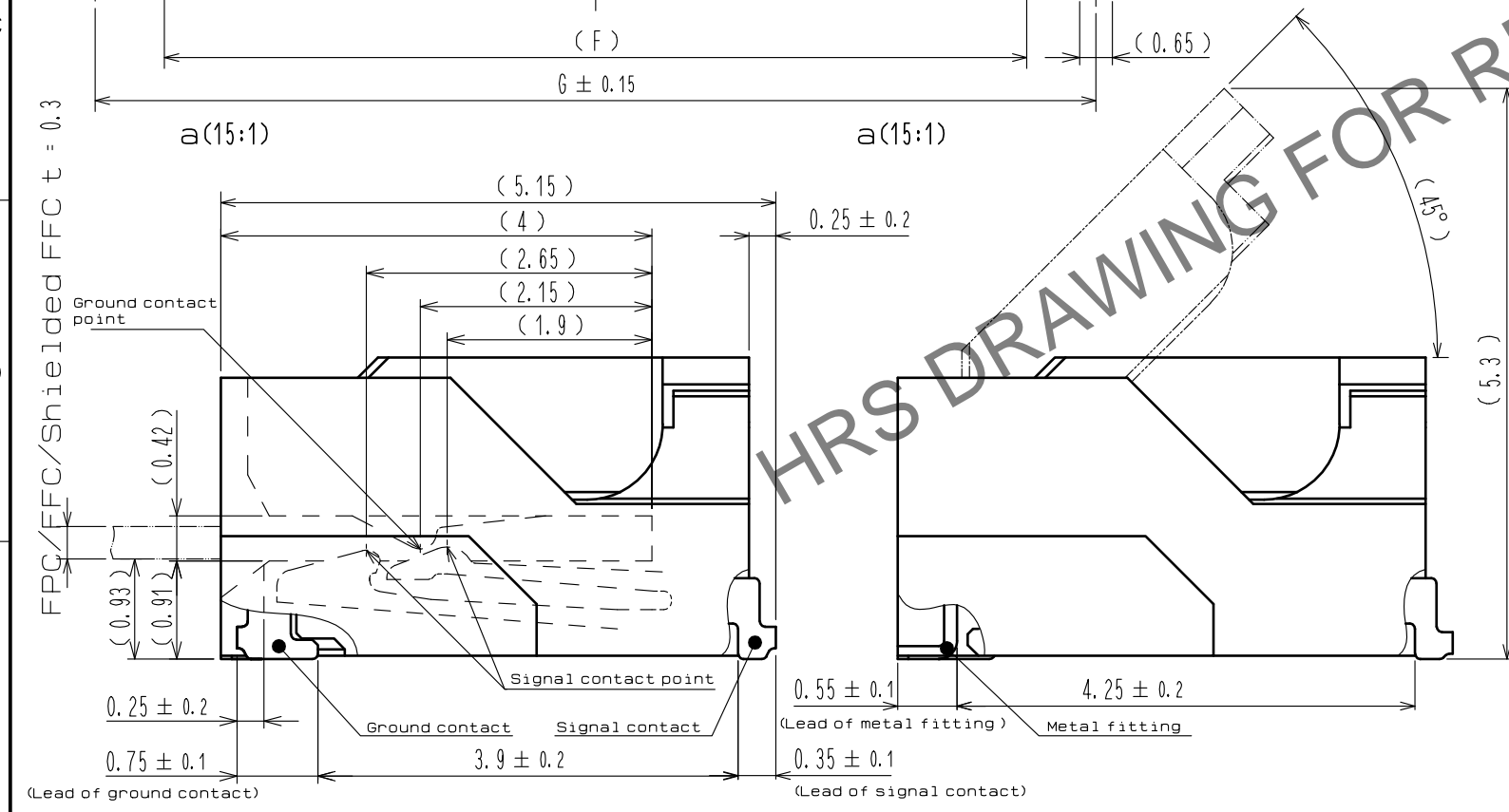
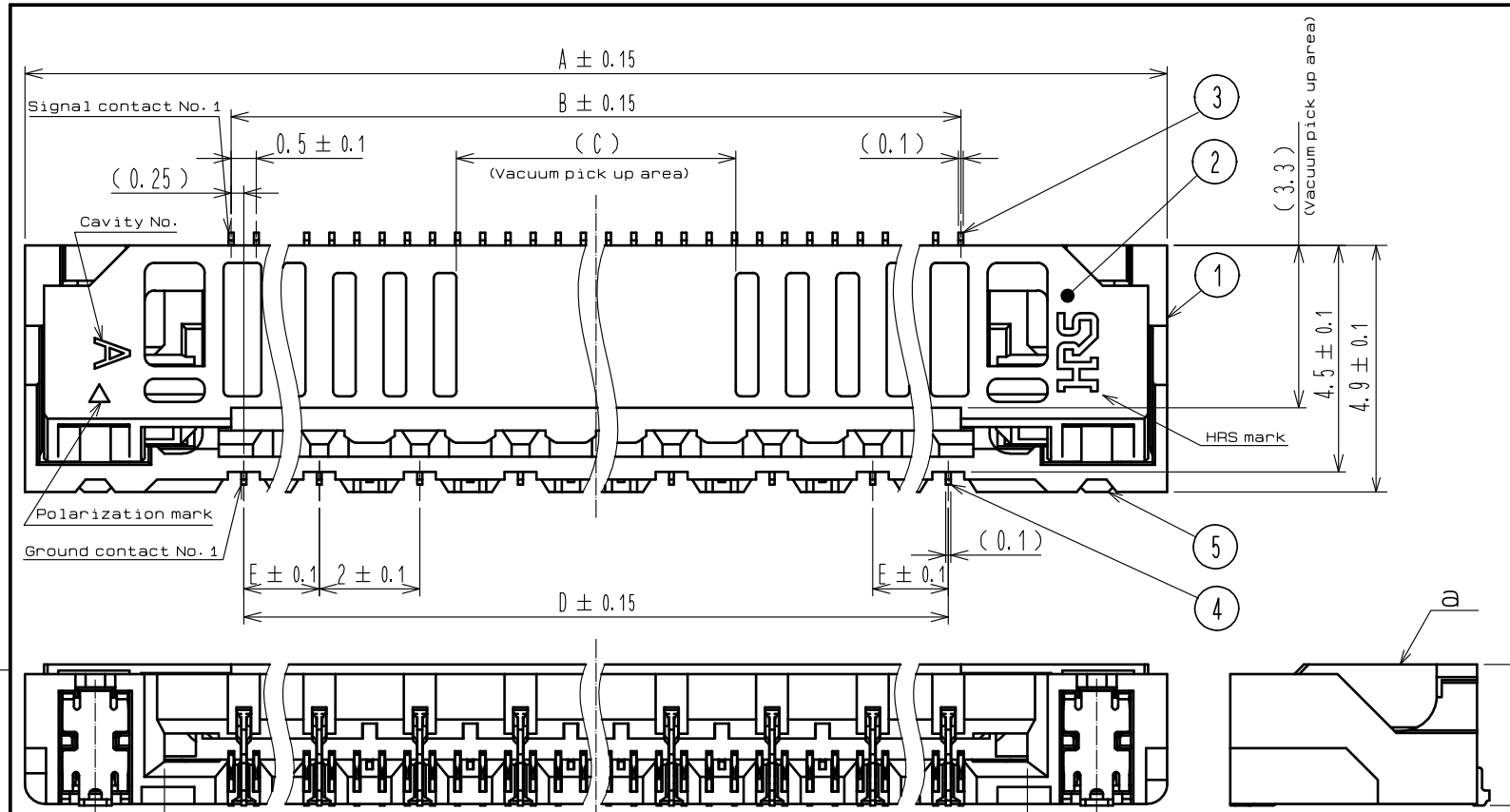
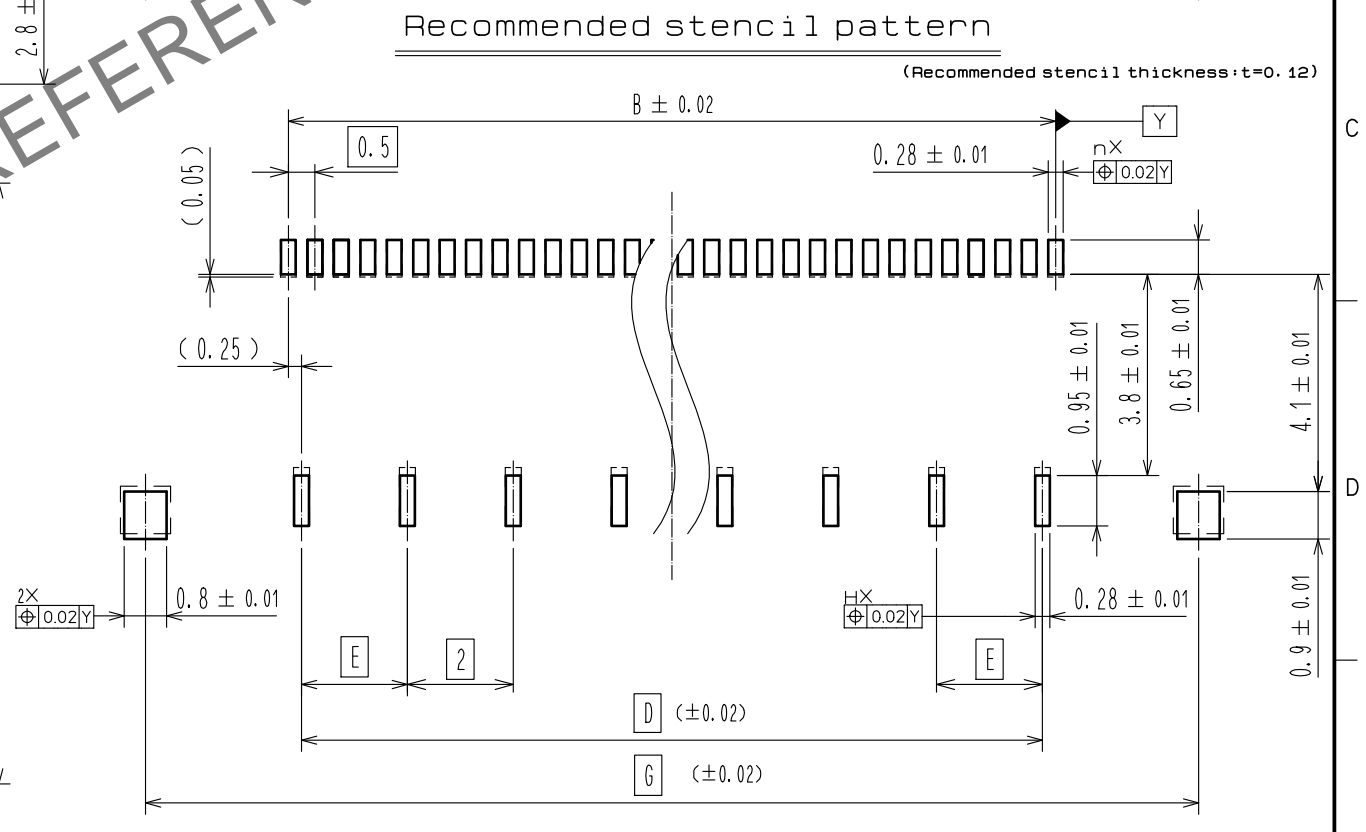
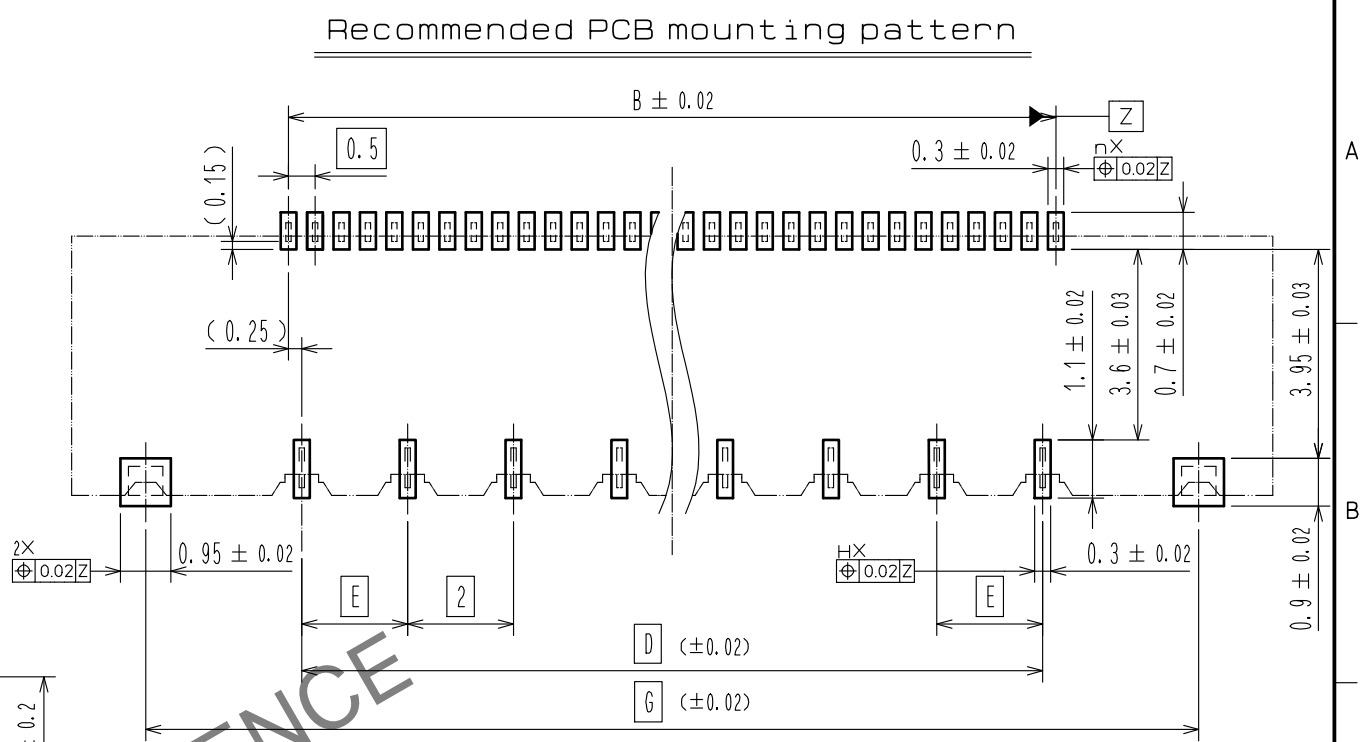


