

PT30A02 V0

Product Specification

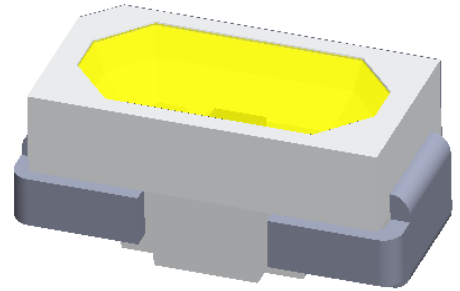
Approval Sheet

PT30A02 V0

Product Specification

RoHS

Product	White SMD LED
Part Number	PT30A02 V0
Issue Date	2014/09/09



■ Feature

- ✓ White SMD LED (L x W x H) of 3.0 x 1.4 x 1.2 mm
- ✓ Dice Technology : InGaN
- ✓ Qualified according to JEDEC moisture sensitivity Level 3
- ✓ Environmental friendly ; RoHS compliance
- ✓ Packing : 1,000 , 2,000 or 2500 pcs/reel

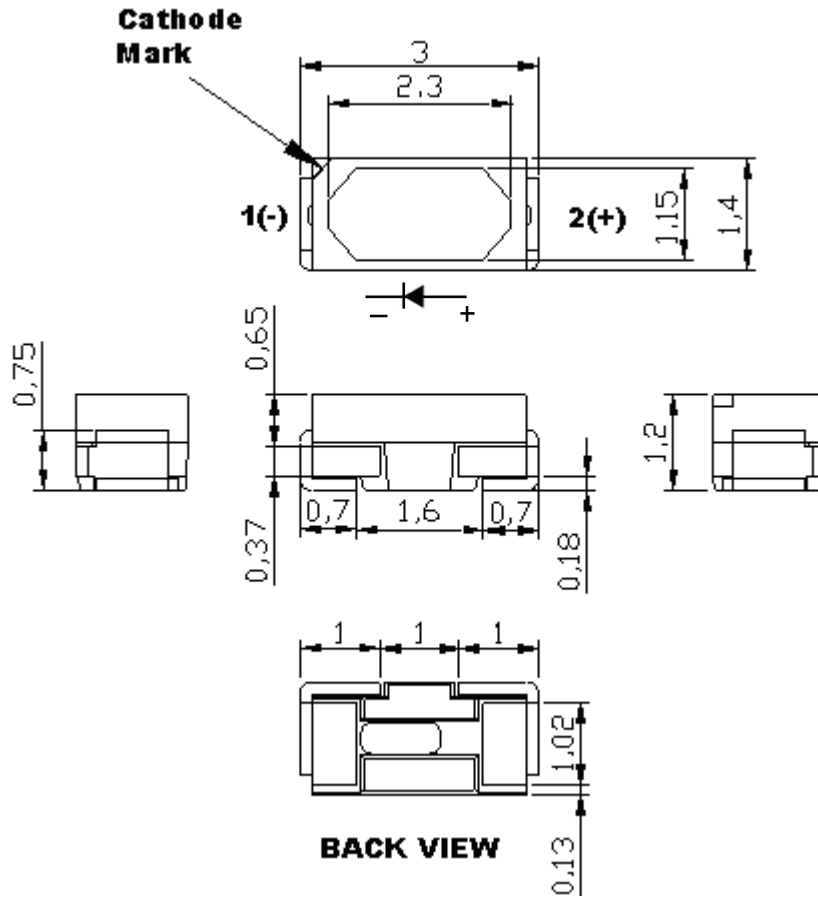
■ Applications

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

Outline Dimension

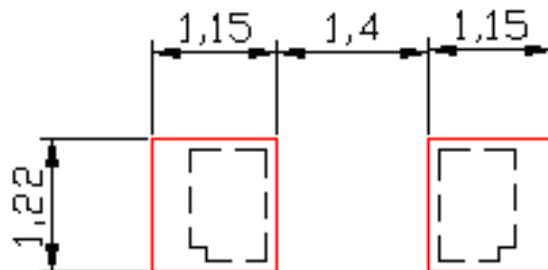
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Unit: mm, Tolerance: $\pm 0.1\text{mm}$

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 = 20 mA	2.8	-	3.5	V
Color Rendering Index ⁽²⁾	Ra		80	-	-	-
View Angle	θ		-	120	-	deg
Thermal Resistance ⁽³⁾	R _{th}		-	100	-	°C/W

(1) The Forward Voltage tolerance is ±0.1V

(2) The CRI tolerance is ±3.

(3) Thermal resistance is calculated from junction to solder

■ **Luminous Flux (Ta=25°C)**

CCT	Condition	Rank
2600K~3700K	I _F = 20 mA	B8,B9,BA,BB
3700K~7000K		B9,BA,BB,BC

* The luminous flux tolerance is ± 10%

■ **Absolute Maximum Ratings**

Parameter	Symbol	value	Unit
DC Forward Current ⁽¹⁾	I _F	30	mA
Power Dissipation	Pd	0.1	W
Pulse Forward Current ⁽²⁾	I _{FP}	100	mA
Storage Temperature	T _s	-40 ~ 100	°C
Operating Temperature	T _{opr}	-40 ~ 85	°C
Junction Temperature	T _J	120	°C
Assembly Temperature	-	260 (max. 5sec)	°C

