

PC35U16 V1 KSF

Product Specification

Approval

PC35U16 V1 KSF
Product Specification

RoHS

Product	White SMD LED
Part Number	PC35U16 V1 KSF
Issue Date	2023/02



Feature

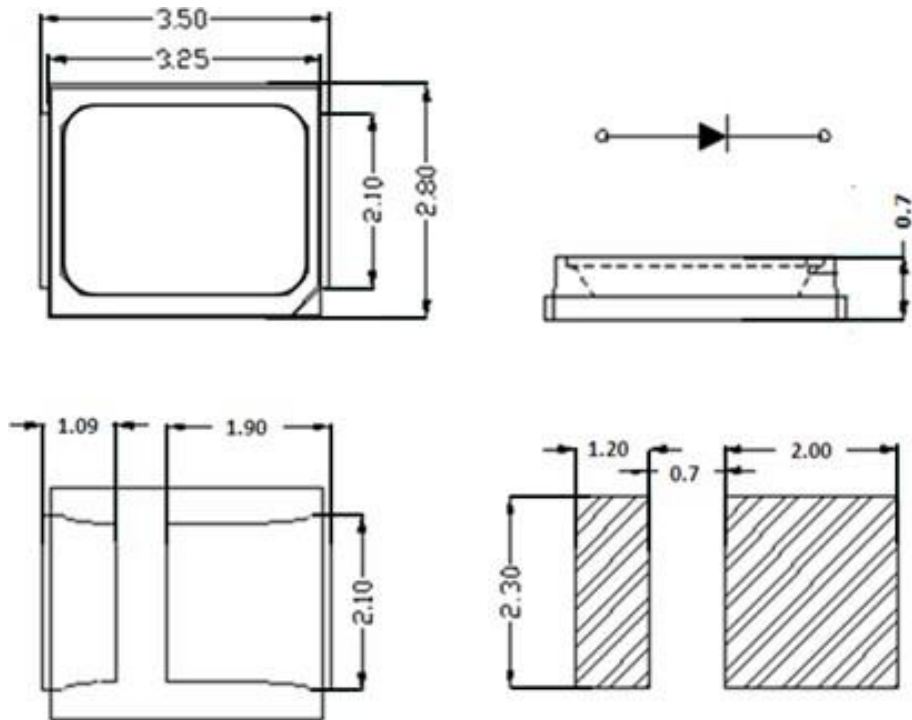
- ✓ White SMD LED (L x W x H) of 3.5x 2.8 x 0.7 mm
- ✓ ASNI Ellipse binning
- ✓ Dice Technology : InGaN
- ✓ Qualified according to JEDEC moisture sensitivity Level 3
- ✓ Environmental friendly ; RoHS compliance
- ✓ Packing : 4000 or 16000 pcs/reel

Applications

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

Outline

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Unit: mm, Tolerance: ± 0.1 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	2.8	–	3.3	V
Color Rendering Index ⁽²⁾	R _a		90	–	–	–
View Angle	θ		–	120	–	deg
Thermal Resistance ⁽³⁾	R _{th}		–	25	–	°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	TF TG TH
3700K~7000K		TG TH TI

* The luminous flux tolerance is ± 7%

■ Absolute Maximum Ratings

Parameter	Symbol	value	Unit
DC Forward Current ⁽¹⁾	I _F	150	mA
Power Dissipation	P _D	0.45	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

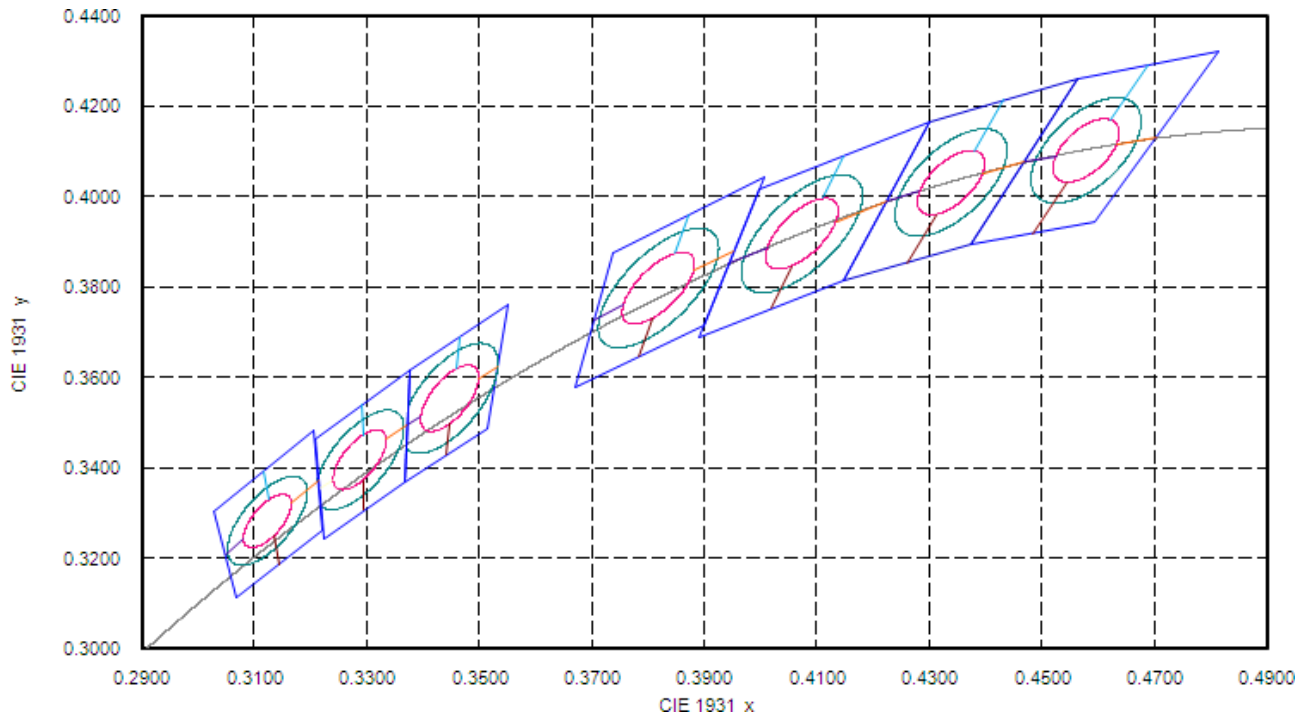
(2) IFP Condition: Duty 1 / 10, Pulse within 10msec

