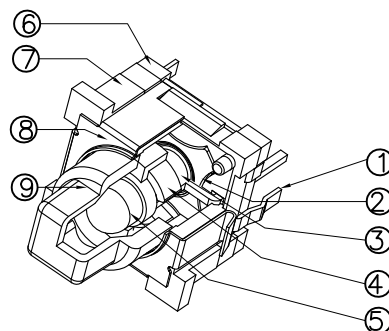
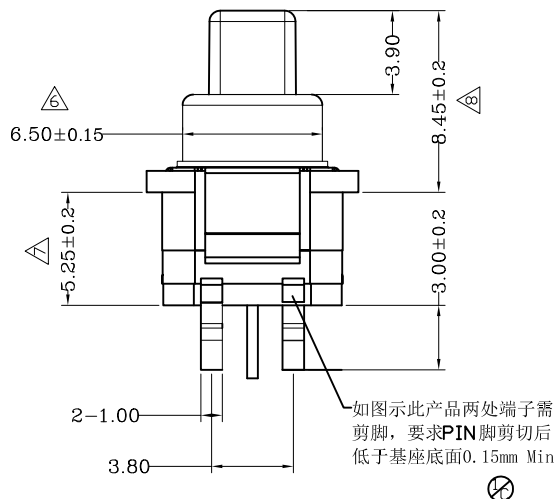
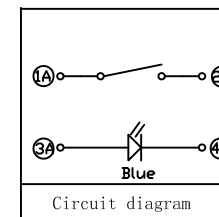
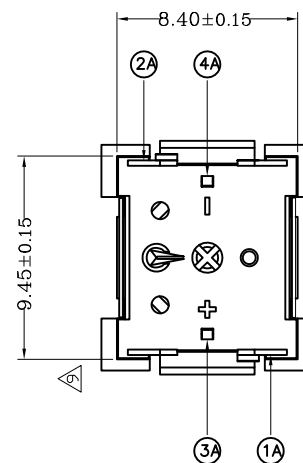
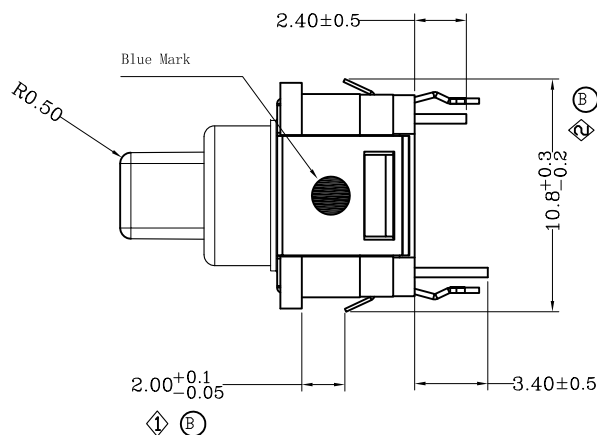
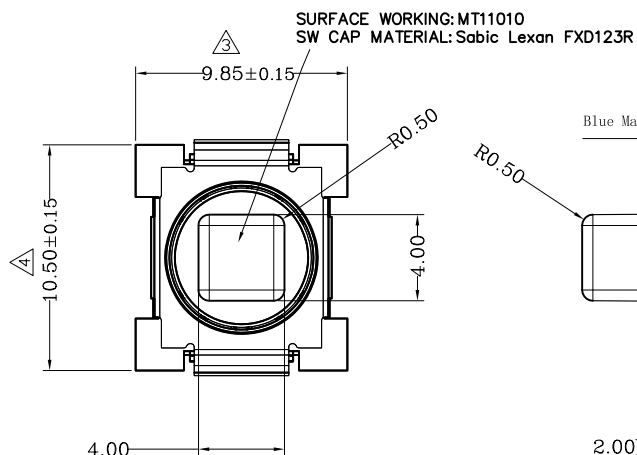


ABIDE BY ROHS



Specification :

