Kingbright

**3.2mm x 1.6mm FULL-COLOR SURFACE MOUNT LED LAMP**

Part Number: APTF3216QBDZGSURKC

Blue
Green
Hyper Red

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

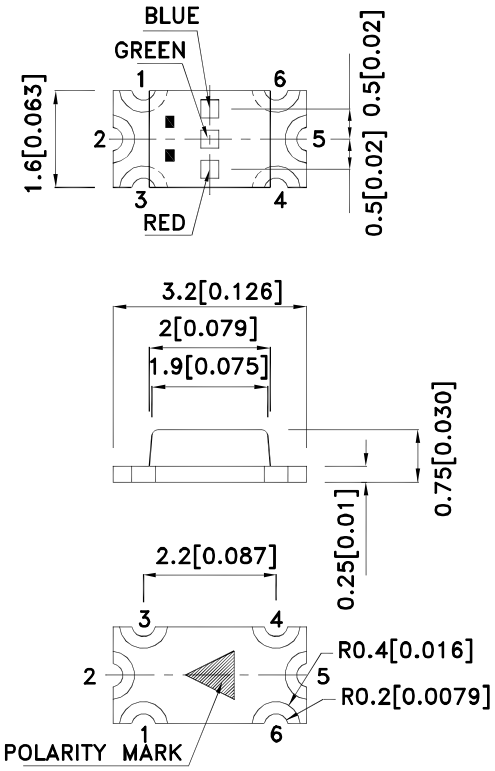
## Features

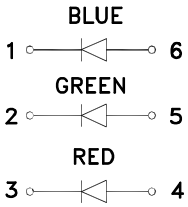
- 3.2mmx1.6mm SMT LED, 0.75mm thickness.
- Low power consumption.
- Can produce any color in visible spectrum, including white light.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

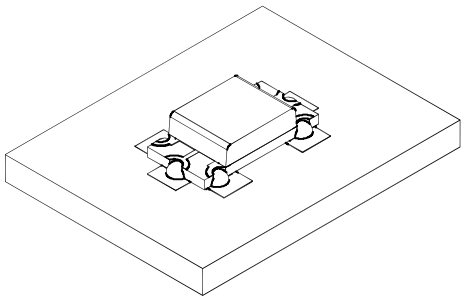
## Description

The Blue source color devices are made with InGaN Light Emitting Diode.
The Green source color devices are made with InGaN on Sapphire Light Emitting Diode.
The Hyper Red source color devices are made with Al-GaInP on GaAs substrate 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 |
| APTF3216QBDZGSURKC | Blue (InGaN) | Water Clear | 55 | 80 | 120° |
| | Green (InGaN) | | 200 | 350 | |
| | Hyper Red (AlGaInP) | | 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%.

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

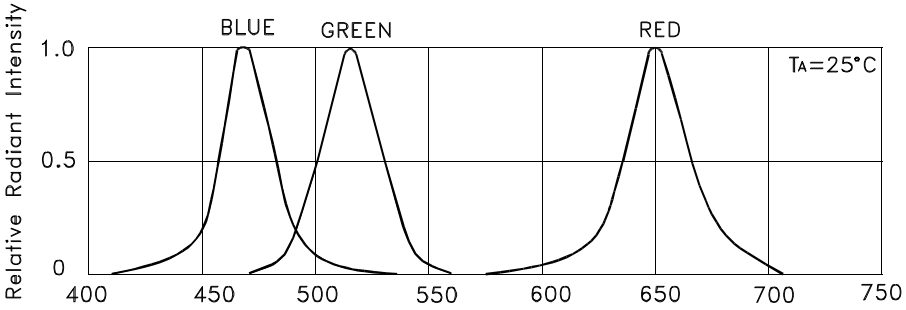
| Symbol | Parameter | Device | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| λpeak | Peak Wavelength | Blue<br>Green<br>Hyper Red | 468<br>515<br>650 | | nm | $I_F$=20mA |
| λD [1] | Dominant Wavelength | Blue<br>Green<br>Hyper Red | 470<br>525<br>630 | | nm | $I_F$=20mA |
| Δλ1/2 | Spectral Line Half-width | Blue<br>Green<br>Hyper Red | 25<br>30<br>28 | | nm | $I_F$=20mA |
| C | Capacitance | Blue<br>Green<br>Hyper Red | 100<br>45<br>35 | | pF | $V_F$=0V;f=1MHz |
| $V_F$ [2] | Forward Voltage | Blue<br>Green<br>Hyper Red | 3.3<br>3.3<br>1.95 | 4<br>4.1<br>2.5 | V | $I_F$=20mA |
| $I_R$ | Reverse Current | Blue<br>Green<br>Hyper Red | | 50<br>50<br>10 | uA | $V_R$=5V |

Notes:
1.Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.

