Shenzhen MSH LIGHTING CO., LTD
Plant Add: 2nd floor,No 9 Yue Ming Street,Beihuan Road, Shiyan, Bao'an, Shenzhen, GD, China.
Whatsapp +8613267109053 Email maisie@abrightled.com
Website: www.abrightled.com www.stripsledlight.com

SK6812

SPECIFICATION

INTEGRATED LIGHT SOURCE INTELLIGENT CONTROL OF CHIP-ON-TOP SMD TYPE LED

Document No.: SPC/ SK6812

Model No.: SK6812

Description: 5.5x5.0x1.6mm Top SMD Type 0.2Watt Power tegrated light source Intelligent control LED

Rev. No.: 03

Date: 2016-04-25

CE RoHS

Shenzhen MSH LIGHTING CO., LTD

Plant Add: 2nd floor,No 9 Yue Ming Street,Beihuan Road, Shiyan, Bao'an, Shenzhen, GD, China.
Whatsapp +8613267109053 Email maisie@abrightled.com
Website: www.abrightled.com www.stripsledlight.com

INTEGRATED LIGHT SOURCE INTELLIGENT CONTROL

OF CHIP-ON-TOP SMD TYPE LED

Model: SK6812

1. Product Overview :

SK6812 is a smart LED control circuit and light emitting circuit in one controlled LED source, which has the shape of a 5050 LED chip. Each lighting element is a pixel, and the intensities of the pixels are contained within the intelligent digital interface input. The output is driven by patented PWM technology, which effectively guarantees high consistency of the color of the pixels. The control circuit consists of a signal shaping amplification circuit, a built-in constant current circuit, and a high precision RC oscillator.

The data protocol being used is unipolar NRZ communication mode. The 24-bit data is transmitted from the controller to DIN of the first element, and if it is accepted it is extracted pixel to pixel. After an internal data latch, the remaining data is passed through the internal amplification circuit and sent out on the DO port to the remaining pixels. The pixel is reset after the end of DIN. Using automatic shaping forwarding technology makes the number of cascaded pixels without signal transmission only limited by signal transmission speed.

The LED has a low driving voltage (which allows for environmental protection and energy saving), high brightness, scattering angle, good consistency, low power, and long life. The control circuit is integrated in the LED above.

2. Main Application Field:

Full color LED string light, LED full color module, LED super hard and soft lights, LED guardrail tube, LED appearance / scene lighting

LED point light, LED pixel screen, LED shaped screen, a variety of electronic products, electrical equipment etc..

3. Description:

Top SMD internal integrated high quality external control line serial cascade constant current IC;

control circuit and the RGB chip in SMD 5050 components, to form a complete control of pixel, color mixing uniformity and consistency;

built-in data shaping circuit, a pixel signal is received after wave shaping and output waveform distortion will not guarantee a line;

The built-in power on reset and reset circuit, the power does not work;

gray level adjusting circuit (256 level gray scale adjustable);

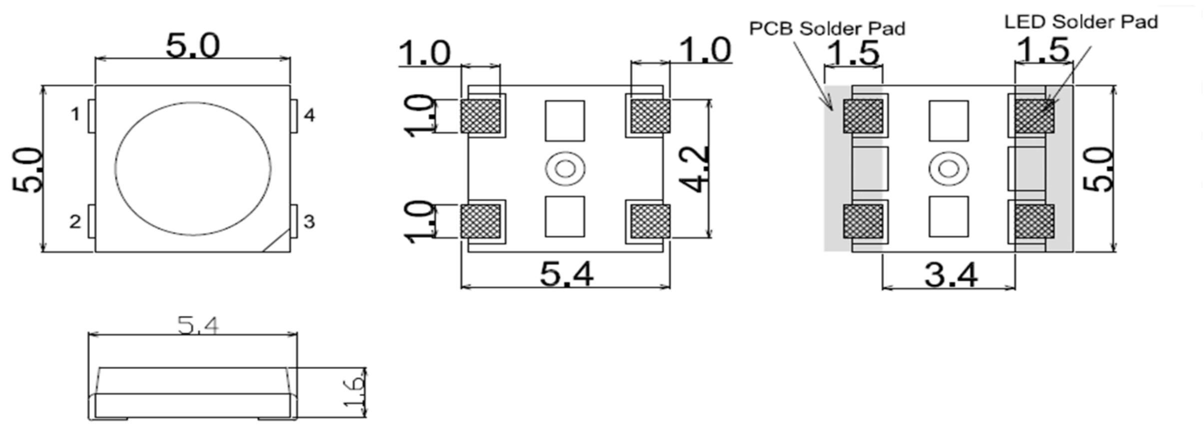
red drive special treatment, color balance;

