Lighting Design Manufacturing Service

www.edison-opto.com

PLCC Series

ET-3014x-1F1W Datasheet

Features :

- High luminous Intensity and high efficiency
- Based on Blue/Green : InGaN
- 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 Lighting
- Backlighting (illuminated advertising, general lighting)

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General Information

Introduction

Ultra high luminous efficacy, combined with the flexibility in design due to its slim and miniature size, PLCC LED Series are optimized to be used as backlight for LCD display and portable computers.

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 3014 series Nomenclature

ET	3014	x	-	1	F	1	W
X1	X2	X3		X4	X5	X6	X7

X1 LED Item		X2 Module		X3 Emitting Color		X4 Chip Quantity		X5~X6 Serial No.	
Code	Type	Code	Type	Code	Type	Code	Type	Code	Type
ET	Edison Top LED	3014	3.0x1.4mm	W	Cool White	1	1pcs	--	--
				H	Neutral White				
				X	Warm White				

	X7 Feature
Code	Type
W	White surface

Mechanical Dimensions

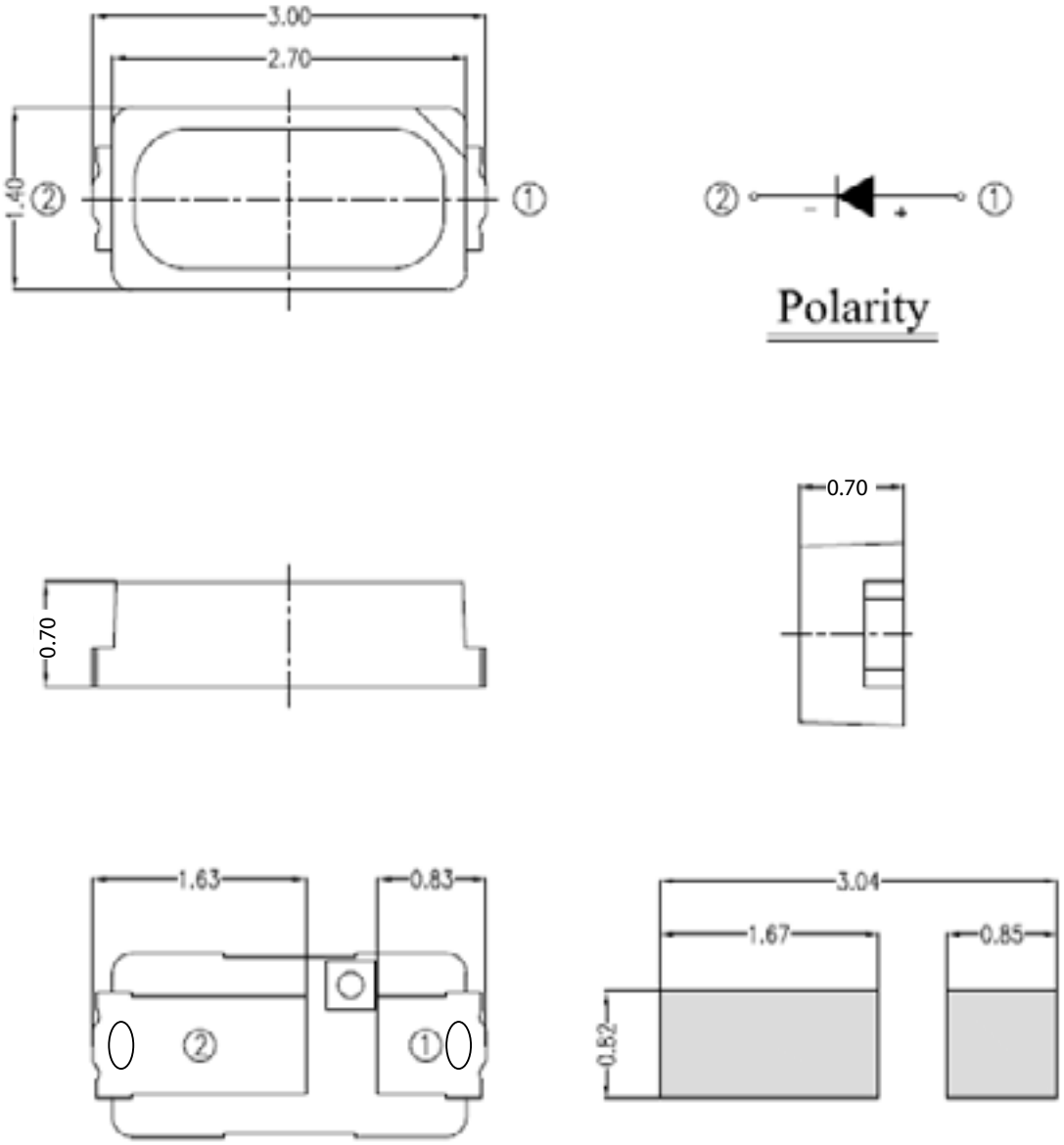

Figure 1. PLCC 3014 series circuit diagram

Notes:
1. All dimensions are measured in mm.
2. Tolerance : ± 0.20 mm

Absolute Maximum Ratings

The following table describe absolute maximum ratings of PLCC 3014 series.

Table 2. Absolute maximum ratings for PLCC 3014 series

Parameter	Rating	Units	Symbol
Forward Current	30	mA	I_F
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	100	mA	
Forward Voltage	3.6	V	V_F
LED Junction Temperature	125	°C	T_J
Operating Temperature	-40 ~ +80	°C	
Storage Temperature	-40 ~ +80	°C	
Soldering Temperature	260	°C	
Manual Soldering at 350°C(Max.)	3	Sec	

Notes:
1. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
2. LEDs are not designed to be driven in reverse bias.
3. tp: Pulse width time

Luminous Intensity Characteristic

The following table describes luminous intensity of PLCC 3014 series.

Table 3 . Luminous intensity characteristics at I_F=30mA and Ta=25°C for PLCC 3014 series

Part Name	Color	Luminous intensity(mcd)			Luminous Flux Typ.(lm)	Forward Current (mA)
