



春兴科技电子有限公司  
CHUNXING TECHNOLOGY ELECTRONICS CO.,LTD

# 承 认 书

## APPROVE SHEET

敬请承认如下之形式规格书:

客户名称:

CUSTOMER: \_\_\_\_\_

贵公司制品名

CUSTOMER RN: \_\_\_\_\_

贵公司规格

APPROVAL DAT: \_\_\_\_\_

客户料号

Customer NO: \_\_\_\_\_

本公司制品名称:

轻触开关

PRODUCT PN: TACT SWITCH

本公司规格:

PRODUCT CODE: TS-D011

本公司规格书编号:

PRODUCT DRAWING NO: \_\_\_\_\_

|                                                                         |                |             |              |
|-------------------------------------------------------------------------|----------------|-------------|--------------|
| <input type="checkbox"/> 产品承认<br>NEW APPROVE                            | APPROVAL<br>批准 | CHECK<br>审核 | DESIGN<br>设计 |
| <input type="checkbox"/> 规格变更再承认<br>CHANGE CODE<br>APPROVE AGAIN        |                |             |              |
| <input type="checkbox"/> 材料变更再承认<br>CHANGE<br>MATERIAL<br>APPROVE AGAIN | DATE:          | DATE:       | DATE:        |

贵公司承认栏

APPROVAL SLGNATURES

印章

请于 年 月 日前承认返回 日期 DATE:

PLEASE RETURN TO ADMIT XUNIANRURI

深圳办事处

SHENZHEN OFFICE

地址: 深圳市福田区都会电子城 4C089

ADD: No. 089, 4C, 4thFloor, DuhuiElectronicBuilding, ZhonghaiRoad, FutianArea, ShenzhenCity.

工厂地址: : 浙江省乐清市虹桥镇西洙工业区

Factory Add: Xizhuindustrial Znoe,Hongqiao Town,Yueqing City,Zhejiang Province.