line data transmission;

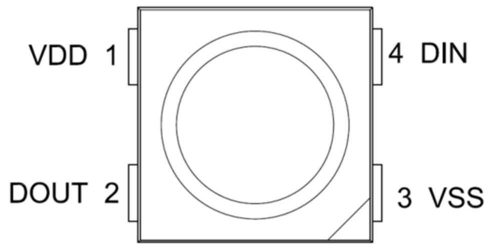
plastic forward strengthening technology, the transmission distance between two points over 10M;

Using a typical data transmission frequency of 800 Kbps, when the refresh rate of 30 frames per sec

Plant Add: 2nd floor,No 9 Yue Ming Street,Beihuan Road, Shiyan, Bao'an, Shenzhen, GD, China.
Whatsapp +8613267109053 Email maisie@abrightled.com
Website: www.abrightled.com www.stripsledlight.com



5. O dpogjhvsbujpo



NO.	Symbol	Function description
1		
2		
3		
4		

6. frof sbmogpsn bujpo

SK6812

SK6812: Uif efgbvmujt SHC dijqt xjui Djoufhsbujpo

7. dBpmuf Nbyjn vn Sbujohtp Ub 36W-WTT 1W ;

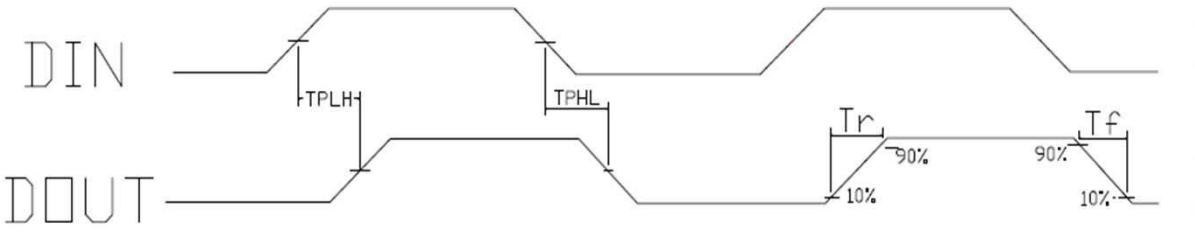
Parameter	Symbol	Range	Unit
Power supply voltage	VDD	+3.5 +5.5	V
Logic input voltage	V_{IN}	-0.5 VDD+0.5	V
Working temperature	Topt	-40~+85	
Storage temperature	Tstg	-50~+150	
ESD pressure	V_{ESD}	4K	V

8. iUf frfdusjdbmepsbn fufst)vorftt puifsxjtf tqfdjgfe- UB .31 , 81 W- WEE 5/6 6/6W-WTT 1W;

Parmeter	Symbol	Min	Typical	Max	Unit	Test conditions
The chip supply voltage	VDD	---	5.2	---	V	---
R/G/B port pressure		---	---	26	V	---
DOUT drive capability	IDOH	---	49	---	mA	DOUT conect ground, the maximum drive current
	IDOL	---	-50	---	mA	DOUT conect +, the largest current
The signal input flip threshold	VIH	3.4	---	---	V	VDD=5.0V
	VIL	---	---	1.6	V	
The frequency of PWM	FPWM	---	1.2	---	KHZ	---
Static power consumption	IDD	---	1	---	mA	---

