

**ROHS**

# Specification

Client Name : \_\_\_\_\_

Client P/N : \_\_\_\_\_

Factory P/N : HL-AF-5060H238W-3-B-S

Sending Date : \_\_\_\_\_

Client approval			Hong li approval		
Approval	Audit	Confirmation	Approval	Audit	Confirmation
					陈婷
<input type="checkbox"/> Qualified <input type="checkbox"/> Unqualified			DATE:		

Adr : West side of Dongfeng Highway,Auto City,Huadu  
 District ,Guangzhou,China  
 Tel : **020-86733333** (Switchboard)  
 Fax : **020-86733883 86733938 86733265**  
 Web : [www.honglitronic.com](http://www.honglitronic.com)

## HL-AF-5060H238W-3-B-S

### Features

- | Extremely wide viewing angle
- | Suitable for all SMT assembly and solder process
- | Available on tape and reel
- | Moisture sensitivity level: Level 4
- | Package:1000pcs/reel
- | RoHS compliant



### Description

The White LED which was fabricated using a blue chip and the phosphor

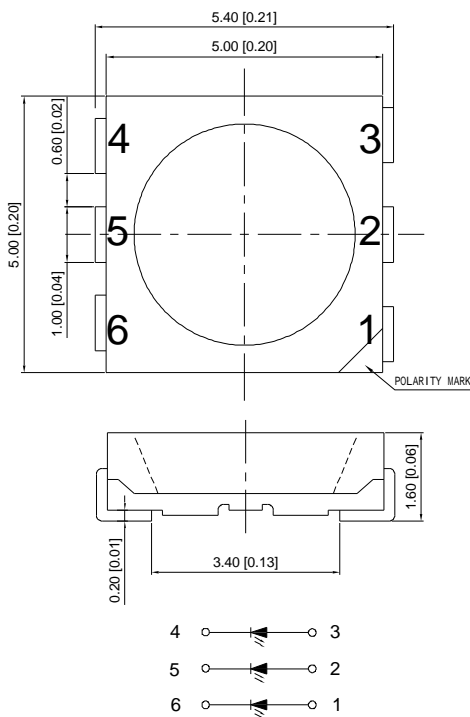
### Applications

- Optical indicator
- Indoor display
- Interior automotive lighting
- Backlight for LCD, switch and Symbol, display
- Light pipe application
- General use

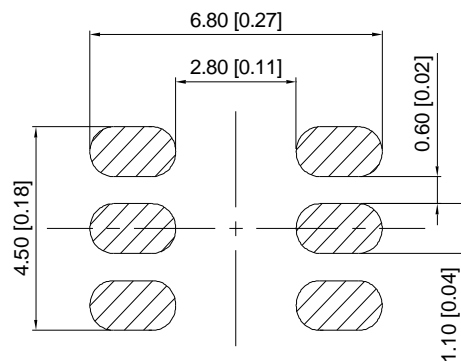


**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

### Package Dimensions



### Recommended Soldering



#### Notes:

1. All dimension units are millimeters.
2. All dimension tolerance is  $\pm 0.15\text{mm}$  unless otherwise noted.

## HL-AF-5060H238W-3-B-S

### Selection Guide

Part No.	Dice	Lens Type	Luminous intensity(mcd) @ 20mA*3			Luminous flux(lm) @ 20mA*3		Viewing Angle
			Rank	Min.	Max.	Min	Typ	2 $\theta$ 1/2
HL-AF-5060H238W-3-B-S	WHITE (InGaN)	Yellow Diffused	Y	3770	4900	13	16	120°
			Z	4900	6370			

Note:

1.  $\theta$ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. the above luminous intensity measurement allowance tolerance  $\pm 10\%$ .

