

CONNECTOR 连接器

中國探針股份有限公司
C.C.P. Contact Probes Co.,Ltd





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ENTERPRISE CULTURE

企業文化



我們的行為準則

對上以敬，對下以慈
對人以和，對事以真

Our Standard of Behavior

- Respect to the supervisors
- Kind to subordinate
- Friendly to colleagues, earnest to work

我們的信念

做三思而行的人
做光明正大的人
讓汗流浹背來創造歷史

Our Belief

- Be a man thinks twice before you leap
- Be a man above board
- Creat history with our hard work

我們的特色文化

員工家庭訪問
員工子女夏令營
員工子女教育補助金

Our Special Culture

- Employees' home visiting
- Summer camp for employees' children
- Education Allowance for employees' children

我們的娛樂生活

年度旅遊
中秋晚會
尾牙晚會

Our Entertainment Life

- Company yearly trip
- Mid-autumn Eve party
- Year-end party





CORE COMPETENCE

我們的核心競爭力

- 提供客制化服務（可以根據不同客戶需要設計產品）
We provide customized service to meet customers satisfaction.
- 具有自動化的生產設備和彈性的生產力（可以生產少量多樣的產品）
We have automated production equipments and flexible productivity to produce many kinds of products.
- 嚴格的品質控制系統（嚴密管控每個流程，保證達到客戶滿意的品質）
We have rigorous quality control system to strictly control each process.
- 優秀的研發團隊（已獲得多個產品設計專利，保證提供給客戶滿意的設計）
We have excellent research and development department who has won multiple design patents.
- 公司擁有自己的電鍍部門（我們擁有功能完善的實驗室和核心電鍍技術）
We have our independent plating department that grasps core technology.



Product Advantages

- 免開模，快速打樣 No Tooling , Supper Fast Sampling
- 間距小 Fine Pitch and high density
- 電源解決方案 High Current Solutions
- 壽命長（可達10萬次） Long Life Cycles (up to 100,000 times)
- 高頻信號傳輸 High Frequency Signal Transmission
- 可量化彈力 Adjustable and Measurable Spring Force
- 穩定可靠 Steady and Reliability



品質決勝未來 我們提供客制化的服務

Quality decides the future. We provide customized service.



Focusing On Pogo Pin Connector Since 1983



C.C.P. (China Contact Probes) Co., LTD. was found in 1983. Since then, we set up our company goal as "Specialize in probes manufacturing and take fixture service as auxiliaries." C.C.P. devoted to providing high quality probed and efficient service to every related industry. C.C.P. issue stocks publicly in May, 2001. On 1st Jan 2003, C.C.P. listed on Taiwan stock exchange market. After 3 decades' effort, C.C.P. has been enlarging in scale.

Since year 2000, C.C.P. build up its subsidiary factory, Dong Guan C.C.P. in Human town, Dong Guan city, Guang Dong province, China. Soon, Dong Guan C.C.P. receives ISO9001, TS16949 and QC08000 certificate. Besides, its market keeps growing, and its sales cover south China, east China and north China. At the same time, Dong Guan C.C.P. set up sales office and branch office in Kunshan, Shanghai, Beijing, Shenzhen, Chengdu, Hong Kong and The USA. It also diversifies its product and receives many design patents. Currently, its major products are ICT probes, Pogo pin connectors, Double-Ended probes, IC sockets, Crown Spring Connector and Industrial Pin Socket. Mean while, the Pogo pin connector covers many fields including cellular phone, lap top, GPS, game console, walkie talkie, and car-used stereo. Speedy order service and sample delivery, precise quality test equipment, efficient production capability and professional sales team received highly favorable reviews, and preference from all the industries.

- **2014** Launched the USA Office in San Jose and rolled out the Contact Pin series.
- **2012** Set up 2nd generation production line with 100K-class clean room and developed the Crown Spring Connector.
- **2010** Obtained ISO 9001:2008 certificate.
- **2009** Developed Magnetic Connector with Lenovo and set up the Plating Lab.
- **2008** Obtained ISO QC080000 certificate and set up C.C.P. International (H.K.) Co., Ltd.
- **2006** Set up IC Socket factory in Taipei and the Beijing Branch in Beijing.
- **2003** Listed in Taiwan Stock Market (TW.6217).
- **2002** Obtained BSI ISO 9001:2000 certificate.
- **2001** DONG GUAN C.C.P. Contact Probes Co., LTD. was found.
- **1983** CCP Contact Probes Enterprise Co., Ltd. established.



公司概況

臺灣中國探針股份有限公司於 1983 年成立，成立之初即抱定以『專業探針製造為主 治具服務為輔』為創業宗旨，致力於為各相關產業提供高品質的測試探針與高效的服務。公司於 2001 年 5 月在臺灣公開發行股票，2003 年元旦掛牌上市。經過 30 多年的發展，經驗累積與努力，在規模上不斷壯大。

2000 年在大六東莞市虎門鎮設分廠，並先後通過了 ISO9001、ISOTS949 及 QC080000 等品質管制體系認證。公司市場不斷擴大，業務面覆蓋西南、華南、華東、華北等地區，並在昆山、上海、北京、深圳、成都、香港及美國設立了分公司、辦事處。公司產品也從單壹化邁向多元化，並獲得了多個產品的設計專利。目前主要產品有：ICT 測試針、傳統測試探針 RF 高頻測試針（線）、萬用針、大電流同軸針、頂針式連接器 (Pogo Pin Conn)、Double-Ended Probe、IC Socket、冠簧連接器、工業連接器等。現在我們連接器的產品專案涵蓋了手機、無線電對講機、車用音響、GPS、遊戲機、筆記型電腦等各種不同領域。公司快速的訂單處理與样品提供服務、精密的品質檢測設備、高效的產品生產線與專業的業務團隊深受業界青睞與好評。



產品結構 Product Structure

Pogo pin連接器單針主要由針軸、彈簧、針管組成。個別產品應客戶要求在針管裏添加鋼珠。包裝上添加膠蓋。

The pogo pin connector consists of 3 parts-Plunger, Spring, and Barrel (based on customers' need, we can match with ball and cap).

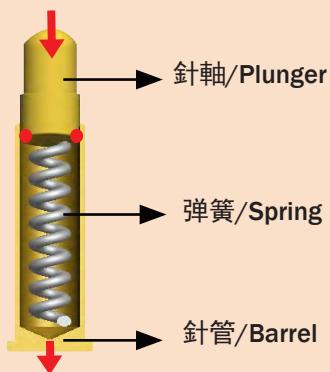


設計理念 Design concept

電特性會主動找尋電阻最小之路徑來傳導電流。最佳之狀況，電流會由針軸傳導至外管之管壁，再傳至PCB，此時電阻阻值最小。

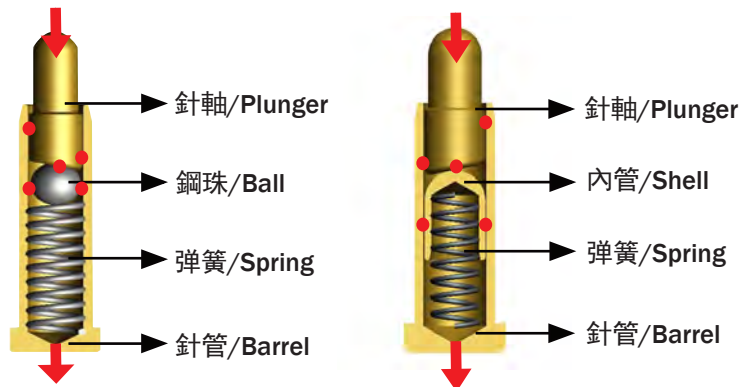
Electrical current flow begins from plunger. The current then has chances to go through spring or barrel. The barrel has much lower contact resistance than the spring, which has basic resistance of 100 milliohms or more. Therefore, the current will follow the direct way from plunger to barrel, if both parts are fully contact.

3 parts design



基本結構
Basic structure

4 parts design



大電流解決方案
High current solutions

針軸設計 Barrel Design

對於針軸的設計，為了適應客戶的需求，我們提供了幾種不同的方案：

To meet the customers need, we provide several kinds of structures for the plunger design.



剖斜邊
Bias Design



反鑽孔
Back-Drill Design



錐底形
Cone Design

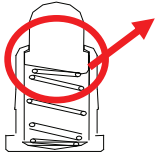


台階式
Step Type

1 剖斜邊 Bias Design

為了保證針軸在工作時100%與針管接觸，我們把針軸與彈簧接觸的一端切成斜面，這樣的設計理念可以保證得到低的穩定的連接阻抗，這種與眾不同的設計理念我們已在中國申請專利，它可以絕對地保證你的產品導通穩定。

剖斜邊/Bias Tail



針軸底部為一個斜面，角度通常為12度或是18度。

slice the end of plunger like a bias style. The choices of degree of slope are 12° or 18°.

