

*High Power Solid-State LED Light Source***LUSTRON X2<sup>NES</sup>****Introduction**

For a brighter solid-state light source, **LUSTRON X2<sup>NES</sup>** is an energy-efficient building block generating enough light outputs suitable for most applications in lighting field. **LUSTRON X2<sup>NES</sup>** offers the best solid-state light source and you might realize your modern ideas of lightings.

**LUSTRON X2<sup>NES</sup>** provides the best possible performance with lifetime longer than 30,000 hours\*. With a nominal correlated color temperature of 2500~3250K for Warm White , 3250~4750K for Neutral White, and 4750~10000K for Cool White, similar to conventional indoor light source, **LUSTRON X2<sup>NES</sup>** is particularly designed for architects and commercial lighting designers.

\*Note1: To optimize product performance and lifetime, constant DC at indicated forward current and T<sub>b</sub> less than 50°C should be applied.

**LUSTRON X2<sup>NES</sup>**

## LUSTRON X2<sup>NES</sup> Part Number Matrix

Table.1

| Color         | P/N         |
|---------------|-------------|
| Warm White    | NES110CLC0B |
| Neutral White | NES110MWC0B |
| Cool White    | NES110NWC0B |

## LUSTRON X2<sup>NES</sup> Material

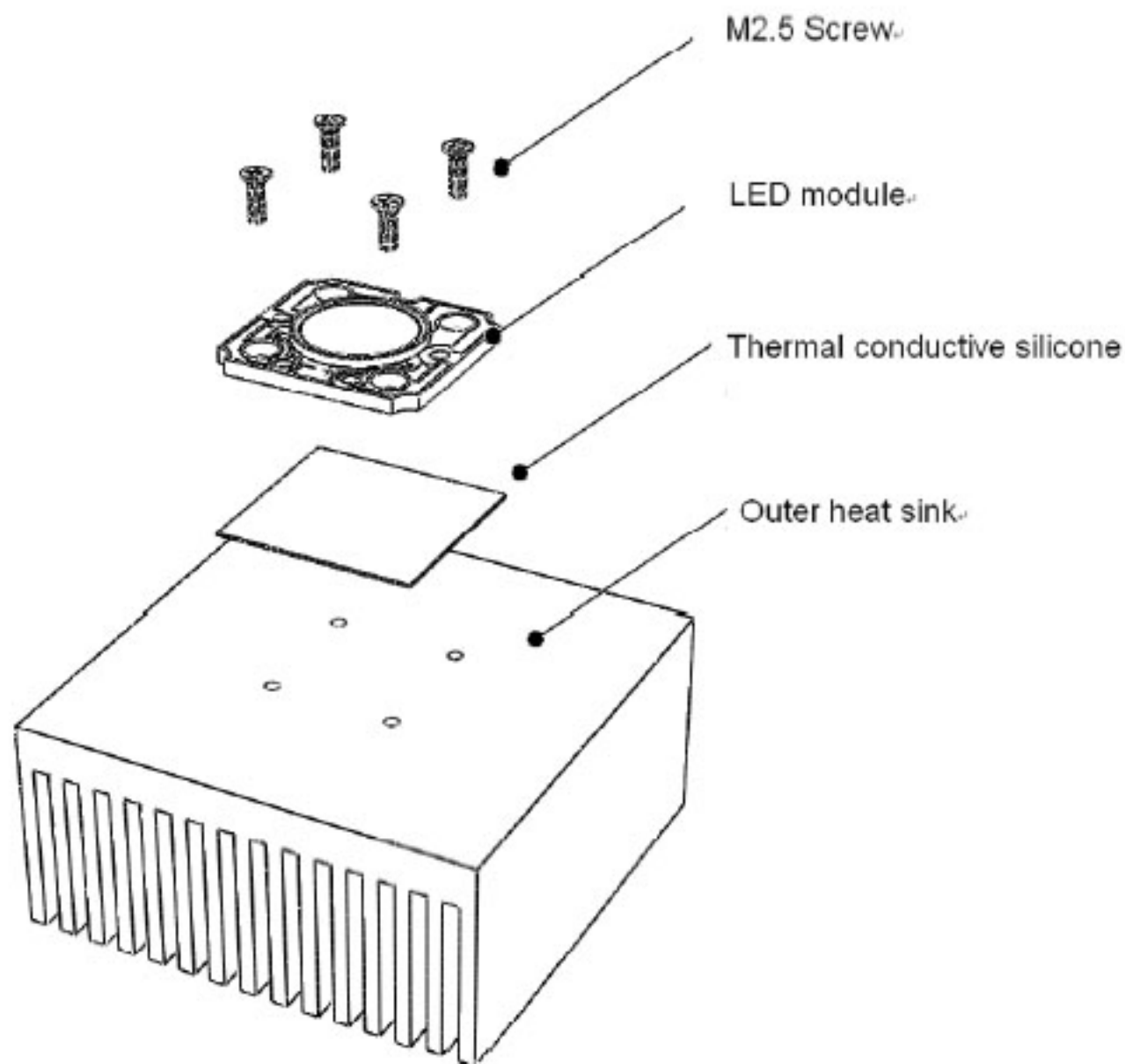
|               |          |
|---------------|----------|
| Chip Material | GaN Base |
|---------------|----------|

## LUSTRON X2<sup>NES</sup> Chips Array

9 Chips Array



## Recommended installation screw pitch



### Warning:

**Do not** touch the lighting area during handling and assembling.

### Flux Characteristics at 1050mA, Junction Temperature T<sub>j</sub> = 25 °C

Table.2

| Color                 | Minimum Luminous Flux (lm) | Typical Luminous Flux (lm) |
|-----------------------|----------------------------|----------------------------|
| Warm White (2700K)    | 450 lm                     | 500 lm                     |
| Neutral White (4000K) | 510 lm                     | 580 lm                     |
| Cool White (5700K)    | 580 lm                     | 660 lm                     |

Note1: Luminous flux is measured in total power with tolerable errors of 10%. Minimum luminous flux performance guaranteed within published operating conditions.

Note2: Higher luminous flux will become available in the near future.

### Optical Characteristics

Table.3

| Color         | λ <sub>d</sub> (nm) or CCT(K) |       |        | Viewing Angle<br>(degrees) | CRI |
|---------------|-------------------------------|-------|--------|----------------------------|-----|
|               | Min                           | Typ   | Max    |                            |     |
| Warm White    | 2500K                         | 2700K | 3250K  | ~120                       | 75  |
| Neutral White | 3250K                         | 4000K | 4750K  |                            |     |
| Cool White    | 4750K                         | 6000K | 10000K |                            |     |

Note1: CRI value is measured with tolerable errors of 10%.



## Electrical Characteristics

Table.4

| Color         | Forward Voltage (V) for 1050 mA forward current |      |      |
|---------------|-------------------------------------------------|------|------|
|               | Min                                             | Typ  | Max  |
| Warm White    |                                                 |      |      |
| Neutral White | 9.4                                             | 10.5 | 11.5 |
| Cool White    |                                                 |      |      |

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

Note2: Measurements are taken under each nominal forward current.

