



Title of Document:	<b>HANDLING MANUAL</b>	Issue No. CHM-1-2145	Rev. 9
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This manual describes important and required points of handling about the FHSY connector (embossed-taping product.)

Be sure to read this manual thoroughly before using the FHSY connector.

## C O N T E N T S

	Page
1. Model Number and Part Name.....	2
1-1 Model number .....	2
1-2 Part name .....	2
2. Storage .....	2
2-1 Connector storage.....	2
2-2 Storage of the crimped contacts .....	2
3. Applicable FPC.....	3
4. PC Board Pattern Layout .....	3
5. Handling Precautions .....	4
5-1 Mating operation method of FPC .....	4
5-2 Inserting and releasing FPC.....	7
5-3 Handling of FPC after mounting the connector on PC board .....	8
6. Soldering operation .....	9
6-1 Soldering iron method .....	9
6-2 Reflow soldering method.....	10
6-3 Metal mask thickness.....	10
7. Other Precautions.....	10

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## 1. Model Number and Part Name

## 1-1 Model number

Part name		Model No.
FHSY connector	Loose piece product	* <sub>1</sub> FHSY-RSM1-* <sub>2</sub> (LF)(SN)
	Embossed-taping product	* <sub>1</sub> FHSY-RSM1-* <sub>2</sub> -TB (LF)(SN)

Note<sub>1</sub>: “\*<sub>1</sub>” denotes the circuit number.

e.g.: 18FHSY-RSM1-TB (LF)(SN)

18-circuit FHSY connector (embossed-taping product)

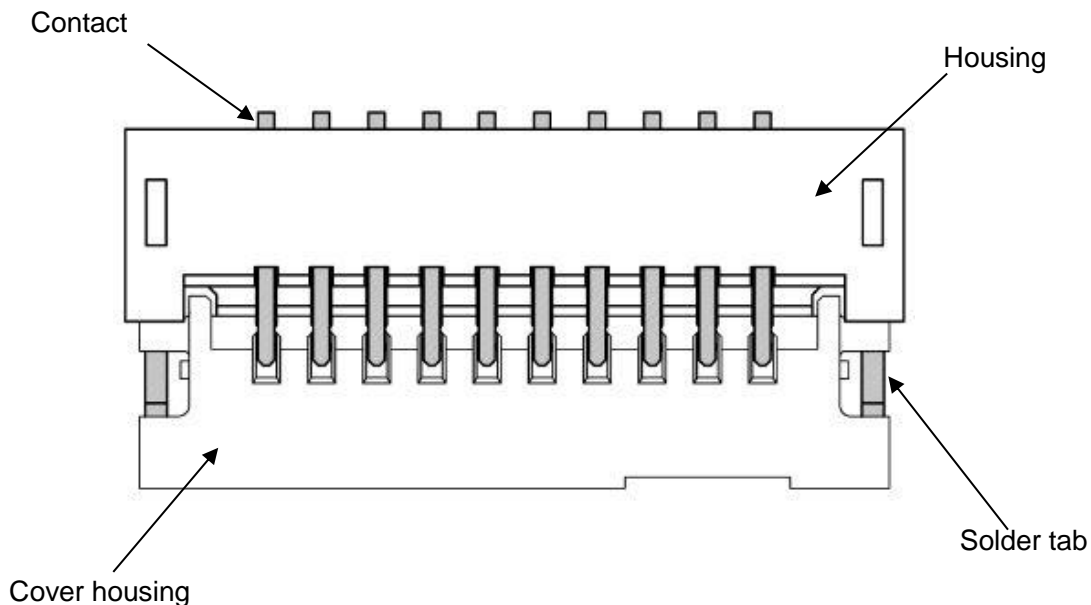
Note<sub>2</sub>: “\*<sub>2</sub>” denotes the surface finish of the contact.

Blank: Tin-plating

GAN: Gold-plating (Nickel stripe)

Note<sub>3</sub>: FHSY connector is supplied on embossed-tape (3,000 pcs./reel).

## 1-2 Part name



## 2. Storage

## 2-1 Connector storage

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), dusty place and condensation.

