

## PLCC Series

**PLCC 3528 0.5W PC Amber**

## Datasheet - AM

Automotive  
Lighting

Outdoor Lighting

General  
Lighting

Indoor Lighting

Signal  
Lighting**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 lighting for automotive signal lighting designs or signboard.

**Description :**

- Best luminous and color uniformity
- Enables halogen and CDM replacement
- Automotive lighting interior and exterior.

**Feature and Benefits :**

- 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
- Qualification according to AEC-Q101 rev. D

## Table of Contents

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General Information .....	3
Absolute Maximum Ratings .....	4
Characteristic .....	4
Luminous Flux Characteristics .....	5
Voltage Bin Structure .....	5
Mechanical Dimensions .....	6
PC Amber Bin Coordinates.....	7
Characteristic curve.....	8
Reliability.....	13
Product Packaging Information.....	14
Revision History .....	15
About Edison Opto .....	15

## General Information

### Ordering Code Format

2      T      03      X5      AX      B      00      03      XXX  
 X1      X2      X3-X4      X5-X6      X7-X8      X9      X10-X11      X12-X13      X14-X16

X1	X2		X3-X4		X5-X6		X7-X8	
Type	Component		Series		Wattage		Color/CCT	
2	Emitter	T	PLCC	03	3528	X5	0.5W	AX Amber

X9	X10-X11		X12-X13		X14-X16	
BIN	CRI		Voltage		Serial Number	
B	PC Amber	00	-	03	3V	-

## Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Forward Current	$I_F$	200	mA
Pulse Forward Current (tp<=100μs, Duty cycle=0.25)	-	300	mA
Reverse Voltage	$V_R$	5	V
Forward Voltage	$V_F$	4	V
LED Junction Temperature	$T_J$	125	°C
Operating Temperature	-	-40 ~ +85	°C
Storage Temperature	-	-40 ~ +125	°C
Soldering Temperature	-	255~260	°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

## Characteristic

Optical Characteristics at  $T_J=25^{\circ}\text{C}$

Parameter	Symbol	Value	Units
Viewing Angle	$2\theta_{1/2}$	120	Degree
Thermal resistance	-	20	°C/W
Wavelength	-	588-592	nm
JEDEC Moisture Sensitivity	-	Level 2a <b>Floor Life</b> Conditions: ≤30°C / 60% RH <b>Soak Requirements(Standard)</b> Time (hours): 120+1/-0 Conditions: 60°C / 60% RH	-

Notes:

1. Wavelengths are stated as dominant wavelength.
2. Edison Opto maintains a tolerance of ± 1nm for dominant wavelength.

## Luminous Flux Characteristics

Luminous Flux characteristics at  $T_j=25^{\circ}\text{C}$

Color	Group	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)	Forward Current (mA)	Order Code
Amber	Q2	34.8	39.4	150	2T03X5AXB00030A1
	R1	39.4	45.3		

Note:

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

## Voltage Bin Structure

Forward voltage rank at  $I_f=150\text{mA}$ ,  $T_j=25^{\circ}\text{C}$

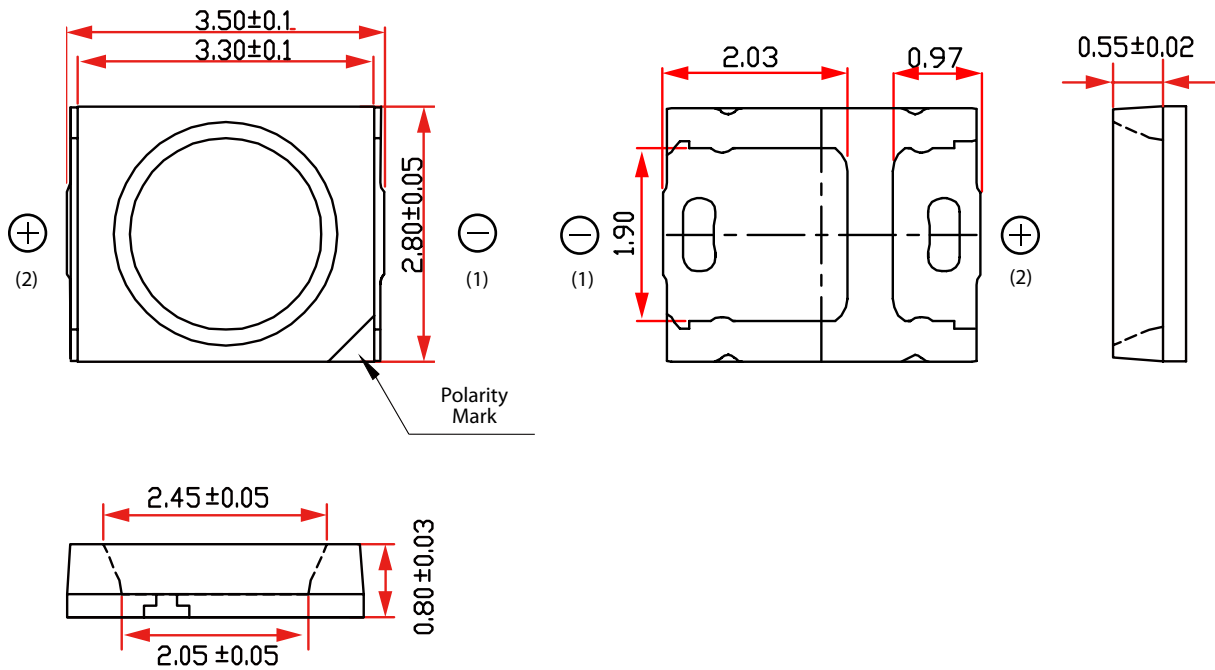
Group	Min. Voltage (V)	Max. Voltage (V)
VB1	2.9	3.0
VC1	3.0	3.1
VA2	3.1	3.2
VB2	3.2	3.3
VC2	3.3	3.4
VA3	3.4	3.5

