

### PRELIMINARY SPEC

Part Number: APFA3210PBAVGASURKC

BLUE/ GREEN  
HYPER RED



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

### Features

- LOW POWER CONSUMPTION.
- 3.2mmX1.0mm RIGHT ANGLE SMT LED,1.5mm THICKNESS.
- WIDE VIEWING ANGLE.
- PACKAGE : 2000PCS / REEL.
- MOISTURE SENSIVITY LEVEL : LEVEL 3
- RoHS COMPLIANT.

### Description

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

The Green source color devices are made with InGaN on G-SiC Light Emitting Diode.

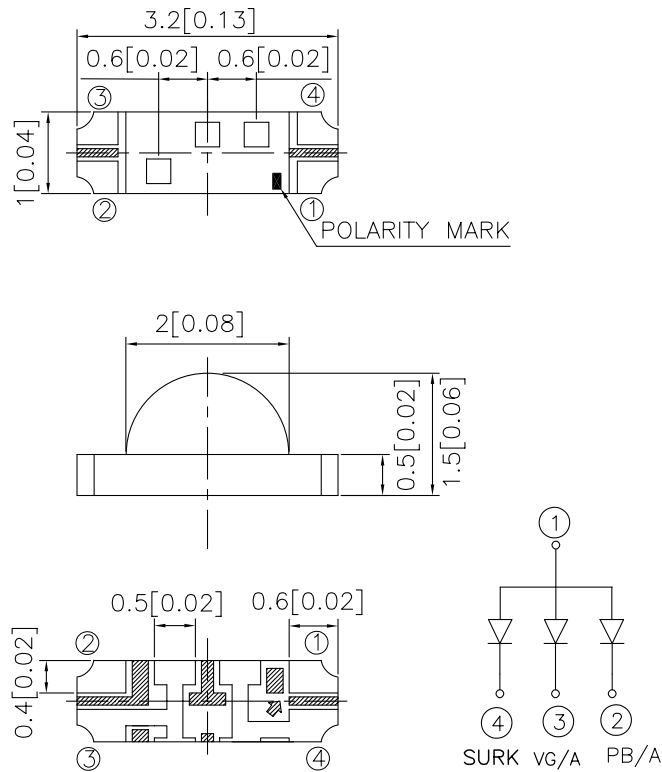
The Hyper Red source color devices are made with DH InGaAlP on GaAs substrate Light Emitting Diode.

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  $\pm 0.1(0.004)$  unless otherwise noted.
3. Specifications are subject to change without notice.

## Selection Guide

| Part No.            | Dice                | Lens Type   | Iv (mcd) [2]<br>@ 20mA |      | Viewing<br>Angle [1] |
|---------------------|---------------------|-------------|------------------------|------|----------------------|
|                     |                     |             | Min.                   | Typ. | 2θ1/2                |
| APFA3210PBAVGASURKC | BLUE (InGaN)        | WATER CLEAR | 18                     | 60   | 130°                 |
|                     | GREEN (InGaN)       |             | 50                     | 200  |                      |
|                     | HYPER RED (InGaAlP) |             | 70                     | 200  |                      |

Notes:

1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. Luminous Intensity / Luminous Flux: +/-15%.

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

| Symbol             | Parameter                | Device                     | Typ.               | Max.              | Units | Test Conditions           |
|--------------------|--------------------------|----------------------------|--------------------|-------------------|-------|---------------------------|
| λ <sub>peak</sub>  | Peak Wavelength          | Blue<br>Green<br>Hyper Red | 468<br>520<br>650  |                   | nm    | I <sub>F</sub> =20mA      |
| λ <sub>D</sub> [1] | Dominant Wavelength      | Blue<br>Green<br>Hyper Red | 470<br>525<br>635  |                   | nm    | I <sub>F</sub> =20mA      |
| Δλ <sub>1/2</sub>  | Spectral Line Half-width | Blue<br>Green<br>Hyper Red | 21<br>35<br>28     |                   | nm    | I <sub>F</sub> =20mA      |
| C                  | Capacitance              | Blue<br>Green<br>Hyper Red | 100<br>100<br>35   |                   | pF    | V <sub>F</sub> =0V;f=1MHz |
| V <sub>F</sub> [2] | Forward Voltage          | Blue<br>Green<br>Hyper Red | 3.3<br>3.2<br>1.95 | 3.8<br>4.0<br>2.5 | V     | I <sub>F</sub> =20mA      |
| I <sub>R</sub>     | Reverse Current          | Blue<br>Green<br>Hyper Red |                    | 10<br>10<br>10    | uA    | V <sub>R</sub> = 5V       |

Notes:

