Spring Fingers

Spring fingers (also known as shield fingers, grounding springs, universal ground contacts or antenna clips) can be used in all types of small printed circuit board applications across all industries. A spring finger is a single contact, surface mountable internal connector with multiple functions on a PCB. Spring fingers can be used for antenna feeds, low voltage electrical connections and grounding or shielding. They are beneficial in preventing EMI noise and static caused by speakers, motors, microphones or any other type of connector that can cause vibration within an application. TE Connectivity (TE) continues to expand its spring finger portfolio offering a broad range of styles, heights, and materials to meet all customers' needs.

Features

- Used for grounding between a device and PCB
- Provides shielding for anything that can cause vibrations within a device, such as motors, speakers, and microphones
- Provides a cost effective solution for antenna feeds in all types of devices
- Used as a connection for simple stacking applications between primary and secondary PCBs
- Available in heights as low as 1.0mm and up to 4.3mm
- 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 PCB layout
- Provides flexible, quick-turn design-ins
- Does not require expensive, specialized application equipment

Applications

- Mobile phones
- Wearable devices
- Game consoles
- Tablets
- Patient monitoring devices
- POS scanners
- Security systems
- GPS devices

www.te.com/products/Spring-Fingers

Applications and Industries

Consumer Electronics

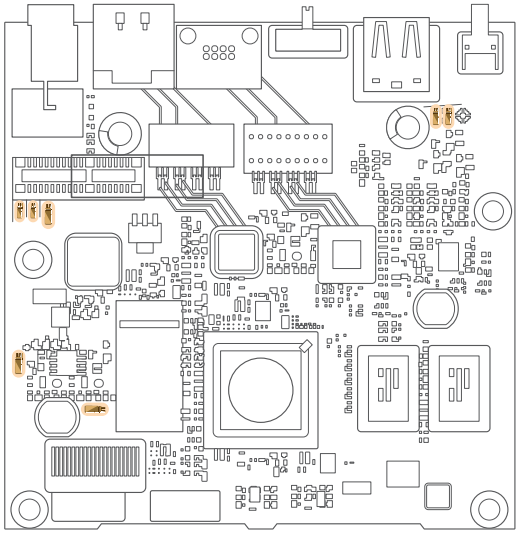
- Smart Home Electronics
- Fitness Equipment
- Gaming Consoles
- Wearable Devices
- Home Entertainment Systems
- Payment Terminals
- Tablets
- Mobile Phones

Industrial / Automotive

- POS Scanners
- Security Systems
- Thermostats
- Backup Cameras
- GPS
- Satellite Radio
- Infotainment

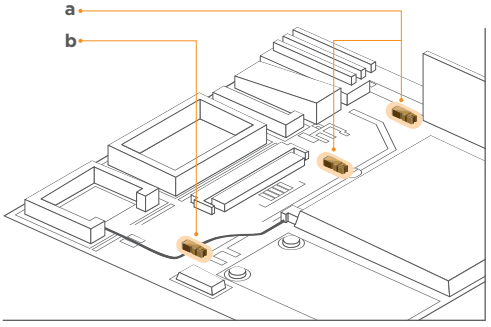
Medical

- Patient Monitoring Devices
- Blood Glucose Monitors
- Hearing Aids



Medical Device PCB

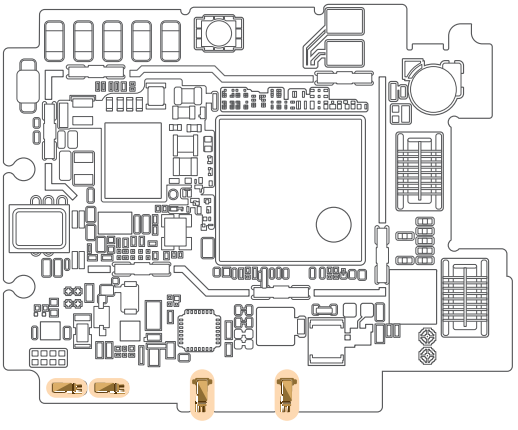
Used for grounding or shielding on the PCB



Tablet PCB

a. Used for grounding or shielding on the PCB

b. Used for an antenna feed

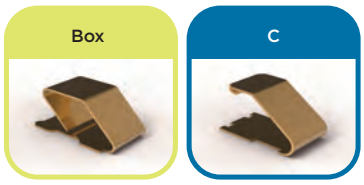


Wearable Device PCB

Used for grounding between the PCB and the cover of the device

Types of Spring Fingers

Standard-flat Contact



Standard box and C type connectors both have simple geometry for easy application.

