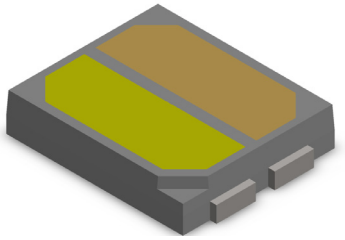
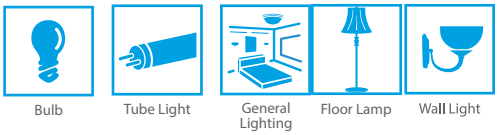
PLCC Series

2835 0.5W Dual Color

Datasheet





Introduction :

The PLCC Dual Color Series provides the comprehensive combination of two or more colors on one components. The Series which features evenly blending light is operated at 0.5W with dimmable function to offer customers the flexibility in SMT and luminaries design.

Description :

- Best luminous and color uniformity
- Enables halogen and CDM replacement
- The article itself presents the actual color.

Feature and Benefits :

- High luminous intensity
- CRI(Ra)>80
- Wide beam angle 120°
- More color options
- Evenly blending light
- Dimmable Desigh
- Suitable for all SMT assembly methods

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EDISON
Lighting Design Manufacturing Service

Table of Contents

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Lighting Design Manufacturing Service

General Information

Ordering Code Format

2	T	0 3	X 5	X X	A	8 8	3 3	x x x
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	2835	X5	0.5 W	WW	Warm White+Warm White
								WN	Warm White+Neutral White
								WC	Warm White+Cool White
								NC	Neutral White+Cool White
								CC	Cool White+Cool White

X9		X10-X11		X12-X13		X14-X16	
BIN		CRI(Ra)		Voltage		Serial Number	
A	Ansi	88	80+80	33	3V +3V	XXX	-

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Absolute Maximum Ratings

Absolute maximum ratings (T_a=25°C)

Parameter	Symbol	Value	Units
DC Forward Current	I_F	90/90	mA
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	I_{pulse}	120/120	mA
Reverse Curent	I_R	10	uA
Reverse Voltage	V_R	-	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.
3. Maximum Forward current of each side (one color) is 90mA.

Characteristics

Parameter		Symbol	Value	Units
Viewing Angle	(Typ.)	$2\Theta_{1/2}$	120	Degree
Thermal resistance		-	35	°C/W
CRI (Ra)		-	80	-
CCT	(Warm White) (Neutral White) (Cool White)	-	2,700 3,000 3,500 4,000 5,000 5,700 6,500	K
JEDEC Moisture Sensitivity		-	Level 3 **Floor Life** Conditions: ≤30°C / 60% RH **Soak Requirements(Standard)** Time (hours): 40+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. Color Rendering index CRI tolerance: ±2.
3. CIE_x/y tolerance: ±0.005.

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Luminous Flux Characteristic

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

Color	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Forward Current (mA)	Order Code
WW 2700K 3000K 3500K	22	22	24	60	2T03X5WWA8833001 2T03X5WNA8833001 2T03X5WCA8833001 2T03X5NCA8833001 2T03X5CCA8833001
	24	24	26		
	26	26	28		
NW 4000K	24	24	26		
	26	26	28		
	28	28	30		
CW 5000K 5700K 6500K	22	22	24		
	24	24	26		
	26	26	28		
	28	28	30		

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

Voltage Bin Structure

Voltage Characteristics, I_F=60mA and T_J=25˚C

Color	Group	Min. Voltage (V)	Max. Voltage (V)
WW NW CW	V00	2.5	2.8
	V01	2.8	3.1
	V02	3.1	3.4

Note:
Forward voltage measurement allowance is ± 0.06V.

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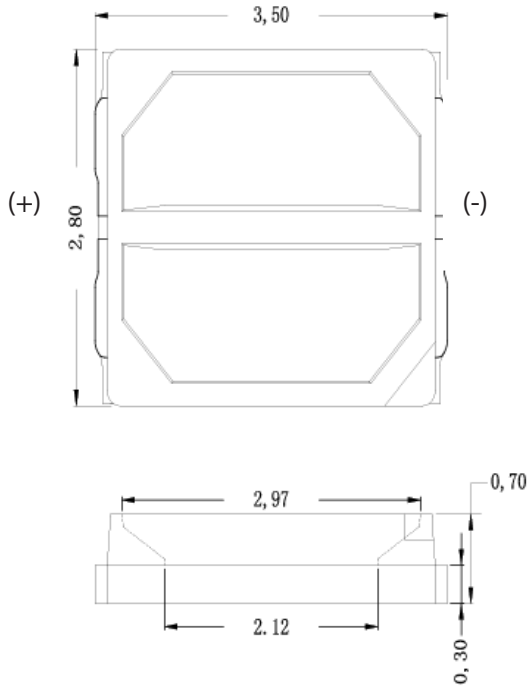
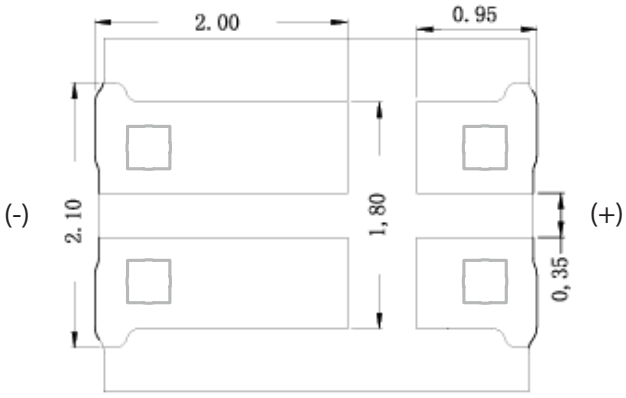
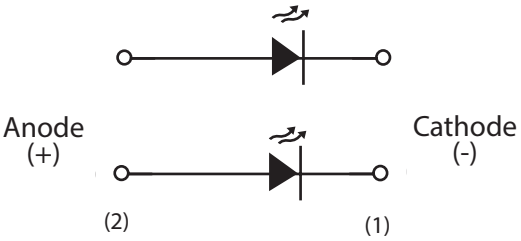
Mechanical Dimensions

