Kingbright

**1.6X1.25mm BI-COLOR SMD CHIP LED LAMP**

Part Number: APTB1612SURKQWDF

Hyper Red
White

**ATTENTION**
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

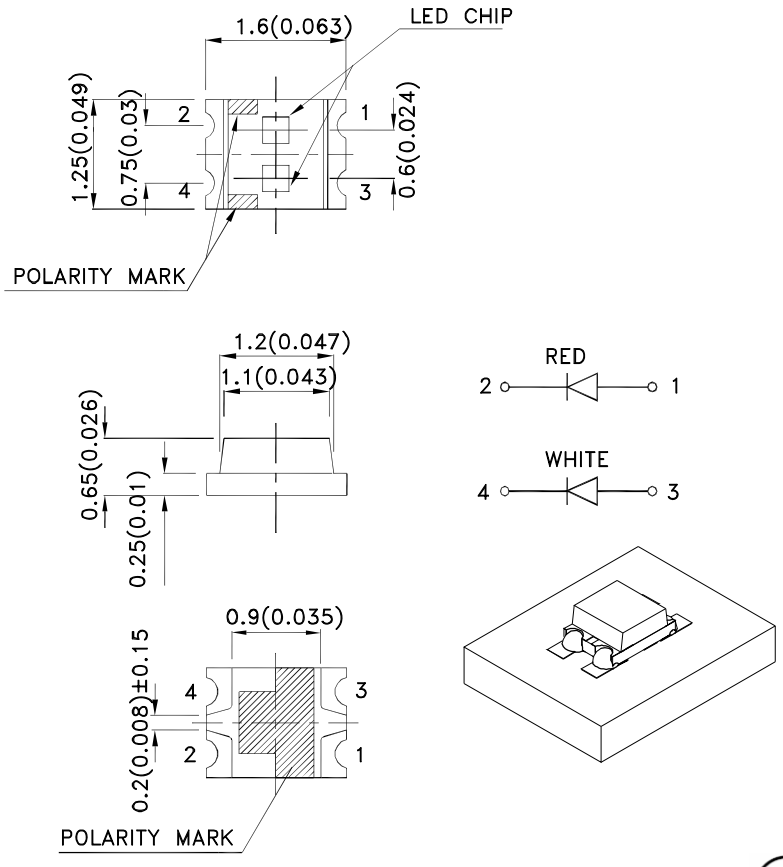
## Features

- 1.6mmx1.25mm SMT LED, 0.65mm thickness.
- Bi-color,low power consumption.
- Wide viewing angle.
- Ideal for backlight and indicator.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

## Descriptions

- The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode.
- The source color devices are made with InGaN Light Emitting Diode.
- Electrostatic discharge and power surge could damage the LEDs.
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
- All devices, equipments and machineries must be electrically grounded.

## Package Dimensions




Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.2(0.008") unless otherwise noted.
3.The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4.The device has a single mounting surface. The device must be mounted according to the specifications.

## Selection Guide

| Part No. | Dice | Lens Type | Iv (mcd) [2] @ 20mA | | Viewing Angle [1] |
|---|---|---|---|---|---|
| | | | Min. | Typ. | 2θ1/2 |
| APTB1612SURKQWDF | Hyper Red (AlGaInP) | Yellow Fluorescent | 120 | 200 | 120° |
| | | | *40 | *80 | |
| | White (InGaN) | | 120 | 250 | |
| | | | *120 | *250 | |

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 [Red]

| Symbol | Parameter | Device | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| λpeak | Peak Wavelength | Hyper Red | 645 | | nm | $I_F$=20mA |
| λD [1] | Dominant Wavelength | Hyper Red | 630 | | nm | $I_F$=20mA |
| Δλ1/2 | Spectral Line Half-width | Hyper Red | 28 | | nm | $I_F$=20mA |
| C | Capacitance | Hyper Red | 35 | | pF | $V_F$=0V;f=1MHz |
| $V_F$ [2] | Forward Voltage | Hyper Red | 1.95 | 2.5 | V | $I_F$=20mA |
| $I_R$ | Reverse Current | Hyper Red | | 10 | uA | $V_R$ = 5V |

Notes:
1.Wavelength: +/-1nm.
2.Forward Voltage: +/-0.1V.
3.Wavelength value is traceable to the CIE127-2007 compliant national standards.
4.Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

