

Spring Contacts

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Spring Contact Introduction

These designs provide single contact points with high durability (number of mating cycles) and require no special shape of mating surface or connector.

The Spring Contact family provides a choice of single contact options, that mate with flat metal surfaces. The spring force designed into the contact gives a positive connection, maintaining electrical connectivity between the assembled contact and another PCB, an antenna, a grounding plane, or the outer enclosure panels. Suitable for passing a full current, or for use as a grounding element with trickle current.

- ❖ Free heights from 1.23mm to 8.20mm, recommended working heights from 0.90mm to 7.10mm
- ❖ Total flexibility with multiple design styles and performance capabilities
- ❖ High mating durability, from 1,000 to 10,000 minimum operations
- ❖ Most designs supplied on Tape and Reel packaging, for fully automated assembly systems within high volume manufacturing applications
- ❖ Stocked in depth throughout Harwin's authorized distributor network

Spring Contacts

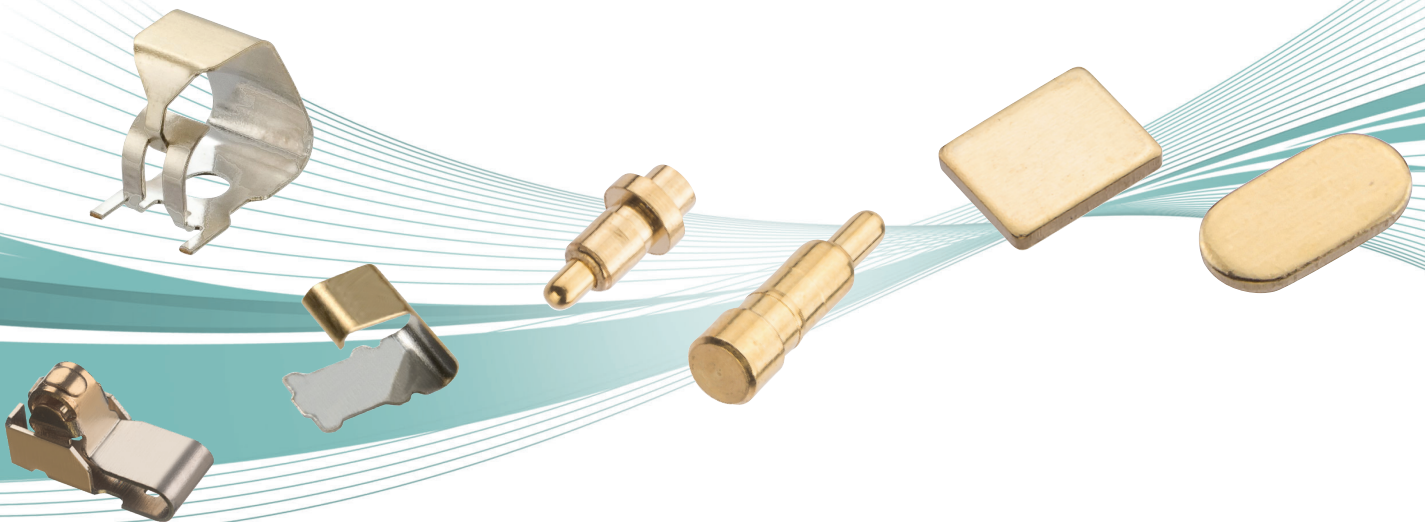
- ❖ Manufactured from various grades and compositions of Copper Alloy, these products utilise the inherent spring properties of the metal to provide the spring force.
- ❖ Rated from 1A to 9A max current, depending on design.
- ❖ Alternative uses include grounding contacts, antenna contacts, single or parallel connections. Also called Spring Fingers.

Pogo Pins

- ❖ Precision construction consisting of plunger, barrel and inner miniature stainless steel spring.
- ❖ Provides robust connections with high mating cycle durability of 10,000 operations.
- ❖ Design options for heights and additional locating peg to assist with SMT mating and vertical stability.

SMT Contact Pads

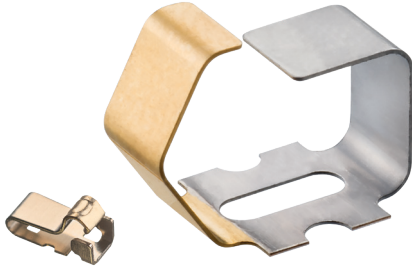
- ❖ Provides a mating connection surface with a compatible gold finish for either the spring contact or pogo pin designs.
- ❖ Choice of three shapes and pad depths up to 0.5mm.
- ❖ Supplied in Tape and reel for easy automation during assembly.



Spring Contact Product Features

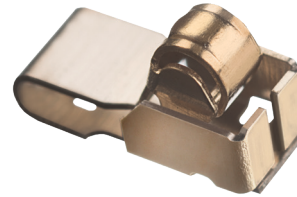
Spring Contacts – Simple flexible designs

Single piece contact designs with a variety of additional features. Small and compact, down to ultra-miniature for mobile antenna connection.



