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Title subject:	FHTG Connector	Revision date:	

This manual describes important and required points of handling about the FHTG connector.  
Be sure to read this manual thoroughly before using the FHTG connector.

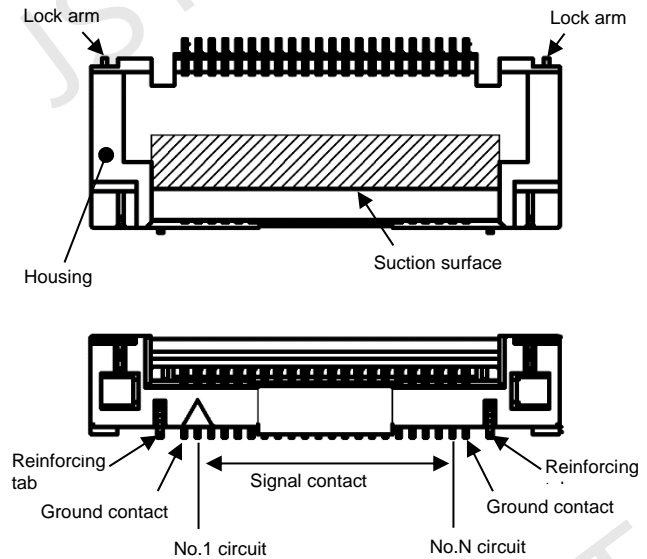
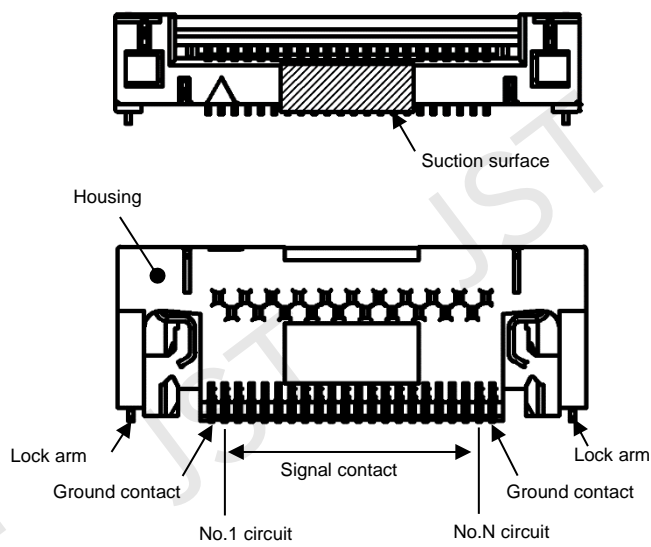
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## 1. Structure and Name

## 1-1 Each part name



## 1-2 Model number

Product name		Model No.
FHTG connector (Taping products)	Top entry type	*FHTG-TSMG-GANS-TF(HF)
	Side entry type Bottom contacting type	*FHTG-RSMG-GANS-TF(HF)
FHTG connector (Loose piece products)	Top entry type	*FHTG-TSMG-GANS(HF)
	Side entry type Bottom contacting type	*FHTG-RSMG-GANS(HF)

Note<sub>1</sub>: 2-digit figures in an asterisk denote the circuit number.  
“(HF)” denotes the halogen-free connector.

Note<sub>2</sub>: FHTG connector is supplied on embossed-tape.

<b>JST</b>	Title subject: FHTG Connector	No. CHM-1-2677
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## 2. Storage

### 2-1 Storing the connectors

Recommended storage condition: Temperature: 5 – 35 °C, Relative humidity 60 % or less  
(Under packaging like the state of JST shipment)

Keep off direct sunlight, places exposing to such corrosive gas as industrial gas (generate from a stove and whatnot) and ammonia gas (generate from a toilet and whatnot) and dusty place.

Note that the resin molding part may break due to transportation and handling, such as processing and mating, under dry or low temperature condition.

After unpacking, return the products in the original package to store.

