

# **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:

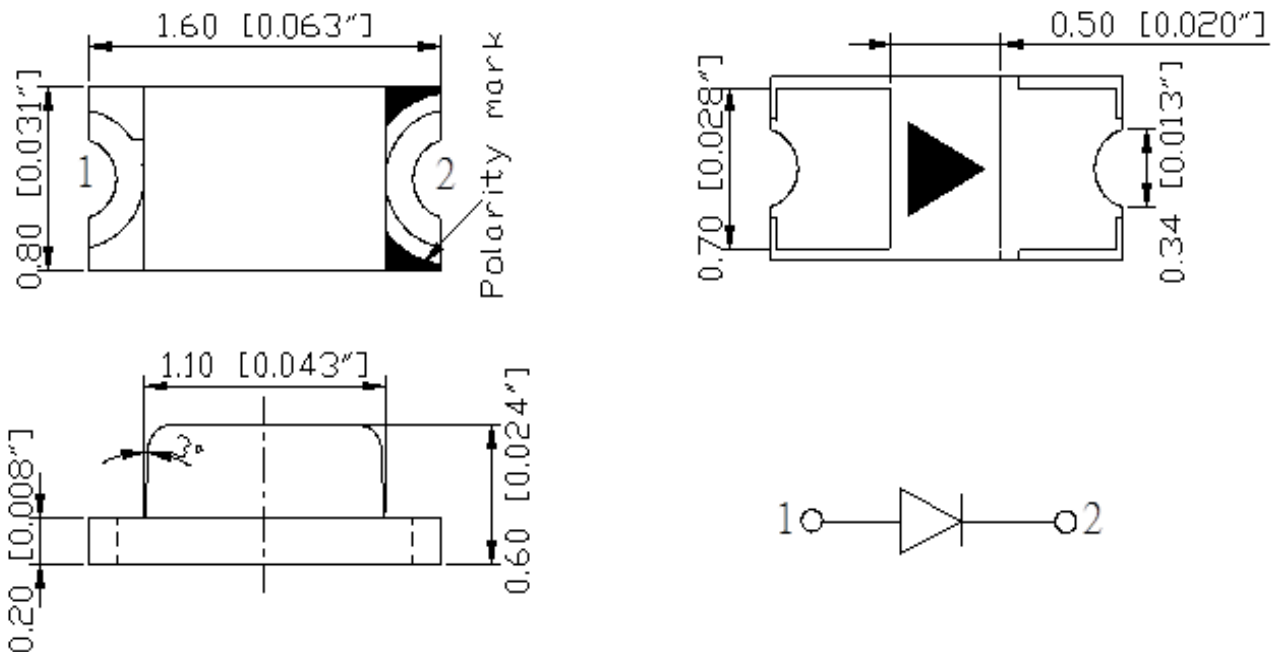
- Status indication
- Back lighting application

### Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



### Dimension:



Units: mm / tolerance = +/-0.1mm

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**Electrical / Optical Characteristic (Ta=25 °C)**

Product	Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		λ <sub>D</sub> (nm)			I <sub>V</sub> (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 <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)**
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

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### 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 $\lambda_D$ 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 $\lambda_D$ 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
t	620	625	nm
u	625	630	

