



### ELCS14G-NB2530J6J7293910-F3Y

| <b>Received</b>                     |                 |
|-------------------------------------|-----------------|
| <input checked="" type="checkbox"/> | MASS PRODUCTION |
| <input type="checkbox"/>            | PRELIMINARY     |
| <input type="checkbox"/>            | CUSTOMER DESIGN |
| DEVICE NO. : DHE-0003733            |                 |
| PAGE : 13                           |                 |

| <b>Revised record</b> |             |              |
|-----------------------|-------------|--------------|
| REV.                  | DESCRIPTION | RELEASE DATE |
| 1                     | New spec    | May.14.2020  |
|                       |             |              |
|                       |             |              |
|                       |             |              |

## ELCS14G-NB2530J6J7293910-F3Y



### Features

- Feature of the device : small package with high efficiency
- Typical luminous flux@ 1A : 220 lm
- Optical efficiency@1A : 63.77 lm/W
- Binning Parameters : Brightness, Forward Voltage and Chromaticity
- Grouping parameter: total luminous flux, color coordinates.
- RoHS compliant & Pb free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

### Applications

- Mobile Phone Camera Flash(Camera flash light /strobe light for mobile devices )
- Torch light for DV(Digital Video) application
- Indoor lighting applications
- Signal and symbol luminaries for orientation marker lights (e.g. steps, exit ways, etc.)
- TFT backlighting
- Exterior and interior illumination applications
- Decorative and Entertainment Lighting
- Exterior and interior automotive illumination

## Device Selection Guide

| Chip Materials | Emitted Color |
|----------------|---------------|
| InGaN          | Warm White    |

## Absolute Maximum Ratings

| Parameter  | Symbol          | Rating     | Unit   |
|--|-----------------|------------|--------|
| DC Forward Current (Torch Mode)                                | $I_F$           | 350        | mA     |
| Peak Pulse Current<br>(400 ms on / 3600 ms off / 30000 cycle ) | $I_{Pulse}$     | 1000       | mA     |
| ESD Resistance (JEDEC 3b)                                      | $V_B$           | 2          | V      |
| Reverse Voltage  | $V_R$           | Note 1     | V      |
| Junction Temperature   | $T_J$           | 145        | °C     |
| Operating Temperature  | $T_{Opr}$       | -40 ~ +85  | °C     |
| Storage Temperature  | $T_{Stg}$       | -40 ~ +100 | °C     |
| Soldering Temperature  | $T_{Sol}$       | 260        | °C     |
| Allowable Reflow Cycles  | n/a             | 2          | Cycles |
| Viewing Angle <sub>(2)</sub>                                   | $2\theta_{1/2}$ | 120        | Deg    |
| Thermal resistance   | $R_{th}$        | 8.5°       | C/W    |

### Notes:

1. The CS series LEDs are not designed for reverse bias used.
2. View angle measurement tolerance $\pm 5^\circ$
3. Avoid operating CS series LEDs at maximum operating temperature exceed 1 hour.
4. All specification are assured by reliability test for 1000hr, IV degradation less than 30%.
5. All reliability items are tested under good thermal management with 1.0x 1.0 cm<sup>2</sup> MCPCB.

## JEDEC Moisture Sensitivity

| Level | Floor Life     |   | Soak Requirements Standard |               |
|-------|----------------|---|----------------------------|---------------|
|       | Time ( hours ) | Conditions                                | Time ( hours )             | Conditions    |
| 1     | Unlimited      | $\leq 30^\circ\text{C} / 85\% \text{ RH}$ | 168 (+5/-0)                | 85°C / 85% RH |

## Electro-Optical Characteristics (Ts=25°C)

| Parameter                         | Symbol         | Min. | Typ. | Max. | Unit | Condition              |
|-----------------------------------|----------------|------|------|------|------|------------------------|
| Luminous Flux <sup>(1)</sup>      | I <sub>v</sub> | 200  | 220  | 300  | lm   | I <sub>F</sub> =1000mA |
| Forward Voltage <sup>(2)(3)</sup> | V <sub>F</sub> | 2.95 | 3.45 | 3.95 | V    |                        |
| Color Temperature                 | CCT            | 2500 | 2750 | 3000 | K    |                        |

