



N3838U-VNx4 Series 340nm UVB LED

Introduction

The N3838U-VNx4 Series LED from TSLC brings industry leading technology to the UVB lighting market with its high reliability and performance. With an AlN substrate and a 50/90/120 degree viewing angle primary optic, the N3838U-VNx4 is ideal for all UV curing and general UVC applications.

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RoHS Compliant

Characteristics

Absolute Maximum Ratings (T_j=25°C)

Parameter	Rating
	N3838U-VNx4 Series
DC Forward Current (mA)	500 mA
LED Junction Temperature	100°C
LED Operating Temperature	-40°C~85°C
Storage Temperature	-40°C~100°C
Soldering Temperature	Max. 260°C / 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 5a

General Characteristics at 350mA

Part number	Color	Peak Wavelength λ _p		2θ _{1/2}	Temperature Coefficient of Vf (mV/°C)	Thermal Resistance Junction to Pad (°C/W)
		Min	Max		ΔVF / ΔTJ	RO _{J-L}
N3838U-VNM4	VBx	330	350	120	-2~-4	8.4
N3838U-VNI4	VBx	330	350	90	-2~-4	8.4
N3838U-VNE4	VBx	330	350	50	-2~-4	8.4

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.
4. 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. Do not drive at rated current for more than 5 seconds without proper thermal management.
6. Always follow thermal design recommendations in the relevant Application Note.
7. Lens discoloration may occur with prolonged exposure to UV/NUV light. Additional lens material will need to be tested for UN/NUV light compatibility and durability.

Radiometric Power and Forward Voltage ($T_j=25^{\circ}\text{C}$)

Part number	Color	Performance at Test Current (350mA)			
		Group	Radiometric Power (mW)		VF(V)
			Min	Max	Typ.
N3838U-VNM4 (beam angle 120°)	VBx (330-350nm)	NC2	120	140	6
		NC3	140	160	6
		NC4	160	180	6
N3838U-VNI4 (beam angle 90°)	VBx (330-350nm)	NC2	120	140	6
		NC3	140	160	6
		NC4	160	180	6
N3838U-VNE4 (beam angle 50°)	VBx (330-350nm)	NC2	120	140	6
		NC3	140	160	6
		NC4	160	180	6

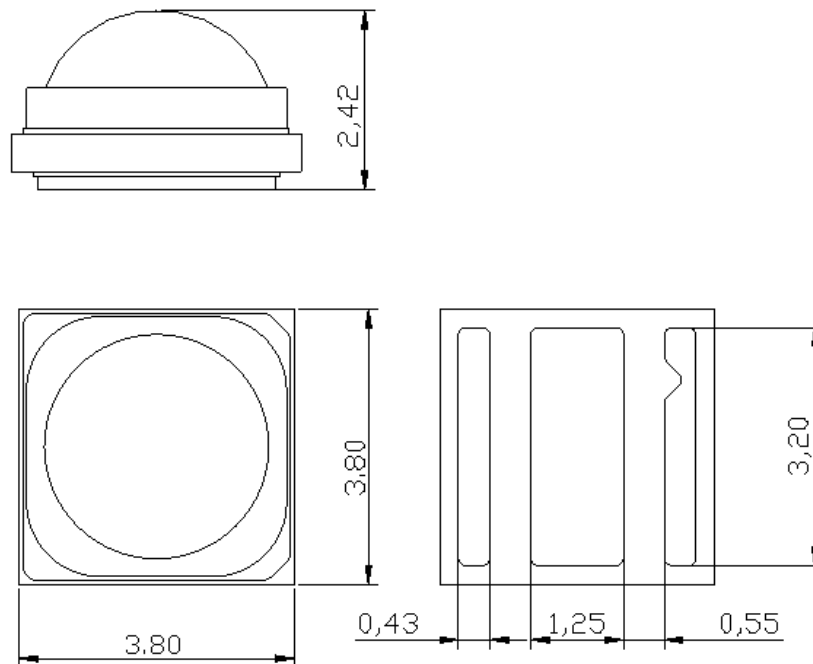
Note:

1. Radiometric power is measured with an accuracy of $\pm 10\%$
2. The forward voltage is measured with an accuracy of $\pm 0.2\text{V}$

