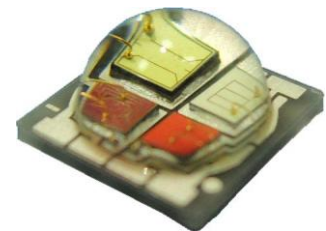




# T5050M-MCL1 Series High Power Mixing Color LED

## Introduction

The T5050M-MCL1 LED from TSLC brings industry leading technology to the solid state lighting market with its high quality and performance. With a silicone lens, T5050M-MCL1 LEDs from TSLC feature very high brightness and efficacy, as well as excellent lifetime.



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**RoHS Compliant**

## Characteristics

### Product Nomenclature

**T 5050 M – MC L 1**

1    2~5    6    7.8    9    10

Code 1: Substrate composition, T: Ceramic AlN

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

Code 6: Class Code, M:MCE

Code 7.8: Color/CCT type, MC:MCE

Code 9: Lens type, L: 140 degree

Code 10: Lens version

### T5050M-MCL1-RGBW (T<sub>j</sub>=25°C , I<sub>f</sub> = 700mA)

Color	CCT/Dominant		Luminous Flux @ 700mA	Forward voltage(V)	
	Min	Max		Min.	Max
Red	620nm	630nm	80-113.6	2.1	3.2
Green	515nm	530nm	150-195	3.2	3.8
Blue	455nm	470nm	25-39.8	3.2	3.8
White	5000K	8000K	180-220	3.2	3.8

### T5050M-MCL1-RGBA

Color	CCT/Dominant		Luminous Flux @ 700mA	Forward voltage(V)	
	Min	Max		Min.	Max
Red	620nm	630nm	80-113.6	2.1	3.2
Green	515nm	530nm	150-195	3.2	3.8
Blue	455nm	470nm	25-39.8	3.2	3.8
Amber	585nm	595nm	85-115	2.1	3.2

#### Notes:

1. T5050M-MCL1 product is tested and binned at 700mA.
2. Dominant wavelength is measured with an accuracy of  $\pm 1$ nm.
3. Forward voltage is measured with an accuracy of  $\pm 0.2$ V.
4. Flux is measured with an accuracy of  $\pm 10$ %.



## Performance Groups

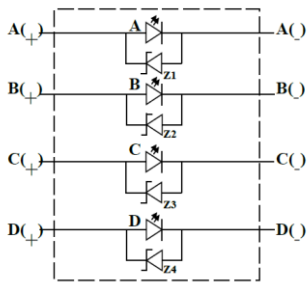
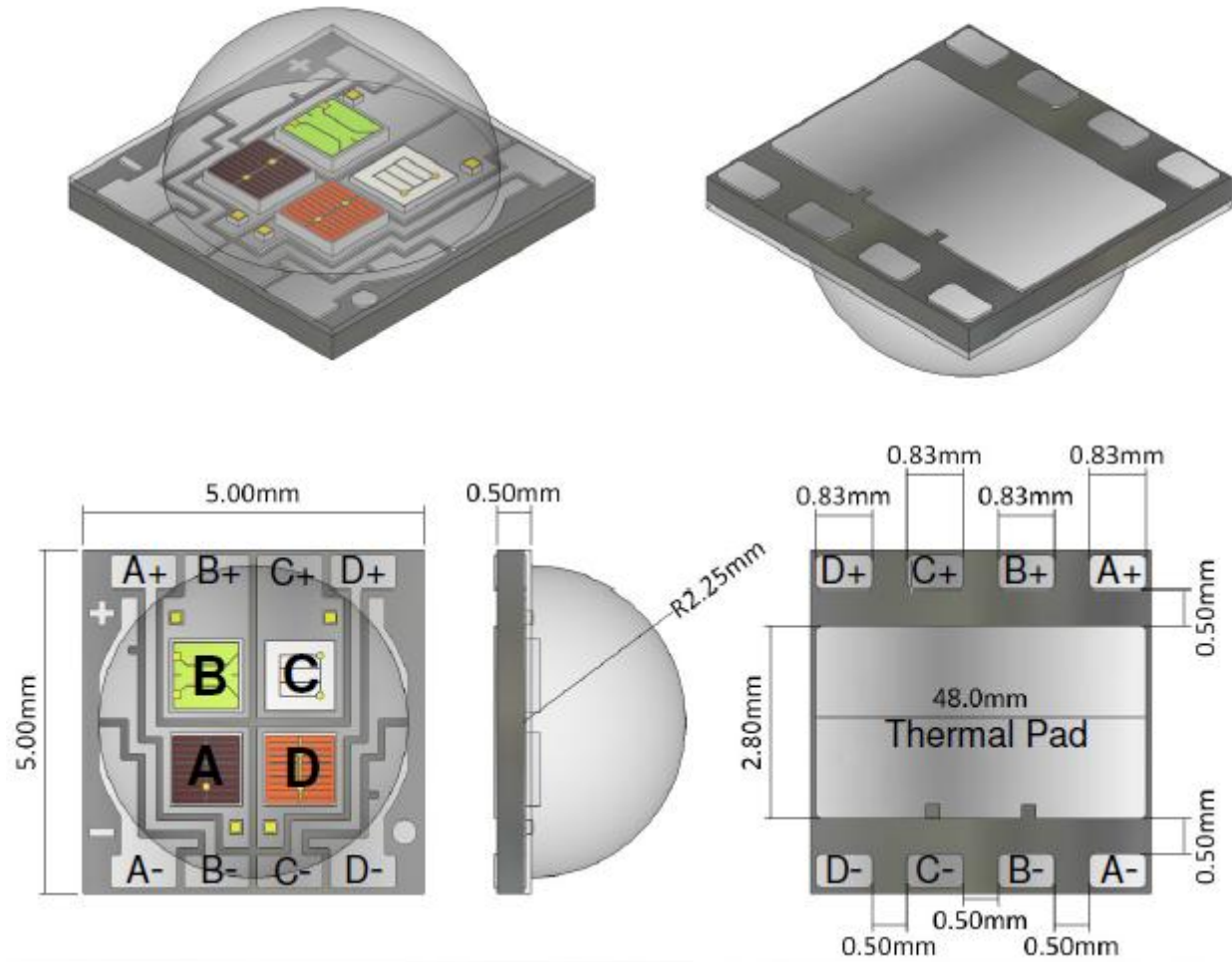
Color	Min. Luminous Flux @ 700mA	Max. Luminous Flux @ 700mA	Min. Wavelength @ 700mA	Max. Wavelength @ 700mA	Min. Vf @ 700mA	Max. Vf @ 700mA
Red	80 lm	113.6 lm	620 nm	630 nm	2.10	3.20
Green	150 lm	195 lm	515 nm	520 nm	3.20	3.80
			520 nm	525 nm		
			525 nm	530 nm		
Blue	25 lm	39.8 lm	455 nm	460 nm	3.20	3.80
			460 nm	465 nm		
			465 nm	470 nm		
Amber	85 lm	115 lm	585 nm	595 nm	2.10	3.20

