

PRODUCT SPECIFICATION

Part Number
PLH3535-WCUV03

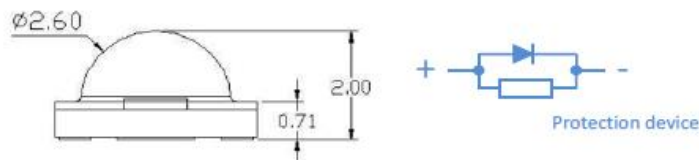
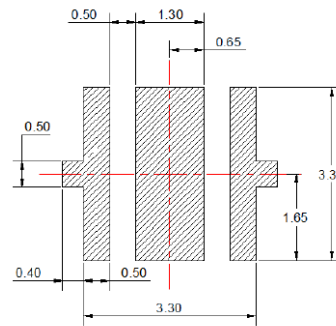
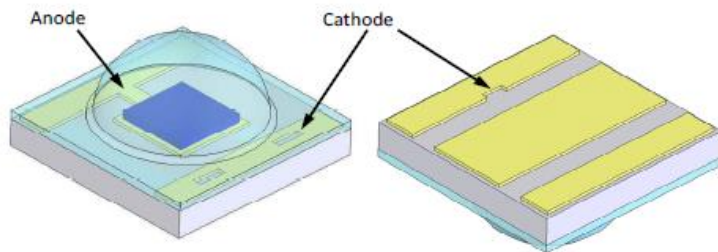
Details

- 3535 Ultraviolet Surface Mount LED
- 3.45 x 3.45 x 2.0 mm
- Aluminum Nitride substrate
- Packaged on 1,000 piece reel

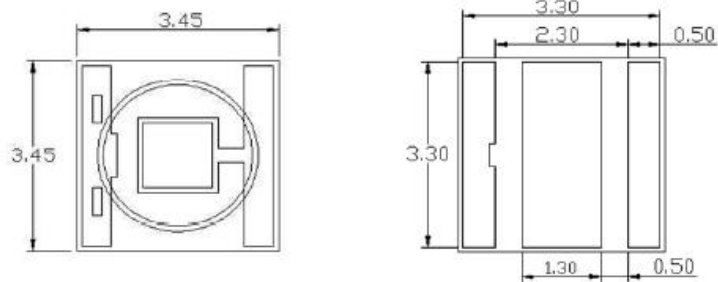
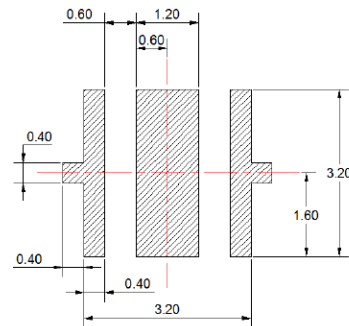
Features

- Durable and Rugged
- RoHS Compliant
- Easy mounting on PCB

Mechanical Dimensions



Recommended soldering Pad Design



Recommend Stencil Pattern Design (Marked Area is Opening)

Soldering terminals may shift in the x, y direction.

Unit: mm

Notes:

1. Dimensions in millimeters unless otherwise noted
2. Tolerance is ± 0.13 mm unless otherwise noted.
3. Specifications subject to change without notice





Device Selection Guide

| Model Number | Chip | | Resin |
|----------------|----------|------------------|-------|
| | Material | Emitting Color | |
| PLH3535-WCUV03 | InGaAlN | Ultraviolet (UV) | Clear |

Radiometric Power and Forward Voltage ($T_j = 25\text{ }^\circ\text{C}$)

