

High Power COB /大功率 COB

CP1616 10W series /CP1616 10W 系列



Features /特性

- High Power COB&High Ra LED/大功率 COB&高显色 LED
- Multi-Chip Solution/多芯片解决方案
- High luminous intensity output/高亮度
- RoHS compliant /符合 RoHS
- Energy Star/ IEC60081 Binning /符合能源之星/IEC60081 分级

Description /描述

Runlite's COB Series is an Ceramic substrate based LED achieving high efficiency while maintaining high Ra at Energy Star /IEC60081 color temperature ranges.

源磊 COB 产品采用陶瓷基板导热，具有高光通量，高光效，高显指的特性，符合能源之星/IEC60081 分级

Applications /应用

- Replacement Bulb /更换球泡
- Indoor General Lighting /室内照明
- Recessed Can Lighting /嵌入式照明

Product Number Explanation /产品编码解说

C P 1616 D EF-GH JK L MNO PQRS T UVWX-0000

C=Product Category/产品类别

P=Product Configuration/产品结构

1313=Product Dimension/产品尺寸

D=Base Material/基板材质

EF=Product Power/产品功率

GH=Chip Serial Number/芯片串联数目

JK=Number of Chips in Parallel/芯片并联数目

L=Product is Emitting Light Colors/产品发光颜色

MNO=Product Color or Band/产品色温或者波段

PQRS=Product Scope of Brightness/产品亮度范围

T=Product Ra/产品显色指数

UVWX=Product Voltage Range/产品电压范围

0000=Serial NO/产品流水码

Table of Ra /显色指数表格

Symbol / 符号	Description/ 描述
A	No Requested/没有要求
B	60-65
C	65-70
D	70-75
E	75-80
F	80-85
G	85-90
H	90-95
I	95-100

Note/备注:

Tolerance of Ra: ± 2 显色指数 ± 2

Mass Production List / 量产清单

Product / 产品型号	Ra	CCT(K)	Φ(lm)	Φ(lm)
	Min.(1)		Min. (2)	Max. (2)
CP1616M10-1203W27SP1P3FM7N0-0000	80	2700K	900	1200
CP1616M10-1203W29SP1P3FM7N0-0000	80	3000K	900	1200
CP1616M10-1203W34SP1P3FM7N0-0000	80	3500K	900	1200
CP1616M10-1203W41SP1P3FM7N0-0000	80	4000K	900	1200
CP1616M10-1203W50SP2P4FM7N0-0000	80	5000K	1000	1300
CP1616M10-1203W58GP2P4FM7N0-0000	80	5700K	1000	1300
CP1616M10-1203W62GP2P4FM7N0-0000	80	6200K	1000	1300
CP1616M10-1203W64SP2P4FM7N0-0000	80	6500K	1000	1300

Notes/备注:

- 1.Tolerance of Ra Index: ± 2 显色指数 ± 2
- 2.Tolerance of Luminous flux: $\pm 11\%$. 光通量 $\pm 11\%$

Device Selection Guide/产品指南

Chip Materials / 芯片材料	Emitted Color/ 发光颜色	Resin Color / 胶体颜色
InGaN	Cool White / 正白	Yellow/黄色
InGaN	Neutral White / 自然白	
InGaN	Warm White / 暖白	

Absolute Maximum Ratings (T_{Soldering}=25°C) / 极限参数 (温度=25°C)

Parameter / 参数	Symbol / 符号	Rating / 等级	Unit / 单位
Forward Current / 正向电流	I _F	270	mA
Peak Forward Current (Duty 1/10 @10ms) / 峰值正向电流	I _{FP}	450	mA
Power Dissipation / 功耗	P _d	9.5	W
Operating Temperature / 操作温度	T _{opr}	-40~+85	°C
Storage Temperature / 存储温度	T _{stg}	-40~+100	°C
Thermal Resistance (Junction / Soldering point) / 热阻	R _{th J-S}	1.8	°C/W
Junction Temperature / 结点温度	T _j	115	°C
Soldering Temperature / 焊接温度	T _{sol}	Hand Soldering / 手工焊 : 350°C for 3 sec.	

Note:

The products are sensitive to static electricity and must be carefully taken when handling products
本产品对静电敏感，请操作时注意

Electro-Optical Characteristics (T_{Soldering}=25°C) / 光电参数 (温度=25°C)

Parameter / 参数	Symbol / 符号	Min./最小	Typ.	Max./最大	Unit/单位	Condition/条件
Luminous Flux / 光通量	Φ	900	--	1300	lm	I _F =270mA
Forward Voltage / 正向电压	V _F	33	--	37	V	
Color Rendering Index / 显色指数	Ra	80	--	85		
Efficacy / 光效	--	105	--	115	lm/W	
Viewing Angle / 发光角度	2θ1/2	--	120	--	deg	
Reverse Current / 反向电流	I _R	--	-----	10	□ uA□	VR = 60V

Notes:

1. Tolerance of Luminous flux: ±11%. 光通量±11%
2. Tolerance of Forward Voltage: ±1V. 正向电压±1V
3. Tolerance of Ra Index: ±2 显色指数 ±2

Bin Range of Luminous Flux /光通量 Bin

2700K---- CP1616M10-1203W27S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P1P3	900	1200	lm	I _F =270mA

3000K---- CP1616M10-1203W29S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P1P3	900	1200	lm	I _F =270mA

