QT-Brightek Chip LED Series

SMD 1208 LED

Part No.: QBLP653 Series

Table of Contents:

Introduction 3
Electrical / Optical Characteristic (T=25 °C) 4
Absolute Maximum Rating 4
CIE Chromaticity Table 7
Characteristic Curves 8
Solder Profile & Footprint 10
Packing 11
Labeling 12
Ordering Information 13
Revision History 14
Disclaimer 14

Introduction

Feature:

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

Description:

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

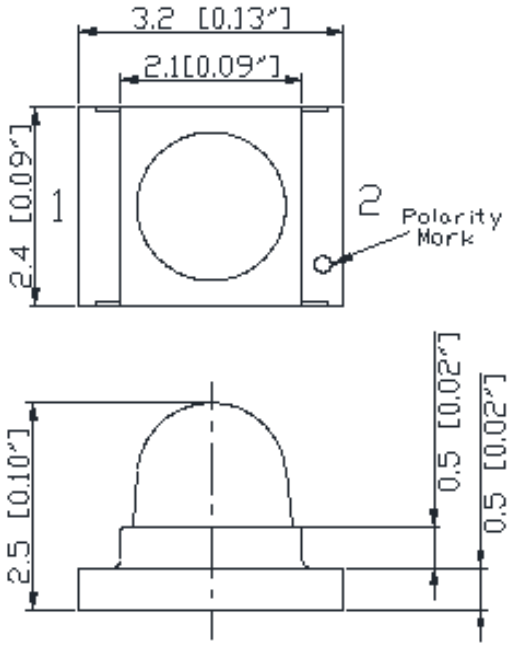
Application:

- Status indication
- Back lighting application

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant

Dimension:







Units: mm / tolerance = +/-0.15mm

Electrical / Optical Characteristic (T=25 °C)

Product	Color	I_F(mA)	V_F(V)		λ_D (nm)			I_V(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	4000	11000
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_d (mW)	I_F (mA)	I_{FP} (mA)*	V_R (V)	T_{OP} (°C)	T_{ST} (°C)	T_{SOL} (°C)**
InGaN	111	30	125	5	-40 ~ +80	-40 ~ +85	260
AlInGaP	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_F for AlInGaP @I_F=20mA

Bin	Min.	Max.	Unit
☐	1.7	2.5	V

Forward Voltage V_F for InGaN @I_F=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	
c	8800	11200	
d	11200	14200	
e	14200	18000	

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

Bin	Min.	Max.	Unit
t	620	625	nm
u	625	630	

Dominant Wavelength λ_D for Yellow Green @ I_F=20mA

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

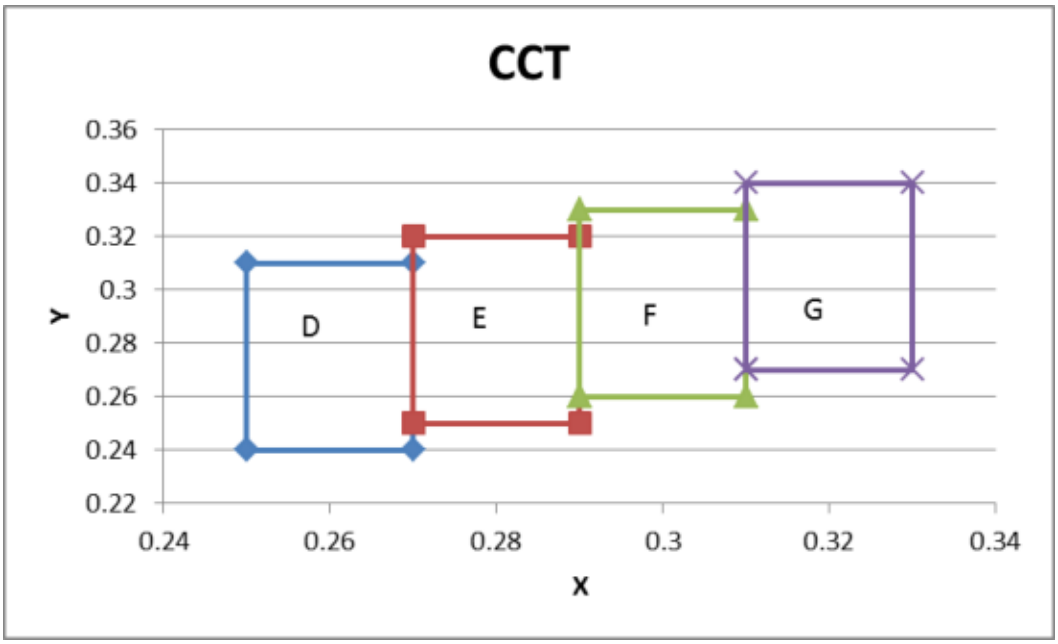
Dominant Wavelength λ_D for Yellow @ I_F=20mA

