

PRODUCT SPECIFICATION

SLM-5050RGB-X1

6 pin PLCC, RGB LED

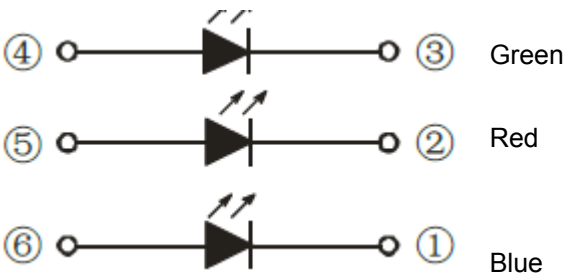
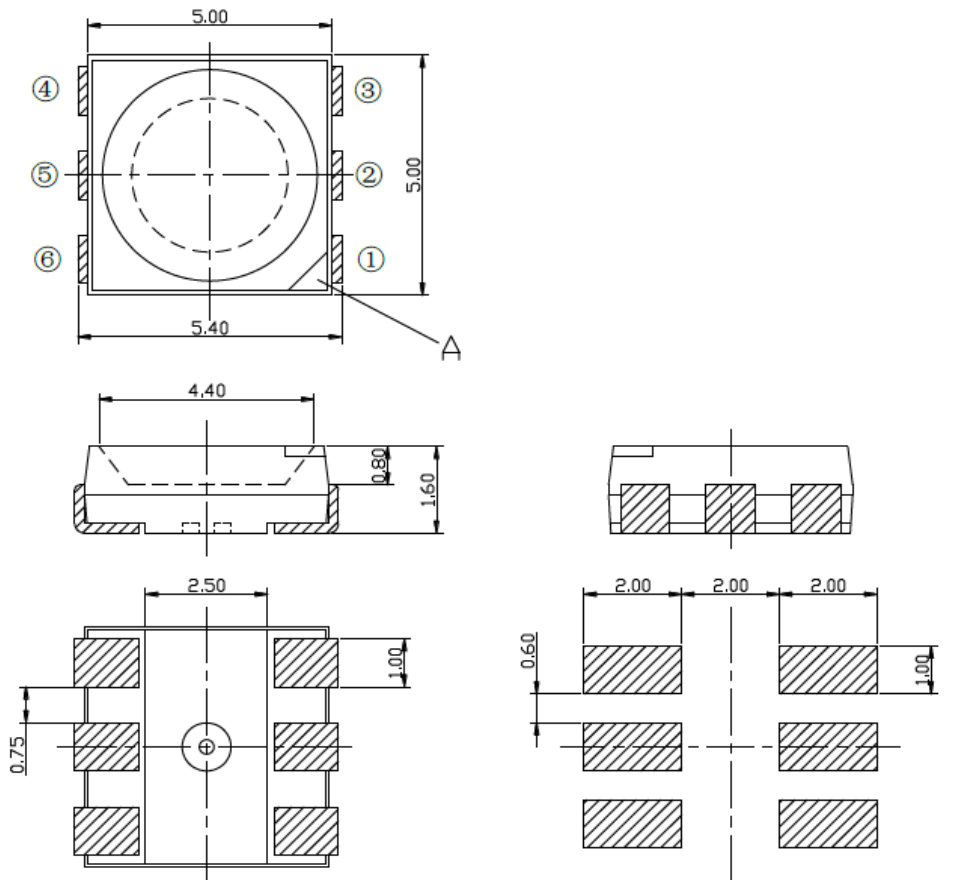
Unit 24, 6/F, Goldfield Industrial Centre, 1 Sui Wo Road, Fo Tan, Shatin, Hong Kong.

Tel: 852 - 2687 4379 Fax: 852 - 2687 3374 <http://www.seam-asia.com>

Features:

- * Material: InGaN
- * Top Tri-Color LED Lamp
- * High Luminous Intensity and Low Power Dissipation
- * Good Reliability and Long Life
- * Complied With RoHS Directive

Outline Dimension



Recommended Soldering Pad

Note:
A: Cathode Mark
All dimensions in mm. Tolerances unless mentioned is ± 0.1 mm.

