

ELCS14B-NB2025J6J8283910-F4Z

| Received |
|---|
| <input type="checkbox"/> MASS PRODUCTION |
| <input checked="" type="checkbox"/> PRELIMINARY |
| <input type="checkbox"/> CUSTOMER DESIGN |
| DEVICE NO. : DHE-000XXXX |
| PAGE : 12 |

| Revised record | | |
|----------------|-------------|--------------|
| REV. | DESCRIPTION | RELEASE DATE |
| 1 | New spec | Jul.13.2018 |
| | | |
| | | |
| | | |

ELCS14B-NB2025J6J8283910-F4Z

(ELCS14 WW)



Features

- Feature of the device : small package with high efficiency
- Typical luminous flux@ 1A : 230 lm
- Optical efficiency@1A : 67.65 lm/W
- ESD protection (according to JEDEC 3b) (HBM air or contact discharge) up to 2KV
- Binning Parameters : Brightness, Forward Voltage and Chromaticity
- Grouping parameter: total luminous flux, color coordinates.
- RoHS compliant & Pb free.
- Compliance with EU REACH
- Compliance Halogen Free (Br<900 ppm, Cl<900ppm , 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 (400 ms on / 3600 ms off / 30000 cycle) | I_{Pulse} | 1000 | mA |
| ESD Resistance (JEDEC 3b) | V_B | 2 | KV |
| Reverse Voltage | V_R | Note 1 | V |
| Junction Temperature | T_j | 150 | °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 ₍₂₎ | $2\theta_{1/2}$ | 120 | Deg |

Notes:

- 1.The CSP series LEDs are not designed for reverse bias used.
- 2.View angle measurement tolerance $\pm 5^\circ$
- 3.Avoid operating CSP 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 cm² MCPCB.
- 6.Peak pulse current shall be applied under conditions as max duration time 400 ms and max duty cycle 10%
- 7.Operate LED component at maximum rating conditions continuously will cause possible permanent damage and de-rating parameters. Exercise multiple maximum rating parameters simultaneously should not be allowed. When maximum rating parameters are applied over a long period will result potential reliability issue.

JEDEC Moisture Sensitivity

| Level | Floor Life | | Soak Requirements Standard | |
|-------|----------------|-----------------|----------------------------|---------------|
| | Time (hours) | Conditions | Time (hours) | Conditions |
| 1 | Unlimited | ≤ 30°C / 85% RH | 168 (+5/-0) | 85°C / 85% RH |

Electro-Optical Characteristics (Ts=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-----------------------------------|----------------|------|------|------|------|------------------------|
| Luminous Flux ₍₁₎ | I _v | 210 | 230 | ---- | lm | |
| Forward Voltage ₍₂₎₍₃₎ | V _F | 2.85 | ---- | 3.95 | V | I _F =1000mA |
| Color Temperature | CCT | 2000 | ---- | 2500 | K | |

Forward Voltage Binning

| Bin | Symbol | Min. | Typ. | Max. | Unit | Condition |
|------|----------------|------|------|------|------|------------------------|
| 2832 | V _F | 2.85 | ---- | 3.25 | V | I _F =1000mA |
| 3235 | V _F | 3.25 | ---- | 3.55 | | |
| 3539 | V _F | 3.55 | ---- | 3.95 | | |

