



T2016L-CNN3 Series High Power LED

Introduction

The T2016L-CNN3 LED from TSLC brings industry leading technology to the solid state lighting market with its high quality and performance. With a silicone lens, T2016L-CNN3 LEDs from TSLC feature very high brightness and efficacy, as well as excellent lifetime.

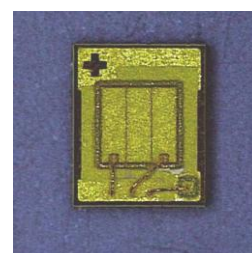


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Characteristics

Absolute Maximum Ratings (Tj = 25°C)

Parameter	Rating
	White Series
DC Torch mode Forward Current (mA)	T2016L-CNN3 A series 150mA
	T2016L-CNN3 B series 350mA
Peak Pulse Flash mode Flash mode Current (mA)	T2016L-CNN3 A series 700mA (100ms ON, 900ms OFF)
	T2016L-CNN3 B series 1500mA (100ms ON, 900ms OFF)
LED Junction Temperature	T2016L-CNN3 A series 125°C
	T2016L-CNN3 B series 150°C
LED Operating Temperature	-40°C ~ 85°C
Storage Temperature	-40°C ~ 115°C
Soldering Temperature	Max. 260°C / Max. 10sec. (JEDEC 020)
ESD Sensitivity	8,000 V HBM (MIL-STD-883G)

Product Nomenclature

T 2016 L – CN N 3

1 2~5 6 7.8 9 10

Code 1: Substrate composition, T: Ceramic AlN

Code 2.3.4.5: Package size, 2016: 2.05*1.65 mm

Code 6: Class Code, L:Lighting

Code 7.8: Color/CCT type, CN: Cool White

Code 9: Lens type, N: Flat

Code 10: Lens version: 1: photics center; 3: submount center

General Characteristics at 500mA

Part number	Color	Correlated Color Temperature, CCT		$2\theta_{1/2}$	Temperature Coefficient of Vf (mV/°C)	Thermal Resistance Junction to Pad (°C/W)
		Min	Max		$\Delta V_F / \Delta T_J$	$R\theta_{J-L}$
T2016L-CNN3 A series	Cool white	5000	8000	140	-2~-4	13

General Characteristics at 1000mA

Part number	Color	Correlated Color Temperature, CCT		$2\theta_{1/2}$	Temperature Coefficient of Vf (mV/°C)	Thermal Resistance Junction to Pad (°C/W)
		Min	Max		$\Delta V_F / \Delta T_J$	$R\theta_{J-L}$
T2016L-CNN3 B series	Cool white	5000	8000	140	-2~-4	10

Notes:

1. The CCT is measured with an accuracy of $\pm 200K$.
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.

Luminous Flux and Forward Voltage (Tj = 25°C)

Part number	Color	Group	Minimum Luminous Flux @ 500mA (lm)	Forward Voltage @ 500mA (V)		※Calculated Minimum Luminous Flux @ 700mA (lm)
				Min	Max	
T2016L-CNN3 A series (500mA)	Cool White	NQC	93.9	3.4	4.4	110
		NQD	100	3.4	4.4	120
		NQE	107	3.4	4.4	128
		NRB	114	3.4	4.4	135
		NRC	122	3.4	4.4	145
		NRD	130	3.4	4.4	155

Note: 1. Elector-optical testing is in single pulse mode Ton:15ms, Tj:25°C

2. Luminous Flux is measured with an accuracy of ±10%

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

4. ※Calculated flux values are for reference only.

