

# 承認書

## SPECIFICATION FOR APPROVAL

客 戶  
Customer

客戶品 號  
Customer Part No.

產品品號  
Brightek Part No. HC-S1615BHBRGTF-F1

產品規格  
Specification 贴片 1615 紅綠藍加

製 錶 人  
Prepared By 王清

審 核  
Checkedy 李東平

客 戶 回 簽  
Customer omfirmation

送 樣 日 期:  
Deliver date:

說明：一、謹致執事者：茲提供敝公司產品之有關詳細規格及圖面資料，敬請給予辦理測試認定手續。同時敬請送返一份附有貴公司簽認之測試認定後之樣品認定書。

We are sending you our specification and drawings for your approval. Please return to us one copy "For Approval" with your approved signatures.

二、客戶意見欄 Customer'S Proposal

☐ Approve 承認 (請於認可欄中簽名)

☐ Disagree 不同意

Reason 原因:

廣東光宇集團

廣東光宇實業有限公司

工廠地址：東莞市寮步鎮松湖智谷 A2 棟 3 樓

弘呈光電（香 港）有限公司

**Hong Cheng Photoelectric (HK) Limited**

東莞市弘呈光電有限公司

**DongGuan Hong cheng Optoelectronics Co.,Ltd.**

工廠地址：廣東省東莞市樟木頭鎮莞樟路樟木頭段 15 號萬輝花園 1 號二樓

ADD: Room 2108, No.1 building, Wanhui Garden, East Guanzhang Road, Zhangmutou, Dongguan, Guangdong, China

TEL: 0769-87797616 87182291 Fax: 0769-82337396 www.hc-led168.com

| 版本/版次 | 修改日期 | 修改內容 |
|-------|------|------|
| A01   |      |      |
|       |      |      |
|       |      |      |

## Features

1.6mm × 1.5mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

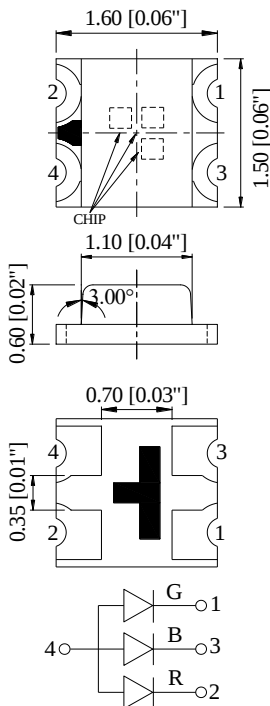
RoHS Compliant

## Applications

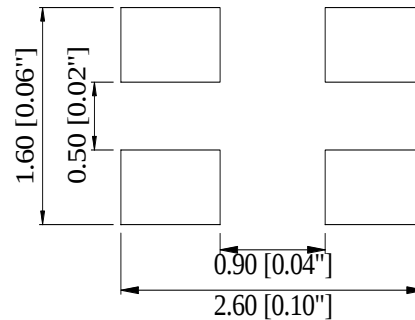
Ideal for back light and indicator

Various colors and lens types available

## Package outlines



## Recommend Pad Layout



| Part No.           | Emitted color | Dice      | Lens color        |
|--------------------|---------------|-----------|-------------------|
| HC-S1615BHBRGTF-F1 | Red           | AlGaInP   | Water transparent |
|                    | Green         | InGaN/GaN |                   |
|                    | Blue          | InGaN/GaN |                   |

### Notes:

1. All dimensions are in millimeters (inches);
2. Tolerances are  $\pm 0.1\text{mm}$  (0.004inch) unless otherwise noted.

### Absolute Maximum Ratings (TA=25℃)

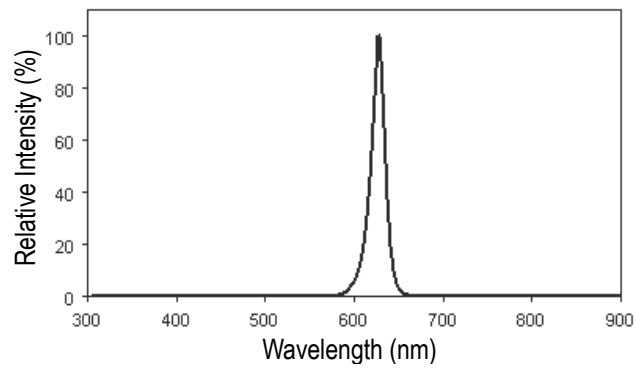
| Parameter                              | Symbol | Value    |     |     | Unit |
|----------------------------------------|--------|----------|-----|-----|------|
|                                        |        | R        | G   | B   |      |
| Power dissipation                      | Pd     | 72       | 111 | 111 | mW   |
| Forward current                        | If     | 30       |     |     | mA   |
| Reverse voltage                        | Vr     | 5        |     |     | V    |
| Operating temperature                  | Top    | -40 ~+80 |     |     | ℃    |
| Storage temperature                    | Tstg   | -40 ~+85 |     |     | ℃    |
| Peak pulsing current (1/8 duty f=1kHz) | Ifp    | 125      |     |     | mA   |

