SEMILEDS

PRODUCT DATASHEET

N35L-U-A

High Power LED

Introduction

The N35L-U-A LED from SemiLEDs brings industry leading technology to the solid state lighting market with its high quality and performance. With a silicone lens, N35L-U-A LEDs from SemiLEDs feature very high brightness and efficacy, as well as excellent lifetime.

N35L-U-A LEDs also feature a special design to fit secondary optics for various lighting applications. The user can easily get uniform light with any secondary optics.

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RoHS Compliant

Characteristics

Absolute Ratings

Parameter	Rating
	UV Series
DC Forward Current (mA)	700 mA
LED Junction Temperature	150℃
LED Operating Temperature	-40℃~110℃
Storage Temperature	-40℃~110℃
Soldering Temperature	Max. 260℃ / Max. 10sec. (JEDEC 020c)
ESD Sensitivity	2,000 V 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.

General Characteristics at 350mA

Part number	Color	Dominant Wavelength λ_d Peak Wavelength λp *		$2\theta_{1/2}$	Temperature Coefficient of Vf (mV/℃)	Thermal Resistance Junction to Pad
		Min	Max		$\Delta V_F / \Delta T_J$	(℃/W) $R\Theta_{J-L}$
N35L-U-A	U50	390	400	125		

Notes:

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

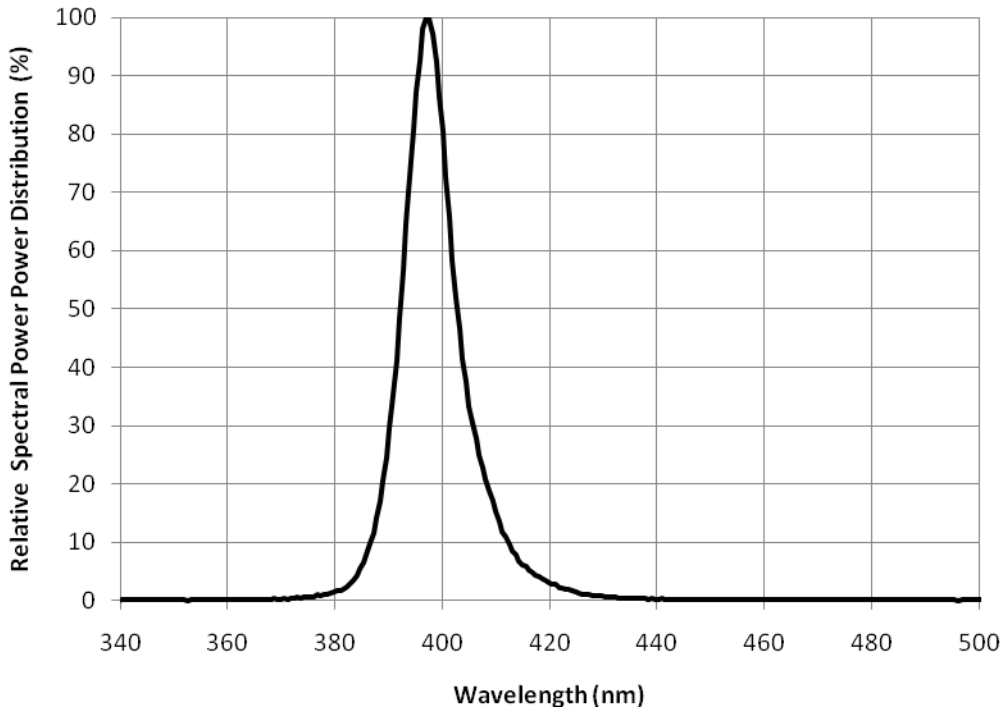
Luminous Flux and Forward Voltage

Part number	Color	Performance at Test Current (350mA)				Performance at 700mA
		Group	Minimum Radiometric Power (mW)	VF		Typical Radiometric Power (mW)
				Min	Max	
N35L-U-A	U50 (390~400nm)	D2	240	3.0	4.0	410
		D3	280	3.0	4.0	475
		D4	320	3.0	4.0	545
		D5	360	3.0	4.0	615

