

江西省晶能半导体有限公司
JiangXi LatticePower Semiconductor Corporation

产 品 规 格 书
Specification

产品名称 Product Name: HGL4

产品型号 Product P/N: F5

客 户 Client name: _____

客户料号 Client P/N: _____

版 本 号 Version No.: A03

日 期 Sending Date: 2025.2.24

客户承认栏 Client Approval	
核准 Approval	确认 Audit

制定 Confirmation: _____ 审核 Approval: _____

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1、特点 Features

- ◆ 陶瓷封装，高亮度，高光效
Ceramic Substrate package , High brightness ,High efficiency
- ◆ 尺寸：6.80mm*3.80mm*0.85mm
Size: 6.80mm*3.80mm *0.85mm
- ◆ 根据 ANSI 标准分档
According to the ANSI standard colour gamut
- ◆ 适于 SMT 贴片
Compatible with SMT
- ◆ 发光角度：120°
Viewing Angle: 120°
- ◆ 包装：最大 1500 颗/卷
Package: Max: 1500pcs /reel
- ◆ 建议额定使用电流为 2.4A
Recommended current 2.4A



2、应用 Applications

汽车照明

Automobile





3、性能 Performance

a) 绝对最大额定值 Absolute Maximum Ratings

参数 Parameter	符号 Symbol	最大参数值 Maximum Rating	单位 Unit
电流 DC (Video Mode) Forward Current	I_F	3000	mA
功率 Power Dissipation	P	22.8	W
脉冲电流 Pulsed(Flash Mode) Forward Current	I_{FP}	4000	mA
结温 (DC 模式) LED Junction Temperature (DC mode)	T_j	150	°C
工作温度 Operating Temperature Range	T_{opr}	-40~105	°C
存储温度 Storage Temperature	T_{stg}	-40~120	°C
ESD (人体模式) ESD Human Body Mode	----	8000	V

备注 Notes :

✧ 绝对最大额定值环境温度 $T_a=25^{\circ}\text{C}$

Absolute Maximum Ratings at $T_a=25^{\circ}\text{C}$

✧ I_{FP} 脉冲时间 $\leq 10\text{ms}$, 宽度 $\leq 10\%$

I_{FP} Conditions with pulse width $\leq 10\text{ms}$ and duty cycle $\leq 10\%$

b) 光电参数

Electro-Optical Characteristics (T solder pad =25 °C, I_F =2000mA)

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
光通量 Luminous Flux	Φ	1480	1690	2040	Lm
正向电压 Forward Voltage	V _F	5.6	6.2	7.6	V
显指 Ra	----	60	----	----	----
热阻 Thermal Resistance	----	----	1.0	----	°C/W
发光角度 Viewing Angle	2θ1/2	----	120	----	°
结温 LED Junction Temperature	T _j	----	150	----	°C

备注 Notes :

- ✧ 光通量测量误差范围±6%
Luminous flux measurement tolerance: ±6%
- ✧ 光电参数测试是瞬态时间为 20ms
Electric and optical data is tested at 20 ms pulse condition



c) 亮度分布特性

Luminous Flux Characteristics (T solder pad = 25 °C, I_F = 2000mA)

最低显指 Min. Ra	常规色温 Normal CCT	色区块 Chromaticity	最小光通量 Minimum Luminous Flux		出货代码 (例) Order Code (e. g.)
			代码 Code	亮度值 Value	
60	3000K~3500K	VC	HFB	1480	F5-B-VC-HFC-BC4
			HFC	1580	
	4750K~5300K	3A、3B、3C、3D	HFC	1580	F5-B-3D-HFC-BC3
			HFD	1690	
			HFE	1800	
	5300K~5700K	2C	HFC	1580	F5-B-2C-HFC-BC4
			HFD	1690	
			HFE	1800	
	5700K~6000K	2B	HFD	1690	F5-B-2B-HFC-BC5
			HFE	1800	
			HFF	1920	
	6000K~6500K	1D	HFE	1800	F5-B-2B-HFC-BC5
			HFF	1920	
			HFG	2040	
	6500K~7000K	1A	HFE	1800	F5-B-2B-HFC-BC5
			HFF	1920	
			HFG	2040	