Note:

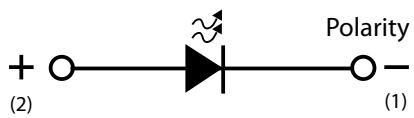
Forward voltage measurement allowance is  $\pm 0.06\text{V}$ .

## Mechanical Dimensions

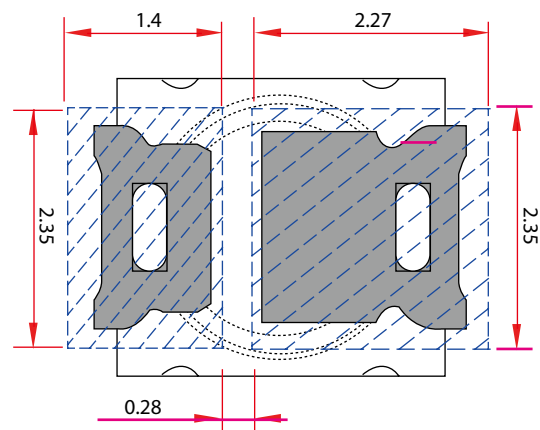
### Emitter Type Dimension



### Circuit



### Solder Pad

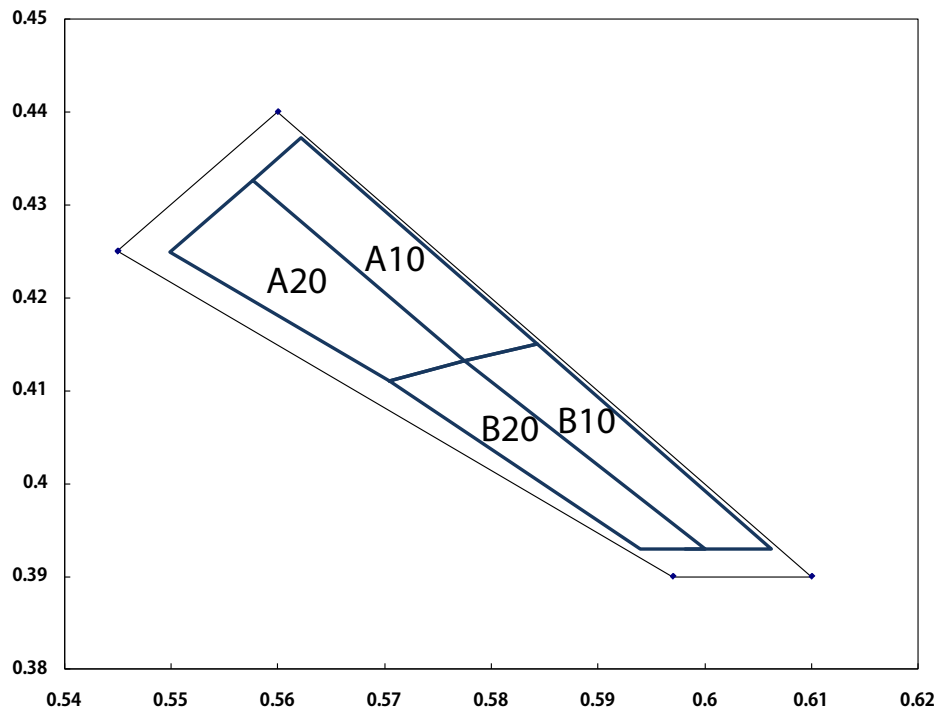


#### Notes:

1. All dimensions are measured in mm.
2. Tolerance :  $\pm 0.2$  mm

## PC Amber Bin Coordinates

### PC Amber CIE



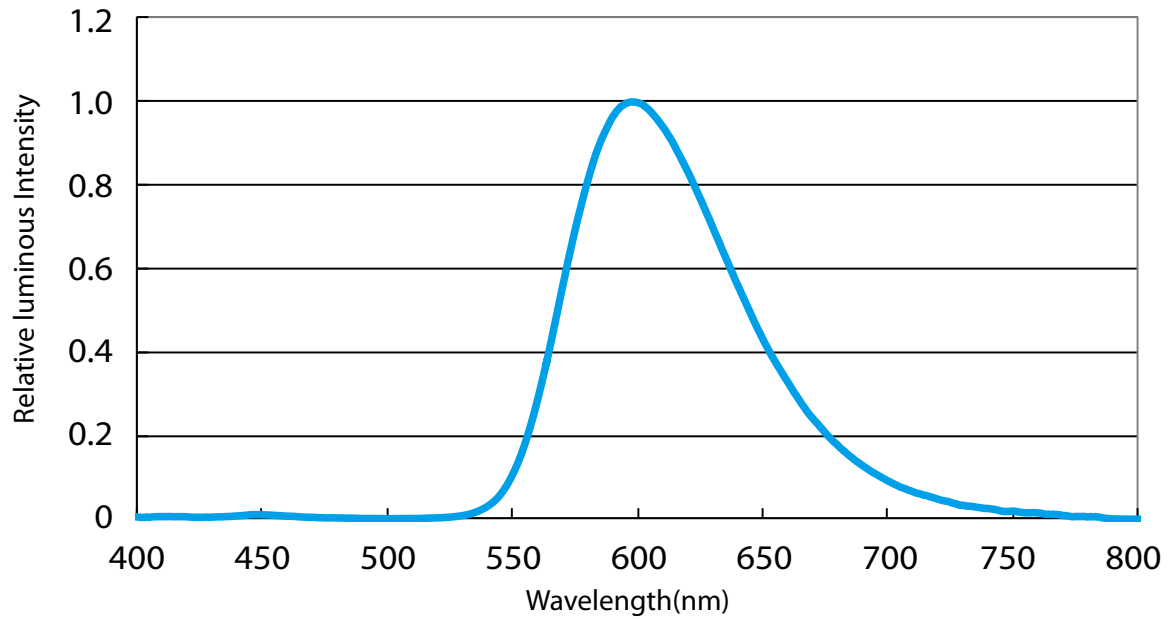
Color Bin	X	Y	Color Bin	X	Y
A10	0.5775	0.4132	A20	0.5705	0.4111
	0.5843	0.4151		0.5775	0.4132
	0.5622	0.4372		0.5576	0.4326
	0.5576	0.4326		0.5499	0.4249
B10	0.5775	0.4132	B20	0.5705	0.4111
	0.5843	0.4151		0.5775	0.4132
	0.6062	0.3930		0.6000	0.3930
	0.5982	0.3930		0.5940	0.3930

