Kingbright

**1.6x1.6mm FULL-COLOR SURFACE MOUNT LED**

Part Number: APTF1616SEJ3ZGGVBDC

Hyper Red
Green
Blue

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

## Features

- 1.6mmX1.6mm SMT LED, 0.7mm thickness.
- Low power consumption.
- Can produce any color in visible spectrum, including white light.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

## Description

The Hyper Red device is based on light emitting diode chip made from AlGaInP.

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

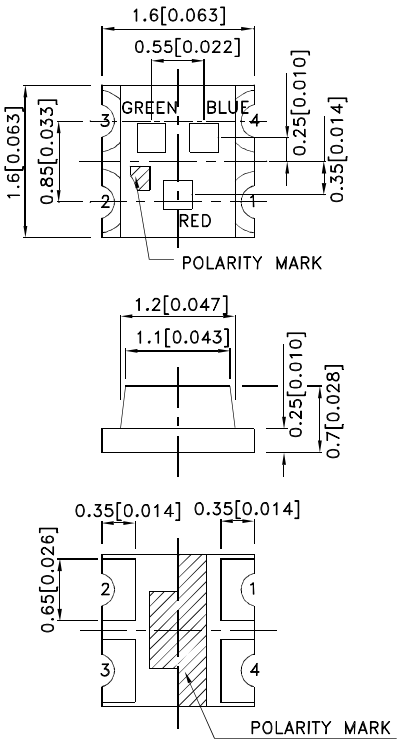
The Blue source color devices are made with InGaN Light Emitting Diode.

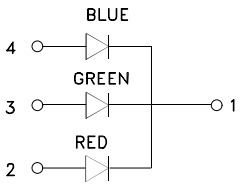
Static electricity and surge damage the LEDS.

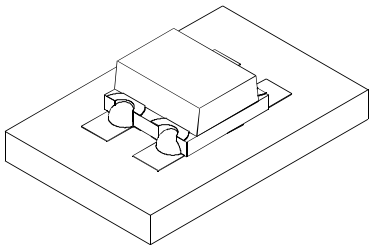
It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

All devices, equipment and machinery 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 |
| APTF1616SEJ3ZGGVBDC | Hyper Red (AlGaInP) | Water Clear | 200 | 360 | 120° |
| | Green (InGaN) | | 500 | 750 | |
| | Blue (InGaN) | | 80 | 140 | |

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%.
3. Luminous intensity value is traceable to the CIE127-2007 compliant national standards.

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

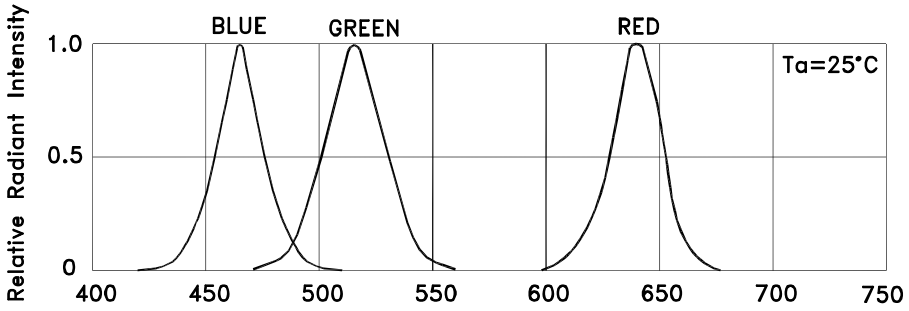
| Symbol | Parameter | Device | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| λpeak | Peak Wavelength | Hyper Red<br>Green<br>Blue | 640<br>520<br>465 | | nm | $I_F$=20mA |
| λD [1] | Dominant Wavelength | Hyper Red<br>Green<br>Blue | 625<br>525<br>470 | | nm | $I_F$=20mA |
| Δλ1/2 | Spectral Line Half-width | Hyper Red<br>Green<br>Blue | 25<br>35<br>22 | | nm | $I_F$=20mA |
| C | Capacitance | Hyper Red<br>Green<br>Blue | 27<br>100<br>100 | | pF | $V_F$=0V;f=1MHz |
| $V_F$ [2] | Forward Voltage | Hyper Red<br>Green<br>Blue | 2.2<br>3.2<br>3.3 | 2.8<br>4<br>4 | V | $I_F$=20mA |
| $I_R$ | Reverse Current | Hyper Red<br>Green<br>Blue | | 10<br>50<br>50 | 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.

