Technical Datasheet LS 83

High Power Solid-State LED Light Source

LUSTRON V5

Introduction

For a brighter solid-state light source, Lustrous Technology is proud to release the new **LUSTRON V5**. Ideal for your high concentration in spotlight, **LUSTRON V5** has a smaller active area which is much easier for secondary optics design and installation. The **LUSTRON V5** is energy efficient and specifically designed for MR16, PAR20, or other similar focused LED lighting applications. **LUSTRON V5** is also commonly used for other types of Commercial and Architectural applications.

Note: To optimize the performance and lifetime, please maintain a constant current of less than the indicated Tb at 50°C.

LUSTRON V5 Part Number Matrix

Table.1

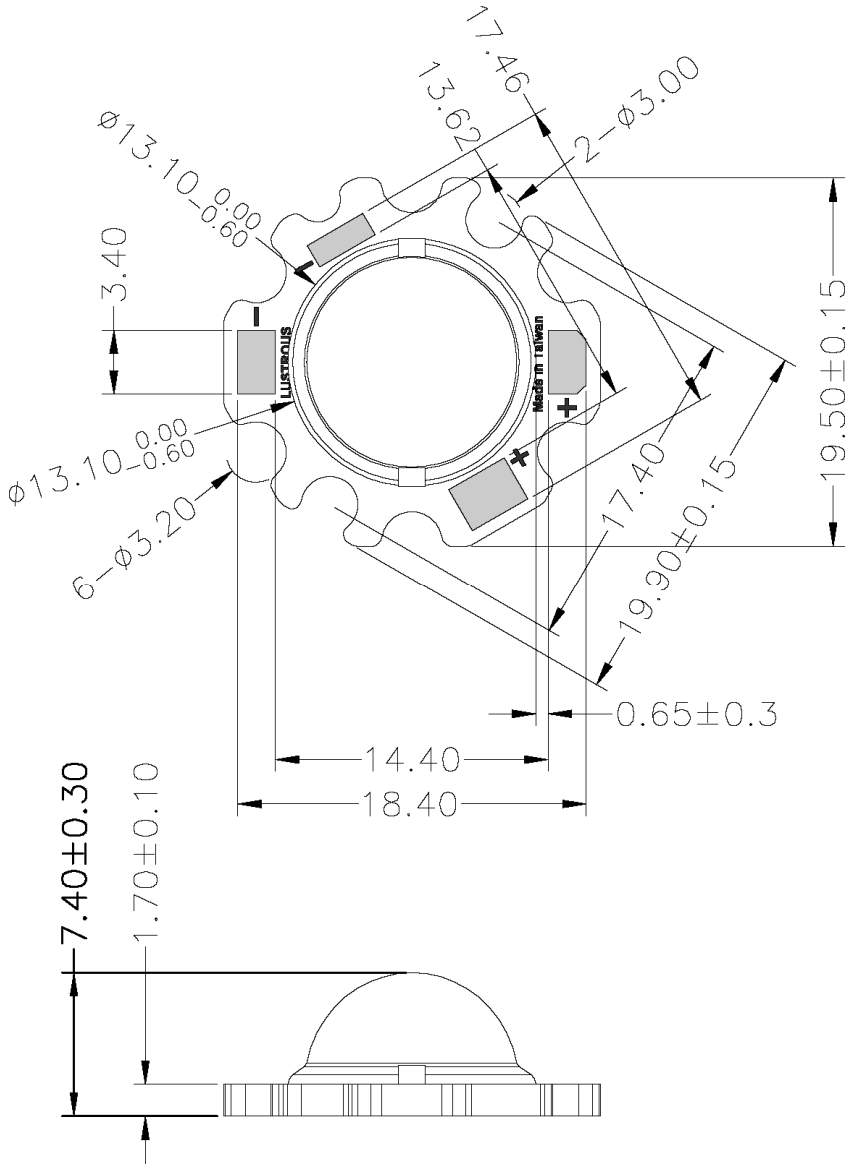
Color	P/N
Warm White （3000K）	L505CLQCBA L505CLBNBA
Neutral White （4000K）	L505MWQCBA L505MWBNBA
Cool White （5000K）	L505NWQCDA L505NWBNDA

LUSTRON V5 Material

Chip Material	GaN Base

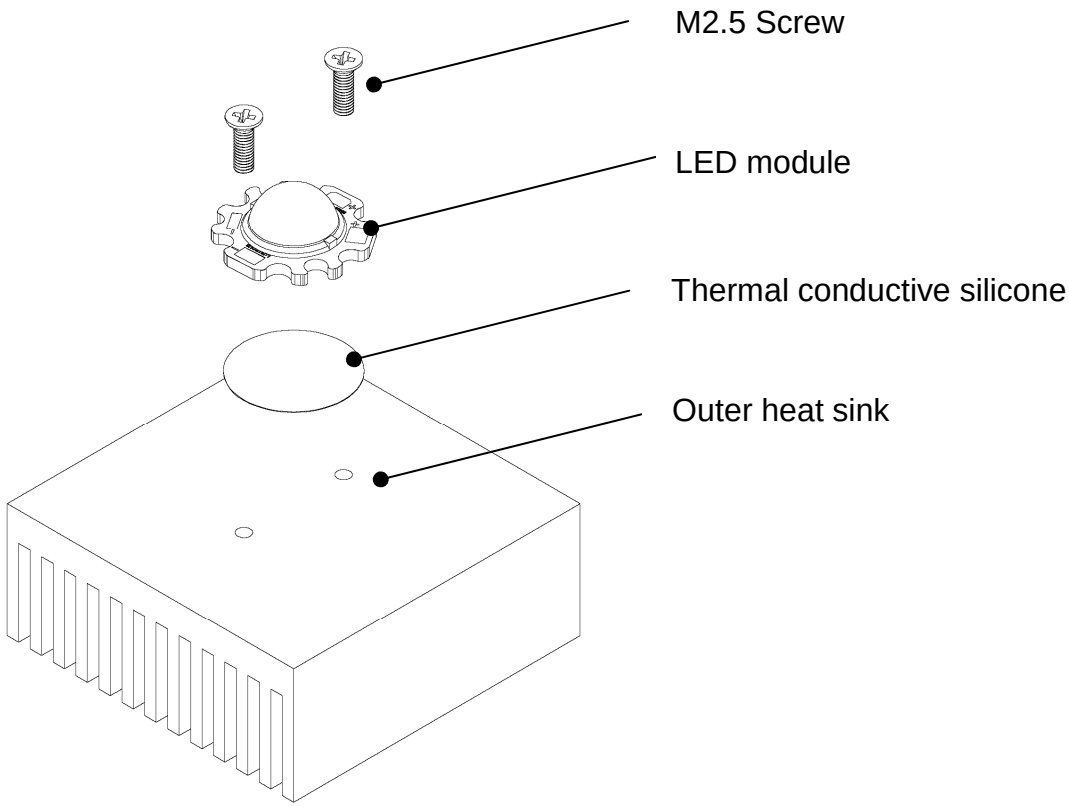
Mechanical Dimensions

LUSTRON V5



Note: These drawings are not for scale. All dimensions are in millimeters.

