



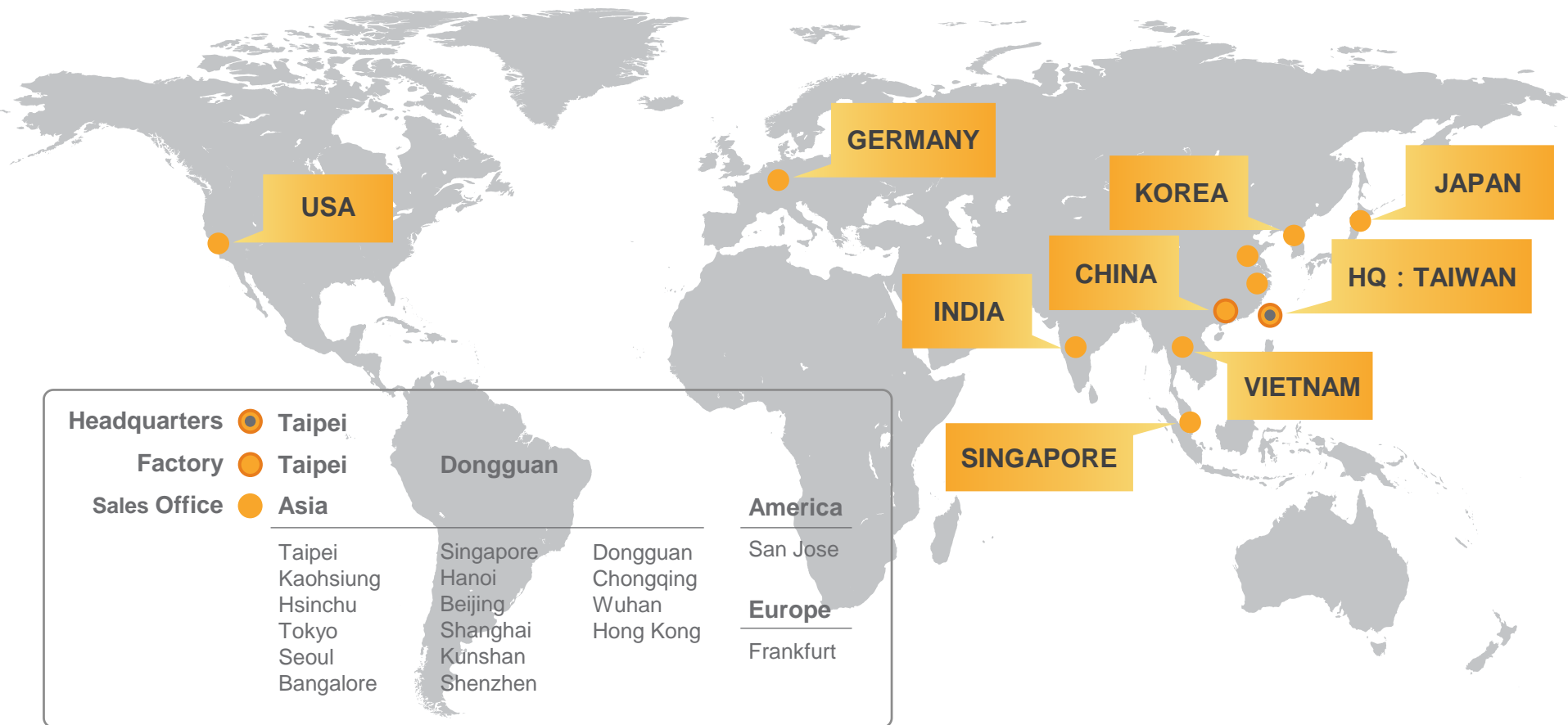
CCP Contact Probes

Pogo Pin Connector

History



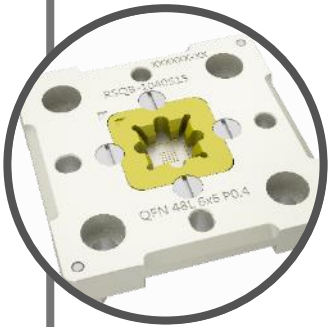
CCP Contact Probes



Selected Customers:



Product Portfolio



CCP - Testing

IC Testing Probe
IC Probe Head
PCB Testing Probe
MEMS Probe



CCP - Connector

1A~13A

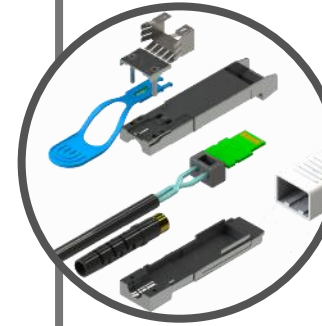
Pogo Pin Conn.
Waterproof Conn.
Magnetic Conn.



CCP - High Current

13A~250A

Electronic Vehicle
High Current Conn.



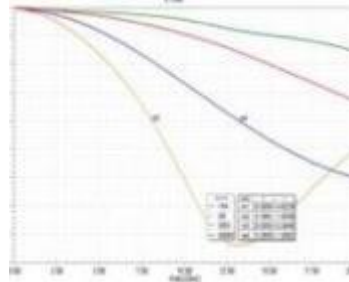
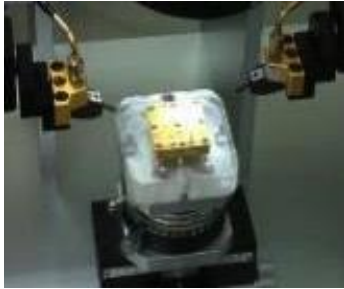
CCP – High Speed

25Gbps~100Gbps

Data Networking
Transceiver

Core Advantages

High Frequency Simulation



HFSS

Material Development

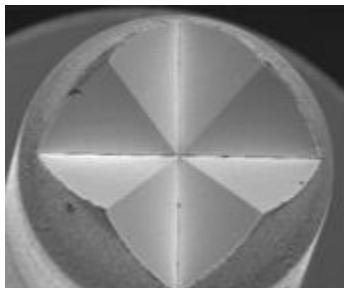


Plating Lab

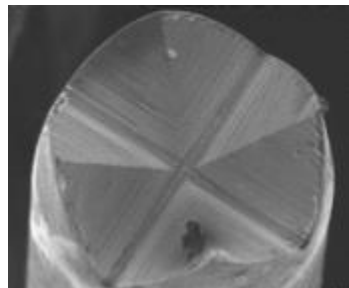


Self-owned
Plating Factory

Mirror Process

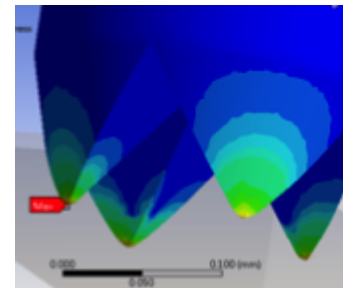


CCP's Product



Other Provider

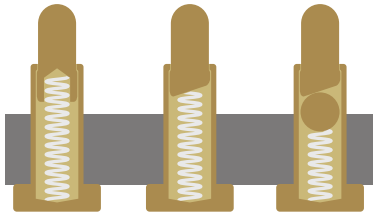
Finite Element Analysis



ANSYS

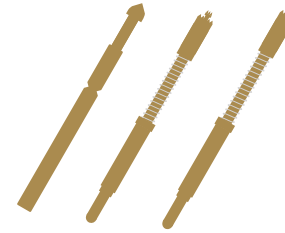
Manufacturing Capacity

Pogo Pin Connectors



60 Mio Pins / Month

Testing Probes



2 Mio Pins / Month



Verification Ability

Testing Items

Electrical

Contact Resistance
Insulation
HIPOT
Rated Current

Mechanical

Retention Force
Life Cycle
Vibration
Mechanical Shock

Other

Drop
Soldering Side Force
Solderability

Environmental

Waterproof
Humidity Test
Salt Spray
Thermal Impact
Resist. To Solder Heat
Vibration

