



湘能华磊光电股份有限公司
Xiangneng HuaLei Optoelectronic Corporation

产品规格书

Product Specification

产品名称 Product Name	HL-S12E 白光 LED 芯片
型号规格 Model SPEC	12E
客户名称 Company Name	
文件编号 Doc ID	C-PB-B-012
版本号 Version NO.	A/14

承认 Admit	确认 Confirmation	制作 Prepared by

客户确认 Customer Confirmation	签名 Signature	日期 Date
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HL-S12E白光LED芯片产品规格
Product specification of HL-S12E blue LED chip

● **特性: Features**

- (1). 亮度高/寿命长 High luminous intensity/Long operation life.
- (2). 可应用于户内/户外 Indoor/outdoor applications.;
- (3). 顶部有钝化层 Passivation layer on top.
- (4). 百分百全测 100% Probing test.

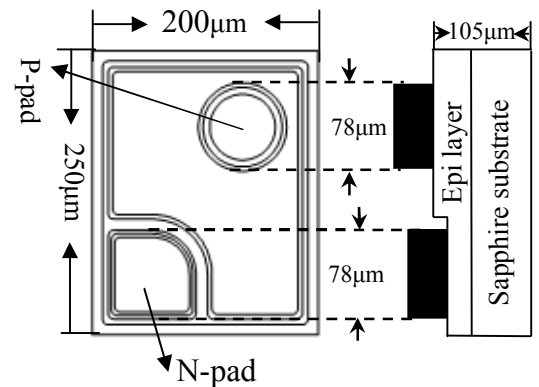
● **物理参数: Characteristics**

1、尺寸 Size

- (1). 芯片尺寸 Chip size: 08milx10mil(200±15μm x 250±15μm)
- (2). 芯片厚度 Chip thickness: 4.1mil(105±15μm)
- (3). P/N电极 P/N bonding pad: 3.1mil (78±10μm)

2、金属电极 Metallization: P/N电极金合金 Au alloy P/N bonding pad.

3、结构 Structure: 参考右图 refer to the right figure.



● **25℃时电光特性: Electro-optical characteristic at 25℃**

(测试参数) Test parameter	(测试条件) Test Condition	(最小值) Min	Typ	(最大值) Max	(单位) Unit
主波长 Dominant wavelength(Wd)	20mA	445	-	465	nm
光功率 Luminous power(P ₀)	20mA	11	-	17	mW
正向电压 Forward voltage(Vf ₁)	20mA	2.8	-	3.6	V
正向电压 Forward voltage(Vf ₄)	1μA	2.0	-	2.7	V
反向电流 Reverse current (Ir)	-8V	0	-	1	μA

备注: Notes

(1)、波长分档为2.5nm, 然而我们也欢迎客户的其他要求。

Basically, wavelength span is 2.5 nm, however, customers' special requirements are also welcome.

(2)、光功率分档为2mW, 然而我们也欢迎客户的其他要求。

Basically, Luminous power span is 2mW, however, customers' special requirements are also welcome.

(3)、电压分档为0.2V或者0.4V, 然而我们也欢迎客户的其他要求。

Basically, Forward voltage span is 0.2V or 0.4V, however, customers' special requirements are also welcome.

●. 绝对最大范围: Absolute Maximum Ratings

(参数) Parameter	(符号) Symbol	(条件) Condition	(范围) Rating	(单位) Unit
(正向直流电流) Forward DC current	If	Ta=25℃	≤30	mA
(反向电压) Reverse voltage	Vr	Ta=25℃	≤8	V
(结温) Junction temperature	Tj	—	≤115	℃
(储存温度) Storage temperature	Tstg	芯片 chip	-40 ~ +85	℃
		储存 chip-on-tape/storage	0 ~ 40	℃
		运输 chip-on-tape/transportation	-20 ~ +65	℃
(封装加热温度) Temperature during packaging	—	—	280 (<10sec)	℃

