

| Order code | Manufacturer code | Description                              |
|------------|-------------------|------------------------------------------|
| 72-9734    | n/a               | KPA-2106QWF-E LED SMT 90DEG WHT 360MCD R |
| 72-9740    | n/a               | KPA-2106QWF-E RL2000 LED WHT 360MCD RC   |

|                                                                                                                                                                                                    |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                                                                                                                                                                                                    | Page 1 of 7              |
| The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E. | Revision A<br>04/07/2003 |

PRELIMINARY SPEC

P/N: KPA-1606QWF-E

WHITE



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

### Features

- 1.6mmx0.6mm RIGHT ANGLE SMT LED, 1.2mm THICKNESS.
- LOW POWER CONSUMPTION.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- VARIOUS COLORS AND LENS TYPES AVAILABLE.
- PACKAGE : 2000PCS / REEL.
- MOISTURE SENSITIVITY LEVEL : LEVEL 3.
- RoHS COMPLIANT.

### Description

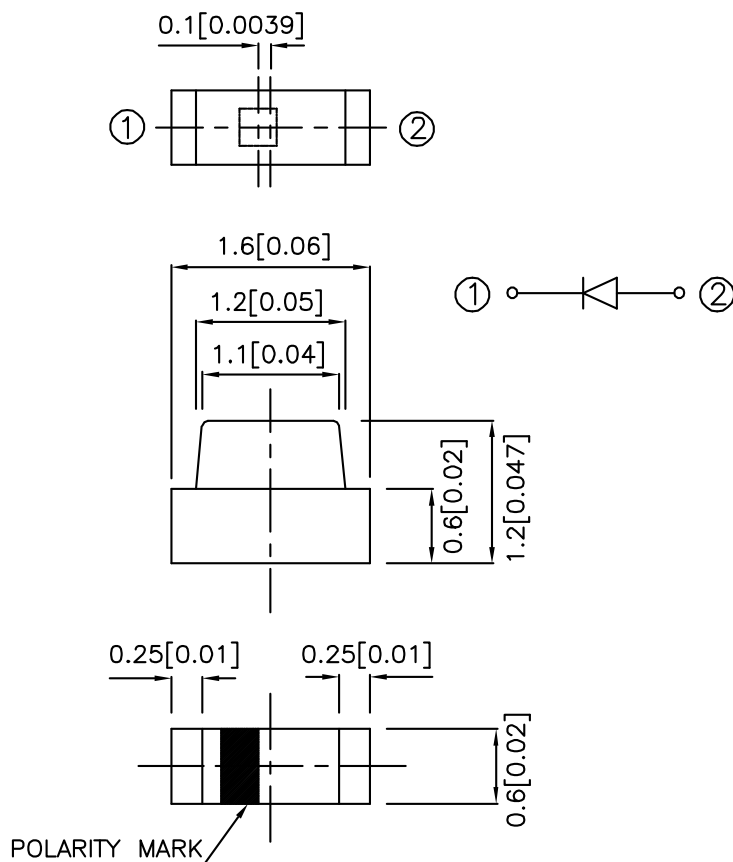
The source color devices are made with AlInGaN on Sapphire Light Emitting Diode.

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. | 2 $\theta$ 1/2       |
| KPA-1606QWF-E | WHITE (AlInGaN) | YELLOW FLUORESCENT | 110                    | 360  | 110°                 |

Notes:

1.  $\theta$ 1/2 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 T<sub>A</sub>=25°C

| Symbol             | Parameter                | Device | Typ. | Max. | Units | Test Conditions           |
|--------------------|--------------------------|--------|------|------|-------|---------------------------|
| V <sub>F</sub> [1] | Forward Voltage          | White  | 3.3  | 4.0  | V     | I <sub>F</sub> =20mA      |
| I <sub>R</sub>     | Reverse Current          | White  |      | 10   | uA    | V <sub>R</sub> = 5V       |
| X [2]              | Chromaticity Coordinates | White  | 0.33 |      |       |                           |
| Y [2]              |                          |        | 0.34 |      |       |                           |
| C                  | Capacitance              | White  | 105  |      | pF    | V <sub>F</sub> =0V;f=1MHz |

Notes:

