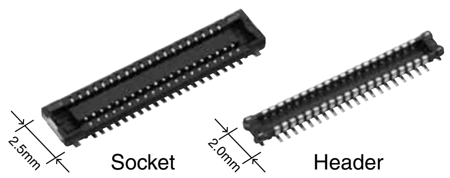
For board-to-FPC

Narrow pitch connectors (0.4mm pitch)

A4S Series



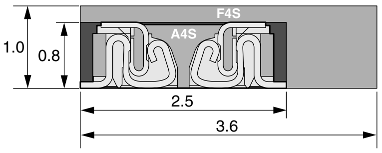
RoHS compliant

FEATURES

1. 2.5 mm wide slim two-piece style connectors

Compact and slim structure contributes overall miniaturization of product design.
<Compared to F4S series (40 pin contacts, when mated)>

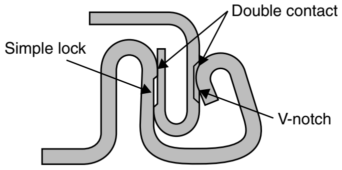
- Width: 30% down
- Footprint: 30% down



2. "TOUGH CONTACT ADVANCED" ensures high resistance to various environments in lieu of slim and low profile body

3. Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.

Simple lock structure



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

4. Mated heights of 0.8 and 1.0 mm are available for the same foot pattern.

5. Connectors for inspection available

APPLICATIONS

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

ORDERING INFORMATION

AXE □ □□ □ **2** **4**

5: Narrow Pitch Connector A4S (0.4 mm pitch) Socket
6: Narrow Pitch Connector A4S (0.4 mm pitch) Header

Number of pins (2 digits)

Mated height
<Socket>
1: For mated height 0.8/1.0 mm
<Header>
1: For mated height 0.8 mm
2: For mated height 1.0 mm

Functions
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

PRODUCT TYPES

Mated height	Number of pins	Part number		Packing	
		Socket	Header	Inner carton (1-reel)	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	AXE630124		
	32	AXE532124	AXE632124		
	34	AXE534124	AXE634124		
	36	AXE536124	AXE636124		
	38	AXE538124	AXE638124		
	40	AXE540124	AXE640124		
	44	AXE544124	AXE644124		
	50	AXE550124	AXE650124		
	54	AXE554124	AXE654124		
	56	AXE556124	AXE656124		
	60	AXE560124	AXE660124		
	64	AXE564124	AXE664124		
	70	AXE570124	AXE670124		
	80	AXE580124	AXE680124		
1.0mm	10	AXE510124	AXE610224		
	12	AXE512124	AXE612224		
	14	AXE514124	AXE614224		
	20	AXE520124	AXE620224		
	24	AXE524124	AXE624224		
	26	AXE526124	AXE626224		
	30	AXE530124	AXE630224		
	32	AXE532124	AXE632224		
	40	AXE540124	AXE640224		
	44	AXE544124	AXE644224		
	50	AXE550124	AXE650224		
	54	AXE554124	AXE654224		
	60	AXE560124	AXE660224		
	70	AXE570124	AXE670224		
	80	AXE580124	AXE680224		

Notes: 1. Order unit:
For volume production: 1-inner carton (1-reel) units
Samples for mounting check: 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 pins other than those listed above.

SPECIFICATIONS

■ Characteristics

Item		Specifications	Conditions
Electrical characteristics	Rated current	0.3A/pin contact (Max. 5 A at total pin 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	Based on the contact resistance measurement method specified by JIS C 5402.
Mechanical characteristics	Composite insertion force	Max. 1.200N/pin contacts × pin contacts (initial)	
	Composite removal force	Min. 0.165N/pin contacts × pin contacts	
	Contact holding force (Socket contact)	Min. 0.20N/pin 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. 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	30 times	Repeated insertion and removal speed of max. 200 times/hours
Unit weight		20 pin contact type: Socket: 0.02 g Header: 0.01 g	

■ Material and surface treatment

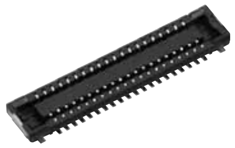
Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have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

