

SHENZHEN LANKE ELECTRONICS CO. LTD

深 圳 市 蓝 科 电 子 有 限 公 司

DATA SHEET

CUSTOMER NAME: _____

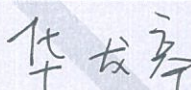
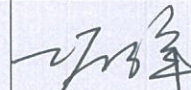
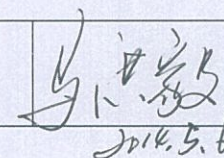
PRODUCT TYPE: LK-2121MC4N0CT2-05

SAMPLE NUMBER: _____

EMITTED COLOR: R/G/B

VIEW ANGLE: 110°

Customer Approval: _____ Date: _____

PREPARE:		CHECK:		APPROVE:	
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Absolute Maximum Ratings ($T_a \leq 25^\circ\text{C}$)

Items	Symbol	Absolute Maximum Ratings			Unit
		R	G	B	
Forward Current	I_F	25	20	20	mA
Peak Forward Current *	I_{FP}	100	70	70	mA
Reverse Voltage	V_R	5			V
Power Dissipation	P_D	57.5	68	68	mW
Total Power Dissipation	P_D	69			
Operating Temperature Range	T_{OPR}	-30°C to $+85^\circ\text{C}$			
Storage Temperature Range	T_{STG}	-40°C to $+100^\circ\text{C}$			
Junction Temperature	T_J	100	100	100	$^\circ\text{C}$

* Duty ratio max 1/10 Pulse Width max. 10ms.

* Power Dissipation: Per Die.

* Total Power Dissipation: Total Per Package.

Electrical Optical Characteristics ($T_a = 25^\circ\text{C}$)

Items	Symbol		Minimum	Typical	Maximum	Unit	Test Conditions
Luminous Intensity	Iv	R	100	125	155	mcd	R:IF=20mA G:IF=10mA B:IF=10mA
		G	180	250	335		
		B	35	55	80		
Viewing Angle	201/2	R	—	110	—	Deg	
		G	—	110	—		
		B	—	110	—		
Dominant Wavelength	λd	R	620	625	630	nm	
		G	520	525	530		
		B	465	468	475		
Forward Voltage	VF	R	1.8	2.1	2.4	V	
		G	2.6	3.0	3.5		
		B	2.6	3.1	3.5		
Reverse Current	IR		—	—	1	uA	VR=5V

Standard bins:

Products are sorted mainly according to relative Luminous Intensity -Iv
& Dominant Wavelength -λd,

Test condition : Red I_F=20mA, Green&Blue I_F=10mA

Bins set:

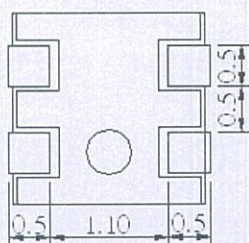
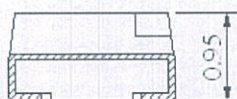
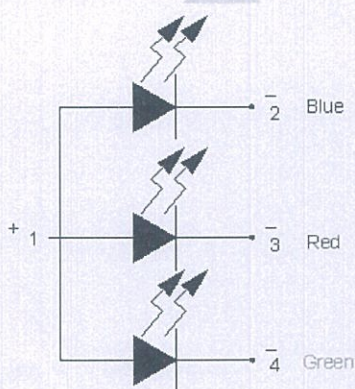
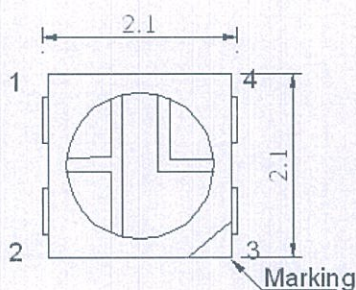
Relative Luminous Intensity: 1:1.25 ~ 1:1.3

Dominant Wavelength: Red: 5nm Green:3 ~ 4nm Blue:3 ~ 4nm

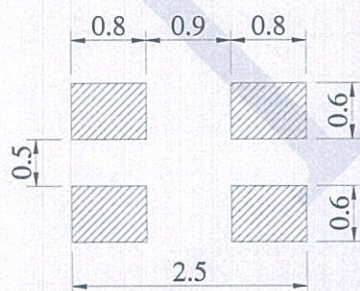
Notes:

1. Tolerance of measurement of luminous intensity is ±10%.
2. Tolerance of measurement of dominant wavelength is ±1nm.
3. Tolerance of measurement of Vf is ±0.05V.