Recommended installation screw pitch



Warning :

Do not touch the lighting surface area during installation.

Flux Characteristics At Junction Temperature Tj = 25°C

Table.2

Color	Minimum Luminous Flux（lm）	Typical Luminous Flux（lm）
Warm White （3000K）	510 lm	620 lm
Neutral White （4000K）	580 lm	700 lm
Cool White （5000K）	720 lm	840 lm

Note1：Luminous flux is measured in total power with tolerance rate of ±10%. Minimum luminous flux performance is guaranteed from the above data.

Note2：Luminous binning information can be found in Table.7.

Optical Characteristics

Table.3

Color	λ_d （nm）or CCT（K）			Viewing Angle （degrees）	CRI
	Min	Typ	Max		
Warm White	2500K	3000K	3250K	~120	85
Neutral White	3250K	4000K	4750K		80
Cool White	4750K	5000K	10000K		65

Note1：CRI value is measured with tolerance rate of ±10%

Electrical Characteristics

Table.4

L505XXQCXX

Color	Forward Voltage （V） for 200mA forward current		
	Min	Typ	Max
Warm White	30.8	34.1	38.5
Neutral White			
Cool White			

L505XXBNXX

Color	Forward Voltage （V） for 1050mA forward current		
	Min	Typ	Max
Warm White	5.6	6.4	7
Neutral White			
Cool White			

Note1：Lustrous Technology allows a tolerance of each LED for voltage measurements.

Note2：Measurements are taken under each nominal forward current.

Absolute Maximum Ratings

Table.5

L505XXQCXX

Parameters	For 200mA forward current
	L505XXQCXX
Advised DC Forward Current （mA）	200
Max. DC Forward Current （mA）	440
LED Junction Temperature （°C）	< 115
ESD Sensitivity	+ 4kV （HBM）
Thermal Resistance （°C /W）	~3.5
Operating Temperature （°C）	-20 ~ +80
Storage Temperature （°C）	-20 ~ +50

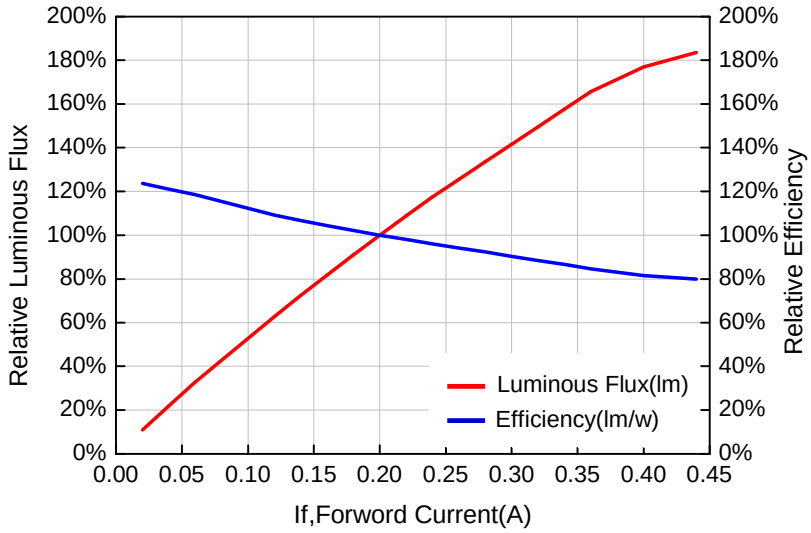
L505XXBNXX

Parameters	For 1050mA forward current
	L505XXBNXX
Advised DC Forward Current （mA）	1050
Max. DC Forward Current （mA）	2310
LED Junction Temperature （°C）	< 115
ESD Sensitivity	+ 4kV （HBM）
Thermal Resistance （°C /W）	~3.5
Operating Temperature （°C）	-20 ~ +80
Storage Temperature （°C）	-20 ~ +50

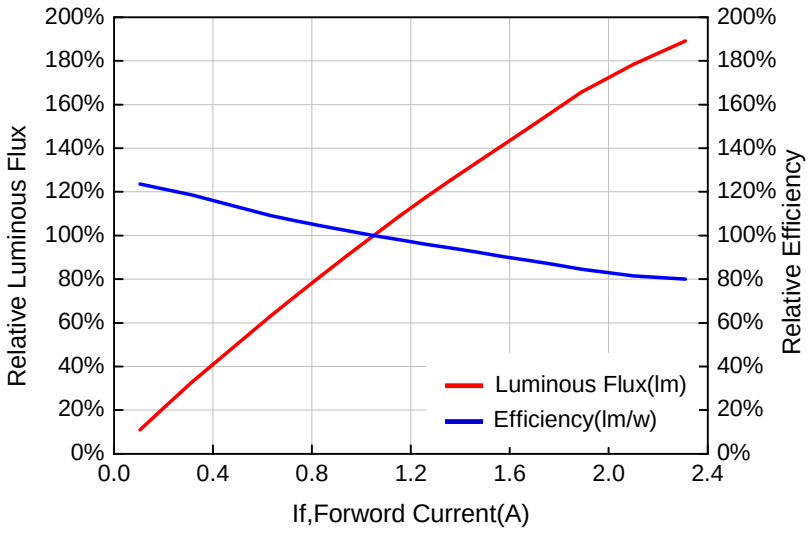
Note1：Proper current operating must be observed to maintain junction temperature below the maximum.

