EDISON
Lighting Design Manufacturing Service

PLCC Series

PLCC 5630 Robin W Datasheet

Features :

- High luminous Intensity and high efficiency
- Based on Blue : InGaN technology
- ANSI Compliant color binning
- Suitable for all SMT assembly methods
- IR reflow process compatible
- Environmental friendly; RoHS compliance

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General Information

Introduction

Edison PLCC 5630 Robin W series features uniform light distribution, excellent light quality and wide angle design (150°x125°). Besides, the small package of 5630R White series can be used with optical lens for wide angle applications such as bulb, down light and street light.

Ordering Code Format

2	T	0 5	X 5	x W	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	05	5630	X5	0.5W	CW	Cool White
								NW	Neutral White
								WW	Warm White

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

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Absolute Maximum Ratings

Absolute maximum ratings (T_a=25°C)

Parameter	Symbol	Value	Units
Forward Current	I_F	100	mA
Pulse Forward Current (tp<=100μs, Duty cycle=0.25) [1]	I_{pulse}	200	mA
Reverse Current	I_R	10	uA
Reverse Voltage	V_R	[2]	V
LED Junction Temperature	T_J	125	°C
Operating Temperature	-	-40 ~ +85	°C
Storage Temperature	-	-40 ~ +125	°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	

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.

Characteristics

Parameter		Symbol	Value	Units
Viewing Angle	(Typ.)	$2\Theta_{1/2}$	150x125	Degree
Thermal resistance		-	20	°C/W
CCT		-	3,000	K
JEDEC Moisture Sensitivity		-	Level 2a **Floor Life** Conditions: ≤30°C / 60% RH **Soak Requirements(Standard)** Time (hours): 120+1/-0 Conditions: 60°C / 60% RH	-

Notes:
1. $2\theta_{1/2}$ is the off-axis angle where the luminous intensity is half of the axial luminous intensity.
2. CIE_x/y tolerance: ±0.006.
3. Viewing angle tolerance: ±5°

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Luminous Flux Characteristic

Luminous Flux Characteristics, I_F=30mA and T_J=25˚C

Color	CRI	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Forward Current(mA)	Order Code
Warm White	80	50	50	55	80	2T05X5WW23000017
		55	55	60		
		60	60	65		
Warm White	90	45	45	50		2T05X5WW44000001
		50	50	55		
		55	55	60		

Notes:
1. The luminous flux performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of ±10% on flux measurements.
2. Color rendering index Color temperature: ±2.

Voltage Bin Structure

Group	Min. Voltage (V)	Max. Voltage (V)
U56	5.6	5.8
U58	5.8	6.0
U60	6.0	6.2
U62	6.2	6.4

Note:
Forward voltage measurement allowance is ± 0.06V.

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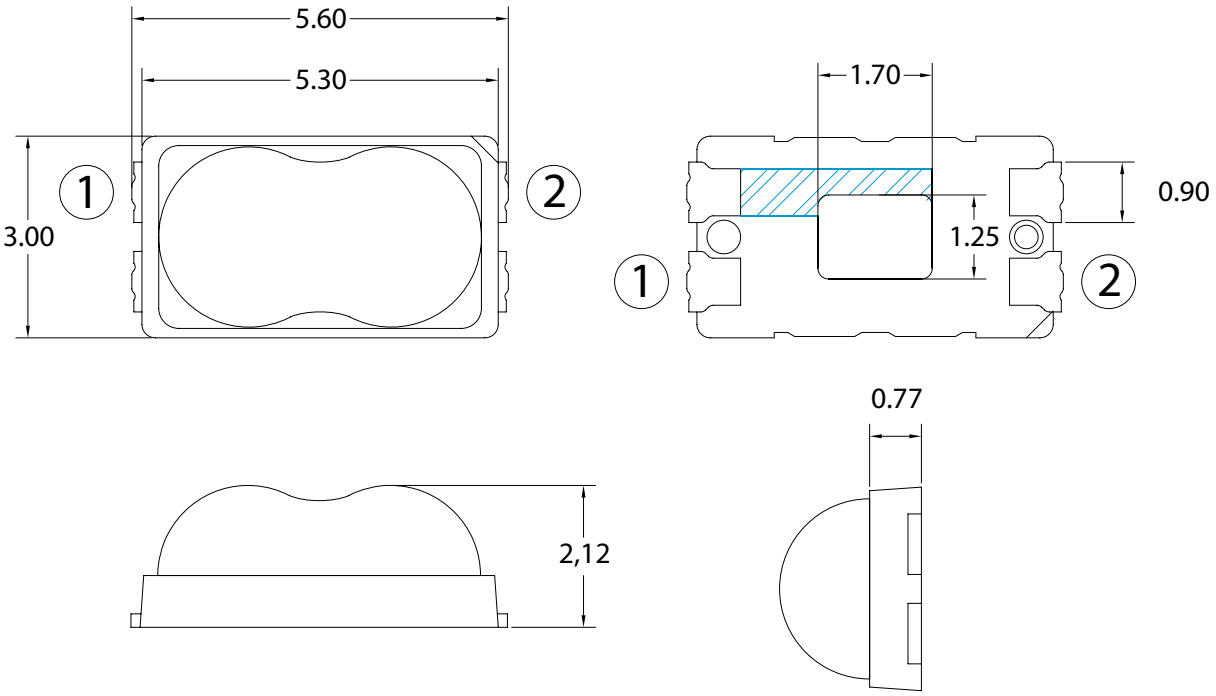
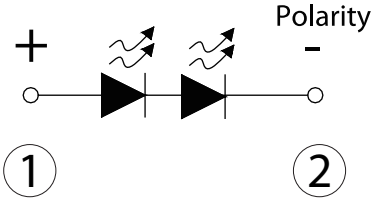
Mechanical Dimensions

