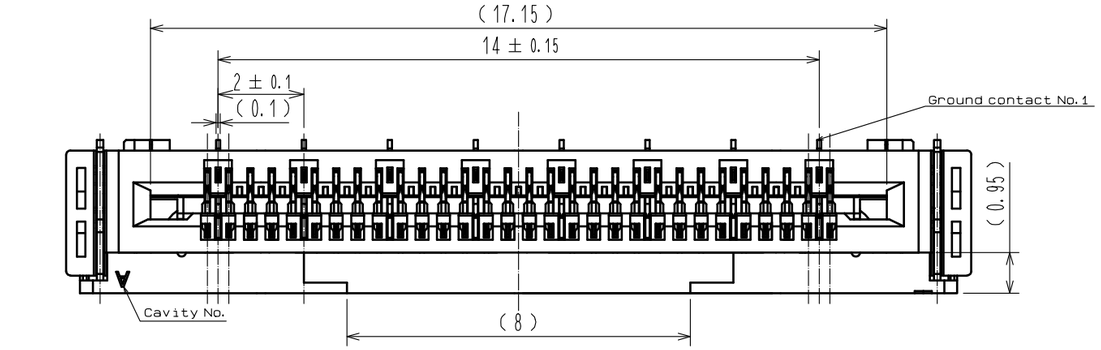
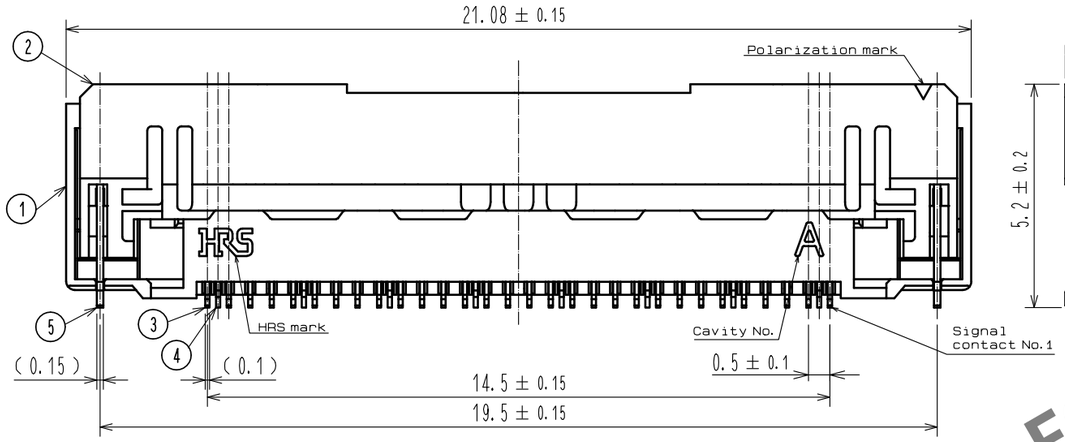
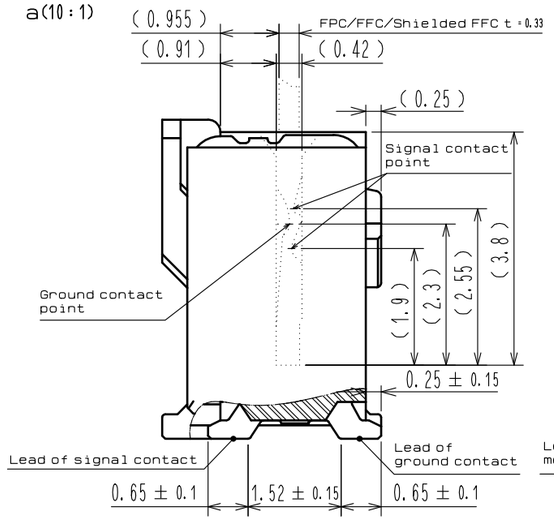
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HRS DRAWING FOR REFERENCE

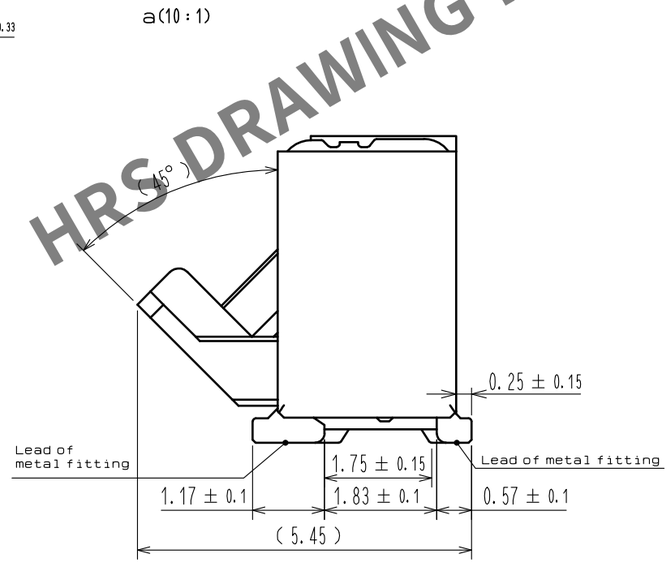




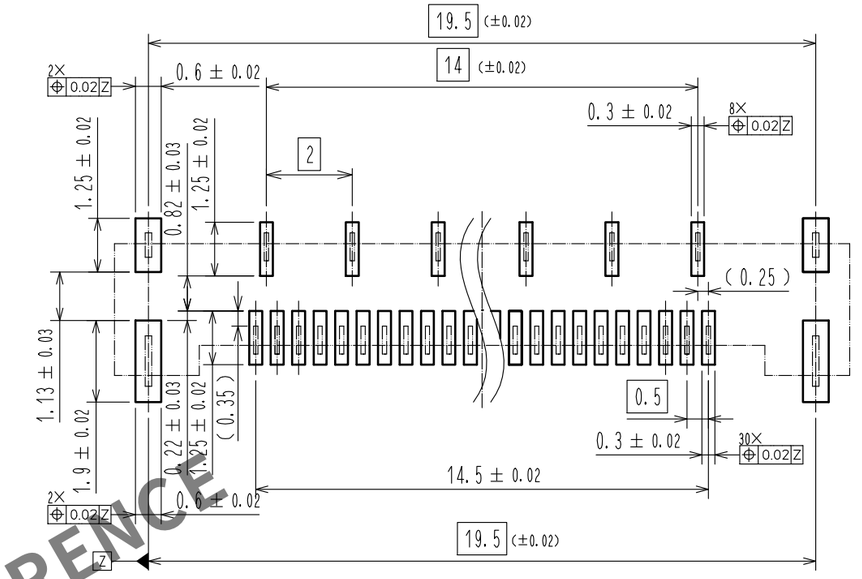
a(10 : 1)



a(10 : 1)

