

# LESD8L3.3CT5G

## Transient Voltage Suppressors

### ESD Protection Diodes with Ultra-Low Capacitance

The ESD8L 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 line applications.

#### Specification 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" (0.4 mm)
- Stand-off Voltage: 3.3 V
- Low Leakage
- Response Time is Typically < 1.0 ns
- IEC61000-4-2 Level 4 ESD Protection
- This is a Pb-Free Device

#### Mechanical Characteristics:

**CASE:** Void-free, transfer-molded, thermosetting plastic

Epoxy Meets UL 94 V-0

**LEAD FINISH:** NiPdAu

**QUALIFIED MAX REFLOW TEMPERATURE:** 260°C

Device Meets MSL 1 Requirements

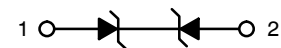
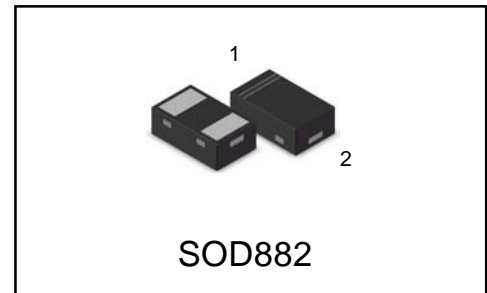
#### MAXIMUM RATINGS

| Rating  | Symbol           | Value       | Unit |
|---|------------------|-------------|------|
| IEC 61000-4-2 (ESD)<br>Contact<br>Air                                     |                  | ±10<br>±15  | kV   |
| Total Power Dissipation on FR-5 Board<br>(Note 1) @ T <sub>A</sub> = 25°C | P <sub>D</sub>   | 150         | mW   |
| Storage Temperature Range   | T <sub>stg</sub> | -55 to +150 | °C   |
| Junction Temperature Range  | T <sub>J</sub>   | -55 to +125 | °C   |
| Lead Solder Temperature - Maximum<br>(10 Second Duration)                 | T <sub>L</sub>   | 260         | °C   |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings 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.

1. FR-5 = 1.0 x 0.75 x 0.62 in.

# LESD8L3.3CT5G



#### Ordering information

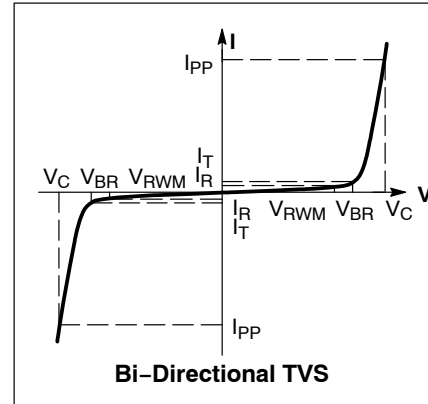
| Device        | Marking | Shipping        |
|---------------|---------|-----------------|
| LESD8L3.3CT5G | S       | 10000/Tape&Reel |

# LESD8L3.3CT5G

## ELECTRICAL CHARACTERISTICS

(T<sub>A</sub> = 25°C unless otherwise noted)

| Symbol           | Parameter  |
|------------------|--|
| I <sub>PP</sub>  | Maximum Reverse Peak Pulse Current                 |
| V <sub>C</sub>   | Clamping Voltage @ I <sub>PP</sub>                 |
| V <sub>RWM</sub> | Working Peak Reverse Voltage                       |
| I <sub>R</sub>   | Maximum Reverse Leakage Current @ V <sub>RWM</sub> |
| V <sub>BR</sub>  | Breakdown Voltage @ I <sub>T</sub>                 |
| I <sub>T</sub>   | Test Current                                       |
| I <sub>F</sub>   | Forward Current                                    |
| V <sub>F</sub>   | Forward Voltage @ I <sub>F</sub>                   |
| P <sub>pk</sub>  | Peak Power Dissipation                             |
| C                | Capacitance @ V <sub>R</sub> = 0 and f = 1.0 MHz   |



## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted, V<sub>F</sub> = 1.0 V Max. @ I<sub>F</sub> = 10 mA for all types)

| Device        | Device Marking | V <sub>RWM</sub> (V) | I <sub>R</sub> (nA) @ V <sub>RWM</sub> | V <sub>BR</sub> (V) @ I <sub>T</sub> (Note 2) |     | I <sub>T</sub> (mA) | C (pF) | V <sub>C</sub> (V) @ I <sub>PPM</sub> = 2 A (Note 3) | V <sub>C</sub> (Per IEC61000-4-2 (Note 4)) |
|---------------|----------------|----------------------|--|---|-----|---------------------|--------|--|--|
|               |                | Max                  | Max                                    | Min   | Max |                     |        | Max  |  |
| LESD8L3.3CT5G | S              | 3.3                  | 50                                     | 3.8   | 8   | 1.0                 | 0.9    | 15   | Figures 1 and 2 See Below                  |

- V<sub>BR</sub> is measured with a pulse test current I<sub>T</sub> at an ambient temperature of 25°C.
- Surge current waveform per Figure 5.
- For test procedure see Figures 3 and 4.

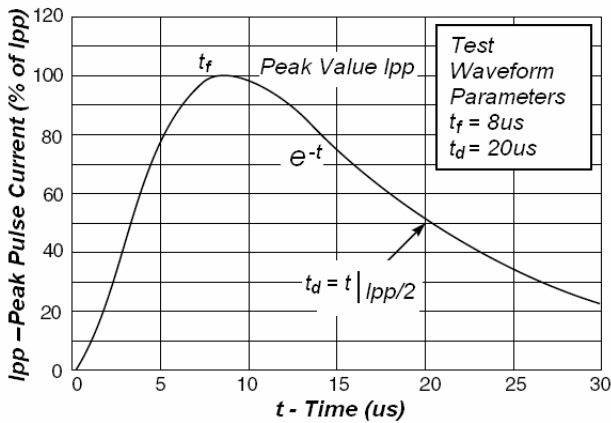


Fig 1. Pulse Waveform

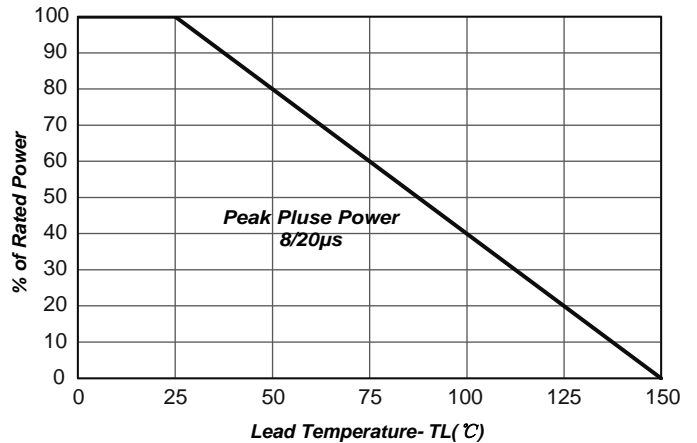


Fig 2. Power Derating Curve

# LESD8L3.3CT5G

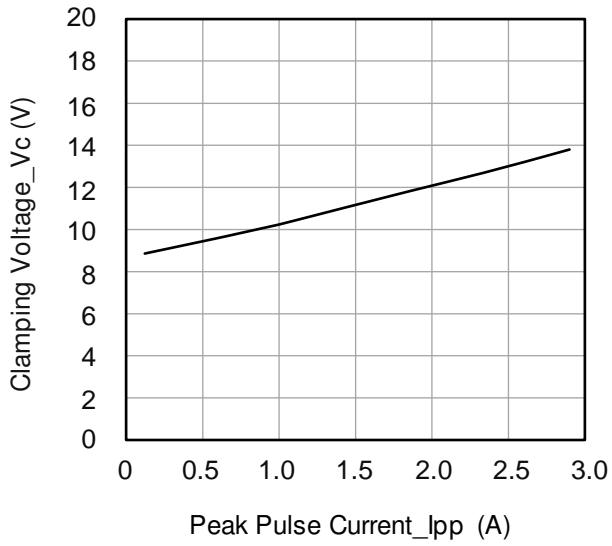


Fig 3 .Clamping Voltage vs. Peak Pulse Current

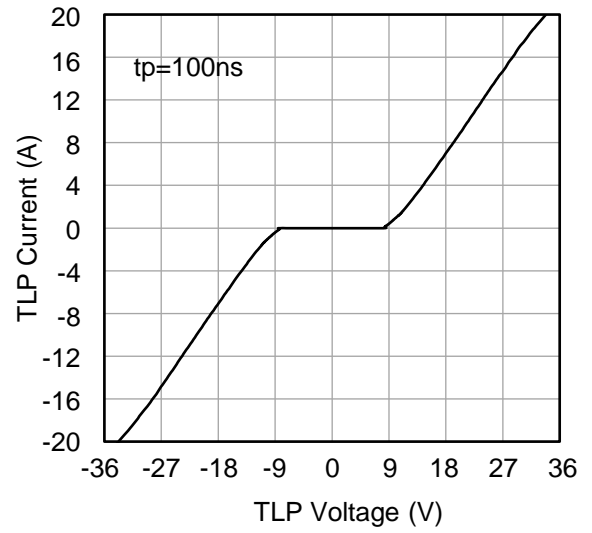
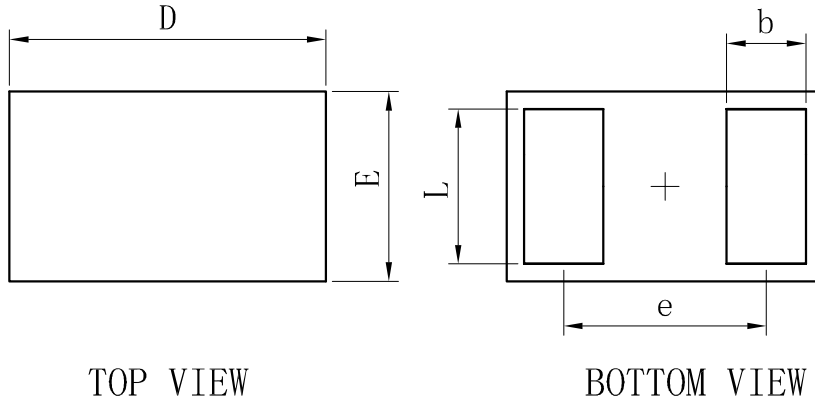


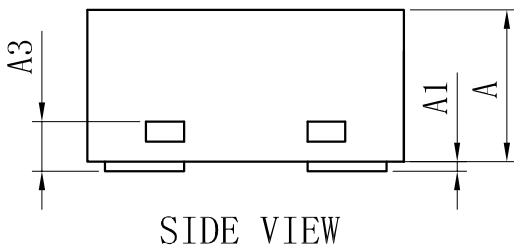
Fig 4. TLP Measurement

# LESD8L3.3CT5G

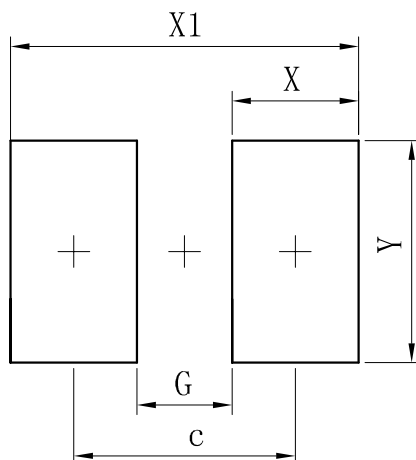
## Package Outline Dimension



| SOD882               |           |      |      |
|----------------------|-----------|------|------|
| Dim                  | Min       | Typ  | Max  |
| D                    | 0.95      | 1.00 | 1.05 |
| E                    | 0.55      | 0.60 | 0.65 |
| e                    | -         | 0.64 | -    |
| L                    | 0.44      | 0.49 | 0.54 |
| b                    | 0.20      | 0.25 | 0.30 |
| A                    | 0.43      | 0.48 | 0.53 |
| A1                   | 0         | -    | 0.05 |
| A3                   | 0.127REF. |      |      |
| All Dimensions in mm |           |      |      |



## Suggested Pad layout



| Dimensions | (mm) |
|------------|------|
| c          | 0.70 |
| G          | 0.30 |
| X          | 0.40 |
| X1         | 1.10 |
| Y          | 0.70 |

**DISCLAIMER**

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
- Before you use our Products for new Project, you are requested to carefully read this document and fully understand its contents. LRC shall not be in any way responsible or liable for failure, malfunction or accident arising from the use of any LRC's Products against warning, caution or note contained in this document.
- All information contained in this document is current as of the issuing date and subject to change without any prior notice. Before purchasing or using LRC's Products, please confirm the latest information with a LRC sales representative.