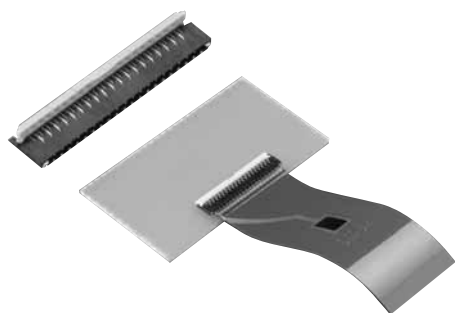


For FPC	<h1>Y3BL Series</h1>
<b>FPC connectors (0.3mm pitch) Back lock</b>	



RoHS compliant

### FEATURES

**1. Low profile (0.6 mm) and slim design**

The Y3BL is a 0.6 mm low-profile connector with a back-lock feature. The slim body with a 3.35 mm width (including the lever) contributes to thickness and size reductions in target equipment.

**2. Compatible with FPC 0.2 mm thickness**

The connector has a 0.6 mm low-profile; however, it is compatible with FPCs that are 0.2 mm thick, facilitating assembly work.

**3. High durability assured with proprietary soldering terminals**

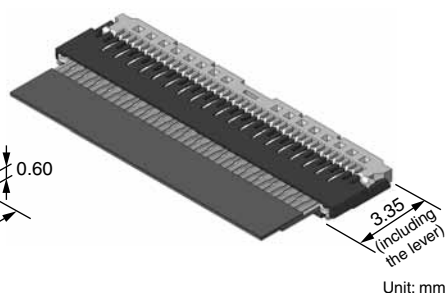
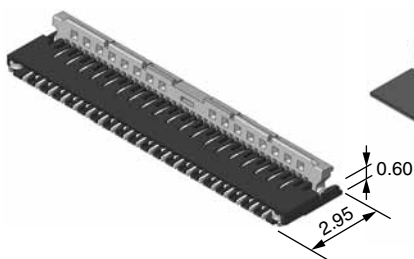
**4. Assembly time is reduced when connector levers are received open.**

**5. Wiring patterns can be placed underneath the connector.**

**6. Ni barrier with high resistance to solder creepage**

### APPLICATIONS

Compact mobile devices such as cellular phones, smartphones, tablet PCs, DSCs, and DVCs.



Unit: mm

### ORDERING INFORMATION

AYF 3 5     2 5

35: FPC Connector Y3BL 0.3 mm pitch  
Back lock

Number of pins (2 digits)

Contact direction

2: Top contact

Surface treatment (Contact portion / Terminal portion)

5: Au plating/Au plating (Ni barrier)

## PRODUCT TYPES

Height	Number of pins	Part number	Packing	
			Inner carton (1-reel)	Outer carton
0.6 mm	7	AYF350725	5,000 pieces	10,000 pieces
	11	AYF351125		
	15	AYF351525		
	23	AYF352325		
	27	AYF352725		
	31	AYF353125		
	39	AYF353925		
	45	AYF354525		
	51	AYF355125		

Notes: 1. Order unit;

For volume production: 1-inner carton (1-reel) units

For samples, please contact our sales office.