## Absolute Maximum Ratings at TA=25°C

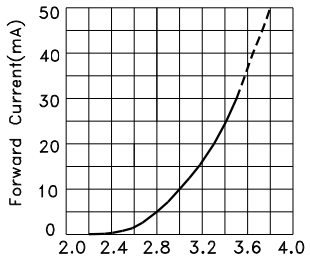
| Parameter | Blue | Green | Hyper Red | Units |
|---|---|---|---|---|
| Power dissipation | 120 | 102.5 | 75 | mW |
| DC Forward Current | 30 | 25 | 30 | mA |
| Peak Forward Current [1] | 150 | 150 | 185 | mA |
| Reverse Voltage | 5 | | | V |
| Operating Temperature | -40°C To +85°C | | | |
| Storage Temperature | -40°C To +85°C | | | |

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

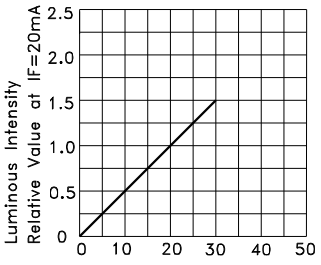


RELATIVE INTENSITY Vs. WAVELENGTH

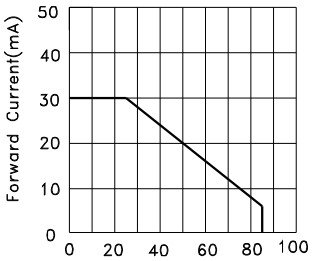
**APTF3216QBDZGSURKC**
**Blue**



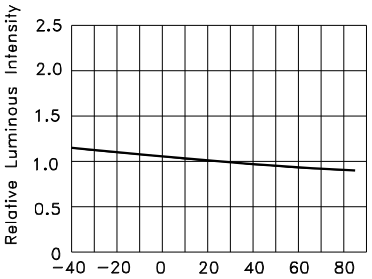
FORWARD CURRENT Vs.
FORWARD VOLTAGE



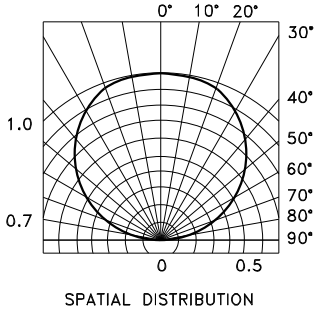
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

