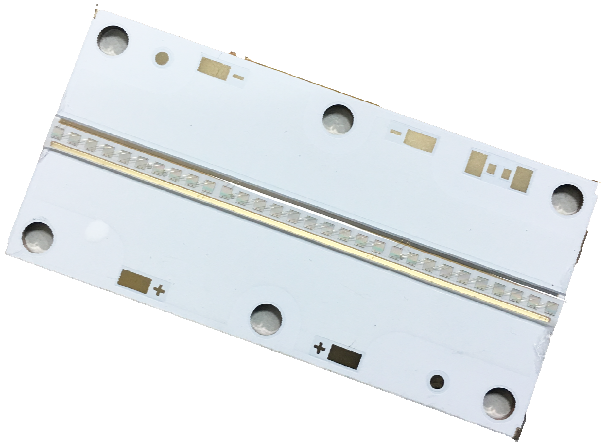
lead-free RoHS Compliant Water cooling

# UC-030D-xxxBB



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## Features:

- **Supply wide UV-A wavelength from 365nm to 430nm**
- **Up 5W/cm2 of Optical power from 390nm to 430nm**
- **High thermal conductivity package:**
  **> Junction to heat sink thermal resistance of < 0.3℃/W**
- **High radiometric efficiency**
- **Environmentally friendly: RoHS compliant, mercury-free**
- **Easy use for Linear UV light source**

## Applications:

- **Curing:**
  **> Inks > Coatings > Adhesives**
- **Inspection**
- **Machine Vision**
- **Fiber-coupled illumination**
- **Specialty Projection Systems for Maskless Lithography**
- **Rapid Prototyping and 3D printing**
- **Medical and Scientific Instrumentation**



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# Technology of Overviews

**FLEDA COB Multi-chips LED package benefit from innovations in device technology, chip package and thermal management. This suite of technologies give engineers and system designers the freedom to develop solutions both high in power and efficiency.**

## FLEDA Technology

**FLEDA's technology enables to emit large area photons uniformly over the entire COB UV LED surface. The intense optical power density produced by these multi-chips facilitate designs which replace mercury lamps where arrays of traditional power LEDs cannot.**

**For UV devices, FLEDA's side-less structure to let the engineers easy to design the linear UV LED light source and instead of the linear mercury lamps with power density 80W/cm -120W/cm.**

## Reliability Technology

**Designed from the ground up, FLEDA COB Multi-chips LEDs are one of the most reliable light sources in the world today. COB Multi-chips LEDs have passed a rigorous suite of environmental and mechanical stress tests, including mechanical shock, vibration, temperature cycling and humidity, and high current applications. With very low failure rates and median lifetimes that typically exceed 10,000 hours, FLEDA COB Multi-chips LEDs are ready for the most demanding applications.**

## Packaging Technology

**Thermal management is critical in high power LED applications. FLEDA UC-Series UV LEDs have the lowest thermal resistance of any LED on the market with a thermal resistance from junction to heat sink of 0.3℃/W or 0.35℃/W. This allows the LED to be driven at higher current densities while maintaining a low junction temperature, thereby resulting in brighter solutions and longer lifetimes.**

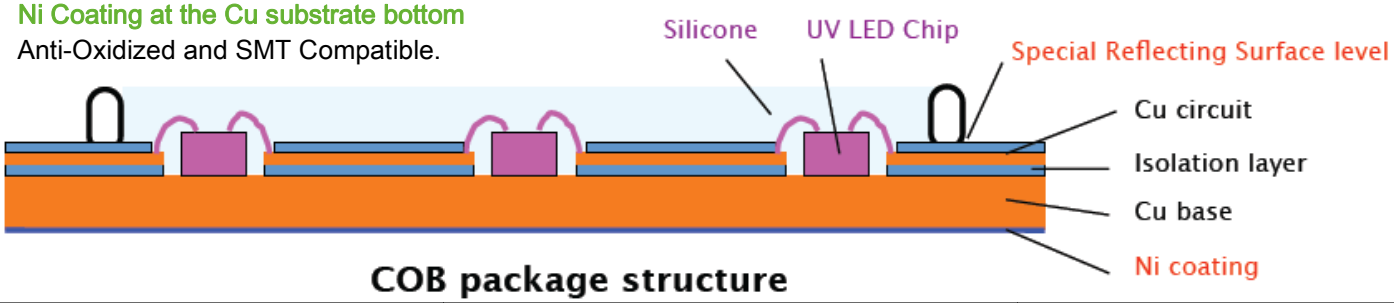
## Environmental Benefits

**FLEDA LEDs help reduce power consumption and the amount of hazardous waste entering the environment. All COB Multi-chips LED products manufactured by FLEDA are RoHS compliant and free for hazardous materials, including lead and mercury.**

