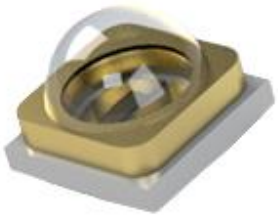
Preliminary Product Datasheet

N3838X-JNx5 Series

Off-Axial High Power Infrared LED

Introduction

The N3838X-JNx5 LED from TSLC brings industry-leading technology to the infrared applications market with its high reliability and performance, achieved through the use of glass lens airtight packaging technology. Featuring a ceramic substrate and a primary lens with a field of view ranging from narrow to wide angles, the N3838X-JNx5 LED is the perfect solution for security cameras, surveillance systems, machine vision, sensors, and general-purpose IR applications.



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RoHS Compliant

Characteristics

Absolute Maximum Ratings (Tj = 25°C)

Parameter	Rating
	N3838X-JNx5 Series
DC Forward Current (mA)	1000 mA
LED Junction Temperature	115℃
LED Operating Temperature	-40℃~85℃
Storage Temperature	-40℃~115℃
Soldering Temperature	Max. 260℃ / Max. 10sec. (JEDEC 020)
ESD Sensitivity	2,000 V HBM (JESD-22A-114-B)
Reverse Voltage	Not designed to be driven in reverse bias (VR≦5V)
Preconditioning	Acc. to JEDEC Level 2

General Characteristics at 700mA

Part Number	Color	Peak Wavelength λp		$2\theta_{1/2}$	Temperature Coefficient of Vf (mV/℃)	Thermal Resistance Junction to Pad (℃/W)
		Min	Max		ΔVF /ΔTJ	$R\Theta_{J-L}$
N3838X-JNU5	Jx5	925	955	18	-2~-4	10
N3838X-JNE5	Jx5	925	955	35	-2~-4	10
N3838X-JNM5	Jx5	925	955	120	-2~-4	10

Notes:

1. The peak wavelength is measured with an accuracy of ±1nm
2. All values stated are subject to the limits and set up of TSLC's testers. All other measurement data are defined as long-term production mean values and are only given for reference.
3. A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system. Life support devices or systems are intended (i) to be implanted in the human body, or (ii) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered. Components used as a critical component must be approved in writing by TSLC Corporation.

Radiometric Power and Forward Voltage (Tj = 25°C)

Part Number	Color	Performance at Test Current (700mA)					Performance at 1000mA
		Group	Radiometric Power (mW)		VF		Calculated Minimum Radiometric Power* (mW)
			Min	Max	Min	Max	
N3838X-JNU5 (beam angle 18°)	Jx5 (925-955nm)	ND3	280	320	1.2	2.2	390
		ND4	320	360	1.2	2.2	445
		ND5	360	400	1.2	2.2	500
		NE1	400	440	1.2	2.2	560
N3838X-JNE5 (beam angle 35°)	Jx5 (925-955nm)	ND5	360	400	1.2	2.2	500
		NE1	400	440	1.2	2.2	560
		NE2	440	480	1.2	2.2	615
		NE3	480	520	1.2	2.2	670
N3838X-JNM5 (beam angle 120°)	Jx5 (925-955nm)	ND5	360	400	1.2	2.2	500
		NE1	400	440	1.2	2.2	560
		NE2	440	480	1.2	2.2	615
		NE3	480	520	1.2	2.2	670

