華皓

Super High Luminous Efficacy, H-GREAT !

Shenzhen H-Great Optoelectronic Co., Ltd.

承认书 Approved Sheet

客户名称：	
客户物料名称：	
客户物料编码：	
文件编号：	
华皓品名：	P34-RGB05P02N3P1IMA03-CC
华皓料号：	

供应商

检测员：
审　核：
批　准：
盖　章：

华皓

检测员：黎敏玲
审　核：陈佳良
批　准：黄增富
日　期：20240926

H-GREAT

P34-RGB05P02N3P1IMA03-CC

The Ultra high reliability and luminous efficacy ,PLCC LED Series are optimized to be used as lighting for automotive interior ambient lighting designs or LED light strip.

Applications/产品应用

Automotive interior ambient lighting	汽车内氛围灯
Full color LED light strip	LED 全彩灯带
Indoor ambient lighting	室内氛围灯

Features/特性

Size(mm)：3.4*3.3*1.9	尺寸（毫米）：3.4*3.3*1.9
Color : Full color LED product	发光颜色：全彩LED产品
Viewing angle: 120°	发光角度：120°
Clock frequency：800Kbps	时钟频率：800Kbps
8bits PWM control with 256 grayscales for each output	8位PWM控制，每个输出256个灰度级
ESD protection up to 2KV	抗静电：2 kV
MSL: Level 3	湿敏等级：Level 3
RoHS compliant	通过RoHS认证

Absolute maximum ratings(Ta=25°C)/最大额定值

Parameters/参数	Symbol/符号	Value/数值	Unit/单位
DC Forward Current 直流工作电压	VDD	+3.5-+5.5	V
Maximum Output Current 最大输出电流	Iledout	12	mA
Electrostatic discharge 抗静电	ESD	2000	V
Operating temperature 工作温度	T_{OPR}	-40~+85	℃
Storage temperature 储存温度	T_{STG}	-40~+85	℃
Maximum junction temperature(1) 最大结温	T_J	125	℃

Proper current derating must be observed to maintain junction temperature below the Maximum.

Electro optical characteristics(led current=12mA,Ta=25℃)/光电特性

Item 项目		Color 颜色	Min 最小值	Max 最大值	Unit 单位
Luminous Intensity 光强	Iv	R	285	560	mcd
		G	1150	1800	
		B	235	350	
Dominant Wavelength 波长	λ d	R	615	625	nm
		G	520	530	
		B	460	470	

Note:

①The Luminous Intensity performance is guaranteed within published operating conditions. H-GREAT maintains a tolerance of ±10% on Intensity measurements.

②Dominant wavelength meansurement allowance is ± 1nm.

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Ranks(sorting current=12mA, Ta=25℃)/档位

①Luminous Intensity/光强

Item 项目	Light Color 发光颜色	Rank 档位	Min 最小值	Max 最大值	Unit 单位
Luminous Intensity 光强	R	I12	280	350	mcd
		I13	350	450	
		I14	450	560	
	G	I22	1150	1400	
		I23	1400	1800	
		I31	1800	2350	
	B	I11	235	280	
		I12	280	350	
		I13	350	450	

Note:

The luminous flux performance is guaranteed within published operating conditions. H-GREAT maintains a tolerance of ±10% on flux measurements.

②Dominant Wavelength/主波长

Item 项目	Light Color 发光颜色	Rank 档位	Min 最小值	Max 最大值	Unit 单位
Dominant Wavelength 主波长	R	E615	615	620	nm
		E620	620	625	
	G	E520	520	525	
		E525	525	530	
	B	E460	460	465	
		E465	465	470	

Note:

Dominant wavelength meansurement allowance is ± 1nm.

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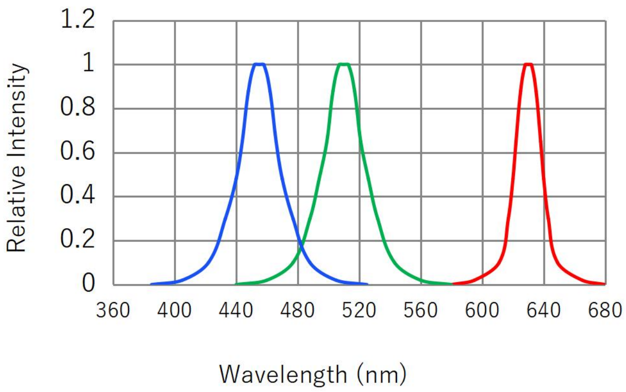
Typical electrical optical characteristic curves/典型光电特征曲线

