

Transient Voltage Suppressor Diode

LCE7.0

(LCE6.5 thru LCE28 Series)

Standoff-Voltage 6.5 to 28V

Peak Pulse Power 1500W

DATASHEET

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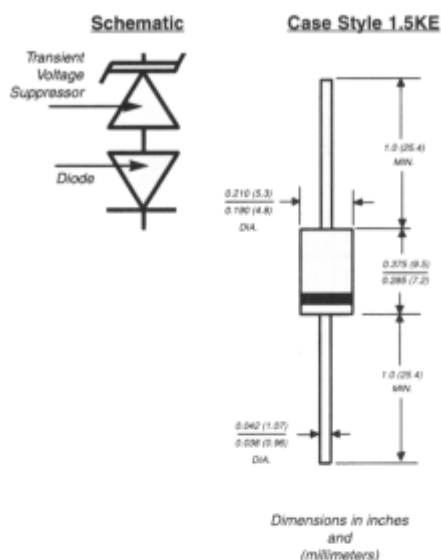
OEM – General Semiconductor

Source: General Semiconductor Databook 1998

LCE6.5 THRU LCE28A SERIES

LOW CAPACITANCE TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage - 6.5 to 28 Volts Peak Pulse Power - 1500 Watts



FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Glass passivated junction
- 1500W peak pulse power capability with a 10/1000µs 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
- High temperature soldering guaranteed: 265°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension

MECHANICAL DATA

Case: Molded plastic body over a passivated junction
Terminals: Plated axial leads, solderable per MIL-STD-750, Method 2026
Polarity: Color band denotes positive end (cathode)
Mounting Position: Any
Weight: 0.045 ounce, 1.2 grams

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| | SYMBOL | VALUE | UNITS |
|--|-----------------------------------|--------------|-------|
| Peak pulse power dissipation with a 10/1000µs waveform (NOTE 1, FIG. 1) | PPPM | Minimum 1500 | Watts |
| Steady state power dissipation, T _L =75°C with at lead lengths 0.375" (9.5mm) | P _{M(AV)} | 5.0 | Watts |
| Peak power pulse surge current with a 10/1000µs waveform (FIG. 3, NOTE 1) | I _{PPM} | SEE TABLE 1 | Amps |
| Operating junction and storage temperature range | T _J , T _{STG} | -65 to +175 | °C |

NOTE:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2

ELECTRICAL CHARACTERISTICS at (T_A=25°C UNLESS OTHERWISE NOTED)

| PART NUMBER | STAND-OFF VOLTAGE V _{WM} (VOLTS) | BREAKDOWN VOLTAGE V _(BR) (VOLTS) MIN / MAX | TEST CURRENT at I _T mA | MAXIMUM REVERSE LEAKAGE AT V _{WM} I ₀ (µA) | MAXIMUM CLAMPING VOLTAGE AT I _{PP} V _c (VOLTS) | MAXIMUM PEAK PULSE CURRENT FIG.2 I _{PPM} (AMPS) | MAXIMUM JUNCTION CAPACITANCE AT 0 VOLTS (pF) | WORKING INVERSE BLOCKING VOLTAGE V _{WIB} (VOLTS) | MAXIMUM INVERSE BLOCKING LEAKAGE CURRENT AT V _{WIB} I _p (mA) | MINIMUM PEAK INVERSE BLOCKING VOLTAGE V _{PIB} (VOLTS) |
|-------------|---|---|-----------------------------------|--|--|--|--|---|--|--|
| *LCE6.5 | 6.5 | 7.22-8.82 | 10.0 | 1000 | 12.3 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE6.5A | 6.5 | 7.22-7.98 | 10.0 | 1000 | 11.2 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE7.0 | 7.0 | 7.78-9.51 | 10.0 | 500 | 13.3 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE7.0A | 7.0 | 7.78-8.60 | 10.0 | 500 | 12.0 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE7.5 | 7.5 | 8.33-10.2 | 10.0 | 250 | 14.3 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE7.5A | 7.5 | 8.33-9.21 | 10.0 | 250 | 12.9 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE8.0 | 8.0 | 8.89-10.9 | 1.0 | 100 | 15.0 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE8.0A | 8.0 | 8.89-9.83 | 1.0 | 100 | 13.6 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE8.5 | 8.5 | 9.44-11.5 | 1.0 | 50.0 | 15.9 | 94 | 100 | 75 | 1.0 | 100 |
| *LCE8.5A | 8.5 | 9.44-10.4 | 1.0 | 50.0 | 14.4 | 100 | 100 | 75 | 1.0 | 100 |
| *LCE9.0 | 9.0 | 10.0-12.2 | 1.0 | 10.0 | 16.9 | 89 | 100 | 75 | 1.0 | 100 |