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

## 2-2 Storage of the crimped contacts

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 FPC

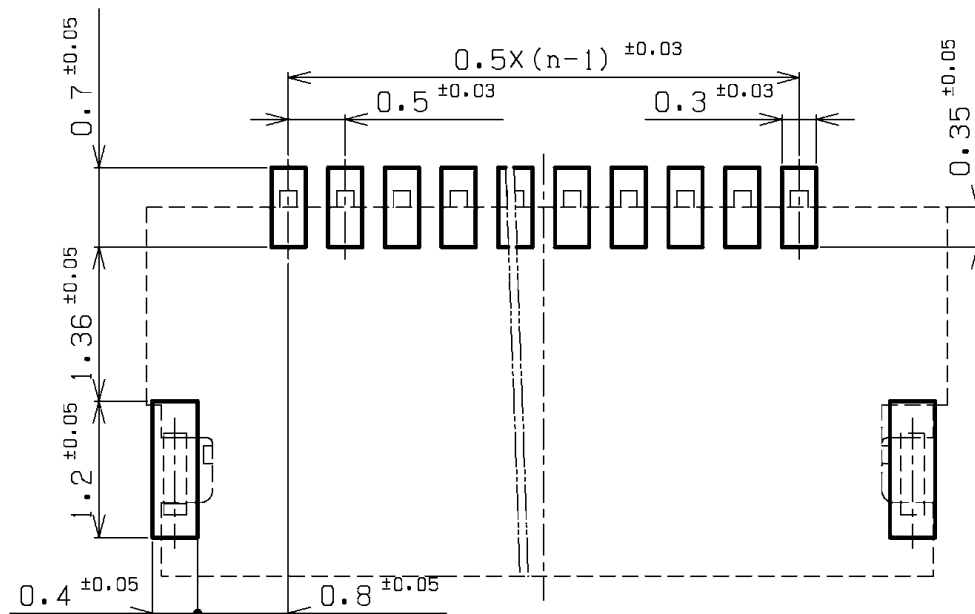
Item	Rated value
Applicable FPC (See attached drawing)	Lead: Gold-plating
	Tin-plating
	Lead pitch: 0.5 mm
	Lead width: 0.35 mm
	Mating part thickness: $0.30 \pm 0.03$ mm

- ① The dimensions of FPC greatly affect the contacting reliability with the connector.  
Conform the dimensions of FPC with those of applicable ones described in the drawing attached to the specification.
- ② Especially, narrow pitch connectors have a high possibility to come off of the contact point due to warpage, deformation, slant insertion, insufficient insertion and so on of FPC.  
In order to reduce these risks, manage that the important dimensions such as conductor width, length, pitch, FPC total width, position misalignment between conductor and FPC width shall meet the given tolerances, considering the variations of those dimensions.
- ③ The above dimensions and structure are general condition. Confirm the applicability of the connector with the FPC used, before using.  
FPC, which applicability is not confirmed, might not be able to guarantee the performance.
- ④ The blanking shall be conducted from the conductor side to the reinforcing plate side.
- ⑤ The material of the reinforcing plate should be polyimide.
- ⑥ Do not mate different kind of metal FPC from the connector.
- ⑦ Adhesive should be thermosetting.

## 4. PC Board Pattern Layout

The following PC board pattern layout is recommended.

UNIT: mm



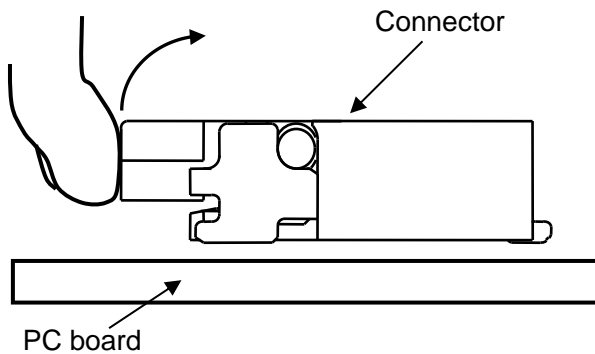
n=Circuit No.

