

# Pogo Pin Connectors

Single Pins  
Connector Modules  
Customized Connectors



C.C.P. CONTACT PROBES

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# ABOUT US

## Introduction

C.C.P. Contact Probes Co., Ltd. is a leading global manufacturer of Contact Probes, Pogo Pins, Testprobes, Springloaded Connectors, and Crown Spring Connectors.

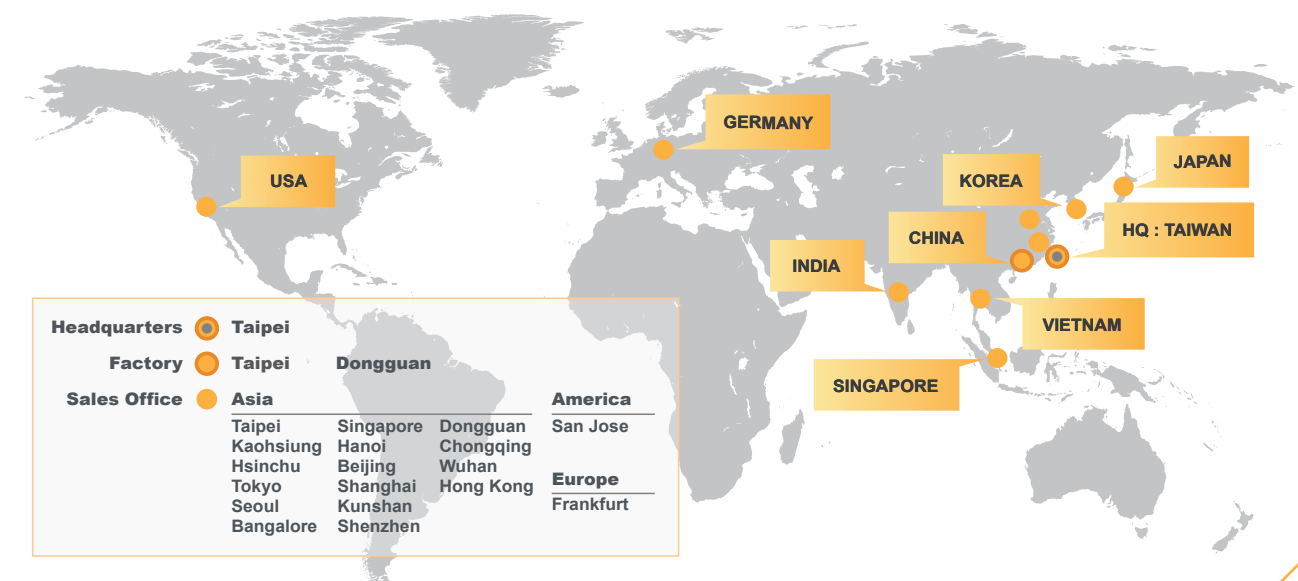
In 1986 we began as a specialized provider of test probes and socket auxiliary solutions and slowly expanded our product portfolio in related industries such as electronic components manufacturing. Among our customers are renowned brands like Apple and Amazon and our products are revered by our customers for their exceptional reliability and superior quality.

Our research and development teams are continuously improving our existing products and bringing new innovations to the market to meet the growing demands of our clients. Since 2001 CCP Contact Probes has been a public traded company listed on the Taiwan Stock Exchange. Today CCP has subsidiaries in the United States, China, Germany, India, Japan and Singapore, meeting the needs of our customers around the world.

## Selected Customers



## Locations



### History

- 2019 CCP Japan & Korea Established
- 2018 CCP Germany, Singapore & India Established
- 2016 High Current Connector Product Line
- 2014 CCP USA Established
- 2003 Listed on Taiwan Stock Market (TW. 6217)
- 2002 Commercial Connector Product Line
- 2001 CCP Dongguan Factory Established
- 1986 CCP Established/ Testing Product Line

### Company Culture



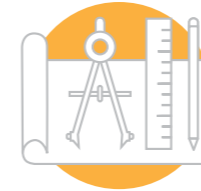
Yearly Home Visit



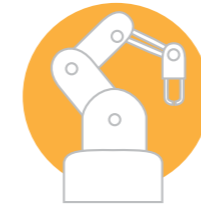
Employee's Children Summer Camp



Tuition Subsidy for Employee's Children



Over 30 Years of Product Development Experience  
Servicing Industry-leading Clients

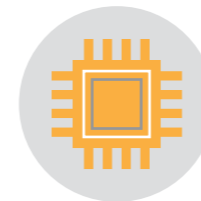


Agile and Flexible Design Process with Self-owned  
Turning and Plating Factory



A Proven Track-record of Reliability, an Industry Certified Quality  
Management System, and State-of-the-art Production Equipment

### Product Lines



Testing Solutions



Commercial Connector Solutions



High Current Connector Solutions

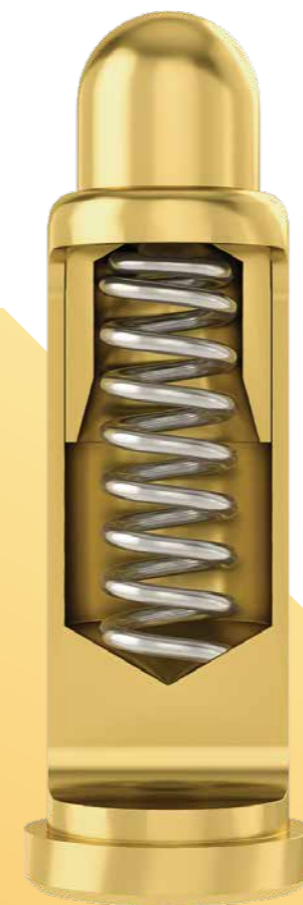
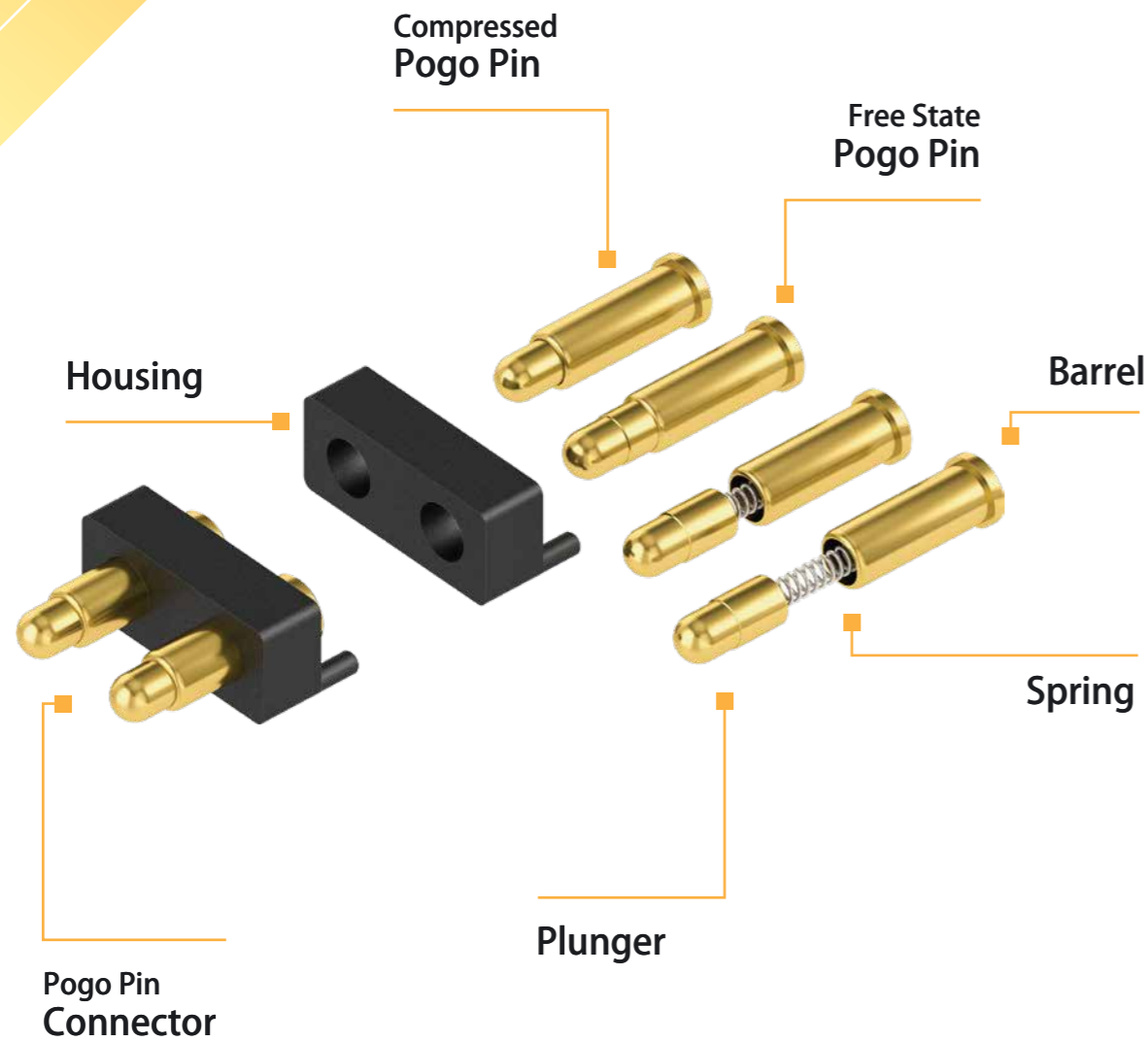


Industrial Connector Solutions

# POGO PIN INTRODUCTION

# WHEN TO USE POGO PINS

Advantage



## 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 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.

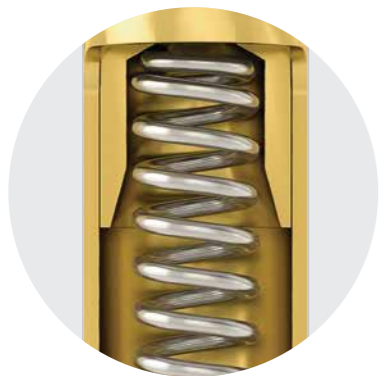


### Material

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

## BACK 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

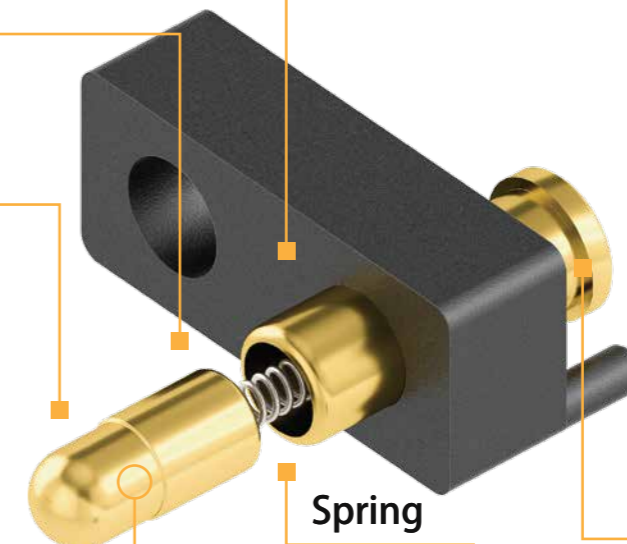
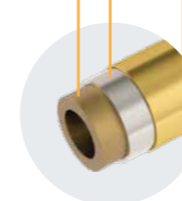
## Ball

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

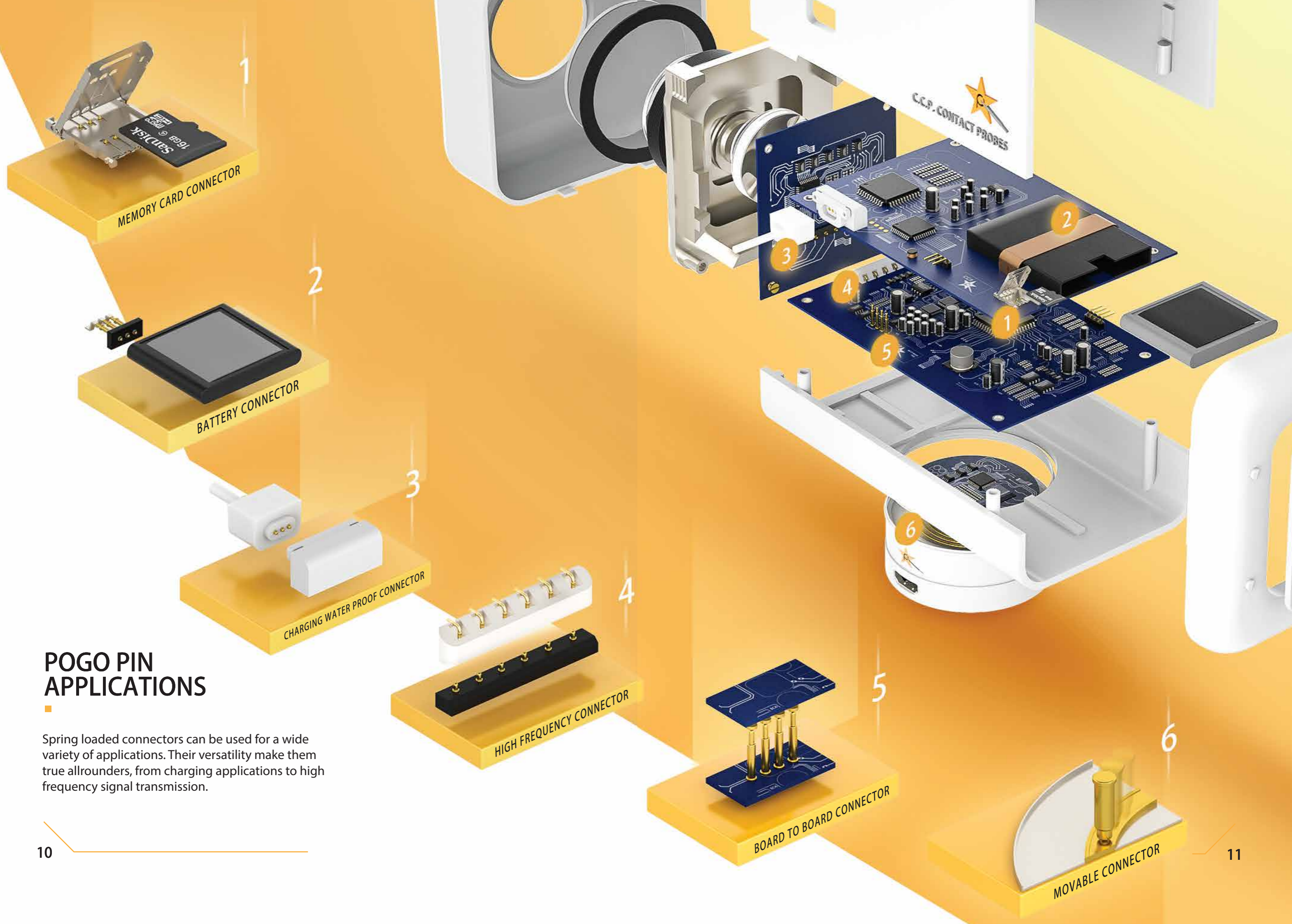
## Understanding Galvanic Corrosion:

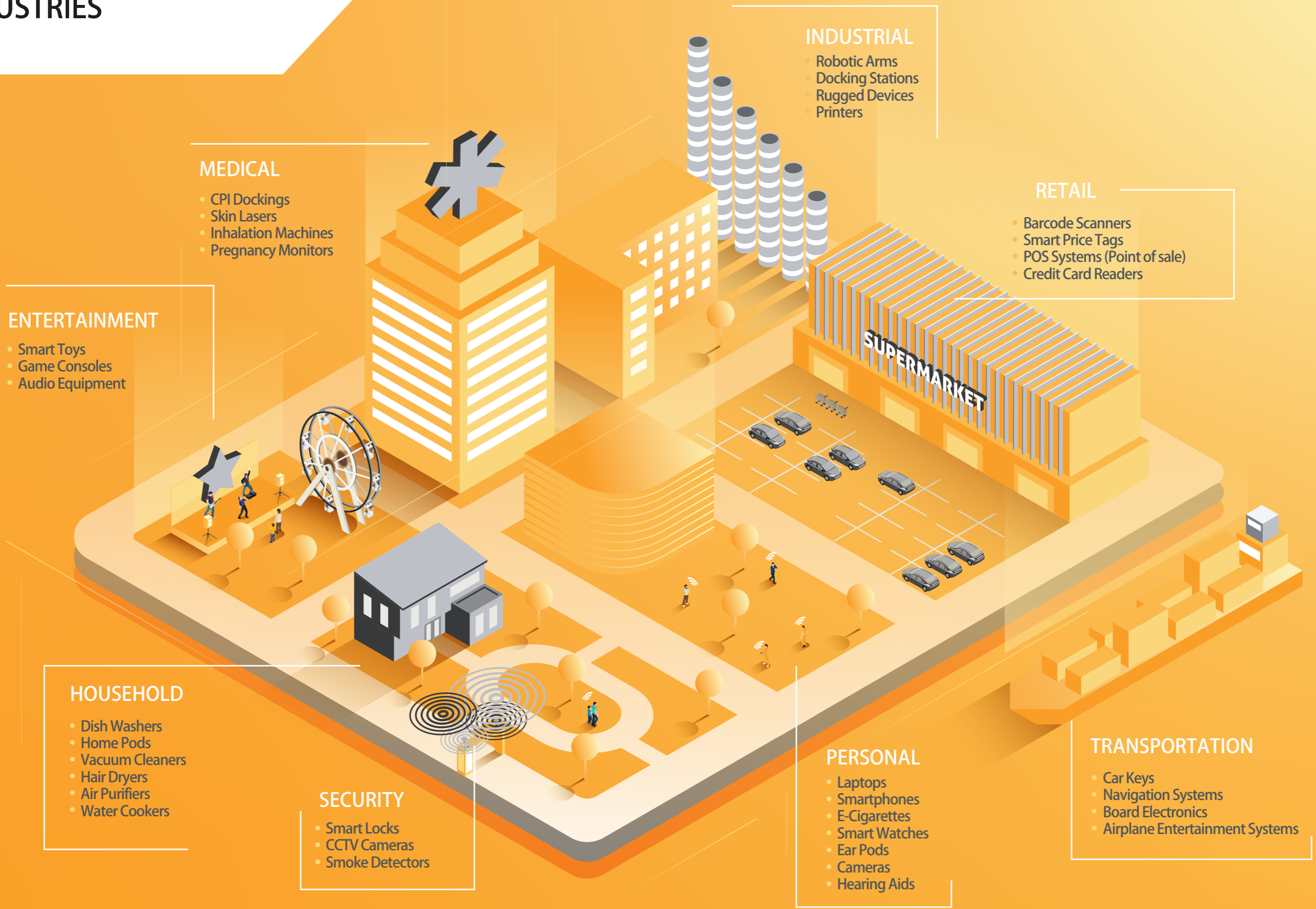
Galvanic corrosion occurs, when two different metals of different nobility get into close contact in the presence of an electrolyte such as water. Dissimilar metals have different electrode potentials which cause one of the metals to act as a cathode and the other as an anode. The resulting current flow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







