NAIS

NARROW-PITCH CONNECTORS FOR PC BOARDS

NARROW PITCH (0.5mm) CONNECTORS P5 SERIES — P5KF —

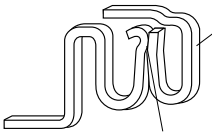
Socket and header are mated | Socket | Header

FEATURES

1. Ultra low profile of 1.5mm

The connector is a two-piece structure and 0.5mm pitch.
The product lineup consists of the stacking height of 1.5mm, 2.0mm and 2.5mm. They allow products to be slimmer.

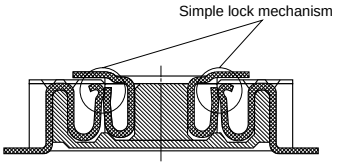
2. The socket and header has the same dropping shock and torsion resistant construction as the bellows-type contact.



Since the contact is formed by bending thin plate, it has a spring-like quality. This construction helps make it resistant to dropping and twisting.

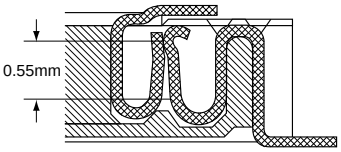
The roll surfaces are in contact with each other, providing high contact reliability.

3. Simple lock mechanism is employed which is suitable for FPC connection.



4. Mating length 0.55mm

While achieving a low profile of 1.5mm between PCBs, the effective mating length has been extended to ensure that there is some latitude in the mating.

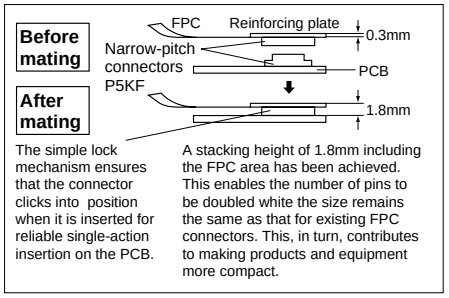


5. Terminal construction prevents solder wicking and bridging.

APPLICATIONS

- Cellular phones
- PHS
- Portable data terminals
- Compact portable devices

Ideal for FPC-to-PCB connections



The simple lock mechanism ensures that the connector clicks into position when it is inserted for reliable single-action insertion on the PCB.

A stacking height of 1.8mm including the FPC area has been achieved. This enables the number of pins to be doubled white the size remains the same as that for existing FPC connectors. This, in turn, contributes to making products and equipment more compact.

SPECIFICATIONS

1. Characteristics

Item		Specifications	Conditions
Electrical characteristics	Rated current	0.5A/contact (Max. 10 A at total contacts)	
	Rated voltage	60V AC/DC	
	Breakdown voltage	150V AC for 1 minute	Detection current: 1mA
	Insulation resistance	Min. 1,000MΩ (initial)	Using 500V DC megger
	Contact resistance	Max. 90mΩ	Measured based on the HP4338B measurement method of JIS C 5402
Mechanical characteristics	Composite insertion force	Max. 0.981N {100gf}/contacts × contacts (initial)	
	Composite removal force	Min. 0.0588N {6gf}/contacts × contacts	
	Post holding force	Min. 0.981N {100gf}/contact	Measures the maximum load in the post axial direction until removal
Environmental characteristics	Ambient temperature	–55°C to +85°C	No freezing at low temperatures
	Soldering heat resistance	Max. peak temperature of 245°C	Infrared reflow soldering
		300°C within 5 seconds	Soldering iron
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Sequence / Temperature (°C) / Time (minutes): 1 / -55^{+0}_{-3} / 30; 2 / 25^{+10}_{-5} / Max. 5; 3 / 85^{+3}_{-0} / 30; 4 / 25^{+10}_{-5} / Max. 5
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Bath temperature 40±2°C, humidity 90 to 95% R.H.
	Saltwater spray resistance (header and socket mated)	24 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Bath temperature 35±2°C, saltwarter concentration 5±1%
	H_2S resistance (header and socket mated)	48 hours, contact resistance max. 90mΩ	Bath temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.
	Insertion and removal life	50 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		Stacking height 1.5mm, 20 contacts; Socket: 0.06g Header: 0.04g	

