规 格 承 认 书

SPECIFICATION FOR APPROVAL

客 户 名 称:
CUSTOMER NANE

客 户 料 号: 可订制大电流
CUSTOMER NUMBER

产 品 规 格: 轻触开关
PRODUCD NANE

我 司 型 号: 6x6防水插脚
PRODUCD MODEL

我 司 料 号: TS-1102FSD-6x6x**
PRODUCD NUMBER

承认单位 DEPT	采 购 部 PURCHASE	品 保 部 Q C	工 程 部 R & D	承认章 APPROVAL SIGNET
审 核 CHKD				
承 认 APPD				

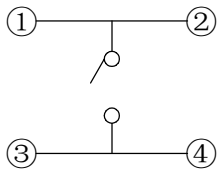
审 核 结 果 : □ 合格 O K □ 不合格 N G
APPROVAL RESULT:

确认后请回签一份

说 明:
REMNRK:_____ 日期(DATE):

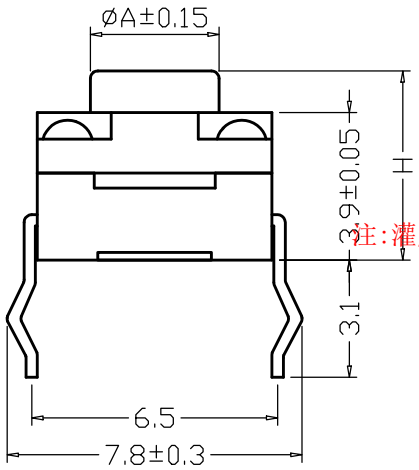
年(YEAR) / 月(MONTH) / 日(DAY)
/ /

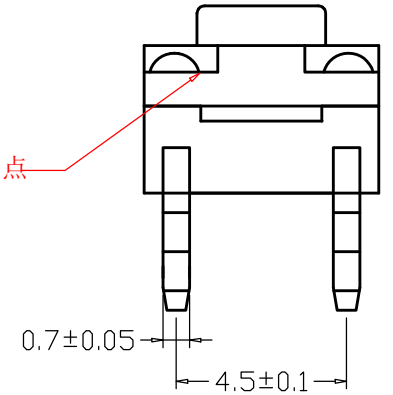
RoHS
REACH

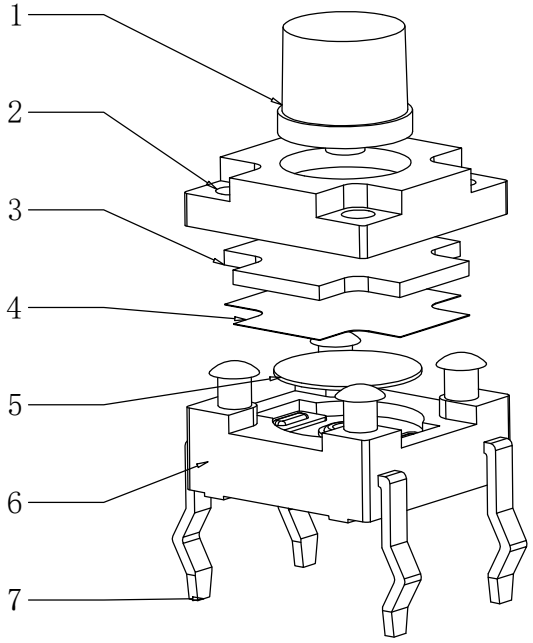


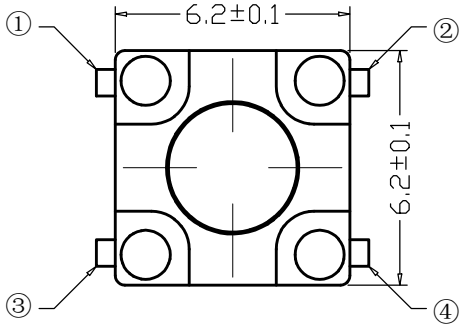
电路图

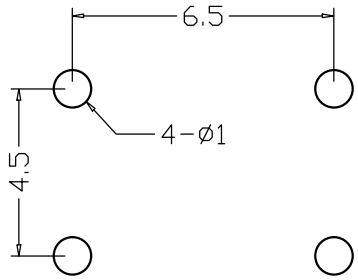
A	H（高度）
φ3.50	4.3~5
φ3.45	5.5
φ3.35	6
φ3.20	6.5
φ3.10	7
φ3.00	7.5
φ3.00	8~29











