



PRODUCT SPECIFICATION

- ◆ 产品名称(Product Name): IE-2727RGB-HB-BBO-KS4
- ◆ 产品型号(Product Model): IE-2727RGB-HB-BBO-KS4
- ◆ 版本号 (Version No.) : V6.2

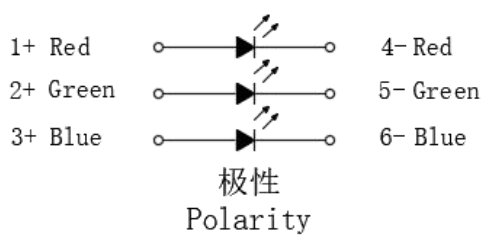
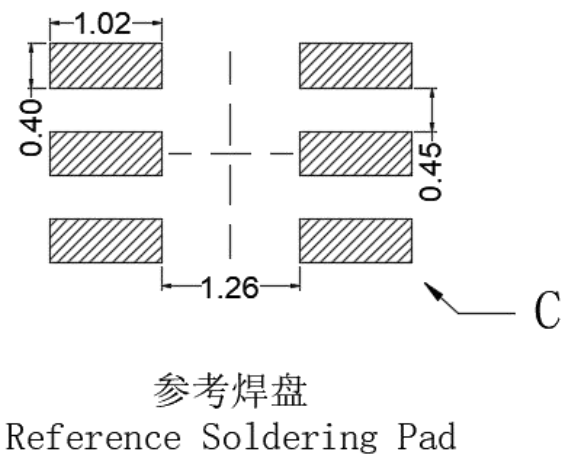
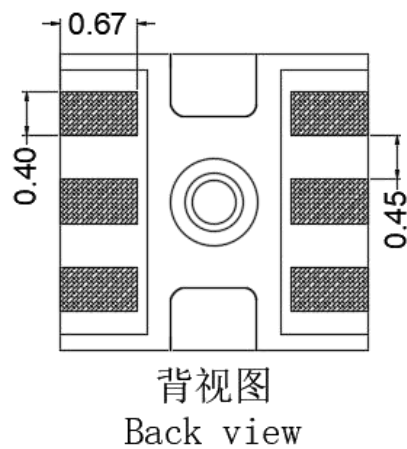
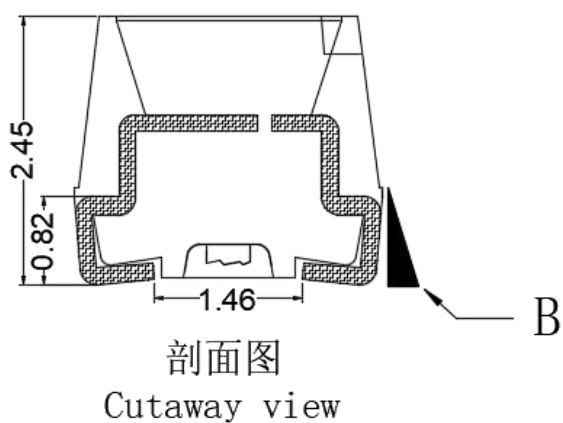
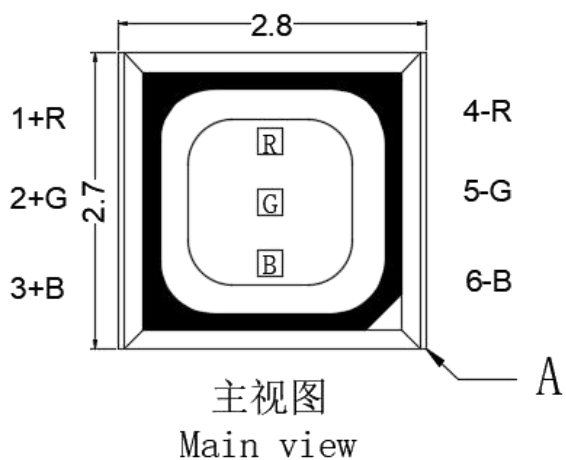
描述 Description:

- TOP 发光二极管 (TOP Light Emitting Diode)
- 胶体颜色 (Colloid Color): 白色雾状 (White Diffused)
- 发光颜色 (Emission Color) : 全彩 (Full Color)

R&D Center		Customer	
Prepared by	Approved by	Confirmed by	Approved by
Customer			
Customer No.			
Issue Date : 2022-06-15			

1. 外形尺寸

Outline Dimension



备注:

Remarks:

所有尺寸单位为 mm，误差范围：±0.1mm。

All demensions are in millimeters (mm),Tolerance range: ±0.1 mm.