### Electrical / Optical Characteristics at Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Forward Voltage	V <sub>F</sub>	3.0	3.2	--	V	I <sub>F</sub> =20mA *3
Reverse Current	I <sub>R</sub>	--	--	10	$\mu$ A	V <sub>R</sub> = 5V
Color Coordinates	X	--	0.31	--	--	I <sub>F</sub> =20mA *3
	Y	--	0.32	--	--	I <sub>F</sub> =20mA *3
Color Temperature	T <sub>c</sub>	--	6500	--	K	I <sub>F</sub> =20mA *3
Color Rendering Index	CRI	--	73	--	Ra	I <sub>F</sub> =20mA *3

### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	P <sub>d</sub>	315	mW
DC Forward Current per chip	I <sub>F</sub>	30	mA
Peak Forward Current [1]	I <sub>FP</sub>	300	mA
Reverse Voltage	V <sub>R</sub>	5	V
Electrostatic Discharge (HBM)	ESD	1000	V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C

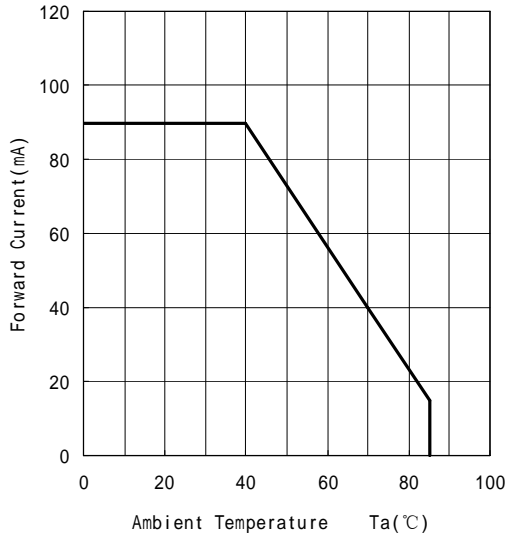
Note:

1. 1/10 Duty Cycle, 0.1ms Pulse Width.

