

# **QT-Brightek Chip LED Series**

## **SMD 1206 LED**

**Part No.: QBLP650 series**

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## Introduction

**Feature:**

- Water clear lens
- Package in tape and reel
- Bright 1206 LED package
- InGaN technology for IB/IG/IW
- AllnGaP technology for R/AG/Y/O

**Description:**

This top mount bright 1206 LEDs have a height profile of 1.1mm, which is ideal in any kind of back lighting application. Also, it is a light weight model that is good for miniature products.

**Application:**

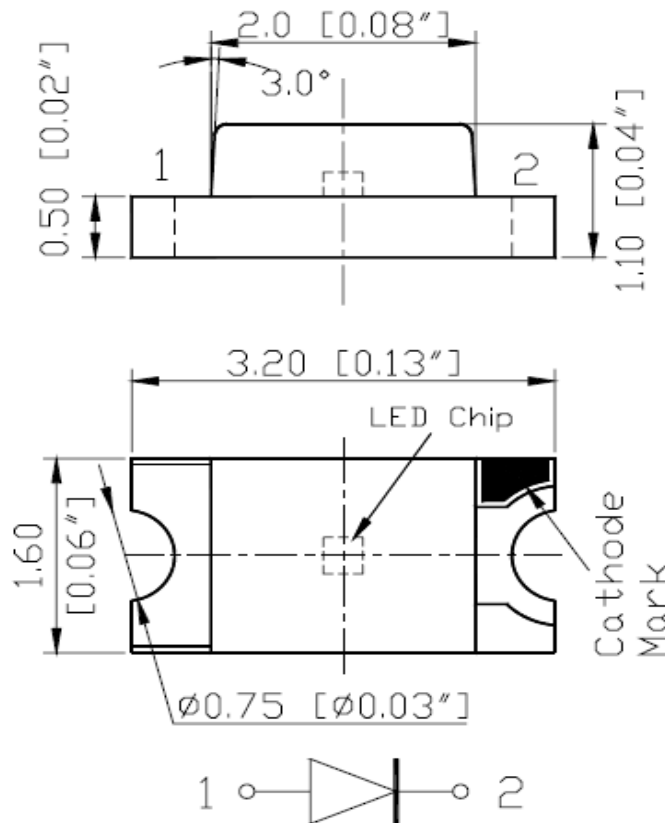
- Automotive dashboard lighting and button lighting
- Telecommunication and storage Back lighting
- Flat panel display back lighting

**Certification & Compliance:**

- TS16949
- ISO9001
- RoHS Compliant



**Dimension:**



Units: mm / tolerance = +/-0.1mm

**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.
QBLP650-IB	Blue	20	3.2	3.7	465	470	475	40	70
QBLP650-IG	Green	20	3.3	3.7	520	525	530	250	420
QBLP650-IW	White	20	3.3	3.7	X=0.25 Y=0.24	X=0.29 Y=0.30	X=0.33 Y=0.34	200	380
QBLP650-R	Red	20	2.0	2.5	615	620	630	80	170
QBLP650-AG	Yellow Green	20	2.0	2.5	565	570	576	25	40
QBLP650-Y	Yellow	20	2.0	2.5	585	590	595	80	150
QBLP650-O	Orange	20	2.0	2.5	600	605	610	125	210

**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	111	30	125	5	-40 ~ +80	-40 ~ +85	260
AllnGaP	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<sub>F</sub> for AllnGaP @ 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	

**Dominant Wavelength λ<sub>D</sub> for Blue @ I<sub>F</sub>=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<sub>D</sub> for Green @ I<sub>F</sub>=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	

