Spring Fingers

Spring fingers (also known as shield fingers, grounding springs, universal ground contacts, or 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. It can be used for antenna feeds, low voltage electrical connections or for grounding to prevent EMI noise and static caused by a speaker, motor, microphone or any other vibration within an application. 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

TE connectivity

Applications and Industries

Consumer Devices

- Digital Cameras
- Payment Terminals
- Games and Game Consoles
- Mobile Phones
- MP3 Players
- Wearable Devices
- Home Entertainment Systems
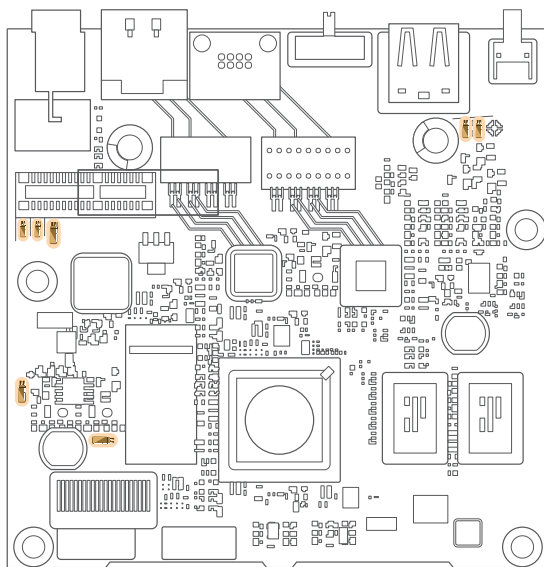- Desktop Computers
- Notebooks
- Tablets

Industrial / Automotive

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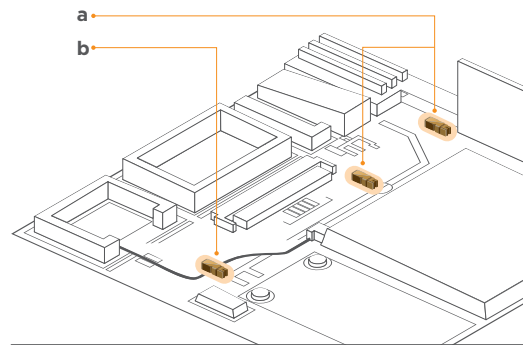- Thermostats
- Backup Cameras
- GPS
- Satellite Radio

Medical

- Fitness Equipment
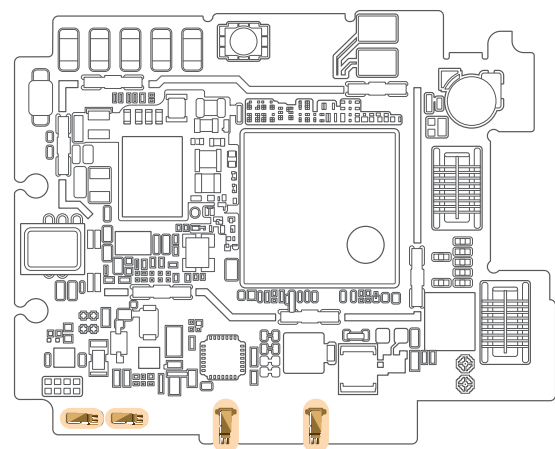- Patient Monitoring Devices
- Wearable Devices

Tablet PCB

a.Used for grounding or shielding on the PCB

b.Used for an antenna feed

Medical Device PCB
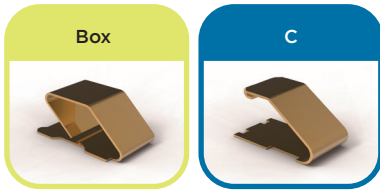
Used for grounding or shielding on the PCB

Wearable Device PCB

Used for grounding between the PCB and the cover of the device
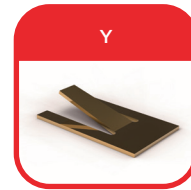
Types of Spring Fingers

Standard-flat Contact

Box	C

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

Pre-loaded Contact

Pre-loaded

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

Y

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

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
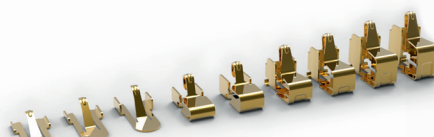
Side Protected Scalable