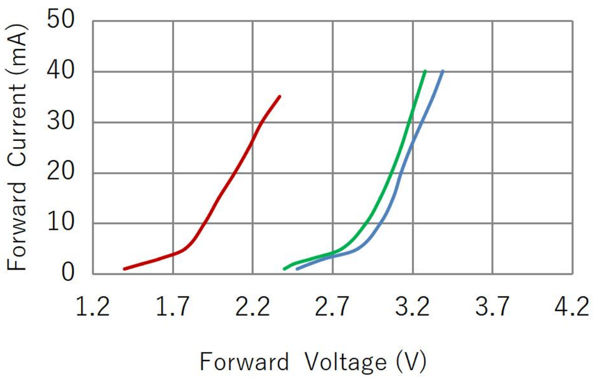
Spectrum Distribution

(led current=12mA,Ta=25℃)



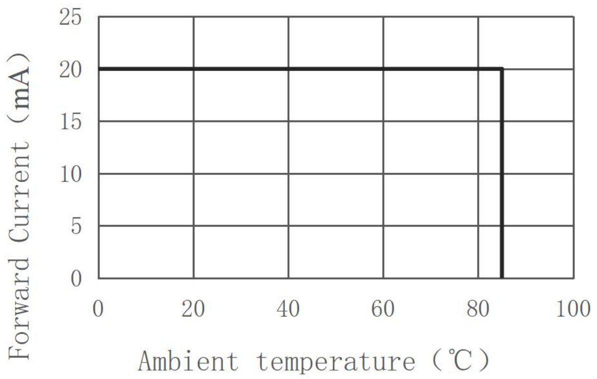
Forward current VS. Forward voltage

(Ta=25℃)



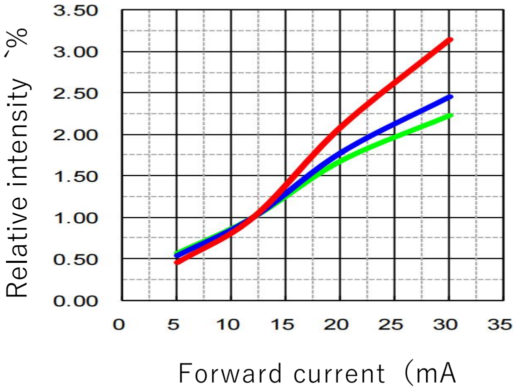
Forward current derating curve

VS.Ambient temperature

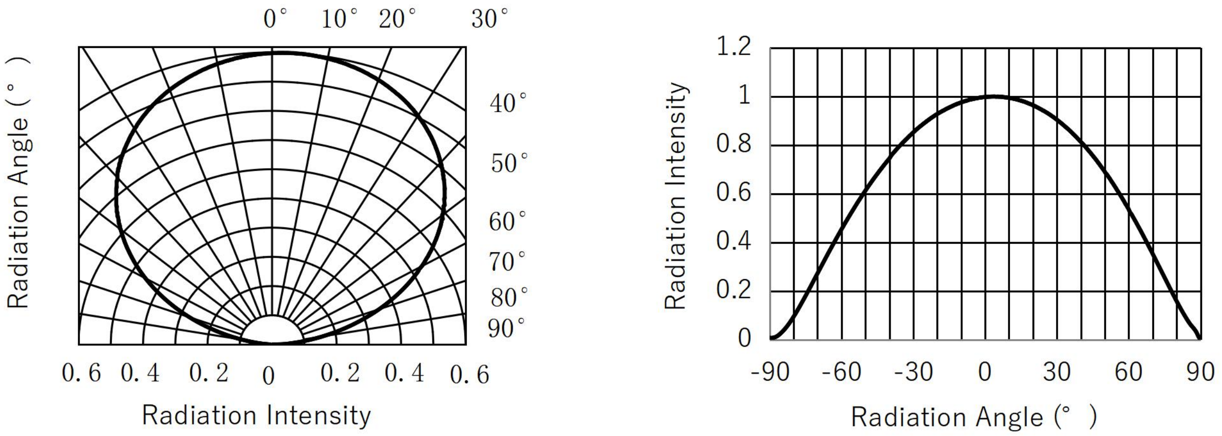


Relative intensity VS. Forward current

(Ta=25℃)



