



C.C.P.



**CCP Contact Probes**

**POGO PIN CONNECTOR**



# CCP Contact Probes - Product Applications



## Wearable Devices

TWS / Smart Watch /  
VR/AR Headset

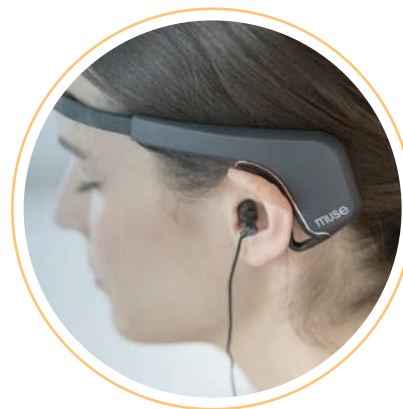
**Pogo Pin Connector**  
**Charging Cable**  
**Charging Case**  
**Housing**



## Charging Stations

Smart Home / Tablet /  
POS System

**Pogo Pin Connector**  
**Charging Dock**  
**Charging Cable**



## Healthcare Devices

Brain Wave Headset /  
Hearing Aids

**Pogo Pin Connector**  
**Charging Case**  
**Charging Cable**  
**Waterproof USB Type-C**



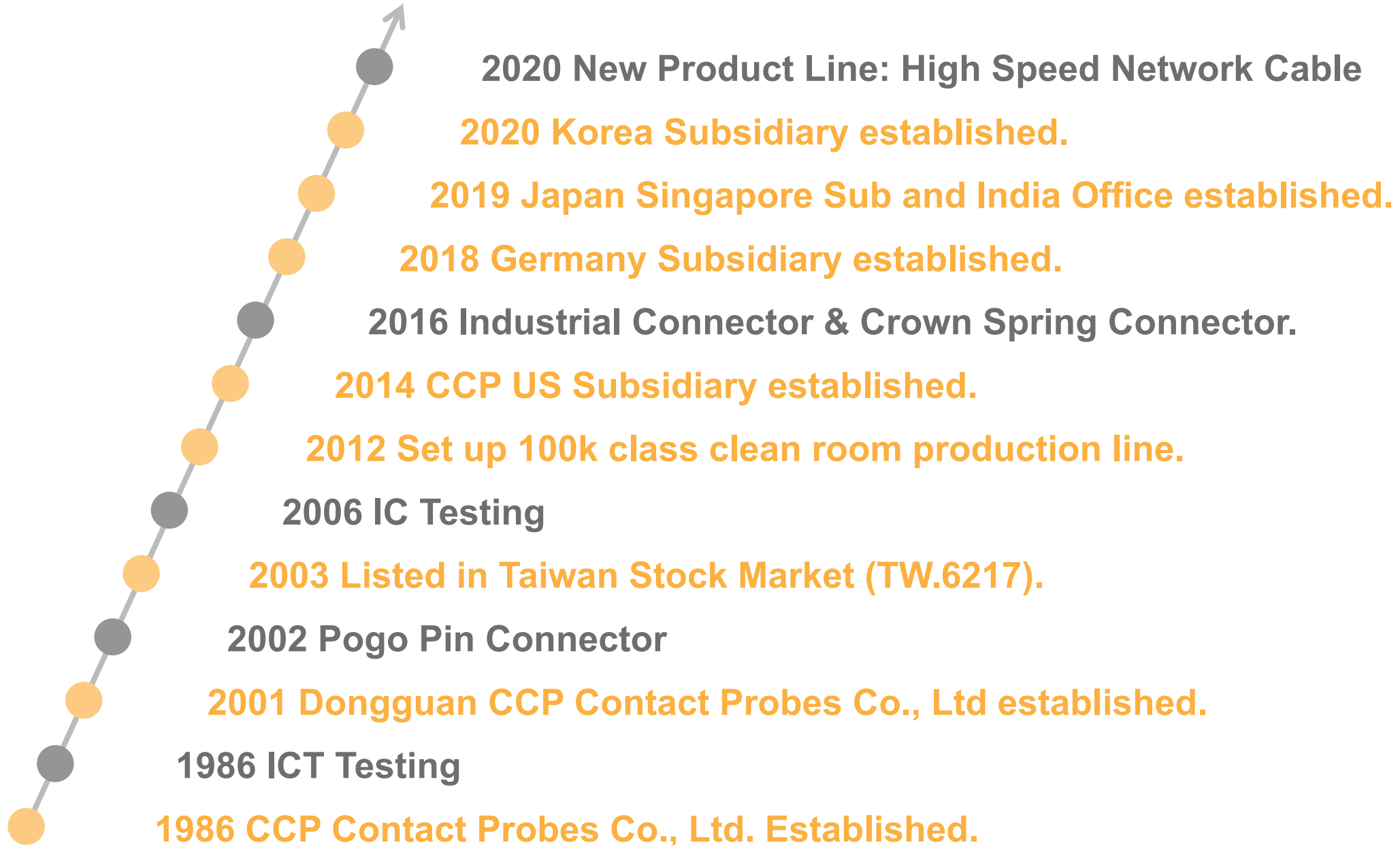
## Electric Vehicle

EV Charging Station / Battery  
System / E-Bike Connector

**Crown Spring Terminal**  
**Charging Gun**  
**Battery Connector**  
**E-Bike Connector**



# CCP Contact Probes - History





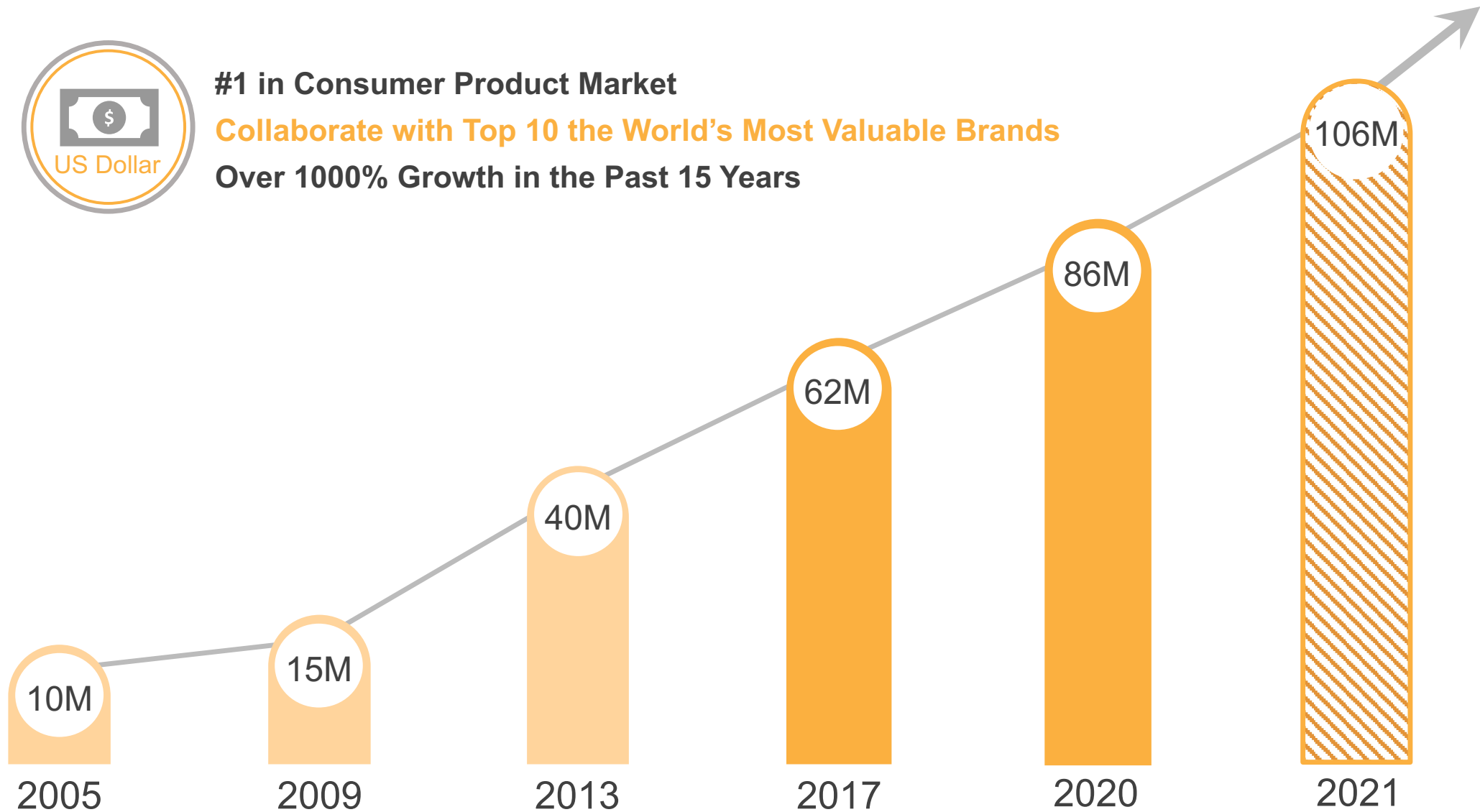
# CCP Contact Probes - Growth



**#1 in Consumer Product Market**

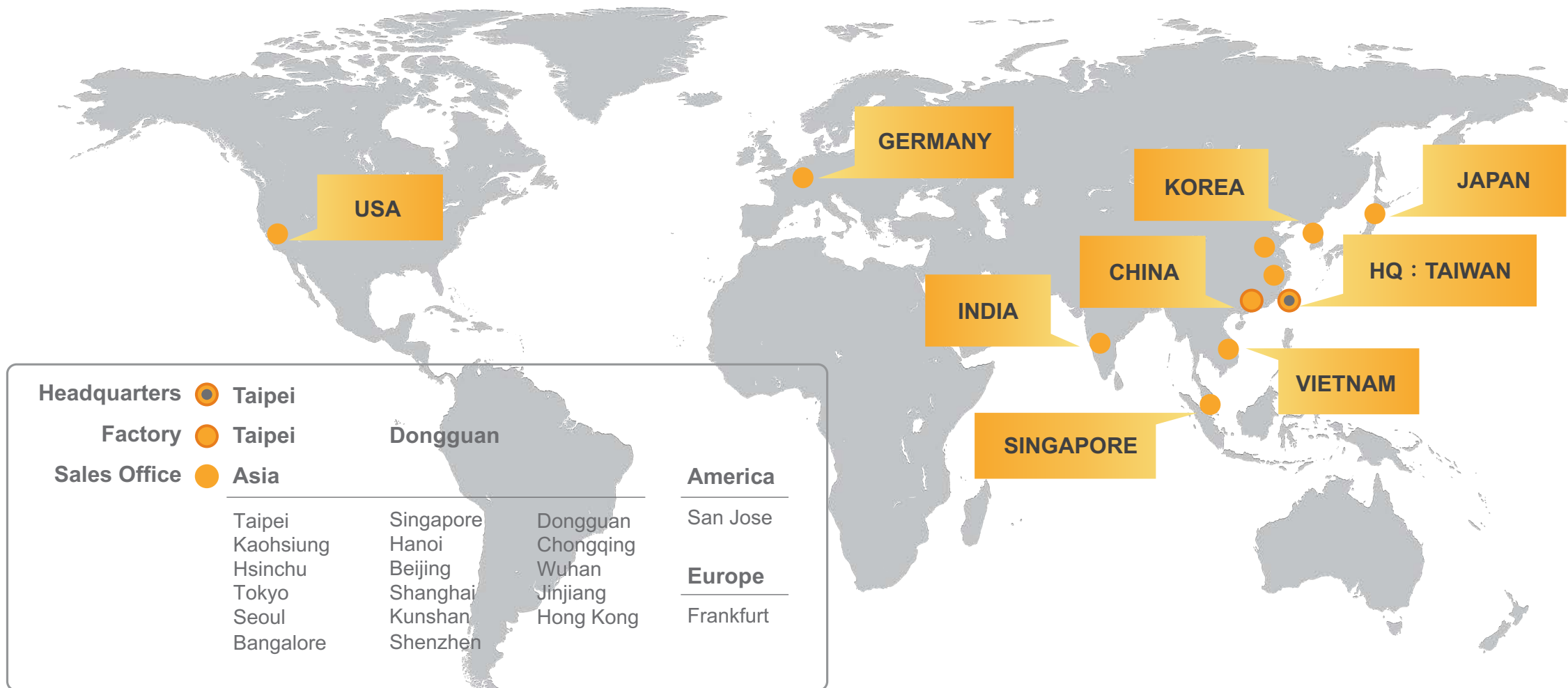
**Collaborate with Top 10 the World's Most Valuable Brands**

**Over 1000% Growth in the Past 15 Years**





# CCP Contact Probes - Worldwide



Western  
Digita



Google



ADVANTEST

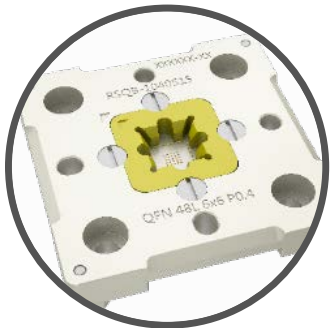
flex



FOXCONN



# CCP Contact Probes - Product Portfolio



## Testing Solution

**Fine Pitch**

IC Testing Probe  
PCB Testing Probe  
Testing Socket



## Pogo Pin Connector

**1A~13A**

Pogo Pin Conn.  
Waterproof Conn.  
Magnetic Conn.



