

PC35H11 V3

Product Specification

Approval

PC35H11 V3

Product Specification

RoHS

Product	White SMD LED
Part Number	PC35H11 V3
Issue Date	2020/07/28



Feature

- ✓ White SMD LED (L x W x H) of 3.5x 2.8 x 0.7 mm
- ✓ ASNI binning
- ✓ Dice Technology : InGaN
- ✓ Qualified according to JEDEC moisture sensitivity Level 3
- ✓ Environmental friendly ; RoHS compliance
- ✓ Packing : 2000 & 4000 pcs/reel

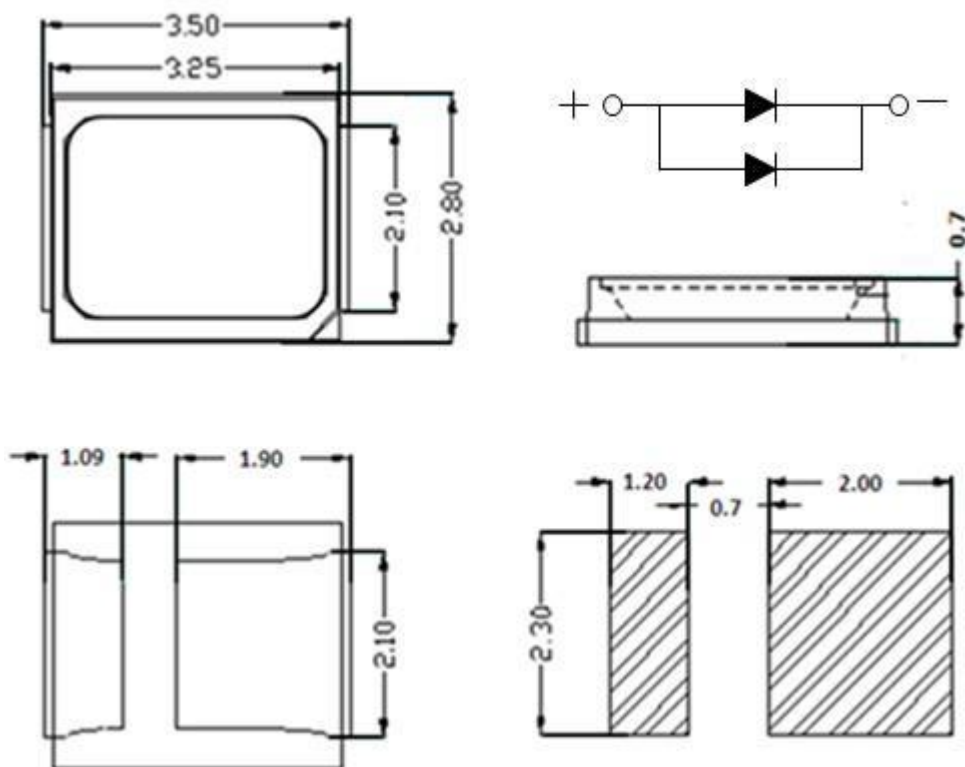
Applications

- ✓ Portable flashlight
- ✓ Reading lights
- ✓ Security / garden lighting
- ✓ General lighting
- ✓ Indoor and outdoor commercial lighting

Outline

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1. Unit :mm

2. Tolerance : $\pm 0.1\text{mm}$

Performance

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■ Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage ⁽¹⁾	V _F	I _F = 65 mA	2.7	–	2.9	V
Color Rendering Index ⁽²⁾	Ra		80	–	–	–
View Angle	θ		–	120	–	deg
Thermal Resistance ⁽³⁾	R _{th}		–	17	–	°C/W

(1) The Forward Voltage tolerance is ±0.1V

(2) The Color Rendering Index tolerance is ±2

(3) Thermal resistance is calculated from junction to solder

■ Luminous Flux (Ta=25°C)

CCT	Condition	Rank
2600K~3700K	I _F = 65 mA	TH, TI, TJ
3700K~7000K		TJ ,TK

* The luminous flux tolerance is ± 7%

■ Absolute Maximum Ratings

Parameter	Symbol	value	Unit
DC Forward Current ⁽¹⁾	I _F	300	mA
Power Dissipation	P _D	0.96	W
Pulse Forward Current ⁽²⁾	I _{FP}	360	mA
Storage Temperature	T _{stg}	–40 ~ 100	°C
Operating Temperature	T _{opr}	–40 ~ 85	°C
Junction Temperature	T _J	120	°C
Assembly Temperature		260 (5 sec)	°C

(1) Proper current rating must be observed to maintain junction temperature below maximum at all time

(2) IFP Condition: Duty 1 / 10, Pulse within 10msec

Ordering Code

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P C 3 5 H 1 1 3 - A 2 7 1 B 0 T H T J A B - 0 2 0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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Item		Pos.	Code	Spec
Model Name		1–8	PC35H113	PC35H11 V3
CIE				
Center Point		9	A	ANSI 1931 on B.B.L
CCT ⁽¹⁾		10,11	27	27 = 2700K
			30	30 = 3000K
			35	35 = 3500K
			40	40 = 4000K
			50	50 = 5000K
			57	57 = 5700K
			65	65 = 6500K
Ra		12	1	Ra > 80
CIE			A0	27A
Bin Group ⁽¹⁾		13,14	B0	27A 27B 27C 27D 27E
IV				
Bin Group		15,16,,17,18	TH TJ	Bin code : TH TI TJ
Vf				
Bin Group		19,20	AB	Bin code : A B
Kittin g Rules	CIE ⁽²⁾	21	0	No requirements.
			1	3 step Kitting
			2	5 step Kitting
Others	Chip	22	2	1 : 1 chip version
	Numbers			2 : 2 chip version
	non	23	0	No requirements.

(1) The first two digits 27 means CCT in 2700K, can be replaced to 30, 35, 40, 50, 57, 65 for different CCT requirements.

(2) Only under an agreement between customer and Lextar Electronics, kitting rules besides "0" can be supplied.

■ **Standard Ordering Code:**

CCT	Ordering Code ⁽¹⁾	CIE Bin Group	IV Bin Group	Vf Bin Group
2700K	PC35H113-A271A0THTJAB-020	A0	TH TI TJ	A B
	PC35H113-A271B0THTJAB-020	B0		
3000K	PC35H113-A301A0THTJAB-020	A0	TH TI TJ	A B
	PC35H113-A301B0THTJAB-020	B0		
3500K	PC35H113-A351A0THTJAB-020	A0	TH TI TJ	A B
	PC35H113-A351B0THTJAB-020	B0		
4000K	PC35H113-A401A0TJTKAB-020	A0	TJ TK	A B
	PC35H113-A401B0TJTKAB-020	B0		
5000K	PC35H113-A501A0TJTKAB-020	A0	TJ TK	A B
	PC35H113-A501B0TJTKAB-020	B0		
5700K	PC35H113-A571A0TJTKAB-020	A0	TJ TK	A B
	PC35H113-A571B0TJTKAB-020	B0		
6500K	PC35H113-A651A0TJTKAB-020	A0	TJ TK	A B
	PC35H113-A651B0TJTKAB-020	B0		