Package Dimensions:



Recommend Pad:



Notes:

1. Unit: mm
2. Tolerance are ±0.10mm, unless note otherwise
3. colloid Color : White diffusion

Derating Characteristics Graphs

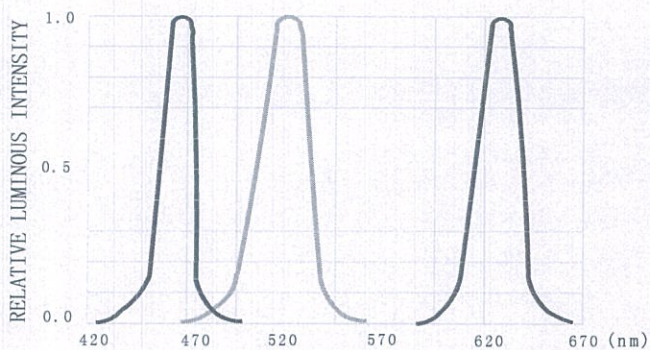


FIG. 1 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

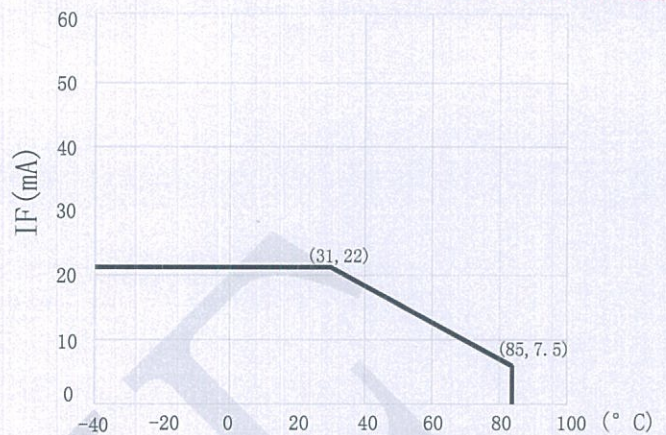


FIG. 2 FORWARD DC CURRENT VS. AMBIENT TEMPERATURE (T_j Max=100°C)

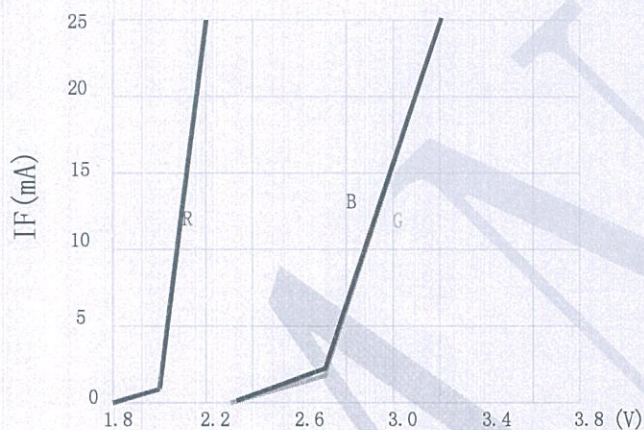


FIG. 3 FORWARD CURRENT VS. FORWARD VOLTAGE.

