

T5050M-MCL1

High Power Mixing Color LED

Introduction

The T5050M-MCL1 LED from SemiLEDs brings industry leading technology to the solid state lighting market with its high quality and performance. With a silicone lens, T5050M-MCL1 LEDs from SemiLEDs 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 – TM441H

1 2~5 6 7.8 9 10 11~16

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

Code 11~16: internal code

(Tj=25°C , If = 700mA)

T5050M-MCL1-TM541H

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	535nm	150-195	3.2	4.2
Blue	455nm	470nm	25-39.8	3.2	4.0
White	5000K	8300K	180-220	3.2	4.0

T5050M-MCL1-TM641H

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	535nm	150-195	3.2	4.2
Blue	455nm	470nm	25-39.8	3.2	4.0
Amber	585nm	595nm	85-115	2.1	3.2

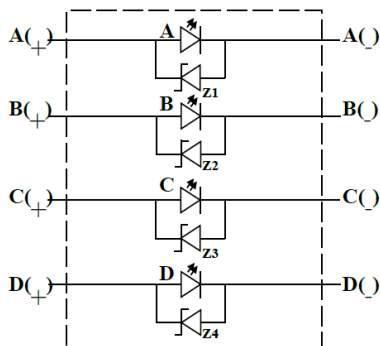
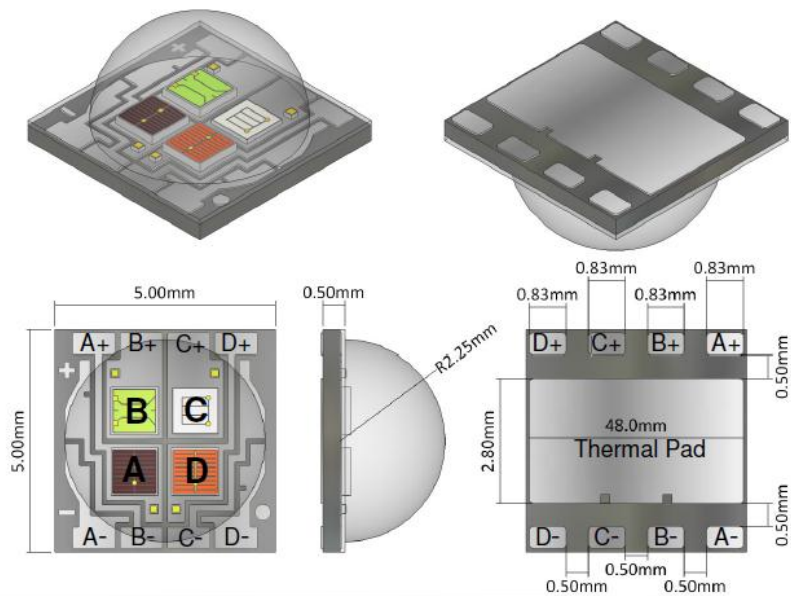
Notes:

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

Absolute Maximum Ratings (Ta=25°C)

Parameters		Symbol	Rating	Unit
DC Forward current		I _f	≦ 700	mA
Peak pulsing current		I _{peak}	≦ 1000	mA
Reverse Voltage		V _r	≦ 5	V
Operating temperature		T _{opr}	-40 ~ 85	°C
LED Storage temperature		T _{stg1}	-40 ~ 110	°C
LED Junction temperature		T _j	≦ 125	°C
Soldering temperature at tp (JEDEC-020-D)		T _{sol}	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



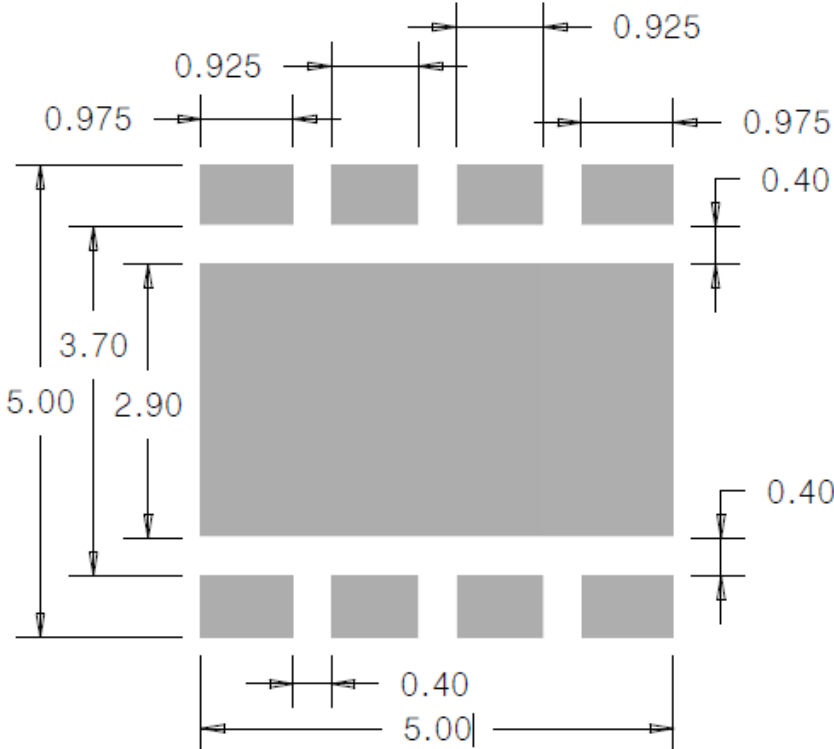
Chip	RGBA	RGBW
A	Red	Red
B	Green	Green
C	Blue	Blue
D	Amber	White

Notes:

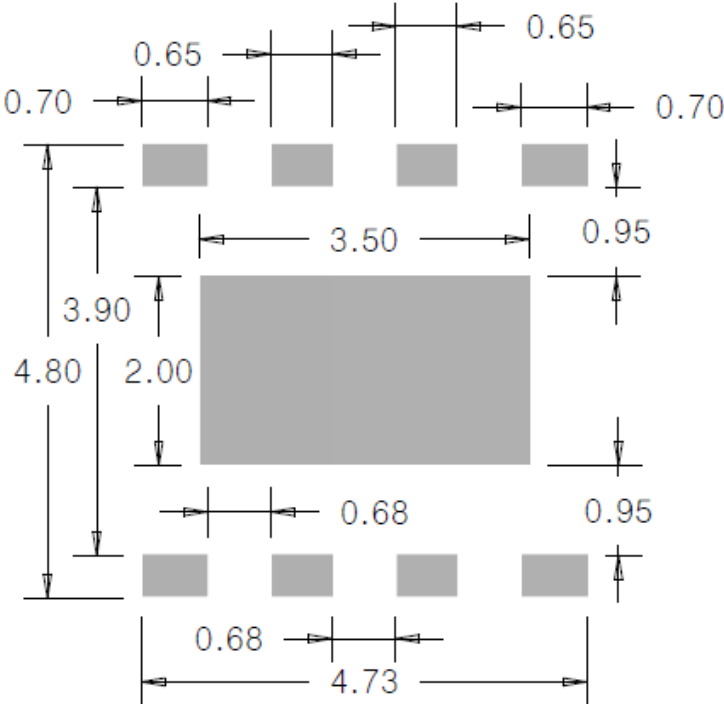
1. All dimensions are in millimeters.
2. Drawings not to scale.