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	

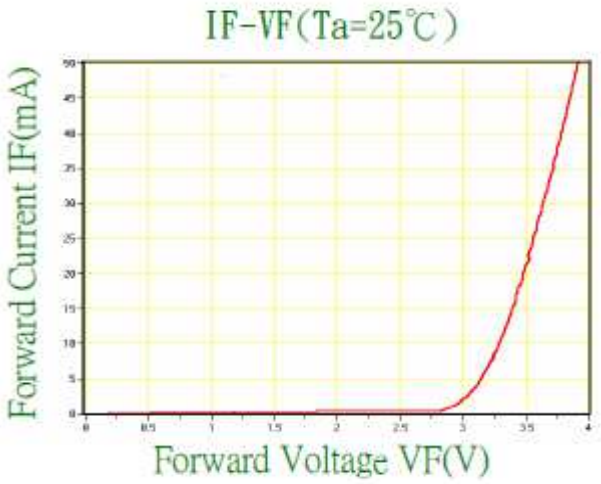
CIE Chromaticity Table

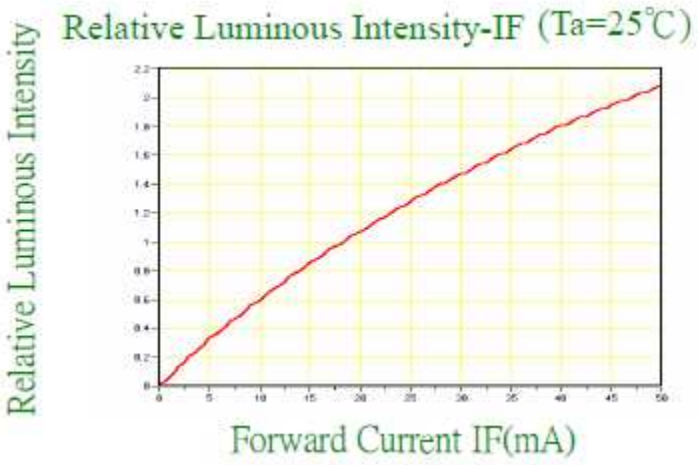


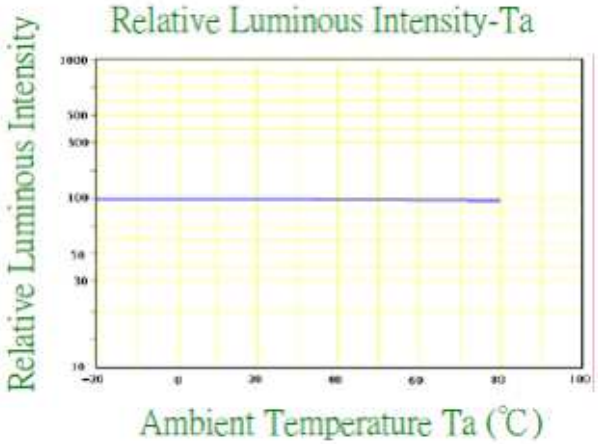
D		E		F		G	
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27
0.25	0.31	0.27	0.32	0.29	0.33	0.31	0.34
0.27	0.31	0.29	0.32	0.31	0.33	0.33	0.34
0.27	0.24	0.29	0.25	0.31	0.26	0.33	0.27
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27

