

# Silicon Avalanche Diodes

## 1500W Axial Leaded Transient Voltage Suppressors

### RoHS LCE Series



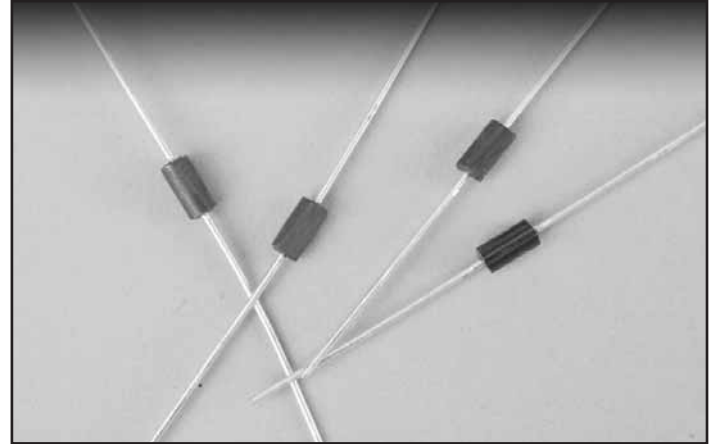
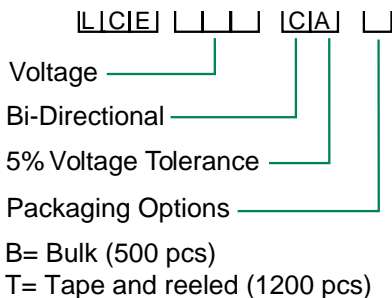
#### FEATURES

- RoHS compliant
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Glass passivated junction
- 1500W Peak Pulse Power capability with a 10/1000 $\mu$ s waveform, repetition rate (duty cycle):0.05%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 5.0ns from 0 Volts to V(BR)
- Ideal for data line applications
- Low capacitance
- High temperature soldering guaranteed: 265°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs., (2.3kg) tension

**Agency Approvals:** Recognized under the Components Program of Underwriters Laboratories.

**Agency File Number:** E128662

#### ORDERING INFORMATION



#### MAXIMUM RATINGS AND CHARACTERISTICS

@25°C AMBIENT TEMPERATURE (unless otherwise noted)

| PARAMETER  | SYMBOL                            | VALUE       | UNIT  |
|--|-----------------------------------|-------------|-------|
| Peak pulse power Dissipation with a 10/1000 $\mu$ s waveform (note 1, FIG.1)   | P <sub>PPM</sub>                  | Min 1500    | Watts |
| Steady State Power Dissipation, TL= 75 with at lead lengths 0.375" (9.5mm)     | P <sub>M(AV)</sub>                | 5           | Watts |
| Peak power pulse surge current with a 10/1000 $\mu$ s waveform (FIG.3, note 1) | I <sub>PPM</sub>                  | See Table 1 | Amps  |
| Operating junction and Storage Temperature Range                               | T <sub>j</sub> , T <sub>STG</sub> | -55 to +175 | °C    |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>= 25°C per Fig.2

#### Mechanical Specifications:

- Weight:** 0.045 ounce, 1.2 grams  
**Case:** JEDEC DO-201 Molded Plastic over passivated junction  
**Mounting Position:** Any  
**Polarity:** Color band denotes cathode except Bidirectionals  
**Terminal:** Solder Plated, solderable per MIL-STD-750, Method 2026  
**Standard Packaging:** 16mm tape (EIA STD RS-481)

6

SILICON DIODE ARRAYS

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#### ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Number | Reverse Stand off Voltage GE $V_{WM}$ (Volts) | Breakdown Voltage $V_{BR}$ (Volts) @ $I_T$ |       | Test Current $I_T$ (mA) | Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (Volts) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Junction Capacitance @ 0 Volts (pF) | Working Inverse Blocking Voltage $V_{WIB}$ (Volts) | Working Inverse Blocking Voltage $V_{WIB}$ (Volts) | Peak Inverse Blocking Voltage $V_{PIB}$ (Volts) |
|-------------|---|--|-------|-------------------------|--|---|---|---|--|--|---|
|             |   | MIN  | MAX   |                         |  |   |   |   |  |  |   |
| LCE6.5A     | 6.5   | 7.22                                       | 7.98  | 10                      | 1000   | 11.2  | 100                                     | 100   | 75   | 1.0  | 100   |
| LCE7.0A     | 7.0   | 7.78                                       | 8.60  | 10                      | 500  | 12.0  | 100                                     | 100   | 75   | 1.0  | 100   |
| LCE7.5A     | 7.5   | 8.33                                       | 9.21  | 10                      | 250  | 12.9  | 100                                     | 100   | 75   | 1.0  | 100   |
| LCE8.0A     | 8.0   | 8.89                                       | 9.83  | 1                       | 100  | 13.6  | 100                                     | 100   | 75   | 1.0  | 100   |
| LCE8.5A     | 8.5   | 9.44                                       | 10.40 | 1                       | 50   | 14.4  | 100                                     | 100   | 75   | 1.0  | 100   |
| LCE9.0A     | 9.0   | 10.00                                      | 11.10 | 1                       | 10   | 15.4  | 97                                      | 100   | 75   | 1.0  | 100   |
| LCE10A      | 10.0  | 11.10                                      | 12.30 | 1                       | 5  | 17.0  | 88                                      | 100   | 75   | 1.0  | 100   |
| LCE11A      | 11.0  | 12.20                                      | 13.50 | 1                       | 5  | 18.2  | 82                                      | 100   | 75   | 1.0  | 100   |
| LCE12A      | 12.0  | 13.30                                      | 14.70 | 1                       | 5  | 19.9  | 75                                      | 100   | 75   | 1.0  | 100   |
| LCE13A      | 13.0  | 14.40                                      | 15.90 | 1                       | 5  | 21.5  | 70                                      | 100   | 75   | 1.0  | 100   |
| LCE14A      | 14.0  | 15.60                                      | 17.20 | 1                       | 5  | 23.2  | 65                                      | 100   | 75   | 1.0  | 100   |
| LCE15A      | 15.0  | 16.70                                      | 18.50 | 1                       | 5  | 24.4  | 61                                      | 100   | 75   | 1.0  | 100   |
| LCE16A      | 16.0  | 17.80                                      | 19.70 | 1                       | 5  | 26.0  | 57                                      | 100   | 75   | 1.0  | 100   |
| LCE17A      | 17.0  | 18.90                                      | 20.90 | 1                       | 5  | 27.6  | 54                                      | 100   | 75   | 1.0  | 100   |
| LCE18A      | 18.0  | 20.00                                      | 22.10 | 1                       | 5  | 29.2  | 51                                      | 100   | 75   | 1.0  | 100   |
| LCE20A      | 20.0  | 22.20                                      | 24.50 | 1                       | 5  | 32.4  | 46                                      | 100   | 75   | 1.0  | 100   |
| LCE22A      | 22.0  | 24.40                                      | 26.90 | 1                       | 5  | 35.5  | 42                                      | 100   | 75   | 1.0  | 100   |
| LCE24A      | 24.0  | 26.70                                      | 29.50 | 1                       | 5  | 38.9  | 39                                      | 100   | 75   | 1.0  | 100   |
| LCE26A      | 26.0  | 28.90                                      | 31.90 | 1                       | 5  | 42.1  | 36                                      | 100   | 75   | 1.0  | 100   |
| LCE28A      | 28.0  | 31.10                                      | 34.40 | 1                       | 5  | 45.5  | 33                                      | 100   | 75   | 1.0  | 100   |

