



东莞市铭标电子科技有限公司
MINGBIAO ELECTRONICS CO., LTD

承 认 书

APPROVE SHEET

客户名称 Customer: _____

品 名 Part name: tact Switch

型 号 Part Number: TAM14-010

Design/Date	Check/Date	Review/Date	Approval/Date

贵公司承认印 Approval signatures

Approval/Date	Remark

Send us a copy of reference , thank you! 日期 Date:

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1. General Specification 基本说明

1.1 Scope 范围 This specification covers the requirements for single key switches which have no key top(TACT SWITCHES:MECHANICAL CONTACT).此规范含盖单推柄和无推柄的轻触开关要求

1.2 Operating Temperature Range 使用温度范围
-40 to+90°C(normal humidity, normal press.) 正常湿度, 标准压力

1.3 Storage Temperature Range 保存温度范围
-40 to+90°C(normal humidity, normal press.)

1.4 Test Conditions 测试条件

Tests and measurements shall be made in the following standard conditions unless otherwise

specified: 测试和计量按下列标准条件除非特殊说明

Normal temperature (temperature 5 to 35°C) 标准温度

Normal humidity (relative humidity 25 to 85%) 正常湿气

Normal pressure (pressure 860 to 1060 mbars) 标准压力

In case any question arises from the judgment made, tests shall be conducted in the following

conditions:

Temperature (20±2°C) 温度

Relative humidity (65±5%) 相对湿度

Pressure (860 to 1060 mbars) 压力

2. Type Of Actuation 动作类型

Tactile feedback 轻触返回

3. Contact Arrangement 1 poles 1 throws

接触形式 1 接点 1 回路

(Details of contact arrangement are given in the assembly drawings.)

细接点形式在装配图中

4. Maximum Ratings DC 16 V 50 mA 最大额定值

DC 1 V 10 μA 最小额定值



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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 开关结构：单回路单输出(具体的触点结构在装配图中已绘出)；

Contact arrangement: 1 pole, 1 throw

(Details of contact arrangement are given in the assembly drawings.)

3. 电气性能：

ELECTRICAL SPECIFICATI

NO.	项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS
3.1	接 触 电 阻 Contact Resistance	用两倍的动作用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 static load twice the actuating force to the center of the stem, measurements shall be made with a 1 kHz small-current contact resistance meter.	50m Ω 以下
3.2	绝 缘 电 阻 Insulation Resistance	在端子与端子之间,端子与外壳之间施加 DC100V, 一分钟 Measurements shall be made following application of DC100V potential between terminals and between individual terminals and frame for one minute.	100M Ω 以上
3.3	介质耐压 Dielectric voltage proof	在端子与端子之间,端子与外壳之间施加 AC250V(50HZ-60HZ) AC <u>250</u> V (50Hz or60Hz) shall be applied between terminals and between individual terminals and frame for one minute.	无击穿、闪烁现象 There shall be no breakdown.



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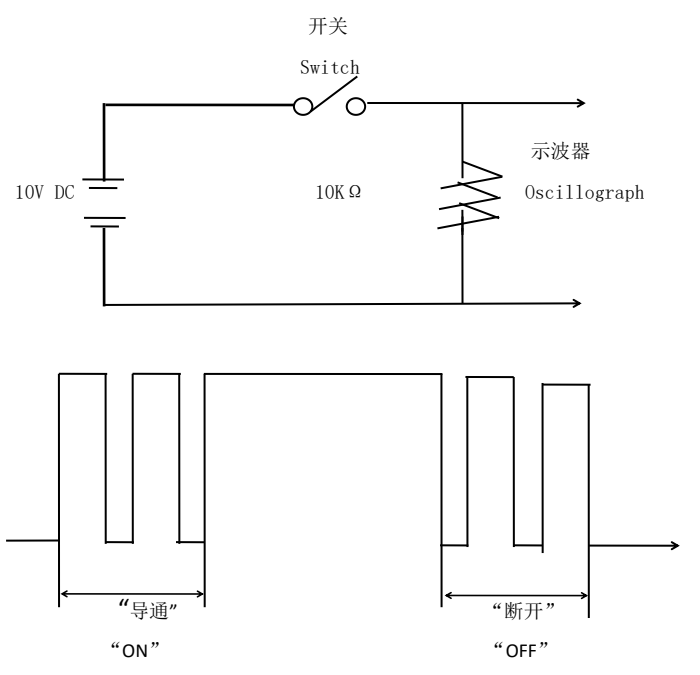
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3.4	触点抖动 Bounce	<p>按照正常使用时的力度轻按手柄中心（每秒 3~4 次），在导通和断开过程中测试开关抖动</p> <p>Lightly striking the center of the stem at a rate encountered in normal use (3 to 4times per second), and bounce shall be tested at “ON” and “OFF”</p> 	50mS 以下
4、机械性能 MECHANICAL SPECIFICATION			
4.1	按力 Operating Force	<p>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。</p> <p>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.</p>	按力 160±50gf 250±50gf
4.2	最大行程 Full Travel	<p>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。</p> <p>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.</p>	0.25±0.1mm