ELECTRICAL CHARACTERISTICS at (T_A=25°C UNLESS OTHERWISE NOTED)

| PART NUMBER | STAND-OFF VOLTAGE V _{WM} (VOLTS) | BREAKDOWN VOLTAGE V _(BR) (VOLTS) MIN/MAX | TEST CURRENT at I _T (mA) | MAXIMUM REVERSE LEAKAGE AT V _{WM} I ₀ (μA) | MAXIMUM CLAMPING VOLTAGE AT I _{PP} V _C (VOLTS) | MAXIMUM PEAK PULSE CURRENT FIG.2 I _{PPM} (AMPS) | MAXIMUM JUNCTION CAPACITANCE AT 0 VOLTS (pF) | WORKING INVERSE BLOCKING VOLTAGE V _{WIB} (VOLTS) | MAXIMUM INVERSE BLOCKING LEAKAGE CURRENT AT V _{WIB} I ₀ (mA) | MINIMUM PEAK INVERSE BLOCKING VOLTAGE V _{PB} (VOLTS) |
|-------------|---|---|-------------------------------------|--|--|--|--|---|--|---|
| LCE9.0A | 9.0 | 10.0-11.1 | 1.0 | 10.0 | 15.4 | 97 | 100 | 75 | 1.0 | 100 |
| LCE10 | 10 | 11.1-13.6 | 1.0 | 5.0 | 18.8 | 80 | 100 | 75 | 1.0 | 100 |
| LCE10A | 10 | 11.1-12.3 | 1.0 | 5.0 | 17.0 | 88 | 100 | 75 | 1.0 | 100 |
| LCE11 | 11 | 12.2-14.9 | 1.0 | 5.0 | 20.1 | 74 | 100 | 75 | 1.0 | 100 |
| LCE11A | 11 | 12.2-13.5 | 1.0 | 5.0 | 18.2 | 82 | 100 | 75 | 1.0 | 100 |
| LCE12 | 12 | 13.3-16.3 | 1.0 | 5.0 | 22.0 | 68 | 100 | 75 | 1.0 | 100 |
| LCE12A | 12 | 13.3-14.7 | 1.0 | 5.0 | 19.9 | 75 | 100 | 75 | 1.0 | 100 |
| LCE13 | 13 | 14.4-17.6 | 1.0 | 5.0 | 23.8 | 63 | 100 | 75 | 1.0 | 100 |
| LCE13A | 13 | 14.4-15.9 | 1.0 | 5.0 | 21.5 | 70 | 100 | 75 | 1.0 | 100 |
| LCE14 | 14 | 15.6-19.1 | 1.0 | 5.0 | 25.8 | 58 | 100 | 75 | 1.0 | 100 |
| LCE14A | 14 | 15.6-17.2 | 1.0 | 5.0 | 23.2 | 65 | 100 | 75 | 1.0 | 100 |
| LCE15 | 15 | 16.7-20.4 | 1.0 | 5.0 | 26.9 | 56 | 100 | 75 | 1.0 | 100 |
| LCE15A | 15 | 16.7-18.5 | 1.0 | 5.0 | 24.4 | 61 | 100 | 75 | 1.0 | 100 |
| LCE16 | 16 | 17.8-21.8 | 1.0 | 5.0 | 28.8 | 52 | 100 | 75 | 1.0 | 100 |
| LCE16A | 16 | 17.8-19.7 | 1.0 | 5.0 | 26.0 | 57 | 100 | 75 | 1.0 | 100 |
| LCE17 | 17 | 18.9-23.1 | 1.0 | 5.0 | 30.5 | 49 | 100 | 75 | 1.0 | 100 |
| LCE17A | 17 | 18.9-20.9 | 1.0 | 5.0 | 27.6 | 54 | 100 | 75 | 1.0 | 100 |
| LCE18 | 18 | 20.0-24.4 | 1.0 | 5.0 | 32.2 | 46 | 100 | 75 | 1.0 | 100 |
| LCE18A | 18 | 20.0-22.1 | 1.0 | 5.0 | 29.2 | 51 | 100 | 75 | 1.0 | 100 |
| LCE20 | 20 | 22.2-27.1 | 1.0 | 5.0 | 35.8 | 42 | 100 | 75 | 1.0 | 100 |
| LCE20A | 20 | 22.2-24.5 | 1.0 | 5.0 | 32.4 | 46 | 100 | 75 | 1.0 | 100 |
| LCE22 | 22 | 24.4-29.8 | 1.0 | 5.0 | 39.4 | 38 | 100 | 75 | 1.0 | 100 |
| LCE22A | 22 | 24.4-26.9 | 1.0 | 5.0 | 35.5 | 42 | 100 | 75 | 1.0 | 100 |
| LCE24 | 24 | 26.7-32.6 | 1.0 | 5.0 | 43.0 | 35 | 100 | 75 | 1.0 | 100 |
| LCE24A | 24 | 26.7-29.5 | 1.0 | 5.0 | 38.9 | 39 | 100 | 75 | 1.0 | 100 |
| LCE26 | 26 | 28.9-35.3 | 1.0 | 5.0 | 46.6 | 32 | 100 | 75 | 1.0 | 100 |
| LCE26A | 26 | 28.9-31.9 | 1.0 | 5.0 | 42.1 | 36 | 100 | 75 | 1.0 | 100 |
| LCE28 | 28 | 31.1-38.0 | 1.0 | 5.0 | 50.1 | 30 | 100 | 75 | 1.0 | 100 |
| LCE28A | 28 | 31.1-34.4 | 1.0 | 5.0 | 45.5 | 33 | 100 | 75 | 1.0 | 100 |