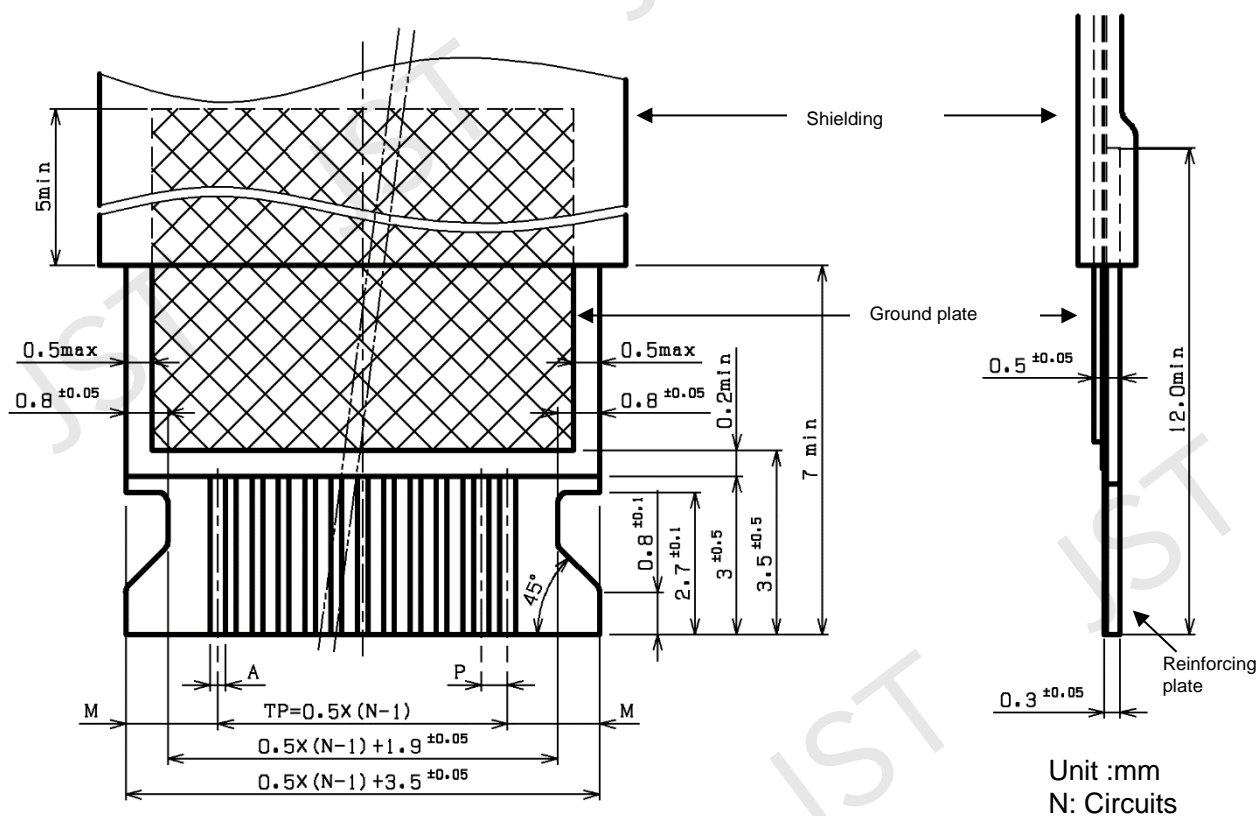
### 2-2 Storing the processed products

Not leaving the crimped contact to stand in a place exposed to high humidity and direct sunshine, and not placing them directly on the ground. Keep them in a clean storage room.

## 3. Applicable FFC

- ① The dimensions of FFC greatly affect the contacting reliability with the connector.  
Follow the dimensions of applicable FFC shown in the drawing.
- ② Especially, narrow pitch connectors like this connector have a high possibility to come off the contact point due to warpage, deformation, slant insertion, insufficient insertion and so on of FFC.  
In order to reduce these risks, manage that the important dimensions such as conductor width, length, pitch, FFC total width, position misalignment between conductors and FFC width shall meet the given tolerances, considering the variations of those dimensions.
- ③ Remember to confirm the applicability of the connector with the FFC used, before using.  
FFC, which applicability is not confirmed, might not be able to guarantee the performance.
- ④ The blanking shall be conducted from the conductor side toward the reinforcing plate side.
- ⑤ Use FPC before confirming the applicability with the connector like FFC.  
The material of the reinforcing plate should be polyimide and that of the adhesive should be thermosetting.

