

# EMC Shielding

## Contents

- Introduction
- SMT Shielding Clips
- Shielding Cans for SMT Clips
- Spring Contacts
  - Positive Stop
  - C Style
  - Extended C Style (Antenna)
  - Box Style
  - Multi-Directional
- Development Kit

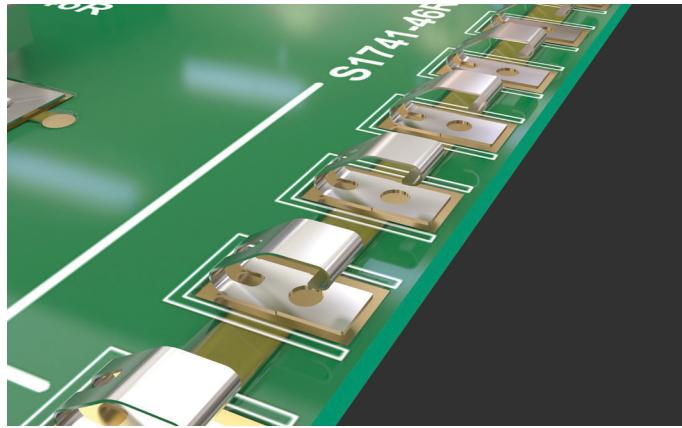


# EMC Shielding Introduction

Harwin provides a range of Surface Mount Shield Clips, compatible Shield Cans, and a comprehensive selection of Spring Contacts, to solve a variety of EMC/RFI and grounding issues.

The Harwin combination of SMT Clips and Cans provide a simple and cost-effective method of shielding vulnerable or EMI radiating board components.

- No secondary manual soldering operations - Shield Cans quickly and easily slot into Clips.
- Potential hot-spots from manual soldering eliminated.
- Rework now easy without a de-soldering operation.



Spring Contacts (also known as Shield Fingers, Antenna or Grounding Contacts) are available in a choice of finish and wide array of styles.

- Heights from 1.23mm to 7.25mm in a variety of spring forces.
- Ideal for antenna feeds in mobile devices, LED lamp connections, grounding metal devices or single signal connections.
- All contacts are SMT, supplied in Tape and Reel packaging for simplified automated assembly and low production costs.

## RFI Shield Clips Summary

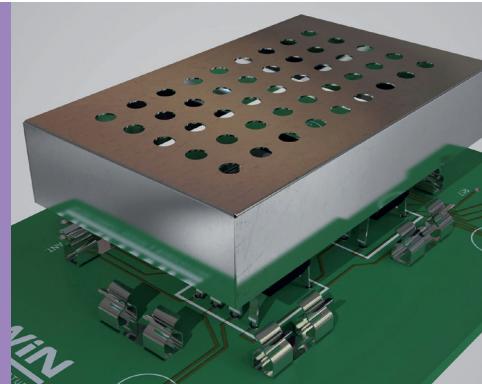
- Further dimensional information on the Shield Clips is available on the following pages.

