



产品规格书

SPECIFICATION

产品型号 Model. NO: BH-EC1615-R2VGQB-CCC06CF-A01ZZ

(BH-E6C1615RGBC3UDA)

文件编号 Document. NO:

版次 REV NO: V2.0

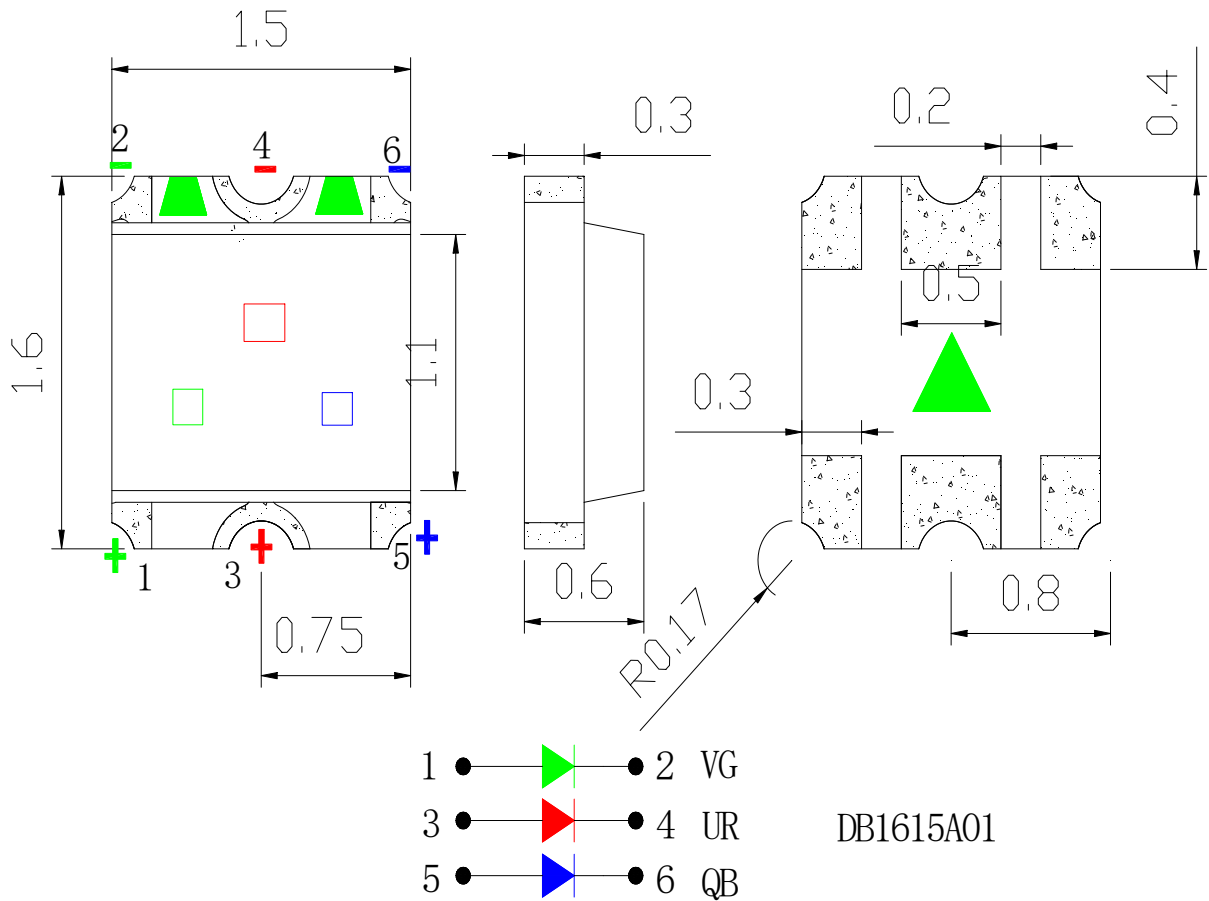
描述 Description:

- 1.6×1.5×0.6贴片侧发光二极管1.6×1.5×0.6 Chip SMD
- 胶体颜色Colloid Color:无色透明 Water Transparent
- 发光颜色Emission Color: 红/绿/蓝/三色七彩
- 半功率角度Viewing Angle :120°

| 博鸿光电 Bohon | | | 客户承认 Client | |
|--------------------|----------|------------|--------------|--------------|
| 工程 Engingeering | 品保 QA | 业务 Sell | 承认 Accept | 盖章 Affirm |
| | | | | |