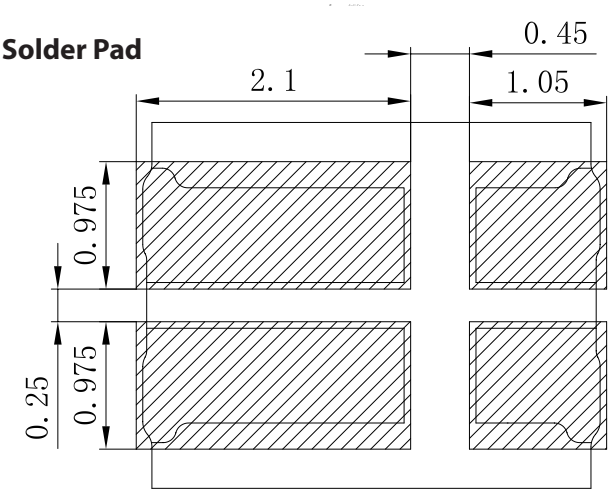




Circuit



Solder Pad



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

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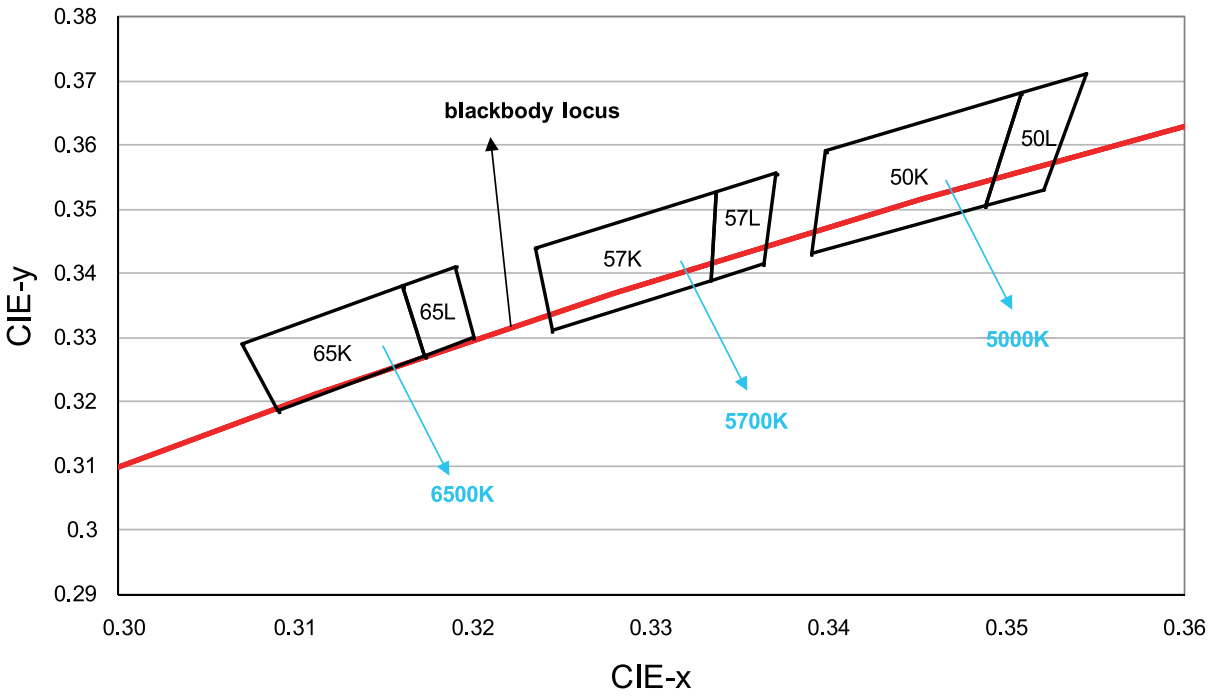
Color BIN code

Cool White



65K		57K		50K	
X	Y	X	Y	X	Y
0.3070	0.3290	0.3235	0.3440	0.3398	0.3590
0.3090	0.3185	0.3244	0.3310	0.3390	0.3430
0.3173	0.3271	0.3333	0.3389	0.3488	0.3505
0.3160	0.3380	0.3336	0.3527	0.3508	0.3682

65L		57L		50L	
X	Y	X	Y	X	Y
0.3160	0.3380	0.3336	0.3527	0.3508	0.3682
0.3173	0.3271	0.3333	0.3389	0.3488	0.3505
0.3200	0.3300	0.3363	0.3415	0.3520	0.3530
0.3190	0.3410	0.3370	0.3556	0.3544	0.3712