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

## SPECIFICATIONS

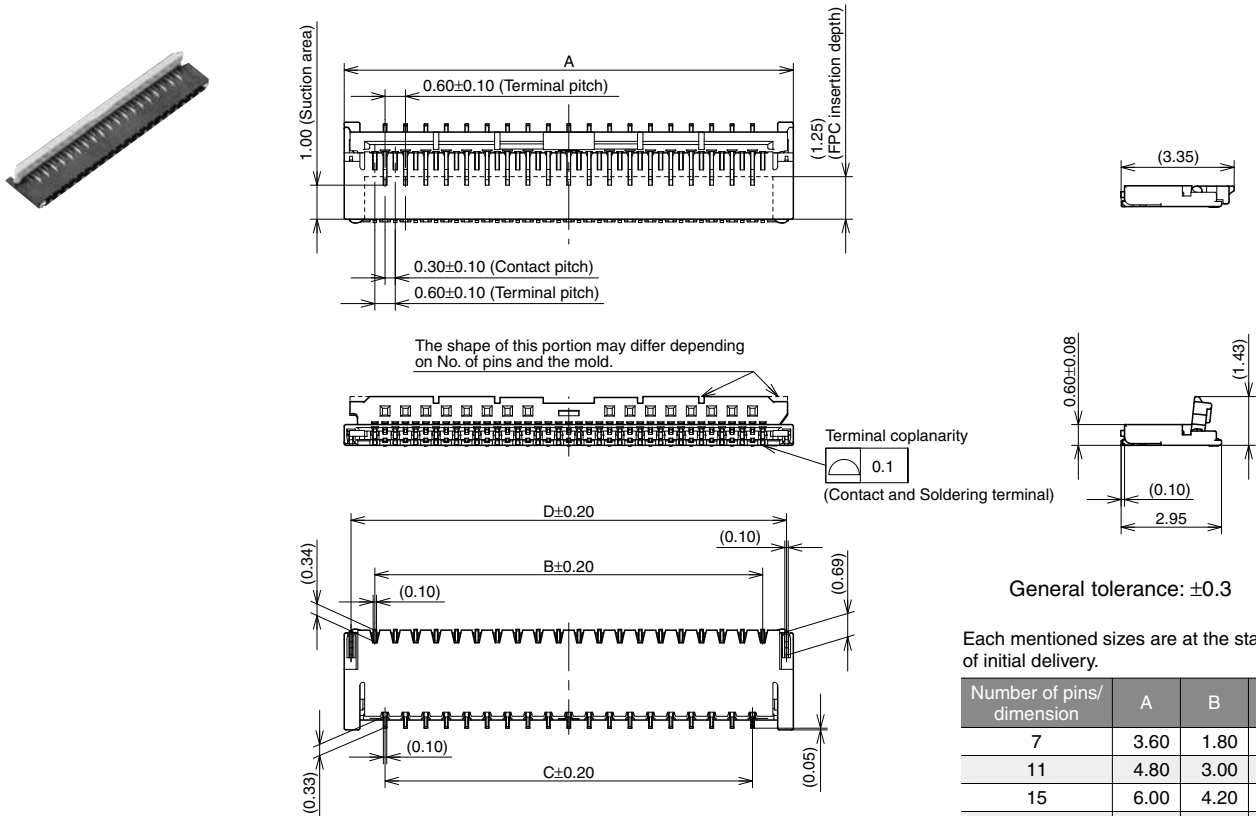
### 1. Characteristics: When using an applicable FPC (thickness 0.20 mm)