Relative Intensity vs. Current （Tj = 25˚C）

L505XXQCXX

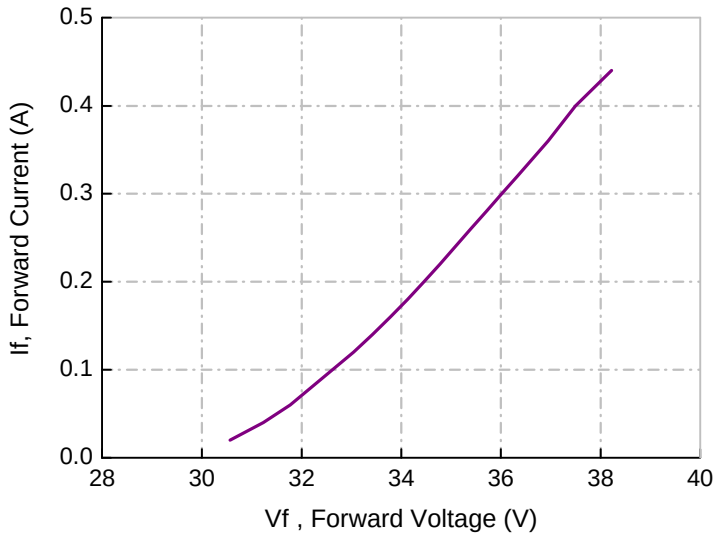


L505XXBNXX

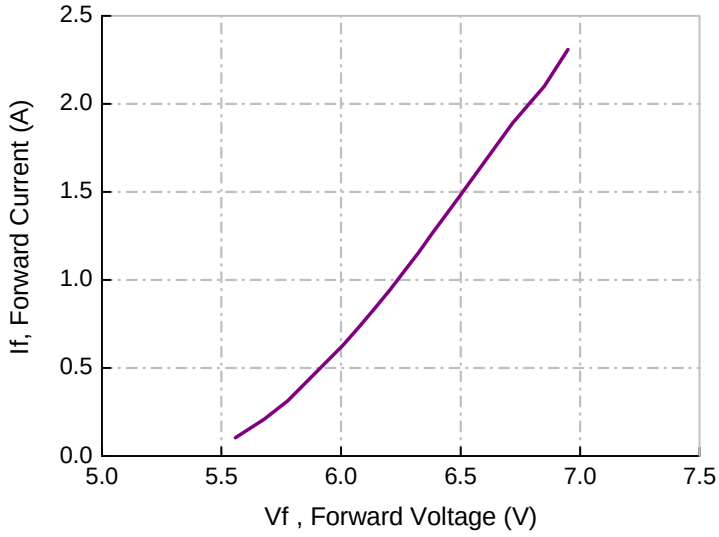


Forward Voltage vs. Current （Tj = 25˚C）

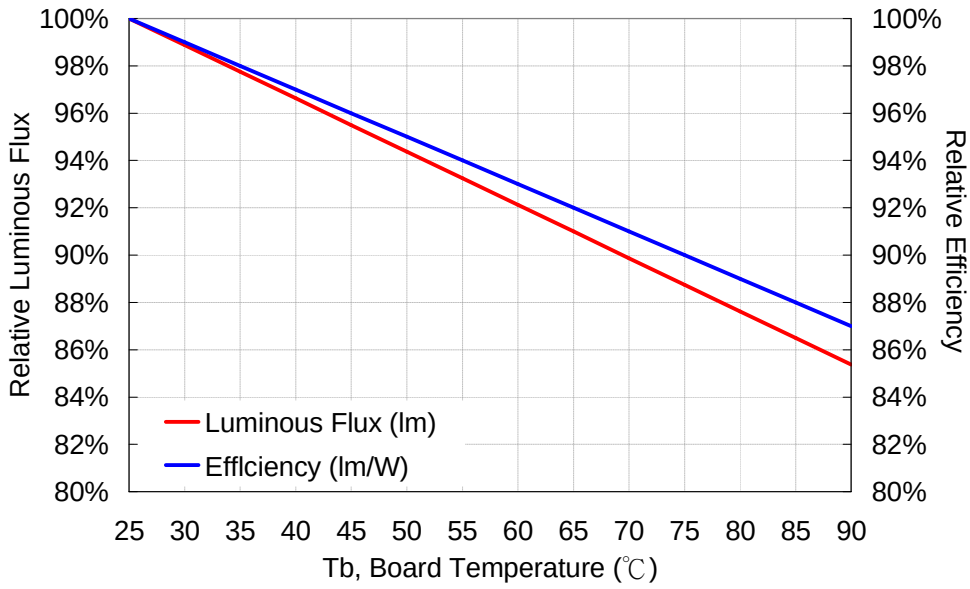
L505XXQCXX



L505XXBNXX

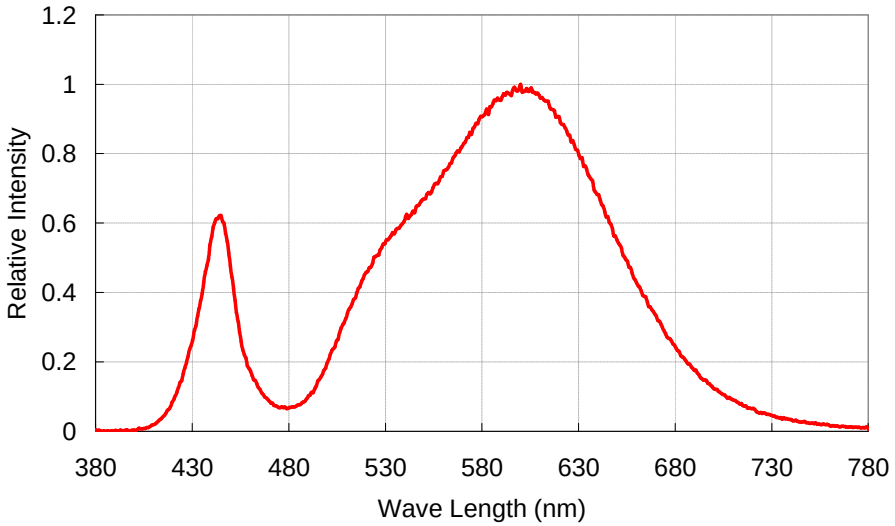


Photometric Output vs. Board Temperature