3400K---- CP1616M10-1203W34S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P1P3	900	1200	lm	I _F =270mA

4000K----CP1616M10-1203W41S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P1P3	900	1200	lm	I _F =270mA

5000K----CP1616M10-1203W50S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P2P4	1000	1300	lm	I _F =270mA

5700K----CP1616M10-1203W58G****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P2P4	1000	1300	lm	I _F =270mA

6200K----CP1616M10-1203W62G****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P2P4	1000	1300	lm	I _F =270mA

6500K----CP1616M10-1203W64S****FM7N0-0000

Bin Code	Min.	Max.	Unit	Condition
P2P4	1000	1300	lm	I _F =270mA

Notes:

Tolerance of Luminous flux: ±11% / 光通量±11%

Bin Range of Forward Voltage / 电压 Bin

Group	Bin Code	Min.	Max.	Unit	Condition
M7N0	M7N0	33	37	V	I _F =270mA

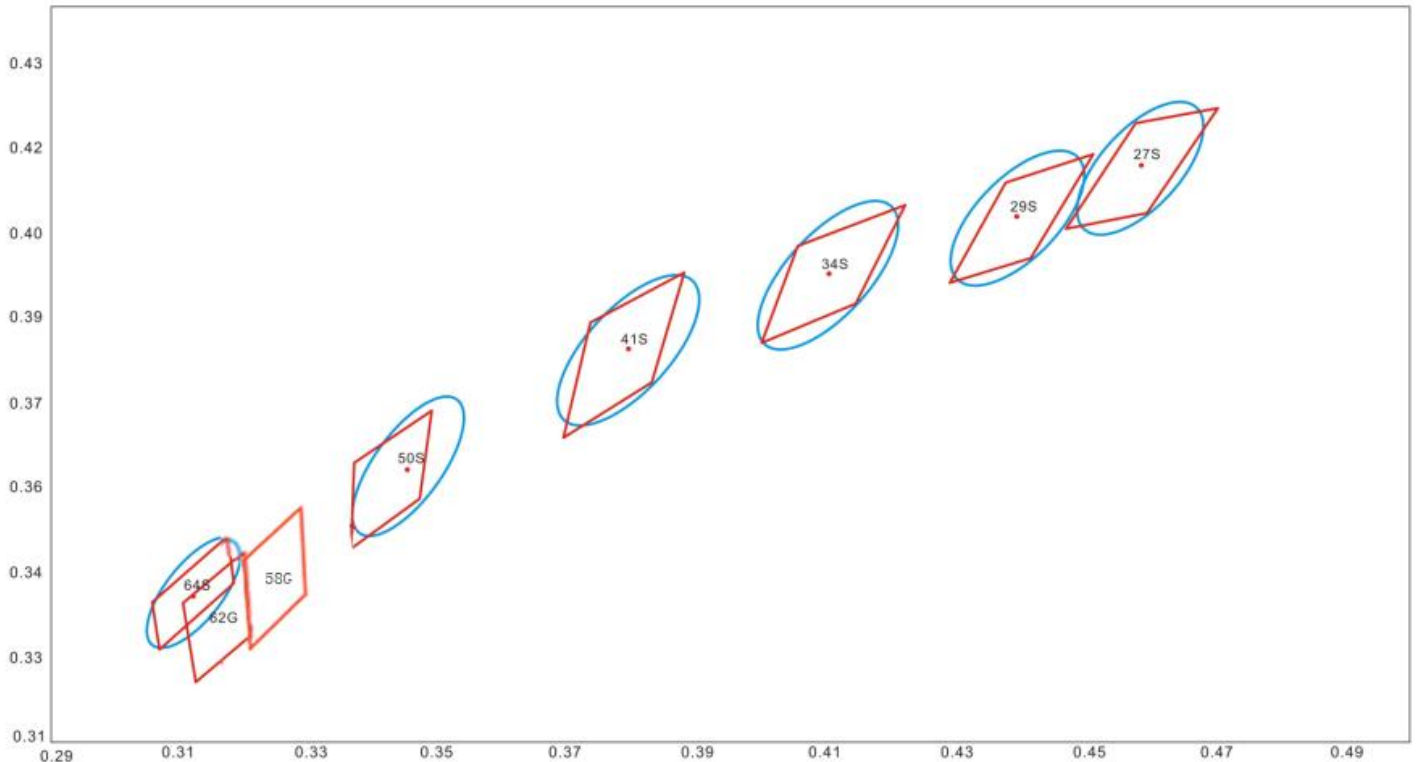
Notes:

Tolerance of Forward Voltage: ±1V. 正向电压±1V

Bin Code of Macadam 5 step / 麦克亚当 5 阶

Step	CCT	C _x	C _y	a	b	theta
5	2700	0.4583	0.4104	0.01350	0.00700	49.70
	3000	0.4345	0.4033	0.01390	0.00680	50.22
	3500	0.4080	0.3919	0.01545	0.00690	51.00
	4000	0.3827	0.3803	0.01565	0.00670	54.80
	5000	0.3451	0.3559	0.01370	0.00590	64.12
	5700	0.3293	0.3423	0.01245	0.00535	66.51
	6500	0.3131	0.3290	0.01115	0.00475	64.57

