

# QT-Brightek High Power Series

## 0.5W High Power LED

Part No.: QBHP687-IWH-XX

XX = WW/NW/CW

Product: QBHP687-IWH-XX	Date: November 05, 2013	Page 1 of 10
	Version# 2.3	

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**Table of Contents:**

Introduction .....	3
Electrical / Optical Characteristic (T=25 °C) .....	4
Absolute Maximum Rating .....	4
Correlated Color Temperature and Chromaticity Correlation .....	5
Characteristic Curves.....	6
Solder Profile .....	7
Packing .....	8
Labeling .....	9
Ordering Information .....	9
Revision History .....	10
Disclaimer .....	10

## Introduction

### Features:

- Diffused lens
- Package in tape and reel
- 0.5W High Power
- Low thermal resistance
- Super high flux and luminance
- InGaN White
- CRI 80

### Description:

This low profile 0.5W high bright LED has a height profile of 0.77mm. It is ideal for indoor lighting and general use.

### Application:

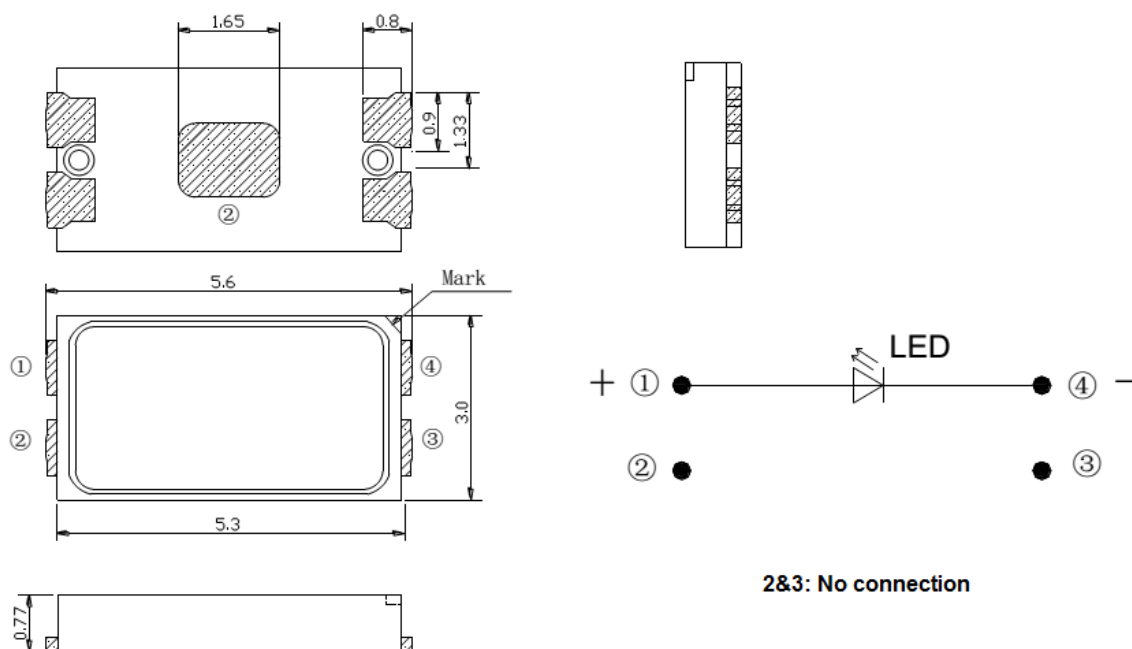
- Architectural lighting
- Household appliances
- General lighting

### Certification & Compliance:

- TS16949
- ISO9001
- RoHS Compliant



## Outline Dimensions:



Units: mm / tolerance = +/-0.2mm

**Electrical / Optical Characteristic (T=25 °C)**

Product Number	Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		CCT (K)			Φ <sub>v</sub> (lm)	
			Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.
QBHP687-IWH-WW	Warm White	150	3.3	3.6	2760	3000	3260	42	44
QBHP687-IWH-NW	Natural White	150	3.3	3.6	3640	4000	4240	42	50
QBHP687-IWH-CW	Cool White	150	3.3	3.6	5300	6020	7050	42	50