Luminous Flux and Forward Voltage (Tj = 25°C)

Part number	Color	Group	Minimum Luminous Flux @ 1000mA (lm)	Forward Voltage @ 1000mA (V)		※Calculated Minimum Luminous Flux @ 1500mA (lm)
				Min	Max	
T2016L-CNN3 B series (1000mA)	Cool White	NTE	140	3.0	4.4	175
		NTF	160	3.0	4.4	200
		NTG	180	3.0	4.4	225
		NTH	200	3.0	4.4	250
		NTI	220	3.0	4.4	275
		NTJ	240	3.0	4.4	300
		NTK	260	3.0	4.4	325
		NTL	280	3.0	4.4	350

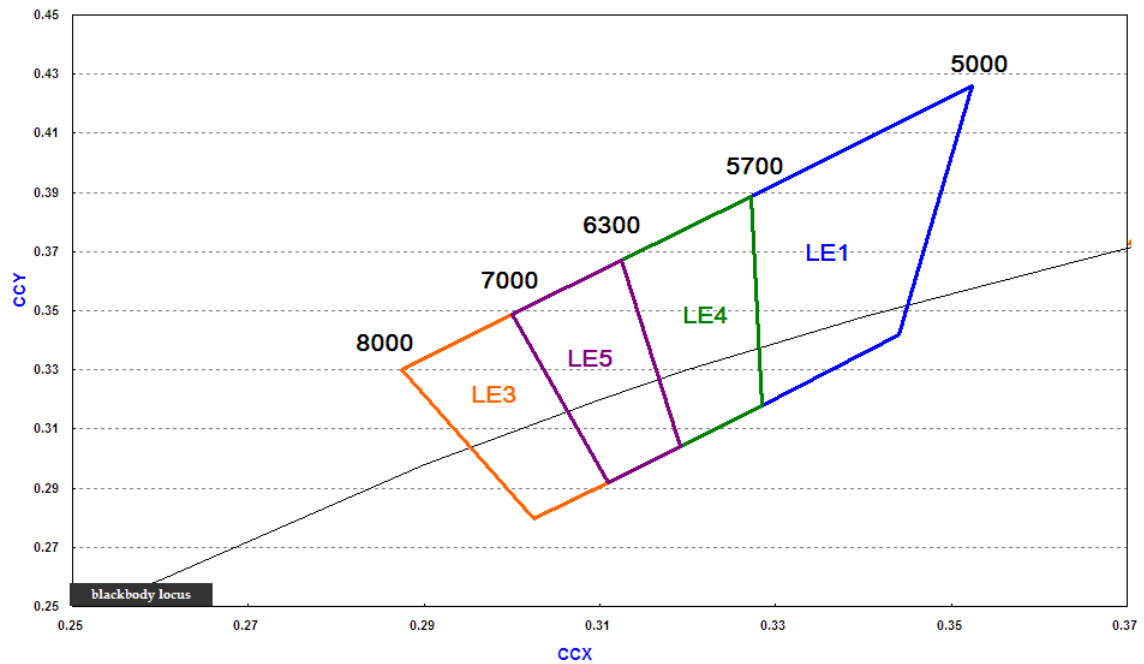
Note: 1. Elector-optical testing is in single pulse mode Ton:15ms, Tj:25°C

