



PC33H07 V0
Product Specification
ErP IEC62612 Ellipse Binning

Approval Sheet

PC33H07 V0

Product Specification

RoHS

Product	White SMD LED
Part Number	PC33H07 V0
Issue Date	2015/01/28



■ Feature

- ✓ White SMD LED (L x W x H) of 3.2 x 3.0 x 0.6 mm
- ✓ ErP ellipse binning
- ✓ Dice Technology : InGaN
- ✓ Qualified according to JEDEC moisture sensitivity Level 3
- ✓ Environmental friendly ; RoHS compliance
- ✓ Packing : 3,000 or 1,000 pcs/reel

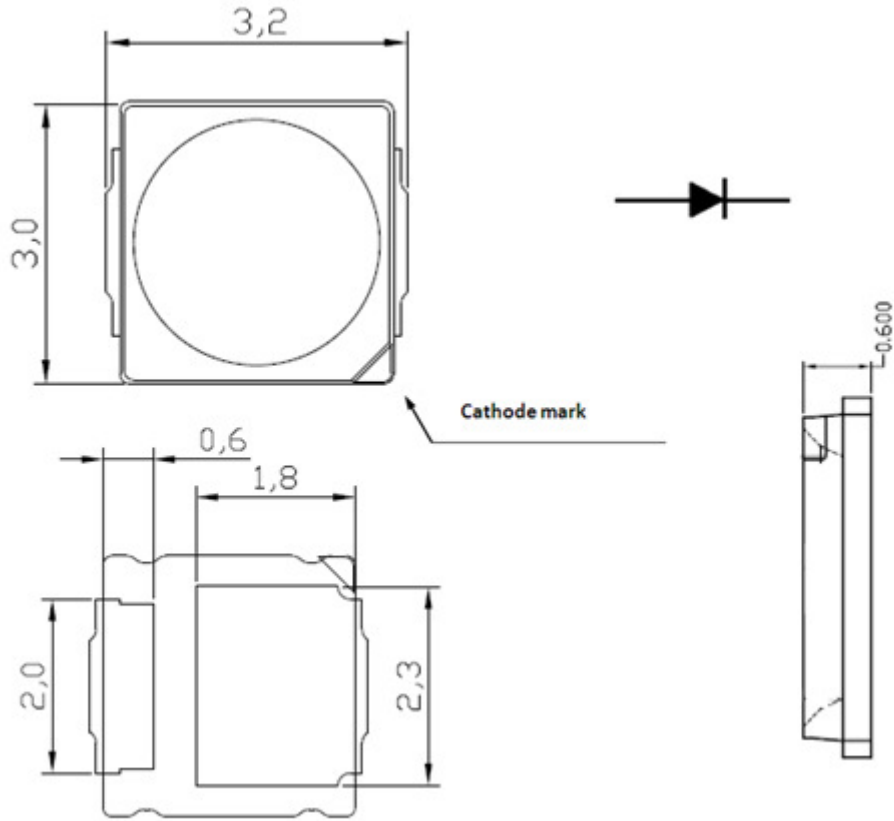
■ Applications

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

Outline Dimension

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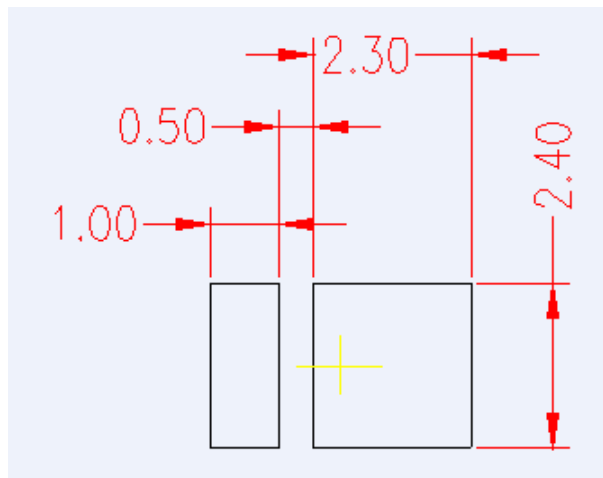
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Unit: mm,

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

■ Recommended Soldering Pad



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 = 150 mA		6.4	6.8	V
Color Rendering Index ⁽²⁾	R _a		80	-	-	-
Color Rendering Index ⁽³⁾	R ₉		0			
View Angle	θ		-	120	-	deg
Thermal Resistance ⁽⁴⁾	R _{th}		-	12	-	°C/W

(1) The Forward Voltage tolerance is ±0.1V

(2) The Color Rendering Index is measured at Ta=85°C and tolerance is ±2

(3) The R₉ is measured at Ta=85°C and tolerance is ±6.

(4) Thermal resistance is calculated from junction to solder

■ Luminous Flux (Ta=25°C)

CCT	Condition	Rank	Typ.	Unit
2600K~4000K	I _F = 150 mA	ET, EU, EV	115	lm
5000K~7000K		EU, EV,EW	125	

* The luminous flux tolerance is ± 7%

■ Absolute Maximum Ratings

Parameter	Symbol	value	Unit
DC Forward Current ⁽¹⁾	I _F	200	mA
Power Dissipation	P _D	1.2	W
Pulse Forward Current ⁽²⁾	I _{FP}	360	mA
Storage Temperature	T _{stg}	-40 ~ 100	°C
Operating Temperature	T _{opr}	-40 ~ 100	°C
Junction Temperature	T _J	125	°C
Assembly Temperature	-	260 (max. 10sec)	°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

Binning

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Color variation categories

Colour marking	CCT (Tc)	Chromaticity coordinates	
		x	y
F 6500	6400	0,313	0,337
F 5000	5000	0,346	0,359
F 4000	4040	0,380	0,380
F 3500	3450	0,409	0,394
F 3000	2940	0,440	0,403
F 2700	2720	0,463	0,420
P 2700	2700	0,458	0,410

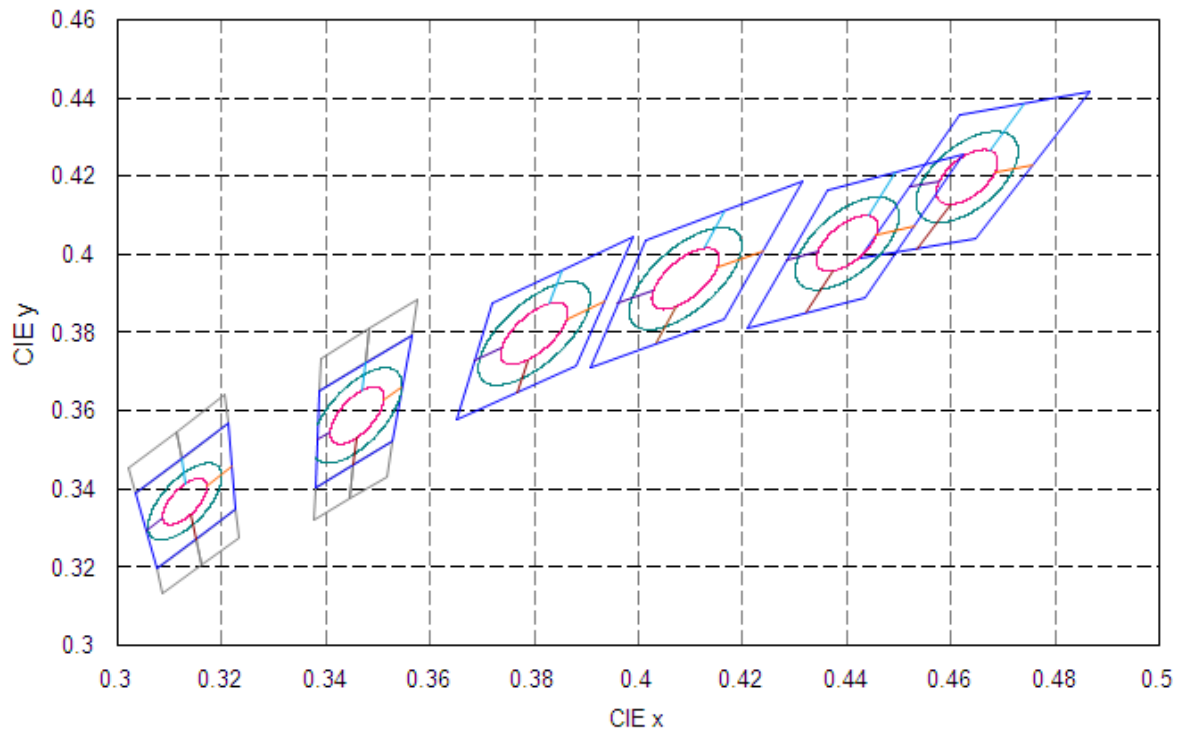
The letters in the colour marking designation stand for:
 F = Values from IEC 60081, Annex D
 P = Value close to the Planckian curve