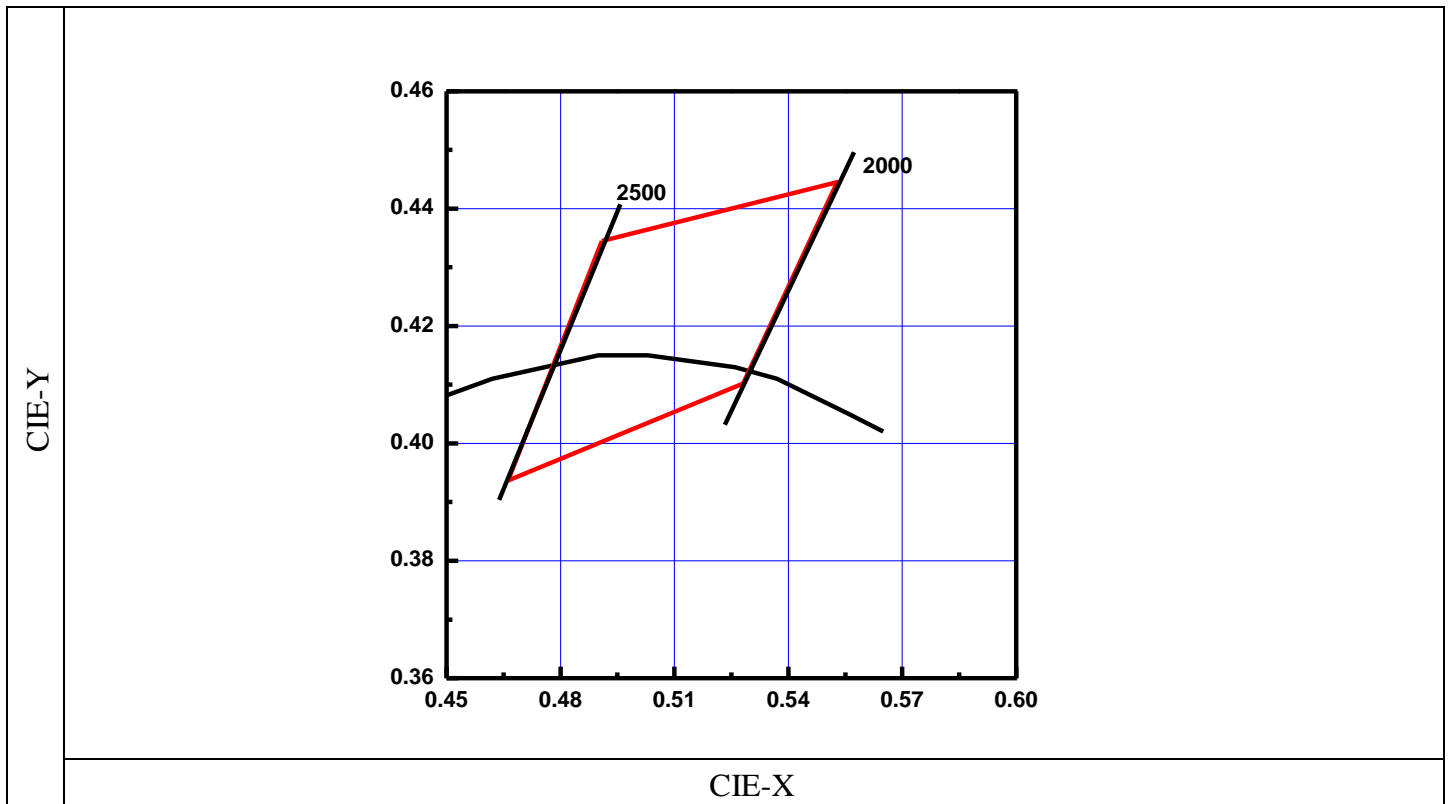
Luminous Flux Binning

| Bin | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-----|----------------|------|------|------|------|------------------------|
| J6 | I _v | 210 | ---- | 250 | lm | I _F =1000mA |
| J7 | I _v | 250 | ---- | 300 | | |
| J8 | I _v | 300 | ---- | 330 | | |

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.Temperature of solder pad : 25°C

