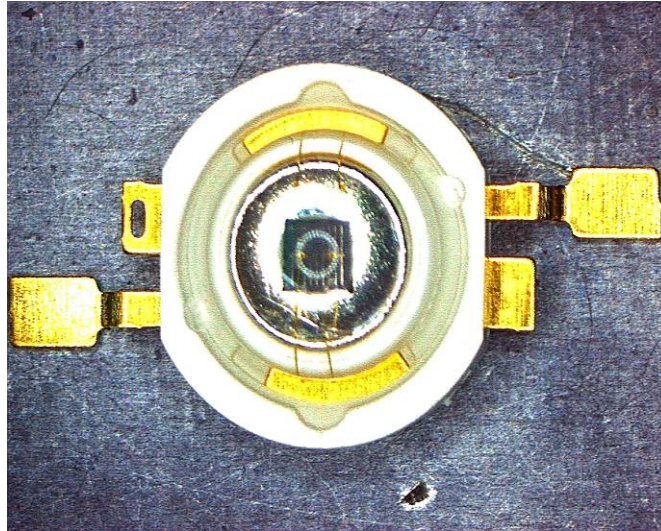


HELIO Optoelectronics Corp.

Helixeon - HMHP-G3HM



Helixeon infrared emitter, the most powerful solid-state lighting device, provides high radiometric power, excellent thermal management and high energy efficiency for infrared applications.

Features

- Low thermal resistance
- Instant response
- Fully dimmable
- Superior ESD protection
- Lead free reflow solder JEDEC 020c compatible

- RoHS compliant

Application

- CCTV
- Wireless communication

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■ Product Nomenclature

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

X1 Item		X2 Classification		X3 Module		X4 Power	
Code	Type	Code	Type	Code	Type	Code	Type
HM	Molding	HP	High power	G	New Emitter	3	3W

X5 Lens		X6 Color	
Code	Type	Code	Type
H	Lambertian II	M	IR 850nm

Circuit Diagram

Color	Part number	Circuit diagram
Infrared-850nm	HMHP-G3HM	

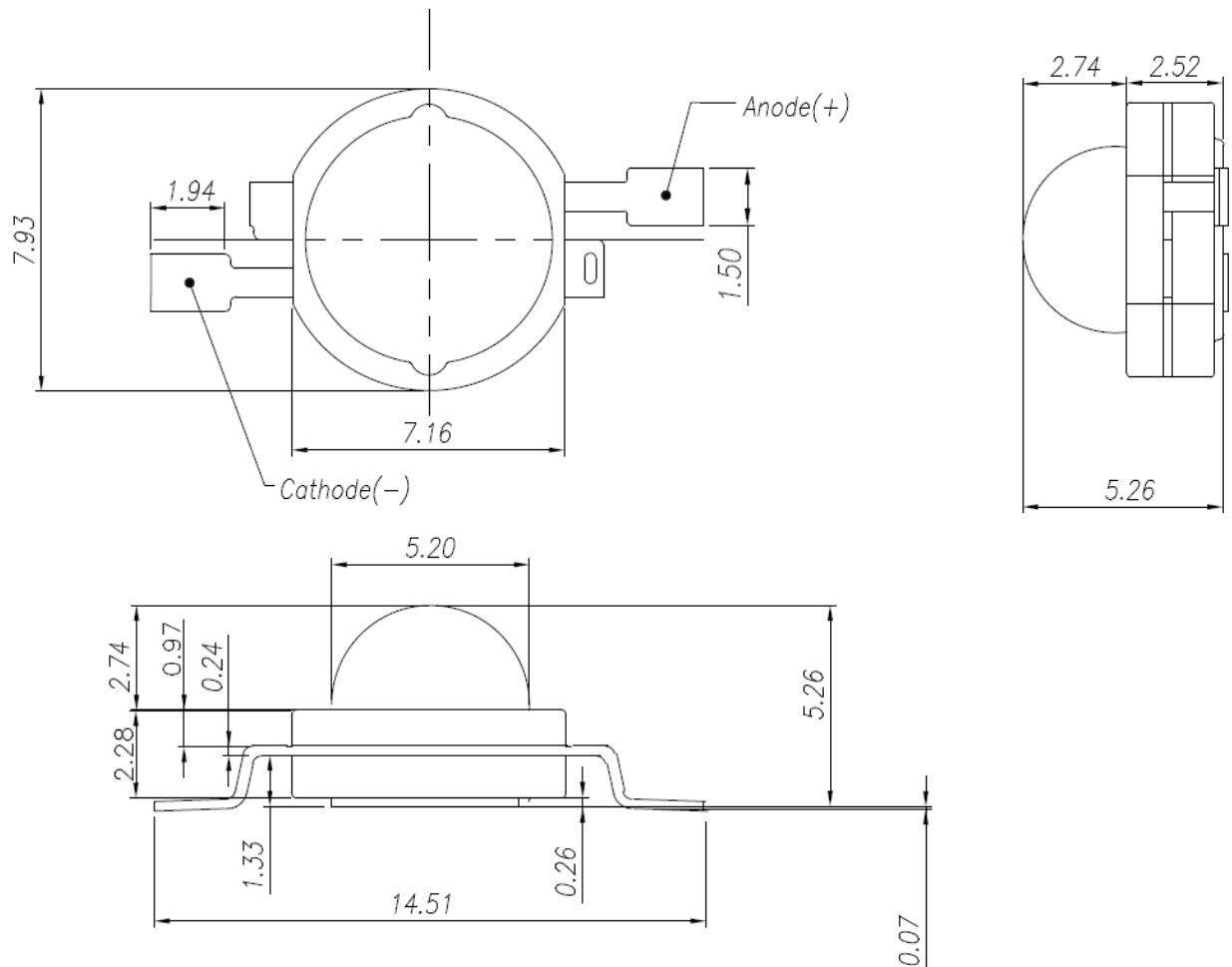
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■ Package Dimensions