Color	Min. Luminous Flux @ 700mA	Max. Luminous Flux @ 700mA	Min. CCT @ 700mA	Max. CCT @ 700mA	Min. Vf @ 700mA	Max. Vf @ 700mA
White	180 lm	220 lm	5000 K	8000 K	3.20	3.80

## Absolute Maximum Ratings (Ta=25°C)

Parameters	Symbol	Rating	Unit	
DC Forward current	If	≤ 700	mA	
Peak pulsing current	Ipeak	≤ 1000	mA	
Reverse Voltage	Vr	≤ 5	V	
Operating temperature	Topr	-40 ~ 85	°C	
LED Storage temperature	Tstg1	-40 ~ 110	°C	
LED Junction temperature	Tj	≤ 125	°C	
Soldering temperature at tp (JEDEC-020-D)	Tsol	20-40	second	
ESD classification	MIL-STD-883G	HBM	8000 (Class 3B)	V
	JESD22-A115-B	MM	400 (Class C)	V

## Mechanical Dimensions & Pad Configuration



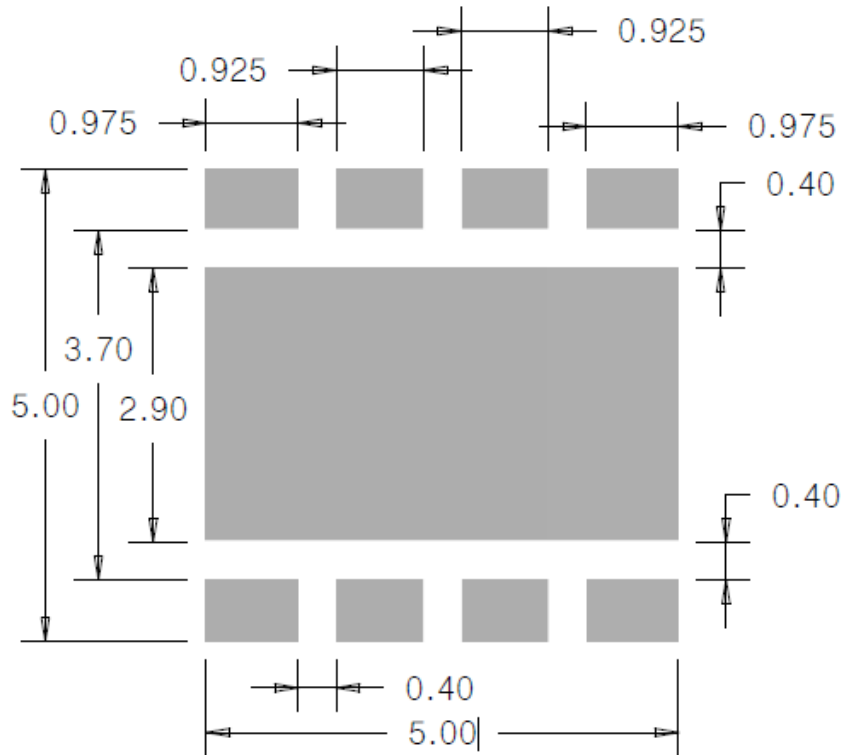
Chip	RGBW	RGBA
A	Red	Red
B	Green	Green
C	Blue	Blue
D	White	Amber

Notes:

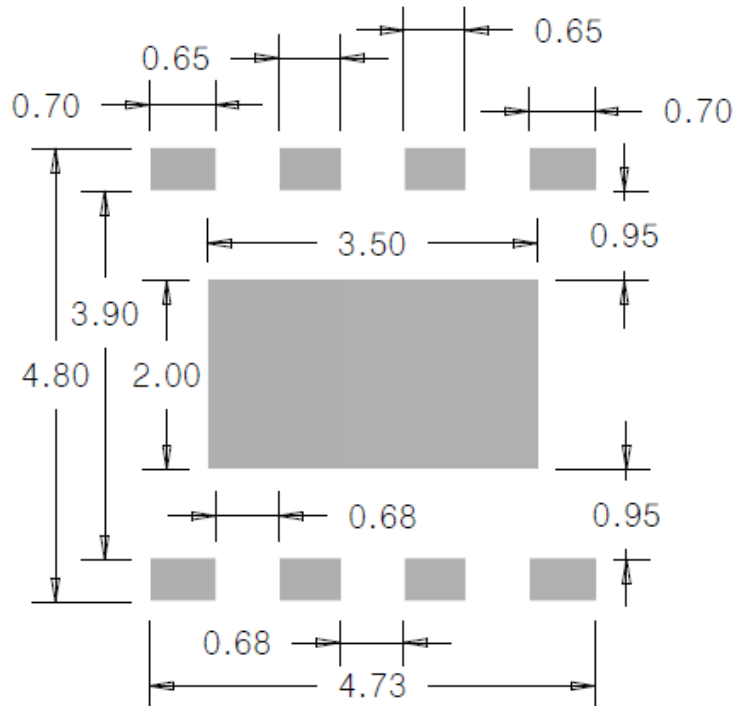
1. All dimensions are in millimeters.
2. Drawings not to scale.