## Absolute Maximum Ratings at TA=25°C

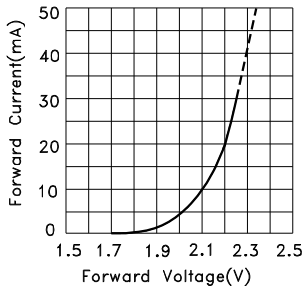
| Parameter | Hyper Red | Green | Blue | Units |
|---|---|---|---|---|
| Power dissipation | 84 | 120 | 120 | mW |
| DC Forward Current | 30 | 30 | 30 | mA |
| Peak Forward Current [1] | 150 | 100 | 100 | mA |
| Reverse Voltage | 5 | | | V |
| Operating Temperature | -40°C To +85°C | | | |
| Storage Temperature | -40°C To +85°C | | | |

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

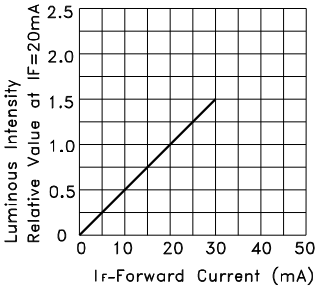



RELATIVE INTENSITY Vs. WAVELENGTH

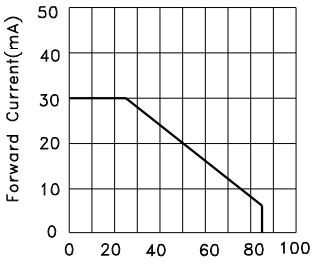
**APTF1616SEJ3ZGGVBDC**
**Hyper Red**



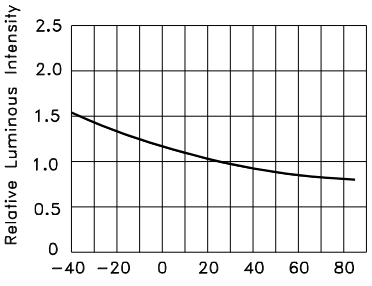

FORWARD CURRENT Vs.
FORWARD VOLTAGE



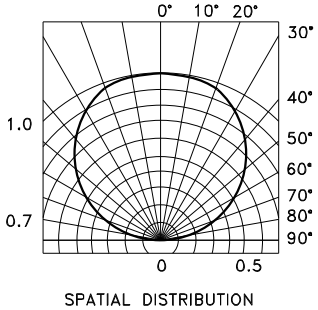

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE

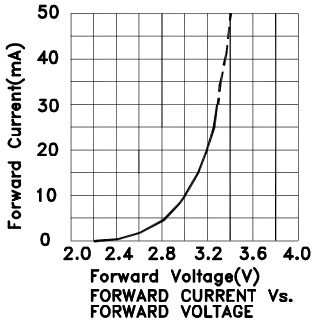



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

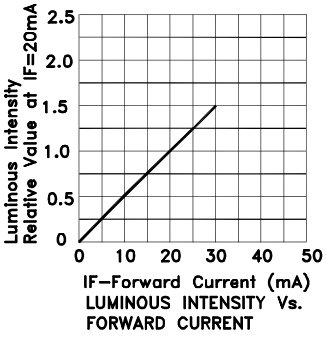



SPATIAL DISTRIBUTION

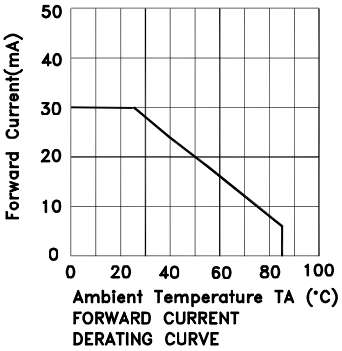