Item	Rated value	
Applicable FFC (Refer to the drawing and the below.)	Lead:	Gold-plated copper foil
	Lead width:	0.30 ± 0.05 mm
	Lead pitch:	See the table below.
	Conductor width:	See the table below.



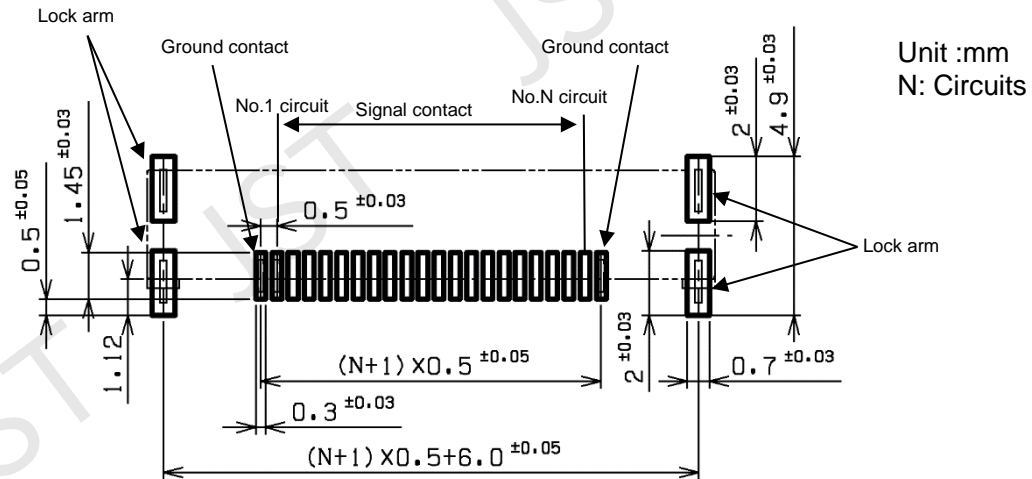
	Pattern 1	Pattern 2	Pattern 3
A	0.3 $\pm$ 0.03	0.32 $\pm$ 0.03	0.32 $\pm$ 0.03
P	0.5 $\pm$ 0.03	0.5 $\pm$ 0.03	0.5 $\pm$ 0.03
TP	TP $\pm$ 0.04	TP $\pm$ 0.05	TP $\pm$ 0.05
M	1.75 $\pm$ 0.07	1.75 $\pm$ 0.07	1.75 $\pm$ 0.06

Refer to the drawings attached to the specification.

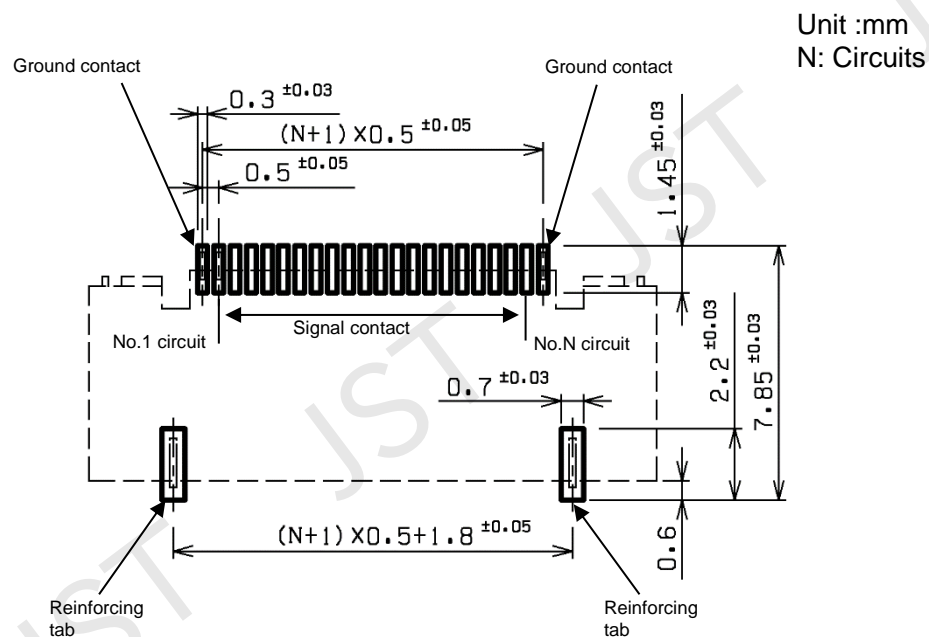
Recommended dimensions of applicable FFC (e.g. with shielding)

## 4. PC Board Pattern Layout

We recommend using the connector on the PC board pattern layout (viewed from the connector mounting side) shown below.