Absolute Maximum Ratings(Ta=25°C)

Parameter		Symbol	Rating	Unit
Forward Current		IF	25	mA
Pulse Forward Current*		IFP	100	mA
Reverse Voltage		VR	5	V
Operating Temperature		TOPR	-30 ~ +85	°C
Storage Temperature		Tstg	-40 ~ +100	°C
Power Dissipation	Red	PD	75	mW
	Green		120	
	Blue		120	
ESD Sensitivity (HBM)	Red	ESD	6000	V
	Green		2000	
	Blue		2000	

* Note: Pulse width≤0.1ms, Duty≤1/10

*** Electro-Optical Characteristics (Temperature=25°C):**

Parameter		Symbol	Condition	Min.	Typ.	Max	Unit
Reverse Current	Red	IR	VR=5V	-	-	10	μA
	Green			-	-	50	
	Blue			-	-	50	
Forward Voltage	Red	VF	IF=20mA	1.8	2.0	2.6	V
	Green			2.8	3.4	3.8	
	Blue			2.8	3.4	3.8	
Dominant Wavelength	Red	λD		618	624	628	nm
	Green			518	520	528	
	Blue			466	470	476	
Spectrum Radiation Bandwidth	Red	Δλ		-	20	-	nm
	Green			-	35	-	
	Blue			-	30	-	
Luminous Intensity	Red	IV	200	300	500	mcd	
	Green		900	1400	2200		
	Blue		250	380	580		
View Angle		2θ1/2			110		deg.

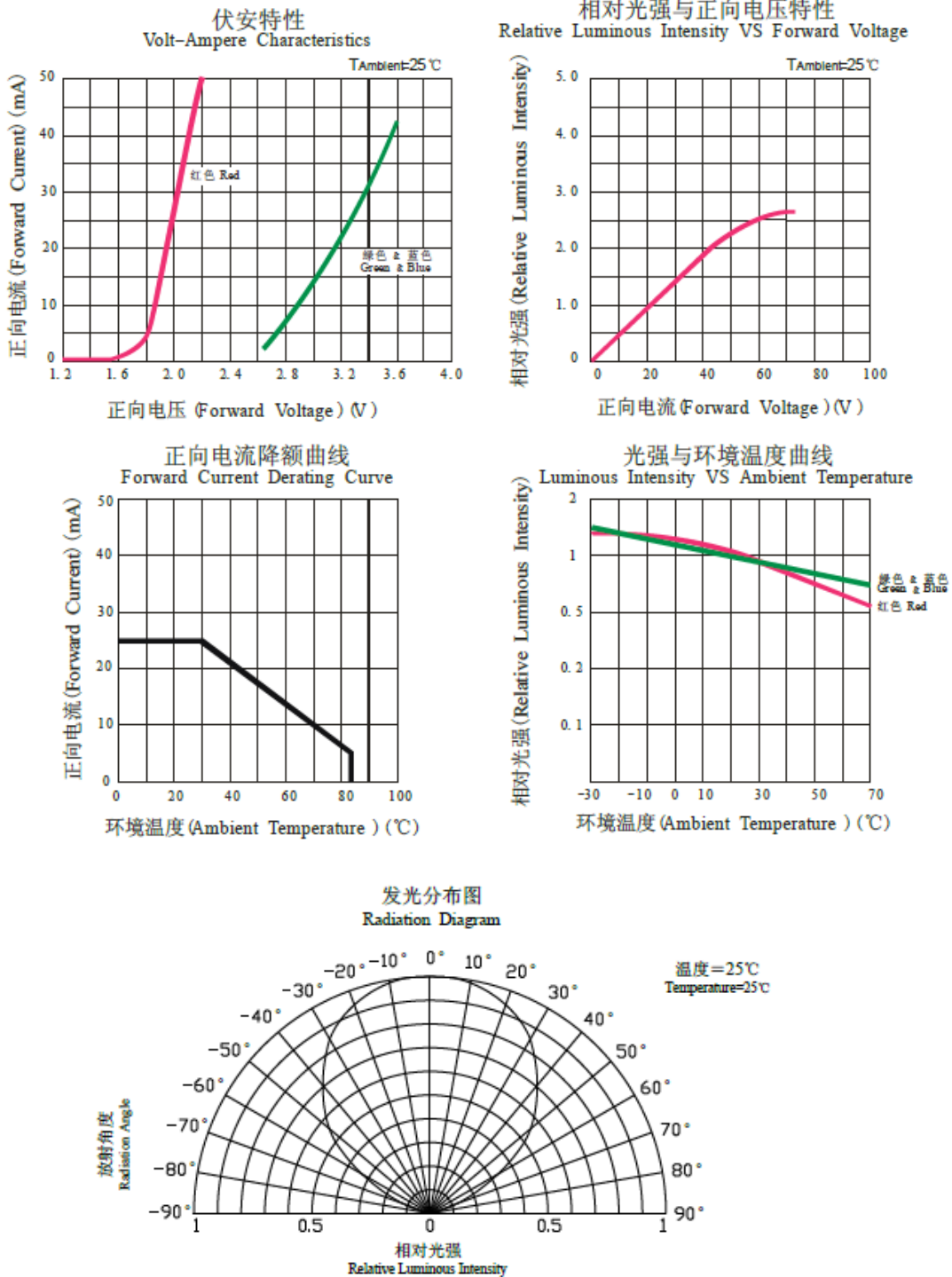
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Typical Characteristics Curves



