QT-Brightek Chip LED Series

SMD 1208 LED

Part No.: QBLP653R Series

Table of Contents:

Introduction

Feature:

- Water clear lens
- Package in tap and reel
- Reverse mount
- 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.

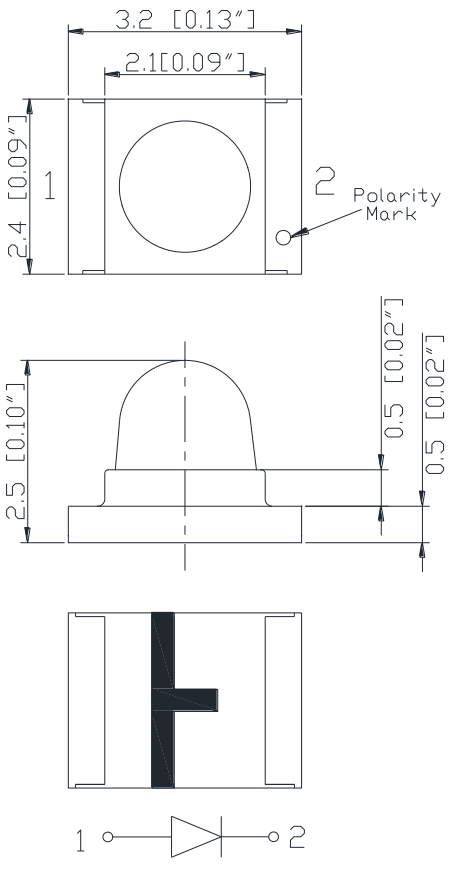
Application:

- Status indication
- Back lighting application

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant

Dimension:



Units: mm / tolerance = +/-0.15mm

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.
QBLP653R-R	Red	20	2.0	2.5	620	625	630	2000	3850
QBLP653R-Y	Yellow	20	2.0	2.5	585	590	595	1600	3400
QBLP653R-O	Orange	20	2.0	2.5	600	605	610	1600	3350
QBLP653R-AG	Yellow Green	20	2.0	2.5	565	570	576	500	1000
QBLP653R-IG	Green	20	3.2	3.7	520	525	530	4000	11000
QBLP653R-IB	Blue	20	3.2	3.7	455	460	465	400	750
QBLP653R-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

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)**
AlInGaP	75	30	125	5	-40 ~ +80	-40 ~ +85	260
InGaN	111	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 Red @ I_F=20mA

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

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 Yellow Green @ I_F=20mA

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

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

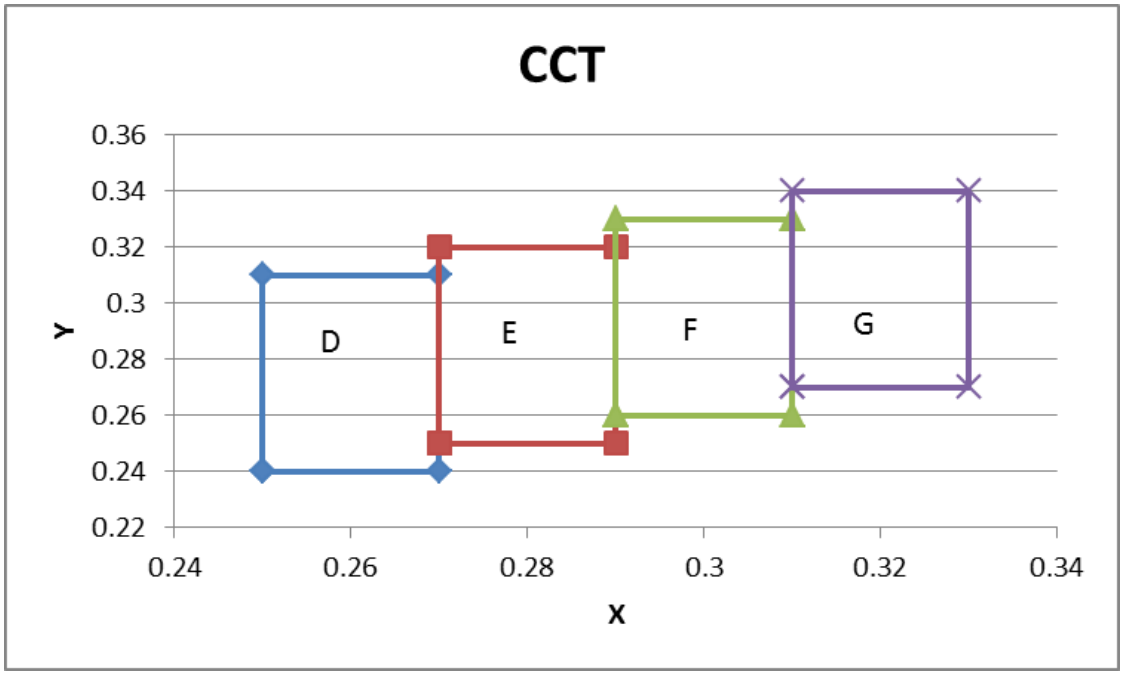
Bin	Min.	Max.	Unit
U	520	522.5	nm
V	522.5	525	
W	525	527.5	
X	527.5	530	

