Lextar

Product Specification

LEXTAR ELECTRONICS CORPORATION

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LED Product Spec

PC30N05

MODEL NAME: PC30N05

<◆> Preliminary Specification
< > Final Specification

Note: The content of this specification is preliminary for reference only..

Record of Revision

Version and Date	Page	Old description	New Description	Remark
0.1 2011/7	All	First Preliminary Edition		
0.2 2011/8	4	Flux bin code update		
0.3 2011/9	4	Flux bin code update		
0.4 2011/9	5~7	CIE bin code update		
0.5 2011/10	12	Electrical characteristcis update		
0.6 2011/10	3	Maximum Forward current update		

1 Specification

1.1 Absolute Maximum Ratings (Ta=25℃)

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	50	mA
Pulse Forward Current *	I_{FP}	100	mA
Allowable Reverse Current	I_R	2	uA
Maximum Power Dissipation	P_D	110	mW
Operating Temperature	T_{opr}	-40 ~ + 85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Soldering Temperature	T_{sld}	Reflow Soldering : 245 (10sec) Hand Soldering : 350 (3sec)	℃

*: I_{FP} Condition: Duty 1/10, Pulse within 10msec.

**: Mil-STD-883

1.2 Initial Electrical/Optical Characteristics (Ta=25℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=30 mA	2.9	3.1	3.5	V
Luminous Flux	Φv	I_F=30 mA	10	11		lm
View Angle	$2\theta_{1/2}$	I_F=30 mA	-	120	-	degree
Color Rendering Index		I_F=30 mA	70			
Chromaticity Coordinate *	x	I_F=30 mA	Refer to ranking table			-
	y	I_F=30 mA				

* Please refer to CIE 1931 chromaticity diagram

1.3 Ranking

1.3.1 Luminous Flux Ranks (Ta=25℃)

Item	Symbol	Condition	Min.	Max.	Unit
LD	Φv	I_F=30 mA	9	10	lm
LE	Φv	I_F=30 mA	10	11	
LF	Φv	I_F=30 mA	11	12	
LG	Φv	I_F=30 mA	12	13	
LH	Φv	I_F=30 mA	13	14	

*Luminous Flux Measurement allowance is ±7%

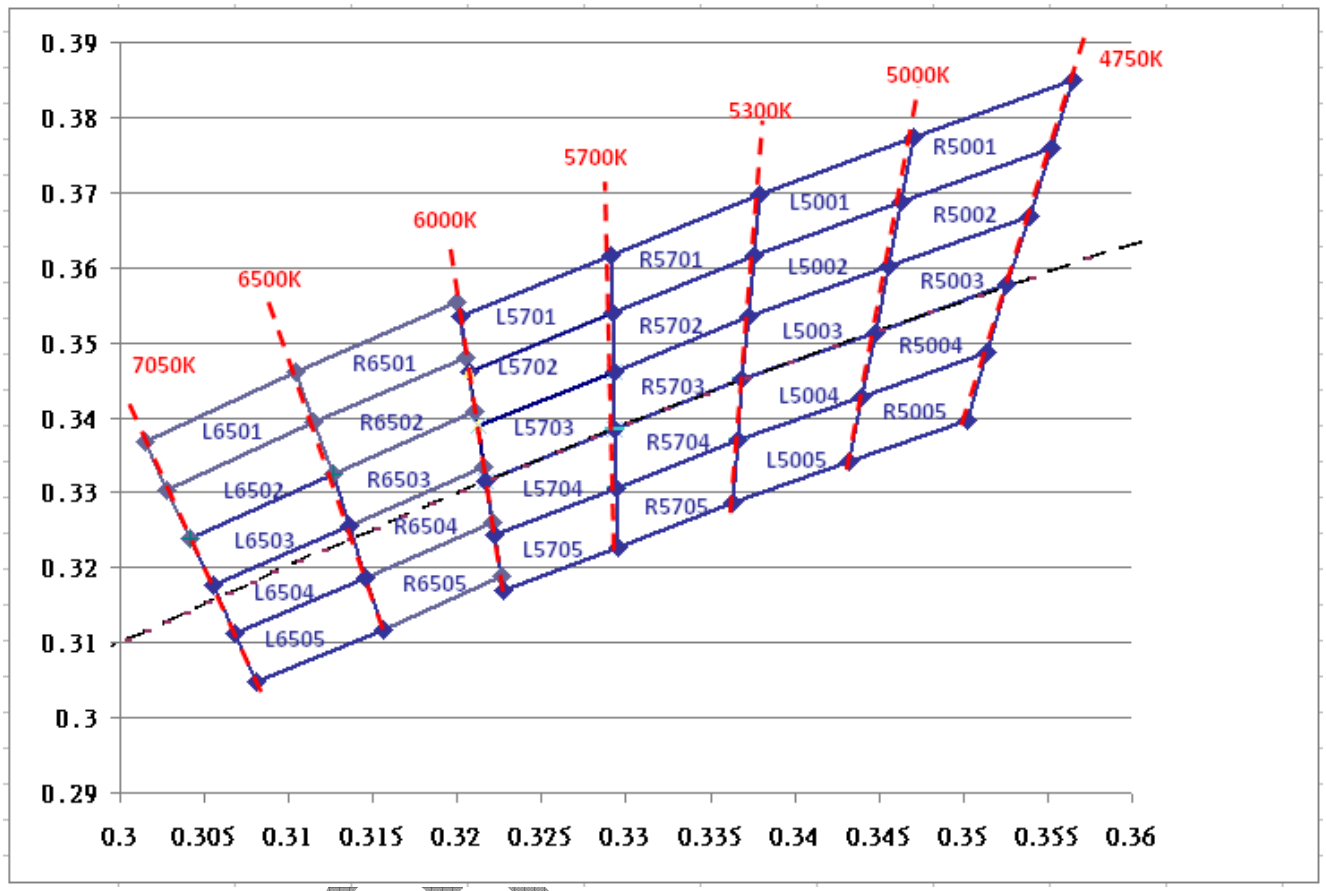
1.3.2 Forward Voltage Ranks (Ta=25℃)

