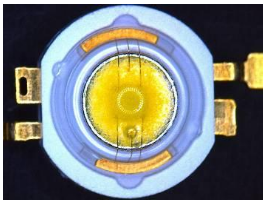
Doc. No.: DS-61-13-04

HELIO Optoelectronics Corp.

Helixeon - White Series



Helixeon, a solid-state lighting device, provides high luminous flux output with high efficiency for the illumination applications. Helixeon is encapsulated in silicone by molding technology. It has characteristics of UV resistance and better heat loading. Also, Helixeon is capable of standard lead free solder reflow process.

Features

- High luminous flux output
- Long life operation
- Instant response
- RoHS certification
- Superior ESD protection
- Silicone molding lens

Application

- Torch lighting
- Down lighting
- Par lamp
- General lighting
- Brightness compensation

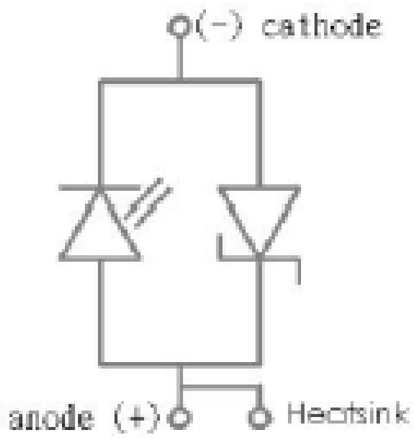
Product Nomenclature

HM	**HP**	-	**G**	**3**	**H**	**W**
X1	X2		X3	X4	X5	X6

X1		X2		X3		X4	
Item		Mode		Heat sink		Power	
Code	Type	Code	Type	Code	Type	Code	Type
HM	Molding	HP	High Power	G	Emitter Ⅴ	3	3W

X5		X6	
Pattern		Color	
Code	Type	Code	Type
H	Lambertian II	W	White
		S	Neutral White
		V	Warm White

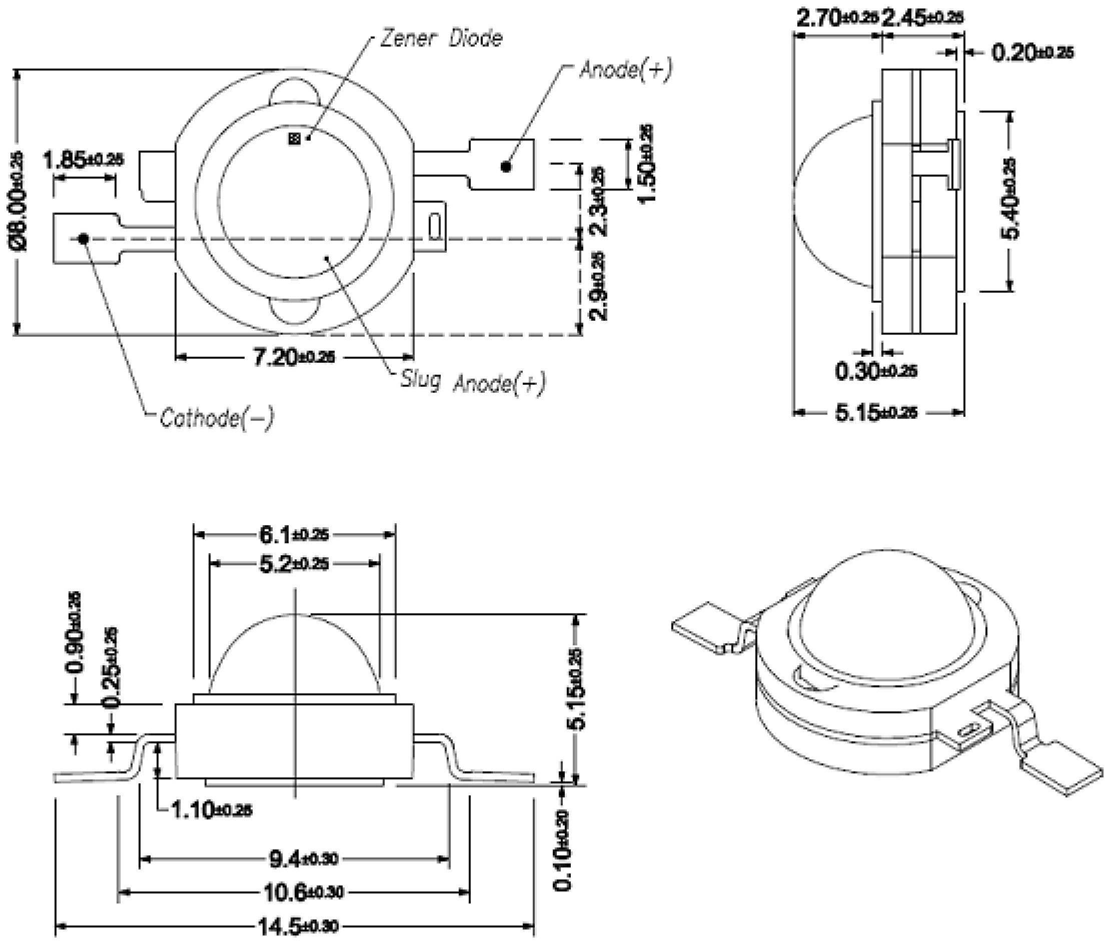
Circuit diagram



■ Package Dimensions

SMT Lead Form

Lambertian



Notes :

1. All dimensions are in millimeters (所有尺寸以 mm 毫米為單位)

■ Characteristics for Helixeon White Emitter

HMHP-G3HW

光電特性 Electrical/Optical Characteristics (Ta=25˚C)

Parameter (参数)	Symbol (符号)	Conditions (测试条件)	Min. (最小值)	Avg. (平均值)	Max. (最大值)	Units (单位)
Luminous Flux [2] (光通量)	Φ V	IF=700mA	185	230		lm
Color Temperature [3] (色温)	CCT	IF=700mA	5000		10000	K
Forward Voltage [4] (順向電壓)	V_F	IF=700mA	3.2		4.5	V
Thermal Resistance Junction To Board (熱阻)	Rth_{J-B}	IF=700mA		13		℃/W
Temperature Coefficient of Forward Voltage (順向電壓之温度係數)	ΔVF/ΔT	IF=700mA		2		mV/℃
Viewing Angle [1] (發光角度)	$2\theta_{1/2}$	IF=700mA		140		Deg
Color Render Index (CRI) [6] (演色性指數)	Ra	IF=700mA	70			

Notes:

[1]. Viewing Angle measurement tolerance is ±10^0.