Radiation Intensity vs Radiation Angle



Notes:

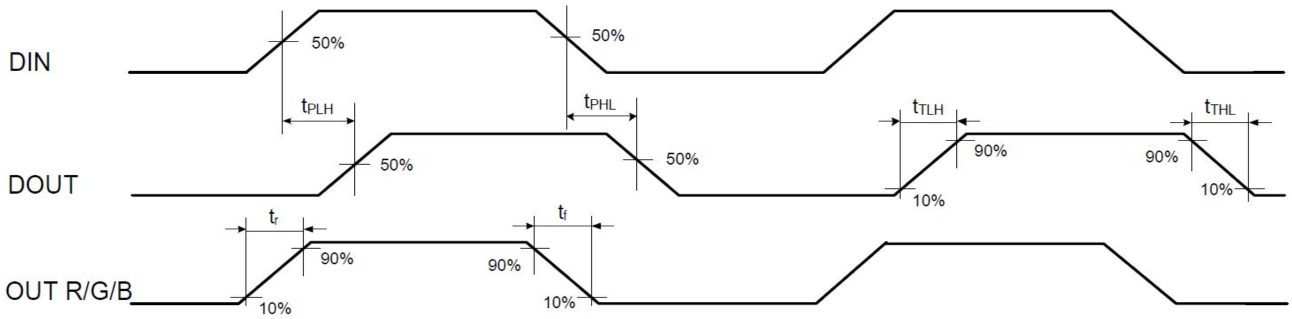
1. 2θ1/2 is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is ± 5° .

DataTransfer Characteristics/传输特性

Parameter 参 数	Describe 描述	Min 最小值	Typ 代表值	Max 最大值	Unit 单 位
VIH	Input High “H”	0.7*VDD	---	---	V
VIL	Input Low “L”	---	---	0.3*VDD	V
IOH	Output current of Dout	---	-40	---	mA
IOL	Power supply supplies current to Dout	---	40	---	mA
VDS_S	knee point voltage(Iout=12mA)	---	0.7	---	V
%VS.VDS	Current changing rate(Iout)	---	0.5	---	%
%VS.VDD		---	0.5	---	%
%VS.Ta		---	4.0	---	%
IDD	Quiescent current	---	0.5	---	mA
Isleep	Standby Current	---	1	---	uA

Switching characteristics/开关特性

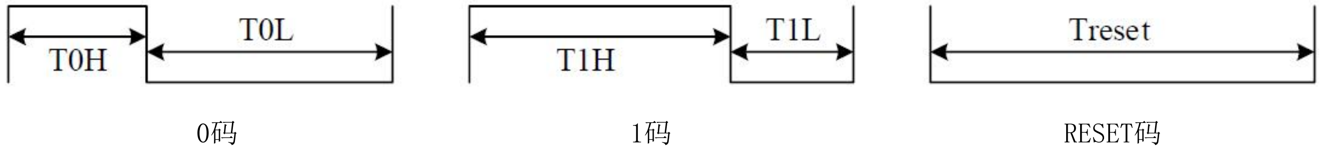
Parameter 参 数	Symbol 符号	Min 最小值	Typ 代表值	Max 最大值	Unit 单 位	Test Condition 测试条件
DOUT Transmission delay DOUT传输延迟	tPLH+ tPHL	---	160	---	ns	Din→Dout Dout端口对地负载电容C=30pF
IOUT Rise/Drop Time IOUT上升/下降时间	tr	---	---	50	ns	IOUT R/G/B=12mA
	tf	---	---	100	ns	
The speedofdata transmission 数据传输速率	fDIN	---	800	---	Kbps	



