



®

KENTO

深圳匡通电子有限公司

SHENZHEN KENTO ELECTRONICCO.,LTD

## SPECIFICATION FOR APPROVAL

Product Name: LED 0603 RED SMD light-emitting diode

Product number : **KT-0603-R**

Client's name :

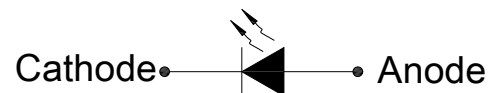
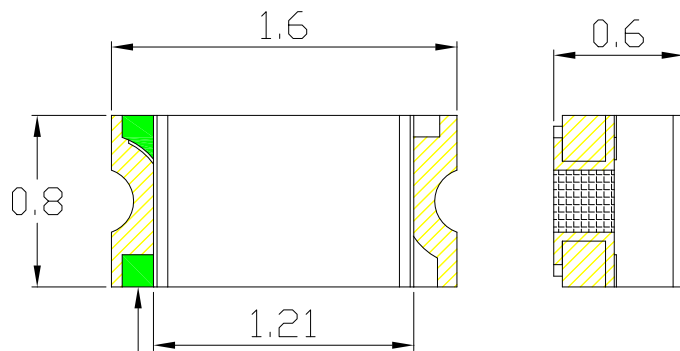
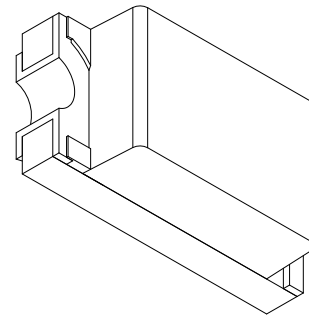
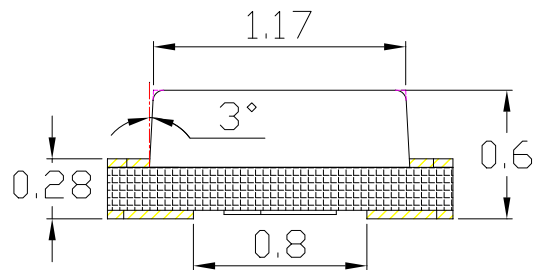
Customer part number :

Release Date: ~~May 2017~~

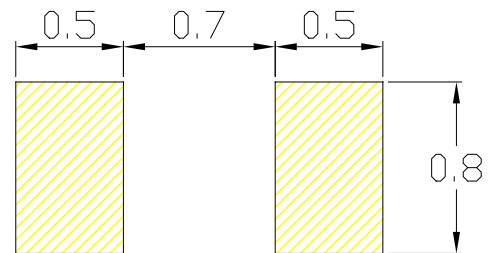
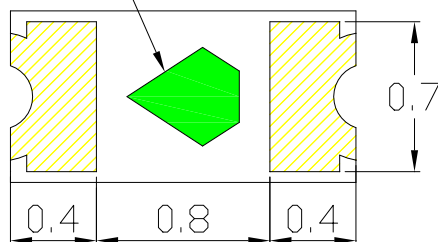
### 一、 Product description

- Dimensions (L/W/H): 1.6 x 0.8 x 0.6 mm
- Color: high brightness red
- Colloid: Transparent colloid
- EIA standard standard packaging
- Environmental protection products, in line with ROHS requirements
- Suitable for automatic placement machine
- Suitable for infrared reflow soldering process