# The Advantages of COB Multi-chips LEDs

**Every FLEDA LED is fully designed to ensure that it meets the high quality standards expected from FLEDA's products.**

- Low Thermal Resistance <0.16℃/W / High thermal conductivity 401W/(m.K)
  Copper Substrate and LED Chip Direct Bonding on Cu Base
- Special Reflecting Surface
  No Ag Plating, Anti-Sulfide, and Low Light Decay.
- Ni Coating at the Cu substrate bottom
  Anti-Oxidized and SMT Compatible.




COB package structure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# Optical & Electric Characteristics

## Optical Characteristics (Ta=25℃)

| Parameter | Symbol | Wavelength | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Irradiance Note[1] | Ee | 365-370 nm | IF=3000mA | 1 | 1.5 | - | W/cm2 |
| | | 370-380 nm | | 1.5 | 2.5 | - | |
| | | 380-390 nm | | 2.5 | 3 | - | |
| | | 390-410 nm | | 3 | 3.5 | - | |
| View Angle | $2\Theta_{1/2}$ | X-Axis | IF=3000mA | 120 | 130 | 140 | Degree |
| | | Y-Axis | | 110 | 120 | 130 | |

Note: [1] Irradiance measured by DYMAX ACCU-CAL 50-LED Meter, and the distance of test is 7 mm from the MCPCB bottom.

[2] Recommended water cooling system, with board temperature controlled around 30°C.

## Electric Characteristics (Ta=25℃)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Forward Voltage | VF | IF=3000mA | 31 | 36 | 41 | V |
| Reverse Current Note[1] | Ir | VR=5V | | | 10 | uA |
| Thermal Resistance Junction to Board | RthJ-B | IF=3000mA | | 0.1 | | ℃/W |
| Temperature Coefficient fo Forward Voltage | $\Delta V_F/\Delta T$ | IF=3000mA | - | -64 | - | mV/℃ |

Note: [1] Singe chip VR


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## Absolute Maximum Rating (Ta=25℃)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Power Dissipation | PD | 123 | W |
| Continuous Forward Current Note[1] | IF | 3000 | mA |
| LED Junction Temperature | Tj | 120 | ℃ |
| Operating Temperature Range | Topr | -30℃ To +80℃ | |
| Storage Temperature Range | Tstg | -40℃ To +100℃ | |
| Manual Soldering Temperature | Tsol | 260℃±20℃ For 3-5 Seconds | |
| ESD Sensitivity Note[2] | ESD | 500V HBM | |
| Life time Note[3] | Lt | 20,000 hrs | |

Note: [1] Recommended water cooling system, with board temperature controlled around 40°C.

[2] Singe chip ESD.

[3] operated current is under 0.9A, and junction temperatures under 60°C.