**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	

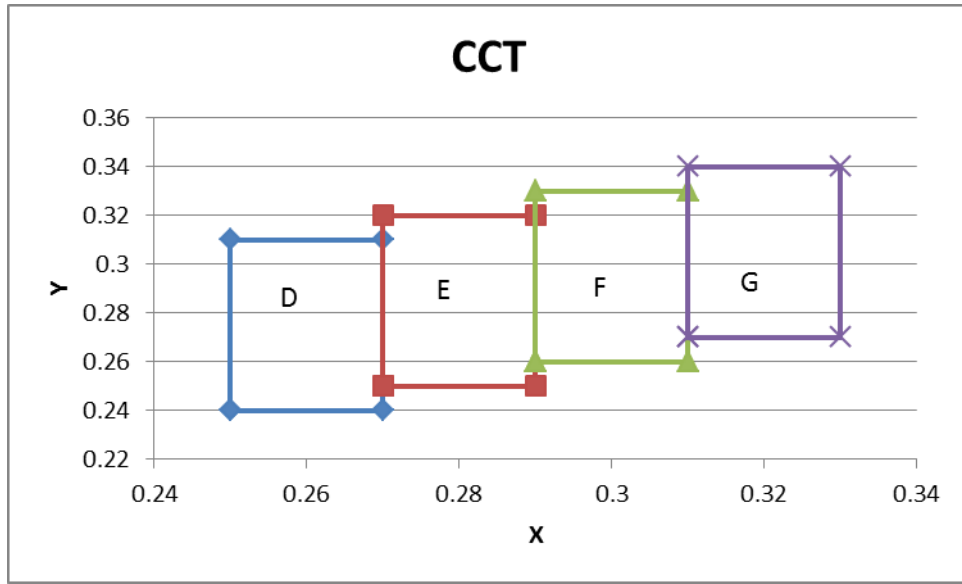
**Dominant Wavelength  $\lambda_D$  for Orange @  $I_F=20mA$**

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

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

Bin	Min.	Max.	Unit
C	20	25	mcd
D	25	32	
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	

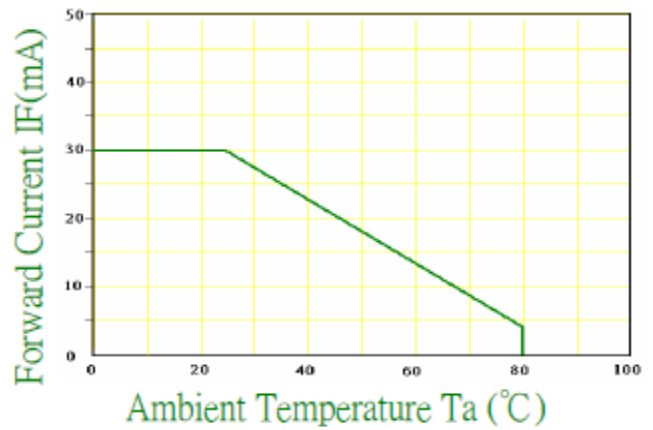
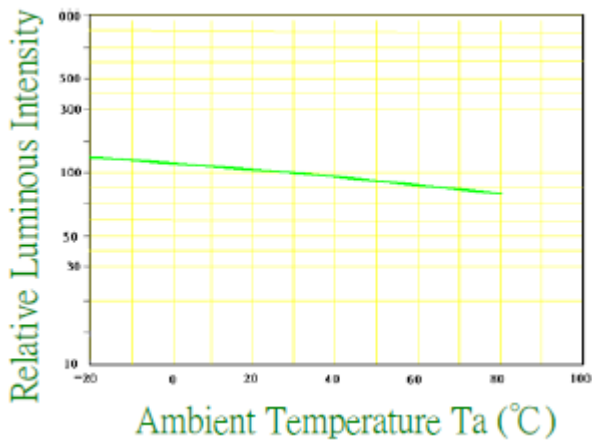
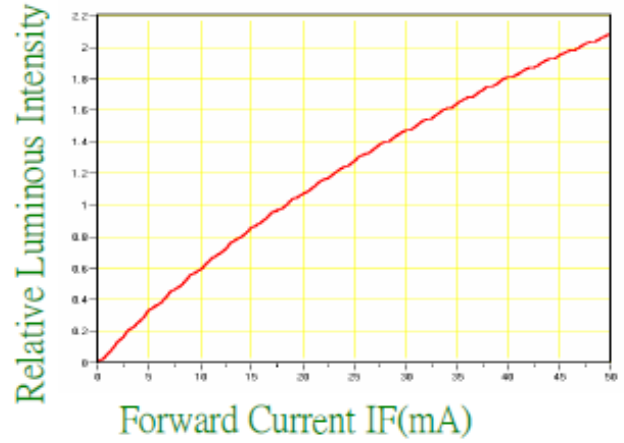
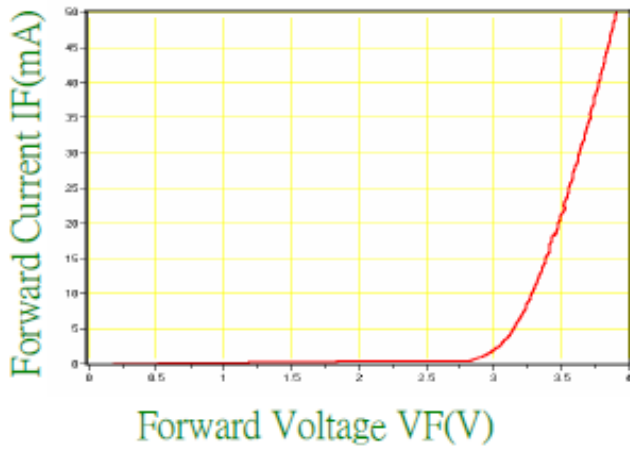
### CIE Chromaticity Table



