



THE DATASHEET OF QBLP601-Y



QT-Brightek Chip LED Series

SMD 0603 LED

Part No.: QBLP601 series

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Introduction

Feature:

- Water clear lens
- Yellow diffused lens for IW
- Package in tape and reel
- Ultra bright 0603 LED package
- InGaN technology for IB/IG/IW
- AlInGaP technology for R/S/AG/Y/O
- Viewing Angle = 140 deg typ.

Description:

These ultra bright 0603 LEDs have a height profile of 0.60mm. Combination of high brightness output and small footprint, these LEDs are ideal for keypad backlighting and status indication.

Application:

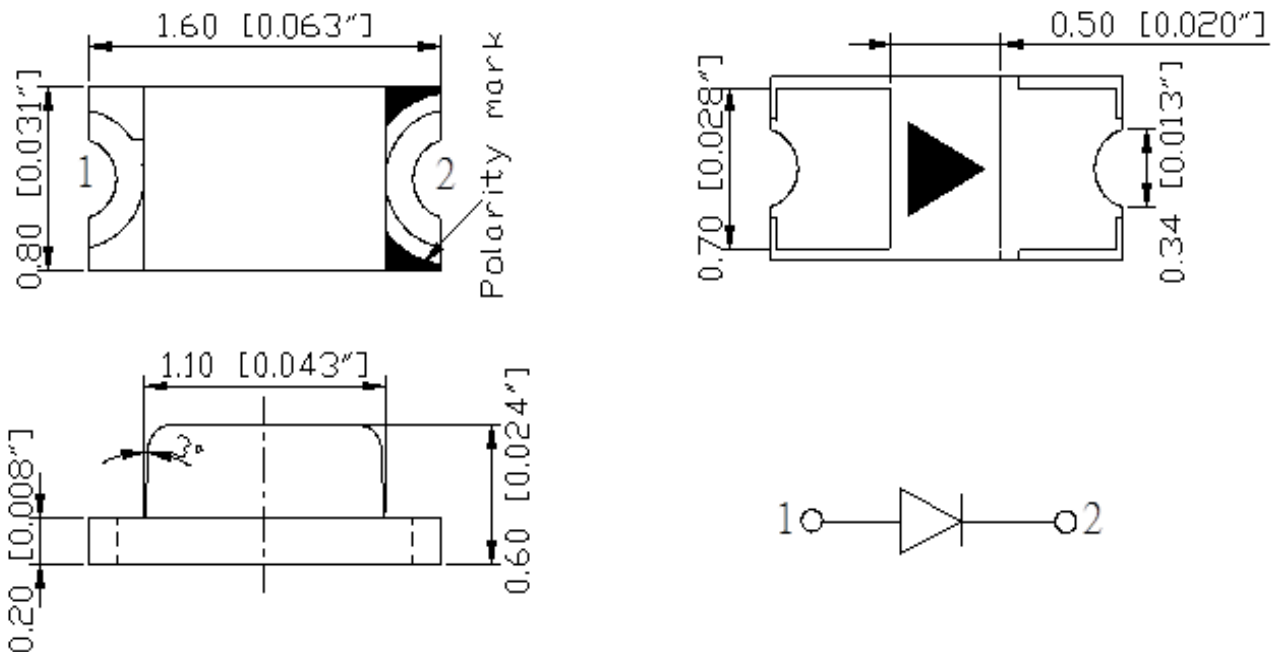
- Status indication
- Back lighting application

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



Dimension:



Units: mm / tolerance = +/-0.1mm

Electrical / Optical Characteristic (Ta=25 °C)