9. iUf e obnjdqbsbn fufst)Ub 36 W ;

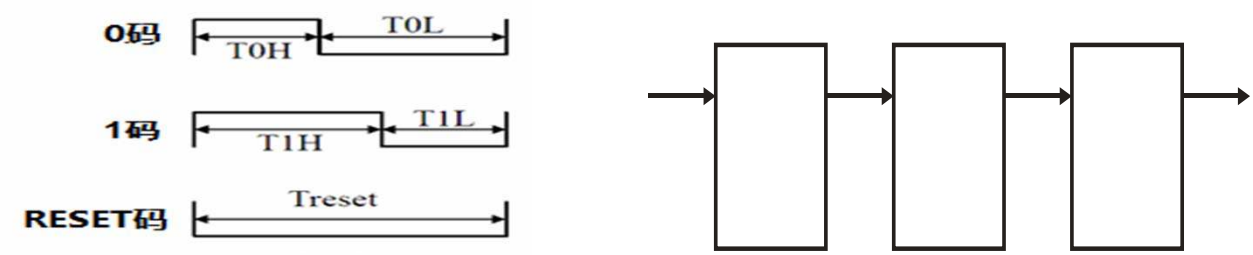
Parameter	Symbol	Min	Typical	Max	Unit	Test conditions
The speed of data transmission	fDIN	---	800	---	KHZ	The duty ratio of 67% (data 1)
DOUT transmission delay	TPLH	---	---	500	ns	DIN→DOUT
	TPHL	---	---	500	ns	
IOUT Rise/Drop Time	Tr	---	100	---	ns	VDS=1.5 IOUT=13mA
	Tf	---	100	---	ns	

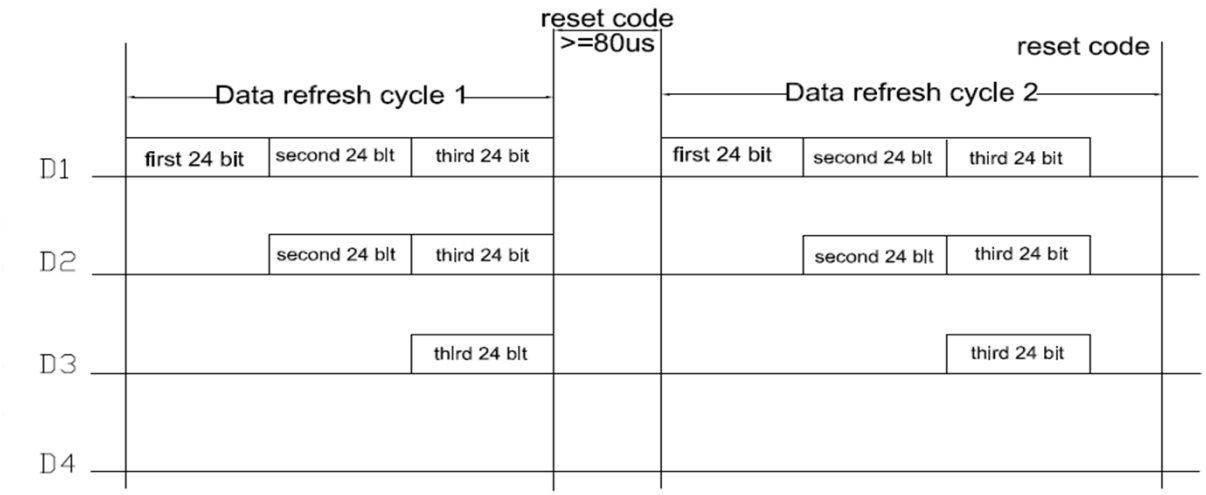


10.fuebubusbotnjttjpoujnf)UI , UM 2/36 t 711ot ;