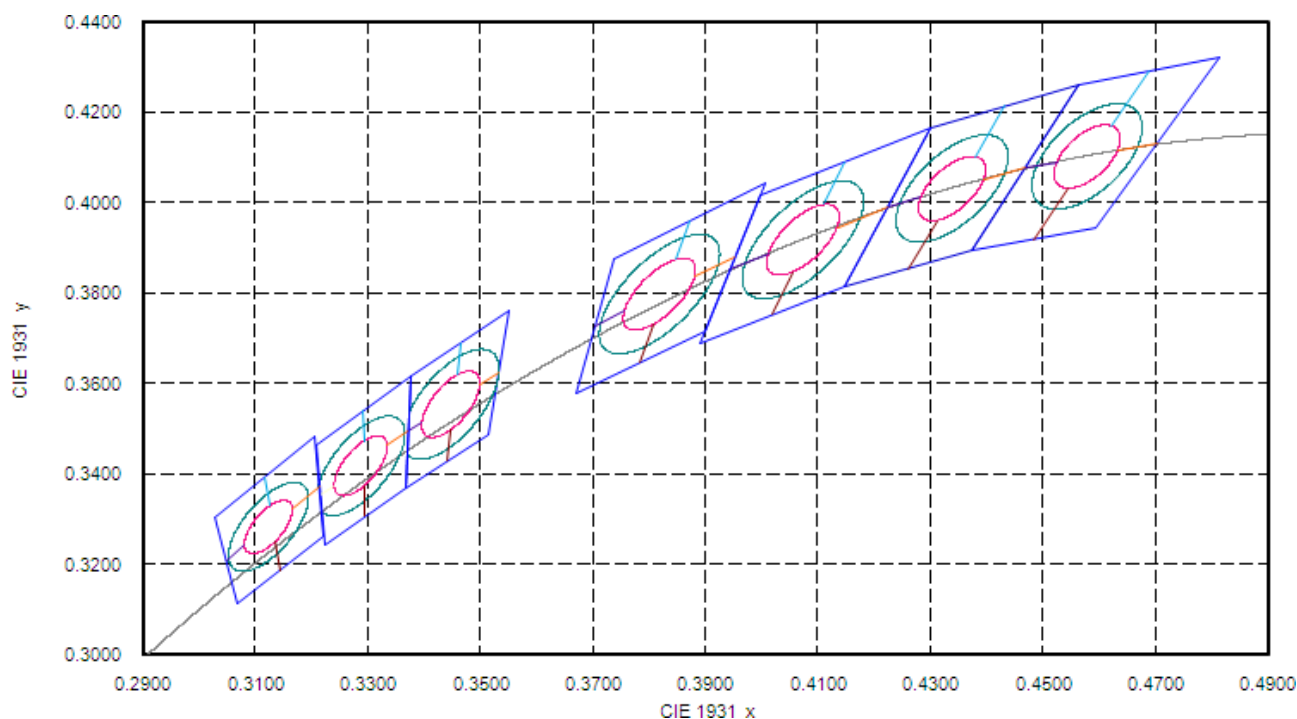
(1) Only under an agreement between customer and Lextar Electronics, Ordering codes not in “Standard Ordering Code Definitions” can be supplied.

Binning

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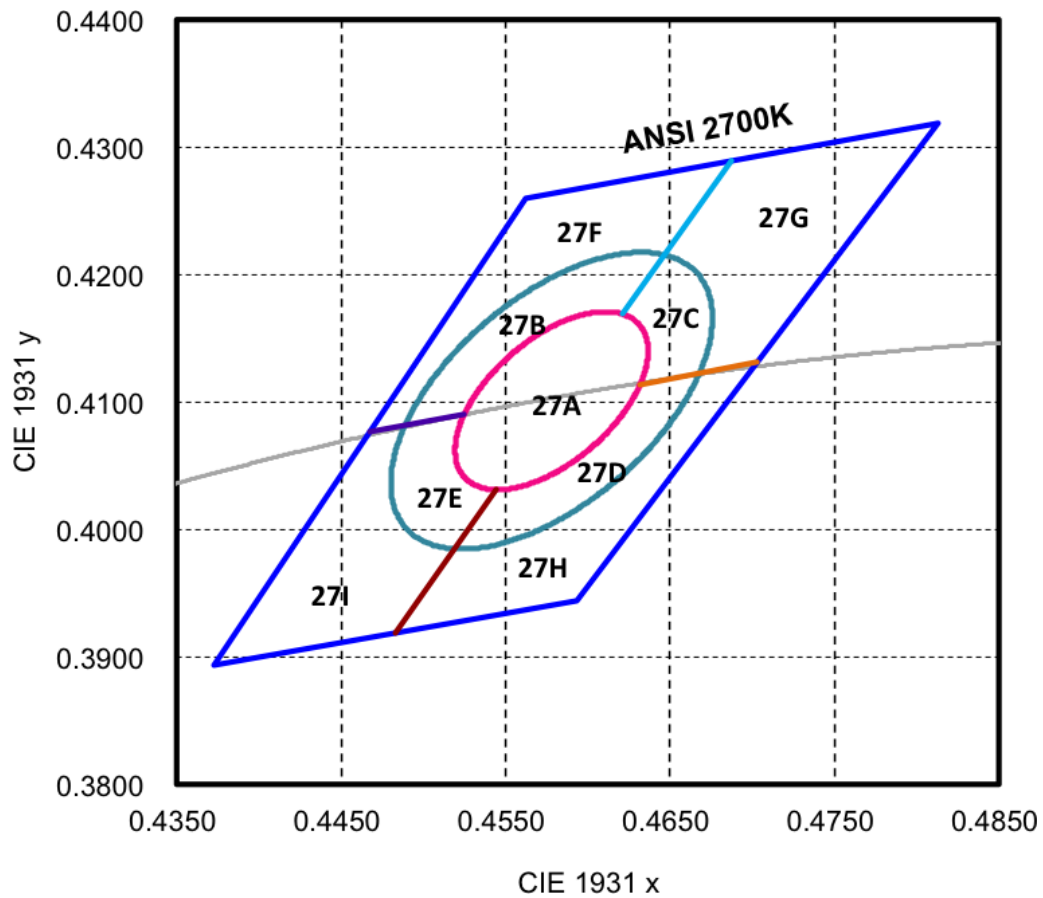
Product Specification