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

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

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

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

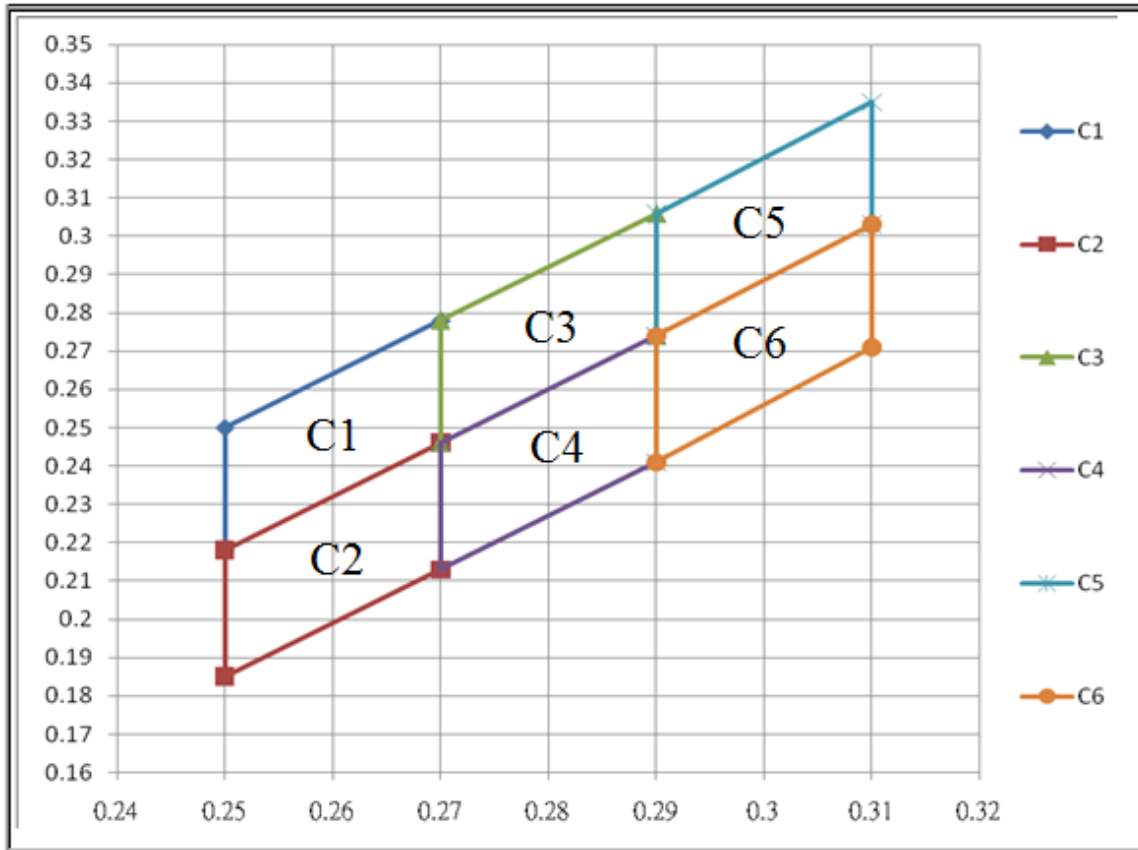
**Dominant Wavelength  $\lambda_D$  for Yellow @  $I_F=20mA$**

