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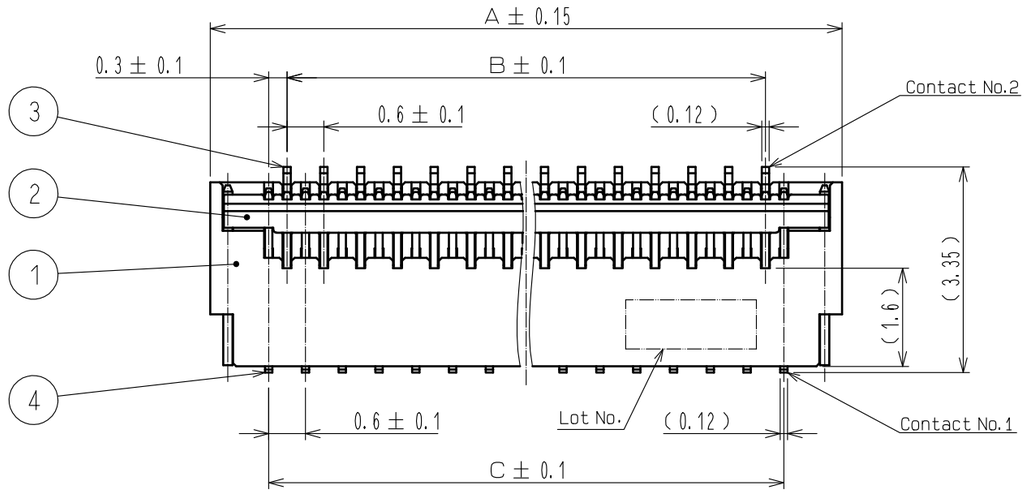
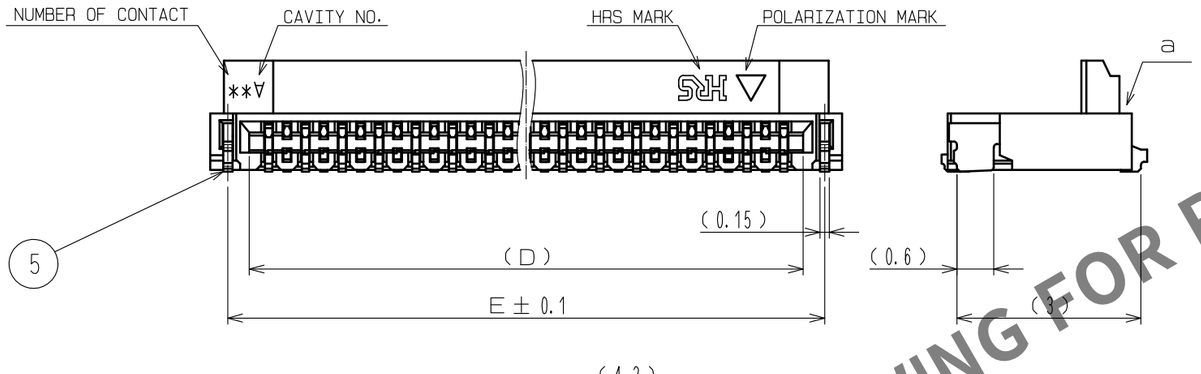
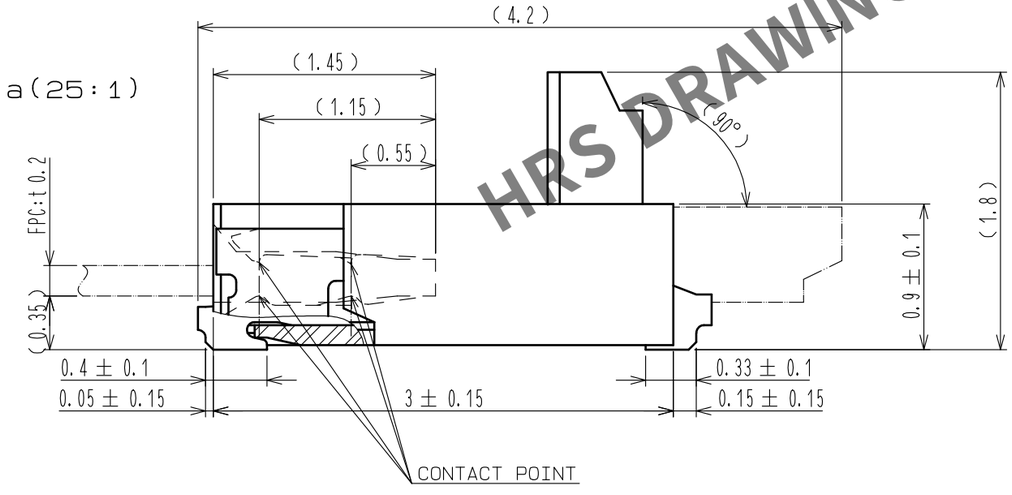
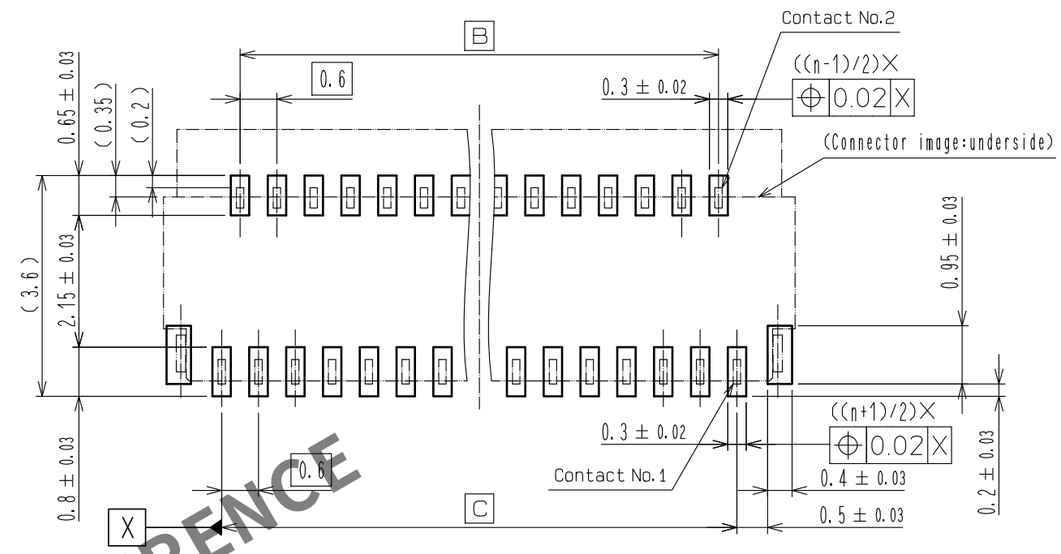