## High Current Connector

**13A~250A**

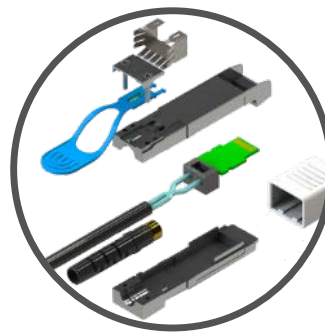
Electronic Vehicle  
High Current Conn.



## Medical Connector

**Environmental Sensitivity**

Circular Conn.  
Endoscope Conn.



## High Speed Cable

**25Gbps~100Gbps**

Server  
Switch  
Telecom



## Industrial Solution

**Extreme Environment**

Aerospace  
Military  
Transportation



# CCP Contact Probes – Pogo Pin Advantages



## #1 in Consumer Product Market

Collaborate with Top 10 the World's Most Valuable Brands



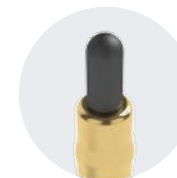
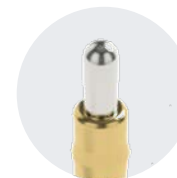
## Innovate to Market Leadership

R&D Team with 30+ Years of Experience  
Vertically Integrated Production



## Industry Leading Electroplating Technology

Self-Owned Electroplating Plant  
Anti-Corrosion Solution For All Kinds Wearable Device  
Customized Colors For Customers' Products Design







# Pogo Pin Connector Product Line



**TWS Earbuds**



**AR/VR Headset**



**Smart Doorbell**



**Smart Watch**



**2 in 1 Tablet & Stylus**

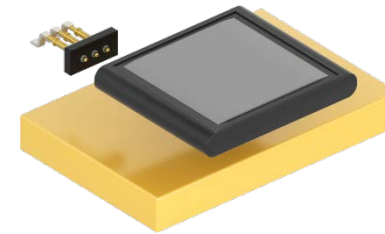
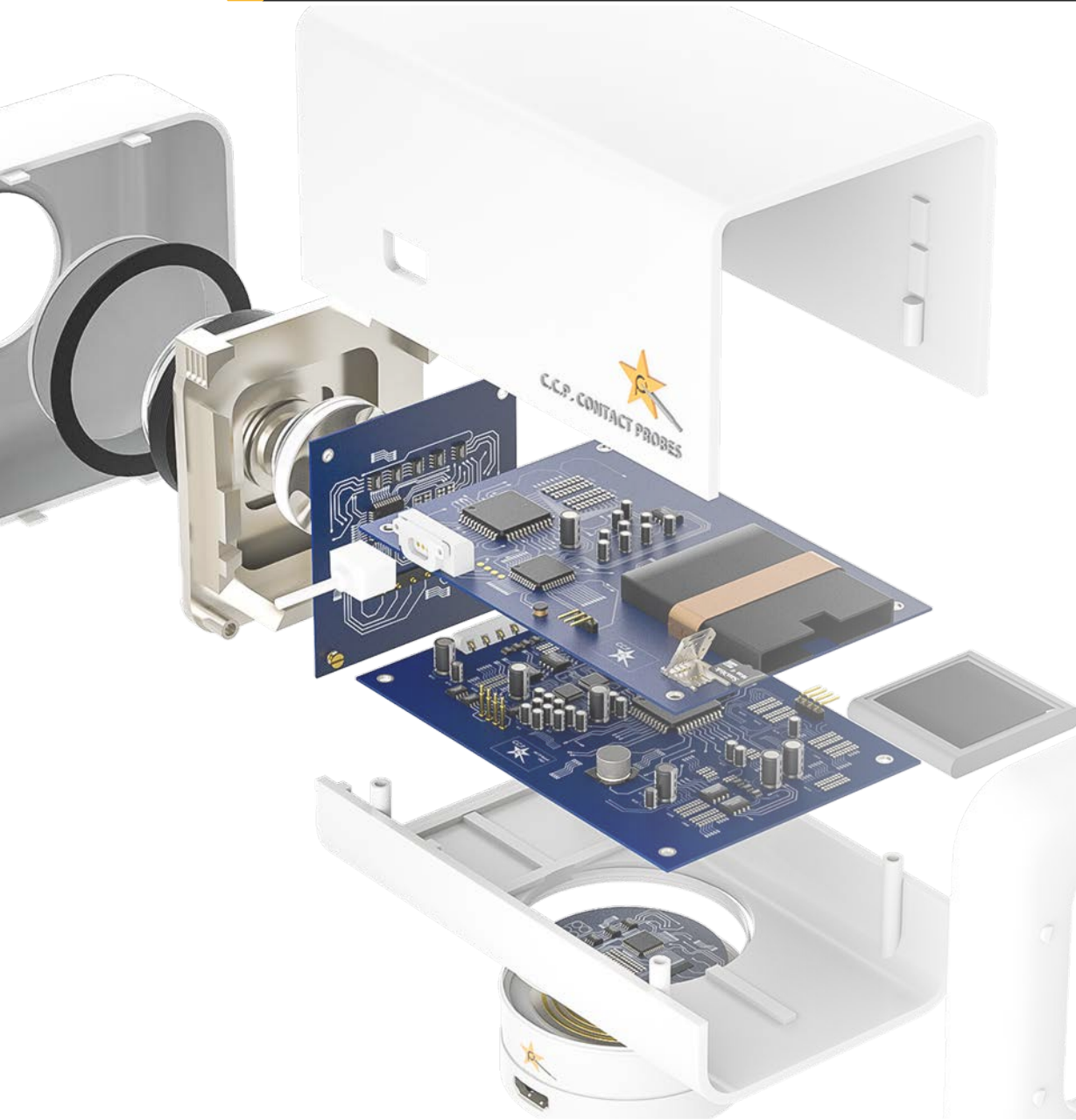


**E-Cigarette**





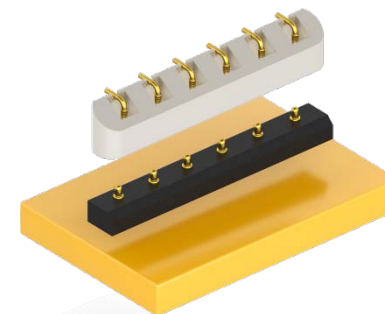
# Pogo Pin Connector Product Line



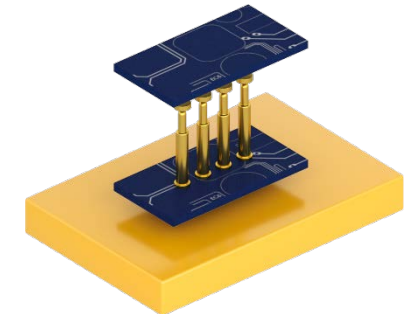
**Battery Connector**



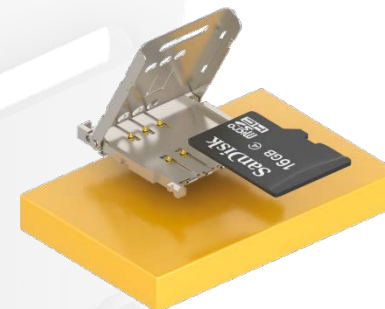
**Waterproof / Magnetic Charging Module**



