PRODUCT DATASHEET

T5050L-xxL1
High Power LED

Introduction

The T5050L-xxL1 LED from TSLC brings industry leading technology to the solid state lighting market with its high quality and performance. With a silicone lens and uniquely designed ceramic substrate, T5050L-xxL1 LEDs from TSLC feature optimized brightness and efficacy, as well as excellent reliability.

With TSLCs' new phosphor technology, T5050L-xxL1 is able to provide consistent CIE coordinates under various environmental conditions. In-house testing showed typical CCT change of less than 50K and 100K for warm white and cool white, respectively.

Table of Contents

RoHS Compliant

Characteristics

Absolute Maximum Ratings (Tj=25℃)

Parameter	Rating
	White Series
DC Forward Current (mA)	700 mA
Maximum Forward Current (mA)	3000 mA
LED Junction Temperature	150℃
LED Operating Temperature	-40℃~125℃
Storage Temperature	-40℃~125℃
Soldering Temperature	Max. 260℃ / Max. 10sec. (JEDEC 020c)
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

Product Nomenclature

T 5050 L – C0 L 1 - A1J 41 H

1 2~5 6 7.8 9 10 11~13 14.15 16

Code 1: Substrate composition, T: Ceramic AlN

Code 2.3.4.5: Package size, 5050: 5.0*5.0mm

Code 6: Class Code, L: Lighting

Code 7.8: Color/CCT type, C0: Cool white

Code 9: Lens type, L: 140~120 degree

Code 10: Lens version

Code 11~16: internal code

General Characteristics at 700mA (Tj=25℃)

Part number	Color	Correlated Color Temperature, CCT		$2\theta_{1/2}$	Temperature Coefficient of Vf (mV/℃)	Thermal Resistance Junction to Pad
		Min	Max		$\Delta V_F / \Delta T_J$	(℃/W) $R\Theta_{J-L}$
T5050L-C0L1-A1P11H	Cool White	4750K	10000K	120	-2~-4	1.5

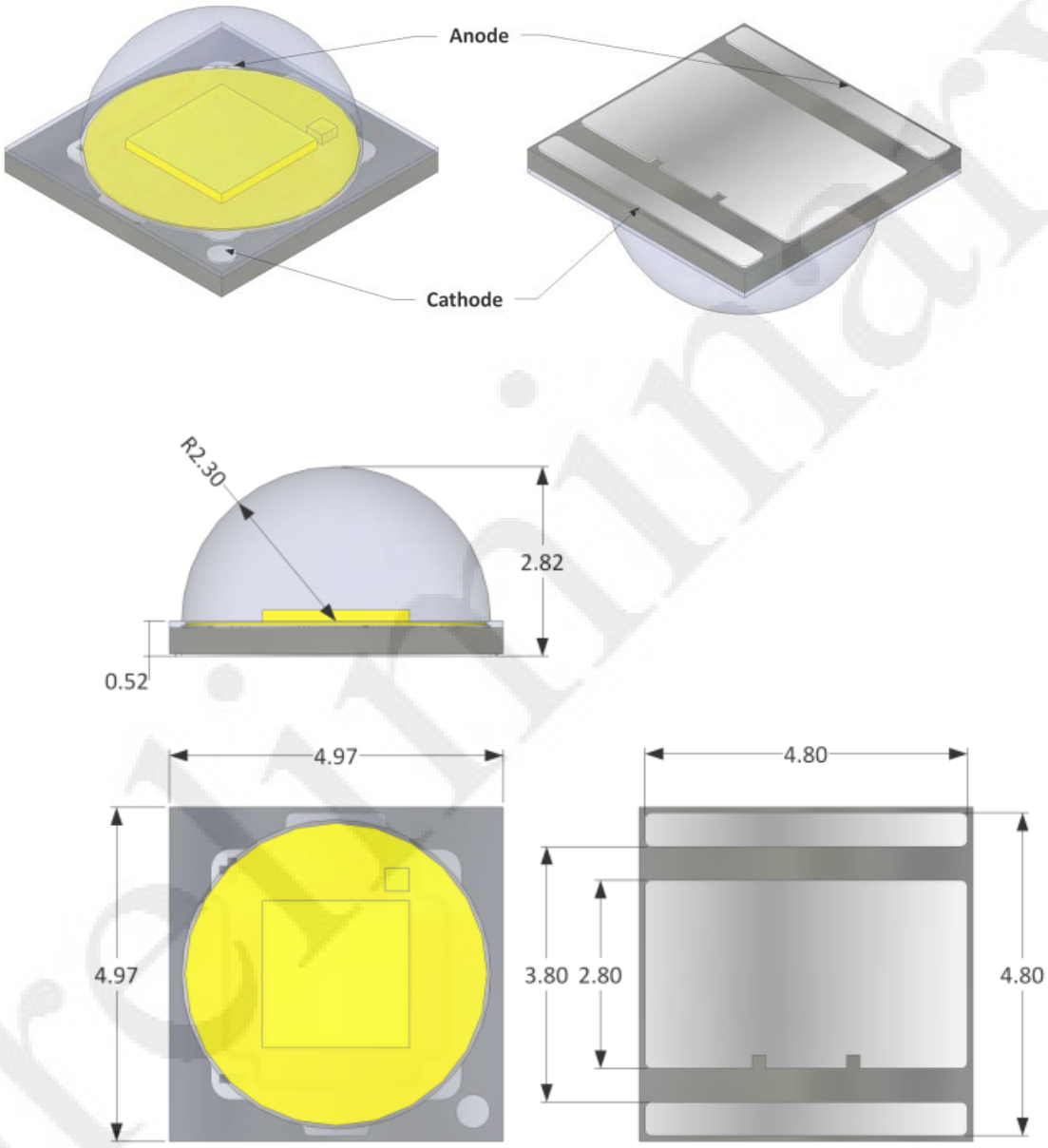
Notes:

