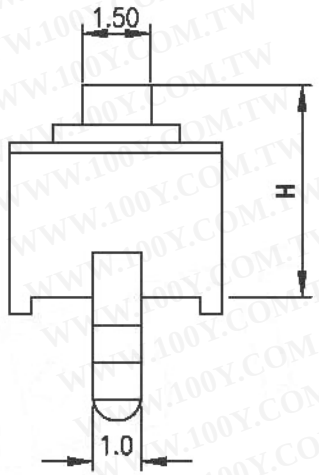

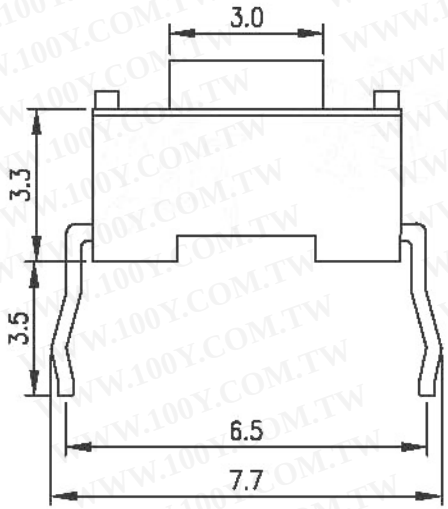

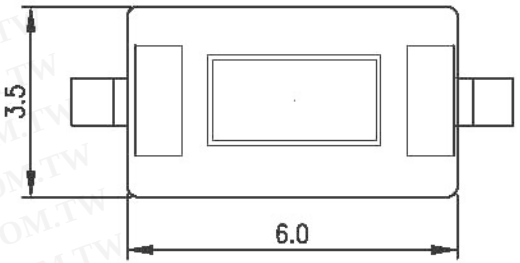

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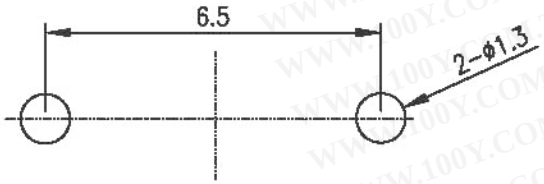


P.B.C LAYOUT TOP VIEW

CIRCUIT DIAGRAM

更版标记 REVISION NOTE	承认 APPRO.	日期 DATE	NO.	名称PART NAME	材质MATERIAL	数量QTY	备注REMARK
			10				
			9				
			8				
			7				
			6				
			5	盖板	铁	1	镀铜镍
			4	按钮	PPA	1	白色
			3	弹片	不锈钢	1	镀银
			2	引脚	黄铜	2	镀银
			1	基座	PPA	1	白色

品名 ARTICLE	轻触开关		未注公差TOLERANCE	
型号 MODEL	TS-1101E		PLASTIC TOL	±0.20
料号 PART NO.	605C2021系列		METAL TOL	±0.10
单位 UNIT	mm			
版本 EDITION	2.0			
制图DRAW	审核CHECK	批准APPRO.	PROJECTION视图方法	

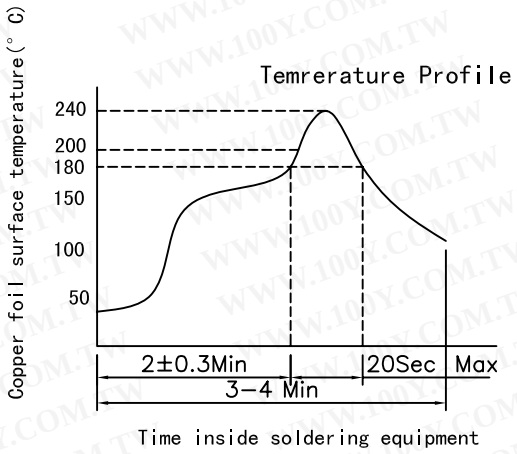
产品规格书
PRODUCT SPECIFICATIONS

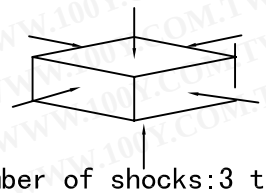
产品名称Product Name	轻触开关
型　　号Model No	TS-1101E
料　　号Part No	605C02021系列
1.一般特性(General Characteristics):	
1.1 适用范围(Application):	该规格书指轻触开关的一般使用范围(This specification is applied to the Tact switch for general applications.)
1.2 使用温度范围(Operating Temperature Range):	-20℃～+70℃
1.3 保存温度范围(Storage Temperature Rang)	-30℃～+80℃
1.4 实验条件(Test Conditions):	若没有特殊说明,则试验在大气条件如下 (Unless otherwise specified,.the atmospheric conditions for making measurements and tests are as follows;) 环境温度(Ambient Temperature):5-35℃ 压力(pressure):860-1060mbars 相对湿度(Relative Humidity):45-85% RH
2.外观,结构及尺寸(Appearance,Structure & Dimension):	
2.1外观(Appearance):	产品外观良好,无锈蚀,裂纹和镀层缺陷.(The switch shall have good finishing,and no rust,crack or plating defects.)
2.2 结构及尺寸(Structure & Dimensions)	参见产品图纸.(Refer to individual product drawing.)
2.3 标识(Markings):	参见产品图纸.(Refer to individual product drawing.)
3.额定值(Rating): DC 12V 50mA	
4. 电气性能(Electrical Characteristcs):	