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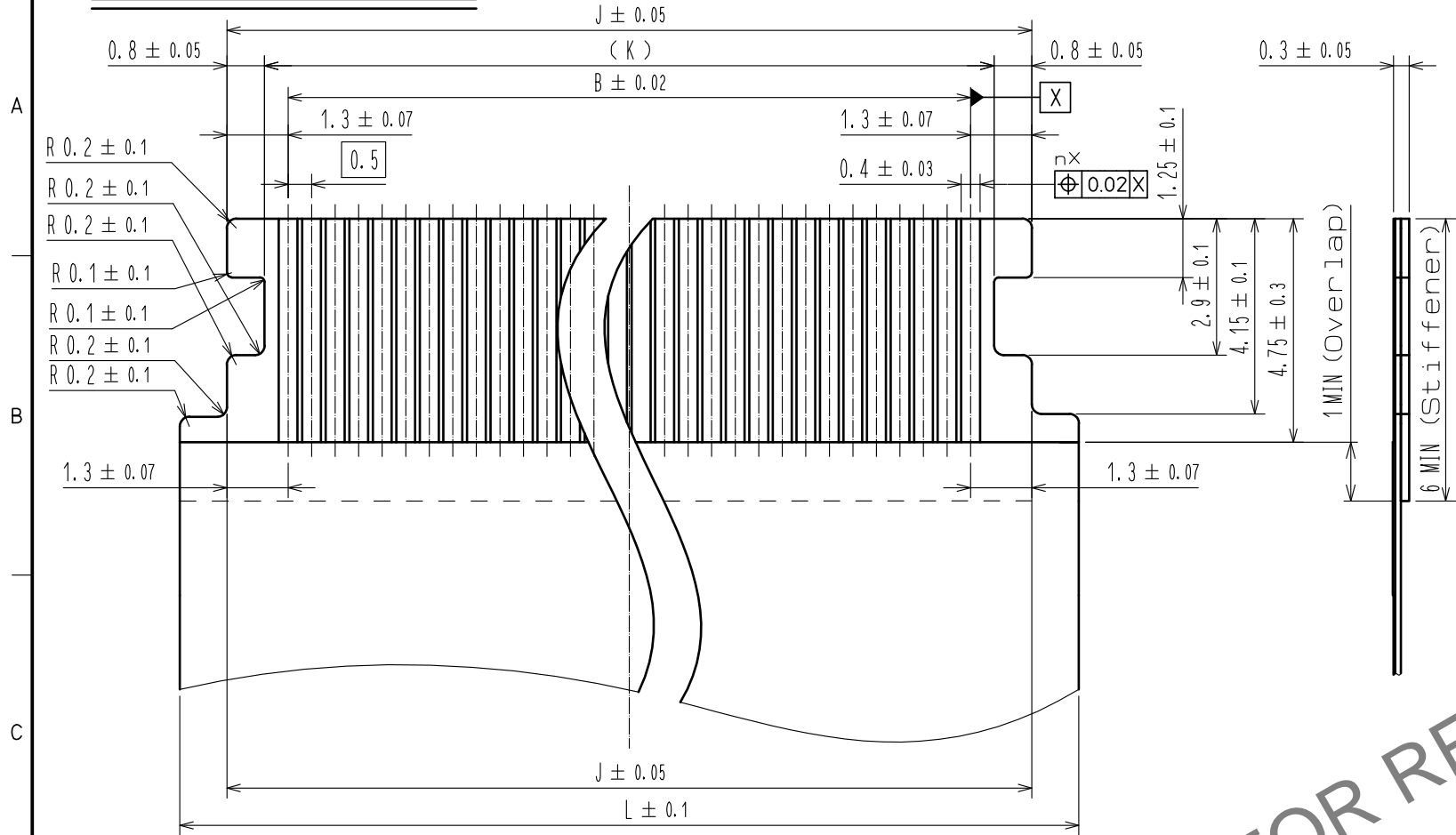
- Notes
- The dimension in parentheses are for reference.
  - Lead co-planarity including reinforced metal fittings shall be 0.1 max.
  - To be delivered with tape and reel packaging. See attached packaging specification for details.
  - Note that preventive hole for sink mark, lighting hole, or slit could be added for improvement.
  - The quality remains good, even with the dark spots, which could occasionally occur on molded plastic.
  - 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.
  - 'n' represents the number of contacts.



