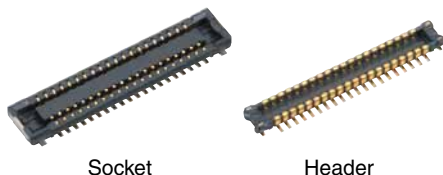


NARROW-PITCH CONNECTOR FOR BOARD-TO-FPC CONNECTION

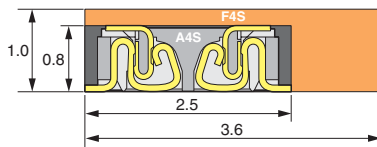
NARROW PITCH (0.4 mm) CONNECTORS ADVANCED SERIES A4S



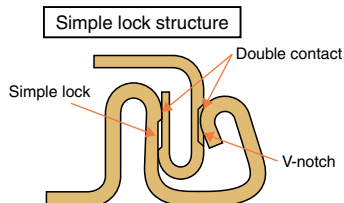
Compliance with RoHS Directive

FEATURES

- 1. The world's slimmest* two-piece connectors having a 2.5 mm width**
The ultra-compact and slim body contributes to further miniaturization and functionality enhancement of target equipment.
<Compared with our existing model (F4S, 40 contacts, when mated)>
• Width: 30% down
• Footprint: 30% down



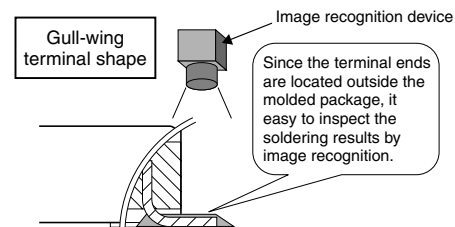
- 2. "TOUGH CONTACT ADVANCED" structure adopted to ensure high resistance to various environments in spite of the ultra-slim and low profile body**
(See Page 2 for details of the structure)
- 3. The simple lock structure gives tactile feedback that ensures a superior mating/unmating operation feel.**



* The connector gives the tactile feedback when inserted, allowing reliable mating.

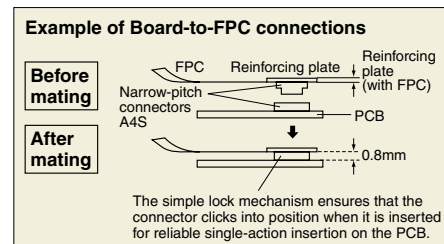
4. Gull-wing terminal structure

The gull-wing terminals facilitate inspection of mounting results using an automatic recognition system.



APPLICATIONS

Recommended for board-to-FPC connections of mobile equipment, such as cellular phones, smart phones, notebook PCs, and portable music players



ORDERING INFORMATION

	AXE			1	2	4
5: Narrow Pitch Connector A4S (0.4 mm pitch) Socket						
6: Narrow Pitch Connector A4S (0.4 mm pitch) Header						
Number of contacts (2 digits)						
Mated height						
<Socket>						
1: For mated height 0.8 mm						
<Header>						
1: For mated height 0.8 mm						
Functions						
<Socket, Header>						
2: Without positioning bosses						
Surface treatment (Contact portion / Terminal portion)						
<Socket>						
4: Ni plating on base, Au plating on surface (for Ni barrier available)						
<Header>						
4: Ni plating on base, Au plating on surface						

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PRODUCT TYPES TOUGH CONTACT ADVANCED

Mated height	Number of contacts	Part number		Packing	
		Socket	Header	Inner carton	Outer carton
0.8mm	10	AXE510124	AXE610124	5,000 pieces	10,000 pieces
	12	AXE512124	AXE612124		
	14	AXE514124	AXE614124		
	16	AXE516124	AXE616124		
	18	AXE518124	AXE618124		
	20	AXE520124	AXE620124		
	22	AXE522124	AXE622124		
	24	AXE524124	AXE624124		
	26	AXE526124	AXE626124		
	28	AXE528124	AXE628124		
	30	AXE530124	AXE430124		
	32	AXE532124	AXE632124		
	34	AXE534124	AXE434124		
	36	AXE536124	AXE636124		
	38	AXE538124	AXE438124		
	40	AXE540124	AXE640124		
	50	AXE550124	AXE650124		
60	AXE560124	AXE660124			
64	AXE564124	AXE664124			
70	AXE570124	AXE670124			
80	AXE580124	AXE680124			

- 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, please contact our sales office.
 3. Please contact us for connectors having a number of contacts other than those listed above.

