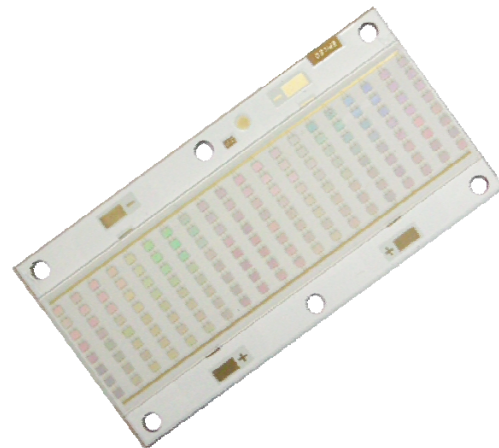




UC-160 UV LEDs



Features:

- Supply wide UV-A wavelength from 365nm to 430nm
- Over 5W/cm² of Optical power typical from 390nm to 430nm
- High thermal conductivity package:
 - > Junction to heat sink thermal resistance of < 0.3°C/W
- High radiometric efficiency
- Environmentally friendly: RoHS compliant, mercury-free
- Variable drive currents: less than 4.5A through 6A
- 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.

Packaging Technology

Thermal management is critical in high power LED applications. FLEDA UC-160 UV LEDs have the lowest thermal resistance of any LED on the market with a thermal resistance from junction to heat sink of $0.3^{\circ}\text{C}/\text{W}$ or $0.35^{\circ}\text{C}/\text{W}$. 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.

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 even the most demanding applications.

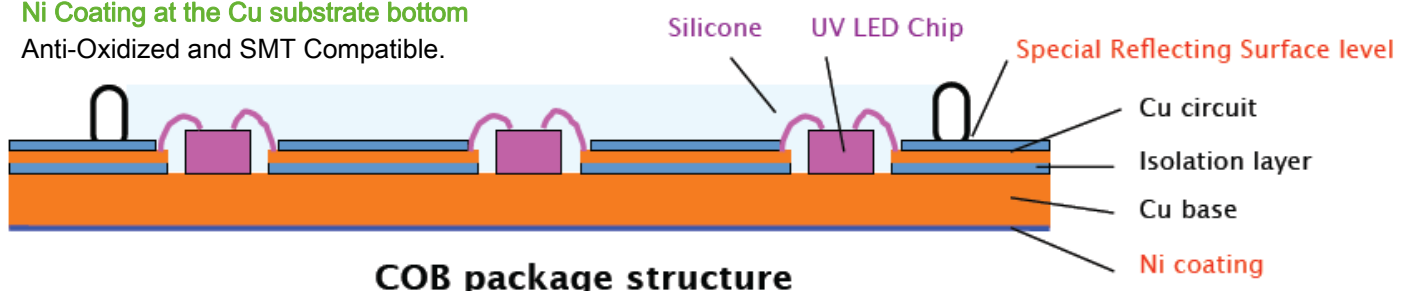
Environmental Benefits

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 fo 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 $<0.16^{\circ}\text{C}/\text{W}$ / High thermal conductivity $401\text{W}/(\text{m.K})$**
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.



Optical & Electric Characteristics

Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Wavelength | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------------------|-------------------|------------|------------|------|------|------|-------------------|
| Irradiance <small>Note[1]</small> | Ee | 365-370 nm | IF=6000mA | 0.25 | 0.5 | - | W/cm ² |
| | | 370-380 nm | | 0.5 | 0.75 | - | |
| | | 380-390 nm | | 3 | 3.4 | - | |
| | | 390-410 nm | | 4 | 5.5 | - | |
| View Angle | 2θ _{1/2} | X-Axis | IF=6000mA | 140 | 150 | 160 | Degree |
| | | Y-Axis | | 120 | 130 | 140 | |

Note: [1] Irradiance measured by DYMAX ACCU-CAL 50-LED Meter, and the distance of test is 5 mm.

