

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

APPLICABLE STANDARD				
RATING	OPERATING TEMPERATURE RANGE	-40 °C TO 85 °C	STORAGE TEMPERATURE RANGE -10 °C TO 50 °C (PACKED CONDITION)	
	VOLTAGE	50 V AC / DC	OPERATING OR STORAGE HUMIDITY RANGE RELATIVE HUMIDITY 90 % MAX (NOT DEWED)	
	CURRENT	0.5 A (note 1)	APPLICABLE CABLE t=0.3±0.05mm, GOLD PLATING	
SPECIFICATIONS				
ITEM	TEST METHOD	REQUIREMENTS	QT	AT
CONSTRUCTION				
GENERAL EXAMINATION	VISUALLY AND BY MEASURING INSTRUMENT.	ACCORDING TO DRAWING.	X	X
MARKING	CONFIRMED VISUALLY.		X	X
ELECTRIC CHARACTERISTICS				
CONTACT RESISTANCE	1mA(DC OR 1000Hz).	50 mΩ MAX. INCLUDING FPC,FFC BULK RESISTANCE (L=8mm)	X	X
INSULATION RESISTANCE	100 V DC.	500 MΩ MIN.	X	X
VOLTAGE PROOF	150 V AC FOR 1 min.	NO FLASHOVER OR BREAKDOWN.	X	X
MECHANICAL CHARACTERISTICS				
MECHANICAL OPERATION	20 TIMES INSERTIONS AND EXTRACTIONS.	① CONTACT RESISTANCE: 50 mΩ MAX. ② NO DAMAGE, CRACK AND LOOSENESS OF PARTS.	X	—
VIBRATION	FREQUENCY 10 TO 55 Hz, HALF AMPLITUDE 0.75 mm, FOR 10 CYCLES IN 3 DIRECTIONS.	① NO ELECTRICAL DISCONTINUITY OF 1 μs.	X	—
SHOCK	981 m/s ² , DURATION OF PULSE 6 ms AT 3 TIMES IN 3 DIRECTIONS.	② CONTACT RESISTANCE: 50 mΩ MAX. ③ NO DAMAGE, CRACK AND LOOSENESS OF PARTS.	X	—
FPC RETENTION FORCE	MEASURED BY APPLICABLE FPC. (CONNECTOR,FPC AT INITIAL CONDITION. THICKNESS OF FPC SHALL BE t=0.30mm)	DIRECTION OF INSERTION: 0.4×n N MIN (n : NUMBER OF CONTACTS).	X	—
ENVIRONMENTAL CHARACTERISTICS				
RAPID CHANGE OF TEMPERATURE	TEMPERATURE-40→+15To+35→+85→+15To+35°C TIME 30→ 2To 3 → 30→ 2To 3 min. UNDER 5 CYCLES.	① CONTACT RESISTANCE: 50 mΩ MAX. ② INSULATION RESISTANCE: 50 MΩ MIN. ③ NO DAMAGE, CRACK AND LOOSENESS OF PARTS.	X	—
DAMP HEAT (STEADY STATE)	EXPOSED AT 40±2 °C, RELATIVE HUMIDITY 90 TO 95 %, 96 h.		X	—
DAMP HEAT,CYCLIC	EXPOSED AT -10 TO +65 °C, RELATIVE HUMIDITY 90 TO 96 %, 10 CYCLES,TOTAL 240 h.	① CONTACT RESISTANCE: 50 mΩ MAX. ② INSULATION RESISTANCE: 1 MΩ MIN. (AT HIGH HUMIDITY) ③ INSULATION RESISTANCE: 50 MΩ MIN. (AT DRY) ④ NO DAMAGE, CRACK AND LOOSENESS OF PARTS.	X	—
DRY HEAT	EXPOSED AT 85±2 °C, 96 h.	① CONTACT RESISTANCE: 50 mΩ MAX.	X	—
COLD	EXPOSED AT -40±3°C, 96 h.	② NO DAMAGE, CRACK AND LOOSENESS OF PARTS.	X	—
CORROSION SALT MIST	EXPOSED AT 35±2 °C 5% SALT WATER SPRAY FOR 96 h.	① CONTACT RESISTANCE: 50 mΩ MAX. ② NO EVIDENCE OF CORROSION WHICH AFFECTS TO OPERATION OF CONNECTOR.	X	—
SURPHUR DIOXIDE [JIS C 0090]	EXPOSED AT 40±2 °C , RELATIVE HUMIDITY 80±5% , 25±5 PPM FOR 96 h.		X	—
HYDROGEN SULPHIDE [JIS C 0092]	EXPOSED AT 40±2 °C , RELATIVE HUMIDITY 80±5% , 10 TO 15 PPM FOR 96 h.		X	—
COUNT	DESCRIPTION OF REVISIONS	DESIGNED	CHECKED	DATE
0				
REMARK		APPROVED	NM. NISHIMATSU	10.10.28
		CHECKED	FN. TAMURA	10.10.28
		DESIGNED	YS. EBI	10.10.28
Unless otherwise specified, refer to JIS C 5402.		DRAWN	YS. EBI	10.10.28
Note QT:Qualification Test AT:Assurance Test X:Applicable Test		DRAWING NO.	ELC4-327944-00	
HRS	SPECIFICATION SHEET	PART NO.	FH52-60S-0.5SH	
	HIROSE ELECTRIC CO., LTD.	CODE NO.	CL580-3301-2-00	△ 1/2

