

SPECIFICATION DATASHEET

1318H2

- 25.9W maximum power capability
- High brightness LED
- Dimension : 13.5 x 13.5 x 1.55 mm
- Precondition : JEDEC Level 2a
- Lead-free reflow soldering application
- RoHS compliant

1318H2xxxxxx

Copyright 20191218 / Ver. E



LUMENS CO., LTD

12, Wongomae-ro, Giheung-gu, Yongin-si, Gyeonggi-do, Korea
<http://lumensleds.com>

Table of Contents

1. Product description	3
2. Absolute maximum ratings	3
3. Electro-optical characteristics	4
4. Electro-optical chart	4
5. Luminous flux characteristics.....	5
6. Chromaticity diagram & coordinates	6
7. Characteristic Graphs	7-10
8. Outline Dimensions	11
9. Circuit Design	11
10. Packing	12-13
11. Label Format	14
12. Product Code	15-16
13. Reliability test items and conditions	16
14. Cautions	17-18

1. Product description

(1) Description

- The Ergon series LED is designed for the high power operation to get the high flux output applications.
- It is ideal for the light source for general illumination applications, custom designed solutions.

(2) Features

- Maximum drive current up to 700mA
- Low thermal resistance as low as 1.6°C/W
- Viewing angle of 115 degrees
- Precondition JEDEC Level 2a
- RoHS compliant

(3) Applications

- Indoor lighting, Outdoor lighting, Industrial lighting

2. Absolute maximum ratings

Parameters	Symbol	Value	Unit
Power dissipated	Pd	25.9	W
Rated forward current	If	700	mA
Maximum junction temperature capability(1)	Tj	125	°C
Maximum case temperature capability(1)	Tc	105	°C
Operating temperature	Top	- 30 ~ +100	°C
Storage temperature	Tst	- 40 ~ +100	°C

- (1) Proper current derating must be observed to maintain junction temperature below the Maximum.

3. Electro-optical characteristics (Tj=85°C)

Parameters	Symbol	If(mA)	Typ.	Unit
Forward voltage	Vf	500	34.2	V
Viewing angle FWHM	2θ1/2	500	115	degrees
Thermal resistance junction to solder pad	Rthj-a		1.6	°C/W

- Lumens maintains a tolerance of ±3% on forward voltage measurements.

4. Electro-optical chart (Sorting current, If=500mA)

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65°C	Pd(W), typ. at Tc=65°C	Φv(lm), typ. at Tc=25°C	lm/W, typ. at Tc=25°C	Φv(lm), typ. at Tc=65°C	lm/W, typ. at Tc=65°C
1318H2-827	80	2700	500	35.5	17.8	2610	144	2370	134
1318H2-830		3000	500	35.5	17.8	2760	152	2500	141
1318H2-835		3500	500	35.5	17.8	2780	154	2520	142
1318H2-840		4000	500	35.5	17.8	2950	163	2670	150
1318H2-850		5000	500	35.5	17.8	3000	166	2720	153
1318H2-857		5700	500	35.5	17.8	2890	160	2620	148
1318H2-927	90	2700	500	35.5	17.8	2300	127	2090	118
1318H2-930		3000	500	35.5	17.8	2440	135	2210	125
1318H2-935		3500	500	35.5	17.8	2460	136	2230	126
1318H2-940		4000	500	35.5	17.8	2510	139	2280	128
1318H2-950		5000	500	35.5	17.8	2570	142	2330	131
1318H2-S27	95	2700	500	35.5	17.8	2010	111	1820	103
1318H2-S30		3000	500	35.5	17.8	2150	119	1950	110
1318H2-S35		3500	500	35.5	17.8	2170	120	1970	111
1318H2-S40		4000	500	35.5	17.8	2260	125	2050	115

- Lumens maintains a tolerance of ±7% on flux measurements.
- Lumens maintains a tolerance of ±3% on forward voltage measurements.
- Lumens maintains a tolerance of ±2 on CRI measurements.
- Tc(Case temperature)=65 °C is equal to Tj(Junction temperature)=85 °C.

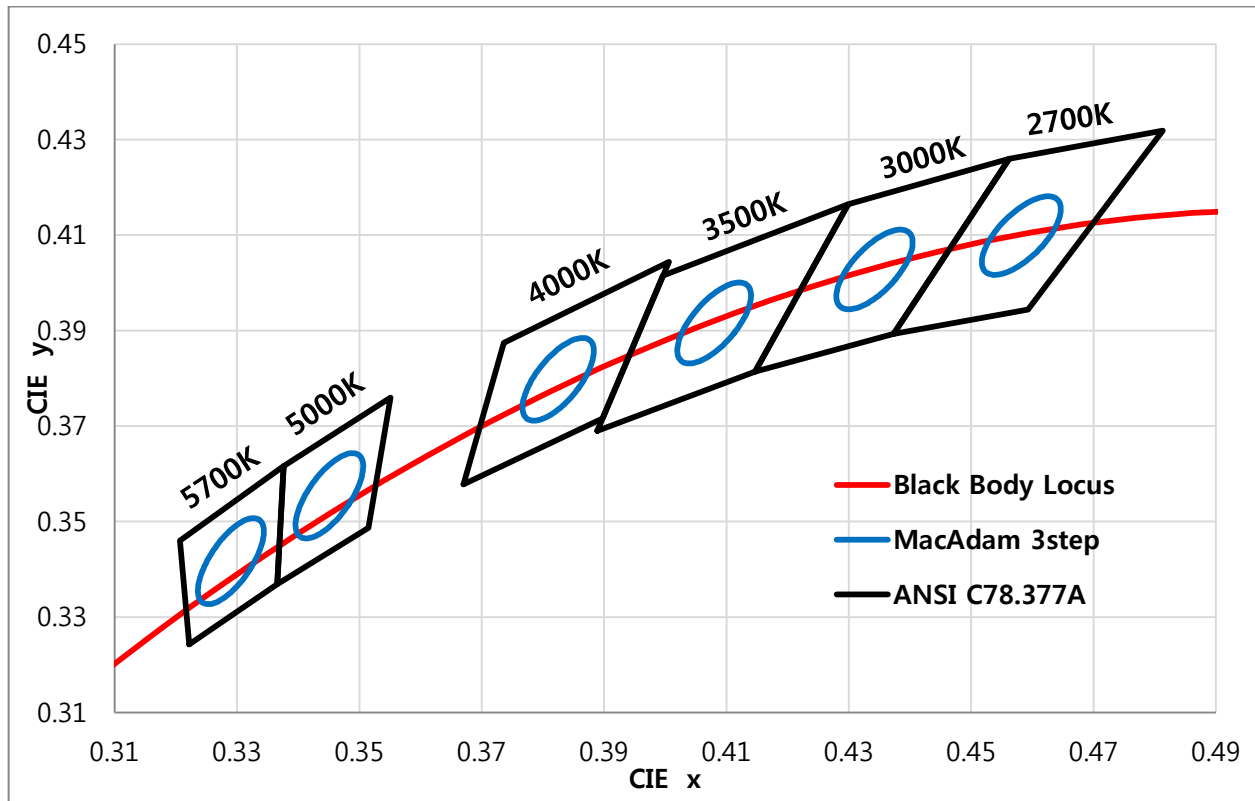
5. Luminous flux characteristics (Sub current, If=350mA & 700mA)