Electric Characteristics (Ta=25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|--------|------------|------|------|------|-------|
| Forward Voltage | VF | IF=6000mA | 26 | - | 30 | V |
| Reverse Current <small>Note[1]</small> | Ir | VR=5V | | | 10 | uA |
| Thermal Resistance Junction to Board | RthJ-B | IF=6000mA | | 0.1 | | °C/W |
| Temperature Coefficient fo Forward Voltage | ΔVF/ΔT | IF=6000mA | - | -64 | - | mV/°C |

Note: [1] Single chip VR

Absolute Maximum Rating (Ta=25°C)

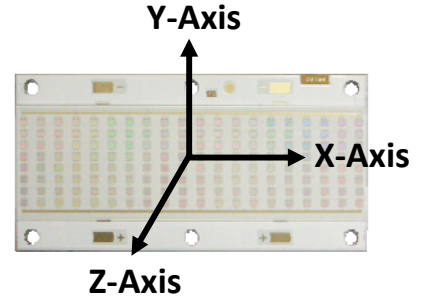
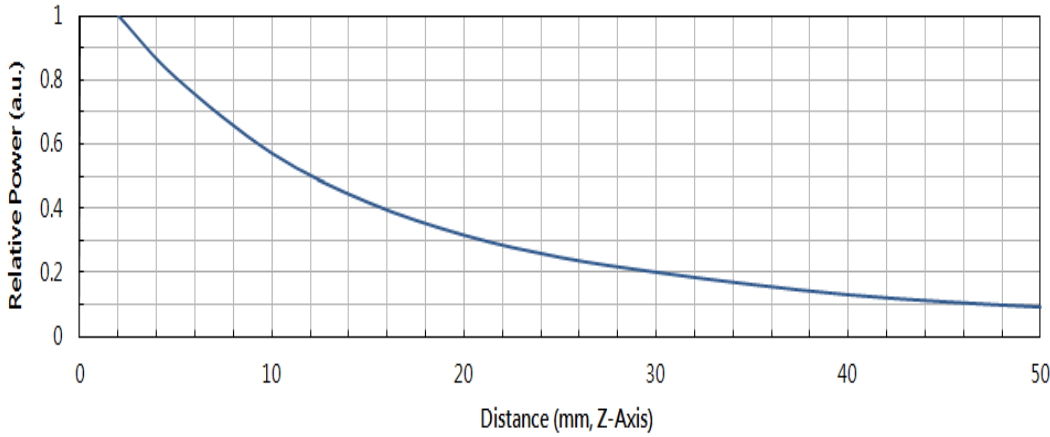
| Parameter | Symbol | Ratings | Unit |
|---|----------|----------------------------|------|
| Power Dissipation | PD | 200 | W |
| Continuous Forward Current | IF | 7000 | mA |
| Peak Forward Current <small>Note[1]</small> | IF(Peak) | 10,000 | mA |
| LED Junction Temperature | Tj | 120 | °C |
| Operating Temperature Range | Topr | 30°C To +80°C | |
| Storage Temperature Range | Tstg | -40°C To +100°C | |
| Manual Soldering Temperature | Tsol | 260°C±20°C For 3-5 Seconds | |
| ESD Sensitivity <small>Note[2]</small> | ESD | 500V HBM | |

