HONGLITRONIC
鸿利光电

Under Development	●
Mass production	

RoHS

Specification

Client Name：
客户名称：________________________
Client P/N：
客户品号：________________________
Product P/N：
产品型号：HL-C1860K9W14DB-1B3C(Ra1)-FC-CZ
Sending Date：
送样日期：________________________

Client approval 客户审核		Hongli approval 鸿利光电审核		
Approval 核准	Audit 确认	Approval 核准	Audit 确认	Confirmation 制作
				王山林
□ Qualified 接受	□ Disqualified 不接受	DATE: 日期：2018.12.27		

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注:1.此规格书以中英文方式书写,若有冲突以中文版本为准文本.
2.此规格书的最终解释权归广州市鸿利智汇集团股份有限公司
3.此规格书的有效期限为两年,自盖章或签字之日起计算,期满时双方可以续签协议,但应采用书面形式

Product naming rules 产品命名规则

HL-C 1860 K9 W 14 D B - 1B3C （Ra1） -FC - CZ
1 2 3 4 5 6 7 8 9 10 11 12

1 ： 鸿利光电代码
2 ： 产品系列代码
3 ： 尺寸代码
4 ： 芯片代码
5 ： 表示发光颜色为白光
6 ： 建议最大使用的瓦数
7 ：模具代码
8 ： 基板材质
9 ： 串并数
10: 显色指数
11: 共晶工艺
12: 车载使用

