

QT-Brightek Chip LED Series

SMD 1204 LED

Part No.: QBLP613_Series

Table of Contents:

| | |
|---|----|
| Introduction | 3 |
| Electrical / Optical Characteristic (T=25 °C) | 4 |
| Absolute Maximum Rating | 4 |
| Characteristic Curves..... | 7 |
| Solder Profile & Footprint..... | 9 |
| Packing | 10 |
| Labeling | 11 |
| Ordering Information | 12 |
| Revision History | 13 |
| Disclaimer | 13 |

Introduction

Feature:

- Water clear lens
- Package in tape and reel
- Side View Ultra bright 1204 LED package
- AllInGaP technology for R/AG/Y
- InGaN technology for IB/IG
- Viewing Angle = 150 deg

Description:

These bright side view 1204 LEDs have a height profile of 1.0mm. With higher packing density and smaller footprint, these LEDs are ideal for smaller equipment and miniature application.

Application:

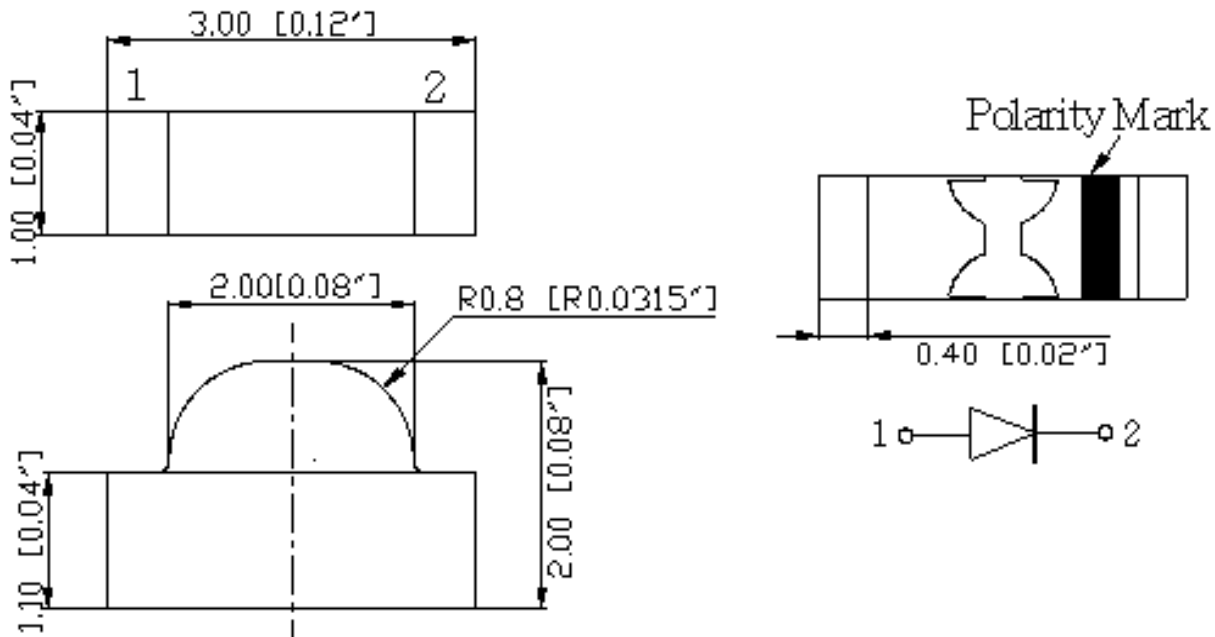
- Status indication
- Back lighting application
- General Use

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



Dimension:



Units: mm / tolerance = +/-0.1mm

Electrical / Optical Characteristic (T=25 °C)

| Product | Color | I _F (mA) | V _F (V) | | λ _D (nm) | | | I _V (mcd) | |
|------------|--------------|---------------------|--------------------|------|---------------------|------|------|----------------------|------|
| | | | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. |
| QBLP613-IB | Blue | 20 | 3.1 | 3.7 | 465 | 470 | 475 | 80 | 100 |
| QBLP613-IG | True Green | 20 | 3.1 | 3.7 | 520 | 525 | 530 | 200 | 370 |
| QBLP613-R | Red | 20 | 2.0 | 2.5 | 625 | 630 | 635 | 50 | 85 |
| QBLP613-AG | Yellow Green | 20 | 2.0 | 2.5 | 565 | 570 | 576 | 25 | 40 |
| QBLP613-Y | Yellow | 20 | 2.0 | 2.5 | 585 | 590 | 595 | 80 | 170 |

Absolute Maximum Rating

| Material | P _d (mW) | I _F (mA) | I _{FP} (mA)* | V _R (V) | T _{OP} (°C) | T _{ST} (°C) | T _{SOL} (°C)** |
|------------------|---------------------|---------------------|-----------------------|--------------------|----------------------|----------------------|-------------------------|
| InGaN (IB/IG) | 111 | 30 | 125 | 5 | -40 ~ +80 | -40 ~ +85 | 260 |
| AllnGaP (R/AG/Y) | 75 | 30 | 125 | 5 | -40 ~ +80 | -40 ~ +85 | 260 |

**Duty 1/8 @ 1KHz

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

Forward Voltage V_F @ I_F=20mA for AllnGaP

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

Forward Voltage V_F @ I_F=20mA for InGaN

| 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 |
|-----|------|------|------|
| D | 25 | 32 | mcd |
| E | 32 | 40 | |
| F | 40 | 50 | |
| G | 50 | 63 | |
| H | 63 | 80 | |
| I | 80 | 100 | |
| J | 100 | 125 | |
| K | 125 | 160 | |
| L | 160 | 200 | |
| M | 200 | 250 | |
| N | 250 | 320 | |
| O | 320 | 400 | |
| P | 400 | 500 | |
| Q | 500 | 630 | |

Dominant Wavelength λ_D for Blue @ $I_F=20mA$

| Bin | Min. | Max. | Unit |
|-----|-------|-------|------|
| G | 465 | 467.5 | nm |
| H | 467.5 | 470 | |
| I | 470 | 470.5 | |
| J | 472.5 | 475 | |

Dominant Wavelength λ_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 λ_D for Red @ $I_F=20mA$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| u | 625 | 630 | nm |
| v | 630 | 635 | |