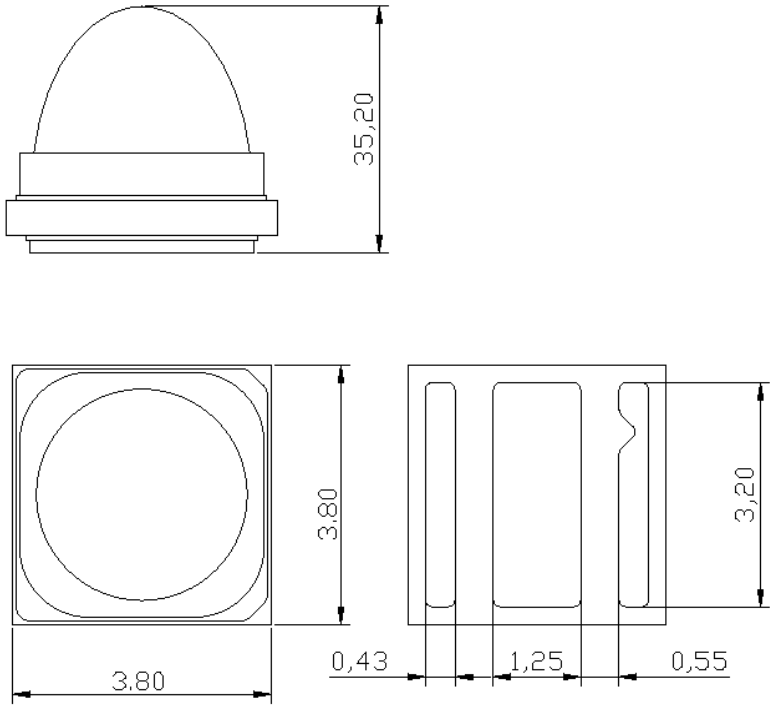
Note: 1. Radiometric power is measured with an accuracy of ±10%

2. The forward voltage is measured with an accuracy of ±0.2V

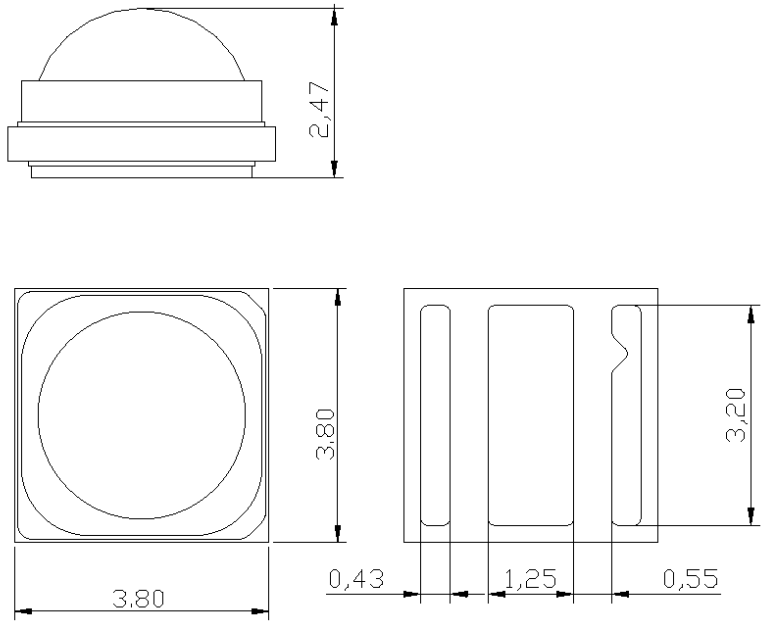
* Calculated values are for reference only.

Mechanical Dimensions

N3838X-JNU5/N3838X-JNE5 series (beam angle 18° and 35°)



N3838X-JNM5 series (beam angle 120°)