## Recommended Solder Pad Design

### Recommended PCB Solder Pad

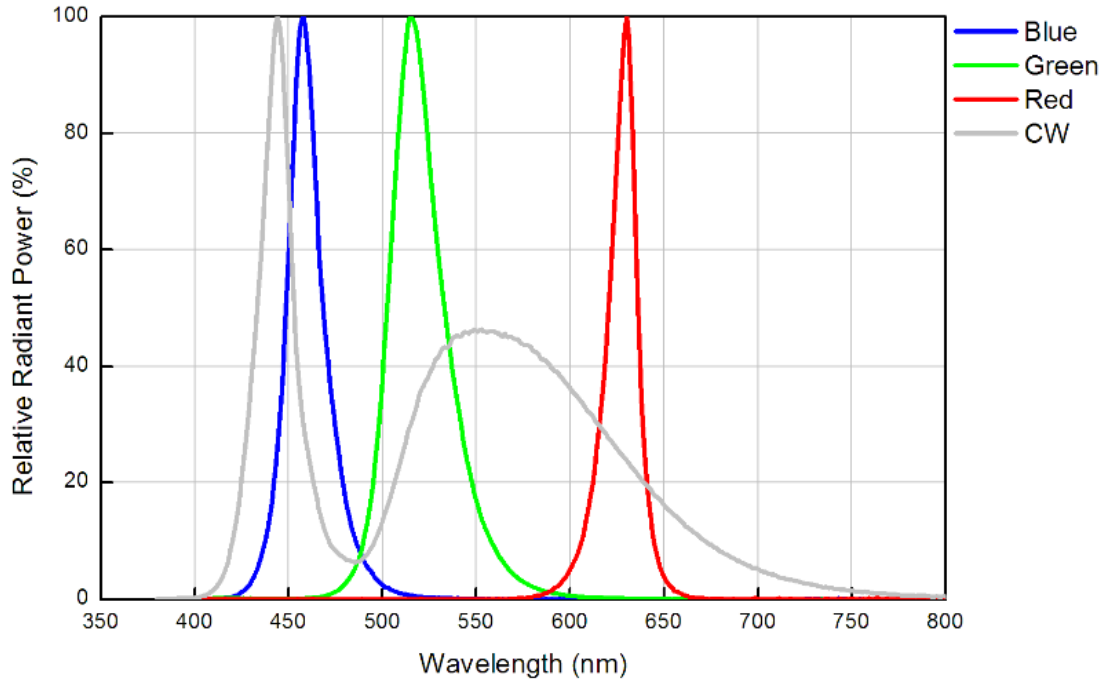


### Recommended Stencil Pattern Design

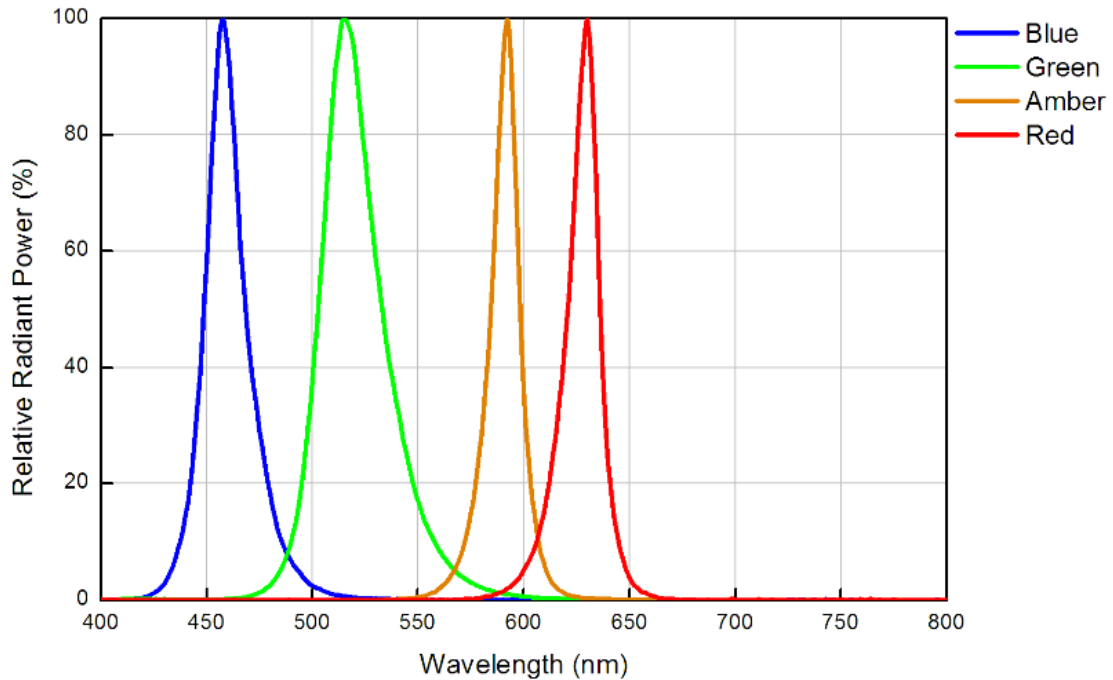


## Relative Spectral Power Distribution, $T_j=25^\circ\text{C}$

T5050M-MCL1-RGBW

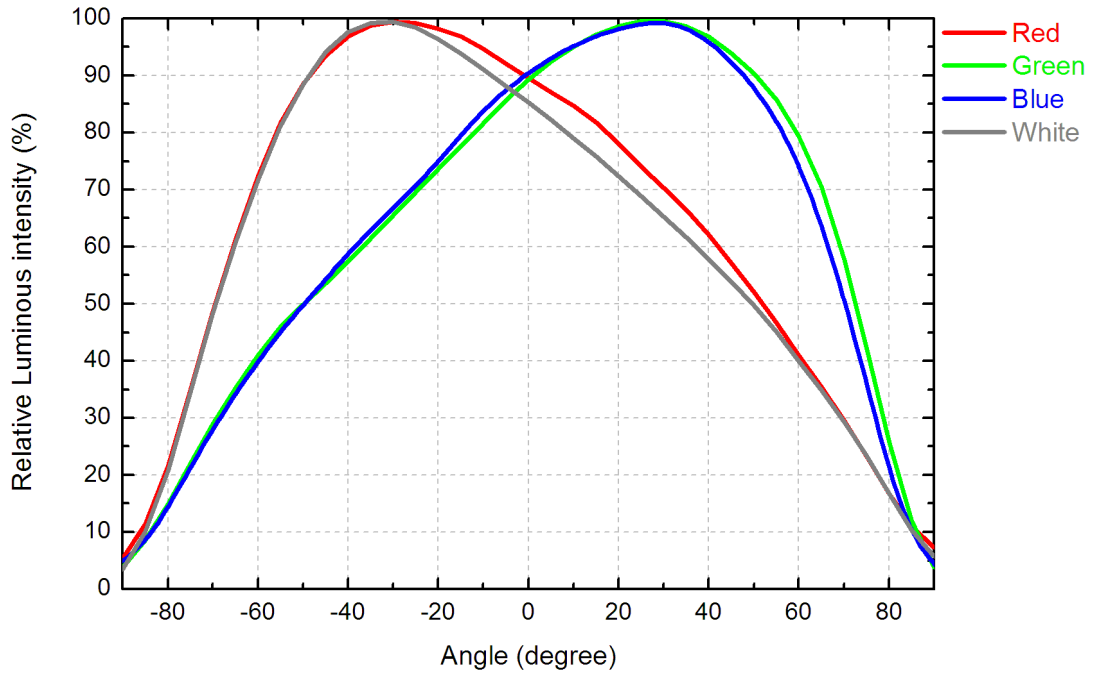


T5050M-MCL1-RGBA

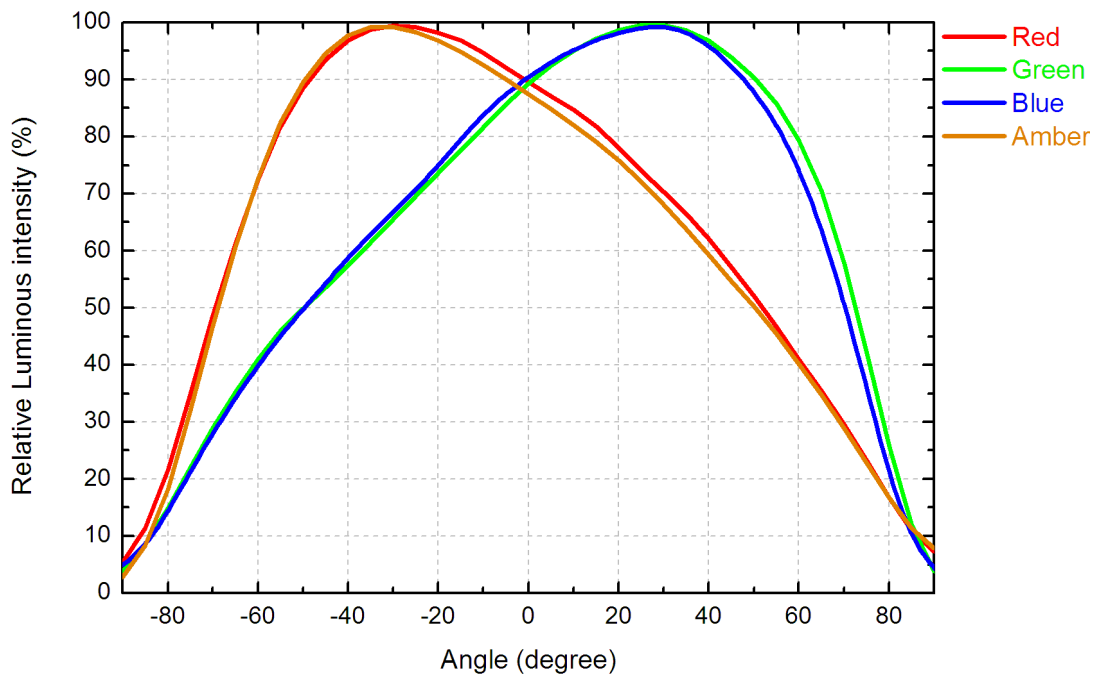


