

# GXUAN

## 36V/13W V3 series

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### Introduction

Everlight's COB Series is an aluminum substrate based LED achieving high efficiency while maintaining high CRI at Energy Star / ANSI color temperature ranges.

### Features

- ◆ High Power COB & High CRI LED
- ◆ Multi-Chip Solution
- ◆ Dimension: 13.5mm x 13.5mm x 1.6 mm
- ◆ Main Parameters: Luminous Flux, Forward Voltage, Chromaticity and Color Rendering Index
- ◆ RoHS compliant
- ◆ Energy Star / ANSI Compliant Binning Structure
- ◆ Typical Viewing Angle: 115°

### Applications

- ◆ Replacement Bulb
- ◆ Indoor General Lighting
- ◆ Recessed Can Lighting

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## Product Nomenclature

The product name is designated as below:

### GXUAN1313-CDEFGHJ-KLMNP-QRST

Family name  
GXUAN1313

Designation:

CD = lighting color and wavelength<sup>[1]</sup>

EF = color bin or CCT bin

G = internal code

HJ = min. luminous flux (lm) or radiation power (mW) performance

KL = forward voltage bin<sup>[2]</sup>

M = internal code

NP = power consumption<sup>[3]</sup>

Q= internal code

R= Dam Diameter<sup>[4]</sup>

S= internal code

T=Type of Package<sup>[5]</sup>

#### Notes

##### 1. Table of lighting color and wavelength

| Symbol | Color         | CCT range  | Color Rendering Index |
|--------|---------------|------------|-----------------------|
| GT     | Cool-White    | 4745~7050K | >65                   |
| KT     | Cool-White    | 4745~7050K | >80                   |
| PT     | Cool-White    | 4745~7050K | >90                   |
| LM     | Warm-White    | 2580~3710K | >70                   |
|        | Neutral-White | 3710~4745K |                       |
| KM     | Warm White    | 2580~3710K | >80                   |
|        | Neutral-White | 3710~4745K |                       |
| PM     | Warm-White    | 2580~3710K | >90                   |
|        | Neutral-White | 3710~4745K |                       |

##### 2. Table of forward voltage bin

| Symbol | Description       |
|--------|-------------------|
| 36     | 36V Input Voltage |

##### 3. Power consumption:

| Symbol | Description |
|--------|-------------|
| 12     | 12W         |

##### 4. Dam Diameter:

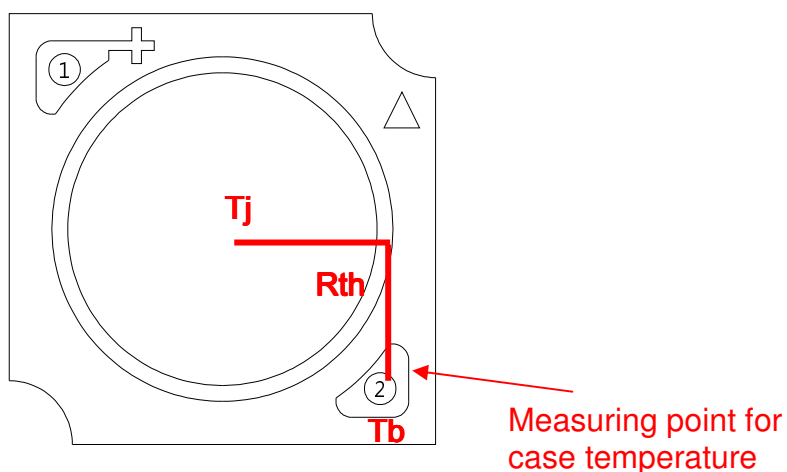
| Symbol | Description |
|--------|-------------|
| 9      | 9.0-9.9mm   |

##### 5. Table of packaging types:

| Symbol | Description |
|--------|-------------|
| T      | Tray        |

## Absolute Maximum Ratings

| Parameter                                       | Symbol    | Ratings   | Unit |
|-------------------------------------------------|-----------|-----------|------|
| Max. DC Forward Current (mA) <sub>[4],[5]</sub> | $I_F$     | 720       | mA   |
| Max. Pulse Forward Current (mA)                 | $I_P$     | 800       | mA   |
| Power Dissipation                               | $P_d$     | 27.6      | W    |
| Thermal Resistance                              | $R_{th}$  | 0.55      | °C/W |
| Max. Junction Temperature                       | $T_J$     | 120       | °C   |
| Operating Temperature <sub>[4],[5]</sub>        | $T_{Opr}$ | -40 ~ +85 | °C   |
| Storage Temperature                             | $T_{Stg}$ | -40 ~ +85 | °C   |



### Notes:

1. For optimal performance, Everlight recommends 360mA operation.
2.  $t_p \leq 100ms$ , Duty cycle = 25%
3. The GXUAN1313 36V/13W V3 series LEDs are not designed for reverse bias use.
4. Power dissipation and forward current are the value when the module temperature is set lower than the rating by using an adequate heat sink.