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65°C	Pd(W), typ. at Tc=65°C	Φv(lm), typ. at Tc=25°C	lm/W, typ. at Tc=25°C	Φv(lm), typ. at Tc=65°C	lm/W, typ. at Tc=65°C
1318H2-827	80	2700	350	34.2	12.0	1880	154	1716	143
1318H2-830		3000	350	34.2	12.0	1990	163	1810	151
1318H2-835		3500	350	34.2	12.0	2010	165	1824	152
1318H2-840		4000	350	34.2	12.0	2130	174	1933	161
1318H2-850		5000	350	34.2	12.0	2170	178	1969	164
1318H2-857		5700	350	34.2	12.0	2090	171	1897	158
1318H2-927	90	2700	350	34.2	12.0	1660	136	1513	126
1318H2-930		3000	350	34.2	12.0	1760	144	1600	134
1318H2-935		3500	350	34.2	12.0	1780	146	1614	135
1318H2-940		4000	350	34.2	12.0	1810	148	1651	138
1318H2-950		5000	350	34.2	12.0	1860	152	1687	141
1318H2-S27	95	2700	350	34.2	12.0	1450	119	1318	110
1318H2-S30		3000	350	34.2	12.0	1550	127	1412	118
1318H2-S35		3500	350	34.2	12.0	1570	129	1426	119
1318H2-S40		4000	350	34.2	12.0	1630	133	1484	124

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65°C	Pd(W), typ. at Tc=65°C	Φv(lm), typ. at Tc=25°C	lm/W, typ. at Tc=25°C	Φv(lm), typ. at Tc=65°C	lm/W, typ. at Tc=65°C
1318H2-827	80	2700	700	37.0	25.9	3510	133	3189	123
1318H2-830		3000	700	37.0	25.9	3710	141	3364	130
1318H2-835		3500	700	37.0	25.9	3740	142	3391	131
1318H2-840		4000	700	37.0	25.9	3970	150	3593	139
1318H2-850		5000	700	37.0	25.9	4030	153	3660	141
1318H2-857		5700	700	37.0	25.9	3880	147	3526	136
1318H2-927	90	2700	700	37.0	25.9	3090	117	2813	109
1318H2-930		3000	700	37.0	25.9	3280	124	2974	115
1318H2-935		3500	700	37.0	25.9	3310	125	3001	116
1318H2-940		4000	700	37.0	25.9	3370	128	3068	118
1318H2-950		5000	700	37.0	25.9	3450	131	3136	121
1318H2-S27	95	2700	700	37.0	25.9	2700	102	2449	95
1318H2-S30		3000	700	37.0	25.9	2890	110	2624	101
1318H2-S35		3500	700	37.0	25.9	2920	111	2651	102
1318H2-S40		4000	700	37.0	25.9	3040	115	2759	107

- Lumens maintains a tolerance of $\pm 7\%$ on flux measurements.
- Lumens maintains a tolerance of $\pm 3\%$ on forward voltage measurements.
- Lumens maintains a tolerance of ± 2 on CRI measurements.
- Tc(Case temperature)=65°C is equal to Tj(Junction temperature)=85°C.

6. Chromaticity diagram & coordinates



- Lumens maintains a tolerance of ± 0.005 on chromaticity (CCx, CCy)

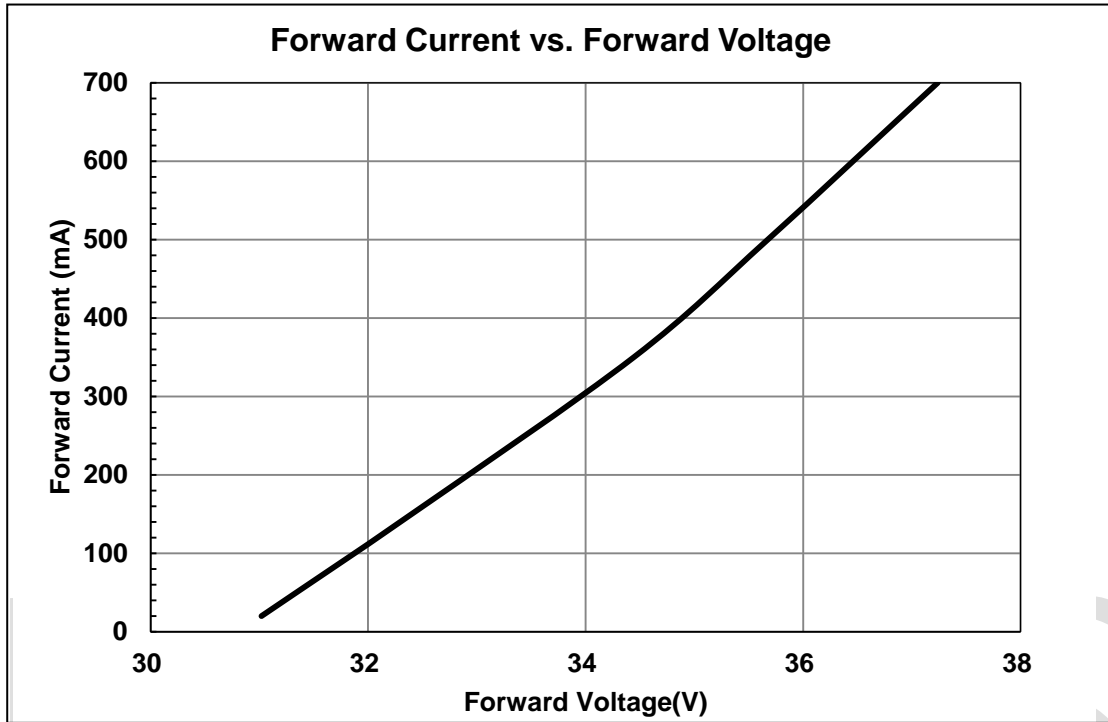
CCT(K)	x	y	CCT(K)	x	y	CCT(K)	x	y
5700K	0.3222	0.3243	4000K	0.3670	0.3578	3000K	0.4147	0.3814
	0.3207	0.3462		0.3736	0.3874		0.4299	0.4165
	0.3376	0.3616		0.4006	0.4044		0.4562	0.4260
	0.3366	0.3369		0.3898	0.3716		0.4373	0.3893
5000K	0.3366	0.3369	3500K	0.3889	0.3690	2700K	0.4373	0.3893
	0.3376	0.3616		0.3996	0.4015		0.4562	0.4260
	0.3551	0.3760		0.4299	0.4165		0.4813	0.4319
	0.3515	0.3487		0.4147	0.3814		0.4593	0.3944

