



浙江富港电子有限公司  
深圳市富港科技有限公司  
广东富港智能科技有限公司

物料承认书

SPECIFICATION FOR APPROVAL

客户名称:

Customer: \_\_\_\_\_

产品名称:

Description: 轻触开关

规格型号:

Modelno: TC-6615X-H-160

客户物料编号:

Cust P/N: \_\_\_\_\_

出厂签章Factory signature

校 对Issuer

审 核Engineer

批 准Approver

曾繁超

/

李志文

承认签章 CUSTOMER

校 对Issuer

审 核Engineer

批 准Approver

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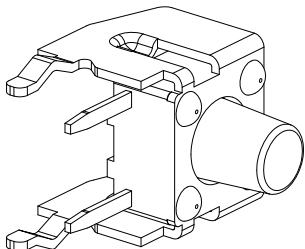
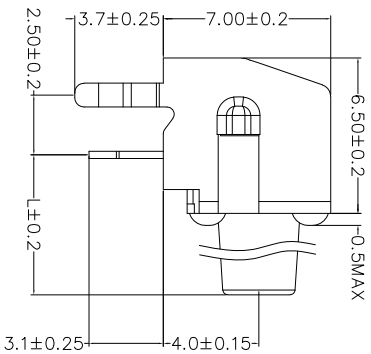
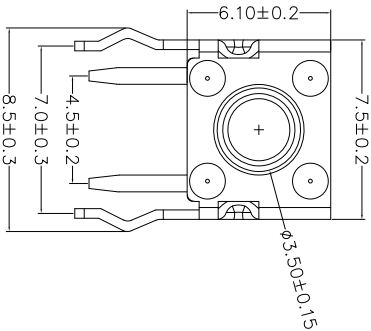
E-mail: [zyd@szfgtc.com](mailto:zyd@szfgtc.com)

确认合格后烦请回签一份给我司存档, 谢谢!

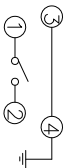
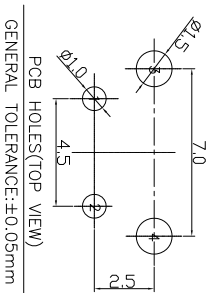
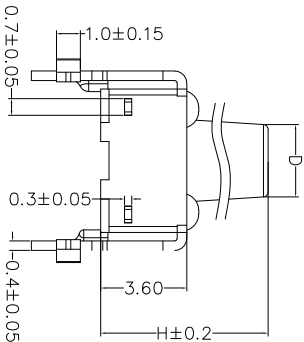
Pls. sign acknowledge and re-turn document to us after confirming, thank you !

版本变更履历表 Version change resume

序号 No	版本 Version	变更内容 Change of content	时间 Time	变更人 Change of person	备注 Remarks
1	A	新版发行 New version release	2025/01/03	曾繁超	
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TACT SWITCH SERIES									
ND	H	L	BUTTON	ND	H	L	D		
1	4.30	3.15	3.50	22	14.50	13.35	3.00		
2	4.50	3.35	3.45	23	15.00	13.85	3.00		
3	5.00	3.85	3.40	24	15.50	14.35	3.00		
4	5.50	4.35	3.30	25	16.00	14.85	3.00		
5	6.00	4.85	3.20	26	16.50	15.35	3.00		
6	6.50	5.35	3.00	27	17.00	15.85	3.00		
7	7.00	5.85	3.00	28	17.50	16.35	3.00		
8	7.50	6.35	3.20	29	18.00	16.85	3.00		
9	8.00	6.85	3.00	30	18.50	17.35	3.00		
10	8.50	7.35	3.00	31	19.00	17.85	3.00		
11	9.00	7.85	3.00	32	19.50	18.35	3.00		
12	9.50	8.35	3.00	33	20.00	18.85	3.00		
13	10.00	8.85	3.00	34	21.00	19.85	3.00		
14	10.50	9.35	3.00	35	22.00	20.85	3.00		
15	11.00	9.85	3.00	36	23.00	21.85	3.00		
16	11.50	10.35	3.00	37	24.00	22.85	3.00		
17	12.00	10.85	3.00	38	25.00	23.85	3.00		
18	12.50	11.35	3.00	39	26.00	24.85	3.00		
19	13.00	11.85	3.00	40	27.00	25.85	3.00		
20	13.50	12.35	3.00	41	28.00	26.85	3.00		
21	14.00	12.85	3.00	42	29.00	27.85	3.00		