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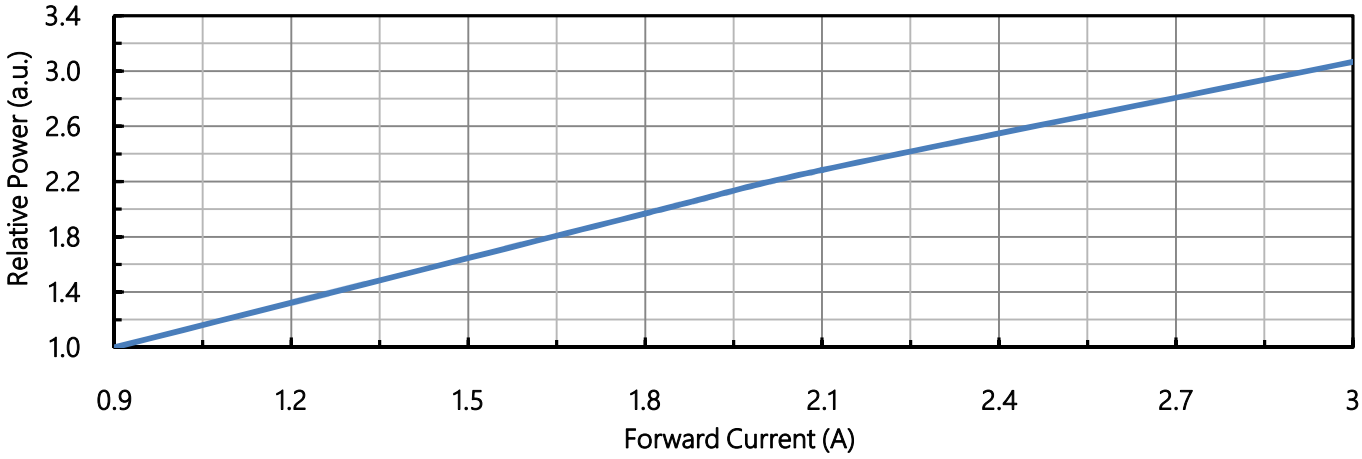
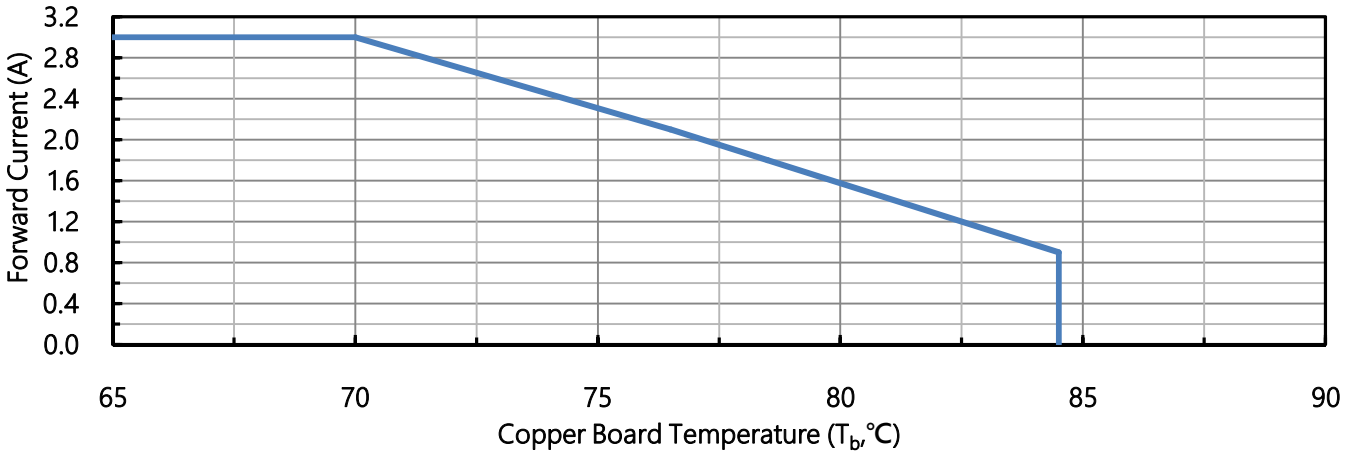
## Optical & Electric Characteristics

