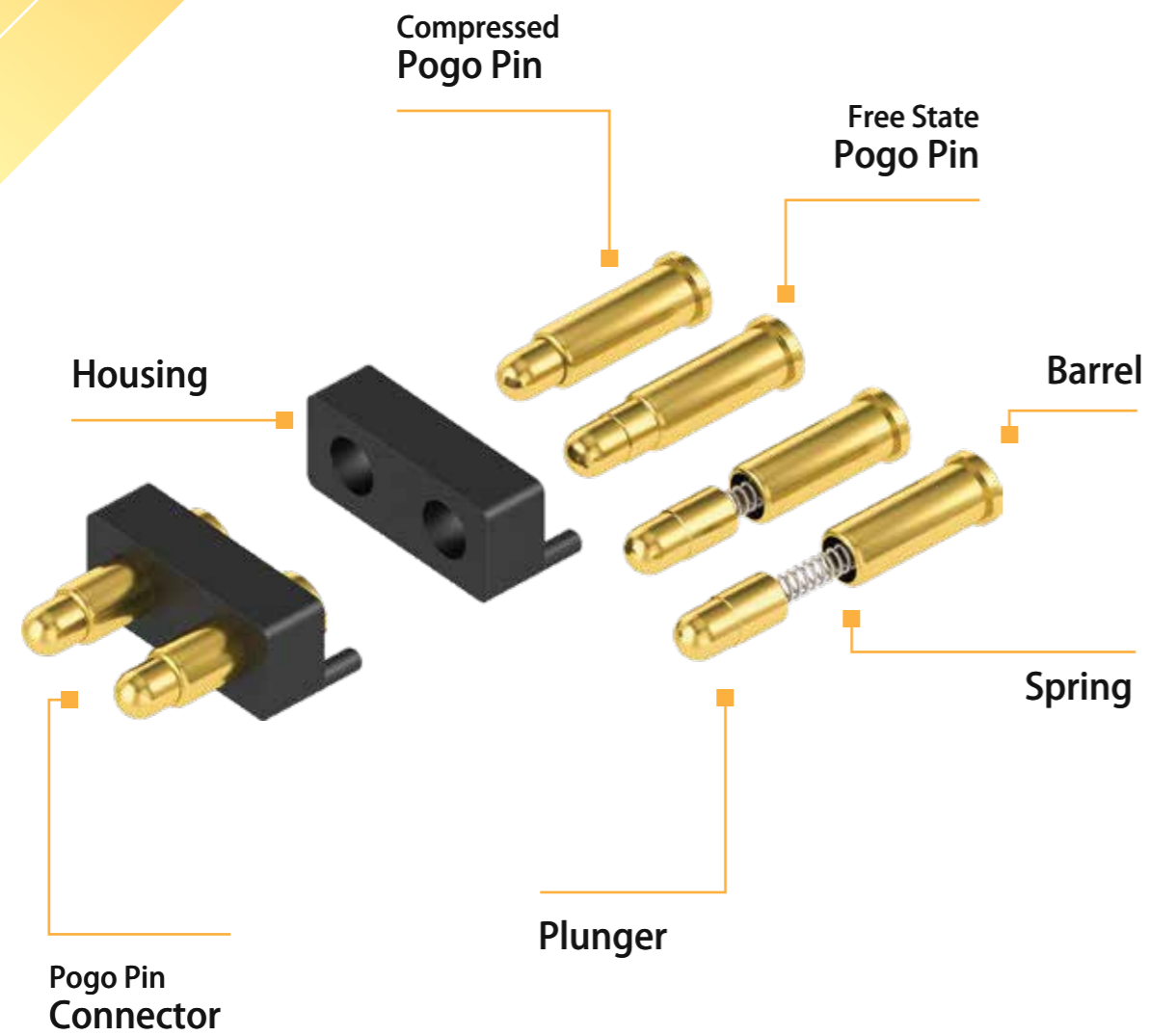


POGO PIN INTRODUCTION



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 SAFE 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 increasing the likelihood 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.



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 important to increase the current flow.