1. The CCT is measured with an accuracy of ±200K
2. The CRI is measured with a tolerance of ±2
3. Typical CRI for Cool White (4750 K – 10000 K CCT) is 70.

Luminous Flux and Forward Voltage (Tj=25℃)

Part number	Color	Performance at Test Current 700mA				Typical Luminous Flux (lm)			
		Group	Minimum Luminous Flux (lm)	VF		1A	1.5A	2A	3A
				Min	Max				
T5050L-C0L1-A1P11H	Cool White	NTJ	240	2.8	3.6	330	480	600	830
		NTK	260	2.8	3.6	360	520	650	900
		NTL	280	2.8	3.6	390	560	700	960
		NUG	300	2.8	3.6	420	600	750	1030

Mechanical Dimensions

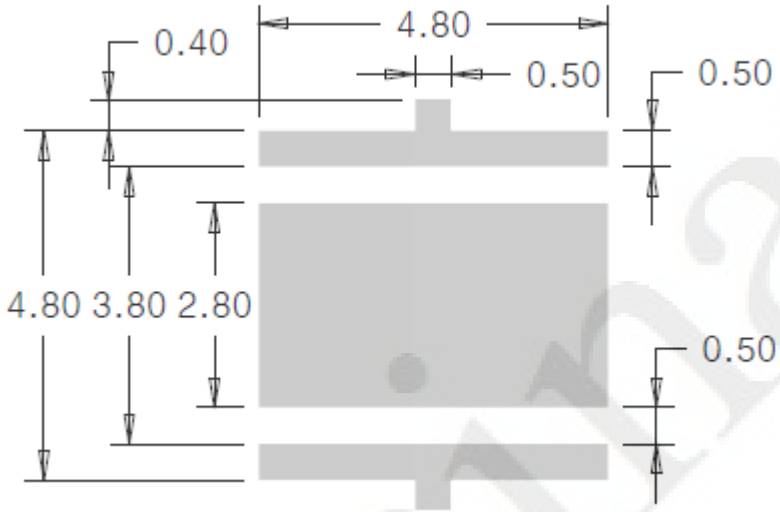


Notes:

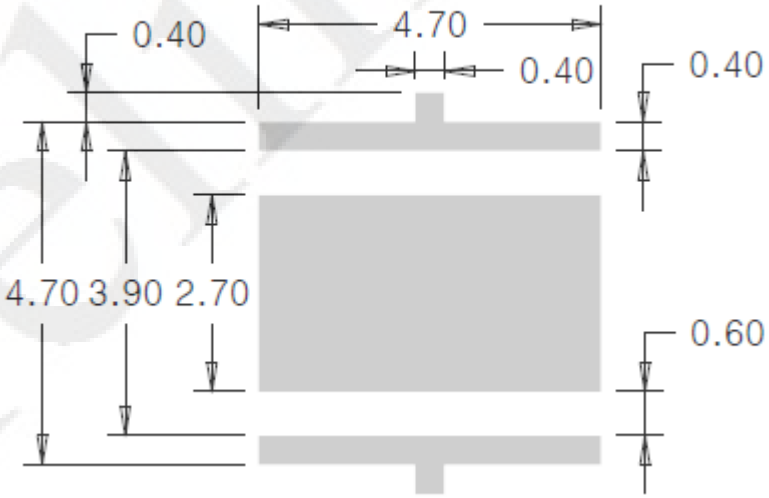
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Dimensions are ±0.13mm unless otherwise indicated

Recommended Solder Pad Design

Recommended Soldering Pad Design



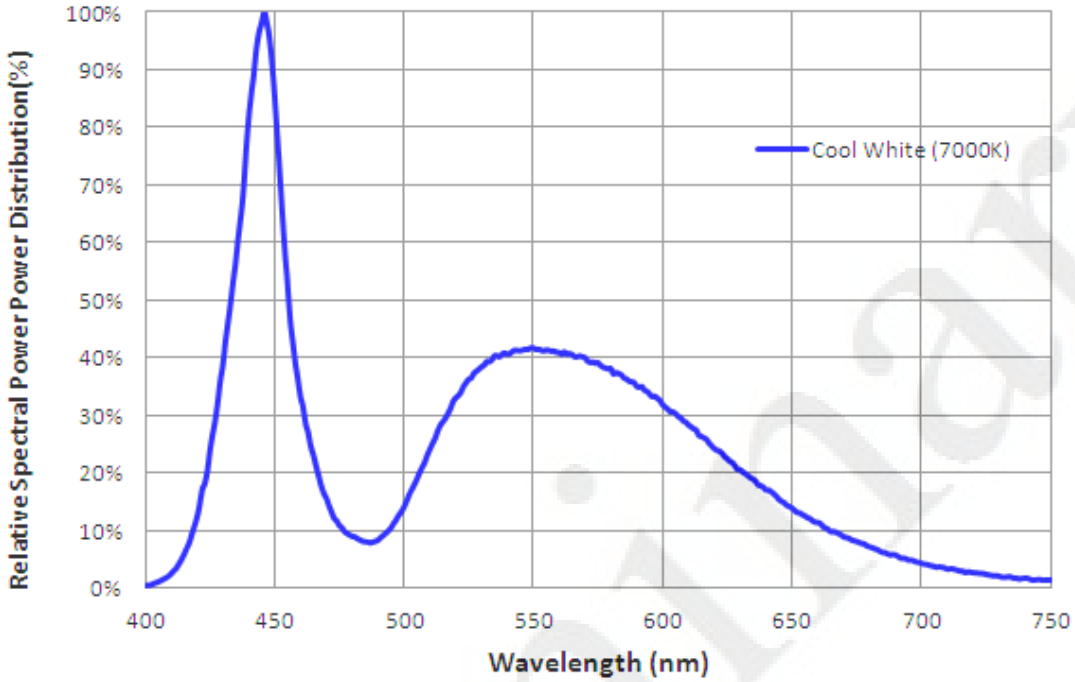
Recommended Stencil Pattern Design (Marked Area is Opening)



