KENTO ®

深圳匡通电子有限公司

SHENZHEN KENTO ELECTRONICCO.,LTD

SPECIFICATION FOR APPROVAL

Product Name: LED 0603 WHITE SMD light-emitting diode

Product number： **KT-0603-W**

Client's name：

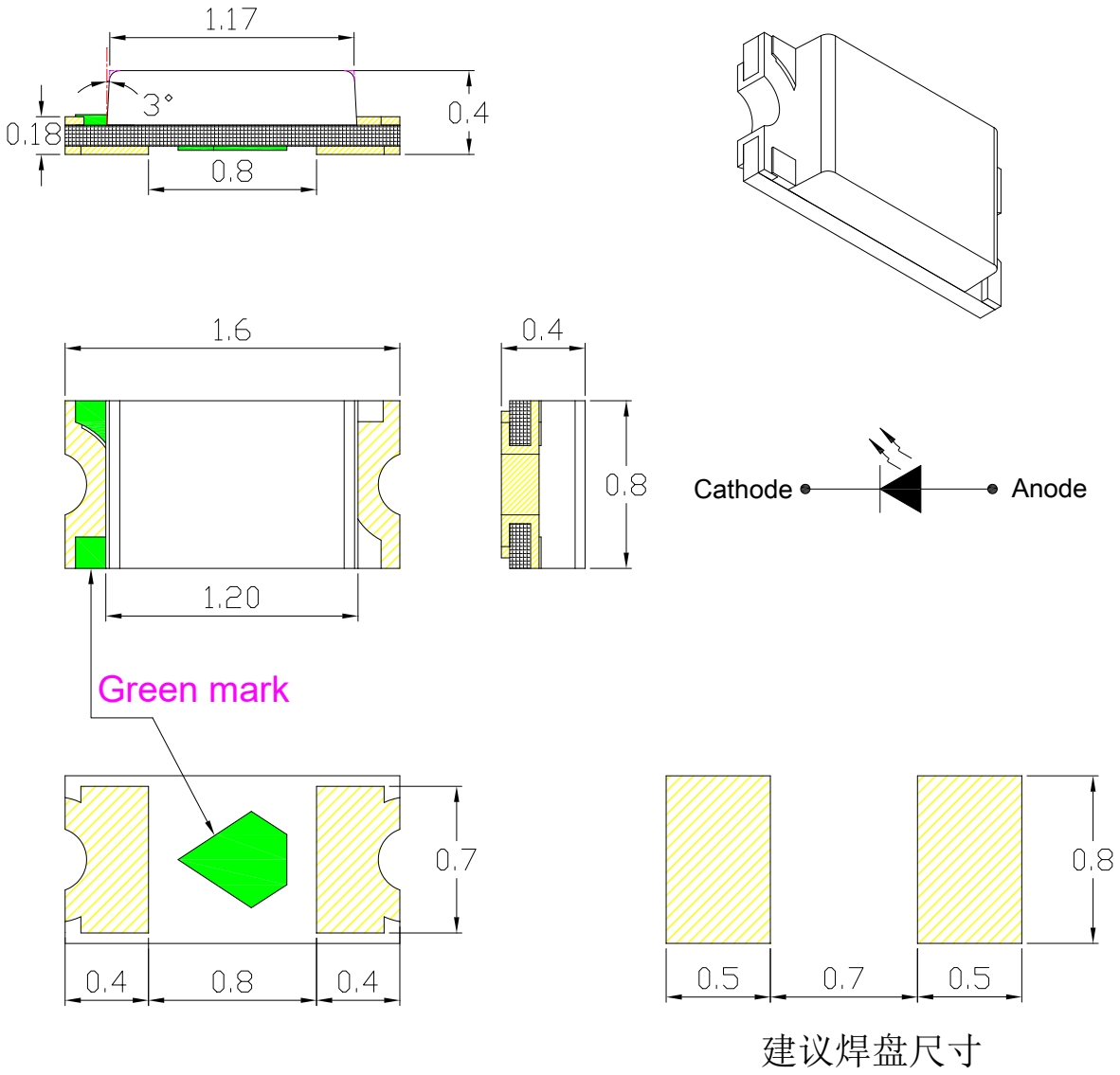
Customer part number：

Release Date: May 2017

一、Product description

- External dimensions (L/W/H) : 1.6 x 0.8 x 0.4 mm
- Color: High brightness white
- Colloid: Yellow colloid
- EIA standard packaging
- Environmentally friendly product, meet ROHS requirements
- Suitable for automatic bonder
- Suitable for infrared reflow process