- 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	0.5–0.6	0.5A
2040852-1	Y	Gold	0.8	2	0.5–0.6	1.5A
1447360-9	C	Gold	1.7	1.5	0.6–1.4	1.5A
1447360-8	C	Gold	1.3	1.2	0.8–1.0	1.5A
1746136-1	Box	Gold	1.5	2	0.9–1.1	1.5A
1871059-1	C	Gold	1.7	1.5	1.0–1.3	1.5A
1674954-1	Box	Gold	2	2	1.2–1.5	0.5A
1734300-1	C	Gold	3	2.5	1.7–2.3	1.5A
1447009-7	C	Gold	3.5	2.5	2.1–2.8	1.5A
1447009-8	C	Gold	3.5	2.5	2.1–2.8	1.5A
1734303-1	Box	Tin-copper	4	2.5	2.4–3.1	1.5A
1437259-6	C	Nickel	4	2.5	2.1–3.1	1.5A
1775073-1	Box	Gold	4.3	2.5	2.4–3.6	1.5A

Pre-Loaded

Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range	Current Capacity
1551631-5	Pre-Loaded	Gold	1.24	1	0.6–0.7	0.5A
2134078-1	Pre-Loaded	Gold	1.2	1.05	0.7–0.9	1.5A
2199001-1	Pre-Loaded	Gold	1.2	1.05	0.7–0.9	1.5A
1565158-1	Pre-Loaded	Gold	1.45	1.1	0.9–1.2	1.0A
1554825-1	Pre-Loaded	Gold	1.3	1.05	0.8–1.0	1.5A
1-1447360-1	Pre-Loaded	Gold	1.4	1	1.0–1.3	1.5A
1857724-4	Pre-Loaded	Gold	1.8	1	1.0–1.4	1.5A
1551281-4	Pre-Loaded	Gold	1.8	1	1.0–1.3	1.5A
1551401-4	Pre-Loaded	Gold	1.8	1	1.0–1.4	1.5A
1565322-1	Pre-Loaded	Gold	1.6	0.75	1.1–1.3	1.5A
2040761-1	Pre-Loaded	Gold	1.99	2	1.1–1.5	1.5A
1554901-1	Pre-Loaded	Gold	2	1.1	1.1–2.0	1.5A

Pre-Loaded

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range (mm)	Current Capacity
	1746854-1	Pre-Loaded	Gold	2.4	1.1	1.4 – 1.9	1.0A
	1827625-1	Pre-Loaded	Gold	3	1.4	2.1 – 2.7	1.5A
	1903646-1	Pre-Loaded	Gold	3	1.4	2.1 – 2.7	1.5A
	2286211-x	Pre-Loaded	Gold	2.4	1.7	1.4 – 1.8	4.2A

Scalable

	Product Number	Type	Contact Finish	Uncompressed Height(mm)	Width (mm)	Working Range (mm)	Current Capacity
	1551572-5	Pre-Loaded	Gold	1.8	1.15	0.9 – 1.3	1.5A
	1551573-5	Pre-Loaded	Gold	2.15	1.15	1.3 – 1.7	0.5A
	1551574-5	Pre-Loaded	Gold	2.6	1.15	1.7 – 2.1	0.5A
	1551575-5	Pre-Loaded	Gold	3	1.15	2.0 – 2.4	0.5A
	1551576-5	Pre-Loaded	Gold	3.4	1.15	2.4 – 3.0	1.5A
	2199248-4	C	Gold	1	2	0.4 – 0.7	2.0A
	2199248-5	C	Gold	1.3	2	0.6 – 0.9	2.0A
	2199248-6	C	Gold	1.6	2	0.8 – 1.2	2.0A
	2199249-3	C	Gold	2	1.5	1.1 – 1.5	2.0A
	2199249-4	C	Gold	2.3	1.5	1.4 – 1.8	2.0A
	3-2199250-2	C	Gold	2.9	1.5	1.9 – 2.3	2.0A
	3-2199250-3	C	Gold	3.2	1.5	2.2 – 2.8	2.0A
	3-2199250-4	C	Gold	3.6	1.5	2.8 – 3.3	2.0A
	3-2199250-5	C	Gold	3.8	1.5	3.1 – 3.6	2.0A
	2108693-4	Pre-Loaded	Gold	1.1	1	0.8 – 0.9	1.5A
	2108610-5	Pre-Loaded	Gold	1.4	1	0.9 – 1.2	1.5A
	2108611-5	Pre-Loaded	Gold	1.7	1	1.2 – 1.5	1.5A
	2108612-5	Pre-Loaded	Gold	2.05	1	1.5 – 1.9	1.5A
	2108613-5	Pre-Loaded	Gold	2.4	1	1.7 – 2.1	1.5A
	2108614-5	Pre-Loaded	Gold	2.7	1	2.0 – 2.3	1.5A
	2108609-5	Pre-Loaded	Gold	3	1	2.3 – 2.6	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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