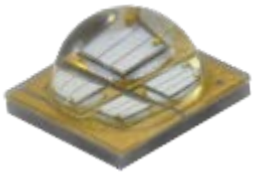
Product Datasheet

N5050U-UNx4-N1J41N Series High Power UV LED

Introduction



The N5050U-UNx4-N1J41N product series is a compact, high quality and reliable 4-chip UV LED. Featuring high radiometric power density and design flexibility – the N5050U-UNx4-N1J41N spectrum can be tailored to your application.

Table of Contents

RoHS Compliant

Characteristics

Absolute Maximum Ratings (T_j=25˚C)

Parameter	Rating
	N5050U-UNx4-N1J41N Series
Max Forward Current (mA)	1000 mA
LED Junction Temperature	125˚C
LED Operating Temperature	-40˚C~85˚C
Storage Temperature	-40˚C~125˚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 1

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.
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 UN/NUV light. Additional lens material will need to be tested for UN/NUV light compatibility and durability.
8.

General Characteristics at 700mA

Part number	Color	Peak Wavelength λp		$2\theta_{1/2}$	Thermal Resistance Junction to Pad (˚C/W)
		Min	Max		$R\Theta_{J-L}$
N5050U-UNL4-N1J41N	U40	380	390	135	1.5
	U50	390	400	135	1.5
	U60	400	410	135	1.5
	U70	410	420	135	1.5

Notes: The peak wavelength is measured with an accuracy of ±1nm, other wavelength are available upon request.

Radiometric Power and Forward Voltage (T_j=25˚C)

Part number	Color	Performance at Test Current (700mA)				
		Group	Radiometric Power (mW)		VF	
			Min	Max	Min	Max
N5050U-UNL4-N1J41N (beam angle 135°)	U40 (380-390nm)	NK3	5000	5500	11	15
		NK4	5500	6000	11	15
		NK5	6000	6500	11	15
	U50 (390-400nm)	NK3	5000	5500	11	15
		NK4	5500	6000	11	15
		NK5	6000	6500	11	15
	U60 (400-410nm)	NK2	4600	5000	11	15
		NK3	5000	5500	11	15
		NK4	5500	6000	11	15
	U70 (410-420nm)	NK2	4600	5000	11	15
		NK3	5000	5500	11	15
		NK4	5500	6000	11	15

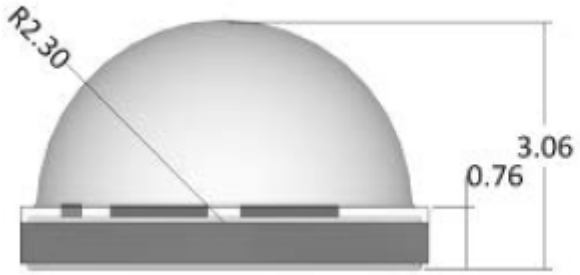
Note: 1. Radiometric power is measured with an accuracy of ±10%

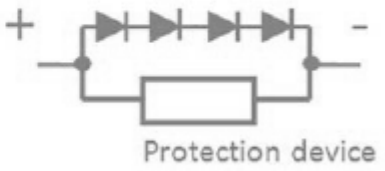
2. The forward voltage is measured with an accuracy of ±0.2V

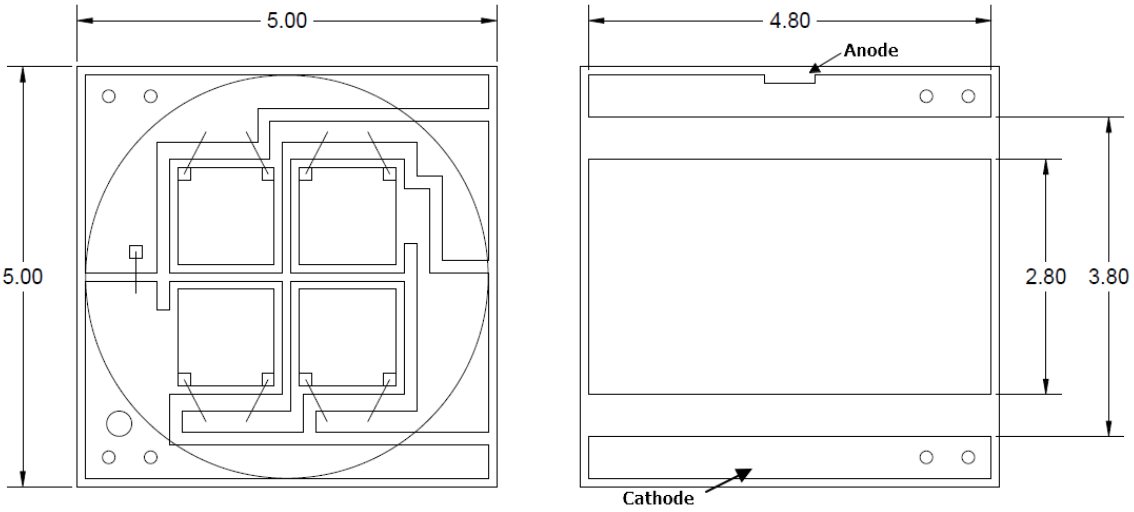
* Calculated values are for reference only.

