EVERLIGHT ELECTRONICS CO.,LTD.

Technical Data Sheet

High Power LED – 0.5W (Preliminary)

EHP-A09/LM31-PU5/TR

Features

- Feature of the device: small package with high efficiency
- Typical color temperature: 3500 K.
- ESD protection.
- Soldering methods: SMT
- Grouping parameter: luminous Intensity, color coordinates, forward voltage.
- Optical efficiency: 35 lm/W.
- Color Reproduction Index(CRI): 80
- Thermal resistance (junction to sink): 50 K/W
- The product itself will remain within RoHS compliant version.

Applications

- Interior automotive lighting (e.g. dashboard backlighting)
- Indoor illumination, room lighting and decoration.
- Reading lamps (aircraft, car, bus)
- Signal and symbol luminaries
- Marker lights and indicator.

Materials

Items	Description
Reflector	**Heat resistant polymer**
Encapsulating Resin	**Silicone resin**
Electrodes	**Ag plating**
Die attach	**Silver paste**
Chip	**InGaN**

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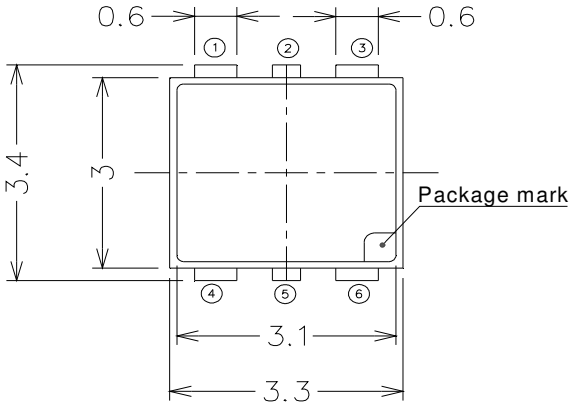
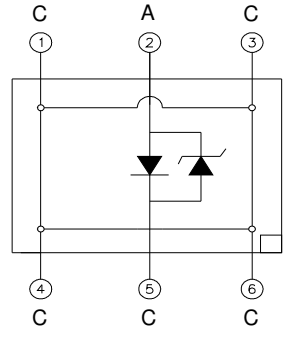
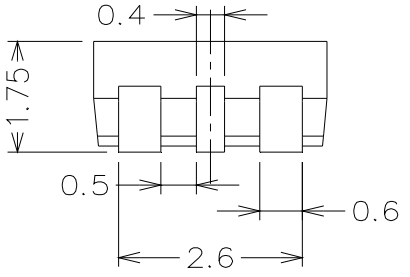
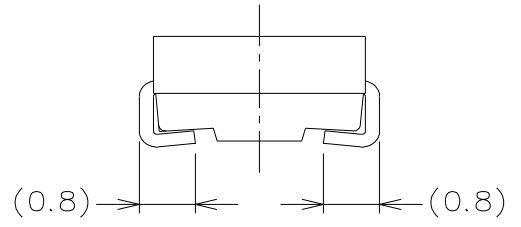
Dimensions

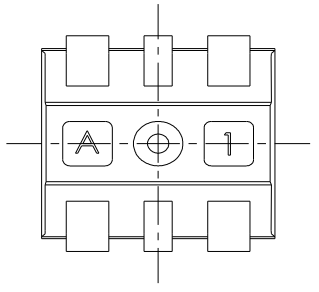




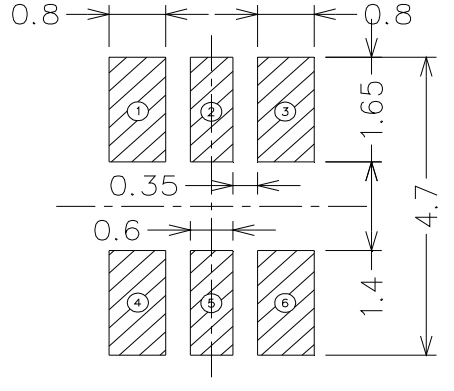
Polarity







Bot. view



Soldering patterns

Notes: 1. Dimensions are in millimeters.

