

Not Recommended for New Design: A4S Series (socket) Narrow-Pitch Board to FPC Connector

ACBD257

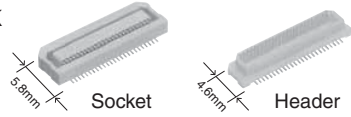
05/28/2014

About this Notice:	Panasonic A4S Series, Socket Type, Narrow-Pitch Connectors are undergoing a part number change due to a change in contact material, thus the older models are not recommended for new designs. The new, updated part numbers can be found in the accompanying line extension, released 5/28/2014.
Details:	Contact material revised from Titanium Copper Alloy to Phosphor Bronze
Effective Date:	Immediately
Affected Parts and/or Replacements:	AXE5XX124
Datasheet(s):	See attached
Notes:	

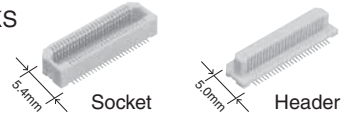
For board-to-board	P5K, P5KS Series
Narrow pitch connectors (0.5mm pitch)	



• P5K



• P5KS



Note: The external appearance and PC board pattern differs between the P5K and P5KS series.

RoHS compliant

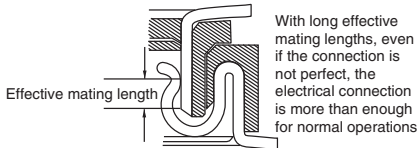
FEATURES

1. The product lineup consists of 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 6.5 mm, 7.0 mm, 8.0 mm, and 9.0 mm mated heights.

Type	Mated height	Notes
P5K	3 mm, 3.5 mm	The external appearance and PC board pattern differs for the P5K and P5KS series.
P5KS	4 mm, 4.5 mm, 5 mm, 5.5 mm, 6 mm, 6.5 mm, 7 mm, 8 mm, 9 mm	

2. Strong resistance to adverse environments! Utilizes **“TOUGH CONTACT”** construction for high contact reliability.

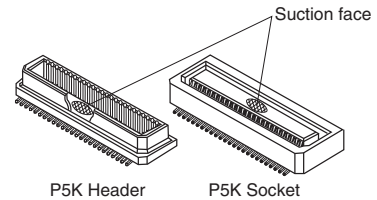
3. Even with a low profile, the effective mating length has been extended to ensure that there for insertion.



Type	Effective mating length
P5K	0.65 mm
P5KS	1.0 mm

4. Automatic mounting

1) Suction area for automatic mounting machines is employed.



APPLICATIONS

Digital devices, such as laptop, digital still cameras and digital video cameras

ORDERING INFORMATION

1. P5K (3.0 mm and 3.5 mm)

AXK 7 Y G

5: Narrow Pitch Connector P5K Socket
6: Narrow Pitch Connector P5K Header

Number of pins (2 digits)

Mated height

<Socket>

1: For mated height 3.0 mm and 3.5 mm

<Header>

2: For mated height 3.5 mm

3: For mated height 3.0 mm

Functions

4: Without positioning bosses

Surface treatment (Contact portion / Terminal portion)

7: Ni plating on base, Au plating on surface /

Ni plating on base, Au plating on surface (Ni barrier product)

Contact portion

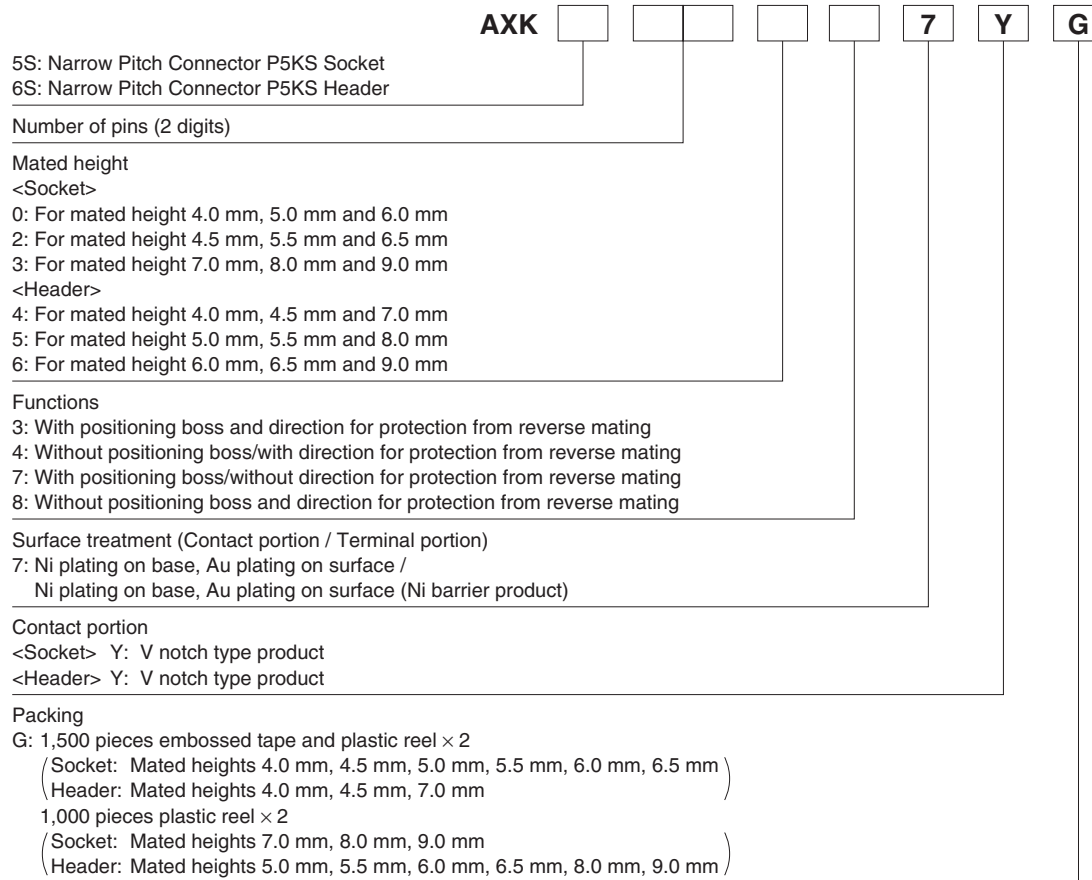
<Socket> Y: V notch type product

<Header> Y: V notch type product

Packing

G: 1,500 pieces embossed tape and plastic reel × 2

2. P5KS (4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 6.5 mm, 7.0 mm, 8.0 mm and 9.0 mm)



Note: Models with mating directionality to prevent reverse insertion have less than 100 pin contacts. Models without mating directionality to prevent reverse insertion have over 100 pin contacts.

PRODUCT TYPES

1. P5K

Product name	Mated height	No. of pins	Part No.		Packing	
			Socket	Header	Inner carton (1 reel)	Outer carton
			<i>TOUGH CONTACT</i>	<i>TOUGH CONTACT</i>		
P5K	3.0 mm	20	AXK520147YG	AXK620347YG	1,500 pieces	3,000 pieces
		22	AXK522147YG	AXK622347YG		
		30	AXK530147YG	AXK630347YG		
		40	AXK540147YG	AXK640347YG		
		50	AXK550147YG	AXK650347YG		
		60	AXK560147YG	AXK660347YG		
		70	AXK570147YG	AXK670347YG		
		80	AXK580147YG	AXK680347YG		
		100	AXK500147YG	AXK600347YG		
		120	AXK5A2147YG	AXK6A2347YG		
	3.5 mm	20	AXK520147YG	AXK620247YG		
		22	AXK522147YG	AXK622247YG		
		30	AXK530147YG	AXK630247YG		
		34	AXK534147YG	AXK634247YG		
		40	AXK540147YG	AXK640247YG		
		50	AXK550147YG	AXK650247YG		
		60	AXK560147YG	AXK660247YG		
		70	AXK570147YG	AXK670247YG		
		80	AXK580147YG	AXK680247YG		
		100	AXK500147YG	AXK600247YG		
120	AXK5A2147YG	AXK6A2247YG				

Notes: 1. Regarding ordering units: During production: Please make orders in 1 reel units.
Samples for mounting confirmation: Available in units of 50 pieces. Please contact our sales office.
Samples: Small lot orders are possible.
2. The standard type comes without positioning bosses.

AXK(5(S)/6(S))

2. P5KS

Product name	Mated height	No. of pins	Part No.		Packing		
			Socket	Header	Inner carton (1 reel)	Outer carton	
			<i>TOUGH CONTACT</i>	<i>TOUGH CONTACT</i>			
P5KS	4.0 mm	20	AXK5S20047YG	AXK6S20447YG	1,500 pieces	3,000 pieces	
		24	AXK5S24047YG	AXK6S24447YG			
		30	AXK5S30047YG	AXK6S30447YG			
		34	AXK5S34047YG	AXK6S34447YG			
		40	AXK5S40047YG	AXK6S40447YG			
		50	AXK5S50047YG	AXK6S50447YG			
		60	AXK5S60047YG	AXK6S60447YG			
		70	AXK5S70047YG	AXK6S70447YG			
		80	AXK5S80047YG	AXK6S80447YG			
		100	AXK5S00047YG	AXK6S00447YG			
		120	AXK5SA2077YG	AXK6SA2477YG			
		160	AXK5SA6077YG	AXK6SA6477YG			
	4.5 mm	20	AXK5S20247YG	AXK6S20447YG			
		24	AXK5S24247YG	AXK6S24447YG			
		30	AXK5S30247YG	AXK6S30447YG			
		34	AXK5S34247YG	AXK6S34447YG			
		36	AXK5S36247YG	AXK6S36447YG			
		40	AXK5S40247YG	AXK6S40447YG			
		50	AXK5S50247YG	AXK6S50447YG			
		60	AXK5S60247YG	AXK6S60447YG			
		70	AXK5S70247YG	AXK6S70447YG			
		80	AXK5S80247YG	AXK6S80447YG			
		100	AXK5S00247YG	AXK6S00447YG			
		120	AXK5SA2277YG	AXK6SA2477YG			
P5KS	5.0 mm	20	AXK5S20047YG	AXK6S20547YG	Socket: 1,500 pieces Header: 1,000 pieces	Socket: 3,000 pieces Header: 2,000 pieces	
		24	AXK5S24047YG	AXK6S24547YG			
		30	AXK5S30047YG	AXK6S30547YG			
		34	AXK5S34047YG	AXK6S34547YG			
		40	AXK5S40047YG	AXK6S40547YG			
		50	AXK5S50047YG	AXK6S50547YG			
		60	AXK5S60047YG	AXK6S60547YG			
		70	AXK5S70047YG	AXK6S70547YG			
		80	AXK5S80047YG	AXK6S80547YG			
		100	AXK5S00047YG	AXK6S00547YG			
		5.5 mm	20	AXK5S20247YG			AXK6S20547YG
			24	AXK5S24247YG			AXK6S24547YG
	30		AXK5S30247YG	AXK6S30547YG			
	34		AXK5S34247YG	AXK6S34547YG			
	40		AXK5S40247YG	AXK6S40547YG			
	50		AXK5S50247YG	AXK6S50547YG			
	60		AXK5S60247YG	AXK6S60547YG			
	70		AXK5S70247YG	AXK6S70547YG			
	80		AXK5S80247YG	AXK6S80547YG			
	100		AXK5S00247YG	AXK6S00547YG			
	6.0 mm		20	AXK5S20047YG			AXK6S20647YG
			30	AXK5S30047YG			AXK6S30647YG
		40	AXK5S40047YG	AXK6S40647YG			
		50	AXK5S50047YG	AXK6S50647YG			
		60	AXK5S60047YG	AXK6S60647YG			
		70	AXK5S70047YG	AXK6S70647YG			
		80	AXK5S80047YG	AXK6S80647YG			
		100	AXK5S00047YG	AXK6S00647YG			
		6.5 mm	20	AXK5S20247YG			AXK6S20647YG
			30	AXK5S30247YG			AXK6S30647YG
			40	AXK5S40247YG			AXK6S40647YG
			50	AXK5S50247YG			AXK6S50647YG
	60		AXK5S60247YG	AXK6S60647YG			
	70		AXK5S70247YG	AXK6S70647YG			
	80		AXK5S80247YG	AXK6S80647YG			
	100		AXK5S00247YG	AXK6S00647YG			
	130		AXK5SA3277YG	AXK6SA3677YG			

Product name	Mated height	No. of pins	Part No.		Packing	
			Socket	Header	Inner carton (1 reel)	Outer carton
			TOUGH CONTACT	TOUGH CONTACT		
P5KS	7.0 mm	20	AXK5S20347YG	AXK6S20447YG	Socket: 1,000 pieces Header: 1,500 pieces	Socket: 2,000 pieces Header: 3,000 pieces
		30	AXK5S30347YG	AXK6S30447YG		
		40	AXK5S40347YG	AXK6S40447YG		
		50	AXK5S50347YG	AXK6S50447YG		
		60	AXK5S60347YG	AXK6S60447YG		
		70	AXK5S70347YG	AXK6S70447YG		
		80	AXK5S80347YG	AXK6S80447YG		
		100	AXK5S00347YG	AXK6S00447YG		
	8.0 mm	20	AXK5S20347YG	AXK6S20547YG	1,000 pieces	2,000 pieces
		30	AXK5S30347YG	AXK6S30547YG		
		40	AXK5S40347YG	AXK6S40547YG		
		50	AXK5S50347YG	AXK6S50547YG		
		60	AXK5S60347YG	AXK6S60547YG		
		70	AXK5S70347YG	AXK6S70547YG		
		80	AXK5S80347YG	AXK6S80547YG		
		100	AXK5S00347YG	AXK6S00547YG		
	9.0 mm	20	AXK5S20347YG	AXK6S20647YG	1,000 pieces	2,000 pieces
		30	AXK5S30347YG	AXK6S30647YG		
		40	AXK5S40347YG	AXK6S40647YG		
		50	AXK5S50347YG	AXK6S50647YG		
		60	AXK5S60347YG	AXK6S60647YG		
		70	AXK5S70347YG	AXK6S70647YG		
		80	AXK5S80347YG	AXK6S80647YG		
		100	AXK5S00347YG	AXK6S00647YG		

- Notes: 1. Regarding ordering units: During production: Please make orders in 1 reel units.
 Samples for mounting confirmation: Available in units of 50 pieces. Please contact our sales office.
 Samples: Small lot orders are possible.
2. The standard type comes without positioning bosses (However, mated heights of 4 mm or higher and 120 pins or more comes standard with bosses). Connectors with positioning bosses are available for on-demand production.

AXK(5(S)/6(S))

SPECIFICATIONS

1. Characteristics

Item		Specifications			Conditions
		3mm, 3.5mm type	4mm, 4.5mm, 5mm, 5.5mm, 6mm, 6.5mm type	7mm, 8mm, 9mm type	
Electrical characteristics	Rated current	0.5A/terminal (Max. 10A)		0.5A/terminal (Max. 16A)	
	Rated voltage	60V AC/DC			
	Breakdown voltage	150V AC for 1 min.			Detection current: 1mA
	Insulation resistance	Min. 1000MΩ			Using 500V DC megger
	Contact resistance	Max. 60mΩ		Max. 80mΩ	Based on the contact resistance measurement method specified by JIS C 5402.
Mechanical characteristics	Composite insertion force	Max. 0.785N × no. of pins (initial)			
	Composite removal force	Min. 0.0588N × no. of pins			
	Contact holding force	Min. 0.98N/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
	Soldering heat resistance	Max. peak temperature of 260°C (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
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 60mΩ		5 cycles, insulation resistance min. 100MΩ, contact resistance max. 80mΩ	Conformed to MIL-STD-202F, method 107G
		Order	Temperature (°C)	Time (minutes)	
	Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 60mΩ	120 hours, insulation resistance min. 100MΩ, contact resistance max. 80mΩ		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. 60mΩ	24 hours, insulation resistance min. 100MΩ, contact resistance max. 80mΩ		Bath temperature 35±2°C, saltwater concentration 5±1%
H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. 60mΩ	48 hours, contact resistance max. 80mΩ		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	P5K 3mm 30 pin contacts	Socket: 0.17g	Header: 0.09g		
	P5KS 4mm 30 pin contacts	Socket: 0.18g	Header: 0.16g		

2. Material and surface treatment

Part name	Mated height 3mm, 3.5mm, 4mm, 4.5mm, 5mm, 5.5mm, 6mm, 6.5mm, 7mm, 8mm, 9mm	
	Material	Surface treatment
Molded portion	Heat-resistant resin (UL94V-0)	—
Contact/post	Copper alloy	Contact portion: Ni plating on base, Au plating on surface Terminal portion: Ni plating on base, Au plating on surface (Except for thick of terminal) The section close to the soldering portion has a nickel barrier. (The nickel base is exposed.)

DIMENSIONS (Unit: mm)

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

P5K: Mated height 3mm, 3.5mm type

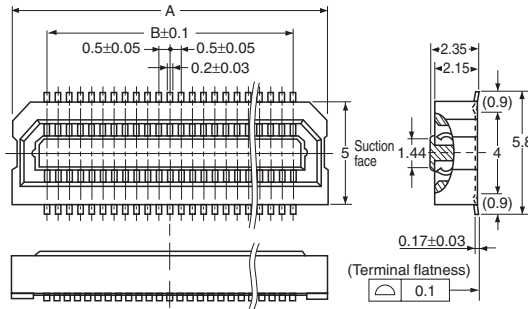
- Socket

CAD Data



Dimension table (mm)

No. of pins	A	B
20	8.20	4.50
22	8.70	5.00
30	10.70	7.00
34	11.70	8.00
40	13.20	9.50
50	15.70	12.00
60	18.20	14.50
70	20.70	17.00
80	23.20	19.50
100	28.20	24.50
120	33.20	29.50



General tolerance: ± 0.2

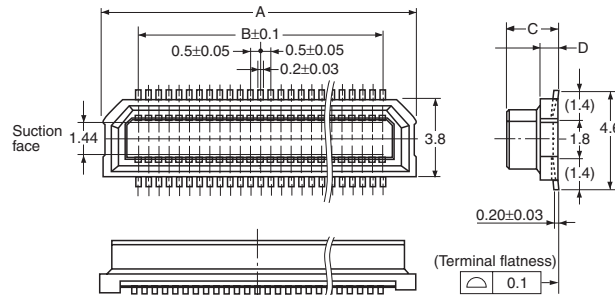
- Header

CAD Data



Dimension table (mm)

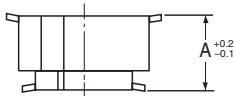
No. of pins	A	B
20	8.20	4.50
22	8.70	5.00
30	10.70	7.00
34	11.70	8.00
40	13.20	9.50
50	15.70	12.00
60	18.20	14.50
70	20.70	17.00
80	23.20	19.50
100	28.20	24.50
120	33.20	29.50



General tolerance: ± 0.2

Mated height	C	D
3.0 mm	2.40	0.85
3.5 mm	2.90	1.35

- Socket and header are mated



Mated height	A
3.0 mm	3.00
3.5 mm	3.50

Note: P5KS series (mated heights 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 8.0mm, and 9.0mm) cannot be mated to this type.

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P5KS: Mated height 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 8.0mm, 9.0mm type

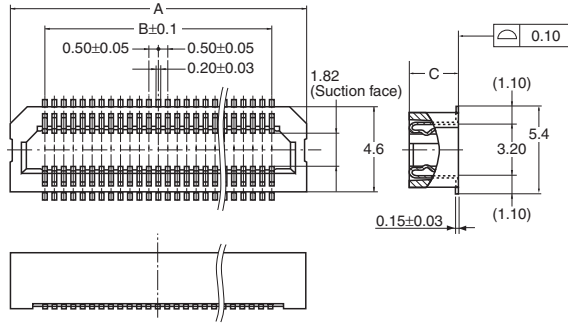
• Socket

CAD Data



Dimension table (mm)

No. of pins	A	B
20	8.20	4.50
24	9.20	5.50
30	10.70	7.00
34	11.70	8.00
36	12.20	8.50
40	13.20	9.50
50	15.70	12.00
60	18.20	14.50
70	20.70	17.00
80	23.20	19.50
100	28.20	24.50



General tolerance: ±0.2

Mated height	C
4.0 mm, 5.0 mm, 6.0 mm	3.05
4.5 mm, 5.5 mm, 6.5 mm	3.55
7.0 mm, 8.0 mm, 9.0 mm	6.05

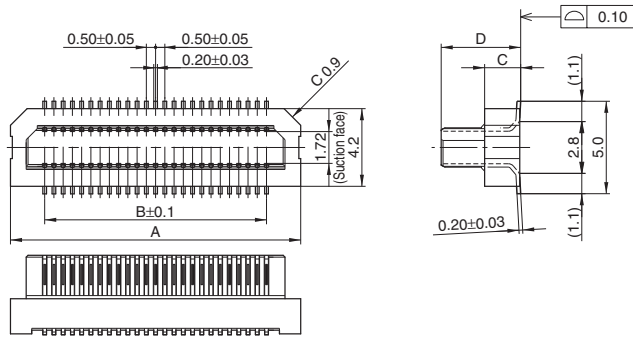
• Header

CAD Data



Dimension table (mm)

No. of pins	A	B
20	8.20	4.50
24	9.20	5.50
30	10.70	7.00
34	11.70	8.00
36	12.20	8.50
40	13.20	9.50
50	15.70	12.00
60	18.20	14.50
70	20.70	17.00
80	23.20	19.50
100	28.20	24.50



General tolerance: ±0.2

Mated height	C	D
4.0 mm, 4.5 mm, 7.0 mm	0.95	3.30
5.0 mm, 5.5 mm, 8.0 mm	1.95	4.30
6.0 mm, 6.5 mm, 9.0 mm	2.95	5.30

• Socket and header are mated



Mated height	A
4.0 mm	4.00
4.5 mm	4.50
5.0 mm	5.00
5.5 mm	5.50
6.0 mm	6.00
6.5 mm	6.50
7.0 mm	7.00
8.0 mm	8.00
9.0 mm	9.00

Note: P5K series (mated heights 3.0mm, 3.5mm) cannot be mated to this type.

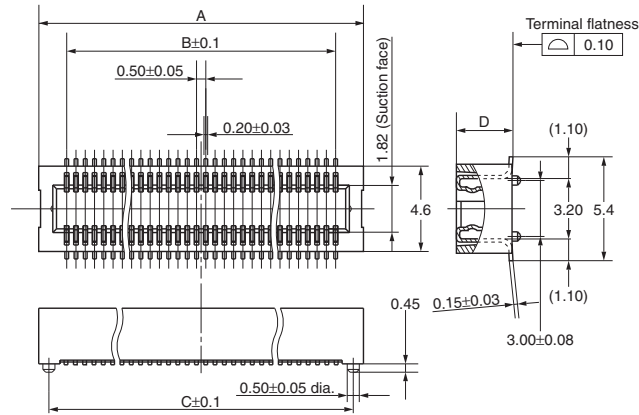
P5KS: Mated height 4.0mm, 4.5mm for 120 pin contacts and 160 pin contacts types, 6.5mm for 130 pin contacts type

• Socket

CAD Data



No. of pins	A	B	C
120	32.50	29.50	32.00
130	35.00	32.00	34.50
160	42.50	39.50	42.00



General tolerance: ±0.2

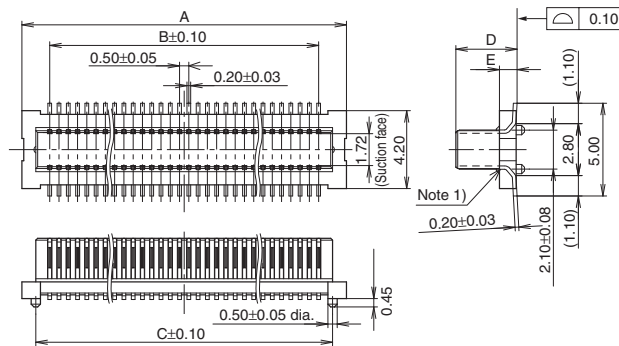
Mated height	D
4.0 mm	3.05
4.5 mm, 6.5 mm	3.55

• Header

CAD Data



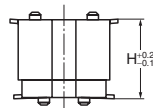
No. of pins	A	B	C
120	32.50	29.50	31.00
130	35.00	32.00	33.50
160	42.50	39.50	41.00



General tolerance: ±0.2

Mated height	D	E
4.0 mm, 4.5 mm	3.30	0.95
6.5 mm	5.30	2.95

• Socket and header are mated



Mated height	H
4.0 mm	4.00
4.5 mm	4.50
6.5 mm	6.50

- Notes: 1. Inquiry separately for diagrams of the embossed tape and cautions for use.
2. Be sure to ask for proper specifications and drawings before actual use.

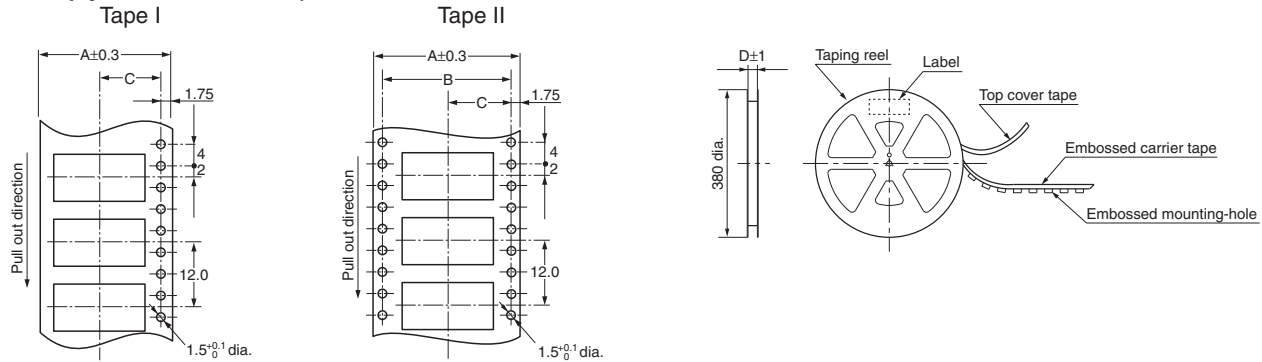
AXK(5(S)/6(S))

EMBOSSSED TAPE DIMENSIONS (unit: mm, Common for respective contact type, socket and header)

• Tape dimensions (Conforming to JIS C 0806:1990.

• Plastic reel dimensions (Conforming to EIAJ ET-7200B)

However, some tapes have mounting hole pitches that do not comply with the standard.)



