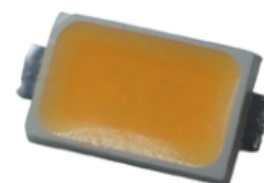


PLCC Series

5630B 0.5W

Datasheet



Bulb



Down Light

Decorative
Light

Tube Light



Track Light



Panel Light

Introduction :

Edison PLCC 5630B series have Ultra high luminous efficacy, combined with the flexibility in design due to its slim and miniature size, 5630B series is optimized to be used in any kind of lighting sources, including general illumination, tube light source, indoor/outdoor display, decorative lighting, industrial and commercial lightings.

Description :

- Standard package size 5.7mm x 3.0mm
- Good uniform light color
- Multi-color system more options
- High reliability product
(pass LM-80 verification)

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
- ANSI Compliant color binning

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General Information

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	-	-	-

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Units
Forward Current	I_F	200	mA
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	I_{pulse}	400	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.)	$2\theta_{1/2}$	120	Degree
Thermal resistance	-	20	°C/W
CCT (Cool White) (Neutral White) (Warm White)	-	2,700 3,000 3,500 4,000 5,000 5,700 6,500	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: ±0.005

Luminous Flux Characteristic

Luminous Flux Characteristics, $I_f=150\text{mA}$ and $T_j=25^\circ\text{C}$

Color	CRI	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Forward Current(mA)	Order Code
Cool White	80	60	60	65	150	2T05X5CW14000004
		65	65	70		
		70	70	75		
Neutral White		60	60	65		2T05X5NW11000004
		65	65	70		
		70	70	75		
Warm White		55	55	60		2T05X5WW11000006
		60	60	65		
		65	65	70		

Notes:

1. The luminous flux performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of $\pm 10\%$ on flux measurements.
2. Color Rendering index CRI tolerance: ± 2 .

Voltage Bin Structure

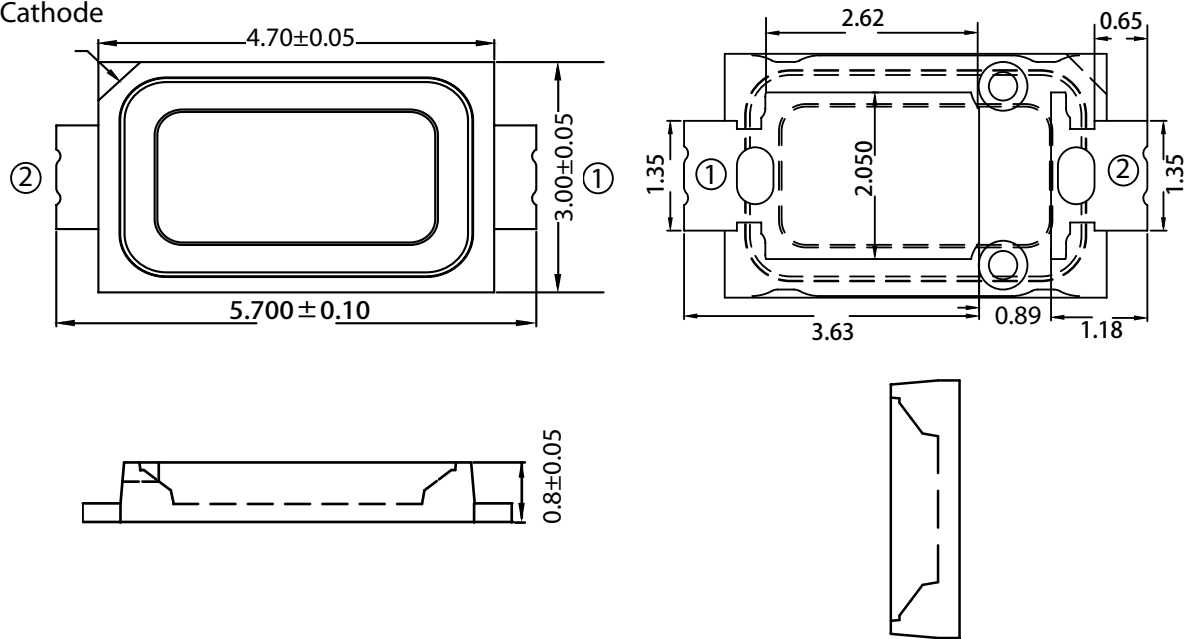
Group	Min. Voltage (V)	Max. Voltage (V)
VA1	2.8	2.9
VB1	2.9	3.0
VC1	3.0	3.1
VA2	3.1	3.2
VB2	3.2	3.3
VC2	3.3	3.4

Note:

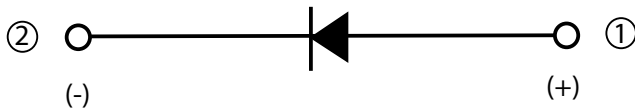
Forward voltage measurement allowance is $\pm 0.06\text{V}$.

Mechanical Dimensions

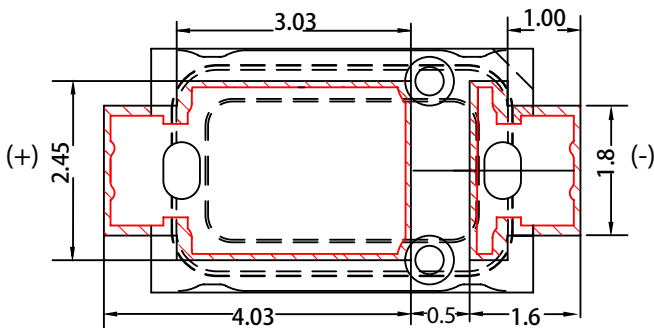
Cathode



Circuit



Solder Pad



Notes:

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

Color BIN code

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.

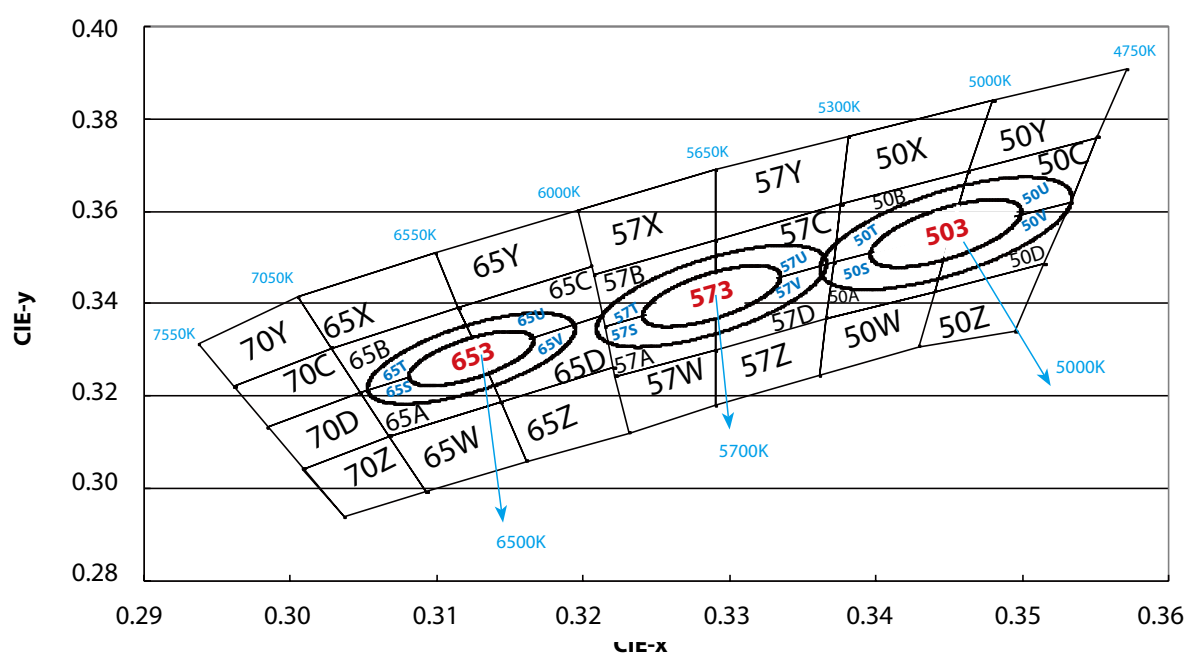
The chromaticity center refers to ANSI C78.377:2008.

