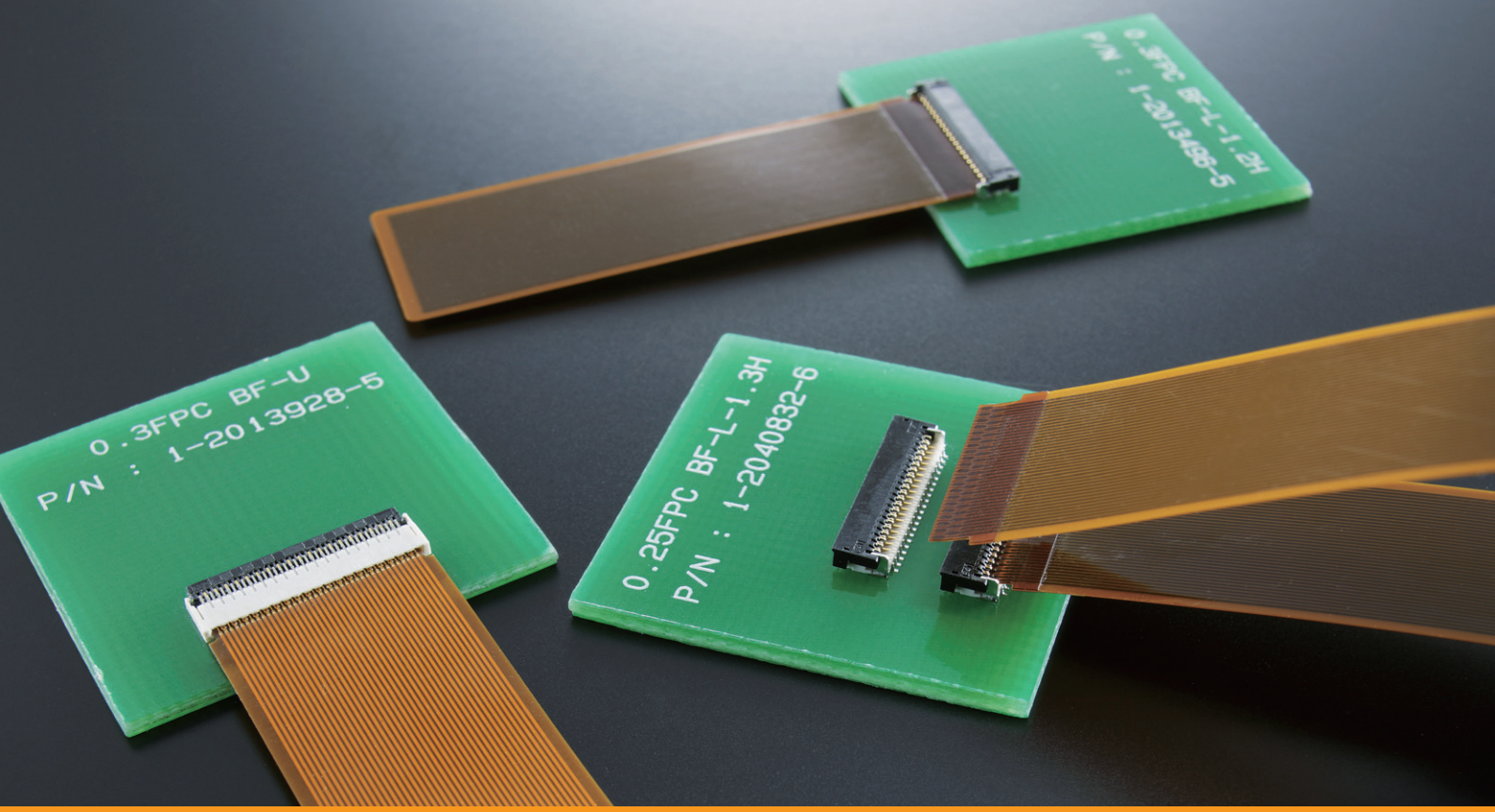


Quick Reference Guide

Fine Pitch FPC (Flexible Printed Circuit) Connectors - 0.25mm & 0.3mm Pitch

FPC interconnect is a solution that is ideal where small centerline spacing makes larger wire-to-board interconnects impractical. As the market trends towards miniaturization, FPC connectors have been developed to meet the challenges of this expanding market, which demands smaller centerline or pitch spacing, lower profile heights and lighter interconnect solutions. TE Connectivity's fine pitch FPC solutions are reliable interconnects that utilize an actuator to secure the cable termination and are field terminatable (requires no tooling).
TE Connectivity's FPC solutions are available in centerline spacings of 0.25mm, 0.3mm, 0.5mm, 1.0mm and 1.25mm.