**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	580	180	300	5	-30 to +85	-40 to +100	260

\*Duty 1/10 @ 1KHz

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

**Forward Voltage V<sub>F</sub> @ I<sub>F</sub>=150mA**

Bin	Min.	Max.	Unit
H	2.8	3.0	V
J	3.0	3.2	
K	3.2	3.4	
M	3.4	3.6	

**Luminous Flux Φ<sub>v</sub> @ I<sub>F</sub>=150mA**

Bin	Min.	Max.	Unit
L1	42	52	lm
L2	52	64	
L3	64	80	

Note:

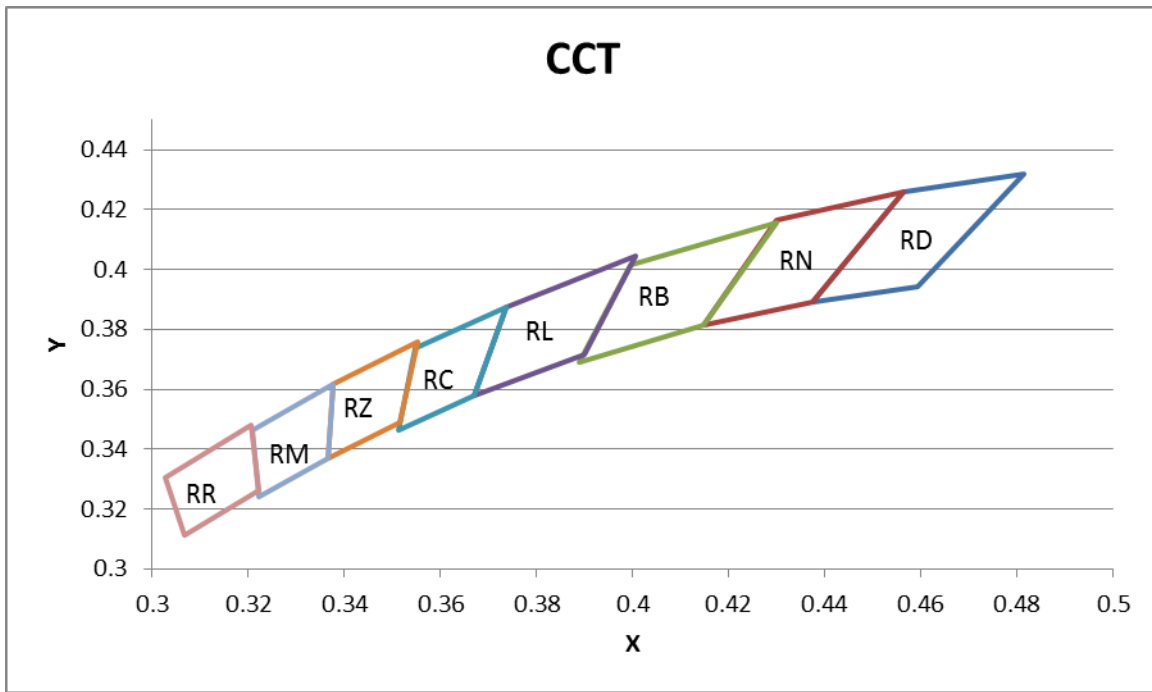
Tolerance of measurement of forward voltage: ±0.1V

Tolerance of measurement of luminous flux: ±10%

**Correlated Color Temperature (CCT) @ I<sub>F</sub>=150mA**

Bin	Min.	Max.	Unit
RN	2760	3260	K
RL	3640	4240	
RM	5300	6020	
RR	6020	7050	

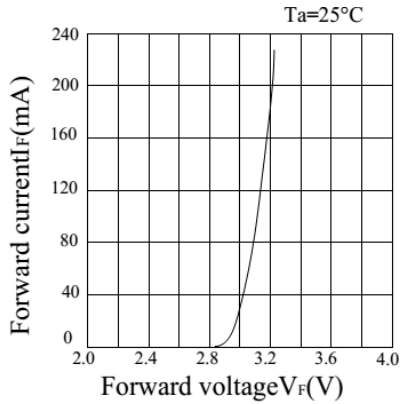
## Correlated Color Temperature and Chromaticity Correlation



