



Lighting Design Manufacturing Service

www.edison-opto.com

PLCC Series

ET-5050x-BF6W-85

Datasheet

Features :

- High luminous Intensity and high efficiency
- Based on GaN technology
- Wide viewing angle : 120°
- Excellent performance and visibility
- Suitable for all SMT assembly methods
- IR reflow process compatible
- Environmental friendly; RoHS compliance

Typical Applications

- Signal and symbol luminaire
- Indoor displays
- Backlighting (illuminated advertising, general lighting)
- Interior automotive lighting
- Emergency lighting



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Table of Contents

General Information	3
Introduction	3
Product Nomenclature	3
Mechanical Dimensions	4
Absolute Maximum Ratings	5
Characteristics	6
Optical Characteristics	6
Electrical Characteristics	6
Characteristic Curves	7
Spectrum	7
Radiation Diagram	7
Luminous Flux & Forward Current	7
Forward Voltage & Forward Current	7
CCT & Forward Current	8
Revision History	9
About Edison Opto	9



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General Information

Introduction

High power PLCC is a surface mount, compact, high brightness LED that is built for various illumination needs. A single Cool White high power PLCC can deliver typical luminous flux of 115 lm while driving at 60mA suitable for any kind of lighting sources, including general illumination, flashlights, spotlights, tube light source, freezer lighting, industrial and commercial lightings. The small physical dimension can free customers from any constraints or limitations in these fields of applications. Furthermore, the reflow-solderable nature of high power PLCC provides an easy path towards the optimum thermal management to achieve a promising reliability.

Product Nomenclature

The following table describes the available color, power, and lens type. For more flux and forward voltage information, please consult the Bin Group document.

Table 1. PLCC 5050 series Nomenclature

ET		5050		W		-	B		F		6		W		-	85	
X1		X2		X3			X4		X5		X6		X7			X8	
X1 LED Item		X2 Package Type		X3 Emitting Color		X4 Chip Quantity		X5~X6 Serial Number									
Code	Type	Code	Type	Code	Type	Code	Type	Code	Type	Code	Type	Code	Type	Code	Type	Code	Type
ET	Edison Top LED	5050	5.0x5.0mm	W	Cool White	B	1W										
				H	Neutral White												
				X	Warm White												
X7 Feature		X8 Serial Number															
Code	Type	Code	Type														
W	White Surface	-	-														