The C.I.E. 1931 Chromaticity Diagram/ C.I.E 1931 打靶图



Bin Range of Chromaticity Coordinates /色坐标范围

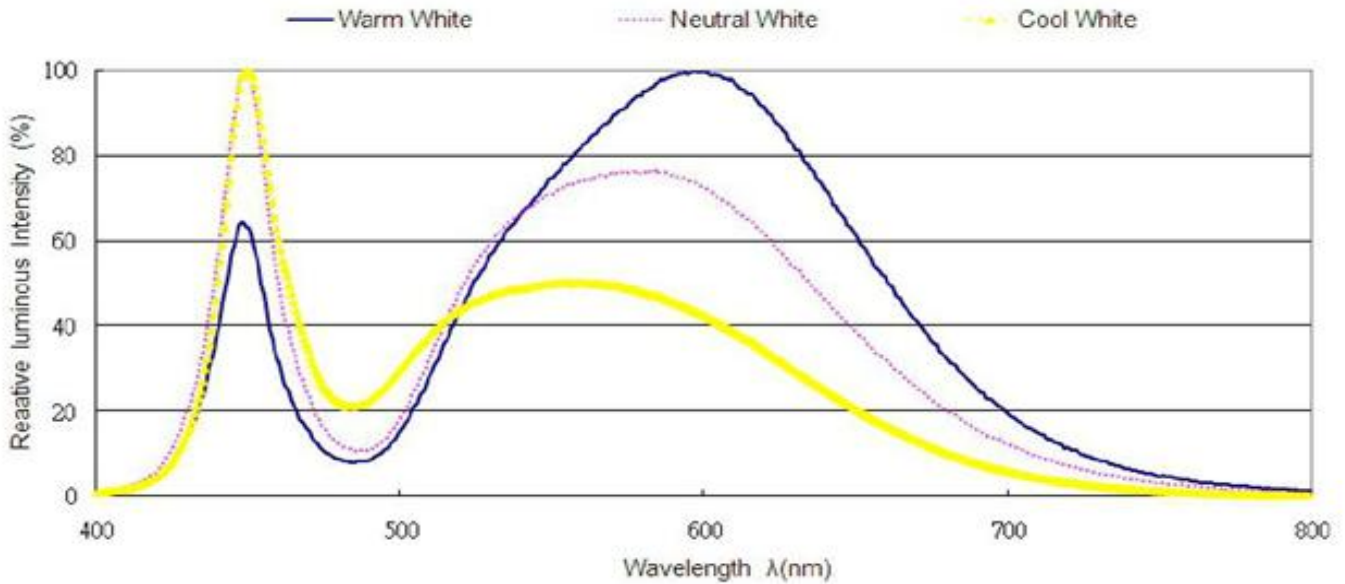
CCT	Bin Code	CIE-X	CIE-Y	CCT	Bin Code	CIE-X	CIE-Y
2645-2805K	27S	0.4475	0.4012	4900-5300K	50S	0.3372	0.3449
		0.4582	0.4199			0.3378	0.3596
		0.4700	0.4228			0.3496	0.3694
		0.4598	0.4041			0.3478	0.3533
	中心点 Central point	0.4590	0.4120		中心点 Central point	0.3460	0.3590
2855-3025K	29S	0.4295	0.3918	6175-6825K	64S	0.3079	0.3274
		0.4381	0.4097			0.3068	0.3354
		0.4515	0.4145			0.3181	0.3467
		0.4420	0.3962			0.3192	0.3387
	中心点 Central point	0.4400	0.4030		中心点 Central point	0.3130	0.3370
3265-3535K	34S	0.4006	0.3811	6020-6530K	62G	0.3133	0.3214
		0.4061	0.3980			0.3113	0.3350
		0.4226	0.4056			0.3208	0.3444
		0.4150	0.3930			0.3219	0.3296
	中心点 Central point	0.4110	0.3930		中心点 Central point	0.3168	0.3328
3897-4223K	41S	0.3699	0.3646	5477-6020K	58G	0.3220	0.3280
		0.3743	0.3846			0.3209	0.3425
		0.3885	0.3934			0.3330	0.3533
		0.3835	0.3741			0.3329	0.3375
	中心点 Central point	0.3800	0.3800		中心点 Central point	0.3272	0.3403

Note:

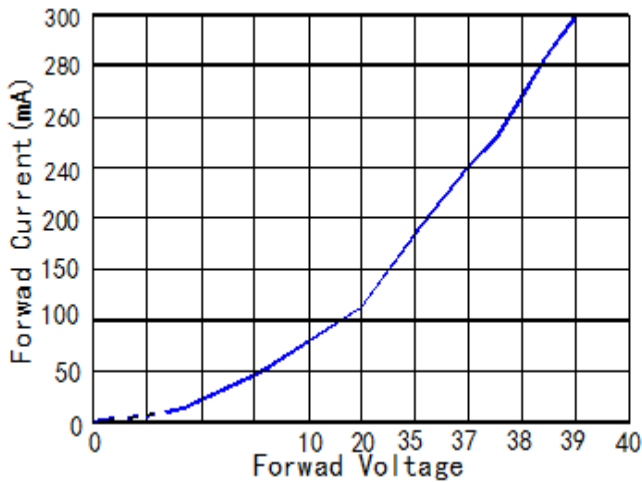
- The value is based on driving current by 200mA/驱动电流 270mA 测试参数.
- Tolerance of Chromaticity Coordinates: ±0.01/色度坐标误差: ±0.01.