Recommended Solder Pad Design

Recommended PCB Solder Pad

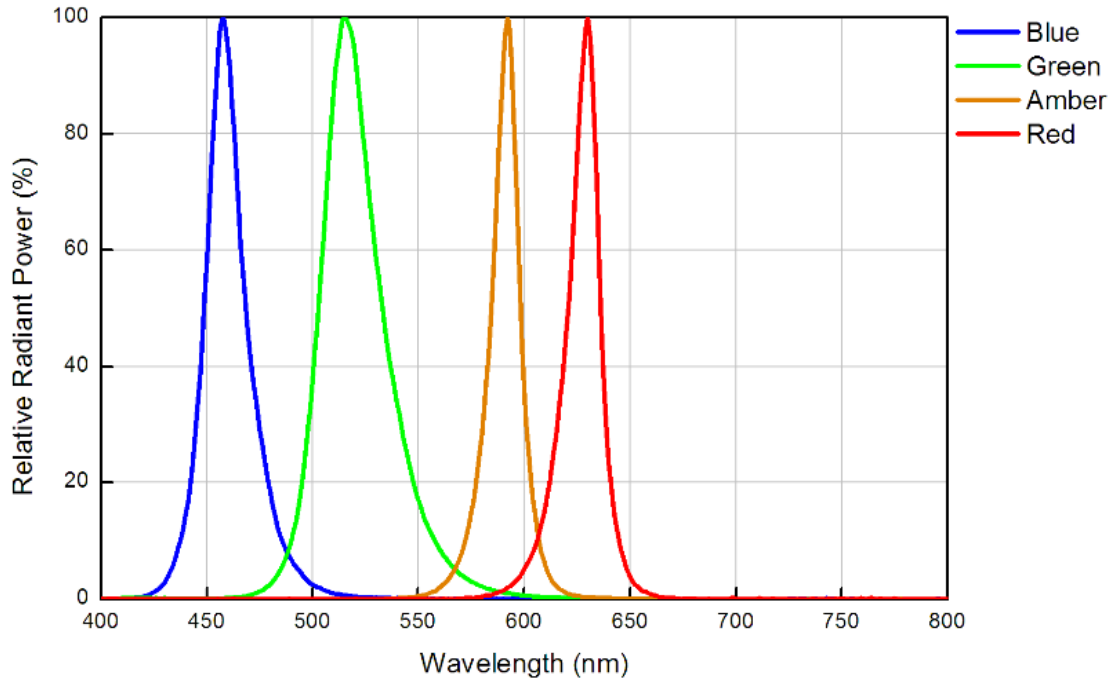


Recommended Stencil Pattern Design

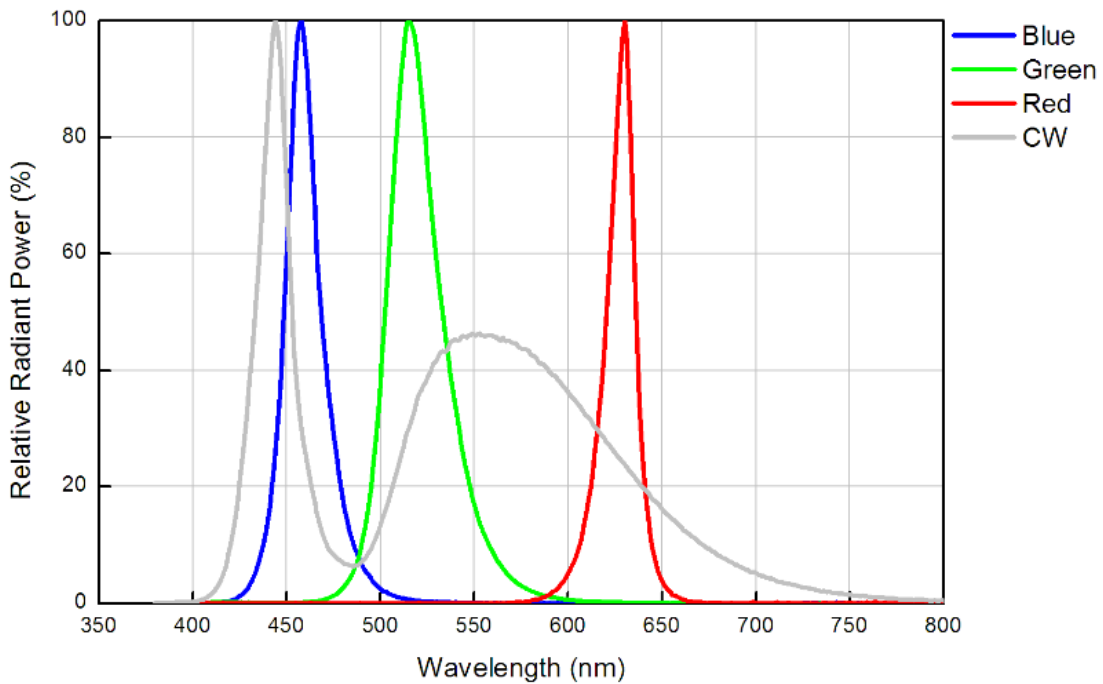


Relative Spectral Power Distribution, T_j=25°C

T5050M-MCL1-TM441H (RGBA)