| Product | Color | I _F (mA) | V _F (V) | | λ _D (nm) | | | I _V (mcd) | |
|------------|--------------|---------------------|--------------------|------|---------------------|------------------|------|----------------------|------|
| | | | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. |
| QBLP601-IB | Blue | 20 | 3.2 | 3.7 | 465 | 470 | 475 | 50 | 90 |
| QBLP601-IG | True Green | 20 | 3.2 | 3.7 | 520 | 525 | 530 | 250 | 450 |
| QBLP601-IW | White | 20 | 3.2 | 3.7 | - | X=0.28 Y=0.26 | - | 200 | 330 |
| QBLP601-R | Red | 20 | 2.0 | 2.5 | 620 | 625 | 630 | 80 | 100 |
| QBLP601-S | Deep Red | 20 | 2.0 | 2.5 | 630 | 640 | 650 | 25 | 45 |
| QBLP601-AG | Yellow Green | 20 | 2.0 | 2.5 | 565 | 570 | 576 | 32 | 45 |
| QBLP601-Y | Yellow | 20 | 2.0 | 2.5 | 585 | 590 | 595 | 80 | 150 |
| QBLP601-O | Orange | 20 | 2.0 | 2.5 | 600 | 605 | 610 | 80 | 165 |

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/IW) | 111 | 30 | 125 | 5 | -40 ~ +80 | -40 ~ +100 | 260 |
| AllnGaP (R/S/AG/Y/O) | 75 | 30 | 125 | 5 | -40 ~ +80 | -40 ~ +100 | 260 |