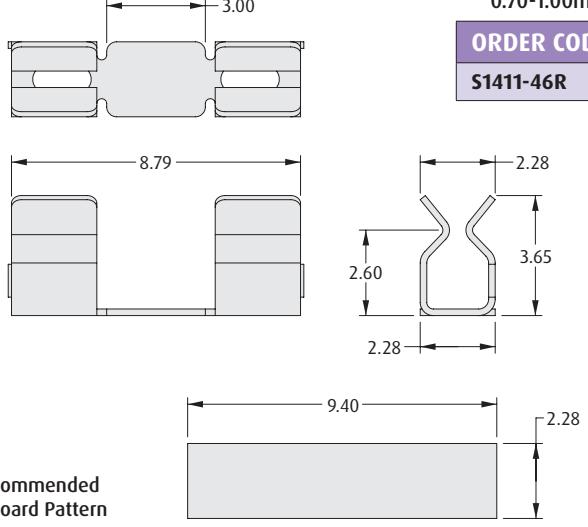
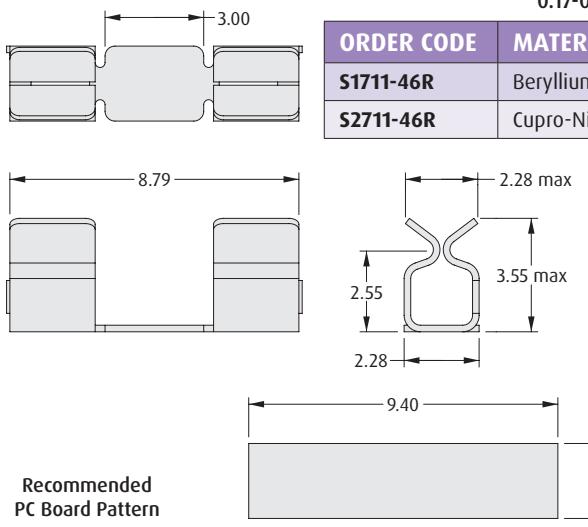
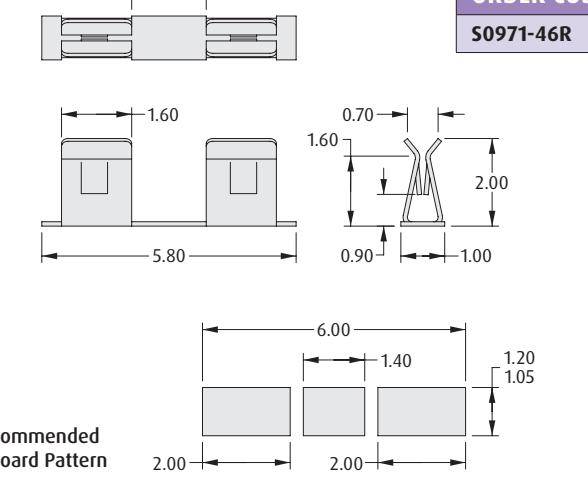
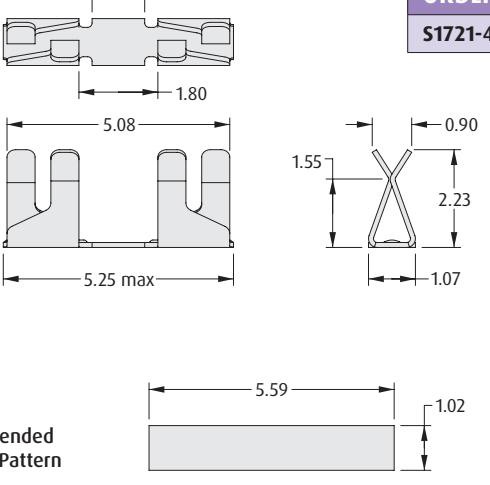
Part No.	Type	Shield Thickness	Material	Finish	Pack Qty. on Ø330mm reel	Insertion Force (max)	Withdrawal Force (min)
<b>S1411-46R</b>	Maxi	0.70-1.00mm	Beryllium Copper	Tin	1,900	7N	0.8N
<b>S1711-46R</b>	Midi	0.17-0.30mm	Beryllium Copper	Tin	1,900	4N	0.5N
<b>S2711-46R</b>	Midi	0.17-0.30mm	Cupro-Nickel (Beryllium-free)	Tin	1,900	4N	0.5N
<b>S0971-46R</b>	Mini	0.20-0.30mm	Stainless Steel	Tin	5,000	19.6N	0.98N
<b>S1721-46R</b>	Mini	013-0.23mm	Beryllium Copper	Tin	5,000	5N	0.35N
<b>S0941-46R</b>	Micro	015-0.20mm	Stainless Steel	Tin	10,000	9.8N	0.69N
<b>S0951-46R</b>	Micro	0.20mm	Stainless Steel	Tin	10,000	9.8N	0.69N
<b>S0961-46R</b>	Micro	015-0.20mm	Stainless Steel	Tin	10,000	24.5N	0.98N
<b>S0991-46R</b>	Micro	020-0.25mm	Stainless Steel	Tin	15,000	19.6N	0.98N
<b>S1001-46R</b>	Micro	015-0.20mm	Stainless Steel	Tin	20,000	19.6N	0.98N
<b>S0981-46R</b>	Corner	020-0.25mm	Stainless Steel	Tin	6,000	19.6N	0.98N

# RFI Shield Clips

## Shield Clips for EMI/RFI Shields

- SMT devices offering a fast solution for assembling RFI shields to PCBs.
- Eliminates the need for through holes and post reflow operations.
- Saves PCB real estate.
- Facilitates easy removal of the can for maintenance and repair.
- Substantial improvement in time and simplicity of assembly tuning and re-work.

