

# Merchandise Spec

customer: \_\_\_\_\_

**Part Number:** FHL-L/R5050UWC-1W

date: \_\_\_\_\_

Sample number : \_\_\_\_\_

Approved Signatures (Client)		
Engineering	Examine	Sanction

Address: 5th & 6th Floor, Anji Communication Building, Linggang Road, Torch  
Development Zone, Zhongshan, Guangdong Province, China

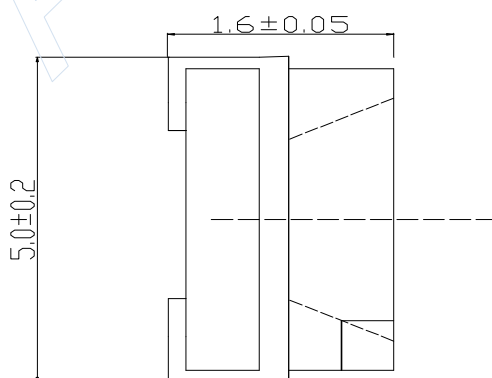
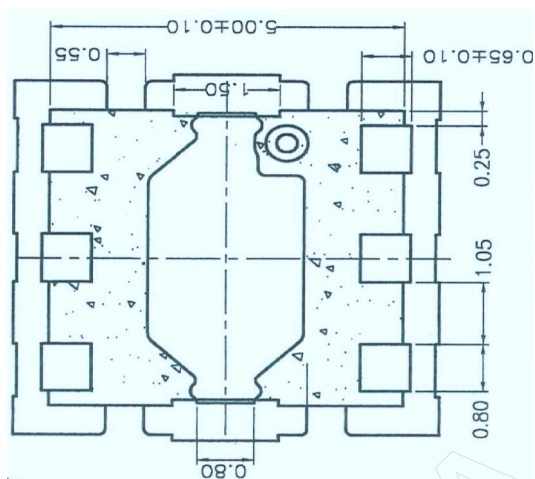
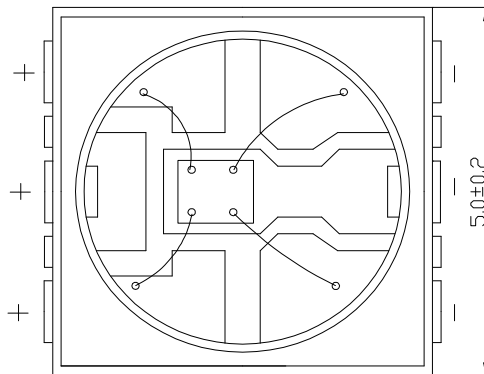
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Part Number: FHL-L/R5050UWC-1W

### Package Dimensions And Materials



#### Notes:

1. All dimension units are millimeters.
2. All dimension tolerance is  $\pm 0.2\text{mm}$  unless otherwise noted.

■ Absolute Maximum Rating

Item	Symbol	Absolute Maximum Rating		Unit
		Blue/Green/White	Red/Yellow	
Forward Current	IF	240	240	mA
Peak Forward Current*	IFP	500	500	mA
Reverse Voltage	VR	5	5	V
Power Dissipation	PD	1000	1000	mW
Electrostatic discharge	ESD	1000	2000	V
Operation Temperature	Topr	-25~+80	-25~+80	°C
Storage Temperature	Tstg	-40~+80	-40~+80	°C
Lead Soldering Temperature*	Tsol	Max. 260°C for 5sec Max.		

\*IFP Conditions: Pulse Width ≤ 10msec duty ≤ 1/10

\* Typical Optical/ Electrical Characteristics

Part No	Luminous Intensity (LM)			Test Condition	Viewing Angle (Typ.)	Forward Voltage(V) (Typ.)
	Min.	Typ.	Max.			
FHL-L/R5050UWC-1W	100	/	110	IF = 240mA	120	3.0-3.6

Notes:

1. Absolute maximum ratings Ta=25°C.
2. Tolerance of measurement of forward voltage ±0.1V.
3. Tolerance of measurement of luminous intensity ±15%.
4. Tolerance of measurement of the color coordinates is ±0.01
5.  $\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity. It use many parameters that correspond to the CIE 1931 2°  
Tolerance of measurement of angle is ±10 degree.
6. Caution in ESD: Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
7. The dominant wavelength  $\lambda_d$  is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

### ■ Typical Optical/Electrical Characteristics Curves

(Ta=25°C Unless Otherwise Noted )