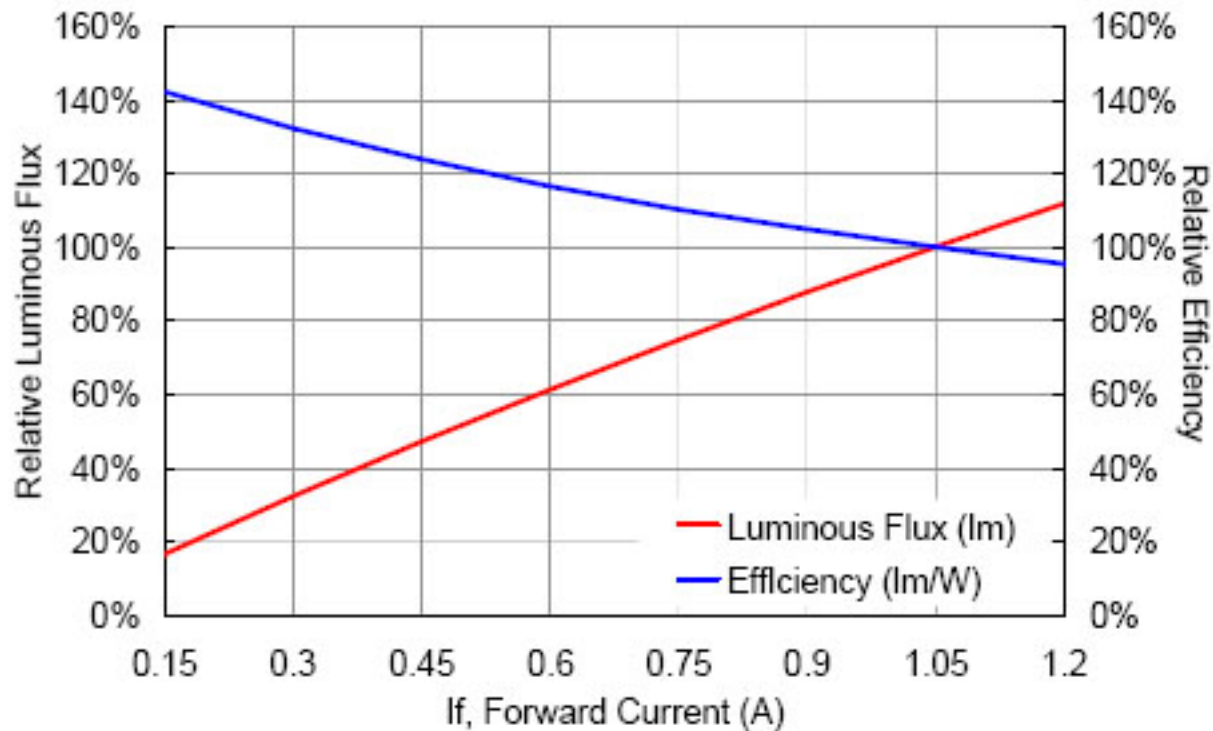
## Absolute Maximum Ratings

Table.5

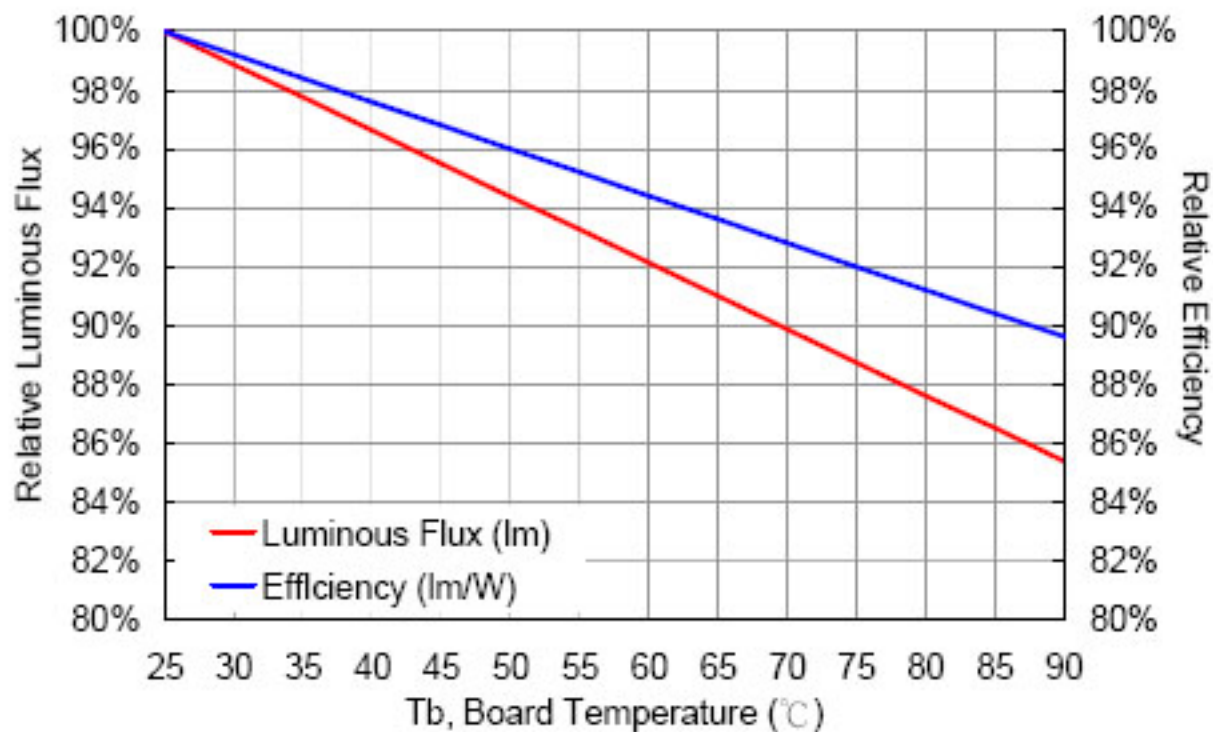
| Parameters                                         | For 1050mA forward current                   |
|----------------------------------------------------|----------------------------------------------|
|                                                    | Warm White/ Neutral White/ Cool White        |
| Advised DC Forward Current (mA)                    | 1050                                         |
| Max. DC Forward Current (mA)                       | 1200                                         |
| LED Junction Temperature ( $^{\circ}\text{C}$ )    | < 125                                        |
| ESD Sensitivity                                    | +/- 4kV (HBM)                                |
| Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ ) | ~2.5                                         |
| Operating Temperature ( $^{\circ}\text{C}$ )       | -25 ~ +85                                    |
| Storage Temperature ( $^{\circ}\text{C}$ )         | -40 ~ +100                                   |
| Soldering Temperature ( $^{\circ}\text{C}$ )       | 260 (duration should be less than 5 seconds) |