Please refer to ANSI C78.377 for the chromaticity center.

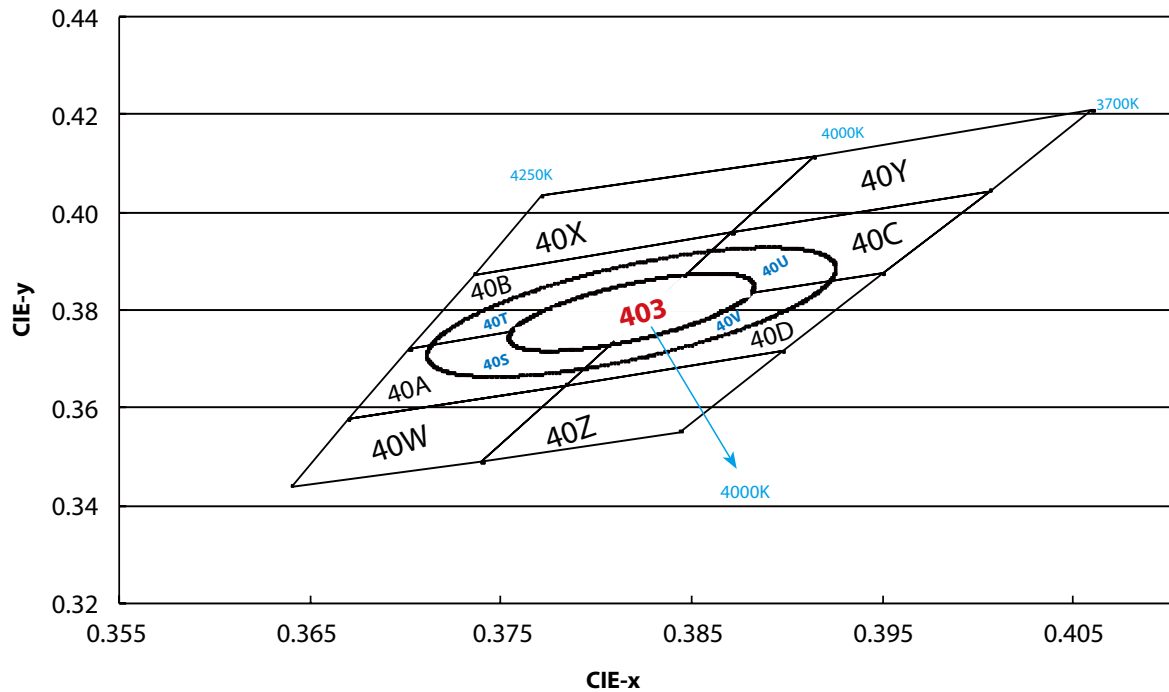
CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22
3500K	5	0.4073	0.3917	0.01545	0.00690	54.00
4000K	5	0.3818	0.3797	0.01565	0.00670	53.72
5000K	5	0.3447	0.3553	0.01370	0.00590	59.62
5700K	5	0.3287	0.3417	0.01243	0.00533	59.09
6500K	5	0.3123	0.3282	0.01115	0.00475	58.57

CCT	Steps	Cx	Cy	a	b	theta
2700K	3	0.4578	0.4101	0.00810	0.00420	53.70
3000K	3	0.4338	0.4030	0.00834	0.00408	53.22
3500K	3	0.4073	0.3917	0.00927	0.00414	54.00
4000K	3	0.3818	0.3797	0.00939	0.00402	53.72
5000K	3	0.3447	0.3553	0.00822	0.00354	59.62
5700K	3	0.3287	0.3417	0.00746	0.00320	59.09
6500K	3	0.3123	0.3282	0.00669	0.00285	58.57

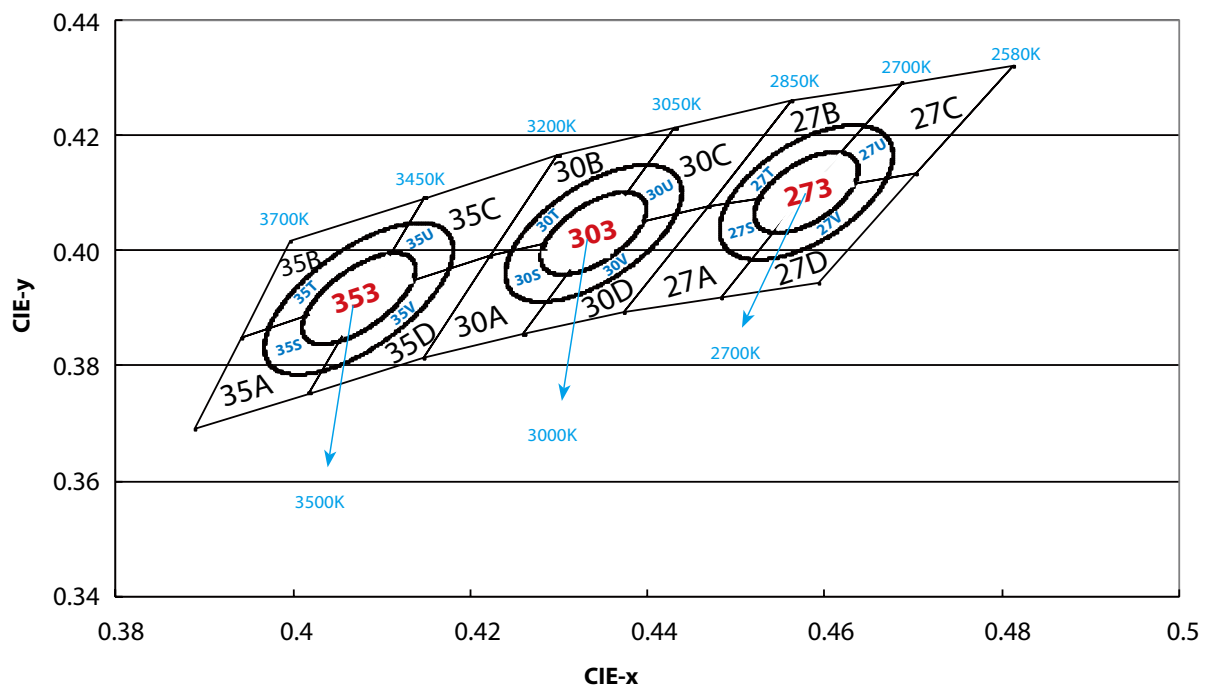
Cool White



Neutral White



Warm White



6500K

65X		65B		65A		65W	
X	Y	X	Y	X	Y	X	Y
0.3005	0.3415	0.3115	0.3391	0.3130	0.3290	0.3068	0.3113
0.3099	0.3509	0.3028	0.3304	0.3048	0.3207	0.3144	0.3186
0.3115	0.3391	0.3048	0.3207	0.3068	0.3113	0.3161	0.3059
0.3028	0.3304	0.3130	0.3290	0.3144	0.3186	0.3093	0.2993

