

PRODUCT SPECIFICATION

Part Number
PLH7070-WCUV02

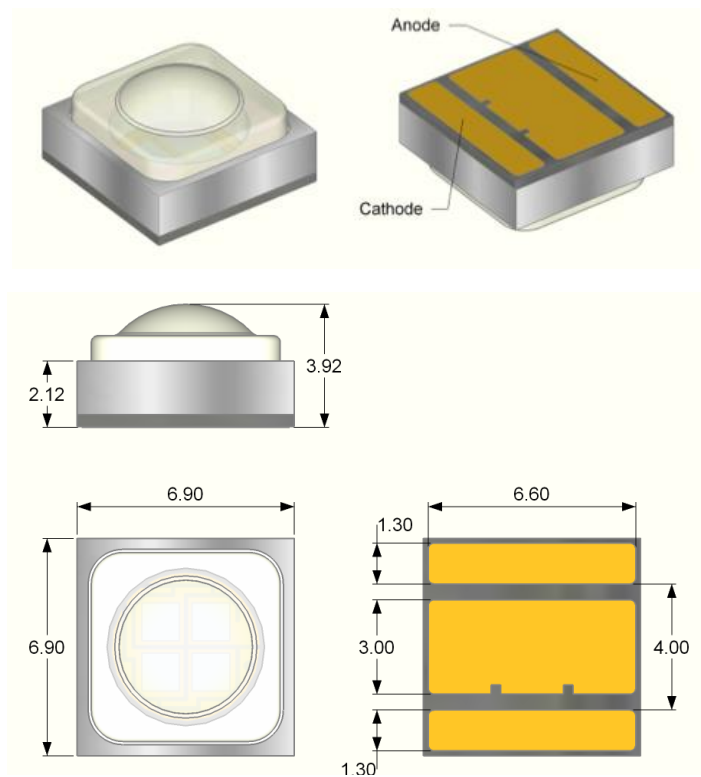
Details

- Ultraviolet Surface Mount LED
- 7.0 x 7.0 x 4.0 mm
- 4 chips in series
- Packaged on 1,000 piece reel

Features

- High reliability
- RoHS Compliant
- 10W, 700mA

Mechanical Dimensions



Notes:

1. Dimensions in millimeters unless otherwise noted,
2. Tolerance is ± 0.13 mm unless otherwise noted, Soldering terminals may shift in the x, y direction.
3. Specifications subject to change without notice





Device Selection Guide

Model Number	Chip		Resin
	Material	Emitting Color	
PLH7070-WCUV02	InGaAlN	Ultraviolet (UV)	Clear

Electro-Optical Characteristics

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) $R_{\theta J-L}$
U2B	365	370	65	-17	3.2 °C/W
U3A	370	375	65	-17	3.2 °C/W

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

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Rating
DC Forward Current (mA)	700mA
LED Junction Temperature	150°C
LED Operating Temperature	-40°C ~ 85°C
Storage Temperature	-40°C ~ 125°C
Soldering Temperature	Max. 260°C / Max 10sec. (JEDEC 020c)
ESD Sensitivity	2,000 V HBM (JESD-22A-114-B)
Reverse Voltage	Not designed to be driven in reverse bias ($V_R \leq 5V$)
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.

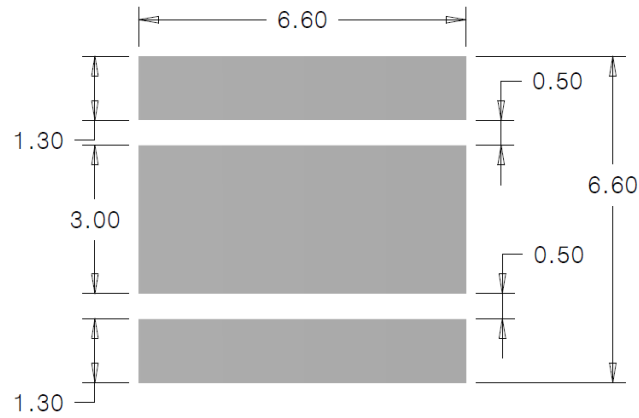
5. Lens discoloration may occur with prolonged exposure to UV/NUV light. Lens material will need to be tested for UV/NUV light compatibility and durability.

