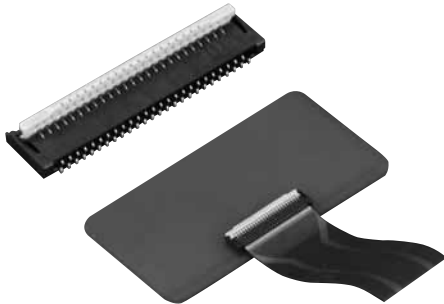


New



FEATURES

1. Slim and low profile design (Pitch: 0.2 mm)

0.2 mm pitch back lock design and the slim body with a 3.15 mm depth (with the lever).



Unit: mm

3. Easy-to-handle back lock design

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 helps resist solder creepage.

APPLICATIONS

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

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.

RoHS compliant

ORDERING INFORMATION

AYF

2	1			3	5
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21: FPC Connector 0.2 mm pitch (Back lock)

Number of pins (2 digits)

Contact direction

3: Top and bottom double contacts

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	23	AYF212335	5,000 pieces	10,000 pieces
	31	AYF213135		
	41	AYF214135		
	51	AYF215135		

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

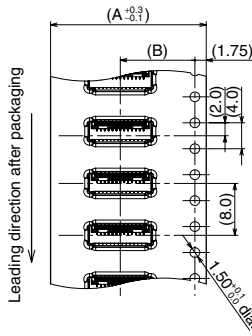
Item		Specifications	Conditions																		
Electrical characteristics	Rated current	0.2A/pin contact (Max. 5A at total pin contacts)																			
	Rated voltage	50V AC/DC																			
	Insulation resistance	Min. 1,000MΩ (initial)	Using 250V DC megger (applied for 1 min.)																		
	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	Min. 0.13N/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. 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>-55⁰₋₃</td> <td>30</td> </tr> <tr> <td>2</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85⁺³₀</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		-55 ⁰ ₋₃	
	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 (with FPC inserted)	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 inserted)	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 inserted)	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	Reflow soldering																			
	300°C within 5 sec. 350°C within 3 sec.	Soldering iron																			
Lifetime characteristics	Insertion and removal life	20 times	Repeated insertion and removal: min. 10 sec./time																		
Unit weight		51 pin contact type: 0.07 g																			

2. Material and surface treatment

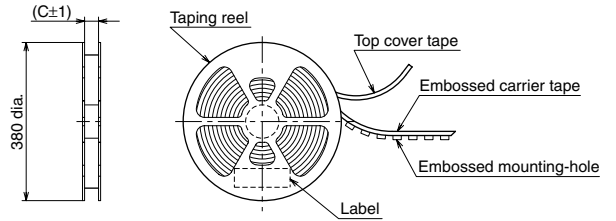
Part name	Material	Surface treatment
Molded portion	Housing: LCP resin (UL94V-0) Lever: LCP resin (UL94V-0)	—
Contact	Copper alloy	Contact portion; Base: Ni plating, Surface: Au plating Terminal portion; Base: Ni plating, Surface: Au plating

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

• Specifications for taping



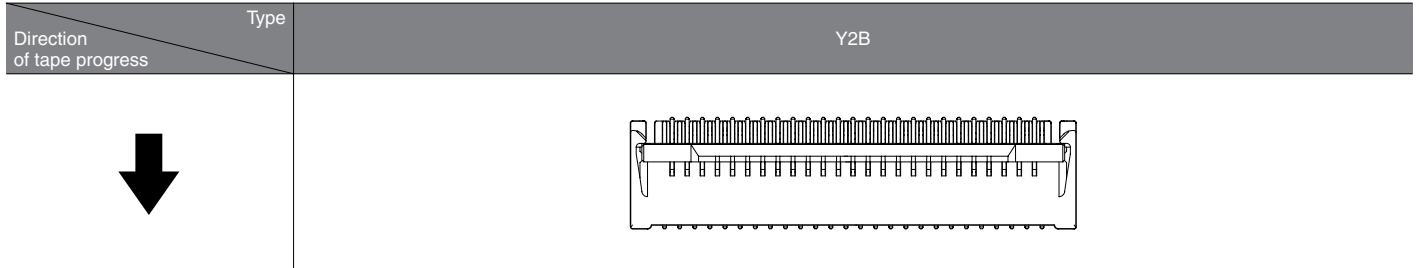
• Specifications for the plastic reel
(In accordance with EIAJ ET-7200B.)