65Y		65C		65D		65Z	
X	Y	X	Y	X	Y	X	Y
0.3099	0.3509	0.3205	0.3481	0.3213	0.3373	0.3144	0.3186
0.3196	0.3602	0.3115	0.3391	0.3130	0.3290	0.3221	0.3261
0.3205	0.3481	0.3130	0.3290	0.3144	0.3186	0.3231	0.3120
0.3115	0.3391	0.3213	0.3373	0.3221	0.3261	0.3161	0.3059

5700K

57X		57B		57A		57W	
X	Y	X	Y	X	Y	X	Y
0.3196	0.3602	0.3290	0.3538	0.3290	0.3417	0.3222	0.3243
0.3290	0.3690	0.3207	0.3462	0.3215	0.3350	0.3290	0.3300
0.3290	0.3538	0.3215	0.3350	0.3222	0.3243	0.3290	0.3180
0.3207	0.3462	0.3290	0.3417	0.3290	0.3300	0.3231	0.3120

57Y		57C		57D		57Z	
X	Y	X	Y	X	Y	X	Y
0.3290	0.3690	0.3376	0.3616	0.3371	0.3490	0.3290	0.3300
0.3381	0.3762	0.3290	0.3538	0.3290	0.3417	0.3366	0.3369
0.3376	0.3616	0.3290	0.3417	0.3290	0.3300	0.3361	0.3245
0.3290	0.3538	0.3371	0.3490	0.3366	0.3369	0.3290	0.3180

5000K

50X		50B		50A		50W	
X	Y	X	Y	X	Y	X	Y
0.3381	0.3762	0.3463	0.3687	0.3451	0.3554	0.3366	0.3369
0.3480	0.3840	0.3376	0.3616	0.3371	0.3490	0.3440	0.3427
0.3463	0.3687	0.3371	0.3490	0.3366	0.3369	0.3429	0.3307
0.3376	0.3616	0.3451	0.3554	0.3440	0.3427	0.3361	0.3245

50Y		50C		50D		50Z	
X	Y	X	Y	X	Y	X	Y
0.3480	0.3840	0.3551	0.3760	0.3533	0.3620	0.3440	0.3427
0.3571	0.3907	0.3463	0.3687	0.3451	0.3554	0.3515	0.3487
0.3551	0.3760	0.3451	0.3554	0.3440	0.3427	0.3495	0.3339
0.3463	0.3687	0.3533	0.3620	0.3515	0.3487	0.3429	0.3307

4000K

40X		40B		40A		40W	
X	Y	X	Y	X	Y	X	Y
0.3771	0.4034	0.3871	0.3959	0.3828	0.3803	0.3670	0.3578
0.3736	0.3874	0.3736	0.3874	0.3702	0.3722	0.3640	0.3440
0.3871	0.3959	0.3702	0.3722	0.3670	0.3578	0.3740	0.3491
0.3914	0.4115	0.3828	0.3803	0.3784	0.3647	0.3784	0.3647

40Y		40C		40D		40Z	
X	Y	X	Y	X	Y	X	Y
0.3914	0.4115	0.4006	0.4044	0.3950	0.3875	0.3784	0.3647
0.3871	0.3959	0.3871	0.3959	0.3828	0.3803	0.3740	0.3491
0.4006	0.4044	0.3828	0.3803	0.3784	0.3647	0.3844	0.3552
0.4060	0.4208	0.3950	0.3875	0.3898	0.3716	0.3898	0.3716

3500K

35A		35B		35C		35D	
X	Y	X	Y	X	Y	X	Y
0.4083	0.3921	0.4148	0.4090	0.4299	0.4165	0.4223	0.399
0.3941	0.3848	0.3996	0.4015	0.4148	0.4090	0.4083	0.3921
0.3889	0.3690	0.3941	0.3848	0.4083	0.3921	0.4018	0.3752
0.4018	0.3752	0.4083	0.3921	0.4223	0.399	0.4147	0.3814

3000K

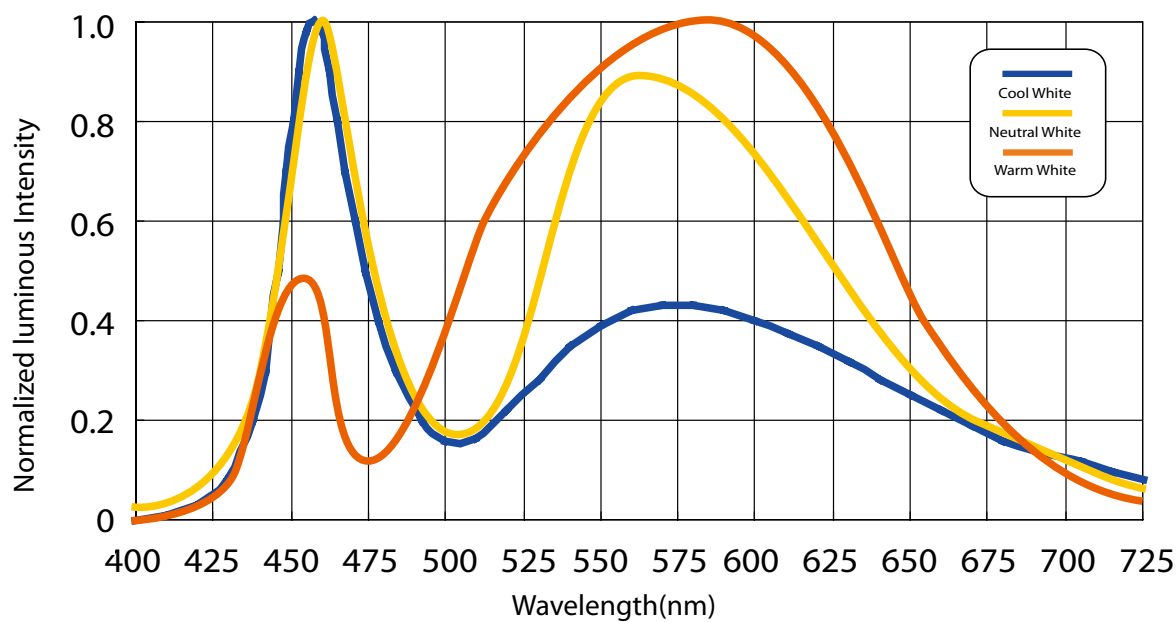
30A		30B		30C		30D	
X	Y	X	Y	X	Y	X	Y
0.4345	0.4033	0.4431	0.4213	0.4562	0.4260	0.4468	0.4077
0.4223	0.3990	0.4299	0.4165	0.4431	0.4213	0.4345	0.4033
0.4147	0.3814	0.4223	0.3990	0.4345	0.4033	0.4260	0.3854
0.4260	0.3854	0.4345	0.4033	0.4468	0.4077	0.4373	0.3893