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

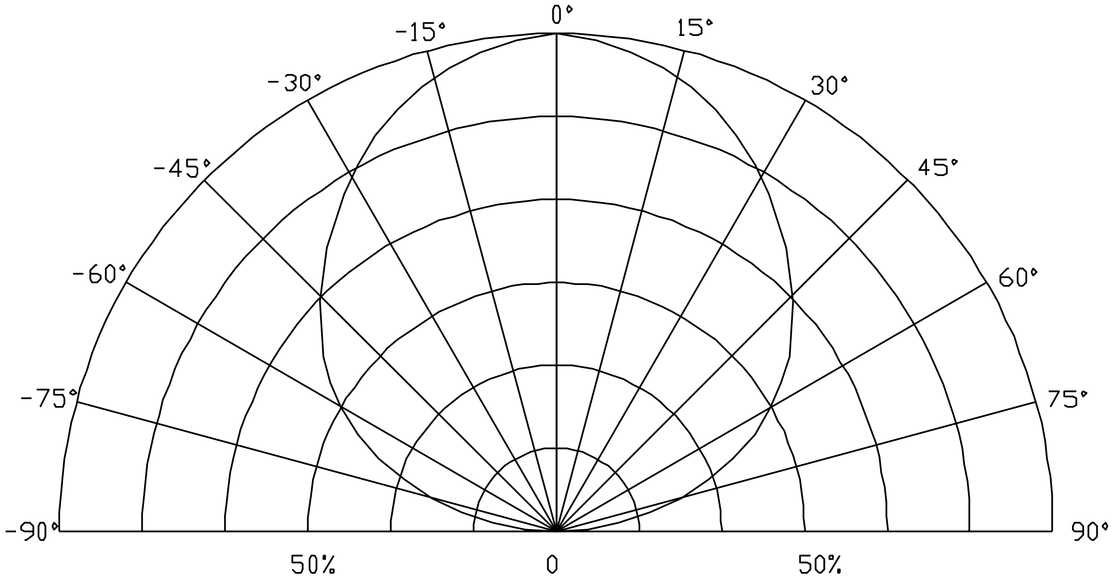
Features 特点

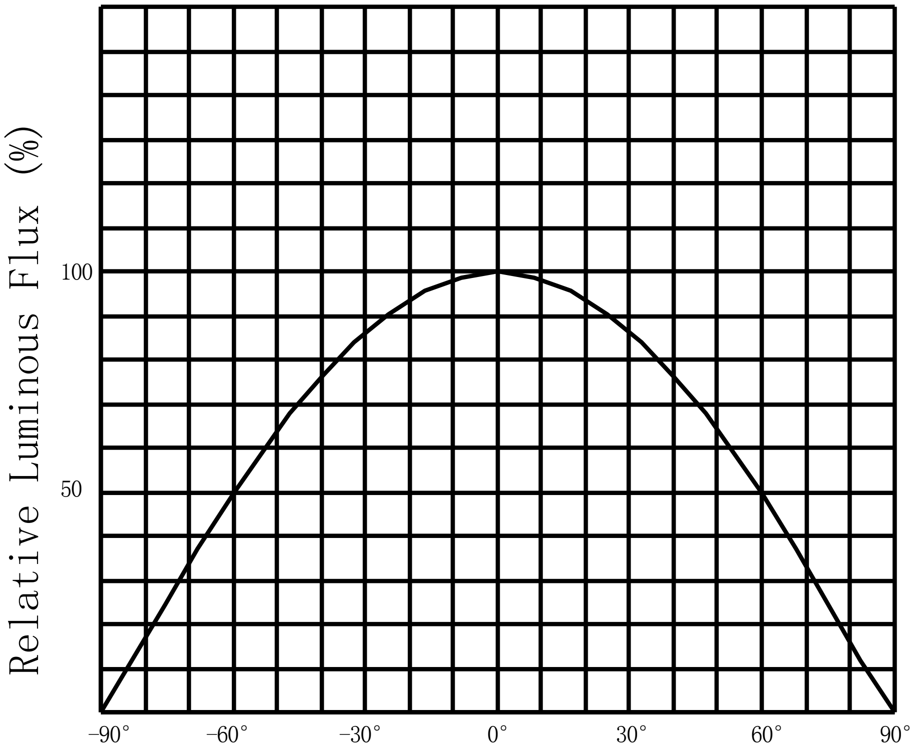
- Long operating life 寿命长
- High flux 光通量高
- Low voltage DC operated 低电压直流工作
- Cool beam, safe to the touch 冷光源，接触安全
- Instant light (less than 100ns) 瞬间点亮（小于100ns）
- No UV 无紫外线
- Eutectic Technology 共晶工艺
- RoHS compliant 符合RoHS标准
- Thermoelectric separation 热电分离

Application range 应用范围

- CARLIGHT 车灯

Radiation Pattern辐射模式





Specifications规范

(1) Absolute Maximum Ratings at Ta=25°C
在25°C时绝对极限条件

Parameter参数	Symbol符号	Rating 值	Units单位
Input power 输入功率	Pi	12	W
Forward Current 正向电流	I_F	≤1200	mA
Junction Temperature结温	Tj	145	˚C
View Angle (FWHM)- White 发光角度	—	120	degrees
Operating Temperature Range工作温度	Topr	-35°C To +100°C	
Storage Temperature Range储藏温度	Tstg	-40°C To +100°C	

Notes注:

1.All high power emitter LED products mounted on aluminum metal-core printed circuit board, can be lighted directly, but we do not recommend lighting the high power products for more than 5 seconds without a appropriate heat dissipation equipment.
所有高功率的发光LED产品安装在铝金属为核心印刷电路板，可直接点亮，但我们不建议在没有一个适当的散热设备时，照明高功率LED点亮超过5秒。

2.Reflow soldering should not be done more than two times.The reflow temperature we recommend is 260℃,When the temperature exceeds 260 ℃, the product failure of LED can be caused.
回流焊不能超过两次,回流焊最高温度建议260℃，当温度超过260℃极大可能引起LED产品失效。

(2) Optical Characteristics at Ta=25°C
在Ta=25°C 时的典型光学特性

Tc（K）		1200mA光通量			显色指数（Ra）
Min	Max	Min	Typ	Max	
5665	7040	1100	1200	1300	70

(3) Optical Electrical /Thermal Characteristics at Ta=25°
在Ta=25°C 时典型的电学/热学特性

IF (mA)	VF (V)			R（j-s）(°C/W)	Po（W）
	min	typ	max		
1200	8.7	-	9.3	2.0	12

Notes注:

1.the products after this specification refer to the parameters prevail, before the release of specification without refer to the above parameters.