Chromaticity Coordinates

PC33H01 is hot color targeted so that at 85°C, the color is within ErP IEC62612.

Typical bin structure at 85°C

In application conditions, the LED temperature rises and at 85°C the typical color bins will be as shown.



■ **Bin code definition**

V _F Rank	Luminous Flux Rank	CIE Rank
Z	ET	271

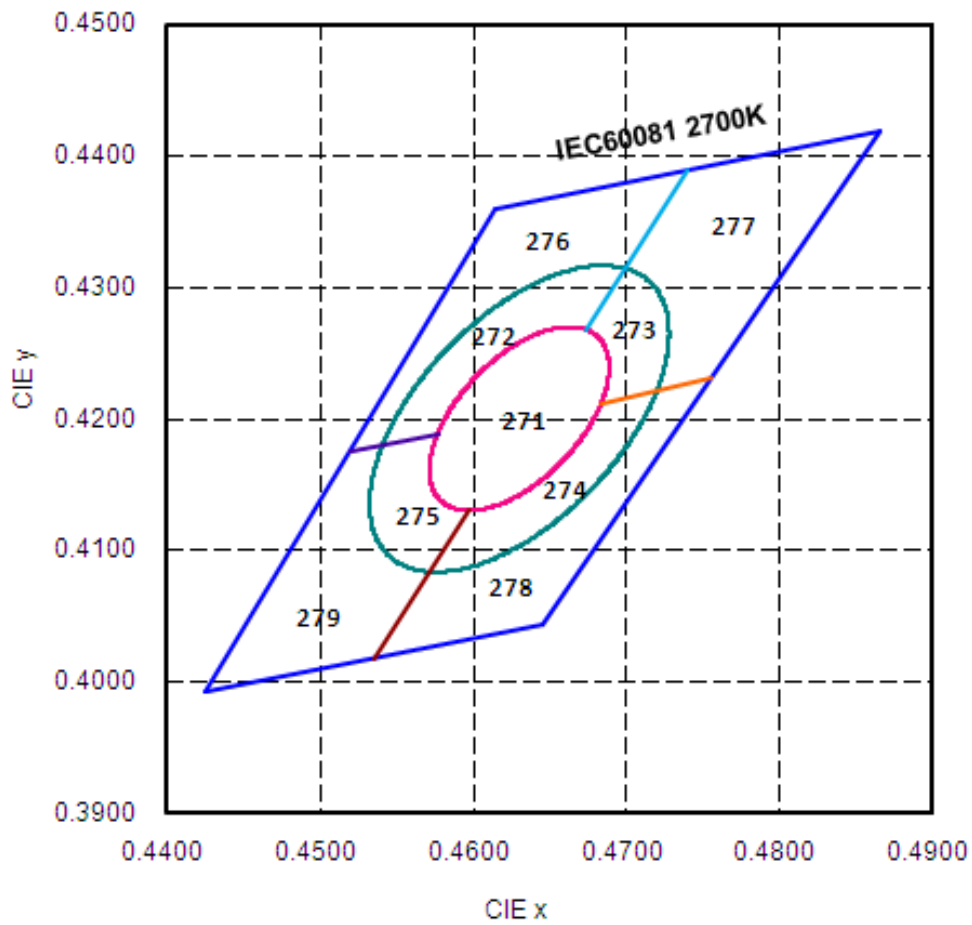
V _F Rank	Condition	Min.	Max.
Z	I _F = 150 mA	5.8	6.0
A		6.0	6.2
B		6.2	6.4
C		6.4	6.6
D		6.6	6.8

Luminous Flux Rank	Condition	Min.	Max.
ET	I _F = 150 mA	100	110
EU		110	120
EV		120	130
EW		130	140

Note:

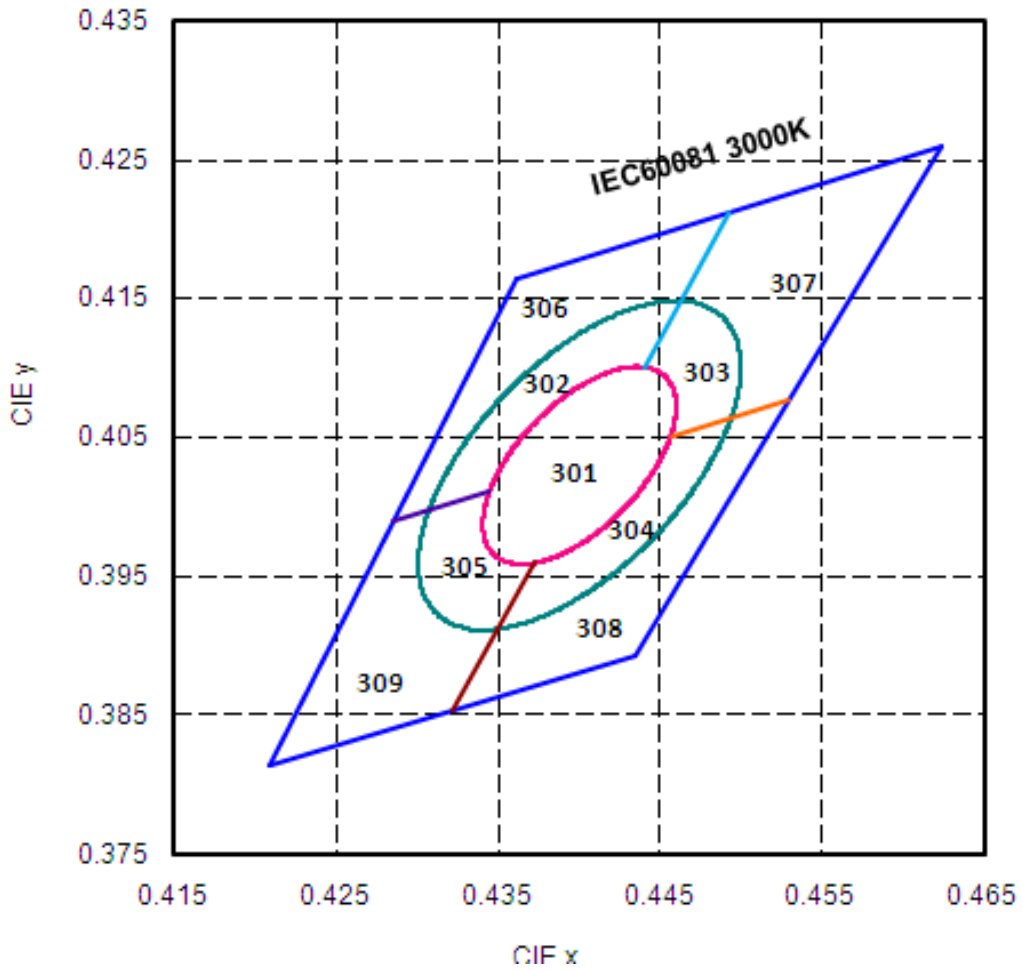
- (1) The luminous flux tolerance is ±7%
- (2) The forward voltage tolerance is ±0.1V