Dominant Wavelength λ_D for Orange @ I_F=20mA

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

Note:
Tolerance of measurement of forward voltage: ±0.1V
Tolerance of measurement of luminous intensity: ±15%
Tolerance of measurement of dominant wavelength: ±2nm

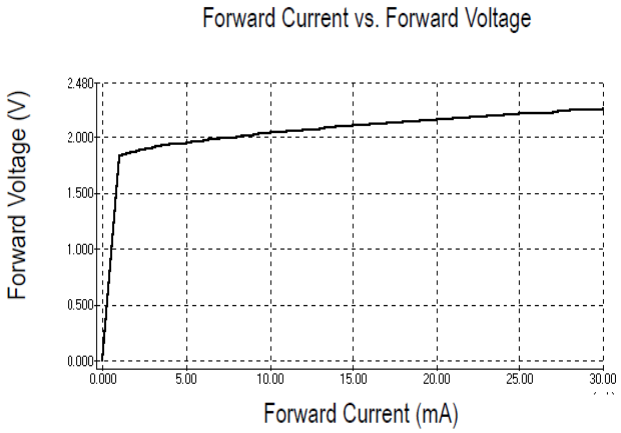
CIE Chromaticity Table

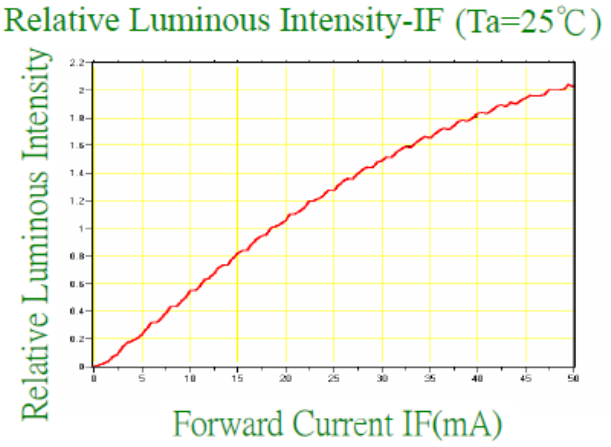


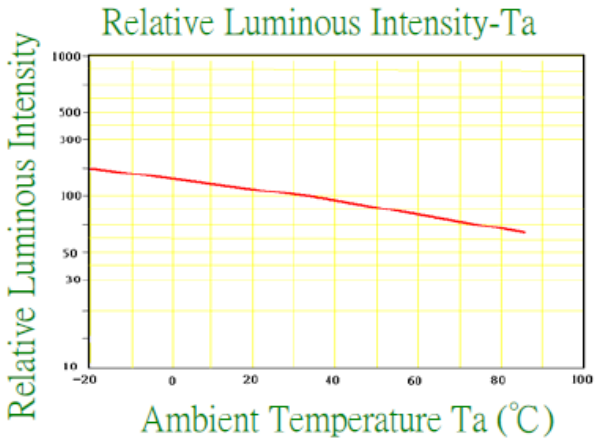
D		E		F		G	
X	Y	X	Y	X	Y	X	Y
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27
0.25	0.31	0.27	0.32	0.29	0.33	0.31	0.34
0.27	0.31	0.29	0.32	0.31	0.33	0.33	0.34
0.27	0.24	0.29	0.25	0.31	0.26	0.33	0.27
0.25	0.24	0.27	0.25	0.29	0.26	0.31	0.27

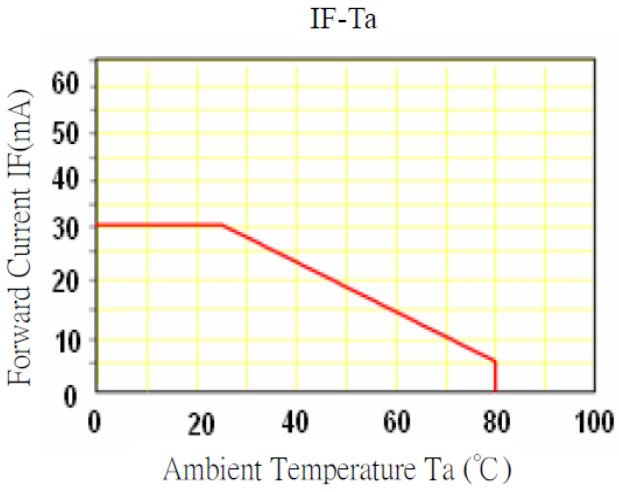
Characteristic Curves

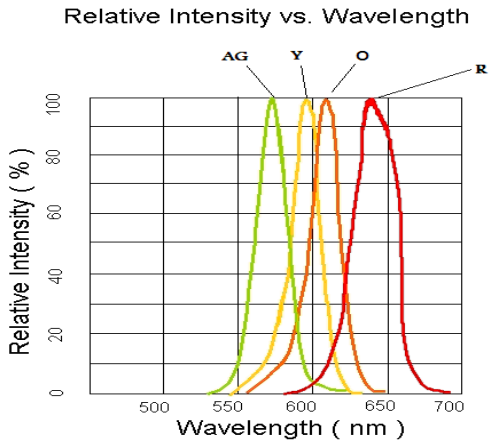
AlInGaP (R/Y/O/AG)