### Relative Power vs Forward Current (IF)




### Forward Current Derating Curve vs Board Temperature ($T_b$)



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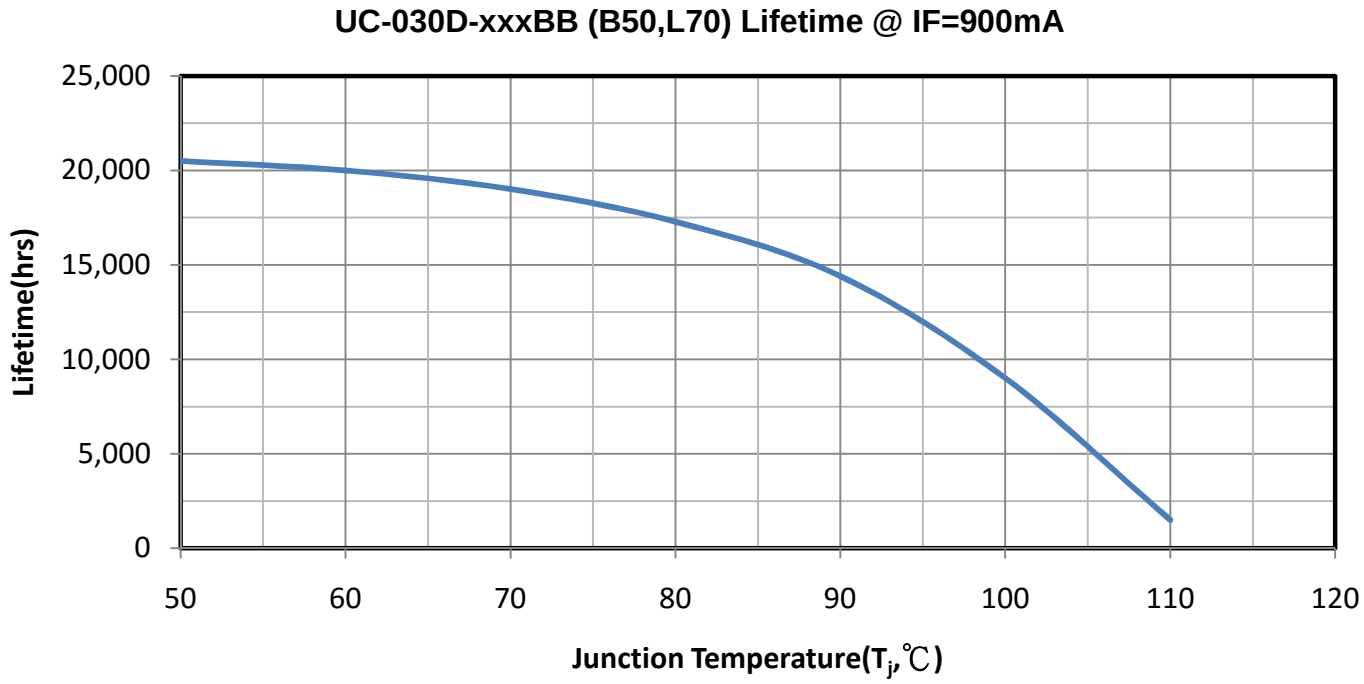
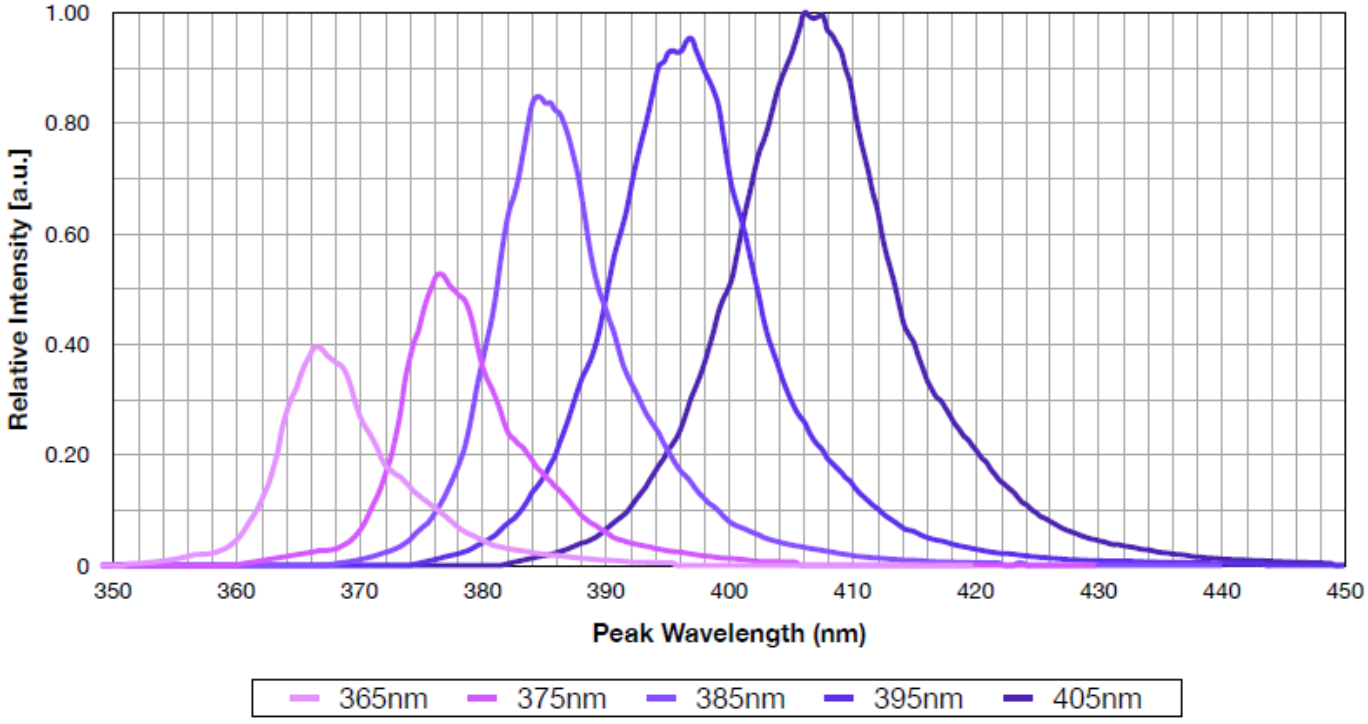
## UV COB LED Reliability