*Duty 1/8 @ 1KHz

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

Forward Voltage V_F @ $I_F=20mA$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| b | 1.6 | 1.9 | V |
| c | 1.9 | 2.2 | |
| d | 2.2 | 2.5 | |
| e | 2.5 | 2.8 | |
| f | 2.8 | 3.1 | |
| 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 | |
| R | 630 | 800 | |

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

| Bin | Min. | Max. | Unit |
|-----|-------|-------|------|
| G | 465 | 467.5 | nm |
| H | 467.5 | 470 | |
| I | 470 | 472.5 | |
| 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 |
|-----|------|------|------|
| t | 620 | 625 | nm |
| u | 625 | 630 | |

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

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| v | 630 | 635 | nm |
| w | 635 | 650 | |

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

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

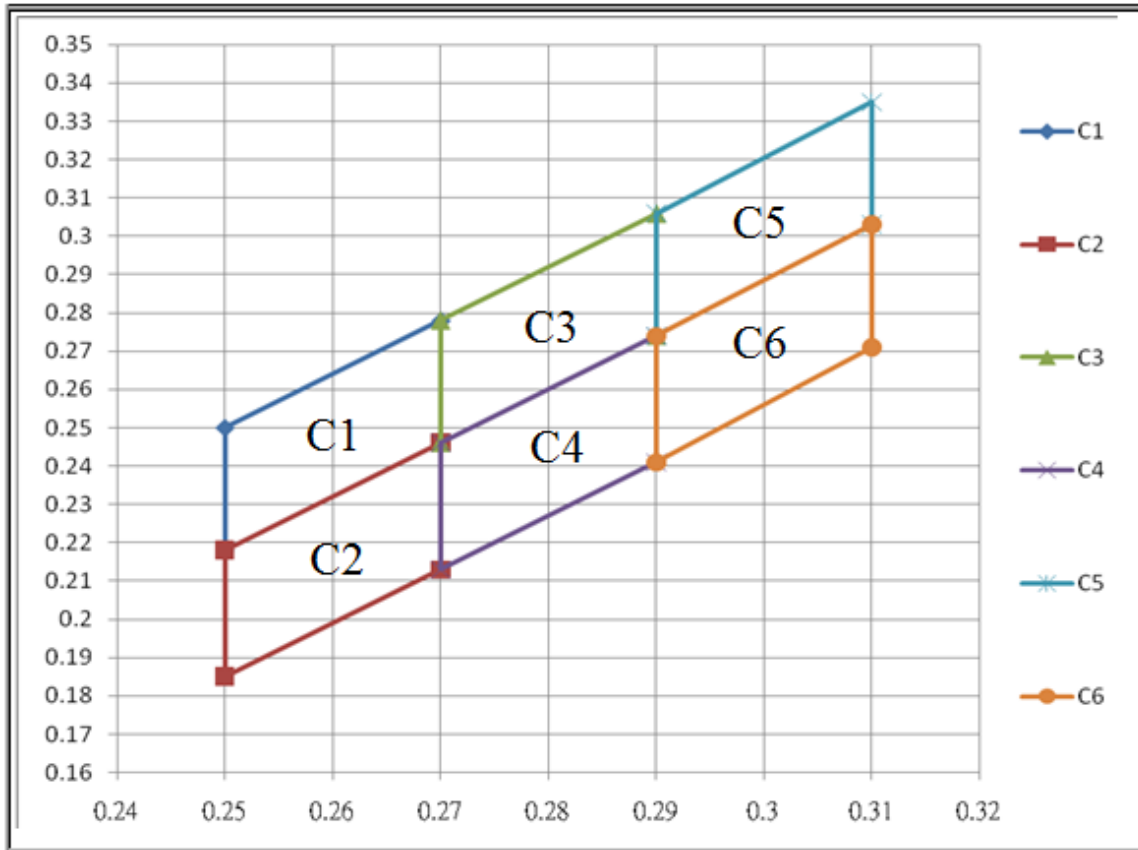
Dominant Wavelength λ_D for Yellow @ $I_F=20mA$

