

# 承认书

Cus t omer Name(客户名称):

Description(品名)

防水轻触开关

Model(型号)

TS-1010S-A5B3-C2D2

Cus t omer(客户料号)

台湾元迪电子科技有限公司 (投资、制造)

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## 批准人签名 Approver Signatures

供应商确认签字 Supplier signature

制定 formulate:

审核 Review:

批准 Approve:

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陈海强

陈睿明

客户确认签字 Customer Signatures

制定 formulate:

审核 Review:

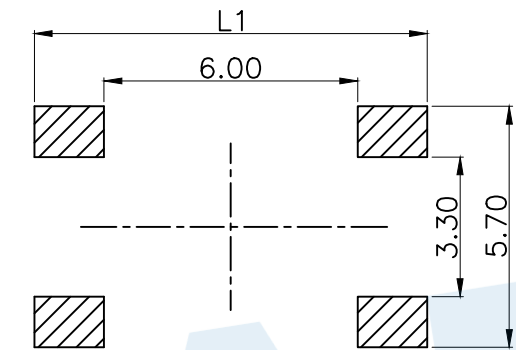
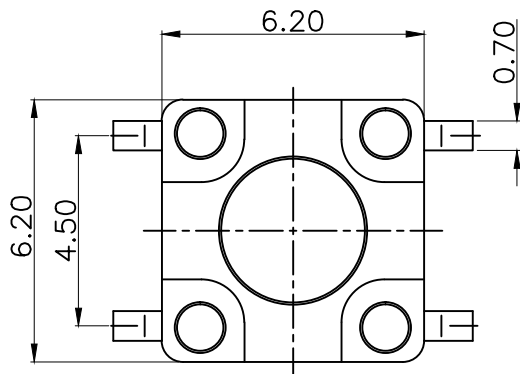
批准 Approve:



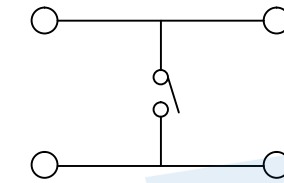
元迪确认签名 (盖章)

Yuan di confirm signature (seal)

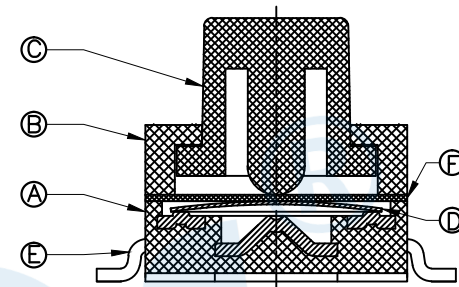
RoHS



PCB Layout(Pattern side)



Circuit Diagram

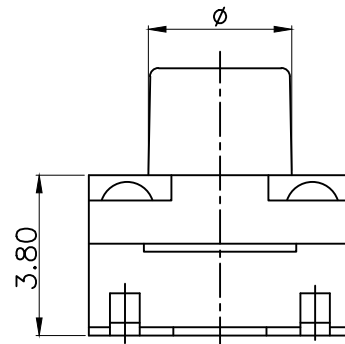
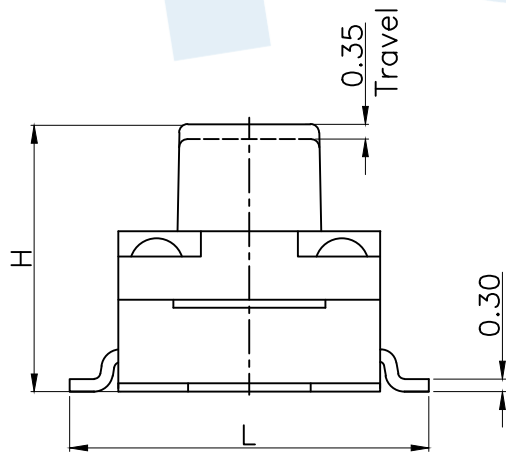


| SHRAPNEL |              |
|----------|--------------|
| CODE     | MATERIAL/QTY |
| D1       | C5210/1PCS   |
| D2       | SUS/1PCS     |

| OPERATING FORCE |          |
|-----------------|----------|
| CODE            | VIGOR    |
| B2              | 180±50gf |
| B3              | 250±50gf |
| B4              | 350±50gf |

| FOOT PITCH |     |    |
|------------|-----|----|
| CODE       | L   | L1 |
| C2         | 8.5 | 11 |
| C3         | 9.0 | 11 |
| C4         | 9.5 | 12 |