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

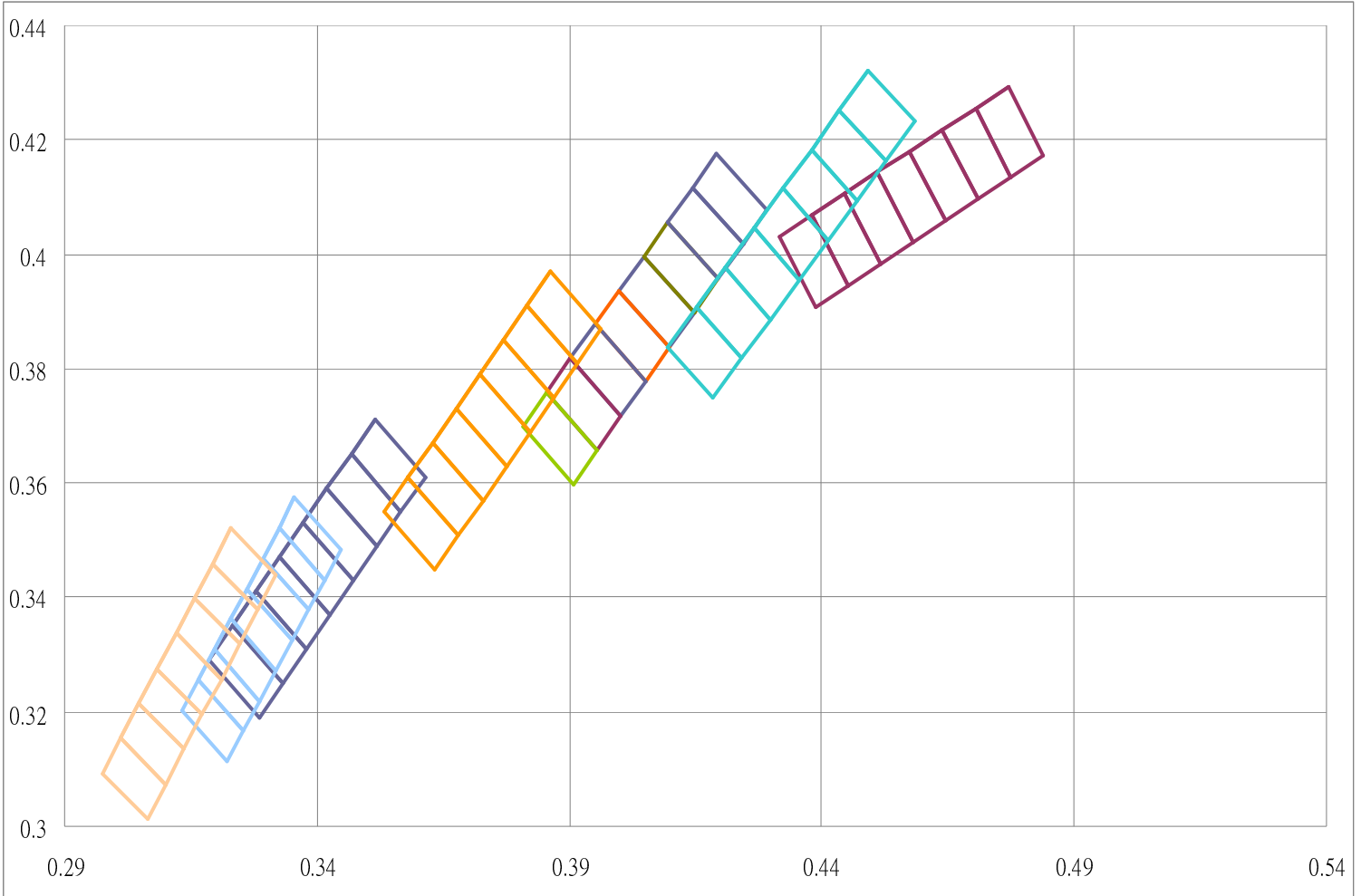
(2) IFP Condition: Duty 1/10, Pulse within 10msec

Binning

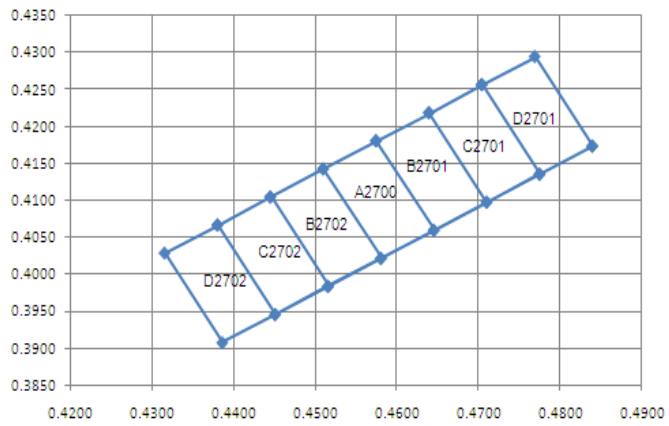
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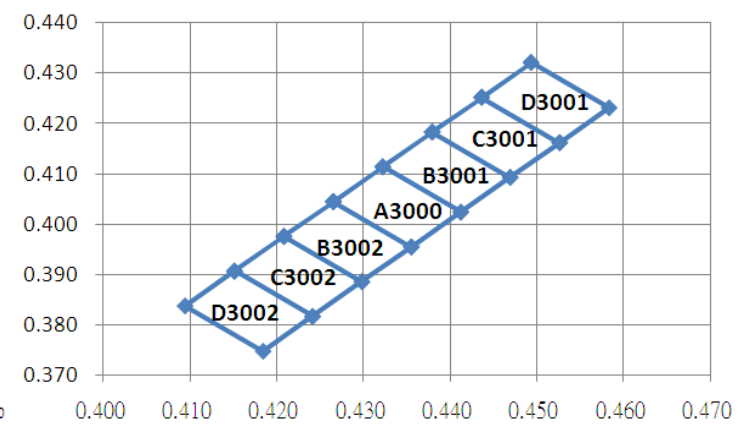
Chromaticity Coordinates