二、External dimensions and recommended pad size:

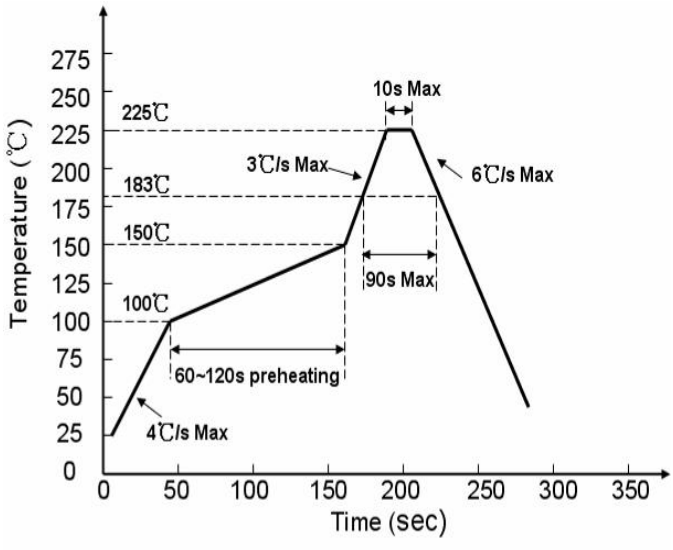


建议焊盘尺寸

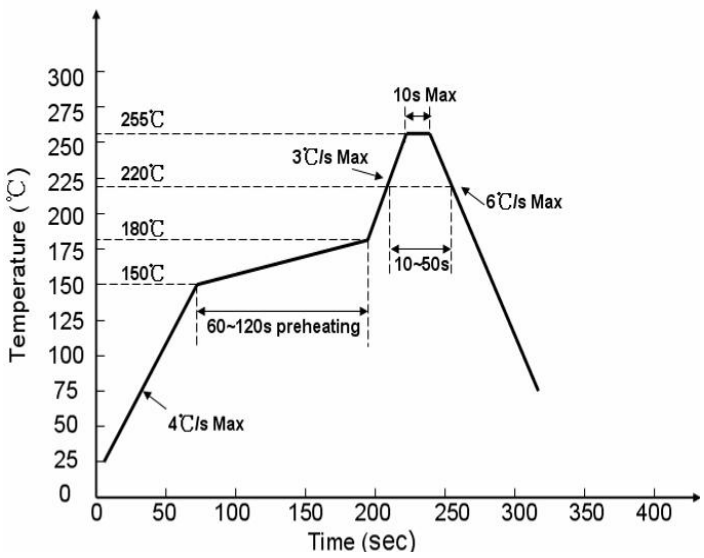
Remarks: 1、Unit : millimeter（ mm ）

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

三、Suggested soldering temperature curve:



Leaded process



Lead-free process

四、Max parameter（Ta=25℃）:

Paramter	Symbol	Max power	Unit
Power	Pd	80	mW
Max impulse current (1/10duty ratio, 0.1ms pulse width)	I_{FP}	100	mA
Working forward dc current	I_F	25	mA
Reverst voltage	V_R	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	

五、 Electro-opto parameters （Ta=25℃）:

Parameter	Symbol	Min.	Typical value	Max.	Unit	Test condition
Light intensity	IV	---	130	---	mcd	IF =2mA
Half light intensity viewing	2θ1/2	---	120	---	deg	IF =2mA
Forward voltage	VF	2.6	---	3.0	V	IF =2mA
Reverse current	IR	---	---	1	uA	VR=5V

Brightness staging:

代码	最小值	最大值	单位	测试条件
Q4	92	110	mcd	IF=2mA
R3	110	132		
R4	132	160		
S3	160	195		

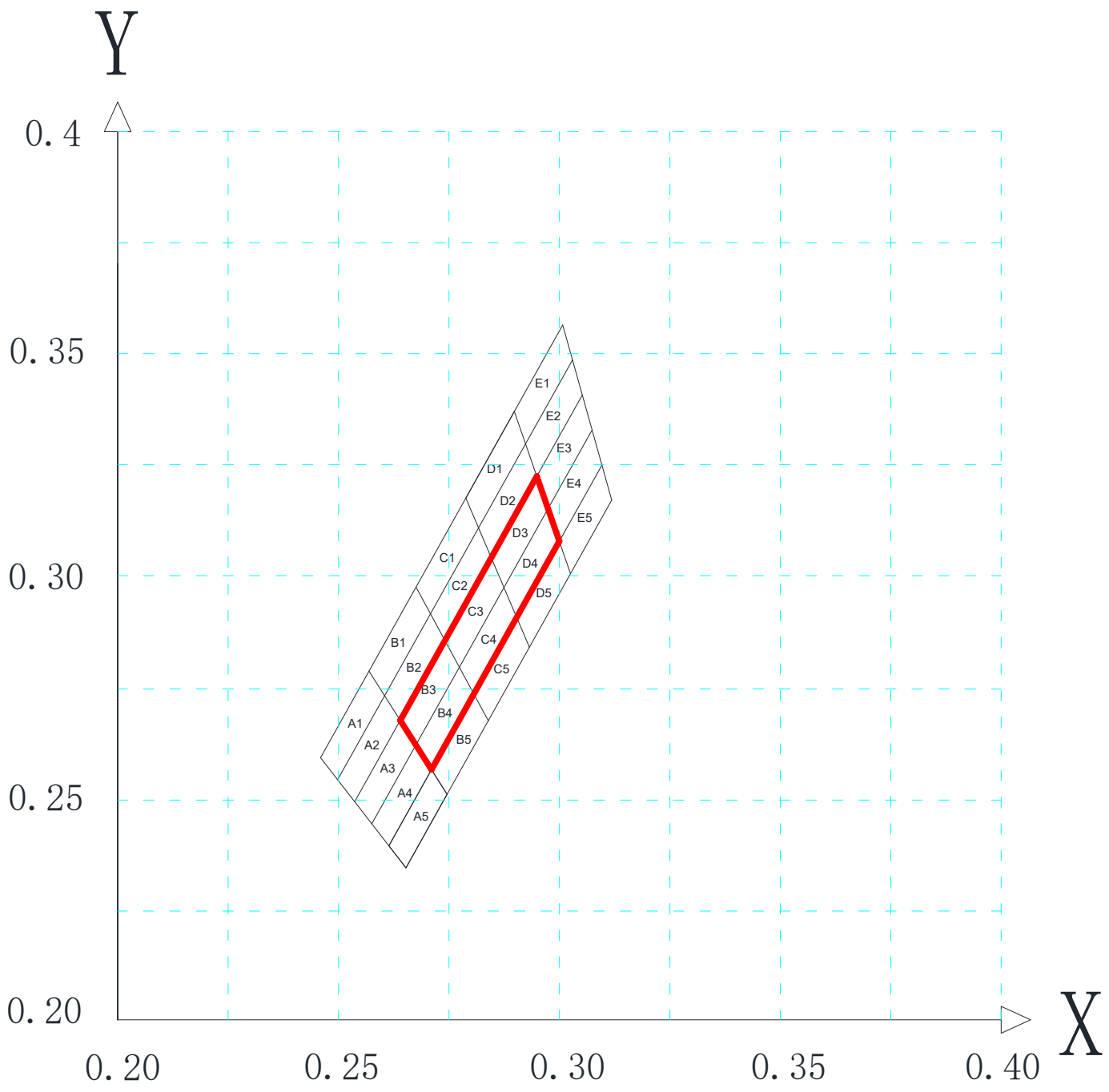
Note:Light intensity error ± 11%

Voltage staging:

代码	最小值	最大值	单位	测试条件
7A	2.5	2.6	V	IF=2mA
7B	2.6	2.7		
8A	2.7	2.8		

Note: Forward voltage error ± 0.02V

Color zone:



Note: The red part is the main production color area.