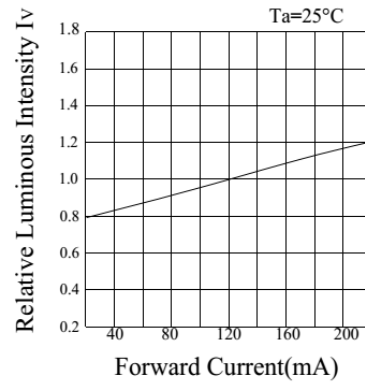
Color Ranks @ I <sub>F</sub> =150mA							
RD		RN		RB		RL	
0.4813	0.4319	0.4562	0.426	0.4299	0.4156	0.4006	0.4044
0.4562	0.426	0.4299	0.4165	0.3996	0.4015	0.3736	0.3874
0.4373	0.3893	0.4147	0.3814	0.3889	0.369	0.367	0.3578
0.4593	0.3944	0.4373	0.3893	0.4147	0.3814	0.3898	0.3716
0.4813	0.4319	0.4562	0.426	0.4299	0.4156	0.4006	0.4044
RC		RZ		RM		RR	
0.3736	0.3874	0.3551	0.376	0.3376	0.3616	0.3205	0.3481
0.3548	0.3736	0.3376	0.3616	0.3207	0.3462	0.3028	0.3304
0.3512	0.3465	0.3366	0.3369	0.3222	0.3243	0.3068	0.3113
0.367	0.3578	0.3515	0.3487	0.3366	0.3369	0.3221	0.3261
0.3736	0.3874	0.3551	0.376	0.3376	0.3616	0.3205	0.3481

Note:  
Tolerance of measurement of Color Coordinates: ±0.01

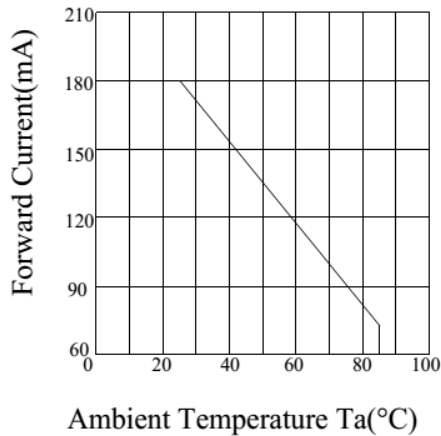
## Characteristic Curves



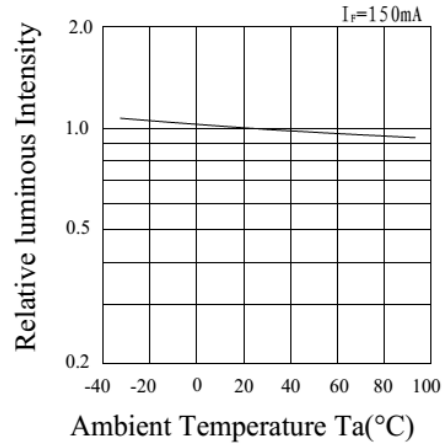
a) FORWARD CURRENT VS. FORWARD VOLTAGE



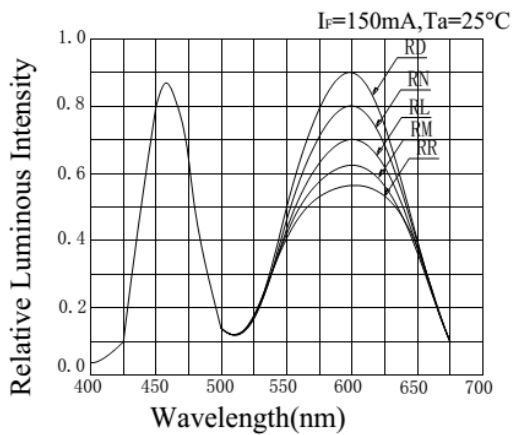
b) RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



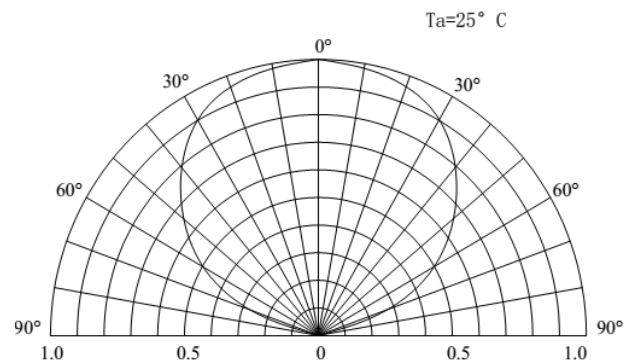
c) FORWARD CURRENT VS. AMBIENT TEMPERATURE



