Panasonic
ideas for life

NARROW-PITCH, THIN AND SLIM CONNECTOR FOR BOARD-TO-FPC CONNECTION

NARROW PITCH (0.4 mm) CONNECTORS F4S SERIES

NEW

TOUGH CONTACT

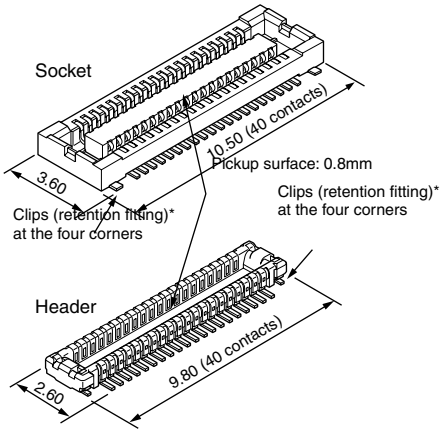

Socket


Header

Compliance with RoHS Directive
http://www.mew.co.jp/ac/e/

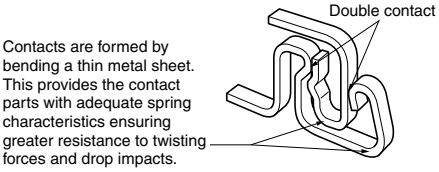
FEATURES

1. Space-saving (3.6 mm widthwise)
The required space is smaller than our F4 series (40-contact type):
Socket — 27% smaller,
Header — 38% smaller
The small size contributes to the miniaturization of target equipment.



* Clips for preventing the solder joints from being removed

2. Highly reliable TOUGH CONTACT has strong resistance to adverse environments.
1) Our original bellows contact: High resistance to drop impact and twisting forces.

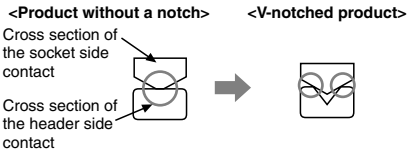


Note: If extra resistance to shock caused by dropping is required, we recommend using our previous F4 Series.

2) V-notch + double contact:
High resistance to the penetration of foreign matters and flux.

● V-notch
By making contact with the edges and thus increasing the contact pressure, this product can eliminate flux and other foreign matters more effectively than conventional products, which also helps to prevent foreign matters from obstructing the contact.

[Cross Section of Contacts]

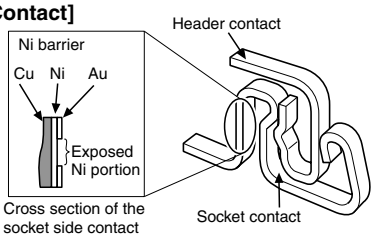


Patented (Japan, Korea, and Taiwan)

3) Ni barrier: High resistance to solder creep.

● Ni barrier
The exposed nickel-plated portion of the gold-plated contact prevents solder creep despite the ultra low profile of the contact.

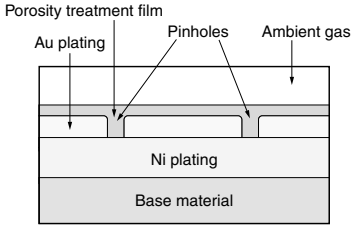
[Contact]



Note: Simultaneous molding of the header contact achieves a construction that prevents solder creep.

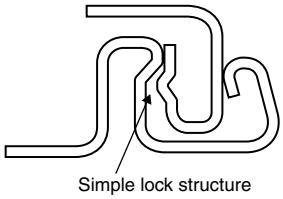
4) Porosity treatment: Resistance to corrosion.

Porosity treatment
This treatment consists in coating the surface with a very thin film to seal pinholes in the gold plating. We have developed this porosity treatment technology, which ensures contact reliability for thin gold plating comparable to that of thick gold plating.