Note: [1] Condition for I_{FP} is pulse of 10% duty cycle @ 1kHz

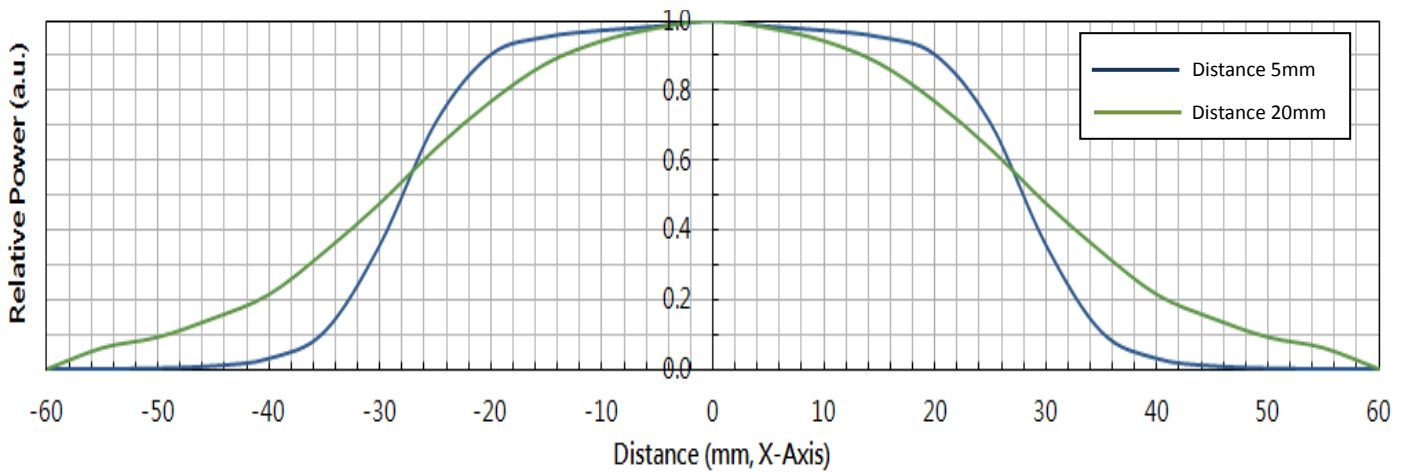
[2] Single chip ESD

Optical & Electric Characteristics

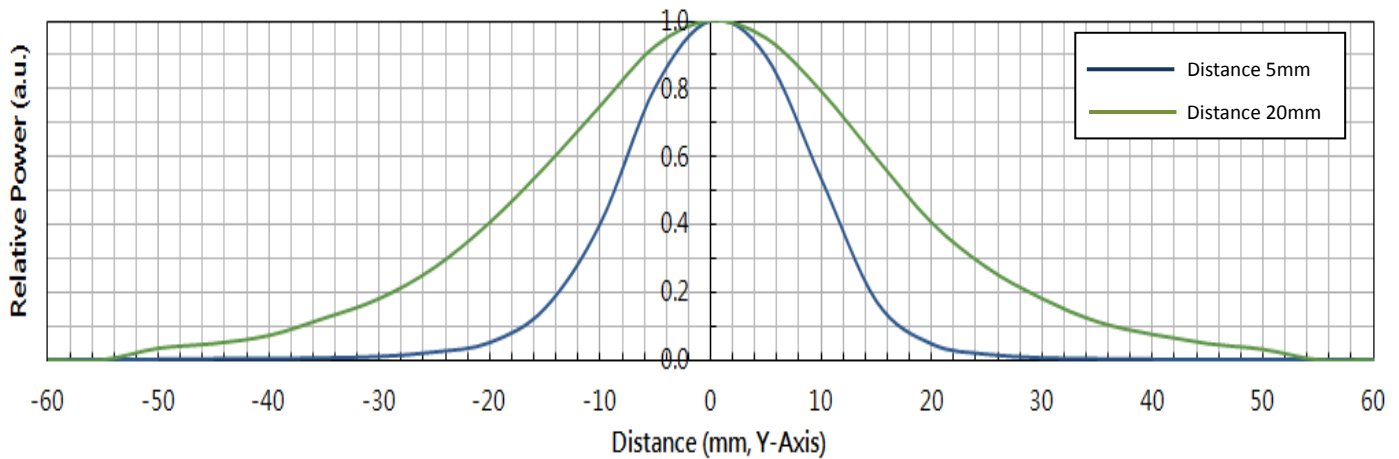
Relative Power vs Distance (at central point), $I_F=6000\text{mA}$