### Electro-Optical Characteristics (TA=25℃)

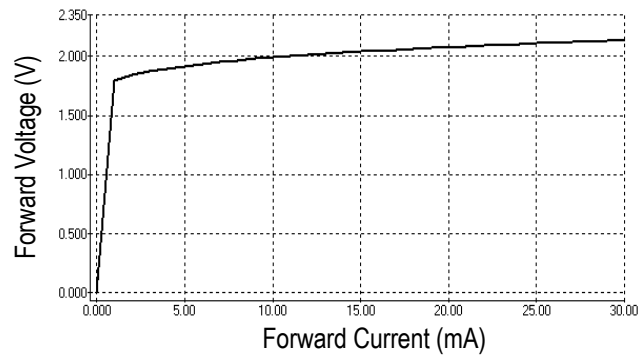
| Parameter                   | Test Condition | Symbol             | Value |     |     | Unit |
|-----------------------------|----------------|--------------------|-------|-----|-----|------|
|                             |                |                    | Min   | Typ | Max |      |
| Wavelength at peak emission | If=20mA        | $\lambda_p$ R      | --    | 632 | --  | nm   |
|                             |                | G                  | --    | 520 | --  |      |
|                             |                | B                  | --    | 465 | --  |      |
| Spectral half bandwidth     | If=20mA        | $\Delta \lambda$ R | --    | 18  | --  | nm   |
|                             |                | G                  | --    | 35  | --  |      |
|                             |                | B                  | --    | 25  | --  |      |
| Dominant wavelength         | If=20mA        | $\lambda_d$ R      | 620   | --  | 630 | nm   |
|                             |                | G                  | 520   | --  | 530 |      |
|                             |                | B                  | 465   | --  | 475 |      |
| Forward voltage             | If=20mA        | Vf R               | 1.8   | --  | 2.4 | V    |
|                             |                | G                  | 2.8   | --  | 3.7 |      |
|                             |                | B                  | 2.8   | --  | 3.7 |      |
| Luminous intensity          | If=20mA        | Iv R               | 80    | 140 | --  | mcd  |
|                             |                | G                  | 320   | 500 | --  |      |
|                             |                | B                  | 80    | 140 | --  |      |
| Viewing angle at 50% Iv     | If=10mA        | 2 $\theta$ 1/2     | --    | 120 | --  | Deg  |
| Reverse current             | Vr=5V          | Ir                 | --    | --  | 10  | μA   |

## Optical Characteristic Curves (Red)

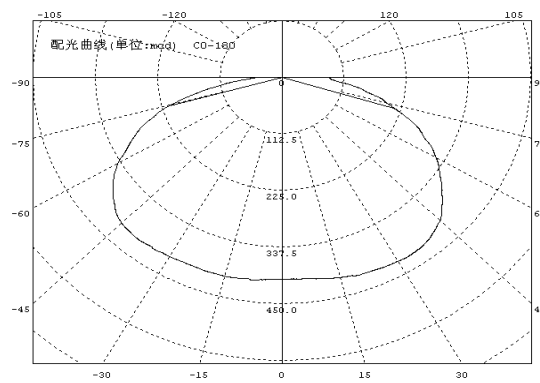
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