2700K

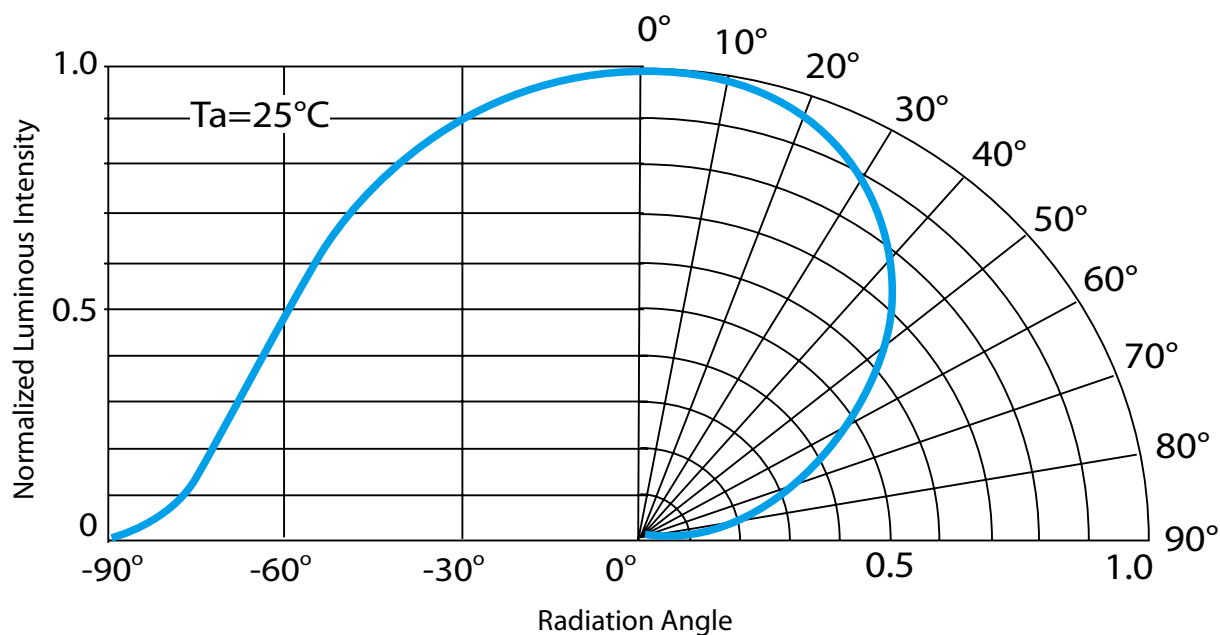
27A		27B		27C		27D	
X	Y	X	Y	X	Y	X	Y
0.4578	0.4101	0.4687	0.4289	0.4813	0.4319	0.4703	0.4132
0.4468	0.4077	0.4562	0.4260	0.4687	0.4289	0.4578	0.4101
0.4373	0.3893	0.4468	0.4077	0.4578	0.4101	0.4483	0.3919
0.4483	0.3919	0.4578	0.4101	0.4703	0.4132	0.4593	0.3944