此规格书发布日后生产的产品以上述参数为准，发布前生产的库存品不参考上述参数。

2.Tolerance of measurement of forward voltage±3%,Color-rendering index±2,luminous flux±5%

不同标准源测试存在仪器公差：正向电压公差为±3%、显指公差为±2、光通量公差为±5%。

3. The parameters are just for reference, Do not order the request parameters.

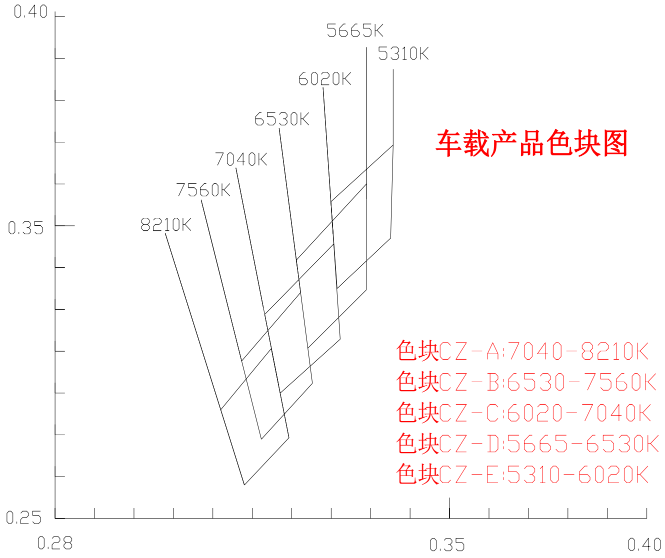
参数仅供参考，不能做为下订单时的参数要求。

Product bins 产品分级

(1) Forward Voltage bins 电压分级

Min (V)	Max (V)
8.7	9.3

(2) Chromaticity bins 色温分级



色块	CZ-A		CZ-B		CZ-C		CZ-D		CZ-E	
色温范围	7040-8210K		6530-7560		6020-7040		5665-6530		5310-6020	
中心色温	7560K		7040K		6530K		6020		5665	
坐标	X	Y	X	Y	X	Y	X	Y	X	Y
	0.2918	0.3062	0.2972	0.3177	0.303	0.3289	0.3114	0.3419	0.3197	0.3559
	0.2978	0.2881	0.3022	0.299	0.3069	0.3099	0.3144	0.3207	0.3215	0.3351
	0.3093	0.2993	0.3152	0.3124	0.3223	0.3229	0.3289	0.3348	0.3350	0.3469
	0.3049	0.3203	0.3122	0.334	0.3207	0.3457	0.3292	0.3601	0.3356	0.3692

Notes 注:

1.Products are tested and binned at a transient forward current(IF) with 1200mA. With the use of different IF, it may probably cause differences in CCT & forward voltage. Generally, with the increase of IF, the CCT will be raised as well.

该产品通过瞬态1200mA 点亮，分光分色.若使用不同电流，可能会引起色温及电压的变化，一般情况下，使用电流增加，色温会上升。

2. Tolerence of ±0.005 on x,y coordinates.

色坐标的测量误差允许在±0.005 。

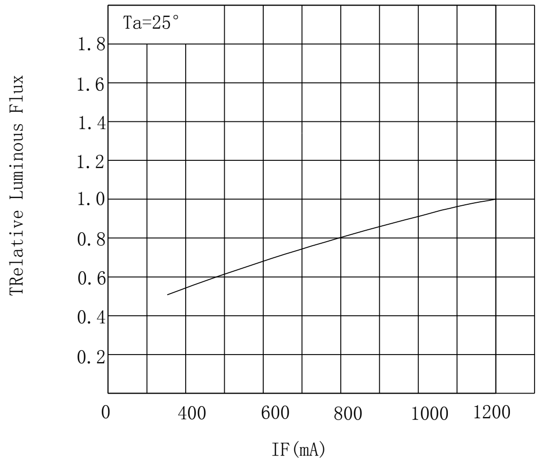
3.The chromaticity center refers to ANSI C78.377-2008.

