

**QT-Brightek Chip LED Series**

**1206 Chip LED with Inner Lens**

**Part No.: QBLP651 Series**

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## Introduction

### Feature:

- Water clear lens (except white color)
- Yellow lens for white
- Tape and reel packaging
- Bright LED package
- InGaN technology for IB/IG/IW
- AlInGaP technology for R/AG/Y/O
- 40° Viewing Angle (R/AG/Y/O/IB/IG)
- 165° Viewing Angle (IW)

### Description:

These 1206 LEDs have a height profile of 1.40mm. With a combination of high brightness output and a small footprint, these LEDs are ideal for status indication.

### Application:

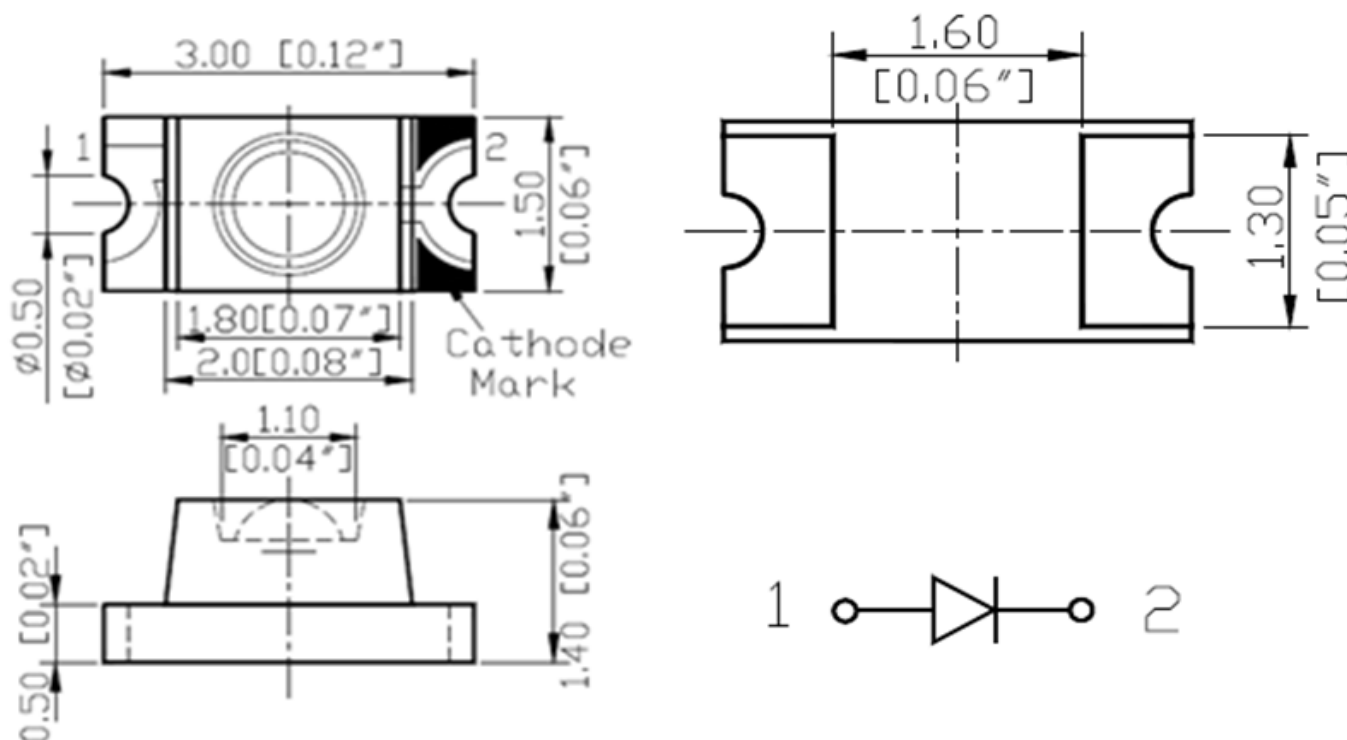
- Status indication
- Back lighting application

### Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



### Dimension:



Units: mm / tolerance = +/-0.1mm

## Electrical / Optical Characteristic (T=25 °C)

| Product Number | Color        | I <sub>F</sub> (mA) | V <sub>F</sub> (V) |      |     | λ <sub>D</sub> (nm) |      |                  | I <sub>v</sub> (mcd) |      |
|----------------|--------------|---------------------|--------------------|------|-----|---------------------|------|------------------|----------------------|------|
|                |              |                     | Min                | Typ. | Max | Min.                | Typ. | Max.             | Min.                 | Typ. |
| QBLP651-IW     | White        | 20                  | 2.8                | 3.2  | 3.7 | x: .25<br>y: .24    | --   | x: .33<br>y: .34 | 160                  | 320  |
| QBLP651-IB     | Blue         | 20                  | 2.8                | 3.1  | 3.7 | 465                 | 470  | 475              | 125                  | 550  |
| QBLP651-IG     | True Green   | 20                  | 2.8                | 3.4  | 3.7 | 520                 | 525  | 530              | 1600                 | 2700 |
| QBLP651-R      | Red          | 20                  | 1.7                | 2.0  | 2.5 | 615                 | 620  | 630              | 320                  | 600  |
| QBLP651-AG     | Yellow Green | 20                  | 1.7                | 2.0  | 2.5 | 565                 | --   | 576              | 80                   | 150  |
| QBLP651-Y      | Yellow       | 20                  | 1.7                | 2.0  | 2.5 | 585                 | 590  | 595              | 320                  | 660  |
| QBLP651-O      | Orange       | 20                  | 1.7                | 2.0  | 2.5 | 600                 | 605  | 610              | 200                  | 450  |

## Absolute Maximum Rating

| Material | P <sub>d</sub> (mW) | I <sub>F</sub> (mA) | I <sub>FP</sub> (mA)* | V <sub>R</sub> (V) | T <sub>OP</sub> (°C) | T <sub>ST</sub> (°C) | T <sub>SOL</sub> (°C)** |
|----------|---------------------|---------------------|-----------------------|--------------------|----------------------|----------------------|-------------------------|
| AlInGaP  | 75                  | 30                  | 125                   | 5                  | -40 to +80           | -40 to +85           | 260                     |
| InGaN    | 111                 | 30                  | 125                   | 5                  | -40 to +80           | -40 to +85           | 260                     |

\*Duty 1/8 @ 1KHz

\*\* IR Reflow for no more than 10 sec @ 260 °C

## Forward Voltage V<sub>F</sub> for AlInGaP @ I<sub>F</sub>=20mA

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| □   | 1.7  | 2.5  | V    |

## Forward Voltage V<sub>F</sub> for InGaN @ I<sub>F</sub>=20mA

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| f   | 2.8  | 3.1  | V    |
| g   | 3.1  | 3.4  |      |
| h   | 3.4  | 3.7  |      |

**Luminous Intensity  $I_v$  @  $I_F=20mA$** 

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| I   | 80   | 100  | mcd  |
| J   | 100  | 125  |      |
| K   | 125  | 160  |      |
| L   | 160  | 200  |      |
| M   | 200  | 250  |      |
| N   | 250  | 320  |      |
| O   | 320  | 400  |      |
| P   | 400  | 500  |      |
| Q   | 500  | 630  |      |
| R   | 630  | 800  |      |
| S   | 800  | 1000 |      |
| T   | 1000 | 1250 |      |
| U   | 1250 | 1600 |      |
| V   | 1600 | 2000 |      |
| W   | 2000 | 2500 |      |
| X   | 2500 | 3200 |      |
| Y   | 3200 | 4000 |      |

**Dominant Wavelength  $\lambda_D$  for Blue @  $I_F=20mA$** 

| Bin | Min.  | Max.  | Unit |
|-----|-------|-------|------|
| G   | 465   | 467.6 | nm   |
| H   | 467.5 | 470   |      |
| I   | 470   | 472.5 |      |
| J   | 472.5 | 475   |      |

**Dominant Wavelength  $\lambda_D$  for True Green @  $I_F=20mA$** 

| Bin | Min.  | Max.  | Unit |
|-----|-------|-------|------|
| U   | 520   | 522.5 | nm   |
| V   | 522.5 | 525   |      |
| W   | 525   | 527.5 |      |
| X   | 527.5 | 530   |      |

