

# Kingbright®

## 1.8mm RIGHT ANGLE LED INDICATORS

L-2060NA/3

### Features

- ▮ TRI-LEVEL DESIGN.
- ▮ DIFFERENT COLOR COMBINATION AVAILABLE.
- ▮ BLACK CASE ENHANCES CONTRAST RATIO.
- ▮ HIGH RELIABILITY LIFE MEASURED IN YEARS.

### Description

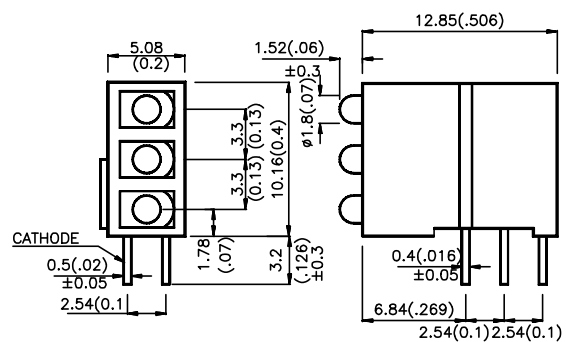
The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

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 Super Bright Red source color devices are made with Gallium Aluminum Arsenide Red Light Emitting Diode.

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$  (0.01") unless otherwise noted.
3. Lead spacing is measured where the lead emerges package.
4. Specifications are subjected to change without notice.

### Selection Guide

| Part No.      | Dice                           | Lens Type       | Iv (mcd)<br>@ 10 mA |      | Viewin<br>Angle<br>2 $\theta$ 1/2 |
|---------------|--------------------------------|-----------------|---------------------|------|-----------------------------------|
|               |                                |                 | Min.                | Max. |                                   |
| L-2060NA/3ID  | HIGH EFFICIENCY RED(GaAsP/GaP) | RED DIFFUSED    | 8                   | 32   | 70°                               |
| L-2060NA/3GD  | GREEN (GaP)                    | GREEN DIFFUSED  | 5                   | 20   | 70°                               |
| L-2060NA/3YD  | YELLOW (GaAsP/GaP)             | YELLOW DIFFUSED | 3.2                 | 20   | 70°                               |
| L-2060NA/3SRD | SUPER BRIGHT RED (GaAlAs)      | RED DIFFUSED    | *70                 | *300 | 70°                               |

#### Notes:

1.  $\theta$ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. \*Luminous intensity with asterisk is measured at 20 mA.

### Electrical / Optical Characteristics at T<sub>A</sub>=25°C

| Symbol                  | Parameter               | Device                                                     | Typ.                      | Max.                     | Units | Test Conditions |
|-------------------------|-------------------------|------------------------------------------------------------|---------------------------|--------------------------|-------|-----------------|
| $\lambda_{\text{peak}}$ | Peak Wavelength         | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 625<br>565<br>590<br>660  |                          | nm    | IF=20mA         |
| $\Delta\lambda_{1/2}$   | Spectral Line Halfwidth | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 45<br>30<br>35<br>20      |                          | nm    | IF=20mA         |
| C                       | Capacitance             | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 12<br>45<br>10<br>95      |                          | pF    | VF=0V;f=1MHz    |
| V <sub>F</sub>          | Forward Voltage         | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 2.0<br>2.2<br>2.1<br>1.85 | 2.5<br>2.5<br>2.5<br>2.5 | V     | IF=20mA         |
| I <sub>R</sub>          | Reverse Current         | All                                                        | 10                        |                          | uA    | VR = 5V         |

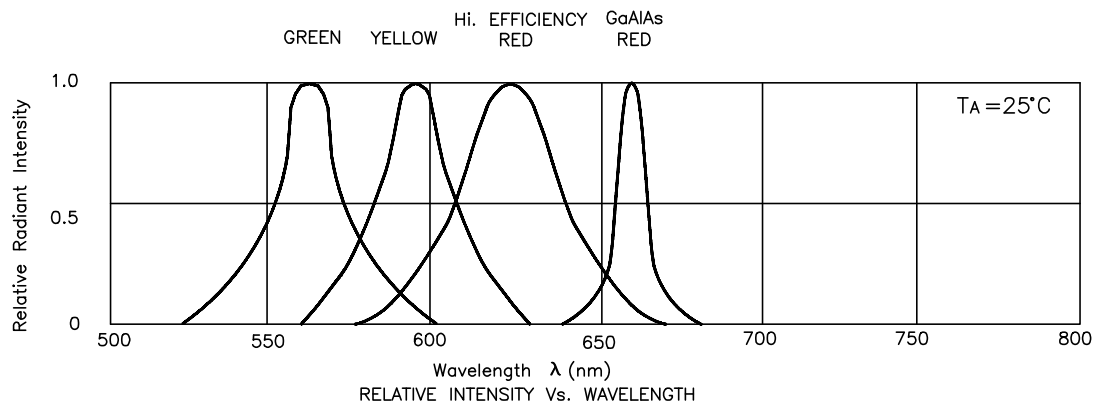
### Absolute Maximum Ratings at T<sub>A</sub>=25°C

| Parameter                      | High Efficiency Red  | Green | Yellow | Super Bright Red | Units |
|--------------------------------|----------------------|-------|--------|------------------|-------|
| Power dissipation              | 105                  | 105   | 105    | 100              | mW    |
| DC Forward Current             | 30                   | 25    | 30     | 30               | mA    |
| Peak Forward Current [1]       | 150                  | 150   | 150    | 150              | mA    |
| Reverse Voltage                | 5                    | 5     | 5      | 5                | V     |
| Operating/Storage Temperature  | -40°C To +85 °C      |       |        |                  |       |
| Lead Soldering Temperature [2] | 260 °C For 5 Seconds |       |        |                  |       |

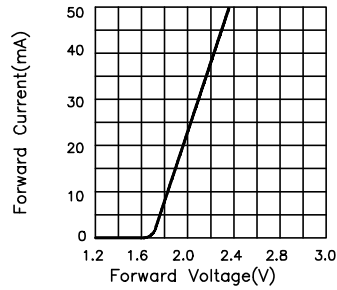
Notes:

1. 1/10 Duty Cycle, 0.1ms Pulse Width.