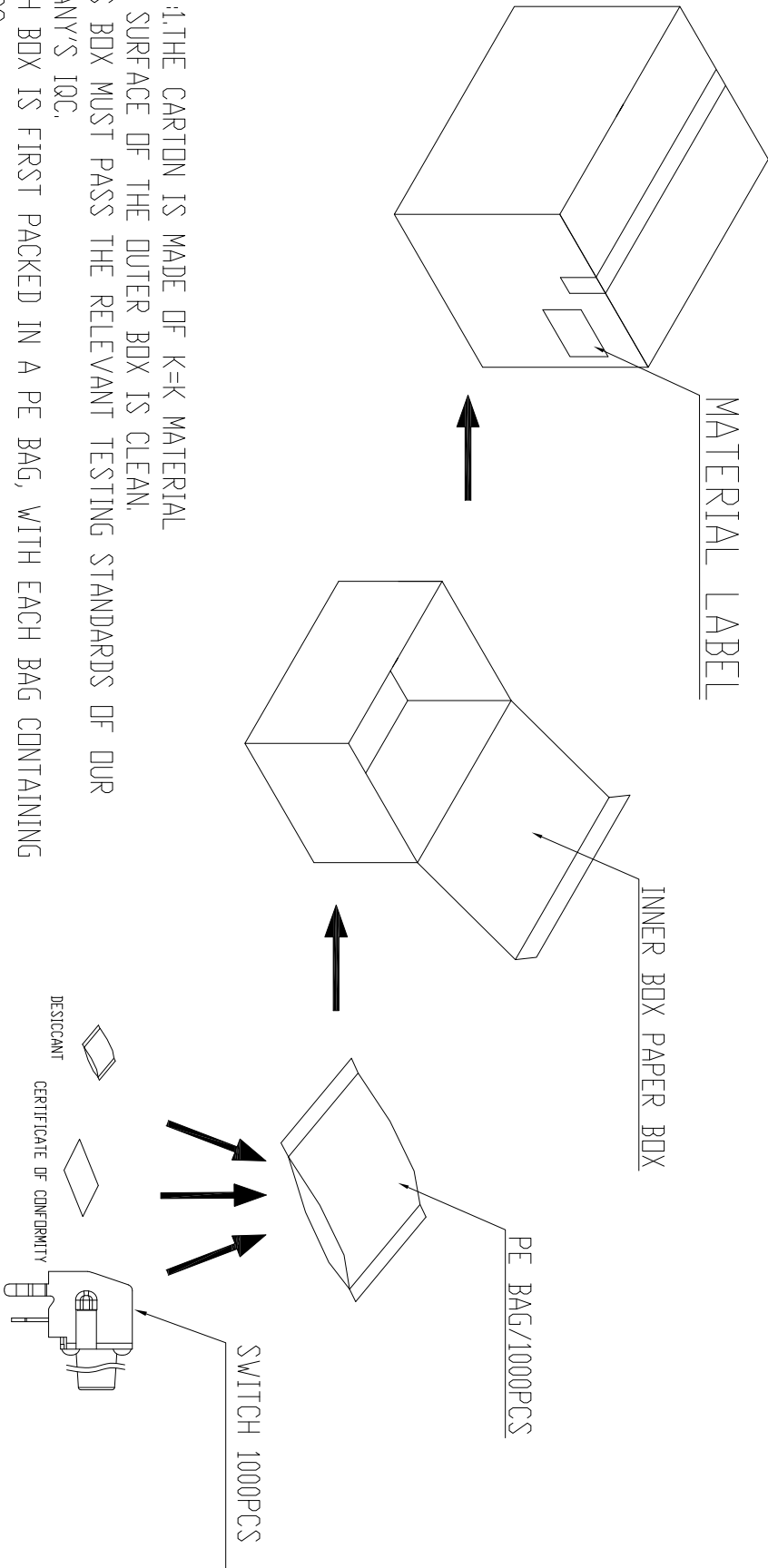
PART NO:TC-6615X-H-XXX  
160-160±50gf  
260-260±50gf