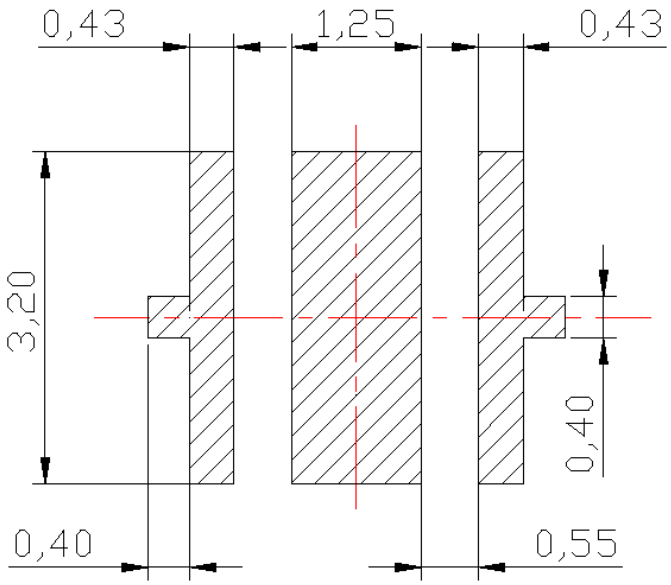


Notes:

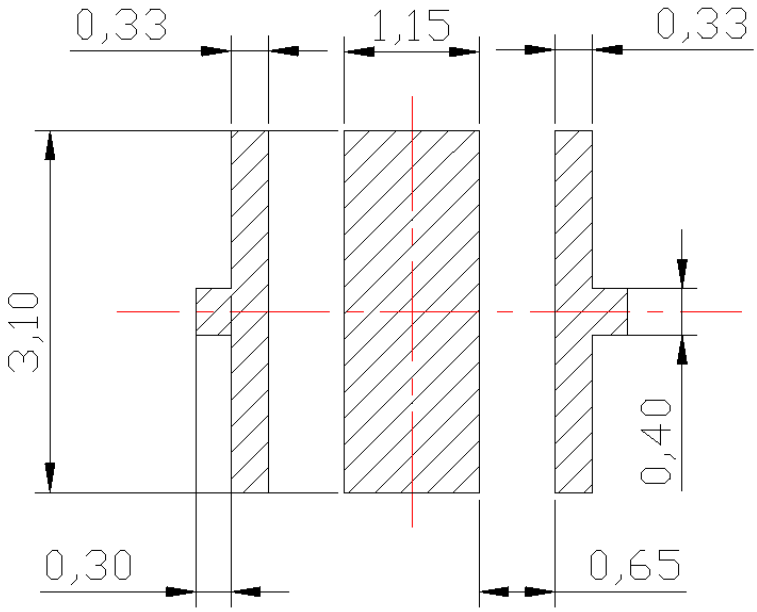
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Dimensions are ±0.13mm unless otherwise indicated

Recommended Solder Pad Design

Recommended Soldering Pad Design



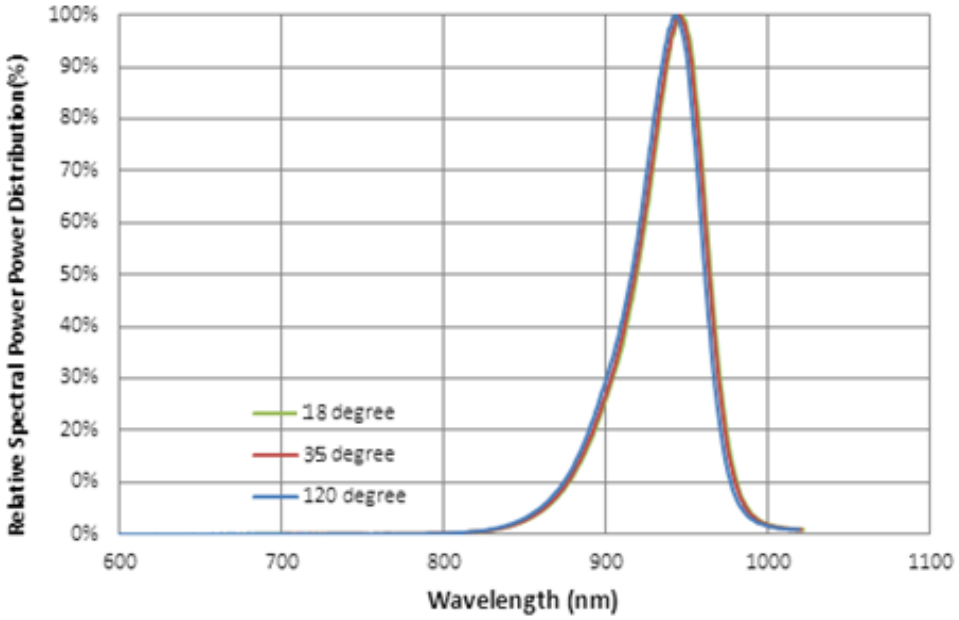
Recommended Stencil Pattern Design (Marked Area is Opening)