Spring Contacts – Positive Stop design

Rigid upstands on the lower contact surface prevent the mating surface from completely flattening the contact.



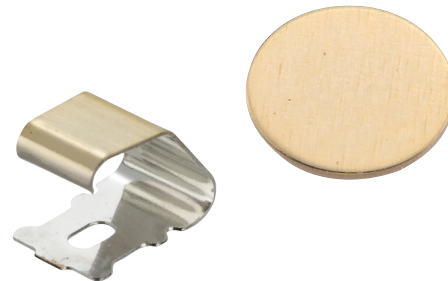
Spring Contacts – Anti-hooking design

Full 360 degree loop, to prevent the end of the upper contact surface from getting snagged during or after production and installation. Known as a Box style.



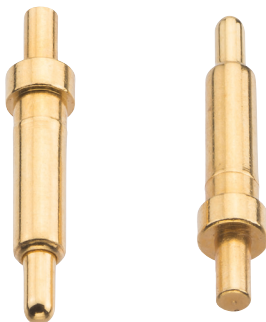
Spring Contacts & SMT Pads – Automated placement

Supplied as standard in tape and reel for fast and easy high volume automated assembly. Pick and place location built into the design.



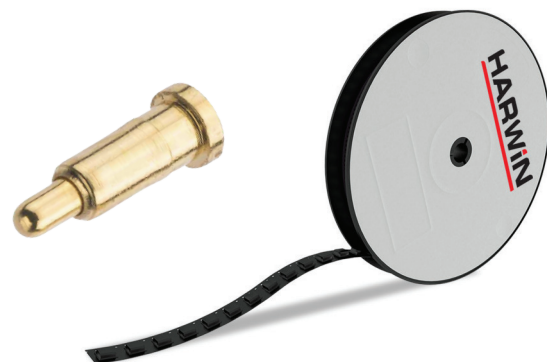
Pogo Pins – SMT Locating Peg

Additional locating peg on base of contact, to assist with SMT location during assembly, and also maintain vertical stability during all assembly operations.



Pogo Pins – Automated placement

Most designs supplied as standard in tape and reel for high volume automated assembly. Pick and place caps pre-assembled to provide vacuum nozzle location.



All dimensions in mm.

Spring Contact Specifications

Materials

Base Metal

S1741, S7131 to S7191:
S1941, S1951, S7061-46R:
Others:

Phosphor Bronze
Beryllium Copper
Titanium Copper

Finish:

See individual product

Environmental

Operating temperature

S1001: -40°C to +150°C
S7131 to S7191: -20°C to +70°C
S7221 to S7271: -40°C to +85°C
Others: -55°C to +125°C

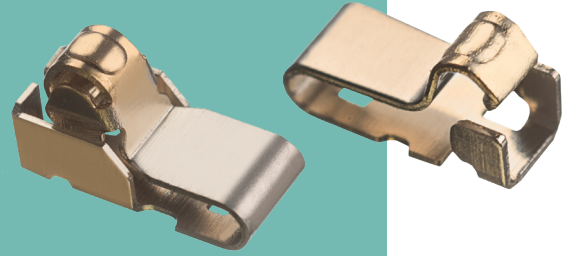
ORDER CODE	CURRENT (MAX)	DURABILITY (OPERATIONS)	WORKING HEIGHT	FORCE AT WORKING HEIGHT
S1741-46R	6A	5,000	1.75mm	1.50N
S1761-XXR	4A	1,500	2.50mm	1.50N
S1791-42R	3A	1,500	3.00mm	1.00N
S1941-XXR	9A	5,000	6.95mm	1.20N
S1951-46R	7A	5,000	6.75mm	1.20N
S7041-42R	5A	1,500	3.40mm	1.20N
S7051-42R	4A	2,500	4.50mm	1.20N
S7061-XXR	4A	2,500	4.60mm	1.20N
S7071-46R	5A	3,500	2.10mm	1.20N
S7081-42R	4A	1,000	2.10mm	1.20N
S7091-42R	6A	2,000	2.30mm	1.20N
S7101-42R	3A	2,500	3.00mm	1.20N
S7111-42R	6A	2,000	3.80mm	1.20N
S7121-42R	4A	3,000	1.50mm	1.20N
S7131-45R	1A	10,000	1.20mm	0.49N
S7141-45R	1A	10,000	1.65mm	0.49N
S7151-45R	1A	10,000	2.15mm	0.49N
S7161-45R	1A	10,000	2.65mm	0.49N
S7171-45R	1A	10,000	3.15mm	0.49N
S7181-45R	1A	10,000	3.65mm	0.49N
S7191-45R	1A	10,000	4.15mm	0.49N
S7221-45R	1A	10,000	0.90mm	0.39N
S7231-45R	1A	10,000	0.98mm	0.39N
S7241-45R	1A	10,000	1.00mm	0.39N
S7251-45R	1A	10,000	1.20mm	0.58N
S7261-45R	1A	10,000	1.20mm	0.78N
S7271-45R	1A	10,000	1.70mm	0.39N

All dimensions in mm.