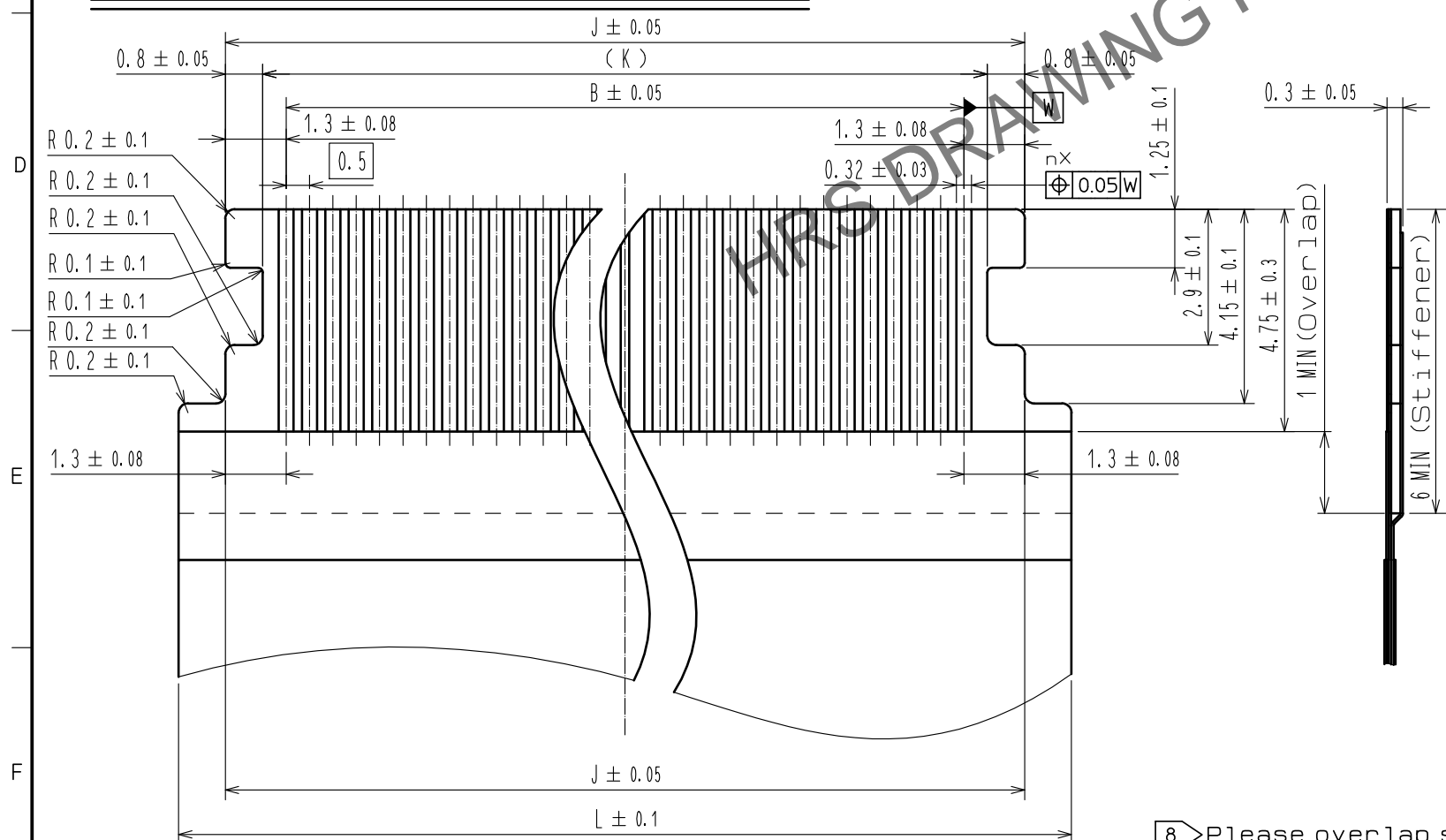
4	Copper alloy	Tin plating (reflow finished) 1μm MIN and copper (interlayer) & 15μm MIN over nickel 1μm MIN	9	(Connector)	
3	Copper alloy	Contact area lead: Gold plating 0.03μm MIN over nickel 1μm MIN. Other: Nickel plating 1μm MIN.	8	Polystyrene	
2	LCP	BLACK UL94V-0	7	Polyester	
1	LCP	GRAY UL94V-0	6	Polystyrene	
			5	Stainless steel	Tin plating (reflow finished) 1μm MIN over nickel 0.2μm MIN.
NO.	MATERIAL	FINISH . REMARKS	NO.	MATERIAL	FINISH . REMARKS
UNITS		SCALE	COUNT	DESCRIPTION OF REVISIONS	
mm		7 : 1	△	DESIGNED	CHECKED
HRS		APPROVED : HS. HIRAHARA	20220119	DRAWING NO. EDC-388109-99-00	
HIROSE ELECTRIC CO., LTD.		CHECKED : HS. HIRAHARA	20220119	PART NO. FH63S-**S-0.5SH(99)	
		DESIGNED : KN. KOBAYASHI	20220119	CODE NO. CL580	
		DRAWN : NM. YONEYAMA	20220119	1/8	

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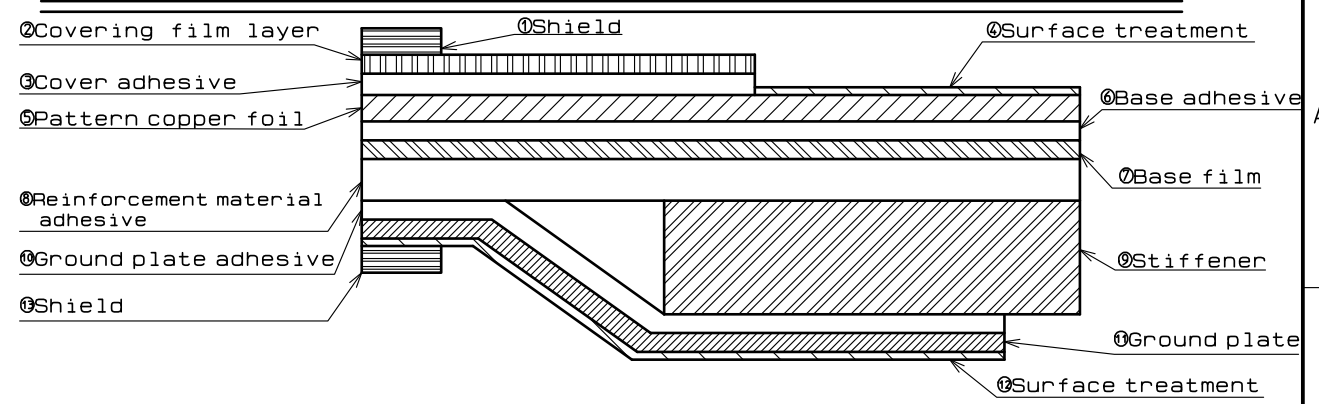
**Recommended FPC**



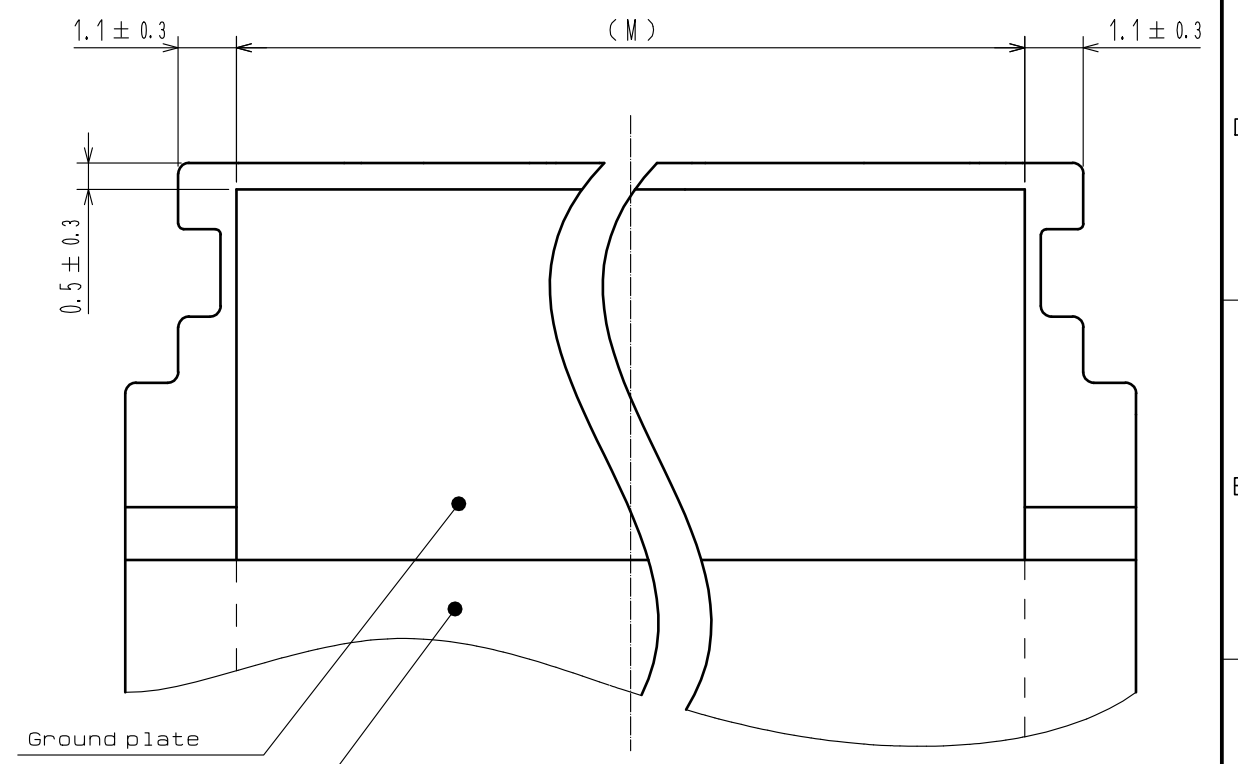
**Recommended FFC/shielded FFC**



**FPC/FFC/shielded FFC configuration (Reference example)**



Material name	FPC		FFC	
	Material	Thickness (μm)	Material	Thickness (μm)
① Shield	—	—	—	—
② Covering film layer	Polyimide 1mil	25	Polyester type	12
③ Cover adhesive	Heat-hardened adhesive	25	Adhesive	30
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)
⑤ Pattern copper foil	Cu 1 oz	35	Soft copper film	35
⑥ Base adhesive	Heat-hardened adhesive	25	Adhesive	15
⑦ Base film	Polyimide 1mil	25	Polyester type	12
⑧ Reinforcement material adhesive	Heat-hardened adhesive	30	Adhesive	30
⑨ Stiffener	Polyimide 8mil	175	Polyester type	150
⑩ Ground plate adhesive	—	—	Adhesive	15
⑪ Ground plate	—	—	Copper film	37
⑫ Surface treatment	—	—	Tin plating 1μm to 5μm	—
⑬ Shield	—	—	—	—



