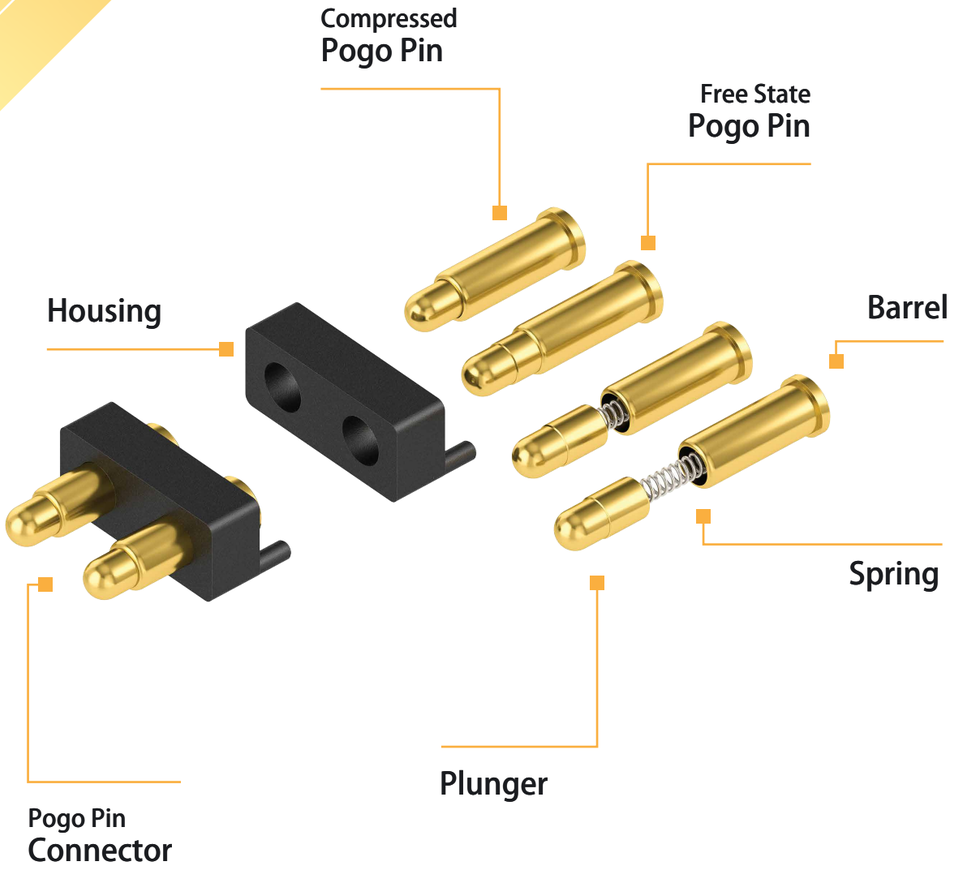
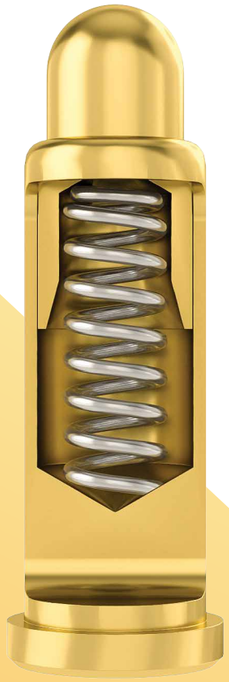
POGO PIN INTRODUCTION





WHEN TO USE POGO PINS

Advantages

IMPROVED USER EXPERIENCE

Easy to plug-in, no accidental rip off of the cable.

STABLE CURRENT FLOW

Different pogo designs maximize the stability of the current flow, by increasing the number of contact points inside the pin.

SMALL VOLUMES POSSIBLE

Pogo pins are produced with high precision turning machines and don`t require a mold as it is the case for other connectors that are using a stamping process.