SMT Lead Form

Lambertian



Note:

1. The anode side of the device is denoted by a hole in the lead frame.
2. Electrical insulation between the case and the board is required. The slug of the device is no electrically neutral.
3. Drawings are not to scale.
4. All dimensions are all in millimeter.
5. All dimensions without tolerance are for reference only.
6. Specifications are subject to change without notice.

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■ Characteristics for Helixeon Infrared emitter

HMEP-G1LM

Characteristics at $I_F = 700\text{mA}$ ($T_a = 25^\circ\text{C}$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Radiometric power ⁽¹⁾	P_o	500	550	--	mW
Peak wavelength ⁽²⁾	λ_p	840	850	870	nm
View angle (Emitter)	$2\Theta_{1/2}$	--	140	--	degree
Forward voltage ⁽³⁾	V_F	1.4	--	2.4	V

Note:

1. Minimum radiometric power performance guaranteed within published operating conditions. HELIO maintains a tolerance of $\pm 10\%$ on radiometric power measurements.
2. HELIO maintains a tolerance of $\pm 1\text{nm}$ on peak wavelength measurement.
3. HELIO maintains a tolerance of $\pm 0.06\text{V}$ on forward voltage measurement.

■ Absolute Maximum Ratings

Parameter	3W
Peak Forward Current (1/10 Duty Cycle at 1KHz)	1000mA
Continuous Forward Current	700mA
LED Junction Temperature	120°C
Operation Temperature	-30°C ~+80°C
Storage Temperature	-40°C ~+100°C
ESD Sensitivity ⁽¹⁾	2,000V Human Body Model (HBM)
Reverse Voltage (V)	5V

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■ Product Binning

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

AB CD EF

Where:

AB - designates radiometric power bin.

CD - designates peak wavelength bin.

EF - designates forward voltage bin.

Radiometric power binning information

Bin Code	Min.	Max.	Unit
Q1	435	475	mW
Q2	475	515	
R1	515	575	
R2	575	635	
S1	635	695	
S2	695	755	

Peak wavelength binning information

Bin Code	Min.	Max.	Unit
J1	840	870	nm
J2	930	960	

Forward voltage binning information

Bin Code	Min.	Max.	Unit
A0	1.4	1.6	V
B0	1.6	1.8	
C0	1.8	2.0	
D0	2.0	2.2	
E0	2.2	2.4	