Dominant Wavelength λ_D for Yellow Green @ $I_F=20mA$

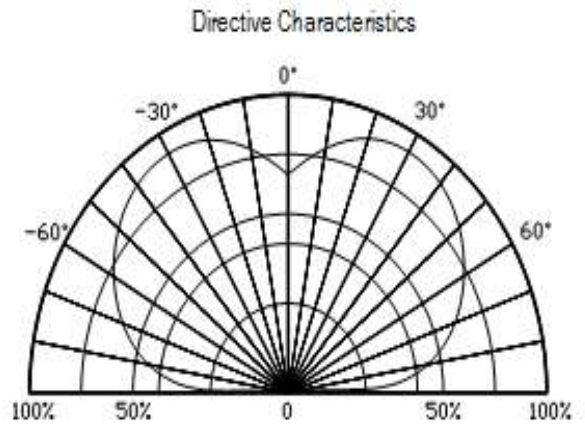
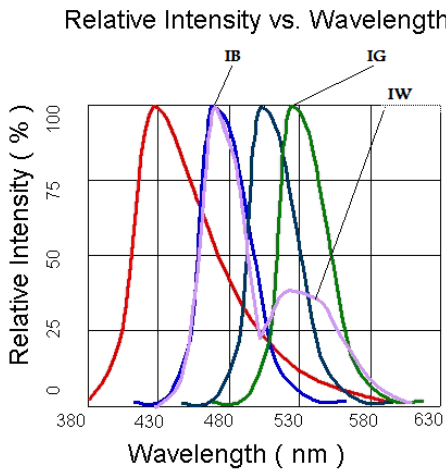
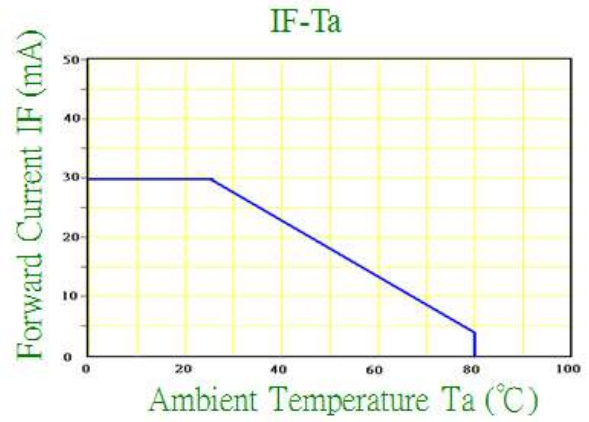
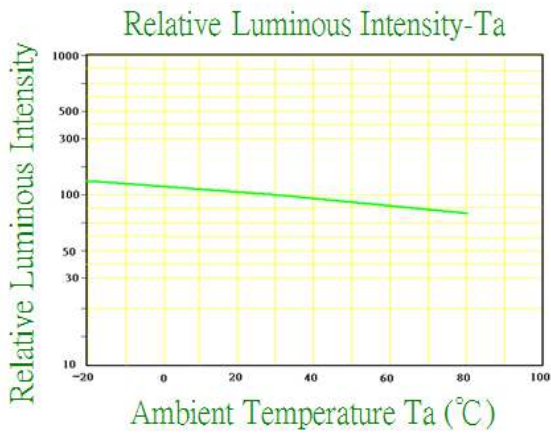
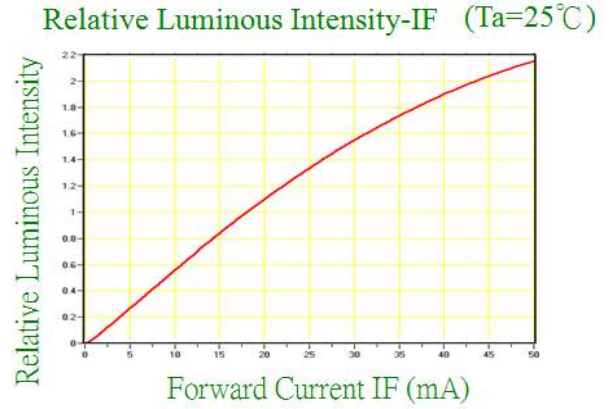
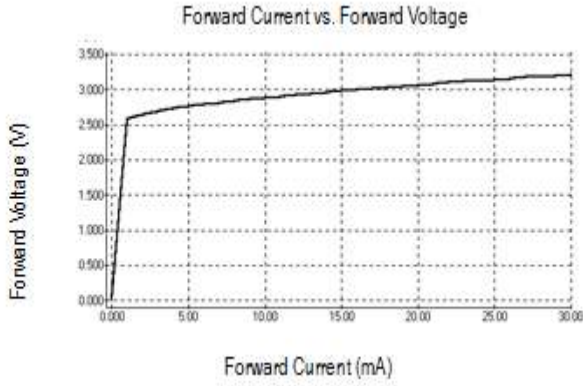
| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| h | 565 | 568 | nm |
| i | 568 | 572 | |
| j | 572 | 576 | |

Dominant Wavelength λ_D for Yellow @ $I_F=20mA$

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

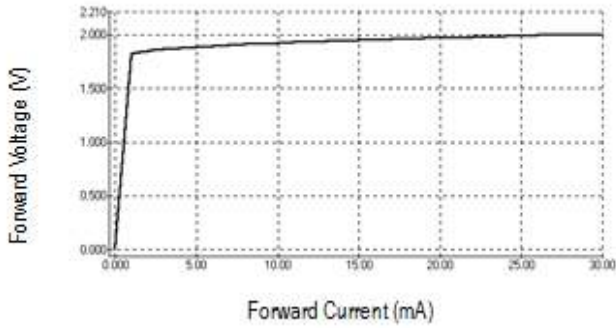
Characteristic Curves

InGaN (IB/IG)

