



深圳市首韩科技有限公司

SHENZHEN SHOUHAN TECHNOLOGY CO., LTD

Tel: 0755-27597601 Fax: 0755-27597491

承 认 书  
SPECIFICATION FOR APPROVAL

客 户 Customer:

\_\_\_\_\_

产品名称 Project:

轻触开关

\_\_\_\_\_

规格型号 Part No:


TS5217A 300gf

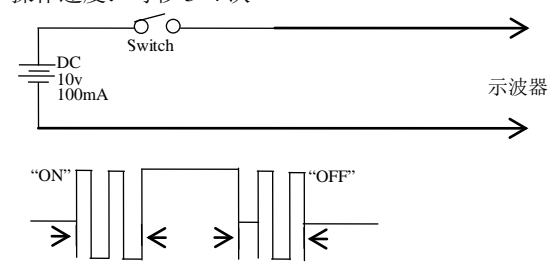
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贵公司承认印 Approval signatures

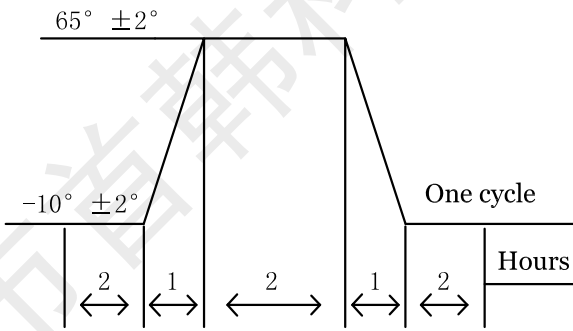
料 号/Part No.	签 章/Signatures

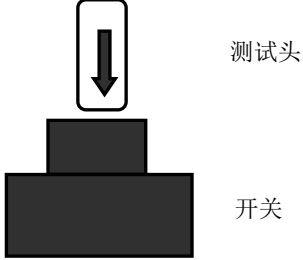
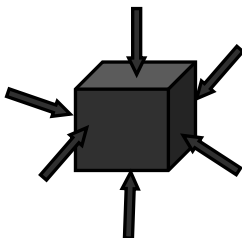
日期 Date:

拟制/Drawn	李春风	
审核/Check	张栋	
批准/Approved	罗孝金	

<b>1.General specification 基本事项</b>			
1.1 Switch action 开关种类: Tact Switch 轻触开关			
1.2 Switch rating 最大额定值: DC 12V, 50mA			
1.3 Operation temperature range 使用温度试验范围: -20°C~+70°C			
1.4 Preservative temperature range 保存温度范围: -30°C~+80°C			
1.5 Appearance and dimensions: See outside drawing page 外形尺寸: 见外形尺寸图			
1.6 Standard condition: Unless otherwise specified, the test and measurements shall be carried out as follows: 试验、测定状态 Ambient temperature 温度: 5~35°C Relative humidity 相对湿度: 25~85% Air pressure 气压: 86~106KPa (860~1060mbar) However, if doubt arises on the decision based on the measured Values under the above-mentioned conditions, the following conditions be employed 但是在对判定产生疑义时, 按下述状态实施: Ambient temperature 温度: 20±2°C Relative humidity 相对湿度: 65±5% Air pressure 气压: 86~106KPa (860~1060mbar)			
<b>2.Performance 性能</b>			
<b>2.1 Electrical characteristics 电气性能</b>			
	<b>Item 项目</b>	<b>Test condition 测试条件</b>	<b>Performance 规格</b>
2.1.1	Contact Resistance 接触电阻	Push force: (Operation force)x2 测定时的负荷: 操作方向动作力基准值的 2 倍 Measurement tool: Contact resistance meter 测定器: 微电流接触电阻计 (1KHz,20V,5~50mA)	100mΩ Max 100 毫欧以下
2.1.2	Insulation Resistance 绝缘电阻	DC 250V(Between terminals) 不相接的两端子间、端子与塑胶间施加DC 250V 的电压	100MΩ Min 100 兆欧以上
2.1.3	Withstand Voltage 耐电压	AC 250V(Between terminals) frame for 1 minute 不相接的两端子间、端子与塑胶间施加 AC250V 电压, 持续 1 分钟测量	No insulation destruction 无绝缘破坏
2.1.4	Bouncing 触点抖动	Operation speed:3~4times/s 操作速度: 每秒 3~4 次 	ON: 5ms max 以下 OFF: 5ms max 以下