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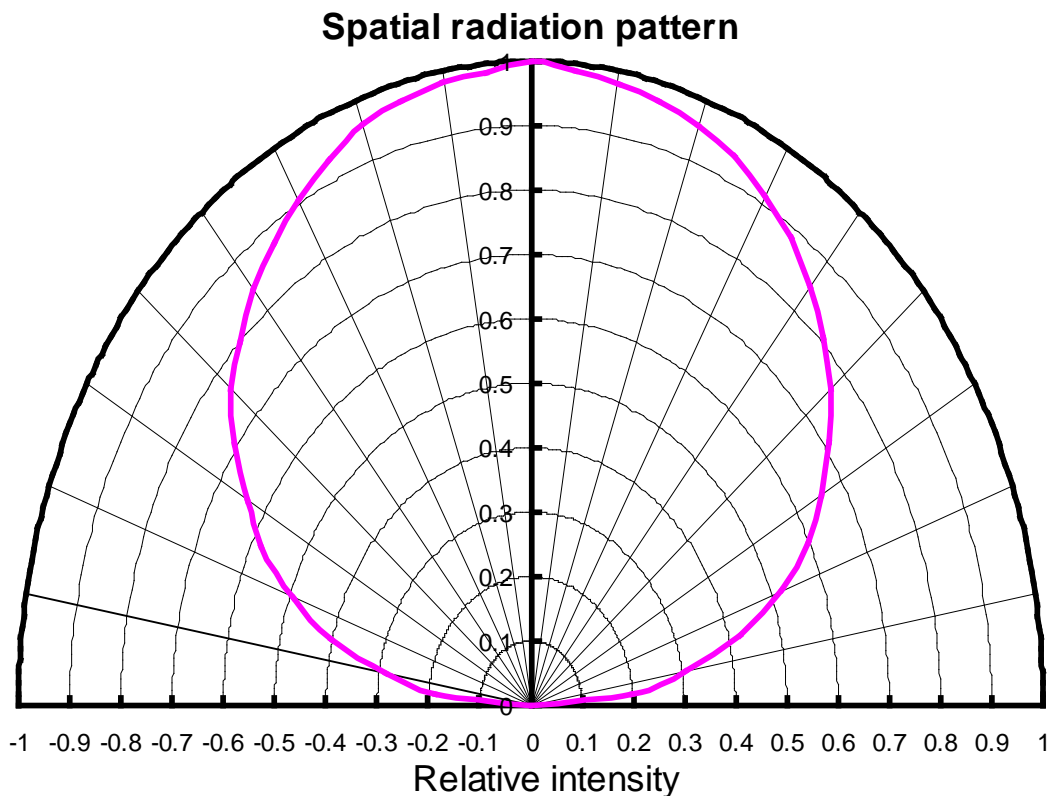
■ Absolute Maximum Ratings

Parameter	1W
Peak Forward Current (1/10 Duty Cycle at 1KHz)	1500mA
Continuous Forward Current	1000mA
LED Junction Temperature	120°C
Operation Temperature	-40°C ~+105°C
Storage Temperature	-40°C ~+120°C
ESD Sensitivity ⁽¹⁾	> 8,000V Human Body Model (HBM) Class 2 JESD22-A114-B
Reverse Voltage (V)	not designed for reverse operation

Note:

1. The zener chip is included to protect the product from ESD.

■ Typical Polar Radiation Pattern

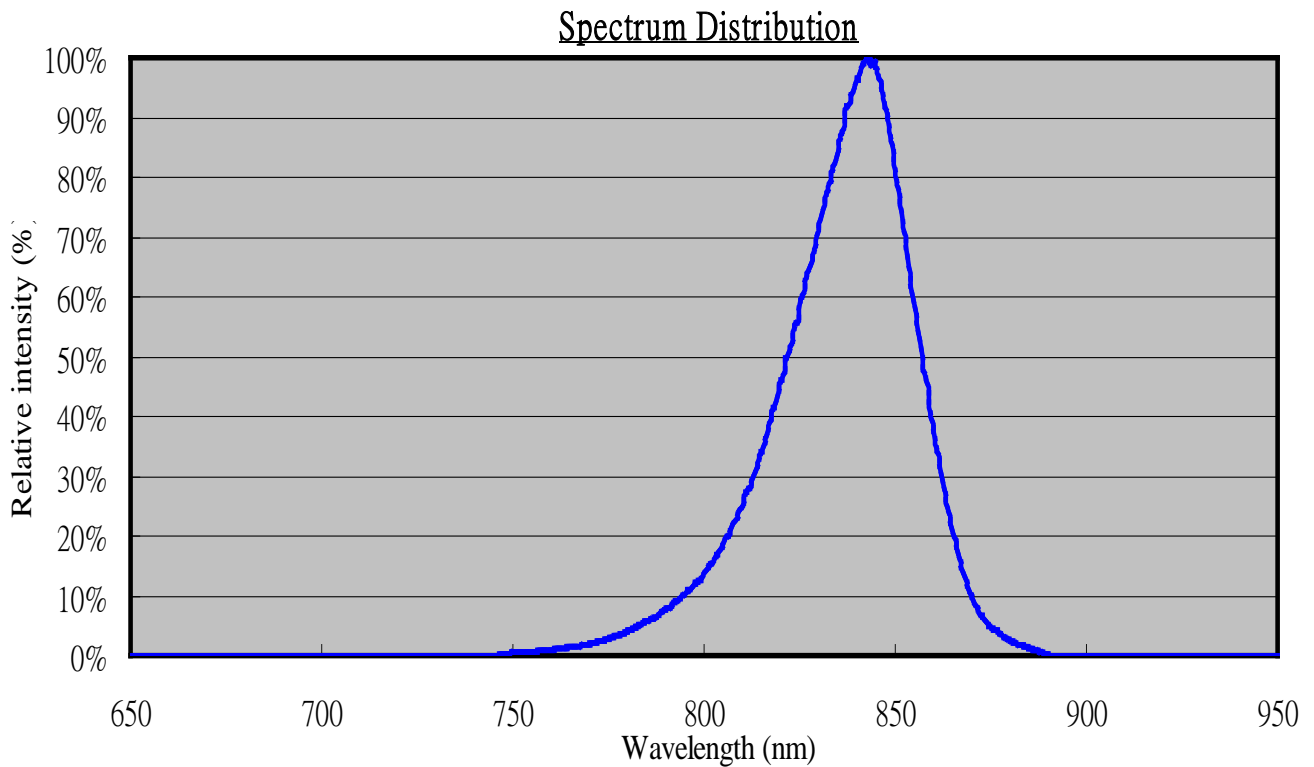


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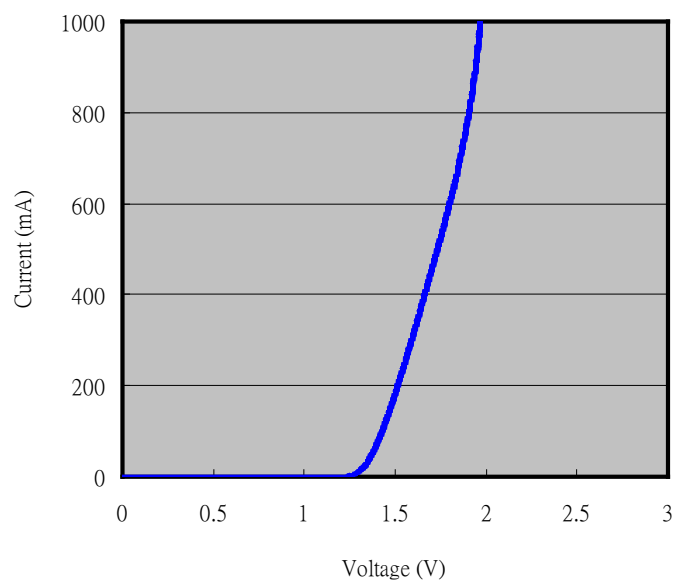
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■ Optical & Electrical characteristics