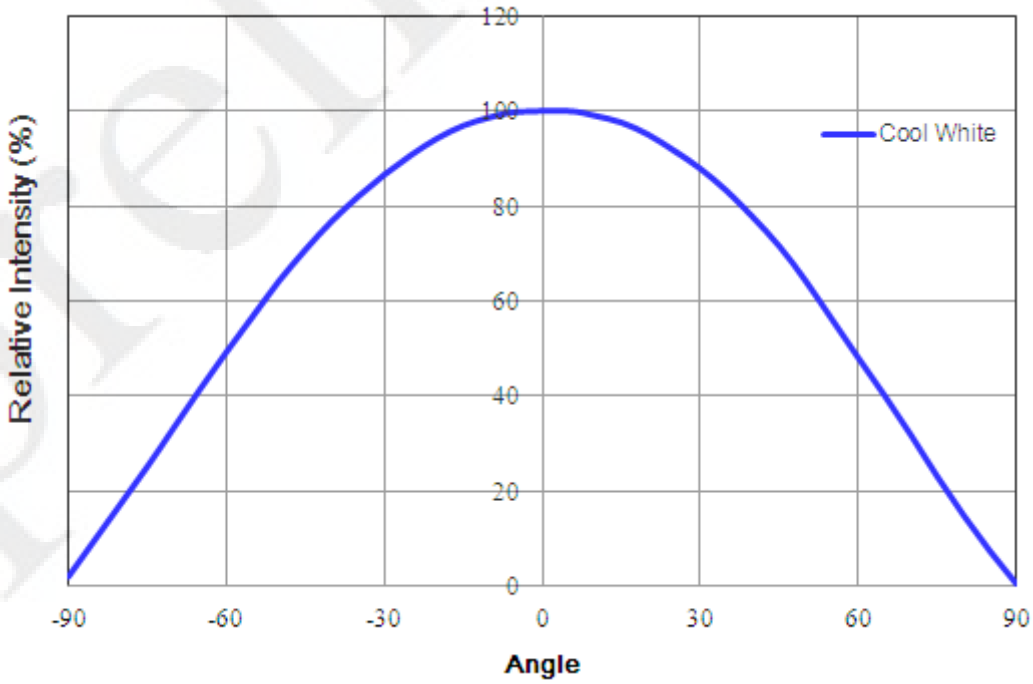
Notes :

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

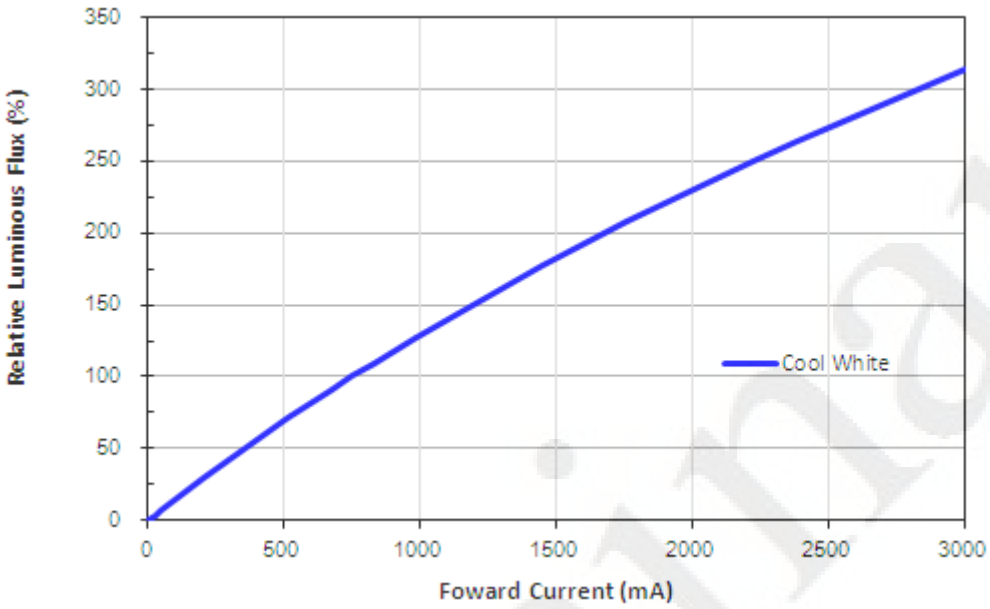
Relative Spectral Power Distribution, Tj=25˚C