## Electrical / Optical Characteristics at TA=25°C [White]

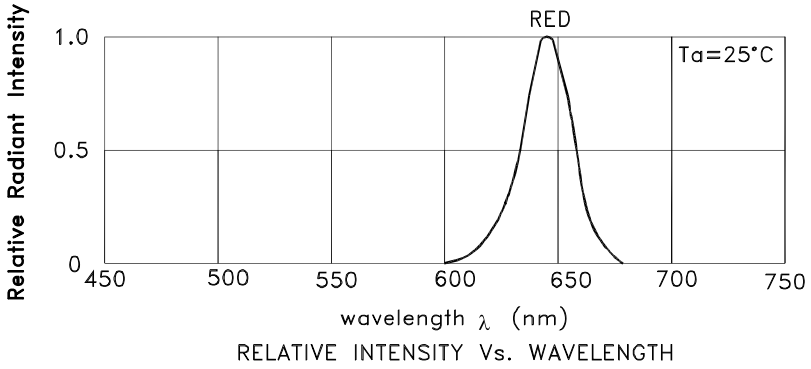
| Symbol | Parameter | Device | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| $V_F$ [1] | Forward Voltage | White | 3.3 | 4.0 | V | $I_F$=20mA |
| $I_R$ | Reverse Current | White | | 50 | uA | $V_R$ = 5V |
| x [2] | Chromaticity Coordinates | White | 0.31 | | | |
| y [2] | | | 0.31 | | | |
| C | Capacitance | White | 100 | | pF | $V_F$=0V;f=1MHz |

Notes:
1.Forward Voltage: +/-0.1V.
2.Measurement Tolerance Of The Chromaticity Coordinates Is ±0.01.
3.Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

### Absolute Maximum Ratings at TA=25°C

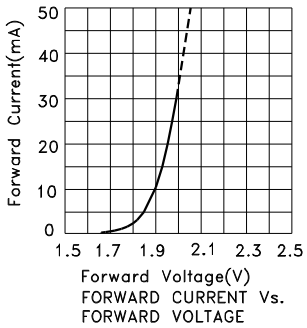
| Parameter | Hyper Red | White | Units |
|---|---|---|---|
| Power dissipation | 75 | 120 | mW |
| DC Forward Current | 30 | 30 | mA |
| Peak Forward Current [1] | 185 | 150 | mA |
| Reverse Voltage | 5 | | V |
| Operating Temperature | -40°C To +85°C | | |
| Storage Temperature | -40°C To +85°C | | |

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

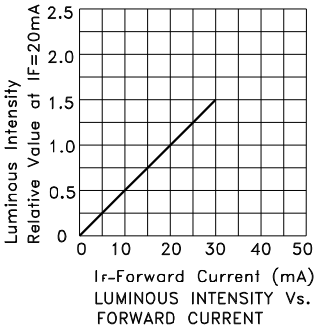


RELATIVE INTENSITY Vs. WAVELENGTH

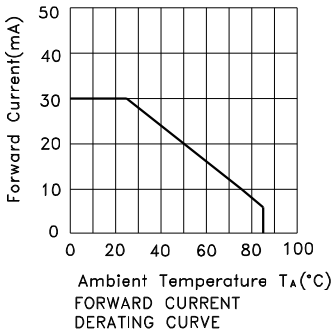
**APTB1612SURKQWDF**
**Hyper Red**



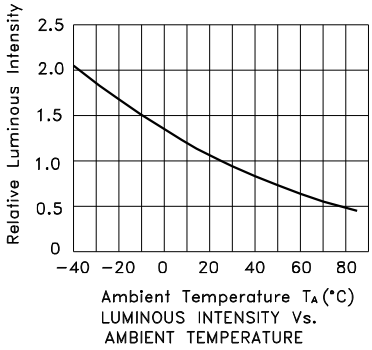
FORWARD CURRENT Vs.
FORWARD VOLTAGE



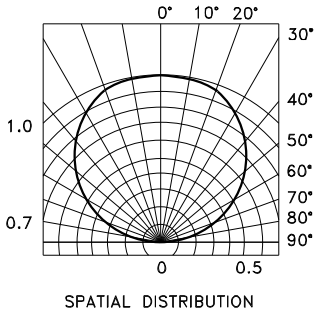
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