| TOTAL HEIGHT |      |     |      |      |     |
|--------------|------|-----|------|------|-----|
| CODE         | H    | ø   | CODE | H    | ø   |
| A1           | 4.3  | 3.5 | A14  | 11   | 3.0 |
| A2           | 4.5  | 3.5 | A145 | 11.5 | 3.0 |
| A3           | 5.0  | 3.5 | A15  | 12   | 3.0 |
| A4           | 5.5  | 3.5 | A155 | 12.5 | 3.0 |
| A5           | 6.0  | 3.5 | A16  | 13   | 3.0 |
| A6           | 6.5  | 3.3 | A165 | 13.5 | 3.0 |
| A7           | 7.0  | 3.3 | A17  | 14   | 3.0 |
| A8           | 7.5  | 3.3 | A18  | 15   | 3.0 |
| A9           | 8.0  | 3.3 | A19  | 16   | 3.0 |
| A10          | 8.5  | 3.3 | A20  | 17   | 3.0 |
| A11          | 9.0  | 3.1 | A21  | 18   | 2.9 |
| A12          | 9.5  | 3.1 | A22  | 19   | 2.9 |
| A13          | 10   | 3.1 | A23  | 20   | 2.9 |
| A135         | 10.5 | 3.0 | A24  | 21   | 2.9 |



|     |                |        |             |                |         |
|-----|----------------|--------|-------------|----------------|---------|
| Ⓣ   | Waterproof mat | 1      | Silica gel  | Black          |         |
| ⓔ   | Terminal       | 4      | Brass(0.3t) | Silvering      |         |
| ⓓ   | Reed           | 1      | SUS         | Silver covered |         |
| ⓐ   | Button         | 1      | PPA         | Black          |         |
| ⓑ   | Cover          | 1      | PPA         | Black          |         |
| Ⓐ   | Base           | 1      | PPA         | Black          |         |
| NO. | Name           | Number | Qty         | Materil        | Remarks |

YUANDI® Yuandi Electronics Co, Ltd

|          |      |       |                    |
|----------|------|-------|--------------------|
| design   | date | name  | TACT SWITCHS       |
| Review   | date | model | TS-1010S-A□B□-C□D□ |
| Approved | date |       |                    |