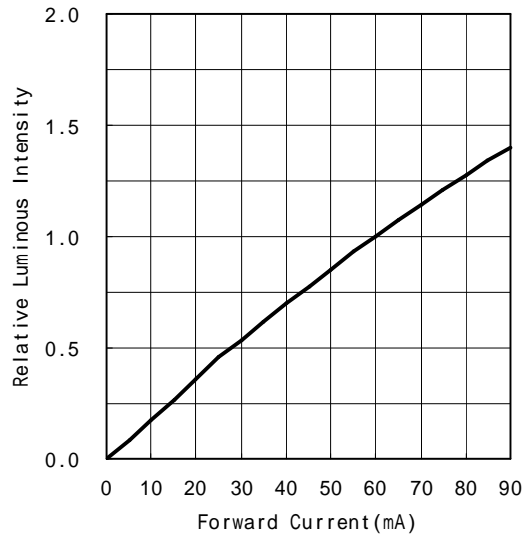
# HL-AF-5060H238W-3-B-S

## Typical optical characteristics curves

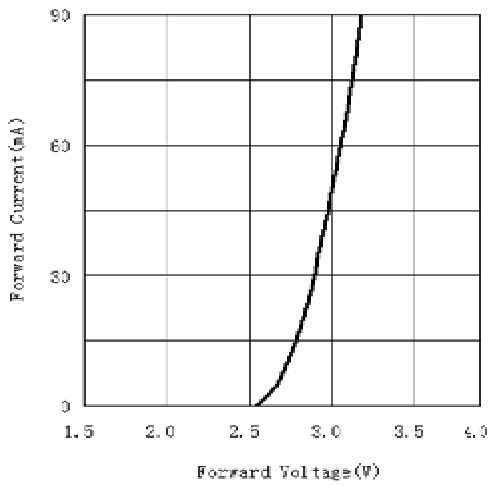
Ambient Temperature VS. Forward Current



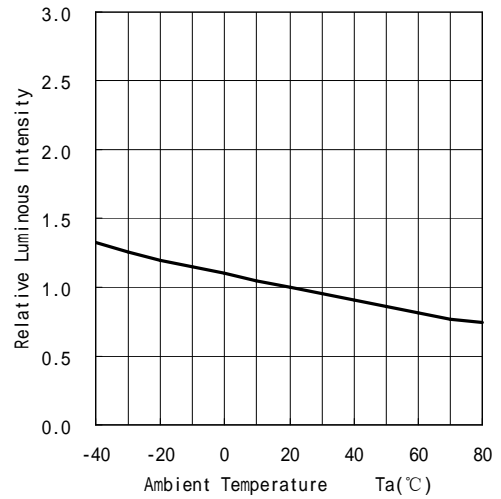
Forward Current VS. Relative Intensity



Forward Voltage VS. Forward Current



Ambient Temperature VS. Relative Intensity



Relative spectral emission

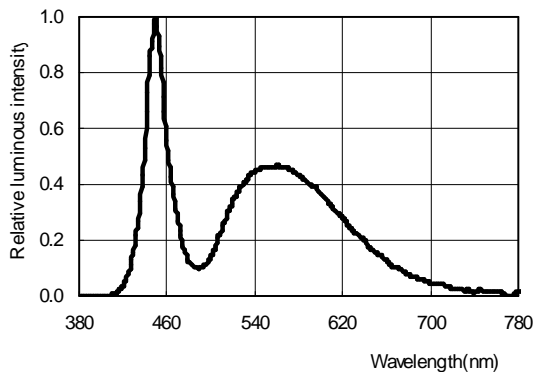
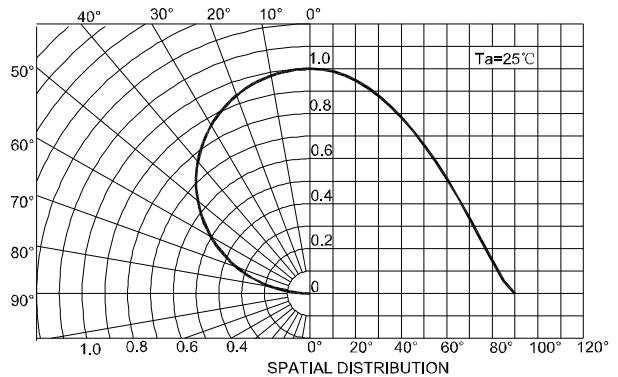
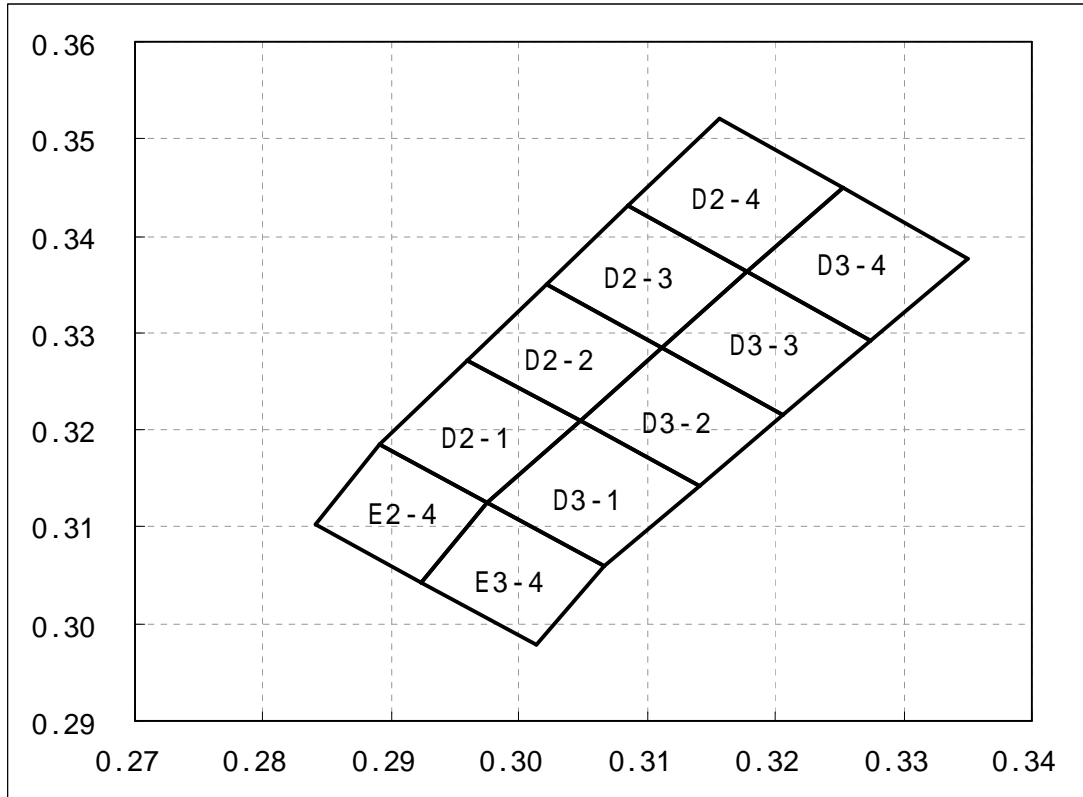


