

Sample Approval Sheet

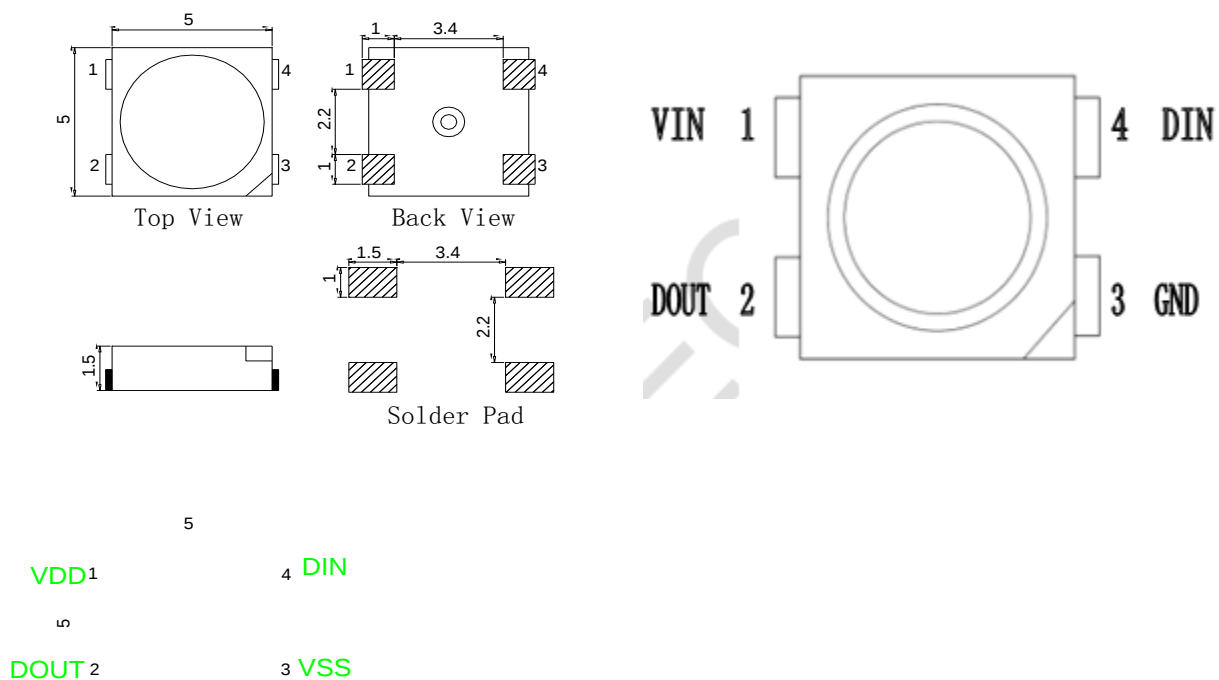
(Product type):SMD		
(Product name): 5050-R/G/B +IC		
(Part No.):		
(Sample No.):		
(Acknowledgement Numbers):		
Signatures		
(Approved)	(Checked)	(Drawn)

Customer		
(Corporation):		
(Material No.):		
(Part No.):		
Customer Signatures		

Feature

- *Low power consumption
- *Long life-solid state reliability
- *Available on tape and reel
- *RoHS compliant

Package outline dimensions



NO	Symbol	Name	Description
1	VIN	Power	Power pin
2	DOUT	Data output	Control data signal output
3	GND	Ground	signal and power ground connection
4	DIN	Data input	Control data signal input

Note:

1. All dimensions are in millimeters(mm);
2. X.X is +/-0.1mm,X.XX is +/- 0.05mm unless otherwise noted;
3. The device has a single mounting surface, the device must be mounted according to the specifications.

Electrical characteristics data sheet

Selection Guide

Part No.	Emitted Color	Resin color	Viewing Angle 20 _{1/2}
	R&G&B	Clear	120

Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Value			Unit
		R	G	B	
Power dissipation	Pd	72	120	120	mW
DC Forward Current	If	20	20	20	mA
Peak Forward Current ⁽¹⁾	Ifp	100	100	100	mA
Reverse Voltage	Vr	5	5	5	V
Electro-Static-Discharge ⁽²⁾ (HBM)	ESD	1000	1000	1000	V
Operating Temperature	Topr	-25to+85			℃
Storage Temperature	Tstg	-40to+100			℃
Lead Solder Temperature	Tsol	260 for 5sec			℃

Notes:

1. 1/10 duty cycle, 0.1ms pulse width;
2. The products are sensitive to static electricity and must be carefully taken when handling products.