Radiometric Power and Forward Voltage

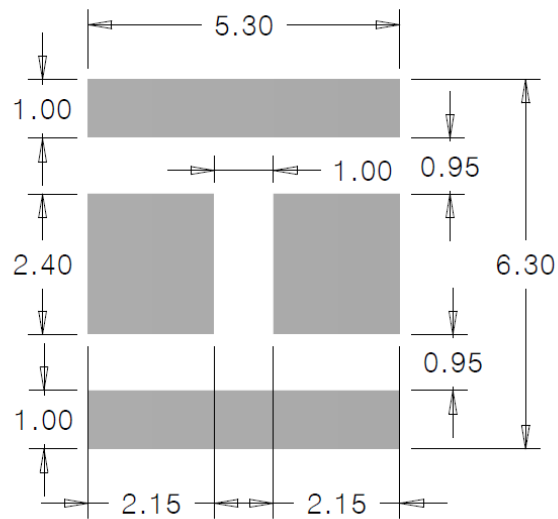
Color	Performance at Test Current 700mA			
	Group	Min. Radiation Power (mW)	V _f	
			Min	Max
U2B (365-370nm)	NH3	1200	13	17
	NH4	1300	13	17
	NH5	1400	13	17
	NH6	1500	13	17
	NH7	1600	13	17
U3A (370-375nm)	NH3	1200	13	17
	NH4	1300	13	17
	NH5	1400	13	17
	NH6	1500	13	17
	NH7	1600	13	17

Note: 1. Radiometric Power is measured with an accuracy of $\pm 10\%$ 2. The forward voltage is measured with an accuracy of $\pm 0.2V$
 * Calculated values are for reference only.

Recommended Soldering Pad Design

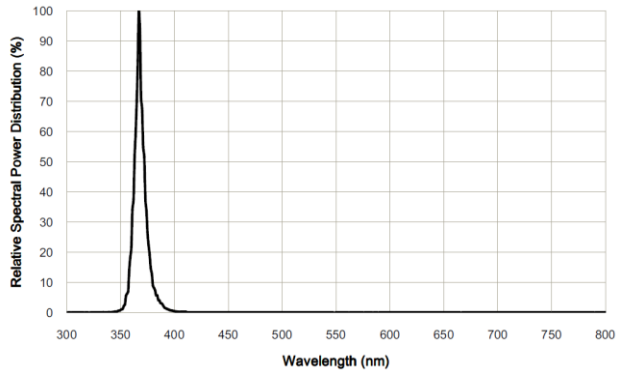


Recommended Soldering Pad Design (Marked Area is Opening)

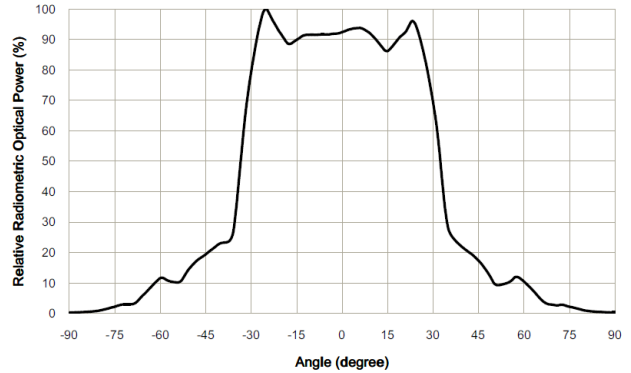


Electrical and Optical Curves

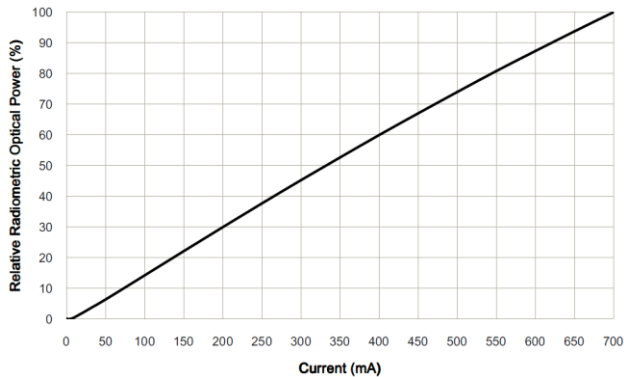
Relative Spectral Power Distribution, $T_j=25^\circ\text{C}$