In order to make the plunger be able to 100% contact with the edge of barrel, we slice the end of plunger like a bias style. Under this design, it can bring low interconnection resistance. The aggressive bias design is our patent in China, which assures absolute consistency of external contact resistance, is controlled.

產品優點:

- 電阻阻質小且穩定，可以確保針軸與管壁緊密接觸降低瞬間斷電之機率

The resistance is small and stable, which assures the close touch between plunger and the wall to lessen the probability of outage.

2 反鑽孔 Back-Drill Design

這個設計對小尺寸的連接器是最好的選擇，在小尺寸上可以滿足到客戶的彈簧力量需求，因為這種設計的彈簧長度可以超過針管的長度，在一些空間受到限制的情況下，我們把針軸內部挖空得到更多彈簧的裝配空間(反鑽孔)，如此便可獲得穩定的彈簧力度和相對多的彈簧行程供客戶選擇，在中國已申請專利。

反鑽孔/Back Drill



針軸為中空，可以讓彈簧置入其中。

The plunger is hollow to save space for the extension of spring.

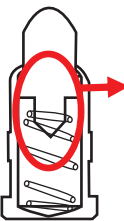
This design is the best solution for ultra-small size pogo pin connector. To reach the spring force which customer wants, the length of spring is always longer than the depth of barrel. Without sufficient space for spring, we make the plunger hollow to let spring have a room to extend. Like this, it can bring force constant and a wide of stroke travel for user's choice. We received the Patent of design in China.

產品優點:

- 車削容易，成本低
- 可以爭取彈簧放置之空間，縮短產品的高度
- 靜態下較無卡針之現象

· Easy turning and low expense
· Make space for spring, and lessen product's height
· Having no block in static state

3 錐底形 Cone Design



針軸底部為錐型，彈簧的頭部通常會與針軸底部稍微結合，讓針軸之晃動機會降低。

The shape of the button of the plunger is cone, and the top of spring slightly combines with the button of the plunger, which lessen the probability of swaying.

產品優點:

- 車削容易
- 成本較低
- 偏斜度小
- 由於針軸底部會與彈簧頂端緊密接觸，因此針軸之搖晃度相當小

· Easy turning
· Low expense
· Small skewness
· As there is close contact between the button of the plunger and the top of the spring, the degree of swaying is rather small.

4 台階式 Step Type

電阻阻質小且穩定，可以確保針軸與管壁緊密接觸降低瞬間斷電之機率，製作難度較剖斜邊複雜，偏擺度可以控制很好

The resistance is small and stable, which assures the close touch between plunger and the wall to lessen the probability of outage. The production of step type is more complicated but the deflection can be controlled.

針管 (Barrel)

關於針管的設計，配合你的結構空間和產品功能的需求，以及壽命的保證，我們提交我們的產品目錄冊供你選擇。在針管的端部，因考慮到產品在PCB上固定的方便和焊接深度的問題，我們有一個凸緣的設計加以保證。

根據針管設計的不同，我們把pogo pin分為以下幾種型式：

About our barrel design,to fit your design space and functional requirement,and keep guaranteed life-cycle at the same time,we offer many choices for the outside diameter of barrels in our product catalog.On the end of barrel,we also can design a flange for your convenience to fit tight and control the depth of soldering with printed circuit board.Besides,with rectangular shape and bent-metal type.

As the difference in barrel design,we divided pogo pin into the following types:

F

平底式 Flat Type

穩定性好,針管底部為平底設計,易于與PCB板焊接
stable quality.The bottom of barrel is designed as flat shape,easy to be mounted on PCB.



P

插件式 Plug-in Type

針軸尾部帶有定位針。與PCB板焊接時,定位效果佳
With positioning pin on the bottom of barrel.Hard to shift after mounted on PCB.Good performance on positioning.



R

側放式 Right-Angle Type

側放式的設計大大減少產品的厚度
Right-angle design helps designers to narrow the space.



M

複合式 Multiple Type

結合彈片及探針的設計,提供設計人員更有彈性的空間設計
“Bent metal plus pogo pin” offers engineers more flexible design on space adjustment.



B

折彎式 Bending Type

針軸尾部折彎,提供設計人員在空間的利用上更多選擇
“Bending tail of barrel” offers engineers more choices on space adjustment.



S

特殊規格 Special Spec

可根據客戶的需求定制特殊規格的產品
We can provide,the customization service for customers special needs in pogo pin connector field.



材料選擇 Material Selection

Pogo pin的材料組成成分 Material Composition

零件/Parts	材質/Material			
 針管/Barrel	黃銅 Brass	鈹銅 Beryllium Copper	磷青銅 Phosphor Bronze	鎳黃銅 Nickel Silver
 針軸/Plunger	黃銅 Brass	鈹銅 Beryllium Copper	磷青銅 Phosphor Bronze	高碳鋼 Tool Steel [SK4]
 彈簧/Spring	不鏽鋼線 Stainless Steel	琴鋼線 [鍍金] Music Wire with gold plated	鈹銅 Beryllium Copper	
 鋼珠 Ball Bearing	不鏽鋼線 Stainless Steel			
 膠芯 Housing & Cap	HTN	LCP	PBT	PA10T
 包材/Reel	PET	PS		

電鍍 Plating

我們擁有功能完善的實驗室和核心電鍍技術，如：鍍厚金屬處理(超過100u")；盲孔電鍍(Aspect Ratio>6.1)；貴重金屬處理(PdNi)等。目前電鍍廠基本產能可達 80KK pins /月。

電鍍可以使產品美觀，延長壽命期限，及得到良好的導電性能。我們的技術已經在跨國客戶的產品上得到實際應用，可以很好的幫助客戶解決大電流高頻連接問題。我們將秉持可信賴的質量、準確的交期、良好的信譽、客制化的服務，與國內外客戶攜手共進，同獲發展。

产品对于电镀之要求/Electroplating Requirements

- 1 電流傳輸能力要好
good current transmission capacity
- 2 抗氧化及腐蝕能力並能保護底材
the good ability on oxidation and corrosion as well as the substrate protection
- 3 可以焊接或焊料易附著於表面上
can be welding or adhered easily on the surface
- 4 高耐磨性極高硬度
high wear resistance and high hardness



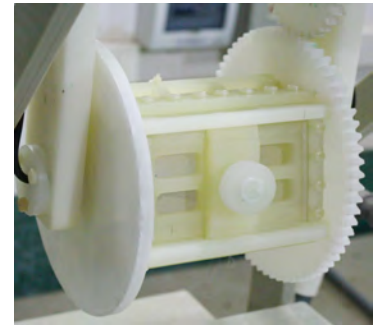
We have a fully functional laboratory and a core-plating technology, such as, a thick-layer Au-plating (over 100u"), a blind-hole plating (Aspect Ratio >6.1), precious metals-processing (PdNi), etc. At present, the basic capacity is 80 million pins per month.

We plate our products to make our products beautiful, extend the life span and achieve favorable electrical conductivity. Our technology has been applied for various well-known world-class brand electronic products. We insist on reliable quality, timely delivery, good reputation, customized service, and are eager to grow with domestic and foreign customers.

專業的電鍍技術——滾鍍 Barrel Plating

微小孔受到液體表面張力的影響, 使得盲孔內部無法順利的沉積上金屬, 所以我們採用了真空震動的方式, 通過壓力降的原理解決盲孔內的問題。

滾鍍是將一定數量的小零件置於專用的滾筒內, 在滾動的狀態下以間接導電的方式使零件表面沈積上各種鍍層, 以達到裝飾性及功能性目的的一種電鍍加工方式。滾鍍在提高電鍍生產效率的同時也降低了人工成本。