Item	Symbol	Condition	Min.	Max.	Unit
1	V_F	I_F=30 mA	2.9	3.0	V
2	V_F	I_F=30 mA	3.0	3.1	V
3	V_F	I_F=30 mA	3.1	3.2	V
4	V_F	I_F=30 mA	3.2	3.3	V
5	V_F	I_F=30 mA	3.3	3.4	V
6	V_F	I_F=30 mA	3.4	3.5	V

* Forward Voltage Measurement allowance is ±3%

1.3.3 Color Rank (I_F=30mA, Ta=25℃)

Chromaticity Diagram



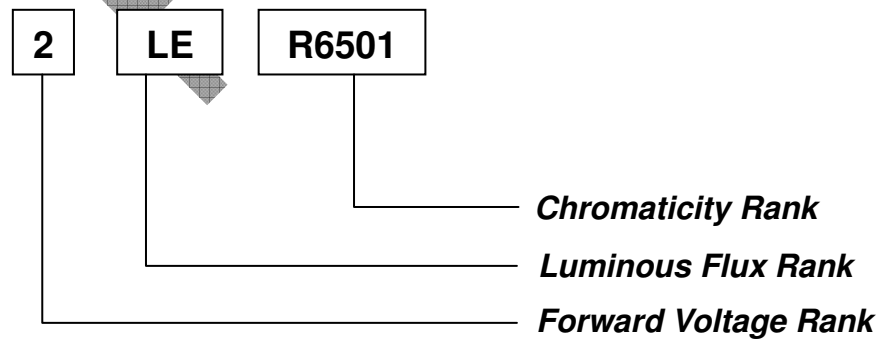
* Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.
Measurement tolerance is ± 5%.

5000K	X	Y		X	Y
R5001	0.347	0.3773	L5001	0.3379	0.3698
	0.3463	0.3687		0.3376	0.3616
	0.3552	0.376		0.3463	0.3687
	0.3565	0.3851		0.347	0.3773
	0.347	0.3773		0.3379	0.3698
R5002	0.3463	0.3687	L5002	0.3376	0.3616
	0.3456	0.3601		0.3373	0.3534
	0.3539	0.3669		0.3456	0.3601
	0.3552	0.376		0.3463	0.3687
	0.3463	0.3687		0.3376	0.3616
R5003	0.3456	0.3601	L5003	0.3373	0.3534
	0.3448	0.3514		0.3369	0.3451
	0.3526	0.3578		0.3448	0.3514
	0.3539	0.3669		0.3456	0.3601
	0.3456	0.3601		0.3373	0.3534
R5004	0.3448	0.3514	L5004	0.3369	0.3451
	0.344	0.3428		0.3366	0.3369
	0.3514	0.3487		0.344	0.3428
	0.3526	0.3578		0.3448	0.3514
	0.3448	0.3514		0.3369	0.3451
R5005	0.344	0.3428	L5005	0.3366	0.3369
	0.3432	0.3342		0.3363	0.3287
	0.3502	0.3396		0.3432	0.3342
	0.3514	0.3487		0.344	0.3428
				0.3366	0.3369