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

## Relative Intensity vs. Current ( $T_j = 25^\circ\text{C}$ )

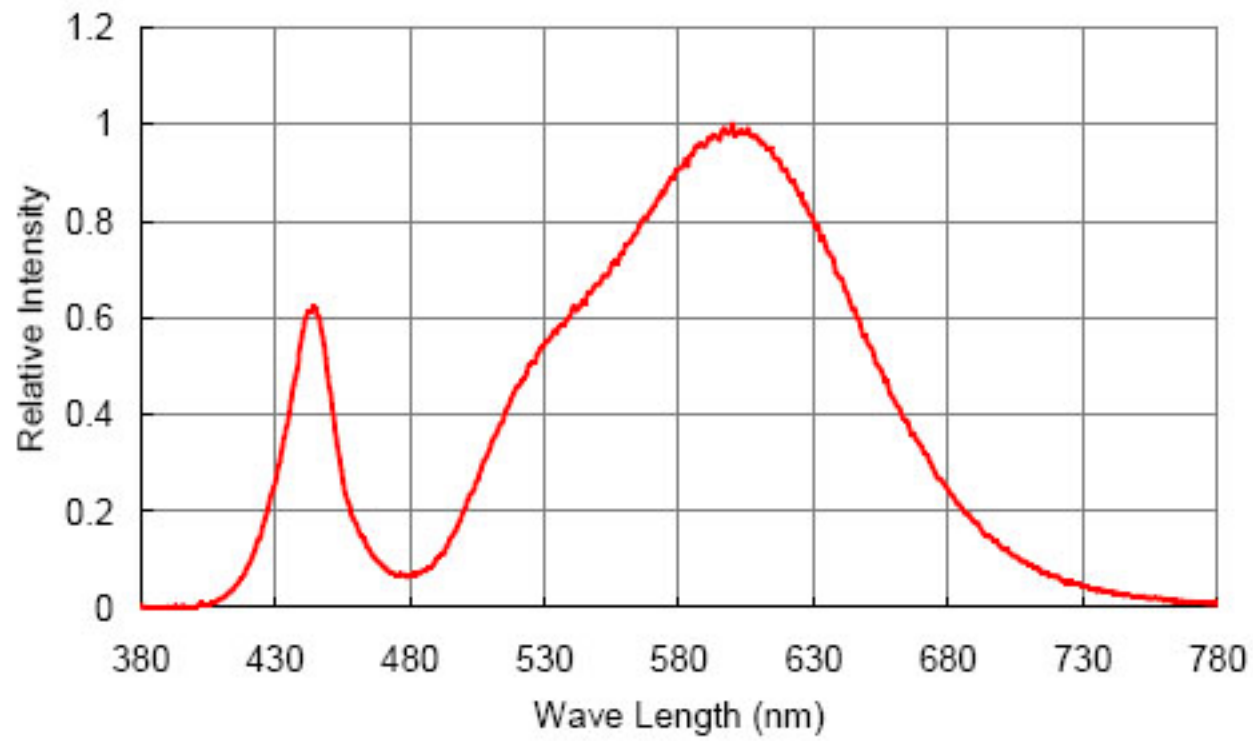


## Photometric Output vs. Board Temperature ( $I_f = 1050\text{mA}$ )

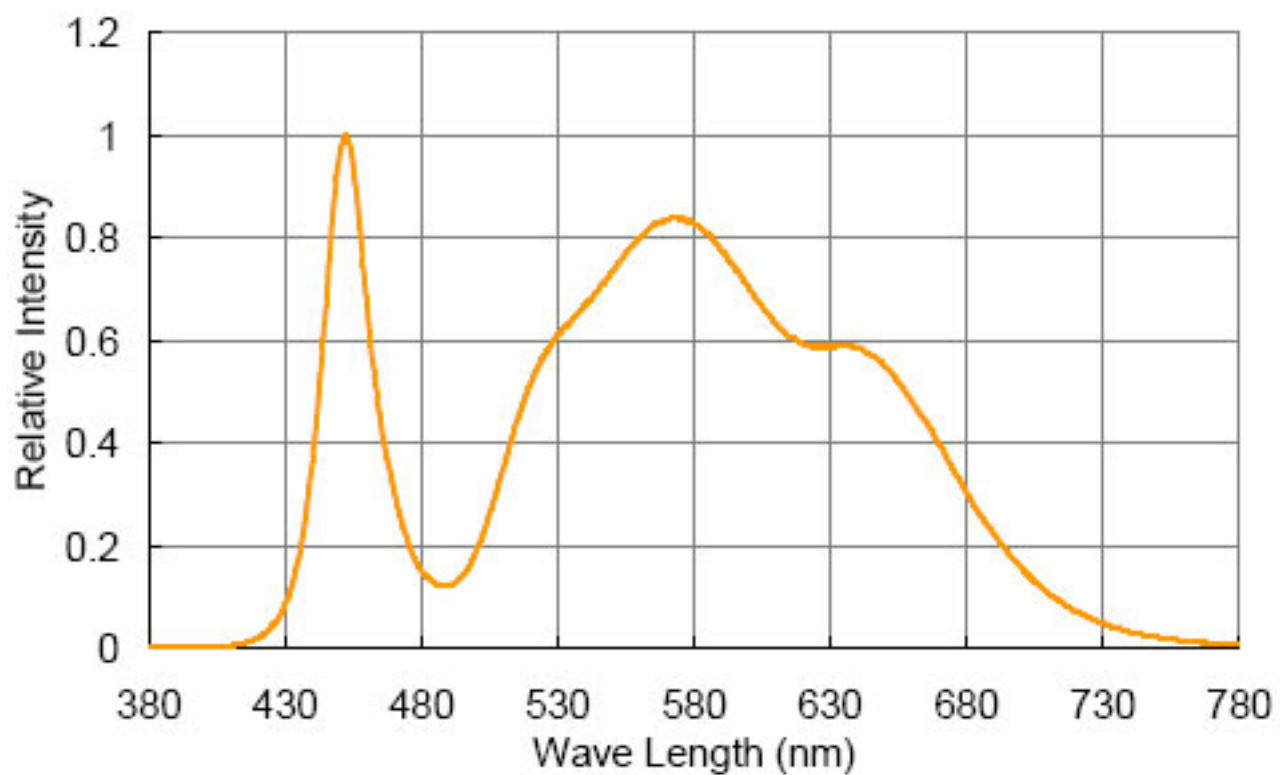


## Relative Spectral Power

### Warm White (2700K)

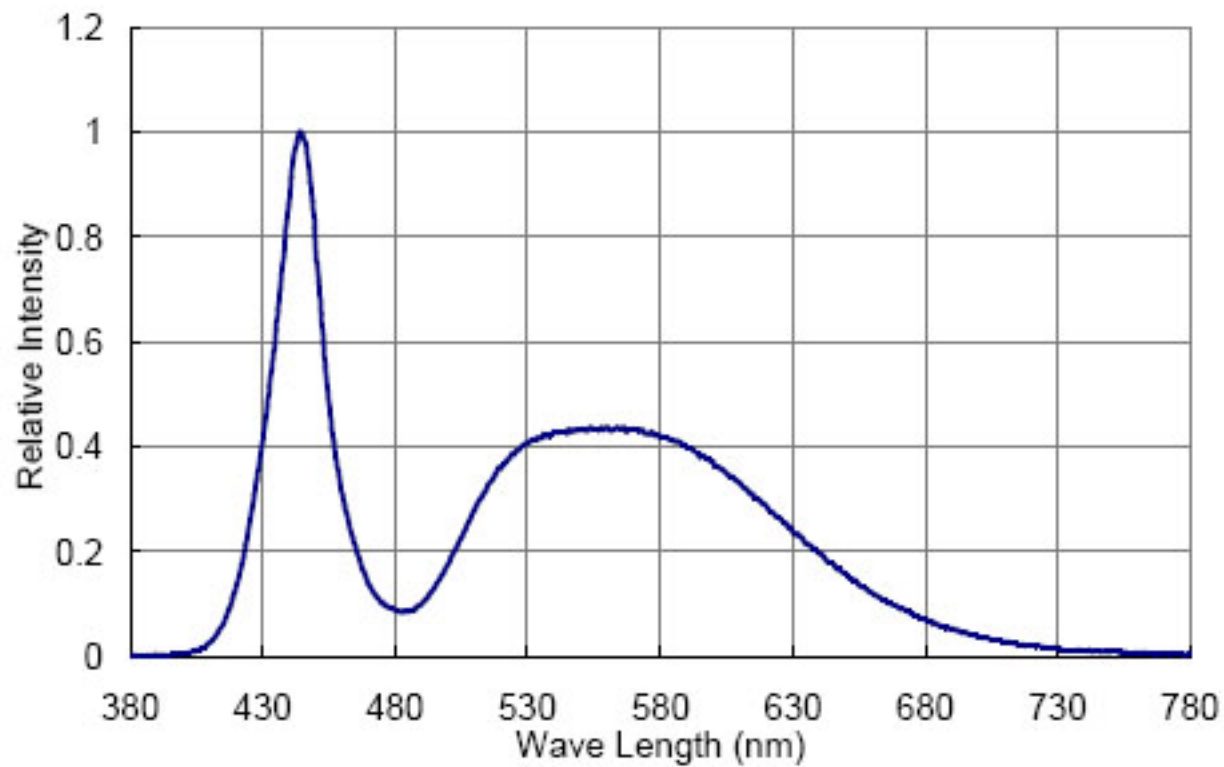