A: 缺口标志。

A: Nivk Mark.

B: 客户使用时，建议注胶高度达到 1.0mm。

B: When the product is employed, the recommended height of injecting glue is 1.0 mm.

2. 光电特性

Electrical-Optical characteristics

(1) 最大限度额定值(温度=25±5°C)

Absolute Maximum Ratings (Ta=25±5°C)

项目 Item	符号 Symbol	最大额定值 Absolute Maximum Rating			单位 Unit
		Blue	Green	Red	
正向电流 Forward Current	IF	20	20	30	mA
正向峰值电流 Pulse Forward Current	IFP	30	30	50	mA
功率消耗 Power Dissipation	PD	68	68	72	mW
反向电压 Reverse Voltage	VR	10			V
灯珠焊盘工作温度 LED Pad Operating Temperature	Topr	-30 ~ +85			°C
贮藏温度 Storage Temperature	Tstg	-40 ~ +85			°C
焊接温度 Soldering Temperature	Tsld	Reflow Soldering: 240°C Hand Soldering: 300°C			for 10sec. for 3sec.

1/10周期, 0.1 msec脉宽

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

(2) 本产品光电参数(温度=25±5°C)

Initial Electrical/Optical Characteristics (Ta=25±5°C).

符号 Symbol	项目 Item	单位 Units	发光颜色 Color	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	Red	1.7		2.4	IF=20mA
			Green	2.4		3.4	IF=15mA
			Blue	2.4		3.4	IF=10mA
IR	反向电流 Reverse Current	uA	-	-	-	0.5	VR=10V
Δλ1/2	发光角度 Viewing Angle	°	-	-	110	-	IF=20/15/10mA
Iv	发光强度 Luminous Intensity	mcd	Red	800		1200	IF=20mA
			Green	1500		2250	IF=15mA
			Blue	200		400	IF=10mA
λD	主波长 Dominate Wavelength	nm	Red	620		625	IF=20mA
			Green	510		535	IF=15mA
			Blue	458		475	IF=10mA

正向电压允许误差±0.05V; 亮度允许误差±10%; 波长允许误差±1nm

Measurement allowance of Vf is ±0.05V; Measurement allowance of luminous intensity is ±10%; Measurement allowance of color coordinates is ±1nm.

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: 1.3 之内。

Above are the reference for minimum and maximum of luminous intensity, which rank in the rate of 1:1.3 in the process of light splitting when the product is manufactured massively.

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:3nm、B:3nm 之内

Above are the reference for minimum and maximum of wavelength, which rank as:R:5nm/G:3nm/B:3nm.in the process of light splitting when the product is manufactured massively.