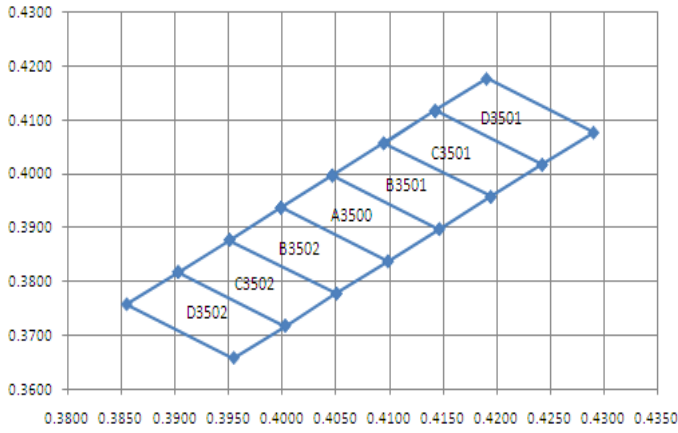
2700K



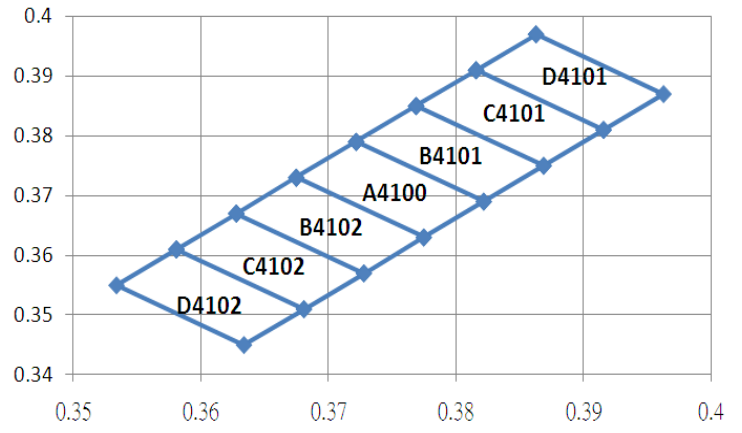
3000K



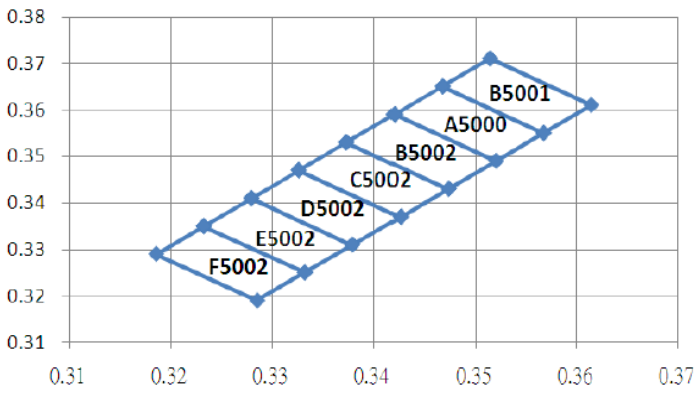
3500K



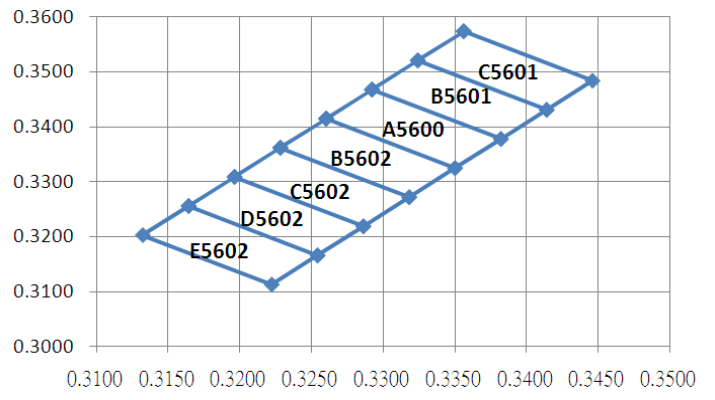
4100K



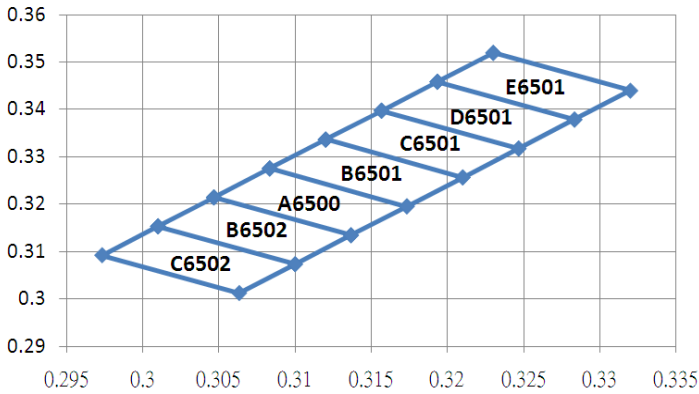
5000K



5600K



6500K



Bin code definition

V _F Rank	Luminous Flux Rank	CIE Rank
2	BA	A3000

V_F Rank	Condition	Min.	Max.
0	$I_F = 20 \text{ mA}$	2.8	2.9
1		2.9	3.0
2		3.0	3.1
3		3.1	3.2
4		3.2	3.3
5		3.3	3.4
6		3.4	3.5
Luminous Flux Rank	Condition	Min.	Max.
B7	$I_F = 20 \text{ mA}$	2070	2180
B8		2180	2290
B9		2290	2400
BA		2400	2550
BB		2550	2700
BC		2700	2850
BD		2850	3000

CCT	CIE code	x1	y1	x2	y2	x3	y3	x4	y4
6500K	E6501	0.3230	0.3520	0.3320	0.3440	0.3283	0.3379	0.3193	0.3459
	D6501	0.3193	0.3459	0.3283	0.3379	0.3247	0.3318	0.3157	0.3398
	C6501	0.3157	0.3398	0.3247	0.3318	0.3210	0.3257	0.3120	0.3337
	B6501	0.3120	0.3337	0.3210	0.3257	0.3173	0.3196	0.3083	0.3276
	A6500	0.3083	0.3276	0.3173	0.3196	0.3137	0.3134	0.3047	0.3214
	B6502	0.3047	0.3214	0.3137	0.3134	0.3100	0.3073	0.3010	0.3153
	C6502	0.3010	0.3153	0.3100	0.3073	0.3063	0.3012	0.2973	0.3092
5600K	C5601	0.3356	0.3574	0.3446	0.3484	0.3414	0.3431	0.3324	0.3521
	B5601	0.3324	0.3521	0.3414	0.3431	0.3382	0.3378	0.3292	0.3468
	A5600	0.3292	0.3468	0.3382	0.3378	0.3350	0.3325	0.3260	0.3415
	B5602	0.3260	0.3415	0.3350	0.3325	0.3318	0.3272	0.3228	0.3362
	C5602	0.3228	0.3362	0.3318	0.3272	0.3286	0.3219	0.3196	0.3309
	D5602	0.3196	0.3309	0.3286	0.3219	0.3254	0.3166	0.3164	0.3256
	E5602	0.3164	0.3256	0.3254	0.3166	0.3222	0.3113	0.3132	0.3203
5000K	B5001	0.3514	0.3710	0.3614	0.3610	0.3567	0.3550	0.3467	0.3650
	A5000	0.3467	0.3650	0.3567	0.3550	0.3520	0.3490	0.3420	0.3590

