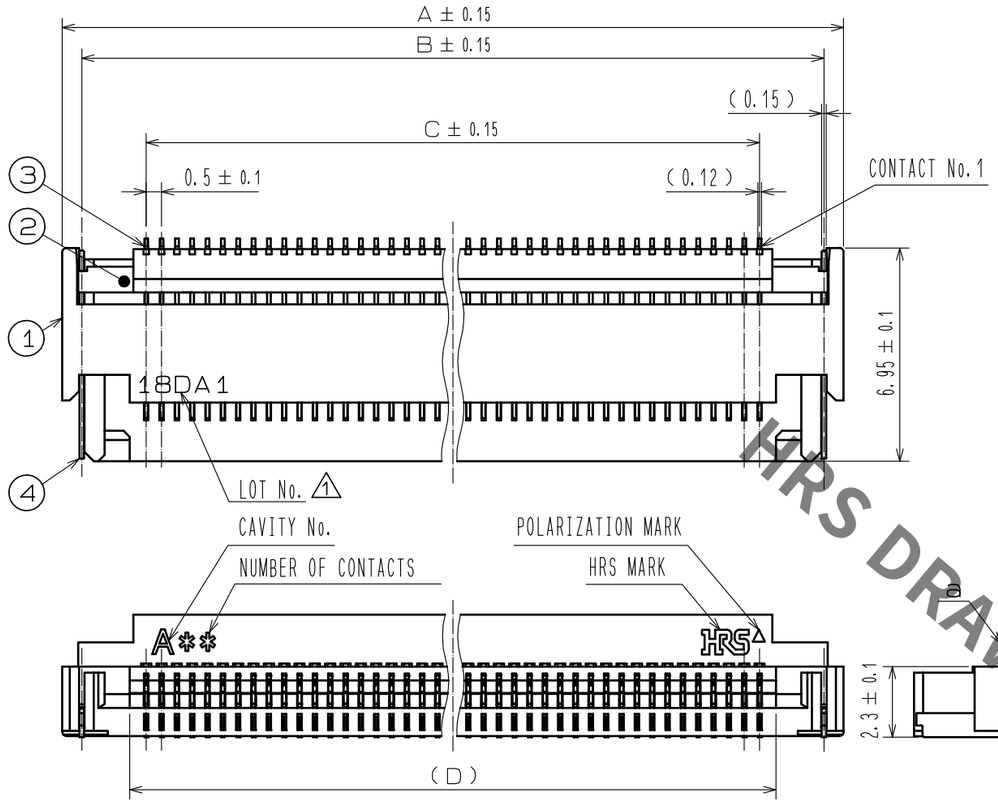
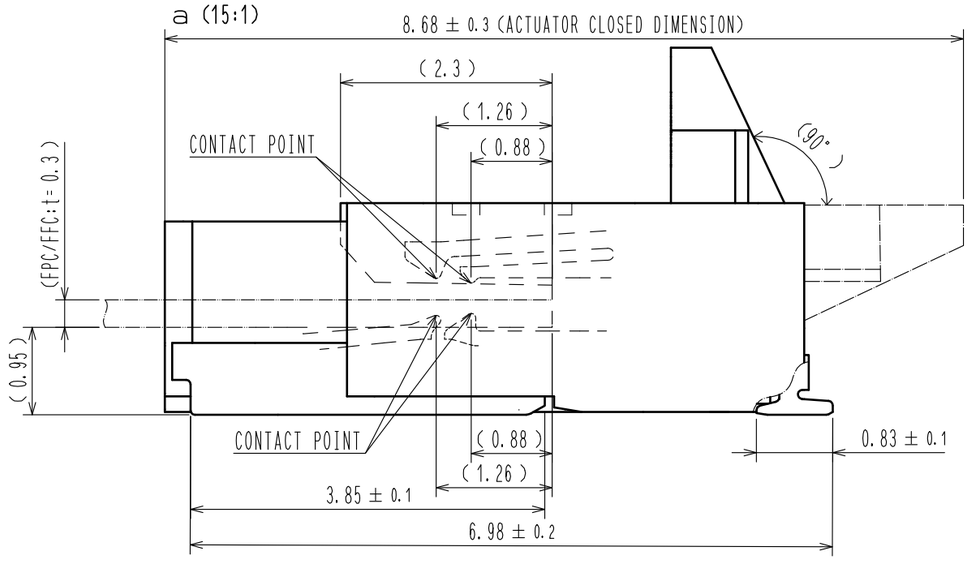
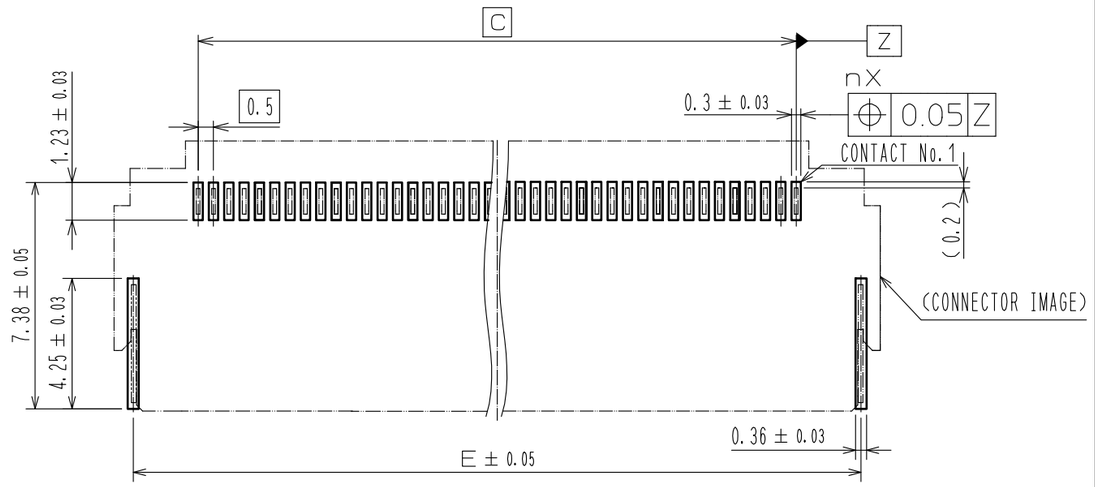
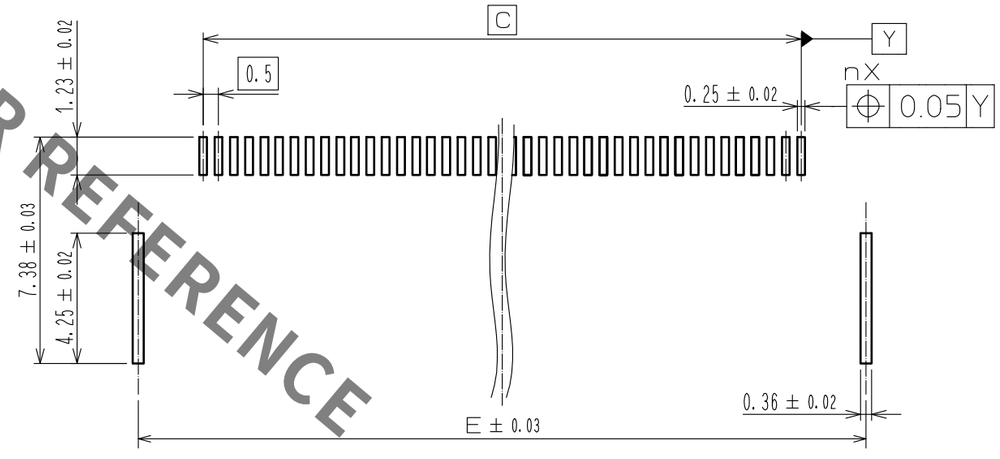