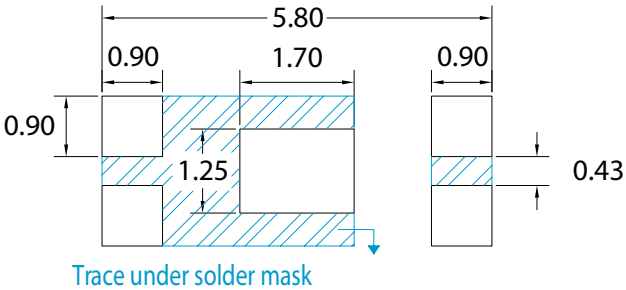
Emitter Type Dimension



Circuit



Solder Pad



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

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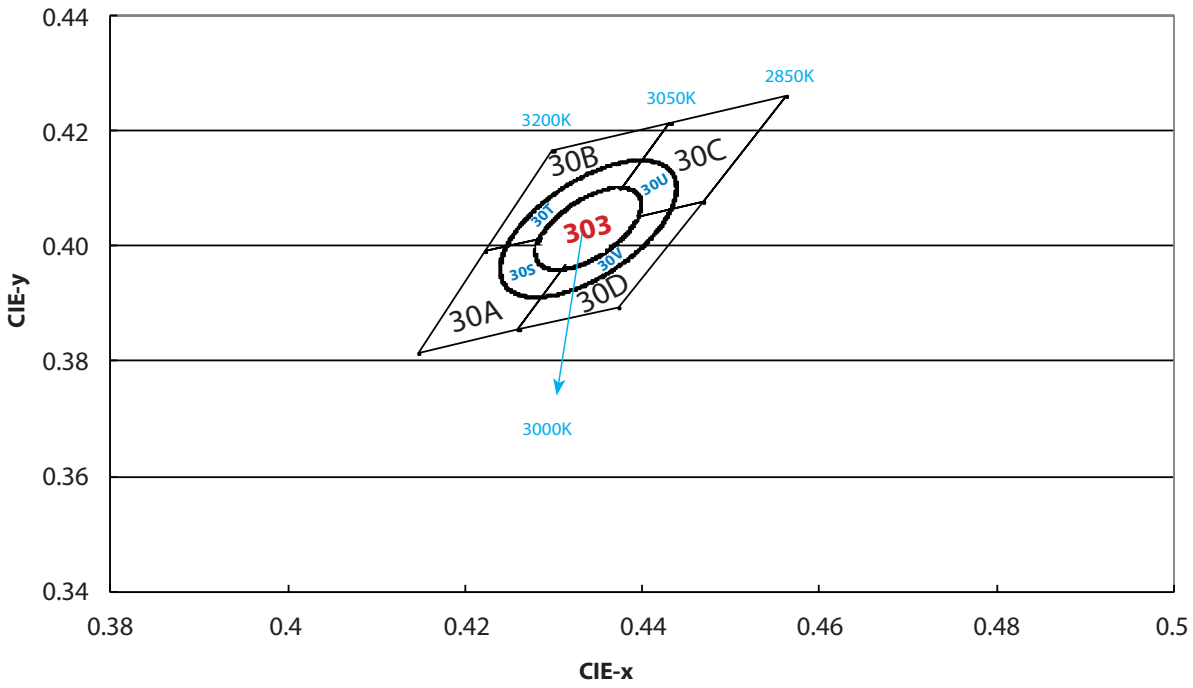
Color BIN code

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.
The chromaticity center refers to ANSI C78.377:2008.
Please refer to ANSI C78.377 for the chromaticity center.

CCT	Steps	Cx	Cy	a	b	theta
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22

CCT	Steps	Cx	Cy	a	b	theta
3000K	3	0.4338	0.4030	0.00834	0.00408	53.22

Warm White



3000K

30A		30B		30C		30D	
X	Y	X	Y	X	Y	X	Y
0.4345	0.4033	0.4431	0.4213	0.4562	0.4260	0.4468	0.4077
0.4223	0.3990	0.4299	0.4165	0.4431	0.4213	0.4345	0.4033
0.4147	0.3814	0.4223	0.3990	0.4345	0.4033	0.4260	0.3854
0.4260	0.3854	0.4345	0.4033	0.4468	0.4077	0.4373	0.3893