2. Luminous Flux is measured with an accuracy of ±10%

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

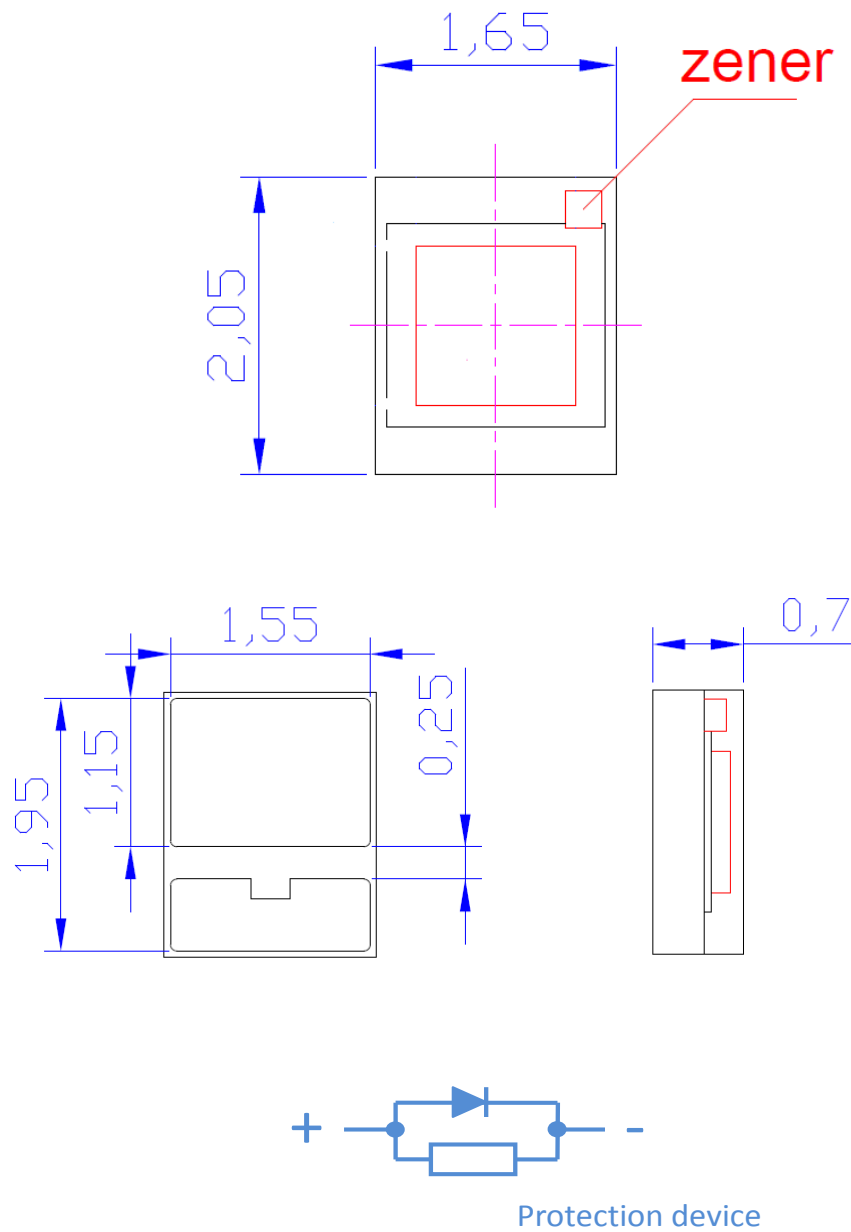
4. ※Calculated flux values are for reference only.

CCT Binning



Bin Code	CIE x	CIE y	CCT Range	Bin Code	CIE x	CIE y	CCT Range
LE1	0.3272	0.3888	5000-5700K	LE5	0.3000	0.3486	6300-7000K
	0.3524	0.4261			0.3124	0.3669	
	0.3440	0.3420			0.3192	0.3041	
	0.3285	0.3178			0.3110	0.2920	
LE4	0.3124	0.3669	5700-6300K	LE3	0.2875	0.3301	7000-8000K
	0.3272	0.3888			0.3000	0.3486	
	0.3285	0.3178			0.3110	0.2920	
	0.3192	0.3041			0.3025	0.2795	

Mechanical Dimensions

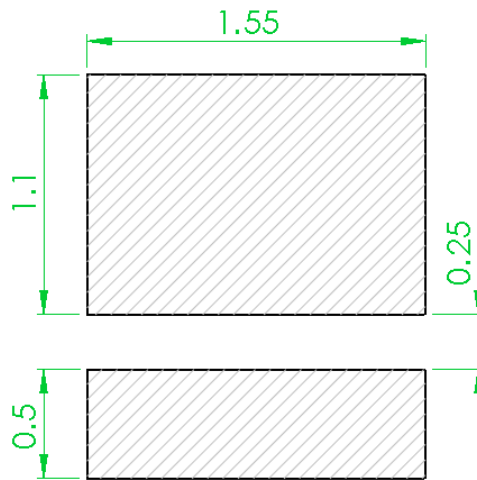


Notes :