Mechanical Dimensions

N5050U-UNL4-N1J41N (beam angle 135°)





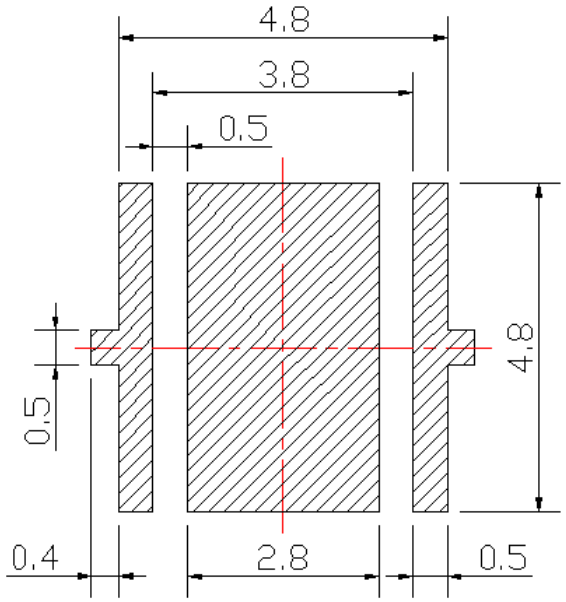


Notes :

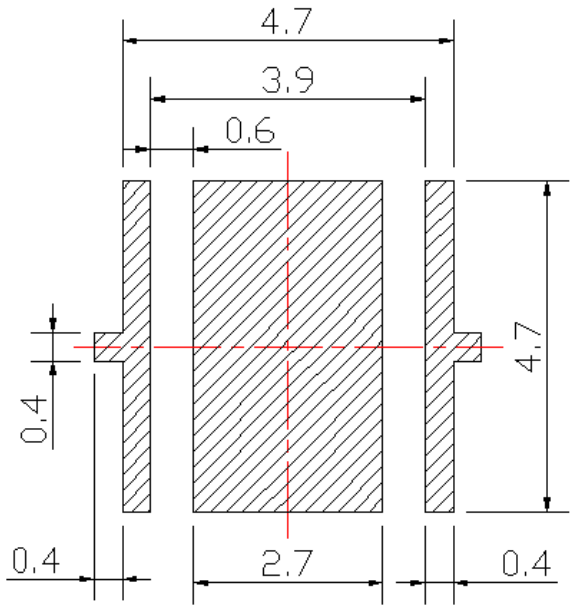
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Dimensions are ±0.13mm unless otherwise indicated
4. The notch on the back solder pad indicates anode.