[2]. Luminous Flux measurement tolerance is ±10%.

[3]. Color Temperature measurement tolerance is ±5%.

[4]. Forward Voltage measurement tolerance is ±0.06V.

[5]. CIE measurement tolerance is ±0.004.

[6]. CRI measurement tolerance is -1.

HMHP-G3HS

光電特性 Electrical/Optical Characteristics (Ta=25˚C)

Parameter (参数)	Symbol (符号)	Conditions (测试条件)	Min. (最小值)	Avg. (平均值)	Max. (最大值)	Units (单位)
Luminous Flux [2] (光通量)	ΦV	IF=700mA	185	235		lm
Color Temperature [3] (色温)	CCT	IF=700mA	3800		5000	K
Forward Voltage [4] (順向電壓)	V_F	IF=700mA	3.2		4.5	V
Thermal Resistance Junction To Board (熱阻)	Rth_{J-B}	IF=700mA		13		℃/W
Temperature Coefficient of Forward Voltage (順向電壓之温度係數)	ΔVF/ΔT	IF=700mA		2		mV/℃
Viewing Angle [1] (發光角度)	$2\theta_{1/2}$	IF=700mA		140		Deg
Color Render Index (CRI) [6] (演色性指數)	Ra	IF=700mA	70			

Notes:

[1]. Viewing Angle measurement tolerance is ±10^0.

[2]. Luminous Flux measurement tolerance is ±10%.

[3]. Color Temperature measurement tolerance is ±5%.

[4]. Forward Voltage measurement tolerance is ±0.06V.

[5]. CIE measurement tolerance is ±0.004.

[6]. CRI measurement tolerance is -1.

HMHP-G3HV

光電特性 Electrical/Optical Characteristics (Ta=25˚C)

Parameter (参数)	Symbol (符号)	Conditions (测试条件)	Min. (最小值)	Avg. (平均值)	Max. (最大值)	Units (单位)
Luminous Flux (光通量)	ΦV	IF=700mA	150	190		lm
Color Temperature (色温)	CCT	IF=700mA	2580		3220	K
Forward Voltage (順向電壓)	V_F	IF=700mA	3.2		4.6	V
Thermal Resistance Junction To Board (熱阻)	Rth_{J-B}	IF=700mA		13		℃/W
Temperature Coefficient of Forward Voltage (順向電壓之溫度係數)	ΔVF/ΔT	IF=700mA		2		mV/℃
Viewing Angle [1] (發光角度)	$2\theta_{1/2}$	IF=700mA		140		Deg
Color Render Index (CRI) [6] (演色性指數)	Ra	IF=700mA	70			

Notes:

[1]. Viewing Angle measurement tolerance is ±10^0.

[2]. Luminous Flux measurement tolerance is ±10%.

[3]. Color Temperature measurement tolerance is ±5%.

[4]. Forward Voltage measurement tolerance is ±0.06V.

[5]. CIE measurement tolerance is ±0.004.

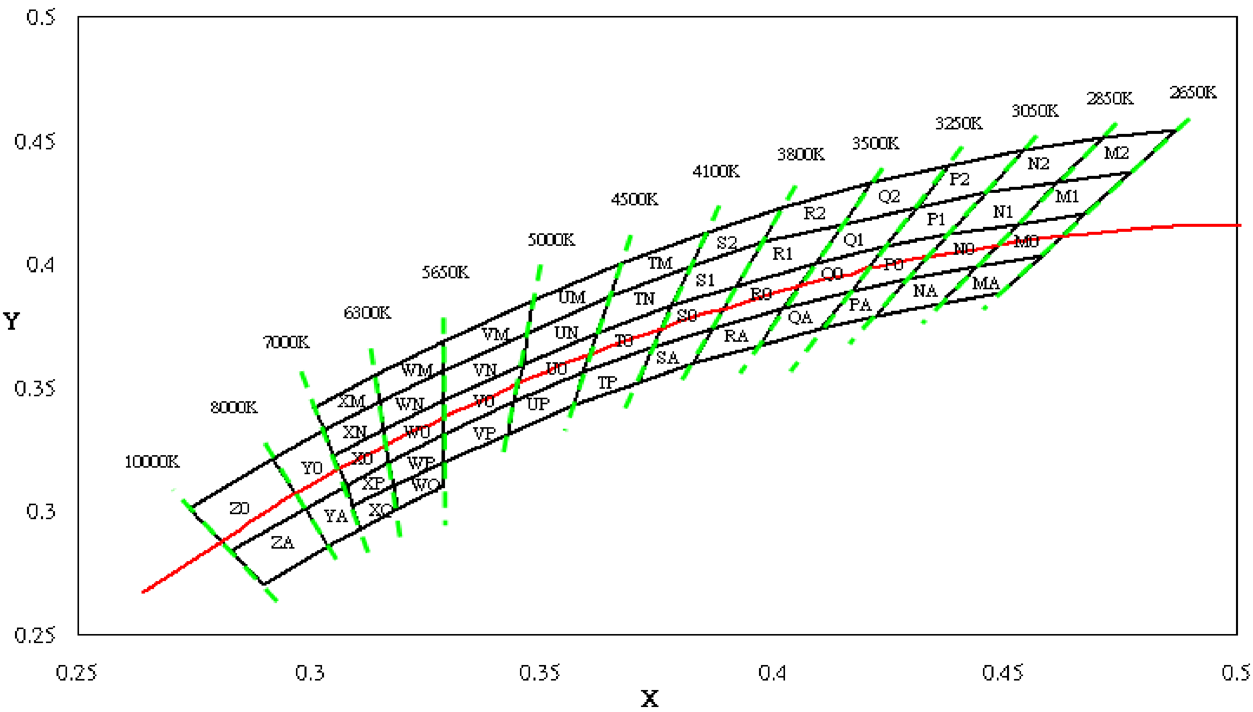
[6]. CRI measurement tolerance is -1.