* 3-step MacAdam Ellipse Color Definition

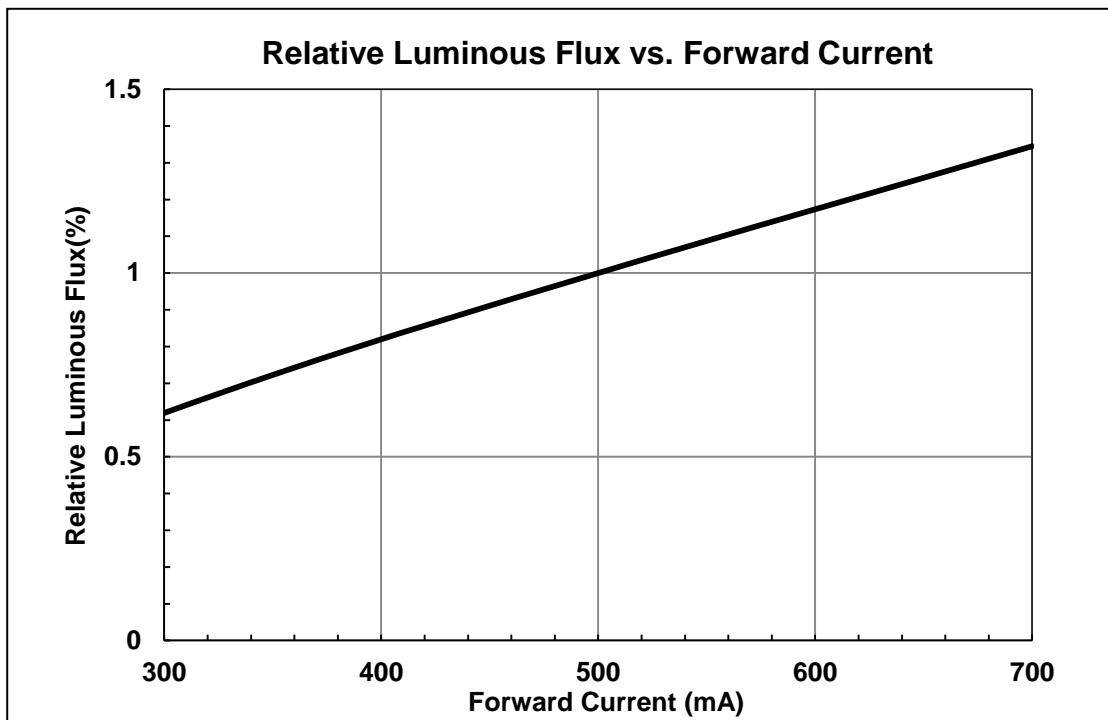
CCT(K)	Center		Ellipse Parameter		
	x	y	Axis a	Axis b	Angle(°)
5700K	0.3287	0.3417	0.00745	0.00320	59.1
5000K	0.3447	0.3553	0.00822	0.00354	59.6
4000K	0.3818	0.3797	0.00939	0.00402	53.7
3500K	0.4073	0.3917	0.00927	0.00414	54.0
3000K	0.4338	0.4030	0.00834	0.00408	53.2
2700K	0.4578	0.4101	0.00810	0.00420	53.7

7. Characteristic Graphs (T_j=85°C)

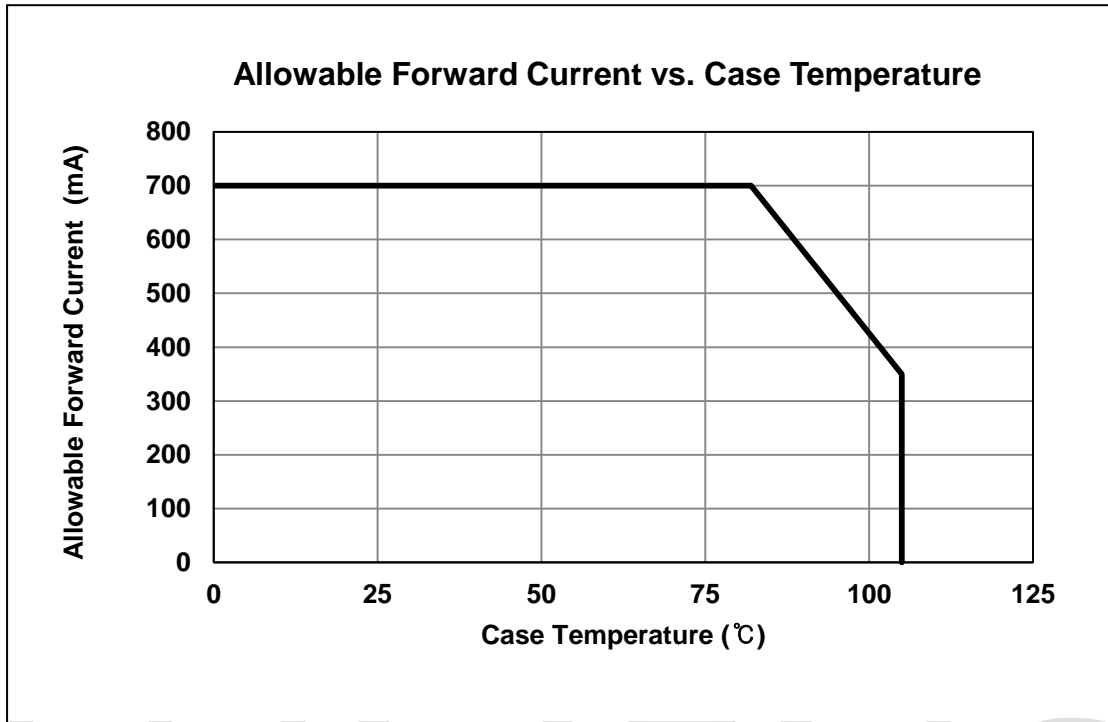
(1) Typical Forward Current vs. Forward Voltage



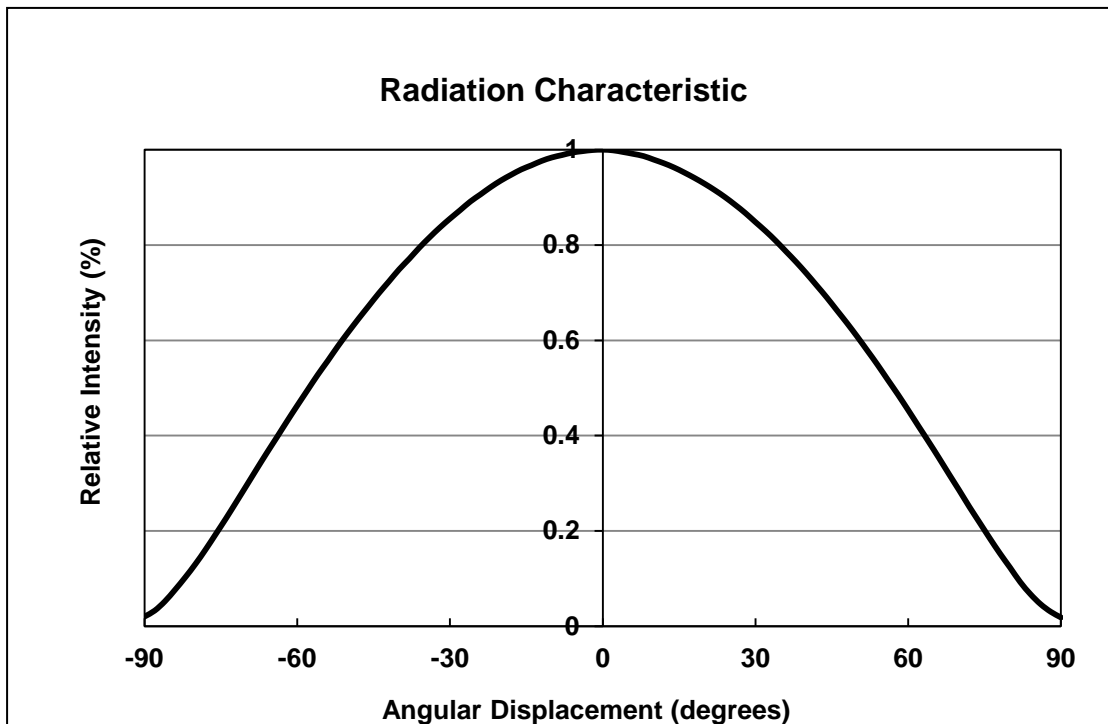
(2) Typical Relative Luminous Flux vs. Forward Current