Note: For parts without A, the VBR is  $\pm$  10%.

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Ratings and Characteristic Curves  $T_A=25^\circ\text{C}$  unless otherwise noted

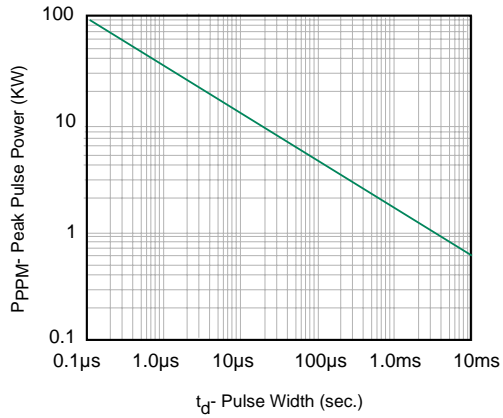


Fig. 1 Peak Pulse Power Rating

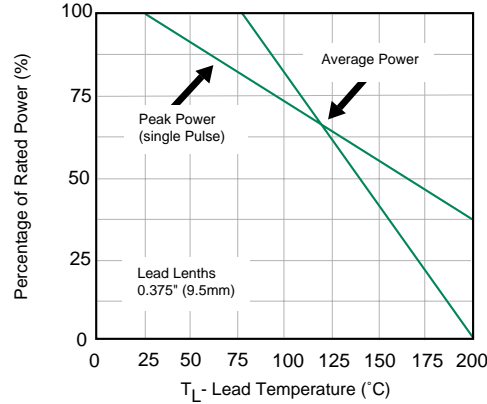


Fig. 2 Power Derating Curve

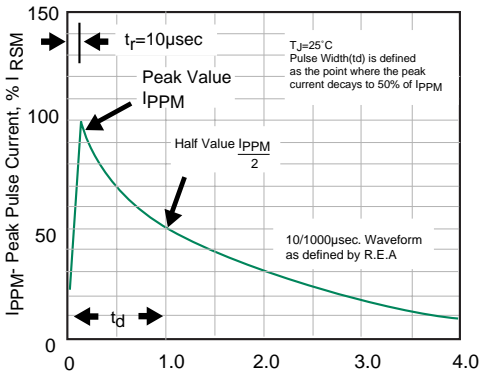
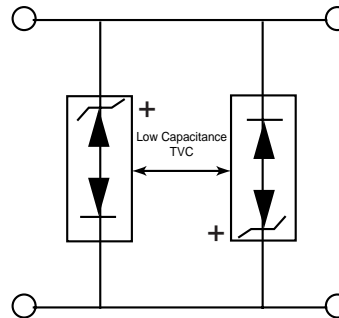


Fig. 3 Pulse Waveform



**Application Note:** Device must be used with two units in parallel, opposite in polarity as shown on circuit for AC signal line protection.

Fig. 4 AC Line Protection Application

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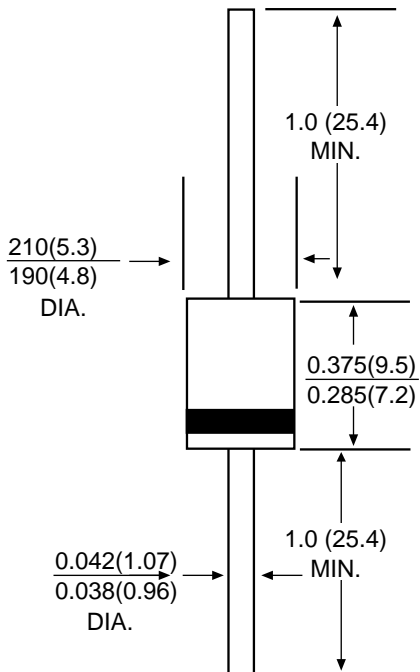
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#### Package Outline Dimensions

Case Style 1.5KE  
(DO-201)



All dimensions in inches and (millimeters)