- Improved in insertion/removal durability
- Improved in resistance to corrosion
- Improved in contact reliability for digital signals

3. The simple lock structure gives tactile feedback that ensures a superior mating/unmating operation feel.

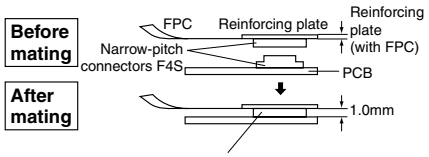

Simple lock structure

4. Gull-wing type terminals
The gull-wing type terminals facilitate automatic mounting inspections.
5. RoHS Directive compliance.

APPLICATIONS

Compact portable devices "Cellular phones, DVC, Digital cameras, etc"

Example of Board-to-FPC connections



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

TABLE OF PRODUCT TYPES

F4S (0.4mm pitch): With clips (retention fitting)*

Socket Header

☆: Available for sale

Number of contacts	Mated height 1.0mm
10	☆
12	☆
16	☆
20	☆
22	☆
24	☆
26	☆
28	☆
30	☆
32	☆
34	☆
36	☆
38	☆
40	☆
42	☆
44	☆
46	☆
48	☆
50	☆

* Clips for preventing the solder joints from being removed

ORDERING INFORMATION

AXT □ □□ **1** □ **4**

AXT5: Narrow Pitch Connector F4S (0.4 mm pitch) Socket
AXT6: Narrow Pitch Connector F4S (0.4 mm pitch) Header

Number of contacts (2 digits)

Mated height
<Socket>
1: For mated height 1.0 mm
<Header>
1: For mated height 1.0 mm

Functions
<Socket, Header>
1: With positioning bosses
2: Without positioning bosses

Surface treatment (Contact portion / Terminal portion)
4: Sockets: Base: Ni plating Surface: Au plating (for Ni barrier product available)
4: Headers: Base: Ni plating Surface: Au plating

PRODUCT TYPES TOUGH CONTACT

Mated height	Number of contacts	Part number		Packing	
		Socket	Header	Inner carton	Outer carton
1.0mm	10	AXT510124	AXT610124	3,000 pieces	6,000 pieces
	12	AXT512124	AXT612124		
	16	AXT516124	AXT616124		
	20	AXT520124	AXT620124		
	22	AXT522124	AXT622124		
	24	AXT524124	AXT624124		
	26	AXT526124	AXT626124		
	28	AXT528124	AXT628124		
	30	AXT530124	AXT630124		
	32	AXT532124	AXT632124		
	34	AXT534124	AXT634124		
	36	AXT536124	AXT636124		
	38	AXT538124	AXT638124		
	40	AXT540124	AXT640124		
	42	AXT542124	AXT642124		
	44	AXT544124	AXT644124		
	46	AXT546124	AXT646124		
	48	AXT548124	AXT648124		
	50	AXT550124	AXT650124		

Notes: 1. Order unit: For mass production: in 1-inner-box (1-reel) units
Samples for mounting check: in 50-connector units. Please contact our sales office.
Samples: Small lot orders are possible. Please contact our sales office.
2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, which are available on demand, please replace "2" in the 8th position of the part number with "1".
3. Please contact us for connectors having a number of contacts other than those listed above.

