

PRODUCT SPECIFICATION

Part Number
PLH3535-WCUV03

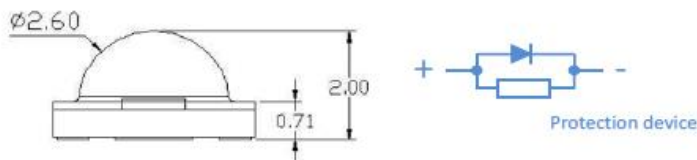
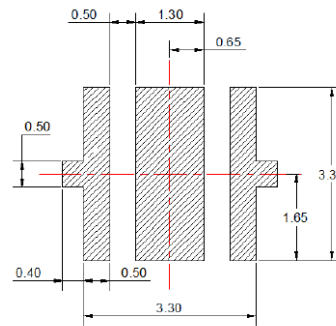
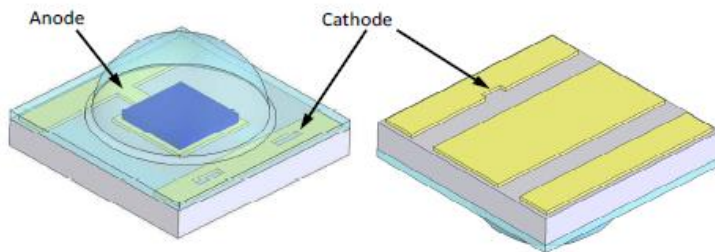
Details

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

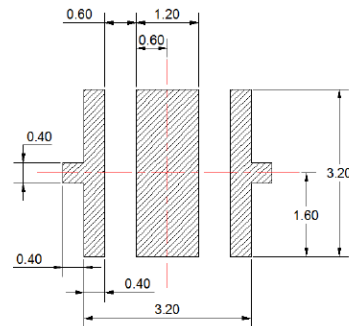
Features

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

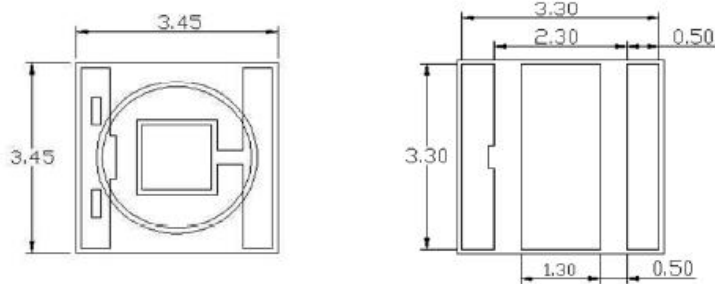
Mechanical Dimensions



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.



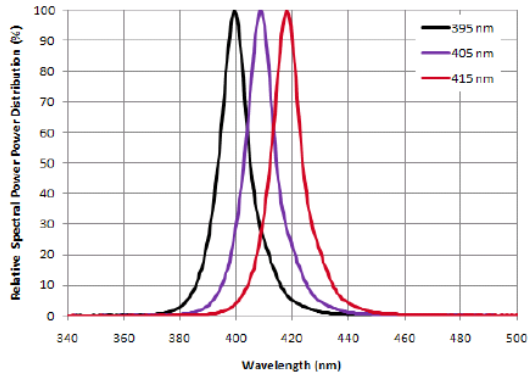
Electrical and Optical Characteristics at Ta=25°C

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

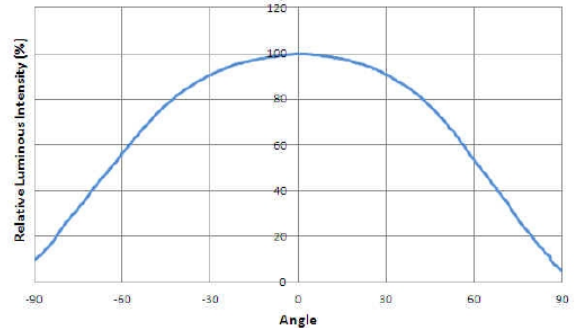
Notes:1. The peak/dominant wavelength is measured with an accuracy of ± 1 nm.

Electrical and Optical Curves

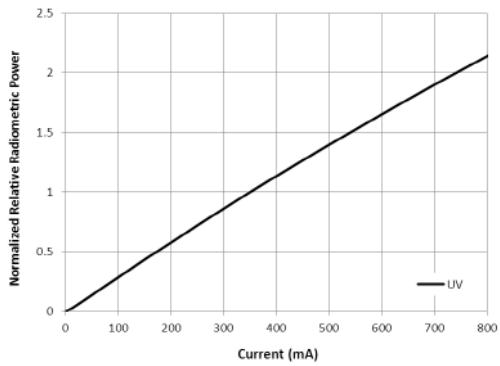
Relative Spectral Power Distribution, $T_j=25\text{ }^\circ\text{C}$