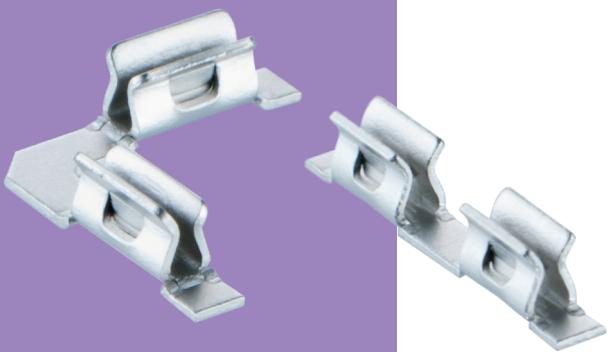


MAXI	MIDI						
 <p><b>Shield Thickness</b> 0.70-1.00mm</p> <p><b>ORDER CODE</b> <b>S1411-46R</b></p>	 <p><b>Shield Thickness</b> 0.17-0.30mm</p> <table border="1"> <tr> <th><b>ORDER CODE</b></th> <th><b>MATERIAL</b></th> </tr> <tr> <td><b>S1711-46R</b></td> <td>Beryllium Copper</td> </tr> <tr> <td><b>S2711-46R</b></td> <td>Cupro-Nickel</td> </tr> </table>	<b>ORDER CODE</b>	<b>MATERIAL</b>	<b>S1711-46R</b>	Beryllium Copper	<b>S2711-46R</b>	Cupro-Nickel
<b>ORDER CODE</b>	<b>MATERIAL</b>						
<b>S1711-46R</b>	Beryllium Copper						
<b>S2711-46R</b>	Cupro-Nickel						
 <p><b>Shield Thickness</b> 0.20-0.30mm</p> <p><b>ORDER CODE</b> <b>S0971-46R</b></p>	 <p><b>Shield Thickness</b> 0.13-0.23mm</p> <p><b>ORDER CODE</b> <b>S1721-46R</b></p>						
All dimensions in mm.							

# RFI Shield Clips

## Shield Clips for EMI/RFI Shields

- Compatible with industry standard placement machines.
- Packaged in standard (EIA 481) Tape & Reel format.
- Spring contact design provides secure retention.
- Ideally suited to miniature electronics.
- Low profile and corner clips offer design flexibility.



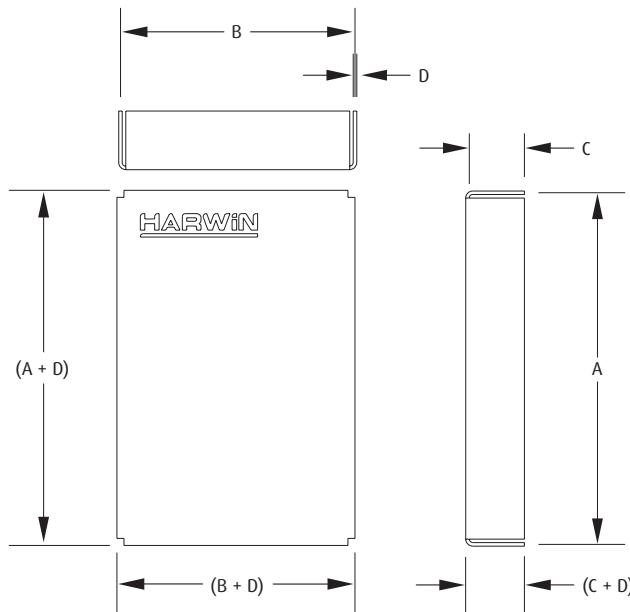
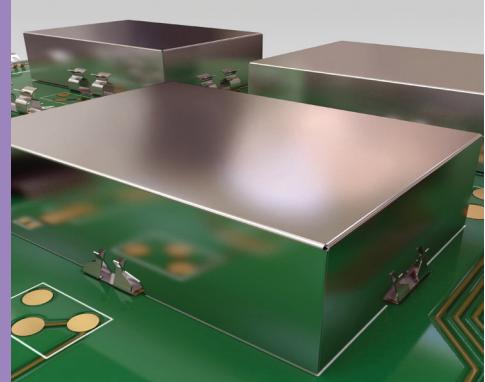
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<b>MICRO</b>		<b>MICRO</b>	
<b>MICRO</b>		<b>MICRO</b>	
<b>MICRO</b>		<b>CORNER</b>	
<b>MICRO</b>		<b>CORNER</b>	

All dimensions in mm.

# RFI Shield Cans

## EMI/RFI Shielding

- 0.3mm thickness Shield Cans suitable for use with S1711, S2711 and S0971 Shield Clips.
- 0.2mm thickness Shield Cans suitable for use with most of the Harwin Shield Clips - check the chart on the introduction page.
- Provides excellent RFI and EMI protection to sensitive circuitry at the PCB level.
- Standard can sizes available from stock.