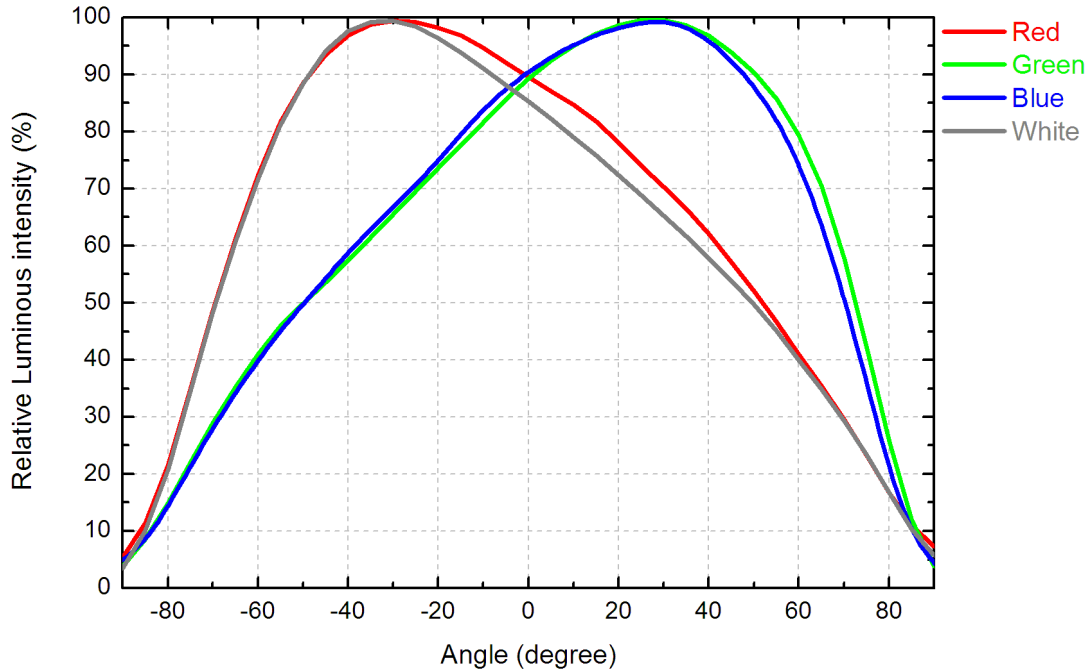


T5050M-MCL1-TM341H (RGBW)