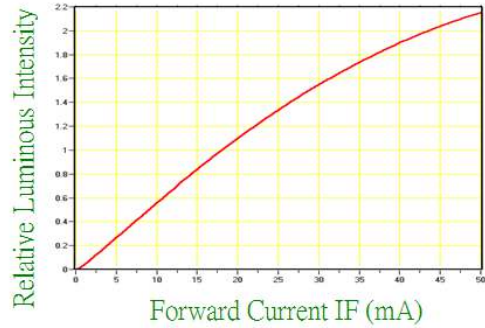


AllnGaP (R/AG/Y)

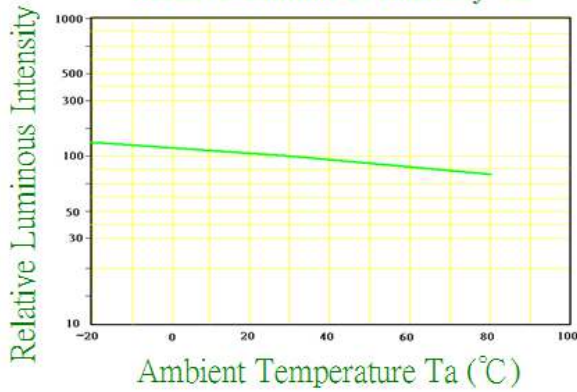
Forward Current vs. Forward Voltage



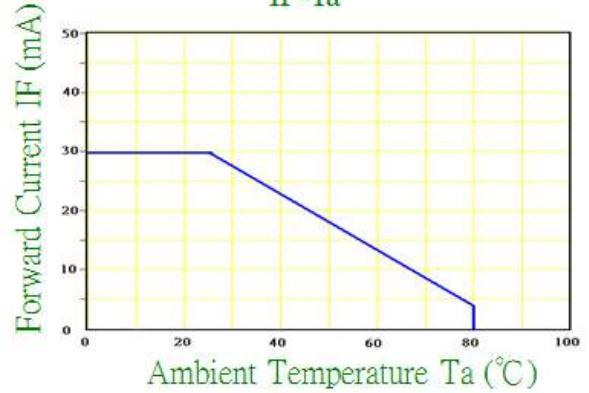
Relative Luminous Intensity-IF (Ta=25°C)