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NO.	项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS
4.3	回弹力 Return Force	<p>开关垂直于操作方向放置，在开关驱动件顶端中心下降至全行程后，测量顶端向自由位置转换的力度。</p> <p>The sample switch is installed such that the direction of switch operation is vertical and upon depressing the stem in its center to the whole travel distance, the force of the stem to return to its free position shall be measured.</p>	$\geq 50\text{gf}$
4.4	停止强度 Stop Strength	<p>开关垂直于操作方向放置，从操作方向向驱动件施加 30N 的静负荷持续 60 seconds。</p> <p>Placing the switch such that the direction of switch operation is vertical, and then a static load of 30N shall be applied in the direction of stem operation for a period of 60 seconds.</p>	无机械和电气损坏 There shall be no sign of damage mechanically and electrically.
4.5	可焊性 Solder ability	<p>After sprated flux 涂上助焊剂后 Wave Soldering Temperature: $260 \pm 5^\circ\text{C}$ 波峰焊温度: $260 \pm 5^\circ\text{C}$ Ferrochrome Soldering Temperature: $380 \pm 20^\circ\text{C}$ 铬铁温度: $380 \pm 20^\circ\text{C}$ Soldering time: <5 sec 焊接时间: <5 秒</p>	



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5、极限电气性能:

ENVIRONMENTAL SPECIFICATION

NO	项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENTS
5.1	低温测试 Resistance to low temperature	样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: (1) 温度：-40±2℃ Temperature : -40±2℃ (2) 时间：96 h Time: 96 hours Water drops shall be removed. 擦除水珠	
5.2	高温测试 Heat resistance	样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made: (1) 温度：85±2℃ temperature:85±2℃ (3) 时间：96 h time: 96hours	接触电阻：≤ 500m Ω Contact resistance: ≤ 500m Ω 绝缘电阻：≤50m Ω Insulation resistance: ≤50m Ω
5.3	温度周期性测试 Change of temperature	根据下面的测试要求进行 5 次循环的温度周期性测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试。测试期间样品应保持干燥。 After 5 cycles of following conditions, the sample shall be allowed to stand under normal temperature and humidity conditions for 1 h. and measurements shall be made. During the test water drops shall be removed. <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>温度(℃)</p> </div> <div> <p>A: +85±2℃ B: -40±2℃ C: 2 小时 D: 1 小时 E: 2 小时 F: 1 小时</p> </div> </div> <p style="text-align: center;">Cycling: 5 cycles 周期: 5 次</p>	项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3



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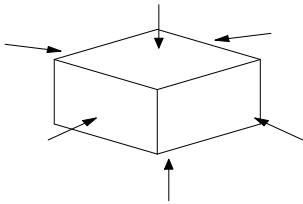
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NO.	项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENT
5.4	湿温测试 Moisture resistance	<p>样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中 1 小时后做性能测试： Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:</p> <p>(1) 温度：60±2℃ temperature: 60±2℃</p> <p>(2) 相对湿度：90%~95% relative humidity:90% to 95%</p> <p>(3) 时间：96h time: 96 hours</p> <p>Water drops shall be removed. 擦除水珠</p>	<p>接触电阻：≤500m Ω Contact resistance: ≤500m Ω</p> <p>绝缘电阻：≤50m Ω Insulation resistance: ≤ 50m Ω</p> <p>项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3</p>
5.5	抗冲击 Impact Shock Resistance	<p>Measurements shall be made following the test set forth below: 按下下列条件进行冲击试验</p> <p>(1)Acceleration: 80g 加速度</p> <p>(2)Cycles of test : 3 cycles each in 6directions, for a total of 18cycles 试验次数: 每个方向 3 次,6 个方向共 18 次</p> 	<p>Item 5.1 Item 5. 2.1、5.2.2</p>
5.6	盐雾试验 Salt Mist	<p>在以下设定条件下进行测量： The switch shall be checked after following test:</p> <p>(1) 温度：35℃±2℃ temperature: 35℃±2℃</p> <p>(2) 盐溶液浓度：5±1%（质量百分比） salt solution : 5±1%(solids by mass)</p> <p>(3) 时间：12h±1h Time:12h±1 hour</p> <p>实验后的盐沉积物后水冲掉 After test, salt deposit shall be removed by running water.</p>	<p>金属件上没有腐蚀斑点 No remarkable corrosion shall be recognized in metal part.</p>