Characteristic curve

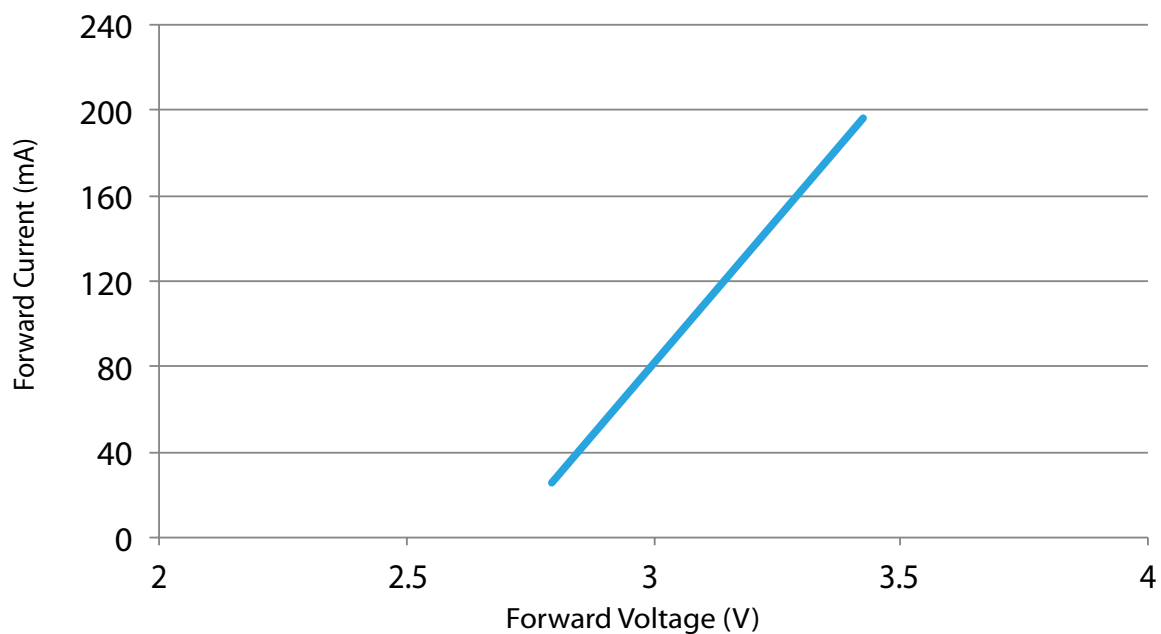
Color Spectrum



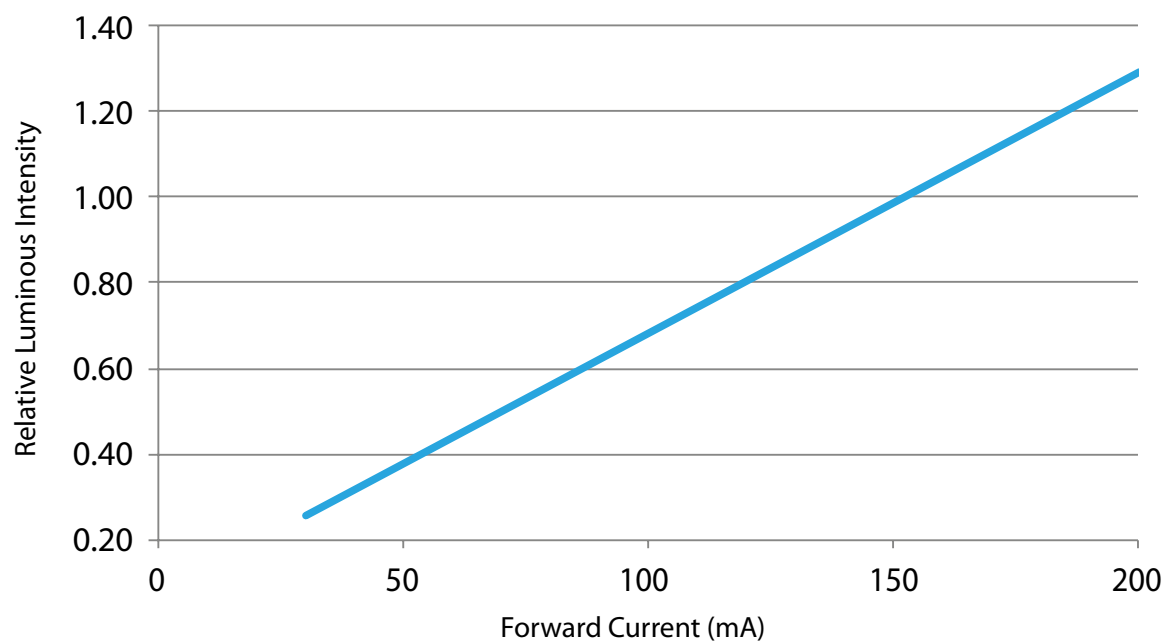
Beam Pattern



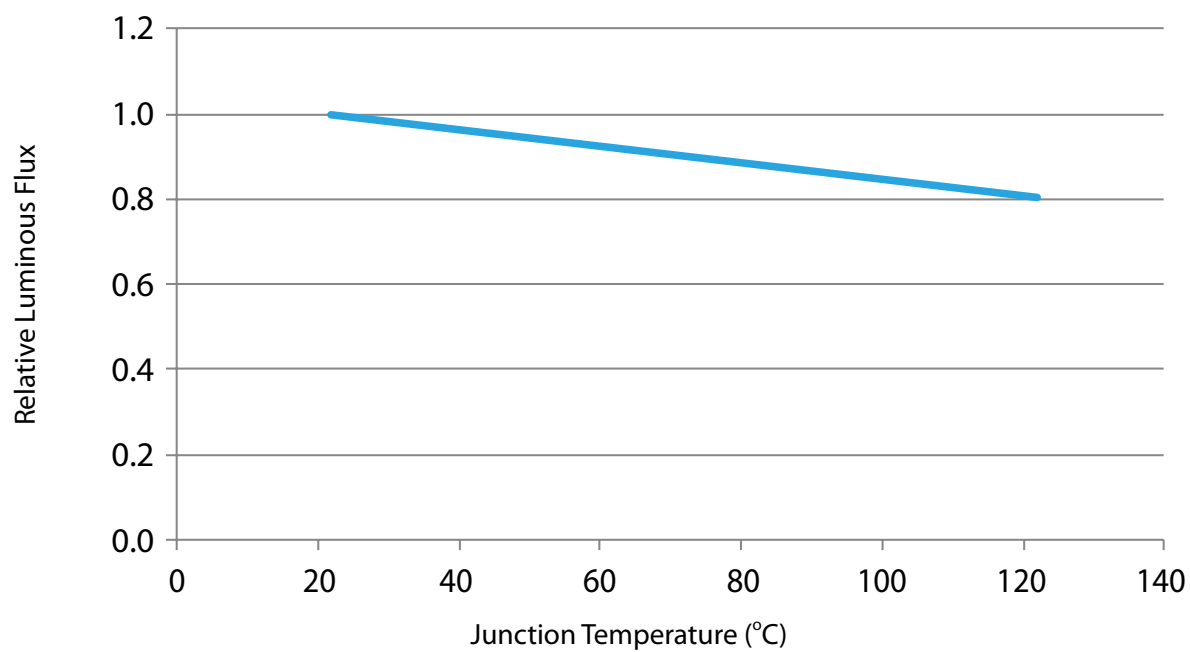
Forward Current vs. Forward Voltage



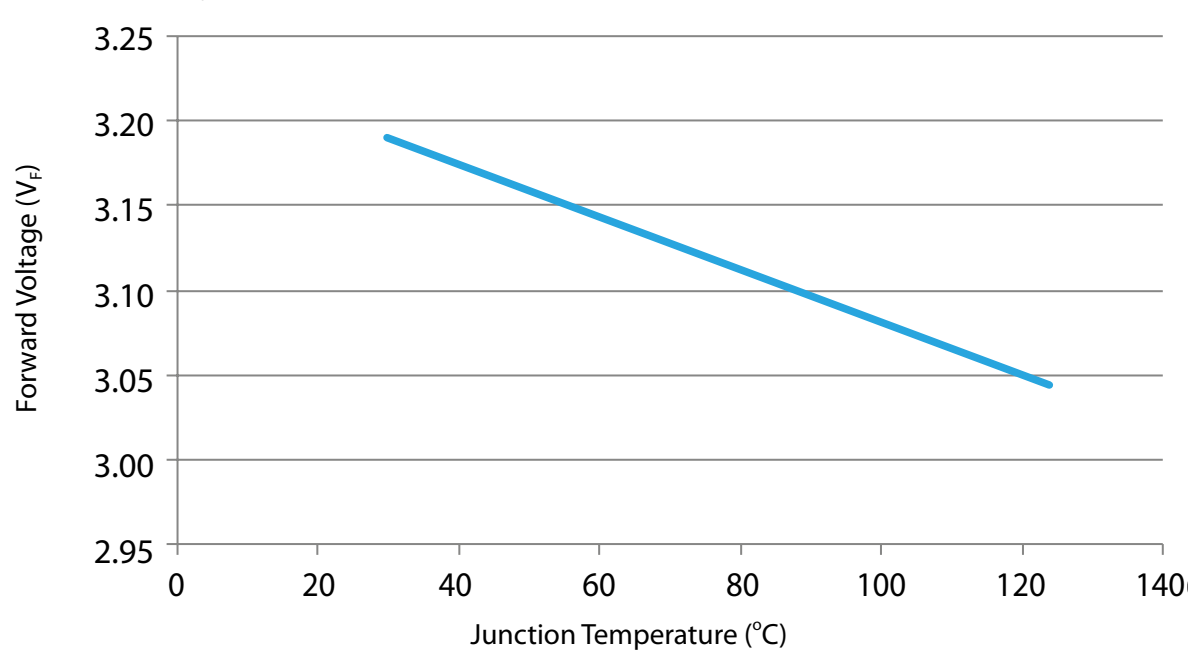
Relative Luminous Intensity vs. Forward Current



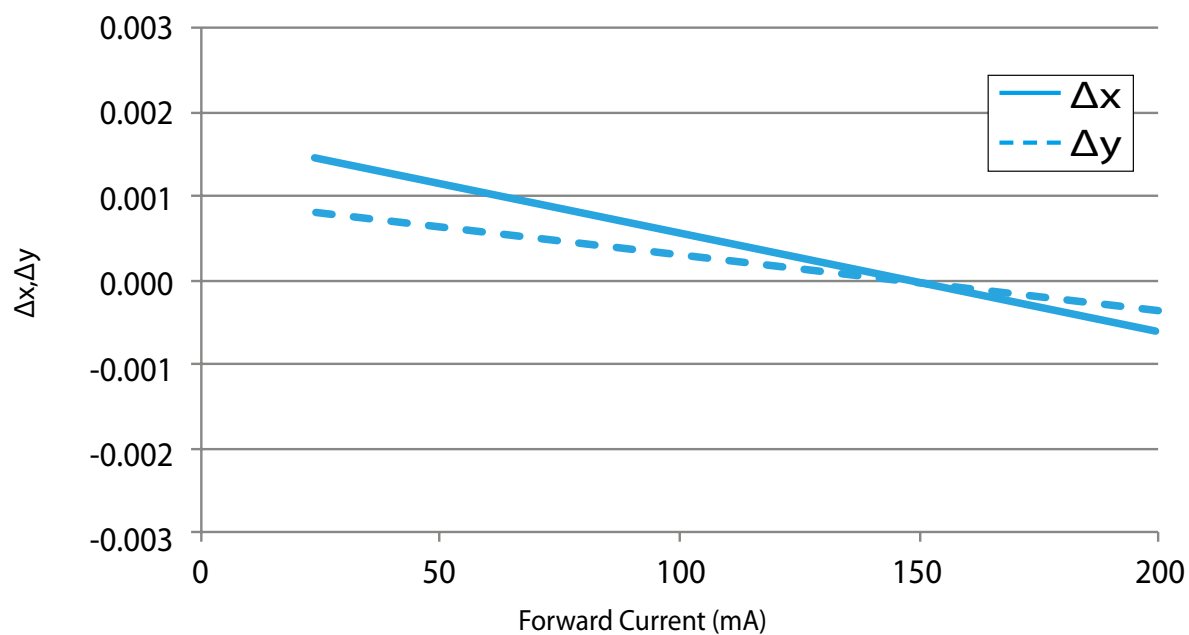
Relative Luminous Flux vs. Junction Temperature



