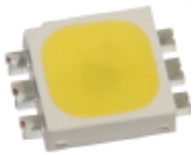
EDISON
Lighting Design Manufacturing Service

PLCC Series

ET-5050 1W HR 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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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 constrains 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.

Ordering Code Format

2	T	x x	x x	x x	x x	0 0 0	x x x
X1	X2	X3-X4	X5-X6	X7-X8	X9-X10	X11-X13	X14-X16

X1		X2		X3-X4		X5-X6		X7-X8	
Type		Component		Series		Wattage		Color	
2	Emitter	T	PLCC	01	3014	01	1W	CW	Cool White
				03	3528	X1	0.1W	NW	Neutral White
				04	5050	X2	0.2W	WW	Warm White
				05	5630	X5	0.5W	RX	Red
						Y6	0.06W	TX	True Green
								BX	Blue
								AX	Amber
								YX	Yellow
								OX	Red Orange
								M1	RGB

X9-X10		X11-X13		X14-X16	
Internal code		PCB Board		Serial Number	
-	-	000	-	-	-

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Absolute Maximum Ratings

Parameter	Symbol	Value	Units
DC Forward Current	I_F	60	mA
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	I_{pulse}	100	mA
Reverse Voltage	V_R	5	V
LED Junction Temperature	T_J	125	°C
Operating Temperature	-	-40 ~ +85	°C
Storage Temperature	-	-40 ~ +120	°C
ESD Sensitivity (HBM)	V_B	2,000	V
Soldering Temperature	T_S	Reflow Soldering : 255~260°C/10~30sec Manual Soldering : 350°C/3sec	

Absolute maximum ratings (T_a=25°C)
Notes:
1. The values are based on 1-die performance.
2.* I_{FP} condition: pulse width ≤0.1msec and duty ≤1/10.

Characteristics

Parameter		Symbol	Value	Units
Viewing Angle	(Typ.)	$2\Theta_{1/2}$	120	Degree
Forward voltage		V_F	20	V
Thermal resistance		-	10	°C/W
CRI		-	85	-
CCT/Wavelength	(Cool White) (Neutral White) (Warm White)	-	5000-10000 3800-5000 2670-3800	K

Note:
1. $2\theta_{1/2}$ is the off-axis angle where the luminous intensity is half of the axial luminous intensity.
2. Edison maintains a tolerance of +/-2 on CRI measurements.

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Luminous Flux Characteristic

Luminous Flux Characteristics, I_F=60mA and T_J=25˚C

Color	Group	Min. Luminous Flux(lm)@60mA	Max. Luminous Flux(lm)@60mA	Order Code
Cool White	U3	100	110	2T0401CW11000001
	V1	110	120	
Neutral White	U3	100	110	2T0401NW11000001
	V1	110	120	
Warm White	U3	100	110	2T0401WW05000004
	V1	110	120	
	V2	120	130	

Note:
The luminous flux performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of ±10% on flux measurements.

Voltage Bin Structure

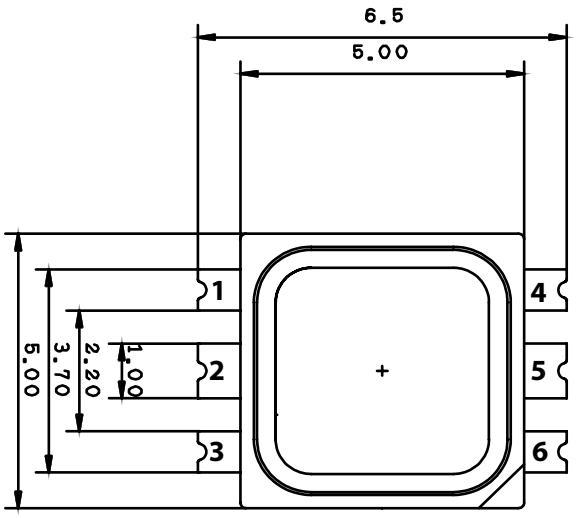
Group	Min. Voltage (V)	Max. Voltage (V)
V16	16	17
V17	17	18
V18	18	19
V19	19	20

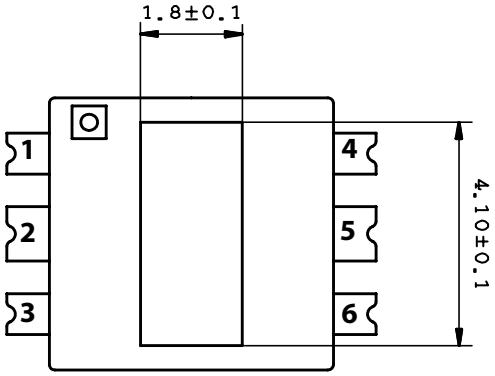
Note:
Forward voltage measurement allowance is ± 0.1V.