### Materials

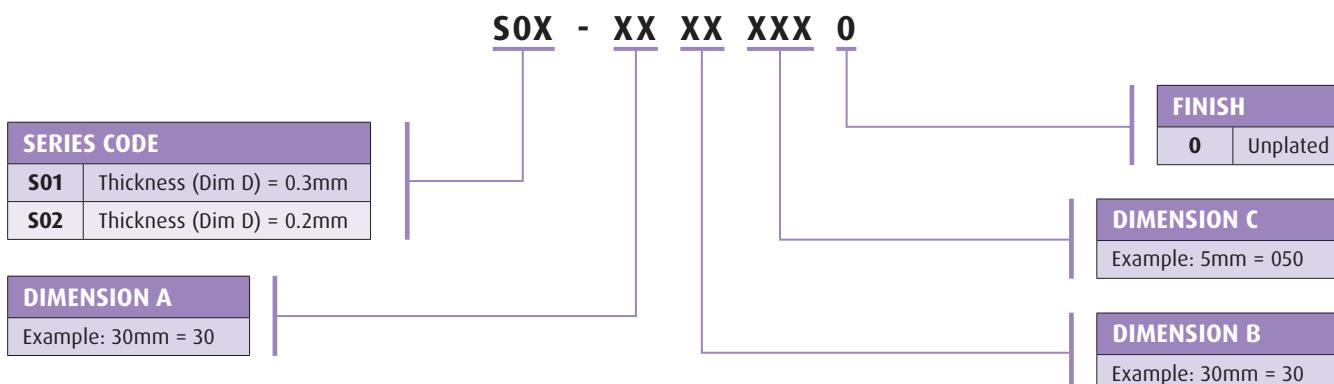
Material: Nickel Silver  
Finish: Unplated

### Standard Sizes

ORDER CODE	DIM A	DIM B	DIM C	DIM D
<b>S01-30200500</b>	30mm	20mm	5mm	0.3mm
<b>S01-30300500</b>	30mm	30mm	5mm	0.3mm
<b>S01-50250500</b>	50mm	25mm	5mm	0.3mm
<b>S02-20150300</b>	20mm	15mm	3mm	0.2mm
<b>S02-25200300</b>	25mm	20mm	3mm	0.2mm
<b>S02-30200250</b>	30mm	20mm	2.5mm	0.2mm

- Dimensions A and B are measured from the **CENTRE** of the material thickness.
- Dimension C is measured from the bottom edge to the **INSIDE** of the top face.

### HOW TO ORDER

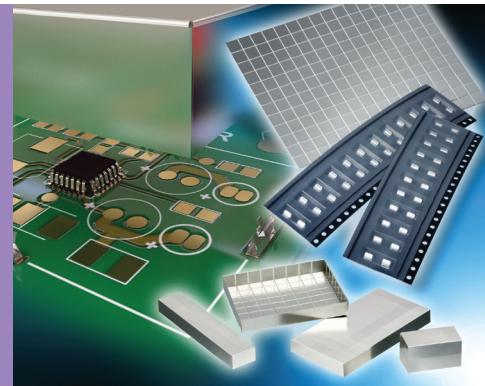


All dimensions in mm.