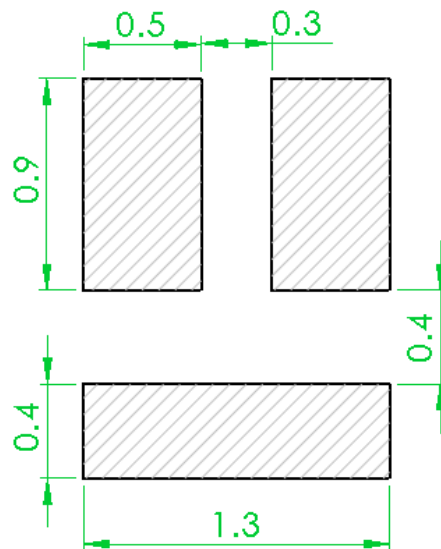
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Dimensions are $\pm 0.10\text{mm}$ unless otherwise indicated

Recommended Solder Pad Design

Recommended Soldering Pad Design



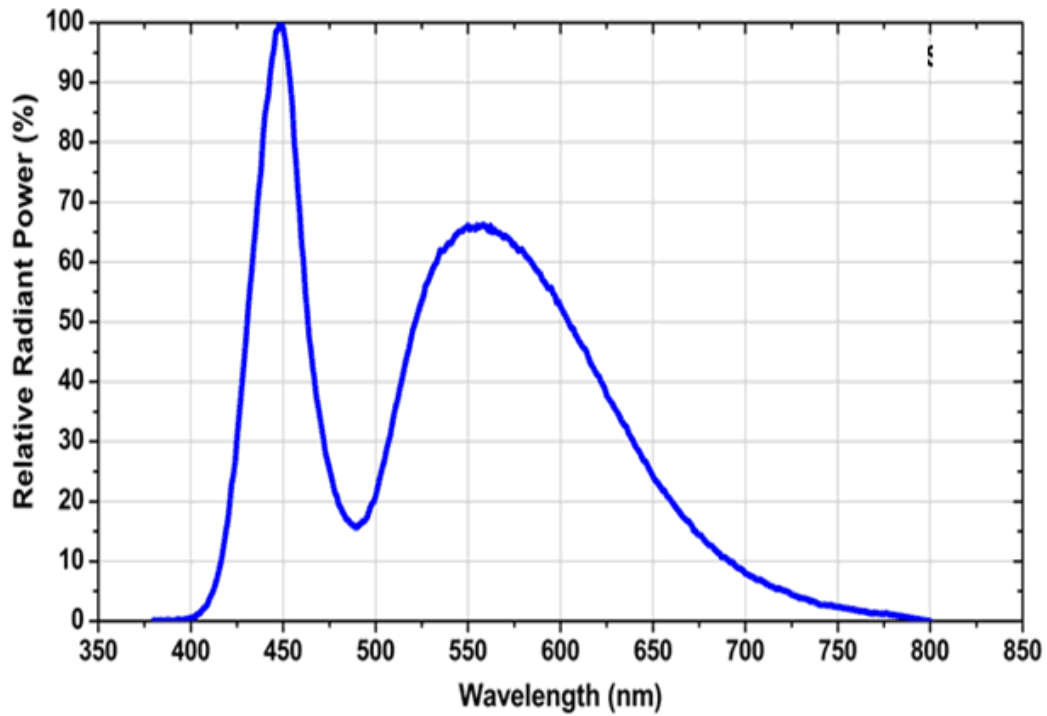
Recommended Stencil Pattern Design (Marked Area is Opening)