Binning – ANSI Ellipse

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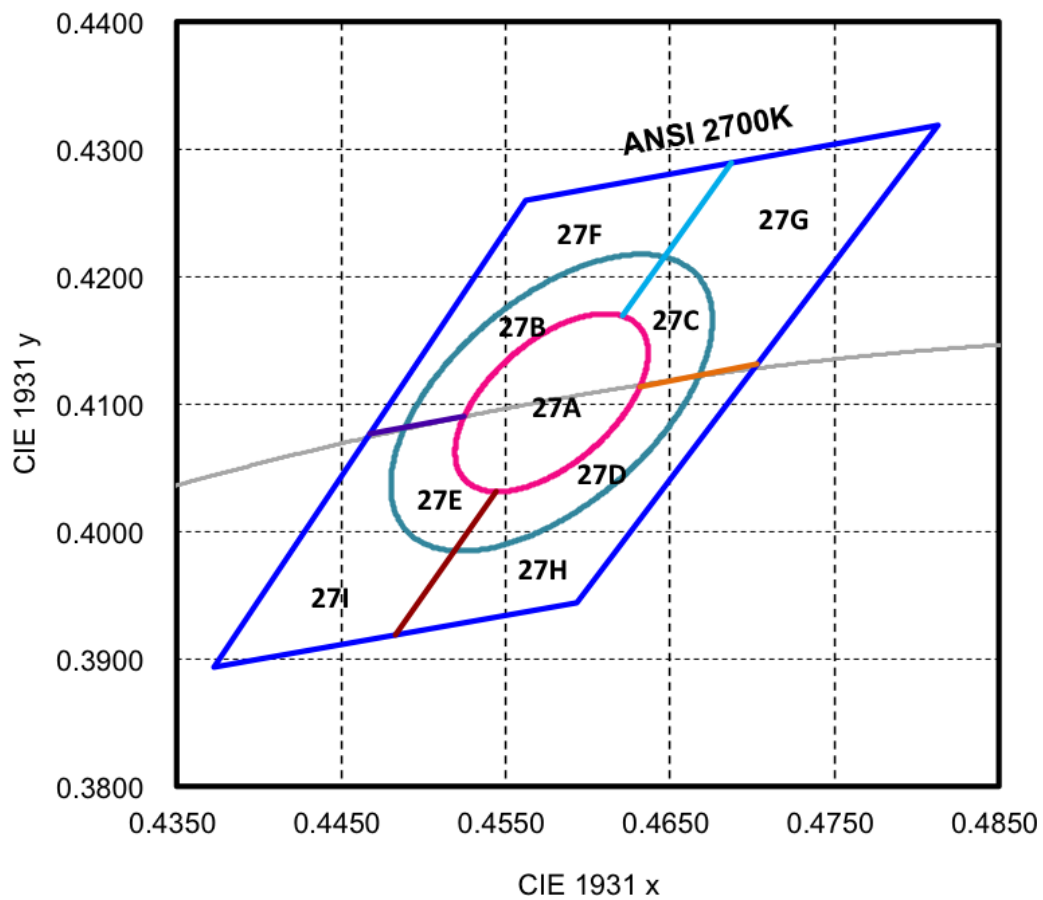
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Chromaticity Coordinates



