

## APPROVAL SPECIFICATIONS

Title. PUSH SWITCH

Part NO. PB22E09071-07

Customer's Part NO. \_\_\_\_\_

Model: \_\_\_\_\_

### Customer's Approval Requested.

Please return this copy as a certification of your approval.

Checked by: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

APPROVE	REVIEW	PREPARE
黄自兵	林庆杰	孙高高



CUSTOMER	CUSTOMER'S P/N	GYE'S P/N	PRODUCT	REVISION
		PB22E09071-07	PUSH SWITCH	A

1、概述

GENERAL

1.2 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)

1.3 工作温度范围

Operating Temperature Range

-5℃~35℃(在标准大气压、标准湿度条件下

-5℃~35℃ (Normal humidity, normal air pressure)

1.4 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)

1.5 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 45%~85%

Normal humidity.....relative humidity 45%~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℃

环境气压.....86KPa~106KPa

Air pressure.....86KPa~106KPa

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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: 30V DC, 0.1A

## 3. 电气性能：

## ELECTRICAL SPECIFICATION

项 目 ITEM		试 验 条 件 TEST CONDITIONS	要 求 REQUIREMENTS
1	接触电阻 Contact Resistance	在不低于 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按钮中心 Applying a static load of 2 times operating force to the center of the button, measurements shall be more than 1KHz AC small-current contact resistance meter.	$\leq 100\text{m}\Omega$
2	绝缘电阻 Insulation Resistance	在端子之间施加 DC 500V /min 的条件下,测量端间和壳体的电阻值 Measurement shall be made following application of 500V DC potential, across terminals, and across terminals and substance, for one minute.	$\geq 100\text{M}\Omega$

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项目 ITEM		试验条件 TEST CONDITIONS		要求 REQUIREMENTS	
3	绝缘耐压 Insulation voltage proof	在端子和壳体之间施加 500V AC(50Hz 或 60Hz)/min 500V AC (50Hz or 60Hz) shall be applied across terminals and substance, for one minute.		无击穿、无飞弧 There should be no breakdown and flashover	
4. 机械性能: MECHANICAL SPECIFICATION					
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 load when switch turns on shall be measured		按装配图所示 Refer to assembly drawings	
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	
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:245±5℃ Solder temperature : 245±5℃ (2) 浸入时间:2s±0.5s Immersion time: 2s±0.5s		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

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: <math>-30\pm 2^{\circ}\text{C}</math> Temperature :<math>-30\pm 2^{\circ}\text{C}</math></p> <p>(2)时间: 72h Time: 72h</p> <p>(3)水滴应擦去 Dripping should be get rid of.</p>	<p>①接触电阻 <math>&lt; 500\text{m}\Omega</math> Contact resistance : <math>&lt; 500\text{m}\Omega</math></p> <p>②绝缘电阻 <math>&gt; 10\text{M}\Omega</math> Insulation Resistance : <math>&gt; 10\text{M}\Omega</math></p> <p>③项目 3.3</p>
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: <math>80\pm 2^{\circ}\text{C}</math> temperature:<math>80\pm 2^{\circ}\text{C}</math></p> <p>(2) 时间: 72h time: 72h</p>	
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: <math>40\pm 2^{\circ}\text{C}</math> temperature: <math>40\pm 2^{\circ}\text{C}</math></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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## 6、极限机械性能:

## ENDURANCE SPECIFICATION

项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS			
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: 2 times as much as Operating Force</p> <p>(4) 平均无故障寿命: 10,000 次 Average fault-free life: 10,000 cycles</p>	<p>①接触电阻 &lt; 500mΩ Contact resistance : &lt; 500mΩ</p> <p>②绝缘电阻 &gt; 10MΩ Insulation Resistance : &gt; 10MΩ</p> <p>③ 按力: 初值的 ±30% Operating Force: initial value±30%</p> <p>④项目 3.3 Item3.3</p>			
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 2 小时, 共 6 小时 Duration: Each 2 hours. total 6 hours</p>	<p>项目 3, 4.1 Item 3, 4.1</p>			
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## 7. 焊接条件:

## SOLDERING CONDITIONS:

项目 ITEM		推荐条件 Recommended 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: $\leq 350^{\circ}\text{C}$ Max. (2) Continuous soldering time: $3\text{ s}$ Max.	
7.1	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 $100^{\circ}\text{C}$ max. Ambient temperature of the soldered surface of PC board. $100^{\circ}\text{C}$ max.
		预热温度时间 Preheating time	45s max.
		焊接温度 Soldering temperature	$255^{\circ}\text{C}$ max.
		焊接浸渍时间 Continuous dipping time	5s max.
		焊接次数 Number of soldering	最多两次 2 times max.