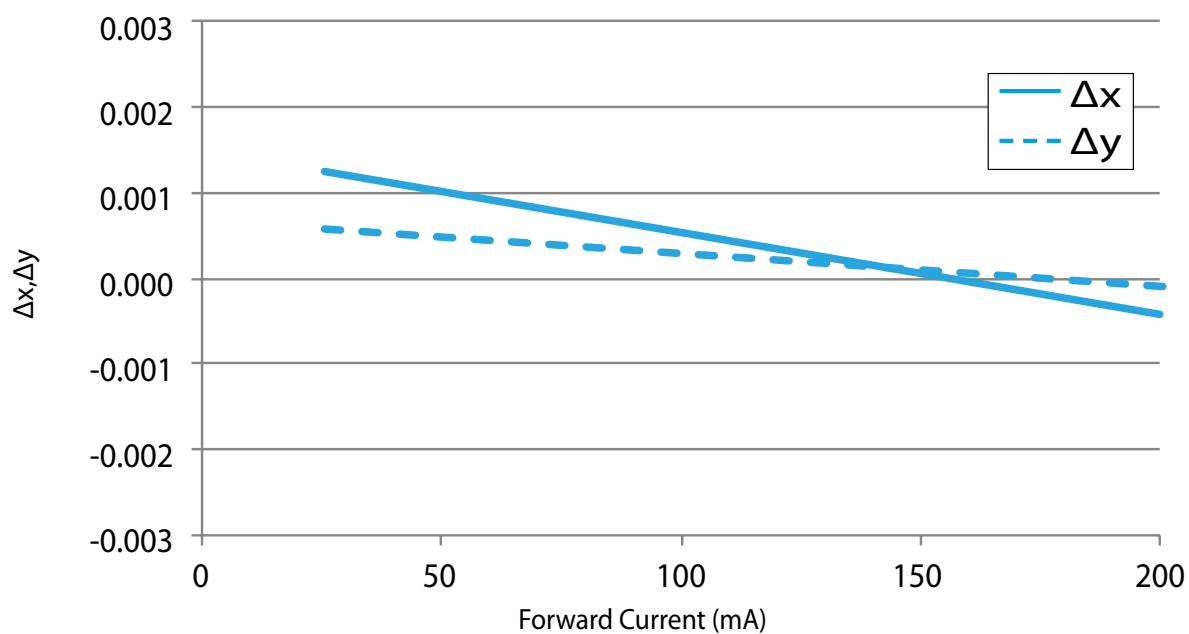
Forward Voltage vs. Junction Temperature



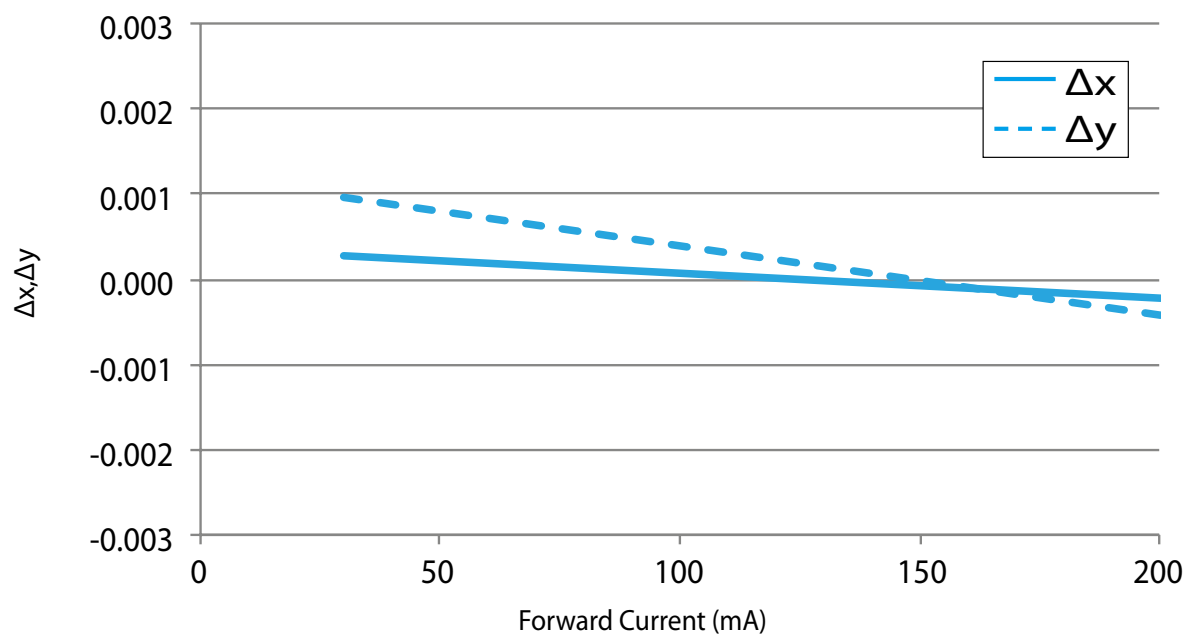
$\Delta x, \Delta y$ vs. Forward Current (Cool White)



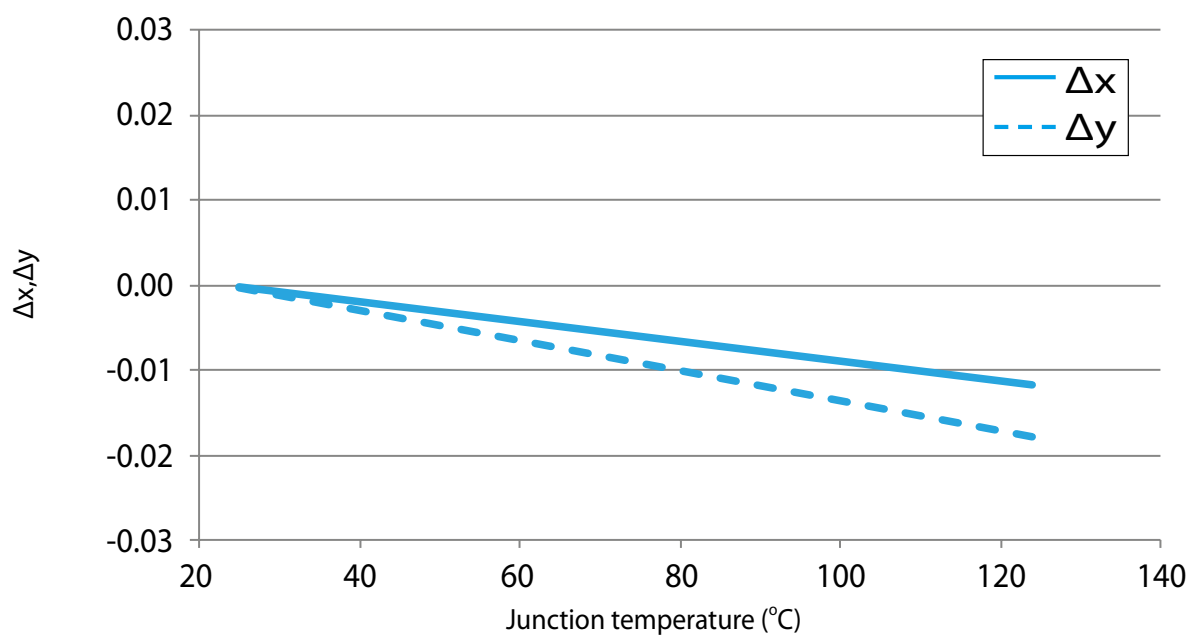
$\Delta x, \Delta y$ vs. Forward Current (Neutral White)



