LUMENS

2032H2xxxxxx

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SPECIFICATION DATASHEET

2032H2

- 43.4W maximum power capability
- High brightness LED
- Dimension : 19.0 x 19.0 x 1.55 mm
- Precondition : JEDEC Level 2a
- Lead-free reflow soldering application
- RoHS compliant

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http://lumensleds.com

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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 1,200mA
- Low thermal resistance as low as 1.0℃/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	43.4	W
Rated forward current	If	1200	mA
Maximum junction temperature capability(1)	Tj	125	℃
Maximum case temperature capability(1)	Tc	105	℃
Operating temperature	Top	- 30 ~ +100	℃
Storage temperature	Tst	- 40 ~ +100	℃

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

3. Electro-optical characteristics (Tj=85℃)

Parameters	Symbol	If(mA)	Typ.	Unit
Forward voltage	Vf	900	35.0	V
Viewing angle FWHM	2θ1/2	900	115	degrees
Thermal resistance junction to solder pad	Rthj-a		1.0	℃/W

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

4. Electro-optical chart (Sorting current, If=900mA)

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65℃	Pd(W), typ at Tc=65℃	Φv(lm), typ. at Tc=25℃	lm/W, typ. at Tc=25℃	Φv(lm), typ. at Tc=65℃	lm/W, typ. at Tc=65℃
2032H2-827	80	2700	900	35.0	31.5	4990	155	4520	143
2032H2-830		3000	900	35.0	31.5	5250	163	4760	151
2032H2-835		3500	900	35.0	31.5	5310	165	4810	153
2032H2-840		4000	900	35.0	31.5	5480	171	4960	157
2032H2-850		5000	900	35.0	31.5	5590	174	5060	161
2032H2-857		5700	900	35.0	31.5	5420	169	4910	156
2032H2-927	90	2700	900	35.0	31.5	4420	138	4000	127
2032H2-930		3000	900	35.0	31.5	4660	145	4220	134
2032H2-935		3500	900	35.0	31.5	4710	147	4270	136
2032H2-940		4000	900	35.0	31.5	4880	152	4420	140
2032H2-950		5000	900	35.0	31.5	4980	155	4510	143
2032H2-S27	95	2700	900	35.0	31.5	3840	120	3480	110
2032H2-S30		3000	900	35.0	31.5	4120	128	3730	118
2032H2-S35		3500	900	35.0	31.5	4160	129	3770	120
2032H2-S40		4000	900	35.0	31.5	4380	136	3970	126

- 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℃ is equal to Tj(Junction temperature)=85℃.

5. Luminous flux characteristics (Sub current, If=700mA & 1050mA & 1200mA)

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65℃	Pd(W), typ at Tc=65℃	Φv(lm), typ. at Tc=25℃	lm/W, typ. at Tc=25℃	Φv(lm), typ. at Tc=65℃	lm/W, typ. at Tc=65℃
2032H2-827	80	2700	700	34.4	24.1	3970	162	3590	149
2032H2-830		3000	700	34.4	24.1	4180	170	3790	157
2032H2-835		3500	700	34.4	24.1	4220	172	3830	159
2032H2-840		4000	700	34.4	24.1	4360	177	3950	164
2032H2-850		5000	700	34.4	24.1	4450	181	4020	167
2032H2-857		5700	700	34.4	24.1	4310	175	3910	162
2032H2-927	90	2700	700	34.4	24.1	3520	143	3180	132
2032H2-930		3000	700	34.4	24.1	3710	151	3360	140
2032H2-935		3500	700	34.4	24.1	3750	153	3400	141
2032H2-940		4000	700	34.4	24.1	3880	158	3520	146
2032H2-950		5000	700	34.4	24.1	3960	161	3590	149
2032H2-S27	95	2700	700	34.4	24.1	3050	124	2770	115
2032H2-S30		3000	700	34.4	24.1	3280	133	2970	123
2032H2-S35		3500	700	34.4	24.1	3310	135	3000	125
2032H2-S40		4000	700	34.4	24.1	3480	142	3160	131