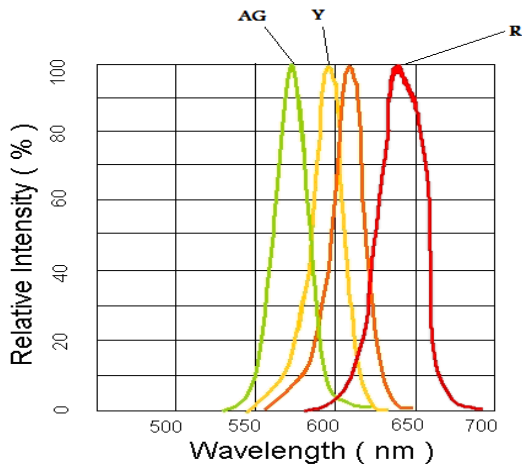
Relative Luminous Intensity-Ta



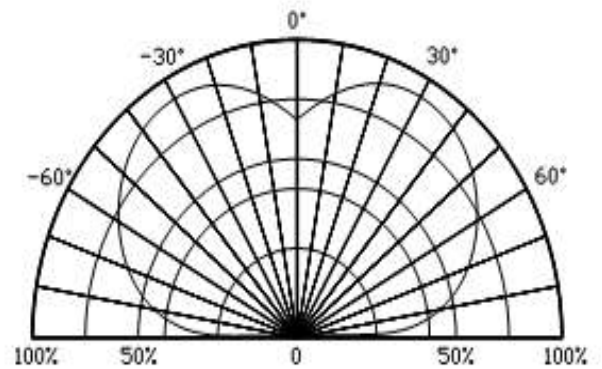
IF-Ta



Relative Intensity vs. Wavelength

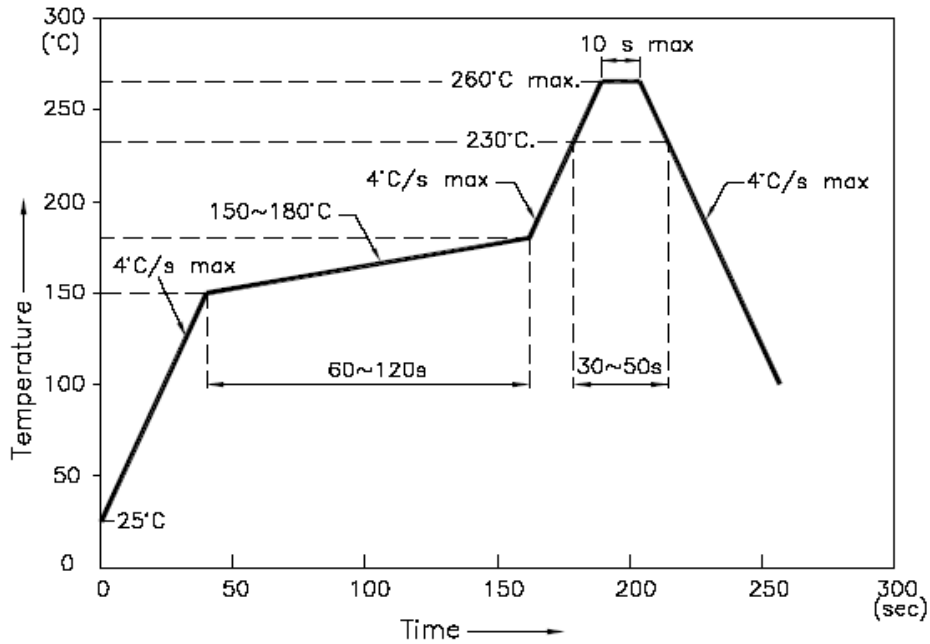


Directive Characteristics

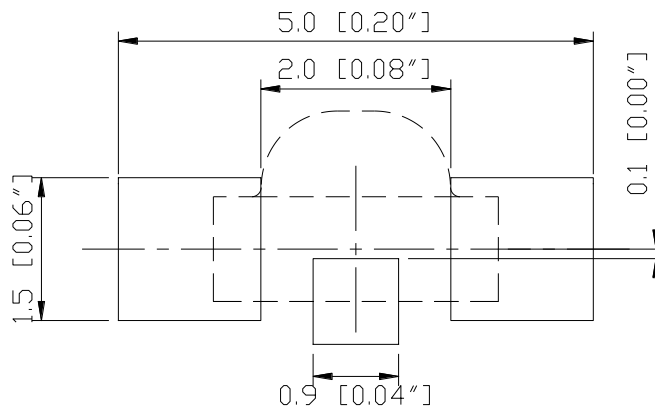


Solder Profile & Footprint

- Recommended tin solder specifications: melting temperature in the range of 178~192 °C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