**Notes:**

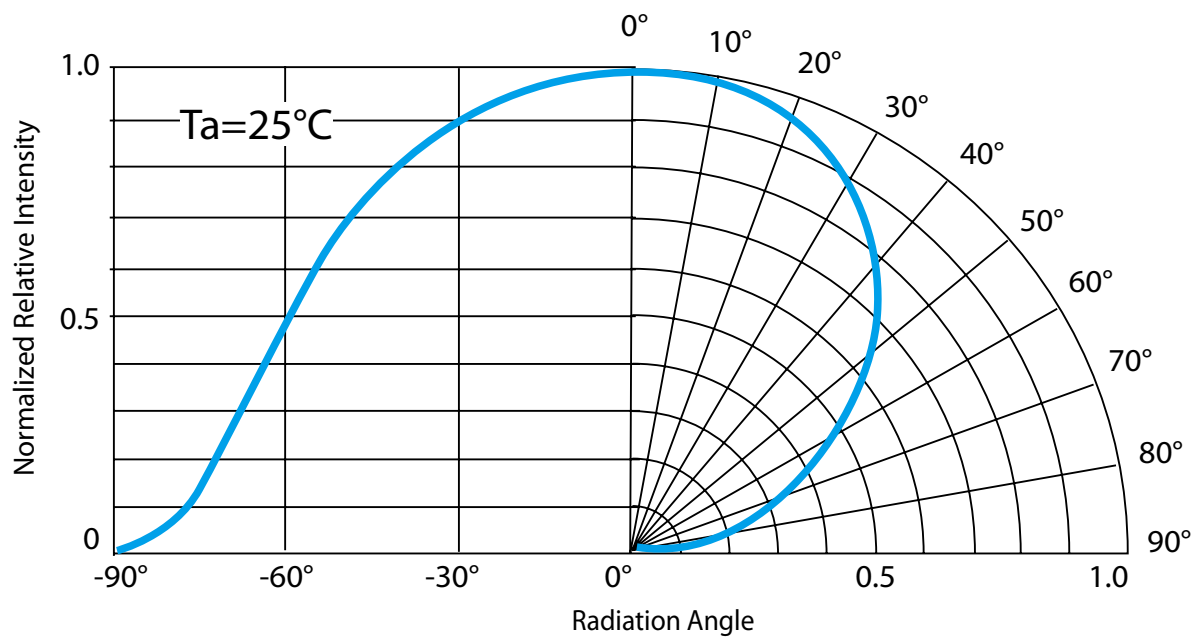
1. PLCC 3528 PC Amber Emitters are tested and binned by x,y coordinates.
2. Edison maintains a tester tolerance of  $\pm 0.005$  on x, y color coordinates.
3. Test conditions of 150mA with current pulse duration of 20ms.

