

**QT-Brightek Chip LED Series**

**SMD 1208 LED**

**Part No.: QBLP653 Series**

Product: QBLP653_series	Date: April 23, 2014	Page 1 of 14
	Version# 1.5	

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## Introduction

**Feature:**

- Water clear lens
- Package in tap and reel
- Bright 1208 LED package
- InGaN technology for IB/IG/IW
- AllnGaP technology for R/AG/Y/O
- 15° Viewing Angle (R/AG/Y/O/IB/IG)
- 130° Viewing Angle (IW)

**Description:**

This reversed mount light weight bright 1208 LEDs have a height profile of 2.5mm. With narrow viewing angle, LED produces high bright light output.

**Application:**

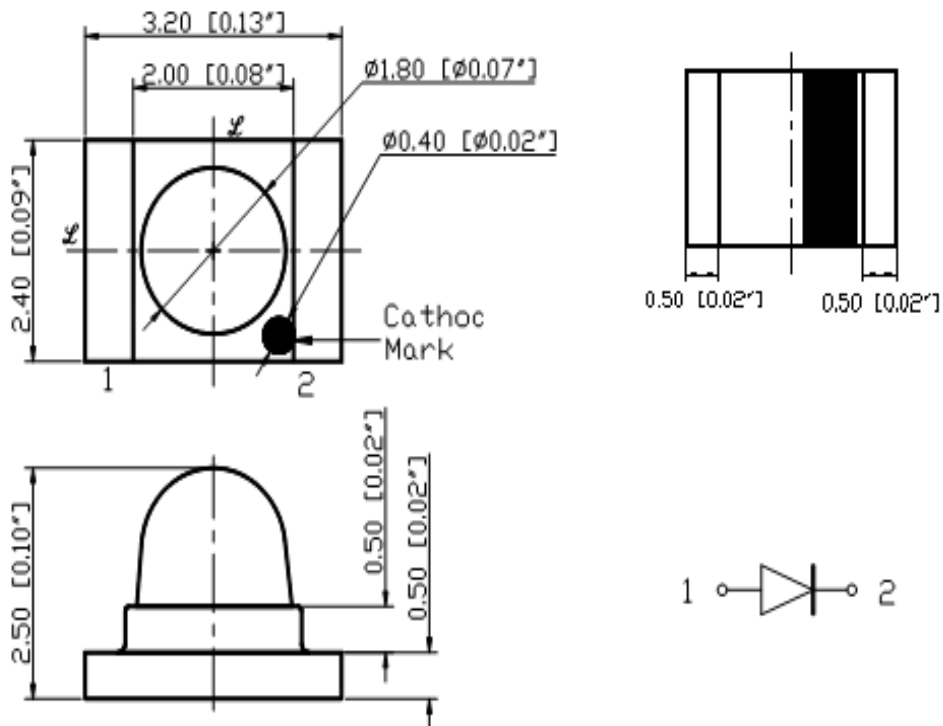
- Status indication
- Back lighting application

**Certification & Compliance:**

- TS16949
- ISO9001
- RoHS Compliant



**Dimension:**



Units: mm / tolerance = +/-0.1mm

**Electrical / Optical Characteristic (T=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.
QBLP653-IW	White	20	3.1	3.7	X = 0.25 Y = 0.24	X = 0.28 Y = 0.29	X = 0.33 Y = 0.34	100	180
QBLP653-IB	Blue	20	3.2	3.7	455	460	465	400	750
QBLP653-IG	Green	20	3.3	3.7	520	525	530	3200	5700
QBLP653-R	Red	20	2.0	2.5	620	625	630	2000	3850
QBLP653-AG	Yellow Green	20	2.0	2.5	565	570	576	320	620
QBLP653-Y	Yellow	20	2.0	2.5	585	590	595	1600	3400
QBLP653-O	Orange	20	2.0	2.5	600	605	610	1600	3350

**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	

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

Bin	Min.	Max.	Unit
J	100	125	mcd
K	125	160	
L	160	200	
M	200	250	
N	250	320	
O	320	400	
P	400	500	
Q	500	630	
R	630	800	
S	800	1000	
T	1000	1250	
U	1250	1600	
V	1600	2000	
W	2000	2500	
X	2500	3200	
Y	3200	4000	
Z	4000	5200	
a	5200	6800	
b	6800	8800	