In this quick reference guide we introduce items with 0.25mm and 0.3mm centerline spacing.

FEATURES AND BENEFITS

- Uses FPC / FFC cable
- Zero Insertion Force (ZIF)
- SMT PCB termination
- Available in top and bottom contact versions
- Cost effective solution that requires no tooling
- Low profile height
- Light weight
- 0.25mm pitch series accepts angled insertion of flexible printed circuit

PRODUCT APPLICATIONS

- Flat Flex Printed Cable Applications
- Consumer electronics
  - Personal Computers
  - Mobile / Smart Phones
  - Cameras
  - GPS Devices
  - Set Top Boxes
  - Game Consoles
  - LC Displays

Basic Information

Tail Orientation

All of our fine pitch FPC products feature a staggered tail orientation. This means that the layout of the front and rear contacts are staggered as shown in Figure A.

When the tail orientation is staggered it is important to remember that you can measure the centerline by measuring the distance between the center of the front contact and the center of the rear contact as shown in Figure B.

Figure A

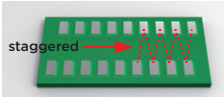
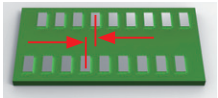


Figure B

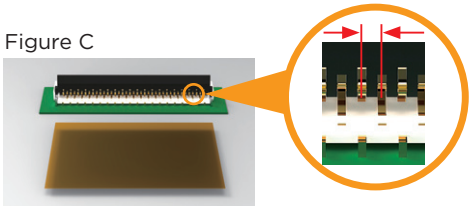


Centerline Spacing

Centerline can be measured many different ways, however, in general, it is simply the spacing between the center of one contact and the center of its neighboring contact.

You can note the centerline of our fine pitch FPC product by looking at the contacts of the connector itself shown in Figure C or by the method already described in Figure B.

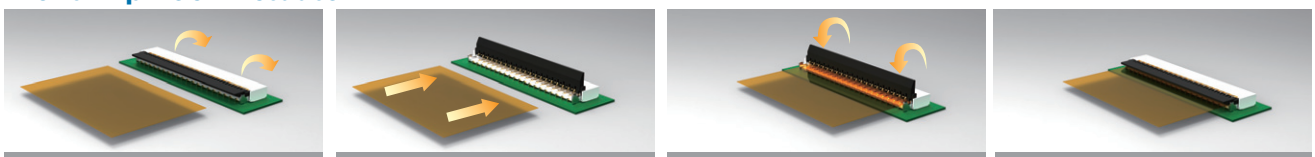
Figure C



Flip Lock Actuator

All of our Fine Pitch FPC connectors incorporate a flip lock actuator for greater printed circuit retention. This termination method also allows for Zero Insertion Force which is why this product is commonly referred to as a ZIF connector. The operation of a flip lock actuator can be seen in the images below.

Front Flip Lock Actuator



Step One:
Open Flip-Lock Actuator. The actuator hinges open towards the back side of the connector (away from the FPC).

Step Two:
Insert the FPC into the connector.

Step Three:
With the FPC inserted, close the Flip-Lock Actuator. The actuator hinges close towards the front side of the connector (towards the FPC).

Step Four:
Your FPC is now securely mated with the connector.

Back Flip Lock Actuator



Step One:
Open Flip-Lock Actuator. The actuator hinges open towards the front side of the connector (towards the FPC).

Step Two:
Insert the FPC into the connector.

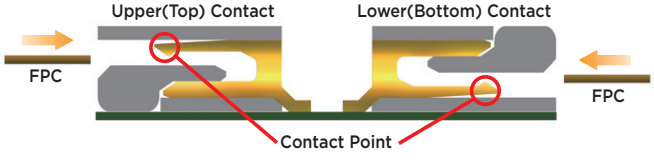
Step Three:
With the FPC inserted, close the Flip-Lock Actuator. The actuator hinges closed towards the back side of the connector (away from the FPC) and closes with a tactile click.

Step Four:
Your FPC is now securely mated with the connector.

Upper (Top) Contact vs Lower (Bottom) Contact

Many of our fine pitch FPC products are available in both Upper (top) or Lower (bottom) contact versions. This attribute simply represents which portion of the contact the flexible printed circuit interacts with. As you can see from the image below, the FPC contacts are formed in a “U” shape. Only one prong of that “U” shaped contact interfaces with the flexible printed circuit contacts. Choosing the correct contact design is generally based on the orientation of the flexible printed circuit as described below.

If the contacts of the flexible printed circuit are facing up (away from the board) then the upper contact version is required.