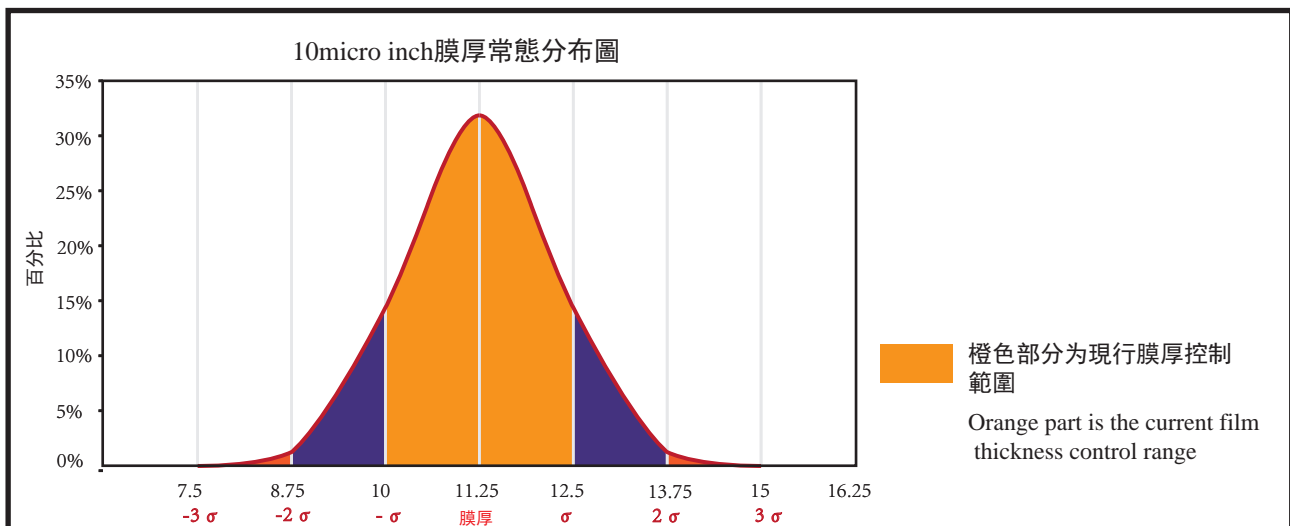


Tiny holes are affected by the surface tension of liquid and the metal can not be successfully deposited on the internal blind hole. Therefore, we use a vacuum vibration to solve the problem by the principle of pressure .

Barrel plating is a way that we put a small quantity of components into the dedicated roller, and the surface of components are plated to achieve our goal of decoration and functionality in the way of indirect electric conduction under the barrel condition. Barrel plating not only improve the efficiency of plating but also reduce the labor cost.

鍍金膜厚標準差 Standard Deviation of Gold-plated Film Thickness

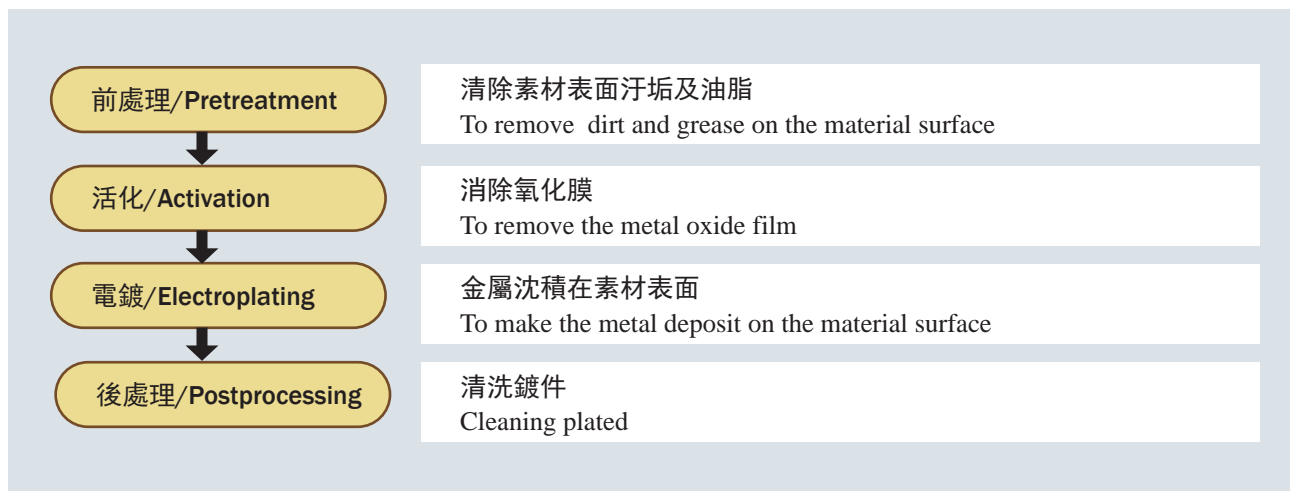
电镀规格 (Min) Plating Spec	标准差 (σ) Standard Deviaton	控制规格 (Avg.) Control Spec	不良膜厚范围 NG Film Thickness Range
5	1.25	<7.5	5-4u: 11.7%-1.8% 4-3u: 3.7%-0.4% <3u: 0.5% 以下
10	1.25	<12.5	10-9u: 11%-1.8% 9-8u: 4.5%-0.4% <8u: 0.4% 以下
30	2.5	<35	30-28u: 11%-1.8% 28-26u: 4.5%-0.4% <26u: 0.4% 以下
50	3	<56	50-48u: 10.5%-1.6% 48-46u: 4.1%-0.6% <46u: 1.3% 以下
100	6	<112	100-98u: 6.2%-1% 98-96u: 4.3%-0.6% <96u: 5.4%-0.7%



表面電鍍材料特性 Plating Material Properties

鍍層(Plating)	外觀 Appearance	硬度(HV) Hardness	膜厚限制 Film Thickness	阻抗率 Resistivity	拉伸能力 Tensile Strength	用途 Function
鍍鎳(Nickel)	銀白色 (Silver)	150~200	120~200	118.5~331	689~840.5	增進抗蝕能力 Improve the corrosion render ability
鍍鈀鎳(Pd-Ni)	銀白色 (Silver)	-	30	-	152	增進信號傳輸, 耐磨性好 Improve signal transmission
鍍金(Gold)	金色 (Gold)	78~86	100	11.4~28.9	110~213.5	增進信號傳輸 Improve signal transmission
銅錫鋅合金 (Ormolu)	銀白色 (Silver)	600	40~80	-	-	代替鎳層 Replace Nickel
鈀鈷合金 (Palladium-cobalt)	銀白色 (Silver)	450~600	80以下	-	-	代替鈀鎳層 Replace Pd-Ni
黑色鍍層 (Black plating)	灰黑色 (Gray)	600~800	10	-	-	外觀要求 Appearance requirements

電鍍流程 Surface Production



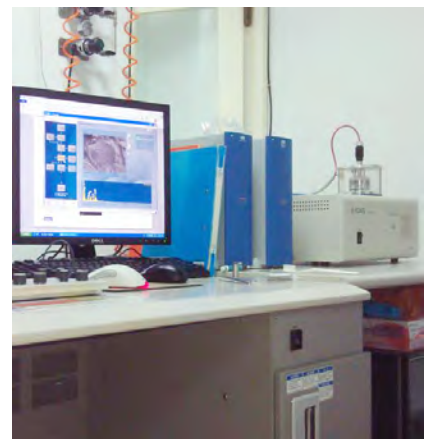
先進的檢驗及分析設備 Advanced Testing Equipments



Atomic Absorption Spectroscopy



Scanning Electron Microscope



Energy Dispersive Spectrometer

The Magnetic Cable Connector

磁吸式连接器



Advantages

- 磁鐵式自动吸附 Magnet solution
- 支持大電流傳輸 Large current transmission
- 高頻信號傳輸(可代替傳統USB2.0、HDMI1.3)
High frequency signal transmission (USB2.0、HDMI 1.3 compatible)
- 拔插容易 Easy to plug
- 壽命長 Long life cycles

NOTE:

1. Material
Barrel&Plunger:Copper Alloy
Spring:SUS
Housing:HTN Black(UL94-V0)
Magnet:NdFeB 48H Plating Ni
2. Plating
Plunger&Barrel:10 micro inch minmum Au over
50-100 micro inch nickel
3. Electrical
Rated current&voltage:DC 12V;3A
Contact resistance:50 mohm maximum at working
height (quiescence)
4. Mechanical
Spring force:90g Min.at working height.
Durability:10,000 cycles(minmum)
5. To ensure the best usage,please operate it compres-
sion shall not be exceeded based on the engineering
drawing.
6. RoHS compliant.

CCP以人性化体验为基础,推出磁吸式连接器。它不仅可实现良好的高频信号传输,能提供10A以上电流充电,而且同时能够提供高速率数据传输,可实现快速充电等功能;恰好的磁吸功能可为产品实现美观的ID设计,并可以解决数据线拖动主机(NB,手机等高端设备)致其掉落损坏等问题。

CCP developed Magnetic Connector for your comfortable using experience.It provides excellent HF signal transmission,fast charging of power(allows more than 3A current to go through),and high speed data transmission.In addition, Magnetic Connector not only has good loading for ID desihn,but also good solution for preventing your laptop or cellphone from dropping when power cord of these items are pulled or trigged by users.



Water Proof Connector 防水式連接器

隨著電子行業的發展，電子產品的普及程度越來越高，並不斷地改善著我們的生活。與此同時，人們對電子產品的要求也不斷地提高，電子產品的防水性能開始受到人們的普遍重視。CCP 適勢推出了防水連接解決方案，提供客制化設計，實現防水，防塵，防震要求，使得產品能夠適用更惡劣的環境，帶給客戶更加安全、可靠優質的體驗。

With the rapid development of electronic industry, electronic products become more and more popular. It continuously improves the quality of our life. At the same time, people's demand for electronic products are increasing and the waterproof performance becomes valued. Therefore, CCP launches a water-proof connection solution. Our products are resistant to water, dust and shock, which can adapt to a more brutal environment, bringing safe and reliable quality to our customers.