PCB线路板图

序号	产品名称	材料规格	表面处理 颜色	数量
1	按　钮	PPA		1
2	盖　板	PPA		1
3	防水垫片			1
4	防水膜			1
5	弹　片	不锈钢		1
6	底　座	PPA		1
7	接线片	铜	镀　银	1

性能	
额定规格	DC12V/50mA
接触电阻	≤100mΩ
绝缘电阻	≥100MΩ
耐 电 压	AC250V/min
动 作 力	250±50gf

未注尺寸公差（mm）		
.X	±0.20	设　计
.XX	±0.10	审　核
.XXX	±0.01	标准化
		批　准

图面	A4
单位	MM
比例	
重量	
页码	1/1
版次	A/0

产品名称：轻触开关

产品规格：TS-1102FSD-6x6x**

浙江创都电子科技有限公司

浙江创都电子科技有限公司	日期 DATE	2021-9-25
	文件编号 Document number	LX-EGHK-01B

Specification 规格书

1.基本说明 General specification

1.1 范围 Scope

此规范含盖单推柄和无推柄的轻触开关要求

This specification covers the requirements for single key switches which have no key top(TACT SWITCHES:MECHANICAL CONTACT).

1.2 使用温度范围 Operating Temperature Range

-20 to +70 ℃ 正常湿度，标准压力 (normal humidity,normal press.)

1.3 保存温度范围 Storage Temperature Range

-25 to +85 ℃ 正常湿度，标准压力 (normal humidity,normal press.)

1.4 测试条件 Test Conditions

测试和计量按下列标准条件除非特殊说明:

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

标准温度 Normal temperature (temperature 5 to 35 ℃)

正常湿气 Normal humidity (relative humidity 45 to 85%)

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

2.动作类型 TYPE OF ACTUATION

轻触返回 Tactile feedback

3.接触形式 CONTACT ARRANGEMENT

1 接点 1 回路 1 poles 1 throws

详细接线图在外形图中(Details of contact arrangement are given in the assembly drawings.)

4.额定规格 MAXIMUM RATINGS

DC 12 V 50 mA

5.外观结构 Appearance and structure

5.1 外观：应无明显收缩、飞边、划伤，镀层均匀，无脱落等现象

Appearance:It should no obvious shrinkin 、upset metal、Scrape、plating path well-distributed and no coming off.

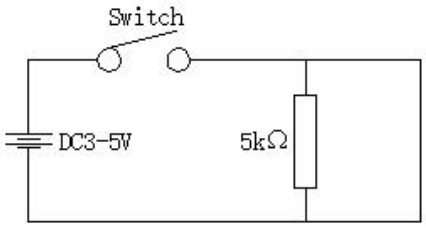
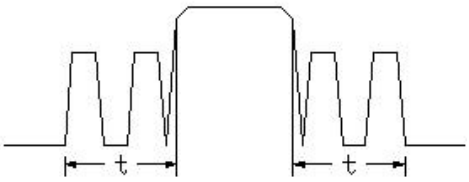
5.2 尺寸：（附外形图）Size:Making (drawing attached)

图纸见第 2 页

Specification 规格书

6.性能 General specification

6.1 电气性能 Electrical properties

项目 Item		测试条件 Test Condition	要求 Requirements
6.1.1	接触电阻 Contact Resistance	用两倍的动作力作静负载施加于按钮的中心，并用 1 千赫(kHz)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.	小于 100 mΩ ≤ 100 mΩ
6.1.2	绝缘电阻 Insulation Resistance	在端子与端子之间,端子与外壳之间施加 DC 100 V/一分钟 Measurements shall be made following application of DC 100 V potential between terminals and between individual terminals and frame for one minute.	大于 100 MΩ ≥ 100 MΩ
6.1.3	耐 电 压 Dielectric withstanding voltage	在端子与端子之间,端子与外壳之间施加 AC 250 V (50HZ-60HZ) AC 250 V (50Hz or 60Hz) 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
6.1.4	抖 动 Bounce	在正常使用中(以每秒 3 - 4 次周期)轻轻地在手柄中心加力,在通与断瞬间测试抖动 Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 operations per sec), Bounce shall be tested when"ON" and "OFF"  示波器 Oscillograph  t 为触点抖动时间	10 mS 以下