# 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.



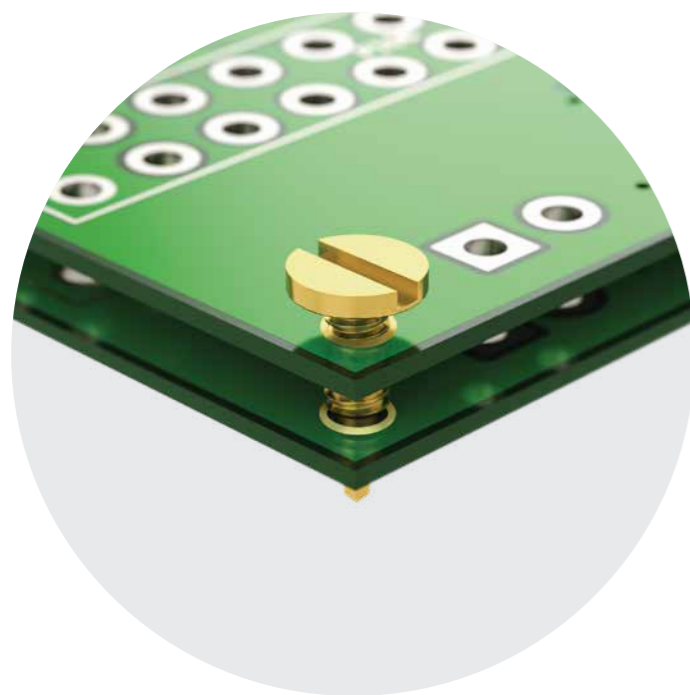
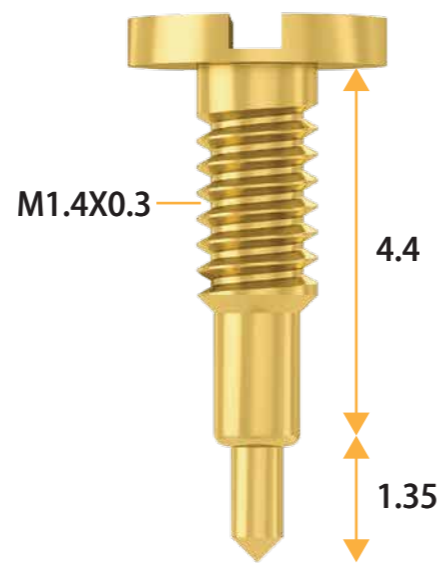
Diameter	Current	Durability
Min 1 mm	1A - 5A	Min 10'000 Compressions
Spring Force	Contact Resistance	Travel Distance
145g ± 20g	30 mΩ — 100 mΩ	Up to 25 km

# 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.



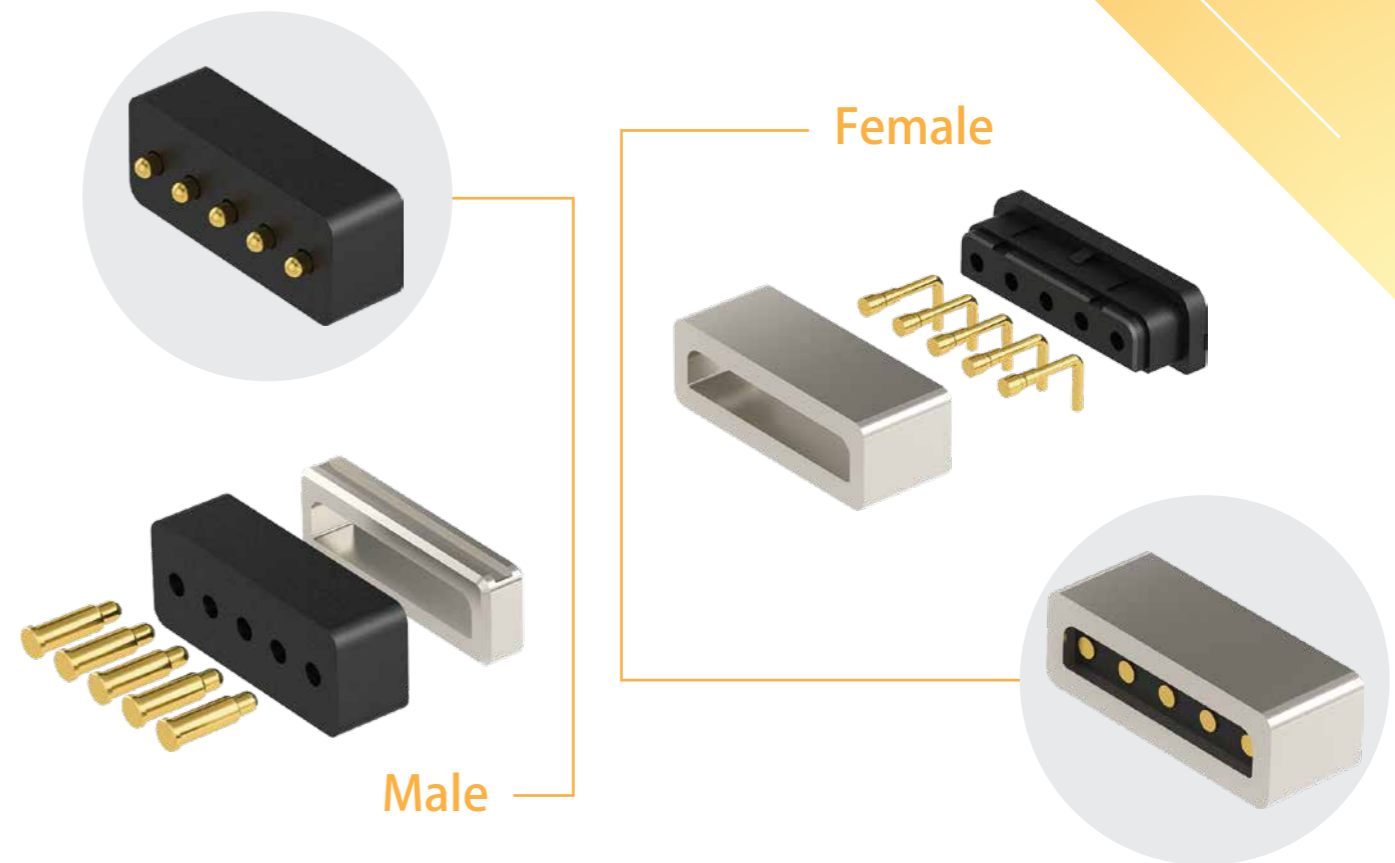
CASE



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

# MAGNETIC CONNECTORS

● Magnet ● Plastic Housing ● Pogo Pin



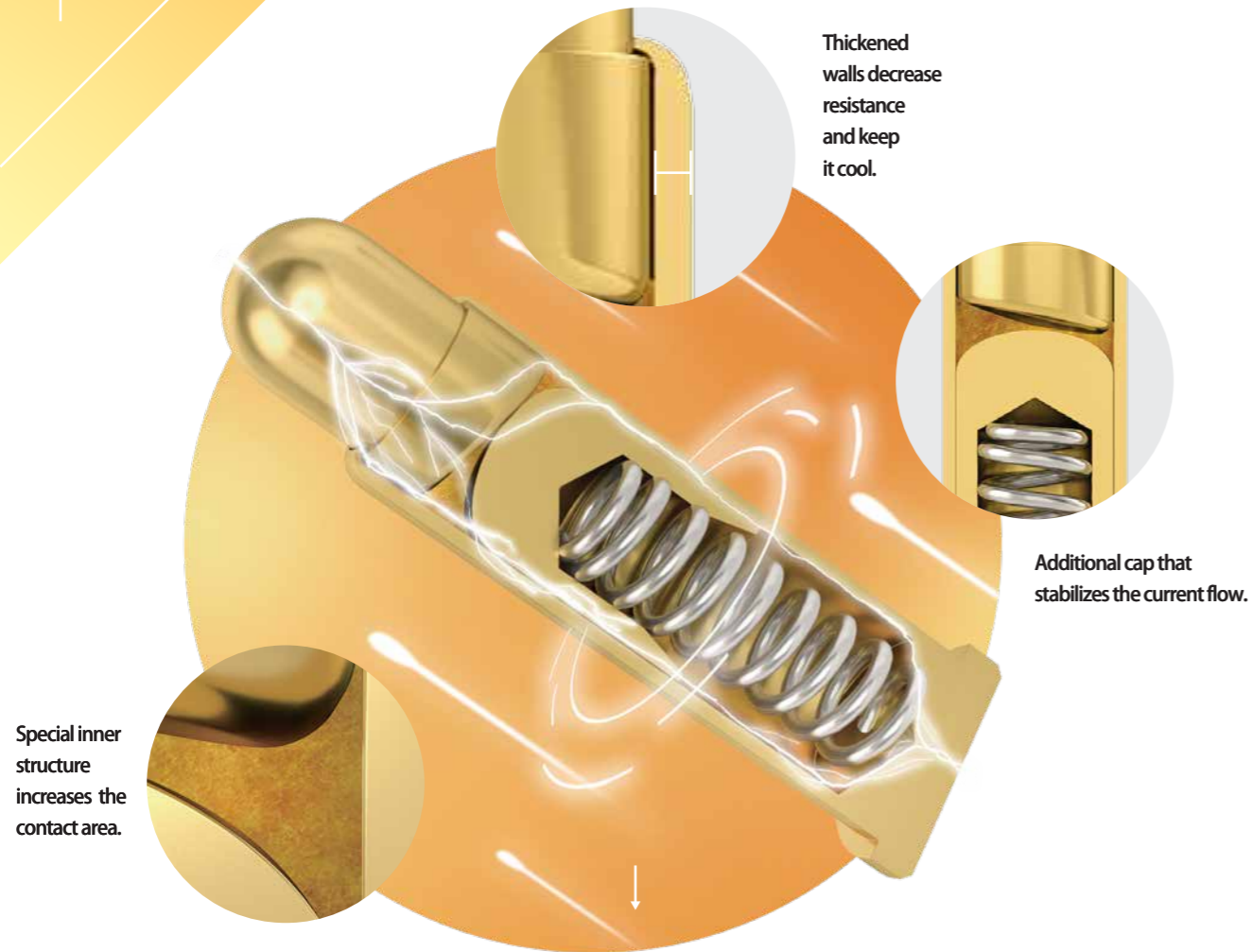
- Easy to plug
- Very durable

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

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

# HIGH CURRENT PINS

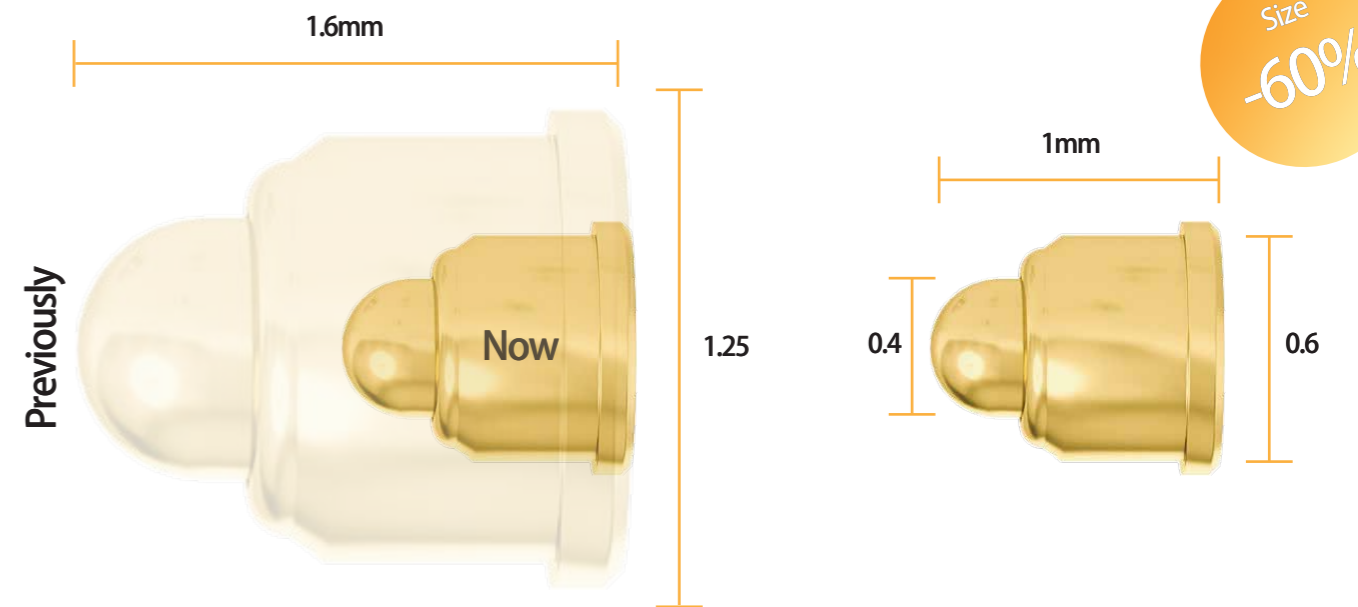
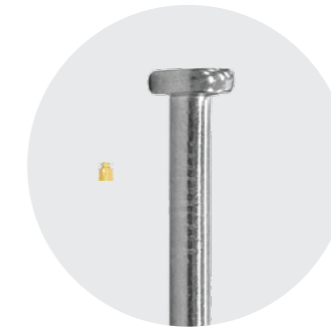
CCP's new high current designs takes Pogo Pins to a new level that is second to none in the industry.



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.

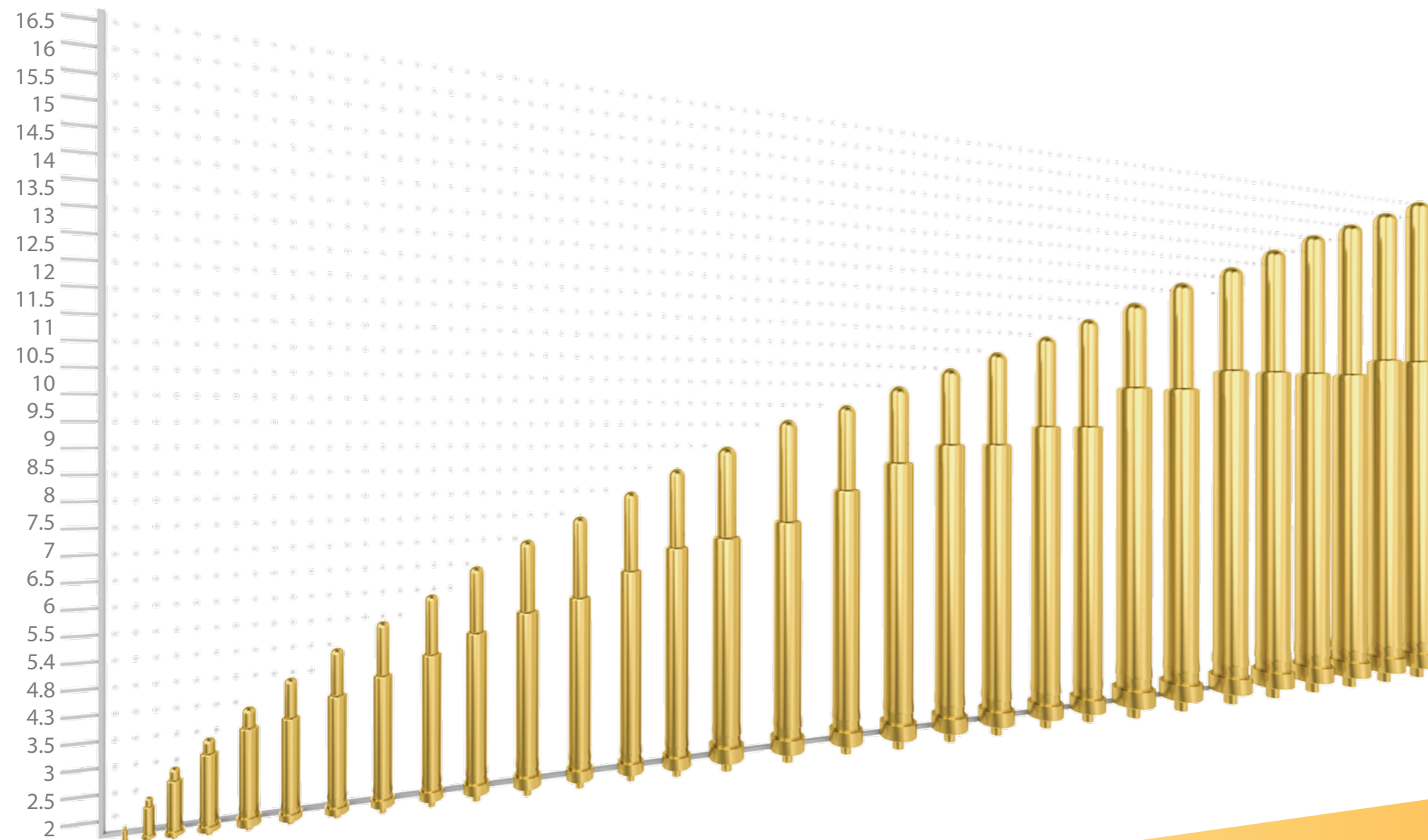


Diameter	Current	Durability
0.6 mm	1A	3,000 compressions
Spring Force	Contact Resistance	
25 g	175 mΩ	

