

PLCC Series

# ET-3014x-1F1W Series Datasheet



## Features :

- High luminous Intensity and high efficiency
- Based on Blue : InGaN 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

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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    W    -    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
Edison	Top LED	3014	3.5x2.8mm	W	Cool White	A	0.5W	--	--
				H	Neutral White				
				X	Warm White				

X7 Feature	
Code	Type
W	White surface

## LED Package Dimension and Polarity

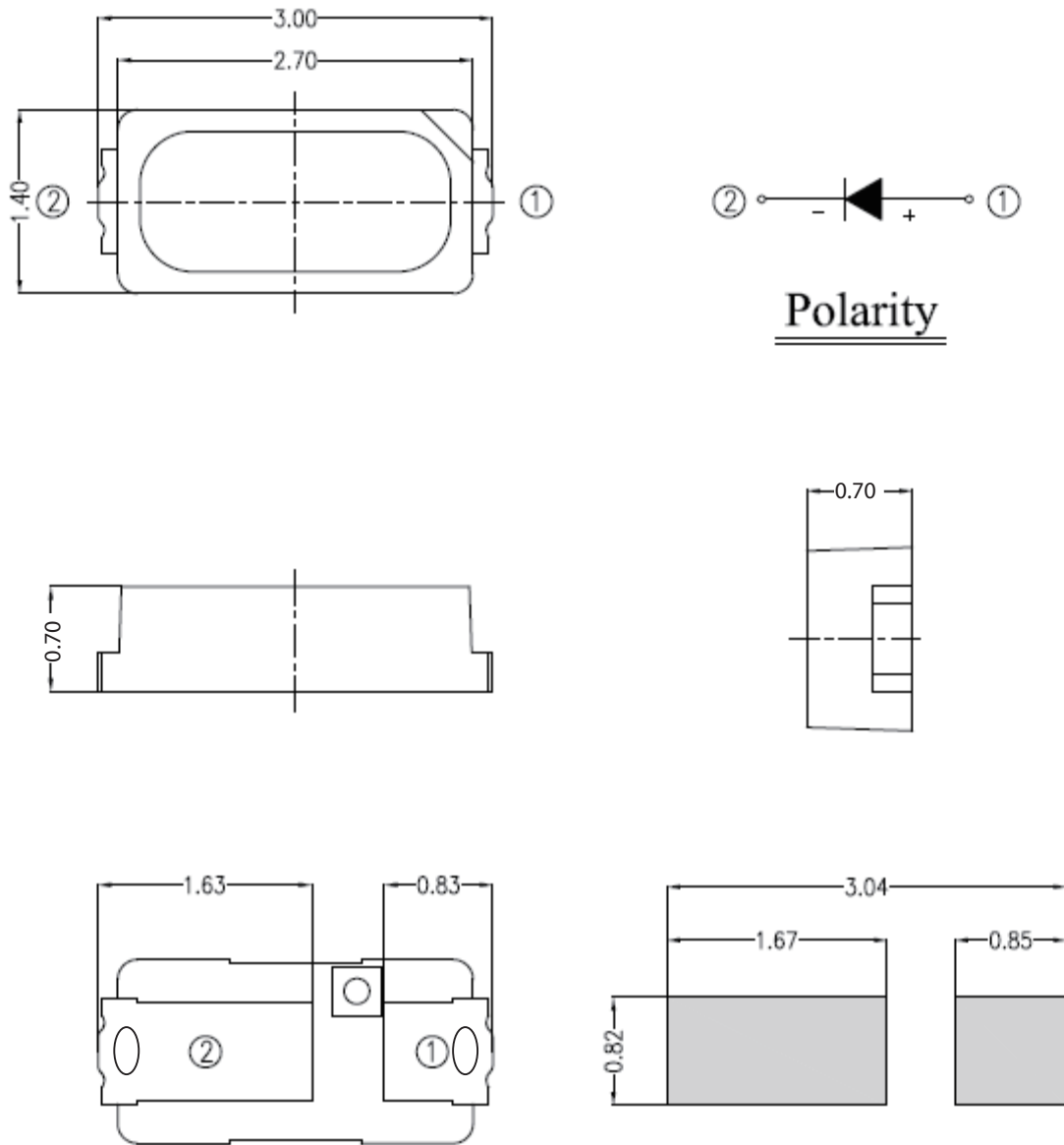


Figure 1. PLCC 3014 series circuit diagram

Notes:

1. All dimensions are measured in mm.
2. Tolerance :  $\pm 0.20$  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 ( $t_p \leq 100\mu s$ , Duty cycle=0.25)	100	mA	-
Reverse Voltage	3.6	mA	$V_R$
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.  $t_p$ : Pulse width time

## Luminous Flux Characteristics

The following table describes luminous Flux of PLCC 3014 series.