RECOMMENDED PCB MOUNTING PATTERN



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 packages.
See attached packaging specification for details.
4. Note that preventive hole for sink mark could be added for improvement.
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	BRASS	TIN PLATING 1μmMIN OVER COPPER 0.3μmMIN			
3	COPPER ALLOY	(CONTACT AREA, MOUNTING AREA) GOLD 0.03μmMIN OVER NICKEL 1μmMIN (OTHER) NICKEL PLATING 1μmMIN	8	(CONNECTOR)	
			7	POLYSTYRENE	
2	PA	BLACK UL94-V0	6	POLYESTER	
1	LCP	BLACK UL94-V0	5	POLYSTYRENE	

UNITS	SCALE		COUNT	DESCRIPTION OF REVISIONS	DESIGNED	CHECKED	DATE
mm	5 : 1	1	8	DIS-F-00010421	SH. YAMAGUCHI	HS. HIRAHARA	20210811

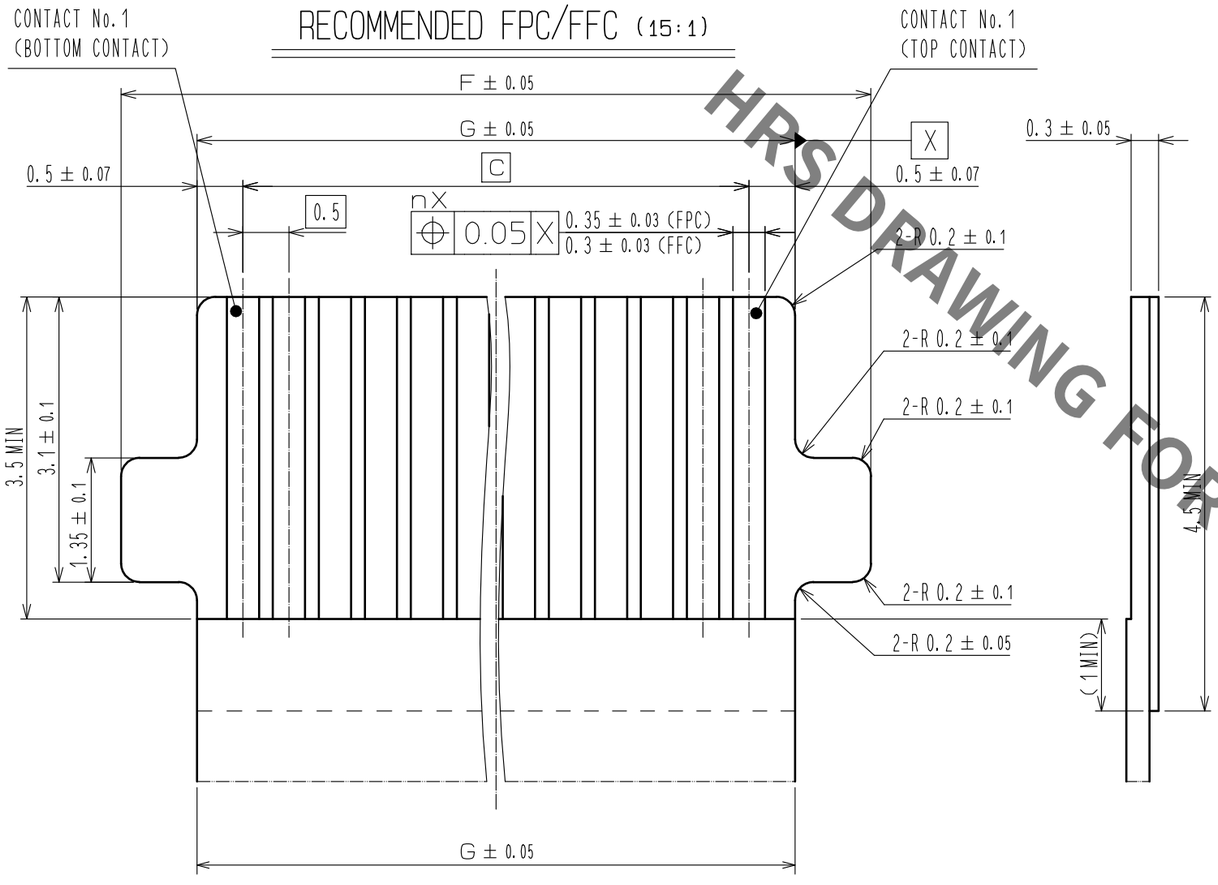
HIROSE ELECTRIC CO., LTD.

APPROVED	HH. SHINDO	20200228
CHECKED	SI. TAMAKI	20200228
DESIGNED	SH. YAMAGUCHI	20200228
DRAWN	SH. YAMAGUCHI	20200228

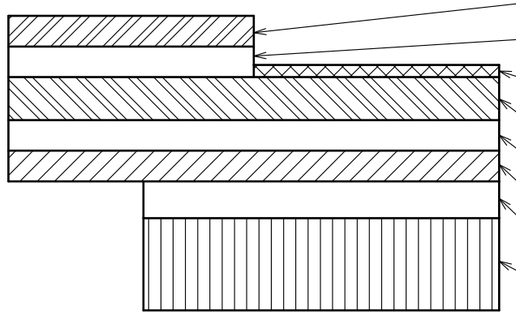
DRAWING NO.	EDC-392112-00-00
PART NO.	FH69-**S-0.5SH
CODE NO.	CL580

1/8

RECOMMENDED FPC/FFC (15:1)

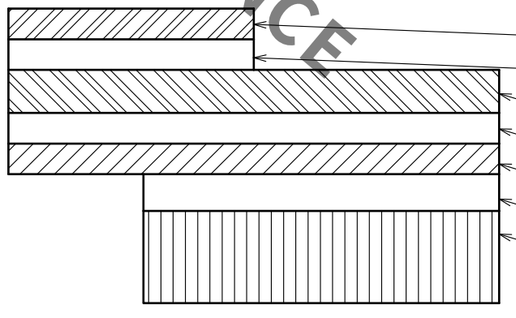


FPC CONFIGURATION (REFERENCE EXAMPLE) (SCALE:FREE)



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	30
STIFFENER	POLYIMIDE 7mil thick.	175

FFC CONFIGURATION (REFERENCE EXAMPLE) (SCALE:FREE)