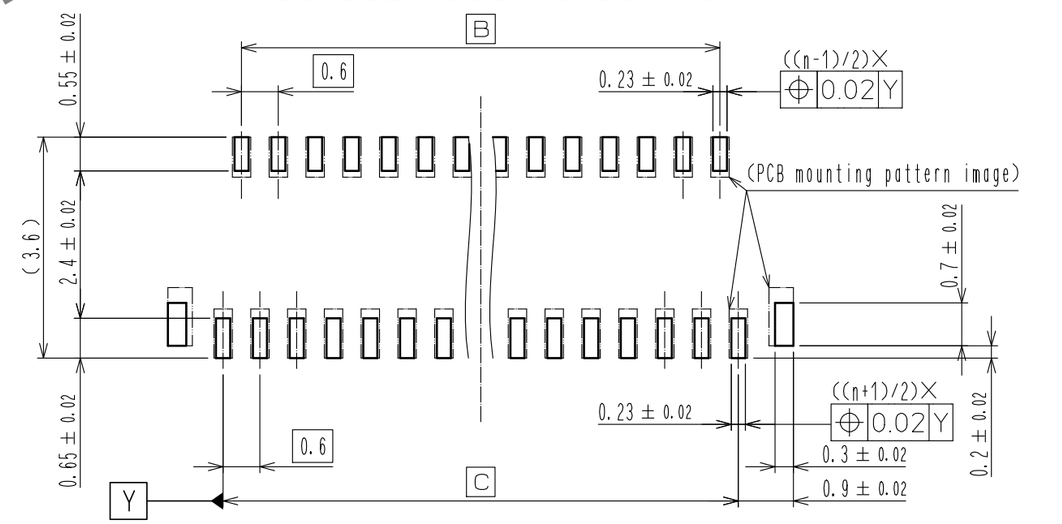


RECOMMENDED PCB MOUNTING PATTERN



RECOMMENDED STENCIL PATTERN

(RECOMMENDED STENCIL THICKNESS:t=0.1)



HRS DRAWING FOR REFERENCE

NOTE
1. The dimensions 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 packages.
   See attached packaging specifications for details.
4. Note that preventive hole for sink mark could be added for improvement.
   The quality remains good, even with the dark spots, which could occasionally occur on molded plastic.
5. This product satisfies halogen free requirements defined as 900ppm maximum chlorine,
   900ppm maximum bromine, and 1500ppm maximum total of chlorine and bromine.
6. 'n' represents the number of contacts.

NO.	MATERIAL	FINISH , REMARKS	NO.	MATERIAL	FINISH , REMARKS
4	PHOSPHOR BRONZE	(CONTACT AREA, LEAD) GOLD 0.03μm MIN OVER NICKEL 1μm MIN (OTHER) NICKEL PLATING 1μm MIN	9	(CONNECTOR)	
			8	POLYSTYRENE	
3	PHOSPHOR BRONZE	(CONTACT AREA, LEAD) GOLD 0.03μm MIN OVER NICKEL 1μm MIN (OTHER) NICKEL PLATING 1μm MIN	7	POLYESTER	
			6	POLYSTYRENE	
2	PA	BLACK UL94V-0	5	PHOSPHOR BRONZE (PLATED MATERIAL)	TIN PLATING (REFLOW FINISHED) 1μm MIN OVER COPPER 0.5μm MIN
1	LCP	GRAY UL94V-0			

UNITS	SCALE		COUNT	DESCRIPTION OF REVISIONS	DESIGNED	CHECKED	DATE
mm	10 : 1	5	16	DIS-F-00015919	TS.WADA	HY.YAMAZAKI	20221202

HIROSE ELECTRIC CO., LTD.	APPROVED : NM. NISHIMATSU	20110613	DRAWING NO.	EDC3-338903-01
	CHECKED : FN. TAMURA	20110610	PART NO.	FH35C-**S-0.3SHW(50)
	DESIGNED : HH. MURAKAMI	20110609	CODE NO.	CL580
	DRAWN : HH. MURAKAMI	20110609		5 1/7