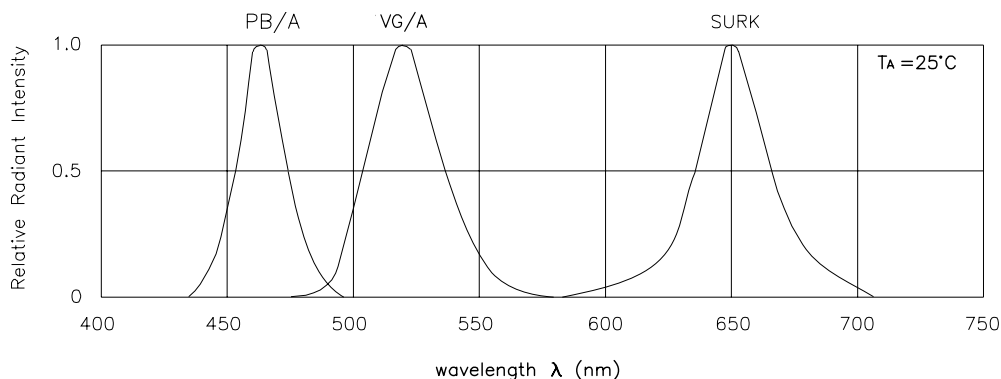
1. Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.

## Absolute Maximum Ratings at TA=25°C

| Parameter                       | Blue           | Green | Hyper Red | Units |
|---------------------------------|----------------|-------|-----------|-------|
| Power dissipation               | 114            | 120   | 75        | mW    |
| DC Forward Current              | 30             | 30    | 30        | mA    |
| Peak Forward Current [1]        | 100            | 100   | 185       | mA    |
| Reverse Voltage                 | 5              |       |           | V     |
| Operating / Storage Temperature | -40°C To +85°C |       |           |       |

Note:

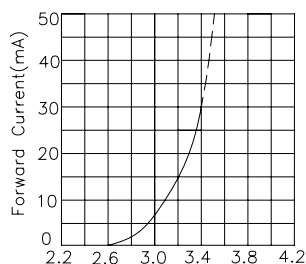
1. 1/10 Duty Cycle, 0.1ms Pulse Width.



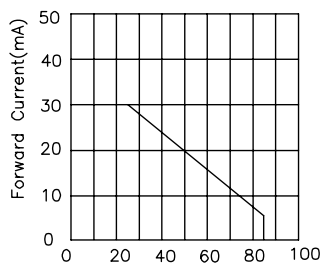
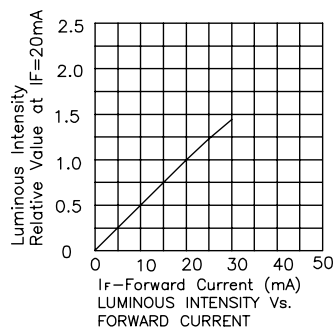
RELATIVE INTENSITY Vs. WAVELENGTH

## APFA3210PBAVGASURKC

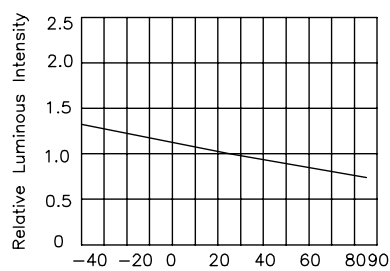
### Blue



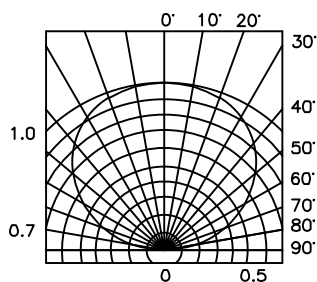
Forward Voltage(V)  
FORWARD CURRENT Vs  
FORWARD VOLTAGE



Ambient Temperature  $T_A$ ( $^\circ\text{C}$ )  
FORWARD CURRENT  
DERATING CURVE



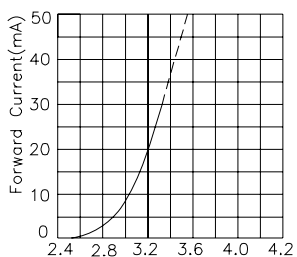
Ambient Temperature  $T_A$ ( $^\circ\text{C}$ )  
LUMINOUS INTENSITY Vs.  
AMBIENT TEMPERATURE