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

Bin	Min.	Max.	Unit
C	455	457.5	nm
D	457.5	460	
E	460	462.5	
F	462.5	465	

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

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

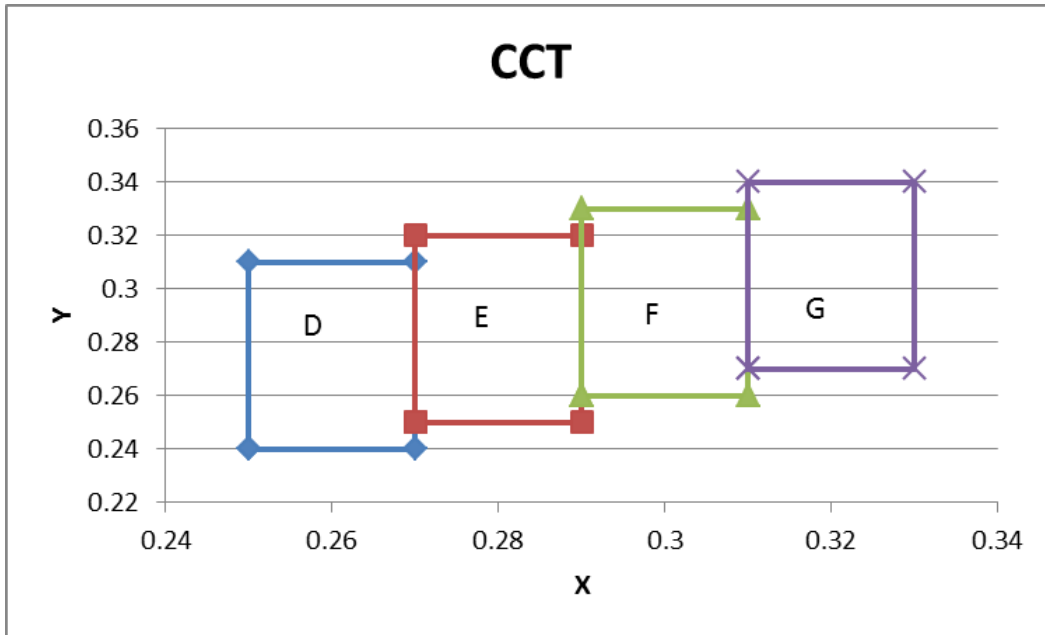
**Dominant Wavelength  $\lambda_D$  for Yellow @  $I_F=20\text{mA}$** 