F 2700K



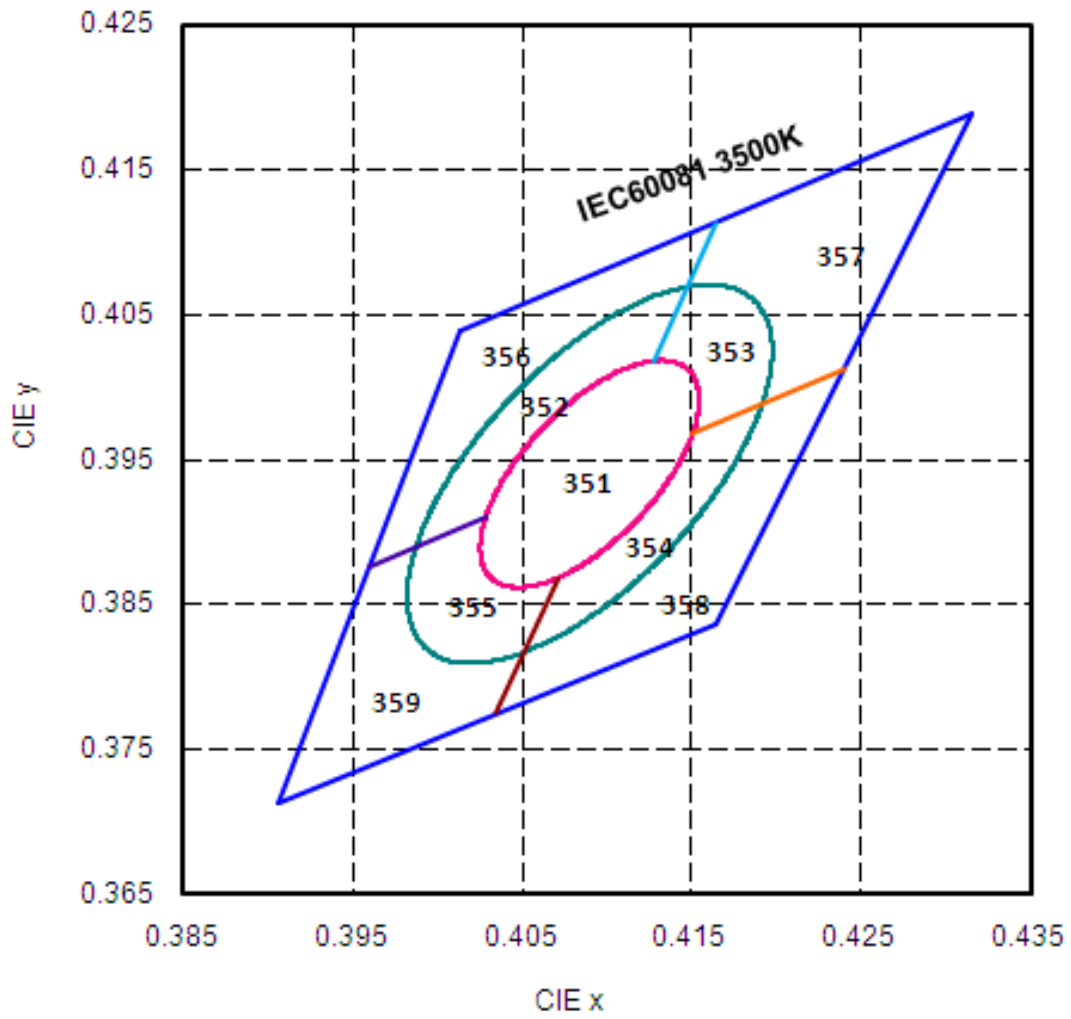
CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
2720K	Single 3-step MacAdam ellipse	(0.463, 0.420)	0.00810	0.00420	53.70°
2720K	Single 5-step MacAdam ellipse	(0.463, 0.420)	0.01350	0.00700	53.70°

F 3000K



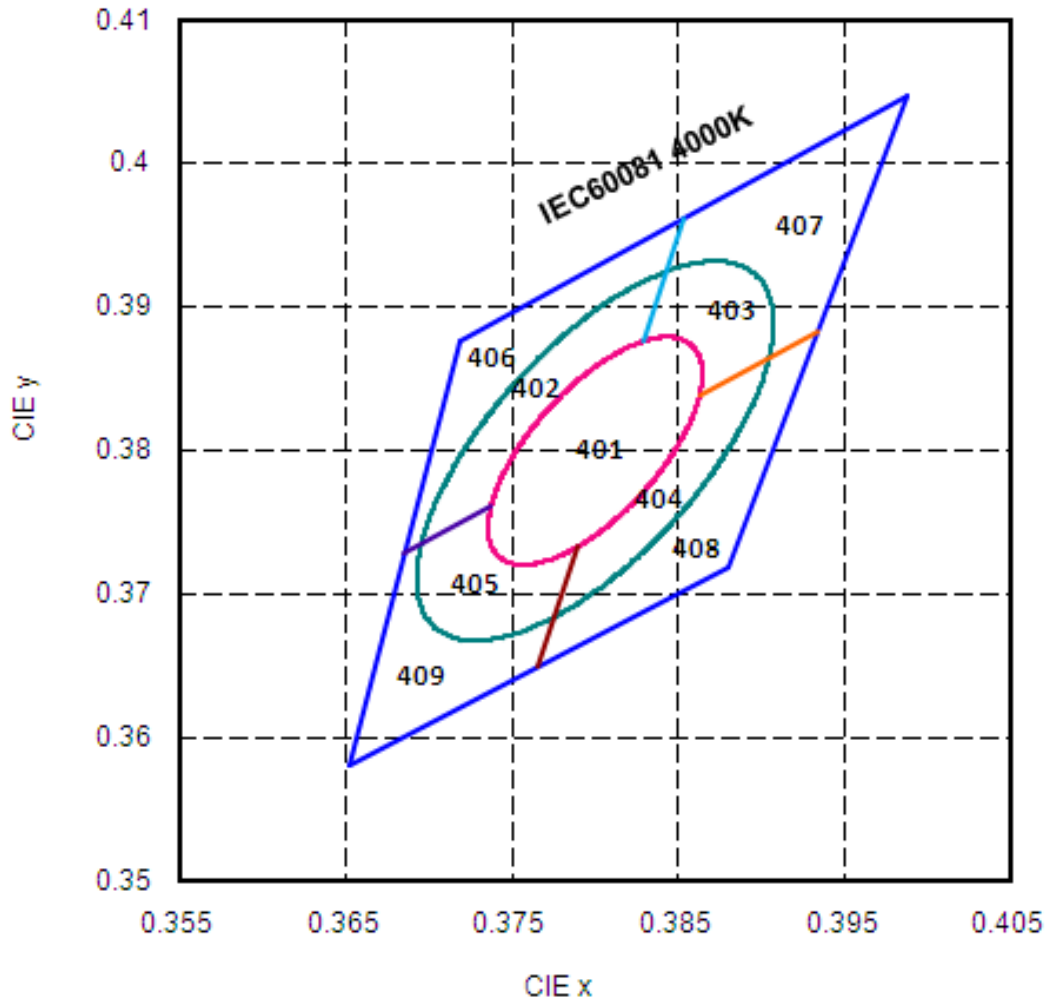
CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
2940K	Single 3-step MacAdam ellipse	(0.440, 0.403)	0.00834	0.00408	53.22°
2940K	Single 5-step MacAdam ellipse	(0.440, 0.403)	0.01390	0.00680	53.22°

