ISO9001: 2000

ISO14001: 2004

# APPROVAL SPECIFICATIONS

Title. TACT SWITCH

Product Model. KAN0642F 防水系列

Customer's Part NO.

Customer's Model:

**Customer's Approval Requested.**

Please return this copy as a certification of your approval.

Checked by: Date:

Approved by: Date:

| APPROVE | REVIEW | PREPARE |
|---|---|---|
| 黄自兵 | 李生勇 | 林庆杰 |

**WENZHOU GANGYUAN ELECTRONICS CO.，LTD.**

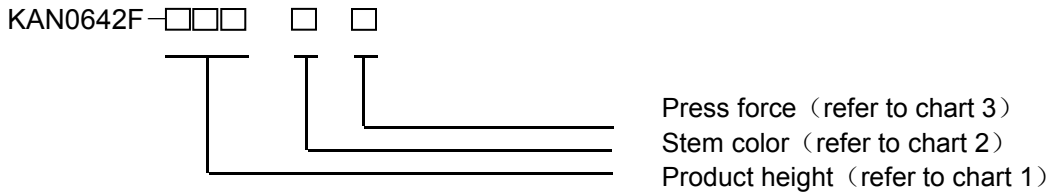
GANGYUAN

# APPROVAL SPECIFICATIONS

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

## A.Specification & meanings

The name of the tact switch is composed by type and specification，the particular meaning of the type、specification and code is as follows.




1、**Product height: It is denoted by three figures; For examples,"075"expresses the product which the total height is 7.5mm,as chart 1 shows:**

| Code | Product height | Code | Product height | Code | Product height |
|---|---|---|---|---|---|
| 043 | 4.3 | | | | |
| 050 | 5.0 | | | | |
| 080 | 8.0 | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

2、**Stem color: It is expressed by a figure, as chart 2 shows:**

| Color | Black | Red |
|---|---|---|
| Code | 1 | 2 |

3、**Operating force: An English letter expresses it, unite: Newton (N),as chart 3 shows:**

| Operating force / Code / Spec | | Press force | Return force |
|---|---|---|---|
| | | | |
| C | 2.6 | 2.6±0.5 | 0.6min |

Examples: "KAN0642F-0501C-C15" denotes the tact switch with 6.1×6.1 base, the height is 5mm,the stem is black , the operating force is 2.6N.

| APPROVE BY | 黄自兵 17.10.10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

1、 概述
GENERAL

1.2 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)

1.3 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）

1.4 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）

1.5 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

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

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（Max） Ratings: DC 12V，50mA （Max）