# STANDARD PINS

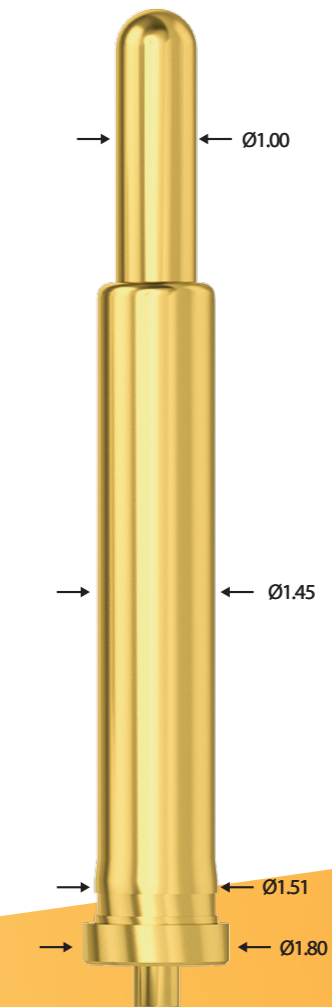
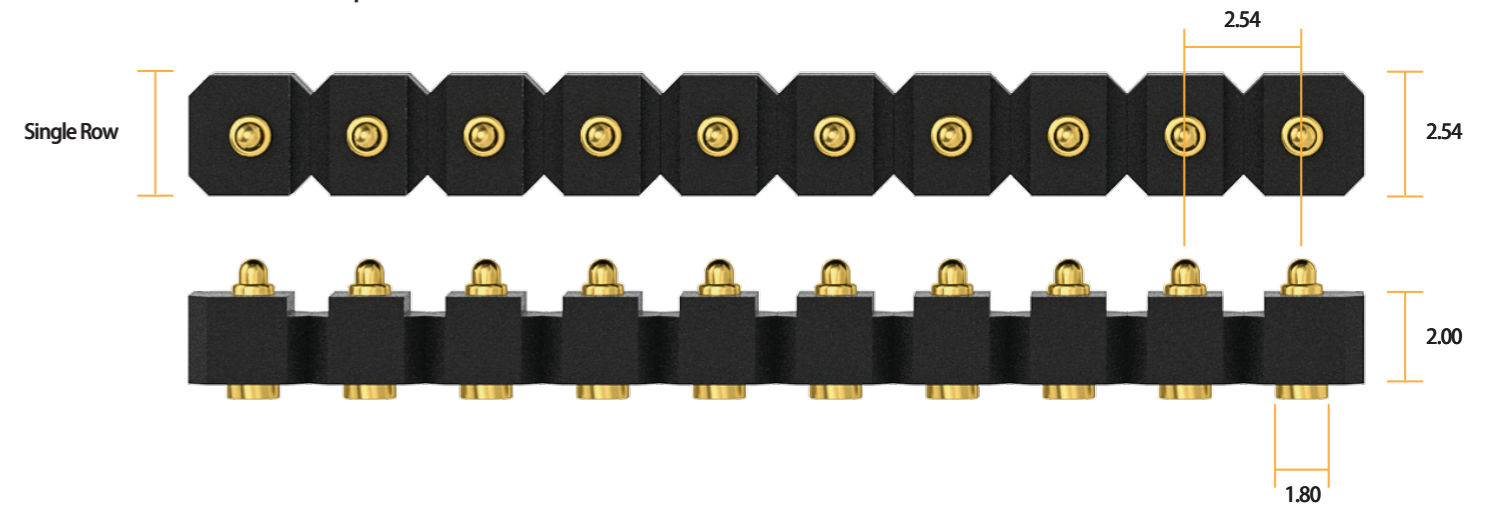
2.54mm Pitch

The Standard Connector Series aims to offer a comprehensive selection of internationally compatible connectors. Its smart design and simple structure makes it very cost effective even at small volumes.



## Modular Housing:

Available from 1-20 columns and up to 4 rows.

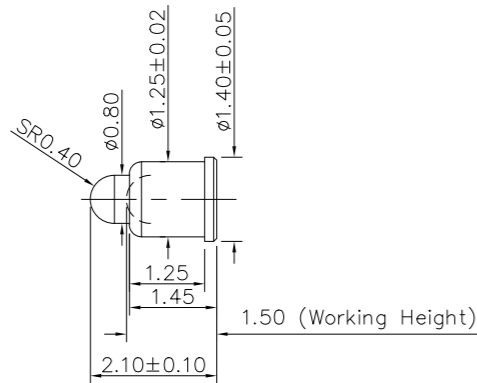


## Technical Specs:

- Available Spring Force: 30g, 60g and 100g
- Current Rating: 1-5 Amps
- Durability: 100.000 Life Cycles
- Pitch: 2mm, 2.5mm or/and 2.54mm
- Diameter: 1.3 and 1.45
- Tail: No Tail and Tailed Versions

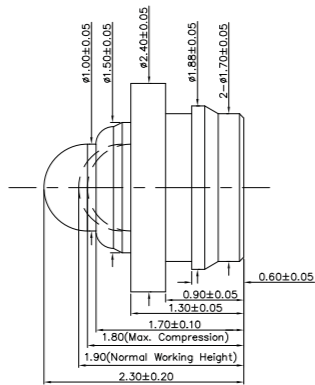
# SINGLE PIN

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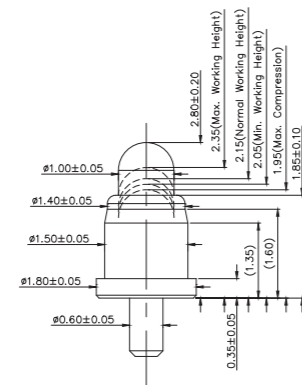
PN: H199M2-R

Length: 2.10 mm  
 Working Height: 1.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 100g  $\pm$  20%



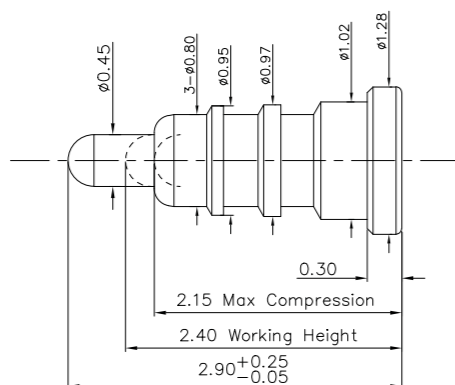
PN: P5271FP04

Length: 2.30 mm  
 Working Height: 1.90 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 80g  $\pm$  20g



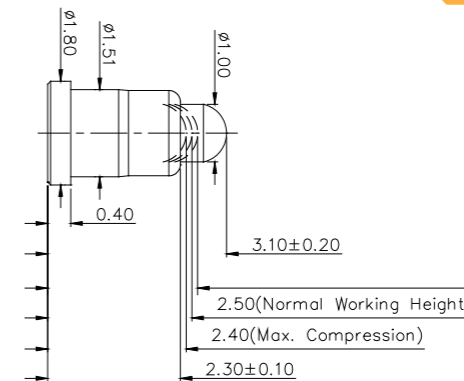
PN: P5625MF01-01A000CR

Length: 2.80 mm  
 Working Height: 2.15 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 40g  $\pm$  15g



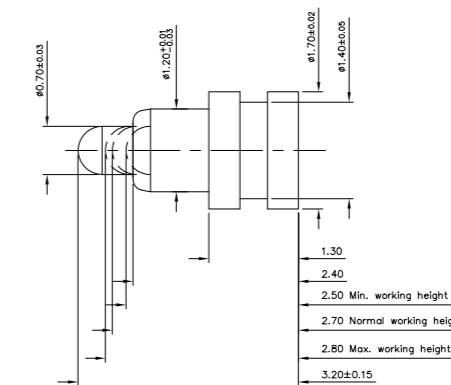
PN: P2988FH03

Length: 2.90 mm  
 Working Height: 2.40 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 60g  $\pm$  20g



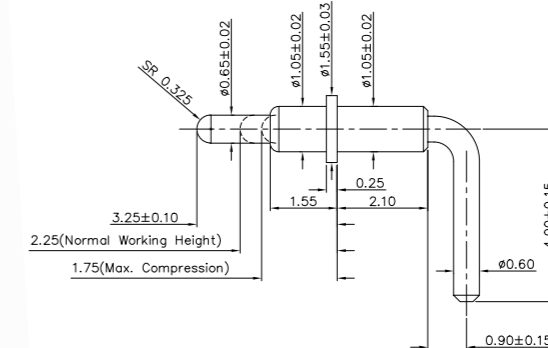
PN: P3198FH01

Length: 3.10 mm  
 Working Height: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 80g  $\pm$  20g



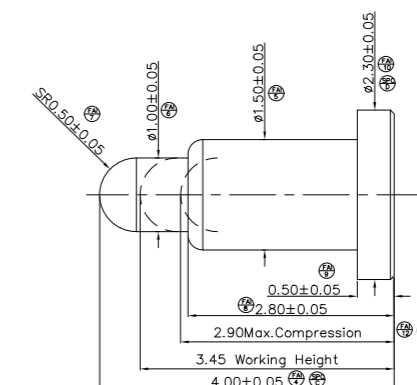
PN: P2616FH03

Length: 3.20 mm  
 Working Height: 2.70 mm  
 Current: 1.5 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 80g  $\pm$  20g



PN: P3533BP02

Length: 3.25 mm  
 Working Height: 2.25 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 80g  $\pm$  20g

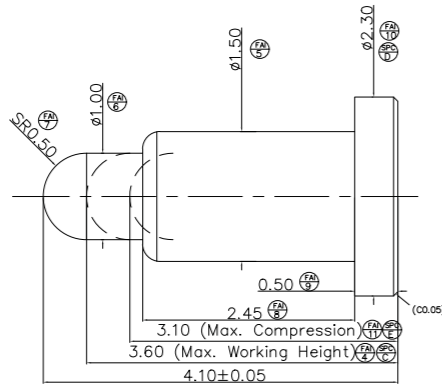


PN: P3775FH01

Length: 4.00 mm  
 Working Height: 3.45 mm  
 Current: 1 Amp  
 Contact Resistance: 200 m $\Omega$   
 Spring Force: 45g  $\pm$  10g

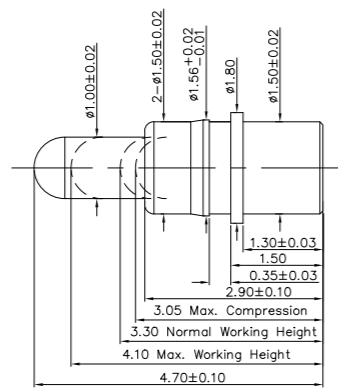
# SINGLE PIN

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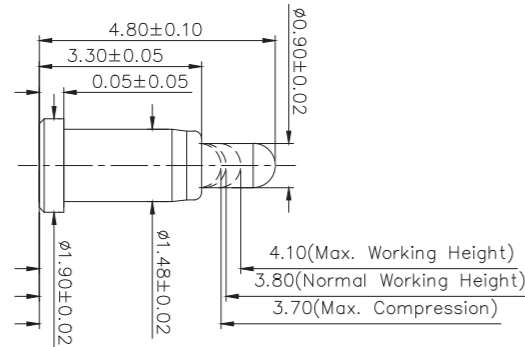
PN: P5067FP01-R

Length: 4.10 mm  
 Working Height: 3.60 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 100g ± 20%



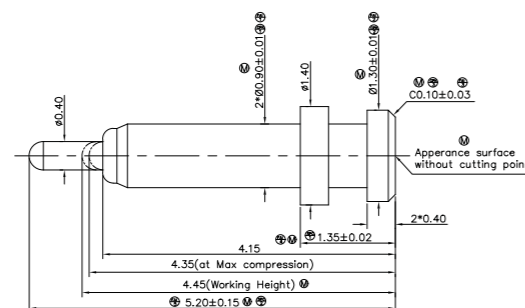
PN: P3697PP01

Length: 4.70 mm  
 Working Height: 3.30 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 60g ± 20g



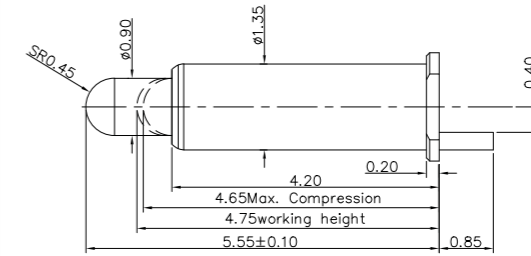
PN: P5660MF03-01A000CR

Length: 4.80 mm  
 Working Height: 3.80 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 70g ± 20g



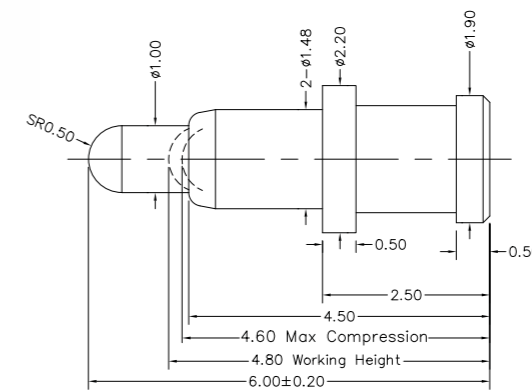
PN: P3989FH01

Length: 5.20 mm  
 Working Height: 4.45 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 65g ± 15%



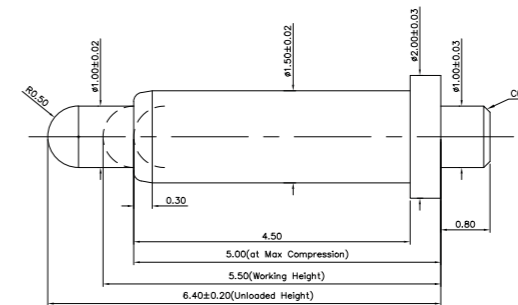
PN: P3730SH02

Length: 5.50 mm  
 Working Height: 4.75 mm  
 Current: 5 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20%



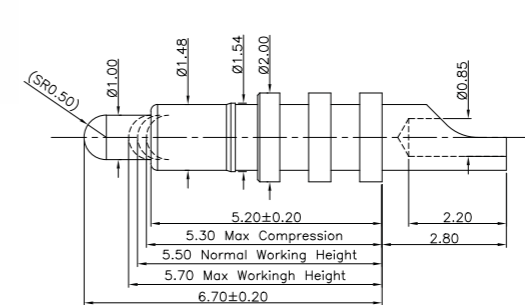
PN: P3256FH01

Length: 6.00 mm  
 Working Height: 4.80 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20g



PN: H024M0

Length: 6.40 mm  
 Working Height: 5.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20%

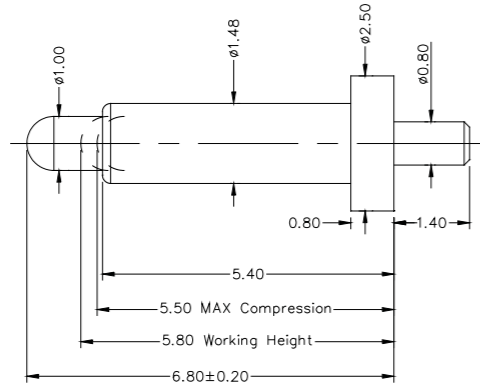


PN: P2859SH01

Length: 6.70 mm  
 Working Height: 5.50 mm  
 Current: 5 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

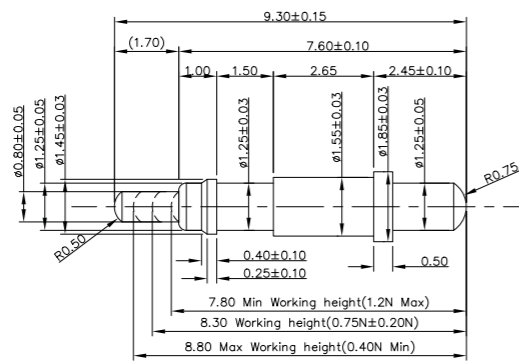
# SINGLE PIN

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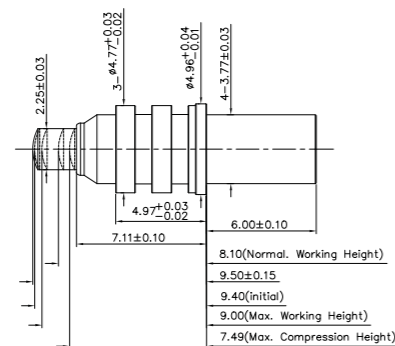
PN: P2871PH01

- Length: 6.80 mm
- Working Height: 5.80 mm
- Current: 3 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 110g ± 20%



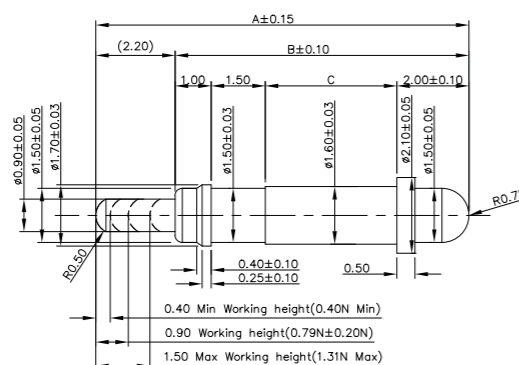
PN: P2631PH03

- Length: 9.30 mm
- Working Height: 8.30 mm
- Current: 2 Amps
- Contact Resistance: 100 mΩ
- Spring Force: 80g ± 20g



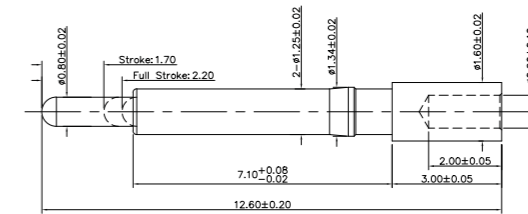
PN: P6123PH03

- Length: 9.50 mm
- Working Height: 8.10 mm
- Current: 5 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 180g ± 20%