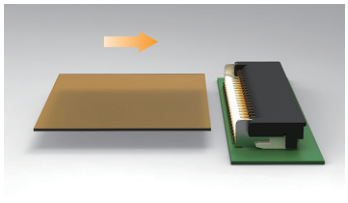


If the contacts of the flexible printed circuit are facing down (towards the board) then the lower contact version is required.

0.25mm Pitch FPC Connector													
Image	Base PN	Pitch size (mm)	Flip Lock Type	Contact Point	PN	Position Number							
						25	27	29	31	33	37	39	41	43	45
	2040832	0.25	Back	Lower (Bottom)	1-2040832-4						✓				
					1-2040832-6								✓		

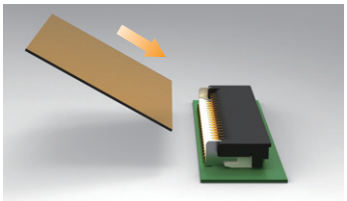
Note: All 0.25mm pitch products feature angled flexible printed circuit insertion. See below for detail.

What's the advantage of "angled insertion?"



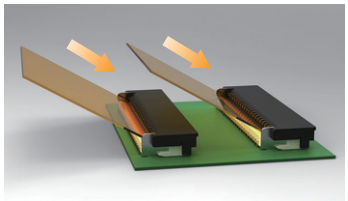
Straight insertion:

Typically flexible printed circuits are inserted straight into the interconnect (or parallel to the PCB). This in turn uses up valuable real-estate in front of the interconnect, which can be a problem as today's devices are trending towards miniaturization.



Angled insertion:

With the angled or slanted insertion you can see how the flexible printed circuit enters the interconnect from an angle. This frees up the space in front of the interconnect which would not have been available using the standard insertion method.



Advantage of angled insertion:

Here you can see how the saved board space can be utilized when using the angled insertion interconnect. You can easily use the freed board space to run a group of FPC connectors or place virtually anything in this place on the PCB.

0.3mm Pitch FPC Connector														
Image	Base PN	Pitch size (mm)	Flip Lock Type	Contact Point	PN	Position Number								
						25	27	29	31	33	37	39	41	43	45	51	71
	2013496	0.3	Back	Lower (Bottom)	2013496-9		✓										
					1-2013496-0			✓									
					1-2013496-1				✓								
					1-2013496-5							✓					
					1-2013496-6								✓				
					1-2013496-8										✓		
	2013928	0.3	Back	Upper (Top)	2013928-8	✓											
					2013928-9		✓										
					1-2013928-2					✓							
					1-2013928-4						✓						
					1-2013928-5							✓					
					1-2013928-6								✓				
					1-2013928-7									✓			
	2041390	0.3	Front	Lower (Bottom)	3-2041390-9							✓					
					5-2041390-1											✓	
					7-2041390-1												✓

2041390
- Narrow Front Flip Lock Style

Actuator Open



Actuator Closed



2013928
- Narrow Back Flip Lock Style

Actuator Open



Actuator Closed



2013496
- Robust Back Flip Lock Style

Actuator Open



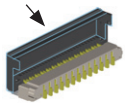
Actuator Closed



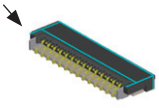
Advantages of Robust Back Flip Lock Actuator

The box shaped robust actuator is visibly much larger than standard actuators and provides a surface for automated pick and place, increases ease of use by providing more area for an operator to handle, provides greater flexible printed circuit retention and better protects the connector.

Easy to Pinch



Box Shape Robust Actuator



Good Operability!

Frequently asked questions

Question 1:
What position sizes can TE Connectivity provide?
Answer 1:
We offer odd numbered position sizes only. Apart from the position sizes listed in the product matrix, we will also be able to provide 11P to 71P sizes in our 0.3mm pitch series and 11P to 61P sizes in our 0.25mm pitch series found in this quick reference guide.

Question 2:
What is the advantage of angled flexible printed circuit insertion?
Answer 2:
Being able to insert and mate the flexible printed circuit into the connector at an angle makes it possible to mount the FPC connector anywhere on your PCB as there is much less clearance needed in front of the connector during mating and unmating.

Question 3:
What type of packaging is used for Fine Pitch FPC products?
Answer 3:
All items are sold in embossed tape and reel packaging. However, packaging quantities may be different depending on the size and position count of the product.

Question 4:
What is the minimum height of this product series?
Answer 4:
Among the items within this guide, 0.9mm is the lowest height.

Question 5:
What is the biggest differentiator of TE's FPC connector series?
Answer 5:
According to our research, our FPC connectors offer the same product function in one of the smallest form factors on the market. Our product also offers a distinct click lock and a larger vacuum pick-up area.

FOR MORE INFORMATION

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