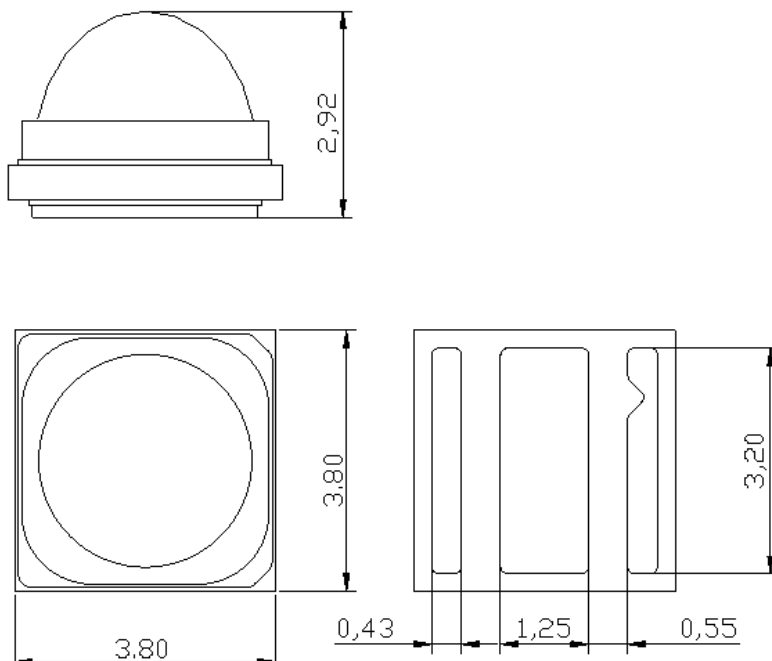
* Calculated values are for reference only.

Mechanical Dimensions

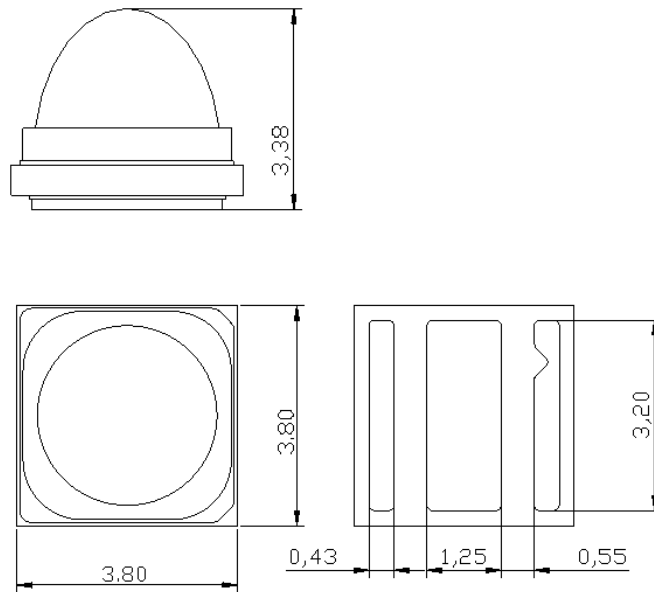
A. N3838U-VNM4 (beam angle 120°)



B. N3838U-VNI4 (beam angle 90°)



C. N3838U-VNE4 (beam angle 50°)

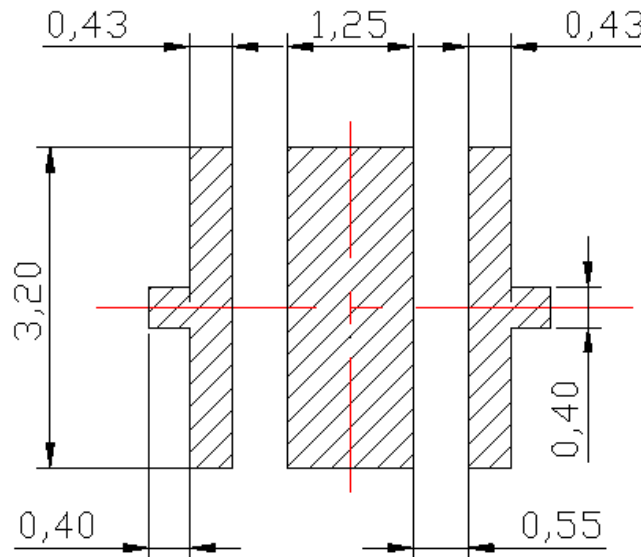


Notes:

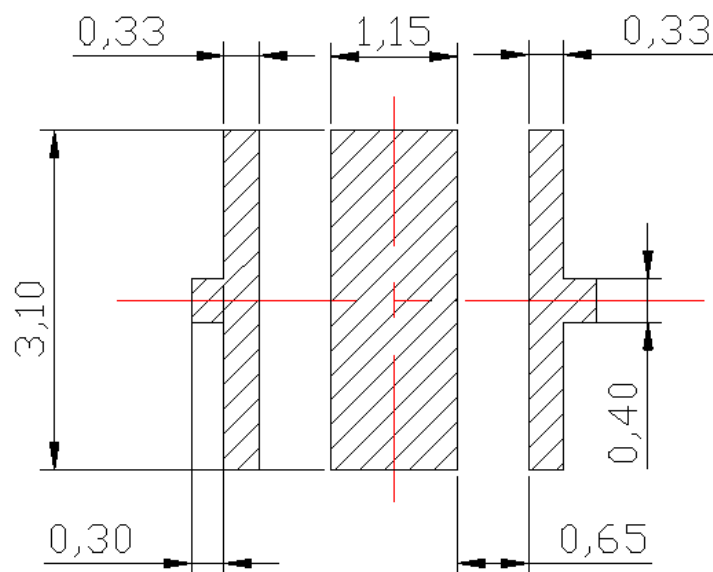
1. Drawing is not to scale
2. All dimensions are in millimetre
3. Dimensions are $\pm 0.13\text{mm}$ unless otherwise indicated

Recommended Solder Pad Design

Recommended Soldering Pad Design



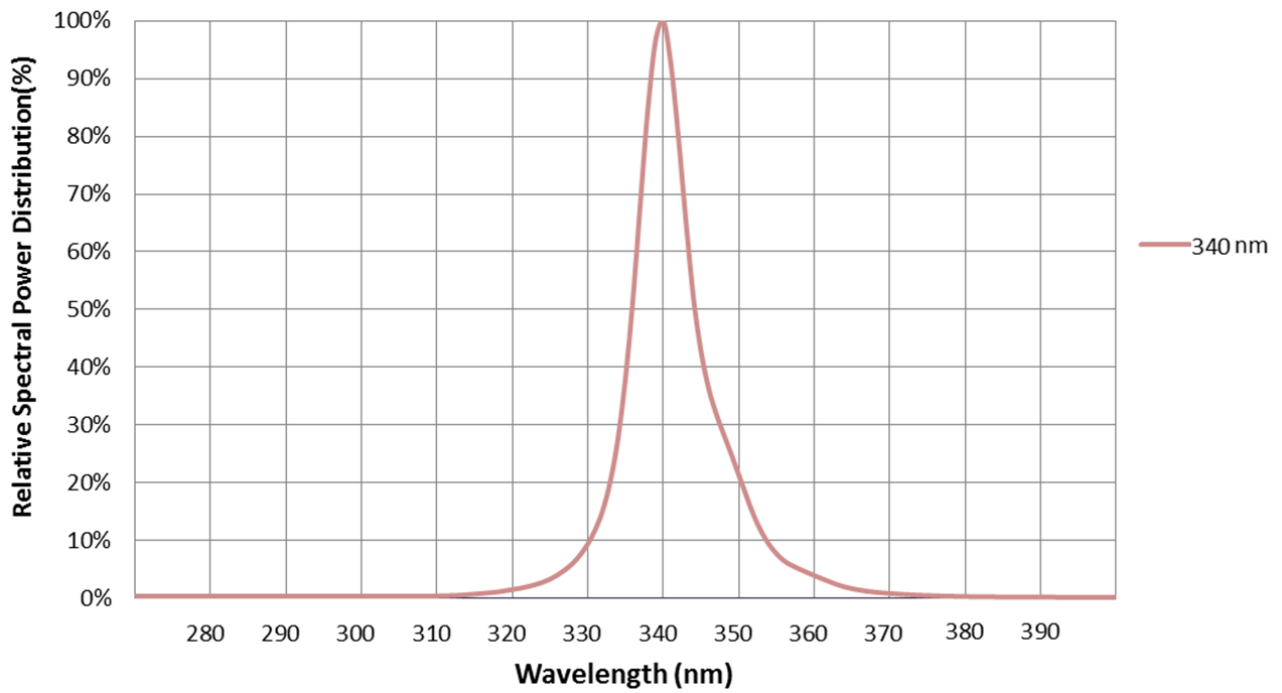
Recommended Stencil Pattern Design (Marked Area is Opening)



