

LIGHT

LIGHT ELECTRONICS CO., LTD.

Electro-Optical Characteristics

18



Absolute Maximum Ratings (Temperature=25°C)

参数名称 Parameter	符号 Symbol	数值 Rating	单位 Unit
Forward Current	I_F	25	mA
Pulse Forward Current*	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OPR}	-30 ~ +85	
Storage Temperature	T_{stg}	-40 ~ +100	
Power Dissipation	Red	60	mW
	Green	85	
	Blue	85	

*

0.1ms

1/10

* Note: Pulse Width 0.1ms, Duty 1/10

18



Electro-Optical Characteristics (Temperature=25°C)

参数名称 Parameter	符号 Symbol	条件 Condition	颜色 Color	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
Reverse Current	I_R	$V_R=5V$	Red			10	μA
			Green			10	
			Blue			10	
Forward Voltage	V_F	$I_F=15mA$	Red	1.8	2.0	2.4	V
		$I_F=8mA$	Green	2.4	3.0	3.4	
		$I_F=5mA$	Blue	2.4	3.0	3.4	
Dominant Wavelength	λ_D	$I_F=15mA$	Red	615	622	630	nm
		$I_F=8mA$	Green	515	522	535	
		$I_F=5mA$	Blue	465	472	480	
Spectrum Radiation Bandwidth	$\Delta\lambda$	$I_F=15mA$	Red			24	nm
		$I_F=8mA$	Green			38	
		$I_F=5mA$	Blue			28	
Luminous Intensity	I_V	$I_F=15mA$	Red	300	450	680	mcd
		$I_F=8mA$	Green	480	730	1100	
		$I_F=5mA$	Blue	70	105	160	
View Angle	2θ1/2				110		deg.