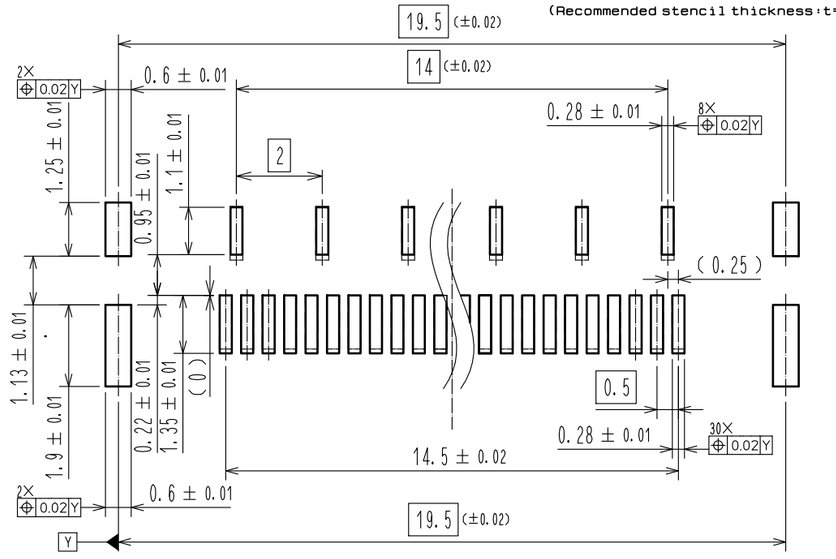


Recommended PCB mounting pattern



Recommended stencil pattern

(Recommended stencil thickness : t=0.12)



Notes
1. The dimension in parentheses are for reference.
2. Lead co-planarity including reinforced metal fittings shall be 0.1 max.
3. To be delivered with tape and reel packaging.
   See attached packaging specification for details.
4. Note that preventive hole for sink mark, lighting hole,
   or slit could be added for improvement.
5. The quality remains good, even with the dark spots,
   which could occasionally occur on molded plastic.
6. This product satisfies halogen free requirements defined as 900 ppm maximum chlorine,
   900 ppm maximum bromine and 1500 ppm maximum total of chlorine and bromine.

NO.	MATERIAL	FINISH , REMARKS	NO.	MATERIAL	FINISH , REMARKS
4	Copper alloy	Tin plating (reflow finished) 1μm MIN and copper (interlayyer) 0.15μm MIN over nickel 1μm MIN	9	(Connector)	
3	Copper alloy	Contact area: Gold plating 0.1μm MIN over nickel 1μm MIN. lead area: Gold plating 0.03μm MIN over nickel 1μm MIN. Other: Nickel plating 1μm MIN.	8	Polystyrene	
			7	Polyester	
			6	Polystyrene	
2	LCP	BLACK UL94V-0	5	Copper alloy	Tin plating (reflow finished) 1μm MIN over nickel 0.2μm MIN.
1	LCP	GRAY UL94V-0			

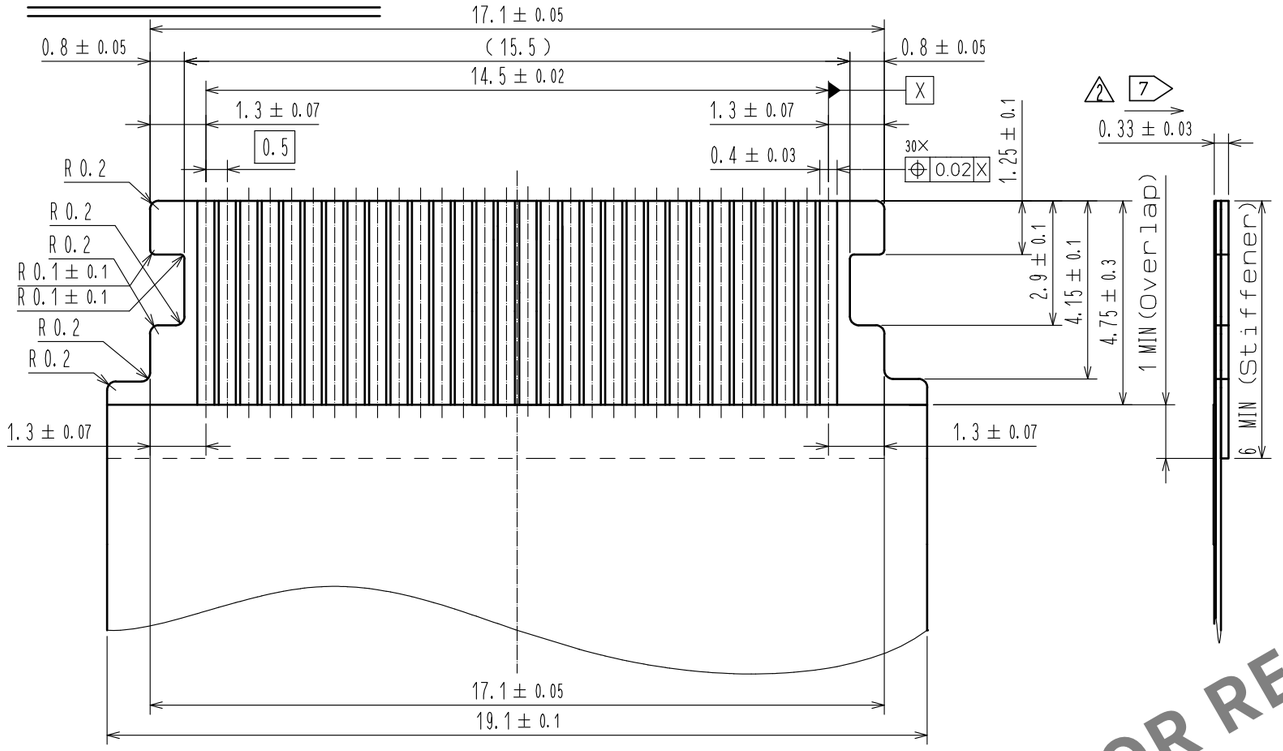
UNITS	SCALE		COUNT	DESCRIPTION OF REVISIONS	DESIGNED	CHECKED	DATE
mm	7 : 1	2	9	DIS-F-00021819	KN. KOBAYASHI	HS. HIRAHARA	20241204

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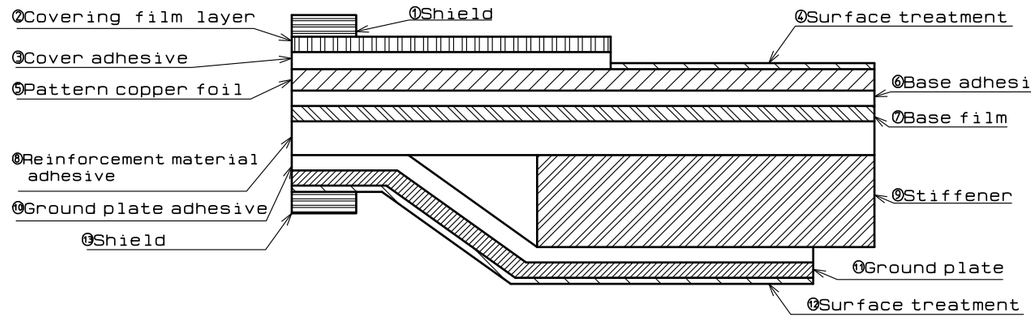
APPROVED	HH. SHINDO	20181012	DRAWING NO. EDC-377805-00-00
CHECKED	KN. SHIBUYA	20181012	PART NO. FH67-30S-0.5SV
DESIGNED	SI. TAMAKI	20181012	CODE NO. CL0580-4901-0-00
DRAWN	DS. HIROWATARI	20181012	2 1/7