DC 1V，10μA（Min） Ratings: DC 1V，10μA （Min）

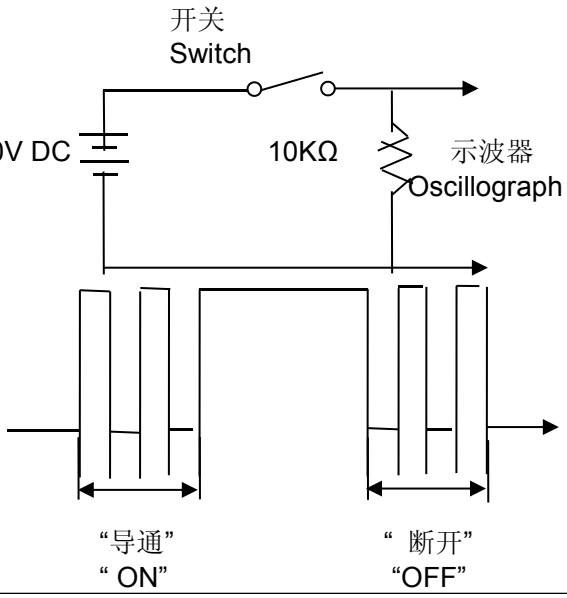
3．电气性能：

ELECTRICAL SPECIFICATION

| 项 目 ITEM | | 试 验 条 件 TEST CONDITIONS | 要求 REQUIREMENTS |
|---|---|---|---|
| 1 | 接触电阻 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 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. | ≤100mΩ |
| 2 | 绝缘电阻 Insulation Resistance | 在端子之间施加 DC 500V /1min 的条件下,测量端子之间底座、盖板的电阻值 Measurement shall be made following application of 500V DC potential, across terminals, and across terminals and cover, for one minute. | ≥100MΩ |
| 3 | 介质耐压 Dielectric voltage proof | 在端子之间施加 250V AC(50HZ 或 60HZ)/1min 250V AC (50HZ or 60HZ) shall be applied across terminals, for one minute. | 无击穿、无飞弧 There should be no breakdown and flashover |

| APPROVE BY | 黄自兵 17.10.10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

| 项目 ITEM | | 试 验 条 件 TEST CONDITIONS | 要求 REQUIREMENTS |
|---|---|---|---|
| 4 | 触点抖动 Bounce | 按照正常使用时的力度轻按手柄中心（每秒 3～4 次），<br>在导通和断开过程中测试开关抖动<br>Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 times per second), and bounce shall be tested at "ON" and "OFF"<br>  <br> | ON-3msec.max<br>OFF-8msec.max |
| 4．机械性能：<br>MECHANICAL SPECIFICATION | | | |
| 1 | 按力 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. | refer to chart 3 |
| 2 | 最大行程 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. | 0.3±0.1mm |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

| 项目 ITEM | | 试 验 条 件 TEST CONDITIONS | 要求 REQUIREMENTS |
|---|---|---|---|
| 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. | refer to chart 3 |
| 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. |
| 5 | 手柄拔出强度<br>Stem Strength | 开关垂直于操作方向放置，反方向实施最大操作力，并测量手柄的行程范围。<br>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. | 20N.min. |
| 6 | 可焊性<br>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% |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

| 项目<br>ITEM | | 试 验 条 件<br>TEST CONDITIONS | 要求<br>REQUIREMENTS |
|---|---|---|---|
| 5、极限电气性能：<br>ENVIRONMENTAL SPECIFICATION | | | |
| 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 |
| 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：80±2℃<br>temperature:80±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 |
| 3 | 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. | 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 |

| | Temperature | Time |
|---|---|---|
| 1cycle | -10±2℃ | 2(hour) |
| | -10～65℃ | 1 |
| | 65±2℃ | 2 |
| | 65～-10℃ | 1 |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

| 项目 ITEM | | 试 验 条 件 TEST CONDITIONS | 要求 REQUIREMENTS |
|---|---|---|---|
| 4 | 湿温测试 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 | 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 | 硫化试验 Sulfuration 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） H2S 气体浓度：3ppm±1ppm<br>$H_2S$ gas concentration: 3ppm±1ppm<br>（2） 时间：72h<br>Time: 72h<br>（3） 温度：40±2℃（90～95%RH）<br>temperature: 40±2℃（90～95%RH） | 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 |
| 6 | 盐雾试验 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：8h±1h<br>Time: 8h±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. |
| 7 | 防水等级 Waterproof grade | 1、IP6X:产品需抽负压，放置沙尘箱中<br>2、IP67：短时间浸水，浸入规定压力的水中经规定的时间后外壳浸水量不至于达到有害程度,放置于一个潜水箱中，一般深度 1 米，试验时间为 30min； | 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 |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