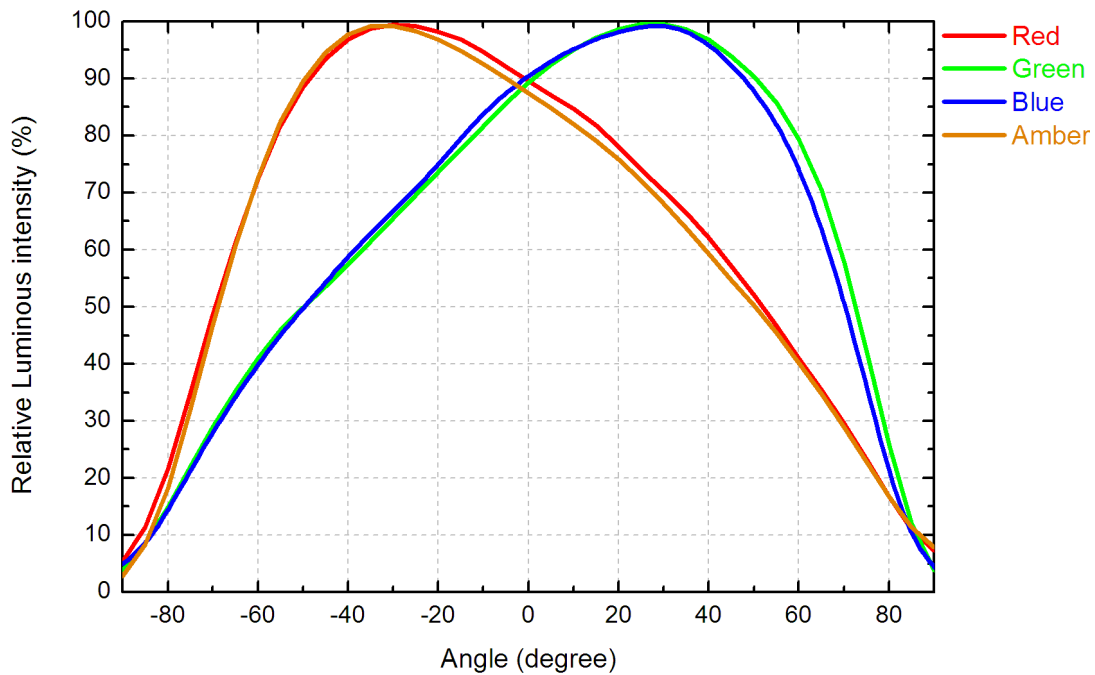


Typical Spatial Radiation Pattern

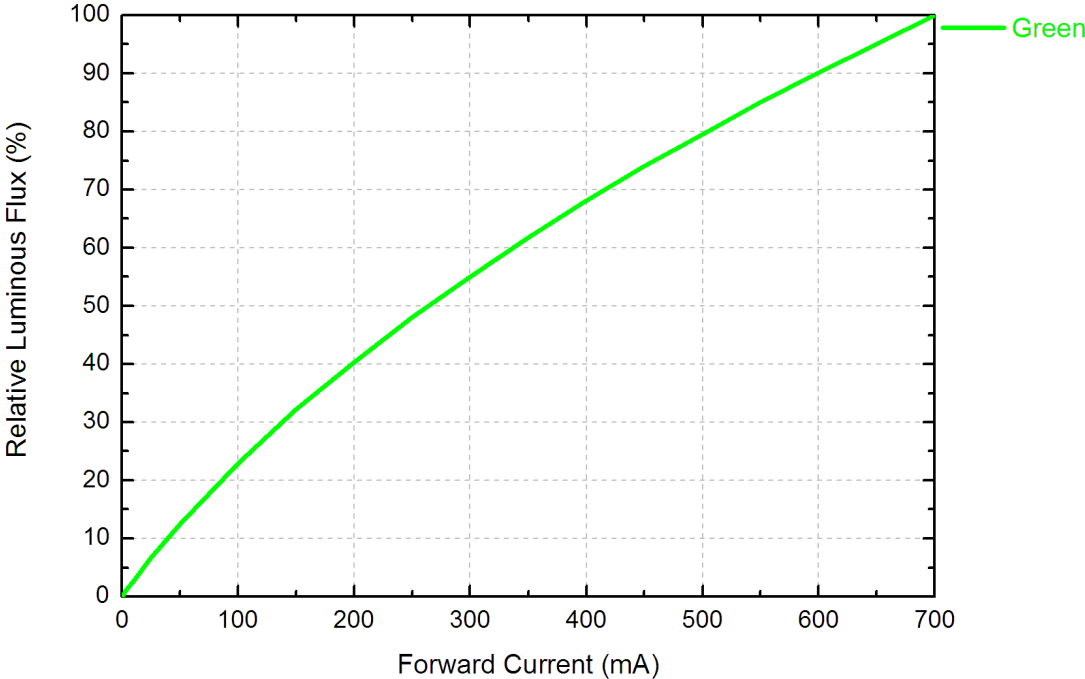
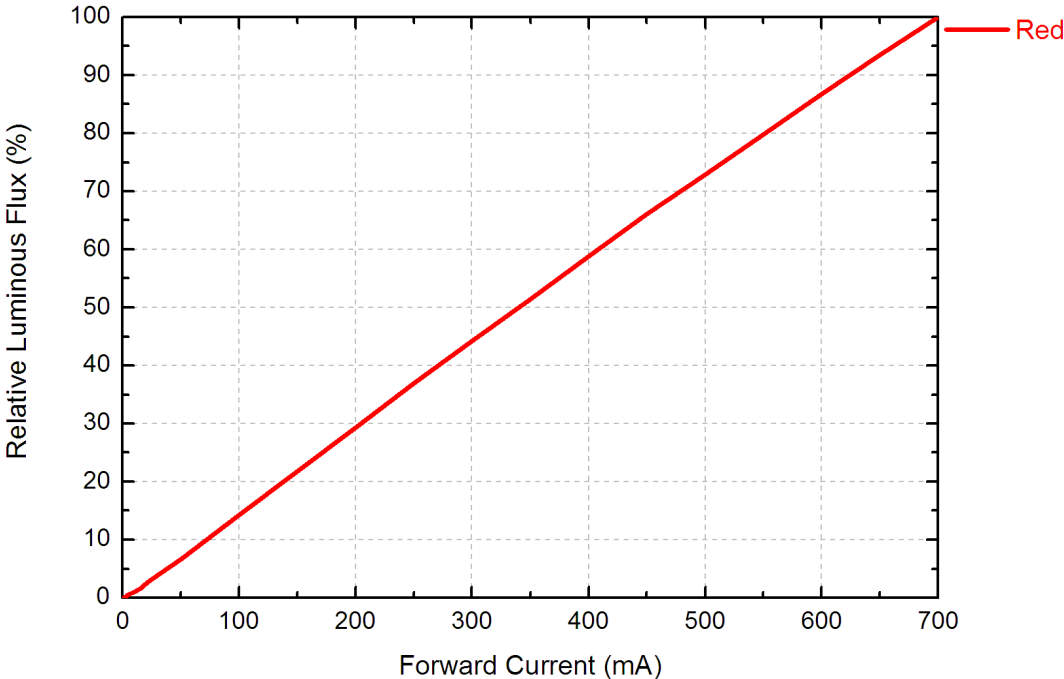
T5050M-MCL1-TM341H (RGBW)

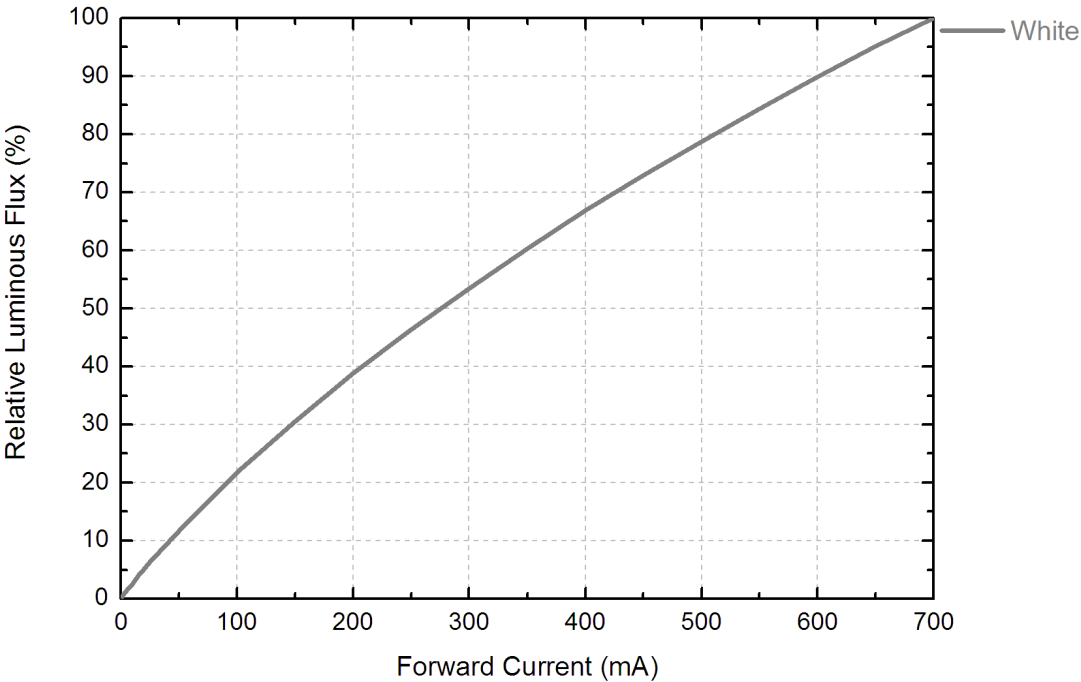
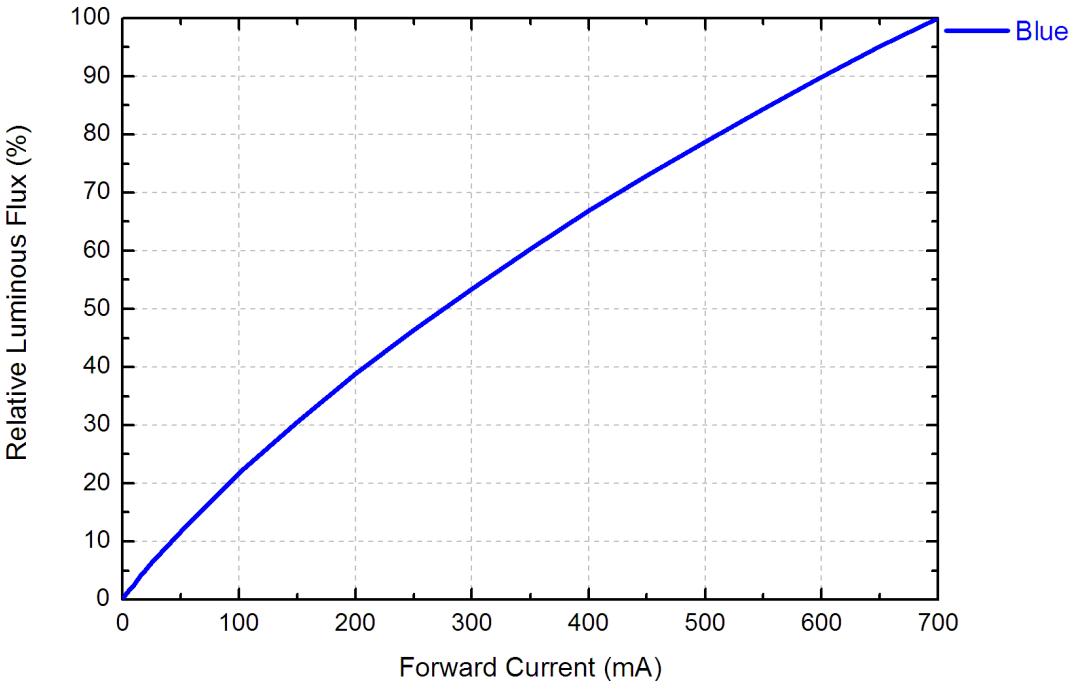


