Luckylight

1.30mm Height 2020 Package Top View 0.5W High Power White LED Technical Data Sheet

Part No.: LL-HPR5050W6C

Features:

- ◇ P-LCC-6 package.
- ◇ Low profile.
- ◇ Colorless clear window.
- ◇ Super luminosity LED.
- ◇ Several colors available.
- ◇ Wide viewing angle.
- ◇ High performance.
- ◇ Small size (L×W×H: 5.00mm×5.00mm×1.30mm).
- ◇ Industry standard footprint.
- ◇ Computable with automatic placement equipment.
- ◇ Soldering methods: Reflow Soldering.
- ◇ The product itself will remain within RoHS compliant Version.

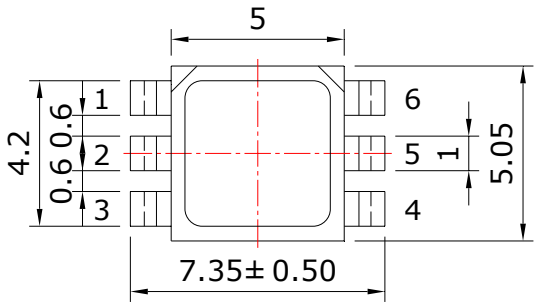
Descriptions:

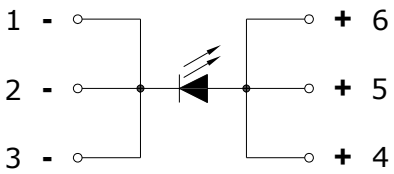
- ◇ The HPR5050 is available in soft red, orange, yellow, green, blue and white. Due to the Package design, the LED has wide viewing angle and optimized light coupling by inter reflector, this feature makes the SMT TOP LED ideal for light pipe Application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

Applications:

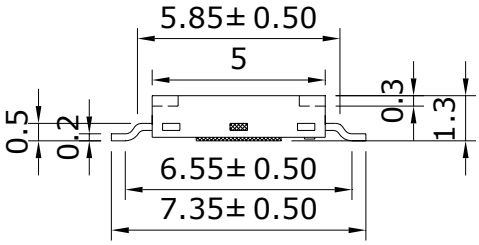
- ◇ Reading lights (car, bus, aircraft).
- ◇ Portable (flashlight, bicycle).
- ◇ Mini-accent / Up lighters / Down lighters / Orientation.
- ◇ Bollards / Security / Garden.
- ◇ Cove / Under shelf / Task.
- ◇ Automotive rear combination lamps.
- ◇ Traffic signaling / Beacons / Rail crossing and Wayside.
- ◇ Indoor / Outdoor Commercial and Residential Architectural.
- ◇ Edge-lit signs (Exit, point of sale).
- ◇ LCD Backlights / Light Guides.

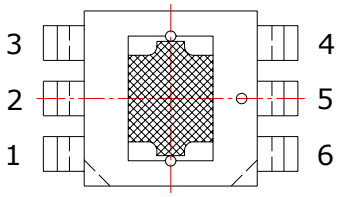
Package Dimension:



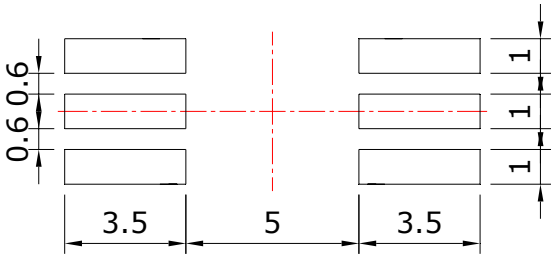


Polarity





Recommended Soldering Pad dimensions



Unit: mm
Tolerance: ± 0.10mm

Part No.	Chip Material	Lens Color	Source Color
LL-HPR5050W6C	InGaN	Yellow Diffused	Warm White

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010”) unless otherwise specified.
3. Specifications are subject to change without notice.