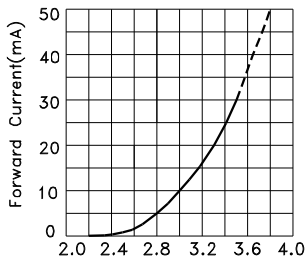


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

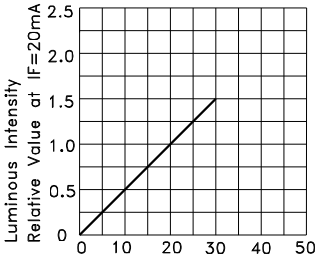


SPATIAL DISTRIBUTION

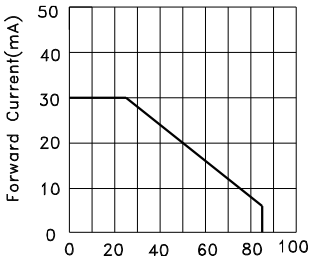
**White**



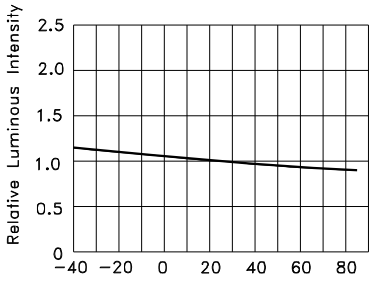

FORWARD CURRENT Vs.
FORWARD VOLTAGE



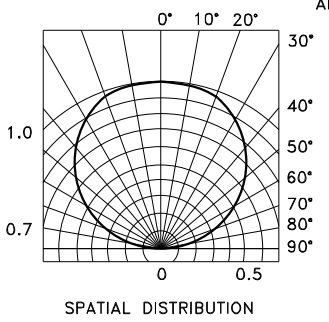

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE



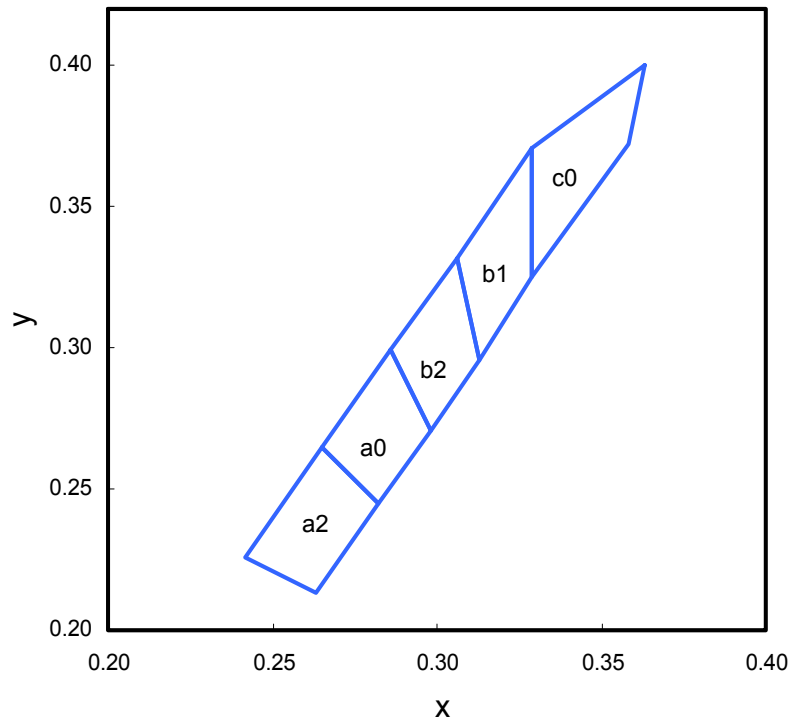

LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE




SPATIAL DISTRIBUTION

**White** **APTB1612SURKQWDF**

## White CIE



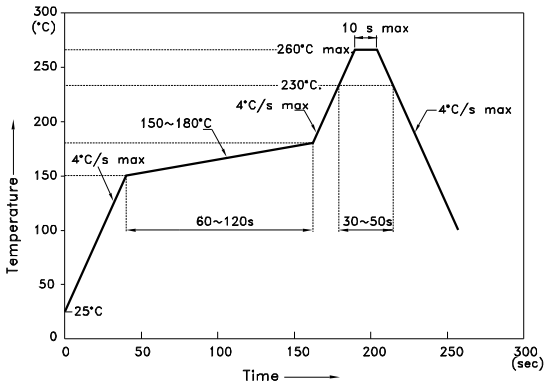

| | x | y | | x | y | | x | y |
|---|---|---|---|---|---|---|---|---|
| a2 | 0.263 | 0.213 | a0 | 0.282 | 0.245 | b2 | 0.298 | 0.271 |
| | 0.282 | 0.245 | | 0.298 | 0.271 | | 0.313 | 0.296 |
| | 0.265 | 0.265 | | 0.286 | 0.299 | | 0.306 | 0.332 |
| | 0.242 | 0.226 | | 0.265 | 0.265 | | 0.286 | 0.299 |
| b1 | 0.313 | 0.296 | c0 | 0.329 | 0.325 | | | |
| | 0.329 | 0.325 | | 0.358 | 0.372 | | | |
| | 0.329 | 0.371 | | 0.363 | 0.400 | | | |
| | 0.306 | 0.332 | | 0.329 | 0.371 | | | |

Notes:
Shipment may contain more than one chromaticity regions.
Orders for single chromaticity region are generally not accepted.
Measurement tolerance of the chromaticity coordinates is ±0.01.