T0H	0 code, high level time	0.3μs	0.15μs
T0L	0 code, low level time	0.9μs	0.15μs
T1H	1 code, high level time	0.6μs	0.15μs
T1L	1 code, low level time	0.6μs	0.15μs
Trst	Reset code low level time	80μs	

11jnLjoh x bwfgpsn ;





Doofdiconef:

13.f ebubtusvdvsf pg35cjuj

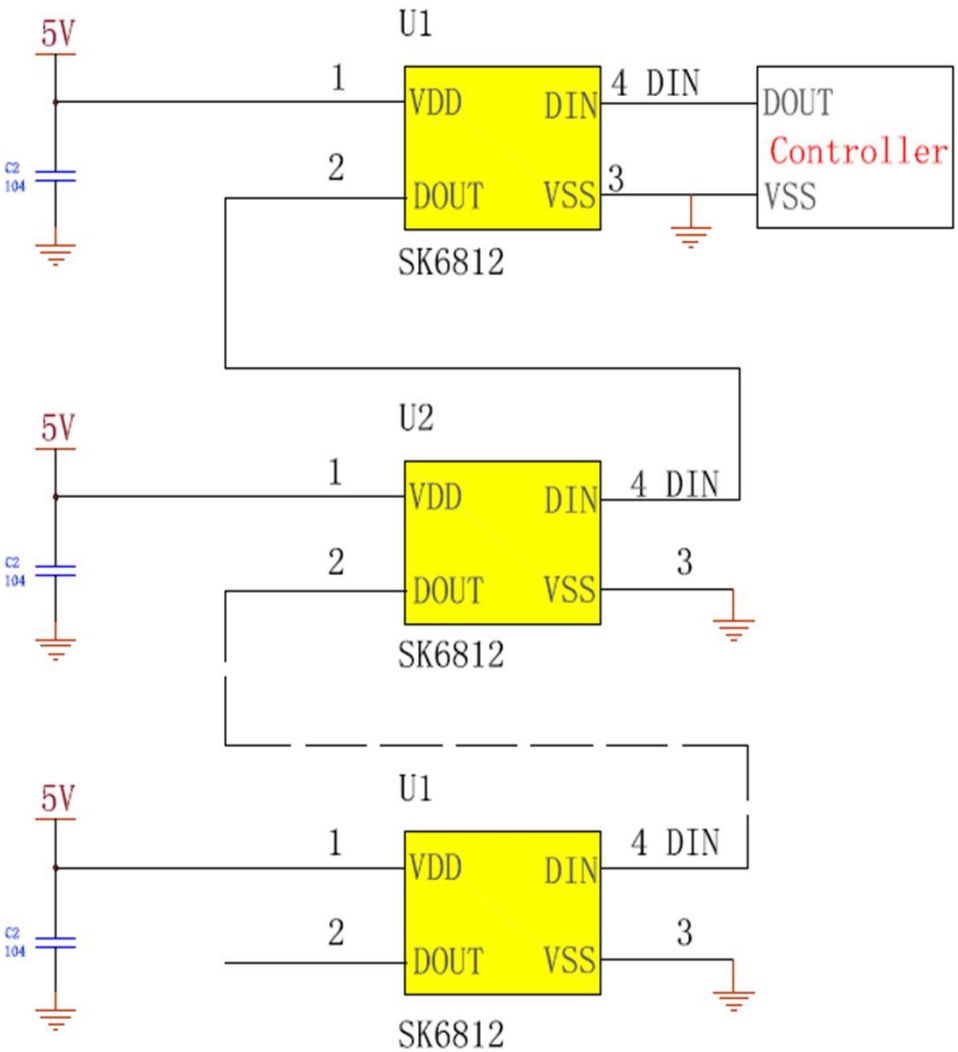
G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Note: high starting, in order to send data (G7 - G6 - ....B0)