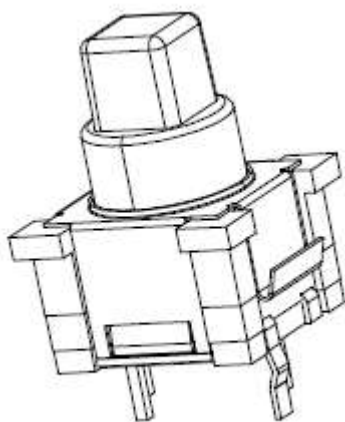
- 1.Rating : DC12V 50mA
- 2.Contact Resistance : 100mΩ Max
- 3.Insulation Resistance : 100M ΩMin
- 4.Withstand Voltage : AC250V (50-60Hz)For 1 minute
- 5.Operation Force : 450±100gf
- 6.Life Test : 25,000 Cycles
- 7.Total Travel : 1.20±0.25mm
- 8.Operation Type: Touch Restore

9	Keystoke	——	1pcs	PC	Transparent	——
8	Shell	——	1pcs	SUS301HV	——	——
7	Cover	——	1pcs	PA10T	Black	——
6	Base	——	1pcs	PA10T	Black	——
5	LED	——	1pcs	∅2.8mm Super Bright Blue LED	——	——
4	Pad	——	1pcs	LCP	Black	——
3	Rubber pad	——	1pcs	Rubber	Gray	——
2	Contact	——	1pcs	SUS301HV	Plating Au(4u")	——
1	Terminal	A.B.	2pcs	Brass	Plating Au(3u")	——
ITEM	PART NAME	TER'NO.	QTY.	MATERIAL	FINISHING	REMARK

APPROVALS			DATE		<div><div>东莞市凯华电子有限公司 KAIHUA ELECTRONICS CO.,LTD.</div></div>		
DRAWN		JIN	2020.10.12				
CHECKED				TITLE:		LA9313 LAMP SWITCH	
APPROVALS				PART NO.		CLA931301D45-HF	
TOLERANCES ARE		30<L	±0.30	ANGLE	UNIT: mm	SCALE: 1 : 1	PROJ: 
		10<L<30	±0.20				
		5<L<10	±0.15				
		L<5	±0.10				
		±2°		DRAWING NO.		KHA-LA9313-026	SHEET 1 OF 1

ECN-2305-027	C	2023.05.19	Non-functional pins are 0.15mm below base base after shearing	QK		
	B	2020.10.12	Dimension 1.9 change to 2.0	JIN		
	A	2014.10.10	NEW			
ECN NO.	REV.	DATE.	DESCRIPTION.	CHANGE.	CHECK.	APPRO.

Product Specification



P/N: _____

CLA931301D45

Title :

Lamp Switch

Rev.	ECN	Release and Revision Description:	Prepared By /Date:	Checked By/Date:	Approved By/Date:
A	— —	New releasing	HQC 2017/08/14	LPH 2017/08/14	David 2017/08/14
B	ECN-2305-02 7	Dimensional change	QK 2023/05/18	WHL 2023/05/18	ZJJ 2023/05/18

P/N: CLA931301D45	DOC. No.: KH-PS1704-01	Rev.: B	Page: 2/9
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1. Scope:

This Product Specification covers the requirement of Micro switch on product performance, test methods and quality assurance provisions.

2. Product Application:

The Switch is applied in all types of electrical appliances. Please let us know before using any of the products in the application not described abovev.

3. Technology Parameters:

Ambient Humidity:	45~85% R.H.;
Operating Temperature Range:	-10℃~+70℃;
Storage Temperature Range:	-20℃~+80℃;
Suggested storage period :	about 6 months

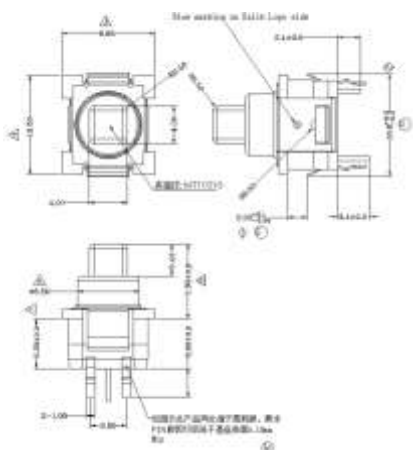
Normal Condition:

Ambient temperature:	20±5
Relative humidity:	65%±5% R.H.;
Air pressure :	86~101KPa;
Contact Resistance:	100 mΩ Max;
Operation Force:	450±100gf
Solder Ability :	Tim-lead soldering : 245℃±5℃ 5s±0.5s;
	Lead-free welding : 255℃±5℃ 5s±0.5s;
Withstand Soldering Temperature:	Wave soldering: 260±5℃ 5±0.5s;