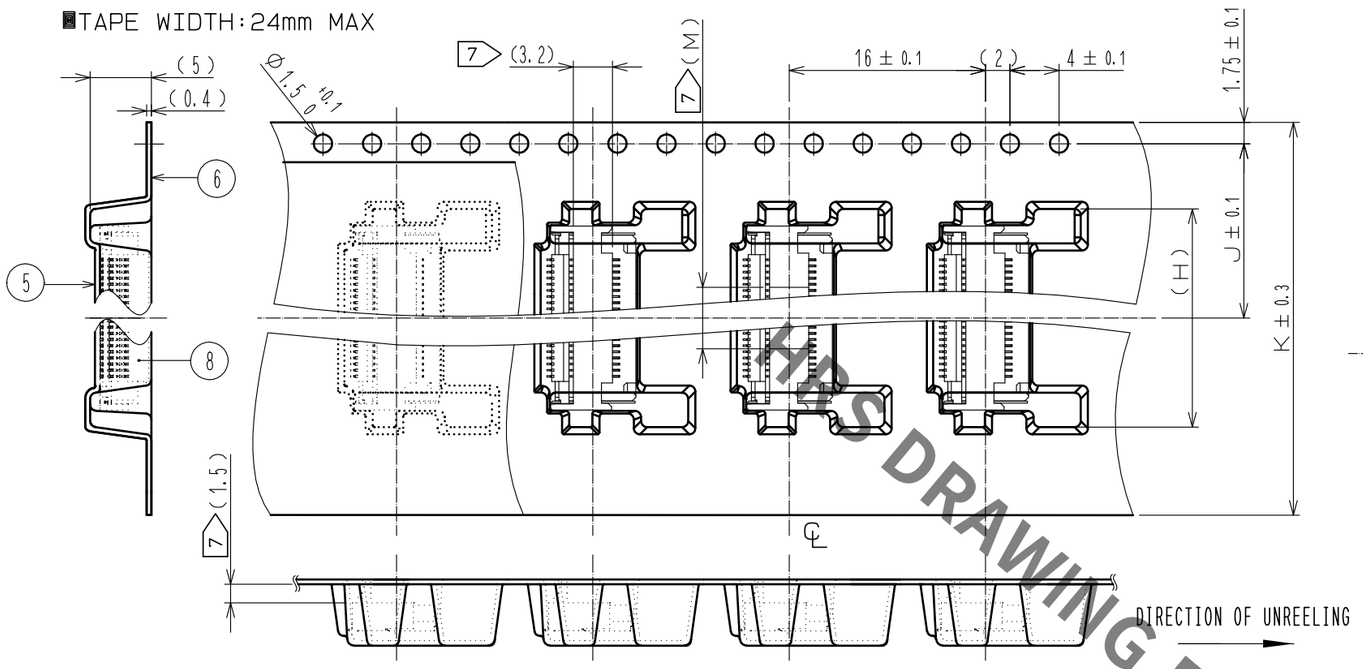
MATERIAL NAME	MATERIAL	THICKNESS(μm)
POLYESTER FILM		(12)
ADHESIVE	POLYESTER THERMOPLASTIC TYPE	(30)
GOLD PLATED, SOFT COPPER FILM		35
ADHESIVE	POLYESTER	30
POLYESTER		12
ADHESIVE	POLYESTER	30
STIFFENER	POLYESTER	188