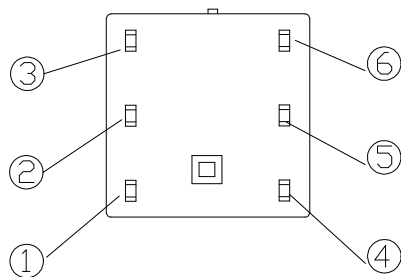
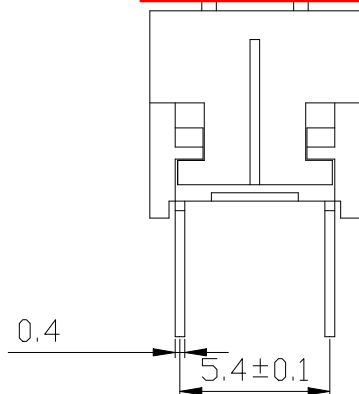
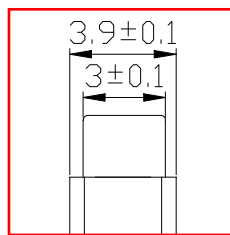
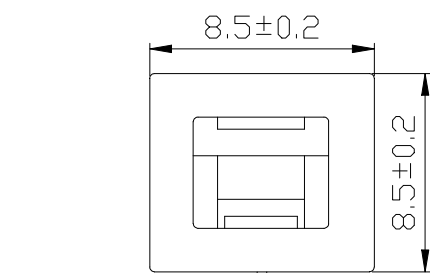
## 说明:

- 1、建议选用含助焊剂 0.2%以下的锡膏，并避免助焊剂进入开关内而导致开关失效。
- 2、设计按压推柄时，请参考所提供的图低，切勿以尖状物直接按压开关，且压柄需垂直置于开关中心位置按压，并将压柄摇晃度控制在 $\pm 3^{\circ}$ 以内。
- 3、开关焊接加工时，应特别注意将温度及时间控制在  $255^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 、5 秒内，否则过高的温度及过长的时间会导致开关的损坏或使用寿命减短。
- 4、焊接加工时开关应保持 OFF 状态，以避免开关损坏。

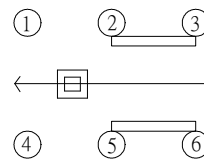
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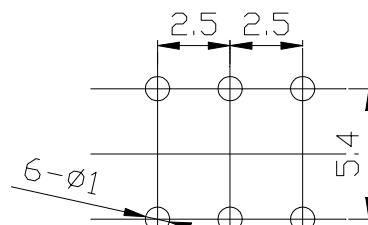
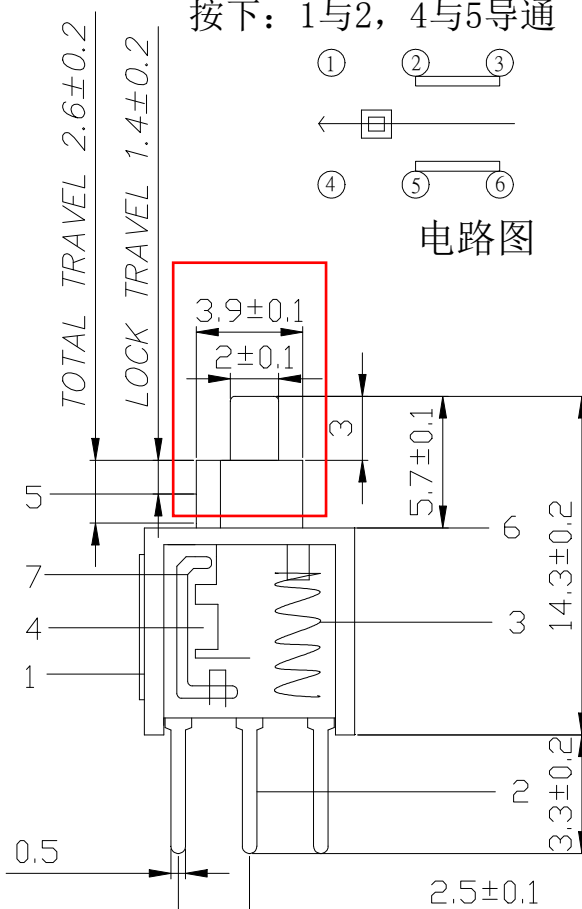
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常态：2与3，5与6导通  
按下：1与2，4与5导通



电路图



印制线路板

7	钩 针(HOOK)	不锈钢(SUS)	1	
6	上 盖(COVER)	PC	1	深灰色(DARK GREY)
5	手 柄(STEM)	POM	1	本色(NATURAL COLOR)
4	接触片(CONTACT)	复银铜(PHOSPHOR BRONZE)	2	镀银(AG PLATING)
3	弹 簧(SPRING)	碳素钢丝(CARBON STEEL WIRE)	1	
2	端 子(TERMINAL)	黄铜(BRASS) t=0.4	6	镀银(AG PLATING)
1	底 座(BASE)	PA66	1	黑色(BLACK)
序号	部件名称	材 料	数量	备 注

按力：230±70gf

				PB22E09071-07		温州港源电子有限公司	
标记	处数	更改文件号	签字	日期			
制作		角度	±2°		版本	A0	
		10 ~	±0.30		比例	1:1	
审核		5 ~ 10	±0.20		页码	1 OF 1	
批准		1 ~ 5	±0.10	重量			
		~ 1	±0.05				
日期		一般公差	视图	◎ □	单位	mm	

8.5X8.5自锁开关