Bin Code	CIE-X	CIE-Y	Bin Code	CIE-X	CIE-Y	Bin Code	CIE-X	CIE-Y
A1	0.2459	0.259	B1	0.2569	0.2785	C1	0.2675	0.2974
	0.2569	0.2785		0.2675	0.2974		0.2788	0.3175
	0.2604	0.273		0.2708	0.2914		0.2817	0.3108
	0.2498	0.2541		0.2604	0.273		0.2708	0.2914
	0.2459	0.259		0.2569	0.2785		0.2675	0.2974
A2	0.2498	0.2541	B2	0.2604	0.273	C2	0.2708	0.2914
	0.2604	0.273		0.2708	0.2914		0.2817	0.3108
	0.264	0.2674		0.2741	0.2854		0.2846	0.3041
	0.2537	0.2491		0.264	0.2674		0.2741	0.2854
	0.2498	0.2541		0.2604	0.273		0.2708	0.2914
A3	0.2537	0.2491	B3	0.264	0.2674	C3	0.2741	0.2854
	0.264	0.2674		0.2741	0.2854		0.2846	0.3041
	0.2675	0.2619		0.2773	0.2794		0.2874	0.2973
	0.2575	0.2441		0.2675	0.2619		0.2773	0.2794
	0.2537	0.2491		0.264	0.2674		0.2741	0.2854
A4	0.2575	0.2441	B4	0.2675	0.2619	C4	0.2773	0.2794
	0.2675	0.2619		0.2773	0.2794		0.2874	0.2973
	0.271	0.2563		0.2806	0.2734		0.2903	0.2906
	0.2614	0.2392		0.271	0.2563		0.2806	0.2734
	0.2575	0.2441		0.2675	0.2619		0.2773	0.2794
A5	0.2614	0.2392	B5	0.271	0.2563	C5	0.2806	0.2734
	0.271	0.2563		0.2806	0.2734		0.2903	0.2906
	0.2746	0.2508		0.2839	0.2673		0.2932	0.2839
	0.2653	0.2342		0.2746	0.2508		0.2839	0.2673
	0.2614	0.2392		0.271	0.2563		0.2806	0.2734

Bin Code	CIE-X	CIE-Y	Bin Code	CIE-X	CIE-Y
D1	0.2788	0.3175	E1	0.2898	0.337
	0.2898	0.337		0.3007	0.3565
	0.2923	0.3297		0.303	0.3486
	0.2817	0.3108		0.2923	0.3297
	0.2788	0.3175		0.2898	0.337
D2	0.2817	0.3108	E2	0.2923	0.3297
	0.2923	0.3297		0.303	0.3486
	0.2949	0.3224		0.3052	0.3407
	0.2846	0.3041		0.2949	0.3224
	0.2817	0.3108		0.2923	0.3297
D3	0.2846	0.3041	E3	0.2949	0.3224
	0.2949	0.3224		0.3052	0.3407
	0.2974	0.3151		0.3074	0.3328
	0.2874	0.2973		0.2974	0.3151
	0.2846	0.3041		0.2949	0.3224
D4	0.2874	0.2973	E4	0.2974	0.3151
	0.2974	0.3151		0.3074	0.3328
	0.3	0.3078		0.3096	0.3249
	0.2903	0.2906		0.3	0.3078
	0.2874	0.2973		0.2974	0.3151
D5	0.2903	0.2906	E5	0.3	0.3078
	0.3	0.3078		0.3096	0.3249
	0.3025	0.3005		0.3118	0.317
	0.2932	0.2839		0.3025	0.3005
	0.2903	0.2906		0.3	0.3078

六、Typical characteristic curve:

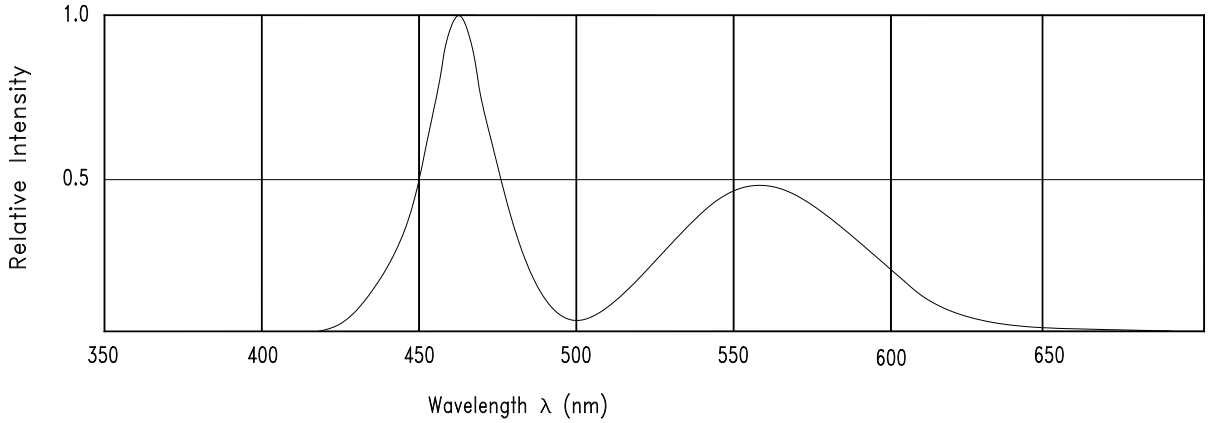


Fig.1 Relative Intensity vs. Wavelength

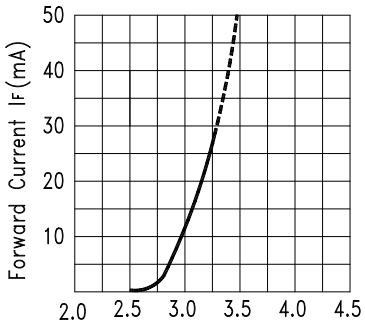


Fig.2 Forward Current vs. Forward Voltage

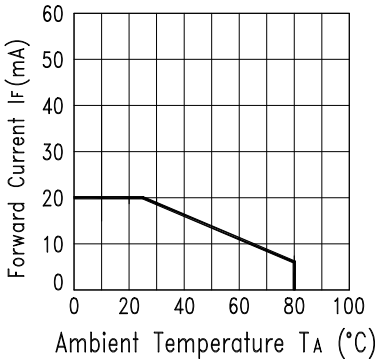


Fig.3 Forward Current Derating Curve

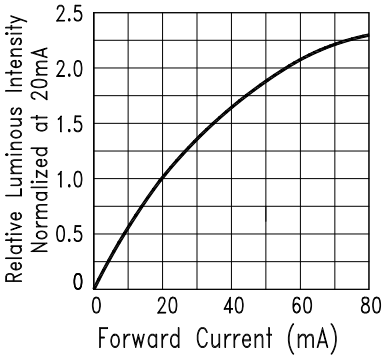


Fig.4 Relative Luminous Intensity vs. Forward Current

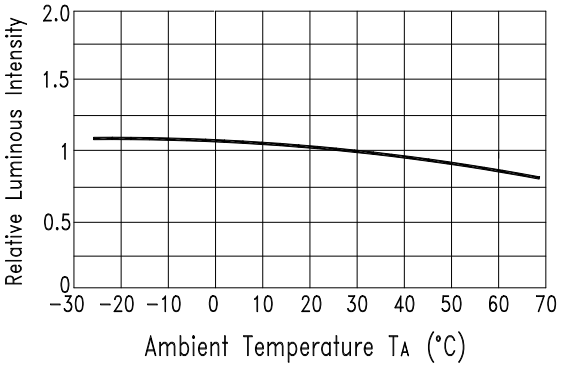


Fig.5 Luminous Intensity vs.Ambient Temperature

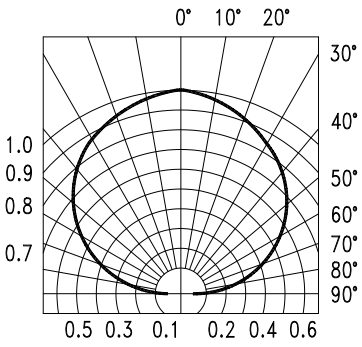


Fig.6 Spatial Distribution

Note: If not otherwise specified, the test ambient temperature is 25 + 3°C

七、Label identification:

CAT: Light Intensity (mcd)

HUE: wavelength (nm)

REF: Voltage (V)