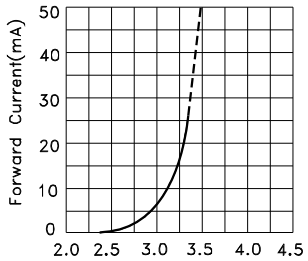


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

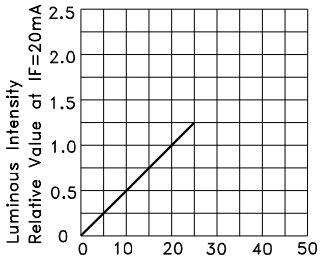


SPATIAL DISTRIBUTION

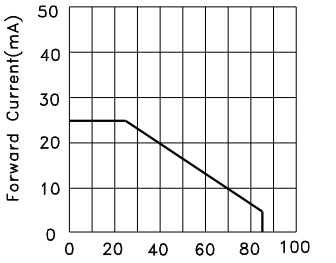
**Green**



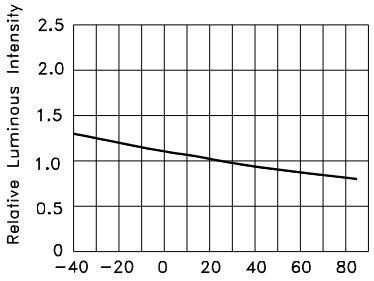

FORWARD CURRENT Vs.
FORWARD VOLTAGE



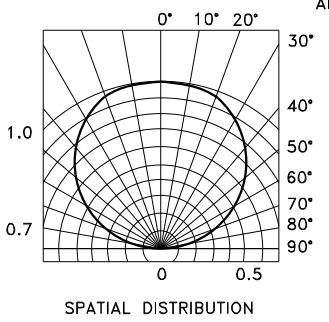

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE

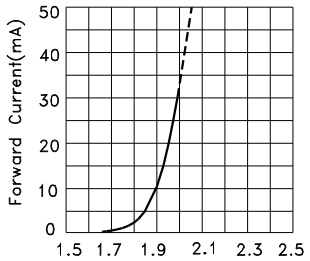



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

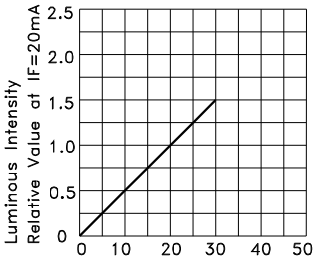



SPATIAL DISTRIBUTION

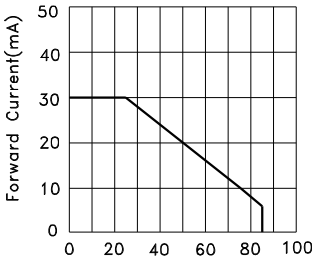
**Hyper Red**



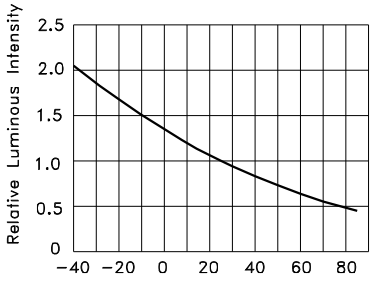

FORWARD CURRENT Vs.
FORWARD VOLTAGE



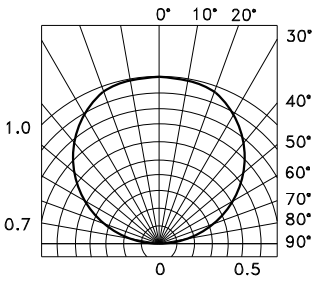

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURVE




LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

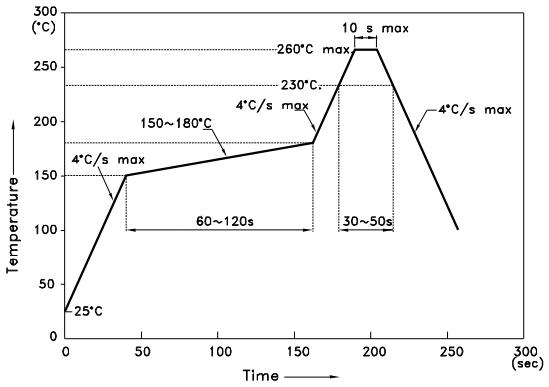



SPATIAL DISTRIBUTION

## APTF3216QBDZGSURKC

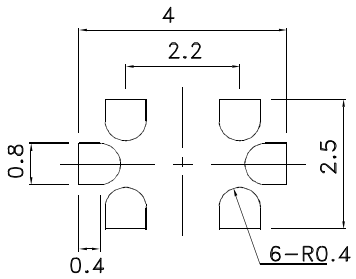
**Reflow soldering is recommended and the soldering profile is shown below.**
**Other soldering methods are not recommended as they might cause damage to the product.**

Reflow Soldering Profile For Lead-free SMT Process.

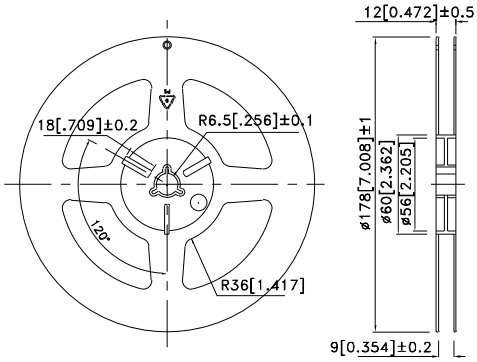



NOTES:
1. We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

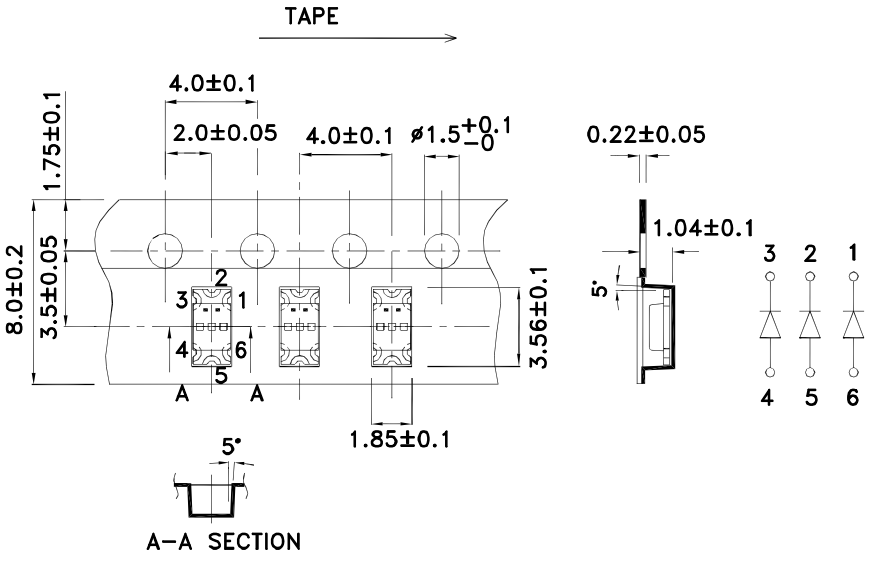
### Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)




### Reel Dimension




### Tape Dimensions (Units : mm)



**PACKING & LABEL SPECIFICATIONS** **APTF3216QBDZGSURKC**