Emission spectrum



Forward Voltage vs Forward Current

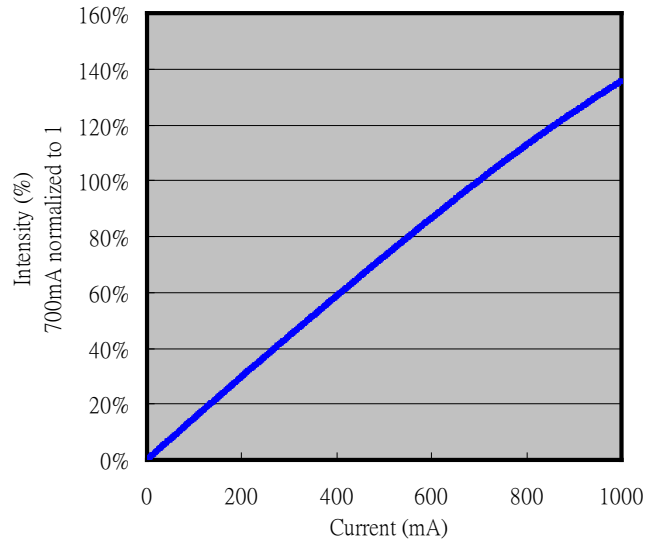


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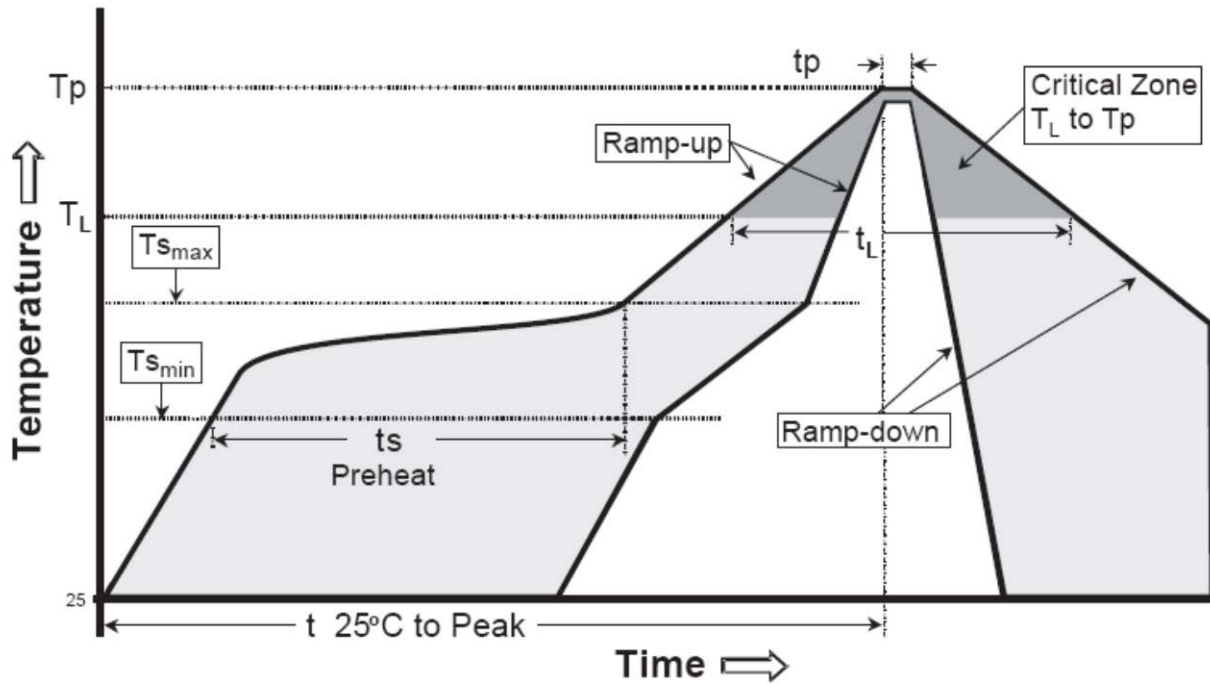
Typical Light Output Characteristics over Forward Current



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Reflow soldering temperature profile



