



产品规格书  
Product specification

编号 No. : SPC-6075

版本 Revision: B

PTS831GX140SMTR LFS

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产品名称 Product Name: Tact Switch

产品型号 Item No: PTS831GX140SMTR LFS

规格书确认 Specification For Approval

客户名称 Customer:

确认者 Approved by

签名或盖章 Signature: \_\_\_\_\_

日期 Date: \_\_\_\_\_

备注 Remark:

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规格书更改记录 Record of Change

版本 Version	修改总项 History×Count	明细 Details	日期 Date	拟制 Pred
B	ECR-0018959	O/F 400gf version life cycles change 50,000 to 100,000	胡俊廷	2023/04/06
A			胡俊廷	2021/11/17

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批准 Approved by:  2023/04/06

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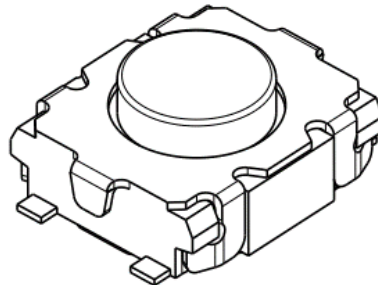
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产品外形图/安装示意图 Product outline drawing/installation diagram



**FEATURES:**

- 切换类型 Contact type: Non-shorting
- 端子类型 Terminal type: SMT
- 端子表面处理 Terminals plating: Ag Plated
- 操作方向 Operating direction: Top actuated
- 驱动类型 Activation type: Momentary action

**Summary:**

1. 一般特性 General Characteristics
2. 外观, 结构及尺寸 Appearance, Structure & Dimensions
3. 额定负荷及寿命 Ratings & Life
4. 电气性能 Electrical Characteristics
5. 机械性能 Mechanical Characteristics
6. 寿命试验 Durability Characteristics
7. 耐候性能 Weather Proof Characteristics
8. 防护 protect
9. 材料声明 Material Declarations
10. 包装 Packaging
11. 材料清单 BOM
12. 注意事项 Precautions for use

**规格书适用范围 The applied scope of the specification**

PTS831GM140SMTR LFS	PTS831GK140SMTR LFS
PTS831GG140SMTR LFS	

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1. 一般特性 General Characteristics:

1.1 适用范围 Application	该规格书指轻触开关的一般使用范围 This specification is applied to the tact switch for general applications
1.2 使用温度范围 Operating Temperature Range	-40℃ 到 +85℃ -40℃ to +85℃
1.3 使用相对湿度范围 Operating Relative Humidity	≦96%RH, +40℃ ≦96% at +40℃
1.4 保存温度范围 Storage Temperature Range	-40℃ 到 +85℃ -40℃ to +85℃
1.5 实验条件 Test Conditions	若没有特别说明, 则试验大气条件如下: Unless otherwise specified, the atmospheric conditions for Making measurements and tests are as follows: 环境温度 Ambient Temperature: 5-35℃ 大气压力 Air Pressure: 86-106Kpa (860-1060 mbar) 相对湿度 Relative Humidity: 45-85%RH
1.6 回路数 Circuit number	1 回路 1 接点 1 Pole 1 Throw

2. 外观, 结构及尺寸 Appearance, Structure & Dimensions:

2.1 外观 Appearance	产品外观良好, 无锈蚀、裂纹和镀层缺陷。 The switch shall have a good appearance, no rust, crack or plating defects.
2.2 结构及尺寸 Structure & Dimensions	参见产品图纸 G01000444 Refer to product drawing G01000444
2.3 标识 Markings	参见产品图纸 G01000444 Refer to product drawing G01000444

3. 额定负荷及寿命 Ratings & Life:

3.1 额定负荷 Ratings	DC 12V 50mA Max. DC 1V 10 μA Min.	
3.2 负荷寿命 Operating life with load	Operating force:160gf	200,000 cycles
	Operating force:250gf	200,000 cycles
	Operating force:400gf	100,000 cycles

4. 电气性能 Electrical Characteristics:

项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information
4.1 初期接触电阻 Initial Contact Resistance	100mΩ Max.	用两倍的动作用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。 Applying a 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.