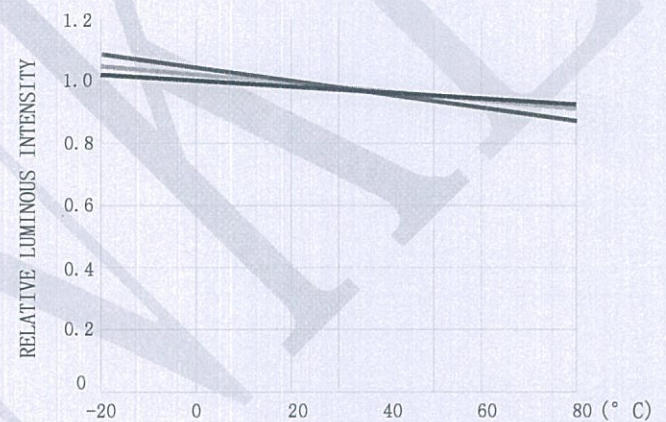


FIG. 4 RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

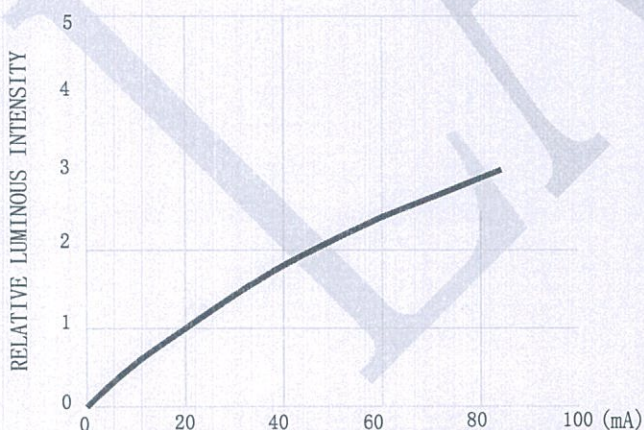


FIG. 5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT.

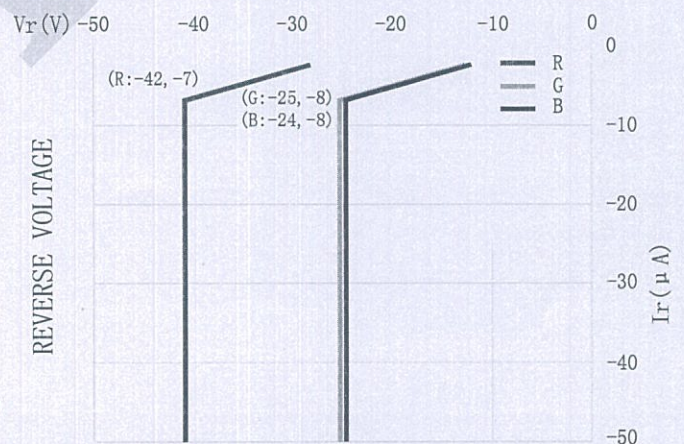


FIG. 6 REVERSE CURRENT VS. REVERSE VOLTAGE.

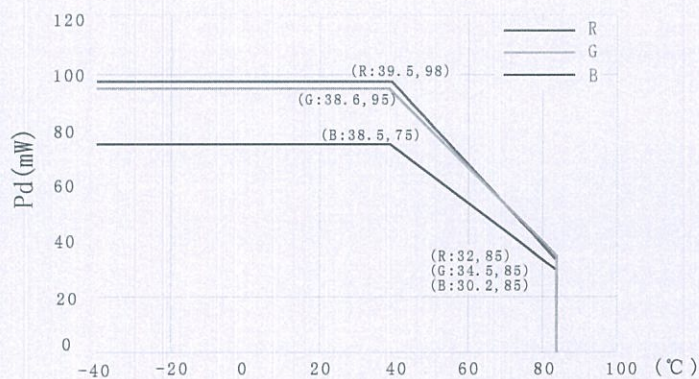


FIG. 7 POWER DISSIPATION VS. AMBIENT TEMPERATURE (°C)

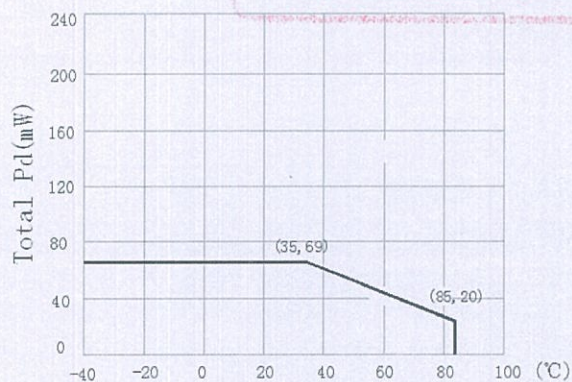


FIG. 7 POWER DISSIPATION VS. AMBIENT TEMPERATURE (°C)