2. Tolerances unless dimensions ±0.25mm.

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Maximum Ratings ($T_{Ambient}$=25ºC)

Parameter	Symbol	Rating	Unit
DC Operating Current	I_F	150	mA
Pulsed Forward Current	I_{PF}	300	mA
ESD Sensitivity	ESD	2000	V
Junction Temperature	T_j	125	℃
Operating Temperature	T_{opr}	-40 ~ +100	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Power Dissipation	P_d	0.5	W
Junction To Heat-Sink Thermal Resistance	R_{th}	50	K/W

Electro-Optical Characteristics ($T_{Ambient}$=25ºC)

Parameter	Bin	Symbol	Min	Typ.	Max	Unit	Condition
Luminous Intensity(1)	C1	I_v	2800	----	3550	mcd	I_F=150mA
	C2		3550	----	4500		
	D1		4500	----	5600		
	D2		5600	----	7100		
Forward Voltage(2)	V1	V_F	2.95	----	3.25	V	
	V2		3.25	----	3.55		
	V3		3.55	----	3.85		
Color Temperature(4)	----	CCT	2670	3500	4500	K	
Viewing Angle(3)	----	$2\theta_{1/2}$	----	120	----	deg	

Note. 1. Luminous Intensity measurement tolerance: ±10%

2. Forward Voltage measurement tolerance: ±0.1V

3. $2\theta_{1/2}$ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.

4. X, Y coordination for white light bin areas refer to High Power Illumination emitters labeling and binning (DSE-A08-002).

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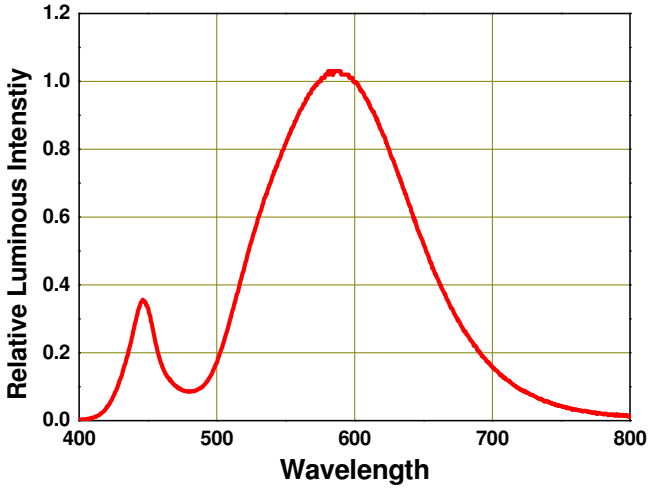
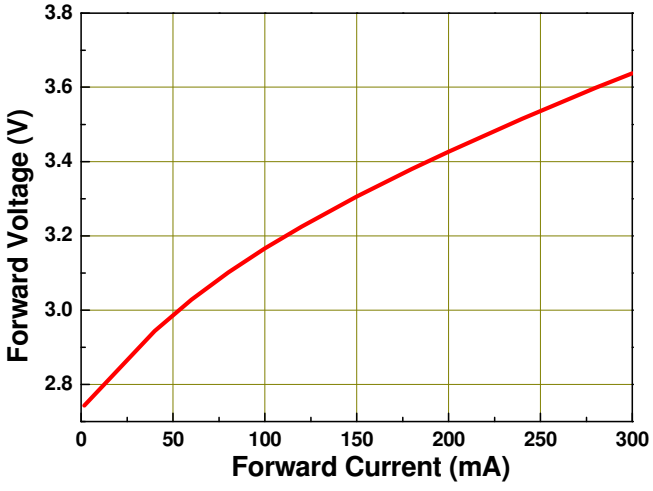
Typical Electro-Optical Characteristics Curves

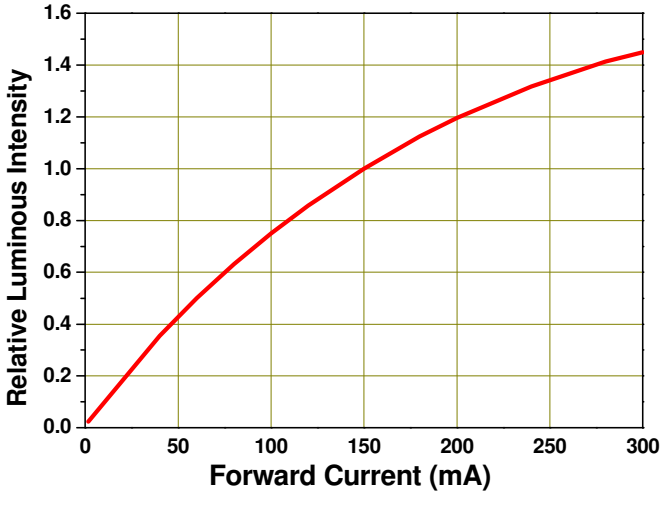
Relative Spectral Distribution, I_F=150mA, $T_{Ambient}$=25ºC