电话 (TEL): +86-577-62309567

传真 (Fax): +86-577-62328872

手机 (H. P): 13806869038

E-mail: chunxingkejidianzi@163.com

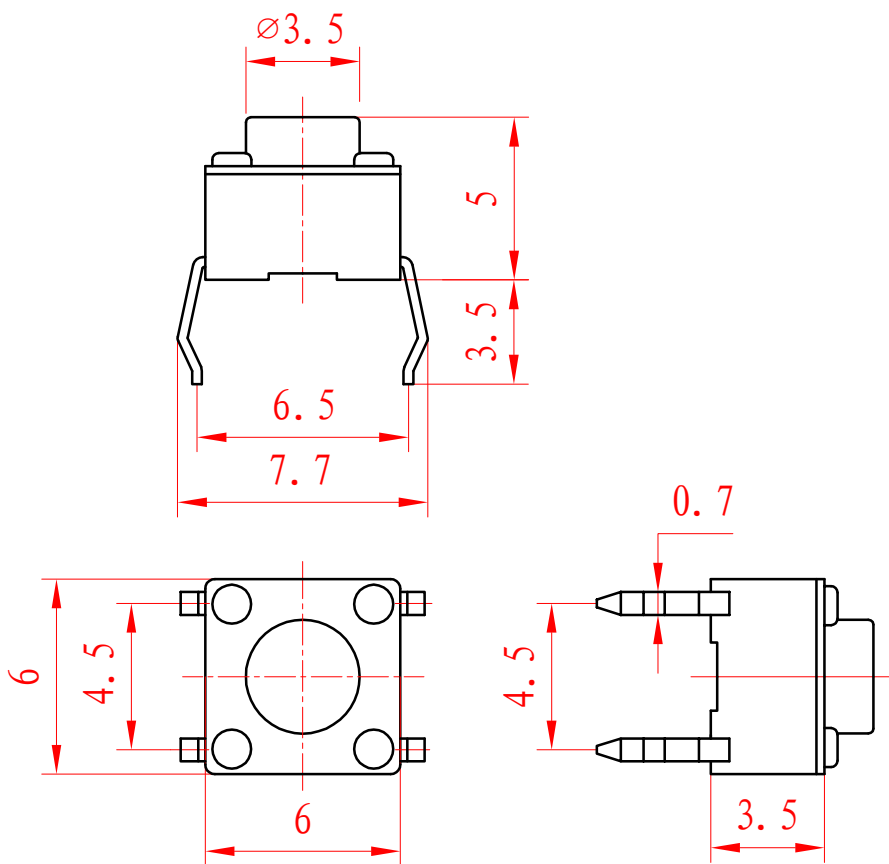
电话 (TEL): +86-755-83239877

手机 (H. P): 13510088655

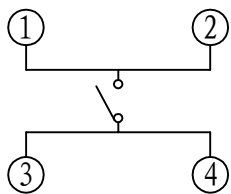
传真 (Fax): +86-755-83322377

http://www.cxkjdz.com

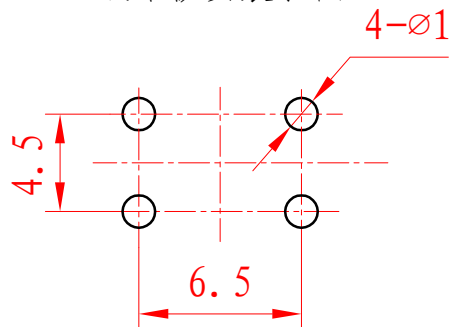
TS-D001



电路图



### 线路板安装孔图



## 技术要求

1. 额定电压、电流DC 12V 50mA;
2. 行程: 0.3mm;
3. 动作力: 240~280gf (或根据顾客需要);
4. 寿命: 100000次
5. 线性尺寸的未注公差按GB/T1804 m级。

借(通)用件登记

描 图

描 校

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日期

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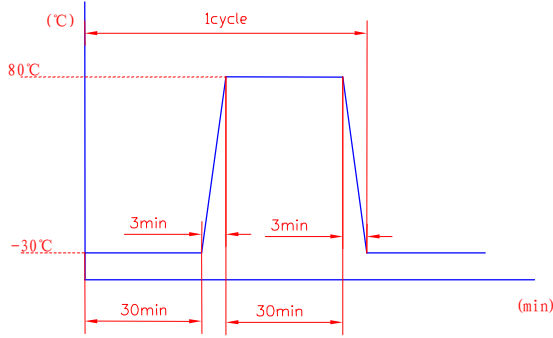
春兴科技电子有限公司  
CHUNXING ELECTRLNIC CO., LTD

## 轻触开关

TS-D001

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                      |             |             |                      |                 |                             |             |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------|-------------|-------------|----------------------|-----------------|-----------------------------|-------------|-------------|
| 乐清市春兴科技有限公司<br>CHUNXING KEJI<br>CO., LTD. YUEQING.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 产 品 规 格 书<br><br>PRODUCTS SPECIFICATIONS |                      |             |             | 拟制<br>DESIGNED       | 审核<br>CHECKED   | 批准<br>APPROVED              | 日期<br>DATE  |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                      |             |             |                      |                 |                             |             |             |
| 产品型号: TS-D001<br>MODEL NO:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          |                      |             |             | 产品图号:<br>DRAWING NO: |                 | 第 1 页 共 4 页<br>SHEET 1 OF 4 |             |             |