Warm White Bin Structure

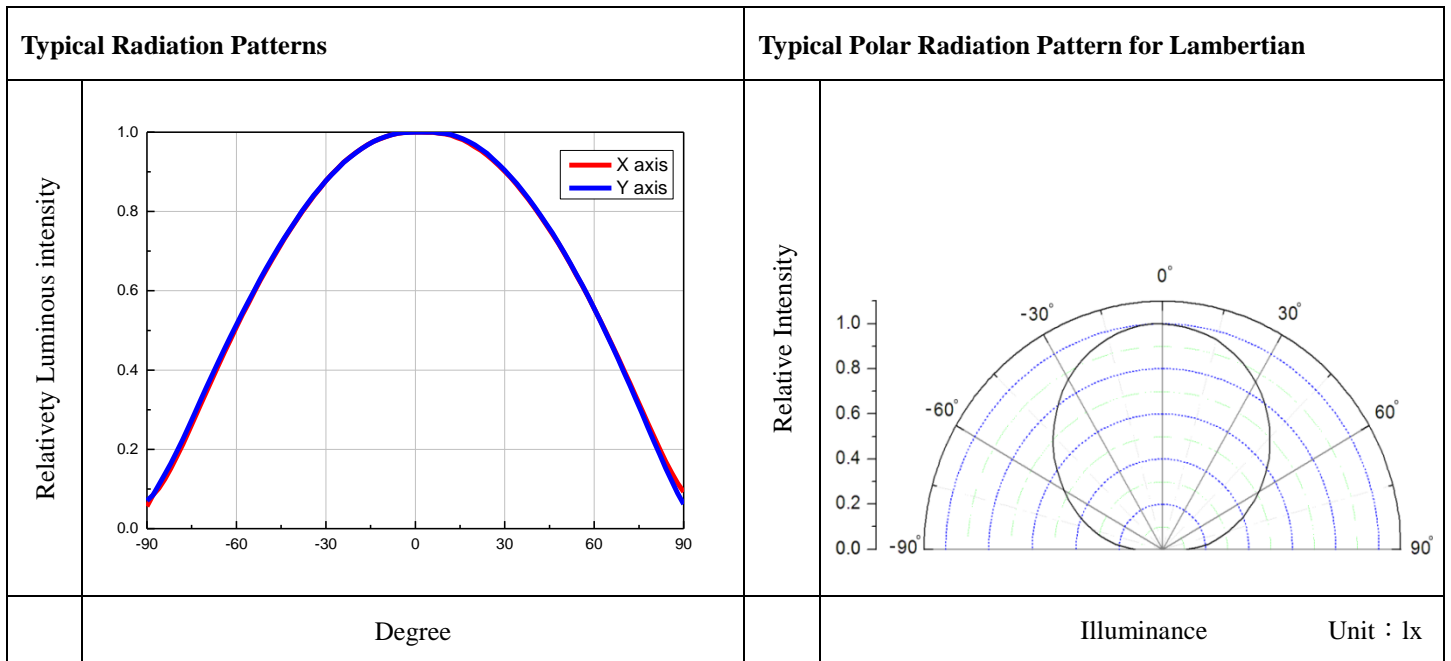
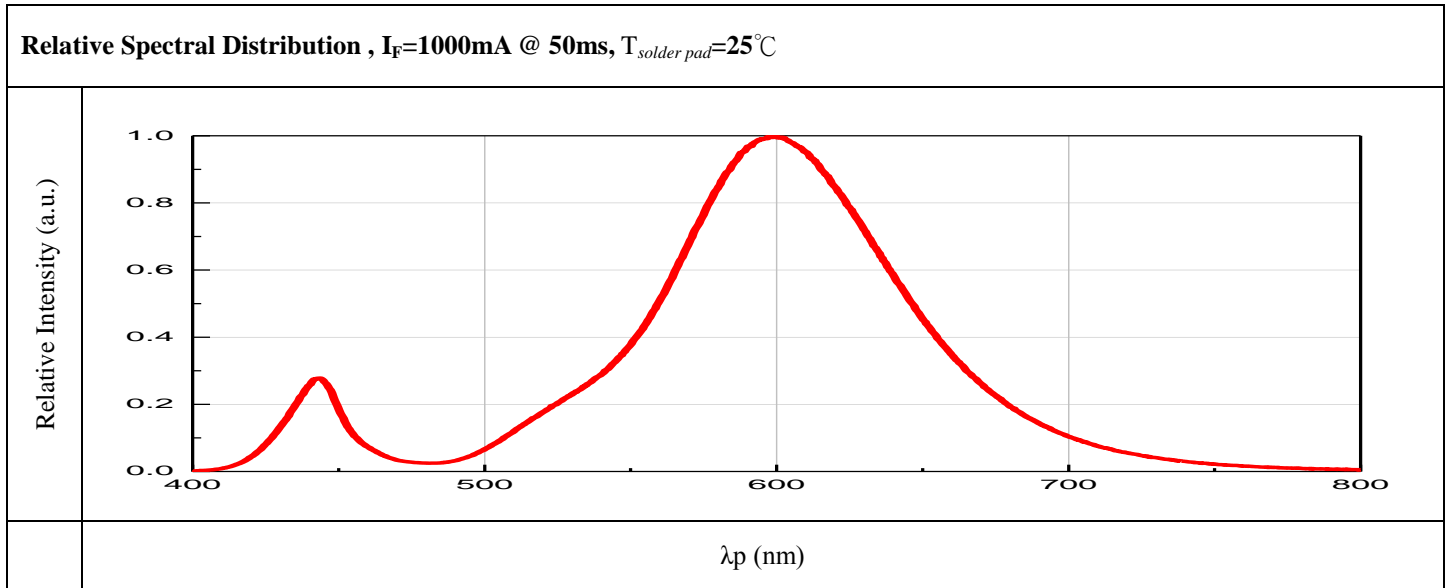