2.2 Mechanical Characteristics																											
Item 项目		Test condition 测试条件	Performance 规格																								
2.2.1	Operations Force 动作力	Push by recommended operating condition 测量时，轻触开关动作方向均匀施加静负荷。	300±50gf																								
2.2.2	Travel to closure 运作行程	Push by recommended operating condition F=(Operations Force)X2 在开关的顶端！顶端的面中央沿开关动作方向施加2倍操作力测量行程，测量仪器的顶端应平。	0.20±0.1mm																								
2.2.3	Kond strength 手柄强度	30N(3Kgf) for 1 minuter 在开关驱动器顶端中央，在垂直方向加30N（3kg）力，作用60秒。	NO damage(Electrical and mechanical) 无异常（电气、机械性能）																								
2.2.4	Vibration test 耐振性	1)Amplitude 全振幅：1.5mm 2)Sweep rate: 10-55-10Hz for 1minuter 扫描速度：10-55-10Hz 1分钟 3)Sweep method:Logarithmic frequency sweep rate 扫描方式：对数频率扫描速度 4)Vibration direction:X. Y. Z (3 directions) 振动方向：X. Y. Z(3个方向) 5)Time: Each direction 2 hours(Total 6 hours) 时间：每个方向2个小时(共6个小时)	No. 2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足2.1项和2.2.1至2.2.2项																								
2.2.5	Soldering heat test 耐焊接热	Soldering area:t/2 of P.W.B thickness (P.C.B: T=1.6mm) 焊接面积：印刷基板的1/2厚度处 Soldering temperature: 260±5° C 焊接温度：260±5° c Soldering time:3±0.5sec 焊接时间：3±0.5秒	NO damage(Electrical and mechanical) 无异常（电气、机械性能）																								
2.2.6	Solderbility 可焊性	After sprated flux 涂上助焊剂后 Temperature:245±5° C 温度：245±5° C Soldering time: 2±0.5sec 焊接时间：2±0.5秒	90% or more of surface area of the portion immersed in solder shall be covered by new solder 90%或更多的浸焊面积能被焊锡覆盖																								
2.2.7	Reflow soldering Heartest  回流焊耐热实验	 <table border="1" data-bbox="466 2004 1066 2184"> <thead> <tr> <th>Parts</th> <th>Temperature (°C)</th> <th>Time at temperature(sec)</th> <th>Treatments</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>NO - 150</td> <td>60-90S</td> <td>Pre-heating zone</td> </tr> <tr> <td>B</td> <td>150 - 180</td> <td>90S</td> <td>Heat preservation zone</td> </tr> <tr> <td>C</td> <td>180 - 220</td> <td>30-40S</td> <td>Heating zone</td> </tr> <tr> <td>D</td> <td>220 - 255 - 220</td> <td>40S (其中255°C为7-10S)</td> <td>Recirculation zone</td> </tr> <tr> <td>E</td> <td>220 to NO</td> <td>60±20S</td> <td>Cooling zone</td> </tr> </tbody> </table>	Parts	Temperature (°C)	Time at temperature(sec)	Treatments	A	NO - 150	60-90S	Pre-heating zone	B	150 - 180	90S	Heat preservation zone	C	180 - 220	30-40S	Heating zone	D	220 - 255 - 220	40S (其中255°C为7-10S)	Recirculation zone	E	220 to NO	60±20S	Cooling zone	Without deformation of case or excessive looseness of electrical properties 本体无变形，能满足于机械，电气性能。
Parts	Temperature (°C)	Time at temperature(sec)	Treatments																								
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E	220 to NO	60±20S	Cooling zone																								

2.3 Characteristics机械性能			
Item 项目	Test condition 测试条件	Performance 测试条件	
2.3.1 Cold test 耐寒性	1) Temperature: $-30 \pm 2^{\circ} \text{C}$ 温度: $-30 \pm 2^{\circ} \text{C}$ 2) Duration of test: 96h 持续时间 96 小时 3) Take off a drop water 去掉水珠 4) Standard conditions after test 1h 试验后放置条件: 1小时	No. 2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足2.1项和2.2.1至2.2.2项	
2.3.2 Heat test 耐热性	1) Temperature: $80 \pm 2^{\circ} \text{C}$ 温度: $80 \pm 2^{\circ} \text{C}$ 2) Duration of test: 96h 持续时间 96 小时 3) Take off a drop water 去掉水珠	No. 2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足2.1项和2.2.1至2.2.2项	
2.3.3 Temperature 温度并变实验	According to following, after 5cycles, test After keeping in normal condition for 30min 如图环境所示, 循环5次后, 放置正常环境中, 1小时候进行测量 	No. 2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足2.1项和2.2.1至2.2.2项	
2.3.1 Humidity test 耐湿性	1) Temperature: $-60 \pm 2^{\circ} \text{C}$ 温度: $-60 \pm 2^{\circ} \text{C}$ 2) Relative humidity: 90~95% 相对湿度: 90~95% 3) Duration of test: 96h 持续时间;96小时 4) Take off a drop water 去掉水珠 5) Standard conditions after test 1h 试验后放置条件: 1小时	No. 2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足2.1项和2.2.1至2.2.2项	