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

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

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

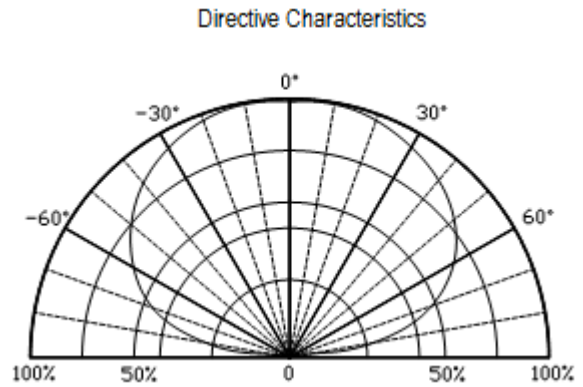
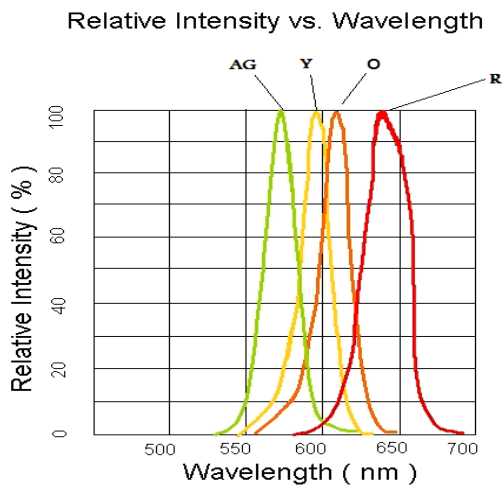
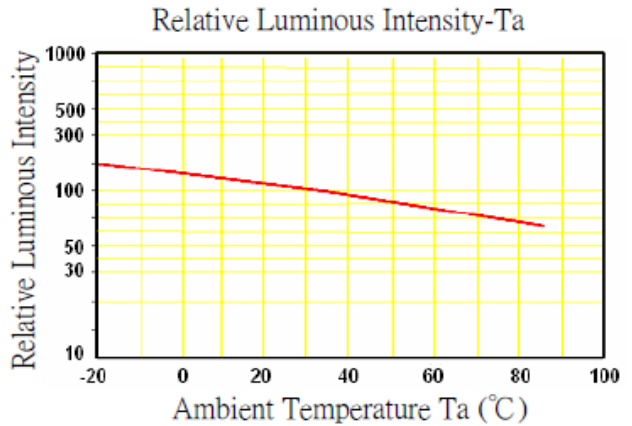
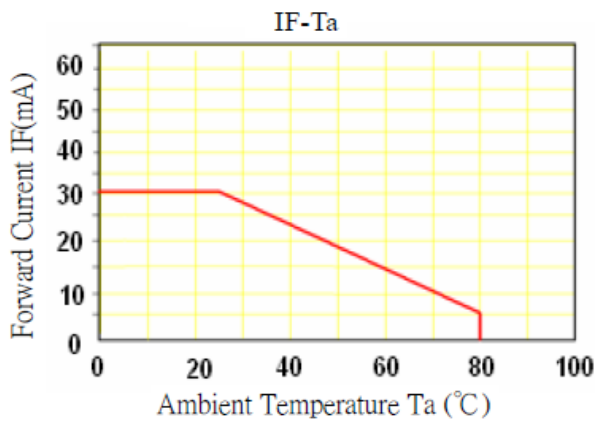
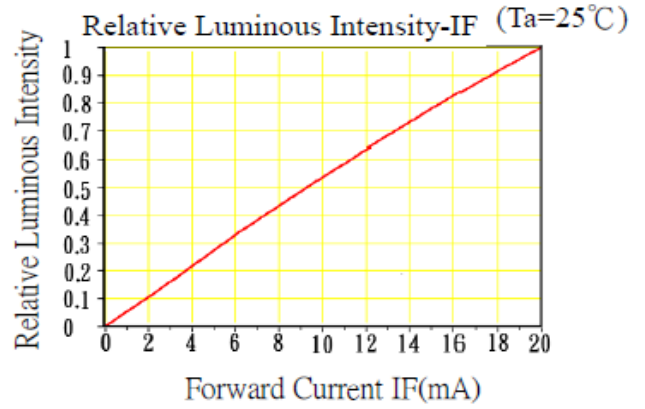
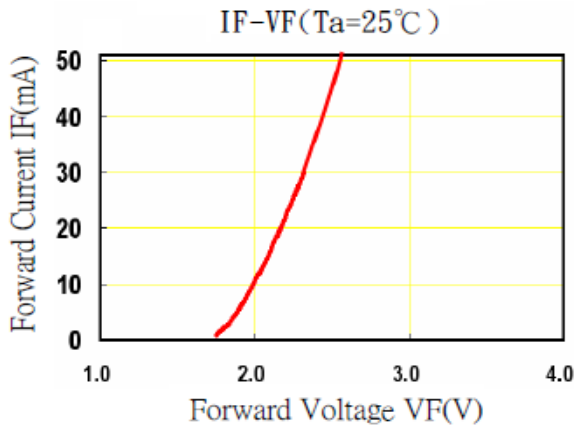
**CIE Chromaticity Diagram**