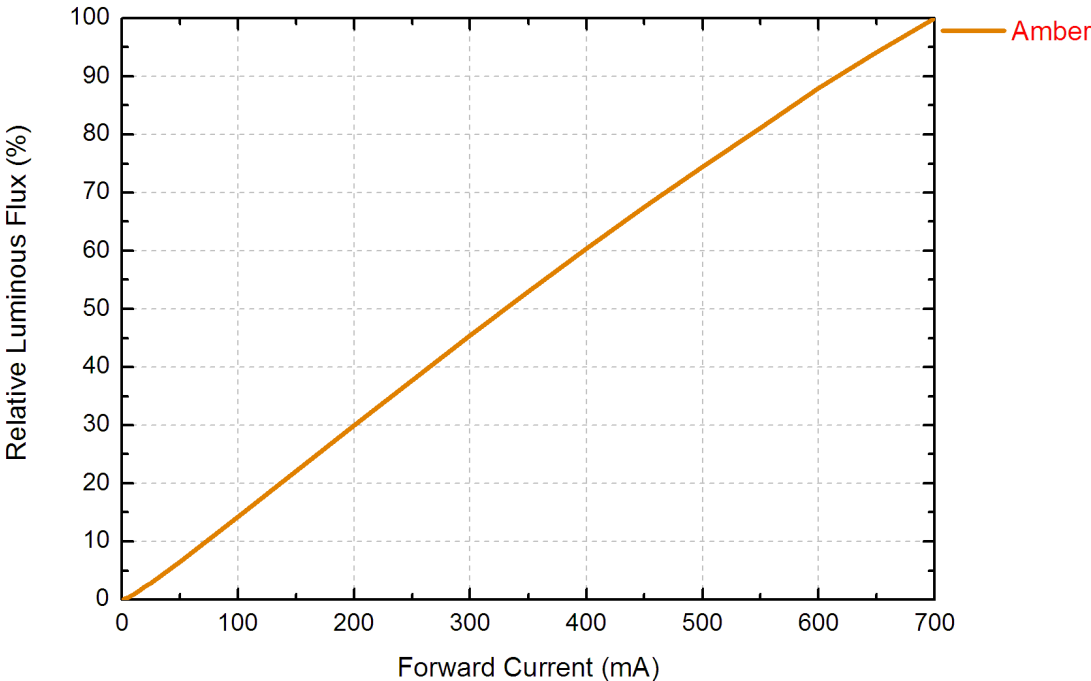
T5050M-MCL1-TM441H (RGBA)