### 二、 External dimensions and recommended pad size:



Green mark

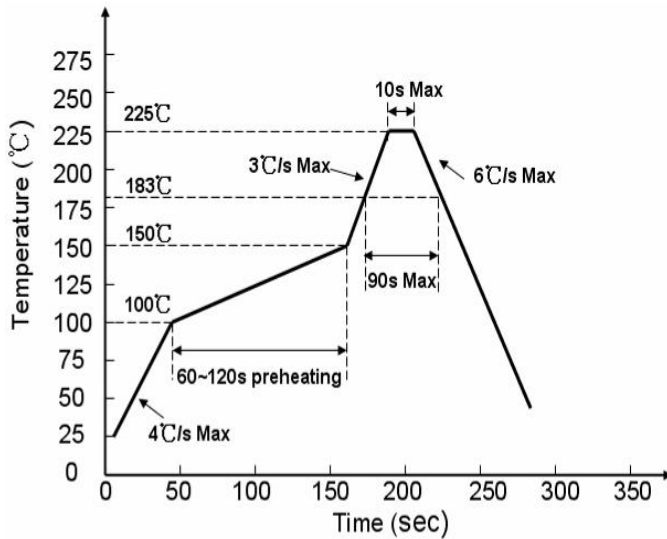


建议焊盘尺寸

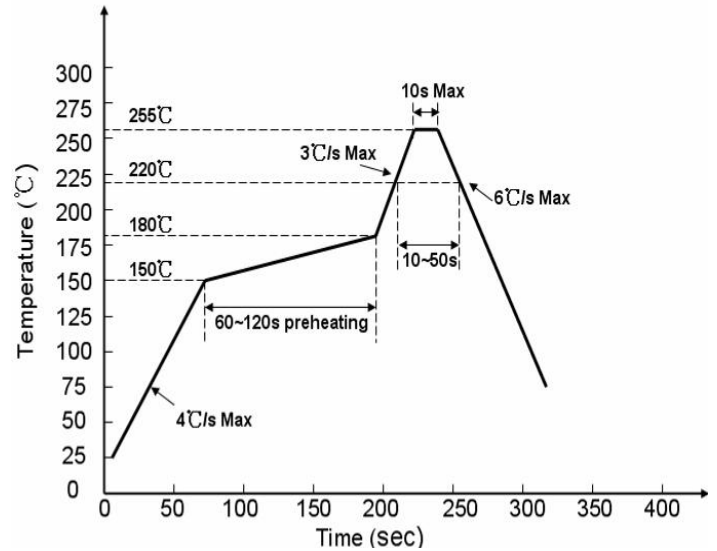
Remarks: 1、Unit : millimeter ( mm )

2、Common Difference : if not special point out its± 0.10 mm

### 三、 Suggested soldering temperature curve ;



有铅制程



无铅制程

### 四、 Max parameter ; ( Ta=25°C )

Parameter	Symbol	Max power	Unit
Power	Pd	55	mW
Max impulse current (1/10duty ratio, 0.1ms pulse width)	IFP	70	mA
Working forward dc current	IF	25	mA
Reverst voltage	VR	5	V
Working temperature	Topr	-30°C ~ + 85°C	
Storeage temperature	Tstg	-40°C ~ + 90°C	
Soldering	Tsol	Reflow soldering: 260°C, 10s Manual soldering: 300°C, 3s	



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## 五、 Electro-opto parameters ; ( Ta=25°C )

Parameter	Symbol	Min.	Typical value	Max.	Unit	Test condition
Light intensity	IV	---	55	---	mcd	IF=5mA
Half light intensity viewing angle	2θ1/2	---	120	---	deg	IF=5mA
Dominate wave length	λD	620	---	630	nm	IF=5mA
Half wave width	Δλ	--	20	---	nm	IF=5mA
Forward voltage	VF	1.6	---	2.4	V	IF=5mA
Reverse current	IR	---	---	1	uA	VR=5V