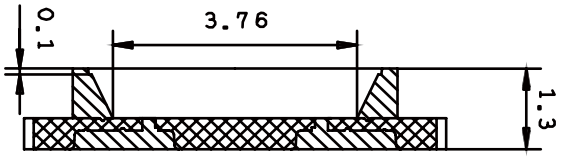
Mechanical Dimensions

Emitter Type Dimension

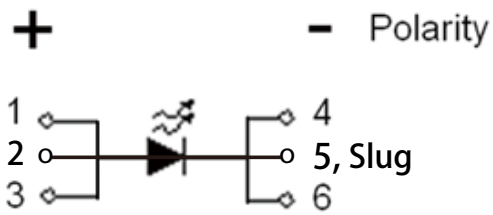
Unit: mm
Tolerance: ±0.2mm



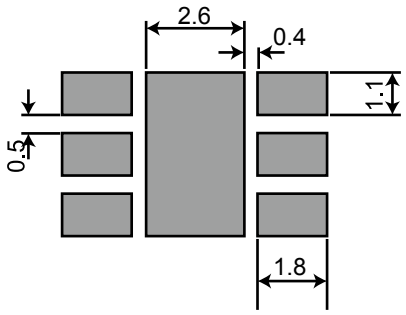




Circuit



Solder Pad



Notes:
1. All dimensions are measured in mm.
2. Tolerance : ± 0.2 mm
3. PLCC Slug without polarity.

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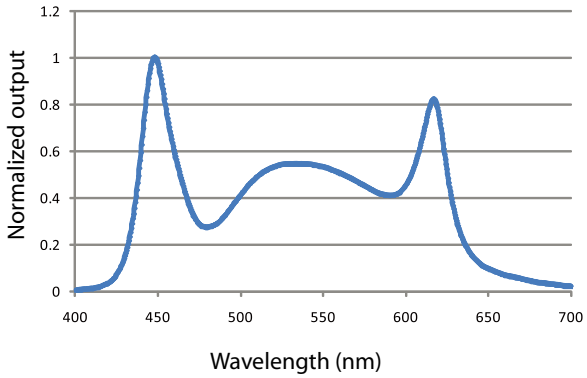
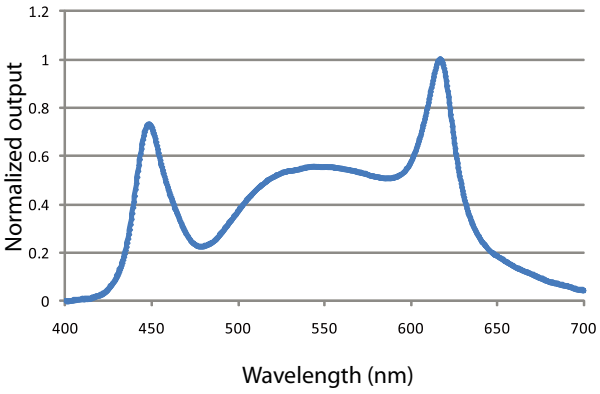
Characteristic Curves