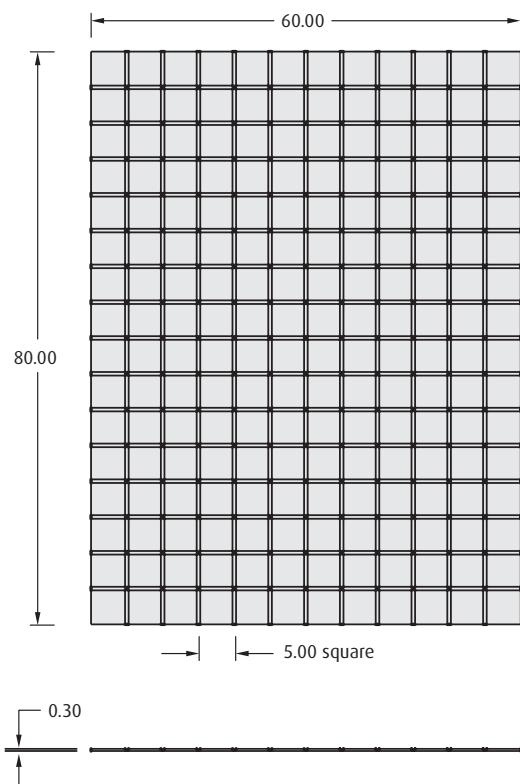
# RFI Shield Can Kit

## SMT Clips and Make-Your-Own Cans

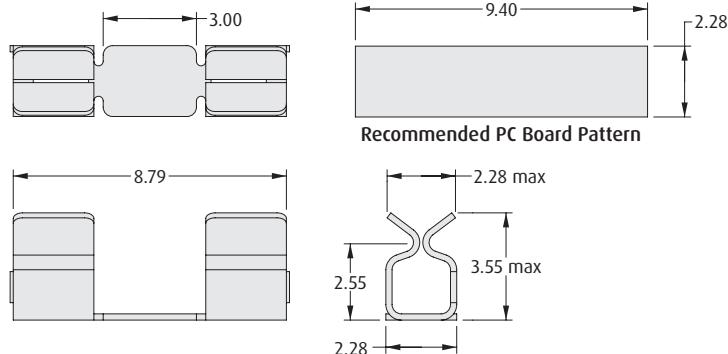
- Make your own Shield Cans in minutes, ideal for fast prototyping.
- Kit contains DIY Shield Can blanks, Shield retention clips and full instructions.
- Nickel Silver material for effective & useable shielding: up to 24dB attenuation achieved (frequency/configuration dependent).
- Shield Can is removable for adjustment.



### SHIELD CAN KIT



**2 x Shield Can Sheets**  
5mm pitch score lines, for folding



### 24 x Shield Clip S1711-46R



**Instruction Sheet**  
(available from [www.harwin.com/instructions](http://www.harwin.com/instructions))

#### ORDER CODE

**S01-806005KIT**

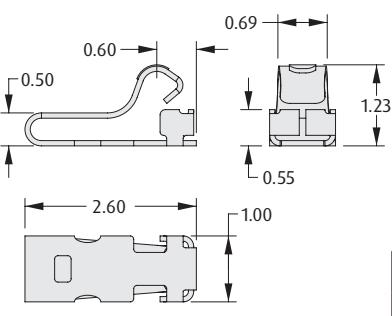
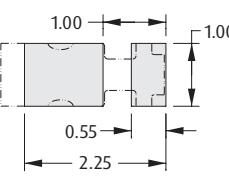
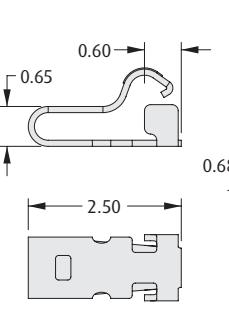
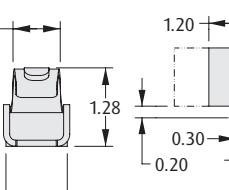
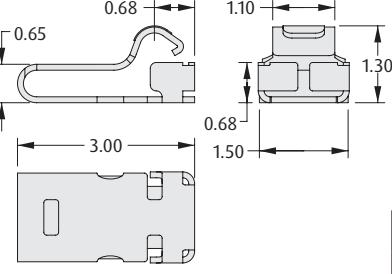
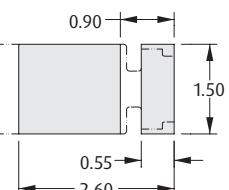
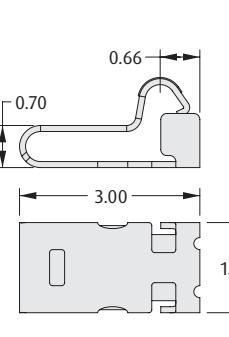
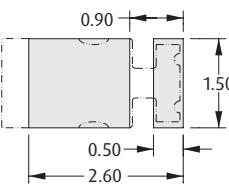
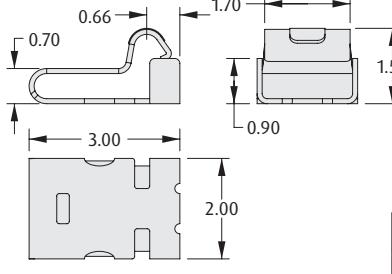
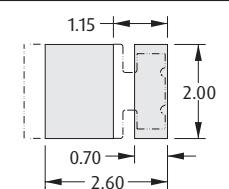
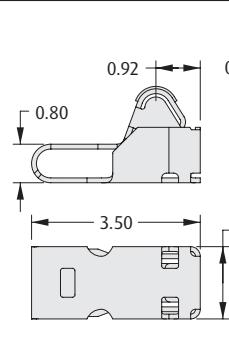
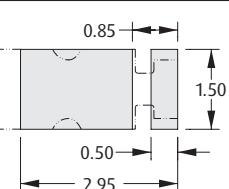
All dimensions in mm.