Typical Optical-Electrical Characteristics curves 典型光电特性曲线

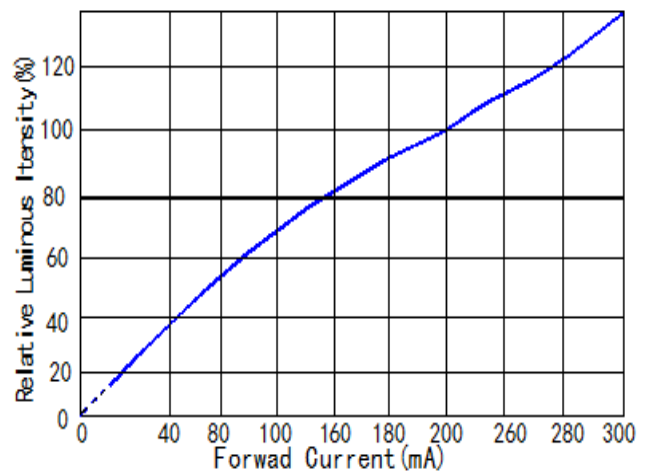
Spectrum Distribution/光谱分布图



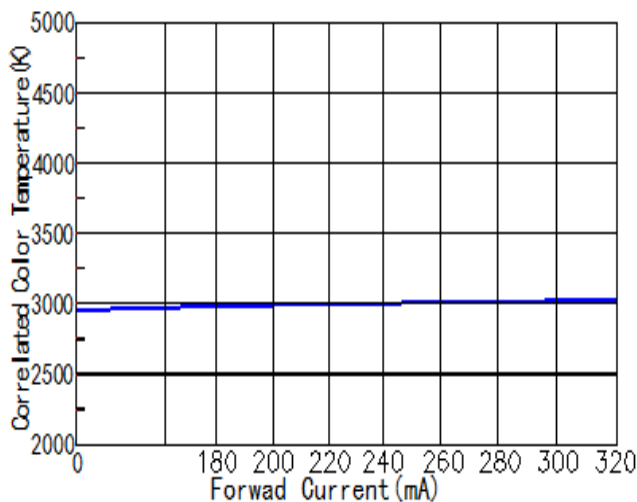
电压与电流关系曲线图
Forward Current VS Forward Voltage



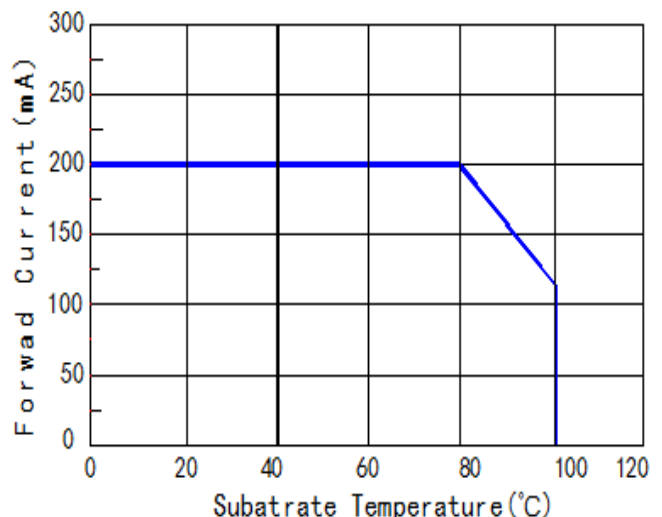
光通量与电流关系曲线图
Relative Flux VS Forward Current