Dimension table (mm)

Suffix: G (1 reel, 1,500 pieces or 1,000 pieces embossed tape and plastic reel package)

Type	Mated height	No. of pins	Type of taping	A	B	C	D	Quantity per reel
P5K	Socket and header are common 3.0mm, 3.5mm	20 to 50	Tape I	24.00	—	11.50	25.40	1,500 pcs.
		60 to 70	Tape II	32.00	28.40	14.20	33.40	
		80 to 100	Tape II	44.00	40.40	20.20	45.40	
		120	Tape II	56.00	52.40	26.20	57.40	
P5KS	Socket: 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm Header: 4.0mm, 4.5mm, 7.0mm	20 to 50	Tape I	24.00	—	11.50	25.40	1,500 pcs.
		60 to 70	Tape II	32.00	28.40	14.20	33.40	
		80 to 100	Tape II	44.00	40.40	20.20	45.40	
		120 to 160	Tape II	56.00	52.40	26.20	57.40	
	Socket: 7.0mm, 8.0mm, 9.0mm Header: 5.0mm, 5.5mm, 6.0mm, 6.5mm, 8.0mm, 9.0mm	20 to 50	Tape I	24.00	—	11.50	25.40	1,000 pcs.
		60 to 70	Tape II	32.00	28.40	14.20	33.40	
		80 to 100	Tape II	44.00	40.40	20.20	45.40	
		130	Tape II	56.00	52.40	26.20	57.40	

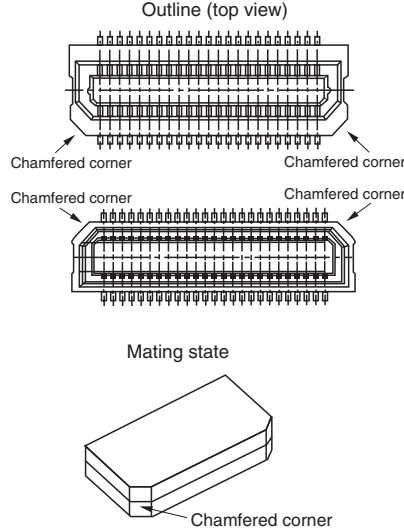
Connector orientation with respect to direction of progress of embossed tape

Direction of tape progress	Type	P5K	P5KS (Less than 100 contacts)	P5KS 120, 130, 160 contacts
↓	Socket	 This corner is oriented on the C side.	 This corner is oriented on the C side.	
	Header	 This corner is oriented on the C side.	 This corner is oriented on the C side.	 Note: There is no indication on this product regarding top-bottom or left-right orientation.

NOTES

1. Prevention of reverse mating

Other than P5KS series 120, 130, 160 pin contacts type, the socket and header are protected from reverse mating by a molded resin key. Excessive mating force may damage the key, so be sure to match chamfered corners when mating.



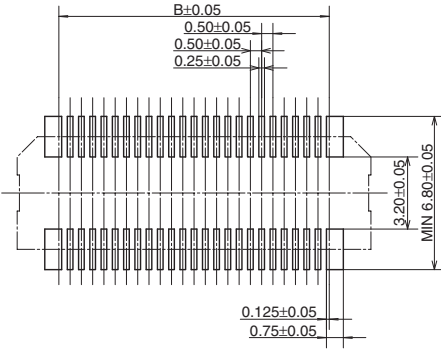
2. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

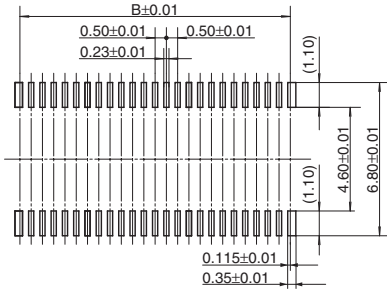
In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used. The figures to the right are recommended metal mask patterns. Please use them as a reference.

• P5K Socket

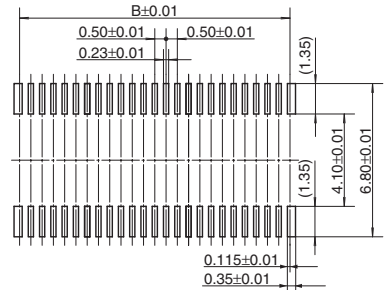
Recommended PC board pattern (TOP VIEW)



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

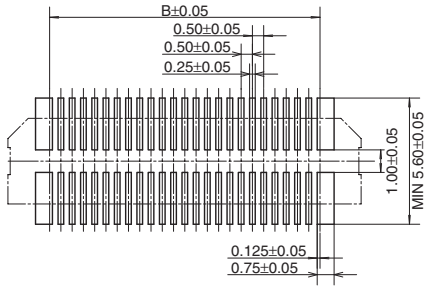


Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 69%)

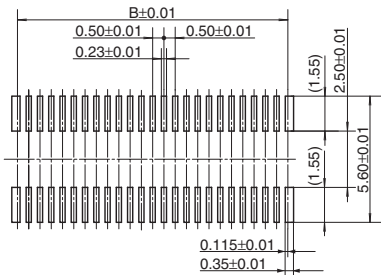


• P5K Header

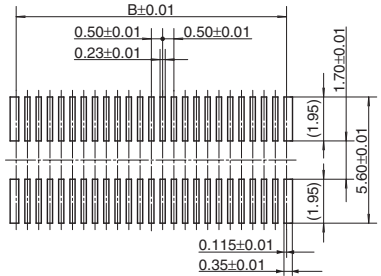
Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: When 150 μm
(Opening area ratio: 62%)



Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 78%)



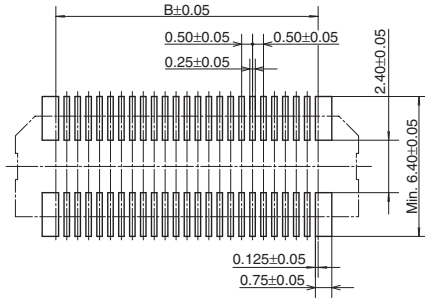
* See the dimension table on page 93 for more information on the B dimension of the socket and header.

AXK(5(S)/6(S))

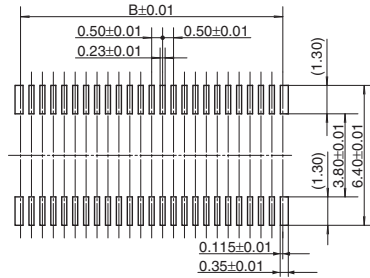
P5KS: Mated height 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 8.0mm, 9.0mm type

• Socket

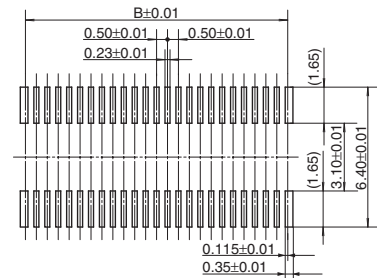
Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: When 150 μm
(Opening area ratio: 60%)



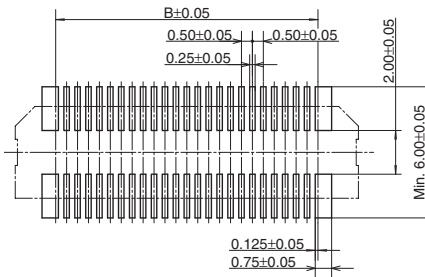
Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 76%)



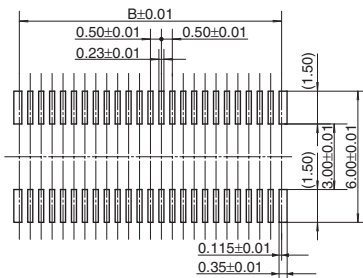
* See the dimension table on page 94 for more information on the B dimension.

• Header

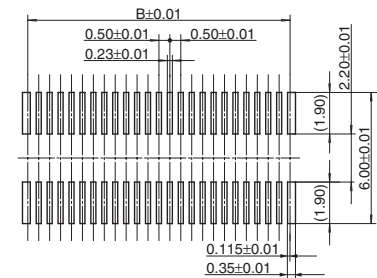
Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: When 150 μm
(Opening area ratio: 69%)



Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 87%)

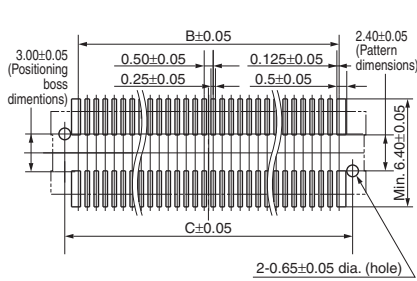


* See the dimension table on page 94 for more information on the B dimension.

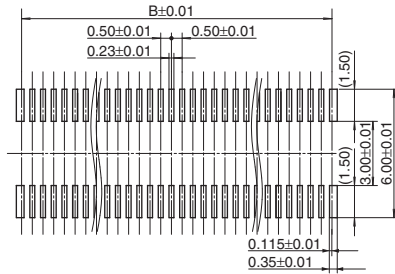
P5KS: Mated height 4.0mm, 4.5mm for 120 pin contacts and 160 pin contacts types, 6.5mm for 130 pin contacts type

• Socket

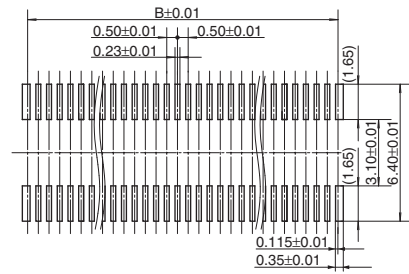
Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: When 150 μm
(Opening area ratio: 60%)



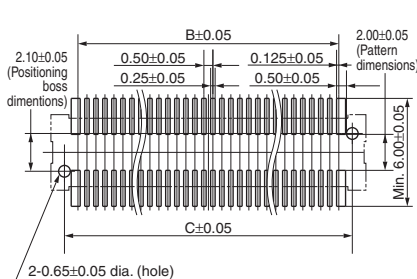
Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 76%)



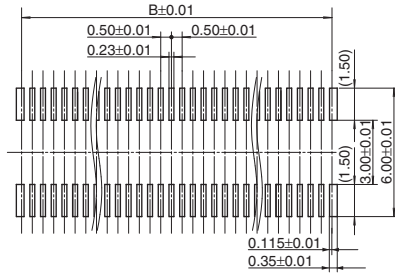
* See the dimension table on page 95 for more information on the B and C dimensions.

• Header

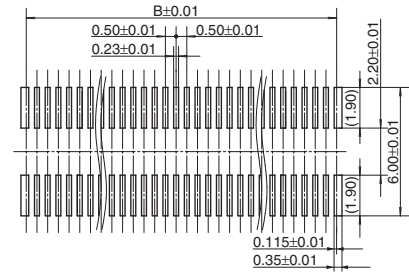
Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern
Metal mask thickness: When 150 μm
(Opening area ratio: 69%)



Recommended metal mask pattern
Metal mask thickness: When 120 μm
(Opening area ratio: 87%)



* See the dimension table on page 95 for more information on the B and C dimensions.

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

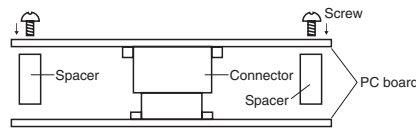
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.
 - (1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.
- 5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

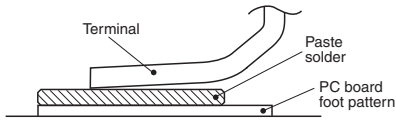
6) Excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

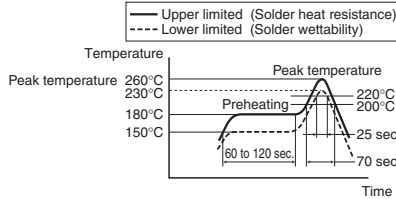


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

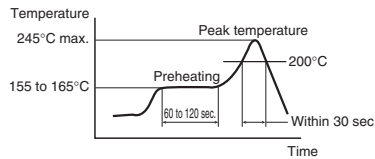
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

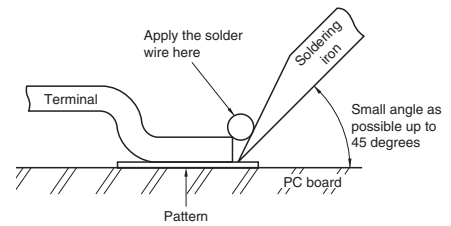
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



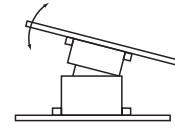
- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Notes on Using Narrow pitch Connectors

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



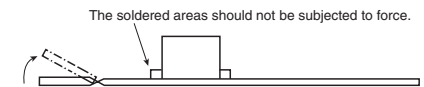
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

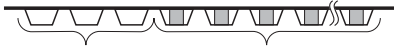
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

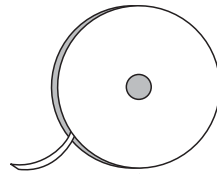
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

Required number of products for sample production (Unit 50 pcs.)



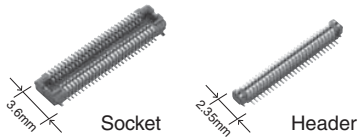
Reel
(Delivery can also be made on a reel by customer request.)

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

For board-to-board | For board-to-FPC

Narrow pitch connectors (0.4mm pitch)

P4S Series

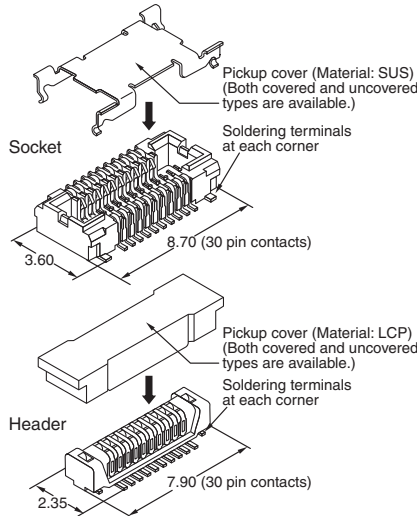


RoHS compliant

FEATURES

1. Space-saving (3.6 mm widthwise)

Smaller compared to P4 series with soldering terminals (30 pin contacts):
 Socket — 38% smaller,
 Header — 34% smaller

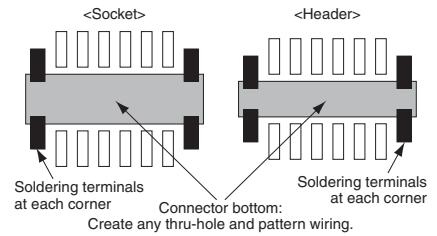


2. Strong resistance to adverse environments! Utilizes

“**TOUGH CONTACT**” construction for high contact reliability.

3. Greater flexibility in connector placement.

Pattern wiring to the connector bottom is made possible with a molded covering on the undersurface of the connector.



4. Gull-wing-shaped terminals to facilitate visual inspections.

5. Connectors for inspection available

APPLICATIONS

Mobile devices, such as cellular phones, digital still cameras and digital video cameras.

ORDERING INFORMATION

AXT 4

3: Narrow Pitch Connector P4S (0.4 mm pitch) Socket
 4: Narrow Pitch Connector P4S (0.4 mm pitch) Header

Number of pins (2 digits)

Mated height

<Socket>

1: For mated height 1.5 mm and 2.0 mm

2: For mated height 2.5 mm and 3.0 mm

<Header>

1: For mated height 1.5 mm and 2.5 mm

2: For mated height 2.0 mm

3: For mated height 3.0 mm

Functions

<Socket/Header>

2: Without pickup cover, without positioning bosses

6: With pickup cover, 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	Outer carton
1.5mm	10	AXT310124	AXT410124	3,000 pieces	6,000 pieces
	16	AXT316124	AXT416124		
	20	AXT320124	AXT420124		
	22	AXT322124	AXT422124		
	24	AXT324124	AXT424124		
	26	AXT326124	AXT426124		
	30	AXT330124	AXT430124		
	32	AXT332124	AXT432124		
	34	AXT334124	AXT434124		
	36	AXT336124	AXT436124		
	38	AXT338124	AXT438124		
	40	AXT340124	AXT440124		
	44	AXT344124	AXT444124		
	46	AXT346124	AXT446124		
	50	AXT350124	AXT450124		
	54	AXT354124	AXT454124		
	60	AXT360124	AXT460124		
	64	AXT364124	AXT464124		
70	AXT370124	AXT470124			
80	AXT380124	AXT480124			
90	AXT390124	AXT490124			
100	AXT300124	AXT400124			
2.0mm	40	AXT340124	AXT440224	3,000 pieces	6,000 pieces
	90	AXT390124	AXT490224		
	100	AXT300124	AXT400224		
2.5mm	20	AXT320224	AXT420124	3,000 pieces	6,000 pieces
	30	AXT330224	AXT430124		
	40	AXT340224	AXT440124		
	60	AXT360224	AXT460124		
	80	AXT380224	AXT480124		
100	AXT300224	AXT400124			
3.0mm	20	AXT320224	AXT420324	3,000 pieces	6,000 pieces
	30	AXT330224	AXT430324		
	60	AXT360224	AXT460324		
	80	AXT380224	AXT480324		
100	AXT300224	AXT400324			

- Notes: 1. Regarding ordering units; During production: Please make orders in 1-reel units.
 Samples for mounting confirmation: Available in units of 50 pieces. Please contact our sales office.
 Samples: Small lot orders are possible. Please consult us.
2. If you require the pickup cover, change the eighth digit of the part number from "2" to "6" in your order. Note that the pickup cover is not available for some types depending on the number of pins. Check the latest product specifications.
3. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our sales office.

AXT3, 4

SPECIFICATIONS

1. 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.	Rated voltage is applied for one minute and check for short circuit or damage with a detection current of 1mA.																
	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. 0.981N/pin contacts × pin contacts (initial)																	
	Composite removal force	Min. 0.0588N/pin contacts × pin contacts																	
	Contact holding force (Socket contact)	Min. 0.981N/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																
	Soldering heat resistance	Max. peak temperature of 260°C (on the surface of the PC board around the connector terminals)	Infrared reflow soldering																
		300°C within 5 sec. or 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																
	Thermal shock resistance (header and socket mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	Conformed to MIL-STD-202F, method 107G																
			<table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55$\frac{0}{3}$</td> <td>30</td> </tr> <tr> <td>2</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85$\frac{0}{3}$</td> <td>30</td> </tr> <tr> <td>4</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55$\frac{0}{3}$</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $\frac{0}{3}$	30	2	∩	Max. 5	3	85 $\frac{0}{3}$	30	4	∩	Max. 5	
	Order	Temperature (°C)	Time (minutes)																
	1	-55 $\frac{0}{3}$	30																
2	∩	Max. 5																	
3	85 $\frac{0}{3}$	30																	
4	∩	Max. 5																	
	-55 $\frac{0}{3}$																		
Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ	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	Temperature 35±2°C, saltwater concentration 5±1%																	
H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. 90mΩ	Temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.																	
Lifetime characteristics	Insertion and removal life	50 times																	
Unit weight	Mated height 1.5mm, 20 pin contact type: Socket: 0.04 g Header: 0.02 g	Repeated insertion and removal speed of max. 200 times/hours																	

2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Ni plating on base, Au plating on surface Terminal portion: Ni plating on base, Au plating on surface (Except for front edge of terminal) However, the area adjacent to the socket terminal is exposed to Ni on base. Soldering terminals portion: Socket: Ni plating on base, Pd + Au flash plating on surface (Expect for front edge of terminal) Header: Ni plating on base, Au plating on surface (Expect for front edge of terminal)

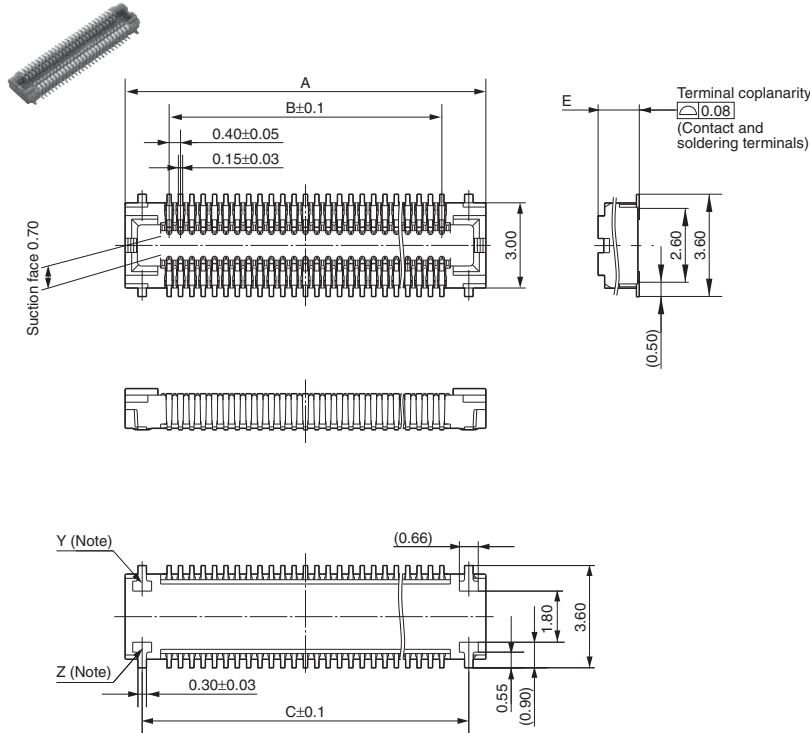
DIMENSIONS (Unit: mm)

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

1. Socket (Mated height: 1.5mm, 2.0mm, 2.5mm, 3.0mm)

- Without pickup cover

CAD Data



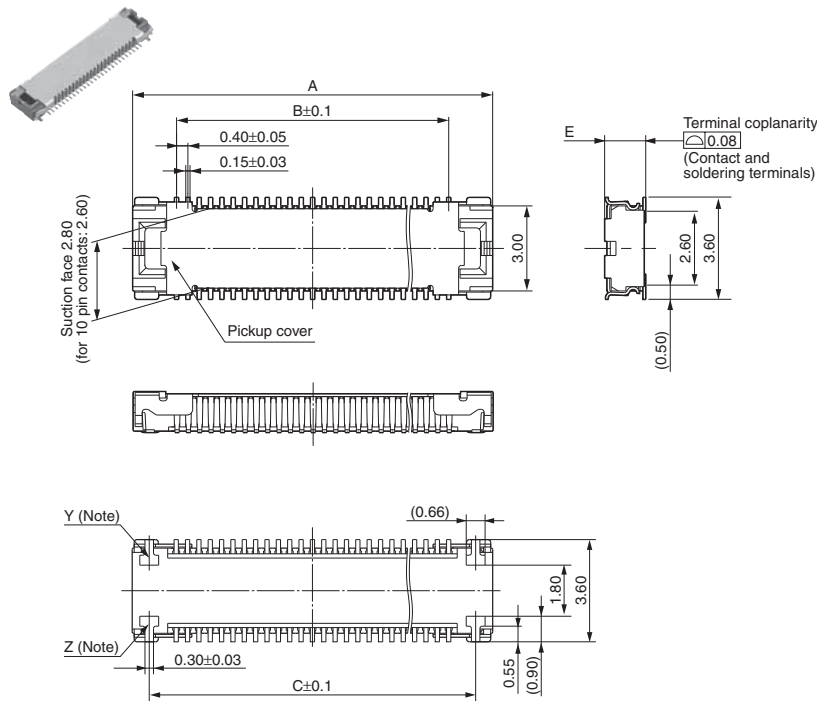
General tolerance: ±0.2

Dimension table (mm)

Number of pins/ dimension	A	B	C
10	4.70	1.60	3.50
16	5.90	2.80	4.70
20	6.70	3.60	5.50
22	7.10	4.00	5.90
24	7.50	4.40	6.30
26	7.90	4.80	6.70
30	8.70	5.60	7.50
32	9.10	6.00	7.90
34	9.50	6.40	8.30
36	9.90	6.80	8.70
38	10.30	7.20	9.10
40	10.70	7.60	9.50
44	11.50	8.40	10.30
46	11.90	8.80	10.70
50	12.70	9.60	11.50
54	13.50	10.40	12.30
60	14.70	11.60	13.50
64	15.50	12.40	14.30
70	16.70	13.60	15.50
80	18.70	15.60	17.50
90	20.70	17.60	19.50
100	22.70	19.60	21.50

Mated height/ dimension	E
1.5mm	1.45
2.0mm	1.45
2.5mm	2.45
3.0mm	2.45

- With pickup cover



General tolerance: ±0.2

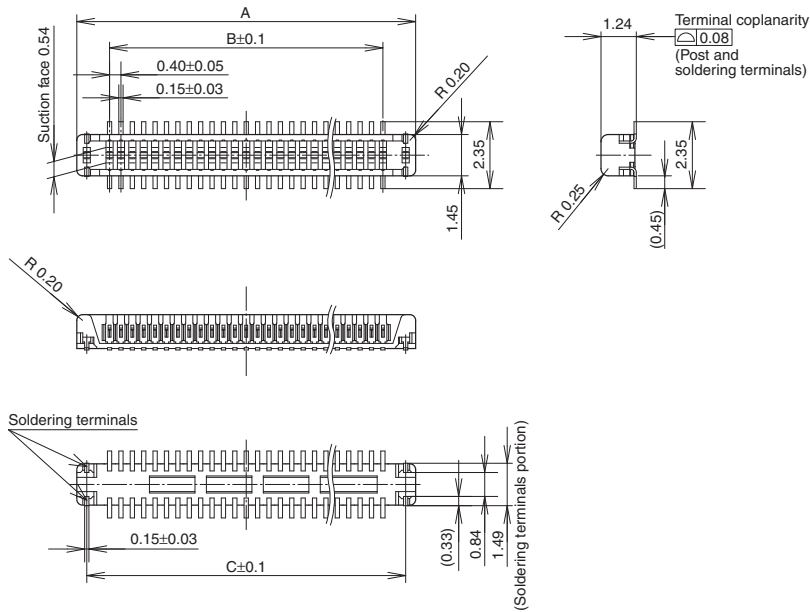
Note: Since soldering terminals are built into the body, the Y and Z parts are connected electrically.

AXT3, 4

2. Header (Mated height: 1.5mm, 2.5mm)

- Without pickup cover

CAD Data

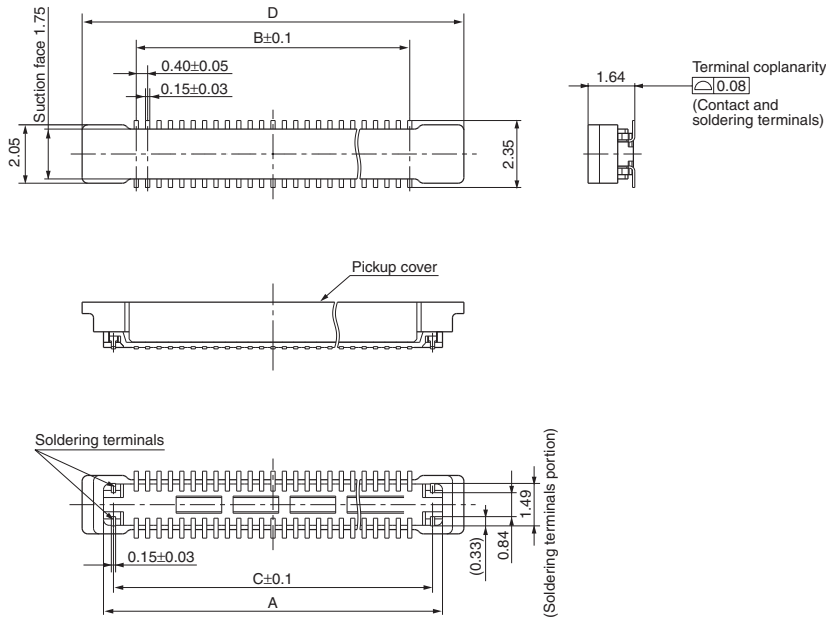


Dimension table (mm)

Number of pins/ dimension	A	B	C	D
10	3.90	1.60	3.20	5.40
16	5.10	2.80	4.40	6.60
20	5.90	3.60	5.20	7.40
22	6.30	4.00	5.60	7.80
24	6.70	4.40	6.00	8.20
26	7.10	4.80	6.40	8.60
30	7.90	5.60	7.20	9.40
32	8.30	6.00	7.60	9.80
34	8.70	6.40	8.00	10.20
36	9.10	6.80	8.40	10.60
38	9.50	7.20	8.80	11.00
40	9.90	7.60	9.20	11.40
44	10.70	8.40	10.00	12.20
46	11.10	8.80	10.40	12.60
50	11.90	9.60	11.20	13.40
54	12.70	10.40	12.00	14.20
60	13.90	11.60	13.20	15.40
64	14.70	12.40	14.00	—
70	15.90	13.60	15.20	17.40
80	17.90	15.60	17.20	19.40
90	19.90	17.60	19.20	21.40
100	21.90	19.60	21.20	23.40

General tolerance: ±0.2

- With pickup cover



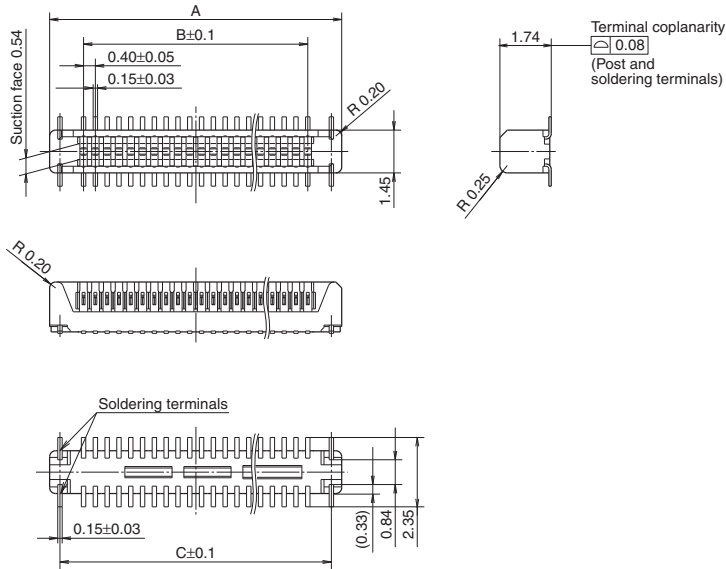
General tolerance: ±0.2

Note: The soldering terminal dimensions of headers with mated heights of 1.5mm/2.5mm and 2.0mm/3.0mm are different.

