厦 门 华 联 电 子 有 限 公 司

**Xiamen Hualian Electronics Co. , Ltd.**

# 产品规格书

# Specification on Product

## 产品名称：850nm 红外发光二极管

**DESCRIPTION: 850nm INFRARED LED**

产品型号：HIR505D627BP(SN)

PART NO.：HIR505D627BP(SN)


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## 1、概述（General）：

HIR505D627BP(SN)是 AlGaAs/AlGaAs 红外发光二极管，具有响应速度快、辐射强度高、寿命长、可靠性高等优点，广泛用作红外遥控系统及监视器中的红外光源。

The HIR505D627BP(SN) is a AlGaAs on AlGaAs Infrared Light Emitting Diode, with the advantages of fast response time, high radiant intensity, long life and high reliability etc. It is widely used in Infrared Remote Control System or Monitors as Infrared light Source .

图 1 产品 Figure 1-Product

## 2、特点（Features）：

- 封装尺寸：Φ5mm。 Size: diameter of 5mm.
- 快速响应时间，可用脉冲驱动。 Fast Response Time , Pulse Driven.
- 环氧树脂蓝色透明封装 Packaged by Blue Transparent Epoxy.
- 符合 RoHS 规范。 RoHS Compliant.

## 3、应用（Applications）

- 近红外遥控系统及监视器中红外光源 Infrared light Source in the Near Infrared Remote Control System or Monitors

## 4、极限参数（Maximum Ratings） ($T_a$=25°C)

**表 1 极限参数**

**Table 1-Absolute Maximum Ratings**

| 参数名称<br>Parameters | 符号<br>Symbol | 额定值<br>Rated Value | 单位<br>Unit |
|---|---|---|---|
| 最大正向脉冲电流 [a]<br>Maximum Forward Current Pulse | $I_{FPM}$ | 0.8 | A |
| 最大正向电流<br>Maximum Forward Current | $I_{FM}$ | 80 | mA |
| 反向电压<br>Reverse Voltage | $V_R$ | 5 | V |
| 最大耗散功率<br>Power Dissipation | $P_M$ | 120 | mW |
| 工作环境温度<br>Operating Temperature | $T_{aop}$ [c] | -25～+85 | ℃ |
| 贮存温度<br>Storage Temperature | $T_{stg}$ | -40～+100 | ℃ |
| 焊接温度 [b]<br>Soldering Heat | $T_{sld}$ | 波峰焊 Wave Soldering：265℃ 10s<br>手工焊 Hand Soldering：350℃ 5s | |

[a] 占空比 Duty：1/100，频率 Frequency：1kHz。
[b] 离器件本体 2mm 以上。 Up to 2 mm from the body.
[c] 工作环境温度参数符号只在极限参数表中用 $T_{aop}$ 表示，其他地方用 $T_a$ 表示。
Parameter symbol of Operating Ambiance Temperature uses $T_{aop}$ only in table 1 Absolute Maximum Ratings, and uses $T_a$ at other places.

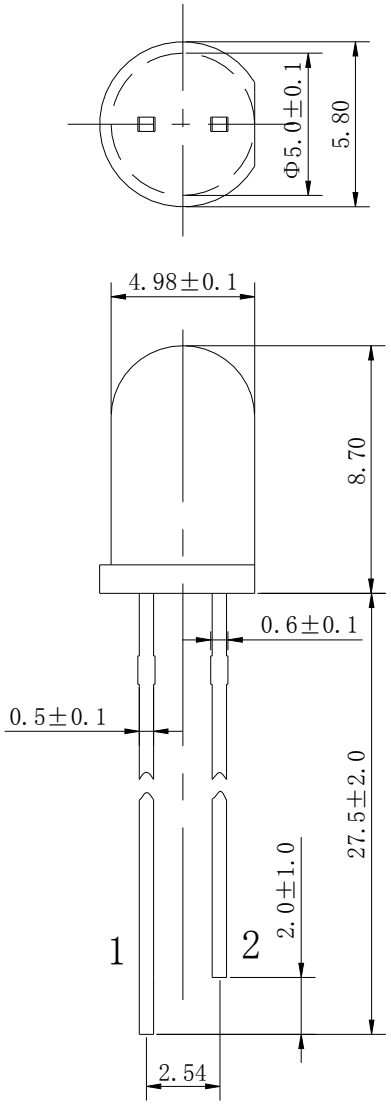
## 5、光电参数（Optoelectric Characteristics）($T_a$=25°C)