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Recommended FPC

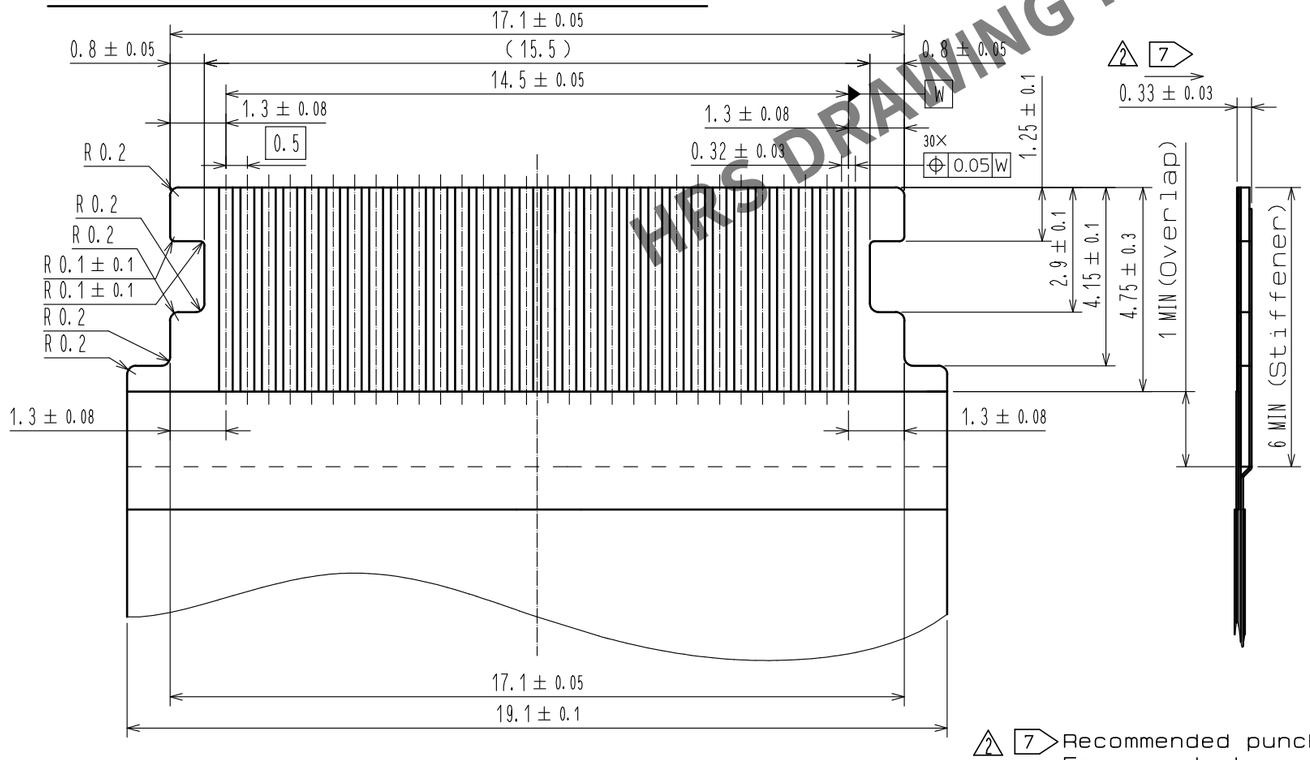


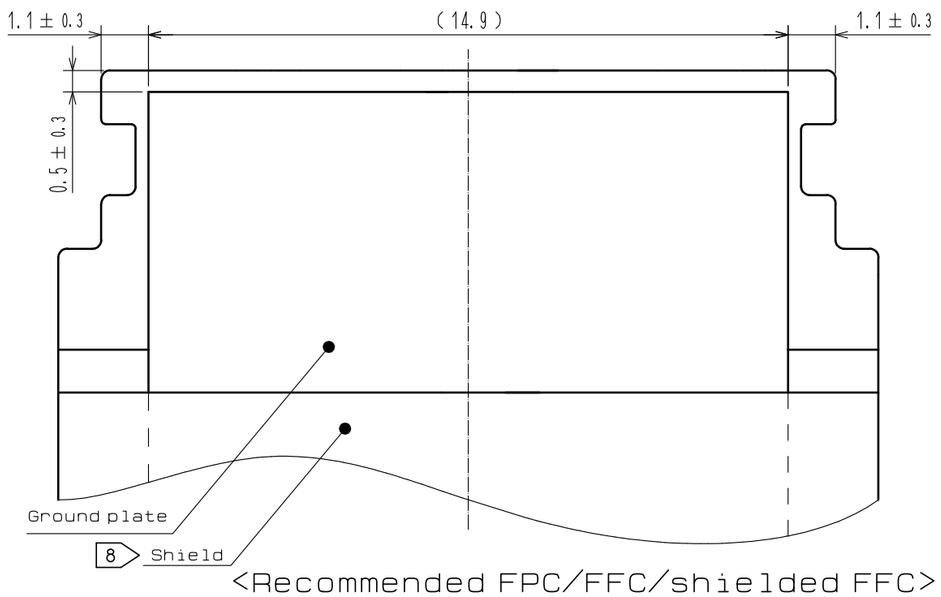
FPC/FFC/shielded FFC configuration (Reference example)



	Material name	FPC Material	FPC Thickness (μm)	FFC Material	FFC Shield FFC Thickness (μm)	FFC FFC Thickness (μm)
①	Shield	—	—			—
②	Covering film layer	Polyimide 1mil	25	Polyester type	25	25
③	Cover adhesive	Heat-hardened adhesive	28	Adhesive	25	25
④	Surface treatment	1μm to 6μm nickel underplated 0.2μm gold plated	(3.7)	0.5μm to 5μm nickel underplated 0.05μm to 0.5μm gold plated	(3.275)	(3.275)
⑤	Pattern copper foil	Cu 1 oz	35	Soft copper film	35	35
⑥	Base adhesive	Heat-hardened adhesive	8	Adhesive	25	25
⑦	Base film	Polyimide 1mil	25	Polyester type	25	50
⑧	Reinforcement material adhesive	Heat-hardened adhesive	55	Adhesive	30	30
⑨	Stiffener	Polyimide 8mil	200	Polyester type	150	188
⑩	Ground plate adhesive	—	—	Adhesive	30	—
⑪	Ground plate	—	—	Copper film Tin plating 1μm to 5μm	37	—
⑫	Surface treatment	—	—			
⑬	Shield	—	—			—

Recommended FFC/shielded FFC





<Recommended FPC/FFC/shielded FFC>

2 7 Recommended puncher direction:
From conductor side to stiffener side.