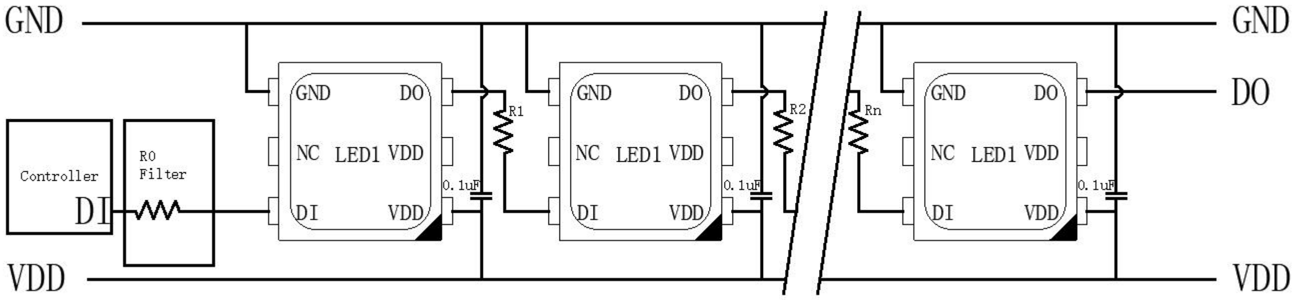
DataTransfer Protocol/传输协议

Parameter 参 数	Describe 描述	Min 最小值	Typ 代表值	Max 最大值	Unit 单 位
T0H	0码，高电平时间	---	300	---	ns
T1H	1码，高电平时间	---	600	---	ns
T0L	0码，低电平时间	---	900	---	ns
T1L	1码，低电平时间	---	600	---	ns
Trst	Reset码，低电平时间	200	---	---	us

Input pattern/输入模式



Connection method/连接方式



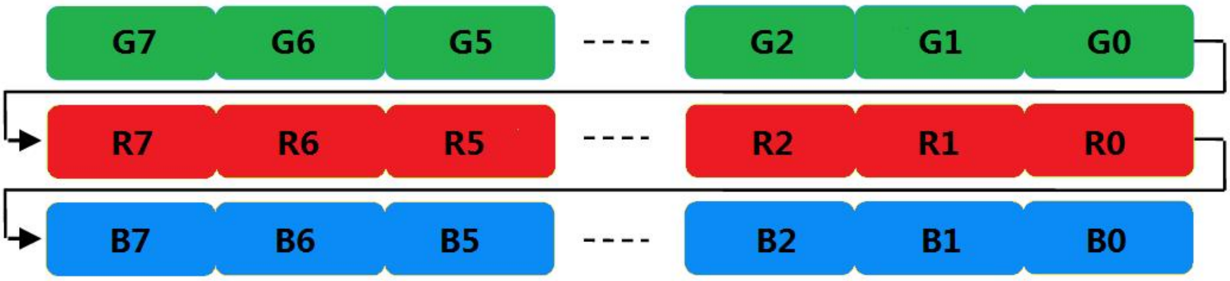
Note1: It is recommended to connect a 100-200 ohm（R0-Rn） resistor for signal isolation to prevent damage to the next level chip from affecting the previous level.

注1：建议接100-200欧姆电阻（R0-Rn）作信号隔离,防止下一级芯片损坏对上一级造成的影响。

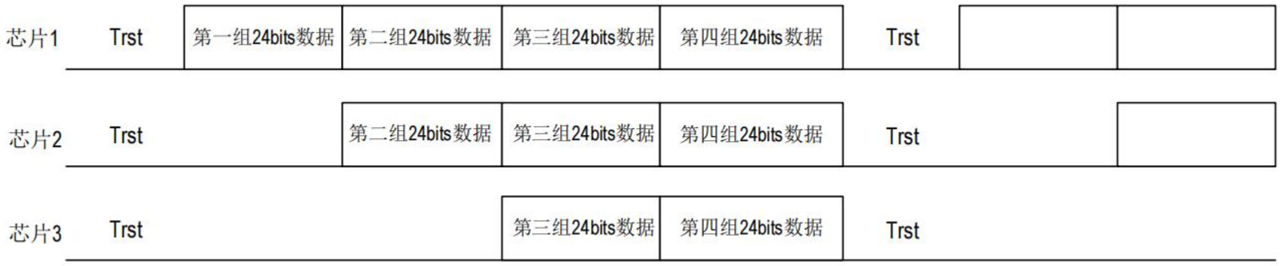
Note2: The by-pass capacitor of VDD pin is necessary to be added on the board for the stability of chip operation. The suggested value of capacitor is 0.1uF.