Specification 规格书

6.2 机械性能 Mechanical properties

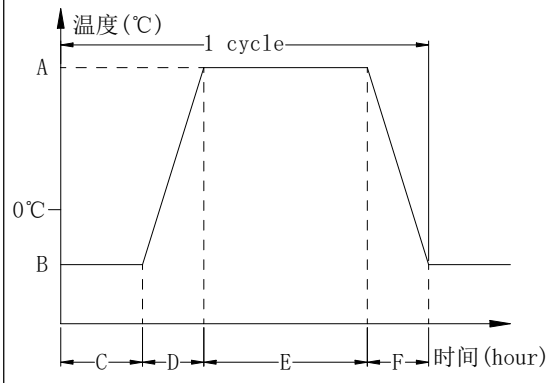
项目 Item		测试条件 Test Condition	要求 Requirements
6.2.1	动 作 力 Actuating Force	开关的动作方向为垂直放置,开关向推柄中心逐渐地增加负荷直到推柄停止时所测量的最大负荷 Place the switch such that the direction of switch operation is vertical and then gradually increase the load applied to the center of the stem, the maximum load required for the stem to come to a stop shall be measured	250 ± 50 gf
6.2.2	行 程 Travel	开关的动作方向为垂直放置开关,并以双倍动作力的静负荷作用推柄中心,测量推柄从开始到停止的行程距离 Place the switch such that the direction of switch operation is vertical and then apply 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	250 gf: 0.25 ± 0.05 mm
6.2.3	返 回 力 Return Force	开关的动作方向为垂直放置开关,在已有行程的推柄中心向上减小压力,推柄回到自由位置时所测量到的力 The sample switch is installed such that the direction of switch operation is vertical and,upon depression of the stem in its center the whole travel distance,the force of the stem to return to its free position shall be measured	250 gf: 80 gf min
6.2.4	静止强度 Static Strength	开关的动作方向为垂直放置开关,在推柄动作方向施加 1KG 的静负荷,持续 60 秒 Placing the switch such that the direction of switch operation is vertical,a static load of 3 kgf shall be applied in the direction of stem operation for a period of 60 seconds	无机械的和电气的损伤迹象 There shall be no sign of damage mechanically and electrically

Specification 规格书

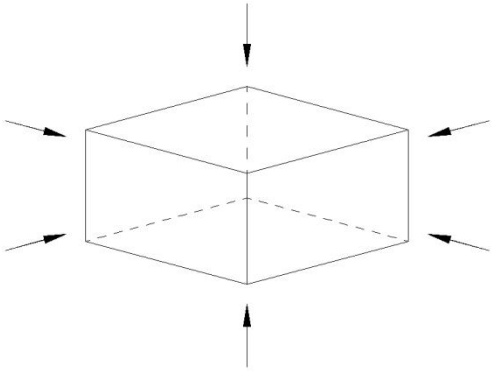
6.3 使用耐久性能 Service Durability

项目 Item		测试条件 Test Condition	要求 Requirements
6.3.1	动作寿命 Operating Life	按下列条件进行寿命试验: Measurements shall be made following the test set forth below: (1)无负载条件 1.5倍力 No load condition (2)动作频率: 60 ~ 120 次/分钟 Rate of operation: 60 to 120 operations per minute (3)动作次数:不锈钢10万次，复银铜5万次 Cycles of operation:Stainless steel 100,000 cycles, Silver coated copper 50,000 cycles	接触电阻 Contact resistance: 100 mΩ Max. 绝缘电阻 Insulation resistance: 100 MΩ Min. 动作力 Actuating force: ± 30% 初始动作力 + 30% or- 30% of initial force 项目 Item 6.2.2
6.3.2	耐 潮 湿 Moisture Resistance	样品按下列条件进行耐潮湿试验,试验后在正常温度和湿度条件下放置 1 小时后测定 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)温 度 Temperature: 40 ± 2 ℃ (2)相对湿度 Relative humidity: 90 to 95% (3)时 间 Time: 96 小时 hours 擦除水珠 Water drops shall be removed.	接触电阻 Contact resistance: 100 mΩ Max. 绝缘电阻 Insulation resistance: 100 MΩ Min 项目 Item 6.1.3、6.1.4 项目 Item 6.2.1～6.2.3
6.3.3	耐 低 温 Low Temperature Resistance	样品按下列条件进行耐低温试验,试验后在正常温度和湿度条件下放置 1 小时后测定 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)温 度 Temperature: -20 ± 2 ℃ (2)时 间 Time: 96 小时 hours 擦除水珠 Water drops shall be removed.	接触电阻 Contact resistance: 100 mΩ Max. 绝缘电阻 Insulation resistance: 100 MΩ Min 项目 Item 6.1.3、6.1.4 项目 Item 6.2.1～6.2.3