| Color | Performance at Test Current 350mA | | | | Performance at 700mA |
|--------------------|-----------------------------------|-----------------------------|-------|-----|--------------------------------|
| | Group | Min. Radiometric Power (mW) | V_f | | Typical Radiometric Power (mW) |
| | | | Min | Max | |
| U50 (390~400nm) | D4 | 320 | 3 | 4 | 545 |
| | D5 | 360 | 3 | 4 | 610 |
| | E1 | 400 | 3 | 4 | 680 |
| | E2 | 440 | 3 | 4 | 750 |
| U60 (400~410nm) | D4 | 320 | 3 | 4 | 545 |
| | D5 | 360 | 3 | 4 | 610 |
| | E1 | 400 | 3 | 4 | 680 |
| | E2 | 440 | 3 | 4 | 750 |
| | E3 | 480 | 3 | 4 | 815 |
| U70 (410~420nm) | D4 | 320 | 3 | 4 | 545 |
| | D5 | 360 | 3 | 4 | 610 |
| | E1 | 400 | 3 | 4 | 680 |
| | E2 | 440 | 3 | 4 | 750 |
| | E3 | 480 | 3 | 4 | 815 |
| | E4 | 520 | 3 | 4 | 885 |

Forward Voltage Binning

| Performance at Test Current (350mA) | | |
|--|--------------------|--------------------|
| V_f Group | Minimum (V) | Maximum (V) |
| V30 | 3.0 | 3.2 |
| V32 | 3.2 | 3.4 |
| V34 | 3.4 | 3.6 |
| V36 | 3.6 | 3.8 |
| V38 | 3.8 | 4.0 |

Absolute Maximum Ratings at Ta=25°C

| Parameter | Rating |
|---------------------------|--|
| DC Forward Current (mA) | 800mA |
| LED Junction Temperature | 150°C |
| LED Operating Temperature | -40°C ~ 125°C |
| Storage Temperature | -40°C ~ 125°C |
| Soldering Temperature | Max. 260°C / Max. 10 sec. (JEDEC 020c) |
| ESD Sensitivity | 2,000V HBM (JEDEC-22A-114-B) |
| Preconditioning | Acc. to JEDEC Level 2 |

Notes:

1. Never operate the LEDs in reverse bias.
2. Do not drive at rated current for more than 5 seconds without proper thermal management.
3. When the LEDs are illuminating, operating current should be decided after considering the packages maximum temperature.
4. Caution: These devices emit high intensity UV/NUV light. Necessary precautions must be taken during operation. Do not look directly into the light or look through the optical system when in operation. Protective eyewear should be worn at all times during operation.
5. Lens discoloration may occur with prolonged exposure to UV/NUV light. Lens material will need to be tested for UV/NUV light compatibility and durability.



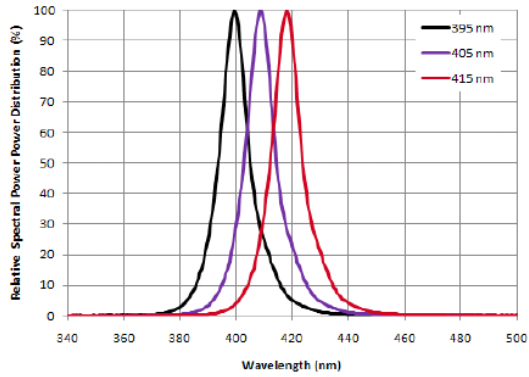
Electrical and Optical Characteristics at Ta=25°C

| Color | Peak Wavelength (λ_p) | | 2 Θ 1/2 | Temperature Coefficient of Vf (mV/°C) | Thermal Resistance Junction to Pad |
|-------|---------------------------------|-----|----------------|---------------------------------------|------------------------------------|
| | Min | Max | | $\Delta V_f / \Delta T_J$ | (°C/W) $R_{\theta_{J-L}}$ |
| U50 | 390 | 400 | 125 | -2~-4 | 8 |
| U60 | 400 | 410 | 125 | -2~-4 | 8 |
| U70 | 410 | 420 | 125 | -2~-4 | 8 |

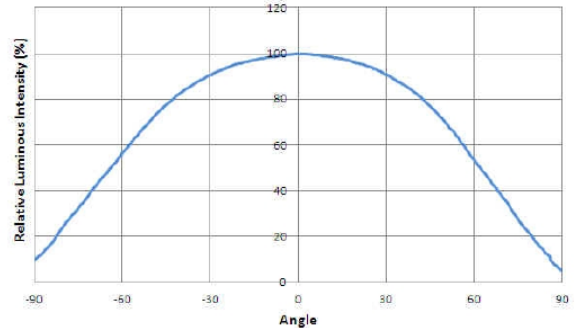
Notes:1. The peak/dominant wavelength is measured with an accuracy of ± 1 nm.