BLACK DRILL

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



Pin Length: \approx 2.5 mm
Current: 1 A

BIAS TAIL

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



Pin Length: \approx 3.5 mm
Current: 2 A

BALL

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



Pin Length: \approx 4.5 mm
Current: 3~5 A

Housing

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

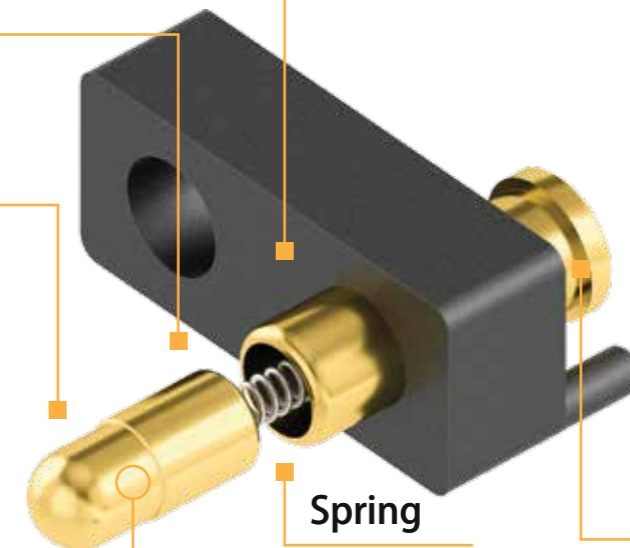
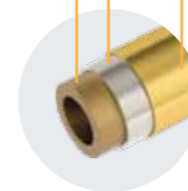
Ball

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 extremely resistant to electrolytic corrosion while maintaining a very low resistance. The perfect solution for any kind electrical application.

2X




more resistant to Salt Spray

5X




more resistant to Artificial Perspiration

30X



more resistant to Electrolysis



Nickel-Free

Comparison of Gold and Super AP Plating:



CCP PLATING TECHNOLOGY

Industry-Leading Anti-Corrosion

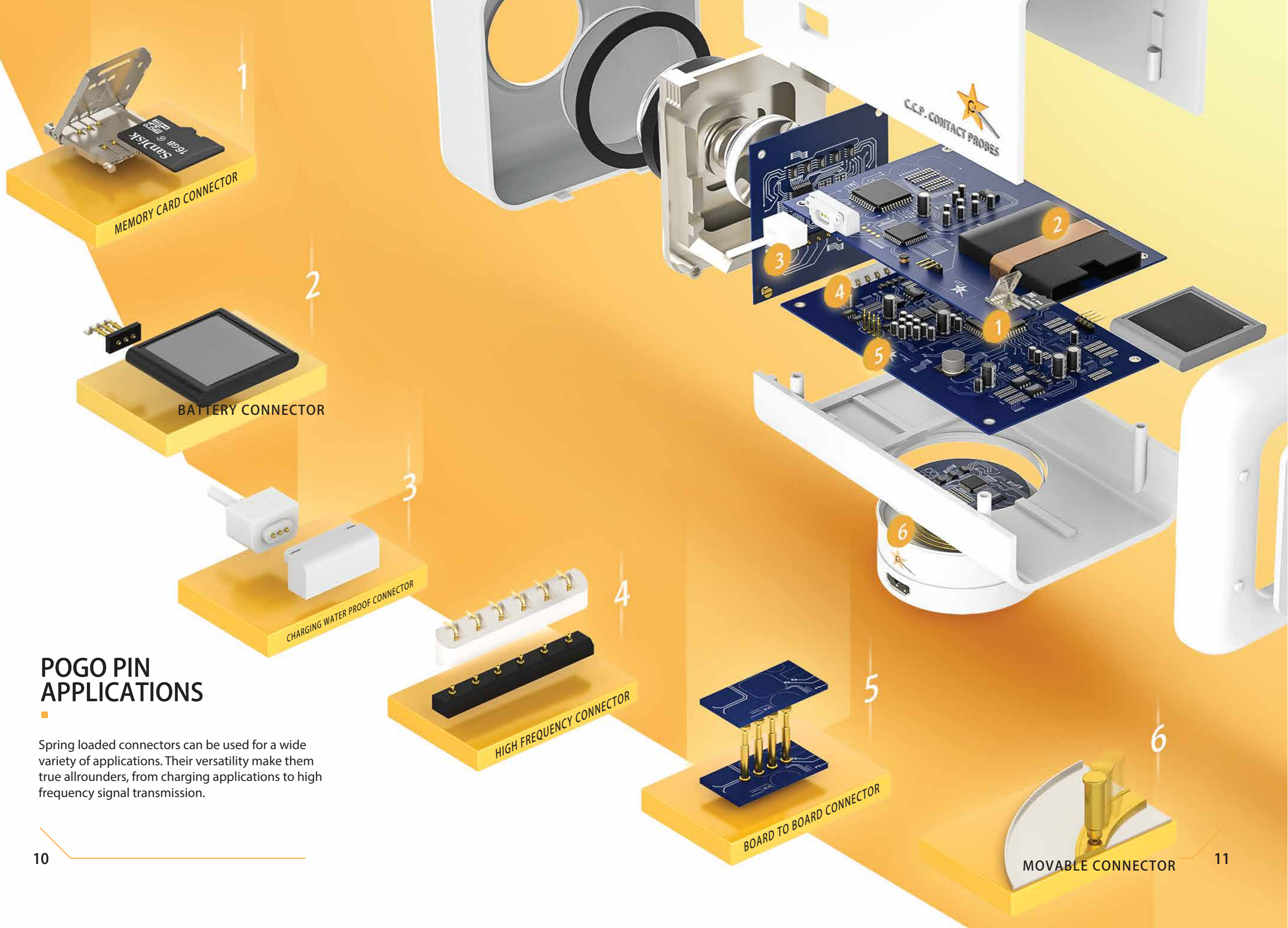
Understanding Galvanic Corrosion:

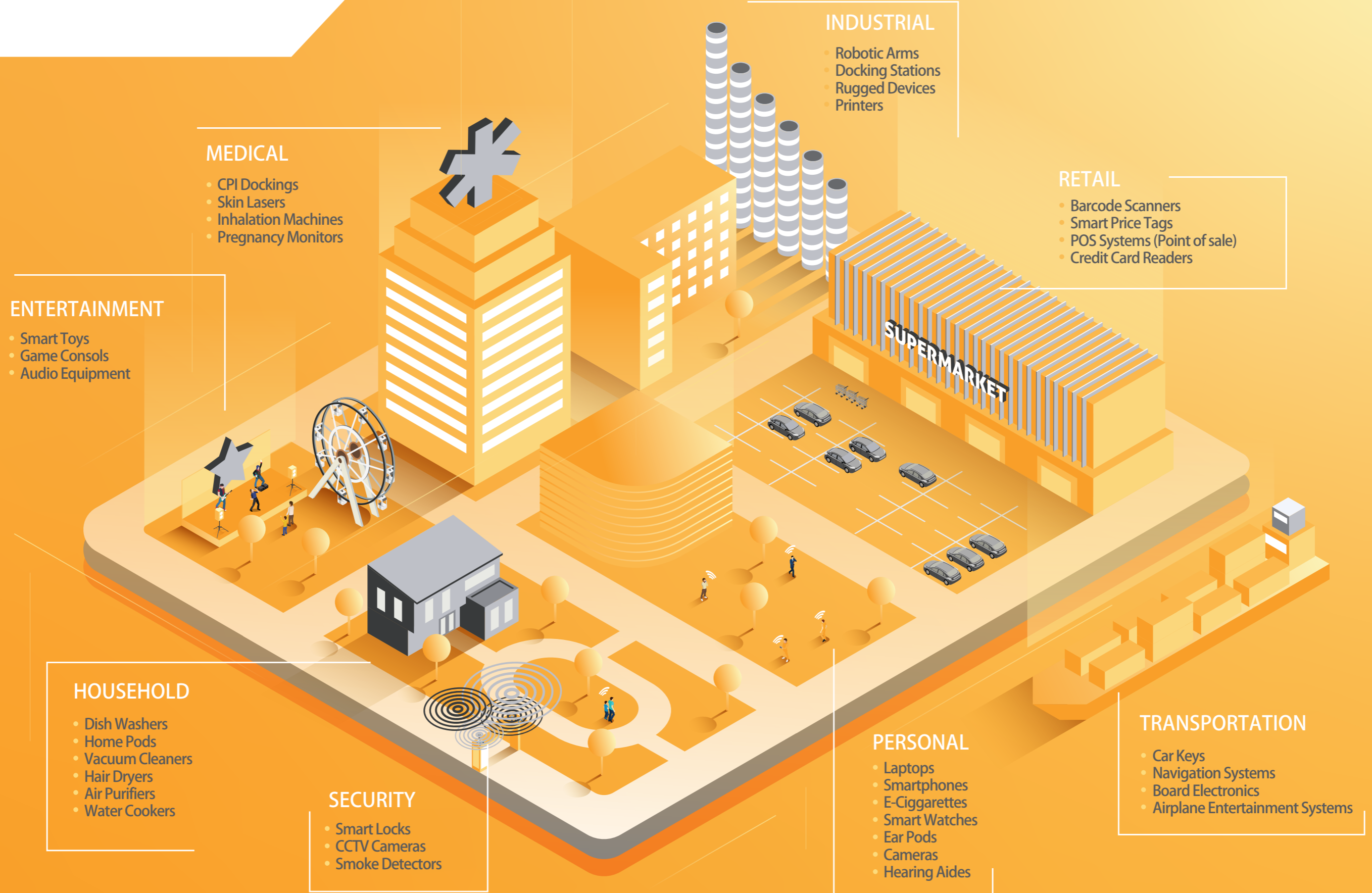
Galvanic corrosion occurs, when two different metals of different nobility get into close contact in the presence of an electrolyte such as water. Dissimilar metals have different electrode potentials which cause one of the metals to act as a cathode and the other as an anode. The resulting current flow is the main cause for the dissolve 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 platinum.