Notes:

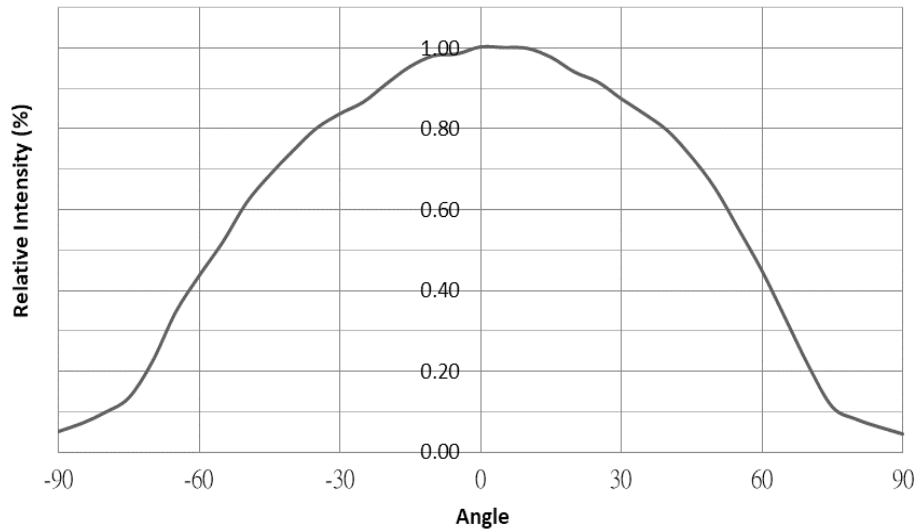
1. Drawing is not to scale
2. All dimensions are in millimeter