色温分bin参考ANSI C78.377-2008。

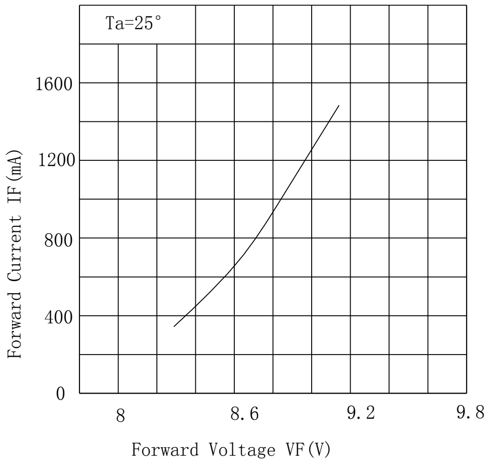
Typical Optical/Electrical Characteristics Curves (T$_a$=25℃ Unless Otherwise Noted)

典型光学/电性特征曲线（T$_a$=25°C 除非另有注释）

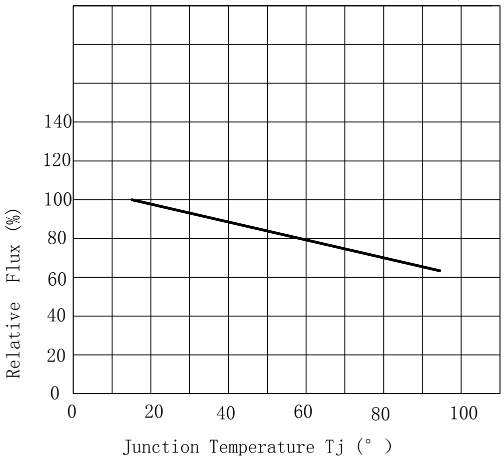
Relative Luminous Flux-IF
正向电流与相对光强曲线图



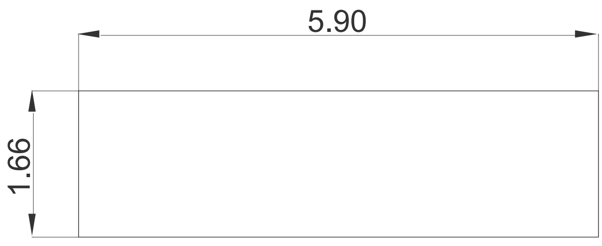
IF - VF
正向电流与正向电压曲线图

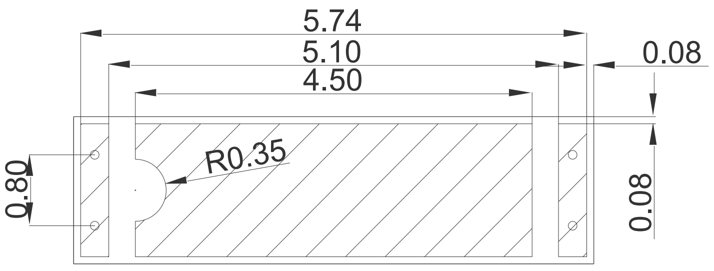


TJ - Relative Flux
温度与相对光通量曲线图



Package Dimensions封装尺寸



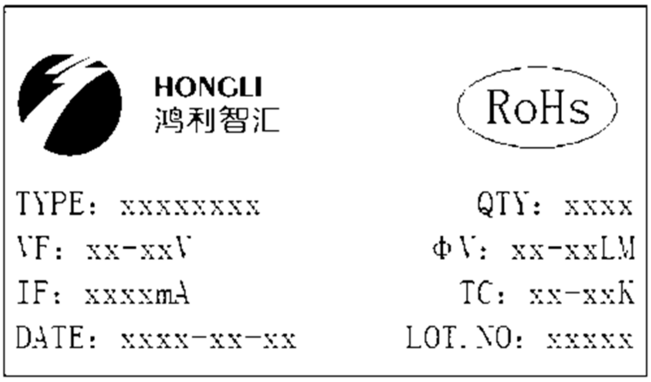


Notes注:

1. All dimension units are millimeters.
   所有尺寸单位均为毫米。
2. All dimension tolerance is ±0.1mm unless otherwise noted.

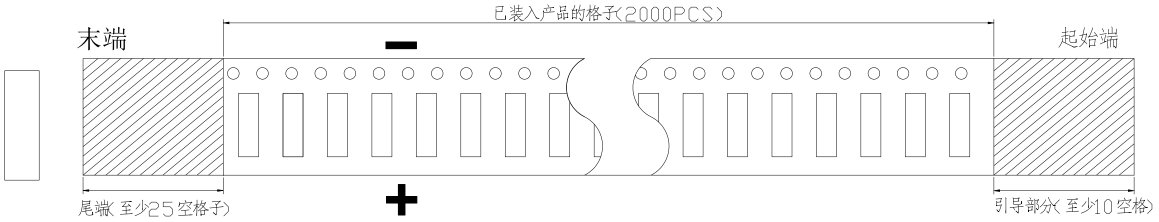
Label 标签

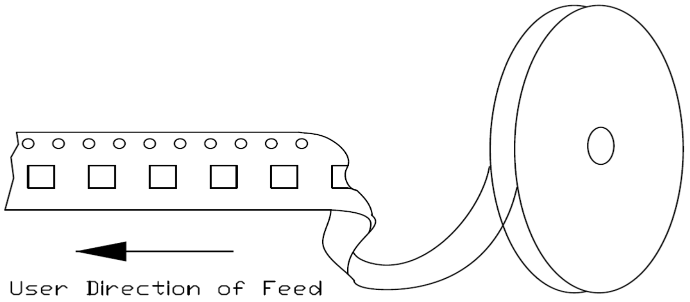
TYPE: XXXXXXXXX 产品型号
QTY: XXXXX 包装数量
VF: Forward voltage rank 正向电压档次范围
ΦV: Luminous Flux rank 光通量档次范围
IF: XXXX 分选电流
TC: Color temperature 色温
DATE: XXXX 生产日期
LOT.NO: Lot Number 生产批号


HONGLI
鸿利智汇
RoHs
TYPE: xxxxxxxx QTY: xxxx
VF: xx-xxV ΦV: xx-xxLM
IF: xxxxmA TC: xx-xxK
DATE: xxxx-xx-xx LOT.NO: xxxxx