絕對最大額定值 Absolute Maximum Rating (Ta=25˚C)

Parameter (参数)	Symbol (符号)	Ratings (數值)	Units (單位)
Power Dissipation (消耗功率)	P_D	3	W
Continuous Forward Current (持續順向输入电流)	I_F	700	mA
Peak Forward Current [1] (順向脈衝電流)	I_F(Peak)	1000	mA
LED Junction Temperature (接面温度)	T_J	120	℃
Operating Temperature Range (工作温度)	T_{OPR}	-30℃ To +80℃	
Storage Temperature Range (儲存温度)	T_{STG}	-40℃ To +100℃	
Manual Solding Temperature (手工焊接温度)	T_{SOL}	260℃±20℃ For 3-5 Seconds	
ESD Sensitivity (抗静电能力)	ESD	2000V HBM	

Notes: [1]. 1/10 Duty Cycle 0.1ms Pulse Width. (脈衝宽度 0.1ms)

■ White ANSI Bin Structure



■ Product Binning

Helixeon emitters are labeled using 6-digit alphanumeric bin code. The formats are explained as follows:

AB CD EF

Where:
AB – designates Photometric Luminous Flux bin.
CD – designates Correlated color temperature bin.
EF – designates forward voltage bin.

Photometric Luminous Flux binning information (AB)

Bin Code	Min.	Max.	Unit
S0	51.7	67.2	lm
T0	67.2	87.4	
U0	87.4	113.6	
V0	113.6	150	
W0	150	190	
X0	190	250	

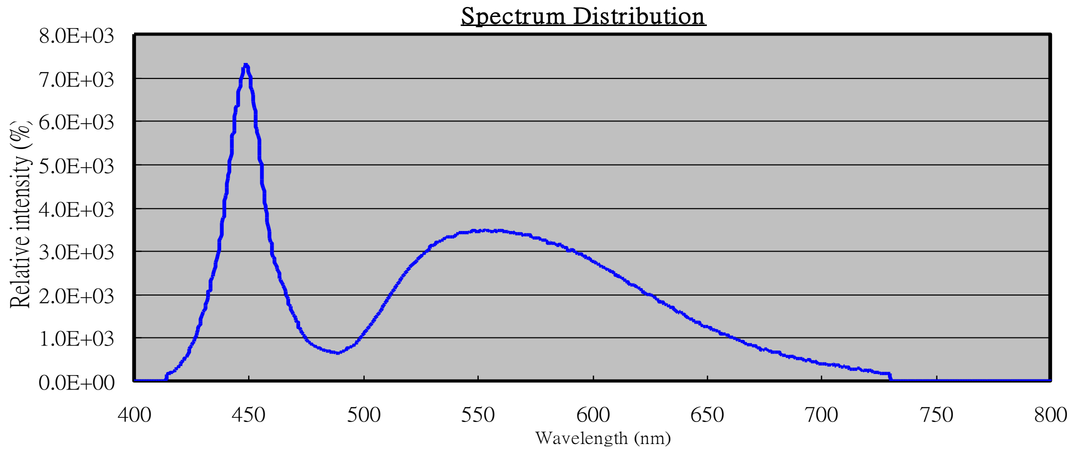
Correlated color temperature binning information (CD)

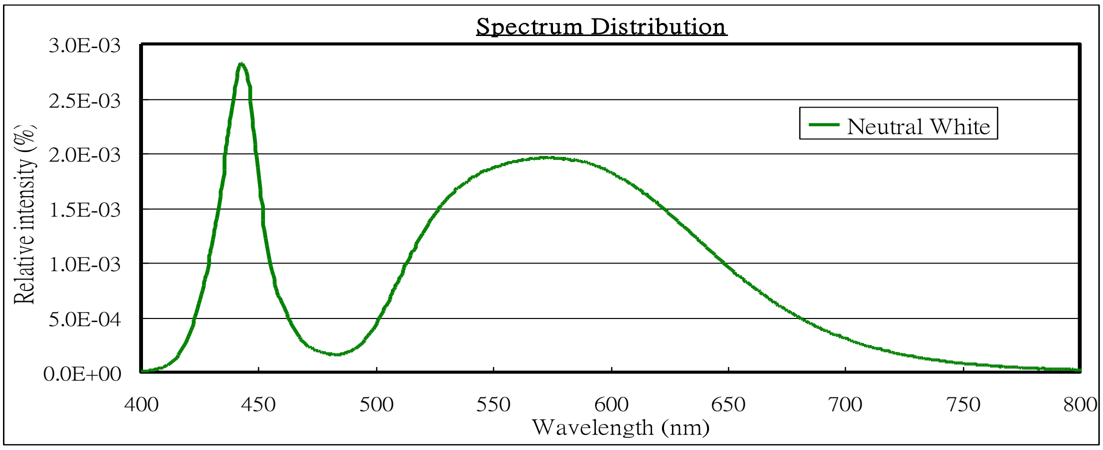
	Bin Code	Min.	Max.	Unit
Warm White	M2,M1,M0,MA	2650	2850	K
	N2,N1,N0,NA	2850	3050	
	P2,P1,P0,PA	3050	3250	
	Q2,Q1,Q0,QA	3250	3500	
Neutral White	R2,R1,R0,RA	3500	3800	K
	S2,S1,S0,SA	3800	4100	
	TM,TN,T0,TP	4100	4500	
White	UM,UN,U0,UP	4500	5000	K
	VM,VN,V0,VP	5000	5650	
	WM,WN,W0,WP,WQ	5650	6300	
	XM,XN,X0,XP,XQ	6300	7000	
	Y0,YA	7000	8000	
	Z0,ZA	8000	10000	