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

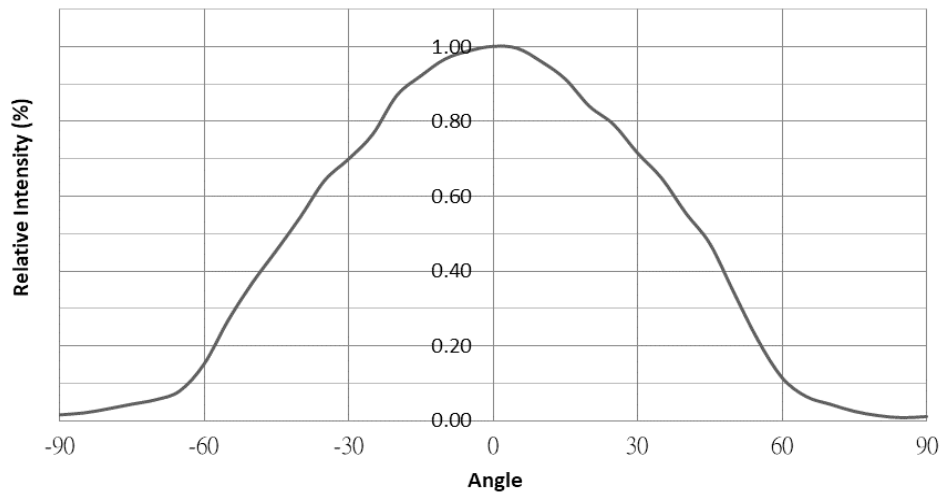


Typical Spatial Radiation Pattern, $T_j=25\text{ }^{\circ}\text{C}$

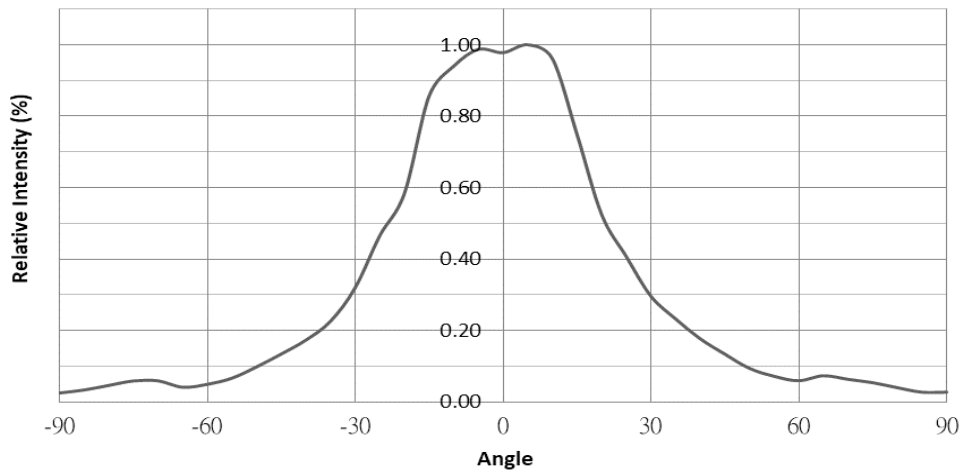
A. N3838U-VNM4 (beam angle 120°)



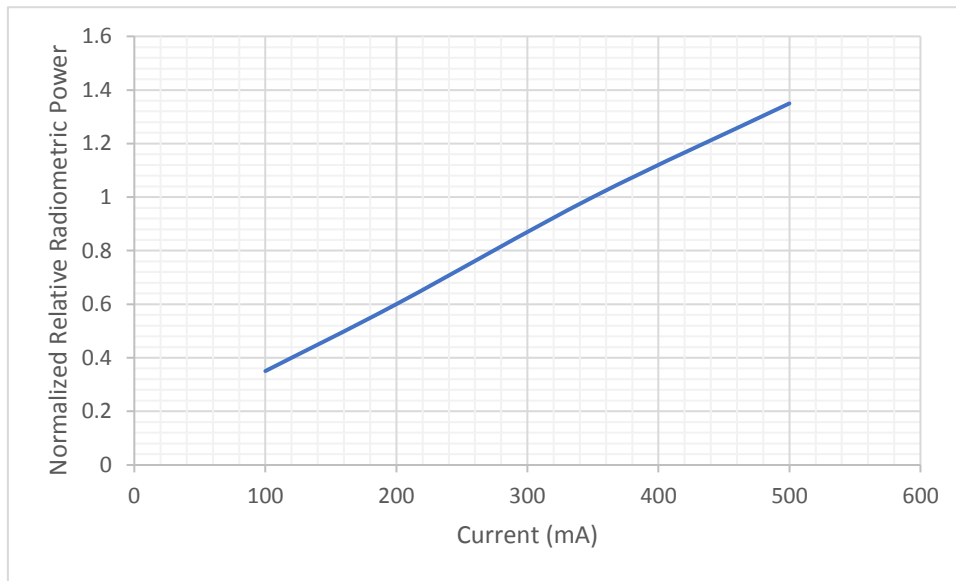
B. N3838U-VNM4 (beam angle 90°)



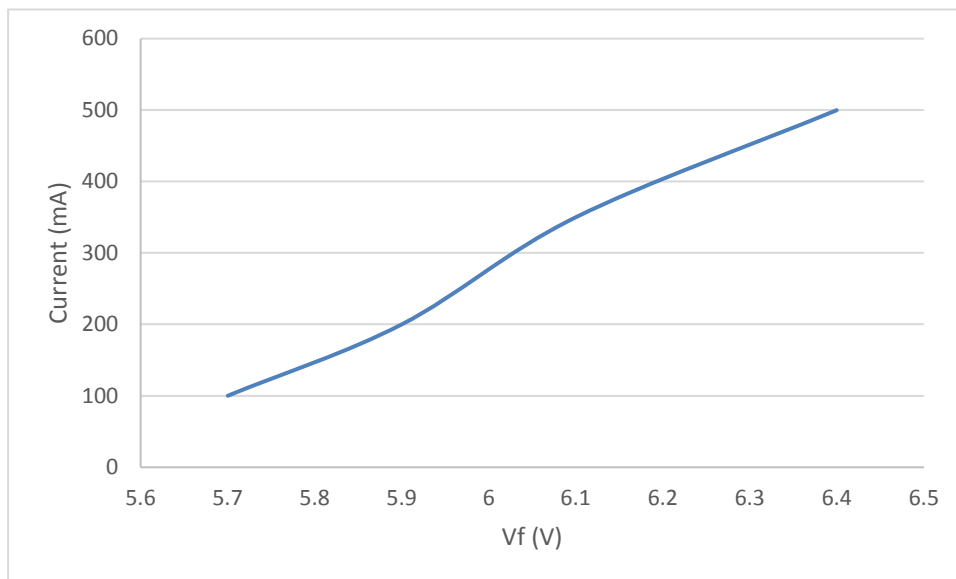
C. N3838U-VNM4 (beam angle 50°)