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6、 极限机械性能:

ENDURANCE SPECIFICATION

NO.	项目 ITEM	试验条件 TEST CONDITIONS	要求 REQUIREMENT
6.1	工作寿命 Operation life	根据下面的测试要求进行测试: Measurement shall be made following the test set forth below: (1) DC 5V, 5mA 带负载 DC 5V, 5mA resistive load (2) 按动速率: 2-3 次/秒 Rate of operation: 2 to 3times/s (2) 减压力: <u>375</u> g f Depression: <u>375</u> g f (3) 最低寿命: 1000.000 次 Min life:1000,000cycles	接触电阻 $\leq 100m\ \Omega$ Contact resistance $\leq 100m\ \Omega$ 绝缘电阻 $\leq 100m\ \Omega$ Insulation resistance $\leq 100m\ \Omega$ 按力: 初值的 $\pm 30\%$ Operating Force:initial value $\pm 30\%$ 项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3
6.2	振 动 Vibration	根据以下给定条件进行测试: Measurement shall be made following the test set forth below: (1) 振动频率范围: 10~55~10Hz Vibration frequency range: 10 to 55 to 10Hz (2) 振幅(峰-峰): 1.5mm Amplitude: 1.5mm (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 (2) 测试时间: 每次 6hours . Duration: Each 6hours.	项目 3,4.1,4.2,4.3 Item 3,4.1,4.2,4.3

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: $\leq 350^{\circ}C$ (2) 连续焊接时间: $\leq 3s$ (3) 电烙铁的功率: $\leq 60\ W$ Please practice according to below conditions: (4) (1) Soldering temperature: $350^{\circ}C$ Max. (5) (2) Continuous soldering time: 3 s Max (6) Capacity of soldering iron: $\leq 60\ W$	
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项目
ITEM

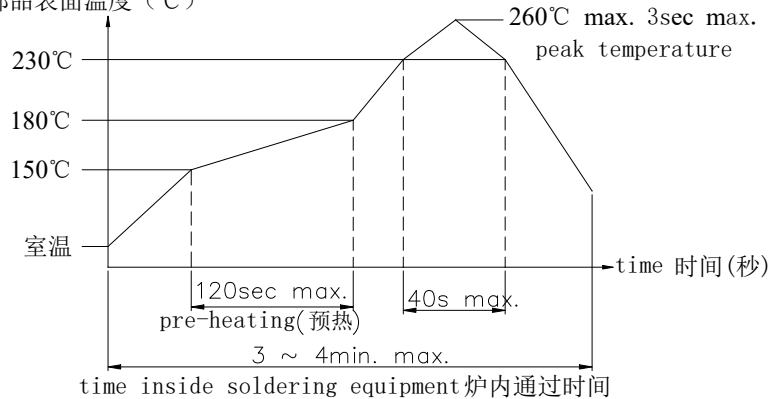
条件
CONDITIONS

7.2

自动焊接
Automatic
flow
soldering

For the product of SMT ,type solder according to the following conditions
对于 SMT 产品，请按以下条件进行焊接

surface of product temperature
部品表面温度 (°C)



Caution: 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. The switch's surface temperature shall not allowed to exceed 260°C 注意：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产不同，因此，千万小心不要让开关表面温度超过 260°C

说明： 1.1 开关浸焊后，注意不要用溶剂清洗。

After switches were soldered, please be careful not to clean switches with solvent.

1.2 在使用烙铁的情况下，焊锡温度应在 260°C 以下、3 秒以内。

In the case of using soldering iron, soldering conditions shall be 260°C max and 3 sec.max.

1.3 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.

2 设计中应注意的事项(Design instructions):

2.1 印刷基板的安装孔尺寸参见产品图。

Follow recommended P.W.B. piercing plan in outside drawing page.

3 注意点(Note):

3.1 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 swiches.