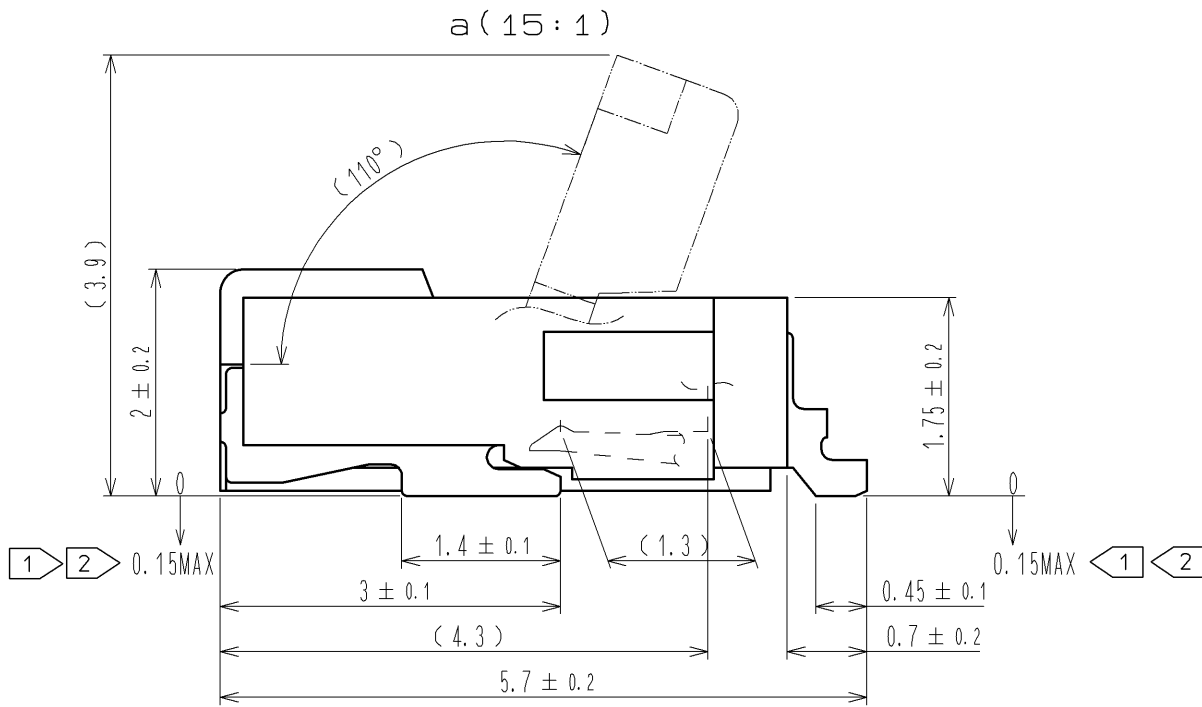
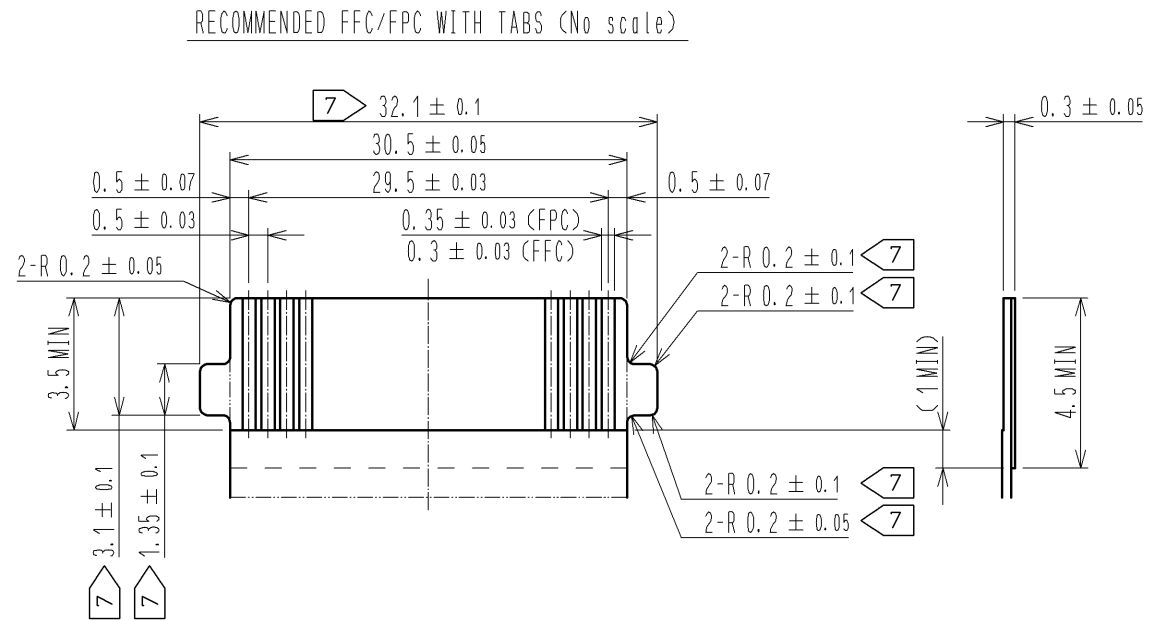
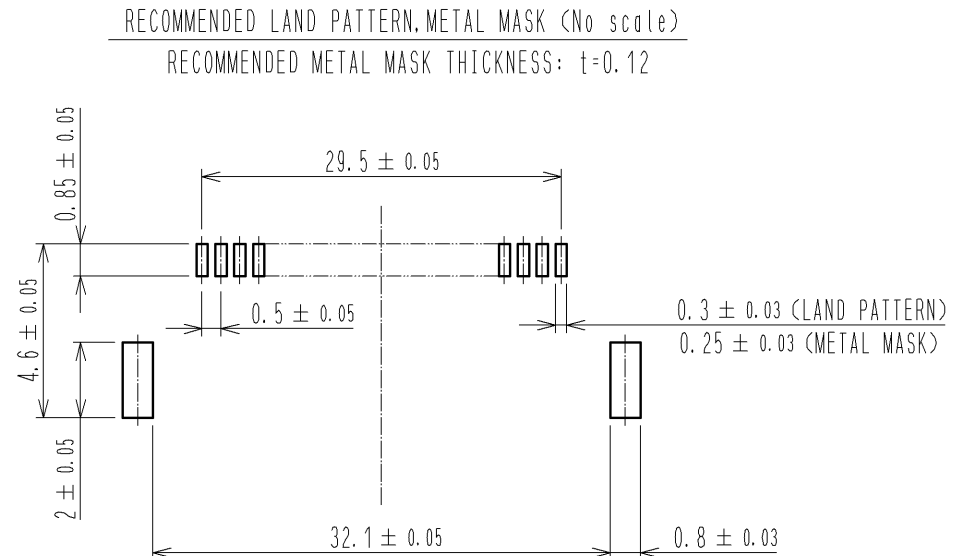
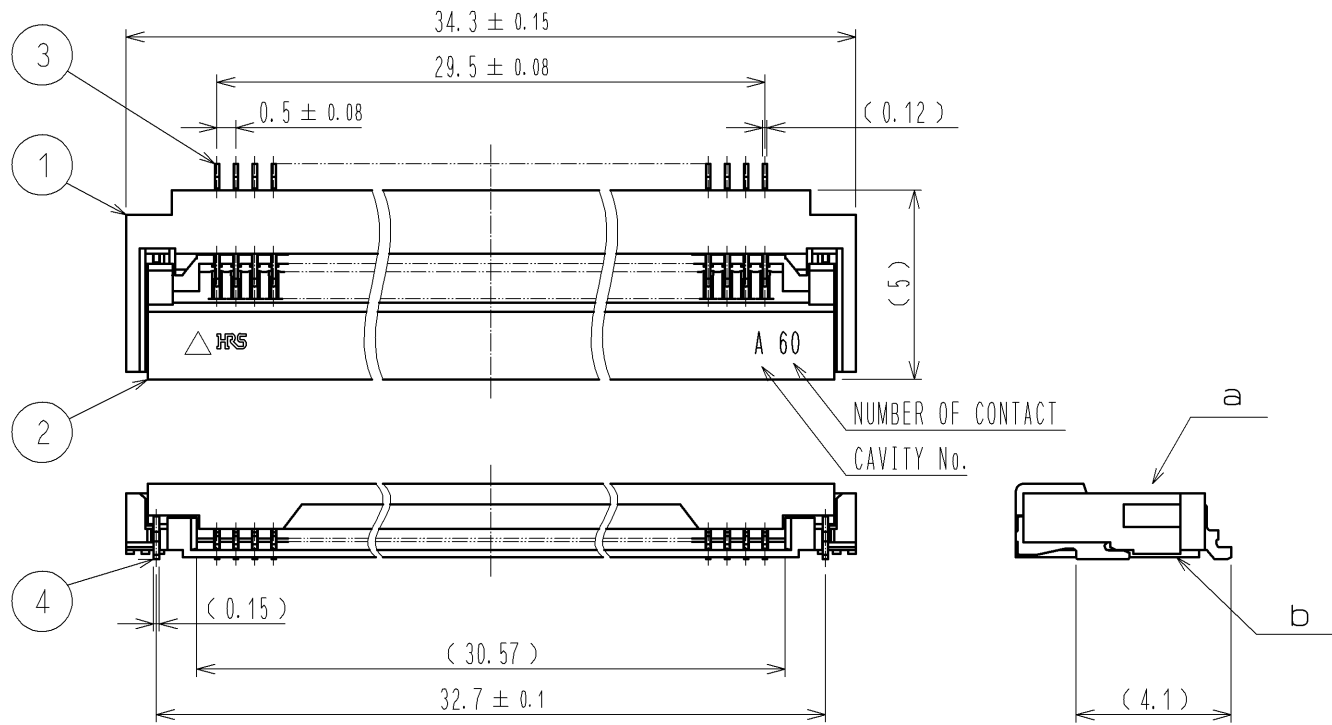
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SPECIFICATIONS				
ITEM	TEST METHOD	REQUIREMENTS	QT	AT
RESISTANCE TO SOLDERING HEAT	1) REFLOW SOLDERING (TO BE 2 TIMES MAX.) PEAK TMP. 250 °C MAX REFLOW TMP. 230 °C MIN FOR 30 sec. PRE-HEATING. 150 TO 200°C 90 TO 120 sec. SOLDERING IRONS : 350 ± 10 °C, FOR 5 ± 1 sec .	NO DEFORMATION OF CASE OF EXCESSIVE LOOSENESS OF THE TERMINALS.	X	—
SOLDERABILITY	SOLDERED AT SOLDER TEMPERATURE, 235±5 °C FOR IMMERSION DURATION, 2±0.5 sec.	A NEW UNIFORM COATING OF SOLDER SHALL COVER A MINIMUM OF 95 % OF THE SURFACE BEING IMMersed.	X	—