### Neutral White (4000K)

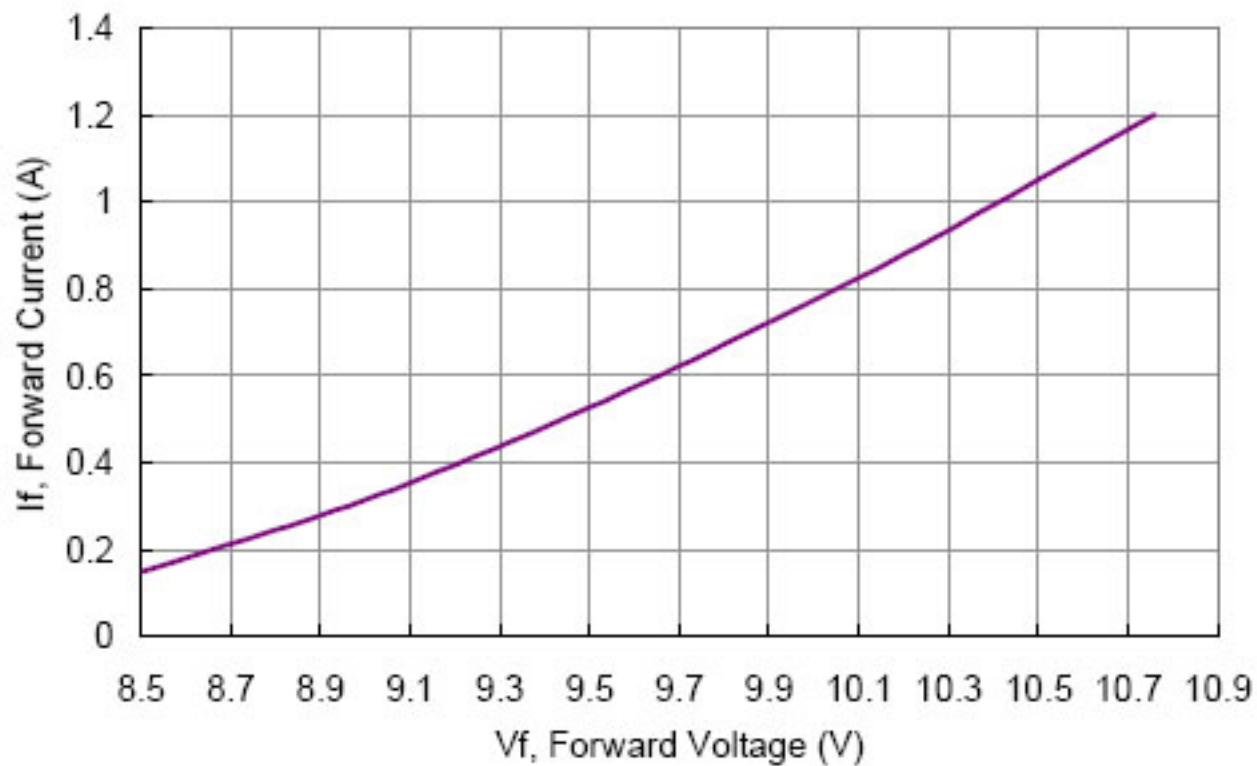




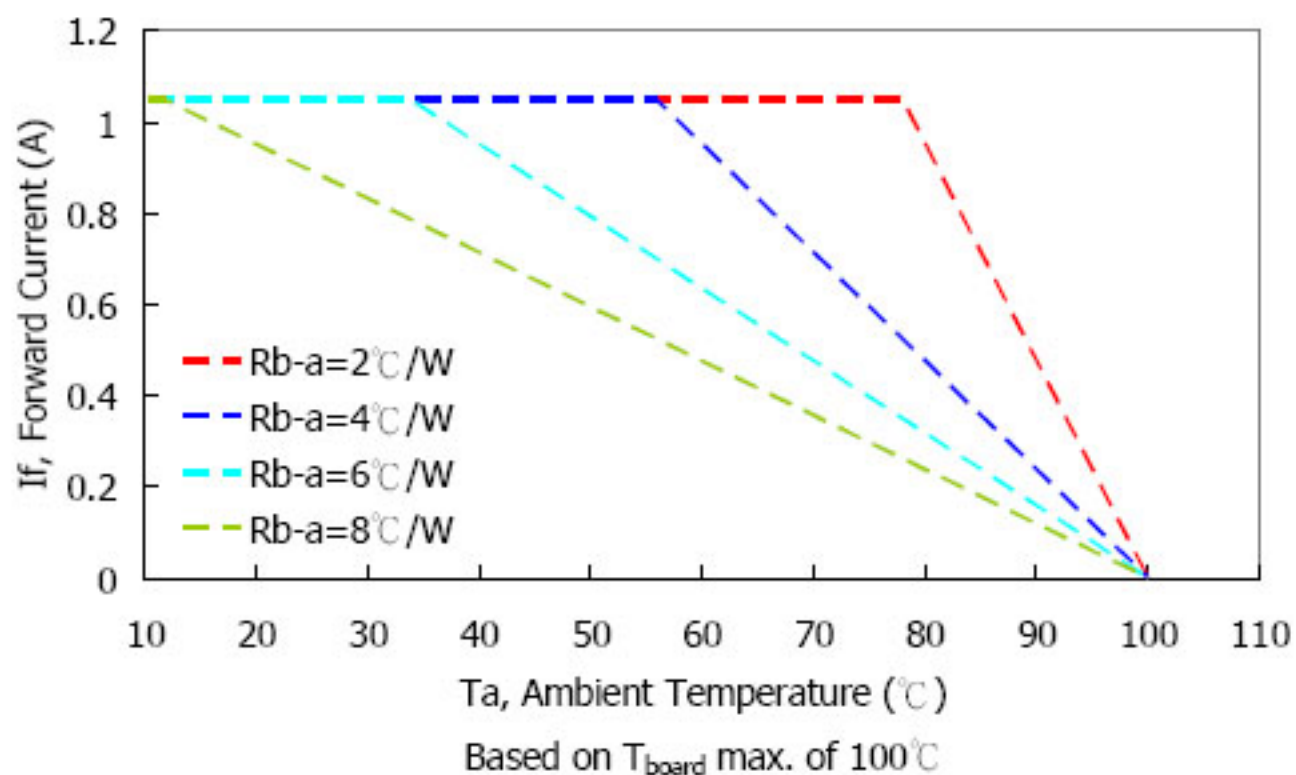
## Cool White (5700K)



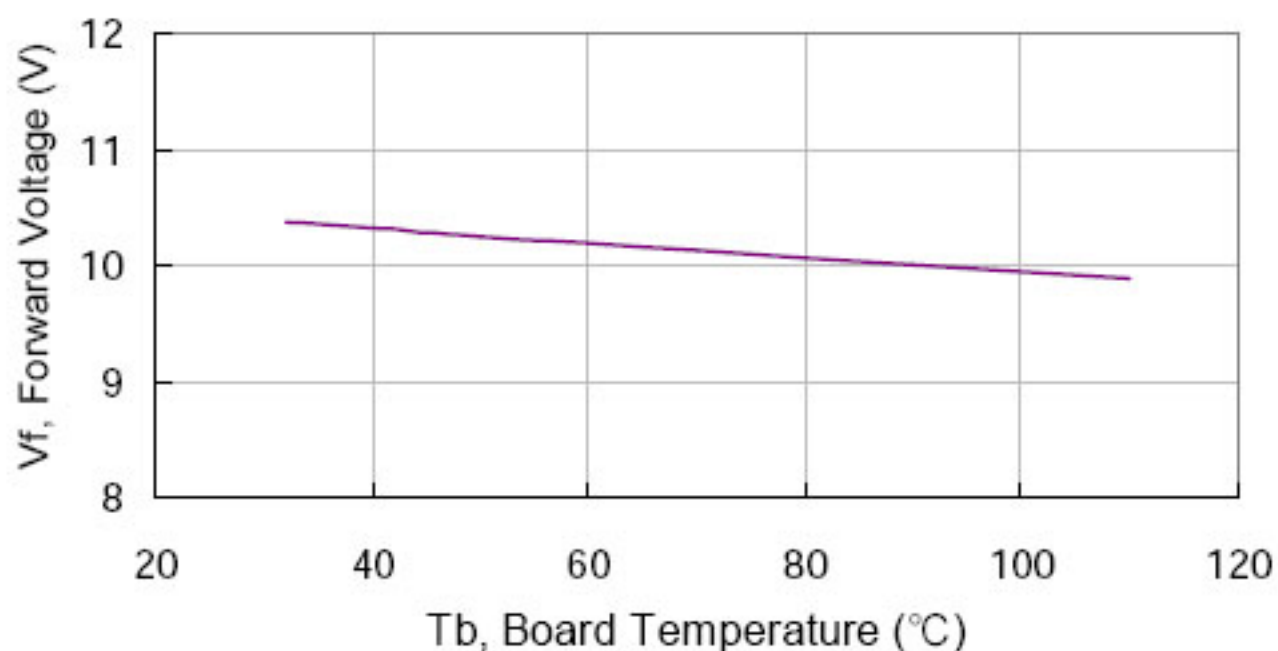
## Forward Voltage vs. Current ( $T_j = 25^\circ\text{C}$ )



## Operating Curve (Max. permissible forward current)



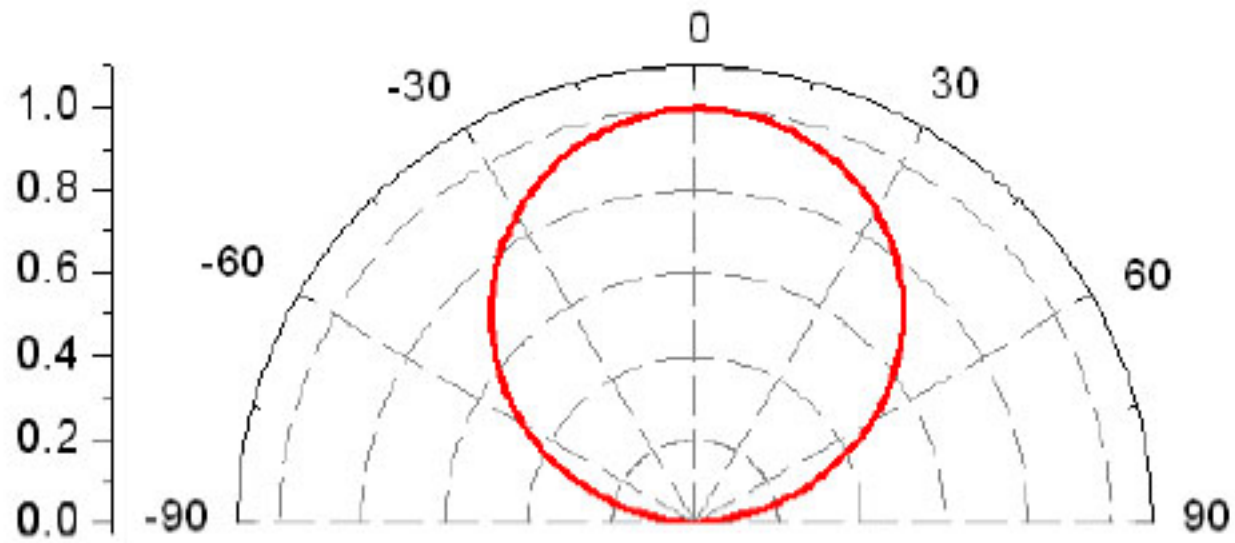
## Board Temperature vs. Forward Voltage ( $I_f=1050\text{mA}$ )