- TECHNICAL PARAMETERS
- 1.OPERATING TEMPERATURE: -20 ~ +70°C
  - 2.RATED LOAD: DC 12V 50mA
  - 3.CONTACT RESISTANCE: ≤50mΩ
  - 4.INSULATION RESISTANCE: ≥100MΩ
  - 5.WITHSTAND VOLTAGE: AC 250V (50Hz)/min
  - 6.ACTUATION FORCE:160/260gf
  - 7.SERVICE LIFE: 50,000~70,000 cycles
  - 8.SWITCH STROKE DIMENSION: 0.25mm±0.1mm
  - 9.SWITCH EXTERIOR SHALL BE FREE OF 10CRACKS AND DAMAGES
  - ACTUATION SHALL BE SMOOTH WITHOUT JAMMING; CIRCUIT SWITCHING SHALL BE NORMAL
  - 11.UNDIMENSIONED TOLERANCE: ±0.15mm

TOLERANCE UNLESS OTHERWISE SPEC		ZHEJIANG FUGANG TECHNOLOGY CO.,LTD	
BASIC DIMENSION	TOLERANCE	DSND	TITLE:SWITCH
x.x	±0.30	CHKD	Y H C
x.x	±0.20	APVD	L P J
x.x	±0.10		251204
ANGLES	±3°		

ND	NAME	NUMBER	MATERIAL	ELECTRIC PLATING	REMARKS
5	PIN	1	BRASS	Ag PLATING	
4	HOUSING	1	PPA	BLCAK	
3	SPRING	1	SUS		
2	COVER	1	IRON	Sn PLATING	
1	BUTTON	1	PPA	BLCAK	

SCHEMATIC DIAGRAM OF THE PACKAGING OF THE TOUCH SWITCH PRODUCT



NOTE :1.THE CARTON IS MADE OF K=K MATERIAL  
2.THE SURFACE OF THE OUTER BOX IS CLEAN.  
3.THIS BOX MUST PASS THE RELEVANT TESTING STANDARDS OF OUR COMPANY'S IQC.  
4.EACH BOX IS FIRST PACKED IN A PE BAG, WITH EACH BAG CONTAINING 1000PCS.  
THEN PACK IT IN A PAPER BOX. ONE BAG PER BOX  
EACH BOX CONTAINS 50 BOXES,1000\*50= 50,000 PCS  
6.MATERIAL OF PLASTIC BAG: PE  
7.UNLESS OTHERWISE SPECIFIED, THE TOLERANCE IS ±5MM

TOLERANCE UNLESS OTHERWISE SPEC		ZHEJIANG FUGANG TECHNOLOGY CO.,LTD				
BASIC DIMENSION	TOLERANCE	DSND	W Z Z	TITLE:SWITCH		
x.x	±0.30	CHKD	Y H C	251204	PART NO:TC-6615X	
x.xx	±0.20	APVD	L P J	251204		
x.xxx	±0.10					
ANGLES	±3°			UNIT:mm	SCALE:1:1	SIZE:A4
						SHEET:1/1

SPECIFICATION FOR APPROVAL				规格书编号 SPECIFICATION NO.
Description	TACT SWITCH	Item No.		

1.General specification 基本说明

1.1 Scope 范围 This specification covers the requirements for single key switches which have no key top(TACT SWITCHES:MECHANICAL CONTACT).此规范含盖单推柄和无推柄的轻触开关要求

1.2 Operating Temperature Range 使用温度范围  
-20 to+70℃(normal humidity, normal press.) 正常湿度，标准压力

1.3 Storage Temperature Range 保存温度范围  
-20 to+70℃(normal humidity, normal press.)

1.4 Test Conditions 测试条件  
Tests and measurements shall be made in the following standard conditions unless otherwise specified: 测试和计量按下列标准条件除非特殊说明  
Normal temperature (temperature 5 to 35℃) 标准温度  
Normal humidity (relative humidity 45 to85%) 正常湿气  
Normal pressure (pressure 860 to 1060 mbars) 标准压力  
In case any question arises from the judgment made, tests shall be conducted in the following conditions:  