注2：为了芯片工作的稳定性，需要在板上增加VDD引脚的旁路电容器C1。电容器的建议值为0.1uF。

24bit data structure/24位数据结构



The method of data transmission/数据传输方法



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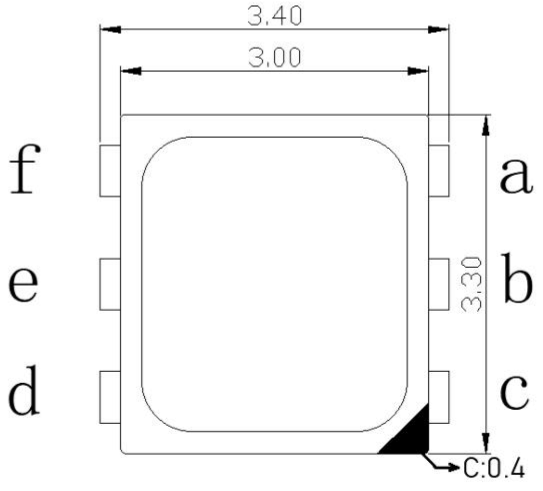
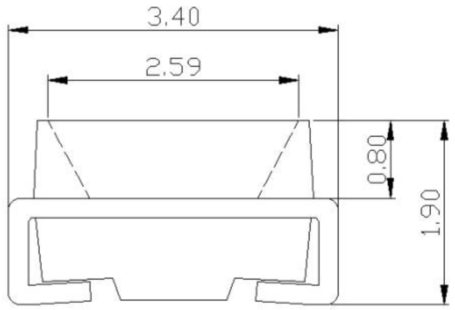
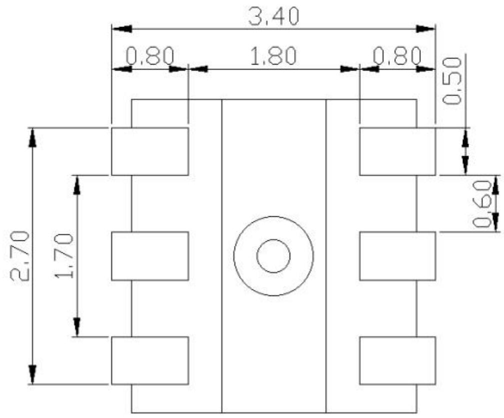
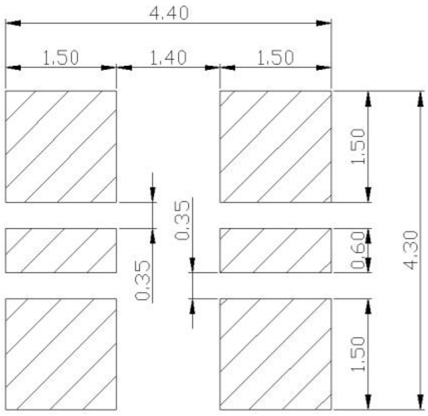
Package dimensions/产品外观尺寸



PIN configuration		
NO	Symbol	Fountion description
a	DOUT	Serial data output
b	VDD	Supply voltage
c		
d	DIN	Serial data input
e	NC	
f	GND	Ground terminal







Soldering pad suggested

Notes:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.1 mm

Packaging specifications/包装规格

Product Labeling/产品标签

Label Explanation/标签解释

P/N: Product Number

VF(V): Forward voltage Bin

WD:Dominant Wavelength rank

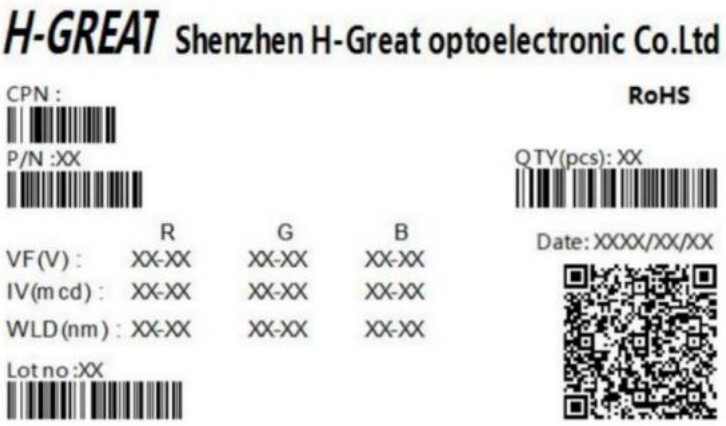
IV:Luminous intensity rank

QTY (pcs): Package Quantity

Lot NO: Lot Number

QTY: quantity

Date：date of manufacture



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CPN :