2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	Heat-resistant resin (UL94V-0)	—
Contact/Post	Copper alloy	Contact portion: Au plating over Ni Terminal portion: Au plating over Ni (Except for thick of terminal)

PRODUCT TYPES

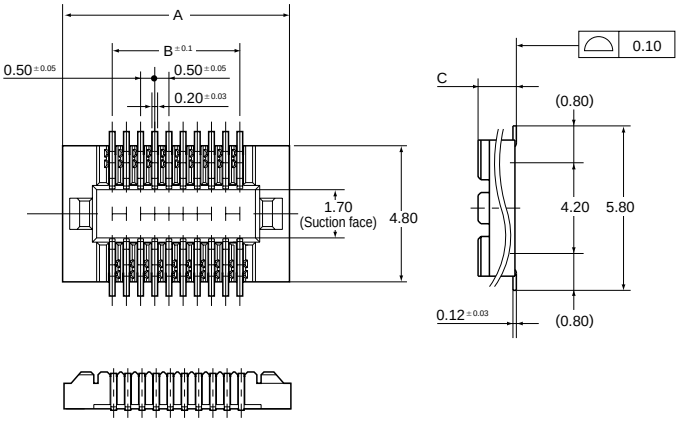
Stacking height	No. of contacts	Part No.		Packing	
		Socket	Header	Inner carton (1-reel)	Outer carton
1.5 mm	10	AXK5F10345J	AXK6F10345J	Note 1) "Asterisk" mark on end of part No.; J: 2,000 pieces (recommendation)	Note 1) "Asterisk" mark on end of part No.; J: 4,000 pieces (recommendation)
	12	AXK5F12345J	AXK6F12345J		
	14	AXK5F14345J	AXK6F14345J		
	16	AXK5F16345J	AXK6F16345J		
	20	AXK5F20345J	AXK6F20345J		
	22	AXK5F22345J	AXK6F22345J		
	24	AXK5F24345J	AXK6F24345J		
	26	AXK5F26345J	AXK6F26345J		
	30	AXK5F30345J	AXK6F30345J		
	32	AXK5F32345J	AXK6F32345J		
	34	AXK5F34345J	AXK6F34345J		
	40	AXK5F40345J	AXK6F40345J		
	50	AXK5F50345J	AXK6F50345J		
	60	AXK5F60345J	AXK6F60345J		
	70	AXK5F70345J	AXK6F70345J		
	80	AXK5F80345J	AXK6F80345J		
2.0 mm	10	AXK5F10545J	AXK6F10345J		
	12	AXK5F12545J	AXK6F12345J		
	14	AXK5F14545J	AXK6F14345J		
	16	AXK5F16545J	AXK6F16345J		
	18	AXK5F18545J	AXK6F18345J		
	20	AXK5F20545J	AXK6F20345J		
	22	AXK5F22545J	AXK6F22345J		
	24	AXK5F24545J	AXK6F24345J		
	30	AXK5F30545J	AXK6F30345J		
	34	AXK5F34545J	AXK6F34345J		
	40	AXK5F40545J	AXK6F40345J		
	50	AXK5F50545J	AXK6F50345J		
	60	AXK5F60545J	AXK6F60345J		
	70	AXK5F70545J	AXK6F70345J		
	80	AXK5F80545J	AXK6F80345J		
	100	AXK5F00545J	AXK6F00345J		
2.5 mm	10	AXK5F10545J	AXK6F10545J		
	12	AXK5F12545J	AXK6F12545J		
	14	AXK5F14545J	AXK6F14545J		
	16	AXK5F16545J	AXK6F16545J		
	20	AXK5F20545J	AXK6F20545J		
	22	AXK5F22545J	AXK6F22545J		
	24	AXK5F24545J	AXK6F24545J		
	30	AXK5F30545J	AXK6F30545J		
	34	AXK5F34545J	AXK6F34545J		
	40	AXK5F40545J	AXK6F40545J		
	50	AXK5F50545J	AXK6F50545J		
	60	AXK5F60545J	AXK6F60545J		
	70	AXK5F70545J	AXK6F70545J		
	80	AXK5F80545J	AXK6F80545J		
	100	AXK5F00545J	AXK6F00545J		