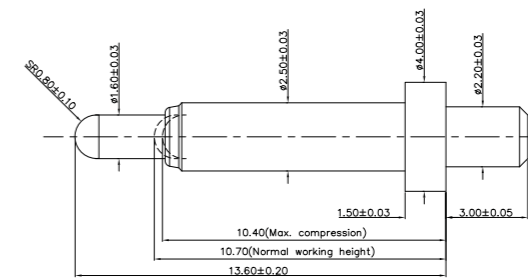
PN: P2683PH09

- Length: 10.05 mm
- Working Height: 0.90 mm
- Current: 2 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 60g ± 20g



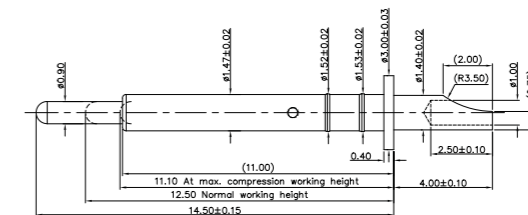
PN: P5773PH02

- Length: 12.60 mm
- Working Height: 2.20 mm
- Current: 1 Amp
- Contact Resistance: 100 mΩ
- Spring Force: 80g ± 20g



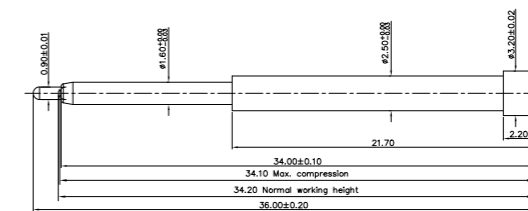
PN: P2783PH01

- Length: 13.60 mm
- Working Height: 10.70 mm
- Current: 5 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 90g ± 20g



PN: P3737SH01

- Length: 14.50 mm
- Working Height: 12.50 mm
- Current: 2 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 100g ± 20%

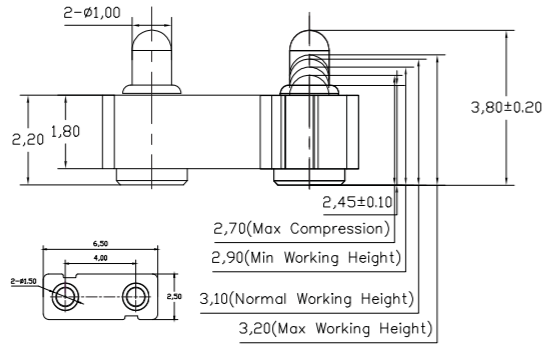


PN: P2977FH01

- Length: 36.00 mm
- Working Height: 34.20 mm
- Current: 1 Amp
- Contact Resistance: 50 mΩ
- Spring Force: 100g ± 20%

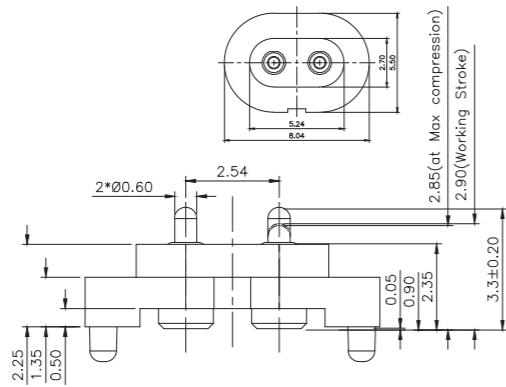
# NON STANDARD CONNECTOR

2 PINS



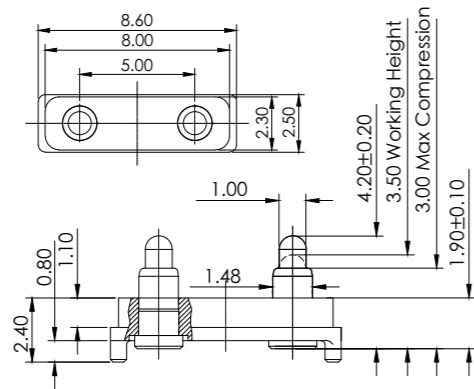
PN: F1106AA01-02A400MR

Length: 3.80 mm  
 Working Height: 3.10 mm  
 Pitch: 4.00 mm  
 Current: 1 Amps  
 Contact Resistance: 100 mΩ  
 Spring Force: 90g ± 20%



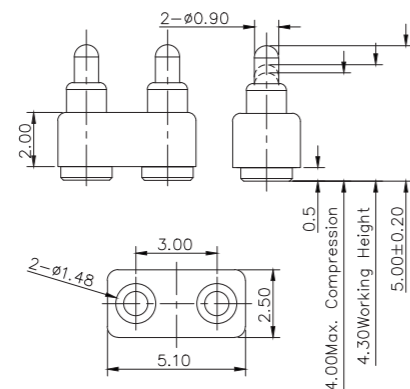
PN: P3013MF01-02F254MR

Length: 3.30 mm  
 Working Height: 2.90 mm  
 Pitch: 2.54 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20g



PN: F969AA01-02A500MR

Length: 4.20 mm  
 Working Height: 3.50 mm  
 Pitch: 5.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20%

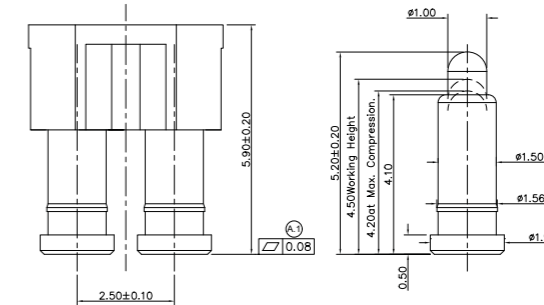


PN: P3708MF01-02F300MR

Length: 5.00 mm  
 Working Height: 4.30 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 60g ± 20g

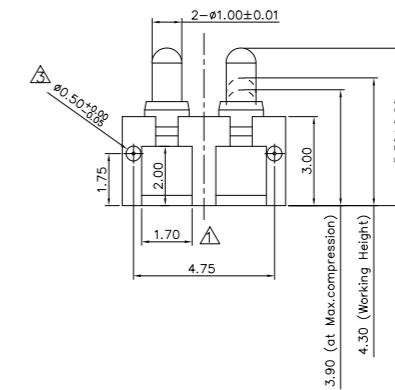
# NON STANDARD CONNECTOR

2 PINS



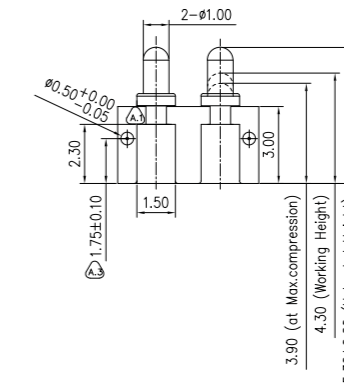
PN: F1835AA01-02A250CR

Length: 5.20 mm  
 Working Height: 4.50 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 60g ± 20g



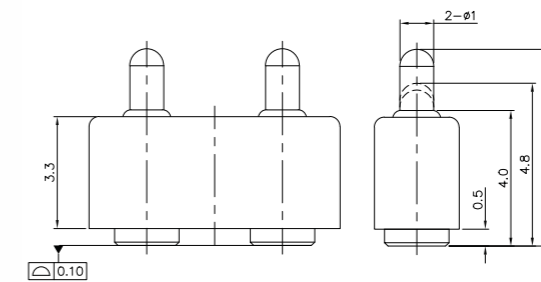
PN: H020M0-H02B250R

Length: 5.30 mm  
 Working Height: 4.30 mm  
 Pitch: 2.50 mm  
 Current: 2.5 Amps  
 Contact Resistance: 100 mΩ  
 Spring Force: 120g ± 20%



PN: H036M0-H02C250R

Length: 5.30 mm  
 Working Height: 4.30 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%



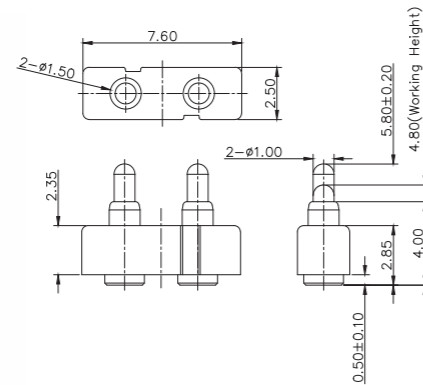
PN: N005M4-02A400HR

Length: 5.80 mm  
 Working Height: 4.80 mm  
 Pitch: 4.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



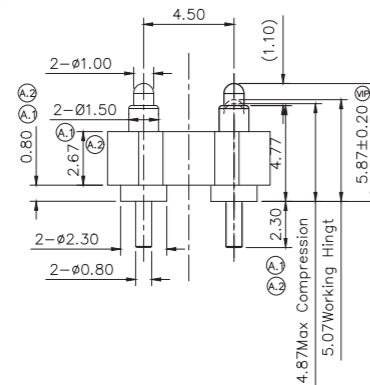
# NON STANDARD CONNECTOR

2 PINS



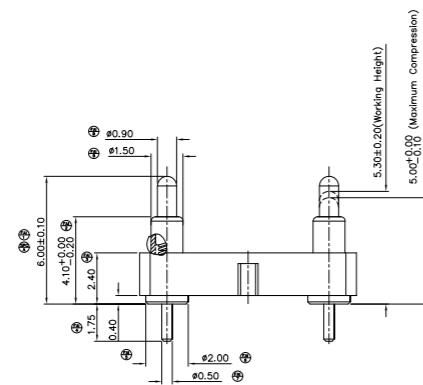
PN: N005M4-02C350MR

Length: 5.80 mm  
 Working Height: 4.80 mm  
 Pitch: 3.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



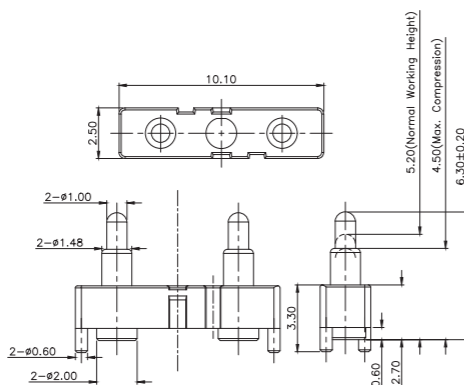
PN: P2688MP01-02G450MR

Length: 5.87 mm  
 Working Height: 5.07 mm  
 Pitch: 4.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



PN: P3721MP01-02A762HR

Length: 6.00 mm  
 Working Height: 5.30 mm  
 Pitch: 2.54 mm  
 Current: 2.5 Amps  
 Contact Resistance: 30 mΩ  
 Spring Force: 50g ± 20%

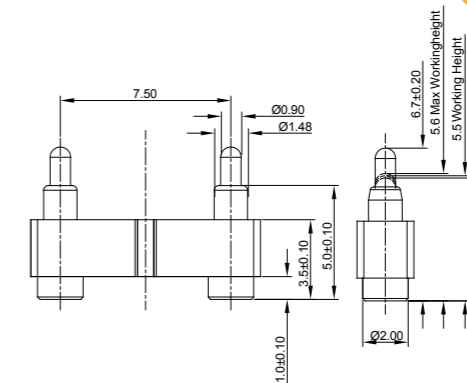


PN: P3037MF01-03A300HB

Length: 6.30 mm  
 Working Height: 5.20 mm  
 Pitch: 6.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

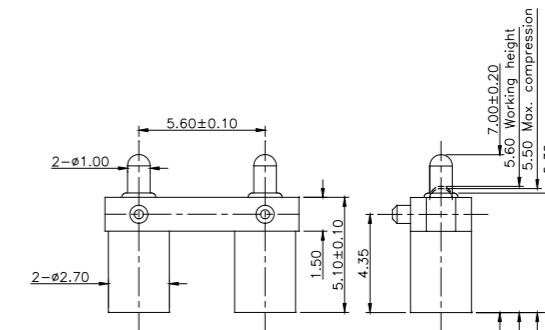
# NON STANDARD CONNECTOR

2 PINS



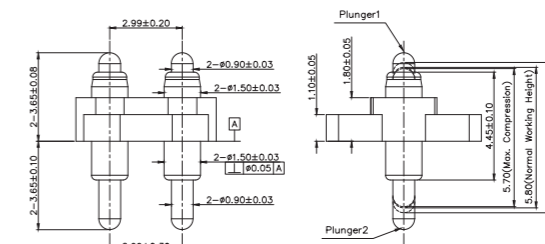
PN: F1615AA02-04B250MR

Length: 6.70 mm  
 Working Height: 5.50 mm  
 Pitch: 7.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



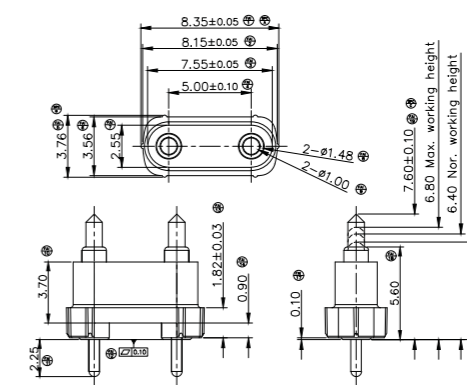
PN: P2723MF01-03B280HB

Length: 7.00 mm  
 Working Height: 5.60 mm  
 Pitch: 5.60 mm  
 Current: 3 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 130g ± 25%



PN: P5121MD10-02A324HB

Length: 7.30 mm  
 Working Height: 5.80 mm  
 Pitch: 2.99 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 85g ± 15%

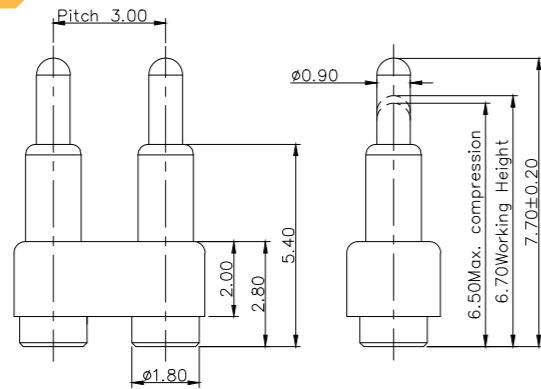


PN: P2388MP10-02G500HR

Length: 7.60 mm  
 Working Height: 6.40 mm  
 Pitch: 5.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%

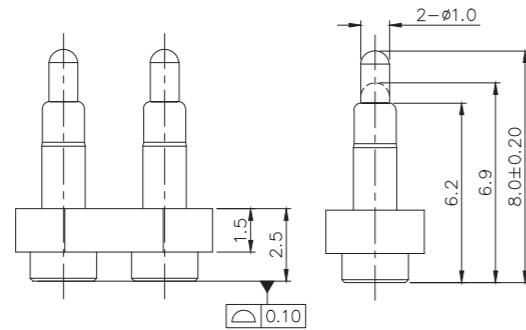
# NON STANDARD CONNECTOR

2 PINS



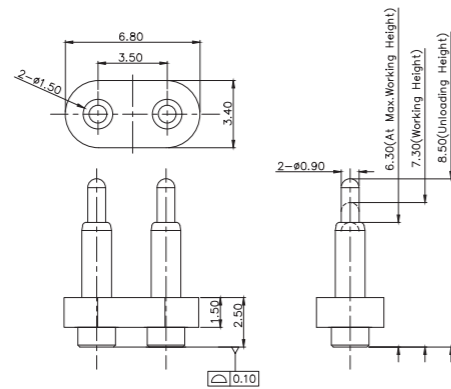
PN: F259AA02-02300MR

- Length: 7.70 mm
- Working Height: 6.70 mm
- Pitch: 3.00 mm
- Current: 1 Amp
- Contact Resistance: 50 m $\Omega$
- Spring Force: 60g  $\pm$  20%



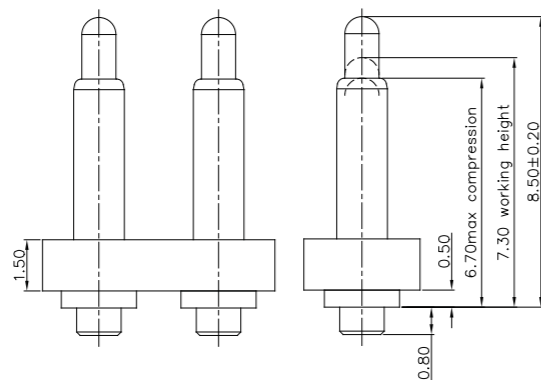
PN: N001M2-02D350MR

- Length: 8.00 mm
- Working Height: 6.90 mm
- Pitch: 3.50 mm
- Current: 1 Amp
- Contact Resistance: 50 m $\Omega$
- Spring Force: 65g  $\pm$  20%



PN: H015M1-02D350MR

- Length: 8.50 mm
- Working Height: 7.30 mm
- Pitch: 3.50 mm
- Current: 1 Amp
- Contact Resistance: 50 m $\Omega$
- Spring Force: 100g  $\pm$  20g

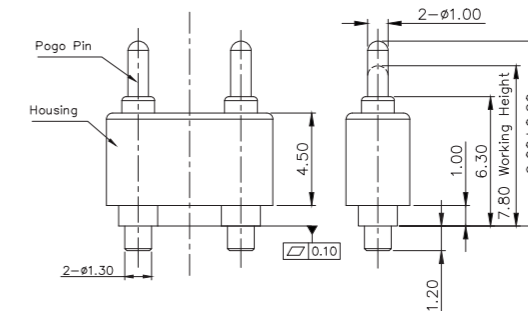


PN: P1089AA01-02D350MR

- Length: 8.50 mm
- Working Height: 7.30 mm
- Pitch: 3.50 mm
- Current: 1.5 Amps
- Contact Resistance: 50 m $\Omega$
- Spring Force: 120g  $\pm$  20%

