Inolux Surface Mount High Power Ultraviolet LED
IN-3531SCUV

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Label Specifications

INOLUX P/N:

I N - 3 5 3 1 S C U V -X X X X

Series Name	Substrate / Emitting Color	Customer Code
IN-3531 **Inolux 3535 package**	**Ceramic 1~3W** **UV@390-420nm**	**XXXX** **Customer Product Code**

Lot No.:

1	2	3	4	5	6	7	8	9	10
E	1	A	1	A	2	2	L	1	2
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
		Mfg. Year	Mfg. Month	Mfg. Date	Consecutive number		Special code		
Internal Tracing Code		2010-A 2011-B 2012-C 2013-D . .	1:Jan. 2:Feb. .... A:Oct. B:Nov. C:Dec.	1:A 2:B 3:C ... 26:Z 27:7 28:8 29:9 30:3 31:4	01~ZZ		000~ZZZ		

Radiometric Power and Forward Voltage

(Tj =25 °C)

Part Number	Color	Performance at Test Current 500 mA				Performance at 700mA
		Group	Min. Radiometric Power (mW)	V_f		Calculated Minimum Radiometric Power (mW)
				Min	Max	
IN-3531SCUV	U50 (390~400nm)	NF1	600	2.8	4.2	780
		NF2	650	2.8	4.2	850
		NF3	700	2.8	4.2	910
		NF4	750	2.8	4.2	980
		NF5	800	2.8	4.2	1050
	U60 (400~410nm)	NF1	600	2.8	4.2	780
		NF2	650	2.8	4.2	850
		NF3	700	2.8	4.2	910
		NF4	750	2.8	4.2	980
		NF5	800	2.8	4.2	1050
	U70 (410~420nm)	NF1	600	2.8	4.2	780
		NF2	650	2.8	4.2	850
		NF3	700	2.8	4.2	910
		NF4	750	2.8	4.2	980
		NF5	800	2.8	4.2	1050
		NG1	850	2.8	4.2	1100

Note:

1. Radiometric Power is measured with an accuracy of ±10%
2. The forward voltage is measured with an accuracy of ±0.1V

* Calculated values are for reference only.

Forward Voltage Binning

Part Number	Performance at Test Current (500mA)		
	V_f Group	Minimum (V)	Maximum (V)
IN-3531SCUV	V28	2.8	3.0
	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
	V40	4.0	4.2

Product Characteristics

Absolute Maximum Ratings

(Tj =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 (JESD-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.

Electro-Optical Characteristics

(T_j 25 °C)

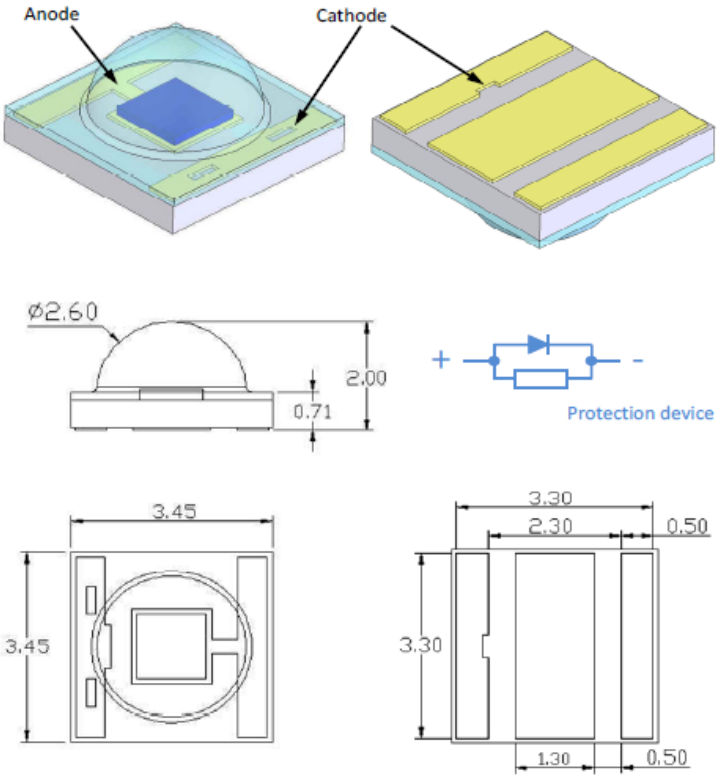
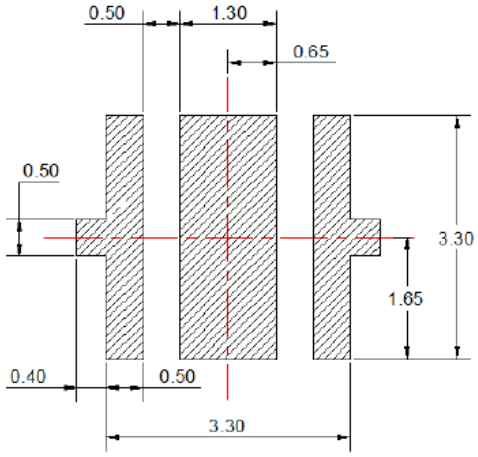
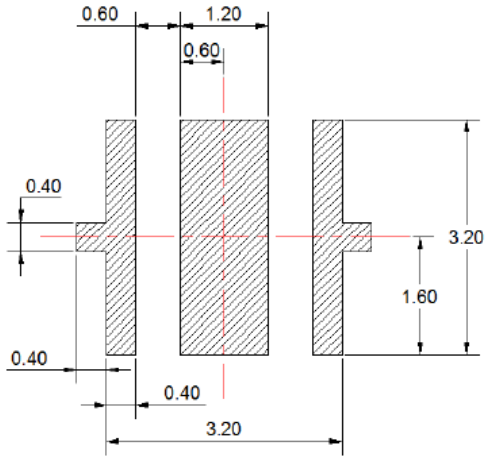
Part Number	Color	Peak Wavelength (λp)		2Θ1/2	Temperature Coefficient of Vf (mV/°C)	Thermal Resistance Junction to Pad
		Min	Max		ΔVF /ΔTJ	(℃/W) $RΘ_{J-L}$
IN-3531SCUV	U50	390	400	125	-2~-4	8
	U60	400	410	125	-2~-4	8
	U70	410	420	125	-2~-4	8