备注:Note

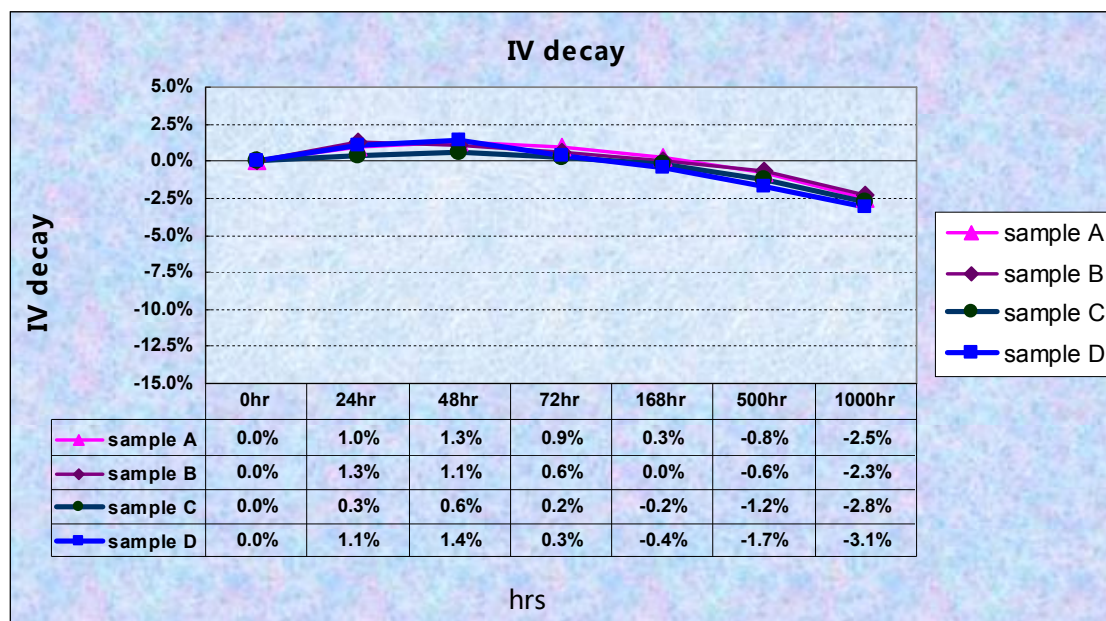
以上最大范围是通过无树脂涂层的印刷电路板所决定的，其与封装形式具高度相关性。施加大于最大范围如正向电流及结温等均会对LED产生危害。

Maximum ratings are package dependent. The above maximum ratings were determined using a Printed Circuit Board (PCB) without an encapsulant. Stresses in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.