## Typical Spatial Radiation Pattern

T5050M-MCL1-RGBW

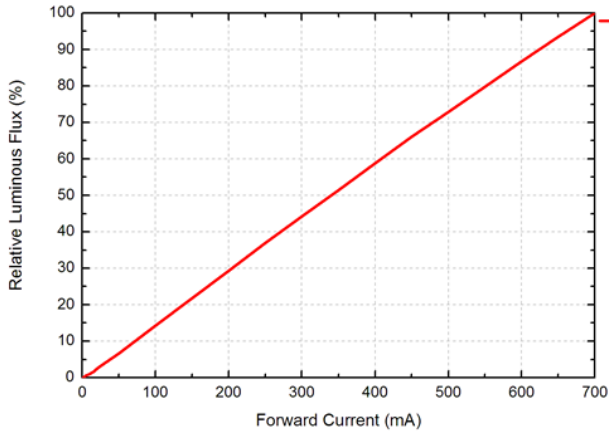


T5050M-MCL1-RGBA

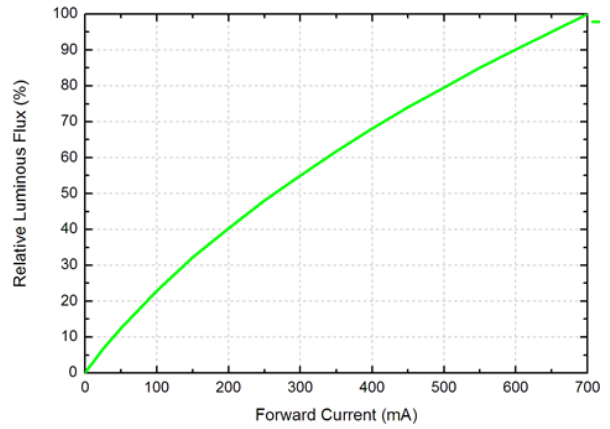


## Typical Forward L-I Characteristics

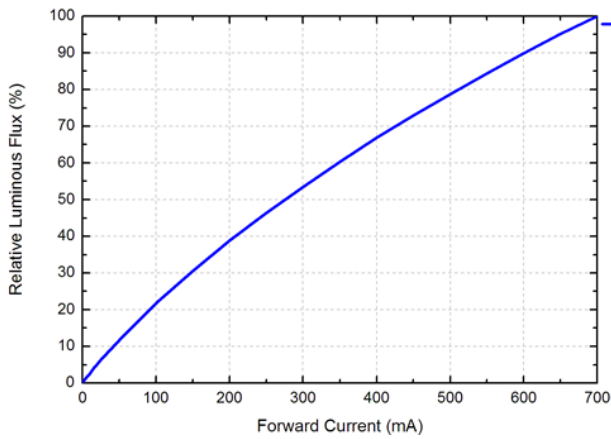
Red



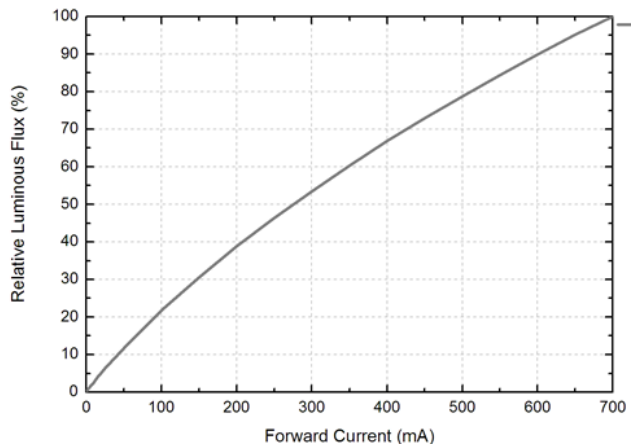
Green



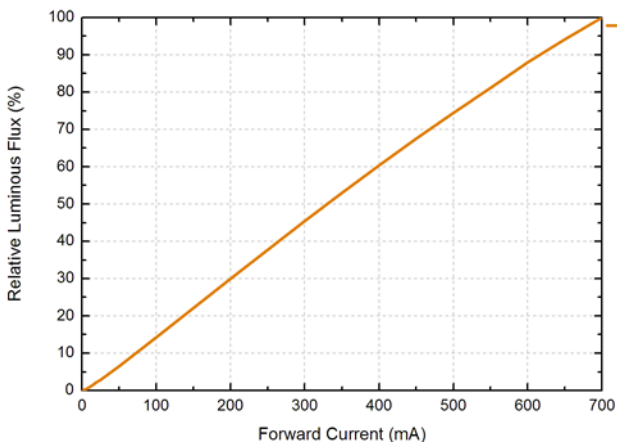
Blue



White