Drawing number: Proportion 1:1 unit mm gage number A4

modify Review Approved Tolerance not specified

angle ±2' 10~30 ±0.30 5~10 ±0.20 ~ 5 ±0.10

Proportion 1:1

unit mm

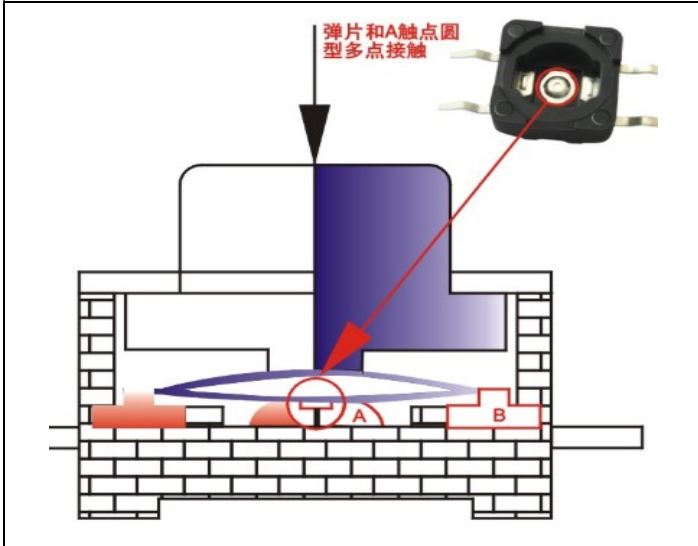
gage number

A4

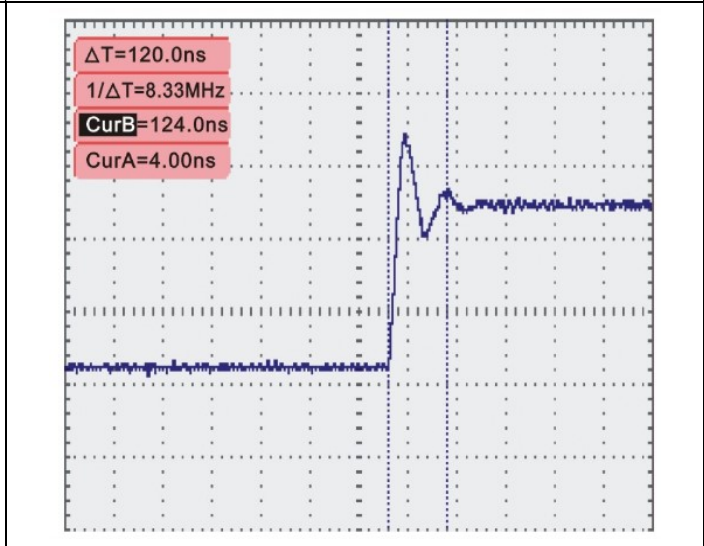
特色

- 高防尘防潮性 满足 IEC529 标准
- 高接触性 内部 A 触点圆形多点接触

开关导通模拟图



开关导通瞬间波形图



1.General 一般事项

1.1 Application 适用范围

This specification is applied to TACT switches which have no key-top  
这是适用于常开状态下的通断开关的轻触开关.

1.2 Operating Temperature range 使用温度范围:

-40°C~85°C (normal humidity, normal air pressure 常湿 常压)

1.3 Storage Temperature range 保存温度范围:

-30°C~80°C (normal humidity, normal air pressure 常湿 常压)

1.4 Test condition 试验状态

Unless otherwise specified the atmospheric conditions for making measurements and tests are as follows  
试验按以下标准状态规定执行

Normal temperature 常温 (temperature 温度 5~35°C)

Normal humidity 常湿 (Relative humidity 湿度 25%~85%)

Normal air pressure 常压 (Air pressure 气压 86~105KPa)

If any doubt arise judgement, tests shall be conducted at the following conditions

当判断出现疑问时, 可以采用以下测试条件

Ambient temperature 温度 20±2°C

Relative humidity 相对湿度 60%~70%      Air pressure 气压 86~105KPa

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2.Appearance,style and Dimension 外观、结构和尺寸

2.1 Appearance 外观

There shall be no defects that affect serviceability of the product.

不能有影响产品性能的不良外观出现

2.2 style and Dimension 结构和尺寸:

Refer to the assembly drawings 参照有关外形图.

3. Type of actuating 动作形式

Tactile feedback 按下自动弹回

4.Contact arrangement 回路形式

1 poles 1 throws 1 回路 1 接点

(Details of contact arrangement are given in the assemblydrawings 详见外形图)

5. Rating 电压

5.1 Maximum Rating 最大电压 12 V DC 50mA

5.2 Minimum Rating 最小电压 1 V DC 10UA

6. Electrical performance 电气性能

| 项目 Item |                               | 试验条件 Test conditions   | 规格参数 Requirements                    |
|---------|-------------------------------|--|--------------------------------------|
| 6.1     | Contact Resistance<br>接触电阻    | Applying a beiw ststic load to the stem,measurements shall be made<br>施加荷重在按钮中间部位进行测定<br>(1) Depression 按压力: 500gf<br>(2) Measuring method 测定方法:<br>1KHz small-current contact resistanc menter or voltage drop method at 5VDC<br>10mA 在 1KHz 微电流接触电阻计或 5VDC 10mA 电压下测试.       | 100mΩ Max.                           |
| 6.2     | Insulation resistance<br>绝缘电阻 | Measurements shall be made following the test set forth below:<br>在以下条件下进行实验和测试<br>(1) Test voltage 施加电压 <u>100V</u> DC for 1min.<br>(2)Applied postion 施加场所:Between all terminals.And if there is a metal<br>frame,between terminals and ground(frame) 引脚之间或引脚和盖板\外壳间         | 100MΩ Min.                           |
| 6.3     | Voltage proof<br>耐压           | Measurements shall be made following the test set forth below:<br>在以下条件下进行实验和测试<br>(1)Test voltage 施加电压 <u>250V</u> AC(50~60Hz) for 1min.<br>(2)Applied postion 施加场所:Between all terminals.And if there is a metal<br>frame,between terminals and ground(frame) 引脚之间或引脚和盖板\外壳间 | There shall be no breakdown<br>无绝缘破坏 |