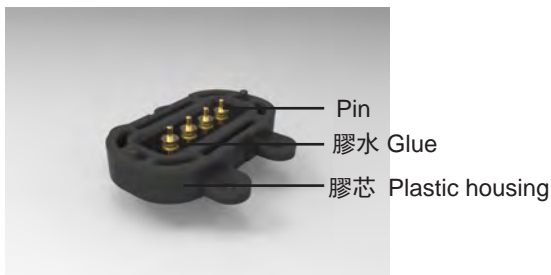
產品優勢 Advantages

- IPX7級別防水設計 IPX7 waterproof design
- 外形小 Small shape
- 高耐溫性 High temperature resistance
- 抗腐蝕性 Corrosion resistance
- 提供客制化設計 Customized design



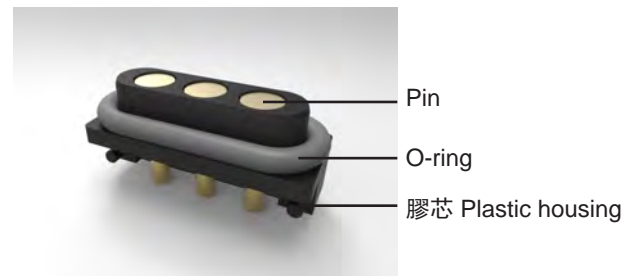
結構設計 Structure Design

1 打膠式 Waterproof Glue



打膠式設計能達到IPX6/IPX7的防護等級
The waterproof design approves IPX6/IPX7

2 O-ring



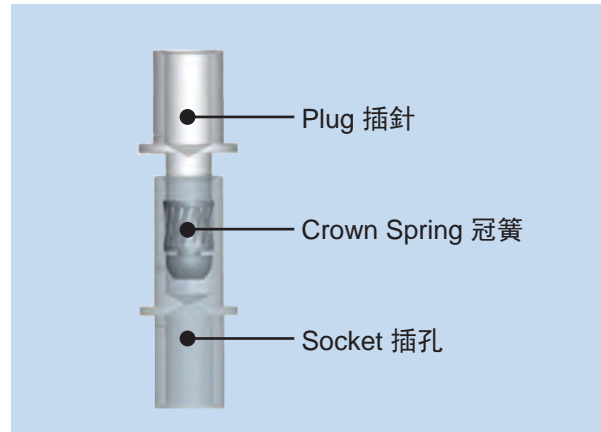
O-ring設計能達到IPX7的防護等級
The o-ring design approves IPX7

Crown Spring Connector

冠簧連接器

隨著電動汽車行業的飛速發展，CCP也同步推出了大電流端子的解決方案，旨在以可靠的連接、適當的插拔力以及更高的載流能力滿足市場以及客戶的快速充電需求。CCP擁有自主設計的冠簧彈片，擁有自主知識產權，並能夠根據不同的客戶需求調整不同的插拔力、阻抗及載流能力。CCP以連接端子為核心（IEC/GB/SAE端子），同時正將產品線拓寬至整組連接器，並輻射到電動汽車、軌道交通、工業及機器人等領域。

With the rapid development of automobile industry, CCP releases a solution of large current terminal, which aims at satisfying the needs of customers and market with our reliable connection, proper insertion force and higher quick charge of current-carrying capacity. CCP has crown spring shrapnel of our independent design and independent intellectual property rights. What's more, we can adjust to different insertion force, resistance and current carrying capacity according to different needs of customers. CCP focuses on the connection terminal (IEC/GB/SAE terminal) and widening our product lines to the whole connector. Besides, we also radiate to fields of electric cars, rail transportation, industrial and robot etc.



Advantages

1. 最小電壓降 Minimal voltage drop
2. 高電流承載量大 High current-carrying capacity
3. 外觀小 Small in size
4. 最小的接觸電阻值 Minimal contact resistance
5. 高耐用性可重複一萬次以上的插拔使用
High durability contacts withstand up to 10 thousand mating cycles
6. 優良抵抗震動和外力衝擊
High resistance to vibration and mechanical shock
7. 低維護費 Low maintenance costs
8. 抗腐蝕性佳 Very good corrosion resistance
9. 提供客製化設計

This structure also supports customize design

10. 專利設計: 雙凹槽接觸式
CCP have an important patent for this crown springs - Double dimple contact CCP

Industrial Contact Pin

工業連接器

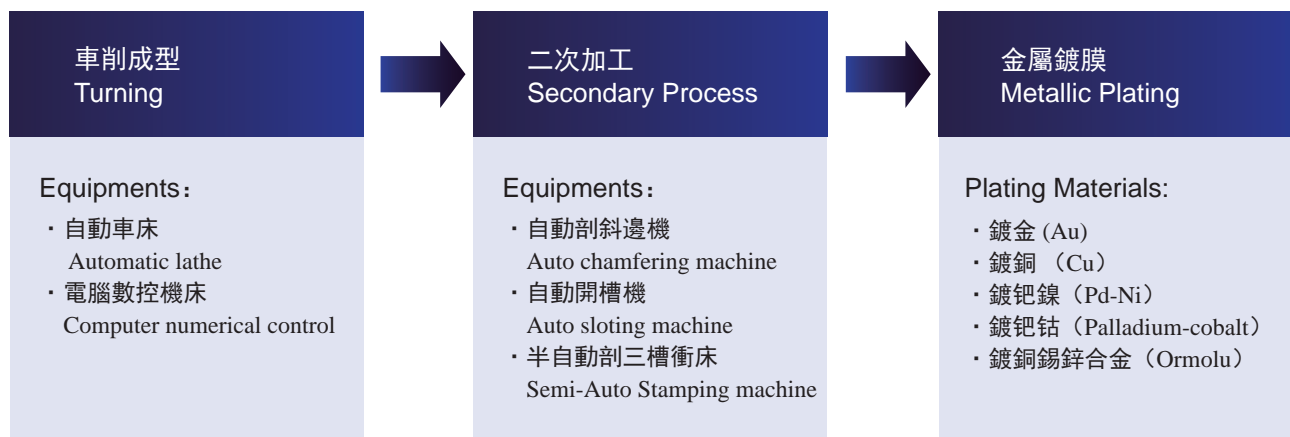
在工業產品領域，CCP推出了航天航空方面的軍用產品，通過在制程設計與原料等方面的差異化創新，以成本優勢與創新的科技幫助客戶增加市場份額，成為客戶最有價值的合作夥伴，為客戶提供安全、可靠優質的服務。

In the industrial field, CCP launches military products in aerospace aspects .By providing the advantages in design process and materials,we help customers increase the market share with cost advantage and technological innovation.We try to become the most valuable partners and we provide safe, reliable, high quality service to our customers.

產品優勢 Advantages

- 獨特的材質（可伐、錫青銅） Special materials（KOVAR、QSN4-3Y&QSN6.5-0.1Y）
- 專業的車削技術（車削孔深比可達9.0） Professional turning technology（turning hole to depth ratio up to 9.0）
- 盲孔電鍍技術 Blind hole plating technology

生產流程 Manufacturing Process

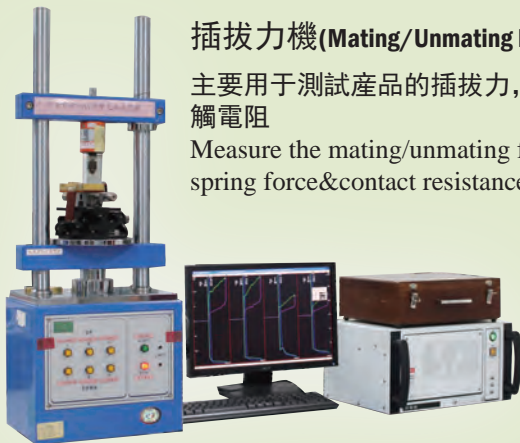


產品展示 Display



Electrical Performance

電氣性能測試機台



插拔力機(Mating/Unmating Force Tester)

主要用于測試產品的插拔力，彈力&接觸電阻

Measure the mating/unmating force, spring force&contact resistance .



低電阻測試機(Low Resistance Tester)

主要用于產品接觸電阻的量測

Mainly use for contact resistance measurements



大電流測試機(High Current Tester)

主要用于測試產品可通過的電壓和電流強度

Make sure the pogo pin connector can work successfully under the particular range of voltage and current.



