1. SCOPE（适用范围）

This specification covers the performance, tests and quality requirements for the single key switches which have no key top(TACT SWITCHES:MECHANICAL CONTACT)本规范涵盖了盖单推柄和无推柄的轻触开关的性能、测试和质量要求。XKB Connectivity)

2. PRODUCT DESCRIPTION（产品描述）

XKB-DESCRIPTION（描述）	Part Number（料号）
轻触开关7.0x3.5x3.5侧立直插160gf	TS-1188A-B-A

3. APPLICABLE DOCUMENT（适用文件）

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.（下列文件构成本规范的一部分，在此规定的范围内。本规范要求与产品图纸有冲突时，以产品图纸为准。如果本规范的要求与参考文件发生冲突，应以本规范为准。）

- MIL-STD-105
- EIA-364
- QQ-N-290
- ISO/IEC- 7816

4. REQUIREMENTS（要求）

4.1. Design and Structure（设计和结构）

Product shall be of the design, structure and physical dimensions specified on the applicable product drawing.（ XKB Connectivity产品的设计、结构和物理尺寸参考所适用的产品图纸）

参考附件图档

4.2. Materials/ Finish (材料/表面处理)

Materials used in the structure of product shall be as specified on the applicable product drawing. (产品结构中使用的材料参考所适用的产品图纸)

4.3. Ratings（额定功率）

Item（项目）	Standard（标准）	
Rated Voltage (Maximum)额定电压	12V	DC
Rated Current (Maximum)额定电流	50mA	
Operating temperature range工作温度范围	-20℃～+85℃ From -20 to +85℃ degree centigrade	
Storage Temperature Range储存温度范围	-30℃～+80℃ From -30 to +80 degree centigrade	

5.0 TEST STANDARD（测试条件）

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows（除另有说明外，用以进行测量和测试的标准环境条件范围如下）

5.1 Ambient temperature（环境温度）: 5℃ to 35℃

5.2 Normal humidity（正常湿度）: 45% to 85%

5.3 Air pressure（气压）: 86Kpa to 106Kpa

5.4 Temperature （温度）：40±2℃

5.5 Relative humidity （相对湿度）：65±5%

6.0 TYPE OF ACTUATION 动作类型

Tactile feedback （轻触返回）

7.0 CONTACT ARRANGEMENT 1POLES 1THROWS （接触形式1 接点 1 回路）

Details of contact arrangement are given in the assembly drawings.
（详细接点形式见装配图）

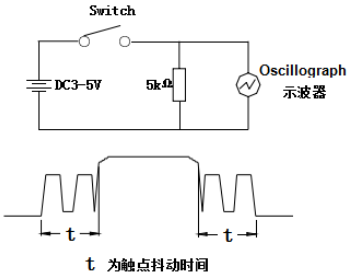
8.0 PERFORMANCE AND TEST DESCRIPTION （ XKB Connectivity性能和测试类型）

8.1 APPEARANCE （外观）

ITEM	DESCRIPTION（类型）	TEST CONDITION（测试条件）	REQUIREMENT（要求）

1	**Appearance** （外观）	**Visual.**（目视）	**Should not have any flaw Scratch discoloration and crushed**（无任何裂痕、刮伤、污染和变形）

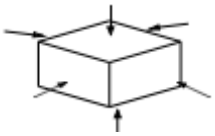
8.2 ELECTRICAL （电气）

ITEM	DESCRIPTION（类型）	TEST CONDITION （测试条件）	REQUIREMENT（要求）
2	**Low level 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）	**100 mΩ Max.**
3	**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， 测量相邻两端的绝缘电阻）	**100 mΩ min.**
4	**Dielectric strength.** **(耐电压)**	**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)**
5	**Bounce** （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”.**（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）  	**10mS Max.**

