S.T. Industrial (ASIA) Limited

DC JACK : Products education and knowledge

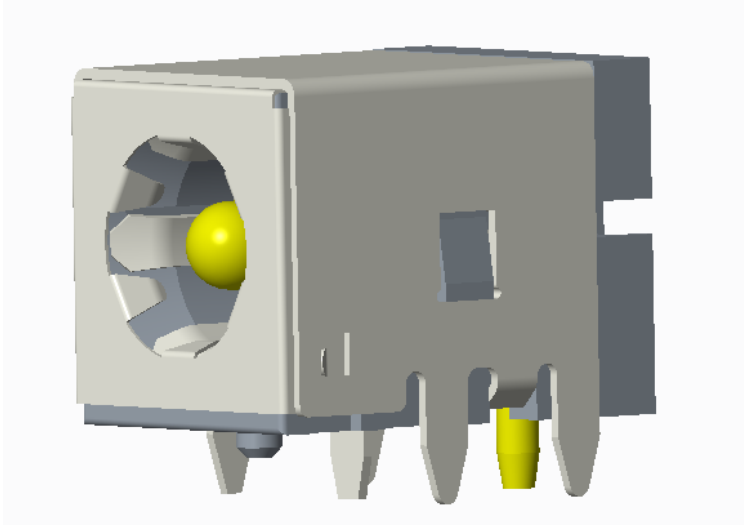
Issued: Engineer
Date: 15-May-2022

Table of contents

Product categories:

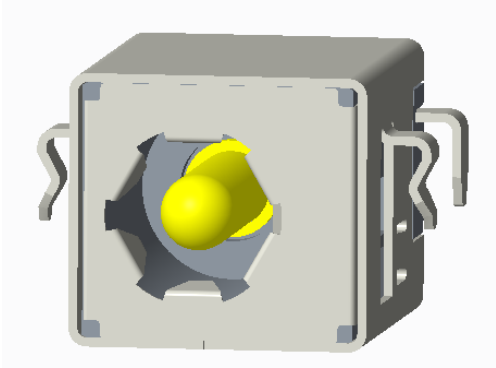
1. According to the type of PCB soldering : SMD type and Dip type

1.1. SMD type



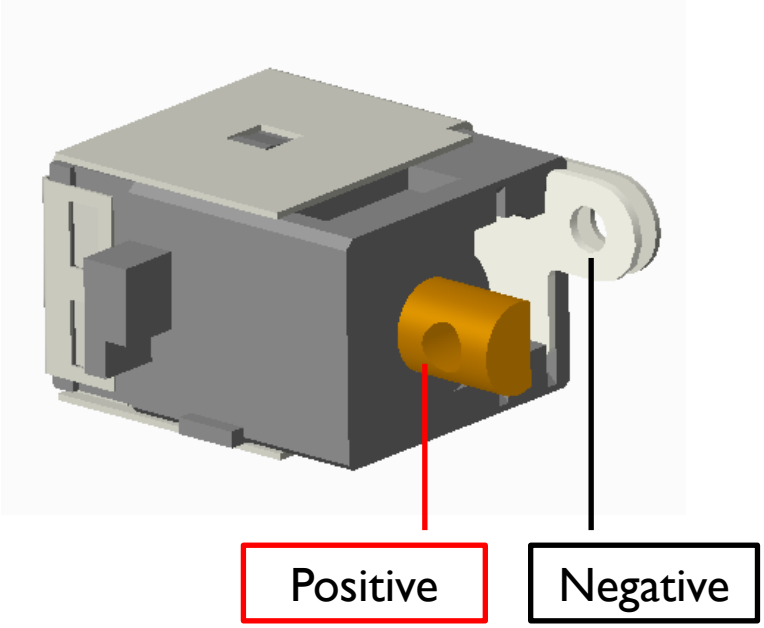
1. According to the type of PCB soldering