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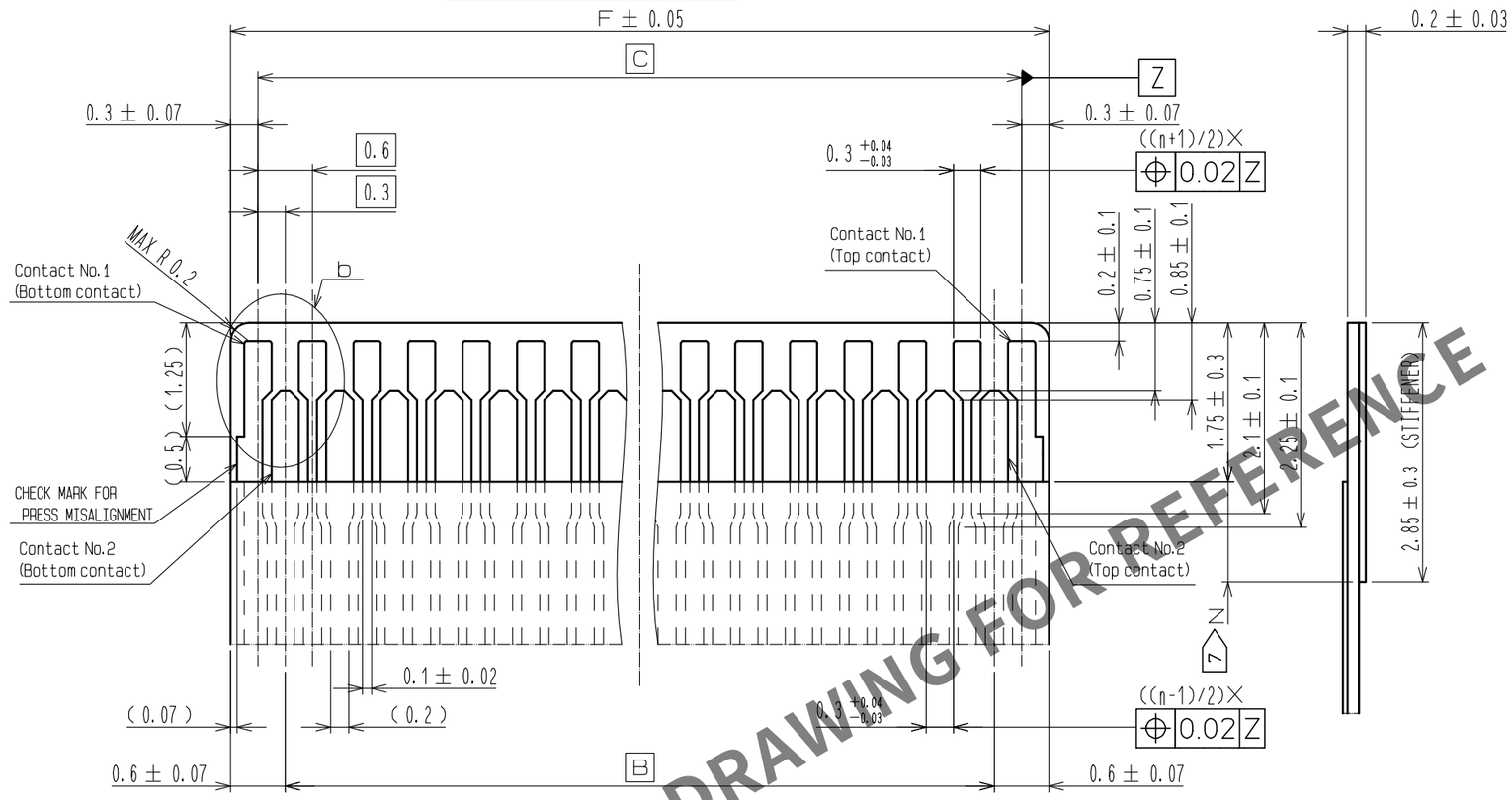
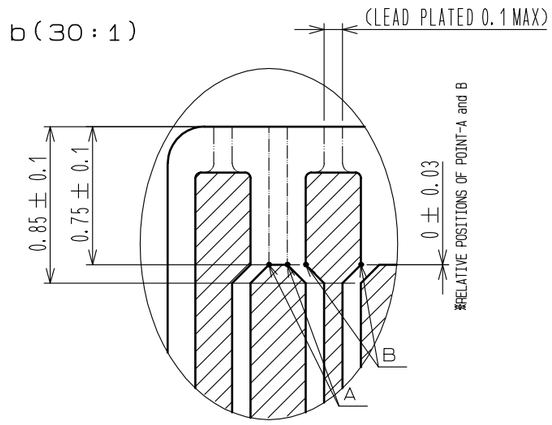
RECOMMENDED FPC (15:1)



HRS DRAWING FOR REFERENCE

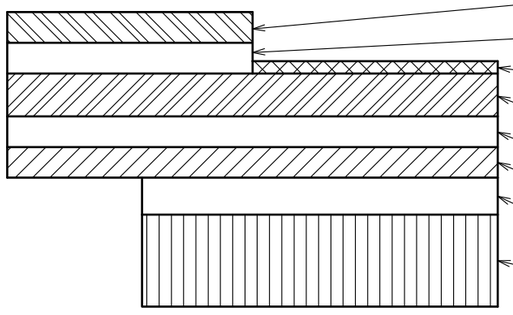
b (30:1)



NOTE 7 On your designing the FPC, make sure that dimension N shall be 0.5 mm or more.
5 8. Recommended puncher direction : From conductor side to stiffener side.

FPC CONFIGURATION (REFERENCE EXAMPLE)

(SCALE:FREE)



MATERIAL NAME	MATERIAL	THICKNESS(μm)
COVERING FILM LAYER	POLYIMIDE 1mil thick.	25
COVER ADHESIVE		25
SURFACE TREATMENT	1μm to 5μm NICKEL UNDERPLATED 0.2μm GOLD PLATED	(3)
COPPER FOIL	Cu 1 oz	35
BASE ADHESIVE	HEAT-HARDENED ADHESIVE	25
BASE FILM	POLYIMIDE 1mil thick	25
REINFORCEMENT MATERIAL ADHESIVE	HEAT-HARDENED ADHESIVE	40
STIFFENER	POLYIMIDE 3mil thick	75