Temperature	(20±2℃)	温度
Relative humidity	(65±5%)	相对湿度
Pressure	(860 to 1060 mbars)	压力

2.TYPE OF ACTUATION 动作类型  
Tactile feedback 轻触返回

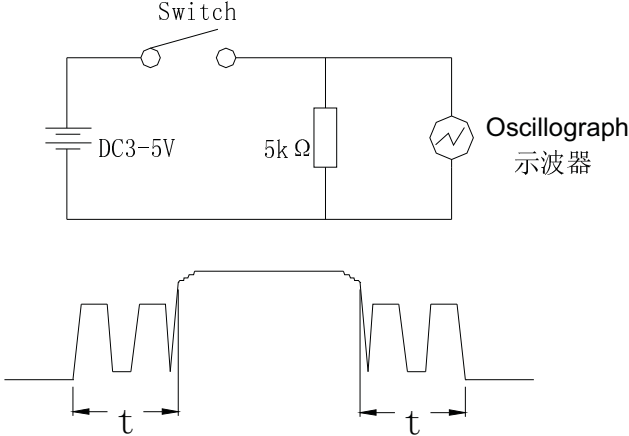
3.CONTACT ARRANGEMENT 1 poles 1 throws 接触形式 1 接点 1 回路  
(Details of contact arrangement are given in the assembly drawings.)  
细接点形式在外形图中

4.MAXIMUM RATINGS DC 12 V 50 mA 最大额定值

5 Appearance and structure (外形结构)

5.1 Appearance:It should no obvious shrinking、upset metal、Scrape、plating path well-distributed and no coming off. 外观：应无明显收缩、飞边、划伤，镀层均匀，无脱落等现象。

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

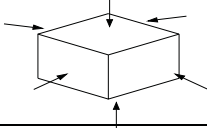
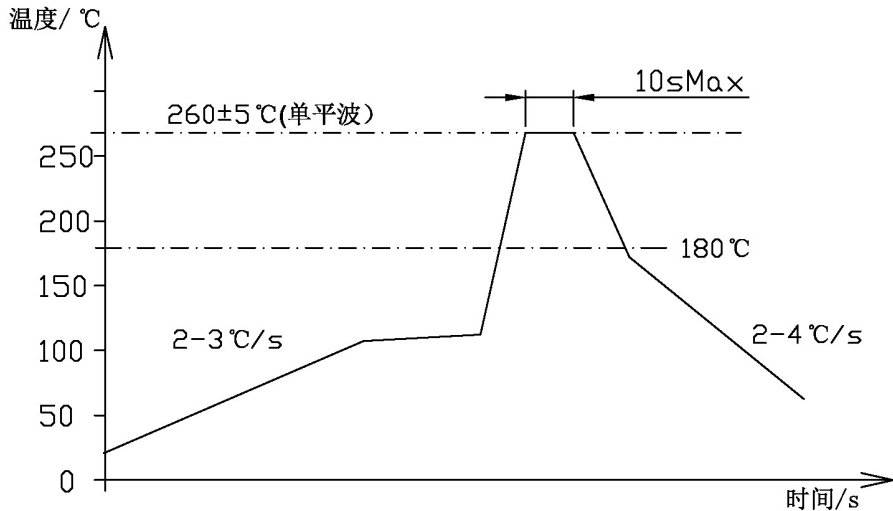
SPECIFICATION FOR APPROVAL				规格书编号 SPECIFICATION NO.
Description	TACT SWITCH	Item No.		
6. General specification 性能				
6.1 电气的性能 Electrical Properties				
Item 项目		Test Condition 测试条件	Requirements 要求	
6.1.1	Contact Resistance 接触电阻	Applying static load twice the actuating force to the center of the stem, measurements shall be made with a 1 kHz small-current contact resistance meter. 用两倍的动作力作静负载施加于按钮的中心,并用1千赫小电流接触电阻仪测量	50mΩ 以下	
6.1.2	Insulation Resistance 绝缘电阻	Measurements shall be made following application of DC100V potential between terminals and between individual terminals and frame for one minute.在端子与端子之间,端子与外壳之间施加DC100V,一分钟	100MΩ 以上	
6.1.3	Dielectric withstanding voltage 电气耐压	AC 250 V (50Hz or60Hz) shall be applied between terminals and between individual terminals and frame for one minute. 在端子与端子之间,端子与外壳之间施加 AC250V(50HZ-60HZ)	There shall be no breakdown. 无击穿、闪烁现象	
6.1.4	Bounce 抖动	<p>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”. 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</p> <div><p>Switch</p><p>DC3-5V      5kΩ      Oscillograph 示波器</p><p>t 为触点抖动时间</p></div>	10mS 以下	