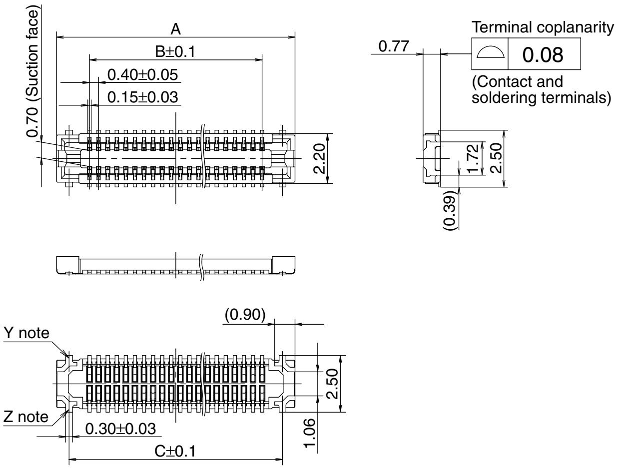
DIMENSIONS (Unit: mm)

The CAD data of the products with a **CAD Data** mark can be downloaded from: http://industrial.panasonic.com/ac/e

■ Socket (Mated height: 0.8 mm/1.0 mm)

CAD Data





General tolerance: ±0.2

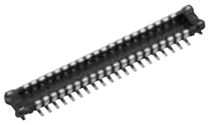
Note: Since the soldering terminals has a single-piece construction, sections Y and Z are electrically connected.

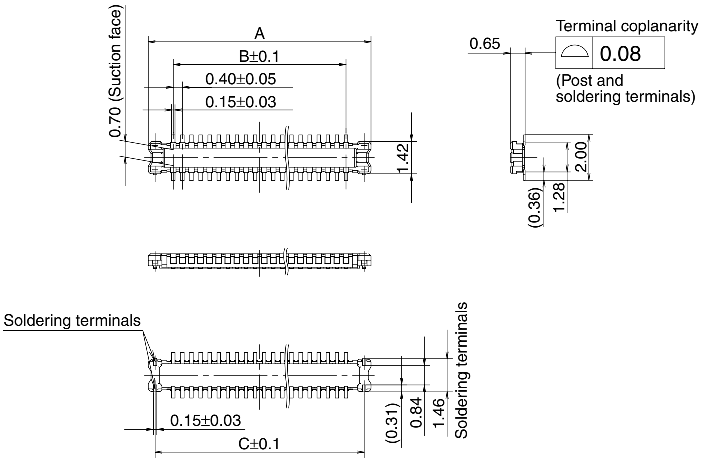
Dimension table (mm)

Number of pins/ 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
44	11.3	8.4	10.2
50	12.5	9.6	11.4
54	13.3	10.4	12.2
56	13.7	10.8	12.6
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)

CAD Data



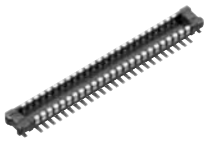


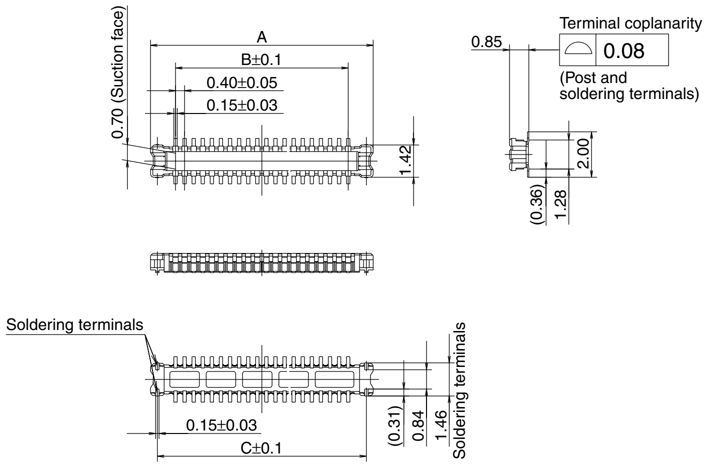
General tolerance: ±0.2

Dimension table (mm)