<RECOMMENDED FPC>

HRS	DRAWING NO.	EDC3-338903-01
	PART NO.	FH35C-**S-0.3SHW(50)
	CODE NO.	CL580

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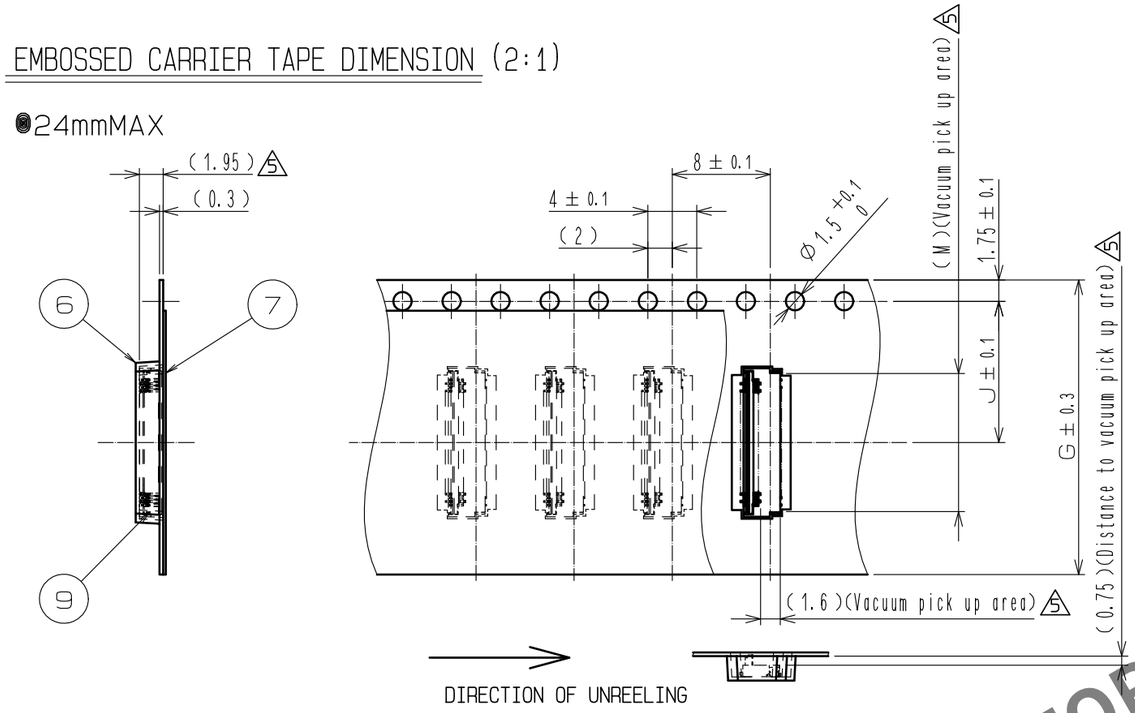
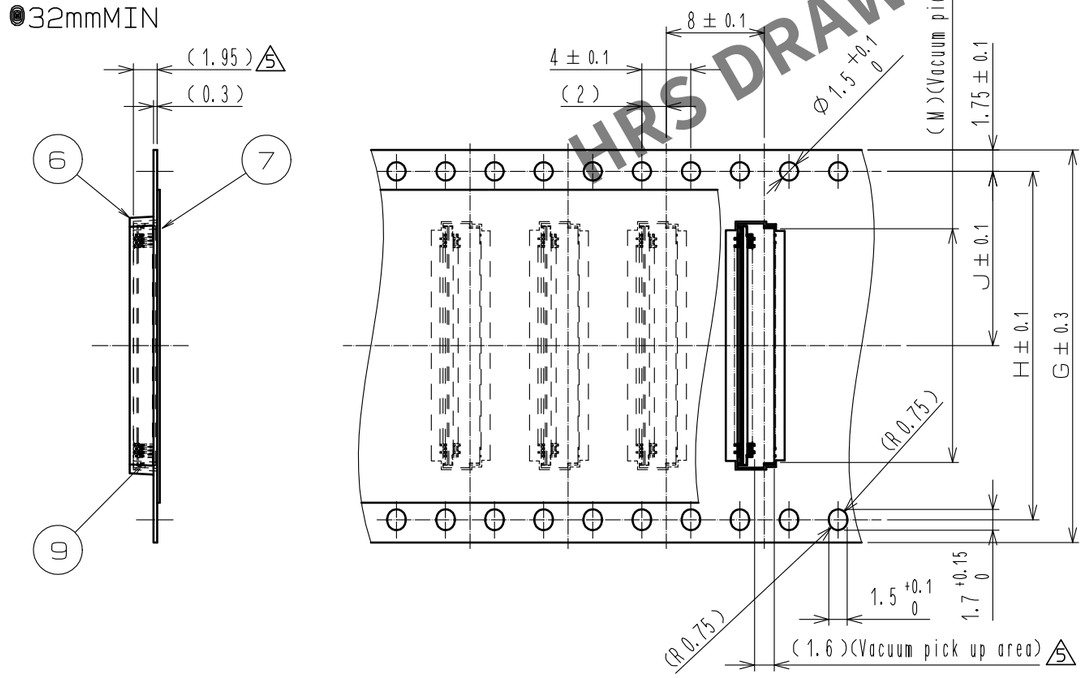
EMBOSSED CARRIER TAPE DIMENSION (2:1)