4. 产品代码 Product Order Code

F5 - B - 1D - HFB - BC5
① ② ③ ④ ⑤

- | | | |
|---|------|------------------|
| ① | 产品型号 | Product Type |
| ② | 显色指数 | Ra level |
| ③ | 色温区块 | Color Area |
| ④ | 亮度等级 | Brightness Level |
| ⑤ | 电压等级 | VF Level |

出货标签(例) Shipping label (e.g.)



LatticePower Corporation Limited

Item: F5-B-1D-HFB-BC5 HGL4



Reel ID: AF5C00000001



Qty: 1500



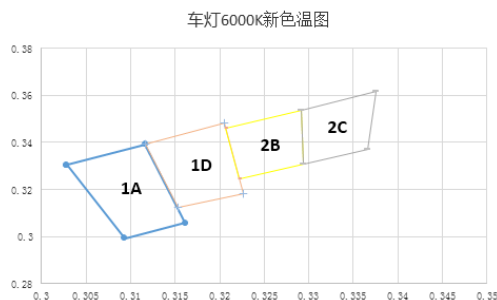
6F5TCHCA

Date:2023-12-14

5. 分档规则 Bin Regulations

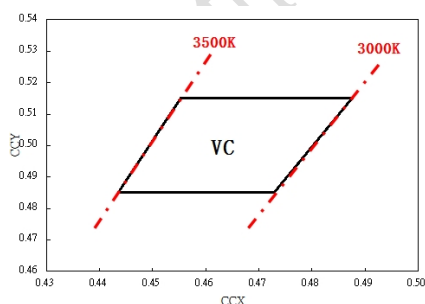
a) 色度区域 Chromaticity Regions

Cool White



Color Chromaticity Groups					
Color Bin	x	y	Color Bin	x	y
1A 6500K~7000K	0.3028	0.3304	1D 6000K~6500K	0.31165	0.33925
	0.31165	0.33925		0.3205	0.3481
	0.3161	0.3059		0.32264	0.31814
	0.3093	0.2993		0.31527	0.3123
2B 5700K~6000K	0.32912	0.35387	2C 5300K~5700K	0.32912	0.35387
	0.32064	0.34615		0.33760	0.36160
	0.32220	0.32430		0.33660	0.33690
	0.32940	0.33060		0.32940	0.33060

Warm White



x	y
0.44360	0.48500
0.47300	0.48500
0.48770	0.51500
0.45540	0.51500
0.44360	0.48500

备注 Notes :

✧ 色度坐标 (x, y) 来自 CIE1931 色度图

The chromaticity coordinates(x,y)is derived from the CIE 1931 chromaticity diagram

✧ PT86 测试设备用于光通量 (lm) 和 CIE1931 色度坐标 (x, y) 测试。

PT86 is for the luminous flux(lm) and the CIE1931 chromaticity coordinates(x,y) testing.

✧ 色度坐标 (x, y) 存在±0.006 公差。

The chromaticity coordinates(x,y) guarantee should be added ±0.006 tolerance.

b) 亮度分档**Luminous Flux Groups** (T solder pad = 25°C, I_F = 2000mA)