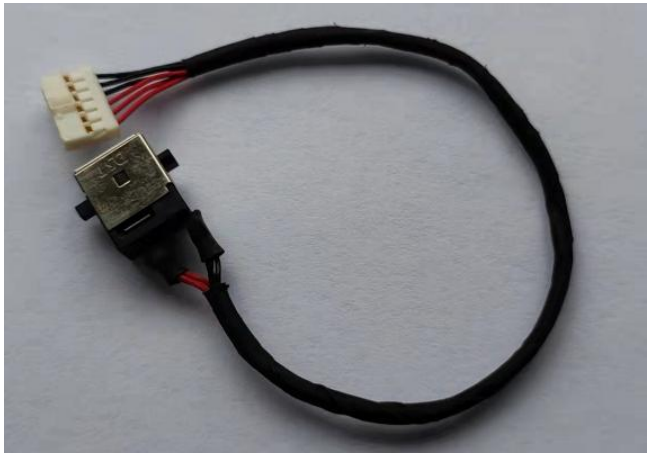
1.2. Dip type



Product categories:

2. Wiring type





Product Specifications (General Specifications)

Voltage and current：20V 5A DC

- Contact resistance：30mΩ max (Inital)
  50mΩ max (After)
- Withstand voltage：500V AC for one minute.
- Insulation resistance：100MΩ min,measured by 500VDC.
- Insertion force extraction force:
- 0.5kgf-3.0kgf (Inital)
  0.4kgf-3.0kgf (After)
- Life times：5000cycles min.

※(The above specifications are general specifications, customers can request specific specifications)

Product Usage

Computer products: notebook...

Digital products: such as digital video cameras...

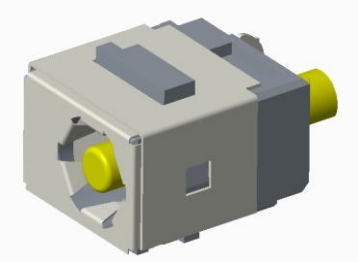
Communication products: such as telephone.....

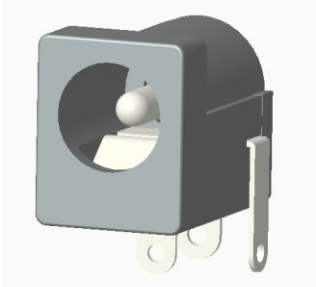
Audio-visual products: Such as MP4...

Household appliances: TV set....

security product: video intercom

medical equipment: sphygmomanometer...





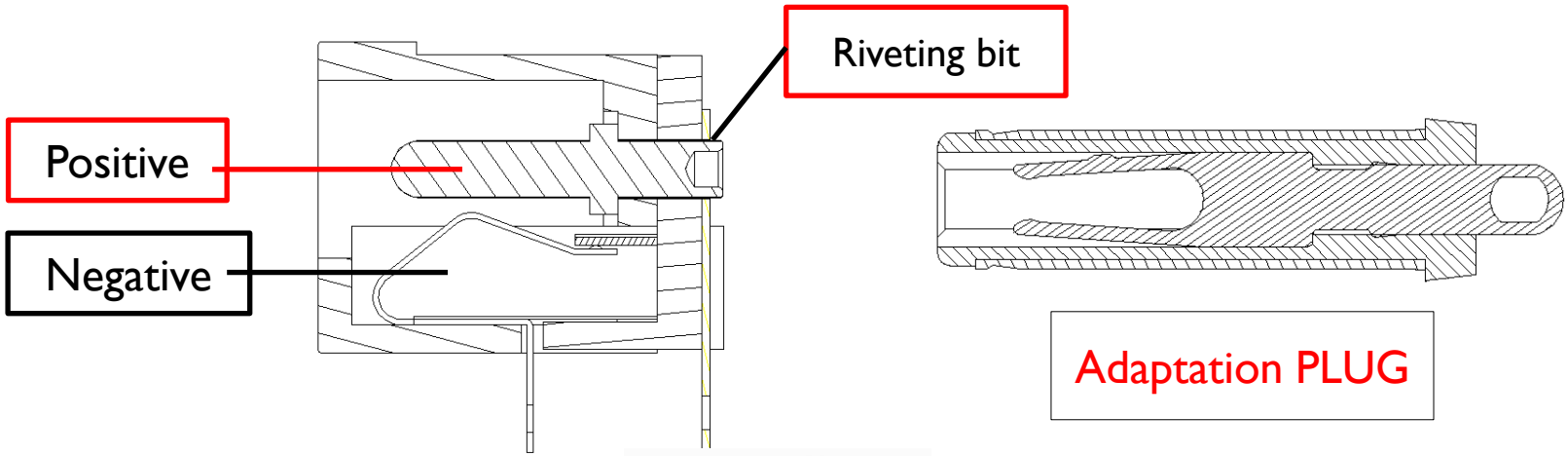
2. Product Structure & Functions :