<RECOMMENDED FPC/FFC>

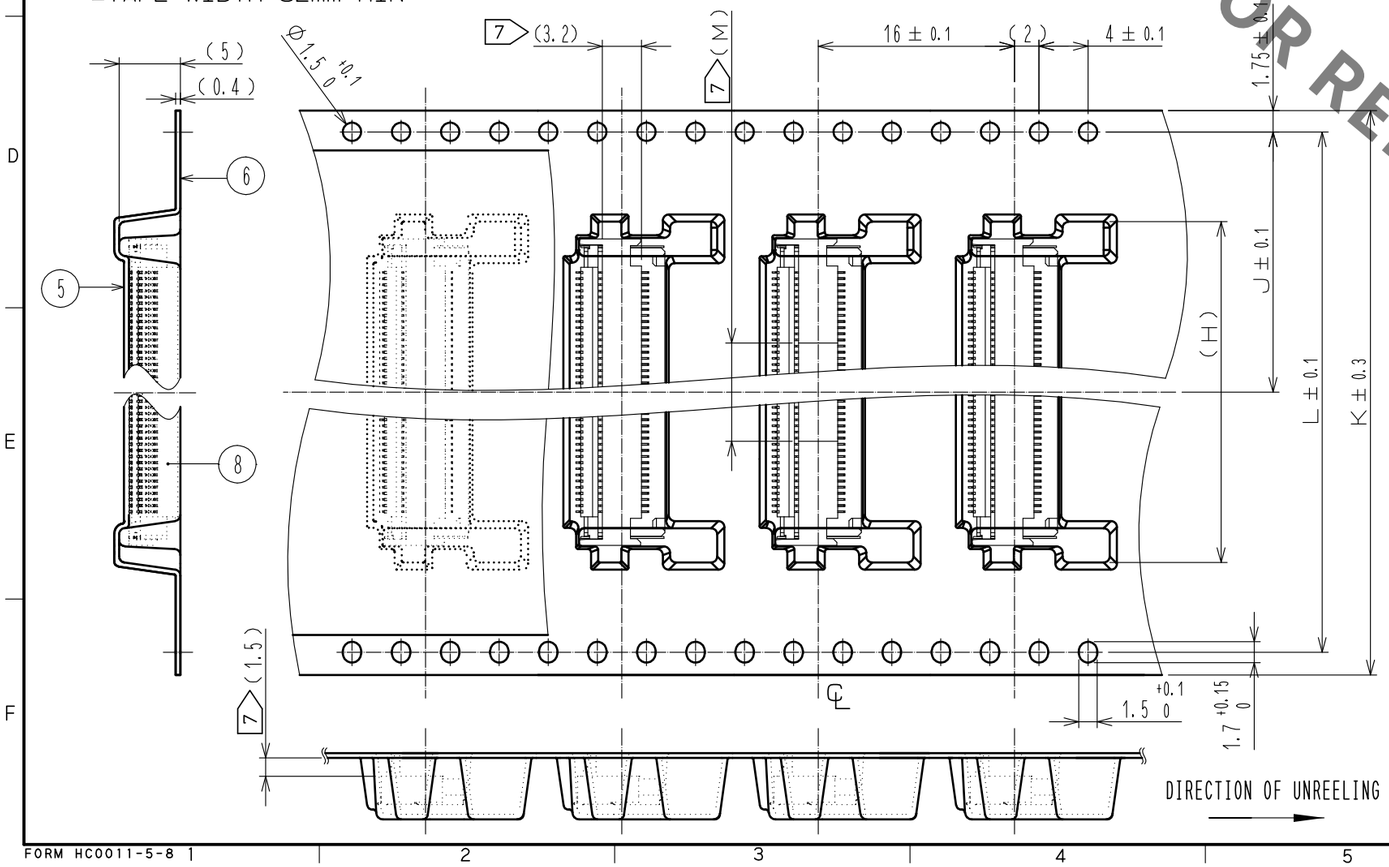
DRAWING NO.	EDC-392112-00-00
PART NO.	FH69-**S-0.5SH
CODE NO.	CL580