Chromaticity Coordinates



■ Bin code definition

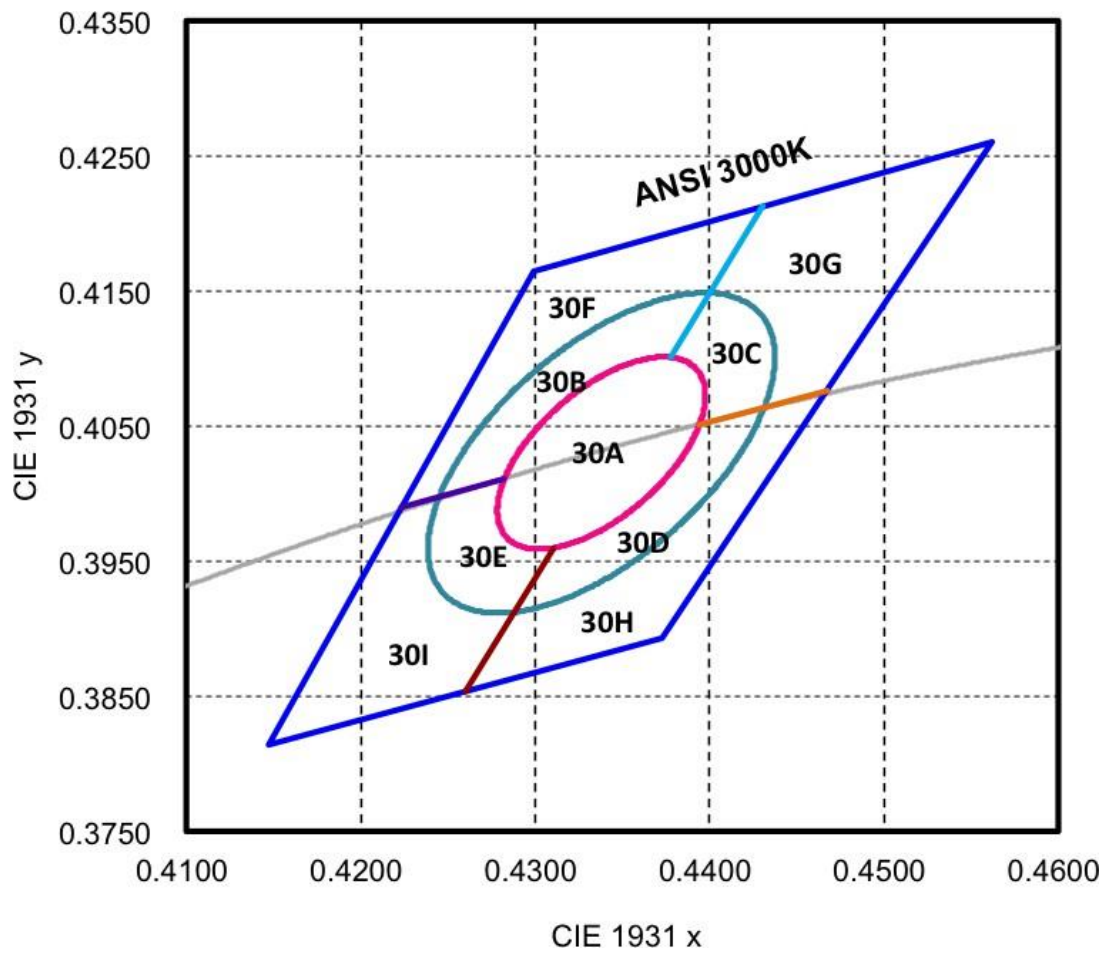
2700K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
2700K	Single 3-step MacAdam ellipse	(0.4578, 0.4101)	0.00810	0.00420	53.70°
2700K	Single 5-step MacAdam ellipse	(0.4578, 0.4101)	0.01350	0.00700	53.70°

	CIE-X	CIE-Y
2700K	0.4813	0.4319
	0.4562	0.4260
	0.4373	0.3893
	0.4593	0.3944

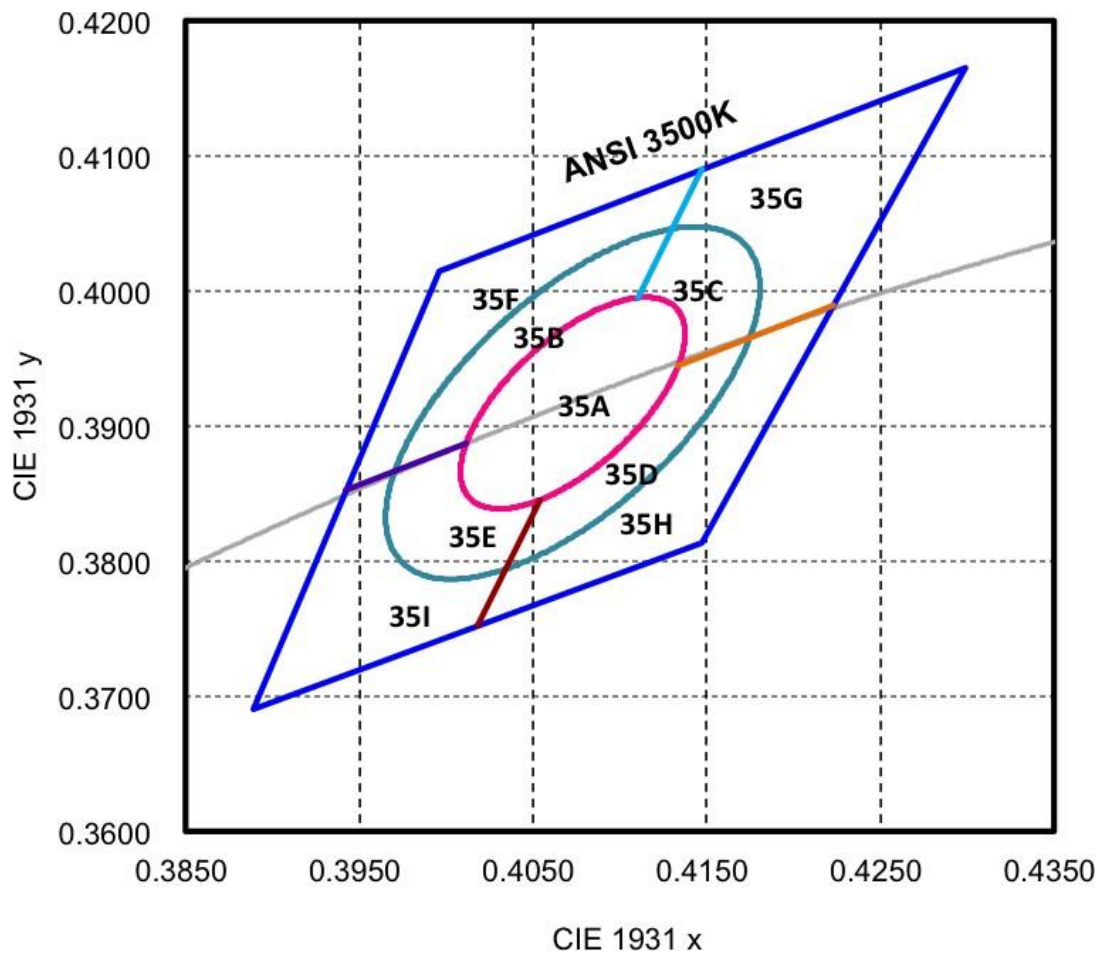
3000K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
3000K	Single 3-step MacAdam ellipse	(0.4338, 0.403)	0.00834	0.00408	53.22°
3000K	Single 5-step MacAdam ellipse	(0.4338, 0.403)	0.01390	0.00680	53.22°