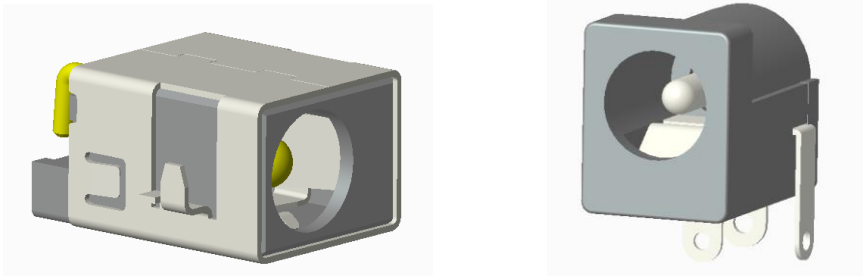
General structure (contact with the plug): the negative pole is in contact with the negative pole of the plug at a single point

The positive pole (center pin) is in contact with the positive pole of the plug (the center pin is generally riveted)

Advantages: Simple production and low cost

Disadvantages:Generally, the positive pole contacts first,and sparks are easily exposed when the negative pole contacts; the current voltage is low.





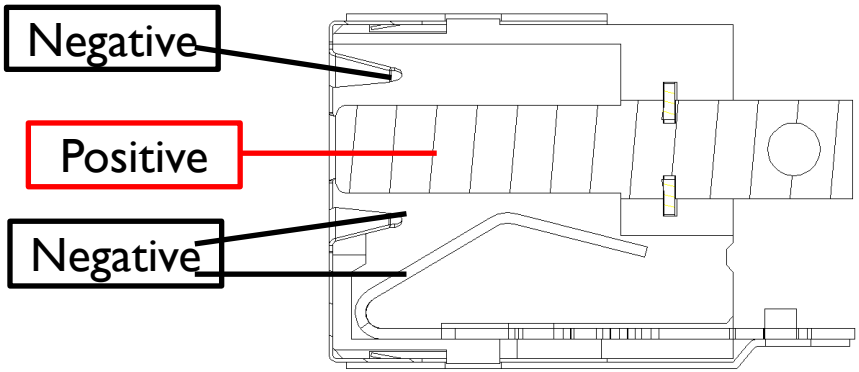
Product Structure & Functions

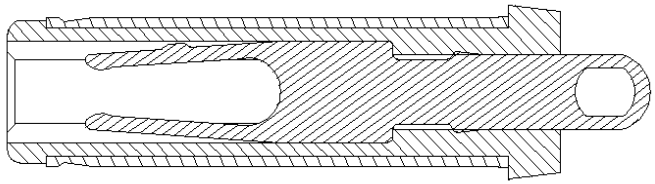
Negative electrode multi-point enhanced structure (contact with plug):

- Thenegative electrode is in multi-point contact with the plug negative electrode

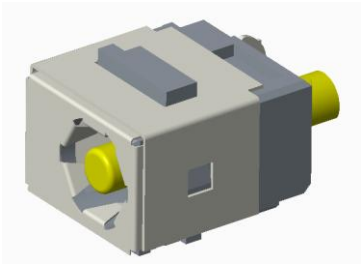
The positive pole (center pin) is in contact with the positive pole of the plug (the center pin is integrated)

Advantages: Large current and voltage carrying capacity, the negative electrode contacts first, and there will be no sparks exposed at the moment of contact.