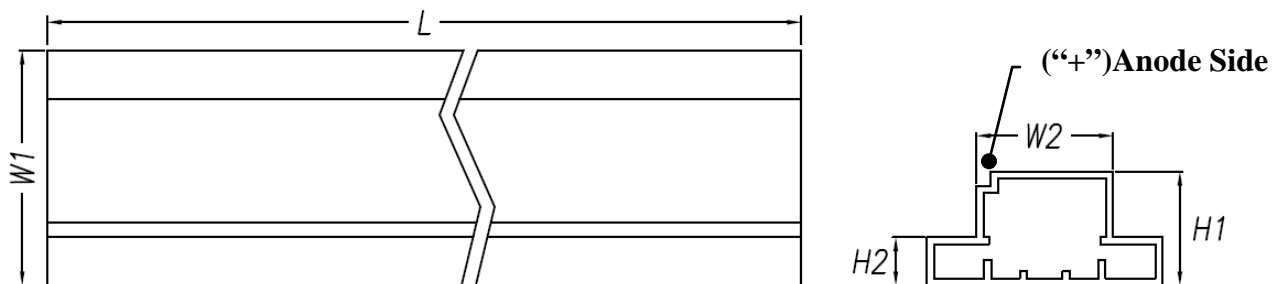
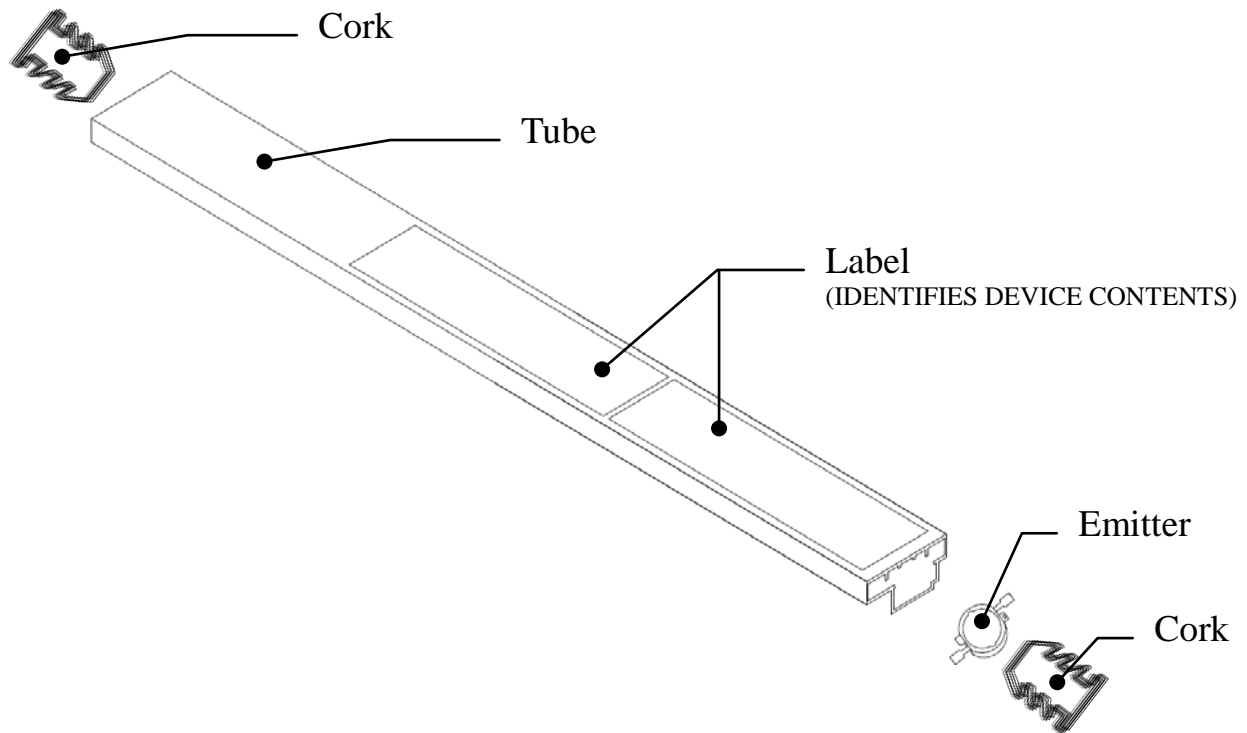
Profile Feature	Typical parameters
Average Ramp-Up Rate (Ts _{max} to Tp)	3 °C/second max.
Preheat Temperature Min (Ts _{min})	150 °C
Preheat Temperature Max (Ts _{max})	200 °C
Time (ts _{min} to ts _{max})	60-180 seconds
Time maintained above Temperature (TL)	217 °C
Time maintained above Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	240 °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.

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包裝方式 Packing

料管包裝 (Tube packing)