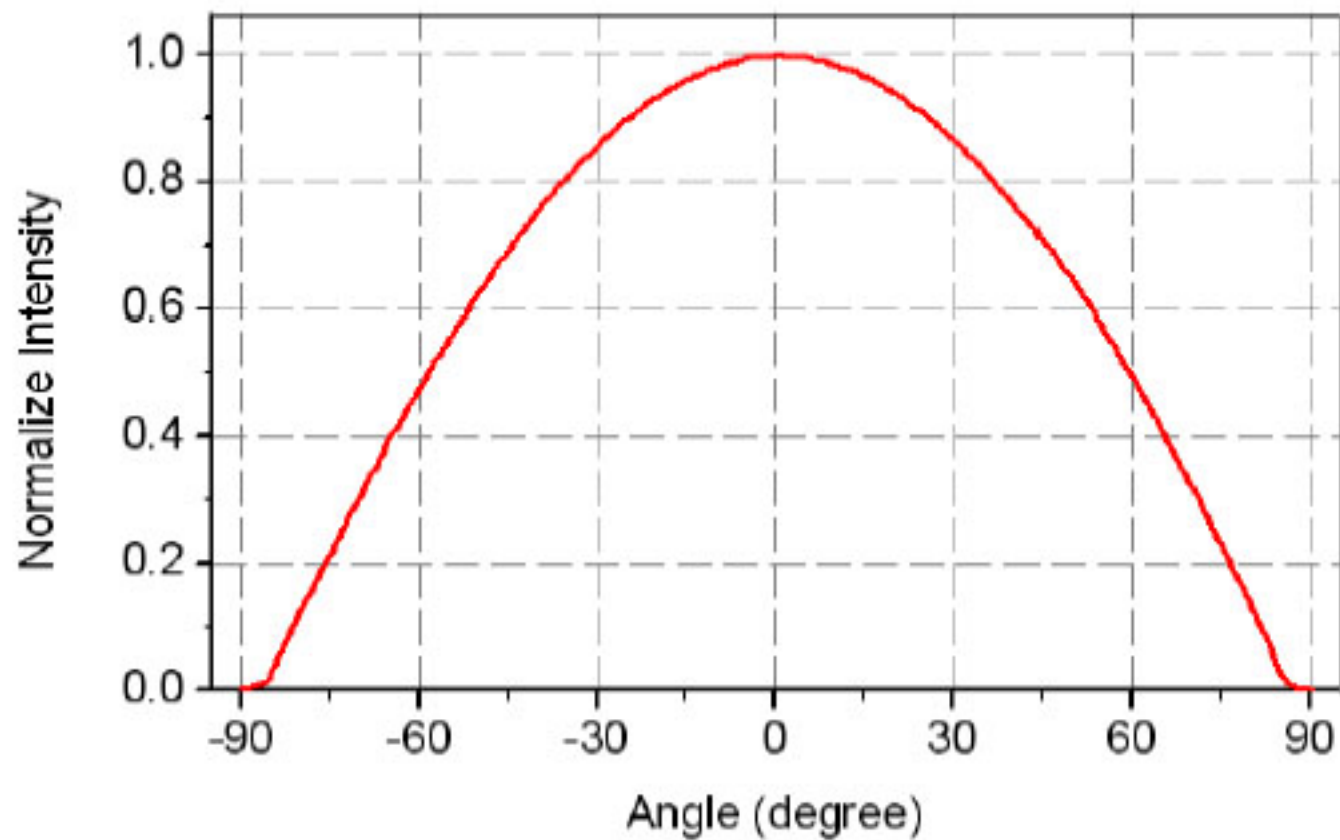
**LUSTROUS<sup>®</sup>**

GREEN TECHNOLOGY OF LIGHTINGS

Typical Angular Beam Profile,  $T_j=25^{\circ}\text{C}^*$



View Angle: 120 degree



\* Note1 : Detail beam profile data can be provided to certain qualified customers

**LUSTRON X2<sup>NES</sup>**

## Product Binning

Typical manufacturing processes of LED result in a variation in performance surrounding the typical data sheet values. In order to minimize variation in the end product of application, Lustrous bins its products for performance in luminous flux and chromaticity.

The tables below list the standard photometric bins for Lustrous LED (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

| 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 |

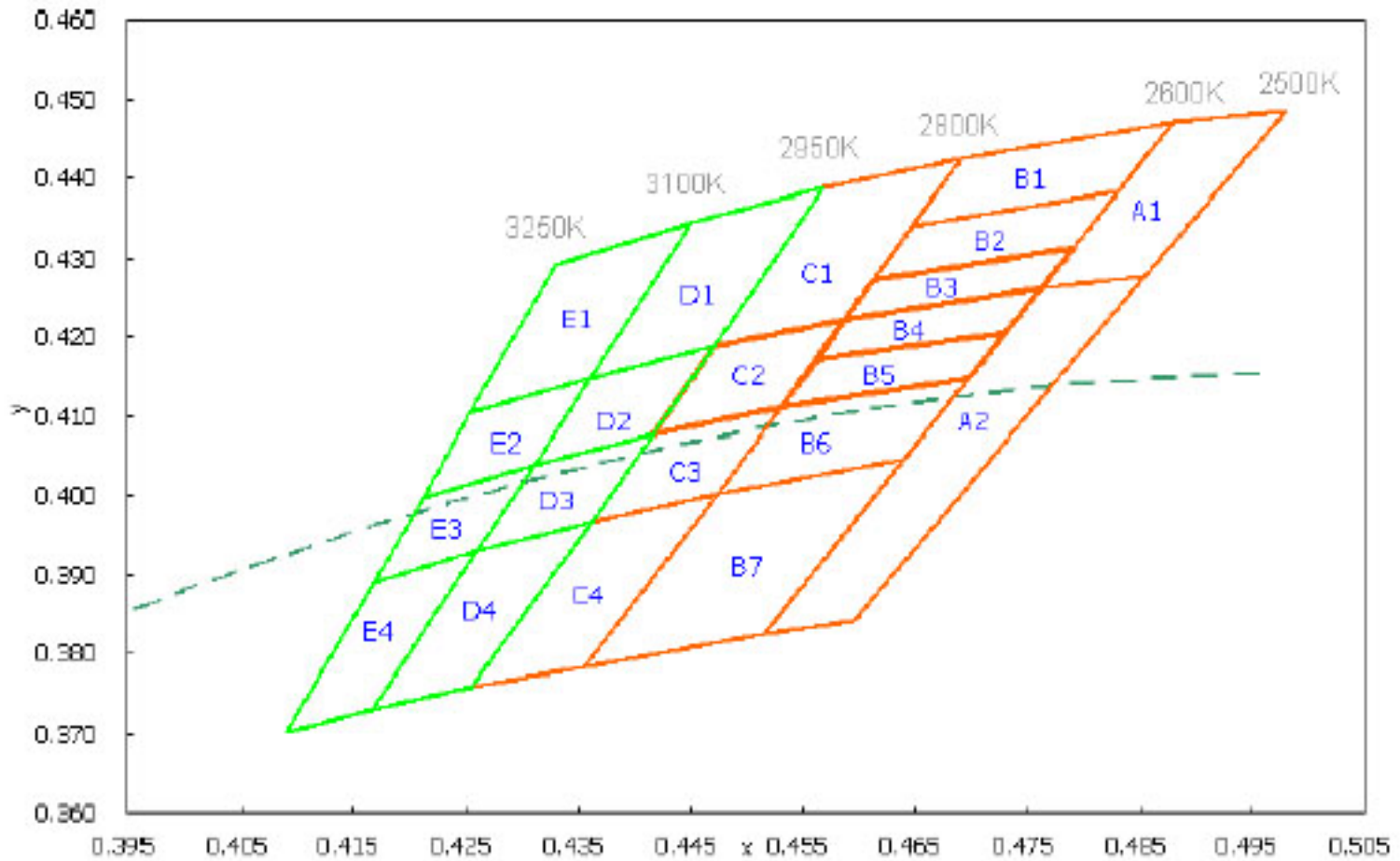
\*Note: Luminous flux is measured in total power with tolerable errors of 10%.