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.





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.



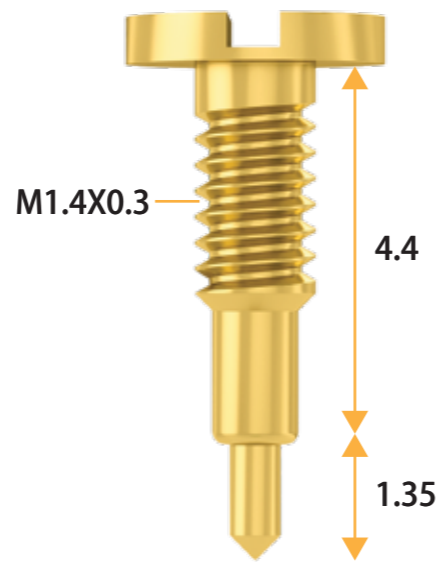
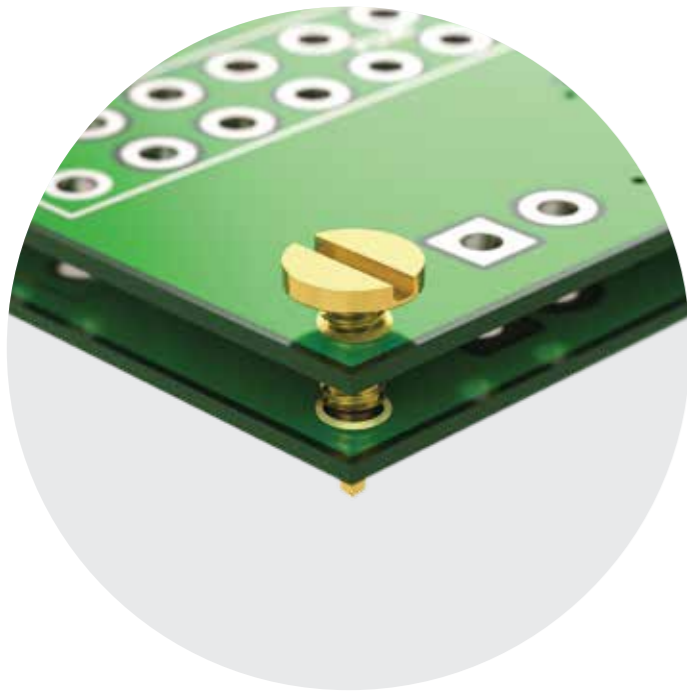
Diameter	Current	Durability
Min 0.6 mm	1A - 5A	Min 10'000 Compressions
Spring Force	Contact Resistance	Travel Distance
145g ± 20g	30 mΩ — 100 mΩ	Up to 25 km