代码 Group Code	最小值 Min.	最大值 Max.
HFB	1480	1580
HFC	1580	1690
HFD	1690	1800
HFE	1800	1920
HFF	1920	2040
HFG	2040	2180

c) 电压分档 Voltage Groups

代码 Group Code	范围 Range
BC2	5.6-6.0
BC3	6.0~6.4
BC4	6.4~6.8
BC5	6.8~7.2
BC6	7.2~7.6

d) 显指分档 Ra Groups

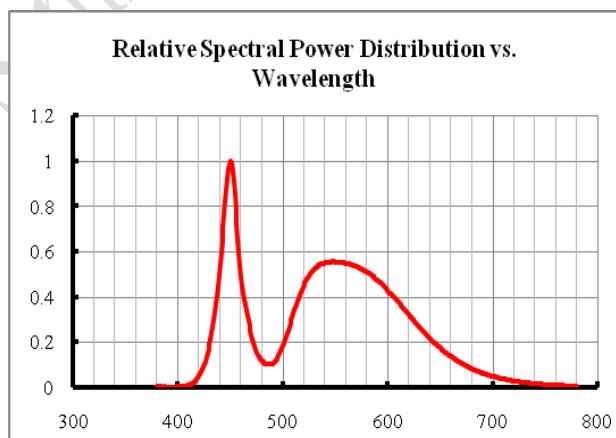
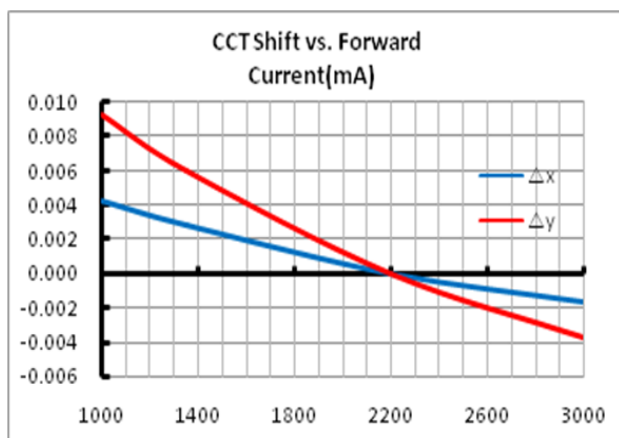
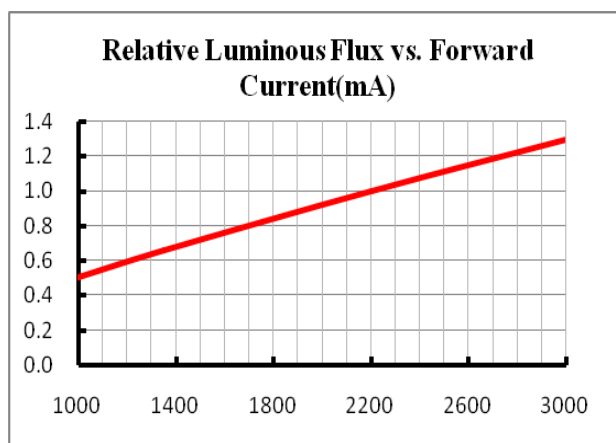
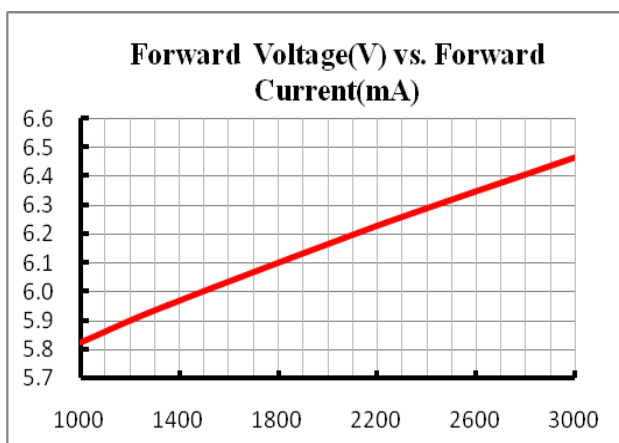
代码 Group Code	范围 Range
B	60~100

备注 Notes :

- ✧ 亮度测试存在±6%的公差
It maintains a tolerance of ±6% on luminous flux measurements.
- ✧ 显指测试存在±2 的公差
It maintains a tolerance of ±2 on CRI measurements