Electrical/Optical Characteristics Ta=25℃

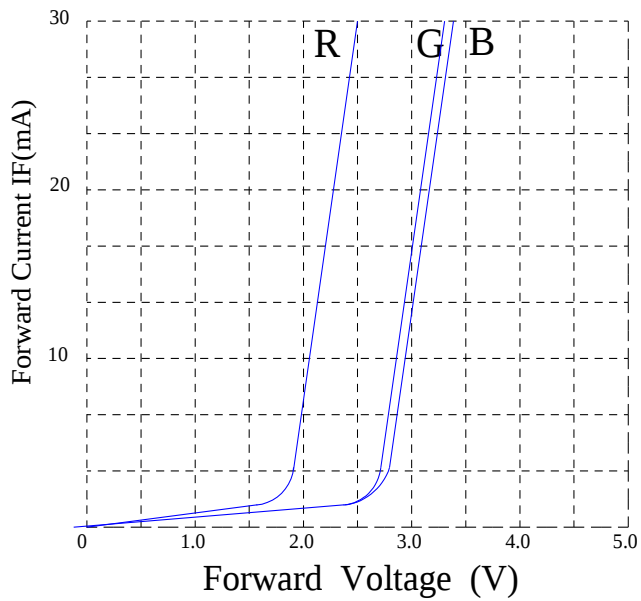
Parameter	Symbol	Light Color	Condition	Value			Unit
				Min.	Typ.	Max.	
Forward voltage	Vf	R	If=20mA	1.8	--	2.2	V
		G	If=20mA	3.0	--	3.4	V
		B	If=20mA	3.0	--	3.4	V
Luminous Intensity	IV	R	If=20mA	560	---	700	mcd
		G	If=20mA	1200	---	1400	mcd
		B	If=20mA	250	---	400	mcd
Dominant wavelength	λd	R	If=20mA	620	625	630	nm
		G	If=20mA	520	525	530	nm
		B	If=20mA	465	470	475	nm
Reverse current	Ir		Vr=5V	---	---	10	μA

Notes:

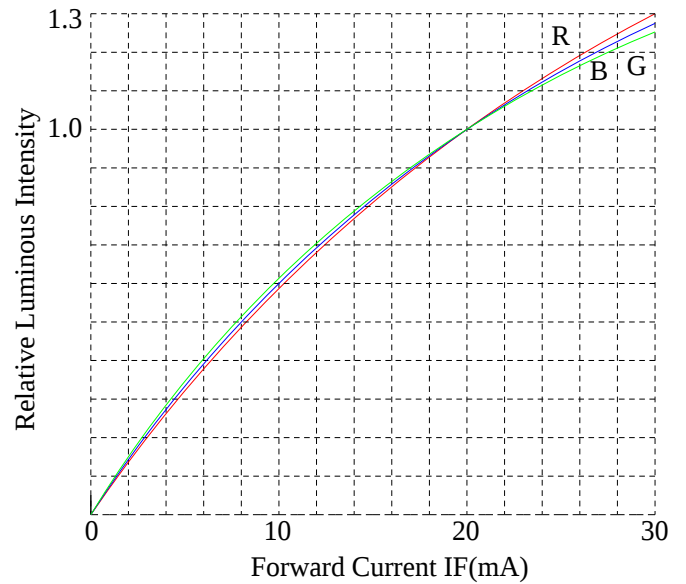
1. Forward voltage: ±0.1V ;
2. Wavelength: ±5%;
3. Luminous Intensity: ±10%.