Specification 规格书

项目 Item		测试条件 Test Condition	要求 Requirements
6.3.4	耐　热 Heat Resistance	样品按下列条件进行耐热试验,试验后在正常温度和湿度条件下放置 1 小时后测定 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)温　　度 Temperature: 70 ± 2 ℃ (2)时　　间 Time: 96 小时 hours	接触电阻 Contact resistance: 100 mΩ Max. 绝缘电阻 Insulation resistance: 100 MΩ Min 项目 Item 6.1.3、6.1.4 项目 Item 6.2.1～6.2.3
6.3.5	温度循环 Change of Temperature	样品按下列条件进行高低温循环试验,试验后在正常温度和温度条件下放置 1 小时后测定 Following ten cycles of high temperature test. The Sample shall be Placed in Normal temperature and humidity Conditions for one hour before measurements are made. During this test, water drops shall be removed  A:+ 85 ± 2 ℃ B:- 25 ± 2 ℃ C: 2 小时 D: 1 小时 E: 2 小时 F: 1 小时 周　　期: 5 次 Cycling:Five cycles	接触电阻 Contact resistance: 100 mΩ Max. 绝缘电阻 Insulation resistance: 100 MΩ Min 项目 Item 6.1.3、6.1.4 项目 Item 6.2.1～6.2.3
6.3.6	盐雾测试 Salt Spray Test	样品按下列条件进行盐雾试验 The salt spray test shall be conducted at the following conditions: (1)浓　　度 Density: 溶液(5 ± 1)%Nacl(质量百分比) (2)温 度 Temperature: 35 ± 2 ℃ (3)时　　间 Time: 6 小时 hours	金属件无发黄、生锈 No yellowing and rusting of metal parts

Specification 规格书

项目 Item		测试条件 Test Condition	要求 Requirements
6.3.7	耐 振 动 Vibration Resistance	按下列条件进行抗振动试验 Measurements shall be made following the test set forth below: (1)频率范围 Range of oscillation: 10 to 55 Hz (2)振幅 Amplitude: 峰-峰 1.5 mm(pk-to-pk: 1.5 mm) (3)扫描周期 Cycle of sweep: 10 - 55 - 10 Hz 约一分钟内(in one minute, approx.) (4)扫描方式 Mode of sweep: 对数扫描式恒定扫描(Logarithmically sweep or uniform sweep.) (5)振动方向 Direction of oscillation: 3 个相互垂直方向,包括推柄行程方向(Three mutually perpendicular directions, including the direction of stem travel.) (6)每方向 2 小时.共 6 小时 (2 hours each,for a total of 6 hours.)	项目 Item 6.1 项目 Item 6.2.1、6.2.2
6.3.8	抗 冲 击 Impact Shock Resistance	按下列条件进行冲击试验 Measurements shall be made following the test set forth below: (1)加速度 Acceleration: 80 g (2)试验次数 Cycles of test: 每个方向 3 次, 6 个方向共 18 次(3 cycles each in 6 directions, for a total of 18 cycles) 	项目 Item 6.1 项目 Item 6.2.1、6.2.2

Specification 规格书

7.焊接条件 Welding conditions

项目 Item		推荐条件 Recommended conditions
7.1	手工焊接 Hand soldering	请按以下条件进行焊接: (1)焊锡温度:≤ 350 ℃ (2)连续焊接时间:≤ 3 S (3)电铬铁的功率:≤ 60 W Please practice according to bellow conditions: (1)Soldering temperature :≤ 350 ℃ (2)Continuous soldering time:≤ 3 S (3)Capacity of soldering iron:≤ 60 W

适用于按入式、径向型
Available for Snap-in Type and Radial Type

项目 Items		条件 Condition
	助焊剂附着量 Flux buit-up	不附着于零部件贴装面的程度 Mounting surface shoud not be coated with flax
7.2 自动浸焊 Condiftons for Auto-dip	预热温度 Preheating temperature	印刷电路板焊接面的周围温度 100℃ max. Ambient temperature of the soldered surface of PC board. 100℃ max.
	预热温度时间 Preheating time	60s max.
	焊接温度 Soldering temperature	260℃ max.
	焊接浸渍时间 Continuous dipping time	5s max. 2 次以下
	焊接次数 Number of soldering	2times max.

8. 其他注意事项 Other precautions

（1） 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.

（2）防止助焊剂从开关的顶端渗入

Safeguard the switch assembly against flux penetration from its topside.

（3）交货后保证开关处于封密状态并库存时间 90 天以下。

Please have the products keep in close status and the storage time is 90 days guaranty after delivering the goods at most.