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.



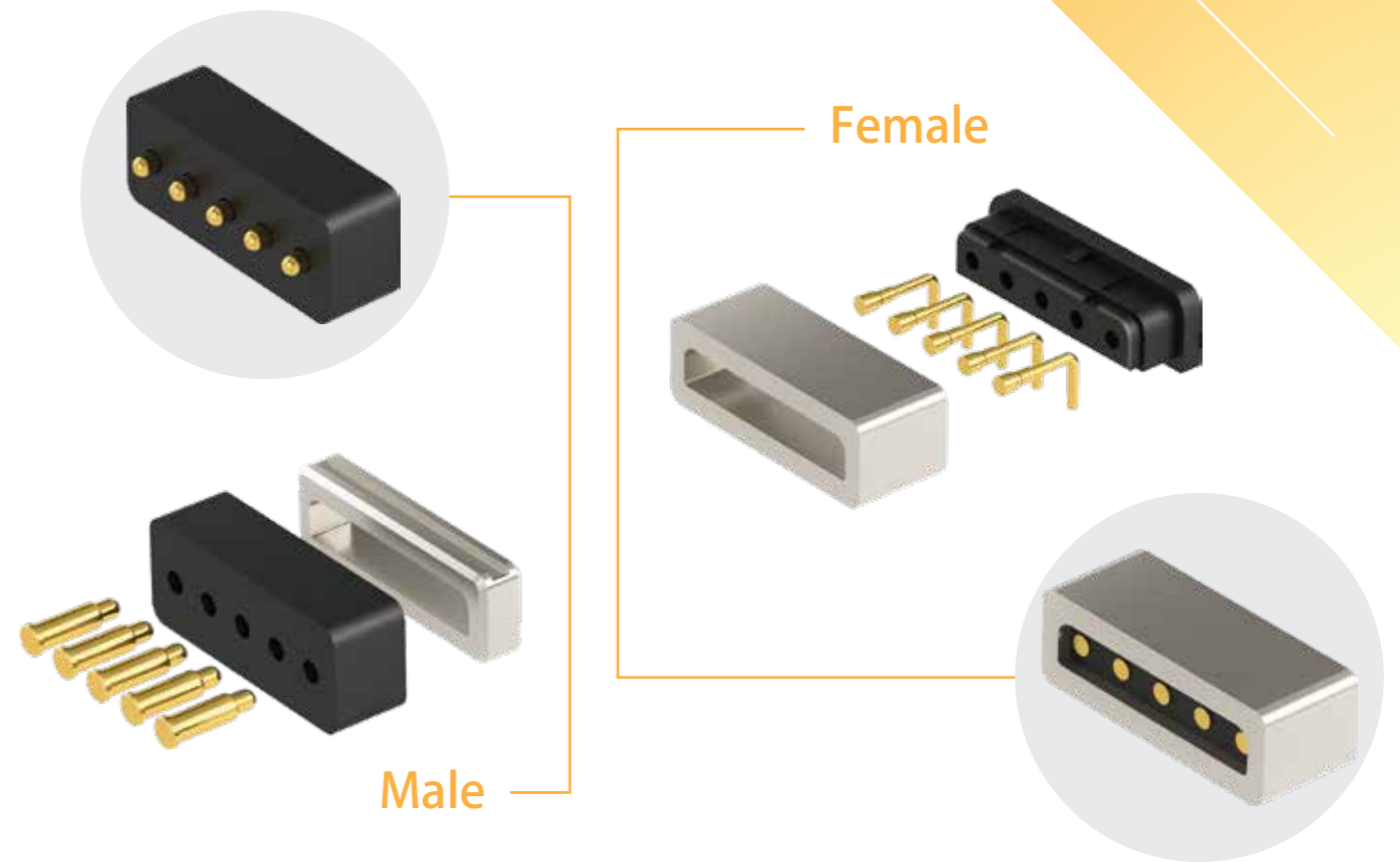
PCB
CASE



Diameter	Current	Durability
3 mm	1A	10,000 compressions
Spring Force	Contact Resistance	
120g ± 20g	200 mΩ, to customize for grounding pin purpose	