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

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

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

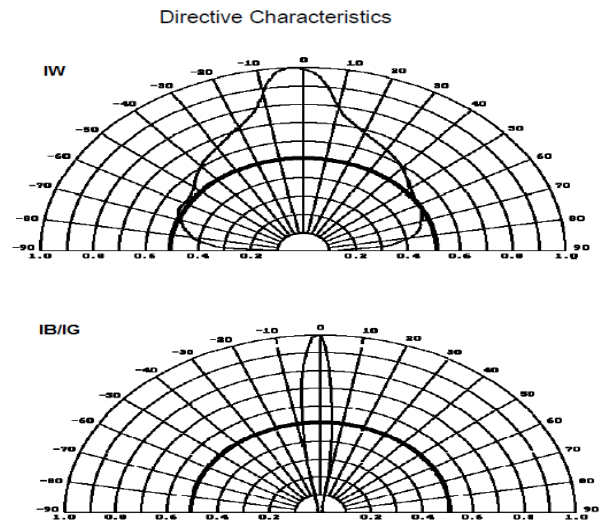
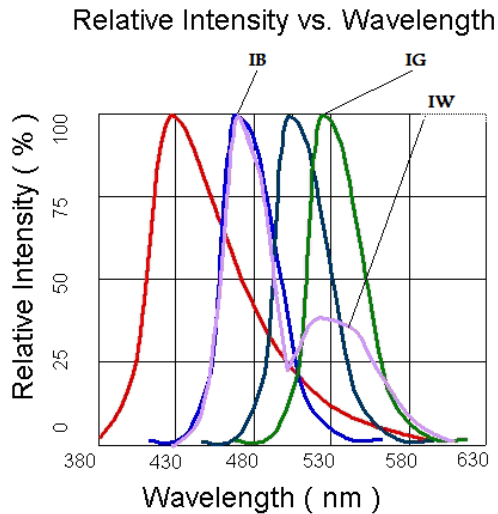
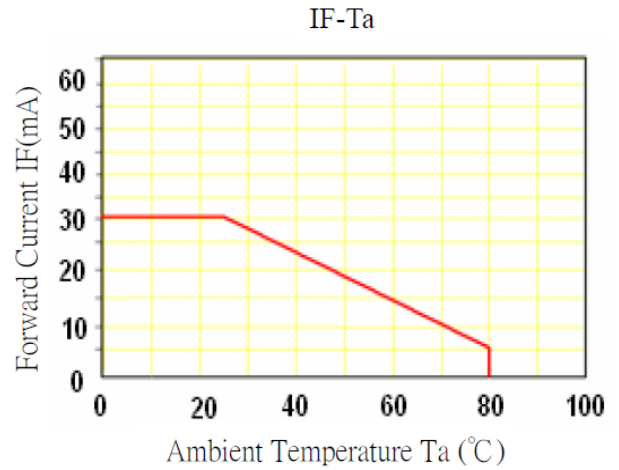
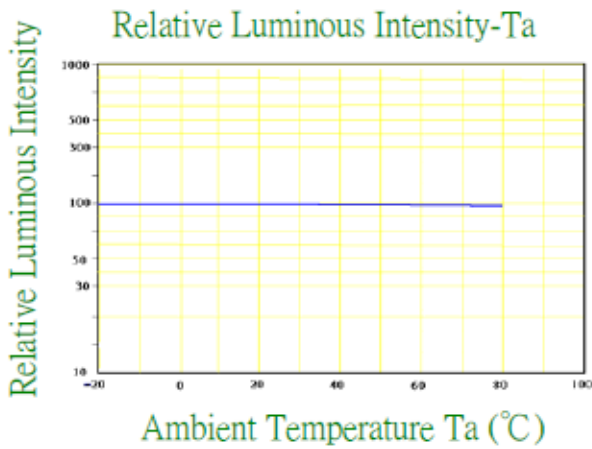
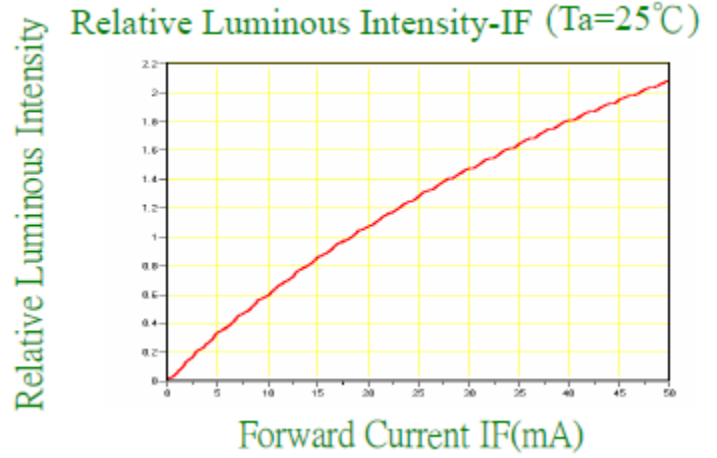
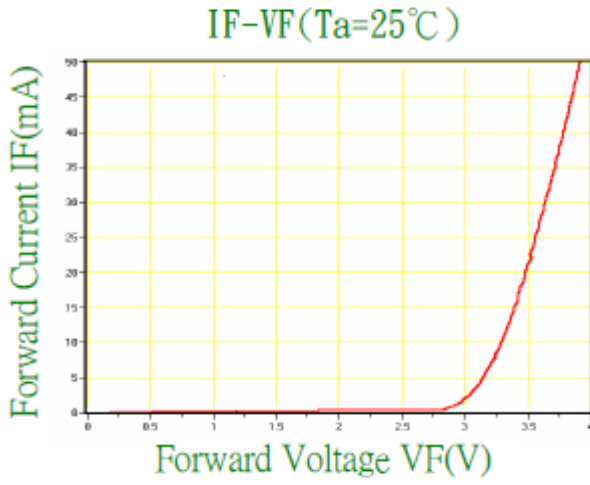
**CIE Chromaticity Table**