## PN of the GXUAN1313 Series : White LEDs

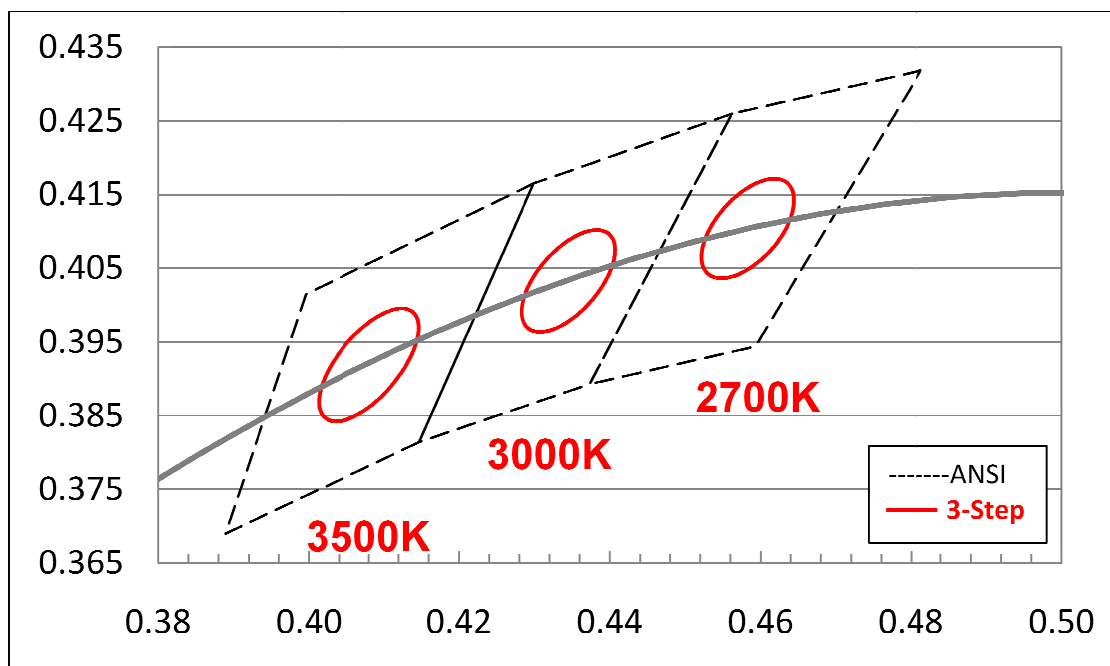


| Order Code of GXUAN1313      | Minimum Luminous Flux (lm) @Tb=85°C | Typical Luminous Flux (lm) @Tb=85°C | Typical Luminous Flux (lm) @Tb=25°C | CCT (K) | Forward Voltage (V) | Forward Current (mA) | CRI (min.) |
|------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|---------------------|----------------------|------------|
| XUAN1313-LM27327-36413-492T  | 1446                                | 1606                                | 1785                                | 27M3    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-LM30330-36413-492T  | 1532                                | 1703                                | 1892                                | 30M3    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-LM35335-36413-492T  | 1580                                | 1755                                | 1950                                | 35M3    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-LM40340-36413-492T  | 1605                                | 1783                                | 1981                                | 40M3    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-GT50550-36413-492T  | 1659                                | 1843                                | 2048                                | 50M5    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-GT57557-36413-492T  | 1677                                | 1863                                | 2070                                | 57M5    | 31.0~37.0           | 360                  | 70         |
| XUAN1313-GT65565-36413-492T  | 1677                                | 1863                                | 2070                                | 65M5    | 31.0~37.0           | 360                  | 70         |
| GXUAN1313-KM27327-36413-492T | 1364                                | 1515                                | 1684                                | 27M3    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KM30330-36413-492T | 1446                                | 1606                                | 1785                                | 30M3    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KM35335-36413-492T | 1490                                | 1656                                | 1840                                | 35M3    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KM40340-36413-492T | 1514                                | 1682                                | 1869                                | 40M3    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KT50550-36413-492T | 1565                                | 1738                                | 1932                                | 50M5    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KT57557-36413-492T | 1582                                | 1758                                | 1953                                | 57M5    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-KT65565-36413-492T | 1582                                | 1758                                | 1953                                | 65M5    | 31.0~37.0           | 360                  | 80         |
| GXUAN1313-PM27327-36413-492T | 1192                                | 1325                                | 1472                                | 27M3    | 31.0~37.0           | 360                  | 90         |
| GXUAN1313-PM30330-36413-492T | 1276                                | 1418                                | 1575                                | 30M3    | 31.0~37.0           | 360                  | 90         |
| GXUAN1313-PM35335-36413-492T | 1293                                | 1436                                | 1596                                | 35M3    | 31.0~37.0           | 360                  | 90         |
| GXUAN1313-PM40340-36413-492T | 1326                                | 1474                                | 1637                                | 40M3    | 31.0~37.0           | 360                  | 90         |

### Notes:

1. CRI measurement tolerance:  $\pm 2$ .
2. Luminous flux measurement tolerance:  $\pm 10\%$ .
3. The data of luminous flux measured at thermal pad=25°C
4. Typical luminous flux or light output performance is operated within the condition guided by this datasheet.

## Product Binning Warm-White Bin Structure



### Warm-White Bin Coordinates

#### 2700K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 27M3 | 0.4583         | 0.4101       |
|      | Oval parameter |              |
|      | a              | 0.0081       |
|      | b              | 0.0042       |
|      | theta          | 49.7         |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.4813 | 0.4319 |
|                             | 0.4562 | 0.4260 |
|                             | 0.4373 | 0.3893 |
|                             | 0.4593 | 0.3944 |
| Reference Range: 2580~2869K |        |        |

#### 3000K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 30M3 | 0.4345         | 0.4033       |
|      | Oval parameter |              |
|      | a              | 0.00834      |
|      | b              | 0.00408      |
|      | theta          | 50.22        |

