



## Ultra Bright AlInGaP Chip LED Lamp

|                         |               |
|-------------------------|---------------|
| LTST- C150/170/190KA KT | Red Orange    |
| LTST- C150/170/190KF KT | Yellow Orange |
| LTST- C150/170/190KR KT | Super Red     |
| LTST- C150/170/190KS KT | Yellow        |
| LTST- C150/170/190KY KT | Amber Yellow  |

### Features

- High brightness AlInGaP material
- Package in 8mm tape on 7" diameter reels.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow and wave solder process.
- EIA STD package.

### Description

The Red Orange source color devices are made with Aluminum Indium Gallium Phosphide on Red Orange Light Emitting Diode.

The Yellow Orange source color devices are made with Aluminum Indium Gallium Phosphide on Yellow Orange Light Emitting Diode.

The Super Red source color devices are made with Aluminum Indium Gallium Phosphide on Super Red Light Emitting Diode.

The Yellow source color devices are made with Aluminum Indium Gallium Phosphide on Yellow Light Emitting Diode.

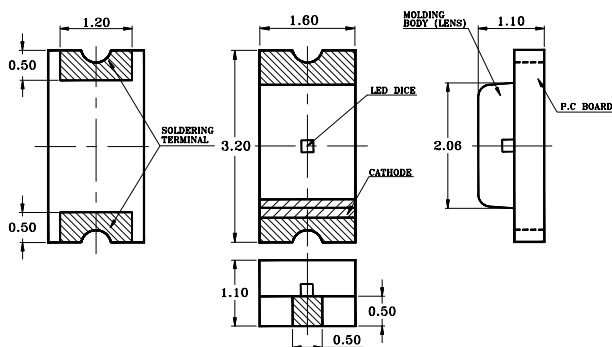
The Amber Yellow source color devices are made with Aluminum Indium Gallium Phosphide on Amber Yellow Light Emitting Diode.

### Devices

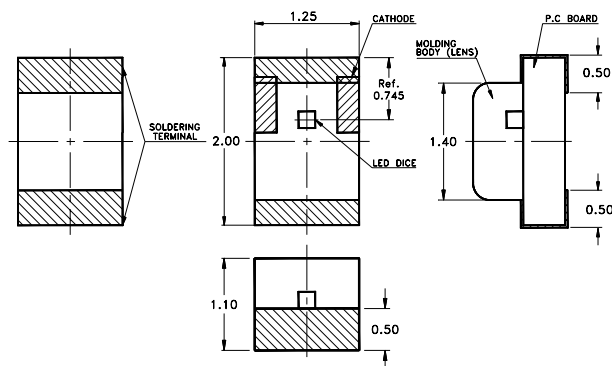
| Part No.<br>LTST-                   | Lens        | Source Color          |
|-------------------------------------|-------------|-----------------------|
| C150KA KT<br>C170KA KT<br>C190KA KT | Water Clear | AlInGaP Red Orange    |
| C150KF KT<br>C170KF KT<br>C190KF KT | Water Clear | AlInGaP Yellow Orange |
| C150KR KT<br>C170KR KT<br>C190KR KT | Water Clear | AlInGaP Super Red     |
| C150KS KT<br>C170KS KT<br>C190KS KT | Water Clear | AlInGaP Yellow        |
| C150KY KT<br>C170KY KT<br>C190KY KT | Water Clear | AlInGaP Amber Yellow  |