## Forward Voltage Binning

| Bin  | Symbol         | Min. | Typ. | Max. | Unit | Condition              |
|------|----------------|------|------|------|------|------------------------|
| 2939 | V <sub>F</sub> | 2.95 | 3.45 | 3.95 | v    | I <sub>F</sub> =1000mA |

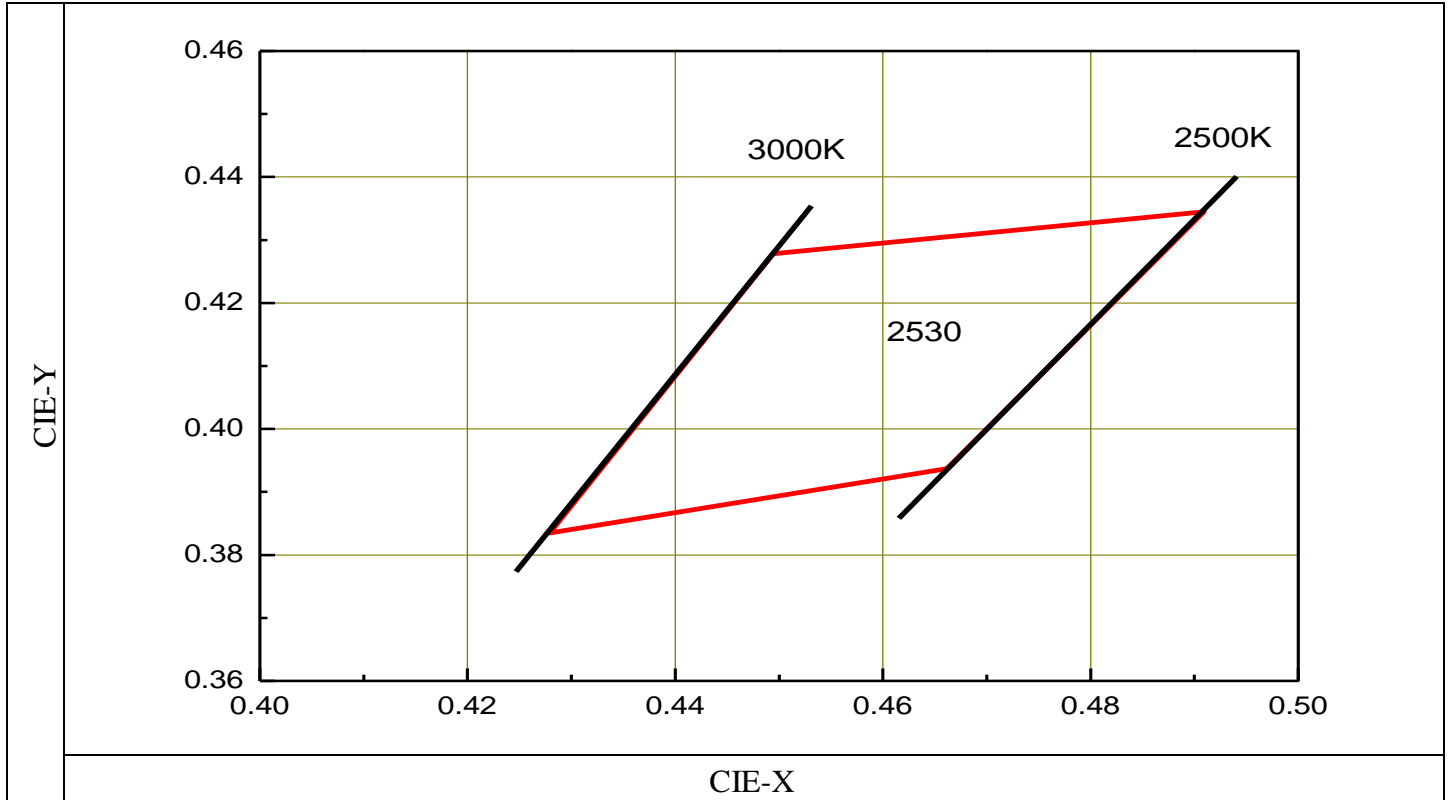
## Luminous Flux Binning

| Bin | Symbol         | Min. | Typ. | Max. | Unit | Condition              |
|-----|----------------|------|------|------|------|------------------------|
| J6  | I <sub>v</sub> | 200  | 220  | 300  | lm   | I <sub>F</sub> =1000mA |