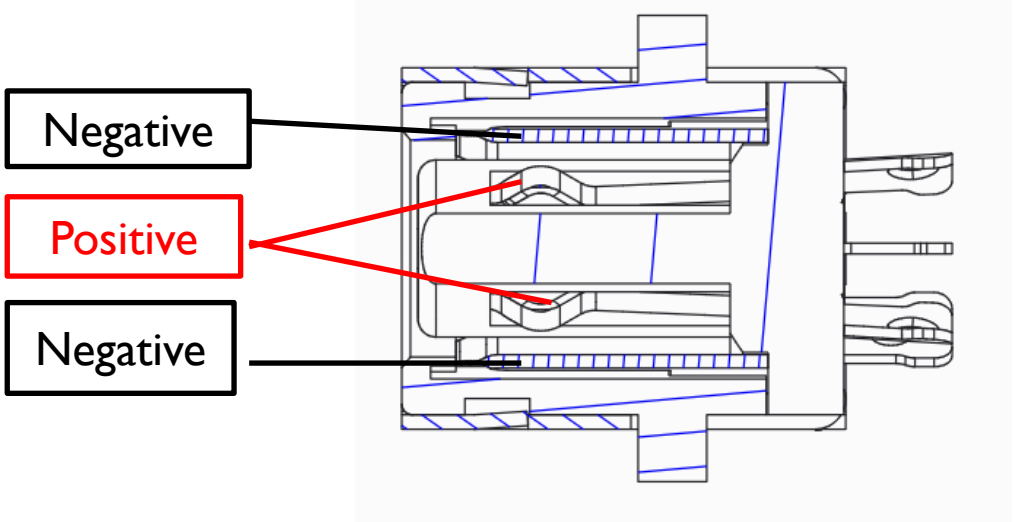


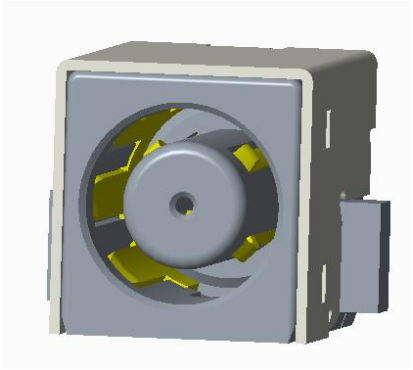
Adaptation PLUG

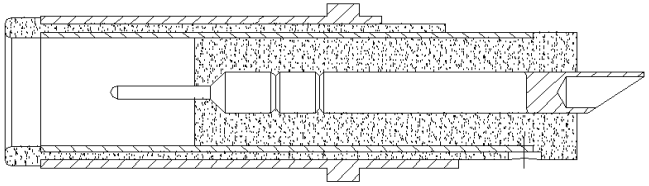


Product Structure & Functions

Negative and positive multipoint enhanced structure (contact with plug):







Adaptation PLUG

3. Material selection

Material type and selection

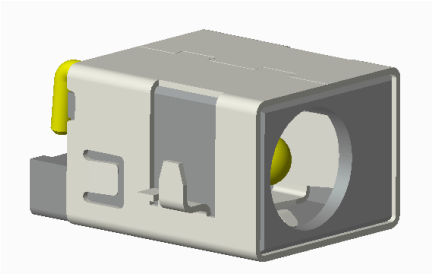
Plastic: PPA,PA4T,PA10T,LCP

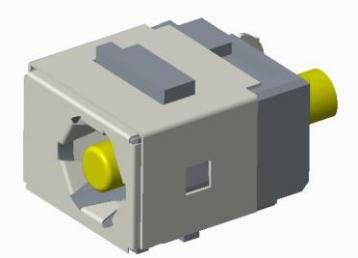
Metal：Negative spring terminal: C5210,C7025,C7035

Shell: C2680,SUS301

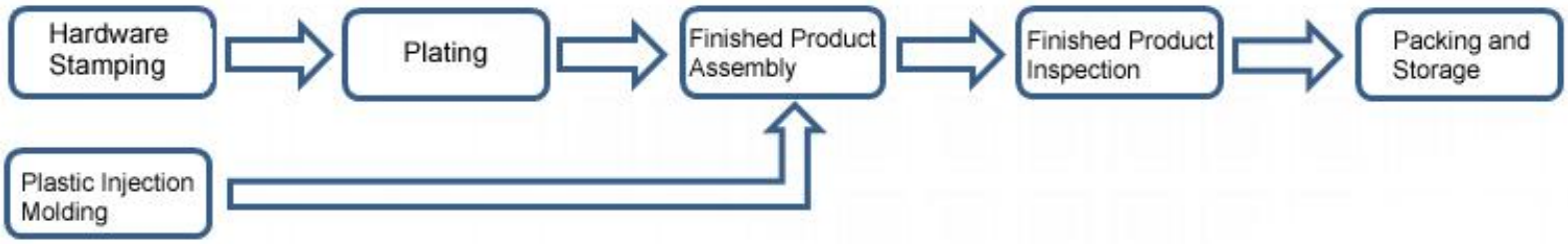
Positive spring terminal: ：C5210,C7025,C7035