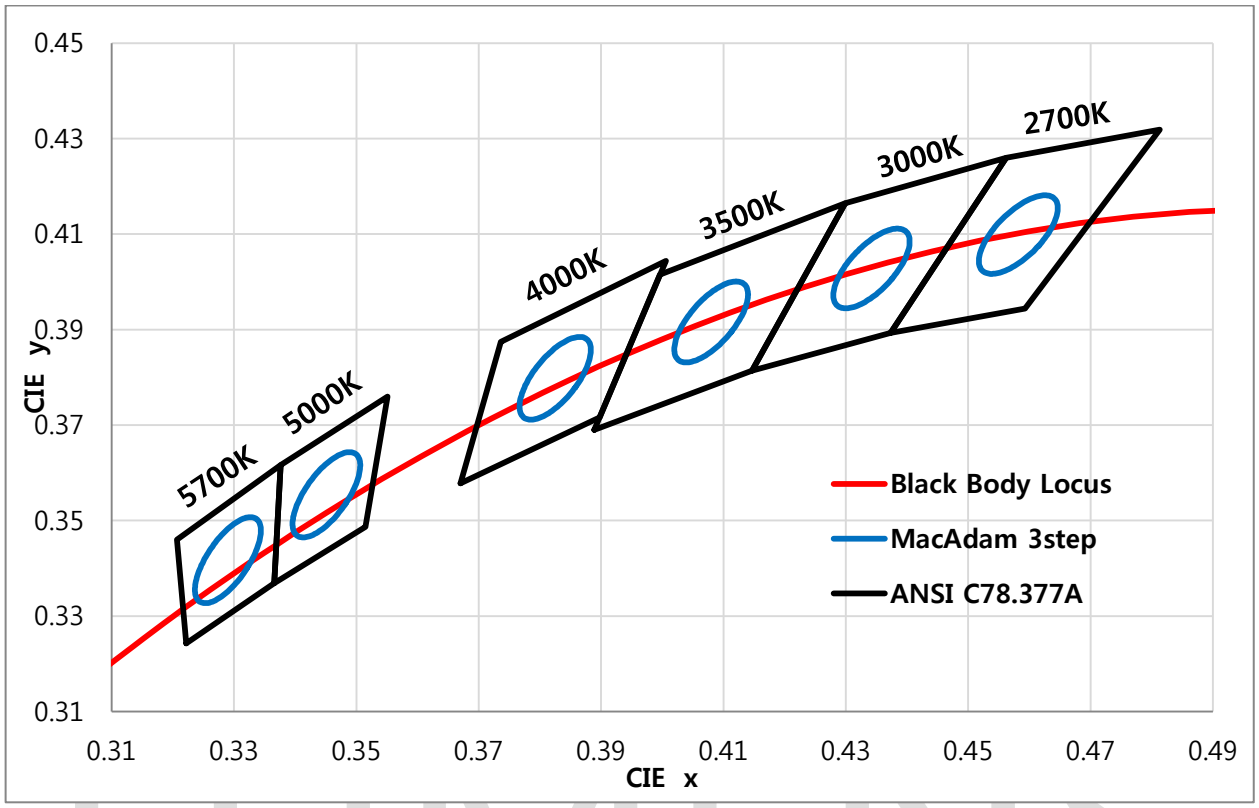
Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65℃	Pd(W), typ at Tc=65℃	Φv(lm), typ. at Tc=25℃	lm/W, typ. at Tc=25℃	Φv(lm), typ. at Tc=65℃	lm/W, typ. at Tc=65℃
2032H2-827	80	2700	1050	35.6	37.4	5530	145	5010	134
2032H2-830		3000	1050	35.6	37.4	5820	153	5270	141
2032H2-835		3500	1050	35.6	37.4	5880	154	5330	143
2032H2-840		4000	1050	35.6	37.4	6070	159	5490	147
2032H2-850		5000	1050	35.6	37.4	6190	162	5610	150
2032H2-857		5700	1050	35.6	37.4	6000	157	5440	146
2032H2-927	90	2700	1050	35.6	37.4	4900	129	4430	119
2032H2-930		3000	1050	35.6	37.4	5160	135	4670	125
2032H2-935		3500	1050	35.6	37.4	5220	137	4730	127
2032H2-940		4000	1050	35.6	37.4	5410	142	4900	131
2032H2-950		5000	1050	35.6	37.4	5520	145	5000	134
2032H2-S27	95	2700	1050	35.6	37.4	4250	112	3850	103
2032H2-S30		3000	1050	35.6	37.4	4560	120	4130	110
2032H2-S35		3500	1050	35.6	37.4	4610	121	4180	112
2032H2-S40		4000	1050	35.6	37.4	4850	127	4400	118

- 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℃ is equal to Tj(Junction temperature)=85℃.

Product Description	CRI (Ra)	CCT (K)	If (mA)	Vf(V), typ. at Tc=65℃	Pd(W), typ at Tc=65℃	Φv(lm), typ. at Tc=25℃	lm/W, typ. at Tc=25℃	Φv(lm), typ. at Tc=65℃	lm/W, typ. at Tc=65℃
2032H2-827	80	2700	1200	36.2	43.4	6090	138	5520	127
2032H2-830		3000	1200	36.2	43.4	6410	145	5810	134
2032H2-835		3500	1200	36.2	43.4	6480	146	5870	135
2032H2-840		4000	1200	36.2	43.4	6690	151	6050	139
2032H2-850		5000	1200	36.2	43.4	6820	154	6180	142
2032H2-857		5700	1200	36.2	43.4	6610	149	5990	138
2032H2-927	90	2700	1200	36.2	43.4	5390	122	4880	112
2032H2-930		3000	1200	36.2	43.4	5690	129	5150	119
2032H2-935		3500	1200	36.2	43.4	5750	130	5210	120
2032H2-940		4000	1200	36.2	43.4	5960	135	5390	124
2032H2-950		5000	1200	36.2	43.4	6080	137	5500	127
2032H2-S27	95	2700	1200	36.2	43.4	4680	106	4250	98
2032H2-S30		3000	1200	36.2	43.4	5030	114	4550	105
2032H2-S35		3500	1200	36.2	43.4	5080	115	4600	106
2032H2-S40		4000	1200	36.2	43.4	5340	121	4840	111

- 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℃ is equal to Tj(Junction temperature)=85℃.

6. Chromaticity diagram & coordinates



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

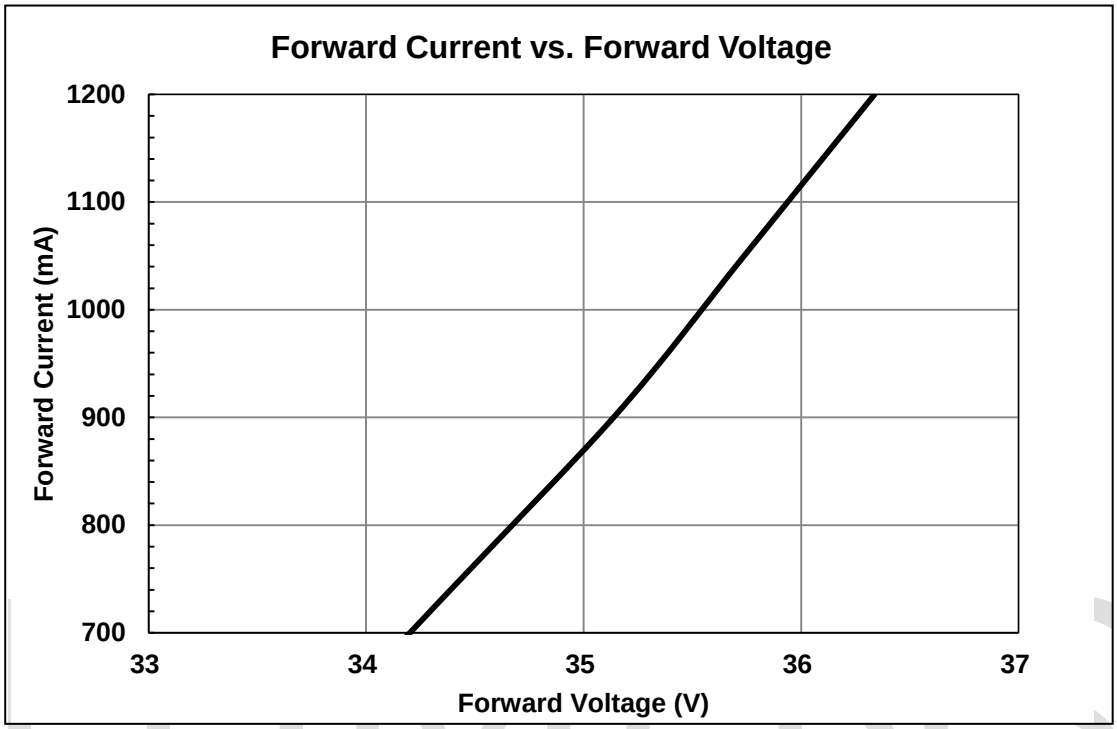
CCT(K)	x	y	CCT(K)	x	y	CCT(K)	x	y
5700K	0.3222	0.3243	4000K	0.3670	0.3578	3000K	0.4147	0.3814
	0.3207	0.3462		0.3736	0.3874		0.4299	0.4165
	0.3376	0.3616		0.4006	0.4044		0.4562	0.4260
	0.3366	0.3369		0.3898	0.3716		0.4373	0.3893
5000K	0.3366	0.3369	3500K	0.3889	0.3690	2700K	0.4373	0.3893
	0.3376	0.3616		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**