| <div>1、总述 General</div> <div>1. 1 适用范围: 此规格书规定了 TS-D001 开关的有关要求。<br/>Scope: this specification covers the requirements for TS-D001 switch which have no Keytop</div> <div>1. 2 操作温度范围: -30℃~85℃ (正常湿度, 正常压力)<br/>Operating temperature range: -30℃ to85℃ (normal humidity,normal press)</div> <div>1. 3 贮存温度范围: -30℃~80℃ (正常湿度、正常压力)<br/>Storage temperature range: -30℃ to 80℃ (normal humidity,normal press)</div> <div>1. 4 测试条件: 除非特别载明, 一般情况下的测试及测量应按以下标准条件下进行。<br/>正常温度 (温度 5℃~35℃)<br/>正常湿度 (相对湿度 45~85%)<br/>正常压力 (86~106 Kpa)<br/>在判定是否符合时, 如有问题产生, 则应按以下条件进行测试:<br/>温度 20℃±2℃<br/>相对湿度 65±5%<br/>Test conditions: test and measurements shall be made in the following standard<br/>Conditions Unless otherwise specified.<br/>Normal temperature (temerature 5℃ to 35℃)<br/>Normal humidity (relative humidity 45 to 85%)<br/>Normal pressure (86 to 106 Kpa)<br/>In case any question arises from the judgement made,tests shall be conducted in the<br/>Following Conditions:<br/>Temperature 20℃±2℃<br/>Relative humidity 65±5%</div> <div>2、外观、型号及尺寸:<br/>Appearance, style, and dimensions</div> <div>2. 1 外观: 应无任何影响产品性能的毛疵。<br/>Appearance there shall be no defects that affect the serviceability of the product.</div> <div>2. 2 型号及尺寸: 应符合装配图纸的要求。<br/>Style and dimensions shall conform to the assembly drawings.</div> <div>3、开关驱动方式: 轻触回复。<br/>Type of actuation's:. tactile feedback.</div> <div>4、额定: DC 12V 50mA<br/>Rating: DC 12V 50mA</div> |                                          |                      |             |             |                      |                 |                             |             |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                      |             |             |                      |                 |                             |             |             |
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| 标 记<br>SIGN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 处 数<br>QUANTITY                          | 更改文件号 FILE<br>NUMBER | 签 名<br>NAME | 日 期<br>DATE | 标 记<br>SIGN          | 处 数<br>QUANTITY | 更改文件号<br>FILE NUMBER        | 签 名<br>NAME | 日 期<br>DATE |