**High Frequency Connector**



**Board to Board Connector**



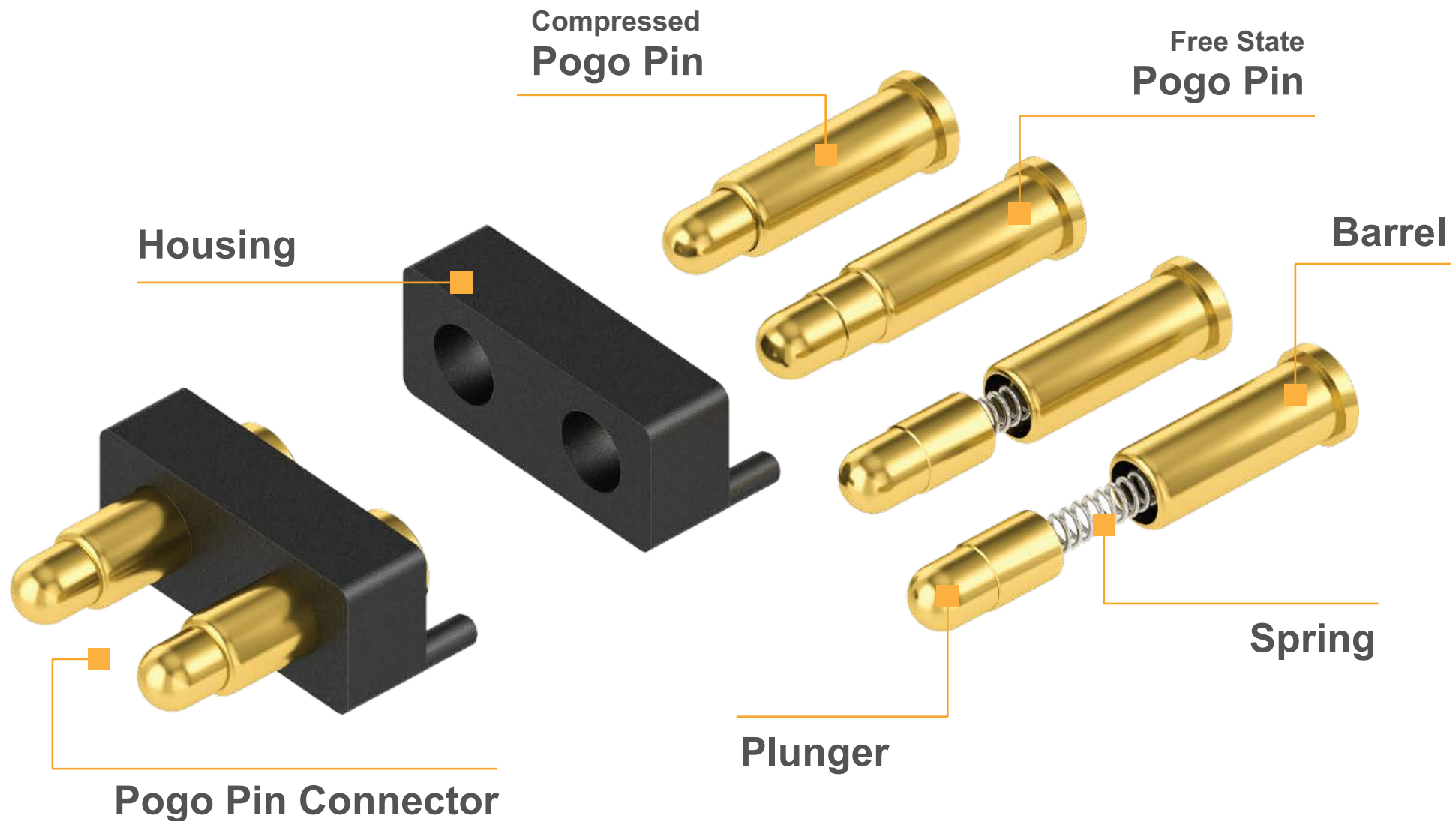
**Ultra Small Pogo Pin**



**Sliding Connector**



# Pogo Pin Connector - Basic Structure





# Pogo Pin Connector - Material & Plating Options

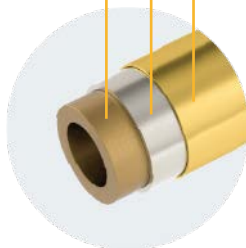
## Ball

Stainless Steel

## Plunger

**Brass (Standard)**  
Beryllium Copper  
Phosphor Bronze  
SK4

Surface Plating  
Base Plating  
Base



## Color Options

PdNi 10u" over Ni 100u" (Silver)  
Ru 10u" over Ni 100u" (Black)



## Housing

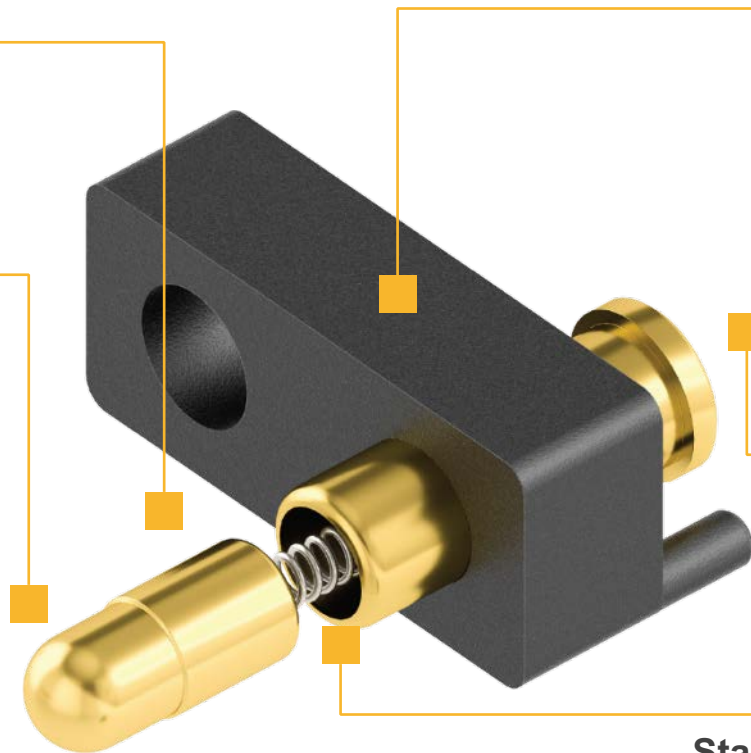
**Polyoxyethylen (Standard)**  
PBT Polybutylene Terephthalate  
LCP Liquid-Crystal Polymers  
HTN Polyphthalamide  
PA10T

## Barrel

**Brass (Standard)**  
Beryllium Copper  
Phosphor Bronze

## Spring

Stainless Steel

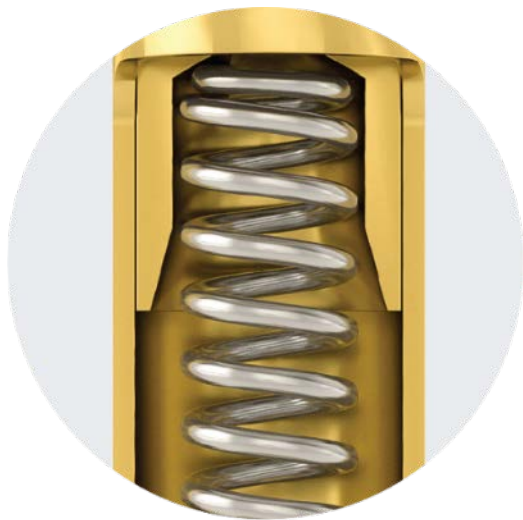




# Pogo Pin Connector - Basic Inner Structures

## Back Drill

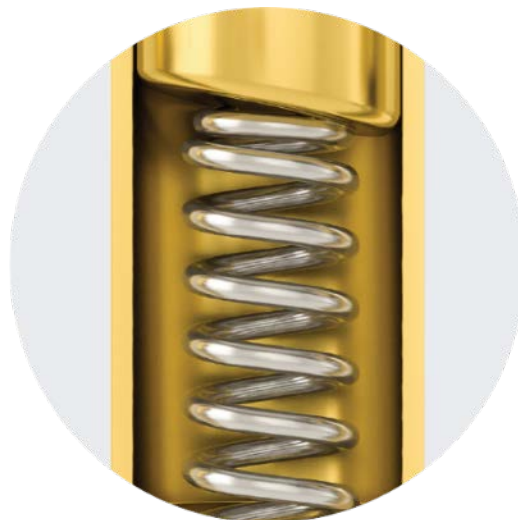
The drilled tail makes extra space for spring and creates a shorter pogo pin.



Pin Length:  $\approx 2.5$  mm  
Current: **1 A**

## Bias Tail

The bias tail of plunger creates 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**





# Pogo Pin Connector - Waterproof Pogo Pin Connector

## Sealing



Pitch: **Small**  
Waterproof: **IPx7 at best**  
Production Complexity: **Low**

## Insert-Molding



Pitch: **Small**  
Waterproof: **IPx7 at best**  
Production Complexity: **Low**

## O-Ring



Pitch: **Large**  
Waterproof: **IPx8 at best**  
Production Complexity: **High**



