

# Kingbright®

## 3.2x1.6mm SUPER THIN SMD CHIP LED LAMPS

KPTR-3216

### Features

- 3.2mmx1.6mm SMT LED. 0.75mm THICKNESS.
- LOW POWER CONSUMPTION.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- VARIOUS COLORS AND LENS TYPES AVAILABLE.

### Description

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

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

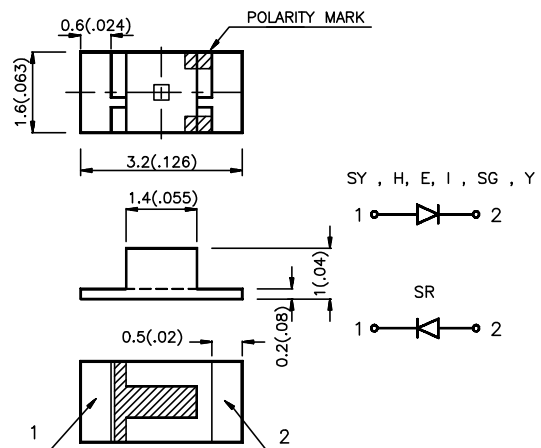
The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

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 Diodes.

The Super Bright Yellow source color devices are made with DH InGaAlP on GaAs substrate Light Emitting Diode.

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1(0.004)$  unless otherwise noted.
3. Lead spacing is measured where the lead emerge package.
4. Specifications are subjected to change without notice.

### Selection Guide

| Part No.      | Dice                            | Lens Type       | Iv (mcd)<br>@ 20 mA |      | Viewing<br>Angle |
|---------------|---------------------------------|-----------------|---------------------|------|------------------|
|               |                                 |                 | Min.                | Typ. |                  |
| KPTR-3216HD   | BRIGHT RED (GaP)                | RED DIFFUSED    | 0.8                 | 1.25 | 120°             |
| KPTR-3216HC   | BRIGHT RED (GaP)                | WATER CLEAR     | 0.8                 | 1.25 | 120°             |
| KPTR-3216HT   | BRIGHT RED (GaP)                | RED TRNS.       | 0.8                 | 1.25 | 120°             |
| KPTR-3216ID   | HIGH EFFICIENCY RED (GaAsP/GaP) | RED DIFFUSED    | 5                   | 12.5 | 120°             |
| KPTR-3216EC   | HIGH EFFICIENCY RED (GaAsP/GaP) | WATER CLEAR     | 5                   | 12.5 | 120°             |
| KPTR-3216IT   | HIGH EFFICIENCY RED (GaAsP/GaP) | RED TRNS.       | 5                   | 12.5 | 120°             |
| KPTR-3216YD   | YELLOW (GaAsP/GaP)              | YELLOW DIFFUSED | 3.2                 | 8    | 120°             |
| KPTR-3216YC   | YELLOW (GaAsP/GaP)              | WATER CLEAR     | 3.2                 | 8    | 120°             |
| KPTR-3216YT   | YELLOW (GaAsP/GaP)              | YELLOW TRNS.    | 3.2                 | 8    | 120°             |
| KPTR-3216SRD  | SUPER BRIGHT RED (GaAlAs)       | RED DIFFUSED    | 40                  | 70   | 120°             |
| KPTR-3216SRC  | SUPER BRIGHT RED (GaAlAs)       | WATER CLEAR     | 40                  | 70   | 120°             |
| KPTR-3216SRT  | SUPER BRIGHT RED (GaAlAs)       | RED TRNS.       | 40                  | 70   | 120°             |
| KPTR-3216SGD  | SUPER BRIGHT GREEN (GaP)        | GREEN DIFFUSED  | 3.2                 | 12.5 | 120°             |
| KPTR-3216SGC  | SUPER BRIGHT GREEN (GaP)        | WATER CLEAR     | 3.2                 | 12.5 | 120°             |
| KPTR-3216SGT  | SUPER BRIGHT GREEN (GaP)        | GREEN TRNS.     | 3.2                 | 12.5 | 120°             |
| KPTR-32162SYD | SUPER BRIGHT YELLOW (InGaAlP)   | YELLOW DIFFUSED | 40                  | 60   | 120°             |
| KPTR-3216SYC  | SUPER BRIGHT YELLOW (InGaAlP)   | WATER CLEAR     | 40                  | 60   | 120°             |
| KPTR-3216SYT  | SUPER BRIGHT YELLOW (InGaAlP)   | YELLOW TRNS.    | 40                  | 60   | 120°             |