■ Bin code definition

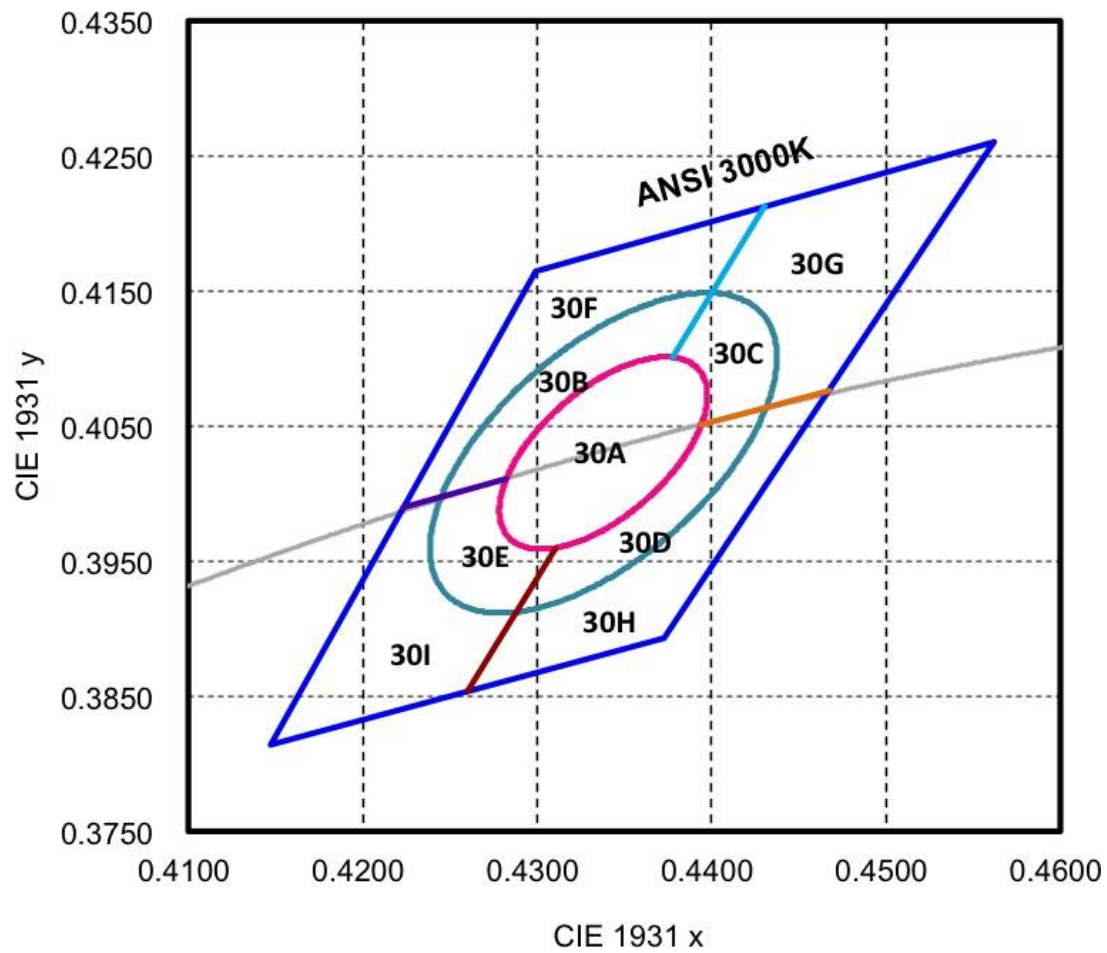
2700K



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

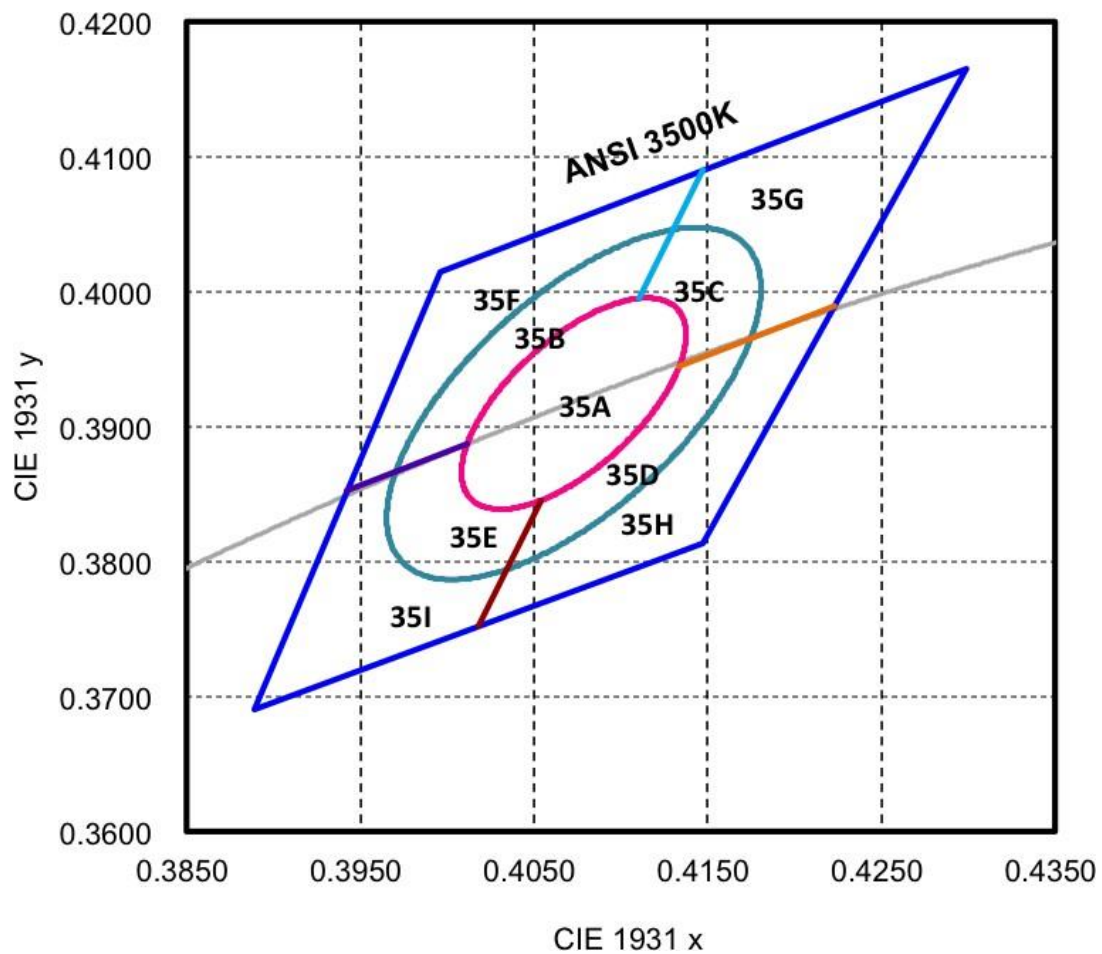
3000K



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

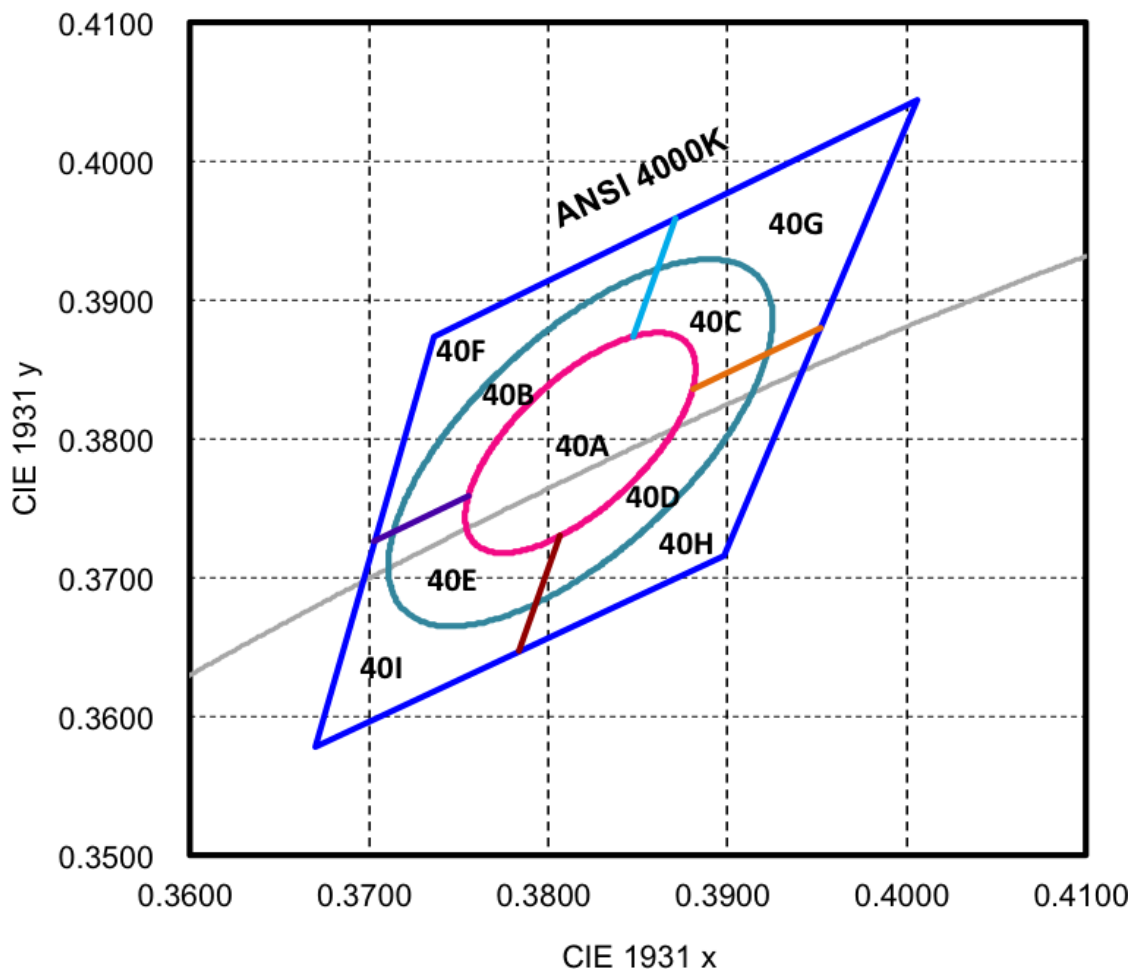
3500K



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

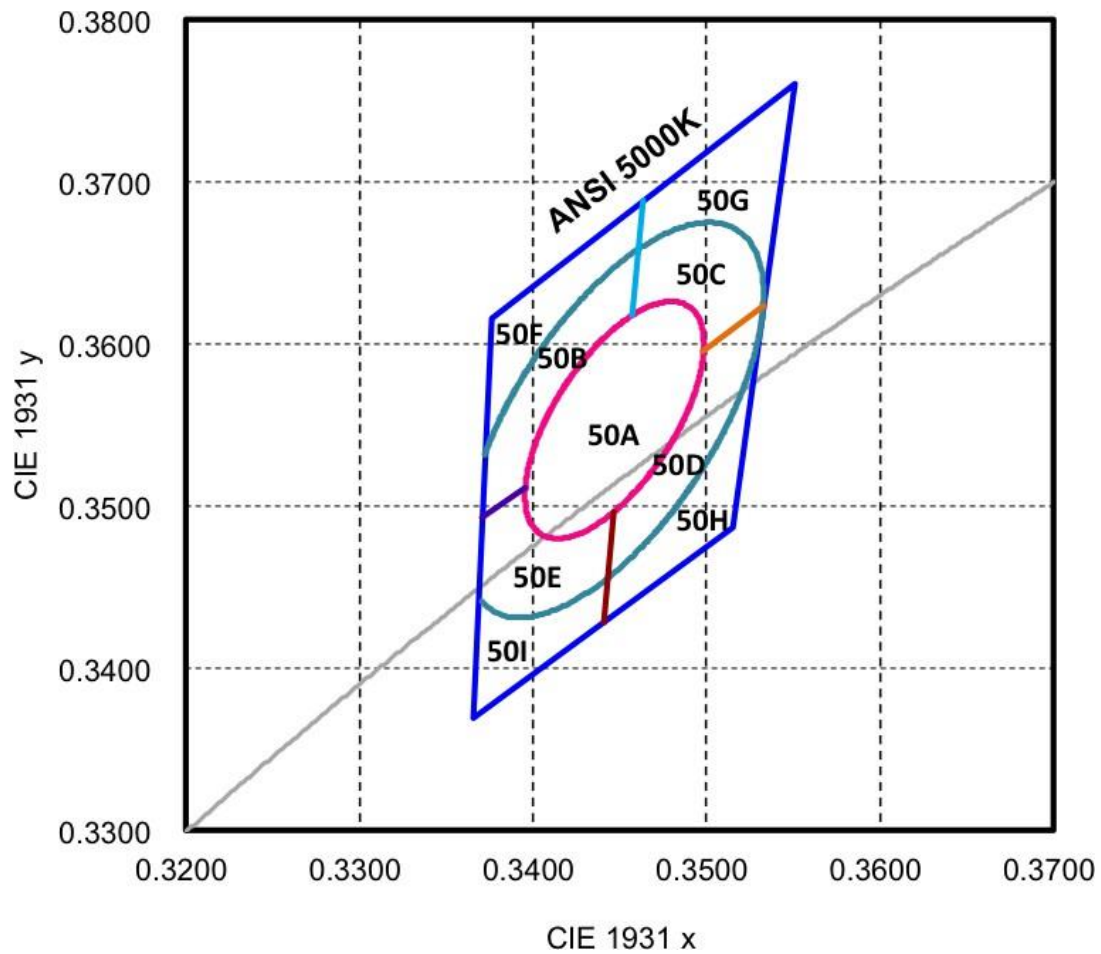
4000K



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