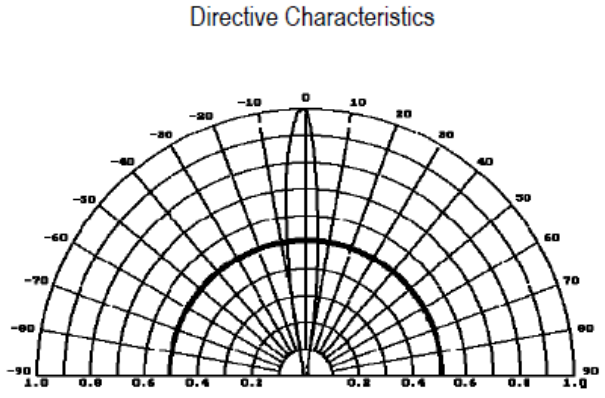




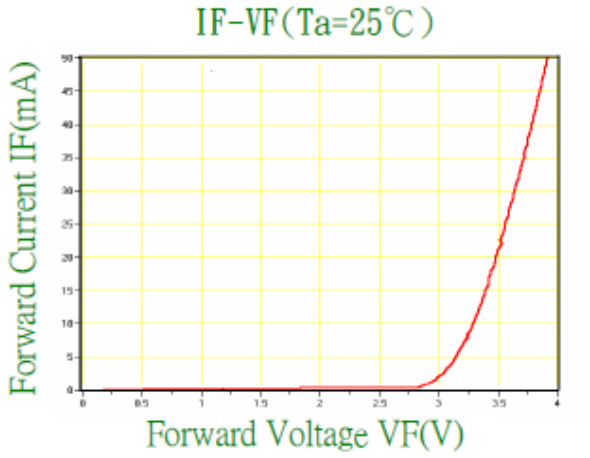


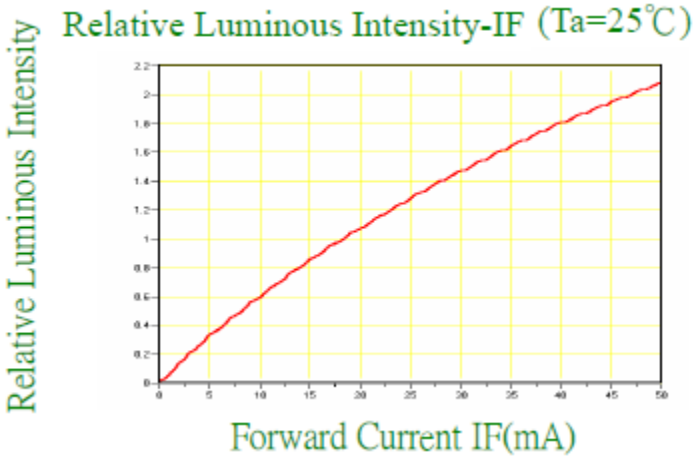


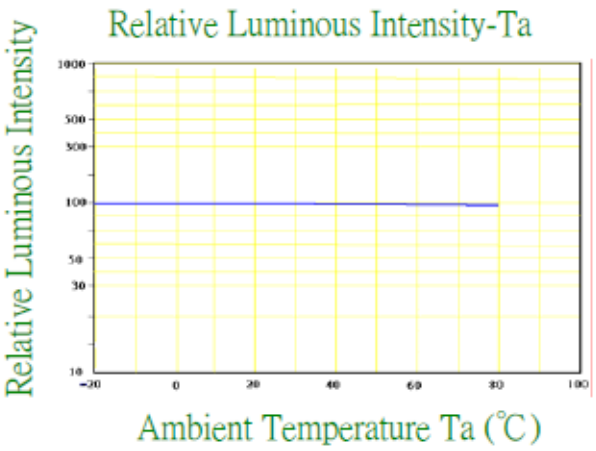


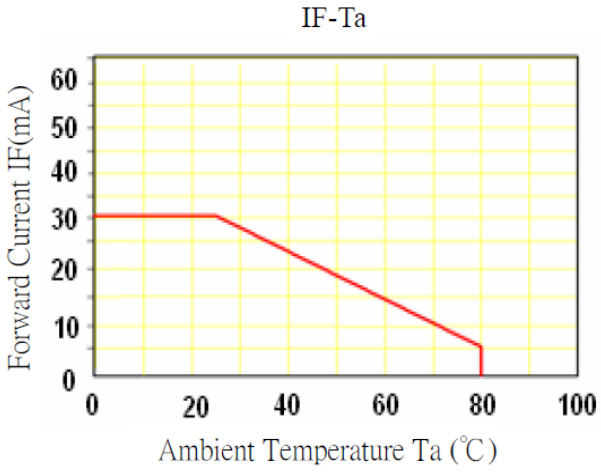


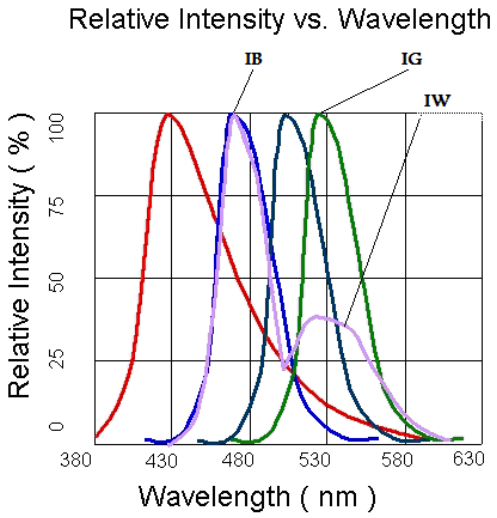
InGaN (IB/IW)