d) RELATIVE INTENSITY VS. AMBIENT TEMPERATURE



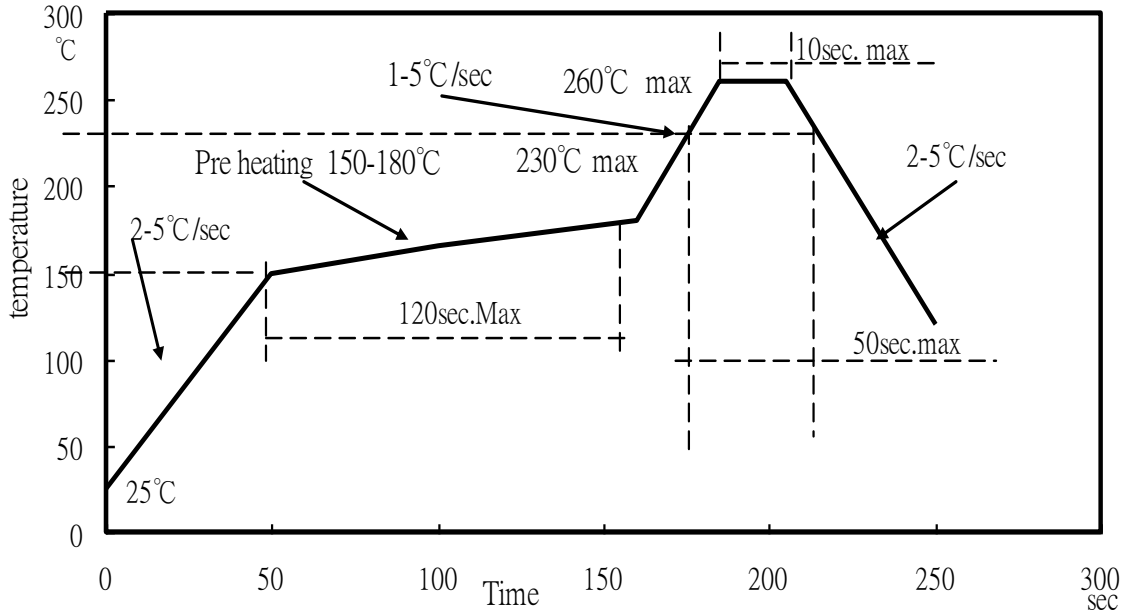
e) RELATIVE INTENSITY VS. WAVELENGTH



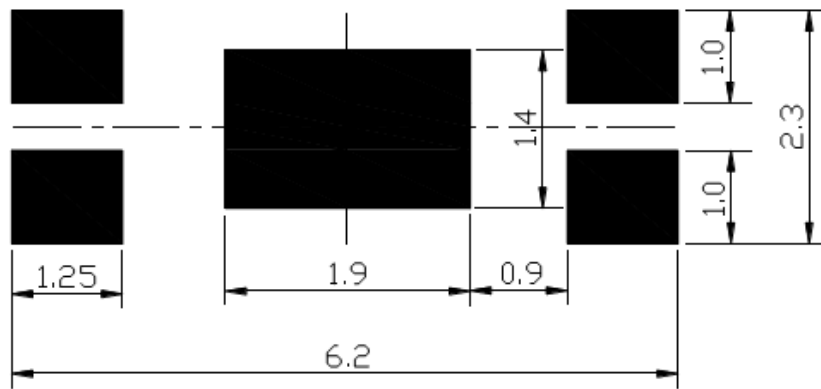
f) RADIATION PATTERN

**Solder Profile**

**Lead-Free Soldering Profile**



**Recommended Pad Layout**

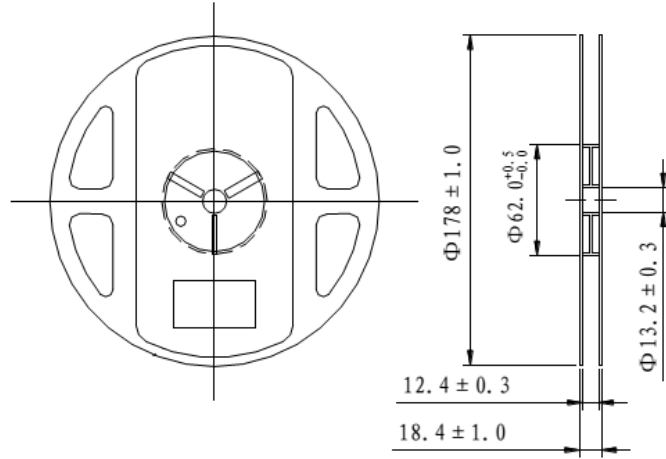


Units: mm

Tolerance: ± 0.2mm

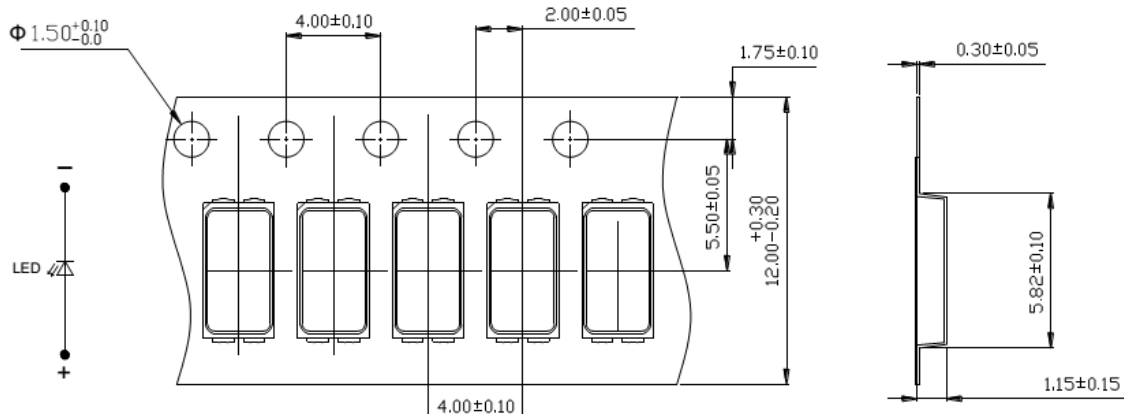
## Packing

Reel Dimension:



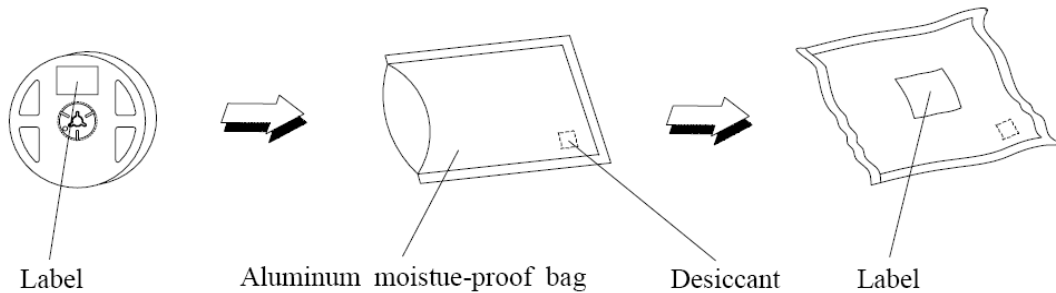
Unit: mm

Tape Dimension:



Unit: mm

Packaging Specifications:





**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
QBHP687-IWH-WW	QBHP687-IWH-WW	$\Phi_v=44\text{lm typ. @ } I_F=150\text{mA} /$ CCT=2760-3260K	2,000 units
QBHP687-IWH-NW	QBHP687-IWH-NW	$\Phi_v=50\text{lm typ. @ } I_F=150\text{mA} /$ CCT=3640-4240K	2,000 units
QBHP687-IWH-CW	QBHP687-IWH-CW	$\Phi_v=50\text{lm typ. @ } I_F=150\text{mA} /$ CCT=5300-7050K	2,000 units

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## Revision History

Description:	Revision #	Revision Date
New Release of QBHP687-IWH	V1.0	04/06/2011
Spec Update	V1.1	10/31/2011
Datasheet Format Update	V1.2	02/20/2012
Updated Binning	V1.3	2/29/2012
Updated Part Number to QBHP687E-IWH-XX	V1.4	03/05/2012
Update part number to QBHP687-IWH-XX / Update binning	V2.0	01/31/2013
Amend the dimension/ binning/ recommend solder pad layout	V2.1	08/01/2013
Update luminous flux and binning	V2.2	10/18/2013
Update pulse current test condition	V2.3	11/05/2013

## 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.