

## Quick Reference Guide Spring Fingers

Spring fingers (also known as shield fingers, grounding springs or universal ground contacts) are used in almost every small printed circuit board application. A spring finger is a single contact, surface mountable, internal connector. It provides an electrical connection and grounding from EMI noise and static between a PCB and other electronic components, such as a secondary PCB, shield can, antenna, or speaker. TE Connectivity offers a wide selection of spring fingers in varying styles and sizes depending on the type of application.

### FEATURES

- Used for grounding between device and PCB
- Provides shielding from vibration from motors, antennas, speakers and microphones
- Used as a connection for stacking applications between primary and secondary PCBs
- Available in effective heights of 0.3mm – 6.5mm
- Requires limited space on a PCB
- Accommodates soldering and pick-and-place using standard equipment

### BENEFITS

- Prevents EMI noise and static
- Provides a highly reliable connection
- Provides an easy and inexpensive method for connecting multiple PCBs
- Allows for versatility in design of the PCB
- Can be designed in at the last minute
- No expensive specialized equipment needed

### APPLICATIONS

- Cell phones, smart phones
- MP3 players
- Digital cameras, camcorders
- GPS units
- eReaders
- Tablets
- PCs and laptops
- Home electronic devices
- Automotive
- Industrial equipment

## Applications



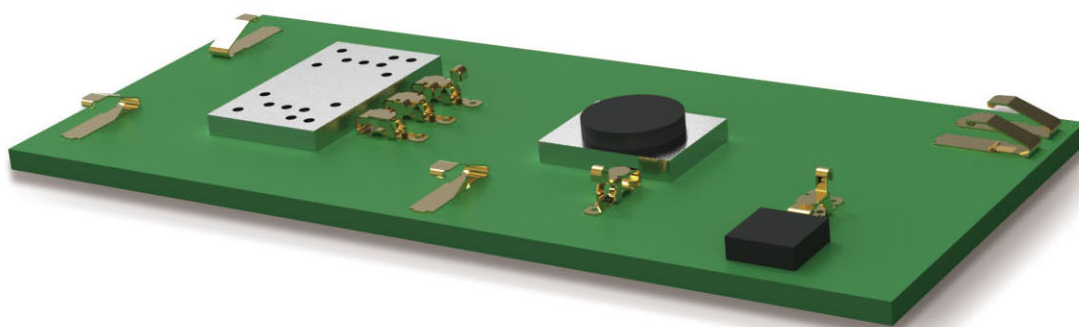
### Mobile Devices

- Digital cameras and videos
- Handheld games
- Payment terminals
- Cell phones
- Smart phones
- MP3 players
- GPS
- eReaders



### Home Entertainment

- Set top boxes
- Game consoles
- DVD players
- Blu-Ray disc drives



### Industrial Equipment

- Security systems
- POS scanners

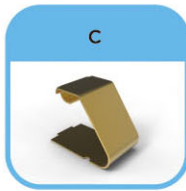


### Personal Computing

- Desktop computers
- Notebooks
- Tablets
- Netbooks

## Types of Spring Fingers

### Standard-flat contact



Standard Box or C type spring fingers both have simple geometry for easy application.

### Pre-Loaded-Round or Flat Contact



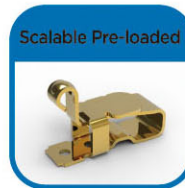
Pre-loaded spring fingers are recommended when a stable electrical contact with minimal deflection is needed. The force change is minimized over working range of the spring finger.

### Ultra low profile



Ultra low profile, Y type spring fingers, are used in applications where low effective heights are needed.

### Pre-loaded Scalable



The scalable family of spring fingers offers the same benefits as pre-loaded spring fingers, but with a common footprint.

## Scalable Spring Finger Key Features

Spring finger family with a common footprint in scalable heights.