**Dominant Wavelength  $\lambda_D$  for Red @  $I_F=20mA$** 

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| s   | 615  | 620  | nm   |
| t   | 620  | 625  |      |
| u   | 625  | 630  |      |

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**Dominant Wavelength  $\lambda_D$  for Yellow Green @  $I_F=20\text{mA}$** 

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| h   | 565  | 568  | nm   |
| i   | 568  | 572  |      |
| j   | 572  | 576  |      |

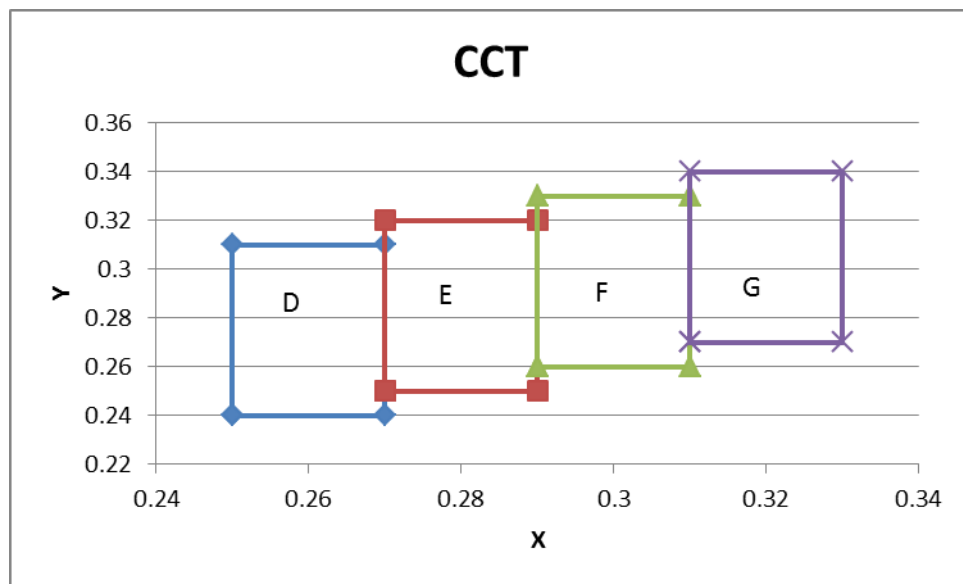
**Dominant Wavelength  $\lambda_D$  for Yellow @  $I_F=20\text{mA}$** 

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| m   | 585  | 590  | nm   |
| n   | 590  | 595  |      |

**Dominant Wavelength  $\lambda_D$  for Orange @  $I_F=20\text{mA}$** 

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| p   | 600  | 605  | nm   |
| q   | 605  | 610  |      |