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

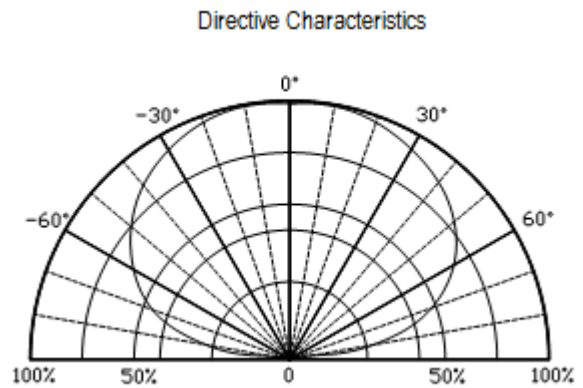
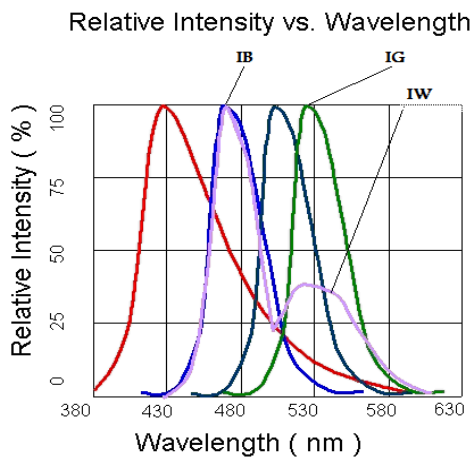
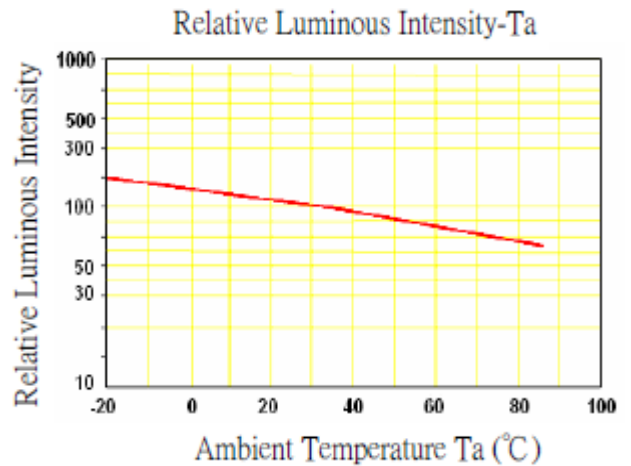
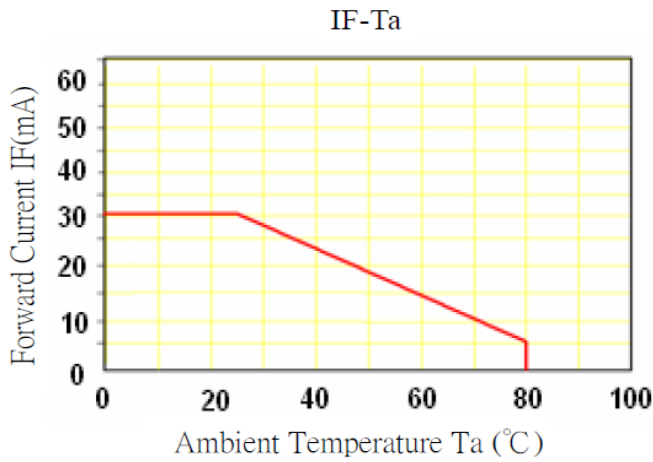
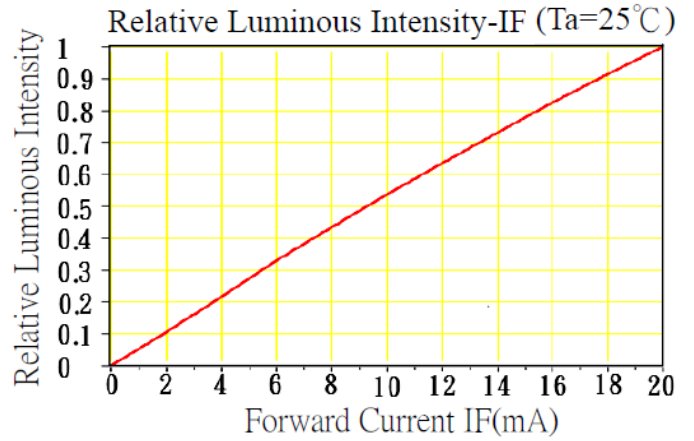
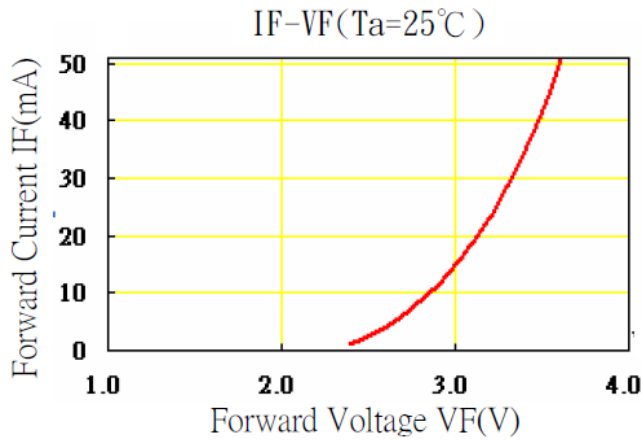
## Characteristic Curves