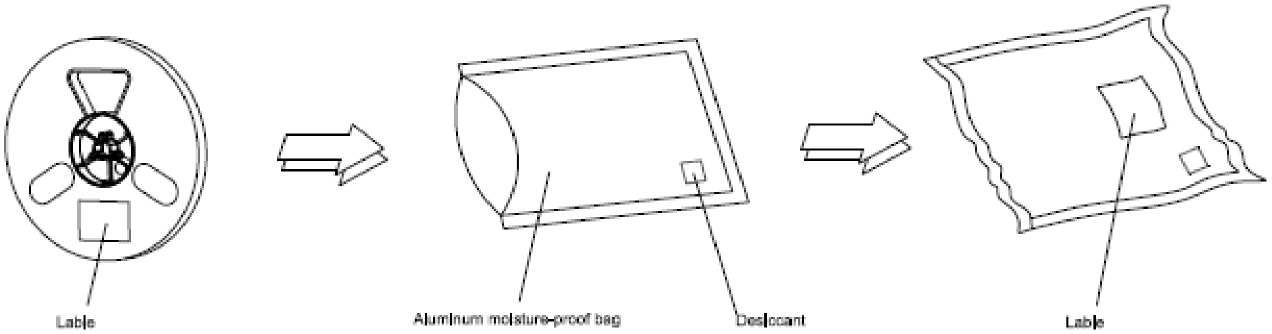
Tape Specifications(Units:mm)包装规格

(1)Reel package (2000 pcs/reel) 卷轴包装（2000 pcs/卷）

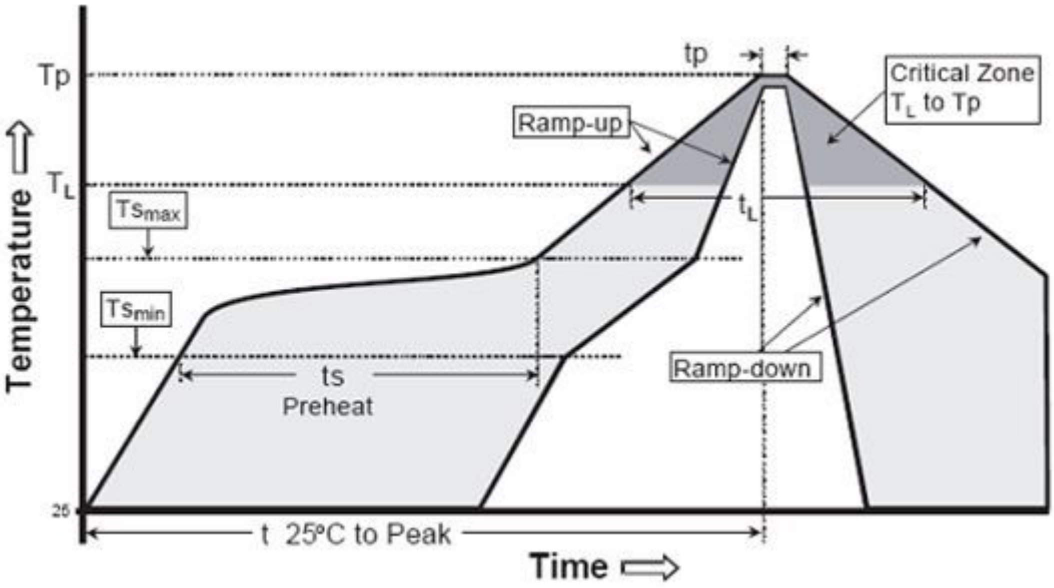




Moisture resistant packaging 防潮包装



Reflow soldering instructions 回流焊说明



Profile Feature	**Lead-Based solder**	**Lead-Free Solder**
Average Ramp-Rate (Ts$_{max}$ to Tp)	3℃/second max	3℃/second max
Preheat: Temperature Min (Ts$_{min}$)	100℃	100℃
Preheat:Temperature Max (Ts$_{max}$)	150℃	150℃
Preheat:Time(ts$_{min}$ to ts$_{max}$)	60-120 seconds	60-120 seconds
Time Maintained Above: Temperature(T$_L$)	183℃	217℃
Time Maintained Above: Time(t$_L$)	60-150 seconds	60-150 seconds
Peak/Classification Temperature(Tp)	215℃	260℃
Time Within 5℃ of Actual Peak Temperature(tp)	10-15 seconds	10-15 seconds
Ramp-Down Rate	6℃/second max	6℃/second max
Time 25℃ to Peak Temperature	6 minutes max	6 minutes max

Note:

1.recommend to use a convection type reflow machine with 8 zones.
建议使用八温区回流焊机。

2.recommend to use Lead-Free Paste .
建议使用无铅锡膏。

3.the reflow soldering time should not be more than 400s.
总的回流焊时间不要超过400s。

4.all temperature means the temperature measured on the surface of the package body.
所有温度均指在封装本体表面上测得的温度。

Use the matters needing attention(使用注意事项)

一、储存(storage)：

为避免受潮的影响，我司建议产品在未开包装前储存条件为 5-30°C，相对湿度小于 60%；已开包装的 LED 光源请在 24H 内使用安装完毕，如未用完之产品，请进行除湿并抽真空后密封保存。开封超过一周或湿度卡发生变化时，请务必进行除湿，除湿条件：60°C±5°C，4H；产品密封保存有效使用期为一年。

To avoid moisture, we recommend storage conditions for the unopened LED +5 ~ +30 °C, relative humidity <60%. LED should be used within 24 Hrs. of opening the package. Please make sure to dehumidify and vacuum pack the remaining/ unused LED. Dehumidifying condition: +120 ° C ± 5 ° C, 04 Hrs. Effective age for the sealed led is one year.