| Bin | CIE-X | CIE-Y | Reference Range |
|------|--------|--------|-----------------|
| 2025 | 0.4909 | 0.4345 | 2000~2500 K |
| | 0.5529 | 0.4445 | |
| | 0.5281 | 0.4102 | |
| | 0.4662 | 0.3937 | |

Notes:

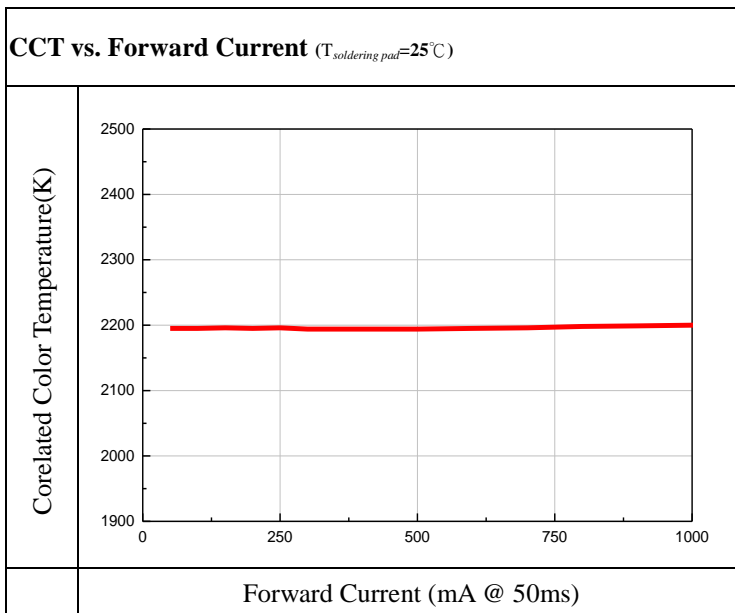
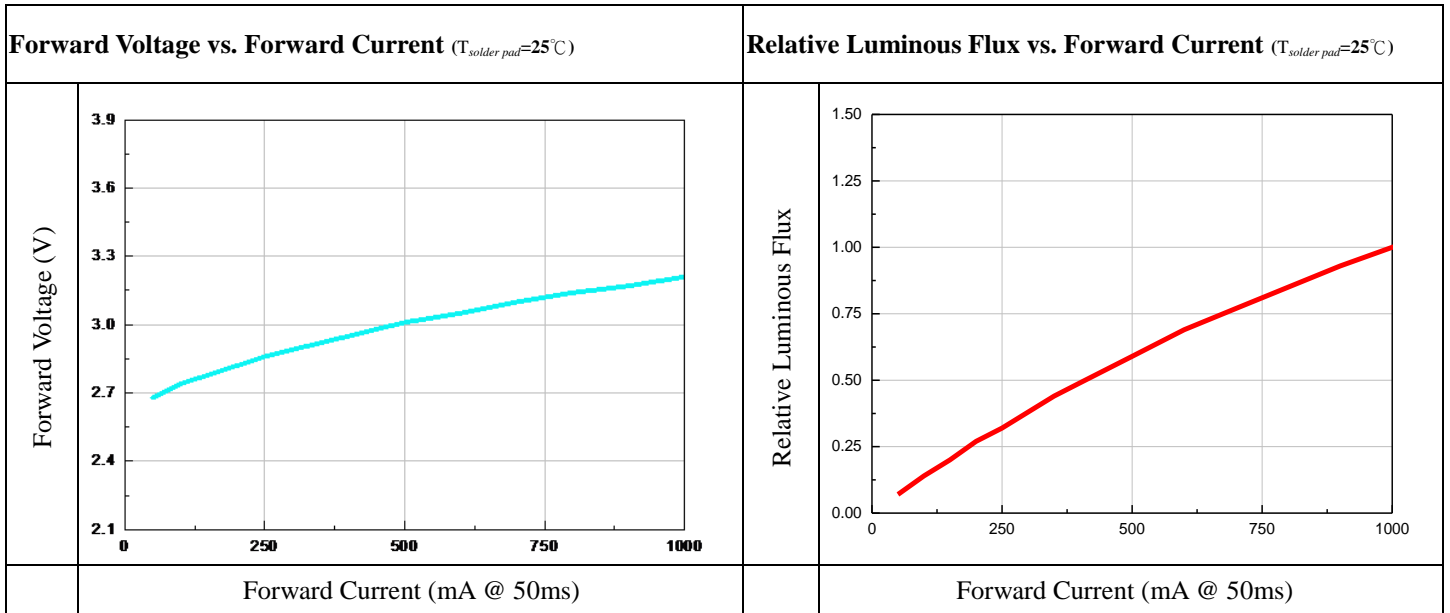
- 1.Color coordinates measurement allowance : ± 0.01
- 2.Color bins are defined at IF=1000mA operation.