#### Note:

1.  $\theta_{1/2}$  is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

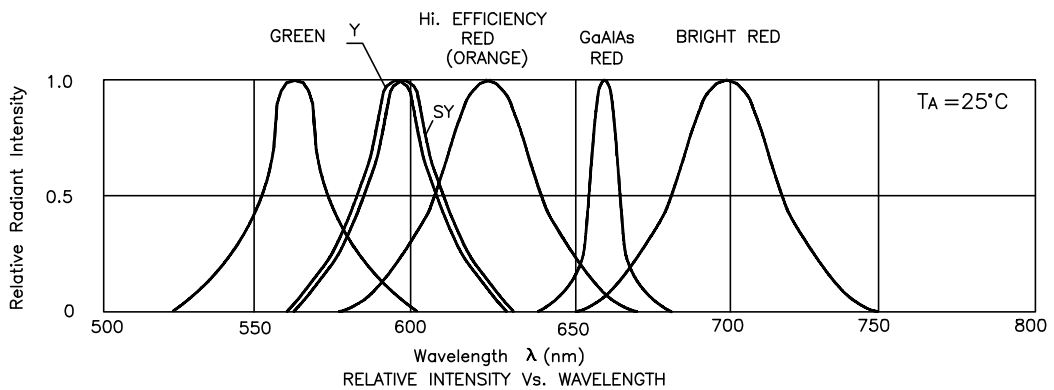
### Electrical / Optical Characteristics at T<sub>A</sub>=25°C

| Symbol                | Parameter               | Device   | Typ.                                    | Max.                                   | Units | Test Conditions |
|-----------------------|-------------------------|--|---|--|-------|-----------------|
| $\lambda_{peak}$      | Peak Wavelength         | Bright Red<br>High Efficiency Red<br>Yellow<br>Super Bright Red<br>Super Bright Green<br>Super Bright Yellow | 700<br>625<br>590<br>660<br>565<br>595  |  | nm    | IF=20mA         |
| $\Delta\lambda_{1/2}$ | Spectral Line Halfwidth | Bright Red<br>High Efficiency Red<br>Yellow<br>Super Bright Red<br>Super Bright Green<br>Super Bright Yellow | 45<br>45<br>35<br>20<br>30<br>20        |  | nm    | IF=20mA         |
| C                     | Capacitance             | Bright Red<br>High Efficiency Red<br>Yellow<br>Super Bright Red<br>Super Bright Green<br>Super Bright Yellow | 40<br>12<br>10<br>95<br>45<br>33        |  | pF    | VF=0V;f=1MHz    |
| V <sub>F</sub>        | Forward Voltage         | Bright Red<br>High Efficiency Red<br>Yellow<br>Super Bright Red<br>Super Bright Green<br>Super Bright Yellow | 2.0<br>2.0<br>2.1<br>1.85<br>2.2<br>2.0 | 2.5<br>2.5<br>2.5<br>2.5<br>2.5<br>2.4 | V     | IF=20mA         |
| I <sub>R</sub>        | Reverse Current         | All  | 10                                      |  | uA    | VR = 5V         |

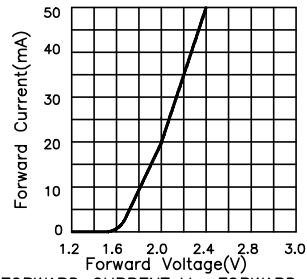
### Absolute Maximum Ratings at T<sub>A</sub>=25°C

| Parameter                     | Bright Red       | High Efficiency Red | Yellow | Super Bright Red | Super Bright Green | Super Bright Yellow | Units |
|-------------------------------|------------------|---------------------|--------|------------------|--------------------|---------------------|-------|
| Power dissipation             | 105              | 105                 | 105    | 100              | 105                | 125                 | mW    |
| DC Forward Current            | 25               | 30                  | 30     | 30               | 25                 | 30                  | mA    |
| Peak Forward Current [1]      | 150              | 150                 | 150    | 150              | 150                | 150                 | mA    |
| Reverse Voltage               | 5                | 5                   | 5      | 5                | 5                  | 5                   | V     |
| Operating/Storage Temperature | -40 °C To +85 °C |                     |        |                  |                    |                     |       |

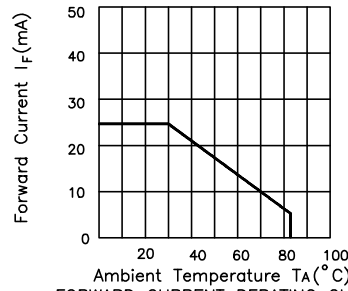
Note:  
1. 1/10 Duty Cycle, 0.1ms Pulse Width.