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

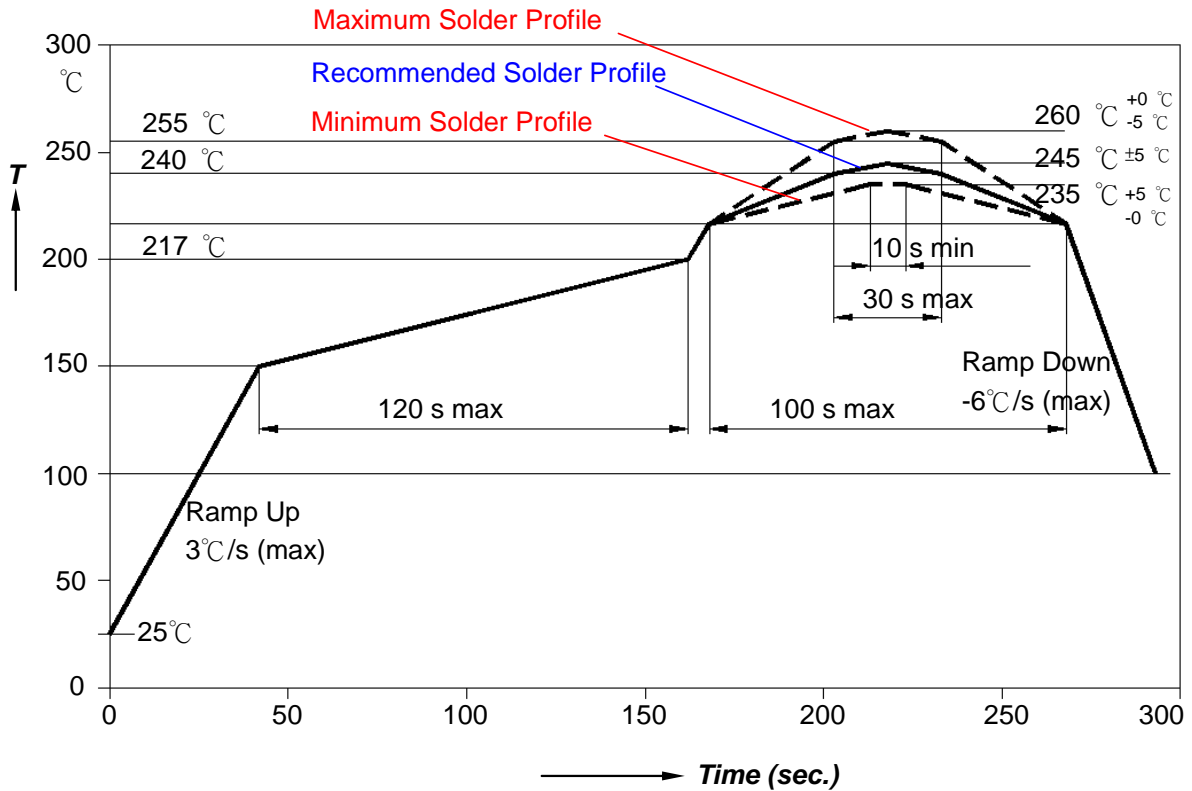


Typical Forward I-V Characteristics, $T_j=25^{\circ}\text{C}$



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.