## Chromaticity Binning Information \*\*

### Warm White

Warm White BIN Table



\*\*Note: Chromaticity is measured in Chromaticity Coordinate (CIE 1931-xy) with tolerable errors of +/-0.005.

Table.8

| BIN Code | Chromaticity Coordinate ( CIE 1931-xy ) |        |        |        |        |        |        |        |
|----------|-----------------------------------------|--------|--------|--------|--------|--------|--------|--------|
|          | x1                                      | y1     | x2     | y2     | x3     | y3     | x4     | y4     |
| A1       | 0.5002                                  | 0.4522 | 0.4901 | 0.4507 | 0.4762 | 0.4262 | 0.4854 | 0.4276 |
| A2       | 0.4854                                  | 0.4276 | 0.4762 | 0.4262 | 0.4640 | 0.4045 | 0.4726 | 0.4060 |
| A3       | 0.4726                                  | 0.4060 | 0.4640 | 0.4045 | 0.4478 | 0.3764 | 0.4561 | 0.3781 |
| B1       | 0.4901                                  | 0.4507 | 0.4709 | 0.4463 | 0.4647 | 0.4340 | 0.4831 | 0.4383 |
| B2       | 0.4831                                  | 0.4383 | 0.4647 | 0.4340 | 0.4613 | 0.4272 | 0.4791 | 0.4314 |
| B3       | 0.4791                                  | 0.4314 | 0.4613 | 0.4272 | 0.4587 | 0.4222 | 0.4762 | 0.4262 |
| B4       | 0.4762                                  | 0.4262 | 0.4587 | 0.4222 | 0.4563 | 0.4172 | 0.4730 | 0.4205 |
| B5       | 0.4730                                  | 0.4205 | 0.4563 | 0.4172 | 0.4531 | 0.4110 | 0.4697 | 0.4147 |
| B6       | 0.4697                                  | 0.4147 | 0.4531 | 0.4110 | 0.4474 | 0.4002 | 0.4640 | 0.4045 |
| B7       | 0.4640                                  | 0.4045 | 0.4474 | 0.4002 | 0.4405 | 0.3873 | 0.4560 | 0.3908 |
| B8       | 0.4560                                  | 0.3908 | 0.4405 | 0.3873 | 0.4328 | 0.3731 | 0.4478 | 0.3764 |
| C1       | 0.4709                                  | 0.4463 | 0.4585 | 0.4425 | 0.4470 | 0.4187 | 0.4587 | 0.4222 |
| C2       | 0.4587                                  | 0.4222 | 0.4470 | 0.4187 | 0.4417 | 0.4076 | 0.4531 | 0.4110 |
| C3       | 0.4531                                  | 0.4110 | 0.4417 | 0.4076 | 0.4362 | 0.3967 | 0.4474 | 0.4002 |
| C4       | 0.4474                                  | 0.4002 | 0.4362 | 0.3967 | 0.4300 | 0.3845 | 0.4405 | 0.3873 |
| C5       | 0.4405                                  | 0.3873 | 0.4300 | 0.3845 | 0.4229 | 0.3706 | 0.4328 | 0.3731 |
| D1       | 0.4585                                  | 0.4425 | 0.4466 | 0.4382 | 0.4360 | 0.4148 | 0.4470 | 0.4187 |
| D2       | 0.4470                                  | 0.4187 | 0.4360 | 0.4148 | 0.4311 | 0.4039 | 0.4417 | 0.4076 |
| D3       | 0.4417                                  | 0.4076 | 0.4311 | 0.4039 | 0.4260 | 0.3930 | 0.4362 | 0.3967 |
| D4       | 0.4362                                  | 0.3967 | 0.4260 | 0.3930 | 0.4205 | 0.3813 | 0.4300 | 0.3845 |
| D5       | 0.4300                                  | 0.3845 | 0.4205 | 0.3813 | 0.4142 | 0.3678 | 0.4229 | 0.3706 |
| E1       | 0.4450                                  | 0.4345 | 0.4360 | 0.4148 | 0.4254 | 0.4103 | 0.4330 | 0.4293 |
| E2       | 0.4360                                  | 0.4148 | 0.4311 | 0.4039 | 0.4211 | 0.3999 | 0.4254 | 0.4103 |
| E3       | 0.4311                                  | 0.4039 | 0.4260 | 0.3930 | 0.4168 | 0.3890 | 0.4211 | 0.3999 |
| E4       | 0.4260                                  | 0.3930 | 0.4167 | 0.3730 | 0.4090 | 0.3700 | 0.4168 | 0.3890 |