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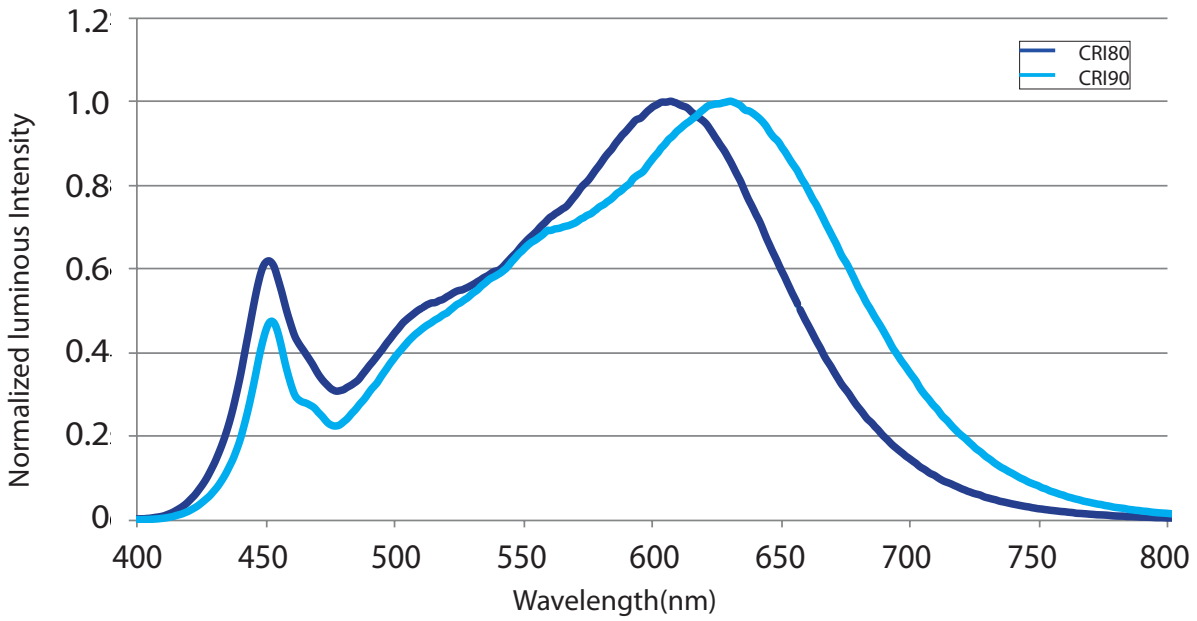
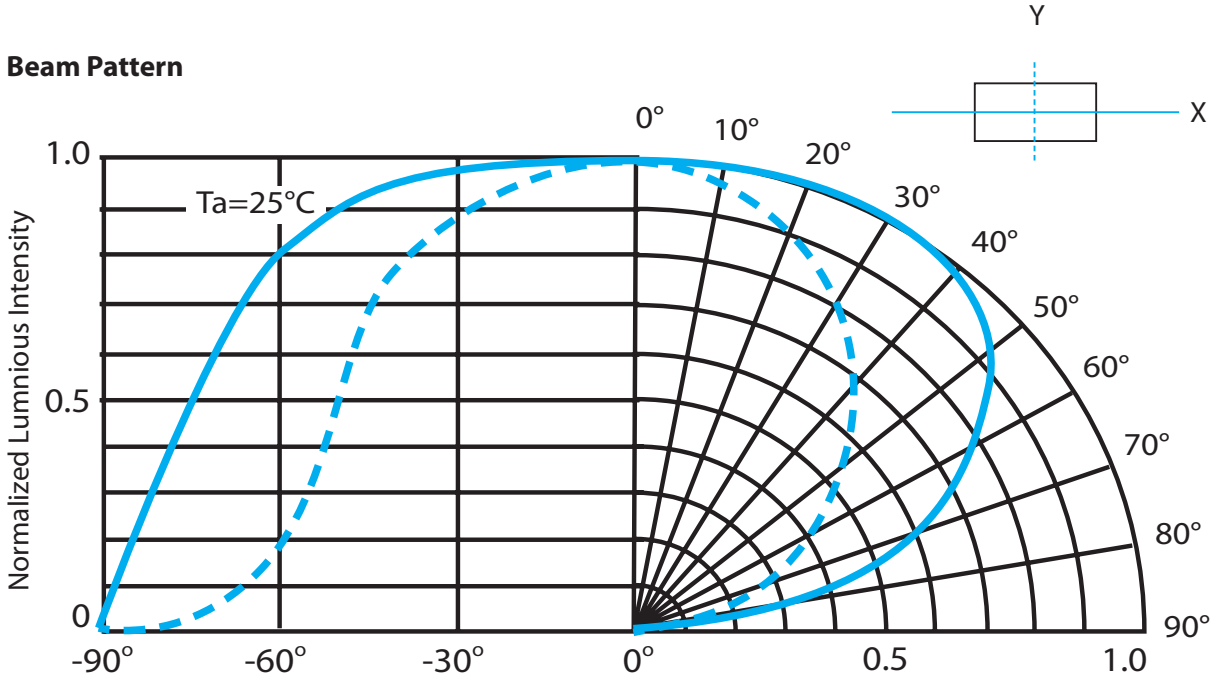
Characteristic curve