1. 外形尺寸Dimensions

单位(Units):毫米(mm)



注意所有尺寸单位为mm，如无特殊说明误差范围为±0.05mm

All dimensions area in mm tolerance is ±0.05mm unless otherwise noted. tes:

2. 光电特性 Electrical / Optical characteristics

(1) 最大限度额定值Absolute Maximum Ratings (TA=25°C)



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| 项目 tem | 符号 Symbol | 最大绝对额定值 Absolute Maximum Rating | | | 单位 Unit |
|-----------------------------|--------------|------------------------------------|-------|-----|------------|
| | | Blue | Green | Red | |
| 正向电流Forward Current | IF | 25 | 25 | 25 | mA |
| 正向峰值电流Pulse Forward Current | IFP | 90 | 90 | 60 | mA |
| 反向电压Reverse Voltage | VR | 5 | | | V |
| 功率消耗Power Dissipation | PD | 135 | | | mW |
| 工作温度Operating Temperature | Topr | -40°C To +85°C | | | ° C |
| 贮藏温度Storage Temperature | Topr | -40°C To +85°C | | | ° C |
| 焊接温度Soldering Temperature | Tslid | Reflow Soldering回流焊接:240°C | | | for 10sec. |
| | | Hand Soldering手工焊接 :350°C | | | for 3sec |

1/10周期, 0.1 msec脉宽

IFP Conditions : 1/10 Duty Cycle, 0.1 msec Pulse Width

(2) 本样品光电参数Initial Electrical/Optical Characteristics (TA=25°C)

| 符号 Symbol | 项目 Item | 单位 Units | 发光颜色 Device | 最小值 Min | 规格值 Typ. | 最大值 Max. | 测试条件 Test Conditions |
|----------------------|----------------------------|-------------|----------------|------------|-------------|-------------|-------------------------|
| VF | 正向电压 Forward Voltage | V | Blue | 2.8 | 3.0 | 3.3 | IF=20mA |
| | | | Green | 2.8 | 3.0 | 3.3 | IF=20mA |
| | | | Red | 1.8 | 1.9 | 2.2 | IF=20mA |
| IR | 反向电流 Reverse Current | uA | - | - | - | 2 | VR=7V |
| $\Delta \lambda 1/2$ | 发光角度 Viewing Angle | ° | - | - | 120 | - | IF=5mA |
| C | 电容 Capacitance | PF | Blue | - | 100 | - | VF=0V f=1MHz |
| | | | Green | - | 40 | - | |
| | | | Red | - | 25 | - | |
| Iv | 发光强度 Luminous Intensity | Mcd | Blue | 100 | 150 | 200 | IF=20mA |
| | | | Green | 400 | 550 | 700 | IF=20mA |
| | | | Red | 100 | 140 | 200 | IF=20mA |
| λD | 主波长 Dominate Wavelength | Nm | Blue | 466 | 469 | 474 | IF=20mA |
| | | | Green | 518 | 523 | 528 | IF=20mA |
| | | | Red | 618 | 620 | 625 | IF=20mA |

正向电压允许误差± 0.05V Tolerance of measurement of Vf is ±0.05 V..

亮度允许误差±10% Luminous Intensity Measurement allowance is ± 10%.

波长允许误差±1nm Color Coordinates Measurement allowance is ± 1nm.

(3)发光强度范围 Luminous Intensity Ranking (TA=25°C)

| 项目 Item | 发光颜色 EmittingColor | 符号 Symbol | 测试条件 TestConditions | 最小值 Min. | 最大值 Max. | 单位 Units |
|-------------------------------|-----------------------|----------------|------------------------|-------------|-------------|-------------|
| 发光强度 Luminous Intensity | R | I _v | IF=20mA | 100 | 200 | Mcd |
| | G | I _v | IF=20mA | 400 | 700 | Mcd |
| | B | I _v | IF=20mA | 100 | 200 | Mcd |

亮度允许误差± 10%

Luminous Intensity Measurement allowance is ± 10%.