3.2 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

3.3 保管时尤其应注意避开高湿高温和有腐蚀性气体的环境。如需要长时间保存，请不要打开包装箱。

Preservation under high temperature and high high humidity or corrosive gas should be avoided

Especially . When you need to preserve for a long period ,do not open the carton .



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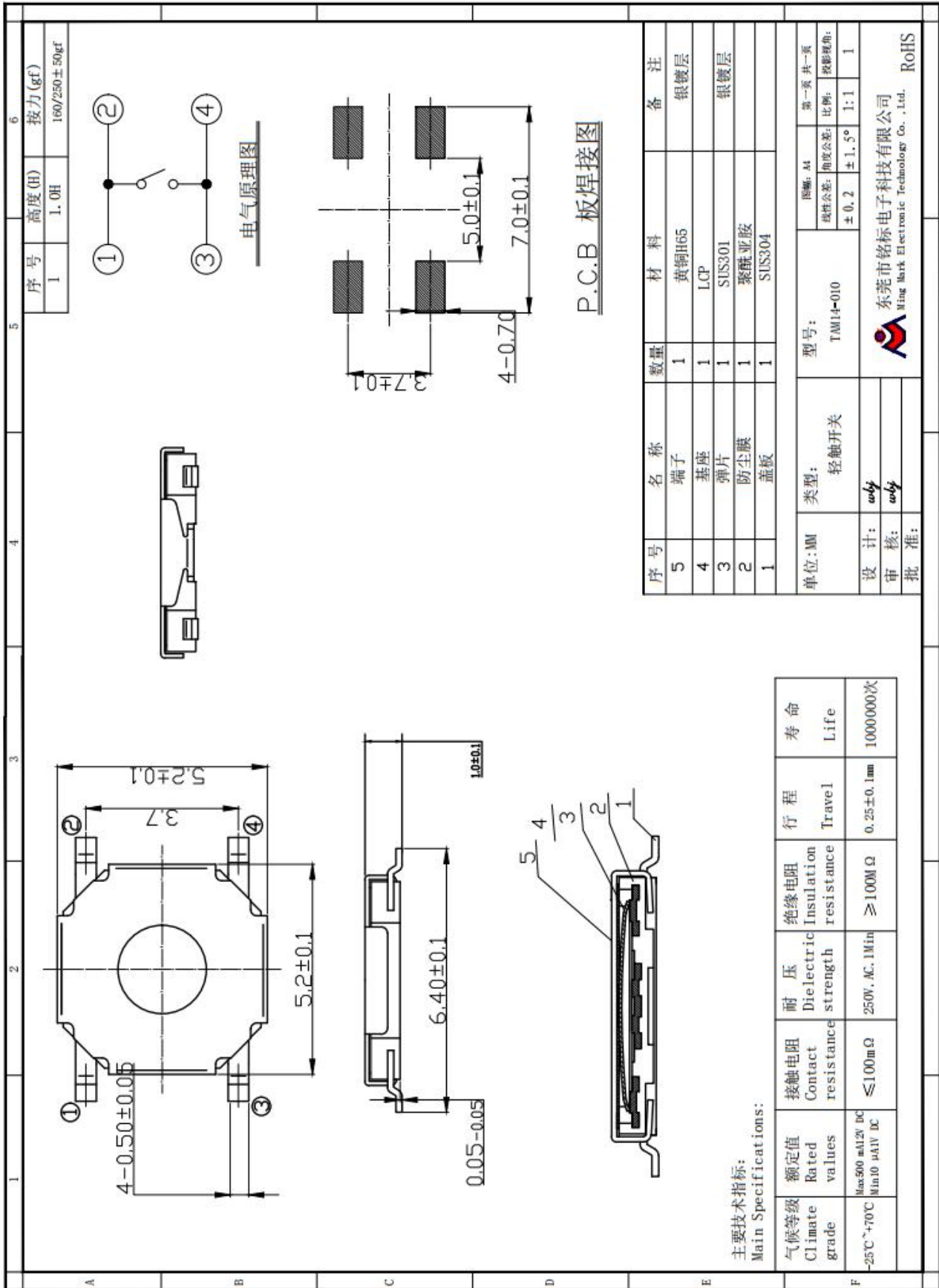
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包装规范

产品规格	盘带 Dribbling		内包装箱 INTER BOX		外包装箱 OUT BOX		净重 (kg)	毛重 (kg)
	规格 (cm)	数量(pcs)	规格 (cm)	袋数	规格 (cm)	盒数		
5.2*5.2*1.0 H		5000						