色温与电流关系曲线图
Correlated Color Temperature VS Forward Current

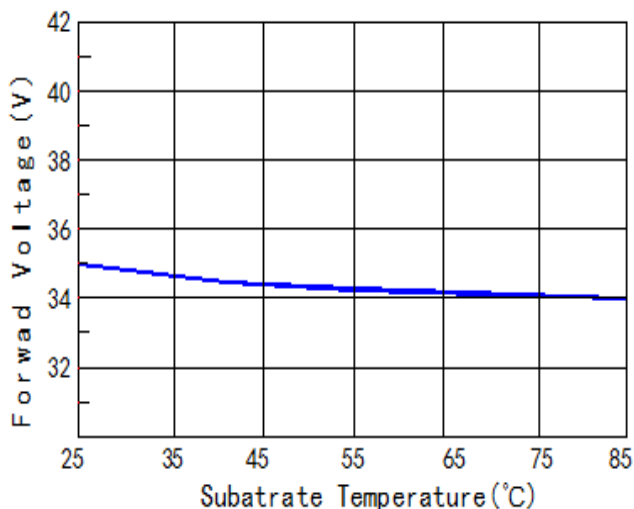


电流与结温关系曲线图
Forward Current VS Junction Temperature



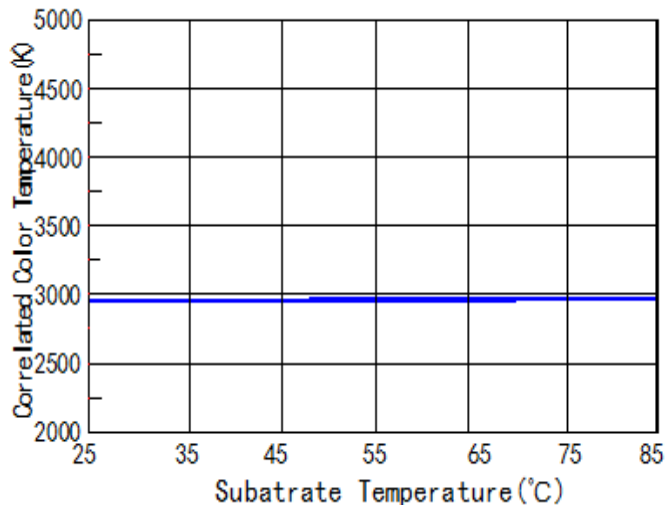
电压与温度关系曲线图

Forward Voltage VS Substrate Temperature



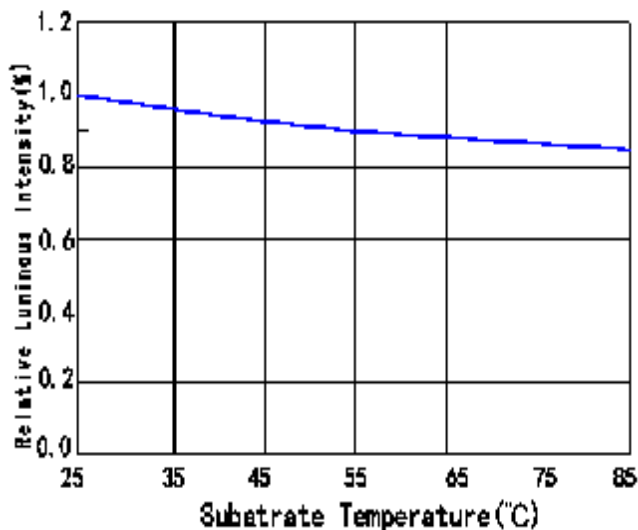
色温与温度关系曲线图

Correlated Color Temperature VS Substrate Temperature



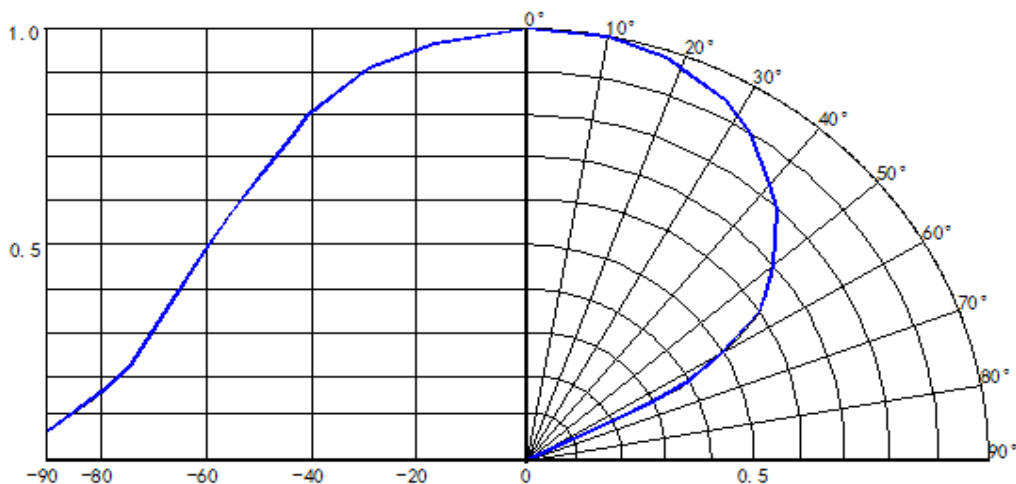
光通量与温度关系曲线图

Relative Flux VS Ambient Temperature

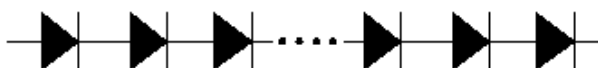
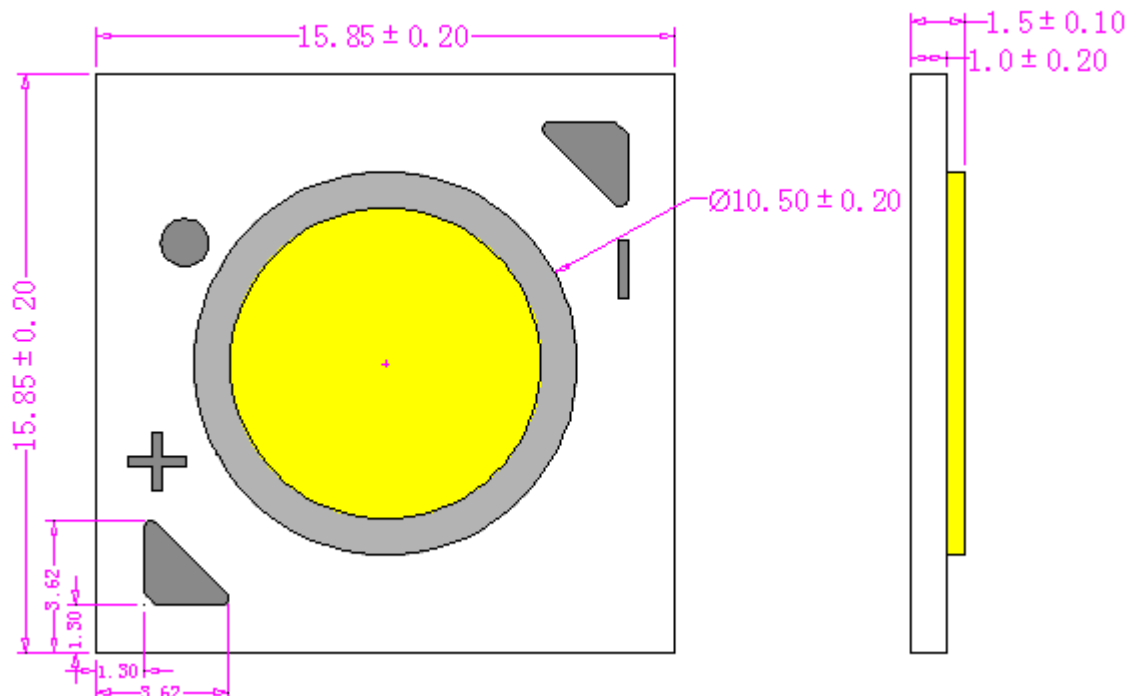