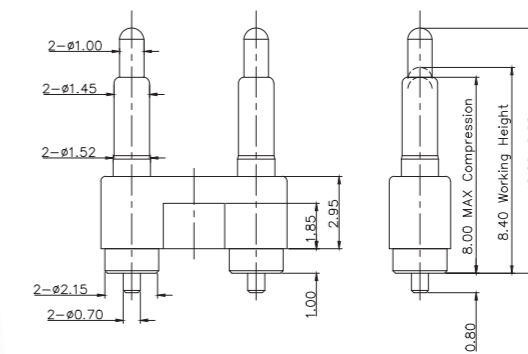
# NON STANDARD CONNECTOR

2 PINS



PN: N002M10-02B500HR

- Length: 9.00 mm
- Working Height: 7.80 mm
- Pitch: 5.00 mm
- Current: 1 Amp
- Contact Resistance: 50 m $\Omega$
- Spring Force: 100g  $\pm$  20g

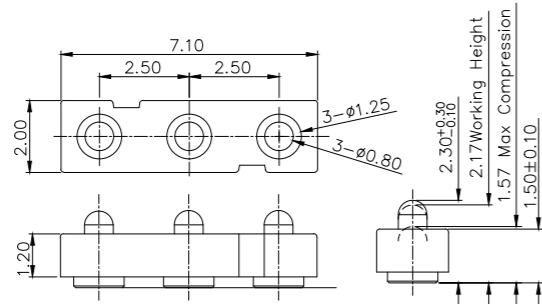


PN: P2780MF01-02A508MR

- Length: 10.00 mm
- Working Height: 8.40 mm
- Pitch: 5.08 mm
- Current: 1 Amp
- Contact Resistance: 50 m $\Omega$
- Spring Force: 100g  $\pm$  20%

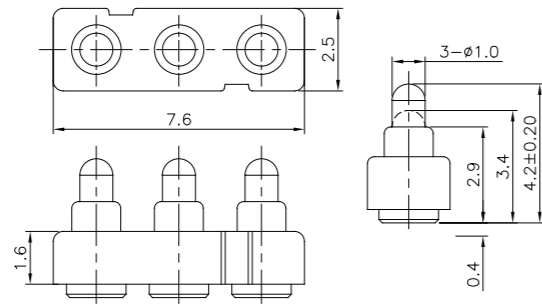
# NON STANDARD CONNECTOR

3 PINS



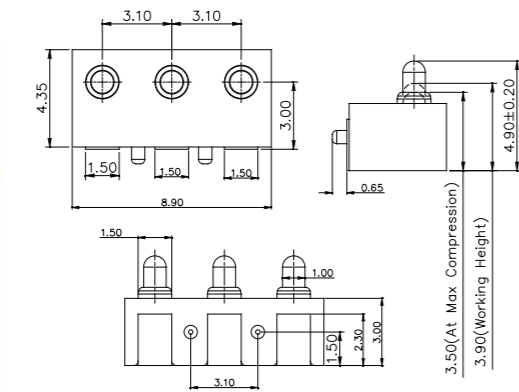
PN: F1106AA01-02A400MR

Length: 2.30 mm  
 Working Height: 2.17 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 80g $\pm$ 20%



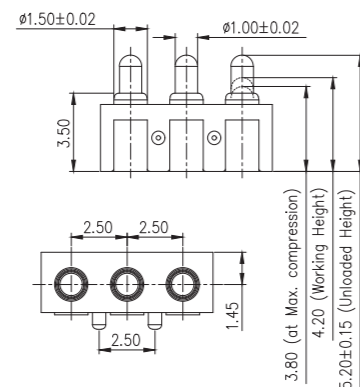
PN: N103M5-03G250MR

Length: 4.20 mm  
 Working Height: 3.40 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%



PN: H003M7-H03A310R

Length: 4.90 mm  
 Working Height: 3.90 mm  
 Pitch: 3.10 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%

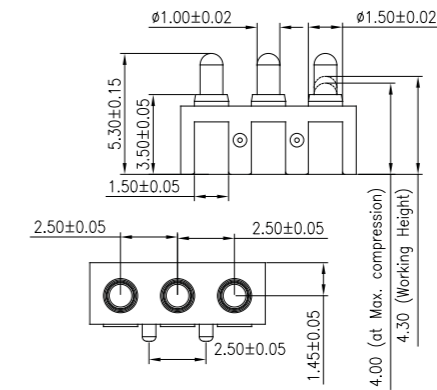


PN: H003M1-H03B250RR

Length: 5.20 mm  
 Working Height: 4.20 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%

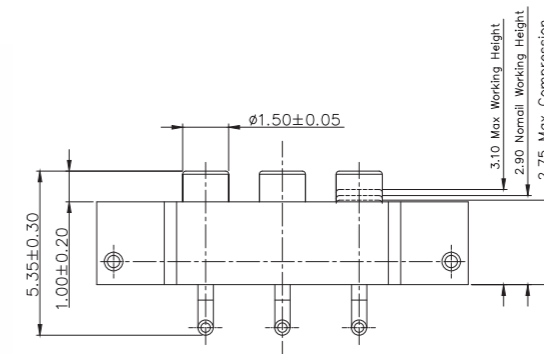
# NON STANDARD CONNECTOR

3 PINS



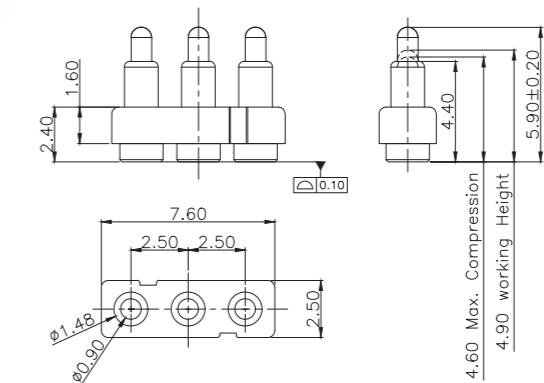
PN: H003M3-H03B250R

Length: 5.30 mm  
 Working Height: 4.30 mm  
 Pitch: 2.50 mm  
 Current: 1 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%



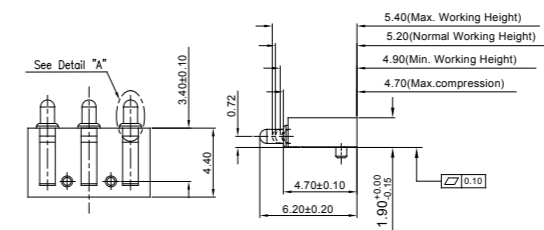
PN: P3309MF01-03R250MR

Length: 5.30 mm  
 Working Height: 3.10 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 100g $\pm$ 20%



PN: F515AA01-03250MR

Length: 5.90 mm  
 Working Height: 4.90 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%

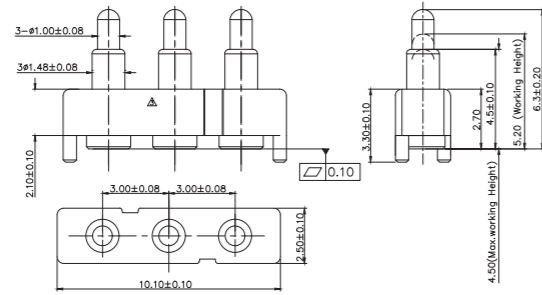


PN: R175AA09-03265HR

Length: 6.20 mm  
 Working Height: 5.20 mm  
 Pitch: 4.90 mm  
 Current: 2.5 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g $\pm$ 20%

# NON STANDARD CONNECTOR

3 PINS

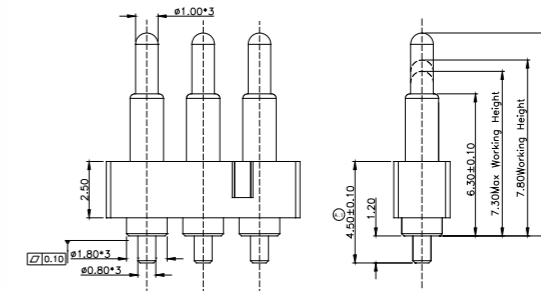


PN: H179M0-03A300MR

Length: 6.30 mm  
 Working Height: 5.20 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

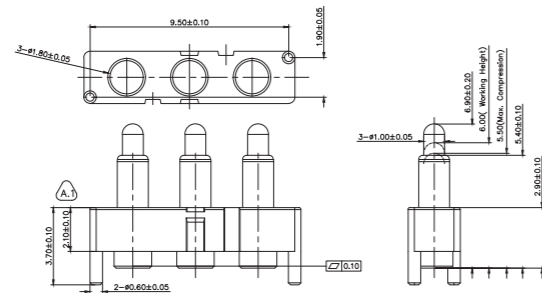
# NON STANDARD CONNECTOR

3 PINS



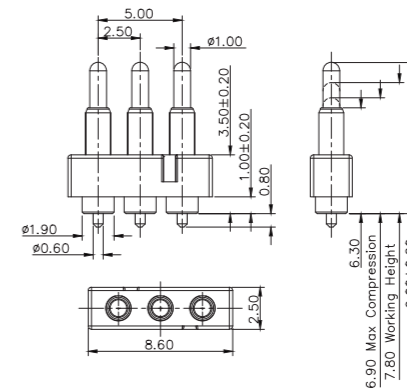
PN: P1500AA01-03C250MR

Length: 9.00 mm  
 Working Height: 7.80 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 60g ± 20%



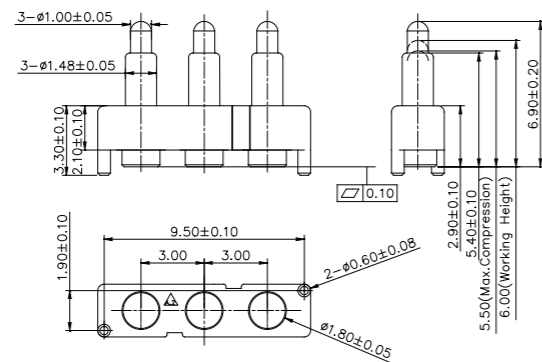
PN: F1767AA01-03A300MR

Length: 6.90 mm  
 Working Height: 6.00 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20%



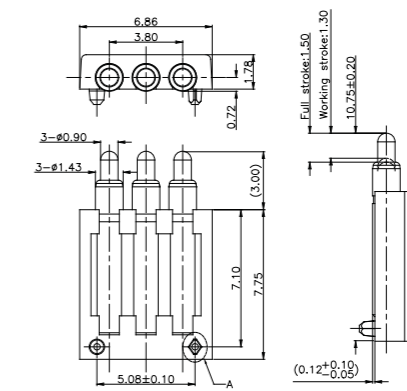
PN: P2223MP01-03C250MR

Length: 9.00 mm  
 Working Height: 7.80 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20%



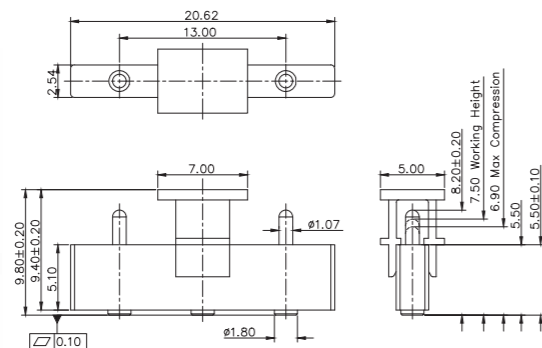
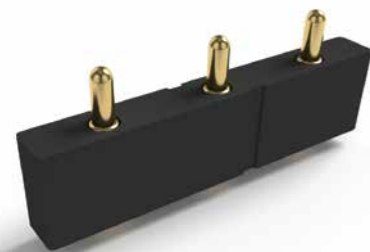
PN: N042M4-03A300MR

Length: 6.90 mm  
 Working Height: 6.00 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 60g ± 20g



PN: R1332AA01-03B190RR

Length: 10.75 mm  
 Working Height: 9.45 mm  
 Pitch: 1.90 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

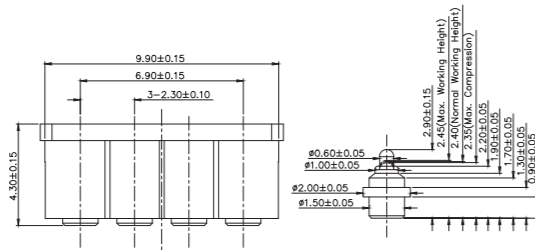


PN: F1712AA02-03D650MR

Length: 8.20 mm  
 Working Height: 7.50 mm  
 Pitch: 6.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 85g ± 20%

# NON STANDARD CONNECTOR

4 PINS

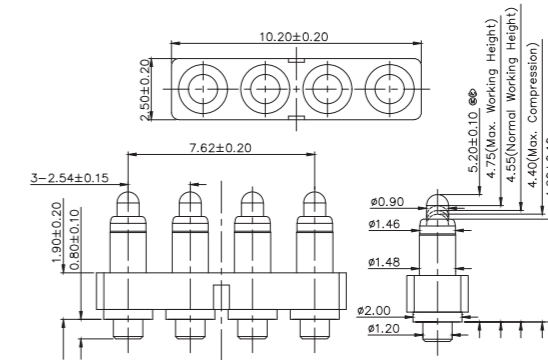


PN: P5331MF02-04A230CR

Length: 2.90 mm  
 Working Height: 2.40 mm  
 Pitch: 2.30 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 75g ± 15g

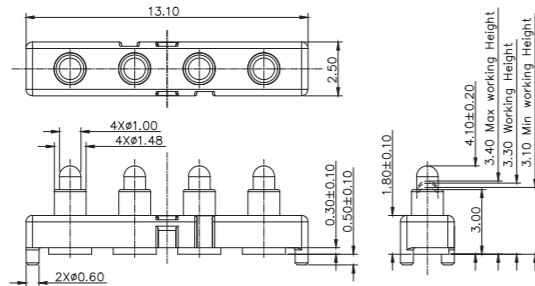
# NON STANDARD CONNECTOR

4 PINS



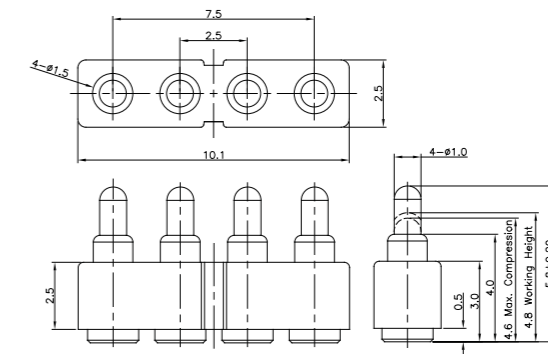
PN: P3859MP01-04A254MR

Length: 5.20 mm  
 Working Height: 4.55 mm  
 Pitch: 2.54 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 55g ± 10g



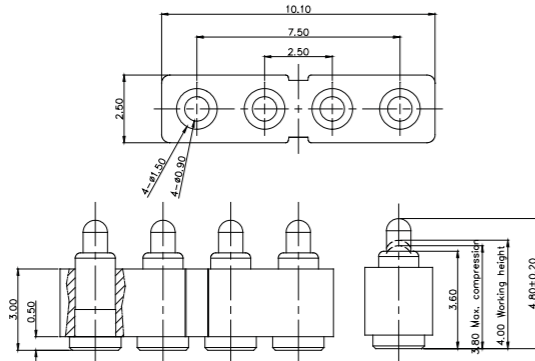
PN: F1853AA02-04F300MR

Length: 4.10 mm  
 Working Height: 3.30 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 80g ± 20%



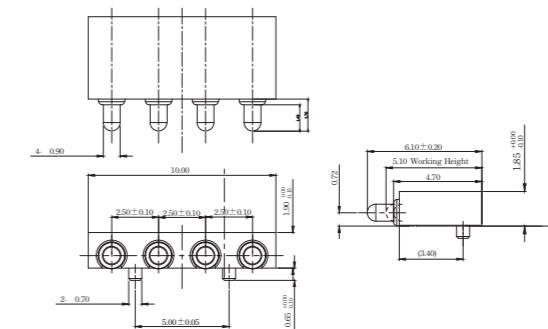
PN: N005M4-04B250MR

Length: 5.80 mm  
 Working Height: 4.80 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



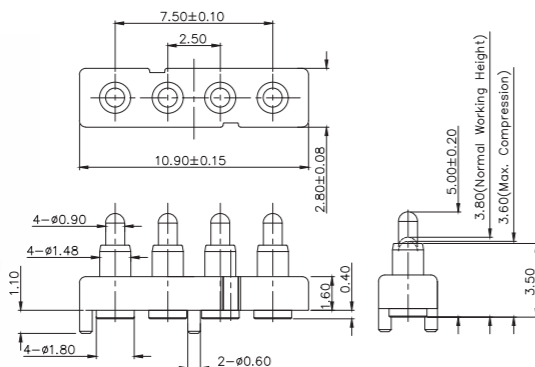
PN: P3063MF01-04B250MR

Length: 4.80 mm  
 Working Height: 4.00 mm  
 Pitch: 2.50 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 90g ± 20%



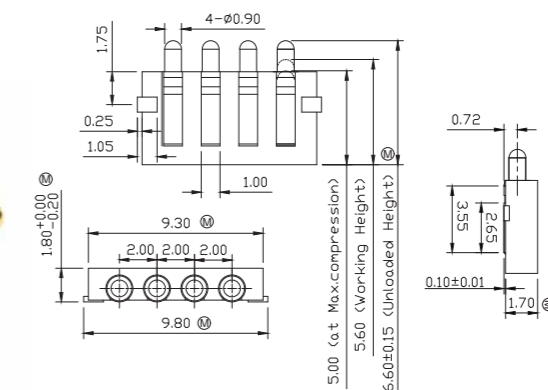
PN: R175AA00-04250RR

Length: 6.10 mm  
 Working Height: 5.10 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%



PN: P2808MF01-04D250MR

Length: 5.00 mm  
 Working Height: 3.80 mm  
 Pitch: 2.50 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 90g ± 20g