### Notes:

1. Luminous Flux, illuminance measurement tolerance : ±10%
2. Forward voltage measurement tolerance : ±0.1V
3. Electric and optical data is tested at 50 ms pulse condition.
4. Low current voltage measurement tolerance: ±10%
5. Temperature of solder pad : 25°C

Cool White Bin Structure

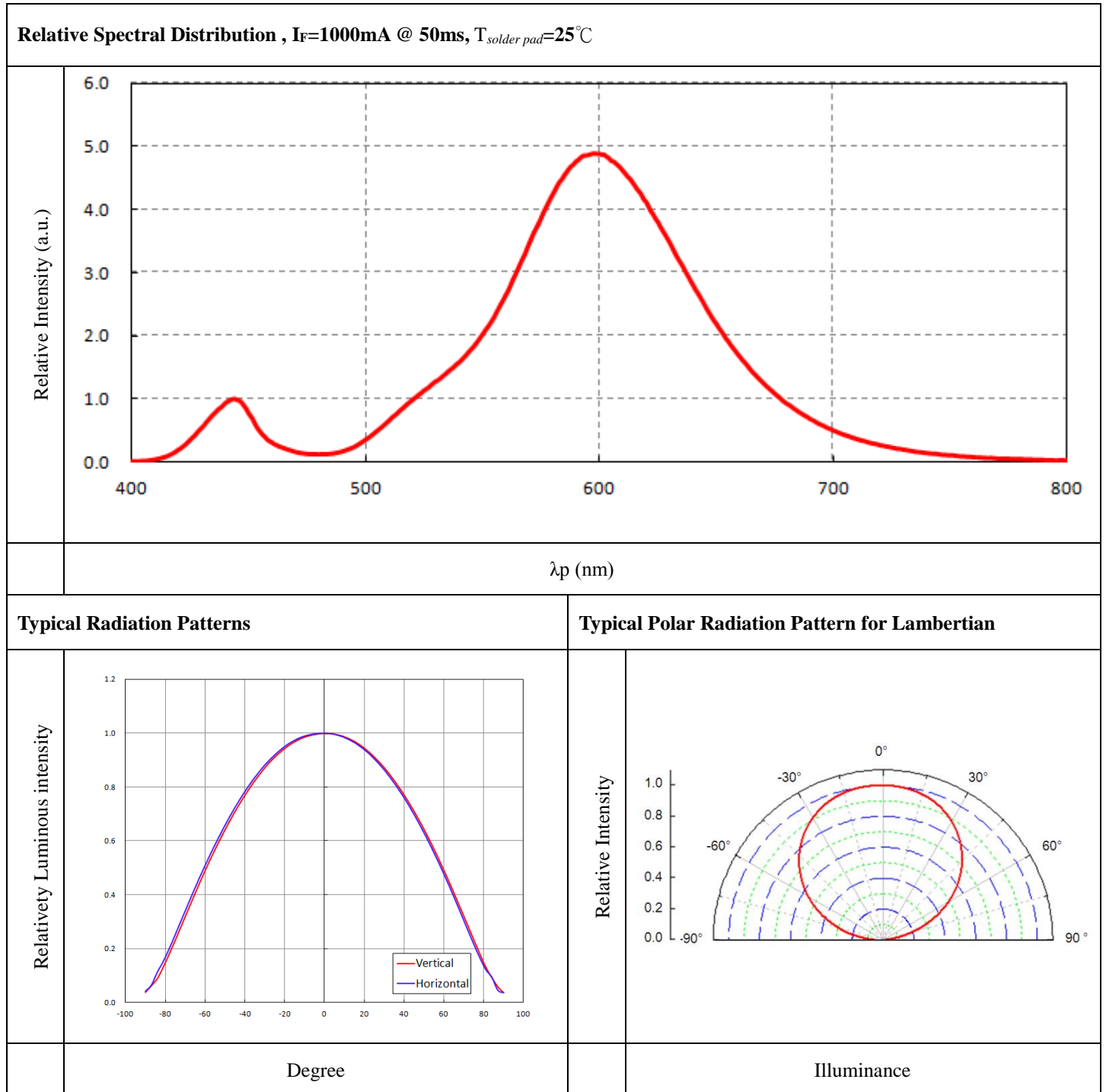


| Bin  | CIE-X  | CIE-Y  | Reference Range |
|------|--------|--------|-----------------|
| 2530 | 0.4494 | 0.4278 | 2500 ~ 3000K    |
|      | 0.4909 | 0.4345 |                 |
|      | 0.4662 | 0.3937 |                 |
|      | 0.4279 | 0.3835 |                 |