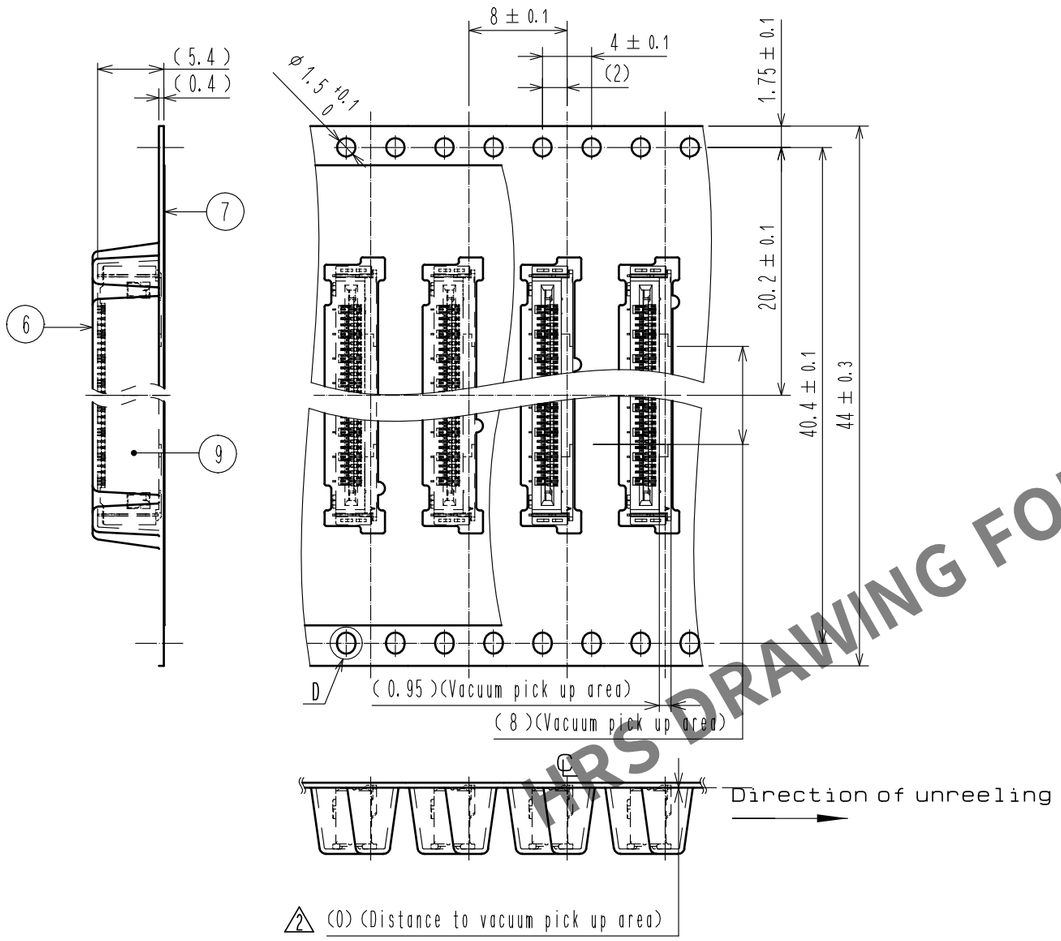
8 Please overlap shield area on ground plate .

HRS DRAWING FOR REFERENCE

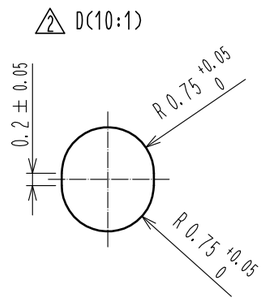
DRAWING NO.	EDC-377805-00-00
PART NO.	FH67-30S-0.5SV
CODE NO.	CL0580-4901-0-00

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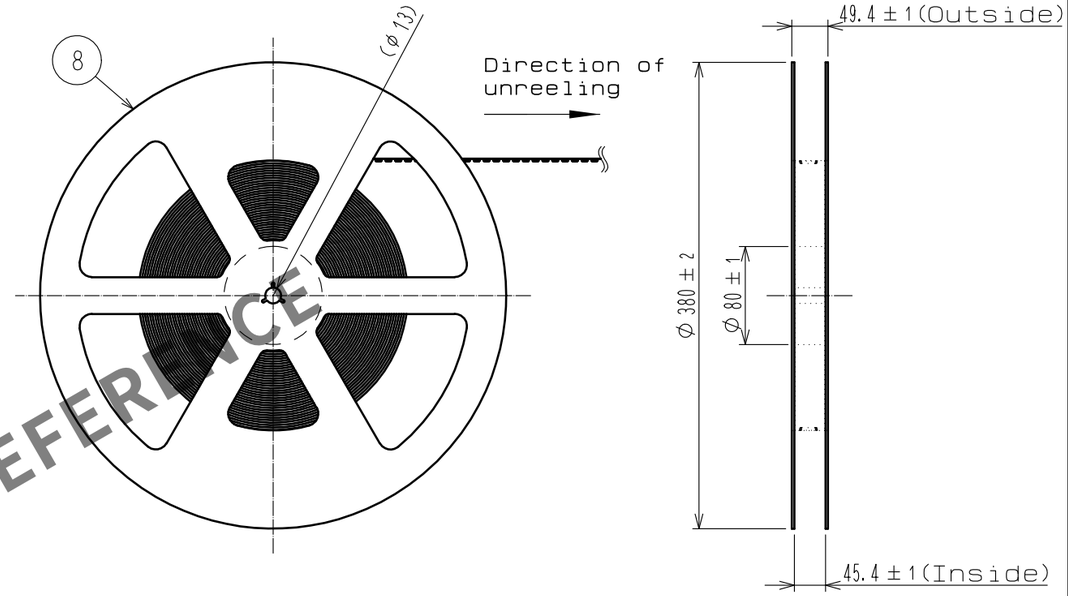
Embossed carrier tape dimension (2:1)



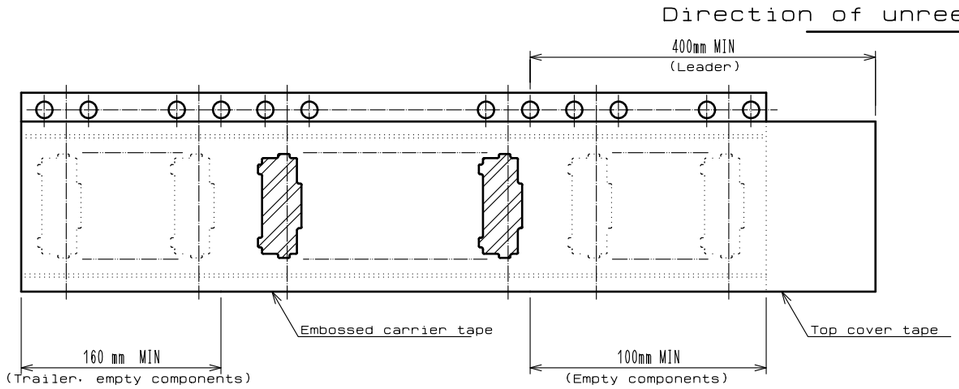
2 D(10:1)



Reel dimension (No scale)