14.fodEjdoGPqjdonDibsdufsjtujdt;

Color	Forward Voltage(V)	Luminance(mcd)	Dominate Wavelength(nm)	Working Current(mA)
Red	2.0-2.2V	700-1000	620-625	20
Green	3.0-3.2V	2200-3300	520-525	20
Blue	3.0-3.2V	1000-1500	465-470	20

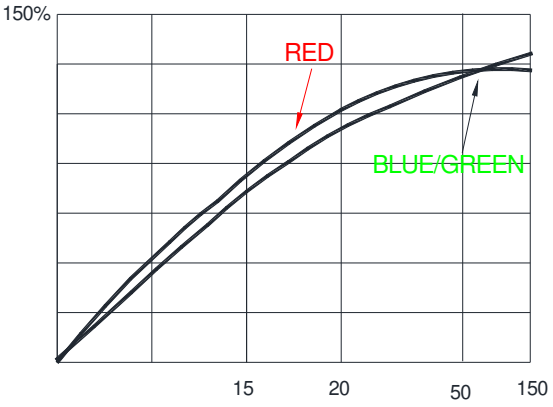
15.f Uqjdonboqmjdbujpo disvju



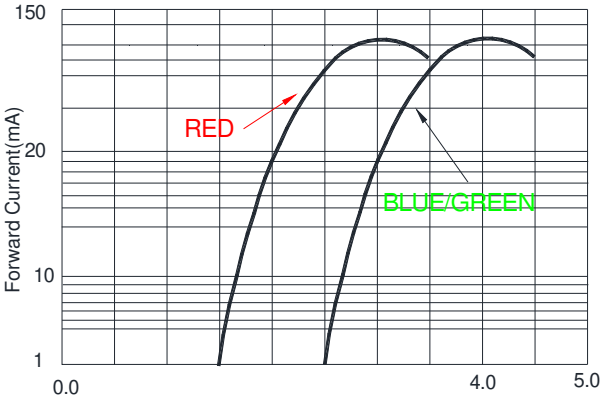
Shenzhen MSH LIGHTING CO., LTD

Plant Add: 2nd floor,No 9 Yue Ming Street,Beihuan Road, Shiyan, Bao'an, Shenzhen, GD, China.
Whatsapp +8613267109053 Email maisie@abrightled.com
Website: www.abrightled.com www.stripsledlight.com

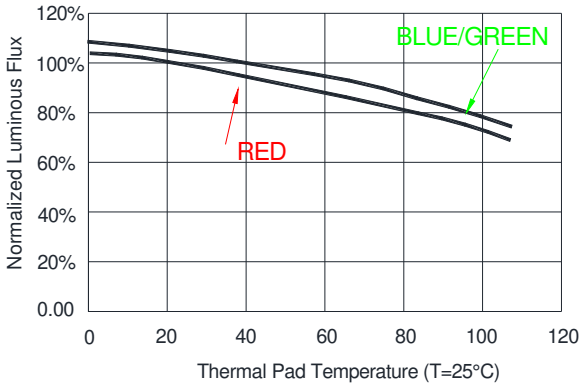
Typical Relative Luminous Flux vs. Forward Current