Mechanical Dimensions

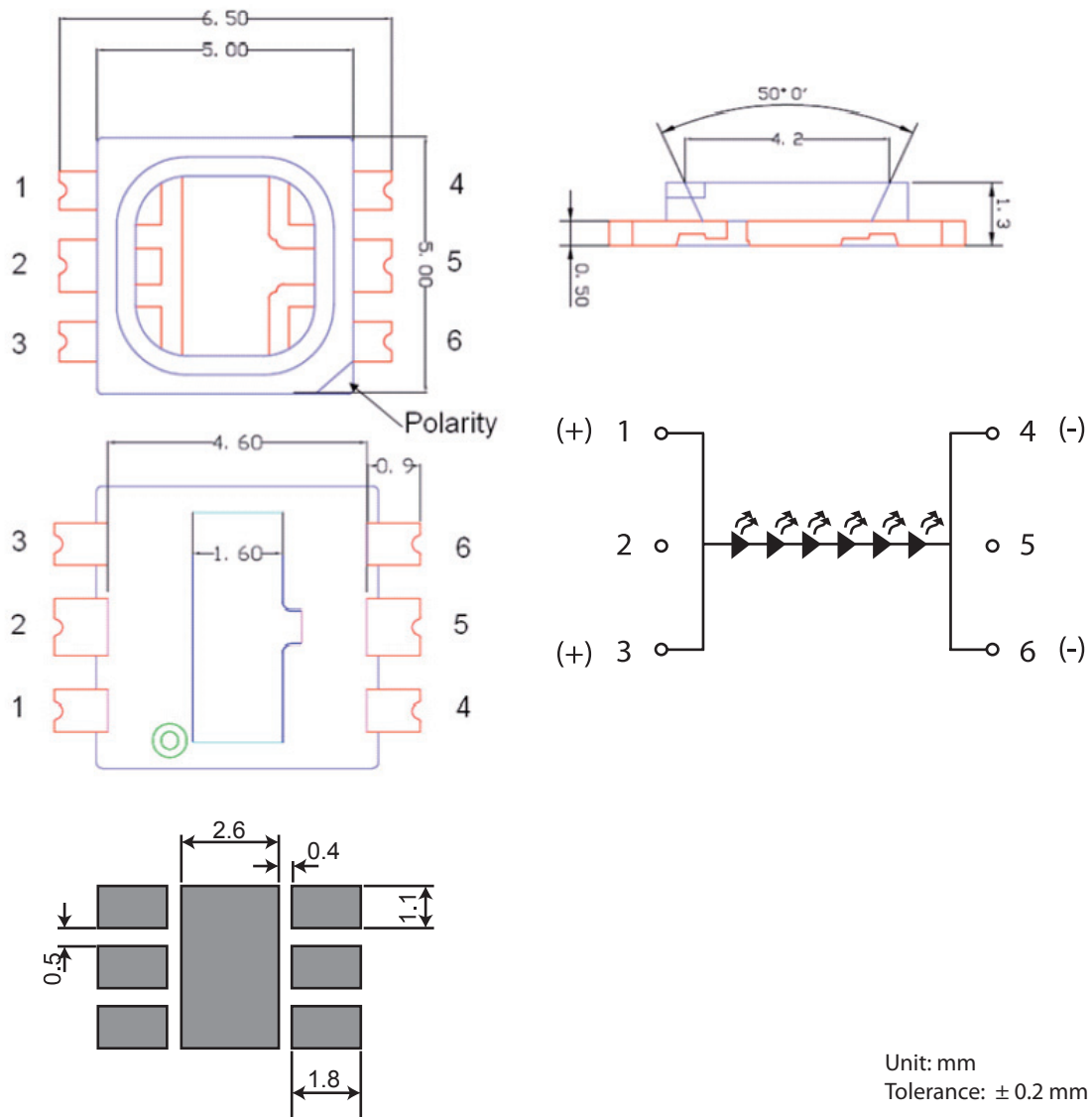


Figure 1. 5050x PLCC Dimension, circuit diagram and recommended soldering pad

Notes:

- 1W PLCC slug has no polarity.
- It is important that the slug cannot contact aluminum surface, it is strongly recommended that there should coat a uniform electrically isolated heat dissipation film on the aluminum surface.

Absolute Maximum Ratings

The following table describe absolute maximum ratings of PLCC 5050 series.

Table 2. Absolute maximum ratings for PLCC 5050 series

Test	Parameter	Units	Symbol
Forward Voltage	20	V	V_F
DC Forward Current	60	mA	I_F
Peak pulse current;(tp100μs, Duty cycle=0.25)	100	mA	T_J
LED junction Temperature ³	125	°C	
Operating Temperature	-40 ~ +80	°C	
Storage Temperature	-40 ~ +100	°C	
Soldering Temperature	260	°C	
Manual Soldering Time at 260°C(Max.)	5	Sec	
ESD Sensitivity	2,000	V	V_B

Notes:

1. DC forward current should not exceed LED's operating current; the current tolerance should be kept within a range of 5%.
2. LEDs are not designed to be driven in reverse bias.
3. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
4. tp: Pulse width time condition: pulse width ≤ 0.1 msec and duty $\leq 1/10$.

Luminous Flux Characteristics

The following table describes luminous flux characteristics of PLCC 5050 series.

Table 3. Luminous Flux characteristics.at $I_F=60$ mA for PLCC 5050 series

Part Name	Color	Min Luminous Flux@350mA		Unit
		Group	Flux	
ET-5050W-BF6W-85	Cool White	U3	100	lm
		V1	112.5	
		V2	129.4	
ET-5050H-BF6W-85	Neutral White	U3	100	lm
		V1	112.5	
		V2	129.4	
ET-5050X-BF6W-85	Warm White	U3	100	lm
		V1	112.5	
		V2	129.4	

Note:

The luminous flux performance is guaranteed within published operating conditions. Edison maintains a tolerance of $\pm 10\%$ on flux measurements.

Characteristics

Optical Characteristics

Table 4. PLCC color temperature or CRI characteristics.

Part Name	Color	CCT/Wavelength (K)			Min.CRI	Viewing Angle (Degree)
		Min.	Typ.	Max.		
ET-5050W-BF6W-85	Cool White	5,000	--	10,000	85	120
ET-5050H-BF6W-85	Neutral White	3,800	--	5,000	85	120
ET-5050X-BF6W-85	Warm White	2,670	--	3,800	85	120

Note:

Edison maintains a tolerance of $\pm 5\%$ on CCT measurement and ± 5 on CRI

Electrical Characteristics

Table 5. PLCC voltage and thermal resistance characteristics.