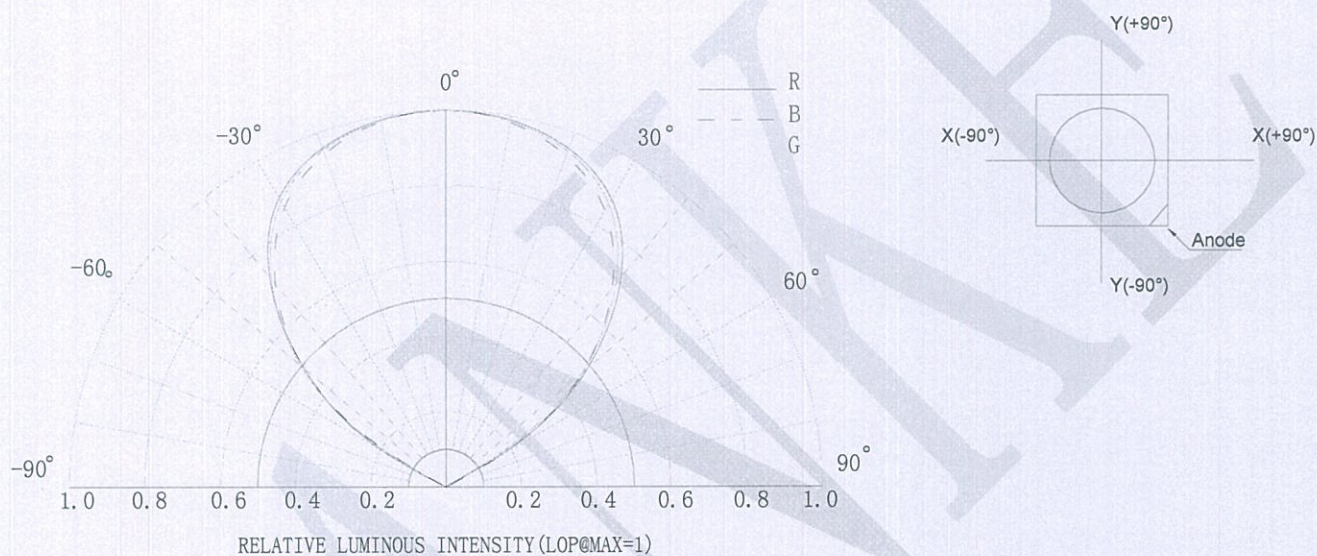


FIG. 8 X-X FAR FIELD PATTERN

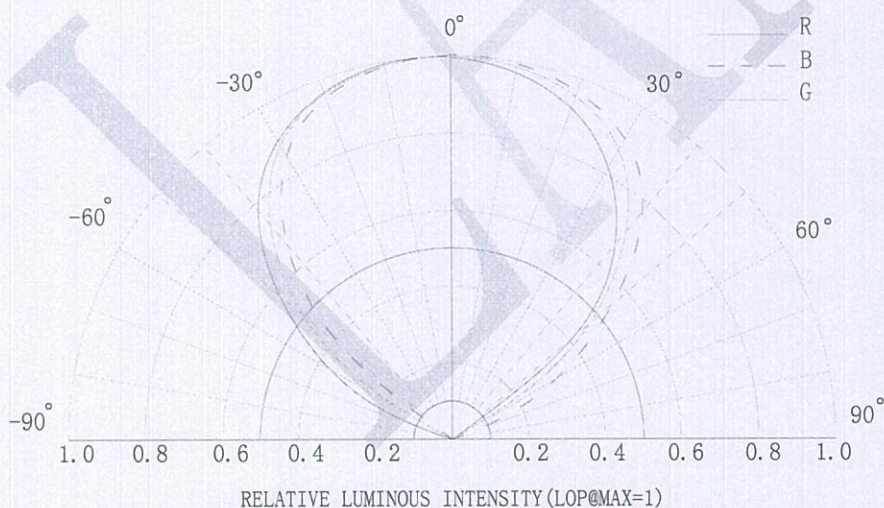


FIG. 8 Y-Y FAR FIELD PATTERN

Reliability test standard

1. Test Items And Results

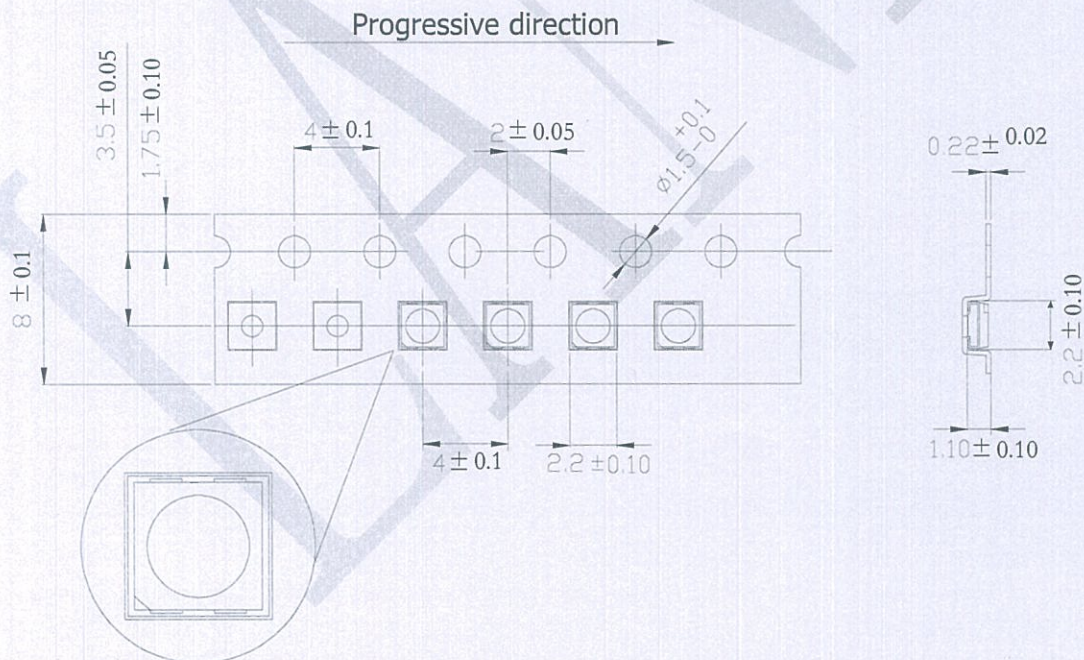
Test Item	Standard	Test Conditions	Note	Number of Damaged
Resistance to soldering Heat	JEITA ED-4701 300 302	Ta=260±5℃ 10sec	2 time	0/50
Heat shock	JEITA ED-4701 300 307	-40℃~100℃ 15min 15min	100cycles	0/50