	B5002	0.3420	0.3590	0.3520	0.3490	0.3473	0.3430	0.3373	0.3530
	C5002	0.3373	0.3530	0.3473	0.3430	0.3426	0.3370	0.3326	0.3470
	D5002	0.3326	0.3470	0.3426	0.3370	0.3379	0.3310	0.3279	0.3410
	E5002	0.3279	0.3410	0.3379	0.3310	0.3332	0.3250	0.3232	0.3350
	F5002	0.3232	0.3350	0.3332	0.3250	0.3285	0.3190	0.3185	0.3290
4100K	D4101	0.3863	0.3970	0.3963	0.3870	0.3916	0.3810	0.3816	0.3910
	C4101	0.3816	0.3910	0.3916	0.3810	0.3869	0.3750	0.3769	0.3850
	B4101	0.3769	0.3850	0.3869	0.3750	0.3822	0.3690	0.3722	0.3790
	A4100	0.3722	0.3790	0.3822	0.3690	0.3775	0.3630	0.3675	0.3730
	B4102	0.3675	0.3730	0.3775	0.3630	0.3728	0.3570	0.3628	0.3670
	C4102	0.3628	0.3670	0.3728	0.3570	0.3681	0.3510	0.3581	0.3610
	D4102	0.3581	0.3610	0.3681	0.3510	0.3634	0.3450	0.3534	0.3550
3500K	D3501	0.4191	0.4177	0.4291	0.4077	0.4243	0.4017	0.4143	0.4117
	C3501	0.4143	0.4117	0.4243	0.4017	0.4195	0.3957	0.4095	0.4057
	B3501	0.4095	0.4057	0.4195	0.3957	0.4147	0.3897	0.4047	0.3997
	A3500	0.4047	0.3997	0.4147	0.3897	0.4099	0.3837	0.3999	0.3937
	B3502	0.3999	0.3937	0.4099	0.3837	0.4051	0.3777	0.3951	0.3877
	C3502	0.3951	0.3877	0.4051	0.3777	0.4003	0.3717	0.3903	0.3817
	D3502	0.3903	0.3817	0.4003	0.3717	0.3955	0.3657	0.3855	0.3757
3000K	D3001	0.4493	0.4321	0.4583	0.4231	0.4526	0.4162	0.4436	0.4252
	C3001	0.4436	0.4252	0.4526	0.4162	0.4469	0.4093	0.4379	0.4183
	B3001	0.4379	0.4183	0.4469	0.4093	0.4412	0.4024	0.4322	0.4114
	A3000	0.4322	0.4114	0.4412	0.4024	0.4355	0.3955	0.4265	0.4045
	B3002	0.4265	0.4045	0.4355	0.3955	0.4298	0.3886	0.4208	0.3976
	C3002	0.4208	0.3976	0.4298	0.3886	0.4241	0.3817	0.4151	0.3907
	D3002	0.4151	0.3907	0.4241	0.3817	0.4184	0.3748	0.4094	0.3838
2700K	D2701	0.4769	0.4294	0.4704	0.4256	0.4775	0.4135	0.4840	0.4173
	C2701	0.4704	0.4256	0.4640	0.4218	0.4710	0.4097	0.4775	0.4135
	B2701	0.4640	0.4218	0.4575	0.4180	0.4646	0.4060	0.4710	0.4097
	A2700	0.4575	0.4180	0.4510	0.4142	0.4581	0.4022	0.4646	0.4060
	B2702	0.4510	0.4142	0.4446	0.4105	0.4516	0.3984	0.4581	0.4022
	C2702	0.4446	0.4105	0.4381	0.4067	0.4452	0.3946	0.4516	0.3984
	D2702	0.4381	0.4067	0.4316	0.4029	0.4387	0.3908	0.4452	0.3946

Note:

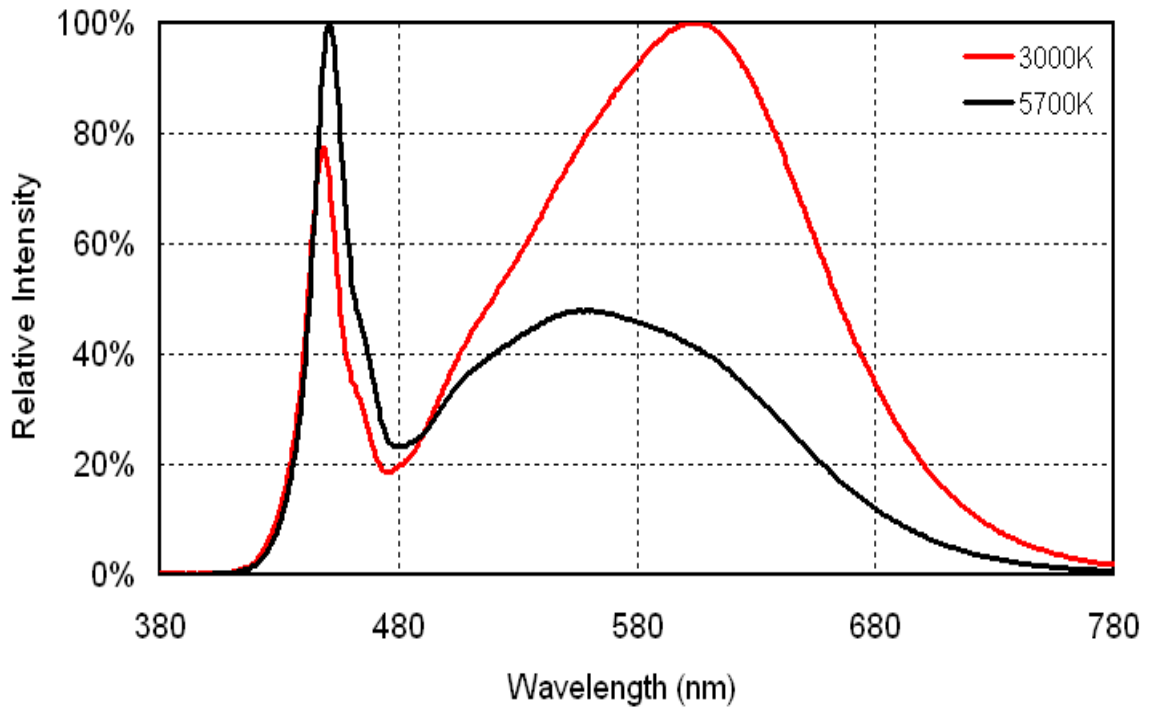
- (1) Correlated color Temperature is derived from the CIE 1931 Chromaticity diagram
- (2) Measurement tolerance is ± 0.007
- (3) The luminous flux tolerance is $\pm 10\%$
- (4) The Forward Voltage tolerance is $\pm 0.1V$