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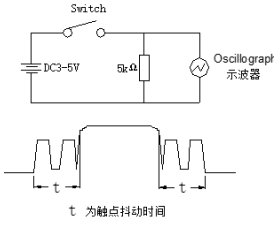
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项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information
4.2 绝缘电阻 Insulation Resistance	100MΩ Min.	在相互绝缘的所有端子之间及各接线端子与金属外壳之间加载 DC100V, 时间 60±5 秒。 A voltage of DC100V shall be applied between open Terminals, and between the terminal and the metal frame for 60±5Sec.
4.3 抗电强度 Dielectric Voltage	无击穿现象发生 No dielectric breakdown shall occur.	在相互绝缘的所有接线端子之间及各接线端子与金属外壳之间 AC250V (50-60Hz) 泄漏电流 10mA, 持续时间 60±5 秒 A voltage of AC250V (50-60HZ), 10mA trip current Shall be applied between open terminals, and between the frame and the terminal for 60±5Sec.
4.4 触点跳跃 Contact Bounce	5ms Max.	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 at "ON" and "OFF".  t 为触点抖动时间
5. 机械性能 Mechanical Characteristics		
5.1 操作力 Operating force	PTS831GM140SMTR LFS	160±50gf
	PTS831GK140SMTR LFS	250±50gf
	PTS831GG140SMTR LFS	400±100gf
5.2 回复力 Releasing force	≥30gf	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.
5.3 行程 Travels	0.12±0.1 mm	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.



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项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information
5.4 静止强度 Stop Strength	无外观及功能损坏, 电气性能 No abnormalities shall be observed in appearance and operation.	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 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.
5.5 推柄强度 Stem Strength	1Kgf	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 Placing the switch such that the direction of switch operation is vertical, the maximum bearing force to with start a pull applied opposite to the direction of stem operation shall be measured
5.6 耐振性 Vibration	ITEM4 ITEM5.1-5.3	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: 10-55 Hz (2) 振幅: 峰-峰 1.5mm Amplitude pk to pk: 1.5mm (3) 扫描周期: 10-55-10-Hz 约一分钟内。 Cycle of sweep: 10-55-10Hz in one minute. (4) 扫描方式: 对数扫描或统一的扫描。 Mode of sweep: Logarithmically sweep or uniform sweep. (5) 振动方向: 3 个相互垂直方向, 包括推柄行程方向 Direction of oscillation: Three mutually perpendicular directions, including the direction of stem travel. (6) 持续时间: 每方向 2 小时, 共 6 小时 Duration of testing 2 hours each for a total of 6 hours.
5.7 耐冲击性 Shock		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: 80g (2) 试验次数: 每个方向 3 次, 6 个方向共 18 次 Cycles of test :3 cycles each in 6 directions. For a total of 18 cycles.
5.8 手工焊接 Hand soldering	ITEM4 ITEM5.1-5.3	请按以下条件进行焊接: Please practice according to bellow conditions: (1) 焊锡温度 Soldering temperature: ≤350°C (2) 每个端子焊接 3sec Max, 每个端子焊接间隔时间 5sec Min. Each terminal soldering 3sec Max, each terminal soldering interval time 5sec Min.