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**

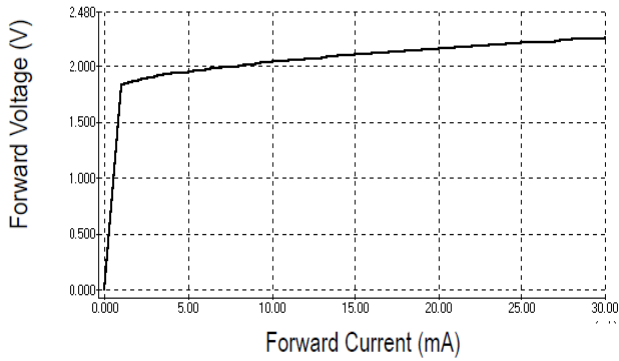
InGaN (IB/IG/IW)



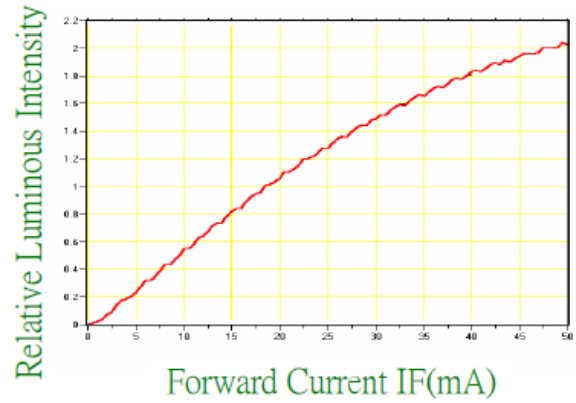


**AllnGaP (R/AG/Y/O)**

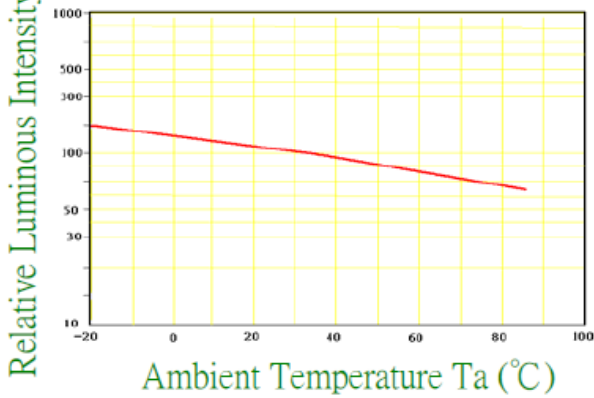
Forward Current vs. Forward Voltage



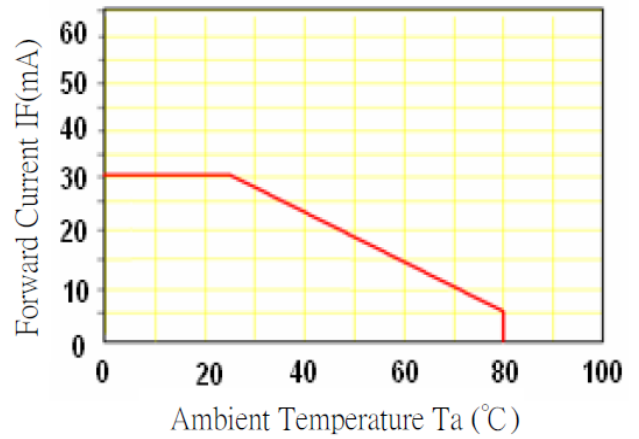
Relative Luminous Intensity-IF (Ta=25°C)