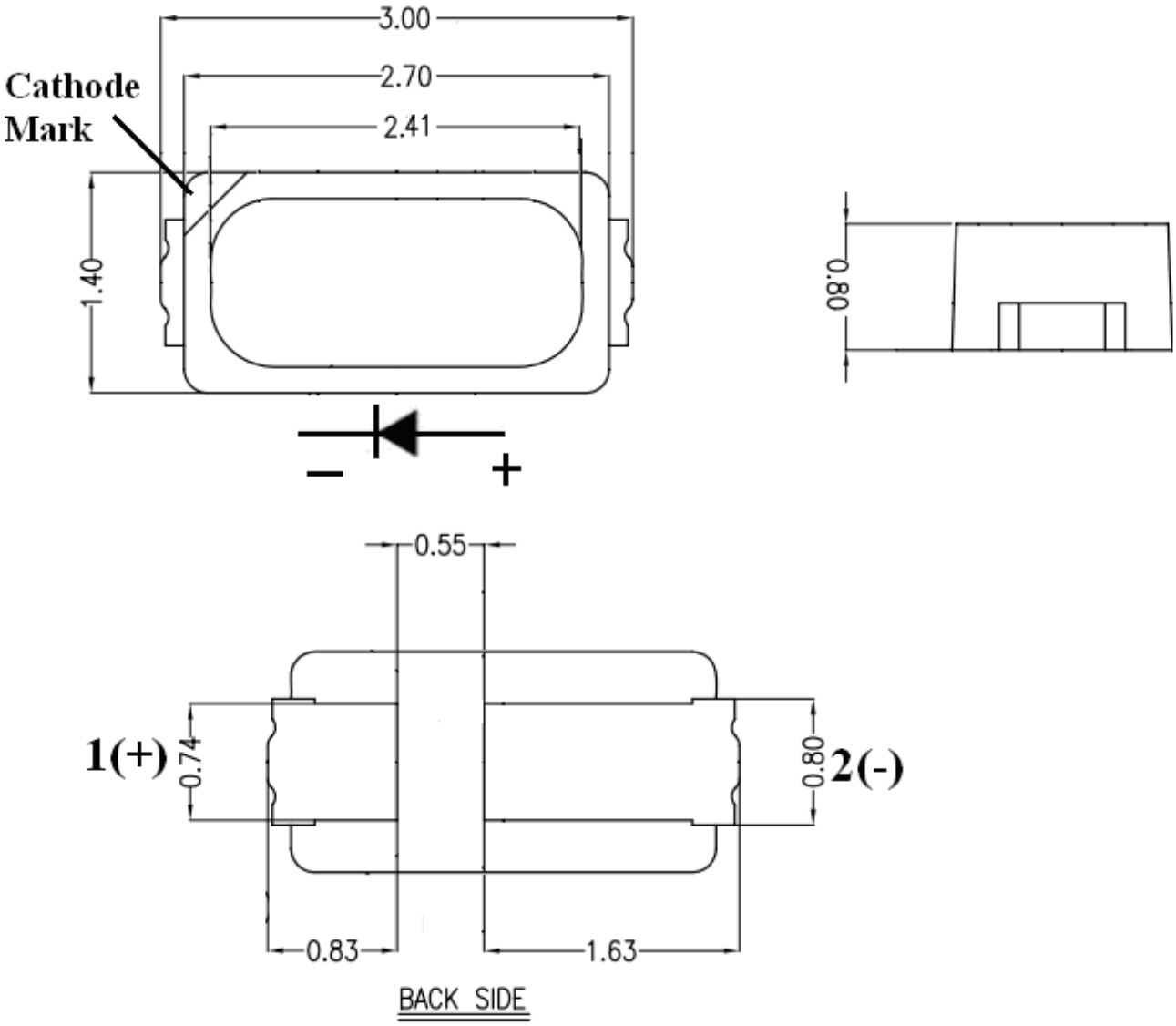
5700K	X	Y		X	Y
R5701	0.3291	0.3617	L5701	0.3202	0.3535
	0.3292	0.3539		0.3207	0.3462
	0.3376	0.3616		0.3292	0.3539
	0.3379	0.3698		0.3291	0.3617
	0.3291	0.3617		0.3202	0.3535
R5702	0.3292	0.3539	L5702	0.3207	0.3462
	0.3293	0.3461		0.3212	0.3389
	0.3373	0.3534		0.3293	0.3461
	0.3376	0.3616		0.3292	0.3539
	0.3292	0.3539		0.3207	0.3462
R5703	0.3293	0.3461	L5703	0.3212	0.3389
	0.3293	0.3384		0.3217	0.3316
	0.3369	0.3451		0.3293	0.3384
	0.3373	0.3534		0.3293	0.3461
	0.3293	0.3461		0.3212	0.3389
R5704	0.3293	0.3384	L5704	0.3217	0.3316
	0.3294	0.3306		0.3222	0.3243
	0.3366	0.3369		0.3294	0.3306
	0.3369	0.3451		0.3293	0.3384
	0.3293	0.3384		0.3217	0.3316
R5705	0.3294	0.3306	L5705	0.3222	0.3243
	0.3295	0.3228		0.3227	0.317
	0.3363	0.3287		0.3295	0.3228
	0.3366	0.3369		0.3294	0.3306
	0.3294	0.3306		0.3222	0.3243

6500K	X	Y		X	Y
R6501	0.3104	0.3462	L6501	0.3015	0.3368
	0.3115	0.3393		0.3028	0.3304
	0.3205	0.3481		0.3115	0.3393
	0.32	0.3554		0.3104	0.3462
	0.3104	0.3462		0.3015	0.3368
R6502	0.3115	0.3393	L6502	0.3028	0.3304
	0.3126	0.3324		0.3041	0.324
	0.321	0.3408		0.3126	0.3324
	0.3205	0.3481		0.3115	0.3393
	0.3115	0.3393		0.3028	0.3304
R6503	0.3126	0.3324	L6503	0.3041	0.324
	0.3136	0.3256		0.3055	0.3177
	0.3216	0.3334		0.3136	0.3256
	0.321	0.3408		0.3126	0.3324
	0.3126	0.3324		0.3041	0.324
R6504	0.3136	0.3256	L6504	0.3055	0.3177
	0.3146	0.3187		0.3068	0.3113
	0.3221	0.3261		0.3146	0.3187
	0.3216	0.3334		0.3136	0.3256
	0.3136	0.3256		0.3055	0.3177
R6505	0.3146	0.3187	L6505	0.3068	0.3113
	0.3156	0.3118		0.3081	0.3049
	0.3226	0.3188		0.3156	0.3118
	0.3221	0.3261		0.3146	0.3187
	0.3146	0.3187		0.3068	0.3113