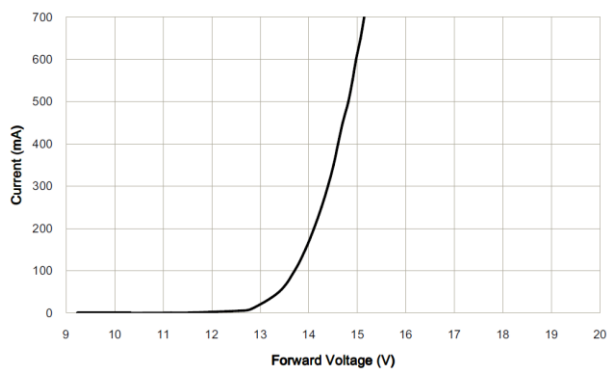
Typical Spatial Radiation Pattern



Typical Forward L-I Characteristics, $T_j=25^\circ\text{C}$

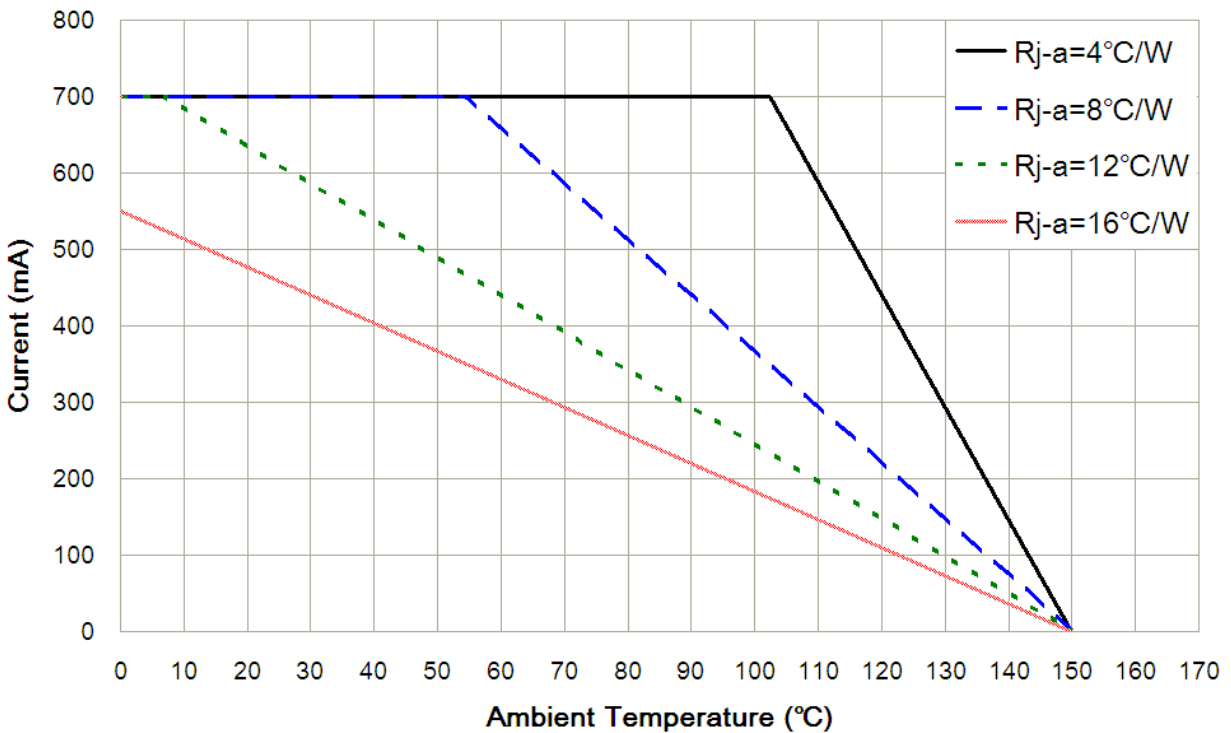


Typical Forward I-V Characteristics, $T_j=25^\circ\text{C}$



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.