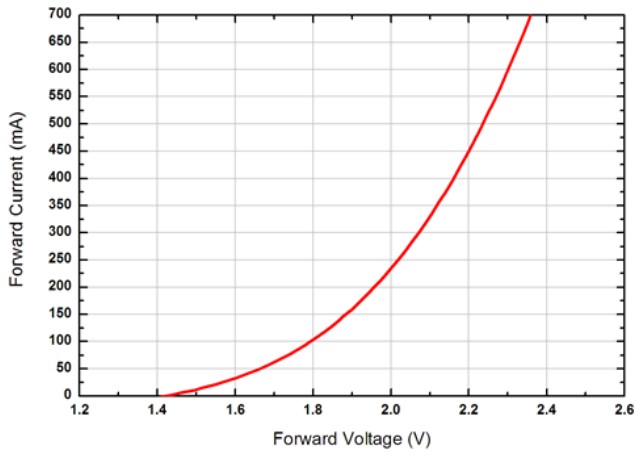
Amber



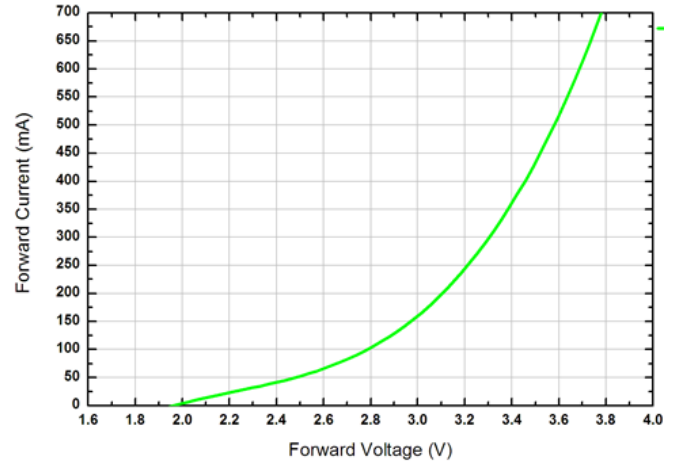


## Typical Forward I-V Characteristics

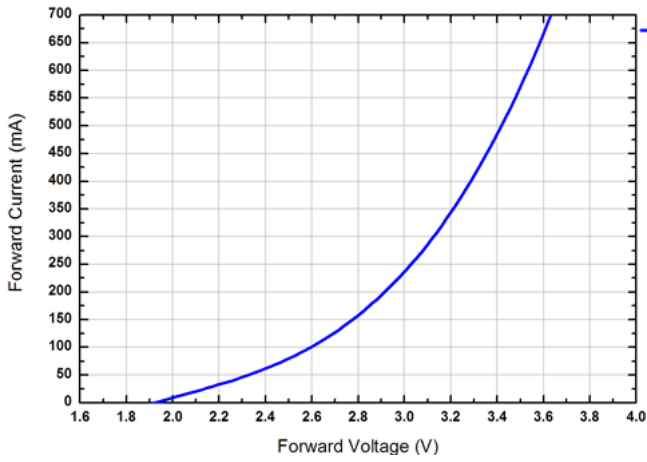
Red



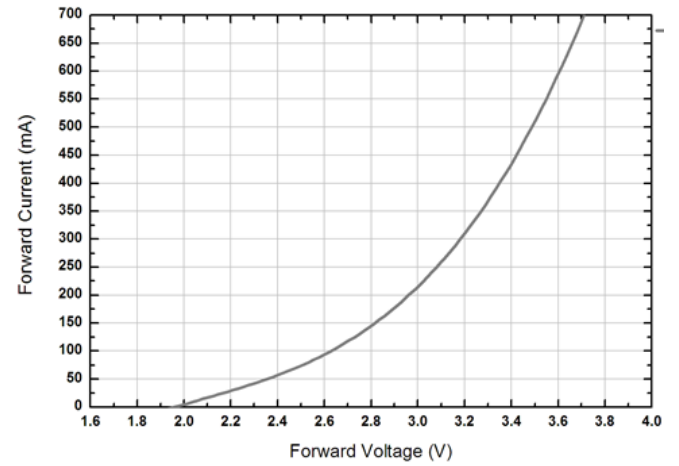
Green



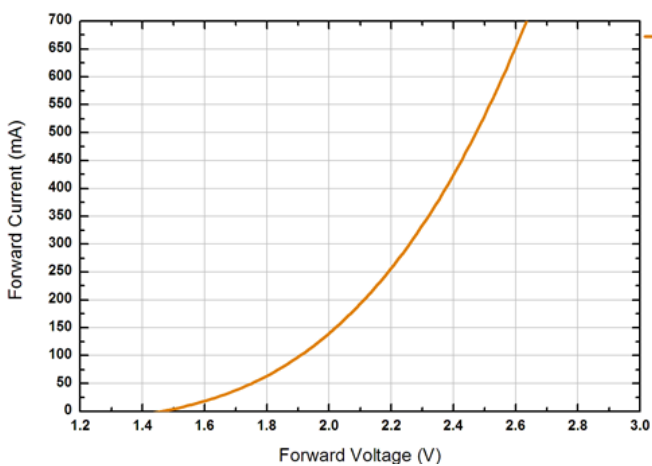
Blue



White

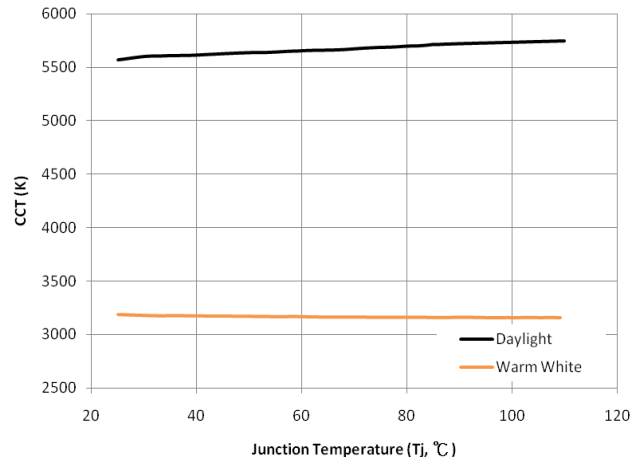
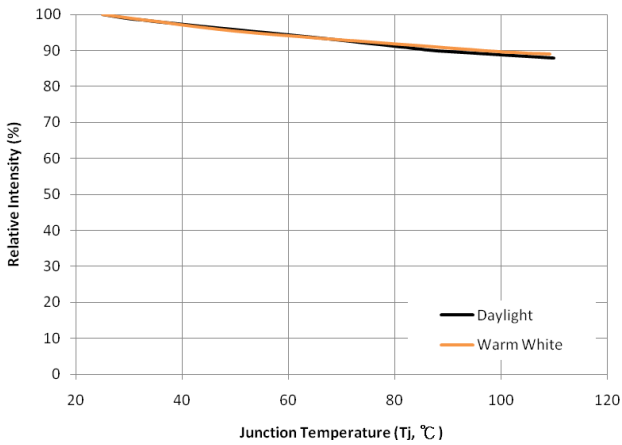