Notes:

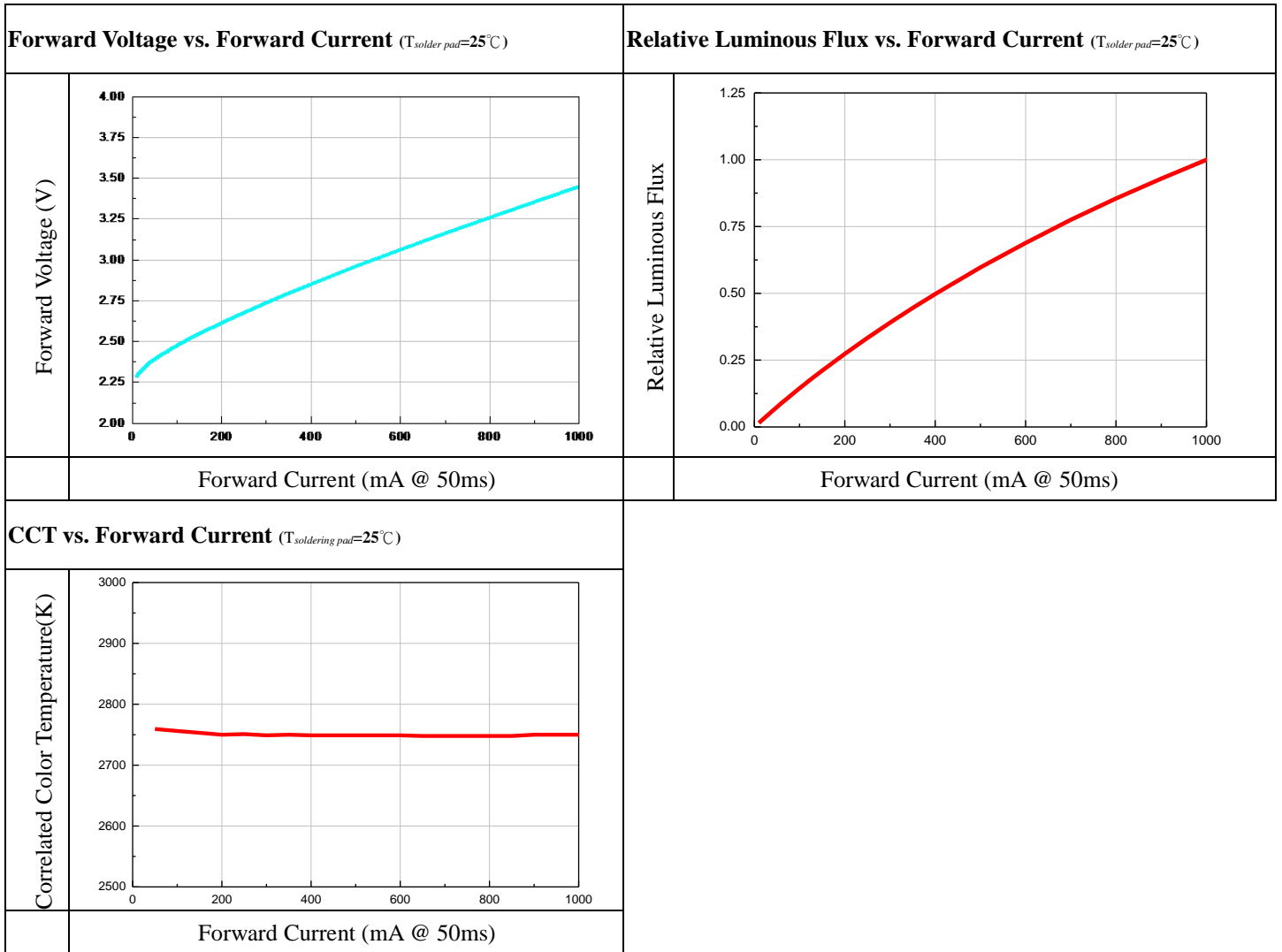
1. Color coordinates measurement allowance :  $\pm 0.01$
2. Color bins are defined at IF=1000mA operation.