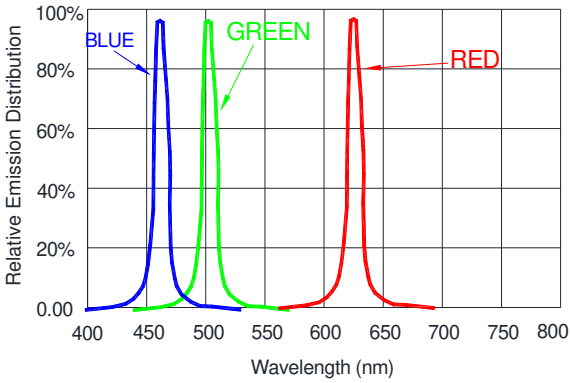
Forward Voltage vs. Forward Current



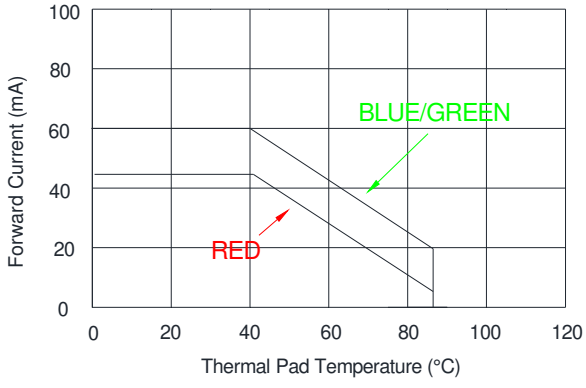
Thermal Pad Temperature vs. Relative Light Output