SPECIFICATIONS

1. Characteristics

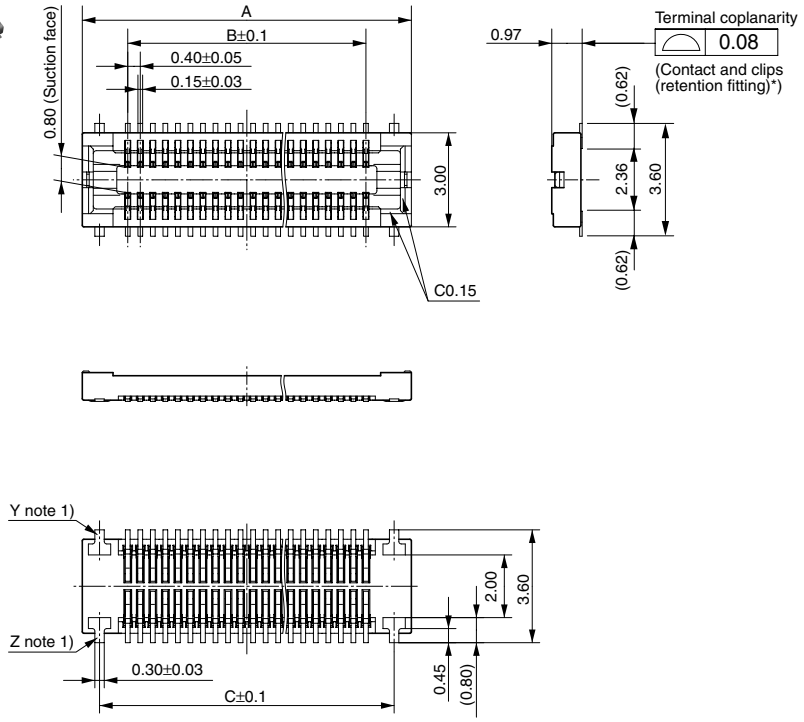
Item		Specifications	Conditions
Electrical characteristics	Rated current	0.3A/contact (Max. 5 A at total contacts)	
	Rated voltage	60V AC/DC	
	Breakdown voltage	150V AC for 1 min.	No short-circuiting or damage at a detection current of 1 mA when the specified voltage is applied for one minute.
	Insulation resistance	Min. 1,000MΩ (initial)	Using 250V DC megger (applied for 1 min.)
	Contact resistance	Max. 90mΩ	Measure it using HP4338B based on the contact resistance measurement method specified by JIS C 5402.
Mechanical characteristics	Composite insertion force	Max. 0.981N/contacts × contacts (initial)	
	Composite removal force	Min. 0.165N/contacts × contacts	
	Post holding force	Min. 0.49N/contacts	Measure the maximum load each contact can withstand without being removed in the axis direction.
Environmental characteristics	Ambient temperature	–55°C to +85°C	No freezing at low temperatures. No dew condensation.
	Soldering heat resistance	Peak temperature: 260°C or less (on the surface of the PC board around the connector terminals)	Infrared reflow soldering
		300°C within 5 sec. 350°C within 3 sec.	Soldering iron
	Storage temperature	–55°C to +85°C (product only) –40°C to +50°C (emboss packing)	No freezing at low temperatures. No dew condensation.
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Sequence 1. –55 $^{0}_{-3}$°C, 30 minutes 2. ~ , Max. 5 minutes 3. 85 $^{+3}_{0}$°C, 30 minutes 4. ~ , Max. 5 minutes
	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, saltwater 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.
Lifetime characteristics	Insertion and removal life	50 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		50-contact type: Socket: 0.05 g Header: 0.03 g	

2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have nickel barriers (exposed nickel portions). Metal clips: Sockets: Base: Ni plating Surface: Pd+Au flash plating (except the terminal tips) Headers: Base: Ni plating Surface: Au plating (except the terminal tips)

DIMENSIONS (mm)

Socket (Mated height: 1.0 mm)



Dimension table (mm)