## APTB1612SURKQWDF

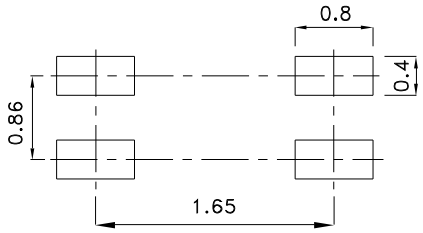
**Reflow soldering is recommended and the soldering profile is shown below.**
**Other soldering methods are not recommended as they might cause damage to the product.**

Reflow Soldering Profile For Lead-free SMT Process.

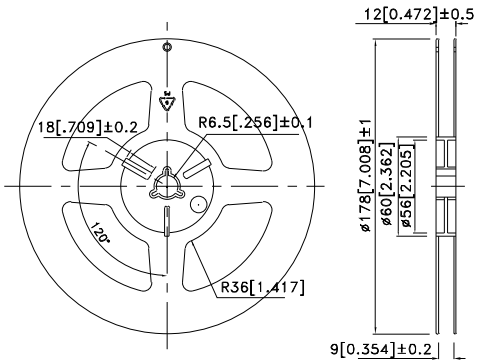



NOTES:
1. We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

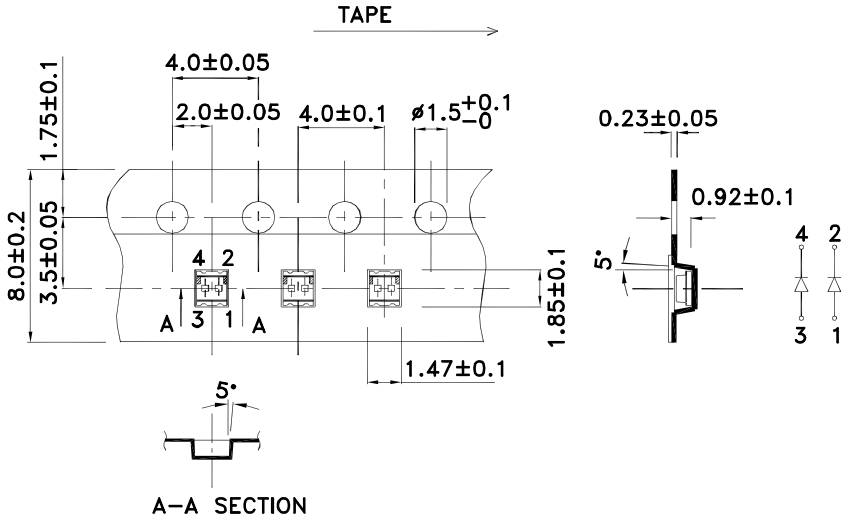
### Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



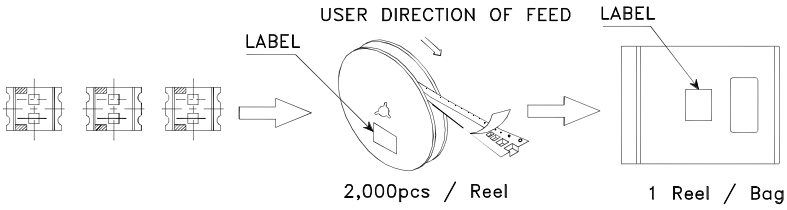

### Reel Dimension

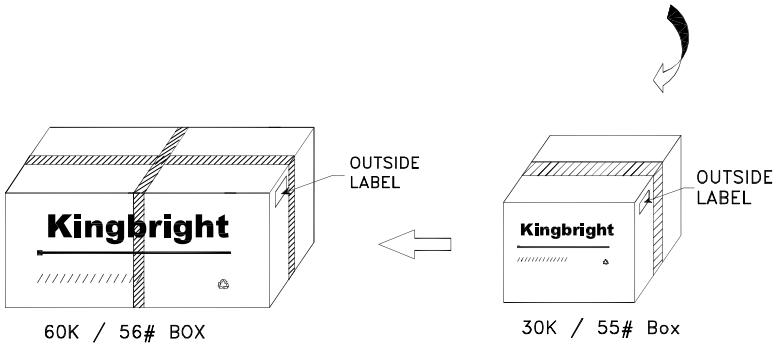


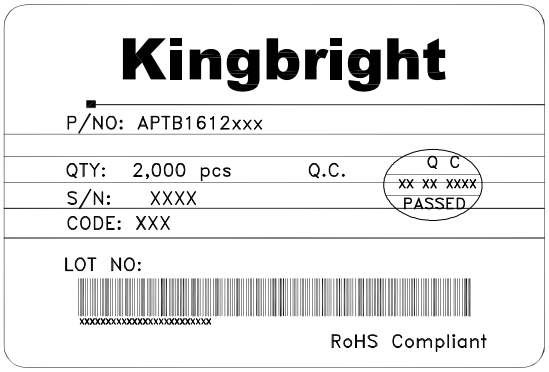

### Tape Dimensions (Units : mm)



## PACKING & LABEL SPECIFICATIONS APTB1612SURKQWDF

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