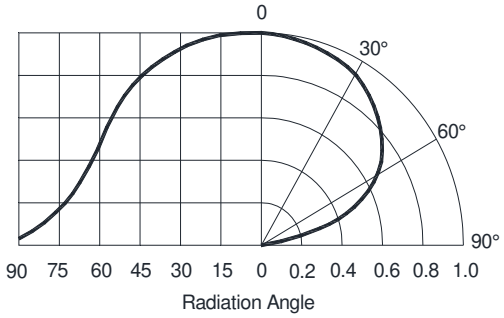
Wavelength Characteristics

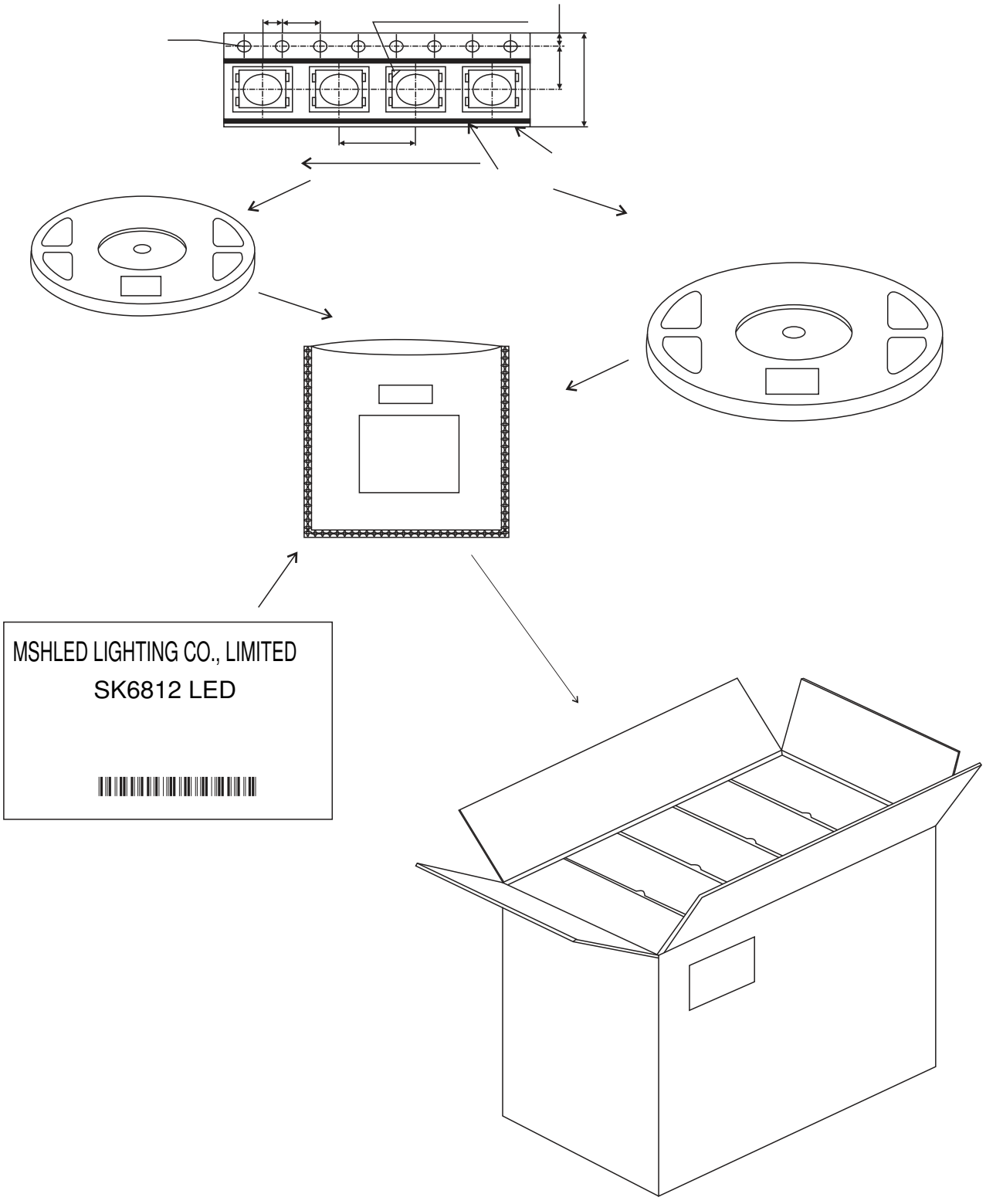


Thermal Pad Temperature vs. Forward Current



Typical Radiation Pattern 120°



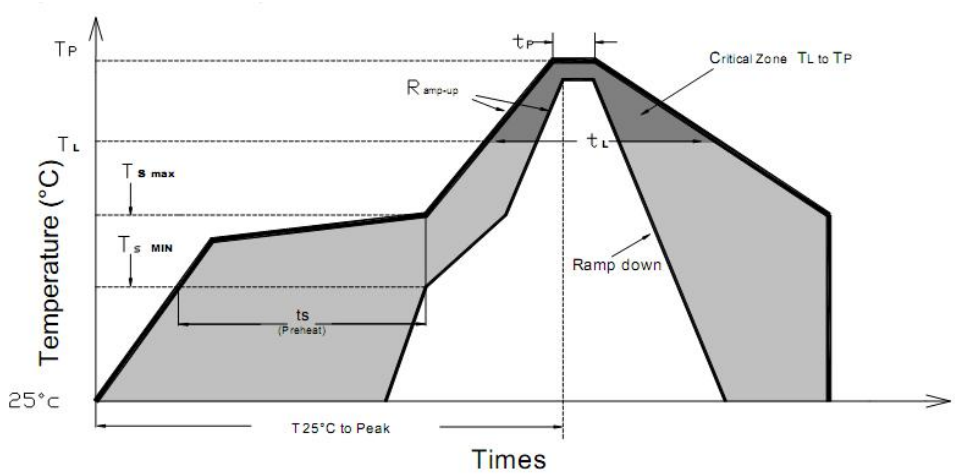


The reel pack is applied in SMD LED. The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags. cardboard boxes will be used to protect the LEDs from mechanical shocks during transportation. The boxes are not water resistant and therefore must be kept away from water and moisture.

kl i M MT MM
i bi phb efkda p b M MT MMM L

Shenzhen MSH LIGHTING CO., LTD

Plant Add: 2nd floor,No 9 Yue Ming Street,Beihuan Road, Shiyan, Bao'an, Shenzhen, GD, China.
Whatsapp +8613267109053 Email maisie@abrightled.com
Website: www.abrightled.com www.stripsledlight.com



Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate (Ts max to Tp)	3 ℃/second max.	
Preheat: Temperature Min (Ts min)	100℃	150℃
Preheat: Temperature Min (Ts max)	150℃	200℃
Preheat: Time (ts min to ts max)	60-120 seconds	60-180 seconds
Time Maintained Above: Temperature (T L)	183 ℃	217 ℃
Time Maintained Above: Time (t L)	60-150 seconds	60-150 seconds
Peak/Classification Temperature (T P)	215 ℃ ℃	238 ℃ ℃
Time Within 5℃ ℃ of Actual Peak Temperature (tp)	<10 seconds	<10 seconds
Ramp-Down Rate	6 ℃/second max	6 ℃/second max
Time 25 ℃ ℃ to Peak Temperature	<6 minutes max	<6 minutes max

Note: All temperatures refer to topside of the package, measured on the package body surface.