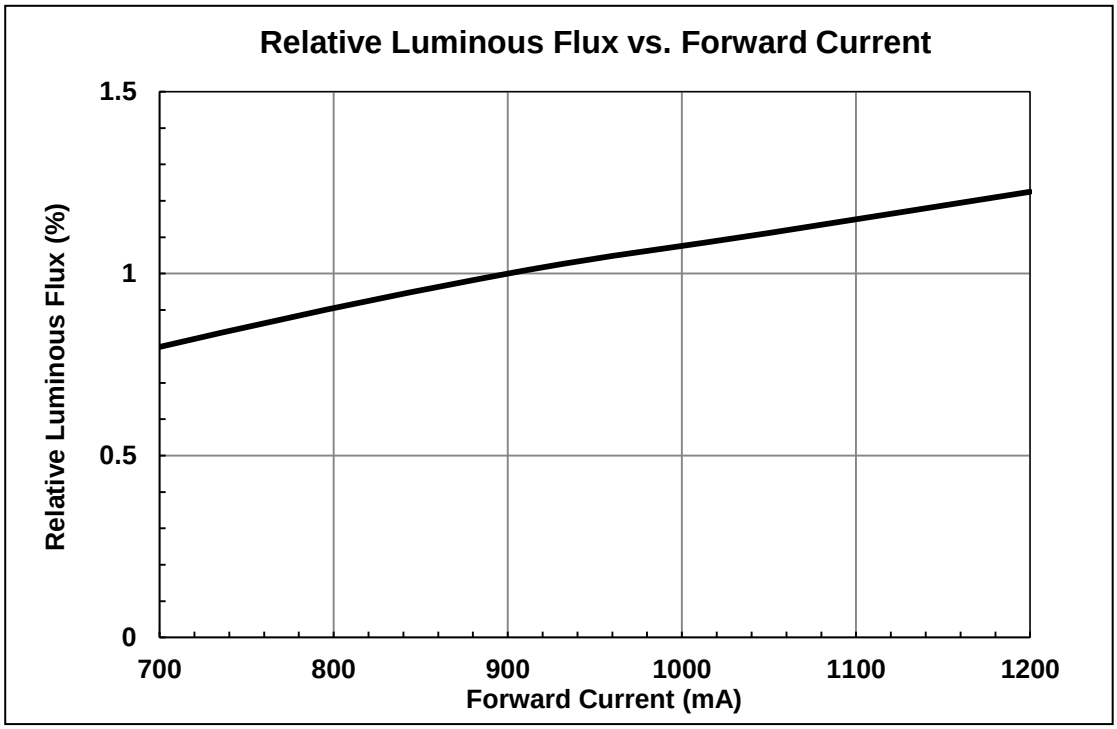
CCT(K)	Center		Ellipse Parameter		
	x	y	Axis a	Axis b	Angle(°)
5700K	0.3287	0.3417	0.00745	0.00320	59.1
5000K	0.3447	0.3553	0.00822	0.00354	59.6
4000K	0.3818	0.3797	0.00939	0.00402	53.7
3500K	0.4073	0.3917	0.00927	0.00414	54.0
3000K	0.4338	0.4030	0.00834	0.00408	53.2
2700K	0.4578	0.4101	0.00810	0.00420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

