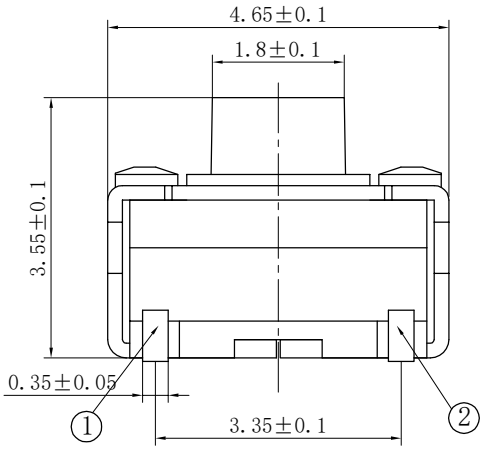
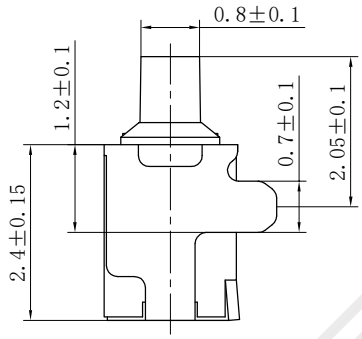
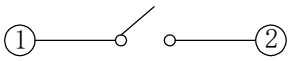
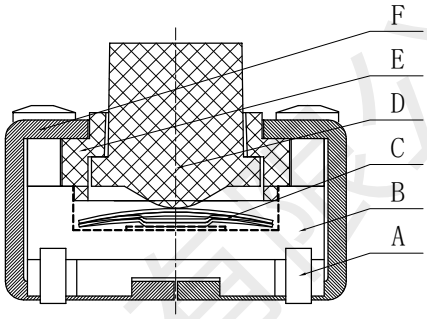
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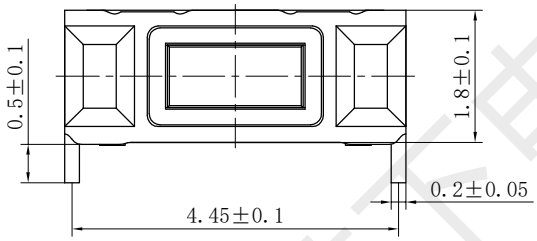


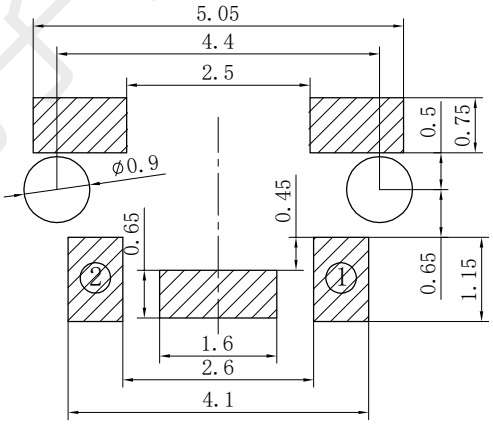




原理图




安装参考图

技术要求：

1. 零部件表面光洁无划伤，水花，变形，影响外观及性能等缺陷。
2. 额定电流：50mA.12V DC,绝缘电阻100MΩmin,100V DC,介电强度250V AC for 1min,接触电阻200mΩ max 。260° 高温后衰变值在初始值的20%内；
3. 开关手感明显，档位清晰可靠，无卡滞现象，消除外力后，应能快速回位。

| 序号 | 名 称 | 料 号 | 材 料 | 数量 | 备注 |
|---|---|---|---|---|---|
| F | 盖板 | AC79 | 磷铜0.2 | 1 | 镀银 |
| E | 塑料盖板 | AC80 | LCP白 | 1 | |
| D | 按钮 | AD32 | LCP黑 | 1 | |
| C | 簧片 | AE3 | 进口不锈钢覆银 | 2 | 外购 |
| B | 底座 | AB58-2 | LCP黑 | 1 | |
| A | 卡件 | AA4 | 磷铜0.15 | 1 | 镀银 |