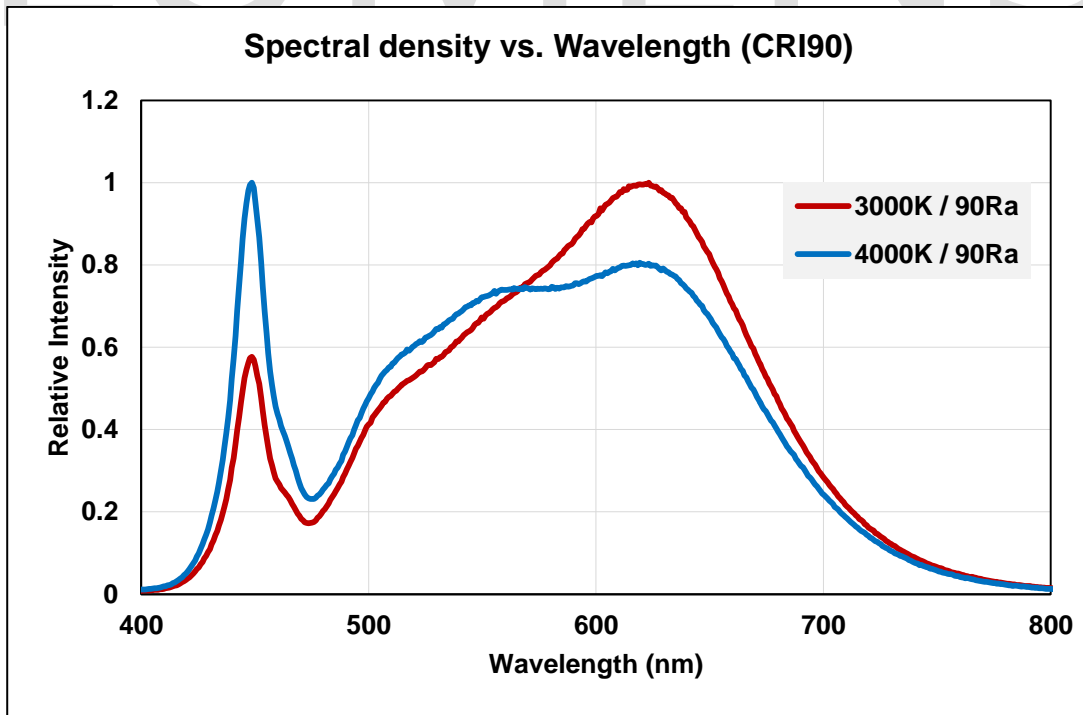
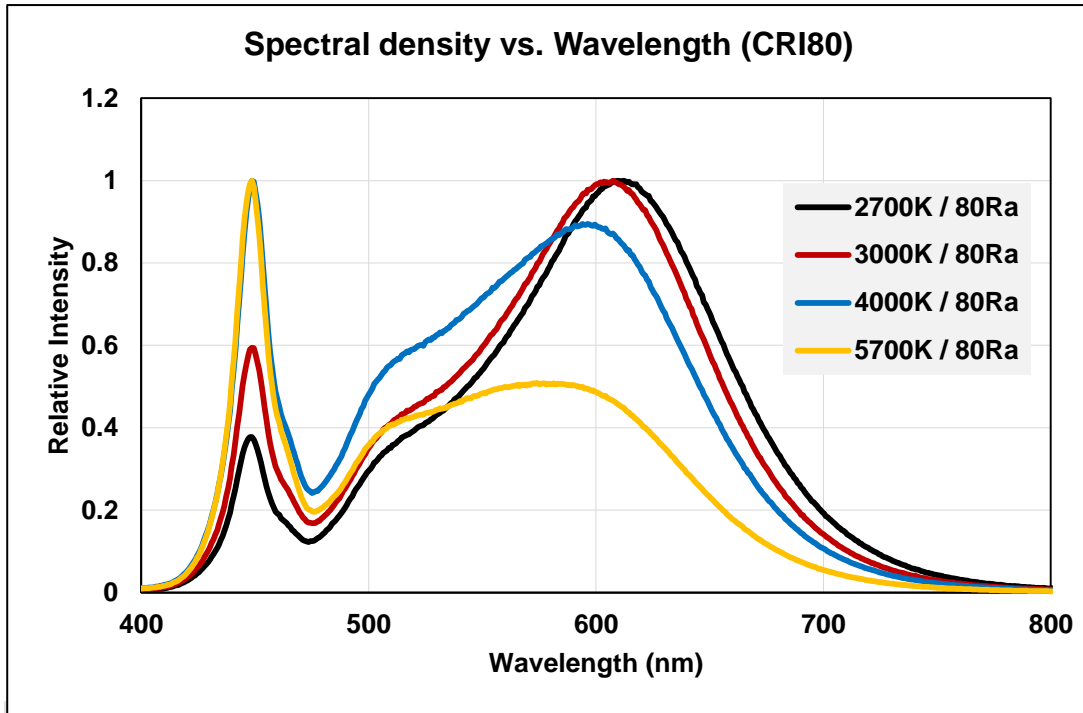
(3) Typical Allowable Forward Current with Ambient Temperature