### Brightness staging:

代码	最小值	最大值	单位	测试条件
L3	37	44	mcd	IF=5mA
L4	44	53		
M3	53	64		

Note: Light intensity error ± 11%

### Voltage staging:

代码	最小值	最大值	单位	测试条件
1	1.5	1.7	V	IF=5mA
2	1.7	1.9		
3	1.9	2.1		
4	2.1	2.3		

Note: Forward voltage error ± 0.02V

### Wavelength staging:

代码	最小值	最大值	单位	测试条件
A	615	620	nm	IF=5mA
B	620	625		
C	625	630		

Note: Wavelength error ± 1 nm

### 六、 Typical characteristic curve:

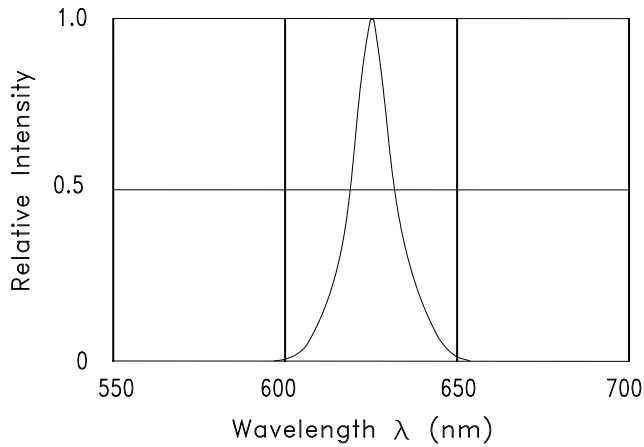


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

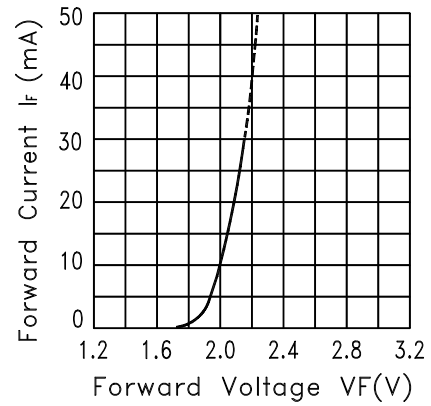


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

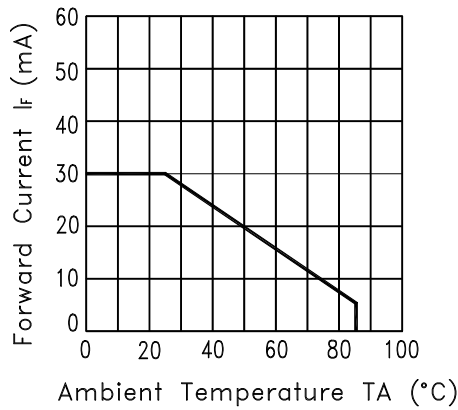


Fig.3 FORWARD CURRENT DERATING CURVE

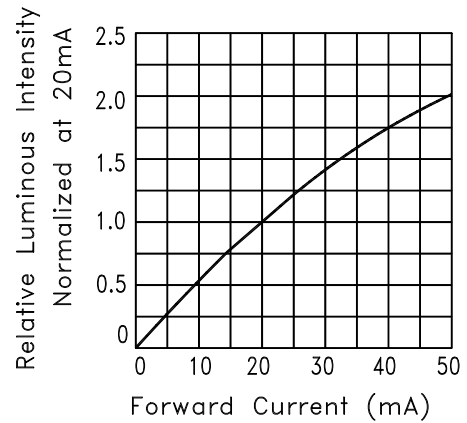


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

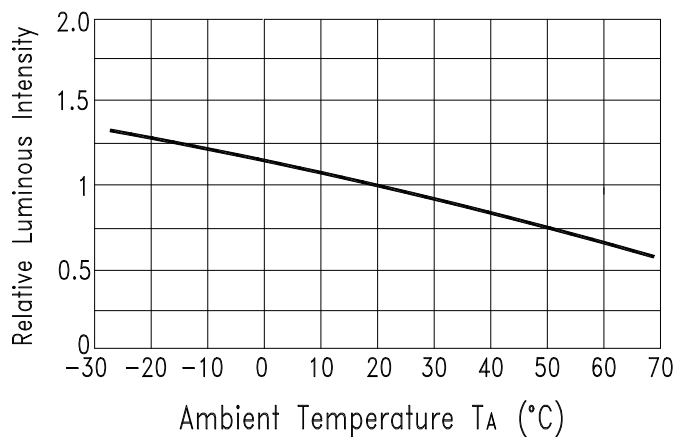


Fig.5 Luminous Intensity vs. Ambient Temperature

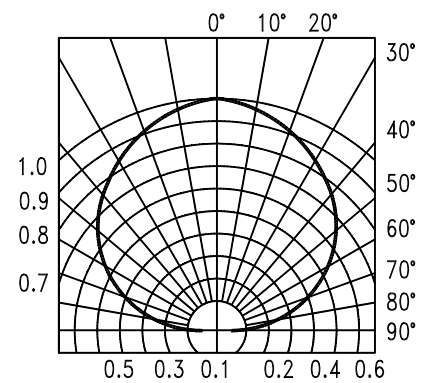


Fig.6 SPATIAL DISTRIBUTION

### 七、 Label identification:

CAT: Light Intensity (mcd)

HUE: wavelength (nm)

REF: Voltage (V)