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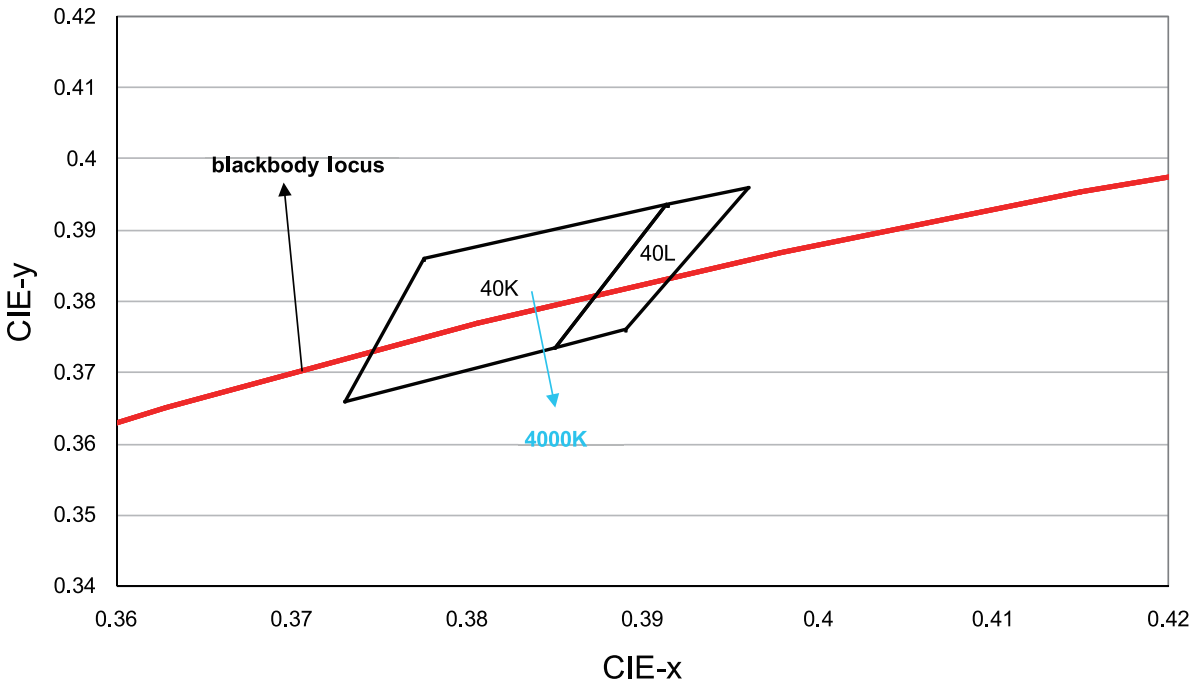
Lighting Design Manufacturing Service

Neutral White



40K		40L	
X	Y	X	Y
0.3775	0.3860	0.3914	0.3935
0.3730	0.3660	0.3850	0.3735
0.3850	0.3735	0.3890	0.3760
0.3914	0.3935	0.3960	0.3960

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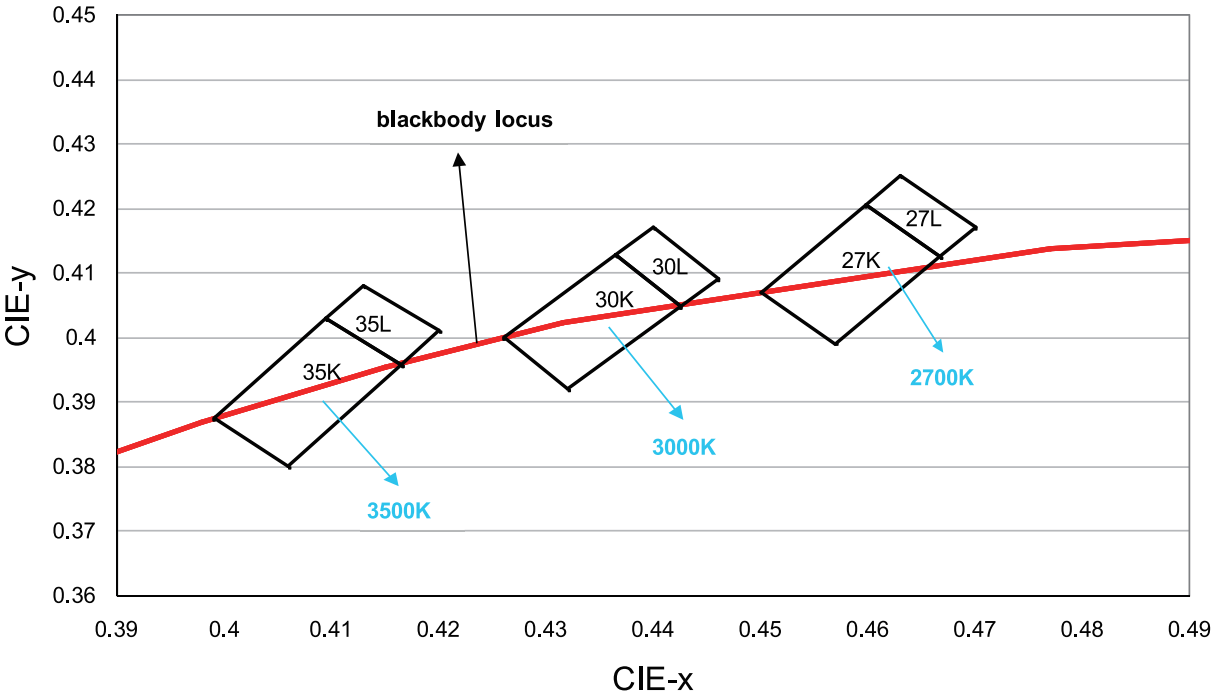
Warm White



35K		30K		27K	
X	Y	X	Y	X	Y
0.3990	0.3875	0.4260	0.4000	0.4500	0.4070
0.4060	0.3800	0.4320	0.3920	0.4570	0.3990
0.4165	0.3958	0.4425	0.4048	0.4668	0.4125
0.4095	0.4029	0.4365	0.4128	0.4598	0.4205

35L		30L		27L	
X	Y	X	Y	X	Y
0.4095	0.4029	0.4365	0.4128	0.4598	0.4205
0.4165	0.3958	0.4425	0.4048	0.4668	0.4125
0.4200	0.4010	0.4460	0.4090	0.4700	0.4170
0.4130	0.4080	0.4400	0.4170	0.4630	0.4250

