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QT-Brightek PLCC Series

PLCC2 LED

Part No.: QBLP671 Series

| | | |
|-------------------------|-------------------------|--------------|
| Product: QBLP671_series | Date: November 21, 2017 | Page 1 of 12 |
| | Version# 1.4 | |

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Introduction**Feature:**

- Package in tape and reel
- Ultra bright reflector type PLCC2 LED
- InGaN technology for IB/IG
- AlInGaP technology for R/O /S
- 120 degree viewing angle
- ESD protection for InGaN IB and IG

Description:

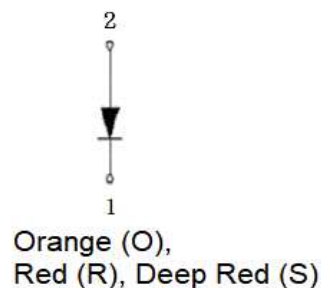
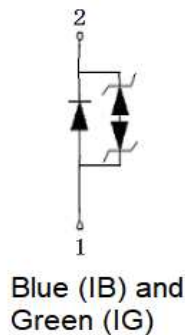
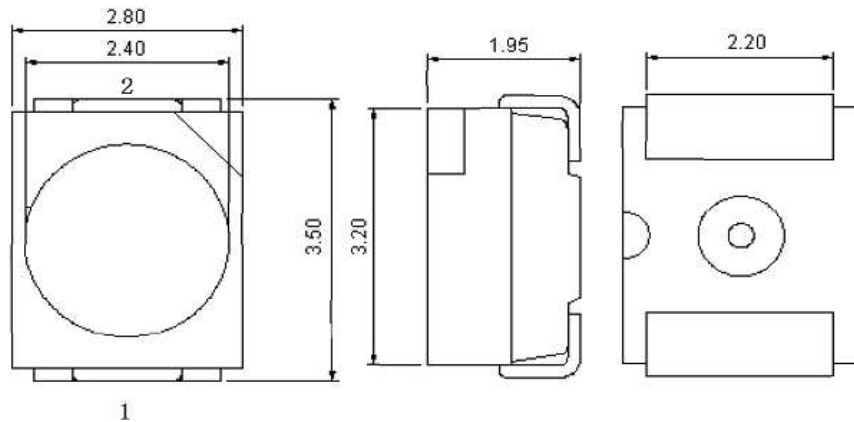
These ultra bright reflector type PLCC2 LEDs have a height profile of 1.95mm. Combination of high brightness output and robust package, these LEDs are ideal for architecture lighting, status indication, and industrial equipment lighting applications.

Application:

- Status indication
- Industrial equipment backlighting
- Architecture lighting

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant

**Dimension:**

Units: mm / tolerance = +/-0.2mm

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. |
| QBLP671E-IB | Blue | 20 | 3.1 | 3.6 | 460 | 465 | 470 | 220 | 300 |
| QBLP671E-IG | True Green | 20 | 3.1 | 3.6 | 515 | 525 | 535 | 830 | 1500 |
| QBLP671-R | Red | 20 | 2.0 | 2.7 | 620 | 625 | 630 | 830 | 900 |
| QBLP671-O | Orange | 20 | 2.0 | 2.7 | 600 | 605 | 615 | 490 | 900 |
| QBLP671-S | Deep Red | 20 | 2.0 | 2.7 | 630 | 640 | 650 | 130 | 200 |

Absolute Maximum Rating

| Material | P _d (mW) | I _F (mA) | I _{FP} (mA)* | V _R (V) | T _{OP} (°C) | T _{ST} (°C) | T _{SOI} (°C)** |
|-----------------|---------------------|---------------------|-----------------------|--------------------|----------------------|----------------------|-------------------------|
| InGaN (IB/IG) | 120 | 30 | 100 | 5 | -40 ~ +105 | -40 ~ +105 | 260 |
| AllnGaP (R/O/S) | 75 | 30 | 125 | 5 | -40 ~ +105 | -40 ~ +105 | 260 |

*Duty 1/8 @ 1KHz

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

Note: Drive current at 5mA is recommended for long term light output maintenance and minimal degradation.