Notes:

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

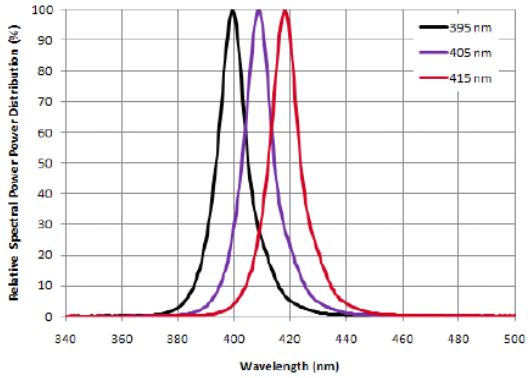
Package Outline Dimension
Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.13

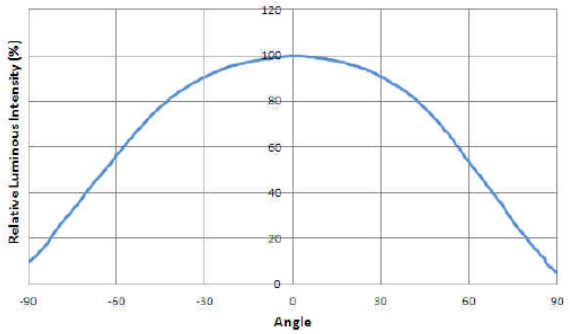
Outline Dimension	Solder Pattern
	 Recommended soldering Pad Design  Recommend Stencil Pattern Design (Marked Area is Opening)
Soldering terminals may shift in the x, y direction.	Unit: mm

Characteristic Curves

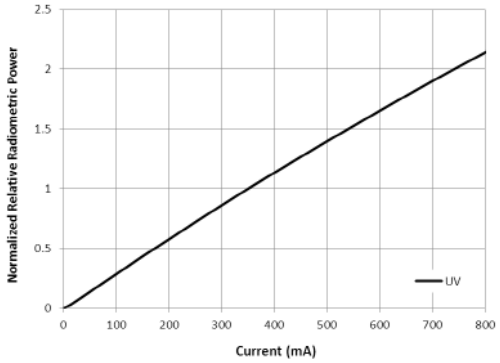
Relative Spectral Power Distribution, Tj=25 ℃