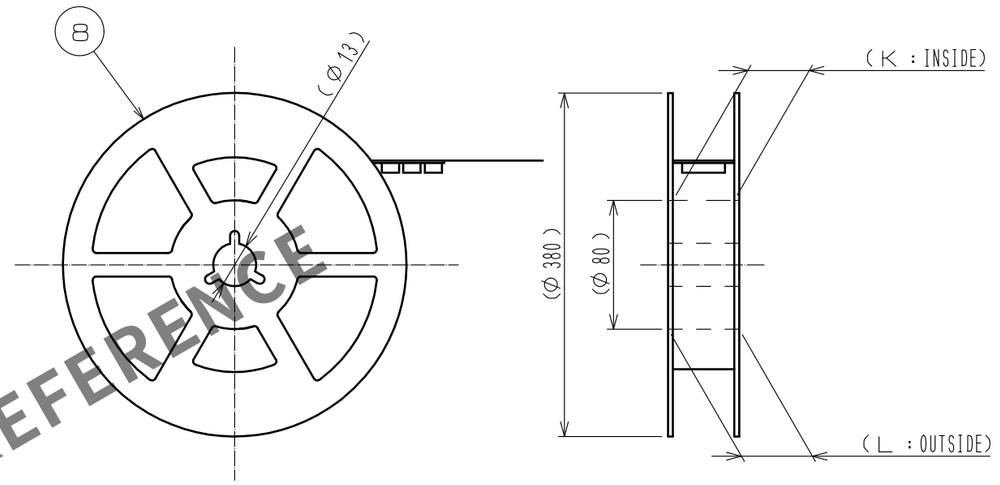
●24mmMAX



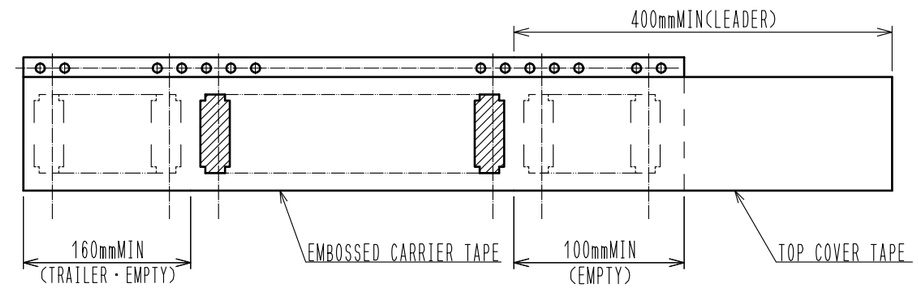
●32mmMIN



REEL DIMENSION (SCALE:FREE)



LEADER, TRAILER DIMENSION (SCALE:FREE)



NOTE 9. Per reel : 5000 connectors.
10. Refer to JIS C 0806
(Packaging of components for automatic handling.)

HRS DRAWING FOR REFERENCE

<DRAWING FOR PACKING>

DRAWING NO.	EDC3-338903-01
PART NO.	FH35C-**S-0.3SHW(50)
CODE NO.	CL580

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PART NUMBER	CODE NUMBER	NUMBER OF CONTACTS	DIMENSION OF CONNECTOR, FPC, PCB MOUNTING PATTERN AND STENCIL						DIMENSION OF DRAWING FOR PACKING ⚠5					
			A	B	C	D	E	F	G	H	J	K	L	M
FH35C- 9S-0.3SHW(50)	CL580-2910-5-50	9	4.3	1.8	2.4	3.03	3.73	3.0	16	—	7.5	17.4	21.4	3.46
FH35C-11S-0.3SHW(50)	CL580-2917-4-50	11	4.9	2.4	3.0	3.63	4.33	3.6	16	—	7.5	17.4	21.4	4.06
FH35C-13S-0.3SHW(50)	CL580-2925-2-50	13	5.5	3.0	3.6	4.23	4.93	4.2	16	—	7.5	17.4	21.4	4.66
FH35C-15S-0.3SHW(50)	CL580-2919-0-50	15	6.1	3.6	4.2	4.83	5.53	4.8	16	—	7.5	17.4	21.4	5.26
FH35C-17S-0.3SHW(50)	CL580-2916-1-50	17	6.7	4.2	4.8	5.43	6.13	5.4	16	—	7.5	17.4	21.4	5.86
FH35C-19S-0.3SHW(50)	CL580-2921-1-50	19	7.3	4.8	5.4	6.03	6.73	6.0	16	—	7.5	17.4	21.4	6.46
FH35C-21S-0.3SHW(50)	CL580-2922-4-50	21	7.9	5.4	6.0	6.63	7.33	6.6	24	—	11.5	25.4	29.4	7.06
FH35C-23S-0.3SHW(50)	CL580-2911-8-50	23	8.5	6.0	6.6	7.23	7.93	7.2	24	—	11.5	25.4	29.4	7.66
FH35C-25S-0.3SHW(50)	CL580-2912-0-50	25	9.1	6.6	7.2	7.83	8.53	7.8	24	—	11.5	25.4	29.4	8.26
FH35C-27S-0.3SHW(50)	CL580-2918-7-50	27	9.7	7.2	7.8	8.43	9.13	8.4	24	—	11.5	25.4	29.4	8.86
FH35C-31S-0.3SHW(50)	CL580-2923-7-50	31	10.9	8.4	9.0	9.63	10.33	9.6	24	—	11.5	25.4	29.4	10.06
FH35C-33S-0.3SHW(50)	CL580-2913-3-50	33	11.5	9.0	9.6	10.23	10.93	10.2	24	—	11.5	25.4	29.4	10.66
FH35C-35S-0.3SHW(50)	CL580-2926-5-50	35	12.1	9.6	10.2	10.83	11.53	10.8	24	—	11.5	25.4	29.4	11.26
FH35C-37S-0.3SHW(50)	CL580-2914-6-50	37	12.7	10.2	10.8	11.43	12.13	11.4	24	—	11.5	25.4	29.4	11.86
FH35C-39S-0.3SHW(50)	CL580-2915-9-50	39	13.3	10.8	11.4	12.03	12.73	12.0	24	—	11.5	25.4	29.4	12.46
FH35C-41S-0.3SHW(50)	CL580-2924-0-50	41	13.9	11.4	12.0	12.63	13.33	12.6	24	—	11.5	25.4	29.4	13.06
FH35C-45S-0.3SHW(50)	CL580-2909-6-50	45	15.1	12.6	13.2	13.83	14.53	13.8	24	—	11.5	25.4	29.4	14.26
FH35C-49S-0.3SHW(50)	CL580-2927-8-50	49	16.3	13.8	14.4	15.03	15.73	15.0	32	28.4	14.2	33.4	37.4	15.46
FH35C-51S-0.3SHW(50)	CL580-2920-9-50	51	16.9	14.4	15.0	15.63	16.33	15.6	32	28.4	14.2	33.4	37.4	16.06
FH35C-55S-0.3SHW(50)	CL580-2931-5-50	55	18.1	15.6	16.2	16.83	17.53	16.8	32	28.4	14.2	33.4	37.4	17.26
FH35C-61S-0.3SHW(50)	CL580-2928-0-50	61	19.9	17.4	18.0	18.63	19.33	18.6	32	28.4	14.2	33.4	37.4	19.06

HRS DRAWING FOR REFERENCE

<DIMENSION TABLE>

HRS	DRAWING NO.	EDC3-338903-01
	PART NO.	FH35C-**S-0.3SHW(50)
	CODE NO.	CL580 ⚠5 4/7

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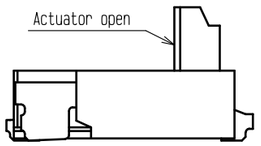
This connector features small, thin and back flip design, requiring delicate and careful handling.
Read through the instructions shown below and handle the connector properly.