Leader, Trailer dimension (No Scale)



Notes 9 1 reel : 1000 connectors
10 Refer to JIS C 0806.and IEC 60286-3
(Packaging of components for automatic handling)

<Packing specification>

HRS	DRAWING NO.	EDC-377805-00-00
	PART NO.	FH67-30S-0.5SV
	CODE NO.	CL0580-4901-0-00

2 3/7

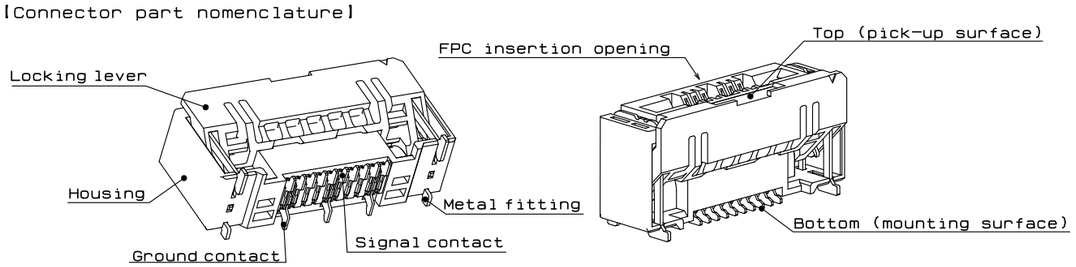
HRS DRAWING FOR REFERENCE

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This connector requires delicate and careful handling.
To prevent connector/FPC breakege and contact failure (mating failure, FPC pattern breakage, etc),
read through the instructions shown below and handle the connector properly.
This instruction manual is applicable to usage with FPC/FFC/shielded FFC .

[Connector part nomenclature]



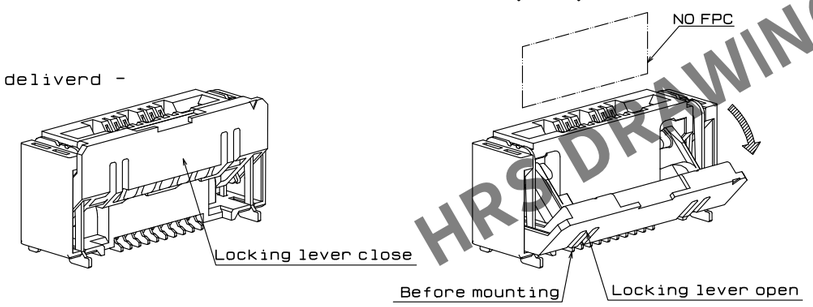
[Operation and precautions]

1. Initial condition
The product is supplied with the locking lever closed.
Locking lever does not have to be operated before inserting FPC .

[Caution]
- Do not open the locking lever when the FPC is not inserted.
The locking lever is to be used only when extracting the FPC (Example 1).
- Do not insert FPC or operate locking lever before mounting (Example 1).

Example 1)

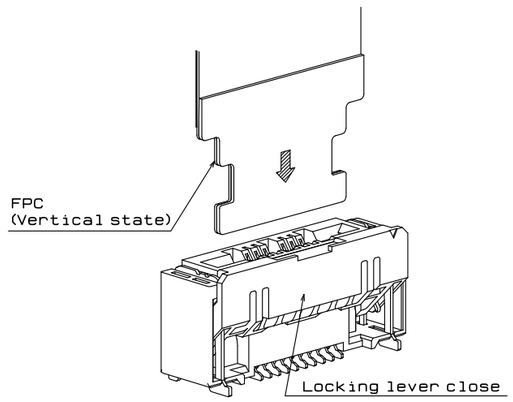
NG



2. How to insert FPC
Insert the FPC into the connector opening vertically to the PCB surface (Example 2).
Insert it properly to the very end.

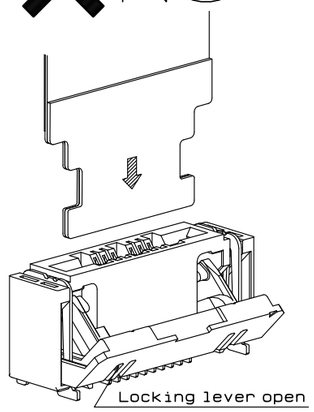
[Caution]
- Make sure the locking lever is closed when inserting the FPC.
Do not insert the FPC when the locking lever is open (Example 3) .
While locking lever is open, it is structured so that FPC can't be inserted,
but if it is forced to insert FPC it will cause breakage.
- Do not insert the FPC when the locking lever is pressed from above a finger.(Example 4) .
- Insert the FPC pattern surface on the opposite side of the locking lever opertaion part.
(Example 5)
- Align both sides of the tip of FPC vertically to the sides of
the connector opening and insert straight forward. (Example 6)
△2 After insertion is complete, do not apply any further load to the FPC .
- Do not twist the FPC to up and down or right and left or an angle(Example 7, 8).
(Recommended insertion angle ±2.5 MAX)
-Do not open lock lever with fingers when insert FPC(Example 9).

Example 2)



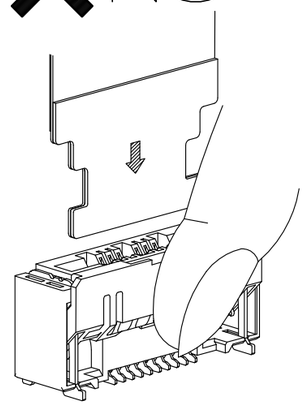
Example 3)

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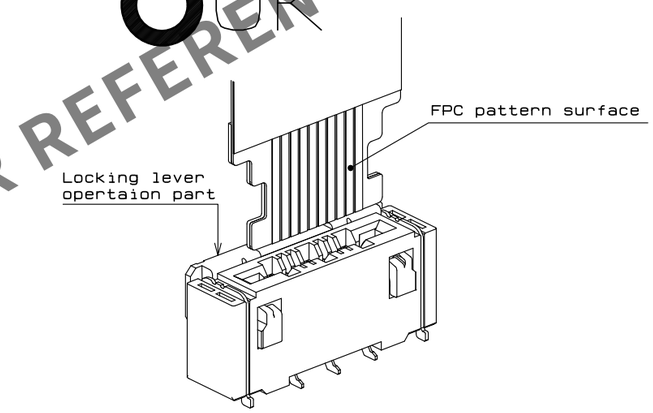
Example 4)

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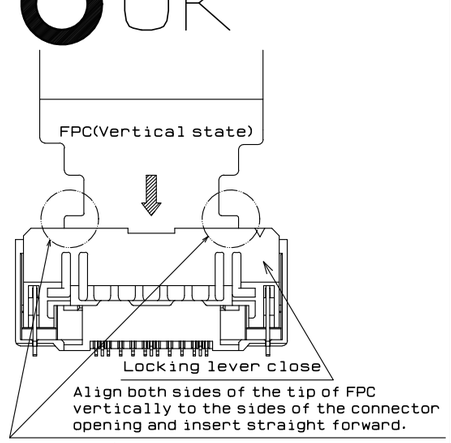
Example 5)

