General Semiconductor Industries, Inc.

TRANSZORB®
TRANSIENT VOLTAGE SUPPRESSORS
LOW CAPACITANCE
LCE6.5 THRU LCE90A

FEATURES

- **1500 watts Peak Pulse Power dissipation**
- **Available in ranges from 6.5 to 90**
- **Low capacitance ac signal protection**
- **Each device 100% tested**

MAXIMUM RATINGS

- 1500 watts of Peak Power dissipation at 25° C (see derating curve)
- $t_{clamping}$ (0 volts to BV min): Less than 5×10^{-9} second (theoretical)
- Operating and Storage temperatures: -65° to +175° C
- Steady State power dissipation: 5.0W at T_L = 75°C, Lead Length = 3/8"
- Repetition rate (duty cycle): .05%

MECHANICAL CHARACTERISTICS

- Molded Case
- Weight: 1.5 grams (approximate)
- Polarity band on cathode end of the TransZorb (positive potential applied)
- Body marked with Logo ⁂ and type number

ELECTRICAL CHARACTERISTICS

Clamping Factor: 1.40 at full rated power
1.30 at 50% rated power

Clamping Factor: The ratio of the actual V_C (Clamping Voltage) to the BV (Breakdown Voltage) as measured on a specific device.

Note: When pulse testing, test in TransZorb Avalanche direction. DO NOT pulse in forward direction.

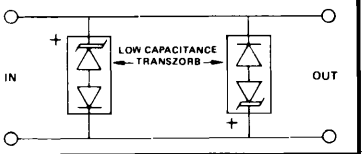
APPLICATION

This specification sheet defines a series of low-capacitance silicon transient suppressors for the protection of ac signal line. This series employs a standard TransZorb® in series with a rectifier with the same transient capabilities as the TransZorb. The rectifier is also used to reduce the effective capacitance up thru 100MHz with a minimum amount of signal loss or deformation. The low-capacitance TransZorb may be applied directly across the signal line to prevent induced transients from lightning, power interruptions, or static discharge.

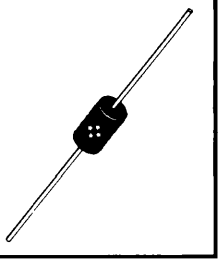
DESCRIPTION

Designed for commercial applications, this series offers pricing advantages. They have the same characteristics as the standard TransZorb, that is, high surge capability and extremely fast response time. If bipolar transient capability is required, two low-capacitance TransZorbs must be used in parallel, opposite in polarity for complete ac protection. For additional reduction in capacitance, these units can be used in conjunction with a bridge network. This will allow a lower capacitance with no change in peak pulse power capability of 1500 watts.

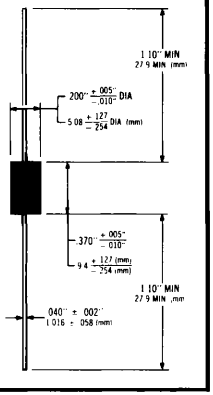
APPLICATION NOTE: Devices must be used with two units in parallel, opposite in polarity, as shown in circuit for AC Signal Line protection



CASE 1



CASE OUTLINE



SCHEMATIC

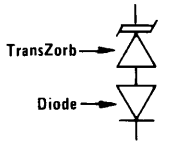


FIGURE 1—Peak Pulse Power vs Pulse Time

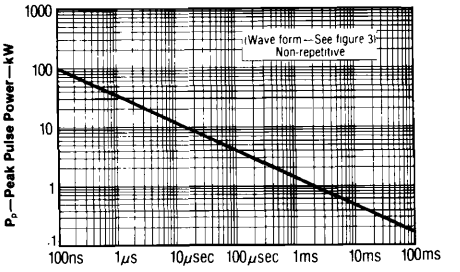
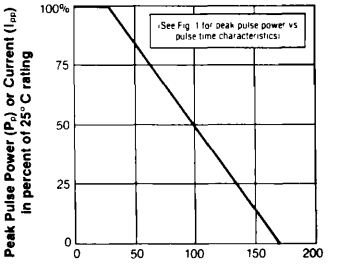