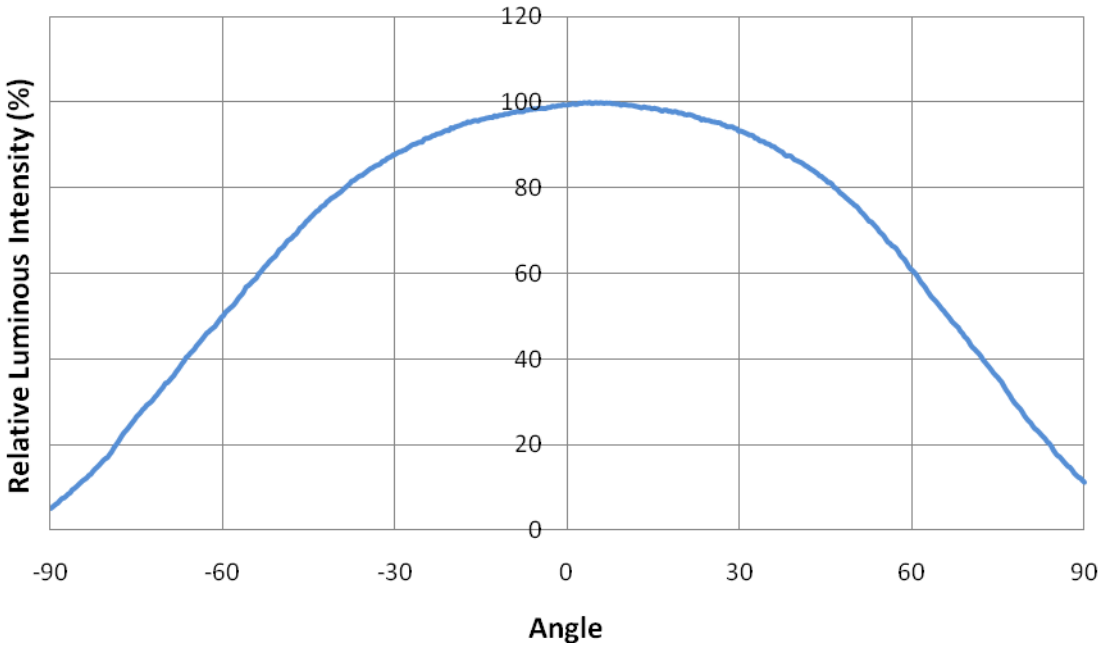
Note:

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

Relative Spectral Power Distribution, Ta=25 ℃

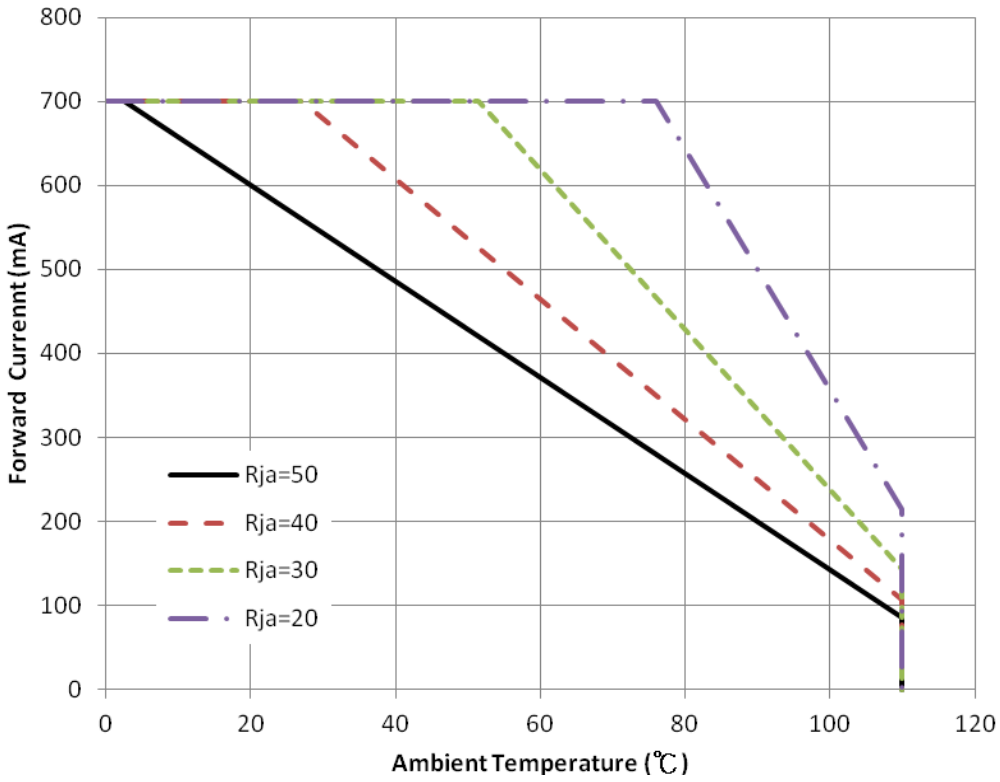


Typical Spatial Radiation Pattern



Thermal Design

Thermal design of the end product is important. The thermal resistance between the junction and the solder point ($R\Theta_{J\text{-}P}$) 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.