[Operation and Precautions]

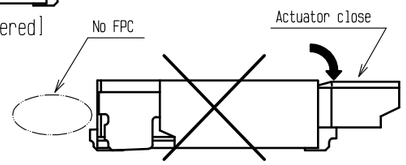
1. Initial condition

Actuator does not have to be operated before inserting FPC, as the connector is delivered with the actuator opened.



[Open when delivered]

[Prohibited acts]
-Do not close the actuator before inserting FPC.
Closing the actuator without FPC could make the contact gap smaller, which could increase the FPC insertion force when FPC is inserted. (Figure:1)
Do not insert the FPC at a sharp angle as this may cause contact deformation by the FPC touching to contact tips. (Figure:2)



Improper operation

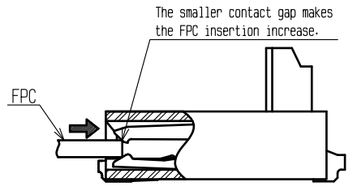


Figure:1

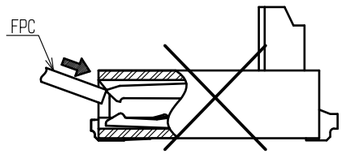


Figure:2

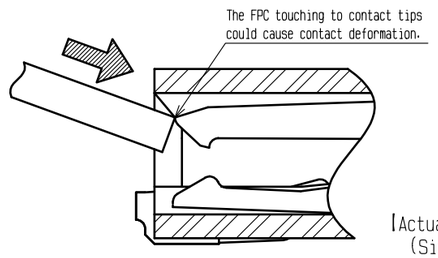
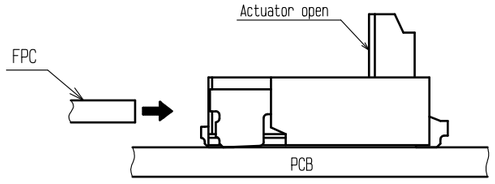


Figure:2 (detail)

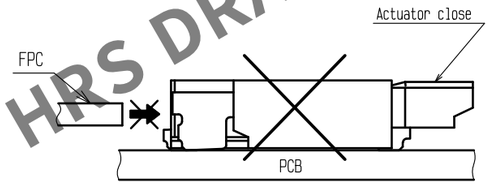
2. How to insert FPC

Insert the FPC into the connector opening horizontally to the board plane.
Insert it properly to the very end.

[Caution]
-Insert the FPC with the actuator opened.
-Twisting the FPC to up and down, right and left or an angle could cause contact deformation and contact failure.



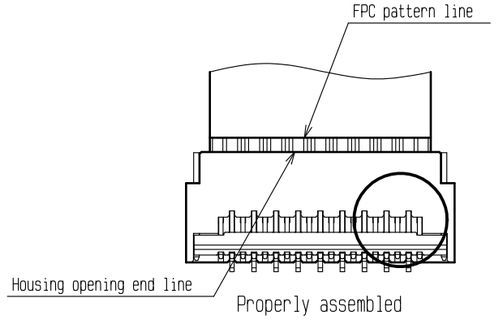
Proper FPC insertion



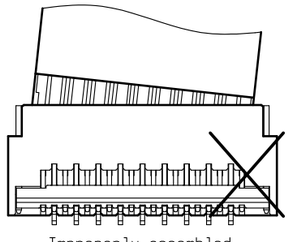
Improper FPC insertion

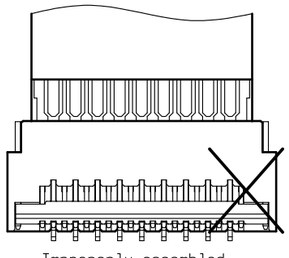
3. FPC insertion check (for using contacts on the top, for FPC pattern only applicable to FH35)

Improper assembly modes are prevented by visual check, comparing positions of housing opening end line and FPC pattern line.



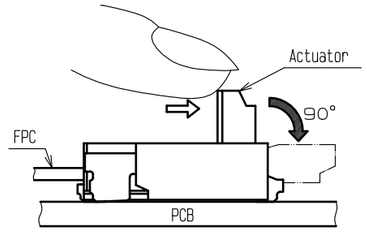
Properly assembled


Improperly assembled (angle insertion)

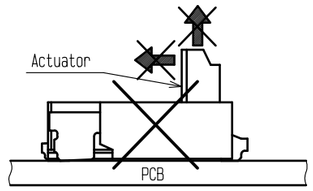

Improperly assembled (Insufficiently inserted)

4. How to lock

Apply load to rotate the actuator by 90 degree after inserting the FPC.