Color Spectrum



Color Spectrum at a typical CCT for PLCC 5630 Robin W

Beam Pattern



Beam pattern diagram for PLCC 5630 Robin W

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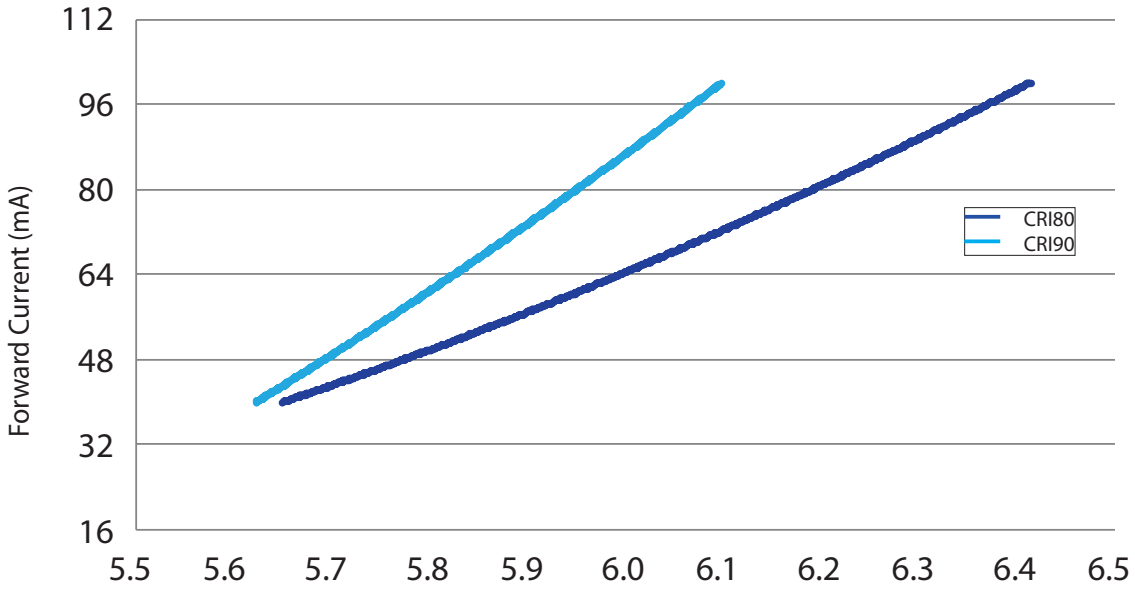
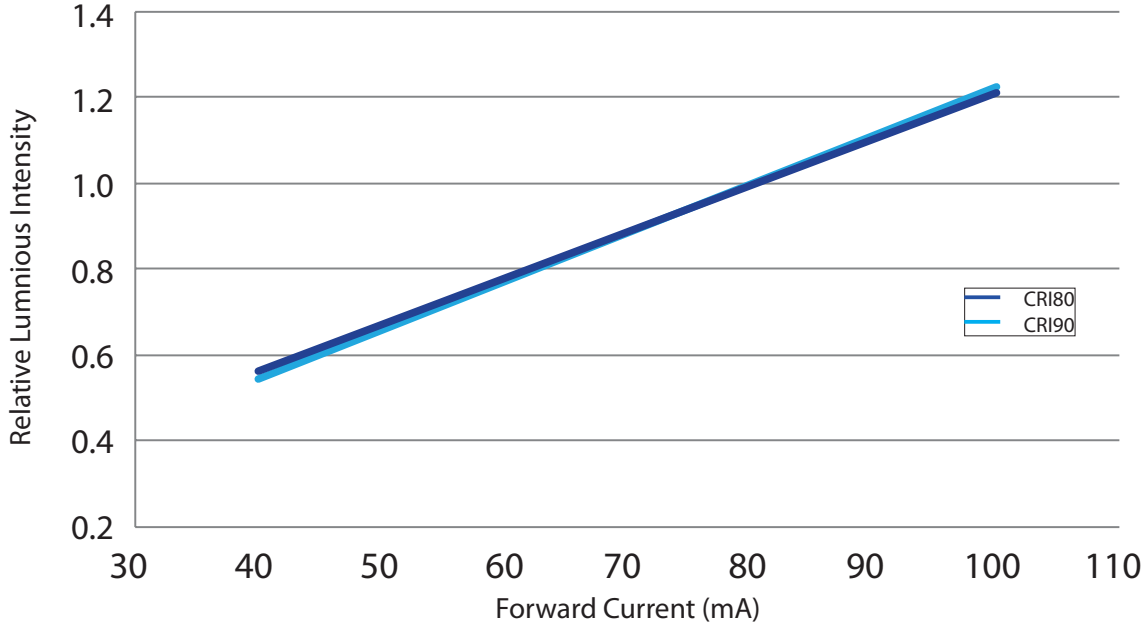
Forward Currentvs. Forward Voltage