Forward Voltage V_F for InGaN @ I_F=20mA

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| V2B | 2.4 | 2.7 | V |
| V2C | 2.7 | 3.0 | |
| V3A | 3.0 | 3.3 | |
| V3B | 3.3 | 3.6 | |

Forward Voltage V_F for AllnGaP @ I_F=20mA

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| V1C | 1.8 | 2.1 | V |
| V2A | 2.1 | 2.4 | |
| V2B | 2.4 | 2.7 | |

Luminous Intensity I_V for AlInGaP (R/O/S) @ $I_F=20\text{mA}$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| 20 | 130 | 170 | mcd |
| 21 | 170 | 220 | |
| 22 | 220 | 290 | |
| 23 | 290 | 370 | |
| 24 | 370 | 490 | |
| 25 | 490 | 640 | |
| 26 | 640 | 830 | |
| 27 | 830 | 1080 | |
| 28 | 1080 | 1400 | |
| 29 | 1400 | 1800 | |
| 30 | 1800 | 2300 | |

Luminous Intensity I_V for InGaN (IG/IB) @ $I_F=20\text{mA}$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| 22 | 220 | 290 | mcd |
| 23 | 290 | 380 | |
| 24 | 380 | 490 | |
| 25 | 490 | 640 | |
| 26 | 640 | 830 | |
| 27 | 830 | 1080 | |
| 28 | 1080 | 1400 | |
| 29 | 1400 | 1800 | |
| 30 | 1800 | 2300 | |

Dominant Wavelength λ_D for Blue @ $I_F=20\text{mA}$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| B5 | 460 | 465 | nm |
| B6 | 465 | 470 | |

Dominant Wavelength λ_D for True Green @ $I_F=20\text{mA}$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| TG1 | 515 | 520 | nm |
| TG2 | 520 | 525 | |
| TG3 | 525 | 530 | |
| TG4 | 530 | 535 | |

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

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| A2 | 600 | 605 | nm |
| A3 | 605 | 610 | |
| A4 | 610 | 615 | |

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

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| R1 | 620 | 625 | nm |
| R2 | 625 | 630 | |

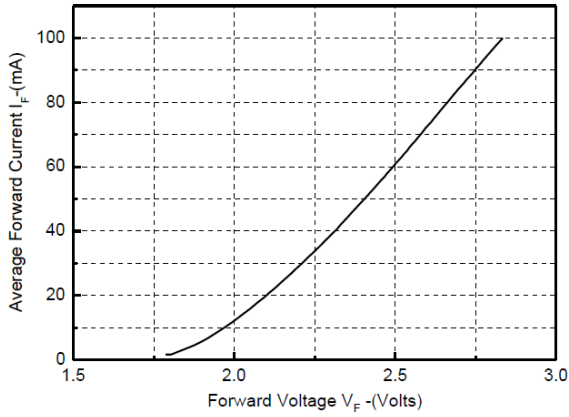
Dominant Wavelength λ_D for Deep Red @ $I_F=20mA$

| Bin | Min. | Max. | Unit |
|-----|------|------|------|
| R3 | 630 | 640 | nm |
| R4 | 640 | 650 | |

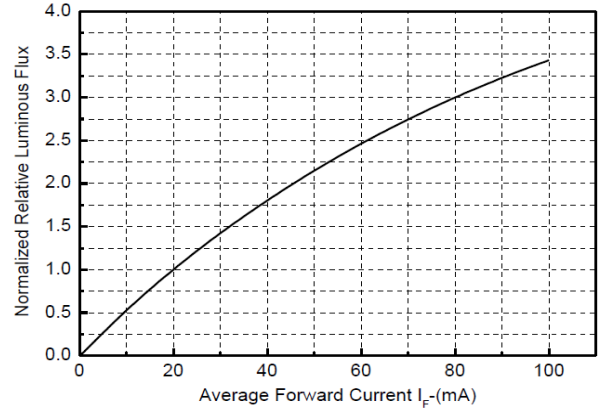
Characteristic Curves

AllnGaP (R/O/S)