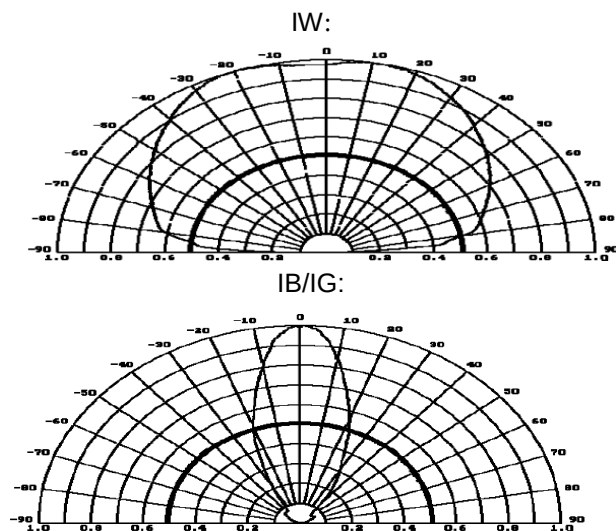
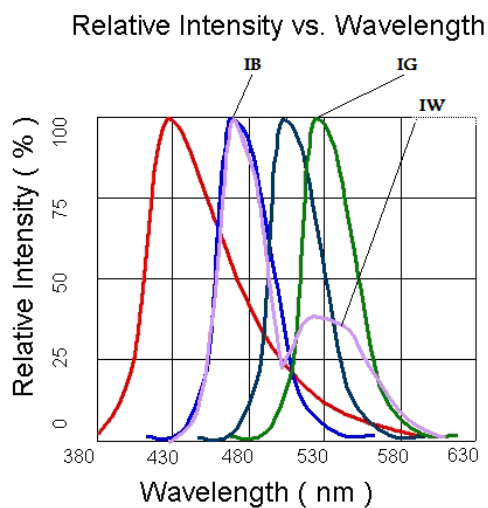
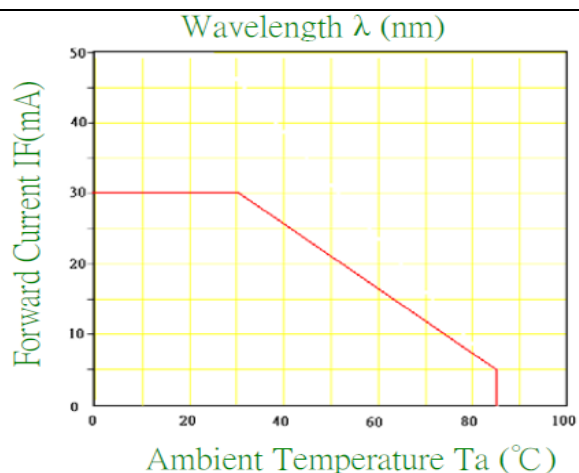
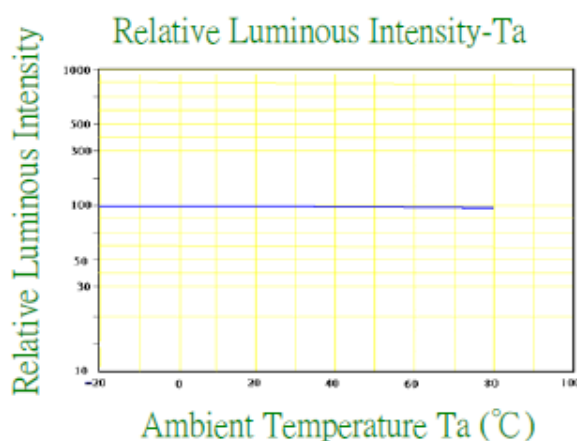
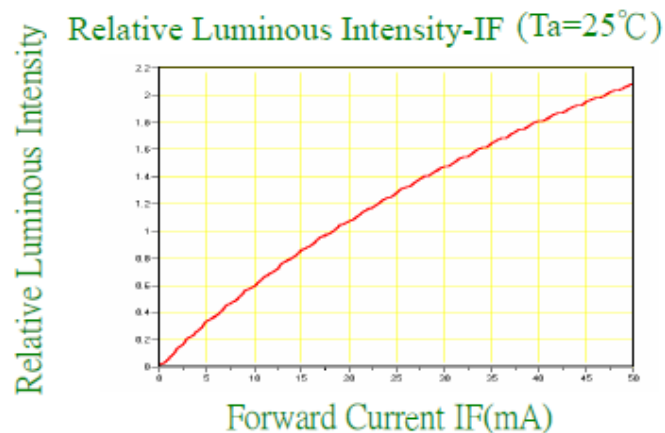
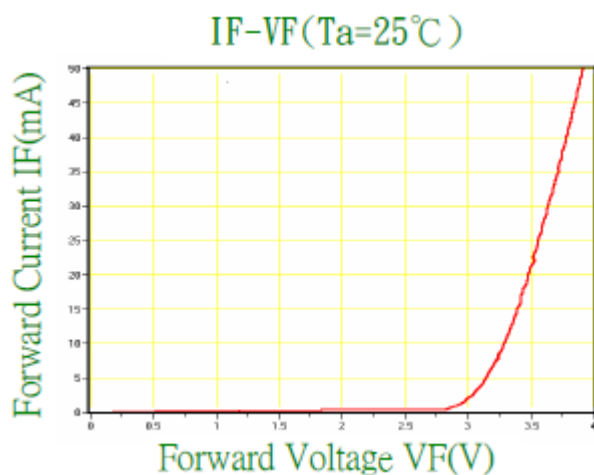
## CIE Chromaticity Table:



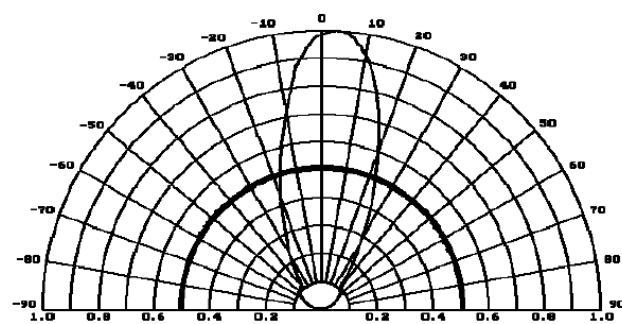
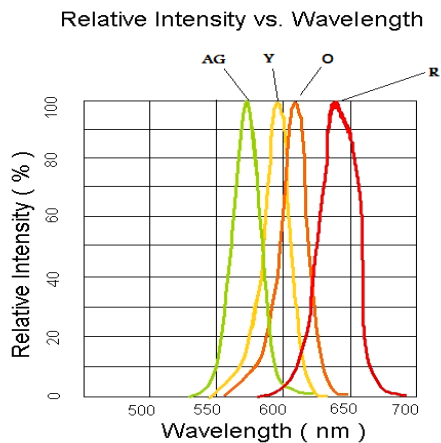
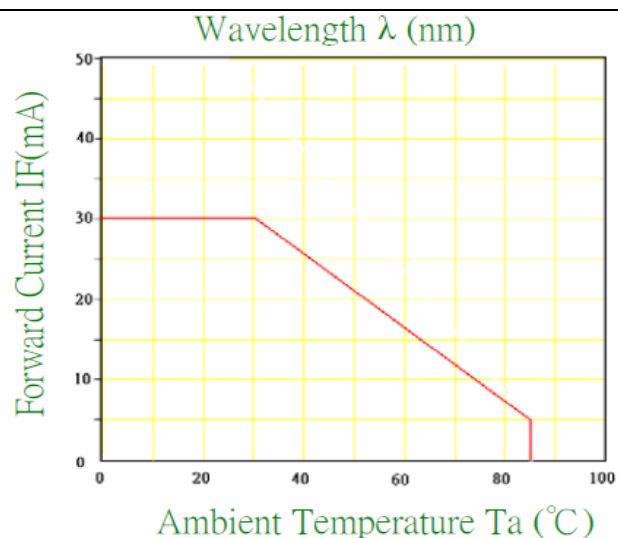
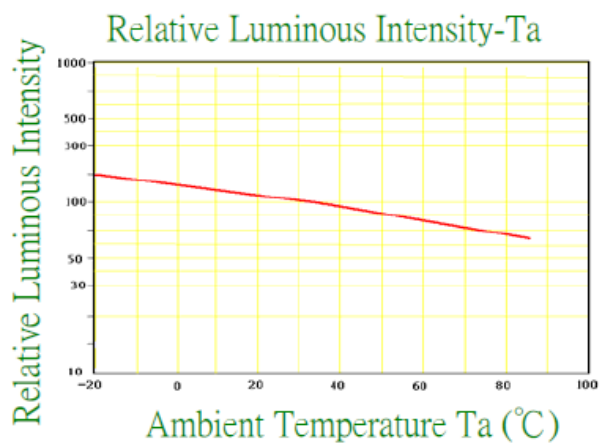
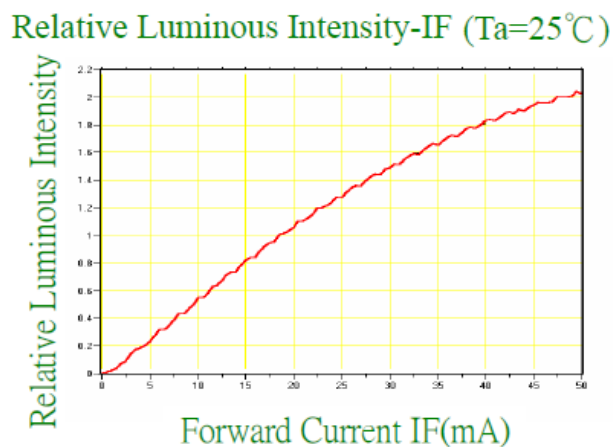
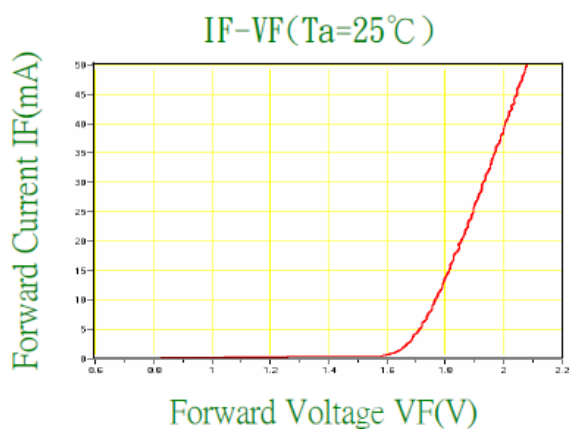
| D    |      | E    |      | F    |      | G    |      |
|------|------|------|------|------|------|------|------|
| 0.25 | 0.24 | 0.27 | 0.25 | 0.29 | 0.26 | 0.31 | 0.27 |
| 0.25 | 0.31 | 0.27 | 0.32 | 0.29 | 0.33 | 0.31 | 0.34 |
| 0.27 | 0.31 | 0.29 | 0.32 | 0.31 | 0.33 | 0.33 | 0.34 |
| 0.27 | 0.24 | 0.29 | 0.25 | 0.31 | 0.26 | 0.33 | 0.27 |
| 0.25 | 0.24 | 0.27 | 0.25 | 0.29 | 0.26 | 0.31 | 0.27 |