**表 2 光电参数**

**Table 2-Opto-Electrical Characteristics** **$T_a$=25℃**

| 参数 Parameter | 符号 Symbol | 测试条件 Test condition | 最小 Min. | 典型 Typ. | 最大 Max. | 单位 Unit |
|---|---|---|---|---|---|---|
| 正向电压 Forward Voltage | $V_F$ | $I_F$=50mA | — | 1.50 | 1.65 | V |
| 正向脉冲电压 Pulse Forward Voltage | $V_{FP}$ | $I_{FP}$=700mA $t_p$=10μs | — | — | 3.50 | V |
| 反向电流 Reverse Current | $I_R$ | $V_R$=5V | — | — | 10 | μA |
| 辐射强度 Radiant Intensity | $I_E$ | $I_F$=50mA | 15 | 25 | — | mW/sr |
| 峰值发射波长 Peak Radiation Wave Length | $\lambda_P$ | $I_F$=50mA | — | 850 | — | nm |
| 光谱半宽度 Half Spectrum Width | $\Delta\lambda$ | $I_F$=50mA | — | 40 | — | nm |
| 半强度角 Radiation Angle of Half Intensity | $\theta_{1/2}$ | $I_F$=50mA | — | 55 | — | deg |
| 开关时间 Switch Time | $t_r/t_f$ | $I_F$=50mA | — | 25/15 | — | ns |