## UV COB LED Spectrum Distribution



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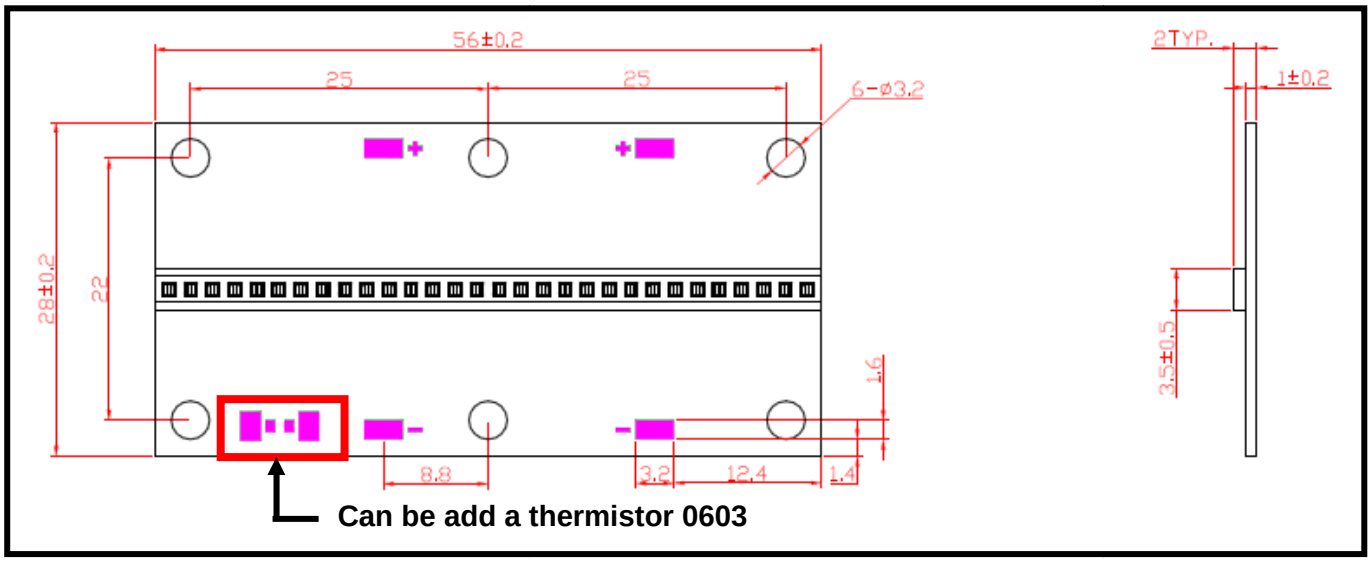
# Mechanical Dimensions

