

For FPC	<h1>Y3FT Series</h1>
FPC connectors (0.3mm pitch) Front lock with FPC tabs	

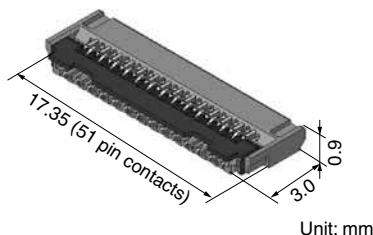
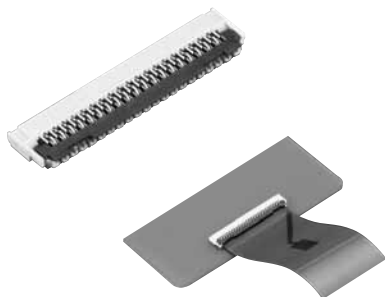
FEATURES

1. Low-profile, space-saving design (pitch: 0.3mm)

The 0.9mm height, 3.0mm depth contributes to the miniaturization and thickness reduction of target products.

* The total depth including the lever is 3.2mm.

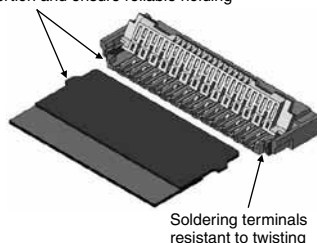
- 3. Soldering terminals for higher mounting strength
- 4. Easy-to-handle front lock structure
- 5. Wiring patterns can be placed underneath the connector.
- 6. Ni barrier with high resistance to solder creep



2. FPC with tabs ensures high reliability through secure connectivity

Thanks to a design in which the FPC tab portion attaches to the protruding resin part, depth is reduced making the product more compact. Also makes it possible to securely position the FPC during insertion and prevent diagonal insertion. (Y3F is compatible with FPC without tabs.)

FPC tabs to prevent diagonal insertion and ensure reliable holding



RoHS compliant

ORDERING INFORMATION

AYF 3 1 1 5

31: FPC Connector 0.3 mm pitch
(Front lock, ZIF type with FPC tabs)

Number of pins (2 digits)

Contact direction
1: Bottom contact

Surface treatment (Contact portion / Terminal portion)
5: Au plating/Au flash plating (Ni barrier)

PRODUCT TYPES

Height	Number of pins	Part number	Packing	
			Inner carton	Outer carton
0.9 mm	11	AYF311115	5,000 pieces	10,000 pieces
	13	AYF311315		
	15	AYF311515		
	17	AYF311715		
	23	AYF312315		
	25	AYF312515		
	27	AYF312715		
	29	AYF312915		
	31	AYF313115		
	33	AYF313315		
	35	AYF313515		
	39	AYF313915		
	41	AYF314115		
	45	AYF314515		
51	AYF315115			

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.

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. 80mΩ	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	FPC holding force	Min. 0.23N/pin contacts × pin contacts (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 inserted)	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$\frac{3}{4}$</td> <td>30</td> </tr> <tr> <td>2</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85$\frac{3}{4}$</td> <td>30</td> </tr> <tr> <td>4</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55$\frac{3}{4}$</td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $\frac{3}{4}$	30	2	∩	Max. 5	3	85 $\frac{3}{4}$	30	4	∩	Max. 5		-55 $\frac{3}{4}$	
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	-55 $\frac{3}{4}$																				
Humidity resistance (with FPC inserted)	120 hours, insulation resistance min. 100MΩ, contact resistance max. 80mΩ	Bath temperature 40±2°C, humidity 90 to 95% R.H.																			
Saltwater spray resistance (with FPC inserted)	24 hours, insulation resistance min. 100MΩ, contact resistance max. 80mΩ	Bath temperature 35±2°C, saltwater concentration 5±1%																			
H ₂ S resistance (with FPC inserted)	48 hours, contact resistance max. 80mΩ	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	30 times	Repeated insertion and removal: min. 10 sec./time																		
Unit weight		51 pin contact type: 0.09 g																			