Part Name	Color	V_F			Forward Current (mA)	Thermal Resistance ($^{\circ}\text{C}/\text{W}$)
		Min.	Typ.	Max.		
ET-5050W-BF6W-85	Cool White	--	18.2 $\pm$ 1.8	--	60	10
ET-5050H-BF6W-85	Neutral White	--	18.2 $\pm$ 1.8	--	60	10
ET-5050X-BF6W-85	Warm White	--	17.5 $\pm$ 1.8	--	60	10

Note:

* Forward voltage measurement allowance is $\pm 1.0\text{ V}$.

Forward Voltage Bin Group

Table 6. PLCC voltage bin group

Part Name	Forward Voltage@60mA		Unit
	Group	Voltage	
ET-5050x-BF6W-85	VSC	16.5~17.0	V
	VSD	17.0~17.5	
	VSE	17.5~18.0	
	VSF	18.0~18.5	
	VSG	18.5~19.0	
	VSH	19.0~19.5	
	VSI	19.5~20.0	

Characteristic Curves

Radiation Diagram

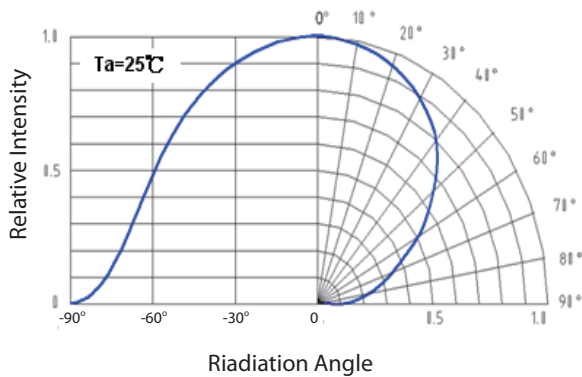


Figure 2. Emission Angle

Forward Voltage & Forward Current

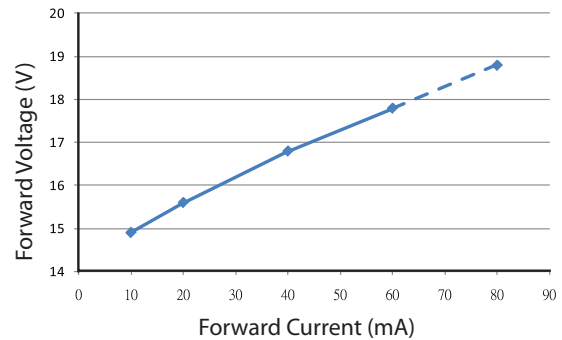


Figure 3. Forward current & forward voltage for PLCC

Luminous Flux & Forward Current

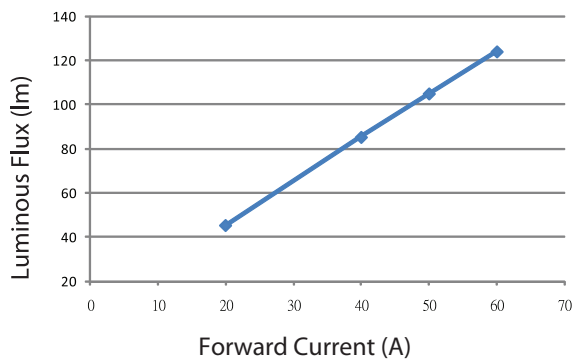


Figure 4. Forward current & relative luminous at $T_a=25^{\circ}\text{C}$ for PLCC

CCT & Forward Current

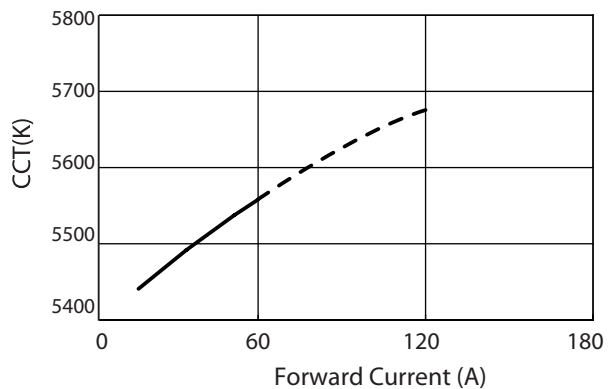


Figure 5. Forward current & CCT at $T_a=25^{\circ}\text{C}$ for 1.1W PLCC Cool White