## 5. Handling Precautions

## 5-1 Mating operation method of FPC

## Operation 1: Opening the cover housing of the connector

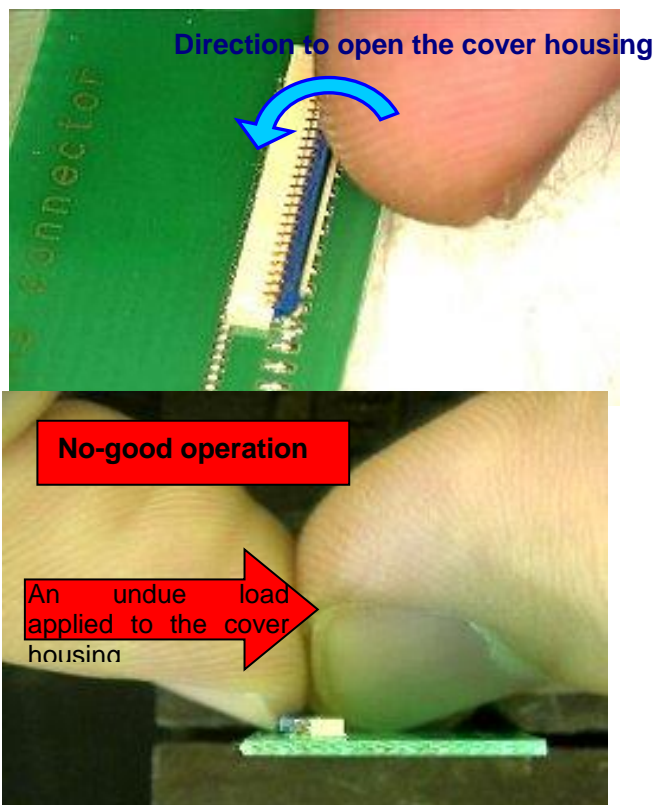
The cover housing is closed.



Lift the center of the cover housing by the cushion of your finger and open the cover housing slowly in the direction of the arrow shown in the left figure.

Then, do not apply an undue load to the inside of the cover housing, because the cover housing may be broken.

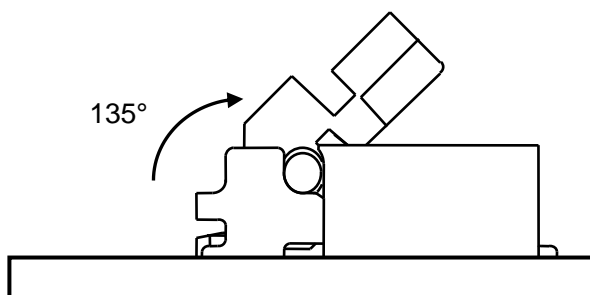
The cover housing is opened.



When the cover housing is opened, do not apply a large load to the direction of the connector mating entrance, because the cover housing may be deformed, leading to influence on opening and closing.

Moreover, do not flick the cover housing by your fingertip and do not pick it up with your fingers in opening it, because the connector becomes easy to break.

The cover housing is closed.

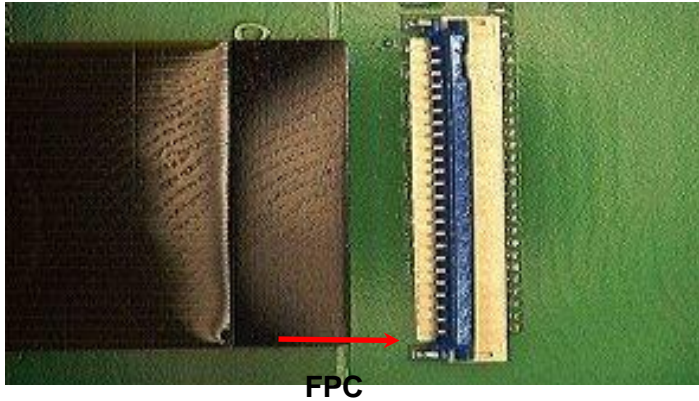


The cover housing is full-opened at 135 degree where it hits and stops.

Do not press the full-opened cover housing by excessive force from the above, because it may be broken.