以上

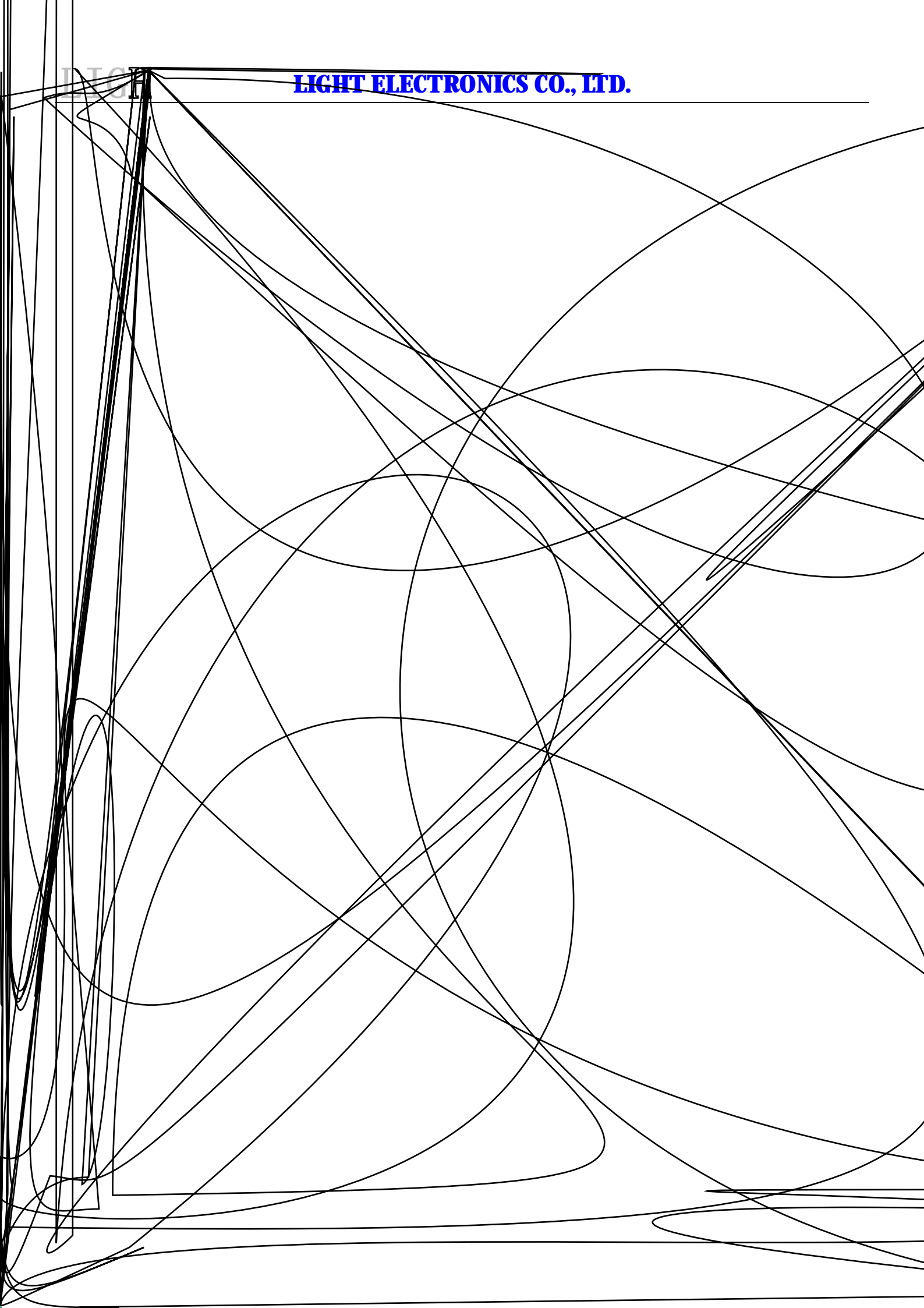
以上

厂商

* Note: The parameters above only for your reference. In case of any discrepancy, please adhere to the label of our actual products. All parameters tested by the standard testing system of manufacturer.

1101

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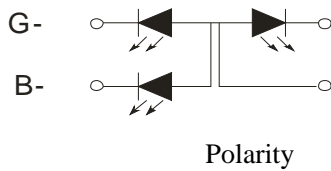
Reliability Test Items And Conditions

实验项目 Test Items	参考标准 Reference	实验条件 Test Conditions	时间 Time	样品数 Quantit	
Thermal Shock	MIL-STD-202G	-40 (30min)←→100 (30min)	300 300 cycles	22	0/22
Temperature And Humidity Cyclic	JEITA ED-4701 200 203	-10 ——+65 0%-90%RH			

Product design and operational recommendation

1 mm

Product design Unit: mm



R!
+

Note

A

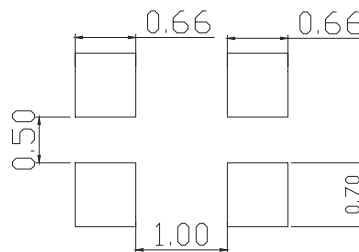
A Nick Mark

X.X w0.1 mm X.XX w0.05mm

Tolerances X.X w0.1 mm X.XX w0.05mm

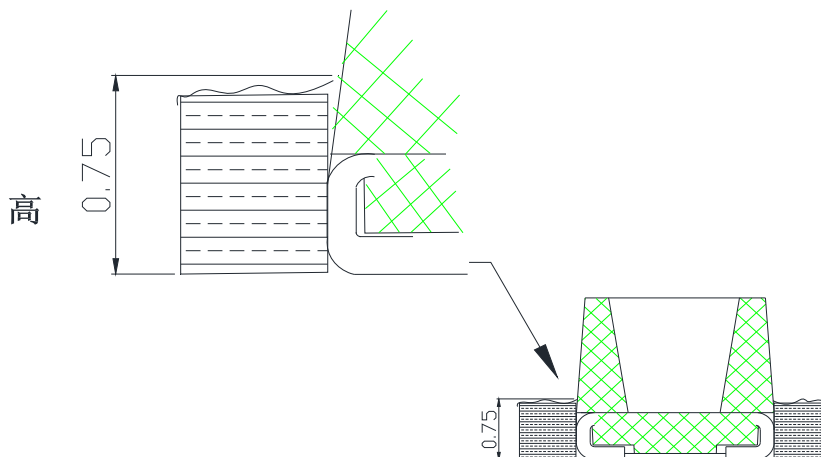
2 mm

Recommended soldering pad (Unit: mm)