LIMITED SPACE & HIGH CURRENT

The trend towards miniaturization in the electronics industry is continuing. No other connector has a better space to current ratio as a pogo pin.

SIMPLIFY ASSEMBLY AND SAVE COST

The complexity of today`s electronics increases the assembly costs and difficulty significantly. Pogo pins not just reduce the manual labor time for inserting cables or pins, they also open up new design and arrangement options for industrial designers and engineers.

HIGH TOLERANCE

Small errors in the production often lead to unstable connectors as they are not properly touching the surface of their counterpart. Pogo pins allow extremely high tolerances in the production and thereby decreasing the likelyhood for errors.

LONG LIFE-TIME

Pogo pins have a far superior life-time as compared to other connector types as they minimize the mechanical strain on the parts.

POGO PIN DESIGNS

The current a pogo pin can carry depends largely on 3 factors:

Number of Contact Points

The ball design maximizes the number of contact points, thereby allowing a higher and more stable flow of current.

Spring Force

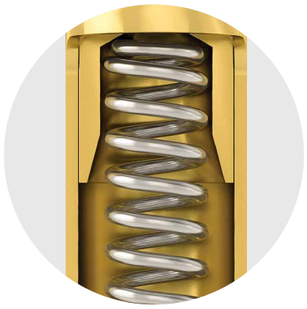
The higher the spring force, the better the plunger is pressed against the wall of the barrel, allowing a stable current flow.

Material

Different material types can heavily influence the conductivity of the pin, but also the roughness is imporant to increase the current flow.

BACK DRILL

The drilled plunger creates extra space for the spring and allowing shorter pogo pin designs.



Pin Length: ≈2.5 mm
Current: 1 A

BIAS TAIL

The biased tail of the plunger creates a lateral force and better contact.

Pin Length: ≈3.5 mm
Current: 2 A

BALL

The ball inside stabilizes the contacting areas for a better performance.

Pin Length: ≈4.5 mm
Current: 3~5 A

MATERIALS

Housing

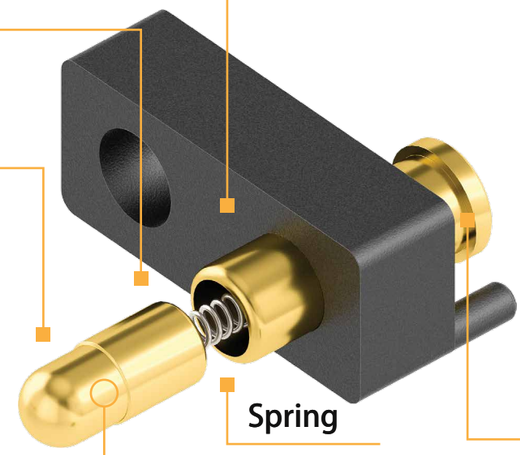
Polyoxyethylen (Standard)
PBT Polybutylene terephthalate
LCP Liquid-crystal polymers
HTN Polyphthalamide
PA10T

Ball

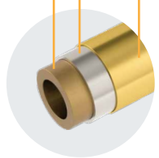
Stainless Steel

Plunger

Brass (Standard)
Beryllium Copper
Phosphor Bronze
SK4



Surface Plating
Base Plating
Base



Spring

Stainless Steel

Barrel

Brass (Standard)
Beryllium Copper
Phosphor Bronze

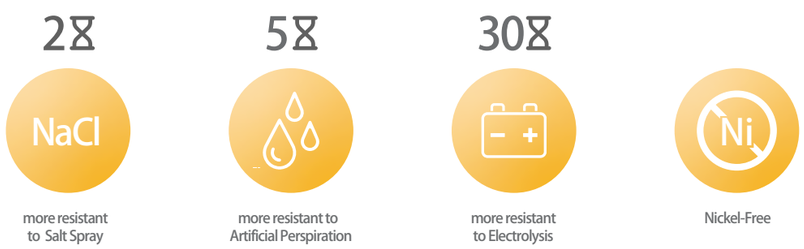
When should you use which surface plating?