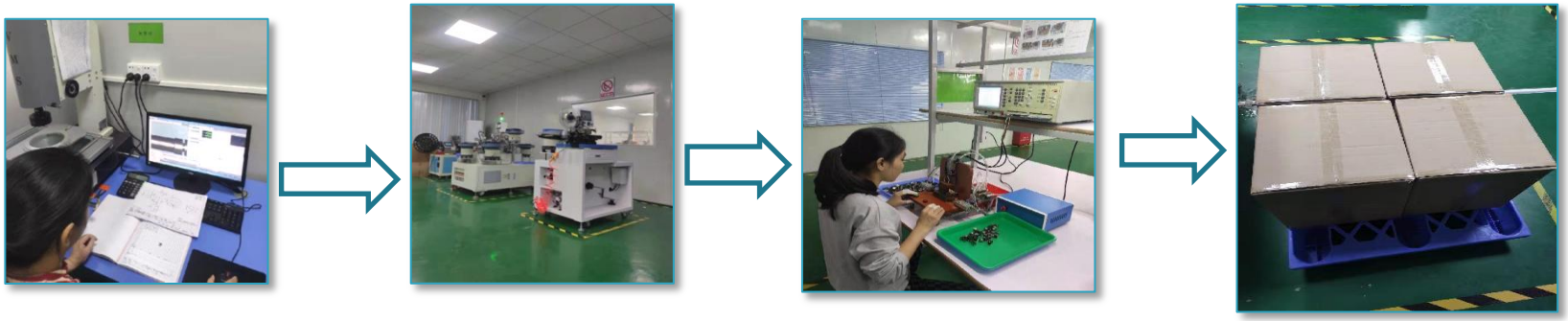
Centre pin：C3602,C3604





4. Production Process





Parts measurement inspection

Finished product assembly

Finished product inspection

Packaging and storage

Reliability Test

- ☑ Appearance inspection
- ☑ Voltage withstand test
- ☑ Insulation resistance test
- ☑ Contact resistance test
- ☑ nsertion and extraction force detection
- ☑ Durability (life test)
- ☑ Salt spray test
- ☑ Heat resistance test
- ☑ Soldering test
- ☑ Cold resistance test
- ☑ Temperature rise test
- ☑ Temperature cycling test
- ☑ Environmental test
- ☑ Glow wire test

Appearance inspection

Inspection Focus	Equipment Diagram

- **Visual appearance:**
- Whether there are burrs, missing parts, different colors, dirt, scratches, deformation and appearance inconsistent with the drawing
- **Dimensional inspection:**
- Inspection according to the size of the drawing (or SIP);
- **Material and surface treatment:**
- According to the requirements of the drawing, confirm whether the materials used in the product meet the requirements, and whether the surface coating meets the drawing specifications

Two-dimensional

magnifier

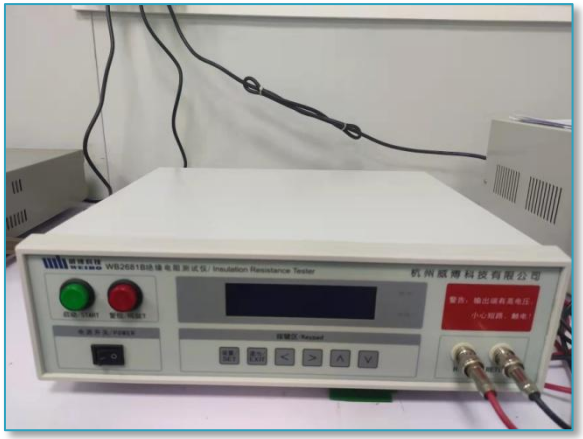
digital caliper

CCD magnifier

☑Voltage withstand test

Inspection Focus	Equipment Diagram
●Sampling test, with a voltage of AC 500V for 60 seconds, there is no short circuit,burning and insulation damage.	 Voltage withstand tester

☑Insulation resistance test

Inspection Focus	Equipment Diagram
●**Sampling test**, ●with a voltage of DC500V for 60 seconds, if the impedance value exceeds 100M within the specified time, and the value reaches a stable state and an upwared trend , it is judged to be qualified.	 Insulation resistance tester