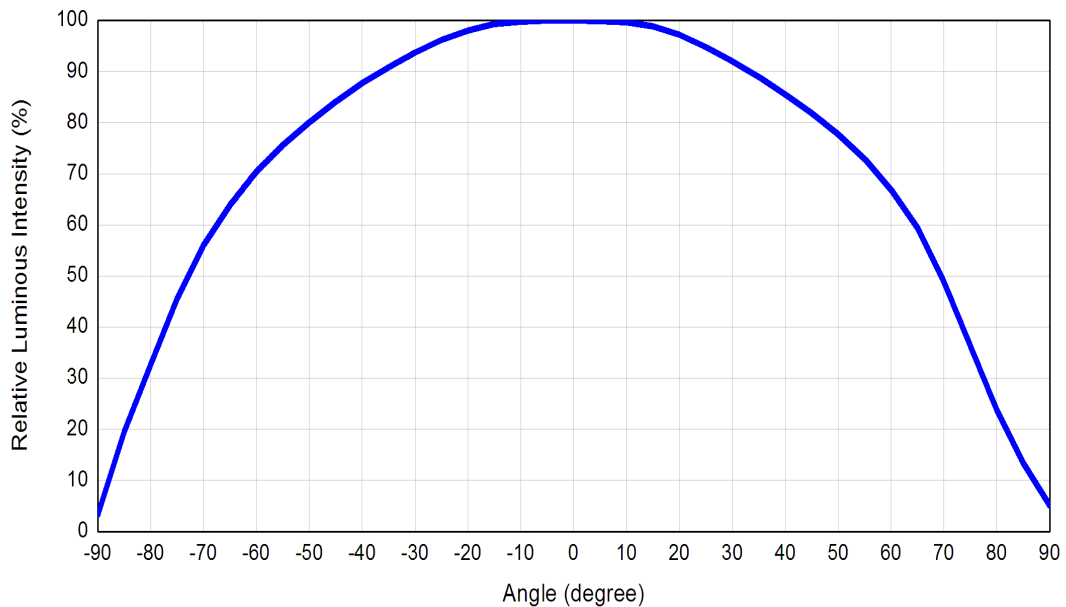
Notes :