3. Header (Mated height: 2.0mm)

- Without pickup cover

CAD Data

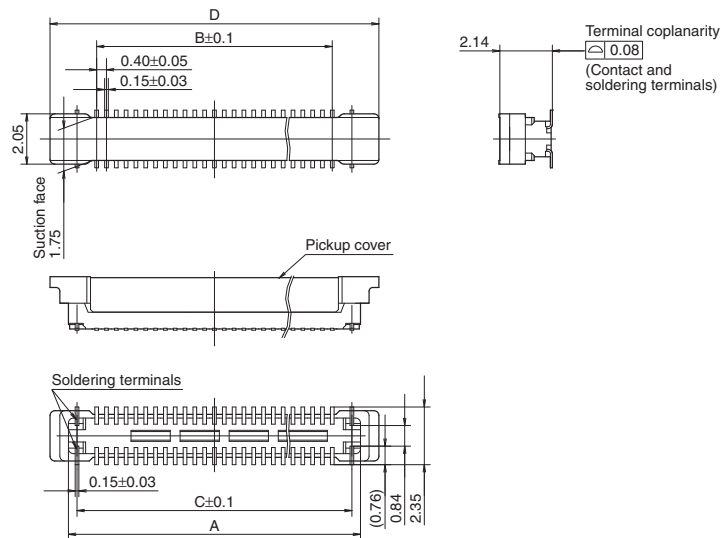


Dimension table (mm)

Number of pins/ dimension	A	B	C	D
40	9.90	7.60	9.20	11.40
90	19.90	17.60	19.20	21.40
100	21.90	19.60	21.20	—

General tolerance: ±0.2

- With pickup cover



General tolerance: ±0.2

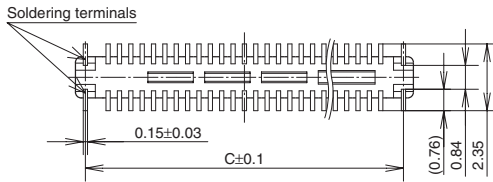
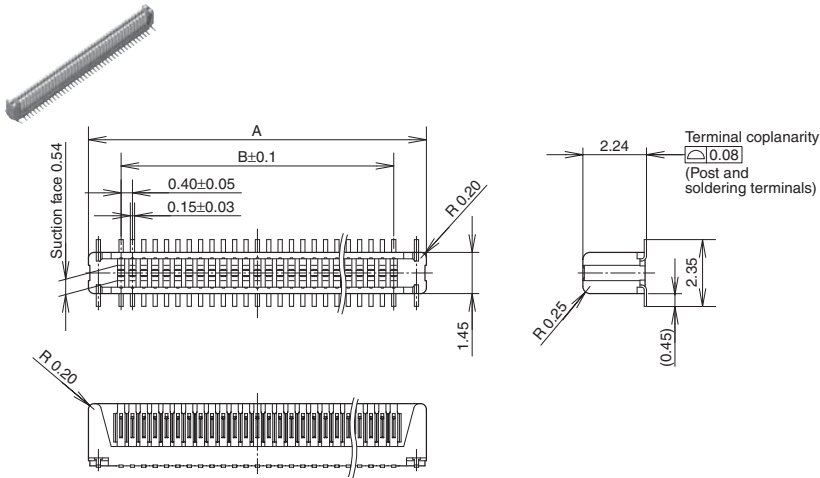
Note: The soldering terminals dimensions of headers with mated heights of 1.5mm/2.5mm and 2.0mm/3.0mm are different.

AXT3, 4

4. Header (Mated height: 3.0mm)

- Without pickup cover

CAD Data

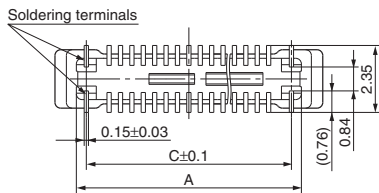
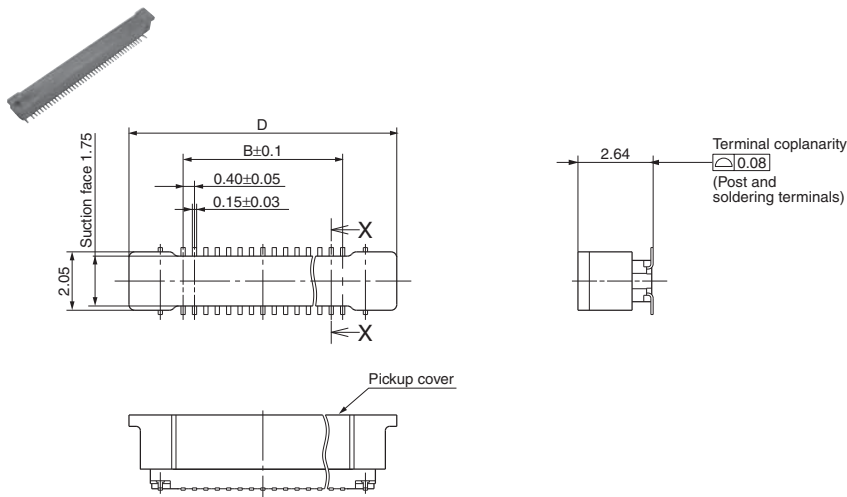


Dimension table (mm)

Number of pins/ dimension	A	B	C	D
20	5.90	3.60	5.20	-
30	7.90	5.60	7.20	9.40
60	13.90	11.60	13.20	-
80	17.90	15.60	17.20	19.40
100	21.90	19.60	21.20	-

General tolerance: ±0.2

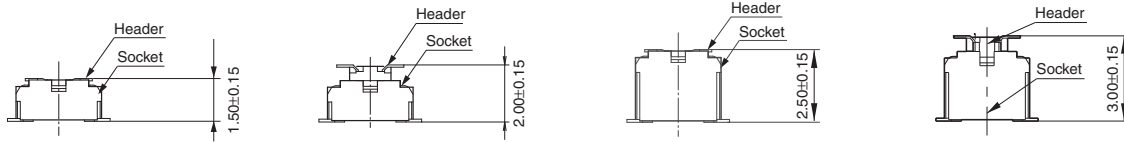
- With pickup cover



General tolerance: ±0.2

Note: The soldering terminals dimensions of headers with mated heights of 1.5mm/2.5mm and 2.0mm/3.0mm are different.

Socket and Header are mated

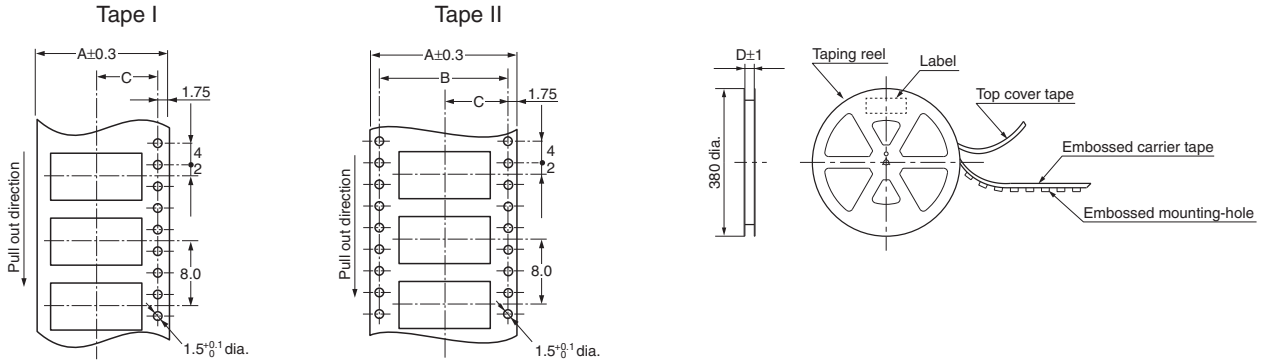


EMBOSSED TAPE DIMENSIONS (unit: mm, Common for respective contact type, socket and header)

• Tape dimensions (Conforming to JIS C 0806:1990.

• Plastic reel dimensions (Conforming to EIAJ ET-7200B)

However, some tapes have mounting hole pitches that do not comply with the standard.)



Dimension table (mm)

Mated height	Number of pins		Type of taping	A	B	C	D	Quantity per reel
	Socket (with/without pickup cover) Header (without pickup cover)	Header (with pickup cover)						
Common for socket and header: 1.5mm, 2.0mm, 2.5mm and 3.0mm	Max. 24	Max. 24	Tape I	16.00	—	7.50	17.50	3,000
	26 to 70	26 to 64	Tape I	24.00	—	11.50	25.50	3,000
	72 to 100	66 to 90	Tape II	32.00	28.40	14.20	33.50	3,000
	—	100	Tape II	44.00	40.40	20.20	45.50	3,000

Connector orientation with respect to direction of progress of embossed tape

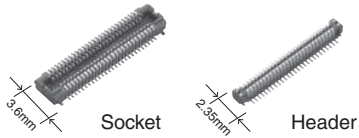
Direction of tape progress	Type	Common for P4S	
		Socket	Header
↓			

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

For board-to-board | For board-to-FPC

Connectors for inspection usage (0.4mm pitch)

P4S 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																			
P4S for inspection	10	16	20	22	24	26	30	32	34	36	38	40	44	50	54	60	70	80	90	100
	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

- Notes: 1. You can use with each mated height in common.
 2. The pickup surface shape of the inspection sockets is different from that of the standard sockets. (For details, refer to the product specification diagram.)
 3. Please inquire about number of pins other than those shown above.
 4. Please inquire with us regarding availability.
 5. Please keep the minimum order quantities no less than 50 pieces per lot.
 6. Please inquire if further information is needed.

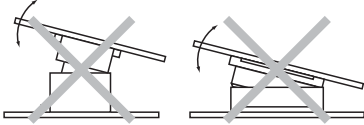
PRODUCT TYPES

Specifications			Part No.	Specifications			Part No.
Socket	With pickup cover	Without positioning bosses	AXT3E**66	Header	With pickup cover	Without positioning bosses	AXT4E**66
	No pickup cover	Without positioning bosses	AXT3E**26		No pickup cover	Without positioning bosses	AXT4E**26

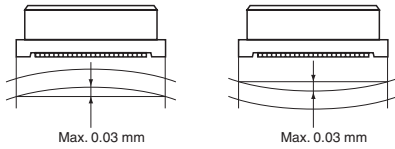
- Notes: 1. When placing an order, substitute the "*" (asterisk) in the above part number with the number of pins for the specific connector.
 2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our sales office.

NOTES

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



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



3. If extra resistance to shock caused by dropping is required, we recommend using P4 Series.

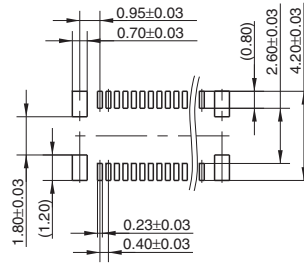
4. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

In order to reduce solder and flux rise, 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.

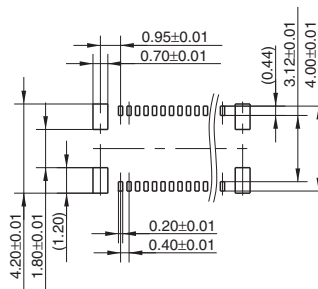
Socket
(Mated height: 1.5mm, 2.0mm, 2.5mm and 3.0mm)

Recommended PC board pattern (TOP VIEW)



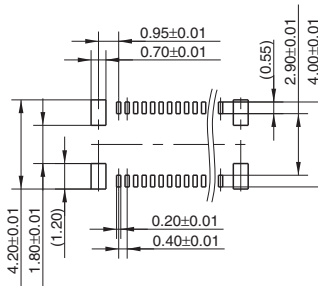
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Terminal portion opening area ratio: 48%)
(Metal portion opening area ratio: 100%)



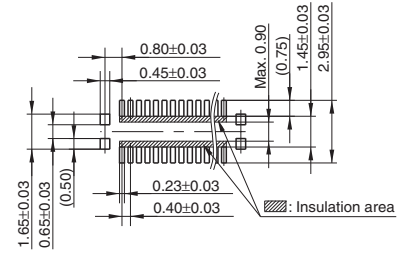
Recommended metal mask pattern

Metal mask thickness: When 120 μm
(Terminal portion opening area ratio: 60%)
(Metal portion opening area ratio: 100%)



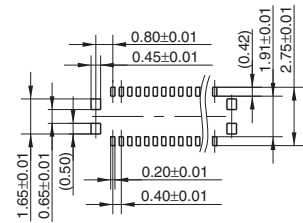
Header
(Mated height: 1.5mm and 2.5mm)

Recommended PC board pattern (TOP VIEW)



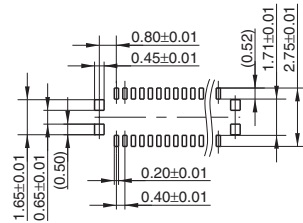
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Terminal portion opening area ratio: 49%)
(Metal portion opening area ratio: 100%)



Recommended metal mask pattern

Metal mask thickness: When 120 μm
(Terminal portion opening area ratio: 60%)
(Metal portion opening area ratio: 100%)

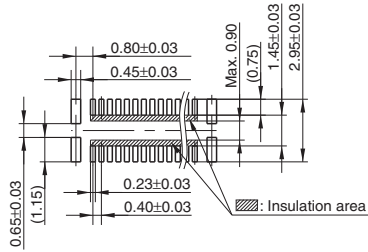


AXT3, 4

Header

(Mated height: 2.0mm, 3.0mm)

Recommended PC board pattern (TOP VIEW)



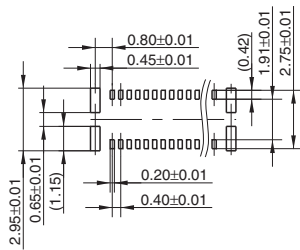
Please refer to the latest product specifications when designing your product.

Recommended metal mask pattern

Metal mask thickness: When 150 μm

(Terminal portion opening area ratio: 49%)

(Metal portion opening area ratio: 100%)

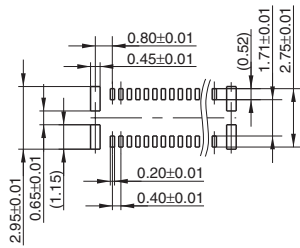


Recommended metal mask pattern

Metal mask thickness: When 120 μm

(Terminal portion opening area ratio: 60%)

(Metal portion opening area ratio: 100%)



Note: The recommended PC board pattern diagrams and metal mask pattern diagrams for headers with mated heights of 1.5 mm/ 2.5 mm and 2.0 mm/3.0 mm are different.

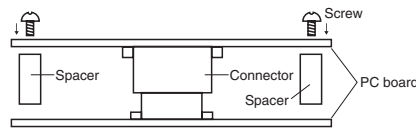
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.
 - (1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

- (2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

- 7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.
- 5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

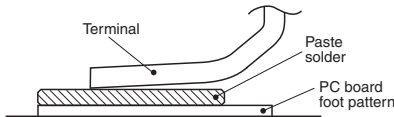
- 6) Excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

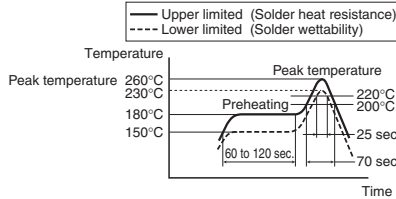


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

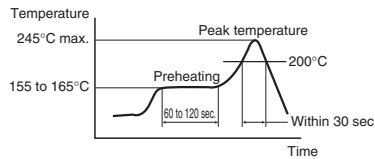
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

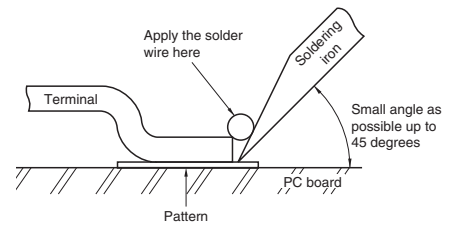
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.

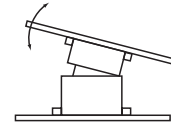


- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



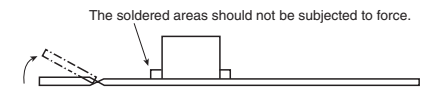
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- 3) Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

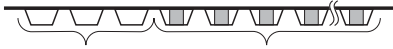
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

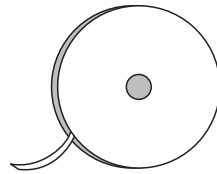
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

Required number of products for sample production (Unit 50 pcs.)



Reel
(Delivery can also be made on a reel by customer request.)

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

For board-to-board | For board-to-FPC

**Narrow pitch connectors
(0.4mm pitch)**

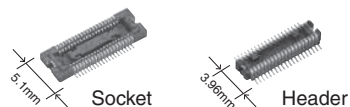
P4 Series



• Without soldering terminals



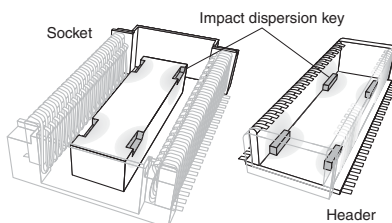
• With soldering terminals



RoHS compliant

FEATURES

1. 0.4 mm pitch and mated heights of 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 3.5 mm.
2. Strong resistance to adverse environments! Utilizes “**TOUGH CONTACT**” construction for high contact reliability.
3. Constructed with impact dispersion keys inside the body to disperse shocks when dropped.



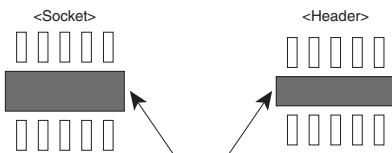
A high level of shock resistance is ensured by dispersing impact over the four locations where the socket indentations and header protrusions are mated together.

Note: The following number of pins are not supported due to suction surface factors.

- Without soldering terminals: 18 pin contacts or less
- With soldering terminals: 22 pin contacts or less

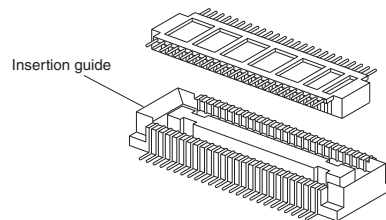
4. Construction makes designing devices easier.

1) The lower connector bottom surface construction prevents contact and shorts between the PCB and metal terminals. This enables freedom in pattern wiring, helping to make PCB's smaller.

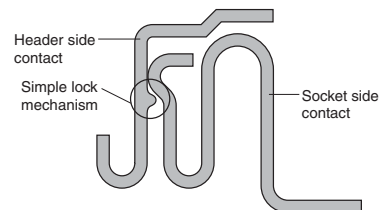


Connector bottom: Create any thru-hole and pattern wiring.

2) Guides are provided to take up any position shift and facilitate insertion.



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



5. Design facilitates efficient mounting.

Features a terminal flatness of 0.08 mm, construction resistant to creeping flux, and design that allows visual inspection of the soldered part.

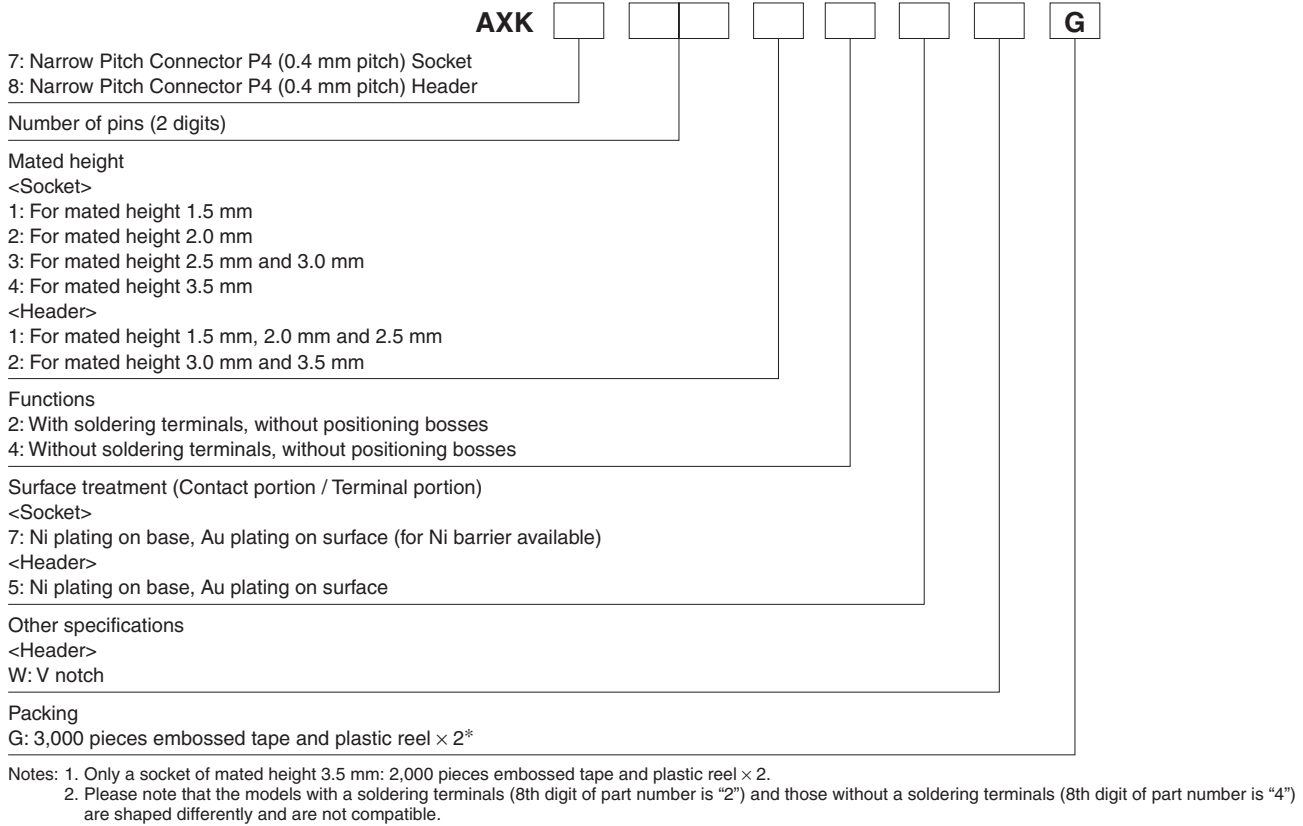
6. Connectors for inspection available

APPLICATIONS

Mobile devices, such as cellular phones, digital still cameras and digital video cameras.

AXK7, 8

ORDERING INFORMATION



PRODUCT TYPES

1. Without soldering terminals

Mated height	Number of pins	Part number		Packing	
		Socket	Header	Inner carton	Outer carton
		<i>TOUGH CONTACT</i>	<i>TOUGH CONTACT</i>		
1.5 mm	14	AXK714147G	AXK814145WG	3,000 pieces	6,000 pieces
	20	AXK720147G	AXK820145WG		
	22	AXK722147G	AXK822145WG		
	24	AXK724147G	AXK824145WG		
	26	AXK726147G	AXK826145WG		
	30	AXK730147G	AXK830145WG		
	34	AXK734147G	AXK834145WG		
	40	AXK740147G	AXK840145WG		
	44	AXK744147G	AXK844145WG		
	50	AXK750147G	AXK850145WG		
	54	AXK754147G	AXK854145WG		
	60	AXK760147G	AXK860145WG		
	64	AXK764147G	AXK864145WG		
	70	AXK770147G	AXK870145WG		
80	AXK780147G	AXK880145WG			
100	AXK700147G	AXK800145WG			
2.0 mm	14	AXK714247G	AXK814145WG	3,000 pieces	6,000 pieces
	20	AXK720247G	AXK820145WG		
	24	AXK724247G	AXK824145WG		
	26	AXK726247G	AXK826145WG		
	30	AXK730247G	AXK830145WG		
	40	AXK740247G	AXK840145WG		
	50	AXK750247G	AXK850145WG		
	60	AXK760247G	AXK860145WG		
2.5 mm	14	AXK714347G	AXK814145WG	3,000 pieces	6,000 pieces
	20	AXK720347G	AXK820145WG		
	24	AXK724347G	AXK824145WG		
	30	AXK730347G	AXK830145WG		
	40	AXK740347G	AXK840145WG		
	50	AXK750347G	AXK850145WG		
	60	AXK760347G	AXK860145WG		
	70	AXK770347G	AXK870145WG		
3.0 mm	20	AXK720347G	AXK820245WG	3,000 pieces	6,000 pieces
	24	AXK724347G	AXK824245WG		
	30	AXK730347G	AXK830245WG		
	40	AXK740347G	AXK840245WG		
	50	AXK750347G	AXK850245WG		
	60	AXK760347G	AXK860245WG		
3.5 mm	20	AXK720447G	AXK820245WG	Socket: 2,000 pieces Header: 3,000 pieces	Socket: 4,000 pieces Header: 6,000 pieces
	30	AXK730447G	AXK830245WG		
	40	AXK740447G	AXK840245WG		

- Notes: 1. Regarding ordering units; During production: Please make orders in 1-reel units.
 Samples for mounting confirmation: Available in units of 50 pieces. Please contact our sales office.
 Samples: Small lot orders are possible.
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.

AXK7, 8

2. With soldering terminals **TOUGH CONTACT**

Mated height	Number of pins	Part number		Packing	
		Socket	Header	Inner carton	Outer carton
		TOUGH CONTACT	TOUGH CONTACT		
1.5 mm	10	AXK710127G	AXK810125WG	3,000 pieces	6,000 pieces
	34	AXK734127G	AXK834125WG		
	40	AXK740127G	AXK840125WG		
2.0 mm	34	AXK734227G	AXK834125WG		
2.5 mm	12	AXK712327G	AXK812125WG		
	20	AXK720327G	AXK820125WG		
	32	AXK732327G	AXK832125WG		
	40	AXK740327G	AXK840125WG		
3.0 mm	20	AXK720327G	AXK820225WG		
	36	AXK736327G	AXK836225WG		
	60	AXK760327G	AXK860225WG		
	70	AXK770327G	AXK870225WG		
	80	AXK780327G	AXK880225WG		
3.5 mm	60	AXK760427G	AXK860225WG	Socket: 2,000 pieces Header: 3,000 pieces	Socket: 4,000 pieces Header: 6,000 pieces
	70	AXK770427G	AXK870225WG		
	80	AXK780427G	AXK880225WG		

Notes: 1. Regarding ordering units; During production: Please make orders in 1-reel units.