	CIE-X	CIE-Y
3000K	0.4562	0.426
	0.4299	0.4165
	0.4147	0.3814
	0.4373	0.3893

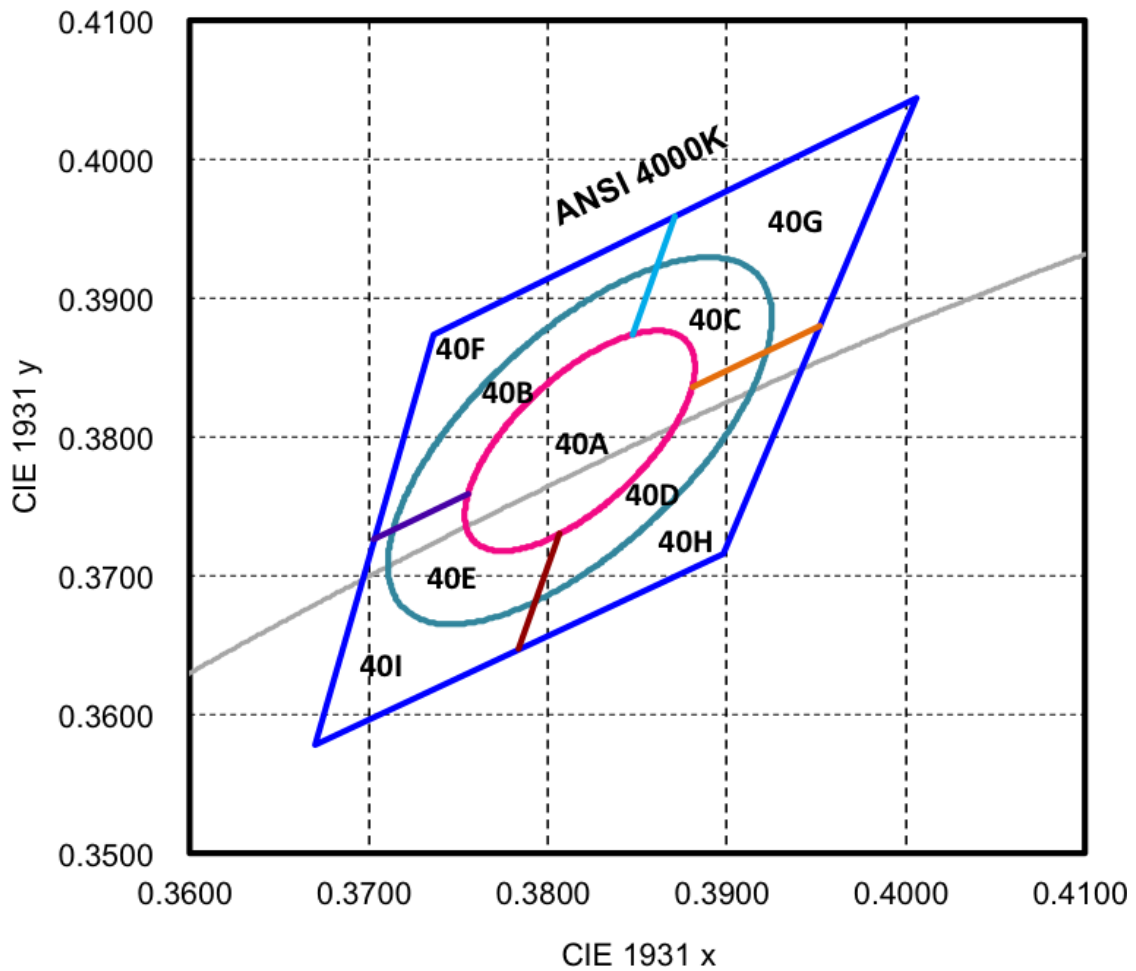
3500K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
3500K	Single 3-step MacAdam ellipse	(0.4073, 0.3917)	0.00927	0.00414	53.22°
3500K	Single 5-step MacAdam ellipse	(0.4073, 0.3917)	0.01545	0.00690	53.22°

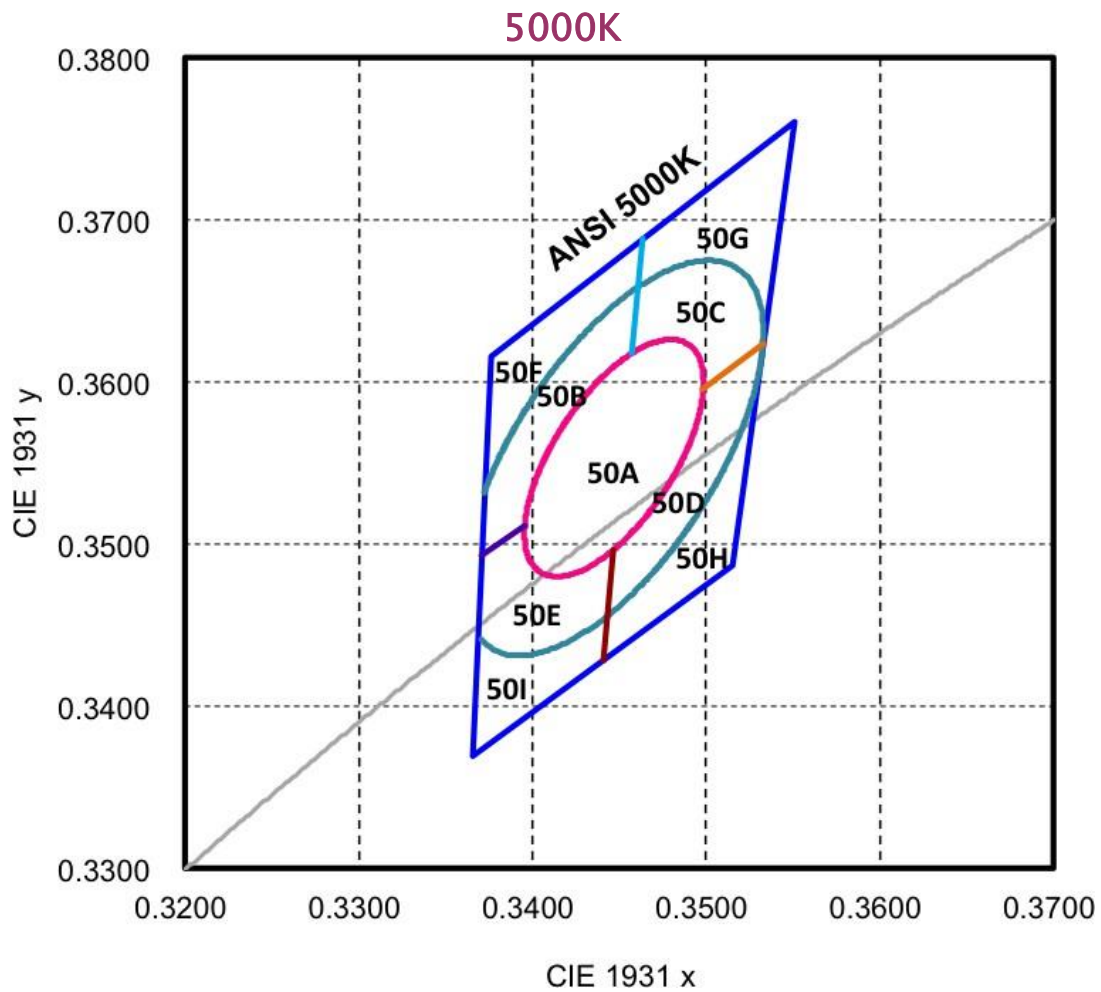
	CIE-X	CIE-Y
3500K	0.4299	0.4165
	0.3996	0.4015
	0.3889	0.3690
	0.4147	0.3814

4000K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
4000K	Single 3-step MacAdam ellipse	(0.3818, 0.3797)	0.00939	0.00402	53.72°
4000K	Single 5-step MacAdam ellipse	(0.3818, 0.3797)	0.01565	0.00670	53.72°