Quality Management

Quality System

ISO 9001: 2015

Quality Management Systems

ISO 13485: 2016

Medical devices - Quality management systems

ISO 14001: 2015

Environmental Management System

IATF 16949: 2016

Automotive Quality Management System

QC 080000

Hazardous Substance Process Management

Quality Assurance



Testing Equipment

Rated Current
Max Rating : 1000Amp



Waterproof
Test Level: IPX7 Up

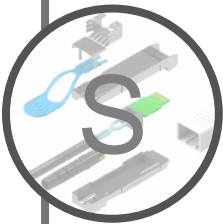
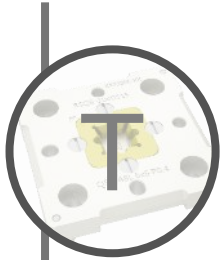


Thermal Impact
Range: -60~120°C
Resolution : 0.01 °C



Vibration
Frequency : 3500Hz max
Acceleration : 50G max

Product Line - Pogo Pin Connector



Pogo Pin Connector



Magnetic Connector



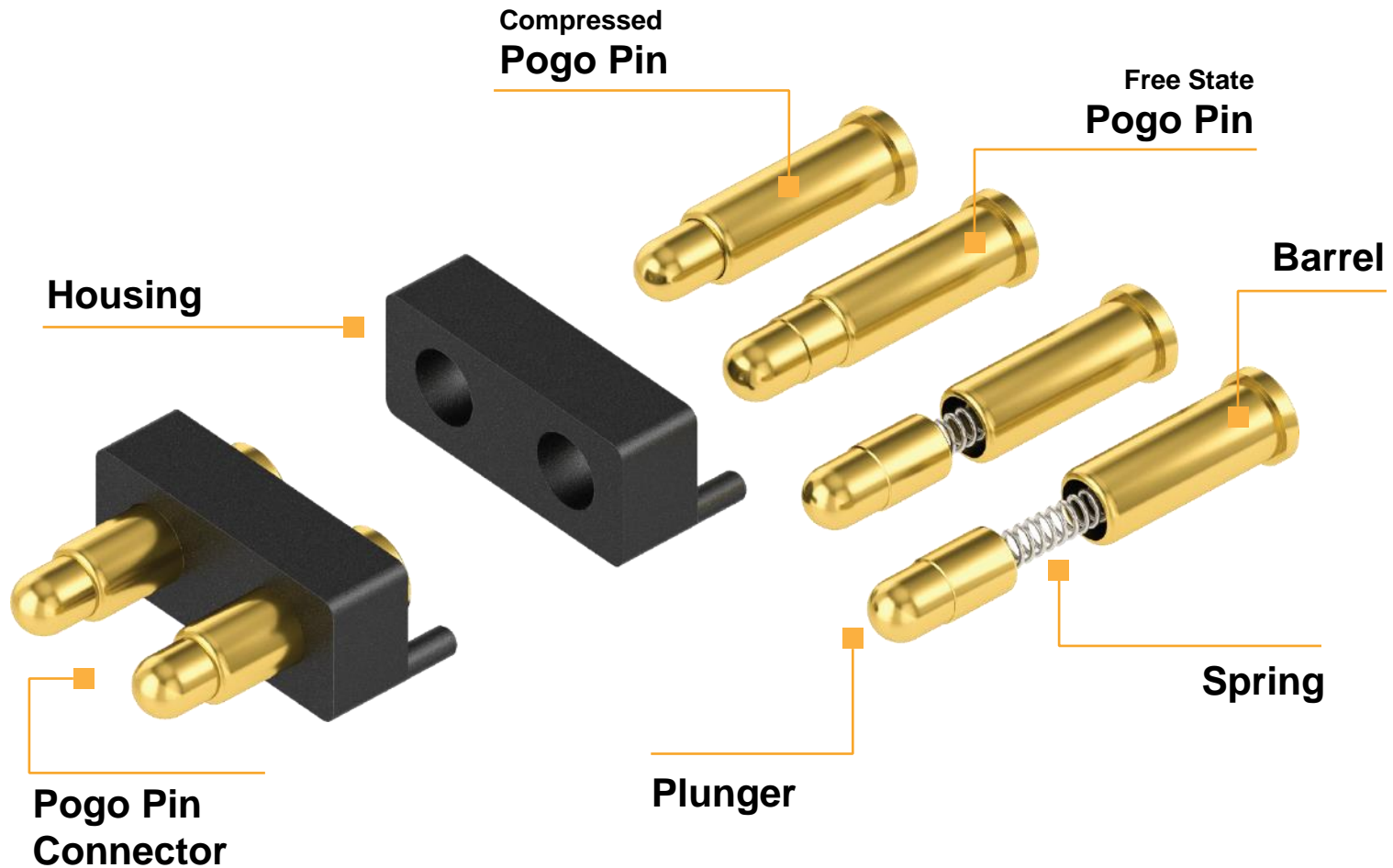
2 in 1 Tablet Connector



Waterproof Connector



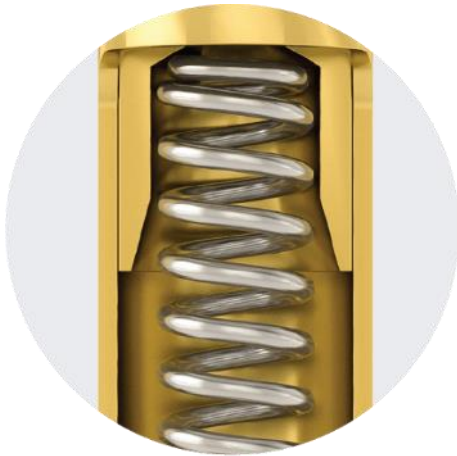
Connector: Basic Structure



Connector - Inner Structure

Back Drill

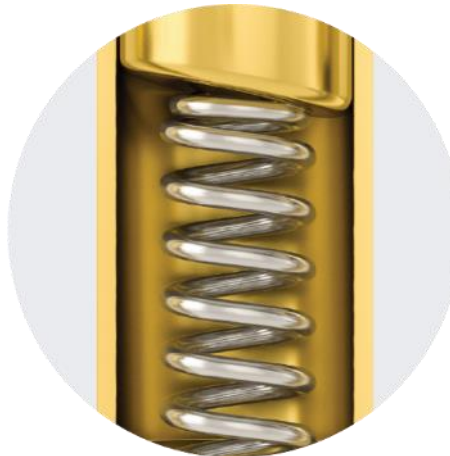
The drilled tail makes extra space for spring and creates a shorter pogo pin.