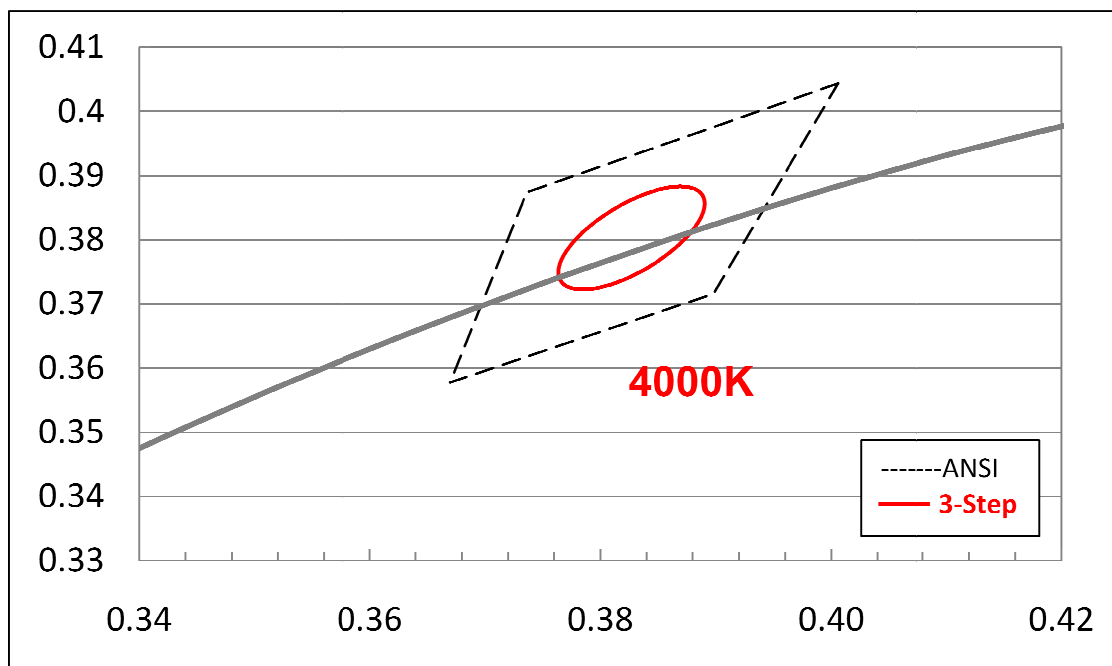
| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.4562 | 0.4260 |
|                             | 0.4299 | 0.4165 |
|                             | 0.4147 | 0.3814 |
|                             | 0.4373 | 0.3893 |
| Reference Range: 2858~3209K |        |        |

#### 3500K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 35M3 | 0.4080         | 0.3919       |
|      | Oval parameter |              |
|      | a              | 0.00927      |
|      | b              | 0.00414      |
|      | theta          | 51.00        |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.4299 | 0.4165 |
|                             | 0.3996 | 0.4015 |
|                             | 0.3889 | 0.3690 |
|                             | 0.4147 | 0.3814 |
| Reference Range: 3209~3710K |        |        |

### Neutral-White Bin Structure



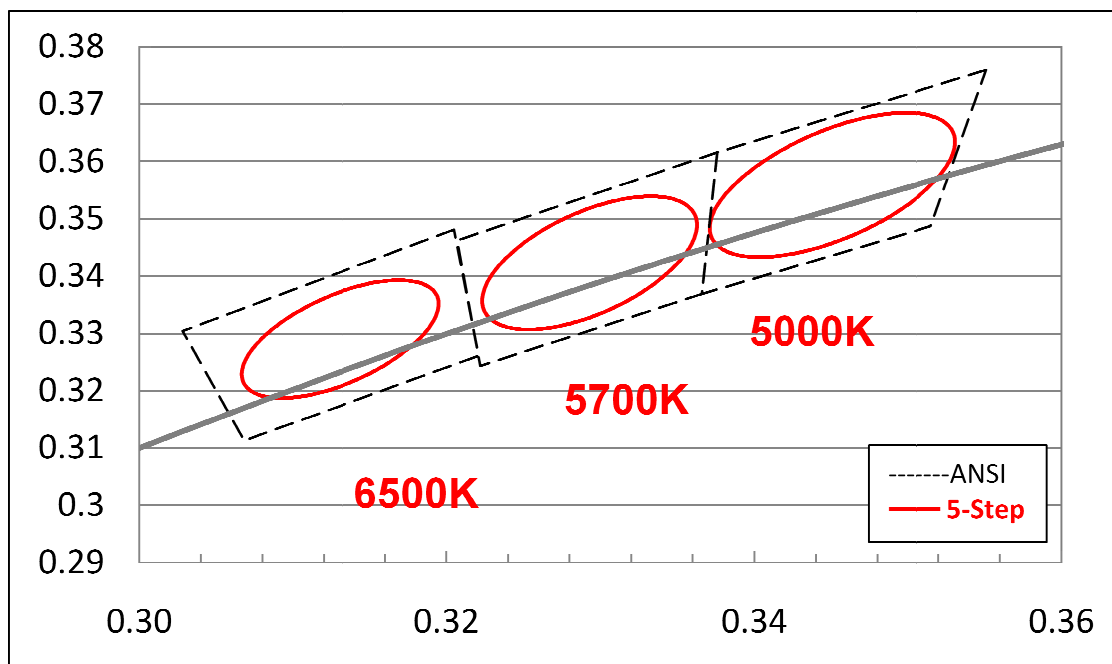
### Neutral-White Bin Coordinates

4000K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 40M3 | 0.3827         | 0.3803       |
|      | Oval parameter |              |
|      | a              | 0.00939      |
|      | b              | 0.00402      |
|      | theta          | 54.80        |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.4006 | 0.4044 |
|                             | 0.3736 | 0.3874 |
|                             | 0.3670 | 0.3578 |
|                             | 0.3898 | 0.3716 |
| Reference Range: 3709~4260K |        |        |

### Cool-White Bin Structure



### Cool-White Bin Coordinates

#### 5000K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 50M5 | 0.3451         | 0.3559       |
|      | Oval parameter |              |
|      | a              | 0.01370      |
|      | b              | 0.00590      |
|      | theta          | 64.12        |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.3551 | 0.3760 |
|                             | 0.3376 | 0.3616 |
|                             | 0.3366 | 0.3369 |
|                             | 0.3515 | 0.3487 |
| Reference Range: 4744~5310K |        |        |