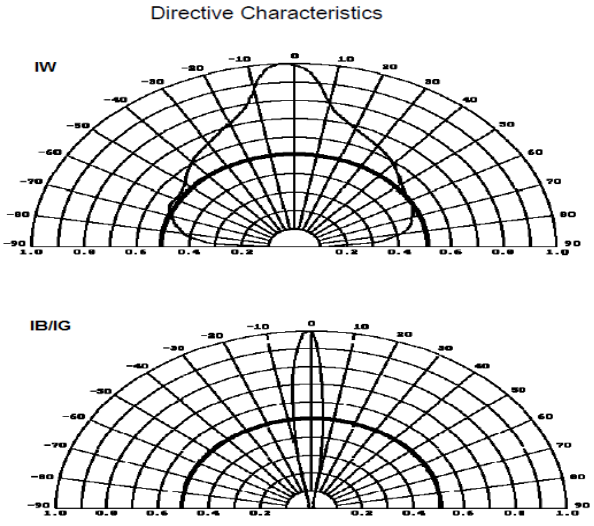

IF-VF(Ta=25℃)
Forward Current IF(mA)
Forward Voltage VF(V)


Relative Luminous Intensity-IF (Ta=25℃)
Relative Luminous Intensity
Forward Current IF(mA)


Relative Luminous Intensity-Ta
Relative Luminous Intensity
Ambient Temperature Ta (℃)