	项目(Item)	标准(Criteria)	实验方法(Test Method)
4.1	接触电阻 (Contact Resistance)	≤100mΩ max	用两倍的动作力作静负载施加于按钮的中心，并用1千赫小电流接触电阻仪测量 (Applying a static load twice the actuating force to the center of the stem,measurements shall be made with a 1 KHZ small-currentcontact resistance meter
4.2	绝缘电阻(Insulation Resistance)	≥50MΩ min	在相互绝缘的所有端子之间及个接线端子与外露的非载流金属零件之间加载DC100V直流电,持续时间60±5秒. (100V DC voltage is applied between each pair of terminals and between the terminal and metal frame for 60±5Sec.)
4.3	抗电强度 (Dielectric Voltage)	无击穿现象发生. (No dielectric breakdown shall occur.)	在相互绝缘的所有接线端子之间加载250V(50-60Hz,泄漏电流10mA)交流电,各接线端子与外壳或非载流金属零件之间加载250V(50-60Hz,泄漏电流10mA)交流电,持续时间60±5秒. 250V(50-60Hz,10mA) alternate current load is applied between open terminals connected with wires; or 250V (50-60Hz,10mA)alternate current load is applied between frame & terminal or between metal parts,for 60±5Sec.

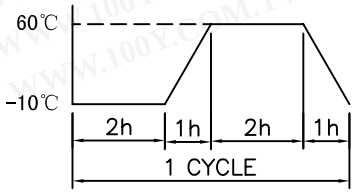
5.机械性能(Mechanical Characteristics)

	项目(Item)	标准(Criteria)	实验方法(Test method)
5.1	驱动力 (Drive Force)	___±30gf	用测力计在按键与弹片之间测量 Being measure at across spring piece and across keystoke forergometer
5.2	回复力 (Releasing Force)	50gf Min	在操作元件末端沿操作方向均匀减少静载荷,使操作元件从动作位置转换到释放位置.(A static load shall be reduced to the tip of actuator in operating direction to change component from operating position to release position)
5.3	行程 (Travels)	0.25±0.1mm	从自由位置到动作位置的距离.(The distance from release position to operating position)
5.4	接线端强度 (Terminal strength)	-端子无松动,损坏及绝缘层的破裂 -电气性能应符合第4部分的要求 (-Shall be free from terminal looseness damage and insulator breakage) (The electrical performance requirements specified in section 4 shall be satisfied)	以3kgf作用力沿轴向施加于接线端末端,作用力方向离开关向外指向,保持60秒,每个接线端子测量一次. (A static load of 3kgf shall be applied to the tip of terminal in a desired direction for 60Sec. The test shall be done once per terminal)
5.5	可焊性 (Solder Ability)	超过75%的焊锡面积被焊料所覆盖 (More than 75% of immersed part shall be covered with solder)	试件在下述参数条件下进行试验. (Switch shall be checked after fallowing test): (1)焊料(Solder):H63A (JIS Z 3282) (2)焊剂:焊剂(JIS K 5902), 质量百分比为25%松香 75%甲醇的 无色透明溶液.Flux:Rosin Flux(JIS K 5902) having a nominal composition of 25% solids by mass of water white rosin in methyl alcohol(JIS K 1501) solution (3) 焊接温度:230±5℃ 焊接时间:3±0.5秒 (Soldering Temperature :230±5℃ Immersing Time : 3±0.5Sec)

5.6	耐焊接热 (Solder Heat Resietance)	无外观及功能损坏,电气性能应符合第4部份的要求 (-No abnormalities shall be observed in appearance and operation -The electrical performance requirements specified in item 4 shall be satisfied)	一、回流焊方法 Re-fiow soldering method: 回流焊接条件:(Reflow soldering conditions 预热:被焊接部位进入焊接设备之后的2±0.3分钟,铜片表面的温度可达到180° C. (Preheat:Temperature on the copper foil surface should reach 180° C,2±0.3 minutes after the P.W.B entered into the soldering equipment.) 焊接温度:被焊接部位进入焊接区的20秒内,铜片表面的温度最高达240° C.(Soldering heat: Temperature on the copper foil surface should reach the peak temperature of 240° C within 20 seconds after the P.W.B enter into soldering heat zone.  二、自动焊接方法 Solder bath method 焊接温度:260±5° C 时间:5±1.0秒 Temperature :260±5° C Sinking time: 5±1S PCB 厚度:1.6mm Thickness of PCB :1.6mm Immersion depth: Up to the surface of the board 三、手工焊接方法 Solder iron method 焊接温度:350±10° C 时间:3±1.0 秒 Bit temperature :350±10° C Application time: 3±1.0S