#### 5700K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 57M5 | 0.3293         | 0.3423       |
|      | Oval parameter |              |
|      | a              | 0.01245      |
|      | b              | 0.00535      |
|      | theta          | 66.51        |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.3376 | 0.3616 |
|                             | 0.3207 | 0.3462 |
|                             | 0.3222 | 0.3243 |
|                             | 0.3366 | 0.3369 |
| Reference Range: 5308~6020K |        |        |

#### 6500K

| Bin  | Center-CIE X   | Center-CIE Y |
|------|----------------|--------------|
| 65M5 | 0.3131         | 0.3290       |
|      | Oval parameter |              |
|      | a              | 0.01115      |
|      | b              | 0.00475      |
|      | theta          | 64.57        |

| Bin                         | CIE X  | CIE Y  |
|-----------------------------|--------|--------|
| ANSI                        | 0.3205 | 0.3481 |
|                             | 0.3028 | 0.3304 |
|                             | 0.3068 | 0.3113 |
|                             | 0.3221 | 0.3261 |
| Reference Range: 6020~7043K |        |        |

#### Notes:

1. Color coordinates measurement allowance :  $\pm 0.01$ .



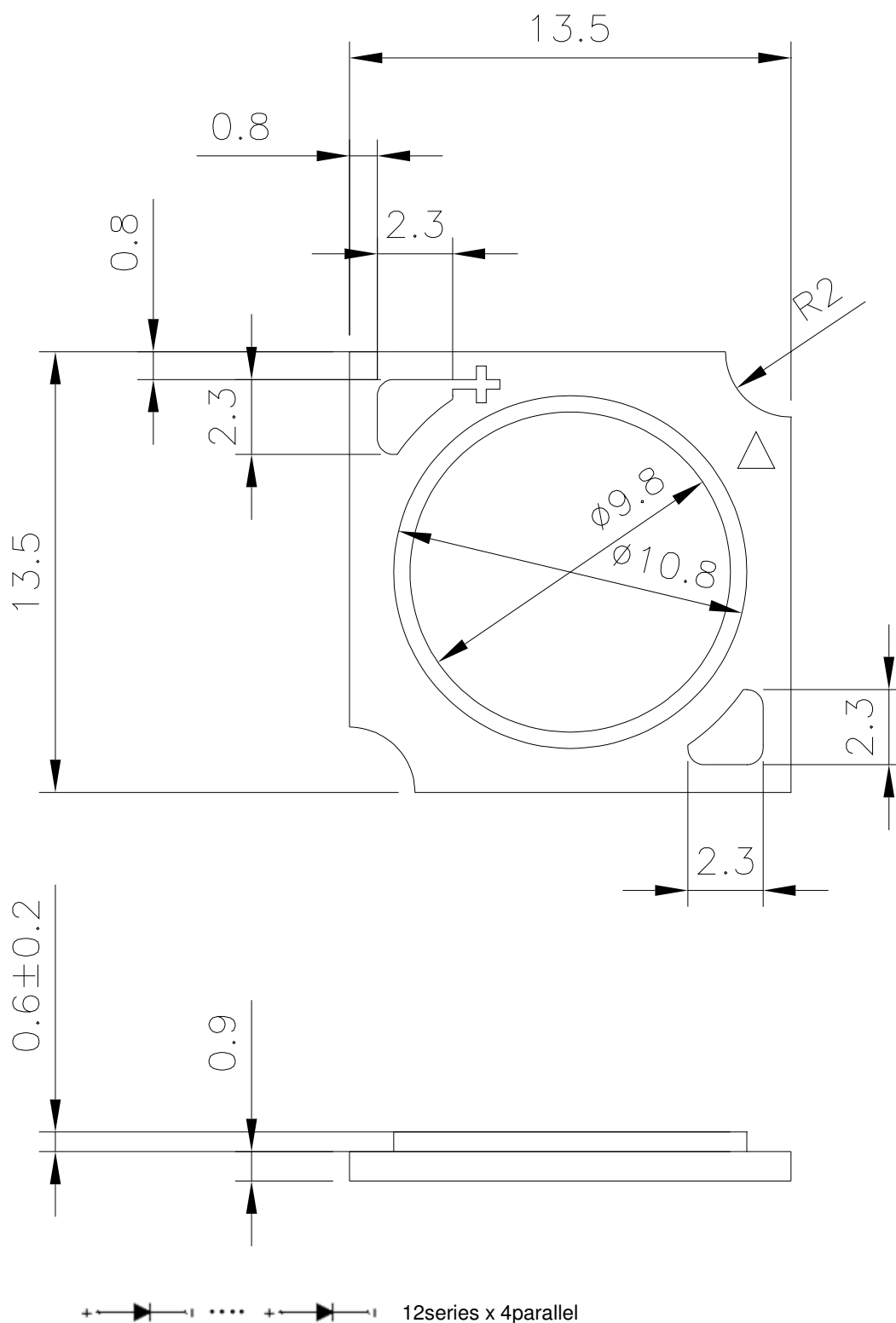
### Forward Voltage Bins

| Bin | Minimum Forward Voltage (V) | Maximum Forward Voltage (V) |
|-----|-----------------------------|-----------------------------|
| W4  | 31.0                        | 37.0                        |

**Notes:**

1. Forward voltage measurement tolerance:  $\pm 2\%$ .
2. Forward voltage bins are defined at  $I_F=360\text{mA}$  operation.
3. Other Forward Voltage bins for White LEDs available upon request. Please contact your local Everlight sales office.