Pre-loaded Contact

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

Ultra Low Profile

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

Types of Scalable Spring Fingers & Key Features

Standard Scalable

- Dimples on the contact enhance contact force
- Holes for connection to the PCB help increase solder strength and reduce wicking
- Locking feature prevents over-stretching
- Contact deflects to the bottom to help prevent permanent deformation
- Bent tip prevents hooking
- Radius on both sides of tip helps remove sharp edges

Side Protected Scalable

- Low force from 0.2N – 1.0N
- To increase strength and reduce wicking
- Prevents tangled springs in operator gloves
- Avoids deflection during PCB transfer

Side Protected Pre-loaded Scalable

- Very low force from 0.2N – 0.7N
- Offers a family of smaller working ranges
- Enhanced sidewall design

Standard and ultra low profile

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range	Current Capacity
	1447009-5	Y	Gold	0.8	2		0.5A
	2040852-1	Y	Gold	0.8	2		1.5A
	1447360-9	C	Gold	1.7	1.5		1.5A
	1447360-8	C	Gold	1.3	1.2		1.5A
	1746136-1	Box	Gold	1.5	2		1.5A
	1871059-1	C	Gold	1.7	1.5		1.5A
	1674954-1	Box	Gold	2	2		0.5A
	1734300-1	C	Gold	3	2.5		1.5A
	1447009-7	C	Gold	3.5	2.5		1.5A
	1447009-8	C	Gold	3.5	2.5		1.5A
	1734303-1	Box	Tin-copper	4	2.5		1.5A
	1437259-6	C	Nickel	4	2.5		1.5A
	1775073-1	Box	Gold	4.3	2.5		1.5A

Pre-Loaded

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range	Current Capacity
	2292838-3	Pre-Loaded	Gold	1.1	1		1.5A
	1551631-5	Pre-Loaded	Gold	1.24	1		0.5A
	2134078-1	Pre-Loaded	Gold	1.2	1.05		1.5A
	2199001-1	Pre-Loaded	Gold	1.2	1.05		1.5A
	1565158-1	Pre-Loaded	Gold	1.45	1.1		1.0A
	1-1447360-1	Pre-Loaded	Gold	1.4	1		1.5A
	1857724-4	Pre-Loaded	Gold	1.8	1		1.5A
	1551281-4	Pre-Loaded	Gold	1.8	1		1.5A
	1551401-4	Pre-Loaded	Gold	1.8	1		1.5A
	1565322-1	Pre-Loaded	Gold	1.6	0.75		1.5A
	2040761-1	Pre-Loaded	Gold	1.99	2		1.5A
	1554901-1	Pre-Loaded	Gold	2	1.1		1.5A
	2289559-1	Pre-Loaded	Gold	2.3	1		0.5A

Pre-Loaded

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range	Current Capacity
	1746854-1	Pre-Loaded	Gold	2.4	1.1		1.0A
	1827625-1	Pre-Loaded	Gold	3	1.4		1.5A
	1903646-1	Pre-Loaded	Gold	3	1.4		1.5A
	2286211-3	Pre-Loaded	Gold	2.4	1.7		4.2A

Scalable

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range	Current Capacity
	1551572-5	Pre-Loaded	Gold	1.8	1.15		0.5A
	1551573-5	Pre-Loaded	Gold	2.15	1.15		0.5A
	1551574-5	Pre-Loaded	Gold	2.6	1.15		0.5A
	1551575-5	Pre-Loaded	Gold	3	1.15		0.5A
	1551576-5	Pre-Loaded	Gold	3.4	1.15		0.5A
	2199248-4	C	Gold	1	2		2.0A
	2199248-5	C	Gold	1.3	2		2.0A
	2199248-6	C	Gold	1.6	2		2.0A
	2199249-3	C	Gold	2	1.5		2.0A
	2199249-4	C	Gold	2.3	1.5		2.0A
	3-2199250-2	C	Gold	2.9	1.5		2.0A
	3-2199250-3	C	Gold	3.2	1.5		2.0A
	3-2199250-4	C	Gold	3.6	1.5		2.0A
	3-2199250-5	C	Gold	3.8	1.5		2.0A
	2108693-4	Pre-Loaded	Gold	1.1	1		1.5A
	2108610-5	Pre-Loaded	Gold	1.4	1		1.5A
	2108611-5	Pre-Loaded	Gold	1.7	1		1.5A
	2108612-5	Pre-Loaded	Gold	2.05	1		1.5A
	2108613-5	Pre-Loaded	Gold	2.4	1		1.5A
	2108614-5	Pre-Loaded	Gold	2.7	1		1.5A
	2108609-5	Pre-Loaded	Gold	3	1		1.5A

Frequently Asked Questions

Question 1
Why would I use a pre-loaded spring finger in an application?

Answer 1
A pre-loaded spring finger allows for the same amount of force with a smaller compression and provides a stable electrical contact with minimal deflection. These features are useful for applications with limited available height.

Question 2
Which style of spring finger is best for my application?

Answer 2
Spring fingers are typically some of the last pieces added to a board. The type used depends upon the height and space left on the board, but the decision is typically based on your design needs.

Question 3
Can I combine different types of spring fingers in an application?

Answer 3
Yes, an application can have multiple spring fingers of more than one type. For example, simple C types can be used for grounding between the device and the PCB, while multiple pre-loaded spring fingers are used on the board for shielding or other simple connections.

Question 4
What are the benefits of using a scalable spring finger?

Answer 4
Scalable spring fingers use a common footprint, allowing easy design changes without requiring any extra space.

FOR MORE INFORMATION

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6-1773460-8 DND 11/2017

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