## Dimensions in millimeters




LED Array: 10S3P
Typical Voltage: 36V
Operating Current: 3000mA

**Notes:**
(1) All dimensions are in millimeters.
(2) Tolerance is ±0.25mm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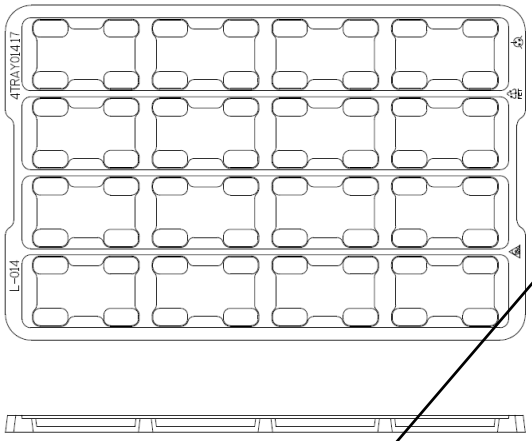
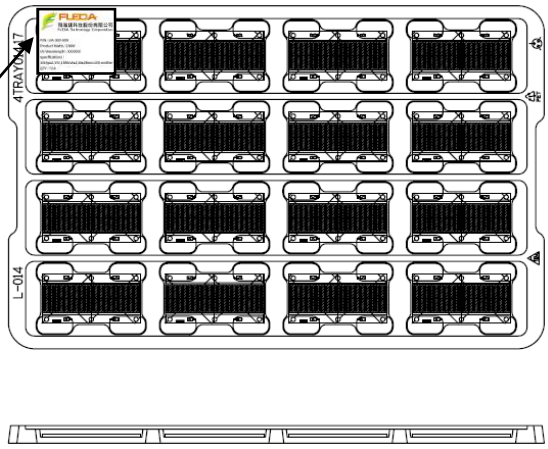
# Packing Information - UC Series

## PET Tray Dimension

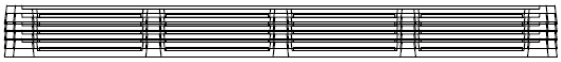



## Put Emitter onto tray

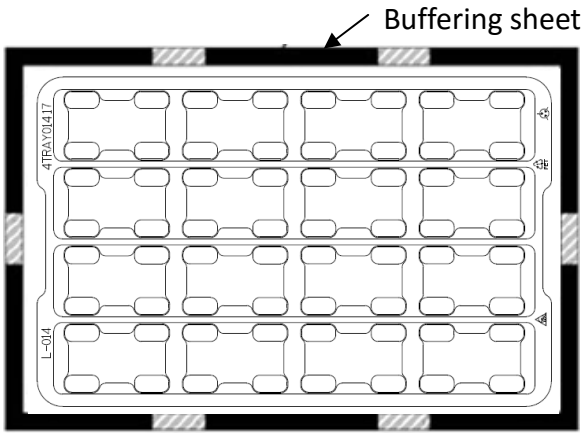


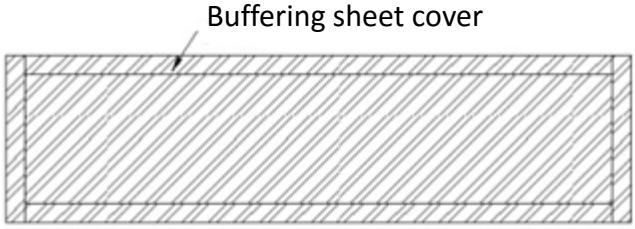

## Label format


## Stack 15 tray with 1 cover (full) Add bubble sheet if not full

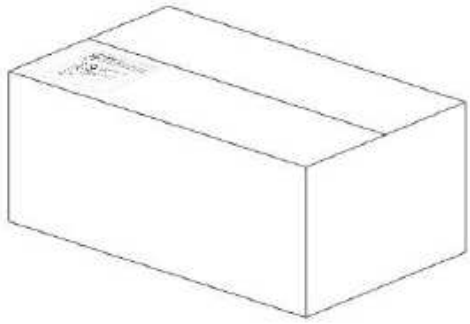


## Put tray into Buffering sheet

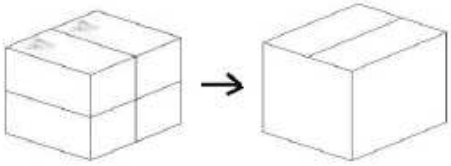



## Put into Carton and add label outside



## Put into Outer Box (4 cartons)





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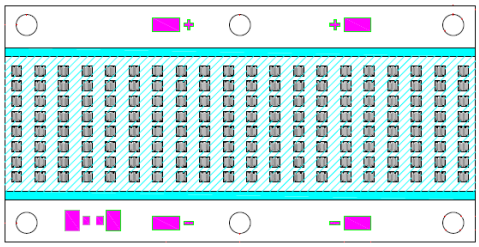
# Notice