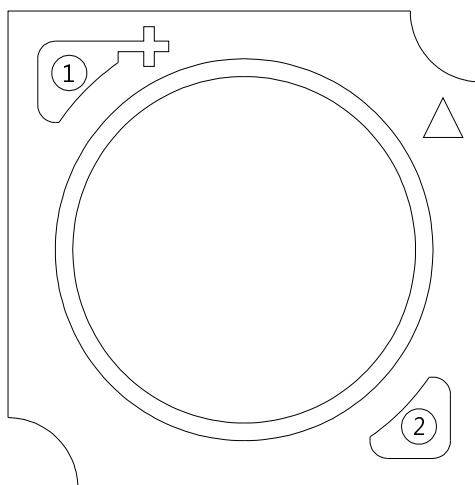
## Mechanical Dimension



**Note:**

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are  $\pm 0.1$  mm.

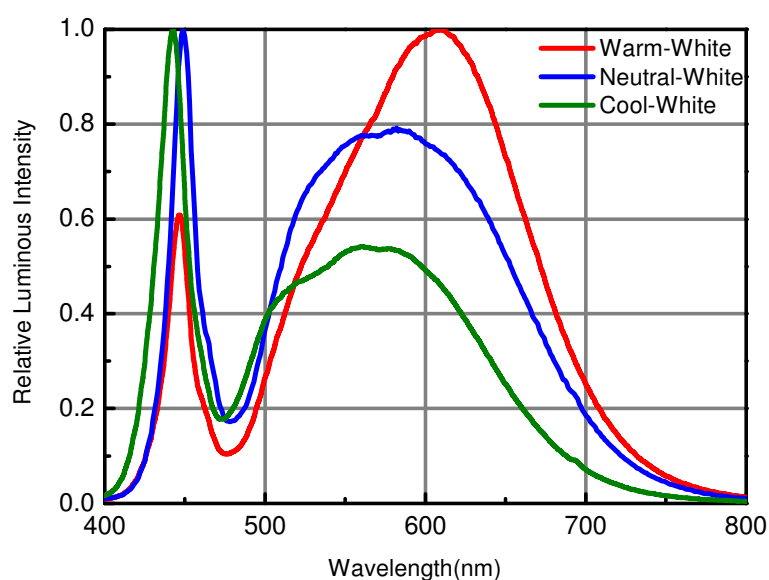
## Pad Configuration



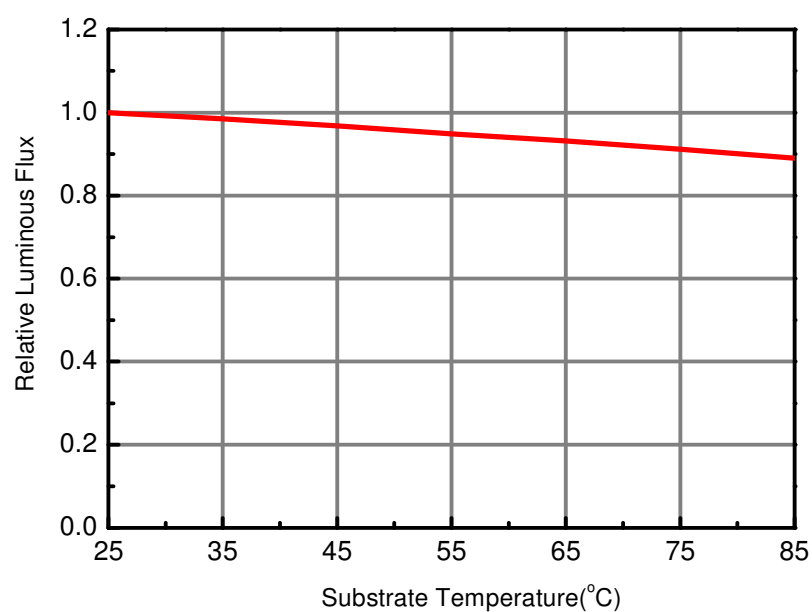
| PAD | FUNCTION |
|-----|----------|
| 1   | ANODE    |
| 2   | CATHODE  |

## Typical Electro-Optical Characteristic Curve

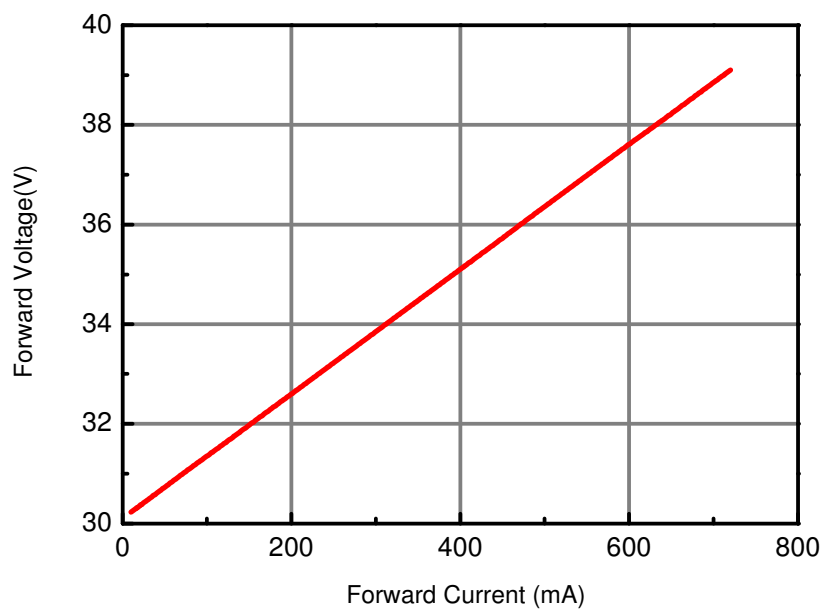
Relative Spectral Distribution  
@ Substrate Temperature = 25°C