Plating	Hardness (HV)	Function	Color
Gold	200	Low resistance	Gold
Super AP	400	Superior corrosion resistance, low electrical resistance	Silver
Nickel	150-200	Low cost, corrosion resistant	Silver
Palladium-Nickel	330-380	Improved signal transmission	Silver
Red Brass (CuSnZn)	600	Replace Nickel	Silver
Palladium Cobalt	450-600	Replace Pd-Ni	Silver
Palladium Cobalt	600-800	Black color requirement	Black

CCP PLATING TECHNOLOGY

Industry-Leading Anti-Corrosion

CCP's Super AP plating is the gold-standard of the industry. Its superior composition makes it extremly resistant to electrolytic corrosion while maintaining a very low resistance. The perfect solution for any kind electrical application.



Comparison of Gold and Super AP Plating:

CCP PLATING TECHNOLOGY

Industry-Leading Anti-Corrosion

Understanding Galvanic Corrosion:

Galvanic corrosion occurs, when two different metals of different nobility get into close contact in the presence of an electrolyte such as water. Dissimilar metals have different electrode potentials which cause one of the metals to act as a cathode and the other as an anode. The resulting current flow is the main cause for the corrosion of the lesser noble (anode) metal. Acid or alkali environments, for example on human skin, can accelerate galvanic corrosion significantly and attack even metals such as gold and plating.

Plating	Testing standard	Au(50u") Layer	APII Layer	Super AP Layer
Nickel Release	EN 12472:2005+A1:2009	Nickel-containing process	Nickel-free process	Nickel-free process
Contact Resistance (mΩ)	EIA-364-23	< 50	< 50	< 50
Salt Spray Resistance (HR)	EIA-362-26	96	96	168
Artificial Sweat Resistance (HR)	ISO-3160	96	96	168
Surface Hardness (HV)	ISO 6507-1:2005	200	400	400
Electrolysis Resistance Time	1mA, 5V, Pitch=0.60mm	<1 Min	15 Min	60 Min

POGO PIN APPLICATIONS

Spring loaded connectors can be used for a wide variety of applications. Their versatility make them true allrounders, from charging applications to high frequency signal transmission.