Relative Power vs X-Axis, $I_F=6000\text{mA}$

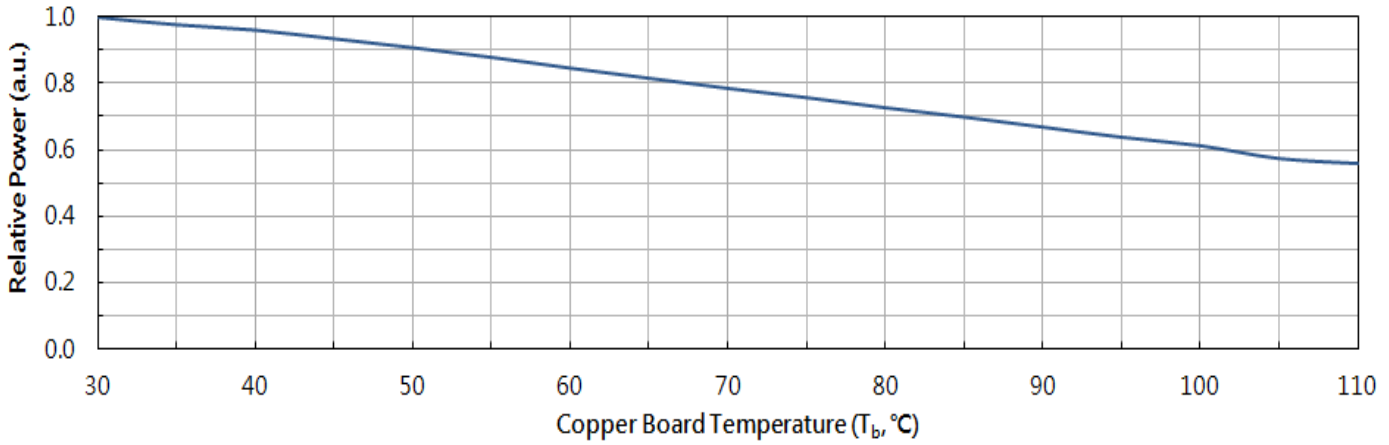


Relative Power vs Y-Axis, $I_F=6000\text{mA}$

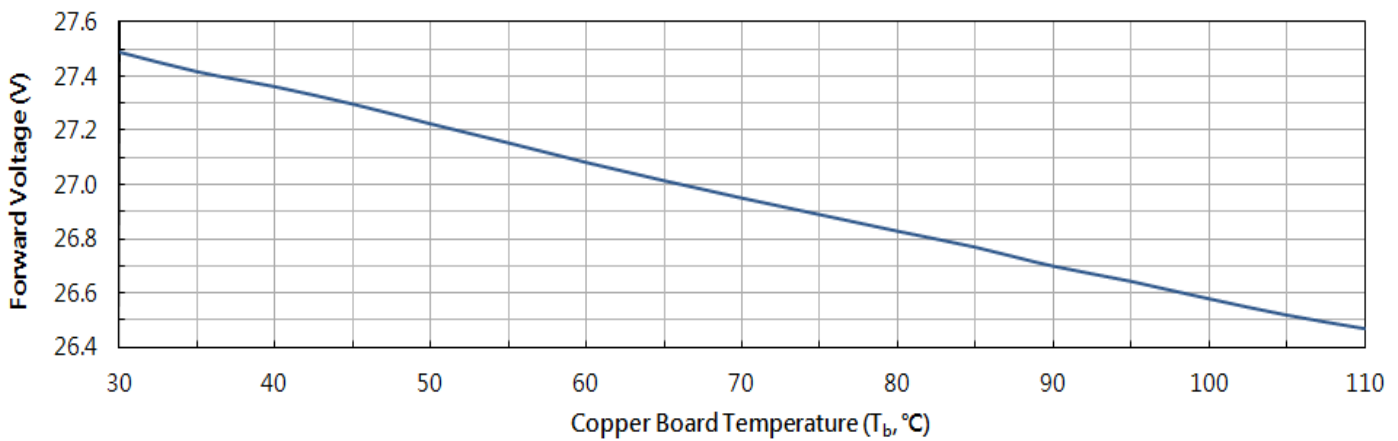


Optical & Electric Characteristics

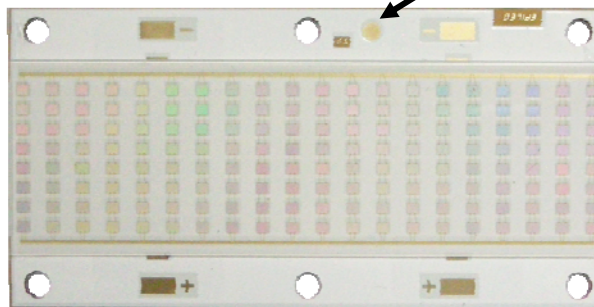
Relative Power vs Board Temperature (T_b)