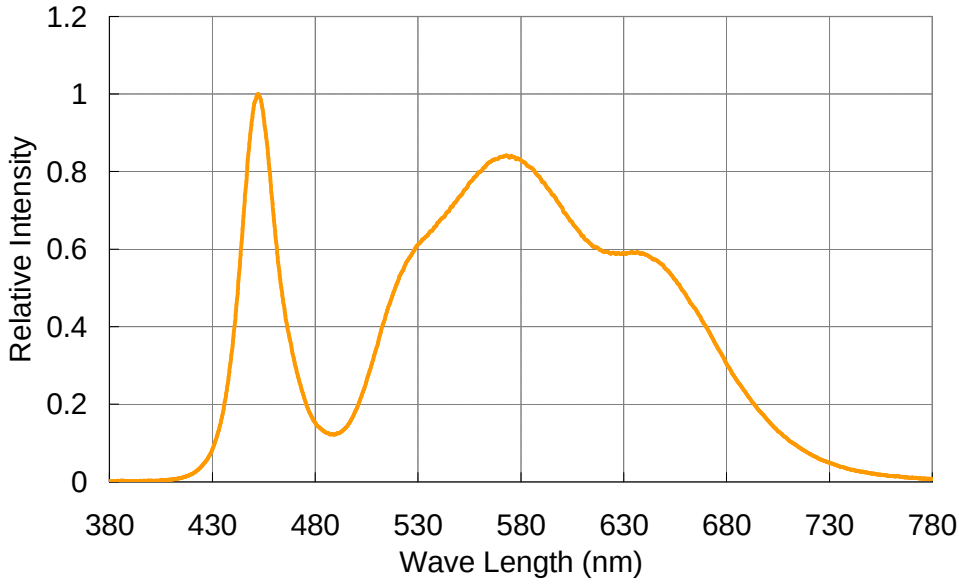


Relative Spectral Power

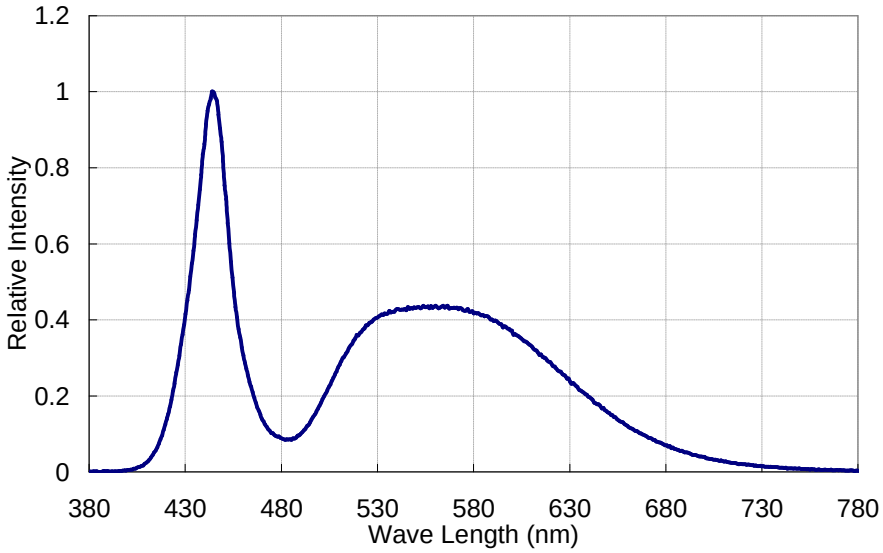
Warm White （3000K）



Neutral White （4000K）

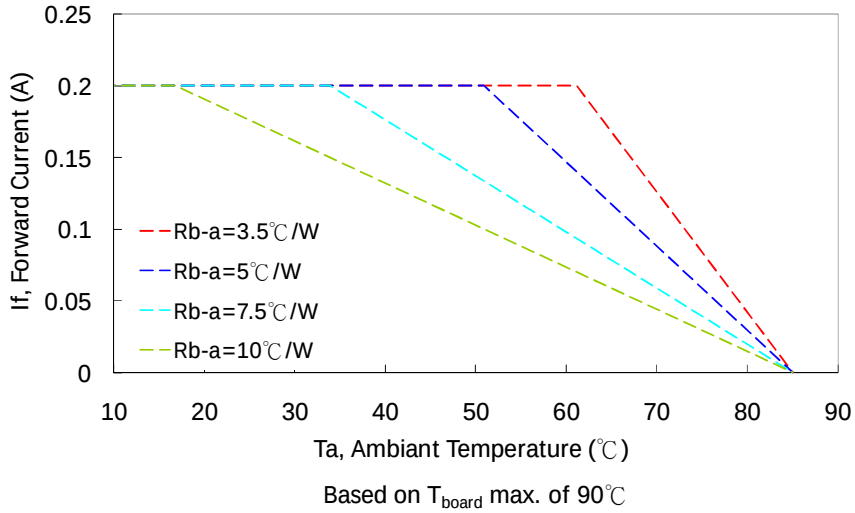


Cool White （5000K）



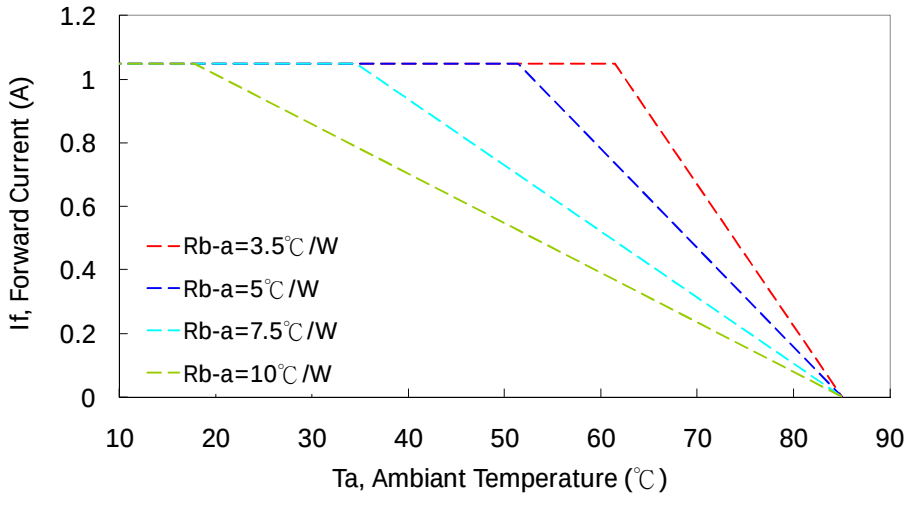
Operating Curve （Max. permissible forward current）