POGO PIN INDUSTRIES

MEDICAL

- CPI Dockings
- Skin Lasers
- Inhalation Machines
- Pregnancy Monitors

INDUSTRIAL

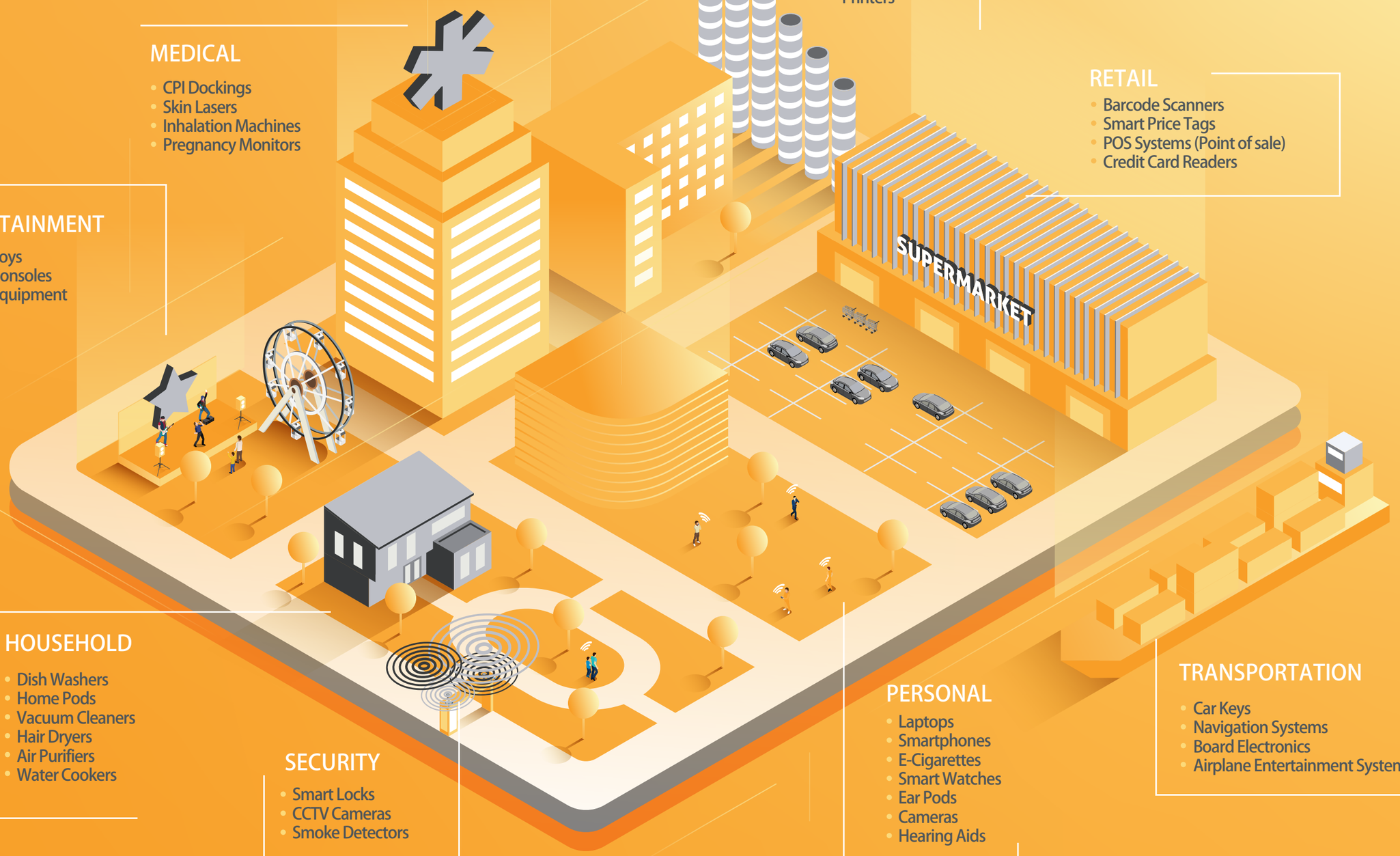
- Robotic Arms
- Docking Stations
- Rugged Devices
- Printers

RETAIL

- Barcode Scanners
- Smart Price Tags
- POS Systems (Point of sale)
- Credit Card Readers

ENTERTAINMENT

- Smart Toys
- Game Consoles
- Audio Equipment



HOUSEHOLD

- Dish Washers
- Home Pods
- Vacuum Cleaners
- Hair Dryers
- Air Purifiers
- Water Cookers

SECURITY

- Smart Locks
- CCTV Cameras
- Smoke Detectors

PERSONAL

- Laptops
- Smartphones
- E-Cigarettes
- Smart Watches
- Ear Pods
- Cameras
- Hearing Aids

