Kingbright

## T-1 (3mm) QUAD-LEVEL LED INDICATOR

Part Number: L-937SB/3EY1EGW

High Efficiency Red
Yellow
Green

### Features

- Quad-level design, save board space.
- Different color combination available.
- Black case enhances contrast.
- Housing UL rating:94V-0.
- Housing material: type 66 nylon.
- RoHS compliant.

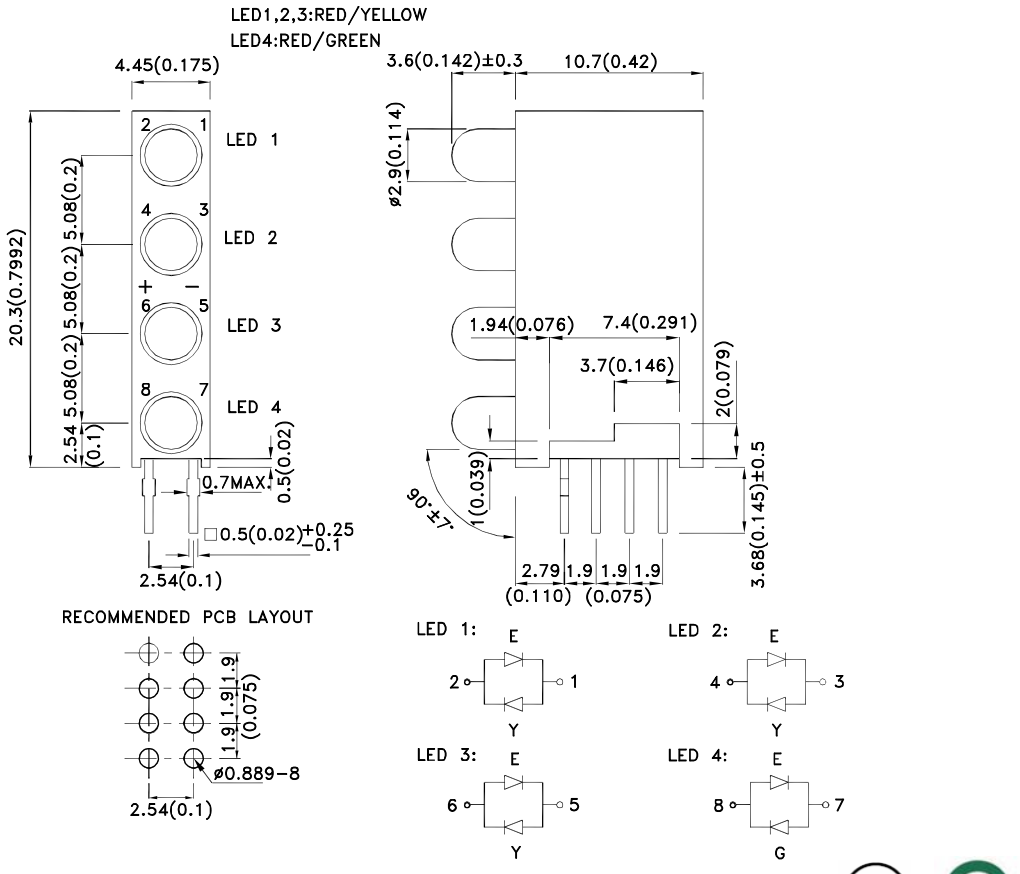
### Description

The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

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

The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

### Package Dimensions




Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

## Selection Guide

| Part No. | Dice | Lens Type | Iv (mcd) [2] @ 20mA | | Viewing Angle [1] |
|---|---|---|---|---|---|
| | | | Min. | Typ. | 2θ1/2 |
| L-937SB/3EY1EGW | High Efficiency Red (GaAsP/GaP) | White Diffused | 6 | 14 | 60° |
| | | | *4 | *10 | |
| | Yellow (GaAsP/GaP) | | 4 | 8 | |
| | | | *4 | *8 | |
| | High Efficiency Red (GaAsP/GaP) | White Diffused | 6 | 14 | 60° |
| | | | *4 | *10 | |
| | Green (GaP) | | 6 | 14 | |
| | | | *6 | *14 | |

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity/ luminous Flux: +/-15%.
* Luminous intensity value is traceable to the CIE127-2007 compliant national standards.