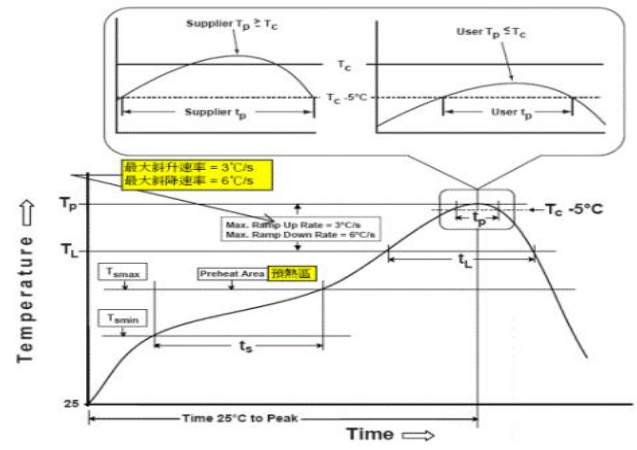
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项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information						
5.9 可焊性 Solderability	开关端子上锡面积应达到90%以上 The area must be reach 90% on the surface of switch terminal	试验温度: 245±5℃ 试验时间: 5s; 试验时以测温棒侦测锡炉温度; 开关端子浸入与焊锡接触, 在时间内取出; 测试后再常温下止2分钟 Test temperature: 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 tempera after testing.						
5.10 回流焊 Reflow soldering	ITEM4 ITEM5.1-5.3	回流焊条件(参考标准: J-STD-020) Reflow soldering conditions (Reference standard: J-STD-020) 1. Preheat ----- 150℃-200℃, 60-120 (sec) 2. Peak temperature --- 260℃ max. 10 (sec) 3. Soldering area temperature ----- 217℃, 60-150 (sec)  						
6. 寿命试验 Durability Characteristics								
6.1 负荷寿命 Operating Life with Load	接触电阻 Contact resistance: 1000 mΩ Max 绝缘电阻 Insulation resistance: 50 MΩ Min 动作力: 初始动作力±30% Actuating force: ±30%of initial force. Item 4.3 Item 5.2-5.3	根据以下进行测试。 The test in conducted according to the below. (1) DC 5V 5mA电阻负载。 DC 5V 5mA resistive load. (2) 操作速度: 60-120 转/分钟 Rate of operation :60-120 cycle/min (3) 驱动力: 驱动力的150% Actuating force: 150% of actuating force (4) 操作周期 Operating cycle: see chart <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td>Operating force:160gf</td> <td>200,000 cycles</td> </tr> <tr> <td>Operating force:250gf</td> <td>200,000 cycles</td> </tr> <tr> <td>Operating force:400gf</td> <td>100,000 cycles</td> </tr> </table>	Operating force:160gf	200,000 cycles	Operating force:250gf	200,000 cycles	Operating force:400gf	100,000 cycles
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项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information
7. 耐候性能 Weather Proof Characteristics:		
7.1 低温 Cold proof		<p>按照以下规定进行测试后, 应在正常温度和湿度条件下将样品放置一小时, 然后再进行测量:</p> <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made:</p> <p>(1) 温度 Temperature : <math>-40 \pm 2^{\circ}\text{C}</math></p> <p>(2) 时间 Time : 96hours</p> <p>(3) 去除水滴 Waterdrops shall be removed.</p>
7.2 高温 Hot proof		<p>按照以下规定进行测试后, 应在正常温度和湿度条件下将样品放置一小时, 然后再进行测量:</p> <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made:</p> <p>(1) 温度 Temperature : <math>85 \pm 2^{\circ}\text{C}</math></p> <p>(2) 时间 Time : 96hours</p>
7.3 恒定湿热 Moisture resistance	接触电阻 Contact resistance: 200 m $\Omega$ Max 绝缘电阻 Insulation resistance: 50 M $\Omega$ Min ITEM4. 3-4. 4 ITEM5. 1-5.3	<p>按照以下规定进行测试后, 应在正常温度和湿度条件下将样品放置一小时, 然后再进行测量:</p> <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made:</p> <p>(1) 温度 Temperature : <math>60 \pm 3^{\circ}\text{C}</math></p> <p>(2) 时间 Time : 96hours</p> <p>(3) 湿度 Relative humidity : 90 - 95%</p> <p>(4) 去除水滴 Waterdrops shall be removed.</p>
7.4 温度转换 Temperature cycling		<p>样品按下列条件进行温度循环试验, 测试前在正常温度和湿度条件下放置 1 小时。测试 5 个循环</p> <p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made. Test 5 cycles</p> <p>During this test, water drops shall be removed.</p> <p>在试验期间, 擦除水珠。</p> <p style="text-align: right;">T Max. =85<math>^{\circ}\text{C}</math> T Min. =-40<math>^{\circ}\text{C}</math></p>