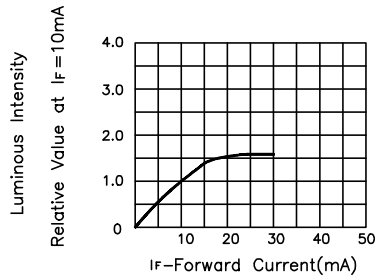
Bright Red KPTR-3216HD, KPTR-3216HC, KPTR-3216HT



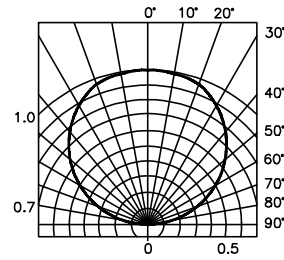
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

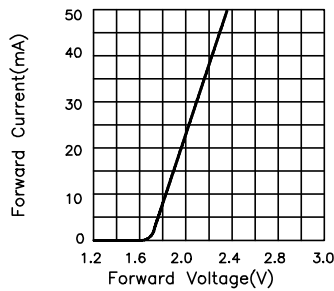


LUMINOUS INTENSITY Vs. FORWARD CURRENT

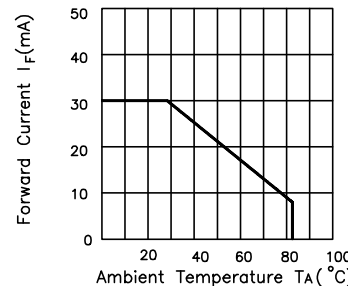


SPATIAL DISTRIBUTION

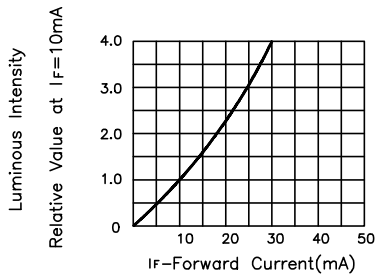
High Efficiency Red KPTR-3216ID, KPTR-3216EC, KPTR-3216IT



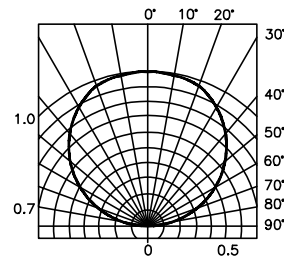
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

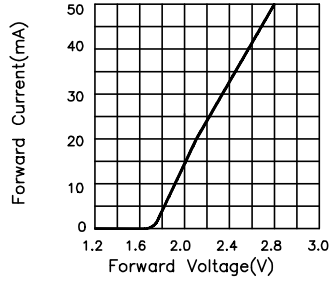


LUMINOUS INTENSITY Vs. FORWARD CURRENT

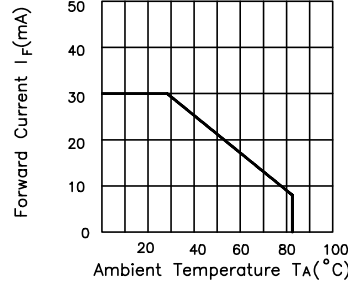


SPATIAL DISTRIBUTION

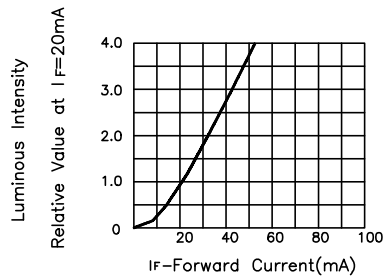
Yellow KPTR-3216YD, KPT-R3216YC, KPTR-3216YT



FORWARD CURRENT Vs. FORWARD VOLTAGE



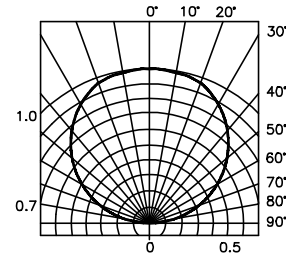
FORWARD CURRENT DERATING CURVE



Luminous Intensity

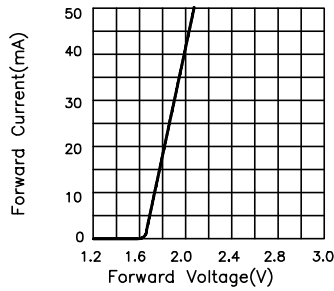
Relative Value at  $I_f=20\text{mA}$

$I_f$ -Forward Current(mA)

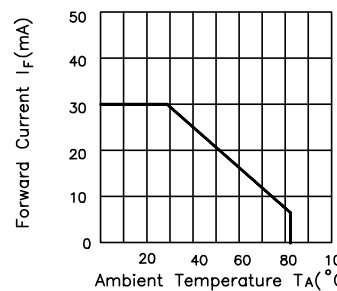


SPATIAL DISTRIBUTION

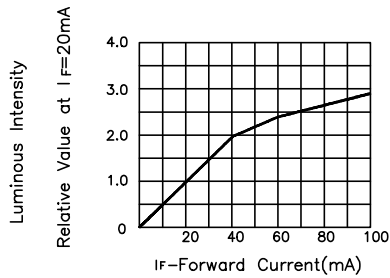
Super Bright Red KPTR-3216SRD, KPTR-3216SRC, KPTR-3216SRT



FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

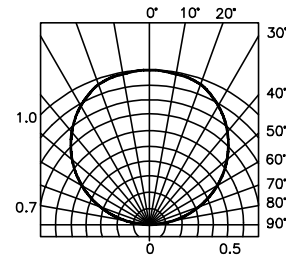


Luminous Intensity

Relative Value at  $I_f=20\text{mA}$

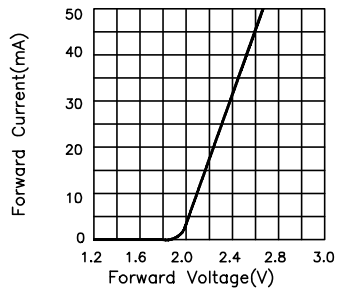
$I_f$ -Forward Current(mA)

LUMINOUS INTENSITY Vs. FORWARD CURRENT

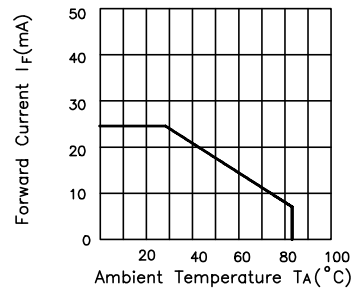


SPATIAL DISTRIBUTION

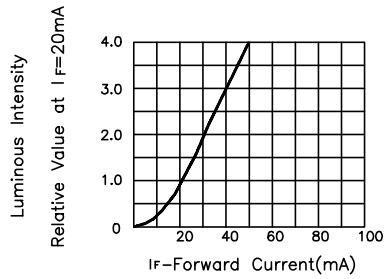
Super Bright Green KPTR-326SGD, KPTR-3216SGC, KPTR-3216SGT



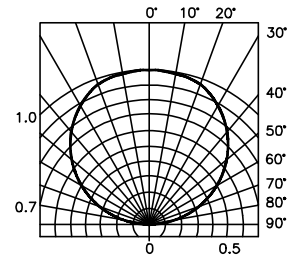
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

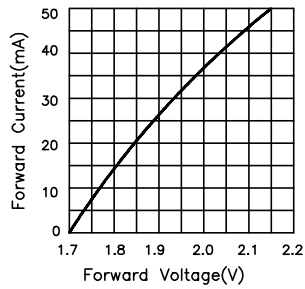


LUMINOUS INTENSITY Vs. FORWARD CURRENT

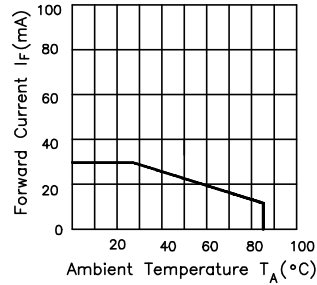


SPATIAL DISTRIBUTION

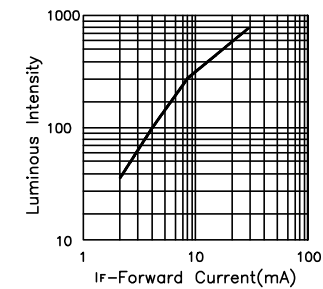
Super Bright Yellow KPTR-3216SYD, KPTR-3216SYC, KPTR-3216SYT



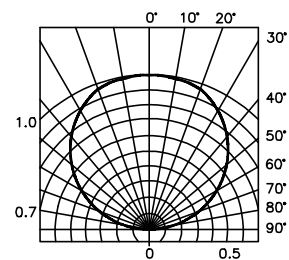
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

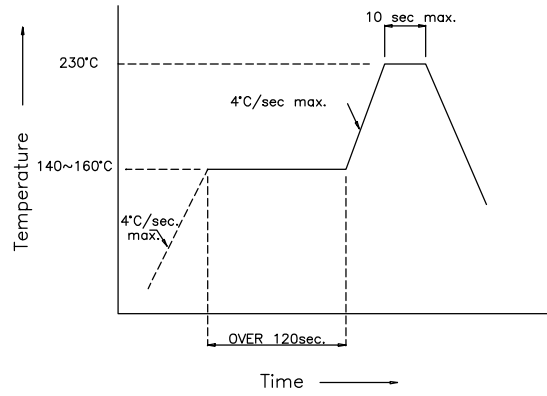


LUMINOUS INTENSITY Vs. FORWARD CURRENT

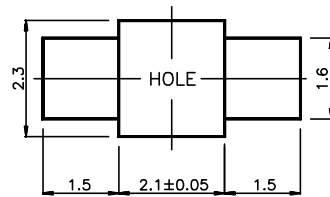


SPATIAL DISTRIBUTION

## KPTR-3216 Series SMT Reflow Soldering Instructions



## KPTR-3216 Series Recommended Soldering Pattern



(Units : mm)

## KPTR-3216 Series Tape Specifications