F 3500K



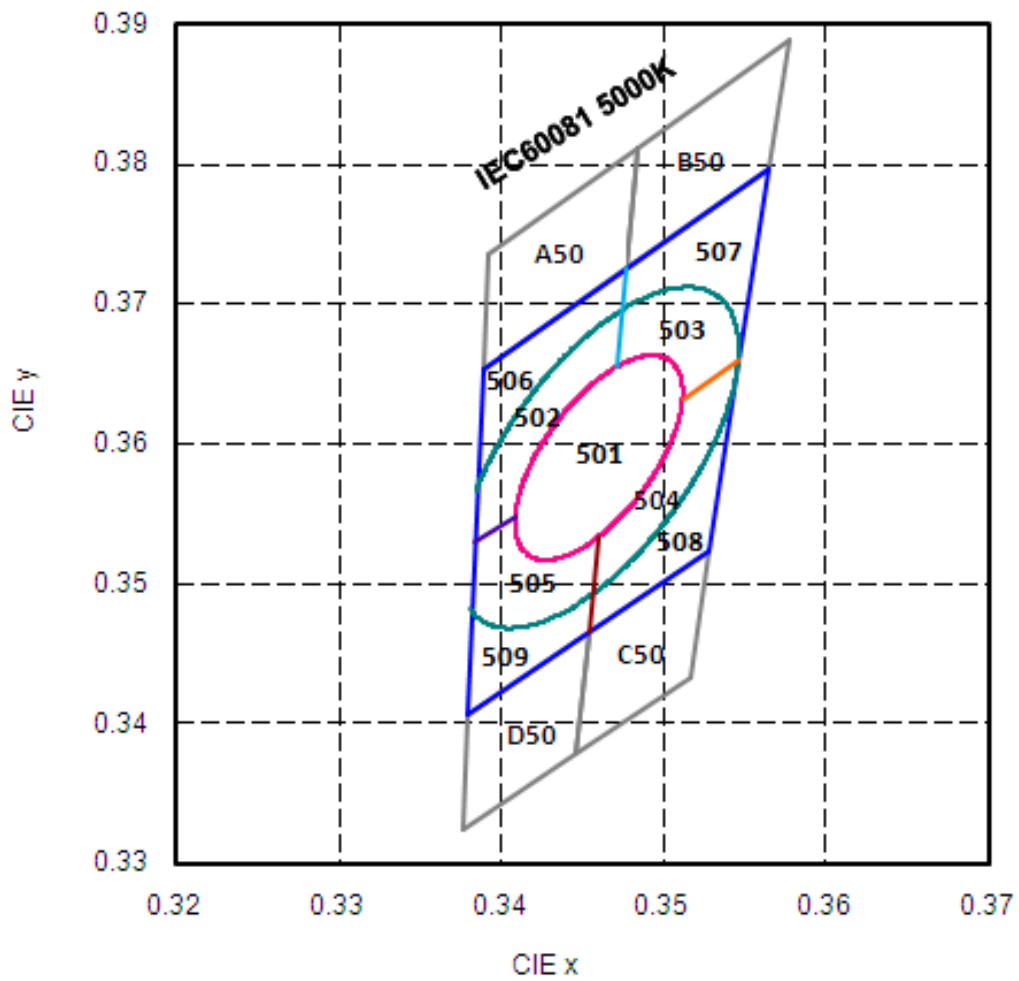
CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
3450K	Single 3-step MacAdam ellipse	(0.409, 0.394)	0.00927	0.00414	53.22°
3450K	Single 5-step MacAdam ellipse	(0.409, 0.394)	0.01545	0.00690	53.22°

F 4000K



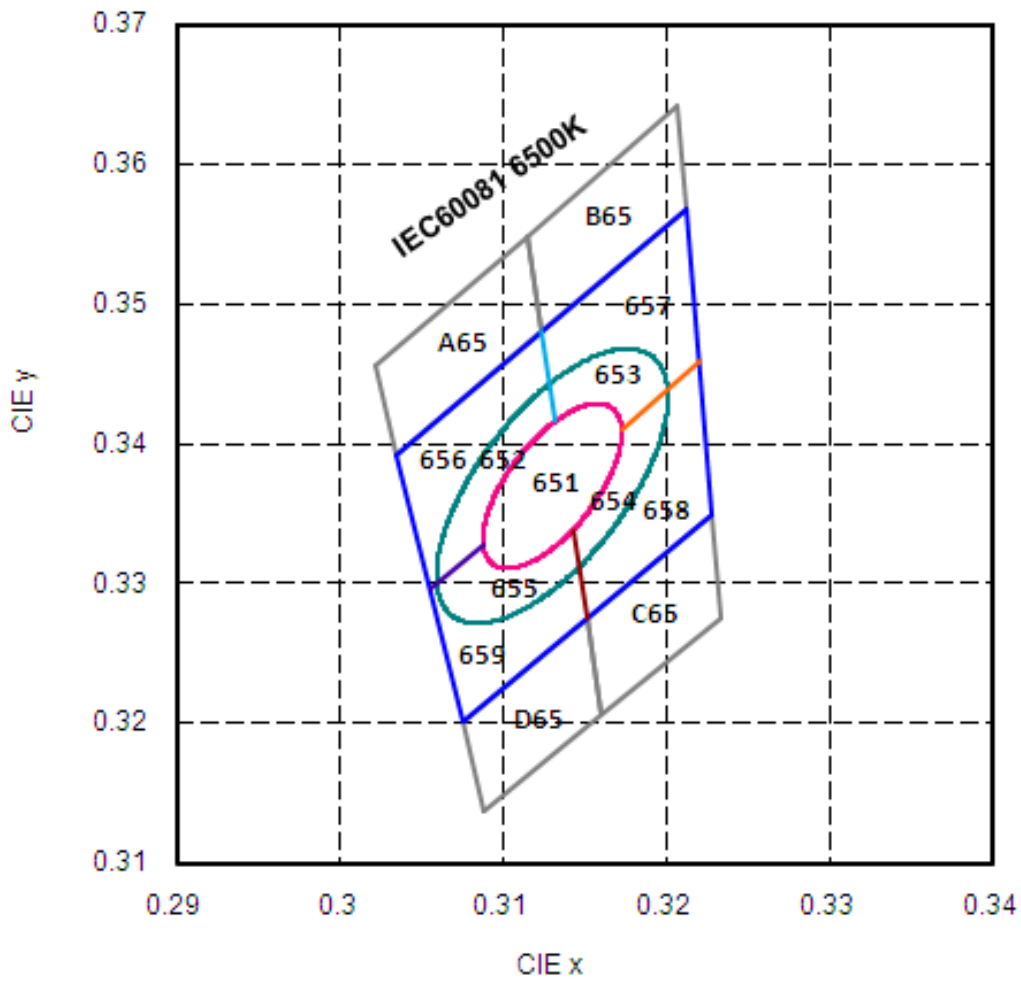
CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
4040K	Single 3-step MacAdam ellipse	(0.380, 0.380)	0.00939	0.00402	53.72°
4040K	Single 5-step MacAdam ellipse	(0.380, 0.380)	0.01565	0.00670	53.72°