Notes) 1. In order to reduce the amount of packaging materials used to help protect the global environment, it is recommended that each packaging box contain 2,000 units with the "J" product number suffix. Embossed tape packages containing 1,000 units in the inner carton (1-reel) are also available. The latter have the "P" product number suffix. When placing orders, change the "J" suffix to the "suffix P."
2. Regarding ordering units, During production: Please make orders in 1-reel units.
Samples for mounting confirmation: Please consult us. (See "Regarding sample orders to confirm proper mounting" on page 9.)
Samples: Small lot orders are possible. Change the suffix "J" to the suffix "P."
3. The standard type comes with no positioning bosses. Connectors with positioning bosses are available for on-demand production. For this type of connector, 9th digit of the part no. changes from 4 to 3. e.g.
Stacking height 1.5mm, 10 contacts for sockets: AXK5F10335J

DIMENSIONS

mm General tolerance ±0.2

• Socket (stacking height: 1.5mm, 2.0mm, 2.5mm)



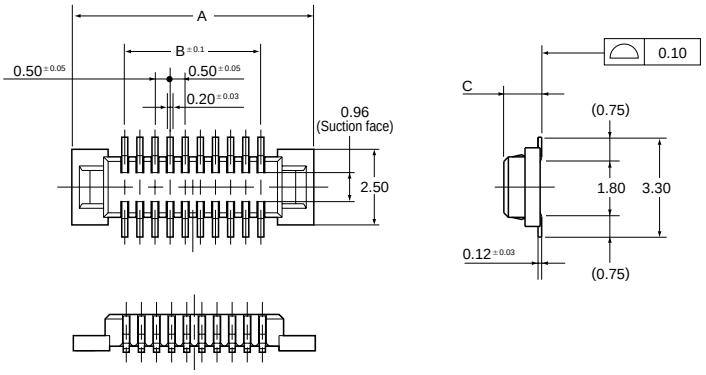
Dimension table (mm)

No. of contacts	A	B
10	5.50	2.00
12	6.00	2.50
14	6.50	3.00
16	7.00	3.50
18	7.50	4.00
20	8.00	4.50
22	8.50	5.00
24	9.00	5.50
26	9.50	6.00
30	10.50	7.00
32	11.00	7.50
34	11.50	8.00
40	13.00	9.50
50	15.50	12.00
60	18.00	14.50
70	20.50	17.00
80	23.00	19.50
100	28.00	24.50

Stacking height	C
1.5 mm	1.35
2.0 mm, 2.5 mm	1.85

Note) P5K series (stacking heights: 3 mm and 3.5 mm) and the P5KS series (stacking heights: 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 6.5 mm, 7 mm, 8 mm, and 9 mm) cannot be mated to this type.

• Header (stacking height: 1.5mm, 2.0mm, 2.5mm)



Dimension table (mm)

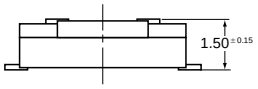
No. of contacts	A	B
10	5.50	2.00
12	6.00	2.50
14	6.50	3.00
16	7.00	3.50
18	7.50	4.00
20	8.00	4.50
22	8.50	5.00
24	9.00	5.50
26	9.50	6.00
30	10.50	7.00
32	11.00	7.50
34	11.50	8.00
40	13.00	9.50
50	15.50	12.00
60	18.00	14.50
70	20.50	17.00
80	23.00	19.50
100	28.00	24.50

Stacking height	C
1.5 mm, 2.0 mm	1.25
2.5 mm	1.75

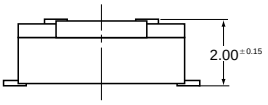
Note) P5K series (stacking heights: 3 mm and 3.5 mm) and the P5KS series (stacking heights: 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 6.5 mm, 7 mm, 8 mm, and 9 mm) cannot be mated to this type.