EMBOSSED CARRIER TAPE DIMENSION (2:1) 1

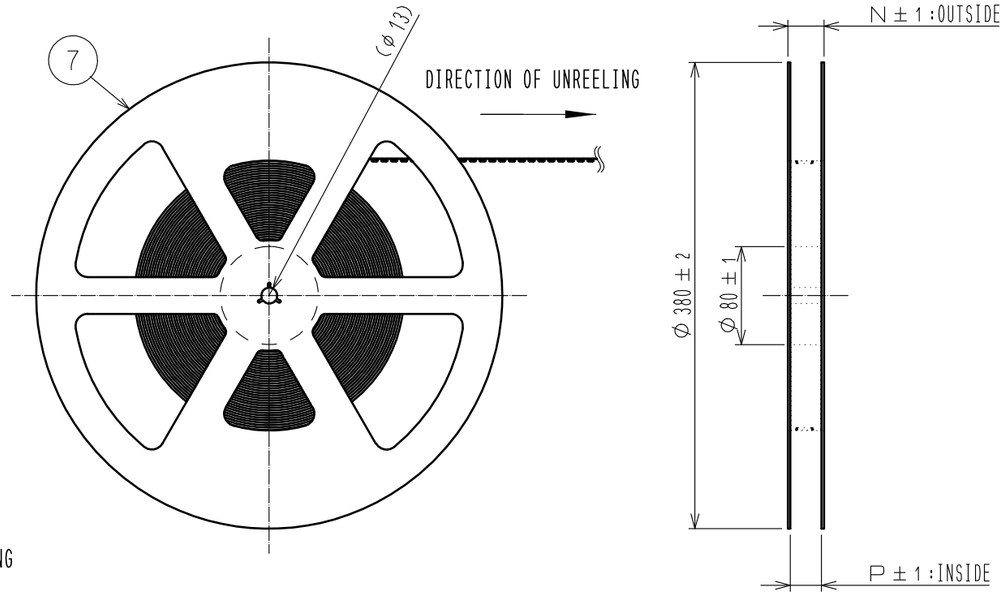
■TAPE WIDTH:24mm MAX



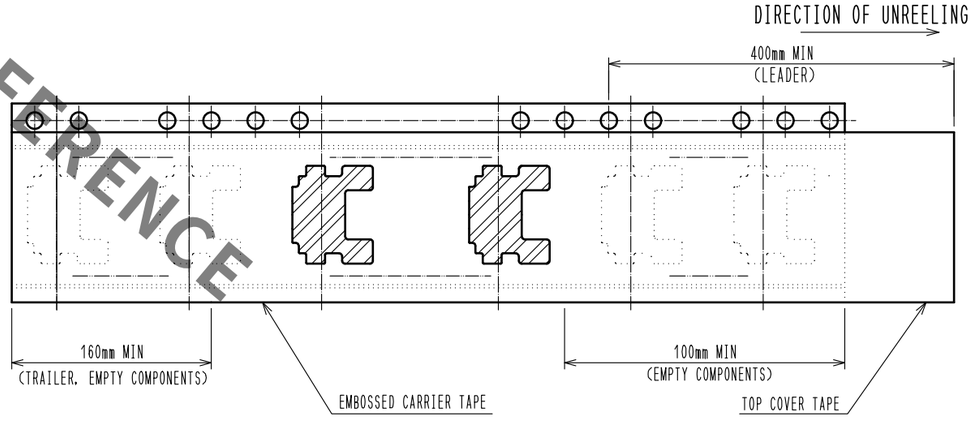
■TAPE WIDTH:32mm MIN



REEL DIMENSION (FREE)



LEADER, TRAILER DIMENSION (FREE)



NOTES 7 The indicated dimension indicates the pick-up area or pick-up position for automatic mounting. 1

8. 1 reel : 1000 connectors. 1
9. Refer to JIS C 0806 and IEC 60286-3. (Packaging of components for automatic mounting.)

<PACKING SPECIFICATION>

HRS	DRAWING NO.	EDC-392112-00-00
	PART NO.	FH69-**S-0.5SH
	CODE NO.	CL580

1 3/8

PART NUMBER	CODE NUMBER	NUMBER OF CONTACT	DIMENSION OF CONNECTOR, PCB MOUNTING PATTERN, AND FFC/FPC							DIMENSION OF DRAWING FOR PACKING ⚠1						
			A	B	C	D	E	F	G	H	J	K	L	M	N	P
FH69-4S-0.5SH		4	6.98	5.7	1.5	2.57	5.73	4.15	2.5	9.66	11.5	24	–	2.0	29.4	25.4
FH69-6S-0.5SH		6	7.98	6.7	2.5	3.57	6.73	5.15	3.5	10.66	11.5	24	–	3.0	29.4	25.4
FH69-8S-0.5SH		8	8.98	7.7	3.5	4.57	7.73	6.15	4.5	11.66	11.5	24	–	4.0	29.4	25.4
FH69-10S-0.5SH		10	9.98	8.7	4.5	5.57	8.73	7.15	5.5	12.66	11.5	24	–	5.0	29.4	25.4
FH69-11S-0.5SH		11	10.48	9.2	5.0	6.07	9.23	7.65	6.0	13.16	11.5	24	–	5.5	29.4	25.4
FH69-12S-0.5SH		12	10.98	9.7	5.5	6.57	9.73	8.15	6.5	13.66	11.5	24	–	6.0	29.4	25.4
FH69-15S-0.5SH		15	12.48	11.2	7.0	8.07	11.23	9.65	8.0	15.16	14.2	32	28.4	8.0	37.4	33.4
FH69-16S-0.5SH		16	12.98	11.7	7.5	8.57	11.73	10.15	8.5	15.66	14.2	32	28.4	8.0	37.4	33.4
FH69-18S-0.5SH		18	13.98	12.7	8.5	9.57	12.73	11.15	9.5	16.66	14.2	32	28.4	8.0	37.4	33.4