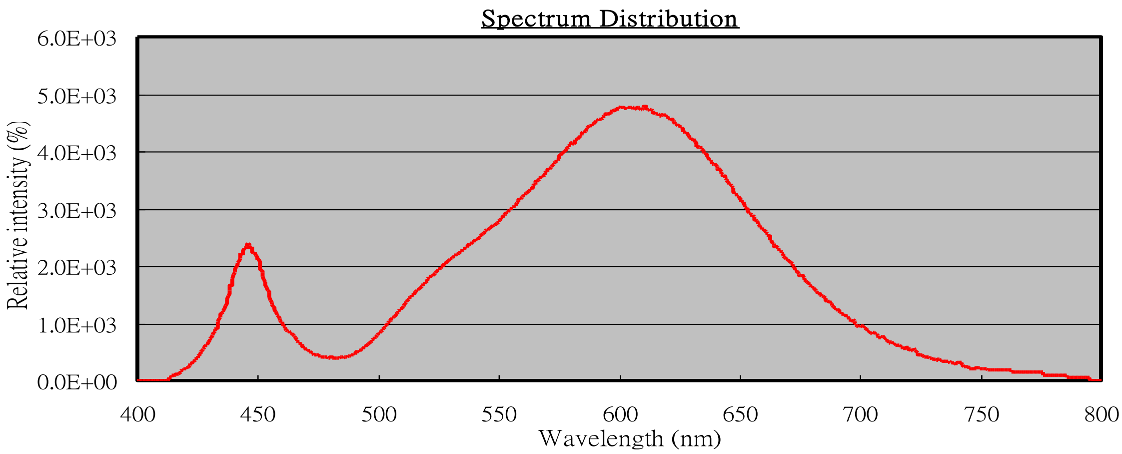
Forward voltage binning information (EF)

Bin Code	Min.	Max.	Unit
K0	3.2	3.4	V
L0	3.4	3.6	
M0	3.6	3.8	
N0	3.8	4.0	
P0	4.0	4.2	
Q0	4.2	4.4	
R0	4.4	4.6	

■ 光譜分佈圖 Spectrum Distribution

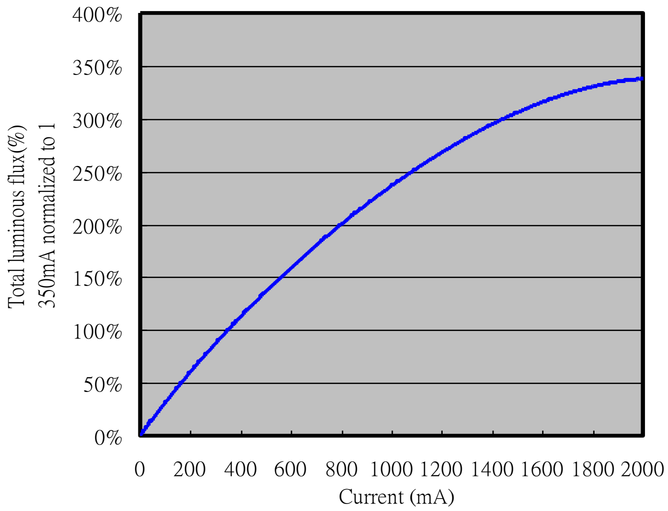




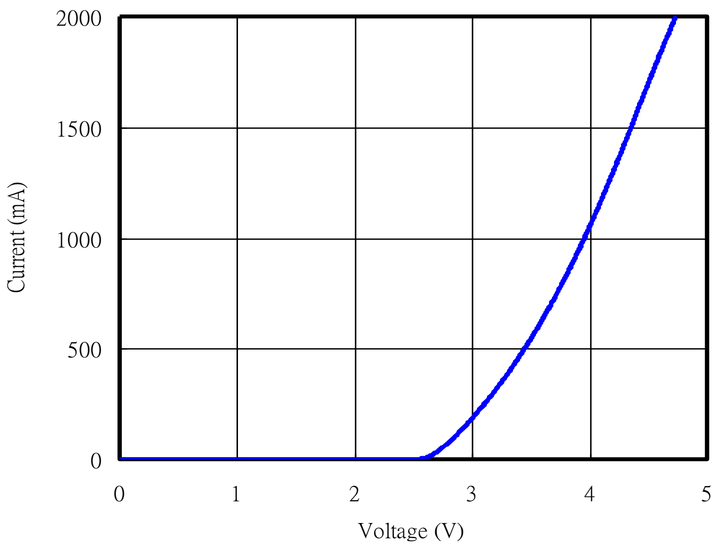


■ 特性曲線 Characteristic Curves

Luminous flux (Φ v) vs Current(IF)