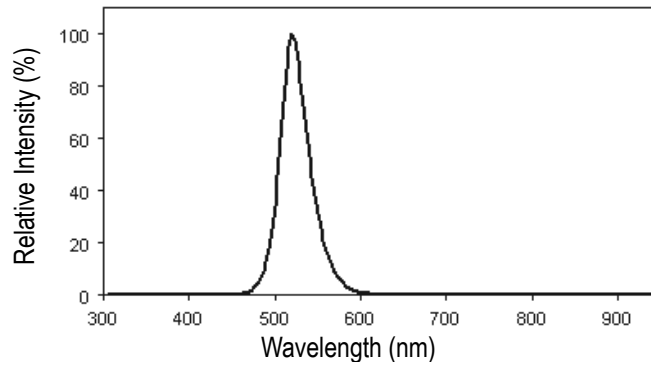


Directive Characteristics

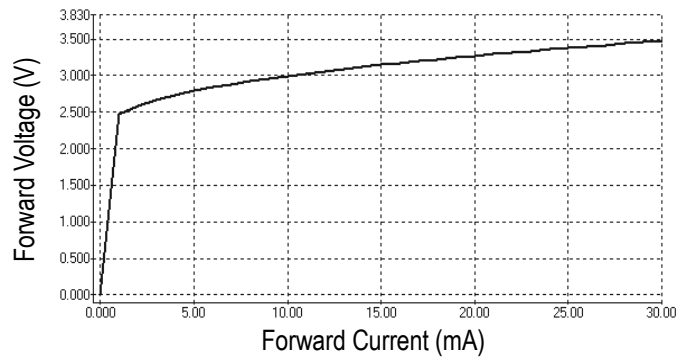


## Optical Characteristic Curves (Green)

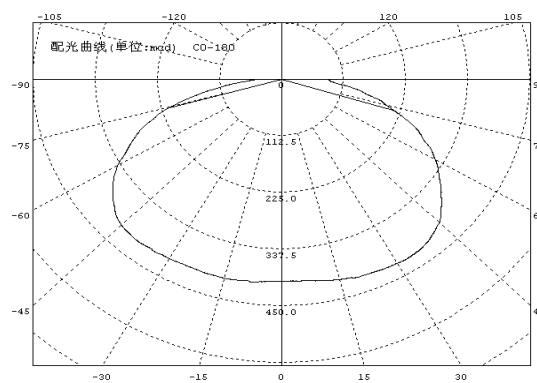
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

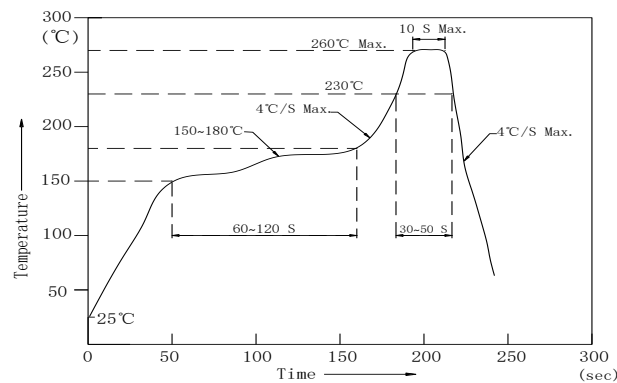


Directive Characteristics



## Reflow Profile

### ■ Reflow Temp/Time



### Notes:

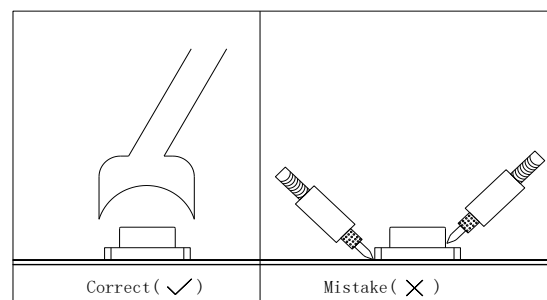
1. We recommend the reflow temperature 245°C (±5°C). the maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

### ■ Soldering iron

Basic spec is  $\leq 5\text{sec}$  when 320°C (±20°C). If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of iron should be smaller than 20W, and temperatures should be controllable. Surface temperature of the device should be under 350°C.

### ■ Rework

1. Customer must finish rework within 5 sec under 340°C.
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow solder etc.

## Test circuit and handling precautions

### ■ Test circuit

### ■ Handling precautions

#### 1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

#### 2. Storage

2.1 It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature :  $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$  ( $41^{\circ}\text{F}\sim 86^{\circ}\text{F}$ )

2.2 Shelf life in sealed bag: 12 month at  $<5^{\circ}\text{C}\sim 30^{\circ}\text{C}$  and  $<30\%$  R.H. after

the package is Opened, the products should be used within a week or they should be keeping to stored at  $\leq 20$  R.H. with zip-lock sealed.

