

# Transient Voltage Suppressor Diode

## **LCE7.0A**

(LCE6.5 thru LCE28 Series)

Standoff-Voltage 6.5 to 28V

Peak Pulse Power 1500W

# DATASHEET

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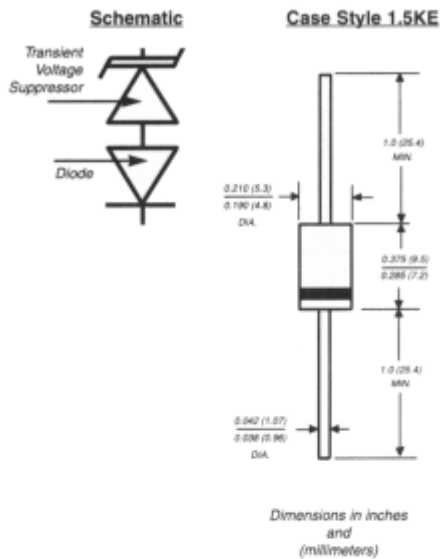
OEM – General Semiconductor

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<sub>(BR)</sub>
- 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 <sub>L</sub> =75°C with at lead lengths 0.375" (9.5mm)	P <sub>M(AV)</sub>	5.0	Watts
Peak power pulse surge current with a 10/1000µs 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>	-65 to +175	°C

NOTE:

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

### ELECTRICAL CHARACTERISTICS at (T<sub>A</sub>=25°C UNLESS OTHERWISE NOTED)

PART NUMBER	STAND-OFF VOLTAGE V <sub>WM</sub> (VOLTS)	BREAKDOWN VOLTAGE V <sub>(BR)</sub> (VOLTS) MIN / MAX	TEST CURRENT at I <sub>T</sub> mA	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> I <sub>0</sub> (µA)	MAXIMUM CLAMPING VOLTAGE AT I <sub>PPM</sub> V <sub>c</sub> (VOLTS)	MAXIMUM PEAK PULSE CURRENT FIG.2 I <sub>PPM</sub> (AMPS)	MAXIMUM JUNCTION CAPACITANCE AT 0 VOLTS (pF)	WORKING INVERSE BLOCKING VOLTAGE V <sub>WIB</sub> (VOLTS)	MAXIMUM INVERSE BLOCKING LEAKAGE CURRENT AT V <sub>WIB</sub> I <sub>p</sub> (mA)	MINIMUM PEAK INVERSE BLOCKING VOLTAGE V <sub>PIB</sub> (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<sub>A</sub>=25°C UNLESS OTHERWISE NOTED)**

PART NUMBER	STAND-OFF VOLTAGE V <sub>WM</sub> (VOLTS)	BREAKDOWN VOLTAGE V <sub>BR</sub> (VOLTS) MIN/MAX	TEST CURRENT at I <sub>r</sub> (mA)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> I <sub>o</sub> (μA)	MAXIMUM CLAMPING VOLTAGE AT I <sub>PP</sub> V <sub>c</sub> (VOLTS)	MAXIMUM PEAK PULSE CURRENT FIG.2 I <sub>PPM</sub> (AMPS)	MAXIMUM JUNCTION CAPACITANCE AT 0 VOLTS (pF)	WORKING INVERSE BLOCKING VOLTAGE V <sub>WIB</sub> (VOLTS)	MAXIMUM INVERSE BLOCKING LEAKAGE CURRENT AT V <sub>WIB</sub> I <sub>o</sub> (mA)	MINIMUM INVERSE BLOCKING VOLTAGE V <sub>PIB</sub> (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

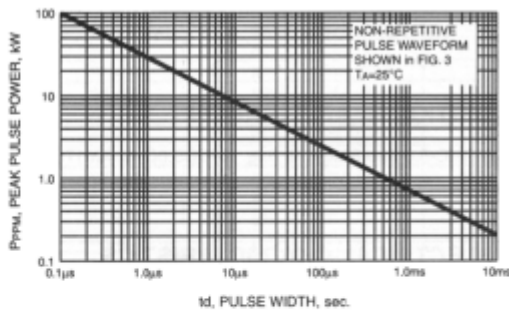


FIG. 2 - POWER DERATING CURVE

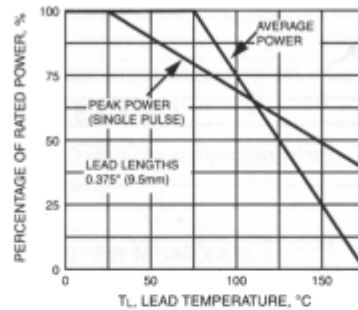


FIG. 3 - PULSE WAVEFORM

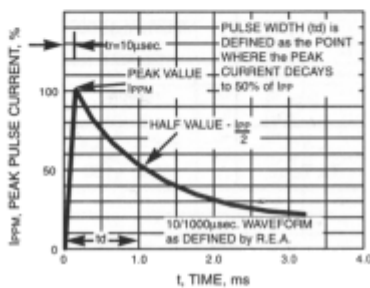
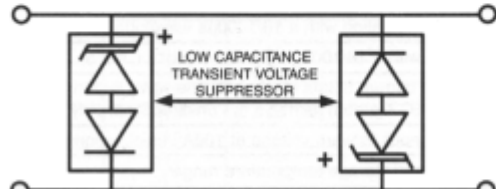


FIG. 4 - AC LINE PROTECTION APPLICATION



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