Samples for mounting confirmation: Available in units of 50 pieces. Please contact our sales office.

Samples: Small lot orders are possible.

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.

SPECIFICATIONS

1. 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.	Detection current: 1mA																		
	Insulation resistance	Min. 1,000M Ω (initial)	Using 250V DC megger (applied for 1 min.)																		
	Contact resistance	Max. 70m Ω	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	Composite insertion force	Max. 0.981N/pin contacts \times pin contacts (initial)																			
	Composite removal force	Min. 0.0588N/pin contacts \times pin contacts (Mated height 1.5 mm without soldering terminals type) Min. 0.118N/pin contacts \times pin contacts All the other types except the above (Mated height 1.5 mm without soldering terminals type)																			
	Post holding force	Min. 0.981N/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																		
	Soldering heat resistance	Max. peak temperature of 260°C (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. 70m Ω	Conformed to MIL-STD-202F, method 107G <table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55$^{\circ}_{-3}$</td> <td>30</td> </tr> <tr> <td>2</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85$^{\circ}_{+3}$</td> <td>30</td> </tr> <tr> <td>4</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55$^{\circ}_{-3}$</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $^{\circ}_{-3}$	30	2	}	Max. 5	3	85 $^{\circ}_{+3}$	30	4	}	Max. 5		-55 $^{\circ}_{-3}$	
	Order	Temperature (°C)	Time (minutes)																		
	1	-55 $^{\circ}_{-3}$	30																		
2	}	Max. 5																			
3	85 $^{\circ}_{+3}$	30																			
4	}	Max. 5																			
	-55 $^{\circ}_{-3}$																				
Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100M Ω , contact resistance max. 70m 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. 70m 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. 70m 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	50 times	Repeated insertion and removal speed of max. 200 times/hours																		
Unit weight		Mated height 1.5mm, 20 pin contacts; Socket: 0.04g Header: 0.02g																			

2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Ni plating on base, Au plating on surface Terminal portion: Ni plating on base, Au plating on surface (Except for thick of terminal) However, upper terminal of Ni barrier production: Exposed over Ni The area adjacent to the terminal of the sockets on models with Ni barrier is exposed to Ni on base.
Soldering terminals portion	Copper alloy	Ni plating on base, Sn plating on surface (Except for front terminal)

AXK7, 8

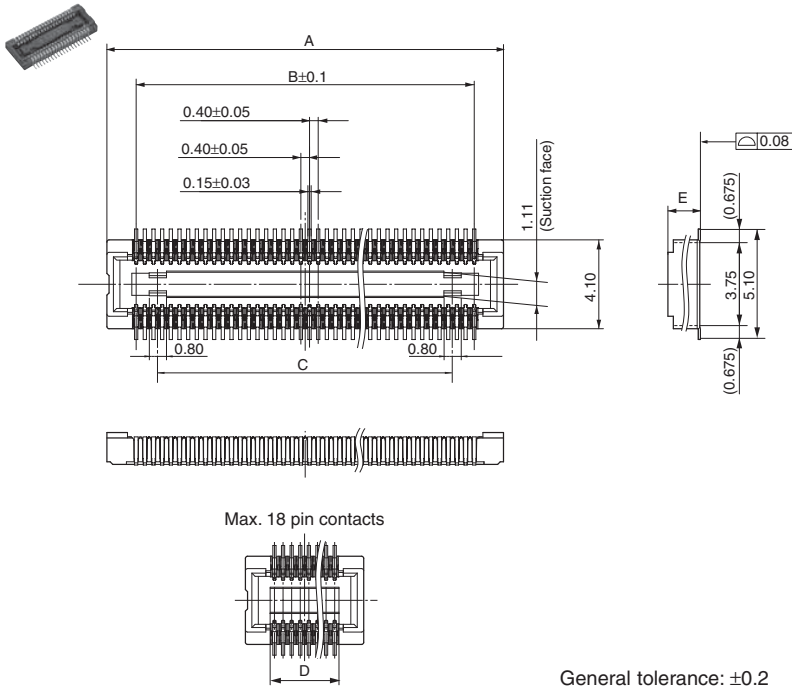
DIMENSIONS (Unit: mm)

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

1. Without Soldering Terminals

Socket (Mated height: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 3.5 mm)

CAD Data



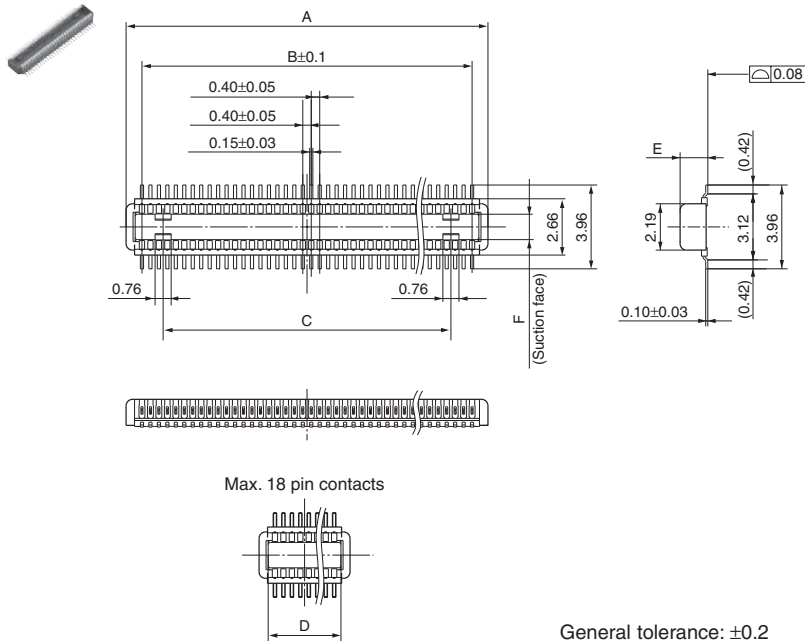
Dimension table (mm)

Number of pins/ dimension	A	B	C	D
14	5.10	2.40	—	2.80
20	6.30	3.60	1.60	—
22	6.70	4.00	2.00	—
24	7.10	4.40	2.40	—
26	7.50	4.80	2.80	—
30	8.30	5.60	3.60	—
34	9.10	6.40	4.40	—
40	10.30	7.60	5.60	—
44	11.10	8.40	6.40	—
50	12.30	9.60	7.60	—
54	13.10	10.40	8.40	—
60	14.30	11.60	9.60	—
64	15.10	12.40	10.40	—
70	16.30	13.60	11.60	—
80	18.30	15.60	13.60	—
100	22.30	19.60	17.60	—

Mated height/dimension	E
1.5mm	1.50
2.0mm	1.92
2.5mm, 3.0mm	2.42
3.5mm	2.92

Header (Mated height: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 3.5 mm)

CAD Data

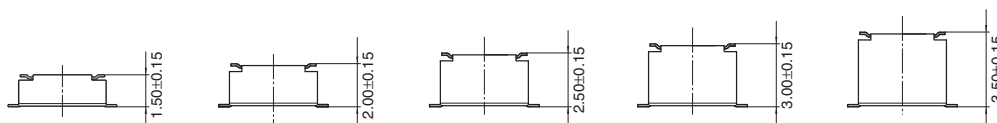


Dimension table (mm)

Number of pins/ dimension	A	B	C	D
14	3.90	2.40	—	3.04
20	5.10	3.60	1.60	—
22	5.50	4.00	2.00	—
24	5.90	4.40	2.40	—
26	6.30	4.80	2.80	—
30	7.10	5.60	3.60	—
34	7.90	6.40	4.40	—
40	9.10	7.60	5.60	—
44	9.90	8.40	6.40	—
50	11.10	9.60	7.60	—
54	11.90	10.40	8.40	—
60	13.10	11.60	9.60	—
64	13.90	12.40	10.40	—
70	15.10	13.60	11.60	—
80	17.10	15.60	13.60	—
100	21.10	19.60	17.60	—

Mated height/dimension	E	F
1.5mm, 2.0mm, 2.5mm	1.31	1.20
3.0mm, 3.5mm	2.26	1.26

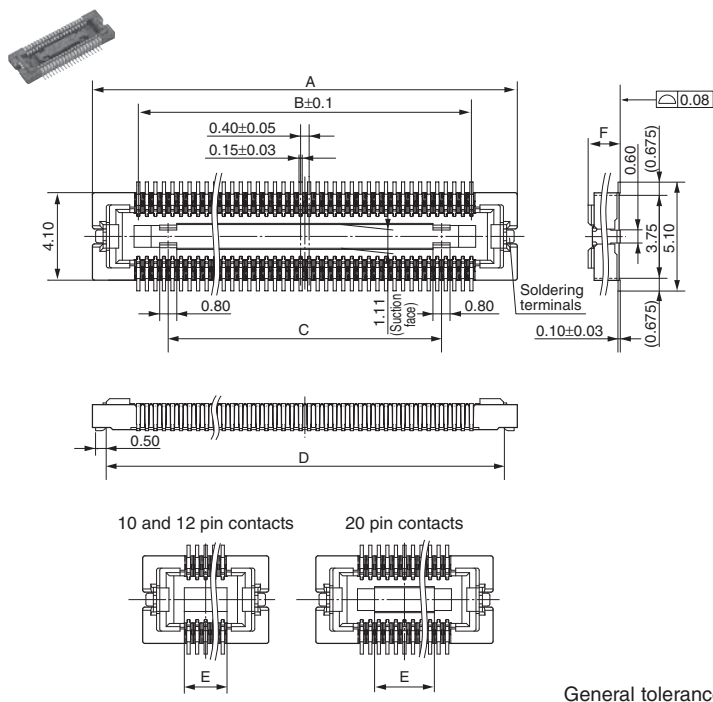
Socket and Header are mated



2. With Soldering Terminals

Socket (Mated height: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 3.5 mm)

CAD Data



Dimension table (mm)

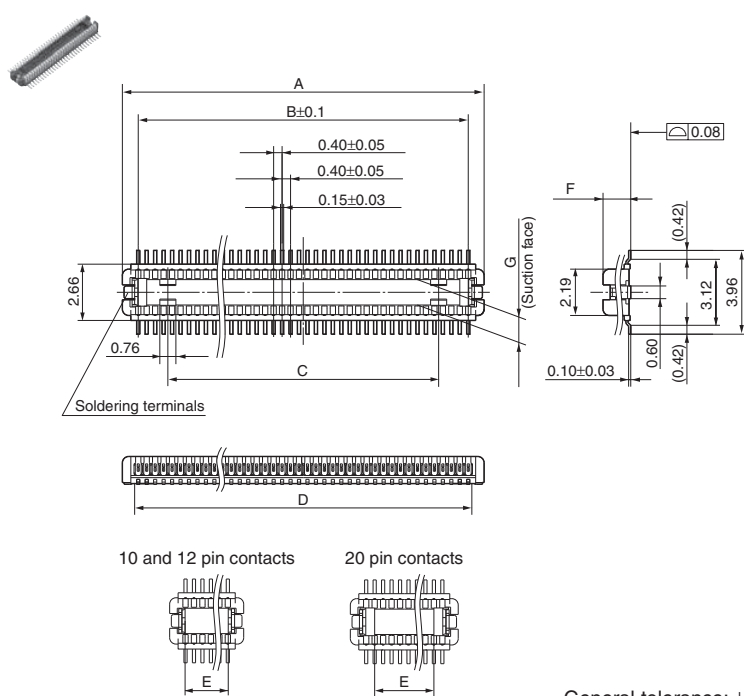
Number of pins/ dimension	A	B	C	D	E
10	5.90	1.60	—	4.60	2.00
12	6.30	2.00	—	5.00	2.40
20	7.90	3.60	—	6.60	2.40
32	10.30	6.00	3.20	9.00	—
34	10.70	6.40	3.60	9.40	—
36	11.10	6.80	4.00	9.40	—
40	11.90	7.60	4.80	10.60	—
60	15.90	11.60	8.80	14.60	—
70	17.90	13.60	10.80	16.60	—
80	19.90	15.60	12.80	18.60	—

Mated height/dimension	F
1.5mm	1.50
2.0mm	1.92
2.5mm, 3.0mm	2.42
3.5mm	2.92

General tolerance: ±0.2

Header (Mated height: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 3.5 mm)

CAD Data



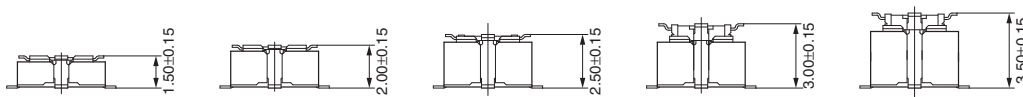
Dimension table (mm)

Number of pins/ dimension	A	B	C	D	E
10	3.10	1.60	—	1.94	1.64
12	3.50	2.00	—	2.34	2.04
20	5.10	3.60	—	3.94	2.80
32	7.50	6.00	3.20	6.34	—
34	7.90	6.40	3.60	6.74	—
36	8.30	6.80	4.00	7.14	—
40	9.10	7.60	4.80	7.94	—
60	13.10	11.60	8.80	11.94	—
70	15.10	13.60	10.80	13.94	—
80	17.10	15.60	12.80	15.94	—

Mated height/dimension	F	G
1.5mm, 2.0mm, 2.5mm	1.31	1.20
3.0mm, 3.5mm	2.26	1.26

General tolerance: ±0.2

Socket and Header are mated.



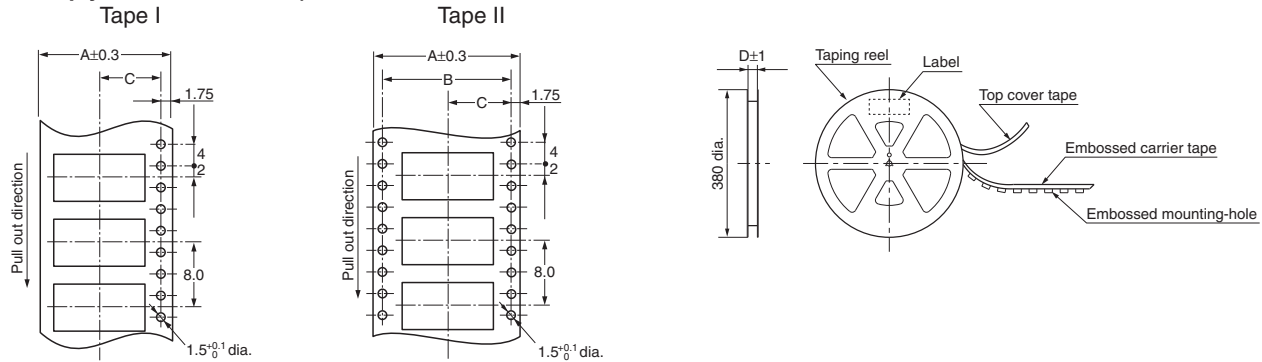
AXK7, 8

EMBOSSED TAPE DIMENSIONS (unit: mm, Common for respective contact type, socket and header)

• Tape dimensions (Conforming to JIS C 0806:1990.

• Plastic reel dimensions (Conforming to EIAJ ET-7200B)

However, some tapes have mounting hole pitches that do not comply with the standard.)



Dimension table (mm)

1. Without Soldering Terminals

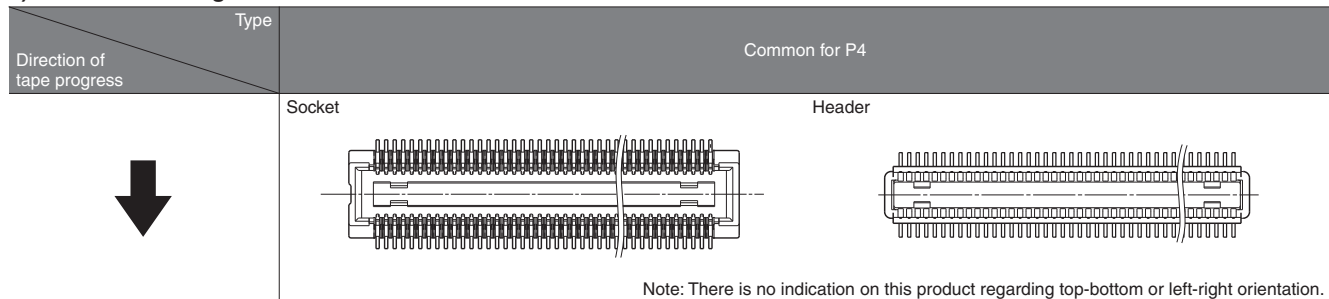
Mated height	Number of pins		Type of taping	A	B	C	D	Quantity per reel
	Socket	Header						
Common for socket and header: 1.5 mm, 2.0 mm, 2.5 mm and 3.0 mm Header: 3.5 mm	Max. 18	Max. 18	Tape I	16.00	—	7.50	17.40	3,000
	20 to 70	20 to 70	Tape I	24.00	—	11.50	25.40	3,000
	80 to 100	80 to 100	Tape II	32.00	28.40	14.20	33.40	3,000
Socket: 3.5 mm	20 to 40		Tape I	24.00	—	11.50	25.40	2,000

2. With Soldering Terminals

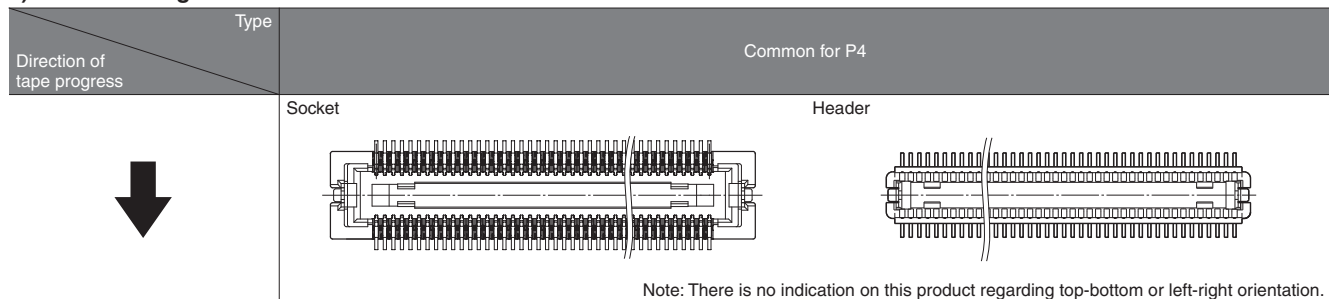
Mated height	Number of pins		Type of taping	A	B	C	D	Quantity per reel
	Socket	Header						
Common for socket and header: 1.5 mm, 2.0 mm, 2.5 mm and 3.0 mm Header: 3.5 mm	Max. 18	Max. 18	Tape I	16.00	—	7.50	17.40	3,000
	20 to 60	20 to 70	Tape I	24.00	—	11.50	25.40	3,000
	70 to 80	80	Tape II	32.00	28.40	14.20	33.40	3,000
Socket: 3.5 mm	60		Tape I	24.00	—	11.50	25.40	2,000
	70 to 80		Tape II	32.00	28.40	14.20	33.40	2,000

3. Connector orientation with respect to direction of progress of embossed tape

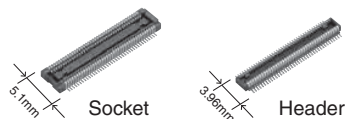
1) Without soldering terminals



2) With soldering terminals



For board-to-board	For board-to-FPC	<h1>P4 Series</h1>
Connectors for inspection usage (0.4mm pitch)		



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																	
	10	12	14	20	22	24	26	30	34	40	44	50	54	60	64	70	80	100
P4 for inspection without soldering terminals			☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
P4 for inspection with soldering terminals	☆	☆		☆					☆	☆				☆			☆	

- Notes:
1. You can use with each mated height in common.
 2. Please inquire about number of pins other than those shown above.
 3. Please inquire with us regarding availability.
 4. Please keep the minimum order quantities no less than 50 pieces per lot.
 5. Please inquire if further information is needed.

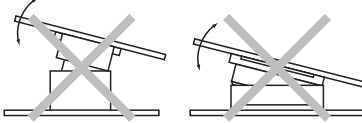
PRODUCT TYPES

Socket	Specifications		Part No.	Header	Specifications		Part No.
	With soldering terminals	Without positioning bosses	AXK7E**26G		With soldering terminals	Without positioning bosses	AXK8E**26WG
Without soldering terminals	Without positioning bosses	AXK7E**46G	Without soldering terminals	Without positioning bosses	AXK8E**46WG		

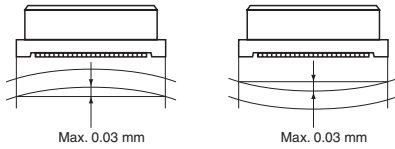
- Notes:
1. When placing an order, substitute the "*" (asterisk) in the above part number with the number of pins for the specific connector.
 2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our local sales office.

NOTES

1. As shown below, excess force during insertion may result in damage to the connector or removal of the solder. Also, to prevent connector damage please 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. Recommended PC board and metal mask patterns

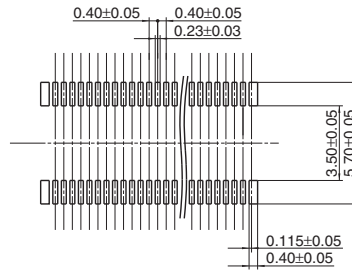
Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

In order to reduce solder and flux rise, 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.

1) Without soldering terminals

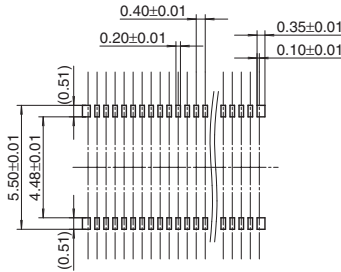
Socket

Recommended PC board pattern (TOP VIEW)



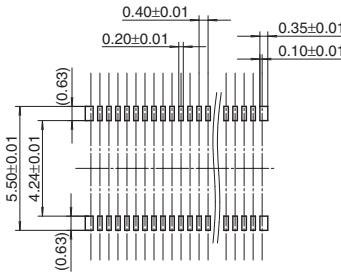
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Opening area ratio: 40%)



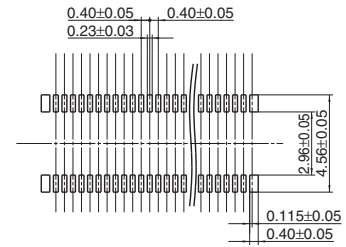
Recommended metal mask pattern

Metal mask thickness: When 120 μm
(Opening area ratio: 50%)



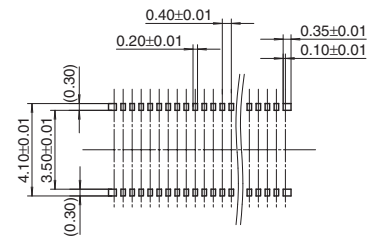
Header

Recommended PC board pattern (TOP VIEW)



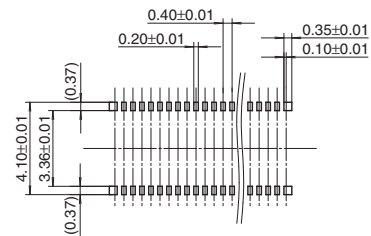
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Opening area ratio: 32%)



Recommended metal mask pattern

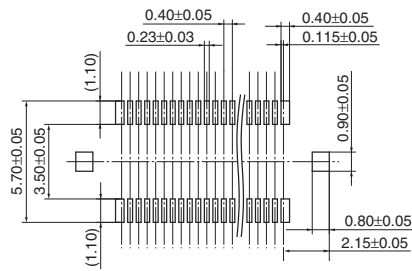
Metal mask thickness: When 120 μm
(Opening area ratio: 40%)



2) With soldering terminals

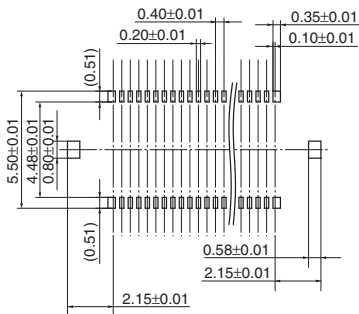
Socket

Recommended PC board pattern (TOP VIEW)



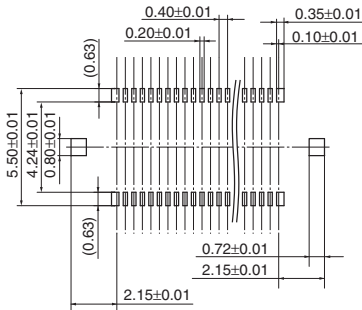
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Terminal portion opening area ratio: 40%)
(Metal portion opening area ratio: 65%)



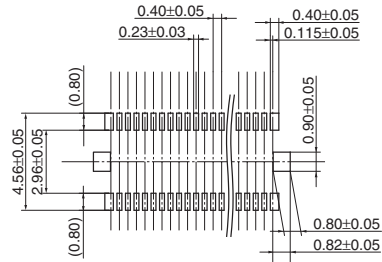
Recommended metal mask pattern

Metal mask thickness: When 120 μm
(Terminal portion opening area ratio: 50%)
(Metal portion opening area ratio: 80%)



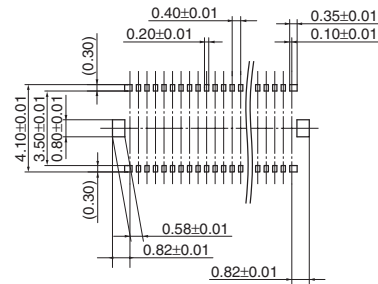
Header

Recommended PC board pattern (TOP VIEW)



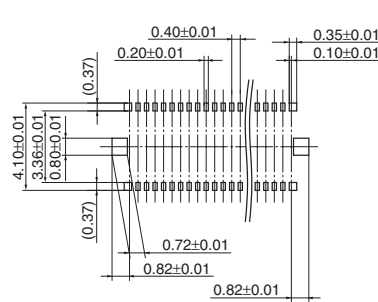
Recommended metal mask pattern

Metal mask thickness: When 150 μm
(Terminal portion opening area ratio: 32%)
(Metal portion opening area ratio: 65%)



Recommended metal mask pattern

Metal mask thickness: When 120 μm
(Terminal portion opening area ratio: 40%)
(Metal portion opening area ratio: 80%)



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

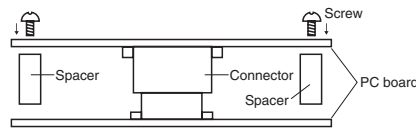
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.
 - (1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.
- 5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

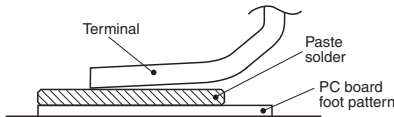
6) Excessive mounter chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

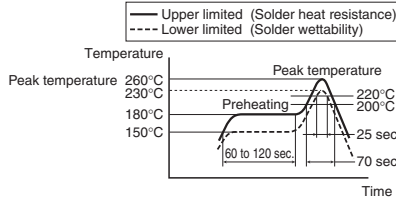


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

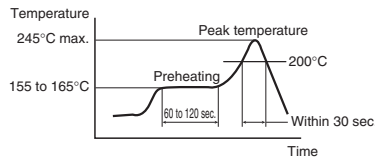
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

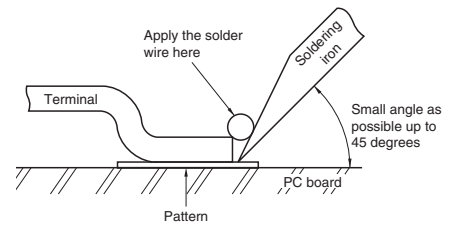
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



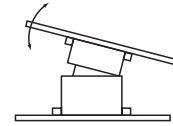
- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Notes on Using Narrow pitch Connectors

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



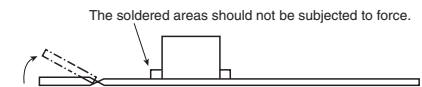
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

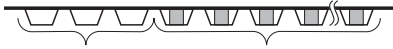
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

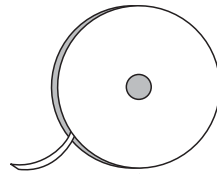
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

Required number of products for sample production (Unit 50 pcs.)