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Max.	Unit
Power Dissipation	PD	760	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	300	mA
Forward Current	IF	200	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge (HBM)	ESD	800	V
Operating Temperature Range	Topr	-40℃ to +80℃	
Storage Temperature Range	Tstg	-40℃ to +85℃	
Soldering Temperature	Tsld	260℃ for 5 Seconds	

Electrical Optical Characteristics at Ta=25℃

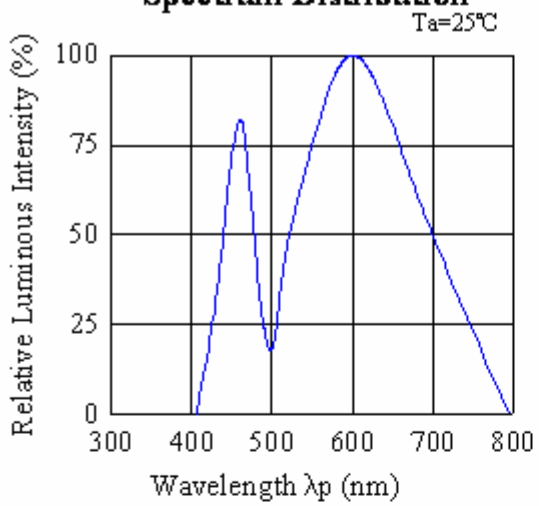
Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	IV	8000	12000	---	mcd	IF=150mA (Note 1)
Luminous Flux	Φv	25	30	---	lm	IF=150mA (Note 1)
Viewing Angle	2θ1/2	---	120	---	Deg	IF=150mA (Note 2)
Chromaticity Coordinates	x	---	0.43	---		IF=150mA (Note 3)
	y	---	0.40	---		
Color Temperature	CCT	2700	3,000	3800	K	IF=150mA
Forward Voltage	VF	3.00	3.40	3.80	V	IF=150mA
Reverse Current	IR	---	---	100	μA	V_R=5V

Notes:

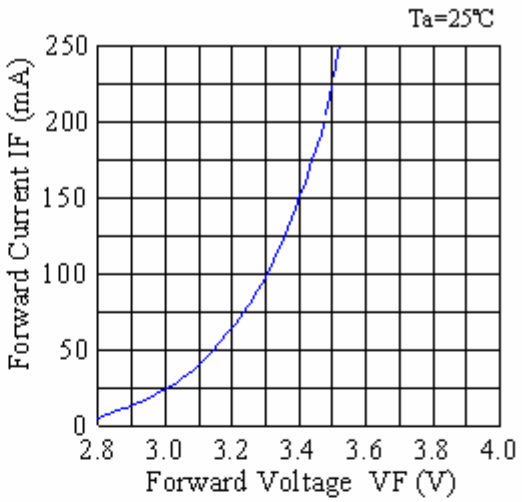
1. Luminous Intensity (Flux) Measurement allowance is ± 10%.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. It use many parameters that correspond to the CIE 1931 2°. X, Y, and Z are CIE 1931 2° values of Red, Green and Blue content of the measurement.

Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

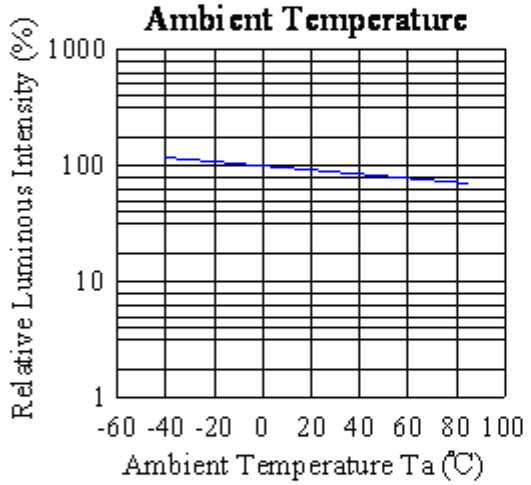
Spectrum Distribution



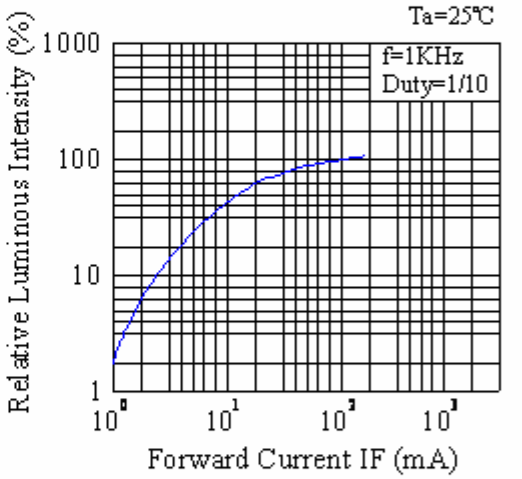
Forward Current & Forward Voltage



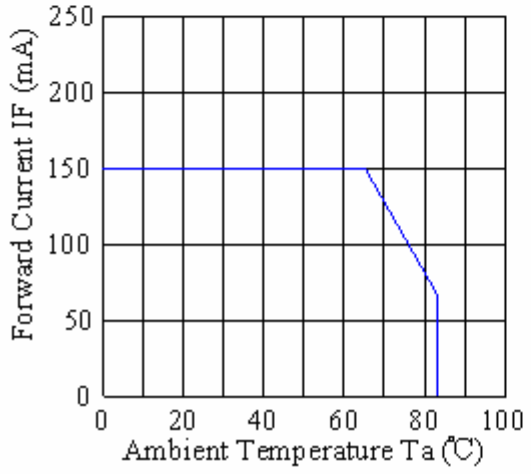
Luminous Intensity & Ambient Temperature