## 6、 外形尺寸 Outline Dimension:




1、正极 Anode
2、负极 Cathode
未注公差 Unidentified Tolerance：0.2mm

**图 2 外形尺寸 Figure 2-Dimensions**

## 7、特性曲线 （Characteristics Curve）

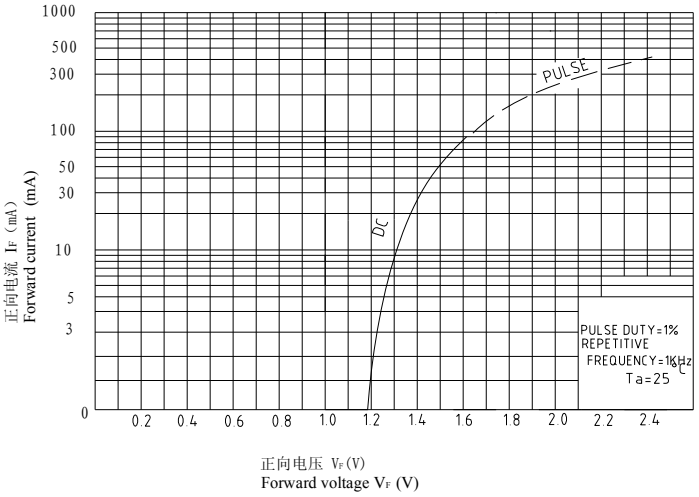



**Fig.1 Forward Current vs. Forward Voltage**

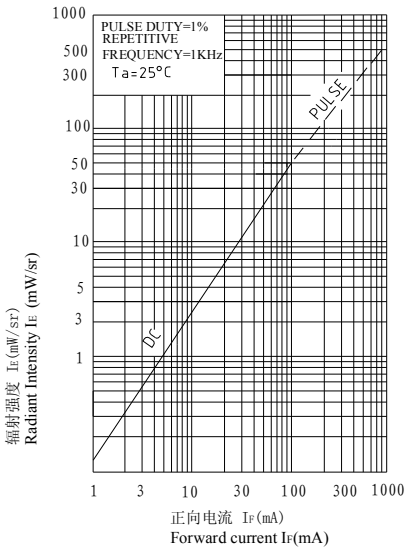



**Fig.2 Radiant Intensity vs. Forward Current**

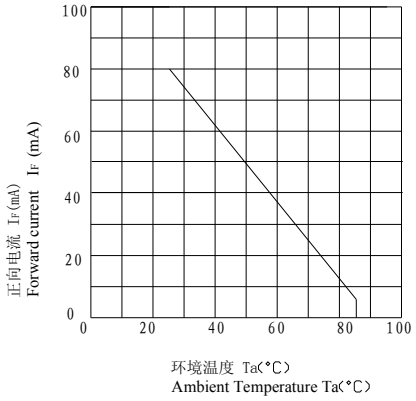



**Fig.3 Forward Current vs. Ambient Temperature**

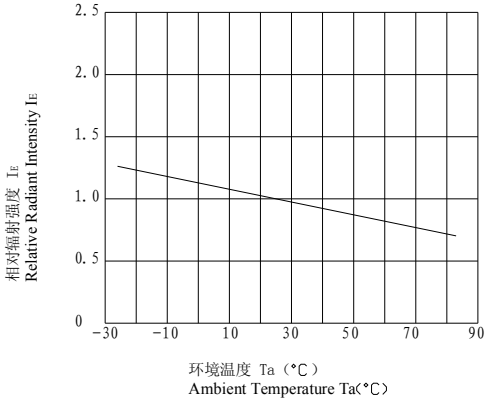



**Fig.4 Relative Radiant Intensity vs. Ambient Temperature**

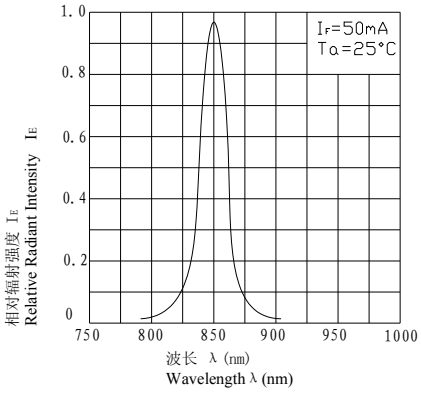



**Fig.5 Relative Radiant Intensity vs. Wavelength**

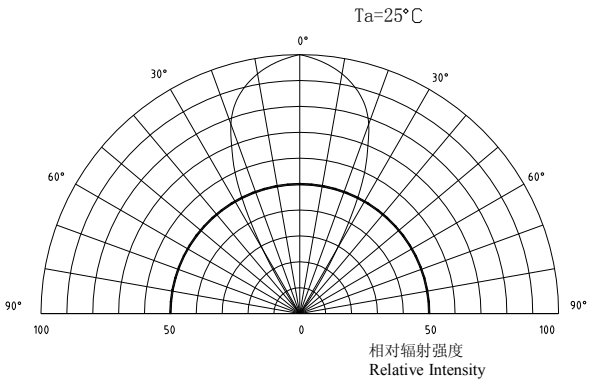



**Fig.6 Relative Radiant Intensity vs. Angular Displacement**

**图 3 特性曲线 Figure 3-Characteristics Curve**

## 8、 包装方式 （Way of Packing）

1、用 110×218mm$^2$ 塑料袋内包装，1000 只/袋。

Internally packed with 110×218mm$^2$ plastic bags, 1,000pcs/bag.

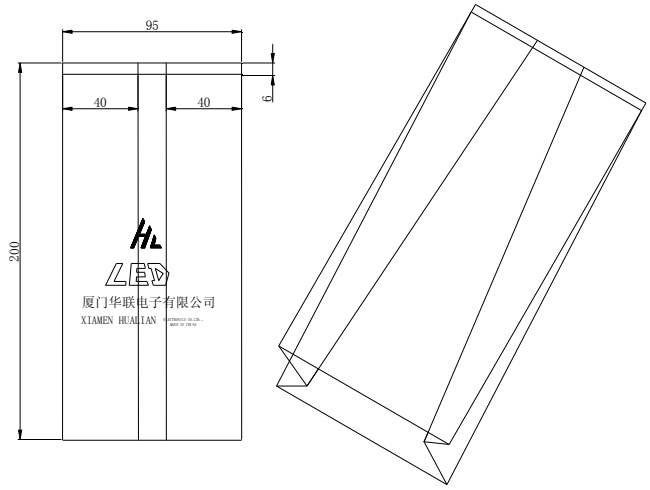



**图 4 内包装袋 Figure 4-Internally Bag**

2、内包装纸箱采用规格为 220mm×220mm×190mm 的纸箱，10 袋/盒（10000 只/盒）；

外包装纸箱采用规格为 595mm×235mm×240mm 的纸箱，3 盒/箱（30000 只/箱）。

Inner packing uses 220mm×220mm×190mm carton, 10bags/box (10,000pcs/box);

Outer packing uses 595mm×235mm×240mm carton, 3 boxes/carton (30,000pcc/carton).