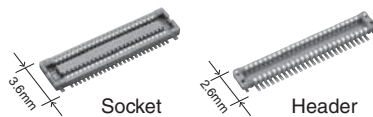
Reel
(Delivery can also be made on a reel by customer request.)

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

For board-to-FPC

**Narrow pitch connectors
(0.4mm pitch)**

F4S Series

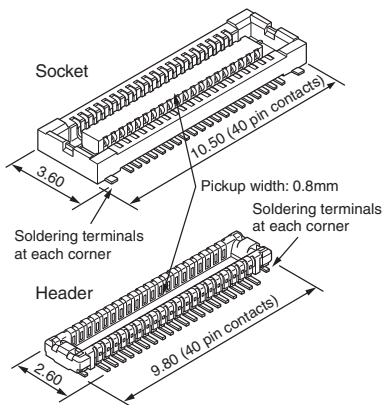


RoHS compliant

FEATURES

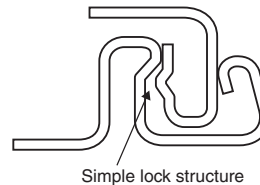
1. Space-saving (3.6 mm widthwise)
Smaller compared to F4 series (40 pin contacts):

Socket — 27% smaller,
Header — 38% smaller



2. Strong resistance to adverse environments! Utilizes “TOUGH CONTACT” construction for high contact reliability.

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

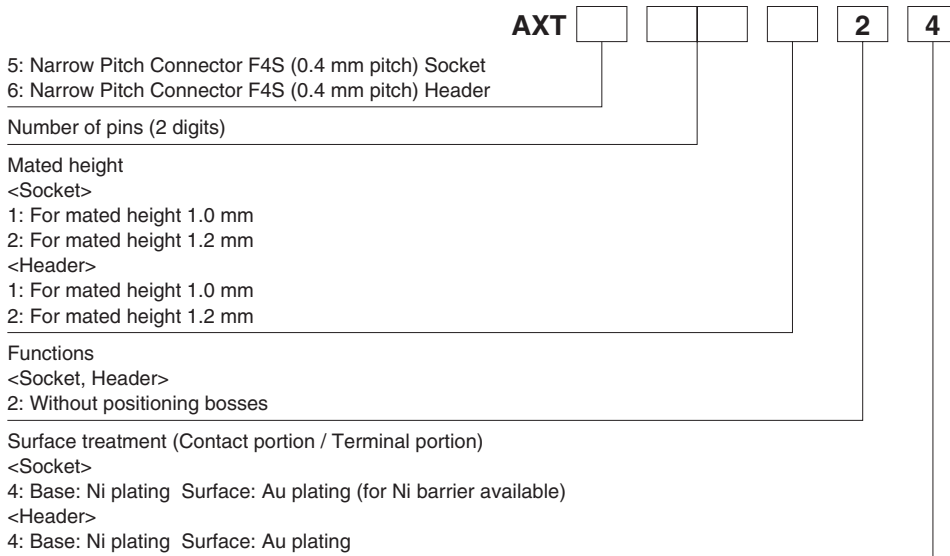


4. Gull-wing-shaped terminals to facilitate visual inspections.
5. Connectors for inspection available

APPLICATIONS

Mobile devices, such as cellular phones, digital still cameras and digital video cameras.

ORDERING INFORMATION



Note: Please note that models with a mated height of 1.0 mm (7th digit of part number is “1”) and 1.2 mm (7th digit of part number is “2”) are not compatible.

PRODUCT TYPES 

Mated height	Number of pins	Part number		Packing				
		Socket	Header	Inner carton	Outer carton			
1.0mm	10	AXT510124	AXT610124	3,000 pieces	6,000 pieces			
	12	AXT512124	AXT612124					
	14	AXT514124	AXT614124					
	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					
	40	AXT540124	AXT640124					
	42	AXT542124	AXT642124					
	44	AXT544124	AXT644124					
	48	AXT548124	AXT648124					
	50	AXT550124	AXT650124					
	1.2mm	10	AXT510224			AXT610224		
		30	AXT530224			AXT630224		
40		AXT540224	AXT640224					
50		AXT550224	AXT650224					
70		AXT570224	AXT670224					
80		AXT580224	AXT680224					

Notes: 1. Order unit: For volume production: 1-inner-box (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.

SPECIFICATIONS

1. 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. 0.981N/pin contacts × pin contacts (initial)																	
	Composite removal force	Min. 0.165N/pin contacts × pin contacts																	
	Contact holding force (Socket contact)	Min. 0.49N/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	Conformed to MIL-STD-202F, method 107G																
			<table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55⁰₋₃</td> <td>30</td> </tr> <tr> <td>2</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85⁺³₋₀</td> <td>30</td> </tr> <tr> <td>4</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55⁰₋₃</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 ⁰ ₋₃	30	2	}	Max. 5	3	85 ⁺³ ₋₀	30	4	}	Max. 5	
	Order	Temperature (°C)	Time (minutes)																
1	-55 ⁰ ₋₃	30																	
2	}	Max. 5																	
3	85 ⁺³ ₋₀	30																	
4	}	Max. 5																	
	-55 ⁰ ₋₃																		
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 ₂ S 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	20 pin contact type: Socket: 0.03 g Header: 0.01 g																		

2. Material and surface treatment

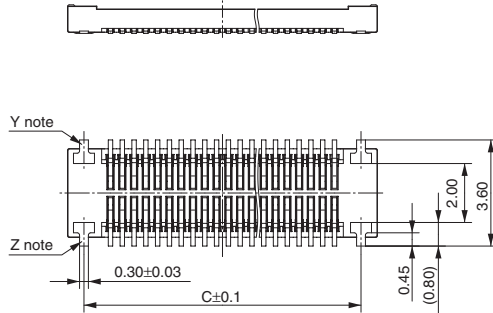
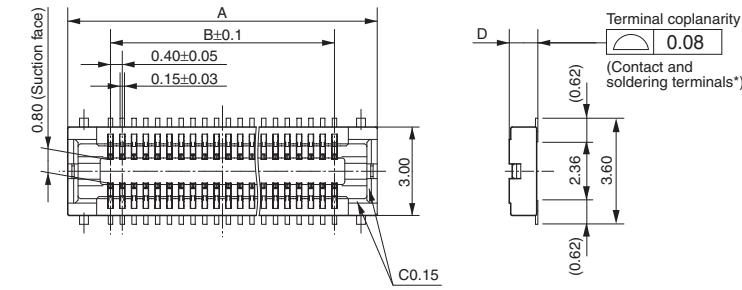
Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating Surface: Au plating Terminal portion: Base: Ni plating Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have 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: 1.0 mm and 1.2 mm)

CAD Data



General tolerance: ±0.2

Mated height/ dimension	D
1.0mm	0.97
1.2mm	1.17

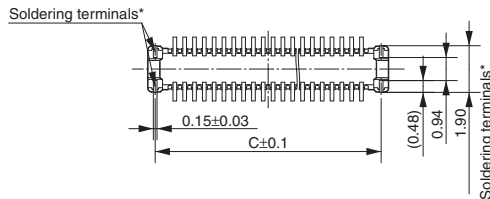
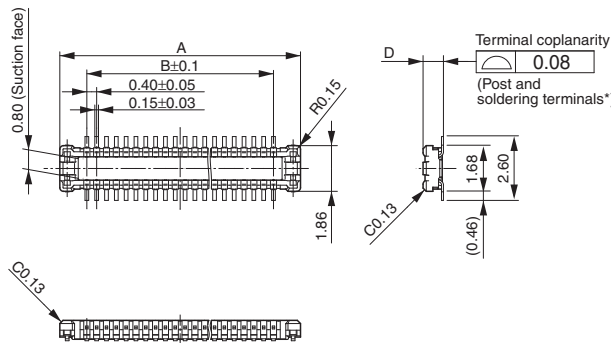
Dimension table (mm)

Number of pins/ dimension	A	B	C
10	4.50	1.60	3.40
12	4.90	2.00	3.80
14	5.30	2.40	4.20
16	5.70	2.80	4.60
20	6.50	3.60	5.40
22	6.90	4.00	5.80
24	7.30	4.40	6.20
26	7.70	4.80	6.60
28	8.10	5.20	7.00
30	8.50	5.60	7.40
32	8.90	6.00	7.80
34	9.30	6.40	8.20
36	9.70	6.80	8.60
40	10.50	7.60	9.40
42	10.90	8.00	9.80
44	11.30	8.40	10.20
48	12.10	9.20	11.00
50	12.50	9.60	11.40
54	13.30	10.40	12.20
60	14.50	11.60	13.40
64	15.30	12.40	14.20
70	16.50	13.60	15.40
80	18.50	15.60	17.40

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

Header (Mated height: 1.0 mm and 1.2 mm)

CAD Data



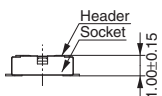
General tolerance: ±0.2

Mated height/ dimension	D
1.0mm	0.83
1.2mm	1.01

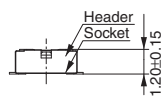
Dimension table (mm)

Number of pins/ dimension	A	B	C
10	3.80	1.60	3.20
12	4.20	2.00	3.60
14	4.60	2.40	4.00
16	5.00	2.80	4.40
20	5.80	3.60	5.20
22	6.20	4.00	5.60
24	6.60	4.40	6.00
26	7.00	4.80	6.40
28	7.40	5.20	6.80
30	7.80	5.60	7.20
32	8.20	6.00	7.60
34	8.60	6.40	8.00
36	9.00	6.80	8.40
40	9.80	7.60	9.20
42	10.20	8.00	9.60
44	10.60	8.40	10.00
48	11.40	9.20	10.80
50	11.80	9.60	11.20
54	12.60	10.40	12.00
60	13.80	11.60	13.20
64	14.60	12.40	14.00
70	15.80	13.60	15.20
80	17.80	15.60	17.20

• **Socket and Header are mated**



Mated height: 1.0 mm



Mated height: 1.2 mm

AXT5, 6

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

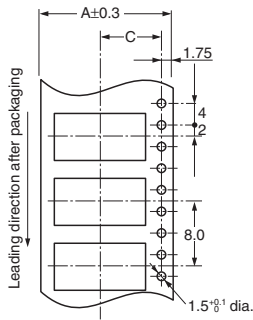
• Specifications for taping

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

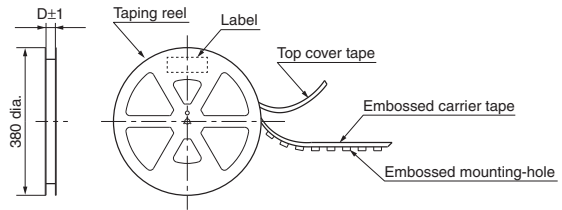
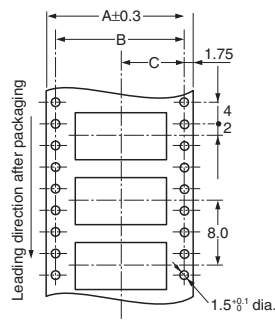
• Specifications for the plastic reel

(In accordance with EIAJET-7200B.)

Tape I



Tape II



• Dimension table (Unit: mm)

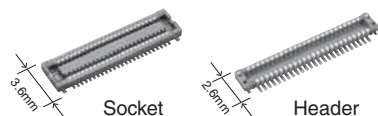
Type/Mated height	Number of pins	Type of taping	A	B	C	D	Quantity per reel
Common for sockets and headers: 1.0mm, 1.2mm	24 or less	Tape I	16.00	—	7.50	17.40	3,000
	26 to 70	Tape I	24.00	—	11.50	25.40	3,000
	80	Tape II	32.00	28.40	14.20	33.40	3,000

• 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.

For board-to-FPC	<h1>F4S Series</h1>
Connectors for inspection usage (0.4mm pitch)	



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																						
F4S for inspection	10	12	14	16	20	22	24	26	28	30	32	34	36	40	42	44	48	50	54	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.
 5. Please note that this inspection connector cannot be connected to standard models with a stacking height of 1.2 mm (AXT5**224 and AXT6**224). Please contact our sales office for a type connectable to models with a stacking height of 1.2 mm.

PRODUCT TYPES

Specifications	Part No.	Specifications	Part No.
Socket	Without positioning bosses	Header	Without positioning bosses
	AXT5E**26		AXT6E**26

- Notes: 1. When placing an order, substitute the "*" (asterisk) in the above part number with the number of pins for the specific connector.
 2. The above part numbers are for connectors without positioning bosses, which are standard. When ordering connectors with positioning bosses, please contact our local sales office.

NOTES

1. For high resistance to drop impact the F4 series is recommended.

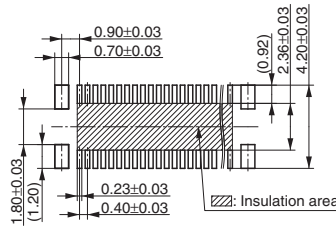
2. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

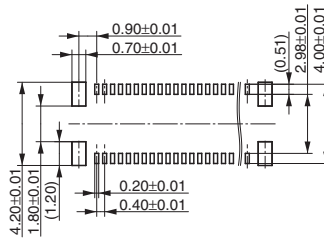
In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used. The figures to the right are recommended metal mask patterns. Please use them as a reference.

• Socket (Mated height: 1.0 mm)

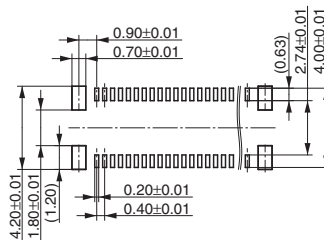
Recommended PC board pattern (TOP VIEW)



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

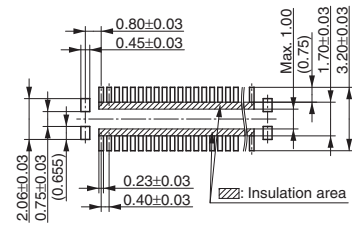


Recommended metal mask pattern
Metal mask thickness: When 120µm
(Terminal opening ratio: 60%)
(Metal-part opening ratio: 100%)

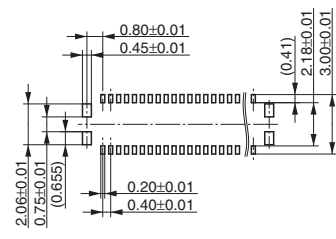


• Header (Mated height: 1.0 mm)

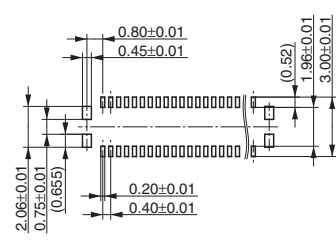
Recommended PC board pattern (TOP VIEW)



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



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



Please note that this inspection connector cannot be connected to standard models with a stacking height of 1.2 mm (AXT5**224 and AXT6**224).

Please contact our sales office for a type connectable to models with a stacking height of 1.2 mm.

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

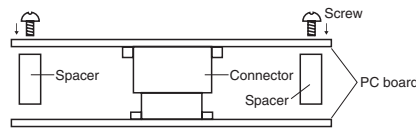
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.

(1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

- 7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.

5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

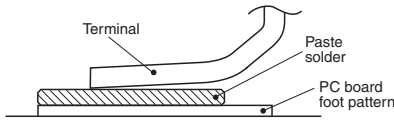
- 6) Excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

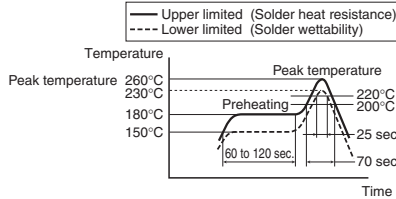


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

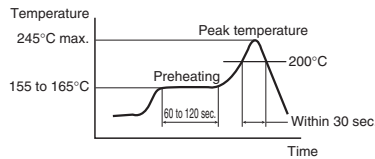
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

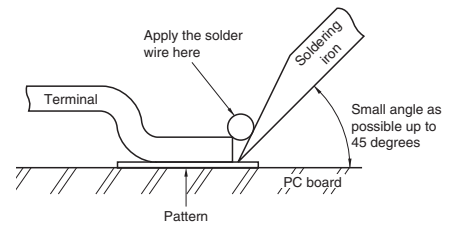
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



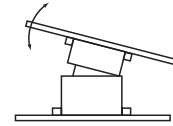
- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Notes on Using Narrow pitch Connectors

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



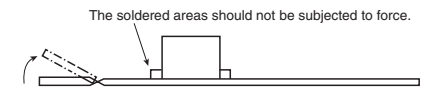
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- 3) Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

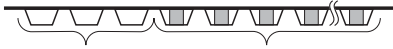
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

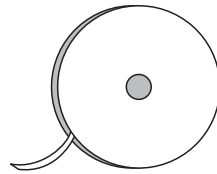
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

Required number of products for sample production (Unit 50 pcs.)



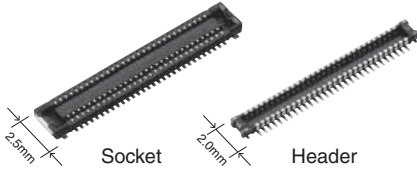
Reel
(Delivery can also be made on a reel by customer request.)

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

For board-to-FPC

Narrow pitch connectors (0.35mm pitch)

A35S Series



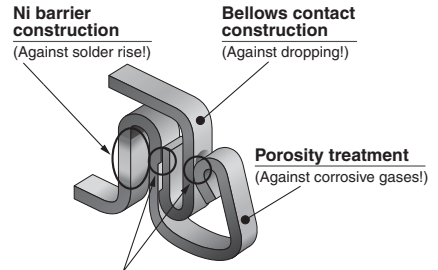
RoHS compliant

FEATURES

1. Small size (Terminal pitch: 0.35 mm, width: 2.5 mm and Mated height: 0.8 mm)

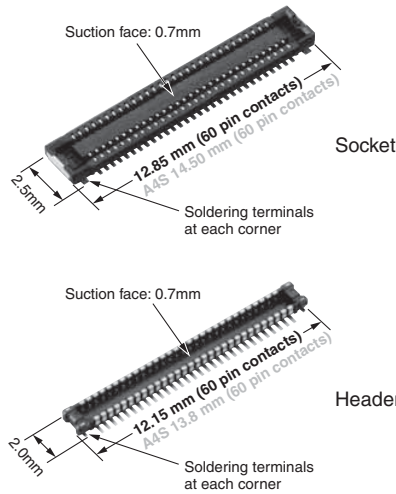
When mated, the footprint is reduced by approx. 10% from A4S series (60 pin contacts), contributing to the functionality enhancement and size reduction of end equipment.

2. “**TOUGH CONTACT**” ensures high resistance to various environments in lieu of its space-saving footprint.



V notch and Double contact constructions
(Against foreign particles and flux!)

- 3. Low-profile connector with up to 100 pin contacts.
- 4. Soldering terminals at each corner enhance mounting strength.
- 5. Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.
- 6. Gull-wing-shaped terminals to facilitate visual inspections.



APPLICATIONS

Suitable for board-to-FPC connections in mobile equipment that requires size and thickness reduction and functionality enhancement.

ORDERING INFORMATION

	AXE			1	2	
7: Narrow Pitch Connector A35S (0.35 mm pitch) Socket						
8: Narrow Pitch Connector A35S (0.35 mm pitch) Header						
Number of pins (2 digits)						
Mated height <Socket> / <Header>						
1: For mated height 0.8 mm						
Functions						
2: Without positioning bosses						
Surface treatment (Contact portion / Terminal portion)						
<Socket>						
7: Base: Ni plating, Surface: Au plating (for Ni barrier available)						
<Header>						
4: Base: Ni plating, Surface: Au plating						

PRODUCT TYPES

Mated height	Number of pins	Part number		Packing	
		Socket	Header	Inner carton (1-reel)	Outer carton
0.8mm	10	AXE710127	AXE810124	5,000 pieces	10,000 pieces
	12	AXE712127	AXE812124		
	20	AXE720127	AXE820124		
	24	AXE724127	AXE824124		
	30	AXE730127	AXE830124		
	34	AXE734127	AXE834124		
	40	AXE740127	AXE840124		
	44	AXE744127	AXE844124		
	50	AXE750127	AXE850124		
	60	AXE760127	AXE860124		
	64	AXE764127	AXE864124		
70	AXE770127	AXE870124			
100	AXE700127	AXE800124			

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. Please contact us for connectors having a number of pins other than those listed above.

SPECIFICATIONS

1. Characteristics

Item		Specifications	Conditions																		
Electrical characteristics	Rated current	0.25A/pin contact (Max. 4 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. 100mΩ	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	Composite insertion force	Max. 0.981N/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) 300°C within 5 sec. 350°C within 3 sec.	Infrared reflow soldering 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. 100mΩ	Conformed to MIL-STD-202F, method 107G <table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55^g</td> <td>30</td> </tr> <tr> <td>2</td> <td>∅</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85^g</td> <td>30</td> </tr> <tr> <td>4</td> <td>∅</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55^g</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 ^g	30	2	∅	Max. 5	3	85 ^g	30	4	∅	Max. 5		-55 ^g	
	Order	Temperature (°C)	Time (minutes)																		
	1	-55 ^g	30																		
	2	∅	Max. 5																		
3	85 ^g	30																			
4	∅	Max. 5																			
	-55 ^g																				
Humidity resistance (header and socket mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 100mΩ	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. 100mΩ	Bath temperature 35±2°C, saltwater concentration 5±1%																			
H ₂ S resistance (header and socket mated)	48 hours, contact resistance max. 100mΩ	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		60 pin contact type: Socket: 0.03 g Header: 0.02 g																			

2. Material and surface treatment

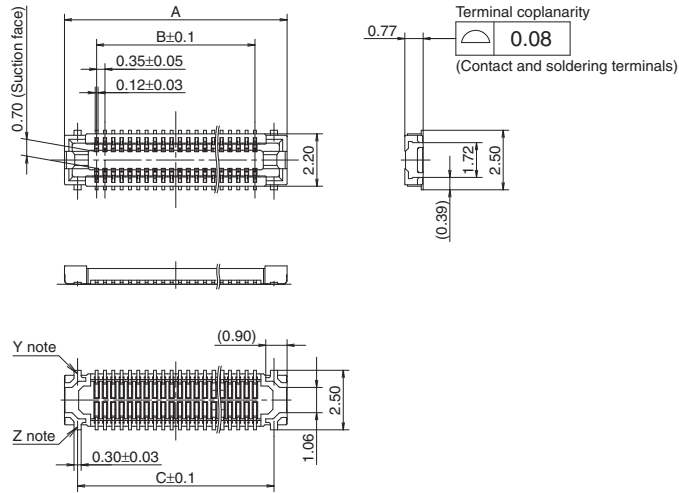
Part name	Material	Surface treatment
Molded portion	LCP resin (UL94V-0)	—
Contact and Post	Copper alloy	Contact portion: Base: Ni plating, Surface: Au plating Terminal portion: Base: Ni plating, Surface: Au plating (except the terminal tips) The socket terminals close to the portion to be soldered have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

AXE7, 8

DIMENSIONS (Unit: mm) Socket (Mated height: 0.8 mm)

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

CAD Data



General tolerance: ±0.2

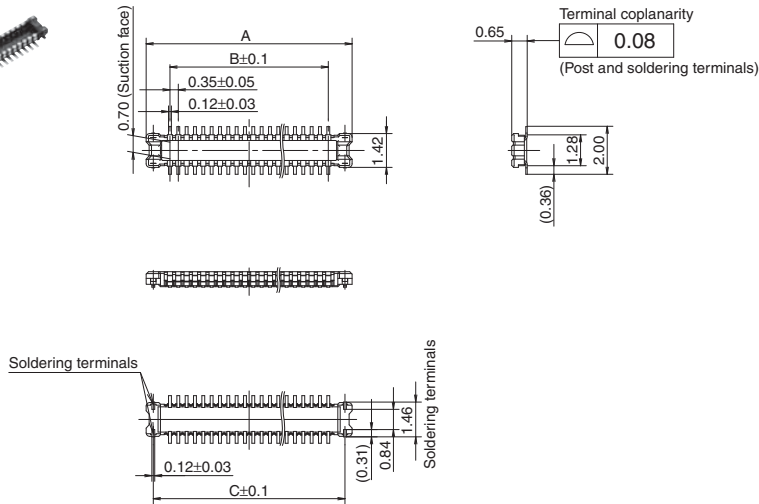
Dimension table (mm)

Number of pins/ dimension	A	B	C
10	4.10	1.40	3.00
12	4.45	1.75	3.35
20	5.85	3.15	4.75
24	6.55	3.85	5.45
30	7.60	4.90	6.50
34	8.30	5.60	7.20
40	9.35	6.65	8.25
44	10.05	7.35	8.95
50	11.10	8.40	10.00
60	12.85	10.15	11.75
64	13.55	10.85	12.45
70	14.60	11.90	13.50
100	19.85	17.15	18.75

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

Header (Mated height: 0.8 mm)

CAD Data

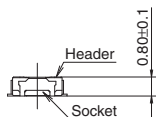


General tolerance: ±0.2

Dimension table (mm)

Number of pins/ dimension	A	B	C
10	3.40	1.40	2.80
12	3.75	1.75	3.15
20	5.15	3.15	4.55
24	5.85	3.85	5.25
30	6.90	4.90	6.30
34	7.60	5.60	7.00
40	8.65	6.65	8.05
44	9.35	7.35	8.75
50	10.40	8.40	9.80
60	12.15	10.15	11.55
64	12.85	10.85	12.25
70	13.90	11.90	13.30
100	19.15	17.15	18.55

• Socket and Header are mated



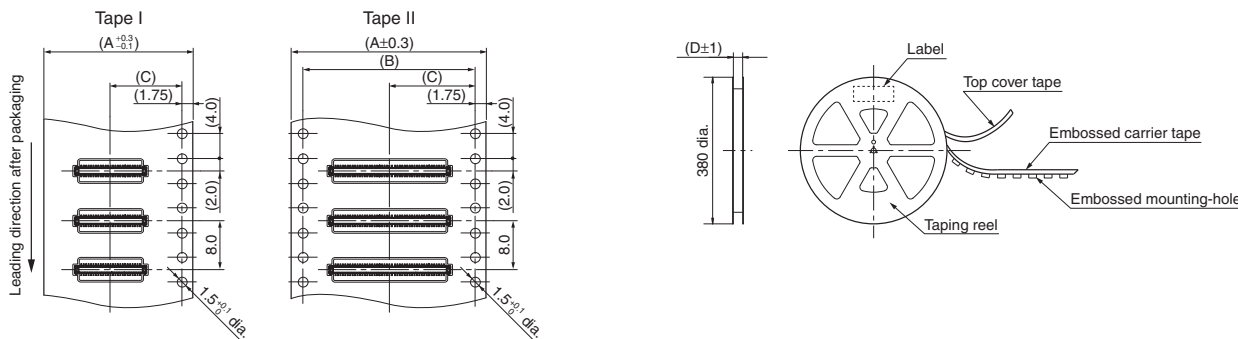
EMBOSSED TAPE DIMENSIONS (Unit: mm)

• Specifications for taping

(In accordance with JIS C 0806-3:1999. However, not applied to the mounting-hole pitch of some connectors.)