Top entry type



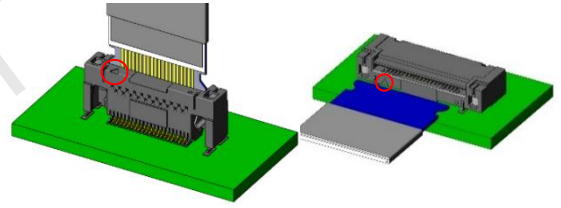
Side entry / Bottom contacting type

PC board pattern layout

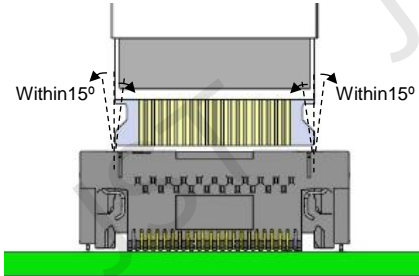
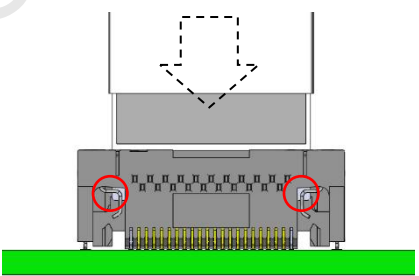
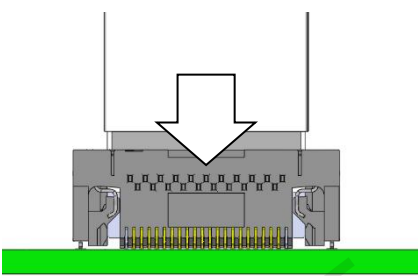
## 5. Handling Precaution

### 5-1 Inserting FFC

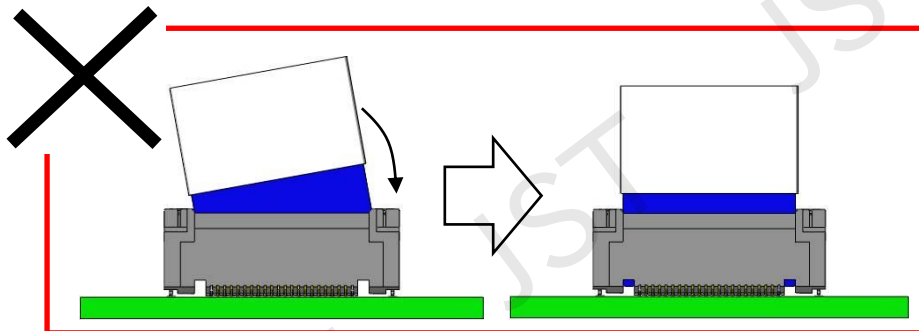
Insert FFC with the conductor surface turning to the side with a black delta mark.  
The conductor side of the top entry type is the side that the lock arm is visible and that of the side entry/bottom contacting type is the PC board surface side.



#### ② Insert FFC in a straight along the mating axis.

Pre-insertion		Insertion
		
Insert the both front ends of FFC into the mating entrance along the mating axis. When it is difficult to insert it, tilt FFC at an angle within 15° to each direction of up-down and right-left.	Insert FFC along the molding guide to decide the position without applying an excessive load until it contacts the both-sided locks.	Insert the both ends of FFC in a straight up to the innermost.

#### ③ Insert FFC not to tilt while applying a load evenly.



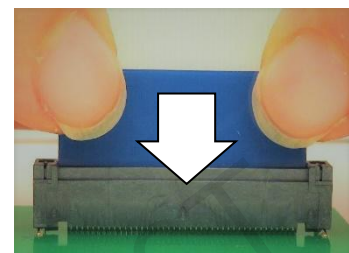
Even if the mating is perfect, there is a possibility that FFC or the contact is deformed inside the mating part, and electrical discontinuity is caused.