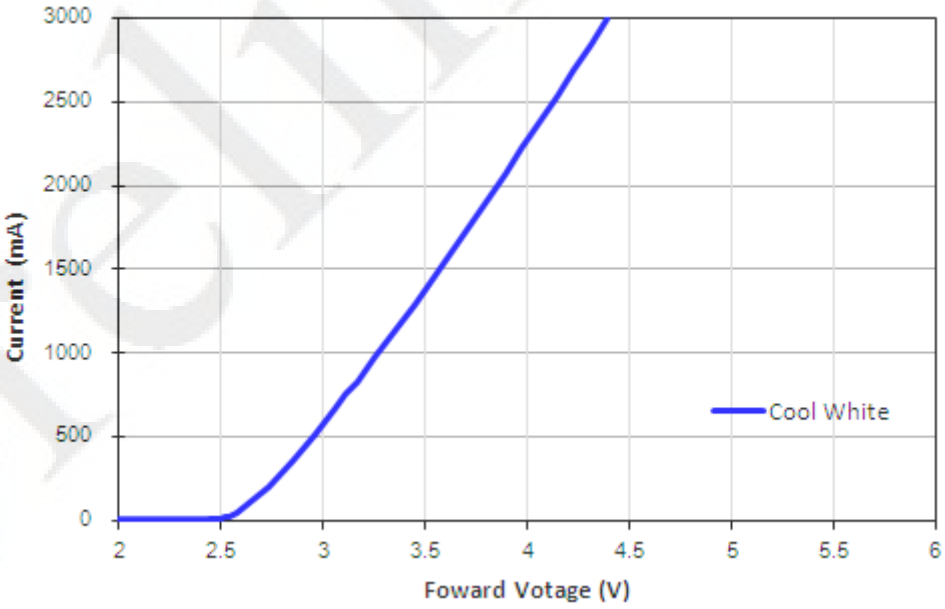
Typical Spatial Radiation Pattern



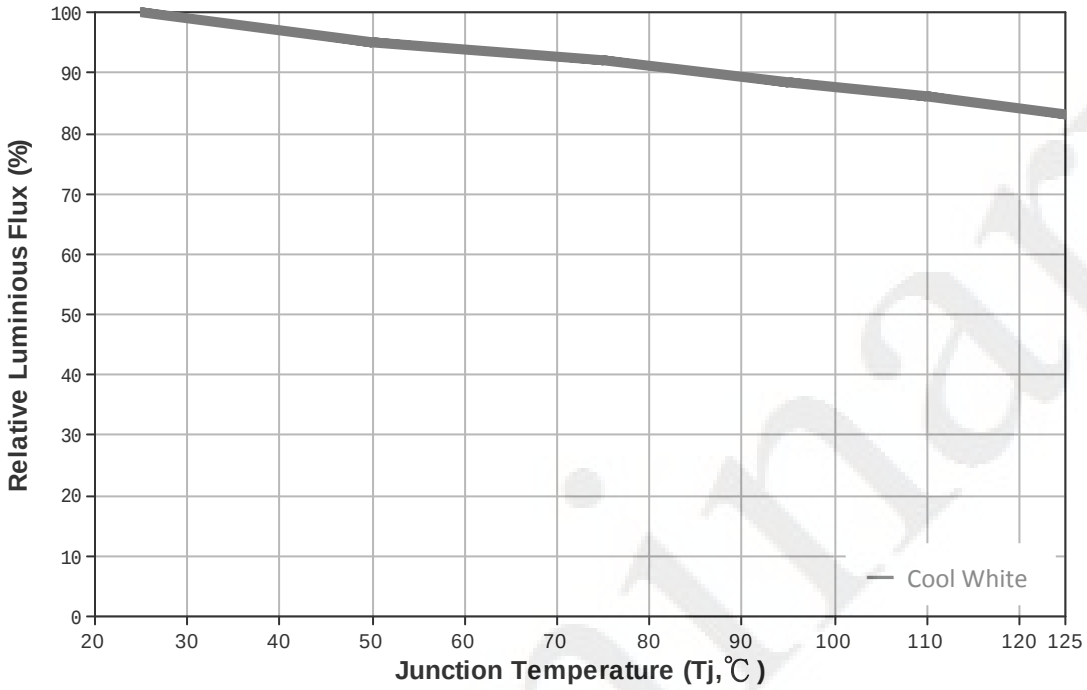
Typical Forward L-I Characteristic



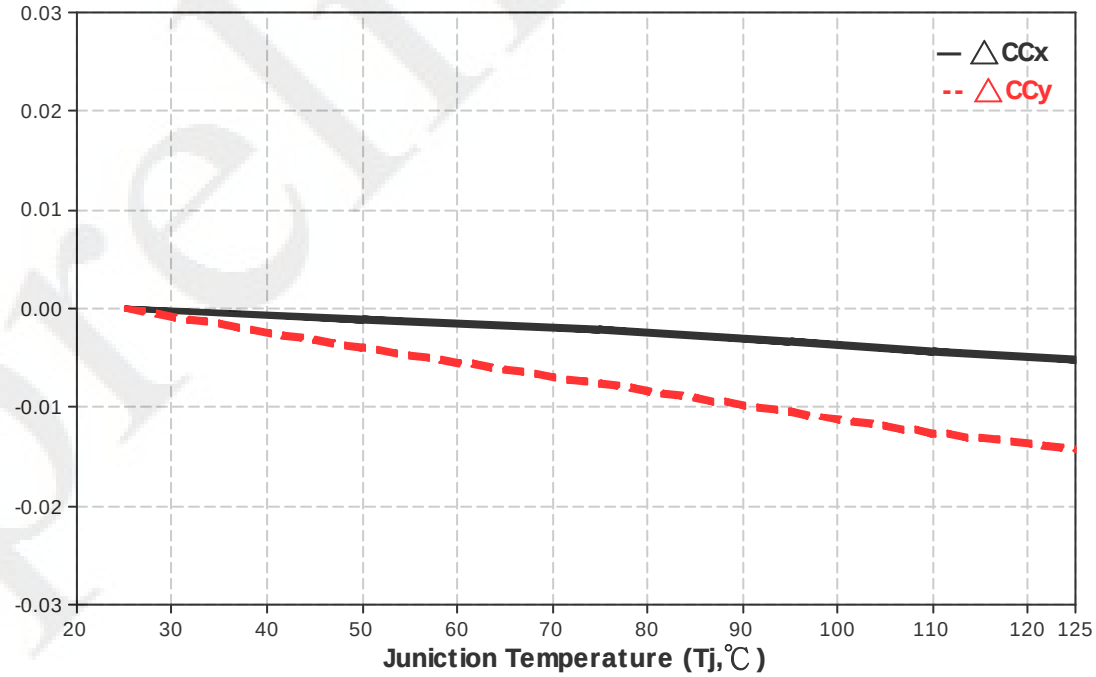
Typical Forward I-V Characteristics



Typical L-Tj Characteristics