☑ Contact resistance test

Inspection Focus	Equipment Diagram
●●**Sampling test** With a voltage of current resistance of 30m2 or less, 100mA test, qualified.	 Contact Resistance Tester

☑Insertion and extraction force detection

Inspection Focus	Equipment Diagram
● Sampling test, insertion force and pullout force to determine the qualified range value, according to the specification or specification requirements.	 Insertion and extraction force tester

☑Durability (life test)

Inspection Focus	Equipment Diagram
●Sampling test, test with an automatic testing machine, with 5000 actions (or customer requirements), 15~18 action frequency per minute, after the test is completed, the insertion force, withdrawal force and contact resistance meet the specifications, and it is judged qualified.	 Durability tester

☑ Salt spray test

Inspection Focus	Equipment Diagram
●Sampling test, the sample was sprayed with saline solution, the concentration of saline solution was 5%, DC JACK was exposed to a saline bucket during the experiment, and kept in the spray of saline solution at a temperature of 35±2C° for 48 hours. After the test is completed, DC JACK is washed in water below 35C°. Test Condition: 1. NaCl concentration: 5%NaCl 2. (Air press): 1.00±0.01 kg/cm2. 3. (Saul spray): 1.0~2.0ml/80m2/h 4. (Pressed bucket temperature): 47±1 ℃ 5. (Salt bucket temperature): 35 ±2 ℃ 6. (Laboratory temperature): 35 ±1 ℃ 7. (Laboratory relative humidity): over 85% 8 (PH Value): 6.5~7.2	 Salt spray test machine

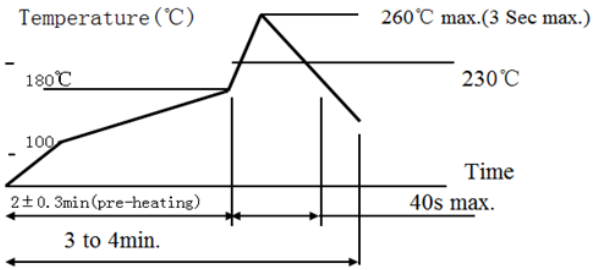
Solder Test

Inspection Focus	Equipment Diagram
●Sampling test, the top of the sample terminal is immersed in the solder pool to a depth of 2m,the temperature is 250 ±5°C, and the time is 3 seconds, more than 95% of the surface of the immersed part will be covered by tin, and it is determined to be qualified.	 Lead-free solder pot

Reflow Soldering Machine

Inspection Focus

●Sampling test, the sample is tested according to the conditions shown in the figure, the body has no deformation after the test, and can meet the mechanical and electrical properties



time inside soldering equipment

***Temperature means The temperature of he PC board surface**

*** PC board thickness for 1.0 mm**

***温度指PC板表面的温度**

***PC板厚度为1.0毫米**

Equipment Diagram

Reflow Soldering Machine

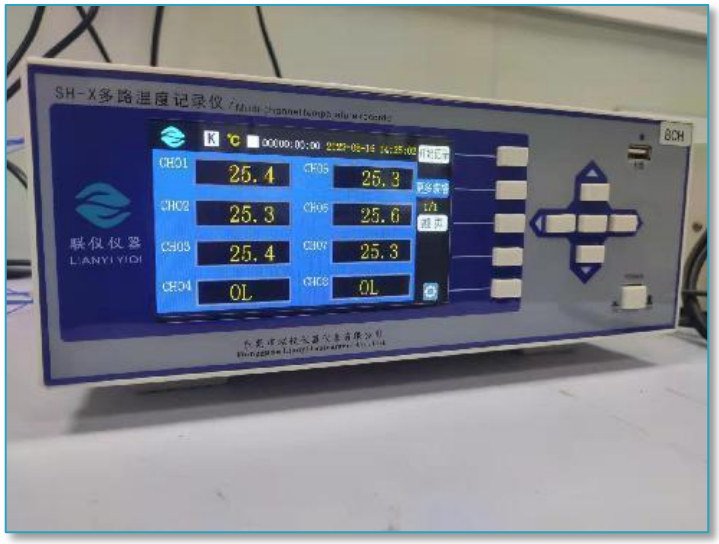
Heat Resistance Test

Inspection Focus	Equipment Diagram
Sampling test, put in the environment of 80±2℃ for 96 hours,and put it in the normal environment for 30 minutes before testing. After the test, if the conta ct resistance is less than 50 milliohms an d the insulation resistance is more than 50 megohms, it is judged to be qualified	 Heat resistance testing machine