RoHS

P/N :XX

QTY(pcs): XX

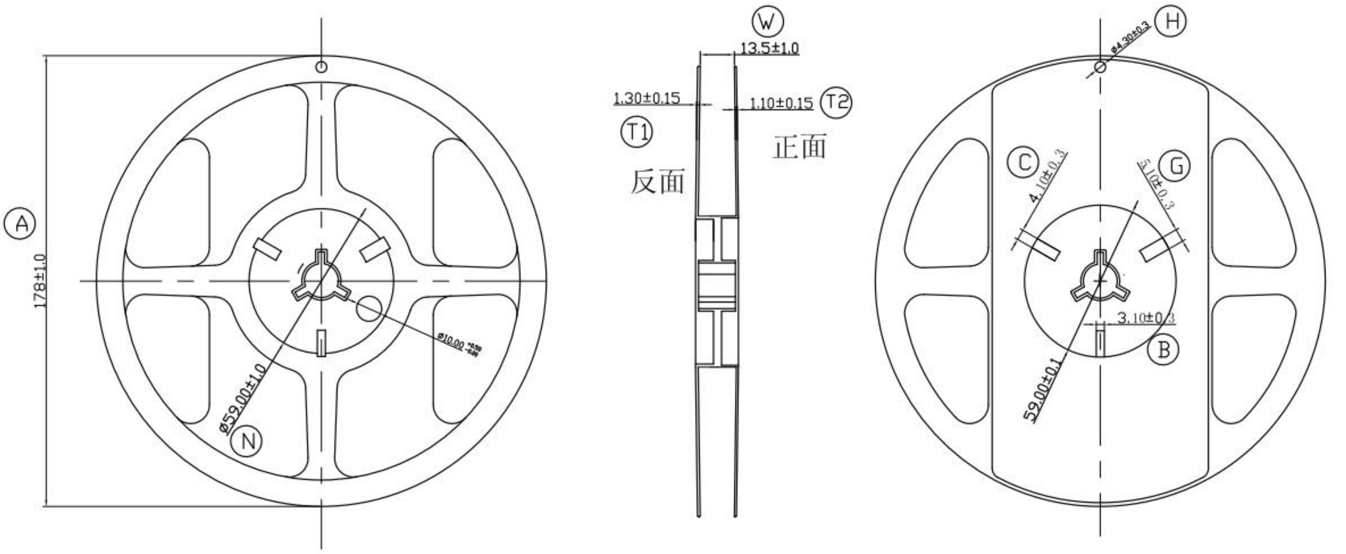
Date: XXXX/XX/XX

	R	G	B
VF(V) :	XX-XX	XX-XX	XX-XX
IV(m cd) :	XX-XX	XX-XX	XX-XX
WLD(nm) :	XX-XX	XX-XX	XX-XX

Lot no :XX

Carrier Tape Dimensions/卷盘包装

Reel Dimensions/卷盘尺寸



反面

正面

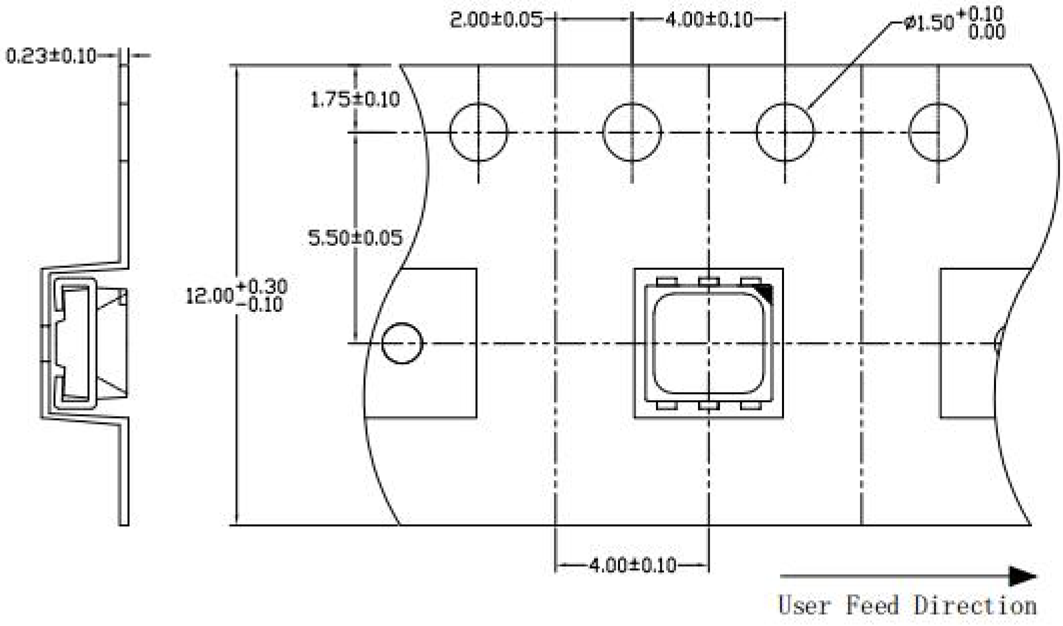
Note/备注：

1. All dimensions are in millimeters;

单位：毫米

Tape On Reel Package/载带包装