发光角度图 (极坐标)

Typical Spectral Distribution



Package Dimension



12 串 3 并

Note:

Tolerance unless mentioned is ± 0.15 mm; Unit: mm

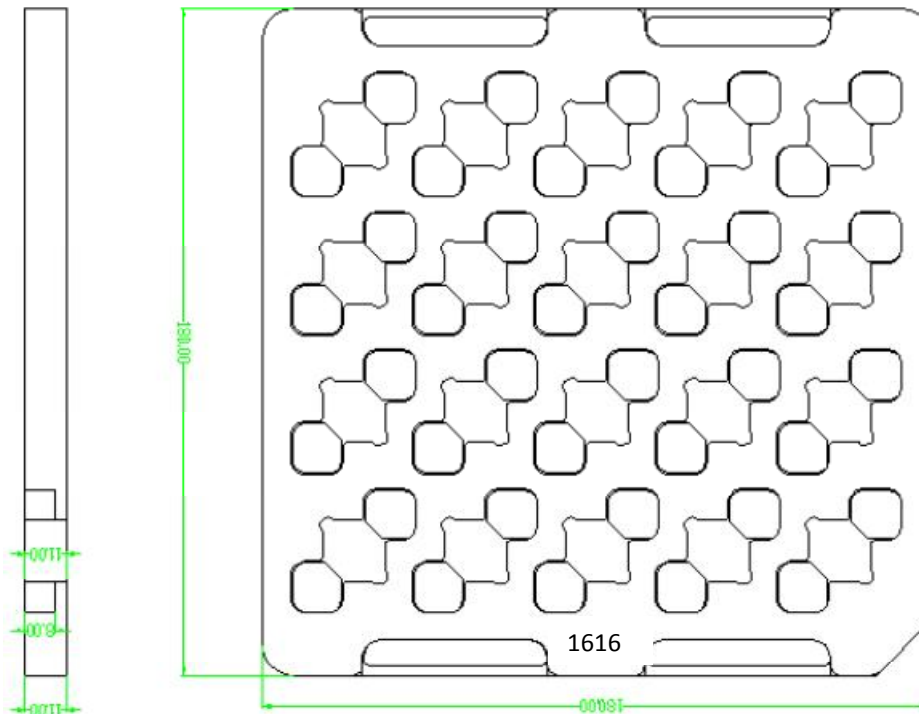
若无特别标注，图中尺寸公差为 ± 0.15 mm；单位：mm

Moisture Resistant Packing Materials /防潮包装

Label Explanation/ 标签解析

 深圳市源磊科技有限公司 Shenzhen Runlite Technology Co., Ltd			
产品型号		BIN号	
品名描述		色容差(Δ)	
批号		功率(W)	
客户订单号		驱动电流(mA)	
客户料号		电压(V)	
数量(PCS)		日期	
显色指数(≥)		 0000	
色温/波长 (K/nm)			
光通量/亮度 (LM/med)			

Reel Dimensions/PVC 盒尺寸



Note:

Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

若无特别标注，图中尺寸公差为 $\pm 0.1\text{mm}$ ，单位：mm

Carrier Tape Dimensions: Loaded Quantity 20pcs Per Reel

卷盘规格：20PCS/盒



Moisture Resistant Packing Process/ 包装步骤



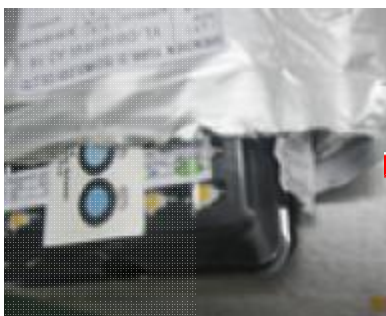
准备 PVC 盒



装盒并贴标签



铝防静电袋贴标签位置



放湿度卡和干燥剂位置



抽真空封口



内纸箱包装



内纸箱套外箱

Reliability Test Items and Conditions/信赖性测试项目条件

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

测试项目 Test Item	测试条件 Test Conditions	持续周期 Duration/Cycle	数量 Quantity	接收/拒收 Ac/Re
温度循环 Temperature	-40°C 30min ↑↓25°C(2min) 100°C 30min	循环 100 次 100 times	22PCS	0/1
冷热冲击 Thermal Shock	-40°C 30min ↑↓ 5sec 100°C 30min	循环 100 次 100 times	22PCS	0/1
高温储存 High Temperature Storage	Ta=100°C	1000 小时 1000 hours	22PCS	0/1
高温高湿 Humidity Heat Storage	Ta=85°C RH=85%	1000 小时 1000 hours	22PCS	0/1
低温储存 Low Temperature Storage	Ta=-40°C	1000 小时 1000 hours	22PCS	0/1
常温老化 Room Temperature Test	Ta=25°C IF=270mA	1000 小时 1000 hours	22PCS	0/1