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

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

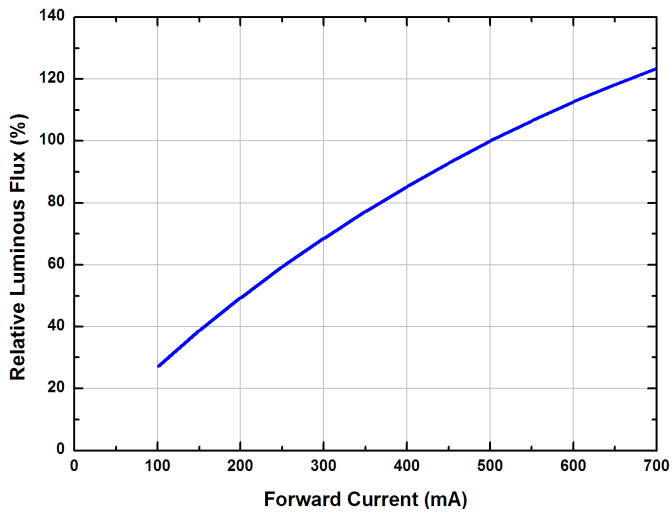


Typical Spatial Radiation Pattern

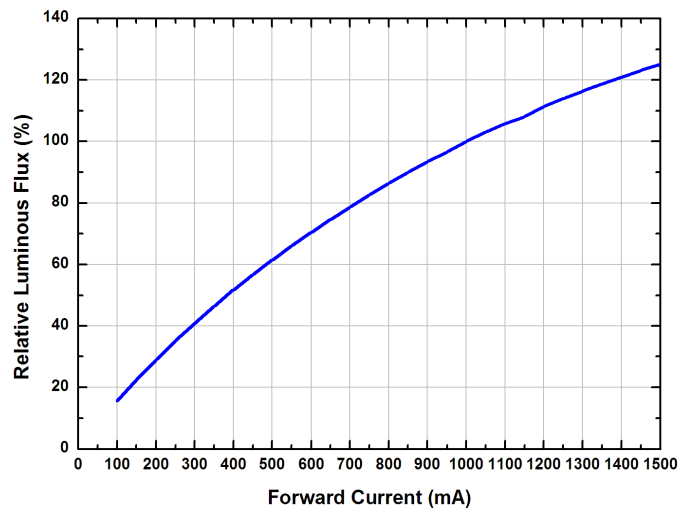


Typical Forward L-I Characteristics, $T_j=25^\circ\text{C}$

T2016L-CNN3 A series at 700mA

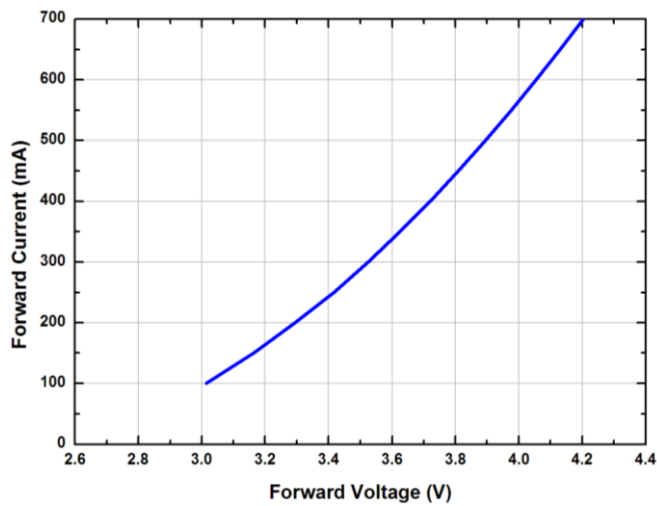