Spring Contacts

Antenna Contacts with Positive Stop

- Extended beam miniature spring contacts, ultra-low profile.
- Ideal for antenna feed in mobile devices, LED lamp connections or RFID tags.
- Ultra-low connection system - free height from just 1.23mm to 2mm.
- Positive Stop to prevent over-compression and permanent set.
- Surface Mount with Pick and Place area for automated placement.



<p>1.23mm HIGH</p> <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7221-45R</td> <td>Gold</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7221-45R	Gold	<p>1.28mm HIGH</p> <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7231-45R</td> <td>Gold</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7231-45R	Gold
ORDER CODE	FINISH								
S7221-45R	Gold								
ORDER CODE	FINISH								
S7231-45R	Gold								
<p>1.3mm HIGH</p> <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7241-45R</td> <td>Gold</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7241-45R	Gold	<p>1.5mm HIGH, 1.5mm WIDE</p> <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7251-45R</td> <td>Gold</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7251-45R	Gold
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S7271-45R	Gold								

All dimensions in mm.

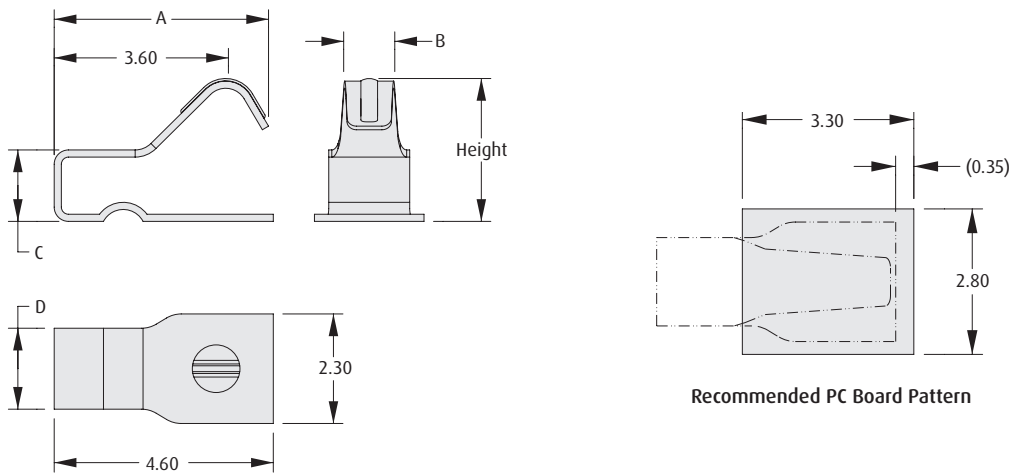
Spring Contacts

Extended Antenna Contacts

- Extended beam miniature spring contacts, ideal for antenna feed in mobile devices.
- Identical footprint contacts, with incremental step heights from 2mm to 5mm.
- Suitable for both wiping and sliding actions.
- Surface Mount with Pick and Place area for automated placement.
- Packaged in standard (EIA 481) Tape & Reel format.



EXTENDED ANTENNA CONTACTS



HOW TO ORDER

PART NO.	HEIGHT	DIM A	DIM B	DIM C	DIM D	FINISH
S7131-45R	2.00	4.30	0.80	1.00	1.55	Gold
S7141-45R	2.50	4.50	0.80	1.00	1.55	Gold
S7151-45R	3.00	4.50	0.90	1.50	1.70	Gold
S7161-45R	3.50	4.50	1.05	2.00	1.95	Gold
S7171-45R	4.00	4.50	1.36	2.50	2.30	Gold
S7181-45R	4.50	4.50	1.82	3.00	2.50	Gold
S7191-45R	5.00	4.50	2.08	3.50	3.00	Gold

All dimensions in mm.

Spring Contacts

Grounding/RFI Contacts

- ❖ SMT devices for use in shielding and grounding applications.
- ❖ For use on surface mount PCBs, in contact with metal shields or frames.
- ❖ Suitable for both wiping and sliding actions.
- ❖ Ideal for automated requirements, using standard placement equipment.