## Package Dimensions

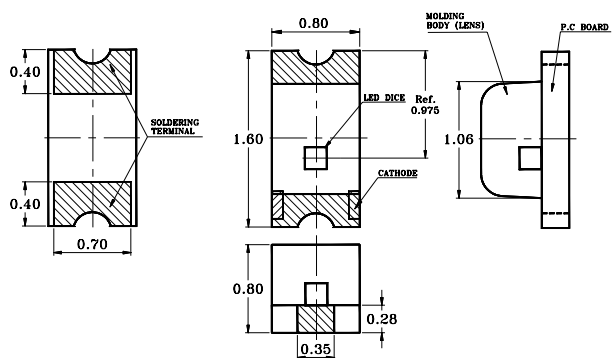
### (1) LTST-C150XKT



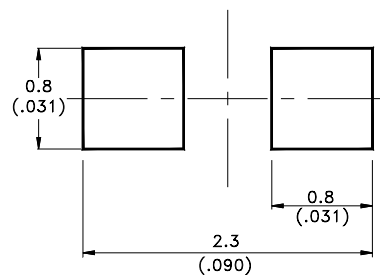
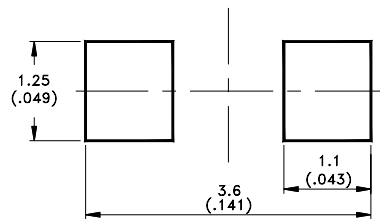
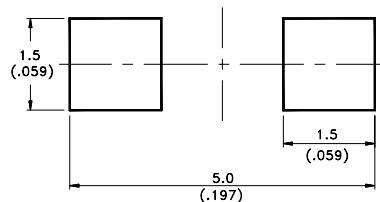
### (2) LTST-C170XKT



### (3) LTST-C190XKT



## Pad Dimensions



#### NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1\text{mm}$  (.004") unless otherwise noted.
3. Specifications are subject to change without notice.

(1) LTST-C150XKT

Technical drawing of a cathode assembly. The drawing includes a side view on the left and a top view on the right.

**Side View Dimensions:**

- Overall width:  $0.23 \pm 0.1$  ( $.009 \pm .004$ )
- Overall height:  $1.21 \pm 0.10$  ( $.047 \pm .004$ )

**Top View Dimensions:**

- Overall width:  $2.00 \pm 0.05$  ( $.079 \pm .002$ )
- Overall height:  $8.00 \pm 0.30$  ( $.315 \pm .012$ )
- Distance from top edge to first hole center:  $1.75 \pm 0.1$  ( $.069 \pm .004$ )
- Distance between hole centers:  $4.00 \pm 0.1$  ( $.157 \pm .004$ )
- Distance from last hole center to right edge:  $1.55 \pm 0.05$  ( $.061 \pm 0.002$ )
- Distance from bottom edge to hole center:  $3.50 \pm 0.05$  ( $.138 \pm .002$ )
- Feature specification:  $\#1.00(.039)$  Typ.

The top view shows three circular holes and three rectangular features. A label "CATHODE" points to the right edge of the assembly.

Technical drawing of a cathode assembly. The drawing includes a side view on the left and a top view on the right. Dimensions are provided in millimeters (mm) with tolerances in parentheses.

**Side View Dimensions:**

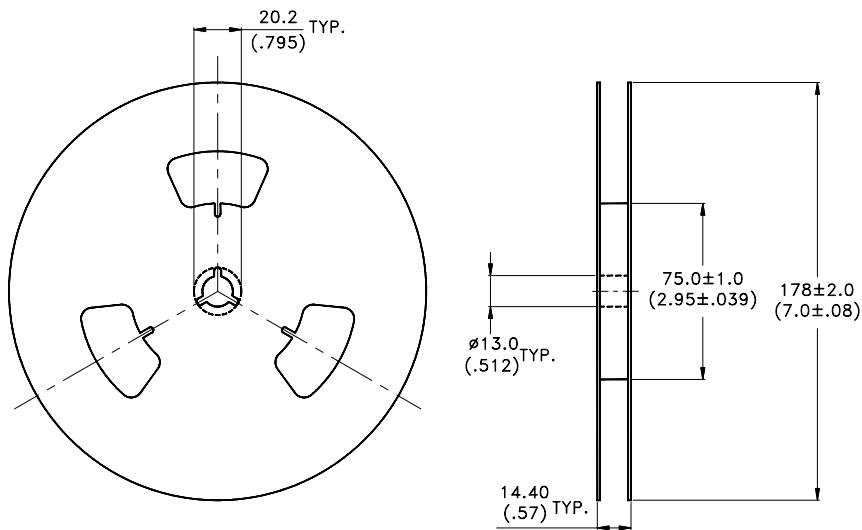
- Top flange thickness:  $0.23 \pm 0.1$  (.009  $\pm$  .004)
- Overall height:  $8.00 \pm 0.30$  ( $0.315 \pm .012$  - .004)
- Internal feature height:  $3.50 \pm 0.05$  (.138  $\pm$  .002)
- Bottom flange thickness:  $0.95 \pm 0.10$  (.038  $\pm$  .004)