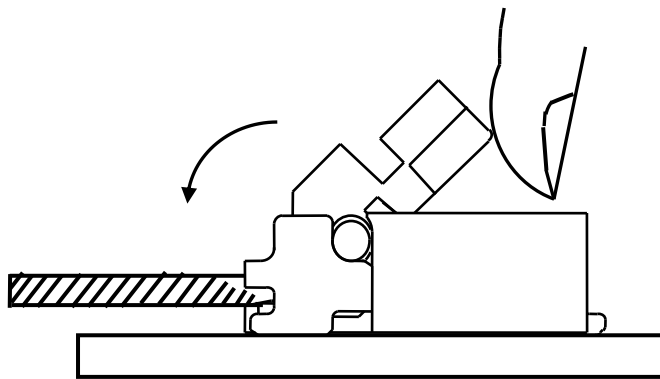
Operation 2: Inserting a FPC into the connector and closing the cover housingInsert a FPC and turn the cover housing.

Top view



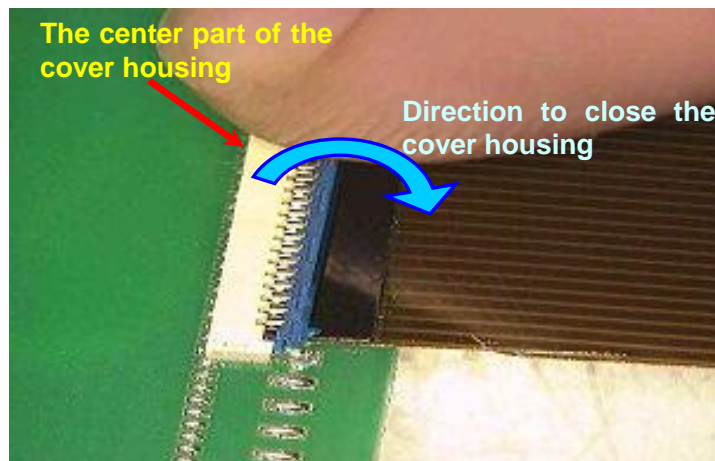
Insert the FPC horizontally into the connector under the condition that the cover housing is fully opened.

(Note<sub>6</sub>) Do not insert the FPC under the condition that the cover housing is not fully opened, because the cover housing may close or be broken.

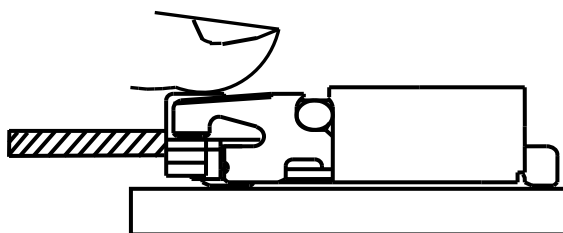


Close the cover housing slowly, pressing the center part with the cushion of your fingertip.

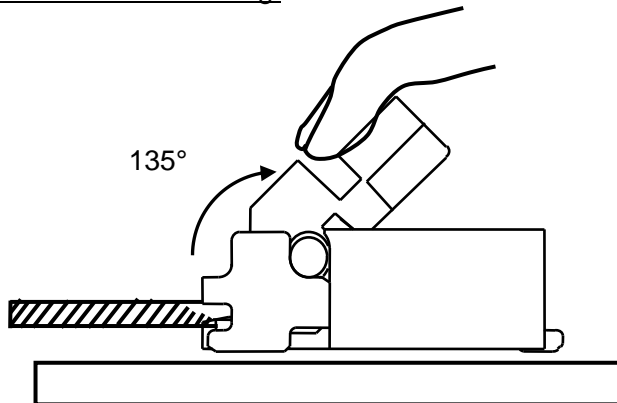
When the cover housing is closed around 90 degrees, the load to close the cover housing gradually becomes large.



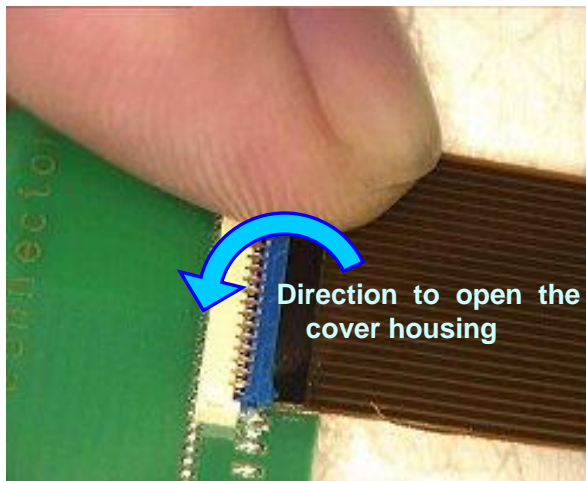
When the cover housing opens more than 90 degrees, it automatically closes with a click.