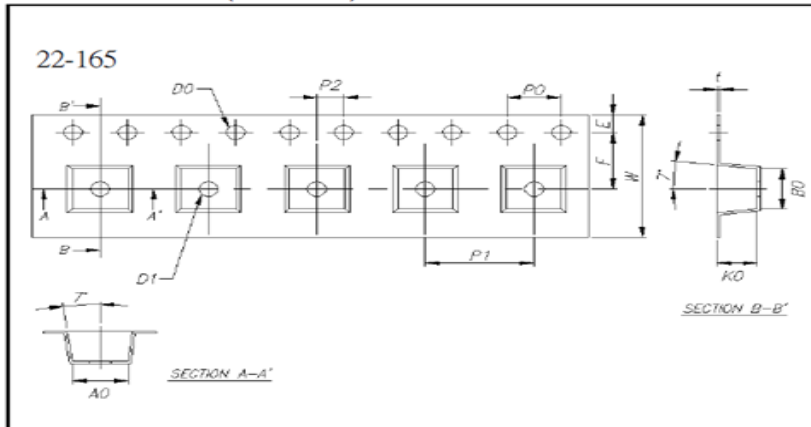


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate ($T_{s_{max}}$ to T_p)	3°C/second max.	3°C/second max.
Preheat		
- Temperature Min($T_{s_{min}}$)	100°C	150°C
- Temperature Max($T_{s_{max}}$)	150°C	200°C
- Time($t_{s_{min}}$ to $t_{s_{max}}$)	60-120 seconds	60-180 seconds
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

N3838U-VNM4 series (beam angle 120°), Max QTY: 1000ea / roll

Dimensions. (Unit: mm)

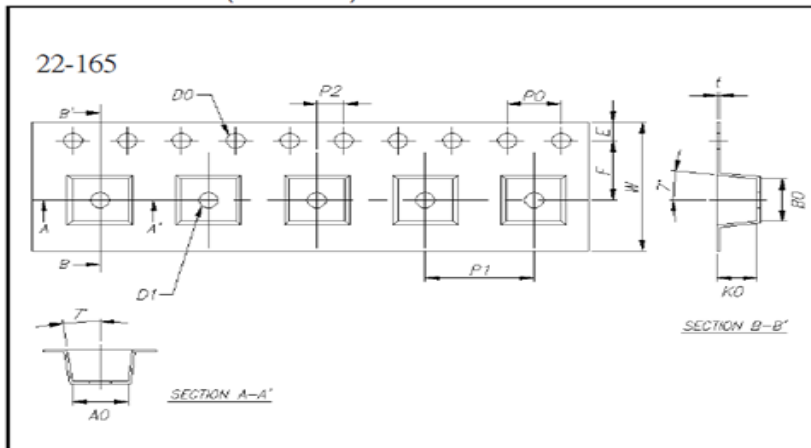


Item	Specification	Tol. (+/-)
W	12.00	± 0.30
E	1.75	± 0.10
F	5.50	± 0.10
D0	1.50	+0.10,-0
D1	1.50	± 0.10
P0	4.00	± 0.10
P1	8.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.23	± 0.05
A0	4.09	± 0.10
B0	3.93	± 0.10
K0	2.95	± 0.10

N3838U-VNI4 series (beam angle 90°), Max QTY: 500ea / roll

Dimensions. (Unit: mm)

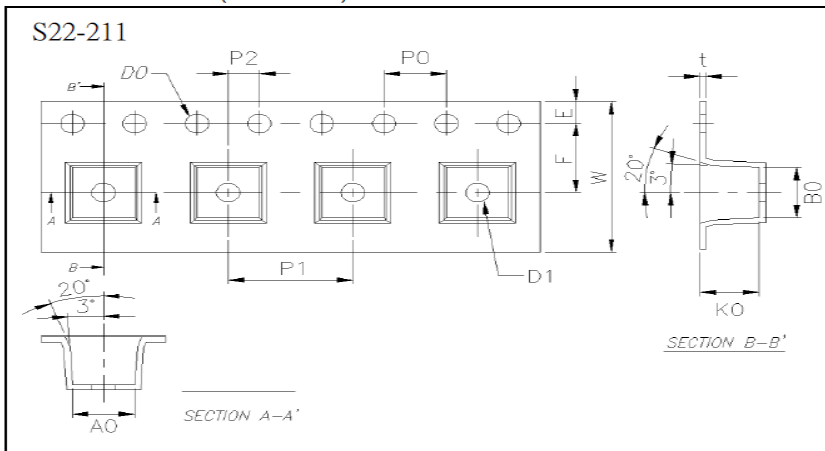


Item	Specification	Tol. (+/-)
W	12.00	± 0.30
E	1.75	± 0.10
F	5.50	± 0.10
D0	1.50	+0.10,-0
D1	1.50	± 0.10
P0	4.00	± 0.10
P1	8.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.23	± 0.05
A0	4.09	± 0.10
B0	3.93	± 0.10
K0	2.95	± 0.10