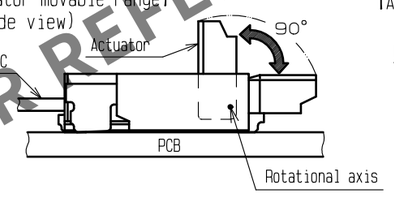
Proper operation



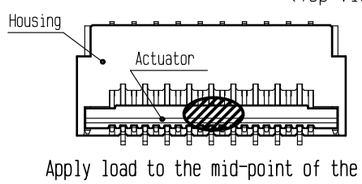
Improper operation

[Caution]
-The actuator rotates around the rotational axis as shown below.
-Do not rotate the actuator to the counter direction.
Do not pinch or pick the actuator to lift. Otherwise, it may break.
-Apply load to the mid-point on the actuator to rotate it.
Do not apply force to side end of the actuator. Uneven load could twist the actuator and cause half mating.
-Do not apply excess force to the housing during the operation.
△5 -Operate the actuator by hand without using sharp tool such as Tweezers.

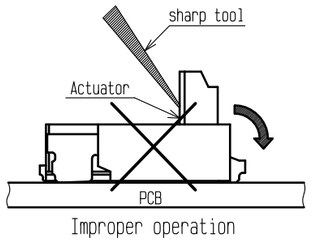
[Actuator movable range]
(Side view)



[Actuator operation area (lock and release)]
(Top view)



Apply load to the mid-point of the actuator.

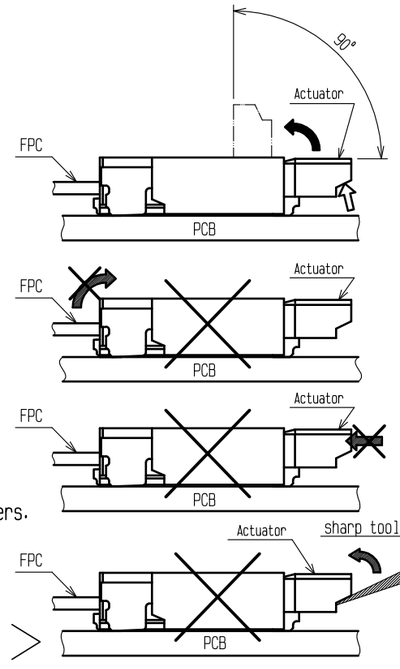


Improper operation

5. How to remove FPC (How to unlock)

Slowly flip up the actuator to release the lock and remove the FPC.

[Caution]
-The actuator is opened up to the movable limit, 90 degree.
Do not open the actuator beyond the specified degree or apply excess force to the actuator.
-To open the actuator, operate at the mid-point of the actuator.
Do not lift up the side end of the actuator, or it may twist the actuator and cause breakage.
-Please note that the connector is back flip style connector, and the opening for FPC insertion and the actuator face the opposite direction. Do not try to lift the actuator at the FPC insertion opening side.
-Do not press down the actuator toward connector when operating.
Otherwise it could deform the contact.
△5 -Operate the actuator by hand without using sharp tool such as Tweezers.



HRS DRAWING FOR REFERENCE

<INSTRUCTION MANUAL(1)>

DRAWING NO.	EDC3-338903-01
PART NO.	FH35C-**S-0.3SHW(50)
CODE NO.	CL580

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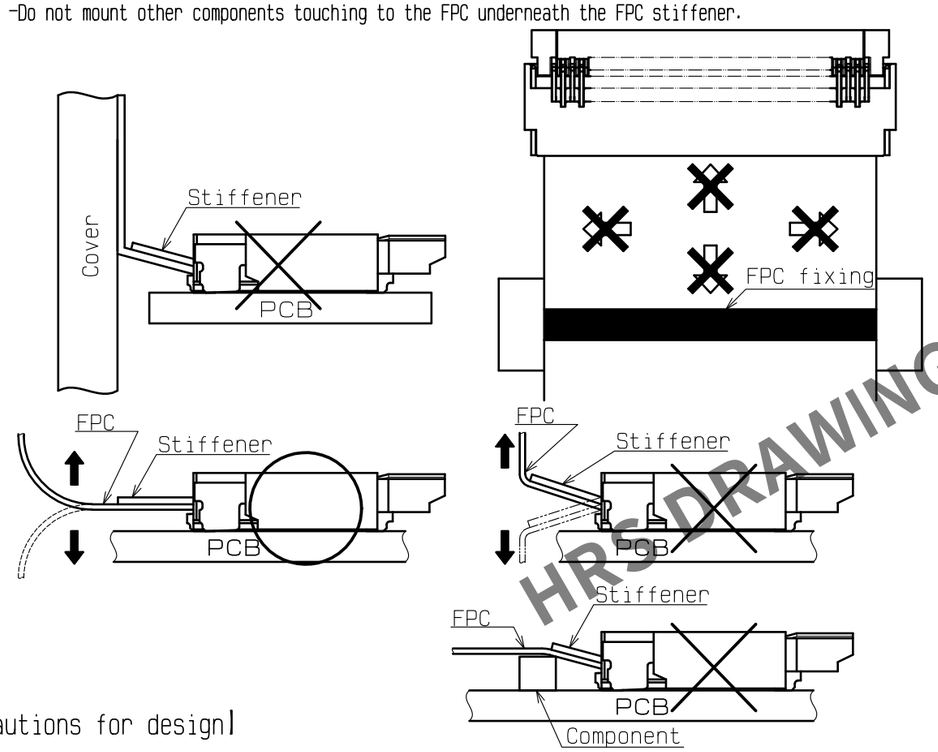
This connector features small , thin and back flip design , requiring delicate and careful handling.
Read through the instructions shown below and handle the connector properly.

6. How to FPC routing

Do not apply load to FPC when locating FPC.
It leads to the disconnection break or damage of FPC.
In addition, there is possibillity to make a conduction failure if applying load to connector.

[Prohibited acts]
- Please design FPC routing so that FPC stiffener will not interfere with cover case.
- When fixing FPC, avoid appplying forces to FPC in vertical or horizontal directions. In addition, avoid pulling up and down on the FPC.
- 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.
- Do not mount other components touching to the FPC underneath the FPC stiffener.



[Precautions for design]

1. During FPC wiring , ensure that stress is not applied directly to the connector.
   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.

2. 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.