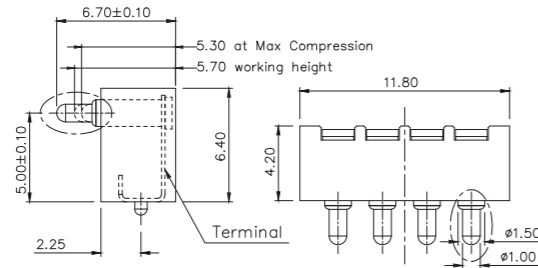


PN: H016M0-H04A200R

Length: 6.60 mm  
 Working Height: 5.60 mm  
 Pitch: 2.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

# NON STANDARD CONNECTOR

4 PINS

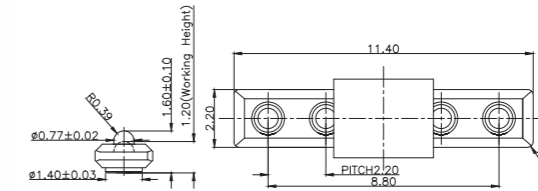


PN: R035AA05-04250RR

Length: 6.70 mm  
 Working Height: 5.70 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%

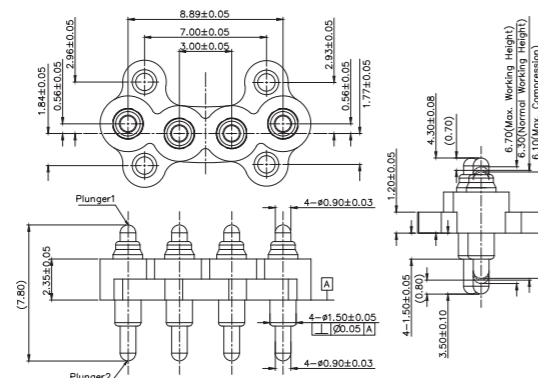
# NON STANDARD CONNECTOR

5 PINS



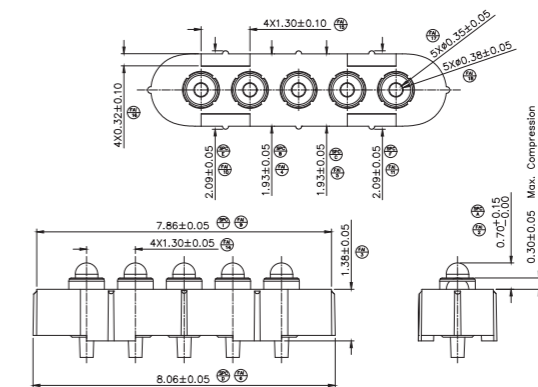
PN: F254AA01-05220MR

Length: 1.60 mm  
 Working Height: 1.20 mm  
 Pitch: 2.20 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 60g ± 20%



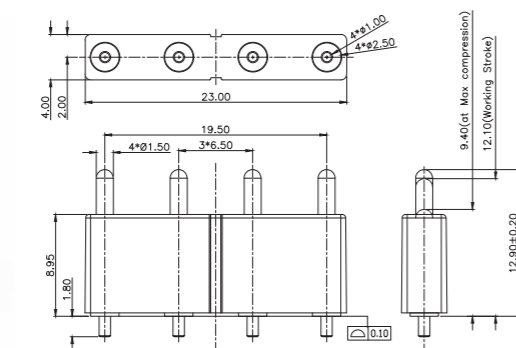
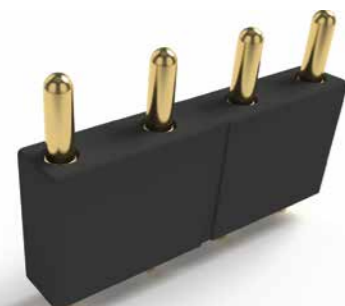
PN: P5751MD01-04A300HB

Length: 7.80 mm  
 Working Height: 6.30 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 30 mΩ  
 Spring Force: 85g ± 15g



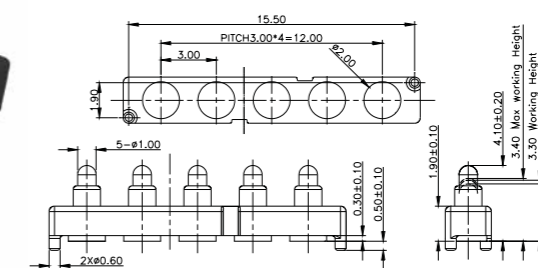
PN: P2288MP02-05A130HR

Length: 2.08 mm  
 Working Height: 1.68 mm  
 Pitch: 1.30 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20g



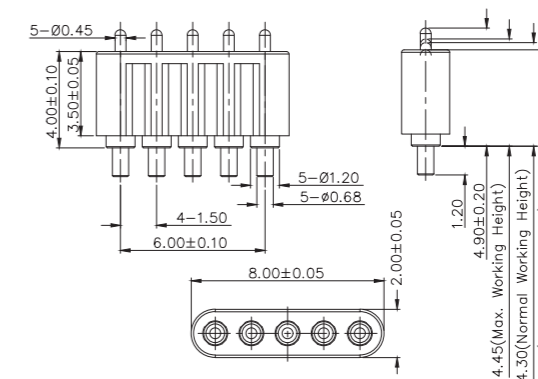
PN: P3136MP01-04B650MR

Length: 12.90 mm  
 Working Height: 12.10 mm  
 Pitch: 6.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 105g ± 20g



PN: F1853AA01-05H300MR

Length: 4.10 mm  
 Working Height: 3.30 mm  
 Pitch: 3.00 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 80g ± 20%

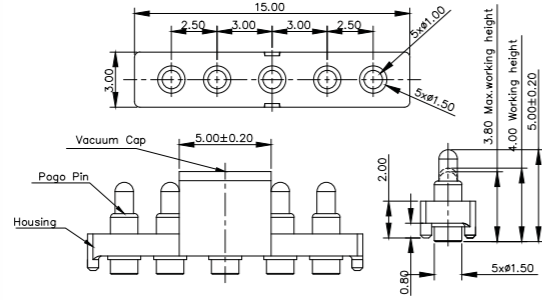
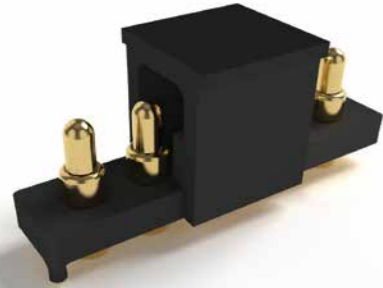


PN: P3710MP01-05A150HB

Length: 4.90 mm  
 Working Height: 4.30 mm  
 Pitch: 1.50 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

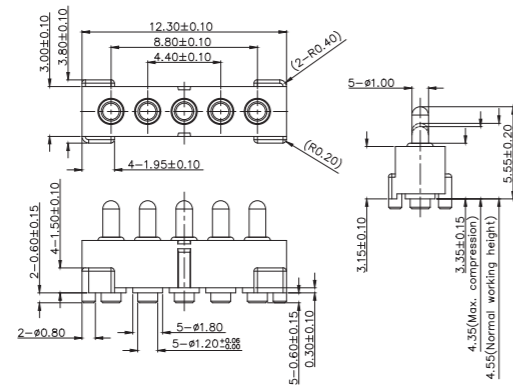
# NON STANDARD CONNECTOR

5 PINS



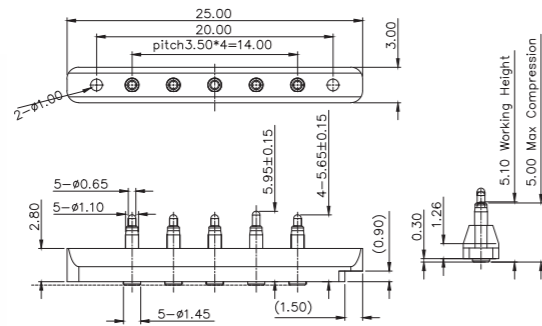
PN: F1371AA01-05A250MR

Length: 5.00 mm  
Working Height: 4.00 mm  
Pitch: 2.50 mm  
Current: 1 Amp  
Contact Resistance: 100 mΩ  
Spring Force: 80g ± 20g



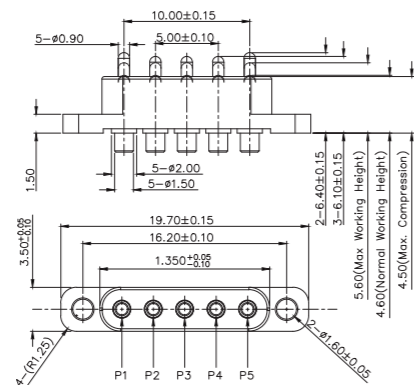
PN: P2761MP01-05E220MR

Length: 5.55 mm  
Working Height: 4.55 mm  
Pitch: 2.20 mm  
Current: 1 Amp  
Contact Resistance: 50 mΩ  
Spring Force: 80g ± 20g



PN: P5362MF01-05A350MR

Length: 5.65 / 5.95 mm  
Working Height: 5.10 mm  
Pitch: 3.50 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 70g ± 20g

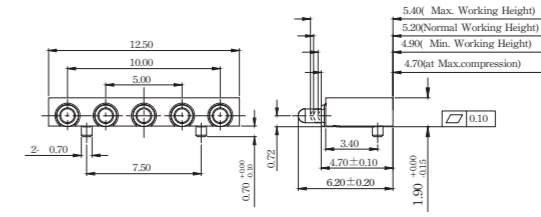


PN: P2673MF02-05R250HT

Length: 6.10 / 6.41 mm  
Working Height: 4.60 mm  
Pitch: 2.50 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 150g ± 20%

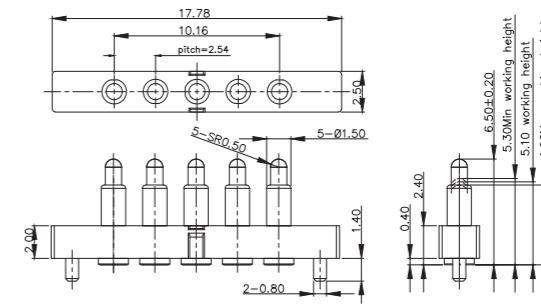
# NON STANDARD CONNECTOR

5 PINS



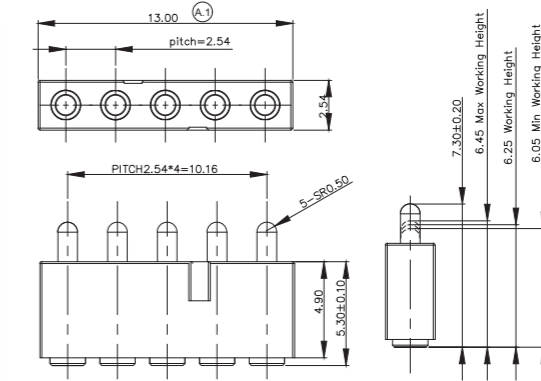
PN: R175AA05-05250RR

Length: 6.20 mm  
Working Height: 5.20 mm  
Pitch: 2.50 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 120g ± 20%



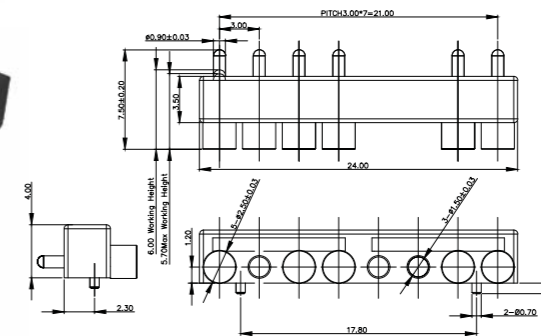
PN: P2037MF01-05J254MR

Length: 6.50 mm  
Working Height: 5.10 mm  
Pitch: 2.54 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 90g ± 20%



PN: P2315MF01-05L254MR

Length: 7.30 mm  
Working Height: 6.25 mm  
Pitch: 2.54 mm  
Current: 5 Amps  
Contact Resistance: 20 mΩ  
Spring Force: 80g ± 20%

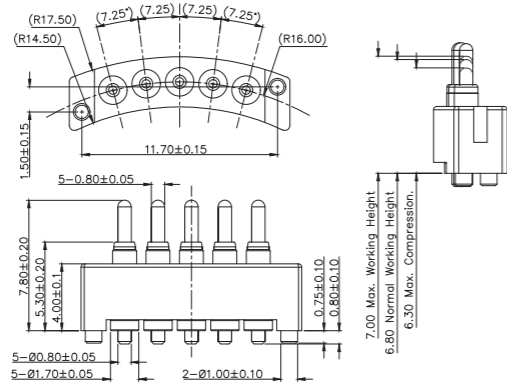


PN: F1601AA05-08G300HB

Length: 7.50 mm  
Working Height: 6.00 mm  
Pitch: 3.00 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 120g ± 20%

# NON STANDARD CONNECTOR

5 PINS

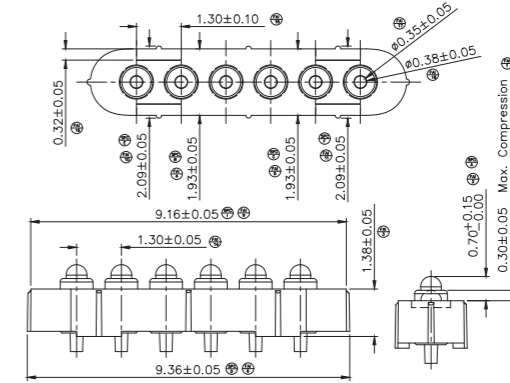


PN: P2698MP03-05A202MR

Length: 7.80 mm  
 Working Height: 6.80 mm  
 Pitch: 2.02 mm  
 Current: 2 Amps  
 Spring Force: 30g ± 10g

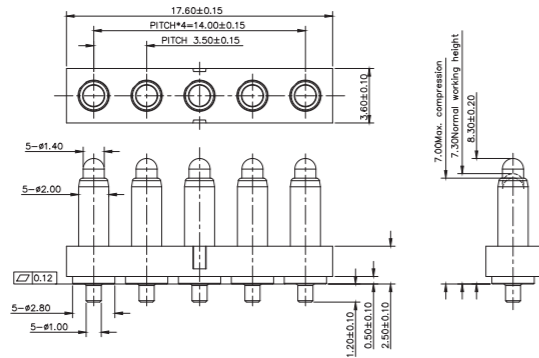
# NON STANDARD CONNECTOR

6 PINS



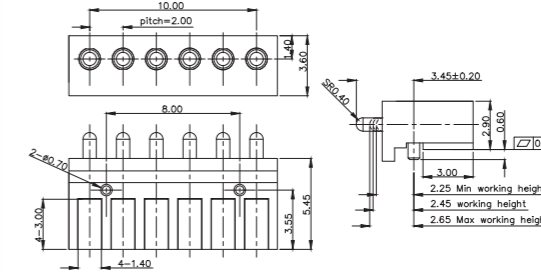
PN: P2288MP02-06B130HR

Length: 2.08 mm  
 Working Height: 1.68 mm  
 Pitch: 1.30 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 50g ± 20g



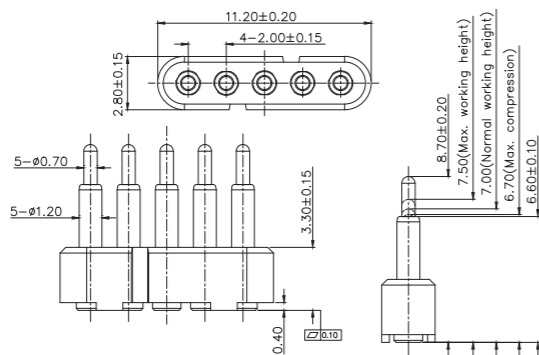
PN: P2811MP01-05E350MR

Length: 8.30 mm  
 Working Height: 7.30 mm  
 Pitch: 3.50 mm  
 Current: 3 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 95g ± 20g



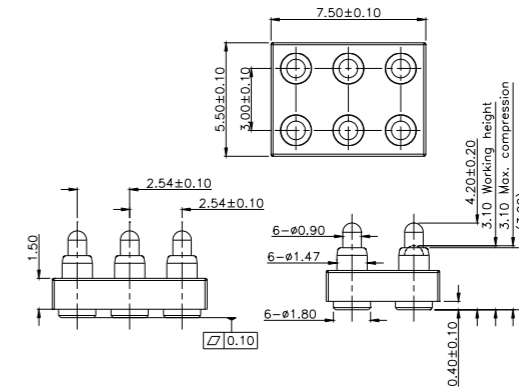
PN: P2526MR01-06F200HR

Length: 3.45 mm  
 Working Height: 2.45 mm  
 Pitch: 2.00 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 70g ± 20%



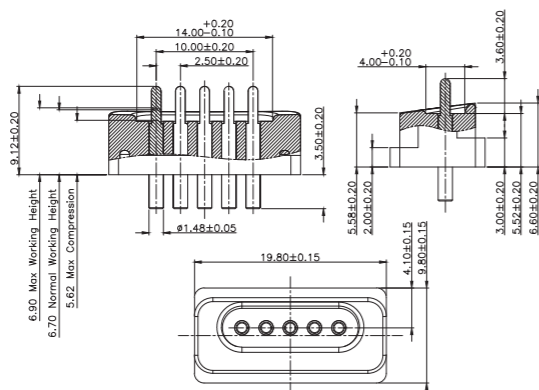
PN: P6287MF02-05A200MR

Length: 8.70 mm  
 Working Height: 7.00 mm  
 Pitch: 2.00 mm  
 Current: 3~5 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%



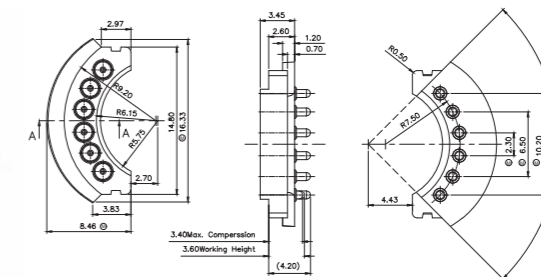
PN: P3004MF01-06A300HR

Length: 4.20 mm  
 Working Height: 3.10 mm  
 Pitch: 2.54 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 80g ± 20%