F 5000K



CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
5000K	Single 3-step MacAdam ellipse	(0.346, 0.359)	0.00822	0.00354	59.62°
5000K	Single 5-step MacAdam ellipse	(0.346, 0.359)	0.01370	0.00590	59.62°

F 6500K



CCT	Color Space	Target Center Point (cx, cy)	Major Axis, a	Minor Axis, b	Ellipse Rotation Angle
6400K	Single 3-step MacAdam ellipse	(0.313, 0.337)	0.00669	0.00285	58.57°
6400K	Single 5-step MacAdam ellipse	(0.313, 0.337)	0.01115	0.00475	58.57°

Note:

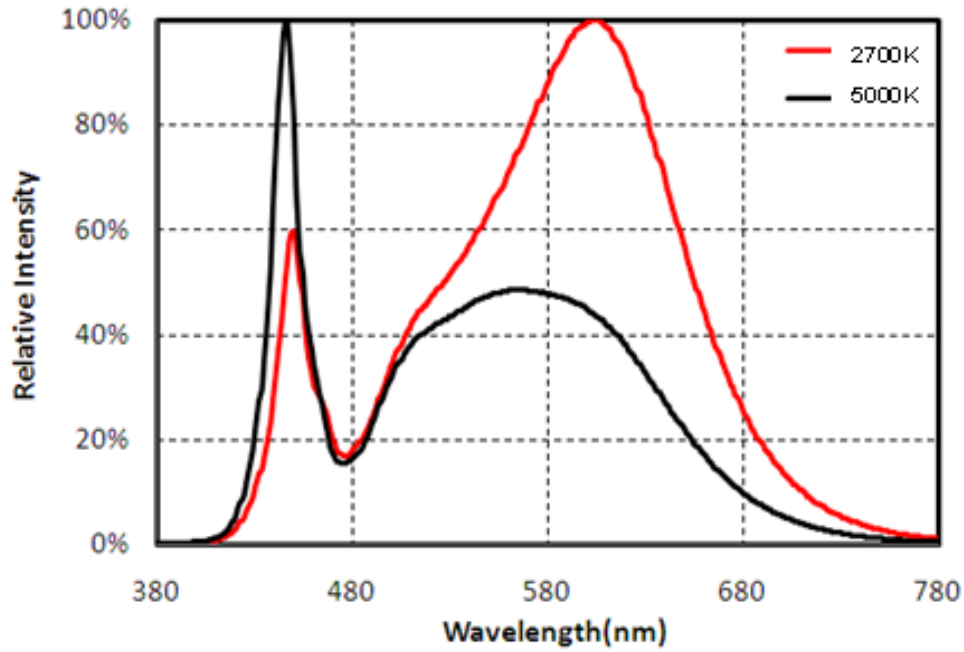
- (1) Correlated color temperature is derived from the CIE 1931 chromaticity diagram
- (2) CIE measurement tolerance is ± 0.007
- (3) The luminous flux tolerance is $\pm 7\%$
- (4) The forward voltage tolerance is $\pm 0.1V$

Characteristics

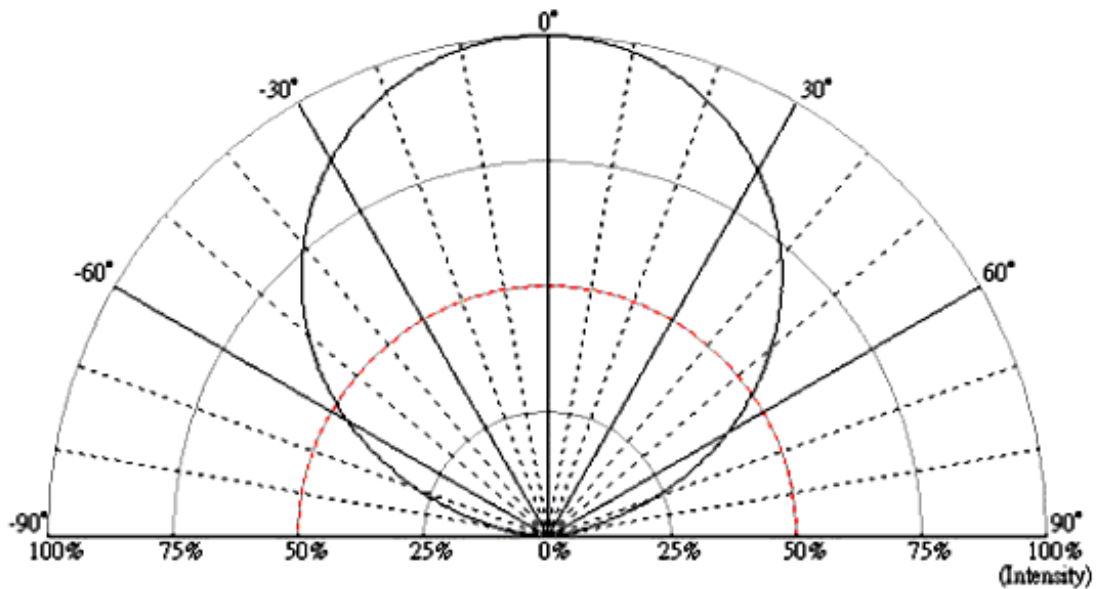
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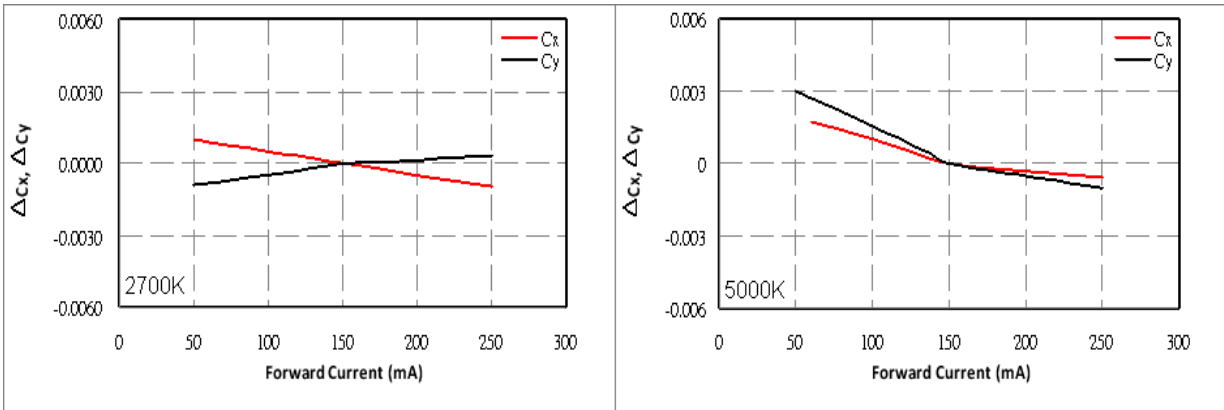
Spectrum