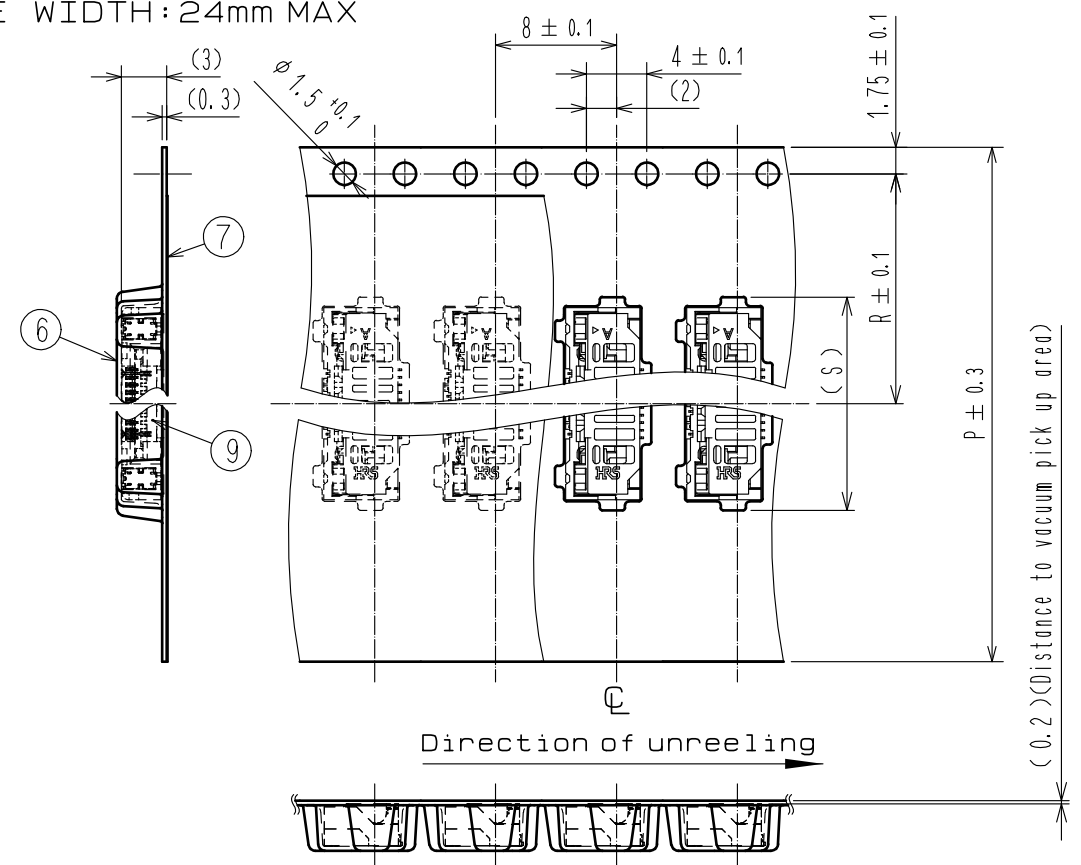
⑧ Please overlap shield area on ground plate.  
9. Recommended puncher direction:  
From conductor side to stiffener side.

**HRS** DRAWING NO. EDC-388109-99-00  
PART NO. FH63S-\*\*S-0.5SH(99)  
CODE NO. CL580

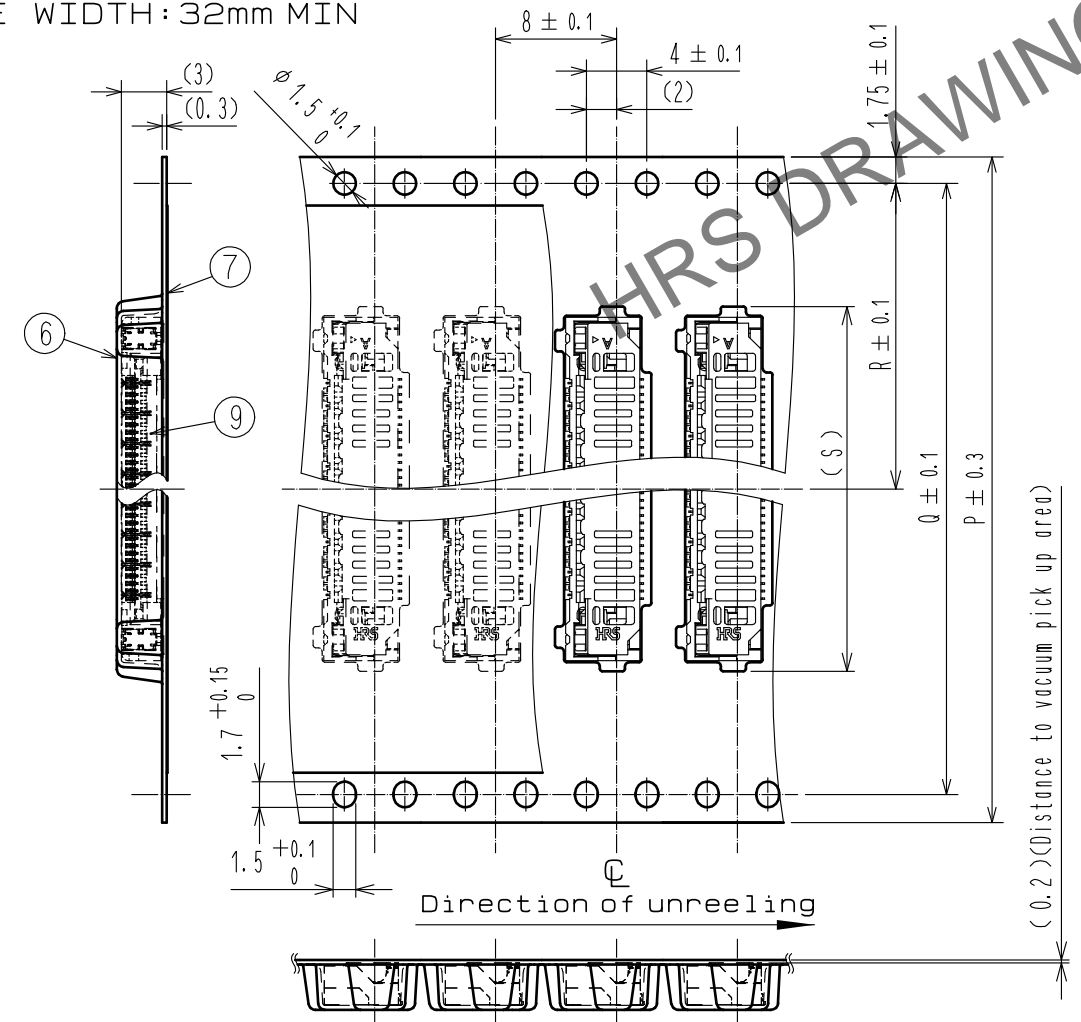
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## Embossed carrier tape dimension (2:1)

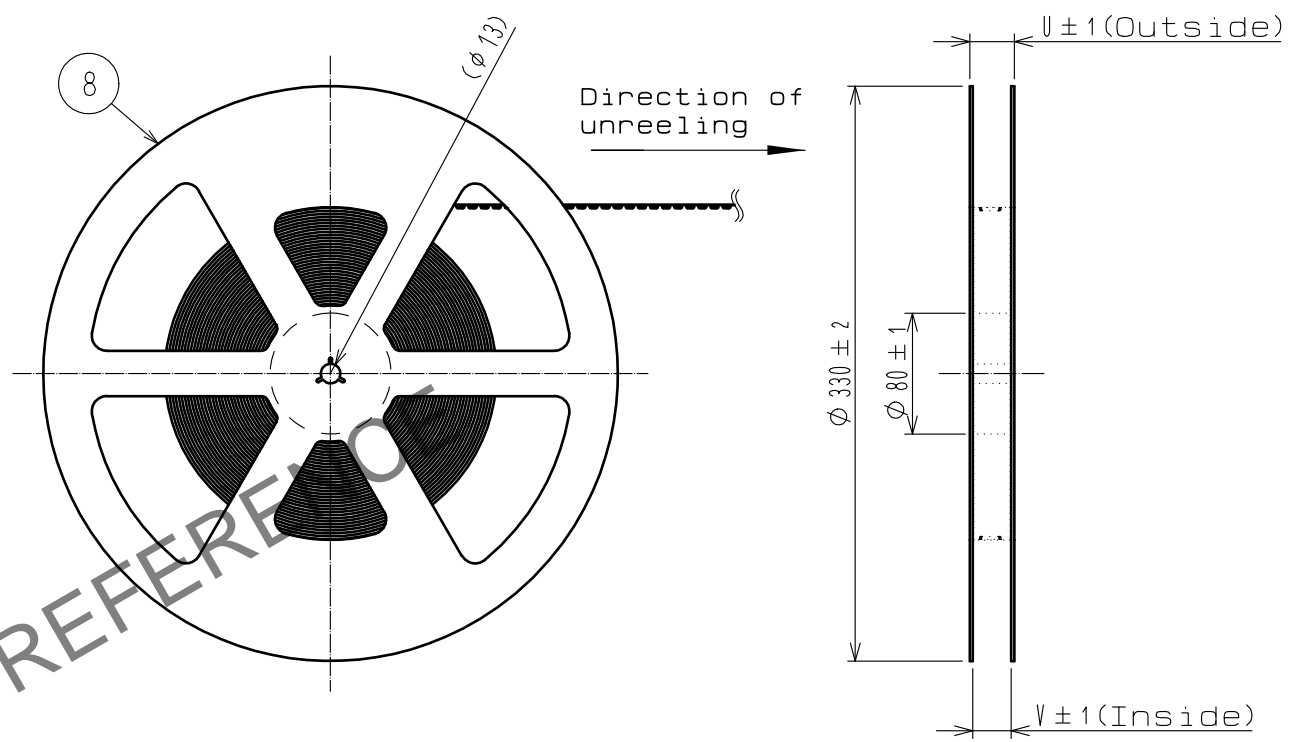
■ TAPE WIDTH: 24mm MAX



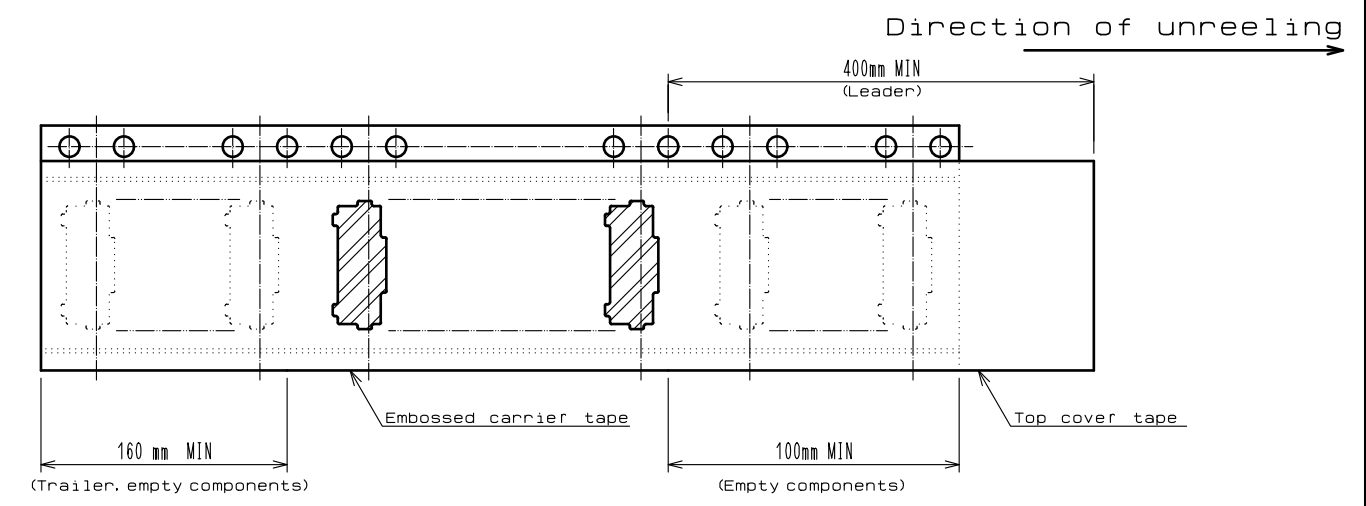
■ TAPE WIDTH: 32mm MIN



## Reel dimension (No scale)



## Leader, Trailer dimension (No scale)



- Notes  
 10. 1 reel : 500 connectors.  
 11. Refer to JIS C 0806 and IEC 60286-3.  
 (Packaging of components for automatic handling)

