

QT-Brightek Mid Power Series

0.5W Mid Power 2835 LED

Part No.: QBHP686-XXH Series

**XX = Color Code
H = 150mA**

Product: QBHP686-XXH Series	Date: June 20, 2017	Page 1 of 12
	Version# 3.1	

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Introduction

Feature:

- Clear lens
- Package in tape and reel
- 0.5W Mid power
- Low thermal resistance
- InGaN technology for IB/IG
- AlInGaP technology for R/Y/O
- 120 degree viewing angle

Description:

The low profile 0.5W high bright LED has height of 0.8mm. It is ideal for indoor lighting and general use.

Application:

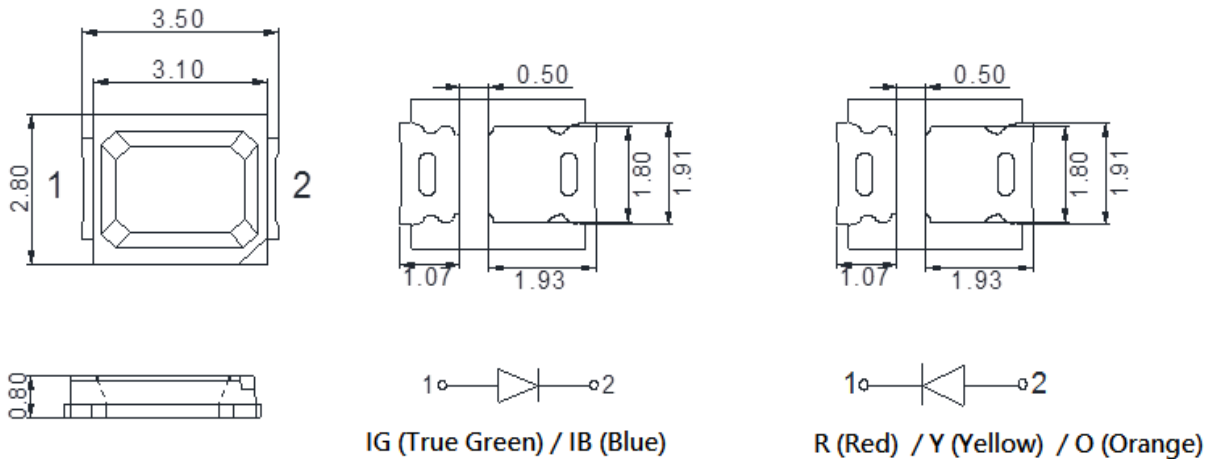
- Status indication
- Industrial equipment backlighting
- Architecture lighting

Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



Dimension:



Units: mm / tolerance = +/-0.2mm

Electrical / Optical Characteristic (Ta=25 °C)

Product	Color	I _F (mA)	V _F (V)		λ _D (nm)			Φ _V (lm)	
			Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.
QBHP686-RH	Red	150	2.4	2.65	615	620	630	8	15
QBHP686-YH	Yellow	150	2.4	2.65	585	590	595	5	9
QBHP686-OH	Orange	150	2.4	2.65	600	605	610	8	17
QBHP686-IGH	True Green	150	2.9	3.7	520	525	530	21	29
QBHP686-IBH	Blue	150	3.0	3.7	460	465	470	6	10

Absolute Maximum Rating

Material	P _d (mW)	I _F (mA)	I _{FP} (mA)*	V _R (V)	T _{OP} (°C)	T _{ST} (°C)	T _{SO L} (°C)**
AllnGaP (R/Y/O)	424	160	125	5	-40 ~ +85	-40 ~ +100	260
InGaN (IB/IG)	550	160	125	5	-40 ~ +85	-40 ~ +100	260

*Duty 1/8 @ 1KHz

**IR Reflow for no more than 10 sec @ 260 °C

Forward Voltage V_F for AllnGaP @ I_F=150mA

Bin	Min.	Max.	Unit
□	1.9	2.65	V

Forward Voltage V_F for InGaN @ I_F=150mA

Bin	Min.	Max.	Unit
e	2.5	2.8	V
f	2.8	3.1	
g	3.1	3.4	
h	3.4	3.7	

Luminous Flux Φ_v for Red (R) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
L1	8	12	lm
L2	12	16	
L3	16	22	

Luminous Flux Φ_v for Yellow (Y) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
L1	5	7	lm
L2	7	9.5	
L3	9.5	13	