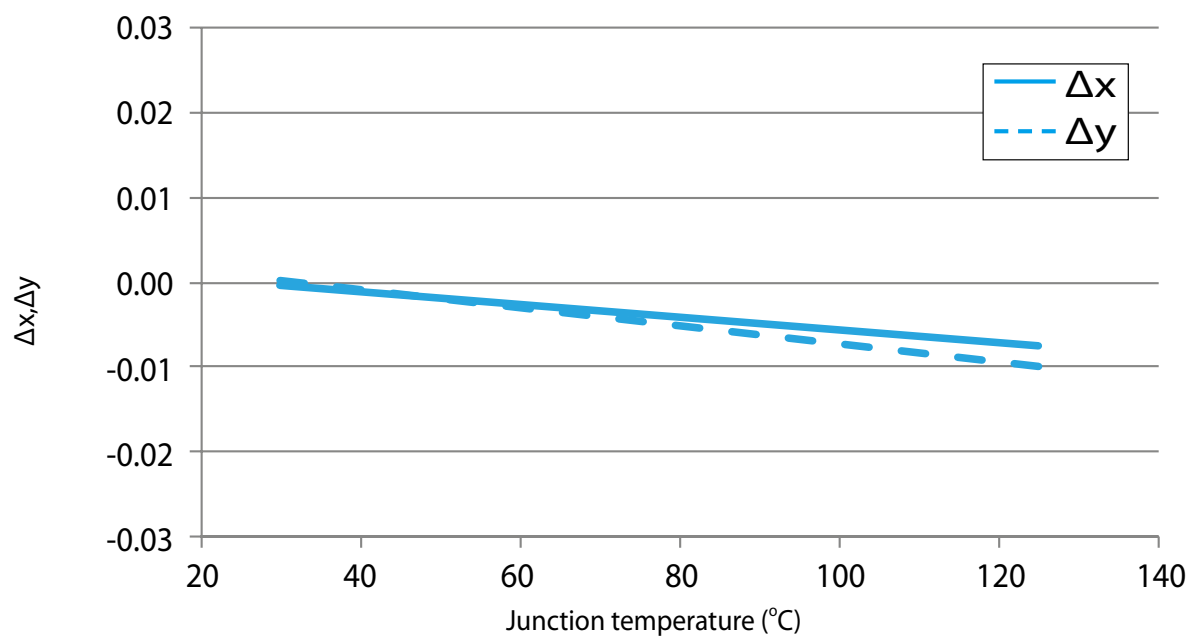
$\Delta x, \Delta y$ vs. Forward Current (Warm White)



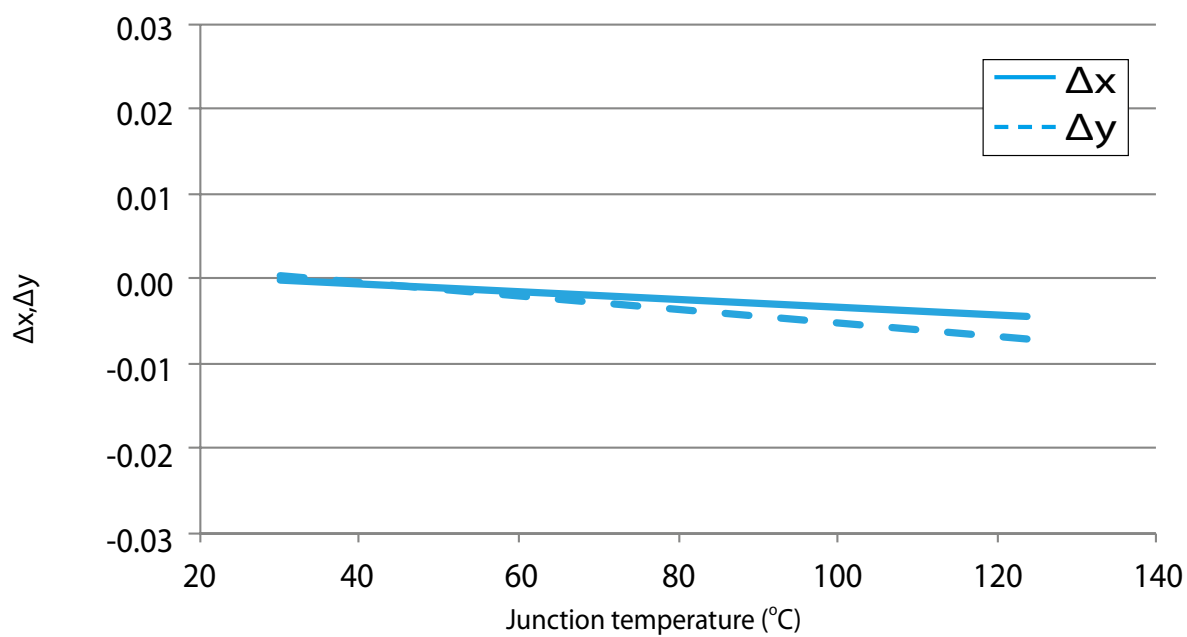
$\Delta x, \Delta y$ vs. Junction Temperature (Cool White)



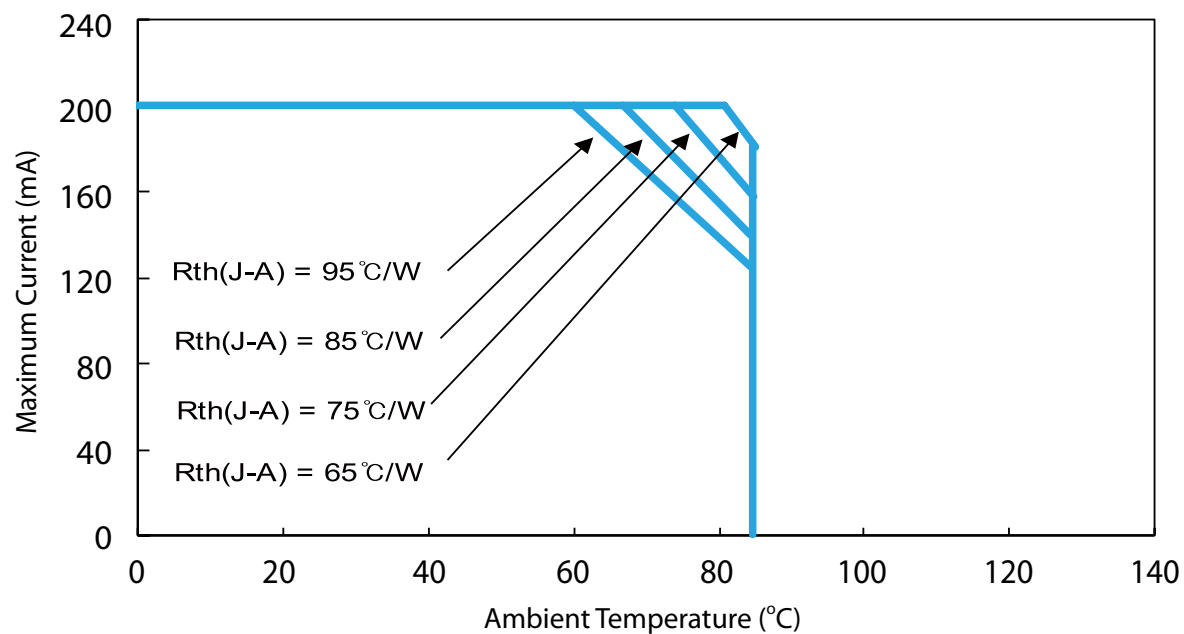
$\Delta x, \Delta y$ vs. Junction Temperature (Neutral White)