Pin Length: ≈ 2.5 mm
Current: **1 A**

Bias Tail

The bias tail of plunger creates 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**

Pogo Pin Connector - Material

Ball

Stainless Steel

Plunger

Brass (Standard)

Beryllium Copper
Phosphor Bronze
SK4

Surface Plating

Base Plating

Base

Housing

Polyoxyethylen (Standard)

PBT Polybutylene terephthalate
LCP Liquid-crystal polymers
HTN Polyphthalamide
PA10T

Spring

Stainless Steel

Barrel

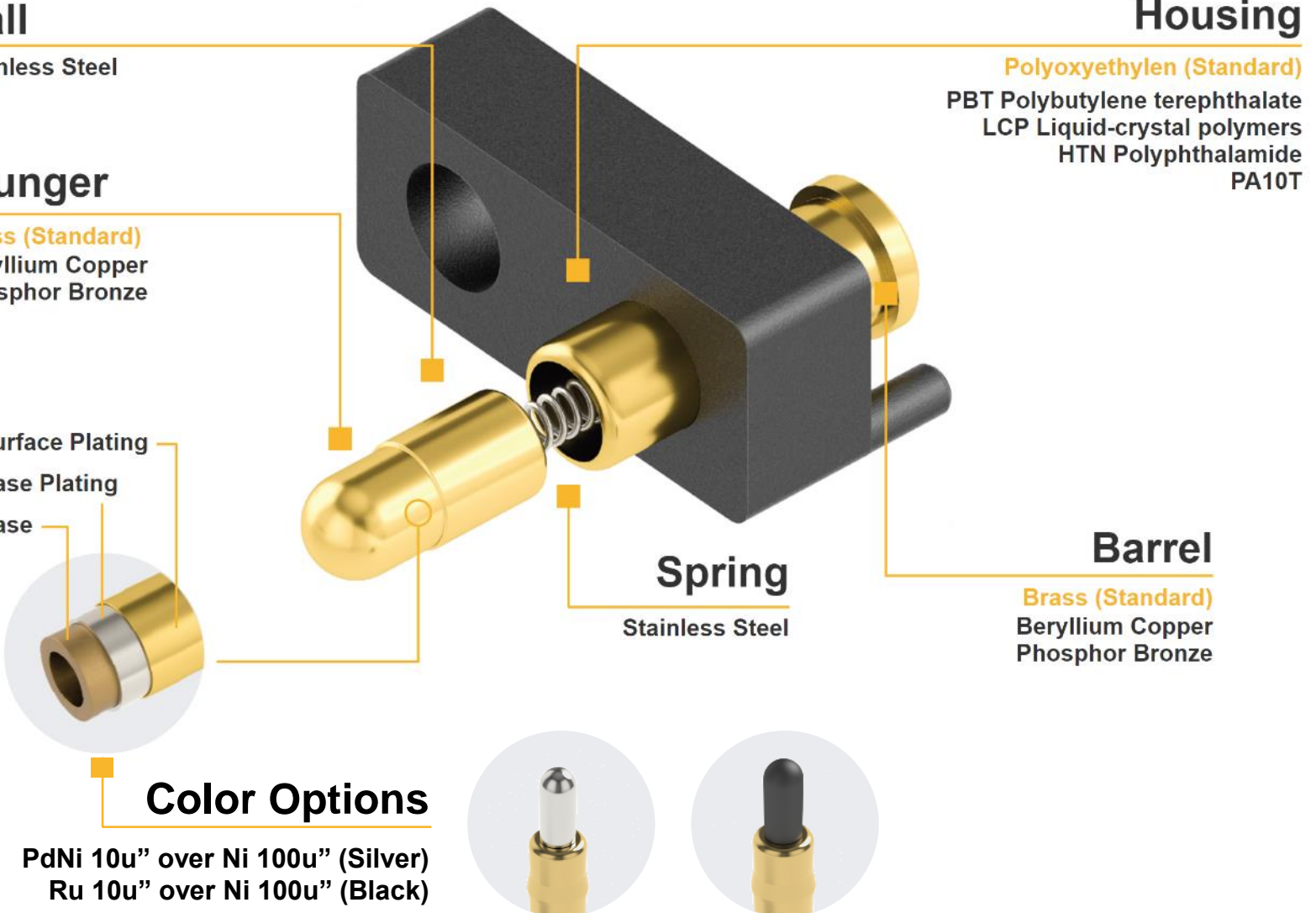
Brass (Standard)

Beryllium Copper
Phosphor Bronze

Color Options

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

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



Pogo Pin Connector - Waterproof

Sealing



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

Insert-Molding



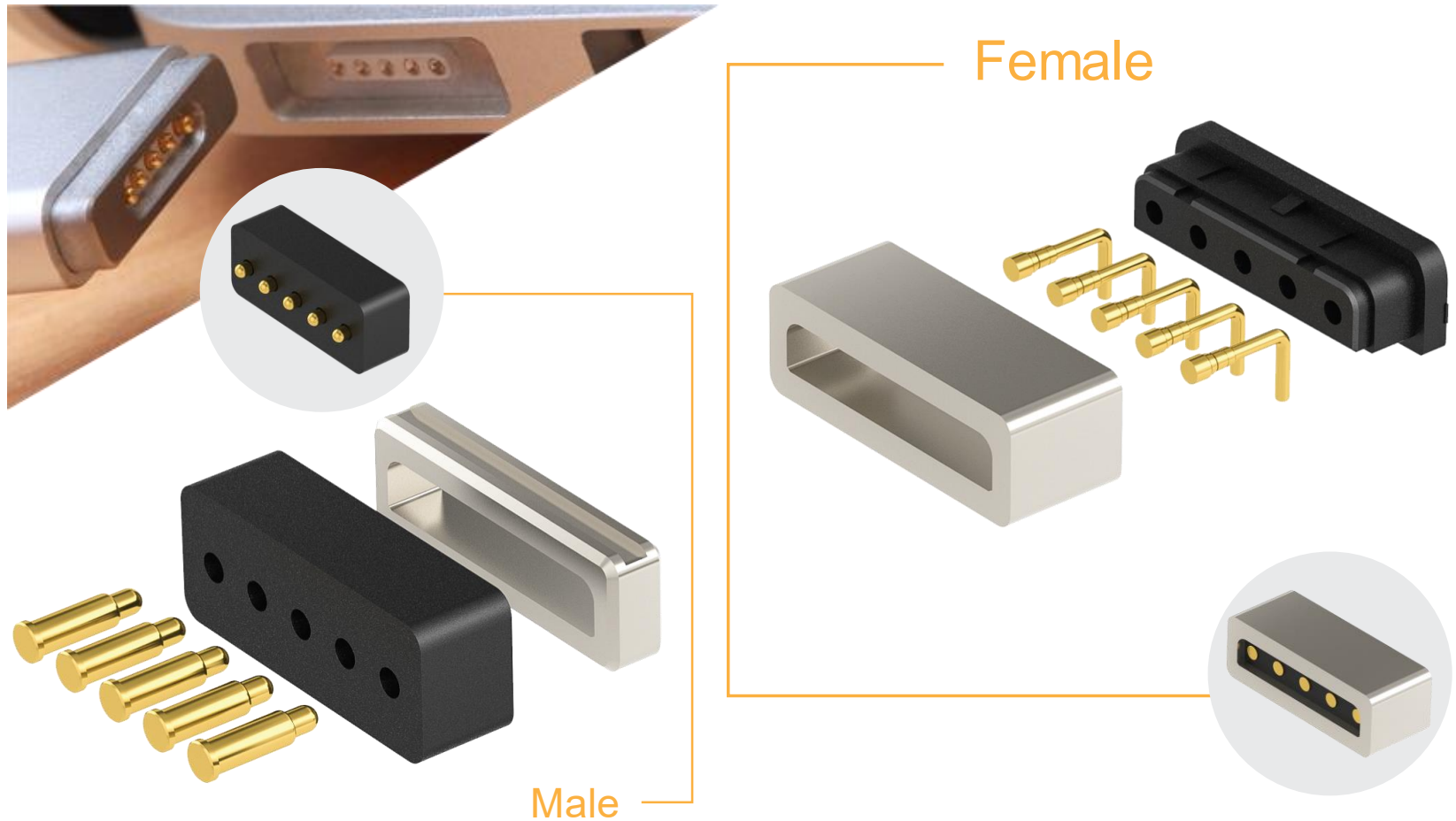
Pitch: Small
Waterproof: IPx7 at best
Production Complexity: Low