FIGURE 2—Derating Curve

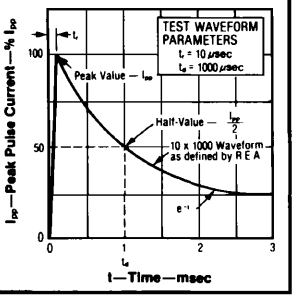


TRANSZORB®
UNIDIRECTIONAL
LOW CAPACITANCE
LCE6.5 THRU LCE90A

ELECTRICAL CHARACTERISTICS @ 25°C

GENERAL SEMI. PART NUMBER	REVERSE STAND-OFF VOLTAGE V_R VOLTS	BREAKDOWN VOLTAGE BV VOLTS Min.	Max.	@ I_T mA	MAXIMUM REVERSE LEAKAGE @ V_R I_R μA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C VOLTS	MAX. PEAK PULSE CURRENT (FIG. 3) I_{PP} AMPS	CAPACITANCE @ 0 VOLTS pF	WORKING INVERSE BLOCKING VOLTAGE V_{WIB} VOLTS	INVERSE BLOCKING LEAKAGE CURRENT @ V_{WIB} I_{IB} mA (Max)	PEAK INVERSE BLOCKING VOLTAGE V_{PIB} VOLTS
LCE6.5	6.5	7.22	8.82	10	1000	12.3	100	100	75	1	100
LCE6.5A	6.5	7.22	7.98	10	1000	11.2	100	100	75	1	100
LCE7.0	7.0	7.78	9.51	10	500	13.3	100	100	75	1	100
LCE7.0A	7.0	7.78	8.60	10	500	12.0	100	100	75	1	100
LCE7.5	7.5	8.33	10.2	10	250	14.3	100	100	75	1	100
LCE7.5A	7.5	8.33	9.21	10	250	12.9	100	100	75	1	100
LCE8.0	8.0	8.89	10.9	1	100	15.0	100	100	75	1	100
LCE8.0A	8.0	8.89	9.83	1	100	13.6	100	100	75	1	100
LCE8.5	8.5	9.44	11.5	1	50	15.9	94	100	75	1	100
LCE8.5A	8.5	9.44	10.4	1	50	14.4	100	100	75	1	100
LCE9.0	9.0	10.0	12.2	1	10	16.9	89	100	75	1	100
LCE9.0A	9.0	10.0	11.1	1	10	15.4	97	100	75	1	100
LCE10	10	11.1	13.6	1	5	18.8	80	100	75	1	100
LCE10A	10	11.1	12.3	1	5	17.0	88	100	75	1	100
LCE11	11	12.2	14.9	1	5	20.1	74	100	75	1	100
LCE11A	11	12.2	13.5	1	5	18.2	82	100	75	1	100
LCE12	12	13.3	16.3	1	5	22.0	68	100	75	1	100
LCE12A	12	13.3	14.7	1	5	19.9	75	100	75	1	100
LCE13	13	14.4	17.6	1	5	23.8	63	100	75	1	100
LCE13A	13	14.4	15.9	1	5	21.5	70	100	75	1	100
LCE14	14	15.6	19.1	1	5	25.8	58	100	75	1	100
LCE14A	14	15.6	17.2	1	5	23.2	65	100	75	1	100
LCE15	15	16.7	20.4	1	5	26.9	56	100	75	1	100
LCE15A	15	16.7	18.5	1	5	24.4	61	100	75	1	100
LCE16	16	17.8	21.8	1	5	28.8	52	100	75	1	100
LCE16A	16	17.8	19.7	1	5	26.0	57	100	75	1	100
LCE17	17	18.9	23.1	1	5	30.5	49	100	75	1	100
LCE17A	17	18.9	20.9	1	5	27.6	54	100	75	1	100
LCE18	18	20.0	24.4	1	5	32.2	46	100	75	1	100
LCE18A	18	20.0	22.1	1	5	29.2	51	100	75	1	100
LCE20	20	22.2	27.1	1	5	35.8	42	100	75	1	100
LCE20A	20	22.2	24.5	1	5	32.4	46	100	75	1	100
LCE22	22	24.4	29.8	1	5	39.4	38	100	75	1	100
LCE22A	22	24.4	26.9	1	5	35.5	42	100	75	1	100
LCE24	24	26.7	32.6	1	5	43.0	35	100	75	1	100
LCE24A	24	26.7	29.5	1	5	38.9	39	100	75	1	100
LCE26	26	28.9	35.3	1	5	46.6	32	100	75	1	100
LCE26A	26	28.9	31.9	1	5	42.1	36	100	75	1	100
LCE28	28	31.1	38.0	1	5	50.1	30	100	75	1	100