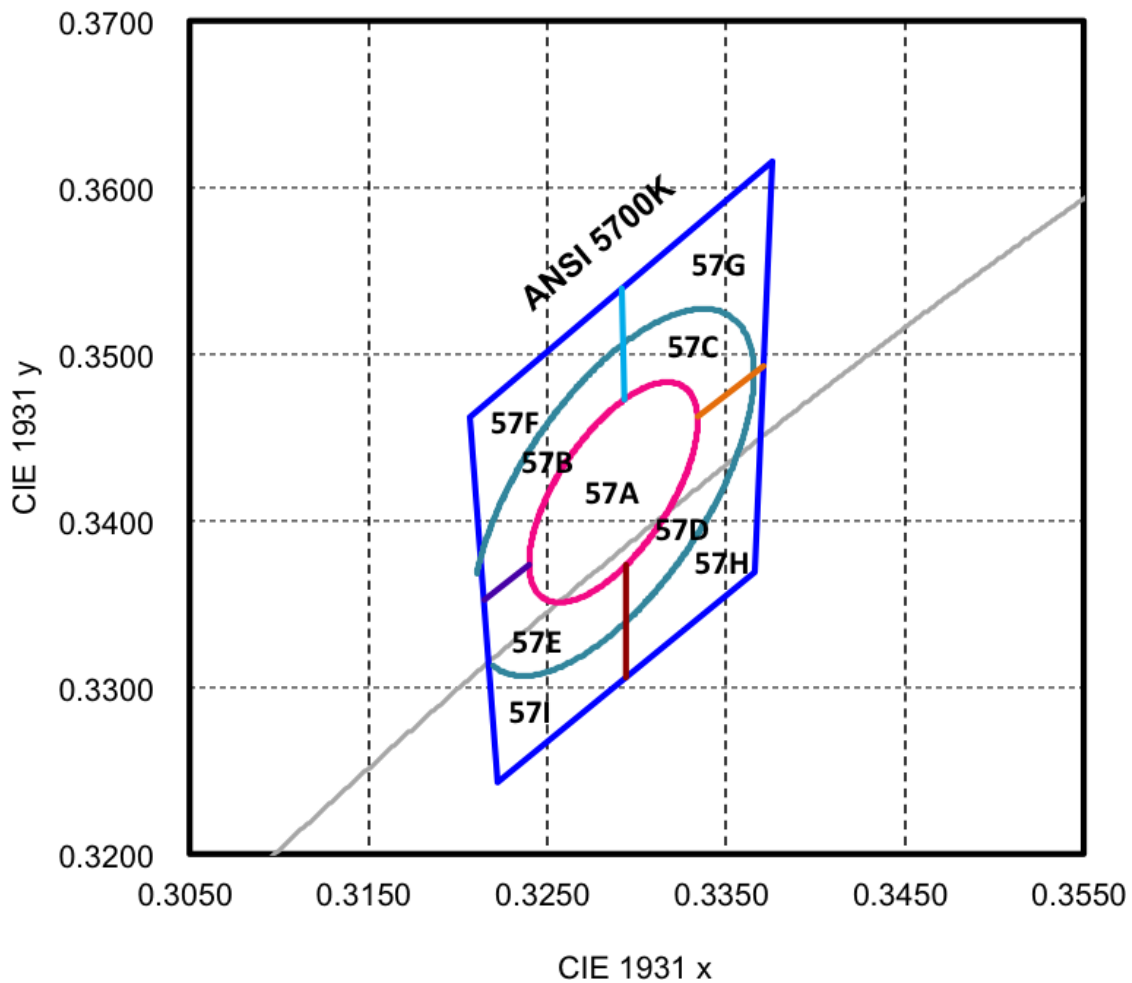
	CIE-X	CIE-Y
4000K	0.4006	0.4044
	0.3736	0.3874
	0.3670	0.3578
	0.3898	0.3716



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
5000K	Single 3-step MacAdam ellipse	(0.3447, 0.3553)	0.00822	0.00354	59.62°
5000K	Single 5-step MacAdam ellipse	(0.3447, 0.3553)	0.01370	0.00590	59.62°

	CIE-X	CIE-Y
5000K	0.3551	0.3760
	0.3376	0.3616
	0.3366	0.3369
	0.3515	0.3487

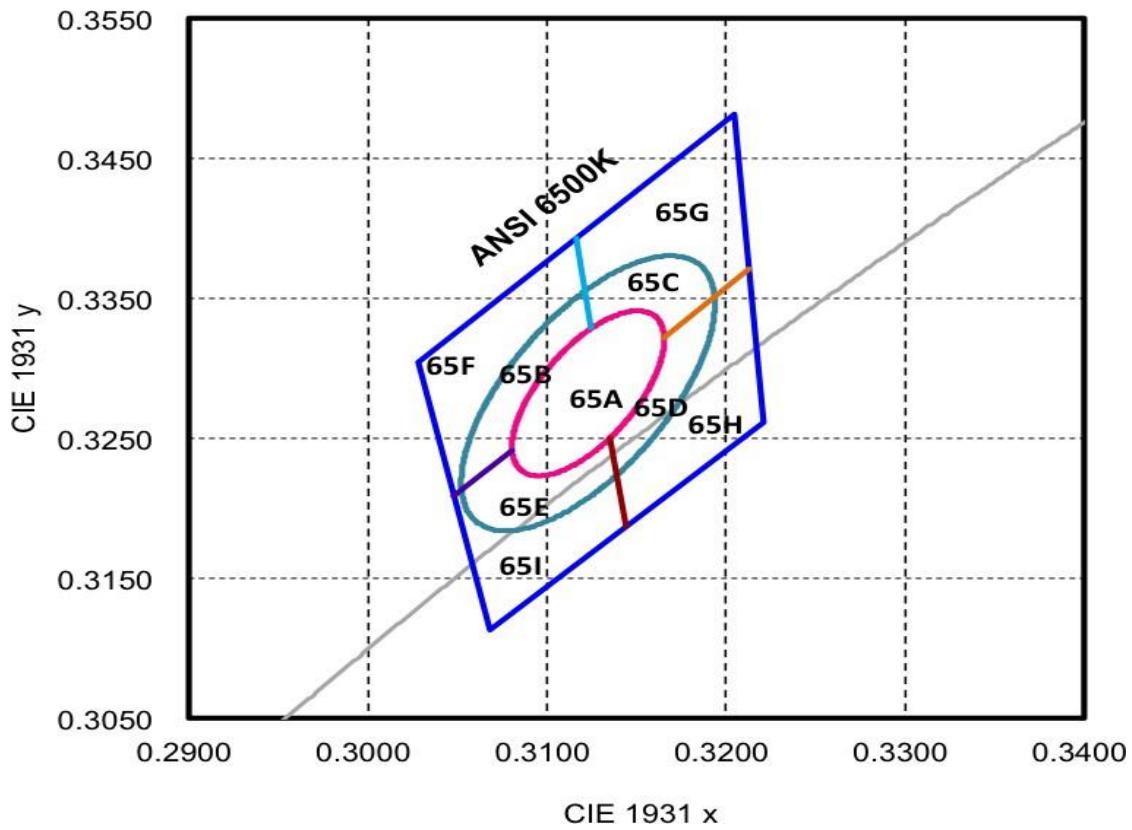
5700K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
5700K	Single 3-step MacAdam ellipse	(0.3287, 0.3417)	0.00746	0.00320	59.09°
5700K	Single 5-step MacAdam ellipse	(0.3287, 0.3417)	0.01243	0.00533	59.09°

	CIE-X	CIE-Y
5700K	0.3376	0.3616
	0.3207	0.3462
	0.3222	0.3243
	0.3366	0.3369

6500K



Nominal ANSI CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
6500K	Single 3-step MacAdam ellipse	(0.3123, 0.3282)	0.00669	0.00285	58.57°
6500K	Single 5-step MacAdam ellipse	(0.3123, 0.3282)	0.01115	0.00475	58.57°

	CIE-X	CIE-Y
6500K	0.3205	0.3481
	0.3028	0.3304
	0.3068	0.3113
	0.3221	0.3261

Note:

(1) Correlated color temperature is derived from the CIE 1931 chromaticity diagram

(2) CIE measurement tolerance is ± 0.005

■ Bin code definition

V _F Rank	Luminous Flux Rank	CIE Rank
A	TH	27A

Parameter	Unit	BIN	65mA	
			Min.	Max.
Forward Voltage	V	A	2.7	2.8
		B	2.8	2.9
		C	2.9	3.0
		D	3.0	3.1
		E	3.1	3.2

Parameter	Unit	BIN	65mA	
			Min.	Max.
Luminous Flux	lm	TG	28	30
		TH	30	32
		TI	32	34
		TJ	34	36
		TK	36	38