<Packing specification>

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Part No.	Code Number	Number of contacts	Dimension of connector, PCB mounting pattern, metal mask, FPC, FFC, and shielded FFC											Dimension of drawing for packing						
			A	B	C	D	E	F	G	H	J	K	L	M	P	Q	R	S	U	V
FH63S-10S-0.5SH(99)	CL580-4414-0-99	10	12.7	4.5	5.55	4	2	7.15	9.9	3	7.1	5.5	9.1	4.9	24	-	11.5	14.1	29.4	25.4
FH63S-20S-0.5SH(99)	CL580-4419-0-99	20	17.7	9.5	6.55	9	1.5	12.15	14.9	6	12.1	10.5	14.1	9.9	32	28.4	14.2	19.1	37.4	33.4
FH63S-30S-0.5SH(99)	CL580-4415-0-99	30	22.7	14.5	5.55	14	2	17.15	19.9	8	17.1	15.5	19.1	14.9	44	40.4	20.2	24.1	49.4	45.4
FH63S-40S-0.5SH(99)	CL580-4416-0-99	40	27.7	19.5	10.55	19	1.5	22.15	24.9	11	22.1	20.5	24.1	19.9	44	40.4	20.2	29.1	49.4	45.4
FH63S-50S-0.5SH(99)		50	32.7	24.5	15.55	24	2	27.15	29.9	13	27.1	25.5	29.1	24.9	56	52.4	26.2	34.1	61.4	57.4
FH63S-60S-0.5SH(99)		60	37.7	29.5	20.55	29	1.5	32.15	34.9	16	32.1	30.5	34.1	29.9	56	52.4	26.2	39.1	61.4	57.4

※The products without code number are currently under planning.  
 Please contact HIROSE for detailed information about product variation.

HRS DRAWING FOR REFERENCE

<Dimension table>

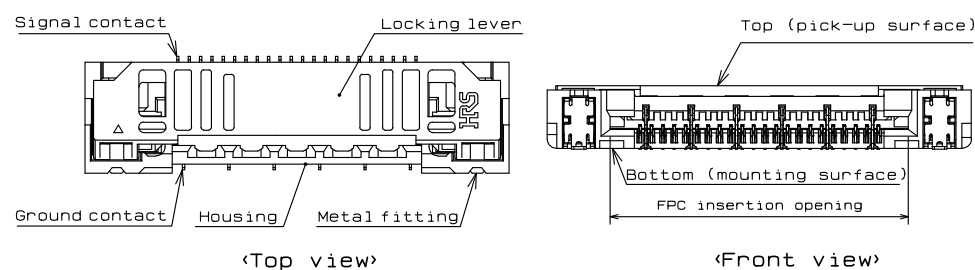
<b>HRS</b>	DRAWING NO.	EDC-388109-99-00
	PART NO.	FH63S-***S-0.5SH(99)
	CODE NO.	CL580

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This connector requires delicate and careful handling.  
To prevent connector/FPC breakage 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]

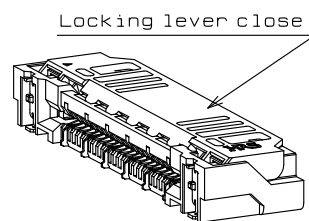
1. Initial condition

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

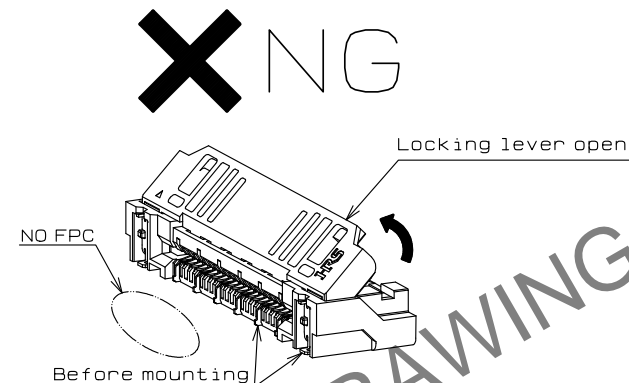
[Caution]

- 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).

- When delivered -



Example 1)



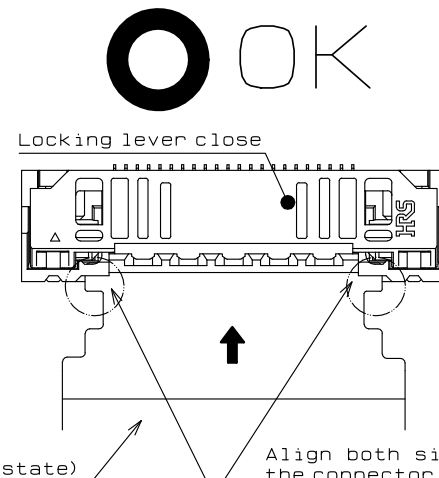
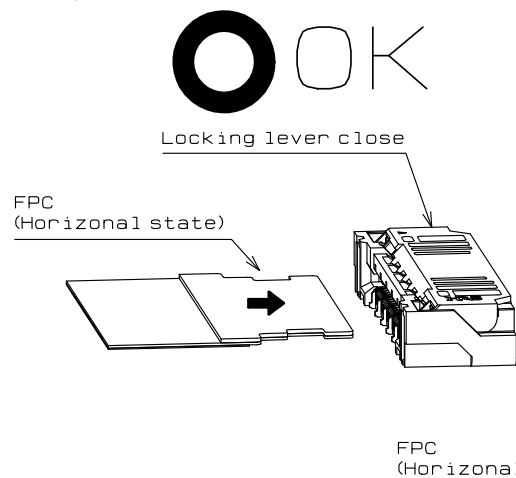
2. How to insert FPC

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

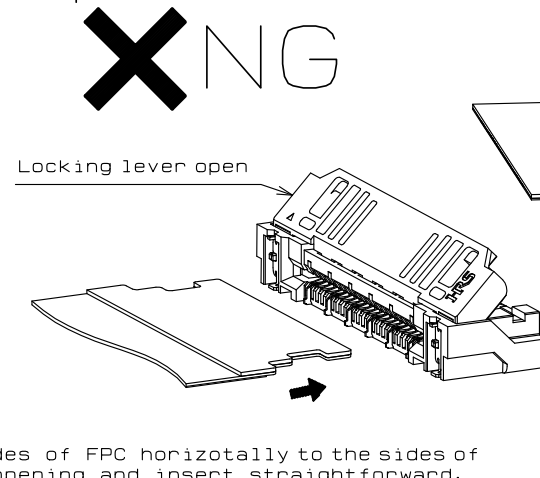
[Caution]

- Make sure the locking lever is closed when inserting the FPC.  
Do not insert the FPC when the locking lever is open (Example 3).
- Do not insert the FPC when the locking lever is pressed from above a finger. (Example 4).
- Align both sides of FPC horizontally to the sides of the connector opening and insert straight forward.
- Do not twist the FPC to up and down or right and left or an angle (Example 5, 6).

Example 2)

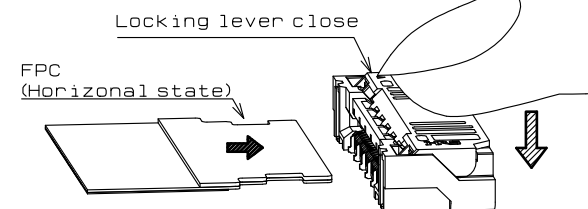


Example 3)

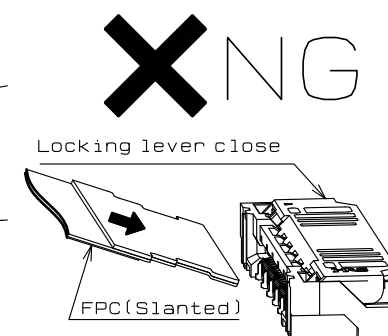


Align both sides of FPC horizontally to the sides of the connector opening and insert straightforward.

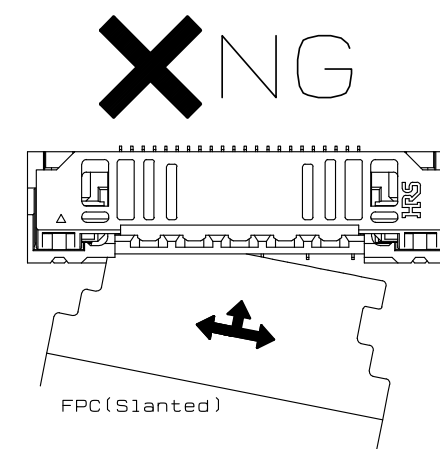
Example 4)



Example 5)



Example 6)



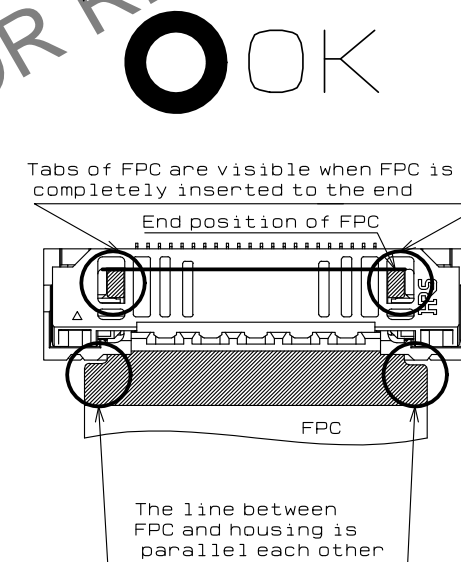
3. FPC insertion check

Make sure that the FPC tabs are located in proper position after FPC insertion (Example 7).  
(The FPC position is to be aligned by the protrusion of the locking lever.)