Typical Electro-Optical Characteristics Curves



Notes:

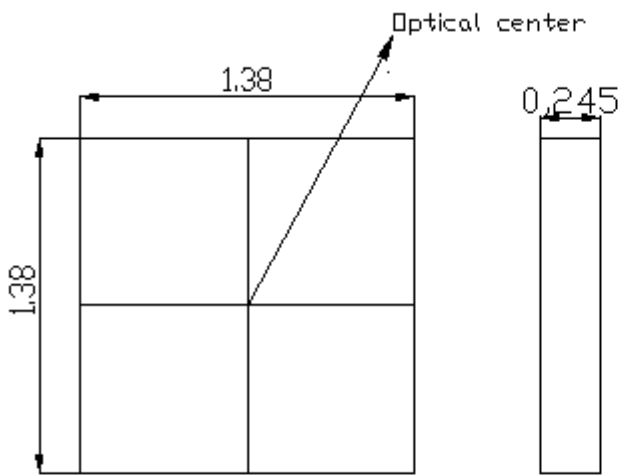
1. $2\theta_{1/2}$ is the off axis from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is $\pm 5^\circ$



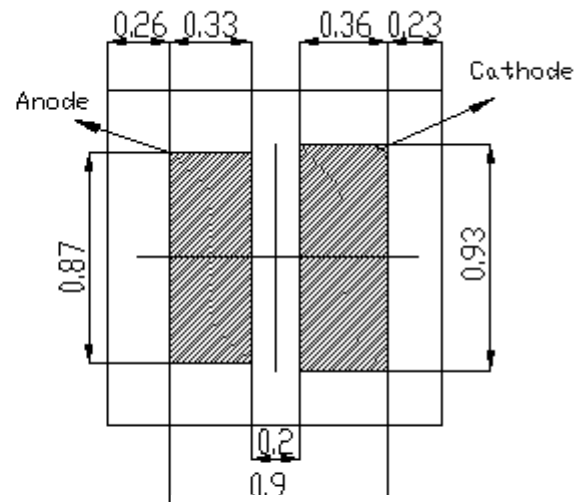
Notes:

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

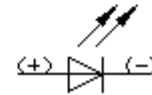
Package Dimension



Top view



Bottom view



Notes:

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are $\pm 0.05\text{mm}$.