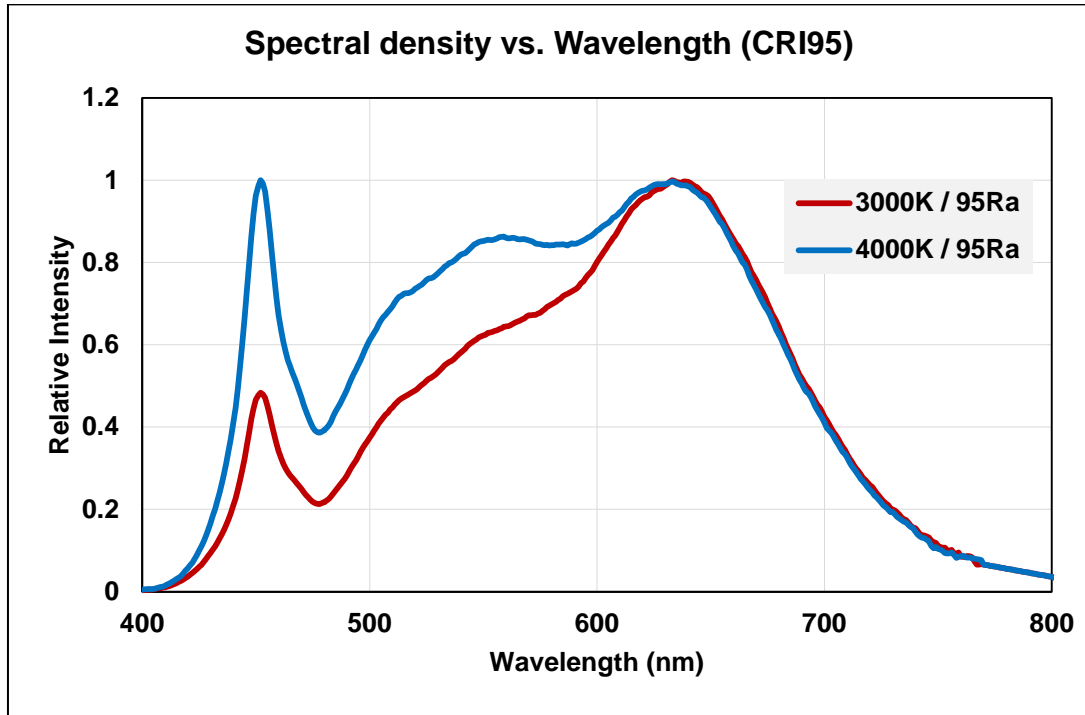


(4) Typical Spatial Radiation Characteristic



(5) Spectrum



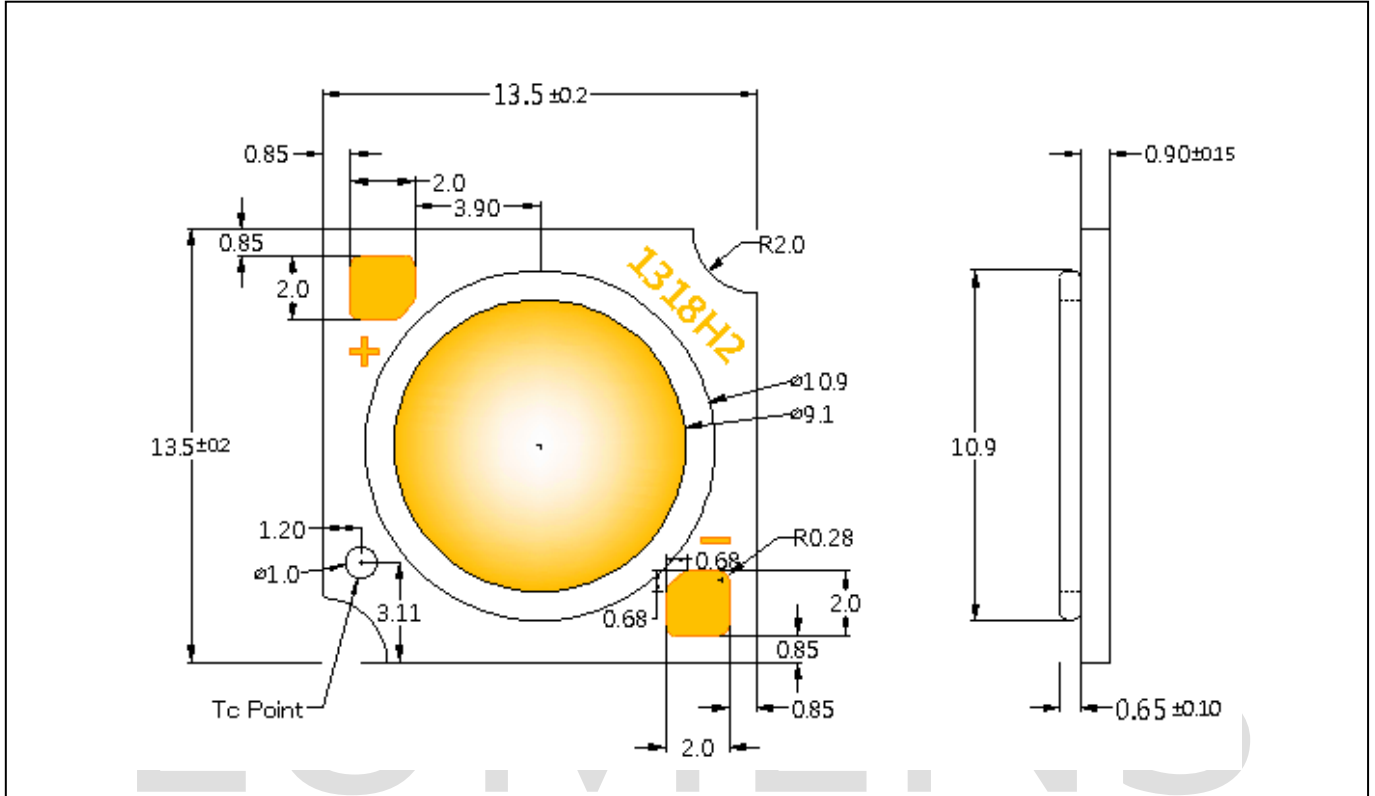


LUMENS

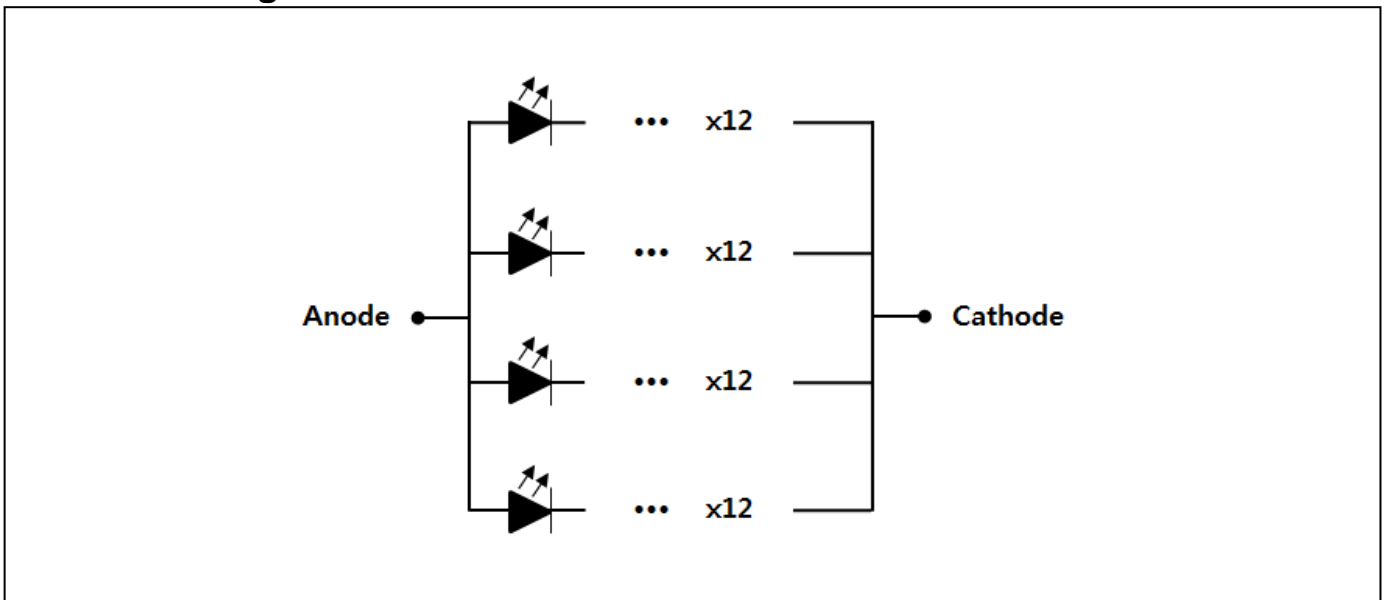
8. Outline Dimensions

- Package outline (Width x Length x Height) of 13.5 x 13.5 x 1.55mm
- Undefined tolerance is ± 0.2 mm

(Unit : mm)