18.4. Anti-static and surge protection for IC devices

Static electricity and surges can damage the LED products of IC devices, so appropriate protective measures must be taken;

The signal input and output ports of IC devices must be connected in series with protective resistors to prevent product failure due to surge or electrostatic shock ports;

In order to protect the LED products of IC devices, whenever you encounter LEDs, wear anti-static straps, anti-static straps and anti-static gloves.

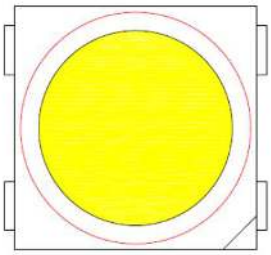
All devices and equipment must be grounded

It is recommended that each product be tested before shipment for relevant electrical tests to select defective products due to static electricity.

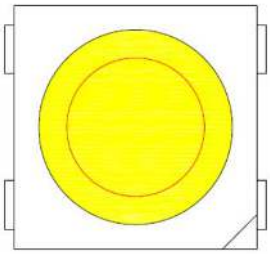
In the design of the circuit, consideration should be given to eliminating the surge to the LED

18.5 Other requirements

SMT nozzle requirements: (red circle refers to the inside diameter of the nozzle)



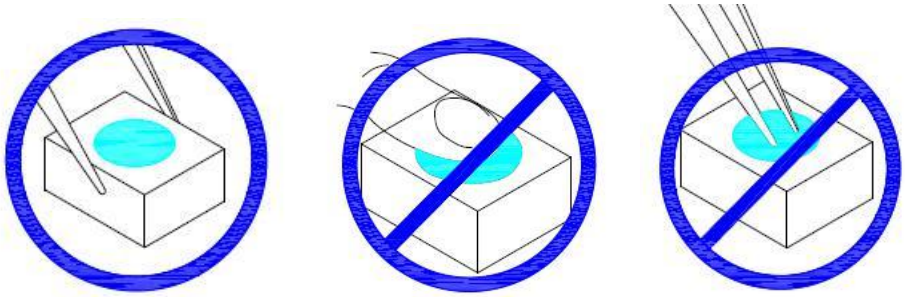
OK (the inside diameter of the nozzle is larger than the light-emitting area of the lamp)



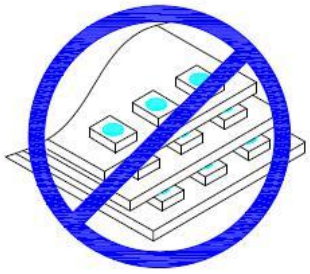
NG (the inside diameter of the nozzle is smaller than the lighting area of the lamp)

Pressing the colloid surface will affect the reliability of LED because the LED is advanced silicone-gel.And therefore precautions should be taken to avoid the strong pressure on the component. It's proper to make the LED be used in safe condition when using a suction nozzle. Silicon packing with soft and elastic, it greatly reduces thermal stresses and unable to bear external mechanical forces. Therefore, preventive measures should be taken in process of manually handling.

① Clip the LED from its side.Neither directly touch the gel surface with the hand or sharp instrument, it may damage its internal circuit.



② Not to be double stacked, it may damage its internal circuit.



③ Can not be stored in or applied in the acidic sites of PH<7.

Modify Records

Item NO.	Rev. No.	Modify Content Summary	Signature	Date
SK6812 RGB	03	Initial Document	Andy Zhu	2018-07-09