		Group	Min.	Max.		
ET-3014W-1F1W	Cool White	L34	3,400	3,800	9.8~12.6	30
		L38	3,800	4,200		
ET-3014H-1F1W	Neutral White	L34	3,400	3,800	9.8~12.6	30
		L38	3,800	4,200		
ET-3014X-1F1W	Warm White	L30	3,000	3,400	8.7~10.5	30
		L34	3,400	3,800		

Note:
Luminous intensity is measured with an accuracy of ± 10%

Characteristics

Optical Characteristics

The following table describes luminous intensity of PLCC 3014 series.

Table 4 . Optical characteristics at I_F=30mA and Ta=25°C for PLCC 3014

Part Name	Color	V_F (V)			CRI	Viewing Angle (Degree)
		Min.	Typ.	Max.		
ET-3014W-1F1W	Cool White	3.0	--	3.6	75	120
ET-3014H-1F1W	Neutral White	3.0	--	3.6	75	120
ET-3014X-1F1W	Warm White	3.0	--	3.6	75	120

Notes:
1. Forward Voltage is measured with an accuracy of ± 0.1V
2. CRI is measured with an accuracy of ± 5

Electrical Characteristics

Table 5 . Electrical characteristics at I_F=30mA and Ta=25°C for PLCC 3014

Part Name	Color	CCT(K)		Forward Current (mA)	Thermal Resistance (°C/W)
		Min.	Max.		
ET-3014W-1F1W	Cool White	5,000	8,000	30	40
ET-3014H-1F1W	Neutral White	3,800	4,500	30	40
ET-3014X-1F1W	Warm White	2,670	3,250	30	40

Note:
Color Temperature is measured with an accuracy of ± 5%

Forward Voltage Ranks

Table 6. Forward voltage rank at Ta=25°C

Bin	Condition	Min	Max	Unit
UK-1	I_F=30mA	3.0	3.1	V
UK-2		3.1	3.2	
UL-1		3.2	3.3	
UL-2		3.3	3.4	
UM-1		3.4	3.5	
UM-2		3.5	3.6	
UN-1		3.6	3.7	

Note:
Forward voltage measurement allowance is ± 0.1V.

JEDEC Information

JEDEC is used to determine what classification level should be used for initial reliability qualification. Once identified, the LEDs can be properly packaged, stored and handled to avoid subsequent thermal and mechanical damage during the assembly solder attachment and/or repair operation. The present moisture sensitivity standard contains six levels, the lower the level ,the longer the devices floor life. PLCC 3014 series are certified at level 2a. This means PLCC 3014 series have a floor life of 4 weeks before PLCC 3014 series need to re-baked.