以上发光强度最小值和最大值参数仅供参考，但批量出货亮度分光跨度范围为1: 1.35 之内。

Above are the reference for minimum and maximum of luminous intensity which rank in the rate of 1:1.35 in the process of light splitting when manufacturing massively

(4) 主波长范围 Color Coordinates Ranking (TA=25°C)

| 项目 Item | 发光颜色 EmittingColor | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min. | 最大值 Max. | 单位 Units |
|-------------------------------|-----------------------|--------------|-------------------------|-------------|-------------|-------------|
| 主波长 Dominate Wavelength | R | λ D | IF=20mA | 618 | 625 | nm |
| | G | λ D | IF=20mA | 518 | 528 | nm |
| | B | λ D | IF=20mA | 466 | 474 | nm |

波长允许误差±0.5nm

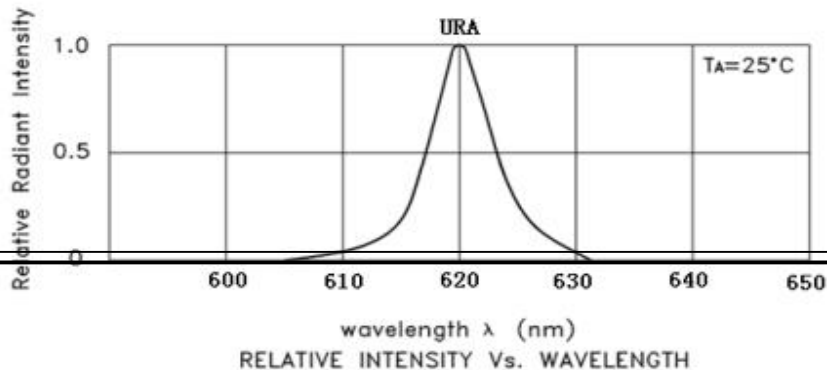
Color Coordinates Measurement allowance is ± 0.5nm.

以上波长最小值和最大值参数仅供参考，但批量出货波长分光跨度范围为R:5nm、G:2.5nm、B:2.5nm 之内

Above are the reference for minimum and maximum of wavelength, while it ranks as:R:5nm/G:2.5nm/B:2.5nm,when light splitting in mass manufacturing.

3. 特性曲线 Characteristic curve

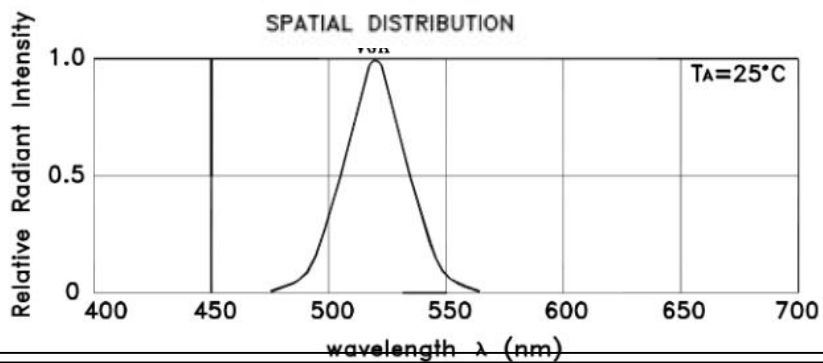
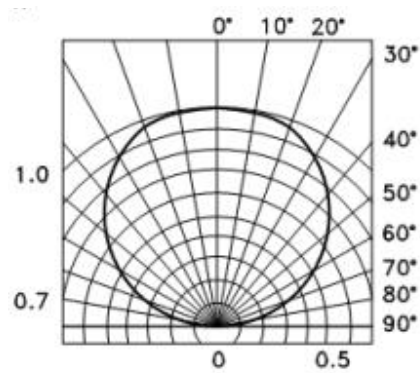
Red 红