Recommended Pad Layout



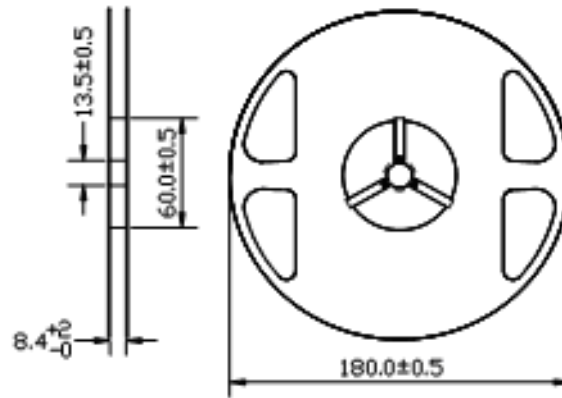
Units: mm

Tolerance: ± 0.1mm

| | | |
|-------------------------|----------------------|--------------|
| Product: QBLP613_Series | Date: March 27, 2014 | Page 9 of 13 |
| | Version# 1.5 | |

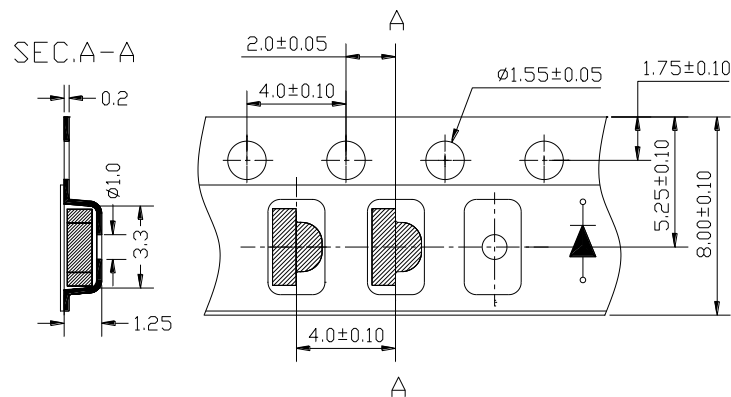
Packing

Reel Dimension:



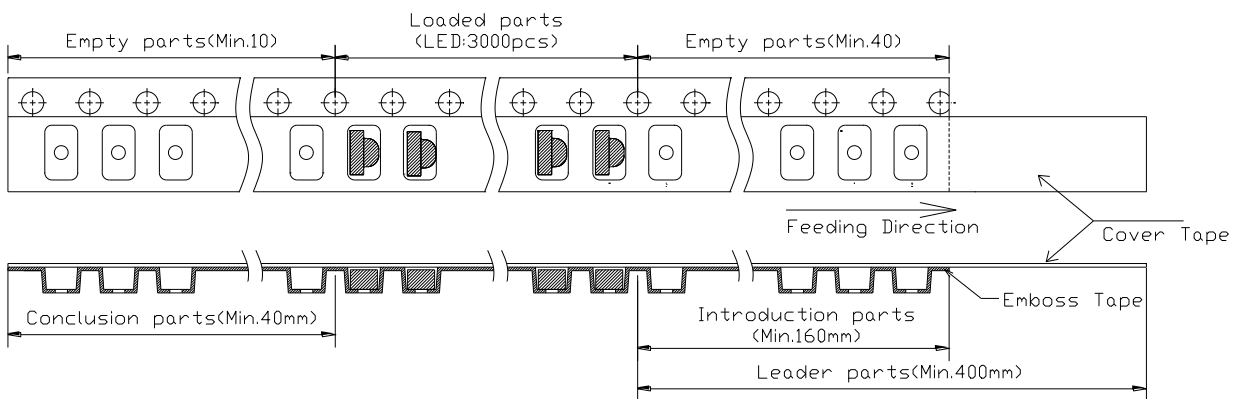
Unit: mm

Tape Dimension:

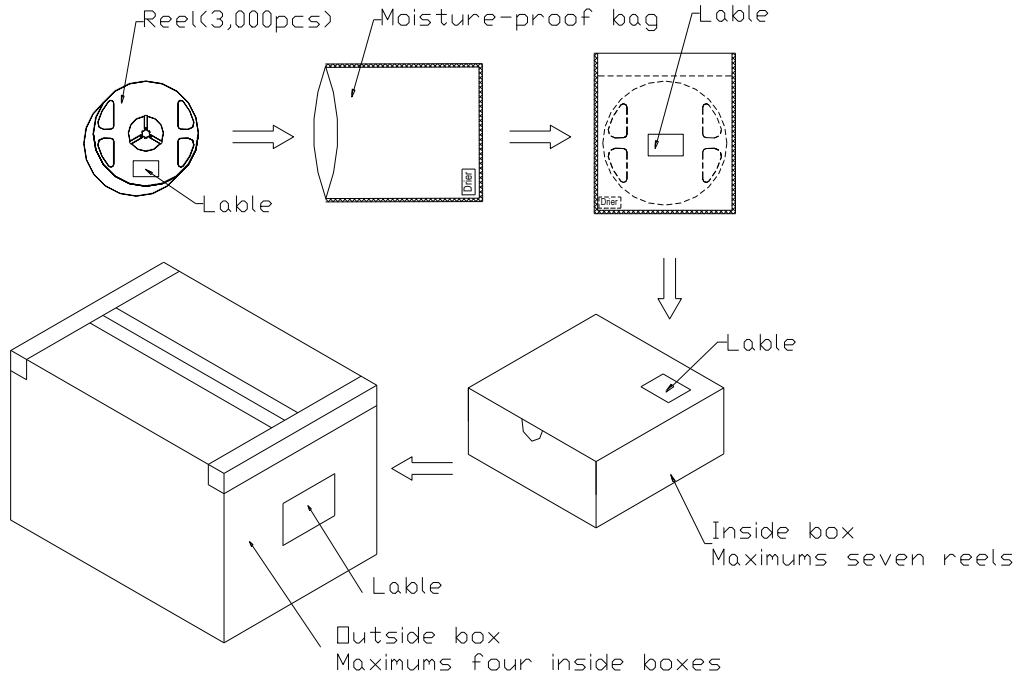


Unit: mm

Arrangement of Tape:



Packaging Specifications:



Labeling



Part No: _____

Customer P/N: _____

Item: _____

Q'ty: _____

Vf: _____

Iv: _____

WI: _____

Date: _____

Made in China

| | | |
|-------------------------|----------------------|---------------|
| Product: QBLP613_Series | Date: March 27, 2014 | Page 11 of 13 |
| | Version# 1.5 | |

Ordering Information

| Part # | Orderable Part # | Spec Range | Quantity per reel |
|------------|------------------|--|-------------------|
| QBLP613-IB | QBLP613-IB | Iv=100mcd typ. @ 20mA / Color= 465nm to 475nm | 3,000 units |
| QBLP613-IG | QBLP613-IG | Iv=370mcd typ. @ 20mA / Color= 520nm to 530nm | 3,000 units |
| QBLP613-R | QBLP613-R | Iv=85mcd typ. @ 20mA / Color= 625nm to 635nm | 3,000 units |
| QBLP613-AG | QBLP613-AG | Iv=40mcd typ. @ 20mA / Color= 565nm to 576nm | 3,000 units |
| QBLP613-Y | QBLP613-Y | Iv=170mcd typ. @ 20mA / Color = 585nm to 595nm | 3,000 units |

Revision History

| Description: | Revision # | Revision Date |
|---|------------|---------------|
| New Release of QBLP613_series | V1.0 | 11/14/2011 |
| Update to new format | V1.1 | 04/03/2012 |
| Information Update | V1.2 | 10/25/2012 |
| Amend the package dimension/ Amend the pad layout | V1.3 | 07/18/2013 |
| Update Spec | V1.4 | 08/06/2013 |
| Update IW, IG, and AG luminous intensity | V1.5 | 03/27/2014 |
| | | |
| | | |

Disclaimer

QT-BRIGHTTEK reserves the right to make changes without further notice to any products herein to improve reliability, function or design. QT-BRIGHTTEK does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

Life Support Policy

QT-BRIGHTTEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of QT-BRIGHTTEK. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.