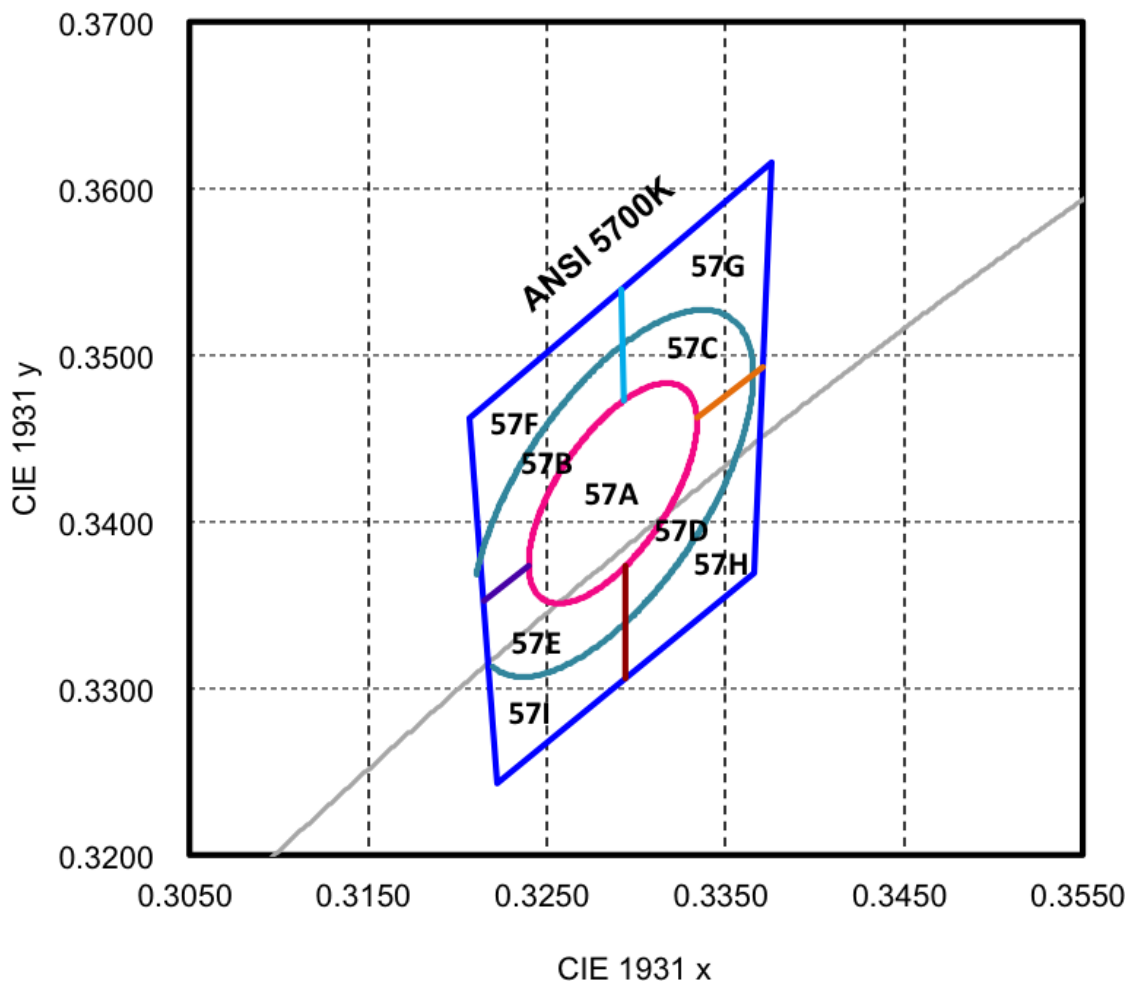
5000K



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

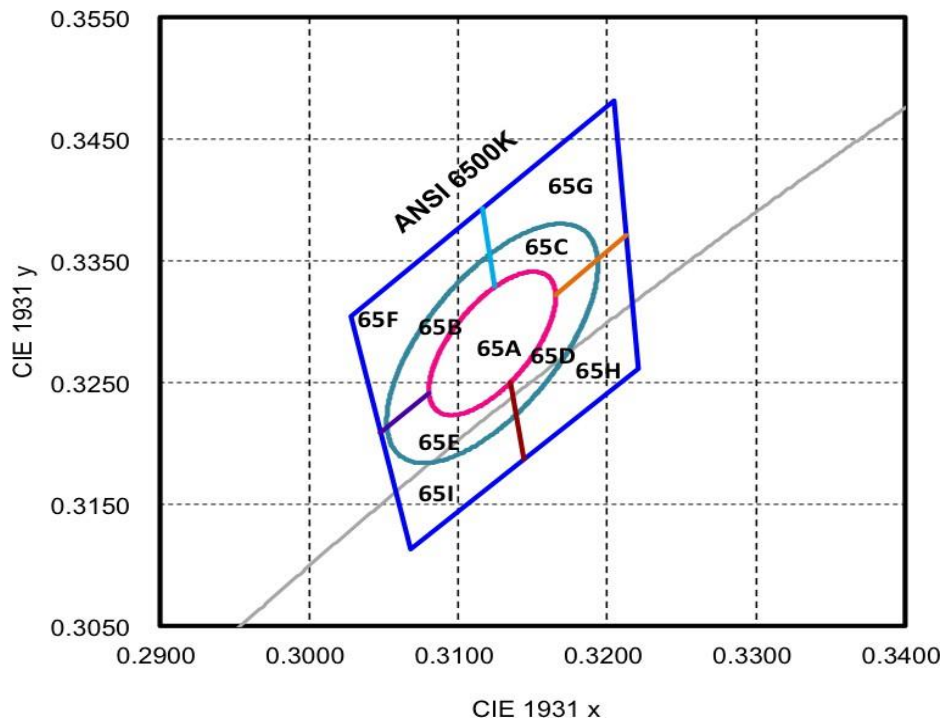
5700K



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
B	TG	30A

V _F Rank	Condition	Min.	Max.
B	I _F = 65 mA	2.8	2.9
C		2.9	3.0
D		3.0	3.1
E		3.1	3.2
F		3.2	3.3
Luminous Flux Rank	Condition	Min.	Max.
TE	I _F = 65 mA	24	26
TF		26	28
TG		28	30
TH		30	32
TI		32	34
TJ		34	36

Note:

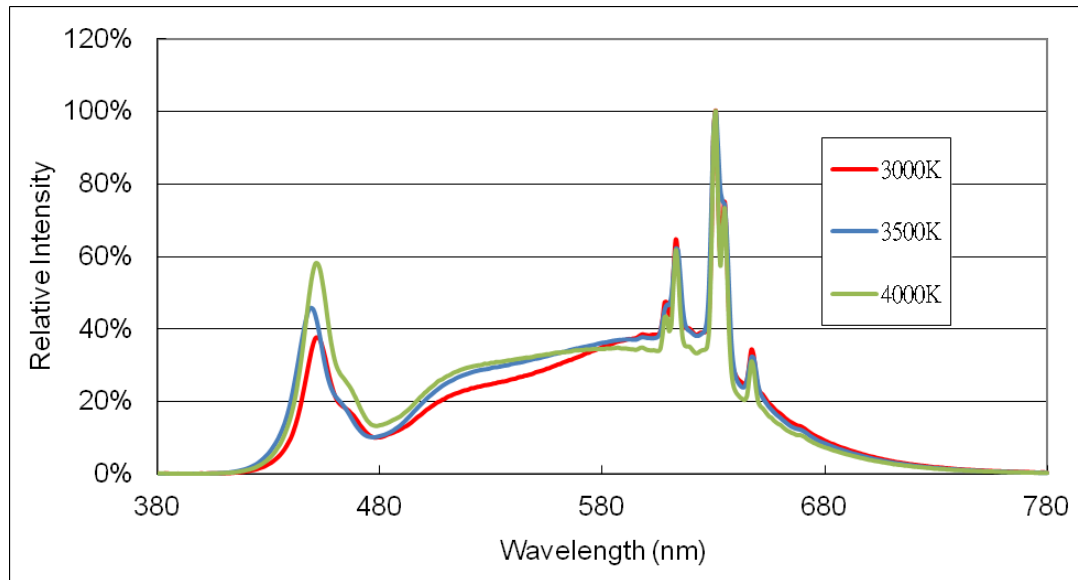
- (1) The luminous flux tolerance is $\pm 7\%$
- (2) The Forward Voltage tolerance is $\pm 0.1V$

Characteristic

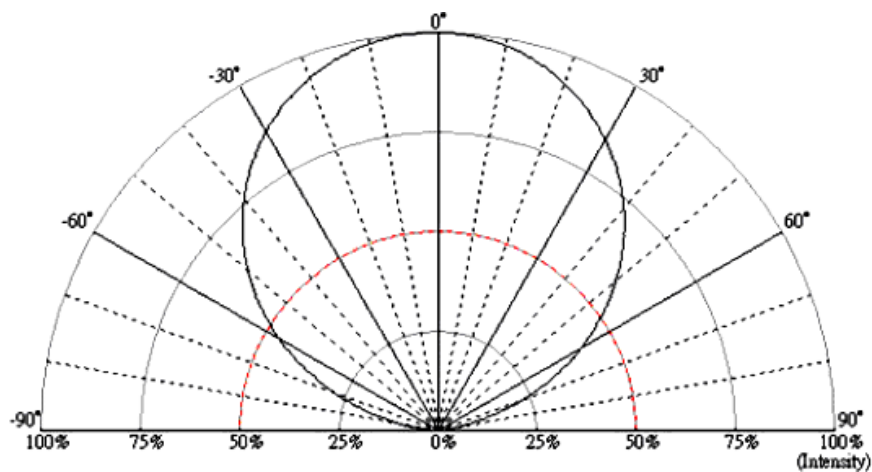
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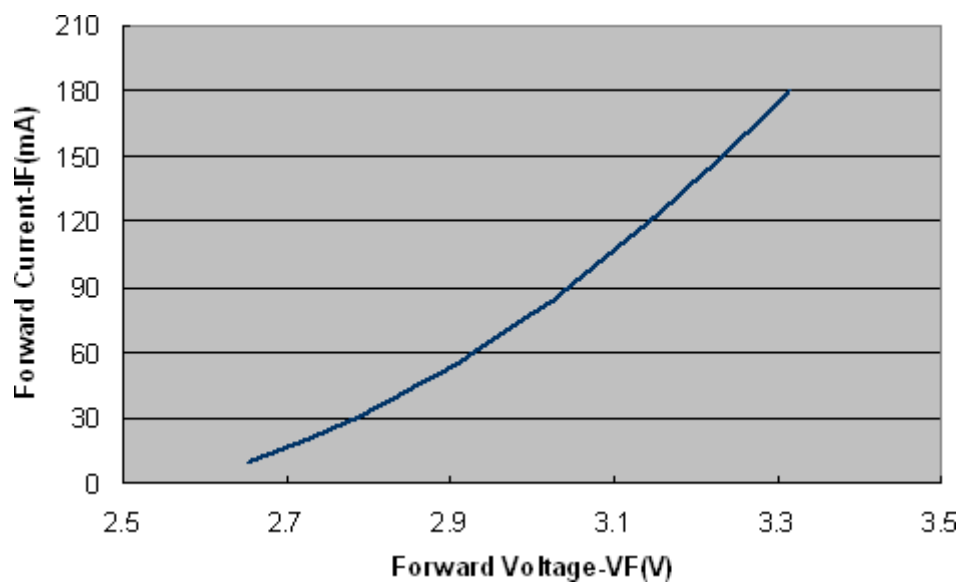
Spectrum