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| 产品型号: TS-D001<br>MODEL NO:3                       |                                                                                                                                                                                                                                                                                                                      | 产品图号:<br>DRAWING NO:                                                         | 第 2 页 共 4 页<br>SHEET 2 OF 4 |
| 5、特性 Performance                                  |                                                                                                                                                                                                                                                                                                                      |                                                                              |                             |
| 5. 1 电气 Electrical                                |                                                                                                                                                                                                                                                                                                                      |                                                                              |                             |
| 项目 Item                                           | 测试条件 Test conditions                                                                                                                                                                                                                                                                                                 | 要求 Requirements                                                              |                             |
| 5. 1. 1 接触电阻<br><br>Contact resistance            | 按柄顶端相对于基准线位置 1.5 mm. 用 1 千赫 (200mV MAX, 500mA MAX) 小电流接触电阻计来测量。<br><br>The knob top shall be placed 1.5mm from reference line. shall be made with a 1 kHz (200mV MAX, 500mA MAX) small-currentt contact resistance meter.                                                                                            | 100mΩ 最大值<br><br>100mΩ max                                                   |                             |
| 5. 1. 2 绝缘电阻<br><br>Insulation resistance         | 在端子之间以及在端子和壳体之间施加 DC 100V 时间 1 分钟。<br><br>Measurements shall be made following application of DC 500V potential across terminals and across terminals and frame for one minute.                                                                                                                                      | 100MΩ 最小值<br><br>100MΩ min                                                   |                             |
| 5. 1. 3 绝缘耐压<br><br>Dielectric withstanding       | 在端子之间以及端子和壳体之间施加 AC 100V (50Hz 或 60Hz) 1 分钟。<br><br>AC 100V (50Hz or 60Hz) shall be applied across terminal and across terminals and frame for one minute.                                                                                                                                                           | 无击穿<br><br>there shall be no breakdown                                       |                             |
| 5. 2 机械 Mechanical                                |                                                                                                                                                                                                                                                                                                                      |                                                                              |                             |
| 项目 Item                                           | 测试条件 Test conditions                                                                                                                                                                                                                                                                                                 | 要求 Requirements                                                              |                             |
| 5. 2. 1 动作力<br><br>Actuating force                | 放置开关, 使它的操作方向是垂直的, 然后逐渐将负荷增大施加在按柄中心, 当负荷达到按柄的最大承受度时, 测得。<br><br>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 stem to come to a stop shall be measured.                     | 240 ~ 280gf                                                                  |                             |
| 5. 2. 2 行程<br><br>Travel                          | 放置开关, 使它的操作方向是垂直的, 然后向按柄的中心施加 2 倍于开关按压力的静负荷, 直至按柄停止时所测得的行程。<br><br>Placing the switch such that the direction of switch operation is vertical and then applying a static load twice the actuating force to the center of the stem, the travel distance for the stem to come to a stop shall be measured.             | 0. 25±0. 1mm                                                                 |                             |
| 5. 2. 3 端子强度<br><br>Stem strength                 | 放置开关, 使其操作方向是垂直的, 在按柄运作的相同方向施加一拔力, 测量其最大的耐受力。<br><br>Placing the switch such that the direction of switch operation is vertical, the maximum force to withstand a pull applied sameness to the direction of stem operation shall be measured.                                                                        | 5N                                                                           |                             |
| 5. 3 环境 Environmental                             |                                                                                                                                                                                                                                                                                                                      |                                                                              |                             |
| 项目 Item                                           | 测试条件 Test conditions                                                                                                                                                                                                                                                                                                 | 要求 Requirements                                                              |                             |
| 5. 3. 1 耐低温<br><br>Resistance To low temperatures | 依照以下设定的测试, 在测量之前样品应放置在正常温度/湿度条件下 1 小时, 然后: (1) 温度-30℃±2℃ (2) 时间 4 小时 (3) 应抹去水滴<br><br>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: (1) temperature -30℃±2℃ (2) time 4 hours (3) waterdrops shall be removed. | 应符合 5. 1、5. 2. 1、5. 2. 3 项目中的要求<br>item 5. 1<br>item 5. 2. 1<br>item 5. 2. 3 |                             |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |                                                                                                                                                                                            |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 产品型号: TS-D001<br>MODEL NO:            |                                                                                                                                                                                                                                                                                                                                                                                                                           | 产品图号:<br>DRAWING NO:                                                                                                                                                                    | 第 3 页 共 4 页<br>SHEET 3 OF 4                                                                                                                                                                |
| 5.3.2 耐热性<br><br>Heat resistance      | 依照以下设定的测试,在测量之前样品应放置在正常温度/湿度条件下 1 小时,然后: (1)温度 80℃±2℃ (2)时间 16 小时<br><br>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: (1)temperature 80℃±2℃ (2)time: 16 hours                                                                                                                                                     | 应符合 5.1、5.2.1、5.2.3 项目中的要求<br><br>item 5.1<br>item 5.2.1<br>item 5.2.3                                                                                                                  |                                                                                                                                                                                            |
| 5.3.3 耐湿性<br><br>Moisture resistance  | 依照以下设定的测试,在测量之前样品应放置在正常温度/湿度条件下 1 小时,然后:<br><br>(1)温度 40℃±2℃<br>(2)相对湿度 90~95%<br>(3)时间 96 小时<br>(4)应抹去水滴<br><br>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made:<br><br>(1)temperature 40℃±2℃<br>(2)relative humidity 90 to 95%<br>(3)time 96 hours<br>(4) waterdrops shall be removed.                              | 接触电阻 200mΩ最大值<br>绝缘电阻 10MΩ最小值<br>绝缘耐压 100V<br>应符合 2.1 项目中的要求<br><br>contact resistance<br>200mΩ max<br>insulation resistance<br>10MΩ min<br>Dielectric withstanding<br>100V<br>item 2.1 |                                                                                                                                                                                            |
| 5.3.4 温度循环<br><br>Temperature cycling | 依照以下设定的测试,在测量之前样品应放置在正常温度/湿度条件下 1 小时,然后进行 5 个测试循环,测试期间应抹去水滴。<br>Following five cycles of the temperature cycling test set forth below the sample shall be left in normal temperature and humidity measurements for one hour before measurements are made during this test, waterdrops shall be removed.<br>                           | 应符合 5.1、5.2.3、2.1 项目中的要求<br><br>item 5.1<br>item 5.2.3<br>item 2.1                                                                                                                      |                                                                                                                                                                                            |
| 5.4 耐久 Endurance                      |                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |                                                                                                                                                                                            |
| 项目 Item                               | 测试条件 Test conditiong                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                         | 要求 Requirements                                                                                                                                                                            |
| 5.4.1 使用寿命<br><br>Operating life      | 应依照以下所设定的测试条件进行测试:<br>(1)DC 12V 50mA 电阻负荷<br>(2)操作频率: 15~18 次/分<br>(3)下 降: 2 倍于驱动力<br>(4)操作次数: 100,000 次<br>(5)操作温度: 常温( 20℃±2℃)<br><br>Measurements shall be made following the test set forth below:<br>(1)DC 12V 50mA resistive load<br>(2)Rate of operation: 15 to 18<br>(3)Depression: Twice the actuating force<br>(4)Cycles of operation: 100,000 cycles<br>(5) operating temperature: normal temperature (20℃±2℃) |                                                                                                                                                                                         | 接触电阻 200mΩ最大值<br>绝缘电阻 10MΩ最小值<br>绝缘耐压 100V<br>应符合 5.2.1 项目中的要求。<br><br>contact resistance<br>200mΩ max<br>insulation<br>resistance10MΩ 1min<br>Dielectric withstanding<br>100V. item 5.2.1 |