3 0.75mm

Recommendation for glue filling: filling height must be higher than or equal to 0.75mm



1

Packaging (1)

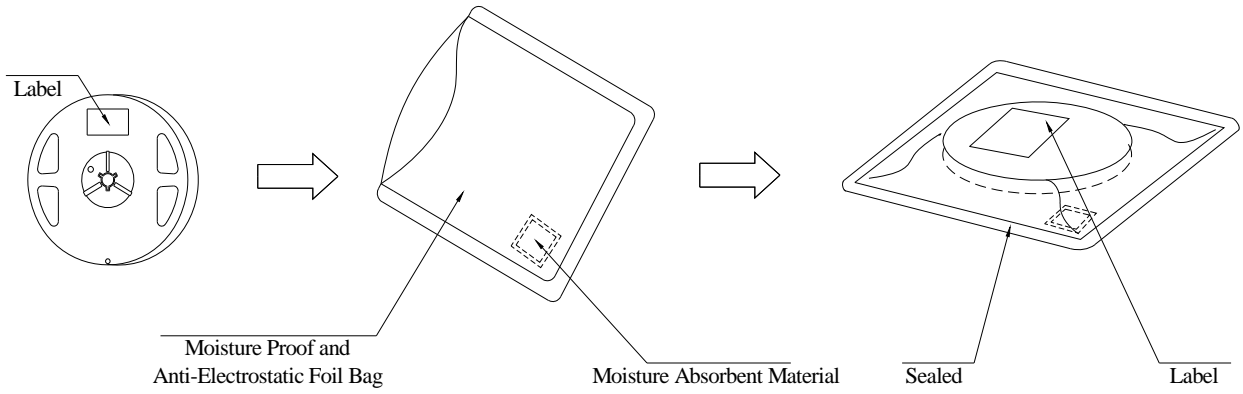
◇ Carrier Tape

◇

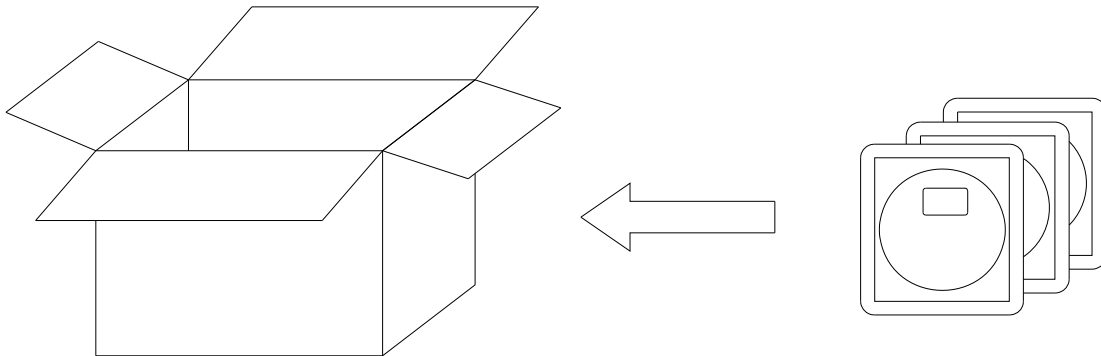
2

Packaging(2)