# 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.



<b>1.23mm HIGH</b>	<b>1.28mm HIGH</b>								
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<b>ORDER CODE</b>	<b>FINISH</b>								
<b>S7221-45R</b>	Gold								
<b>ORDER CODE</b>	<b>FINISH</b>								
<b>S7231-45R</b>	Gold								
<b>1.3mm HIGH</b>	<b>1.5mm HIGH, 1.5mm WIDE</b>								
  <table border="1"> <tr> <td><b>ORDER CODE</b></td><td><b>FINISH</b></td></tr> <tr> <td><b>S7241-45R</b></td><td>Gold</td></tr> </table>	<b>ORDER CODE</b>	<b>FINISH</b>	<b>S7241-45R</b>	Gold	  <table border="1"> <tr> <td><b>ORDER CODE</b></td><td><b>FINISH</b></td></tr> <tr> <td><b>S7251-45R</b></td><td>Gold</td></tr> </table>	<b>ORDER CODE</b>	<b>FINISH</b>	<b>S7251-45R</b>	Gold
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<b>S7241-45R</b>	Gold								
<b>ORDER CODE</b>	<b>FINISH</b>								
<b>S7251-45R</b>	Gold								
<b>1.5mm HIGH, 2mm WIDE</b>	<b>2mm HIGH</b>								
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<b>ORDER CODE</b>	<b>FINISH</b>								
<b>S7261-45R</b>	Gold								
<b>ORDER CODE</b>	<b>FINISH</b>								
<b>S7271-45R</b>	Gold								

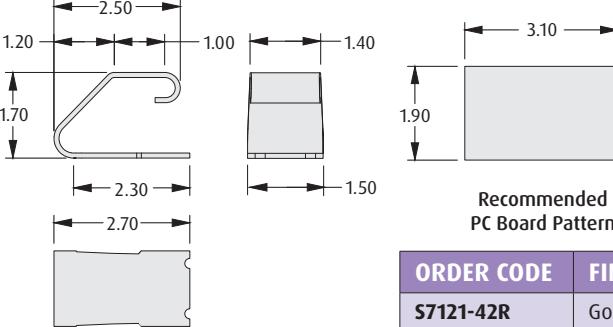
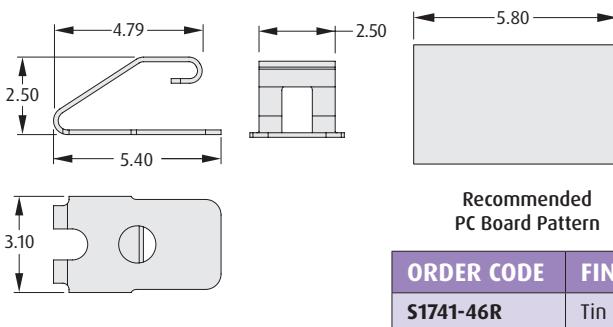
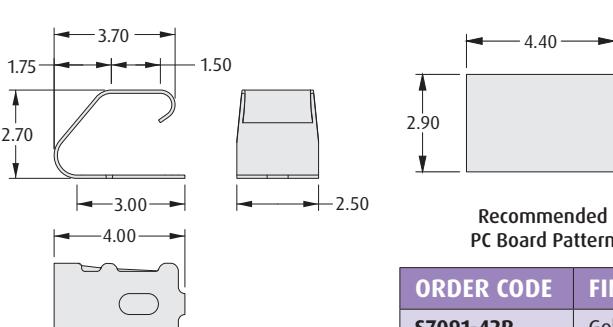
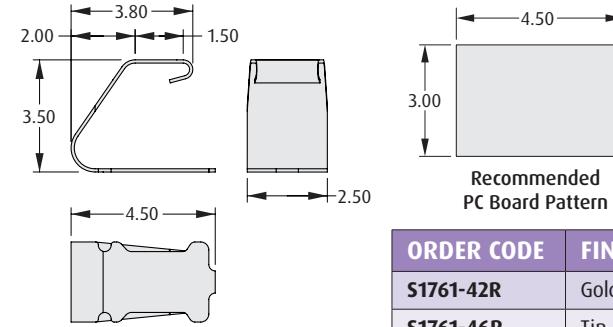
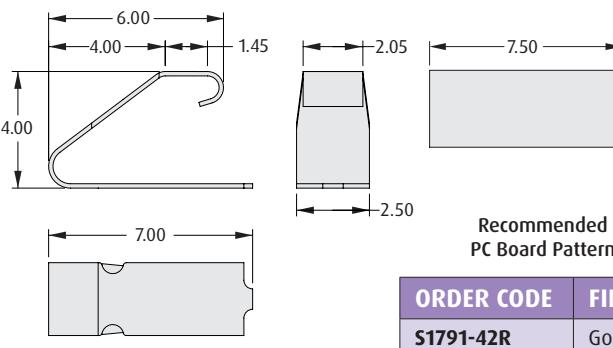
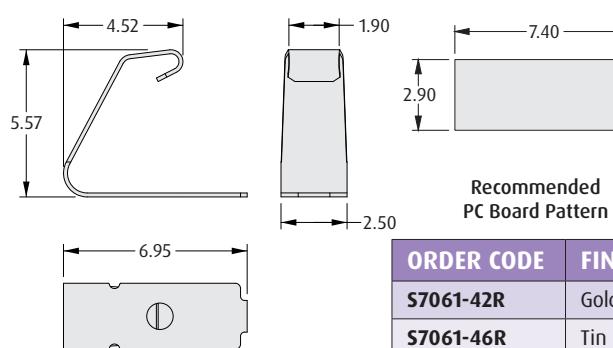
All dimensions in mm.