Recommended Solder Pad Design

Recommended Soldering Pad Design



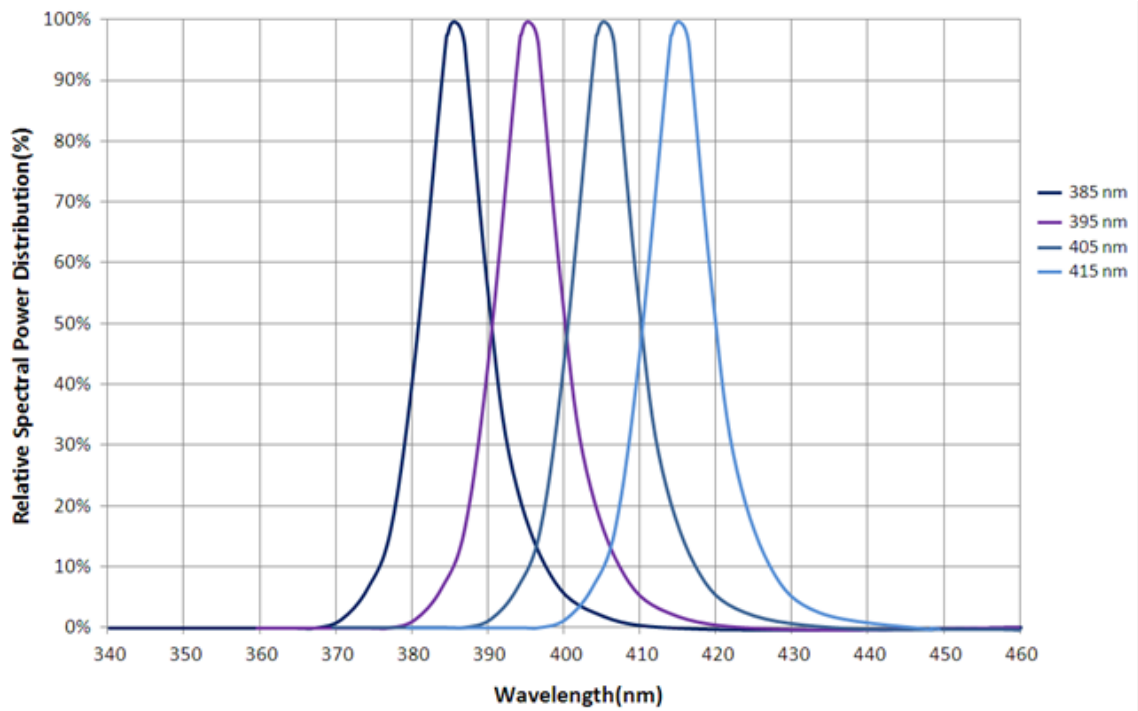
Recommended Stencil Pattern Design (Marked Area is Opening)



Notes :

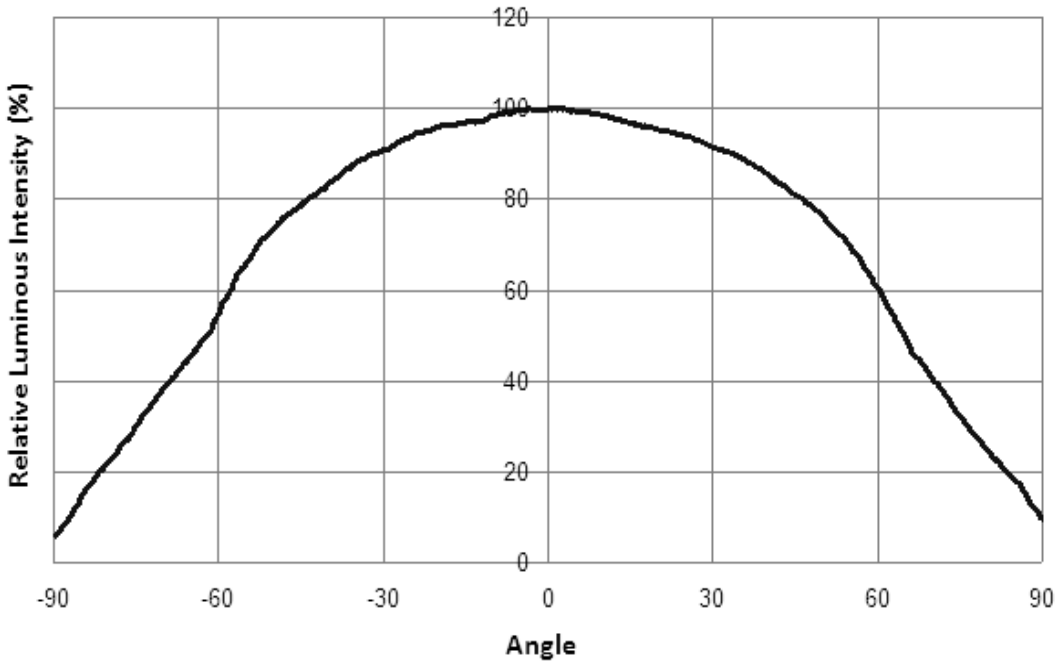
1. Drawing is not to scale
2. All dimensions are in millimeter