Notes:

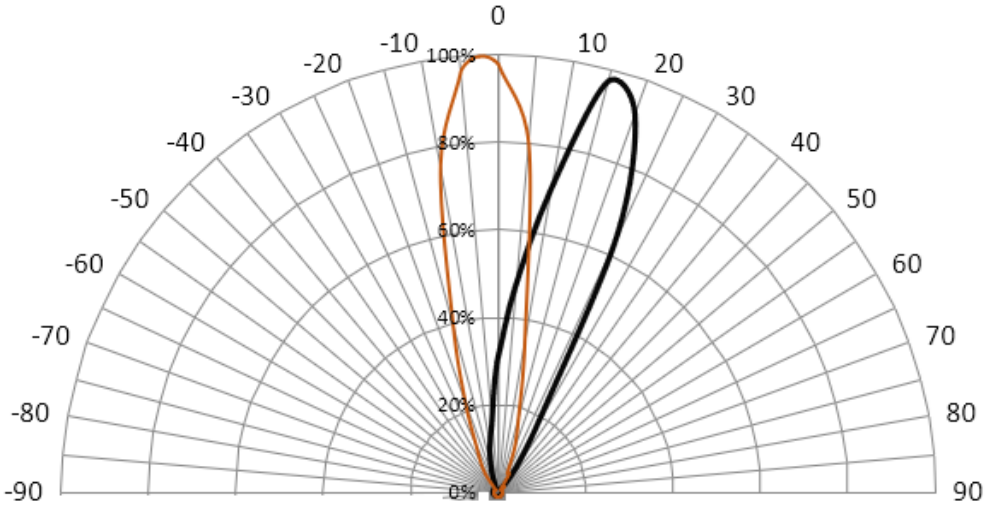
1. Drawing is not to scale
2. All dimensions are in millimeter