彈簧拉壓力試驗機
Spring Force Tester

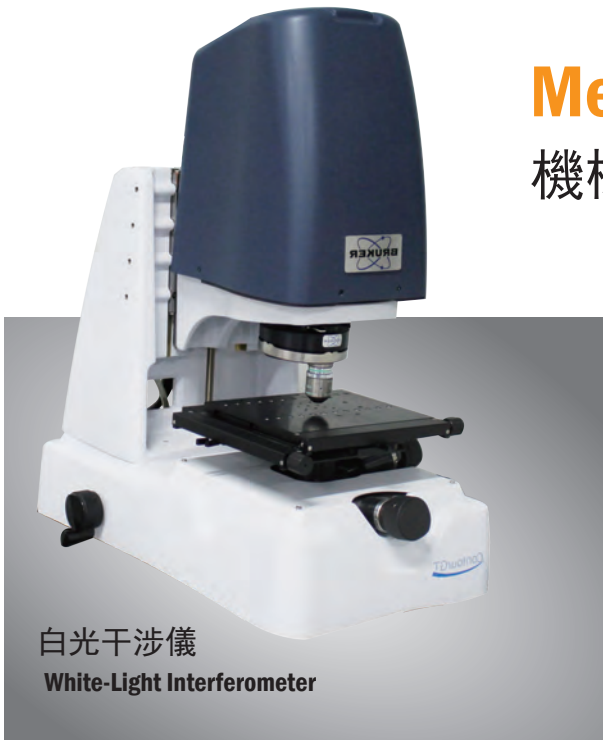


阻值測試機(Resistance Tester)

可對產品的使用壽命進行測試，監測產品測試時的阻抗變化
Test life cycle of whole series of pogo pin products. Monitor the change of contact resistance during compression.

Mechanical Performance

機械/結構性能測試機台



白光干涉儀
White-Light Interferometer



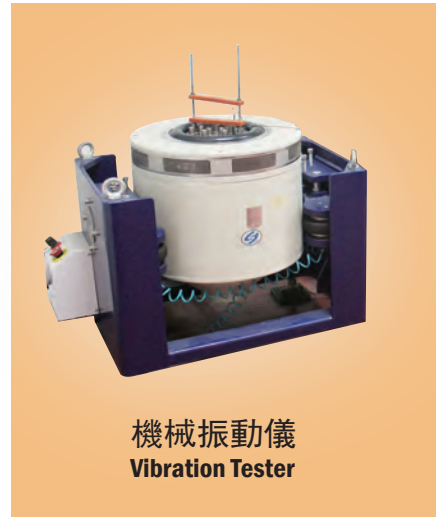
X-Ray透視機
Micro-Focus X-Ray Tester



插拔壽命檢驗機
Durability Life Tester



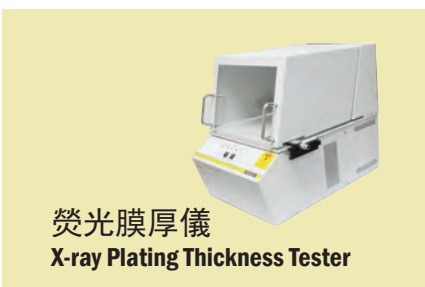
全自動荷重試驗機
Automatic Load Tester



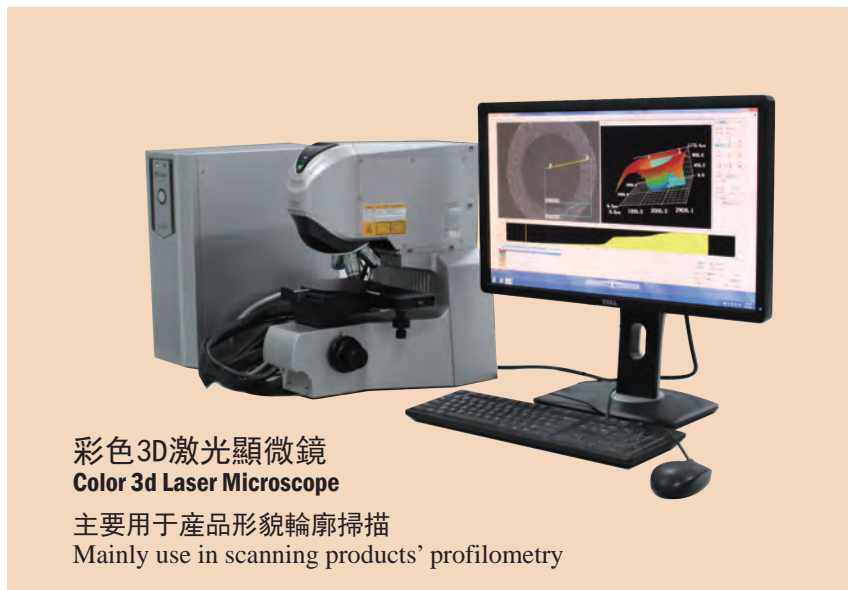
機械振動儀
Vibration Tester



線性彎折試驗機
Bending Tester



熒光膜厚儀
X-ray Plating Thickness Tester



彩色3D激光顯微鏡
Color 3d Laser Microscope

主要用于產品形貌輪廓掃描
Mainly use in scanning products' profilometry

Environmental Tester

環境測試機台



人工汗液試驗機
Artificial Sweat Tester



強衝水試驗箱 (Flush Test Chamber)
用於檢驗產品的密封、防水性能
Test the sealing, waterproof performance of products



高溫烤箱 (Flush Test Chamber)
模擬產品耐受高溫儲存，評估產品外觀及功能變化狀況
Simulate products' tolerance in high temperature and assess the changes in appearance and function



全熱風回焊機
Hot-Air Reflow Machine



鹽水噴霧機
Salt Spray Tester



冷熱衝擊機
Thermal Shock Tester

模擬產品耐受極端高低溫衝擊
Simulate products tolerance extreme high low-temperature impact



恒溫恒濕機
Temperature & Humidity Chamber

模擬測試不同溫濕度下產品性能
Creat repeatable environmental conditions for numinous product lines



綜合淋雨試驗機
Comprehensive Tain Tester

模擬測試高濕環境下產品性能
Practice the product performance under the environment of high humidity

Quality System Introduction

品質系統介紹

Part1 Quality Policy 品質政策

品質第一 Quality Priority

中國探針秉持著以品質為企業生命線的信念，通過科學管理，不斷提升產品的品質，採納客戶的意見，傾聽市場的聲音，產品通過不斷改造更新，爭取能提供給客戶最適用的產品。

CCP believes that quality is a key to strike for a company's success. So we continuously improve our product quality by accepting customers' suggestions, listening to the market and product innovation in order to deliver the suitable products to our customers.

顧客滿意 Customers Satisfaction

提供符合客戶滿意的產品，通過客戶滿意度調查，反饋回公司內部做檢討，不斷持續改進。

We provide customers satisfying products, by means of the investigation of CSI (Customer Satisfaction Index), feed back the related information to our company for inside reviewing and analyzing in order to improve product accordingly. CCP has devoted itself to meet customer satisfaction index as well as to conduct internal self-inspection in order to provide customer-satisfactory products.

ISO9001:2008 ISO/TS16949:2009

中國探針的ISO品質系統是遵循PDCA持續改進的管理循環模式，我們非常重視每一個流程和細節，通過層層的檢驗把關（進料檢驗IQC、制程檢驗IPQC、成品檢驗FQC、出貨檢驗OQC、信賴試驗和客訴處理）與完善的品質保證系統，不斷提高顧客滿意度。

ISO/TS16949汽車生產供應鏈遵循過程管理模式，主要關注于五大工具和汽車行業顧客的特殊要求。

CCP ISO quality complies with PDCA module, we pay intensive attention to every process and detail in accordance with six controls (IQC, IPQC, FQC, OQC, reliability compliance test and CQS) and comprehensive quality management to continuously increase CSI.

ISO/TS16949 automobile production following a process of supply chain management mode, focus on the customers' special requirements who concentrate on the five tools and auto industry.



Part2 Quality Assurance System

品質保證系統



樣品檢測流程 Sample Inspection Process

中國探針在每一款樣品完成後，都會進行一系列的品質檢測，確保每一款樣品都能符合客戶的要求。

Each finished sample will follow a series of quality tests to ensure meeting customer requirements.