**Green**



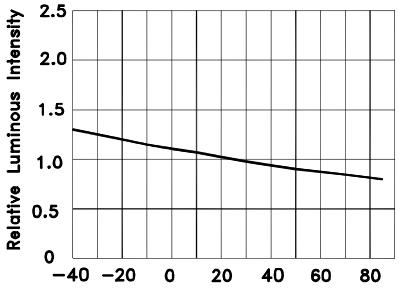

FORWARD CURRENT Vs.
FORWARD VOLTAGE



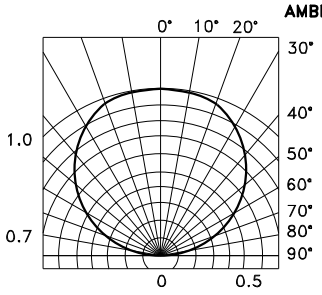

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE

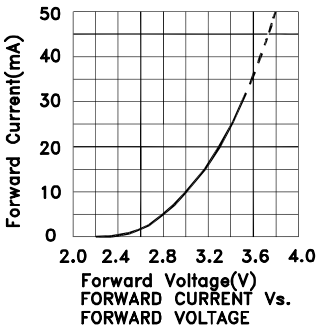



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

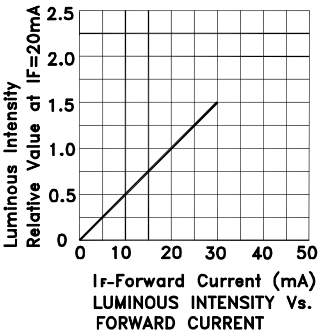



SPATIAL DISTRIBUTION

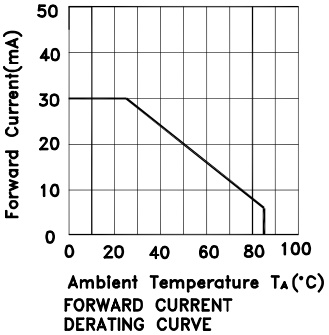
**Blue**



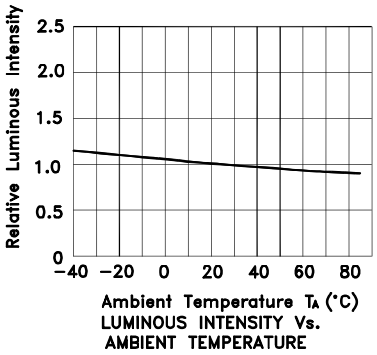

FORWARD CURRENT Vs.
FORWARD VOLTAGE



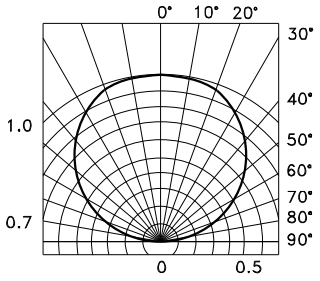

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE




LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

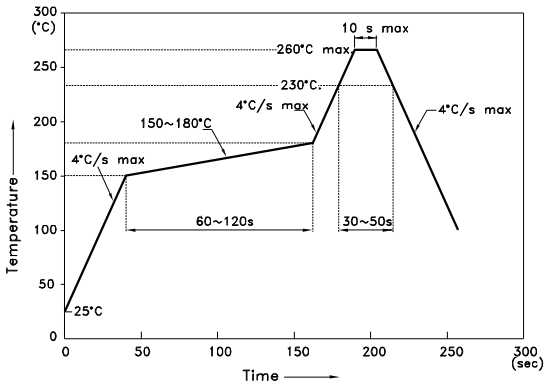



SPATIAL DISTRIBUTION

## APTF1616SEJ3ZGGVBDC

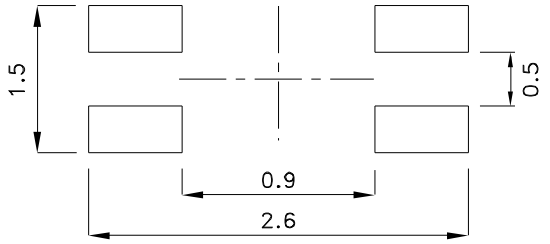
**Reflow soldering is recommended and the soldering profile is shown below.**
**Other soldering methods are not recommended as they might cause damage to the product.**

Reflow Soldering Profile For Lead-free SMT Process.