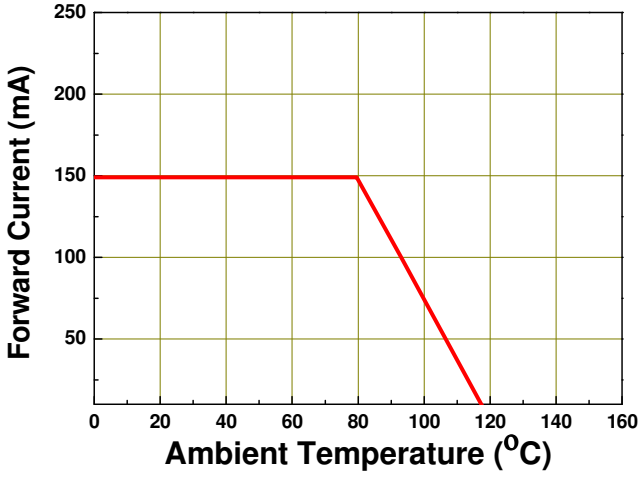
Forward Voltage vs Forward Current, $T_{Ambient}$=25ºC



Relative Luminous Intensity vs Forward Current, $T_{Ambient}$=25ºC



Forward Current Derating Curve, Derating based on T_{jMAX}=125 ºC



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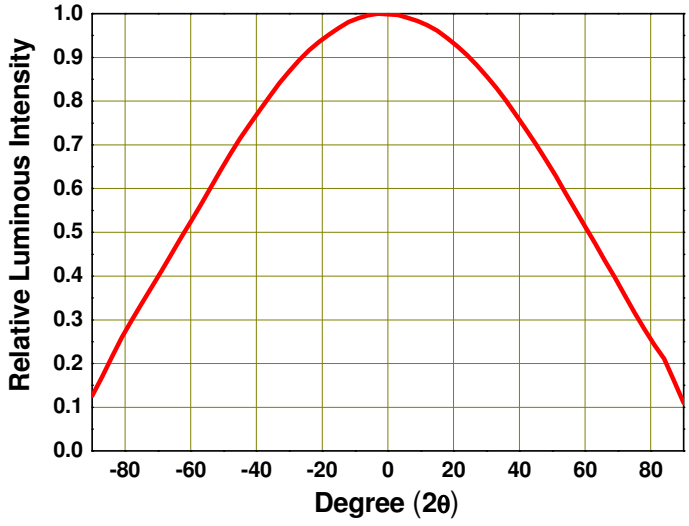
Typical Representative Spatial Radiation Pattern



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Label explanation

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

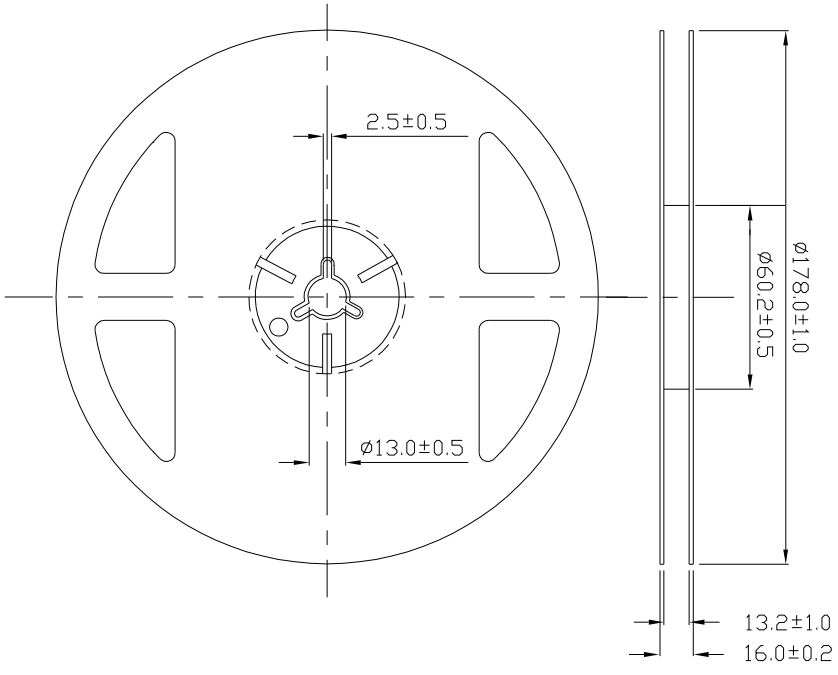
HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN TAIWAN: Production Place