SPRING CONTACTS

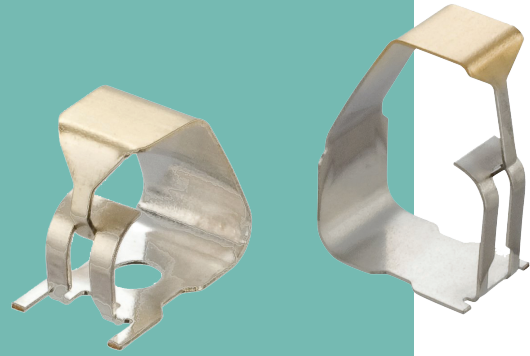
1.7mm HIGH	2.5mm HIGH										
<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7121-42R</td> <td>Gold</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7121-42R	Gold	<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S1741-46R</td> <td>Tin</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S1741-46R	Tin		
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S7121-42R	Gold										
ORDER CODE	FINISH										
S1741-46R	Tin										
2.7mm HIGH	3.5mm HIGH										
<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7091-42R</td> <td>Gold + Tin</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7091-42R	Gold + Tin	<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S1761-42R</td> <td>Gold + Tin</td> </tr> <tr> <td>S1761-46R</td> <td>Tin</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S1761-42R	Gold + Tin	S1761-46R	Tin
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S7091-42R	Gold + Tin										
ORDER CODE	FINISH										
S1761-42R	Gold + Tin										
S1761-46R	Tin										
4.0mm HIGH	5.6mm HIGH										
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S1791-42R	Gold										
ORDER CODE	FINISH										
S7061-42R	Gold + Tin										
S7061-46R	Tin										

All dimensions in mm.

Spring Contacts

Grounding/RFI Contacts

- ❖ Prevents EMC noise and static.
- ❖ Simple and effective method for connecting multiple PCBs.
- ❖ No special tooling required, uses standard Pick and Place equipment.
- ❖ Protected tips prevent product from hooking.



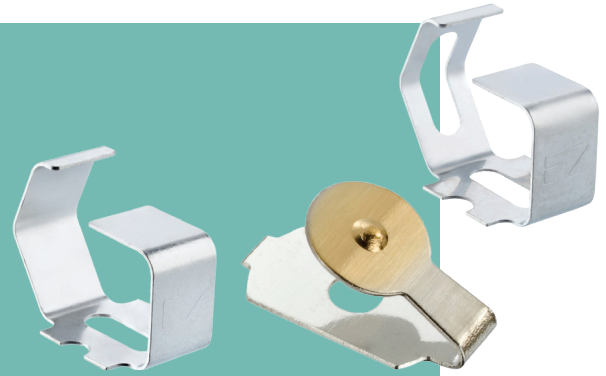
3.5mm HIGH	4.0mm HIGH								
<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7101-42R</td> <td>Gold + Tin</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7101-42R	Gold + Tin	<p style="text-align: center;">Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th> <th>FINISH</th> </tr> </thead> <tbody> <tr> <td>S7041-42R</td> <td>Gold + Tin</td> </tr> </tbody> </table>	ORDER CODE	FINISH	S7041-42R	Gold + Tin
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S7101-42R	Gold + Tin								
ORDER CODE	FINISH								
S7041-42R	Gold + Tin								
4.5mm HIGH	6.0mm HIGH								
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S7111-42R	Gold + Tin								
ORDER CODE	FINISH								
S7051-42R	Gold + Tin								

All dimensions in mm.

Spring Contacts

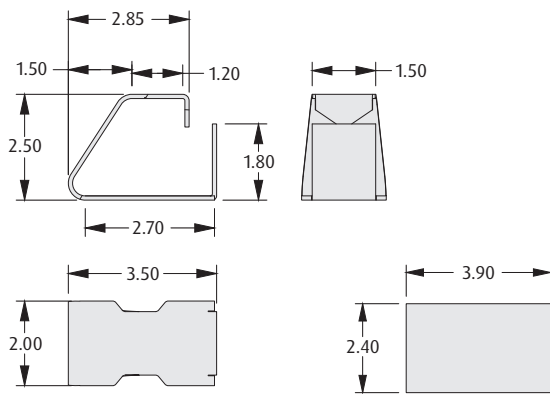
Grounding/RFI Contacts

- Packaged in standard (EIA 481) Tape & Reel format.
- Spring contacts maintain a positive force and stable electrical contact.
- Small PCB footprint.
- Multi-Directional contacts can be used in either vertical or horizontal orientations.