8.3 MECHANICAL （机械）

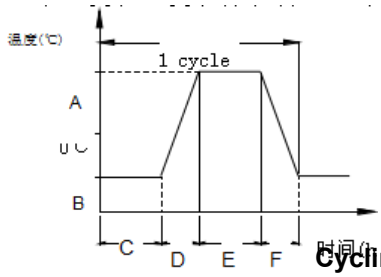
ITEM	DESCRIPTION（类型）	TEST CONDITION （测试条件）	REQUIREMENT（要求）

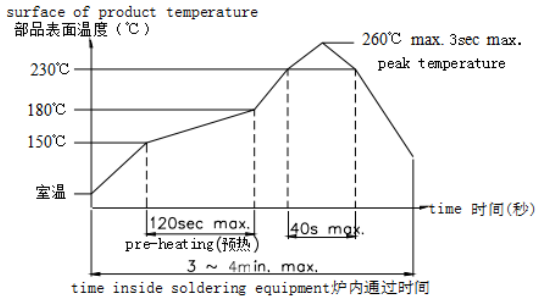
6	Actuating Force（动作力）	Place the switch such that the direction of switch operation is vertical and then gradually increase the load applied to the center of the stem, the maximum load required for the stem to come to a stop shall be measured.（开关的动作方向为垂直放置开关向推柄中心逐渐地增加负荷直到推柄停止时所测量的最大负荷）	160 ± 30 gf
7	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）	0.25
8	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）	10gf min.
9	Static Strength（静止强度）	Placing the switch such that the direction of switch operation is vertical, a static load of 3 kg shall be applied in the direction of stem operation for a period of 60 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）
10	Stem Strength（推柄强度）	Placing the switch such that the direction of switch operation is vertical,the maxitrnm force to withstarxt a pull applied opposite to the direction of stem operation shall be measured.（固定开关，使开关与操作方向垂直，以推柄动作方向反方向施加拉力所测量到的最大承受力）	1Kgf

11	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) DC 5V 5mA resistive load. DC 5V 5mA 阻性负载 (2) Rate of operation: 2 to 3 operations per second动作频率：2-3 次/每秒 (3) Depression: 160 gf 减压力 (4) Cycles of operation动作次数: 10x10^{4}cycles	Contact resistance接触电阻: 100 mΩ Max. Insulation resistance绝缘电阻：100mΩ Min. Actuating force: 动作力 + 30 %or- 30%of initial force. ±30%初始动作力 Item 8.2.2 Item 8. 3.7
12	Vibration Resistance（振动）	Measurements shall be made following the test set forth below: 按下列条件进行抗振动试验 （1）Range of oscillation:10 to 55Hz 频率范围 （2）Amplitude,pk-to-pk:1.5mm 振幅:峰-峰 1.5mm （3）Cycle of sweep: 10-55-10Hz in one minute, approx.扫描周期：10-55-10Hz 约一分钟内 （4）Mode of sweep: Logarithmically sweep or uniform sweep. 扫描方式: 对数扫描式恒定扫描 （5）Direction of oscillation振动方向: 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 （6）2 hours each, for a total of 6hours. 每方向 2 小时. 共 6 小时	Item 8.2.5 Item 8.3.6、8.3.7
13	Impact Shock Resistance（抗冲击）	Measurements shall be made following the test set forth below: 按下列条件进行冲击试验 （1）Acceleration: 80g 加速度 （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 	Item 8.2.2 Item 8.3.6、8.3.7

8.4 ENVIRONMENTAL (环境 XKB Connectivity)

ITEM	DESCRIPTION（类型）	TEST CONDITION（测试条件）	REQUIREMENT（要求）
14	**Solder ability** **（可焊性）**	**Test temperature:245±5℃ Test time :5sec During test,the stick detect temperature in the oven.Then switch terminal soak in the oven.It put 2min under normal temperature after testing.** **试验温度：245±5℃** **试验时间：5s；试验时以测温棒侦测锡炉温度；开关端子浸入与焊锡接触，在时间内 f** **取出；测试后再常温下测试后再常温下静止 2 分钟**	**The area must be reach 90% on the surface of switch terminal** **开关端子上锡面积应达到 90%以上**
15	**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温度: 60±2℃** **（2）Relative humidity相对湿度: 90 to 95%** **（3）Time时间: 96hours** **Water drops shall be removed.擦除水珠**	**Contact resistance: 100 mΩ Max.** **接触电阻Insulation resistance : 100 MΩ Min.** **绝缘电阻** **Item 8.2.4、8.2.5** **Item8.3.6~8.3.8**
16	**TLow 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温度:-40±2℃** **(2)Time时间: 96 hours** **Water drops shall be removed.擦除水珠**	**Contact resistance: 100 mΩ Max.** **接触电阻Insulation resistance : 100 MΩ Min.** **绝缘电阻** **Item 8.2.4、8.2.5** **Item 8.3.6~8.3.8**