L505XXQCXX



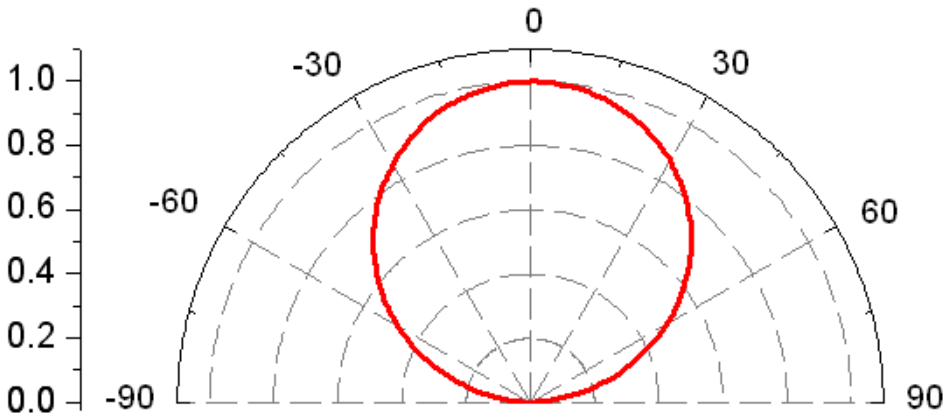
Based on T_{board} max. of 90℃

L505XXBNXX

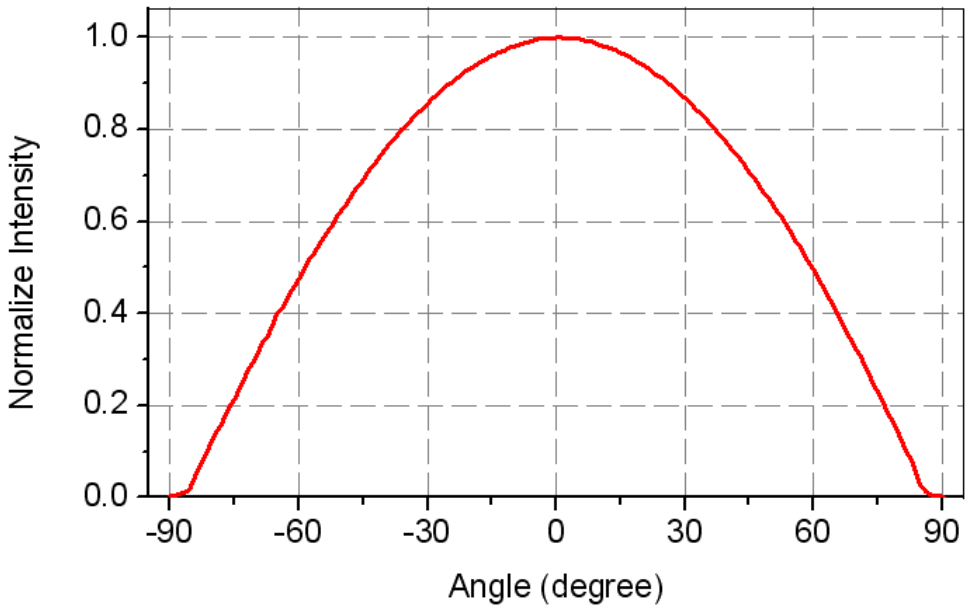


Based on T_{board} max. of 90℃

Typical Angular Beam Profile, Tj=25℃ *



View Angle: 120 degree



* Note1：Photometrics data is ready on request.

Product Binning

In the manufacturing process, there is a natural variation of specifications between LEDs. In order to minimize variation in the end product of application, Lustrous Technology uses the current ANSI code binning procedures to measure its products for performance in luminous flux and chromaticity.

The tables below list the standard photometric bins for Lustrous LED products (tested and binned at the indicated test current). **Product availability in a particular bin varies by product and production run. Please contact your Lustrous sales representative for further information regarding product availability.**

Binning Condition

Table.6

L505XXQCXX

Color	Forward Current （mA）
Warm White	200
Neutral White	
Cool White	

L505XXBNXX

Color	Forward Current （mA）
Warm White	1050
Neutral White	
Cool White	

Luminous Flux Binning Information *

Table.7

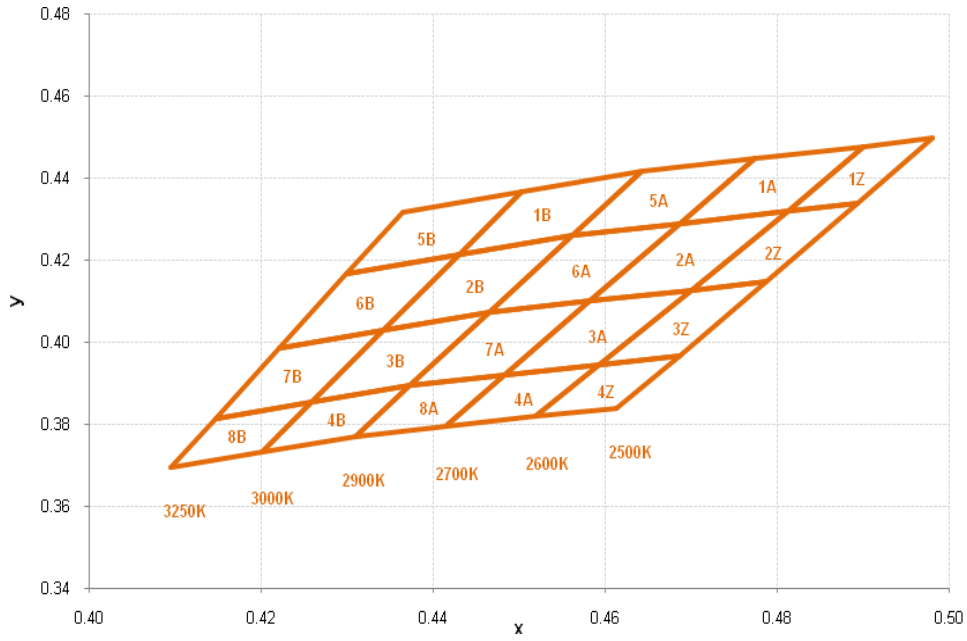
BIN Code	Lv （lm）	
	min.	max.
A	5	20
B	20	40
C	40	60
D	60	80
E	80	110
F	110	140
G	140	170
H	170	200
I	200	240
J	240	280
K	280	320

BIN Code	Lv （lm）	
	min.	max.
L	320	360
M	360	400
N	400	450
O	450	500
P	500	580
Q	580	660
R	660	740
S	740	860
T	860	980
U	980	1100
V	1100	1300

*Note：Luminous flux is measured in total power with tolerance rate of ±10%.