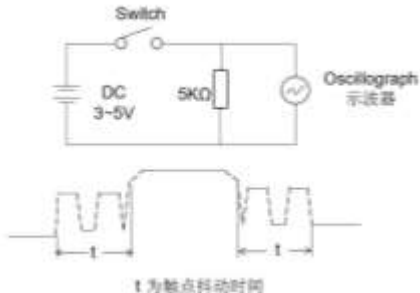
4. Rated Performance Requirements:

Rating:	DC12V / 50mA
Insulation Resistance:	≥100MΩ/DC 250V;
Withstand Voltage:	250V AC 1 Minute;
Mechanical Life:	25,000 Cycles.


5. Profile Dimensions :

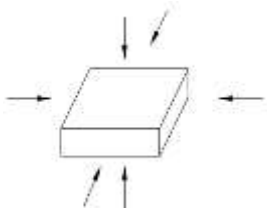


6. Electrical Performance:

Item	Description	Test Condition	Requirement
6.1	Contact Resistance	<p>Static load: (Operation force)x2, which is applied on the center of Switch stem. Be measured when the switch contact stabilization.</p> <p>Measurement tool: Contact resistance Meter. (1KHz, 20mV, 5~50mA)</p> <p>Measured at low current (100mA or less).</p>	100mΩ Max
6.2	Insulation Resistance	<p>Apply a Voltage of DC 250 V for 1 minute, according to the below method.</p> <p>(1) Between terminals. (2) Between terminal and Body.</p>	100MΩ Min
6.3	Dielectric withstanding voltage	<p>Apply a Voltage of AC250 V (50~60Hz) for 1 minute, according to the below method.</p> <p>(1) Between terminals. (2) Between terminal and Body.</p>	No evidence of breakdown.
6.4	Bouncing	<p>Operation speed: 3~4 times/s Oscilloscope Switch Bouncing Test Circuit.</p>  <p>The diagram shows a circuit for testing switch bouncing. It includes a DC power source (3-5V), a switch, a 5KΩ resistor, and an oscilloscope. The oscilloscope trace shows the voltage across the switch during operation, with the time interval 't' marked as the contact bounce time.</p> <p>t 为触点抖动时间</p>	<p>Before Life cycle: On: 5ms MAX Off: 5ms MAX</p> <p>After Life cycle: On: 10ms MAX Off: 10ms MAX</p>

7. Mechanical Performance:

It	Description	Test Condition	Requirement
7.1	Operation force	Operate the keystroke of the switch and then increase press strength gradually, Measured maximum operation force while the travel of the switch is full.	$450 \pm 100\text{gf}$
7.2	Travel	Operate the keystroke of the switch vertically, the travel distance of keystroke moving from its free position to maximum moving distance shall be measurement.	$1.20 \pm 0.25\text{mm}$
7.3	Static Strength	<p>A static load of 3kgf shall be applied in the direction of button operation for a period of 60 seconds.</p> 	No damage (Electrical and mechanical)
7.4	Stem Pull Strength	Break by a pull force applied opposite to the direction of stem operation.	500gf Min

7.5	Shock	<p>Measured by according to the below condition:</p> <p>(1) Acceleration: 80g accelerated speed</p> <p>(2) Cycles of test: 3 cycles each in 6 directions, for a total of 18 cycles.</p> 	Shall meet No.6, 7.1, 7.2
7.6	Life Test	<p>(1) 1 Weight: 600gf</p> <p>(2) Operation speed: 60 cycles/min</p> <p>(3) Push force: Maximum value of operation force.</p> <p>(4) Cycles: 25,000 times Min</p>	<p>Contact resistance: 1000 Ω Max</p> <p>Bouncing: 10ms Max</p> <p>Operation force and tactile force: Variation rate within $\pm 30\%$</p>