Temperature cycle	JEITA ED-4701 100 105	-40℃~25℃~100℃~25℃ 30min 5min 30min 5min	100 cycles	0/50
Steady State Operating Life	---	Ta=60℃ RH=85% IF=20mA	1000hrs	0/50
High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000hrs	0/50
Temperature Humidity Storage	JEITA ED-4701 200 103	Ta=60℃ RH=60%	1000hrs	0/50
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000hrs	0/50
Life Test	---	Ta=25℃ IF=20mA	1000hrs	0/50

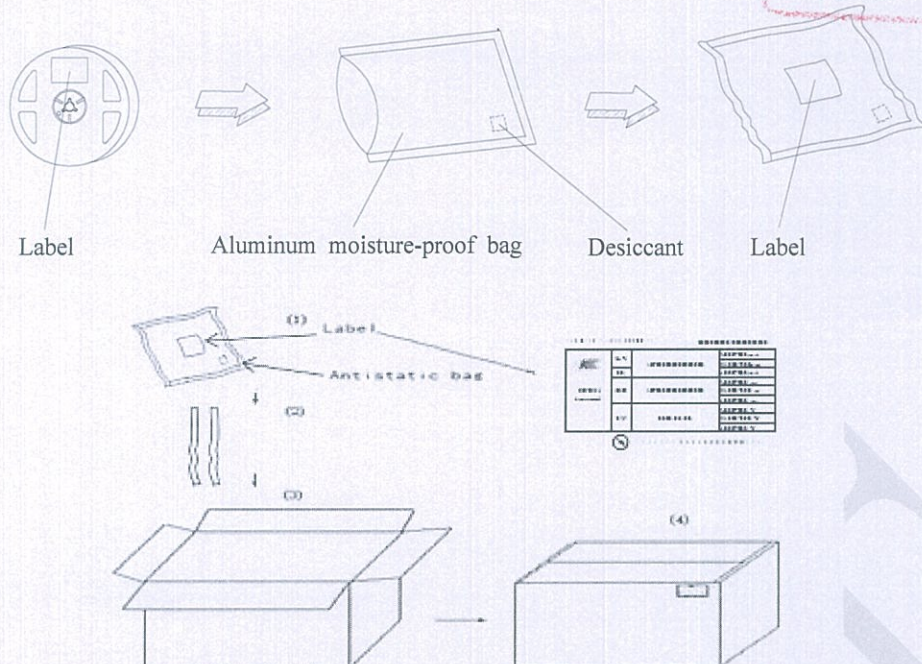
2.Criteria for Judging The Damage:

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	I _F	I _F =20mA	—	U.S.L*1.1
Reverse Current	I _R	V _R =5V	—	U.S.L*2.0
Luminous Intensity	I _v	I _F =20mA	L.S.L*0.7	—

PS: U.S.L.:Upper Standard Level L.S.L.:Lower Standard Level

Packaging:



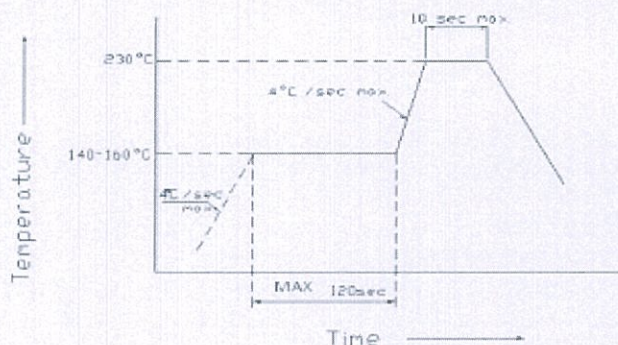


Soldering Conditions

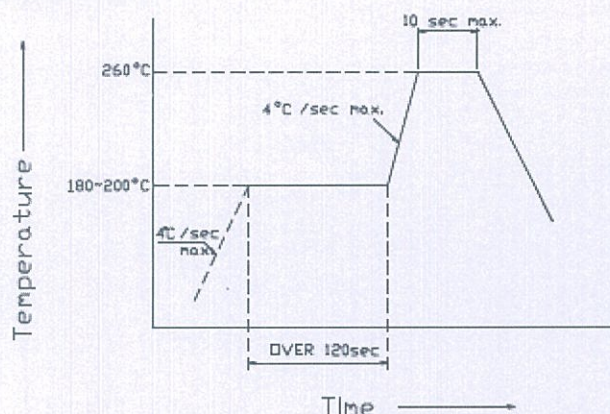
- lead frames has a low thermal coefficient (easily conducts heat). Careful attention should be paid during soldering.
- Recommended soldering conditions

Solder Reflow	Lead solder	Lead-Free solder	Manual Soldering	
Preheat Temp.	140°C~160°C	180-200°C	Soldering iron tip temperature	Max. 300°C
Preheat Time	120sec. Max.	60sec. Max.	Soldering time	<5 sec
Reflow temperature	230°C Max.	260°C Max.		
Reflow time	10 sec Max.	10 sec Max.		

Lead solder



Lead-Free solder



- Preheat the largest temperature slope: 4°C/sec.
- Minimum temperature slope of the cooling zone: 6°C/sec.
- Highest Temperature: 230°C Max. (Lead solder) 260°C Max. (Lead-Free solder)
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- reflow soldering should not be done more than two time.
- Hand soldering should not be done more than one time.
- Do not apply any stress to the lead particularly when heated.
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

Storage:

- Please check if there is air leak before opening the package, if so, please return the goods back to take drying process for later using.
- Shelf life in sealed bag: 6 month at <5°C~30°C and <30% R.H.
- Products can be used within 15days after packaging, after the package is opened, the products should be used within 24hrs and used in the condition: 30°C within and 60%RH below, stored in 30%RH for moisture below. Outside the condition, the products must be finished reflow soldering within 30 minutes
- Products cannot be used for and over 15days after being packaged unless opening the package and take drying our process in 60°C/24H

Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electronic equipment (RoHS), as amended through April 21 , 2006 .

Caution in ESD:

1. Static Electricity and surge damages the LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
2. All devices、Equipment and machinery must be properly grounded.
3. When inspecting own final products on which LEDs were mounted, It is easy to find static-damaged LEDs by light emission test at lower current (below 1mA is recommended) .
4. Damaged LEDs will show some unusual characteristics such as leak current remarkably increases, starting forward voltage becomes lower, or the LEDs get unlighted at the low current.

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