Diagram characteristics of radiation



# HL-AF-5060H238W-3-B-S

## CIE Chromaticity Diagram



E2-4				
X	0.284	0.292	0.298	0.289
Y	0.310	0.304	0.313	0.319

E3-4				
X	0.292	0.301	0.307	0.298
Y	0.304	0.298	0.306	0.313

D2-1				
X	0.296	0.289	0.298	0.305
Y	0.327	0.319	0.313	0.321

D2-2				
X	0.302	0.296	0.305	0.311
Y	0.335	0.327	0.321	0.328

D2-3				
X	0.309	0.302	0.311	0.318
Y	0.343	0.335	0.328	0.336

D2-4				
X	0.316	0.309	0.318	0.325
Y	0.352	0.343	0.336	0.345

D3-1				
X	0.305	0.298	0.307	0.314
Y	0.321	0.313	0.306	0.314

D3-2				
X	0.311	0.305	0.314	0.321
Y	0.328	0.321	0.314	0.322

D3-3				
X	0.318	0.311	0.321	0.327
Y	0.336	0.328	0.322	0.329

D3-4				
X	0.325	0.318	0.327	0.335
Y	0.345	0.336	0.329	0.338

## HL-AF-5060H238W-3-B-S

### Reliability Test Items And Conditions

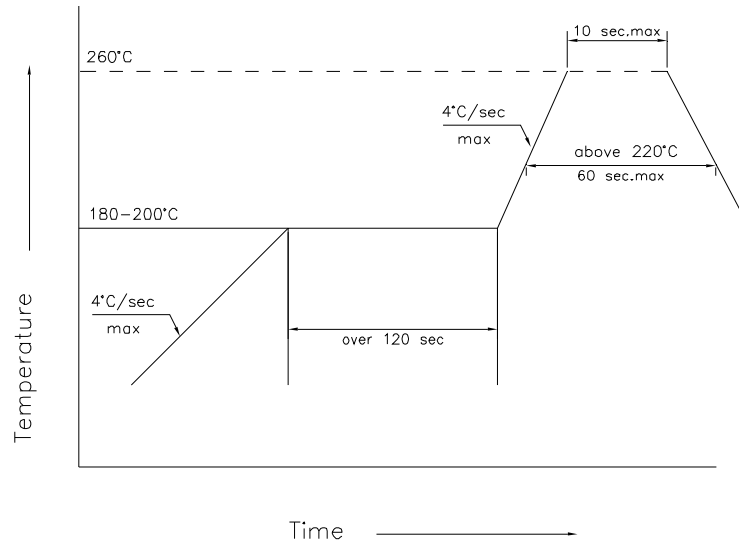
The reliability of products shall be satisfied with items listed below.  
 Confidence level :90%  
 LTPD :10%