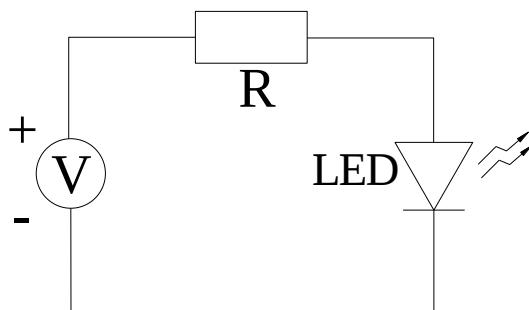
#### 3. Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs. The Conditions are as followings:

3.1  $60\pm 3^{\circ}\text{C}$  x(12~24hrs) and  $<5\%$  RH, taped reel type

3.2  $100\pm 3^{\circ}\text{C}$  x(45min~1hr), bulk type

3.3  $130\pm 3^{\circ}\text{C}$  x(15~30min), bulk type

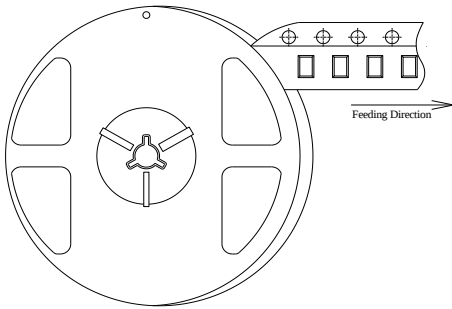


## Test items and results of reliability

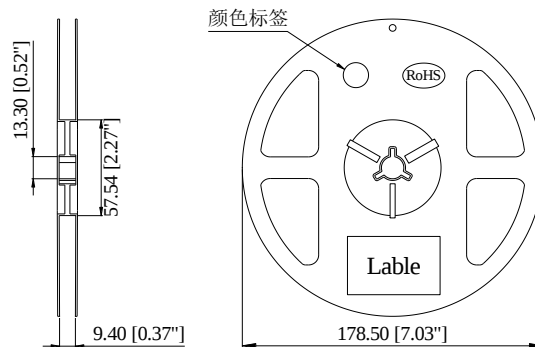
| Type                   | Test Item                    | Test Conditions                              | Note      | Number of Damaged |
|------------------------|------------------------------|----------------------------------------------|-----------|-------------------|
| Environmental Sequence | Temperature Cycle            | -40℃ 30min<br>↑ → (25℃/5min) ↓<br>100℃ 30min | 100 cycle | 0/22              |
|                        | Thermal Shock                | -40℃ 15min<br>↑ ↓<br>100℃ 15min              | 100 cycle | 0/22              |
|                        | High Humidity Heat Cycle     | 30℃ ⇔ 65℃<br>90%RH 24hrs/1cycle              | 10 cycle  | 0/22              |
|                        | High Temperature Storage     | Ta=100℃                                      | 1000 hrs  | 0/22              |
|                        | Humidity Heat Storage        | Ta=60℃<br>RH=95%                             | 1000 hrs  | 0/22              |
|                        | Low Temperature Storage      | Ta=-40℃                                      | 1000 hrs  | 0/22              |
| Operation Sequence     | Life Test                    | Ta=25℃<br>IF=20mA                            | 1000 hrs  | 0/22              |
|                        | High Humidity Heat Life Test | 60℃ RH=95%<br>IF=10mA                        | 500 hrs   | 0/22              |
|                        | Low Temperature Life Test    | Ta=-20℃<br>IF=20mA                           | 1000 hrs  | 0/22              |