# Pogo Pin Connector - Waterproof Application



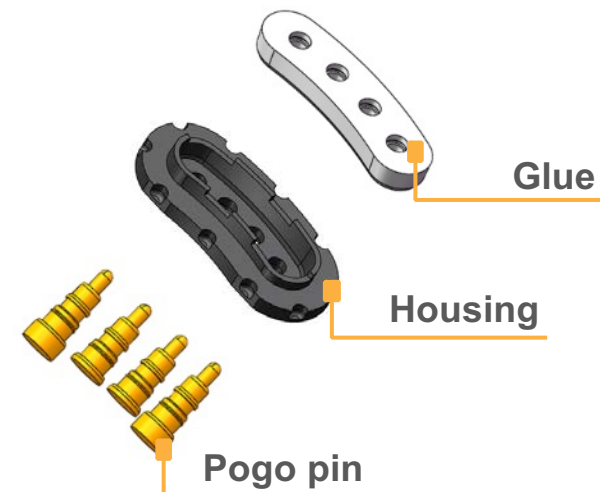
## Assembly & glue module

- IPX7
- Electrolytic resistant design



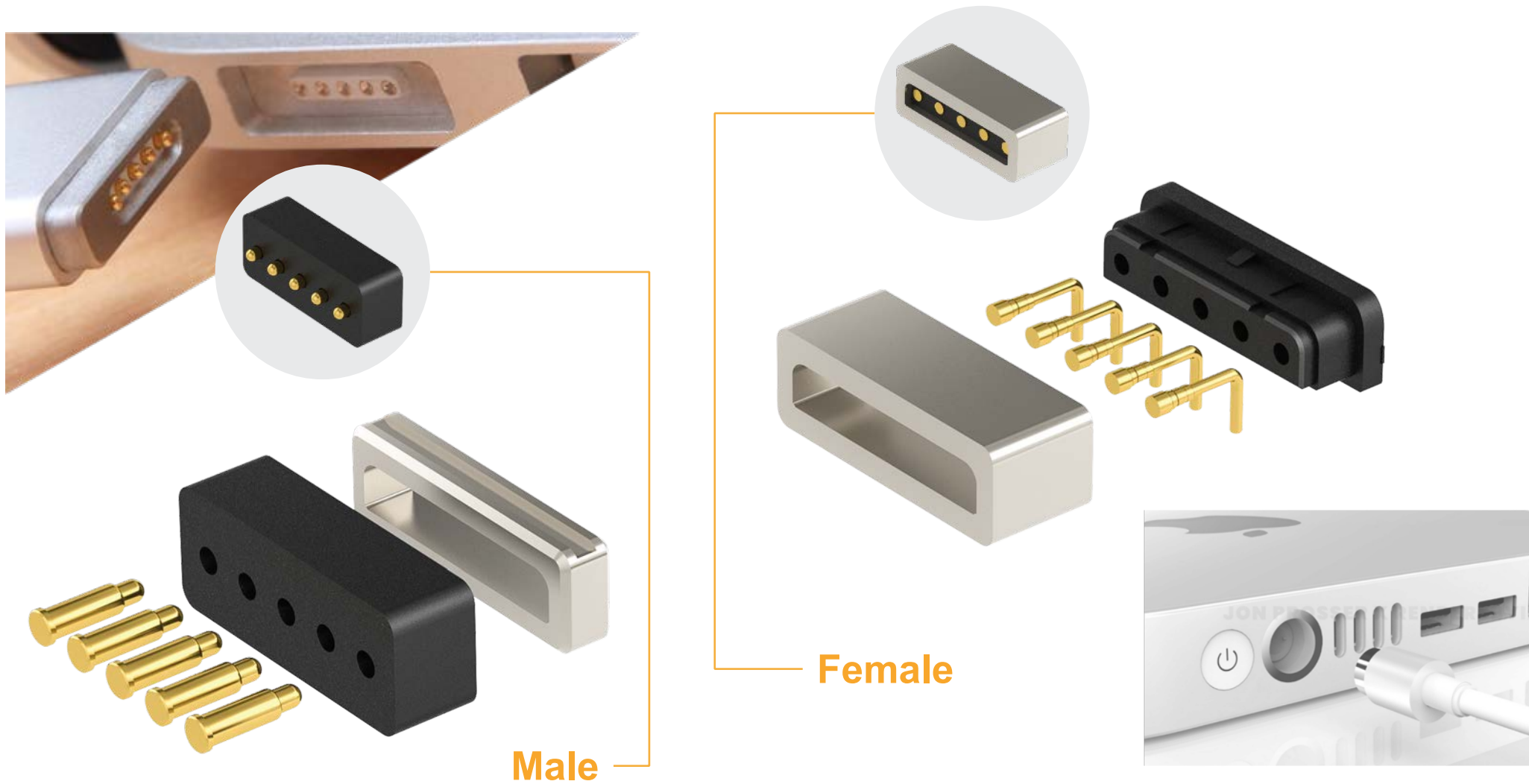
## Electrolytic resistant design

- Steps feature on housing





# Pogo Pin Connector - Magnetic Connector



Magnet



Plastic Housing

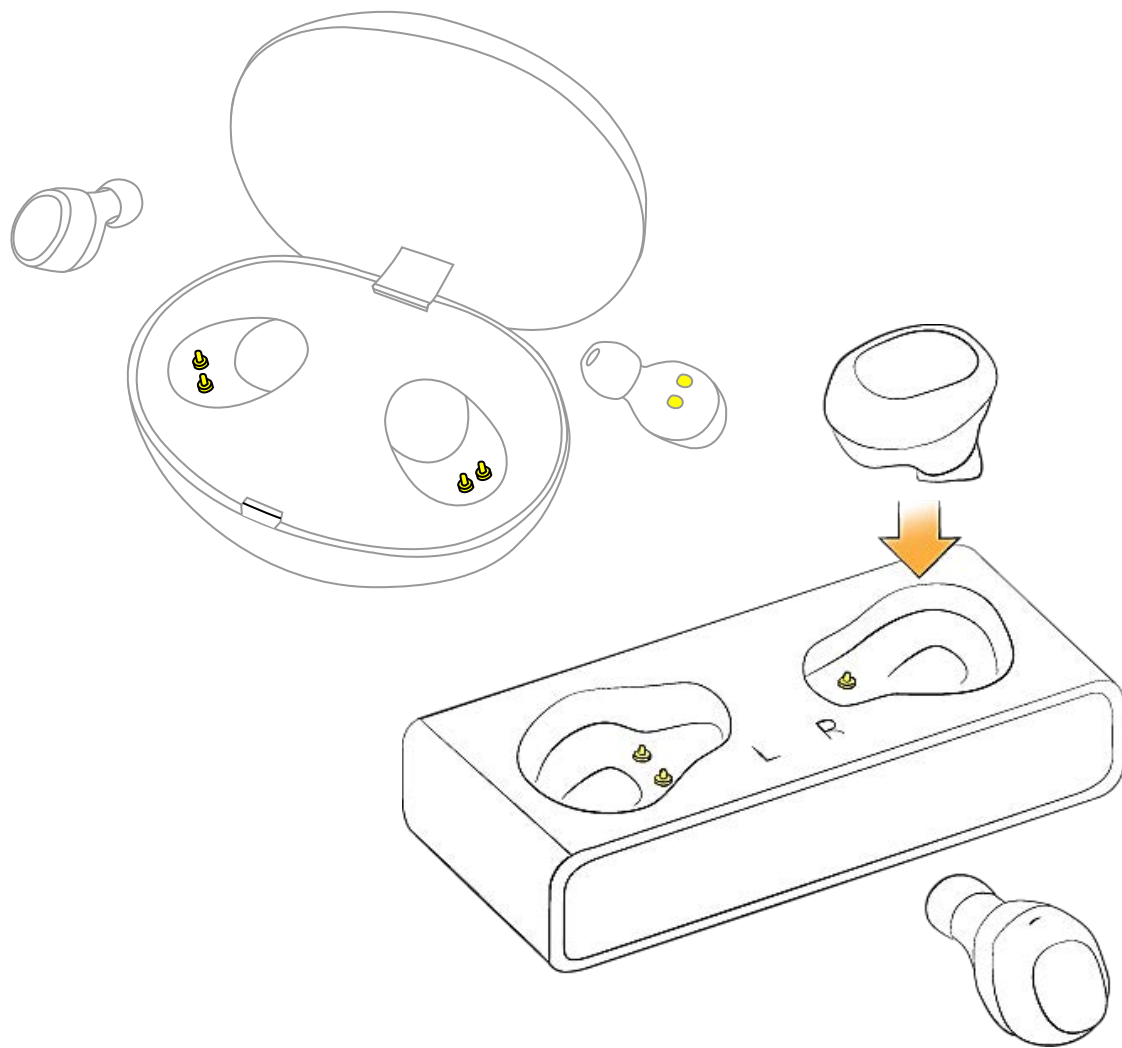


Pogo Pin



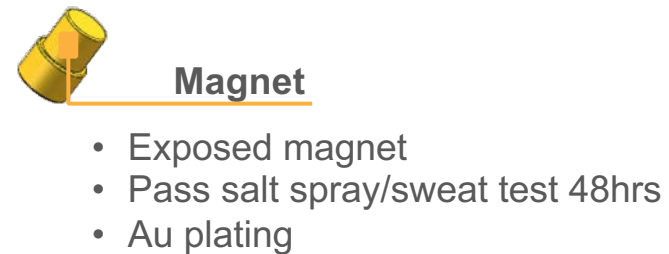
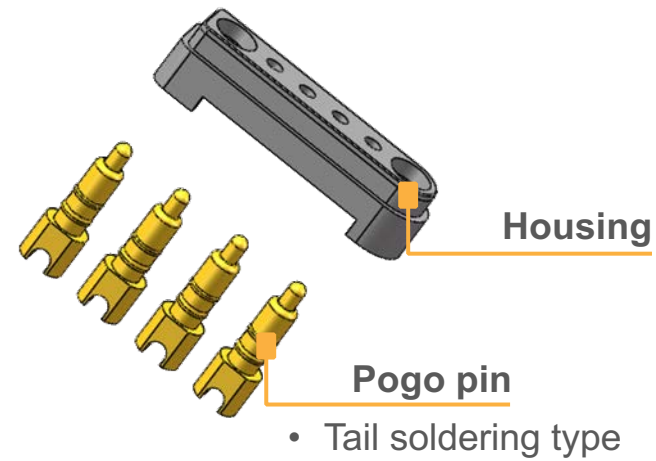
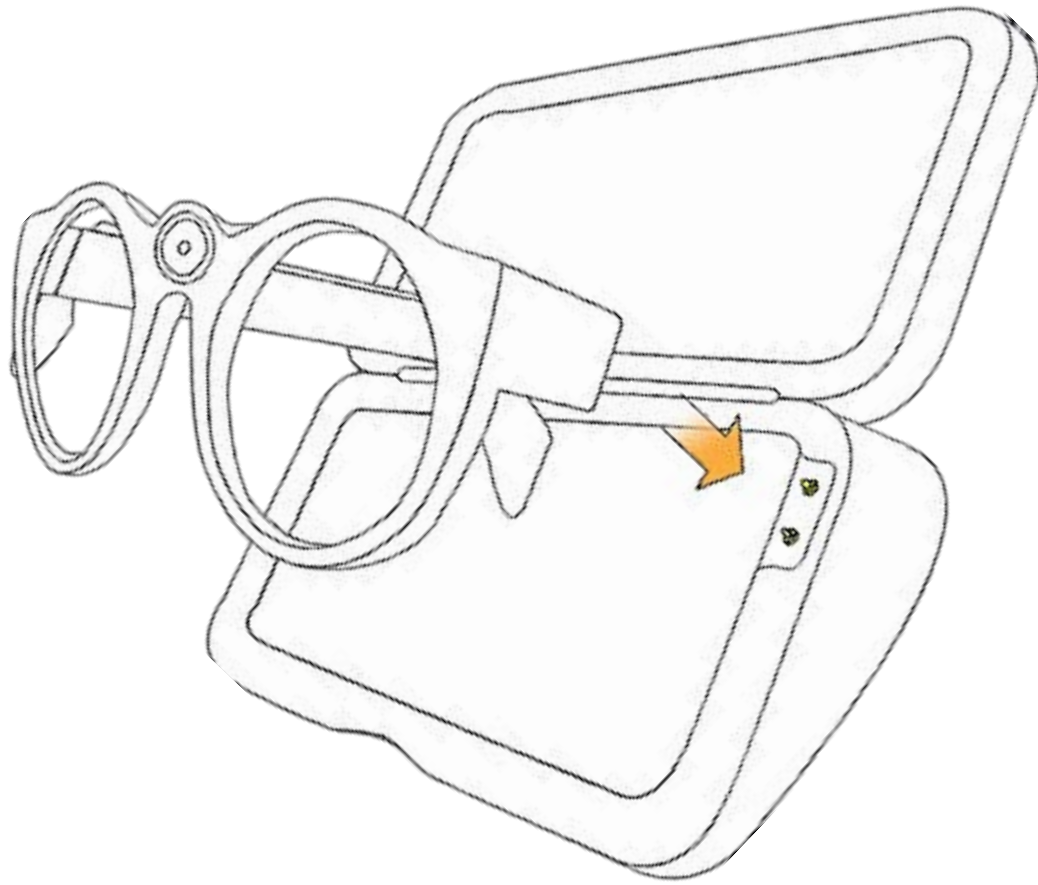


# Pogo Pin Connector - Magnetic Module Design





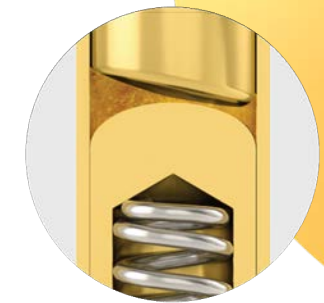
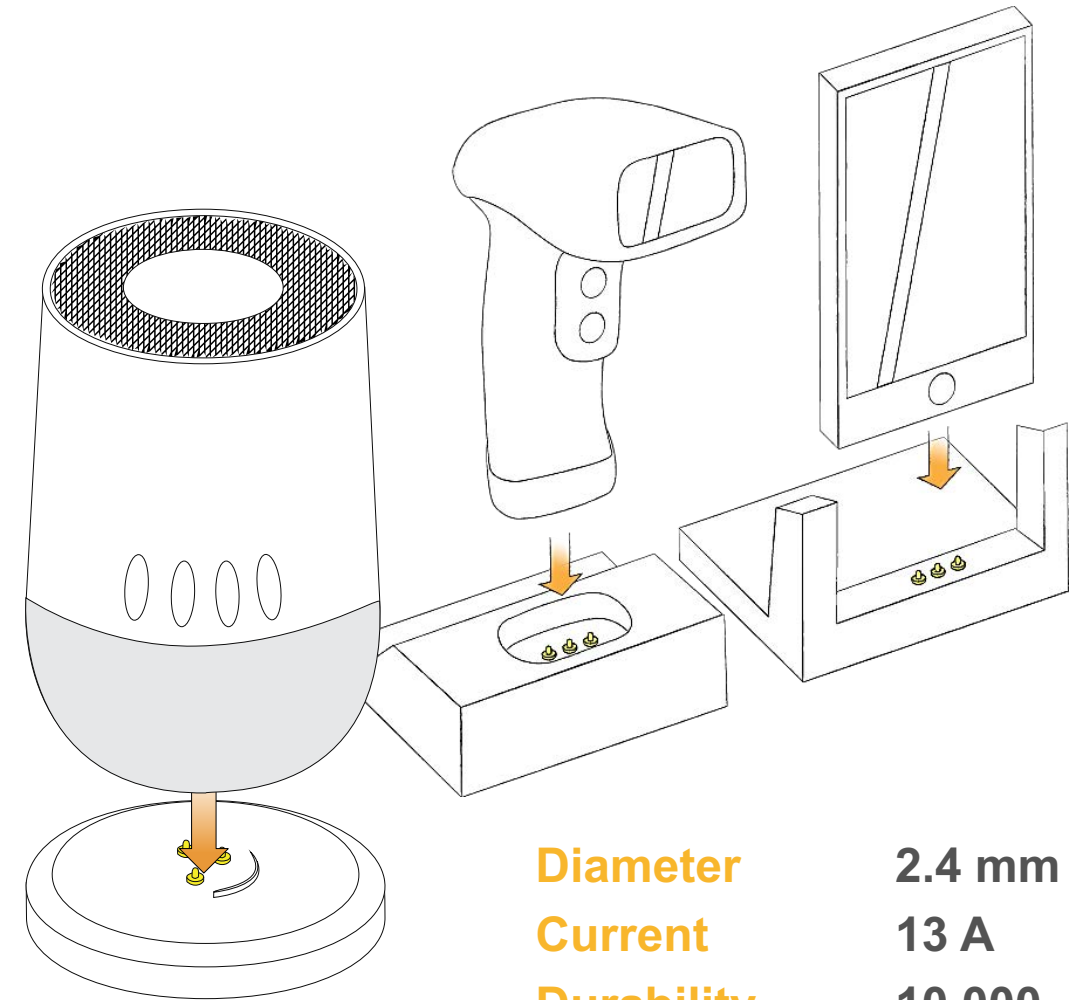
# Pogo Pin Connector - Magnetic Module Design