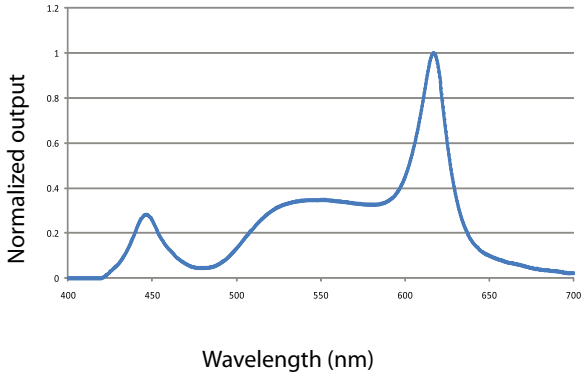
Spectrum



Spectrum for PLCC Cool White

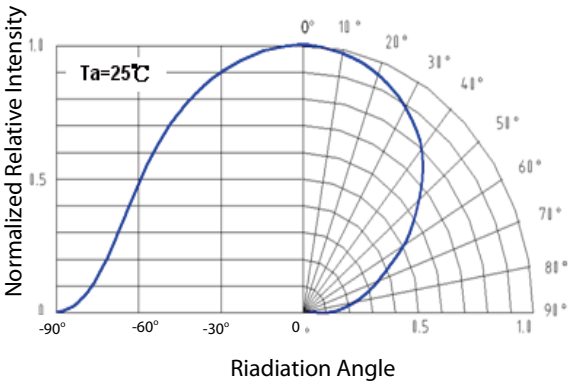


Spectrum for PLCC Neutral White



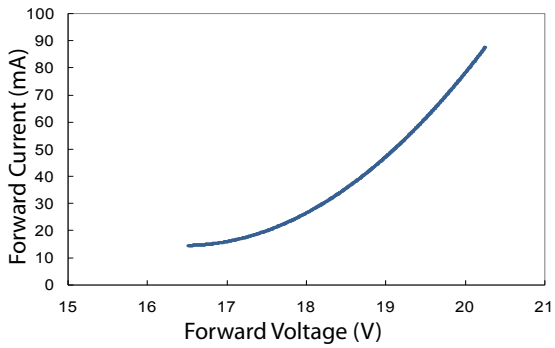
Spectrum for PLCC Warm White

Radiation Diagram



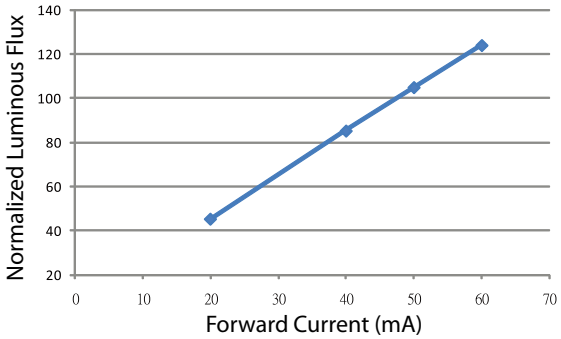
Emission Angle

Forward Voltage vs. Forward Current



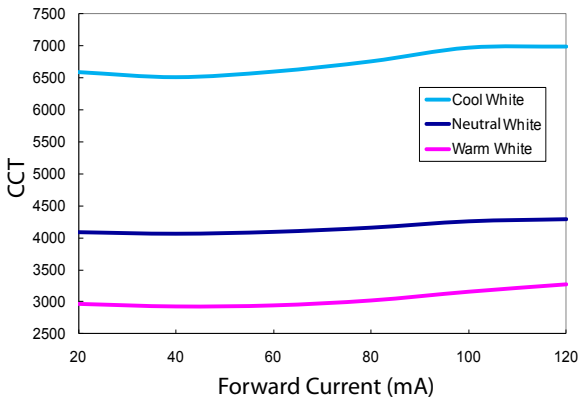
Forward current vs. forward voltage for 1W PLCC 5050

Luminous Flux vs. Forward Current



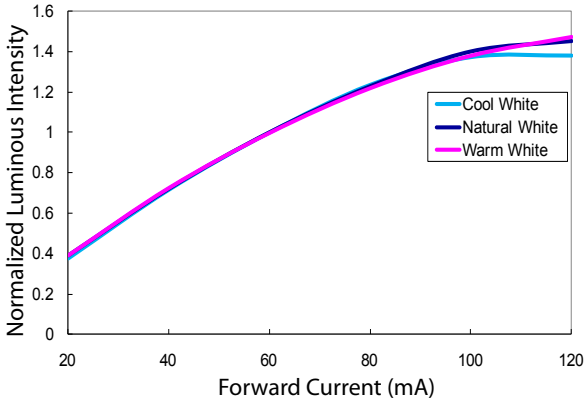
Forward current vs. luminous flux at T_a=25°C for 1W PLCC 5050

CCT vs. Forward Current



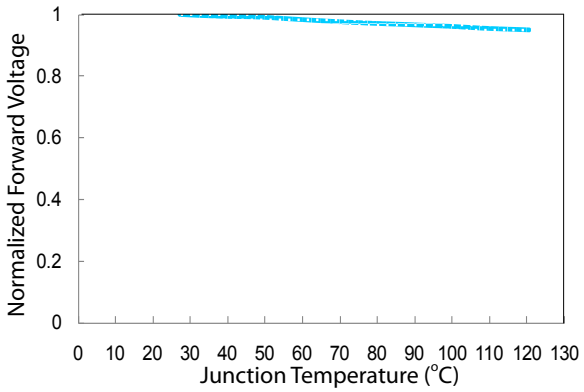
Forward current vs. CCT at Ta =25°C for 1W PLCC 5050