O-Ring



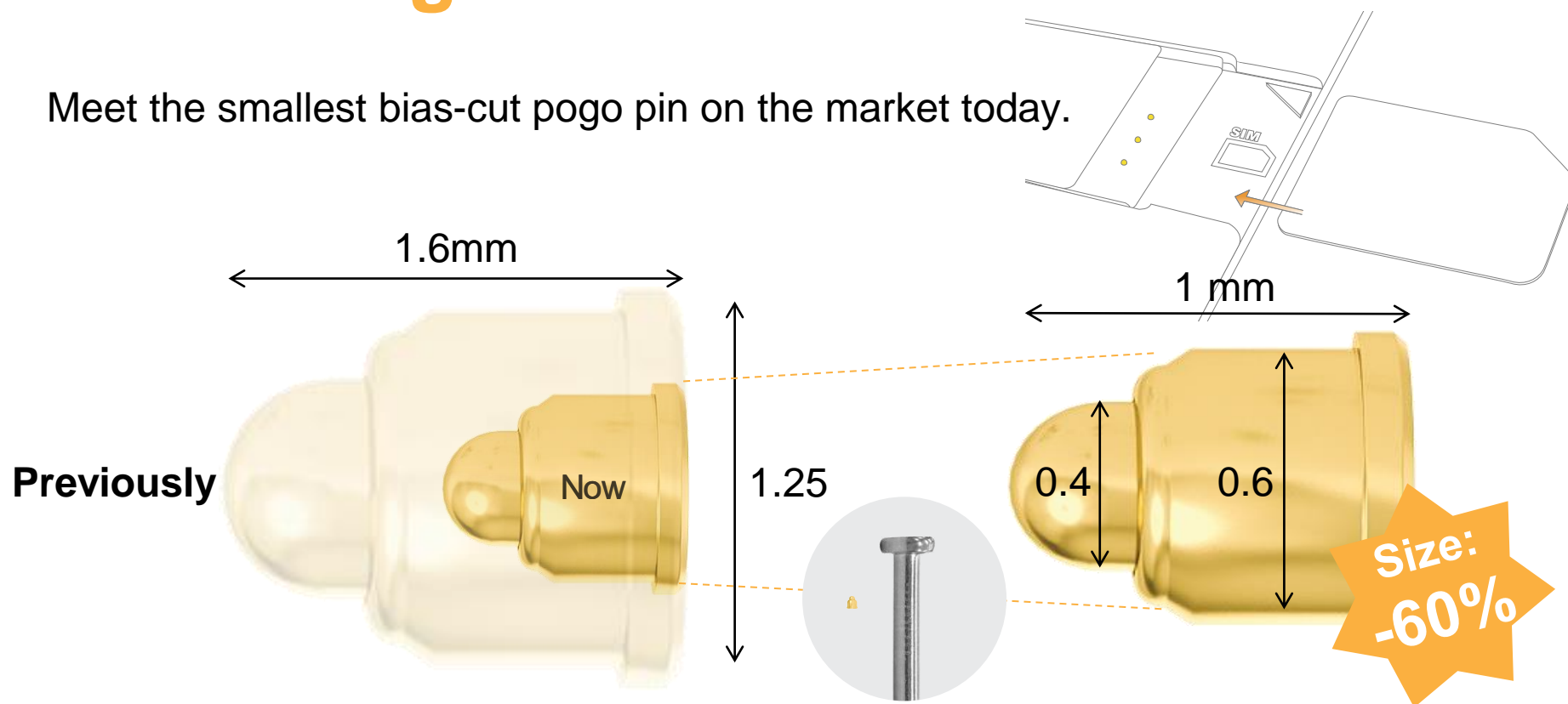
Pitch: Large
Waterproof: IPx8 at best
Production Complexity: High

Pogo Pin Connector - Magnetic



Pogo Pin - Ultra Short Pin

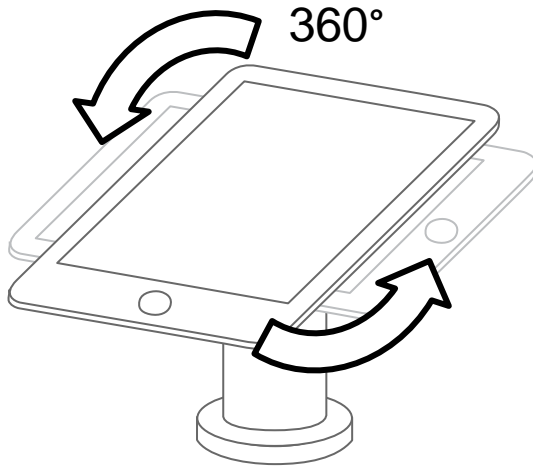
Meet the smallest bias-cut pogo pin on the market today.



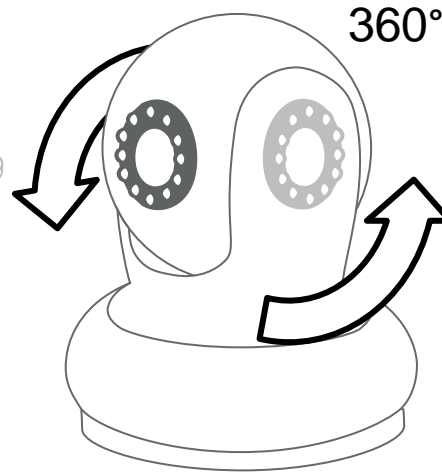
Diameter	Current	Durability
0.6 mm	1A	3,000 compressions
Spring force	Contact resistance	
25g	175 mΩ, to customize for grounding pin purpose	