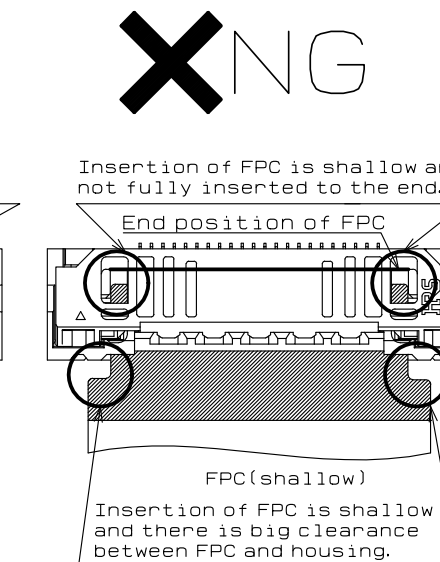
[Caution]

- Do not insert the FPC at an angle and/or stop it before insertion is completed (Example 8, 9).
- As this product is designed for one action locking, the locking lever does not have to be operated after inserting FPC.

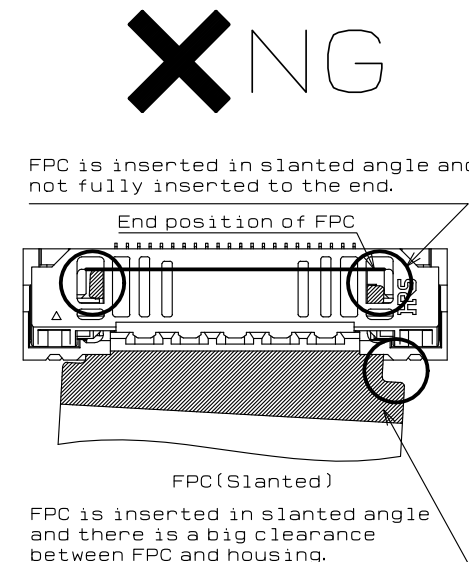
Example 7)



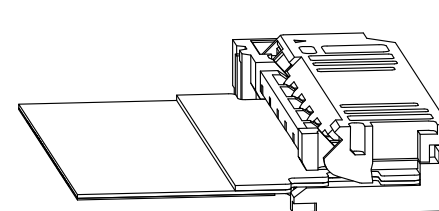
Example 8)



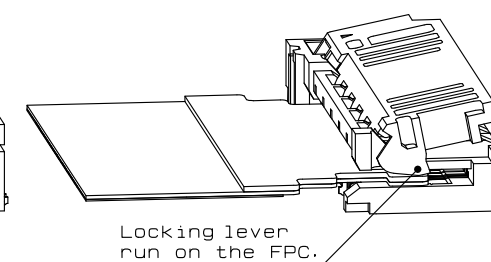
Example 9)



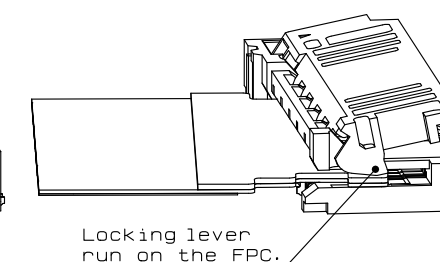
Section - locking area -



Section - locking area -



Section - locking area -



<Instruction manual(1)>

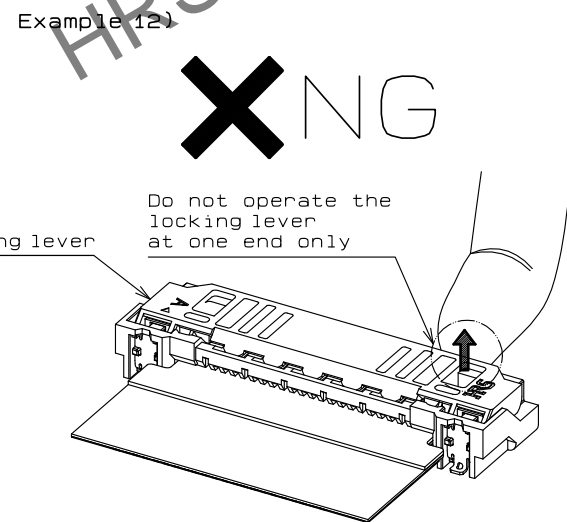
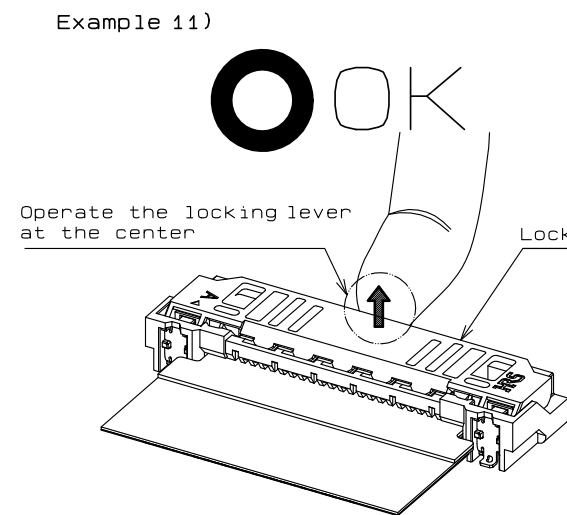
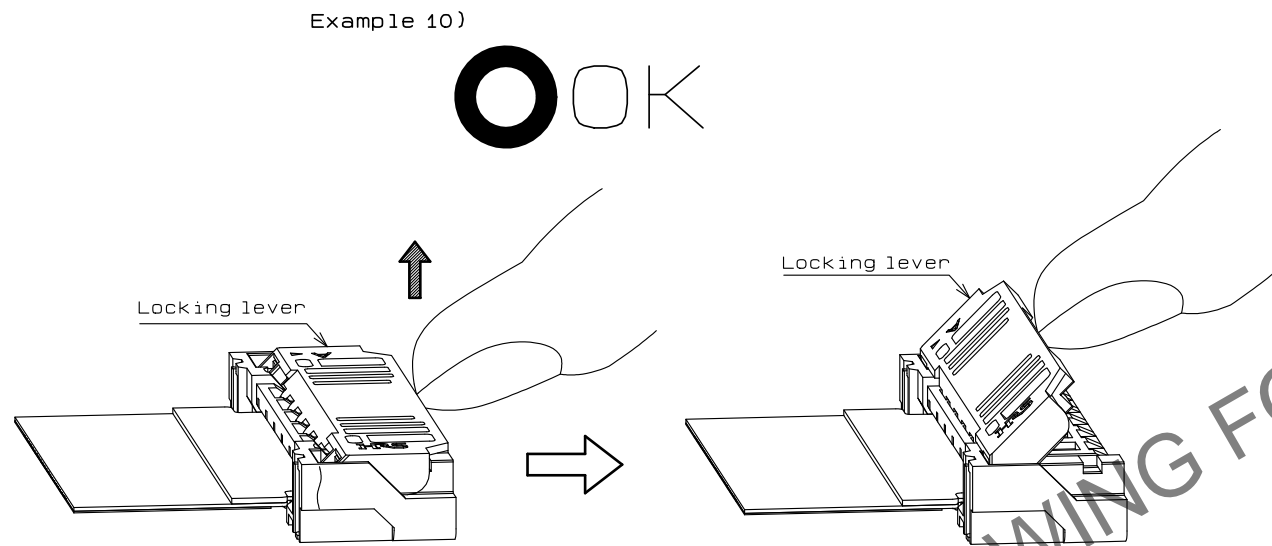
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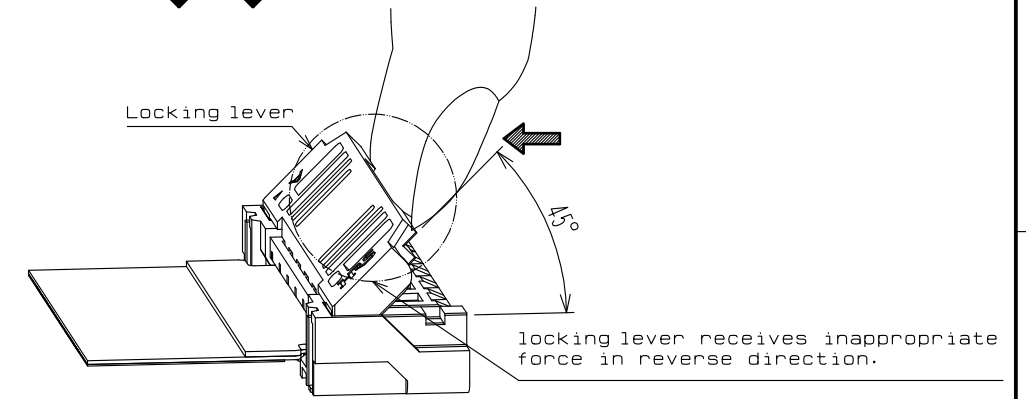
4. How to release the lock  
Slowly flip up the locking lever to release the lock (Example 10).

[Caution]

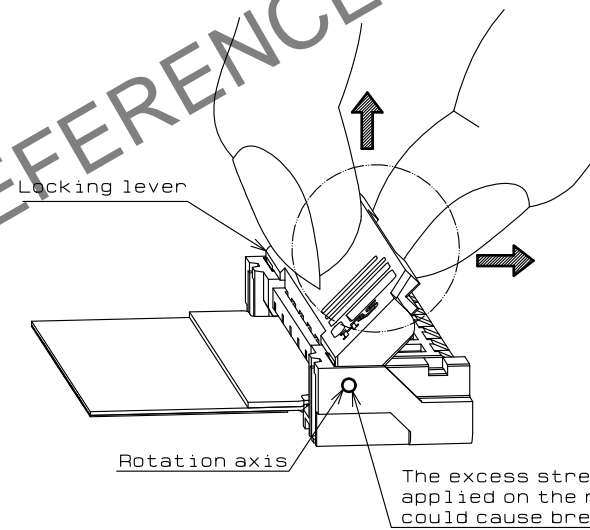
- To open the locking lever, operate at the center of the locking lever (Example 11).
- To open the locking lever, do not operate the locking lever at one end only (Example 12).
- The locking lever is opened up to the movable limit, 45 degree. Do not open the locking lever beyond the specified degree or apply excess force to the locking lever (Example 13).
- Do not pick the locking lever to lift and pull it (Example 14).
- Operate the locking lever by hand without using sharp tool such as Tweezers. (Example 15).
- Do not apply excess force to the housing during the operation (Example 16).
- Do not try to open the lock lever from the FPC insertion side, as the locking lever is designed with the opposite direction from the FPC insertion direction (Example 17).