8. Environmental Performance:

Item	Description	Test Condition	Requirement
8.1	Cold test	<p>(1) Temperature : $-20 \pm 2^{\circ}\text{C}$</p> <p>(2) Duration of test: 96h</p> <p>(3) Take off a drop water</p> <p>(4) Standard conditions after test : 1</p>	<p>Contact resistance: 200m Ω Max</p> <p>Shall meet : No. 6.2 to 6.4</p> <p>No. 7.1 to 7.2</p>
8.2	Heat test	<p>(1) Temperature : $70 \pm 2^{\circ}\text{C}$</p> <p>(2) Duration of test: 96h</p> <p>(3) Take off a drop water</p> <p>(4) Standard conditions after test : 1h</p>	<p>Contact resistance: 200m Ω Max</p> <p>Shall meet : No. 6.2 to 6.4</p> <p>No. 7.1 to 7.2</p>

8.3

Temperature cycle

- (1) Test cycles: 5 cycles
(2) Standard condition after test: 1h

	Temperature	Duration of test
1 cycle	20±5℃	1h
	-20±5℃	1h
	20±5℃	h
	70±5℃	1

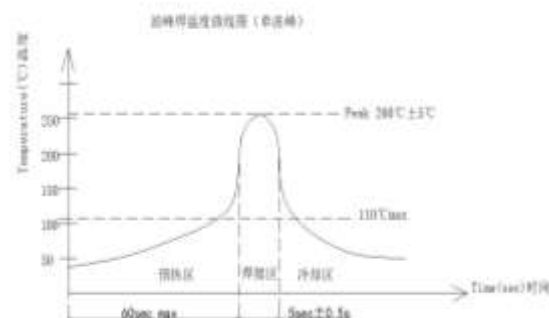
Contact resistance:
200mΩ Max
Shall meet :
No. 6.2 to 6.4
No. 7.1 to 7.2

8.4

Soldering heat test

Soldering area: 1/2 of PWB thickness.
(PWB: T=1.6mm)

Soldering temperature: 260±5℃
Soldering time: 5±0.5s



Appearance:
No abnormality.

8.5

Solder ability

Lead-tin soldering:
Soldering temperature: 245±5℃
Soldering time: 5±0.5s

Lead free soldering:
Soldering temperature: 255±5℃
Soldering time: 5±0.5s

At least 90% of surface area of immersed portion shall be covered by solder.

8.6

Humidity test

- (1) Temperature : 60±2℃
(2) relative humidity: 90~95% R.H.
(3) Duration of test: 96h
(4) Take off a drop water
(5) Standard conditions after test: 1h

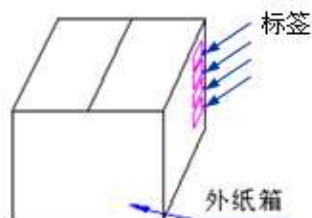
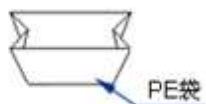
Contact resistance:
200mΩ Max
Shall meet :
No. 6.2 to 6.4
No. 7.1 to 7.2

8.7	Salt Spray	Apply the following environment to test : (1) Temperature : $35 \pm 5^{\circ}\text{C}$ (2) Salt water density: $5 \pm 1\%$ (3) Duration: 24hours (4) After test, the salt deposit shall be removed by running water.	Appearance: No corrosion spot, no crack, no base plate naked. Contact Resistance: 200 m Ω Max
8.8	Withstand K ₂ S	Apply the following environment to test: (1) Temperature: $35 \pm 5^{\circ}\text{C}$ (2) K ₂ S Density: 2%; (3) Duration: 2 minute.	Appearance: No corrosion spot, no crack, no base plate naked. Contact Resistance: 200 m Ω Max

9. Packaging

Operation Force Binning: In groups of 65-75gf、75-85gf、85-95gf

Packing Style	Quantity	Notes
PE bag	1000PCS.	1000Pcs/Bag,
Inner Carton	10000PCS.	PE Bag:10 PCS



10. Precaution

10.1 Immersion Soldering condition

ITEM	CONDITION
Preheat temperature	110°C Max (Ambient temperature of soldering surface of P.W.B)
Preheat time	60s, Max
Area of flux	1/2 Max of PWB Thickness
Temperature of solder	260±5°C 260±5°C
Time of immersion	5±0.5s 5±0.5s
Number of soldering	2times Max (But should down heat of the first soldering)
Printed wiring board	Single side copper-clad laminates

- (1) After switches were soldered, please be careful not to clean switches with solvent
- (2) Under the condition of using soldering iron, soldering temperature shall be 350°C±5°C with 3±0.5s.