電氣性能測試 (Electrical Performance)

1. 接觸電阻 (Contact Resistance)
2. 絕緣阻抗 (Insulation Resistance)
3. 耐電壓測試 (Withstand Voltage)
4. 額定電流測試 (Current Rating)



環境測試 (Environmental Testing)

1. 高濕測試 (Humidity)
2. 鹽霧噴水測試 (Salt Spray)
3. 熱靜置測試 (Temperature Life)
4. 冷熱衝擊測試 (Thermal Shock)
5. 耐焊錫熱測試 (Heat Resistance)



機械性能測試 (Mechanical Performance)

1. 保持力(Contact Retention)
2. 耐久測試 (Durability)
3. 彈簧力測試 (Spring Force)
4. 振動測試 (Random Vibration)
5. 機械衝擊測試 (Mechanical Shock)

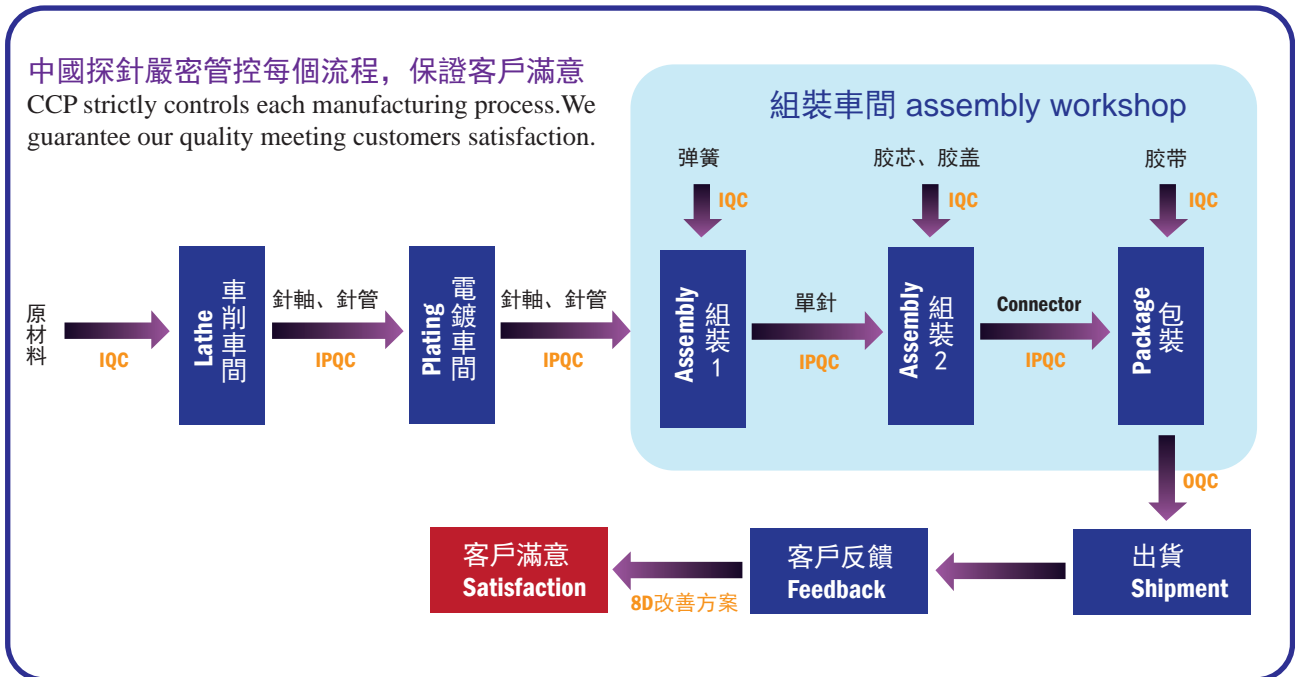


其他 (Others)

1. 包裝掉落測試 (Drop Test)
2. 側向力測試 (Side Force)
3. 沾錫能力 (Solder Ability)



量產檢測流程 Mass Production Inspection



Part 3 Environmental Policy 環境政策

IECQ-QC080000

選擇環境責任供應商，維護美好環境
遵守環保法令之要求，致力持續改善
Choose the responsible suppliers to protect environment .Obey the environmental laws and keep improving.

ISO14001:2004

預防汙染為指導思想，全員節能減排
執行環境過程的管理，追求客戶滿意
Take pollution prevention as guiding ideology and reduce emission in staffs.
Control the environmental process and pursue customer satisfaction.

在2008年，中國探針通過了國際電子零件**IECQ QC080000**有害物質過程管理系統認證。透過此系統，展現我司對RoHS及無鹵化的管理能力，並能為客戶帶來長期利益。

In 2008, CCP passed IECQ QC080000 hazardous substance confirmation system. Through this system, we can show our management ability on RoHS and non-halogenation. What's more, it will bring long-time benefits to customers.

中國探針的產品品質完全符合RoHS指令要求

CCP completely complies with RoHS requirement



提供給中國探針的原料皆是符合綠色環保RoHS的合格供應商，我們對於RoHS列管的六種（鉛、六價鉻、鎘、汞、多溴連苯、多溴連苯醚）物質含量和鹵素含量禁用規範有嚴格的管控。我司對於管控的方式有：

- (1) 對於供應商進行計劃性的稽核
- (2) 對供應商進行不定期的稽核
- (3) 供應商的物料須通過第三方（SGS/CTI）檢測
- (4) 依有害物質年度送檢計劃將產品送公正第三方（SGS/CTI）進行檢測

The materials suppliers are approved vendors which have to be complying with the green environment protect&RoHS. We take serious actions to control RoHS's regulated 6 kinds of toxicity (Pb/Cr6+/Cd/Hg/PBB/PBDE) and Halogen. Control methods:

- (1) Audit supplier regularly
- (2) Audit supplier randomly
- (3) Materials from supplier must pass SGS or CTI test conducted by the third party
- (4) Send products to the third party for SGS or CTI test periodically.

中國探針對綠色環保RoHS有害物質的管理標準： CCP Standard Criteria of Hazardous substance control

管控標準 Criteria 單位Unit:(ppm)	鉛(Pb)	鎘(Cd)	汞(Hg)	六價鉻(Cr+6)	多溴聯苯 (PBBs)	多溴聯苯醚 (PBDEs)
	<700	<50	<2	<2	<5	<5
塑膠 (Plastic)	<50	<50	<2	<2	<5	<5
金屬 Metal	鋼合金 (steel alloy)	<3500	<50	<2	<2	0
	銅合金 (copper alloy)	<40000	<50	<2	<2	0
	鋁合金 (aluminum alloy)	<4000	<50	<2	<2	0
電鍍件 (Plating item)	<50	<50	<2	<2	0	0
無鉛焊錫 (Lead-free solder)	<700	<50	<2	<2	0	0
包裝材料 (Packaging material)	<100				<5	<5
	<50	<5	<5	<5		

說明:根據RoHS指令 2002/95/EC，本公司制程所使用銅類材質鉛含量均符合ROHS豁免標準(Pb<40000ppm)

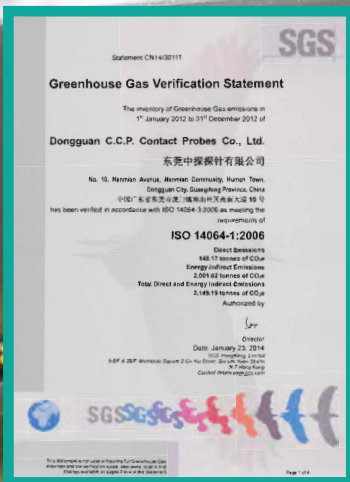
According to DIRECTIVE 2002/95/EC, Lead is an alloying element in copper alloy containing up to 4 % lead by weight, which is exempted from the requirements of Article 4(1)

SGS/CTI檢測頻率與有害物質檢測項： SGS/CTI Test Frequency and Hazardous Substance

	SGS/CTI檢測頻率 (Test Frequency)	有害物質檢測項 (Hazardous Substance)
塑膠件 (Plastic parts)	半年 (six month)	RoHS六項+鹵素Cl、Br+PFOS/PFOA
電鍍件 (Plating parts)	半年 (six month)	RoHS四項+PFOS/PFOA
五金件 (Metal parts)	一年 (a year)	RoHS四項
包裝材料 (Package parts)	一年 (a year)	RoHS六項+鹵素F、Cl、Br

CERTIFICATES

- ISO 9001 質量管理體系認證
- ISO 14001 環境管理體系認證
- ISO TS16949 汽車行業質量體系認證
- ISO 14064 溫室氣體核查聲明
- IECQ QC80000 有害物質過程管理體系認證

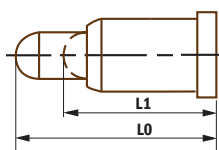


POGO PIN Spec Introduction

POGO PIN詳細規格介紹

F

平底式 Flat Type



(L1:working height)

NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4
Barrel:Brass 3604/BeCu/PHBZ
Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current&Voltage:DC 12V;1~2A

Contact Resistance:50mΩ max at Working Height

單針 Single Pin

(長度單位 Unit: mm)