Ranking Criteria

Luminous Intensity

Blue(mcd)			Green(mcd)			Red(mcd)		
Rank	Min.	Max.	Rank	Min.	Max.	Rank	Min.	Max.
B1	270	350	G1	1000	1300	R1	210	270
B2	350	450	G2	1300	1700	R2	270	350
B3	450	550	G3	1700	2200	R3	350	450

Wavelength

Rank	Blue(nm)		Green(nm)		Red(nm)	
	Min.	Max.	Min.	Max.	Min.	Max.
Full	469	475	519	525	619	625

Forward Voltage

Rank	Blue(nm)		Green(nm)		Red(nm)	
	Min.	Max.	Min.	Max.	Min.	Max.
V1	2.8	3.6	2.8	3.6	1.8	2.3

Notes: Measurement Condition: IF=20mA

*1: Measurement Uncertainty : ± 0.05

*2: Measurement Uncertainty : $\pm 20\%$,

*3: Measurement Uncertainty : $\pm 0.05V$

Reliability Test Items And Conditions :

Test Items	Test Conditions	Quantity	Judging Criteria
Solderability	(Solder Temperature): : 300°C (Solder Duration): (3.5±0.5) sec	15	Solder able Area Over 95%
Thermal Shock Followed by High Temperature And High Humidity Cyclic	-40°C □□10 min. 5 Cycles □□ Shift (2~3) 100°C □□10 min □□ 25°C~55°C (90%~95%) RH 2 Cycles for 48 hrs. Recover for 2 hrs.	11	C=0 & I**
Resistance For Soldering Heat	Reflow Soldering	15	C=0 & I**
DC Operating Life	1000 hrs. Forward Current: 60mA	22	C=0 & I*
High Temperature Storage	100°C □□1000 hrs.	15	C=0 & I*
High Temperature And High Humidity Cyclic	25°C~55°C (90%~95%) RH 6 Cycles for 144 hrs. Recover for 2 hrs.	11	C=0 & I*