✧ **Moisture Proof and Anti-Electrostatic Foil Bag**



✧ **Cardboard Box**

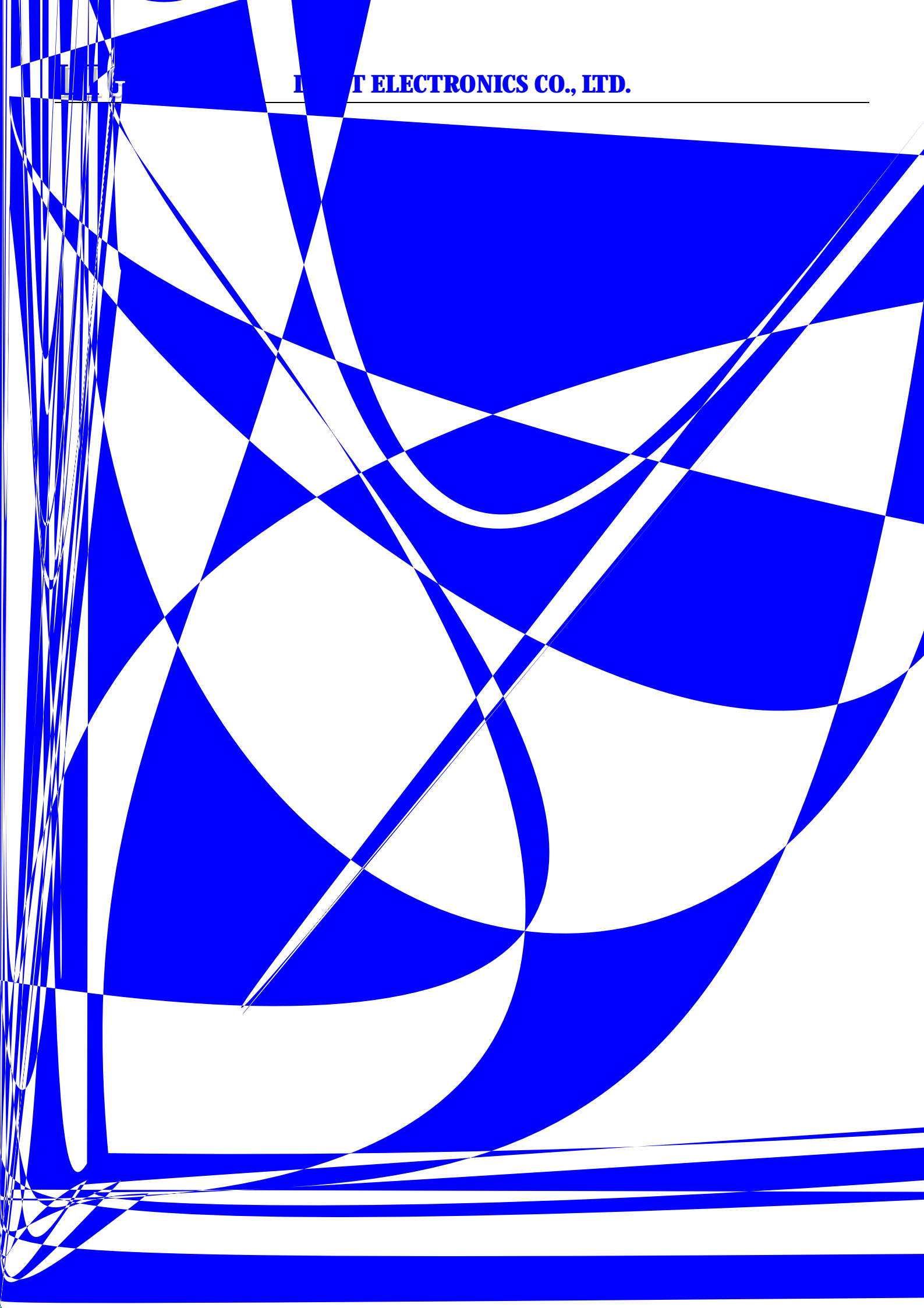


✧ **Label Explanation**

LIGHT		
Light Electronics CO., LTD.		
TYPE NO.:	_____	 <small>LOT NO.</small>
QUANTITY:	_____	
BIN:	_____	
DATE CODE:	_____	
REMARKS:	_____	

1115

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2

Guideline for Soldering (2)

- x ·
- x · Reflow soldering should not be done more than one time.
- x · LED
- x · Stress on the LEDs should be avoided during heating in the reflow soldering process.



(1)

Precautions (1)

1.

Storage

•

Moisture proof, anti-electrostatic package and moisture absorbent material are used, to keep moisture to a minimum. Humidity indicator card inside to test if the products are moisted.

•

<30 <60 RH

Storage environment: All the products should be stored in the environment of temperature<30 and humidity<60 RH before foiled bags open and need to be baked before SMT.