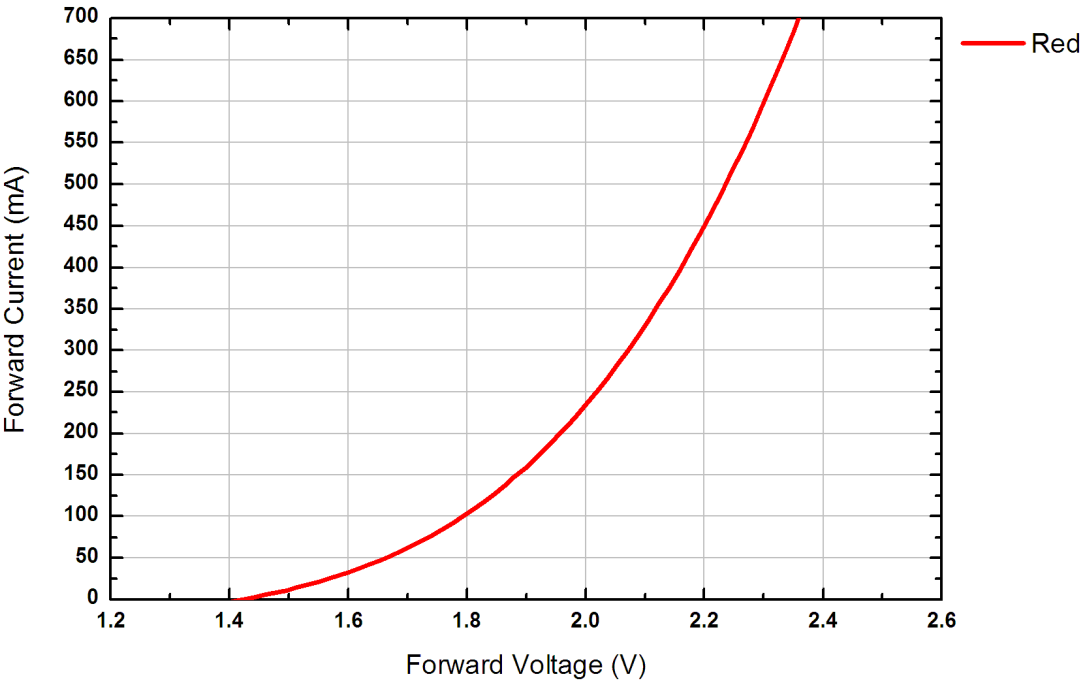
Typical Forward L-I Characteristics

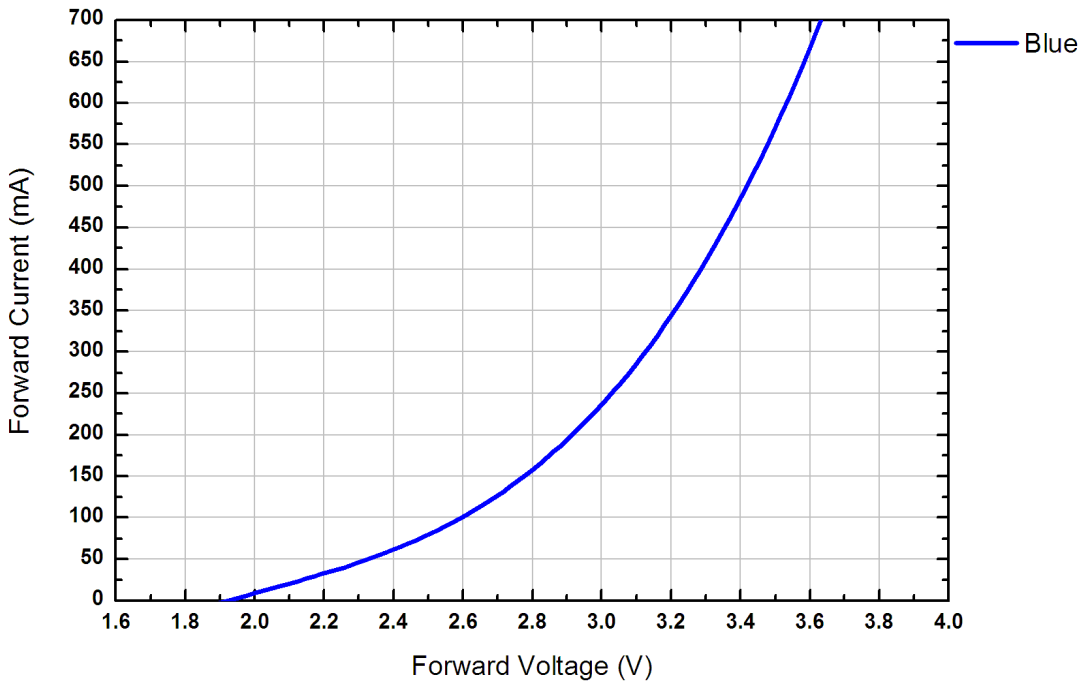
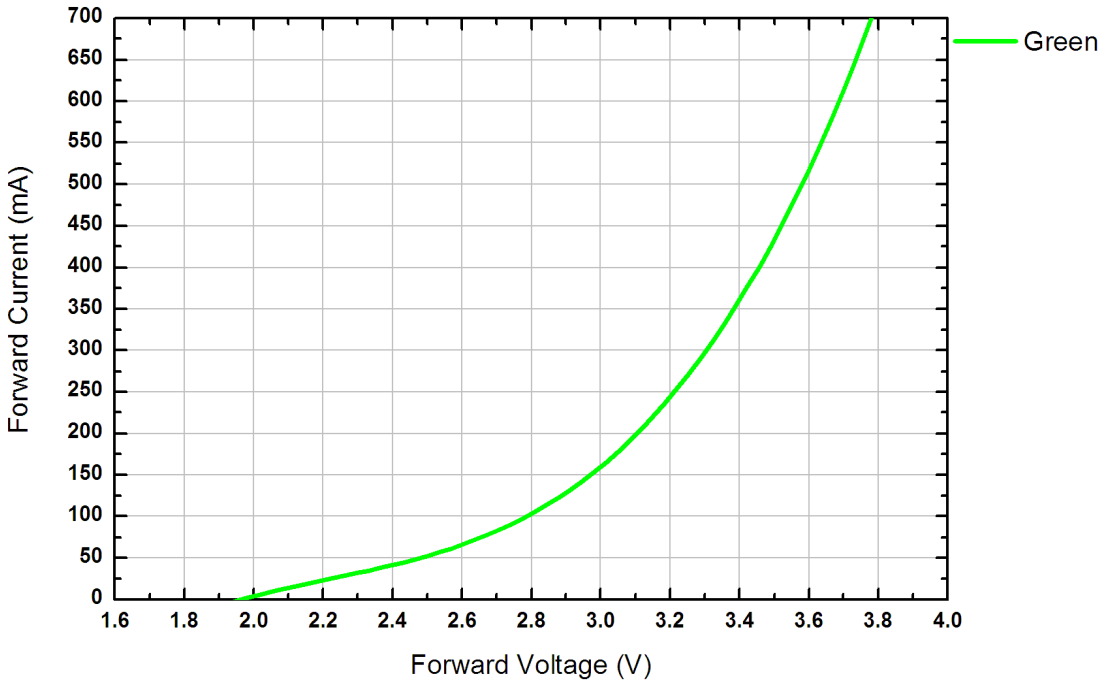