Neutral White

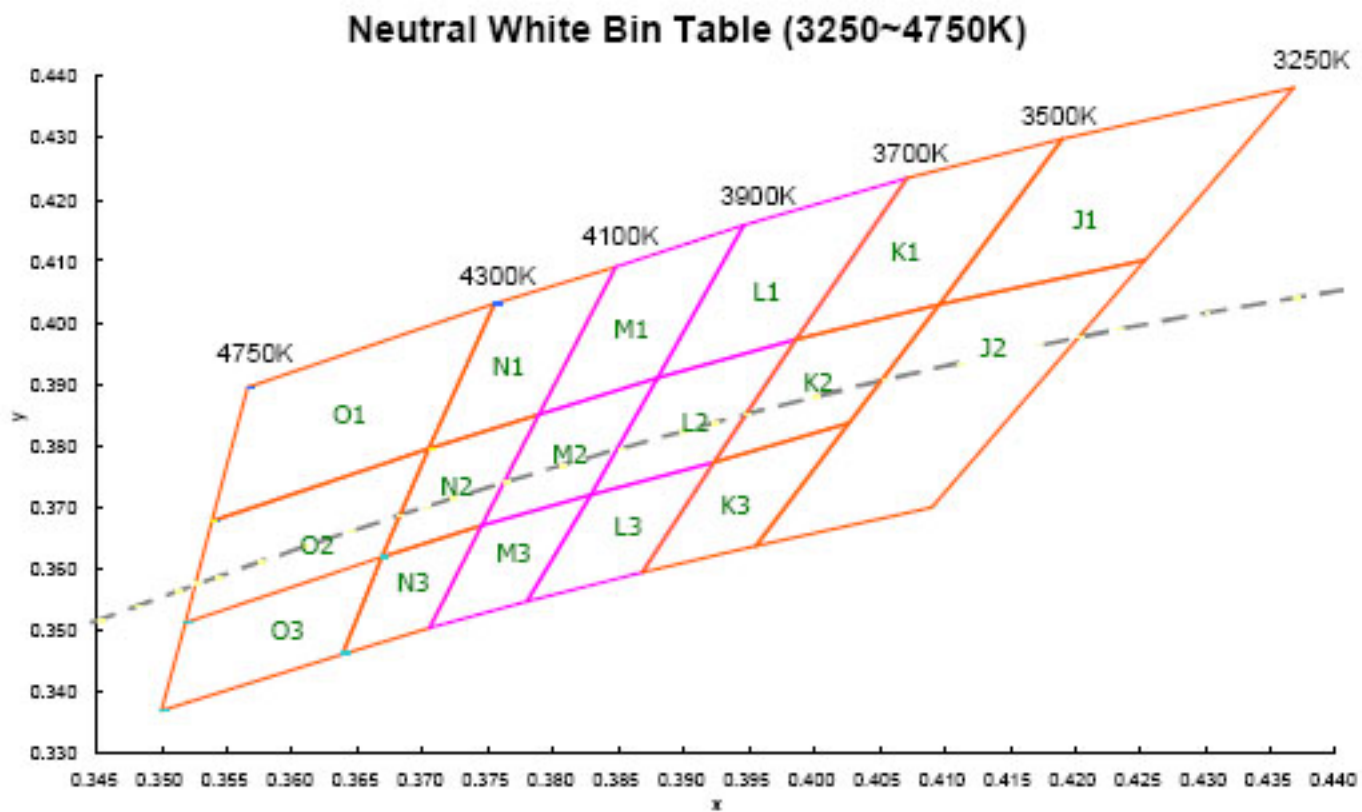




Table.9

| BIN Code | Chromaticity Coordinate (CIE 1931-xy) |        |        |        |        |        |        |        |
|----------|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|
|          | x1                                    | y1     | x2     | y2     | x3     | y3     | x4     | y4     |
| J1       | 0.4368                                | 0.4382 | 0.4254 | 0.4103 | 0.4096 | 0.4030 | 0.4190 | 0.4299 |
| J2       | 0.4254                                | 0.4103 | 0.4090 | 0.3700 | 0.3955 | 0.3638 | 0.4096 | 0.4030 |
| K1       | 0.4190                                | 0.4299 | 0.4096 | 0.4030 | 0.3986 | 0.3973 | 0.4071 | 0.4235 |
| K2       | 0.4096                                | 0.4030 | 0.4026 | 0.3837 | 0.3923 | 0.3774 | 0.3986 | 0.3973 |
| K3       | 0.4026                                | 0.3837 | 0.3955 | 0.3638 | 0.3868 | 0.3595 | 0.3923 | 0.3774 |
| L1       | 0.4071                                | 0.4235 | 0.3986 | 0.3973 | 0.3880 | 0.3910 | 0.3946 | 0.4160 |
| L2       | 0.3986                                | 0.3973 | 0.3923 | 0.3774 | 0.3829 | 0.3721 | 0.3880 | 0.3910 |
| L3       | 0.3923                                | 0.3774 | 0.3868 | 0.3595 | 0.3780 | 0.3547 | 0.3829 | 0.3721 |
| M1       | 0.3946                                | 0.4160 | 0.3880 | 0.3910 | 0.3789 | 0.3851 | 0.3848 | 0.4091 |
| M2       | 0.3880                                | 0.3910 | 0.3829 | 0.3721 | 0.3745 | 0.3670 | 0.3789 | 0.3851 |
| M3       | 0.3829                                | 0.3721 | 0.3780 | 0.3547 | 0.3705 | 0.3505 | 0.3745 | 0.3670 |
| N1       | 0.3848                                | 0.4091 | 0.3789 | 0.3851 | 0.3705 | 0.3795 | 0.3755 | 0.4031 |
| N2       | 0.3789                                | 0.3851 | 0.3745 | 0.3670 | 0.3668 | 0.3620 | 0.3705 | 0.3795 |
| N3       | 0.3745                                | 0.3670 | 0.3705 | 0.3505 | 0.3638 | 0.3462 | 0.3668 | 0.3620 |
| O1       | 0.3755                                | 0.4031 | 0.3705 | 0.3795 | 0.3538 | 0.3677 | 0.3566 | 0.3895 |
| O2       | 0.3705                                | 0.3795 | 0.3668 | 0.3620 | 0.3518 | 0.3513 | 0.3538 | 0.3677 |
| O3       | 0.3668                                | 0.3620 | 0.3638 | 0.3462 | 0.3500 | 0.3369 | 0.3518 | 0.3513 |

Cool White

**Cool White Bin Table (4750~10000K)**

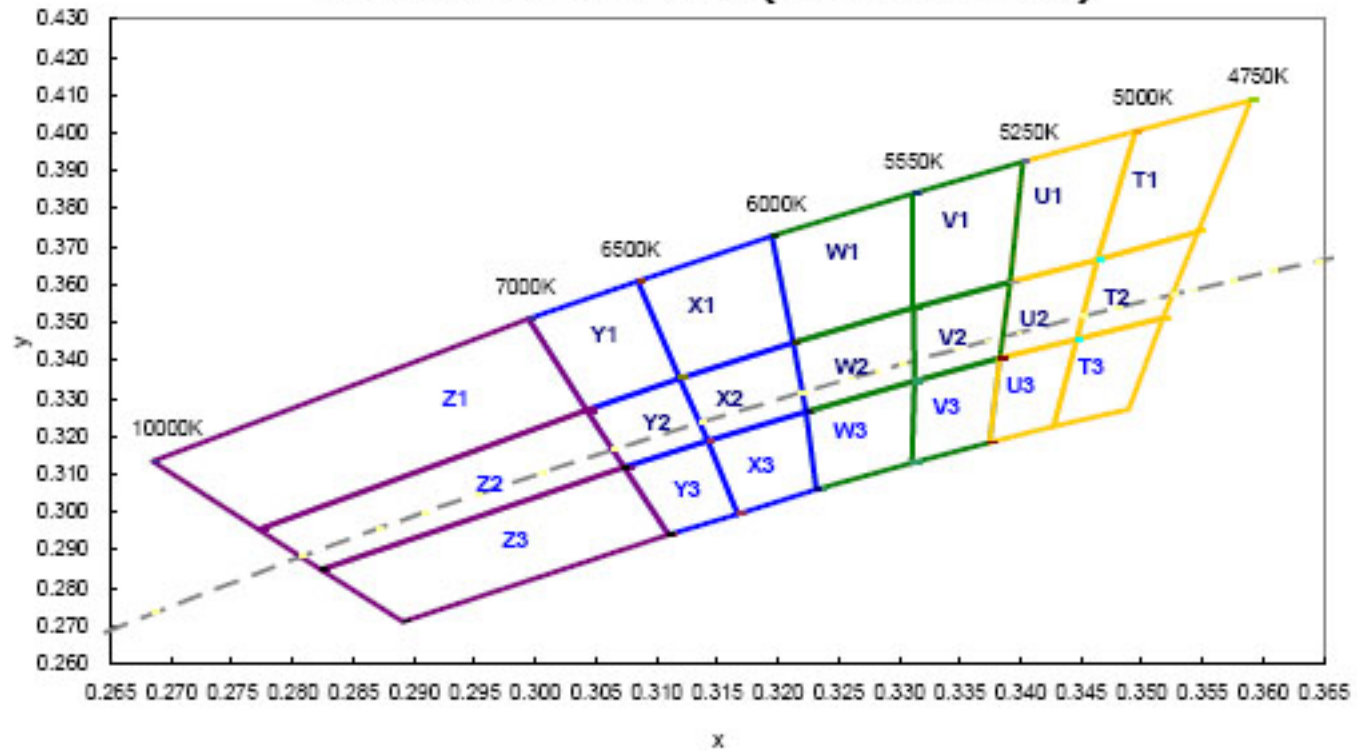




Table.10

| BIN Code | Chromaticity Coordinate (CIE 1931-xy) |        |        |        |        |        |        |        |
|----------|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|
|          | x1                                    | y1     | x2     | y2     | x3     | y3     | x4     | y4     |
| T1       | 0.3590                                | 0.4088 | 0.3546 | 0.3741 | 0.3463 | 0.3667 | 0.3495 | 0.4005 |
| T2       | 0.3546                                | 0.3741 | 0.3518 | 0.3513 | 0.3446 | 0.3458 | 0.3463 | 0.3667 |
| T3       | 0.3518                                | 0.3513 | 0.3490 | 0.3272 | 0.3428 | 0.3227 | 0.3446 | 0.3458 |
| U1       | 0.3495                                | 0.4005 | 0.3463 | 0.3667 | 0.3392 | 0.3608 | 0.3403 | 0.3924 |
| U2       | 0.3463                                | 0.3667 | 0.3446 | 0.3458 | 0.3383 | 0.3406 | 0.3392 | 0.3608 |
| U3       | 0.3446                                | 0.3458 | 0.3428 | 0.3227 | 0.3374 | 0.3184 | 0.3383 | 0.3406 |
| V1       | 0.3403                                | 0.3924 | 0.3392 | 0.3608 | 0.3313 | 0.3540 | 0.3313 | 0.3841 |
| V2       | 0.3392                                | 0.3608 | 0.3383 | 0.3406 | 0.3313 | 0.3346 | 0.3313 | 0.3540 |
| V3       | 0.3383                                | 0.3406 | 0.3374 | 0.3184 | 0.3311 | 0.3132 | 0.3313 | 0.3346 |
| W1       | 0.3313                                | 0.3841 | 0.3312 | 0.3540 | 0.3213 | 0.3448 | 0.3195 | 0.3730 |
| W2       | 0.3313                                | 0.3540 | 0.3313 | 0.3346 | 0.3223 | 0.3266 | 0.3213 | 0.3448 |
| W3       | 0.3313                                | 0.3346 | 0.3311 | 0.3132 | 0.3232 | 0.3061 | 0.3223 | 0.3266 |
| X1       | 0.3195                                | 0.3730 | 0.3213 | 0.3448 | 0.3119 | 0.3354 | 0.3085 | 0.3610 |
| X2       | 0.3213                                | 0.3448 | 0.3223 | 0.3266 | 0.3142 | 0.3188 | 0.3119 | 0.3354 |
| X3       | 0.3223                                | 0.3266 | 0.3232 | 0.3061 | 0.3167 | 0.2997 | 0.3142 | 0.3188 |
| Y1       | 0.3085                                | 0.3610 | 0.3119 | 0.3354 | 0.3042 | 0.3270 | 0.2995 | 0.3510 |
| Y2       | 0.3119                                | 0.3354 | 0.3142 | 0.3188 | 0.3073 | 0.3120 | 0.3042 | 0.3270 |
| Y3       | 0.3142                                | 0.3188 | 0.3167 | 0.2997 | 0.3110 | 0.2941 | 0.3073 | 0.3120 |
| Z1       | 0.2995                                | 0.3510 | 0.3042 | 0.3270 | 0.2772 | 0.2955 | 0.2685 | 0.3135 |
| Z2       | 0.3042                                | 0.3270 | 0.3073 | 0.3120 | 0.2824 | 0.2850 | 0.2772 | 0.2955 |
| Z3       | 0.3073                                | 0.3120 | 0.3110 | 0.2941 | 0.2892 | 0.2713 | 0.2824 | 0.2850 |