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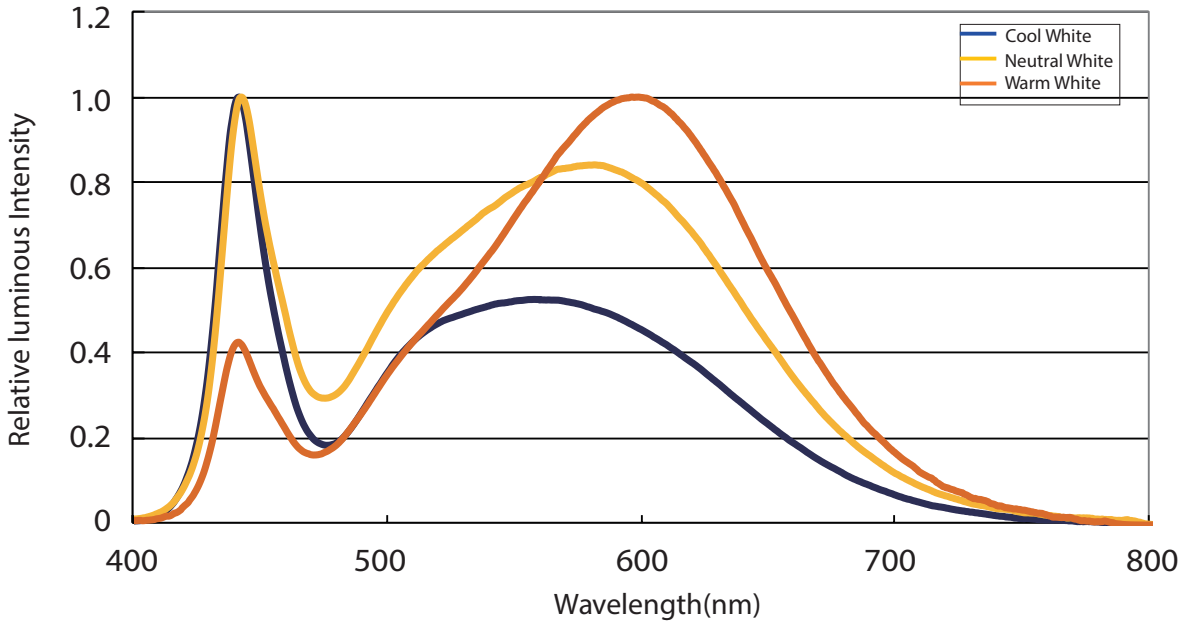
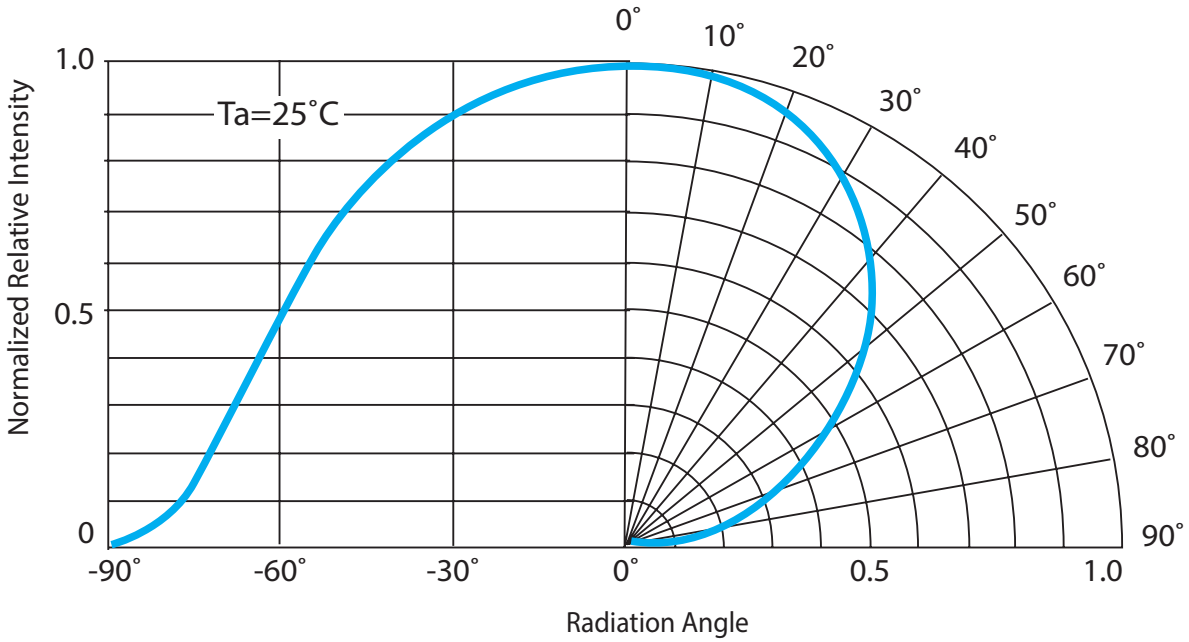
Characteristic curve

