 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	1/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
Title : 带灯开关 Switch With LED				

## 1. SCOPE (适用范围)

This specification covers the performance, tests and quality requirements for the .Switch With LED 本规范涵盖了盖带灯开关的性能、测试和质量要求。)

## 2. PRODUCT DESCRIPTION (产品描述)

DESCRIPTION (描述)	Part Number (料号)
带灯轻触开关7.2x6.4x7插件带红灯	TM-005-D-02

## 3. APPLICABLE DOCUMENT (适用文件)

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence. (下列文件构成本规范的一部分，在此规定的范围内。本规范要求与产品图纸有冲突时，以产品图纸为准。如果本规范的要求与参考文件发生冲突，应以本规范为准。)


## 4. TEST STANDARD (测试条件)

4.1 Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows (除另有说明外，用以进行测量和测试的标准环境条件范围如下)

Ambient temperature (环境温度) : 5°C to 35°C

Normal humidity (正常湿度) : 45% to 85%

Air pressure (气压) : 86Kpa to 106Kpa

 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	2/9
	Date Issued	2020-04-06	Prepared by	Josephine
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<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
<b>Title :</b> 带灯开关 Switch With LED				

- 4.2 However if doubt arises on the decision based on the measured Values under the above-mentioned Conditions. The following conditions shall be employed: （但是在对判定产生疑问时,按下述状态实施）
- Temperature （温度）:  $20\pm 2^{\circ}\text{C}$
- Relative humidity （相对湿度）:  $65\pm 5\%$
- Air pressure （气压）: 86Kpa to 106Kpa

## 5. REQUIREMENTS （要求）

### 5.1 Product Structure and Materials （产品结构和材料）

### 5.2 Ratings （额定功率）

Item （项目）	Standard （标准）
Rated Voltage (Maximum) 额定电压	30V DC
Rated Current (Maximum) 额定电流	100MA
Operating temperature range 工作温度范围	-25℃～+85℃ From -25 to +85 degree centigrade
Storage Temperature Range 储存温度范围	-25℃～+85℃ From -25 to +85 degree centigrade


## 6. PERFORMANCE AND TEST DESCRIPTION （性能和测试类型）

### 6.1 APPEARANCE （外观）

ITEM	DESCRIPTION （类型）	TEST CONDITION （测试条件）	REQUIREMENT （要求）
1	<b>Appearance</b> （外观）	<b>Visual.</b> （目视）	<b>Should not have any flaw Scratch discoloration and crushed</b> （无任何裂痕、刮伤、污染和变形）

### 6.2 ELECTRICAL （电气）


ITEM	DESCRIPTION （类型）	TEST CONDITION （测试条件）	REQUIREMENT （要求）
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 <b>Xibang Electronics</b> <b>Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	3/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
Title : 带灯开关 Switch With LED				


1	<b>Contact Resistance</b> 接触电阻	<b>Rating (电压) : DC 5V</b> <b>Current (电流) : 100±2mA</b>	<b>100 mΩ Max.</b>
2	<b>Insulation Resistance.</b> (绝缘电阻)	<b>Measurements shall be made following application of DC100V potential between terminals and between individual terminals and frame for one minute.</b> (在端子与端子之间, 端子与外壳之间施加 DC100V, 一分钟, 测量相邻两端的绝缘电阻)	<b>100 MΩ min.</b>
3	<b>Dielectric strength.</b> (耐电压)	<b>AC 250 V (50Hz or 60Hz) shall be applied between terminals and between individual terminals and frame for one minute.</b> (在端子与端子之间, 端子与外壳之间施加 AC250V(50HZ-60HZ))	<b>There shall be no breakdown.</b> (无击穿、闪烁现象)

### 6.3 MECHANICAL (机械)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	<b>Press force</b> (动作力)	<b>Place the switch such that the direction of switch operation is vertical and then gradually increase the load applied to the center of the stem, the maximum load required for the stem to come to a stop shall be measured.</b> (开关的动作方向为垂直放置开关向推柄中心逐渐地增加负荷直到推柄停止时所测量的最大负荷)	<b>1.7±0.5N</b> <b>or 2.2±0.5N</b> <b>or 2.6±0.5N</b>
2	<b>Travel</b> (行程)	<b>Place the switch such that the direction of switch operation is vertical and then apply a static load twice the actuating force to the center of the stem, the travel distance for the stem to come to a stop shall be measured.</b> (开关的动作方向为垂直放置开关, 并以双倍动作力的静负荷作用推柄中心, 测量推柄从开始到停止的行程距离)	<b>0.25 ± 0.1mm</b>

 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	4/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
<b>Title :</b> 带灯开关 Switch With LED				