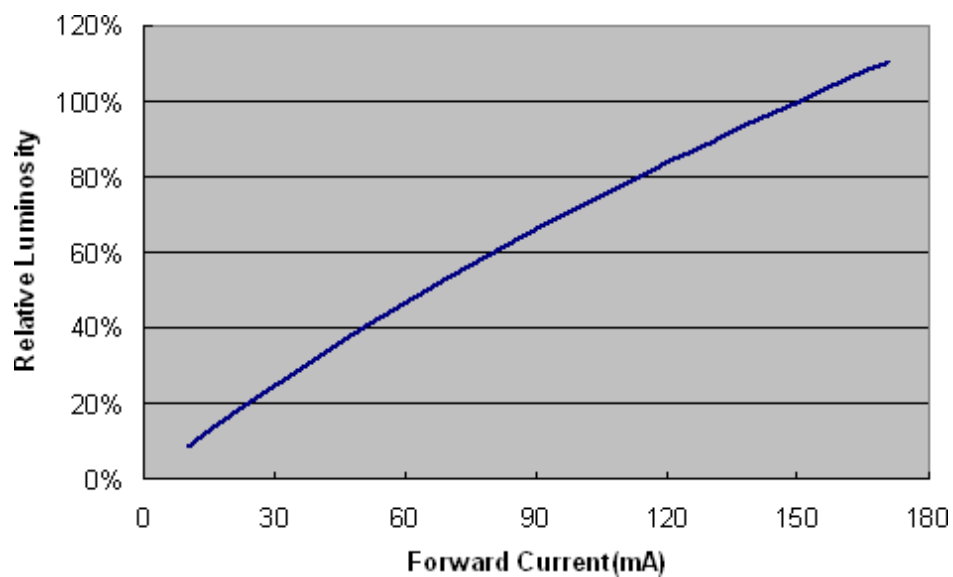
Radiation Pattern



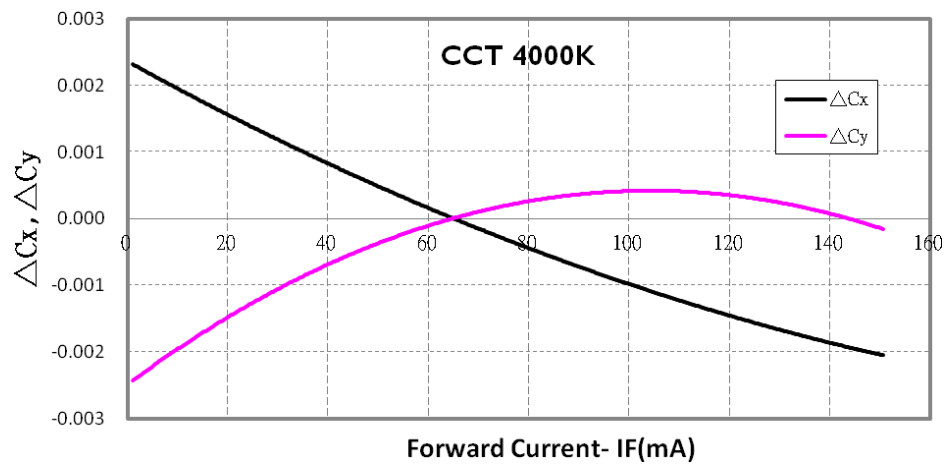
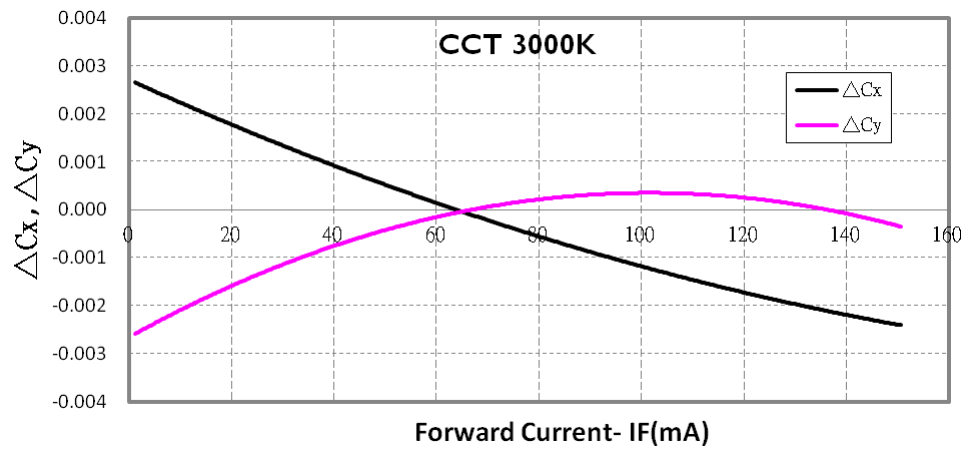
■ Forward Voltage vs. Forward Current



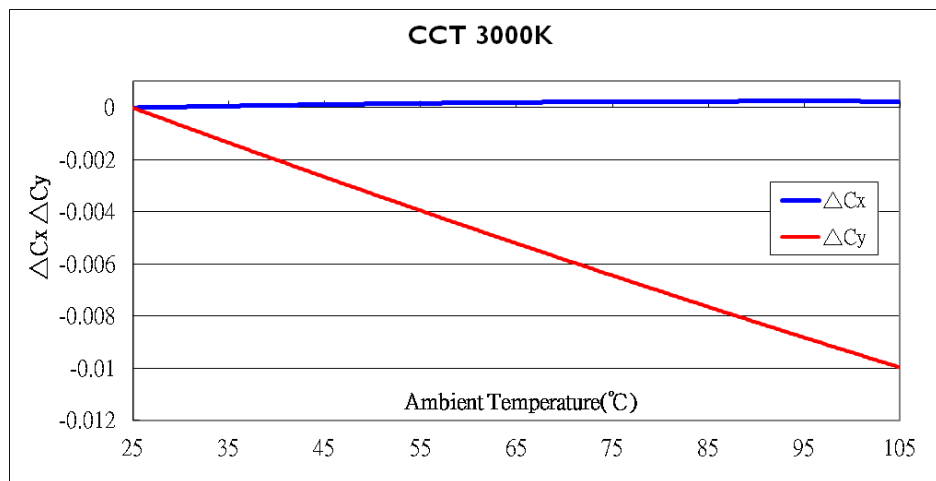
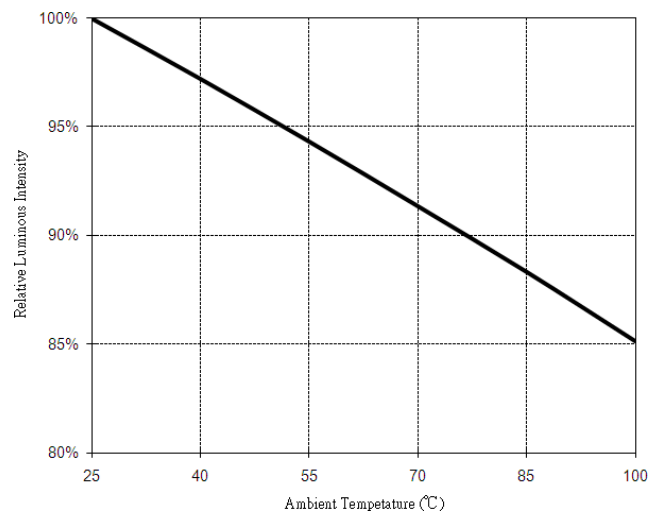
■ Forward Current vs. Relative Luminosity



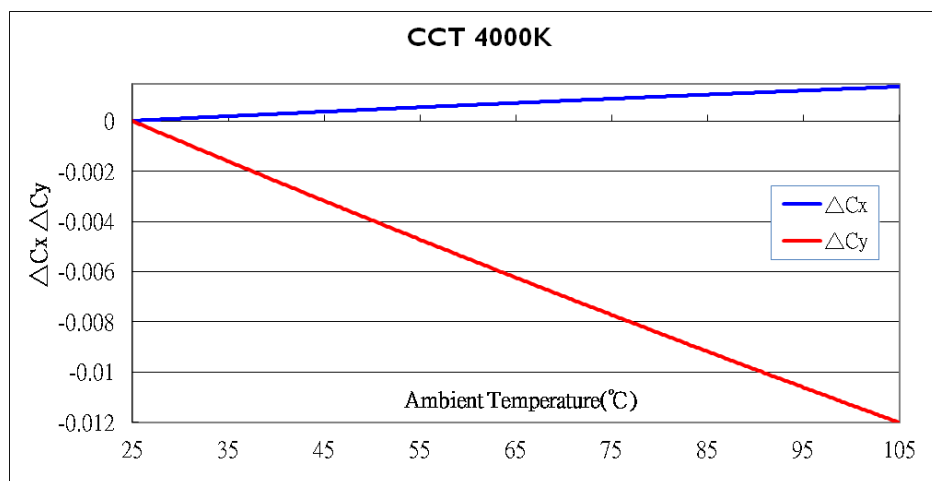
■ Forward Current vs. Chromaticity Coordinate



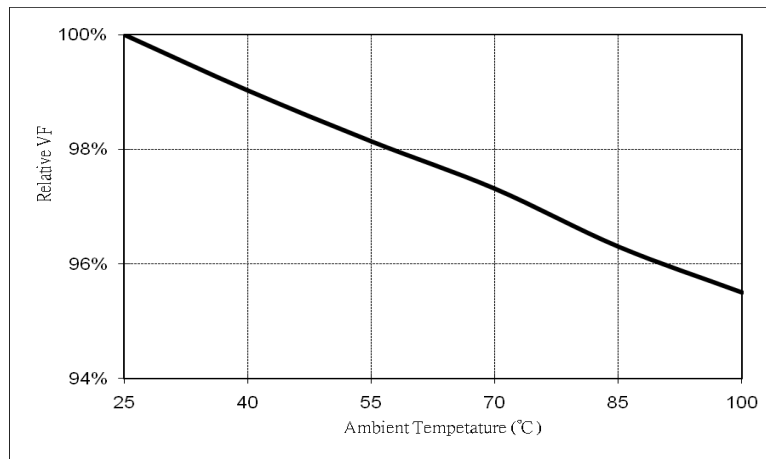
■ Relative Luminous Intensity vs. Ambient Temperature



■ 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 :