Amber

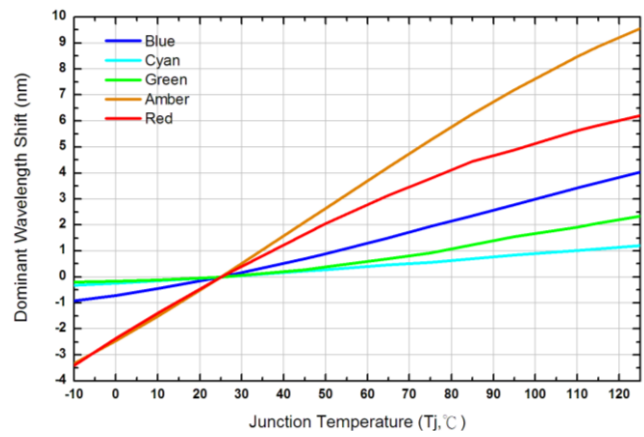
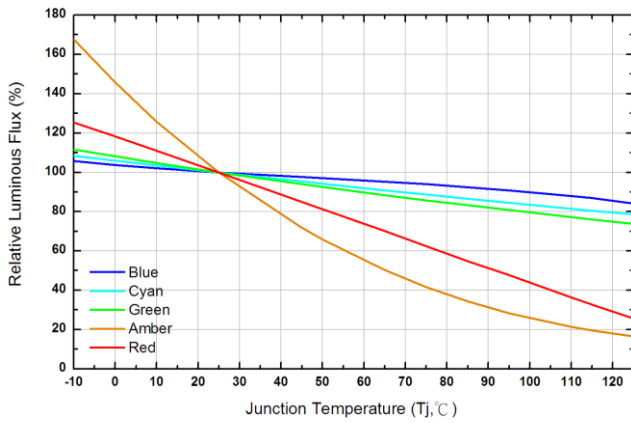