# 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.



<b>1.7mm HIGH</b>	<b>2.5mm HIGH</b>
 <b>Recommended PC Board Pattern</b>	 <b>Recommended PC Board Pattern</b>
<b>2.7mm HIGH</b>	<b>3.5mm HIGH</b>
 <b>Recommended PC Board Pattern</b>	 <b>Recommended PC Board Pattern</b>
<b>4.0mm HIGH</b>	<b>5.6mm HIGH</b>
 <b>Recommended PC Board Pattern</b>	 <b>Recommended PC Board Pattern</b>

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.



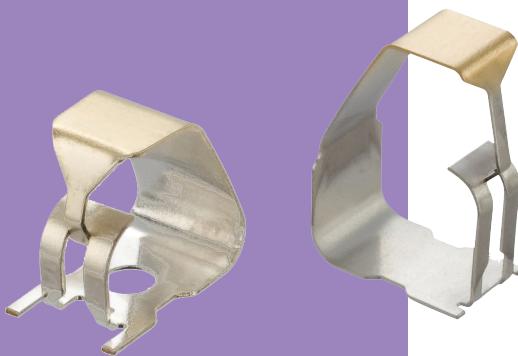
EXTENDED ANTENNA CONTACTS						
PART NO.	HEIGHT	DIM A	DIM B	DIM C	DIM D	FINISH
<b>S7131-45R</b>	2.00	4.30	0.80	1.00	1.55	Gold
<b>S7141-45R</b>	2.50	4.50	0.80	1.00	1.55	Gold
<b>S7151-45R</b>	3.00	4.50	0.90	1.50	1.70	Gold
<b>S7161-45R</b>	3.50	4.50	1.05	2.00	1.95	Gold
<b>S7171-45R</b>	4.00	4.50	1.36	2.50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

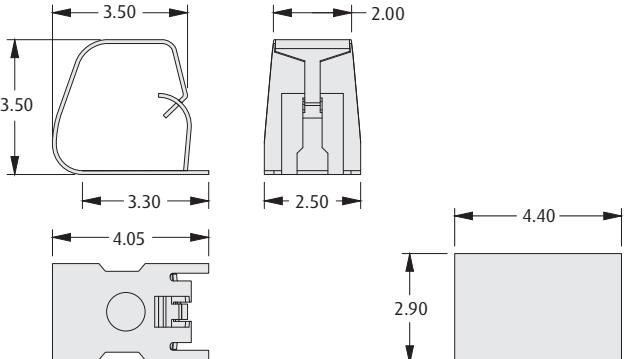
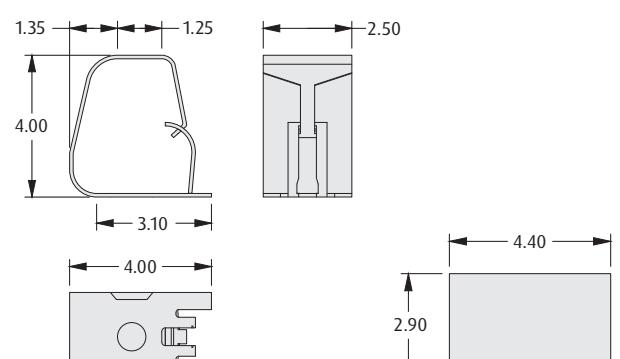
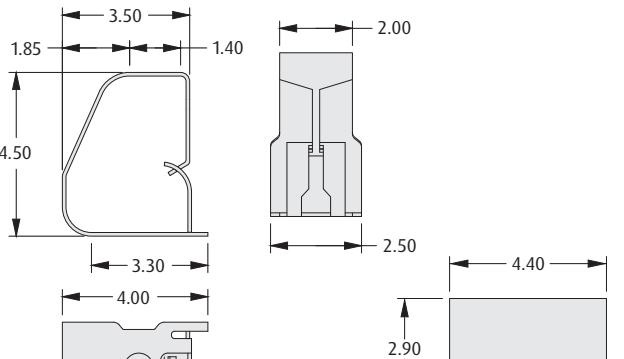
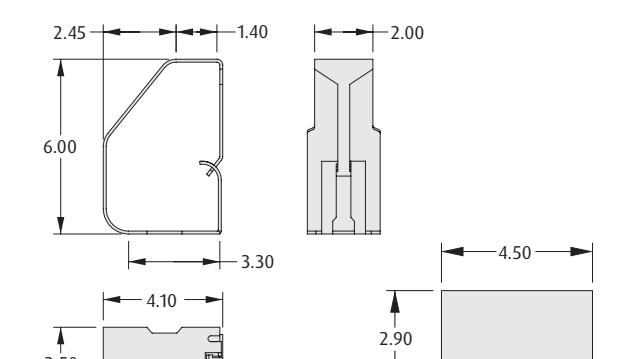
All dimensions in mm.