SPECIFICATION FOR APPROVAL				规格书编号 SPECIFICATION NO.
Description	TACT SWITCH	Item No.		
<b>6.2 机械的性能 Mechanical property</b>				
Item 项目		Test Condition 测试条件	Requirements 要求	
6.2.1	Actuating Force 动作力	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. 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	<u>160</u> ± <u>50</u> gf  或按客户指定	
6.2.2	Travel 行程	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. 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	<u>0.25</u> ± <u>0.1</u> mm	
6.2.3	Return Force 返回力	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. 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	<u>40</u> gf Min	
6.2.4	Static Strength 静止强度	Placing the switch such that the direction of switch operation is vertical, a static load of <u>3</u> kgf shall be applied in the direction of stem operation for a period of <u>60</u> seconds. 开关的动作方向为垂直放置开关,在推柄动作方向施加 3KG 的静负荷,60 秒时间	There shall be no sign of damage mechanically and electrically. 无机械的和电气的损伤迹象	

SPECIFICATION FOR APPROVAL				规格书编号 SPECIFICATION NO.
Description	TACT SWITCH	Item No.		
<b>6.3 使用耐久性能 Use durability</b>				
Item 项目		Test Condition 测试条件		Requirements 要求
6.3.1	Operating Life 动作寿命	Measurements shall be made following the test set forth below: 按下列条件进行寿命试验 (1) 无负载 No load (2) Rate of operation: 60-100 operations per minute 动作频率: 60-100 次/每分钟 (3) Operating Force: Operating Force 1.5; 按力 1.5倍。 (4) Cycles of operation: 50000-70000 cycles, 动作次数: 5-7万次		Contact resistance: <u>200</u> mΩ Max. 接触电阻 Insulation resistance : <u>50</u> MΩ Min. 绝缘电阻 Actuating force: 动作力 + <u>30 %</u> or <u>30%</u> of initial force. ±30% 初始动作力  Item 6.1.3 Item 6. 2.2
6.3.2	Moisture Resistance 耐潮湿	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: 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 (1) Temperature: 60±2℃ 温度 (2) Relative humidity: 90 to 95% 相对湿度 (3) Time: 96 hours 时间 Water drops shall be removed. 擦除水珠		Contact resistance: <u>200</u> mΩ Max. 接触电阻 Insulation resistance : <u>50</u> MΩ Min. 绝缘电阻 Item 6.1.3、6.1.4 Item 6. 2.1~6.2.3
6.3.3	Low Temperature Resistance 耐低温	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: 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 (1) Temperature: -40±2℃ 温度 (2) Time: 96 hours 时间 Water drops shall be removed. 擦除水珠		Contact resistance: <u>200</u> mΩ Max. 接触电阻 Insulation resistance : <u>50</u> MΩ Min. 绝缘电阻 Item 6.1.3、6.1.4 Item 6. 2.1~6.2.3
6.3.4	Heat Resistance 耐热	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: 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 (1) Temperature: 85±2℃ 温度 (2) Time: 96 hours 时间		Contact resistance: <u>200</u> mΩ Max. 接触电阻 Insulation resistance : <u>50</u> MΩ Min. 绝缘电阻 Item 6.1.3、6.1.4 Item 6. 2.1~6.2.3