Forward Current vs. Forward Voltagefor PLCC 5630 Robin W

Relative Luminous Intensity vs. Forward Current



Relative Luminous Intensity vs. Forward Current for PLCC 5630 Robin W

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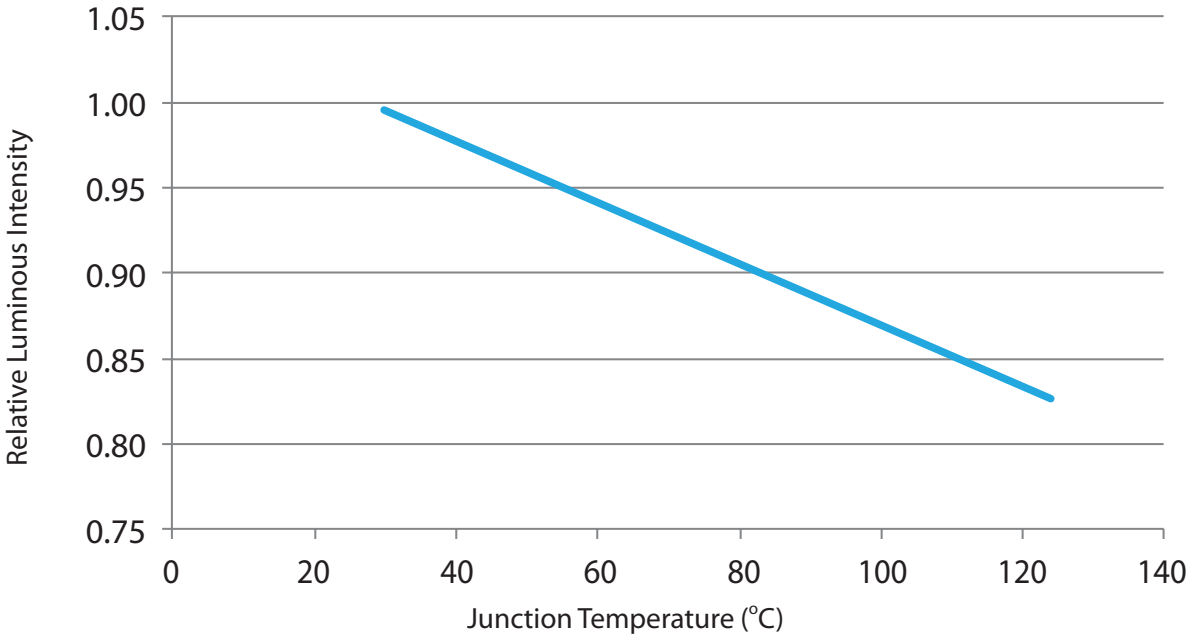
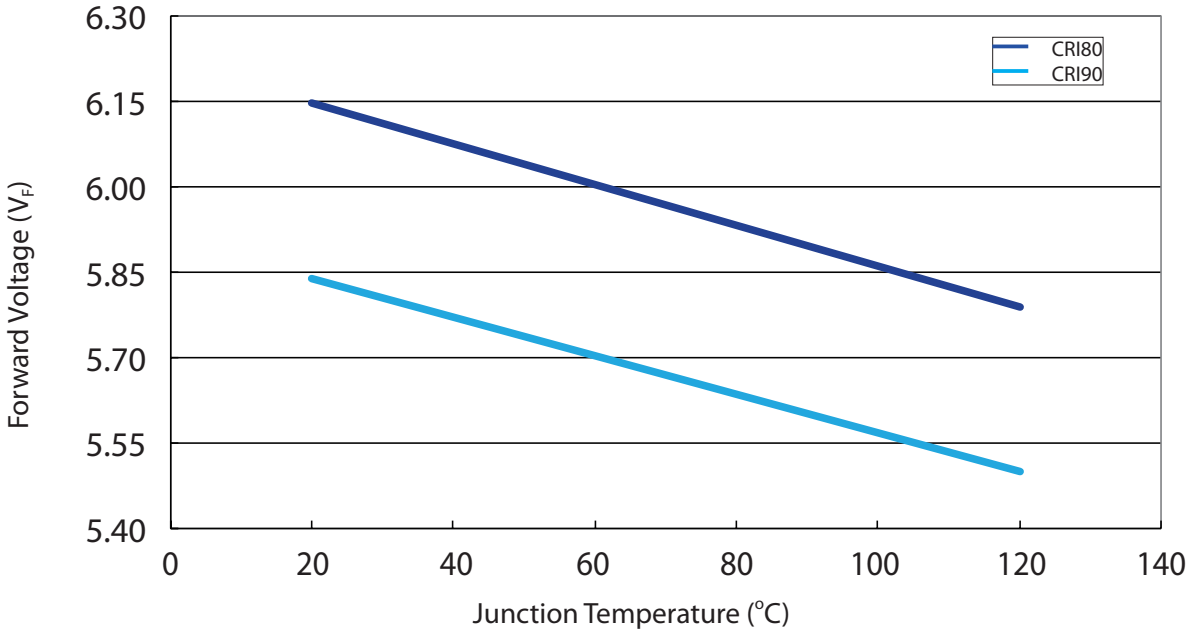
Relative Luminous Flux vs. Junction Temperature