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

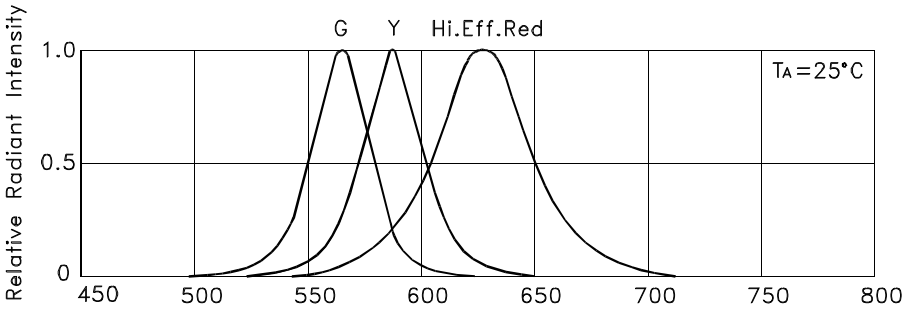
| Symbol | Parameter | Device | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| λpeak | Peak Wavelength | High Efficiency Red<br>Yellow<br>Green | 627<br>590<br>565 | | nm | $I_F$=20mA |
| λD [1] | Dominant Wavelength | High Efficiency Red<br>Yellow<br>Green | 617<br>588<br>568 | | nm | $I_F$=20mA |
| Δλ1/2 | High Efficiency Red | High Efficiency Red<br>Yellow<br>Green | 45<br>35<br>30 | | nm | $I_F$=20mA |
| C | Capacitance | High Efficiency Red<br>Yellow<br>Green | 15<br>20<br>15 | | pF | $V_F$=0V;f=1MHz |
| $V_F$ [2] | Forward Voltage | High Efficiency Red<br>Yellow<br>Green | 2<br>2.1<br>2.2 | 2.5<br>2.5<br>2.5 | V | $I_F$=20mA |

Notes:
1.Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.
3.Wavelength value is traceable to the CIE127-2007 compliant national standards.

## Absolute Maximum Ratings at TA=25°C

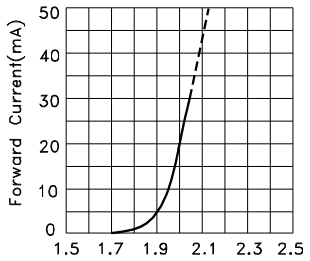
| Parameter | High Efficiency Red | Yellow | Green | Units |
|---|---|---|---|---|
| Power dissipation | 75 | 75 | 62.5 | mW |
| DC Forward Current | 30 | 30 | 25 | mA |
| Peak Forward Current [1] | 160 | 140 | 140 | mA |
| Operating/Storage Temperature | -40°C To +85°C | | | |
| Lead Solder Temperature [2] | 260°C For 3 Seconds | | | |
| Lead Solder Temperature [3] | 260°C For 5 Seconds | | | |

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. 2mm below package base.
3. 5mm below package base.

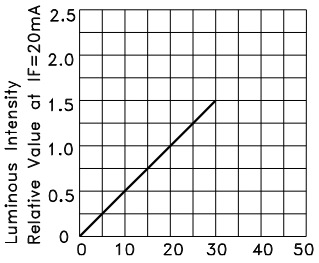


RELATIVE INTENSITY Vs. WAVELENGTH

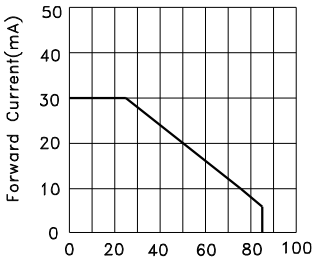
**L-937SB/3EY1EGW**
**High Efficiency Red**



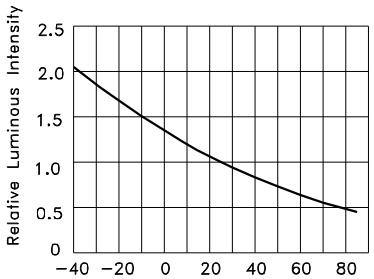
FORWARD CURRENT Vs.
FORWARD VOLTAGE



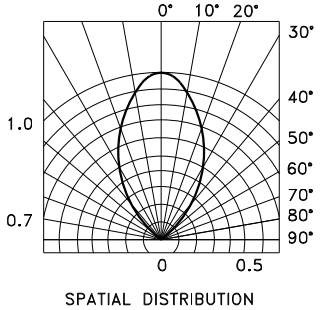
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