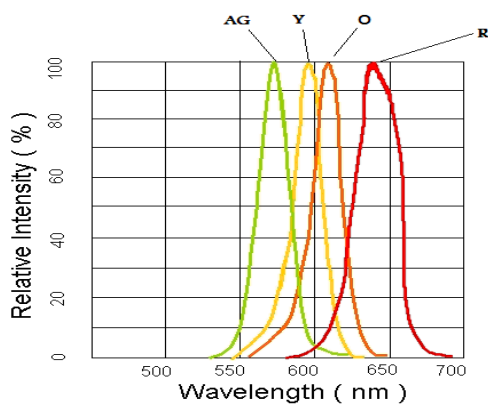
Relative Luminous Intensity-Ta



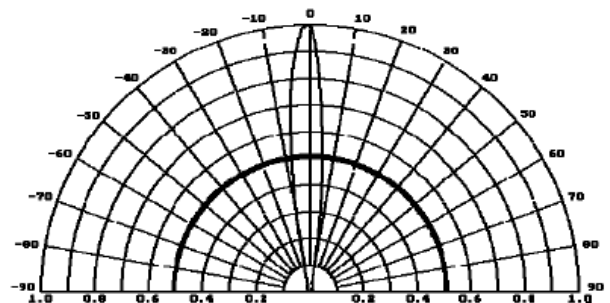
IF-Ta



Relative Intensity vs. Wavelength

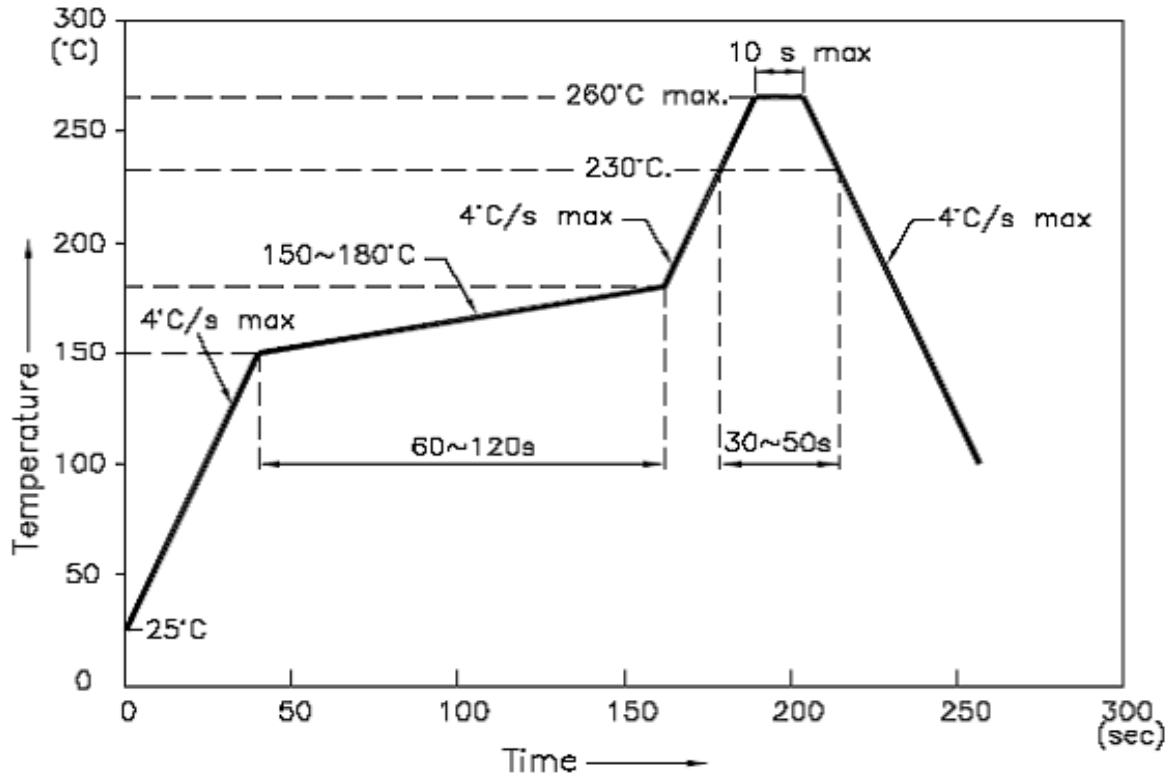


Directive Characteristics

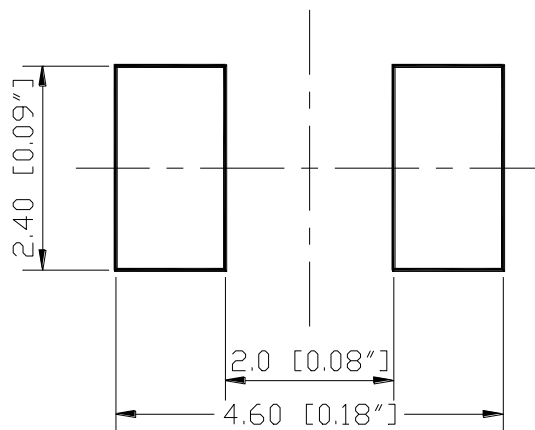