| 标记 | 处数 | 更改文件号 | 日期 |
|---|---|---|---|
| | | | |

| 材料 | | 角度公差 | 比例 |
|---|---|---|---|
| | | ±1° | 10:1 |
| 电镀颜色 | | 标尺公差 | 单位 |
| | | ±0.1 | mm |
| 厚度 | | 日期 | 版本 |
| | | | |

| 名称 | 2*4全包双层爬楼梯1.8 |
|---|---|
| 型号 | HX 2x4-ZJ-1.6N |

| 设 计 | 标 准 化 | 审 核 | 批 准 |
|---|---|---|---|
| 黄彬 | | 张伟 | 罗小春 |

韩下 HANXIA

深圳市韩下电子有限公司

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Shenzhen Hanxia Electronic Co.,Ltd
Tel:0755-23086569 Email: shouhan3@so-han.com

# 承　认　书

# SPECIFICATION FOR APPROVAL

**产 品 编 码**
**Material code:** _____

产品名称 Project：**轻触开关**

规格型号 Part No：**HX 2x4-ZJ-1.6N**

**贵公司承认印 Approval signatures**

| 料 号/Part No. | 签　章/Signatures |
|---|---|
| | |

日期 Date:

| | | |
|---|---|---|
| 拟制/Drawn | 黄彬 | 深圳市韩下电子有限公司 工程专用章 |
| 审核/Check | 张伟 | |
| 批准/Approved | 罗小春 | |

深圳市韩下电子有限公司

1、 概述

GENERAL

1.1 适用范围

APPLICATION

此规格书适用于机械式轻触开关的相关要求

This specification is applied to the requirements for TACTILE SWITCH (MECHANICAL CONTACT)

1.2 工作温度范围

Operating Temperature Range

－20℃～70℃(在标准大气压、标准湿度条件下)

-20℃～70℃（Normal humidity, normal air pressure）

1.3 贮藏温度范围

Storage Temperature Range

-30℃～80℃(在标准大气压、标准湿度条件下)

-30℃～80℃（Normal humidity, normal air pressure）

1.4 测试条件

Test Conditions

在没有其它特定的条件下，应该在以下的条件下进行测试和测量：

Unless otherwise specified, tests and measurement shall be made in the following standard conditions:

常温……5℃～35℃

Normal temperature……5℃～35℃

标准湿度……相对湿度25%～85%

Normal humidity……relative humidity 25%～85%

标准大气压……86KPa～106Kpa

Normal air pressure……86Kpa～106Kpa

在制造过程中，测试和测量应该在以下的条件下进行：

If any doubt arise from the judgment, tests shall be conducted at the following conditions:

温度……20℃±2℃

Temperature……20℃±2℃

相对湿度……65%±5%

Relative humidity……65%±5%

环境气压……86KPa～106Kpa

Air pressure……86KPa～106Kpa

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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.)

2.5 开关工作额定值：DC 12V，50mA（有效值）

Ratings: 12V DC, 50mA (effective value)