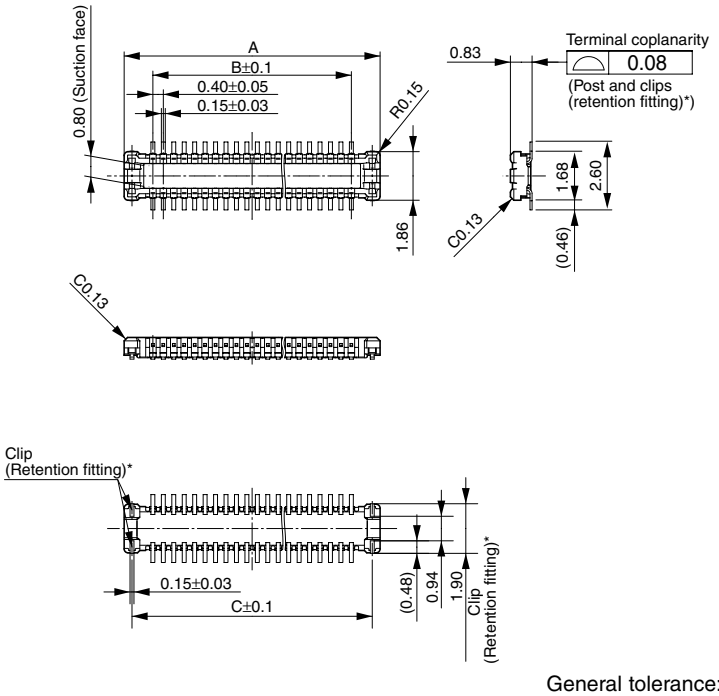
Number of contacts/ dimension	A	B	C
10	4.5	1.6	3.4
12	4.9	2.0	3.8
16	5.7	2.8	4.6
20	6.5	3.6	5.4
22	6.9	4.0	5.8
24	7.3	4.4	6.2
26	7.7	4.8	6.6
28	8.1	5.2	7.0
30	8.5	5.6	7.4
32	8.9	6.0	7.8
34	9.3	6.4	8.2
36	9.7	6.8	8.6
38	10.1	7.2	9.0
40	10.5	7.6	9.4
42	10.9	8.0	9.8
44	11.3	8.4	10.2
46	11.7	8.8	10.6
48	12.1	9.2	11.0
50	12.5	9.6	11.4

General tolerance: ±0.2

Note 1): Since the clip (retention fitting)* has a single-piece construction, sections Y and Z are electrically connected.

* Clips for preventing the solder joints from being removed

Header (Mated height: 1.0 mm)



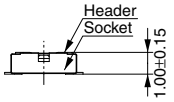
Dimension table (mm)

Number of contacts/ dimension	A	B	C
10	3.8	1.6	3.2
12	4.2	2.0	3.6
16	5.0	2.8	4.4
20	5.8	3.6	5.2
22	6.2	4.0	5.6
24	6.6	4.4	6.0
26	7.0	4.8	6.4
28	7.4	5.2	6.8
30	7.8	5.6	7.2
32	8.2	6.0	7.6
34	8.6	6.4	8.0
36	9.0	6.8	8.4
38	9.4	7.2	8.8
40	9.8	7.6	9.2
42	10.2	8.0	9.6
44	10.6	8.4	10.0
46	11.0	8.8	10.4
48	11.4	9.2	10.8
50	11.8	9.6	11.2

General tolerance: ±0.2

* Clips for preventing the solder joints from being removed

• Socket and Header are mated

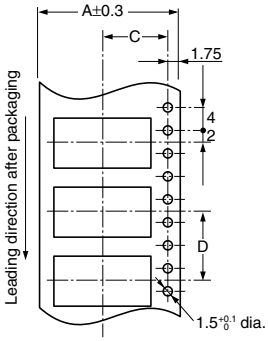


EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common to all sockets and headers)

• Specifications for taping

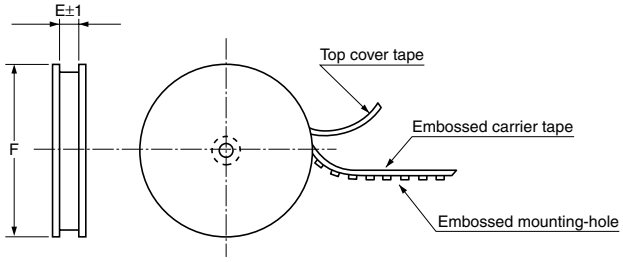
(In accordance with JIS C 0806-1990. However, not applied to the mounting-hole pitch of some connectors.)