Table 3. Luminous Flux characteristics at  $T_a=25^\circ C$  for PLCC 3014 series

Part Name	Color	Luminous Flux (lm)			Luminous Intensity Typ.(mcd)	Forward Current (mA)
		Group	Min.	Max.		
ET-3014W-1F1W	Cool White	L34	9.8	11.0	4,000	30
		L38	11.0	12.1		
		L42	12.1	13.3		
ET-3014H-1F1W	Neutral White	L34	9.8	11.0	4,000	30
		L38	11.0	12.1		
		L42	12.1	13.3		
ET-3014X-1F1W	Warm White	L30	8.7	9.8	3,600	30
		L34	9.8	11.0		
		L38	11.0	12.1		

Note: Luminous intensity is measured with an accuracy of  $\pm 10\%$

## Characteristic

### Optical Characteristics

The following table describes CCT of PLCC 3014 series

Table 4. Optical characteristics at  $I_f=30\text{mA}$  and  $T_a=25^\circ\text{C}$

Part Name	Color	$V_F$ (V)			CRI	Viewing Angle (Degree)
		Min.	Typ.	Max.		
ET-3014W-1F1W	Cool White	3.0	--	3.6	70	120
ET-3014H-1F1W	Neutral White	3.0	--	3.6	70	120
ET-3014X-1F1W	Warm White	3.0	--	3.6	70	120

Note: CRI is measured with an accuracy of  $\pm 5$

### Electrical Characteristics

The following table describes forward voltage of PLCC 3014 series

Table 5. Electrical Characteristics Characteristics at  $T_j=25^\circ\text{C}$

Part Name	Color	CCT(K)		Forward Current (mA)	Thermal Resistance ( $^\circ\text{C}/\text{W}$ )
		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: Forward Voltage is measured with an accuracy of  $\pm 0.1\text{V}$

## Forward Voltage Ranks

Table 6. Forward voltage rank at  $T_a=25^\circ\text{C}$

Bin	Condition	Min	Max	Unit
UK-1	$I_f=30\text{mA}$	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  $\pm 0.1\text{V}$ .

## Reliability Test Items

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

### Test 1<sup>(1)</sup>: JEDEC LEVEL 2a Test

Stress Test	Stress Conditions	Duration	Failure Criteria
Temperature and Humidity	60°C/ 60%RH	120 Hr(<0.5W) 168 Hr(≥0.5W)	No Catastrophes
IR reflow	Peak temp. = 255~260°C/ <10 Sec.	3 Times	No Catastrophes

### Test 2: Other Test

Stress Test	Stress Conditions	Duration	Failure Criteria
Room Temperature Operating Life	25°C , I <sub>F</sub> =I DCmax (2)	1000 Hours	(3)
High Temperature High Humidity Operating Life	85°C/ 85%RH , I <sub>F</sub> = I DCmax×0.5	1000 Hours	(3)
High Temperature Storage Life	85°C	1000 Hours	(3)
Low Temperature Storage Life	-40°C	1000 Hours	(3)
Non-Operating Thermal Shock	-40°C/125°C 15 min dwell<10 sec transfer	1000Hours/ 200 Cycles	No Catastrophes
Non-Operating Thermal Cycle	-40°C/100°C 30 min dwell <15min transfer	1000Hours/ 200 Cycles	No Catastrophes

Notes:

- Reliability test 2 is performed after reliability test 1.
- DC max is defined to be under the indicated driving current for PLCC respectively/
- Failure Criteria:
  - Electrical failures: VF shifts ≥10%
  - Light Output Degradation: Percentage level shift ≥ 35% for PLCC<0.5W
  - Light Output Degradation: Percentage level shift ≥ 50% at 1,000hrs or 500cycle for PLCC≥0.5W
  - Visual failures: Broken or damaged package on lens or substrate