## Characteristic Curves

InGaN Technology (IW, IB, IG)

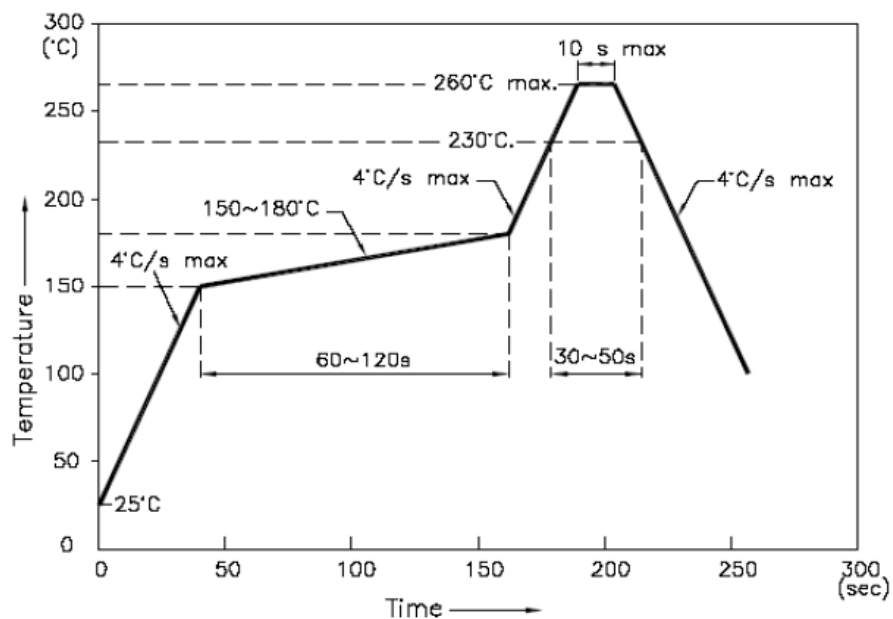


**AllInGaP Technology (R/AG/Y/O)**

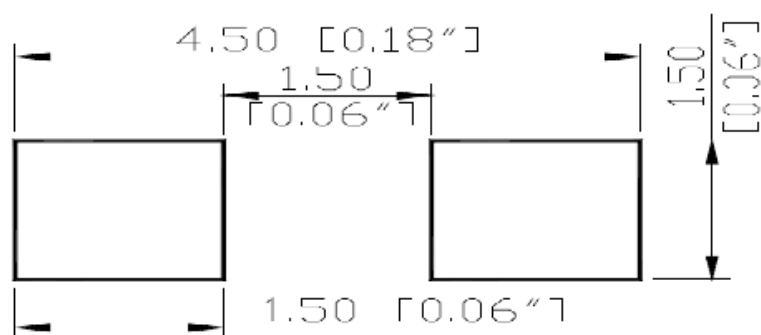


## Solder Profile

### Lead-Free Soldering Profile:



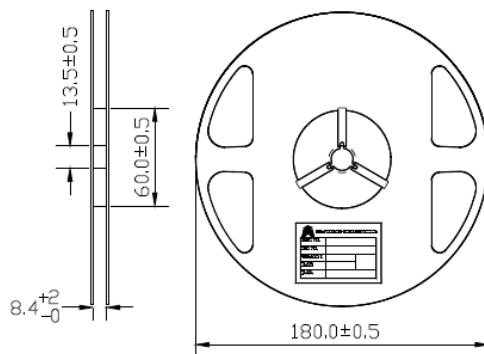
### RECOMMEND PAD LAYOUT



Units: mm / tolerance = +/-0.1mm

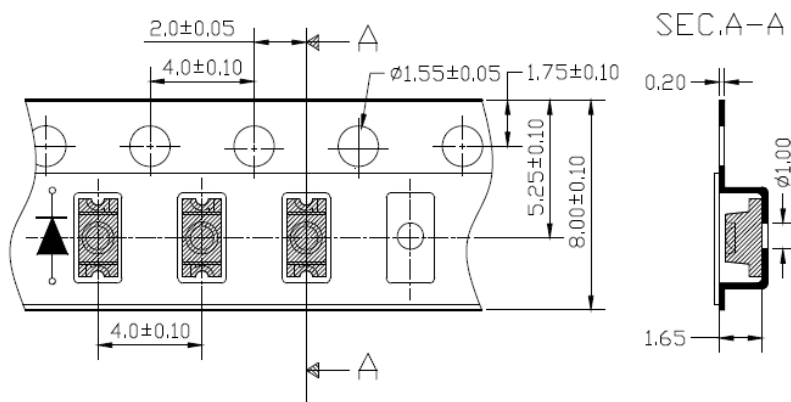
## Packing

### Reel Dimensions:



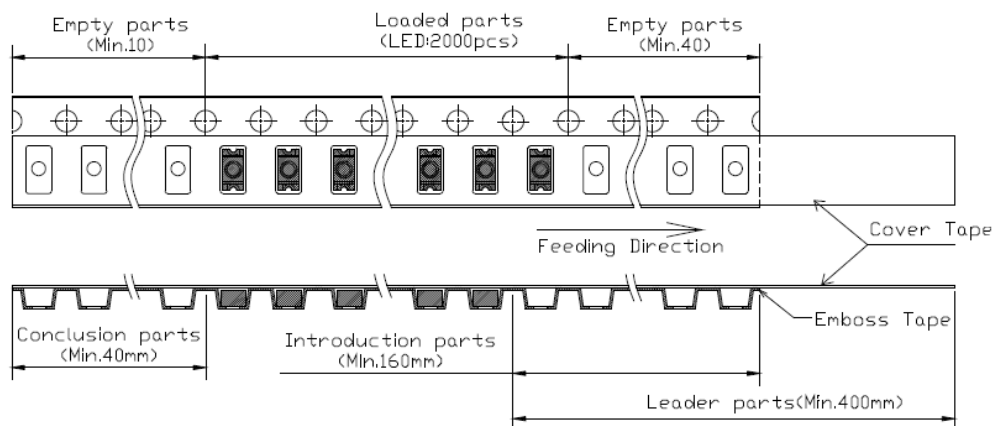
Unit: mm

### Tape Dimensions:

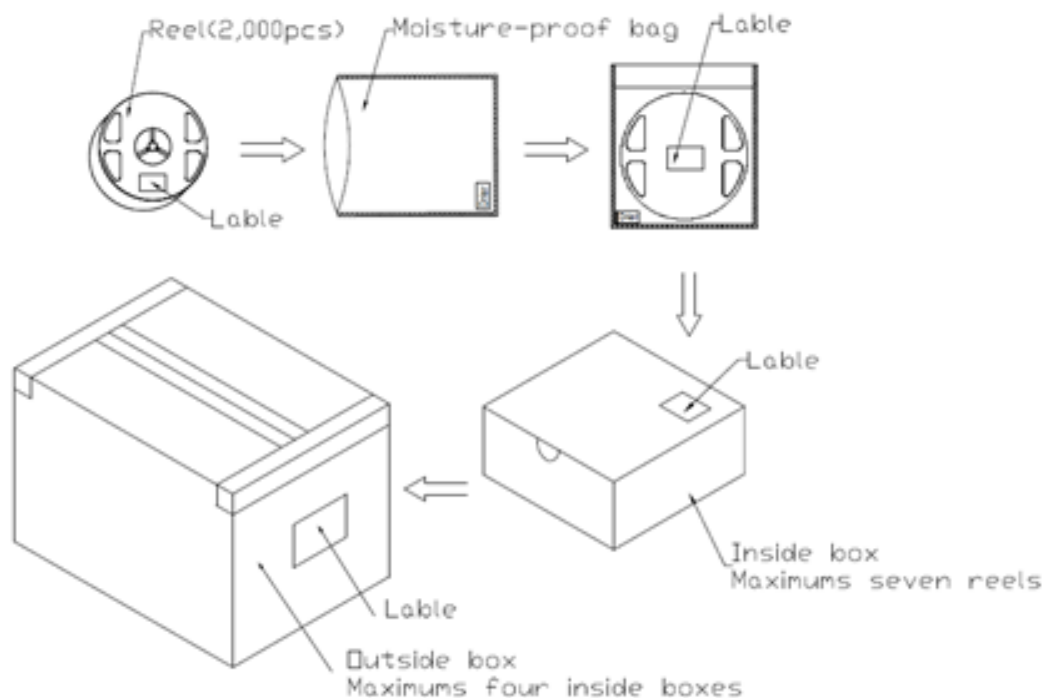


Unit: mm

### Arrangement of Tape:



Packing specifications:



## Labeling



Part No: \_\_\_\_\_

Customer P/N: \_\_\_\_\_

Item: \_\_\_\_\_

Q'ty: \_\_\_\_\_

Vf: \_\_\_\_\_

Iv: \_\_\_\_\_

Wl: \_\_\_\_\_

Date: \_\_\_\_\_