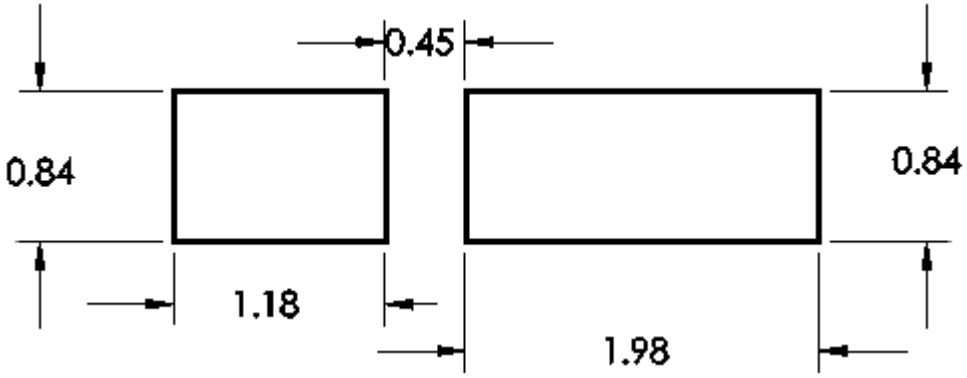
Bin code definition



2 Outline Dimension and Recommended Soldering Pad



Recommended Soldering Pad:



3 Reliability

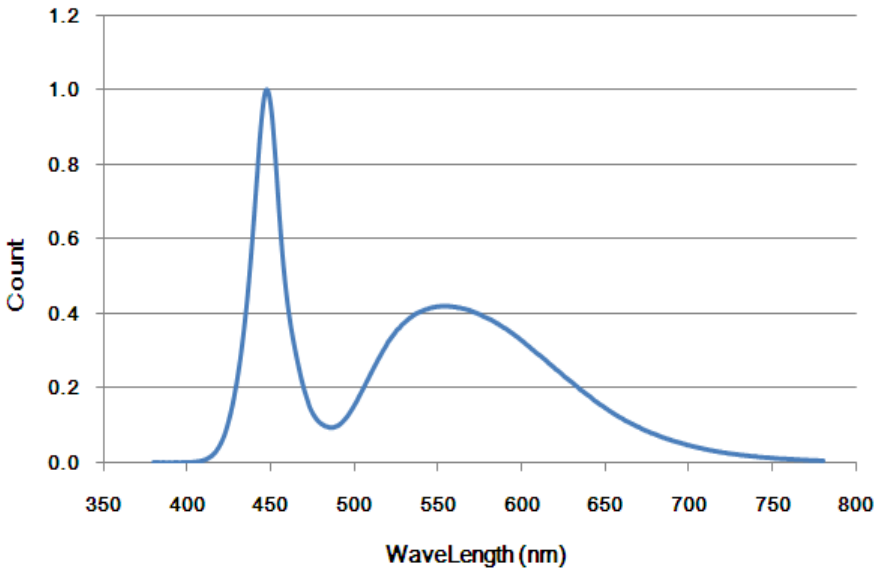
Test Item	Judgment	Test Condition	Test Period	Damage No.
Resistance to Soldering Heat (Reflow Soldering)	Open/Short	Tsld=240℃ 10 sec (Pretreatment 30℃,70%,168hrs.)	Twice	0/30
Thermal Shock	Open/Short	-40℃ ~ 100℃ 5min 5min	1000 cycles	0/30
Temperature Cycle	Open/Short	-40℃ ~ 25℃ ~ 100℃ ~ 25℃ 30min 5min 30min 5min	1000 cycles	0/30
High Temperature Storage	See Note	Ta=85℃	1000hrs	0/30
Low Temperature Operating Life	See Note	Ta=-40℃, IF=30mA	1000hrs	0/30
High Temperature Operating Life	See Note	Ta=85℃, IF=30mA	1000hrs	0/30
Steady State Operating Life	See Note	Ta=25℃ , IF=30mA	1000hrs	0/30
High Temperature & Humidity Operating Life	See Note	Ta=85℃ , 85%RH, IF=30mA	1000hrs	0/30

Notes:

1. A failure is an LED that is open, shorted, no longer light up, VF shift>200mV. Luminous flux degradation>15%, or Forward or reverse leakage>10μA.
2. A failure is an LED that is open or shorted.