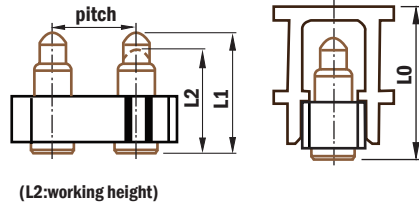
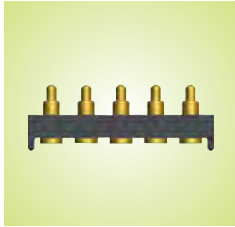
P/N	L0	L1	Spring Force±20%(g)
F3366AA01-01000CR	1.60	1.20	60
F828AA06-01000C	1.85	1.50	50
F319AA01-01000C	2.10	1.50	100
F591AA04-01A000CR	2.10	1.60	100
F446AA01-01000C	2.20	1.75	80
F2010AA01-01A000CR	2.30	1.90	90
F2010AA02-01A000CR	2.40	1.90	70
F1795AA01-01F000CR	2.50	2.10	80
F1187AA01-01A000CR	2.50	1.95	70
F937AA01-01000C	2.60	2.50	60
F219AA01-01000CR	2.60	2.00	100
F651AA01-01000CR	2.80	2.00	100
F185AA03-01000C	2.90	2.20	100
F030AA02-01000C	2.95	2.45	40
F266AA05-01B000CR	3.00	2.00	110
F925AA01-01000C	3.10	2.40	110
F553AA02-01000C	3.20	2.50	80
F266AA04-01B000CR	3.20	2.20	110
F0350AA0001000C	3.50	2.40	120
F349AA01-01000C	3.50	2.50	100
F473AA01-01000C	3.50	3.00	50
F1785AA01-01A000CR	3.50	2.85	100
F2557MF01-01A000CR	3.60	3.05	60
F610AA01-01000CR	3.80	3.00	100
F423AA01-01F000CR	4.00	3.20	110
F2006AA01-01F000CR	4.00	3.00	50
F766AA06-01000CR	4.10	3.60	45
F613AA02-01000CR	4.20	3.15	120
F037AA00-01000CR	4.20	3.20	130

P/N	L0	L1	Spring Force±20%(g)
F773AA01-01000CR	4.40	3.40	60
F766AA08-01000CR	4.50	4.00	45
F1322AA01-01A000CR	4.50	3.20	100
F1189AA02-01000T	4.60	3.60	105
F1188AA01-01F000CR	4.60	3.80	100
F1536AA01-01A000CR	4.70	3.90	80
F035AA01-01000C	4.70	3.60	120
F580AA06-01000C	4.70	3.30	100
F868AA02-01000CR	4.72	4.02	80
F0500AA0001000M	5.00	4.00	110
F294AA02-01C000CR	5.00	3.80	120
F294AA03-01A000CR	5.10	4.40	120
F391AA01-01000C	5.30	4.30	120
F154AA00-01000C	5.40	4.70	150
F1029AA02-01000R	5.50	4.50	110
F766AA03-01000CR	5.50	4.60	45
F1029AA02-01F000CR	5.50	4.50	110
F602AA02-01000CR	5.80	4.80	70
F168AA00-01000C	5.80	5.00	80
F777AA01-01000C	6.00	5.00	110
F1189AA03-01000T	6.03	5.03	105
F766AA05-01000CR	6.40	5.50	45
F328AA01-01000C	7.00	6.00	50
F856AA01-01000C	7.00	6.50	200
F835AA01-01000C	7.10	5.90	110
F338AA01-01000CR	7.50	6.50	110
F187AA01-01000CR	7.80	6.60	90
F255AA01-01000C	8.00	7.00	100
F1963AA01-01000R	8.33	7.63	60



F

平底式 Flat Type



NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4

Barrel:Brass 3604/BeCu/PHBZ

Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current&Voltage:DC 12V;1~2A

Contact Resistance:50mΩ max at Working Height

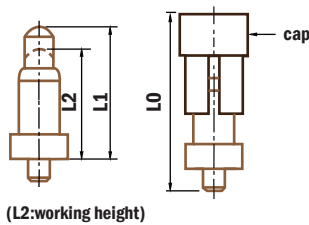
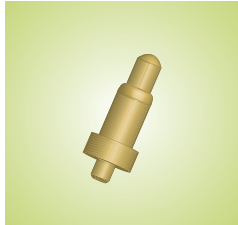
多針 Multiple Pins

(長度單位 Unit:mm)

P/N	PIN	Pitch	L0	L1	L2	Spring Force±20%(g)
F1106AA01-02A400MR	2	4	5.90	3.80	3.10	90
F920AA01-02330MR	2	3.3	5.90	4.70	4.00	80
F969AA01-02A500MR	2	5	7.00	4.20	3.50	100
F164AA00-02170MR	2	1.7	8.00	6.70	5.50	110
F1168AA01-03A250MR	3	2.5	3.60	2.30	2.17	50
F1692AA01-03A180MR	3	1.8	5.50	4.30	3.50	80
F1712AA01-03D650MR	3	6.5	9.80	8.20	7.50	85
F1238AA01-03A406MR	3	4.06	4.20	3.40	2.70	60
F1601AA04-08G300HB	4	3	7.50	7.50	6.00	120
F266AA03-04250MR	4	2.5	4.55	3.00	2.00	180
F615AA01-04250MR	4	2.5	9.00	8.00	7.00	100
F1853AA02-04F300MR	4	3	5.50	4.10	3.30	80
F1109AA01-05A500LR	5	5	4.00	4.00	3.20	110
F1371AA01-05A250MR	5	2.5	6.60	5.00	4.00	80
F1601AA05-08G300HB	5	3	7.50	7.50	6.00	120
F254AA01-05220MR	5	2.2	3.70	1.60	1.20	60
F1606AA01-06F300HT	6	3	8.50	8.50	7.00	150
F754AA01-06280HR	6	2.8	4.00	4.00	3.00	120
F999AA01-06350MR	6	3.5	5.50	5.05	4.30	60
F999AA02-06350BR	6	3.5	5.90	5.05	4.30	60
F181AA00-07500MR	7	5	10.40	8.20	6.60	130
F1238AA01-07A203MR	7	2.03	4.20	3.40	2.70	60
F1601AA01-08G300HB	8	3	7.50	7.50	6.00	120
F386AA05-08E254HH	8	2.54	5.00	5.00	4.00	110
F386AA02-09254HP	9	2.54	7.00	5.00	3.80	50
F1195XX01-12A350MR	12	3.5	8.20	7.00	5.30	130
F990AA02-12250MR	12	2.5	9.20	7.10	5.60	100
F971AA01-16254HR	16	2.54	9.45	9.45	8.10	110
F0010AA01-20A350LT	20	3.5	5.90	5.90	4.70	80
F1268AA01-22B254HH	22	2.54	6.60	6.60	5.60	60
F906AA01-30250DR	30	2.5	9.88	5.50	4.70	80
F282AA03-32254MR	32	2.54	9.00	6.50	4.75	90
F755AA01-35254MR	35	2.54	9.35	7.00	5.20	130
F1178AA01-44A300HR	44	3	11.00	7.20	6.10	110

P

插件式 Plug-in Type



NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4

Barrel:Brass 3604/BeCu/PHBZ

Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current& Voltage:DC 12V;1~2A

Contact Resistance:50mΩ max at Working Height

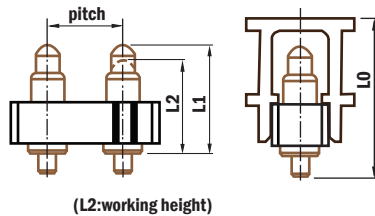
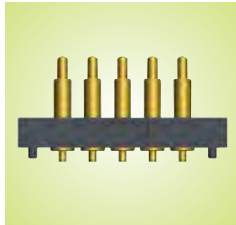
單針 Single Pin

(長度單位 Unit:mm)

P/N	L0	L1	L2	Spring Force±20%(g)
P1901AA02-01A000CR	4.50	2.60	1.90	80
P1299AA02-01F000CR	3.95	2.90	2.30	80
P809AA01-01000C	4.45	2.90	2.60	90
P865AA01-01000C	3.80	3.10	2.80	65
P988XX01-01000C	4.20	3.10	2.40	110
P421AA01-01000CR	4.55	3.10	1.60	80
P809AA01-01000CR	4.45	3.40	3.10	90
P1711AA01-01A000CR	5.90	3.50	3.00	50
P1789AA02-01A000CR	6.30	4.00	3.20	100
P1107AA01-01C000C	5.50	4.40	3.40	110
P1107AA01-01C000CR	7.50	4.40	3.40	110
P512AA01-01000C	5.90	4.60	3.60	100
P869AA01-01000C	6.40	4.80	4.00	110
P121AA00-01000C	5.70	5.00	4.00	60
P2387MP01-01A000CR	6.45	5.50	4.50	60
P2366MP01-01A000CR	6.80	5.70	4.70	100
P735AA03-01000C	7.20	5.80	4.90	100
P004AA00-01000CR	7.20	6.10	4.00	20
P1175AA01-01B000CR	8.40	6.40	5.30	110
P1129AA02-01F000CR	8.00	6.85	5.65	110
P1671AA01-01A000CR	8.50	7.00	6.00	80
P1769AA01-01F000CR	7.90	7.10	6.10	120
P229AA02-01000R	8.70	7.20	6.20	110
P024AA00-01000K	8.95	7.60	6.60	110
P0850AA0001000M	9.20	7.70	6.70	110
P516AA01-01000C	10.30	9.00	7.80	100
P516AA01-01000CR	10.30	9.00	7.80	100
P1770AA01-01F000CR	10.60	9.80	8.80	120
P363AA01-01000MR	14.30	11.00	9.00	60
P798AA01-01000C	14.40	11.80	9.50	150