Pogo Pin Connector - Ball Point

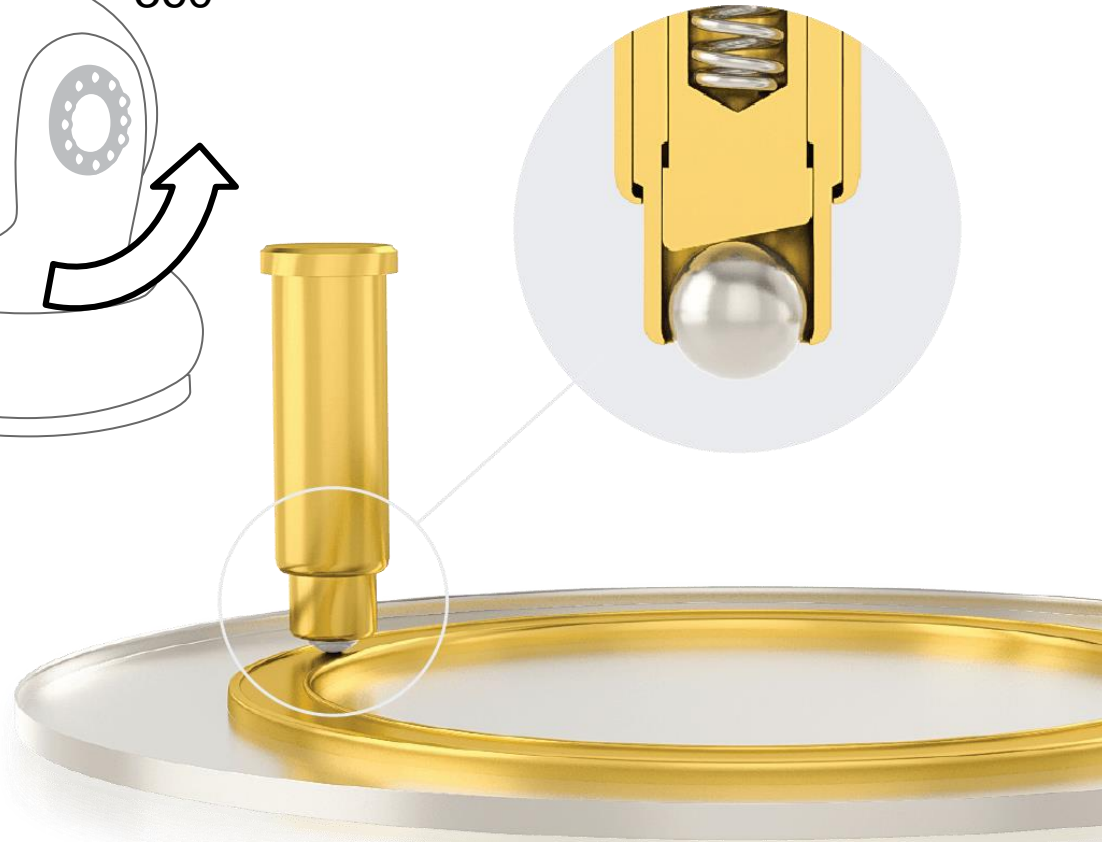
Product Display



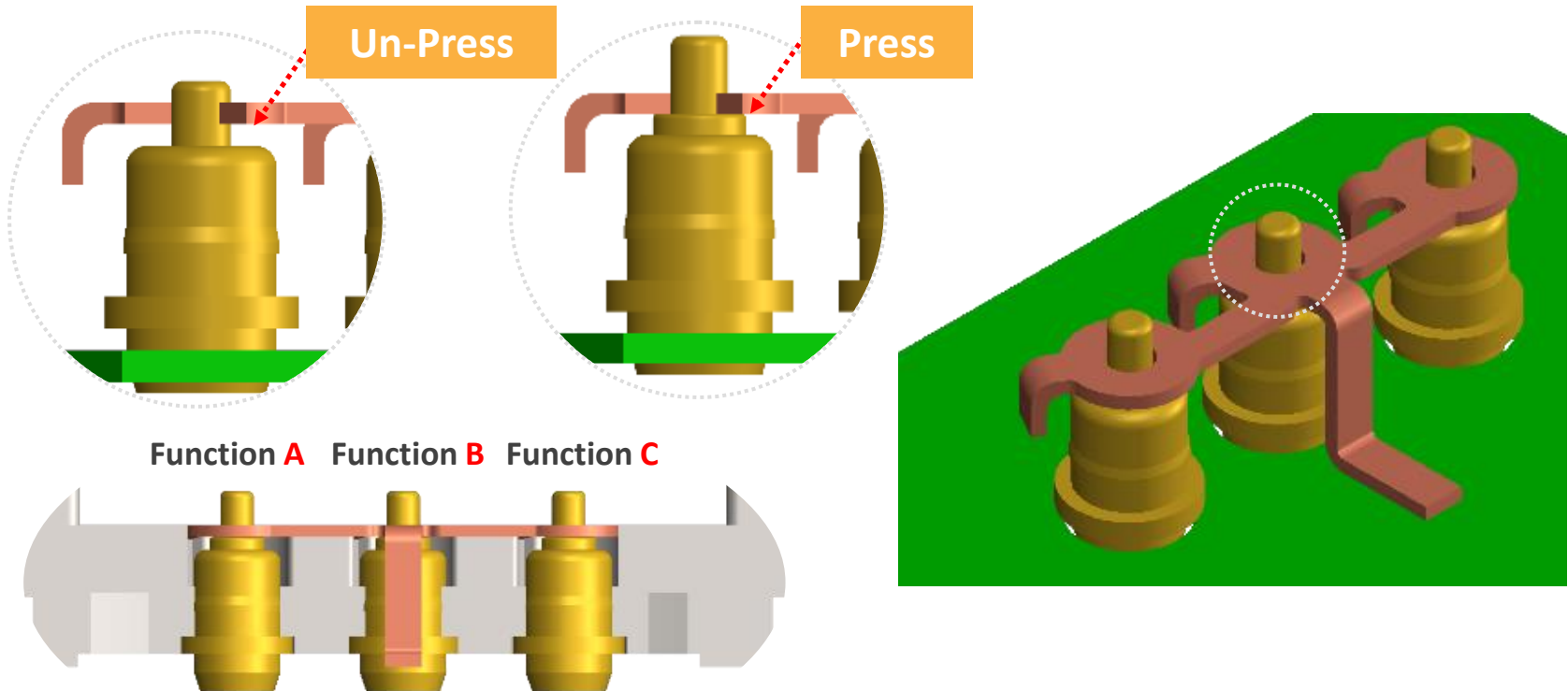
Camera



Compression: 10'000 times
Lateral Movement: 25'000'000 mm
Resistance: 100 m Ω
Current: 3 A

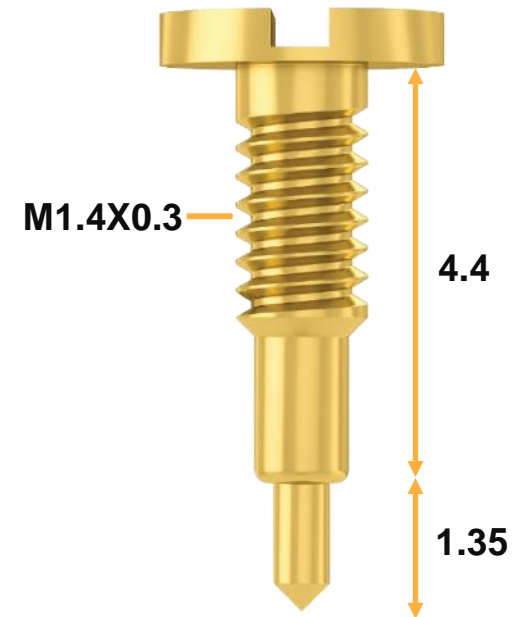
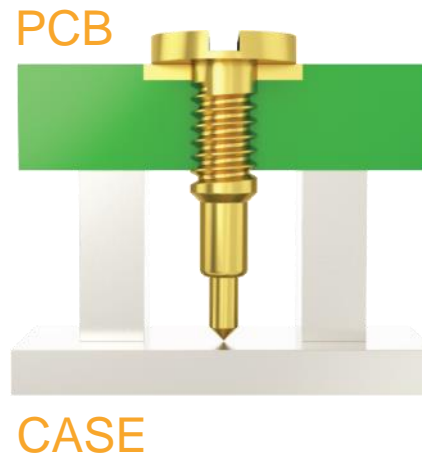
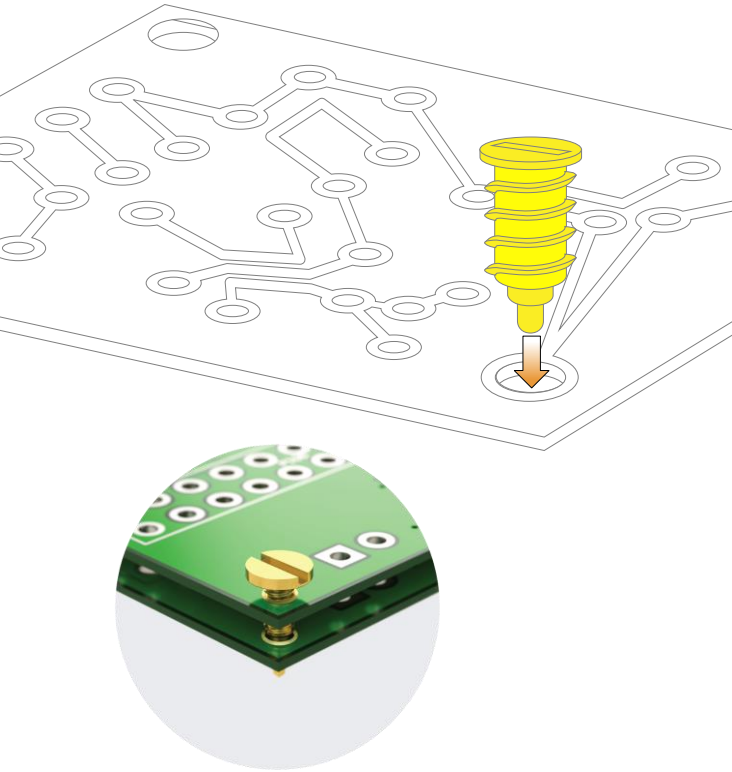