TRANSPORTATION

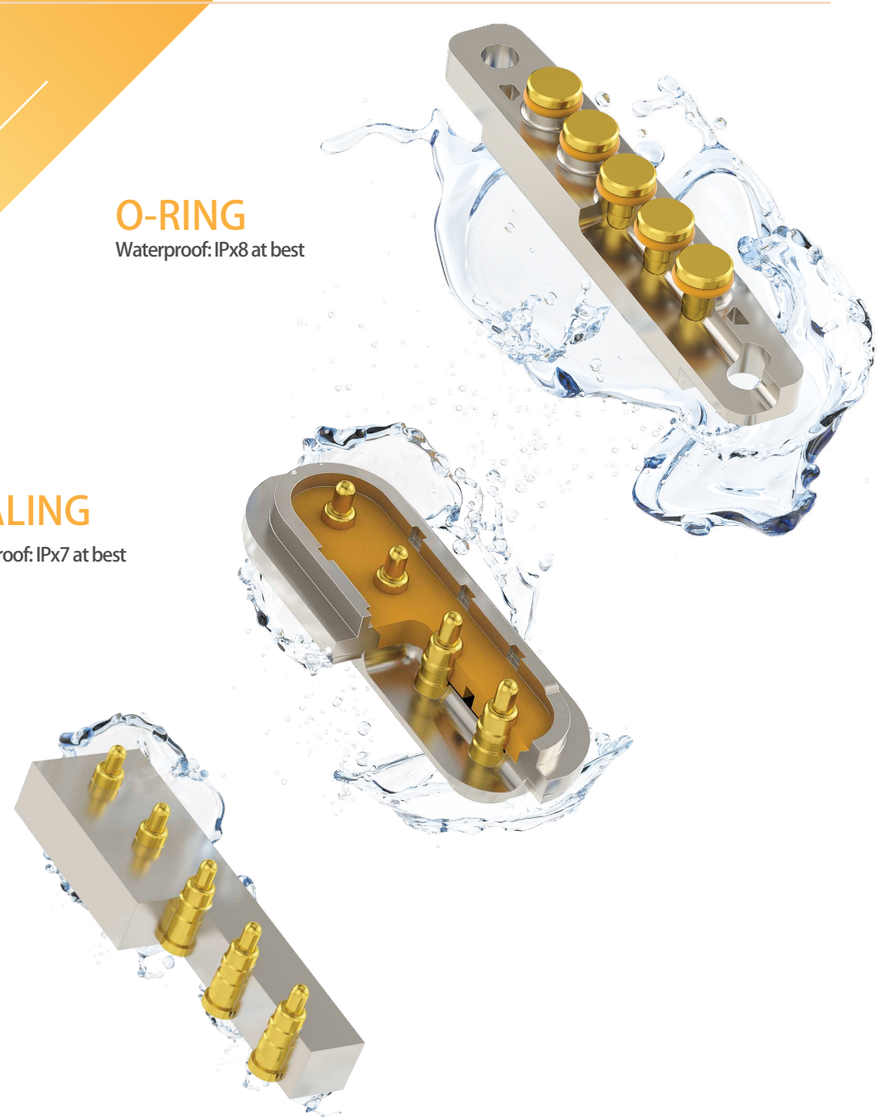
- Car Keys
- Navigation Systems
- Board Electronics
- Airplane Entertainment Systems

WATERPROOF CONNECTORS

O-RING
Waterproof: IPx8 at best

SEALING
Waterproof: IPx7 at best

INSERT MOLDING
Waterproof: IPx7 at best
No SMT Process Possible



DOES WATER HARM POGO PINS?

CCP`s waterproof pogo pin connectors are designed to withstand any long and short term submersion in water. For very challenging environments we recommend our SuperAP Plating which can withstand the effects of Galvanic Corrosion up to 60 times longer.

