

APPROVAL SPECIFICATIONS

Title. SELF LOCK SWITCH

Product Model. PB21E09171-07

Customer's Part NO. _____

Customer's Model: _____

Customer's Approval Requested.

Please return this copy as a certification of your approval.

Checked by: _____ Date: _____

Approved by: _____ Date: _____

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1、概述 GENERAL

1.1 适用范围 APPLICATION

此规格书适用于机械式按键开关的相关要求

This specification is applied to the requirements for PUSH SWITCH (MECHANICAL CONTACT)

1.2 工作温度范围 Operating Temperature Range

-20℃~80℃(在标准大气压、标准湿度条件下)

-20℃~80℃(Normal humidity, normal air pressure)

1.3 贮藏温度范围 Storage Temperature Range

-30℃~80℃(在标准大气压、标准湿度条件下)

-30℃~80℃(Normal humidity, normal air pressure)

1.4 测试条件 Test Conditions

在没有其它特定的条件下，应该在以下的条件下进行测试和测量：

Unless otherwise specified, tests and measurement shall be made in the following standard conditions:

常温.....5℃~35℃

Normal temperature.....5℃~35℃

标准湿度.....相对湿度 25%~85%

Normal humidity.....relative humidity 25%~85%

标准大气压.....86Kpa~106Kpa

Normal air pressure.....86Kpa~106Kpa

在制造过程中，测试和测量应该在以下的条件下进行：

If any doubt arise from the judgment, tests shall be conducted at the following conditions:

温度.....20℃±2℃

Temperature.....20℃±2℃

相对湿度.....65%±5%

Relative humidity.....65%±5%

环境气压.....86Kpa~106Kpa

Air pressure.....86Kpa~106Kpa

1.5 存储方法 Storage method

1. 使用前确保包装完整无破损，无浸湿。

Ensure that the product without package breaking or wetting before use.

2. 存储条件 Storage conditions:

储存温度 Storage temperature: -5 ~ 35 ℃;

储存湿度 Storage humidity: 25% ~80%;

未开封状态：6个月内使用完毕（从发货日开始计算）；超过6个月后再使用的，使用前请先验证：端脚无氧化、无发黑、塑料件无吸湿起泡，确保焊接的适宜性；

Unopened status: Use up the product as soon as possible before 6 months. (calculated from shipment date). Over 6 months, please make sure below ;

before use it: terminal without oxidation or blackening, plastic parts without moisture absorption or bubble, ensure solderability.

已开封状态：1个月内使用完毕；

Opened status: use up within 1 month;

储存注意事项：避开高湿高温和有腐蚀性气体的环境及阳光直射；

Storage precautions: Please avoid the following environment: with high humidity, high temperature , corrosive gases and direct sunlight.

3. 请勿超重叠放。

Do not stack too many switches.



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2、 详细说明

Detailed specification

2.1 外观：应无影响、降低产品性能的缺陷；

Appearance: There should be no defects that affect the serviceability of product.

2.2 结构尺寸和安装尺寸：应符合装配图要求；

Style and dimension: shall conform to the assemble drawings.

2.3 操作形式：有触觉反应的操作

Type of actuating: Tactile feedback.

2.4 接触方式：具体的触点结构在装配图中已绘出；

Details of contact arrangement are given in the assembly drawings.

2.5 最大功率： DC 30V, 0.1A

Most ratings: DC 30V, 0.1A

3. 电气性能：**ELECTRICAL SPECIFICATION**

项 目 ITEM		试 验 条 件 TEST CONDITIONS	要 求 REQUIREMENTS
3.1	接触电阻 Contact Resistance	在以 5V 10mA 的直流电源或不低于 1KHz 的交流电源的电路中，以一个等于 2 倍按力的静负荷施加于手柄中心 Applying a static load of 2 times operating force to the center of the stem, measurements shall be made by 5V DC 10mA or more than 1KHz AC small-current contact resistance meter.	$\leq 100\text{m}\Omega$
3.2	绝缘电阻 Insulation Resistance	在端子之间施加 DC 100V /min 的条件下,测量端子之间底的电阻值 Measurement of resistance between terminals under DC 100V / min applied between terminals.	$\geq 100\text{M}\Omega$
3.3	介质耐压 Dielectric voltage proof	在端子之间施加 250V AC(50Hz 或 60Hz)/min 250V AC (50Hz or 60Hz) shall be applied across terminals, for one minute.	无击穿、无飞弧 There should be no breakdown and flashover



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项目 ITEM	试验条件 TEST CONDITIONS			要求 REQUIREMENTS
4. 机械性能: MECHANICAL SPECIFICATION				
4.1	按力 Operating Force	开关垂直于操作方向放置，在开关驱动件顶端中心逐渐施力，测量开关导通所需的最大力度。 Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the center of the stem, the maximum load required for the switch to come to a stop shall be measured.		按装配图所示 Refer to assembly drawings
4.2	最大行程 Full Travel	开关垂直于操作方向放置，以一个等于 2 倍按力的静负荷施加在开关驱动件顶端中心，测量顶端移动的距离。 Placing the switch such that the direction of switch operation is vertical and then applying static load of 2times operating force to the center of the stem; the travel distance for the switch to come to a stop shall be measured.		按装配图所示 Refer to assembly drawings
4.3	可焊性 Solderability	在以下设定条件下进行测量: Measurements shall be made following the test set forth below: (1) 焊接温度:235±5℃ Solder temperature : 235±5℃ (2) 浸入时间:3s±0.5s Immersion time: 3s±0.5s 对于其它步骤参考《GB 5095.6—86》试验 12a The other steps please refer to 《GB 5095.6-86》 TEST 12a		除边缘外涂层应均匀覆盖 90%以上 Except for the edge, the coating should cover a minimum 90%