(note 1)

WHEN THE SAME VALUE OF CURRENT ARE APPLIED TO ALL CONTACTS AT THE SAME TIME IN ONCE, SET THE CURRENT TO THE 70 % OF THE RATED CURRENT VALUE.

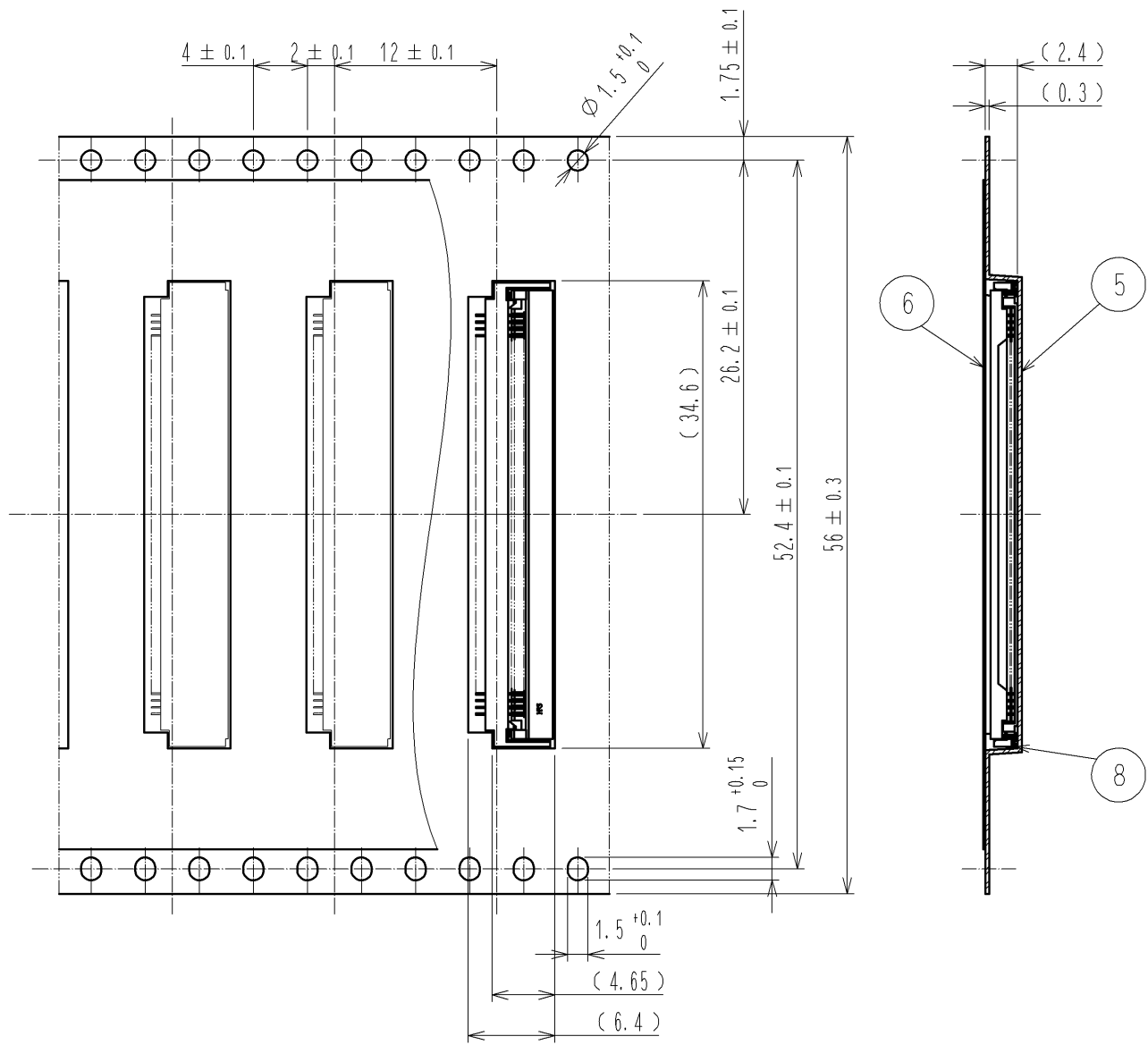
Note QT:Qualification Test AT:Assurance Test X:Applicable Test		DRAWING NO.		ELC4-327944-00	
HRS	SPECIFICATION SHEET		PART NO.	FH52-60S-0.5SH	
	HIROSE ELECTRIC CO., LTD.		CODE NO	CL580-3301-2-00	△ 2/2



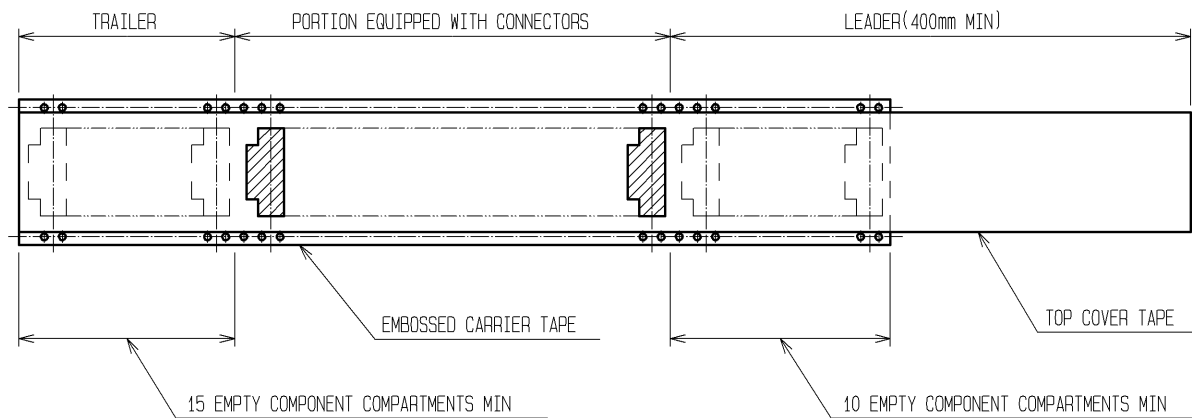
- NOTES
- ① Lead CO-PLANARITY including reinforced metal fittings shall be 0.1 MAX.
 - ② Dimension: from reference b.
 - 3. To be delivered with tape and reel packages.
 - 4. Note that preventive hole for sink mark could be added for improvement.
 - 5. The quality remains good. Even with the dark spots, which could occasionally occur molded plastics.
 - 6. This product satisfies halogen free requirements defined as 900ppm maximum chlorine, 900ppm maximum bromine, and 1500ppm maximum total of chlorine and bromine.
 - ⑦ FPC without tabs is also available.
In case of using FPC without tabs, dimensions relating tabs are not required.