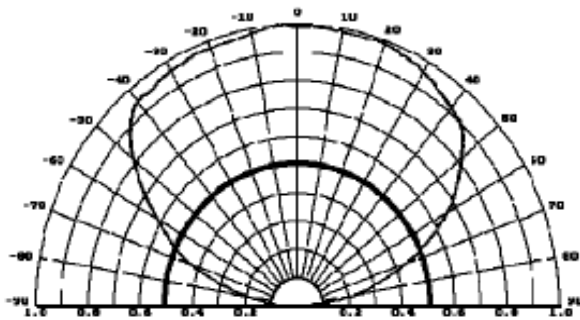
D		E		F		G	
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27
0.25	0.31	0.27	0.32	0.29	0.33	0.31	0.34
0.27	0.31	0.29	0.32	0.31	0.33	0.33	0.34
0.27	0.24	0.29	0.25	0.31	0.26	0.33	0.27
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27

## Characteristic Curves

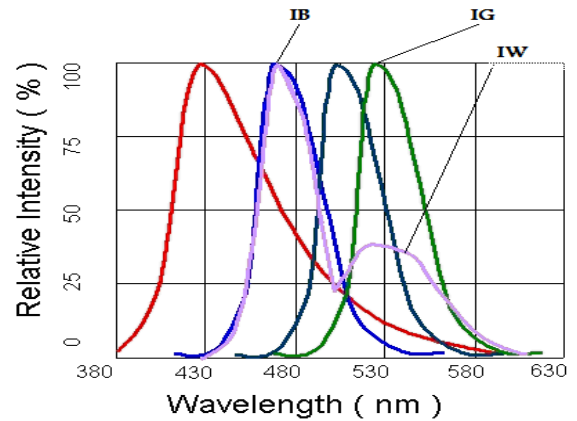
InGaN Technology (IB/IG/IW)