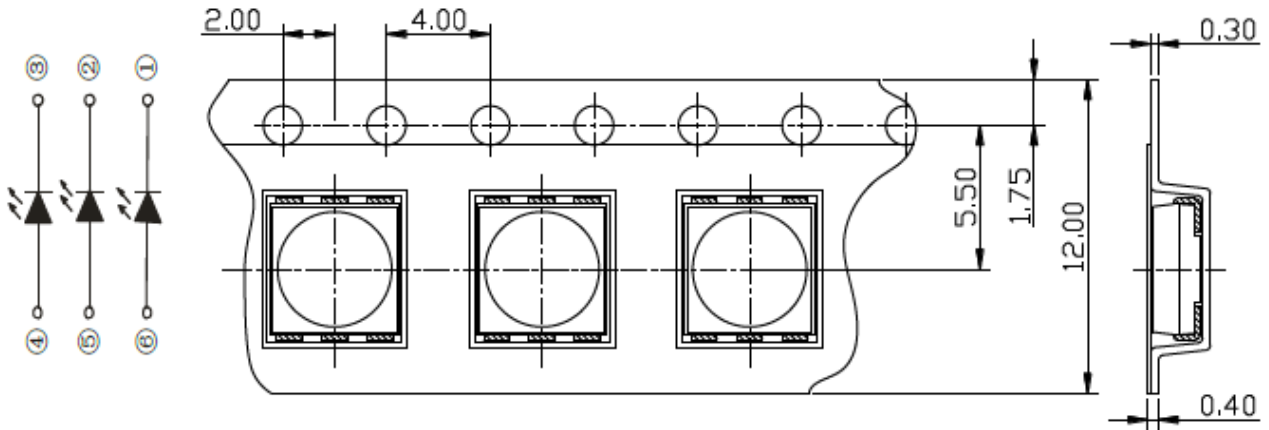
Criteria For Judging Damage

Items	Symbol	Test Conditions	Criteria For Judging Damage I*	Criteria For Judging Damage I*
Forward Voltage	VF	IF=60mA	≥USL×1.2	≥USL
Reverse Current	IR	VR=5V	≥USL×2.0	≥USL
Luminous Intensity	IV	IF=60mA	≤LSL×0.5	≤LSL

* USL: Upper Standard Level, LSL: Lower Standard Level

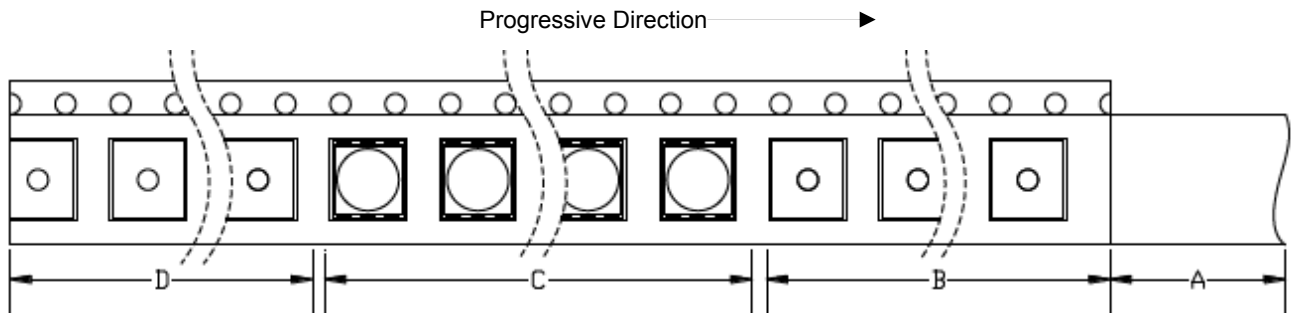
Packaging

* Carrier Tape



All dimensions in mm, tolerances unless mentioned is ± 0.1 mm.

* Details Of Carrier Tape ((packing quantity: 1000pcs/reel)



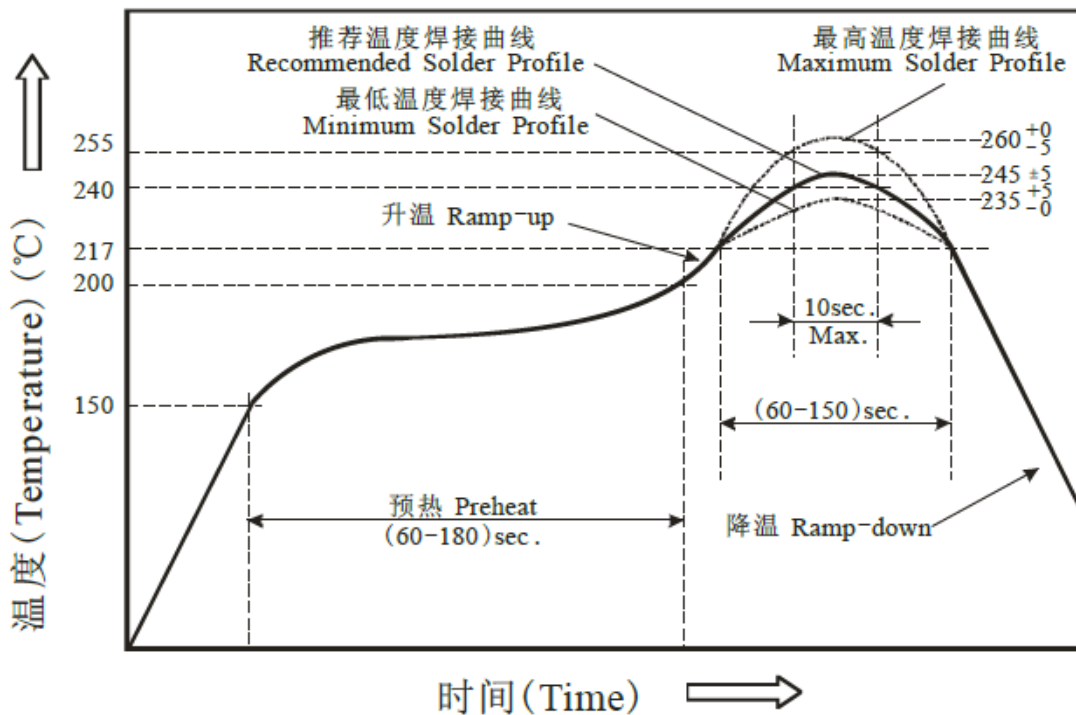
A: Top Cover Tape, 300mm; B: Leader, Empty, 200mm; C:1000 Lamps Loaded; D: Trailer, Empty, 200mm