1. Forward Voltage: +/-0.1V.
2. Chromaticity Coordinates X, Y: +/-0.01.

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

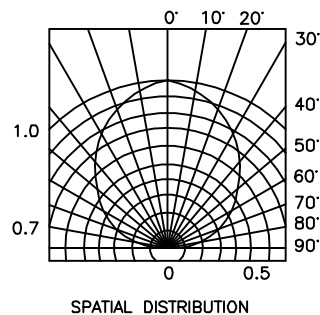
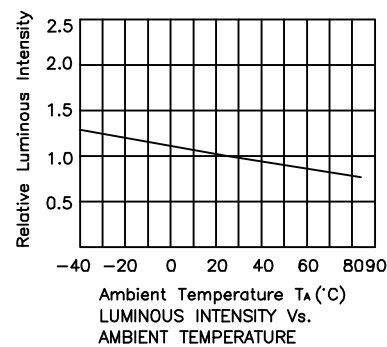
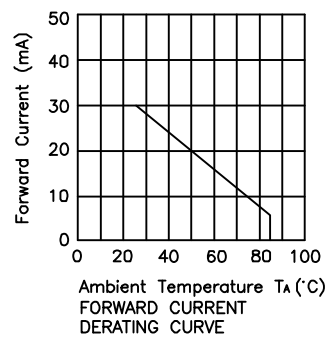
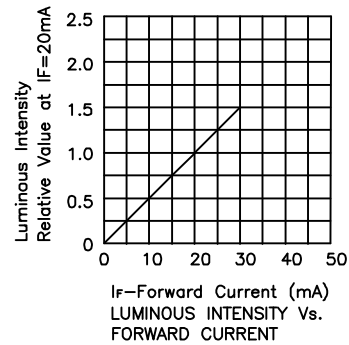
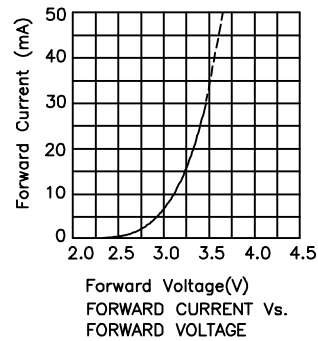
| Parameter                     | White          | Units |
|-------------------------------|----------------|-------|
| Power dissipation             | 120            | mW    |
| DC Forward Current            | 30             | mA    |
| Peak Forward Current [1]      | 150            | mA    |
| Reverse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

Note:

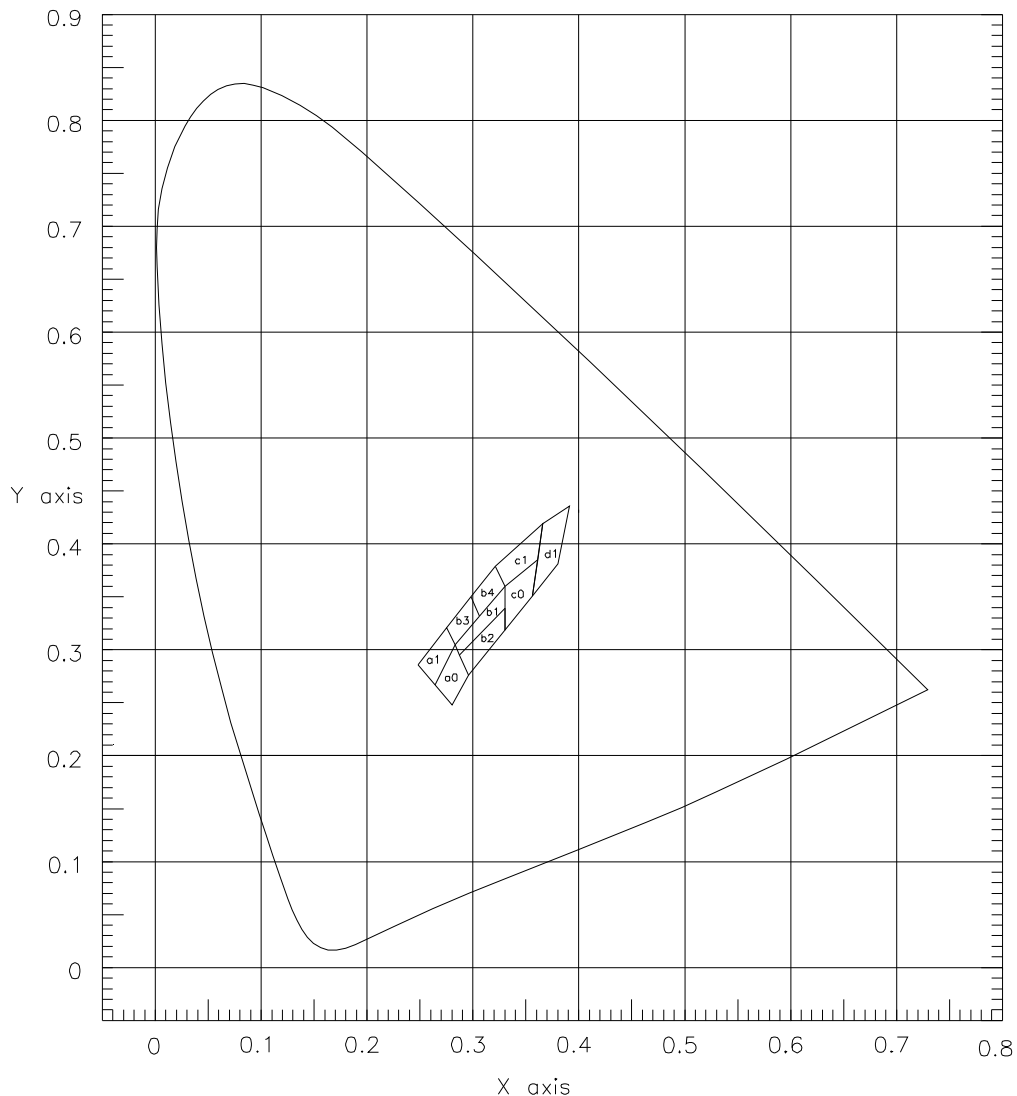
1. 1/10 Duty Cycle, 0.1ms Pulse Width.