3. 可靠性试验

Reliability Test

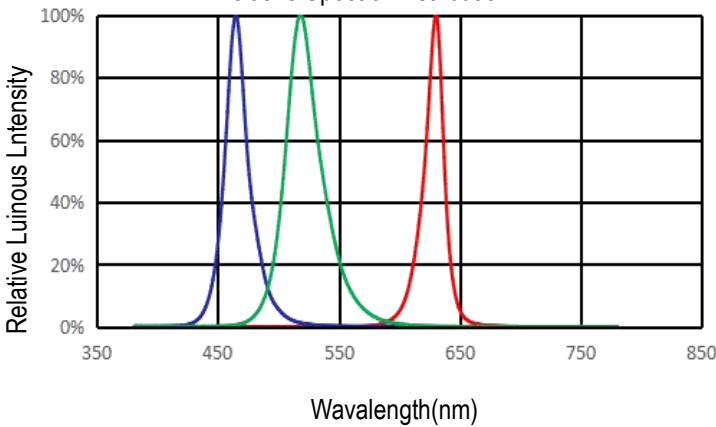
序号 NO.	试验项目 Test Items	参考标准 Reference	试验条件 Test conditions		实验数 Units Tested	允收 水准 LTPD
1	温度循环保存 Temperature Cycling Test	EIAJ ED-4701 100 105	-40℃~25℃~100℃~25℃ 30min ~5min ~30min~5min	100 Cycles	22	0/22
2	冷热冲击保存 Thermal Shock Test	EIAJ ED-4701 300 307	-40℃~125℃ 10min~10min	200 Cycles	22	0/22
3	高温储存 High Temperature Storage Test	EIAJ ED-4701 200 201	Ta=125℃	1000 Hours	22	0/22
4	低温储存 Low Temperature Storage Test	EIAJ ED-4701 200 202	Ta=-55℃	1000 Hours	22	0/22
5	常温寿命试验 Continuous Operating Test	EIAJ ED-4701 100 101	Ta=25±5℃ IF=1.5 倍分光电流	1000 Hours	22	0/22
6	耐焊性(回流焊) Soldering Resistance Test	EIAJ ED-4701 300 301	Pre treatment: Tsol=260℃, T=10s	3 Times	22	0/22
7	潮湿等级 3 MSL3	IPC/JEDEC J-STD-020D.1	1. 125℃除湿 24 小时 Moisture Removal 125℃/ 24HR 2. Ta=60℃, RH=60% 吸湿 52 小时 Moisture AbsorptionTa=60℃, RH=60% /52HR 3. Tsol=260℃, T=10s 回流焊 Tsol = 260℃, t=10s Reflow Soldering	3 Times	22	0/22
备注 Remarks	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。 All the tests should be performed according to customers' actual requirements, while difference of test standard or special requirements exist. Otherwise, all the tests are performed according to the standard listed above. Different current is applied to the tests of different product models.					