OK



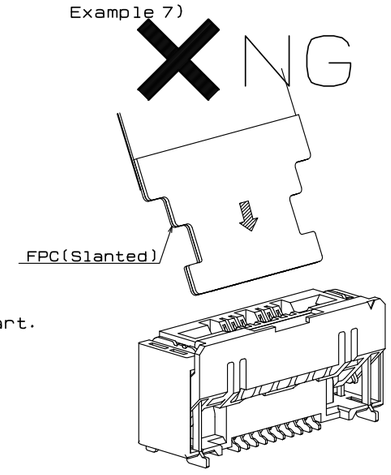
Example 6)

OK



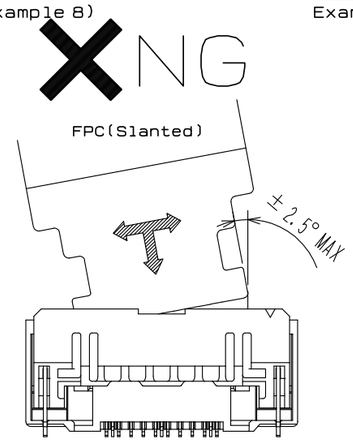
Example 7)

NG



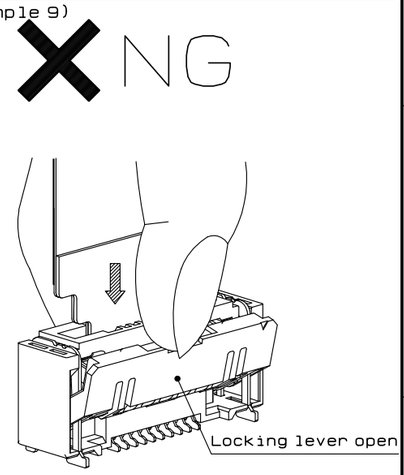
Example 8)

NG



Example 9)

NG



<Instruction manual(1)>

DRAWING NO.	EDC-377805-00-00
PART NO.	FH67-30S-0.5SV
CODE NO.	CL0580-4901-0-00 △2

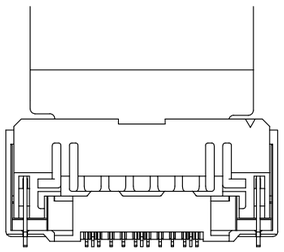
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3. FPC insertion check
Make sure that the FPC tabs are located in proper position after FPC insertion (Example 10).
(The FPC position is to be aligned by the protrusion of the locking lever.)

[Caution]
- Do not insert the FPC at an angle and/or stop it before insertion is completed (Example 11, 12).
- As this product is designed for one action locking, the locking lever does not have to be operated after inserting FPC.

Example 10)

OOK

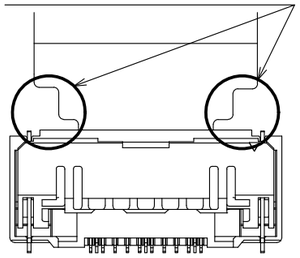


FPC is completely inserted to the end.

Example 11)

XNG

Insertion of FPC is shallow and there is big clearance between FPC and housing.

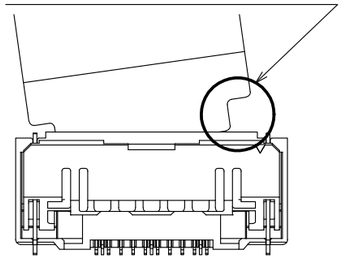


Insertion of FPC is shallow and not fully inserted to the end.

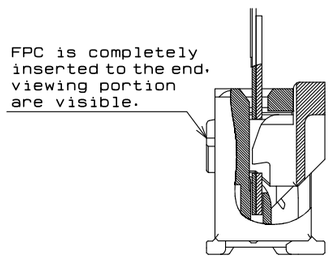
Example 12)

XNG

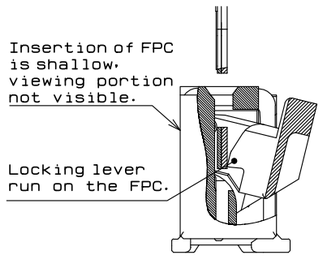
FPC is inserted in slanted angle and there is big clearance between FPC and housing.



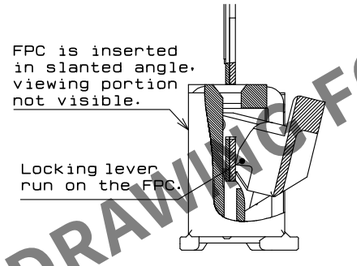
FPC is inserted in slanted angle and not fully inserted to the end.



Section – locking area –



Section – locking area –



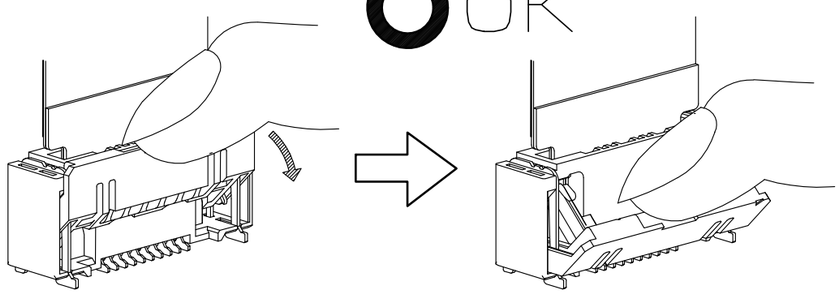
Section – locking area –

4. How to release the lock
Slowly flip down the locking lever to release the lock (Example 13).

[Caution]
- To open the locking lever, operate at the center of the locking lever (Example 14).
- To open the locking lever, do not operate the locking lever at one end only (Example 15).
- The locking lever is opened up to the movable limit, 45 degree. Do not open the locking lever beyond the specified degree or apply excess force to the locking lever(Example 16).
- Do not pick the locking lever to lift and pull it (Example 17).
- Operate the locking lever by hand without using sharp tool such as Tweezers. (Example 18).
- Do not apply excess force to the housing during the operation (Example 19).

Example 13)

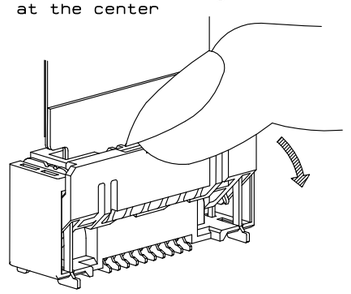
OOK



Example 14)

OOK

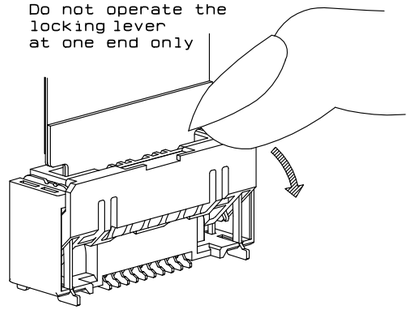
Operate the locking lever at the center



Example 15)

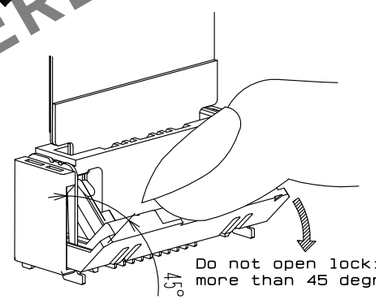
XNG

Do not operate the locking lever at one end only



Example 16)

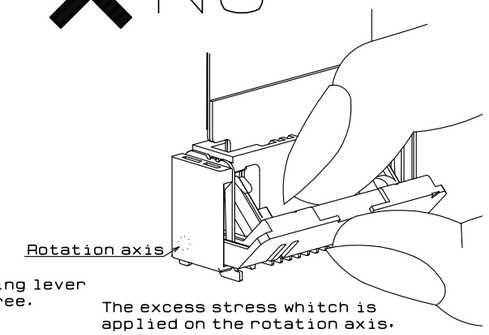
XNG



Do not open locking lever more than 45 degree.