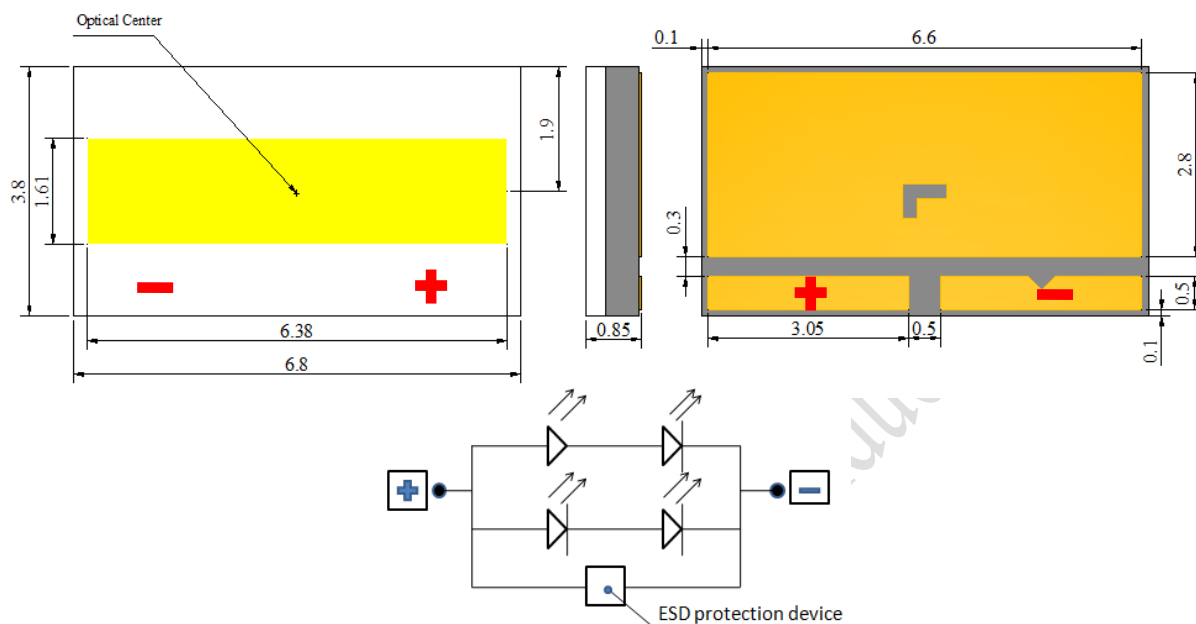
6、光电特性图

The Photoelectric Characteristics Graph (Ta= 25 °C,6000K)

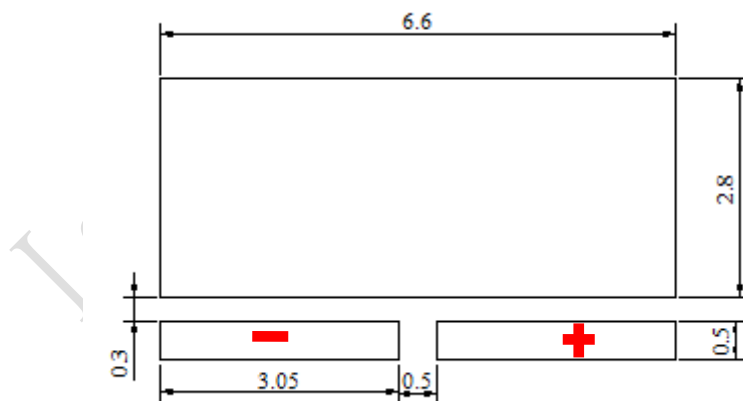


7. 产品及钢网尺寸 Product and PCB Pad Dimensions

a) 产品尺寸 Product Dimensions:



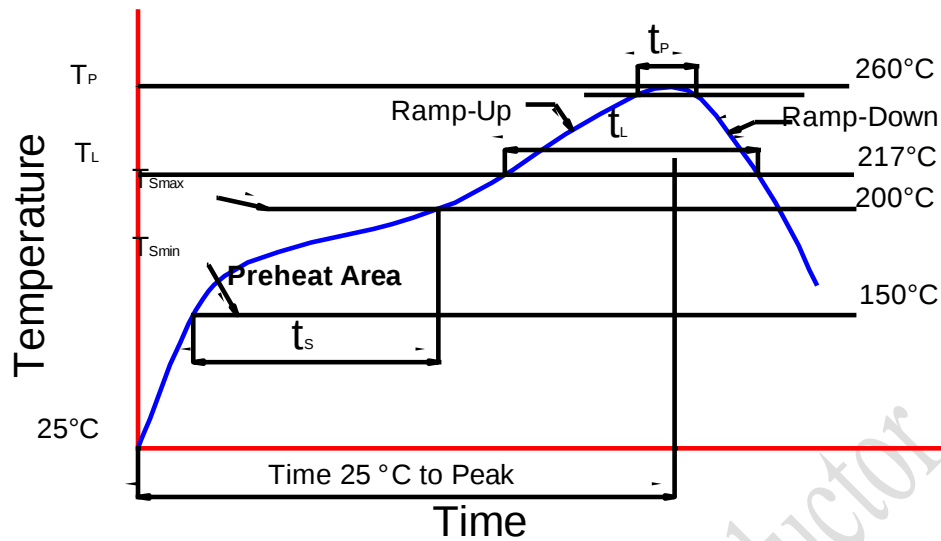
b) 推荐焊盘尺寸 PCB Pad Dimensions



备注 Notes:

- ◇ 所有尺寸均以 mm 为单位
All dimensions are in millimeters
- ◇ 尺寸未按照公差 $\pm 0.1\text{mm}$ 标记的, 按照图纸标记
Size is not marked in accordance with tolerance $\pm 0.1\text{mm}$ and dimension tolerances in accordance with drawings