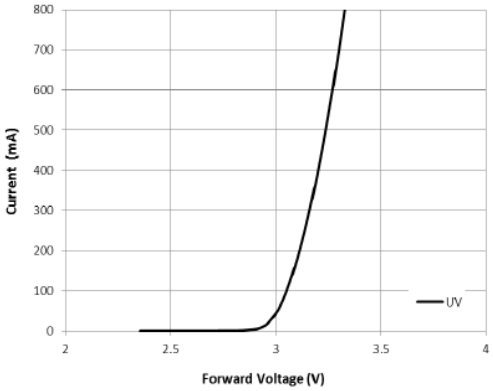
Typical Spatial Radiation Pattern



Typical Forward L-I Characteristics

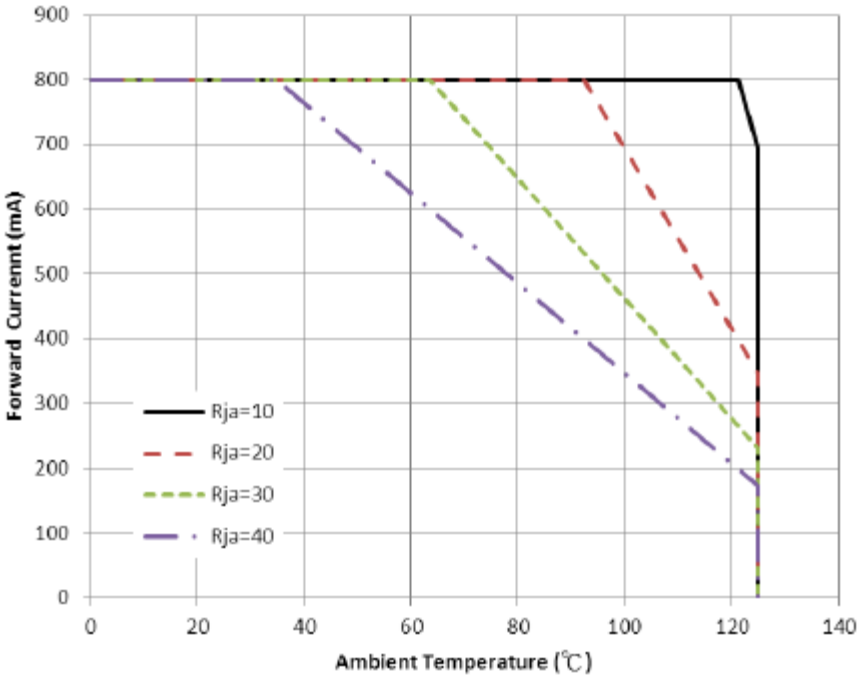


Typical Forward I-V Characteristics



Thermal Design

Thermal design of the end product is important. The thermal resistance between the junction and the solder point (RΘJ-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 (Rja) by the following equation.

Tj=Ta + Rja*W

Tj: LED junction temperature

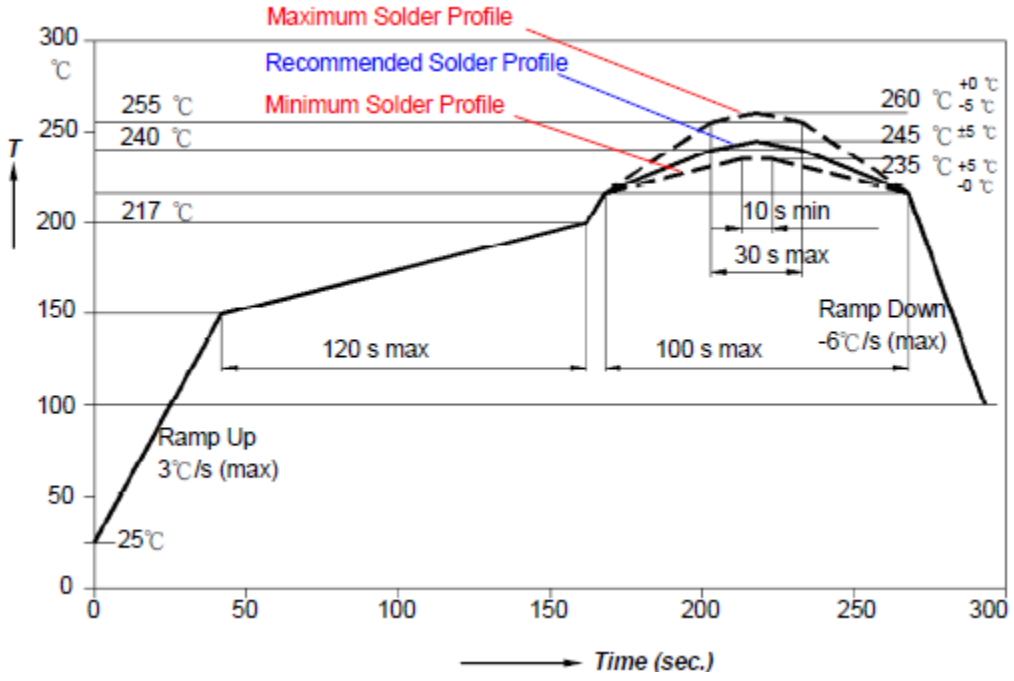
Ta: Ambient temperature

Rja: Thermal resistance between the junction and ambient

W: Input power (I_F*V_F)