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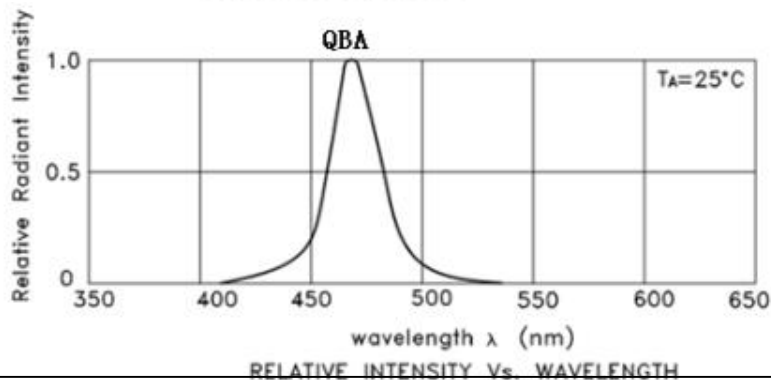
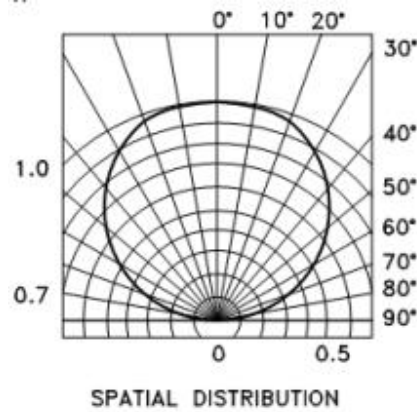
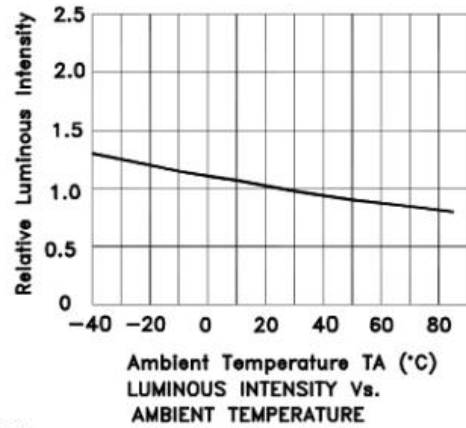
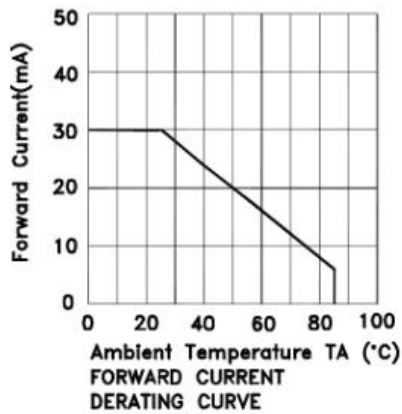
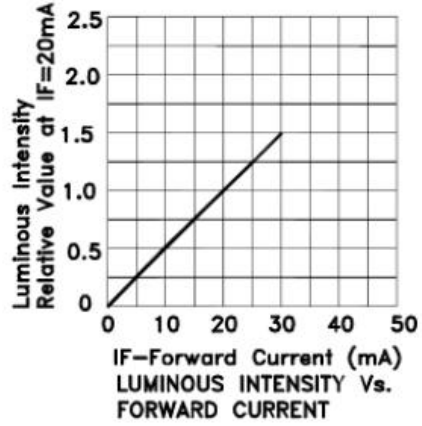
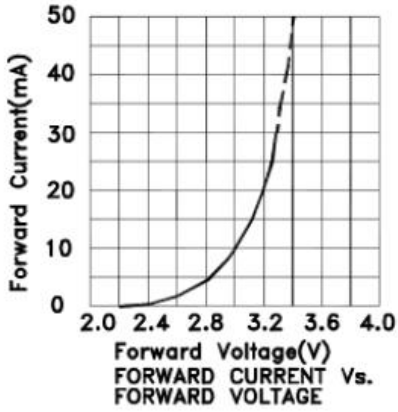
Green 绿