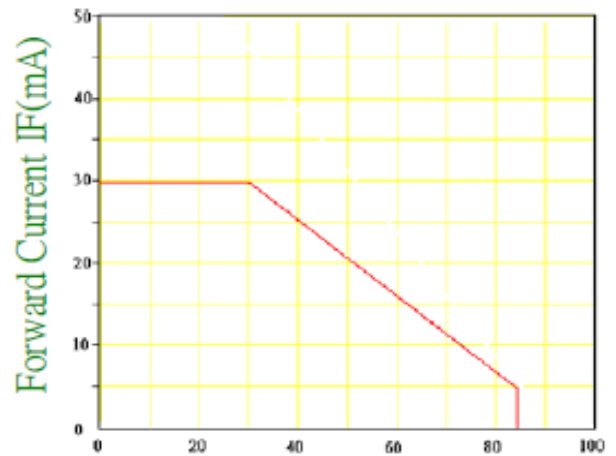
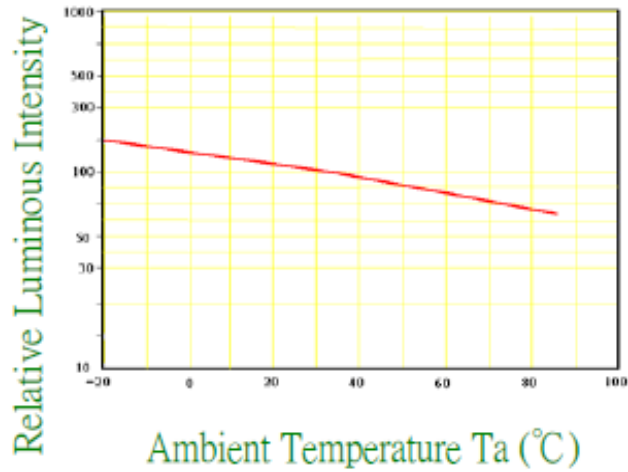
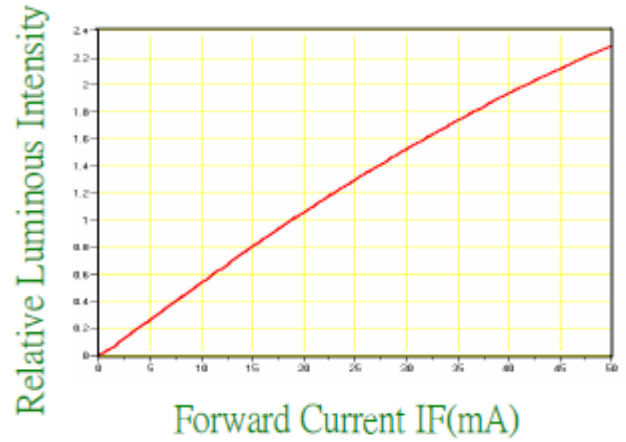
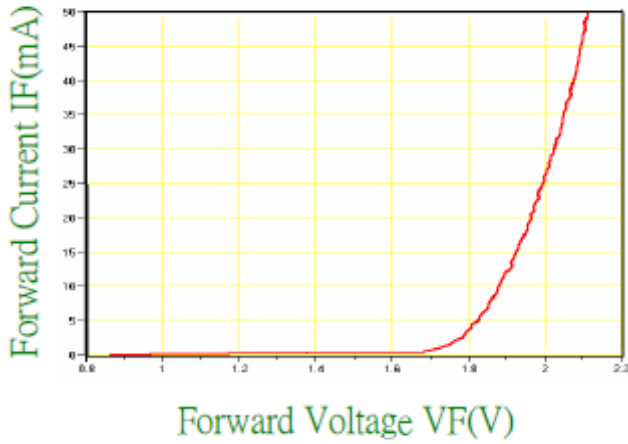
### Directive Characteristics