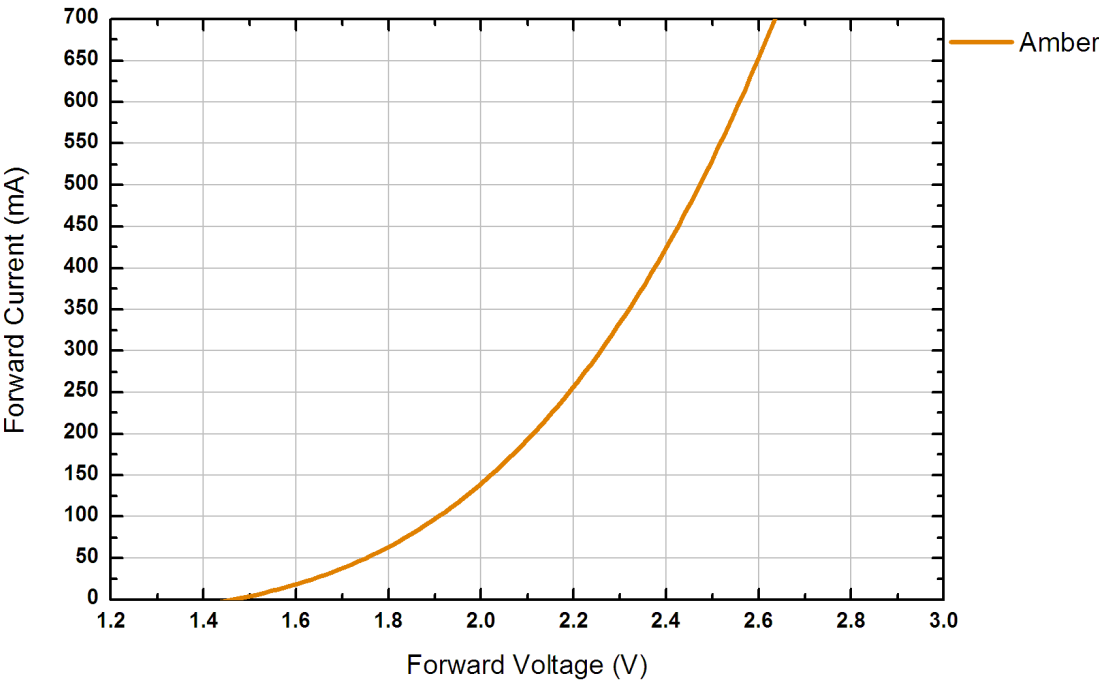
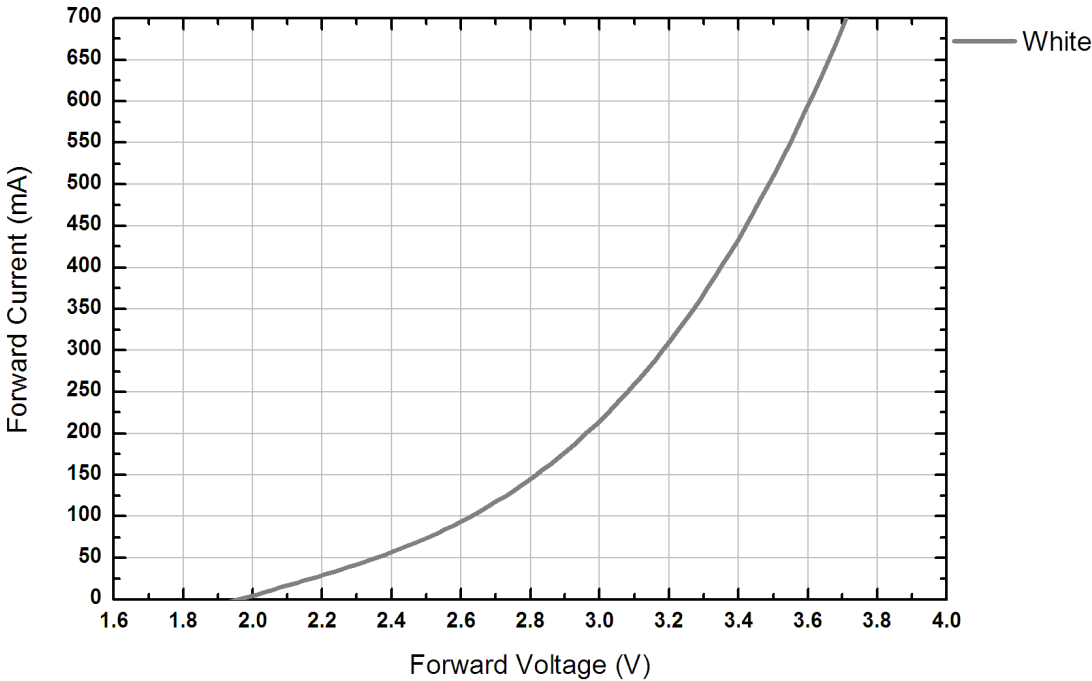