Electrical and Optical Curves

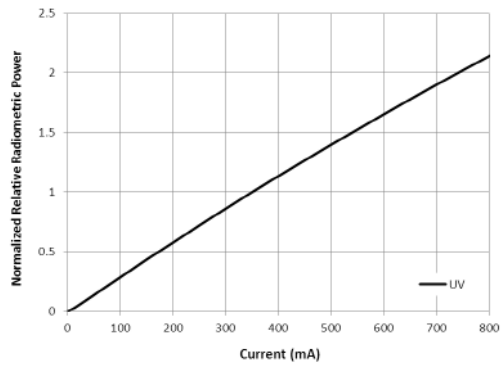
Relative Spectral Power Distribution, $T_j=25\text{ }^\circ\text{C}$



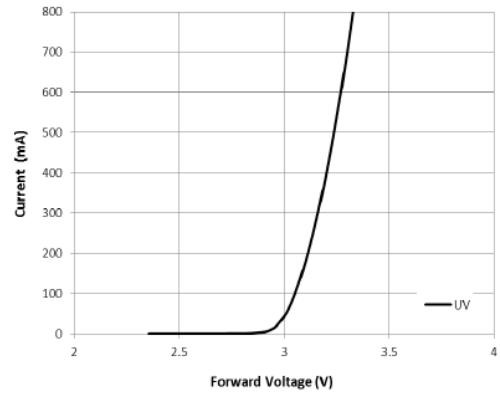
Typical Spatial Radiation Pattern



Typical Forward L-I Characteristics



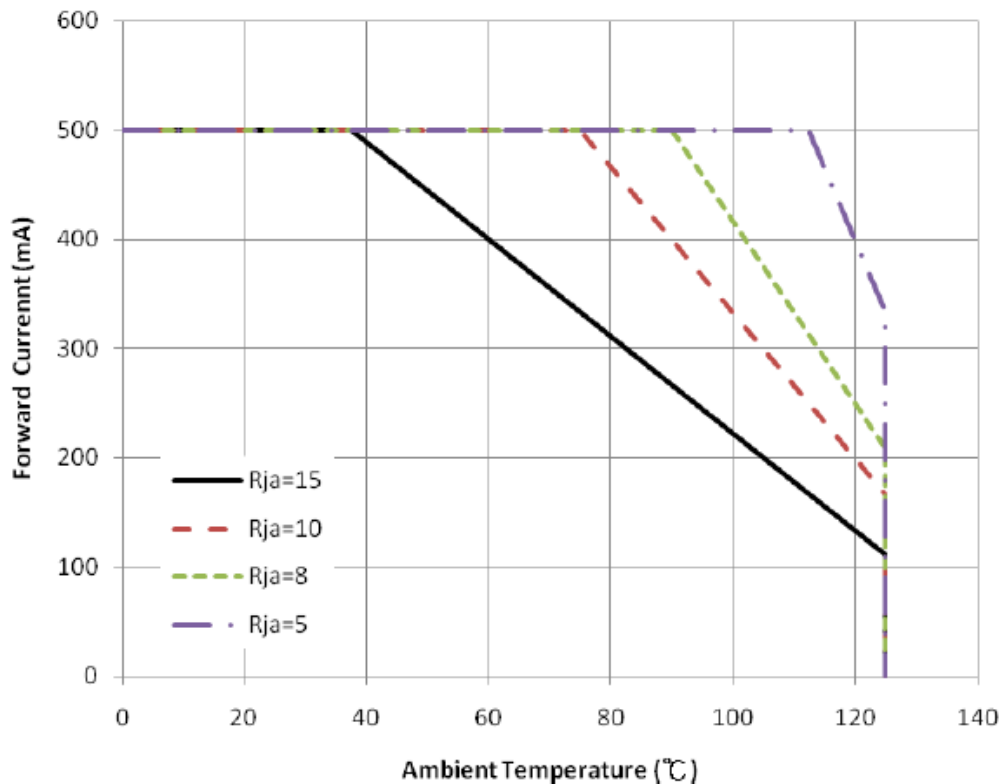
Typical Forward I-V Characteristics



Thermal design

Thermal Design

of the end product is important. The thermal resistance between the junction and the solder point (R_{ΘJ-S}) and the end product should be designed to minimize the thermal resistance from the