Example 17)

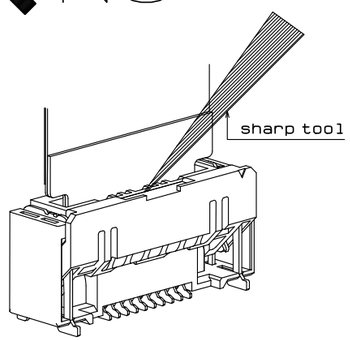
XNG



The excess stress whitch is applied on the rotation axis. could cause breakage.

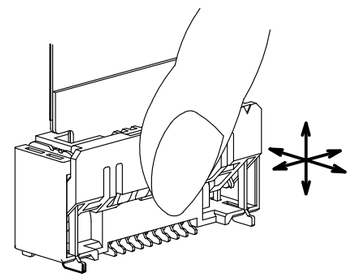
Example 18)

XNG



Example 19)

XNG



Do not apply excess force to the locking lever during the operation.

HRS DRAWING FOR REFERENCE

<Instruction manual(2)>

HRS	DRAWING NO.	EDC-377805-00-00
	PART NO.	FH67-30S-0.5SV
	CODE NO.	CL0580-4901-0-00

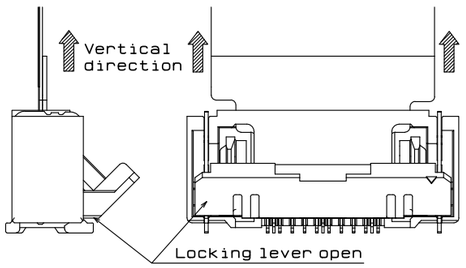
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5. How to remove FPC
After flip down the locking lever to the fully opened position vertically withdraw the FPC (Example 20).
Do not withdraw the FPC on the condition that the locking lever is held by a finger. (Example 21)
⚠2 The lock lever close automatically when the FPC is removed, but this is not a defect of the product. (Example 22).

[Caution]
- Do not attempt to pull the FPC without unlocking the locking lever (Example 23). After forcibly remove FPC, retention force of FPC may decrease.
- This connector has a temporary FPC holding structure with the locking lever. For FPC removal, do not pull out the FPC other than in the vertically direction of the PCB (Example 24).

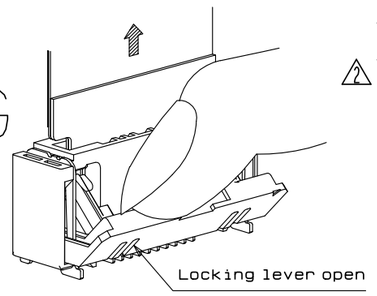
Example 20)

OK



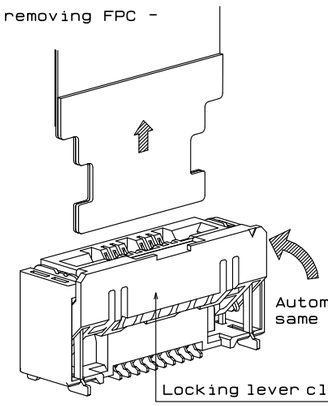
Example 21)

NG



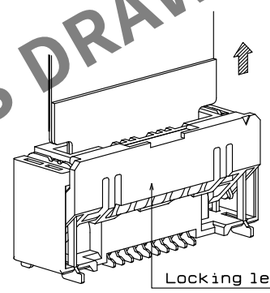
Example 22)

- After removing FPC -



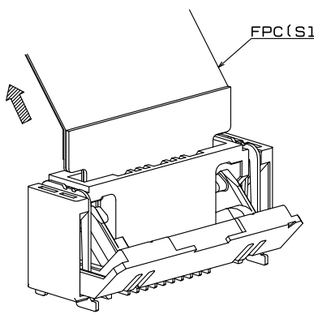
Example 23)

NG

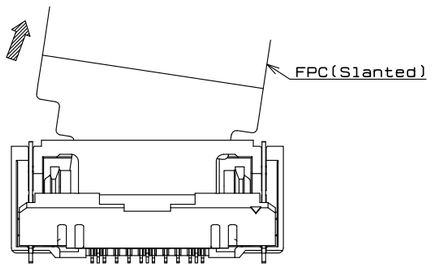


Example 24)

NG



NG



[Precautions for component layout]

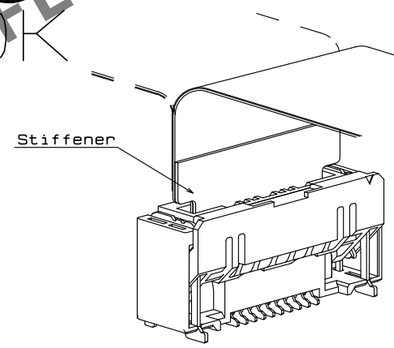
Depending on a FPC rounding, a load is applied to the connector, and a contact failure may occur.
To prevent a failure, take the following notes into a consideration during mechanism design.

[Caution]
- When fixing FPC after FPC cabling, avoid pulling FPC, and route the wire FPC with slack. In this regard, the stiffener is vertical to the PCB (Example25).
- Avoid applying forces to FPC in vertical or horizontal directions. Do not bend the FPC excessively near the connector during use, or it may cause contact failure or FPC breakage. Stabilizing the FPC is recommended (Example 26, 27).
- Do not mount other components or enclosure touching to the FPC underneath the FPC stiffener (Example28).
- Make adjustments with the FPC manufacturer for FPC bending performance and wire breakage.
- Keep a sufficient FPC insertion space in the stage of the layout in order to avoid incorrect FPC insertion. Appropriate FPC length and component layout are recommended for assembly ease. Too short FPC length makes assembly difficult.
- Keep spaces for the locking lever movement and its operation for PCB design and component layout.
- ⚠2 Please consult with our sales representative if you are using FPC with different configuration from our recommendation.