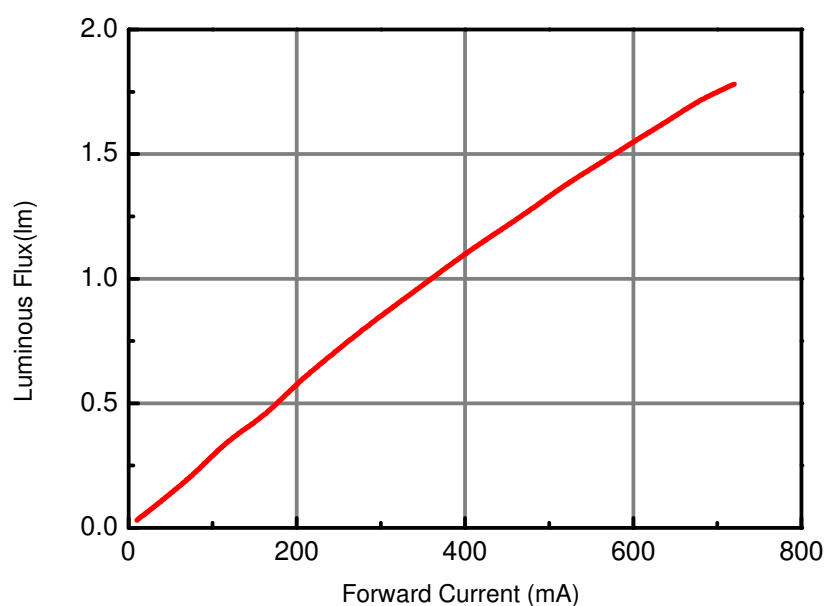
Relative Luminous Flux vs. Substrate Temperature  
@Forward Current = 360mA



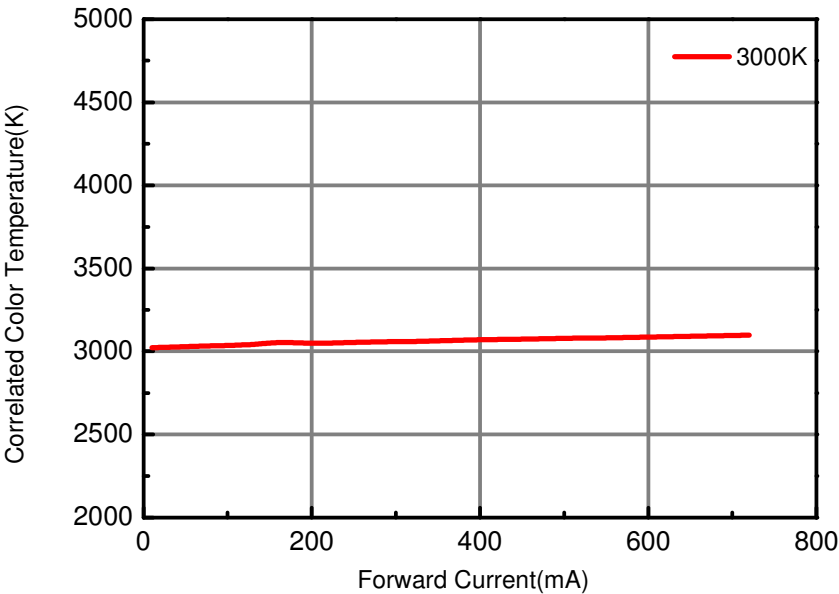
**Forward Voltage vs. Forward Current**  
**@ Substrate Temperature = 25°C**



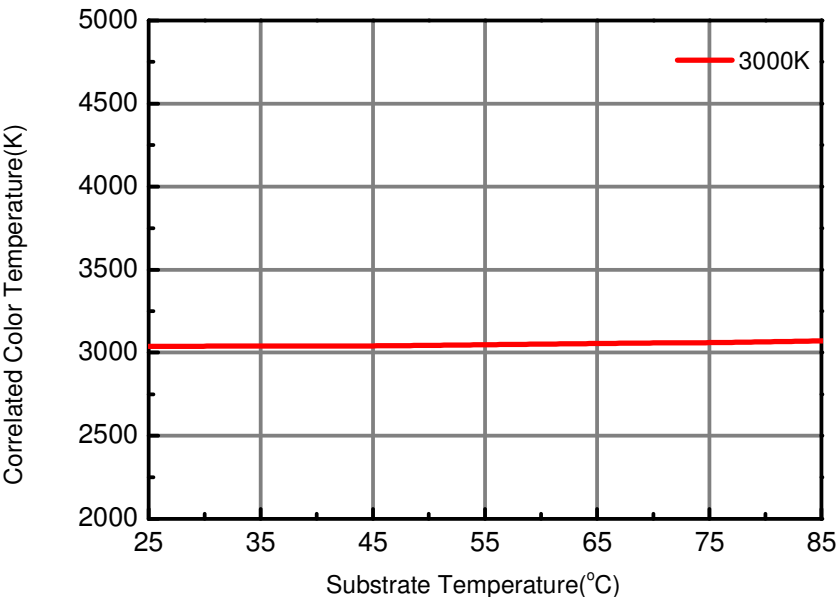
**Luminous Flux vs. Forward Current**  
**@ Substrate Temperature = 25°C**