## Characteristic Curves

### Beam Pattern Diagram

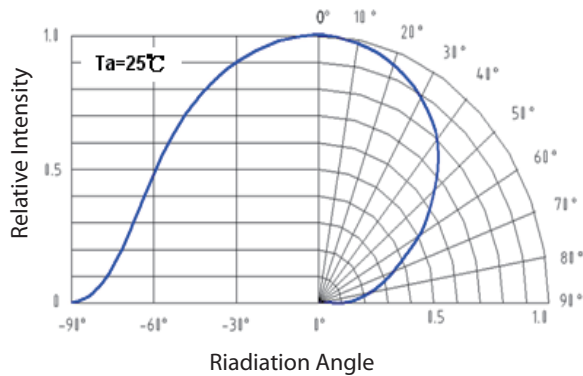


Figure 2. Beam pattern diagram for PLCC 3014 series

### Luminous Flux & Wavelength

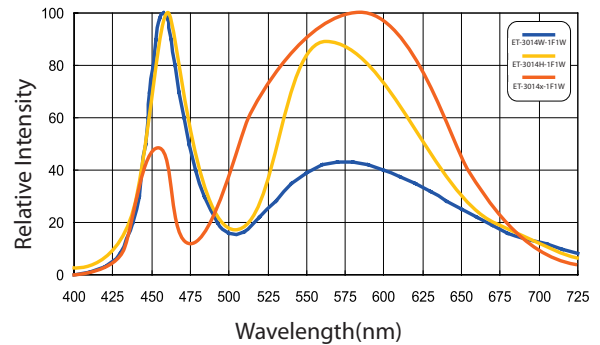


Figure 3. Wavelength & relative intensity for PLCC 3014 series

### Luminous Flux & Temperature

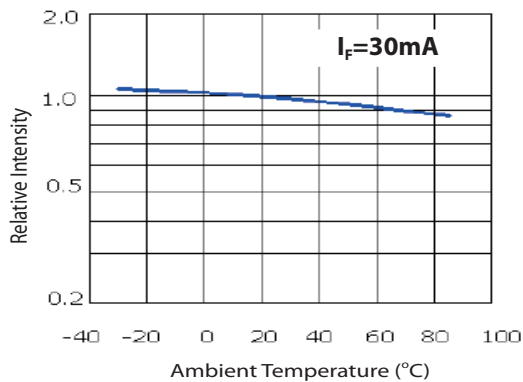


Figure 4. Ambient temperature & relative intensity for PLCC 3014 series

### Forward Voltage & Forward Current

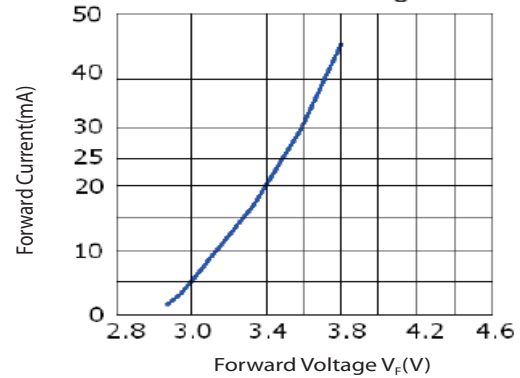


Figure 5. Forward current & forward voltage for PLCC 3014 series

### Forward Current & Temperature

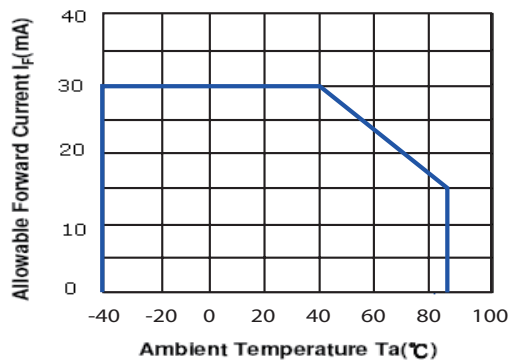


Figure 6. Ambient temperature & forward current for PLCC 3014 series

### Luminous Flux & Forward Current

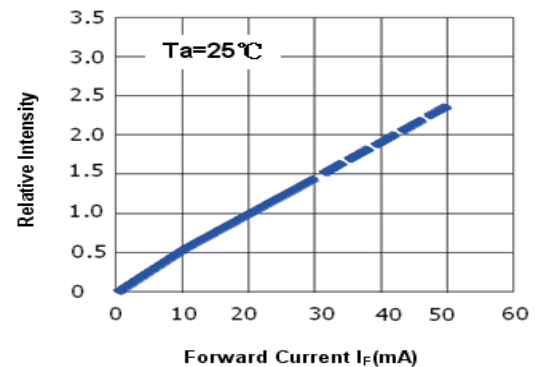
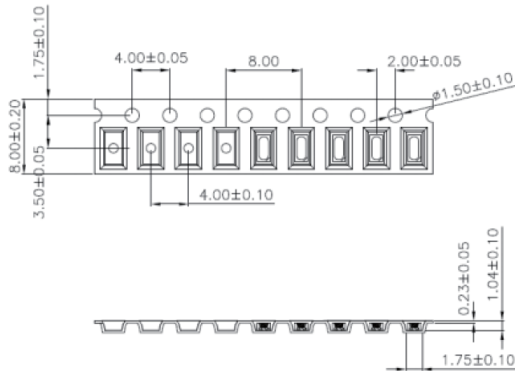


Figure 7. Forward current & relative intensity for PLCC 3014 series