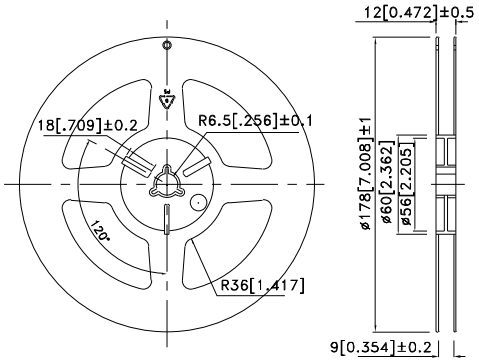



NOTES:
1. We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

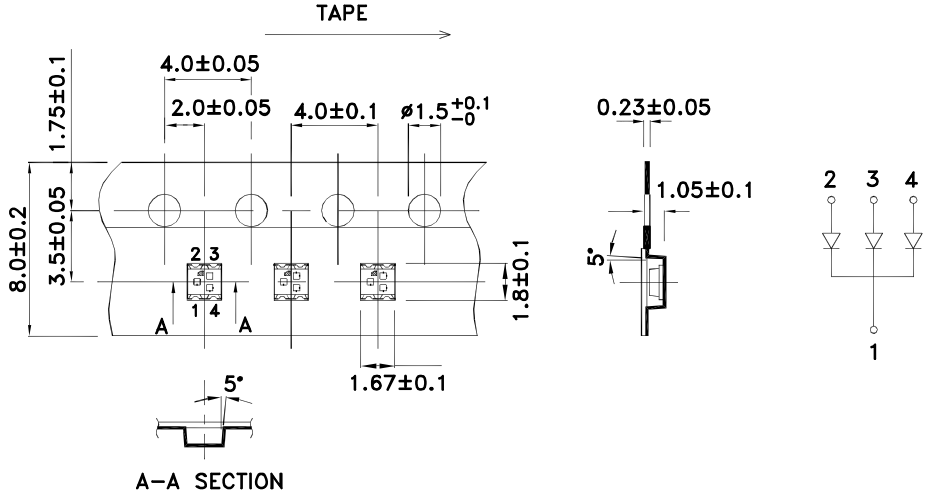
### Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



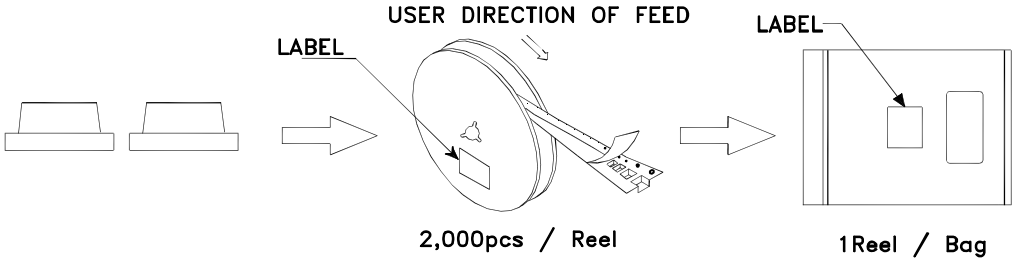

### Reel Dimension

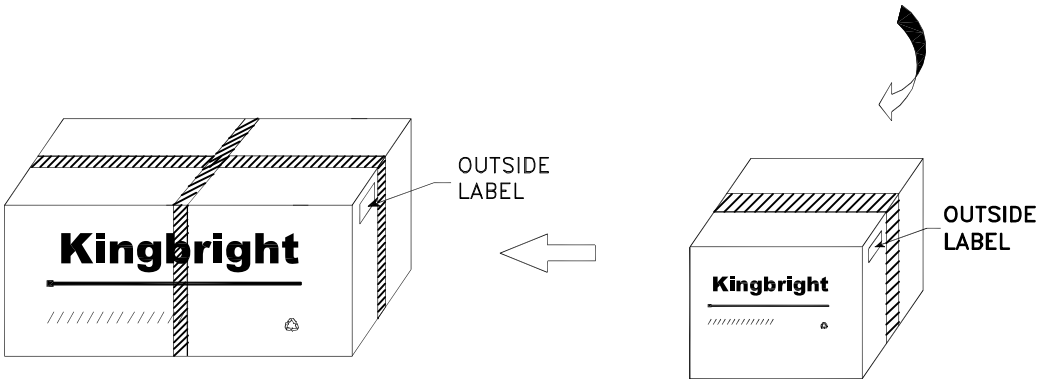


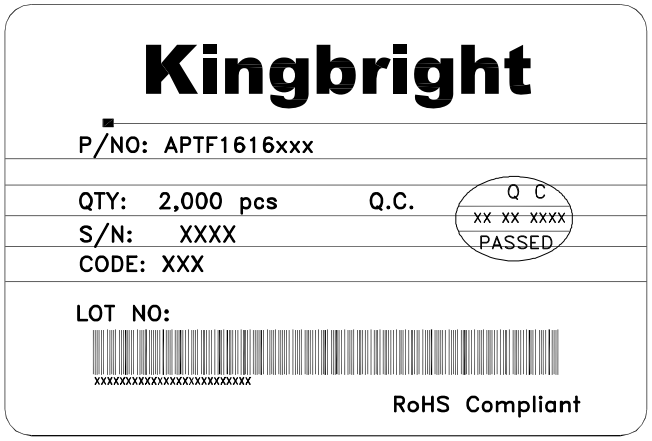

### Tape Dimensions (Units : mm)



**PACKING & LABEL SPECIFICATIONS** **APTF1616SEJ3ZGGVBDC**




All design applications should refer to Kingbright application notes available at http://www.KingbrightUSA.com/ApplicationNotes

# Mouser Electronics

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