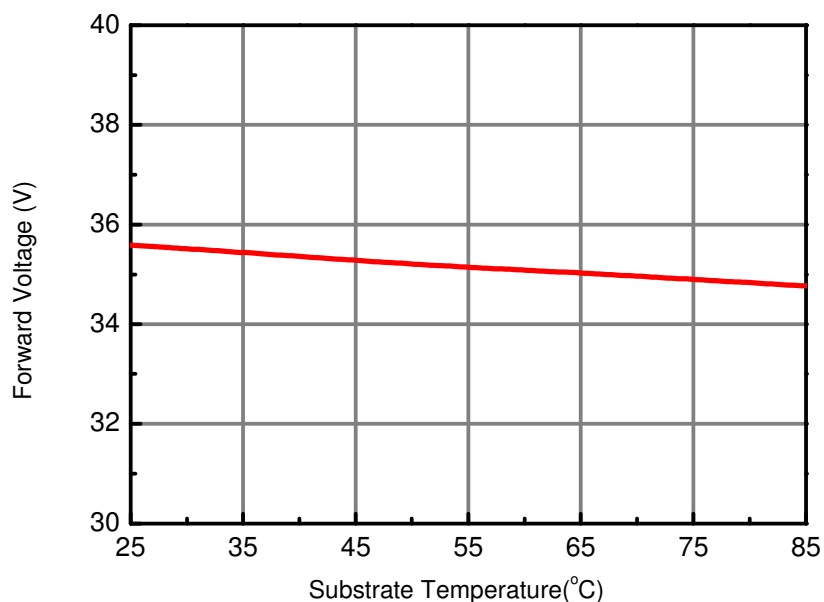
Correlated Color Temperature vs. Forward Current  
@ Substrate Temperature = 25°C



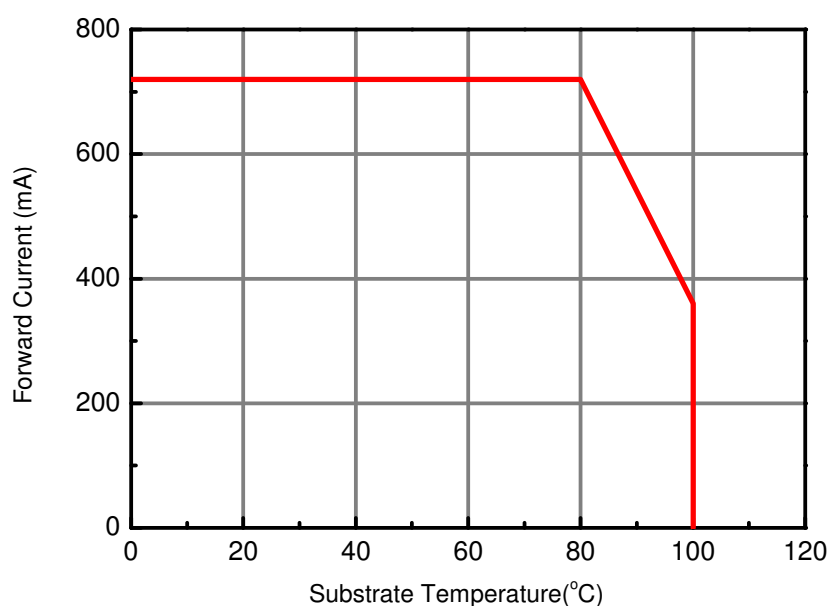
Correlated Color Temperature vs. Substrate Temperature  
@ Forward Current = 360mA



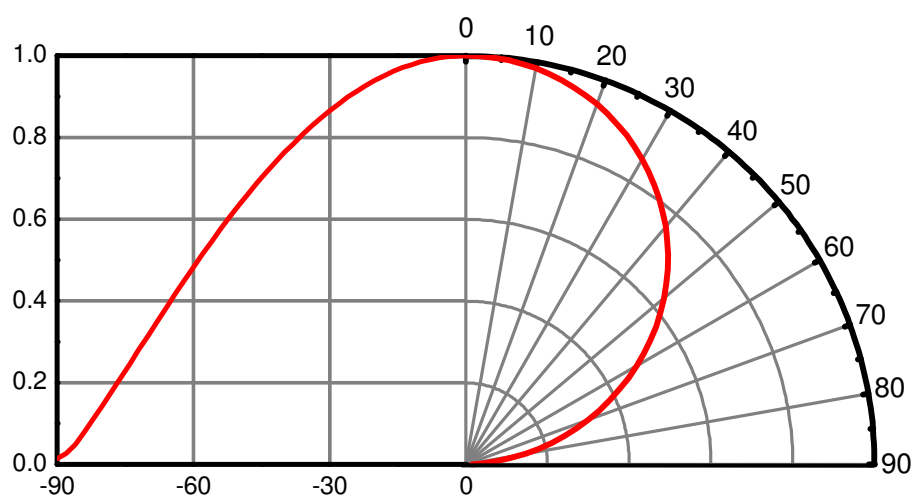
**Forward Voltage vs. Substrate Temperature**  
**@ Forward Current = 360mA**



**Forward Current Derating Curve**  
**@ Junction Temperature <120°C**



### Typical Diagram Characteristics of Radiation Patterns



**Notes:**

1.  $2\theta_{1/2}$  is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. Viewing angle tolerance is  $\pm 5^\circ$



## Product Labeling

### Label Explanation

CPN: Customer Specification (when required)