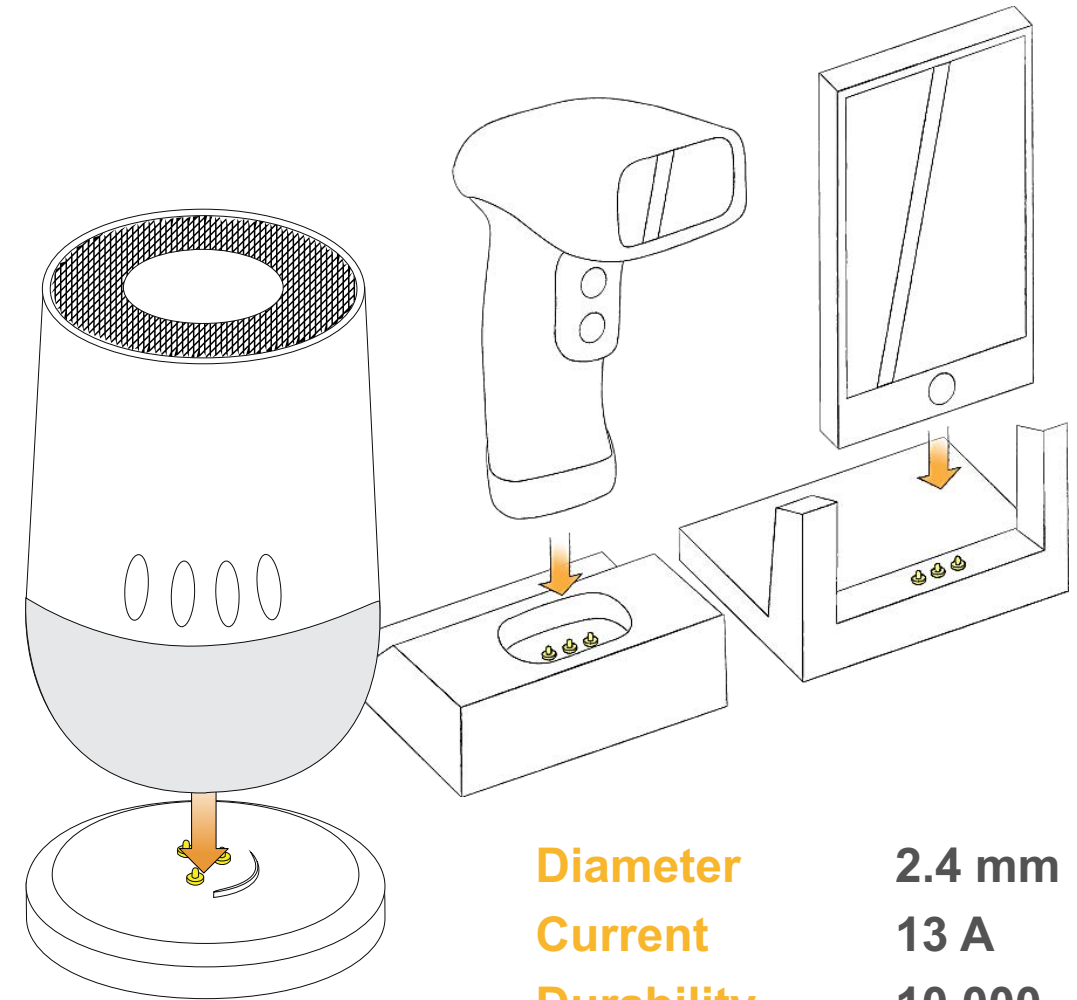


# Pogo Pin Connector - High Current Pogo Pin

Thickened Structure



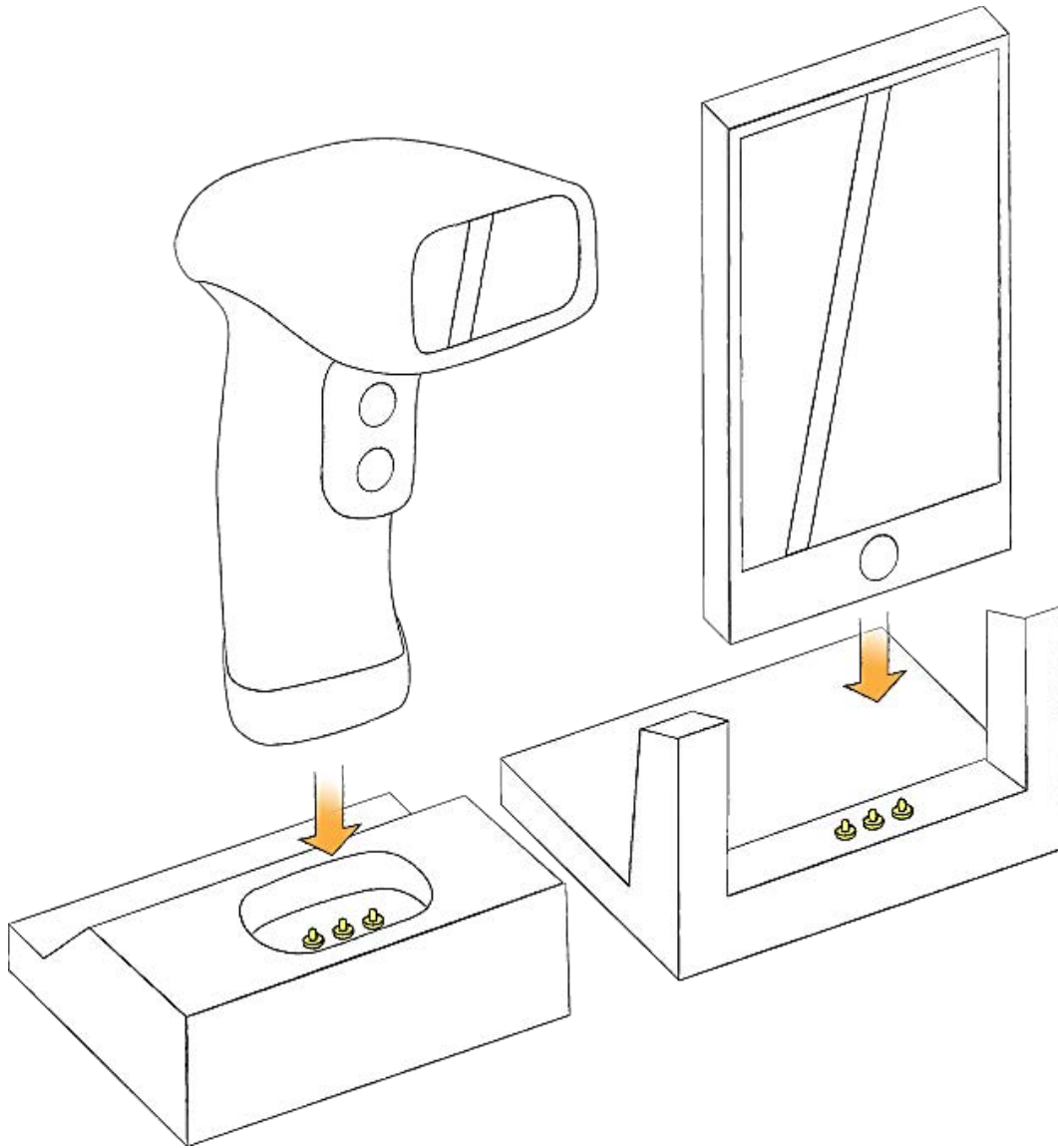
Cap Design



<b>Diameter</b>	<b>2.4 mm</b>
<b>Current</b>	<b>13 A</b>
<b>Durability</b>	<b>10,000</b>
<b>Spring Force</b>	<b>120g<math>\pm</math>20g</b>
<b>Resistance</b>	<b>30 m<math>\Omega</math></b>