Relative Spectral Power Distribution, Tj=25 ℃

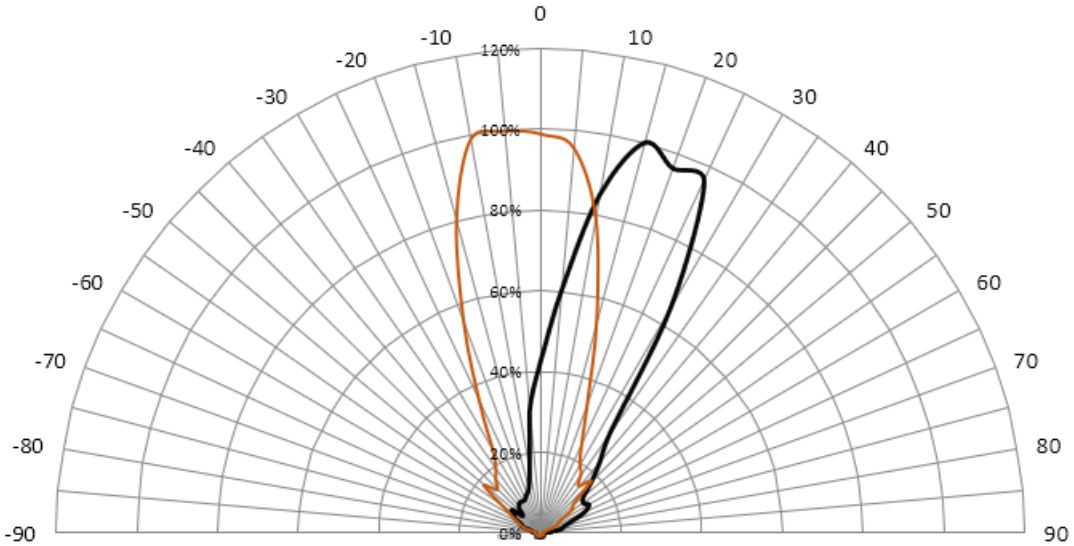


Typical Spatial Radiation Pattern, Tj=25˚C

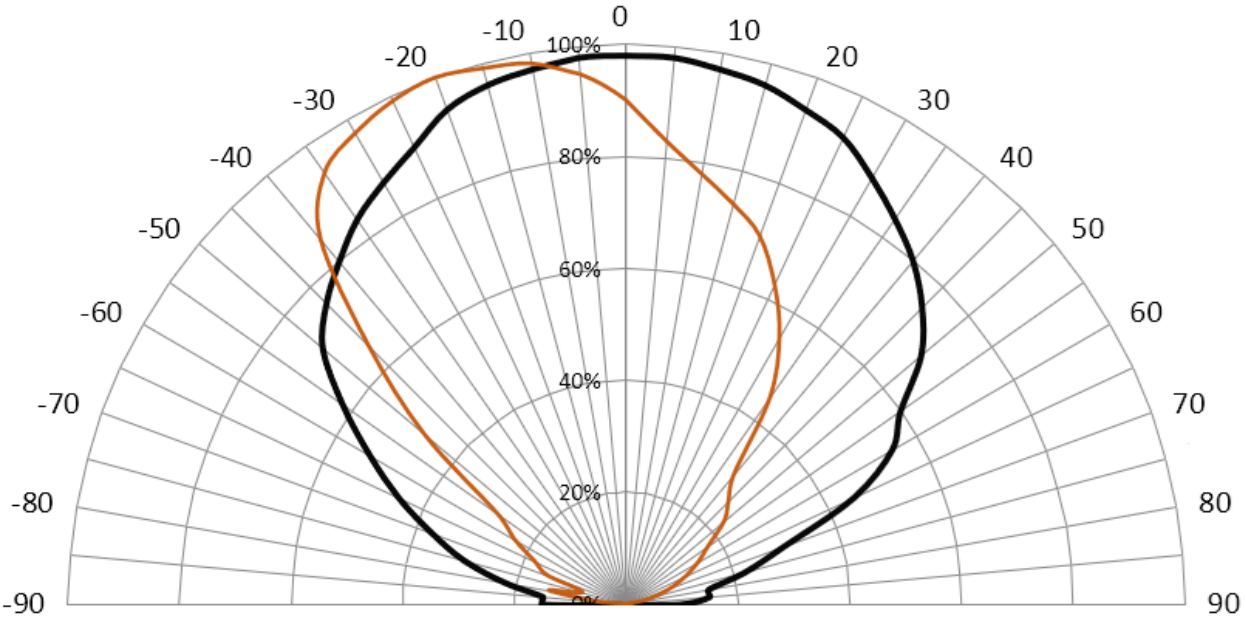
N3838X-JNU5 series (beam angle 18°)