• Socket and header are mated

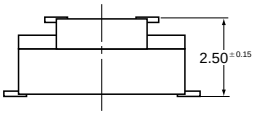
Stacking height: 1.5 mm



Stacking height: 2.0 mm



Stacking height: 2.5 mm

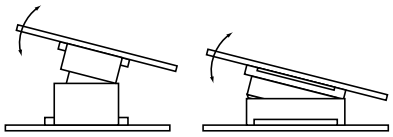


EMBOSSED TAPE DIMENSIONS

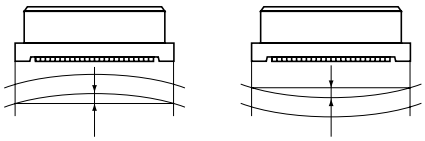
Please refer to page 56.

NOTES

1. As shown below, excess force during insertion may result in damage to the connector or removal of the solder. Please be careful. Also, to prevent connector damage plese confirm the correct position before mating connectors.



2. Keep the PC board warp no more than 0.03 mm in relation to the overall length of the connector.

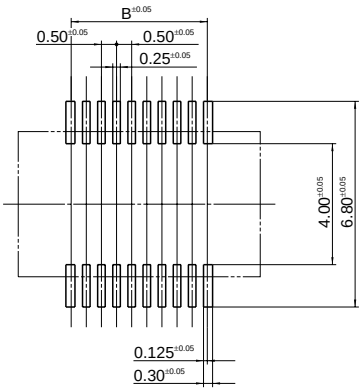


3. PC Boards and Recommended Metal Mask Patterns

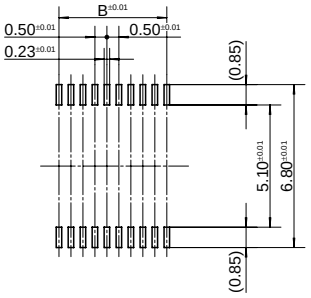
Connectors are mounted with high density, with a pitch interval of 0.4 to 0.5 mm. It is therefore necessary to make sure that the right levels of solder are used, in order to reduce solder bridge and other issues. The figures to the right are recommended metal mask patterns. Please use them as a reference.

• Socket

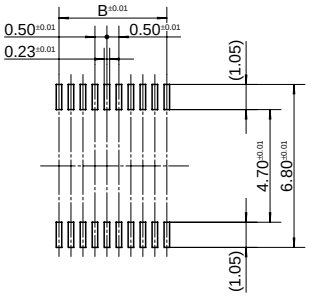
Recommended PC board pattern
(TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: Here, 150 µm
(Opening area ratio: 56%)

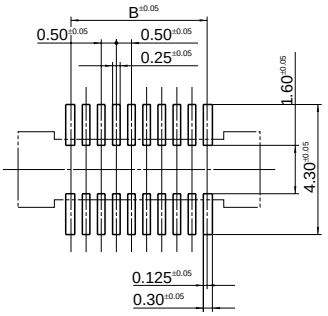


Recommended metal mask pattern
Metal mask thickness: Here, 120 µm
(Opening area ratio: 69%)

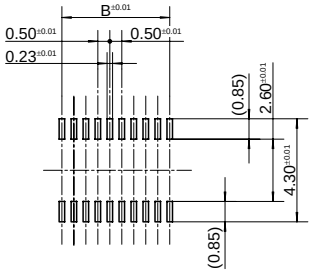


• Header

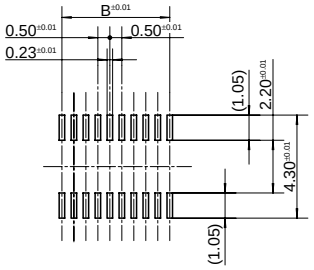
Recommended PC board pattern
(TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: Here, 150 µm
(Opening area ratio: 58%)



Recommended metal mask pattern
Metal mask thickness: Here, 120 µm
(Opening area ratio: 72%)



* See the dimension table on page 18 for more information on the B dimension of the socket and header.

Regarding general notes, please refer to pages 8 and 9.