Carrier Tape Dimensions as the following/载带尺寸



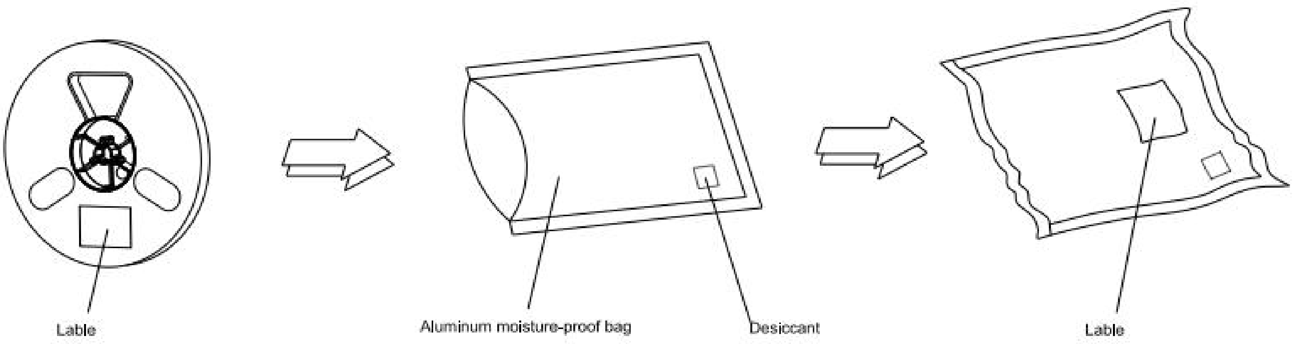
Note/备注：

(1)The cathode is oriented towards the tape sprocket hole in accordance with data sheet specifications.
根据图表显示，负极朝向载带孔。

(2) MPQ:1000pcs per reel.
1000颗/每盘。

(3) 60 empty in front of the tape sprocket，80 empty in the end of the tape sprocket.
载带前空60颗，后空80颗。