Relative Luminous flux vs. junction temperature for PLCC 5630 Robin W

Forward Voltage vs. Junction Temperature



Forward voltage vs. junction temperature for PLCC 5630 Robin W

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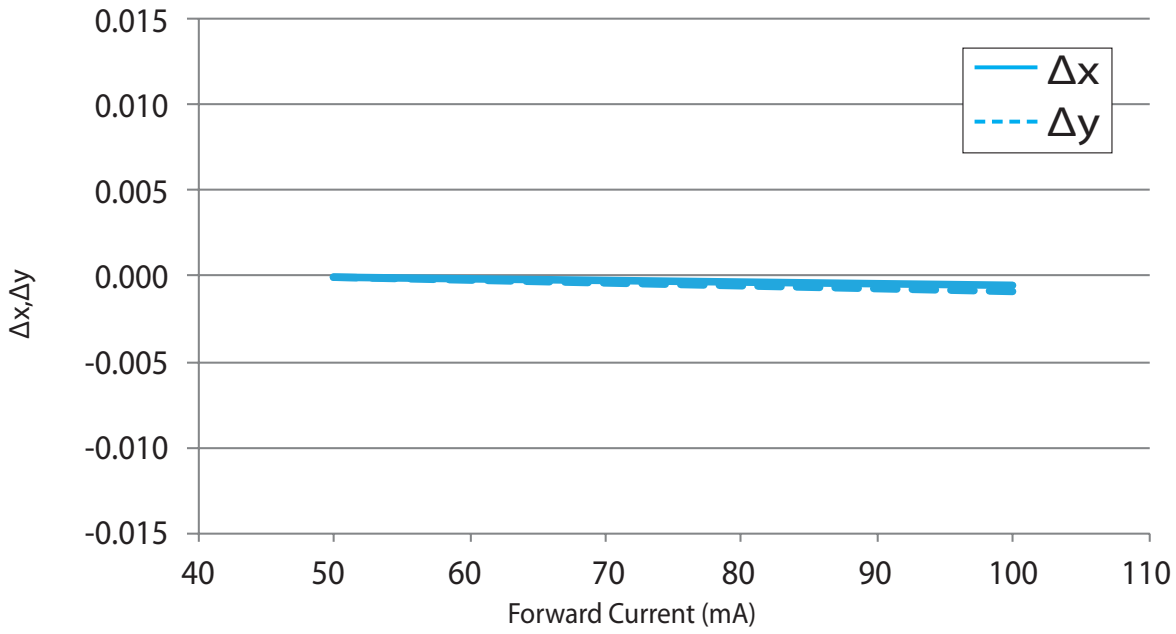
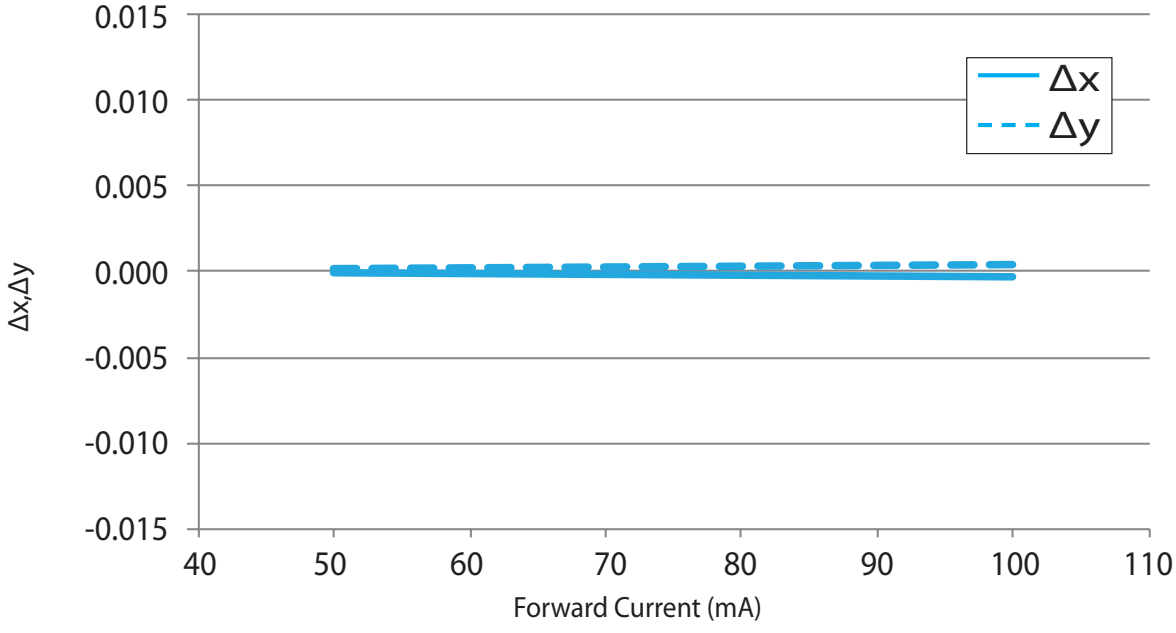
Δx,Δy vs. Forward Current