The cover housing is locked.

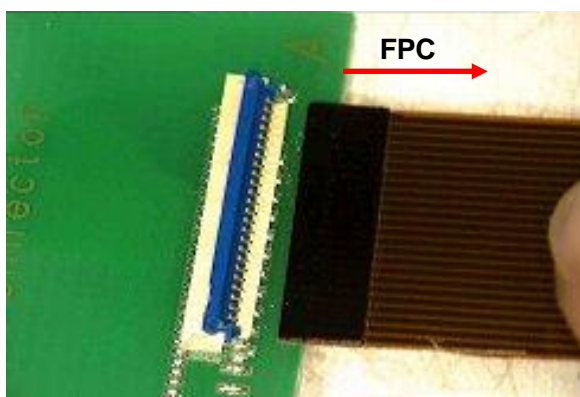
Be sure to check that the cover housing is completely closed, because performance defects may be caused.

Operation 3: Releasing a FPC from the connector by manual operationTurn the cover housing.

Raise the cover housing of the mounted connector as shown in the left figure. (Put the top of the cover housing up with your fingertip to open because FPC is inserted.) Do not apply a large load to the mating entrance of the cover housing in opening, because the cover housing is deformed, affecting the opening and closing.



The cover housing stops at 135 degrees where it is full-opened. Do not push down the full-opened cover housing with excessive force, because it may be broken.

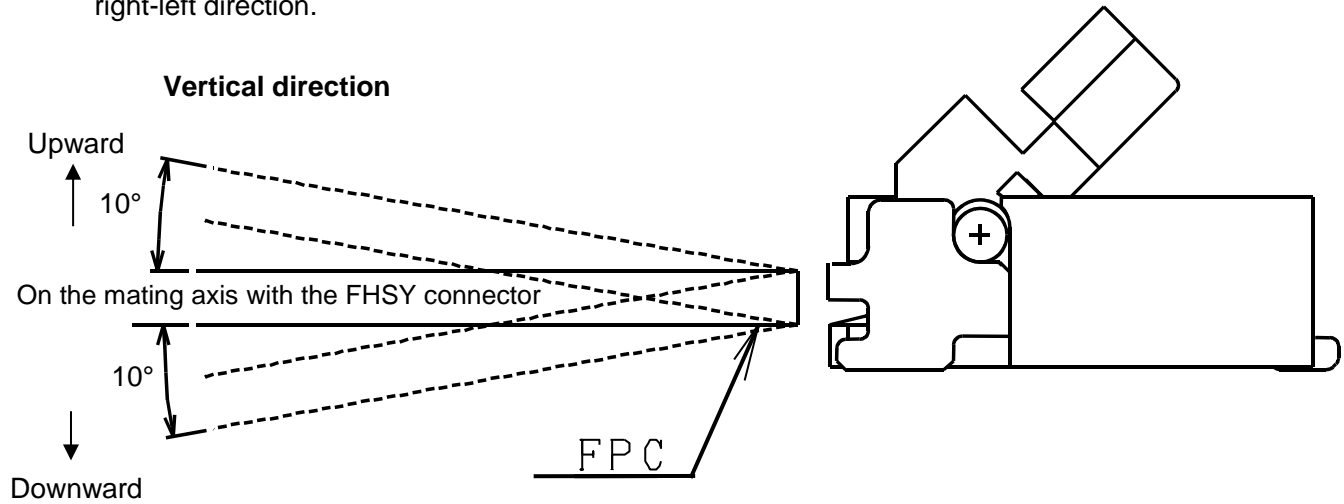
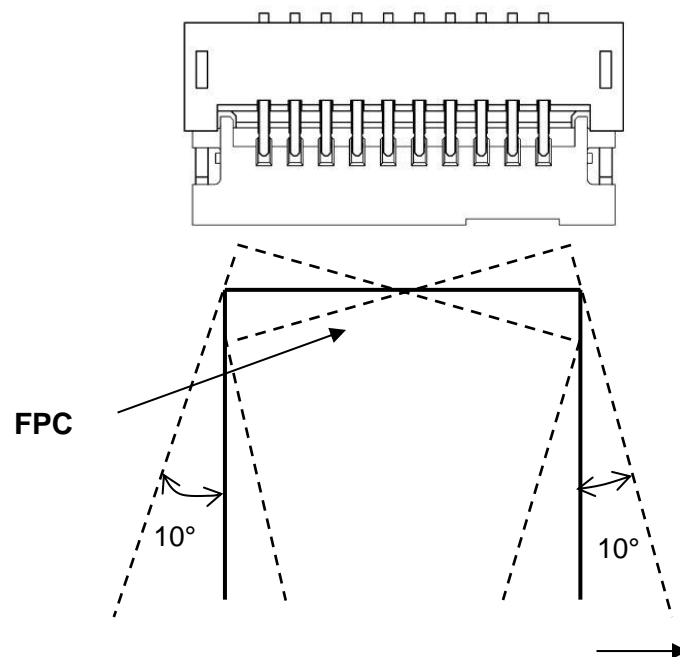
The cover housing is opened.