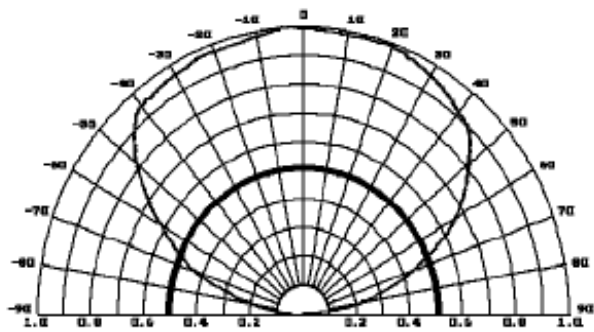
### Relative Intensity vs. Wavelength



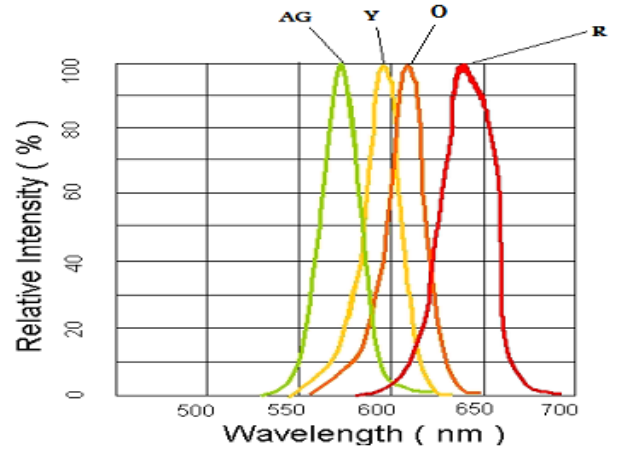
**AllnGaP Technology (R/AG/Y/O)**



**Directive Characteristics**



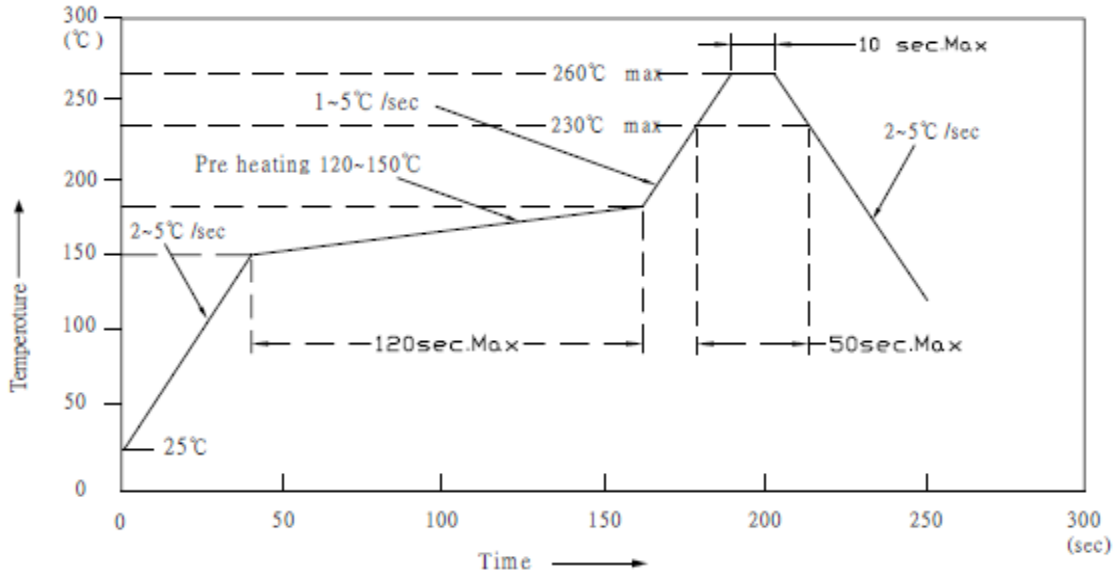
**Relative Intensity vs. Wavelength**



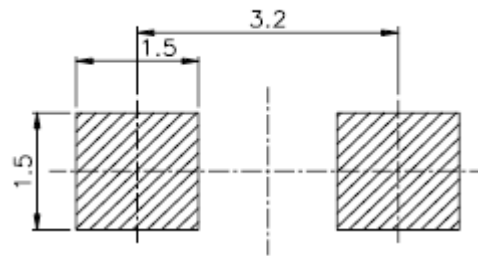


**Solder Profile & Footprint**

**IR Reflow Soldering Profile  
Lead Free Solder**



For reflow soldering (propose)