SPRING CONTACTS

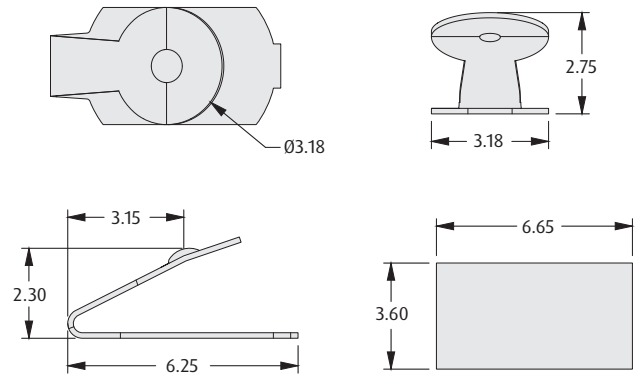
2.5mm HIGH



Recommended
PC Board Pattern

ORDER CODE	FINISH
S7071-46R	Tin

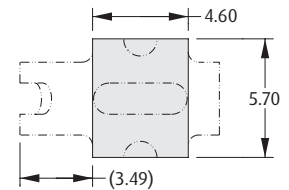
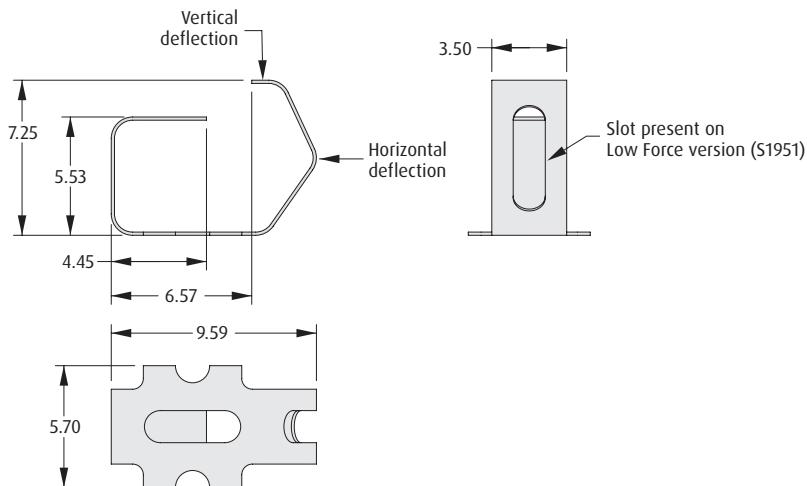
2.75mm HIGH



Recommended
PC Board Pattern

ORDER CODE	FINISH
S7081-42R	Gold + Tin

MULTI-DIRECTION



Recommended PC Board Pattern

ORDER CODE	TYPE	FINISH
S1941-42R	Normal Force	Gold + Tin
S1941-46R	Normal Force	Tin
S1951-46R	Low Force	Tin

All dimensions in mm.

Spring Contacts

Development Kit

- ❑ Selection of 16 different Spring Contacts in one box.
- ❑ Ideal for prototyping on new projects.
- ❑ Free refills available on all Spring Contacts.
- ❑ For individual contact details, see previous catalog pages or search for the part number on www.harwin.com.



- ❑ External box dimensions are 338mm x 261mm, 57mm high
- ❑ Free refills available - registration card included with each box with further details on claiming your spring contact replacements.



❑ Box Contents

ORDER CODE	CONTACT STYLE	QUANTITY
S7221-45R	Positive Stop	20
S7271-45R	Positive Stop	20
S7121-42R	C Style	20
S1741-46R	C Style	20
S1761-42R	C Style	20
S1761-46R	C Style	20
S1791-42R	C Style	20
S7061-42R	C Style	20
S7061-46R	C Style	20
S7131-45R	Extended Antenna	20
S7161-45R	Extended Antenna	20
S7101-42R	Box Style	20
S7051-42R	Box Style	20
S7071-46R	C/Box Style	20
S7081-42R	Point Contact	20
S1941-46R	Multi-Direction	20

ORDER CODE
DEV-001

All dimensions in mm.

Pogo Pin Specification

Materials

Plunger:	Brass, Gold finish
Barrel:	Brass, Gold finish
Spring:	Stainless Steel

Electrical

Current:	2A or 1A (see individual pages)
Contact resistance:	50mΩ max

Mechanical

Durability:	10,000 operations
Spring force at working height:	See individual pages

Environmental

Operating temperature:	-40°C to +85°C
Solderability:	235°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Pogo Pins

Single Spring Loaded Contacts – SMT with Peg

- ❖ These pogo pins are intended to be used as surface mount with a location peg, but they can also be used as a throughboard tail version.
- ❖ Available in Tape and Reeled packaging format for automated assembly methods.
- ❖ Gold finish for improved wear resistance.
- ❖ Additional height options shown on following page.



❖ Packaging

Reel quantity

- P70-6000045R: 1,800 on a Ø330mm reel
- P70-2000045R: 800 on a Ø330mm reel
- P70-2010045R: 700 on a Ø330mm reel

❖ Electrical

Current

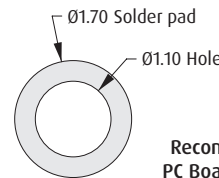
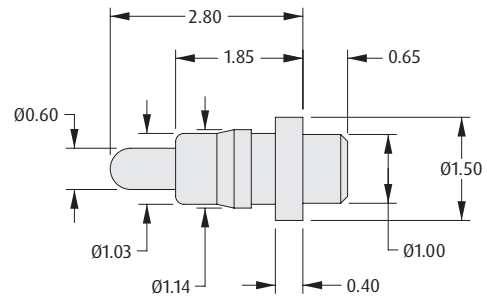
- P70-6000045R: 1A
- P70-2000045R: 2A
- P70-2010045R: 2A

❖ Mechanical

Spring force at working height

- P70-6000045R: 0.39N ±0.09N at 2.10mm working height
- P70-2000045R: 1.27N ±0.34N at 2.90mm working height
- P70-2010045R: 1.32N +0.39/-0.29N at 4.00mm working height