*Guideline for Soldering

1. Hand Soldering

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 300°C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only. Be careful because the damage of the product is often started at the time of the hand soldering

2. Reflow Soldering: Use the conditions shown in the under Figure of Pb-Free Reflow Soldering



Reflow soldering should not be done more than two times

Stress on the LEDs should be avoided during heating in soldering process

After soldering, do not deal with the product before its temperature drop down to room temperature.

3. Cleaning

It is recommended that alcohol be used as a solvent for cleaning after soldering. Cleaning is to go under 30°C for 3 minutes or 50°C for 30 seconds. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Ultrasonic cleaning is also an effective way for cleaning. But the influence of Ultrasonic cleaning on LED depends on factors such as ultrasonic power. Generally, the ultrasonic power should not be higher than 300W. Before cleaning, a pre-test should be done to confirm whether any damage to LEDs will occur.

* **Note:** This general guideline may not apply to all PCB designs and configurations of all soldering equipment. The technique in practice is influenced by many factors it should be specialized base on the PCB designs and configurations of the soldering equipment

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4. Storage

Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum. Before opening the package, the product should be kept at 30°C or less and humidity less than 60% RH, and be used within a year.

After opening the package, the product should be stored at 30°C or less and humidity less than 10%RH, and be soldered within 24 hours (1 day). It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.

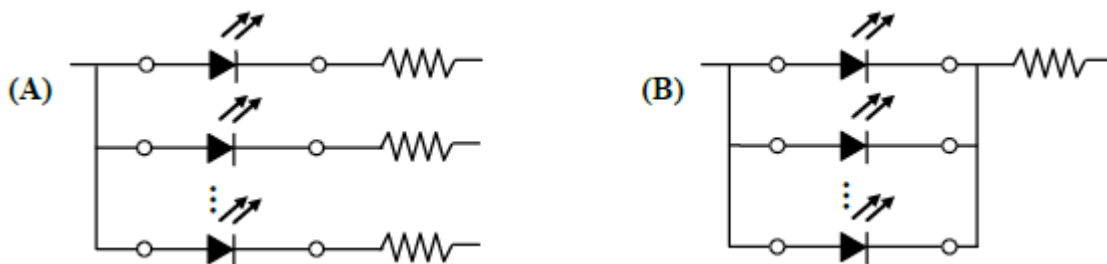
If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (80±5)°C for 24 hours.

5. Static Electricity

Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current, even not light. All devices, equipment and machinery must be properly grounded. At the same time, it is recommended that wrist bands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

6. Design Consideration

In designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen. It is recommended to use Circuit A which regulates the current flowing through each LED rather than Circuit B. When driving LEDs with a constant voltage in Circuit B, the current through the LEDs may vary due to the variation in Forward Voltage (VF) of the LEDs. In the worst case, some LED may be subjected to stresses in excess of the Absolute Maximum Rating.



Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LEDs when making the system design.