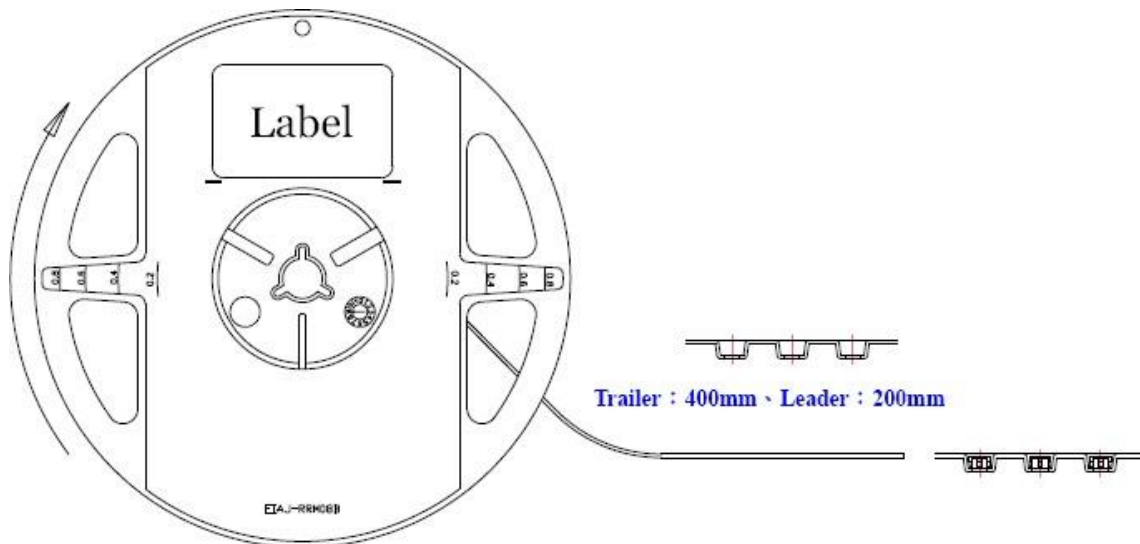
Bin code :

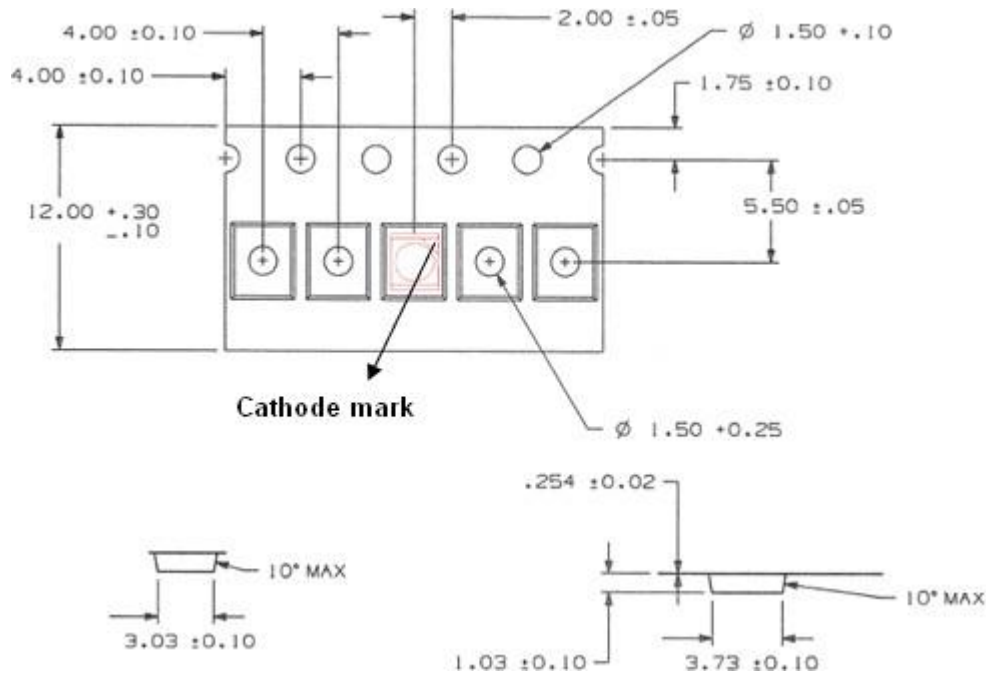


Vendor lot :

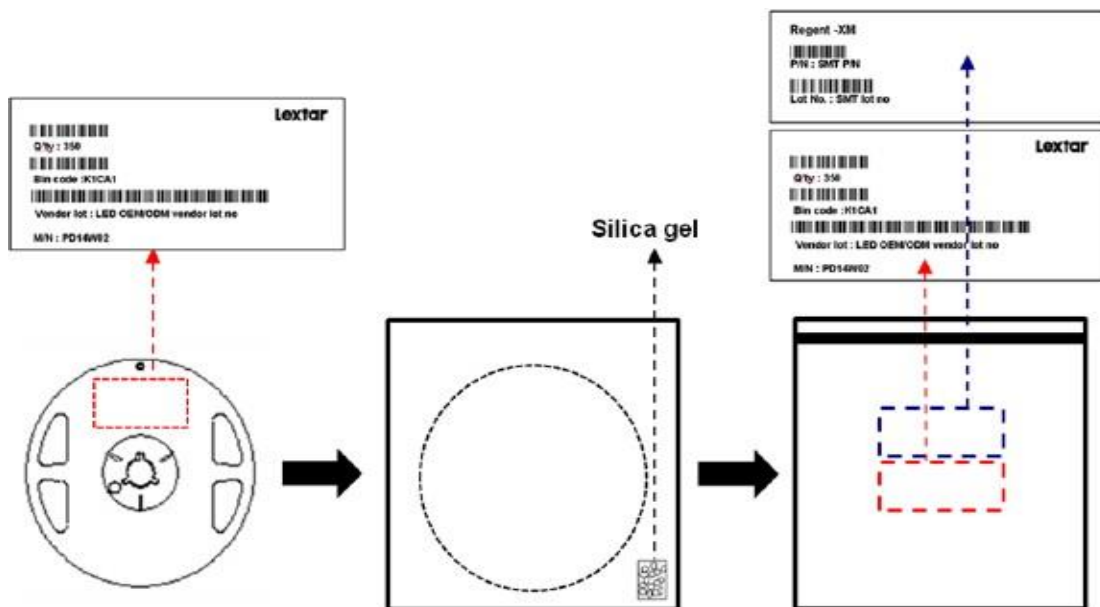
M/N :