Reflow Soldering

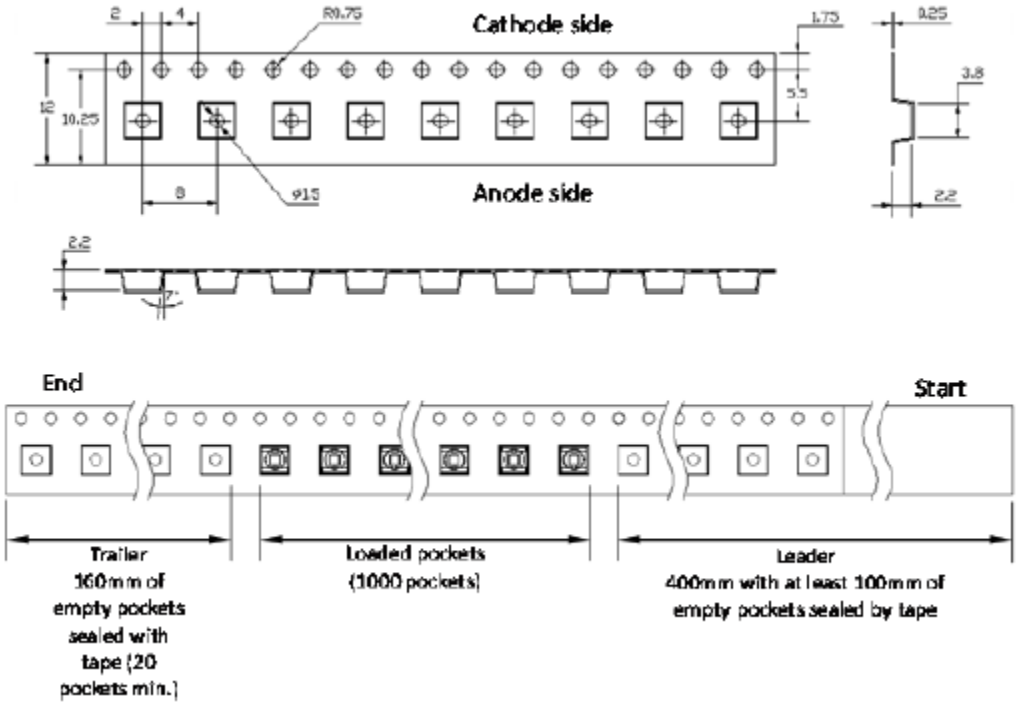
The LEDs can be soldered using the parameter listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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

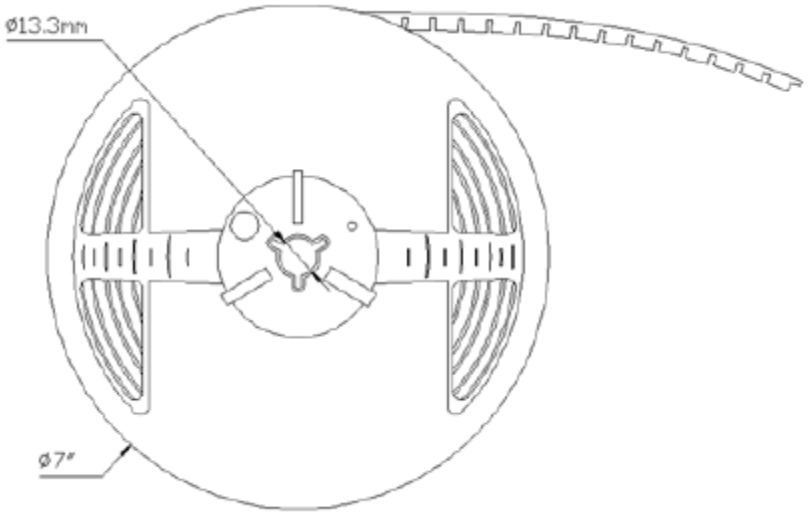


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate (Tsmax to Tp)	3℃/second max.	3℃/second max.
Preheat - Temperature Min(Tsmin) - Temperature Max(Tsmax) - Time(tsmin to tsmax)	 100℃ 150℃ 60-120 seconds	 150℃ 200℃ 60-180 seconds
Time maintained above: - Temperature(TL) - Time(tL)	 183℃ 60-150 seconds	 217℃ 60-150 seconds
Peak/classification Temperature(Tp)	215℃	260℃
Time within 5℃ of actual Peak Temperature(tp)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6℃/second max.	6℃/second max.
Time 25℃ to Peak Temperature	6 minutes max.	8 minutes max.

Packing Information

The carrier tape is conformal to EIA-481D





Note : All Dimensions are in millimeter

Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial release		1.0	04-19-2014
Revised Binning based on 500mA testing current	5	1.1	08-31-2015
Update format		1.2	01-31-2016
Update Vf Binning		1.3	09-05-2016

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