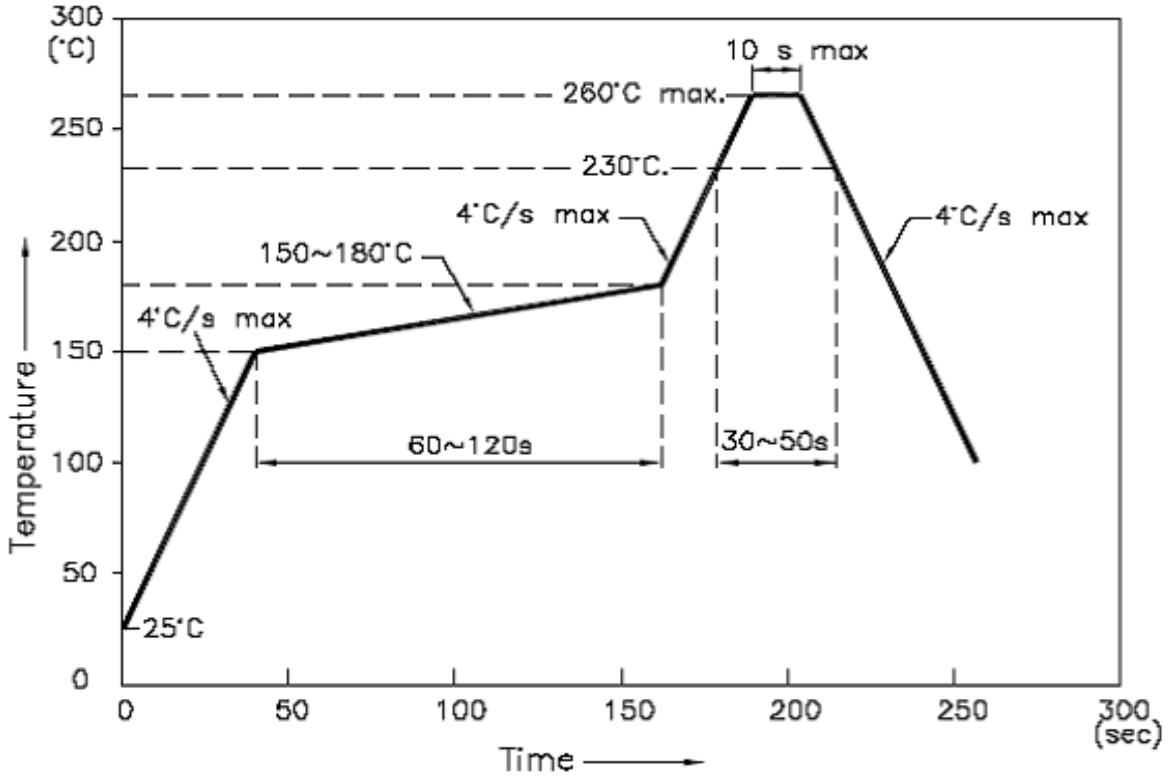

IF-Ta
Forward Current IF(mA)
0
10
20
30
40
50
60
0
20
40
60
80
100
Ambient Temperature Ta (℃)


Relative Intensity vs. Wavelength
IB
IG
IW
Relative Intensity (%)
0
25
50
75
100
380
430
480
530
580
630
Wavelength (nm)

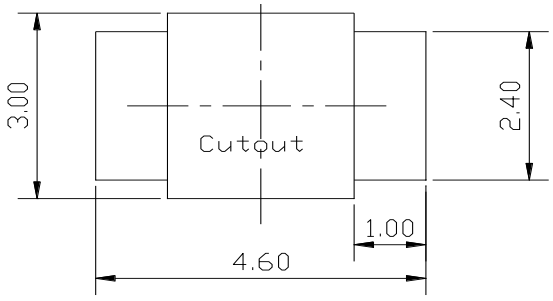

Directive Characteristics