Chromaticity Binning Information **

Warm White



**Note：Chromaticity is measured in Chromaticity Coordinate （CIE 1931-xy） with tolerance rate of ±0.005.

Table.8

Warm-White Bin Coordinates												
CCT (K)			BIN CODE		Chromaticity Coordinate (CIE 1931-xy)							
Min	Typ.	Max			x1	y1	x2	y2	x3	y3	x4	y4
2500	2550	2600	Z	1Z	0.4900	0.4477	0.4980	0.4496	0.4893	0.4338	0.4813	0.4319
				2Z	0.4813	0.4319	0.4893	0.4338	0.4787	0.4146	0.4700	0.4126
				3Z	0.4700	0.4126	0.4787	0.4146	0.4687	0.3965	0.4593	0.3944
				4Z	0.4593	0.3944	0.4687	0.3965	0.4613	0.3839	0.4519	0.3818
2600	2700	2900	A	1A	0.4687	0.4289	0.4774	0.4447	0.4900	0.4477	0.4813	0.4319
				2A	0.4582	0.4099	0.4687	0.4289	0.4813	0.4319	0.4700	0.4126
				3A	0.4483	0.3919	0.4582	0.4099	0.4700	0.4126	0.4593	0.3944
				4A	0.4414	0.3794	0.4483	0.3919	0.4593	0.3944	0.4519	0.3818
				5A	0.4562	0.4260	0.4642	0.4416	0.4774	0.4447	0.4687	0.4289
				6A	0.4465	0.4071	0.4562	0.4260	0.4687	0.4289	0.4582	0.4099
				7A	0.4373	0.3893	0.4465	0.4071	0.4582	0.4099	0.4483	0.3919
				8A	0.4309	0.3769	0.4373	0.3893	0.4483	0.3919	0.4414	0.3794
2900	3000	3250	B	1B	0.4430	0.4212	0.4503	0.4366	0.4642	0.4416	0.4562	0.4260
				2B	0.4342	0.4028	0.4430	0.4212	0.4562	0.4260	0.4465	0.4071
				3B	0.4259	0.3853	0.4342	0.4028	0.4465	0.4071	0.4373	0.3893
				4B	0.4201	0.3731	0.4259	0.3853	0.4373	0.3893	0.4309	0.3769
				5B	0.4299	0.4165	0.4364	0.4316	0.4503	0.4366	0.4430	0.4212
				6B	0.4221	0.3984	0.4299	0.4165	0.4430	0.4212	0.4342	0.4028
				7B	0.4147	0.3814	0.4221	0.3984	0.4342	0.4028	0.4259	0.3853
				8B	0.4095	0.3694	0.4147	0.3814	0.4259	0.3853	0.4201	0.3731

Neutral White

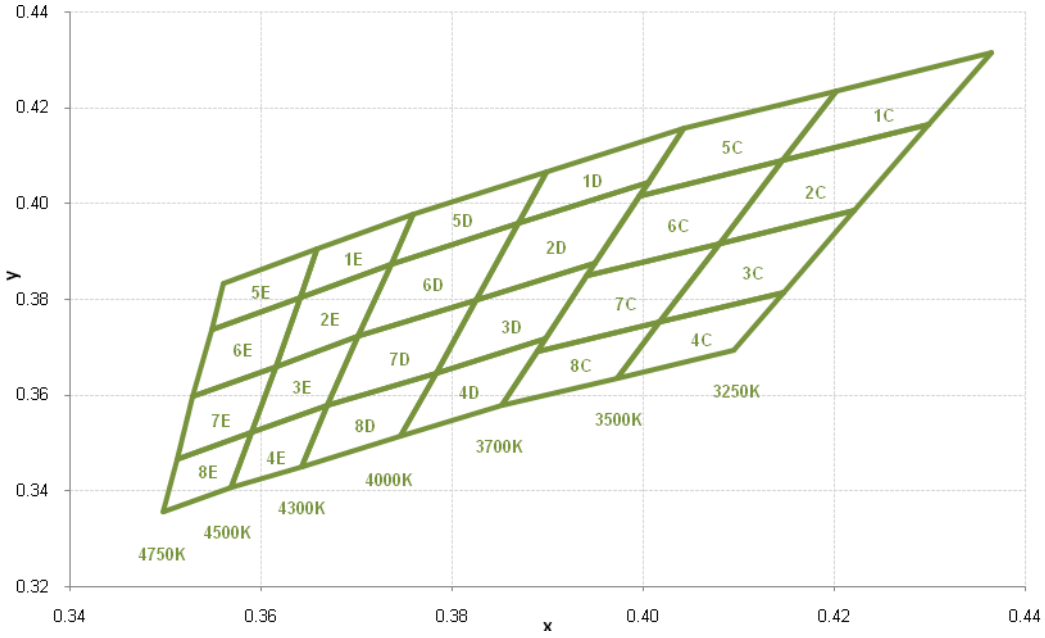


Table.9

Natural White Bin Table												
CCT (K)			BIN CODE		Chromaticity Coordinate (CIE 1931-xy)							
Min	Typ.	Max			x1	y1	x2	y2	x3	y3	x4	y4
3250	3500	3700	C	1C	0.4146	0.4089	0.4202	0.4235	0.4364	0.4316	0.4299	0.4165
				2C	0.4080	0.3916	0.4146	0.4089	0.4299	0.4165	0.4221	0.3984
				3C	0.4017	0.3751	0.4080	0.3916	0.4221	0.3984	0.4147	0.3814
				4C	0.3973	0.3635	0.4017	0.3751	0.4147	0.3814	0.4095	0.3694
				5C	0.3996	0.4015	0.4043	0.4157	0.4202	0.4235	0.4146	0.4089
				6C	0.3941	0.3848	0.3996	0.4015	0.4146	0.4089	0.4080	0.3916
				7C	0.3889	0.3690	0.3941	0.3848	0.4080	0.3916	0.4017	0.3751