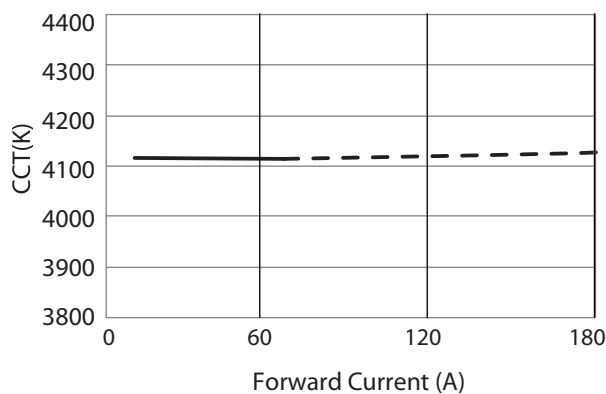


Figure 6. Forward current & CCT at $T_a=25^{\circ}\text{C}$ for PLCC Neutral White

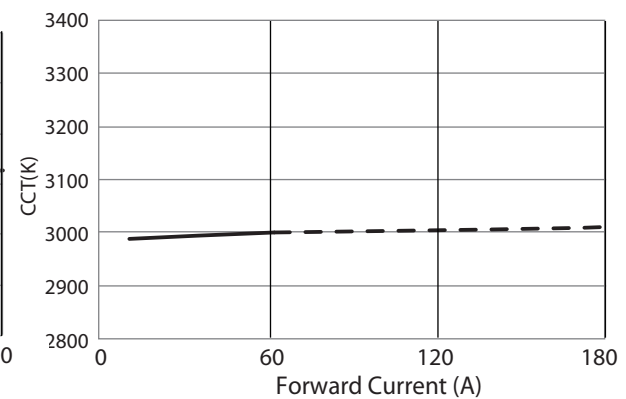


Figure 7. Forward current & CCT at $T_a=25^{\circ}\text{C}$ for PLCC Warm White

Spectrum

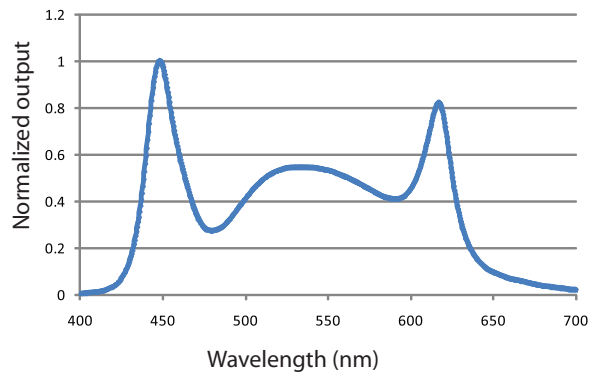


Figure 8. Spectrum for PLCC Cool White

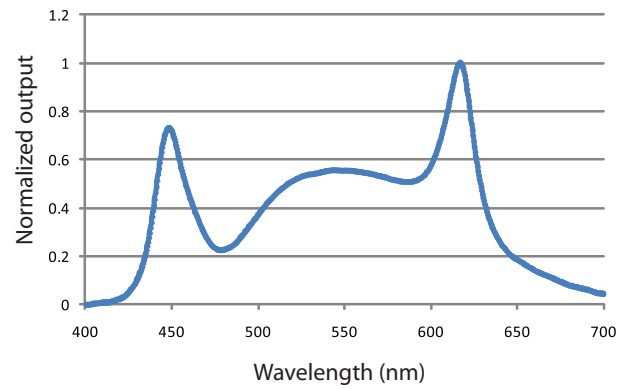


Figure 9. Spectrum for PLCC Neutral White

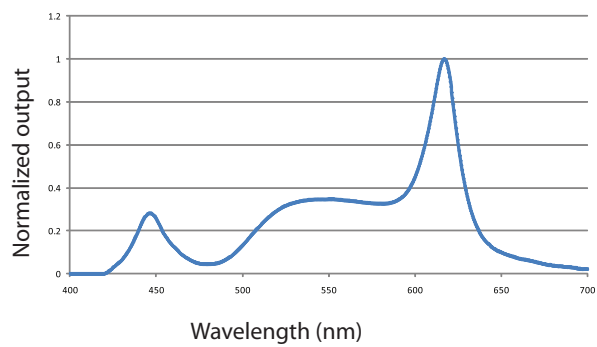


Figure 10. Spectrum for PLCC Warm White

Revision History

Table 7. Revision history of ET-5050x-BF6W-85 series datasheet

Version	Description	Release Date
1	1. Establish a datasheet	2012/01/16
2	1. Update Characteristic Curves on p.7	2012/02/02

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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