P

插件式 Plug-in Type



NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4

Barrel:Brass 3604/BeCu/PHBZ

Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current&Voltage:DC 12V;1~2A

Contact Resistance:50mΩ max at Working Height

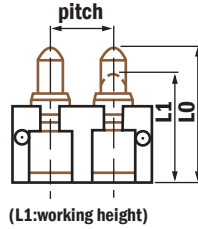
多針 Multiple Pins

(長度單位 Unit:mm)

P/N	PIN	Pitch	L0	L1	L2	Spring Force±20%(g)
P1088AA01-02D400HR	2	4	6.20	6.20	4.70	85
P1231AA01-02A250MR	2	2.5	9.92	9.00	8.00	75
P1530AA01-02A350HR	2	3.5	5.90	5.90	5.00	70
P1903AA01-02A170MR	2	1.7	8.00	6.70	5.50	110
P2388MP10-02G500HR	2	5	7.60	7.60	6.40	120
P1071ZZ01-03E250MR	3	2.5	9.30	6.70	5.70	110
P1500AA01-03C250MR	3	2.5	10.20	9.00	7.80	60
P1505AA01-04B250HB	4	2.5	8.00	8.00	7.00	100
P453AA02-04245HR	4	2.45	2.95	2.95	1.95	100
P980AA01-04500HR	4	5	6.70	6.70	5.50	110
P1311AA01-05B180HT	5	1.8	7.00	7.00	6.05	80
P848AA01-05295R	5	2.95	10.24	7.00	5.70	175
P1538AA02-06E254HR	6	2.54	6.50	6.50	5.50	110
P580AA03-06700PT	6	7	5.40	5.40	4.40	127
P1990AA01-06J300LR	6	3	6.60	6.60	5.80	120
P2197MP01-06C240MR	6	2.4	6.65	6.65	5.85	90
P822AA01-07250MR	7	2.5	16.00	13.70	12.20	100
P1075XX01-08A200HT	8	2	7.50	7.30	6.65	120
P1078XX01-08B200HT	8	2	8.20	8.20	7.20	120
P1585AA02-08E300HR	8	3	10.80	10.80	9.50	100
P2382MB01-08A240HT	8	2.4	7.50	3.00	2.10	100
P1860AA01-09A230LT	9	2.3	9.00	8.95	7.30	80
P2177MP03-09E280MR	9	2.8	8.00	8.00	6.80	115
P2236MB01-09E250HR	9	2.5	8.00	8.00	6.90	80
P1179AA09-12C165HR	12	1.65	7.55	7.55	6.40	65
P1179AA11-12C165HR	12	1.65	7.55	7.55	6.40	120
P1179AA13-12C165HR	12	1.65	7.70	7.70	6.60	140
P2018AA07-12E250MR	12	2.5	5.85	4.50	3.50	80
P2166MP01-12D330HT	12	3.3	10.50	10.50	7.80	90
P2001AA01-13D200LT	13	2	3.30	3.30	2.70	80
P879AA01-14140HT	14	1.4	8.55	5.45	4.35	80
P1882AA01-26B300HT	26	3	11.20	11.20	9.70	100
P939AA02-30400HT	30	4	13.93	8.63	7.63	120
P939AA03-30400HT	30	4	15.42	11.74	10.74	120

R

側放式 Right-Angle Type



NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4

Barrel:Brass 3604/BeCu/PHBZ

Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current&Voltage:DC 12V;1~2A

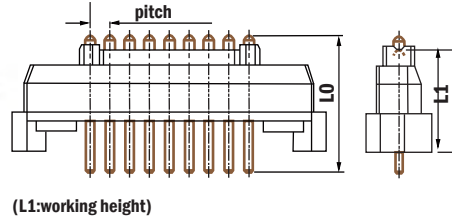
Contact Resistance:50mΩ max at Working Height

(長度單位 Unit:mm)

P/N	PIN	Pitch	L0	L1	Spring Force±20%(g)
R898AA01-01000R	1	/	5.40	4.40	120
H020M0-H02B250R	2	2.5	5.30	4.30	120
H036M0-H02C250R	2	2.5	5.30	4.30	120
R035AA00-03650R	3	6.5	5.50	4.50	120
R175AA02-03470R	3	4.7	/	/	130
R175AA06-03265RR	3	2.65	6.20	5.20	120
R175AA09-03265HR	3	2.65	6.20	5.20	120
R1332AA01-03B190RR	3	1.9	10.75	9.45	110
H003M0-H03B250R	3	2.50	4.90	3.90	120
H003M2-H03B250RR	3	2.5	4.90	3.90	120
H003M2-H03B250RR	3	2.5	4.90	3.90	120
H003M7-H03A310R	3	3.1	4.90	3.90	120
H003M1-H03B250RR	3	2.5	5.20	4.20	120
H003M3-H03B250R	3	2.50	5.30	4.30	120
R035AA05-04250RR	4	2.5	6.70	5.70	120
R035AA06-04250RR	4	2.5	6.50	5.50	120
R175AA00-04250R	4	2.5	6.10	5.10	110
R175AA05-04250RR	4	2.5	6.20	5.20	120
H016M0-H04A200R	4	2	6.60	5.60	110
R175AA05-05250RR	5	2.5	6.20	5.20	120
R035AA05-06250RR	6	2.5	6.70	5.70	120
R035AA06-06250RR	6	2.5	6.50	5.50	120
R175AA05-06B200RR	6	2	6.20	5.20	120
R175AA08-06B200RR	6	2	6.20	5.20	120
R217AA01-07254R	7	2.54	4.00	3.40	100
R217AA02-07254RR	7	2.54	4.80	3.40	100



特殊規格 Special Spec



(L1:working height)

NOTE: 1.Materials

Plunger:Brass 3604/BeCu/SK4

Barrel:Brass 3604/BeCu/PHBZ

Spring:SUS 304/SWP/PHBZ

2.Plating

Contact Surface:10μmin Au over 50~100μNi

3.Electrical

Rated Current& Voltage:DC 12V;1~2A

Contact Resistance:50mΩ max at Working Height

(長度單位 Unit:mm)

P/N	PIN	Pitch	L0	L1	Spring Force±20%(g)
S161AA03	1	/	2.15	1.95	80
H160M2	1	/	4.15	3.35	130
H019M0	1	/	4.25	3.65	100
H311M0	1	/	4.30	3.75	70
S161AA06	1	/	4.35	4.05	30
H160M1	1	/	4.60	3.75	130
S161AA04	1	/	4.60	3.85	100
HCS176M0	1	/	5.50	4.20	35
S161AA07	1	/	5.65	5.15	30
H074M0	1	/	6.50	5.50	90
H026M0	1	/	7.70	6.70	120
S163AA02	1	/	10.40	9.40	800
HCS130M7	1	/	11.95	9.10	120
S217AA01	1	/	12.90	11.70	100
HCS196M0	1	/	14.20	12.90	60
HCS130M3	1	/	17.50	11.30	100
HCS203M0	1	/	18.35	16.95	68
S136M0	1	/	22.00	19.00	110
S539AA03-03300H	3	3	6.75/6.55	5.85	80
S539AA09-03300L	3	3	6.75/6.55	5.85	80
S134AA01-05160H	5	1.6	8.00	6.90	40
N005M6-05B250HR	5	5	4.90	3.90	110
N005M7-05B250HR	5	2.5	5.10	4.10	110
N005M0-05B250HR	5	2.5	5.50	4.50	110
N042M3-05B250MR	5	2.5	6.50	5.50	110
N183M0-H05A295RR	5	2.95	7.00	5.70	150-200
H199M0-H05B200MR	5	2	2.10	1.50	110
S134AA01-09160H	9	1.6	8.00	6.90	40
S213AA01-09160H	9	1.6	6.40	5.30	40
S497AA02-0916H	9	1.6	/	8.10	40
S497AA03-09160H	9	1.6	/	/	40
S497AA04-09160HH	9	1.6	6.85	5.75	40
S1068AA01-12B200HT	12	2	10.10	8.10	85
HCS222P0-H26AT	26	2.54	6.30	/	/

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