White

KPA-1606QWF-E



## KPA-1606QWF-E



| a1 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.248 | 0.275 | 0.283 | 0.264 |
| Y  | 0.286 | 0.321 | 0.305 | 0.267 |
| b1 |       |       |       |       |
| X  | 0.283 | 0.330 | 0.330 | 0.287 |
| Y  | 0.305 | 0.360 | 0.339 | 0.295 |
| c1 |       |       |       |       |
| X  | 0.321 | 0.366 | 0.361 | 0.330 |
| Y  | 0.379 | 0.419 | 0.385 | 0.360 |

| a0 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.264 | 0.283 | 0.296 | 0.280 |
| Y  | 0.267 | 0.305 | 0.276 | 0.248 |
| b2 |       |       |       |       |
| X  | 0.287 | 0.330 | 0.330 | 0.296 |
| Y  | 0.295 | 0.339 | 0.318 | 0.276 |
| c0 |       |       |       |       |
| X  | 0.330 | 0.361 | 0.356 | 0.330 |
| Y  | 0.360 | 0.385 | 0.351 | 0.318 |

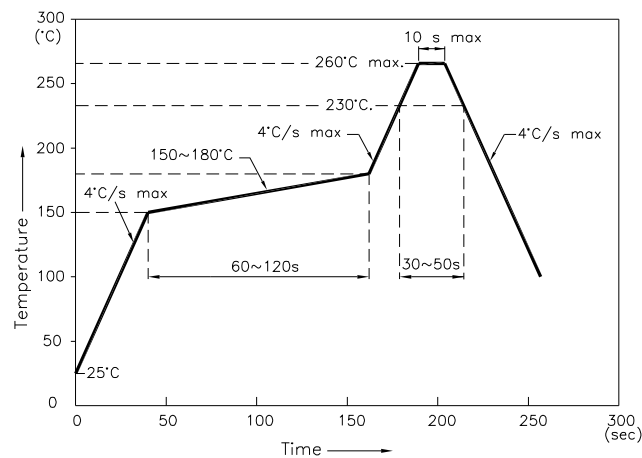
| b3 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.275 | 0.298 | 0.306 | 0.283 |
| Y  | 0.321 | 0.350 | 0.332 | 0.305 |
| b4 |       |       |       |       |
| X  | 0.298 | 0.321 | 0.330 | 0.306 |
| Y  | 0.350 | 0.379 | 0.360 | 0.332 |
| d1 |       |       |       |       |
| X  | 0.366 | 0.391 | 0.380 | 0.356 |
| Y  | 0.419 | 0.436 | 0.381 | 0.351 |

Ta=25°, IF=20mA

Measurement Uncertainty of the Color Coordinates:  $\pm 0.01$

## KPA-1606QWF-E

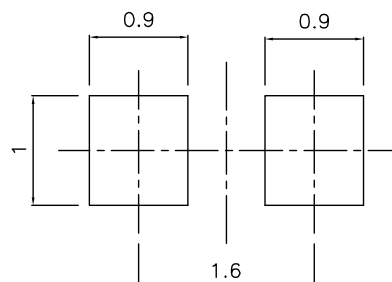
Reflow Soldering Profile For Lead-free SMT Process.