•

Before using, please check whether there is any air leakage or not, If the bag has leaked air, Please bake the product with below condition.

•

<30 <60 RH 12h

Before soldering ,the product must be stored under the condition of <30 and <60 RH. Under these conditions the SMD LEDs must be used (subject to reflow oven) within 12 hours.

•

70±5 y 12h

70±5 y 12h

6 70±5 y 48h

Baking condition Within 2 months' storage undamped : 70±5 ×12h

After 2 months' storage (undamped): 70±5 ×24h

Damped/Foiled bag leakage/ beyond 6 months' storage at customers' side: 70±5 ×48h

2.

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 can not be lighted up. In view of the above, we should do some anti-static precautions when using the SMD LEDs.

•

All devices, equipments and machineries must be properly grounded, at the same time we should take measures to prevent anti-static and voltage surge.

•

It is also recommended that anti-electrostatic wrist bands, pads, uniforms, gloves or containers can be used when dealing with the LEDs.

(2)

Precautions (2)

3.

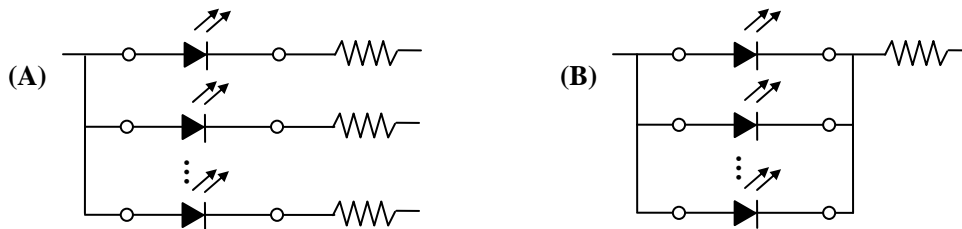
Design Consideration

- LED

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 which will probably lead to damage.

- A LED B LED
LED V_F LED

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 (V_F) of the LEDs. In the worst case, some LED may be subjected to stress in the excess of the Absolute Maximum Rating.



- LED LED

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

4.

Reverse voltage protection

- LED LED
LED

LED 5V

In general, the reverse current of LED is very small, which won't affect the normal use of components. But when it is often suffered the reverse voltage which exceeds the limit of the component then it will be damaged.

Such as the reverse current increase rapidly. And it will cause the string light when the screen is black. So please pay attention to controlling the reverse voltage which less than 5V is recommended.

5.

The safe temperature for LEDs working

- LED

55

75

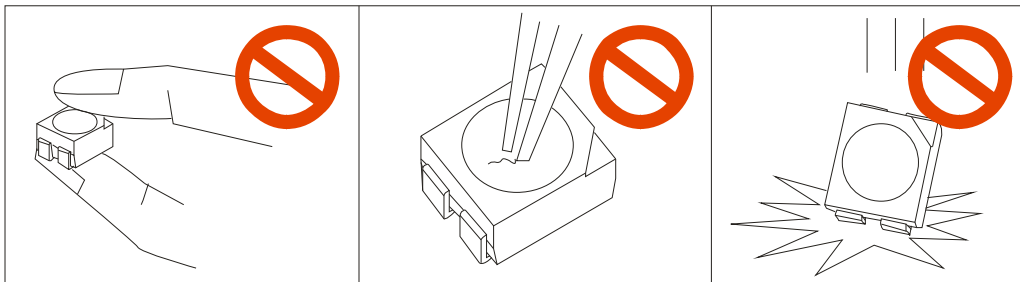
The high temperature will make the LEDs' Luminous Intensity decreased radically, if LEDs are used in hot environment for a long time, they will be disabled easily. When LEDs are used in a high density array, we suggest that the LEDs' surface temperature should be lower than 55 and the legs' temperature should be lower than 75 .

6.

Others

-

When handling the product, touching the encapsulation with bare hands will not only contaminate its surface, but also have an effect on its optical characteristics. Excessive force to the encapsulation might result in catastrophic failure of the LEDs due to die breakage or wire deformation. For this reason, please do not put excessive stress on LEDs, especially when the LEDs are heated such as during Reflow Soldering.



- LED