Δx,Δy vs. Forward Current for PLCC 5630 Robin W CRI80



Δx,Δy vs. Forward Current for PLCC 5630 Robin W CRI90

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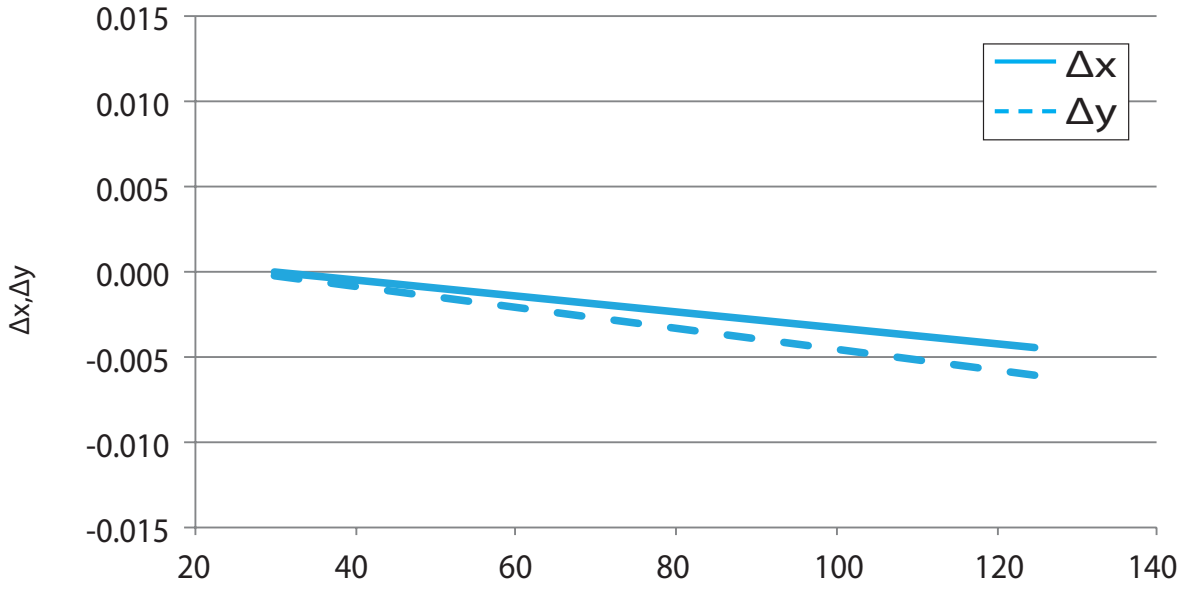
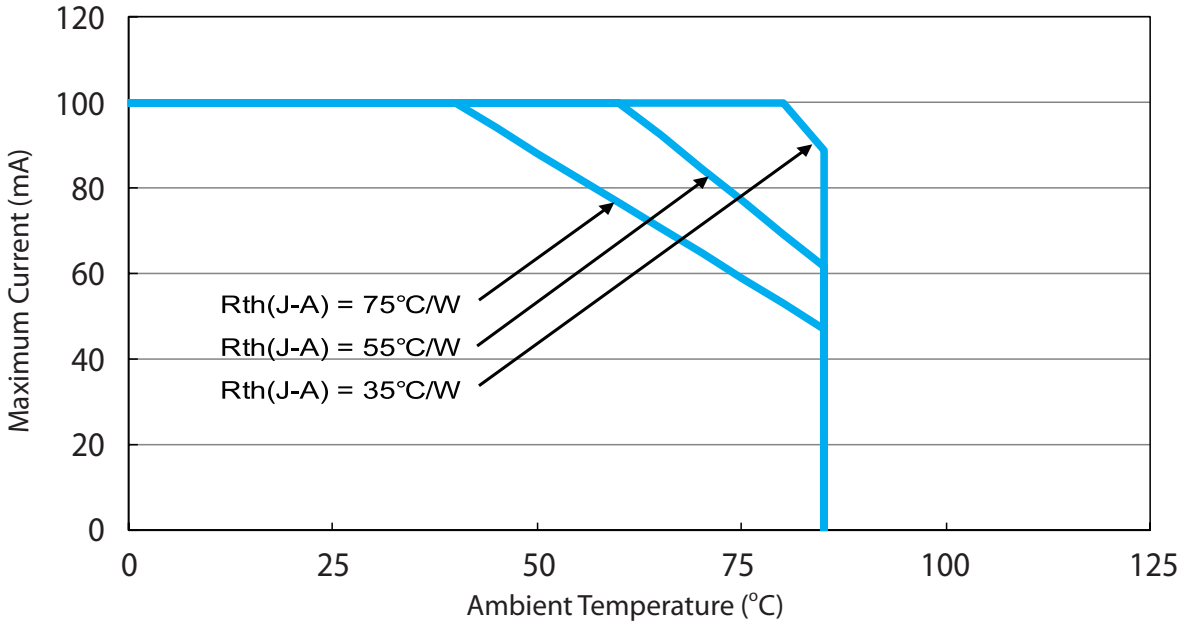
Δx,Δy vs. Junction Temperature



Δx,Δy vs. Junction temperature for PLCC 5630 Robin W

Maximum Current vs. Ambient Temperature



Maximum Current vs. Ambient Temperature for PLCC 5630 Robin W

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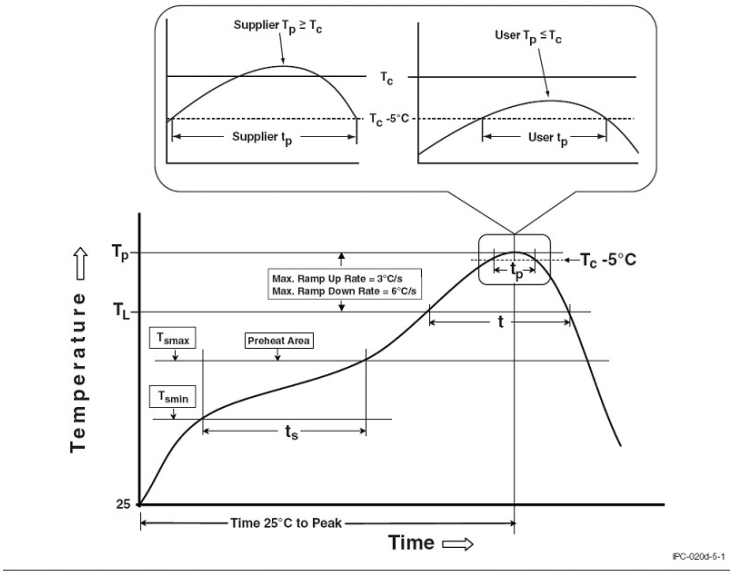
Reflow Profile