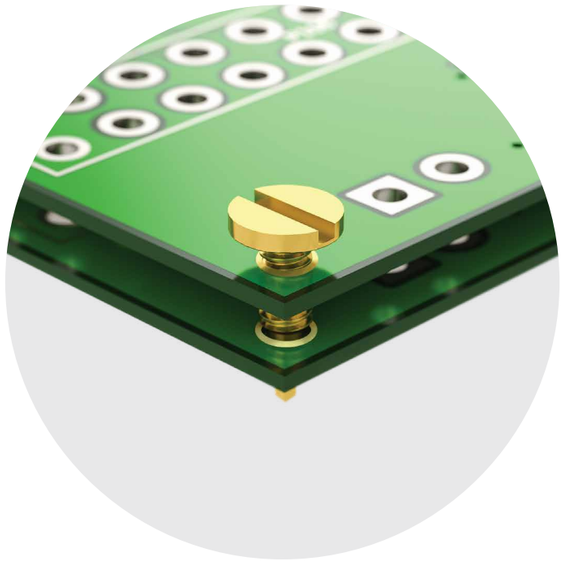
BALL POINT CONNECTOR

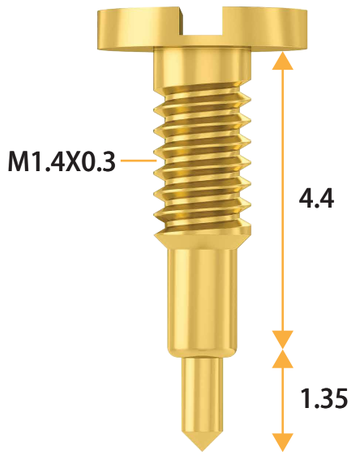
Keeping a stable connection to a moving target can be a challenge,
as constant strain on the components can result in degradation of the materials
and in worst case to a malfunction.
The Ball-Point Connector solves this problem by a radically new design that offers
totally new engineering possibilities and a simplified assembly without cables.

Diameter	Current	Durability
Min 0.6 mm	1A - 5A	Min 10´000 Compressions
Spring Force	**Contact Resistance**	**Travel Distance**
145g ± 20g	30 mΩ — 100 mΩ	Up to 25 km

SCREW PINS

CCP's Screw Pin design is a smart way to utilize a pogo pin as a connector as well as a mounting part, reducing the assembly cost significantly and opening new design possibilities for industrial engineers.

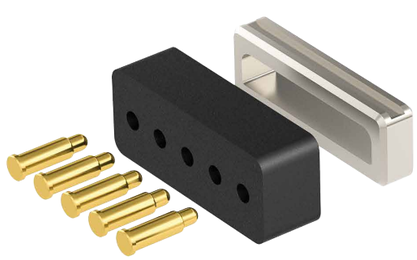




Diameter	Current	Durability
3 mm	1A	10,000 compressions
Spring Force	**Contact Resistance**	
120g ± 20g	200 mΩ	