N3838U-VNE4 series (beam angle 50°), Max QTY: 500ea / roll

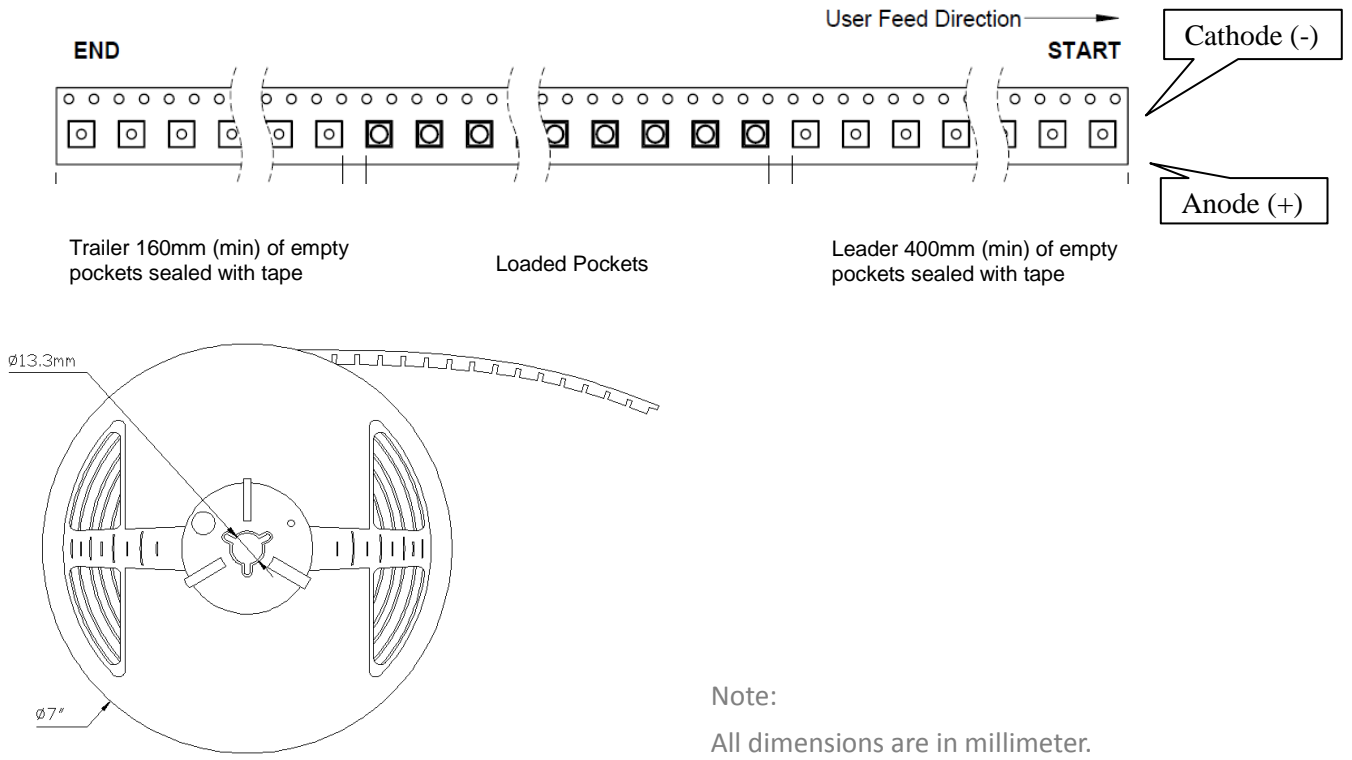
Dimensions. (Unit: mm)



Item	Specification	Tol. (+/-)
W	12.00	± 0.30
E	1.75	± 0.10
F	5.50	± 0.10
D0	1.50	+0.10, -0
D1	1.50	+0.10, -0
P0	4.00	± 0.10
P1	8.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.40	± 0.05
A0	4.00	± 0.10
B0	4.00	± 0.10
K0	3.80	± 0.10

N3838U-VNx4 Series Preliminary Product Datasheet



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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