# Pogo Pin Connector - Docking Module Design



## Application

Power Connection  
Data Transmission

## Advantage

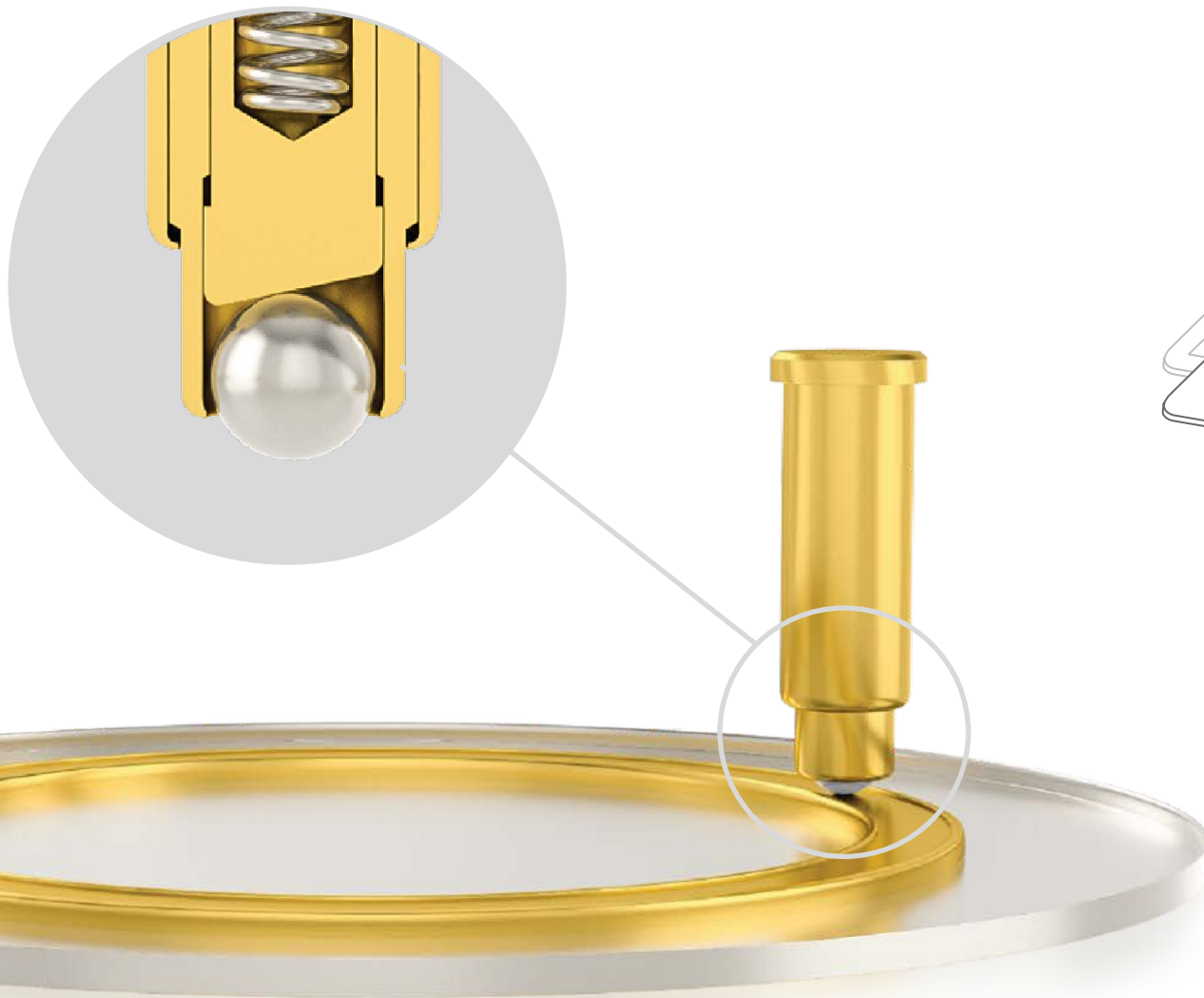
Easy to Contact



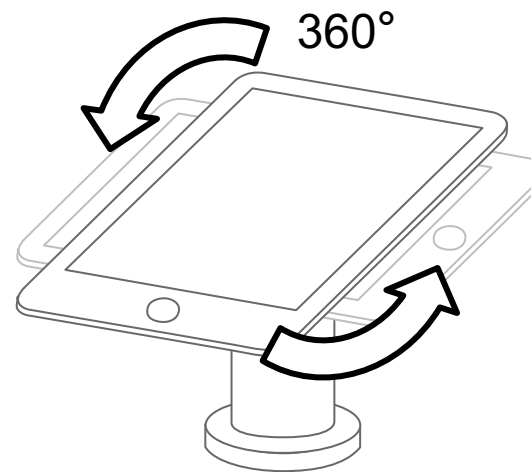




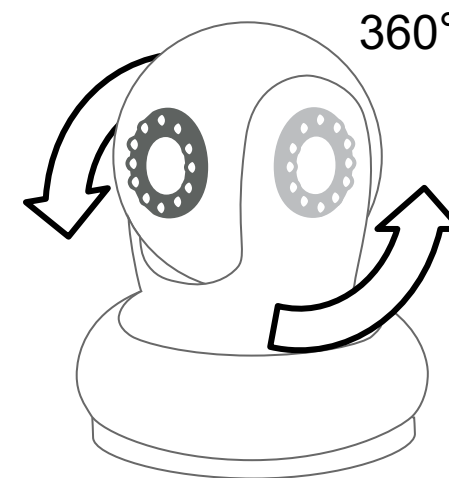
# Pogo Pin Connector - Ball Point Pogo Pin



Product Display



Camera



**Current**

1 ~ 5 A

**Durability**

10,000

**Lateral Movement**

25,000,000 mm

**Resistance**

100 mΩ



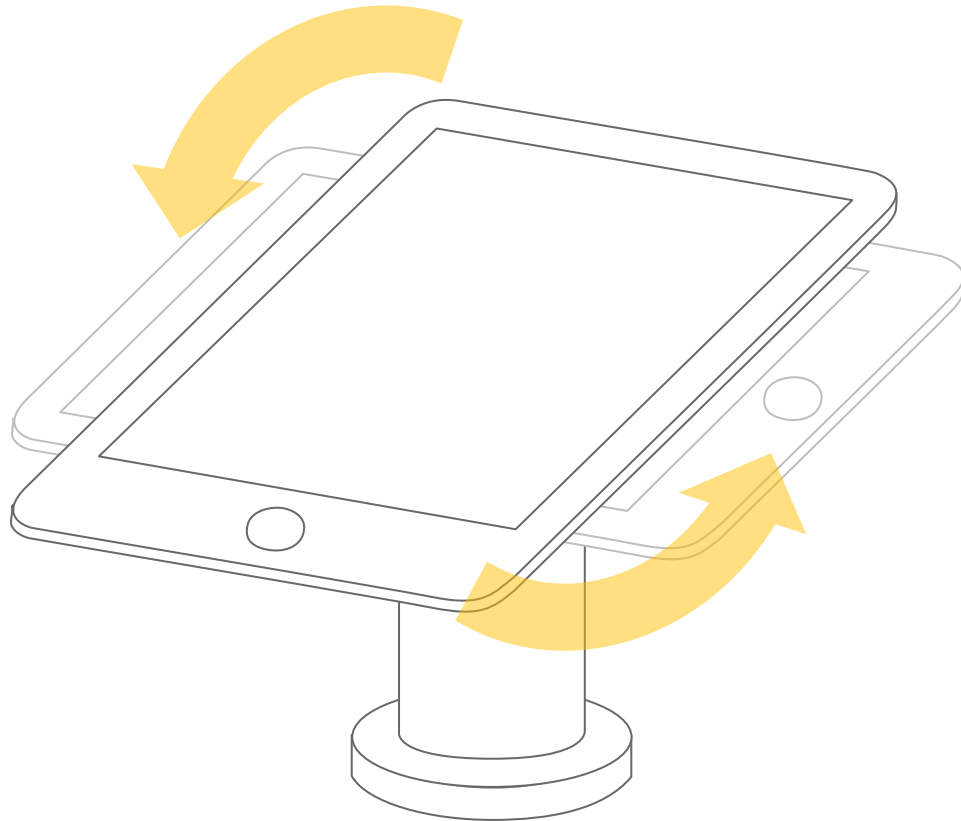
# Pogo Pin Connector - Rotation Docking Module