4. 特性曲线

Characteristic Curves

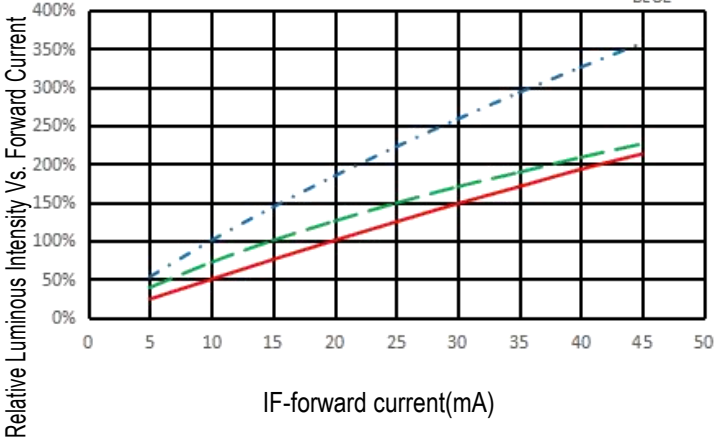
光谱分布特性曲线

Relative Spectral Distribution



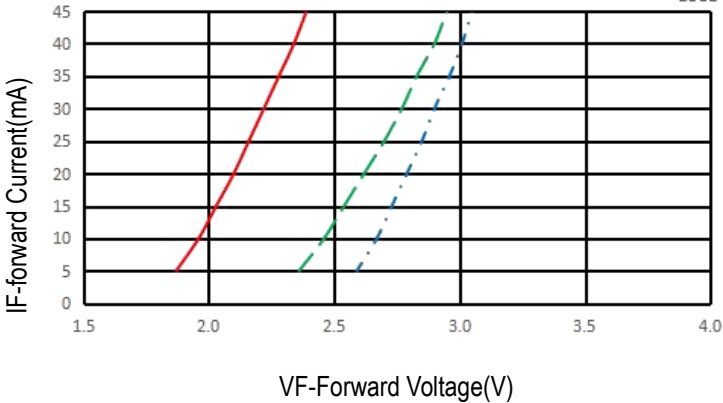
相对光强与正向电流关系

Relative Luminous Intensity Vs. Forward Current



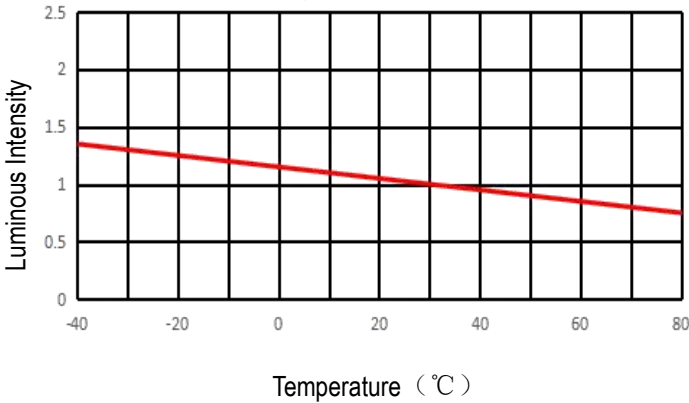
伏安特性曲线

Electrical Characteristics



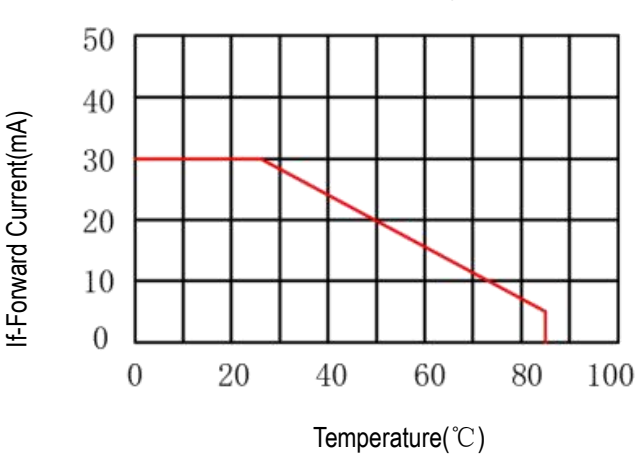
光强与环境温度曲线

Luminous Intensity Vs. Ambient Temperature



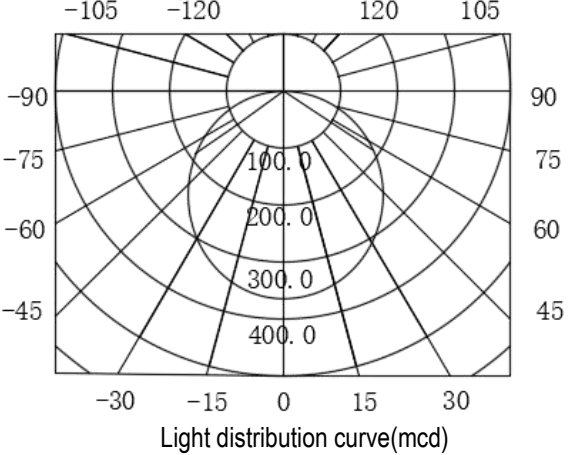
正向电流降额曲线

Forward Current Derating Curve



配光曲线

Light Distribution Curve



5. 注意事项

Cautions

5.1 焊接（包括手动和回流焊）

Soldering (Including Manual and Reflow Soldering)