$$T_j = T_a + R_{ja} * W$$

T_j: LED junction temperature

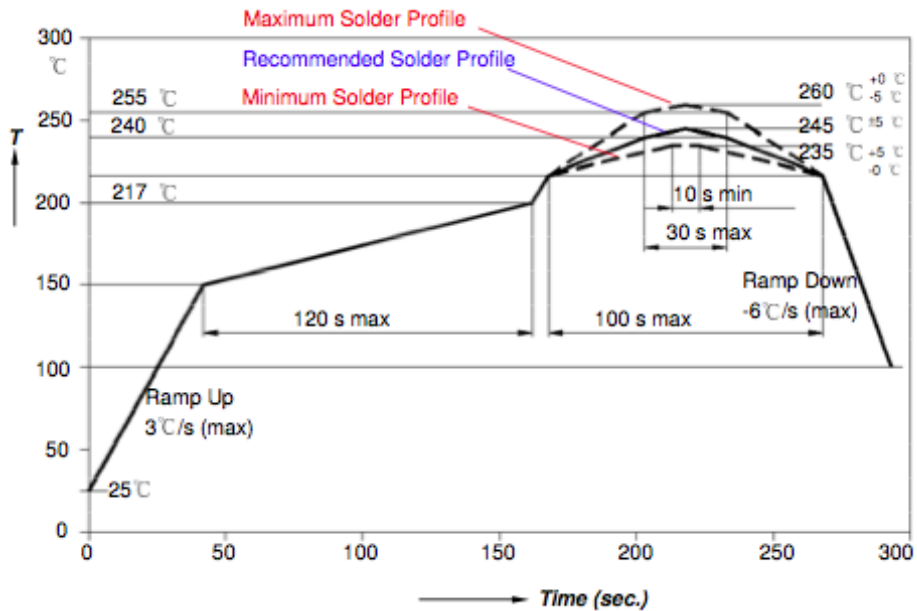
T_a: Ambient temperature

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.

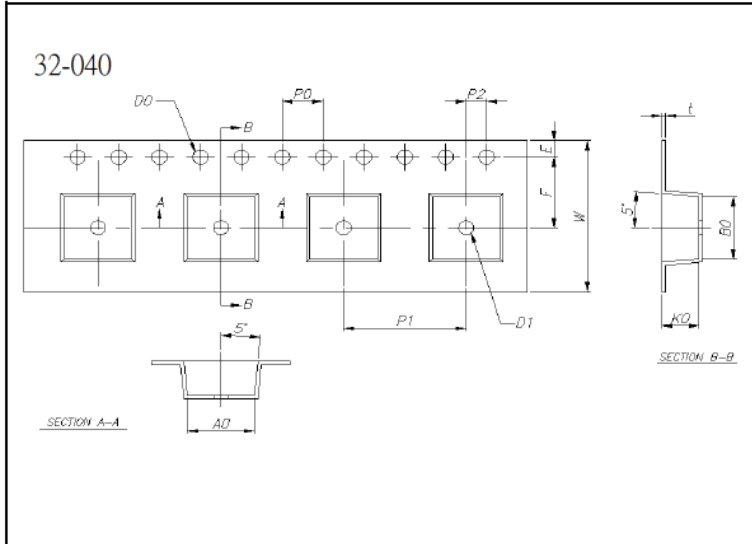


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate (Ts _{max} to Tp)	3°C/second max.	3°C/second max.
Preheat		
- Temperature Min(Ts _{min})	100°C	150°C
- Temperature Max(Ts _{max})	150°C	200°C
- Time(ts _{min} to ts _{max})	60-120 seconds	60-180 seconds
Time maintained above:		
- Temperature(T _i)	183°C	217°C
- Time(t _i)	60-150 seconds	60-150 seconds
Peak/classification Temperature(Tp)	215°C	260°C
Time within 5°C of actual Peak Temperature(tp)	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

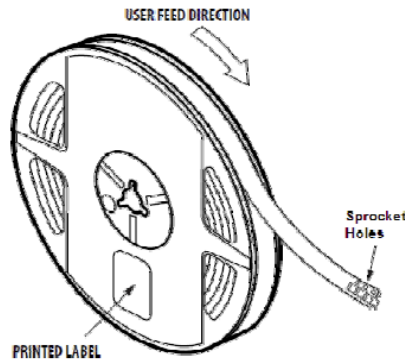
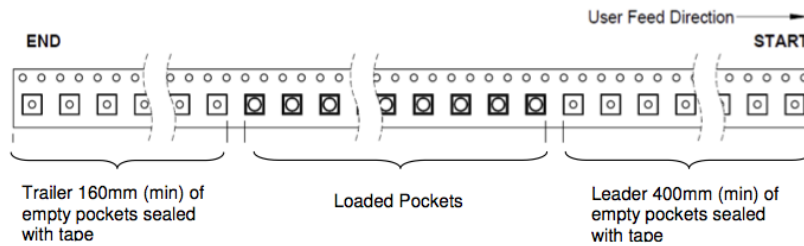
The carrier tape is conformal to EIA-481D

Dimensions. (Unit: mm)



Item	Specification	Tol. (+/-)
W	16.00	± 0.20
E	1.75	± 0.10
F	7.50	± 0.10
D0	1.50	+0.10,-0
D1	1.50	± 0.10
P0	4.00	± 0.10
P1	12.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.35	± 0.05
A0	6.75	± 0.10
B0	6.65	± 0.10
K0	3.65	± 0.10



Note: All Dimensions are in millimeter