LCE28A	28	31.1	34.4	1	5	45.5	33	100	75	1	100
LCE30	30	33.3	40.7	1	5	53.5	28	100	75	1	100
LCE30A	30	33.3	36.8	1	5	48.4	31	100	75	1	100
LCE33	33	36.7	44.9	1	5	59.0	25.4	100	75	1	100
LCE33A	33	36.7	40.6	1	5	53.3	28.1	100	75	1	100
LCE36	36	40.0	48.9	1	5	64.3	23.3	100	75	1	100
LCE36A	36	40.0	44.2	1	5	58.1	25.8	100	75	1	100
LCE40	40	44.4	54.3	1	5	71.4	21.0	100	75	1	100
LCE40A	40	44.4	49.1	1	5	64.5	23.3	100	75	1	100
LCE43	43	47.8	58.4	1	5	76.7	19.5	100	150	1	200
LCE43A	43	47.8	52.8	1	5	69.4	21.6	100	150	1	200
LCE45	45	50.0	61.1	1	5	80.3	18.7	100	150	1	200
LCE45A	45	50.0	55.3	1	5	72.7	20.6	100	150	1	200
LCE48	48	53.3	65.1	1	5	85.5	17.5	100	150	1	200
LCE48A	48	53.3	58.9	1	5	77.4	19.4	100	150	1	200
LCE51	51	56.7	69.3	1	5	91.1	16.5	100	150	1	200
LCE51A	51	56.7	62.7	1	5	82.4	18.2	100	150	1	200
LCE54	54	60.0	73.3	1	5	96.3	15.6	100	150	1	200
LCE54A	54	60.0	66.3	1	5	87.1	17.2	100	150	1	200
LCE58	58	64.4	78.7	1	5	103.0	14.6	100	150	1	200
LCE58A	58	64.4	71.2	1	5	93.6	16.0	100	150	1	200
LCE60	60	66.7	81.5	1	5	107.0	14.0	90	150	1	200
LCE60A	60	66.7	73.7	1	5	96.8	15.5	90	150	1	200
LCE64	64	71.1	86.9	1	5	114.0	13.2	90	150	1	200
LCE64A	64	71.1	78.6	1	5	103.0	14.6	90	150	1	200
LCE70	70	77.8	95.1	1	5	125	12.0	90	150	1	200
LCE70A	70	77.8	86.0	1	5	113	13.3	90	150	1	200
LCE75	75	83.3	102.0	1	5	134	11.2	90	150	1	200
LCE75A	75	83.3	92.1	1	5	121	12.4	90	150	1	200
LCE80	80	88.7	108	1	5	142	10.6	90	150	1	200
LCE80A	80	88.7	98.0	1	5	129	11.6	90	150	1	200
LCE90	90	100	122	1	5	160	9.4	90	300	1	200
LCE90A	90	100	111	1	5	146	10.3	90	300	1	200

FIGURE 3—Pulse Waveform



NOTES

Note 1: A TransZorb is normally selected according to the reverse "Stand Off Voltage" (V_R) which should be equal to or greater than the DC or continuous peak operating voltage level.

ABBREVIATIONS & SYMBOLS

- V_R — Stand-Off Voltage: Applied Reverse Voltage to assure a nonconductive condition. (See Note 1)
- BV(min) — This is the minimum Breakdown Voltage the device will exhibit and is used to assure that conduction does not occur prior to this voltage level at 25°C.
- V_C(max) — Maximum Clamping Voltage. The maximum peak voltage appearing across the TransZorb when subjected to the peak pulse current in a one millisecond time interval. The peak pulse voltages are the combination of voltage rise due to both the series resistance and thermal rise.
- I_{pp} — Peak Pulse Current — See Figure 3
- P_p — Peak Pulse Power
- I_R — Reverse Leakage