PN: P3117MF01-05U250HT

Length: 9.12 mm  
 Working Height: 6.70 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Spring Force: 100g ± 20g



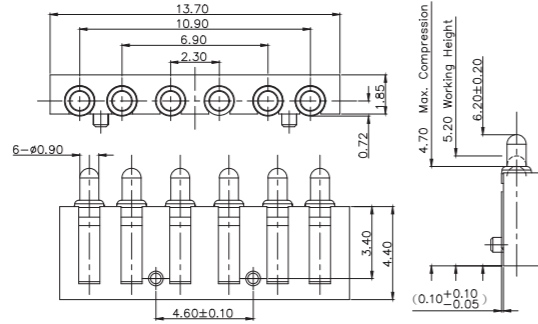
PN: P2106MP01-06B230HR

Length: 4.20 mm  
 Working Height: 3.60 mm  
 Pitch: 1.85 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 90g ± 20%



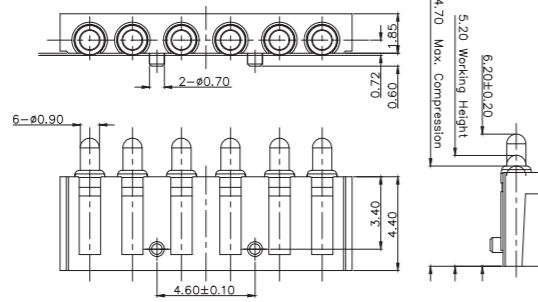
# NON STANDARD CONNECTOR

6 PINS



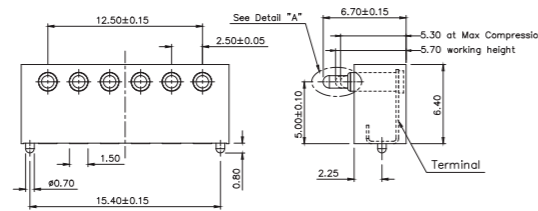
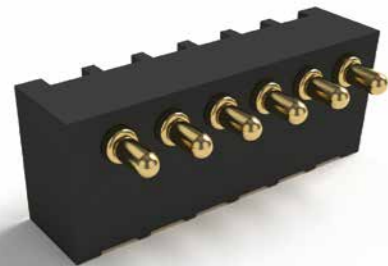
PN: R175AA05-06B200RR

Length: 6.20 mm  
 Working Height: 5.20 mm  
 Pitch: 2.30 mm  
 Current: 1.5 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%



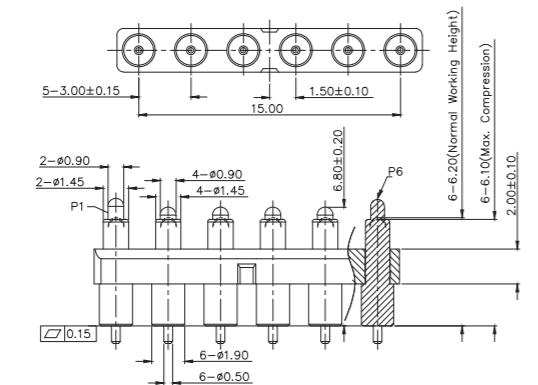
PN: R175AA08-06B200RR

Length: 6.20 mm  
 Working Height: 5.20 mm  
 Pitch: 2.30 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%



PN: R035AA06-06250RR

Length: 6.70 mm  
 Working Height: 5.70 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 120g ± 20%

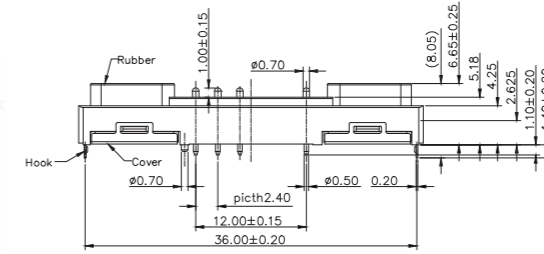


PN: P3588MP02-06B300MR

Length: 6.80 / 7.30 mm  
 Working Height: 6.20 mm  
 Pitch: 3.00 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 110g ± 20%

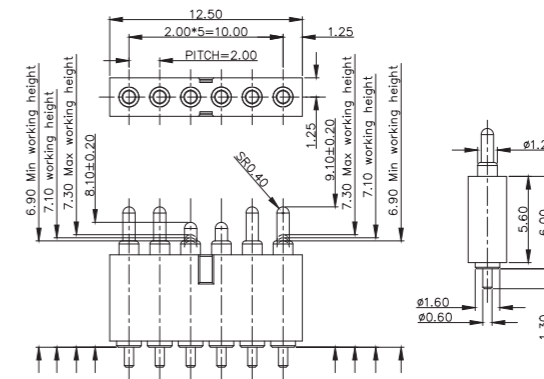
# NON STANDARD CONNECTOR

6 PINS



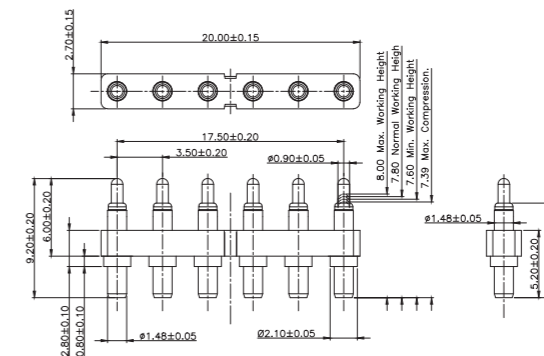
PN: P2197MP01-06C240MR

Length: 7.28 mm  
 Working Height: 6.48 mm  
 Pitch: 2.40 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 90g ± 20%



PN: P2294MP01-06E200MR

Length: 8.10 / 9.10 mm  
 Working Height: 7.10 mm  
 Pitch: 2.00 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 70g ± 20%

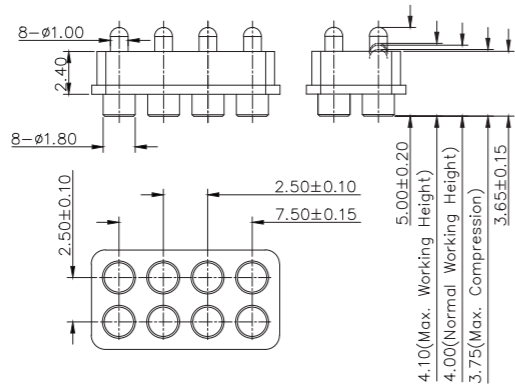


PN: P3783MP01-06L350MR

Length: 9.20 mm  
 Working Height: 7.80 mm  
 Pitch: 3.50 mm  
 Current: 5 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 100g ± 20g

# NON STANDARD CONNECTOR

8 PINS

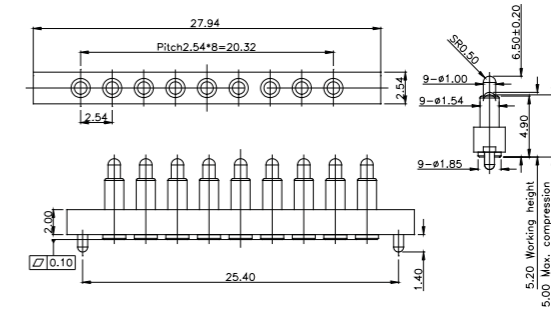


PN: P3728MF01-08P250HR

Length: 5.00 mm  
 Working Height: 4.00 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 80g  $\pm$  20g

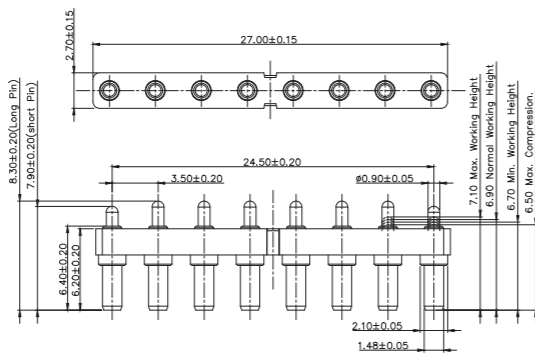
# NON STANDARD CONNECTOR

9-12 PINS



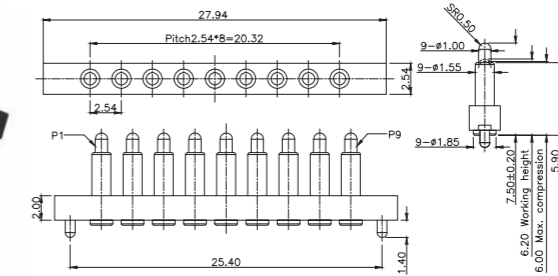
PN: P2839MF01-09F254MR

Length: 6.50 mm  
 Working Height: 5.20 mm  
 Pitch: 2.54 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 100g  $\pm$  20%



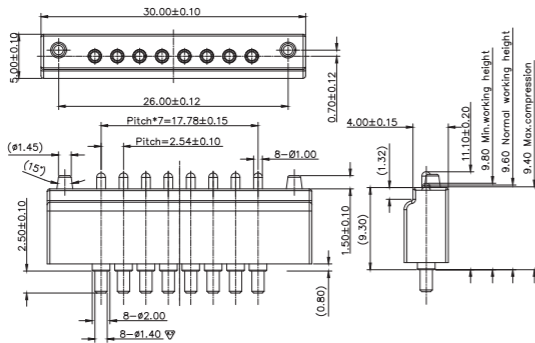
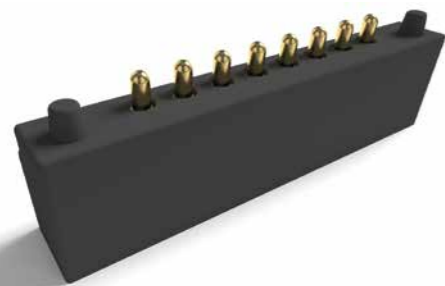
PN: P2613MP01-08E350MR

Length: 7.90 / 8.30 mm  
 Working Height: 6.90 mm  
 Pitch: 3.50 mm  
 Current: 2 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 110g  $\pm$  20g



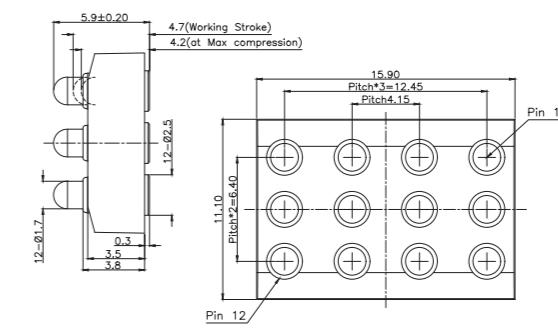
PN: P2879MF01-09F254MR

Length: 7.50 mm  
 Working Height: 6.20 mm  
 Pitch: 2.54 mm  
 Current: 1 Amp  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 100g  $\pm$  20%



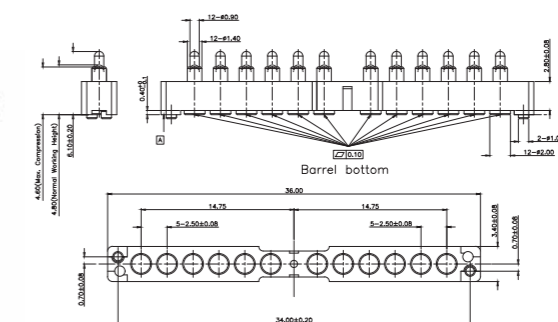
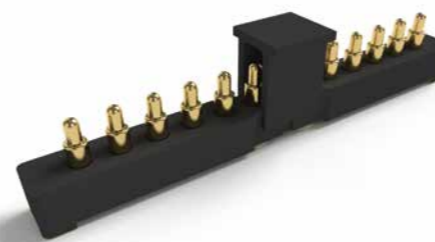
PN: P1933AA01-08C254HT

Length: 11.10 mm  
 Working Height: 9.60 mm  
 Pitch: 2.54 mm  
 Current: 2 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 120g  $\pm$  20%



PN: P2976MF01-12A415HR

Length: 5.90 mm  
 Working Height: 4.70 mm  
 Pitch: 3.20 mm  
 Current: 2 Amps  
 Contact Resistance: 50 m $\Omega$   
 Spring Force: 110g  $\pm$  20g



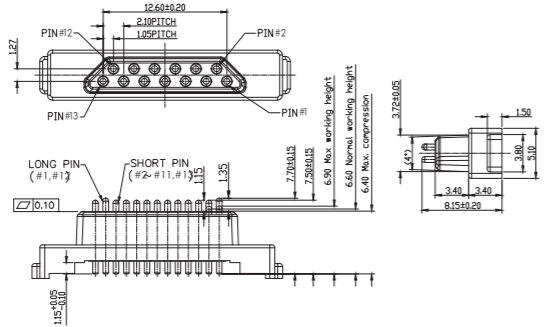
PN: P3303MF01-12A250MR

Length: 6.10 mm  
 Working Height: 4.80 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 100 m $\Omega$   
 Spring Force: 60g  $\pm$  20g

# NON STANDARD CONNECTOR

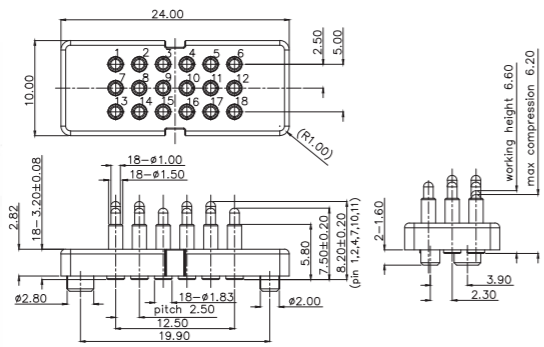
## 12-18 PINS

# BALL POINT CONNECTOR



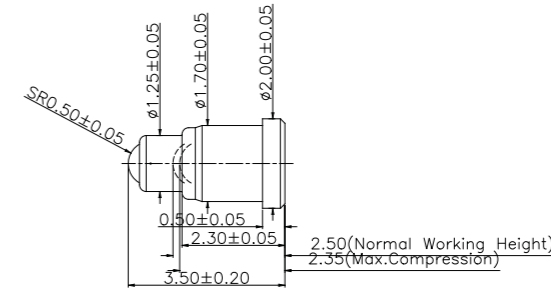
PN: P1179AA17-13B210HR

Length: 7.50 / 7.70 mm  
 Working Height: 6.60  
 Pitch: 1.05 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 140g ± 20%



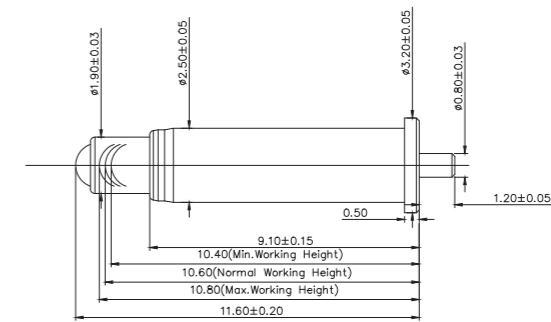
PN: P3673MF01-18A250MR

Length: 7.50 / 8.20 mm  
 Working Height: 6.60 mm  
 Pitch: 2.50 mm  
 Current: 1 Amp  
 Contact Resistance: 50 mΩ  
 Spring Force: 130g ± 20g



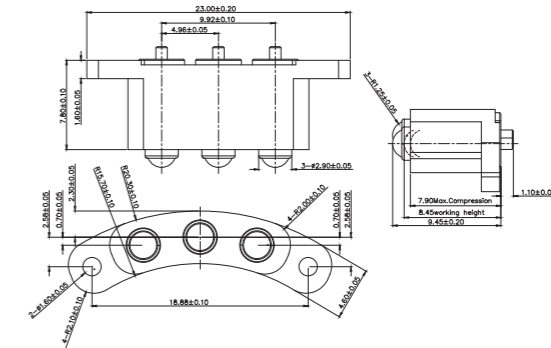
PN: P5079FP01

Length: 3.50 mm  
 Working Height: 2.50 mm  
 Current: 2 Amps  
 Contact Resistance: 100 mΩ  
 Spring Force: 60g ± 15g  
 Durability: 2,000



PN: P6353PP02

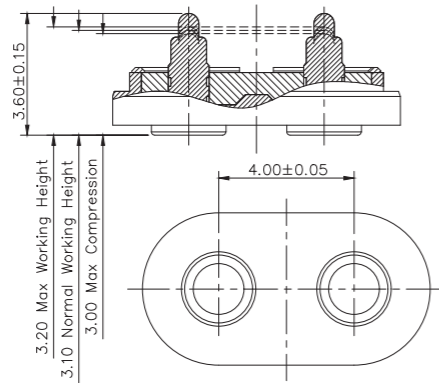
Length: 11.60 mm  
 Working Height: 10.60 mm  
 Current: 2 Amps  
 Contact Resistance: 50 mΩ  
 Spring Force: 90g ± 20g  
 Durability: 10,000



PN: P5982MP05-03C500HR

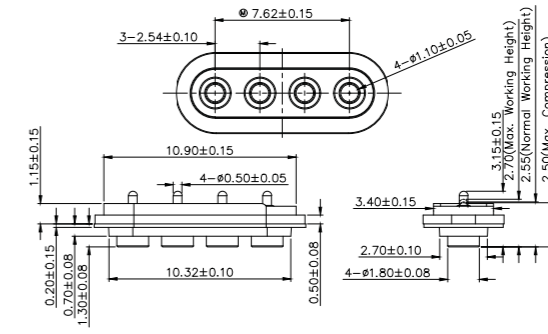
Length: 9.45 mm  
 Working Height: 8.45 mm  
 Pitch: 4.96 mm  
 Current: 1 Amp  
 Contact Resistance: 100 mΩ  
 Spring Force: 60g ± 15g  
 Durability: 200,000