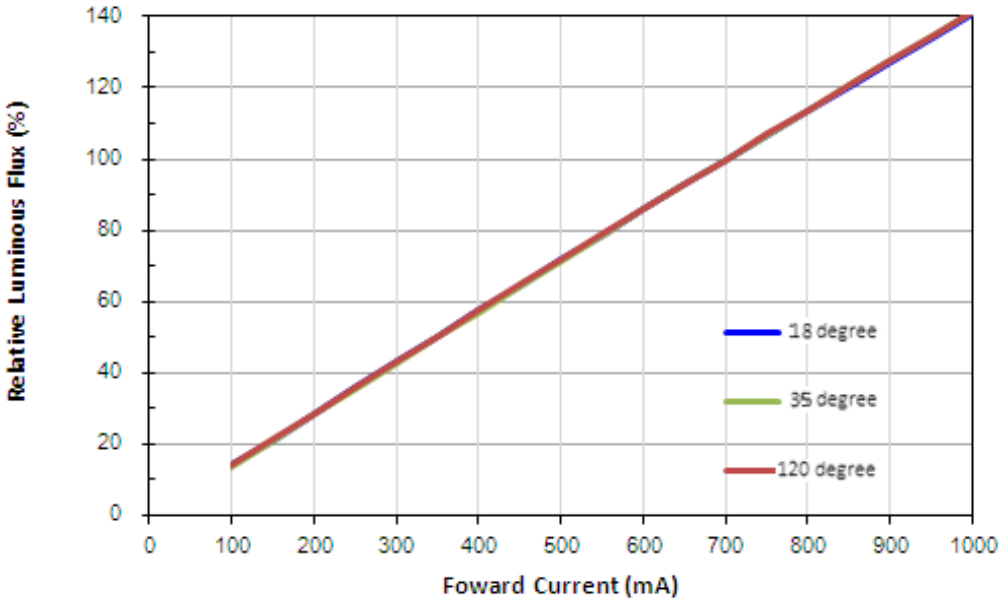
N3838X-JNE5 series (beam angle 35°)



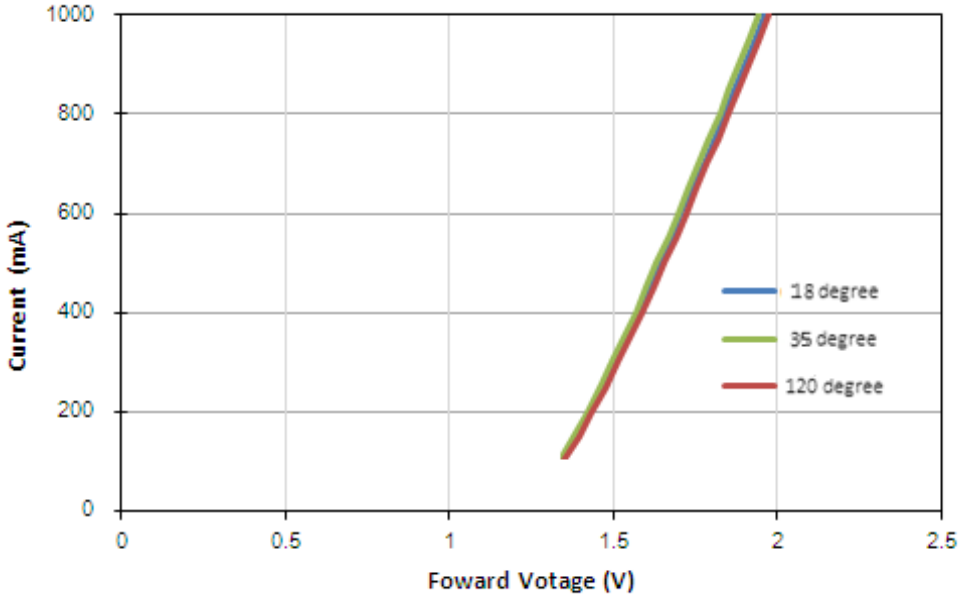
N3838X-JNM5 series (beam angle 120°)