4	BRASS (PLATED MATERIAL)	TIN PLATING (REFLOW FINISHED) 1#mMIN OVER COPPER 0.3#mMIN	8	(CONNECTOR)	
3	PHOSPHOR BRONZE	(CONTACT AREA, LEAD) GOLD PLATING 0.03#mMIN OVER NICKEL 1#mMIN (OTHER) NICKEL PLATING 1#mMIN	7	POLYSTYRENE	
2	LCP	BLACK UL94V-0	6	POLYESTER	
1	LCP	GRAY UL94V-0	5	POLYSTYRENE	
NO.	MATERIAL	FINISH, REMARKS	NO.	MATERIAL	FINISH, REMARKS
UNITS mm		SCALE 5 : 1	COUNT △	DESCRIPTION OF REVISIONS	
DESIGNED		CHECKED		DATE	
APPROVED : NM. NISHIMATSU		10.10.28		DRAWING NO. EDC3-327944-00	
CHECKED : FN. TAMURA		10.10.28		PART NO. FH52-60S-0.5SH	
DESIGNED : YS. EBI		10.10.28		CODE NO. CL580-3301-2-00	
DRAWN : YS. EBI		10.10.28		△ 1/4	

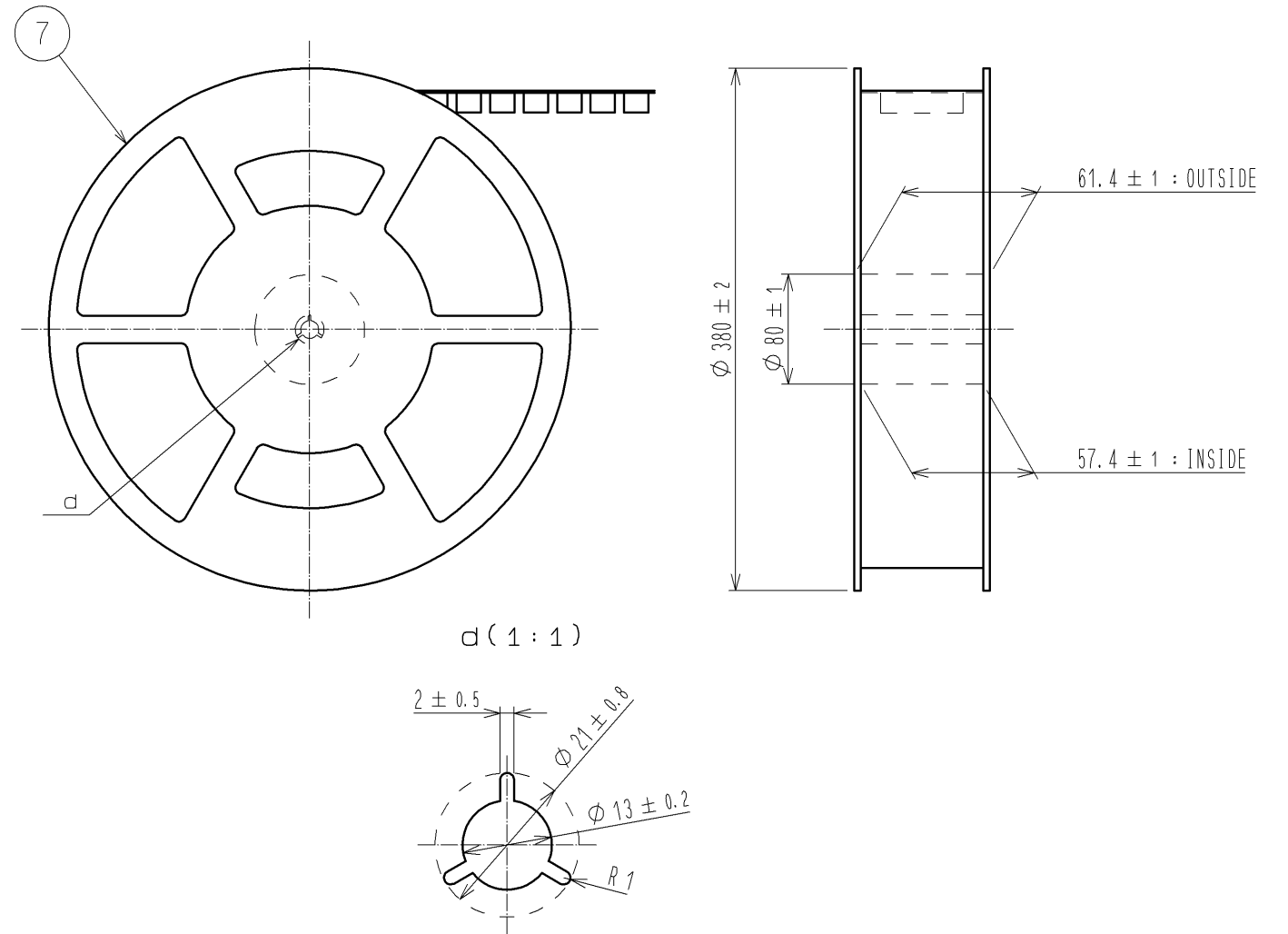
EMBOSED CARRIER TAPE DIMENSION (2:1)



DIRECTION OF UNREELING



REEL DIMENSIONS (No scale)



- NOTES
- 8. The dimension in parentheses are for reference.
 - 9. 1 reel : 3000 connectors.
 - 10. Refer to JIS C 0806. (Packaging of components for automatic handling.)