Reel Dimensions



Note: 1. Dimensions are in millimeters.

2. The tolerances unless mentioned is ±0.1mm.

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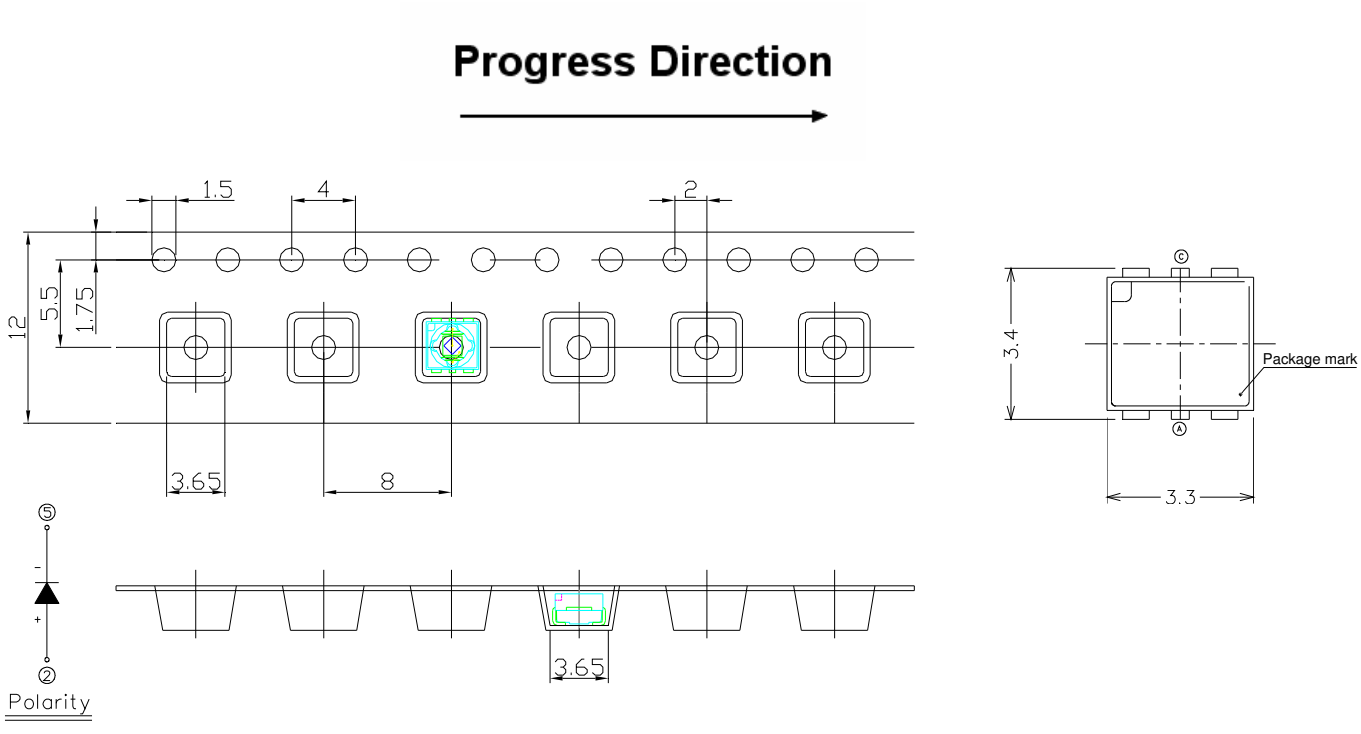
Carrier Tape Dimensions: Loaded quantity 1000 PCS per reel