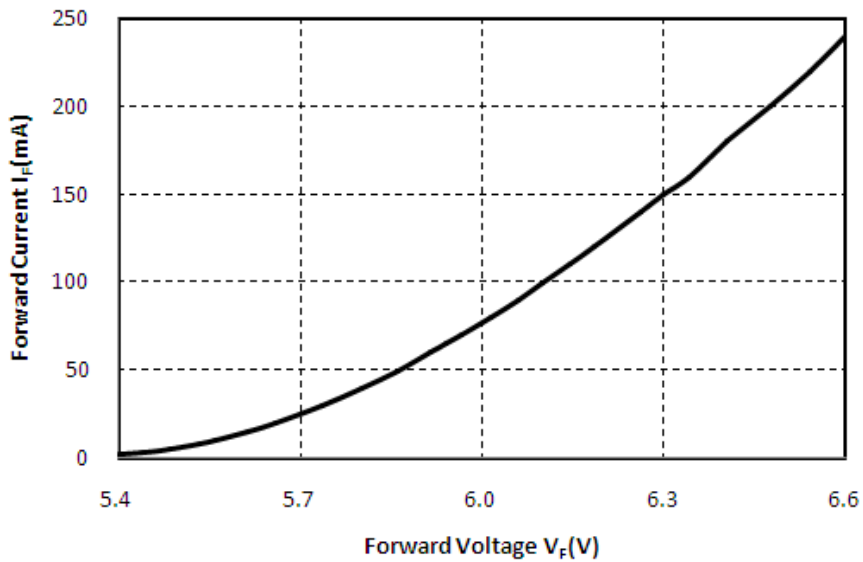
Radiation Pattern



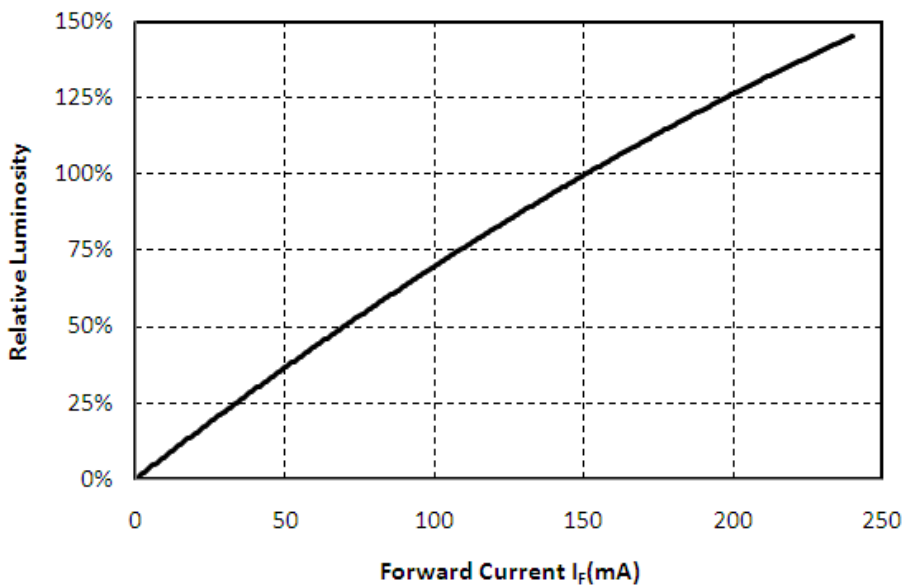
■ **Forward Current vs. Chromaticity Coordinate**



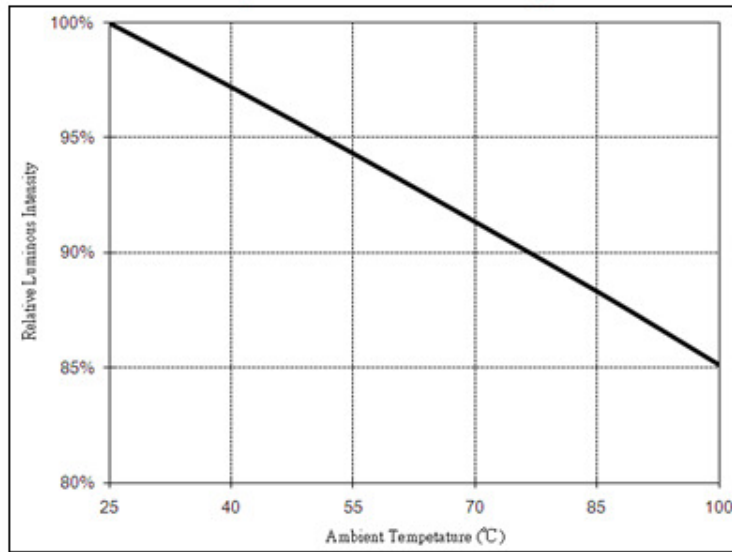
■ **Forward Voltage vs. Forward Current**



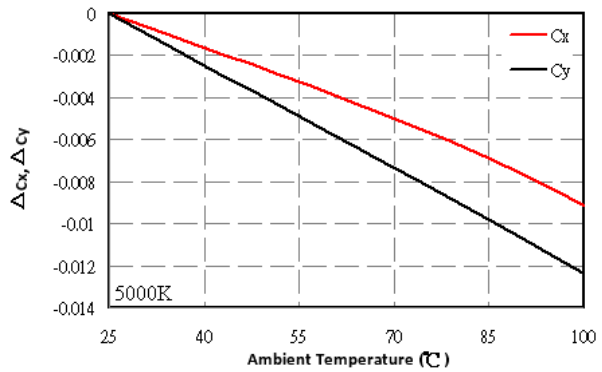
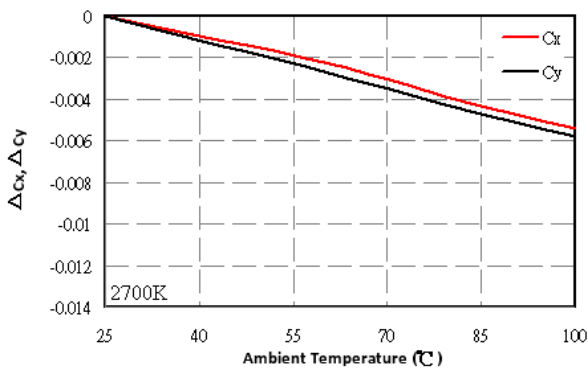
■ **Forward Current vs. Relative Luminosity**



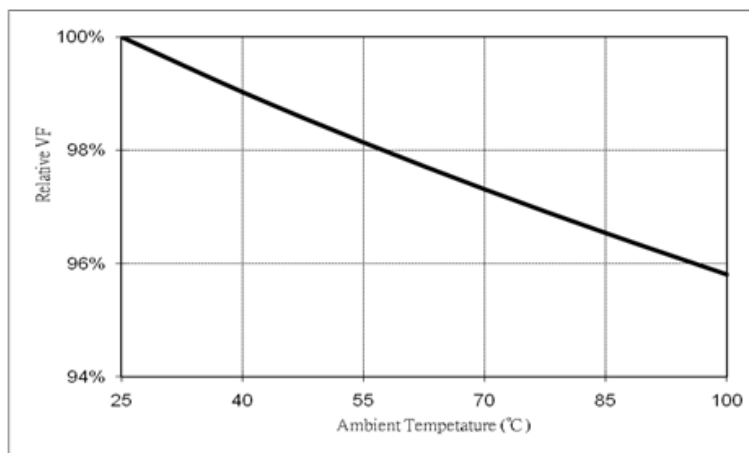
■ **Relative Luminous Intensity vs. Ambient Temperature**



■ **Chromaticity vs. Ambient Temperature**



■ **Relative VF vs. Ambient Temperature**



■ **Reliability test**

Item	Condition	Current	Time/Cycle
Steady State Operating Life of Low Temperature -40°C	-40°C Operating	150mA	1000 Hrs
Steady State Operating Life of High Temperature 60°C	60°C Operating	150mA	1000 Hrs
Steady State Operating Life of High Temperature 85°C	85°C Operating	150mA	1000 Hrs
Steady State Operating Life of High Temperature 100°C	100°C Operating	150mA	1000 Hrs
Low temperature storage -40°C	-40°C Storage	NA	1000 Hrs
High temperature storage 100°C	100°C Storage	NA	1000 Hrs
Steady State Operating Life of High Humidity Heat 60°C/90%	60°C/90% Operating	150mA	1000 Hrs
Resistance to soldering heat on PCB (JEDEC MSL3)	pre-store@60°C, 60%RH for 52hrs Tsld max.=260°C 10sec	NA	3 Times
Thermal shock	-40°C/20minr ~5minr ~ 100°C/20min	NA	300 Cycles