Forward Voltage vs Board Temperature (T_b)

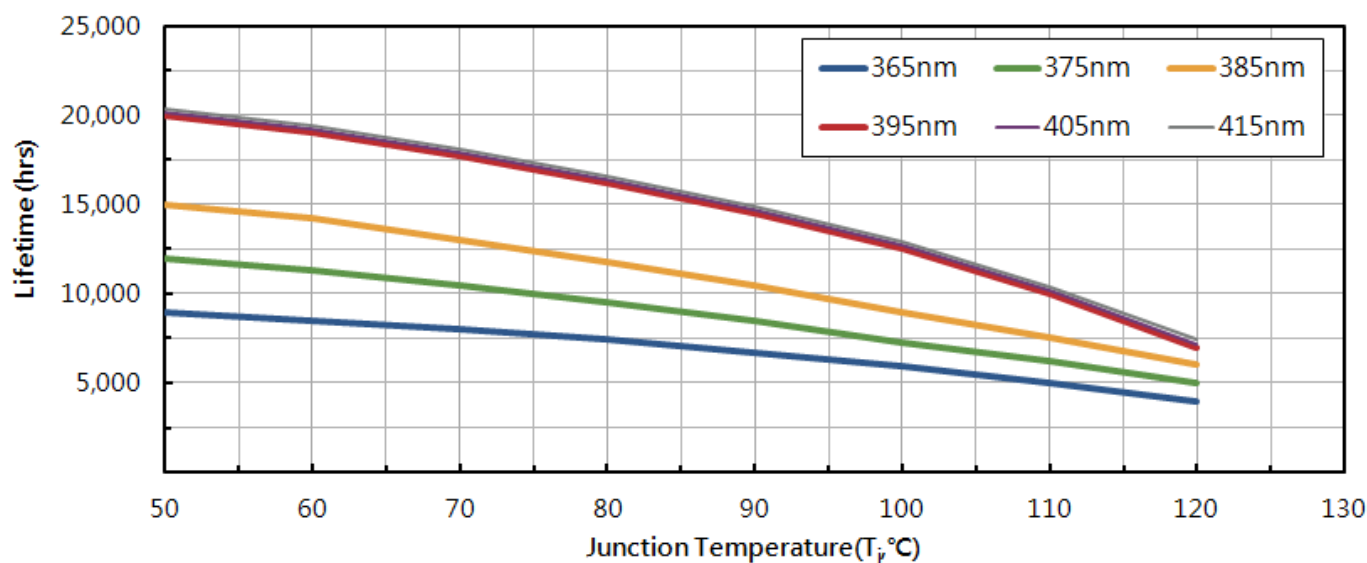


Board Temperature (T_b)