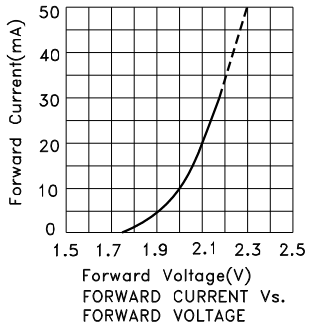


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

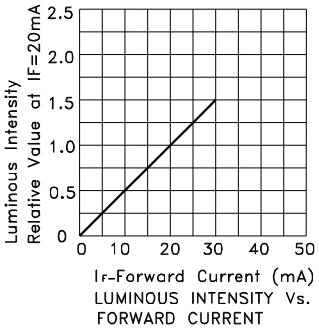


SPATIAL DISTRIBUTION

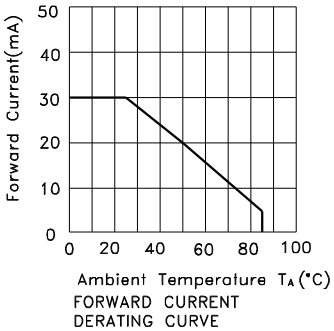
**Yellow**



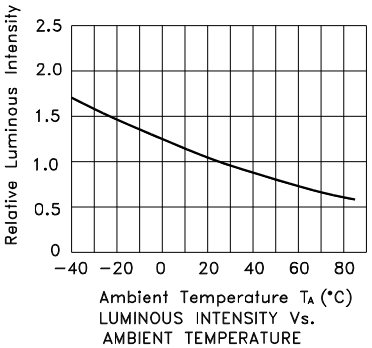

FORWARD CURRENT Vs.
FORWARD VOLTAGE



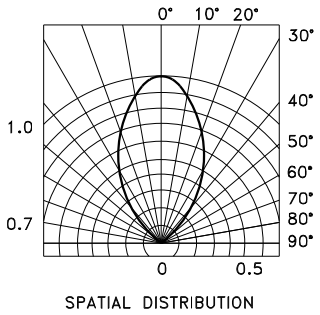

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE

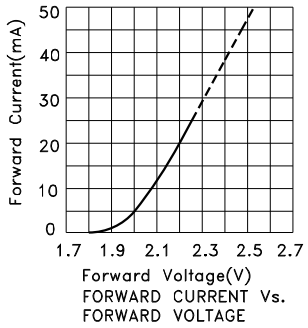



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

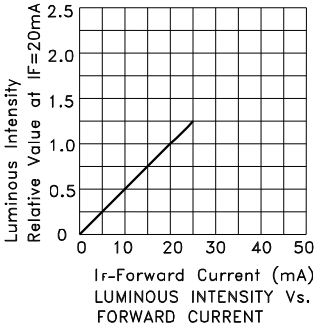



SPATIAL DISTRIBUTION

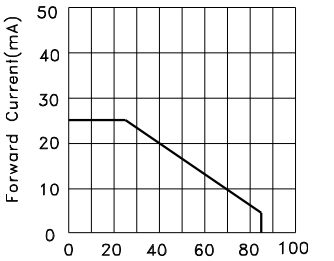
**Green**



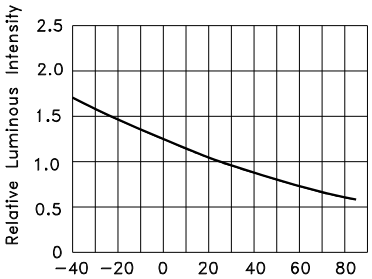

FORWARD CURRENT Vs.
FORWARD VOLTAGE



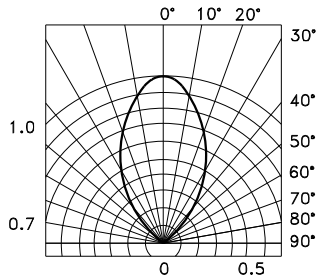

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE



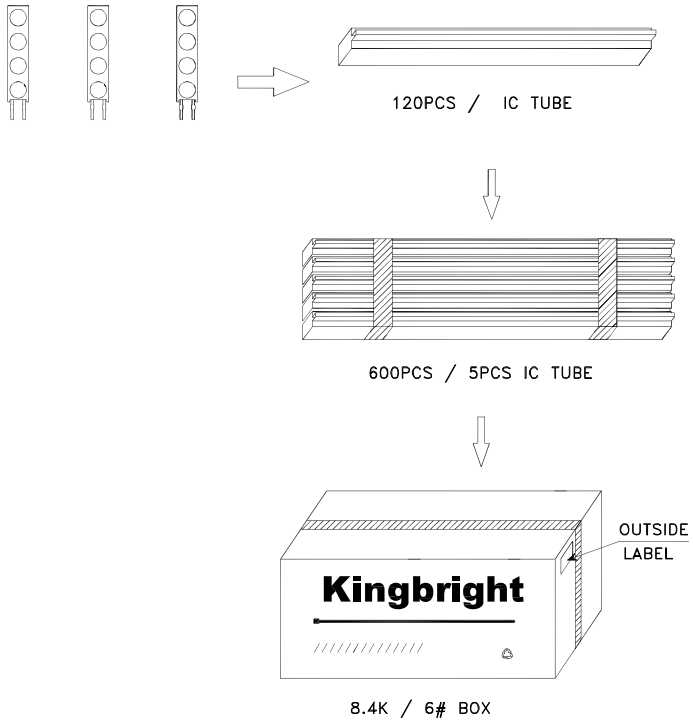

LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

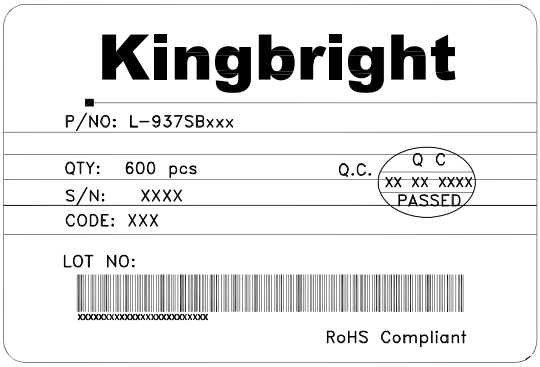