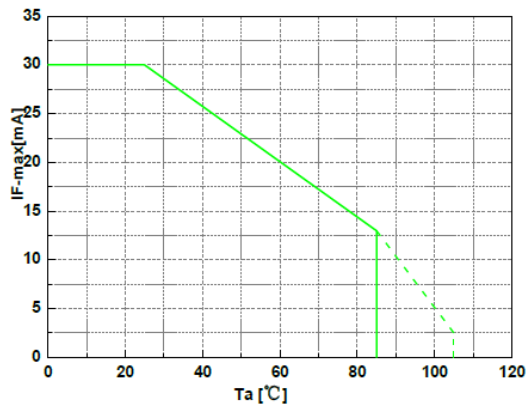
Forward Current VS. Forward Voltage



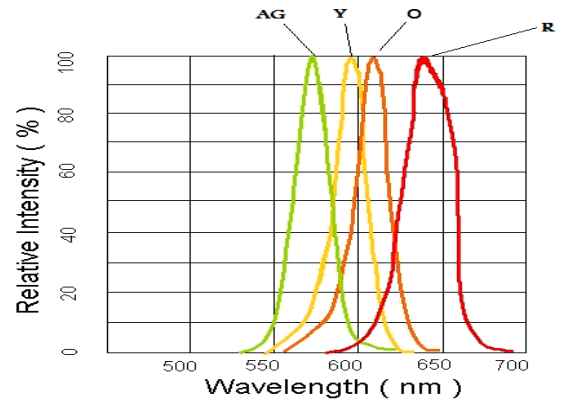
Relative Luminous Flux VS. Forward Current



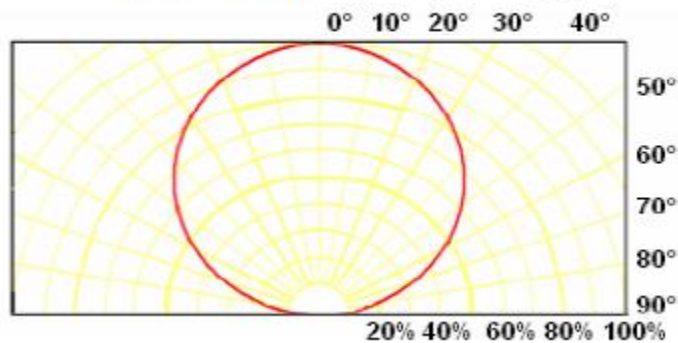
Maximum Driving Forward DC Current VS. Ambient Temperature



Relative Intensity vs. Wavelength

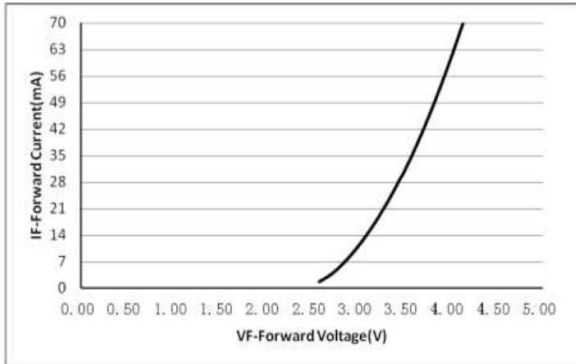


Directive Characteristics (Ta=25°C)

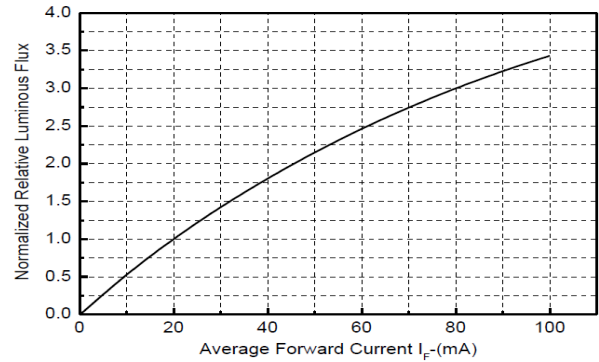


InGaN (IB/IG)

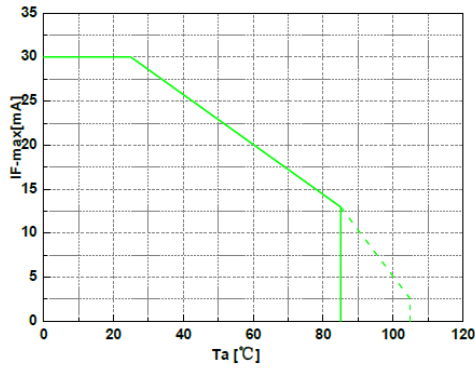
Forward Current VS. Forward Voltage



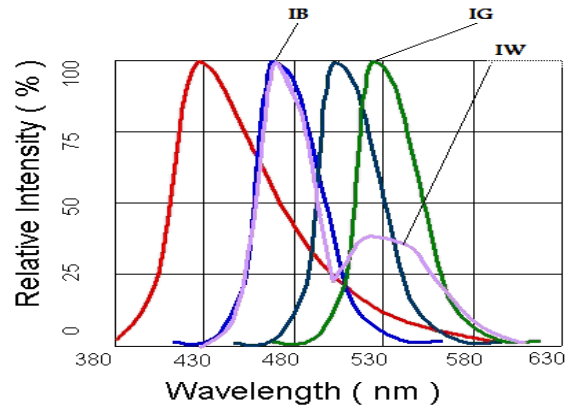
Relative Luminous Flux VS. Forward Current