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5、极限电气性能：

ENVIRONMENTAL SPECIFICATION

项目 ITEM		试验条件 TEST CONDITIONS	要求 REQUIREMENTS
5.1	低温测试 Resistance to low temperature	<p>样品应放在常温及标准湿度的环境中 1 小时后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1)温度：-30±2℃ Temperature :-30±2℃</p> <p>(2)时间：72h Time: 72h</p> <p>(3)水滴应擦去 Dripping should be get rid of.</p>	
5.2	高温测试 Heat resistance	<p>样品应放在常温及标准湿度的环境中 1 小时后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：80±2℃ temperature:80±2℃</p> <p>(2) 时间：72h time: 72h</p>	<p>① 接触电阻 ≤500m Ω Contact resistance : ≤500m Ω</p> <p>②绝缘电阻 ≥10M Ω Insulation Resistance: ≥10M Ω</p> <p>③项目 3.3</p>
5.3	湿温测试 Moisture resistance	<p>样品应放在常温及标准湿度的环境中 1 小时后，根据下面的测试要求进行测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：40±2℃ temperature: 40±2℃</p> <p>(2) 相对湿度：90%~95% relative humidity:90% to 95%</p> <p>(3) 时间：72h time: 72h</p> <p>(4) 水滴应擦去 Dripping should be get rid of.</p>	



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项目 ITEM	试验条件 TEST CONDITIONS			要求 REQUIREMENTS

6、极限机械性能：

ENDURANCE SPECIFICATION

6.1	工作寿命 Operation life	<p>根据下面的测试要求进行测试： Measurement shall be made following the test set forth below:</p> <p>(1) DC 5V, 50mA 带负载 DC 5V, 50 mA resistive load</p> <p>(2) 按动速率：15~30 次/min Rate of operation: 15 to 30 times/min</p> <p>(3) 按力：按力的 2 倍 Operating Force: Operating Force 2 double</p> <p>(4) 无故障寿命：10,000 次 fault-free life: 10,000 cycles</p>	<p>①接触电阻$\leq 500\text{m}\Omega$ Contact resistance : $\leq 500\text{m}\Omega$</p> <p>②绝缘电阻$\geq 10\text{M}\Omega$ Insulation Resistance: $\geq 10\text{M}\Omega$</p> <p>③按力：初值的$\pm 30\%$ Operating Force: initial value$\pm 30\%$</p> <p>④项目 3.3 Item 3.3</p>
6.2	振动 Vibration	<p>根据以下给定条件进行测试： Measurement shall be made following the test set forth below:</p> <p>(1) 振动频率范围：10~55~10Hz Vibration frequency range: 10 to 55 to 10Hz</p> <p>(2) 振幅（峰—峰）：1.5mm Amplitude: 1.5mm</p> <p>(3) 振动方向：包括手柄行程方向在内的三个相互垂直的方向 Direction of vibration: Three mutually perpendicular direction including the direction of stem travel</p> <p>(4) 测试时间：每次 2hours ，共 6 小时 Duration: Each 2hours.together 6 hours</p>	项目 3, 4. 1 Item 3, 4. 1



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项目 ITEM	推荐条件 Recommended conditions			要求 REQUIREMENTS

7. 焊接条件:

SOLDERING CONDITIONS:

7.1	手工焊接 Hand soldering	请按以下条件进行焊接: (1) 焊锡温度: $\leq 350^{\circ}\text{C}$, (2) 连续焊接时间: $\leq 3\text{ s}$ Please practice according to below conditions: (1) Soldering temperature: 350°C Max. (2) Continuous soldering time: 3 s Max.		
7.2	自动浸焊 Conditions for Auto-dip	项目 Items	条件 Condition	
		助焊剂附着量 Flux built-up	不附着于零部件贴装面的程度 Mounting surface should not be coated with flux	
		预热温度 Preheating temperature	印刷电路板焊接面的周围温度 100°C max. Ambient temperature of the soldered surface of PC board. 100°C max.	
		预热温度时间 Preheating time	60s max.	
		焊接温度 Soldering emperature	260°C max.	
		焊接浸渍时间 Continuous dipping time	5s max.	
		焊接次数 Number of soldering	最多两次 2times max.	

注意事项(Notes):

a、印刷基板的焊盘尺寸参见产品图。

The pad size of the printed substrate is shown in the product diagram.

b、在使用烙铁的情况下，焊锡温度应在 350°C 以下、3 秒以内。

In the case of using soldering iron, soldering conditions shall be 350°C max and 3 sec.max.

c、防止助焊剂从开关的顶端渗入

Prevent flux penetration from the top of the switch

d、开关浸焊后，注意不要用溶剂或类似品清洗开关。

After switches were soldered, please be careful not to clean switches with solvent or other similar products.

e、浸焊后，注意不要在顶部施加负荷。

Right after switches were soldered; please be careful not to load to on the knobs of switches.

f、注意不要施加超负荷的压力或晃动开关。

Please be cautions not to give excessive static load or shock to switches.

g、开关浸焊后，印刷基板注意不要叠放。

Please be careful not to pile up P.W.B. after switches were soldered