10.2 Notes

- (1) Please be cautious not to give excessive static load or shock to switches.
- (2) Please be careful not to stack up P. W. B. after switches were soldered.
- (3) Preservation under high temperature and high humidity or corrosive gas should be avoided
Especially. When you need to preserve for a long period, do not open the carton.
- (4) The standard storage period is 3 months, with maximum up to 6months, preferably to be used as soon as possible. After opening the package, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas.
- (5) This Product Specification is considered as the technical agreement on product between the receiving customer and Kailh. Any information on Product Catalogue which is in conflict with or different from the corresponding information of this document is considered as invalid.
- (6) It will be considered that customer already confirmed and accepted this specification if customer issue purchase order to us directly.
- (7) If there is no order or no request for new specification after 1 year upon this specification is issued, the specification will be regarded as invalid.
- (8) Products meet the ROHS & REACH environmental management substances control standards

Approval Sheet

承認書

16031510

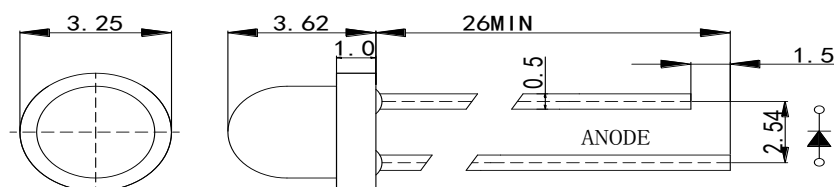
Product/产品	R3 无边圆头雾状蓝光
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Part Number/型号	LC3164UBW-H
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Customer/客户	
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Issue Date /发行日期	2016.3.21
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■ Dimensional drawing/尺寸圖



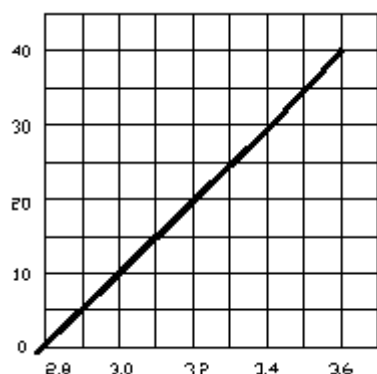
All dimensions are in millimeter/圖中所有尺寸均以毫米為單位

Tolerance is $\pm 0.25\text{mm}$ (0.10") unless otherwise noted/若無特別標注，圖中尺寸公差為 $\pm 0.25\text{mm}$

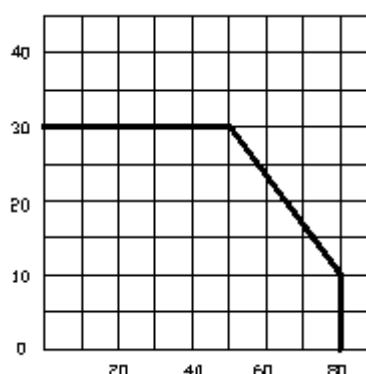
■ Shape Specification /外觀要求

No. 序號	ITEM 項目	SPEC OR DESCRIPTION 規格要求描述
1	Lens 膠體	<ul style="list-style-type: none"> ◆ No change color/不可有膠體變色 ◆ No Disrepair/不可有破損 ◆ Scratch/劃傷 (length $\leq 2.0\text{mm}$, Width $\leq 0.25\text{mm}$) ◆ macula/黑點、異物 ($\leq 0.25\text{mm}$ and $\leq 2\text{EA}$ in Encapsulation reverse) ◆ bubble/氣泡 ($\leq 0.3\text{mm}$ and $\leq 2\text{EA}$ Encapsulation reverse)
2	PIN PIN 腳	<ul style="list-style-type: none"> ◆ No bottom crook/PIN 尖不可有彎腳 ◆ No oxidation/不可有氧化 ◆ No electropolar reverse/不可有切反 (極性反)
3	Configuration 結構	<ul style="list-style-type: none"> ◆ No Encapsulation reverse/不可封反 ◆ No PIN loosen/PIN 腳不可鬆動
4	surface preparation 表面處理	<ul style="list-style-type: none"> ◆ Cut needn't electroplate /切口處無需作電鍍
5	Lens color 膠體顏色	<ul style="list-style-type: none"> ◆ 霧狀