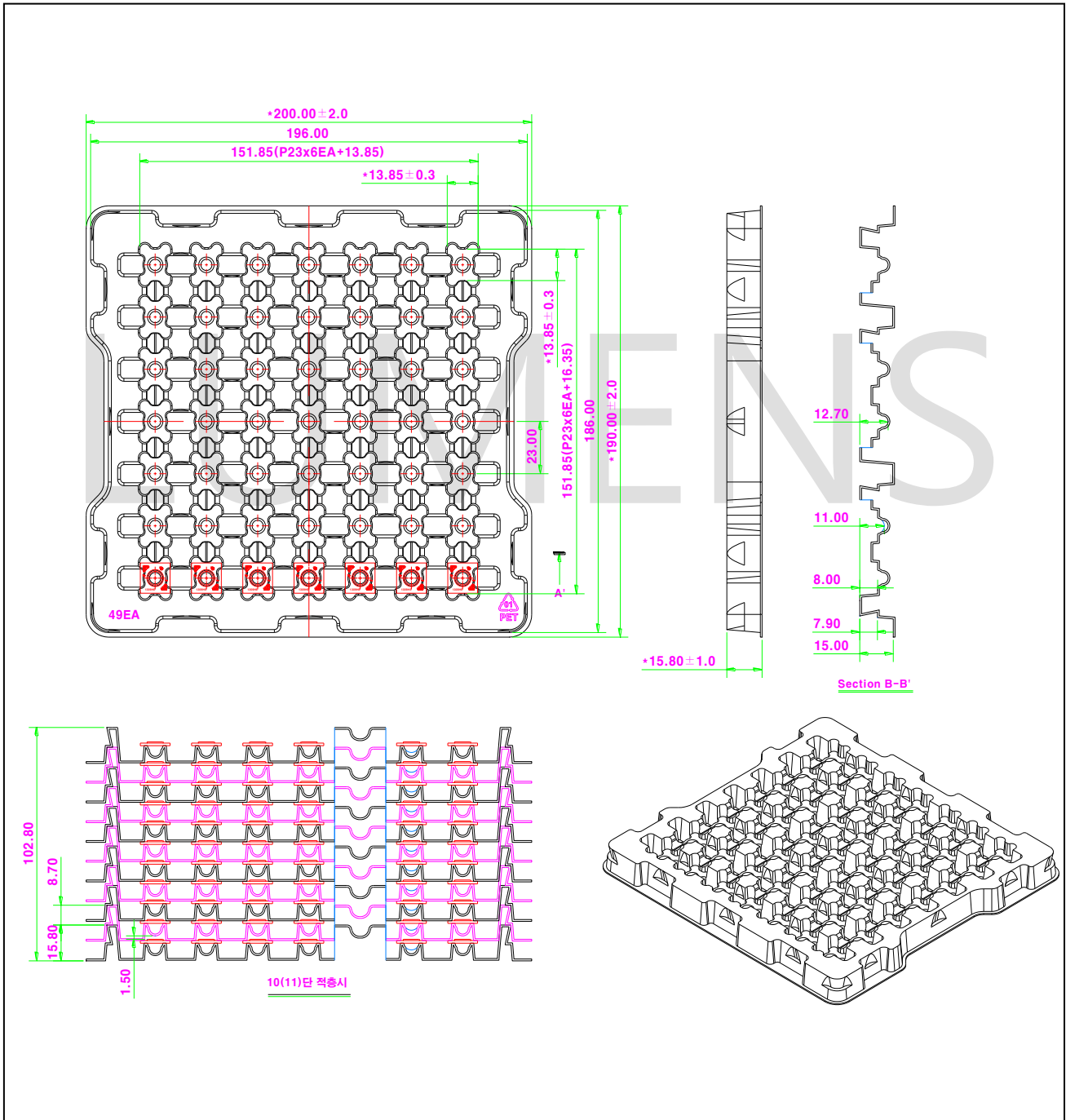


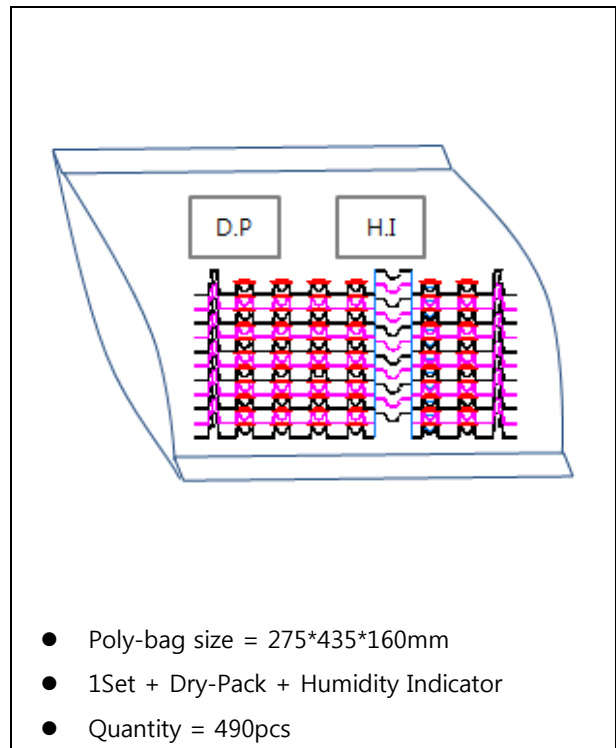
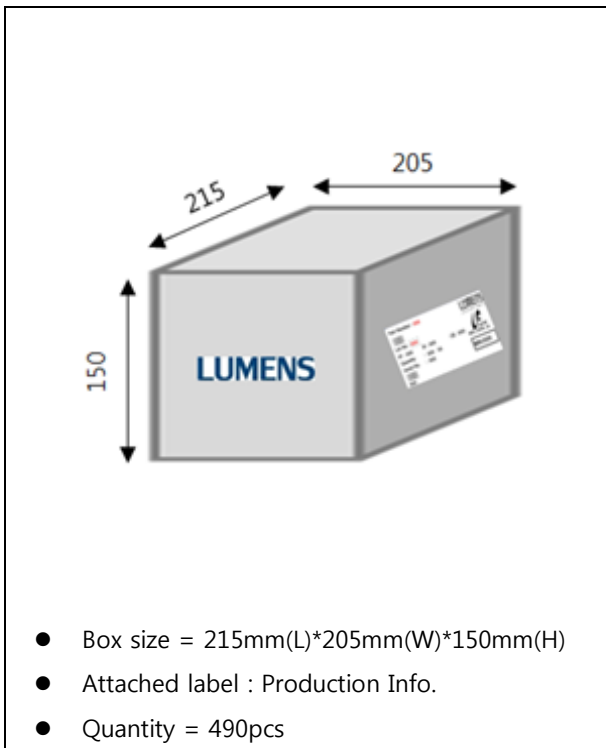
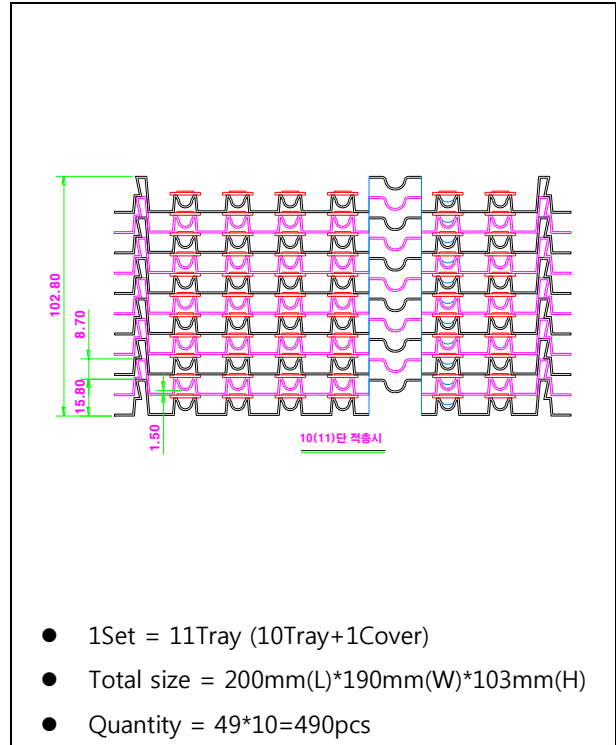
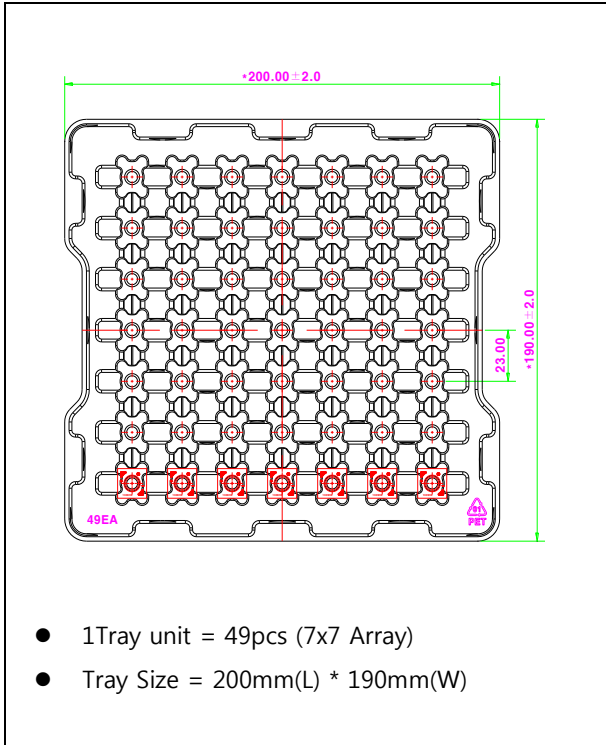
9. Circuit Design



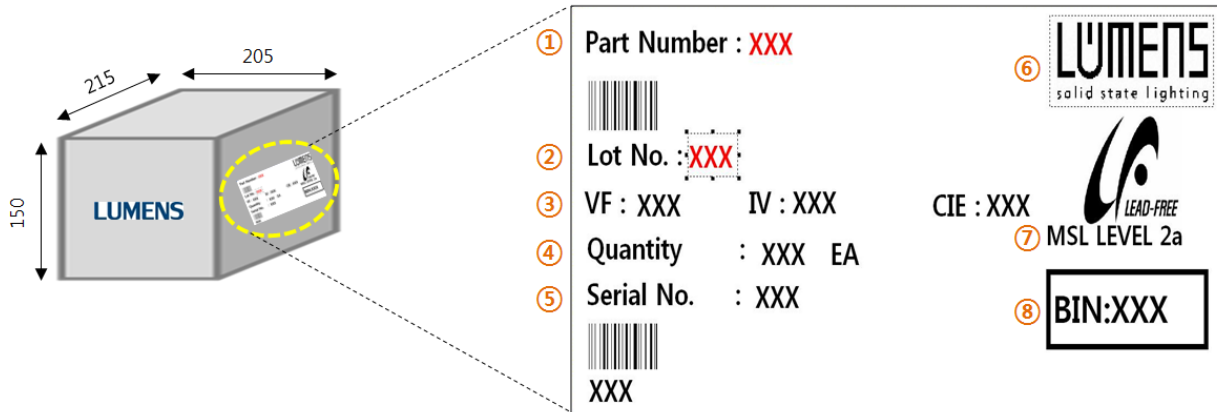
10. Packing

- 49pcs modules per tray
- 10 trays in one Carton
- Tray Size : L x W=200 x 190(mm), 7X 7=49pcs.
- Carton Size : 215mm x 205mm x 150mm
- Undefined tolerance is ± 2 mm





11. Label Format



No.	ITEM	REMARK	DESCRIPTION
①	PART NUMBER (Product Code)	XXXXH2xxxxxx	H2 COB (Size, Watt, Type, CRI, CCT, Version)
②	LOT NUMBER	xx-xxx – YYMMDDW -Lxxx	Production Input (Input date, Product model size, Lot no.) Y(Year), M(Month), D(Day)
③	VF / IV / CIE	VF : Forward voltage IV : Luminous flux CIE : CRI + CCT	VF : xx - xx IV : xx - xx CIE : 827 (80Ra + 2700K)
④	QUANTITY	xxx EA	Total Q'ty
⑤	SERIAL NUMBER	xxx-YYMMDD	Y(Year), M(Month), D(Day)
⑥	COMPANY LOGO	LOGO	-
⑦	MSL LEVEL	Moisture Sensitivity Level	ex) MSL1 ~ 6
⑧	BIN No.	00xx ~ 90xx	TEST Bin No.