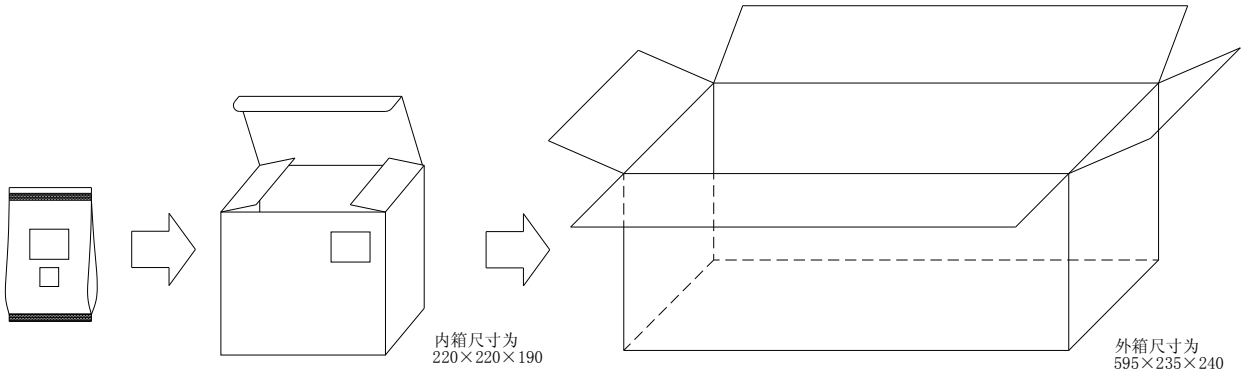



**图 5 外包装盒 Figure 5-Externally Cartons**

3、标识 Label

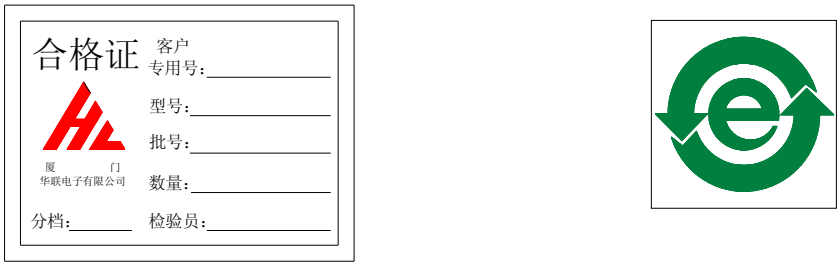



**图 6 标识 Figure 6-Label**

## 9、使用注意事项 （Precautions for Use）

9.1 引线成型 Forming

9.1.1 引线成型需在焊接前完成。Leads should be formed before soldering.

9.1.2 不能以靠近环氧体的支架根部为支点成型。

Do not form the leads with their bases near the epoxy body as a fulcrum.

9.1.3 成型位置应离环氧本体 5mm 以上，特殊情况需在 5mm 以下（但应≥2mm）成型的，应制作特制的夹具，成型时固定住靠近环氧体的管脚部位，尽量减少对环氧体的作用应力，防止因应力过大造成 LED 开路及其环氧体裂损。

Forming location should be up to 5mm from the epoxy body, if it has to be formed under 5mm（≥2mm）, special fixture should be made. When forming, the leadframe near to epoxy body should be secured to lessen the stress on the body in order to avoid LED open circuit and crack because of over stress.

9.2 储存 Storage

9.2．1 LED 产品出厂后贮存的条件应为 0～+30℃、相对湿度不大于 70%，贮存期限为 6 个月。若贮存超过 6 个月，则应放在带有氮气和干燥剂的密闭容器内，贮存时间可达一年。

The LEDs should be stored at 30℃ or less and 70%RH or less after being shipped from HUALIAN and the storage life limits are 6 mouths. If the LEDs are stored for 6 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.