5.1.1 使用烙铁手动焊接

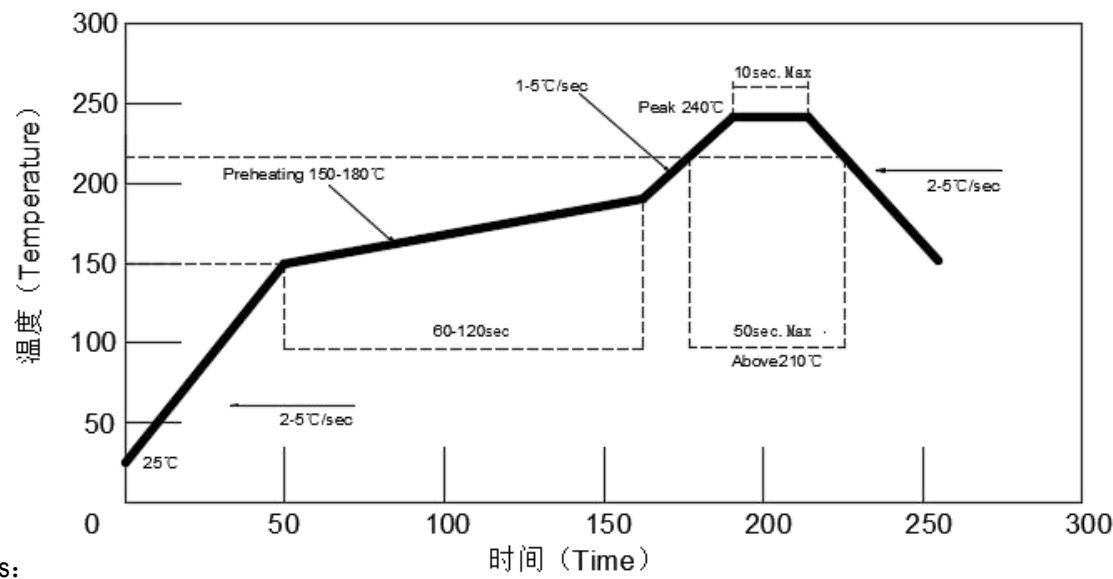
Maual Soldering

焊接时烙铁的温度必须保持在 300℃ 以下，且每个电极只能进行一次焊接，每次焊接的持续时间不得超过 3 秒。因 LED 尺寸较小，采用手工焊接较难管控焊接温度及加锡时间的一致性，且易破坏灯体结构，严重时可能造成 LED 失效，所以请尽量使用回流焊机台作业。

The temperature of soldering iron must be kept below 300℃ during the soldering process. Each pin can be soldered once only, and the duration of each soldering should not exceed 3 seconds. Due to the small size of LED, it is difficult to control the soldering temperature and consistency of tin time during the manual soldering while the structure of light body can be destroyed easily, causing further LED failure. Reflow soldering process is recommended.

5.1.2 推荐回流焊接曲线

Recommended Reflow Soldering Curve



a. 建议 LED 贴板前对 PCB 板进行烘烤，建议烘烤条件 110℃/4 小时。

Baking of PCB is necessary before SMD working, and the recommended baking condition is 110℃/4HR.

b.回流焊接时，建议焊接温度控制在 240±5℃ 以内。

It is suggested that the soldering temperature should be controlled within 240±5℃ during reflow soldering.

c.回流焊接最多只能进行两次。在回流焊接升温过程中，请不要对 LED 施加任何压力。在焊接完成后，待产品温度下降到室温之后，再进行其他处理。

Reflow soldering can be performed twice only. In the heating process of reflow soldering, please do not introduce any additional pressure on the LED. After the completion of soldering, perform other processing while the product is fully cooled to room temperature.

5.2 储存

Storage

本产品使用密封防潮抗静电铝箔袋包封并附有干燥剂。搬运过程中应避免挤压、刺破包装袋的情况发生，同时为避免产品受潮引发的可靠性失效问题，需做好 LED 产品焊接前的储存与防潮措施，如下：

Moisture-proof anti-static aluminum foil bags with desiccant are employed for the product package. The package should be prevented from extrusion and puncture. Meanwhile, in order to avoid the failure of reliability caused by moisture, it is necessary to ensure the storage and moisture resistance of LED products before soldering, as follows:

5.2.1 未开封的产品需储存于:温度:30℃以内/湿度:60%RH 以下的环境,且 3 个月内用完。

Unopened products should be stored in the environment of temperature below 30℃ / humidity below 60% RH and used up within 3 months.

5.2.2 在开包装之前，请先检查包装袋有无漏气，如果有漏气现象，请退回我司重新烘烤除湿包装后再使用。

Before opening the package, please check the package for air leaks, if there exists any air leaks, please return the product to our company for package after dehumidification by baking before your second use.

5.2.3 包装袋开启后,产品必须：在规定环境温度 30℃以内、湿度 60%RH 以下的条件中使用；并且需要在 12 小时内焊接完毕；未使用完的需存储需于温度:25℃以内 湿度:30%RH 以下的环境,且必须在 24 小时内用完。

After the package is opened, the product must be used in the specified environment of temperature below 30℃/humidity below 60% RH, and soldered within 12HR. Unused material must be stored in the environment of temperature below 25℃/humidity below 30% RH and used up within 24HR.