## Characteristic curve

### Color Spectrum

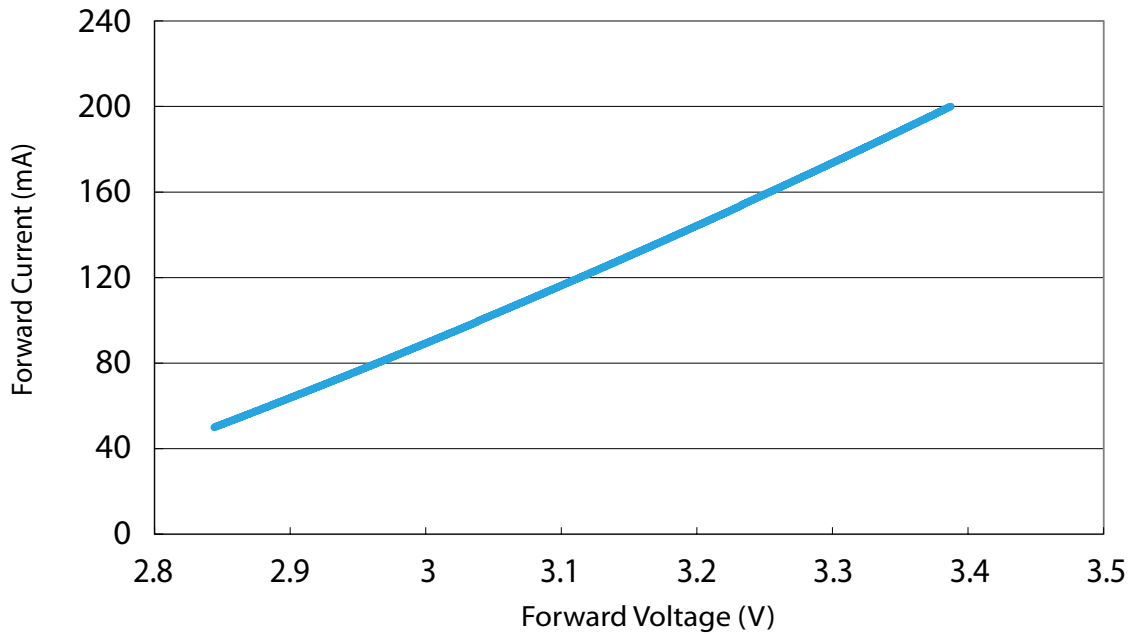


### Beam Pattern

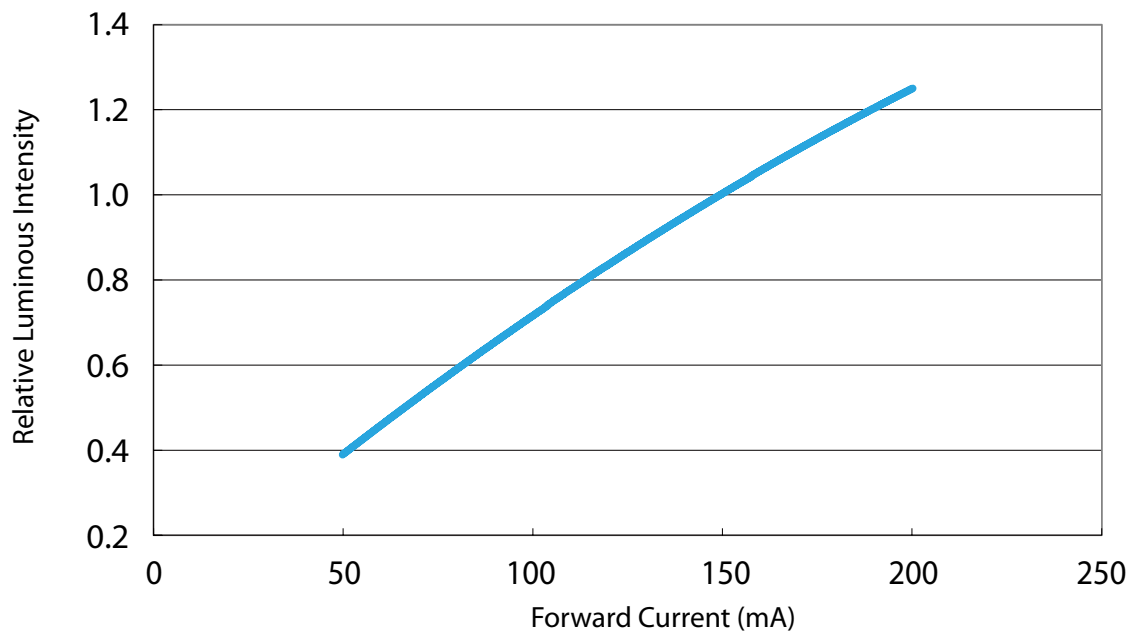