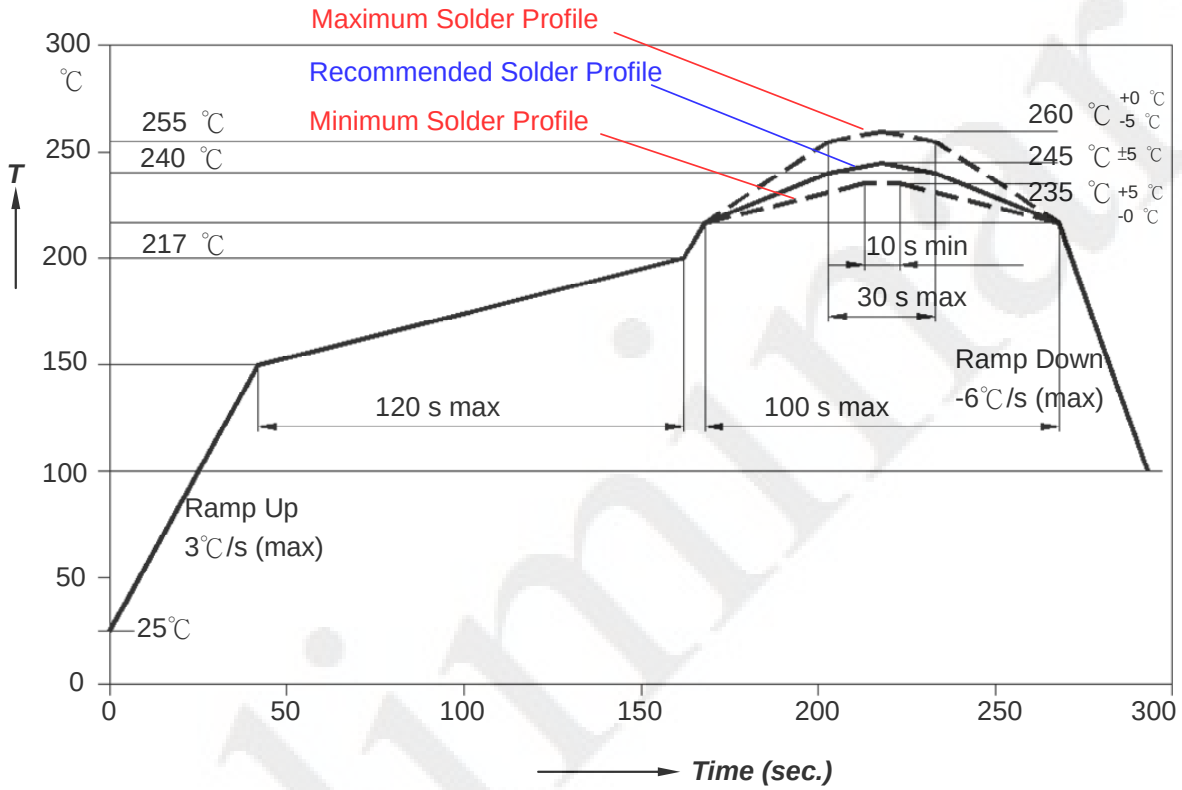


Cool White



Recommended Soldering Profile

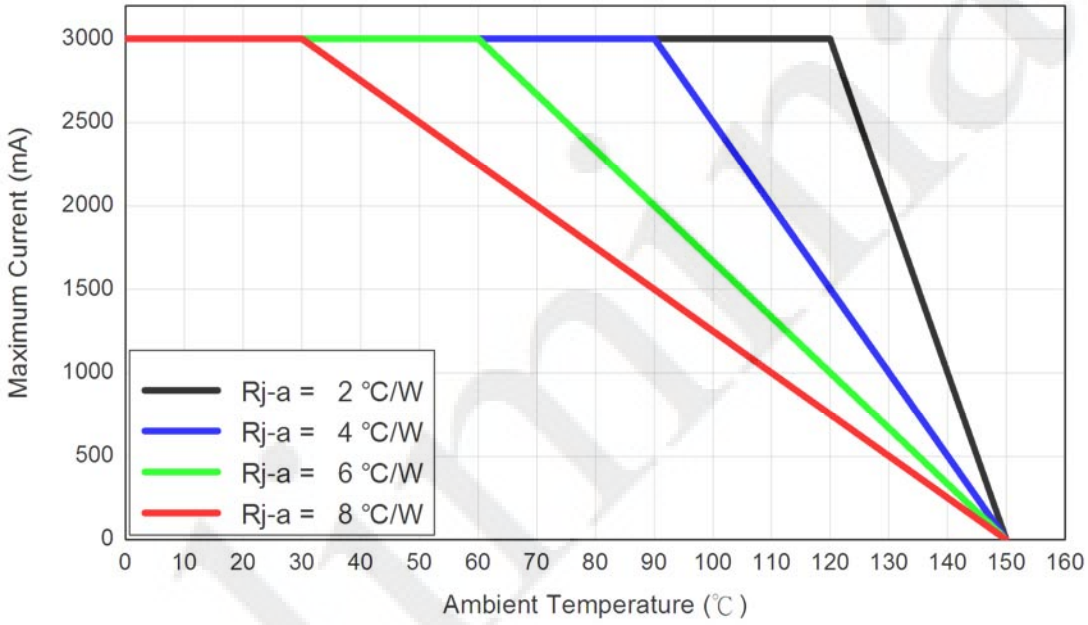
The LEDs can be soldered using the parameters listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (Tsmax 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}) (ts)	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 Temperature (T_p)	215 °C	260 °C
Time within 5°C of actual Peak Temperature $(tp)^2$	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.