3	<b>Return Force</b> (返回力)	The sample switch is installed such that the direction of switch operation is vertical and, upon depression of the stem in its center the whole travel distance, the force of the stem to return to its free position shall be measured. (开关的动作方向为垂直放置开关, 在已有行程的推柄中心向上减小压力, 推柄回到自由位置时所测量到的力)	0.6±0.3N or 0.7±0.3N or 0.8±0.3N
4	<b>Actuator Strength</b> (驱动件强度)	Placing the switch such that the direction of switch operation is vertical, a static load of 5N shall be applied in the direction of stem operation for a period of 5 seconds. (开关的动作方向为垂直放置开关, 在推柄动作方向施加 5N 的静负荷, 5 秒时间)	Item 6.3.1 、 6.2.1 to 6.2.3 shall be satisfied. Without damage of actuator. Function and action is in gear. (满足 6.3.1, 6.2.1-6.2.3 项 要求且操作元件不被损坏或太松)
5	<b>Connection Port Strength</b> (接线端强度)	To any the connection place pull 10N , 10±1sec. (接线端任意方向施加 10 牛顿的力, 持续时间: 10±1 秒。)	Without damage of connection Port function and action is in gear. (接线端无损伤, 脱落; 功能动作正常)
6	<b>Librate</b> (振动)	Librate frequency:10-500Hz Swing : Extent cost displacement should be 0.35mm; The accelerated extent cost should be 50m/s2. The scan time:11 minutes once a time. Do it for five times. (振频 10-500Hz 振幅位移幅值: 0.35mm; 加速度幅值: 50m/s2, 每次扫描时间: 11 分钟, 共进行 5 次循环)	Item 6.2.1 shall be satisfied, the facade of the switch have no abnormity , motion and function. (应满足 6.2.1 项, 外观 无明显异常, 功能动作应正常)

 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	5/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
Title : 带灯开关 Switch With LED				


7	Life Text (寿命测试)	<b>100,000 cycles of a knob operation shall be performed continuously at a rate of 2~3 cycles/sec.</b> (操作元件以每秒钟 2~3 次的速度连续完成 100,000 次动作)	<b>Press force. Refer to Item 6.3.1 动作力, 参照 6.3.1 : <math>\pm 30\%</math> of initial force 初始力度值 <math>\pm 30\%</math></b> <b>Contact resistance Refer to Item 6.2.1 接触电阻, 参照 6.2.1: <math>100\text{ m}\Omega</math> Max.</b> <b>Insulation resistance Refer to Item 6.2.2 绝缘电阻, 参照 6.2.2: <math>100\text{ M}\Omega</math> Min.</b> <b>Dielectric strength Refer to Item 6.2.3 耐电压, 参照 6.2.3: There shall be no breakdown 无击穿、闪烁现象</b>
8	Average Life (灯寿命)	<b>40000-50000hour continuous lamp life</b> 灯连续使用寿命 40000~50000 小时	Normal 正常

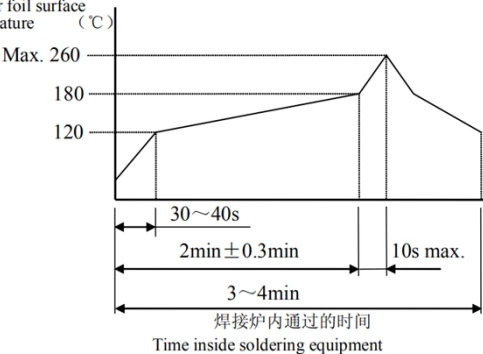
#### 6.4 ENVIRONMENTAL (环境)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	Solder ability (可焊性)	<b>An hour later , the steam ageing. The soldering area of the terminal shall be immersed into molten solder at a temperature of <math>235\pm 5^{\circ}\text{C}</math> for <math>2\pm 0.5\text{sec}</math>.</b> 蒸汽老化 1 小时后。端子的焊接部分浸入温度为 $235\pm 5^{\circ}\text{C}$ 熔融的焊锡内 $2\pm 0.5$ 秒。	<b>More than 90% of the dipping part shall be covered by solder.</b> 大于浸入部分的 90% 被焊锡覆盖


 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	6/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
<b>Title :</b> 带灯开关 Switch With LED				