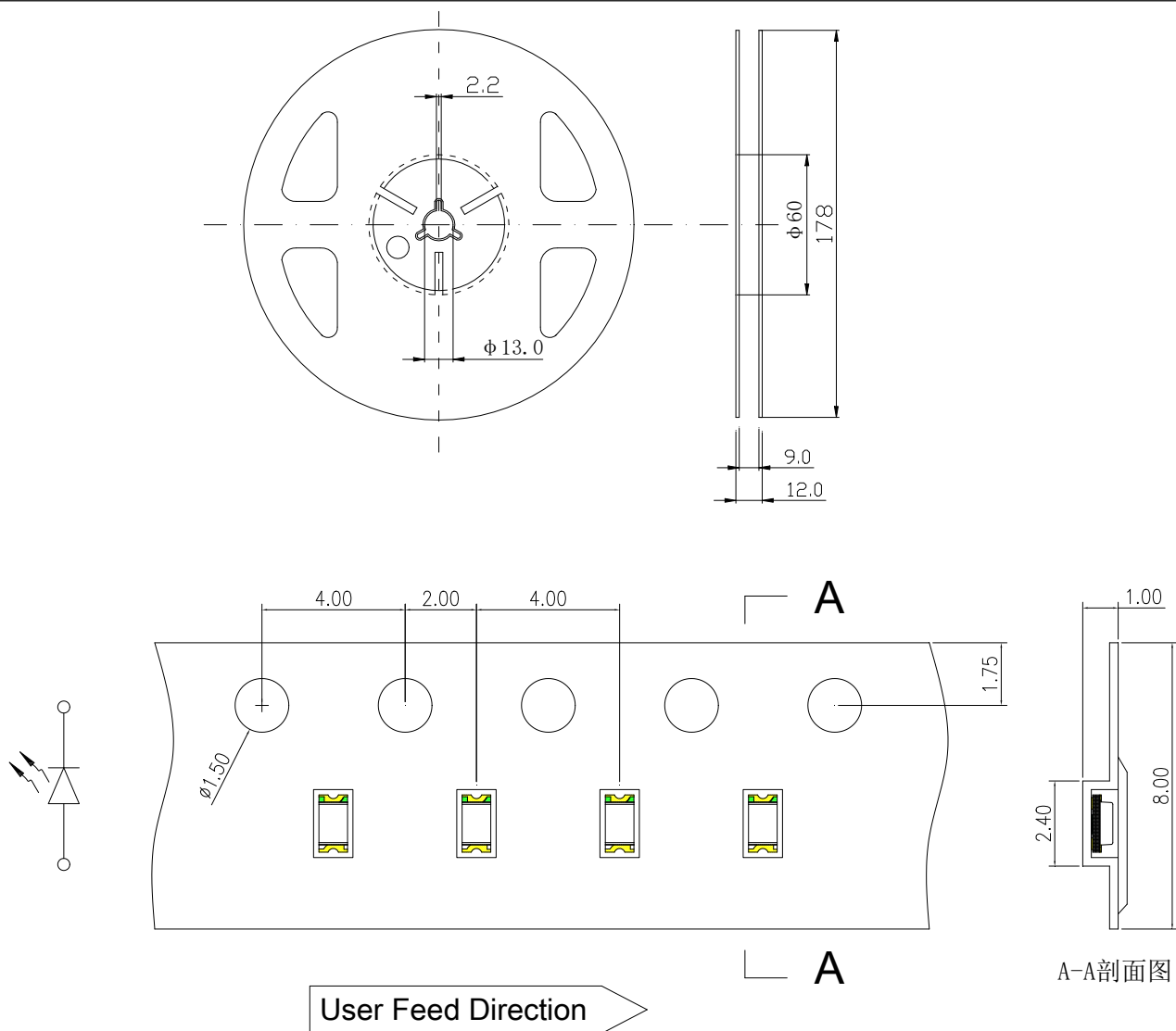
误差范围

a. Luminous Intensity:  $\pm 15\%$

b. HUE:  $\pm 1\text{nm}$