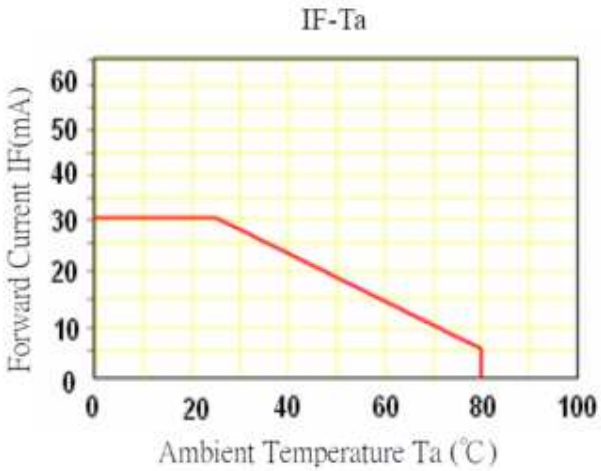
Characteristic Curves

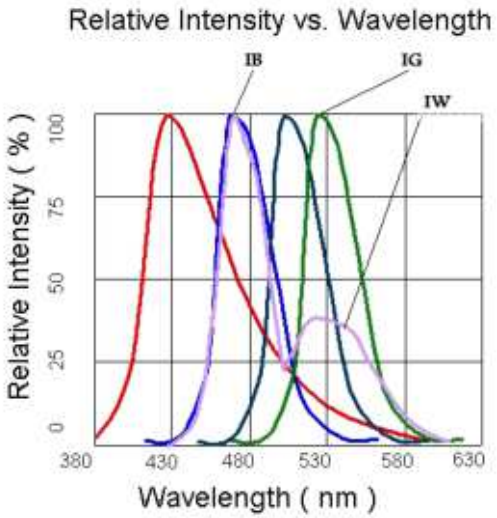
InGaN (IB/IG/IW)