MAGNET CONNECTORS

● Magnet ● Plastic Housing ● Pogo Pin



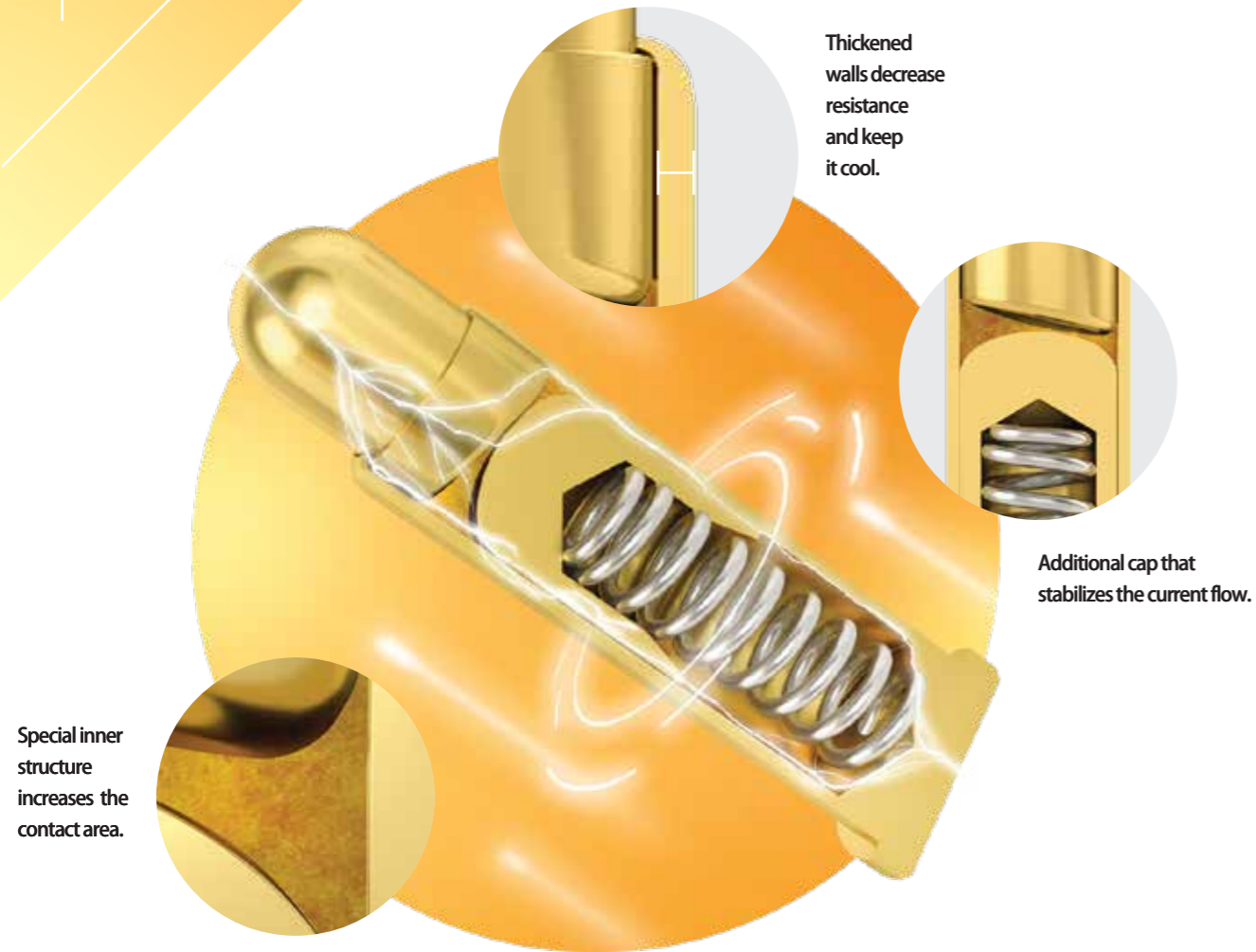
Easy to plug
Very durable

No accidental breaking
Suitable for high frequency transmission (20GHz)

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.



Special inner structure increases the contact area.