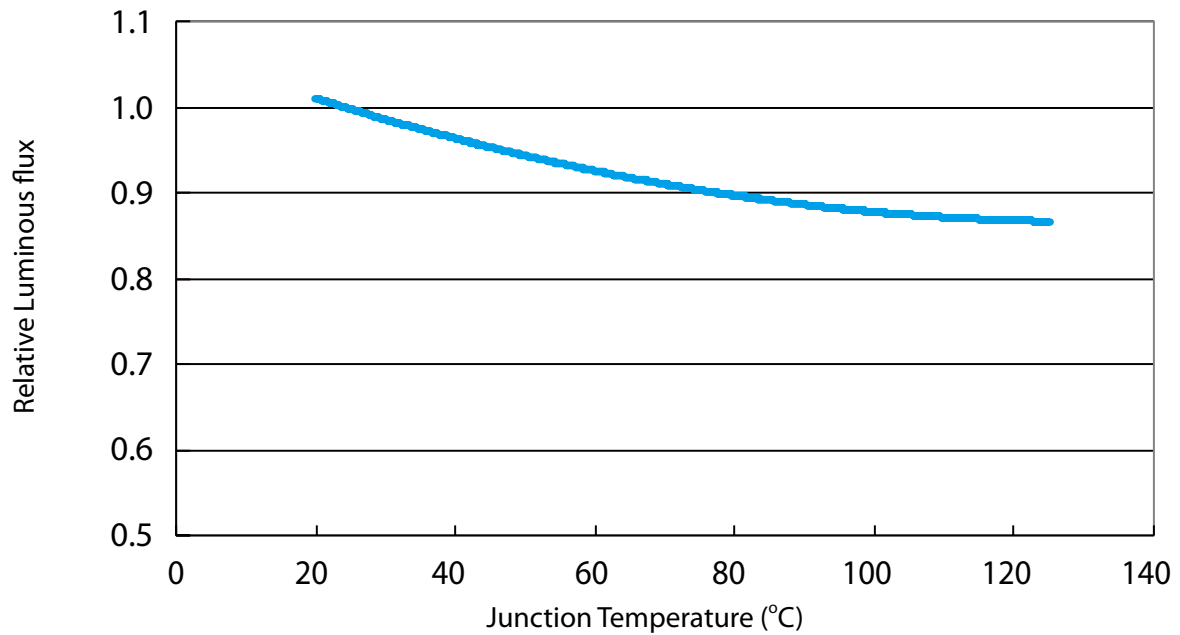
### Forward Current vs. Forward Voltage



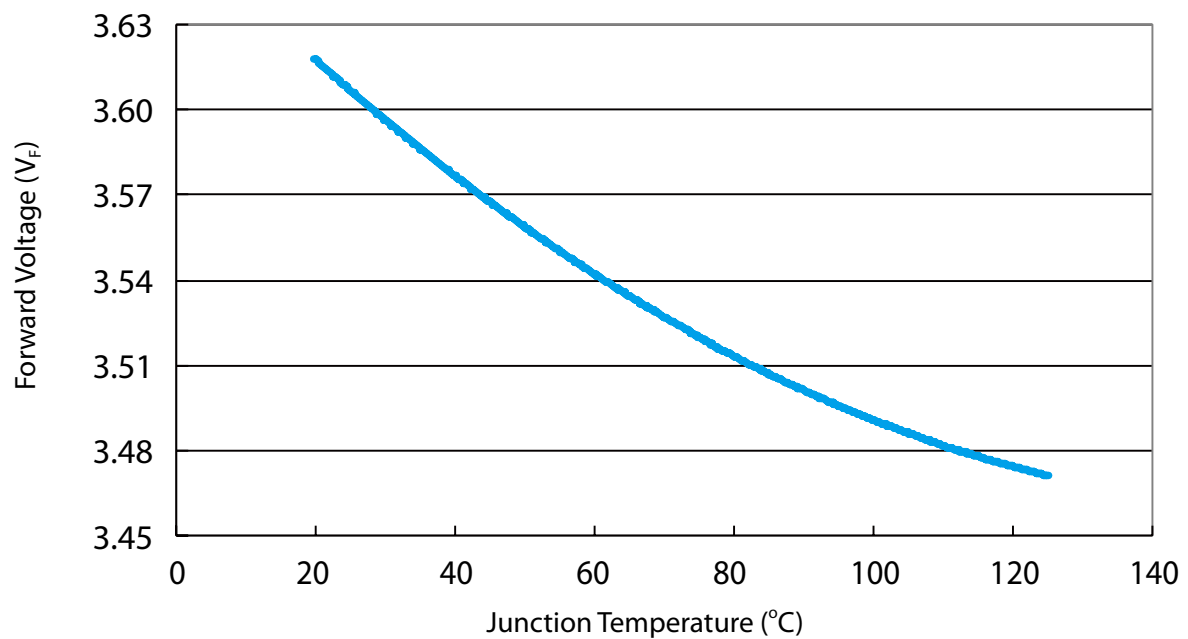