Connector: Switch Type Pogo



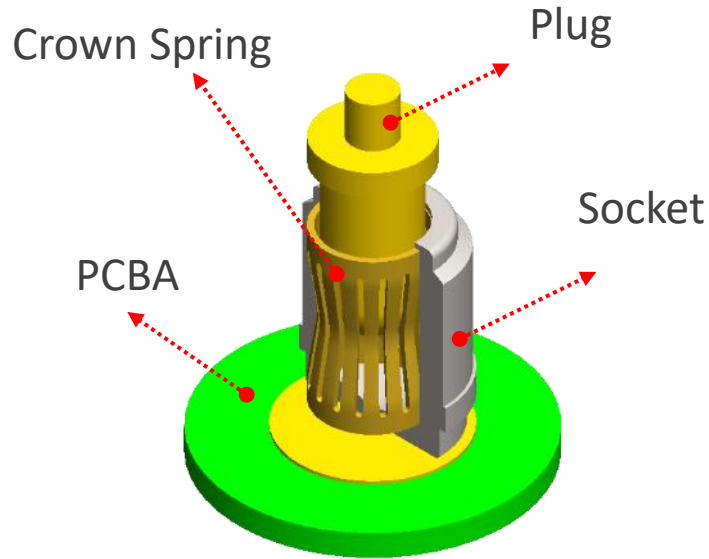
Diameter	Current	Durability
2 mm	1A	10,000 compressions
Spring force	Contact resistance	
60g ± 20g	50 mΩ	

Connector: Pogo Screw Pin



Diameter	Current	Durability
3 mm	1A	10,000 compressions
Spring force	Contact resistance	
120g \pm 20g	200 m Ω	

Connector - Crown Spring Pin



Advantages:

- Vibration Usage
- Low Resistance
- Withstand Current 400A
- Life Cycles Up to 10K



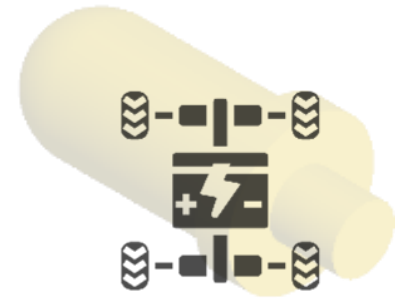
Hand Dryer



Vacuum Cleaner



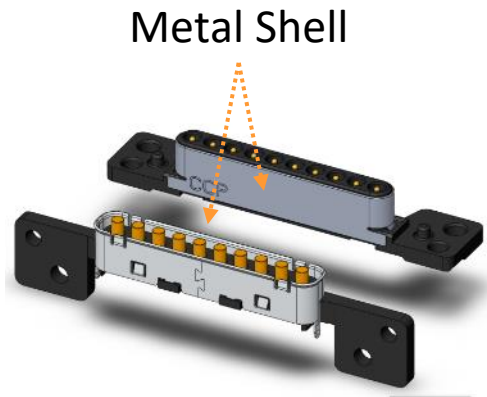
Drone



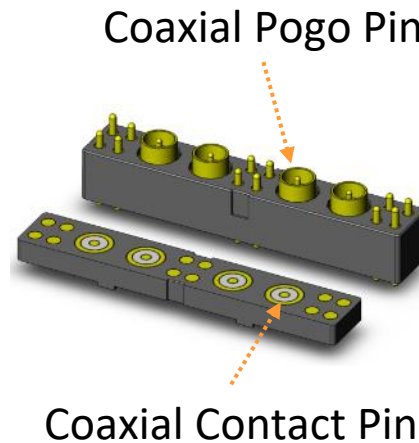
Bus-Bar

High Frequency Connector Design

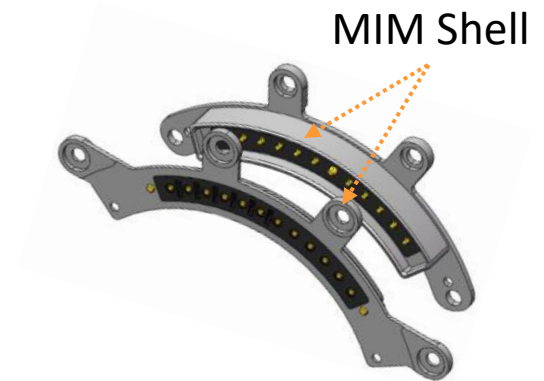
Metal Shell



Coaxial



MIM Shell

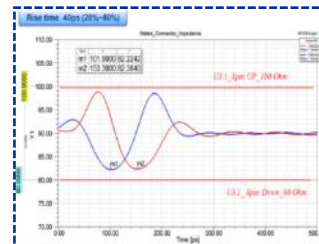


High Frequency Connector – USB 3.1



USB 3.1 Connector HFSS analysis

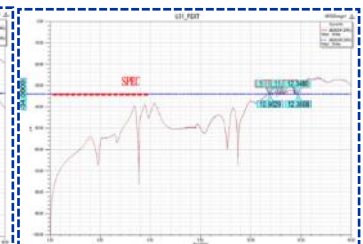
Mated Connectors Impedance



NEXT-SS Pairs



FEXT-SS Pairs

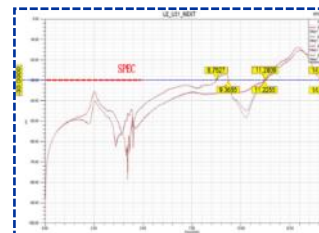


High Frequency Signal Application

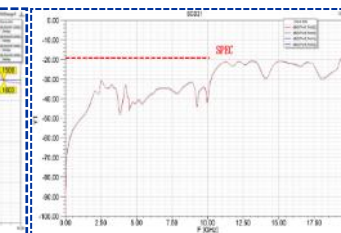
1. USB3.0 & 3.1
2. HDMI
3. Display Port
4. PCIe