**Top View Dimensions:**

- Overall width:  $2.00 \pm 0.05$  (.079  $\pm$  .002)
- Distance between first two holes:  $4.00 \pm 0.1$  (.157  $\pm$  .004)
- Distance between second and third holes:  $4.00 \pm 0.1$  (.157  $\pm$  .004)
- Distance from centerline to fourth hole:  $1.50 \pm 0.10$  ( $0.059 \pm .004$  - .00)

The top view shows three circular holes and four rectangular features. The rightmost rectangular feature is labeled "CATHODE".

Package Dimensions of Reel



- NOTES:
- 1. Empty component pockets sealed with top cover tape
  - 2. 7 inch reel-3000 pieces per reel.
  - 3. The maximum number of consecutive missing lamps is two.
  - 4. In accordance with ANSI/EIA 481-1-A-1994 specifications.

Absolute Mmaximum Ratings at Ta=25°C

| Parameter                                                    | Red Orange          | Yellow Orange | Super Red | Yellow | Amber Yellow | Unit  |
|--------------------------------------------------------------|---------------------|---------------|-----------|--------|--------------|-------|
| Power Dissipation                                            | 75                  | 75            | 75        | 75     | 75           | mW    |
| Peak Forward Current<br>(1/10 Duty Cycle, 0.1ms Pulse Width) | 80                  | 80            | 80        | 80     | 80           | mA    |
| Continuous Forward Current                                   | 30                  | 30            | 30        | 30     | 30           | mA    |
| Derating Linear From 50°C                                    | 0.4                 | 0.4           | 0.4       | 0.4    | 0.4          | mA/°C |
| Reverse Voltage                                              | 5                   | 5             | 5         | 5      | 5            | V     |
| Operating Temperature Range                                  | -55°C to +85°C      |               |           |        |              |       |
| Storage Temperature Range                                    | -55°C to +85°C      |               |           |        |              |       |
| Wave Soldering Condition                                     | 260°C for 5 Seconds |               |           |        |              |       |
| Infrared Soldering Condition                                 | 260°C for 5 Seconds |               |           |        |              |       |
| Vapor phase Soldering Condition                              | 215°C for 3 minutes |               |           |        |              |       |