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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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 ≦10 sec	100 Cycle
3	Resistance to Soldering Heat	T_{SOL}=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_A=100°C	1,000 hrs
6	Humidity Heat Storage	T_A=85°C RH=85%	1,000 hrs
7	Low-Temperature Storage	T_A=-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%	-
Δu'v'	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μA
Resistance to Soldering Heat	No dead lamps or visual damage	

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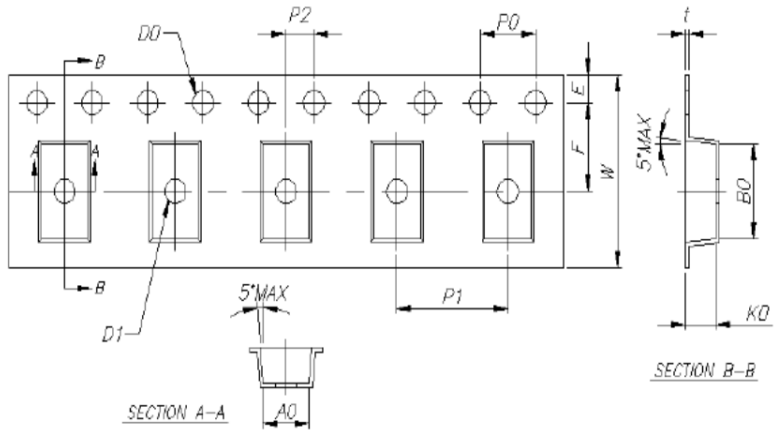
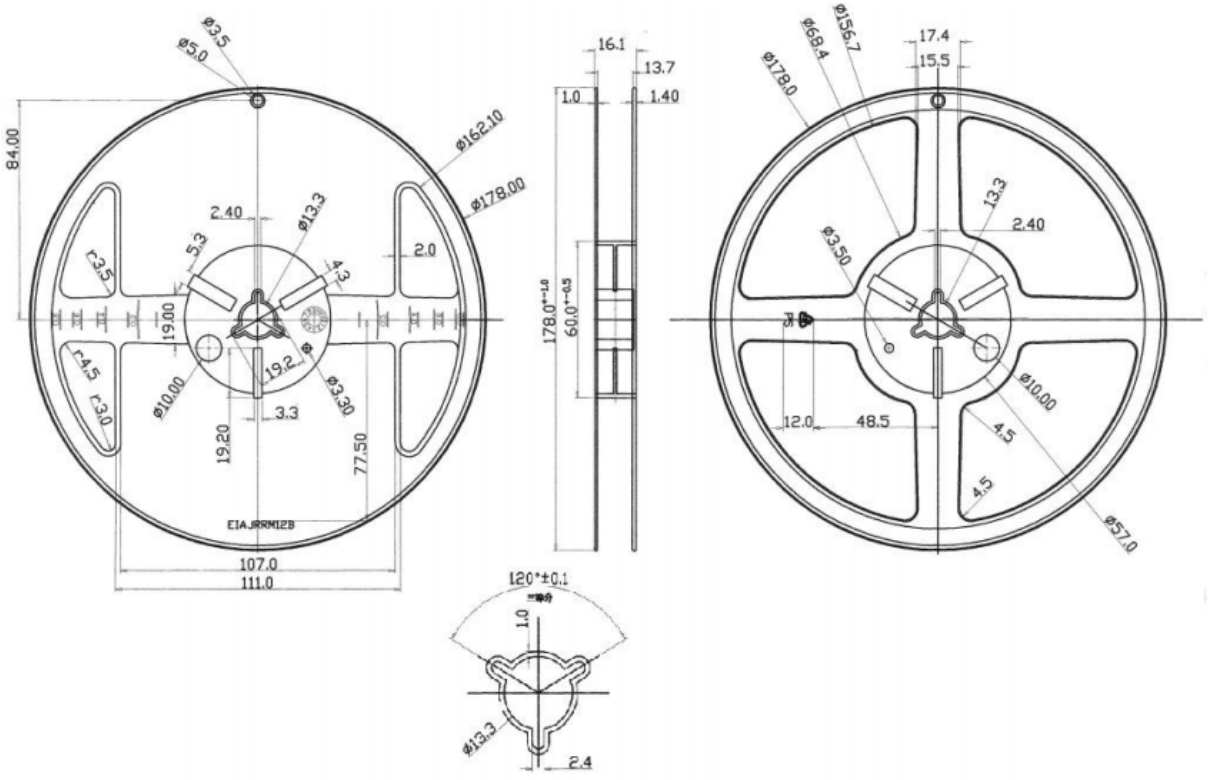
Reliability



Test Item	Specification (mm)
W	12.00
E	1.75
F	5.50
D0	1.50
D1	1.50
P0	4.00
P1	8.00
P2	2.00
t	0.25
A0	3.45
B0	5.90
K0	2.40

Reel Specification



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Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2015/03/23

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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