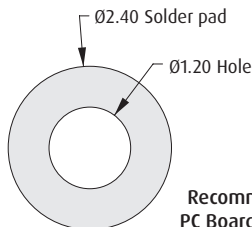
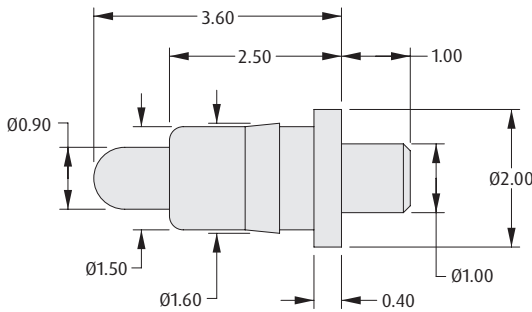
2.8mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE
P70-6000045R

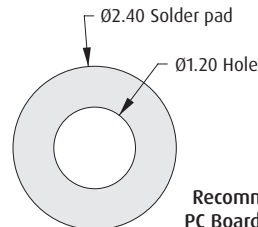
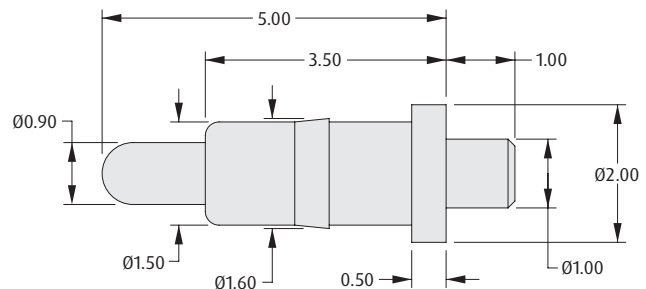
3.6mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE
P70-2000045R

5.0mm FREE HEIGHT



Recommended
PC Board Pattern

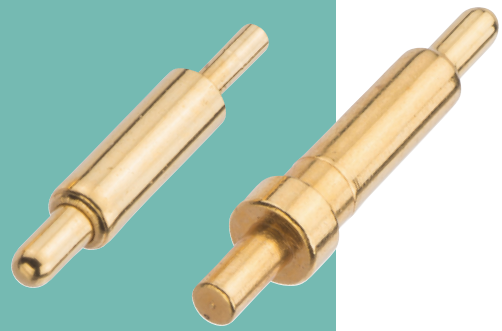
ORDER CODE
P70-2010045R

All dimensions in mm.

Pogo Pins

Single Spring Loaded Contacts – SMT with Peg

- These pogo pins are intended to be used as surface mount with a location peg, but they can also be used as a throughboard tail version.
- Available in Tape and Reeled packaging format for automated assembly methods.
- Gold finish for improved wear resistance.
- Additional height options shown on previous page.



POGO PINS

Packaging

Reel quantity

P70-2100045R:	600 on a Ø330mm reel
P70-2300045R:	580 on a Ø330mm reel
P70-2200045:	Loose

Electrical

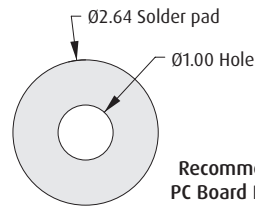
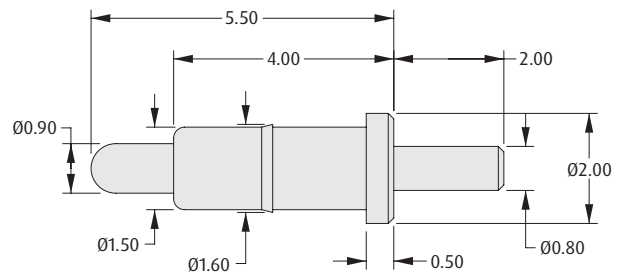
Current: 2A

Mechanical

Spring force at working height

P70-2100045R:	0.68N ±0.24N at 4.50mm working height
P70-2300045R:	0.83N ±0.25N at 4.90mm working height
P70-2200045:	0.98 ±0.19N at 7.10mm working height

5.5mm FREE HEIGHT

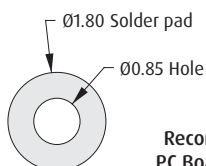
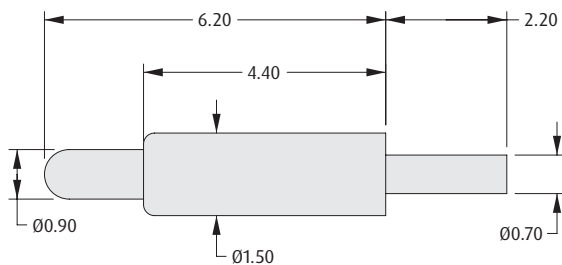


Recommended
PC Board Pattern

ORDER CODE

P70-2100045R

6.2mm FREE HEIGHT

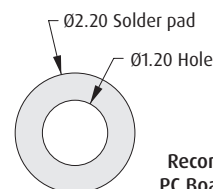
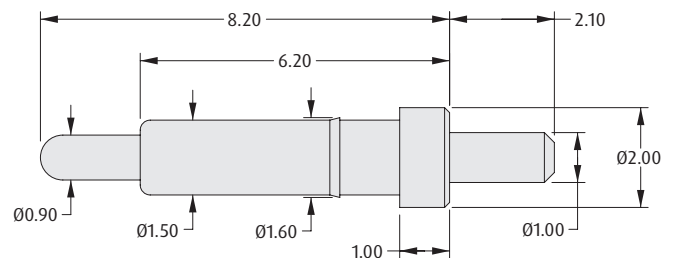


Recommended
PC Board Pattern

ORDER CODE

P70-2300045R

8.2mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE

P70-2200045

All dimensions in mm.