T2016L-CNN3 B series at 1500mA

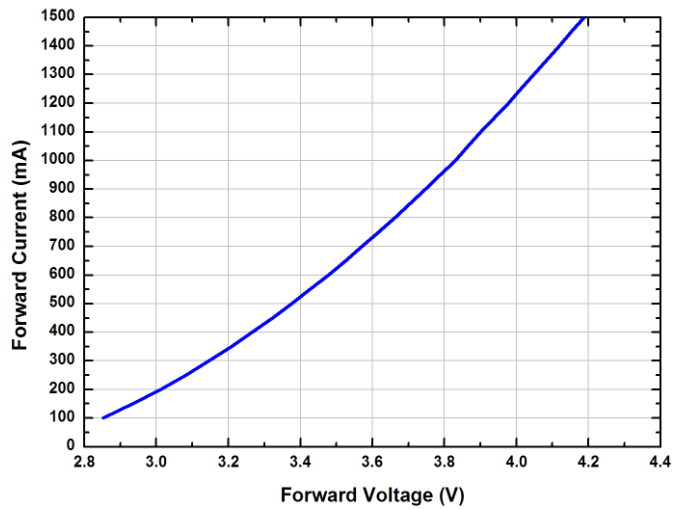


Typical Forward I-V Characteristics, $T_j=25^\circ\text{C}$

T2016L-CNN3 A series at 700mA

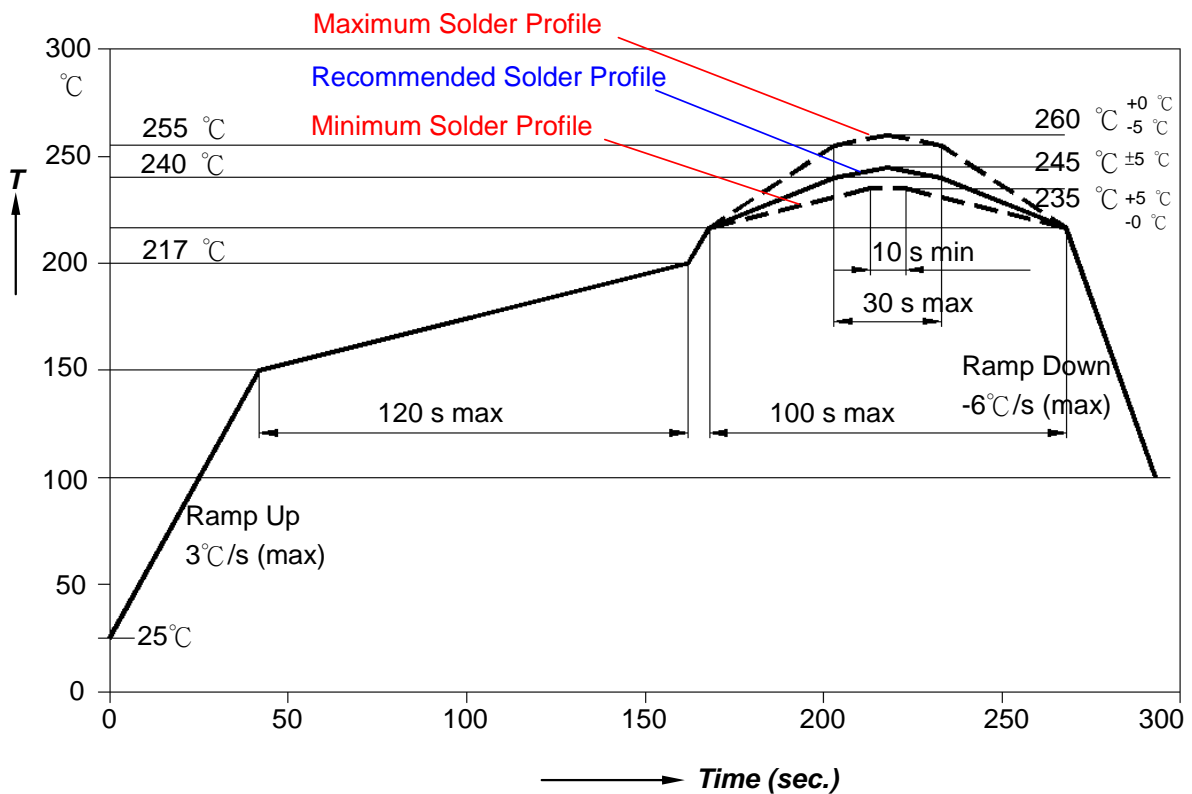


T2016L-CNN3 B series at 1500mA



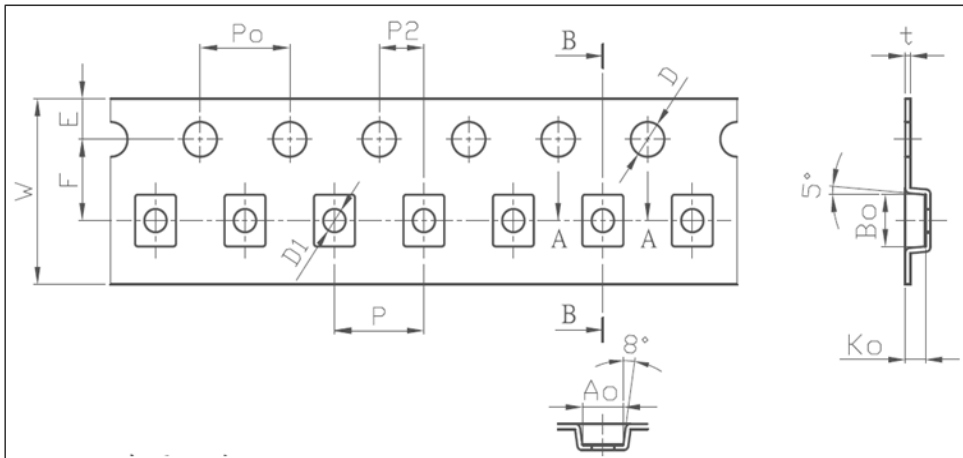
Recommended Soldering Profile

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.