FH69-20S-0.5SH		20	14.98	13.7	9.5	10.57	13.73	12.15	10.5	17.66	14.2	32	28.4	8.0	37.4	33.4
FH69-22S-0.5SH		22	15.98	14.7	10.5	11.57	14.73	13.15	11.5	18.66	20.2	44	40.4	8.0	49.4	45.4
FH69-24S-0.5SH		24	16.98	15.7	11.5	12.57	15.73	14.15	12.5	19.66	20.2	44	40.4	8.0	49.4	45.4
FH69-25S-0.5SH		25	17.48	16.2	12.0	13.07	16.23	14.65	13.0	20.16	20.2	44	40.4	8.0	49.4	45.4
FH69-26S-0.5SH		26	17.98	16.7	12.5	13.57	16.73	15.15	13.5	20.66	20.2	44	40.4	8.0	49.4	45.4
FH69-28S-0.5SH		28	18.98	17.7	13.5	14.57	17.73	16.15	14.5	21.66	20.2	44	40.4	8.0	49.4	45.4
FH69-30S-0.5SH		30	19.98	18.7	14.5	15.57	18.73	17.15	15.5	22.66	20.2	44	40.4	8.0	49.4	45.4
FH69-32S-0.5SH		32	20.98	19.7	15.5	16.57	19.73	18.15	16.5	23.66	20.2	44	40.4	8.0	49.4	45.4
FH69-34S-0.5SH		34	21.98	20.7	16.5	17.57	20.73	19.15	17.5	24.66	20.2	44	40.4	8.0	49.4	45.4
FH69-35S-0.5SH		35	22.48	21.2	17.0	18.07	21.23	19.65	18.0	25.16	20.2	44	40.4	8.0	49.4	45.4
FH69-40S-0.5SH		40	24.98	23.7	19.5	20.57	23.73	22.15	20.5	27.66	20.2	44	40.4	8.0	49.4	45.4
FH69-42S-0.5SH		42	25.98	24.7	20.5	21.57	24.73	23.15	21.5	28.66	20.2	44	40.4	8.0	49.4	45.4
FH69-45S-0.5SH		45	27.48	26.2	22.0	23.07	26.23	24.65	23.0	30.16	26.2	56	52.4	8.0	61.4	57.4
FH69-50S-0.5SH		50	29.98	28.7	24.5	25.57	28.73	27.15	25.5	32.66	26.2	56	52.4	8.0	61.4	57.4
FH69-51S-0.5SH		51	30.48	29.2	25.0	26.07	29.23	27.65	26.0	33.16	26.2	56	52.4	8.0	61.4	57.4
FH69-60S-0.5SH	CL580-5007-0-00	60	34.98	33.7	29.5	30.57	33.73	32.15	30.5	37.66	26.2	56	52.4	8.0	61.4	57.4