## Typical L-Tj Characteristics

### White Series

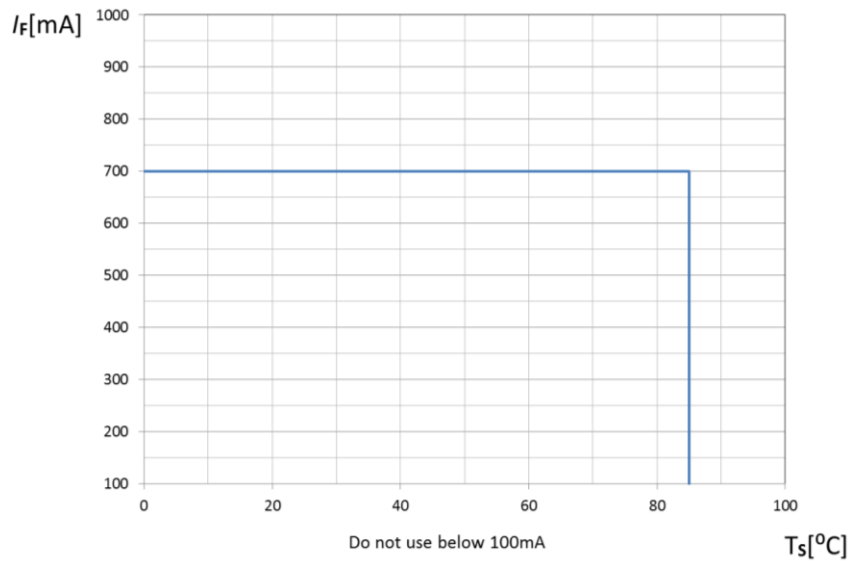


### Blue / Green / Amber / Red



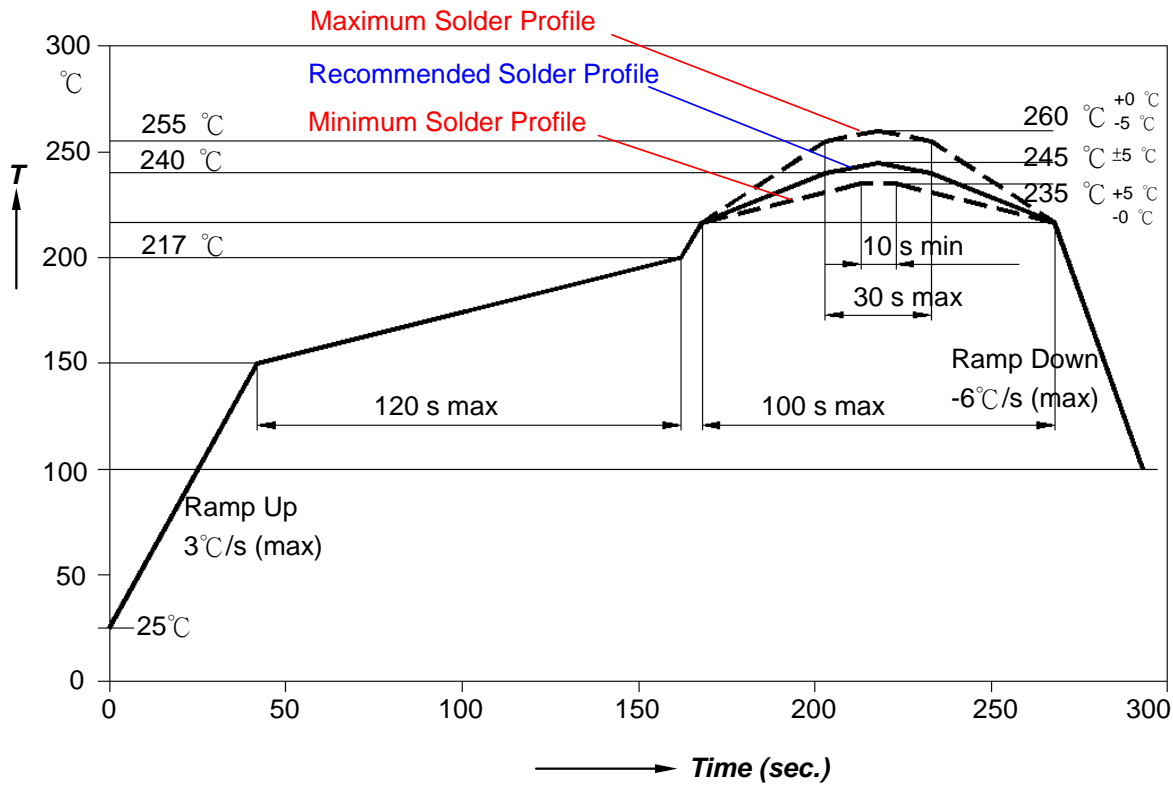
## Max. Permissible Forward Current

For 4 chip operated



## Recommended Soldering Profile

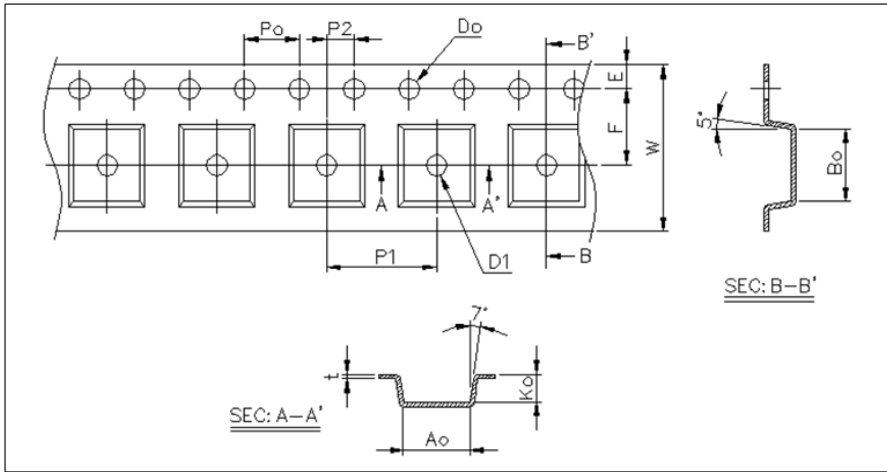
The LEDs can be soldered using the parameters listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest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



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C / second max.	3°C / second max.
<b>Preheat</b>		
• Temperature Min (T <sub>smin</sub> )	100 °C	150 °C
• Temperature Max (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (ts)	60-120 seconds	60-180 seconds
<b>Time maintained above:</b>		
• Temperature (T <sub>L</sub> )	183 °C	217 °C
• Time (T <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Temperature (T <sub>p</sub> )	215 °C	260 °C