Color Spectrum



Beam Pattern



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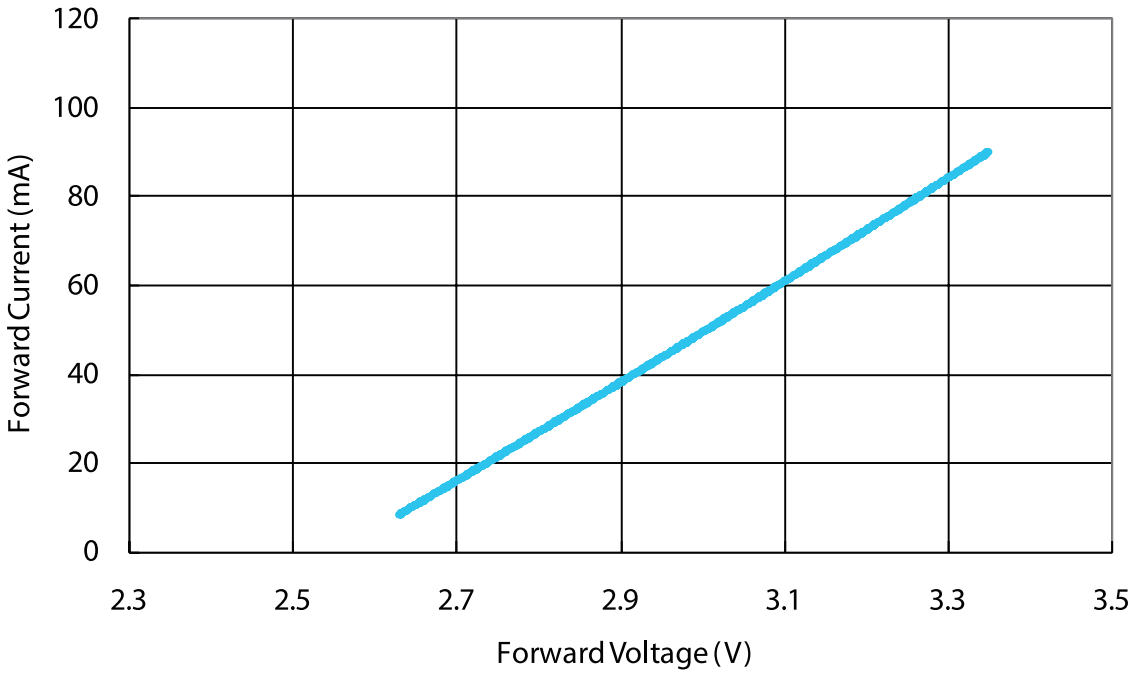
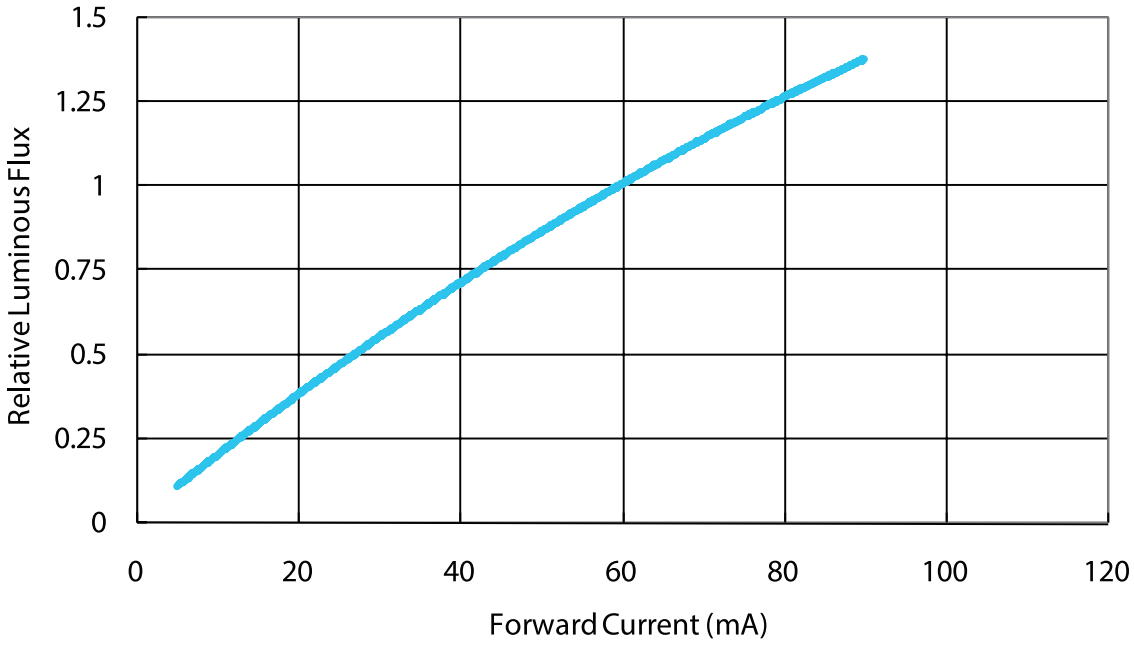
Forward Current vs. Forward Voltage