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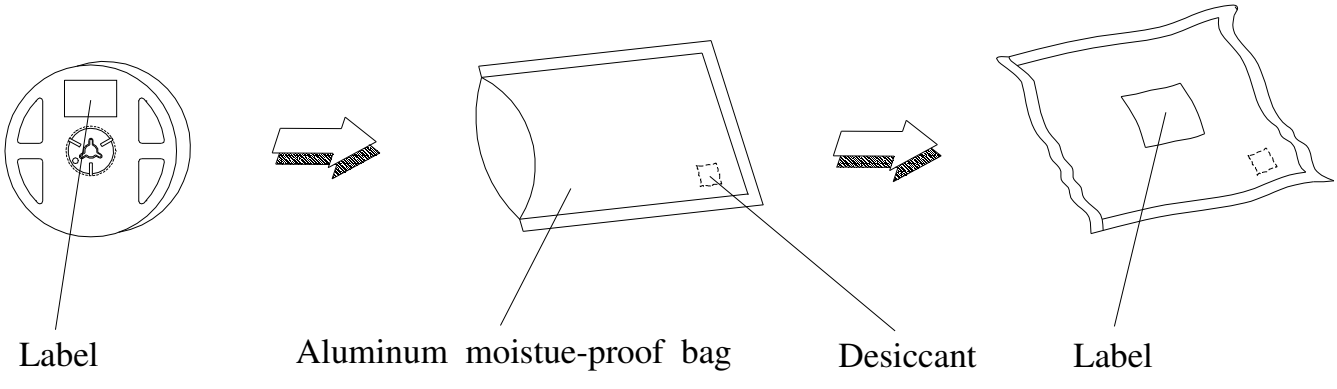
Moisture Resistant Packaging



EHP-A09/LM31-PU5/TR

Precautions For Use

1. Over-current-proof

Though EHP-A09 has conducted ESD protection mechanism, customers must not use the device in reverse and should apply resistors for extra protection. Otherwise, slight voltage difference may cause enormous current shift and burn out failure would happen.

2. Storage

i. Do not open the moisture proof bag before the devices are ready to use.
ii. Before the package is opened, LEDs should be stored at temperature less than 30℃and humidity less than 90%.
iii. LEDs should be used within a year.
iv. After the package is opened, LEDs should be stored at temperature less than 30℃and humidity less than 70%.
v. LEDs should be used within 168 hours (7 days) after the package is opened.
vi. If the moisture absorbent material (silicone gel) has faded away or LEDs have exceeded the storage time, baking treatment should be implemented based on the following the conditions: pre-curing at 60±5℃ for 24 hours.

3. Thermal Management

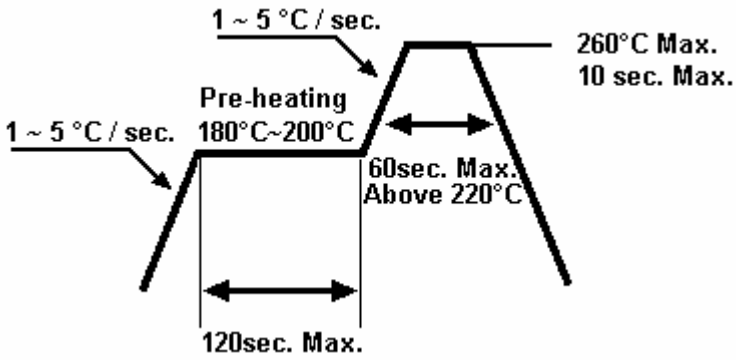
i. For maintaining the high flux output and achieving reliability, EHP-A09 series LEDs should be mounted on a metal core printed circuit board (MCPCB) or other kinds of heat sink with proper thermal connection to dissipate approximate 0.5W of thermal energy at 150mA operation.
ii. Special thermal designs are also recommended to take in heat dissipation management, such as FR4 PCB on Aluminum with thermal vias or FPC on Aluminum with thermal conductive adhesive, etc.
iii. Sufficient thermal management must be implemented. Otherwise, the junction temperature of dies might be over the limit at high current driving condition and LEDs' lifetime might be decreases dramatically.
iv. For further thermal management suggestions, please consult Everlight Design Guide or local representatives for assistance.

4. Soldering Condition

4-1. For Reflow process

i. EHP-A09 series are suitable for SMT process.

ii. Lead reflow soldering temperature profile



iii. Reflow soldering should not be done more than two times.

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

v. After soldering, do not warp the circuit board.