7. Characteristic Graphs (Tj=85℃)

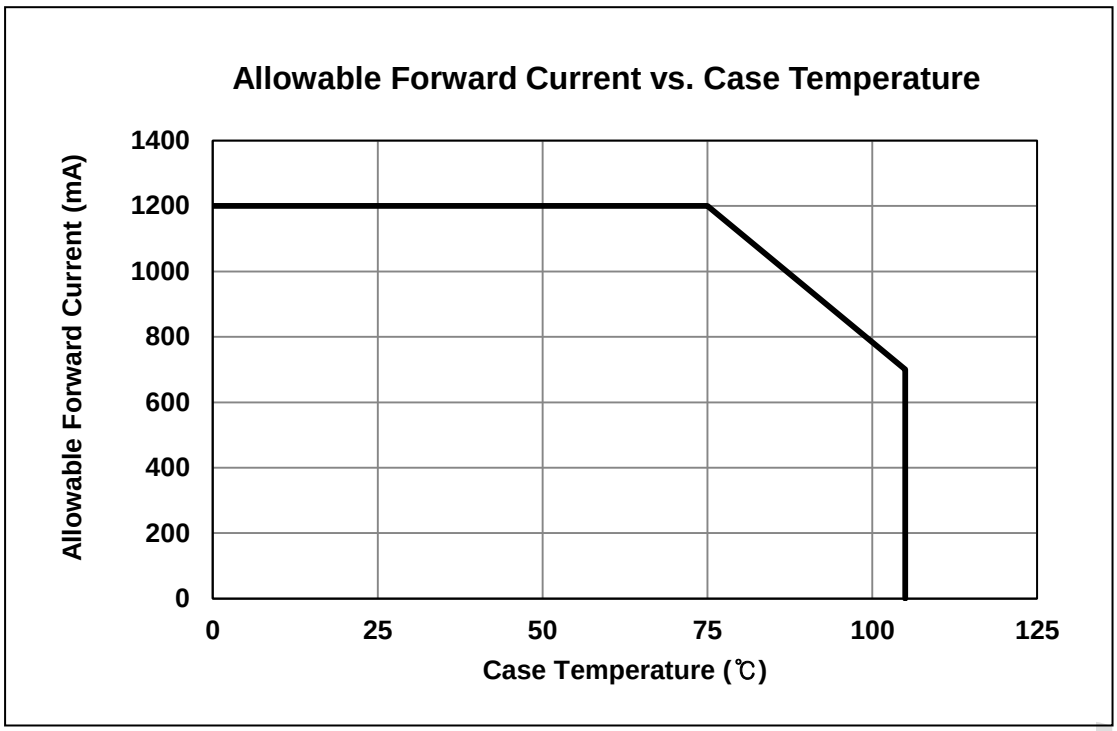
(1) Typical Forward Current vs. Forward Voltage



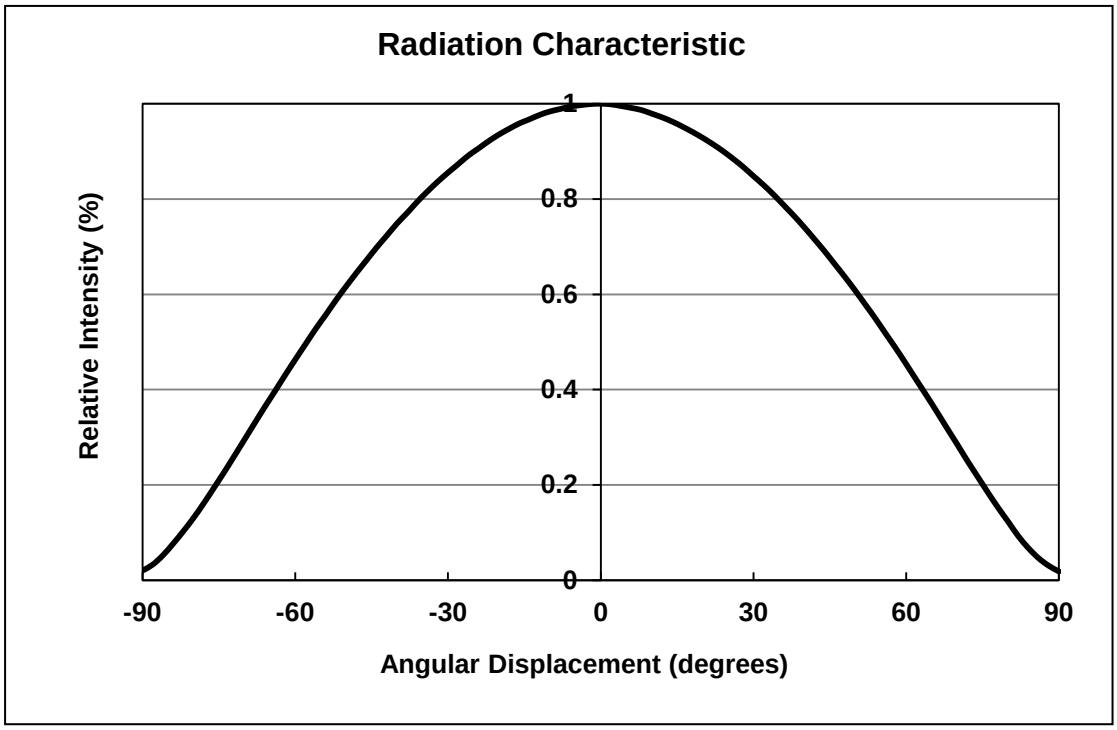
(2) Typical Relative Luminous Flux vs. Forward Current



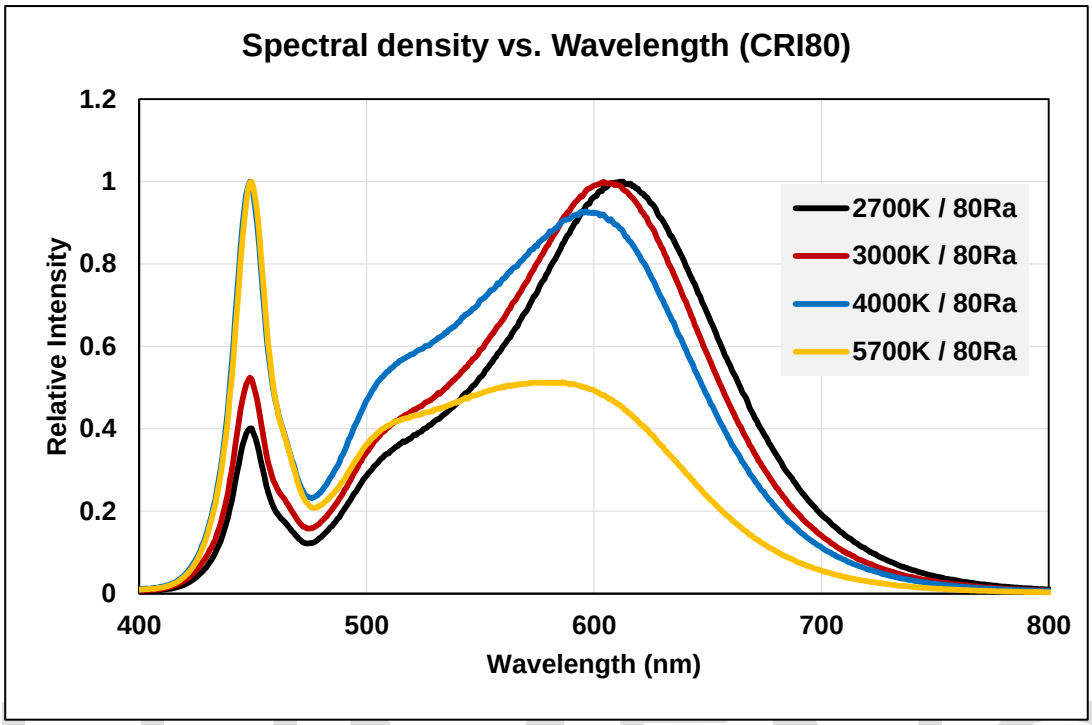
(3) Typical Allowable Forward Current with Ambient Temperature