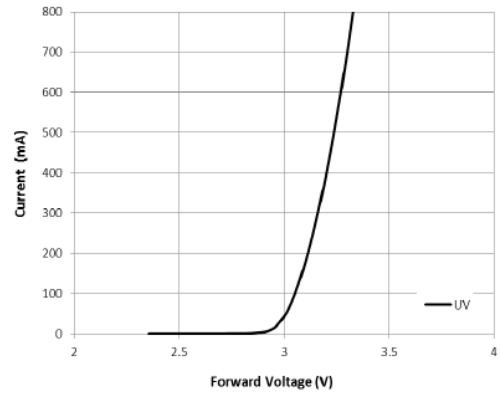
Typical Spatial Radiation Pattern



Typical Forward L-I Characteristics



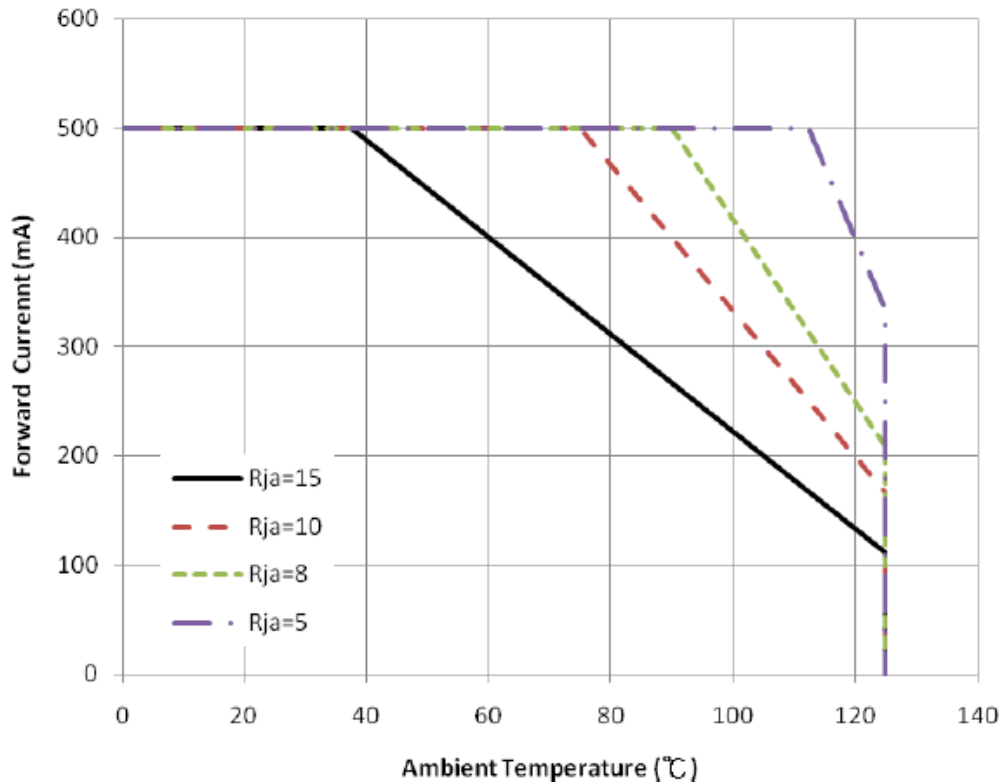
Typical Forward I-V Characteristics



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.