RELATIVE INTENSITY Vs. WAVELENGTH



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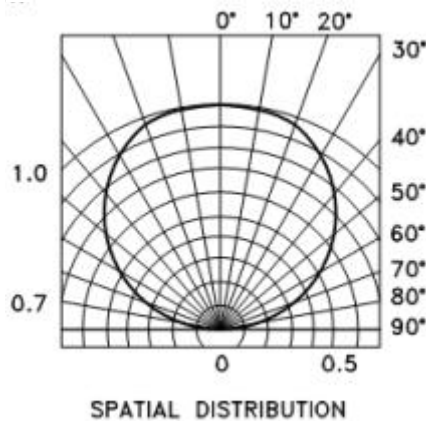
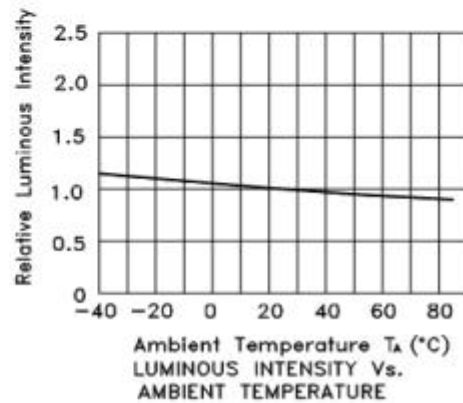
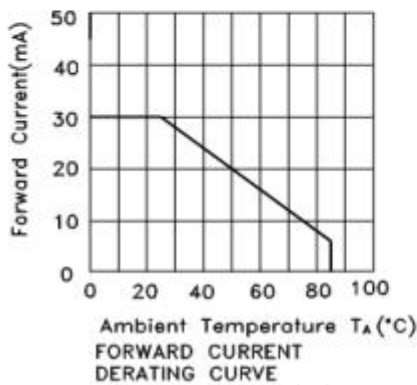
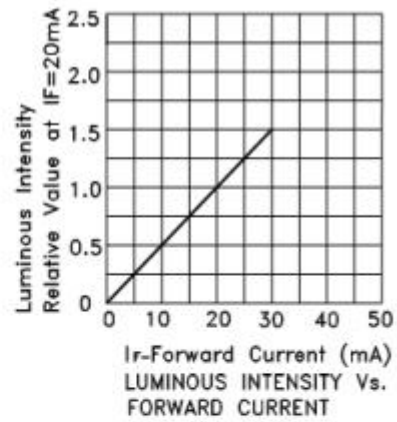
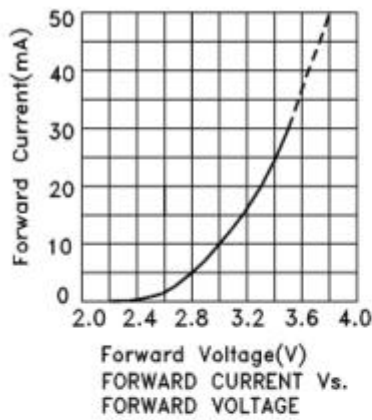


Blue蓝



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4. 可靠性RELIABILITY

(1) 测试项目及结果 Test Items and Results

| 序号 | 试验项目 | 参考标准 | 试验条件 | 持续时间 | 取样数 | 不良数量/抽样 |
|----|------|---------------|------------------------------------------------|--------------|-----|---------|
| 1 | 温度循环 | JEITA ED-4701 | -40°C~25°C~ 100°C~ 25°C 30 分钟 5 分钟 30 | 循环 100 回合 | 50 | 0/50 |



| | | | | | | |
|---|--------------|--------------------------|---------------------------------------------------|----------------------|----|------|
| | | | 分钟 5 分钟 | | | |
| 2 | 冷热冲击 | MIL-STD-202G | -40℃~100℃ 15 分钟 15 分钟 | 循环 500 回合 | 50 | 0/50 |
| 3 | 高温储存 | JEITA ED-4701 200 201 | Ta=100℃ | 1000 小 时 | 50 | 0/50 |
| 4 | 低温储存 | JEITA ED-4701 200 201 | Ta=-40℃ | 1000 小 时 | 50 | 0/50 |
| 5 | 常温寿命 试验 | | Ta=25±5℃ IF=5mA | 1000 小 时 | 50 | 0/50 |
| 6 | 高温高湿 寿命试验 | | Ta=60℃ RH=85% IF=5mA | 1000 小 时 | 50 | 0/50 |
| 7 | 可焊性 (回流焊) | JEITA ED-4701 300 303 | Tsol=280℃±5℃, 3 秒 使用助焊剂 | 焊接一 次, 3 秒 | 10 | 0/10 |
| 8 | 耐焊性 (回流焊) | JEITA ED-4701 300 301 | Tsol=245℃±5℃ , 10 秒 预处理: 35℃ 95%RH 96 小时 | 焊接二 次, 每次 10 秒 | 10 | 0/10 |

以上试验项目如与客户试验要求存在差异的或者特殊客户特殊要求的可根据实际情况按照客户的要求进行试作, 客户未要求的按我司试验标准试作. 不同产品使用不同电流进行测试

The above test items such as differences or special customer specific requirements according to the actual situation in accordance with the requirements of customers to try the requirements with the customer, the customer is not required by our test standard test. Different products using different current test

5. 注意事项 Cautions

(1) 焊接条件 Soldering Conditions

本产品最多只可回焊两次, 且在首次回焊后须冷却至室温之后方可进行第二次回焊.

Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and Second soldering process.

推荐焊接条件(Recommended soldering conditions)

| | 回流焊接Reflow soldering | | 手工焊接Hand welding | |
|--------------|----------------------|------------------------|------------------|-------------|
| | 有铅 Lead Solder | 无铅 Lead-free Solder | 温度Temperature | 350° C Max. |
| 预热温度Pre-heat | 140 ~ 160° C | 180 ~ 200° C | 焊接时间 | 3 sec. Max. |



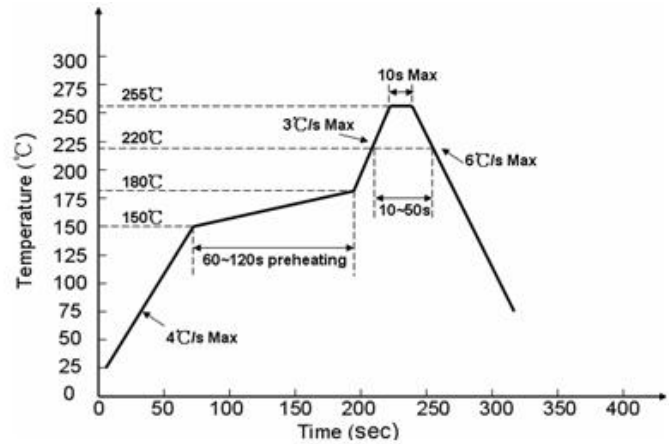
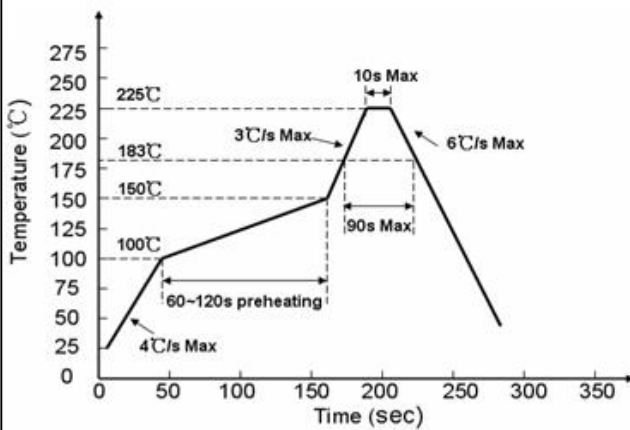
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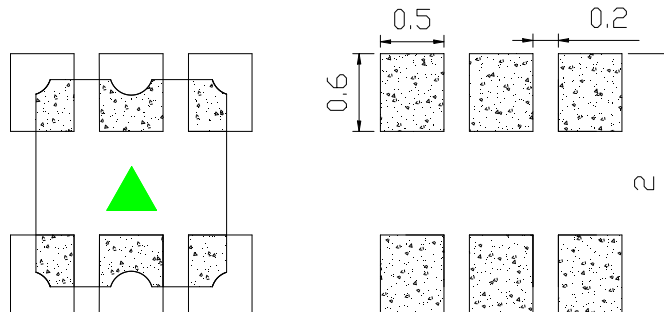
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|----------------------|---------------|---------------|----------------|----------------|
| 预热时间Pre-heat time | 120 sec. Max. | 120 sec. Max. | Soldering time | (onetime only) |
| 峰值温度Peak temperature | 230° C Max. | 250° C Max. | | |
| 焊接时间Soldering time | 10 sec. Max. | 10 sec. Max. | | |
| 条件Condition | 参考下图 | 参考下图 | | |

有铅回焊 (Lead Solder)

无铅回焊 (Lead-Free Solder)



推荐焊盘式样 (Recommended Soldering Pattern) 单位:毫米 (Units:mm)



(2) 静电 Static Electricity

触摸 LED 时, 推荐使用防静电手腕带或防静电手套.

It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.

所有装置、设备、机器均应接地.

All devices, equipment and machinery must be properly grounded.

静电损坏的 LED 会显示出异常特征: 正向电压变低或在低电流时死灯. 标准: $I_F=0.5\text{mA}$ 时, $V_F > 2.0\text{V}$
 Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current. Criteria : ($V_F > 2.0\text{V}$ at $I_F=0.5\text{mA}$)

(3) 防潮包装 Moisture Proof Package

使用防潮包装

It is recommended that moisture proof package be used .