SPECIFICATIONS

1. Characteristics

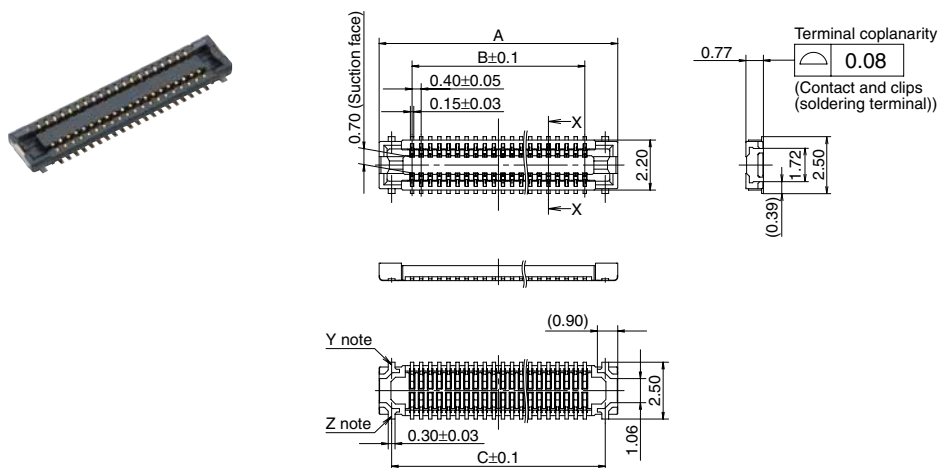
	Item	Specifications	Conditions
Electrical characteristics	Rated current	0.3A/contact (Max. 5 A at total contacts)	
	Rated voltage	60V AC/DC	
	Breakdown voltage	150V AC for 1 min.	No short-circuiting or damage at a detection current of 1 mA when the specified voltage is applied for one minute.
	Insulation resistance	Min. 1,000M Ω (initial)	Using 250V DC megger (applied for 1 min.)
	Contact resistance	Max. 90m Ω	Based on the contact resistance measurement method specified by JIS C 5402.
Mechanical characteristics	Composite insertion force	Max. 1.200N/contacts \times contacts (initial)	
	Composite removal force	Min. 0.165N/contacts \times contacts	
	Contact holding force (Socket contact)	Min. 0.20N/contacts	Measuring the maximum force. As the contact is axially pull out.
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. 100M Ω , contact resistance max. 90m Ω	Sequence 1. -55.0°C, 30 minutes 2. ~, Max. 5 minutes 3. 85.0°C, 30 minutes 4. ~, Max. 5 minutes
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100M Ω , contact resistance max. 90m Ω	Bath temperature 40 \pm 2°C, humidity 90 to 95% R.H.
	Saltwater spray resistance (header and socket mated)	24 hours, insulation resistance min. 100M Ω , contact resistance max. 90m Ω	Bath temperature 35 \pm 2°C, saltwater concentration 5 \pm 1%
H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. 90m Ω	Bath temperature 40 \pm 2°C, gas concentration 3 \pm 1 ppm, humidity 75 to 80% R.H.	
Lifetime characteristics	Insertion and removal life	30 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		50-contact type: Socket: 0.03 g Header: 0.01 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) 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 (Unit: mm)

Socket (Mated height: 0.8 mm)



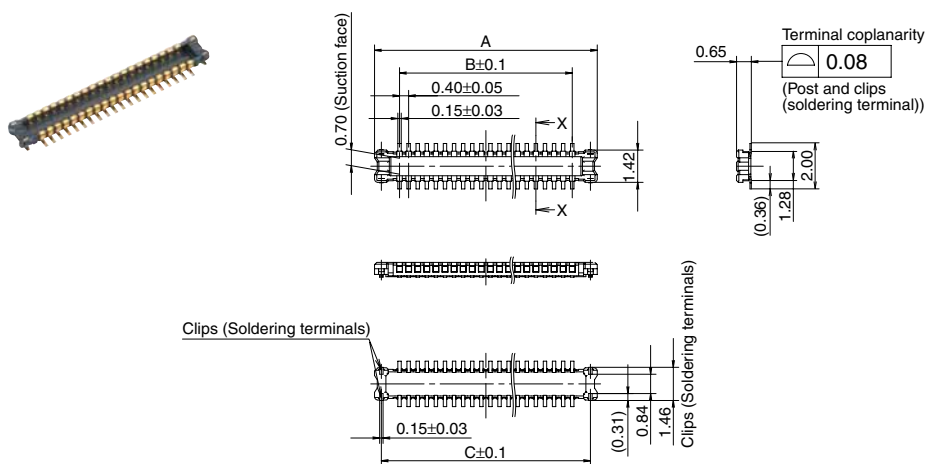
General tolerance: ±0.2

Note: Since the clip (soldering terminal) has a single-piece construction, sections Y and Z are electrically connected.