Unit : mm

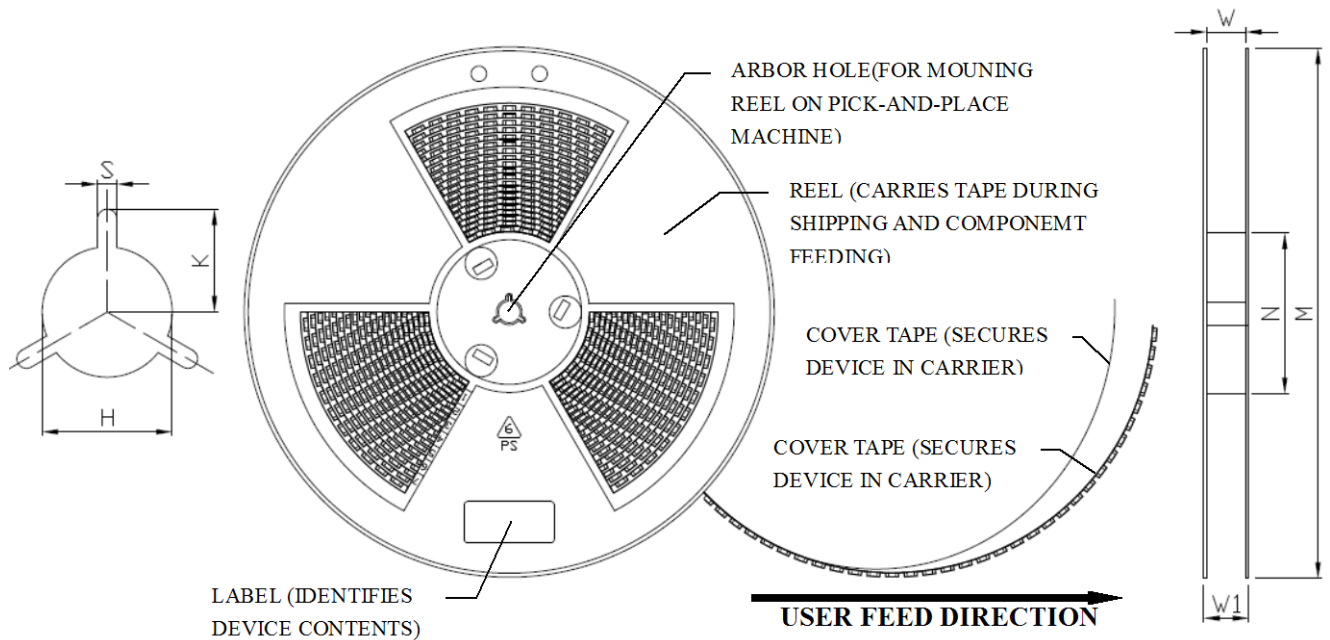
W1	W2	H1	H2	L
16.5	9.6	8.0	3.4	424.0
±0.2	±0.2	±0.2	±0.2	±2.0

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料帶包裝 (Tape-and-Reel packing)

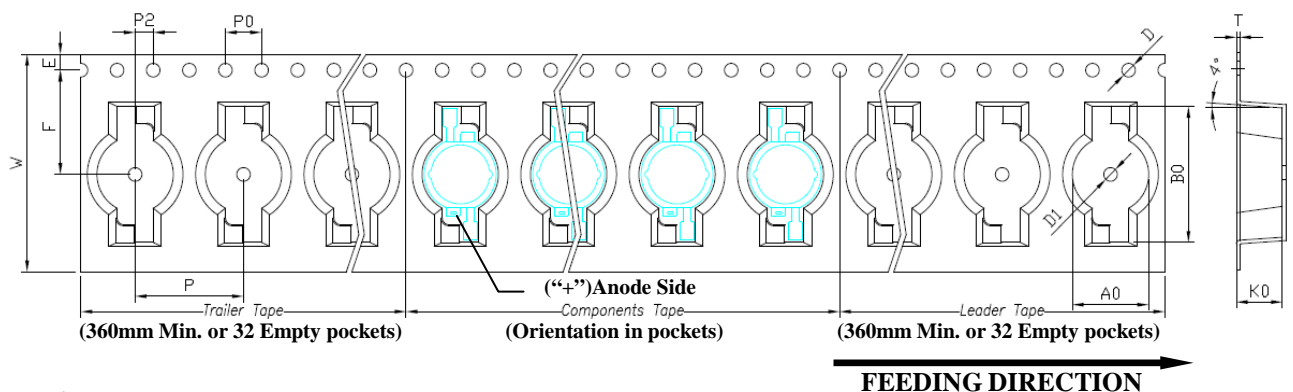
● Reel dimensions



Unit : mm

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

● Carrier tape dimensions



Unit : mm

W	P	E	F	P2	D	D1	P0	A0	B0	K0	T
24.0	12.0	1.75	11.5	2.0	1.5	1.5	4.0	8.45	15.0	5.10	0.37

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±0.3	±0.1	±0.1	±0.1	±0.1	+0.1	±0.25	±0.1	±0.1	±0.1	±0.1	±0.02
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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： $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ ，濕度： $\leq 60\% \text{HR}$ 。
- 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： $60^{\circ}\text{C}\pm 5^{\circ}\text{C}/24$ 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 : $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ Humidity:60% HR max.
2. If the storage conditions are of high humidity the product should be dried before use.
Recommended drying conditions: 24 hours at $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$
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

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should be properly grounded.

12. This product must be driven by constant power supplier.