Time within 5°C of actual Peak Temperature (t <sub>p</sub> ) <sup>2</sup>	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.

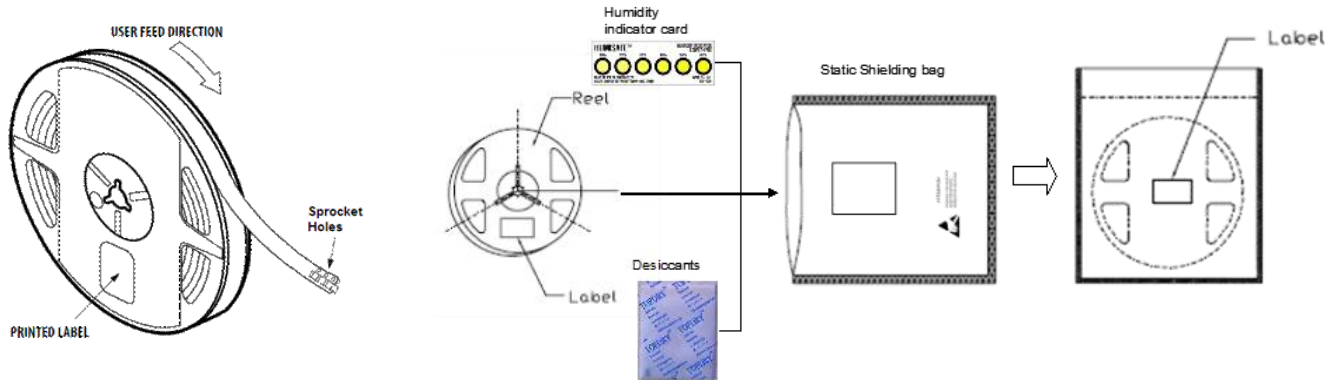
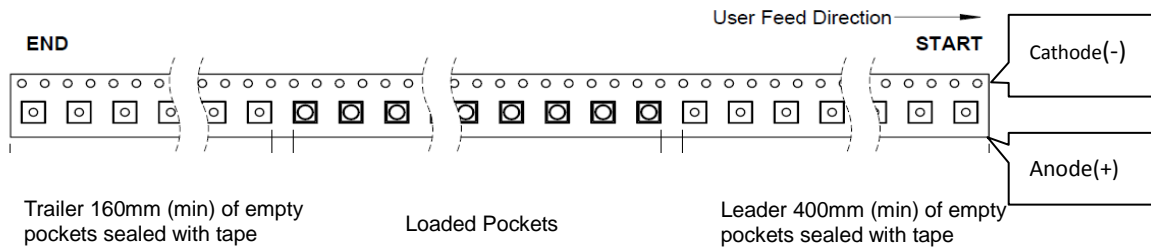
## Packing Information

Max QTY: 500ea / roll

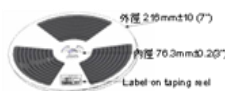


Item	Specification	Tol.(+/-)
W	12.00	±0.20
E	1.75	±0.10
F	5.50	±0.05
D0	1.50	+0.10, -0
D1	1.50	+0.10, -0
P0	4.00	±0.05
P1	8.00	±0.10
P2	2.00	±0.05
P0X10	40.00	±0.20

Item	Specification	Tol.(+/-)
t	0.30	±0.05
A0	5.30	±0.10
B0	5.40	±0.10
K0	3.10	±0.10



### MFG Packing

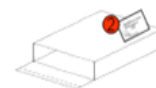


### FG in after OQC Packing



1 reel in a bag = 500pcs

### Ship out packing Step



1 bag in an inner box = 500pcs



Small size: 5 inner box in an outer box = 2500pcs

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](http://www.tslc.com.tw) or please contact [sales@tslc.com.tw](mailto:sales@tslc.com.tw).



[www.tslc.com.tw](http://www.tslc.com.tw)

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