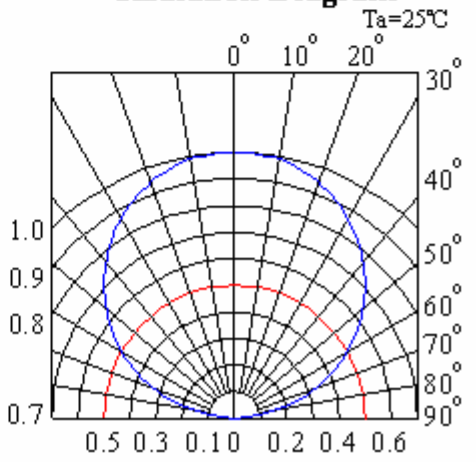
Luminous Intensity & Forward Current



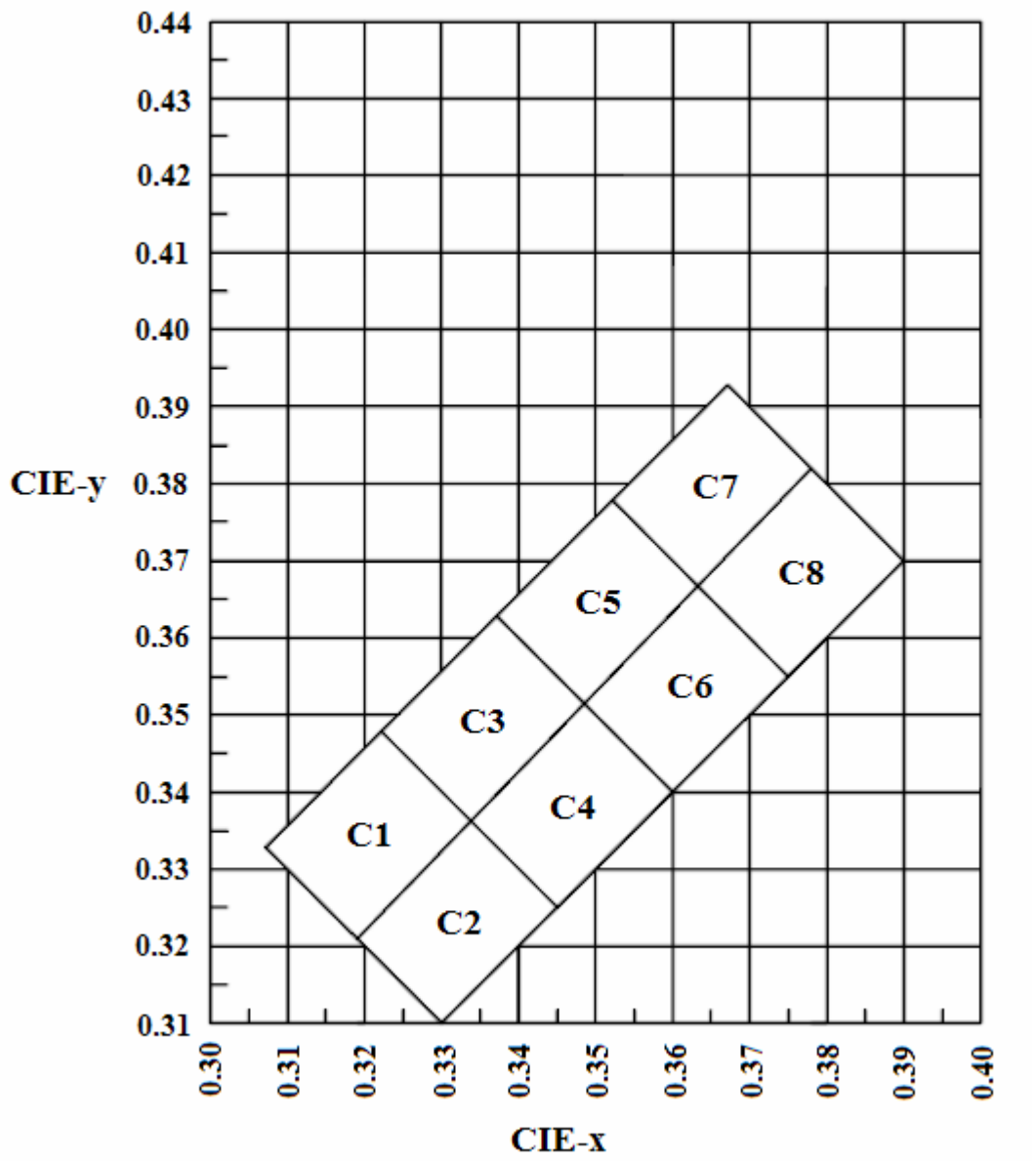
Forward Current Derating Curve



Radiation Diagram



CIE Chromaticity Diagram:



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Chromaticity Coordinates Specifications for Bin Rank (IF=150mA):

Code	Sub-bin	Chromaticity Coordinates	1	2	3	4
	Full	X	0.2700	0.3220	0.3440	0.2713
		y	0.2650	0.3480	0.3320	0.2396
A	A1	X	0.2700	0.2810	0.2713	0.2600
		y	0.2650	0.2560	0.2396	0.2486
	A2	X	0.2810	0.2920	0.2821	0.2713
		y	0.2560	0.2480	0.2311	0.2396
	A3	X	0.2700	0.2800	0.2910	0.2810
		y	0.2650	0.2820	0.2730	0.2560
	A4	X	0.2810	0.2910	0.3020	0.2920
		y	0.2560	0.2730	0.2650	0.2480
B	B1	X	0.2800	0.2880	0.2990	0.2910
		y	0.2820	0.2940	0.2860	0.2730
	B2	X	0.2910	0.2990	0.3100	0.3020
		y	0.2730	0.2860	0.2770	0.2650
	B3	X	0.2880	0.2960	0.3070	0.2990
		y	0.2940	0.3070	0.2980	0.2860
	B4	X	0.2990	0.3070	0.3180	0.3100
		y	0.2860	0.2980	0.2900	0.2770
	B5	X	0.2960	0.3040	0.3150	0.3070
		y	0.3070	0.3190	0.3110	0.2980
	B6	X	0.3070	0.3150	0.3260	0.3180
		y	0.2980	0.3110	0.3030	0.2900
	B7	X	0.3040	0.3120	0.3230	0.3150
		y	0.3190	0.3310	0.3230	0.3110
	B8	X	0.3150	0.3230	0.3340	0.3260
		y	0.3110	0.3230	0.3150	0.3030
C	C1	X	0.3120	0.3220	0.3330	0.3230
		y	0.3310	0.3480	0.3400	0.3230
	C2	X	0.3230	0.3330	0.3440	0.3340
		y	0.3230	0.3400	0.3320	0.3150

Reliability Test Items and Conditions:

The reliability of products shall be satisfied with items listed below:

Confidence level: 90%.

LTPD: 10%.