$$Tj=Ta + Rja*W$$

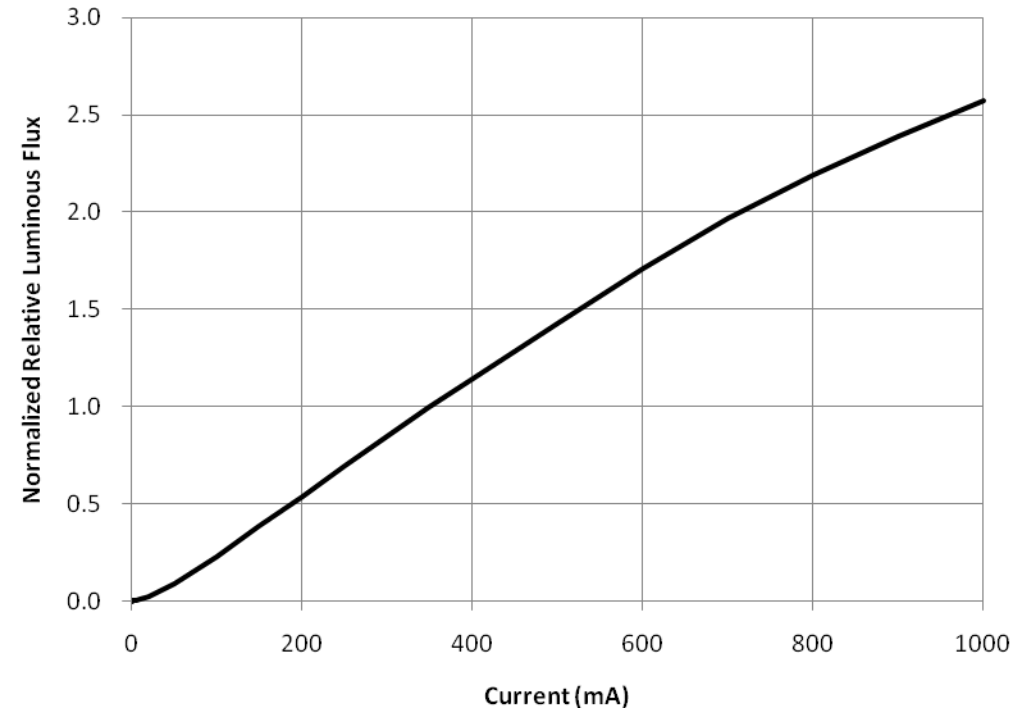
Tj: LED junction temperature

Ta: Ambient temperature

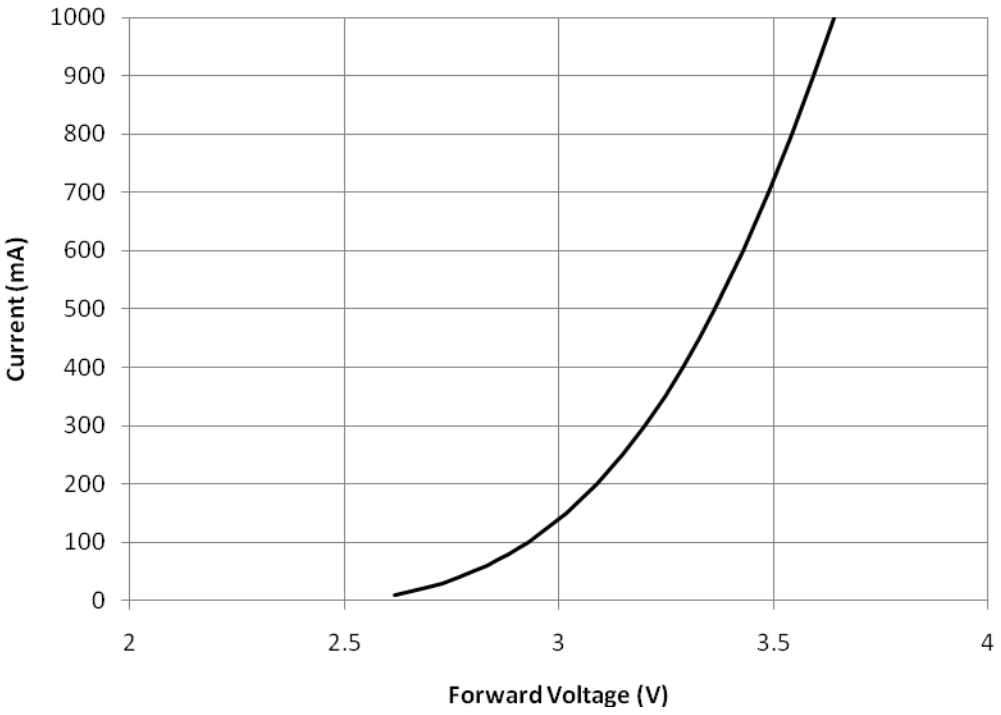
Rja: Thermal resistance between the junction and ambient

W: Input power (I_F*V_F)