Dimension table (mm)

Number of contacts/dimension	A	B	C
10	4.5	1.6	3.4
12	4.9	2.0	3.8
14	5.3	2.4	4.2
16	5.7	2.8	4.6
18	6.1	3.2	5.0
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
50	12.5	9.6	11.4
60	14.5	11.6	13.4
64	15.3	12.4	14.2
70	16.5	13.6	15.4
80	18.5	15.6	17.4

Header (Mated height: 0.8 mm)

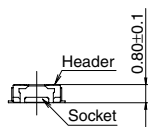


General tolerance: ±0.2

Dimension table (mm)

Number of contacts/dimension	A	B	C
10	3.8	1.6	3.2
12	4.2	2.0	3.6
14	4.6	2.4	4.0
16	5.0	2.8	4.4
18	5.4	3.2	4.8
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
50	11.8	9.6	11.2
60	13.8	11.6	13.2
64	14.6	12.4	14.0
70	15.8	13.6	15.2
80	17.8	15.6	17.2

• Socket and Header are mated



AXE5, 6

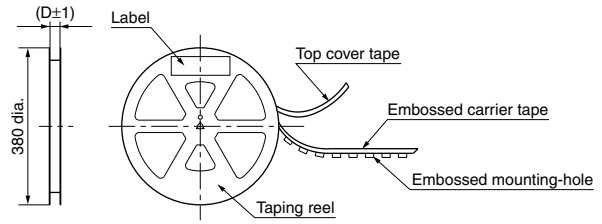
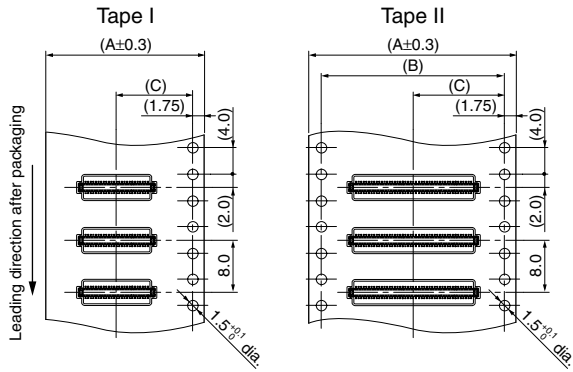
EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common to all sockets and headers)

• Specifications for taping

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

• Specifications for the plastic reel

(In accordance with EIAJ ET-7200B.)



• Dimension table (Unit: mm)

Type/Mated height	Number of contacts	Type of taping	A	B	C	D	Quantity per reel
Common for sockets and headers/ 0.8 mm	24 or less	Tape I	16.0	—	7.5	17.4	5,000
	26 to 70	Tape I	24.0	—	11.5	25.4	5,000
	80	Tape II	32.0	28.4	14.2	33.4	5,000

• Connector orientation with respect to embossed tape feeding direction

Direction of tape progress	Type	Common for A4S	
	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 for ultra-low profile type connectors, we recommend using our F4 or F4S 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.

3. Regarding the design of PC board patterns

Conduct the recommended foot pattern design, in order to preserve the mechanical strength of terminal solder areas.

4. Connector mounting

In case the connector is picked up by chucking during mounting, an excessive mounter chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

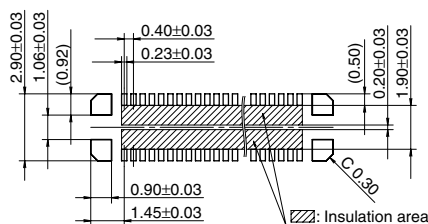
5. Soldering

1) Manual soldering.

- Due to the low profile, if an excessive amount of solder is applied to this product during manual soldering, the solder may creep up to near the contact points, or interference by solder may cause imperfect contact.
- Make sure that the soldering iron tip is heated within the temperature and time limits indicated in the specifications.
- Flux from the solder wire may adhere to the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any flux before use.
- Be aware that a load applied to the connector terminals while soldering may displace the contact.
- Thoroughly clean the iron tip.