				8C	0.3852	0.3578	0.3889	0.3690	0.4017	0.3751	0.3973	0.3635
3700	4000	4300	D	1D	0.3869	0.3958	0.3899	0.4066	0.4043	0.4157	0.4006	0.4044
				2D	0.3825	0.3798	0.3869	0.3958	0.4006	0.4044	0.3950	0.3875
				3D	0.3783	0.3646	0.3825	0.3798	0.3950	0.3875	0.3898	0.3716
				4D	0.3746	0.3513	0.3783	0.3646	0.3898	0.3716	0.3852	0.3578
				5D	0.3736	0.3874	0.3759	0.3978	0.3899	0.4066	0.3869	0.3958
				6D	0.3702	0.3722	0.3736	0.3874	0.3869	0.3958	0.3825	0.3798
				7D	0.3670	0.3578	0.3702	0.3722	0.3825	0.3798	0.3783	0.3646
				8D	0.3642	0.3450	0.3670	0.3578	0.3783	0.3646	0.3746	0.3513
4300	4500	4750	E	1E	0.3641	0.3804	0.3659	0.3904	0.3759	0.3978	0.3736	0.3874
				2E	0.3615	0.3659	0.3641	0.3804	0.3736	0.3874	0.3702	0.3722
				3E	0.3590	0.3521	0.3615	0.3659	0.3702	0.3722	0.3670	0.3578
				4E	0.3569	0.3407	0.3590	0.3521	0.3670	0.3578	0.3642	0.3450
				5E	0.3548	0.3736	0.3560	0.3832	0.3659	0.3904	0.3641	0.3804
				6E	0.3529	0.3597	0.3548	0.3736	0.3641	0.3804	0.3615	0.3659
				7E	0.3512	0.3465	0.3529	0.3597	0.3615	0.3659	0.3590	0.3521
				8E	0.3498	0.3355	0.3512	0.3465	0.3590	0.3521	0.3569	0.3407

Cool White

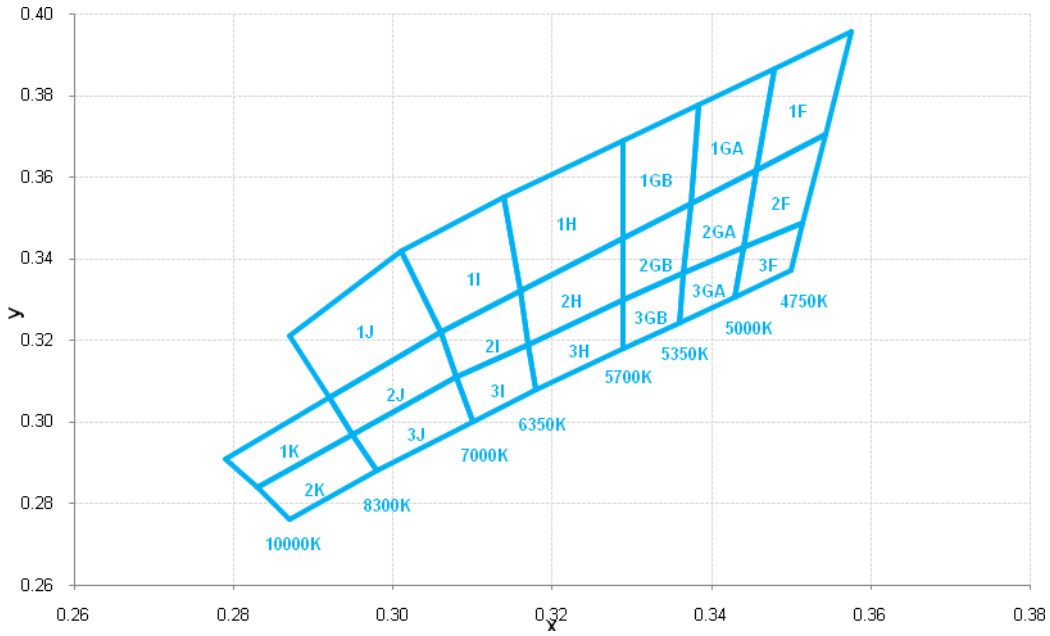

0.40
0.38
0.36
0.34
0.32
0.30
0.28
0.26
y
0.26
0.28
0.30
0.32
0.34
0.36
0.38
x
1F
1GA
1GB
2F
1H
2GA
2GB
3F
1I
2H
3GA
4750K
3GB
5000K
1J
2I
3H
5350K
5700K
2J
3I
6350K
3J
7000K
1K
2K
8300K
10000K

Table.10

Cool White Bin Table												
CCT （K）			BIN CODE		Chromaticity Coordinate （CIE 1931-xy）							
Min	Typ.	Max			x1	y1	x2	y2	x3	y3	x4	y4
4750	4850	5000	F	1F	0.3479	0.3867	0.3457	0.3617	0.3544	0.3704	0.3576	0.3957
				2F	0.3457	0.3617	0.3440	0.3429	0.3515	0.3487	0.3544	0.3704
				3F	0.3440	0.3429	0.3429	0.3307	0.3500	0.3371	0.3515	0.3487
5000	5175	5350	G	1GA	0.3385	0.3779	0.3374	0.3534	0.3457	0.3617	0.3479	0.3867
				2GA	0.3374	0.3534	0.3365	0.3365	0.3440	0.3429	0.3457	0.3617
				3GA	0.3365	0.3365	0.3360	0.3244	0.3429	0.3307	0.3440	0.3429
5350	5525	5700		1GB	0.3290	0.3690	0.3290	0.3450	0.3374	0.3534	0.3385	0.3779
				2GB	0.3290	0.3450	0.3290	0.3300	0.3365	0.3365	0.3374	0.3534
				3GB	0.3290	0.3300	0.3290	0.3180	0.3360	0.3244	0.3365	0.3365
5700	6000	6350	H	1H	0.3290	0.3690	0.3290	0.3450	0.3160	0.3320	0.3140	0.3550
				2H	0.3290	0.3450	0.3290	0.3300	0.3170	0.3190	0.3160	0.3320
				3H	0.3170	0.3190	0.3290	0.3300	0.3290	0.3180	0.3180	0.3080
6350	6500	7000	I	1I	0.3140	0.3550	0.3160	0.3320	0.3060	0.3220	0.3010	0.3420
				2I	0.3160	0.3320	0.3170	0.3190	0.3080	0.3110	0.3060	0.3220
				3I	0.3080	0.3110	0.3170	0.3190	0.3180	0.3080	0.3100	0.3000
7000	7650	8300	J	1J	0.3010	0.3420	0.3060	0.3220	0.2920	0.3060	0.2870	0.3210
				2J	0.3060	0.3220	0.3080	0.3110	0.2950	0.2970	0.2920	0.3060
				3J	0.2950	0.2970	0.3080	0.3110	0.3100	0.3000	0.2980	0.2880
8300	9000	10000	K	1K	0.2920	0.3060	0.2950	0.2970	0.2830	0.2840	0.2790	0.2910
				2K	0.2830	0.2840	0.2950	0.2970	0.2980	0.2880	0.2870	0.2760