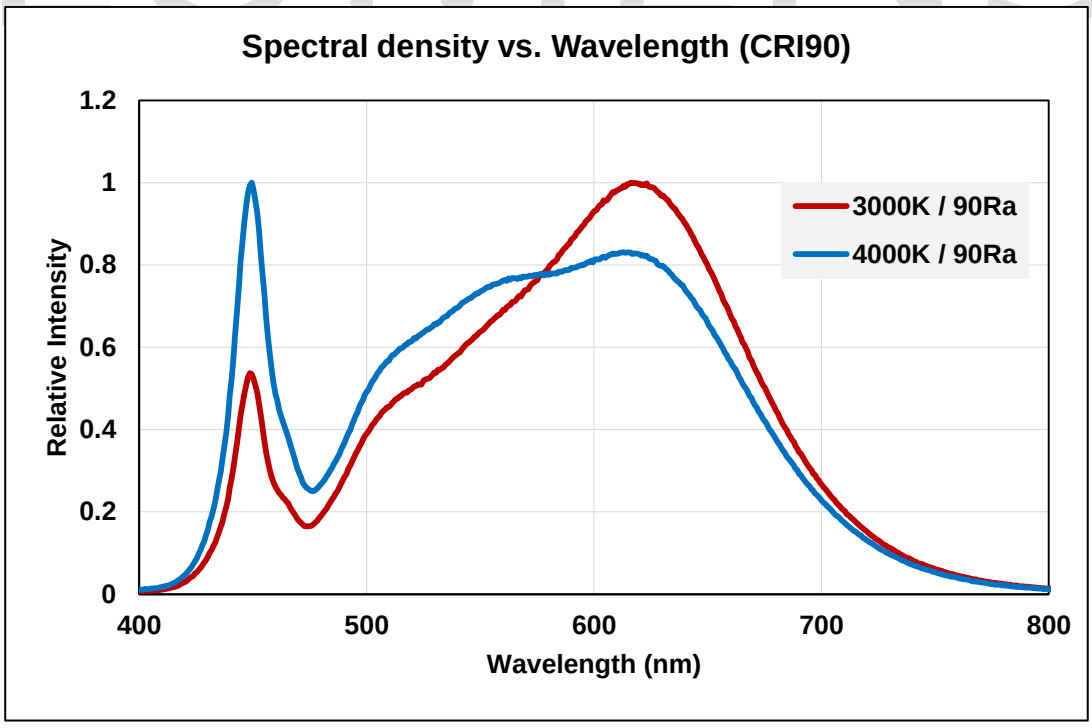


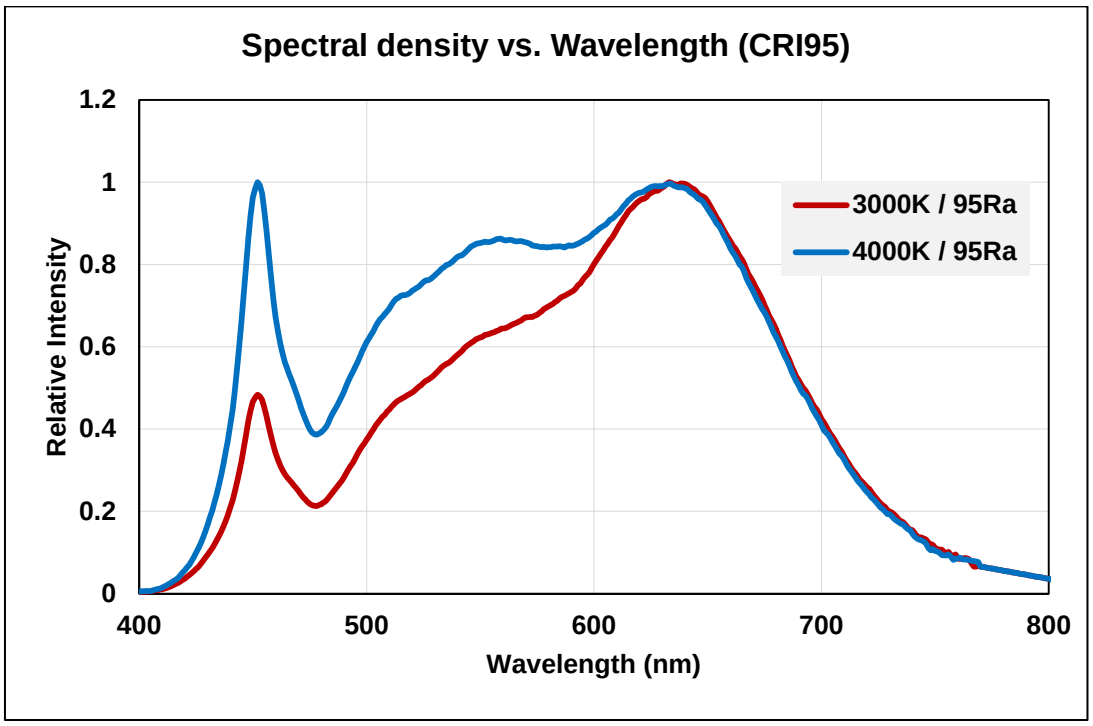
(4) Typical Spatial Radiation Characteristic



(5) Spectrum


Spectral density vs. Wavelength (CRI80)
Relative Intensity
1.2
1
0.8
0.6
0.4
0.2
0
400
500
600
700
800
Wavelength (nm)
2700K / 80Ra
3000K / 80Ra
4000K / 80Ra
5700K / 80Ra