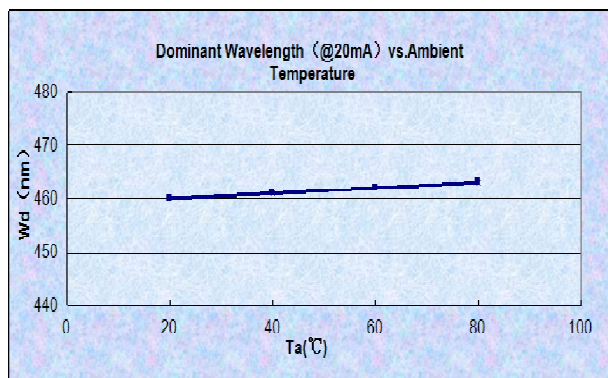
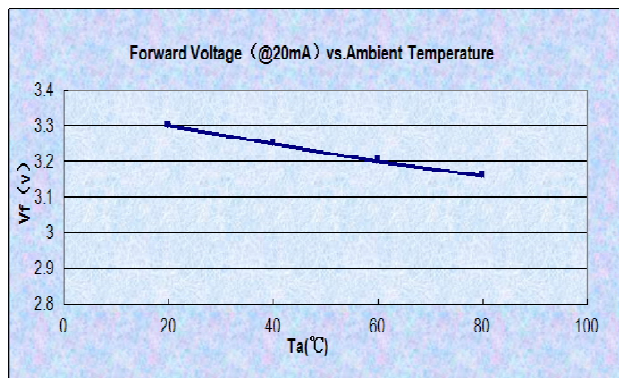
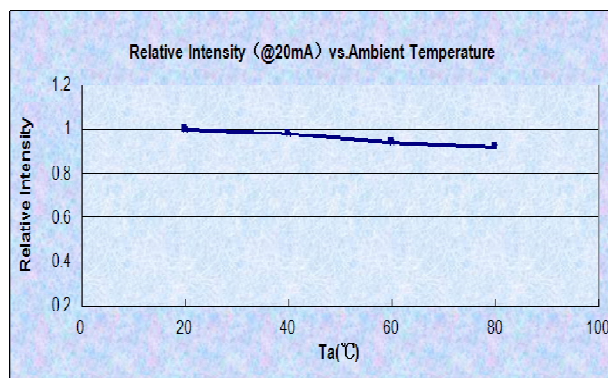
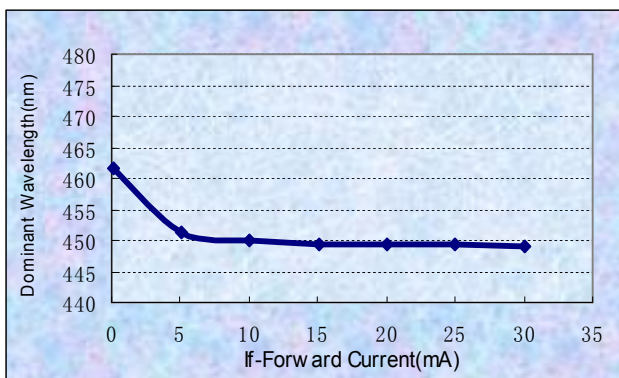
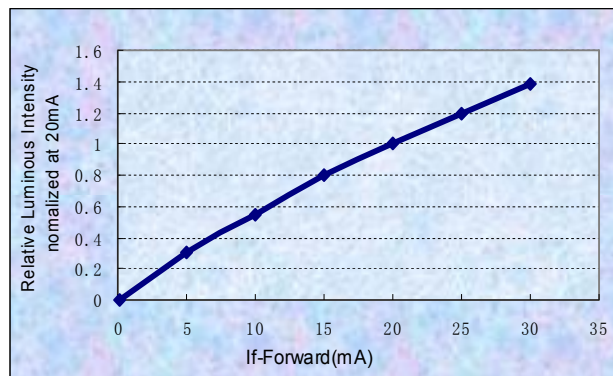
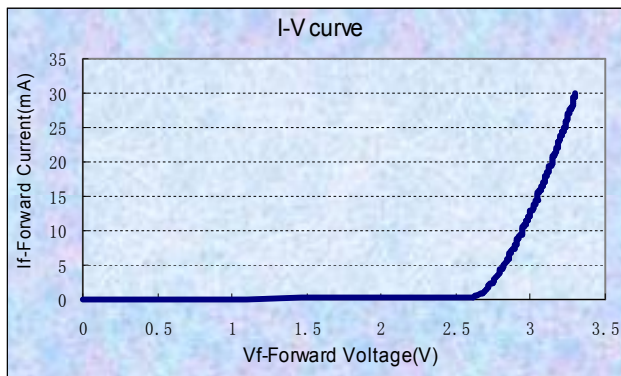
●. 可靠性数据: Reliability data