No.	Items	Ref.Standard	Test Condition	Test Hours/ Cycles	Sample Size	Ac/Re
1	Reflow	JESD22-B106	Temp:260°Cmax T=10 sec	3 times.	22Pcs.	0/1
2	Temperature Cycle	JESD22-A104	100°C±5°C 30 min. ↑↓5 min -40°C±5°C 30 min.	100 Cycles	22Pcs.	0/1
3	Thermal Shock	JESD22-A106	100°C±5°C 5 min. ↑↓ -40°C±5°C 5 min.	100 Cycles	22Pcs.	0/1
4	High Temperature Storage	JESD22-A103	Temp:100°C±5°C	1000Hrs.	22Pcs.	0/1
5	Low Temperature Storage	JESD22-A119	Temp:-40°C±5°C	1000Hrs.	22Pcs.	0/1
6	DC Operating Life	JESD22-A108	Ta=25°C±5°C IF=60mA	1000Hrs.	22Pcs.	0/1
7	High Temperature High Humidity	JESD22-A101	85°C±5°C/ 85%RH IF=15mA	1000Hrs.	22Pcs.	0/1

\*The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

## HL-AF-5060H238W-3-B-S

### SMT Reflow Soldering Instructions



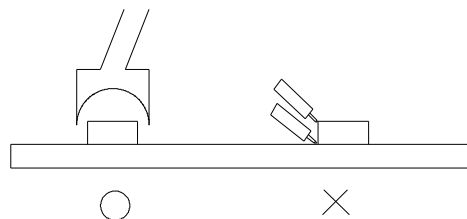
- 1.Reflow soldering should not be done more than two times
- 2.When soldering , do not put stress on the LEDs during heating

### Soldering iron

- 1.When hand soldering, the temperature of the iron must less than 300°C for 3 seconds
- 2.The hand solder should be done only one times

### Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of LEDs will or will not be damaged by repairing.



### Cautions

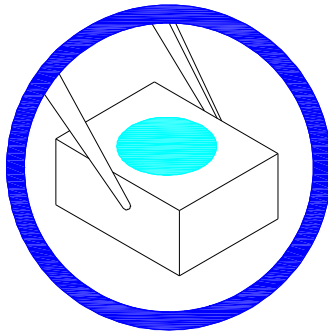
The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper.

## HL-AF-5060H238W-3-B-S

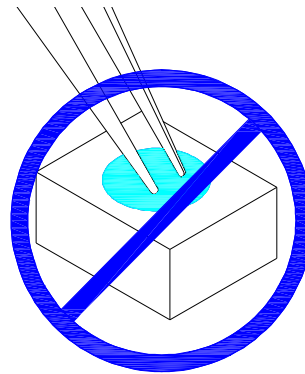
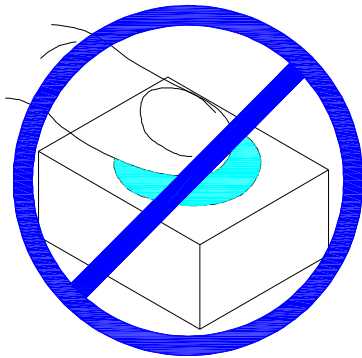
### Handling Precautions

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, Special handling precautions need to be observed during assemble using silicone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.

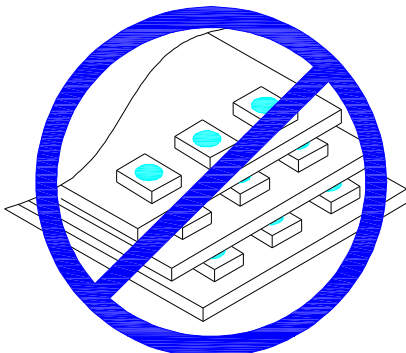
1.Handle the component along the side surface by using forceps or appropriate tools