## Application

Rotation Docking Connection  
Hi-speed Data Transmission

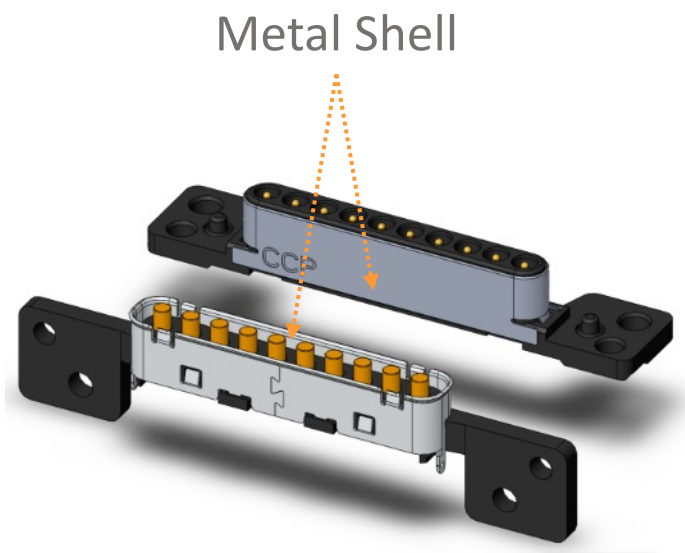
## Advantage

Customized Shape  
Cosmetic Finish  
Easy to Connect with Magnet

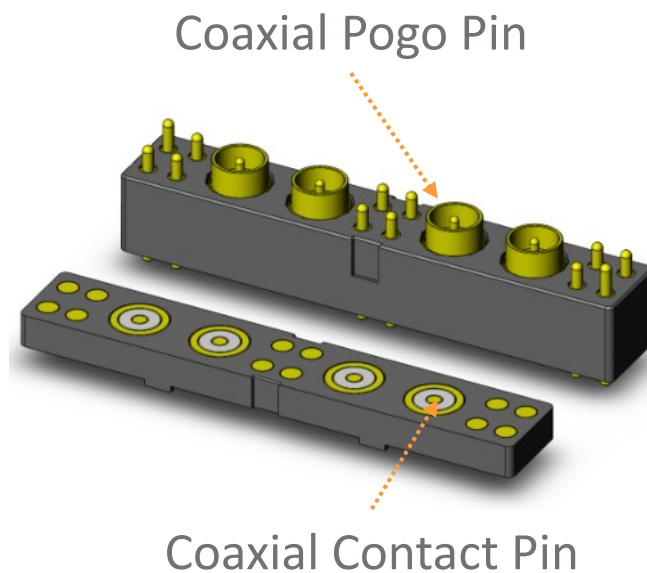


# Pogo Pin Connector - High Frequency Connector

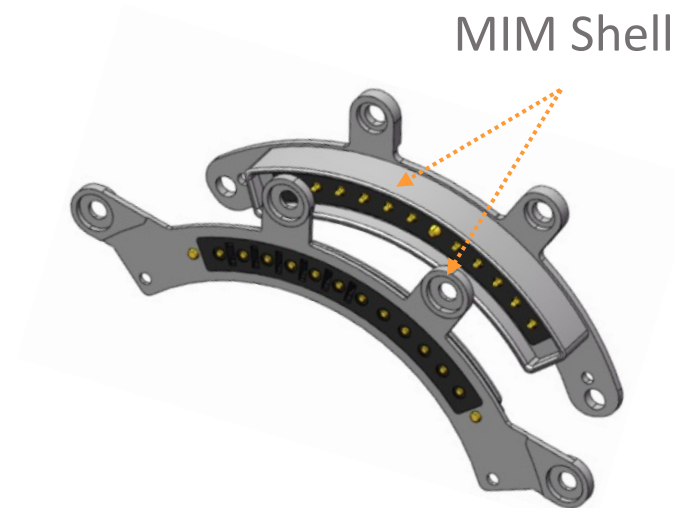
## Metal Shell



## Coaxial



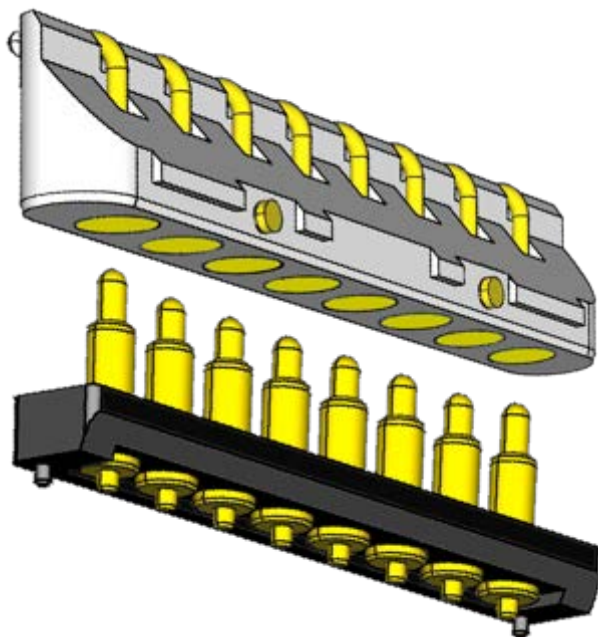
## MIM Shell





# Pogo Pin Connector - High Frequency Application

High Frequency  
Magnetic Matting  
Desktop Docking



Mating Area



Tablet Side Female Connector



Keyboard Side Male Connector



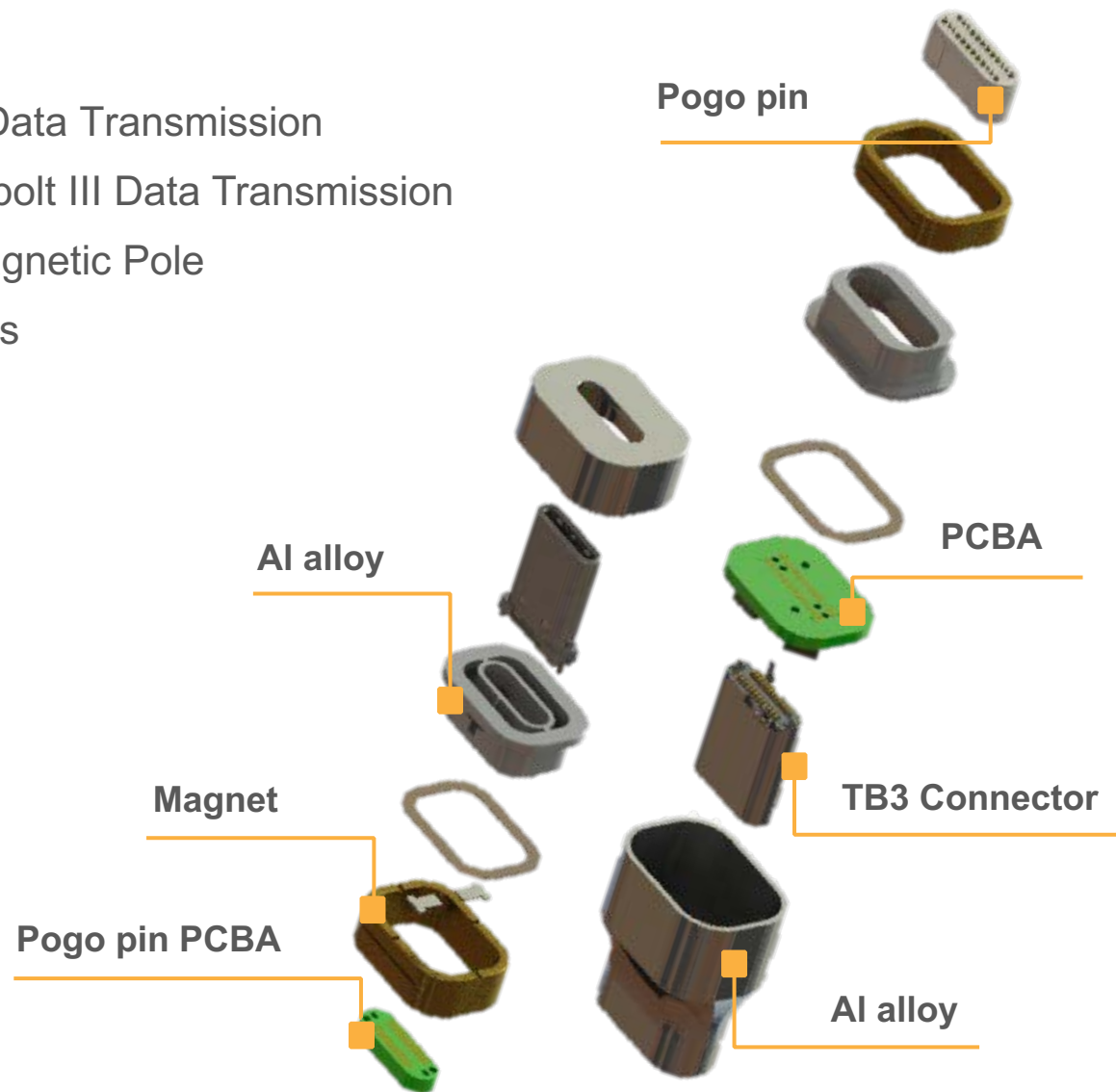
# Pogo Pin Connector - Magnetic Modular Design



Satisfy USB 3.1 Data Transmission  
Support Thunderbolt III Data Transmission  
Fool-proof via Magnetic Pole  
10,000 Life Cycles

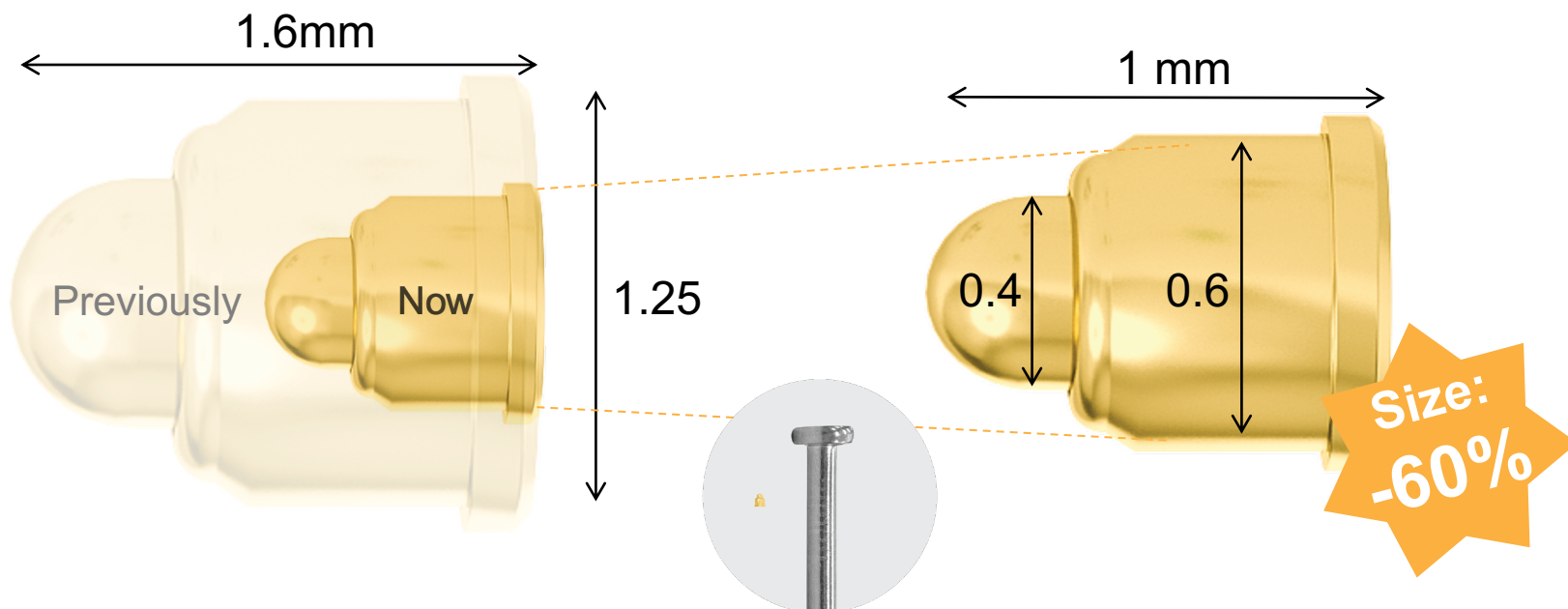
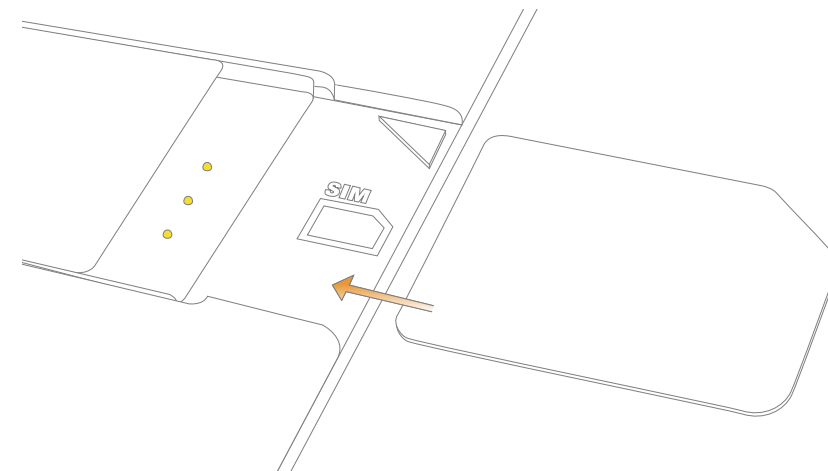


Ultra Thin Pogo Pin  
High-Speed pins  $\Phi$  0.35 mm  
Ground Pin  $\Phi$  0.50 mm



# Pogo Pin Connector - Ultra Short Pogo Pin

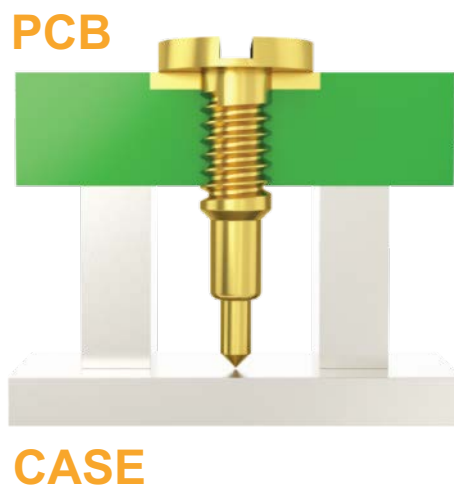
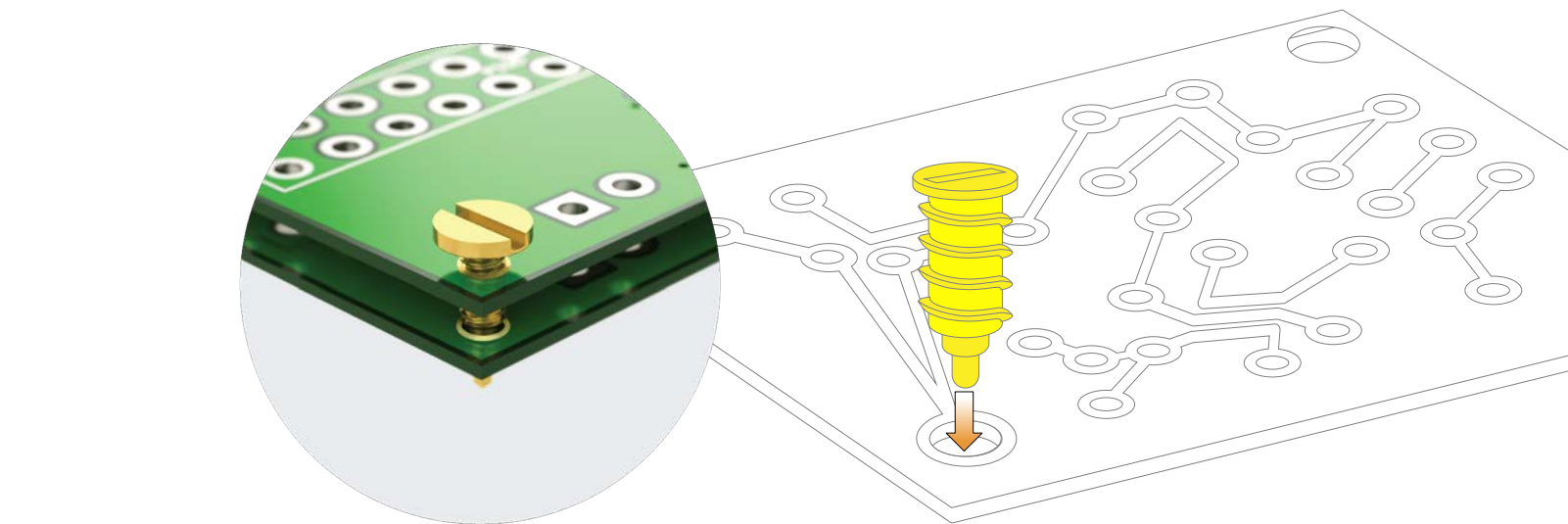
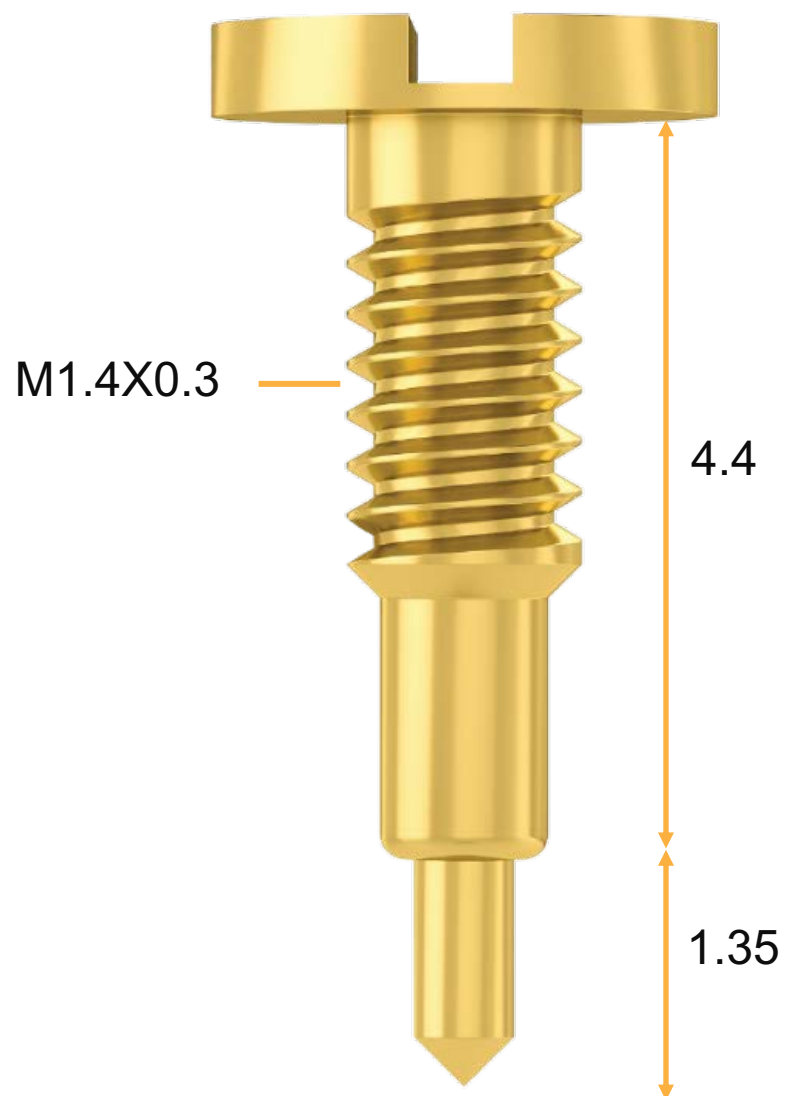
Developed and designed to fit in compact devices  
Feasible for mass production