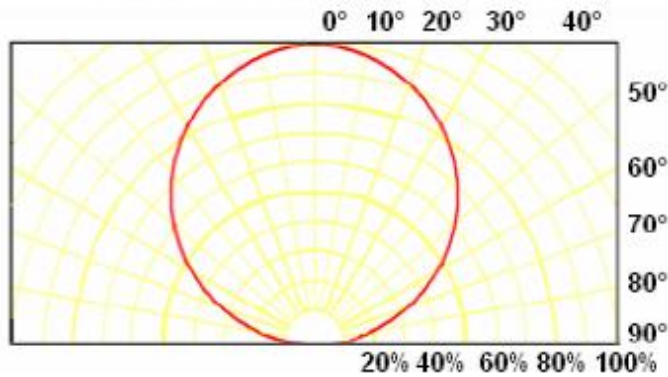
Maximum Driving Forward DC Current VS. Ambient Temperature



Relative Intensity vs. Wavelength

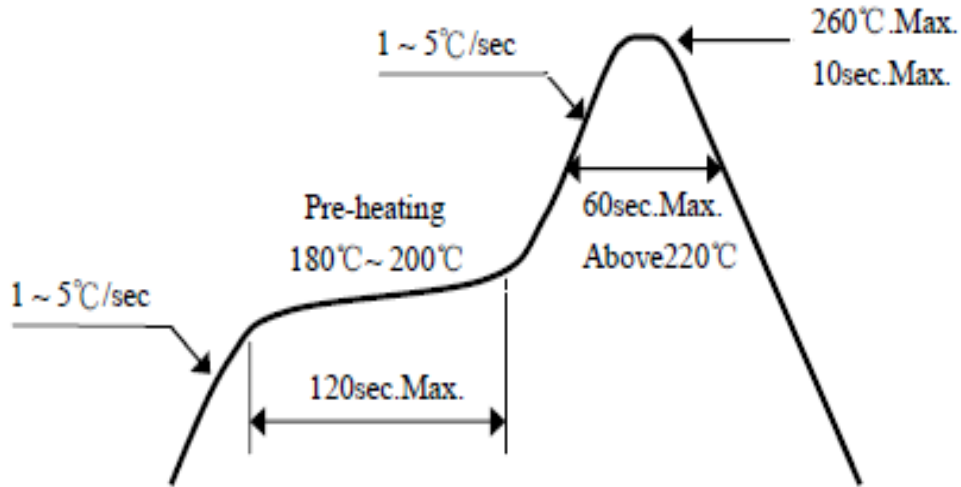


Directive Characteristics ($T_a=25^\circ\text{C}$)

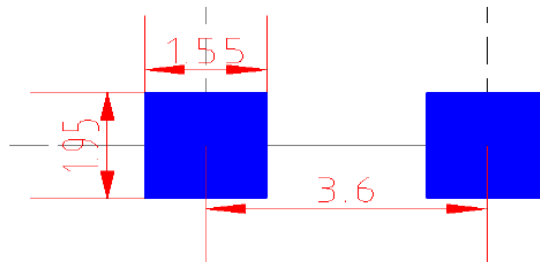


Solder Profile & Footprint

- 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):