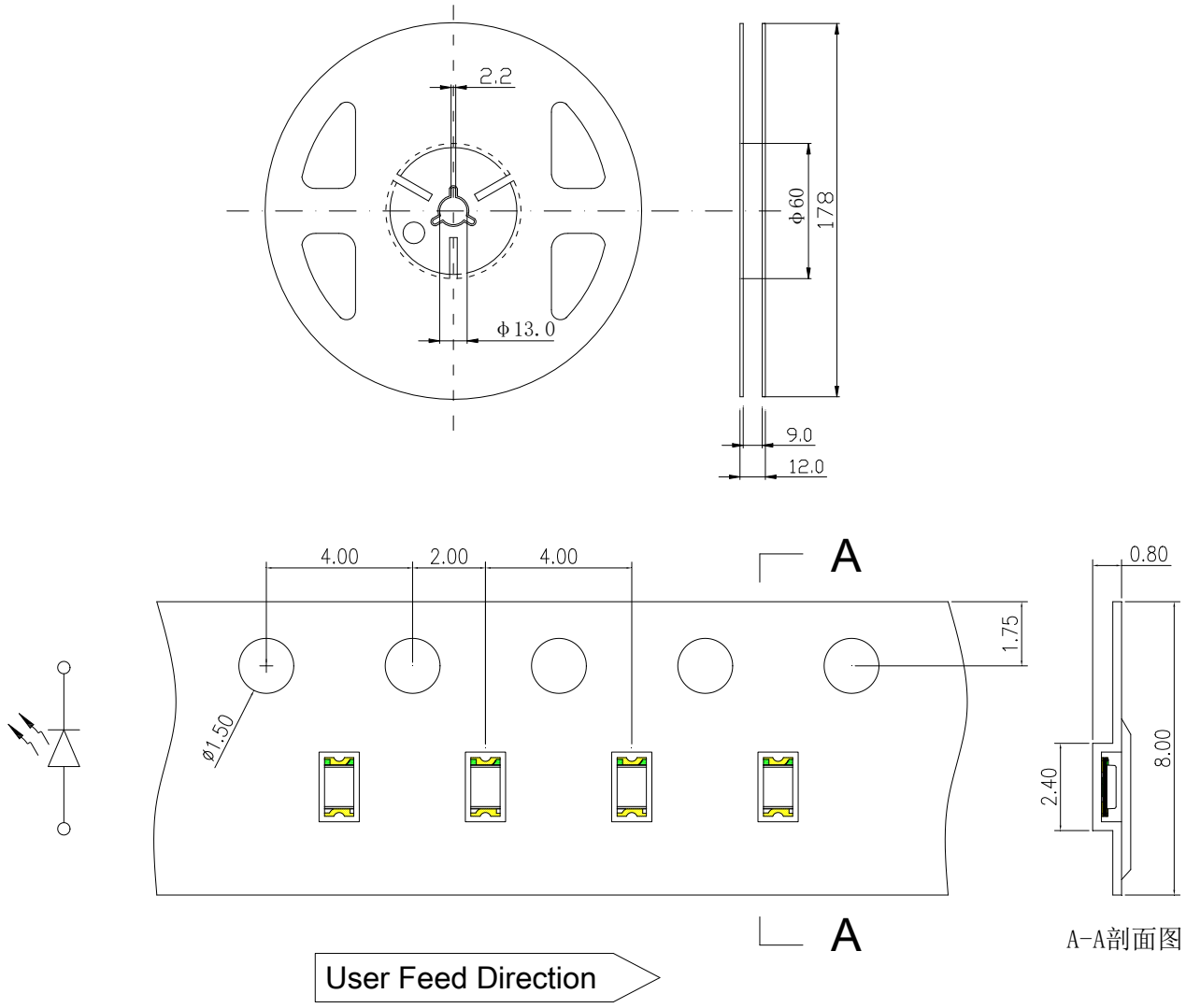
误差范围

a. Luminous Intensity: ± 15%

b. HUE: ±1nm

c. Forward Voltage: ± 0.1V

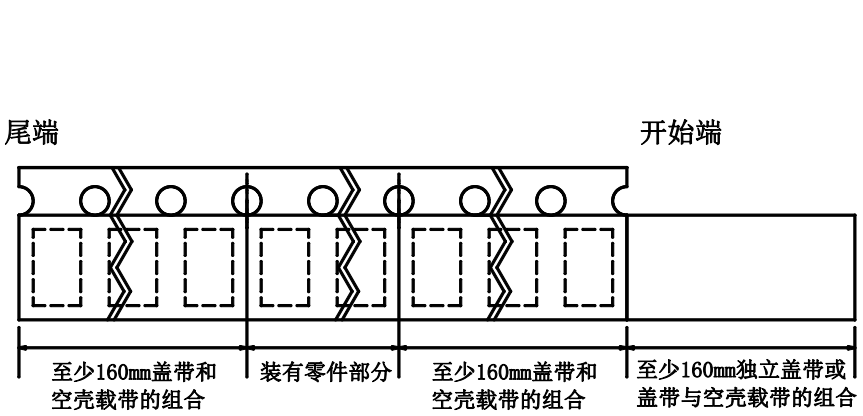
八、 Packaging carrier tape and disc size:

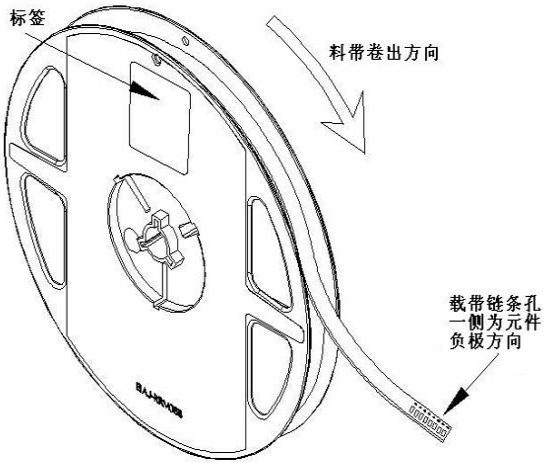


Remarks: 1. Dimensions are in millimeters (mm);

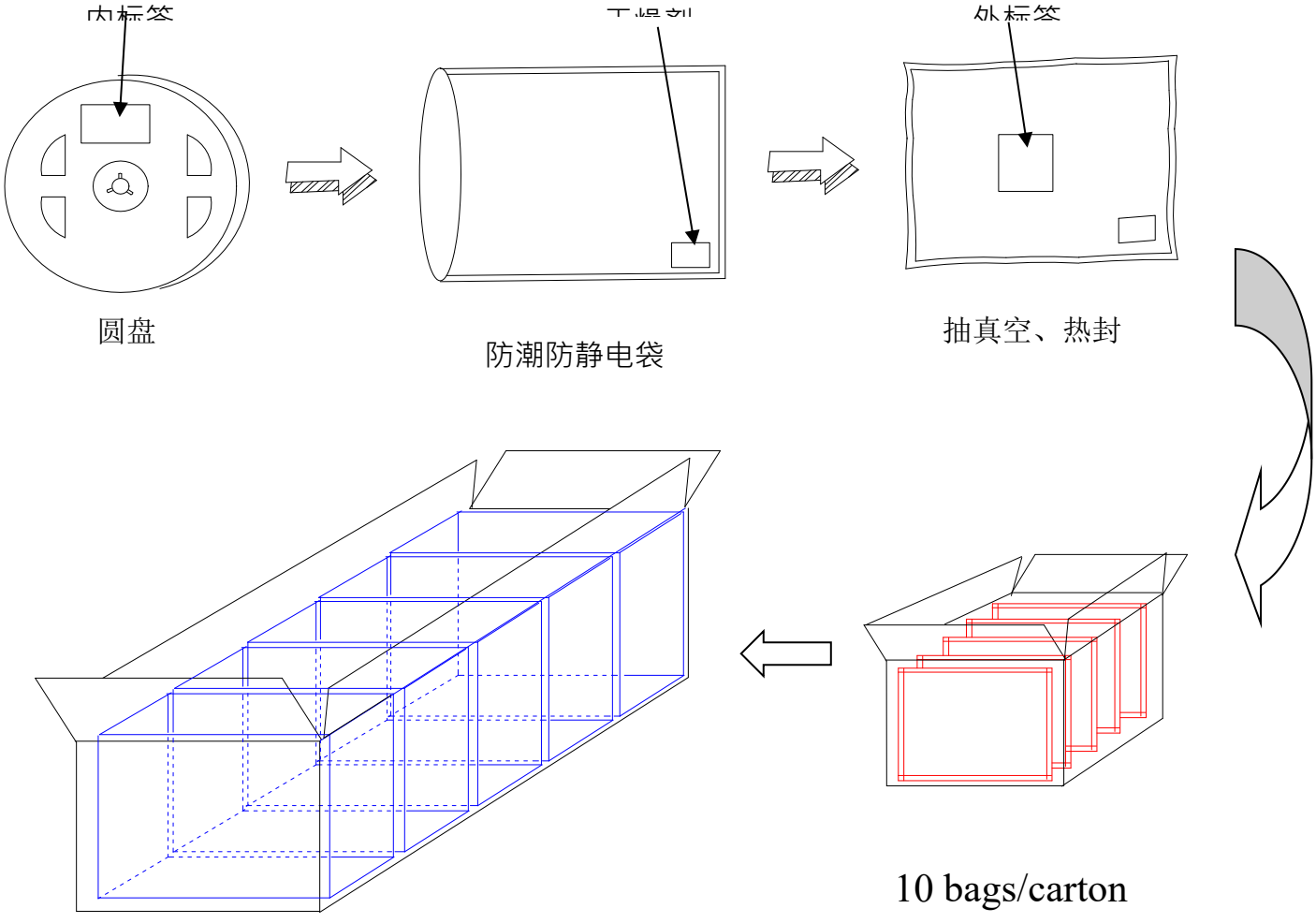
2. If the dimensional tolerance is not marked, it is ±0.15mm;