3. Follow the recommended PCB layout , FPC design and the stencil opening design.

4. Make adjustments with the FPC manufacturer for FPC bending performance and wire breakage.

5. Keep spaces for the actuator movement and its operation for PCB design and component layout.

△5 6. Please consult with our sales representive if you are using FPC with different configuration from our recommendation.

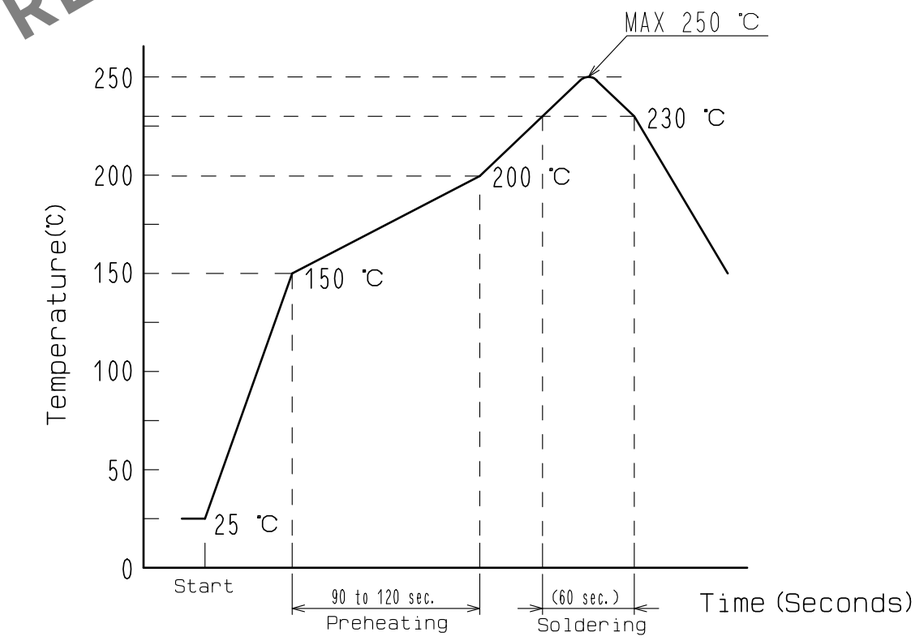
[Instructions for mounting on the PCB]

△5 ♦Warp of PCB
- Minimize warp of the PCB as much as possible.
  Lead co-planarity including reinforced metal fittings is 0.1 mm or less.
  Too much warp of the PCB may result in a soldering failure.
- Clearance between the mounting surface of the connector contact lead and the bottom of the housing is (0.03).
  Solder resist/silk screening applied underneath the connector may interfere with the connector.
  This may lead to soldering defect/insufficient fillet formation.
  Please verify your solder resist/silk screening design carefully before implementing the design.

♦Flexible board design
Please make sure to put a stiffener on the backside of the flexible board.
We recommend a glass epoxy material with the thickness of 0.3mm MIN.

♦Load to Connector
Do not add 0.5N or greater external force when unreel or pick and place the connector etc, or it may get broken.
In addition, do not insert the FPC or operate the connector before mounting.

△5 ♦Reflow temperature profile
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.



HRS DRAWING FOR REFERENCE

<INSTRUCTION MANUAL(2)>

DRAWING NO.	EDC3-338903-01
PART NO.	FH35C-**S-0.3SHW(50)
CODE NO.	CL580

△5 6/7

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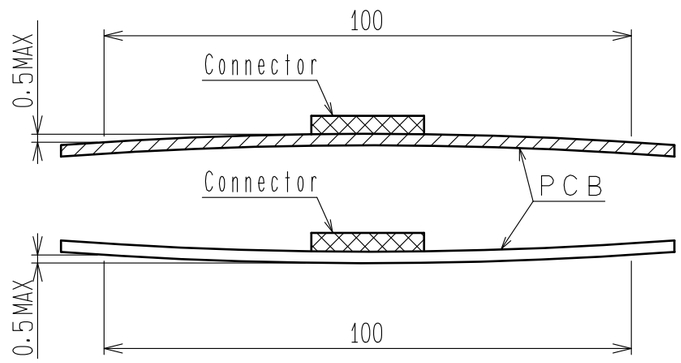
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

HRS DRAWING FOR REFERENCE

INSTRUCTIONS FOR PCB HANDLING AFTER MOUNTING THE CONNECTOR

♦Load to PCB
-Splitting a large PCB into several pieces
-Screwing the PCB
Avoid the handling described above so that no force is exerted on the PCB during the assembly process.
Otherwise, the connector may become defective.

♦Amount of Warp
The warp of a 100mm wide PCB should be 0.5 mm or less.
The warp of PCB suffers stress on connector and the connector may become defective.



Other instructions

♦Instructions on manual soldering
Follow the instructions shown below when soldering the connector manually during repair work, etc.

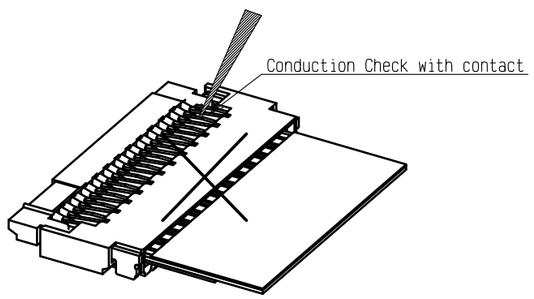
1. Do not perform manual soldering with the FPC inserted into the connector.

2. 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.

3. 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 or rotating parts of the actuator, resulting in poor contact or a rotation failure of the actuator.
Supplying excessive solder to the metal fittings may hinder actuator rotation, resulting in breakage of the connector.

△5 4. 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.

△5 5. Please perform conduction check with caution. Conductivity probe may damage the connector contacts.



Improper operation

<INSTRUCTION MANUAL(3)>

DRAWING NO.	EDC3-338903-01
PART NO.	FH35C-**S-0.3SHW(50)
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