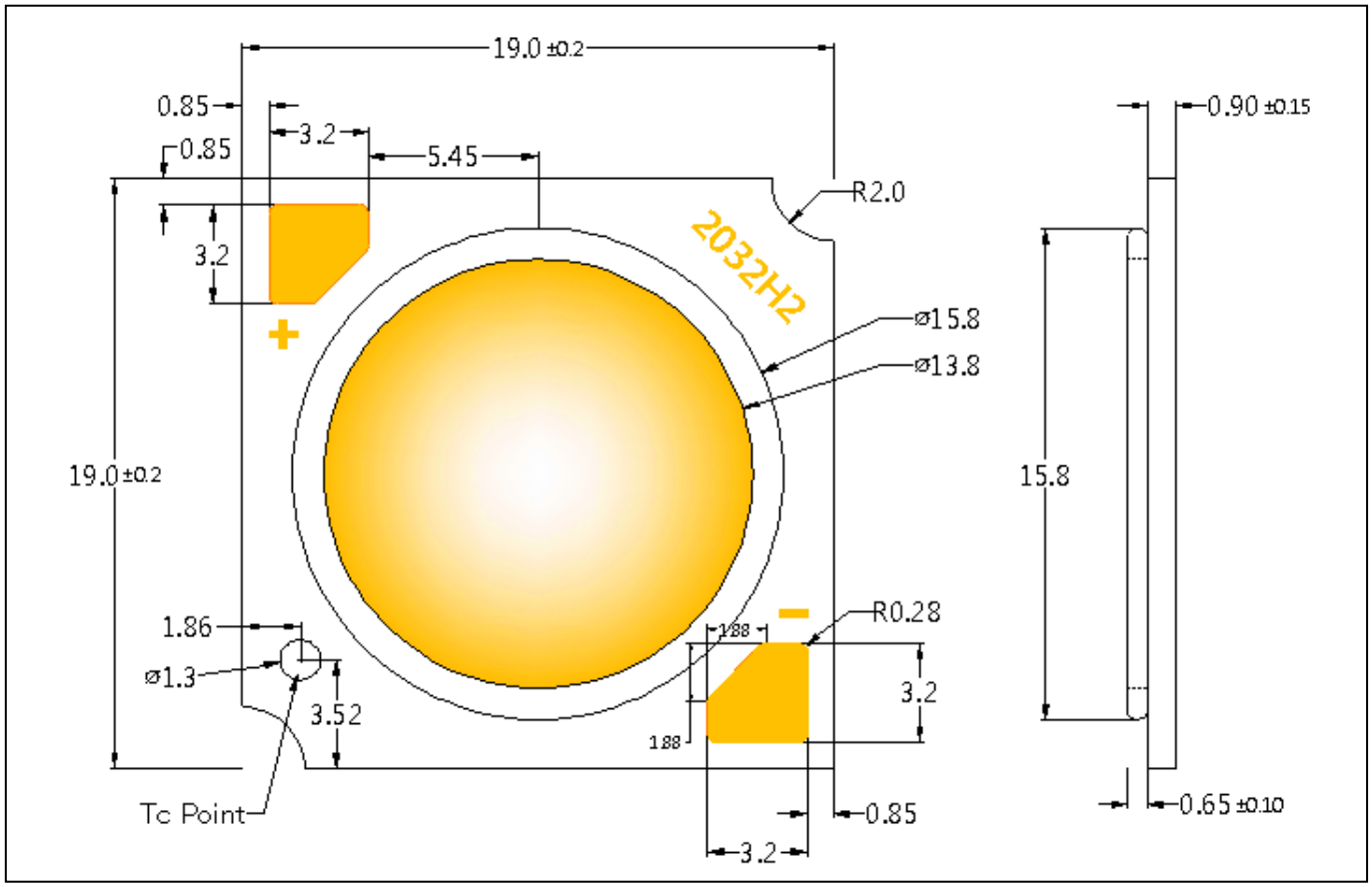

Spectral density vs. Wavelength (CRI90)
Relative Intensity
1.2
1
0.8
0.6
0.4
0.2
0
400
500
600
700
800
Wavelength (nm)
3000K / 90Ra
4000K / 90Ra


Spectral density vs. Wavelength (CRI95)
Relative Intensity
1.2
1
0.8
0.6
0.4
0.2
0
400
500
600
700
800
Wavelength (nm)
3000K / 95Ra
4000K / 95Ra