Typical Forward I-V Characteristics

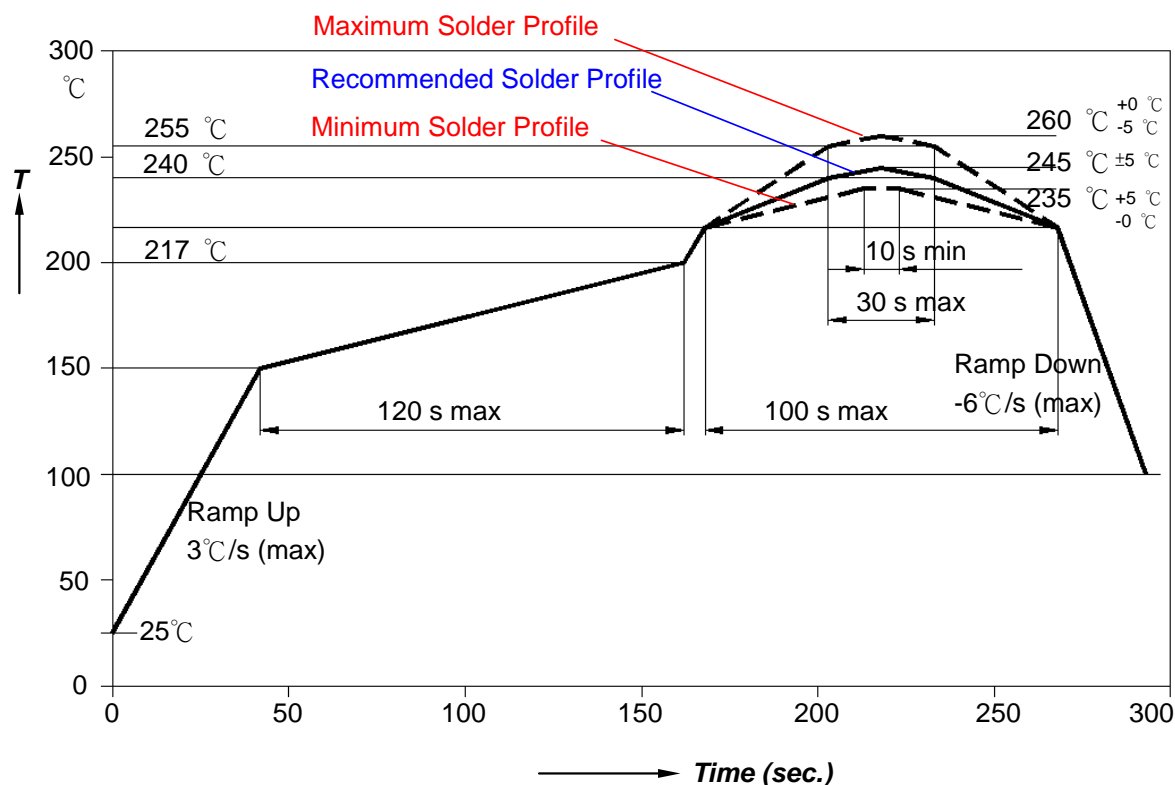






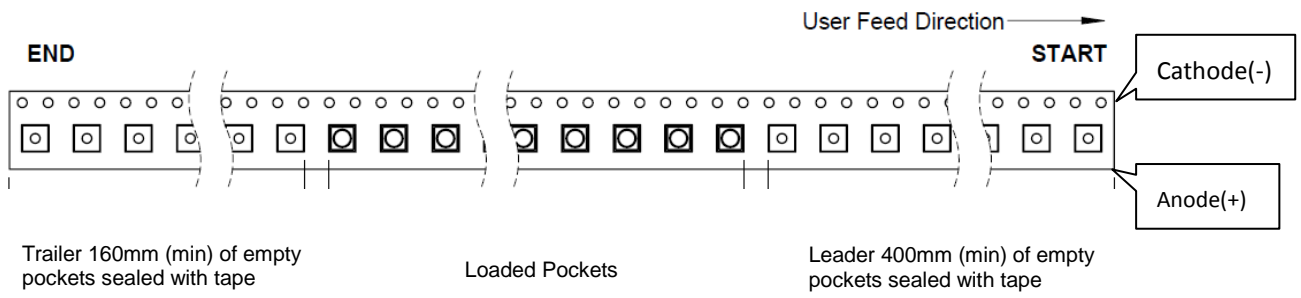
Recommended Soldering Profile

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 _{smax} to T _p)	3°C / second max.	3°C / second max.
Preheat		
• Temperature Min (T _{smin})	100 °C	150 °C
• Temperature Max (T _{smax})	150 °C	200 °C
• Time (T _{smin} to T _{smax}) (ts)	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 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.

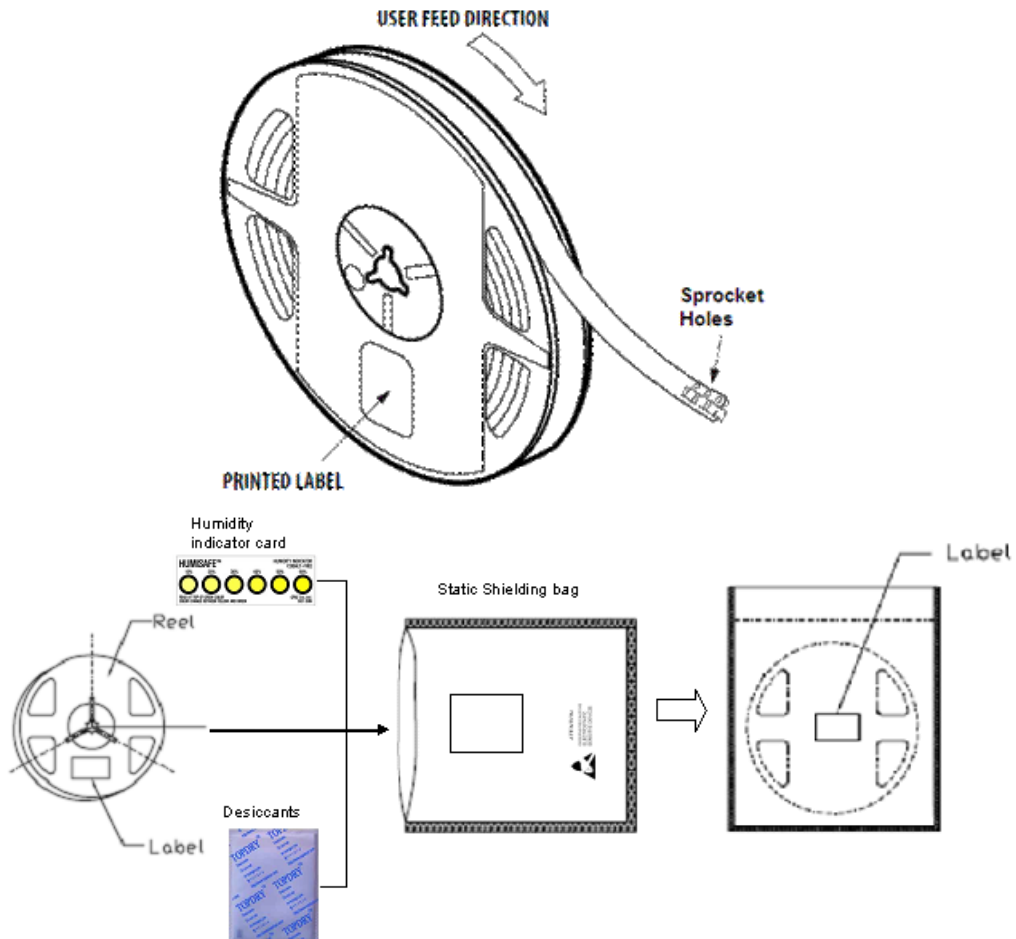
Packing Information



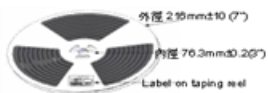
Trailer 160mm (min) of empty pockets sealed with tape

Loaded Pockets

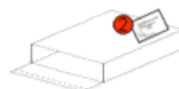
Leader 400mm (min) of empty pockets sealed with tape



MFG Packing



Ship out packing Step



1 bag in an inner box= 400pcs

FG in after OQC Packing



1 reel in a bag = 400pcs



Small size: 5 inner box in an outer box= 2000pcs

About Us

SemiLEDs Corporation is a US based manufacturer of ultra-high brightness LED chips with state of the art fabrication facilities in Hsinchu Science Park, Taiwan. SemiLEDs specializes in the development and manufacturing of vertical LED chips in blue (white), green, and UV using a patented copper alloy base. This unique design allows for higher performance and longer lumen maintenance. In December 2008, The World Economic Forum recognized SemiLEDs innovations with the 2009 Technology Pioneer Award. SemiLEDs is fully ISO 9001:2008 Certified

SemiLEDs is a publicly traded company on NASDAQ Global Select Market (stock symbol "LEDS"). For investor information, please contact us at investors@semileds.com.

For further company or product information, please visit us at www.semileds.com or please contact sales@semileds.com.



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