### Relative Luminous Intensity vs. Forward Current



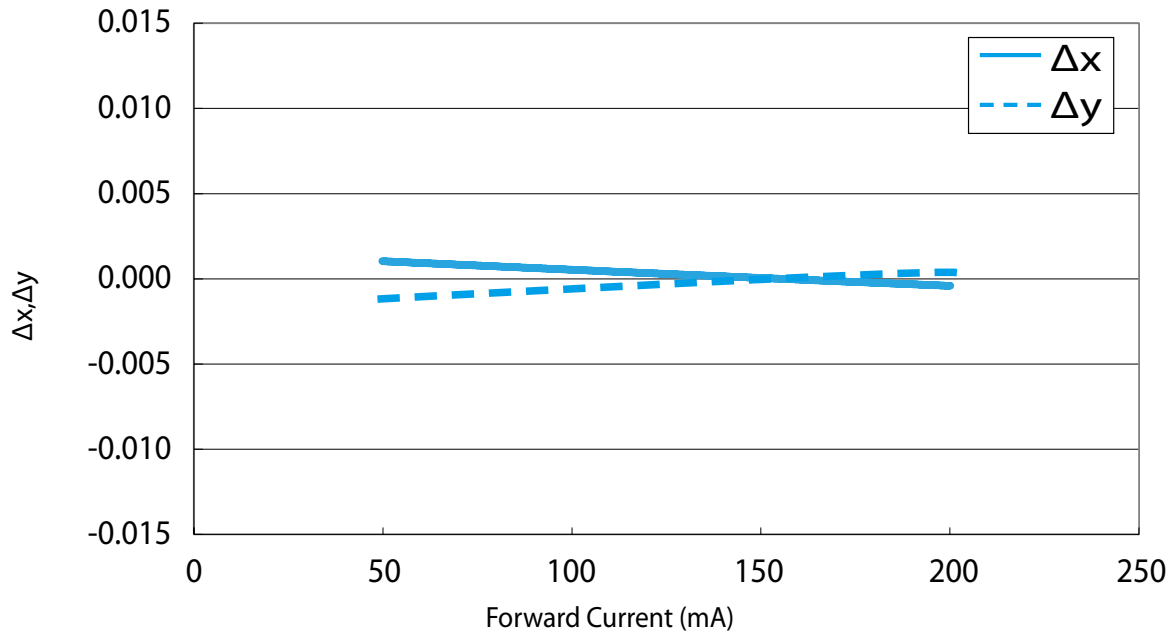
### Relative Luminous Flux vs. Junction Temperature