Table 7. JEDEC characteristics for PLCC 3014

Level	Floor Life		Soak Requirements			
	Time	Conditions	Standard		Accelerated Environment	
			Time (hours)	Conditions	Time (hours)	Conditions
2a	4 weeks	≤30˚C / 60% RH	696 +5/-0	30˚C / 60% RH	120 +1/-0	60˚C / 60% RH

Leve	Floor Life		Soak Requirements			
			Standard		Accelerated Environment	
	Time	Condition	Time (hours)	Condition	Time (hours)	Condition
1	Unlimited	≤30˚C /85% RH	168 +5/-0	85˚C/85% RH		
2	1 year	≤30˚C /60% RH	168 +5/-0	85˚C/60% RH		
2a	4 weeks	≤30˚C /60% RH	696[1] +5/-0	30˚C/60% RH	120 +1/-0	60˚C/60% RH
3	168 hours	≤30˚C /60% RH	192[1] +5/-0	30˚C/60% RH	40 +5/-0	60˚C/60% RH
4	72 hours	≤30˚C /60% RH	96[1] +5/-0	30˚C/60% RH	20 +5/-0	60˚C/60% RH
5	48 hours	≤30˚C /60% RH	72[1] +5/-0	30˚C/60% RH	15 +5/-0	60˚C/60% RH
5a	24 hours	≤30˚C /60% RH	48[1] +5/-0	30˚C/60% RH	10 +5/-0V	60˚C/60% RH
6	Time on tabel (TOL)	≤30˚C /60% RH	TOL	30˚C/60% RH		

Note:
The standard soak time includes a default value of 24 hours for semiconductor manufacturer's exposure time (MET) between bake and bag , and includes the maximumtime allowed out of the bag at the distributor's facility.

Reliability Test Items

The following table describes operating life, mechanical, and environmental tests performed on PLCC 3014 series.

Table 8. Reliability Test

Stress Test	Stress Conditions	Stress Duration
Room Temperature Operation Life, RTOL	Ta=25°C, I_F=30mA	1000 hours
High Temperature Operation Life, HTOL	Ta=65°C, I_F=30mA	1000 hours
Low Temperature Operation Life, LTOL	Ta=-40°C I_F=30mA	1000 hours
High Temperature and high Humidity Operation Life, WHTOL	Ta=85°C, RH=85%, I_F=30mA	1000 hours
Thermal Shock	-40~125°C, 30min~30min	100 cycle

Notes:
1. Reliability test 2 is performed after reliability test 1.
2. Depending on the maximum derating curve.
3. Failure Criteria:
   Electrical failures
   V_F Shift >=10%
   Luminous Intensity
   I_V Decay>= 35%