## Print Code Guideline

NES110CLC0B-XXXXX

1

2

XXXXXXXXXXXXXX

2

V0-O-B2-XX XX XX

3

4

5

6

7

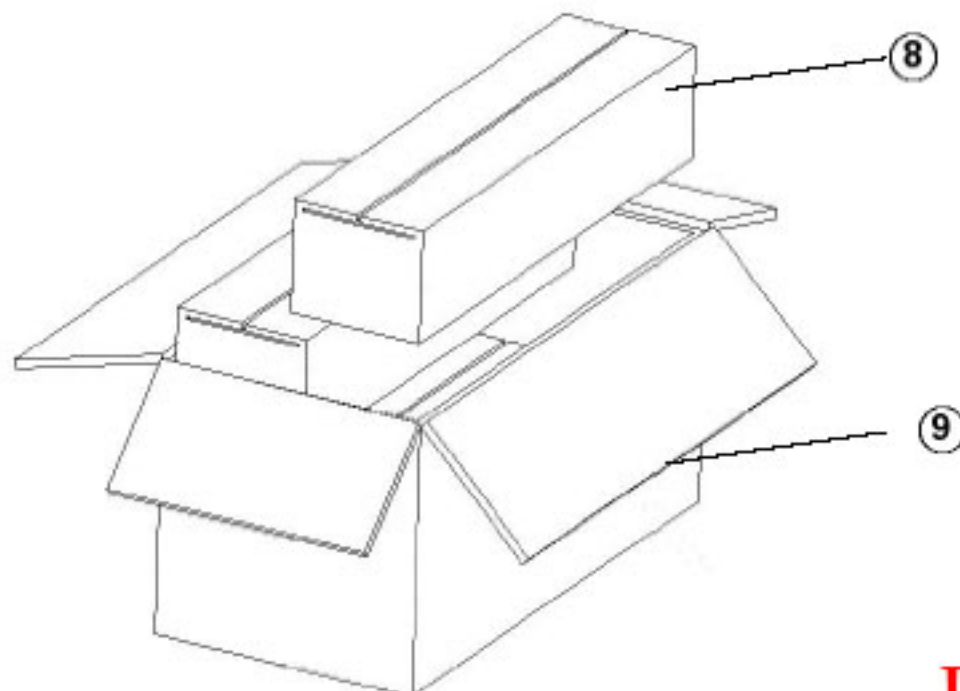
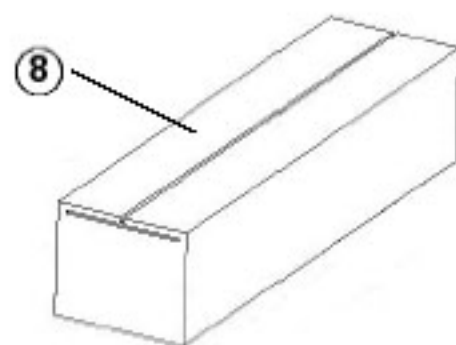
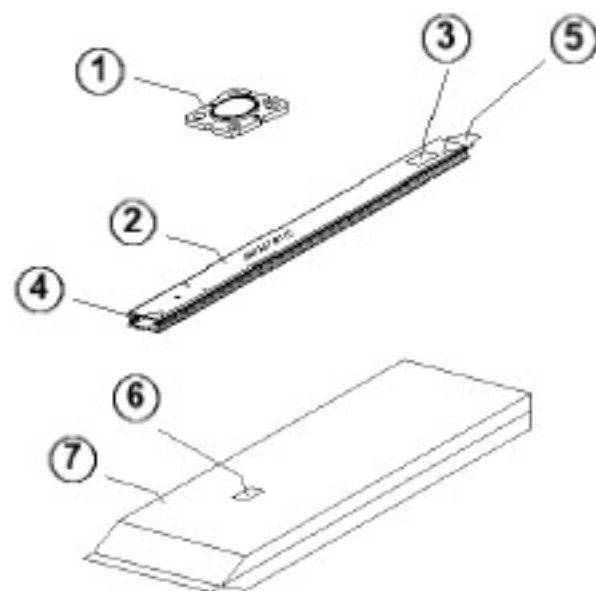
8

Table.11

| 1<br>P/N                                                                                                                         | 2<br>Internal Code | 3<br>Vf            | 4<br>Luminous Flux      |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|-------------------------|
| <a href="#">Warm White: NES110CLC0B</a><br><a href="#">Neutral White: NES110MWC0B</a><br><a href="#">Cool White: NES110NWC0B</a> |                    | V0: Without Binned | See Bin Code Definition |

| 5<br>Chromaticity       | 6<br>Year                                             | 7<br>Month                                                    | 8<br>Week                                                                                                   |
|-------------------------|-------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| See Bin Code Definition | <b>08:</b> 2008<br><b>09:</b> 2009<br><b>10:</b> 2010 | <b>01 :</b> January<br><b>05 :</b> May<br><b>10 :</b> October | <b>01 :</b> 01 <sup>st</sup> Week<br><b>20 :</b> 20 <sup>th</sup> Week<br><b>45 :</b> 45 <sup>th</sup> Week |

## Standard Packaging



| ITEM                   | DESCRIPTION            |            |
|------------------------|------------------------|------------|
| ①                      | LED                    |            |
| ②                      | PLASTIC TUBE           |            |
| ③                      | ADHESIVE MAIN LABEL    |            |
| ④                      | END-PLUG WHITE         |            |
| ⑤                      | END-PLUG BLACK         |            |
| ⑥                      | ADHESIVE MAIN LABEL    |            |
| ⑦                      | MOISTURE BARRIER BAG   |            |
| ⑧                      | SMALL BOX              |            |
| ⑨                      | STANDARD BOX           |            |
| STACKING METHOD        |                        |            |
| PCS/TUBE               | 10                     |            |
| TUBE/BAG               | 10                     |            |
| BAG/SMALL BOX          | 2                      |            |
| PCS/SMALL BOX          | 200                    |            |
| SMALL BOX/STANDARD BOX | 4                      |            |
| PCS/STANDARD BOX       | 800                    |            |
| SIZE AND WEIGHT        |                        |            |
|                        | SIZE(mm <sup>3</sup> ) | WEIGHT(kg) |
| SMALL BOX              | 560x130x130            | 3.4±0.5    |
| STANDARD BOX           | 580x280x280            | 14.3±0.5   |



## Precaution for Use

### Over-current Proof

1. Customer must not drive the LEDs with reverse current and should apply resistors for extra protection.
2. The maximum overshoot of driving current should be limited under normal driving current \* 1.3 times.
3. The ripple of driving current should not be over +/-10% of normal driving current.
4. The typical driving current for this series is 1050 mA.
5. When driving the products, the clamp voltage must be set at 12V in driver.

### Storage

1. Do not open the moisture barrier bag ( MBB ) before the products are ready to be used.
2. Storage Condition ( before opening the MBB ) :
  - Storage Temperature: -40~90°C
  - Relative Humidity < 90% RH
  - Please re-seal the MBB when storing longer than 3 weeks.
  - The products should be used within half of a year.
3. Storage Condition ( after opening the MBB ) :
  - Storage Temperature: -40~90°C
  - Relative Humidity < 90% RH
  - The products should be used ( assembled ) as soon as possible after opening the MBB. Otherwise, LED must be baked at 80+/-5°C, 24 hours before handling and assembling.

### Handling

1. Do not touch the lighting area during handling and assembling.



## 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.

*All rights reserved. Product specifications are subject to change without further notice.*