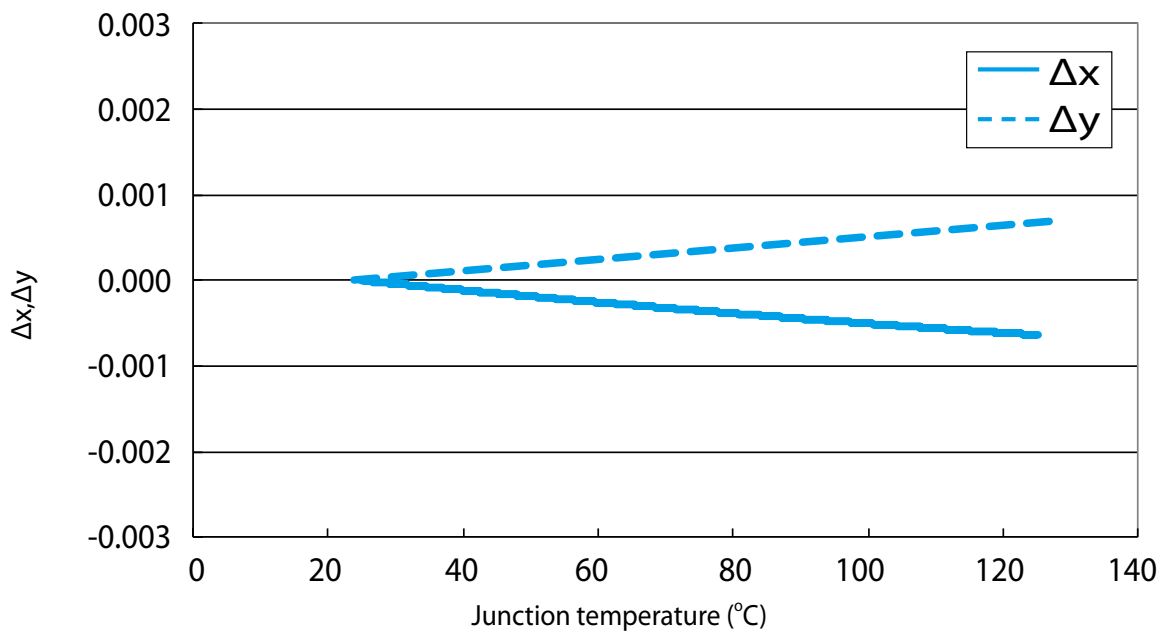
### Forward Voltage vs. Junction Temperature



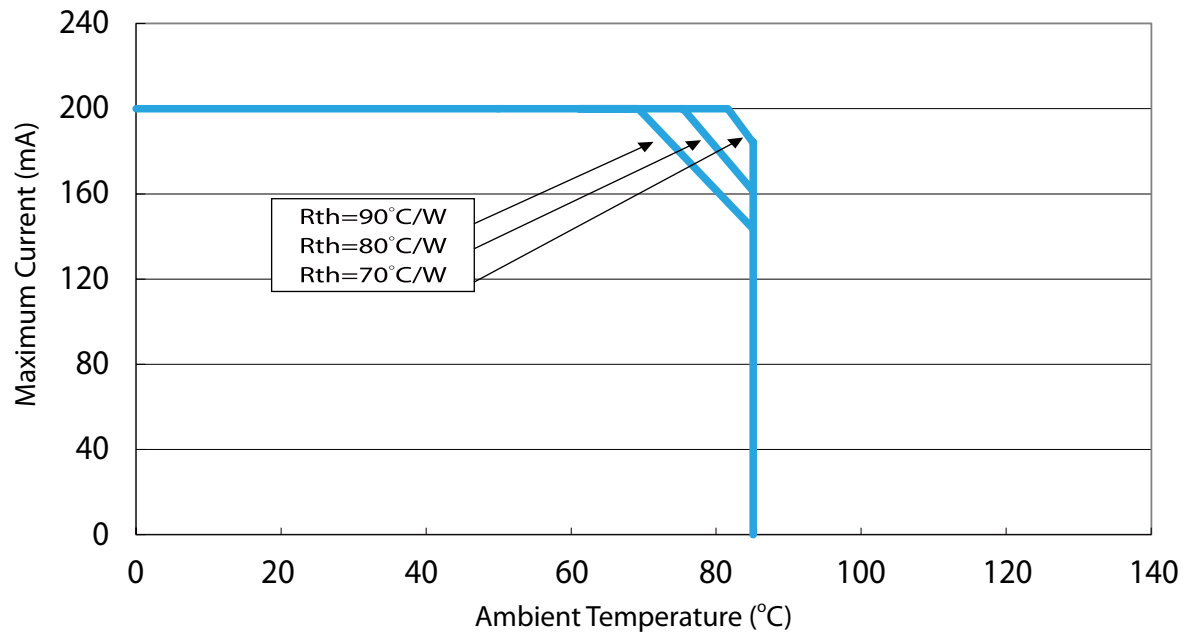
### $\Delta x, \Delta y$ vs. Forward Current