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

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

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

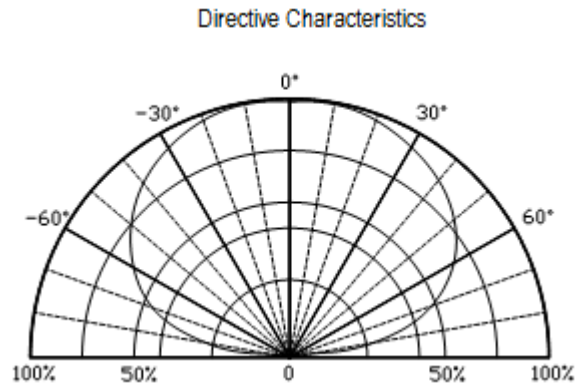
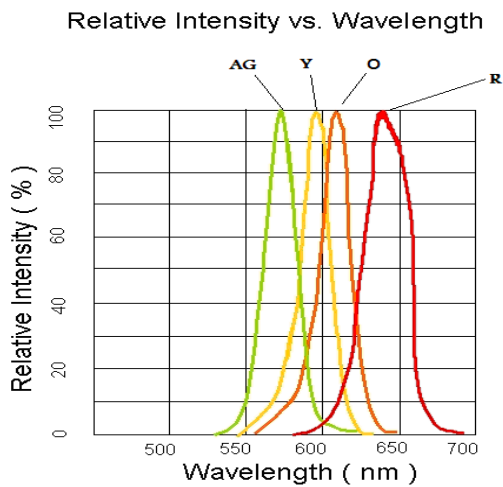
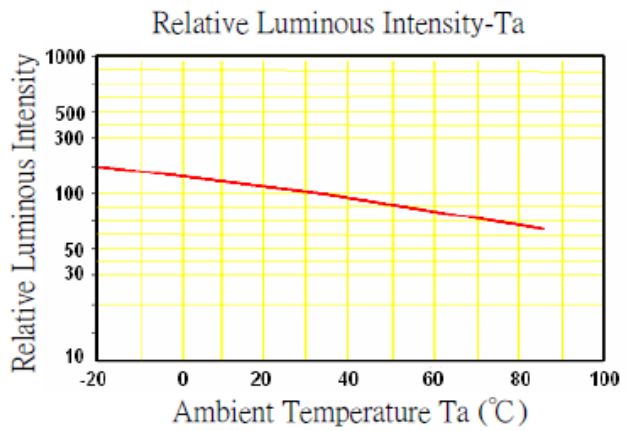
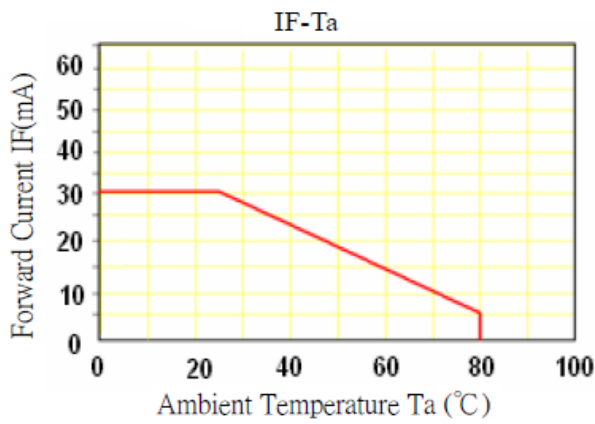
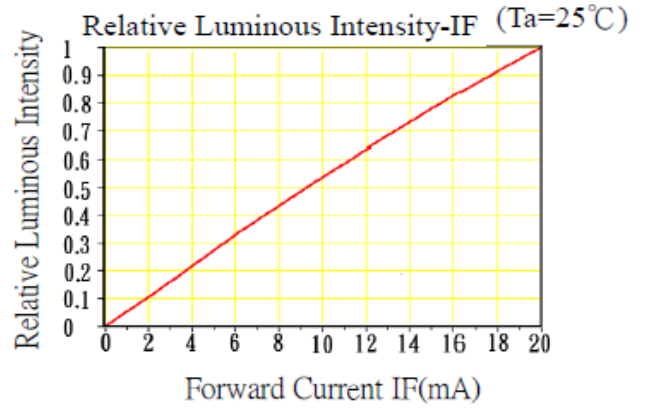
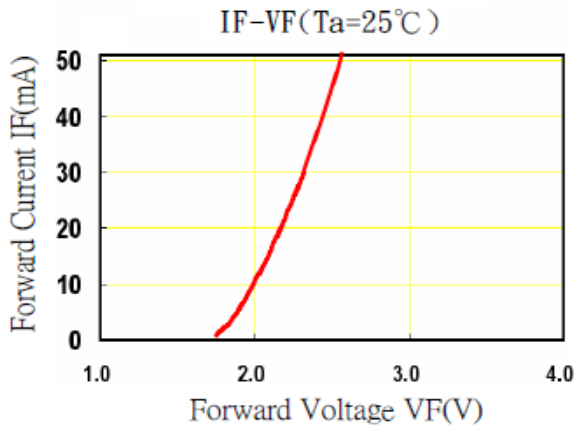
CIE Chromaticity Diagram