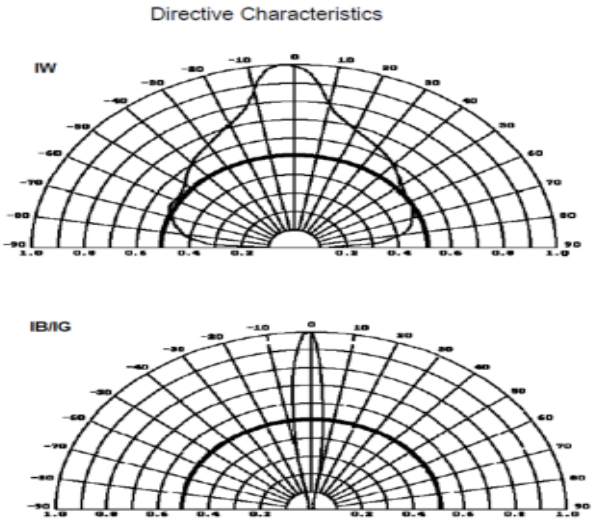




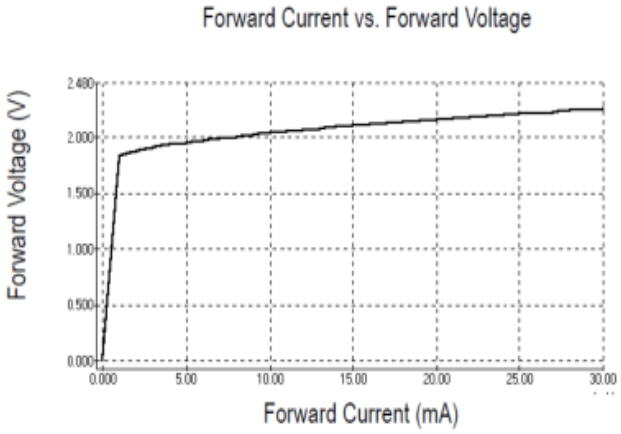




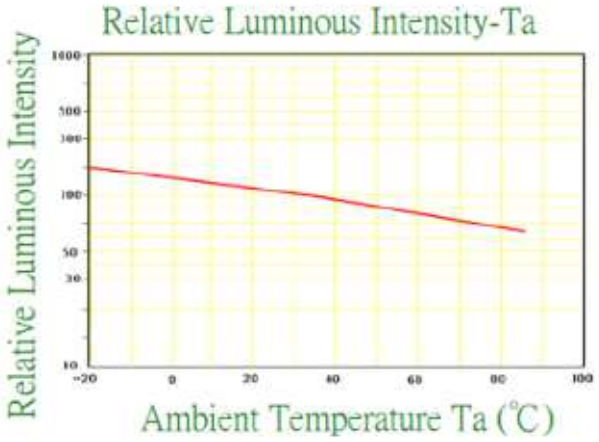


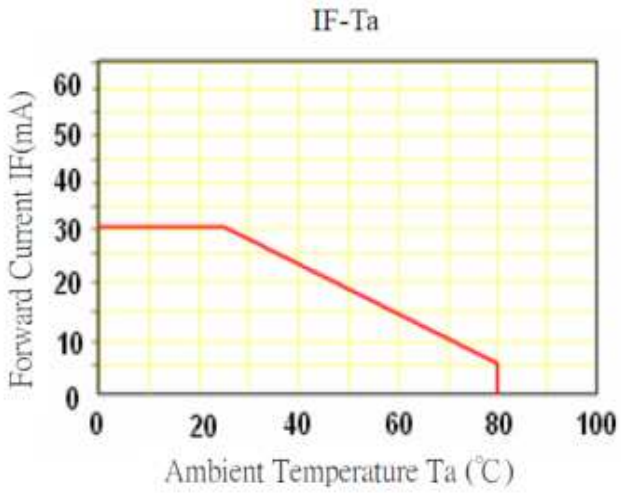


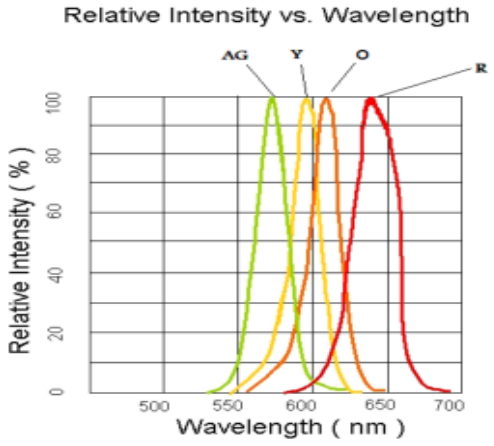
AlInGaP (R/AG/Y/O)