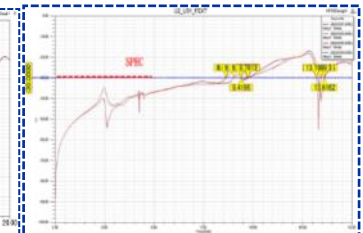
NEXT-USB2.0 and SS Pairs



Differential to Common Mode Conversion



FEXT-USB2.0 and SS Pairs



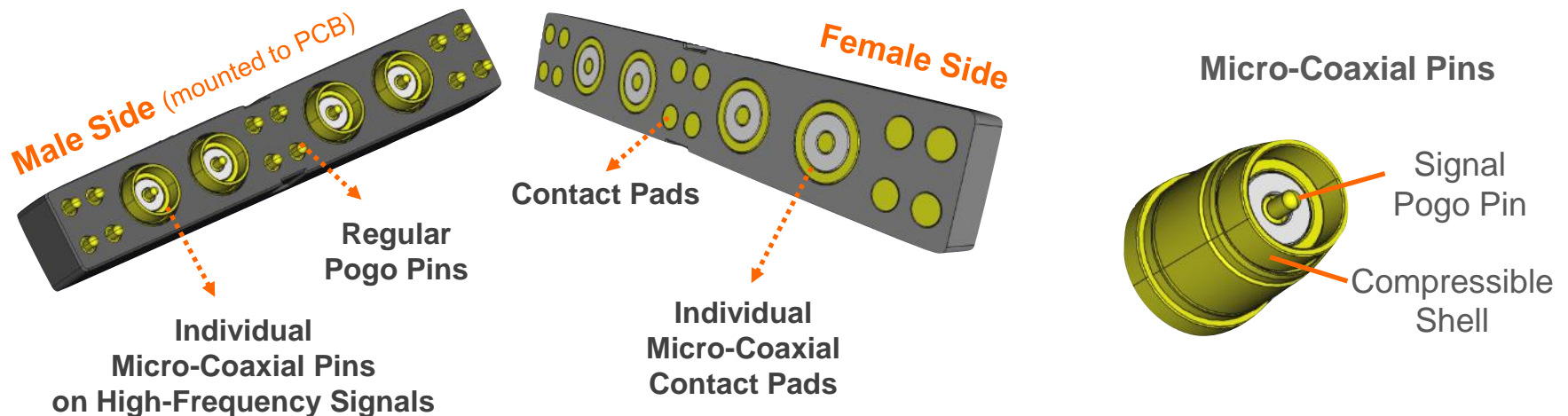
Pin Define

GND	Tx +	Tx -	PWR	D +	D-	PWR	Rx -	Rx +	GND
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High Frequency Connector – Coaxial

Pros:

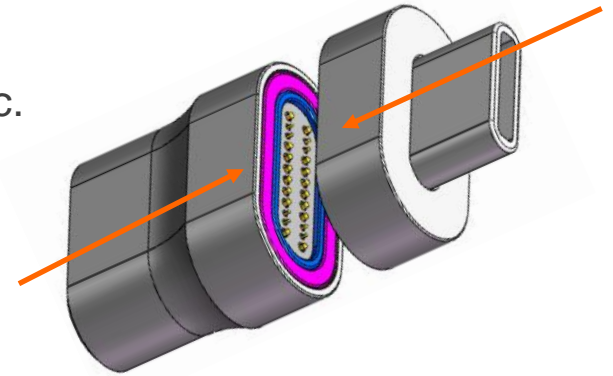
1. RF pins are individually shielded and are capable for USB 3.1 Gen-2 data bandwidth
2. The female side can lay flat on the device for better ID
3. The 2 sides can be mated completely since all the pogo pins and shells are compressible
4. Potentially oriental-free connections



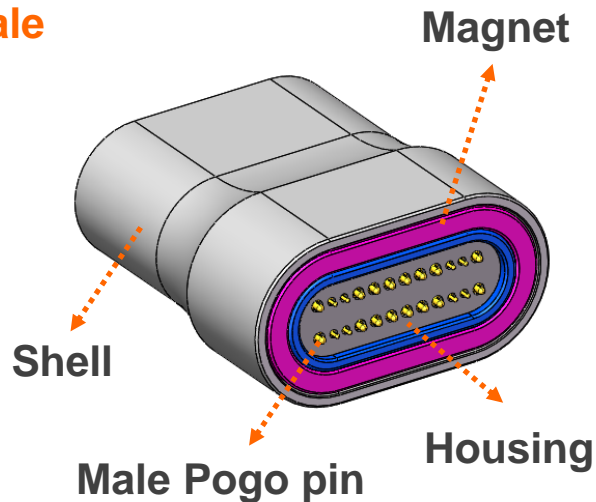
High Frequency Connector - Thunderbolt 3

Pros:

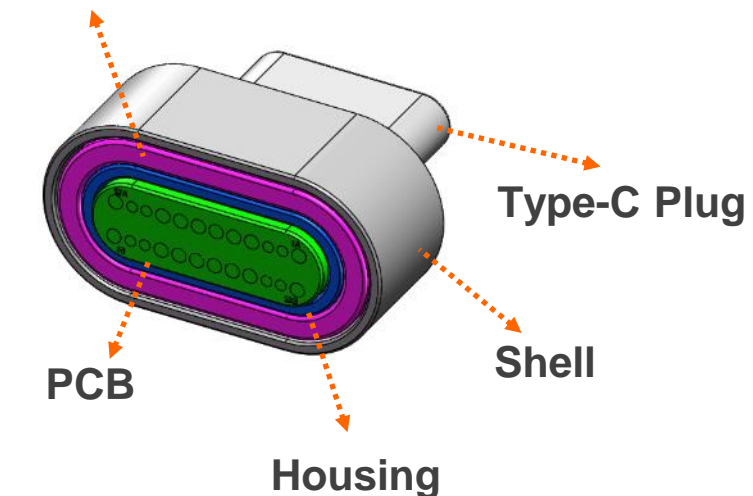
1. Compatible to USB 3.1 Gen-2 and full Thunderbolt 3 spec.
2. Male and female connector docking by magnetic force
3. Oriental-free connections



Male



Magnet

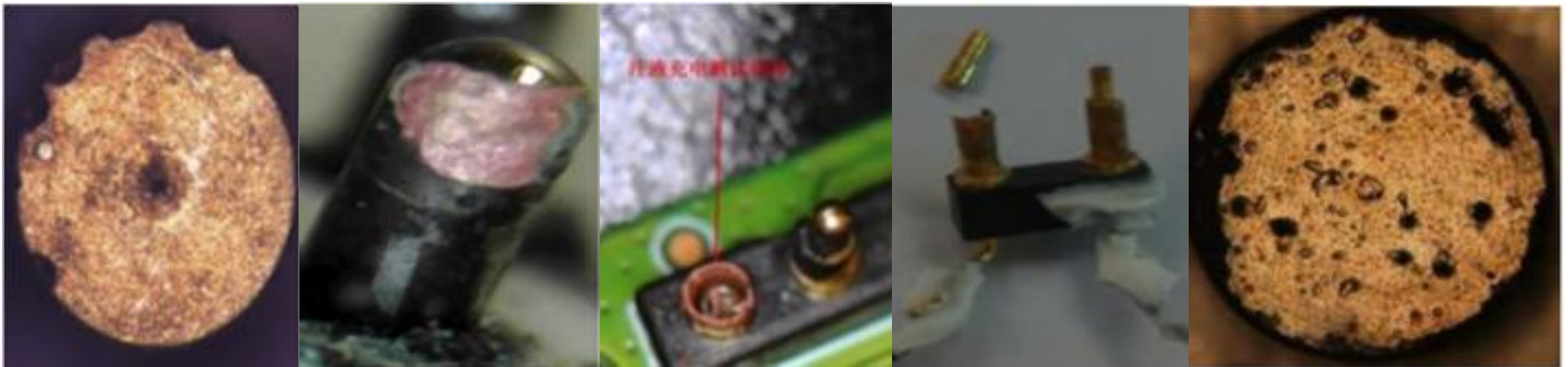


Anti-Corrosion Plating




Recently more and more smart watches and bracelets use Pogo Pins to fit the space constraints in such products



Wearable products are usually waterproof and are often charged after getting in contact with electrolytes such as sweat and water. Ideal conditions for Galvanic Corrosion.