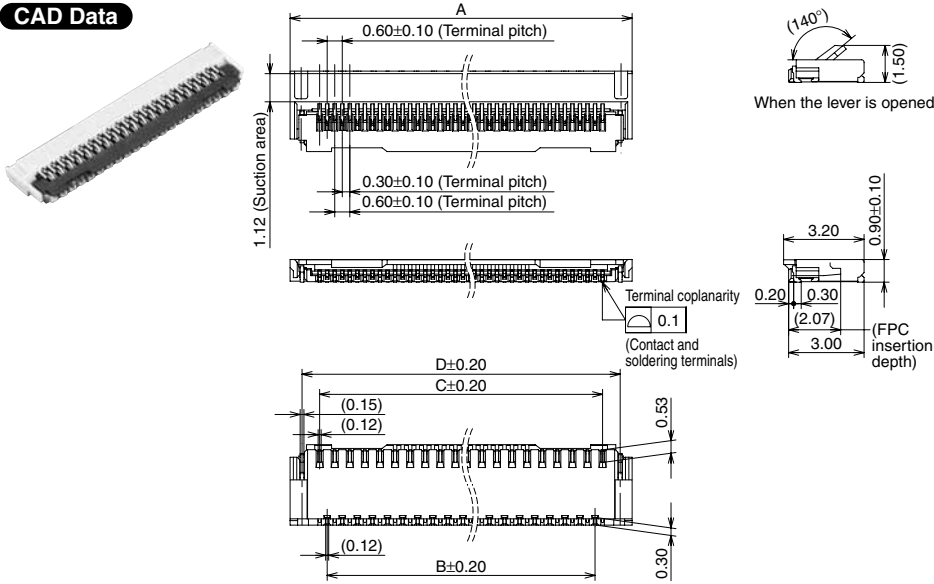
2. Material and surface treatment

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
Soldering terminals portion	Copper alloy	Base: Ni plating, Surface: Au plating

DIMENSIONS (Unit: mm)

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

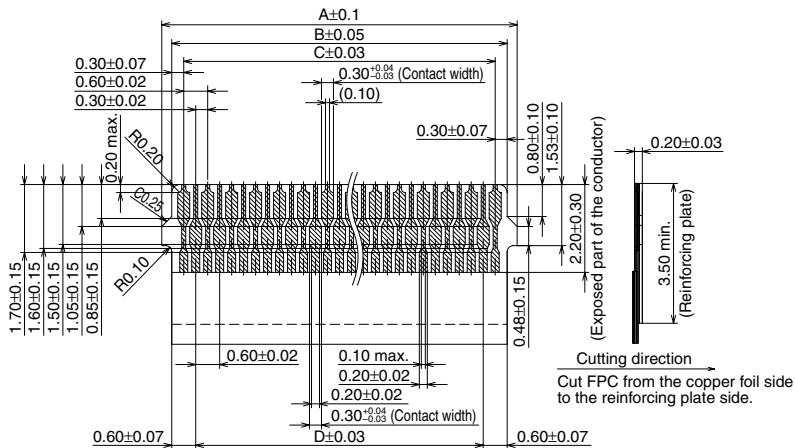
CAD Data



Number of pins/ dimension	A	B	C	D
11	5.35	2.40	3.00	4.40
13	5.95	3.00	3.60	5.00
15	6.55	3.60	4.20	5.60
17	7.15	4.20	4.80	6.20
23	8.95	6.00	6.60	8.00
25	9.55	6.60	7.20	8.60
27	10.15	7.20	7.80	9.20
29	10.75	7.80	8.40	9.80
31	11.35	8.40	9.00	10.40
33	11.95	9.00	9.60	11.00
35	12.55	9.60	10.20	11.60
39	13.75	10.80	11.40	12.80
41	14.35	11.40	12.00	13.40
45	15.55	12.60	13.20	14.60
51	17.35	14.40	15.00	16.40

RECOMMENDED FPC DIMENSIONS

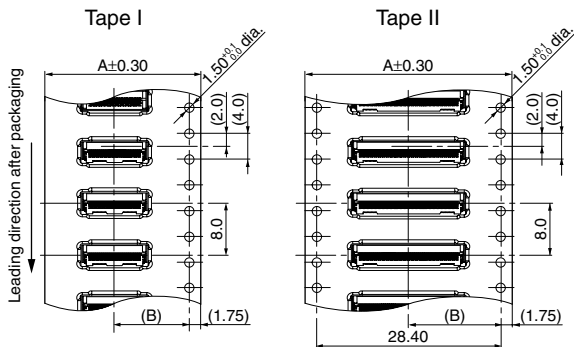
(Finished thickness: $t = 0.2 \pm 0.03$)
The conductive parts should be based by Ni plating and then Au plating.



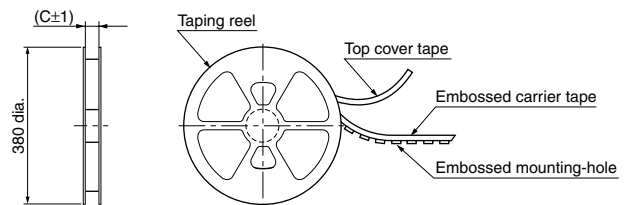
Number of pins/ dimension	A	B	C	D
11	4.10	3.60	3.00	2.40
13	4.70	4.20	3.60	3.00
15	5.30	4.80	4.20	3.60
17	5.90	5.40	4.80	4.20
23	7.70	7.20	6.60	6.00
25	8.30	7.80	7.20	6.60
27	8.90	8.40	7.80	7.20
29	9.50	9.00	8.40	7.80
31	10.10	9.60	9.00	8.40
33	10.70	10.20	9.60	9.00
35	11.30	10.80	10.20	9.60
39	12.50	12.00	11.40	10.80
41	13.10	12.60	12.00	11.40
45	14.30	13.80	13.20	12.60
51	16.10	15.60	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.)



• Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	Quantity per reel
Max. 17	Tape I	16.0	7.5	17.4	5,000
23 to 45	Tape I	24.0	11.5	25.4	5,000
51	Tape II	32.0	14.2	33.4	5,000

• Connector orientation with respect to embossed tape feeding direction

Direction of tape progress	Type	Y3FT
		

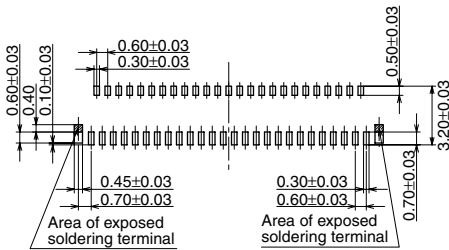
NOTES

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 bridges and other issues make sure the proper levels of solder is used.

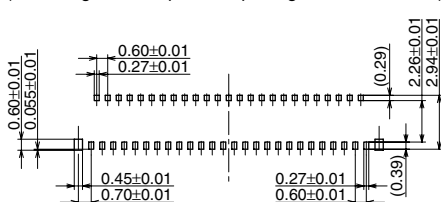
The figures to the right are recommended metal mask patterns. Please use them as a reference.

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



Recommended metal mask pattern

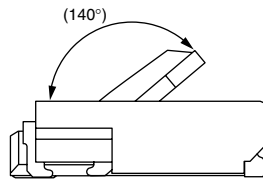
Metal mask thickness: Here, 120μm
 (Front terminal portion opening area ratio: 50%)
 (Back terminal portion opening area ratio: 51%)
 (Soldering terminal portion opening area ratio: 100%)



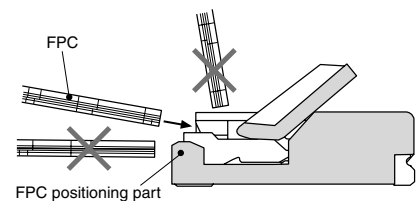
2. Precautions for insertion/removal of FPC

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.



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. 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. 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 forcibly pulled into a direction parallel to the board, the molded part may break.

After an FPC is inserted, carefully handle it so as not to apply excessive stress to the base of the FPC.

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

Notes on Using FPC Connectors (Common)

■ 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 back lock type is used, secure enough space for closing the lever and for open-close operation of the lever.

Due to the FPC size, weight, or the reaction force of the routed FPC.

Carefully check the equipment design and take required measures to prevent the FPC from being removed due to a fall, vibration, or other impact.

■ Connector mounting

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

■ Soldering

1) Manual soldering.

• Due to the connector's compact size, if an excessive amount of solder is applied during manual soldering, the solder may creep up near the contact points, or solder interference may cause imperfect contact.

• Make sure that the soldering iron tip is heated within the temperature and time limits indicated in the specifications.

• Flux from the solder wire may adhere to the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any flux before use.

• Be aware that a load applied to the connector terminals while soldering may displace the contact.

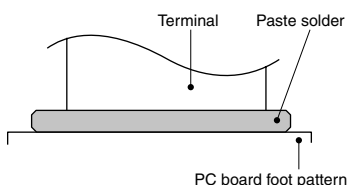
• Thoroughly clean the iron tip.

2) Reflow soldering

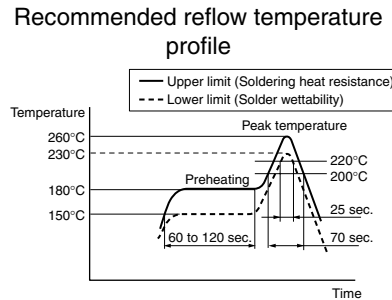
• Screen-printing is recommended for printing paste solder.

• To 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 that excess solder on the soldering terminals prevents the lever from rotating.



- 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

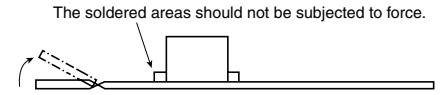


- The temperature is measured on the surface of the PC board near the connector terminal.
 - Certain solder and flux types may cause serious solder creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.
 - When performing reflow soldering on the back of the PC board after reflow soldering the connector, secure the connector using, for example, an adhesive. (Double reflow soldering on the same side is possible)
- 3) Reworking on a soldered portion
- Finish reworking in one operation.
 - For reworking of the solder bridge, use a soldering iron with a flat tip. Do not add flux, otherwise the flux may creep to the contact parts.
 - Use a soldering iron whose tip temperature is within the temperature range specified in the specifications.

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

■ Don't 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.



■ Other Notes

When coating the PC board after soldering the connector (to prevent the deterioration of insulation), perform the coating in such a way so that the coating does not get on the connector.

The connectors are not meant to be used for switching.

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