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

T_j: LED junction temperature

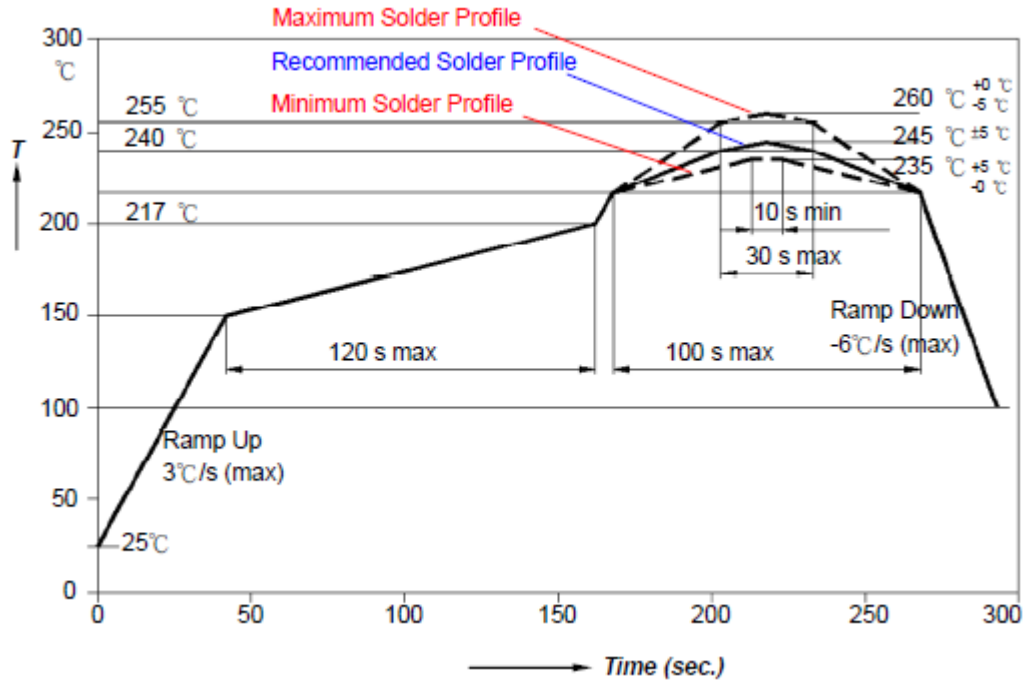
T_a: Ambient temperature

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

W: Input power (I_F*V_F)

Reflow Soldering

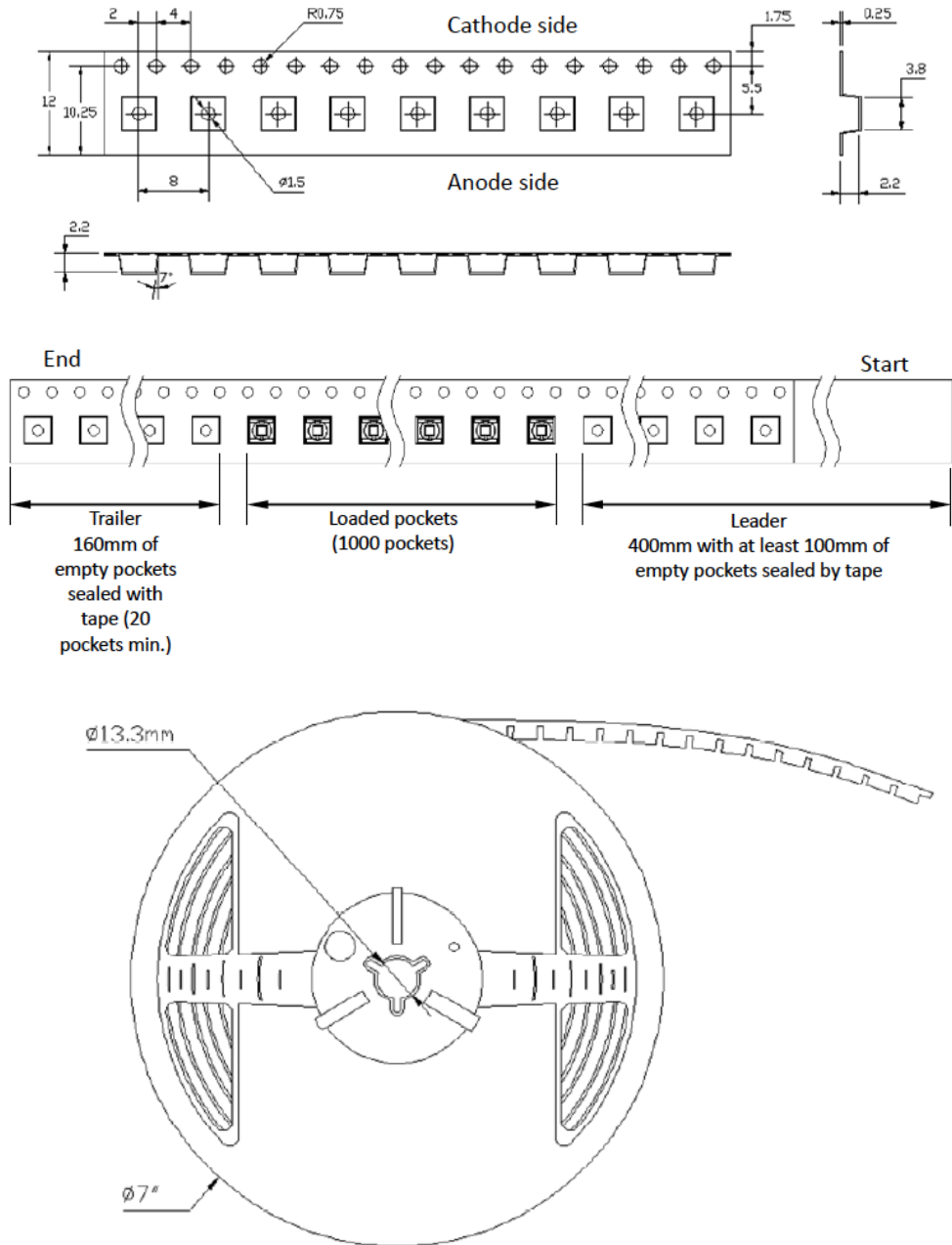
The LEDs can be soldered using the parameter listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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