Cold test

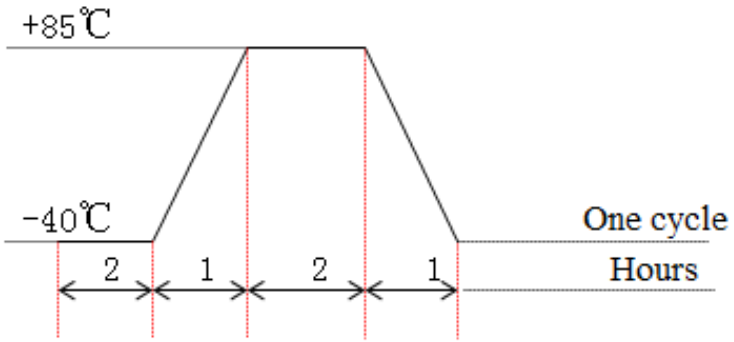
Inspection Focus	Equipment Diagram
Sampling test, put it in 40±3℃ environment for 96 hours, then put it in normal environment, and test after 30 minutes. After the test, if the contact resistance is less than 50 milliohms and the insulation resistance is more than 50 megohms, it is judged to be qualified.	 Cold Tester

Temperature rise test

Inspection Focus	Equipment Diagram
● Sampling test, put it in40±3℃ environment for 96 hours, then put it in normal environment, and test after 30 minutes. After the test, if the contact resistance is less than 50 milliohms and the insulation resi stance is more than 50 megohms, it is judged to be qualified.	 Temperature rise tester

Temperature Alternation Test

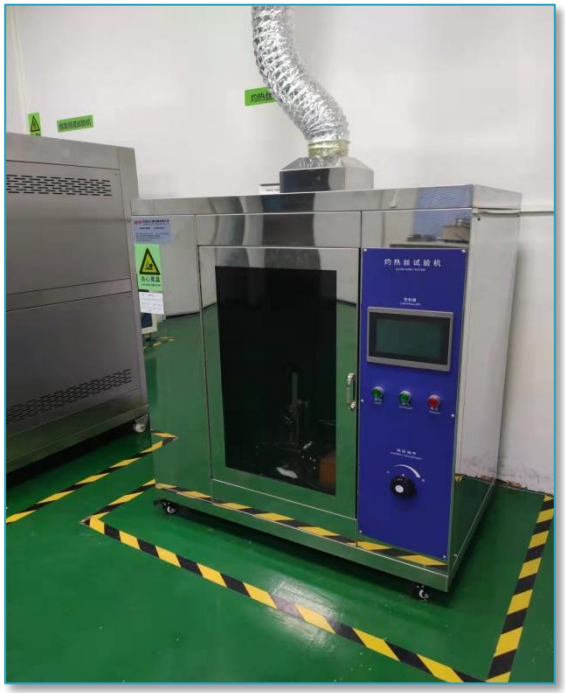
Inspection Focus	Equipment Diagram
●Sampling test, in the environment shown in the picture, after 5 cycles, the contact resistance is below 50 ohms, and the insulation resistance is above 50 megohms. Qualified.	 Temperature Alternation Tester