Pogo Pins

Single Spring Loaded Contacts – Surface Mount

- ❖ Used for individual contacts or irregular layout requirements.
- ❖ Available in Tape and Reeled packaging format for automated assembly methods.
- ❖ Gold finish for improved wear resistance.
- ❖ Additional height options shown on following page.



❖ Packaging

Reel quantity

P70-5000045R: 2,000 on a Ø330mm reel
 P70-7000045: Loose
 P70-5100045: Loose

❖ Electrical

Current

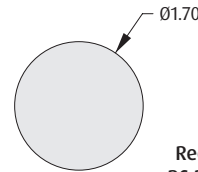
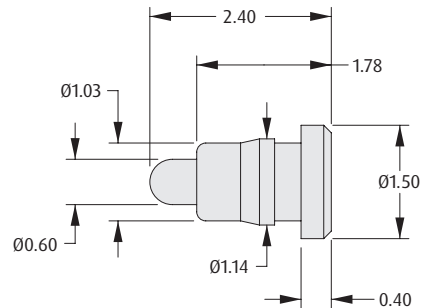
P70-5000045R: 1A
 P70-7000045: 2A
 P70-5100045: 2A

❖ Mechanical

Spring force at working height

P70-5000045R: 0.68N ±0.19N at 1.90mm working height
 P70-7000045: 0.68N ±0.19N at 2.00mm working height
 P70-5100045: 0.98N ±0.29N at 4.00mm working height

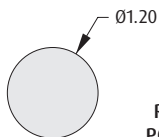
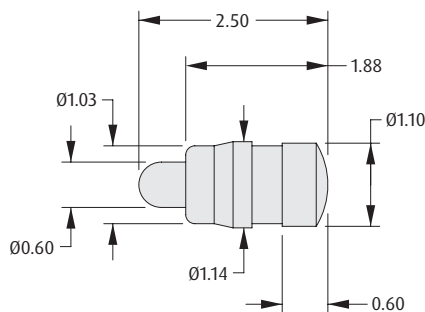
2.4mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE
P70-5000045R

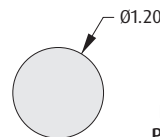
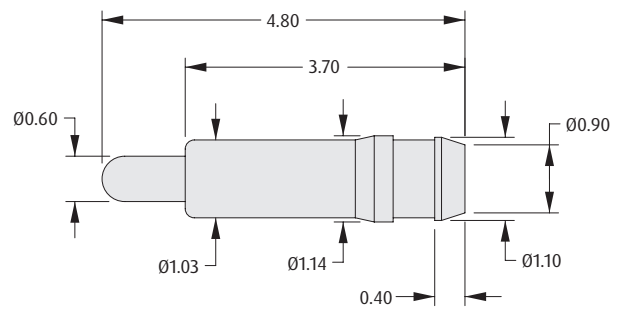
2.5mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE
P70-7000045

4.8mm FREE HEIGHT



Recommended
PC Board Pattern

ORDER CODE
P70-5100045

All dimensions in mm.

Pogo Pins

Single Spring Loaded Contacts – Surface Mount

- Used for individual contacts or irregular layout requirements.
- Available in Tape and Reeled packaging format for automated assembly methods.
- Gold finish for improved wear resistance.
- Additional height options shown on following page.



POGO PINS

➤ Packaging

Reel Quantity

P70-1100045R:	650 on a Ø330mm reel
P70-1030045R:	650 on a Ø330mm reel
P70-1000045R:	1,400 on a Ø330mm reel
P70-1010045R:	800 on a Ø330mm reel
P70-1020045R:	700 on a Ø330mm reel

➤ Electrical

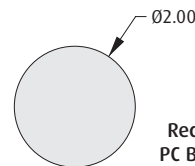
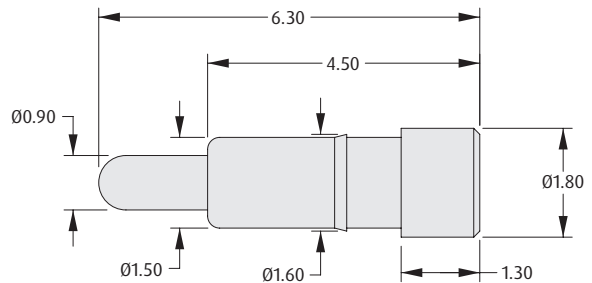
Current: 2A