Characteristics

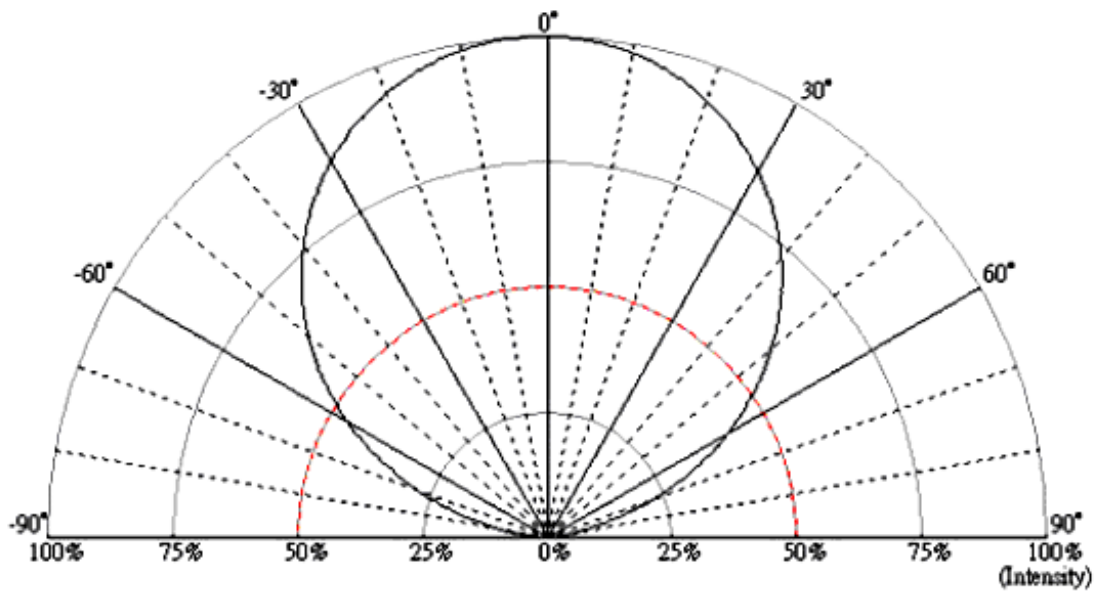
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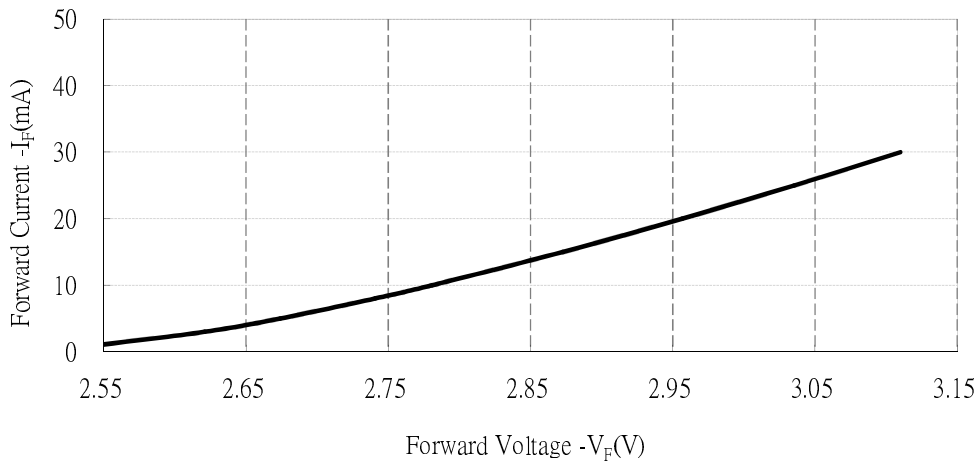
Spectrum



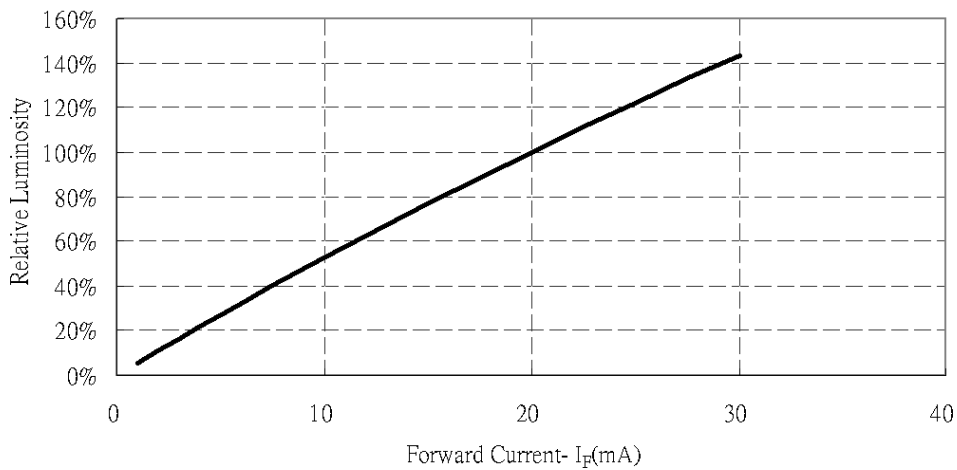
Radiation Pattern



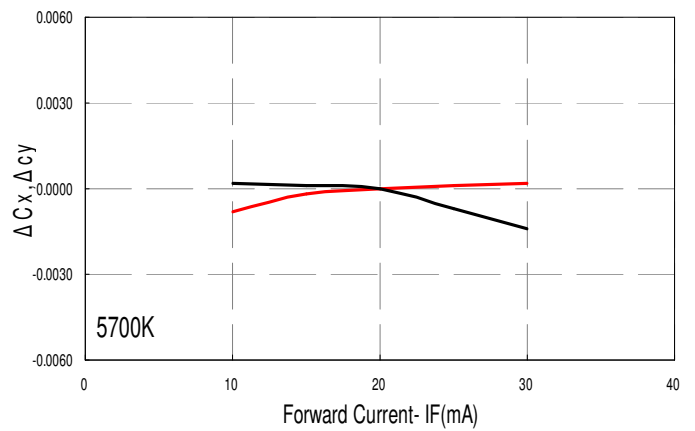
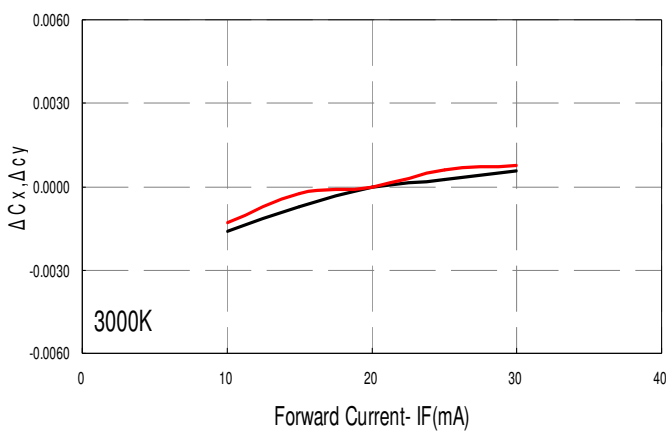
■ Forward Voltage vs. Forward Current