17	**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温度: 85±2℃** **（2） Time时间: 96 hours**	**Contact resistance: 100 mΩ Max.** 接触电阻**Insulation resistance : 100 MΩ Min.** 绝缘电阻 **Item 8.2.4、8.2.5** **Item 8.3.6~8.3.8**
18	**Change of Temperature 温度循环**	**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.**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  A：+85±2℃ B：－40±2℃ C：2 小时 D：1 小时 E：2 小时 F：1 小时 **Cycling：5**	**Contact resistance: 100 mΩ Max.** 接触电阻**Insulation resistance : 100 MΩ Min.** 绝缘电阻 **Item 8.2.4、8.2.5** **Item 8.3.6~8.3.8**
19	**Salt Spray Test** 盐雾试验	**The salt spray test shall be conducted at the following conditions :** 样品按下列条件进行盐雾试验 (1) **Density**(浓度)：溶液(5±1)% **Nacl**（质量百分比） **(2)Temperature温度: 35±2℃** Time时间: **24 hours**	**Appearance shall no rust, oxidation, corrosion and other undesirable phenomena.**（外观须无生锈、氧化、腐蚀等不良现象）
20	**Hand Soldering** 手工焊接	**Please practice according to bellow conditions**:（请按以下条件进行焊接） **(1) Soldering temperature焊锡温度：≤350℃** **(2) Continuous soldering time连续焊接时间: ≤3 S** **(3) Capacity of soldering iron电铬铁的功率: ≤60 W**	**Should not have any flaw scratch and crack.** （无任何裂痕、刮伤和破裂）

21	**Automatic Flow Soldering** （自动焊接）	**For the product of SMT , type solder according to the following conditions** 对于 **SMT** 产品，请按以下条件进行焊接  **Caution: the condition mentioned above is a temperature on the PWB surface on which parts are mounted. There are cases where PWB temperature greatly differs from switch's surface temperature depending on PWB material, size, thickness, etc. The switch's surface temperature shall not allowed to exceed 260℃** 注意：以上提及的条件是零部件上 **PWB** 表面的温度，由于 **PWB** 的材料、尺寸、厚度等不同，**PWB** 从开关表面获得的温度也会有很大产不同，因此，千万小心不要让开关表面温度超过 **260**℃	**Should not have any flaw scratch and crack** (无任何裂痕、刮伤和破裂) **No visual damage to insulator.** (绝缘体不得有严重变形)

9.0 XKB CONNECTIVITY OTHER PRECAUTIONS 其他注意事项:

9.1. 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

9.2. Safeguard the switch assembly against flux penetration from its topside.

防止助焊剂从开关的顶端渗入

9.3. 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

10. REEL PACKAGING 盘装

10.1. Scope 范围: This specification covers the requirements of the reel packaging for SMT standard type of tact switches. 该规范包含 SMT 标准型拨动开关的绕带封装的要求

10.2. Packaging Material 包装材料

ITEM 项目	DESCRIPTION 说明
Package 包装	Cartons 卡通箱
Reel 转轴	Delete Cartons 可降解箱
Carrier Tape 载带	Polypropylene 聚丙烯

10.3. XKB Connectivity Packaging Quantity 封装数量
Please refer to the packing drawing. 请参考产品包装图纸

Rev.	Description	Date revised	Created/ Revised by
01	New Release	2021/09/05	Josephine Lin