Relative Spectral Power Distribution, T_j=25°C

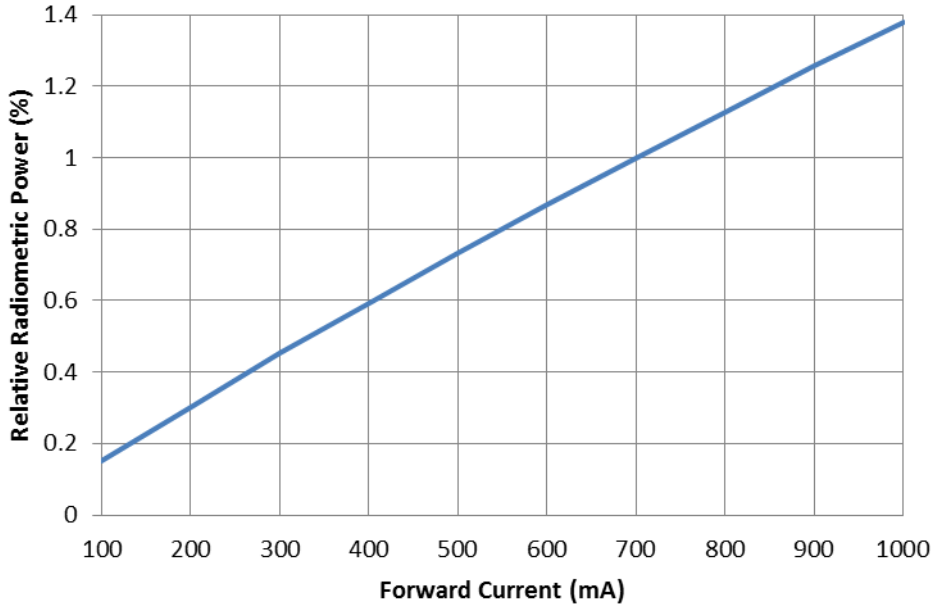


Typical Spatial Radiation Pattern

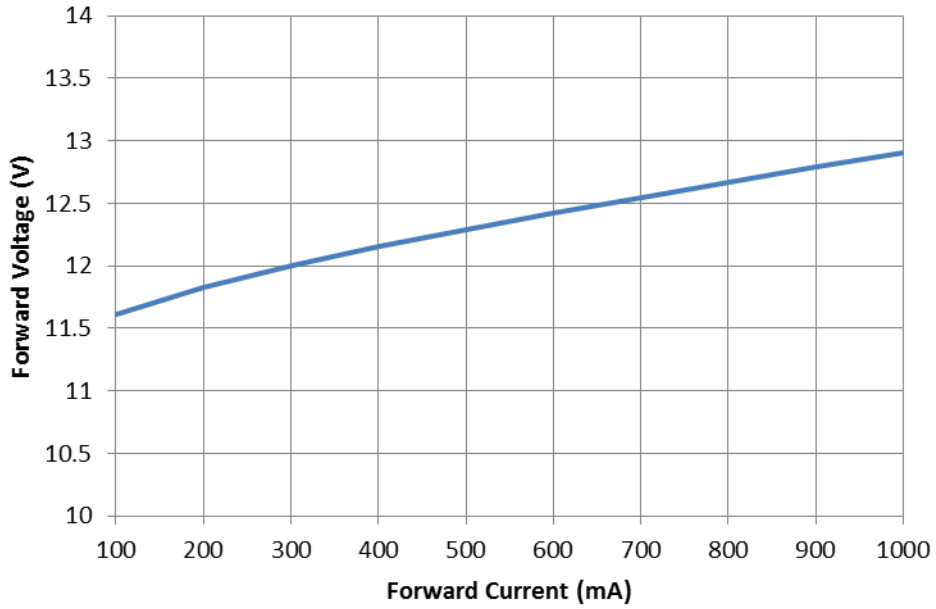
N5050U-UNL4-N1J41N (beam angle 135°)