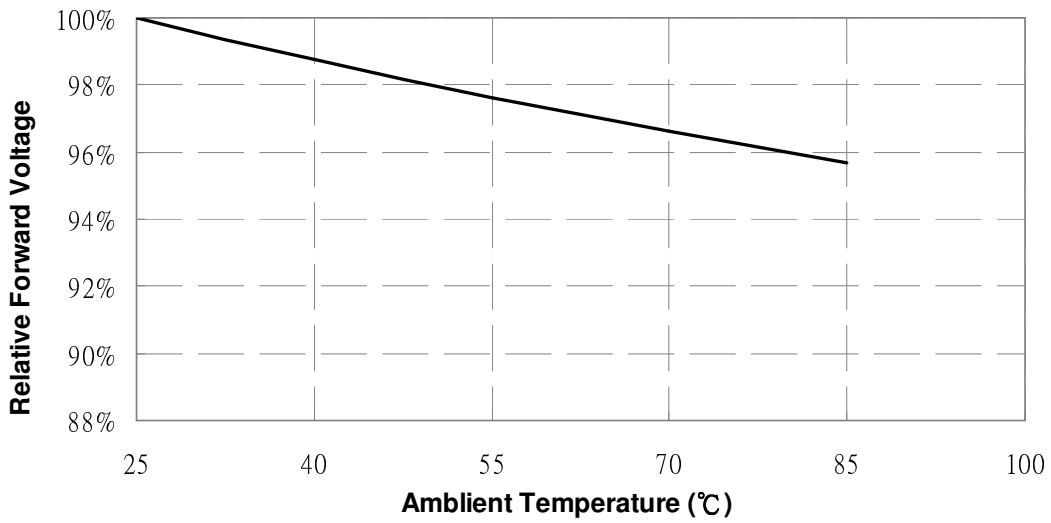
■ Forward Current vs. Relative Luminosity



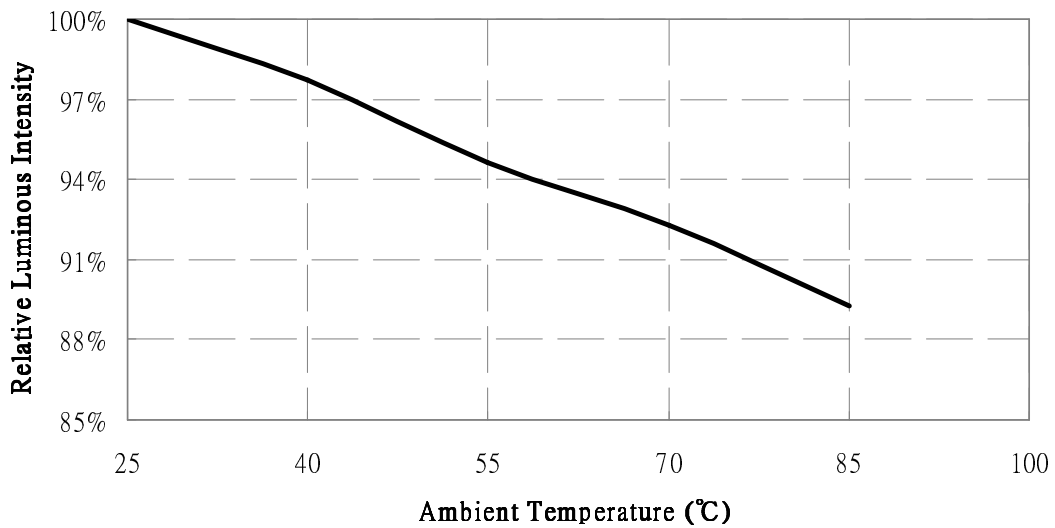
■ Forward Current vs. Chromaticity Coordinate



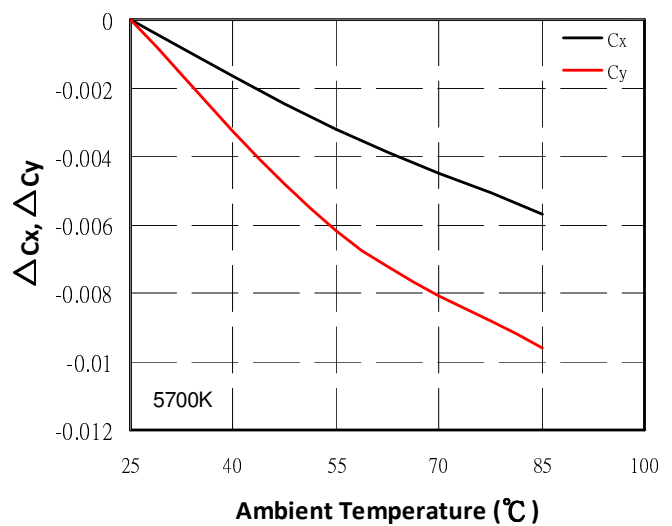
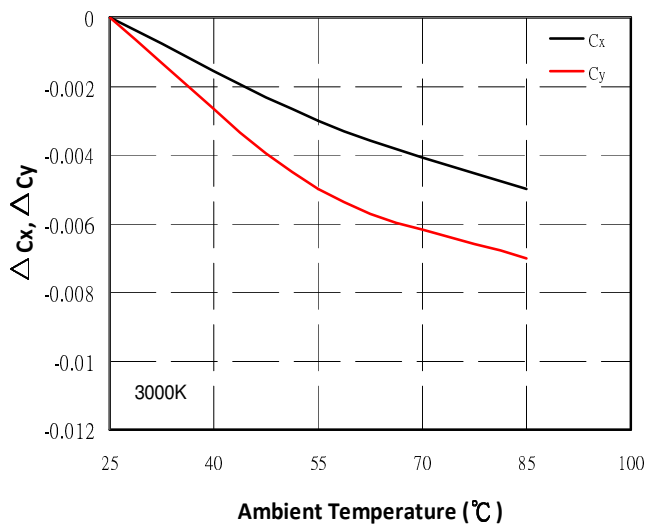
■ Relative Forward Voltage vs. Ambient Temperature



■ Relative Luminous Intensity vs. Ambient Temperature



■ Chromaticity vs. Ambient Temperature



Reliability

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Reliability test

Item	Condition	Time/Cycle
Steady State Operating Life of Low Temperature -40°C	-40°C Operating	1000 Hrs
Steady State Operating Life of High Temperature 60°C	60°C Operating	1000 Hrs
Steady State Operating Life of High Temperature 85°C	85°C Operating	1000 Hrs
High temperature storage 100°C	100°C Storage	1000 Hrs
Steady State Operating Life of High Humidity Heat 60°C 90%	60°C/90% Operating	1000 Hrs
Thermal shock	-40°C/20minr ~5minr ~ 100°C/20min	200 Cycles
Resistance to soldering heat on PCB (JEDEC MSL3)	pre-store@30°C, 60%RH for 168hrs Tsld max.=260°C 10sec	1 cycle

Judgment Criteria

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	20 mA	$\Delta V_f < 10 \%$
Luminous Flux	Iv	20 mA	$\Delta I_v < 30 \%$