Note:

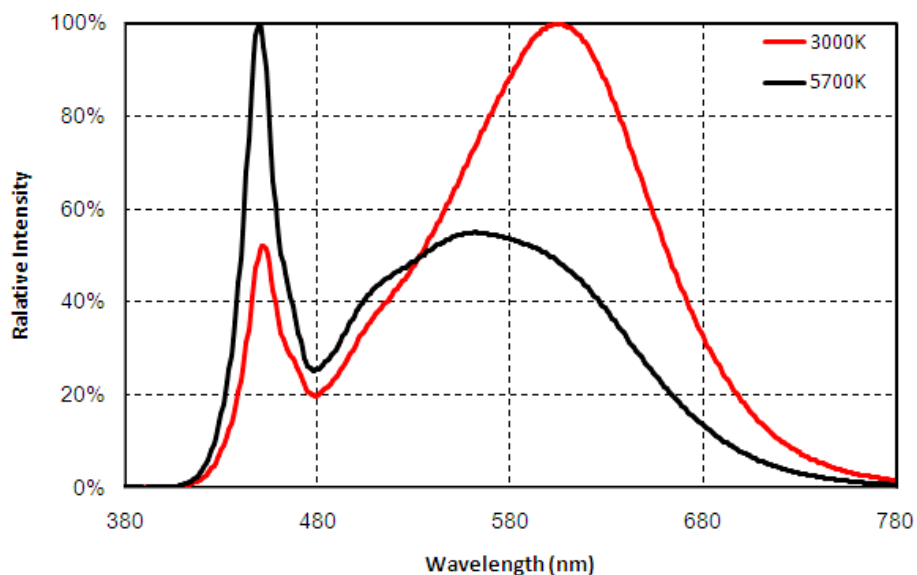
- (1) The luminous flux tolerance is $\pm 7\%$
- (2) The Forward Voltage tolerance is $\pm 0.1V$

Characteristic

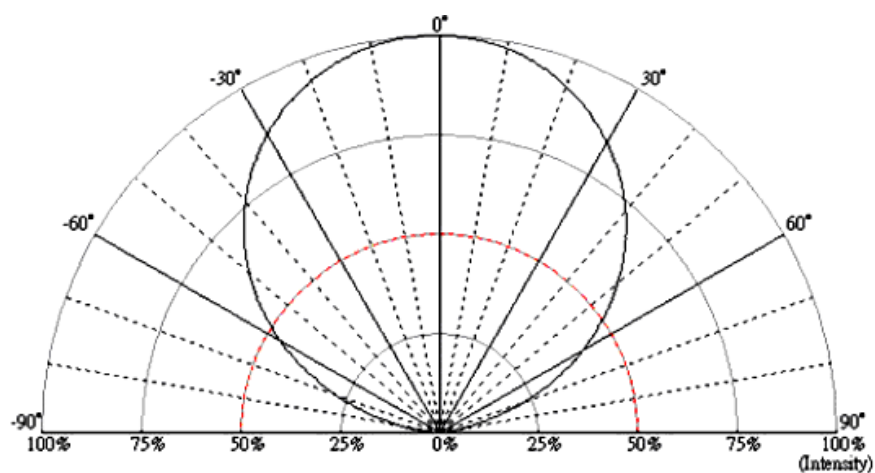
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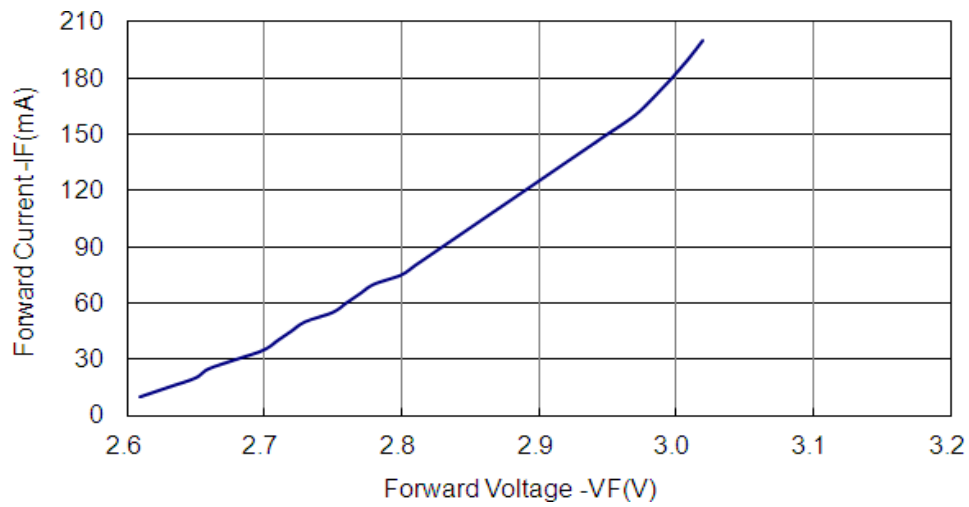
Spectrum