Luminous Flux Φ_v for Orange (O) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
L1	8	12	lm
L2	12	16	
L3	16	22	

Luminous Flux Φ_v for True Green (IG) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
L1	21	28	lm
L2	28	37	
L3	37	48	

Luminous Flux Φ_v for Blue (IB) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
L1	6	8	lm
L2	8	12	
L3	12	16	

Dominant Wavelength λ_D for Red (R) @ $I_F=150\text{mA}$

Bin	Min.	Max.	Unit
s	615	620	nm
t	620	625	
u	625	630	

Dominant Wavelength λ_D for Yellow (Y) @ $I_F=150\text{mA}$

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

Dominant Wavelength λ_D for Orange (O) @ $I_F=150\text{mA}$

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

Dominant Wavelength λ_D for True Green (IG) @ $I_F=150\text{mA}$

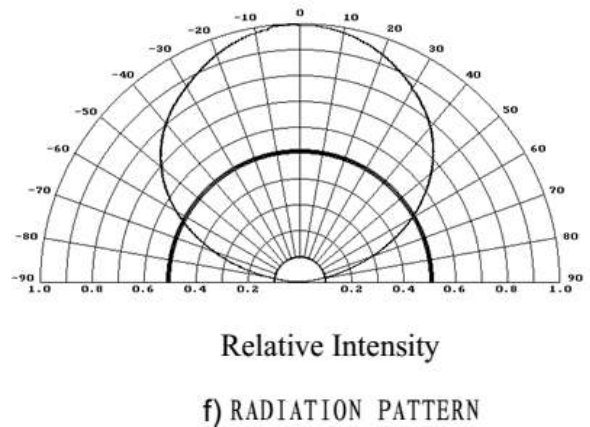
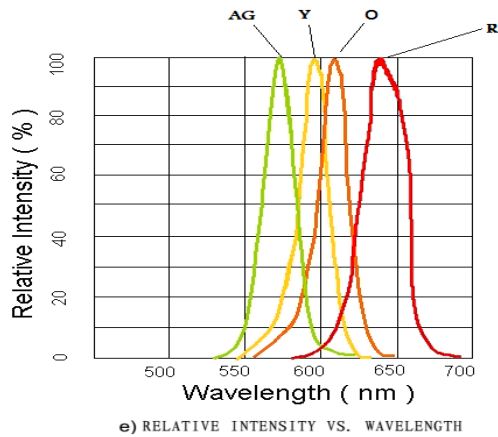
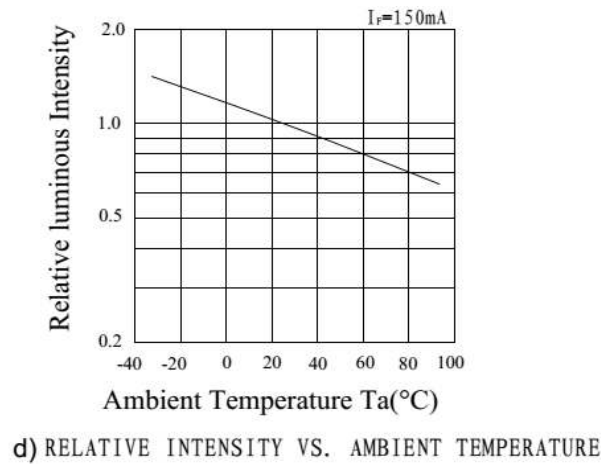
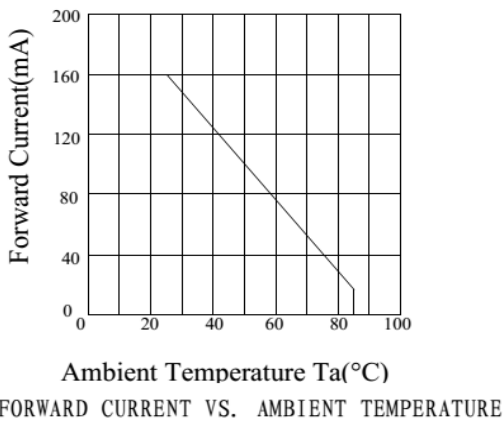
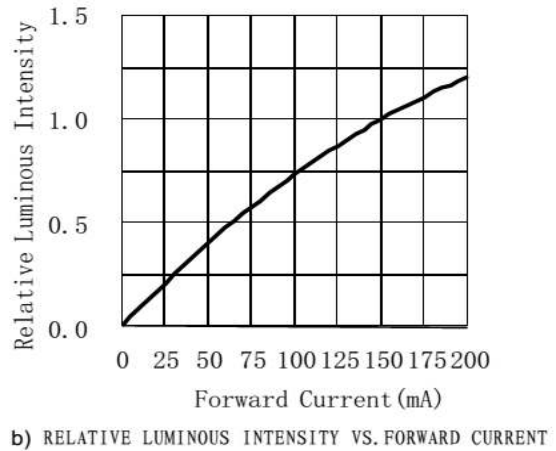
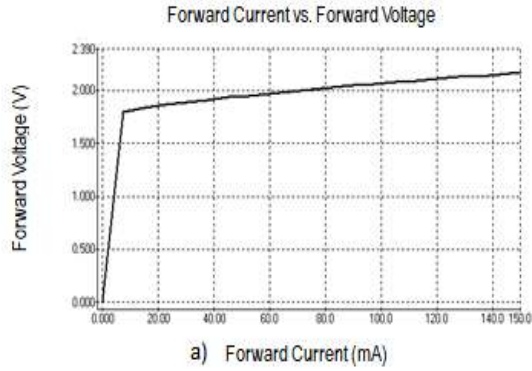
Bin	Min.	Max.	Unit
U	520	522.5	nm
V	522.5	525	
W	525	527.5	
X	527.5	530	