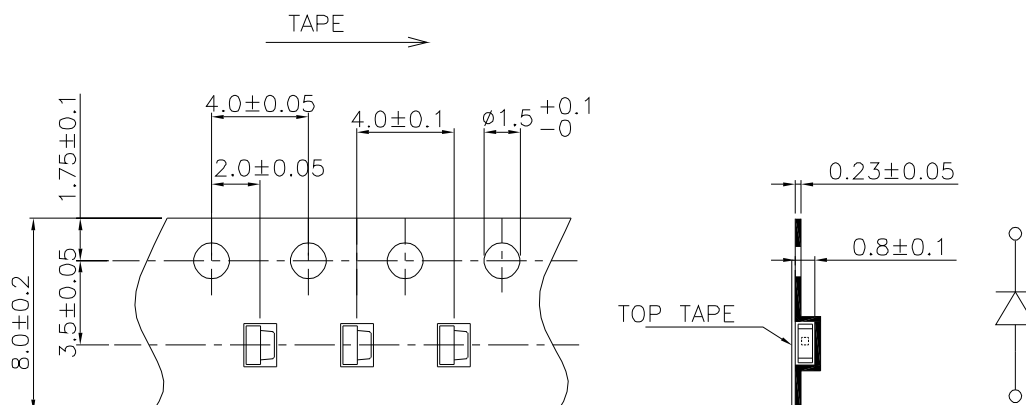
### NOTES:

1. We recommend the reflow temperature  $245^{\circ}\text{C} (+/-5^{\circ}\text{C})$ . The maximum soldering temperature should be limited to  $260^{\circ}\text{C}$ .
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)



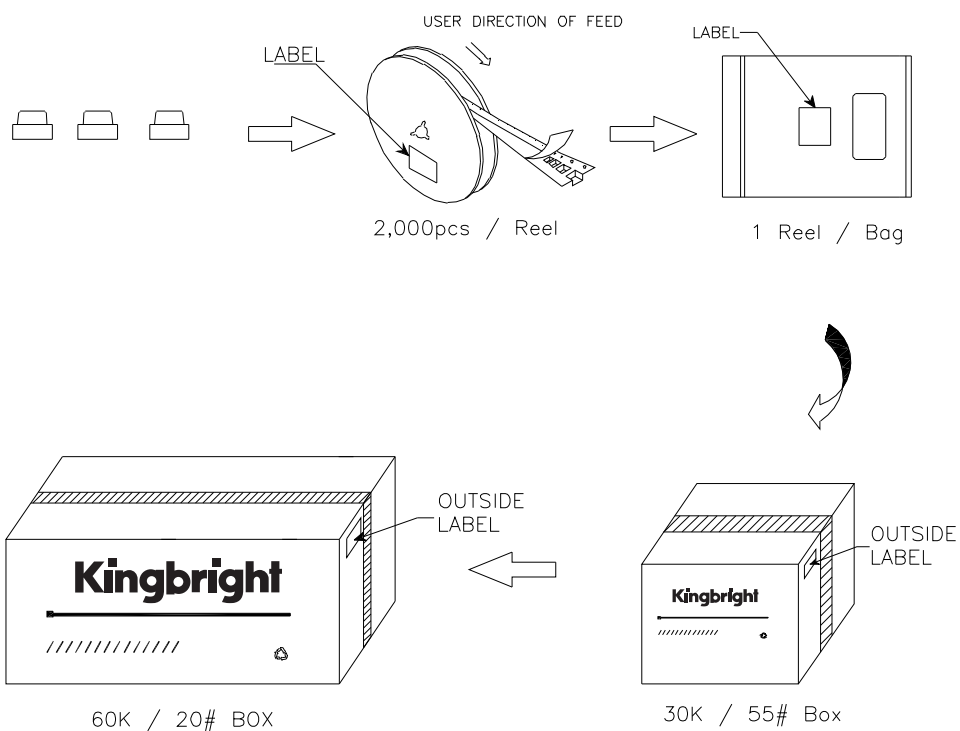
## Tape Specifications (Units : mm)



Note: Tolerance is  $\pm 0.25$  unless otherwise noted.

PACKING & LABEL SPECIFICATIONS

KPA-1606QWF-E



|                                                                                      |                                               |
|--------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>Kingbright</b>                                                                    |                                               |
| P/NO: KPA-1606XXX                                                                    |                                               |
| QTY: 2,000 pcs                                                                       | Q.C. <div>Q C<br/>xx xx xxxx<br/>PASSED</div> |
| S/N: XXXX                                                                            |                                               |
| CODE: XXX                                                                            |                                               |
| LOT NO:                                                                              |                                               |
|  |                                               |
| MADE IN CHINA                                                                        | RoHS Compliant                                |