SMD LAMPS

## Electrical / Optical Characteristics and Curves at Ta = 25°C

| Parameter                | Symbol            | Color         | Part No.<br>LTST-C150/170/190 | Min. | Typ. | Max. | Unit. | Test Condition.           |
|--------------------------|-------------------|---------------|-------------------------------|------|------|------|-------|---------------------------|
| Luminous Intensity       | Iv                | Red Orange    | KAKT                          | 16   | 80   | 200  | mcd   | If=20 mA<br>Note 1        |
|                          |                   | Yellow Orange | KFKT                          | 16   | 80   | 200  |       |                           |
|                          |                   | Super Red     | KRKT                          | 16   | 80   | 200  |       |                           |
|                          |                   | Yellow        | KSKT                          | 10   | 50   | 125  |       |                           |
|                          |                   | Amber Yellow  | KYKT                          | 16   | 80   | 200  |       |                           |
| Viewing Angle            | 2θ <sub>1/2</sub> | Red Orange    | KAKT                          |      | 130  |      | deg   | Note 2 (Fig.6)            |
|                          |                   | Yellow Orange | KFKT                          |      | 130  |      |       |                           |
|                          |                   | Super Red     | KRKT                          |      | 130  |      |       |                           |
|                          |                   | Yellow        | KSKT                          |      | 130  |      |       |                           |
|                          |                   | Amber Yellow  | KYKT                          |      | 130  |      |       |                           |
| Peak Emission Wavelength | λ P               | Red Orange    | KAKT                          |      | 621  |      | nm    | Measurement @Peak (Fig.1) |
|                          |                   | Yellow Orange | KFKT                          |      | 611  |      |       |                           |
|                          |                   | Super Red     | KRKT                          |      | 639  |      |       |                           |
|                          |                   | Yellow        | KSKT                          |      | 591  |      |       |                           |
|                          |                   | Amber Yellow  | KYKT                          |      | 598  |      |       |                           |
| Dominant Wavelength      | λ d               | Red Orange    | KAKT                          |      | 615  |      | nm    | Note 3                    |
|                          |                   | Yellow Orange | KFKT                          |      | 605  |      |       |                           |
|                          |                   | Super Red     | KRKT                          |      | 631  |      |       |                           |
|                          |                   | Yellow        | KSKT                          |      | 589  |      |       |                           |
|                          |                   | Amber Yellow  | KYKT                          |      | 595  |      |       |                           |
| Spectral Line Half Width | Δλ                | Red Orange    | KAKT                          |      | 18   |      | nm    |                           |
|                          |                   | Yellow Orange | KFKT                          |      | 17   |      |       |                           |
|                          |                   | Super Red     | KRKT                          |      | 20   |      |       |                           |
|                          |                   | Yellow        | KSKT                          |      | 15   |      |       |                           |
|                          |                   | Amber Yellow  | KYKT                          |      | 16   |      |       |                           |

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.  
2. 2θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.  
3. The dominant wavelength, λ d is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

## Electrical / Optical Characteristics and Curves at TA = 25°C

| Parameter       | Symbol         | Color         | Part No.<br>LTST- | Min. | Typ. | Max. | Unit. | Test Condition.          |
|-----------------|----------------|---------------|-------------------|------|------|------|-------|--------------------------|
| Forward Voltage | V <sub>F</sub> | Red Orange    | KAKT              |      | 2.0  | 2.4  | V     | I <sub>F</sub> =20mA     |
|                 |                | Yellow Orange | KFKT              |      | 2.0  | 2.4  |       |                          |
|                 |                | Super Red     | KRKT              |      | 2.0  | 2.4  |       |                          |
|                 |                | Yellow        | KSKT              |      | 2.0  | 2.4  |       |                          |
|                 |                | Amber Yellow  | KYKT              |      | 2.0  | 2.4  |       |                          |
| Reverse Current | I <sub>R</sub> | Red Orange    | KAKT              |      |      | 100  | μA    | V <sub>R</sub> =5V       |
|                 |                | Yellow Orange | KFKT              |      |      | 100  |       |                          |
|                 |                | Super Red     | KRKT              |      |      | 100  |       |                          |
|                 |                | Yellow        | KSKT              |      |      | 100  |       |                          |
|                 |                | Amber Yellow  | KYKT              |      |      | 100  |       |                          |
| Capacitance     | C              | Red Orange    | KAKT              |      | 40   |      | pF    | V <sub>F</sub> =0 f=1MHZ |
|                 |                | Yellow Orange | KFKT              |      | 40   |      |       |                          |
|                 |                | Super Red     | KRKT              |      | 40   |      |       |                          |
|                 |                | Yellow        | KSKT              |      | 40   |      |       |                          |
|                 |                | Amber Yellow  | KYKT              |      | 40   |      |       |                          |

- NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
2.  $2\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength,  $\lambda_d$  is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

**Typical Electrical / Optical Characteristic Curves  
(25°C Ambient Temperature Unless Otherwise Noted)**

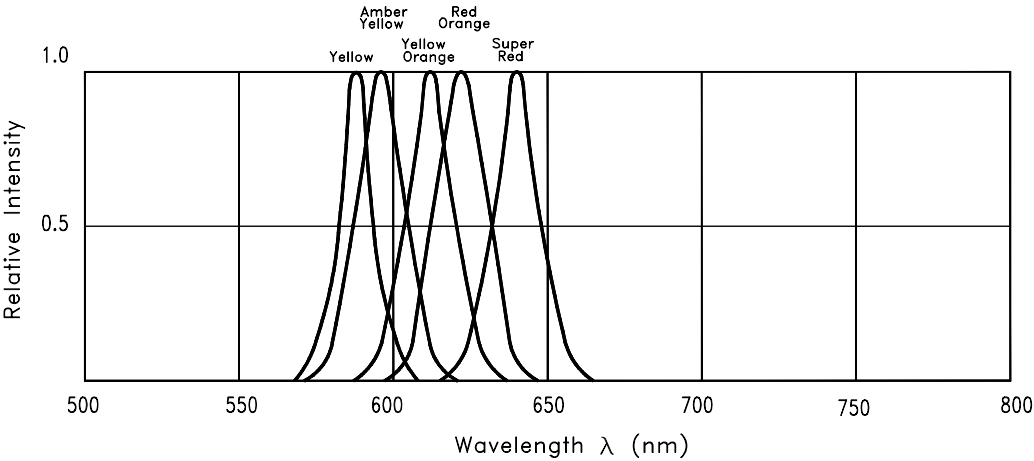


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

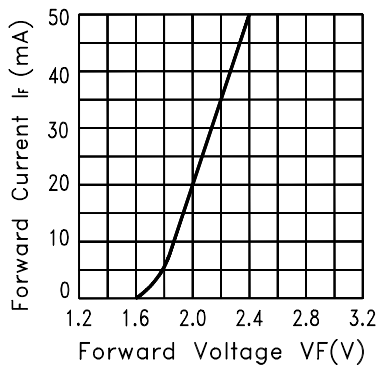


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

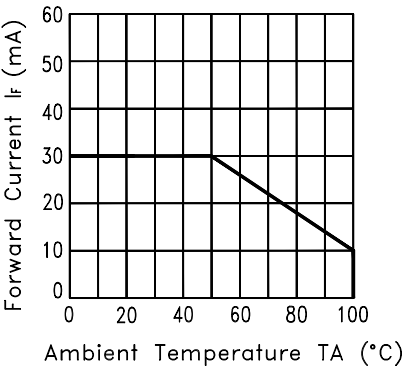


Fig.3 FORWARD CURRENT DERATING CURVE

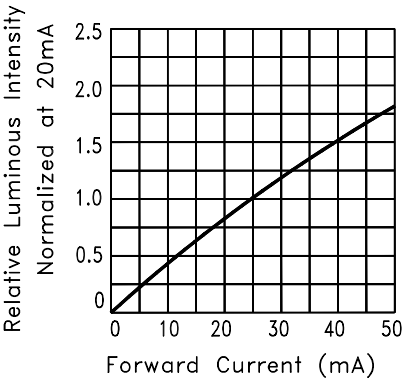


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

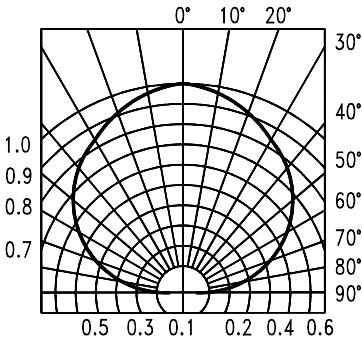


Fig.6 SPATIAL DISTRIBUTION