Typical Electro-Optical Characteristics Curves

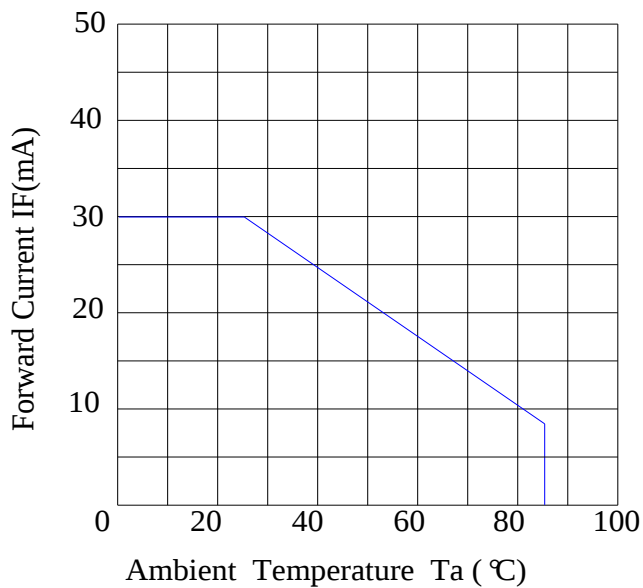
FORWARD CURRENT VS. FORWARD VOLTAGE



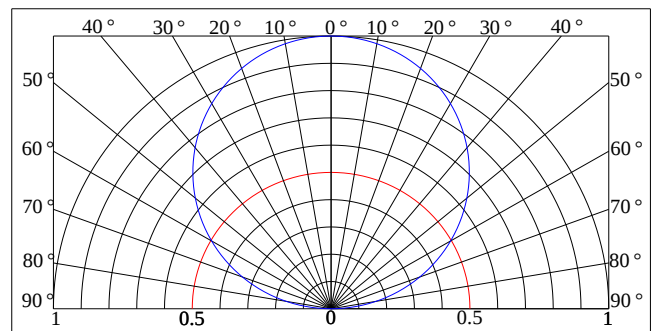
FORWARD CURRENT VS. LUMINOUS INTENSITY



AMBIENT TEMPERATURE VS. FORWARD CURRENT

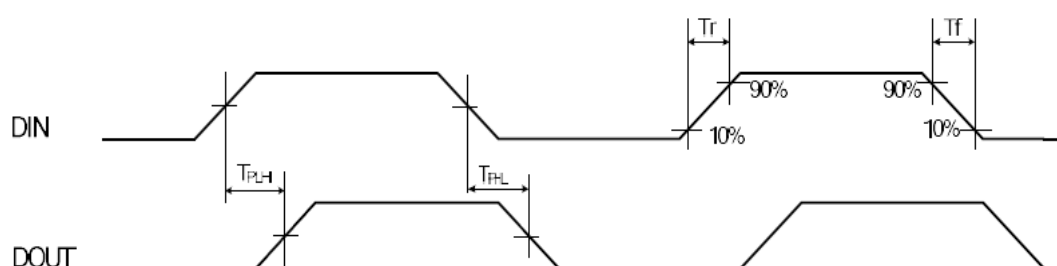


RADIATION DIAGRAM



动态参数 (Ta = 25℃)

参数	符号	测试条件	最小	典型	最大	单位
数据传输速率	f _{DIN}	占空比 67%(数据 1)	-	800	-	KHz
DOUT 传输延迟	t _{PLH}	DIN→DOUT	-	-	500	ns
	t _{PHL}		-	-	500	ns
I _{OUT} 上升时间	T _r	V _{DS} =1.5V	-	70	-	ns
	T _f	I _{OUT} =12mA	-	100	-	ns



电气参数

极限参数 (Ta = 25℃)

参数	符号	范围	单位
输入电压	V _{IN}	3.5-5.5	V
R/G/B 电流输出端口耐压	V _{DS}	26	V
逻辑输入电压	V _{I1}	-0.5——5.5	V
工作环境温度	T _{OPT}	-40——+85	℃
储存温度	T _{STG}	-50——+150	℃
ESD 耐压	V _{ESD}	4K	V

电气特性 (Ta = 25℃)

参数	符号	测试条件	最小	典型	最大	单位
芯片输入电压	V _{IN}	--	-	5		V
R/G/B 端口耐压	BV _{OUT}	OUT R/G/B 端口关闭	-	-	26	V
R/G/B 端口驱动电流	I _{OUT_R}	V _{DS_R/G/B} = 1V	-	12	-	mA
信号输入翻转阈值	V _{IH}	VDD=5.0V	-	3.4	-	V
	V _{IL}		-	1.6	-	V
PWM 频率	f _{PWM}	--	-	1.2	-	KHz
静态功耗	I _{OD}	VDD=4.5V, OUT R/G/B 关闭	-	1.0	-	mA