2.Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry



3.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage



4.Not available in the situation of acidity for PH





# HL-AF-5060H238W-3-B-S

## Label

IV: Luminous intensity rank  
Bin: Bin code  
VF: Forward voltage rank



**HONGLITRONIC 广州市鸿利光电股份有限公司**  
GUANGZHOUHONGLI OPTO-ELECTRONIC CO.,LTD.

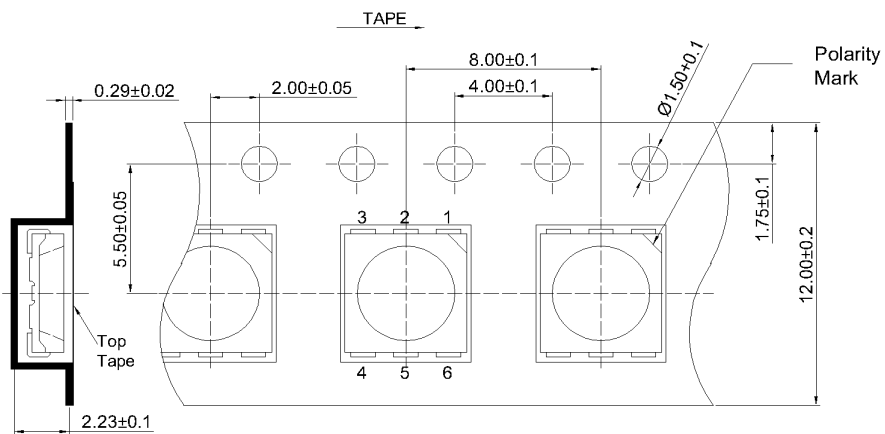
Part No: XXXXXXXXXXXXXXXXXXXXXXXX

Quantity: xxx PCS    Bin: IV    Bin    VF

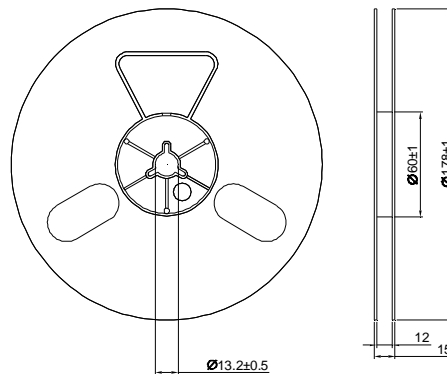
Sealing date: XXXXXXXXXXXXXXXXXXXX



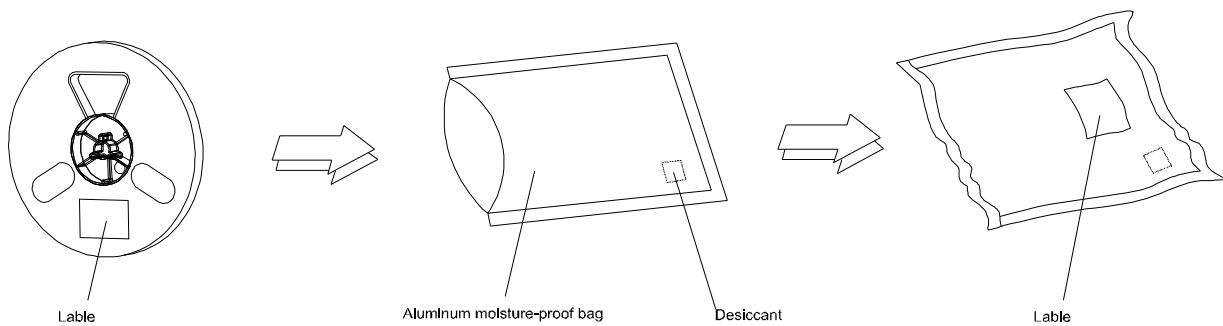
## Tape Specifications (Units : mm)



## Reel Dimensions



## Moisture Resistant Packaging



Note: The tolerances unless mentioned is  $\pm 0.1$ mm, Unit: mm