When the cover housing is fully opened (135 degrees), extract the FPC.

## 5-2 Inserting and releasing FPC

Conduct the insertion and withdrawal operation of FPC with the connector on the same axis.

When the operation on the same axis is difficult, do it swiftly within 10 degrees to each up-down or right-left direction.

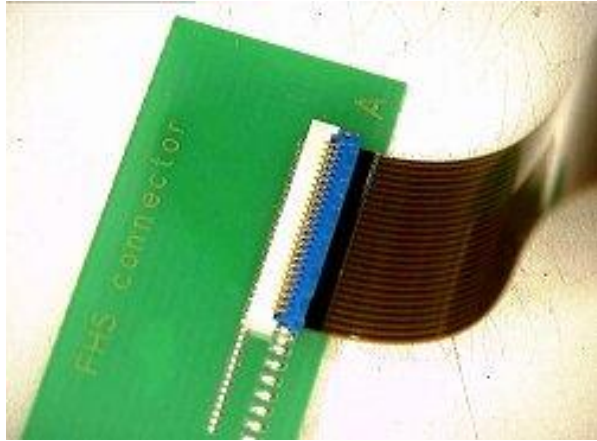
**Lateral direction**



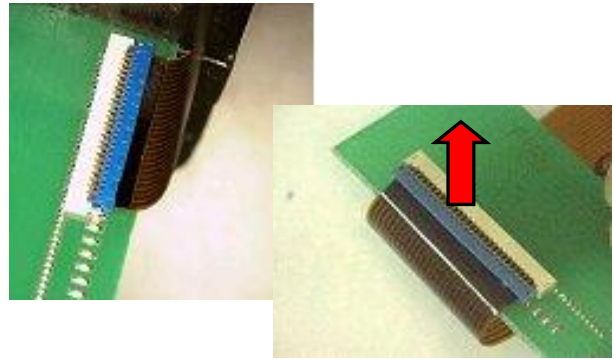
## 5-3 Handling of FPC after mounting the connector on PC board

Be careful for handling of FPC as shown in the figure below.

When the inserted FPC is handled upward, keep an enough distance from the connector not to apply an upward load as much as possible to the connector.



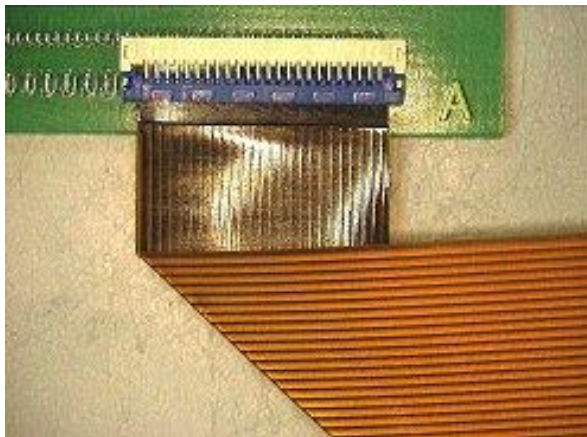
Upward handling FPC close to the connector may break the connector or FPC.