**Made in China**

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**Ordering Information**

| Part #     | Orderable Part # | Spec Range                                   | Quantity per reel |
|------------|------------------|----------------------------------------------|-------------------|
| QBLP651-IW | QBLP651-IW       | $I_V=320\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |
| QBLP651-IB | QBLP651-IB       | $I_V=550\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |
| QBLP651-IG | QBLP651-IG       | $I_V=2700\text{mcd typ. @ } I_F=20\text{mA}$ | 3,000 pcs         |
| QBLP651-R  | QBLP651-R        | $I_V=600\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |
| QBLP651-AG | QBLP651-AG       | $I_V=150\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |
| QBLP651-Y  | QBLP651-Y        | $I_V=660\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |
| QBLP651-O  | QBLP651-O        | $I_V=450\text{mcd typ. @ } I_F=20\text{mA}$  | 3,000 pcs         |

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## Revision History

| Description:                        | Revision # | Revision Date |
|-------------------------------------|------------|---------------|
| New Release of QBLP651 Series       | V1.0       | 03/15/2012    |
| Information Update                  | V1.1       | 02/13/2013    |
| Amend the packing QTY from 2k to 3k | V1.2       | 10/16/2014    |
| Amend the min brightness of blue    | V1.3       | 10/27/2017    |
|                                     |            |               |

## Disclaimer

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.