<b>Diameter</b>	<b>0.6 mm</b>
<b>Current</b>	<b>1A</b>
<b>Durability</b>	<b>3,000</b>
<b>Spring Force</b>	<b>25 g</b>
<b>Resistance</b>	<b>170 mΩ</b>

Customized for grounding pin purpose

# Pogo Pin Connector - Screw Pin



<b>Diameter</b>	<b>3 mm</b>
<b>Current</b>	<b>1 A</b>
<b>Durability</b>	<b>10,000</b>
<b>Spring Force</b>	<b>120g<math>\pm</math>20g</b>
<b>Resistance</b>	<b>200 m<math>\Omega</math></b>
	Customer's Request





# Plating Technology - Anti-Electrolysis Plating



**CCP  
Super AP**

0 Min



5 Min



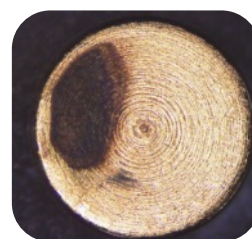
10 Min



50 Min



**Gold**





# Plating Technology - Electroplating Capability



**Plating Development**  
**30 Years Experience**  
**Automated Production Line**  
**Online Plating Monitoring System**  
**Capability: 3,000 Lot/Month**

## Automatic Degreasing



Function: Degreasing.  
 Max. Capability: 240 lot/day.  
 No damage to substrate & no wastewater.

## Automatic Pretreatment



Function: Activation.  
 Max. Capability: 180 lot/day.  
 High efficiency.

## Automatic Post-Treatment



Function: Protection & Cleaning production.  
 Max. Capability: 240 lot/day.  
 Consistent Quality

## Fischer X-Ray



Function:  
 Measuring plating thickness.

## PE AAS



Function:  
 Monitor ion concentration.



# Plating Technology - Patent Plating Layer



Plating	Testing Standard	Au(50u") Layer	AP Layer	APII Layer	Super AP Layer
Color	/	Gold	Silver	Silver	Silver
Nickel Release	EN 12472:2005+A1:2009	Nickel-containing process	Nickel-free process	Nickel-free process	Nickel-free process
Plating Thickness (micro inch)	XRF	100~170	110-170	270~400	210~400
Resistance (mΩ)	EIA-364-23	< 50	< 50	< 50	< 50
Salt Spray Resistance (HR)	EIA-364-26	96	48	96	168
Artificial Sweat Resistance (HR)	ISO-3160	96	48	96	168
Surface Hardness (HV)	ISO 6507-1:2005	200	400	400	400
Electrolysis Resistance Time	1mA,5V,Pitch=0.60mm	<1min	10min	15min	60min
Cost	Factor to Gold Plating	1	x0.9	x2	x3





# Testing Solution - Integrated Manufacturing



Automatic CNC lath



CNC spring coiling machine



Surface treatment production line



Semi-automatic assembly machine



Automatic assembly machine



Automatic probe **full inspection**





# Manufacturing Capability - Precision Machining



CAM Turret Machine: 105 Units

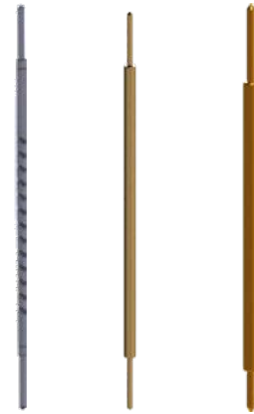
Capacity: 20KK

Precision: 0.005mm

CNC Turret Machine : 42 Units

Capacity: 2KK

Precision: 0.001mm



IC Test Probe



Pogo Pin



High Current  
Pin & Socket



Customized



# Testing Capability - Test Equipment

## Electrical Performance



Network Analyzer



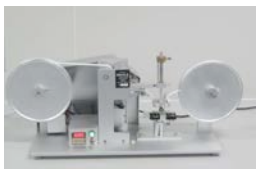
VNA  
(Vector Network Analyzer)



High Current  
Power Supply &  
Electronic Load



Contact  
Resistance  
Tester



RCA Tape  
Abrasion  
Tester

## Mechanical Performance



Safety  
Comprehensive  
Analyzer



Mechanical  
Vibration/Shock



Automatic  
Insertion Force  
Tester



Durability  
Cycling  
Machine

## Environmental Testing



Oven



Waterproof test  
machine



Flush test  
chamber



Thermal shock  
test machine



Salt spray test  
machine



Temperature &  
humidity test  
machine

## Other



Hot-Air Reflow  
machine



3D laser  
scanning  
microscope



X-ray



Electrochemical  
workstation



Terminal cross  
section  
analyzer

## Quality System

### **ISO 9001:2015**

Quality Management Systems

### **IATF 16949:2016**

Automotive Quality Management System

### **ISO 14001 : 2015**

Environment Management Systems

### **QC 080000**

Hazardous Substance Process Management

### **ISO 13485:2016**

Medical Devices Quality Management Systems



# Quality Assurance





# Verification Ability

## Testing Items

### Environmental

Waterproof

Humidity Test

Salt Spray

Thermal Impact

Resist. to Solder Heat

Vibration

### Electrical

Contact Resistance

Insulation

HIPOT

Rated Current

### Mechanical

Retention Force

Life Cycle

Vibration

Mechanical Shock

### Other

Drop

Soldering Side Force

Solderability



# Testing Equipment

Rated Current

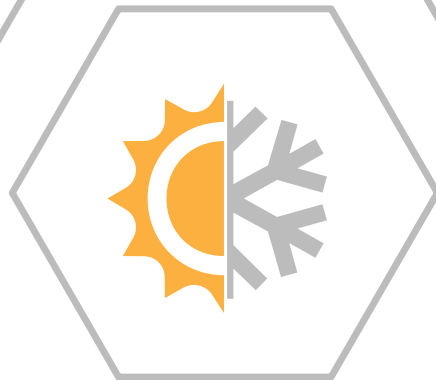
Max Rating :

1000Amp



Waterproof

Test Level : IPX7 Up



Thermal Impact

Range : -60~120°C

Resolution : 0.01°C



Vibration

Frequency : 3500Hz Max.

Acceleration : 50G Max.





# Certificate



ISO 9001

ISO 13485

ISO 14001

ISO 14064

IATF 16949

IECQ QC080000





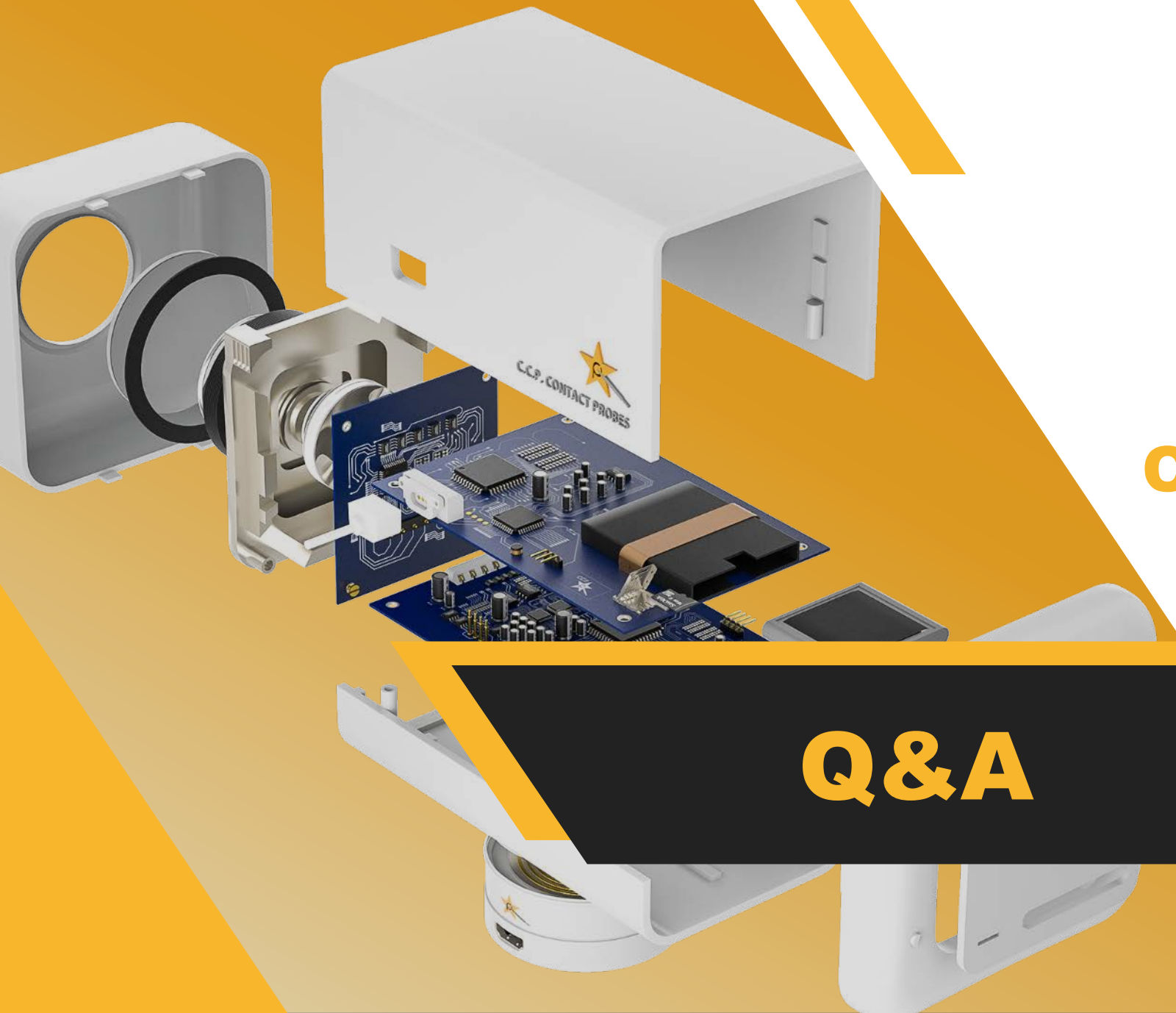
Summer camp for employees' children



Home visit to employees around the world



CCP offers tuition scholarship for employees' children



C.C.P.



**CCP Contact Probes**

**Q&A**

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www.ccpcontactprobes.com