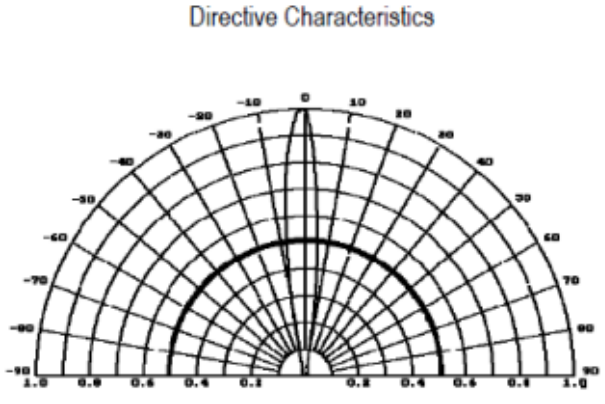






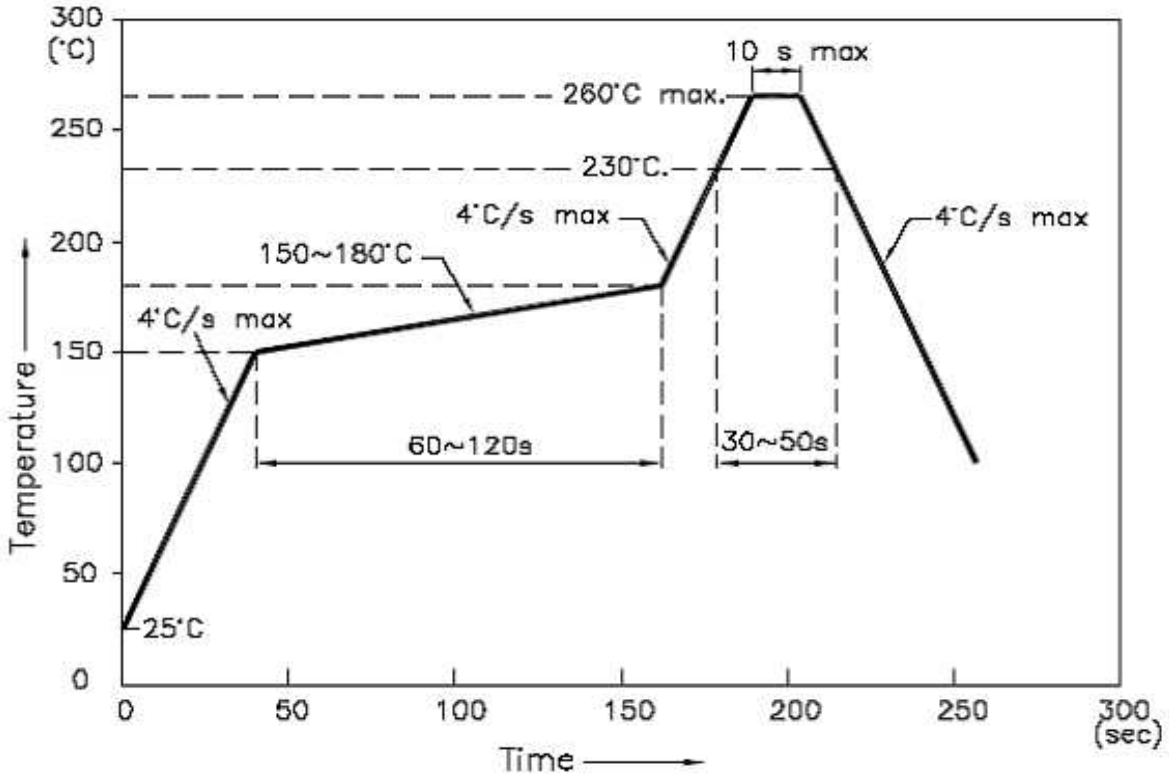




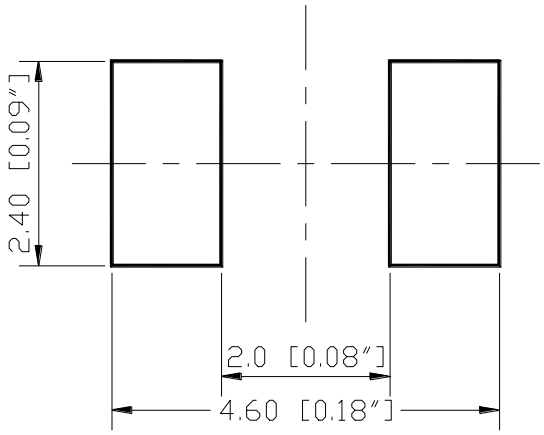


Solder Profile & Footprint

-Recommended tin glue specifications: melting temperature in the range of 178~192 ^{O}C
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



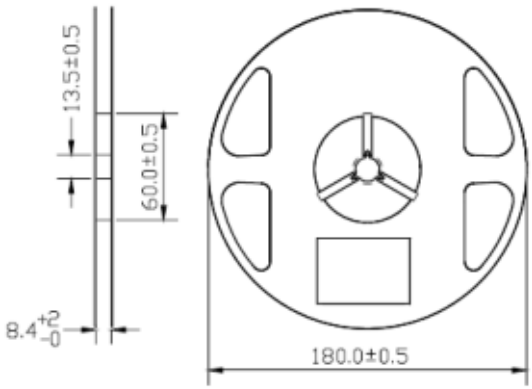
Recommended Pad Layout



Units: mm Tolerance: ± 0.1mm

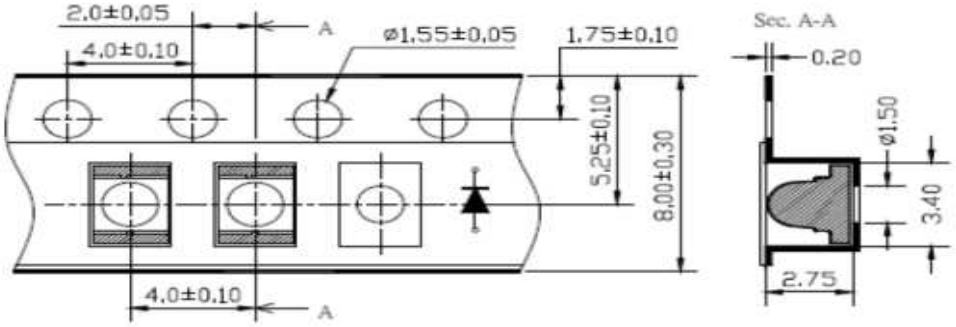
Packing

Reel Dimension:



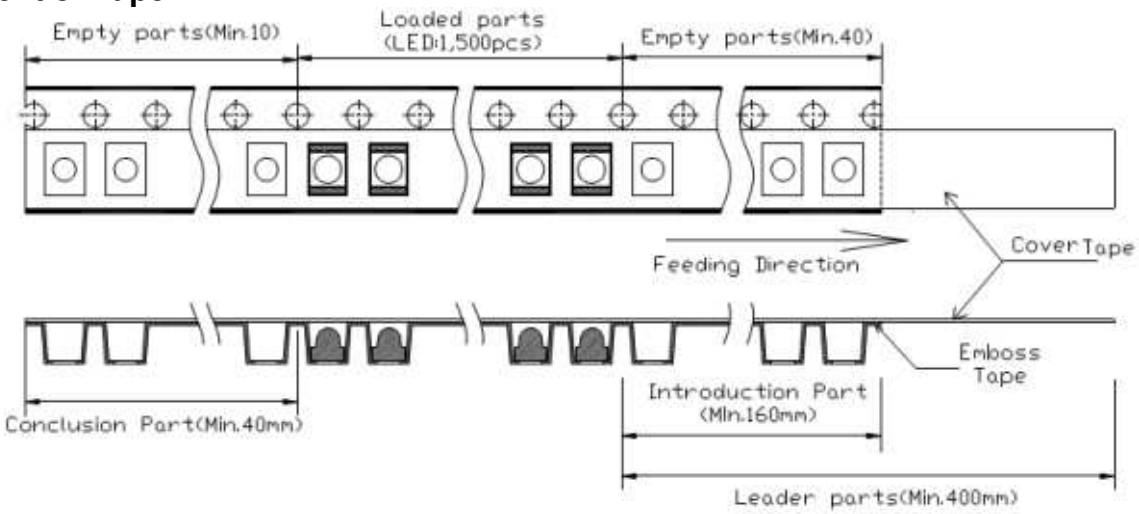
Unit: mm

Tape Dimension:

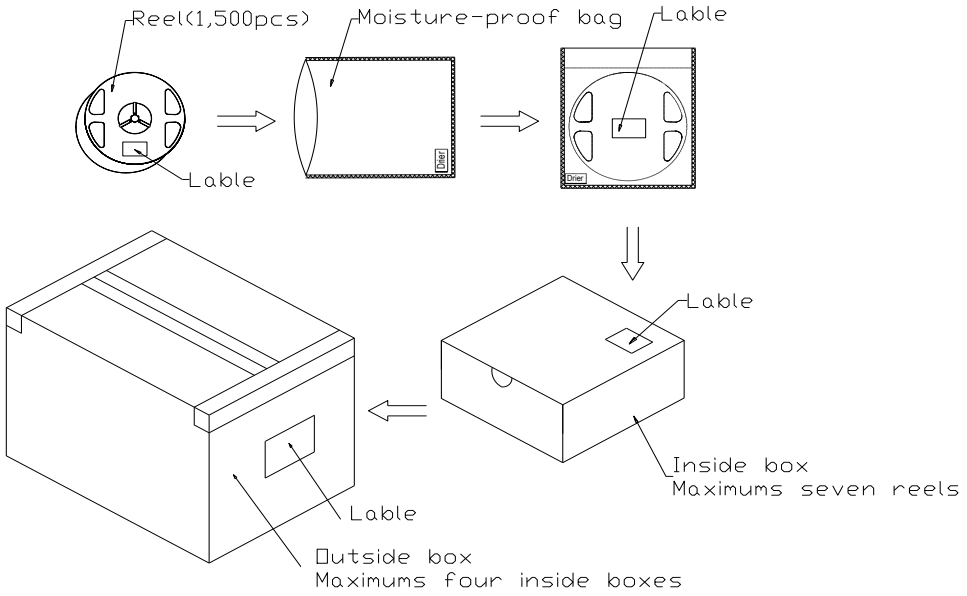


Unit: mm

Arrangement of Tape:



Packaging Specification:



Labeling



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=750mcd typ. / Color=455nm ~ 465nm	1,500 units
QBLP653-IG	QBLP653-IG	Iv=11000mcd typ. / Color=520nm ~ 530nm	1,500 units
QBLP653-R	QBLP653-R	Iv=3850mcd typ. / Color =620nm ~ 630nm	1,500 units
QBLP653-AG	QBLP653-AG	Iv=620mcd typ. / Color=565nm ~ 576nm	1,500 units
QBLP653-Y	QBLP653-Y	Iv=3400mcd typ. / Color =585nm ~ 595nm	1,500 units
QBLP653-O	QBLP653-O	Iv=3350mcd 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
Update Iv inning and brightness for IG	V1.6	08/26/2016
Minor update on package drawing appearance	V1.7	11/10/2016

Disclaimer

QT-BRIGHTEK reserves the right to make changes without further notice to any products herein to improve reliability, function or design. QT-BRIGHTEK does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

Life Support Policy

QT-BRIGHTEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of QT-BRIGHTEK. As used herein:

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.