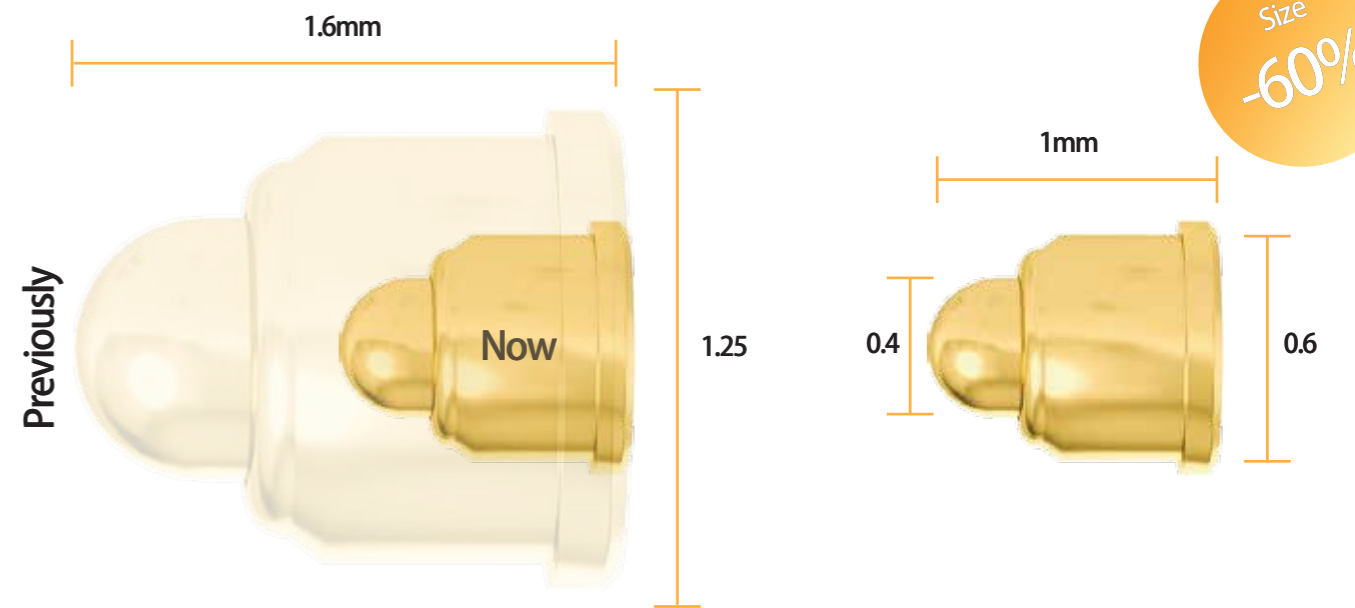
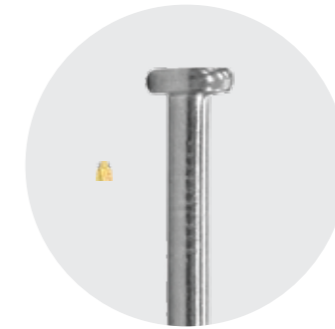
Thickened walls decrease resistance and keep it cool.

Additional cap that stabilizes the current flow.

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	600 compressions
Spring Force	Contact Resistance	
30g	100 mΩ	