Item	Specifications	Conditions																			
Electrical characteristics	Rated current	0.2A/pin contact																			
	Rated voltage	50V AC/DC																			
	Insulation resistance	Min. 1,000M $\Omega$ (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. 160m $\Omega$	Based on the contact resistance measurement method specified by JIS C 5402.																		
Mechanical characteristics	FPC holding force	Min. 0.10N/pin contact $\times$ 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 mated)	5 cycles, insulation resistance min. 100M $\Omega$ , contact resistance max. 160m $\Omega$	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<math>^{\circ}</math><sub>-3</sub></td> <td>30</td> </tr> <tr> <td>2</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td>3</td> <td>85<math>^{\circ}</math><sub>+3</sub></td> <td>30</td> </tr> <tr> <td>4</td> <td>∩</td> <td>Max. 5</td> </tr> <tr> <td></td> <td>-55<math>^{\circ}</math><sub>-3</sub></td> <td></td> </tr> </tbody> </table>	Order	Temperature (°C)	Time (minutes)	1	-55 $^{\circ}$ <sub>-3</sub>	30	2	∩	Max. 5	3	85 $^{\circ}$ <sub>+3</sub>	30	4	∩	Max. 5		-55 $^{\circ}$ <sub>-3</sub>	
	Order	Temperature (°C)	Time (minutes)																		
	1	-55 $^{\circ}$ <sub>-3</sub>	30																		
	2	∩	Max. 5																		
	3	85 $^{\circ}$ <sub>+3</sub>	30																		
4	∩	Max. 5																			
	-55 $^{\circ}$ <sub>-3</sub>																				
Humidity resistance (with FPC mated)	120 hours, insulation resistance min. 100M $\Omega$ , contact resistance max. 160m $\Omega$	Conformed to IEC60068-2-78 Bath temperature 40 $\pm$ 2°C, humidity 90 to 95% R.H.																			
Saltwater spray resistance (with FPC mated)	24 hours, insulation resistance min. 100M $\Omega$ , contact resistance max. 160m $\Omega$	Conformed to IEC60068-2-11 Bath temperature 35 $\pm$ 2°C, saltwater concentration 5 $\pm$ 1%																			
H <sub>2</sub> S resistance (with FPC mated)	48 hours, contact resistance max. 160m $\Omega$	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	51 pin contacts: 0.05 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 terminal	Copper alloy	Ni on base, Pd + Au flash plating

## DIMENSIONS (Unit: mm)



General tolerance:  $\pm 0.3$

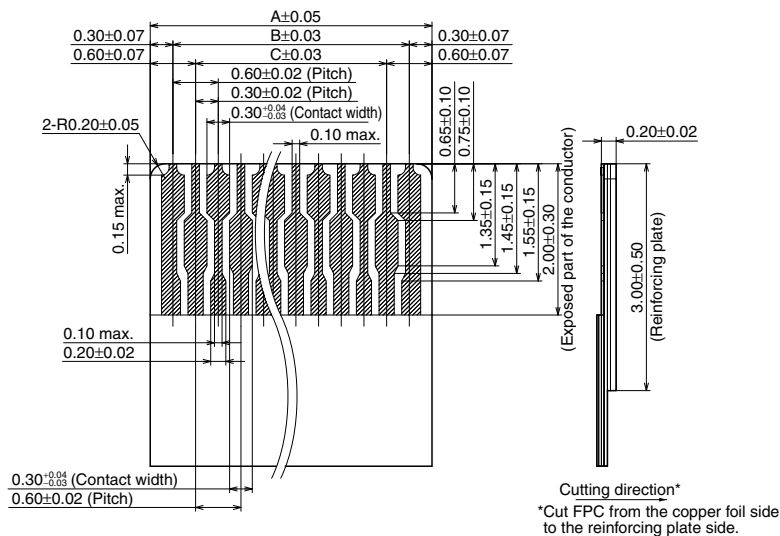
Each mentioned sizes are at the stage of initial delivery.

Number of pins/ dimension	A	B	C	D
7	3.60	1.80	1.20	3.20
11	4.80	3.00	2.40	4.40
15	6.00	4.20	3.60	5.60
23	8.40	6.60	6.00	8.00
27	9.60	7.80	7.20	9.20
31	10.80	9.00	8.40	10.40
39	13.20	11.40	10.80	12.80
45	15.00	13.20	12.60	14.60
51	16.80	15.00	14.40	16.40

## RECOMMENDED FPC DIMENSIONS

(Finished thickness:  $t = 0.2 \pm 0.02$ )

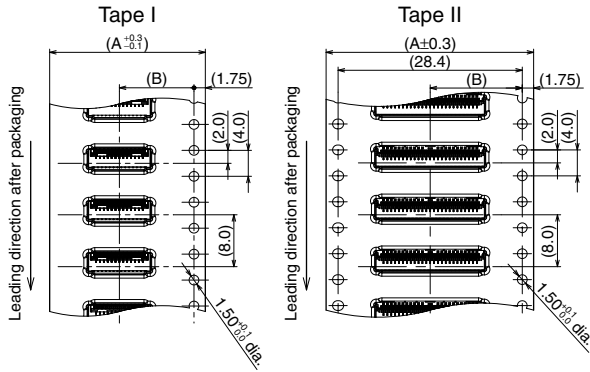
The conductive parts should be based by Ni plating and then Au plating.