• Specifications for the plastic reel

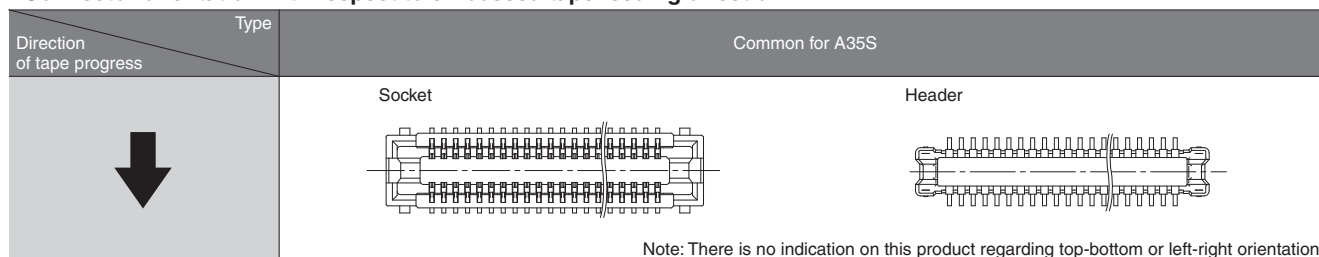
(In accordance with EIAJ ET-7200B.)



• Dimension table (Unit: mm)

Type/Mated height	Number of pins	Type of taping	A	B	C	D	Quantity per reel
Common for sockets and headers 0.8mm	10 to 24	Tape I	16.00	—	7.50	17.40	5,000
	30 to 70	Tape I	24.00	—	11.50	25.40	5,000
	100	Tape II	32.00	28.40	14.20	33.40	5,000

• Connector orientation with respect to embossed tape feeding direction



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

NOTES

■ Design of PC board patterns

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

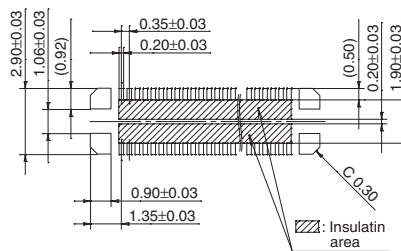
■ Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

In order to reduce solder and flux rise, 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.

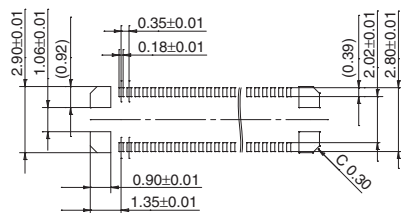
• Socket (Mated height: 0.8 mm)

Recommended PC board pattern (TOP VIEW)



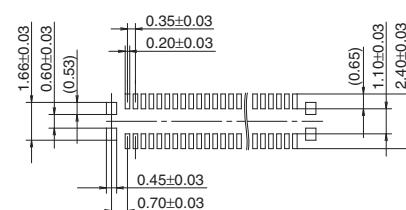
Recommended metal mask pattern

Metal mask thickness: When $120 \mu\text{m}$
(Terminal opening ratio: 70%)
(Metal-part opening ratio: 100%)



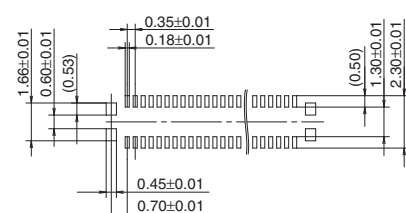
• Header (Mated height: 0.8 mm)

Recommended PC board pattern (TOP VIEW)



Recommended metal mask pattern

Metal mask thickness: When $120 \mu\text{m}$
(Terminal opening ratio: 70%)
(Metal-part opening ratio: 100%)



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

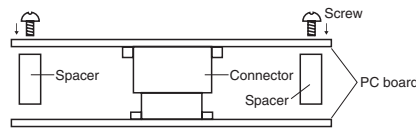
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.

(1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

- 7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.

5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

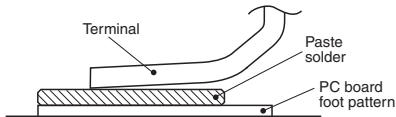
- 6) Excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

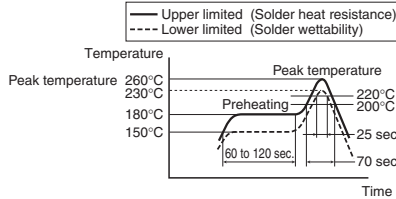


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

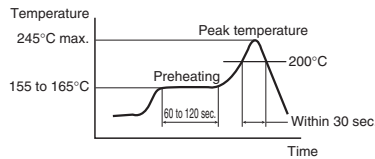
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

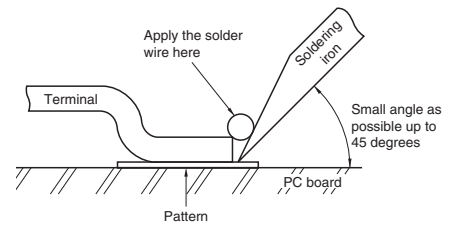
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



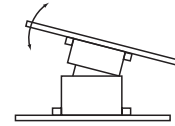
- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Notes on Using Narrow pitch Connectors

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



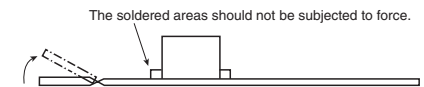
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- 3) Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

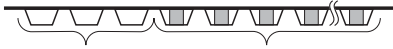
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

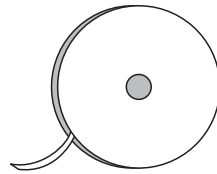
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

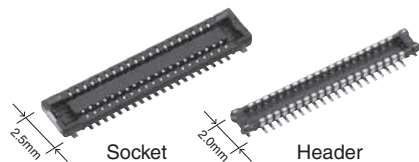
Required number of products for sample production (Unit 50 pcs.)



Reel
(Delivery can also be made on a reel by customer request.)

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

For board-to-FPC	A4S Series
Narrow pitch connectors (0.4mm pitch)	



RoHS compliant

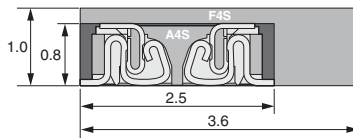
FEATURES

1. 2.5 mm wide slim two-piece type connector

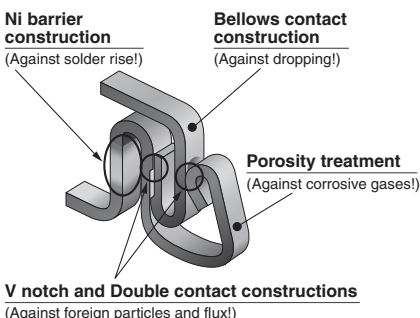
Compact and slim structure contributes overall miniaturization of product design.

<Compared to F4S series (40 pin contacts, when mated)>

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



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



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

AXE5, 6

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		
	40	AXE540124	AXE640124		
	44	AXE544124	AXE644124		
	50	AXE550124	AXE650124		
	54	AXE554124	AXE654124		
60	AXE560124	AXE660124			
64	AXE564124	AXE664124			
70	AXE570124	AXE670124			
80	AXE580124	AXE680124			
1.0mm	10	AXE510124	AXE610224	5,000 pieces	10,000 pieces
	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. 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	Conformed to MIL-STD-202F, method 107G																
			<table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55$\frac{0}{3}$</td> <td>30</td> </tr> <tr> <td>2</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85$\frac{0}{3}$</td> <td>30</td> </tr> <tr> <td>4</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55$\frac{0}{3}$</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $\frac{0}{3}$	30	2	}	Max. 5	3	85 $\frac{0}{3}$	30	4	}	Max. 5	
	Order	Temperature (°C)	Time (minutes)																
	1	-55 $\frac{0}{3}$	30																
2	}	Max. 5																	
3	85 $\frac{0}{3}$	30																	
4	}	Max. 5																	
	-55 $\frac{0}{3}$																		
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 ₂ S 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)

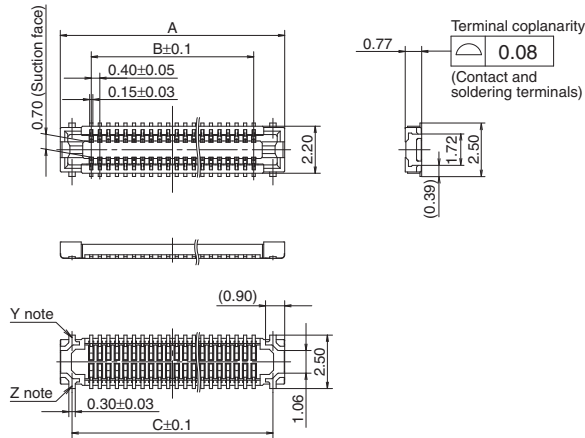
AXE5, 6

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

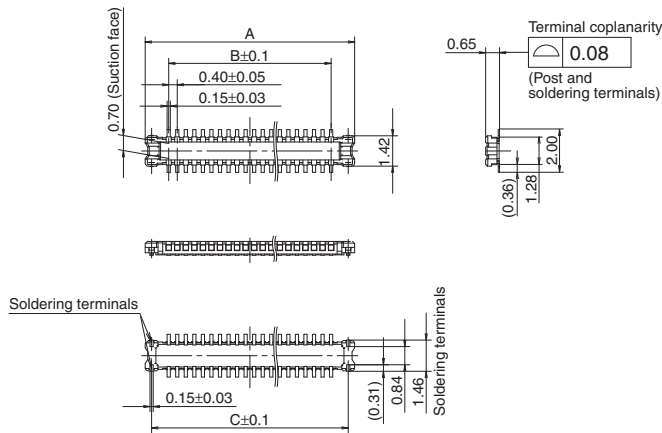
Note: Since the soldering terminals has a single-piece construction, sections Y and Z are electrically connected.

Dimension table (mm)

Number of pins/ dimension	A	B	C
10	4.50	1.60	3.40
12	4.90	2.00	3.80
14	5.30	2.40	4.20
16	5.70	2.80	4.60
18	6.10	3.20	5.00
20	6.50	3.60	5.40
22	6.90	4.00	5.80
24	7.30	4.40	6.20
26	7.70	4.80	6.60
28	8.10	5.20	7.00
30	8.50	5.60	7.40
32	8.90	6.00	7.80
34	9.30	6.40	8.20
36	9.70	6.80	8.60
40	10.50	7.60	9.40
44	11.30	8.40	10.20
50	12.50	9.60	11.40
54	13.30	10.40	12.20
60	14.50	11.60	13.40
64	15.30	12.40	14.20
70	16.50	13.60	15.40
80	18.50	15.60	17.40

Header (Mated height: 0.8 mm)

CAD Data

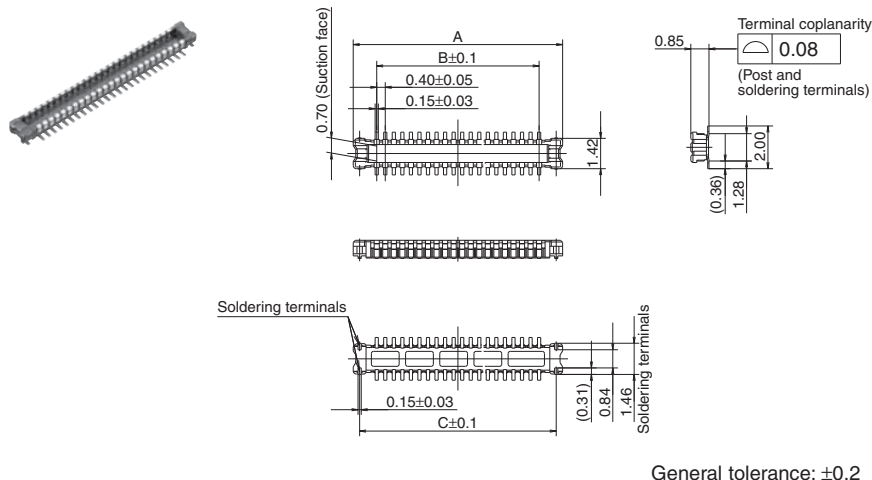


General tolerance: ±0.2

Dimension table (mm)

Number of pins/ dimension	A	B	C
10	3.80	1.60	3.20
12	4.20	2.00	3.60
14	4.60	2.40	4.00
16	5.00	2.80	4.40
18	5.40	3.20	4.80
20	5.80	3.60	5.20
22	6.20	4.00	5.60
24	6.60	4.40	6.00
26	7.00	4.80	6.40
28	7.40	5.20	6.80
30	7.80	5.60	7.20
32	8.20	6.00	7.60
34	8.60	6.40	8.00
36	9.00	6.80	8.40
40	9.80	7.60	9.20
44	10.60	8.40	10.00
50	11.80	9.60	11.20
54	12.60	10.40	12.00
60	13.80	11.60	13.20
64	14.60	12.40	14.00
70	15.80	13.60	15.20
80	17.80	15.60	17.20

■ Header (Mated height: 1.0 mm)

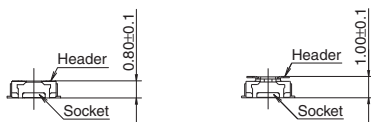


Dimension table (mm)

Number of pins/ dimension	A	B	C
10	3.80	1.60	3.20
12	4.20	2.00	3.60
14	4.60	2.40	4.00
20	5.80	3.60	5.20
24	6.60	4.40	6.00
26	7.00	4.80	6.40
30	7.80	5.60	7.20
32	8.20	6.00	7.60
40	9.80	7.60	9.20
44	10.60	8.40	10.00
50	11.80	9.60	11.20
54	12.60	10.40	12.00
60	13.80	11.60	13.20
70	15.80	13.60	15.20
80	17.80	15.60	17.20

General tolerance: ±0.2

■ Socket and Header are mated



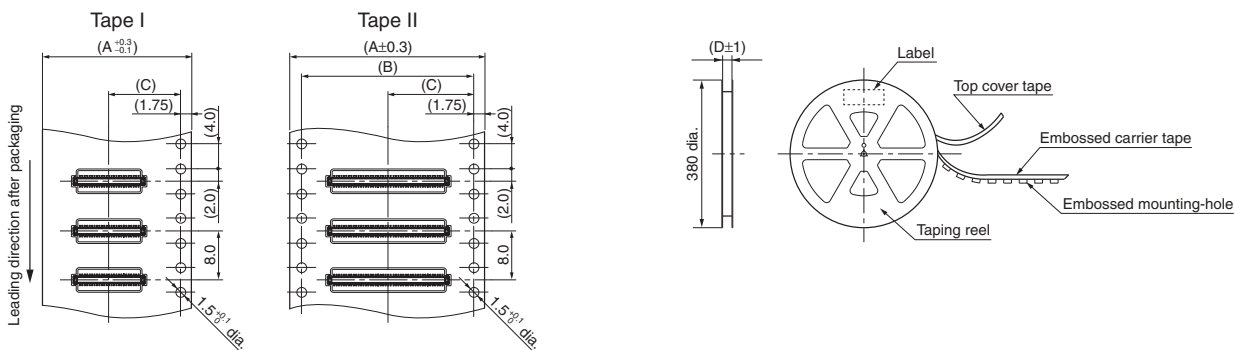
EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common for respective contact types, sockets and headers)

■ Specifications for taping

(In accordance with JIS C 0806-3:1999. However, not applied to the mounting-hole pitch of some connectors.)

■ Specifications for the plastic reel

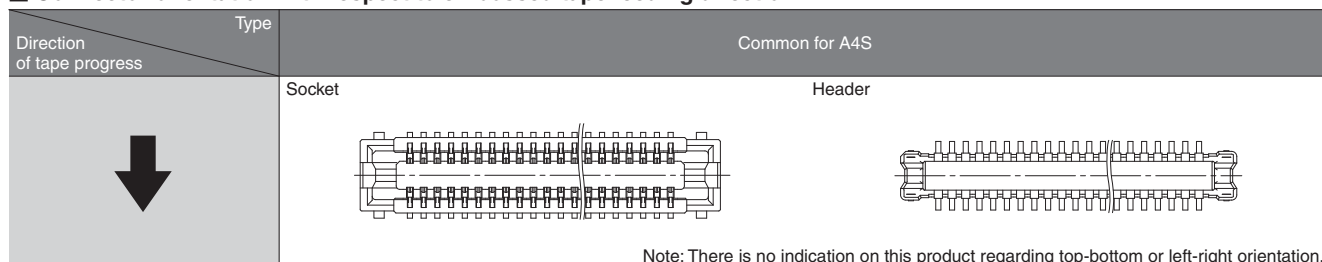
(In accordance with EIAJ ET-7200B.)



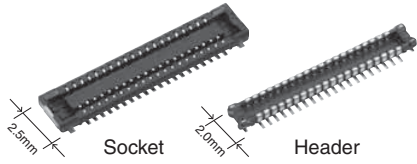
■ Dimension table (Unit: mm)

Type/Mated height	Number of pins	Type of taping	A	B	C	D	Quantity per reel
Common for sockets and headers 0.8 mm/1.0 mm	Max. 24	Tape I	16.00	—	7.50	17.40	5,000
	26 to 70	Tape I	24.00	—	11.50	25.40	5,000
	80	Tape II	32.00	28.40	14.20	33.40	5,000

■ Connector orientation with respect to embossed tape feeding direction



For board-to-FPC	A4S Series
Connectors for inspection usage (0.4mm pitch)	



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	40	44	50	54	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	Header	Without positioning bosses
	AXE5E**26		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

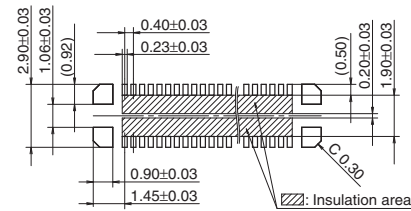
Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm.

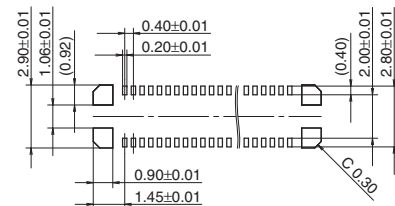
In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used. The figures to the right are recommended metal mask patterns. Please use them as a reference.

• Socket (Mated height: 0.8mm/1.0mm)

Recommended PC board pattern (TOP VIEW)

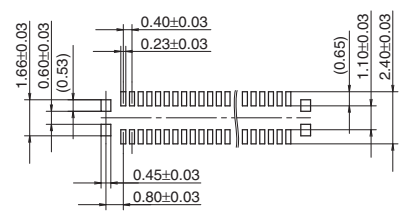


Recommended metal mask pattern
 Metal mask thickness: When 120μm
 (Terminal opening ratio: 70%)
 (Metal-part opening ratio: 100%)

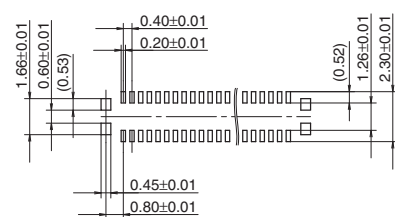


• Header (Mated height: 0.8mm/1.0mm)

Recommended PC board pattern (TOP VIEW)



Recommended metal mask 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.

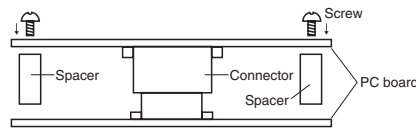
Notes on Using Narrow pitch Connectors

Regarding the design of devices and PC board patterns

- 1) When connecting several connectors together by stacking, make sure to maintain proper accuracy in the design of structure and mounting equipment so that the connectors are not subjected to twisting and torsional forces.
- 2) With mounting equipment, there may be up to a ± 0.2 to 0.3 -mm error in positioning. Be sure to design PC boards and patterns while taking into consideration the performance and abilities of the required equipment.
- 3) Some connectors have tabs embossed on the body to aid in positioning. When using these connectors, make sure that the PC board is designed with positioning holes to match these tabs.
- 4) To ensure the required mechanical strength when soldering the connector terminals, make sure the PC board meets recommended PC board pattern design dimensions given.

- 5) For all connectors of the narrow pitch series, to prevent the PC board from coming off during vibrations or impacts, and to prevent loads from falling directly on the soldered portions, be sure to design some means to fix the PC board in place.

Example) Secure in place with screws



When connecting PC boards, take appropriate measures to prevent the connector from coming off.

- 6) Notes when using a FPC.
 - (1) 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. Please make the reinforcement board dimensions bigger than the outer limits of the recommended PC board pattern (should be approximately 1 mm greater than the outer limit).

Material should be glass epoxy or polyimide, and the thickness should be between 0.2 and 0.3 mm.

(2) Collisions, impacts, or turning of FPC boards, may apply forces on the connector and cause it to come loose. Therefore, make to design retaining plates or screws that will fix the connector in place.

7) The narrow pitch connector series is designed to be compact and thin.

Although ease of handling has been taken into account, take care when mating the connectors, as displacement or angled mating could damage or deform the connector.

Regarding the selection of the connector placement machine and the mounting procedures

- 1) Select the placement machine taking into consideration the connector height, required positioning accuracy, and packaging conditions.
- 2) Be aware that if the catching force of the placement machine is too great, it may deform the shape of the connector body or connector terminals.
- 3) Be aware that during mounting, external forces may be applied to the connector contact surfaces and terminals and cause deformations.

- 4) Depending on the size of the connector being used, self alignment may not be possible. In such cases, be sure to carefully position the terminal with the PC board pattern.
- 5) The positioning bosses give an approximate alignment for positioning on the PC board. For accurate positioning of the connector when mounting it to the PC board, we recommend using an automatic positioning machine.

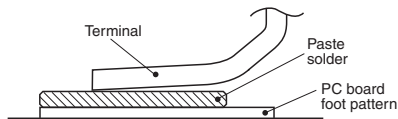
6) Excessive moulder chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

Notes on Using Narrow pitch Connectors

Regarding soldering

1. Reflow soldering

- 1) Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 2) As for cream solder printing, screen printing is recommended.
- 3) 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.

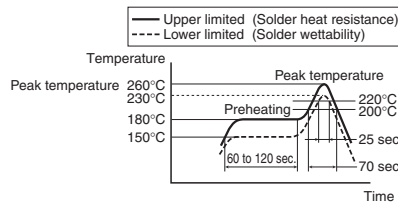


- 4) Consult us when using a screen-printing thickness other than that recommended.
- 5) When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board. (Double reflow soldering on the same side is possible.)
- 6) N₂ reflow, conducting reflow soldering in a nitrogen atmosphere, increases the solder flow too greatly, enabling wicking to occur. Make sure that the solder feed rate and temperature profile are appropriate.

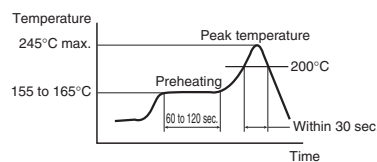
Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact us before using a temperature profile other than that described below (e.g. lead-free solder).

- Narrow pitch connectors (except P8 type)



- Narrow pitch connector (P8)



For products other than the ones above, please refer to the latest product specifications.

- 7) The temperatures are measured at the surface of the PC board near the connector terminals. (The setting for the sensor will differ depending on the sensor used, so be sure to carefully read the instructions that comes with it.)
- 8) The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector beforehand and then begin mounting.
- 9) Consult us when using a screen-printing thickness other than that recommended.
- 10) Some solder and flux types may cause serious solder or flux creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.

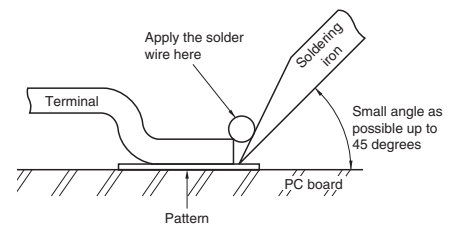
2. Hand soldering

- 1) Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

Product name	Soldering iron temperature
SMD type connectors	300°C within 5 sec. 350°C within 3 sec.

- 2) Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- 3) Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



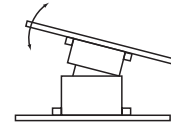
- 4) Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
 - 5) Thoroughly clean the soldering iron.
 - 6) Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
 - 7) For soldering of prototype devices during product development, you can perform soldering at the necessary locations by heating with a hot-air gun by applying cream solder to the foot pattern beforehand. However, at this time, make sure that the air pressure does not move connectors by carefully holding them down with tweezers or other similar tool. Also, be careful not to go too close to the connectors and melt any of the molded components.
 - 8) 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.
- ### 3. Solder reworking
- 1) Finish reworking in one operation.
 - 2) For reworking of the solder bridge, use a soldering iron with a flat tip. To prevent flux from climbing up to the contact surfaces, do not add more flux.
 - 3) Keep the soldering iron tip temperature below the temperature given in Table A.

Notes on Using Narrow pitch Connectors

Handling Single Components

- 1) Make sure not to drop or allow parts to fall from work bench
- 2) Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.
- 3) Repeated bending of the terminals may cause terminals to break.
- 4) 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.
- 5) Excessive prying-force applied to one end may cause product breakage and separation of the solder joints at the terminal.

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.



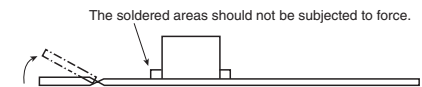
Cleaning flux from PC board

- 1) To increase the cleanliness of the cleaning fluid and cleaning operations, prepare equipment for cleaning process beginning with boil cleaning, ultrasonic cleaning, and then vapor cleaning.
- 2) Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- 3) Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend aqua pura electronic parts cleaners. Please consult us if you wish to use other types of cleaning fluids.
- 4) Please note that the surfaces of molded parts may whiten when cleaned with alcohol.

Handling the PC board

• Handling the PC board after mounting the connector

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



Storage of connectors

- 1) To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity. When storing the connectors for more than six months, be sure to consider storage area where the humidity is properly controlled.
- 2) Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced.
- 3) Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.
- 3) When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.

- 4) Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

Other Notes

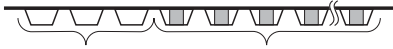
- 1) These products are made for the design of compact and lightweight devices and therefore the thickness of the molded components has been made very thin. Therefore, be careful during insertion and removal operations for excessive forces applied may damage the products.
- 2) Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- 3) Before soldering, try not to insert or remove the connector more than absolutely necessary.
- 4) 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.
- 5) There may be variations in the colors of products from different production lots. This is normal.
- 6) The connectors are not meant to be used for switching.
- 7) Be sure not to allow external pressure to act on connectors when assembling PCBs or moving in block assemblies.

Notes on Using Narrow pitch Connectors

Regarding sample orders to confirm proper mounting

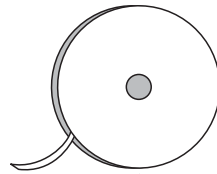
When ordering samples to confirm proper mounting with the placement machine, connectors are delivered in 50-piece units in the condition given right. Consult a sale representative for ordering sample units.

Condition when delivered from manufacturing



Embossed tape amount required for the mounting

Required number of products for sample production (Unit 50 pcs.)



Reel
(Delivery can also be made on a reel by customer request.)