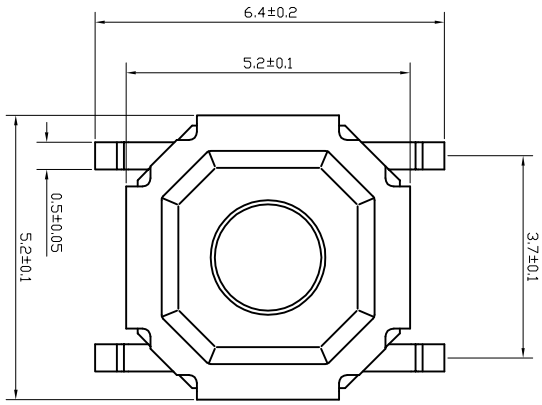
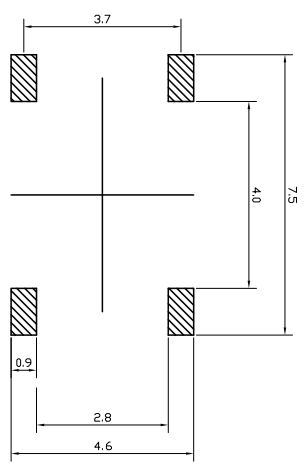
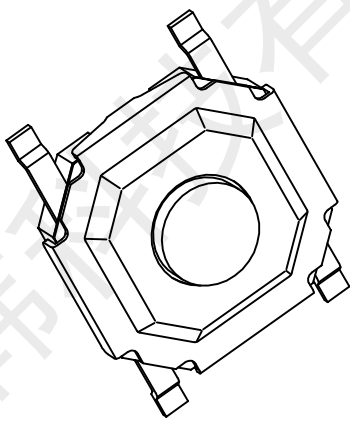
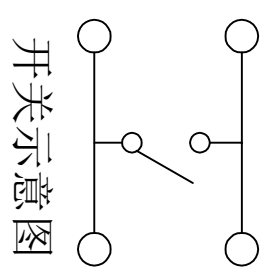
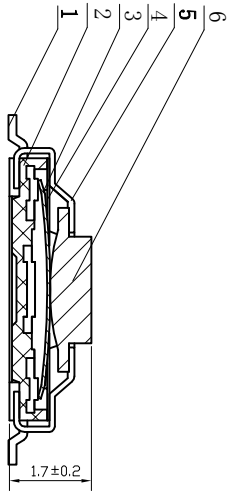
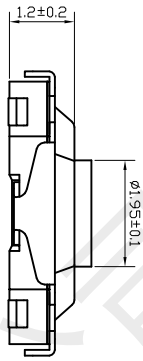
Item 项目	Test condition 测试条件	Performance 规格
2.3.5 Endurance (switching) action 耐久特性 (开关寿命)	1) Operation speed: 60 times/min 动作速度: 60次/分钟 3) Push force: Maximum vale of operation force 按力: 动作力规格值的上限 3) Operation number: 100, 000 times 动作次数: 100, 000次 安装示意图 	Contact resistance: 200mΩ max 接触电阻: 200mΩ 以下 Bouncing: 10 ms max 触点抖动: 10 毫秒以下 Insulation resistance: 100MΩ min 绝缘电阻: DC 250V, 大于 100MΩ Withstand voltage: No.destruction 耐电压: 无绝缘破坏 Variations rate of operation force shall be within ±30% to the value be fore testing 动作力的变化范围在初始值的±30%以内 2.2.2 shall be satisfied 满足 2.2.2 项
2.3.6 Withstand H <sub>2</sub> S 耐H <sub>2</sub> S	1) Density: 3±1ppm 浓度: 3±1ppm 2) Temperature: 40±2°C 温度: 40±2°C 3) Relative humidity: 90~95% 相对温度: 90~95% 4) Duration of test: 12h 持续时间: 12 小时 5) Standard conditions after test: 1h 试验后的放置条件: 1 小时	No.2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足 2.1 项和 2.2.1 至 2.2.2 项。
2.3.7 Salt mist 盐雾试验	At 5% Nacl liquor for 8 hours depend on 35°C, after washing, keep in normal condition. 5%的 Nacl 溶液, PH 值: 6.5~7.2, 在 35°C的条件下喷雾 8 小时, 用清水洗净后并在室温下晾干。	No remarkable corrosion shall be recognized in metal part. 在金属件上没有腐蚀斑点。
2.3.8 Shock 耐冲击性	Peak acceleration: 500m/S <sup>2</sup> Duration of test: 11ms 冲击加速度: 500m/S <sup>2</sup> 持续时间: 11ms Test time-6direction, each 3 times total 18 times 测试次数-6 个方向, 各 3 次共计 18 次。 	No.2.1 and 2.2.1 to 2.2.2 shall be satisfied 满足 2.1 项和 2.2.1 至 2.2.2 项。