■ **Judgment Criteria**

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

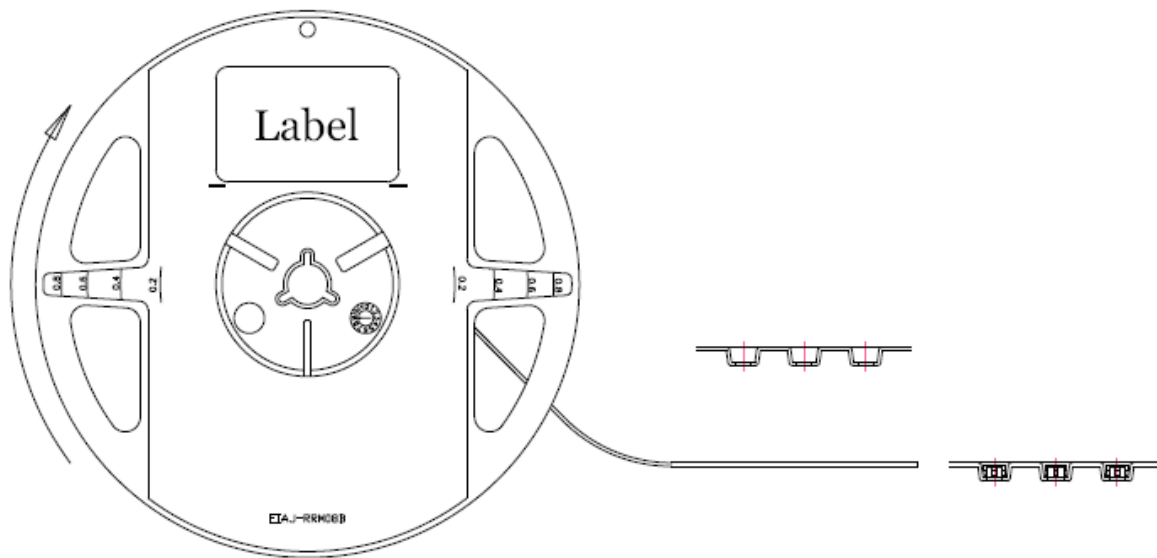
Packing

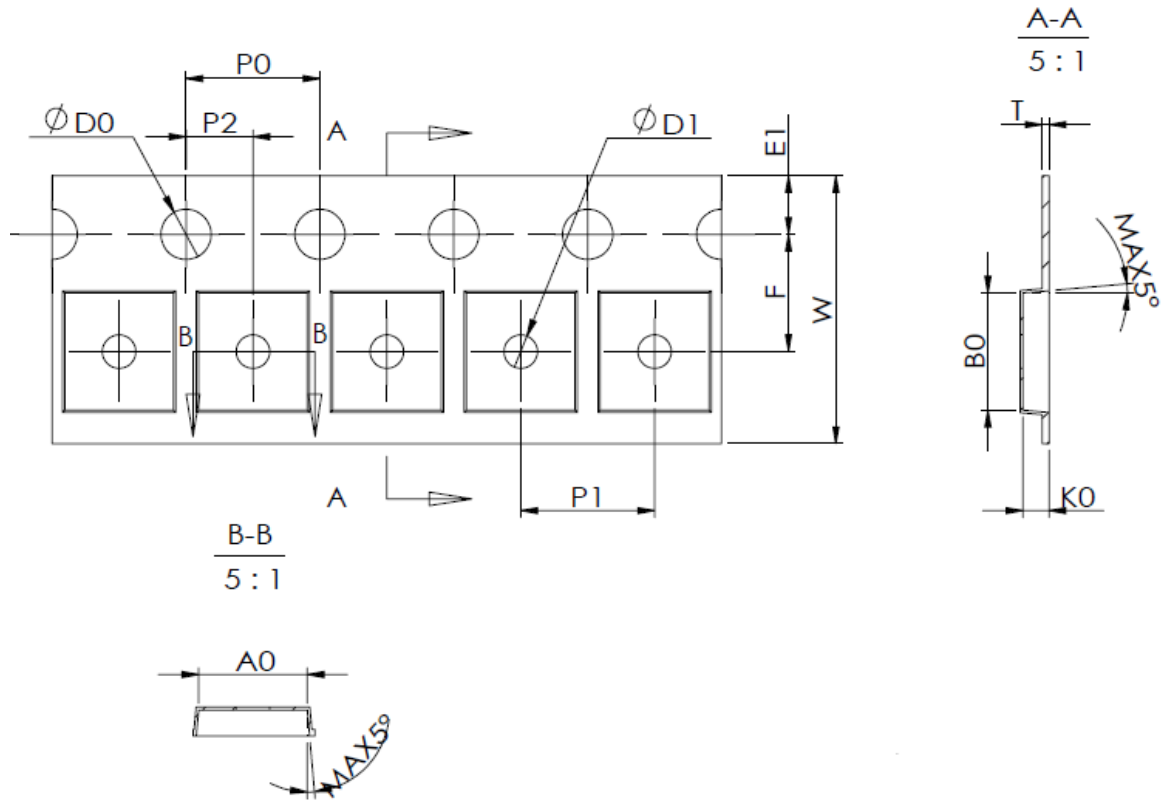
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■ **Label**

Lextar

QTY :

Bin code :

Vendor lot :
M/N :

■ **Carrier Taping**





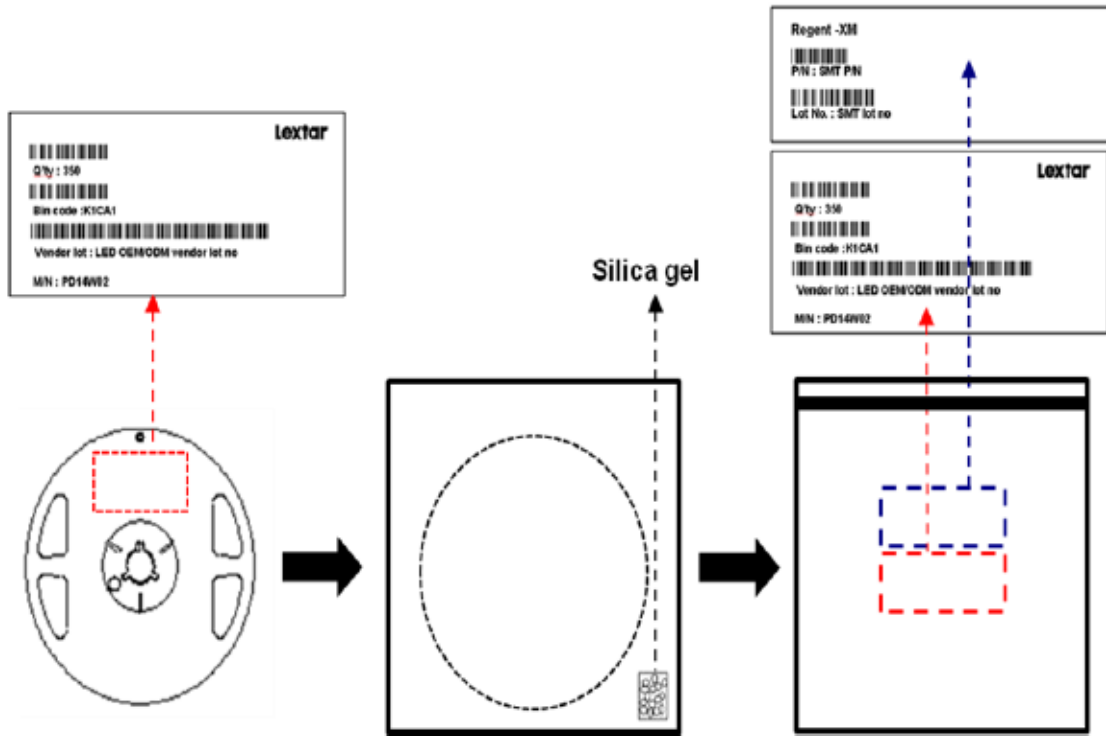
W	P1	E1	F	D0	D1
8.0	4.0	1.75	3.5	1.5	1.0
P0	P2	A0	B0	K0	T
4.0	2.0	3.25	3.5	0.8	0.22