※老化条件 Burn-in condition: 芯片固置于无树脂涂层的印刷电路板，室温下 If=30mA，1000 hrs

※测试条件 Measurement: Vf Iv Wd @20mA，Ir@-8V ※要求 Guarantee: Iv decay<10%。



●. 特性曲线: Characteristic Curves



●. 外观检验标准: Appearance Inspection Standard

类别 Type	缺陷项目 Defect Item	符合标准描述 Description
电极异常 PAD Defect	电极异色 Multi colors	N、P 电极不得有颜色异常 N、P Pad without multi colors.
	掉电极 Metal Peeling	N、P 电极不能有任何缺损或翘起 N、P Pad without metal peeling or curve.
	电极划伤、针痕 Scratch、Pin Hole	a. 电极划伤面积 $\leq$ P 型电极面积的 1/3; a. Pad scratch area is less than or equal to 1/3 of the whole P-Pad area. b. 电极针痕面积 $\leq$ P 型电极面积的 1/3。 b. Pin hole area is less than or equal to 1/3 of the whole P-Pad area.
	电极污染 Pad Stain	电极污染面积 $\leq$ P 型电极面积的 1/3。 Pad Stain area is less than or equal to 1/3 of the whole P-Pad area.
发光区异常 Light Emitting Area Defect	表面异物、污染 Surface Stain、Contamination	a. 非电极区域粘有异物、污染面积 $\leq$ P 型电极面积的 1/3; a. Stained on the non-pad area、stain area is less than or equal to 1/3 of the whole P-Pad area. b. 表面异物、污染不得跨过 mesa 线。 b. Surface stain or contamination can not be exceeded mesa line.
	残金 Residual Metal	不超过 P 型电极面积的 1/3, 且 N 电极残金不可与发光区相连。 Residual metal is less than the 1/3 of the whole P-Pad area, N-pad residual metal can not be connected with the light emitting area.
	发光区刮伤 Light Emitting Scratch Area	发光区划伤面积 $\leq$ 发光区面积的 1/7。 Light emitting scratch area is less than or equal to 1/7 of the whole light emitting area.
	外延缺陷 Epitaxial defects	a. 外延缺陷面积 $\leq$ P 型电极面积的 1/3; a. Epitaxial defects area is less than or equal to 1/3 of the whole P-Pad area. b. P 电极区域内不得有外延缺陷。 b. P-pad area without any epitaxial defects.

其他异常 Other Defect	背镀层脱落 Backside layer peeling	芯片背镀层脱落面积不允许超过背面面积的 10%。 Backside layer peeling area can not be exceeded 10% of the whole back area.
	切割不良 Cutting NG	a. 发光区与电极完好，无任何缺损； a. Light emitting area and pad can be intact, without any damage. b. 不可以有另一颗芯片的发光区或电极。 b. No light emitting area or pad of another chip.
	排列不齐 Chip Position Difference	a. 芯片旋转角度不超过 15° ； a. Chip tilt can not be exceeded 15°. b. 芯片上下、左右偏移不得超过标准间隔的 45μm。 b. Chip offset can not be exceeded 45μm on the up, down, left and right from standard interval.
	芯片电极反向排列 Chip alignment with reversed pad	芯片排列不允许有芯粒电极相反的情况。 Chip alignment can not be allowed with reversed pad.
	蓝膜污染、破损 Blue tape stain、damage	蓝膜上不得有任何肉眼可见的外观不良，如划痕、笔迹等污染或破损。 Blue tape without any appearance defects in naked eyes. E.g scratch, handwriting stain or damage.

备注: Notes

(1)、芯片掉电极异常的比例控制在500ppm/批之内。

The abnormal ratio of pad peeling is controlled under 500ppm / batch.

(2)、单张芯片外观不良比例控制在0.1%之内。

The abnormal ratio of appearance is controlled under 0.1%.

(3)、单张芯片颗数误差控制在0.1%之内。

The tolerance of each chip's granular can be controlled within 0.1%.

● 电光性能误差: Electro-optical characteristic tolerance

※正向电压 : $\pm 0.05V$ Forward voltage (Vf):

※光功率/光强: $\pm 10\%$ Luminous power (Po) / Luminous intensity (Iv)

※主波长: $\pm 1nm$ Dominant wavelength (Wd)

备注: Notes

(1)、芯片电光性能异常率均控制在0.1%之内。

The abnormal ratio of electro-optical properties is controlled under 0.1%.

(2)、所有芯片亮度是在裸晶基础上由华磊光电设备所测量，然而由我司芯片制作成灯珠的光电特性是不能完全保证的。All chips' luminous intensities are measured on bare chip by equipments of Xiangneng Hualei Optoelectronic Corporation. However, the electro-optical characteristics on lamps made by our chips are not fully guaranteed.