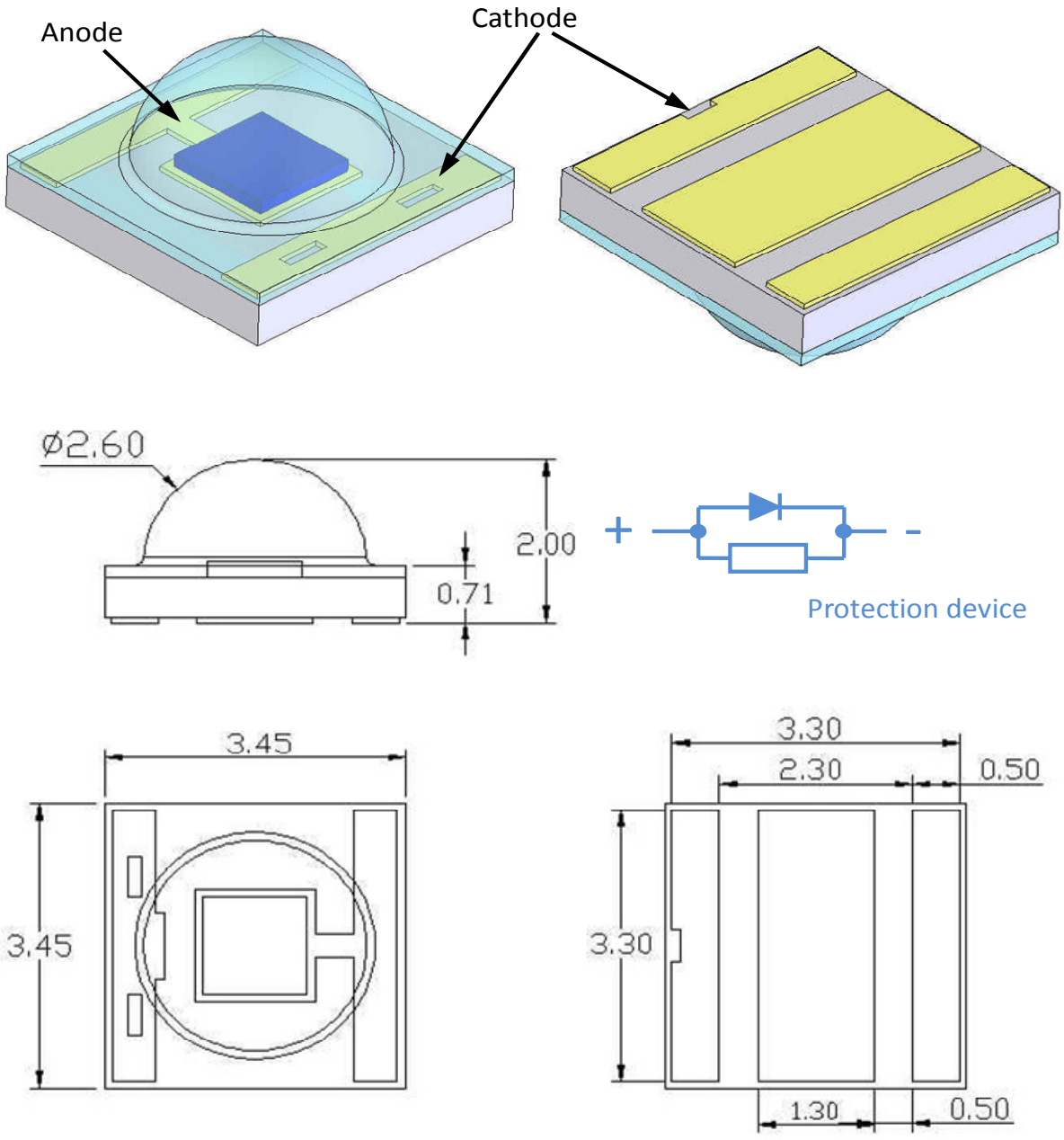
Typical Forward L-I Characteristics



Typical Forward I-V Characteristics



Mechanical Dimensions

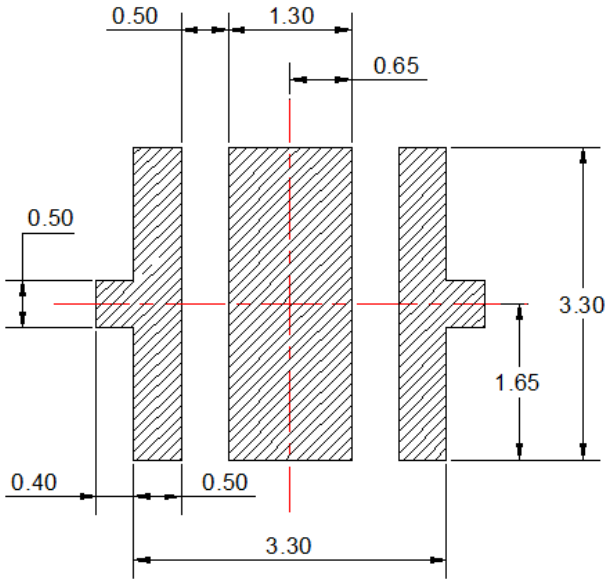


Notes :

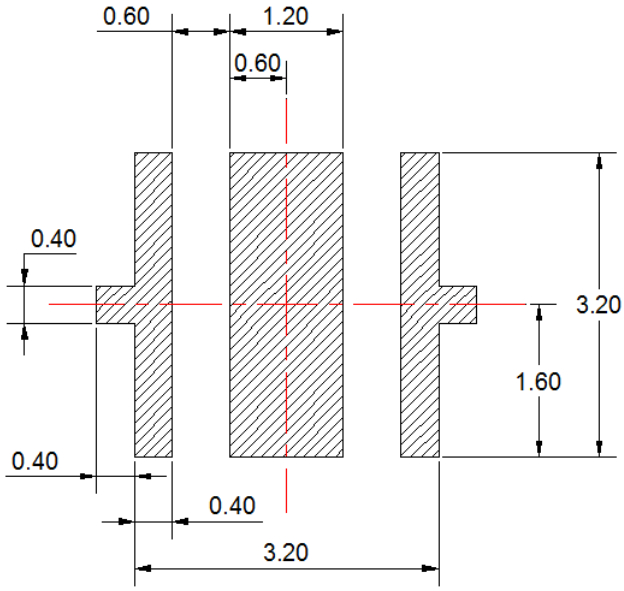
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Dimensions are ±0.13mm unless otherwise indicated

Recommended Solder Pad Design

Recommended Soldering Pad Design



Recommended Stencil Pattern Design (Mark Area is Opening)