Print Code Guideline

L5	05	NW	Q	C	D	A
1	2	3	4	5	6	7

XXXXXXXXXXXXX
8

V 0	–	S	–	2GA	XX	XX	XX
9		10		11	12	13	14

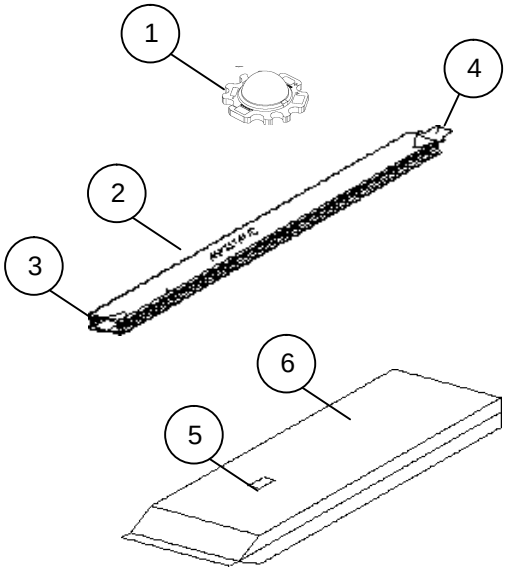
Table.11

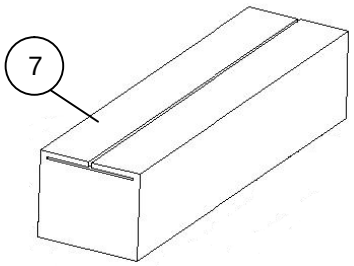
1 Type	2 Power	3 Color	4 Vf	5 Current	6 CRI
L5	**05**：5W	**NW**：Cool White **MW**：Neutral White **CL**：Warm White	**B**：7V **Q**：38.5 V	**N**：1050mA **C**：200 mA	**B**：80~90 **D**：60~70

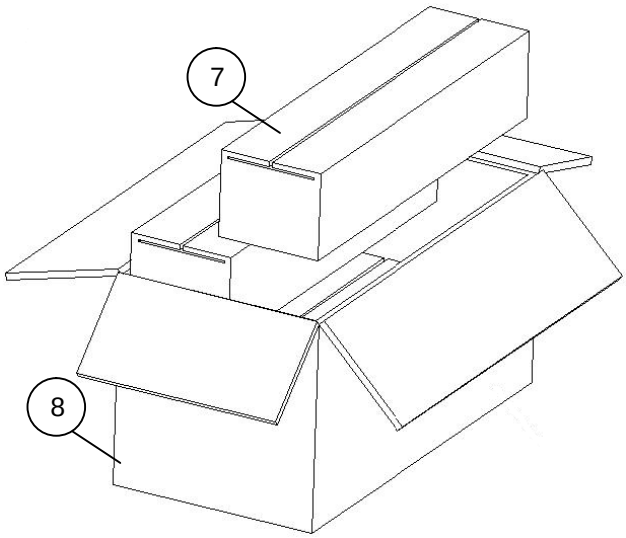
7 Customer Code	8 Internal Code	9 Bin Vf	10 Luminous Flux	11 Chromaticity
		V0：Without Binned	See Bin Code Definition	See Bin Code Definition

12 Year	13 Month	14 Week
12： 2012 **13**： 2013 **14**： 2014	**01**：January **05**：May **10**：October	**01**：01st Week **20**：20th Week **45**：45th Week

Standard Packaging







ITEM	DESCRIPTION
①	LED
②	PLASTIC TUBE
③	END-PLUG WHITE
④	END-PLUG BLACK
⑤	ADHESIVE MAIN LABEL
⑥	MOISTURE BARRIER BAG
⑦	SMALL BOX
⑧	STANDARD BOX

STACKING METHOD	
PCS/TUBE	20
TUBE/BAG	25
BAG/SMALL BOX	1
PCS/SMALL BOX	500
SMALL BOX/STANDARD BOX	4
PCS/STANDARD BOX	2000

SIZE AND WEIGHT		
	SIZE(mm^3)	WEIGHT(kg)
SMALL BOX	440×130×130	1.64±0.5
STANDARD BOX	460×280×280	7.25±0.5

Precaution for Use

Installation

1. Do not touch the lighting surface area during installation.
2. If the product might to be used under the following conditions, the customer must evaluate its approproateness them. This product is not designed for use under the following conditions. In places where the product might:
   - get wet due to rain.
   - suffer from damage caused by salt.
   - be exposed to corrosive gas such as Cl, S, H_2S, NH_3, SO_2, NO_x and so on.
   - be exposed to dust, fluid or oil.

Over-current Proof

1. Do not reverse current the LEDs we suggest current limit resistors for extra protection.
2. The maximum overshot current should be limited to 130% of normal drive current.
3. The ripple of driving current should not exceed +/-10% of normal driving current.
4. The typical driving current for L505XXQCXX is 200mA and L505XXBNXX is 1050mA.
5. When driving the products, the clamp voltage for L505XXQCXX must be set at 44V and L505XXBNXX must be set at 8V in driver.

Storage

1. Do not open the Moisture Barrier Bag (MBB) before you are ready to install the LEDs.
2. Storage Condition （before opening the MBB）:
   - Storage Temperature:-20~50°C.
   - Relative Humidity: <60% RH.
   - Please re-seal the MBB when storing longer than 3 weeks.
   - The products should be used within half a year.
3. Storage Condition （after opening the MBB）:
   - Storage Temperature:-20~50°C.
   - Relative Humidity: <60% RH.
   - The products should be used or installed as soon as possible after opening the MBB. Otherwise, the LED product must be baked at 80+/-5°C, 24 hours before installation.

Company Information

Lustrous Technology, founded in 2004, endeavors to bring a new era of solid-state lighting. Our R&D development center and production facilities are based in Taiwan, a famous island for IT technology in the world. Our products are well designed in both performance and reliability. Lustrous is one of the leading high-power LED manufacturer and solution provider in the world.

**Lustrous Technology may make process and material changes affecting performance and characteristics of our products without further notice. These products supplied after changes will continue to meet published specifications, but may not be identical to products supplied as samples or under prior orders.

LUSTROUS®
Green Technology of Lightings

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