Moisture Resistant Packing Materials

Product Labeling

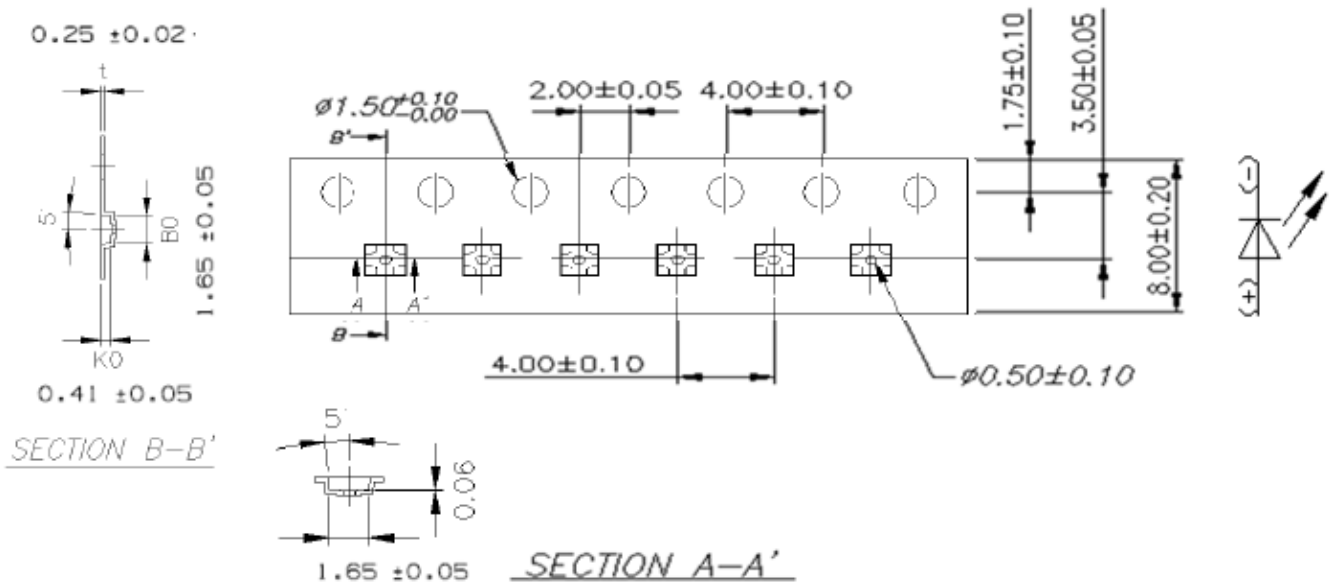
RoHS Pb **EVERLIGHT** **5**
 CPN: XXXXXXXXXXXXXXXXXXXX
 XXXXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX
 P/N: XXXXXXXXXXXX
 XXXXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX
 LOT NO: Y150716XXX-XXXXXXXXXX-XXXXXXXXXX
 QTY: 0123456789 HUE: XXXXXXXXXXXX
 CAT: XXXXXXXXXXXX REF: XXXXXXXXXXXX
 REFERENCE: BTPYYMDDXXXXX
 MSL-X MADE IN XXXXXX



- 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 5000 pcs Per Reel

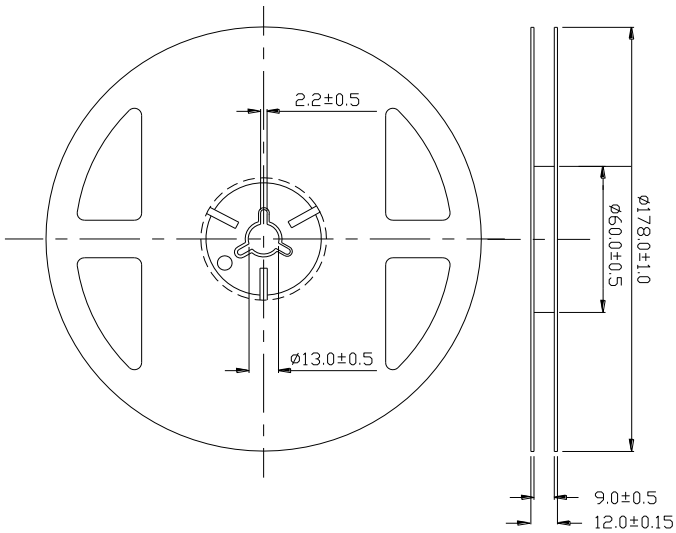
(Minimum Package Quantity :1000 PCS)