6、极限机械性能：
**ENDURANCE SPECIFICATION**

| 项目 ITEM | | 试 验 条 件 TEST CONDITIONS | 要求 REQUIREMENTS |
|---|---|---|---|
| 1 | 工作寿命 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） DC 12V，50mA 带负载<br>DC 12V, 50 mA resistive load<br>（2）按动速率：1 次/秒<br>Rate of operation: 1 times/s<br>（3） 按力：按力的 1.5 倍<br>Operating Force： Operating Force1.5 double<br>（4） 平均无故障寿命：Average fault-free life<br>C 2.6 80000 次 | 接 触 电 阻 ≤1ΩContact resistance≤1Ω<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 |
| 2 | 振动 Vibration | 根据以下给定条件进行测试：<br>Measurement shall be made following the test set forth below:<br>（1） 振动频率范围：10～55～10Hz<br>Vibration frequency range: 10 to 55 to 10Hz<br>（2） 振幅（峰一峰）：1.5mm<br>Amplitude: 1.5mm<br>（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<br>Direction of vibration:Three mutually perpendicular direction including the direction of stem travel<br>（4） 测试时间：每次 2hours .<br>Duration: Each 2hours. | 项目 3,4.1,4.2,4.3<br>Item 3,4.1,4.2,4.3 |

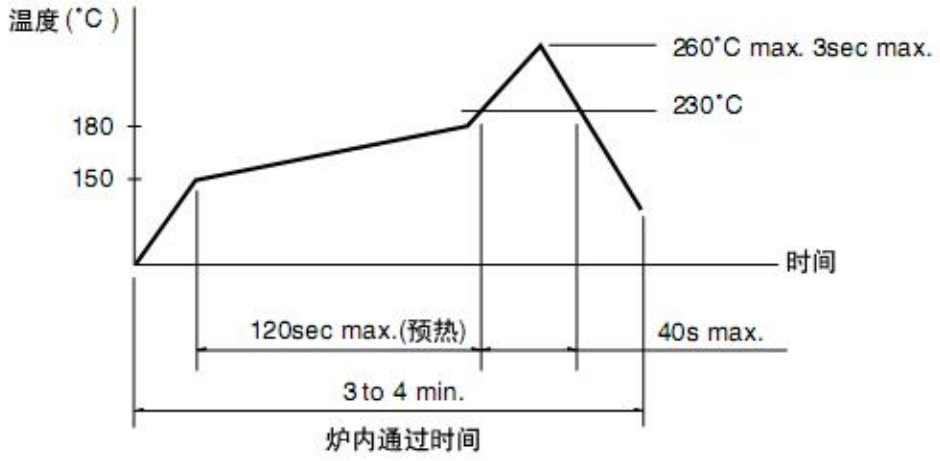
**7．焊接条件：**
**SOLDERING CONDITIONS:**

| | | |
|---|---|---|
| 7.1 | 手工焊接 Hand soldering | 请按以下条件进行焊接：<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. |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

7.2 回流焊时 Conditions for reflow




**焊接说明：**

**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.

1.1 在使用烙铁的情况下，焊锡温度应在 350℃以下、3 秒以内。

In the case of using solding iron, solding conditions shall be 350℃ max and 3 sec.max.

1.2 浸焊后，注意不要在顶部施加负荷。

Right after switches were soidered;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。

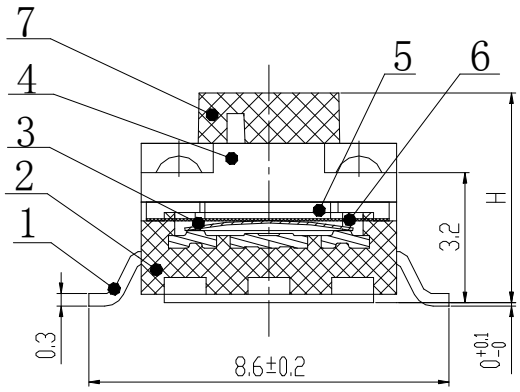
Preservation under high temperature and high high humidity or corrosive gas should be avoided Especially . When you need to preserve for a long period ,do not open the carton.