Inserting FFC at an angle leads to the insertion of only one side.

Even if the mating becomes perfect by pushing another one side from the state of one side insertion, there is a possibility that FFC or the connector contact is deformed inside the mating part, and electrical discontinuity is caused.

In case that only one side of FFC has been inserted by accident, pull it out to check that FFC and the connector are free from abnormalities, and insert it again.

When it is difficult to apply an even load to the entire FFC, we recommend holding it with your both hands like the right picture and inserting it in a straight. Take care of not warping FFC in inserting.

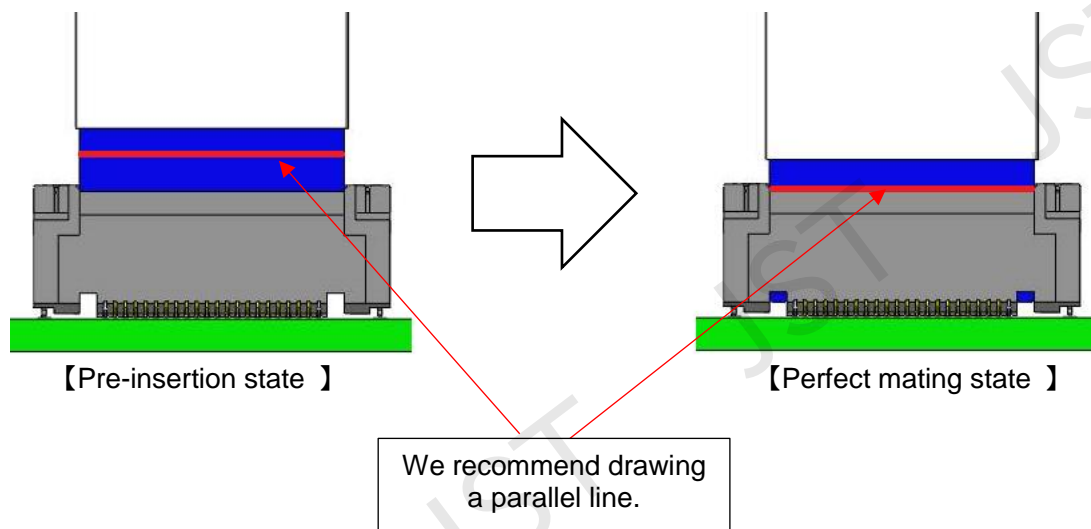


- ④ Perfectly mate FFC with the connector.  
There are the following 2 confirmation ways.

Confirmation way 1	Confirmation way 2
<p>Exposure of FFC front end should be two third or more against this range.</p>	
The front end of FFC is visible from the both mating check windows.	FFC both ends are mated up to the bottom of the lock arm

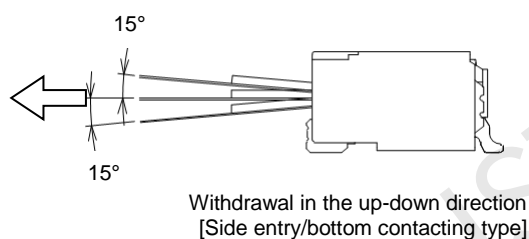
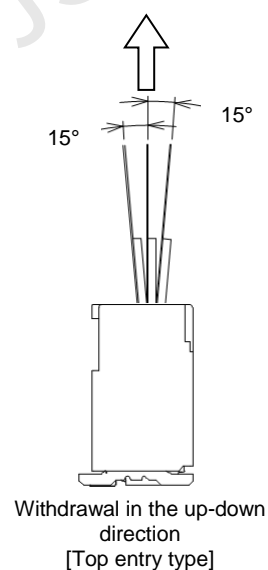
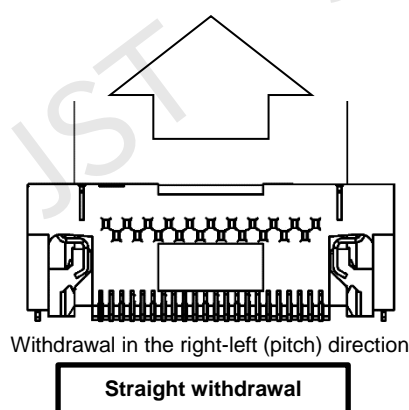
In case that FFC insertion is short or it is inserted at an angle (not perfect mating), electrical discontinuity or short circuit due to the contact with the adjacent pins may be caused.