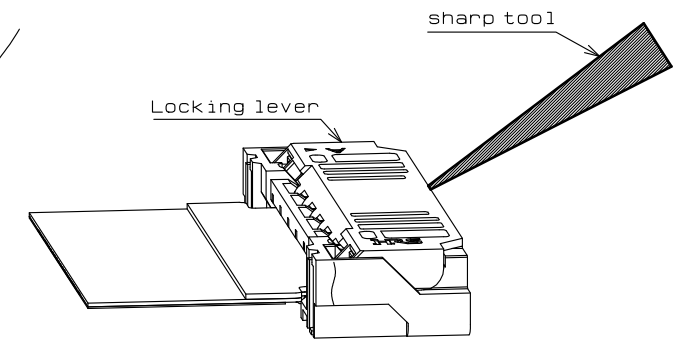
Example 13) **X NG**



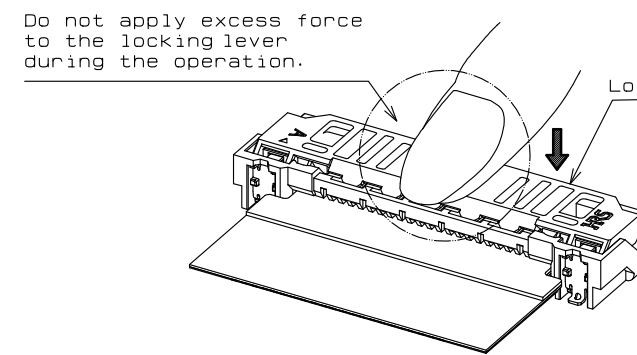
Example 14) **X NG**



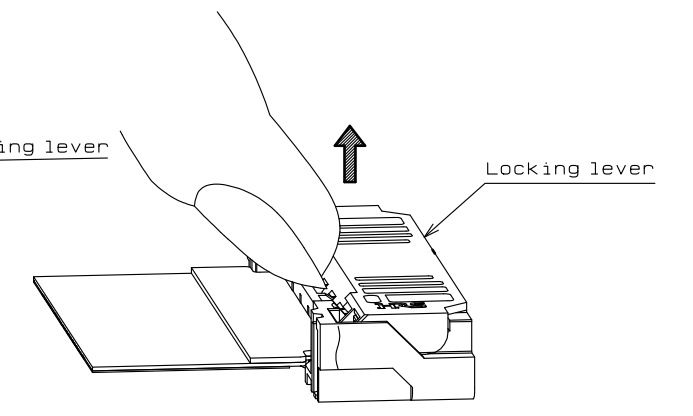
Example 15) **X NG**



Example 16) **X NG**



Example 17) **X NG**



<Instruction manual(2)>

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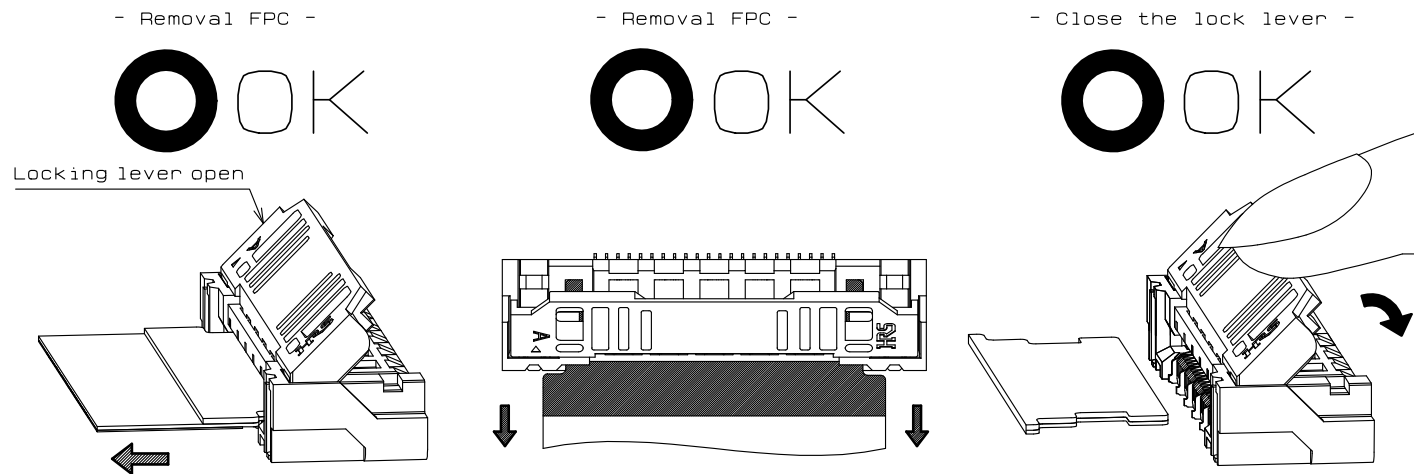
5. How to remove FPC

After flip up the locking lever to the fully opened position carefully withdraw the FPC and close the lock lever(Example 18).  
Do not withdraw the FPC on the condition that the locking lever is held by a finger(Example 19).  
The lock lever close automatically when the FPC is removed, but this is not a defect of the product.(Example 20).

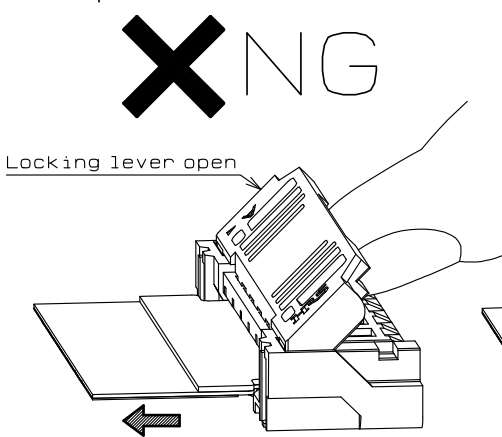
[Caution]

- Do not attempt to pull the FPC without unlocking the locking lever(Example 21).
- This connector has a temporary FPC holding structure with the locking lever. For FPC removal, do not pull out the FPC upward or angled direction(Example 22).

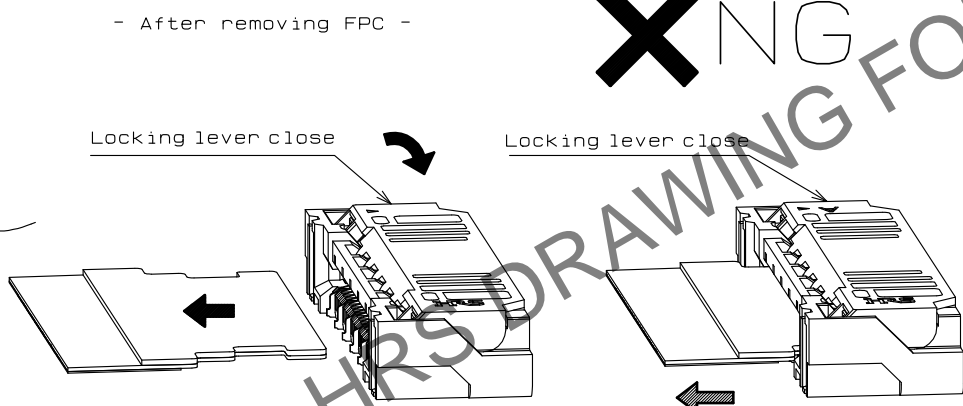
Example 18)



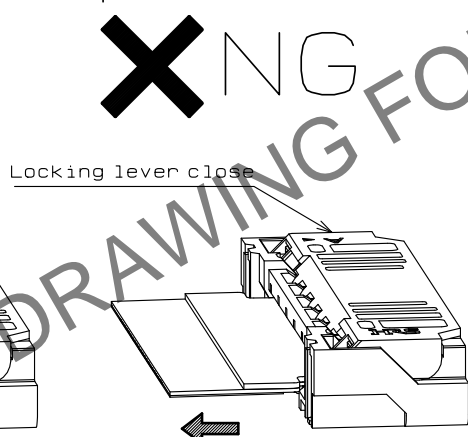
Example 19)



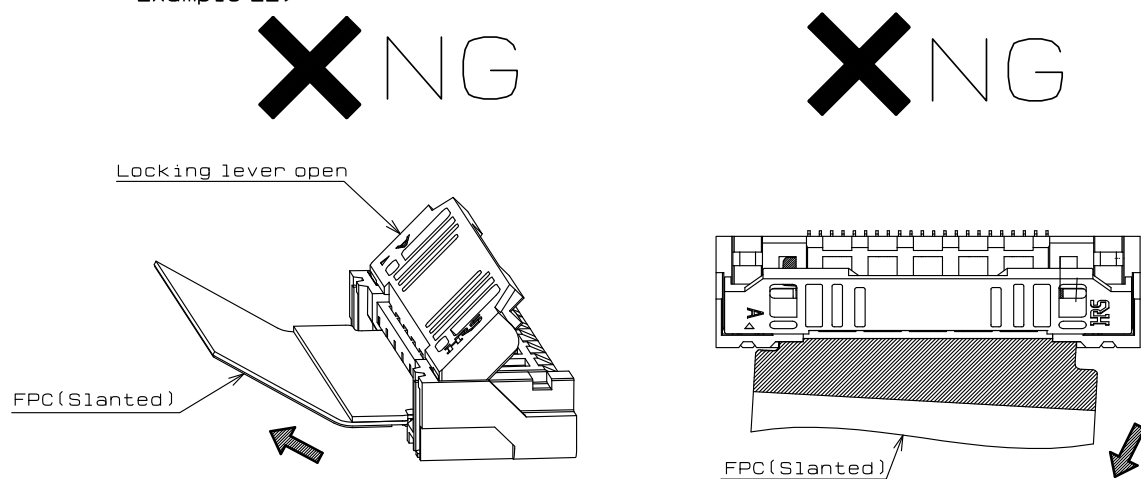
Example 20)



Example 21)



Example 22)



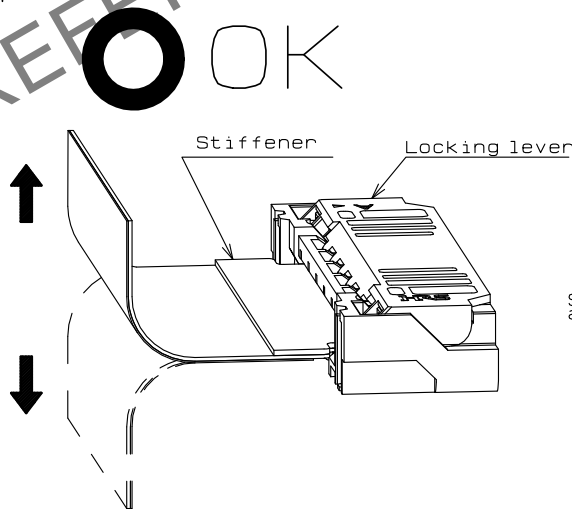
[Precautions for component layout]

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.