2	<b>Invaria-Blenes Damp Heat</b> (恒定湿热)	<p>Switch for test shall be stored at a temperature <math>40\pm2^{\circ}\text{C}</math> ,and a relative humidity of 90-95% for 96 hours. Then the switch shall be maintained at standard atmospheric conditions for an hour after which measurement shall be made within 96hour.</p> <p>放置在温度为 <math>40\pm2^{\circ}\text{C}</math> ,相对湿度为 90-95%的环境中 96 小时,然后再放在标准大气环境中 1 小时,在此后 1 小时内进行测量</p>	<p><b>Press force and appearance</b> 动作力和外观: 参照 6.3.1 和 6.1.1</p> <p><b>Contact resistance</b> Refer to Item 6.2.1 接触电阻, 参照 6.2.1: <b>100 mΩ Max.</b></p> <p><b>Insulation resistance</b> Refer to Item 6.2.2 绝缘电阻, 参照 6.2.2: <b>100 MΩ Min.</b></p> <p><b>Dielectric strength</b> Refer to Item 6.2.3耐电压, 参照 6.2.3:</p> <p><b>There shall be no breakdown</b>无击穿、闪烁现象</p>
3	<b>Dry heat proof</b> 耐高温	<p>Switch for test shall be stored at a temperature of <math>70\pm2^{\circ}\text{C}</math> for 72 hours , and at standard atmospheric Conditions for 1hour then to be measured within an hour.储放在 <math>70\pm2^{\circ}\text{C}</math> 的温箱中 72 小时后,在标准大气环境中放置 1 小时,然后在 1 小时之内测量</p>	<p><b>Press force and appearance</b> 动作力和外观: 参照 6.3.1 和 6.1.1</p> <p><b>Contact resistance</b> Refer to Item 6.2.1 接触电阻, 参照 6.2.1: <b>100 mΩ Max.</b></p>
4	<b>Cold Proof</b> 耐低温	<p>Switch for test shall be stored at a temperature of <math>-25\pm3^{\circ}\text{C}</math> for 16 hours , and at standard atmospheric conditions for 1hour then to be measured within 1 hour.</p> <p>储放在<math>-25\pm3^{\circ}\text{C}</math>的冰箱中 16 小时后,在标准大气环境中放置 1 小时,然后在 1 小时之内测量</p>	<p><b>Insulation resistance</b> Refer to Item 6.2.2 绝缘电阻, 参照 6.2.2: <b>100 MΩ Min.</b></p> <p><b>Dielectric strength</b> Refer to Item 6.2.3耐电压, 参照 6.2.3:</p> <p><b>There shall be no breakdown</b>无击穿、闪烁现象</p>

 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	7/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
Title : 带灯开关 Switch With LED				

5	<b>Soldering heat resistance 耐焊接热</b>	<p>The soldering area of the terminal shall be immersed into molten solder at a temperature of 260+5°C for 5 sec.</p> <p>端子的焊接部分浸入温度为 260+5°C 熔融的焊锡内 5 秒</p>	<p>There shall not be deforming in appearance 不能出现变形</p> <p>The requirements specified in Item 6.3.1, 6.2.1 to 6.2.3 shall be satisfied.</p> <p>满足 6.3.1, 6.2.1 to 6.2.3 项要求</p>
6	<b>Hand soldering 手工焊接</b>	<p>Please practice according to bellow conditions: (请按以下条件进行焊接)</p> <p>(1) Soldering temperature 焊锡温度:</p> <p>≤360°C</p> <p>(2) Continuous soldering time 连续焊接时间: ≤5 S</p> <p>Capacity of soldering iron 电烙铁功率: ≤20 W</p>	<p>Should not have any flaw scratch and crack.</p> <p>无任何裂痕、刮伤和破裂</p>
7	<b>Automatic flow soldering 自动焊接</b>	<p>For the product of SMD, in case an automatic flow soldering apparatus is used for soldering adhere to the following conditions: (对于 SMD 产品, 如果使用喷流式自动焊接装置焊接时, 请按以下条件进行焊接)</p> <p>铜箔表面的温度 Copper foil surface temperature (°C)</p>  <p>Max. 260 180 120</p> <p>30~40s 2min ± 0.3min 10s max. 3~4min 焊接炉内通过的时间 Time inside soldering equipment</p>	<p>Should not have any flaw scratch and crack (无任何裂痕、刮伤和破裂)</p> <p>No visual damage to insulator. (绝缘体不得有严重变形)</p>



 <b>Xibang Electronics Switch Connector</b>	Doc. No.	TM-A0162-38	Page No.	8/9
	Date Issued	2020-04-06	Prepared by	Josephine
	Date revised	2020-11-23	checked by	Jay
<b>Product Specification</b>	Rev. No.	01	Approved by	Mei Chen
Title : 带灯开关 Switch With LED				

7	<b>Automatic Flow Soldering</b> （自动焊接）	<p>(1) <b>Preheat:</b> Temperature on the copper foil surface should reach preheat maximum temperature of 180 °C within 2min ± 0.3min. after the PWB entered into the soldering equipment. （预热：在 PWB 进入焊接装置后，在 2±0.3 分钟内铜箔表面的温度应达到预热的最高温度 180 °C；）</p> <p>(2) <b>Soldering:</b> Temperature on the copper foil surface should reach the peak temperature of 260°C within 10 seconds max. after the PWB entered into soldering heat zone. （焊接：在 PWB 进入焊接热区域后，最长 10 秒内铜箔表面的温度应达到 260°C 的峰值温度；）</p> <p>(3) <b>Caution:</b> The condition mentioned above is a temperature on the PWB surface on which parts are mounted. There are cases where PWB temperature greatly differs from switch's surface temperature depending on PWB material , size , thickness , etc . Care , therefore , should be used not to allow switch's surface temperature to exceed 280°C. （说明：以上提及的条件是零部件上 PWB 表面的温度，由于 PWB 的材料，尺寸、厚度等不同 PWB 从开关表面获得的温度也会有很大的不同，因此，千万小心不要让开关表面的温度超过 280°C。）</p>	<p><b>Should not have any flaw scratch and crack</b> (无任何裂痕、刮伤和破裂)</p> <p><b>No visual damage to insulator.</b> (绝缘体不得有严重变形)</p>
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