# 1615 Series SMD Chip LED Lamps Packaging Specifications

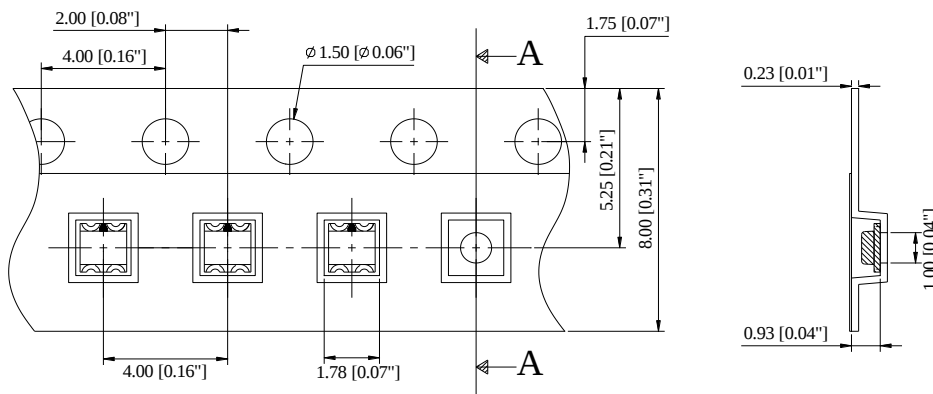
- Feeding Direction



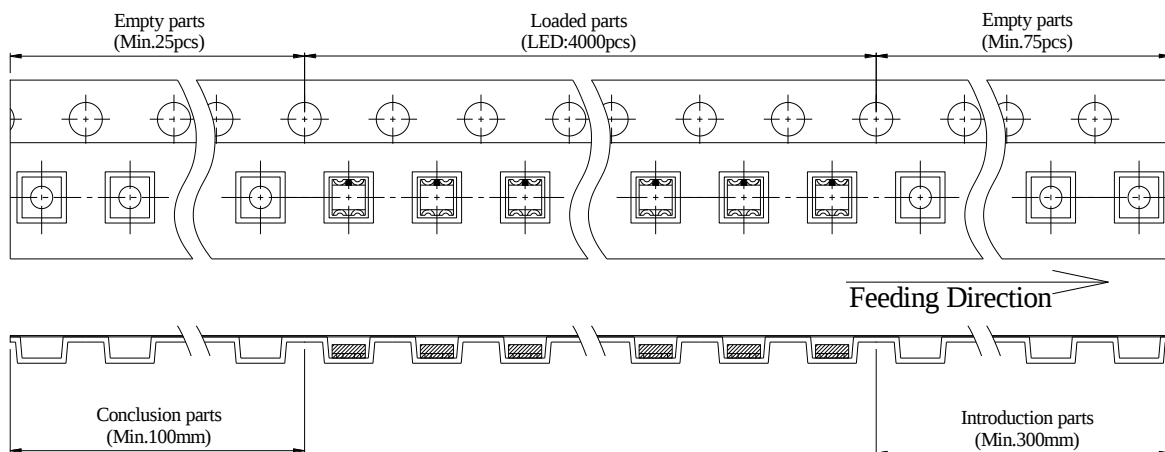
- Dimensions of Reel (Unit: mm)



- Dimensions of Tape (Unit: mm)



- Arrangement of Tape

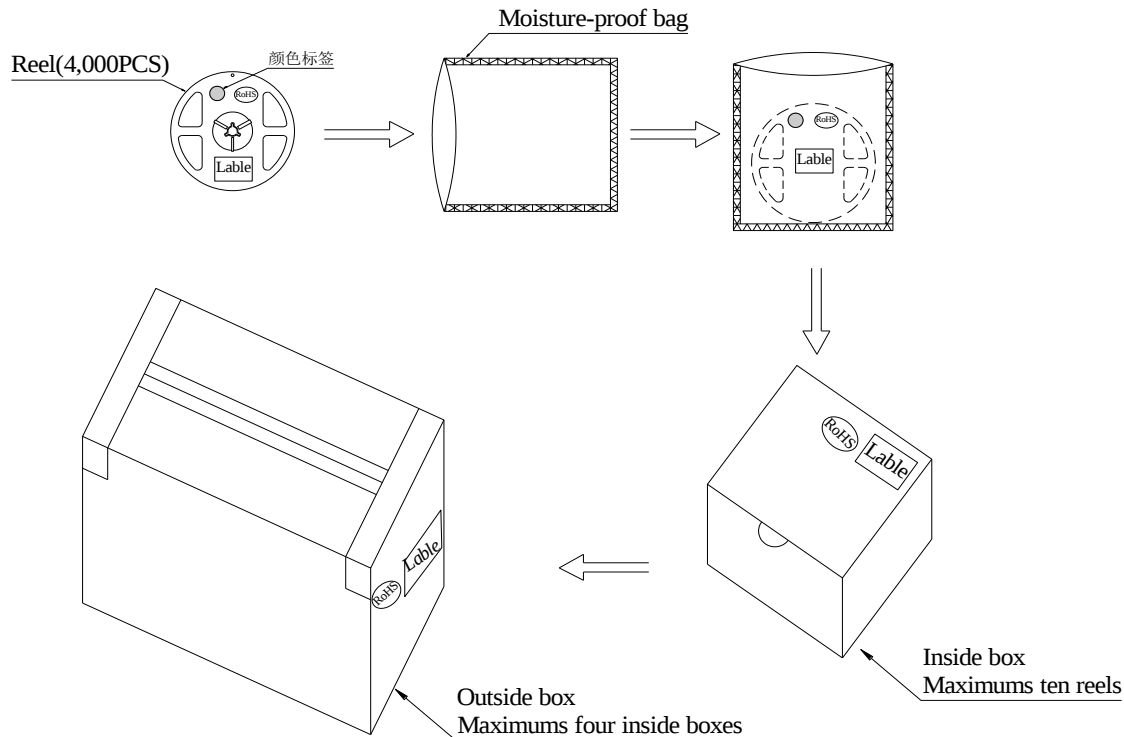


Notes:

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.

# 1615 Series SMD Chip LED Lamps Packaging Specifications

- Packaging specifications



Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. and quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.