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



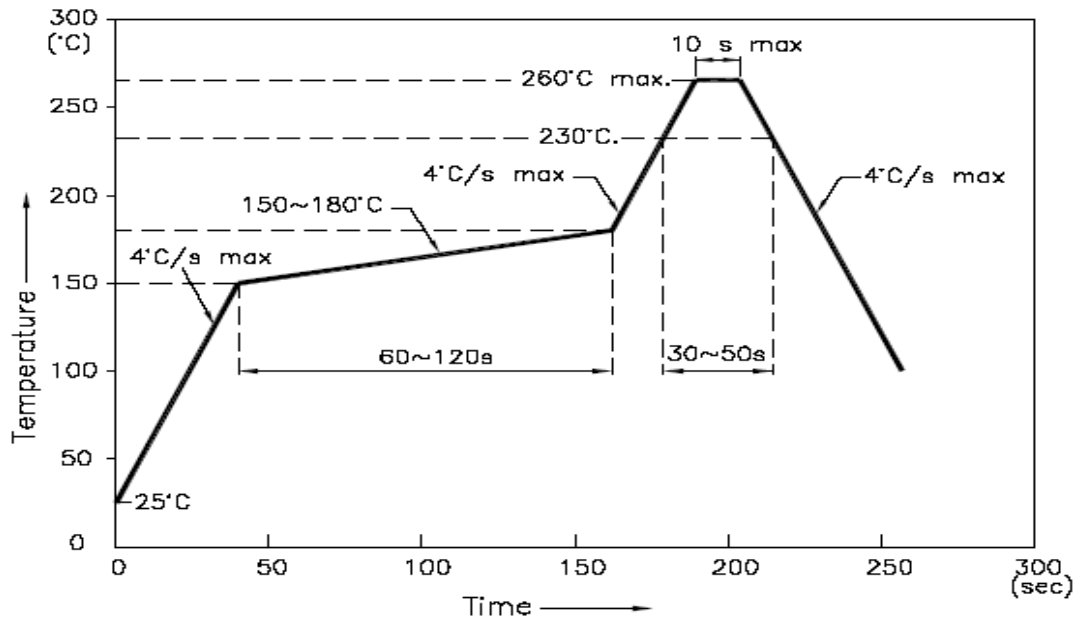


InGaN (IB/IG/IW)