编码描述

该芯片协议采用的是单极性归零码，每一个码元都必须有低电平。本协议的每个码元起始为高电平，高电平时
间宽度决定“0”码或者“1”码。

输入码型：



名称	描述	最小值	典型值	最大值	容许误差	单位
T0H	0 码, 高电平时间	-	0.3	-	±0.15	us
T1H	1 码, 高电平时间	-	0.6	-	±0.15	us
T0L	0 码, 低电平时间	-	0.9	-	±0.15	us
T1L	1 码, 低电平时间	-	0.6	-	±0.15	us
Trst	Reset 码, 低电平时间	-	80	-	-	us

Reliability Test Items and Conditions

1、Test items and result

Test Item	Ref. Standard	Test Condition	Note	Number of Damaged
Resistance to Soldering Heat	JESD22-B106	Tsld=260℃,10sec	2 times	0/100
Temperature Cycle	JESD22-A104	-40℃ 30min ↓↑ 5min 100℃ 30min	100 cycle	0/100
Thermal Shock	JESD22-A106	-40℃ 15min ↑↓ 100℃ 15min	100 cycle	0/100
Power temperature Cycling	JESD22-A105	On 5min -40℃>15min ↑↓<15min Off 5min 100℃>15min	100 cycle	0/100
High temperature Storage	JESD22-A103	Ta=100℃	1000 hrs	0/100
Low temperature Storage	JESD22-A119	Ta=-40℃	1000 hrs	0/100

Lift Test	JESD22-A108	$T_a=25^{\circ}\text{C}$ $I_F=20\text{mA}$	1000 hrs	0/20
High Humidity Heat Lift Test	JESD22-A101	60°C RH=90 % $I_F=20\text{mA}$	1000 hrs	0/20

2、Criteria for judging damage

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward voltage	V_F	$I_F=20\text{mA}$	--	$\text{U.S.L.}^*) \times 1.1$
Reverse current	I_R	$V_R=5\text{V}$	--	$\text{U.S.L.}^*) \times 2.0$
Luminous intensity	I_V	$I_F=20\text{mA}$	$\text{L.S.L.}^{**}) \times 0.7$	--

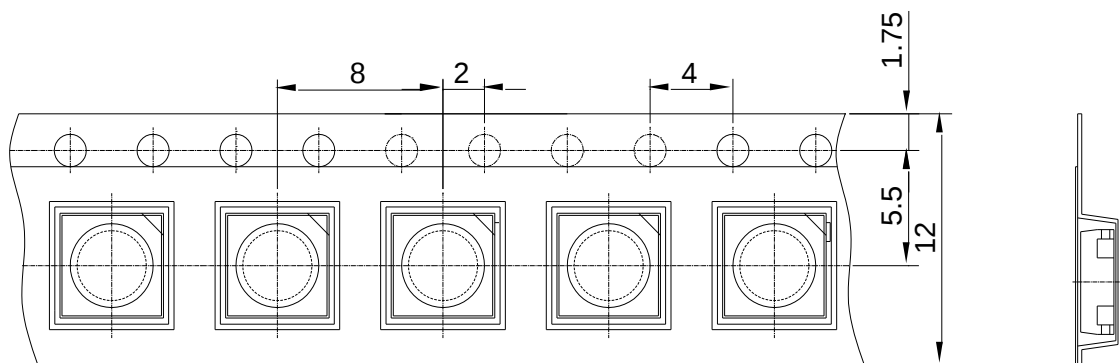
Notes:

U.S.L.: Upper Standard Level

L.S.L.: Lower Standard Level

Packaging Dimensions Specification

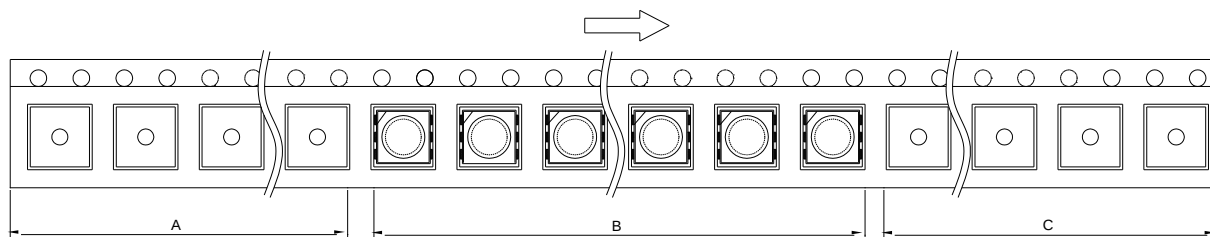
1、Carrier tape dimensions



Notes:

- 1) .All dimensions are in millimeters;
- 2) .Tolerance is ± 0.25 unless otherwise noted.
- 3) . 1000PCS/Reel

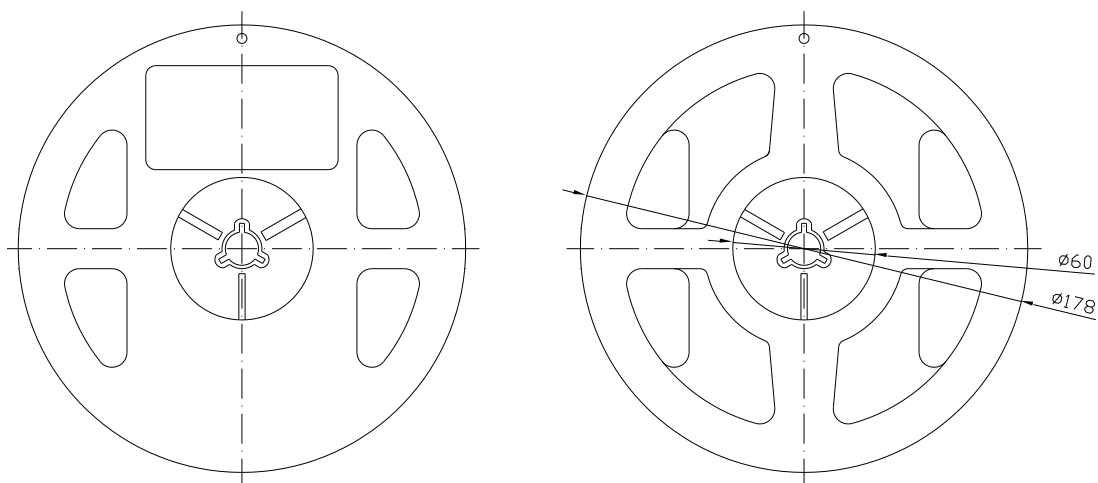
2、Details of carrier tape



Notes:

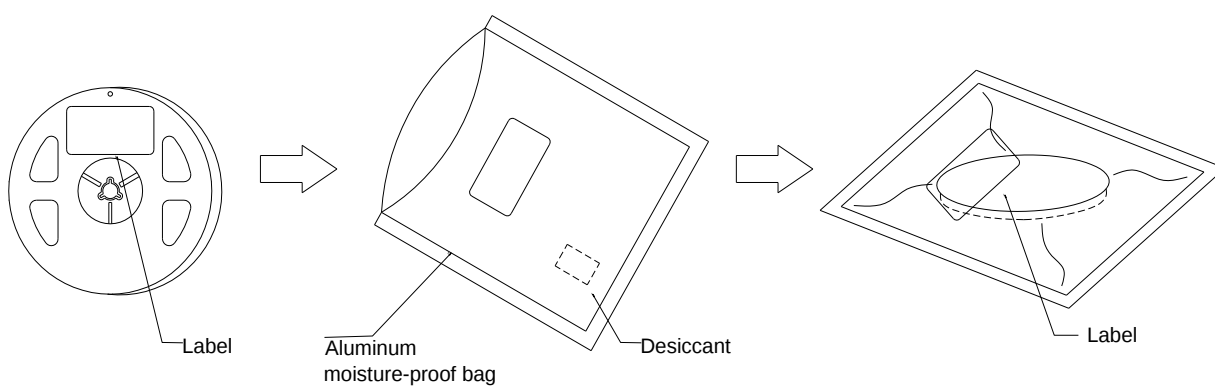
A、empty tape; B、loading tape; C、empty tape.