## Solder Profile & Footprint

- Recommended tin glue 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



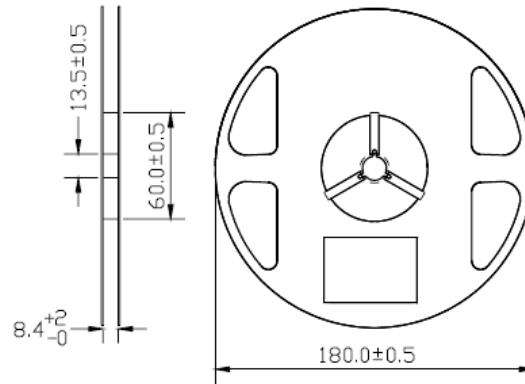
Units: mm

Tolerance: ± 0.1mm

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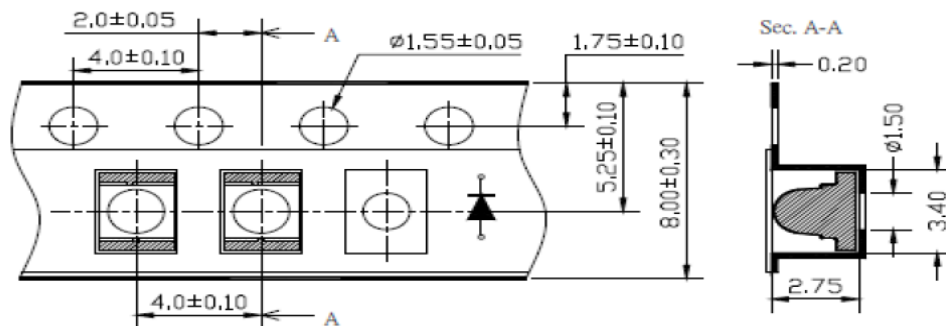
## Packing