Number of pins/ 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
44	10.6	8.4	10.0
50	11.8	9.6	11.2
54	12.6	10.4	12.0
56	13.0	10.8	12.4
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

■ Header (Mated height: 1.0 mm)



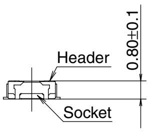


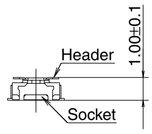
General tolerance: ±0.2

Dimension table (mm)

Number of pins/ 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
20	5.8	3.6	5.2
24	6.6	4.4	6.0
26	7.0	4.8	6.4
30	7.8	5.6	7.2
32	8.2	6.0	7.6
40	9.8	7.6	9.2
44	10.6	8.4	10.0
50	11.8	9.6	11.2
54	12.6	10.4	12.0
60	13.8	11.6	13.2
70	15.8	13.6	15.2
80	17.8	15.6	17.2

■ Socket and Header are mated



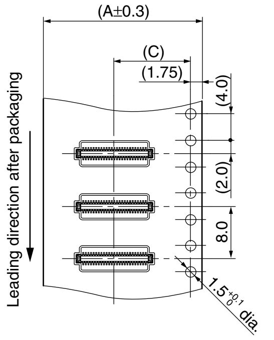


EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common for respective contact types, sockets and headers)

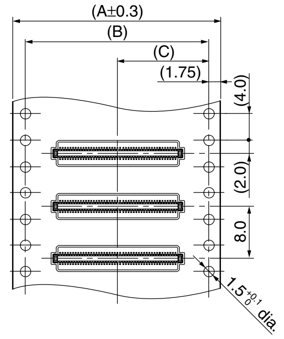
■ Specifications for taping

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

Tape I

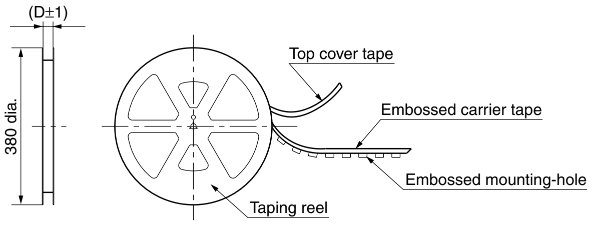


Tape II



■ Specifications for the plastic reel

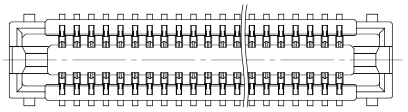
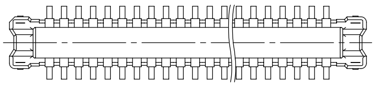
(In accordance with EIAJ ET-7200B.)



■ Dimension table (Unit: mm)

Type/Mated height	Number of pins	Type of taping	A	B	C	D	Quantity per reel
Common for sockets and headers 0.8 mm/1.0 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

Type / Direction of tape progress	Common for A4S	
↓	Socket 	Header 

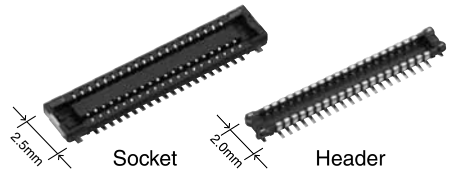
Note: There is no indication on this product regarding top-bottom or left-right orientation.

Panasonic
ideas for life

For board-to-FPC

Connectors for inspection usage (0.4mm pitch)

A4S Series



RoHS compliant

FEATURES

1. 3,000 mating and unmating cycles
2. Same external dimensions and foot pattern as standard type.
3. Improved mating
Insertion and removal easy due to a reduction in mating retention force. This is made possible by a simple locking structure design.
Note: Mating retention force cannot be warranted.

APPLICATIONS

Ideal for module unit inspection and equipment assembly inspection

TABLE OF PRODUCT TYPES

☆: Available for sale

Product name	Number of pins																							
A4S for inspection	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	44	50	54	56	60	64	70	80
	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

Notes: 1. Please inquire about number of pins other than those shown above.
2. Please inquire with us regarding availability.
3. Please keep the minimum order quantities no less than 50 pieces per lot.
4. Please inquire if further information is needed.