PS : unit : mm

Notice:

1. 10 Sprocket hole pitch cumulative tolerance is $\pm 0.20\text{mm}$.
2. Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
3. Ao & Bo measured on a place in the middle of the corner radii.
4. Ko measured from a place on the inside bottom of the pocket to top surface of carrier.
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
6. Surface resistivity $10^4 \sim 10^8$ ohm/sq.

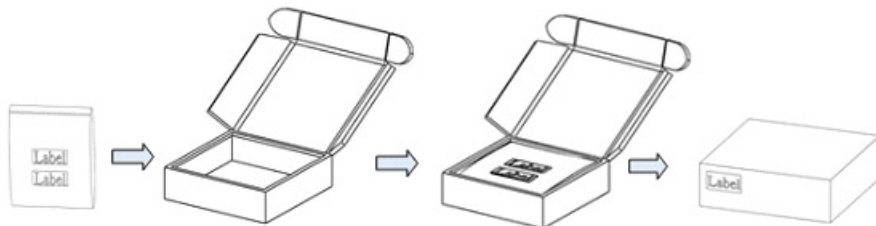
■ **Shield Bag Taping**



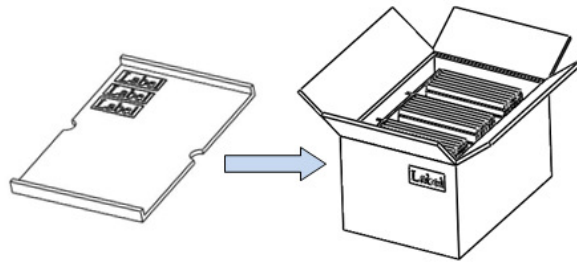
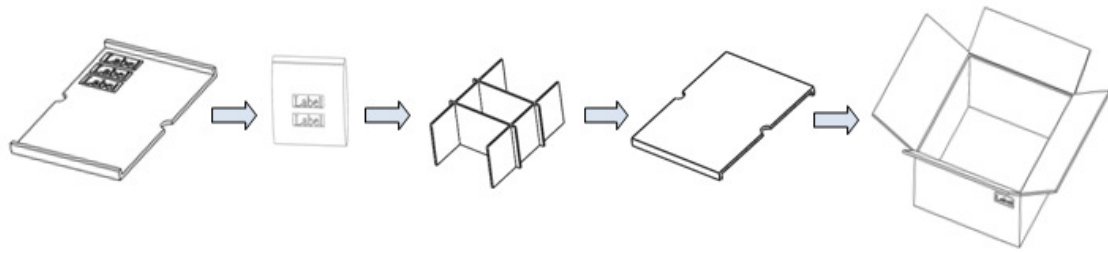
■ **Packing Box**

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

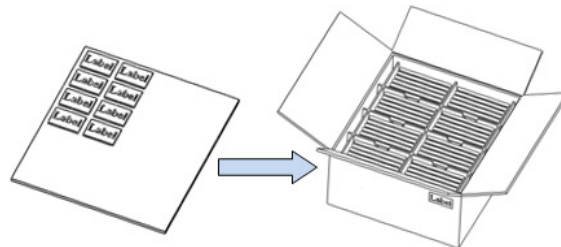
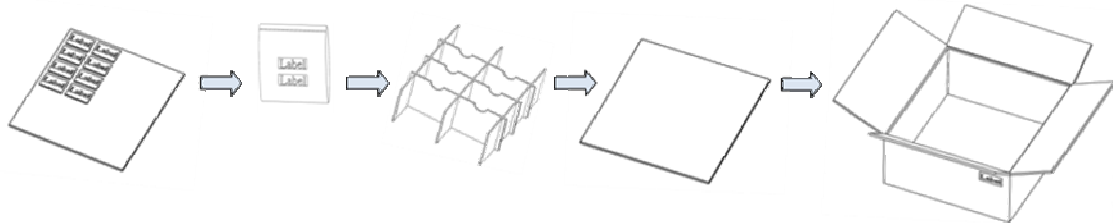
■ **Small Box**



■ **Medium Box**



■ **Large Box**



Precautions

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■ Safety Precautions

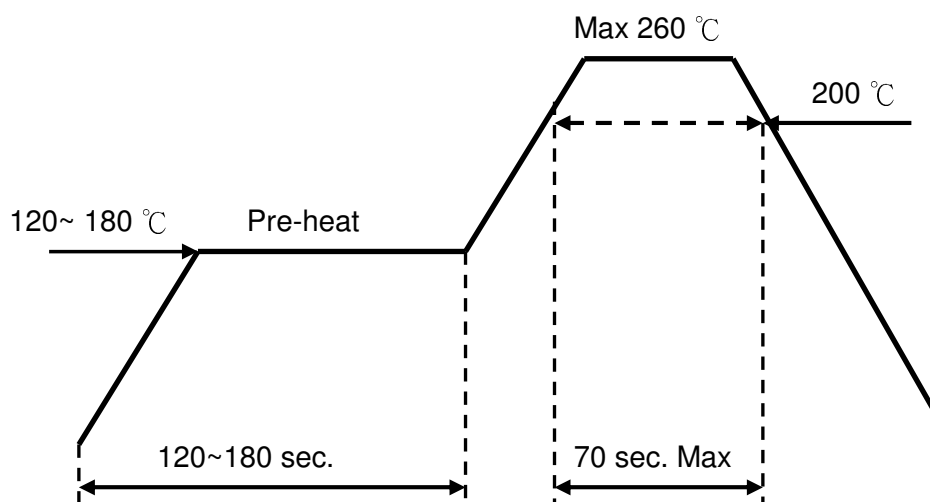
- The LED light output is too strong for human eyes without shield. Prevent eye contact directly more than seconds.
- Ensure operating under maximum rating.

■ 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 168 hrs. 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 150 °C max, 180 sec. max.
Peak 260 °C max, 10 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	Approved
2015.01.28	New version	Abigale Wu	Berris Huang
2015.03.17	BIN code 修正 & 增加 OE data	Rock Yen	
2015.04.12	BIN code 修正 & 外觀尺寸	Rock Yen	
2015.04.30	CIE hot binning 變更	Rock Yen	
2015.1029	Add R9 Spec	Kenis Hung	

Smart Lighting *Amazing Life*

Lextar Electronics Corp. is the leading LED (Light Emitting Diode) maker integrating upper stream epitaxial, middle stream chip, and downstream package, SMT and LED lighting applications. Founded in May, 2008, Lextar is a subsidiary of AU Optronics, the leading TFT-LCD and solar PV manufacturer. Lextar's product applications include lighting and LCD backlight. Lextar's manufacturing sites include Hsinchu and Chunan in Taiwan, and Suzhou in China.

The company turnover in 2010 is 266 million USD.