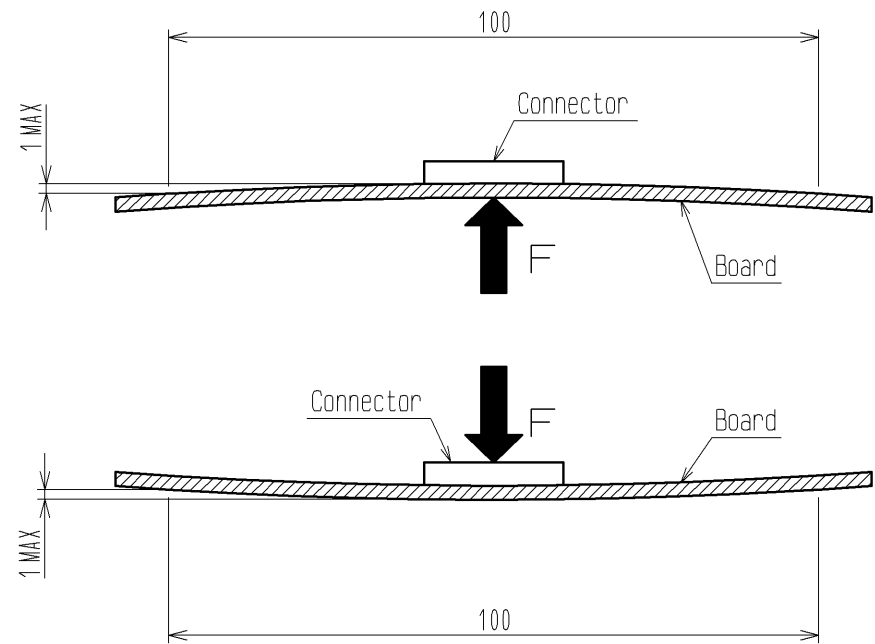
<DRAWING FOR PACKING>

HRS	DRAWING NO.	EDC3-327944-00
	PART NO.	FH52-60S-0.5SH
	CODE NO.	CL580-3301-2-00
		△ 2/4

This connector requires delicate and careful handling.
Read through the instructions shown below and handle the connector properly.
Each values indicating here are for reference and may differ from standard value.

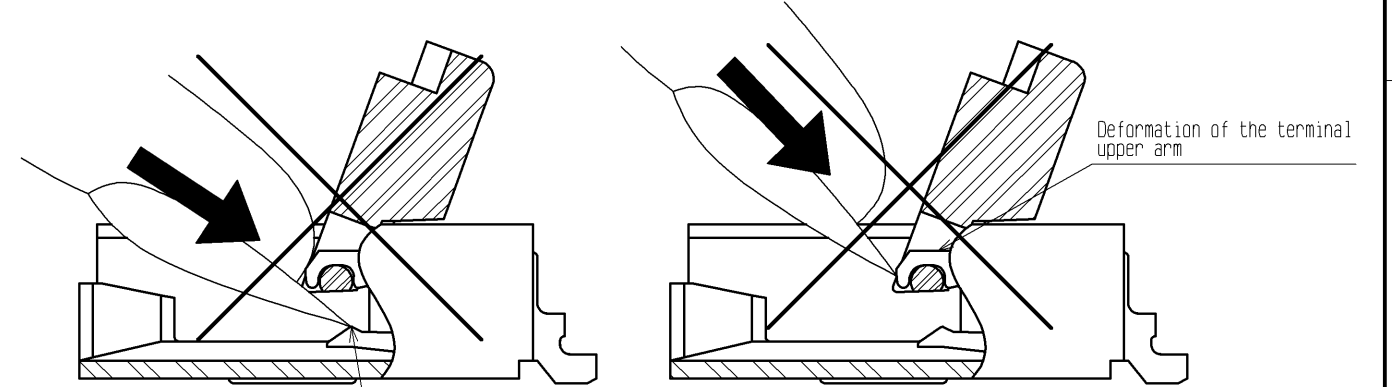
[INSTRUCTIONS FOR MOUNTING ON THE BOARD]

- ◆ Warp of Board
Minimize warp of the board as much as possible.
Lead co-planarity including reinforced metal fittings is 0.1 mm or less.
Too much warp of the board may result in a soldering failure.
- ◆ Load to Connector
Do not apply a force of 1 N or more to the connector before mounting it on the board.
Otherwise, the connector may be broken.
Do not insert the FFC or operate the connector before mounting it.
- ◆ Load to Board
Splitting a large board into several pieces
Screwing the board
Avoid the handling described above so that no force is exerted on the board during the assembly process.
Otherwise, the connector may become defective.
- ◆ Amount of Warp
The warp of a 100mm wide board should be 1 mm or less.
The warp of board suffers stress on connector and the connector may become defective.



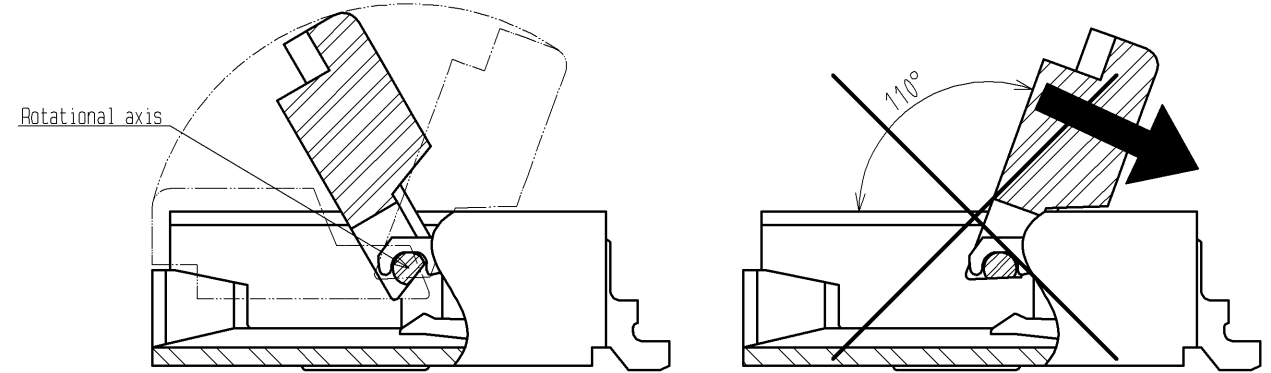
[INSTRUCTIONS ON INSERTING FFC/FPC AND CONNECTION]

- ◆ Use of the Actuator
1. Be very careful not to apply excessive force when releasing the actuator in the initial position.
If you use your nail or finger as shown below, the terminals may be deformed.