+ UL listed for Telecom application protection 497B, file number E136766

RATINGS AND CHARACTERISTIC CURVES LCE6.5 THRU LCE28A SERIES

FIG. 1 - PEAK PULSE POWER RATING CURVE

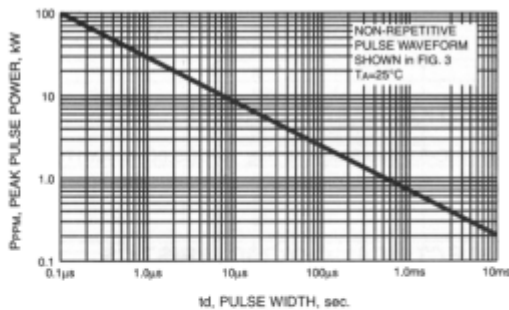


FIG. 2 - POWER DERATING CURVE

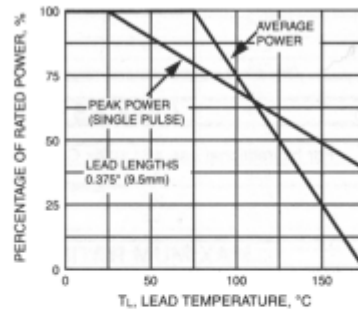


FIG. 3 - PULSE WAVEFORM

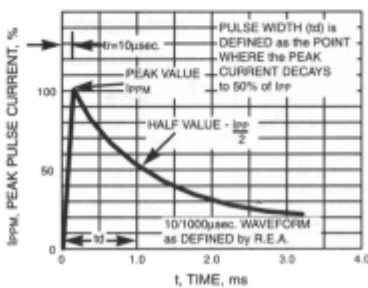
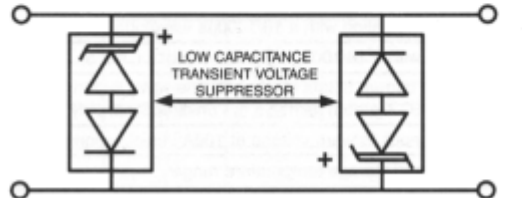


FIG. 4 - AC LINE PROTECTION APPLICATION



APPLICATION NOTE: Device must be used with two units in parallel, opposite in polarity as shown in circuit for AC signal Line protection