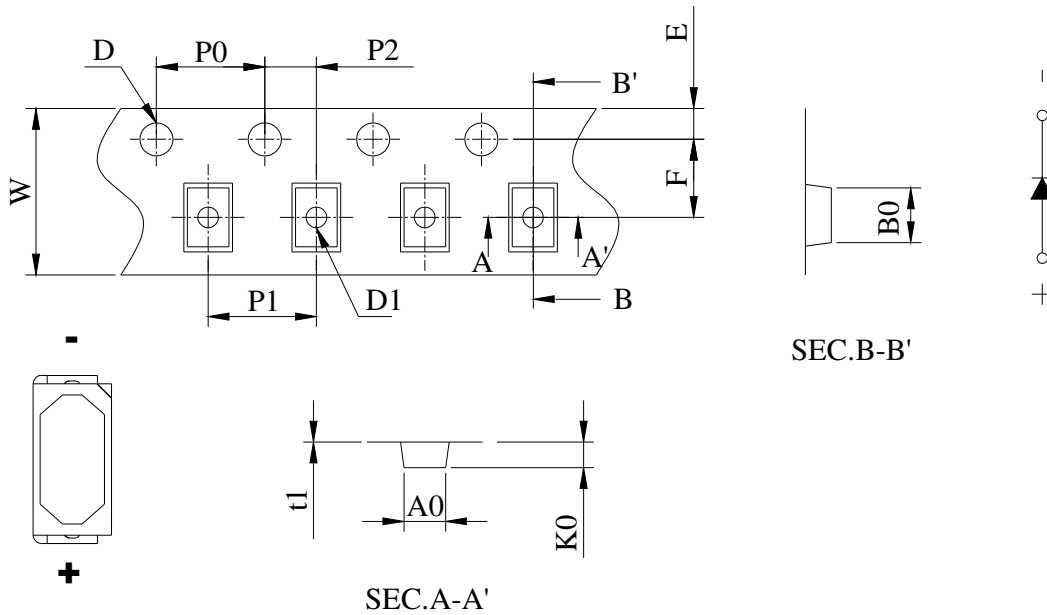
Packing

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■ Reel Label

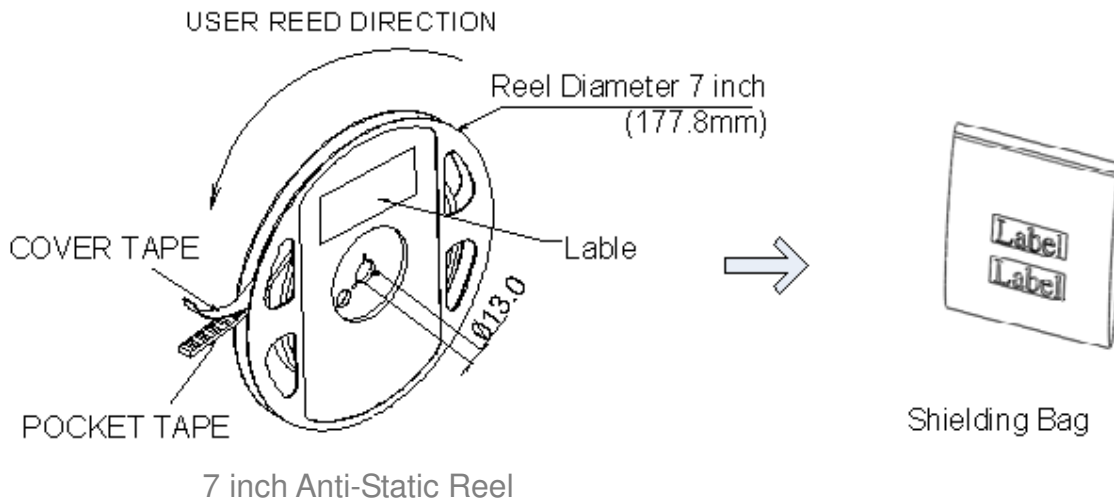


■ Carrier Tape Dimension

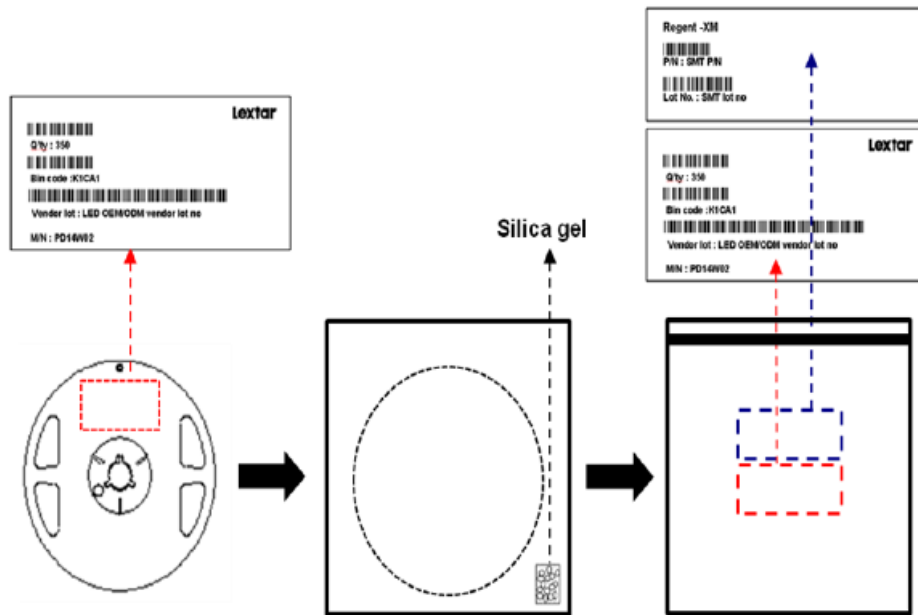


Item	Spec	Tol.(+/-)	Item	Spec	Tol.(+/-)
W	8.00	±0.1	P2	2.00	±0.05
E	1.75	±0.1	P0 x 10	40.00	±0.2
F	3.50	±0.05	t1	0.23	±0.05
D	1.50	+0.1,-0	A0	1.55	±0.1
D1	1.00	±0.1	B0	3.25	±0.1
P0、P1	4.00	±0.1	K0	1.4	±0.1