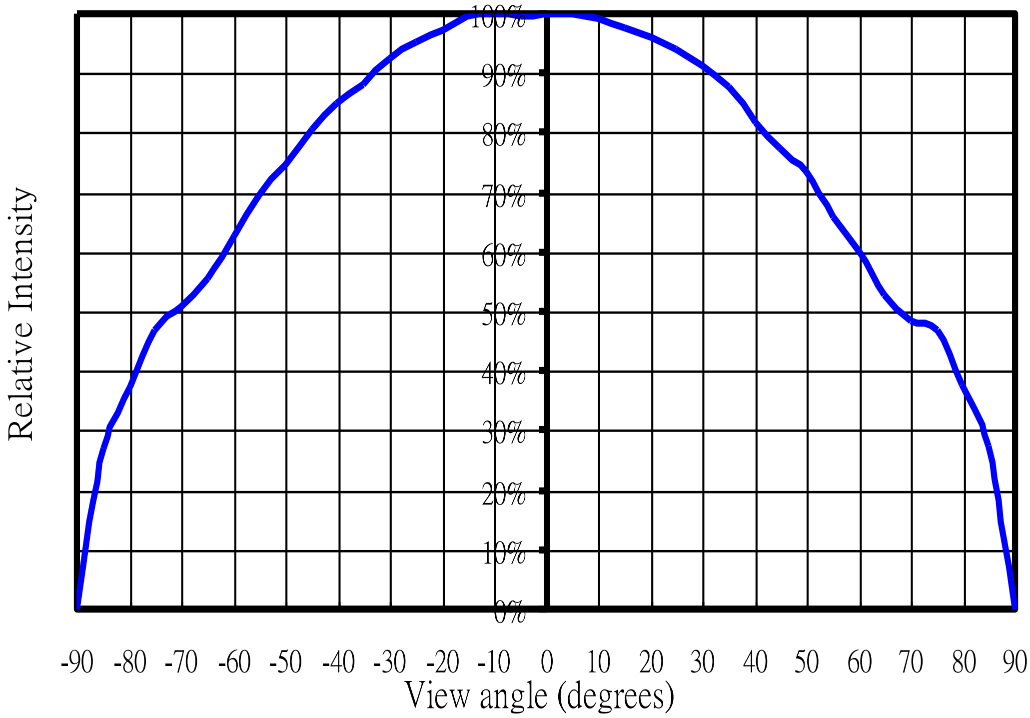


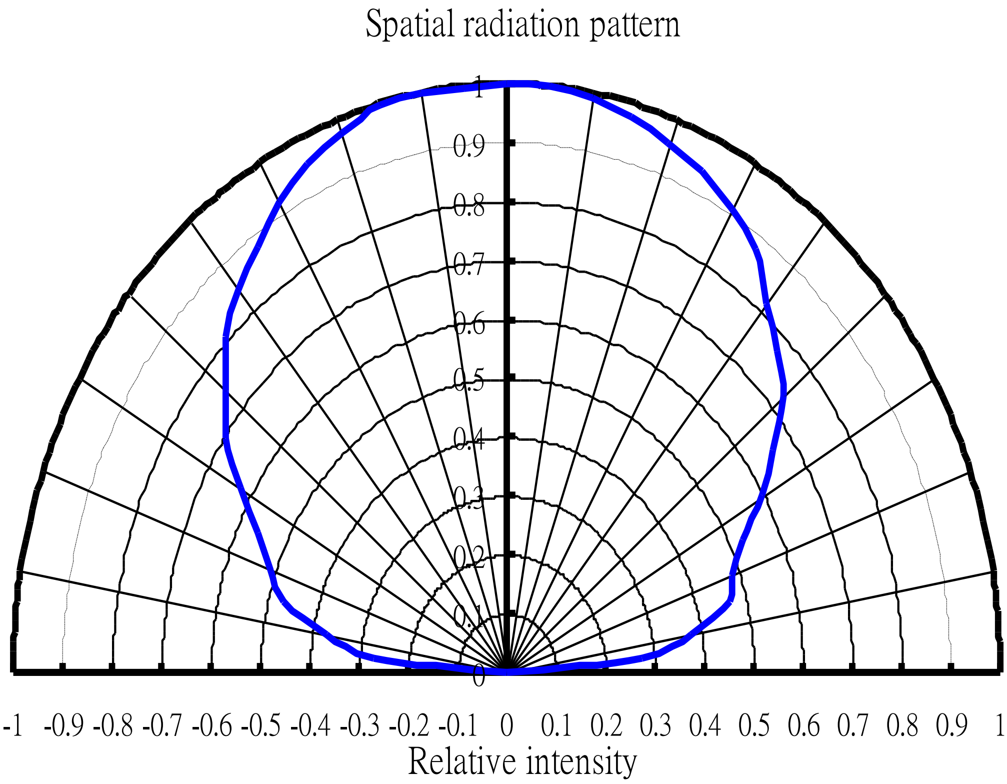
Current(IF) vs Voltage(VF)



■ 典型發光圖形 Typical Radiation pattern

Spatial radiation pattern

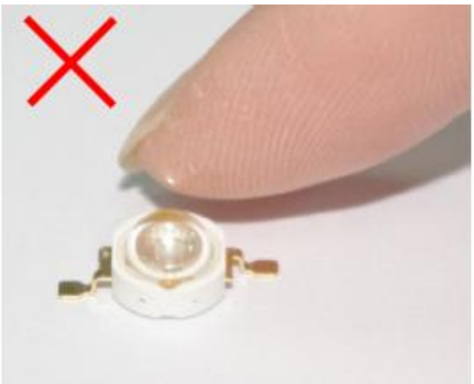


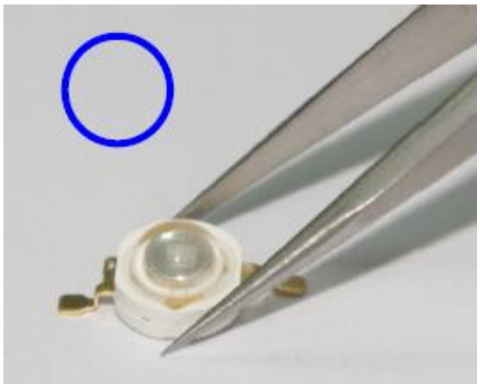

Spatial radiation pattern
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-1 -0.9 -0.8 -0.7 -0.6 -0.5 -0.4 -0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
Relative intensity