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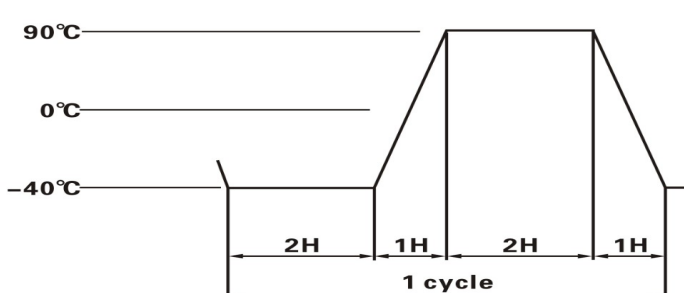


7. Mechanical performance 机械性能

| 项目 Item |                        | 试验条件 Test conditions  | 规格参数 Requirements   |
|---------|------------------------|---|---|
| 7.1     | Operating force<br>按力  | 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 for the Switch to come to a make"ON" shall be measured.<br>开关垂直于操作方向放置, 在按钮顶端中心逐渐施力, 测量开关导通所需的最大力度。       | C: 250-310 gf   |
| 7.2     | Travel<br>行程           | Placing the switch such that the direction of switch operation is vertical and then applying a below static load to the center of the stem the travel distance for the switch to come to a "ON" shall be measured.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于按钮顶端中心, 测量顶端的移动距离。             | 0.35±0.1mm  |
| 7.3     | Return force<br>回弹力    | The sample switch is installed such that the direction of switch operation is vertical, and upon depression of stem in its center the whole travel distance, the force of the stem to return to its free position shall be measured.开关垂直于操作方向放置, 按钮顶端中心下降至全行程后, 测量顶端向自由位置返回的力度。 | >49gf Min.  |
| 7.4     | Stop Strength<br>抗压强度  | Placing the switch such that the direction of switch operation is vertical and then a below station load shall be applied in the direction of stem operation 在按钮顶端中央, 施加力于按压方向停止一段时间。<br>(1) Depression 按压力 1000gf<br>(2)Time 时间 15 s   | There shall be no sign of damage mechanically abd electrically<br>无电气和机械性能的异常 |
| 7.5     | StemStrength<br>按钮拔去强度 | Placing the switch such that the direction of switch operation is vertical and then the maximum force to withstand a pull applied opposite to the direction of stem operation shall be measured.<br>开关垂直于操作方向放置, 在按钮顶端中心逐渐施力和开关运动反方向的最大力。                                       | 3000gf Min.   |

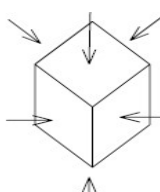
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8. Environmental specification 耐气候性

|     |                                      |   |  |
|-----|--------------------------------------|---|--|
| 8.1 | Resistance to low temperature<br>耐寒性 | <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 2 h before measurements are made:<br/>实验后常温常湿中放置 2 个小时后测定.</p> <p>(1) Temperature 温度: <u>-40</u> + <u>2</u> °C<br/>(2) Time 时间 <u>720h</u></p> <p>Waterdrops shall be removed 清除水滴</p>   | Item 6<br>Item 7.1<br>Item 7.2   |
| 8.2 | Heat resistance<br>耐热性               | <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 2 h before measurements are made:<br/>实验后常温常湿中放置 2 个小时后测定.</p> <p>(1) Temperature 温度: <u>90</u> + <u>2</u> °C<br/>Time 时间 <u>720h</u></p>  | Item 6<br>Item 7.1<br>Item 7.2   |
| 8.3 | Mresistance<br>耐湿性                   | <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 2 h before measurements are made:<br/>实验后常温常湿中放置 2 个小时后测定.</p> <p>(1) Temperature 温度: <u>60</u> + <u>2</u> °C<br/>(2) Time 时间 <u>240h</u><br/>(3) Relative humidity 相对湿度 <u>90~95</u> %<br/>(4) Waterdrops shall be removed 清除水滴</p>                 | Contact resistance 接触电阻<br>(Item 6.1): <u>200</u> mΩ<br>Insulation resistance 绝缘电阻<br>(Item 6.2): <u>10M</u> Ω<br>Item 6.3<br>Item 7.1<br>Item 7.2 |
| 8.4 | Change of Temperature<br>耐高低温        |  <p>After belowcycles of following conditions,the switch shall be allowed to stand under normal room temperature and humidity conditions for 2 h,and measurement shall be made.water drops shall be removed.<br/>在以上条件下循环 6 个实验后, 在常温常湿中放置 2 个小时后测定.实验过程中清除水滴。</p>                 | Item 6<br>Item 7.1<br>Item 7.2   |
| 8.5 | Resistance to sulfide dioxide<br>耐硫化 | <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:<br/>实验后常温常湿中放置 1 个小时后测定.</p> <p>(1) Concentration of SO<sub>2</sub> gas. SO<sub>2</sub> 浓度 <u>10</u> ppm<br/>(2) Temperature 温度 <u>40</u> °C<br/>(3) Relative humidity 相对湿度 <u>75</u> %<br/>Time 时间 <u>120</u></p> | Contact resistance 接触电阻<br>(Item 6.1): <u>1</u> Ω  |

