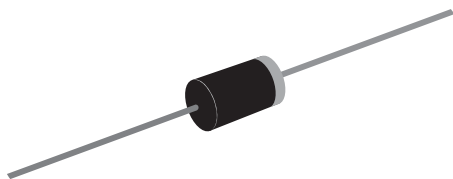


# Low Capacitance TRANSZORB® Transient Voltage Suppressors



Case Style 1.5KE

## FEATURES

- Glass passivated chip junction
- 1500 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication.

## MECHANICAL DATA

**Case:** Molded epoxy body over passivated junction  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes TVS cathode end

| PRIMARY CHARACTERISTICS    |                  |
|----------------------------|------------------|
| $V_{WM}$                   | 6.5 V to 28 V    |
| $V_{BR}$ (uni-directional) | 7.22 V to 34.4 V |
| $P_{PPM}$                  | 1500 W           |
| $P_D$                      | 6.5 W            |
| $T_J$ max.                 | 175 °C           |
| Polarity                   | Uni-directional  |
| Package                    | 1.5KE            |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                                |                |                |      |
|--|----------------|----------------|------|
| PARAMETER  | SYMBOL         | LIMIT          | UNIT |
| Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup> (fig. 1)   | $P_{PPM}$      | 1500           | W    |
| Peak power pulse surge current with a 10/1000 $\mu$ s waveform <sup>(1)</sup> (fig. 2) | $I_{PPM}$      | See next table | A    |
| Power dissipation on infinite heatsink at $T_L = 75$ °C (fig. 2)                       | $P_D$          | 6.5            | W    |
| Operating junction and storage temperature range                                       | $T_J, T_{STG}$ | - 65 to + 175  | °C   |

### Note

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig.

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| PART NUMBER | BREAKDOWN VOLTAGE $V_{BR}$ (V) |      | TEST CURRENT $I_T$ (mA) | STAND-OFF VOLTAGE $V_{WM}$ (V) | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ ) | MAXIMUM PEAK PULSE CURRENT (FIG.3) $I_{PP}$ (A) | MAXIMUM CLAMPING VOLTAGE AT $I_{PP}$ $V_C$ (V) | MAXIMUM JUNCTION CAPACITANCE AT 0 (V) (pF) | MAXIMUM INVERSE BLOCKING VOLTAGE $V_{WIB}$ (V) | MAXIMUM INVERSE BLOCKING LEAKAGE CURRENT AT $V_{WIB}$ $I_D$ (mA) | MINIMUM PEAK INVERSE BLOCKING VOLTAGE $V_{PIB}$ (V) |
|-------------|--------------------------------|------|-------------------------|--------------------------------|---|---|--|--|--|--|---|
|             | MIN.                           | MAX. |                         |                                |   |   |  |  |  |  |   |
| LCE6.5A     | 7.22                           | 7.98 | 10.0                    | 6.5                            | 1000  | 100   | 11.2   | 100  | 75   | 1.0  | 100   |
| LCE7.0A     | 7.78                           | 8.6  | 10.0                    | 7.0                            | 500   | 100   | 12.0   | 100  | 75   | 1.0  | 100   |
| LCE7.5A     | 8.33                           | 9.21 | 10.0                    | 7.5                            | 250   | 100   | 12.9   | 100  | 75   | 1.0  | 100   |
| LCE8.0A     | 8.89                           | 9.83 | 1.0                     | 8.0                            | 100   | 100   | 13.6   | 100  | 75   | 1.0  | 100   |
| LCE8.5A     | 9.44                           | 10.4 | 1.0                     | 8.5                            | 50.0  | 100   | 14.4   | 100  | 75   | 1.0  | 100   |
| LCE9.0A     | 10.0                           | 11.1 | 1.0                     | 9.0                            | 10.0  | 97  | 15.4   | 100  | 75   | 1.0  | 100   |
| LCE10A      | 11.1                           | 12.3 | 1.0                     | 10.0                           | 5.0   | 88  | 17.0   | 100  | 75   | 1.0  | 100   |
| LCE11A      | 12.2                           | 13.5 | 1.0                     | 11.0                           | 5.0   | 82  | 18.2   | 100  | 75   | 1.0  | 100   |
| LCE12A      | 13.3                           | 14.7 | 1.0                     | 12.0                           | 5.0   | 75  | 19.9   | 100  | 75   | 1.0  | 100   |
| LCE13A      | 14.4                           | 15.9 | 1.0                     | 13.0                           | 5.0   | 70  | 21.5   | 100  | 75   | 1.0  | 100   |
| LCE14A      | 15.6                           | 17.2 | 1.0                     | 14.0                           | 5.0   | 65  | 23.2   | 100  | 75   | 1.0  | 100   |
| LCE15A      | 16.7                           | 18.5 | 1.0                     | 15.0                           | 5.0   | 61  | 24.4   | 100  | 75   | 1.0  | 100   |
| LCE16A      | 17.8                           | 19.7 | 1.0                     | 16.0                           | 5.0   | 57  | 26.0   | 100  | 75   | 1.0  | 100   |
| LCE17A      | 18.9                           | 20.9 | 1.0                     | 17.0                           | 5.0   | 54  | 27.6   | 100  | 75   | 1.0  | 100   |
| LCE18A      | 20.0                           | 22.1 | 1.0                     | 18.0                           | 5.0   | 51  | 29.2   | 100  | 75   | 1.0  | 100   |
| LCE20A      | 22.2                           | 24.5 | 1.0                     | 20.0                           | 5.0   | 46  | 32.4   | 100  | 75   | 1.0  | 100   |
| LCE22A      | 24.4                           | 26.9 | 1.0                     | 22.0                           | 5.0   | 42  | 35.5   | 100  | 75   | 1.0  | 100   |
| LCE24A      | 26.7                           | 29.5 | 1.0                     | 24.0                           | 5.0   | 39  | 38.9   | 100  | 75   | 1.0  | 100   |
| LCE26A      | 28.9                           | 31.9 | 1.0                     | 26.0                           | 5.0   | 36  | 42.1   | 100  | 75   | 1.0  | 100   |
| LCE28A      | 31.1                           | 34.4 | 1.0                     | 28.0                           | 5.0   | 33  | 45.5   | 100  | 75   | 1.0  | 100   |