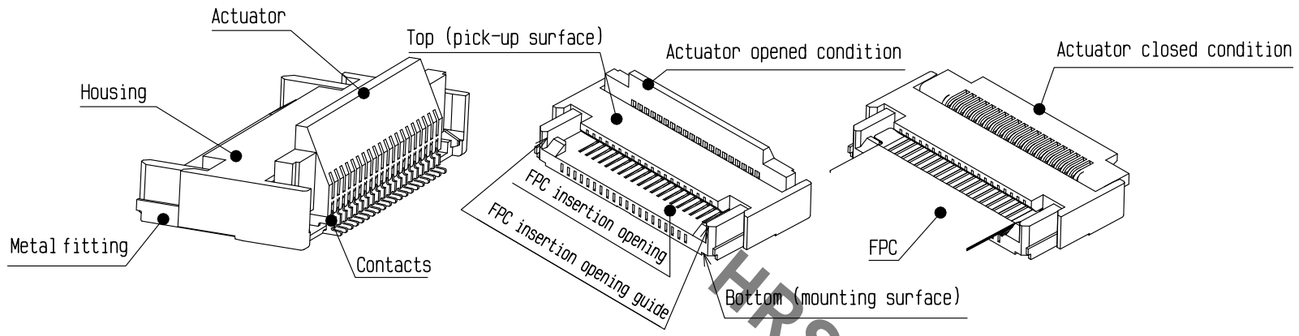
※THE PRODUCTS WITHOUT CODE NUMBER ARE CURRENTLY UNDER PLANNING.
PLEASE CONTACT HIROSE FOR DETAILED INFORMATION ABOUT PRODUCT VARIATION.

<DIMENSION TABLE>

HRS	DRAWING NO.	EDC-392112-00-00
	PART NO.	FH69-**S-0.5SH
	CODE NO.	CL580 ⚠1 4/8

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.
Although this instruction manual is applicable to usage with FPC/FFC.

[Connector Part Nomenclature]



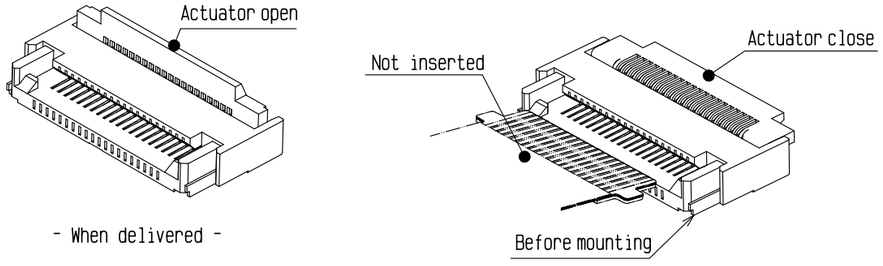
[Operation and cautions]