Relative Luminous Flux vs. Forward Current



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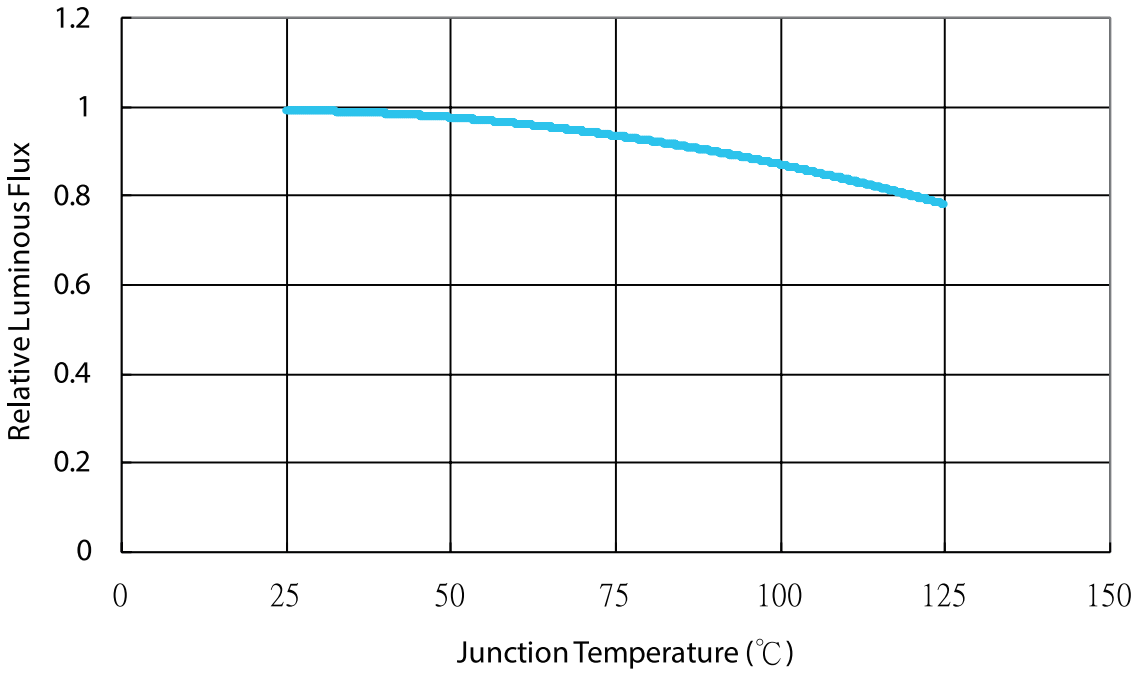
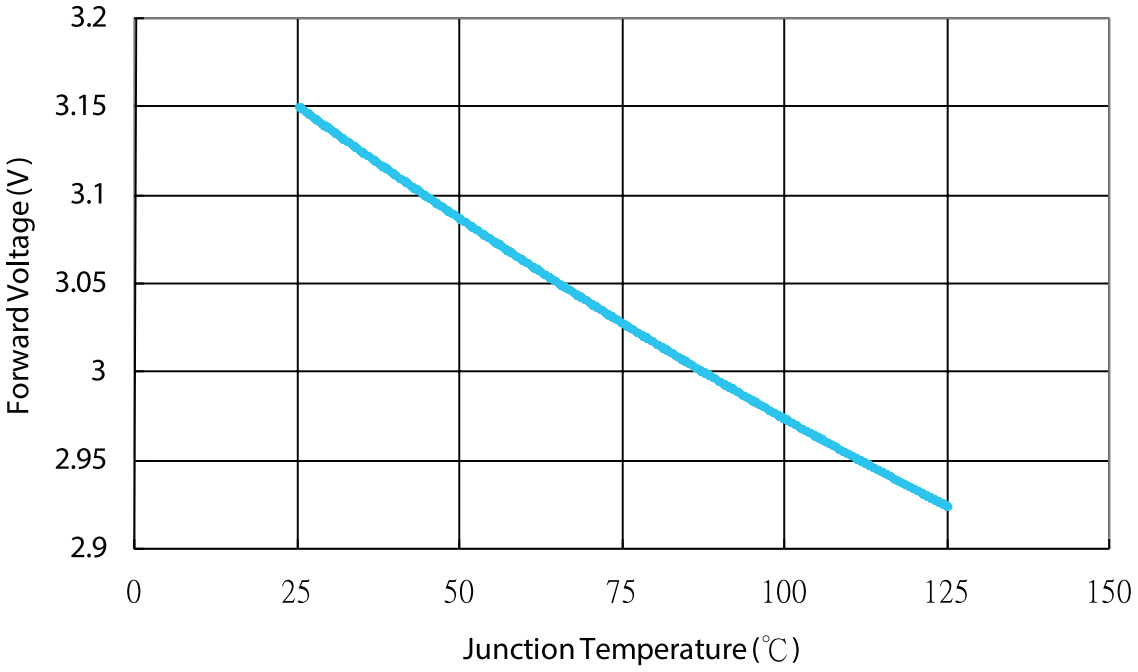
Relative Luminous Flux vs. Junction Temperature