IW
IB/IG

Solder Profile & Footprint

-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



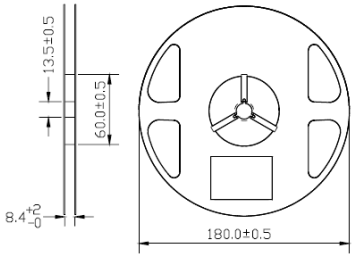
Recommended Pad Layout



Units: mm Tolerance: ± 0.15mm

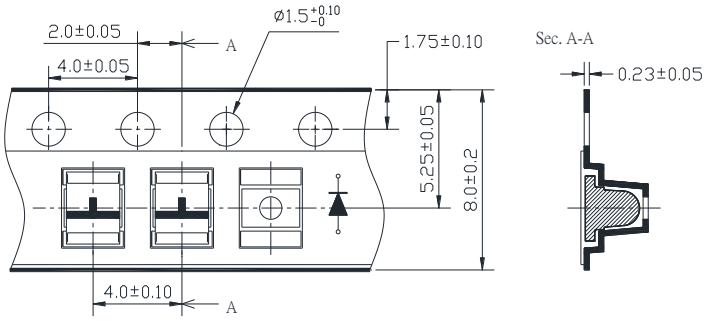
Packing

Reel Dimension:



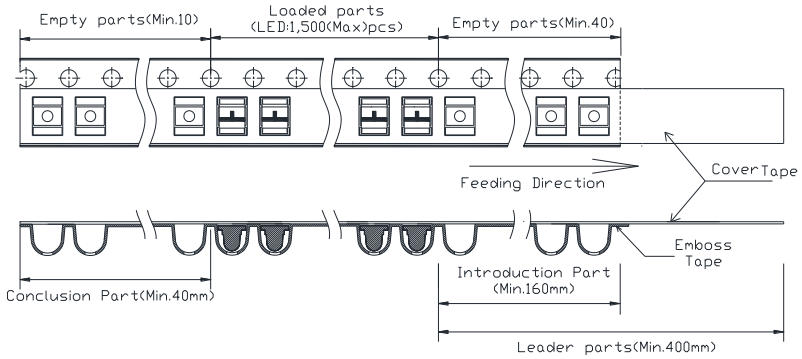
Unit: mm

Tape Dimension:

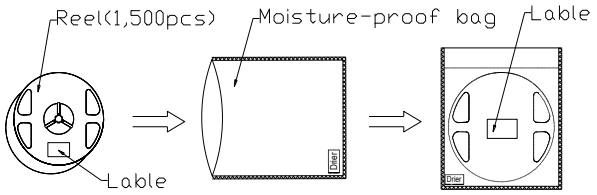


Unit: mm

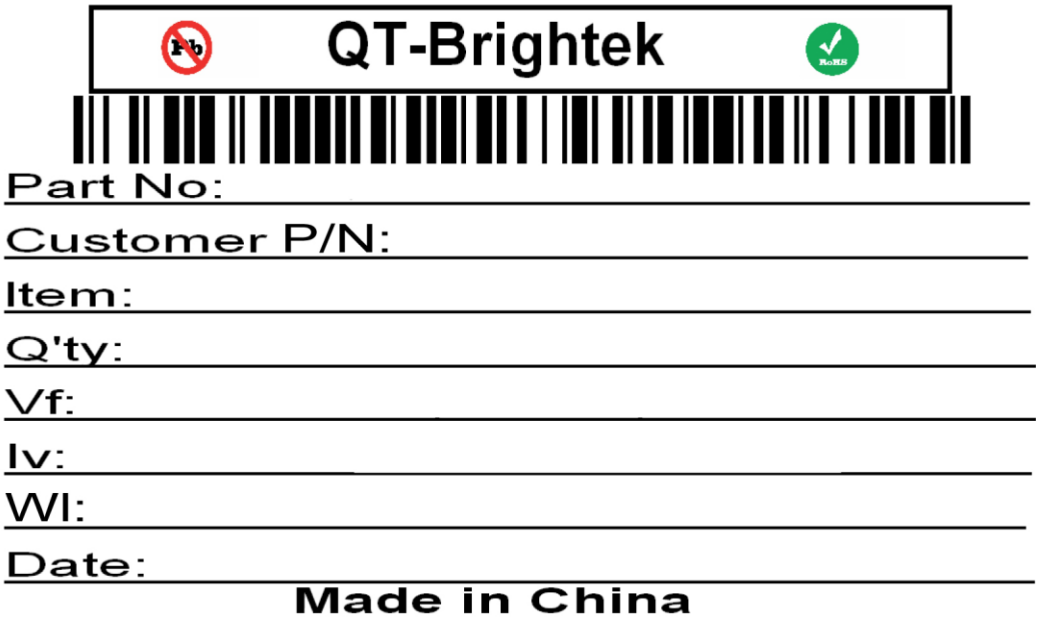
Arrangement of Tape:



Packaging Specification:



Labeling



Ordering Information

Part #	Orderable Part #	Spec Range	Quantity per reel
QBLP653R-R	QBLP653R-R	Iv=3850mcd typ. @ 20mA / λd=620nm ~ 630nm	1,500 units
QBLP653R-Y	QBLP653R-Y	Iv=3400mcd typ. @ 20mA / λd =585nm ~ 595nm	1,500 units
QBLP653R-O	QBLP653R-O	Iv=3350mcd typ.@ 20mA / λd =600nm ~ 610nm	1,500 units
QBLP653R-AG	QBLP653R-AG	Iv=1000mcd typ. @ 20mA / λd =565nm ~ 576nm	1,500 units
QBLP653R-IG	QBLP653R-IG	Iv=11000mcd typ. @ 20mA / λd=520nm ~ 530nm	1,500 units
QBLP653R-IB	QBLP653R-IB	Iv=750mcd typ. @ 20mA / λd=455nm ~ 465nm	1,500 units
QBLP653R-IW	QBLP653R-IW	Iv=180mcd typ. @ 20mA / CIE Coordinate: (X=0.28, Y=0.29) typ.	1,500 units

Revision History

Description:	Revision #	Revision Date
New Release of QBLP653R_series	V1.0	12/08/2011
Amend Pad Layout	V1.1	02/16/2012
Update format	V1.2	05/24/2012
Update drawing dimension and spec for AG	V2.0	11/18/2016
Fix packing spec drawing and dimension and tolerance error	V2.1	01/09/2017

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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.