P/N : Everlight Production Number

QTY: Packing Quantity

CAT: Luminous Flux (Brightness) Bin

HUE: Color Bin

REF: Forward Voltage Bin

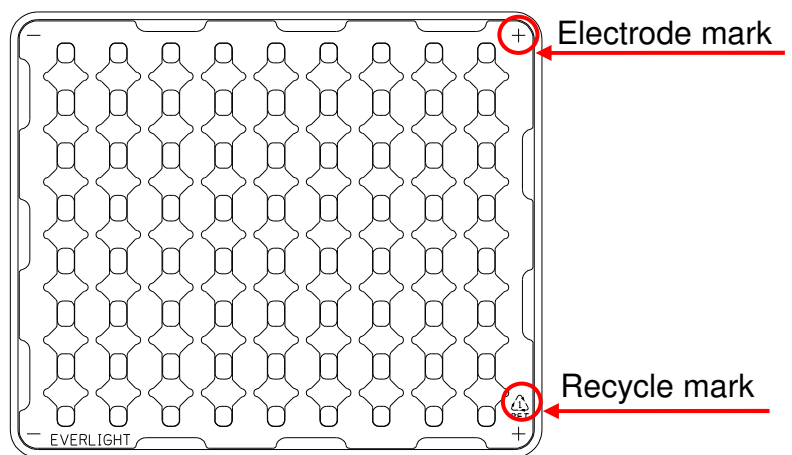
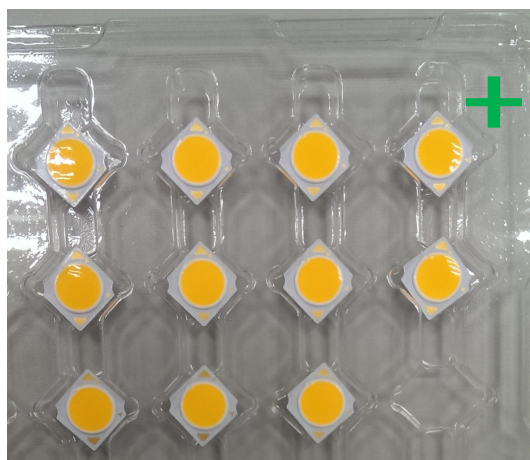
LOT No: Lot Number

MADE IN TAIWAN: Production Place



## Carrier Tray Specification

Loaded Quantity: 63 PCS Per Tray



Notes:

1. Dimensions are in millimeters
2. Tolerances unless mentioned are  $\pm 0.1\text{mm}$

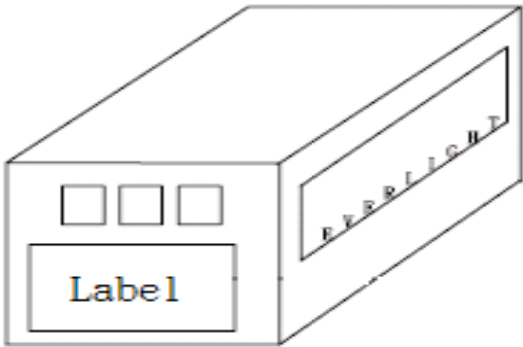
### LED Direction

- The **Recycle mark** on the LEDs will be toward the **Anode mark** on the carrier tray.

### Moisture Resistant Packaging



Outside Carton



Packaging Quantity

- 63 PCS Per Tray
- 20 Trays Per Outside Carton

RoHS

Pb

EVERLIGHT

5

CPN: XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX  
P/N: XXXXXXXXXXXX  
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX  
LOT NO: Y150716XXX-XXXXXXXXXX-XXXXXXXXXX  
QTY: 0123456789 HUE: XXXXXXXXXXXX  
CAT: XXXXXXXXXXXX REF: XXXXXXXXXXXX  
REFERENCE: BTPYYMDDXXXXX  
MADE IN XXXXXX

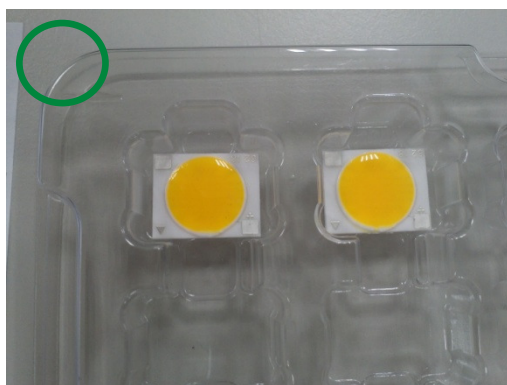
## Precautions of Use

### Over-Current-Proof

- Though the GXUAN1313 has a conducted ESD protection mechanism, customers must not use the device in reverse and should apply resistors for extra protection. Otherwise slight voltage shift may cause significant current changes and burn out failure may happen.

### Storage Conditions

- Before the package is opened: The LEDs should be stored at 30°C or less and 50%RH or less after being shipped from Everlight and the storage life limit is 6 months. If the LEDs are stored for 6 months or more, they should be stored in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- After opening the package: The LED should be stored under 30°C or less and 30%RH or less. The LED should be used within 168hrs (7days) after opening the package. If unused LEDs remain, it should be stored in moisture proof packages.
- Do not stack assemblies.

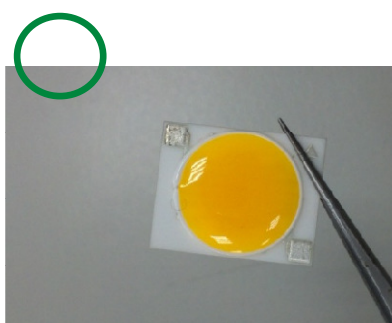


## Handling

- Do not put mechanical stress on the LED.
- Never touch the optical surface with finger or sharp object. The LED surface could be soiled or damaged, which could affect the optical performance of the LED.
- In low-humidity work environment, please keep handling the LEDs with appropriate ESD grounding.
- It is recommended to handle the LED with powder-less latex gloves.

## Manual Handling

- When handling the product, do not apply direct pressure on the optical surface.
- Do not touch the resin with tweezers to avoid scratching or other damage.



## Thermal Management

- Sufficient thermal management must be implemented. Substrate of the positive in temperature must be kept under 85 °C at the driving current of 360mA. Otherwise, the junction temperature of die may exceed the limit at high current driving conditions and the LEDs' lifetime may be decrease dramatically.

## Revision History

Current version: **2016/06/07**

Previous version: **N/A**

Device No. DHE-0003091

Rev. Ver. 1

| Page | Subjects (major change in previous version) | Date of change |
|------|---------------------------------------------|----------------|
|      |                                             |                |
|      |                                             |                |
|      |                                             |                |
|      |                                             |                |