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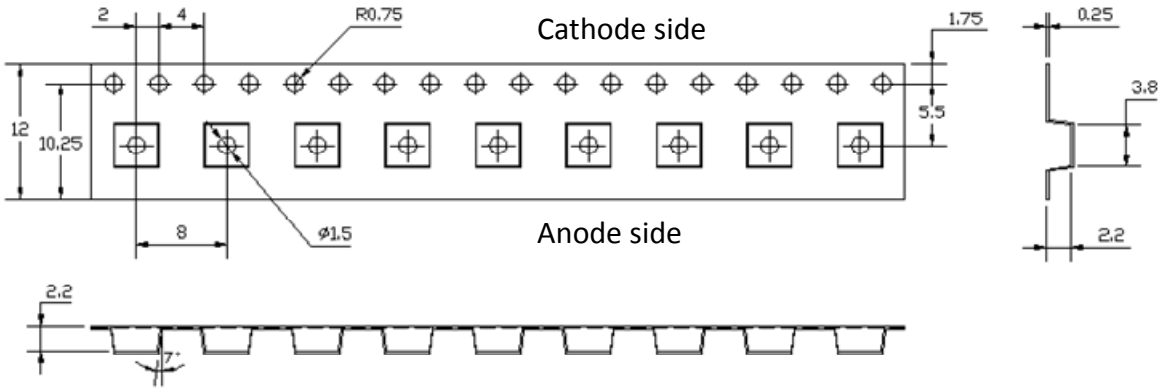
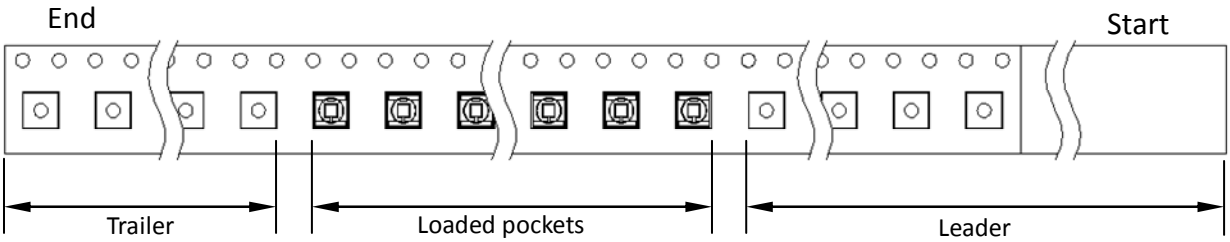
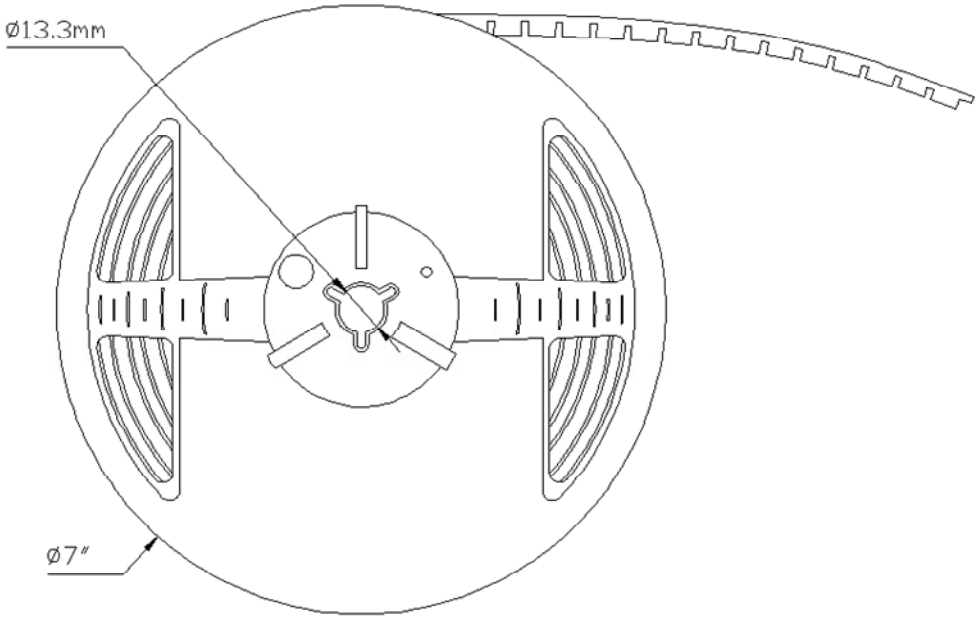
Packing Information

The carrier tape conform to EIA-481D.