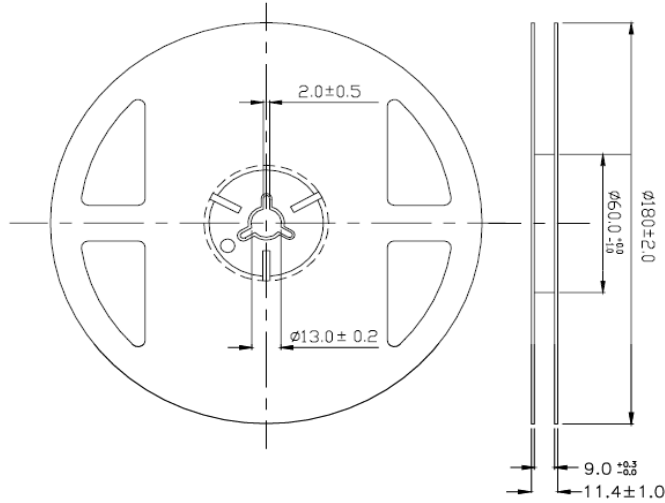
( Proposed Solder footprint )

Units: mm

tolerance: +/- 0.1mm

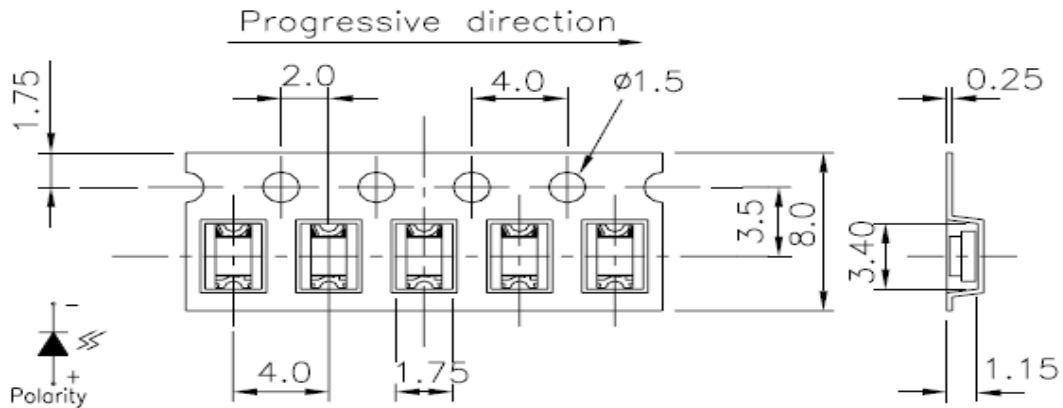
## Packing

### Reel Dimension:



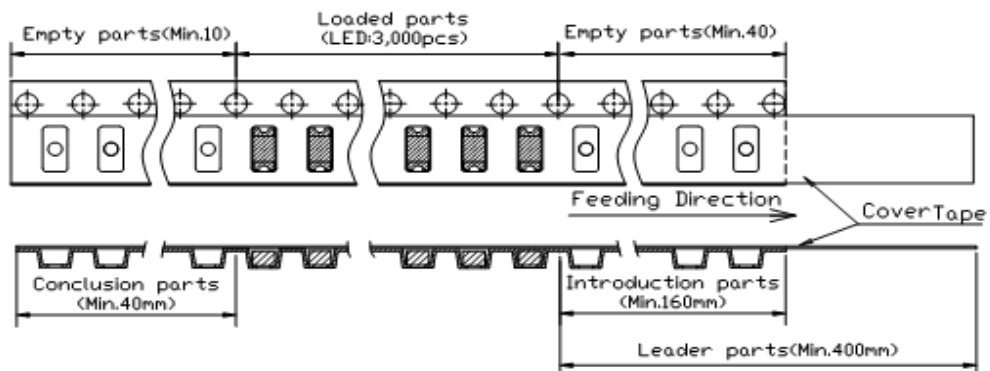
Unit: mm

### Tape Dimension:



Unit: mm

### Arrangement of Tape:

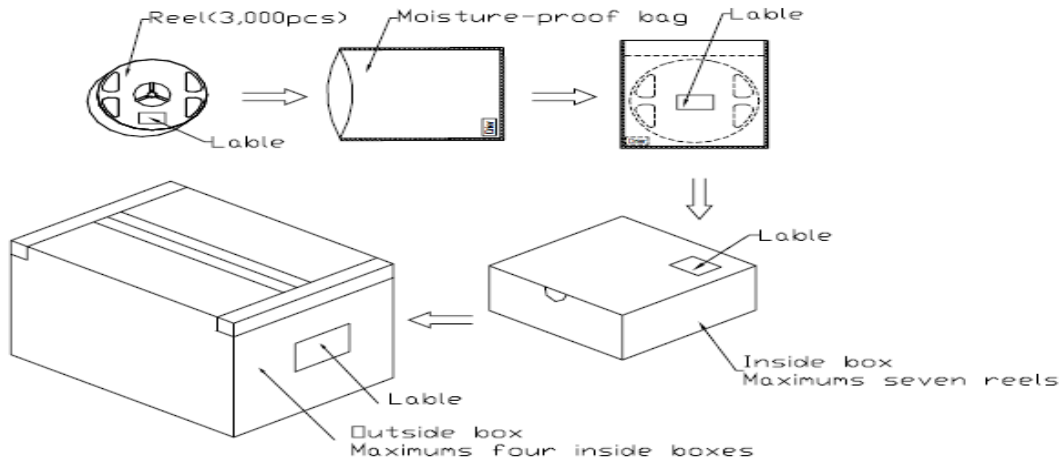


**Labeling**



Part No: \_\_\_\_\_  
 Customer P/N: \_\_\_\_\_  
 Item: \_\_\_\_\_  
 Q'ty: \_\_\_\_\_  
 Vf: \_\_\_\_\_  
 Iv: \_\_\_\_\_  
 VI: \_\_\_\_\_  
 Date: \_\_\_\_\_

**Made in China**



**Ordering Information**

Part #	Orderable Part #	Spec Range	Quantity per reel
QBLP650-IB	QBLP650-IB	Iv = 70 mcd Typ. / Color = 470nm Typ.	3,000 units
QBLP650-IG	QBLP650-IG	Iv = 420 mcd Typ. / Color = 525nm Typ.	3,000 units
QBLP650-IW	QBLP650-IW	Iv = 380 mcd Typ. / (X = 0.28, Y = 0.29) Typ.	3,000 units
QBLP650-R	QBLP650-R	Iv = 170 mcd Typ. / Color = 615 – 630nm	3,000 units
QBLP650-AG	QBLP650-AG	Iv = 40 mcd Typ. / Color = 570nm Typ.	3,000 units
QBLP650-Y	QBLP650-Y	Iv = 150 mcd Typ. / Color = 590nm Typ.	3,000 units
QBLP650-O	QBLP650-O	Iv = 210 mcd Typ. / Color = 605nm Typ.	3,000 units

## Revision History

Description:	Revision #	Revision Date
New Release of QBLP650_series	V1.0	09/20/2010
Update Information	V1.1	03/20/2011
Update brightness and CCT range	V2.1	05/06/2011
Update Brightness	V2.2	06/15/2011
Add bin code	V2.3	08/16/2011
Update Spec	V2.4	12/07/2011
Update Spec	V2.5	01/24/2012
Update format	V3.0	06/04/2012

## 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.