Handle FPC downwardly with care near the connector not to apply a load to an upward direction.



Do not apply lateral force to FPC.



When handling FPC to lateral direction, do forming processing on it.



Give attention to using the connector at the place where FPC inserted in the connector moves by the mechanism of the rotating axis of devices or along with the operation of the moveable part, because poor contact may be caused due to fretting corrosion.



## 6. Soldering operation

## 6-1 Solder iron method

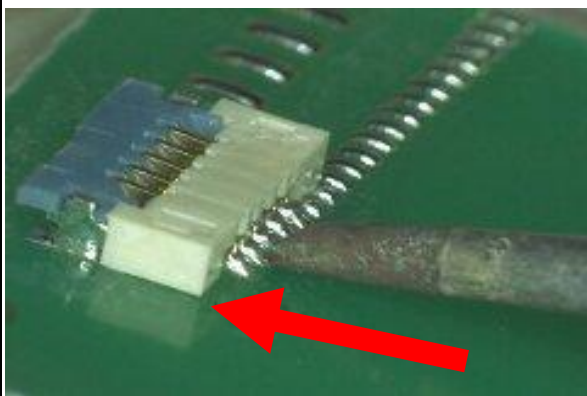
Solder the connector mounted on a PC board by a soldering iron of 350°C quickly within 3 seconds, and check the appearance visually.

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.

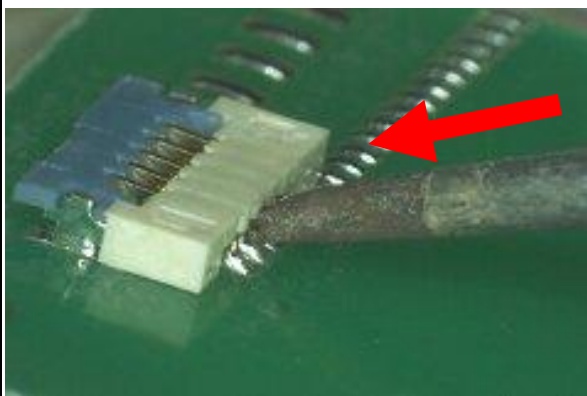
When soldering is repaired, do it with care, paying attention to the below points:



Using the soldering iron of 350 °C, touch the iron tip on the lead end of the specimen mounted on a PC board (within 3 seconds) and remove the connector.



When you repair soldering, do not press the soldering iron on the lead part or do not apply an abnormal load, such as lateral one. If done, dismount and exchange the connector, and conduct soldering again. Do not reuse the dismantled connector.



Do not press the soldering iron on the connector side beyond the lead or do not apply an abnormal load such as lateral one. If done, dismount the connector to exchange, and conduct soldering again. Do not reuse the dismantled connector.



<b>JST</b>	Title subject: FHSY Connector Reverse Type 8 Embossed-Taping Product)	No. CHM-1-2145
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## 6-2 Reflow soldering method

We recommend reflow soldering at lower temperature than the temperature profile of reflow soldering described in item "Resistance to Soldering Heat" of the product specification.

As the recommended reflow temperature condition varies depending on the materials, such as solder paste, solder the connector according to the condition of the material.

When bridge trouble appears in process of reflow soldering and repair is conducted by hand, strictly conduct item 6-1 "Solder iron method."

## 6-3 Metal mask thickness

We recommend using the 100 to 120 $\mu$ m-thick metal mask which area of the blanking part is same as PC board pad area. In case that the metal mask thickness is more than 120 $\mu$ m, adjust the amount (area) of soldering coat by making the opening area smaller than the PC board pad area.

## 7. Other Precautions

- ① The FHSY connector is for ultra-low profile (the connector height: 0.9 mm) and narrow space; each component of the connector is very delicately manufactured. Especially when the cover housing is operated or a FPC is handled, be sure to read through the aforementioned handling way.
- ② The cover housing of the FHSY connector is locked with the reinforcement. Be sure to mount the reinforcement, because the connector performance may be affected.
- ③ Do not extract a FPC by force while the cover housing is closed after the insertion. Such handling may cause the breakage of the connector and FPC.
- ④ The development concept of the connector is low-profile and space-saving. As a rule, we recommend using the exclusive jig when the cover housing is operated.