(4) 储藏 Storage

打开包装袋之前, LED 在温度为 30°C 或更低湿度 70%RH 以下, 可保存一年.

Before opening the package , The LEDs should be kept at 30°C or less and 70%RH or less.



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The LEDs should be used within a year.

(5) 打开包装之后,应在 24hrs 内焊接完毕.

After opening the package, The LEDs should be soldered within 24 hours (1days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel).

下列情况发生时,须要在焊接前重新烘烤 60 ± 5° C,12 小时以上。

- A. 当包装袋破损漏气
- B. 打开包装后在 24hrs 内未焊接完毕
- C. LED 超过存储时间。

If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions Baking treatment : more than 12 hours at 60 ± 5° C.

(6) 包装标签如下:

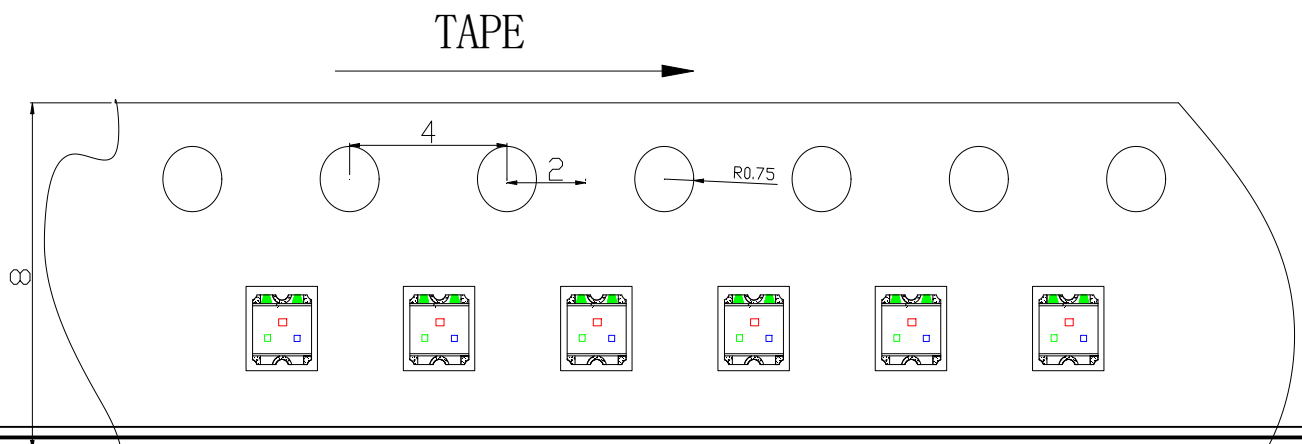
| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|  深圳市博鸿光电科技有限公司 ShenZhen BOHON Photoelectricity Technology Co., Ltd | |
| 型号: | 日期: |
| 单号: | BIN: |
| 亮度: mcd | 波长: nm |
| 电压: V | 数量: pcs |
| 注意: 贴片前需68℃烘烤8-10小时! (硬硅胶封装, 回焊温度≤230℃) | |

6. 包装 PACKAGING

(1)LEDS 在装带之后纸箱包装. The LEDs are packed in cardboard boxes after taping.

(2)装带规格.Taping Specifications (单位:毫米 Units:mm)