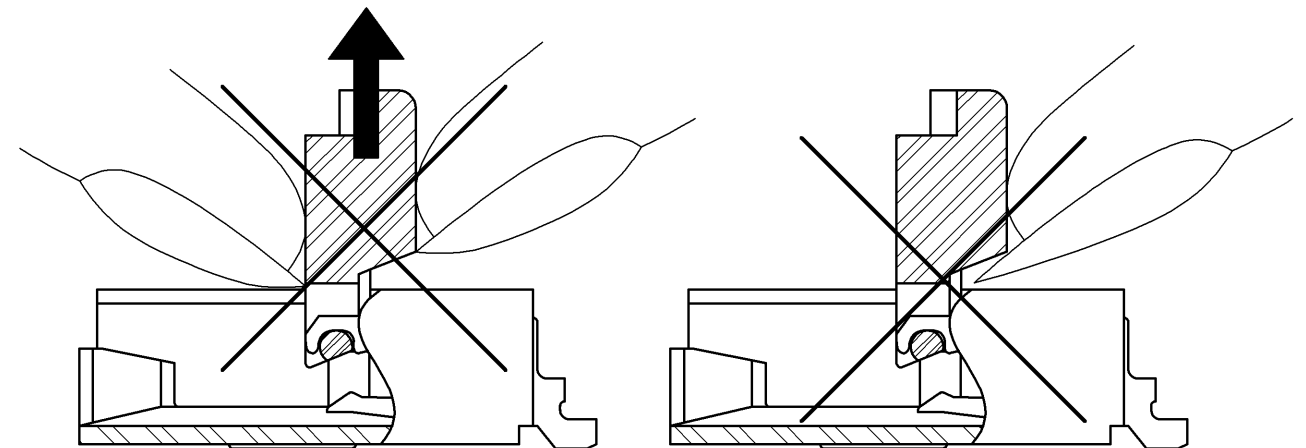


Deformation of the terminal

- 2. The actuator rotates around the rotational axis as shown below.
Rotate the actuator.
- 3. The actuator will not open more than 110°.
Do not apply any force backward beyond this point.
Otherwise, the actuator may come off or break.



- 4. Move the actuator at approximately the center.
- 5. Do not pinch or pick the actuator to lift it as shown below. Otherwise, it may break.
(Do not carry out any operation other than rotating the actuator as shown in 2 above.)



< INSTRUCTION MANUAL(1) >

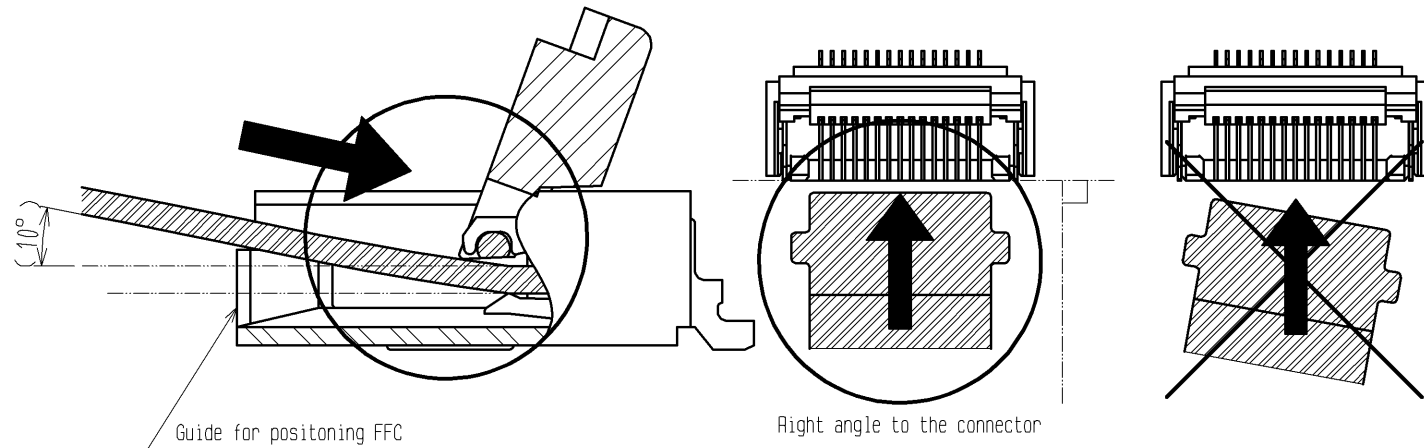
HRS	DRAWING NO.	EDC3-327944-00
	PART NO.	FH52-60S-0.5SH
	CODE NO.	CL580-3301-2-00
		△ 3/4

◆ Direction of Contacts

This connector has contacts on the bottom. Thus, insert FFC/FPC with the exposed conductors face down.

◆ Inserting the FFC/FPC

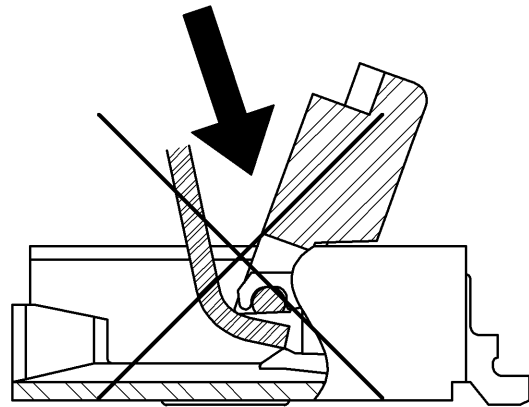
1. Insert the FFC/FPC by about 10 degrees along the surface and at a right angle to the connector. Insert it properly to the very end.