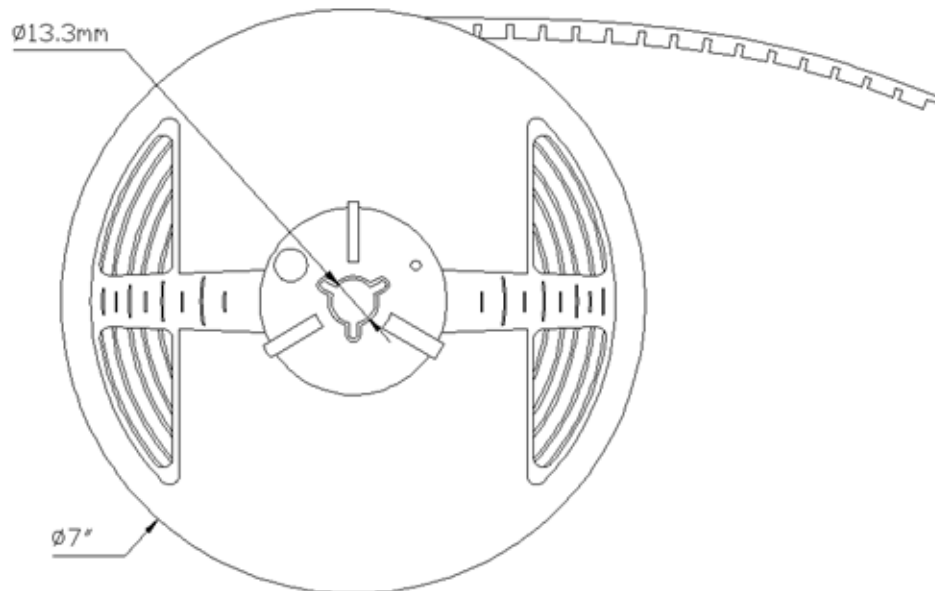
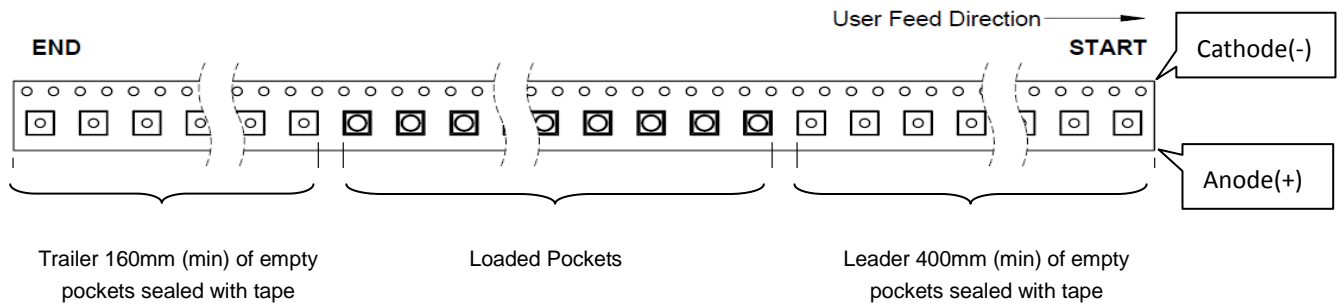
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-up Rate ($T_{s_{max}}$ to T_p)	3°C /second max.	3°C /second max.
Preheat <ul style="list-style-type: none"> - Temperature Min($T_{s_{min}}$) - Temperature Max($T_{s_{max}}$) - Time($t_{s_{min}}$ to $t_{s_{max}}$) 	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: <ul style="list-style-type: none"> - Temperature(T_L) - Time(t_L) 	183°C 60-150 seconds	217°C 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



Item	Specification	Tol.(+/-)
W	8.00	±0.10
P	4.00	±0.10
E	1.75	±0.10
F	3.50	±0.05
P2	2.00	±0.05
D	1.50	+0.10, -0
D1	1.00	+0.10, -0
P0	4.00	±0.10
P0X10	40.00	±0.20

Item	Specification	Tol.(+/-)
A0	1.88	±0.10
B0	2.23	±0.10
K0	0.90	±0.10
t	0.23	±0.05



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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