5.2.4 材料拆装后使用时间超过 12 小时未用完，需重新烘烤后才可使用。烘烤条件如下表：

If unpacked material is not used up for over 12HR, it need to be re-baked before its using. The baking conditions are listed in the table below:

产品型号 Product Model	开封前受潮 Damp before Opening	开封前未受潮 No damp before Kaifeng	
		<60天 <60 Days	>60天 >60 Days
Chip系列：1010/1415/ 4093/4156/2125/0606	返厂处理	60℃/12HR	60℃/24HR
Top户外系列：3535/2727/2627 2525/1921/1820/1515/1112	返厂处理	85℃/6HR	85℃/12HR
Top户内系列：1415/2020/ 1212/1010	返厂处理	60℃/12HR	60℃/24HR
备注 Remarks	1. 开封前受潮:①.包装漏气。②.打开包装后发现包装内部湿度卡指示已达 30%。 Damp before opening: ①.Packing leaks. ②. After opening the package, the inside indication card of humidity has reached 30 % or more. 2. 针对">60天"以包装标签上包装日期为基准。 " > 60 days" refers to the packaging date on the packaging label.		

5.3 静电防护

Electrostatic protection

5.3.1 静电和电涌会导致产品特性发生改变，例如正向电压降低等，如果情况严重甚至会损毁产品。所以对于整个工序（生产、测试、包装等）与 LED 直接接触的员工都要做好防止和消除静电措施。

ESD and surge probably causes the change of product characteristics, ie. the reduce of forward voltage. In severe cases, the product can be damaged. Thus, in the whole process (production, testing, packaging, etc.), all employees in direct contact with LEDs should be equipped with anti-static measures.

5.3.2 所有相关的设备和机器都应该正确接地，接地交流阻小于 1.0 欧姆，工作台上需垫表面电阻为 106-109 欧姆的桌垫。

All involved equipment and machines should be properly grounded, and the AC impedance should be less than 1.0Ω, workbenches should be covered by table pads of which surface resistance is 106-109Ω.

5.3.3 在容易产生静电的环境内，还必须安装离子风扇，作业过程中操作员需使用防静电手环，防静电垫子，防静电工作服、工作鞋、手套，防静电容器等，取放材料时尽可能拿胶体部分。

In the environment where ESD tends to happen, ionizing air blowers must be installed, operators must use anti-static wristband, mats, overalls, work shoes, gloves, containers, etc., and handle with the the colloid part while moving the material.

5.4 反压保护

Inverse Voltage Protection

5.4.1 通常 LED 的反向漏电流都很小，不会影响正常使用。如果 LED 长期遭受超过其所能承受的反向电压冲击时，LED 会被损伤，例如，反向漏电流会迅速变大等，这样会引起显示屏冷灰度下串光的发生。在设计中，要注意控制反向电压，建议加在 LED 上的反向电压值不超过 5V。

Generally, the inverse leakage current of LED is small, and it does not tend to affect the normal function. However, if LED suffered the inverse voltage which is higher than the limitation for a long time, it will be damaged. For example, the inverse leakage current will increase rapidly, leading to the optical crosstalk on display in low grey scale. Pay attention to control the inverse voltage in design, the recommended inverse voltage on LED is not higher than 5V.

5.5 温度保护

Temperature Protection

5.5.1 LED 在高温条件下，衰减会加速，本身应力也会增大，若长期处于高温环境下，极容易出现失效。对于高密度排列使用的情况，建议在使用过程中灯面温度不超过 55℃，灯脚温度不超过 75℃。

High temperature will accelerate the decreasing luminous intensity and the increasing stress of LED. If LED is in the environment of high temperature for a long time, failure tends to happen. In the case that arrangement in high density is used, it is recommended that the temperature of light surface is not higher than 55℃ and the temperature of light bottom is not higher than 75℃ during use.