Typical Forward L-I Characteristics, Tj=25 ℃

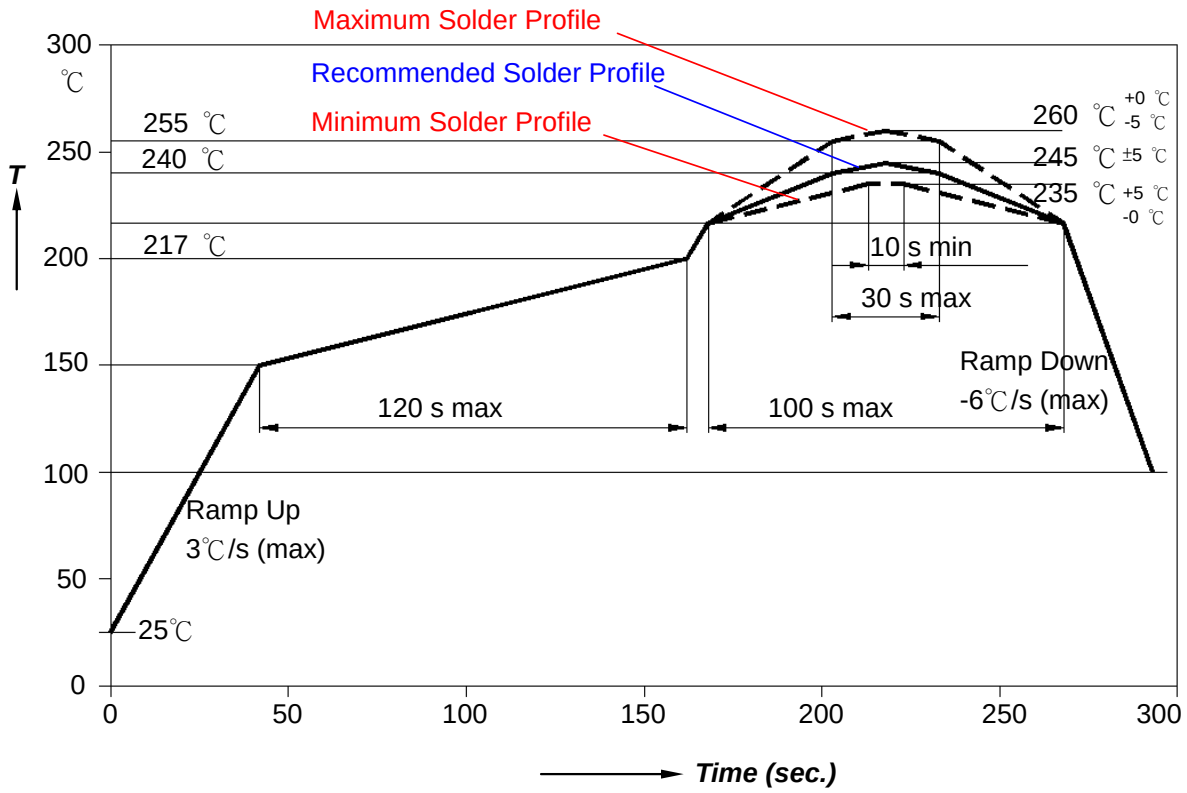


Typical Forward I-V Characteristics, Tj=25 ℃



Recommended Soldering Profile

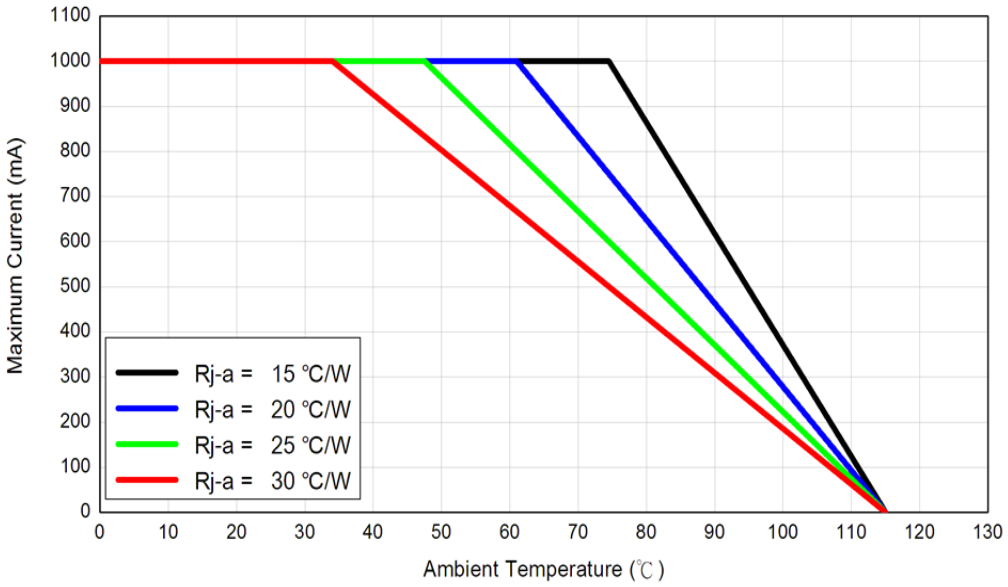
The LEDs can be soldered using the parameters listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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