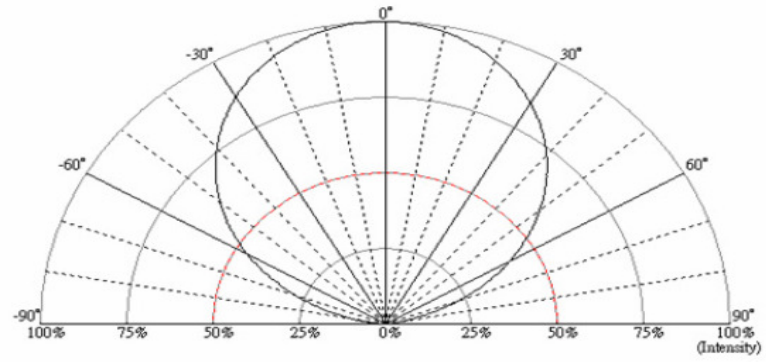
4 Initial Optical/Electrical Characteristics

4.1 Spectrum

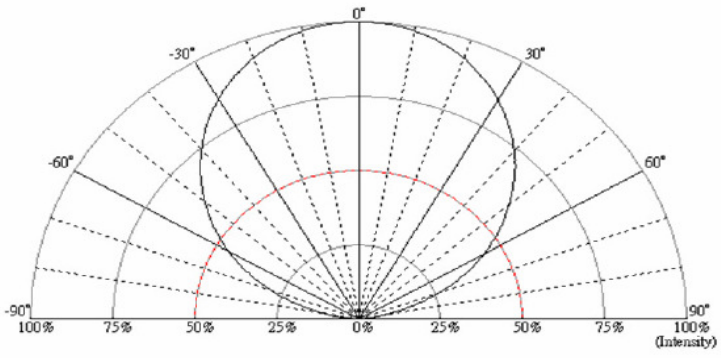


4.2 Directivity

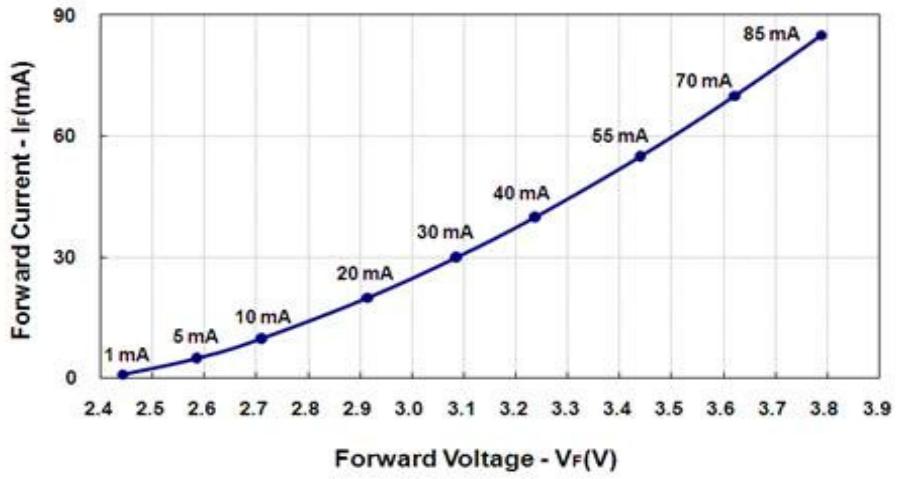
X-X' Direction



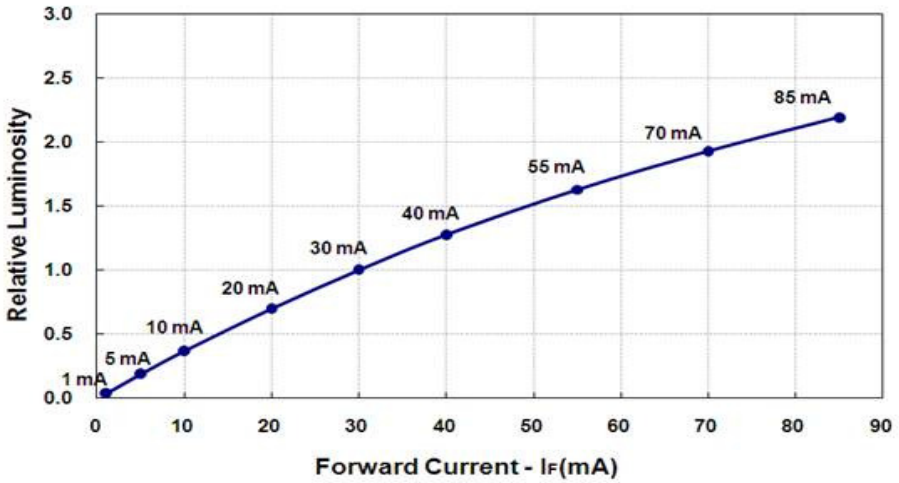
Y-Y' Direction