➤ Mechanical

Spring force at working height

P70-1100045R:	1.23N ±0.34N at 5.00mm working height
P70-1000045R:	0.88N ±0.29N at 2.90mm working height
P70-1010045R:	1.17N ±0.29N at 4.00mm working height
P70-1020045R:	1.17N ±0.29N/-0.19N at 4.50mm working height
P70-1030045R:	1.29N ±0.29N at 6.20mm working height

6.3mm FREE HEIGHT

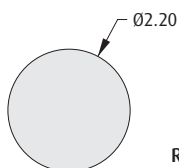
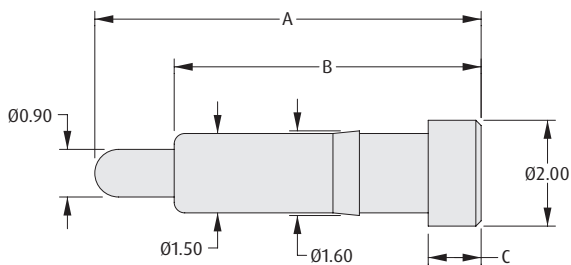


Recommended
PC Board Pattern

ORDER CODE

P70-1100045R

3.5mm TO 7.3mm FREE HEIGHT



Recommended PC Board Pattern

ORDER CODE	DIM A	DIM B	DIM C
P70-1000045R	3.50	2.50	0.40
P70-1010045R	5.00	3.50	0.50
P70-1020045R	5.50	4.00	0.50
P70-1030045R	7.30	5.80	1.00

All dimensions in mm.

Contact Pads

Surface Mount Contacts

- ❖ Surface mountable contact pad, ideal as a mating area for spring contacts and pogo pins.
- ❖ Supplied in Tape and Reeled packaging format for automated assembly methods.
- ❖ Gold finish for improved wear resistance.
- ❖ Available in 3 shapes, with a choice of pad dimensions.



Materials

Base material: Beryllium Copper
 Finish: Gold

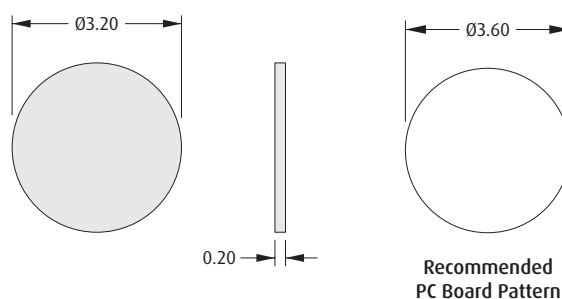
Electrical

Current: 6A
 Contact resistance: 0.15mΩ max

Environmental

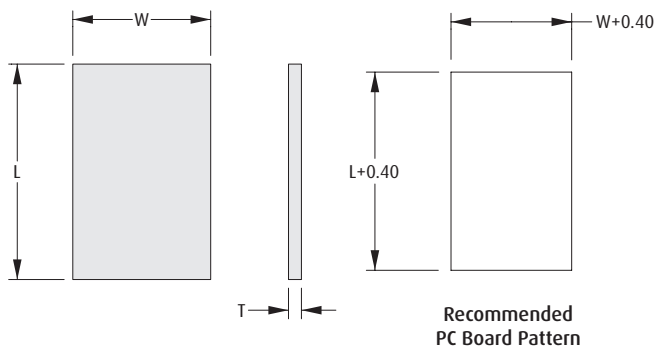
Operating temperature: -40°C to +180°C

CIRCULAR



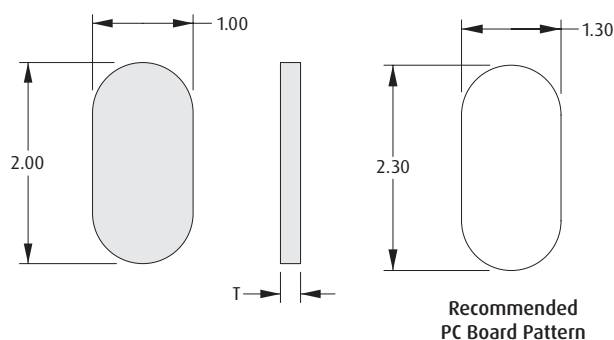
ORDER CODE	TAPE & REEL
S70-332002045R	2,000 on a Ø178 reel

RECTANGULAR



ORDER CODE	DIM L	DIM W	DIM T	TAPE & REEL
S70-125161545R	2.50	1.60	0.15	4,000 on a Ø178 reel
S70-138181045R	3.80	1.80	0.10	2,000 on a Ø178 reel
S70-138305045R	3.80	3.00	0.50	2,000 on a Ø178 reel

OVAL



ORDER CODE	DIM T	TAPE & REEL
S70-220101045R	0.10	9,000 on a Ø178 reel
S70-220102045R	0.20	9,000 on a Ø178 reel

All dimensions in mm.