Example 25)

OK

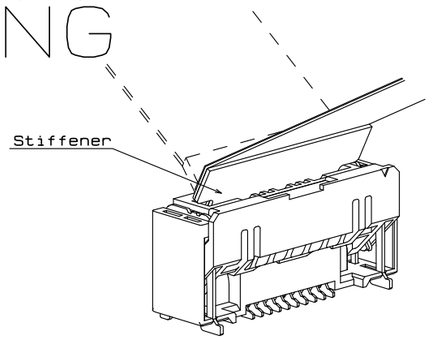
Stress is not applied to Stiffener



Example 26)

NG

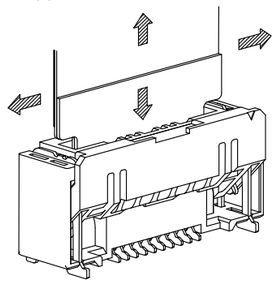
Stress is applied to Stiffener



Example 27)

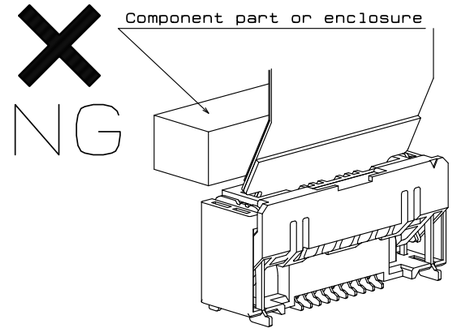
NG

Stress is applied to FPC



Example 28)

NG



HRS DRAWING FOR REFERENCE

<Instruction manual(3)>

HRS	DRAWING NO.	EDC-377805-00-00
	PART NO.	FH67-30S-0.5SV
	CODE NO.	CL0580-4901-0-00 ⚠2 6/7

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In case of consideration for using Automotive equipment / device which demands high reliability, kindly contact our sales window correspondents.

【Instructions for mounting on the PCB】

Follow the instructions shown below when mounting on the PCB.

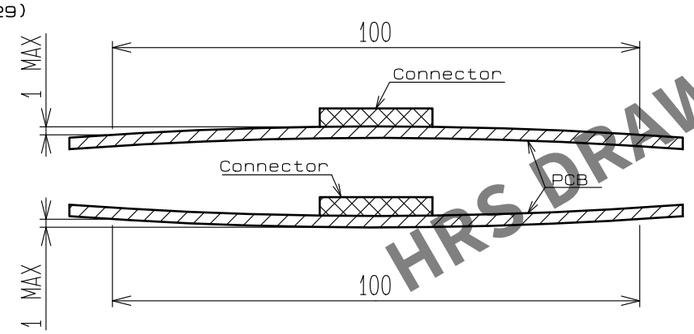
[Caution]
- Refer to recommended layouts on the page 1 for PCB and stencil pattern.
- Shorter pattern width than the recommended PCB dimension, could cause solder wicking and/or flux penetration.
- Larger pattern than the recommended stencil dimension, could cause solder wicking and/or flux penetration.
- Clearance underneath the contact lead and the housing is very small. In case solder resist and/or silk screening are applied on PCB underneath the connector, verify the thickness, or it could push up the connector bottom and may cause soldering defect and/or insufficient fillet formation.
- Apply reflow temperature profile within the specified conditions. In individual applications, the actual temperature may vary, depending on solder paste type, volume/thickness and PCB size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.
- Prevent warpage of PCB, where possible, since it can cause soldering failure :even with 0.1 mm max coplanarity.
- When mounting on the flexible board, please make sure to put a stiffener on the backside of the flexible board. We recommend a glass epoxy material with the thickness of 0.3 mm min.
- Do not add 1.0 N or greater external force when unreel or pick and place the connector etc, or it may get broken.

【Instructions for PCB handling after mounting the connector】

Follow the instructions shown below when mounting on the PCB.

[Caution]
- ·Splitting a large PCB into several pieces
  ·Screwing the PCB
  During the handling described above, do not exert an excessive force on the PCB. Otherwise, the connector may become defective.
- The warp of a 100 mm wide PCB should be 1.0 mm or less. The warp of PCB suffers stress on connector and the connector may become defective (Example 29).

Example 29)



【Instructions on manual soldering】

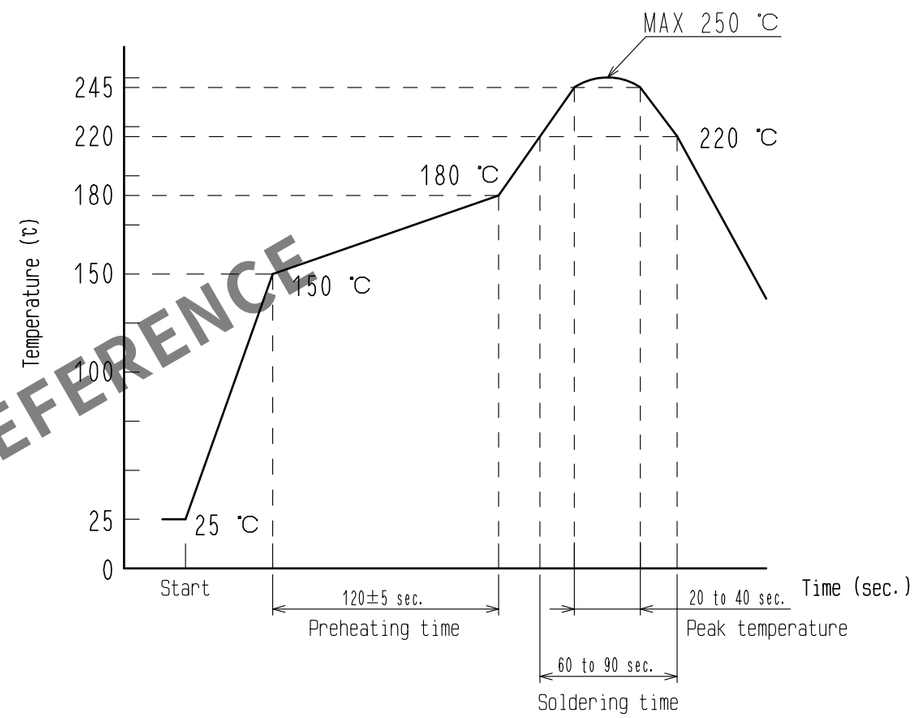
Follow the instructions shown below when soldering the connector manually during repair work, etc.

[Caution]
- Do not perform manual soldering with the FPC inserted into the connector.
- Do not heat the connector excessively. Be very careful not to let the soldering iron contact any parts other than connector leads. Otherwise, the connector may be deformed or melt.
- Do not supply excessive solder (or flux). If excessive solder (or flux) is supplied on the terminals, solder or flux may adhere to the contacts, resulting in poor contact . Supplying excessive solder to the metal fittings may hinder locking lever rotation, resulting in breakage of the connector.

△2 【Recommended reflow temperature profile】

The temperatures mentioned above refer to the PCB surface temperature near the connector leads.
In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness.
Consult your solder paste and equipment manufacturer for specific recommendations.

- Reflow method:IR reflow
- Number of reflow cycles:2 cycles MAX.



HRS DRAWING FOR REFERENCE

<Instruction manual(4)>

DRAWING NO.	EDC-377805-00-00
PART NO.	FH67-30S-0.5SV
CODE NO.	CL0580-4901-0-00 △2 7/7