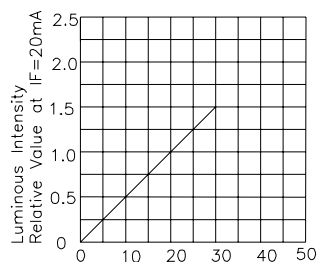
SPATIAL DISTRIBUTION

# Kingbright

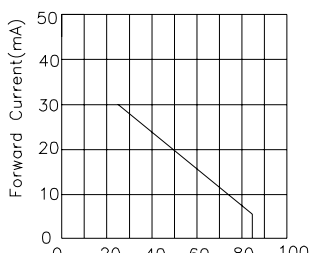
## Green



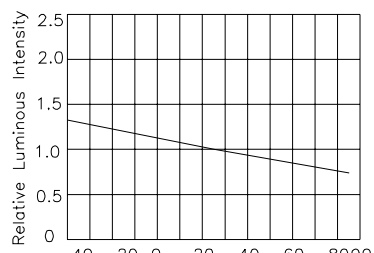
Forward Voltage(V)  
FORWARD CURRENT Vs  
FORWARD VOLTAGE



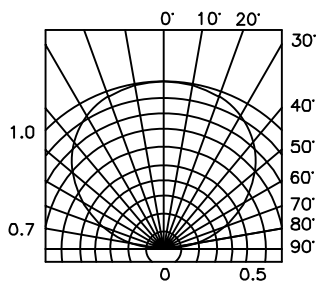
If-Forward Current (mA)  
LUMINOUS INTENSITY Vs.  
FORWARD CURRENT



Ambient Temperature  $T_A$  (°C)  
FORWARD CURRENT  
DERATING CURVE



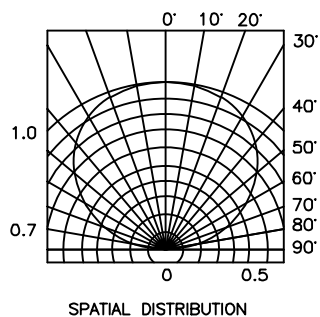
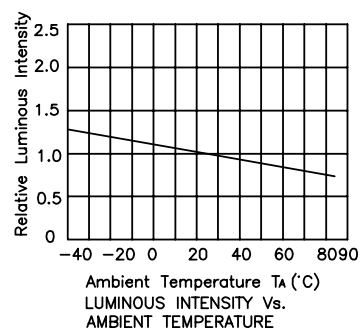
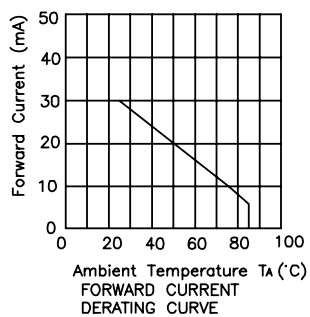
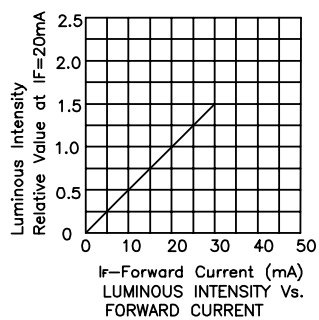
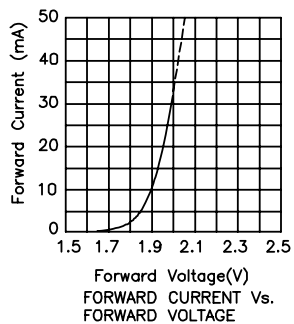
Ambient Temperature  $T_A$  (°C)  
LUMINOUS INTENSITY Vs.  
AMBIENT TEMPERATURE



SPATIAL DISTRIBUTION

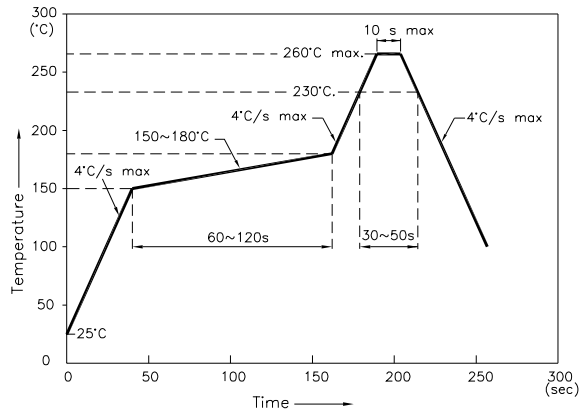
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## Hyper Red



## APFA3210PBAVGASURKC

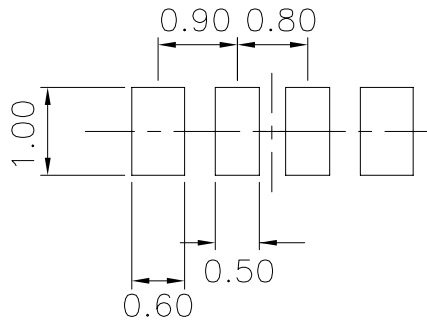
Reflow Soldering Profile For Lead-free SMT Process.