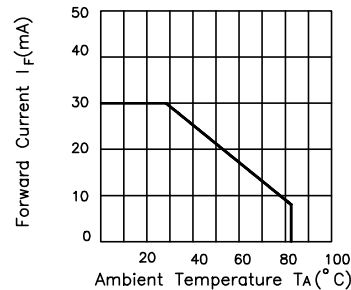
2. 4mm below package base.



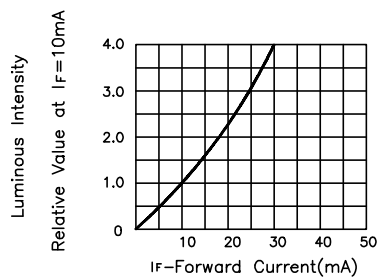
## High Efficiency Red L-2060NA/3ID



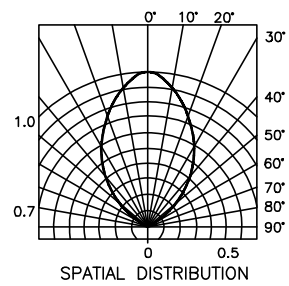
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

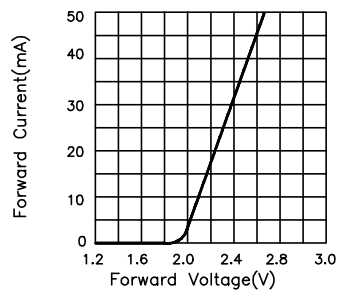


LUMINOUS INTENSITY Vs. FORWARD CURRENT

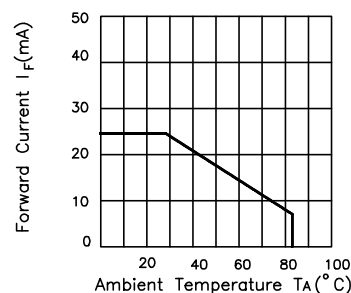


SPATIAL DISTRIBUTION

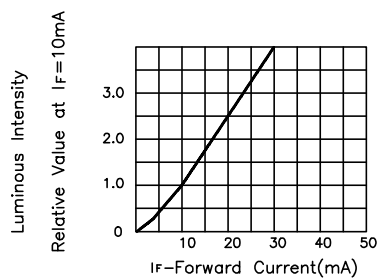
## Green L-2060NA/3GD



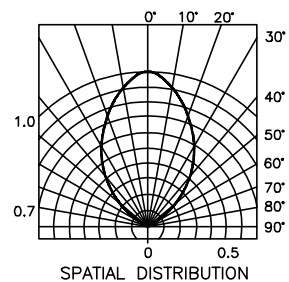
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

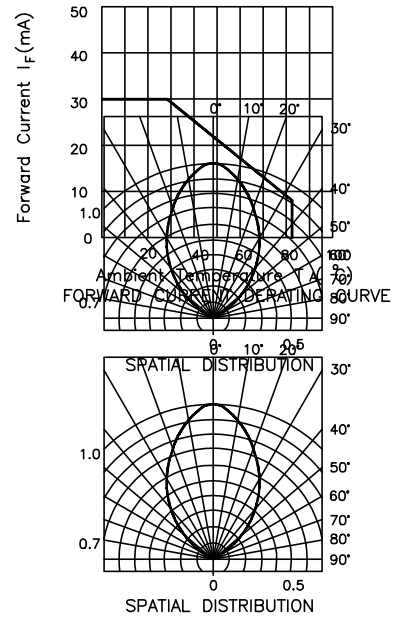
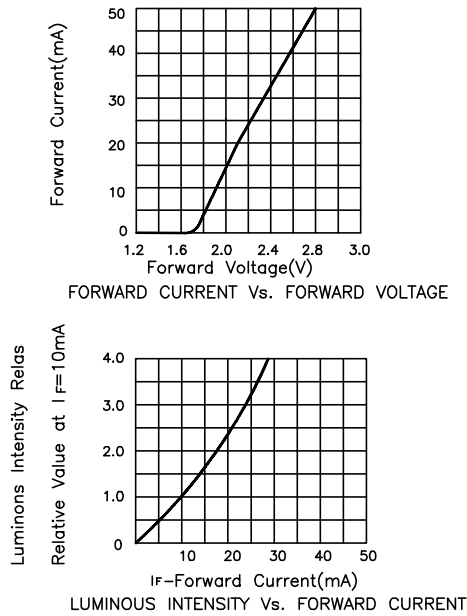


LUMINOUS INTENSITY Vs. FORWARD CURRENT



SPATIAL DISTRIBUTION

## Yellow L-2060NA/3YD



## Super Bright Red L-2060NA/3SRD