■ Handling Precaution

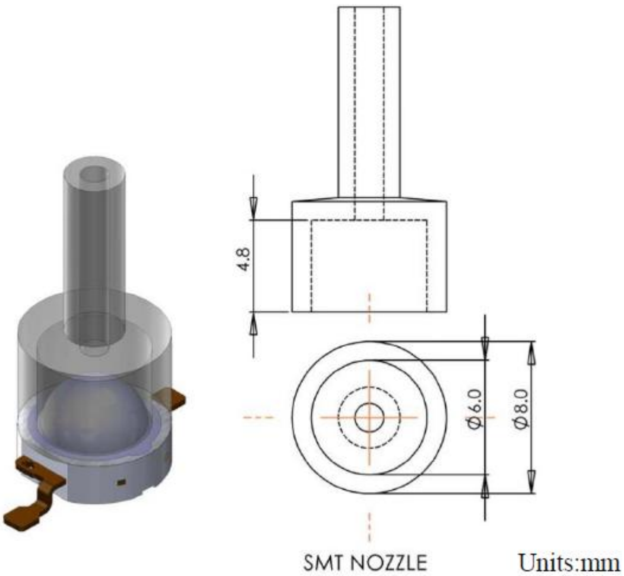
The softness and dust affinity of silicone molding lens constrain the handling of LED. Thus, some handling indications of HELIXEON emitters are presented for possible damage prevention and excellent reliability.

- Avoid leaving fingerprints or scratches (by sharp tools) on the silicone resin parts.

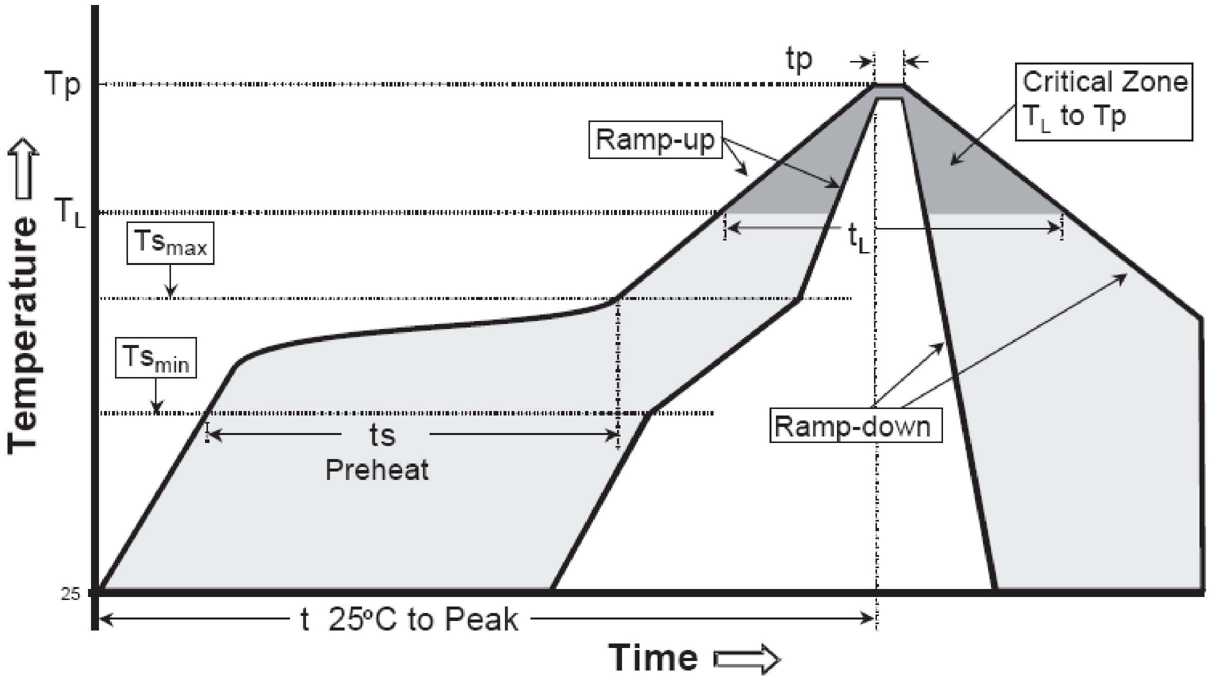




- **Do not force over 2000g impact or pressure on the silicone molding lens.**
- **The LEDs should only be picked up by making contact with the sides of the LED body.**
- **In case of pick-and-place nozzle for surface mount assembly, avoid directly contacting the lens with nozzle. The pickup tool was recommended and shown as below.**