### $\Delta x, \Delta y$ vs. Junction Temperature



### Maximum Current vs. Ambient Temperature



## Reliability

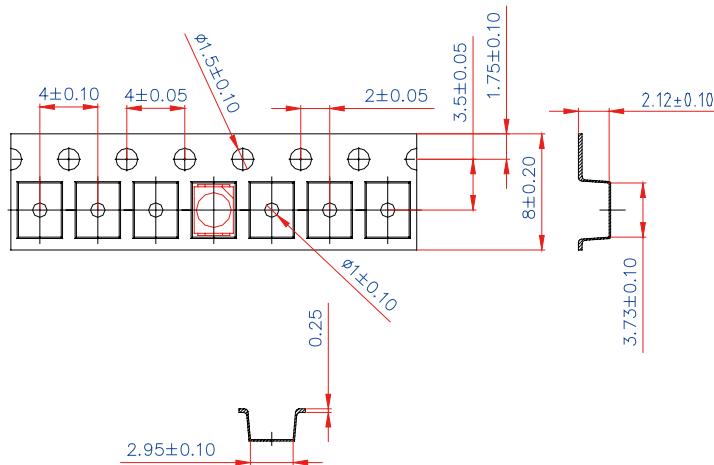
NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins $\leq$ 10 sec	100 Cycle
3	Resistance to Soldering Heat	T <sub>SOL</sub> =260°C, 30 sec	3 times
4	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
5	High-Temperature Storage	T <sub>A</sub> =100°C	1,000 hrs
6	Humidity Heat Storage	T <sub>A</sub> =85°C RH=85%	1,000 hrs
7	Low-Temperature Storage	T <sub>A</sub> =-40°C	1,000 hrs
8	Operation Life test	25°C	1,000 hrs
9	High Temperature Operation Life test	85°C	1,000 hrs
10	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
11	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

## Failure Criteria

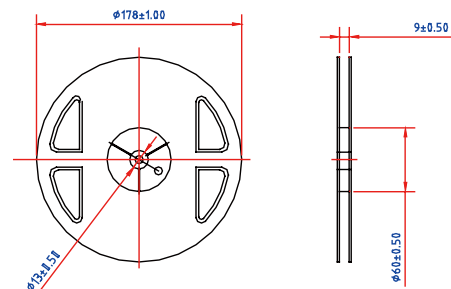
Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 $\mu$ A
Resistance to Soldering Heat	No dead lamps or visual damage	

## Product Packaging Information

### 3528 Dimension

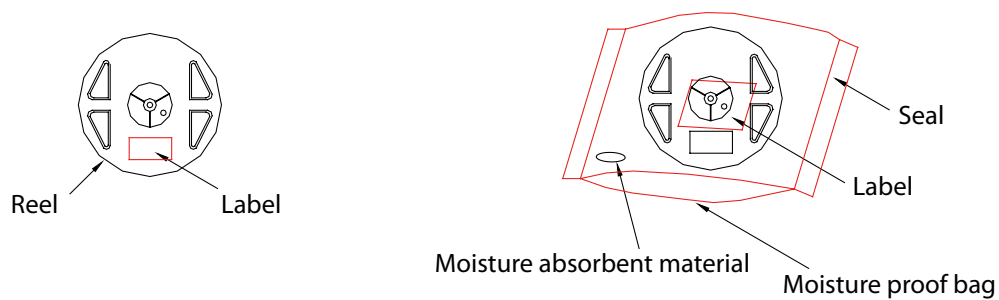


### Taping Reel



### Quantity and Package Dimension

There is package quantity for PLCC LEDs. Please confirm the noted quantity before unseal.



Item	Quantity	Total	Dimensions (mm)
Reel	4,000pcs	4,000pcs	R=178
Starting with 150pcs empty, and 150pcs empty at the last			

## Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2016/07/26
2	1. Revise Mechanical dimensions 2. Update the value of thermal resistance	2016/11/11

## 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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