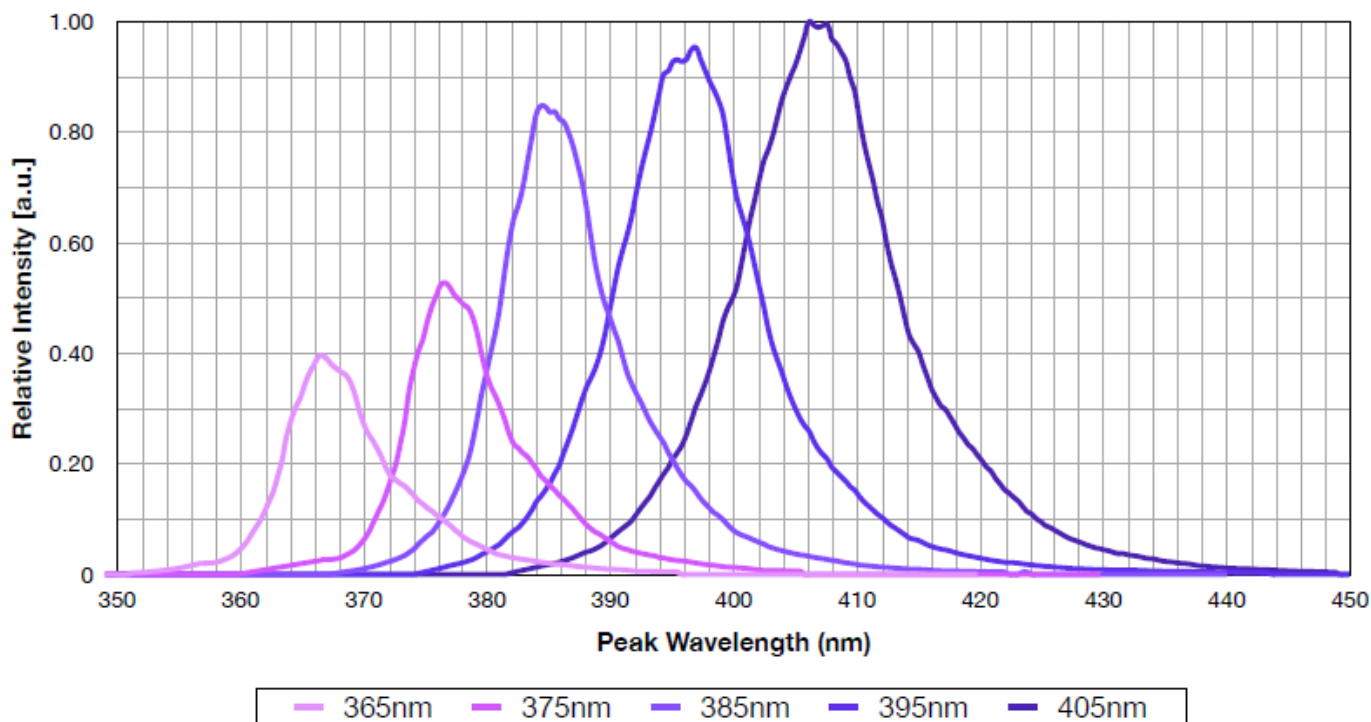


UV COB LED Reliability

UC-160 (B50,L70) Lifetimes @ IF=6000mA

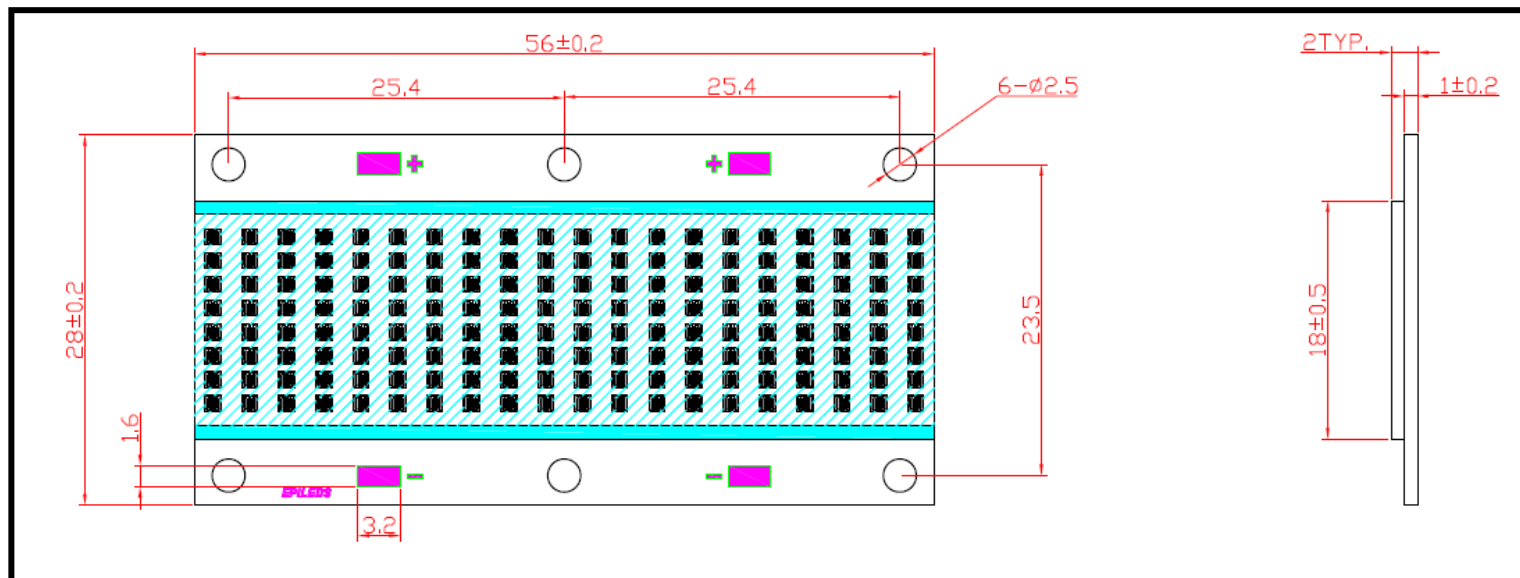


UV COB LED Spectrum Distribution



Mechanical Dimensions

Dimensions in millimeters



LED Array: 8s20p

Typical Voltage: 28V

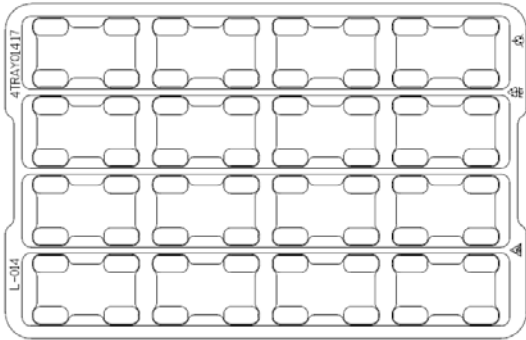
Operating Current: 6000mA

Notes:

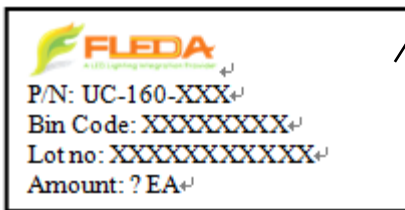
- (1) All dimensions are in millimeters.
- (2) Tolerance is ± 0.25 mm

Packing Informations - UC-160

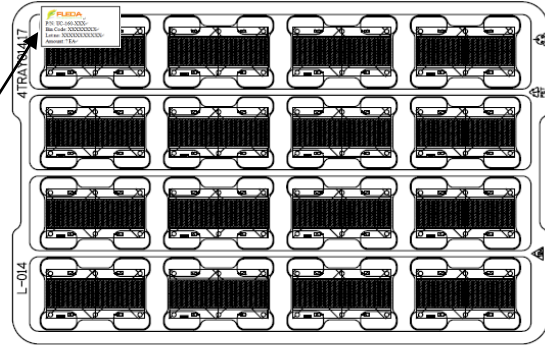
PET Tray Dimension



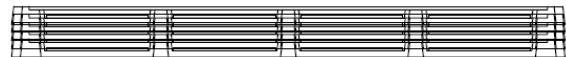
Label format



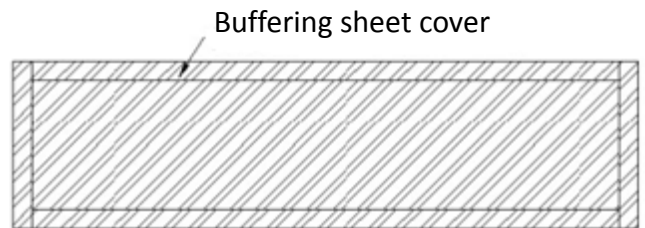
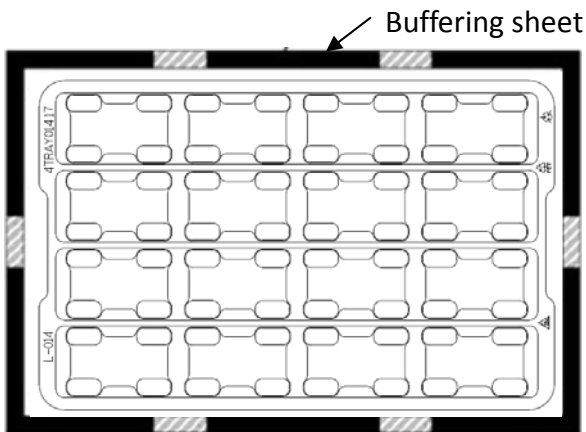
Put Emitter onto tray