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

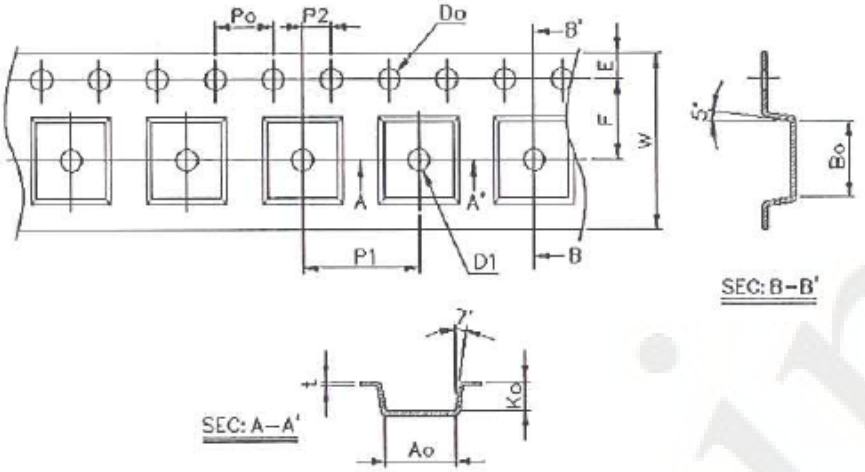
Rja: Thermal resistance between the junction and ambient

W: Input power (I_F*V_F)

Packing Information

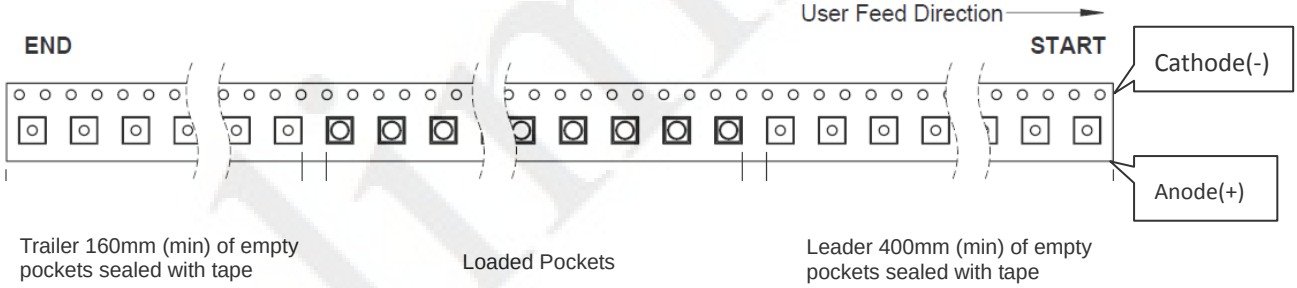
Max QTY: 500ea / roll

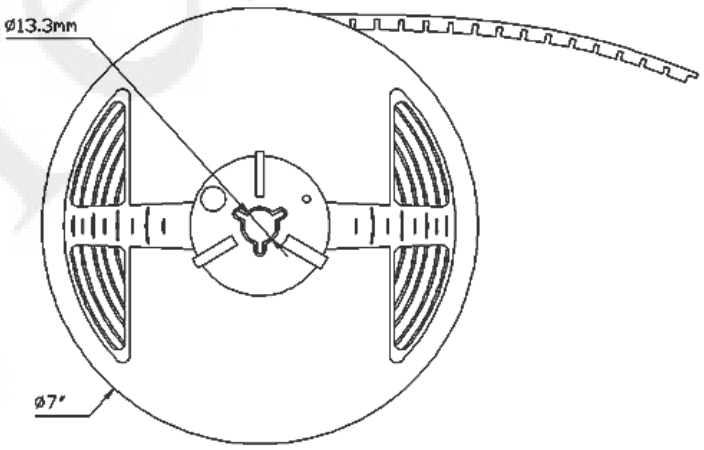
22-048S



Symbol	Spec.	Tolerance
W	12.00	±0.20
E	1.75	±0.01
F	5.50	±0.05
D0	1.50	+0.1/-0.0
D1	1.50	+0.1/-0.0
P0	4.00	±0.05
P1	8.00	±0.10
P2	2.00	±0.05
P0x10	40.00	±0.20

A0	5.3	±0.10
B0	5.4	±0.10
K0	3.1	±0.10
t	0.3	±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.**

www.tslc.com.tw

ASIA PACIFIC
3F-1, No.8, Xin An Road,
Hsinchu, Science Park
Hsinchu City
Taiwan 300-78

Tel: +886-3-5789555
Fax: +886-3-5788111
sales@tslc.com.tw