$\Delta x, \Delta y$ vs. Junction Temperature (Warm White)

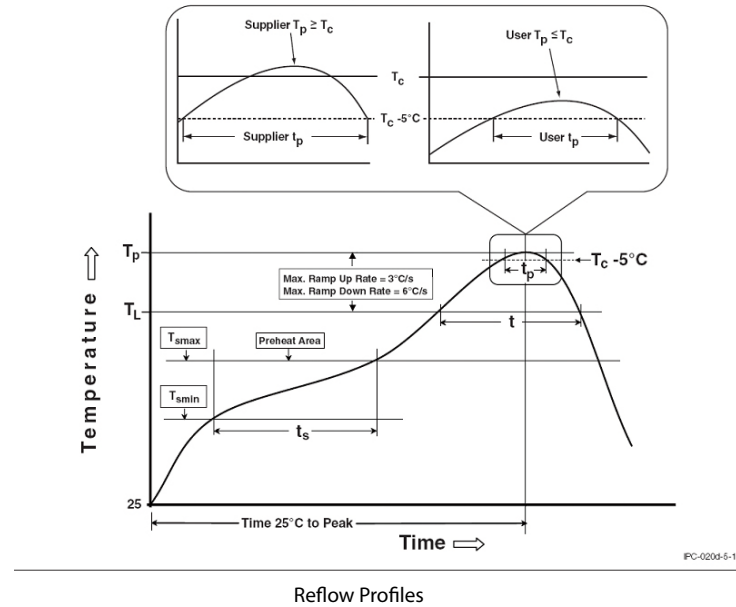


Maximum Current vs. Ambient Temperature



Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak	
Temperature min (T _{min})	150 °C
Temperature max (T _{max})	200 °C
Time (T _{min} to T _{max}) (t _s)	60-120 seconds
Average ramp-up rate (T _{max} to T _p)	3 °C/second max.
Liquidous temperature (T _L)	217 °C
Time at liquidous (t _L)	60-150 seconds
Peak package body temperature (T _p)*	255 °C ~260 °C *
Classification temperature (T _c)	260 °C
Time (t _p)** within 5 °C of the specified classification temperature (T _c)	30** seconds
Average ramp-down rate (T _p to T _{max})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:

- * Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
- ** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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

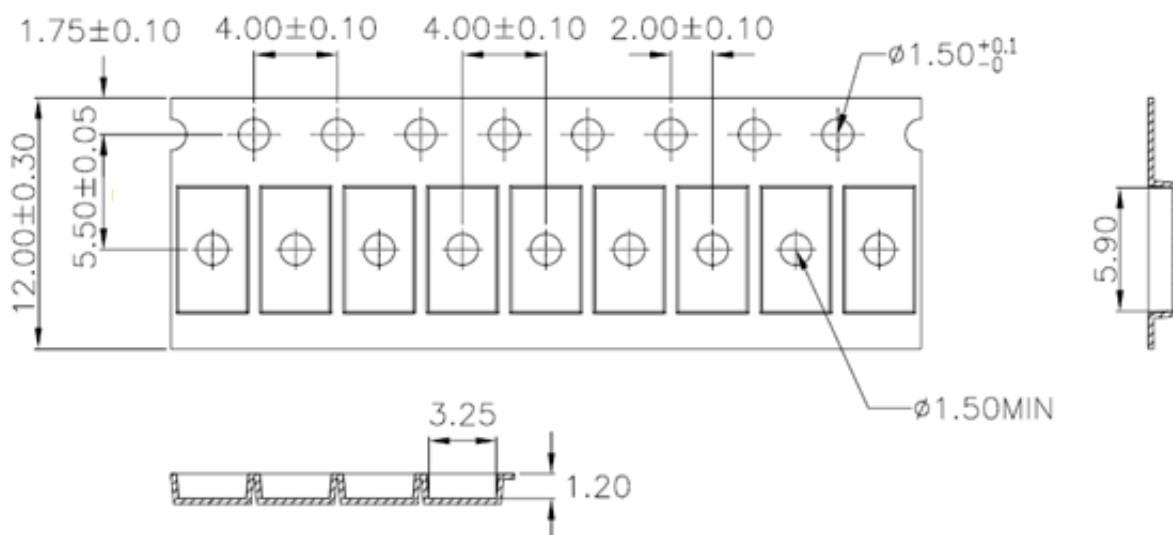
Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

**LM
80**

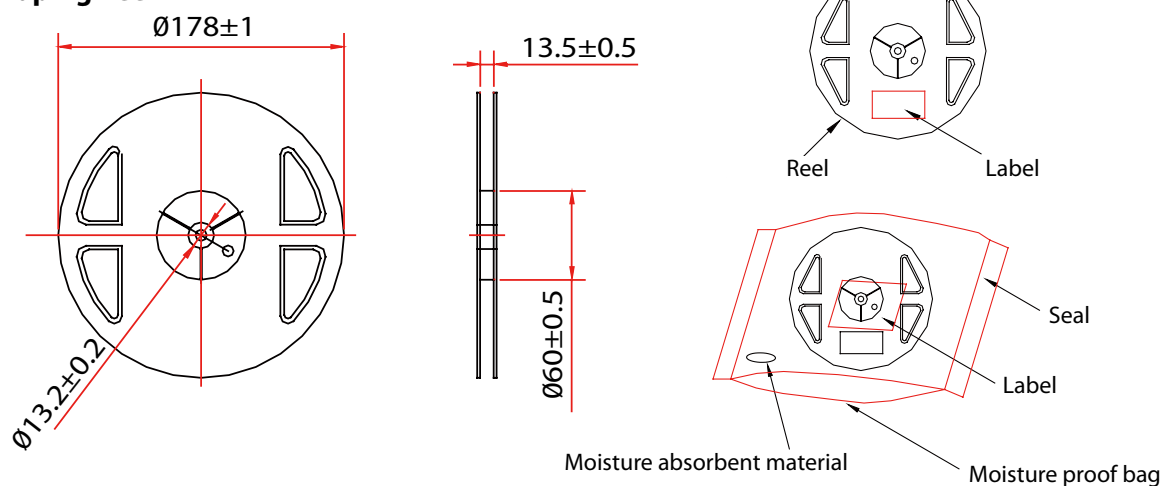
Lumen Maintenance

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.

Product Packaging Information



Taping Reel



Note:
All dimensions are measured in mm.

Item	Quantity	Total	Dimensions(mm)
Reel	3,000pcs	3,000pcs	R=178
Carton	36 reels	108,000pcs	520*255*285
Starting with 50pcs empty, and 50pcs empty at the last			

Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2014/02/25
2	1. Add JEDEC Moisture Sensitivity 2. Revise Reliability 3. Update Solder pad Dimensions	2014/09/01
3	Add CIE_x/y tolerance	2015/01/09
4	1. Update to new pattern 2. Revise package information 3. Add LM80 Information	2015/08/11
5	Update Luminous flux characteristic	2016/11/03

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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