3、 电气性能：

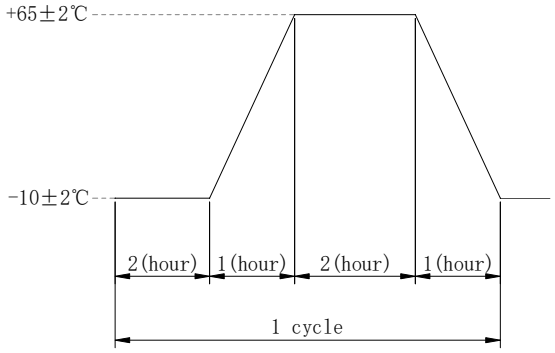
ELECTRICAL SPECIFICATION

| NO. | 项目<br>ITEM | 试验条件<br>TEST CONDITIONS | 要求<br>REQUIREMENTS |
|---|---|---|---|
| 3.1 | 接触电阻<br>Contact Resistance | 在以 5V 10mA的直流电源或不低于1KHz的交流电源的电路中，以一个等于2倍按力的静负荷施加于手柄中心<br>Applying a static load of 2 times operating force to the center of the stem, measurements shall be made by 5V DC 10mA or more than 1KHZ AC small-current contact resistance meter. | ≤200mΩ |
| 3.2 | 绝缘电阻<br>Insulation Resistance | 在端子之间施加DC 100V /1min的条件下,测量端子之间底座、盖板的电阻值<br>Measurement shall be made following application of 100V DC potential, across terminals, and across terminals and cover, for one minute. | ≥100MΩ |
| 3.3 | 介质耐压<br>Dielectric voltage proof | 在端子之间施加250V AC(50HZ或60HZ)/1min<br>250V AC (50HZ or 60HZ) shall be applied across terminals, for one minute. | 无击穿、无飞弧<br>There should be no breakdown and flashover |
| 4、 机械性能：<br>MECHANICAL SPECIFICATION | | | |
| 4.1 | 按力<br>Operating Force | 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<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 switch to come to a stop shall be measured | 按力：160±50gf<br><br>Operating Force:160±50gf |

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| NO. | 项目<br>ITEM | 试验条件<br>TEST CONDITIONS | 要求<br>REQUIREMENTS |
|---|---|---|---|
| 4.2 | 最大行程<br>Full Travel | 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。<br>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. | 0.15±0.1mm |
| 4.3 | 回弹力<br>Return Force | 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。<br>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. | 回弹力<br>Return Force:50gf min |
| 4.4 | 停止强度<br>Stop Strength | 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1min。<br>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 1 min. | 无机械和电气损坏<br>There shall be no sign of damage mechanically and electrically. |
| 4.5 | 可焊性Solderability | 在以下设定条件下进行测量:<br>Measurements shall be made following the test set forth below:<br>(1) 焊接温度:245±5℃<br>Solder temperature : 245±5℃<br>(2) 浸入时间:2s±0.5s<br>Immersion time: 2s±0.5s<br>对于其它步骤参考《GB 5095.6—86》试验12a<br>The other steps please refer to《GB 5095.6-86》TEST 12a | 除边缘外涂层应均匀覆盖90%以上<br>Except for the edge, the coating should cover a minimum 90% |
| 5、极限电气性能：<br>ENVIRONMENTAL SPECIFICATION | | | |
| 5.1 | 低温测试<br>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：<br>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>（1） 温度：-30±2℃<br>Temperature : -30±2℃<br>（2） 时间：96h<br>Time: 96h | 接触电阻：≤200mΩ<br>Contact resistance: ≤200mΩ<br>项目3,4.1,4.2,4.3<br>Item 3,4.1,4.2,4.3 |

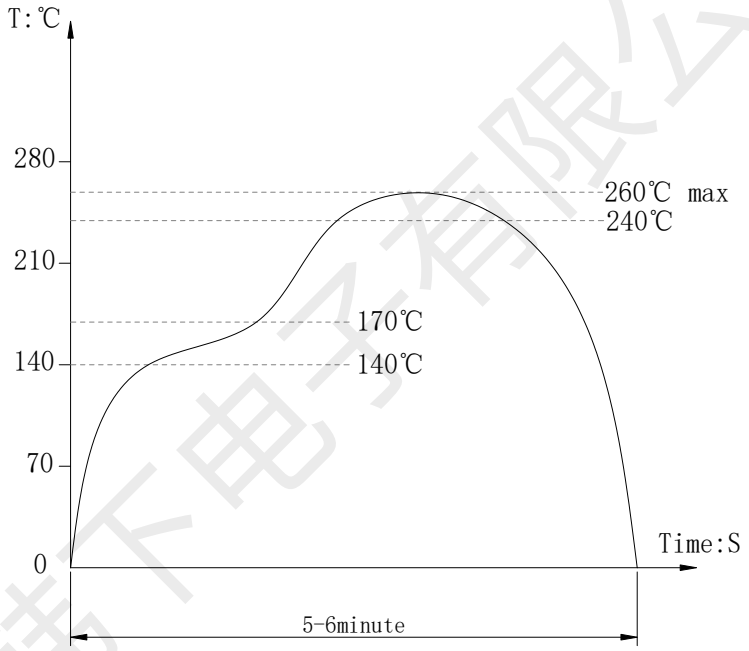
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| NO. | 项目<br>ITEM | 试验条件<br>TEST CONDITIONS | 要求<br>REQUIREMENTS |
|---|---|---|---|
| 5.2 | 高温测试<br>Heat resistance | 样品应按照以下实验条件进行测试，实验后样品应放在常温及标准湿度的环境中1小时后做性能测试：Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 h before measurements are made:<br>（1） 温度：85±2℃<br>temperature:85±2℃<br>（2） 时间：96h<br>time: 96h | 接触电阻：≤200mΩ<br>Contact resistance: ≤200mΩ<br>项目3,4.1,4.2,4.3<br>Item 3,4.1,4.2,4.3 |
| 5.3 | 湿温测试<br>Moisture 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:<br>（1） 温度：60±2℃<br>temperature: 60±2℃<br>（2） 相对湿度：90%～95%<br>relative humidity:90% to 95%<br>（3） 时间：96h<br>time: 96h | |
| 5.4 | 温度周期性测试<br>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.<br>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.<br><br> | |