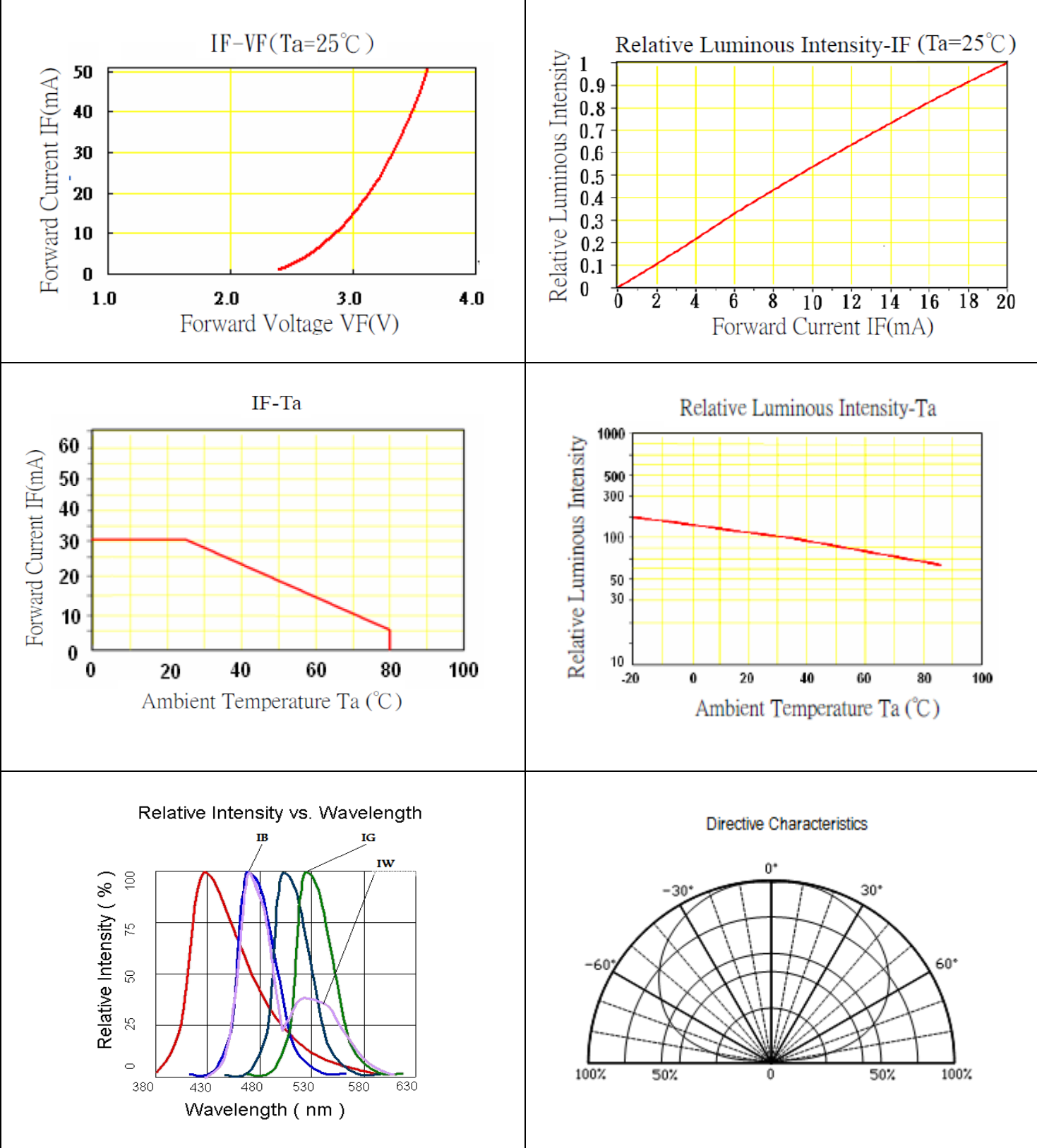
| Chromaticity coordinates Ranks combination (IF=20mA) | | | | | |
|--|---|--------------------------|-------|-------|-------|
| Rank | | Chromaticity coordinates | | | |
| C1 | X | 0.250 | 0.250 | 0.270 | 0.270 |
| | Y | 0.218 | 0.250 | 0.278 | 0.246 |
| C2 | X | 0.250 | 0.250 | 0.270 | 0.270 |
| | Y | 0.185 | 0.218 | 0.246 | 0.213 |
| C3 | X | 0.270 | 0.270 | 0.290 | 0.290 |
| | Y | 0.246 | 0.278 | 0.306 | 0.274 |
| C4 | X | 0.270 | 0.270 | 0.290 | 0.290 |
| | Y | 0.213 | 0.246 | 0.274 | 0.241 |
| C5 | X | 0.290 | 0.290 | 0.310 | 0.310 |
| | Y | 0.274 | 0.306 | 0.335 | 0.303 |
| C6 | X | 0.290 | 0.290 | 0.310 | 0.310 |
| | Y | 0.241 | 0.274 | 0.303 | 0.271 |