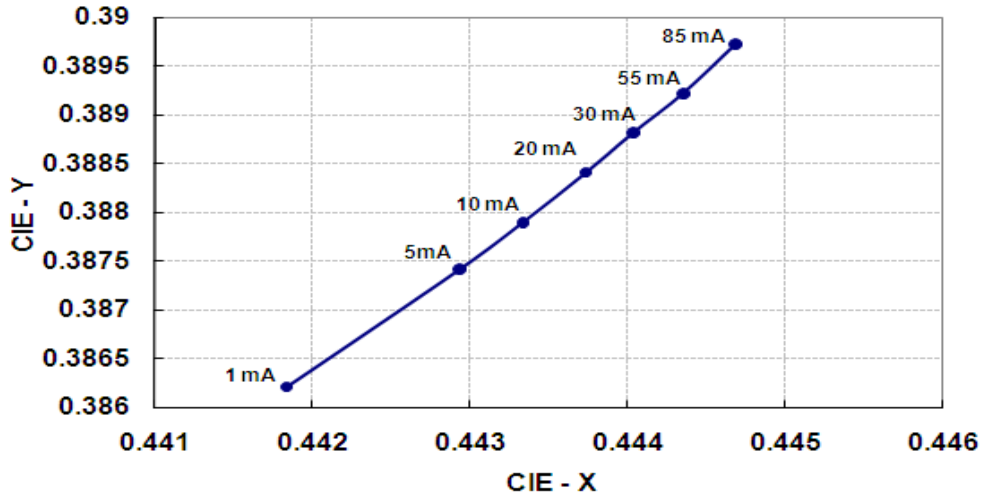
4.3 Forward Voltage vs. Forward Current



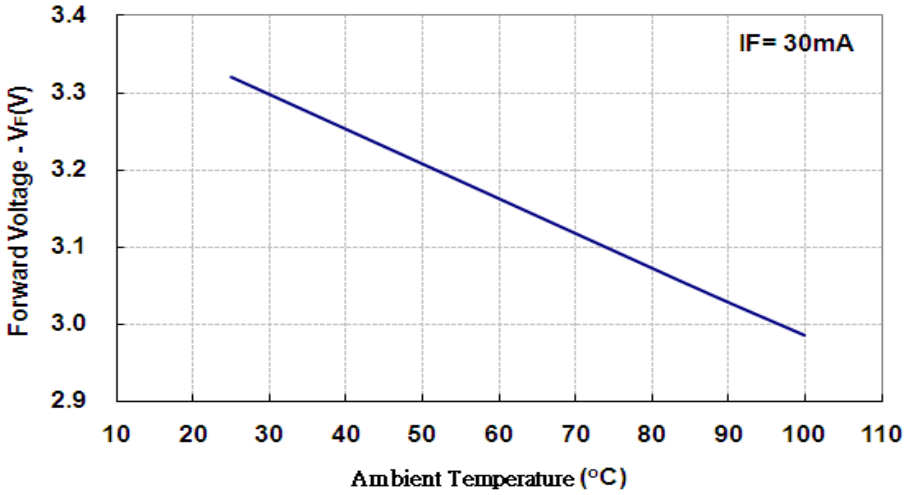
4.4 Forward Current vs. Relative Luminosity



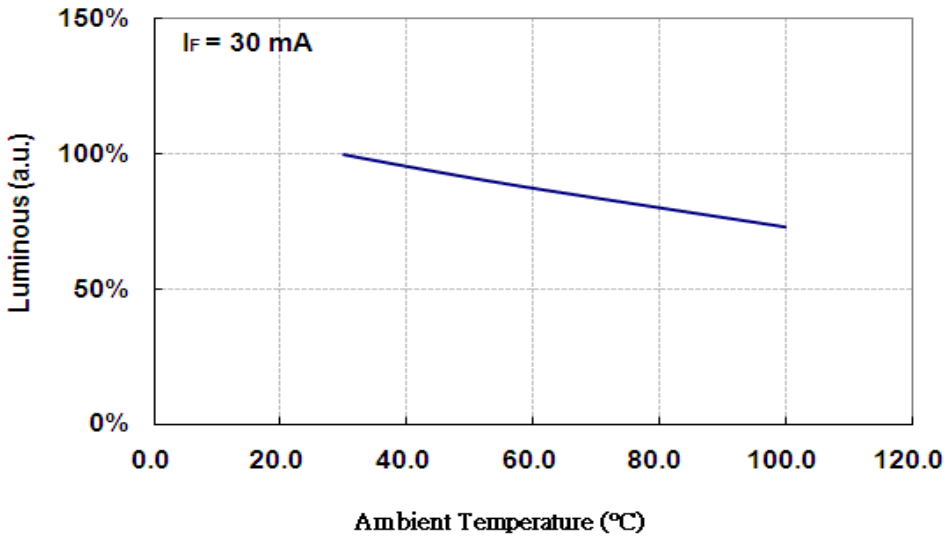
4.5 Forward Current vs. Chromaticity Coordinate