Dimple on the contact to enhance the contact force

Locking for prevention of overstretching due to sideways force

Pick-and-place area for  $\Phi$  0.75mm nozzle pre-load function

Holes provide increased soldering strength and reduce solder wicking

















Contact can deflect to the bottom of spring finger without permanent deformation

Tip bent backwards to prevent hooking














Radius on both sides of tip to remove sharp edges








## Standard and Ultra Low Profile Spring Fingers

P/N	Type	Contact Finish	Uncompressed Height (mm)	Width (mm)	Working Range																																								
					0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1				
 1447009-5	Y	Nickel	0.8	2.0																																									
 1447009-9	Y	Gold over Nickel	0.8	2.0																																									
 1447360-9	C	Gold over Nickel	1.7	1.5																																									
 1447360-8	C	Gold over Nickel	1.3	1.2																																									
 1746136-1	Box	Gold over Nickel	1.5	2.0																																									
 1871059-1	C	Gold over Nickel	1.7	1.5																																									
 1674954-1	Box	Gold Flash	2.0	2.0																																									
 1734300-1	C	Gold over Nickel	3.0	2.49																																									
 1734305-1	C	Tin-Copper over Nickel	2.5	2.0																																									
 1447009-7	C	Gold over Nickel	3.5	2.49																																									
 1447009-8	C	Gold over Nickel	3.5	2.49																																									
 1734303-1	Box	Tin-Copper over Nickel	4.0	2.49																																									
 1720028-2	Box	Tin-Copper over Nickel	4.0	2.49																																									
 1437259-6	C	Nickel	4.0	2.49																																									
 1775073-1	Box	Gold over Nickel	4.3	4.0																																									
 1717222-1	C	Gold over Nickel	4.15	3.0																																									

Pre-Loaded Spring

P/N	Type	Contact Finish	Uncom-pressed Height (mm)	Width (mm)	Working Range																									
					0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	
 1551631-5	Pre-Loaded	Gold over Nickel	1.24	1.0																										
 1565158-1	Pre-Loaded	Gold over Nickel	1.5	1.1																										
 1554825-1	Pre-Loaded	Gold over Nickel	1.3	1.0																										
 1-1447360-1	Pre-Loaded	Gold over Nickel	1.4	1.0																										
 1857724-4	Pre-Loaded	Gold Flash over Nickel	1.8	1.0																										
 1551281-4	Pre-Loaded	Gold over Nickel	1.8	1.0																										
 1551401-4	Pre-Loaded	Gold over Nickel	1.8	1.0																										
 1565322-1	Pre-Loaded	Gold over Nickel	1.6	0.8																										
 2040761-1	Pre-Loaded	Gold over Nickel	1.99	2.0																										
 1554901-1	Pre-Loaded	Gold over Nickel	2.0	1.1																										
 1746854-1	Pre-Loaded	Nickel	2.4	1.1																										
 1827625-1	Pre-Loaded	Gold over Nickel	3.0	1.4																										
 1903646-1	Pre-Loaded	Gold over Nickel	3.0	1.4																										

Scalable Spring Finger Family

P/N	Type	Contact Finish	Uncompressed Height (mm)	Width (mm)	Working Range																							
					0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
 1551572-5	Pre-Loaded	Gold over Nickel	1.80	1.15																								
 1551573-5	Pre-Loaded	Gold over Nickel	2.15	1.15																								
 1551574-5	Pre-Loaded	Gold over Nickel	2.60	1.15																								
 1551575-5	Pre-Loaded	Gold Flash over Nickel	3.00	1.3																								
 1551576-5	Pre-Loaded	Gold over Nickel	3.40	1.4																								

## Frequently asked questions

### Question1

Why would I use a pre-loaded spring finger in an application?

### Answer1

A pre-loaded spring finger allows you to get the same amount of force, but with a smaller compression. A pre-loaded spring finger provides a stable electrical contact with minimal deflection. Sometimes these are preferred when there is limited height available in an application.

### Question2

What style of spring finger is best for my application?

### Answer2

Spring fingers are typically one of the last pieces added to a board. The type to be used is dependent upon the height and space left on the board. The decision of what type of spring finger to use is typically based on personal preference.

### Question3

Can the types of spring fingers be mixed in an application?

### Answer3

Yes, an application can have multiple spring fingers and more than one type. For example, there can be simple C types used for grounding between the device and the PCB and then multiple pre-loaded spring fingers on the board for shielding or other simple connections.

## FOR MORE INFORMATION

### TE Connectivity Technical Support Center

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For other country number go to [te.com/supportcenter](http://te.com/supportcenter)

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