■ Package



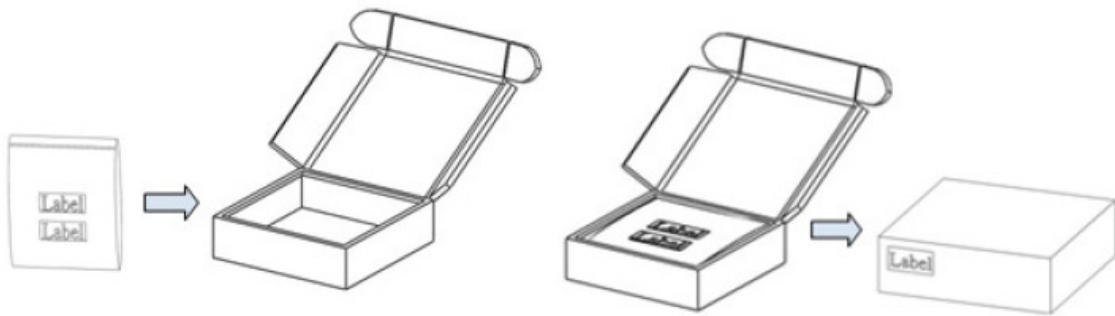
■ Shield Bag Taping



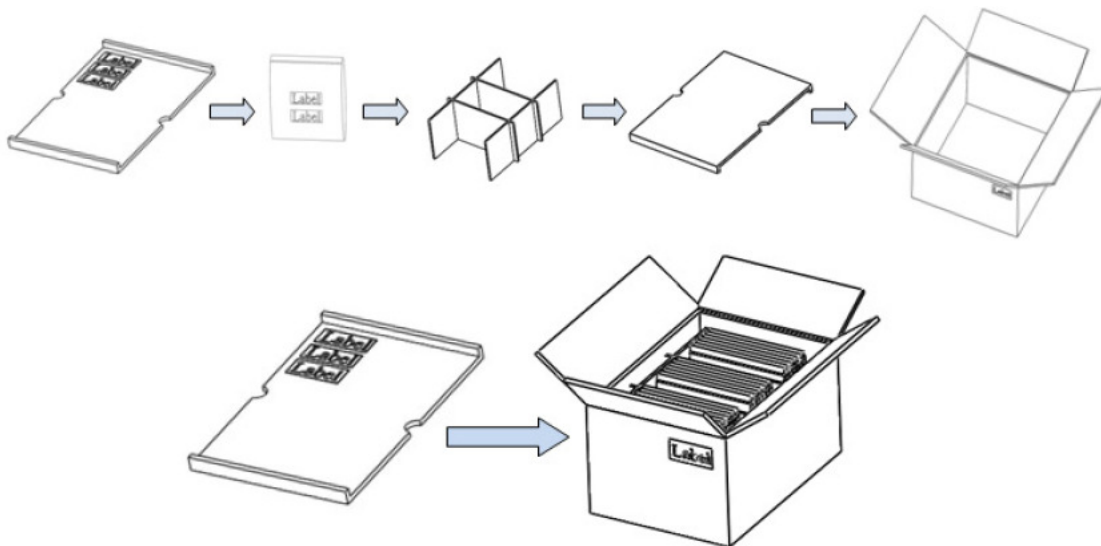
■ Packing Box

Type	Large Box		Medium Box		Small Box	
Dimension	541X511X276mm		385X303X260mm		283X235x70mm	
Maximum Reels	7"X12mm Reel	80/R	7"X12mm Reel	30/R	7"X12mm Reel	6/R
Minimum Reels	7"X12mm Reel	40/R	7"X12mm Reel	21/R	7"X12mm Reel	1/R

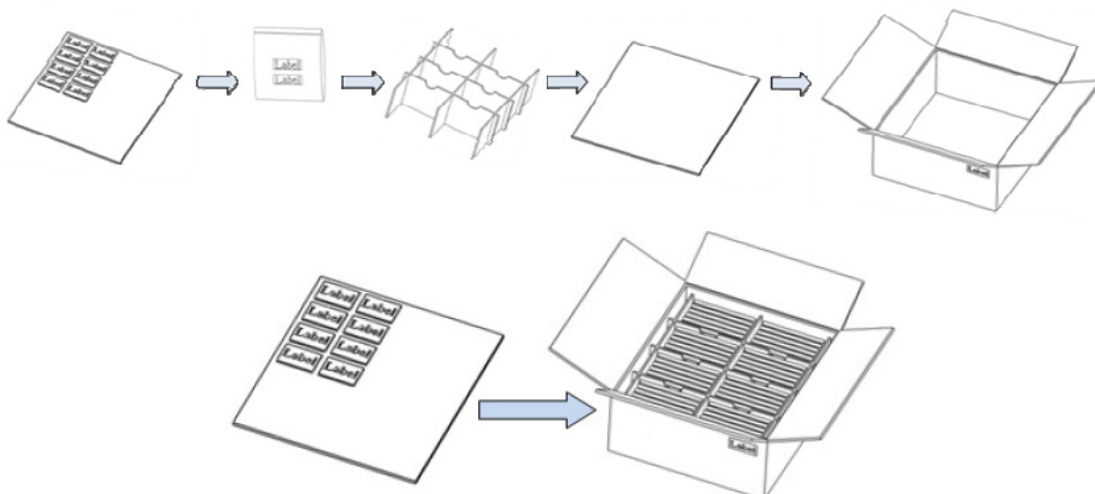
■ **Small Box**



■ **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.

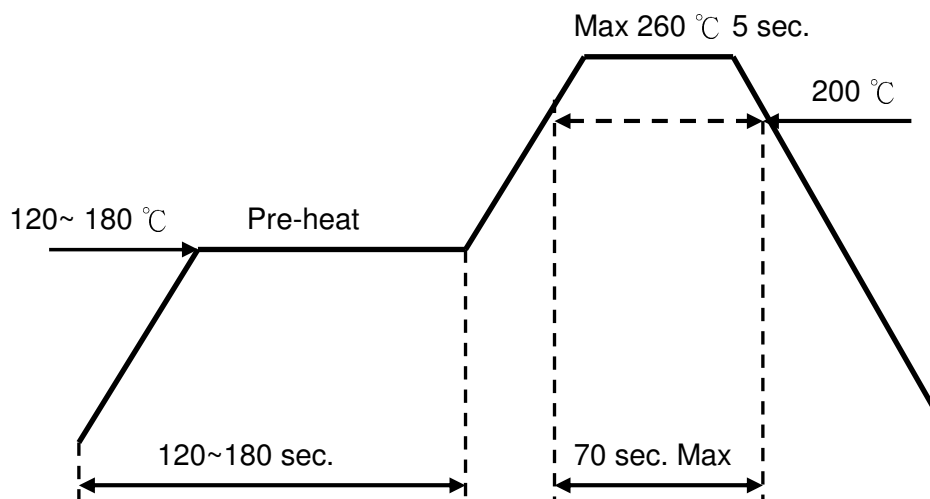
■ Storage

- Before opening the package, the LEDs should storage under 30°C, 70% RH.
- After opening the package bag, the LEDs should be keep under 30°C, 70% RH. Recommend to use within 168 hours. 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	Approved
2013.11.01	New version	Blanc Tung	Berris Huang
2014.09.09	Update Tolerance	Blanc Tung	Berris Huang

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.