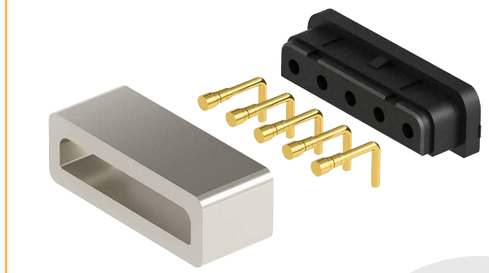
MAGNETIC CONNECTORS

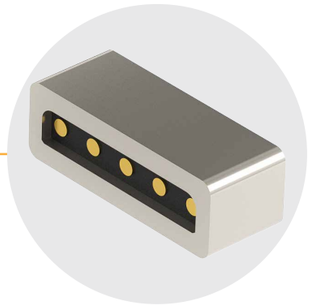
Magnet Plastic Housing Pogo Pin



Male

Female





Easy to plug

No accidental breaking

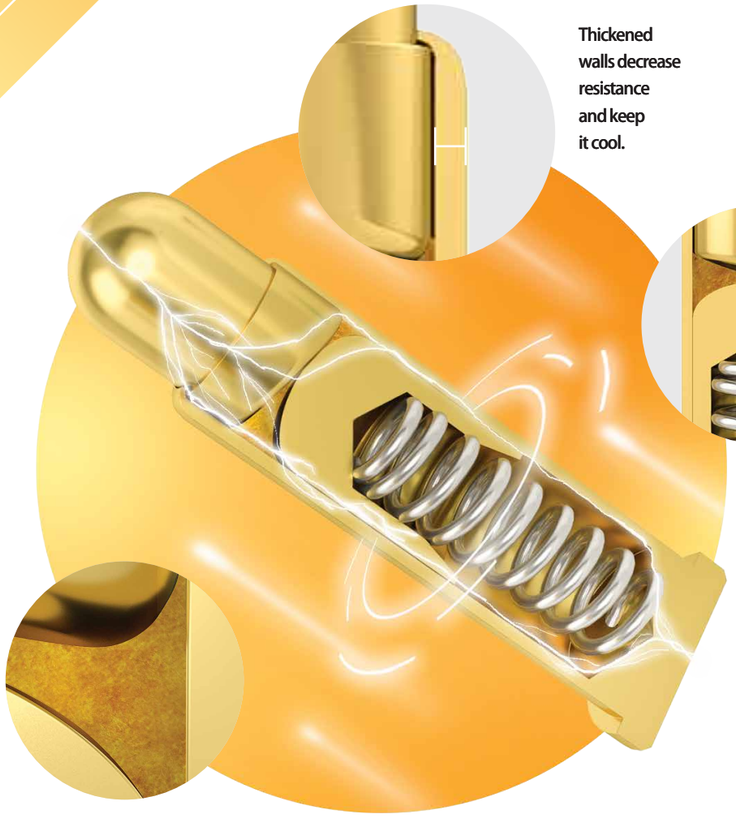
Very durable

Suitable for high frequency transmission

Assembly Options		
Metal injection molded housing	Two magnets	One magnet to metal

HIGH CURRENT PINS

CCP`s new high current designs takes Pogo Pins to a new level that is second to none in the industry.



Thickened walls decrease resistance and keep it cool.

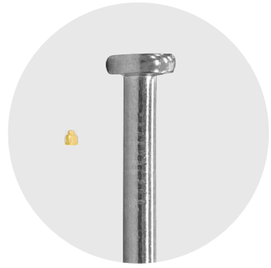
Additional cap that stabilizes the current flow.

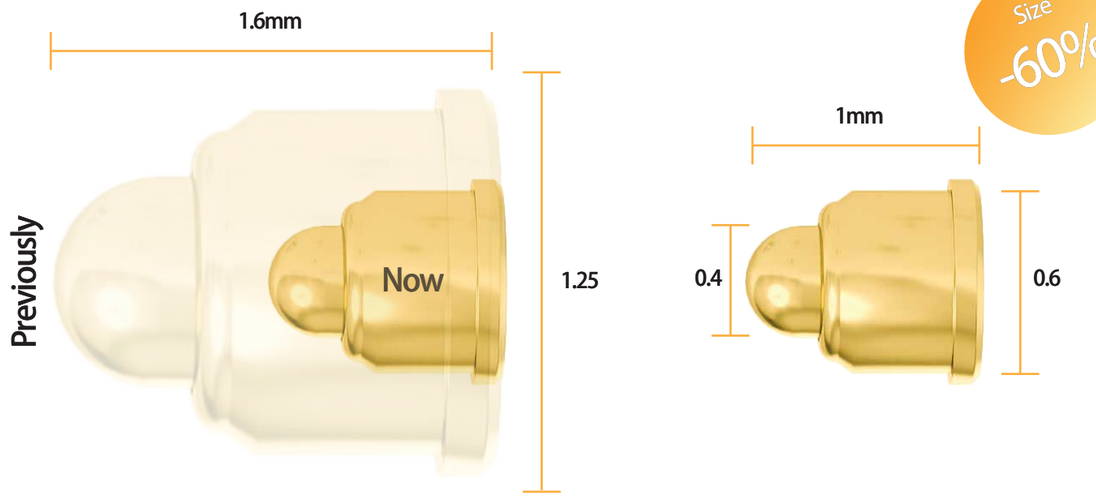
Special inner structure increases the contact area.

Diameter	Current	Durability
2.4 mm	13A	10.000 compressions
Spring Force	**Contact Resistance**	
120g ± 20g	30 mΩ	

ULTRA SMALL PINS

Meet the smallest bias-cut pogo pin on the market today making even the most compact designs possible. The pin is so small, that you could fit over 100 pins on the tip of your finger.





Diameter	Current	Durability
0.6 mm	1A	3,000 compressions
Spring Force	**Contact Resistance**	
25 g	175 mΩ	