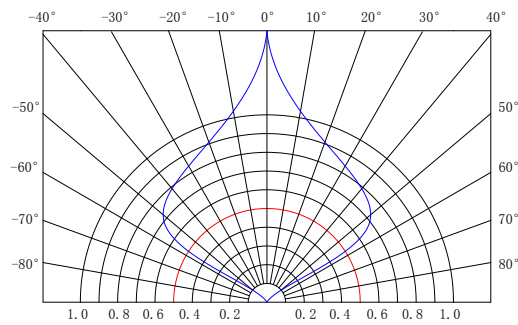
■ Opto-Electrical Characteristics /光電特性



Forward Current vs. Forward Voltage
伏安特性



Maximum Forward Current vs. Ambient Temperature
環境溫度與電流的關係



Lighting Angle / 發光角度：

Absolute maximum ratings/最大絕對額定值

Parameter 參數	Symbol 符號	Value 數值	Unit 單位
Forward Current 正向電流	If	20	mA
Reverse Voltage 反向電壓	Vr	5	V
Operating Temperature 工作溫度	Topr	-25~+85	°C
Storage Temperature 儲存溫度	Tstg	-35~+85	°C
Soldering temperature 焊接溫度	Tsol	260±5°C (for 5sec)	°C
Power Dissipation 功率消耗	Pd	60	mW
Pulse Current 脈衝電流	I _{FP}	100	mA

Opto-Electrical Specification/光電參數規格

Parameter 參數	Symbol 符號	Min 最小值	Typ 平均值	Max 最大值	Unit 單位	Tolerance 誤差值	Test Conditinos 測試條件
Forward Voltage 正向電壓	Vf	2.8	--	3.4	V	±0.05V	IF/正向電流=20mA Test Temperature 測試溫度=25°C
Luminous Intensity 發光強度	IV	50	--	150	mcd	±10% mcd	
波长	WL	460	--	470	nm	±1nm	
Chromatic current 光譜座標	X	--	/	--	/	±0.005	
	Y	--	/	--	/	±0.005	
Luminous Flux 光通量	Φ	0.4	/	0.8	Lm	±0.1 Lm	
Lighting Angle 發光角度	θ	---	60	---	deg	±5	
Reverse Current 反向電流	IR	--	--	10	μA	±0.1μA	Vr=5V

■ Opto-Electrical Grading Specification /光電分級規格

Forward Voltage 正向電壓	Luminous Intensity 發光強度	Color Temperature 色溫	Chromatic current 光譜座標		Test Conditions 測試條件
			X	Y	
					IF/正向電流=20mA Test Temperature 測試溫度=25°C

■ Reliability Test Items/可靠度測試項目

No.	Item 測度項目	Condition 測試條件	Time/Cycle 測試時間或週期	Number of Damaged 不良數/測試數
1.	Soldering Heat Test 焊接試驗	260 ±5 °C	10 sec	0/60
2	Thermal Shock 熱衝擊	0 °C (15sec) ~ 100 °C(15sec)	20 cycle	0/60
3	High Temp. Storage 高溫儲存	100 °C	1000Hrs	0/60
4	Low Temp. Storage 低溫儲存	-40 °C	1000Hrs	0/60
5	Temperature Cycle Test 高低溫迴圈	-40 °C ~ 80 °C	100 Cycles, 200 Hrs	0/60
6	High Temp. High Humidity Test 高溫高濕	60 °C, 90 % RH	1000 Hrs	0/60
7	Operation Life Test 1 常溫老化	Room Temp., 20mA	1000 Hrs	0/60
8	Operation Life Test 2 常溫老化	Room Temp., 30mA	500 Hrs	0/60
9	High Temp. Operation Life Test 高溫老化	85 °C , 5mA	1000 Hrs	0/60
10	Low Temp. Operation Life Test 低溫老化	-30 °C , 20mA	1000 Hrs	0/60

Judgment Criteria/判定標準：

Item 項目	Symbol	Test Conditions	Judgment Criteria
Forward Voltage 正向電壓	Vf	I _F = 20 mA	Δ% < 10 %
Leakage Current 反向漏電流	I _r	V _r = 5V	< 10 uA
Luminous Intensity 發光強度	I _v	I _F = 20 mA	Δ% < 20 %
Luminous Flux 光通量	Im	I _F = 20 mA	Δ% < 20 %

■ Caution/注意事項

- 1、After open the package, the LED should be kept at 25°C, 65 % RH environment or less.