5.6 其他事项

Additional Items

5.6.1 LED 产品的树脂封装部分相当脆弱，请勿用坚硬、尖锐的物体刮擦封装树脂部分，用镊子夹取 LED 时也

应当小心注意。

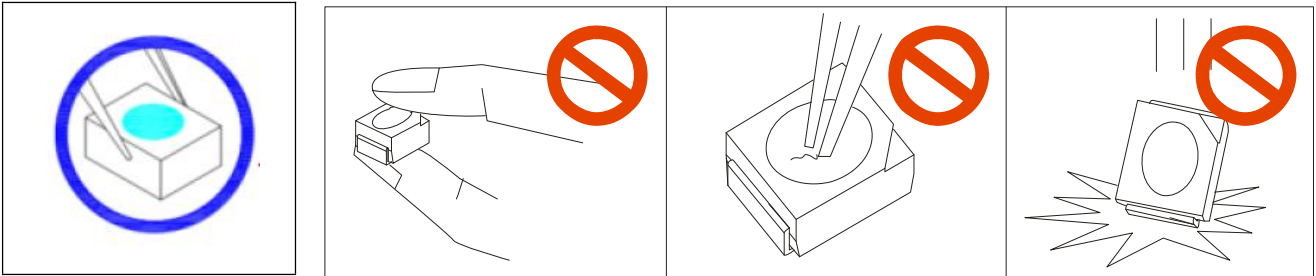
Epoxy encapsulant of LED products could be very brittle, please do not use hard or sharp objects to scratch epoxy encapsulant, Moreover, pick up LED material very carefully when using tweezers.

5.6.2 请勿直接用手拿取 LED 产品。直接用手拿取 LED 产品不但会污染封装树脂表面，也可能由于静电等因素导致产品性能的改变。

Please do not take LED products by hand. It will not only pollute the surface of epoxy encapsulant but also induce changes in the performance of LED products due to electrostatic and other factors.

5.6.3 请勿对 LED 产品施加过度压力，特别当 LED 产品处于高温状态下（例如在回流焊接过程中），过度的压力可能直接影响封装内部的管芯和金线。

Please do not introduce excessive pressure on LED products, especially when LED products are under high temperature, for example, in the process of reflow soldering, excessive pressure can affect the sealed tube core and gold thread directly.

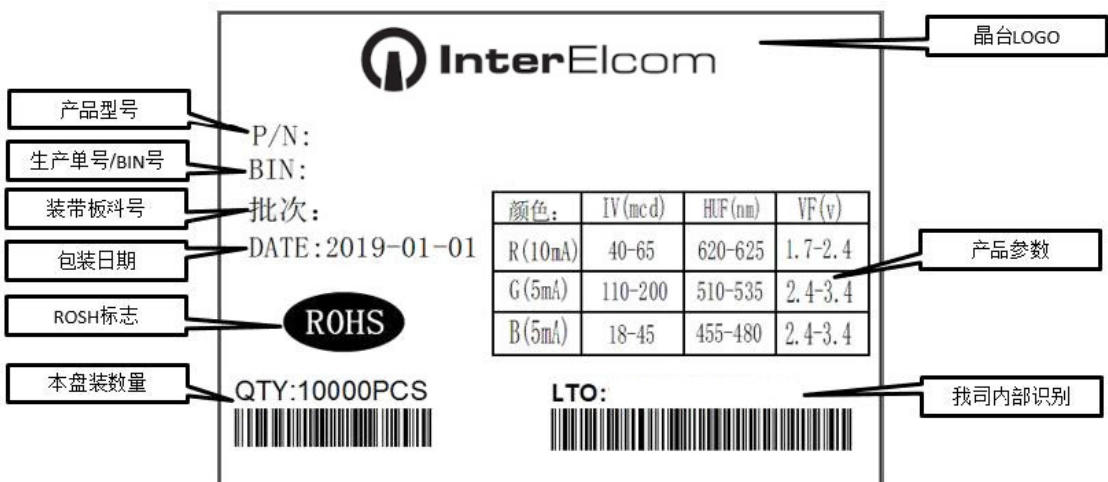


6. 包装

PACKAGING

(1) 包装标签：

Packaging Label:



Notes of Label:

a 、在使用我公司 LED 产品生产时请对应好我司产品型号是否一致不同型号产品不能混用。

Please make sure the product model of our LED products, different models cannot be mixed when being used.

b 、不同拌料编号不能用于同一块显示屏（型号、参数相同也不能用在同一显示屏）。

Products with different batch numbers can not be used in one display panel, even of the same model and with the same