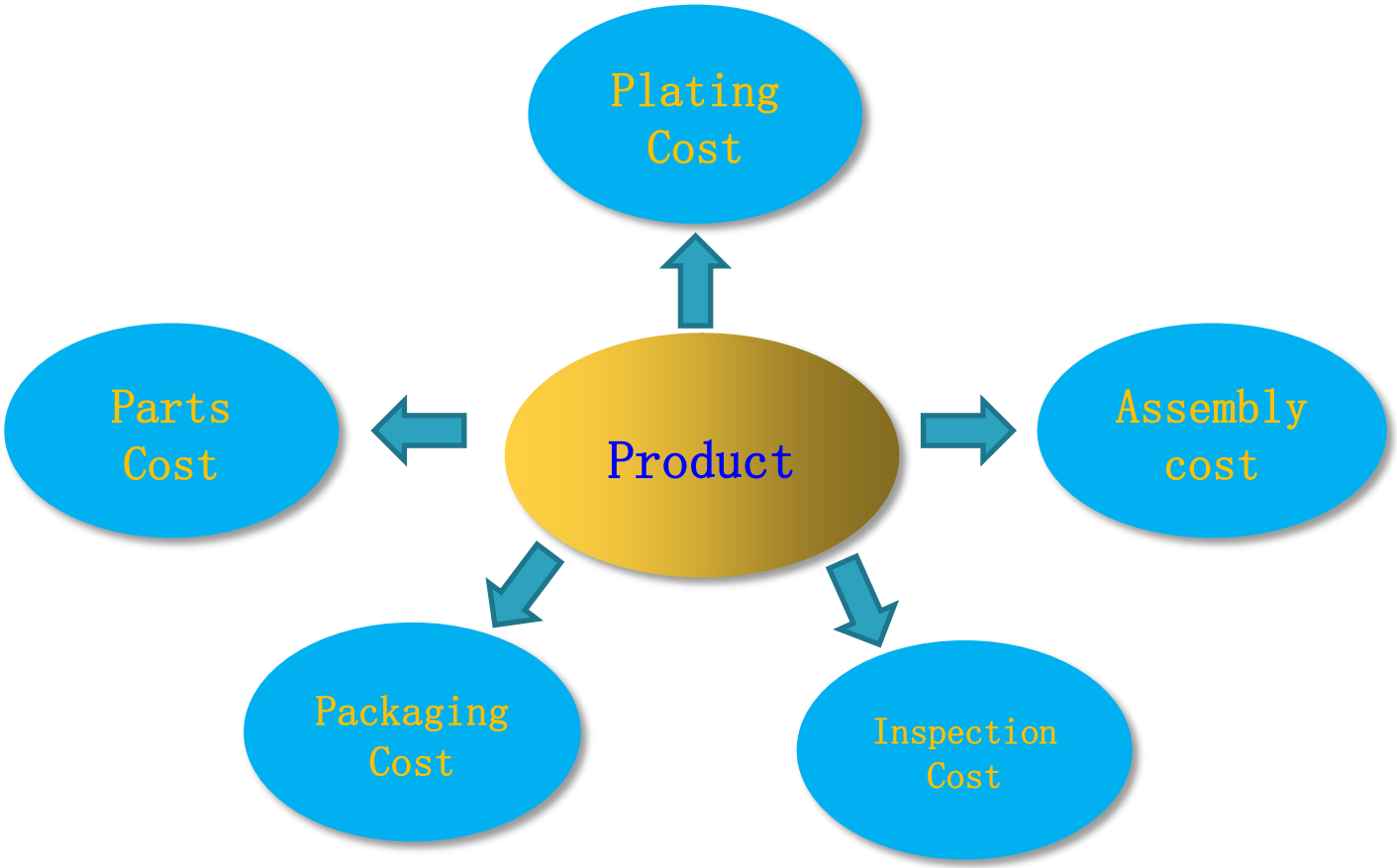
Environmental test

Inspection Focus	Equipment Diagram
●Environmental Hazardous Substances Protocol: Hazardous substances contained in the product: the content of Cd (cadmium), Pb (lead), Hg (mercury), Cr6+ (total Cr test evaluation), PBBS PBDES (total Br test evaluation) is within the acceptable range	 XRF

Glow wire test

Inspection Focus	Equipment Diagram
●Sampling test, set the test temperature to 750C°, and the time is 30s; After the test, the flame or glow of the test sample is extinguished within 30 seconds after the glow wire is removed, and the packaging tissue paper placed under the test product does not ignite, and it is judged to be qualified ●Reference standard: ●Test method for glow-wire flammability of finished products (IEC 60695-2-11:2000/GB/ T5169.11-2006)	 glow wire tester

6. Cost Structure



7. Other Information

Provide customers with professional product education and trainin g to solve your doubts about the company's products. For a product to be the best tool for users, it must be able to obtain relevant support and master knowledge to fully utilize the products capabilities. Therefore, education and training content is launched to assist users.

Homepage : htpp://www.st-switch-jack.com