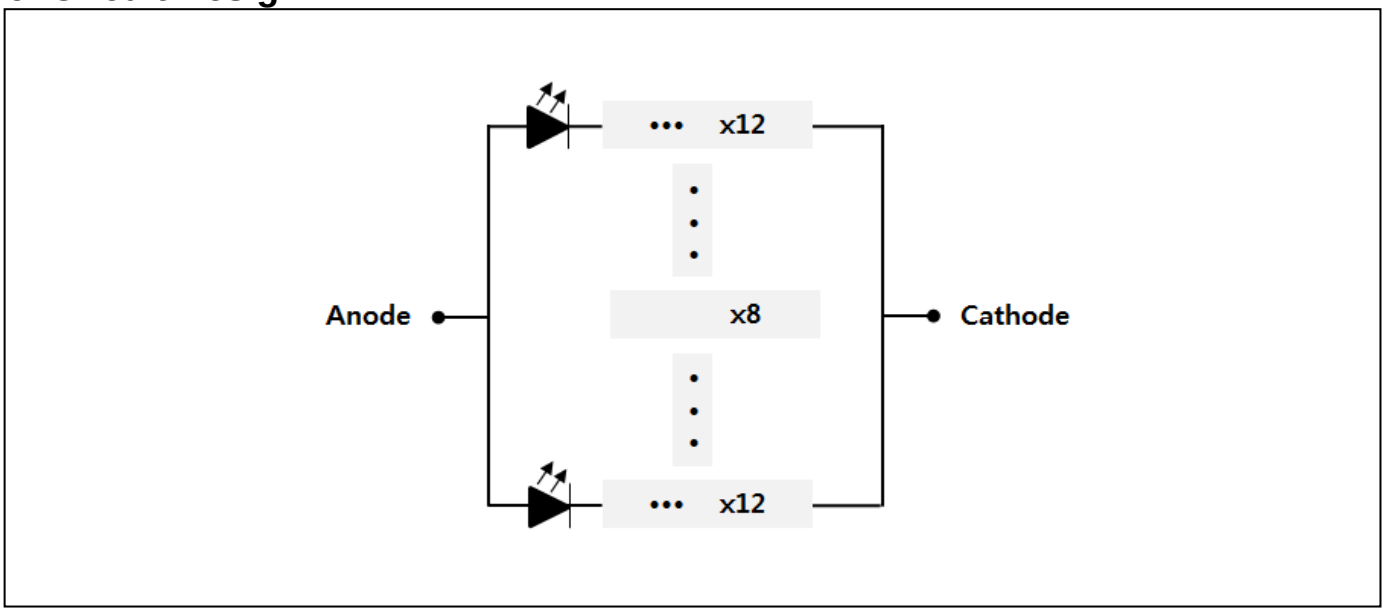
8. Outline Dimensions

- Package outline (Width x Length x Height) of 19.0 x 19.0 x 1.55mm
- Undefined tolerance is ± 0.2 mm

(Unit : mm)

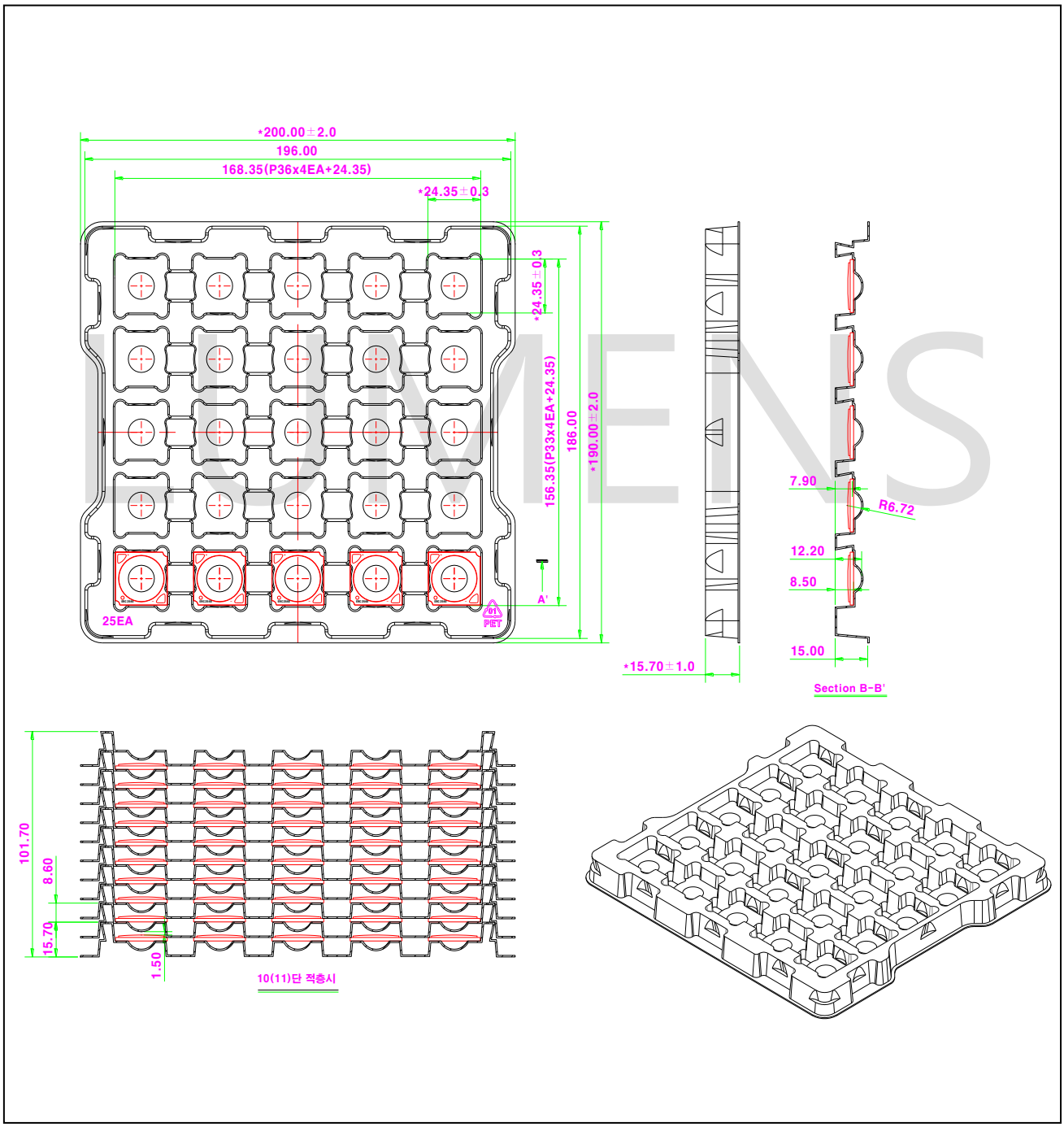


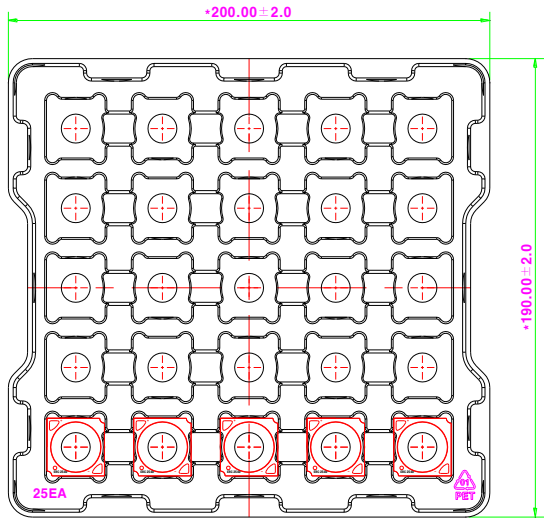
9. Circuit Design



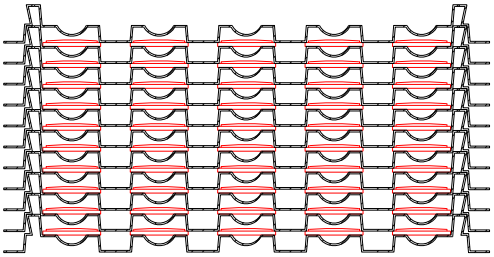
10. Packing

- 25pcs modules per tray
- 10 trays in one Carton
- Tray Size : L x W=200 x 190(mm), 5x5=25pcs
- Carton Size : 215mm x 205mm x 150mm
- Undefined tolerance is ± 2 mm