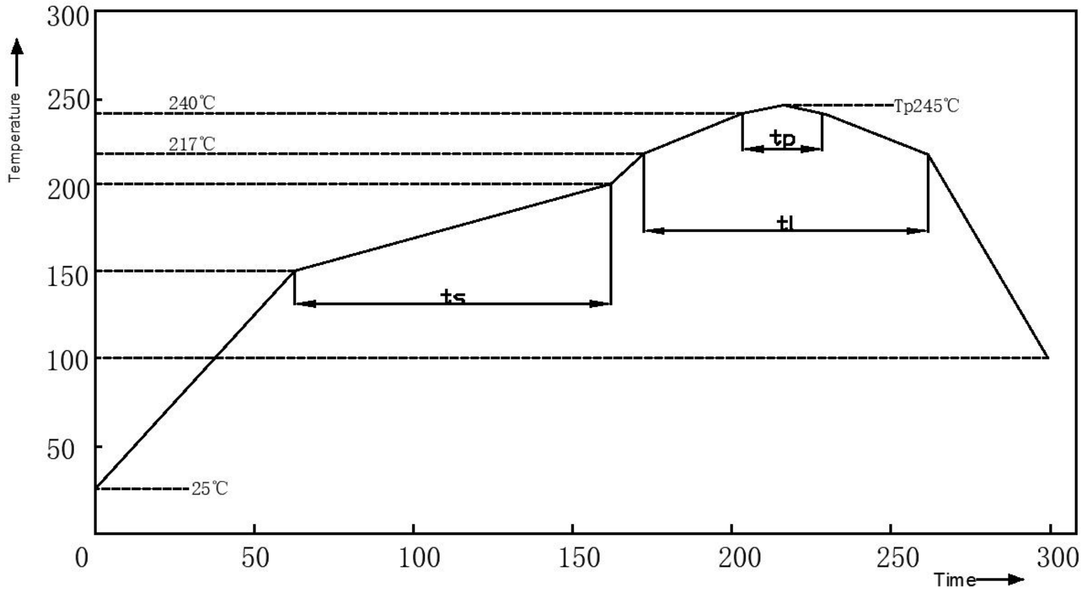
Moisture Resistant Packaging/防潮包装



Soldering Characteristics/焊接工艺

Reflow Soldering Profile/回流曲线

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Pb- Free Assembly	Unit Einheit
Average Ramp- up Rate 25 ° C to 150 ° C	2-3	° C /sec
Preheat Temperature Min.	150	sec
Preheat Temperature Max.	200	sec
Preheat Time	60- 120	sec
Time Maintained Above Temperature	217	° C
Time Maintained Above Time	60-90	sec
Peak Temperature (max.)	260	° C

c. Reflow soldering should not be done more than twice.

d. In soldering process, stress on the LEDs during heating should be avoided.

e. After soldering, do not bend the circuit board.

Cautions/注意事项

1. Moisture-Proof Package/防潮包装

   1.1 When moisture is absorbed into the LED package it may vaporize and expand products during soldering. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof package is used to keep moisture to a minimum in the package.

   当水分被吸收到 LED 包装中时，它可能会在焊接过程中蒸发并膨胀产品。这可能会导致触点脱落并损坏 LED 的光学特性。因此，防潮包装需要将包装中的水分保持在最低限度。

2. Iron Soldering/烙铁焊接

   2.1 Hand soldering is not recommended for regular production. These guidelines are for rework only.
   常规生产不建议手工焊接。此方法仅适用于返工。

   2.2 The recommended condition is less than 5s at 260℃.
   建议的条件是在 260℃时小于 5s。

   2.3 The time must be shorter for higher temperatures. (+10℃→-1sec)
   对于较高的温度，时间必须更短。（+10℃→-1 秒）

   2.4 The power dissipation of the soldering iron should be lower than 25W and the surface temperature of the device should be controlled at under 300℃.
   烙铁的功耗应低于 25W，器件表面温度应控制在 300℃以下。

3. Storage Conditions/储存条件

   3.1 Before opening the package : The LEDs should be kept at 30℃ or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture-proof packaging with moisture-absorbent material is recommended.
   打开包装前：LED 应保持在 30℃或以下，相对湿度为 90%或以下。LED 应在一年内使用。储存 LED 时，建议使用吸湿材进行防潮包装。

   3.2 After opening the package: The LEDs should be kept at 30℃ or less and 60%RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture-absorbent material. It is also recommended to return the LEDs to the original moisture-proof bag and to reseal the moisture-proof bag again.
   打开包装后：LED 应保持在 30℃或以下，相对湿度为 60%或以下。LED 应在打开包装后 168 小时（7 天）内焊接。如果仍有未使用的 LED 灯珠，则应将其储存在防潮包装中，例如带有吸湿材料包装的密封容器中。也建议将 LED 灯珠放回原来的防潮袋，并再次重新密封防潮袋。

   3.3 If the moisture-absorbent material has faded away or the LEDs have exceeded the recommended storage time, baking treatment should be performed using the following conditions. Baking treatment: more than 24 hours at 65±5℃
   如果吸湿材料褪色或 LED 超过建议的存储时间，则应使用以下条件进行除湿处理。除湿处理：在 65±5℃下烘烤超过 24 小时。

   3.4 H-Great LED electrode sections are comprised of a silver-plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid condition which may cause difficulty environments during soldering operations. It is recommended that the user uses the LEDs as soon as possible.

华皓 LED 灯珠电极部分由镀银铜合金组成。银表面可能受到含有腐蚀性气体等环境的影响。在焊接操作过程中，请避免出现可能由环境导致问题的情况。建议用户尽快使用 LED 灯珠。

3.5 Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

请避免环境温度快速变化，尤其是在可能发生冷凝的高湿度环境中。

4. Handling of Silicone LEDs/硅胶 LED 灯珠处理

4.1 Avoid silicone resin parts especially with sharp tools such as tweezers.

避免使用锋利工具，尤其是使用镊子等接触硅胶部分。

4.2 Avoid leaving fingerprints on silicone part.

避免在硅胶零件上留下指纹。

5. Usage/用途

5.1 Do not exceed the values given in this specification.

不要超出本规范中给出的使用条件。

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Revision History

Versions	Description	Release Date
A0	Standard data sheet	2024/09/26