### Reel Dimension:



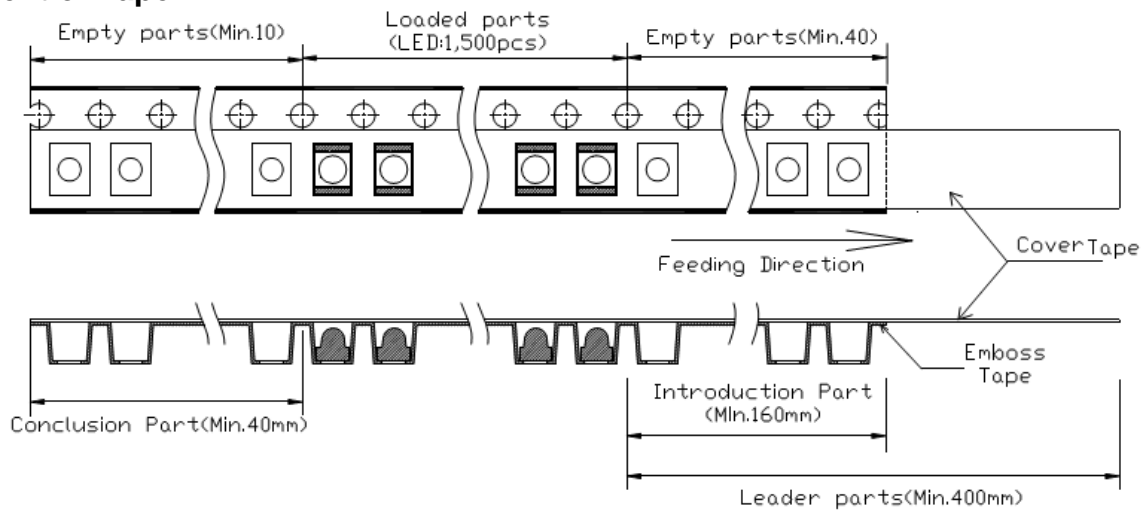
Unit: mm

### Tape Dimension:

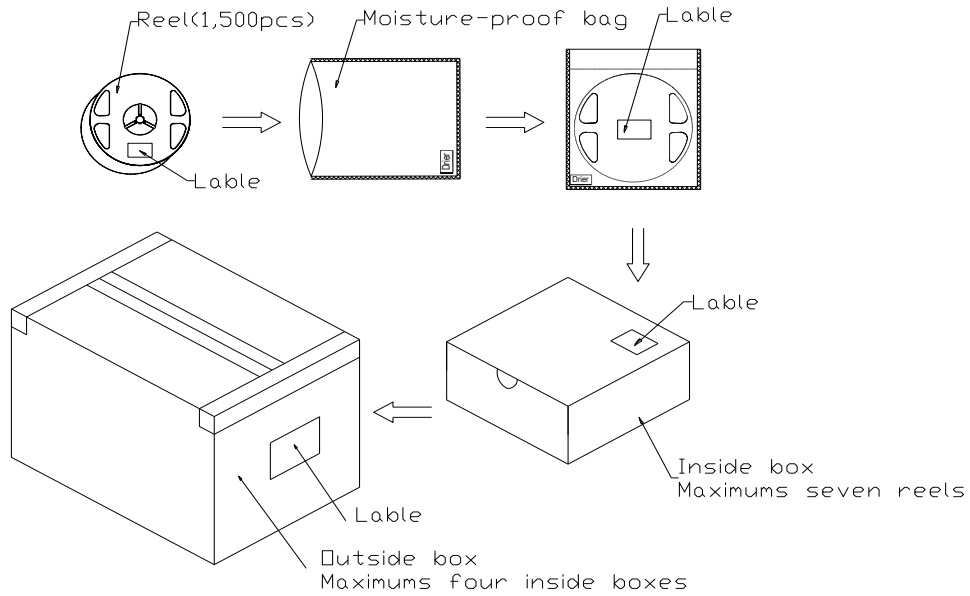


Unit: mm

### Arrangement of Tape:



**Packaging Specification:**



**Labeling**



**Part No:** \_\_\_\_\_

**Customer P/N:** \_\_\_\_\_

**Item:** \_\_\_\_\_

**Q'ty:** \_\_\_\_\_

**Vf:** \_\_\_\_\_

**Iv:** \_\_\_\_\_

**WI:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Made in China**

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**Ordering Information**

Part #	Orderable Part #	Spec Range	Quantity per reel
QBLP653-IW	QBLP653-IW	Iv=180mcd typ. @ 20mA, / CIE Coordinate: (X=0.28, Y=0.29) typ.	1,500 units
QBLP653-IB	QBLP653-IB	Iv=750 mcd typ. / Color=455nm ~ 465nm	1,500 units
QBLP653-IG	QBLP653-IG	Iv=5700 mcd typ. / Color=520nm ~ 530nm	1,500 units
QBLP653-R	QBLP653-R	Iv=3850 mcd typ. / Color =620nm ~ 630nm	1,500 units
QBLP653-AG	QBLP653-AG	Iv=620 mcd typ. / Color=565nm ~ 576nm	1,500 units
QBLP653-Y	QBLP653-Y	Iv=3400 mcd typ. / Color =585nm ~ 595nm	1,500 units
QBLP653-O	QBLP653-O	Iv=3350 mcd typ. / Color=600nm ~ 610nm	1,500 units

## Revision History

Description:	Revision #	Revision Date
New Release of QBLP653_series	V1.0	12/08/2011
Amend Packing Spec	V1.1	12/13/2011
Update Characteristic Curves	V1.2	12/29/2011
Update to new format	V1.3	08/16/2012
Update Iv binning for white	V1.4	02/04/2014
Update Iv binning for IG	V1.5	04/23/2014

## Disclaimer

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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.