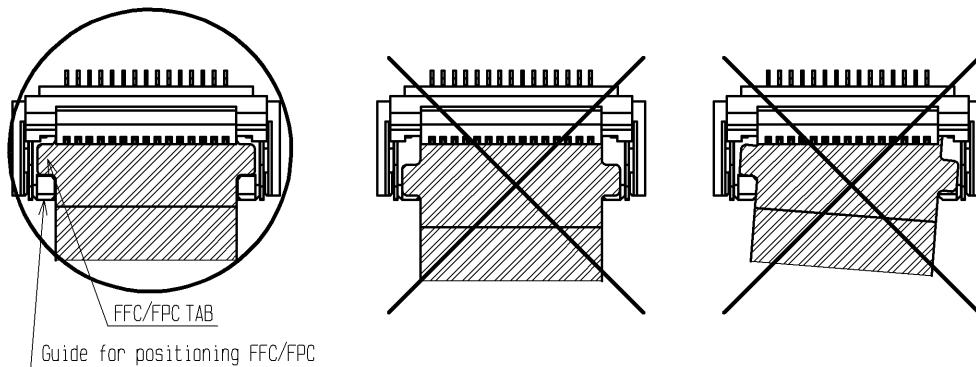
2. Do not insert the FFC/FPC diagonally from above. If the FFC/FPC is inserted at a slant (incorrectly) as shown below in the FFC/FPC insertion process, the edge of the FFC/FPC may catch in the terminals, resulting in deformation of the terminals. The FFC/FPC may bend and patterns may break or the FFC may not insert completely, resulting in improper conduction.

- ※ Keep a sufficient FFC/FPC insertion space in the stage of the layout in order to avoid incorrect FFC/FPC insertion. Besides, it is not difficult to insert FFC/FPC correctly all the way to the end. Design the proper layout of parts.

- ※ Make adjustments with the FFC/FPC manufacturer for FFC/FPC bending performance and wire breakage.



3. Do not rotate the actuator when FFC/FPC TAB is on right and left guides for positioning FFC/FPC. Make sure the position of FFC TAB and guides before rotate the actuator.



◆ Checking the Locking Condition

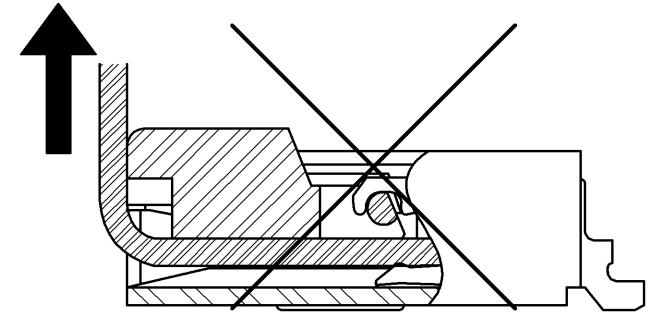
In the locked condition, make sure that the actuator is horizontal on the board surface. Do not apply excessive force to it near the 0° position of the actuator. Otherwise, the terminals may be deformed.

[INSTRUCTIONS ON FFC/FPC LAYOUT AFTER CONNECTION]

◆ Load to FFC/FPC

Be very careful not to apply any force to the connector directly after inserting FFC/FPC. Otherwise, the connector may become unlocked or the FFC/FPC may break. In particular, design the FFC/FPC layout with care not to bend it sharply upward in a vertical direction near the insertion opening. Fix the FFC/FPC when loads are applied to it continuously.

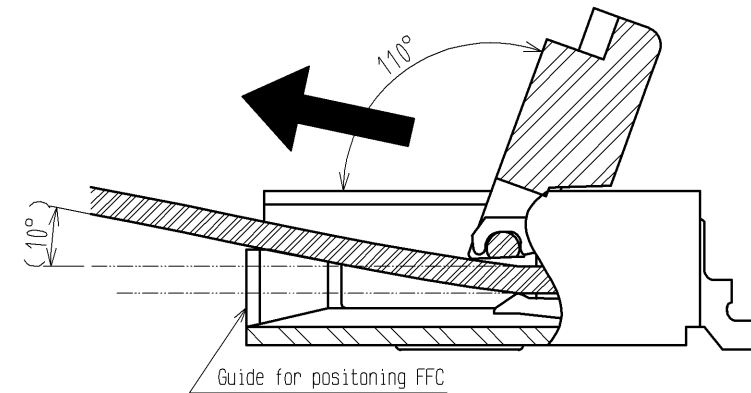
Load: $0.10 \times n$ N MAX
(n: number of contacts)



[INSTRUCTIONS ON REMOVING FFC/FPC]

- ◆ Move the actuator at approximately the center.

- ◆ Release the actuator to remove the FFC/FPC. Remove the FFC/FPC by about 10 degrees along the surface.



[OTHER INSTRUCTIONS]

◆ Instructions on Manual Soldering

- Follow the instructions shown below when soldering the connector manually during repair work, etc.
1. Do not perform reflow soldering or manual soldering with the FFC 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 use excessive solder (or flux). If excessive solder (or flux) is used 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 reinforcing bracket may hinder actuator rotation, resulting in breakage of the connector.

< INSTRUCTION MANUAL(2) >

HRS	DRAWING NO.	EDC3-327944-00
	PART NO.	FH52-60S-0.5SH
	CODE NO.	CL580-3301-2-00
		△ 4/4