Characteristic Curve

Beam Pattern Diagram

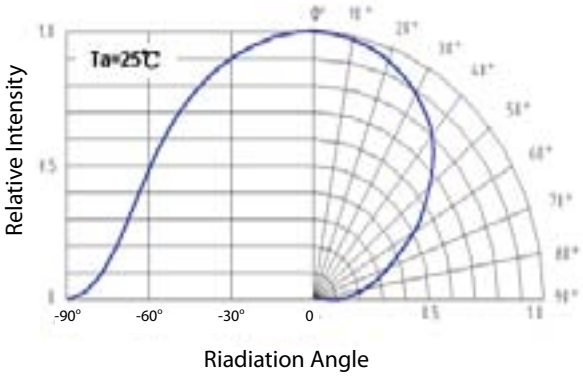

Figure 2. Beam pattern diagram for PLCC 3014 series

Relative Spectrum Distribution

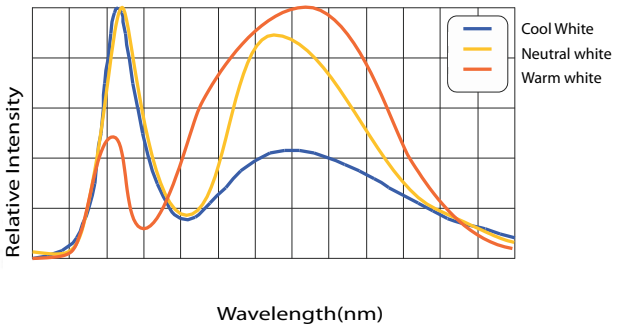

Figure 3. Relatvie Spectrum Distribution for PLCC 3014 series

Forward voltage & Forward current

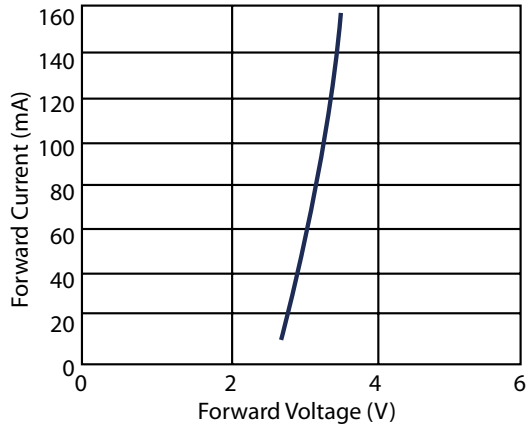

Figure 4. Forward voltage and forward current for PLCC 3014 series

Forward current & Relative Inetensity

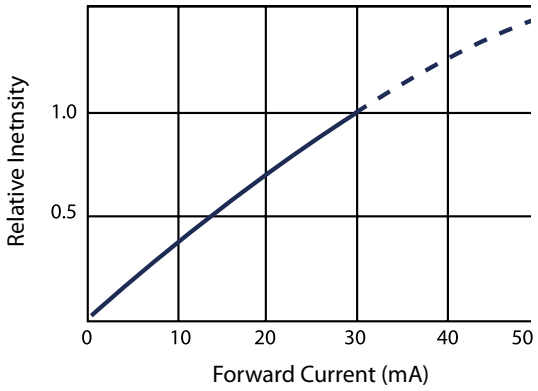

Figure 5. Forward current & relative intensity for PLCC 3014 series

Ambient temperature & Forward current

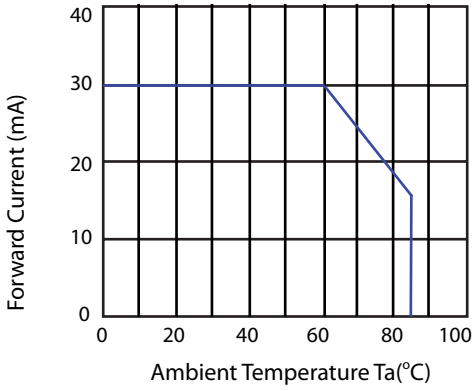

Figure 6. Ambient temperature and forward current for PLCC 3014 series

Product Packaging Information

Taping Reel

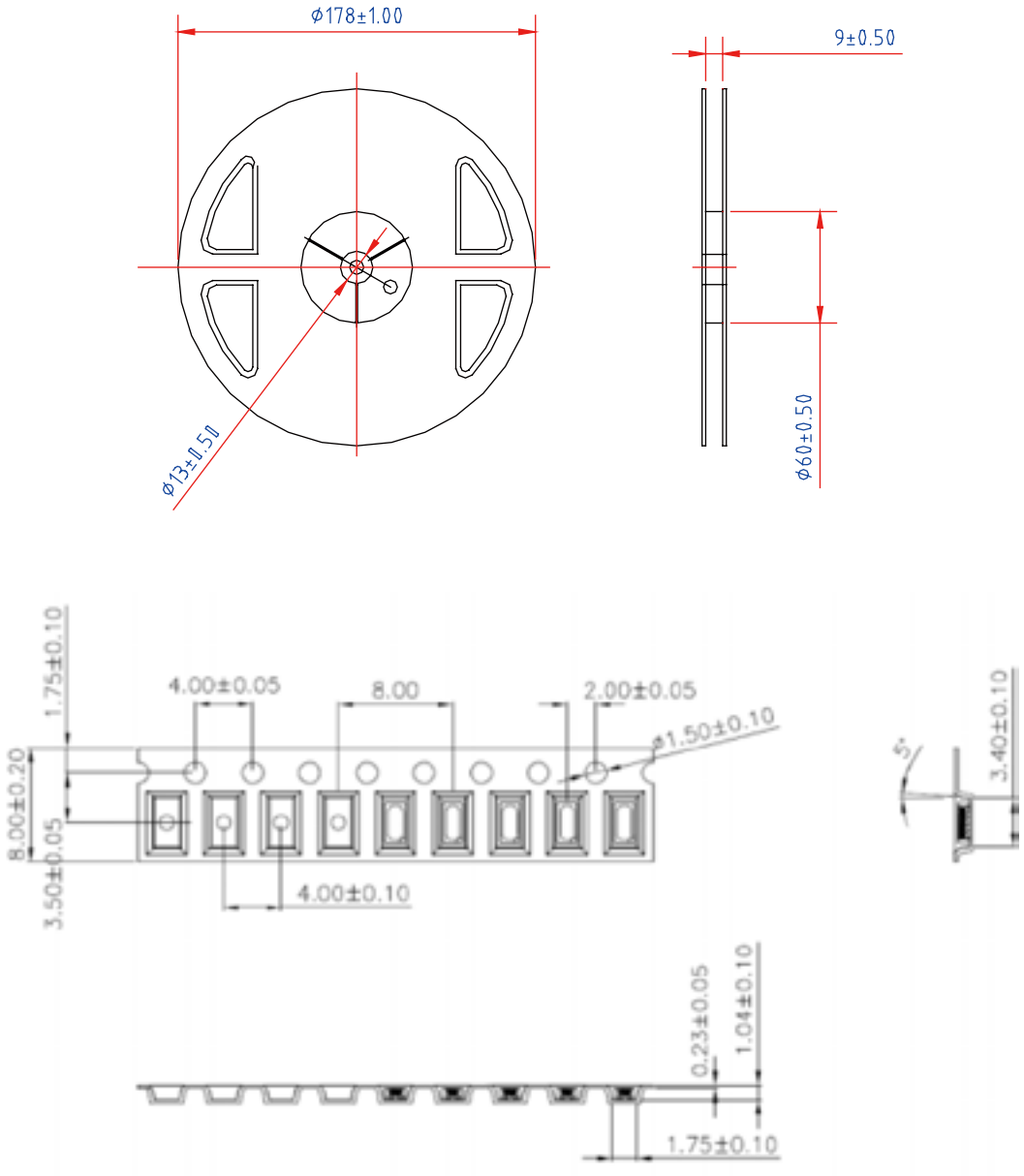

Figure 7. Taping reel dimensions