COB 型 LED 使用说明书

感谢您使用深圳市源磊科技有限公司的 COB 系列 LED 产品，为增进您对我公司产品特性的了解，也为方便您快速掌握产品的基本操作。为尽量减少或避免因人为等因素造成不必要的产品损坏，使其能够更好的为您的生产服务，特针对使用过程中的一些规范使用作相应说明，同时即使是同一规格 LED，在实际应用领域其可靠性与整体系统设计水平、作业方式、使用条件均相关。本使用说明不可能涵盖客户使用过程中可能碰到的所有问题，由此带来的不便，敬请谅解！

Thanks for using our COB series LED product. In order to enhance your understanding of our product performance, Rapidly knowing well of product basic operation, Avoiding unnecessary product damage owing to incorrect operation, We, Shenzhen Runlite Technology Co., Ltd, give you the following guidance of correct usage. Meanwhile, Please keep in mind that the application stable performance even for one LED is largely related to using condition, operating method, and wholly system designing level. The usage instruction is hardly possible to mention all issues occurred during the usage, Hope you can understand this.

1、产品特征：

COB 型 LED 封装的构造有基板和硅胶组成，基板由正电极和负电极构成，同时，硅胶部分的基板上贴有 LED 元器件，并使用带有荧光胶的硅胶进行封装。与 SMD 型 LED 封装不同，COB 型 LED 封装可直接安装与散热器上。此外，通过将 LED 元器件贴于基板上保证其优异的散热性。使用 COB 型 LED 封装可实现灯具的小型化设计。

1、Features:

COB series LED is consisted of board and silicon glue. Positive electrode and negative electrode dotted on board, and LED components be mounted on board having conductive silicon gel, and LED components was encapsulated by silicon gel. The encapsulation difference between SMD LED and COB LED is that COB' s LED can be directly mounted on heat sink board, the heat dissipation performance is better, we can achieve compact designing.

2、使用前注意事项：

2.1、开包装前避免湿气进入 LED 内部，建议 COB 系列 LED 存放在内置干燥剂的干燥柜中，储存环境为温度 20-30°C，湿度不超过 50%。若存储时间超过 3 个月，LED 需要重新除湿（120°C/1-2 小时）。若开包装的 LED 当天未使用完请及时存放干燥柜中，超过 24 小时的请重新除湿（120°C/1-2 小时）再使用。

2.2、COB 型 LED 封装产品在交付时使用托盘包装，在搬运的过程中请勿施加外力挤压，外力挤压会导致产品不亮灯，因此请注意切勿用手指等接触托盘内部。

2.3、不当的产品拿取方式可能会对产品的光学特性及使用寿命造成影响。特别注意不要对硅胶部分施加外力，否则可能会导致产品不亮灯，拿取材料请佩戴防静电手套，切勿徒手接触产品，徒手接触发光部分可能会弄脏表面，从而影响其光学特性。切勿使用镊子等头部较为锐利的工具夹取，与硅胶部分接触可能导致金线断线，从而引发不发光或发光闪烁故障。

2、Attention before usage

2.1 We should avoid moist-air slipping into packaging before opening it. We suggest that COB series LED should be put in dry cabinet. The storage temperature should be 20-30°C, The humidity should be less than 50%. If the storage time exceed 3 months, LEDs should be rehumidification under the condition of 120°C/1-2hour. We need to rehumidification LEDs if it exposes into air exceeding 24hours.

2.2 COB series LEDs was packed in pallet, Please do not press heavily when transportation, it most possibly caused dead light.

2.3 Taking LED incorrectly will have effect on product' s lighting performance and lifespan. Please do not press heavily on silicone gel because of possibly causing dead light. Please do not touch LEDs bare-handed owing to possibly staining LEDs surface, Please wear anti-static gloves before touch it. Please do not use tools like nipper, because this may lead to golden wire broken causing dead light or flicker.

3、操作注意事项：

3.1、硅胶部分由发光部位和围胶构成，通过围胶成型，请避免对硅胶部位按压或与尖锐的金属接触，否则可能会影响产品的功能及可靠性。

3.2、装入灯具时请切勿将硅胶部位与其他组件接触，为防止硅胶部位出现剥落，断线或缺损等情况，请勿将本产品重叠放置。

3.3、本产品部不适合进行回流焊，因此在进行焊接时推荐使用恒温电烙铁，功率在 30W 以内，烙铁头温度在 350 度以下，加热时间在 5 秒以内，不要重复对光源焊接，因当焊接完成一个焊盘待冷却以后再焊接另一个焊盘。注意焊接的引线不要碰触到硅胶部位和铝基板边缘。

3、Operation attention

3.1 Silica gel is dispensing on the surface of lighting and around. Please avoid pressing or touching it with sharp metal, this may effect the function and reliability performance of product.

3.2 The silica gel place should be avoided of touching with other parts when assembling lamp. Please do not layer COB LEDs, this may cause silica gel peeling off, golden wire broken.