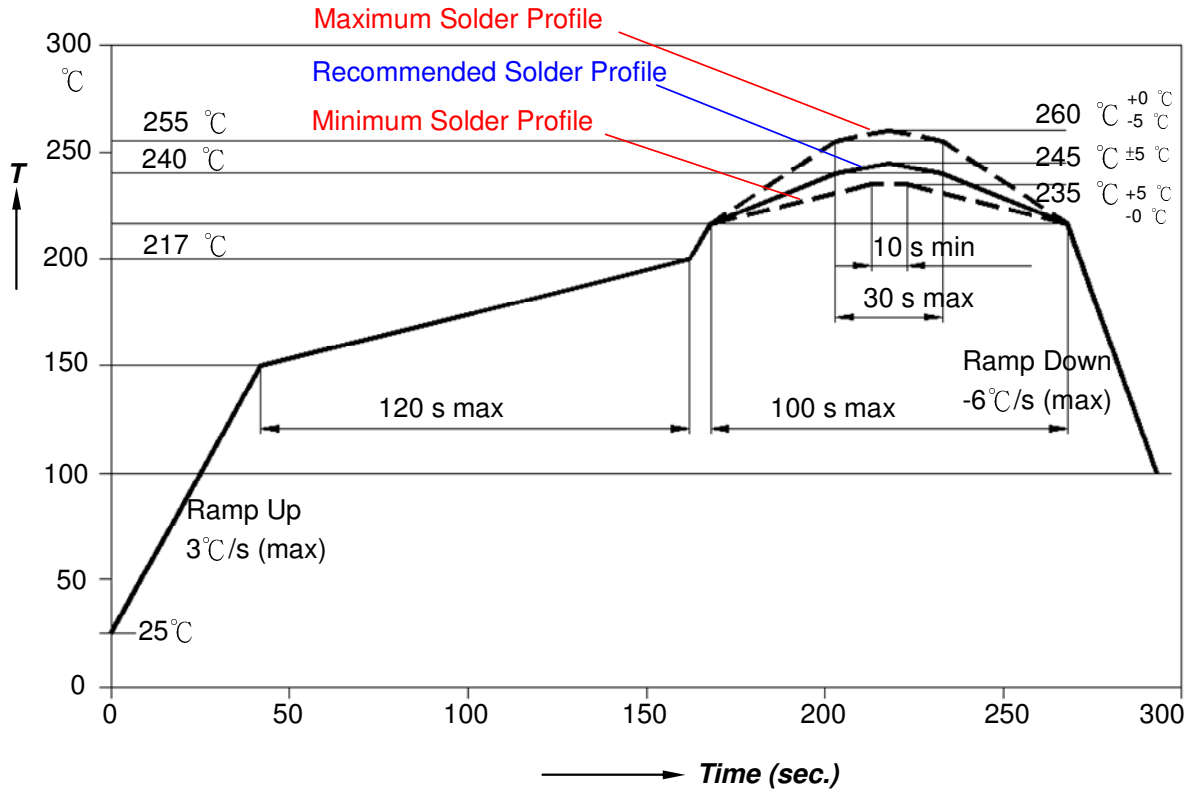


Note:

1. All dimensions are in millimeter.

Recommended Soldering Profile

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 advised for the LEDs.



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate (Ts_{max} to Tp)	3℃/second max.	3℃/second max.
Preheat - Temperature Min(Ts_{min}) - Temperature Max(Ts_{max}) - Time(ts_{min} to ts_{max})	 100℃ 150℃ 60-120 seconds	 150℃ 200℃ 60-180 seconds
Time maintained above: - Temperature(T_L) - Time(t_L)	 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.

About Us

SemiLEDs Corporation is a US based manufacturer of ultra-high brightness LED chips with state of the art fabrication facilities in Hsinchu Science Park, Taiwan. SemiLEDs specializes in the development and manufacturing of vertical LED chips in blue (white), green, and UV using a patented copper alloy base. This unique design allows for higher performance and longer lumen maintenance. In December 2008, The World Economic Forum recognized SemiLEDs innovations with the 2009 Technology Pioneer Award. SemiLEDs is fully ISO 9001:2008 Certified

SemiLEDs is a publicly traded company on NASDAQ Global Select Market (stock symbol "LEDS"). For investor information, please contact us at **investors@semileds.com.**

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