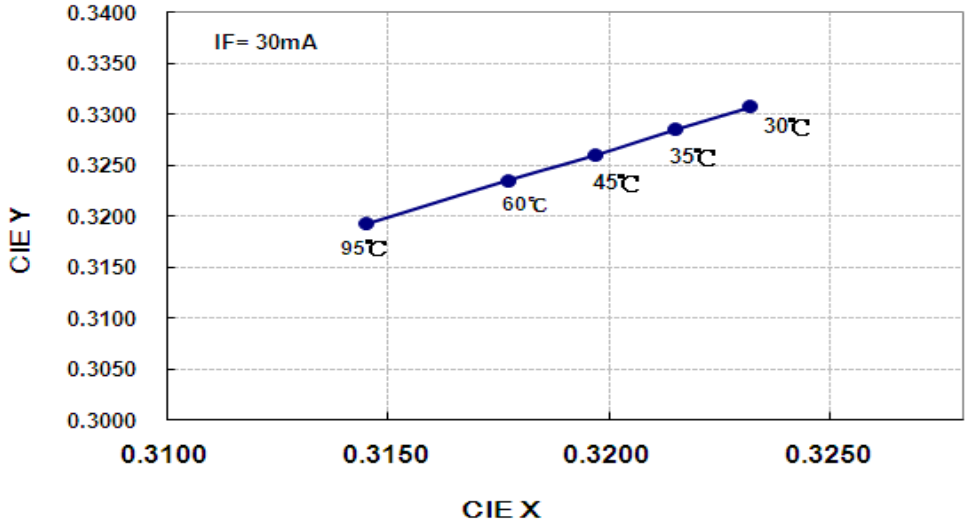
4.6 Forward Voltage change vs. Ambient Temperature



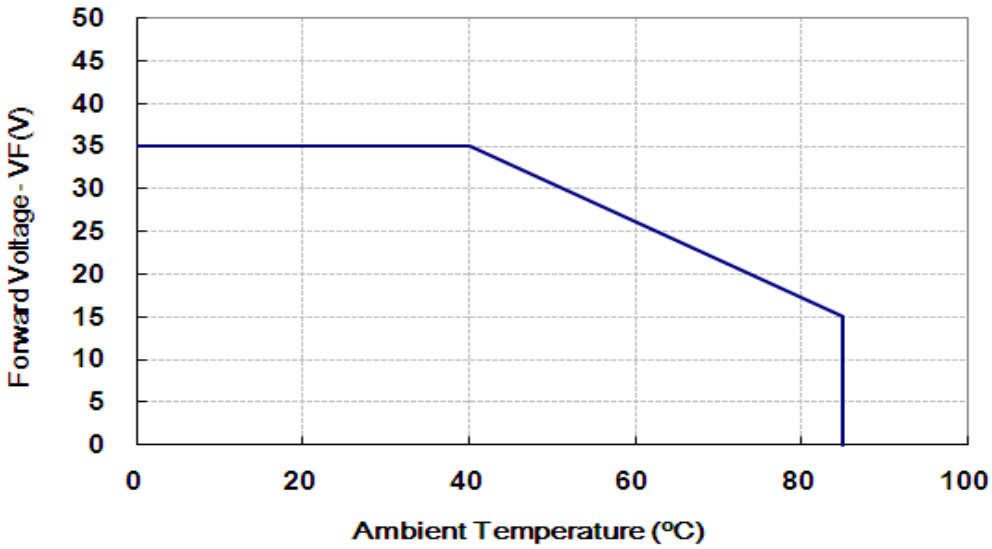
4.7 Relative Luminous Intensity vs. Ambient Temperature



4.8 Chromaticity vs. Ambient Temperature

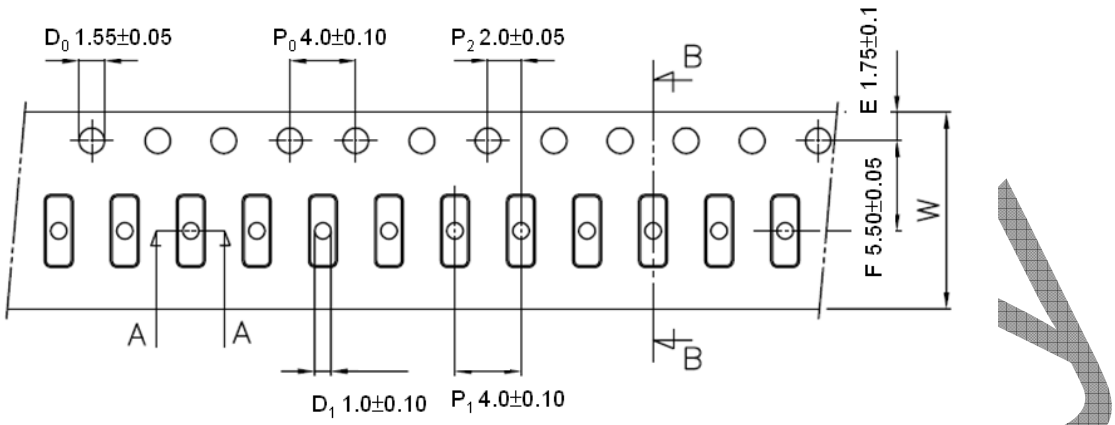


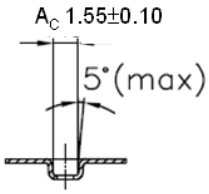
4.9 Allowable Forward Current vs. Ambient Temperature