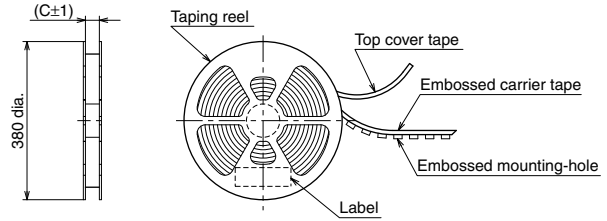
Number of pins/ dimension	A	B	C
7	2.40	1.80	1.20
11	3.60	3.00	2.40
15	4.80	4.20	3.60
23	7.20	6.60	6.00
27	8.40	7.80	7.20
31	9.60	9.00	8.40
39	12.00	11.40	10.80
45	13.80	13.20	12.60
51	15.60	15.00	14.40

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

• Specifications for taping



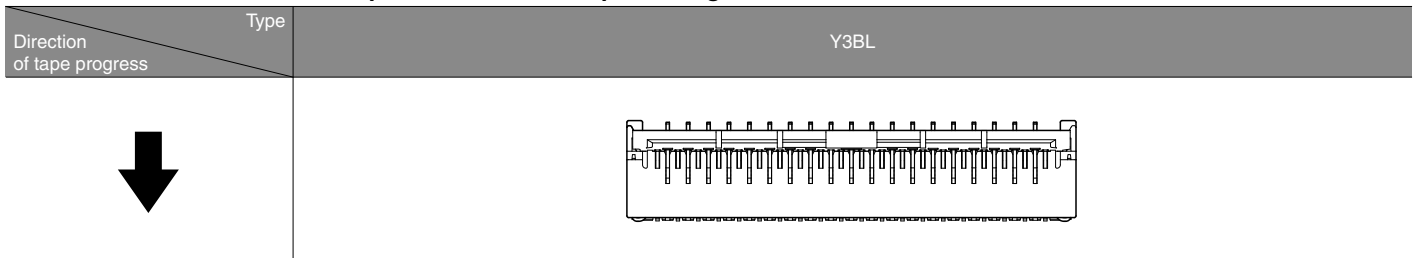
• Specifications for the plastic reel (In accordance with EIAJ ET-7200B.)



• Dimension table (Unit: mm)

Number of pins	Type of taping	A	B	C	Quantity per reel
7 to 15	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



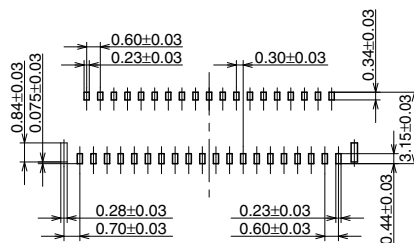
## NOTES

### 1. Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of contact pitch 0.4 mm, 0.5 mm or 0.6 mm.

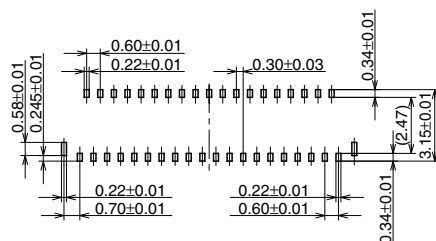
In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used. The figures to the right are recommended metal mask patterns. Please use our recommended patterns basically.