# WATERPROOF CONNECTOR



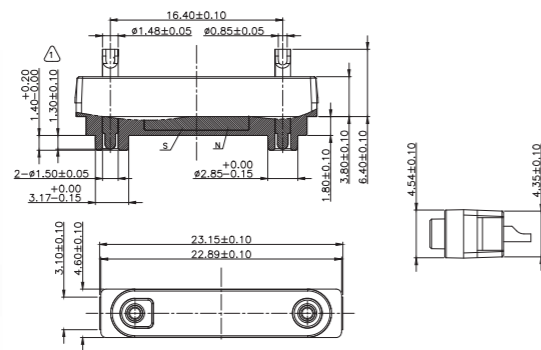
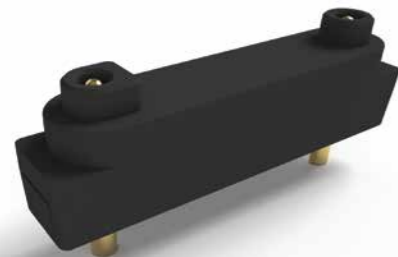
PN: P5562MP01-02B400HB

Length: 3.60 mm  
Working Height: 3.10 mm  
Pitch: 4.00 mm  
Current: 1 Amps  
Contact Resistance: 100 mΩ  
Spring Force: 80g ± 20g  
IP Factor: IPX8



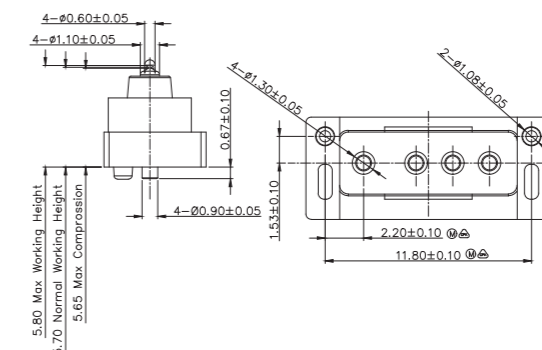
PN: P5875MF01-04A250HT

Length: 3.15 mm  
Working Height: 2.55 mm  
Pitch: 2.54 mm  
Current: 1 Amp  
Contact Resistance: 50 mΩ  
Spring Force: 75g ± 20g  
IP Factor: IPX7



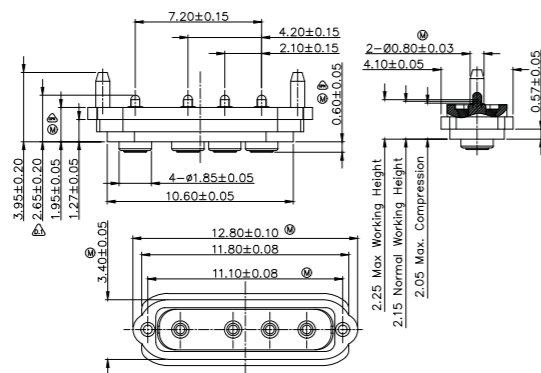
PN: P2859MS01-02B164HT

Length: 9.60 mm  
Working Height: 9.50 mm  
Pitch: 16.40 mm  
Current: 5 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 110g ± 20%  
IP Factor: IPX7



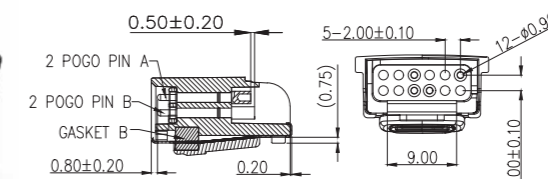
PN: P3613MP05-04A210MR

Length: 6.13 mm  
Working Height: 5.70 mm  
Pitch: 2.10 mm  
Current: 1 Amp  
Contact Resistance: 50 mΩ  
Spring Force: 50g ± 15g



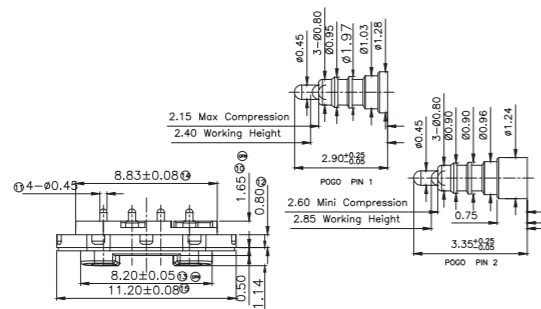
PN: P5320MF01-04A210HT

Length: 2.65 mm  
Working Height: 2.15 mm  
Pitch: 2.10 mm  
Current: 1.5 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 80g ± 20g  
IP Factor: IPX7



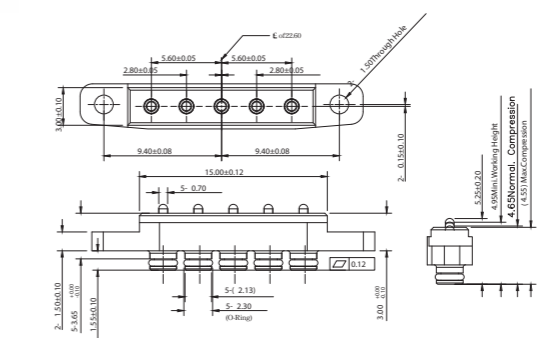
PN: F047AA00-04200ST

Length: 18.00 mm  
Working Height: 17.50 mm  
Pitch: 2.0 mm  
Current: 1 Amp  
Contact Resistance: 100 mΩ  
Spring Force: 80g ± 20%



PN: P2988MM03-04C180HB

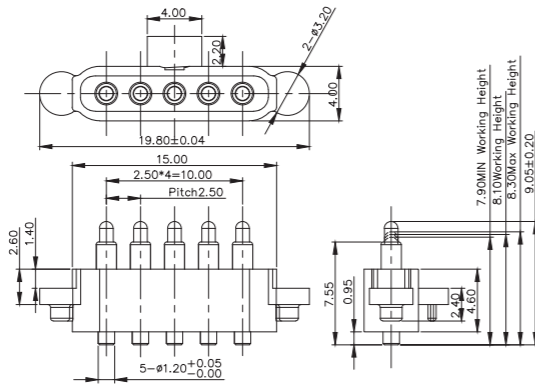
Length: 2.90 / 3.35 mm  
Working Height: 2.40 / 2.85 mm  
Pitch: 1.80 mm  
Current: 1 Amp  
Contact Resistance: 50 mΩ  
Spring Force: 60g ± 20g



PN: P2352MF01-05A280HT

Length: 5.25 mm  
Working Height: 4.95 mm  
Pitch: 2.80 mm  
Current: 2 Amps  
Contact Resistance: 50 mΩ  
Spring Force: 95g ± 20%

# WATERPROOF CONNECTOR

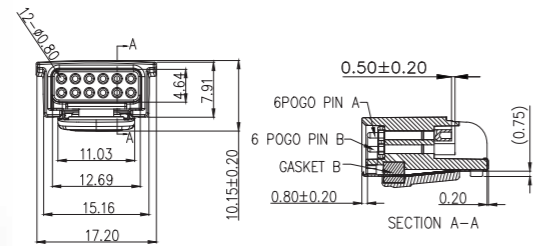


PN: P3608MP01-05A250MR

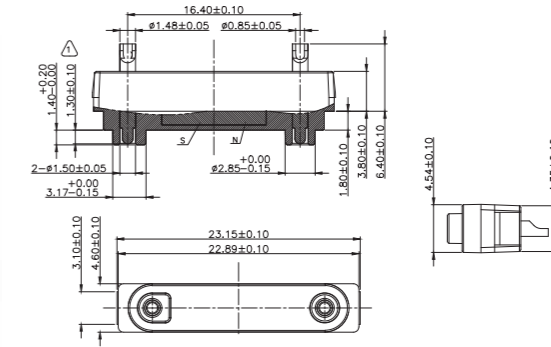
- Length: 9.05 mm
- Working Height: 8.10 mm
- Pitch: 2.50 mm
- Current: 2 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 90g ± 20%
- IP Factor: IPX7

PN: F047AA00-12200ST

- Length: 18.00 mm
- Working Height: 17.50 mm
- Pitch: 2.0 mm
- Current: 1 Amp
- Contact Resistance: 100 mΩ
- Spring Force: 80g ± 20%

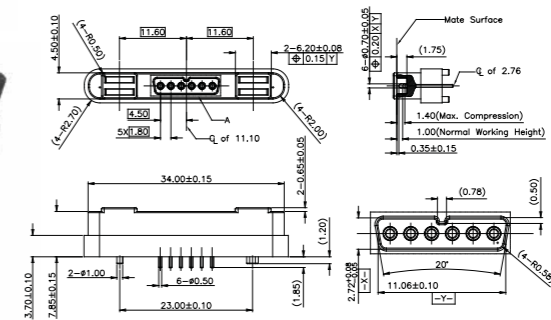


# MAGNETIC CONNECTOR



PN: P2859MS01-02B164HT

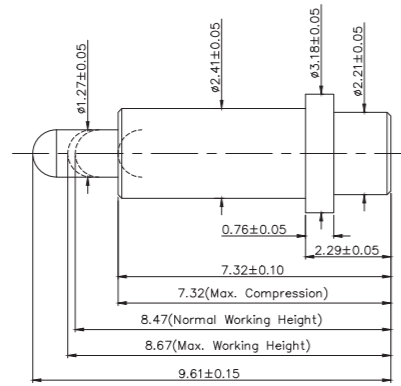
- Length: 9.60 mm
- Working Height: 9.50 mm
- Pitch: 16.40 mm
- Current: 5 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 110g ± 20%
- IP Factor: IPX7



PN: P2578MP01-06C180HT

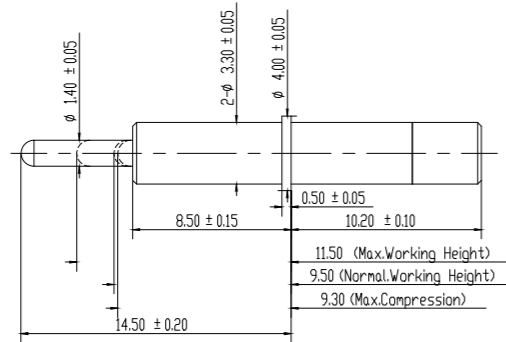
- Length: 9.70 mm
- Working Height: 8.70 mm
- Pitch: 1.80 mm
- Current: 3 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 70g ± 20g

# HIGH CURRENT CONNECTOR



PN: P5650FH01

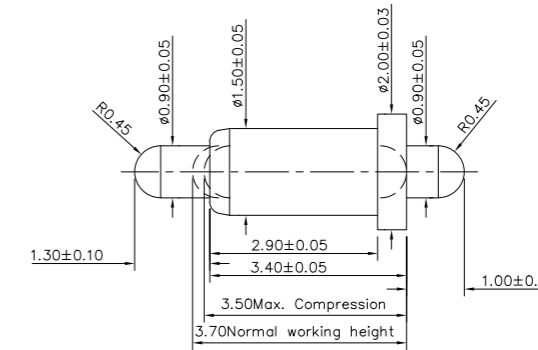
- Length: 9.61 mm
- Working Height: 8.47 mm
- Current: 9 Amps
- Contact Resistance: 30 m $\Omega$
- Spring Force: 100g  $\pm$  20%



PN: P07408PH1

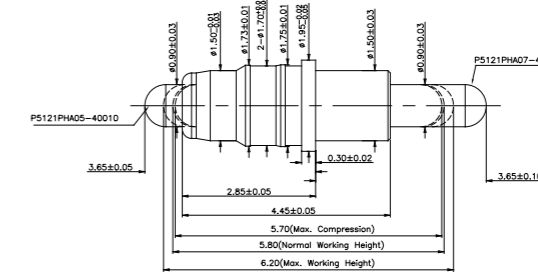
- Length: 14.50 mm
- Working Height: 9.50 mm
- Current: 12 Amps
- Contact Resistance: 50 m $\Omega$
- Spring Force: 150g  $\pm$  20%

# DOUBLE ENDED PIN



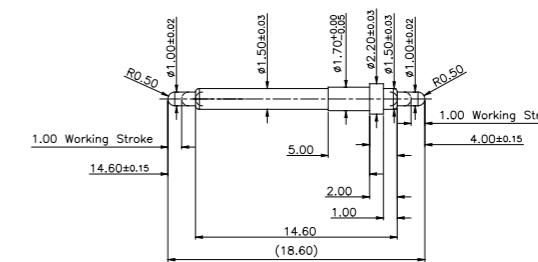
PN: P2573DP01

- Length: 5.70 mm
- Working Height: 3.70 mm
- Current: 1 Amp
- Contact Resistance: 100 m $\Omega$
- Spring Force: 100g  $\pm$  20%



PN: P5650FH01

- Length: 7.30 mm
- Working Height: 5.80 mm
- Current: 2 Amps
- Contact Resistance: 30 m $\Omega$
- Spring Force: 85g  $\pm$  15g

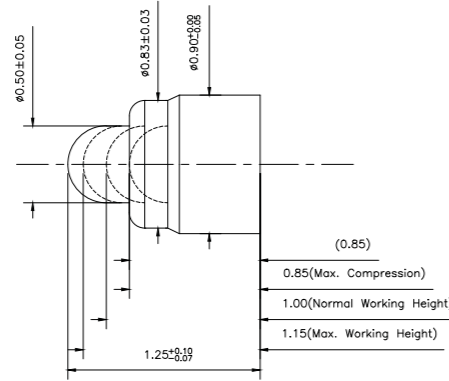


PN: D406AA01

- Length: 18.60 mm
- Working Height: 16.60 mm
- Current: 1 Amp
- Contact Resistance: 100 m $\Omega$
- Spring Force: 60g  $\pm$  20%

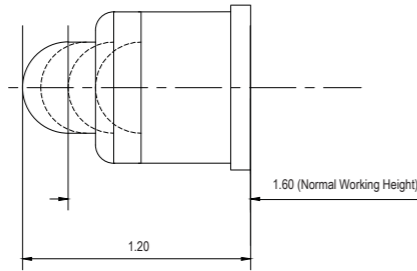
# ULTRA SMALL PIN

# SCREW PIN



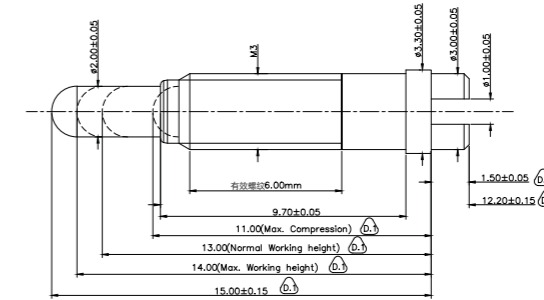
PN: P6925FP03

- Length: 1.25 mm
- Working Height: 1.00 mm
- Current: 300m Amp
- Contact Resistance: 100 mΩ
- Spring Force: 35g ± 20%



PN: F254AA01

- Length: 1.60 mm
- Working Height: 1.20 mm
- Current: 300m Amp
- Contact Resistance: 100 mΩ
- Spring Force: 40g ± 20%



PN: P07417PH1

- Length: 15.00 mm
- Working Height: 13.00 mm
- Current: 1 Amps
- Contact Resistance: 50 mΩ
- Spring Force: 250g ± 20%

## Testing Items

### Environmental

- Waterproof
- Humidity Test
- Salt Spray
- Thermal Impact
- Resistance 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

**ISO 9001: 2015**  
Quality Management Systems

**ISO 14001: 2015**  
Environmental Management Systems

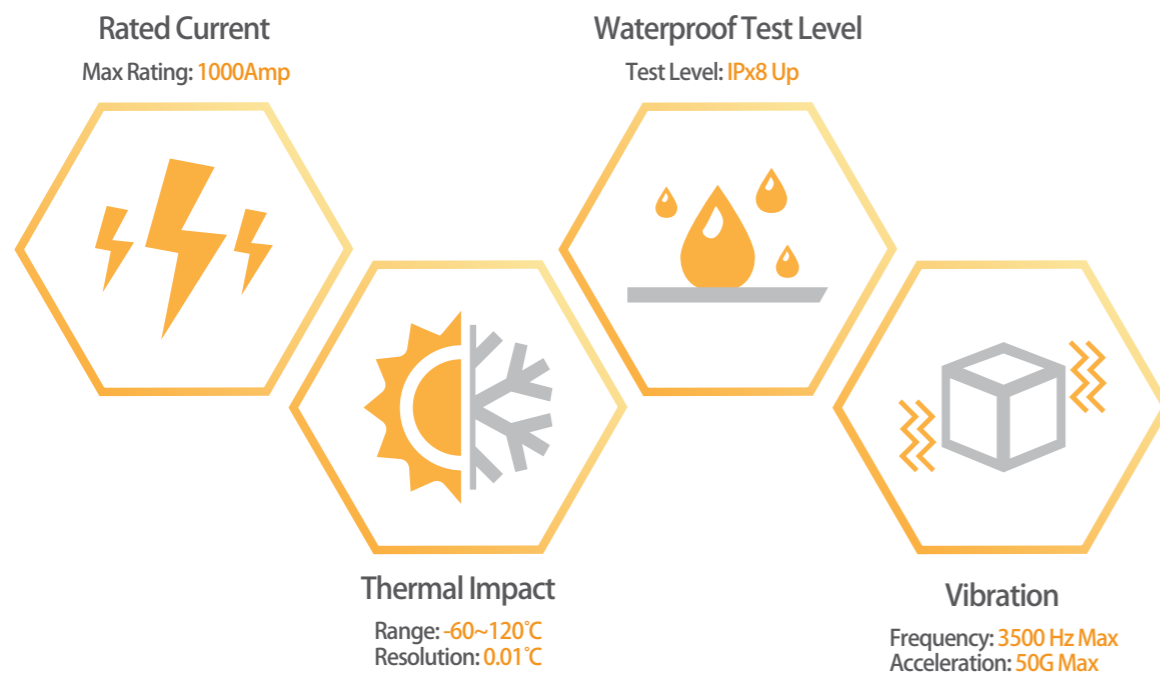
**IATF 16949: 2016**  
Automotive Quality Management Systems

**QC 080000**  
Hazardous Substance Process Management

## Quality Assurance



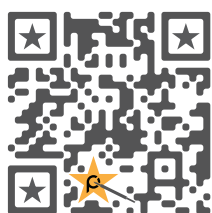
## Testing Equipment







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