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Description	TACT SWITCH	Item No.		
Item 项目		Test Condition 测试条件		Requirements 要求
6.3.5	Change of Temperature 温度循环	<p>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.</p> <p>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湿度条件下放置 1 小时后测定</p> <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>温度(℃)</p> <p>时间(hour)</p> </div> <div style="flex: 1;"> <p>A: <math>+85 \pm 2^{\circ}\text{C}</math>  B: <math>-25 \pm 2^{\circ}\text{C}</math>  C: 2 小时  D: 1 小时  E: 2 小时  F: 1 小时</p> </div> </div> <p style="text-align: center;">Cycling: Five cycles 周期: 5 次</p>		<p>Contact resistance: <u>200</u> mΩ Max. 接触电阻</p> <p>Insulation resistance : <u>50</u> MΩ Min. 绝缘电阻</p> <p>Item 6.1.3、6.1.4 Item 6. 2.1~6.2.3</p>
6.3.6	Salt Spray Test 盐雾试验	<p>The salt spray test shall be conducted at the following conditions :样品按下列条件进行盐雾试验</p> <p>(1)Density (浓度):溶液(5±1)% Nacl(质量百分比)</p> <p>(2)Temperature:35±2℃温度</p> <p>(3)Time:8 H hours时间</p>		<p>金属件无发黄、生锈</p> <p>Metal parts are free from yellowing and rus</p>
6.3.7	Vibration Resistance 耐振动	<p>Measurements shall be made following the test set forth below: 按下列条件进行抗振动试验</p> <p>(1)Range of oscillation:10 to 55Hz 频率范围</p> <p>(2)Amplitude,pk-to-pk:1.5 mm 振幅: 峰-峰 1.5mm</p> <p>(3)Cycle of sweep: 10-55-10Hz in one minute, approx.扫描周期: 10-55-10Hz 约一分钟内</p> <p>(4)Mode of sweep: Logarithmically sweep or uniform sweep. 扫描方式:对数扫描式恒定扫描</p> <p>(4) Direction of oscillation: 振动方向</p> <p>Three mutually perpendicular directions, including the direction of stem travel. 3 个相互垂直方向,包括推柄行程方向</p> <p>(5) 2 hours each ,for a total of 6hours.每方向 2 小时,共 6 小时</p>		<p>Item 6.1</p> <p>Item 6. 2.1、6.2.2</p>

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Description		TACT SWITCH	Item No.	
Item 项目		Test Condition 测试条件		Requirements 要求
6.3.8	Impact Shock Resistance 抗冲击	<div>Measurements shall be made following the test set forth below: 按下列条件进行冲击试验</div> <div>(1)Acceleration:80g 加速度</div> <div>(2)Cycles of test :3 cycles each in 6directions, for a total of 18cycles 试验次数:每个方向 3 次,6 个方向共 18 次</div> <div></div>		Item 6.1 Item 6. 2.1、 6.2.2
7. 焊接条件:				
Item 项目		Recommended conditions 推荐条件		
7.1	Hand soldering 手工焊接	<div>Please practice according to bellow conditions:</div> <div>(1)Soldering temperature :≤350℃</div> <div>(2)Continuous soldering time:≤3 S</div> <div>(3)Capacity of soldering iron:≤20 W</div> <div>请按以下条件进行焊接:</div> <div>（1）焊锡温度： ≤350℃</div> <div>（2）连续焊接时间： ≤3 S</div> <div>（3）电烙铁的功率： ≤20 W</div>		
7.2	Automatic flow soldering 自动焊接	<div>For the product of DIP,type solder sccording to the following conditions</div> <div>对于DIP产品，请按以下条件进行焊接。</div> <div></div>		

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Description	TACT SWITCH	Item No.		
<div>8. Other precautions 其他注意事项:</div> <div><div>(1) Following the soldering process, do not try to clean the switch with a solvent or the like. 进行焊接过程中，不可以用溶剂或类似品清洗开关</div><div>(2) Safeguard the switch assembly against flux penetration from its topside. 防止助焊剂从开关的顶端渗入</div><div>(3) Please have the products keep in close status and the storage time is 90 days guaranty after delivering the goods at most. 交货后保证开关处于封密状态并库存时间 90 天以下。</div></div>				