### Typical Electro-Optical Characteristics Curves



**Notes:**

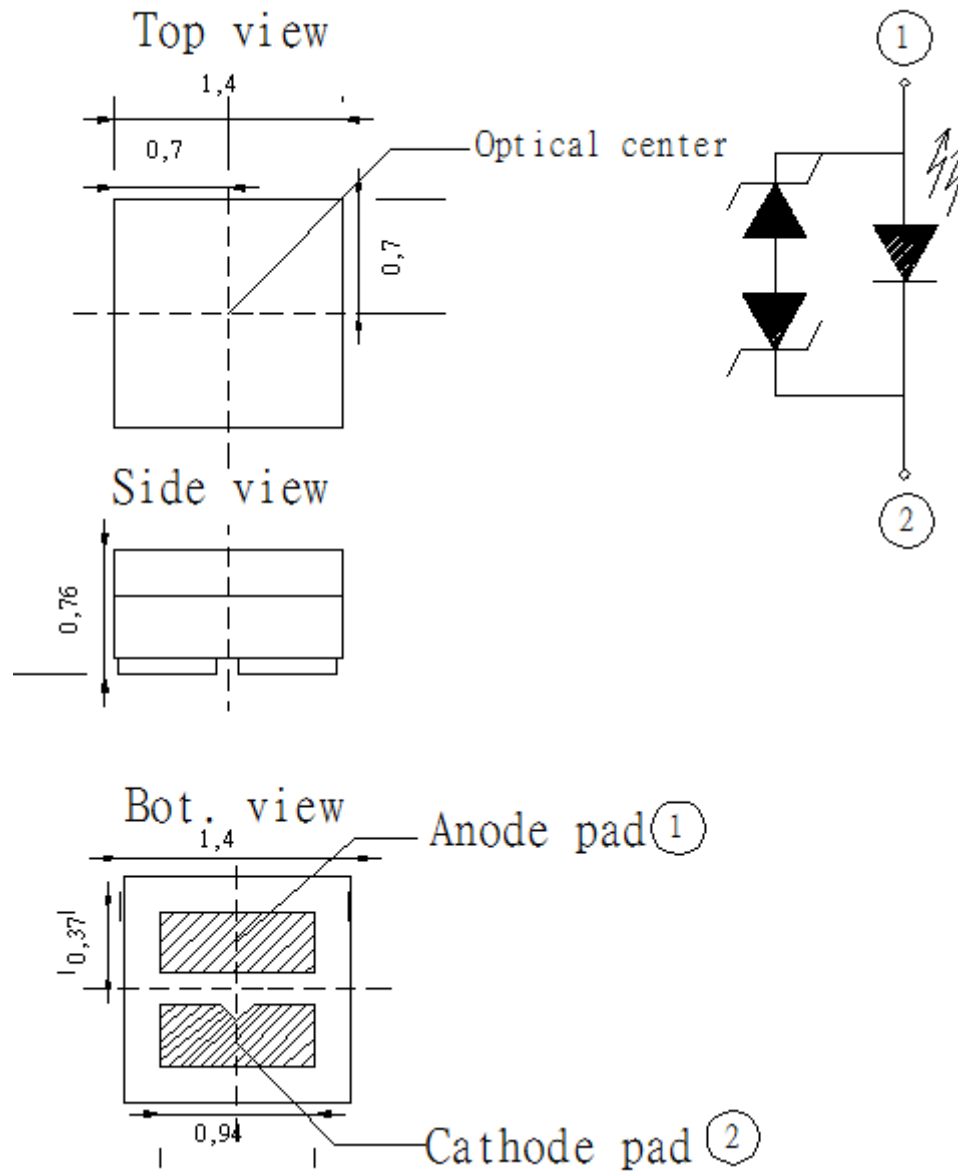
1.  $2\theta_{1/2}$  is the off axis from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is  $\pm 5^\circ$