### 3.Precaution 注意事项

#### 3.1 Soldering condition 浸焊条件

Item 项目	Condition 测试条件
Preheat temperature 预热温度	110°C max (Embilomental temperature of soldering surface of P.C.B) 110°C以下 (印刷基板焊锡周围的温度)
Preheat time 预热时间	60 sec, max 60 秒以内
Area of flux 助焊剂面积	1/2 max of P.C.B thickness 印刷基板厚度的 1/2 以内
Temperature of solder 焊锡温度	260±5°C max 260±5°C 以下
Times of immersion 浸焊时间	Within 5 sec 5 秒以内
Soldering number 浸焊次数	Within 2 times(But should bring down heat of the first soldering) 2 次以内 (但应把第一次焊锡的温度降下来)
Printed wiring board 印刷基板	Single sided copper-clad laminates 单面铜箔

- 1) After switches were soldered, please be careful not to clean switches with solvent.  
开关浸焊后, 注意不要用溶剂清洗。
  - 2) In the case of using soldering iron, soldering conditions shall be 280°C max and 3 sec max.  
在使用烙铁的情况下, 焊锡温度应在 280°C以下、3 秒以内。
  - 3) Right after switches were soldered; please be careful not to load on the knobs of switches.  
浸焊后, 注意不要在手柄顶部施加负荷。
- 3.2 Design instructions (设计中应注意事项)
- 1) Follow recommended P.C.B piercing plan in the outside drawing page.  
印刷基板的安装孔尺寸参见产品图。
- 3.3 Note (注意点)
- 1) Please be cautious not to give excessive static load or shock to switches.  
注意不要施加超过负荷的压力或晃动开关。
  - 2) Please be careful not to pile up P.C.B after switches were soldered.  
开关焊接以后, 印刷基板注意不要叠放。
  - 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.  
保管时尤其应注意避开高湿高温和有腐蚀性气体的环境, 如需长时间保存, 请不要打开包装箱。



Specification:

- ① 温度范围 Temperature:-20 +70°C
- ② 额定负荷 Current Rating:DC12V 50mA
- ③ 接触电阻 Contact Resistance:100mΩ Max
- ④ 绝缘电阻 Insulation Resistance:100MΩ Min
- ⑤ 耐电压 Withstand Voltage:AC250V(50Hz)/min
- ⑥ 动作力 Actuating Force 300gf±50gf
- ⑦ 电气寿命 Mechanical Life:100,000 Cycles

6	按键	黄铜	1	黄色
5	盖板	SUS	1	---
4	贴膜	聚酰亚胺	1	黄色
3	弹片	SUS	1	镀银
2	底座	PPA	1	黑色
1	端子	磷铜	1	镀银
编号	部件名称	材料名称	数量	备注

单位 UNIT		mm	
制图 DRAW	李春风	一般公差 GENERAL TOLERANCE	ANGLES
设计 DESIGN		XX±0.2	X±5
审核 CHECKED	张栋	XXX±0.1	X±2
校核 STANDARD		材质 MATERIAL	
		重量 WT.	
		表面积 SA.	
批准 APPROVE	罗孝金	名称 TITLE	轻触开关
日期 DATE		型号 MODEL	5. 2X5. 2X1. 7
修改 REVISE		图号 DWG NO.	
ECN编号/变更内容 ECN NO./DEFINITION		图法 PROJ.	
标记 MARK		比例 SCALE	1 : 1
		版本 REV.	A0
		张数 SHEET	第1页
		产品编码 MODEL NO.	TSS5217A 300gf

首韩 SHOUHAN 深圳市首韩科技有限公司