Fig.1 Forward current vs. Forward Voltage

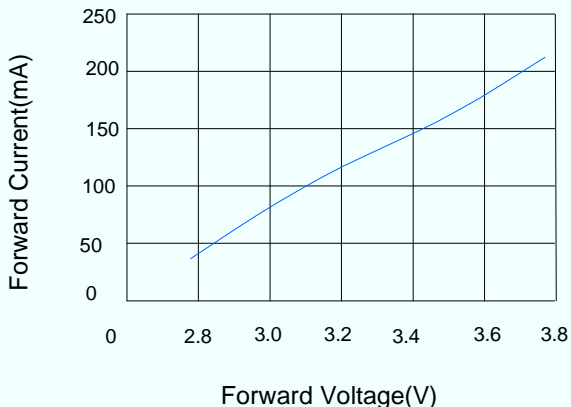
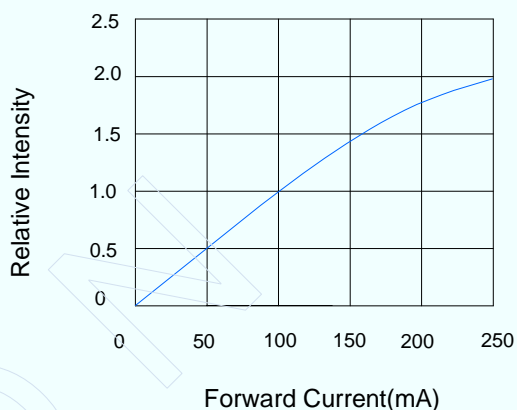
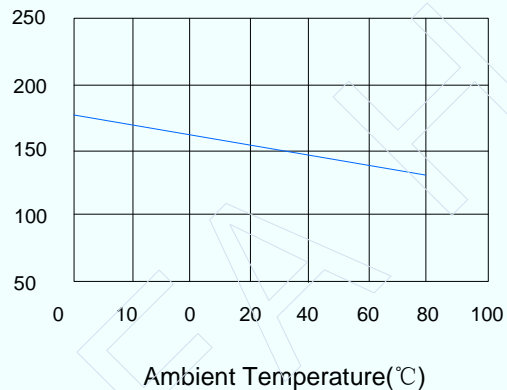


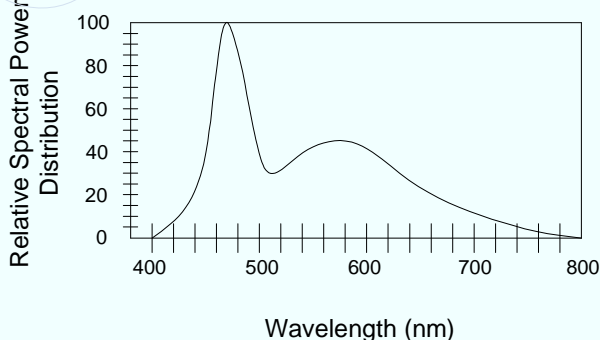
Fig.2 Relative Intensity vs. Forward Current



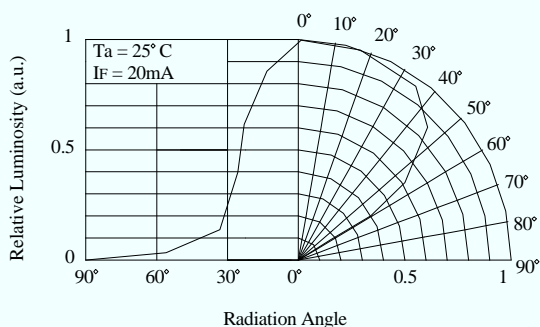
Allowable Forward Current IFP(mA)



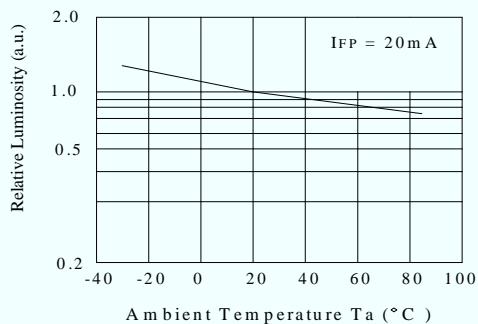
SPECTRAL RADIANCE



Directivity (Angle : 120° )



Ambient Temperature vs. Relative Luminosity



**CAUTIONS- Super Top LED****(1) Storage**

- a. Recommended storage condition: at 5°C-30°C or less and 60%RH and the storage life limits are 3 months.
- b. If the LEDs are stored more than 3 months, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- c. Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

**(2) use**

After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:

- a. Completed within 24 hours;
- b. Stored at less than 30% RH.
- c. Devices require baking before mounting, if:  
Don't conform to the above two points.
- d. If baking is required, devices must be baked under below conditions:  
12 hours at 60°C ± 3°C