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9. Endurance specification 耐久性能

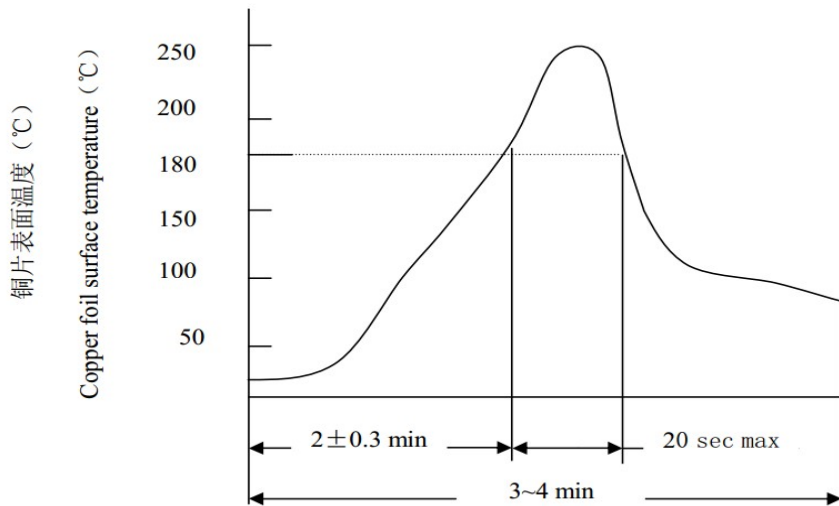
|     |                        |   |   |
|-----|------------------------|---|---|
| 9.1 | Operating life<br>寿命试验 | <p>Measurements shall be made following the test set forth below<br/>在以下条件下进行试验和测试判断</p> <p>(1) <u>12</u>VDC <u>50</u>mA resistive load 施加电压<br/>(2) Rate of operation 动作速度: <u>1</u> to <u>2</u> operations per s 回/秒<br/>(3) Depression 按压力 400gf<br/>Cycles of operation 动作回数 <u>100,000</u> cycles 回</p>  | Item 6<br>Item 7.1<br>Item 7.2<br>Operating force 按力(Item 7.1):-30<br>~ +30 %of initial force 初始值 |
| 9.2 | Shock<br>耐冲击性          | <p>Measurements shall be made following the test set forth below<br/>在以下条件下进行试验和测试判断</p> <p>(1) Acceleration 加速度 <u>981</u>m/s<sup>2</sup><br/>(2) Action time 作用时间 6msec<br/>(3) Test direction 实验方向 6 directions 6面<br/>(4) Number of shccks 实验回数 <u>3</u> times per direction<br/>(<u>18</u> times in total)各方向个3回计18回)</p> <div style="text-align: center;">  </div> | Item 6<br>Item 7.1<br>Item 7.2  |

9、回流焊接 Reflow soldering

在 PCB（印刷电路板）进入焊接设备中之后的  $2 \pm 0.3$  分钟，铜片表面的预热温度应达到  $180^{\circ}\text{C}$ 。

在 PCB 进入焊接热区域中之后的 20 秒之内，铜片表面的焊接热温度应达到  $250^{\circ}\text{C}$  的高峰温度。

Preheat-Temperature on the copper foil surface should reach  $180^{\circ}\text{C}$ ,  $2 \pm 0.3$  minutes after the PCB entered into the sodering equipment. Soldering heat Temerature on the copper foil surface should reach the peak temperature of  $250^{\circ}\text{C}$  within 20 seconds after the PCB entered into soldering heat zone.



温度变化图

Time in side soldering equipemt

Temperature profile

|            |                |                     |            |            |            |                |                     |            |            |
|------------|----------------|---------------------|------------|------------|------------|----------------|---------------------|------------|------------|
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