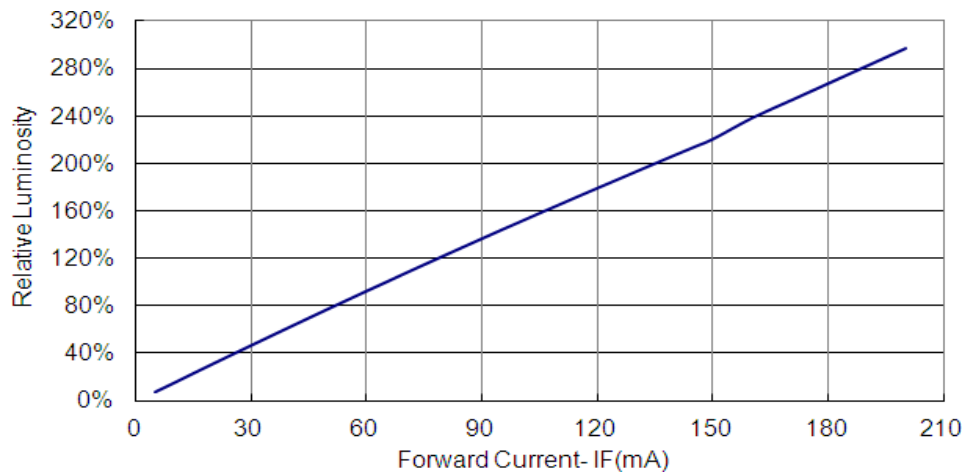
Radiation Pattern



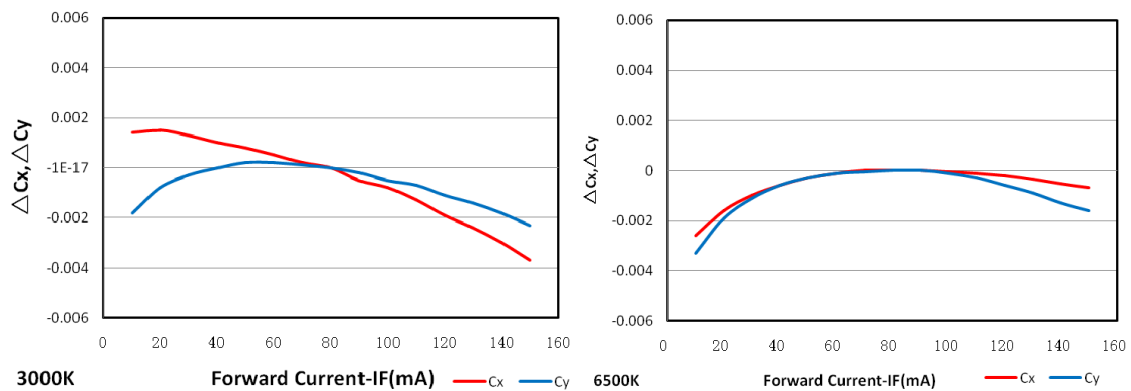
■ Forward Voltage vs. Forward Current



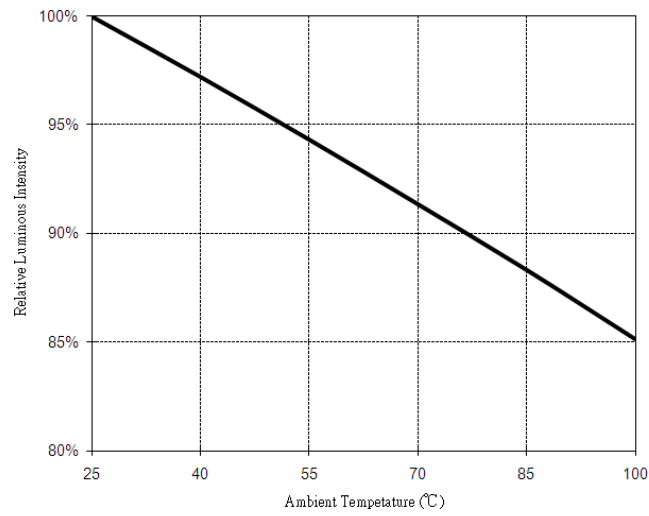
■ Forward Current vs. Relative Luminosity



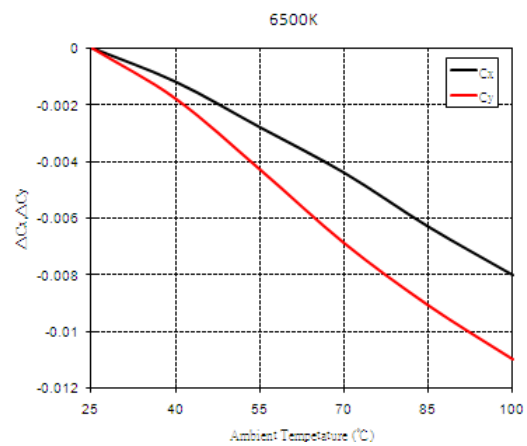
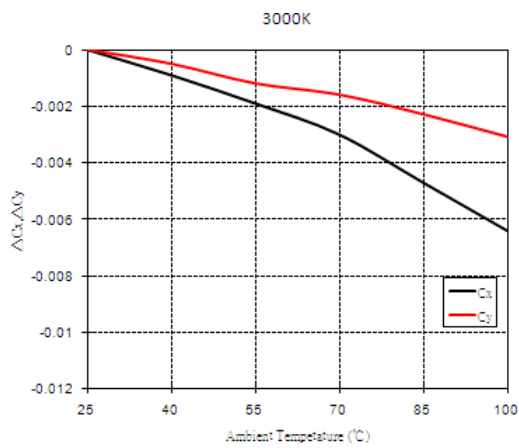
■ Forward Current vs. Chromaticity Coordinate



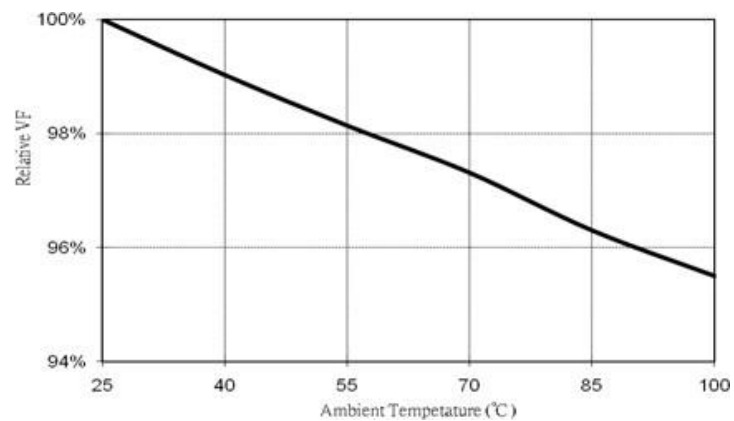
■ Relative Luminous Intensity vs. Ambient Temperature



■ Chromaticity vs. Ambient Temperature



■ Relative VF vs. Ambient Temperature



Reliability

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Reliability test

Item	Condition	Time/Cycle	Sample Size
Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	30PCS
Steady State Operating Life of High Temperature 60℃	60℃ Operating	1000 Hrs	30PCS
Steady State Operating Life of High Temperature Ts105℃	Ts 105 ℃ Operating	1000 Hrs	30PCS
Low temperature storage - 40℃	-40℃ Storage	1000 Hrs	30PCS
High temperature storage 100℃	100℃ Storage	1000 Hrs	30PCS
Steady State Operating Life of High Humidity Heat 60℃90%	60℃/90% Operating	1000 Hrs	30PCS
Resistance to soldering heat on PCB (JEDEC MSL3)	pre-store@60℃, 60%RH for 52hrs Tsld max.=260℃ 10sec	1 cycle 3 Times	30PCS
Thermal shock	-40℃/20minr ~5minr ~ 100℃/20min	200 Cycles	30PCS

Judgment Criteria

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	150mA	$\Delta V_f < 10 \%$
Luminous Flux	Iv	150mA	$\Delta I_v < 30 \%$

Packing

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Label

Lextar



QTY :



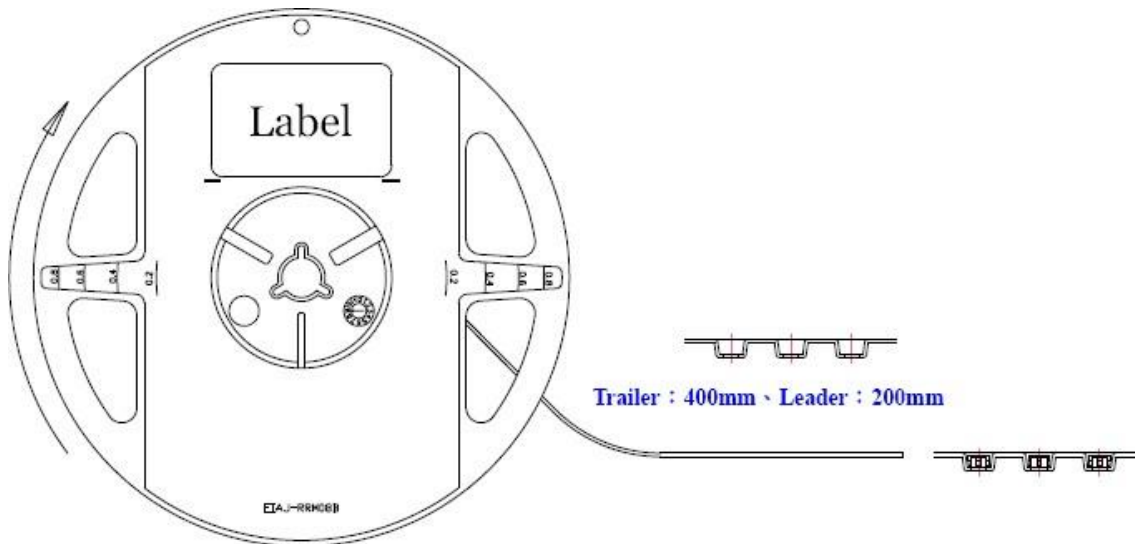
Bin code :



Vendor lot :

M/N :