8、回流焊特性 Reflow Soldering Characteristics

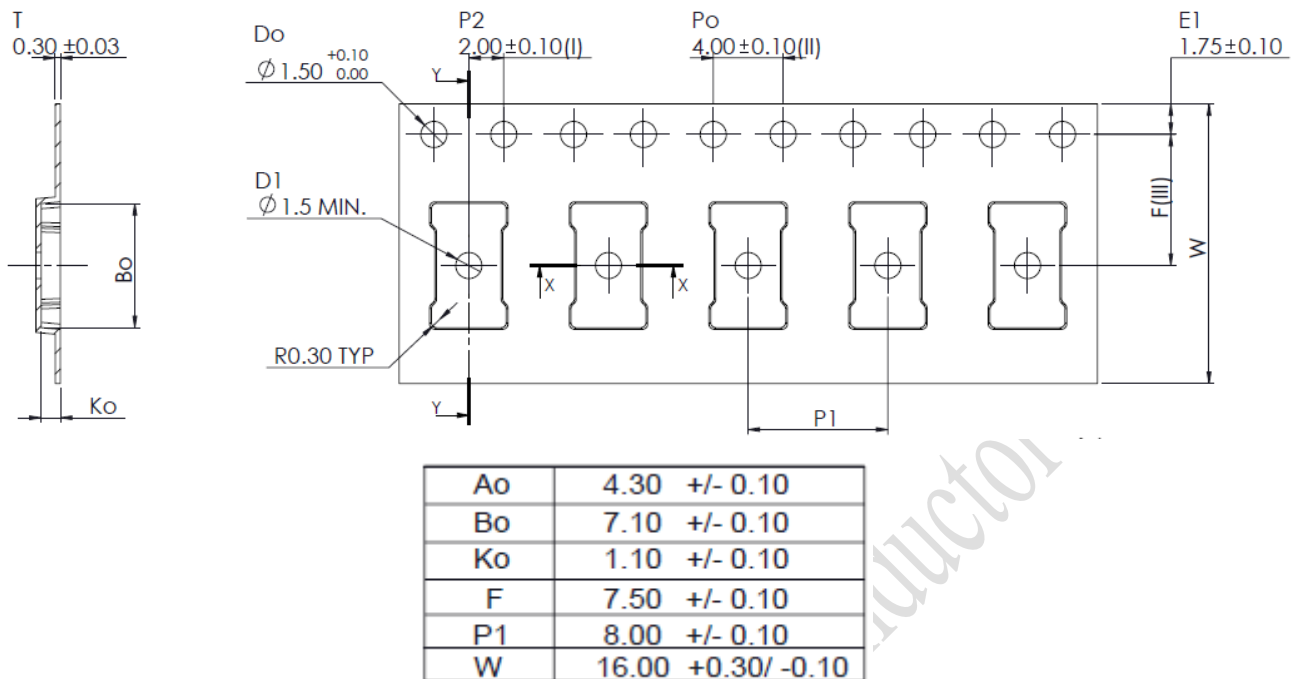


根据 EDEC-J-STD-020D 内容，参考以下内容。

Compatible with the JEDEC-J-STD-020D, using the parameters listed below.

特制参数 Profile Feature	无铅焊料 Lead-Free Solder
平均上升速率 (T _{smax} 至 T _p) Average Ramp-Up Rate (T _{smax} to T _p)	3 °C/sec max.
预热: 温度最小值 (T _{smin}) Preheat: Temperature Min (T _{smin})	150
预热: 最高温度 (T _{smax}) Preheat: Temperature Max (T _{smax})	200
预热: 时间 (t _{smin} 到 t _{smax}) Preheat: Time (t _{smin} to t _{smax})	60-180 secs
回流温度 (T _L) Time Maintained Above: Temperature (T _L)	217°C
回流时间 (t _L) Time Maintained Above: Time (t _L)	60-150 secs
峰值/分类温度 (T _p) Peak/Classification Temperature(T _p)	255 ± 5°C
实际峰值温度 (t _p) 在 5°C 以内的时间 Time Within 5°C of Actual Peak Temperature (t _p)	20~40 secs
降低速率 Ramp-Down Rate	4°C/sec max.

9、 卷轴 Reel Dimensions



备注 Notes:

- ◇ 卷轴包装 1500pcs
Reel:1500pcs.
- ◇ 卷轴包装方法符合 IJSC0806 (连续胶带上的电子元件包装)
The tape packing method complies with IJSC0806(Packing of Electronic Components on Continuous Tapes).
- ◇ 当卷轴由于工作中断而重绕时, 载带上压力不应超过 10N, 否则 LED 可能会粘在盖带上
When the tape is rewound due to work interruptions, no more than 10N should be applied to the embossed carrier tape.
The LEDs may stick to the cover tape.



10、可靠性 Reliability

a) 测试和结果 Tests and Results

测试项目 Test Item	标准 Reference Standard	测试条件 Test Conditions	测试周期 Test Duration
回流焊 Solderability(Reflow Soldering)	JESD22-B102	Tsld=255±5℃,5sec,Lead-free Solder (Sn-3.0Ag-0.5Cu)	3 times
高低温循环 Temperature Cycle	JESD22-A105	I _F =2000mA , -40℃ (30min)~85℃ (30min)	200cycles
冷热冲击 Thermal Shock	JESD22-A106	-40℃ (15min)~125℃ (15min)	200cycles
低温存储 Low Temperature Storage	JESD22-A119	T _A =-40℃	1000H
高温老化 High Temperature Operating Life	JESD22-A108	T _j =150℃, I _F =2400mA	1000H
高温高湿 Temperature Humidity Operating Life	JESD22- A101	T _a =85℃, RH=85%, I _F =2000mA	1000H
间歇性点亮测试 Intermittent operation life	MIL-STD-750	T _a =80℃, I _F =2000mA ,2min On/4 min Off,	10000 cycles
震动 Vibration	JESD22-B103	10m/s ² ,100~20000~100Hz,4cycles,4min, each X,Y,Z	3 times
静电放电测试 Electrostatic Discharge Test	JESD22-A114/A115	Human body model :8000 V Mechanical mode:400V (forward and reverse current conduct electricity, each 1 time)	