●. 包装尺寸规格: Packing Specification

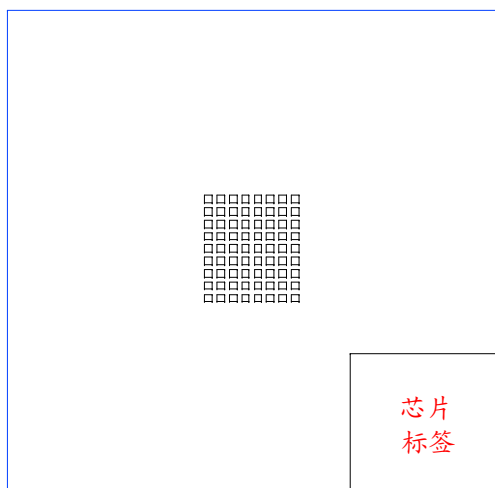
※蓝膜:Blue Tape 195mm×200mm

※离型纸: Anti-adhesive Paper 200mm×200mm

※静电金属袋:Antistatic Bag 220mm×220mm (自粘式封口袋 Insulating self-adhesive bag),

每个静电袋包装不超过 30 张为宜。No more than 30 pieces in each antistatic bag is recommended.

※标签:Label 55mm×60mm 粘贴于蓝膜右下角(如下图) The label is in the lower right on the blue tape.



●. 产品存放与运输: The Products in Storage and Transport

(1)、产品需以竖立方式存放, 请勿折叠、重压芯片。

Products should be placed upright, and do not press or fold.

(2)、包装盒无防水、防潮和防湿的能力, 必须远离存放。

The boxes must be kept away from water, moisture and dust.

(3)、请不要在芯片包装所用的离型纸、蓝膜、产品标签上使用硬质工具进行标记(可使用标签纸粘贴在离型纸外进行标记)。

Do not mark on the anti-adhesive paper, blue tape and label by rigid tool.

(4)、请使用托盘或包装盒等硬质容器搬运芯片, 保持芯片包装蓝膜平整。

Please place chips in rigid containers for transportation, and make sure the blue tape is kept smooth.

●. 使用防范措施: Precautions for use

(1)、生产作业时, 应确保操作员的身体和设备接地。

Be sure to ground the worker's body and equipment when operator handles the chips in mass production.

(2)、工作台与电源需具有相同的接地线。

Set the ground line of work bench to the same that of the power supply.

(3)、在相对湿度 45%-65%的环境下储存芯片, 确保空气中的灰尘和气体不能损坏芯片。

Chips are stored in the environment with 45% - 65% of the relative humidity and to ensure that the air dust and gas can not damage the chips.

(4)、利用不易带静电的箱子储存。

Use a storage case which can not be easily charged with static electricity.

(5)、芯片为一般电子设备而设计。

This chips are designed for general electric equipments.

※电脑 Computer

※测量仪器 Measuring instrument

※OA 设备 OA equipment

※家用电器 Home appliances

※AV 设备 AV equipment

※通讯设备 Telecommunication

※设备终端等 Equipment(Terminal) etc.

●. 其他注意事项: Other Cautions

(1)、芯片处理过程中要采取ESD保护措施。

Precause of ESD protection is necessary during handling chips.

(2)、考虑到蓝膜材料的变化, 出厂芯片应储存不超过 6 个月。

Chips should be stored within 6 months.

(3)、光电参数均系湘能华磊光电股份有限公司测试仪器在室温条件下测试所得。

The electro-optical characteristics are measured at room temperature in Xiangneng Hualei Optoelectronic Corporation.

(4)、在非标准环境下使用芯片造成的损失, 湘能华磊光电股份有限公司一概不负责任。

Xiangneng Hualei Optoelectronic Corporation cannot take any responsibility for any loss that are caused by using the chips at exceedingly critical conditions.

(5)、如用户有任何特殊质量或可靠度方面的需求, 如医疗设备、航空应用、交通信号灯、安全系统设备等, 请提前咨询湘能华磊光电股份有限公司。

It is recommended to consult Xiangneng Hualei Optoelectronic Corporation in advance if user's application requires any particular quality or reliability. Such as medical equipments, aerospace applications, traffic signals, safety system equipments and so on.

(6)、此产品承认书仅适用于湘能华磊光电股份有限公司 A2 品芯片。

The approval sheet applies only to A2-class chips of Xiangneng Hualei Optoelectronic Corporation.