Characteristic Curves

AllnGaP (R/S/AG/Y/O)

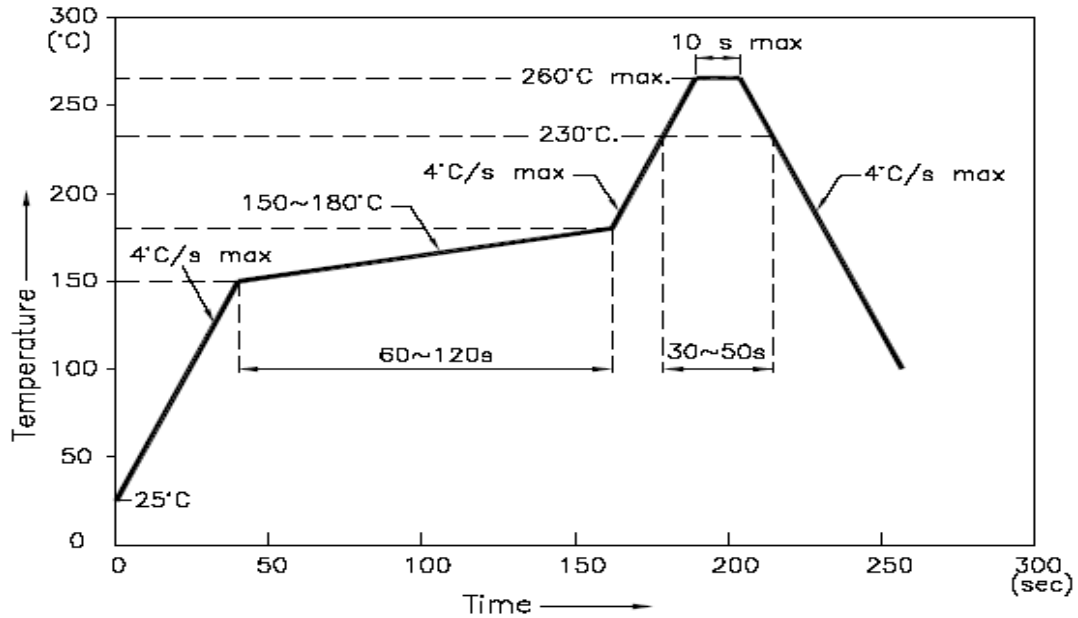


InGaN (IB/IG/IW)

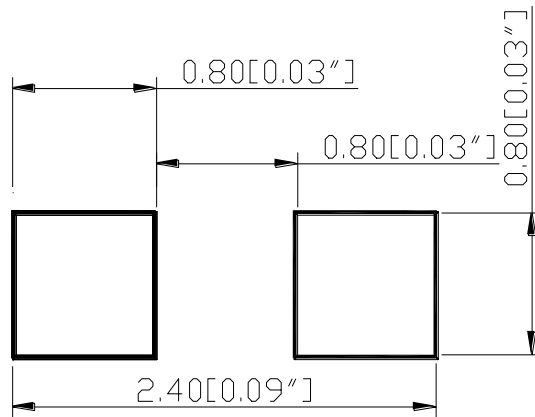


Solder Profile & Footprint

- 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

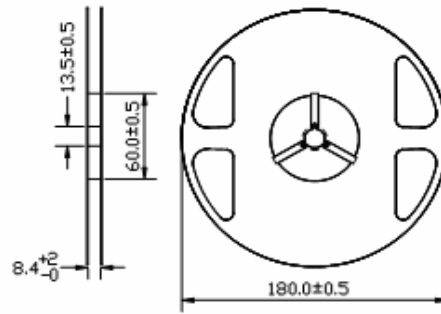


Units: mm

Tolerance: ± 0.1mm

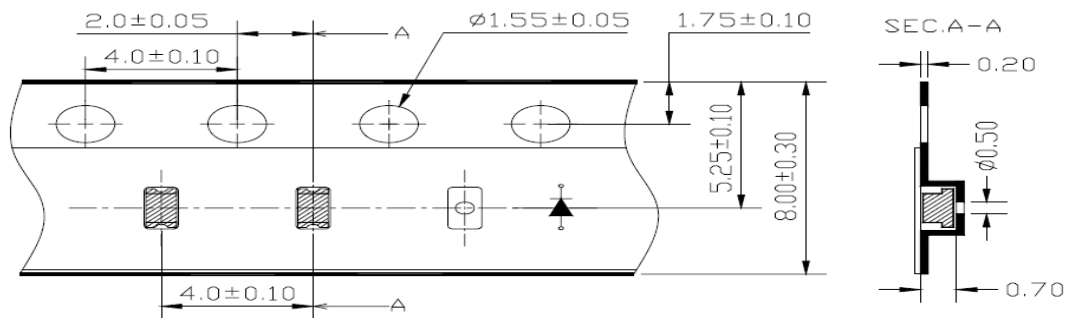
Packing

Reel Dimension:



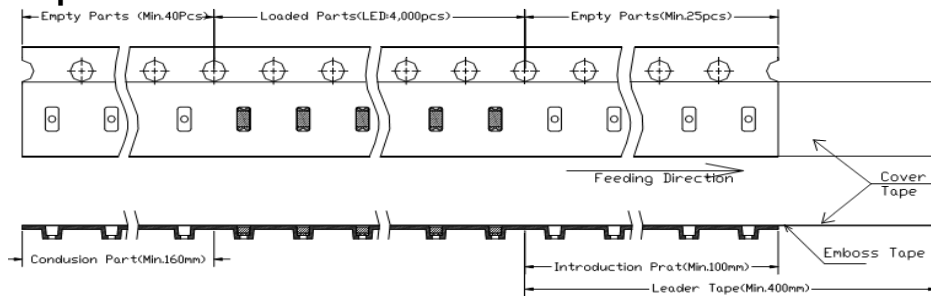
Unit: mm

Tape Dimension:

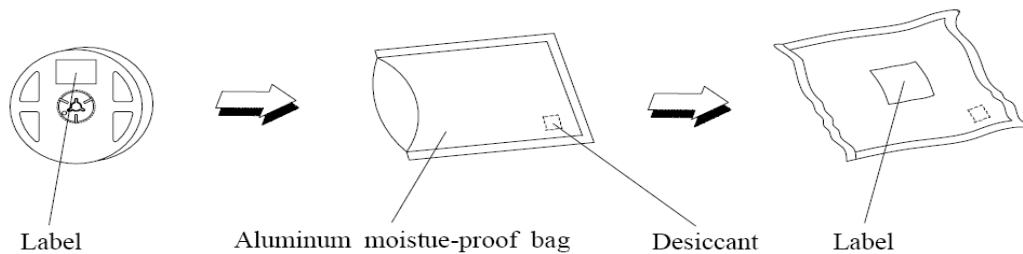


Unit: mm

Arrangement of Tape:



Packaging Specifications:



Labeling



Part No: _____

Customer P/N: _____

Item: _____

Q'ty: _____

Vf: _____

Iv: _____

WI: _____

Date: _____

Made in China

Ordering Information

| Part # | Orderable Part # | Spec Range | Quantity per reel |
|------------|------------------|---|-------------------|
| QBLP601-IB | QBLP601-IB | Iv=90mcd Typ. @ I _F =20mA / Color=465nm-475nm | 4,000 units |
| QBLP601-IG | QBLP601-IG | Iv=450mcd Typ. @ I _F =20mA / Color=520nm-530nm | 4,000 units |
| QBLP601-IW | QBLP601-IW | Iv=330mcd Typ. @ I _F =20mA / CCT: (X=0.28, Y=0.26) typ. | 4,000 units |
| QBLP601-R | QBLP601-R | Iv=100mcd Typ. @ I _F =20mA / Color=620nm-630nm | 4,000 units |
| QBLP601-S | QBLP601-S | Iv=45mcd Typ. @ I _F =20mA / Color=630nm-635nm | 4,000 units |
| QBLP601-AG | QBLP601-AG | Iv=45mcd Typ. @ I _F =20mA / Color=565nm-576nm | 4,000 units |
| QBLP601-Y | QBLP601-Y | Iv=150mcd Typ. @ I _F =20mA / Color=585nm-595nm | 4,000 units |
| QBLP601-O | QBLP601-O | Iv=165mcd Typ. @ I _F =20mA / Color=600nm-610nm | 4,000 units |

Revision History

| Description: | Revision # | Revision Date |
|---|------------|---------------|
| New Release of QBLP601 series | V1.0 | 9/20/2010 |
| Update opto specifications | V2.0 | 02/03/2011 |
| Added QBLP601-O | V2.1 | 06/16/2011 |
| Added Bin Code/ update Electrical/ Optical Characteristic | V2.2 | 10/04/2011 |
| Update Format | V2.3 | 03/23/2012 |
| Update orange brightness | V2.4 | 06/07/2012 |
| Update white (x,y) coordinates | V2.5 | 05/30/2013 |
| Update outline dimensions and spec | V3.0 | 11/04/2013 |
| Information update | V3.1 | 02/13/2014 |
| Add deep red (QBLP601-S) | V3.2 | 11/13/2014 |
| Update Viewing Angle | V3.3 | 09/27/2021 |

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