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项目 Item	标准 Criteria	测试条件/信息 Test Conditions / Information
8. 防护 protect		
8.1 Salt spray test 盐雾试验	金属件无发黄、生锈 Metal parts are free of yellowing and rust	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: (5±1)% NaCl (2) 温度 Temperature: 35±2°C (3) 时间 Time: 24 hours
9. 材料声明 Material Declarations		
9.1 RoHS 合规性 RoHS compliance	-	本产品符合欧盟指令 2011/65/EU This product is complying with the EU directive 2011/65/EU without exemption.
9.2 REACH 合规性 REACH compliance	-	根据法规 (EC) N° 1907/2006, C&K 声明 REACH 是指欧洲化学品管理局发布的 REACH 高度关注物质候选清单 REACH compliant, according to the C&K Declaration on Regulation (EC) N° 1907/2006. The C&K REACH declaration refers to the current REACH Candidate List of Substances of Very High Concern published by the European Chemicals Agency.
10. 包装 Packaging		
10.1 MSL 等级 MSL level	1	根据 JEDEC J-STD-020 标准定义湿敏等级 The Moisture Sensitive Level is defined according to the standard JEDEC J-STD-020.
10.2 产品单重 Weight		0.02 Grams
10.3 包装类型 Type		载带 Reel





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11. 材料清单 BOM

序号 No.	零部件名称 Parts Name	数量 Quantity	材料、规格 Material And Specificatio	防火等级 Flame-retardan	备注 Remarks
01	BASE	1	LCP		
02	TERMINAL	1	C5191		Ag Plating
03	CONTACT	2	STAINLESS STEEL		Ag Plating
04	STEM	1	LCP		
05	COVER	1	STAINLESS STEEL		

12. 注意事项 Precautions for use:

12.1 一般事项 General:

本产品主要用于自动化装置, 视像装置, 家用电器, 信息装置及通讯装置等常用电子设备中; 如果该产品要用于其它具有更高安全性及可靠性的耐久性设备中 (如生命维持装置, 宇宙航空装置, 防灾及安全性装置) 时, 请确认是否合用, 或者同我方了解详细情况

The product is used mainly in electronic devices such as automotive devices, visual devices, home electrical appliances, information devices and communication settings. If the products is intended to be used for other endurance equipments requiring higher safety and reliability such as life support system, space and aviation devices, disaster and safety system, it' s necessary to make verification of conformity or contact us for the details before using.

12.2 焊接安装 Soldering and assembly:

(1) 焊锡条件应按照实际的对应条件予以确认。

The soldering conditions should be confirmed according to the actual production environment.

(2) 焊锡工序完成后, 不要尝试用溶剂或类似物品清洗开关。

Don' t try to clean the switch with a solvent or similar substance after the soldering process.

(3) 开关焊锡后, 还有热量时, 请不要操作开关。

Don' t operate the switch if it still has heat after soldering.

(4) 如使用水溶性助焊剂, 可能会导致开关破损, 因此应确保不要用这种助焊剂。

The switch might be damaged if using the water-soluble flux, so make sure not to use such kind of flux.

12.3 安装构造, 机械设计 Assembly structure and Mechanical design:

(1) 线路板上安装孔及安装图示的尺寸都须参照工程图中所建议的尺寸。

The dimensions for the holes and the pattern on PCB should refer to the recommended dimensions on the engineering drawing.

(2) 如果施超出规定值的较大重力于开关上, 会导致开关破损, 所以应特别小心防止开关承受超出规定值的较大重力。

The switch might be broken if there is stress stronger than the specified is given on it. Take special care not to stress the switch beyond its specification.

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If the switch is being used together other products, please confirm the compatibility of the specification, laws and regulations. Please also confirm the compatibility of switch to be installed in the systems, machines and devices used by customer. If you want to change the operating conditions of the switch, please consult with us in advance.

#### 12.4 使用环境 Operating Environment

(1) 如果该产品常用于产生硫化气体的硫性热源周围或有汽车废气存在的地方,应特别留意,因为开关性能可能会受到影响;

If the product is always used near sulfurate hot spring where sulfide gas is generated or in a place where exhaust gas from automobiles exists, it's necessary to pay more attention because the switch performance may be affected.

(2) 如果在安装开关的模组内有以下所描述的部件材料,需遵循以下要求:

If the below parts or materials are used in the module where the switch is installed, directions below should be followed:

①. 部品、橡胶材料、粘合剂、包装材料及用于装置内机械部件上的润滑油剂等,不要使用那些可能会产生硫化气体或氧化气体的材料。

For parts, rubber materials, adhesive agents, packing material and grease used for the mechanical part of the device, don't use any material that may generate gas of sulfurization or oxidization.