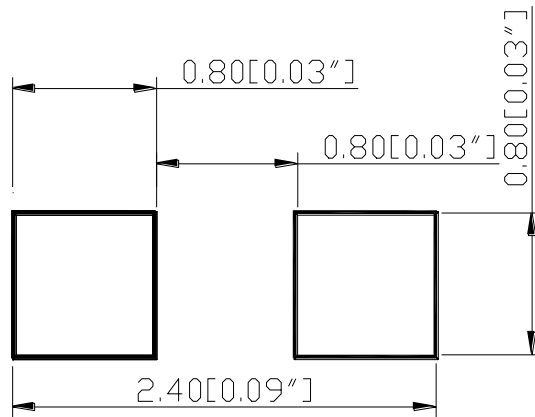


## Solder Profile & Footprint

- 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

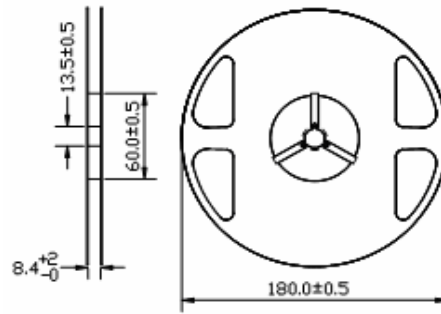


Units: mm

Tolerance: ± 0.1mm

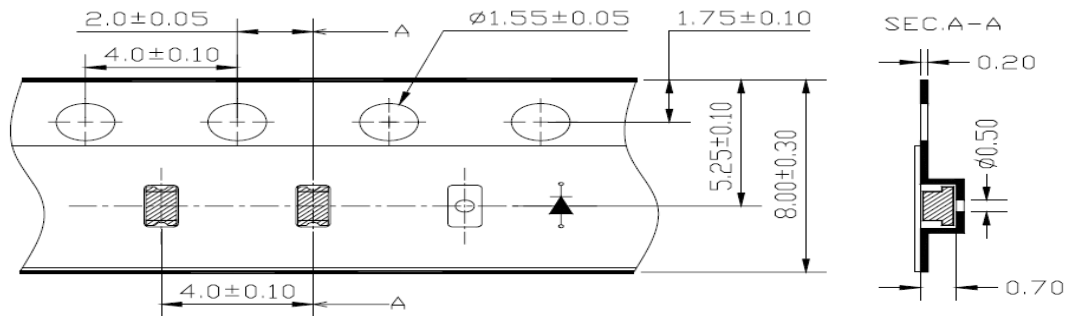
## Packing

### Reel Dimension:



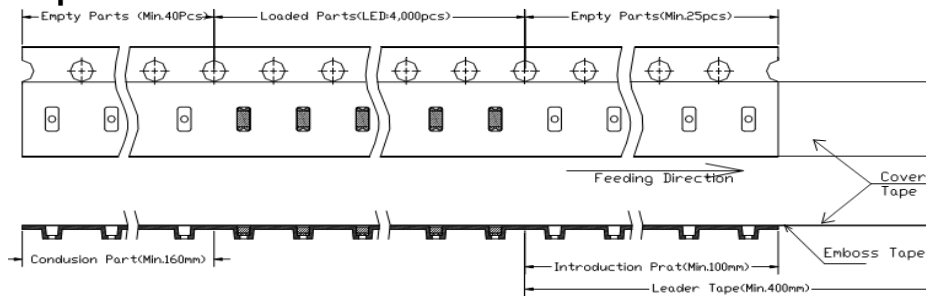
Unit: mm

### Tape Dimension:



Unit: mm

### Arrangement of Tape:



### Packaging Specifications:



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## 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 <sub>F</sub> =20mA / Color=465nm-475nm	4,000 units
QBLP601-IG	QBLP601-IG	Iv=450mcd Typ. @ I <sub>F</sub> =20mA / Color=520nm-530nm	4,000 units
QBLP601-IW	QBLP601-IW	Iv=330mcd Typ. @ I <sub>F</sub> =20mA / CCT: (X=0.28, Y=0.26) typ.	4,000 units
QBLP601-R	QBLP601-R	Iv=100mcd Typ. @ I <sub>F</sub> =20mA / Color=620nm-630nm	4,000 units
QBLP601-S	QBLP601-S	Iv=45mcd Typ. @ I <sub>F</sub> =20mA / Color=630nm-635nm	4,000 units
QBLP601-AG	QBLP601-AG	Iv=45mcd Typ. @ I <sub>F</sub> =20mA / Color=565nm-576nm	4,000 units
QBLP601-Y	QBLP601-Y	Iv=150mcd Typ. @ I <sub>F</sub> =20mA / Color=585nm-595nm	4,000 units
QBLP601-O	QBLP601-O	Iv=165mcd Typ. @ I <sub>F</sub> =20mA / Color=600nm-610nm	4,000 units

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## 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

## Disclaimer

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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.

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