Notes:

1. Dimensions are in millimeters

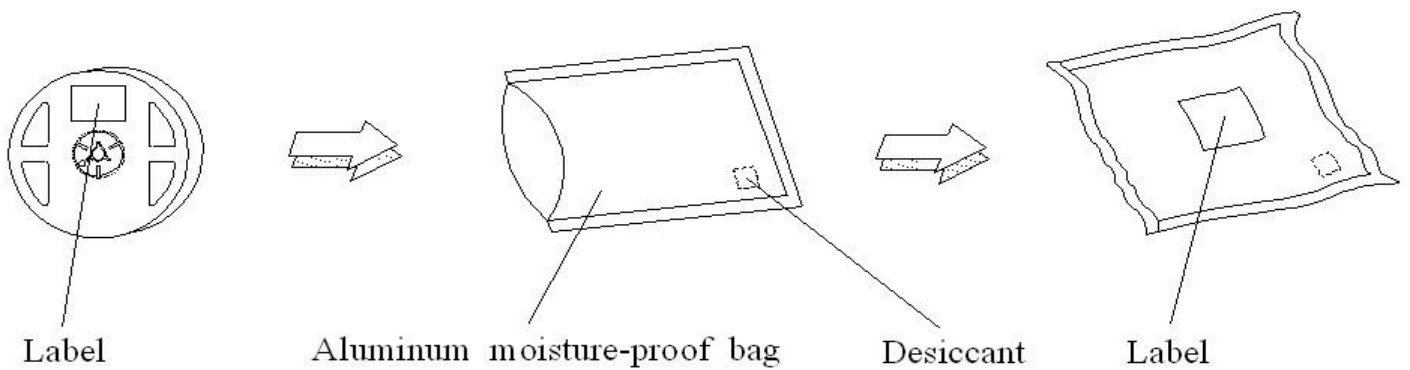
Emitter Reel Dimensions



Notes:

1. Dimensions are in millimeters.

Moisture Resistant Packing Process



Reflow Soldering Characteristics

Soldering and Handling

1. Storage

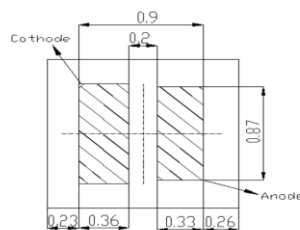
- 1.1 Do not open the moisture proof bag before the products are ready to use.
- 1.2 Before opening the package, the LEDs should be stored at temperature less than 30°C and relative humidity less than 90%
- 1.3 After opening the package, the LEDs should be stored at temperature less than 30°C and relative humidity less than 85%
- 1.4 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.

2. Thermal Management

- 2.1 For maintaining the high flux output and achieving reliability, CSP 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.
- 2.2 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.
- 2.3 When operating , the solder pad temperature (or the board temperature nearby the LED) must controlled under 70°C.

3. Soldering Condition

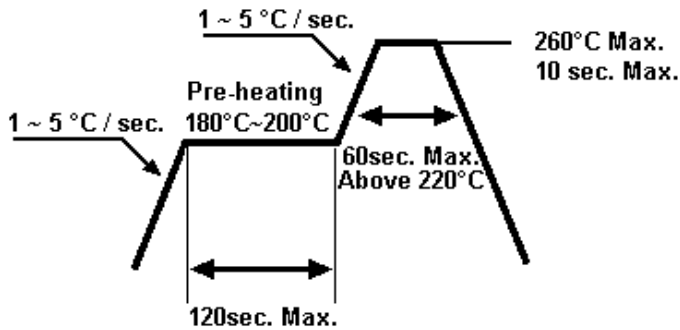
3.1 Soldering Pad



Recommended soldering pattern layout

3.2 For Reflow Process

3.2.1 Lead reflow soldering temperature profile



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

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

3.2.4 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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