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| | | | |
|---|---|---|---|
| 5.5 | 盐雾试验<br>Salt Mist | 在以下设定条件下进行测量:<br>The switch shall be checked after following test:<br>（1）温度：35℃±2℃<br>temperature: 35℃±2℃<br>（2）盐溶液浓度：5±1%（质量百分比）<br>salt solution : 5±1%(solids by mass)<br>（3）时间：24h±1h<br>Time: 24h±1 hour<br>实验后的盐沉积物后水冲掉<br>After test, salt deposit shall be removed by running water. | 金属件上没有腐蚀斑点<br>No remarkable corrosion shall be recognized in metal part. |
| 6、 极限机械性能：<br>ENDURANCE SPECIFICATION | | | |
| 6.1 | 工作寿命<br>Operation life | 根据下面的测试要求进行测试：<br>Measurement shall be made following the test set forth below:<br>（1） 不带负载<br>No load<br>（2） 按动速率：2次/秒<br>Rate of operation: 2 times/s<br>（3） 按力：160g<br>Operating Force：160g<br>（4） 平均无故障寿命/Average fault-free life:30000次 | 接触电阻≤500mΩContact resistance≤500mΩ<br>触点弹力≤10ms<br>Contact bounce≤10ms<br>按力：初值的±30%<br>Operating Force: initial value±30%<br>项目3,4.1,4.2,4.3<br>Item 3,4.1,4.2,4.3 |
| 7、 焊接条件：<br>SOLDERING CONDITIONS: | | | |
| 7.1 | 手工焊接<br>Hand soldering | 请按以下条件进行焊接：<br>(1) 焊锡温度：≤350℃<br>(2) 连续焊接时间：≤3 s<br>Please practice according to below conditions:<br>(1) Soldering temperature: 350℃ Max.<br>(2) Continuous soldering time: 3 s Max. | |

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| | | |
|---|---|---|
| 7.2 | 自动焊接<br>Automatic soldering | 在使用的情况下自动焊接<br>In case the automatic flow soldering is to be used<br>(1)预热 ---------- 150℃ ~ 175℃, 40 ~ 80 sec<br>Preheat ---------- 150℃ ~ 175℃, 40 ~ 80 sec<br>(2)峰值温度----- 260℃ (max)<br>Peak temperature ----- 260℃ (max)<br>(3)焊接区温度------ 260℃, 1 ~ 4 sec, 2 times (max)<br>Soldering area temperature ------ 260℃, 1 ~ 4 sec, 2 times (max)<br>(4)高温后性能衰变值±20%<br>After high temperature,the decay data about perfarmance will be±20%<br><br><br>< Temperature profile > |

8、 Other precautions其他注意事项

8.1 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.

8.2 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.

8.3 进行焊接过程中，不可以用溶剂或类似品清洗开关
Following the soldering process,do not try to clean the switch with a solvent or the like.

8.4 防止助焊剂从开关的顶端渗入
Safeguard the switch assembly against flux penetration from its topside.

8.5 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.