|                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                         |                             |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 产品型号: TS-D001<br>MODEL NO:                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 产品图号:<br>DRAWING NO:                                                                                                                                    | 第 4 页 共 4 页<br>SHEET 4 OF 4 |
| 5. 4. 2 耐振性<br><br>Vibration resistance             | 应依照以下设定的测试条件进行测试:<br>(1) 振荡范围: 10~55Hz<br>(2) 振 幅 2mm<br>(3) 摆动次数: 10~55 10Hz (约 1 分钟)<br>(4) 摆动方式: 对数摆动或均匀摆动<br>(5) 振荡方向: 三个相互垂直方向包括按柄行程方向<br>(6) 测试时间: 各 11 小时, 共 55 分钟<br><br>Measurements shall be made following the test set forth below:<br>(1) Range of oscillation: 10 to 55 Hz<br>(2) Amplitude, pk-to-pk: 2 mm<br>(3) Cycle of sweep: 10-55 10 Hz (in one minute approx)<br>(4) Mode of sweep: logarithmical sweep or uniform sweep<br>(5) Direction of oscillation: three mutually perpendicular directions, including the direction of stem travel<br>(6) Duration of testing: 11 min each for a total of 6 hours. | 应符合 5.1.1、2.1 项目中的要求<br><br>item 5.1.1<br>item 2.1                                                                                                      |                             |
| 5. 4. 3 耐碰撞冲击<br><br>Impact shock                   | 应依照以下设定的测试条件进行测试:<br>(1) 加速度: 10 G<br>(2) 测试次数: 每个方向 3 次, 共 6 个方向 18 次<br><br>Measurements shall be made following the test set forth below:<br>(1) Acceleration: 10 G<br>(2) Cycles of test: 3 cycles each in 6 directions for a totsl of 18 cycles                                                                                                                                                                                                                                                                                                                                                                            | 应符合 5.1.1、2.1 项目中的要求<br><br>item 5.1<br>item 2.1                                                                                                        |                             |
| 5.4.4 可焊性<br><br>Solderability                      | 端子顶部被浸入锡池中 2mm 深, 温度为 265±5℃, 时间为 5±0.5 秒。<br><br>The tip of the terminals shall be dipped 2mm in the solder bath at a temperature of 265±5℃ for 5±0.5 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 浸入部分的 75%以上表面被焊锡覆盖<br>A new uniform coating of solder shall cover a minnum of 75% of the Surfacebeing                                                   |                             |
| 5.4.5 耐焊接热<br><br>Resistance to soldering heat test | 开关置于锡焊装置中, 温度为 280±5℃, 时间为 3±0.5 秒。<br><br>The switch is placed in the soldering device, and the temperature is 280±5℃, for 3±0.5 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 开关未被破坏, 机械及电气性能可被满足.<br>应符合 2.1 项目中的要求。<br><br>Switch without harmful damage, mechanical and electrical characteristics shall be satisfied.<br>item 2.1 |                             |