**Note**

- All the above devices are UL listed for Telecom application protection 497B, file number E136766

**ORDERING INFORMATION** (Example)

| PREFERRED PIN | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
|---------------|-----------------|------------------------|---------------|----------------------------------|
| LCE6.5A-E3/54 | 0.968           | 54                     | 1400          | 13" diameter paper tape and reel |

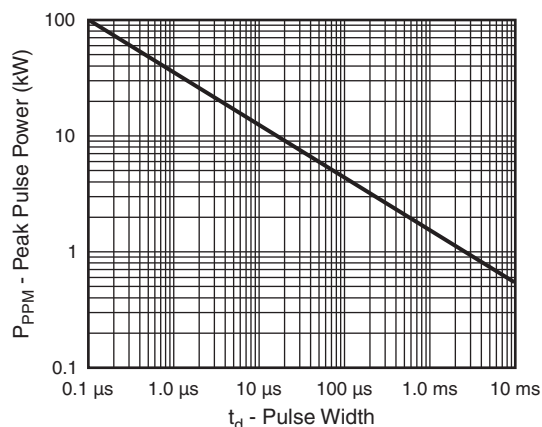
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve

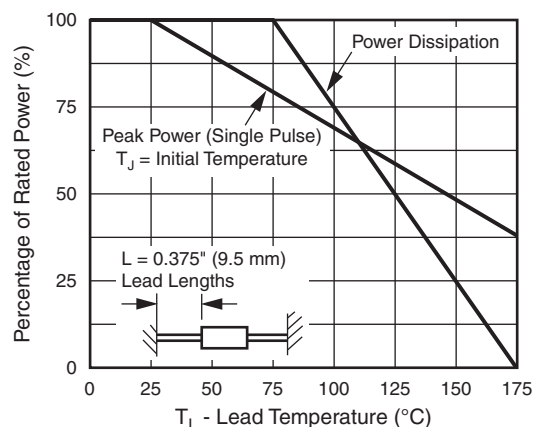


Fig. 2 - Power Derating Curve

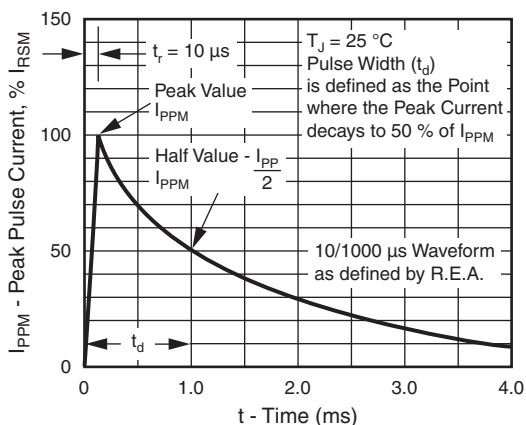
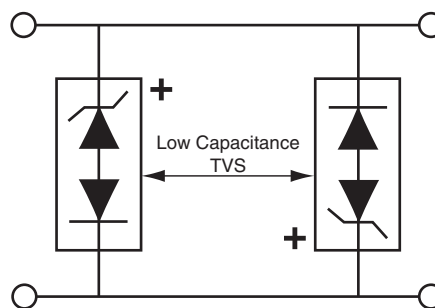


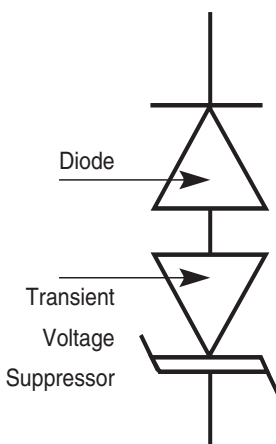
Fig. 3 - Pulse Waveform



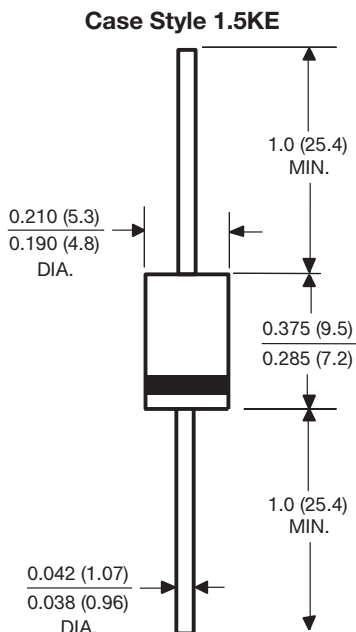
**Application Note:** Device must be used with two units in parallel, opposite in polarity as shown in circuit for AC signal line protection.

Fig. 4 - AC Line Protection Application

### SCHEMATIC



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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