5. Packaging

5.1 Carrier Tape Dimension





A—A SECTION

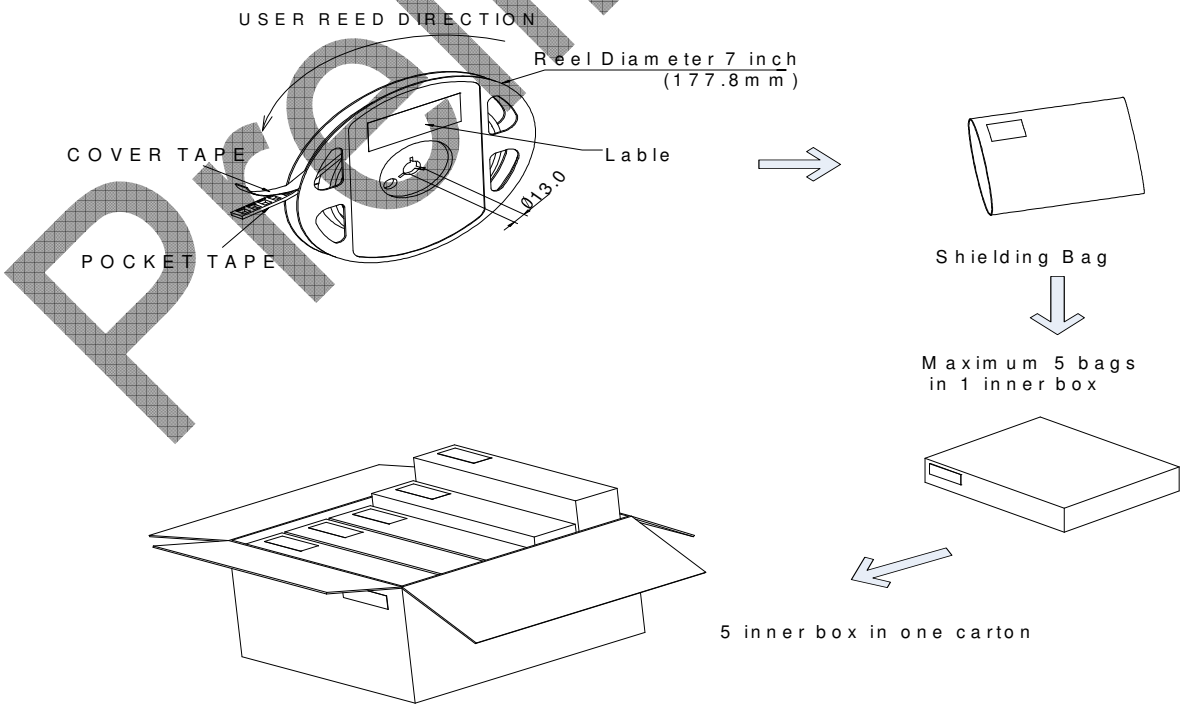
5.2 Reel Label

TBD

5.3 Label on carton

TBD

5.4 Package



6 Precautions

6.1 Safety Precautions

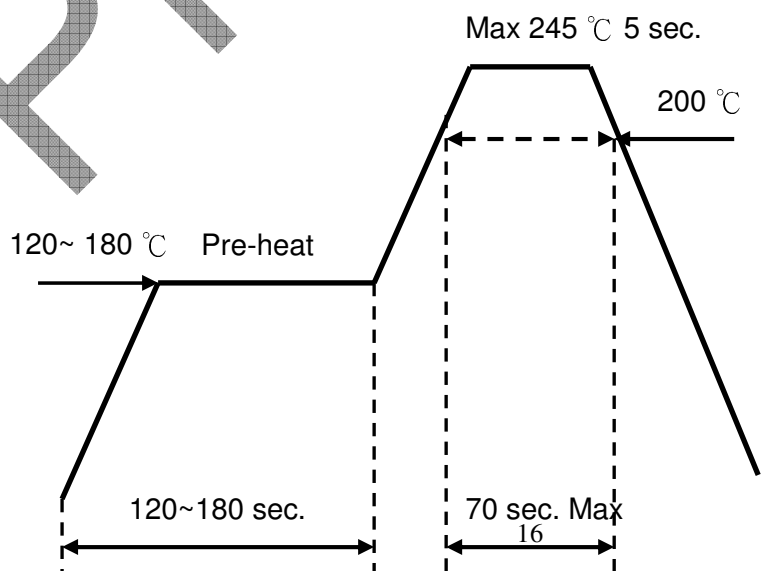
- The LED light output is too strong for human eyes without shield. Prevent eye contact directly more than seconds.
- Ensure operating under maximum rating.

6.2 Storage

- Before opening the package, the LEDs should storage under 30℃, 70% RH. Recommend to use within one year.
- After opening the package bag, the LEDs should be keep under 30℃, 70% RH. Recommend to use within 2days. 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℃, 12hours (One time only).

6.3 Soldering Notice and Conditions

- When soldering LEDs,
- Do not solder/reflow the same LED over two times.
- Recommend soldering conditions:
  Hand soldering: 350 ℃ max , 3 sec. max.
  Reflow soldering: Pre-heat 150 ℃ max , 180 sec. max.
  Peak 245 ℃ 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.

6.4 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.

6.5 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.