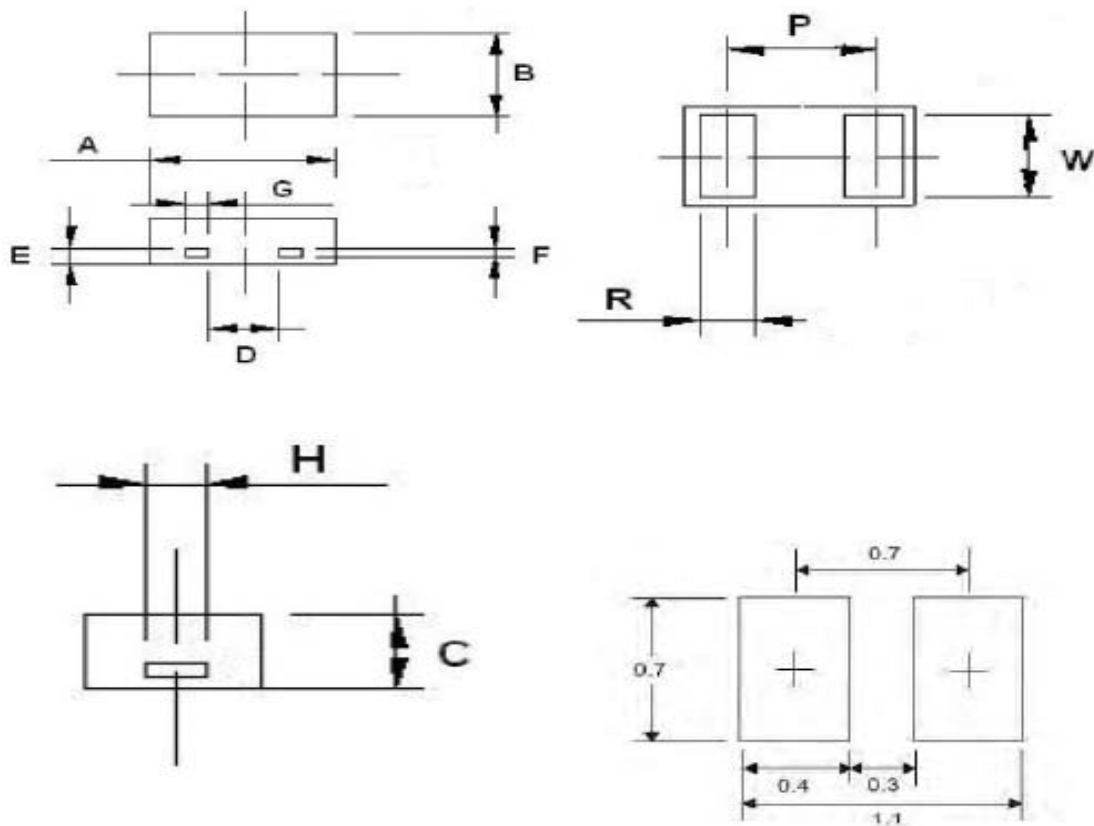


Figure 4. 8 X 20 μ s Pulse Waveform

Package Dimension

SOD-882







SOLDERING FOOTPRINT




| Dimensions | | | | |
|------------|-------------|------|-------------|-------|
| SYMBOL | Millimeters | | Inches | |
| | MIN | MAX | MIN | MAX |
| A | 0.95 | 1.05 | 0.037 | 0.041 |
| B | 0.55 | 0.65 | 0.022 | 0.026 |
| C | 0.465 | 0.50 | 0.018 | 0.020 |
| D | 0.39 (TYP) | | 0.015 (TYP) | |
| E | 0.127 (TYP) | | 0.005 (TYP) | |
| F | 0.064 (TYP) | | 0.003 (TYP) | |
| G | 0.12 (TYP) | | 0.005 (TYP) | |
| H | 0.20 (TYP) | | 0.008 (TYP) | |
| P | 0.64 (TYP) | | 0.025 (TYP) | |
| R | 0.25 (TYP) | | 0.010 (TYP) | |
| W | 0.49 (TYP) | | 0.019 (TYP) | |



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