Connector - Plating Comparison

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
Impedance (mΩ)	EIA-364-23	< 50	< 50	< 50	< 50
Salt Spray resistance (HR)	EIA-362-26	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

Connector - Medical

Critical Care System



Brainwave Headband



Catheter



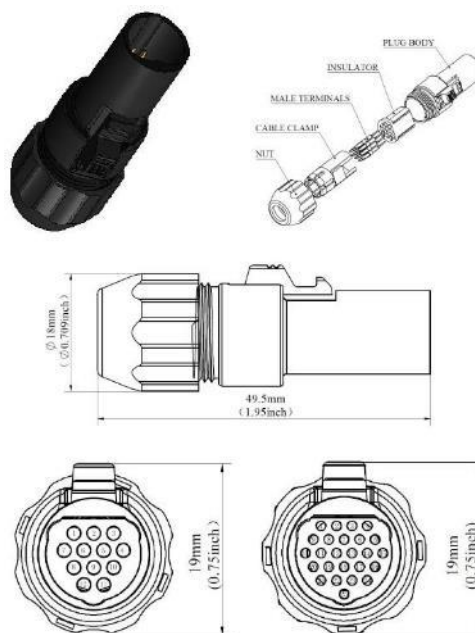
Endoscope



Medical Connector - 12/25 Pin

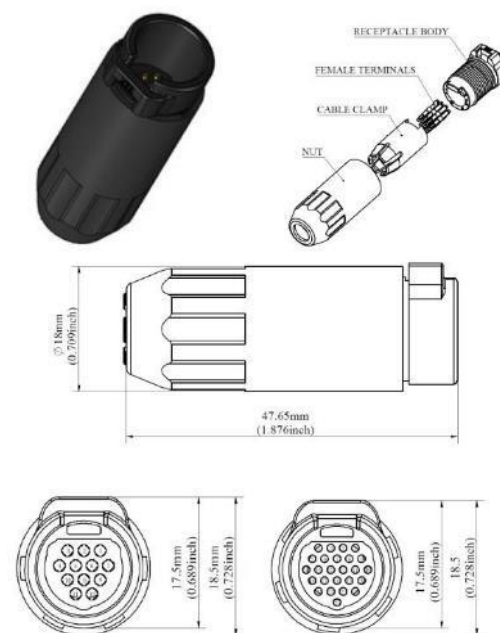
Product type		12 pin	25 pin
MECHANICAL PERFORMANCE			
Contact diameter		0.5mm(0.018inch)	0.4mm(0.016inch)
Extraction force (per contact)		0.2 N~0.8N	0.1 N~0.6N
Contact mating cycles life	Normal socket	10000 MAX	10000 MAX
	Wire spring socket	30000 MAX	30000 MAX
Cable diameter		5~8mm	5~8mm
ELECTRICAL PERFORMANCE			
Current rating		2.5A	1.0A
Withstand voltage		750V DC	750V DC
Breakdown voltage		1000V DC min	1000V DC min
Contact resistance		< 20mΩ	< 20mΩ
Insulation resistance		≥1000MΩ AT 500V DC	≥1000MΩ AT 500V DC
Solder wire		UP TO 22 AWG	UP TO 26 AWG
Crimp wire		22 TO 26 AWG	26 TO 28 AWG
ENVIRONMENTAL PERFORMANCE			
Temperature range		-40°C ~ +80°C	-40°C ~ +125°C
Contacts salt spray		48h	48h

Plug



P/N: A-CM-DQ003000-001S

Receptacle



P/N: A-CF-DQ003000-003S

Metal Waterproof Type-C Connector

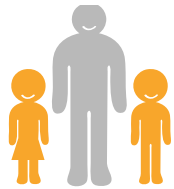
- Application: Medical / Military
- High Speed Transmission
- Customized Size: M8, M10, M12, M16, M18 (Type-C: min. M14)
- Customized Plating Color



Waterproof Level: IP57



Social Responsibility



Summer camp for employees' children.

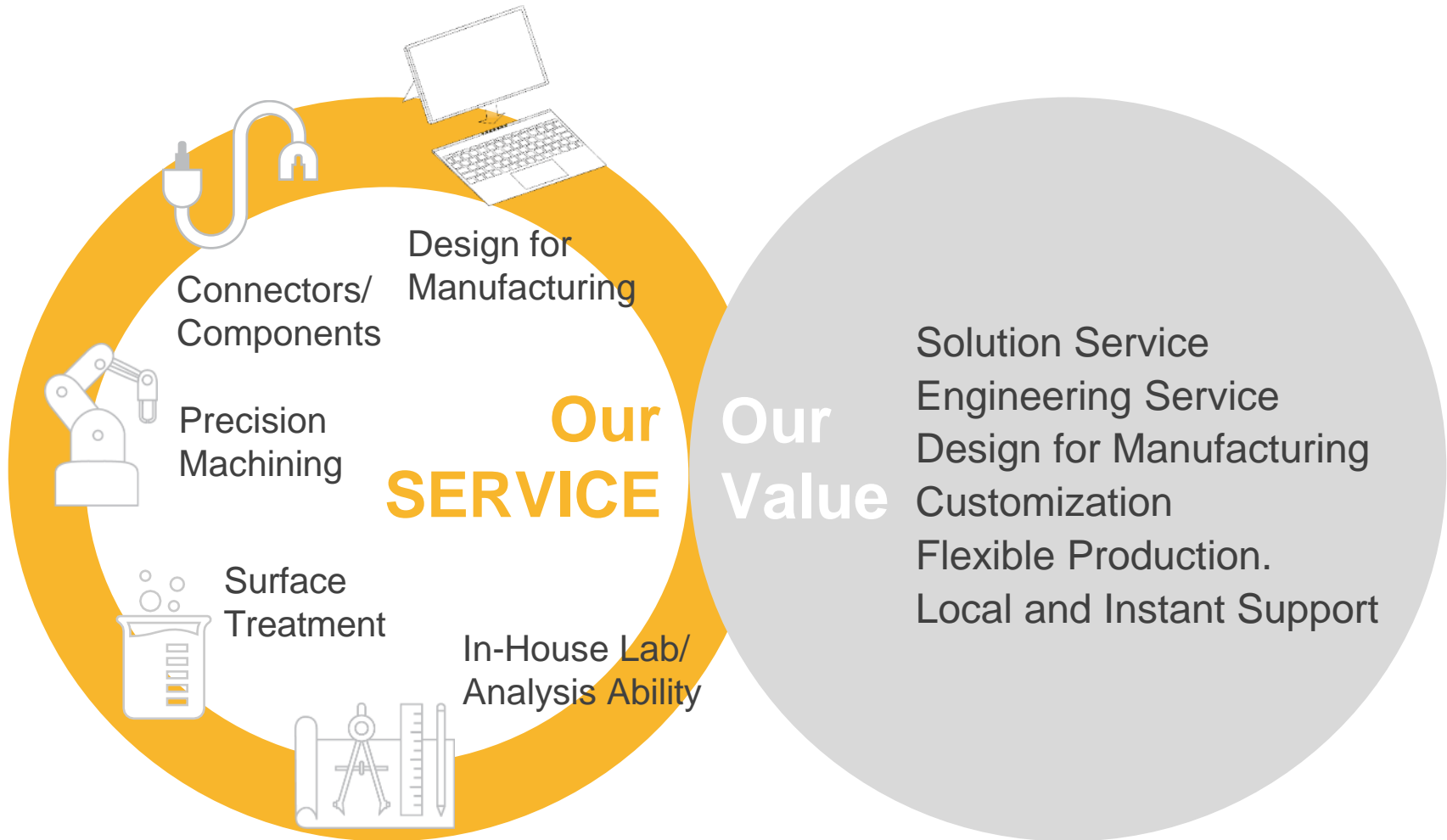


Home visit to employees around the world.



CCP offers tuition scholarship for employees' children.

Create Value for Customers





Q&A