Carrier Taping

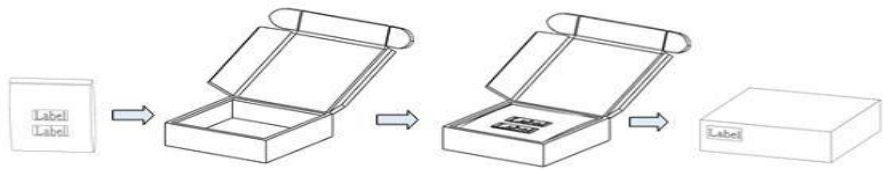




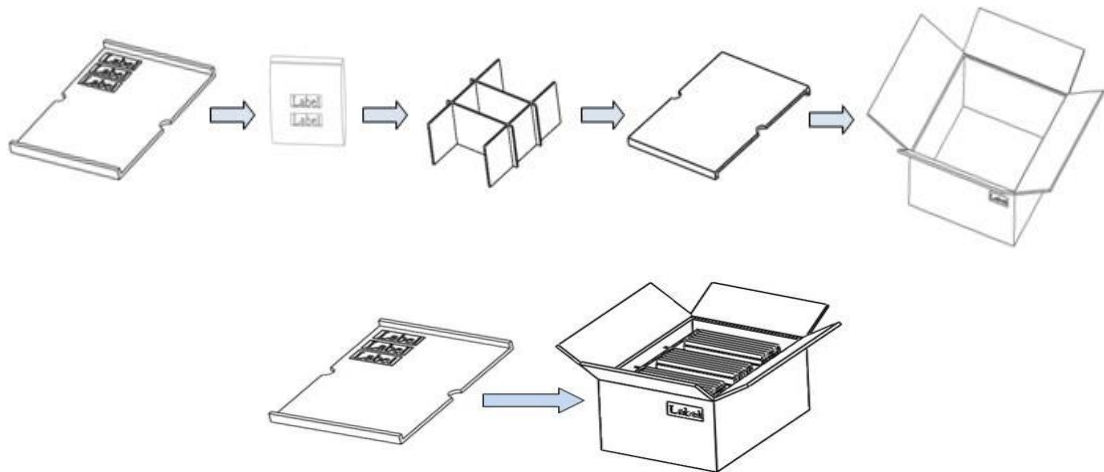
Packing Box

Type	Large Box		Medium Box		Small Box	
Dimension	541X511X276mm		385X303X260mm		283X235x70mm	
Maximum Reels	7"X12mm Reel	64/R	7"X12mm Reel	21 /R	7"X12mm Reel	4/R
Minimum Reels	7"X12mm Reel	32/R	7"X12mm Reel	9/R	7"X12mm Reel	1 /R

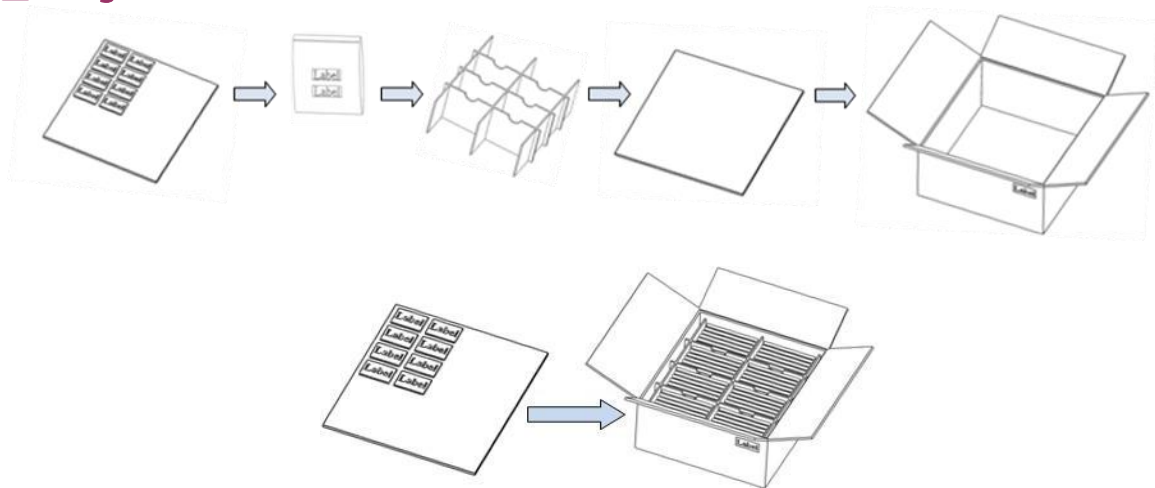
Small Box



Medium Box



Large Box



Precautions

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■ Safety Precautions

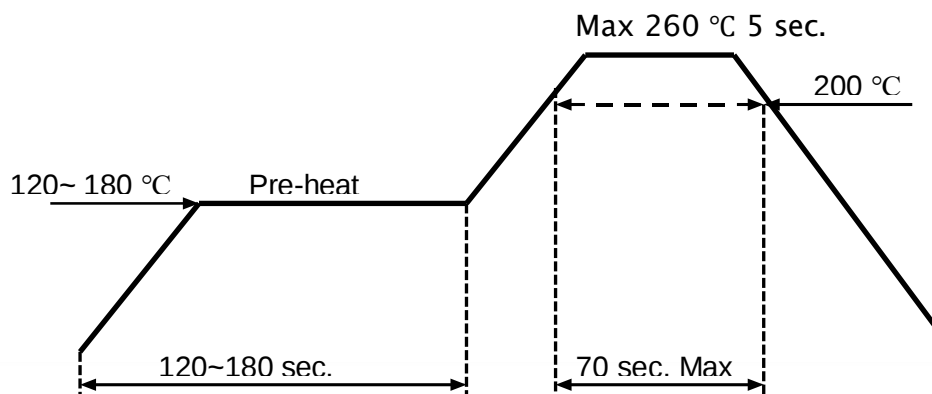
- The LED light output is too strong for human eyes without shield. Prevent eye contact directly more than seconds.
- Ensure operating under maximum rating.

■ Storage

- Before opening the package, the LEDs should storage under 30°C, 60% RH.
- After opening the package bag, the LEDs should be keep under 30°C, 60% RH. Recommend to use within 168hrs. If unused LEDs remain, suggest to store into moisture proof bag or original package bag with moisture absorbent material such as silica gel. Reseal well is necessary.
- If the product exceeded the storage period or the moisture absorbent material faded away, baking treatment should be done by following conditions. Bake condition: 60°C, 12hours (One time only).

■ Soldering Notice and Conditions

- When soldering LEDs,
- Do not solder/reflow the same LED over two times.
- Recommend soldering conditions:
Hand soldering: 350 °C max , 3 sec. max.
Reflow soldering: Pre-heat 180 °C max , 180 sec. max.
Peak 260 °C max , 5 sec. max.
- Reflow temperature profile as below: (lead-free solder)



- When soldering, don't put stress on the LEDs
- After LEDs have been soldered, strongly recommend not to repair to keep the LEDs performance.

■ Static Electricity

- LED package is extremely sensitive to static electricity. It's recommended that anti-electrostatic glove and wrist band is necessary when handling the LEDs. All devices are also be grounded properly as well.
- Protection devices design should be considered in the LED driving circuit.

■ Cleaning

- If washing is required, recommend to use alcohol as a solvent.
- Recommend to avoid cleaning the LEDs by ultrasonic. If necessary, pre-test the LED is necessary to confirm whether any damage occur after the process.

Revision History

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Date	Contents	Writer
2020.07	New Version	Ching Chen