3.3 COB LEDs are not fit for reflow soldering, we suggest you to use constant temperature electric soldering iron for operation. For COB LEDs wattage below 30w, the temperature of electric soldering iron tip should be below 350°C, heating time should be in 5 seconds. Please do not resolder on one COB LEDs welding spot. We should solder the other welding spot only after the first one cools down. Please do not allow wire soldered well to touch place either silica gel or aluminum board edge.

4、安装方法：

4.1、对 COB 型 LED 封装组装时建议使用 M3 螺丝固定在散热器上，在扭螺丝的过程中切勿对硅胶施加外力。为提高产品的散热性能，请在 LED 封装与散热器之间使用优质导热膏，请将其均匀涂抹在 LED 封装的背面。

4.2、LED 元器件会根据输入的功率而发光和热，但是 LED 封装的表面积非常小，仅靠封装本身向大气进行散热几乎无法实现，因此需要散热片等外接散热器。LED 封装中元件接合点温度 Tj 管控十分重要，在任何条件下均不可以高于规格书中规定的绝对最大额定值。

4、Installation method

4.1 We suggest that you will use M3 type screws for fixing COB LED on heat sink. Please do not press extra strength on silica gel when screwing. For enhancing product heat dissipation performance, please even lay thermal paste between COB LED and heat sink.

4.2 COB LEDs correspondencely emit lighting and heat according to input wattage. Owing to the small heat dissipation surface, COB LEDs relying on itself will be impossible to achieve good heat dissipation performance. Therefore, heat sink is a must. The conjunction temp Tj control is very important. Please do not let the temp exceeding maximum rated temp stipulated in datasheet.

5、驱动方式：

5.1、LED 为恒流驱动器件，客户在选定电源需要根据光源的电流额定电流选择电源的输出电流和电压，防止电流过大烧坏光源或影响性能。

5.2、LED 封装与电容器等容性负载连接时，在开关转换瞬间可能会产生浪涌电流，在使用时应尽可能避免产生浪涌电流，但当无法避免时请采取措施，确保其低于产品的绝对最大额定值。

5、Powering method

5.1 COB LED is constant-current drivered. driver' s output current and voltage' s determination accord with COB LED' s current and rated current. Over-large current of driver may cause LED damaged.

5.2 Please possibly avoid surge current when switching on or off after COB LEDs had been collected to load with Capacitance. Please make sure the surge current lower than COB LED' s maximum rated value if the result is unavoid.

6、清洁清洗：

建议使用异丙醇来清洁 LED，如果要采用其他溶剂清洁，一定要确保此溶剂不会对硅胶、支架镀银层等产生影响。若不可避免，清洗前请事先进行试验，以确认是否对 LED 造成不良影响或潜在性隐患。

6、Cleaning

Please apply isopropyl alcohol for cleaning LED. If you have to apply other solvent cleaning, Please make sure of that solvent cleaning not having negative effect on silica gel and silver layer of holder. You' d better make a trial before cleaning.

其他注意事项：

7.1、白光 LED 是由蓝光芯片和特种荧光粉组合。因此 LED 的发光颜色会随着工作电流的变化而变化，使用前应考虑此因素是否能达到预期效果。

7.2、产品的应用可不用考虑防辐射的设计。

7.3、LED 长时间暴露在阳光或偶尔暴露在紫外线下可能导致胶体或透镜黄变。

7.4、为保证 LED 光电性能，请保持 LED 发光区域表面清洁，避免手指印或其它异物覆盖。

7.5、不建议在 LED 的硅胶表面覆盖其他与之不兼容的脂类物质。

7.6、LED 支架表面处理采用镀银工艺，单质银易与硫、卤素（氟、氯、溴、碘）等元素发生反应，导致 LED 外观及光色发生变化。故请客户在组装及应用过程需排除上述元素（含灯具、电源原材料，车间生产环境等），避免上述元素与 LED 镀银层发生反应致 LED 失效（光衰、色温漂移、死灯等）。

7.7、产品符合 RoHs 指令，产品意图主要应用在通用电气设备（如办公自动设备、通讯设备、视听设备、家用电器、测量工具等）特别是通用照明。一旦应用在高可靠度或由于故障失效而直接影响人身安全等领域产品上（航空产品、医疗设备、自动控制系统等），请事先联系我们的销售代表。

7、Other attentions:

7.1、White LED is made from blue chip and special phosphor. Therefore, LED emitting lighting color will change along with working current. Please take this factor into consideration before usage.

7.2、The application do not need to consider anti-radiation designing.

7.3、The glues or lens have the risk of becoming yellow provided that LEDs expose under sunlight longtime or sometime UV light.

7.4、For protecting LED Lighting performance, Please make sure of cleaning of lighting surface, avoiding touching it bare-handed, or covering with other material.

7.5、We do not suggest to cover LED silica gel surface by other lipid material.

7.6、The treatment to the surface of LED holder is silver painting, Silver element is easy to reaction with other element like sulfur, halogen (fluorine, chlorine, bromine, Iodine), This will lead to color differentiate. Therefore, Please avoid the contact when clients assemble/install it. so that LED will not fail owing to the reaction.

7.7、COB LEDs is in accordance with RoHS. This product is mainly used for usual lighting like office auto equipment, communication equipment, vision equipment, house application, testing tools. Please contact us firstly once this will be applied for product like avigation product, medical equipment, auto-control system, which effect life safety.

源磊/Runlite		客户/Customer	
制作/Prepared	陈飞	工程/Engineering	
审核/Checked	李云刚	品质/Quality	
批准/Approved	张月强	批准/Approved	