Packaging

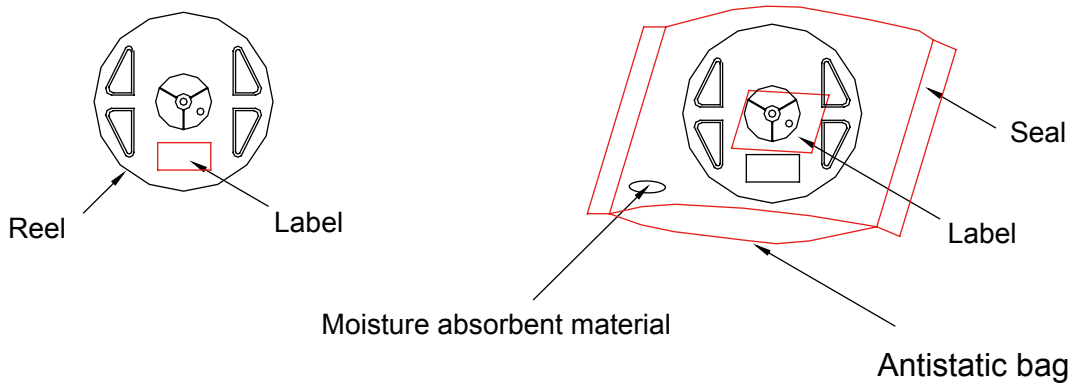

Figure 8. Taping reel dimensions

Package Label

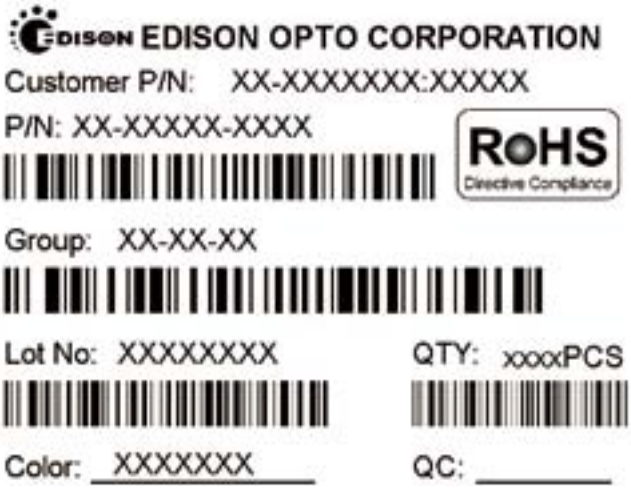

Figure 9. Package label

Table 12. Package dimensions and quantity

Item	Quantity	Total	Dimensions(mm)
Reel	3,000pcs	3,000pcs	Diameter=178
Carton	25 reels	75,000pcs	353*254*256

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Revision History

Table 13. Revision history of PLCC ET-3014x-1F1W series datasheet

Version	Description	Release Date
1	1.Establish a datasheet	2011/11/11
2	1. Update Luminous Intensity Characteristic 2. Update bin group 3.Update packaging	2012/01/16
3	1.Update mcd and forward voltage bin on P.7 2.Update Characteristic Curve on P.10	2012/01/31

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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