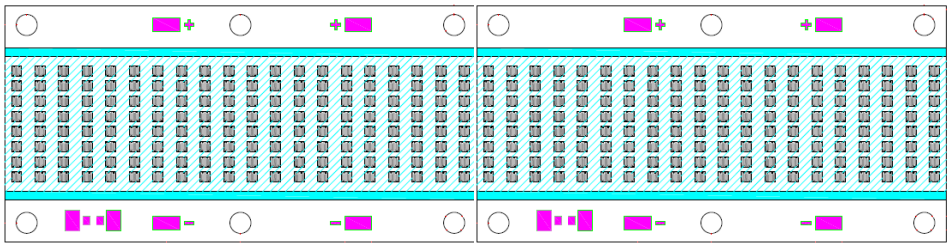
## Assembly Notice

**(1) Do not touch emitting area.**
Do not touch or scratch silicon forming matrix area since it could damage the bonding of LED chips or wires and cause dead zone.



**Don’t touch the surface of Emitter**

**(2) Assembly guideline**
Wiring emitter’s anode/cathode pad, then fix emitter with screws onto heat sink.



**(3) Soldering methods**
a) Set up the temperature of welding head to 400±10℃ when soldering.
b) Put Emitter on a 100±10℃ hot plate and set up welding head temperature to 300±10℃
c) Either is OK.

**(4) Wires**
Suggested using strand wires (softer) to connect power, don’t use solid wires.

## Used Notice

(1) In order to avoid absorption of moisture, it is recommended that the products are sotred in the dry box (or desiccators) with a desiccants. Alternatively the following environment is recommended. Storage temperature: 5℃ ~ 30℃ , Humidity: 60% HR Max.

(2) Soldering rapidly cooling should be avoided.

(3) Products should not be assembly on distorted surface of heat sink.

(4) Products should not contact with any types of fluid, such as water, oil, organic solvents,...etc.

(5) The maximum ambient temperature should be taken into consideration when determining the operating current.

(6) This product must be driven by constant power supplier.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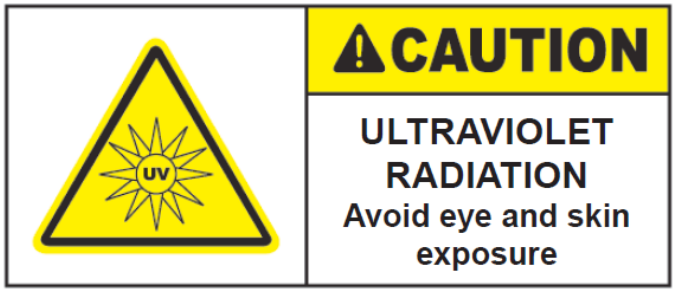
(7) ESD Precautions Static Electricity and surge damages LEDs. It is recommended that wrist bands or anti-electrostatic gloves be used when handing the LEDs. All devices, equipment, and machinery should be properly grounded.

(8) The appearance and specifications of product may be modified for improvement without notice.

## Ordering Information

| Color | Order Code | Peak Wavelength (nm) | | Light Intensity (W/cm$^2$)@3000mA | |
|---|---|---|---|---|---|
| | | Min | Max | Min | Max |
| UV | UC-030D-415BB | 410 | 420 | 3 | 5 |
| | UC-030D-405BB | 400 | 410 | 3 | 5 |
| | UC-030D-395BB | 390 | 400 | 3 | 5 |
| | UC-030D-385BB | 380 | 390 | 2.5 | 4 |
| | UC-030D-375BB | 370 | 380 | 2 | 3 |
| | UC-030D-365BB | 365 | 370 | 1.5 | 2 |

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