②. 当有用到磷橡胶、润滑油、粘合剂及油脂时,应使用不会产生低分子磷氧烷气体的材料,因为低分子磷氧烷气体在开关接触部位形成二氧化磷层而引起接触不良,如有用到(如涂料剂等化学溶剂),请预先告知我方

If silicon rubber, grease, adhesive agents and oil are used, choose the material that will not generate low molecular siloxane gas, because the low molecular siloxane gas may form silicon dioxide coat on the switch contact part, resulting of failing contact.

(3) 不要将开关用于高湿或有沾湿可能性的环境中,因这样的环境可能会引起端子间电流泄漏。

Don't use the switch in the environment with high humidity or other bedewing possibility, as it may cause leaking among the terminals.

(4) 外部浸入物的影响:由于该开关无密封机构,因此可能会由于外部环境中浸入的尘埃而引起接触失效,在使用该开关时,应采取防尘措施,以下是尘埃浸入的范例,使用时请注意防止:

The effect caused by outer immersed dust Because the switch was designed without dust-proof structure, it may have failing contact due to the immersed dust from the outer environment. When using the switch, it's necessary to take dust-proof actions. Examples of immersed dust, which should be prevented during the operation:

①. 加工过程中切口处及 PCB 孔处产生碎屑,或 PCB 防护材料,(如报纸、发泡、聚苯乙烯材料等)产生的废弃物等浸入开关内

The scraps being generated during PCB processing, or other waste from the protective material for PCB such as newspaper, foam, polystyrene materials, may immerse inside the switch.

②. 在堆叠 PCB 时产生的助焊剂或粉末状焊剂浸入开关内。

The flux or solder powder being generated when stacking the PCB may immerse inside the switch

#### 12.5 保存方法 Storage Method:

(1) 为防止本产品的性能劣化和耐焊性等性能受到影响,请保管在以下的条件和环境下:

In order to protect the switch performance and the soldering conditions, it should keep the switch under the following conditions:



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①. 避免保存在含有腐蚀性气体等的空气中。

Avoid storing in the environment containing corrosive gas;

②. 产品购入后, 不可超过 12 个月以上长期保管。

After purchasing, the storage period should not exceed 12 months.

③. 避免保存在日光能直射的场所。

Avoid keeping it in the location with direct sunlight.

(2) 在不施加负重外力的包装状态下进行保管。

Store using the standard packing without exerting force.

(3) 打开包装后, 请尽早使用, 有剩余品时, 应将剩余部分以胶袋包装好以同外界隔离, 请进行合适的防湿, 防腐蚀性气体等处理后进行保管

After opening the package, preferably to be used as soon as possible, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas

12.6 其它 Others:

请特别注意严格遵守以下的禁止事项及注意事项 Please take good care to comply with the following guidelines:

(1) 关于火灾, 冒烟的禁止事项 The prohibited practices where there is fire and fume:

①. 超过额定负荷使用时, 有发生火灾的可能性, 故请切勿超负荷使用。

It might catch fire if the rating exceeds the specifications. Never use the switch beyond the rating.

②. 如果有误使用、异常使用等有可能超过额定电流的话, 请采取对策. 如:通过设置保护电路等切断电流。

If the rating may exceed due to some abuse or abnormal usage, please take protective measures such as protective circuit to shut down the circuit.

(2) 对于追求安全性产品的注意事项 Precautions to the products requiring special safety:

①. 对于产品品质我司以期万全, 但有可能发生寿命等故障形式, 如性能劣化、短路、常开等。因此, 在设计追求安全性产品的时候: “对于零件单一故障, 产品会出现什么故障”。请进行事前检讨。

Though we are confident in switch quality, we can't deny the possibility that there could be failure due to inferior performance, short or open circuit. Therefore, when designing the product requiring special safety, please verify in advance what effects would show on your product in case the switch alone may fail.

②. 准备保护电路、保护装置的系统以谋求安全。

Prepare the system with protective circuit and protective devices for safety purposes.

③. 准备安全备用电路, 使单一的故障不会导致整体系统的失效, 以确保安全性。

Prepare safety standby circuit to preclude the whole system failure that may result from specific failure.