**Notes:**

1. All correlation data is tested under superior thermal management with  $1 \times 1 \text{ cm}^2$  MCPCB.

## Package Dimension



### Notes:

1. Dimensions are in millimeters.



## Moisture Resistant Packing Materials

### Product Labeling

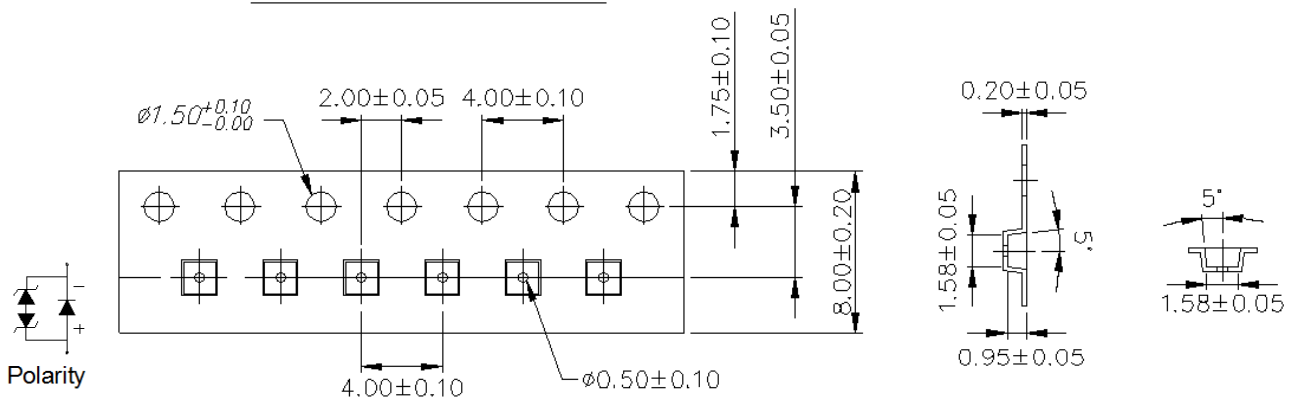


- CPN:Customer's Product Number
- P/N:Everlight Product Number
- LOT NO:Lot Number
- QTY:Packing Quantity
- CAT:Luminous Flux (Brightness) Bin
- HUE:Color Bin
- REF:Forward Voltage Bin
- REFERENCE:Reference
- MSL-X:MSL Level

### Carrier Tape Dimensions: Loaded Quantity 3000 pcs Per Reel

(Minimum Package Quantity :1000 PCS)