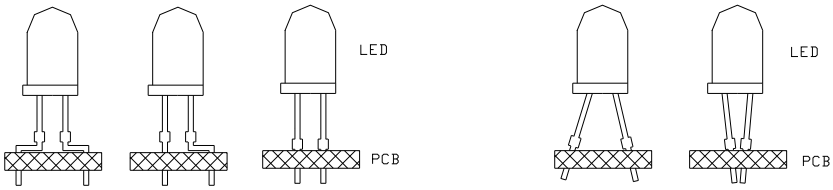
9.2．2 拆袋使用，应尽可能短时间内用完。若用不完，应满足贮存条件应为 0～+30℃、相对湿度不大于 60%，并在 15 天内安装完。

After the bag is opened, It is recommended that the LEDs be used as soon as possible. Mounted within 15days at factory conditions of ≤30℃/60%RH。

9.3 安装 Installation

9.3.1 LED 安装在 PCB 上，不能造成对引线施加压力。

Installation on PCB does not apply physical stress to the leads when mounting LED lamps on PCB.




Correct Wrong

**图 7 LED 安装方式 Figure 7-LED Installation Way**

9.3.2 LED 安装在 PCB 后，负极引线弯曲到与 PCB 最小夹角为 15°，正极引线弯曲到与 PCB 最小夹角为 45°。 After mounting LED lamps on PCB, the leads should be bent, the angle between the cathode leads and PCB should be 15° min. while the angle between the anode leads and the PCB 45° min..

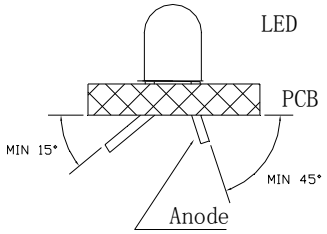



**图 8 引线极限角度 Figure 8-Down-lead's Limit Angle**

9.4 焊接 Soldering

9.4.1 环氧不可浸入锡槽内。

Do not dip epoxy body into solder bath.

9.4.2 加热过程中不能对引线施加压力。

Do not apply stress to leads while they are heated.

9.4.3 推荐焊接条件 Recommended soldering conditions:

**表 3 推荐焊接条件**

**Table 3-Recommended Soldering Conditions**

| 波峰焊 Wave Soldering | | 手工焊 Hand Solding | |
|---|---|---|---|
| Pre-heat Temperature<br>Pre-heat Time<br>Peak Temperature<br>Dwell Time | 120℃ Max.<br>60 seconds Max.<br>260℃ Max.<br>10 seconds Max. | Temperature<br>Dwell Time | 340℃ Max.<br>5 seconds Max. |

9.5 清洗 Cleaning

9.5.1 在任何情况下，清洗时间应在常温 1 分钟之内进行。

In any case, the cleaning time should be 1 minute or less at a normal temperature.

9.5.2 清洗 LEDs 时推荐使用酒精作为清洗剂。如使用其他清洗剂，需先确认清洗剂是否会腐蚀环氧体。

氟利昂不能作为清洗剂。

It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. When use other solvents, it should be confirmed beforehand whether the solvents will dissolve the resin or not. Freon solvent should not be used to cleaning the LEDs because of worldwide regulations.

9.5.3 不可用水清洗，以免腐蚀引线，建议使用酒精。

Do not clean LEDs with water as the remains may rust the leads. Alcohol is suggested to be used.

9.5.4 用超声波清洗 LED 时，超声功率和时间应分别小于 300W 和 30 秒；PCB 和 LED 不能接触振荡器；不能使 PCB 上 LED 产生共振。

When LEDs are ultrasonic-washed, use the ultrasonic output power of less than 300W and the time of less than 30s; Do not let the PCB and LEDs touch on the oscillator; Do not resonate the LEDs attached on the PCB.

# 更改记录表

# Engineering Change Notice-Record

| 版次<br>EDITION | 更改日期<br>DATE | 主要更改内容<br>MAIN CONTENT | 拟 制<br>PREPARED | 确 认<br>CHECKED |
|---|---|---|---|---|
| 1.0 | 2015-05 | 新版发行 New Edition | | |
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