Dominant Wavelength λ_D for Blue (IB) @ $I_F=150\text{mA}$

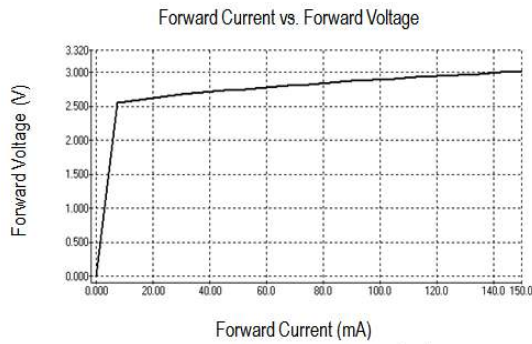
Bin	Min.	Max.	Unit
E	460	462.5	nm
F	462.5	465	
G	465	467.5	
H	467.5	470	

Characteristic Curves

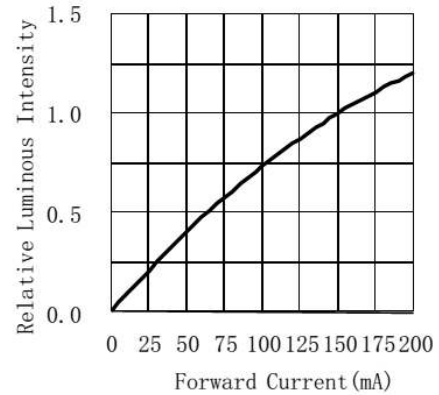
AllnGaP (R/Y/O/AG)



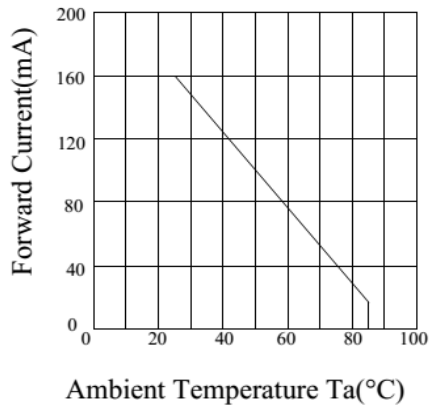
InGaN (IB/IG)



