



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 helping to prevent 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 address 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 0.8mm and up to 7mm
- Requires limited space on a PCB
- Accommodates soldering and pick-and-place using standard equipment

Benefits

- Helps to prevent EMI noise and static
- Provides a well grounded connection
- Provides an easier and cost effective 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

APPLICATIONS AND INDUSTRIES

The internet of things (IoT) technology functions as a global infrastructure for the information society, enabling advanced services to interconnect devices based on existing and evolving communications technologies. Also, it offers operational information and the ability to communicate independently without human intervention. As a result, the technology is expected to open up new revenue streams, drive business efficiencies, facilitate new business models, and improve the way existing services are delivered across many different sectors.



Consumer Electronics

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



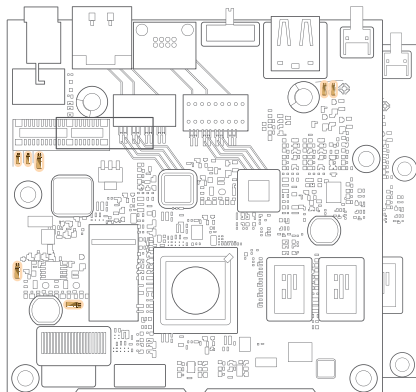
Industrial / Automotive

- POS Scanners
- Security Systems
- Thermostats
- Backup Cameras
- GPS
- Satellite Radio
- Infotainment
- Rugged Tablet/Phone
- Smart Building
- Fleet Telematics



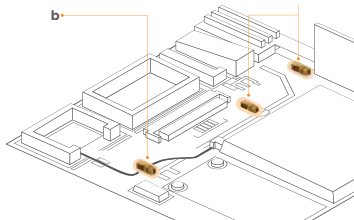
Medical Application

- Patient Monitoring Devices
- Blood Glucose Monitors
- Hearing Aids
- Smart Healthcare



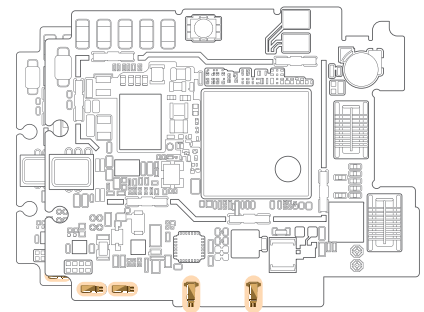
Medical Device PCB

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

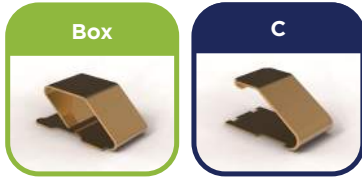


Wearable Device PCB

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

TYPES OF SPRING FINGERS

Standard-flat Contact



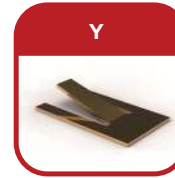
Standard box and C type connectors both have simple geometry for easier application.

Pre-loaded Contact



Pre-loaded spring fingers are useful 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.

Ultra-small Contact



Offered in different heights and styles/form factors, ultra small spring fingers are used in a broad range of applications with space constraints across various industries.

TYPES OF SCALABLE 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 overstretching
- Contact deflects to the bottom to help prevent permanent deformation
- Bent tip can prevent 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
- Helps prevent tangled springs in operator gloves
- Helps to avoid 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	Uncom-pressed Height (mm)	Width (mm)	Length (mm)	Working Range																															Current Capacity											
						0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4		3.5	3.6	3.7	3.8	4	4.2	4.25	4.5	4.9	5.1	6
 1447009-5	Y	Gold	0.8	2.0	3.4	█																																0.5A										
 2040852-1	Y	Gold	0.8	2.0	3.4	█																																1.5A										
 1447360-9	C	Gold	1.7	1.5	2.7					█																														1.5A								
 1447360-8	C	Gold	1.3	1.2	4.5	█																														1.5A												
 1746136-1	Box	Gold	1.5	2.0	3.4					█																														1.5A								
 1871059-1	C	Gold	1.7	1.5	2.7					█																														1.5A								
 1674954-1	Box	Gold	2.0	2.0	4.5					█																														1.5A								
 1734300-1	C	Gold	3.0	2.5	4.5	█																											1.5A															
 1447009-7	C	Gold	3.5	2.5	4.5	█																											1.5A															
 1447009-8	C	Gold	3.5	2.5	4.5	█																											1.5A															
 1734303-1	Box	Tin-Copper	4.0	2.5	4.1	█																											1.5A															
 1437259-6	C	Nickel	4.0	2.5	7.0	█																											1.5A															
 2343297-2	Box	Gold	4.0	1.8	5.8	█																											1A															
 1775073-1	Box	Gold	4.3	2.5	4.0	█																											4.5A															
 440423-1	C	Gold	5.0	2.5	7.0	█																											2.0A															
 2339640-1	Box	Gold	6.0	2.5	4.0	█																											2.0A															
 1734298-1	C	Gold	7.0	2.5	7.0	█																											2.0A															

Pre-Loaded

Product Number	Type	Contact Finish	Uncom-pressed Height (mm)	Width (mm)	Length (mm)	Working Range																																								Current Capacity									
						0.4	0.5	0.6	0.65	0.7	0.75	0.8	0.9	1	1.1	1.15	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4	3.5	4	4.5													
							Pre-Loaded	Gold	1.1	1	2.7	0.4	0.5	0.6	0.65	0.7	0.75	0.8	0.9	1	1.1	1.15	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4		3.5	4	4.5	1.5A					
2292838-3																																																							
	Pre-Loaded	Gold	1.24	1	2.91																																												0.5A						
1551631-5																																																							
	Pre-Loaded	Gold	1.2	1.05	2.4																																														1.5A				
2134078-1																																																							
	Pre-Loaded	Gold	1.2	1.05	2.4																																															1.5A			
2199001-1																																																							
	Pre-Loaded	Gold	1.45	1.1	3.1																																																1.0A		
1565158-1																																																							
	Pre-Loaded	Gold	1.4	1	3.5																																																	1.5A	
1-1447360-1																																																							
	Pre-Loaded	Gold	1.8	1	3.31																																																	1.5A	
1857724-4																																																							
	Pre-Loaded	Gold	1.6	0.75	3.2																																																	1.5A	
1565322-1																																																							
	Pre-Loaded	Gold	2	1.1	3.15																																																	1.5A	
1554901-1																																																							
	Pre-Loaded	Gold	2.3	1	3.5																																																	0.5A	
2289559-1																																																							
	Pre-Loaded	Gold	2.4	1.1	3.5																																																	1.0A	
1746854-1																																																							
	Pre-Loaded	Gold	3	1.4	4.4																																																	1.5A	
1827625-1																																																							
	Pre-Loaded	Gold	3	1.4	4.35																																																	1.5A	
1903646-1																																																							
	Pre-Loaded	Gold	2.4	1.7	4																																																	5.5A	
2286211-3																																																							

FREQUENTLY ASKED QUESTIONS

Questions	Answers
Why would I use a pre-loaded spring finger in an application?	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.
Which style of spring finger is best for my application?	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.
Can I combine different types of spring fingers in an application?	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.
What are the benefits of using a scalable spring finger?	Scalable spring fingers use a common footprint, allowing easier design changes without requiring any extra space.
What are spring fingers' key specifications a designer needs to know for their development?	Basically the key specifications would be uncompressed height

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