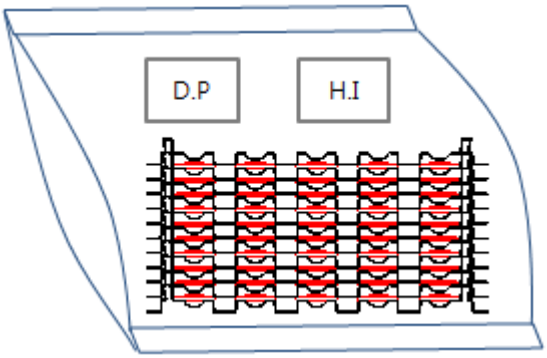




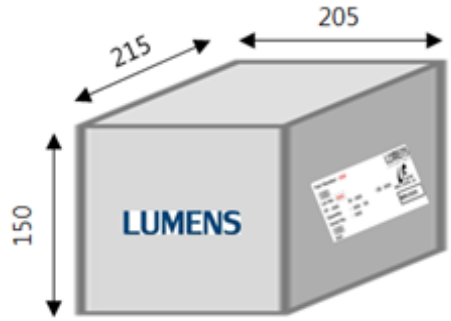
- 1Tray unit = 25pcs (5x5 Array)
- Tray Size = 200mm(L) * 190mm(W)



- 1Set = 11Tray (10Tray+1Cover)
- Total size = 200mm(L)*190mm(W)*103mm(H)
- Quantity = 25*10=250pcs

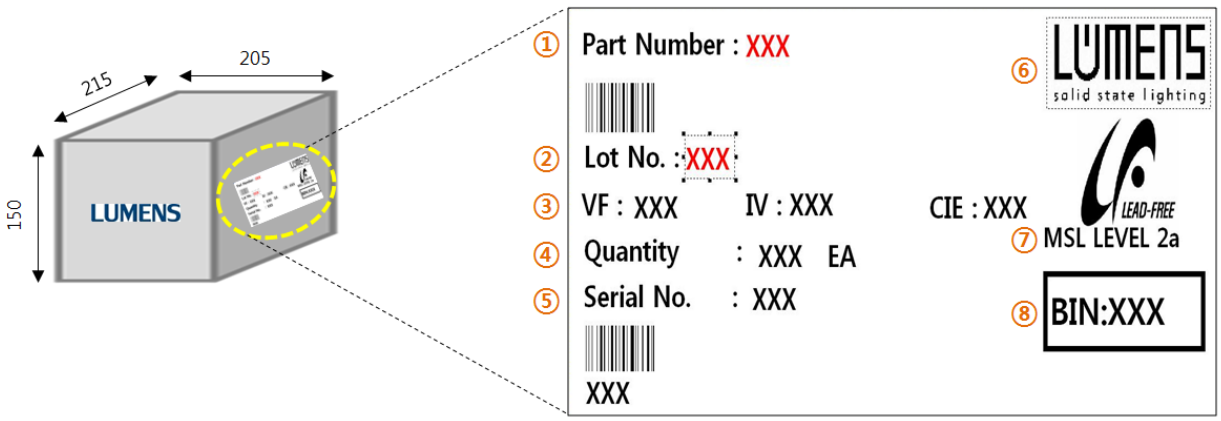


- Poly-bag size = 275*435*160mm
- 1Set + Dry-Pack + Humidity Indicator
- Quantity = 250pcs



- Box size = 215mm(L)*205mm(W)*150mm(H)
- Attached label : Production Info.
- Quantity = 250pcs

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	

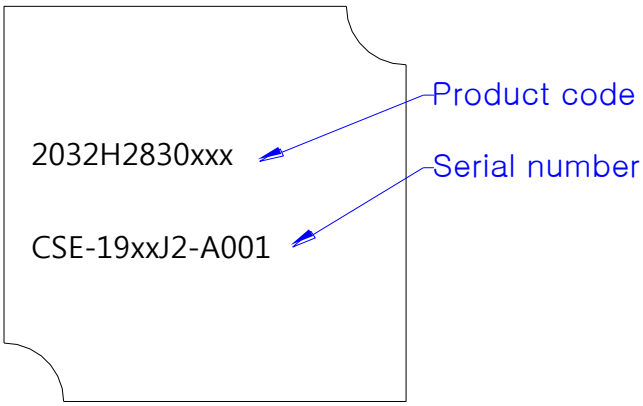
- **Product Code Nomenclature detail**

Size + Watt (2)	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℃ (30min) ~ 100℃ (30min)	100 Cycle
Room temperature Operating Life Test	Internal Reference	Ta = 25℃, If = Maximum current	1,000 Hours
High Temperature Operating Life Test	Internal Reference	Ta = 85℃, If = Sorting current	1,000 Hours
High Temperature High Humidity Life Test	Internal Reference	Ta = 85℃, 85% RH	1,000 Hours
Low Temperature Storage Test	Internal Reference	Ta = -40℃	1,000 Hours
High Temperature Storage Test	Internal Reference	Ta = 100℃	1,000 Hours

(1) Criteria for judging the damage

Item	Symbol	Condition	Criteria for Judgment	
			MIN	MAX
Forward Voltage	Vf	If = 900mA	-	USL (1) × 1.1
Luminous Intensity	Φv	If = 900mA	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℃ 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℃ 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℃

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.

NOTE :

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