**(3) Static Electricity**

- a. Static electricity or surge voltage damages the LEDs.
- b. It is recommended that a wristband or an anti-electrostatic glove be used when handling the LEDs.
- c. All devices, equipment and machinery must be properly grounded.
- d. It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.
- e. Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LEDs do not light at the low current.  
Criteria: (VF>2.0V at IF=0.5mA)

**(4) Heat Generation**

- a. Thermal design of the end product was most importance. Please consider the heat generation of the LED when making the system design.
- b. The thermal resistance of the circuit board and density of LED placement on the board, as well as other components was the important factor affecting the coefficient of temperature increase per input electric power. It must be avoid intense heat generation and operate within the maximum ratings given in the specification.  
The operating current should be decided after considering the ambient maximum temperature of LEDs.

**(5) Cleaning**

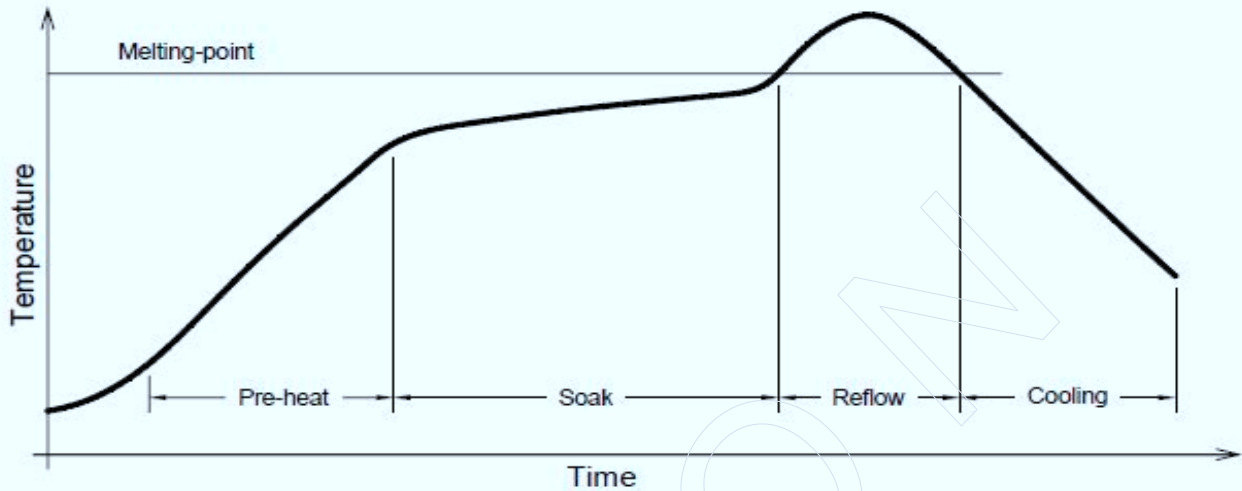
- a. It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations.
- b. Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs would occur.

**(6) Soldering Condition for LED Lamps**

- a. Manual Soldering with a Soldering Iron
  - Use of a soldering iron of less than 25 watts is recommended. The iron temperature must be kept below 315°C and soldering time no more than 2 seconds.
  - The epoxy resin of an SMD LED should not contact the tip of the soldering iron.
  - No mechanical stress should be exerted on the resin portion of an SMD LED during soldering.
  - Handling of an SMD LED should be done only when the package has been cooled down to below 40°C or less. This is to prevent SMDLED failures due to thermal-mechanical stress during handling.

### b. Reflow Soldering

Temperature (top surface of the SMD LED) profile:



Solder = Sn63-Pb37	Solder = Lead-Free
Average ramp-up rate = 4°C/sec. max.	Average ramp-up rate = 4°C/sec. max.
Preheat temperature: 100°~150°C	Preheat temperature: 150~200°C
Preheat time = 120 sec. max.	Preheat time = 120 sec. max.
Ramp-down rate = 6°C/sec. max.	Ramp-down rate = 6°C/sec. max.
Peak temperature = 230°C max.	Peak temperature = 250°C max.
Time within 5°C of actual peak temperature = 10 sec. max.	Time within 5°C of actual peak temperature = 10 sec. max.
Duration above 183°C is 60 sec. max.	Duration above 217°C is 60 sec. max.

Solder = Low Lead-Free
Average ramp-up rate = 3°C/sec. max.
Preheat temperature: 130°~170°C
Preheat time = 120 sec. max.
Ramp-down rate = 6°C/sec. max.
Peak temperature = 213°C max.
Time within 3°C of actual peak temperature = 25 sec. max.
Duration above 200°C is 40 sec. max.