solder point to ambient in order to optimize the emitter life and optical characteristics. The maximum operation current is determined by the plot of Allowable Forward Current vs. Ambient Temperature.



The junction temperature can be correlated to the thermal resistance between the junction and ambient (R_{ja}) by the following equation.

$$T_j = T_a + R_{ja} \cdot W$$

T_j: LED junction temperature

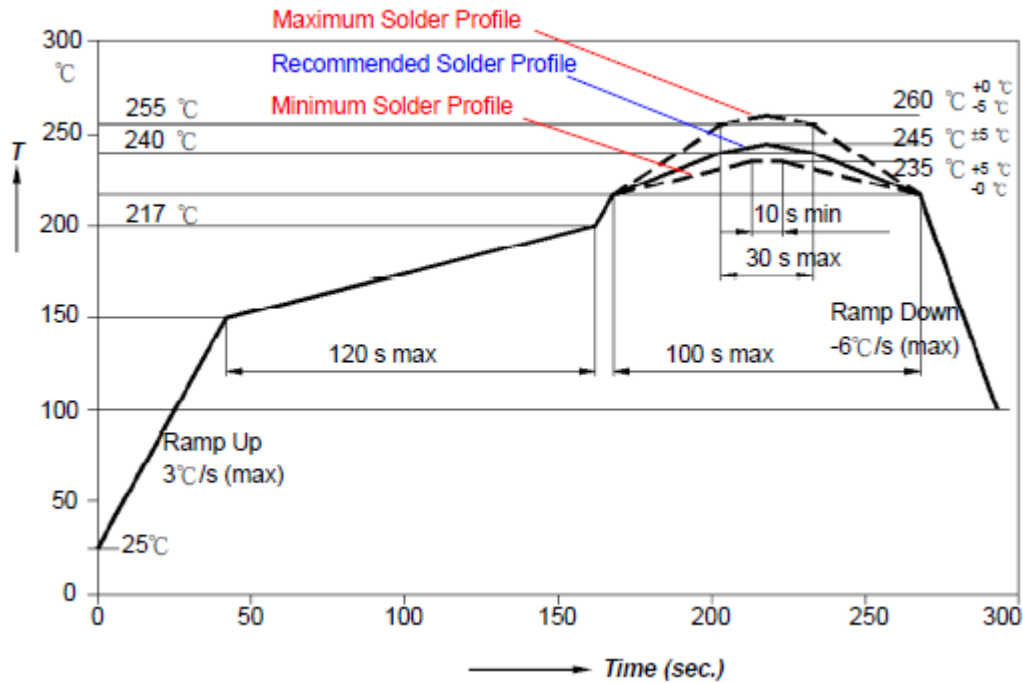
T_a: Ambient temperature

R_{ja}: Thermal resistance between the junction and ambient

W: Input power (I_F · V_F)