Additionally, we recommend drawing a parallel line on the reinforcing plate of FFC with kind of a pen so as to identify even at FFC side whether the mating is perfect or tilts.



## 5-2 Withdrawing FFC

Withdraw FFC in a straight along the mating axis.  
When it is difficult to withdraw FFC along the mating axis,  
operate at an angle within  $15^\circ$  in the up-down direction.  
In the right-left direction (pitch direction), withdraw FFC  
straight with no angle and no rotation, because FFC  
and the connector may lead to breakage.



OK case	NG case 1	NG case 2
Withdraw FFC straight from the connector along the mating axis.	Withdrawing only one side of FFC has it angled, leading to breakage on FFC or the connector.	Withdrawing FFC angled against the mating axis may cause connector breakage.

In case that only one side of FFC is pulled out like NG case 1, FFC sometimes cannot be pulled out from the connector. In that case, do not pull FFC out by force but return to the mating state with the connector, and pull it out in a straight.  
Then, make sure that FFC and the connector are free from such abnormalities as deformation and breakage.

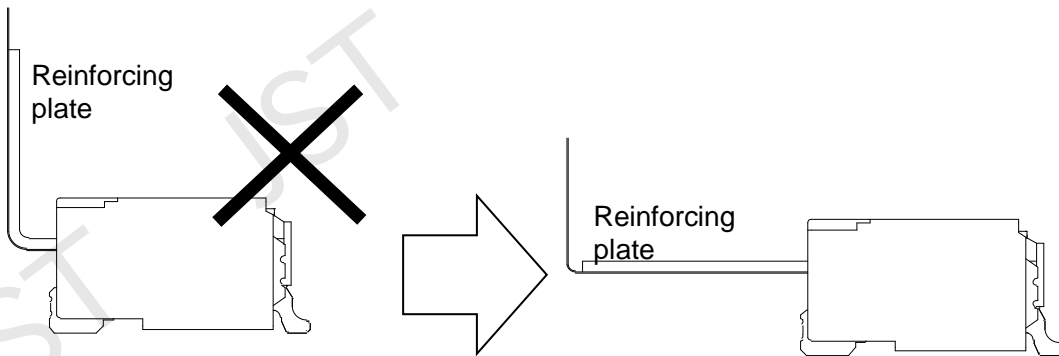


## 5-3 Handling of FFC after mounting on PC board

When an inserted FFC is handled, keep a length enough not to cause deformation and warpage on the reinforcing plate of FFC and not to apply any loads to the connector.  
(Because the connector may be broken.)

The side entry/bottom contacting type shows below as an example.