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

For FPC/FFC*

FPC connectors (0.5mm pitch) Back lock

Y5B/Y5BW Series

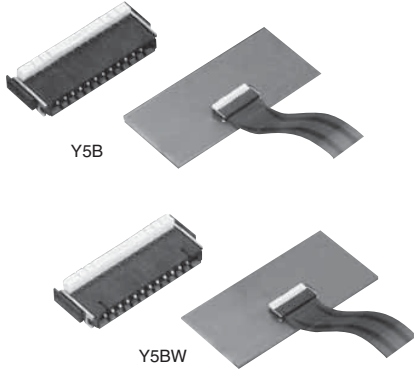
FEATURES

- 1. Low profile, space saving back lock type with improved lever operability
- 2. Mechanical design freedom achieved by top and bottom double contacts

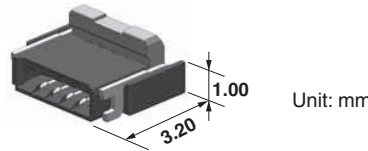
- 3. Wide selection, including a type with a small number of pins

Low profile and space saving design of 1.0 mm high and 3.20 mm deep (3.70 mm with lever)

Y5B and Y5BW can have a minimum of four and two contacts respectively, maximum reduction in design packaging.



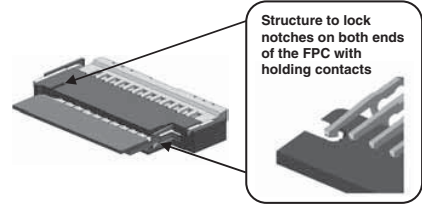
RoHS compliant



4 pin contacts (Y5B: minimum)

- 4. Wiring patterns can be placed underneath the connector.
- 5. Man-hours for assembly can be reduced by delivering the connectors with their levers opened.
- 6. Y5BW features advanced functionality, including a structure to temporarily hold the FPC and a higher holding force.

The FPC holding contacts located on both ends of the connector facilitate positioning of FPC and further enhance the FPC holding force.



Applicable FPC shape



With notches

- (1) The inserted FPC can be temporarily held until the lever is closed.
- (2) When the lever is closed, the holding contacts lock the FPC by its notches, enhancing the FPC holding force.

* (Y5BW is compatible with FPC only.)

APPLICATIONS

A wide range of digital equipment, including mobile phones, smartphones, PCs, digital still camera, and digital video camera. Ideal for touch panels and LCD backlights, which require connectors with a small number of pins.

ORDERING INFORMATION

AYF 5 3 [] [] [] 5

53: FPC Connector 0.5 mm pitch (Back lock)

Number of pins (2 digits)

Function

3: Top and bottom double contacts (Y5B)

6: Top and bottom double contacts, lock holding type (Y5BW)

Surface treatment (Contact portion / Terminal portion)

5: Au plating/Au plating (Ni barrier)

PRODUCT TYPES

Height	Y5B		Y5BW		Packing	
	Number of pins	Part number	Number of pins	Part number	Inner carton (1-reel)	Outer carton
1.0 mm	4	AYF530435	2	AYF530265	5,000 pieces	10,000 pieces
	5	AYF530535	3	AYF530365		
	6	AYF530635	4	AYF530465		
	8	AYF530835	6	AYF530665		
	10	AYF531035	8	AYF530865		
	12	AYF531235	10	AYF531065		
	14	AYF531435	12	AYF531265		
	16	AYF531635	14	AYF531465		
	24	AYF532435	22	AYF532265		
	28	AYF532835	26	AYF532665		
	30	AYF533035	28	AYF532865		
	32	AYF533235	30	AYF533065		
	34	AYF533435	32	AYF533265		
	40	AYF534035	38	AYF533865		
	42	AYF534235	40	AYF534065		
50	AYF535035	48	AYF534865			

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. Please contact our sales office for connectors having a number of pins other than those listed above.

SPECIFICATIONS

1. Characteristics

Item		Specifications	Conditions																		
Electrical characteristics	Rated current	0.5A/pin contact (Except for holding contact)																			
	Rated voltage	50V AC/DC																			
	Insulation resistance	Min. 1,000M Ω (initial)	Using 250V DC megger (applied for 1 min.)																		
	Breakdown voltage	250V 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.																		
	Contact resistance	Max. 100m Ω	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	FPC holding force	Y5B: Min. 0.2N/pin contacts \times pin contacts (initial) Y5BW: Min. 0.2N/pin contacts \times pin contacts + 2.0N (initial)	Measurement of the maximum force applied until the inserted compatible FPC is pulled out in the insertion axis direction while the connector lever is closed																		
	Ambient temperature	-55°C to +85°C																			
Environmental characteristics	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 (with FPC mated)	5 cycles, insulation resistance min. 100M Ω , contact resistance max. 100m Ω	Conformed to MIL-STD-202F, method 107G																		
			<table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55$\frac{3}{3}$</td> <td>30</td> </tr> <tr> <td>2</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85$\frac{3}{3}$</td> <td>30</td> </tr> <tr> <td>4</td> <td>}</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55$\frac{3}{3}$</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $\frac{3}{3}$	30	2	}	Max. 5	3	85 $\frac{3}{3}$	30	4	}	Max. 5		-55 $\frac{3}{3}$	
			Order	Temperature (°C)	Time (minutes)																
			1	-55 $\frac{3}{3}$	30																
	2	}	Max. 5																		
	3	85 $\frac{3}{3}$	30																		
4	}	Max. 5																			
	-55 $\frac{3}{3}$																				
Humidity resistance (with FPC mated)	120 hours, insulation resistance min. 100M Ω , contact resistance max. 100m Ω	Bath temperature 40 \pm 2°C, humidity 90 to 95% R.H.																			
Saltwater spray resistance (with FPC mated)	24 hours, insulation resistance min. 100M Ω , contact resistance max. 100m Ω	Bath temperature 35 \pm 2°C, saltwater concentration 5 \pm 1%																			
H ₂ S resistance (with FPC mated)	48 hours, contact resistance max. 100m Ω	Bath temperature 40 \pm 2°C, gas concentration 3 \pm 1 ppm, humidity 75 to 80% R.H.																			
Soldering heat resistance	Peak temperature: 260°C or less 300°C within 5 sec. 350°C within 3 sec.	Reflow soldering																			
		Soldering iron																			
Lifetime characteristics	Insertion and removal life	20 times	Repeated insertion and removal: min. 10 sec./time																		
Unit weight		Y5B (50 pin contacts): 0.16 g																			

2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	Housing: LCP resin (UL94V-0) Lever: LCP resin (UL94V-0)	—
Contact	Copper alloy	Contact portion; Base: Ni plating, Surface: Au plating Terminal portion; Base: Ni plating, Surface: Au plating
Holding contact portion	Copper alloy	Terminal portion; Base: Ni plating, Surface: Au plating
Soldering terminals portion	Copper alloy	Base: Ni plating, Surface: Au plating

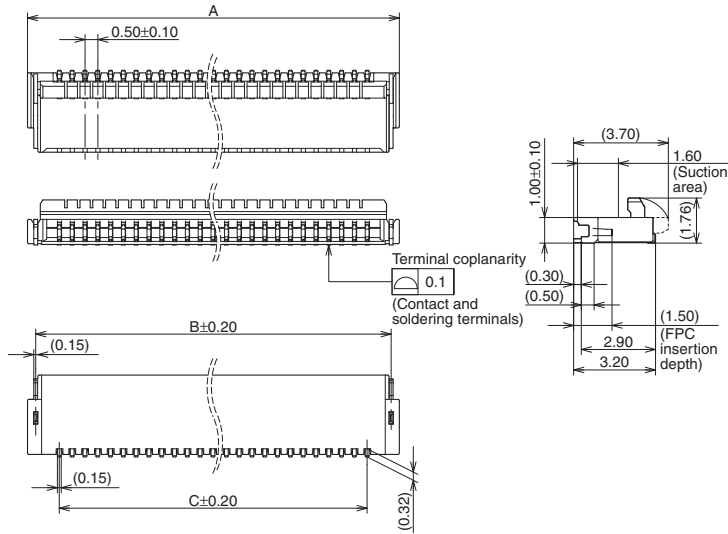
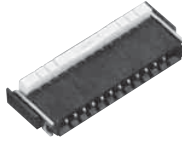
AYF53

DIMENSIONS (Unit: mm)

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

Y5B

CAD Data



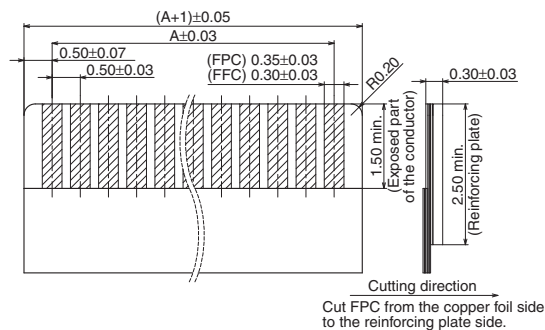
General tolerance: ± 0.3

Number of pins/ dimension	A	B	C
4	4.00	3.36	1.50
5	4.50	3.86	2.00
6	5.00	4.36	2.50
8	6.00	5.36	3.50
10	7.00	6.36	4.50
12	8.00	7.36	5.50
14	9.00	8.36	6.50
16	10.00	9.36	7.50
24	14.00	13.36	11.50
28	16.00	15.36	13.50
30	17.00	16.36	14.50
32	18.00	17.36	15.50
34	19.00	18.36	16.50
40	22.00	21.36	19.50
42	23.00	22.36	20.50
50	27.00	26.36	24.50

Y5B RECOMMENDED FPC/FFC DIMENSIONS

(Finished thickness: $t = 0.3 \pm 0.03$)

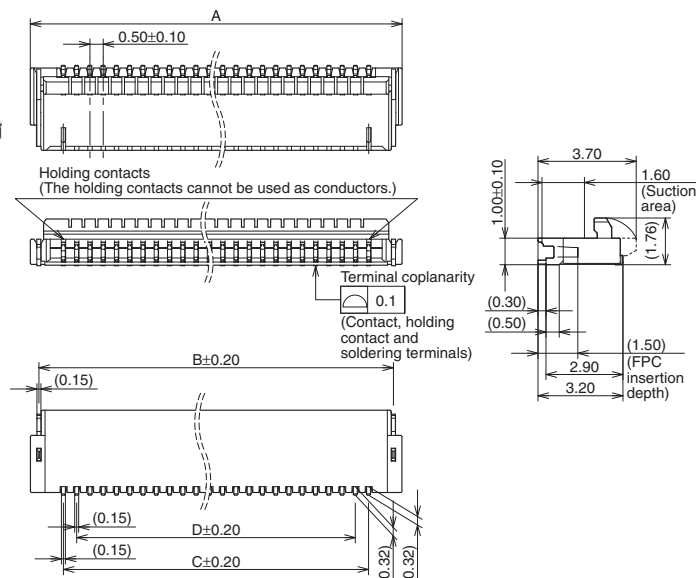
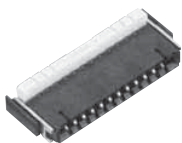
The conductive parts should be based by Ni plating and then Au plating.



Number of pins/ dimension	A
4	1.50
5	2.00
6	2.50
8	3.50
10	4.50
12	5.50
14	6.50
16	7.50
24	11.50
28	13.50
30	14.50
32	15.50
34	16.50
40	19.50
42	20.50
50	24.50

Y5BW

CAD Data



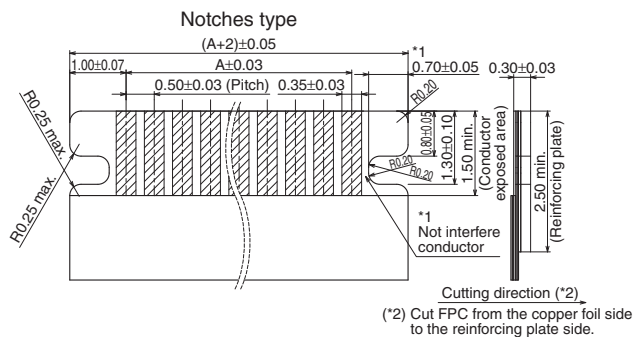
General tolerance: ± 0.3

Number of pins/ dimension	A	B	C	D
2	4.00	3.36	1.50	0.50
3	4.50	3.86	2.00	1.00
4	5.00	4.36	2.50	1.50
6	6.00	5.36	3.50	2.50
8	7.00	6.36	4.50	3.50
10	8.00	7.36	5.50	4.50
12	9.00	8.36	6.50	5.50
14	10.00	9.36	7.50	6.50
22	14.00	13.36	11.50	10.50
26	16.00	15.36	13.50	12.50
28	17.00	16.36	14.50	13.50
30	18.00	17.36	15.50	14.50
32	19.00	18.36	16.50	15.50
38	22.00	21.36	19.50	18.50
40	23.00	22.36	20.50	19.50
48	27.00	26.36	24.50	23.50

Y5BW RECOMMENDED FPC DIMENSIONS

(Finished thickness: $t = 0.3 \pm 0.03$)

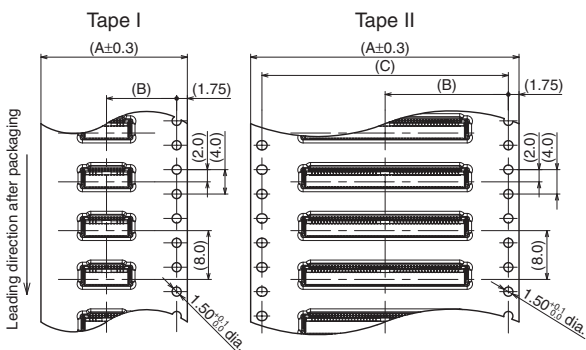
The conductive parts should be based by Ni plating and then Au plating.



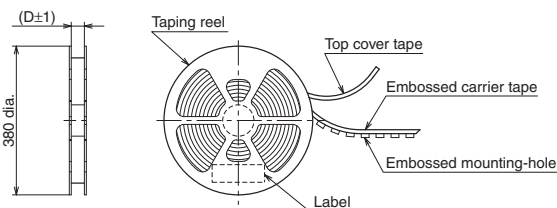
Number of pins/ dimension	A
2	0.50
3	1.00
4	1.50
6	2.50
8	3.50
10	4.50
12	5.50
14	6.50
22	10.50
26	12.50
28	13.50
30	14.50
32	15.50
38	18.50
40	19.50
48	23.50

EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common for respective contact type)

• Specifications for taping



• Specifications for the plastic reel
(In accordance with EIAJ ET-7200B.)



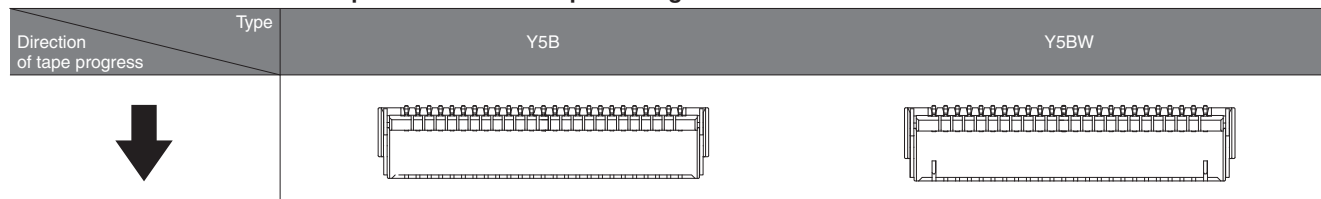
• Y5B Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	D	Quantity per reel
4 to 10	Tape I	16.00	7.50	—	17.40	5,000
12 to 30	Tape I	24.00	11.50	—	25.40	5,000
32 to 34	Tape II	32.00	14.20	28.40	33.40	5,000
40 to 50	Tape II	44.00	20.20	40.40	45.40	5,000

• Y5BW Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	D	Quantity per reel
2 to 8	Tape I	16.00	7.50	—	17.40	5,000
10 to 28	Tape I	24.00	11.50	—	25.40	5,000
30 to 32	Tape II	32.00	14.20	28.40	33.40	5,000
38 to 48	Tape II	44.00	20.20	40.40	45.40	5,000

• Connector orientation with respect to embossed tape feeding direction



NOTES

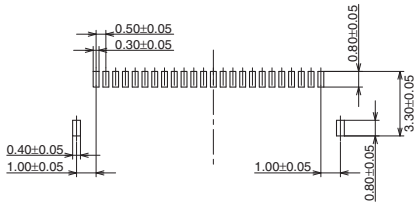
1. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.3 mm or 0.5 mm. In order to reduce solder and flux rise, 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.

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

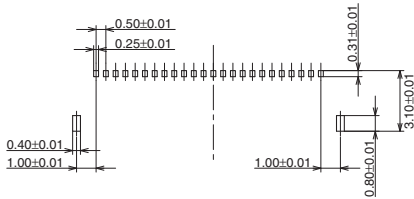
• Y5B/Y5BW

Recommended PC board pattern
(mounting layout)
(TOP VIEW)



Recommended metal mask pattern

Metal mask thickness: When $120\mu\text{m}$
(Terminal portion opening area ratio: 31.8%)
(Soldering terminal portion opening area ratio: 100%)



Notes on Using FPC Connectors

■ PC board design

Design the recommended foot pattern in order to secure the mechanical strength in the soldered areas of the terminal.

■ FPC and equipment design

- Design the FPC based with recommended dimensions to ensure the required connector performance.
- When using back lock type, secure enough space for closing the lever and for open-close operation of the lever.
- Make sure that connector positioning and FPC length are appropriate to prevent diagonal insertion of the FPC. Due to the FPC size, weight, or the reaction force of the routed FPC, FPC may be removed. Carefully check the equipment design. Take required measures to prevent the FPC from being removed due to a fall, vibration, or other impact.

(Y3BW/Y5BW)

■ The holding contacts cannot be used as conductors.

The holding contacts are located on both ends of the contacts, and the shape of the soldered portions is the same as that of the other contacts.

Use caution to ensure connect identification.

(Y3BL)

■ Soldering terminal structure

Since soldering terminals touch FPC, note that the short circuit may occur when the metal parts exposed on side of FPC.

■ Connector mounting

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

■ Soldering

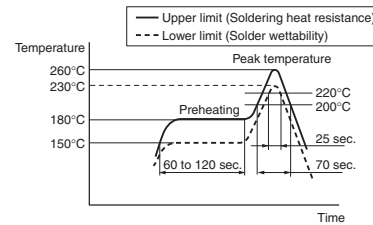
1) Manual soldering

- Due to the connector's compact size, if an excessive amount of solder is applied during manual soldering, the solder may creep up and flux wicking near the contact points, or solder interference may cause contact failure.
- 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 cleans off any flux solder 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 achieve the appropriate soldering state, make sure that the reflow temperature, PC board foot pattern, window size and thickness of metal mask are recommended condition.
- Note that excess solder on the terminals prevents complete insertion of the FPC, and causes flux climbing up.
- A screen thickness of 120 μ m is recommended during cream solder printing.
- 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.



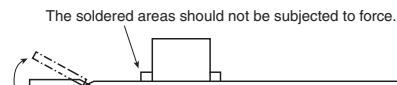
- The temperature is measured on the surface of the PC board near the connector terminals.
- Depending on reflow condition, poor contact may occur by solder and flux wicking. Please set the reflow conditions that considering the characteristics of solder and flux. Also please make consideration in setting the reflow times and O₂ concentration to prevent poor contact by solder and flux wicking.
- 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.) Do not touch the lever or apply any load to the lever until the second reflow soldering. Otherwise, contact deflection occurs and the terminals may be deformed by reflow heating.
- 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. When adding the solder for reworking, do not add an excessive solder. Otherwise, solder and flux may creep up and solder bridges may occur.
 - 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 during reflow degrade.

■ Do not open/close the lever or insert/remove an FPC until the connector is 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. In addition, do not insert an FPC into the connector before soldering the connector.

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

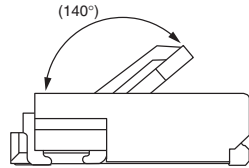


Notes on Using FPC Connectors

■ Precautions for insertion/removal of FPC

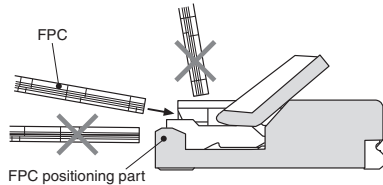
<Front-Lock>

- To open the lever, hold its center and pull it up. An uneven load applied to the lever on one side may deform and break the lever. Do not apply an excessive load to the lever in the opening direction, otherwise, the terminals may be deformed.
- Don't further apply an excessive load to the fully opened lever; otherwise, the lever may be deformed.
- Fully open the lever to insert an FPC.
- Since this product connects at the bottom, please insert the FPC so that its electrode plane is facing the board to which it will be mounted. Do not insert the FPC in the reverse direction of the contact section; otherwise, operation failures or malfunctions may be caused.



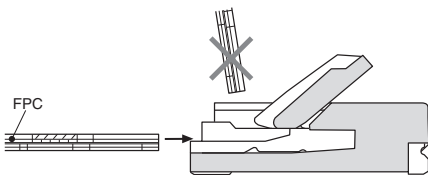
(Y3FT)

- This product has a structure to position an inserted FPC using the FPC tabs. Therefore, insert an FPC at an angle to the board. If the FPC is inserted in the direction parallel to the board, the molded positioning parts block the FPC, leading to incomplete insertion. Do not insert the FPC at an excessive angle to the board. Otherwise, it may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.



(Y3F)

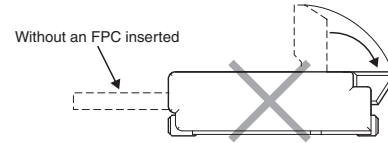
- Completely insert the FPC horizontally. Do not insert the FPC at an excessive angle to the board. Otherwise, it may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.



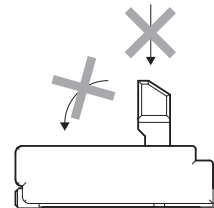
- Insert the FPC to the full depth of the connector without altering the angle.
- When closing the lever, carefully use the tip of your finger to push the entire lever or both sides of it. If pressure to the lever is applied unevenly, IE: only the edge, it may deform or break the FPC. Make sure that the lever is closed completely. Not doing so will cause a faulty connection.
- Avoid applying an excessive load to the top of the lever during or after closing the lever. Otherwise, the terminals may be deformed.
- Remove the FPC at an angle with the lever fully opened. If the lever is closed, or if the FPC is forcedly pulled into a direction parallel to the board, the molded part may break.

<Back-Lock>

- Avoid touching the lever (applying any external force) until an FPC is inserted.
- Do not open/close the lever without an FPC inserted. Failure to follow this instruction will cause the contacts to warp, leading to the contact tips to interfere with the insertion of an FPC, deforming the terminals. Failure to follow this instruction may cause the lever to be removed, terminals to be deformed, and/or the FPC insertion force to increase.



- The FPC insertion section is on the opposite side of the lever. Be careful not to make a mistake in the FPC insertion position or the lever opening/closing position. Otherwise, a contact failure or connector breakage may occur.
- Do not insert an FPC upside down. Inserting an FPC in a direction opposite to that you intended may cause an operation failure or malfunction.
- Insert an FPC with the lever opened at right angle, that is, in the factory default position.
- Completely insert the FPC horizontally. An FPC inserted at an excessive angle to the board may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.
- Insert the FPC to the full depth of the connector without altering the angle.
- Insert the FPC into the connector after checking the position of FPC insertion slot and FPC. Do not insert the FPC without positioning the FPC and connector. Otherwise, it may cause connector breakages. When it is hard to insert the FPC, do not insert the FPC on that condition. Confirm the FPC and connector positioning.
- Do not apply an excessive load to the lever in the opening direction beyond its open position; otherwise, the lever may be deformed or removed.
- Do not apply an excessive load to the lever in a direction perpendicular to the lever rotation axis or in the lever opening direction; otherwise, the terminals may be deformed, and the lever may be removed.



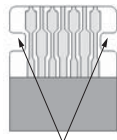
- To close the lever, turn down the lever by pressing the entire lever or both sides of the lever with fingers tips. And close the lever completely. Be careful not to apply partial load to the lever that may cause its deformation or destruction. Close the lever completely to prevent contact failure.
- If pressure to the lever is applied unevenly, it may deform or break the FPC. Make sure that the lever is closed completely. Not doing so will cause a faulty connection.
- Avoid applying an excessive load to the top of the lever during or after closing the lever. Otherwise, the terminals may be deformed.
- When opening the lever to remove the FPC, ensure that the lever will not go over the initial position; otherwise, the lever may be removed.

Notes on Using FPC Connectors

- Remove the FPC at parallel with the lever fully opened. If the lever is closed, or if the FPC is forcedly pulled, the product or FPC may break.
- If a lever is accidentally detached during the handling of a connector, do not use the connector any longer.

■ **After an FPC is inserted, carefully handle it so as not to apply excessive stress to the base of the FPC. When using FPC with a bent condition, please pay attention to precautions below; otherwise, in some conditions it may cause conduction failure, connector breakage, unlocking lever or FPC disconnection.**

- Design so that a load is not applied to connector directly by FPC bending.
- Avoid sharp FPC bending at the root of FPC insertion part.
- Design so that a load is not applied to the part of FPC bending.
- Fix the FPC if there might be a load on FPC when using the FPC with cutout, do not apply a bending load to the cutout part of FPC. Otherwise, it may cause FPC disconnection and deformation since the cutout part of FPC is subjected to bending stress.



FPC cutout part

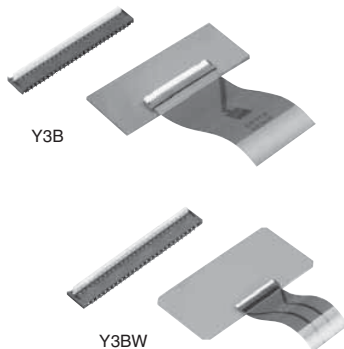
■ **Other cautions**

- 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.
- There is no problem on the product quality though the swelling and the black spot, etc. might be generated in the molding parts.

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

For FPC	<h1>Y3B/Y3BW</h1> Series
FPC connectors (0.3mm pitch) Back lock	

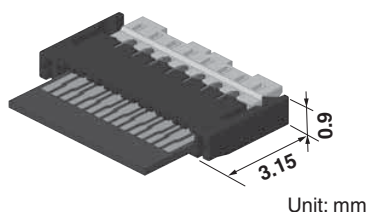
New Y3BW is added.



RoHS compliant

FEATURES

1. Slim and low profile design (Pitch: 0.3 mm)
Back lock type and the slim body with a 3.15 mm depth (with the lever).



2. Mechanical design freedom is achieved with double top and bottom contacts

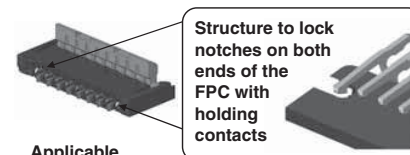
Top and bottom double contacts eliminate the need of using different connectors (with either top or bottom contacts) depending on the FPC wiring conditions.

3. Easy-to-handle back lock structure
4. Man-hours of assembly time can be reduced by delivering the connectors with their levers opened.

5. Wiring patterns can be placed underneath the connector.
6. Ni barrier with high resistance to solder creepage

7. Y3BW features advanced functionality, including a structure to temporarily hold the FPC and a higher holding force.

The FPC holding contacts located on both ends of the connector facilitate positioning of FPC and further enhance the FPC holding force.



Applicable FPC shapes

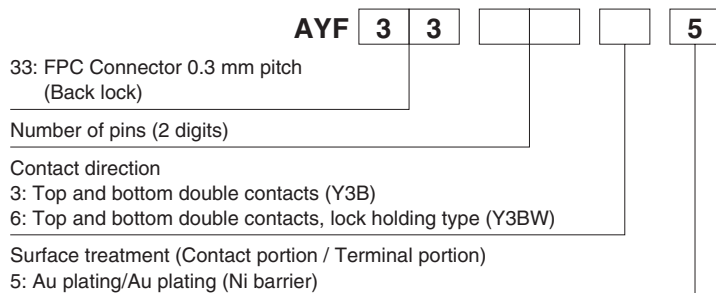


- (1) The inserted FPC can be temporarily held until the lever is closed.
- (2) When the lever is closed, the holding contacts lock the FPC by its notches, enhancing the FPC holding force.