Recommended PC board pattern (mounting layout)



Recommended metal mask pattern

Metal mask thickness: When 120μm  
 (Front terminal portion opening area ratio: 74%)  
 (Back terminal portion opening area ratio: 96%)  
 (Soldering terminal portion opening area ratio: 54%)



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

# Notes on Using FPC Connectors

## ■ About safety Remarks

- Do not use these connectors beyond the specified ranges. The use of the product outside of the specified rated current, breakdown voltage ranges, and other environmental conditions may cause abnormal heating, smoke, and fire.
- In order to avoid accidents, make sure you have thoroughly reviewed the specifications before use. Please consult us if you plan to use the product in a way not covered by the specifications. Otherwise, the quality cannot be guaranteed.
- We are consistently striving to improve quality and reliability. However, the fact remains that electrical components and devices generally cause failures at a given statistical probability. Furthermore, their durability varies with use environments or use conditions. In this respect, we ask you to check for actual electrical components and devices under actual conditions before use without fail. Continuously using them in a state of degraded performance may cause deterioration in insulation performance, thus resulting in abnormal heat generation, smoke generation, or firing. To avoid that, we ask you to carry out safety design including redundancy design, design for fire spread prevention, and design for malfunction prevention as well as periodic maintenance so that no accidents resulting in injury or death, fire accidents, or social damage will be caused as a result of our product failure or service life.

## ■ PC board design

- Design the recommended foot pattern in order to secure the mechanical strength in the soldered areas of the terminal.
- In order to facilitate the connector mount, make sure to design the board with reduced warpage.
- Please design and pay attention to the distance from the board edge to the pattern. When cutting the board, do not give an excessive stress to the connector, which risks damaging the connector.

### (Y3BW/Y5BW)

- Depending on FPC dimension and FPC insertion location, there is a possibility that the holding contact and an FPC pattern of both end of signal contacts are in short-circuited. Please design the equipment not to be affected even if a board pattern of holding contacts and an FPC pattern of both end of signal contacts are in short-circuited.  
(For example: Do not connect a board pattern of holding contacts and GND.  
If connect a board pattern of holding contacts and GND, also connect board pattern of both end of signal contacts.)

## ■ 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.
- 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 removed and connector deformation may occur by a fall, vibration, or other impact.  
When using FPC connector for smart phones, cellular phones and other applications which require falling resistance, please pay attention to precautions.
- Carefully check the equipment design and take required measures to prevent the FPC removed.
- If the shock of falling, vibration is applied to the FPC, please design the equipment not to be applied a load to connector, such as fixing the FPC.
- Make sure to design the FPC insertion part with reduced warpage. Otherwise, the warpage may adversely affect the FPC insertion.

### (Y4BH)

When using in high-speed transmission applications, please take care when designing the FPC, because the differential impedance values may be uneven depending on FPC dimensions settings, uneven dimensions, and layering composition.

### (Y3BW/Y5BW)

**■ The holding contacts cannot be used as conductors.**  
The holding contacts are located on both ends of the connector, and the shape of the soldered portions is the same as that of the signal 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.  
• Depending on FPC dimension, there is a possibility that soldering terminals and an FPC pattern of both end of signal contacts are in short-circuited.  
Please design the equipment not to be affected even if a board pattern of soldering terminals and an FPC pattern of both end of signal contacts are in short-circuited.  
(For example: Do not connect a board pattern of soldering terminals and GND. If connect a board pattern of soldering terminals and GND, also connect board pattern of both end of signal contacts.)

## ■ 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.

# Notes on Using FPC Connectors

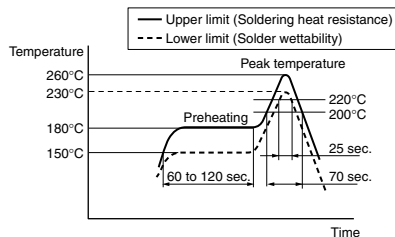
## ■ Soldering

### 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 impact 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 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 $\mu$ 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.
- The condition of solder or flux rise and wettability varies depending on the type of solder and flux. Solder and flux characteristics should be taken into consideration and also set the reflow temperature and oxygen level.
- Do not use resin-containing solder. Otherwise, the contacts might be firmly fixed.
- 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. The terminals may be deformed by reflow heating, because if touching or applying any load to the lever, contact deflection occurs.