c. Forward Voltage:  $\pm 0.1\text{V}$

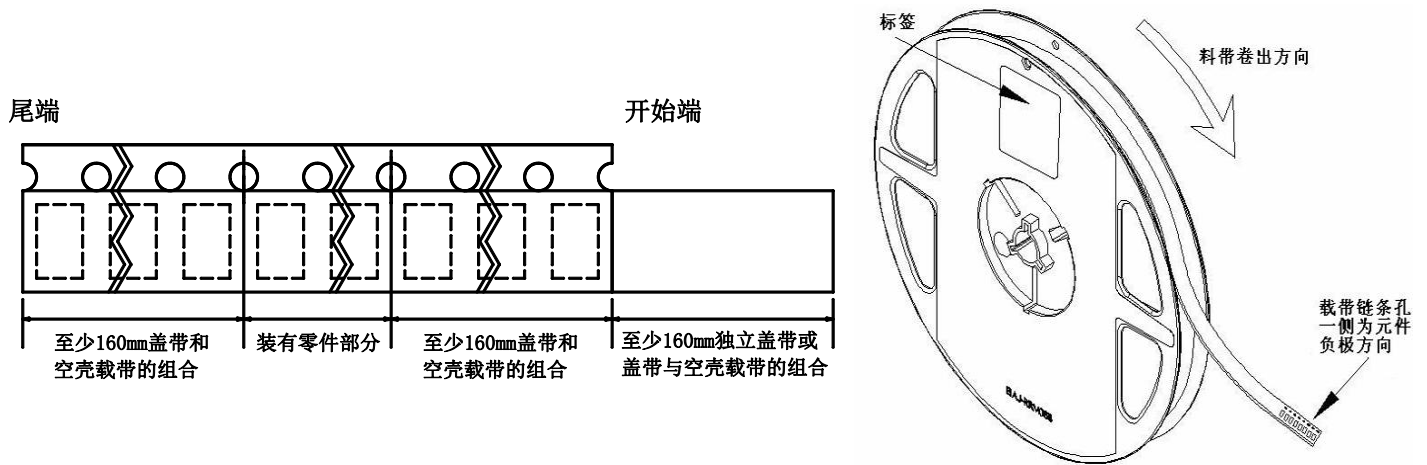
### 八、 Packaging carrier tape and disc size:



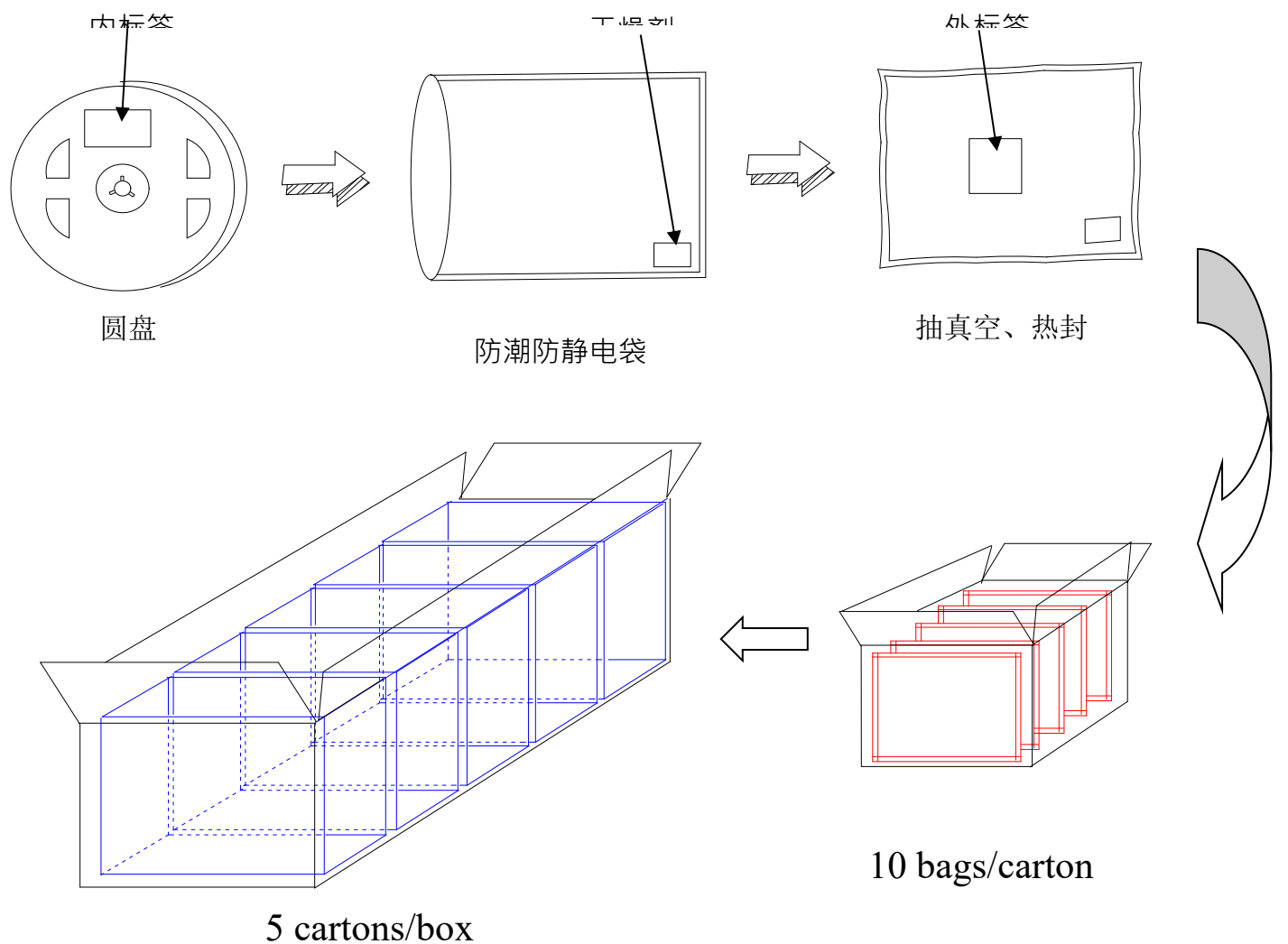
Remarks: 1. Dimensions are in millimeters (mm);

2. If the dimensional tolerance is not marked, it is  $\pm 0.15\text{mm}$ ;

## 九、 Disc and carrier tape roll-out direction and cavity specifications:



## 十、 Inner and outer packaging:





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## 十一、Reliable test:

Type	Test Items	Test condition	Test time	Standard	Type
Durability test	life	Room temperature light at max current continuous work, test at 20mA	1000hrs ( -24hrs · +72hrs )	MIL-STD-750 D:1026 MIL-STD-883 D:1005 JIS C 7021B-1	Durability test
	High Temperature & High Humidity Test	IR-Reflow In-Board, 2 Times Room temperature eTa= 85±5°C, Humidity RH= 85%	1000hrs ( ± 2hrs )	JESD22-A101	
	High Temperature Storage	环境温度 Ta= 105±5 °C	1000hrs ( -24hrs · +72hrs )	MIL-STD-883 D:1008 JIS C 7021B-10	
	Low Temperature Storage	环境温度 Ta= -55±5 °C	1000hrs ( -24hrs · +72hrs )	JIS C 7021:B-12	
Environment test	Temperature cycle	105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins 5mins	10cycles	MIL-STD-202 F:107D MIL-STD-750 D:1051 MIL-STD-883 D:1010 JIS C 7021A-4	Environment test





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	Cold and heat impulsion	IR-Reflow In-Board, 2 Times 85 ± 5°C ~ -40°C ± 5°C 10mins 10mins	10cycles	MIL-STD-202 F:107D MIL-STD-750 D:1051 MIL-STD-883 D:1011	
	Tin resistance test	Sldering temperatur e T.sol= 260 ± 5°C	10 ± 1secs 2 次	MIL-STD-202 F:210A MIL-STD-750 D:2031 JIS C 7021:A-1	

## (2) Failure criteria

Standard #	Item	Test Condition	Failure Standard
# 1	Forward voltage (VF)	I <sub>F</sub> =20mA	>U.S.L*1.1
	Light intensity (IV)	I <sub>F</sub> =20mA	<L.S.L*0.7
	Reverse current (IR)	V <sub>R</sub> =5V	>U.S.L*2.0
# 2	Welding Reliability	/	Solder paste coverage pad ratio less than 95%

★ U.S.L: 规格上限 L.S.L: 规格下限

## 十二、 Attentions ;

### ◆ USE:

1. Excessive temperature will affect the brightness of the LED and other performance, so in order to make the LED have better performance, the LED should be away from the heat source.

2. Optoelectronic parameter tolerance.

Forward voltage (REF / VF): ± 0.1V

Brightness (CAT / IV): ± 15%



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Wavelength (HUE / WLD):  $\pm 1\text{nm}$

## Storage

In order to avoid the absorption of moisture, it is recommended to store in the dry box (or desiccator) with a desiccant. Otherwise, to store them in the following environment is recommended. Temperature:  $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$

Humidity: 60%RH max.

Attention after opened

However LED is corresponded SMD, when LED be soldered dip, interfacial separation may affect The light transmission efficiency, causing the light intensity to drop. Attention in followed. a. After opened and mounted, the soldering shall be quickly. b. Keeping of a fraction Temperature:  $5^{\circ}\text{C}\sim 40^{\circ}\text{C}$  Humidity: less than 30%

In case or more than 1 week passed after opening or change color of indicator on desiccant components shall be dried 10-12hr. at  $60^{\circ}\text{C}\pm 3^{\circ}\text{C}$ .

## ESD ( Electrostatic Discharge)

Static Electricity or power surge will damage the LED.

The following procedures may decrease the possibility of ESD damage.

All production machinery and test instruments must be electrically grounded.

Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.

Maintain a humidity level of 50% or higher in production areas.

Use anti-static packaging for transport and storage.

## Clean :

Suggest Isopropyl alcohol clean the leds, it is strictly forbidden to clean with corrosive liquids.

## Soldering :

1. Reflow soldering refer to the first page solder curve.
2. Rework soldering should be done no more than twice
3. Not suggest hand soldering except repair works, ; max soldering temperature no exceed 300 centigrade and should finish in 3s. soldering iron power no exceed 30W.

## others :

1. This standard led is supposed to use on normal electronic equipments, (eg office equipments, communication equipments etc.) if need more reliability, especially concern the equipments that while components breakdown could cause health or life dangers (such as aerospace, medical, transportation, insurance equipments etc) please inform in advance so we could offer better configurations.
2. for improving purpose, products design and parameter may change to better level without inform in advance



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