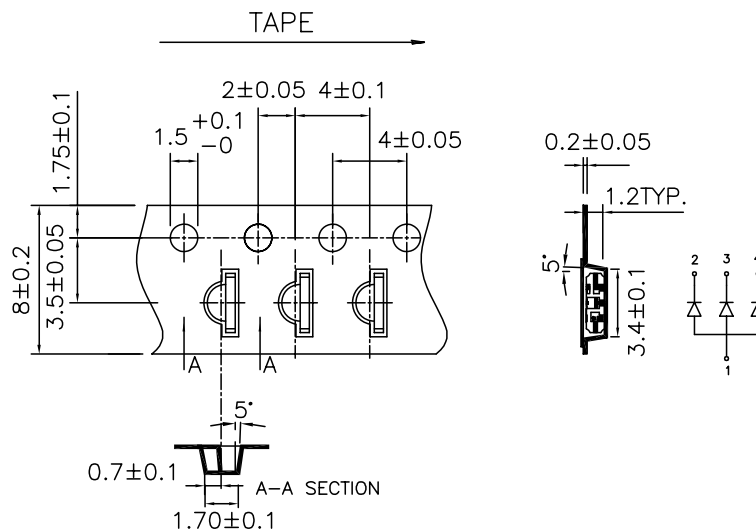
**NOTES:**

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)

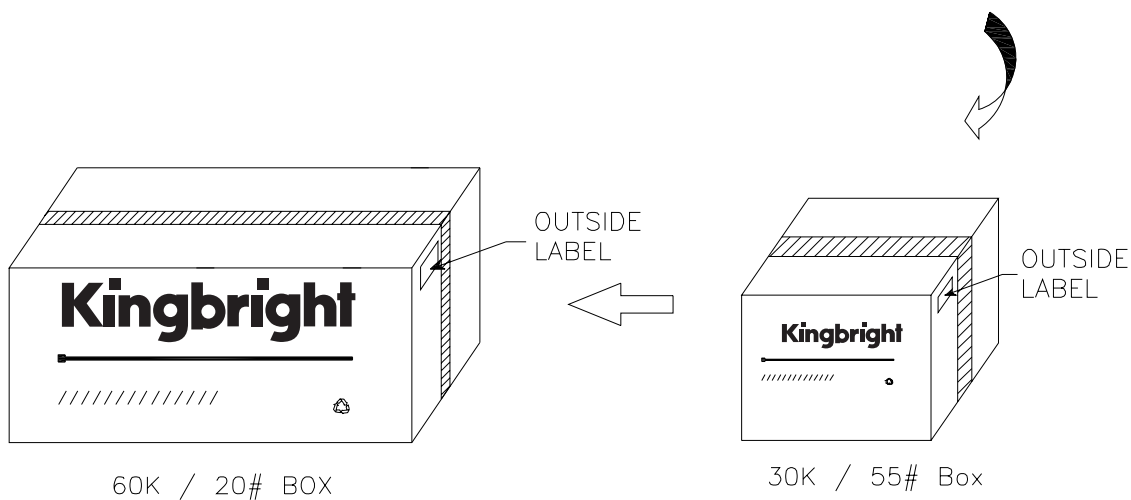
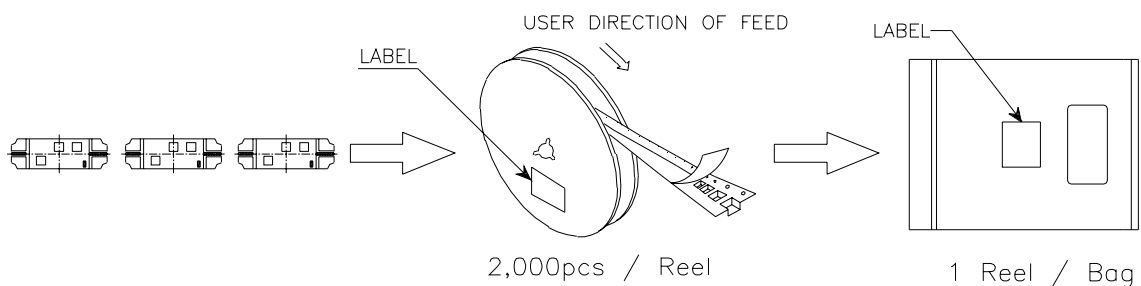



### Tape Specifications (Units : mm)



## PACKING & LABEL SPECIFICATIONS

## APFA3210PBAVGASURKC



|  |  |
|--|--|
| <b>Kingbright</b>  |  |
| P/N : APFA3210xxx  |  |
| QTY: 2,000 pcs   | Q.C. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Q C<br/>xx xx xxxx<br/>PASSED</span> |
| S/N: XXXX  |  |
| CODE: XXX  |  |
| LOT NO:  |  |
|  |  |
| MADE IN CHINA  | RoHS Compliant   |