二、组装注意事项(the assembly notes)：

焊接条件：此产品必须使用回流焊接的作业方式,回流曲线最高温度不可超过 260°C.作业或存放过程中不可有 1000g 以上的外力或尖锐物体作用于透镜表面（如压力，摩擦等外力以及钳子镊子等工具），以免造成元件损伤；如果超出此使用条件，鸿利光电将不能保证产品的稳定性，如需使用超出的操作条件，请务必进行风险评。

Soldering Conditions：This product must be used reflow soldering practices, the maximum temperature of reflow should not exceed 260°C.Please make sure when soldering, there is no external force on the soldering surface (such as pressure, friction or sharp metal nails, etc.), to avoid gold wire deformation or damage and other abnormalities. If beyond recommended conditions, we cannot guarantee the LED stability, please do the risk assessment first.

焊接后清洗：焊接后应将灯珠冷却至室温再进行后续处理，尽早清洁镜头周围部分以免损坏产品； 焊接后可以用异丙醇清洗PCB板，不能用超声波清洗；（注：已经安装了灯具的PCB 板不能用水清洗）

Cleaning after reflow soldering ：Lamp should be cooled to room temperature after welding, then carrying out subsequent processing. Early to deal with the component, especially the part around the lens, may lead to damage of product; When cleaning PCB after welding, isopropyl alcohol can be used to clean PCB but without ultrasonic cleaning. Also the PCB board already equipped with lamps can not be cleaned by water.

三、防静电措施(anti-Static Measures)：

请采取足够的措施来防止静电产生，比如带静电环或防静电手指套等；每个制造工程关于产品（工厂、设备、机器、载波机和运输单位）应当连接地面，避免产品电气带电；本产品的防静电敏感度超过8000V (HBM)，装配后的最终灯具产品（S）建议检查是否损坏LED（漏电现象）

Please take adequate measures to prevent electrostatic generation, such as wearing electrostatic ring or anti-static fingerstall etc; any relative products like plant equipment, machinery, carrier and transportation units shall be connected to discharging unit/ ground. After assembly, please make sure to discharge Static Electricity with proper ESD equipment；The antistatic sensitivity of this product is over 8000V(HBM), and the final lighting product (S) after assembly is recommended to check whether the LED (leakage phenomenon) is damaged

四、温度控制(temperature Control)：

为确保在SMT后散热通道良好，建议灯珠焊盘与MCPCB空洞率小于20%，MCPCB采用铜基热电分离结构；并且保证焊点温度低于100℃，灯珠胶面温度低于200 ℃。

It is suggested that the hole rate of the lamp bead and MCPCB is less than 20% to ensure that the cooling channel is good after SMT ；Solder joint temperature below 100 ℃ and the light bead of glue temperature below 200 ℃

五、驱动控制(drive control)：

本产品需使用恒流源进行驱动，且输出电流符合规格书上的功率使用范围，如需使用恒压源或其他使用条件，请进行使用效果风险评估。

Drive this product at constant current. Output current range specifications should be according to the operational and other conditions, as mentioned in data sheet. Before using a constant voltage source or altered specifications, other than recommended, please consider risk factors.

为使LED在稳定状态下工作，电路中必须串联保护电阻；

环境温度会影响到LED的可靠性，LED光源应当远离热源工作；

在LED固态照明设计中，不相容的挥发性有机化合物可能会降低照明系统的性能，缩短其使用寿命，因此在设计过程中请避免使用有机化合物

The circuit must be connected in series to ensure that the LED is working in a stable state.

The ambient temperature will affect the reliability of the LED, and the LED light source should be kept away from the heat source ；

In LED solid-state lighting design, the incompatibility of volatile organic compounds may degrade the performance of the lighting system, shorten its service life, therefore please avoid using organic compounds in the process of design

六、其他(other)：

本产品不可在以下条件下使用，如果产品在以下条件下使用，评估其使用效果和风险是有必要的：

---直接或间接的打湿或受潮，比如淋雨等；

---被海水损害或侵蚀；

---被暴露于腐蚀性气体(如 Cl2,H2S、NH3、SOx、NOx等）；

---被暴露于粉尘、液体或油；

Product is not suitable to use in following conditions;
—-Direct or indirect wet / damp conditions, such as rain, etc;
—-in contact with sea water and erosive materials;
—-Exposed to corrosive gases (e.g., Cl2, H2S, NH3, SOx, NOx, etc.);
—-Exposed to dust, liquids or oils;

修订次数	修订人	修订内容	修订日期	版次
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