Thermal Design

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

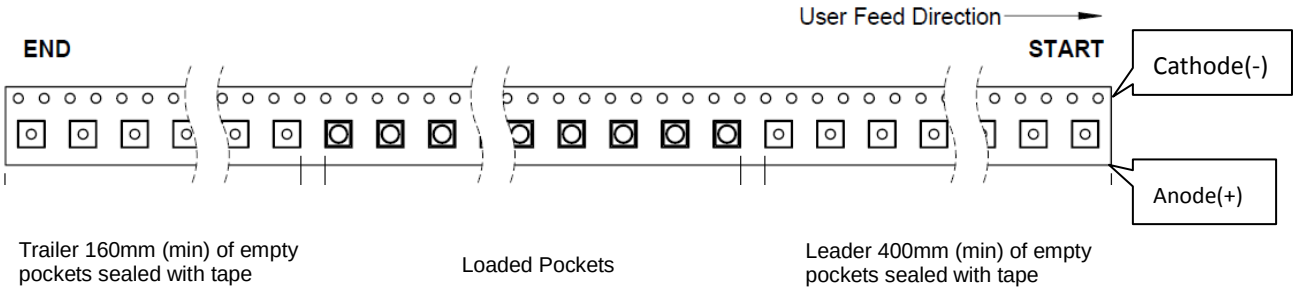
Packing Information

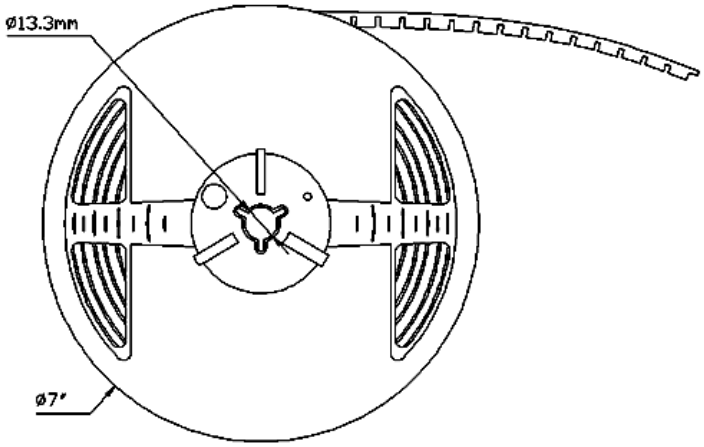
N3838X-JNU5/N3838X-JNE5 series (beam angle 18° and 35°), Max QTY: 500ea / roll

TBD

N3838X-JNM5 series (beam angle 120°) , Max QTY: 500ea / roll

TBD





Note:

All dimensions are in millimeter.

About Us

TSLC Corporation is devoted to developing high-density and multi-size emitters with powerful output to satisfy the needs of every customer.

TSLC Corporation is the leader in LED solutions. Unlimited design flexibility for interior and exterior spaces with high-end lighting effect; energy-efficient for UV curing to improve the quality of medical care; horticulture solutions create a better environment for everyone; high-intensity rotatable lightings for the entertainment industry, TSLC is always there for your lighting needs.

For further company or product information, please visit us at **www.tslc.com.tw** or please contact **sales@ tslc.com.tw.**

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