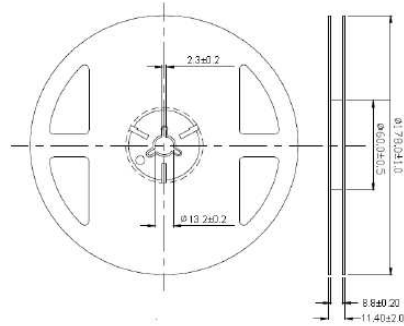
Recommended Soldering Pad Pattern



Units: mm / tolerance = +/-0.2mm

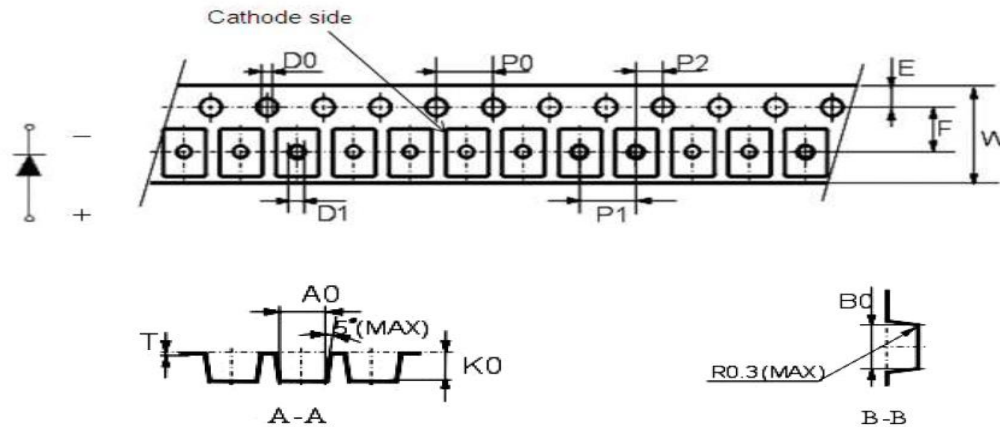
Packing

Reel Dimension:



Unit: mm

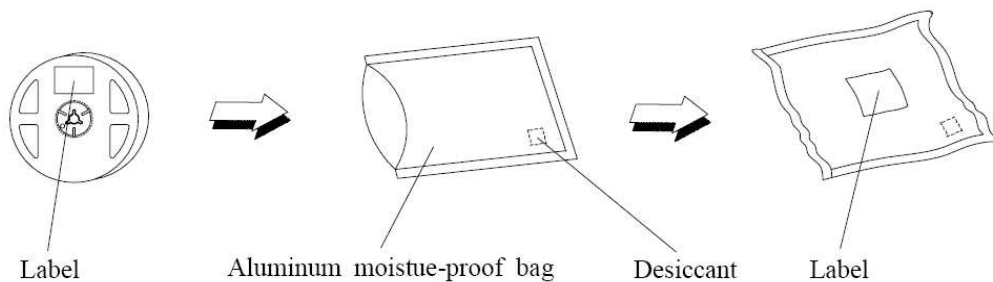
Tape Dimension:



| | | | | | | |
|--------|-----------|------------|-----------|-----------|-----------|-----------|
| symbol | A0 | B0 | K0 | P0 | P1 | P2 |
| Spec | 3.15±0.10 | 3.80±0.10 | 2.10±0.10 | 4.00±0.10 | 4.0±0.10 | 2.00±0.10 |
| symbol | W | T | E | F | D0 | D1 |
| Spec | 8.00±0.1 | 0.235±0.05 | 1.75±0.10 | 3.5±0.10 | 1.50±0.10 | 1.00±0.10 |

Unit: mm

Packaging Specification:



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 |
|-------------|------------------|---|-------------------|
| QBLP671E-IB | QBLP671E-IB | Iv=300mcd typ. @ 20mA/ $\lambda_D=465\text{nm}$ typ. | 2,000 units |
| QBLP671E-IG | QBLP671E-IG | Iv=1500mcd typ. @ 20mA/ $\lambda_D =525\text{nm}$ typ. | 2,000 units |
| QBLP671-R | QBLP671-R | Iv=900mcd typ. @ 20mA/ $\lambda_D=625\text{nm}$ typ. | 2,000 units |
| QBLP671-O | QBLP671-O | Iv=900mcd typ. @ 20mA/ $\lambda_D= 605\text{nm}$ typ. | 2,000 units |
| QBLP671-S | QBLP671-S | Iv=200mcd typ. @ 20mA/ $\lambda_D=640\text{nm}$ typ. | 2,000 units |

Revision History

| Description: | Revision # | Revision Date |
|---|------------|---------------|
| New Release of QBLP671_series | V1.0 | 03/18/2015 |
| Add Note on Page 4 | V1.1 | 07/08/2015 |
| Update spec and add binning | V1.2 | 06/08/2016 |
| Update the Forward Current vs. Ambient Temperature Graph/ Amend Green IV and WLD bin | V1.3 | 02/09/2017 |
| Fix typo on the deep red (S) polarity / Update bin info | V1.4 | 11/21/2017 |
| | | |
| | | |
| | | |
| | | |
| | | |

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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.