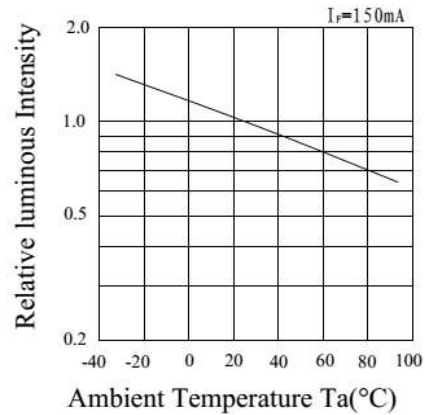
a) FORWARD CURRENT VS. FORWARD VOLTAGE



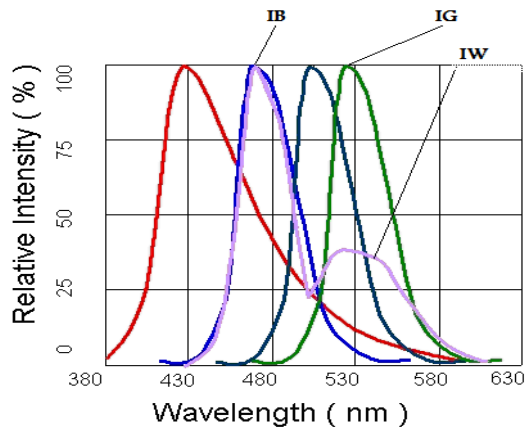
b) RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



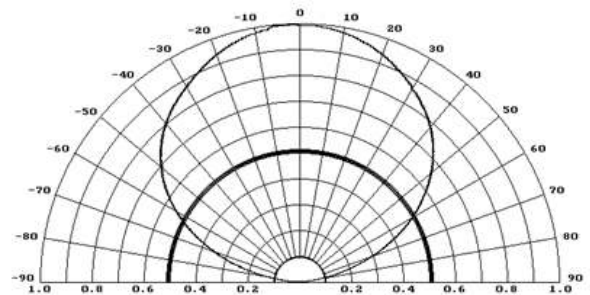
c) FORWARD CURRENT VS. AMBIENT TEMPERATURE