Forward Voltage vs. Junction Temperature



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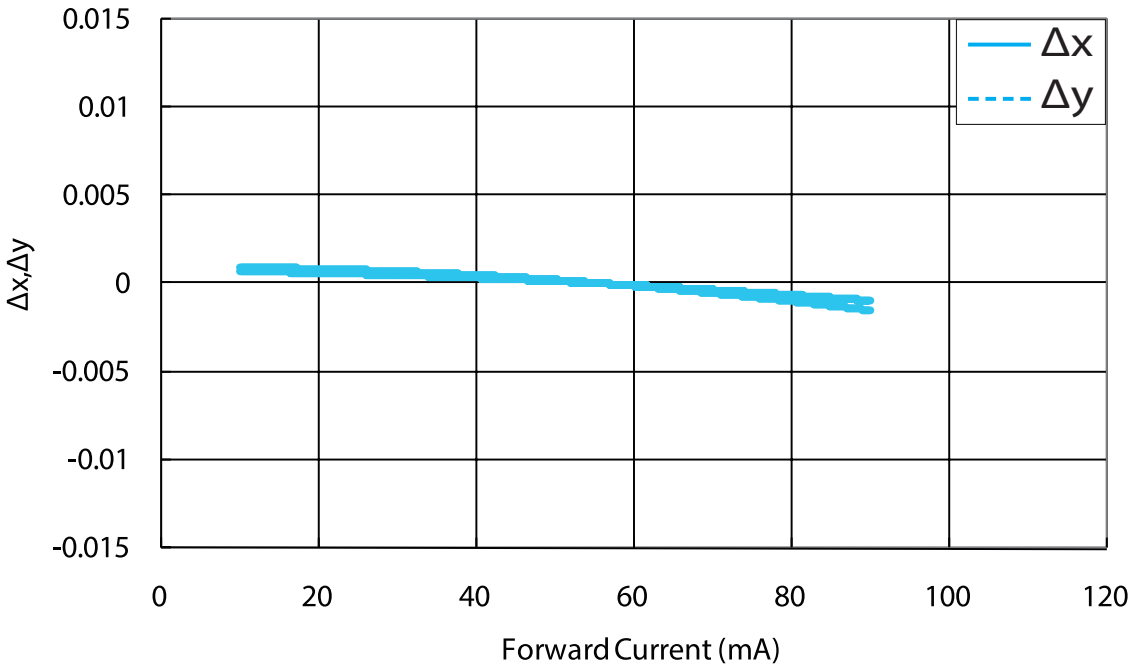
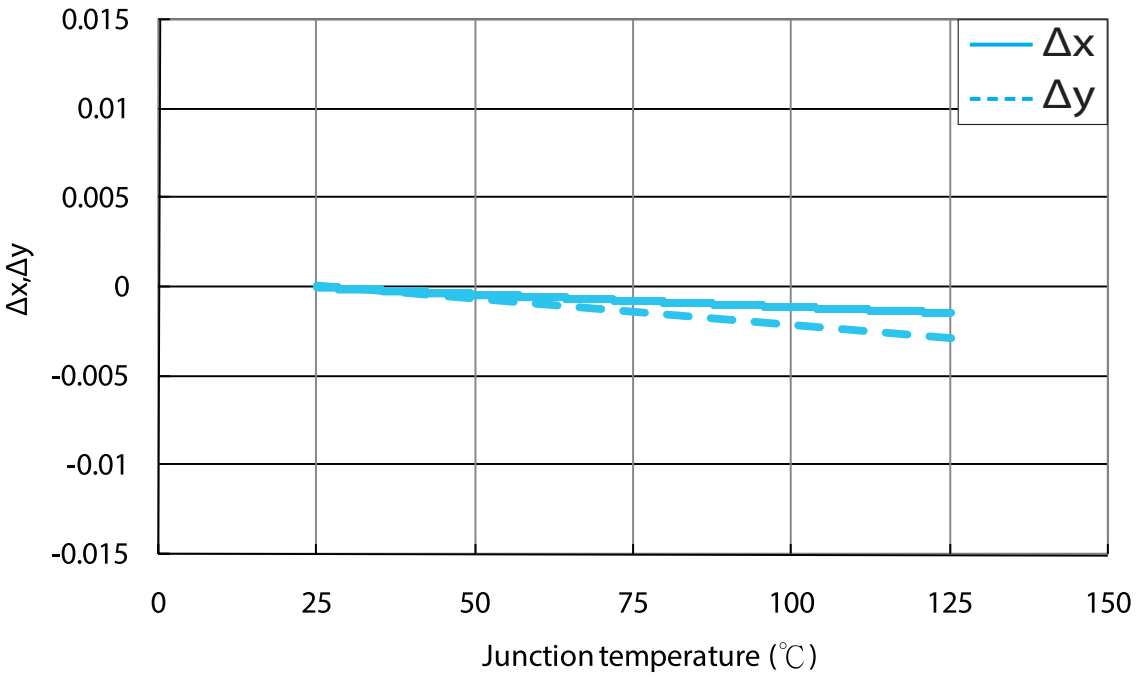
Δx,Δy vs. Forward Current



Δx,Δy vs. Junction Temperature



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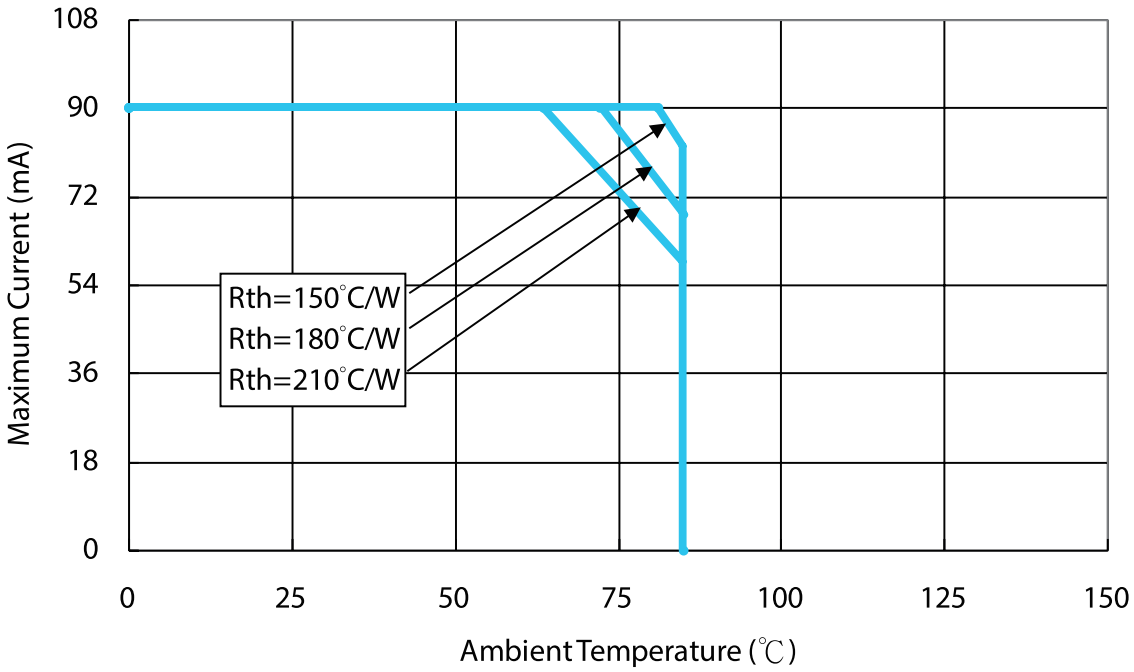
Maximum Current vs. Ambient Temperature