5.7 振动测试 Vibration test	无外观及功能损坏,电气性能应符合第4部份的要求和机械性能的5.1, 5.2, 5.3的要求 (-No abnormalities shall be observed in appearance and operation. -The electrical performance requirements specified in item 4 shall be satisfied, The mechanical characteristics requirements specified in item 5.1, 5.2, 5.3 shall be satisfied.)	(1)振幅(Amplitude):1.5mm (2)振动频率(Sweep rate):1分钟10-55-10Hz(10-55-10Hz for 1 minute.) (3)振动方法(Sweep method):Logarthmic frequency sweep rate. (4)振动方向(Vibration direction):X,Y,Z(3 direction) (5)时间(Time):每个方向2个小时(Each directiom 2 hours)
5.8 冲击 Impact Shock	实验后: 接触电阻:0.5Ω Max. 绝缘电阻:100MΩ Min. 电气性能应符合第4.3条的要求. 表面无变形且操作无异常. After test, Contact resistance:0.5Ω Max Insulation resistance: 100MΩ Min The Electrical performance requirements specified in item 4.3 shall be satisfied. Shall be free from mechanical abnormalities.	试件在下述参数条件下进行试验: (1)安装方法:常规方法 (2)加速度:80g (3)时间:11ms (4)实验方向:图示6方向 (5)冲击次数:每个方向3次(总共18次) Switch shall be measured after following test (1)Mounting Method:Normal (2)Acceleration :80g (3)Duration: 11ms (4)Test Direction:6 directions  (5)Number of shocks:3 times per direction (18 times in total)

6. 耐候性能(Weather Proof Characteriscs):

	项目(Item)	标准(Criteria)	实验方法(Test Method)
6.1	低温 Cold Proof	实验后(After test): -接触电阻(Contact resistance): 200mΩ Max. -绝缘电阻(Insulation resistance): 100MΩ Min -抗电强度应符合第4.3格的要求. (Electrical performance requirements specified in item 4.3 shall be satisfied) -操作力变化在±10%以内 (Operating force shall be within ±10% of specified value) -开关外观及结构应无损坏. (The switch shall be free from abnormalities in appearance & construction.)	试件在-30±2℃的温控箱内保持96个小时,然后在正常的温度和湿度下恢复1小时,并在此后1小时内对试品进行测量,水滴应消失. (After testing at -30±2℃ for 96 hours , the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that .Water drops shall be eliminated.)
6.2	高温 Hot Proof		试件在80±2℃的温控箱内保持96个小时,然后在正常的温度和湿度下恢复1小时,并在此后1小时内对试品进行测量. (After testing at 80±2℃ for 96 hours , the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that .)
6.3	恒定湿热 Moisture Resistance		试件在60±2℃,90-95%RH的温控箱内保持96个小时,然后在正常的温度和湿度下恢复1小时,并在此后1小时内对试品进行测量,水滴应消失. (After testing at 60±2℃,90-95%RH for 96 hours ,the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated.)
6.4	温度转换 Temperature Cycling		试件按下述实验条件试验80个循环,然后在正常温度和湿度下恢复1小时,并在此后1小时内对试品进行测量,水滴应消失. (After 80 cycles of following conditions,the swtich shall be allowed to stand normal temperature and humidity conditions for 1 hour ,and measurement shall be made within 1 hour after that .Water drops shall be eliminated.) 

6.5	盐雾实验 Salt Mist	实验后(After test): -接触电阻(Contact resistance): 200mΩ Max. -绝缘电阻(Insulation resistance): 100MΩ Min -抗电强度应符合第4.3格的要求. (Electrical performance requirements specified in item 4.3 shall be satisfied) -操作力变化在±10%以内 (Operating force shall be within ±10% of specified value .) -开关外观及结构应无损坏. (The switch shall be free from abnormalities in appearance & construction.)	5%的Nacl溶液、喷雾铜料、不锈钢24小时,铁料8小时,用水清洗并在室温下30分钟. At 5% Nacl liquor for Brass and sus 24 hours/Spcc 8 hours, after washing, keep in normal condition for 30 min,
6.6	耐硫化测试 Resistance to sulfuration		After following testing,the swifch shall be allowed to stand under Dormal roomtemperature and bumidity conditions for l h,and measurement shall be madeafter that. 按下列条件实验后, 在常温常湿环境中放置1小时再测定. Temperature 温度: 40±2℃ Humidity 温度: 75±5%RH Density 温度: H S gas 10±2 ppm Duration 测试时间: 12 h

7. 寿命试验(Durability Characteristics

	项目(Item)	标准(Criteria)	实验方法(Test Method)
7.1	机械寿命 (Operating life without Load)	实验后(After test): -接触电阻(Contact resistance):200MΩ Max -绝缘电阻(Insulation resistance): 100MΩ Min -抗电强度应符合第4.3格的要求. (Electrical performance requirements specified in item 4.3 shall be satisfied) -操作力变化在±30%以内.(Operating force shall be within ±30% of specified value.) -开关外观及结构无损坏. (The switch shall be free from abnormalities in appearance & construction.)	在无负荷的条件下,在寿命试验设备连续转换30,000次.(60次/分) 30,000 cycles of operation shall be performed continuously at a rate of 60 cycles per minute load.

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