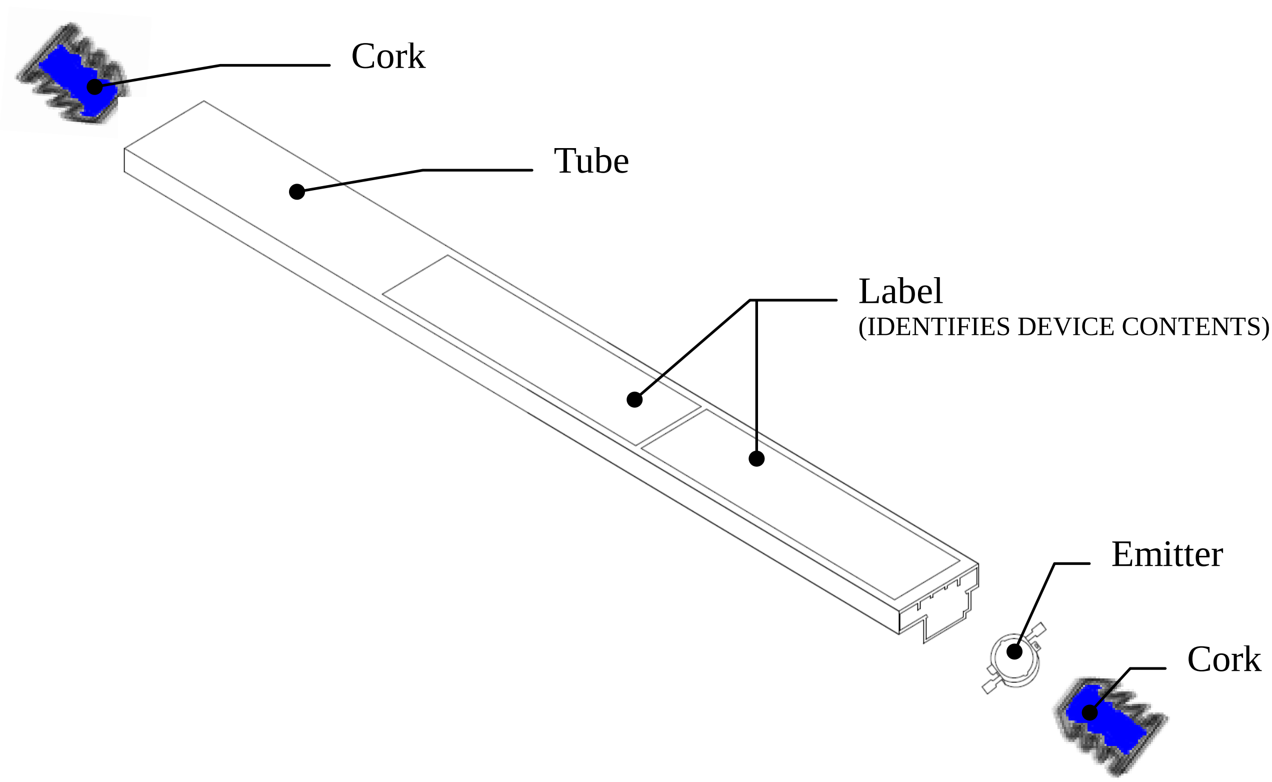
■ 典型迴焊曲線 Typical Reflow Soldering Profile

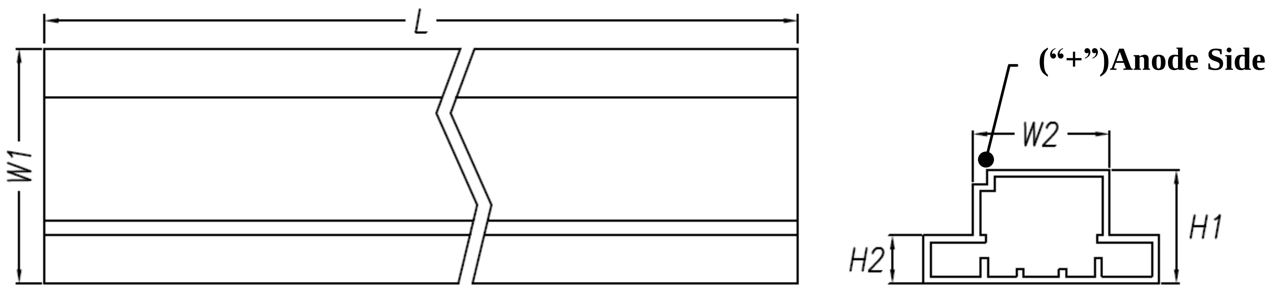


Profile Feature	Typical parameters
Average Ramp-Up Rate (Tsmax to Tp)	3 °C/second max.
Preheat Temperature Min (Tsmin)	150 °C
Preheat Temperature Max (Tsmax)	200 °C
Time (tsmin to tsmax)	60-180 seconds
Time maintained above Temperature (TL)	217 °C
Time maintained above Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	260 °C
Time within 5 °C of Actual Peak Temperature (tp)	5 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.

■ 包裝方式 Packing

<u>料管包裝 (Tube packing)</u>





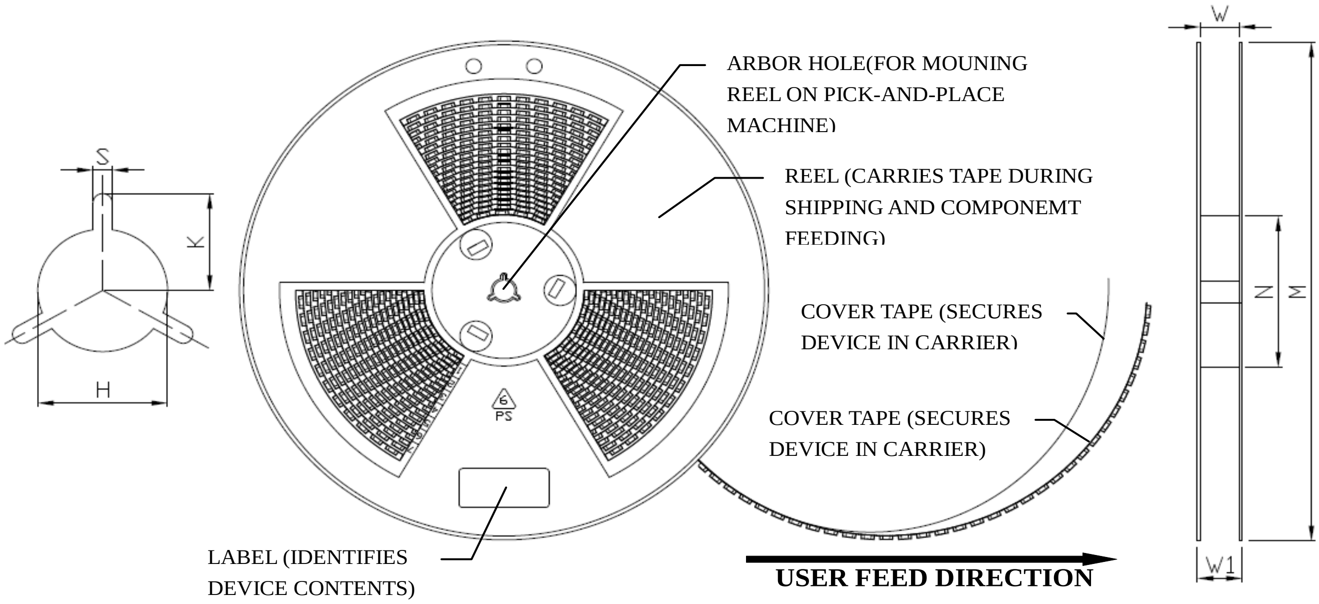
Unit：mm

W1	W2	H1	H2	L
16.5 ±0.2	9.6 ±0.2	8.0 ±0.2	3.4 ±0.2	424.0 ±2.0

Note:兩端 cork 為藍色

■ 料帶包裝 (Tape-and-Reel packing)