PRODUCT TYPES

Specifications		Part No.	Specifications		Part No.
Socket	Without positioning bosses	AXE5E**26	Header	Without positioning bosses	AXE6E**26

Note: When placing an order, substitute the "*" (asterisk) in the above part number with the number of pins for the specific connector.

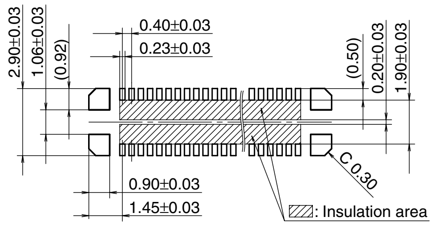
NOTES

■ Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.
In order to reduce solder bridges and other issues make sure the proper levels of solder is used.
The figures to the right are recommended metal mask patterns. Please use them as a reference.

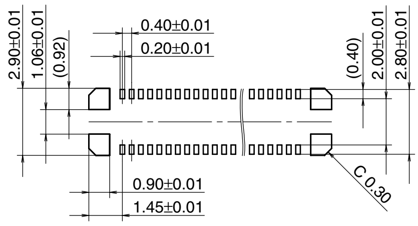
• Socket (Mated height: 0.8mm/1.0mm)

Recommended PC board pattern (TOP VIEW)



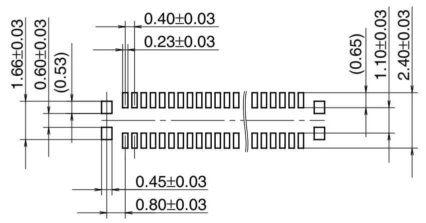
Recommended metal mask opening pattern

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



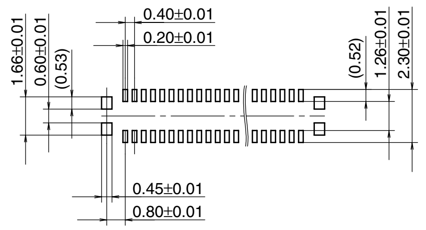
• Header (Mated height: 0.8mm/1.0mm)

Recommended PC board pattern (TOP VIEW)



Recommended metal mask opening pattern

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



Please refer to the latest product specifications when designing your product.

NOTES FOR USING ADVANCED SERIES NARROW-PITCH CONNECTORS (Common)

■ **Connector mounting**

Excessive mounter chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

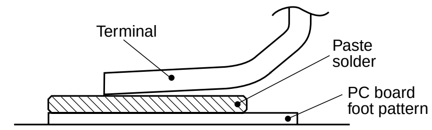
■ **Soldering**

1) Manual soldering.

- Due to the connector's low profile, if an excessive amount of solder is applied during manual soldering, the solder may creep up near the contact points, or solder interference 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.

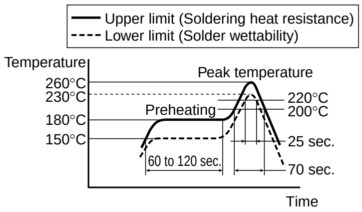
2) Reflow soldering

- 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. Solder and flux characteristics should be taken 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)

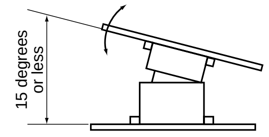
3) Reworking on a soldered portion

- 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.

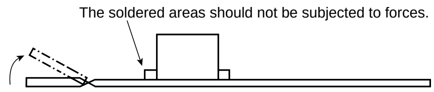
■ **Do not drop or handle the connector carelessly. Otherwise, the terminals may become deformed due to excessive force or applied solderability may be degraded during reflow.**

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

■ **Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.**
When removing the connector, be sure not to tilt the connector exceeding 15 degrees widthwise.
Excessive force applied for insertion in a pivot action as shown may also cause product breakage.
Align the header and socket positions before connecting them.



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



■ **Notes when using a FPC.**

- When the connector is soldered to an FPC board, during insertion and removal 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 SUS, 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.

■ **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.

Please refer to the latest product specifications when designing your product.