打開包裝後請在溫度 25±3 °C 濕度 65±5%的環境下使用。

- 2、The LED should be soldered within 48 hours (2 days) after opening the package.

打開包裝後請在 48 小時內作焊接。

- 3、The LAMP LED is an ESD sensitive device. All the equipment and machine must be properly grounded.

LED 是靜電敏感器件，使用時所有設備、機構都需有適當的接地導電措施。

- 4、when make use of it, please use static-free container, operator should wear antistatic clothes and rope-static-ring also should make effective ground.

使用時請使用防靜電的盛裝容器，作業人員應穿著防靜電服裝及佩戴有繩之靜電環並作有效接地。

- 5、Damaged device will appear some symptoms, lower forward voltage, higher leak current, or even short circuit

受靜電與突波破壞之 LED 的電性特性上，會有明顯的漏電流，或驅動電壓明顯變低，甚至是短路現象。

- 6、It's unsuitable for circumfluence soldering

本產品不適合作回流焊接。

- 7、ferrochromium soldering :power keep no more than 40W,tip temperature should not pass 280 °C,soldering time within 3 second, welding position and lens should keep 1.6mm distance at least

鉻鐵焊接時鉻鐵功率不要超過 40W，尖端溫度不要超過 280 °C，焊接時間不要超過 3 秒，焊接位置最少與膠體保持 1.6mm 距離。

- 8、wave-soldering: temperature should not pass 265 °C, soldering time within 5 second, welding position and lens should keep 1.6mm distance at least

波峰焊接時溫度不超過 265 °C，焊接時間不要超過 5 秒，焊接位置最少與膠體保持 1.6mm 距離。

- 9、After soldering the LED should keep out off any shake or outer force before it come to normal temperature

在焊接溫度回到正常以前，必須避免使 LED 受到任何震動或外力。

- 10、when shaped pin should used tong or by professional staff,keep 2mm at least between lens and bend pin, the pin should been shaped before soldering..

引腳成形必須使用夾具或由專業人員來完成，離膠體最少 2mm 才能彎折引腳，並請在焊接前完成引腳成形。

- 11、the pin can't not be press in high temperature, cut pin in room temperature because in high temperature LED may fail

高溫時，不可對引腳施壓，請在室溫時裁切引腳，高溫時裁切可能會造成 LED 失效。

- 12、after shape ,pin space should keep in line with the PCB board space

引腳成形後必須保證引腳間距和線路板上一致。

- 13、LED is one-way continuity, please check electrode before mount, if amount wrong ,the LED chip will damage or fail when LED applied voltage

單嚮導通性，安裝前確認極性，若裝反，在施加電壓時容易造成 LED 晶片損傷或失效。

- 14、ordinary our LED the long pin is anode ,short pin is cathode, lens without gap is anode ,with gap is cathode.unless other special require and note

通常在無特別要求或提示下，我們提供的 LAMP LED 的長腳為正極，短腳為負極。膠體無缺口的一端為正極，有缺口的一端為負極。

- 15、please design the PCB board to keep a distance between LED and other emit heat component

線路設計時，請不要將 LED 與發熱元件靠得過近。

- 16、strongly recommend design the board according setting current other than setting voltage .if you are really need setting voltage type please consider there may cause influence arise by difference voltage of difference LED

電路設計上，建議以定電流設計，若為定電壓設計，請考慮 LED 之間不同正向電壓所可能造成之影響。

- 17、the outer voltage change will bring the current index change .unsuitable design and current control,easy cause LED fail .for example excess current will cause LED life short or even burn down , too little electricity will cause lacking light

LED 之外加電壓變化，會造成電流指數級變化，不當之設計與電流控制，易造成 LED 失效，如電流過大引起壽命問題甚至燒毀，電流過小引起亮度不足。

- 18、If you need make difference BIN LED in the one module .please confirm whether it can meet the electric and optics characteristic require such as the current balance, emitting and brightness consistency.

不同 BIN 號之 LED 需安裝在同一個元件時，請先確認是否可滿足相關電氣及光學之特性要求，如電流是否均衡，光色、亮度的一致性。