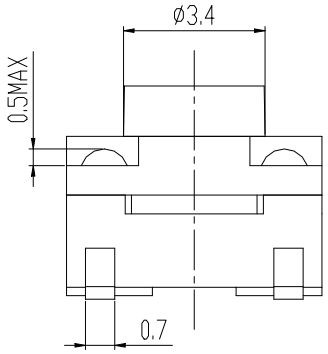
| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

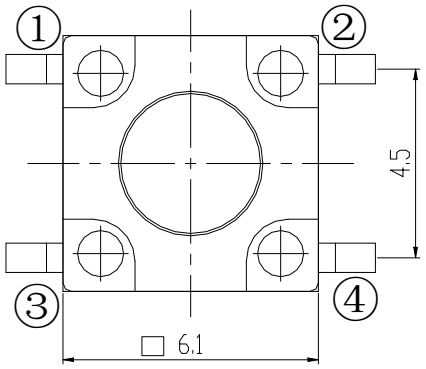


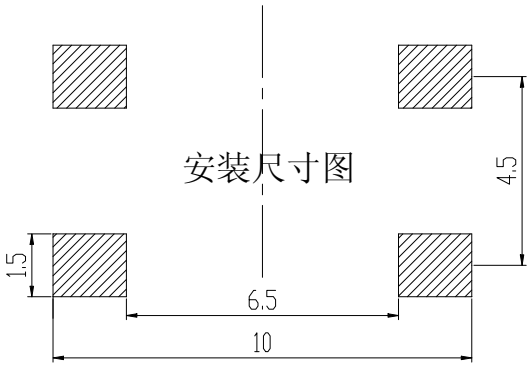
GANGYUAN APPROVAL SPECIFICATIONS

| CUSTOMER | CUSTOMER'S P/N | GYE'S P/N | PRODUCT | REVISION |
|---|---|---|---|---|
| | | KAN0642F 防水系列 | TACT SWITCH | A |

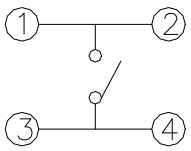



电路图




General tolerance：±0.2mm

| NO. | NAME | MATERIAL | NATIONALITY | QTY. | FINISHING |
|---|---|---|---|---|---|
| 1 | TERMINAL | Brass | China | 1 | Silver plating |
| 2 | CASE | PA10T | China | 1 | Black |
| 3 | CONTACT | SUS | Japan | 1 | Ag plating |
| 4 | PI 膜 | PI | China | 1 | YELLOW |
| 5 | 防水橡胶 | 橡胶 | China | 1 | Black |
| 6 | COVER | PA10T | China | 1 | Black |
| 7 | STEM | PA6T | China | 1 | Black |

| APPROVE BY | 黄自兵 17. 10. 10 | CHECKED BY | 李生勇 17.10.10 | PRPARE BY | 林庆杰 17.10.10 |
|---|---|---|---|---|---|

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** Tactile Switches ***category:***

***Click to view products by*** GANGYUAN ***manufacturer:***

Other Similar products are found below :

5GTH92001 5GTH9202242 1-1977120-4 ADTSA62NV ADTSA62RV B3F-3123 1977177-8 1977266-1 ADTSA63NV ADTSM21NSVTR ADTSM25RVTR ADTSM32NVTR ADTSMW64RV FSMRA4JHA04 GS4.70F300QP 3ESH9R KSC241J SP DELTA LFS 3FTL600RAS 3FTL640RAS Y96K132V0FPLFS 5GSH92001 5GTH9658222 ADTSM31NVTR 2-1977120-7 TSJW-5.2-260-TR KMT011MNGJLHS ADTSG648NV ADTSM62KSVTR ADTSM648NV 95C06E3RAT 3ATH9Q FSM4JSMLXTR FSM4JSMXL FSMRA8JHA04 HARS0073 Y97HS12A5RAFP Y97BT23B2HAFP Y33R411N9FPLFT Y31C01402FPLFS PTS645SK50SMTR92 ADTSM32NVB KMS233GPWTLFG Y78B42324FP Y33R21116FPLFT Y31B43131FPLFG Y78B64124FP Y71243251FP Y33R31119FPLFT Y97HS12A5TAFP PTS638SK25SMTR2LFS