3、Reel dimensions(



Packaging Dimensions Specification

4、Moisture-Proof and anti-static electricity

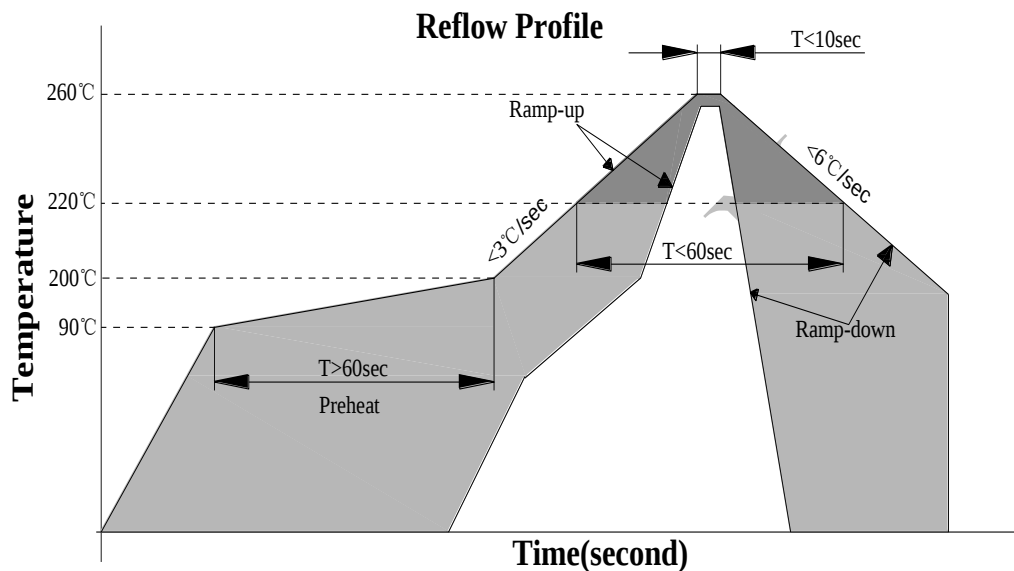


5、Label

Precautions

1、Requirements for application and reflow soldering

Use the recommended curve in the under figure of Pb-free reflow soldering.



☆Notes for reflow soldering:

- 1) No more than twice for reflow soldering.
- 2) To ensure the quality of our LEDs ,please do not put pressure on the LEDs.
- 3) Please choose the right nozzle to avoid the damage to products due to the pressure.
- 4) Please put on the antistatic hand loop during the use. The worktable should be with antistatic finish. The equipments must be contacted with ground

☆Handwork soldering

- 1) During the soldering, the electronic soldering iron must be kept under the temperature of 350°C and the soldering time must not be beyond 3 seconds. No touch between the electronic soldering iron and colloid.
- 2) Handwork soldering is only allowed once. We won't take responsibility for more than that.
- 3) Avoid using sharp objects to compress products Colloidal Part directly.
- 4) Please put on the antistatic hand loop during the use. The worktable should be with antistatic finish. The equipments must be contacted with ground.

2、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 in six months.
- ☆Products at the customer's incoming inspection, if not timely use, please restore the vacuum packing seal, the product may not be exposed to the air for a long time (no more than 4 hours).
- ☆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. 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 fade away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition (70±5) °C for 24hour.
- ☆Products more than the production date for three months, although is vacuum packaging, Suggestions or want to desiccant before using product.

3、Static electricity

- ☆Static electricity or surge voltage damages the LEDs .Damaged LEDs will show some unusual characteristic such as the forward voltage comes 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 .

4、Vulcanization

- ☆LED curing is due to sulfur being in bracket and the +1 price of silver in the chemical reaction generated Ag₂S in the

process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline, seriously affecting the performance of the product. So we should take corresponding measures to avoiding vulcanization, Such as to avoid using Sulphur volatile substances and keeping away from high Sulphur content of the material.

5、 Safety advice for human eyes

☆Viewing direct to the light emitting center of the LEDs, especially those of great luminous Intensity will cause great hazard to human eyes .Please be careful.

6、 Design consideration

☆In designing a circuit about LED, 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.