APPLICATIONS

Mobile devices, such as cellular phones, smartphones, digital still cameras and digital video cameras.

ORDERING INFORMATION



PRODUCT TYPES

Y3B

Height	Number of pins	Part number	Packing	
			Inner carton	Outer carton
0.9 mm	7	AYF330735	5,000 pieces	10,000 pieces
	8	AYF330835		
	9	AYF330935		
	11	AYF331135		
	13	AYF331335		
	15	AYF331535		
	17	AYF331735		
	21	AYF332135		
	23	AYF332335		
	25	AYF332535		
	27	AYF332735		
	31	AYF333135		
	33	AYF333335		
	35	AYF333535		
	37	AYF333735		
	39	AYF333935		
45	AYF334535			
51	AYF335135			
61	AYF336135			

Y3BW

Height	Number of pins	Part number	Packing	
			Inner carton (1-reel)	Outer carton
0.9 mm	11	AYF331165	5,000 pieces	10,000 pieces
	25	AYF332565		
	51	AYF335165		

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. Please contact our sales office for connectors having a number of pins other than those listed above.

SPECIFICATIONS

1. Characteristics

Item		Specifications	Conditions																		
Electrical characteristics	Rated current	0.2A/pin contact																			
	Rated voltage	50V AC/DC																			
	Insulation resistance	Min. 1,000MΩ (initial)	Using 250V DC megger (applied for 1 min.)																		
	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.																		
	Contact resistance	Max. 100mΩ	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	FPC holding force	Y3B: Min. 0.13N/pin contacts × pin contacts (initial) Y3BW: Min. 0.13N/pin contacts × pin contacts + 1.00N (initial)	Measurement of the maximum force applied until the inserted compatible FPC is pulled out in the insertion axis direction while the connector lever is closed																		
Environmental characteristics	Ambient temperature	-55°C to +85°C	No freezing at low temperatures. No dew condensation.																		
	Storage temperature	-55°C to +85°C (product only) -40°C to +50°C (emboss packing)																			
	Thermal shock resistance (with FPC mated)	5 cycles, insulation resistance min. 100MΩ, contact resistance max. 80mΩ	Conformed to MIL-STD-202F, method 107G <table border="1"> <thead> <tr> <th>Order</th> <th>Temperature (°C)</th> <th>Time (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55₋₃</td> <td>30</td> </tr> <tr> <td>2</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85₊₃</td> <td>30</td> </tr> <tr> <td>4</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55₋₃</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 ₋₃	30	2	∩	Max. 5	3	85 ₊₃	30	4	∩	Max. 5		-55 ₋₃	
	Order	Temperature (°C)	Time (minutes)																		
	1	-55 ₋₃	30																		
	2	∩	Max. 5																		
	3	85 ₊₃	30																		
4	∩	Max. 5																			
	-55 ₋₃																				
Humidity resistance (with FPC mated)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 100mΩ	Bath temperature 40±2°C, humidity 90 to 95% R.H.																			
Saltwater spray resistance (with FPC mated)	24 hours, insulation resistance min. 100MΩ, contact resistance max. 100mΩ	Bath temperature 35±2°C, saltwater concentration 5±1%																			
H ₂ S resistance (with FPC mated)	48 hours, contact resistance max. 100mΩ	Bath temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.																			
Soldering heat resistance	Peak temperature: 260°C or less 300°C within 5 sec. 350°C within 3 sec.	Reflow soldering Soldering iron																			
Lifetime characteristics	Insertion and removal life	20 times	Repeated insertion and removal: min. 10 sec./time																		
Unit weight		Y3B: 61 pin contact type: 0.10 g Y3BW: 51 pin contact type: 0.09 g																			

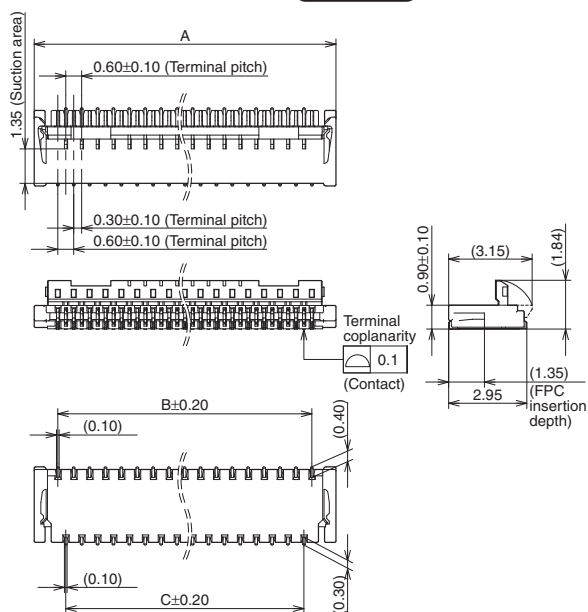
2. Material and surface treatment

Part name	Material	Surface treatment
Molded portion	Housing: LCP resin (UL94V-0) Lever: LCP resin (UL94V-0)	—
Contact	Copper alloy	Contact portion; Base: Ni plating, Surface: Au plating Terminal portion; Base: Ni plating, Surface: Au plating

DIMENSIONS (Unit: mm)
Y3B

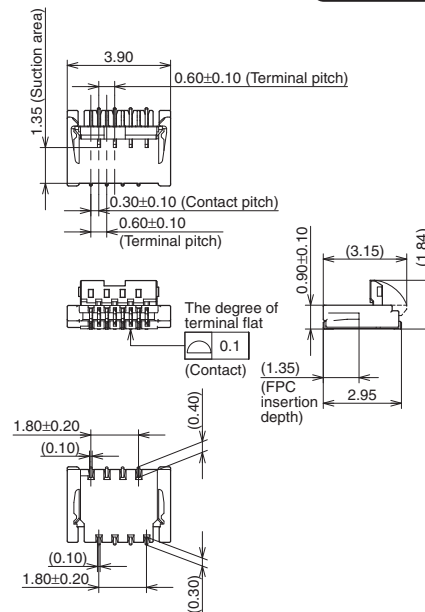
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

No. of pins: Odd number **CAD Data**



Number of pins/dimension	A	B	C
7	3.60	1.80	1.20
9	4.20	2.40	1.80
11	4.80	3.00	2.40
13	5.40	3.60	3.00
15	6.00	4.20	3.60
17	6.60	4.80	4.20
21	7.80	6.00	5.40
23	8.40	6.60	6.00
25	9.00	7.20	6.60
27	9.60	7.80	7.20
31	10.80	9.00	8.40
33	11.40	9.60	9.00
35	12.00	10.20	9.60
37	12.60	10.80	10.20
39	13.20	11.40	10.80
45	15.00	13.20	12.60
51	16.80	15.00	14.40
61	19.80	18.00	17.40

No. of pins: Even number (8 pins) **CAD Data**



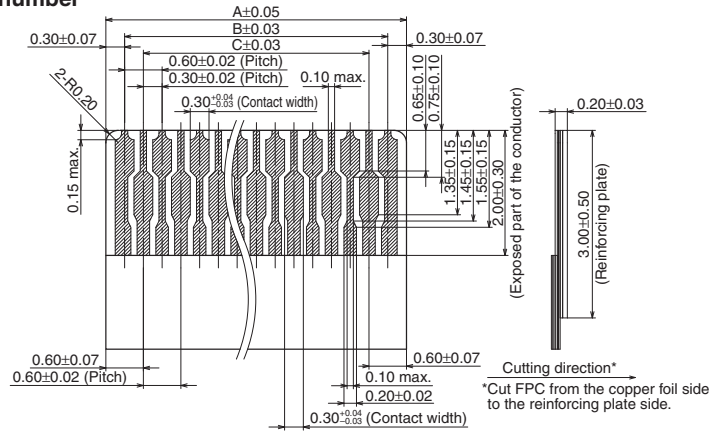
RECOMMENDED FPC DIMENSIONS

Y3B

(Finished thickness: $t = 0.2 \pm 0.03$)

The conductive parts should be based by Ni plating and then Au plating.

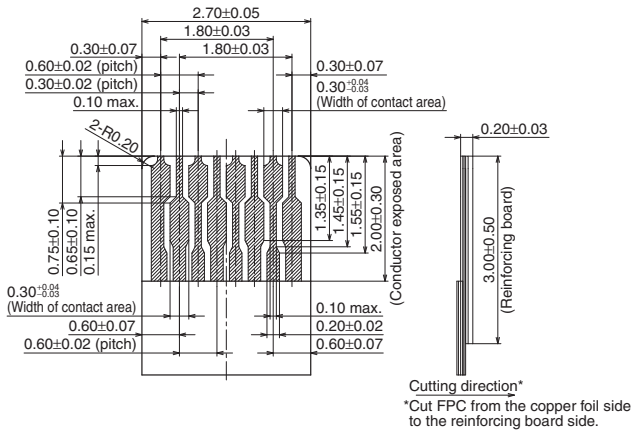
No. of pins: Odd number



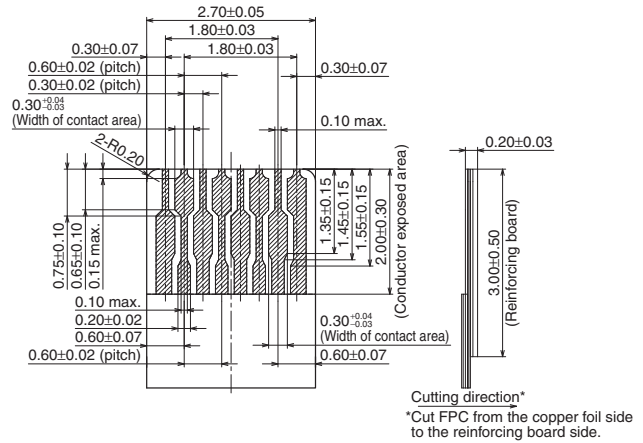
Number of pins/ dimension	A	B	C
7	2.40	1.80	1.20
9	3.00	2.40	1.80
11	3.60	3.00	2.40
13	4.20	3.60	3.00
15	4.80	4.20	3.60
17	5.40	4.80	4.20
21	6.60	6.00	5.40
23	7.20	6.60	6.00
25	7.80	7.20	6.60
27	8.40	7.80	7.20
31	9.60	9.00	8.40
33	10.20	9.60	9.00
35	10.80	10.20	9.60
37	11.40	10.80	10.20
39	12.00	11.40	10.80
45	13.80	13.20	12.60
51	15.60	15.00	14.40
61	18.60	18.00	17.40

No. of pins: Even number (8 pins)

For Top Contacts



For Bottom Contacts

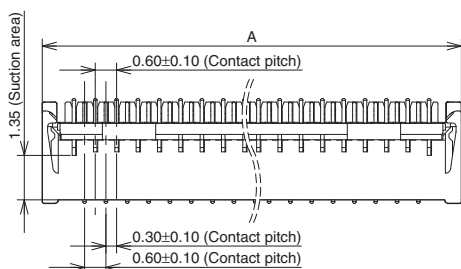


DIMENSIONS (Unit: mm)

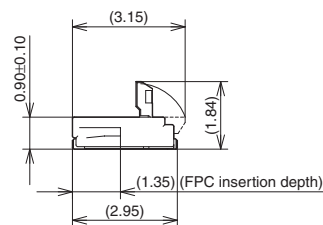
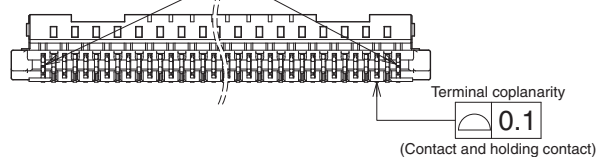
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

Y3BW

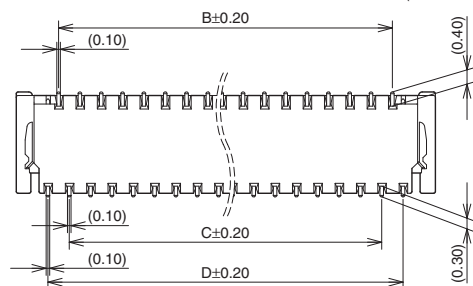
CAD Data



Holding contacts
(The holding contacts cannot be used as conductors.)



General tolerance: ±0.3



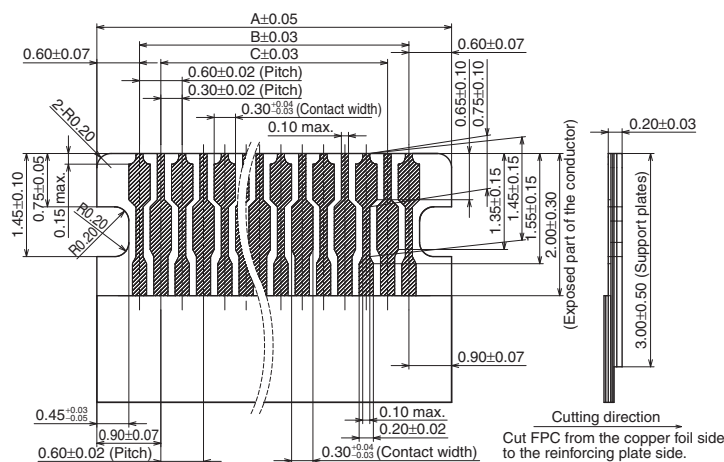
Number of pins/ dimension	A	B	C	D
11	5.40	3.00	2.40	3.60
25	9.60	7.20	6.60	7.80
51	17.40	15.00	14.40	15.60

RECOMMENDED FPC DIMENSIONS

Y3BW

(Finished thickness: $t = 0.2 \pm 0.03$)

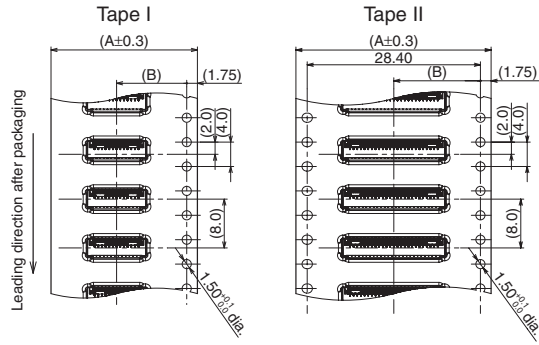
The conductive parts should be based by Ni plating and then Au plating.



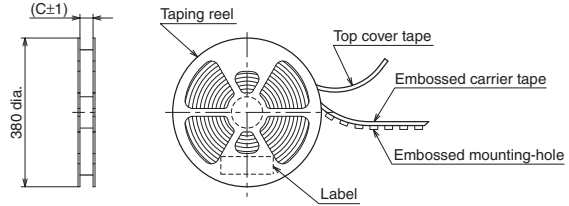
Number of pins/ dimension	A	B	C
11	4.20	3.00	2.40
25	8.40	7.20	6.60
51	16.20	15.00	14.40

EMBOSSED TAPE DIMENSIONS (Unit: mm) (Common for respective contact type)

• Specifications for taping



• Specifications for the plastic reel
(In accordance with EIAJ ET-7200B.)



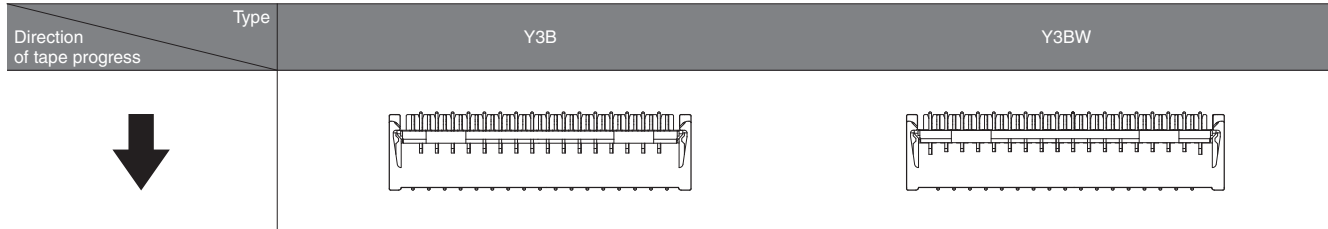
• Y3B Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	Quantity per reel
7 to 17	Tape I	16.00	7.50	17.40	5,000
21 to 45	Tape I	24.00	11.50	25.40	5,000
51, 61	Tape II	32.00	14.20	33.40	5,000

• Y3BW Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	Quantity per reel
11	Tape I	16.00	7.50	17.40	5,000
25	Tape I	24.00	11.50	25.40	5,000
51	Tape II	32.00	14.20	33.40	5,000

• Connector orientation with respect to embossed tape feeding direction



NOTES

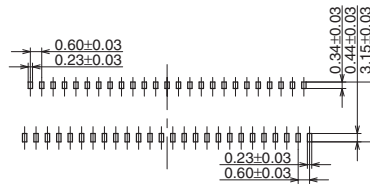
1. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.3 mm or 0.5 mm. In order to reduce solder and flux rise, 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.

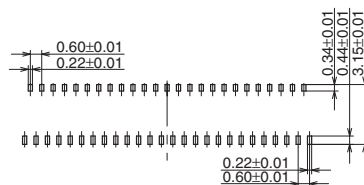
• Y3B

No. of pins: Odd number

Recommended PC board pattern (mounting layout) (TOP VIEW)

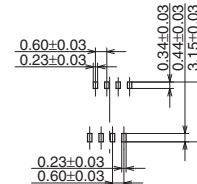


Recommended metal mask pattern
Metal mask thickness: When 120µm
(Front terminal portion opening area ratio: 96%)
(Back terminal portion opening area ratio: 96%)

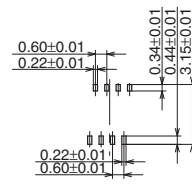


No. of pins: Even number (8 pins)

Recommended PC board pattern (mounting layout) (TOP VIEW)

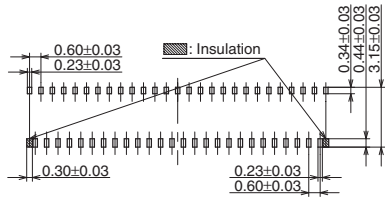


Recommended metal mask pattern
Metal mask thickness: When 120µm
(Front terminal portion opening area ratio: 96%)
(Back terminal portion opening area ratio: 96%)



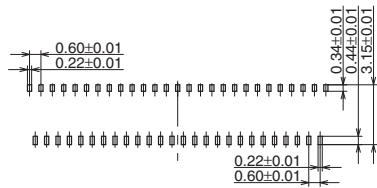
• Y3BW

Recommended PC board pattern
(mounting layout)
(TOP VIEW)



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

Recommended metal mask pattern
Metal mask thickness: When $120\mu\text{m}$
(Front terminal portion opening area ratio: 96%)
(Back terminal portion opening area ratio: 96%)



Notes on Using FPC Connectors

■ PC board design

Design the recommended foot pattern in order to secure the mechanical strength in the soldered areas of the terminal.

■ FPC and equipment design

- Design the FPC based with recommended dimensions to ensure the required connector performance.
- When using back lock type, secure enough space for closing the lever and for open-close operation of the lever.
- Make sure that connector positioning and FPC length are appropriate to prevent diagonal insertion of the FPC. Due to the FPC size, weight, or the reaction force of the routed FPC, FPC may be removed. Carefully check the equipment design. Take required measures to prevent the FPC from being removed due to a fall, vibration, or other impact.

(Y3BW/Y5BW)

■ The holding contacts cannot be used as conductors.

The holding contacts are located on both ends of the contacts, and the shape of the soldered portions is the same as that of the other contacts.

Use caution to ensure connect identification.

(Y3BL)

■ Soldering terminal structure

Since soldering terminals touch FPC, note that the short circuit may occur when the metal parts exposed on side of FPC.

■ Connector mounting

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

■ Soldering

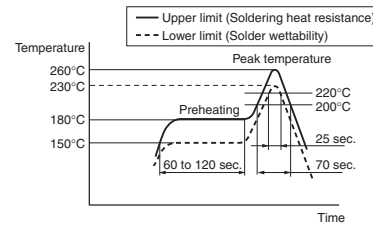
1) Manual soldering

- Due to the connector's compact size, if an excessive amount of solder is applied during manual soldering, the solder may creep up and flux wicking near the contact points, or solder interference may cause contact failure.
- 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 cleans off any flux solder 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 achieve the appropriate soldering state, make sure that the reflow temperature, PC board foot pattern, window size and thickness of metal mask are recommended condition.
- Note that excess solder on the terminals prevents complete insertion of the FPC, and causes flux climbing up.
- A screen thickness of 120 μ m is recommended during cream solder printing.
- 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.



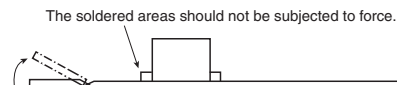
- The temperature is measured on the surface of the PC board near the connector terminals.
- Depending on reflow condition, poor contact may occur by solder and flux wicking. Please set the reflow conditions that considering the characteristics of solder and flux. Also please make consideration in setting the reflow times and O₂ concentration to prevent poor contact by solder and flux wicking.
- 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.) Do not touch the lever or apply any load to the lever until the second reflow soldering. Otherwise, contact deflection occurs and the terminals may be deformed by reflow heating.
- 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. When adding the solder for reworking, do not add an excessive solder. Otherwise, solder and flux may creep up and solder bridges may occur.
 - 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 during reflow degrade.

■ Do not open/close the lever or insert/remove an FPC until the connector is 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. In addition, do not insert an FPC into the connector before soldering the connector.

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

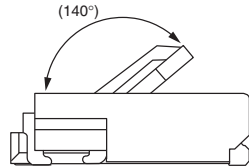


Notes on Using FPC Connectors

■ Precautions for insertion/removal of FPC

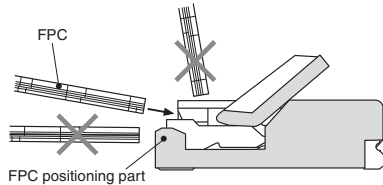
<Front-Lock>

- To open the lever, hold its center and pull it up. An uneven load applied to the lever on one side may deform and break the lever. Do not apply an excessive load to the lever in the opening direction, otherwise, the terminals may be deformed.
- Don't further apply an excessive load to the fully opened lever; otherwise, the lever may be deformed.
- Fully open the lever to insert an FPC.
- Since this product connects at the bottom, please insert the FPC so that its electrode plane is facing the board to which it will be mounted. Do not insert the FPC in the reverse direction of the contact section; otherwise, operation failures or malfunctions may be caused.



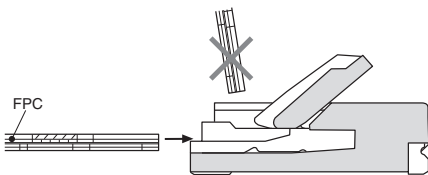
(Y3FT)

- This product has a structure to position an inserted FPC using the FPC tabs. Therefore, insert an FPC at an angle to the board. If the FPC is inserted in the direction parallel to the board, the molded positioning parts block the FPC, leading to incomplete insertion. Do not insert the FPC at an excessive angle to the board. Otherwise, it may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.



(Y3F)

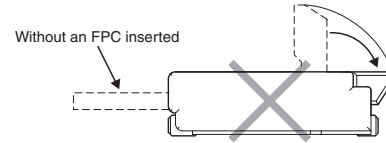
- Completely insert the FPC horizontally. Do not insert the FPC at an excessive angle to the board. Otherwise, it may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.



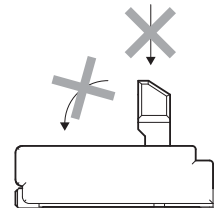
- Insert the FPC to the full depth of the connector without altering the angle.
- When closing the lever, carefully use the tip of your finger to push the entire lever or both sides of it. If pressure to the lever is applied unevenly, IE: only the edge, it may deform or break the FPC. Make sure that the lever is closed completely. Not doing so will cause a faulty connection.
- Avoid applying an excessive load to the top of the lever during or after closing the lever. Otherwise, the terminals may be deformed.
- Remove the FPC at an angle with the lever fully opened. If the lever is closed, or if the FPC is forcedly pulled into a direction parallel to the board, the molded part may break.

<Back-Lock>

- Avoid touching the lever (applying any external force) until an FPC is inserted.
- Do not open/close the lever without an FPC inserted. Failure to follow this instruction will cause the contacts to warp, leading to the contact tips to interfere with the insertion of an FPC, deforming the terminals. Failure to follow this instruction may cause the lever to be removed, terminals to be deformed, and/or the FPC insertion force to increase.



- The FPC insertion section is on the opposite side of the lever. Be careful not to make a mistake in the FPC insertion position or the lever opening/closing position. Otherwise, a contact failure or connector breakage may occur.
- Do not insert an FPC upside down. Inserting an FPC in a direction opposite to that you intended may cause an operation failure or malfunction.
- Insert an FPC with the lever opened at right angle, that is, in the factory default position.
- Completely insert the FPC horizontally. An FPC inserted at an excessive angle to the board may cause the deformation of metal parts, FPC insertion failures, and FPC circuit breakages.
- Insert the FPC to the full depth of the connector without altering the angle.
- Insert the FPC into the connector after checking the position of FPC insertion slot and FPC. Do not insert the FPC without positioning the FPC and connector. Otherwise, it may cause connector breakages. When it is hard to insert the FPC, do not insert the FPC on that condition. Confirm the FPC and connector positioning.
- Do not apply an excessive load to the lever in the opening direction beyond its open position; otherwise, the lever may be deformed or removed.
- Do not apply an excessive load to the lever in a direction perpendicular to the lever rotation axis or in the lever opening direction; otherwise, the terminals may be deformed, and the lever may be removed.



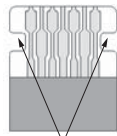
- To close the lever, turn down the lever by pressing the entire lever or both sides of the lever with fingers tips. And close the lever completely. Be careful not to apply partial load to the lever that may cause its deformation or destruction. Close the lever completely to prevent contact failure.
- If pressure to the lever is applied unevenly, it may deform or break the FPC. Make sure that the lever is closed completely. Not doing so will cause a faulty connection.
- Avoid applying an excessive load to the top of the lever during or after closing the lever. Otherwise, the terminals may be deformed.
- When opening the lever to remove the FPC, ensure that the lever will not go over the initial position; otherwise, the lever may be removed.

Notes on Using FPC Connectors

- Remove the FPC at parallel with the lever fully opened. If the lever is closed, or if the FPC is forcedly pulled, the product or FPC may break.
- If a lever is accidentally detached during the handling of a connector, do not use the connector any longer.

■ **After an FPC is inserted, carefully handle it so as not to apply excessive stress to the base of the FPC. When using FPC with a bent condition, please pay attention to precautions below; otherwise, in some conditions it may cause conduction failure, connector breakage, unlocking lever or FPC disconnection.**

- Design so that a load is not applied to connector directly by FPC bending.
- Avoid sharp FPC bending at the root of FPC insertion part.
- Design so that a load is not applied to the part of FPC bending.
- Fix the FPC if there might be a load on FPC when using the FPC with cutout, do not apply a bending load to the cutout part of FPC. Otherwise, it may cause FPC disconnection and deformation since the cutout part of FPC is subjected to bending stress.



FPC cutout part

■ **Other cautions**

- 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.
- There is no problem on the product quality though the swelling and the black spot, etc. might be generated in the molding parts.

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