SPATIAL DISTRIBUTION

## PACKING & LABEL SPECIFICATIONS

## L-937SB/3EY1EGW

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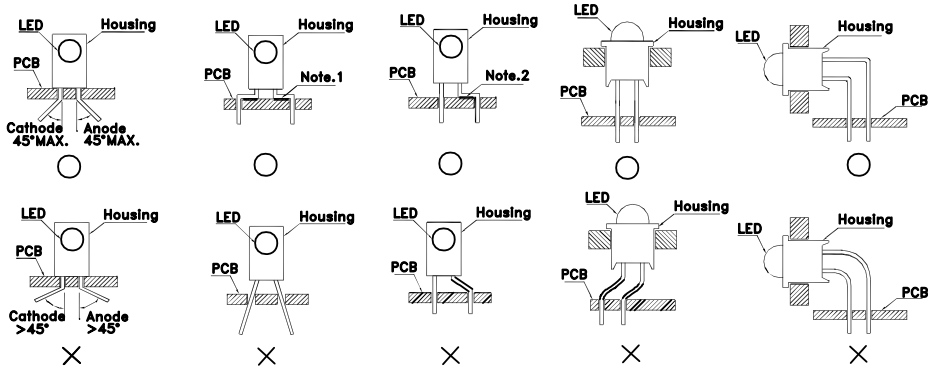
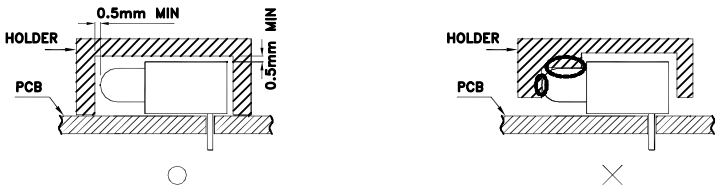
## PRECAUTIONS

1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead–forming may be required to insure the lead pitch matches the hole pitch. Refer to the figure below for proper lead forming procedures.

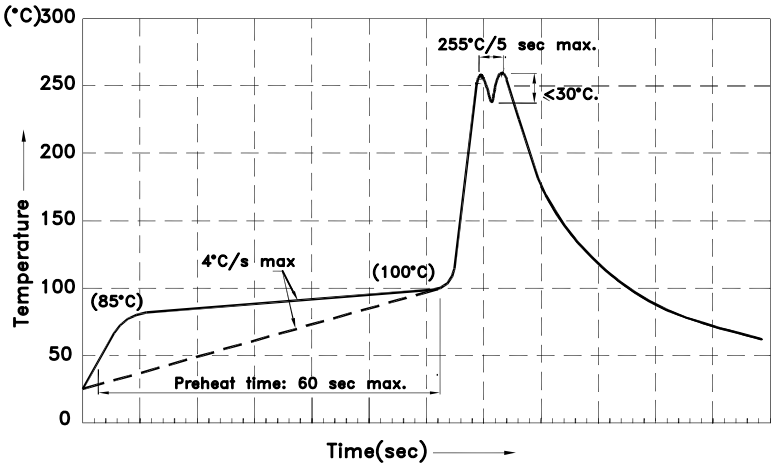



"○" Correct mounting method "×" Incorrect mounting method

2. During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering.




3. The tip of the soldering iron should never touch the lens epoxy.
4. Through–hole LEDs are incompatible with reflow soldering.
5. If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Kingbright for compatibility.
6. Recommended Wave Soldering Profiles:




Notes:

1. Recommend pre–heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.