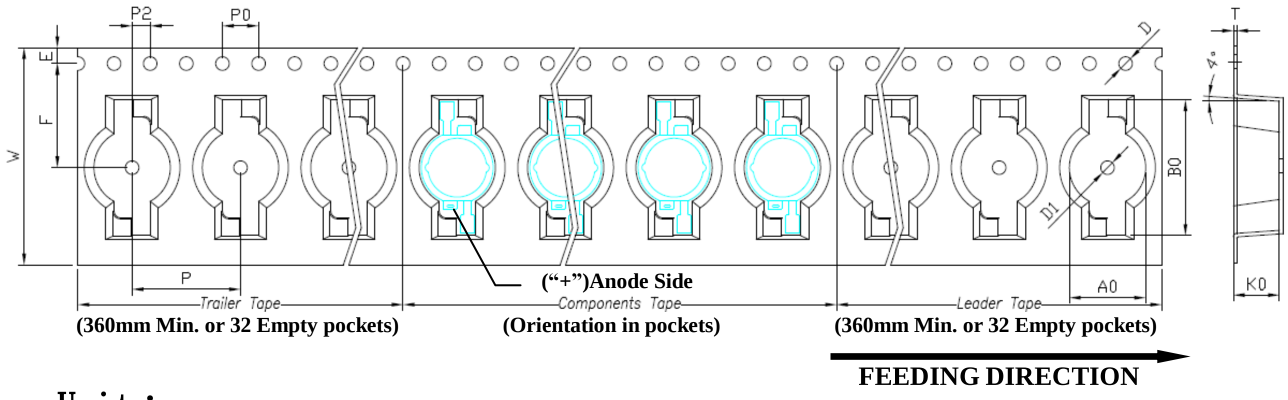
Reel dimensions



Unit：mm

M	N	W	W1	H	K	S
Φ330.0 ±1.0	Φ99.5 ±1.0	24.4 ±1.0	29.0 ±1.0	Φ13.5 ±0.5	10.75 ±0.5	2.5 ±0.5

Carrier tape dimensions



Unit：mm

W	P	E	F	P2	D	D1	P0	A0	B0	K0	T
24.0 ±0.3	12.0 ±0.1	1.75 ±0.1	11.5 ±0.1	2.0 ±0.1	1.5 +0.1	1.5 ±0.25	4.0 ±0.1	8.45 ±0.1	15.0 ±0.1	5.10 ±0.1	0.37 ±0.02

■ Label

■ Label for Tape-and-Reel

海立爾股份有限公司

品號: XXXX-XXXX	單號:
品名: Reel-XXXX-XXXX	QC
數量: 1000 PCS	
Bin Code: XXXXX[1] XXXX	
日期: XXXX-XX-XX	

Note：

1. HELIO internal code.

■ Label for Tube & Tray

HELIO XXXX-XXXX

080630323-M1469B-PLEA1069

BIN CODE: XXXXXX

QTY: 50 PCS

使用注意事項 Notice

使用注意事項

一、為避免吸潮建議將產品貯存在放有乾燥劑的乾燥櫃中，貯存溫度為：5℃~30℃，濕度：≤60%HR。

二、貯存在濕度較高環境的產品使用前，建議乾燥，乾燥條件為：100℃±5℃/12 個小時。

三、產品在焊錫後冷卻過程中避免機械壓力和過大震動。

四、回焊後不允許快速冷卻。

五、禁止焊接在變形 PCB 板上。

六、產品不得接觸水、油、有機溶液。

七、產品使用最大溫度值應考慮工作電流大小。

八、打開防潮包裝後 7 天內產品使用完畢。

九、重新包裝未使用的產品置防潮袋密封好之後貯存在乾燥的地方。

十、產品外觀尺寸可更改而不另行通知。

十一、防靜電要求：使用產品時，必須戴防靜電環或防靜電手套，所有設備、裝置、機台必須有效接地。

十二、該產品必須配置恒流源驅動。

Notice

1. In order to avoid absorption of moisture, it is recommended that the products are stored in the dry box (or desiccators) with a desiccants. Alternatively the following environment is recommended:
   Storage temperature : 5˚C~30˚C Humidity:60% HR max.
2. If the storage conditions are of high humidity the product should be dried before use.
   Recommended drying conditions: 12 hours at 100˚C±5˚C
3. Any mechanical force or any excess vibration should be avoid during the cooling process after soldering.
4. Reflow rapidly cooling should be avoided.
5. Components should not be mounted on distorted Printed Circuit Boards.
6. Devices should not contact with any types of fluid, such as water , oil , organic solvents…. etc.
7. The maximum ambient temperature should be taken into consideration when determining the operating current.
8. Devices should be soldered within 7 days after opening the moisture-proof packing.
9. Repack unused product in anti-moisture packing, fold to close any opening and store in a dry place.
10. The appearance and specifications of devices may be modified for improvement without notice.
11. ESD Precautions Static Electricity and surge damages LEDs. It is recommended that wrist bands or anti-electrostatic gloves be used when handing the LEDs . All devices, equipment and machinery should be properly grounded.
12. This product must be driven by constant power supplier.