Typical Forward L-I Characteristics, T_j=25°C

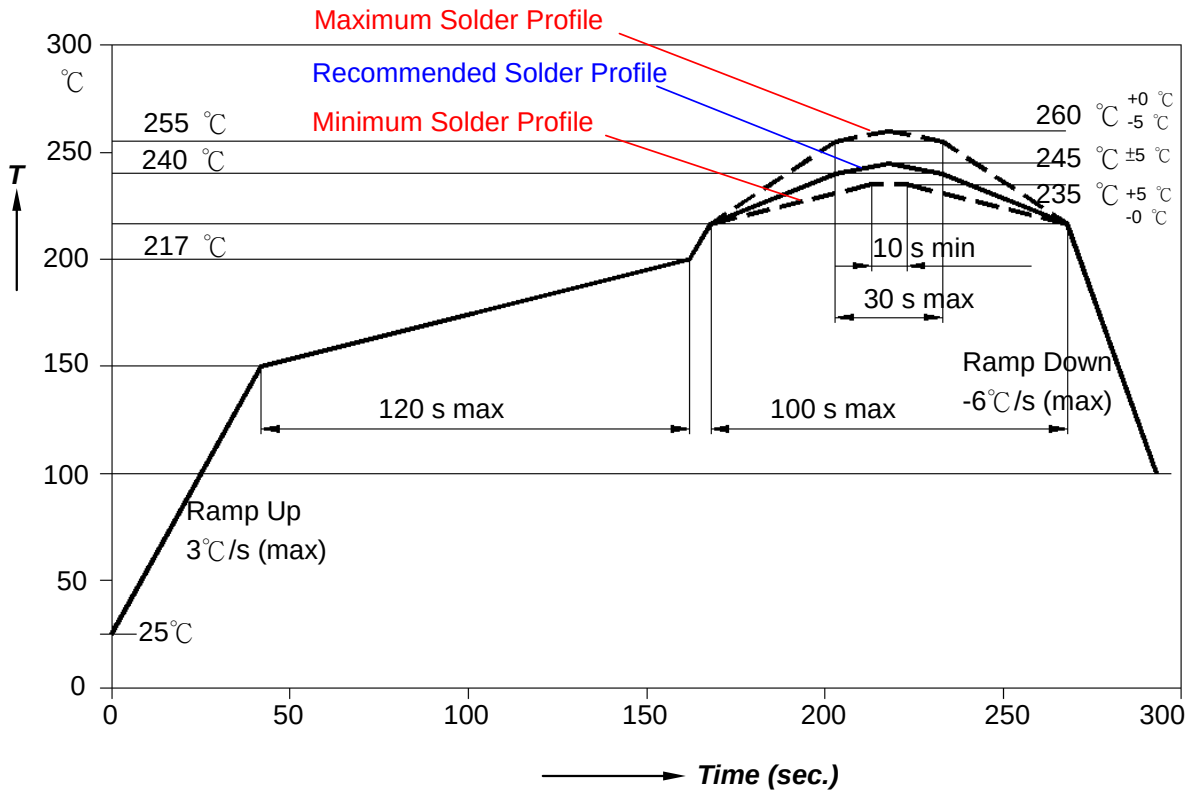


Typical Forward I-V Characteristics, T_j=25°C



Recommended Soldering Profile

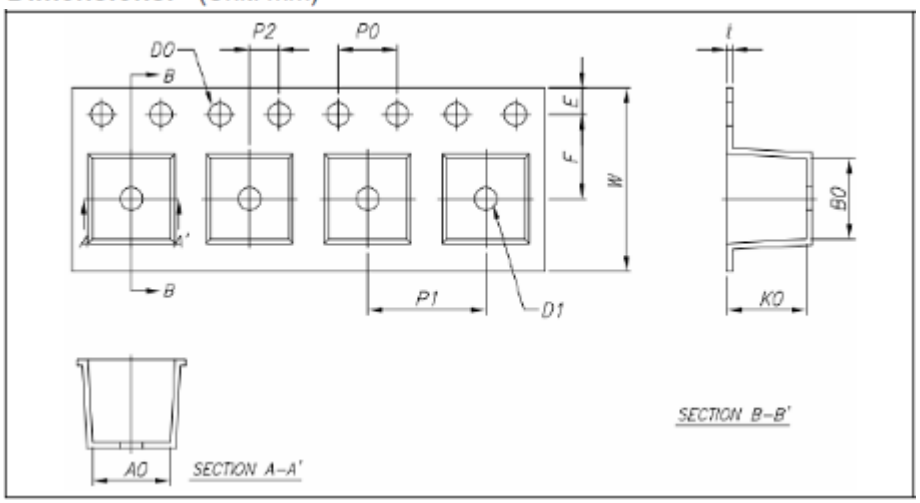
The LEDs can be soldered using the parameters listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate (Ts_{max} to Tp)	3˚C/second max.	3˚C/second max.
Preheat - Temperature Min(Ts_{min}) - Temperature Max(Ts_{max}) - Time(ts_{min} to ts_{max})	100˚C 150˚C 60-120 seconds	150˚C 200˚C 60-180 seconds
Time maintained above: - Temperature(T_L) - Time(t_L)	183˚C 60-150 seconds	217˚C 60-150 seconds
Peak/classification Temperature(Tp)	215˚C	260˚C
Time within 5℃ of actual Peak Temperature(tp)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6˚C/second max.	6˚C/second max.
Time 25℃ to Peak Temperature	6 minutes max.	8 minutes max.