• Dimension table (Unit: mm)

Number of pins	A	B	C	Quantity per reel
23	16.0	7.5	17.4	5,000
31, 41, 51	24.0	11.5	25.4	5,000

• Connector orientation with respect to embossed tape feeding direction

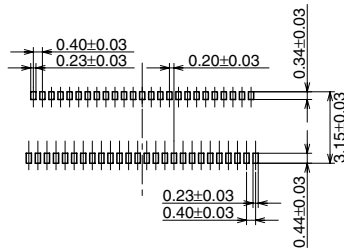


NOTES

1. Recommended PC board and metal mask patterns

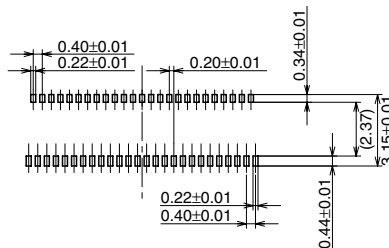
Connectors are mounted with high pitch density, intervals of 0.2 mm or 0.3 mm. In order to reduce solder bridges and other issues make sure the proper levels of solder is used. The figures to the right are recommended metal mask patterns. Please use them as a reference.

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



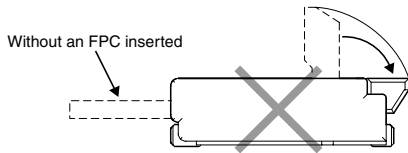
Recommended metal mask pattern

Metal mask thickness: Here, 120µm
(Front terminal portion opening area ratio: 96%)
(Back terminal portion opening area ratio: 96%)



2. Precautions for insertion/removal of FPC

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.



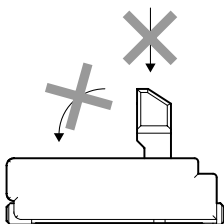
These connectors are of the back lock type, which has the FPC insertion section on the opposite side of the lever. Be careful not to make a mistake in the FPC insertion position or the lever opening/closing position. Otherwise, a contact failure or connector breakage may occur. These connectors have top and bottom double contacts. 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. 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.

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.

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 in 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.

If there might be a load on FPC, please fix 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 low profile, if an excessive amount of solder is applied during manual soldering, the solder may creep up near the contact points, or solder interference may cause imperfect contact.

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

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

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

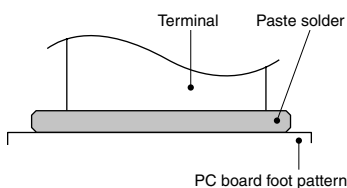
• Thoroughly clean the iron tip.

2) Reflow soldering

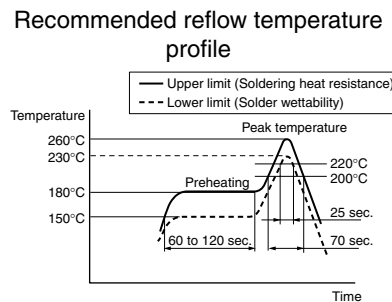
• Screen-printing is recommended for printing paste solder.

• To determine the relationship between the screen opening area and the PC board foot pattern area, refer to the diagrams in the recommended patterns for PC boards and metal masks when setting.

• 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.



- Screen thickness of 120 μ m is recommended for paste 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

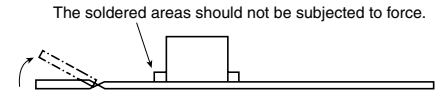


- The temperature is measured on the surface of the PC board near the connector terminal.
- Certain solder and flux types may cause serious solder creeping. Solder and flux characteristics should be taken into consideration when setting the reflow soldering conditions.
- When performing reflow soldering 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.