# 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>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> </thead> <tbody> <tr> <td><b>S7101-42R</b></td><td>Gold + Tin</td></tr> </tbody> </table>	ORDER CODE	FINISH	<b>S7101-42R</b>	Gold + Tin	 <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> </thead> <tbody> <tr> <td><b>S7041-42R</b></td><td>Gold + Tin</td></tr> </tbody> </table>	ORDER CODE	FINISH	<b>S7041-42R</b>	Gold + Tin
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<b>S7041-42R</b>	Gold + Tin								
 <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> </thead> <tbody> <tr> <td><b>S7111-42R</b></td><td>Gold + Tin</td></tr> </tbody> </table>	ORDER CODE	FINISH	<b>S7111-42R</b>	Gold + Tin	 <p>Recommended PC Board Pattern</p> <table border="1"> <thead> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> </thead> <tbody> <tr> <td><b>S7051-42R</b></td><td>Gold + Tin</td></tr> </tbody> </table>	ORDER CODE	FINISH	<b>S7051-42R</b>	Gold + Tin
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<b>S7111-42R</b>	Gold + Tin								
ORDER CODE	FINISH								
<b>S7051-42R</b>	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.



2.5mm HIGH	2.75mm HIGH												
  <b>Recommended PC Board Pattern</b> <table border="1"> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> <tr> <td><b>S7071-46R</b></td><td>Tin</td></tr> </table>	ORDER CODE	FINISH	<b>S7071-46R</b>	Tin	  <b>Recommended PC Board Pattern</b> <table border="1"> <tr> <th>ORDER CODE</th><th>FINISH</th></tr> <tr> <td><b>S7081-42R</b></td><td>Gold + Tin</td></tr> </table>	ORDER CODE	FINISH	<b>S7081-42R</b>	Gold + Tin				
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MULTI-DIRECTION													
 	 <b>Recommended PC Board Pattern</b> <table border="1"> <tr> <th>ORDER CODE</th><th>TYPE</th><th>FINISH</th></tr> <tr> <td><b>S1941-42R</b></td><td>Normal Force</td><td>Gold + Tin</td></tr> <tr> <td><b>S1941-46R</b></td><td>Normal Force</td><td>Tin</td></tr> <tr> <td><b>S1951-46R</b></td><td>Low Force</td><td>Tin</td></tr> </table>	ORDER CODE	TYPE	FINISH	<b>S1941-42R</b>	Normal Force	Gold + Tin	<b>S1941-46R</b>	Normal Force	Tin	<b>S1951-46R</b>	Low Force	Tin
ORDER CODE	TYPE	FINISH											
<b>S1941-42R</b>	Normal Force	Gold + Tin											
<b>S1941-46R</b>	Normal Force	Tin											
<b>S1951-46R</b>	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](http://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
<b>S7221-45R</b>	Positive Stop	20
<b>S7271-45R</b>	Positive Stop	20
<b>S7121-42R</b>	C Style	20
<b>S1741-46R</b>	C Style	20
<b>S1761-42R</b>	C Style	20
<b>S1761-46R</b>	C Style	20
<b>S1791-42R</b>	C Style	20
<b>S7061-42R</b>	C Style	20
<b>S7061-46R</b>	C Style	20
<b>S7131-45R</b>	Extended Antenna	20
<b>S7161-45R</b>	Extended Antenna	20
<b>S7101-42R</b>	Box Style	20
<b>S7051-42R</b>	Box Style	20
<b>S7071-46R</b>	C/Box Style	20
<b>S7081-42R</b>	Point Contact	20
<b>S1941-46R</b>	Multi-Directional	20

ORDER CODE
<b>DEV-001</b>

All dimensions in mm.