Reflow Soldering

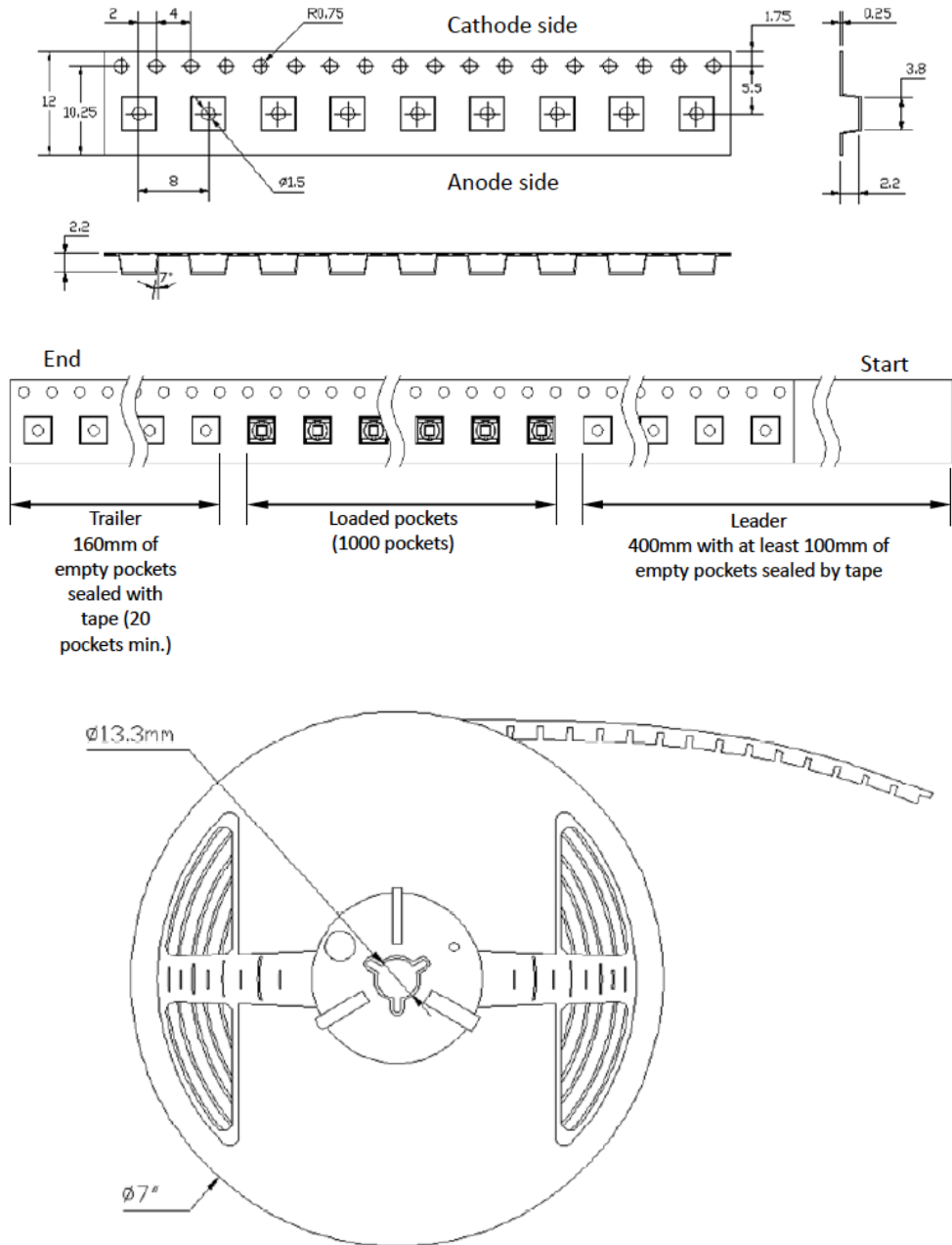
The LEDs can be soldered using the parameter listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest possible temperature is preferred for the LEDs.



| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|-------------------------|------------------|
| Average Ramp-up Rate (T _{smax} to T _p) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| - Temperature Min(T _{smin}) | 100°C | 150°C |
| - Temperature Max(T _{smax}) | 150°C | 200°C |
| - Time(t _{smin} to t _{smax}) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| - Temperature(T _L) | 183°C | 217°C |
| - Time(t _L) | 60-150 seconds | 60-150 seconds |
| Peak/classification Temperature(T _p) | 215°C | 260°C |
| Time within 5°C of actual Peak Temperature(t _p) | 10-30 seconds | 20-40 seconds |
| Ramp-Down Rate | 6°C/second max. | 6°C/second max. |
| Time 25°C to Peak Temperature | 6 minutes max. | 8 minutes max. |

Packing Information

The carrier tape is conformal to EIA-481D



Note: All Dimensions are in millimeters