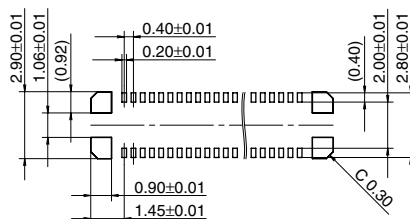
• Socket

Recommended PC board pattern (TOP VIEW)



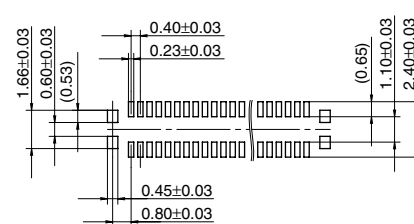
Recommended metal mask opening pattern

Metal mask thickness: When 120 μ m
(Terminal opening ratio: 70%)
(Metal-part opening ratio: 100%)



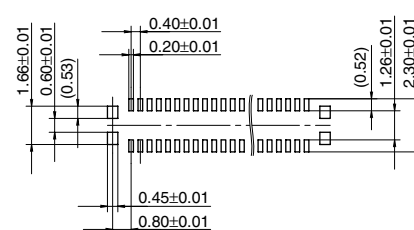
• Header

Recommended PC board pattern (TOP VIEW)



Recommended metal mask opening pattern

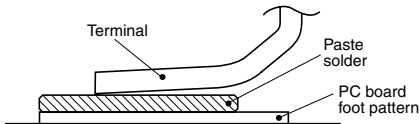
Metal mask thickness: When 120 μ m
(Terminal opening ratio: 70%)
(Metal-part opening ratio: 100%)



AXE5, 6

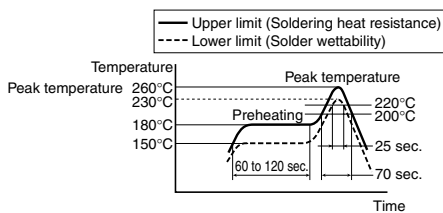
2) Reflow soldering

- Screen-printing is recommended for printing paste solder.
 - To determine the relationship between the screen opening area and the PC-board foot pattern area, refer to the diagrams in the recommended patterns for PC boards and metal masks. Make sure to use the terminal tip as a reference position when setting.
- Avoid an excessive amount of solder from being applied, otherwise, interference by the solder will cause an imperfect contact.



- Consult us when using a screen-printing thickness other than that recommended.
- Depending on the size of the connector being used, self alignment may not be possible. Accordingly, carefully position the terminal with the PC board pattern.
- The recommended reflow temperature profile is given in the figure below

Recommended reflow temperature profile



- The temperature is measured on the surface of the PC board near the connector terminal.

- Some solder and flux types may cause serious solder creeping. Take the solder and flux characteristics into consideration when setting the reflow soldering conditions.
- When performing reflow soldering on the back of the PC board after reflow soldering the connector, secure the connector using, for example, an adhesive (Double reflow soldering on the same side is possible)

3) Reworking on a soldered portion

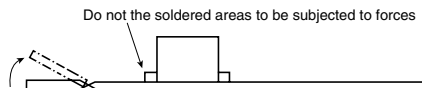
- Finish reworking in one operation.
- For reworking of the solder bridge, use a soldering iron with a flat tip. Do not add flux, otherwise, the flux may creep to the contact parts.
- Use a soldering iron whose tip temperature is within the temperature range specified in the specifications.

6. Do not drop the product or handle it carelessly. Otherwise, the terminals may become deformed due to excessive force or the solderability during reflow soldering may degrade.

7. Do not insert or remove the connector when it is not soldered.

Also, forcibly applied external pressure on the terminals can weaken the adherence of the terminals to the molded part or cause the terminals to lose their evenness.

8. When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive forces.



9. Notes when using a FPC.

- When the connector is soldered to an FPC board, during its insertion and removal procedures, forces may be applied to the terminals and cause the soldering to come off. It is recommended to use a reinforcement board on the backside of the FPC board to which the connector is being connected. Make sure that the reinforcing plate is larger than the outline of the recommended PC board pattern (Outline + approx. 1 mm). The reinforcing plate is made of glass epoxy or polyimide that is 0.2 to 0.3 mm thick.
- This connector employs a simple locking structure. However, the connector may come off depending on the size and weight of the FPC, layout and reaction force of FPC, or by drop impact. Make sure to fully check the equipment's condition. To prevent any problem with loose connectors, adopt measures to prevent the connector from coming off inside the equipment.

10. Other Notes

- When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector.
- The connectors are not meant to be used for switching.

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