Packing Information

Dimensions. (Unit: mm)



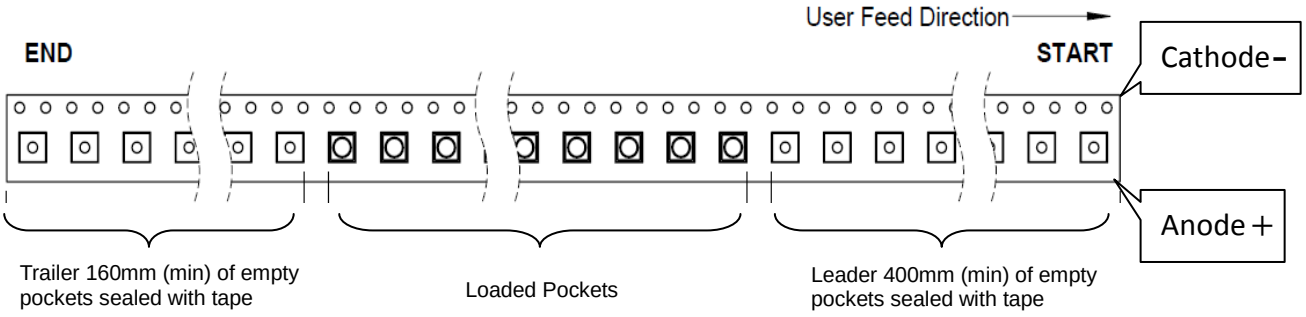
Common dimensions

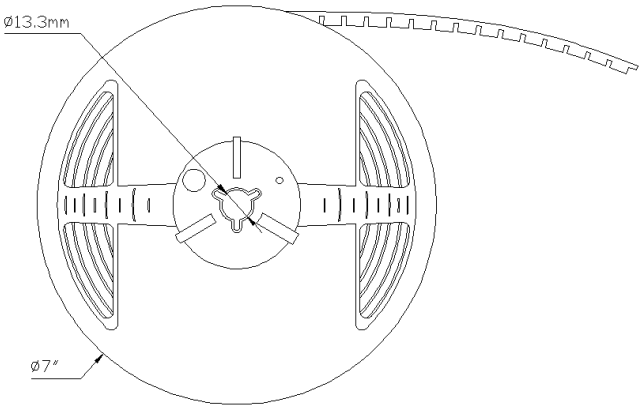
Item	Specification	Tol. (+/-)
W	12.00	±0.20
E	1.75	±0.10
F	5.50	±0.10
D0	1.50	±0.10
D1	1.50	±0.10
P0	4.00	±0.10
P1	8.00	±0.10
P2	2.00	±0.10
P0x10	40.00	±0.20

Pocket & other dimensions

N5050U-UNL4 series

Item	Specification	Tol. (+/-)
t	0.28	±0.05
A0	5.35	±0.10
B0	5.35	±0.10
K0	3.40	±0.10





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.**

www.tslc.com.tw

ASIA PACIFIC
1F, No. 11, Ke Jung Rd.
Chu-Nan Site
Hsinchu Science Park
Chu-Nan 350, Miao-Li City
Taiwan, ROC

Tel: +886-37-587098
Fax: +886-37-587099
sales@tslc.com.tw