(3)包装方式.Manner of packing



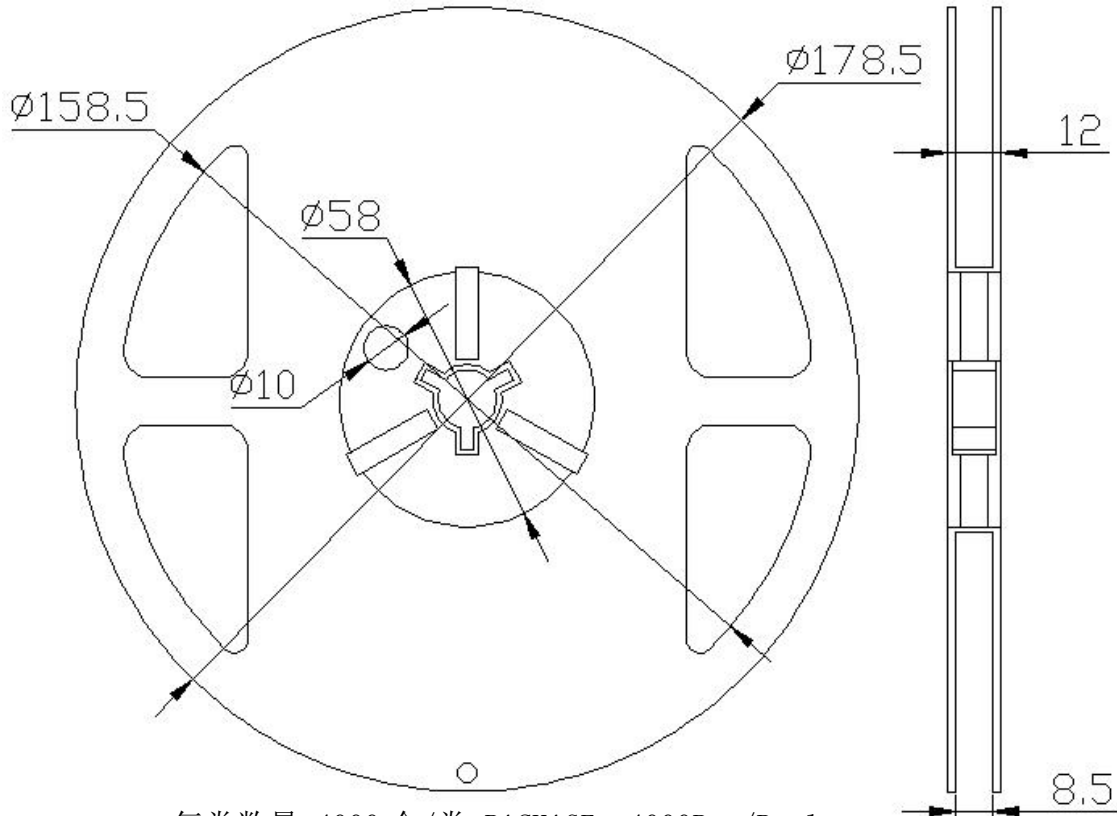


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(4) 卷轴尺寸

Reel Dimensions



每卷数量 4000 个/卷 PACKAGE: 4000Pcs/Reel

(5) 最小包装标签注明以下: 产品名称. 批号. 光电范围. 数量.

The label on the minimum packing unit shows ; Part Number, Lot Number, Ranking, Quantity.

(6) 请注意防水防潮

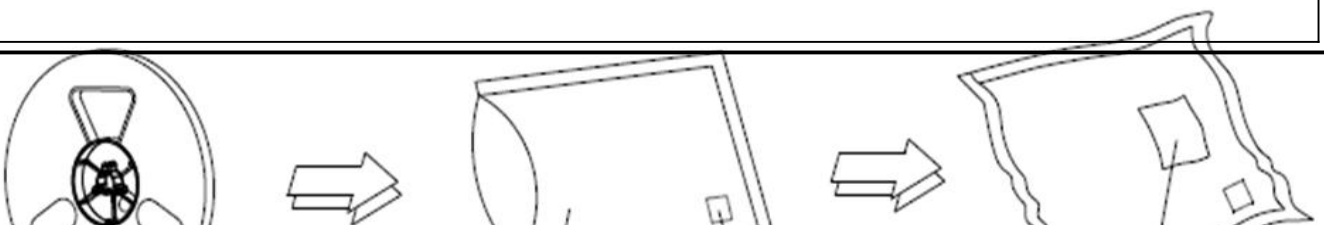
Keep away from water, moisture in order to protect the LEDs.

(7) 须采取适当防护措施, 以防包装箱跌落或受到强力撞击造成对产品的损伤.

The LEDS may be damaged if the boxes are dropped or receive a strong impact against them.
so precautions must be taken to prevent any damage.

7. 防潮带包装

Moisture Resistant Packaging





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注:标注公差为 $\pm 0.1\text{MM}$,单位:MM

Note:The tolerances unless mentioned is $\pm 0.1\text{mm}$,Unit:mm

表面贴装LED采用卷盘包装,LED在用普通或防静电袋包装后再装在纸箱中. 纸箱用于保护运输途中LED不受机械冲击,纸箱不防水,因此请注意防潮防水

Surface mount LED is packed in reels, LED is packed in plain or antistatic bags and then packed in cartons. Cartons are used to protect the LED from mechanical shocks during shipping. Cartons are not waterproof, so please be waterproof