1) Test Items and Results:

No.	Test Item	Test Hours/Cycles	Test Conditions	Sample Size	Ac/Re
1	Resistance to Soldering Heat	6 Min	Tsld=260±5℃, Min. 5sec	25pcs	0/1
2	Thermal Shock	300 Cycles	H: +100℃ 5min ∫ 10 sec L: -10℃ 5min	25pcs	0/1
3	Temperature Cycle	300 Cycles	H: +100℃ 15min ∫ 5min L: -40℃ 15min	25pcs	0/1
4	High Temperature Storage	1000Hrs.	Temp: 100℃	25pcs	0/1
5	DC Operating Life	1000Hrs.	IF=150mA	25pcs	0/1
6	Low Temperature Storage	1000Hrs.	Temp: -40℃	25pcs	0/1
7	High Temperature/ High Humidity	1000Hrs.	85℃/85%RH	25pcs	0/1

2) Criteria for Judging the Damage:

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	VF	IF=150mA	---	F.V.*)×1.1
Reverse Current	IR	VR=5V	---	F.V.*)×2.0
Luminous Intensity	IV	IF=150mA	F.V.*)×0.7	---

*) F.V.: First Value.

Please read the following notes before using the product:

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30℃ or less and 90%RH or less.

2.3 The LEDs should be used within a year.

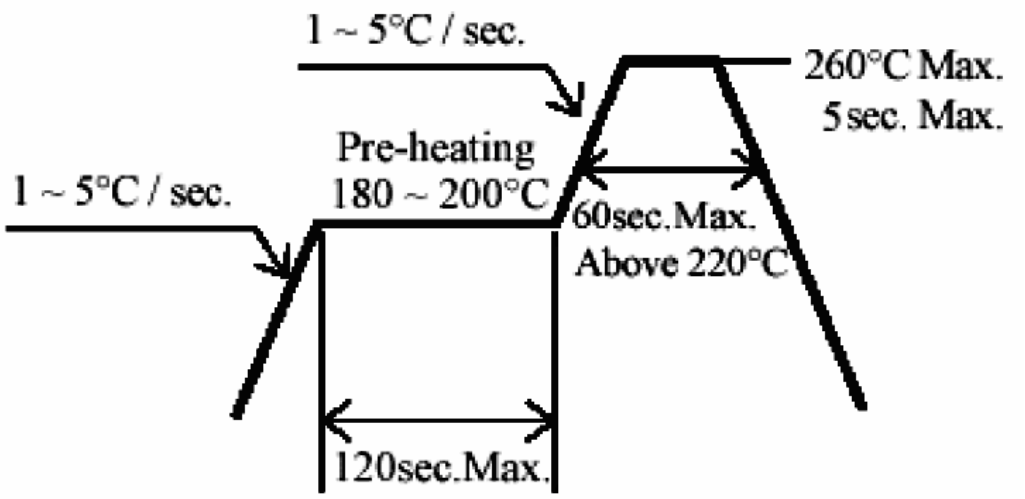
2.4 After opening the package, the LEDs should be kept at 30℃ or less and 70%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture adsorbent material (silica gel) has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5℃ for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile.



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

3.3 When soldering, do not put stress on the LEDs during heating.

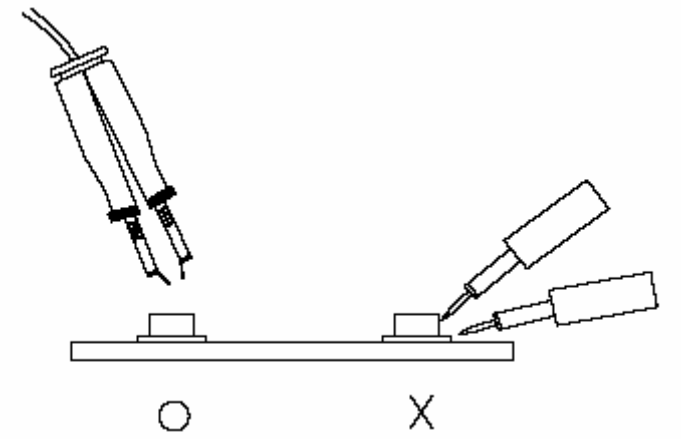
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260℃ for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. 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 the LEDs will or will not be damaged by repairing.



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.