Tape I



• Specifications for the plastic reel

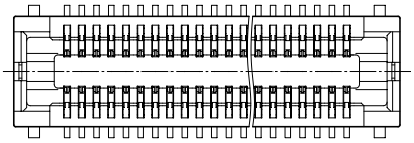
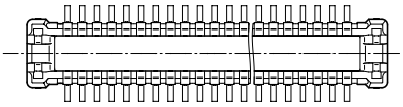
(In accordance with EIAJET-7200B.)



• Dimension table (Unit: mm)

Type/Mated height	Number of contacts	Type of taping	A	B	C	D	E	F	Quantity per reel
Common for sockets and headers	24 or less	Tape I	16.0	7.5	—	8.0	17.4	380 dia.	3,000
	26 to 50	Tape I	24.0	11.5	—	8.0	25.4	380 dia.	3,000

• Connector orientation with respect to embossed tape feeding direction

Direction of tape progress \ Type	Common for F4S
↓	Socket  Header 

Note: There is no indication on this product regarding top-bottom or left-right orientation.

NOTES

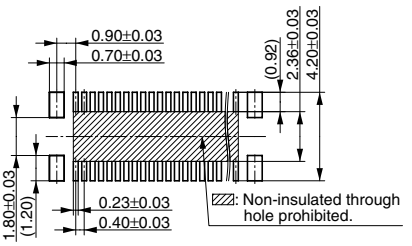
1. If extra resistance to drop impact is required, we recommend using our F4 series.

2. Recommended PC board and metal mask patterns

Appropriate control of solder amount is required to minimize solder bridges and other defects for connectors with 0.4-mm or 0.5-mm pitch terminals, which require high-density mounting. Refer to the right-hand drawing for recommended patterns.

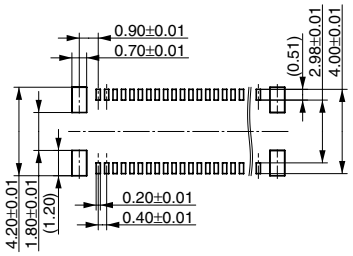
• Socket

Recommended PC board pattern (TOP VIEW)



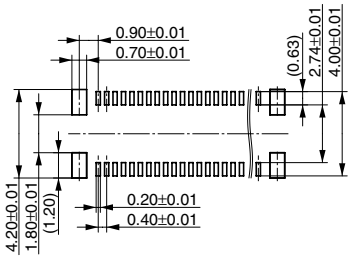
Recommended metal mask opening pattern

Metal mask thickness: When 150µm
(Terminal opening ratio: 48%)
(Metal-part opening ratio: 100%)



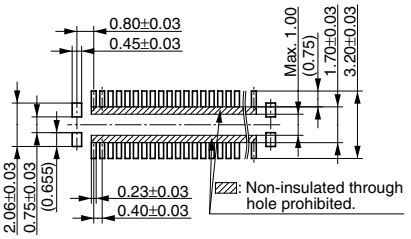
Recommended metal mask opening pattern

Metal mask thickness: When 120µm
(Terminal opening ratio: 60%)
(Metal-part opening ratio: 100%)



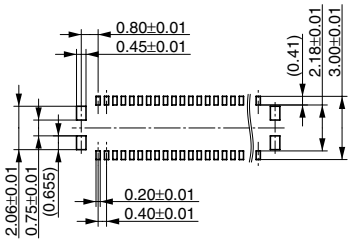
• Header

Recommended PC board pattern (TOP VIEW)



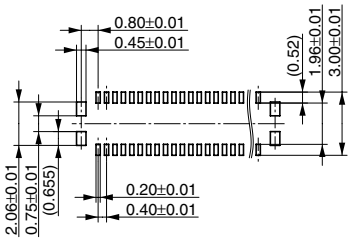
Recommended metal mask opening pattern

Metal mask thickness: When 150µm
(Terminal opening ratio: 48%)
(Metal-part opening ratio: 100%)



Recommended metal mask opening pattern

Metal mask thickness: When 120µm
(Terminal opening ratio: 60%)
(Metal-part opening ratio: 100%)



Regarding general notes, please refer to page 12.

For other details, please verify with the product specification sheets.