## Product Packaging Information

### 3014 Diemision



### Taping Reel

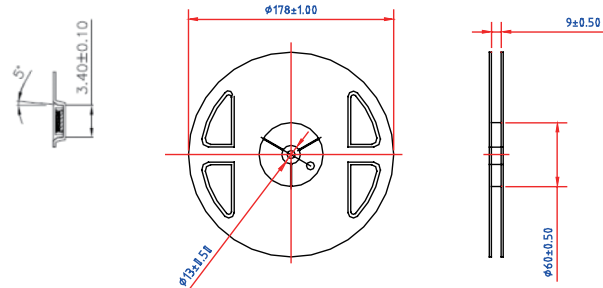
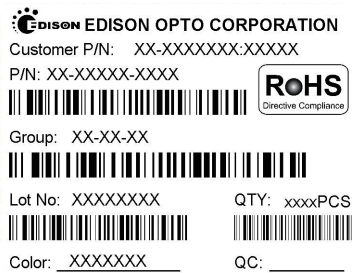


Figure 8. Taping reel dimensions

### Package Label



### Quantity and Package Dimension

There are two different package quantities for PLCC LEDs. Please confirm the noted quantity before unseal.

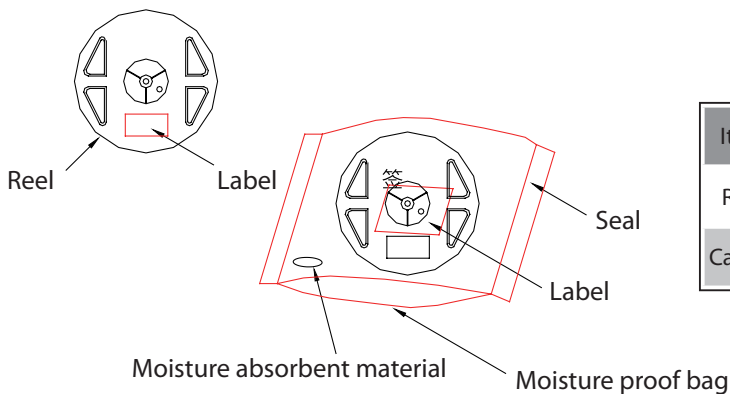


Figure 9. Package label

Table 7. Package dimensions and quantity

Item	Quantity	Total	Dimensions(mm)
Reel	3,000pcs	3,000pcs	Diameter=178
Carton	50 reels	15,000pcs	353*254*256mm

## Revision History

Table 8. Revision history of PLCC 3014.

Versions	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
4	1.Update Luminous Intensity Characteristic	2012/08/09

## 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](http://www.edison-opto.com)

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