Luminous Intensity vs. Forward Current



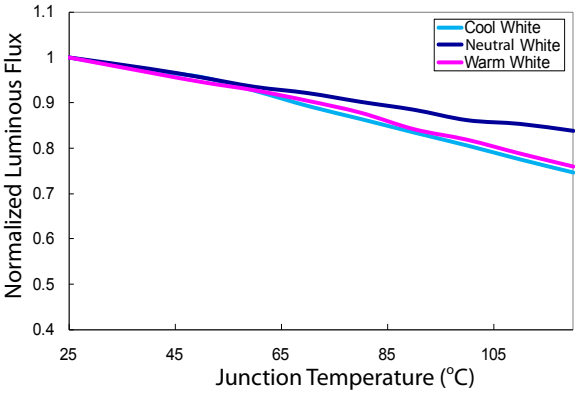
Luminous Intensity vs. Forward Current for 1W PLCC 5050

Forward voltage vs. Junction temperature



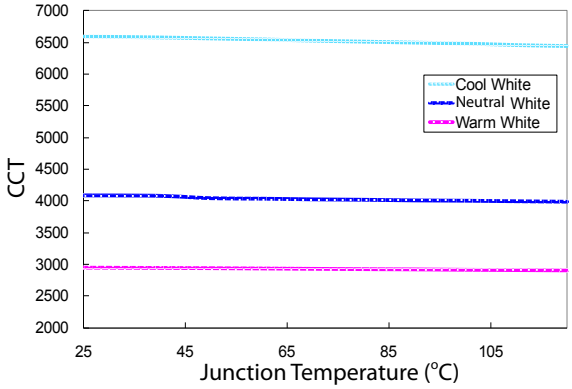
Forward voltage vs. Junction temperature for 1W PLCC 5050

Luminous Flux vs. Junction temperature



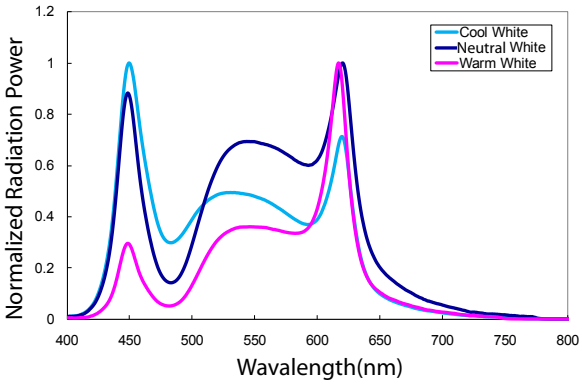
Luminous Flux vs. Junction temperature for 1W PLCC 5050

CCT vs. Junction temperature



CCT vs. Junction temperature for 1W PLCC 5050

Radiation Power vs. Wavelength



Radiation power vs. Wavelength for 1W PLCC 5050

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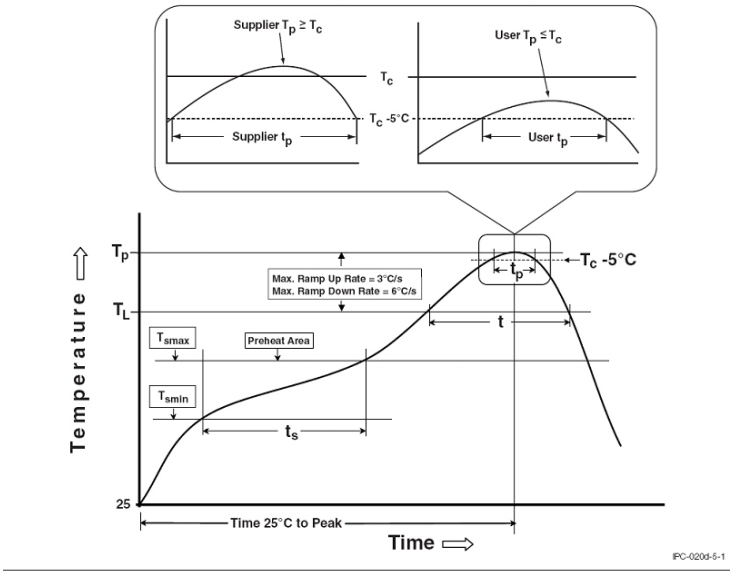
Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Reflow Profiles

Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (Tsmin) Temperature max (Tsmax) Time (Tsmin to Tsmax) (ts)	150 °C 200 °C 60-120 seconds
Average ramp-up rate (Tsmax to Tp)	3 °C/second max.
Liquidous temperature (TL) Time at liquidous (tL)	217 °C 60-150 seconds
Peak package body temperature (Tp)*	255 °C ~260 °C *
Classification temperature (Tc)	260 °C
Time (tp)** within 5 °C of the specified classification temperature (Tc)	30** seconds
Average ramp-down rate (Tp to Tsmax)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:
1. * Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.
2. ** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.

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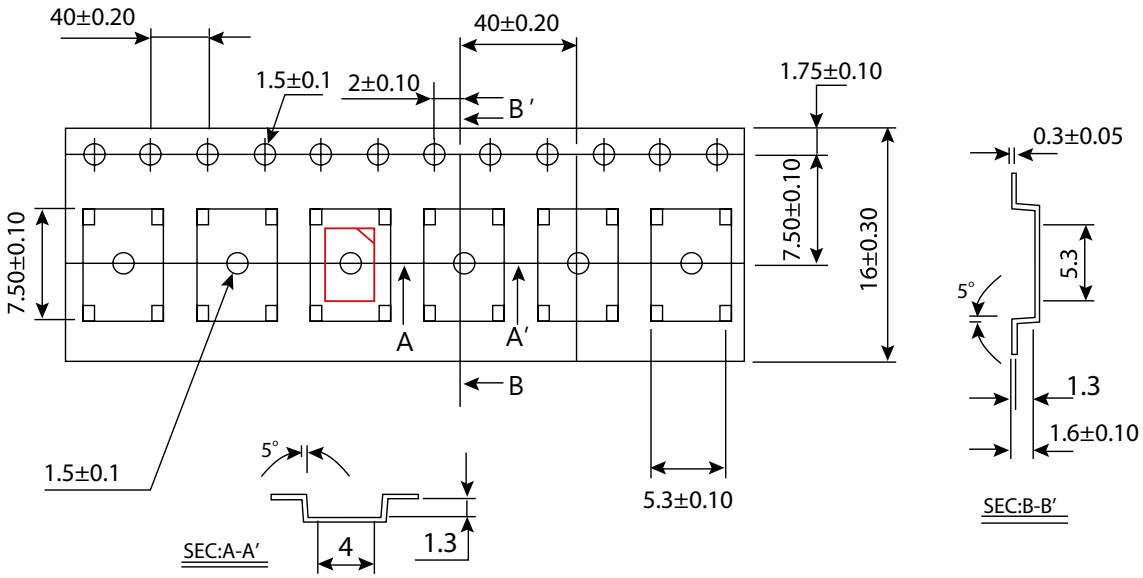
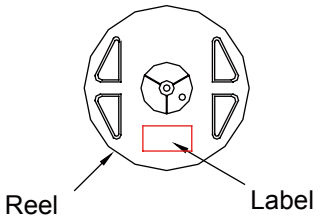
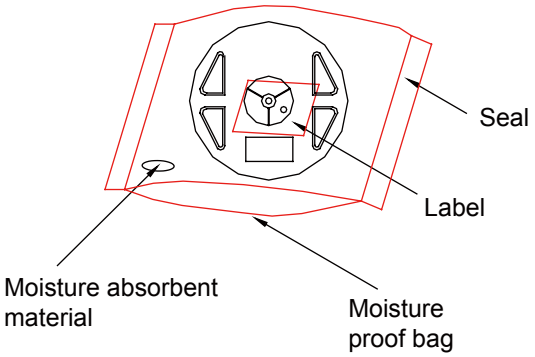
Product Packaging Information





Taping reel dimensions



Package & label

Item	Quantity	Total	Dimensions(mm)
Reel	1,000pcs	1,000pcs	R=178
Box	3 Reels	3,000pcs	240*235*67
Carton	10 boxes	30,000pcs	500*260*355
Starting with 50pcs empty,and 50pcs empty at the last			

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Revision History

Versions	Description	Release Date
1	Establish order code information	2012/11/26
2	Add the Characteristic Curve	2013/04/11
3	1. Add tolerance on CRI measurements 2. Update mechanical dimensions	2013/10/24

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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