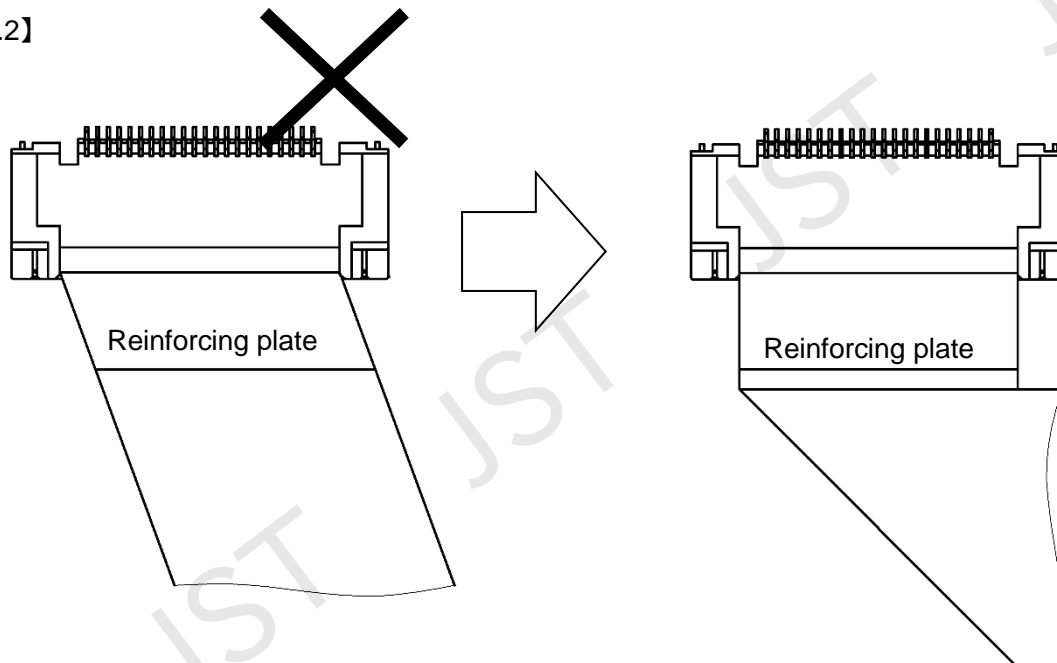
【e.g.1】



※ Not enough length to handle FFC

※ Enough length to handle FFC

【e.g.2】



※ The connector under a load.

※ Forming processing to FFC for not applying a load to the connector.

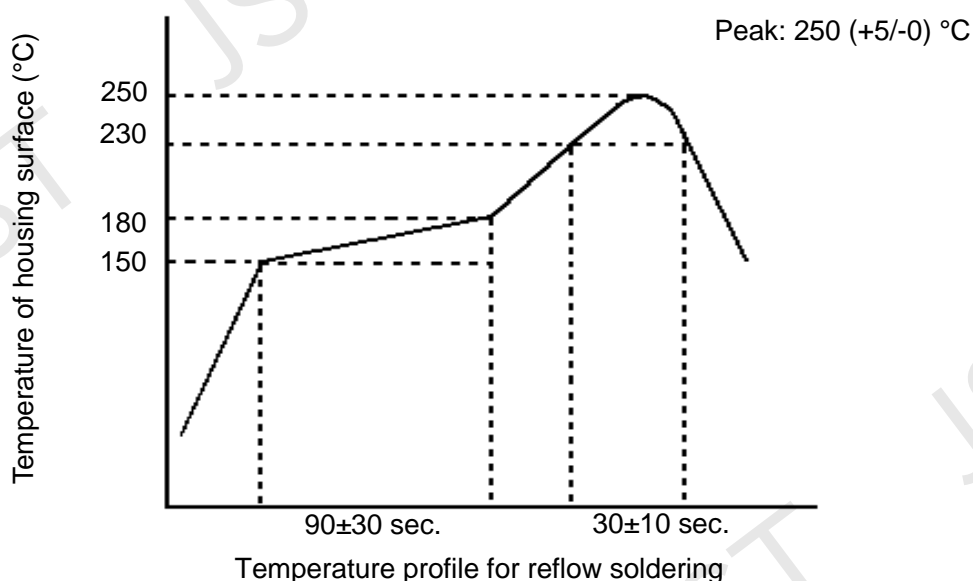
When a load is likely to apply to the connecting part between the connector and FFC by the movement of the rotation part and the kind, poor contact may be caused. So, take such countermeasures as fixing FFC.

#### 5-4 Precautions for soldering

##### Reflow soldering

We recommend reflow soldering at a lower temperature than the temperature profile shown below. As the recommended reflow temperature condition depends on the materials, such as solder paste, solder the connector according to the condition of the material.

We recommend using some 0.10 – 0.12 mm-thick metal mask which the blanking part has the area same as PC board pad area. In case that the metal mask thickness is more than 0.12 mm, adjust the amount (area) of soldering coat by making the opening area smaller than the PC board pad area.



When bridge troubles appear in process of reflow soldering and repair is conducted by hand, strictly follow the below.

##### Solder iron method

Solder the connector mounted on a PC board by a soldering iron of 350°C quickly within 3 seconds, and check the appearance visually.

When soldering, do not push the iron tip on the connector contact lead part nor apply an abnormal force such as lateral load. If done, dismount and replace the connector with the new one, and redo soldering. Do not reuse the dismantled connector.

#### 5-5 Others

Do not contaminate the contact with household goods such as oils, detergent, seasoning, fruit juice and insecticide. If contaminated, do not use.

Never spray fumy insecticide in the place where the connectors are kept.