### 3) Rework of soldering portion.

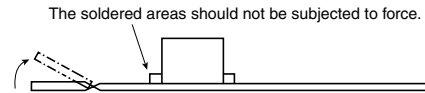
- Rework must be only one time.
- In case of soldering rework of bridges. Please don't use supplementary solder flux. Doing so may cause contact problems by flux. When adding the solder for reworking, do not add an excessive solder.
- Please use the soldering iron under specification's temperature.

## ■ 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.



## ■ PC board

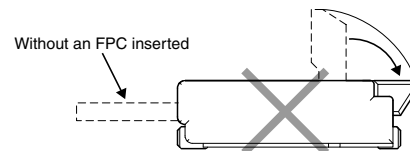
In case the thickness of the coverlay and adhesive is too thick, poor soldering may be caused. Please control and minimize the thickness of them.

## ■ Precautions for insertion/removal of FPC

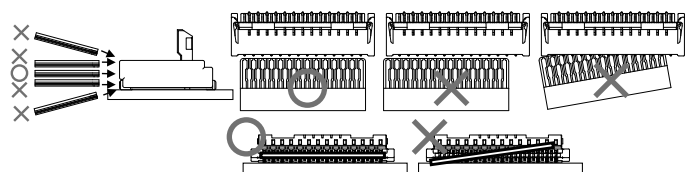
### <Back-Lock>

- Avoid touching the lever (applying any external force) until an FPC is inserted.

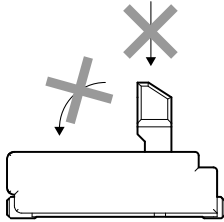
Do not open/close the lever without an FPC inserted. Failure to follow this instruction will cause the contacts to warp, leading to the contact tips to interfere with the insertion of an FPC, deforming the terminals. Failure to follow this instruction may cause the lever to be removed, terminals to be deformed, and/or the FPC insertion force to increase.



- 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.
- 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.
- After checking the position of FPC insertion slot and FPC, completely insert the FPC horizontally to the full depth of the connector without altering the angle. An FPC inserted at an excessive angle to the board may cause the deformation of metal parts, crack of molding parts, FPC insertion failures, and FPC circuit breakages.



- 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.



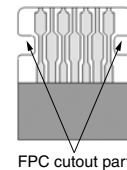
- To close the lever, turn down the lever by pressing the entire lever or both sides of the lever with fingers tips. And close the lever completely. Be careful not to apply partial load to the lever that may cause its deformation or destruction or lever going back to initial position. Close the lever completely to prevent contact failure.
- 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, rotate the lever to the initial position. Do not push the lever into the FPC inlet side and ensure that the lever will not go over the initial position; otherwise, it may be deformed or broken.
- To open the lever, if pressure to the lever is applied unevenly, such as to an edge only, it may deform or break.
- Do not open the lever forcefully with something sharp tool, otherwise, the lever may be deformed.
- 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.
- If there might be a load on FPC, please fix the FPC.

(Y3BW and Y5BW)

- Fix the FPC if there might be a load to the cut out, do not apply 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.



#### ■ Cleaning treatment

Cleaning this product is not needed.

If cleaning it, pay attention to the following points to prevent the negative effect to the product.

- Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend semi-aqueous cleaning solvent. Please consult us if you wish to use other types of cleaning fluids.

#### ■ Precautions for operating environment and storage environment

Panasonic Corporation does not guarantee the failures caused by condensation.

#### ■ Other precautions

- 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.
- There is no problem on the product quality though the weld line might be generated in the weld part of molding parts when the use of product is within the specifications.
- The detailed shape of metal parts and molding parts may differ depending on the mold.
- Height in FPC mating depends on the way to being used, such as mounting condition, thickness of FPC, and angle of lever lock etc. Please check it by actual equipment.

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