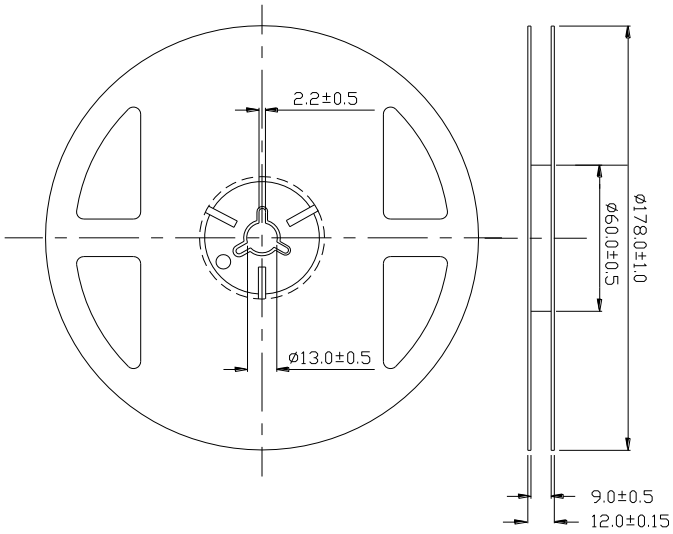
#### Progress Direction



#### Notes:

1. Dimensions are in millimeters.

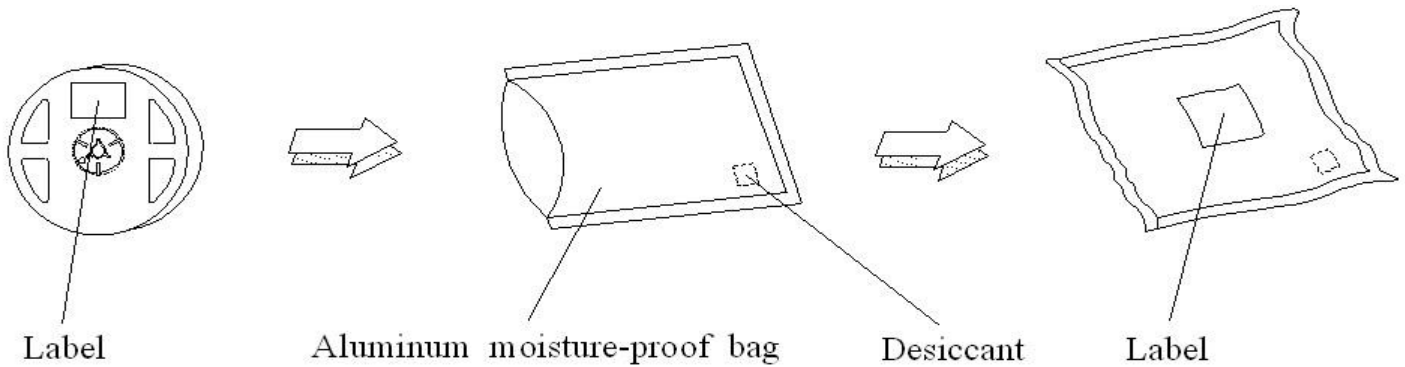
### Emitter Reel Dimensions



#### Notes:

1. Dimensions are in millimeters.

### Moisture Resistant Packing Process



## Reflow Soldering Characteristics

### Soldering and Handling

#### 1. Over-current-proof

Though CS series has 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 enormous current shift and burn out failure would happen.

#### 2. Storage

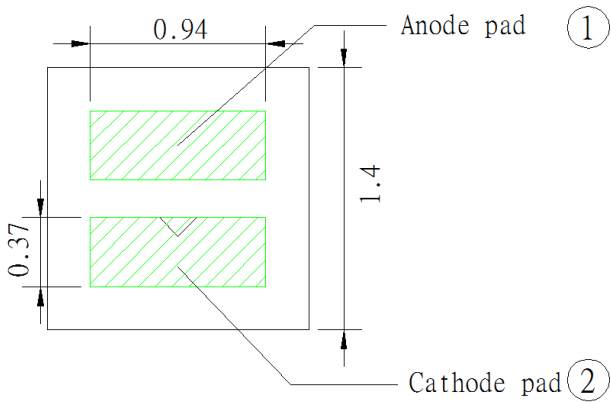
- 2.1 Do not open the moisture proof bag before the products are ready to use.
- 2.2 Before opening the package, the LEDs should be stored at temperature less than 30°C and relative humidity less than 90%
- 2.3 After opening the package, the LEDs should be stored at temperature less than 30°C and relative humidity less than 85%.
- 2.4 If the moisture absorbent material (silicone gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be implemented based on the following conditions: Pre-curing at 60±5°C for 24 hours.

#### 3. Thermal Management

- 3.1 For maintaining the high flux output and achieving reliability, CS series LEDs should be mounted on a metal core printed circuit board (MCPCB), with proper thermal connection to dissipate approximately 1W to 5W of thermal energy under normal operation.
- 3.2 Sufficient thermal management must be conducted, or the die junction temperature will be over the limit under large electronic driving and LEDs lifetime will decrease critically.
- 3.3 When operating, the solder pad temperature ( or the board temperature nearby the LED) must controlled under 70°C.

#### 4. Soldering Condition

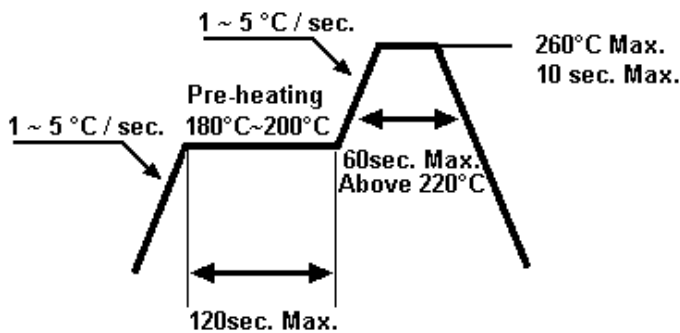
##### 4.1 Soldering Pad



### Soldering pattern

#### 4.2 For Reflow Process

##### 4.2.1 Lead reflow soldering temperature profile



4.2.2 Reflow soldering should not be done more than two times.

4.2.3 While soldering, do not put stress on the LEDs during heating.

4.2.4 After soldering, do not warp the circuit board.

## **DISCLAIMER**

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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