d) RELATIVE INTENSITY VS. AMBIENT TEMPERATURE



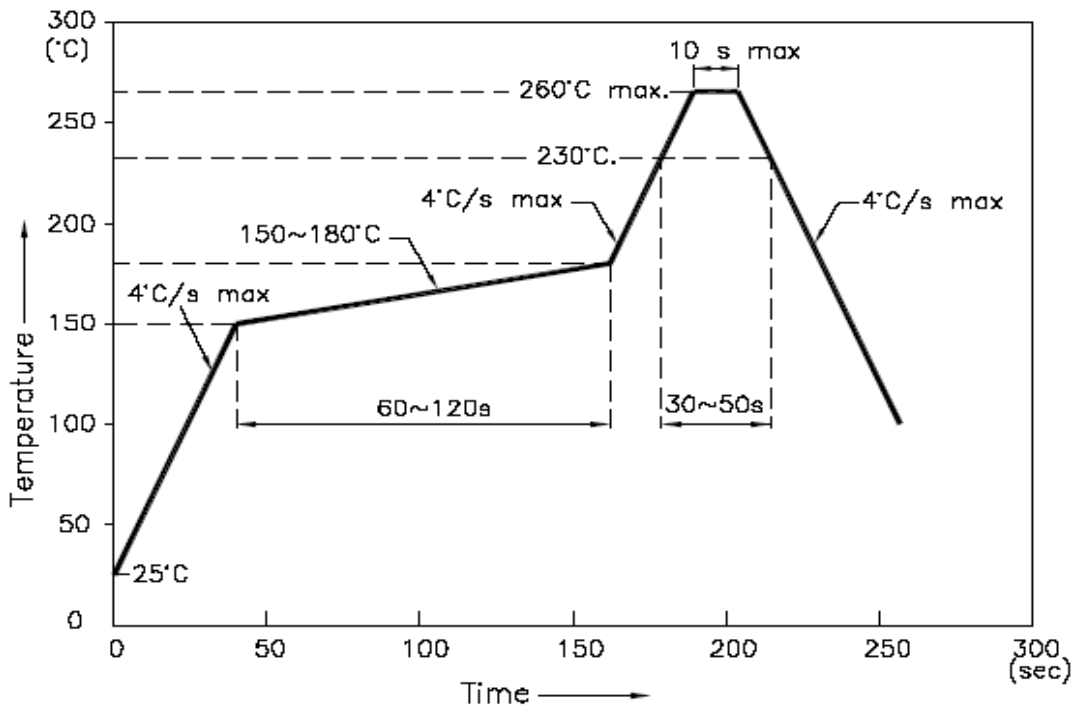
e) RELATIVE INTENSITY VS. WAVELENGTH



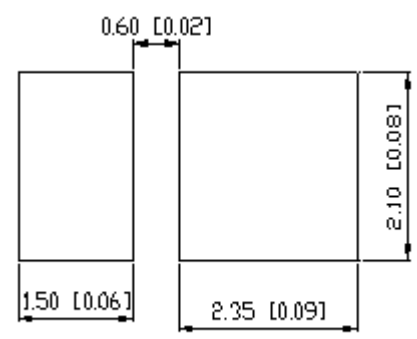
f) RADIATION PATTERN

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

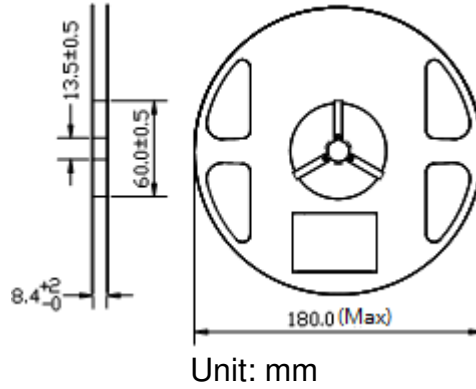


Units: mm

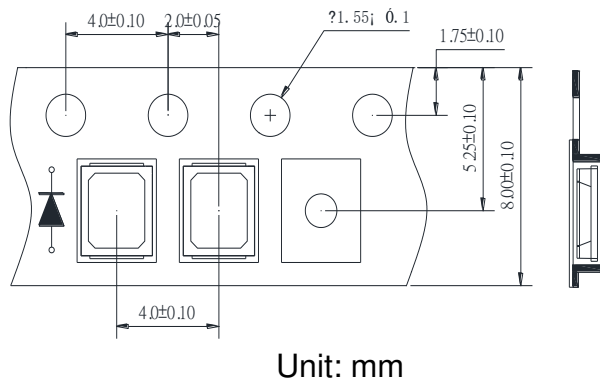
Tolerance: ± 0.2mm

Packing

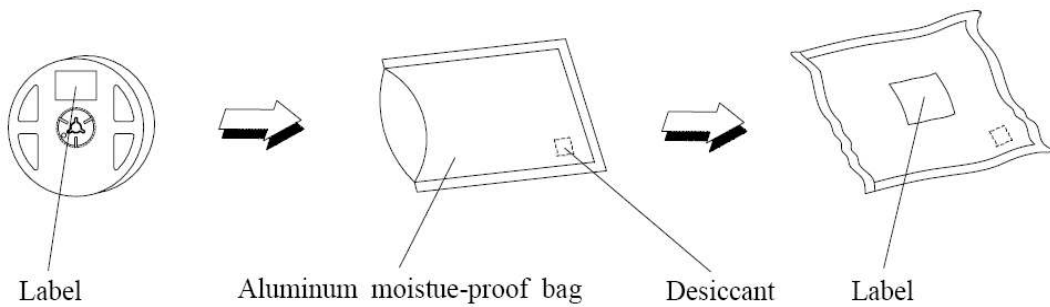
Reel Dimension:



Tape Dimension:



Packaging Specification:



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
QBHP686-RH	QBHP686-RH	$\Phi_v=15\text{lm typ. @ }150\text{mA/}$ $\lambda_D=615\text{nm to }630\text{nm}$	2,000 units
QBHP686-YH	QBHP686-YH	$\Phi_v=9\text{lm typ. @ }150\text{mA/}$ $\lambda_D=585\text{nm to }595\text{nm}$	2,000 units
QBHP686-OH	QBHP686-OH	$\Phi_v=17\text{lm typ. @ }150\text{mA/}$ Color=600nm to 610nm	2,000 units
QBHP686-IGH	QBHP686-IGH	$\Phi_v=29\text{lm typ. @ }150\text{mA/}$ Color=520nm to 530nm	2,000 units
QBHP686-IBH	QBHP686-IBH	$\Phi_v=10\text{lm typ. @ }150\text{mA/}$ Color=460nm to 470nm	2,000 units

Revision History

Description:	Revision #	Revision Date
New Release of QBHP686_series	V1.0	03/14/2011
Amend Spec	V1.1	02/15/2012
Update format and spec	V1.2	05/30/2012
Update dimension drawing and spec	V2.0	12/19/2013
Update dimension drawing (lead frame) and spec	V3.0	06/09/2017
Update Polarity on R/Y/O	V3.1	06/20/2017

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.