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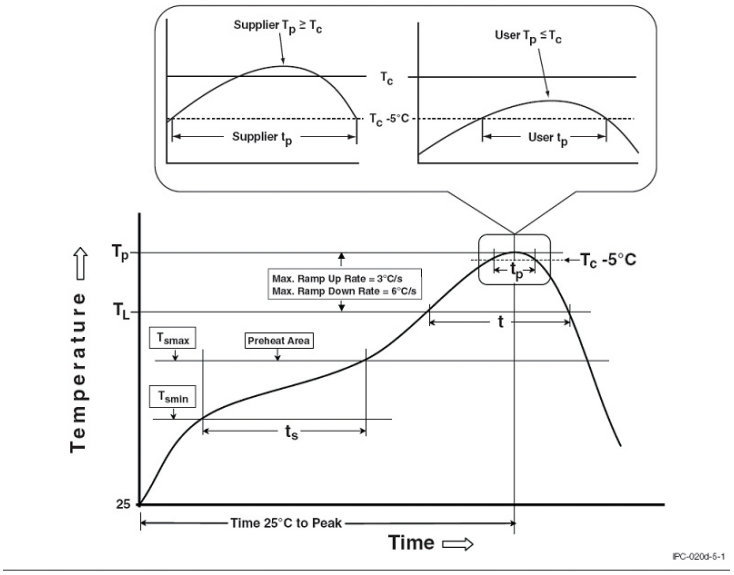
Lighting Design Manufacturing Service

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	

Cautions

LEDs should be stored or lighted in the environment of no Sulfur.

Some materials, such as plastic seals, printing ink, enclosures and adhesives, may contain sulfur.

LEDs also should not be exposed in the acid or halogen environment.

Lumen Maintenance

LM 80

Edison Opto's LM-80 verification is conducted according to standardized IES LM-80-08 and TM-21-11 methods. Based on the different testing intervals data, Edison Opto can speculate LED lumen maintenance. For more details on lumen maintenance testing, chromaticity and LED case temperatures please refer to Edison Opto's LM-80 reports.

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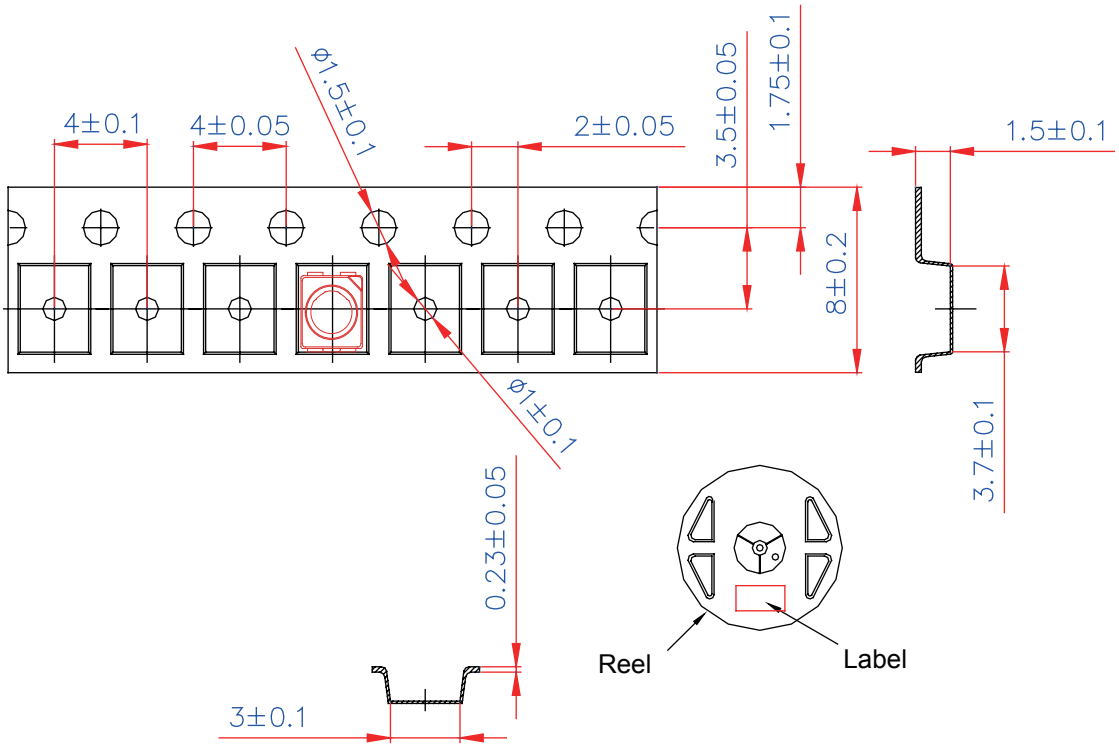
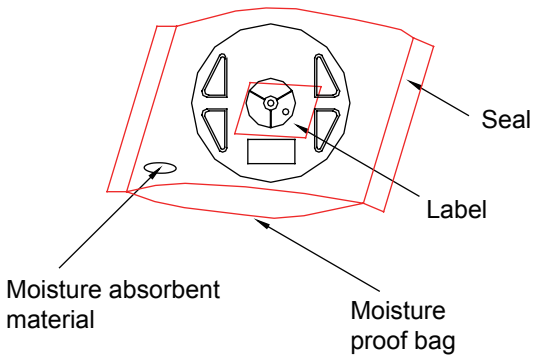
Product Packaging Information



Taping reel dimensions



Package & label

Label Example:

Item	Quantity	Total	Dimensions(mm)
Reel	4,000pcs	4,000pcs	R=178
Starting with 250pcs empty,and 150pcs empty at the last			

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Lighting Design Manufacturing Service

Revision History

Versions	Description	Release Date
1	Preliminary	2018/5/25
2	Update Voltage Bin Structure	2019/02/22
3	Update Label Example Update Lumen Maintenance	2019/12/20
4	Update Luminous Flux Characteristics	2023/05/30

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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