Carrier Taping





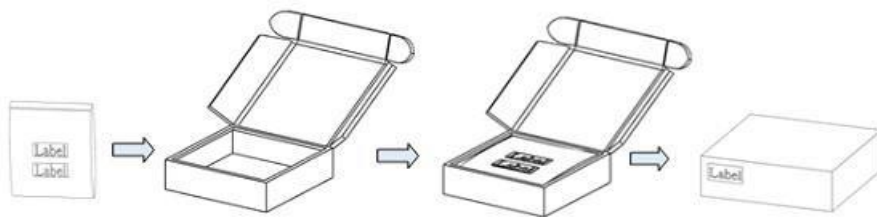
Shield Bag Taping



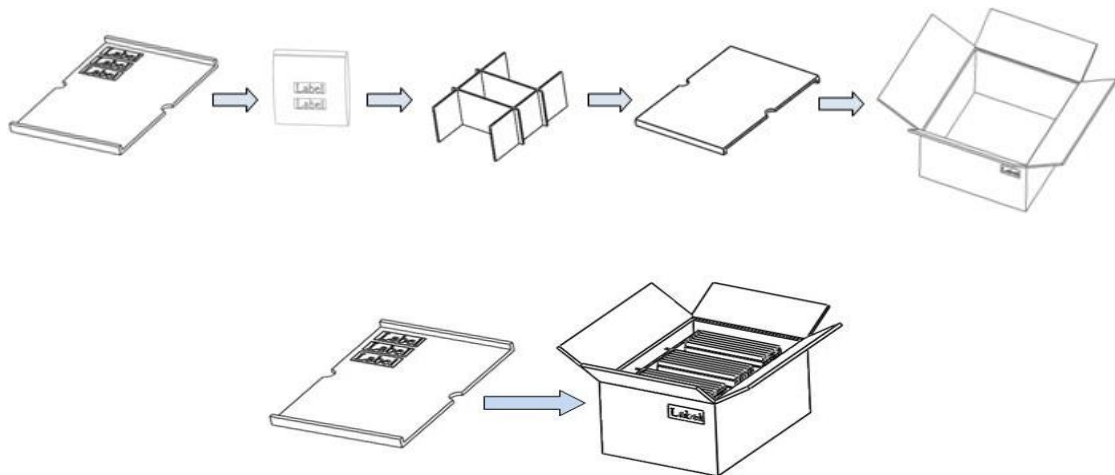
■ Packing Box

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

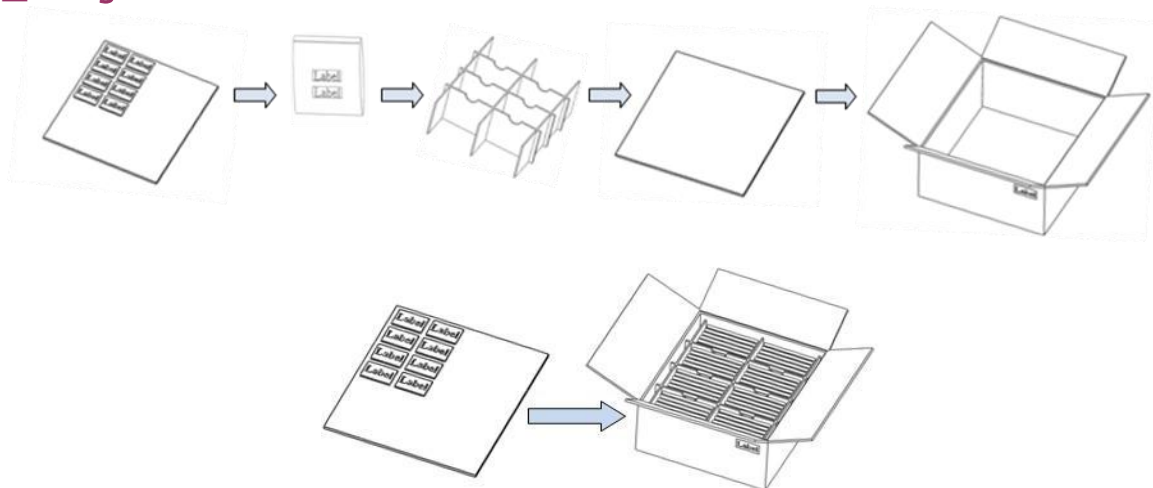
■ Small Box



■ Medium Box



■ Large Box



Precautions

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■ Safety Precautions

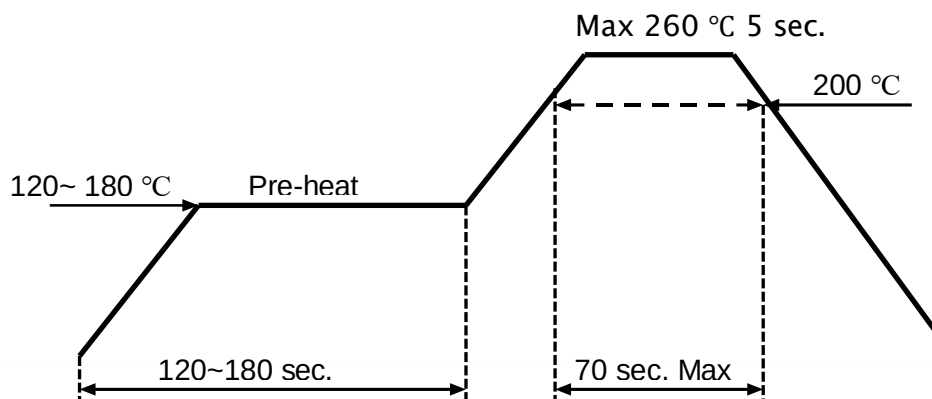
- The LED light output is too strong for human eyes without shield. Prevent eye contact directly more than seconds.
- Ensure operating under maximum rating.

■ 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 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.

Use Applications

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- The products are not intended to military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.

Please be noted that a different product may be required. If you have any concerns, please contact us before using the products in your desired application. This specification guarantees the quality and performance of the products as an individual component. Do not use the products beyond the use case and use environment that the specification has described in this document. We assume no responsibility and liability for any lost and damage resulting from the use or operation of the products which do not comply with any absolute maximum ratings, warnings, restriction and instructions recited in these specification sheets or other forms of notices from us or resulting from the use or operation of the products under non-standard environment or non-regular operations.

Miscellaneous

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- All measurement data is taken from standard experiment procedure and environment with conditions on each discrete product, which is not integrated with other components and materials which are not provided by us. Therefore the measurement result is just provided for reference and evaluation. The products should always be cautiously used with other parts not supplied by us. It is your or your customer's responsibility to perform sufficient verification under your expected environment prior to use the products with other parts to ensure that the lifetime and other quality characteristics required for the intended use in real life are met. It is recommended to consult with us instantly while there is any concern or inconsistency about the LED operation under certain environment and procedure. It is highly possible to cause malfunctions or damages to the products or risks of life or health under non-standard environment and operations.
- You will not reverse engineer, disassemble or otherwise attempt to extract knowledge/design information from the products. In the case of any incident or quality concern that appears to be in breach of these specifications, the products in question must be reported to our local sales representatives to discuss instructions on how to precede while ensuring that the products in question are not dissembled or removed from the PCBs(if any). The determination of whether the products in question are defective and are required for any corrective action thereafter shall be made by us in accordance with our cause analysis procedure. If you do not agree with our cause analysis result for a quality issue, you may request us to send the products in question to a mutually agreed third party for inspection. The cost of such third party inspection shall be borne by you unless it is determined by such third party that said quality issue is solely attributable to us. In the above case, our sole and exclusive obligation shall be, either to repair, replace or refund the products in question to the extent commercially practicable with the products

without such quality issue.

- All previous negotiation and agreements not specifically incorporated herein are superseded and rendered null and void. We assume no liability with respect to defects and/or issues of the products caused by:
 - (a) alternation, modification or change of the products by someone other than us;
 - (b) attempt by someone other than us to repair the products;
 - (c) not our negligent, gross negligent, reckless, or other improper use of the LEDs;
 - (d) installation, operation, or maintenance of the products by someone other than us and not in a manner described in the instruction manual, if applicable; and
 - (e) Combination of products by someone other than us with those not supplied by us.



LIMITED WARRANTY & DISCLAIMERS

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- REPAIR, REPLACE OR REFUND OF THE PRODUCTS SHALL CONSTITUTE THE EXCLUSIVE REMEDY FOR A BREACH OF THIS LIMITED WARRANTY, AND WE WILL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES, PERSONAL INJURY, LOSSES, DAMAGES, OR EXPENSES DIRECTLY OR INDIRECTLY RESULTING FROM THE USE OF THE PRODUCTS. LIABILITY OF US TO YOU OR CUSTOMER FOR PRODUCTS SHALL BE LIMITED TO THE NET SALES AMOUNT OF THE PRODUCTS SOLD TO CUSTOMER. WE DISCLAIM ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- BOTH PARTIES INTEND TO AGREE ON THE OFFICIAL SPECIFICATIONS FOR THE SUPPLIED PRODUCTS BEFORE ANY PROGRAMS ARE OFFICIALLY LAUNCHED SUCH AS BEFORE THE MASS PRODUCTION LAUNCHED. WITHOUT THIS CONSENT AGREEMENT IN WRITING (I.E. PRODUCT SPECIFICATION), THE CONTENT OF THIS SPECIFICATION SHALL BE DEEMED SUBJECT TO CHANGE WITHOUT NOTICE FROM US.

Revision History

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Date	Contents	Writer
2023.02	New version	Ching Chen