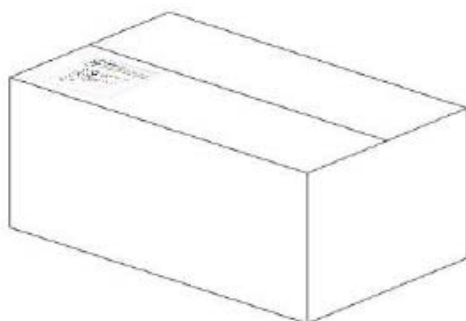
Stack 15 tray with 1 cover (full) Add bubble sheet if not full



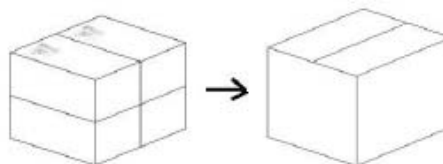
Put tray into Buffering sheet



Put into Carton and add label outside



Put into Outer Box (4 cartons)

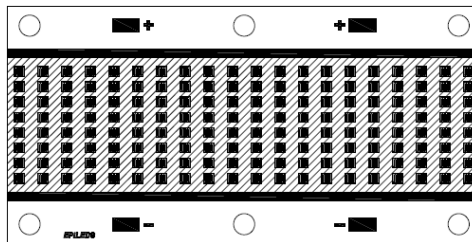


Notice

Assembly Notice

(1) Do not touch emitting area.

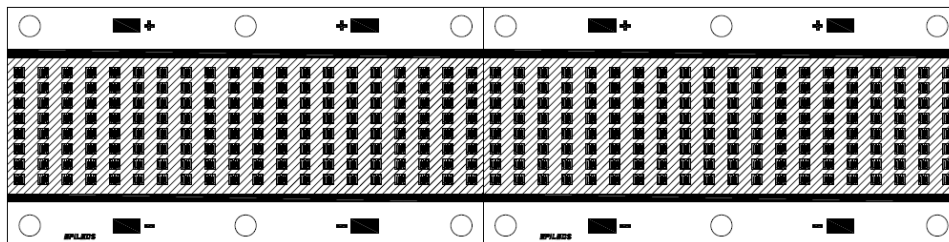
Do not touch or scratch silicon forming matrix area since it could damage the bonding of LED chips or wires and cause dead zone.



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 $400\pm 10^{\circ}\text{C}$ when soldering.
- b) Put Emitter on a $100\pm 10^{\circ}\text{C}$ hot plate and set up welding head temperature to $300\pm 10^{\circ}\text{C}$
- c) Either is OK.

(4) Wires

Suggested using strand wires (softer) to connect power, don't use solid wires.

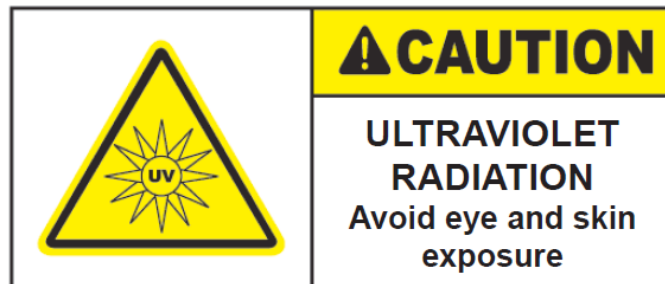
Used Notice

- (1) In order to avoid absorption of moisture, it is recommended that the products are stored in the dry box (or desiccators) with a desiccants. Alternatively the following environment is recommended. Storage temperature: $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$, 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.

- (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) | |
|-------|------------|----------------------|-----|--------------------------------------|------|
| | | Min | Max | Min | Max |
| UV | UC-160-415 | 410 | 420 | 4 | 6 |
| | UC-160-405 | 400 | 410 | 4 | 6 |
| | UC-160-395 | 390 | 400 | 4 | 6 |
| | UC-160-385 | 380 | 390 | 3 | 4 |
| | UC-160-375 | 370 | 380 | 0.5 | 0.75 |
| | UC-160-365 | 365 | 370 | 0.25 | 0.5 |



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