11、注意事项 Cautions

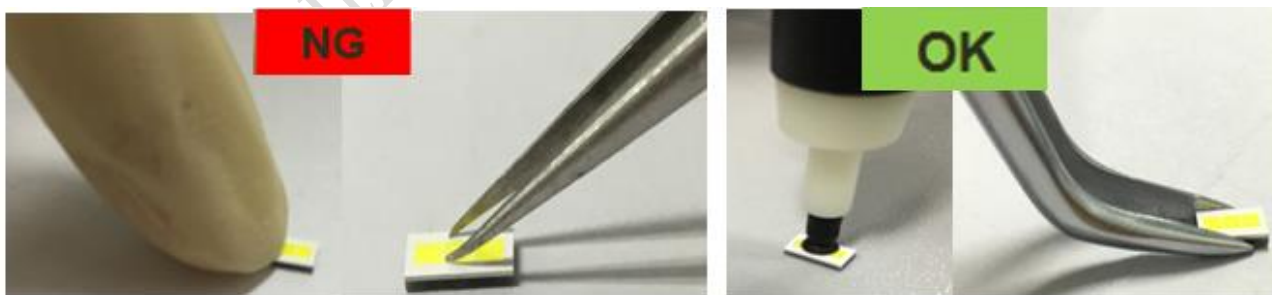
a) 存储 Storage

- 不要将芯片放在潮湿的地方，存放温度在 5°C~30°C 之间，相对湿度在 30% 以下。
Do not place the chips in damp places, Storage temperature between 5 °C and 30 °C, Relative humidity under 30%.
- 开包后建议在 24 小时内过完回流焊，车间条件 ≤30°C/60%RH。
After opening the package, it is recommended to finish the reflow within 24 hours. The workshop conditions are ≤30°C/60%RH
- 如果受潮，需将贴片卷盘放入 60°C 烤箱烘烤 24 小时；打开后，LED 灯可重新密封在原始真空袋中。
If it is wet, the patch reel should be baked in a 60 ° C oven for 24 hours; after opening, the LED light can be resealed in the original vacuum bag.
- 不要接触任何未知的液体，特别是丙酮。
Don't touch any unknown liquid, In particular, acetone.
- 防止静电死亡，手动操作需要戴橡胶手套并佩戴静电环。
Prevent electrostatic killed, Manual operation is required to wear rubber gloves and wear electrostatic ring.

b) 清洗 Cleaning

- 通常，LED 不建议对部件进行湿式清洁处理，因为封装不是密封的。
In general, LED does not recommend a wet cleaning process for component as the package is not hermetically sealed.
- 由于采用开放式设计，所有类型的清洁液都可能渗透到封装中，导致 LED 退化或完全失效。
Due to the open design, all kind of cleaning liquids can infiltrate the package and cause a degradation or a complete failure of the LED.

c) 操作注意 Handling Precautions



- 在处理过程中，还应注意确保组件顶面没有压力。
During the handling, care should be taken as well to ensure no pressure on the top surface of component.
- 应避免使用所有类型的尖锐物体（例如镊子，指甲等），以防止对硅树脂造成压力，因为这会导致部件损坏。
All types of sharp objects(e.g. forceps, fingernail, etc) should be avoided in order to prevent stress to the silicone, since this can lead to damage of the component.



12、文件履历表 Document Resume

序号	变更日期	变更人	版本	变更内容
01	2020.07.08	袁丁	A00	1. 新增文件编号及序号;
02	2020.10.22	李雄斌	A01	1. 新增 PCB Pad 建议尺寸;
03	2023.12.14	袁丁	A02	1.更新公司标签抬头;
04	2025.2.24	邱运兰	A03	1. 增加 HFG(2040-2180)亮度档位; 2. 更新可出货亮度档位。