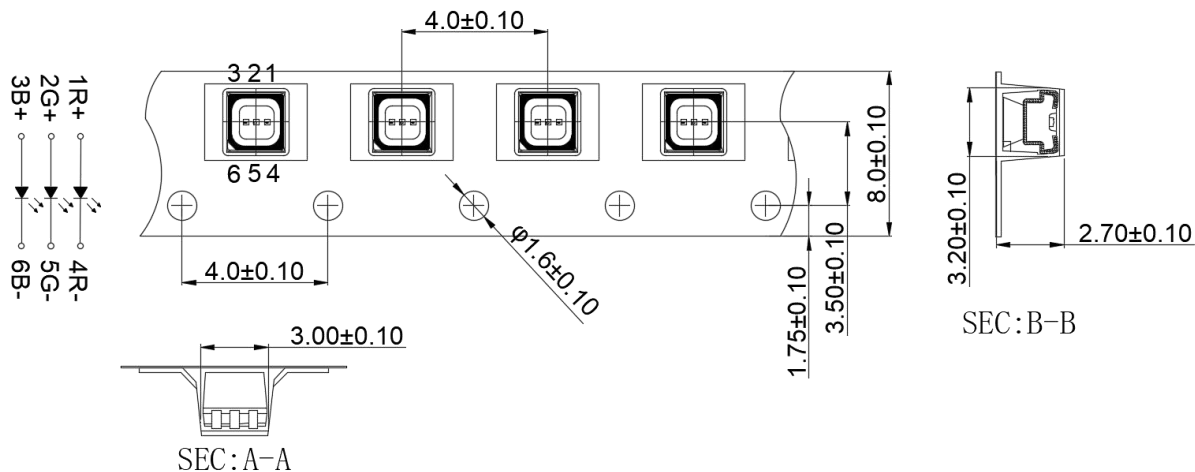
parameter.

- (2) LED 在装带之后纸箱包装.

LED products are packed in cardboard boxes after being taped.

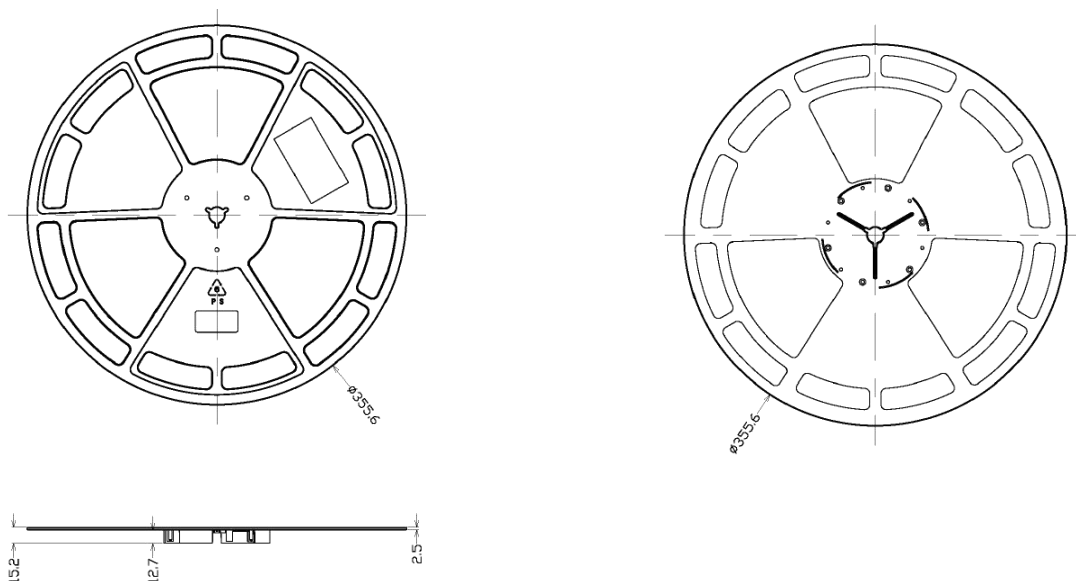
- (3) 装带规格(单位:毫米)

Taping Specifications (Units:mm)



- (4) 卷轴尺寸

Reel Dimension



每卷数量 8000 个/卷

PACKAGE: 8000Pcs/Reel

- (5) 最小包装标签注明以下:产品名称、批号、参数范围、数量。

The label on the minimum packing unit shows; product model, batch number, ranking, quantity.

- (6) 请注意防水防潮。

Keep away from water and moisture in order to protect LED products.

- (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。

Precautions must be taken to prevent any damage caused by dropping or strong impact..