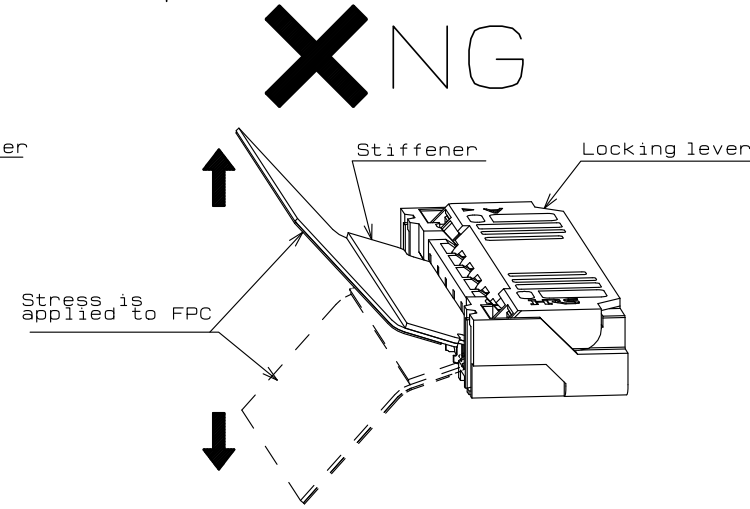
[Caution]

- When fixing FPC after FPC cabling, avoid pulling FPC, and route the wire FPC with slack. In this regard, the stiffener is parallel to the PCB (Example 23).
- 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 24, 25).
- Do not mount other components touching to the FPC underneath the FPC stiffener (Example 26).
- 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.
- Please consult with our sales representative if you are using FPC with different configuration from our recommendation.

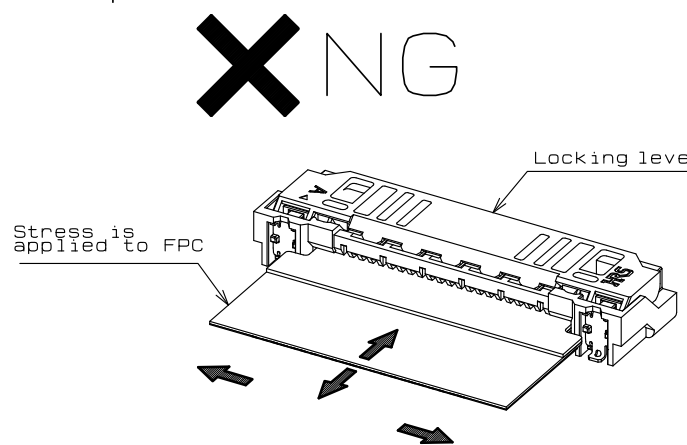
Example 23)



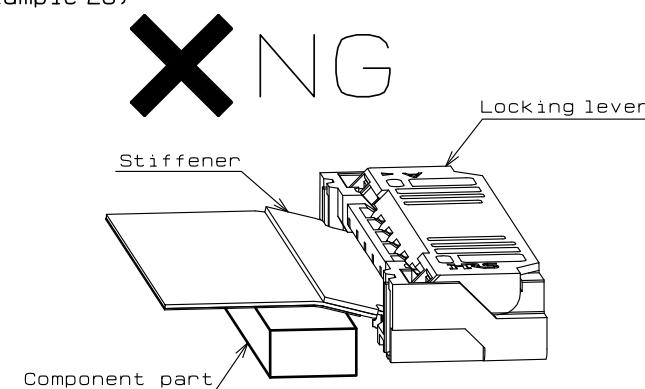
Example 24)



Example 25)



Example 26)



<Instruction manual(3)>

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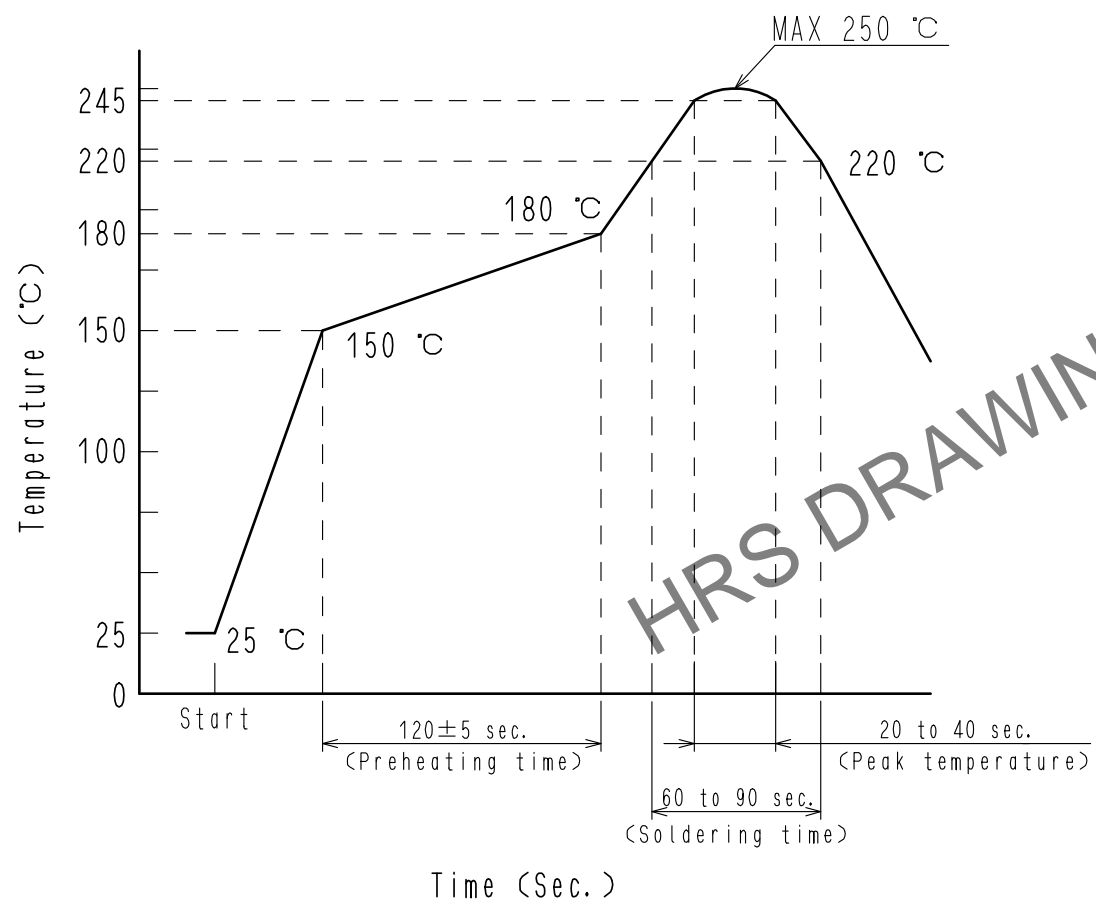
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[Instructions for mounting on the PCB]

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.
- 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.
- Apply reflow temperature profile within the specified conditions. For specific applications, the recommended temperature may vary depending on type/volume/thickness of solder paste and size/thickness of PCB. Please Consult with your solder paste and equipment manufacturer for specific recommendations. The temperatures mentioned below refer to the PCB surface temperature near the connector contact leads.
- Reflow method: IR reflow
- Number of reflow cycles: 2 cycles MAX.



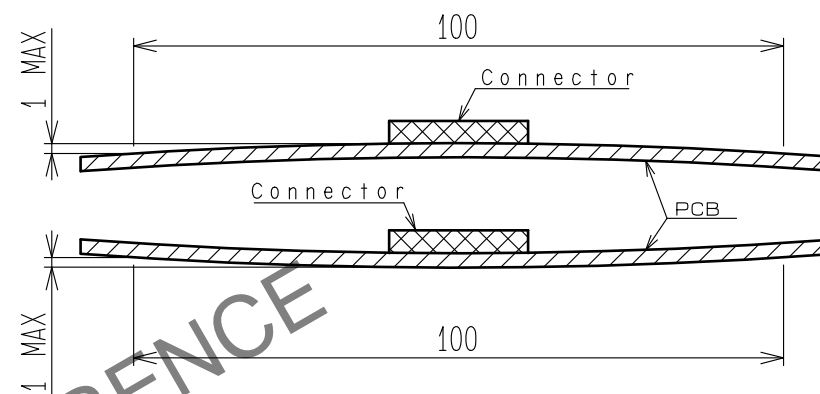
[Instructions for PCB handling after mounting the connector]

Follow the instructions shown below when mounting on the PCB.

[Caution]

- Splitting a large PCB into several pieces
  - Installing mounting screw on PCB
- During the assembly processes described above, care shall be taken so as not to give any stresses of deflection or twisting to the PCB. Stresses applied on PCB may damage the connector as well.
- The warpage of a 100 mm wide PCB should remain within 1.0 mm.
  - The warpage of PCB may apply excessive stress on the connector and damage the connector (Example 27).

Example 27)



[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 touch 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 contact leads, solder or flux may adhere to the contacts, resulting in poor conduction. Supplying excessive solder to the metal fittings may hinder locking lever rotation, resulting in breakage of the connector.

[Other]

- Attachment of foreign particles with the connector contact may lead to conduction failure. In this particular case, the conduction failure may be fixed by re-inserting the FPC.

<Instruction manual(4)>

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	PART NO.	FH63S-***S-0.5SH(99)
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