12. Product Code

Color Code	Product Code					Remark
827	1309H2827xxx	1318H2827xxx	2025H2827xxx	2032H2827xxx	3040H2827xxx	CRI80
830	1309H2830xxx	1318H2830xxx	2025H2830xxx	2032H2830xxx	3040H2830xxx	
835	1309H2835xxx	1318H2835xxx	2025H2835xxx	2032H2835xxx	3040H2835xxx	
840	1309H2840xxx	1318H2840xxx	2025H2840xxx	2032H2840xxx	3040H2840xxx	
850	1309H2850xxx	1318H2850xxx	2025H2850xxx	2032H2850xxx	3040H2850xxx	
857	1309H2857xxx	1318H2857xxx	2025H2857xxx	2032H2857xxx	3040H2857xxx	
927	1309H2927xxx	1318H2927xxx	2025H2927xxx	2032H2927xxx	3040H2927xxx	CRI90
930	1309H2930xxx	1318H2930xxx	2025H2930xxx	2032H2930xxx	3040H2930xxx	
935	1309H2935xxx	1318H2935xxx	2025H2935xxx	2032H2935xxx	3040H2935xxx	
940	1309H2940xxx	1318H2940xxx	2025H2940xxx	2032H2940xxx	3040H2940xxx	
S27	1309H2S27xxx	1318H2S27xxx	2025H2S27xxx	2032H2S27xxx	3040H2S27xxx	CRI95
S30	1309H2S30xxx	1318H2S30xxx	2025H2S30xxx	2032H2S30xxx	3040H2S30xxx	
S35	1309H2S35xxx	1318H2S35xxx	2025H2S35xxx	2032H2S35xxx	3040H2S35xxx	
S40	1309H2S40xxx	1318H2S40xxx	2025H2S40xxx	2032H2S40xxx	3040H2S40xxx	

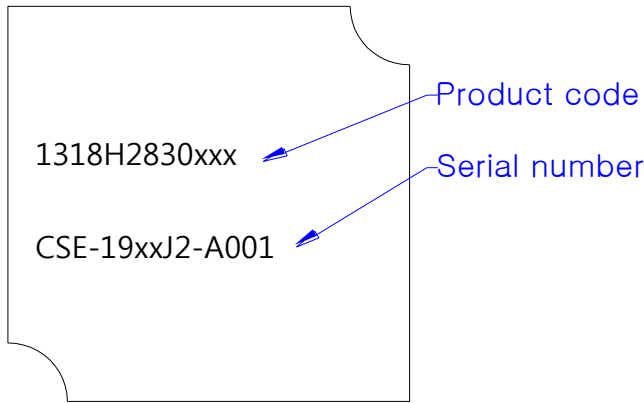
● Product Code Nomenclature detail

Size + Watt (2) (2)	Type (2)	CRI (1)	CCT (2)	Version (3)
XXXX	H2	8 : 80Ra	27 : 2700K	xxx
		9 : 90Ra	30 : 3000K	
		S : 95Ra	35 : 3500K	
			40 : 4000K	
			50 : 5000K	
			57 : 5700K	

● Serial number Nomenclature detail

Item (1)	Product (1)	Type (1)	Date (YYMM) (4)	Input # (2)	Machine (1)	Lot number (3)
C : COB	A	A	1910	AX : A1~A9	A	001
	B	B		BX : B1~B9	B	002
	C	C		CX : C1~C9	C	003
	D	D		DX : D1~D9	D	004
	⋮	⋮		⋮	⋮	⋮
	Z	Z		ZX : Z1~Z9	Z	999

- **Marking**



13. Reliability test items and conditions

Item	Reference	Test Conditions	Duration Cycle
Thermal Shock	EIAJ ED-4701	Ta = - 40°C (30min) ~ 100°C (30min)	100 Cycle
Room temperature Operating Life Test	Internal Reference	Ta = 25°C, If = Maximum current	1,000 Hours
High Temperature Operating Life Test	Internal Reference	Ta = 85°C, If = Sorting current	1,000 Hours
High Temperature High Humidity Life Test	Internal Reference	Ta = 85°C, 85% RH	1,000 Hours
Low Temperature Storage Test	Internal Reference	Ta = -40°C	1,000 Hours
High Temperature Storage Test	Internal Reference	Ta = 100°C	1,000 Hours

(1) Criteria for judging the damage

Item	Symbol	Condition	Criteria for Judgment	
			MIN	MAX
Forward Voltage	Vf	If = 500mA	-	USL (1) × 1.1
Luminous Intensity	Φv	If = 500mA	LSL (2) × 0.7	-

- USL : Upper Standard Level
- LSL : Lower Standard Level

14. Cautions

(1) Moisture-Proof Package

- 1.1 When moisture is absorbed into the LED package it may vaporize and expand products during soldering. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof package is used to keep moisture to a minimum in the package.
- 1.2 A package of a moisture-absorbent material (silica gel) is inserted into the shielding bag. The silica gel changes its color from blue to pink as it absorbs moisture.

(2) Current limiting

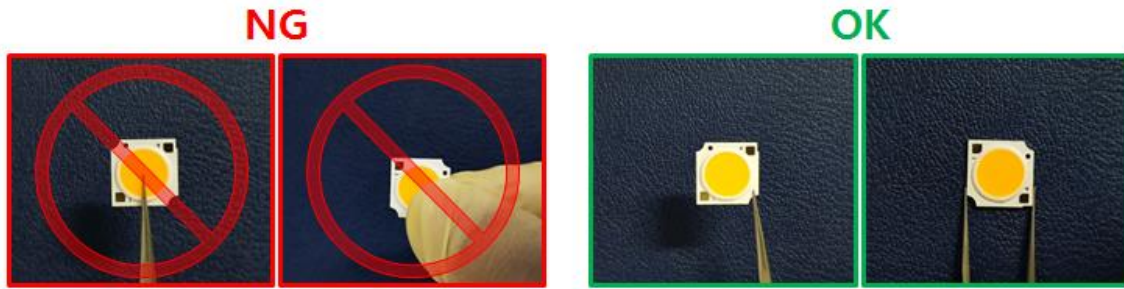
A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

(3) Storage Conditions

- 3.1 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture-proof packaging with moisture-absorbent material (silica gel) is recommended.
- 3.2 After opening the package: The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture-absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture-proof bag and to reseal the moisture-proof bag again.
- 3.3 If the moisture-absorbent material (silica gel) has faded away or the LEDs have exceeded the recommended storage time, baking treatment should be performed using the following conditions.
Baking treatment: more than 24 hours at 65±5°C
- 3.4 Lumens LED electrode sections are comprised of a silver-plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid condition which may cause difficulty environments during soldering operations. It is recommended that the user uses the LEDs as soon as possible.
- 3.5 Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

(4) Handling of Silicone (Lens) LEDs

- 4.1 Avoid silicone resin parts especially with sharp tools such as tweezers.
- 4.2 Avoid leaving fingerprints on silicone lens part.



(5) Usage

- 5.1 Do not exceed the values given in this specification.

LUMENS

NOTE :

All the information published is considered to be reliable. However, Lumens does not assume any liability arising out of the application or use of any product described herein.

Lumens reserves the right to make changes at any time without notice to any products in order to improve reliability, function or design.

Lumens products are not authorized for use as critical components in life support devices or systems without the express written approval from the managing director of Lumens.