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





十、 Inner and outer packaging:



十一、Reliable test:

Type	Test Items	Number of tests	Reference standard	Failure determination	Standard Number of failed LEDs (PCS)
Moisture resistance level	1. maximum reflow temperature = 260°C, 10 seconds, 2 reflows. 2. Storage conditions before reflow: 30°C, relative humidity = 70%, 168H.	-	JEITA ED-4701 300.301	# 1	0/22
Solder Reliability (Lead-free reflow soldering)	Reflow maximum temperature = 245±5°C for 5 seconds (lead-free reflow)	-	JEITA ED-4701 303 303A	# 2	0/22
Heat and cold cycle	-40℃ 30min~25℃ 5min~ 100℃ 30min~25℃ 5min	300 pcs Circulation	JESD22-A104	# 1	0/22
Cold & Heat Shock	-35℃ 15min Conversion time 3 minutes 85℃ 15min	300 pcs Circulation	JESD22-A106	# 1	0/22
High temperature storage	Ta=100℃	1000 hours	JESD22-A103	# 1	0/22
Cryogenic storage	Ta=-40℃	1000 hours	JESD22-A119	# 1	0/22
Normal temperature aging	Ta=25℃ IF=20mA	1000 hours	JESD22-A108	# 1	0/22

（2）Failure criteria

Standard #	Item	Test Condition	Failure Standard
# 1	Forward voltage (VF)	I_F=20mA	＞U.S.L*1.1
	Light intensity (IV)	I_F=20mA	＜L.S.L*0.7
	Reverse current (IR)	V_R=5V	＞U.S.L*2.0

# 2	Welding Reliability	/	Solder paste coverage pad ratio less than 95%

★ U.S.L : Upper specification limit L.S.L : Lower specification limit

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%

Wavelength (HUE / WLD): ± 1nm

Storage

In order to avoid the absorption of moisture, it is recommended to store in the dry box (or desicca tor) with a desiccant. Otherwise, to store them in the following environment is recommended. Temperature: 5°C~30°C
Humidity: 60%HR 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°C~40°C Humidity: less than 30%
In case or more than 1 week passed after opening or change color of indicator on desiccant compo nents shall be dried 10-12hr. at 60°C±3°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 clead the leds,it is strictly forbidden to clean with corrosive liquids.

Soldering：

1. Reflow soldering refer to the frist page solder curve.
2. Relow sodering should done no more than twice
3. Not suggest hand soldering expect repair works, ; max soldering temperauter no exceed 300 centigrade and should finsh 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 reliablity,especially concern the equipments that while conponents breakdown could cause healty or life dangers(such as areospace,medical,transpor,gurance equipmemts 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

◆ **清洗**

建议使用异丙醇等醇类溶液清洗 LED，严禁使用腐蚀性溶液清洗。

◆ **焊接**

1. 回流焊焊接条件参考第一页温度曲线；
2. 回流焊焊接次数不得超过两次；
3. 只建议在修理和重工的情况下使用手工焊接，最高焊接温度不应超过 300 度，且须在 3 秒内完成。烙铁最大功率应不超过 30W；
4. 焊接过程中，严禁在高温情况下碰触胶体；
5. 焊接后，禁止对胶体施加外力，禁止弯折 PCB，避免元件受到撞击。

◆ **其他**

1. 本规格所描述的 LED 定义应用在普通的的电子设备范围（例如办公设备、通讯设备等等）。如果有更为严苛的信赖度要求，特别是当元件失效或故障时可能会直接危害到生命和健康时（如航天、运输、交通、医疗器械、安全保护等等），请事先知会敝司业务人员；
2. 高亮度 LED 产品点亮时可能会对人眼造成伤害，应避免从正上方直视；
3. 出于持续改善的目的，产品外观和参数规格可能会在没有预先通知的情况下作改良性变化。