1. Initial condition

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

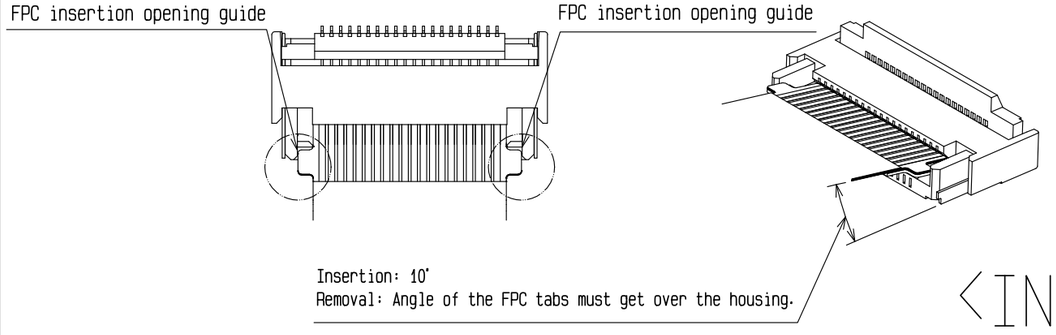
NG

Connector operation when FPC is not inserted or unmounted.



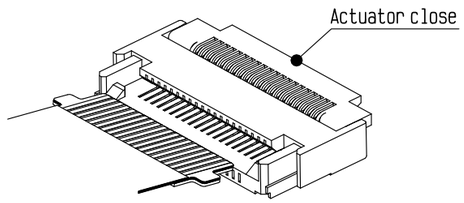
2. How to insert and remove FPC
- When inserting the FPC, insert the FPC at about 10 degree angle to the PCB mounting surface.
  Also, please position both ends of the FPC by insertion opening guide and then insert it straightly.
- When removing the FPC, please pull it out diagonally upward so that the both end tab of FPC
  get over the housing boss.

OK



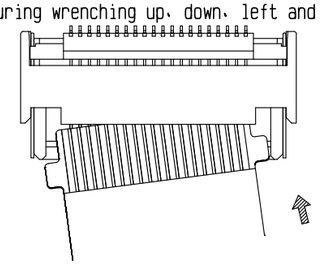
NG

Insertion and removal with actuator close



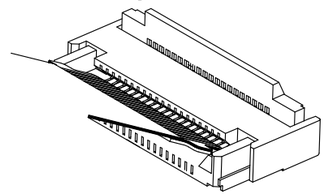
NG

Insertion and removal
during wrenching up, down, left and right.



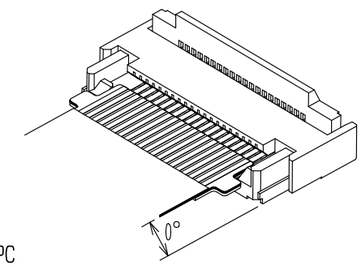
NG

Insertion and removal
excessive angles from PCB surface



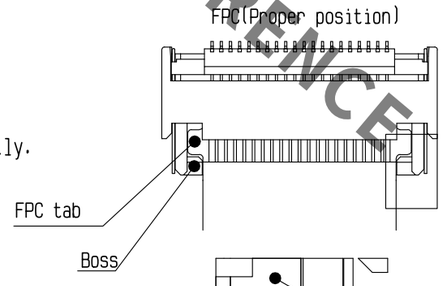
NG

Insertion and removal
horizontal angle from PCB surface

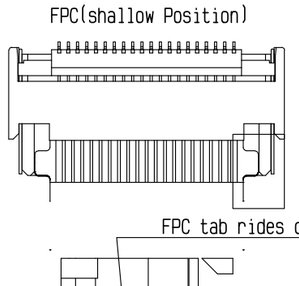


3. FPC insertion check and mating confirmation of the FPC
Guide for positioning FPC guide the FPC tabs to the correct position.
Make sure that the FPC tabs are located in correct position
as shown in the figure below after FPC insertion and mating.

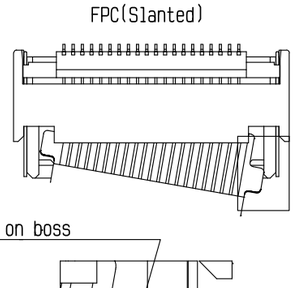
OK

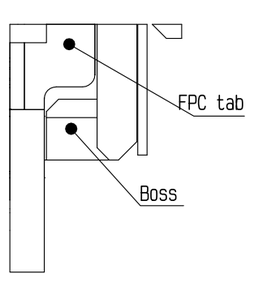


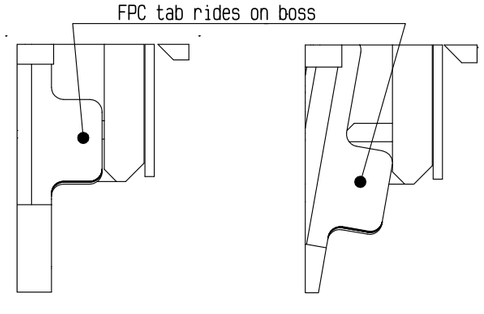
NG



NG







<INSTRUCTION MANUAL(1)>

DRAWING NO.	EDC-392112-00-00
PART NO.	FH69-**S-0.5SH
CODE NO.	CL580

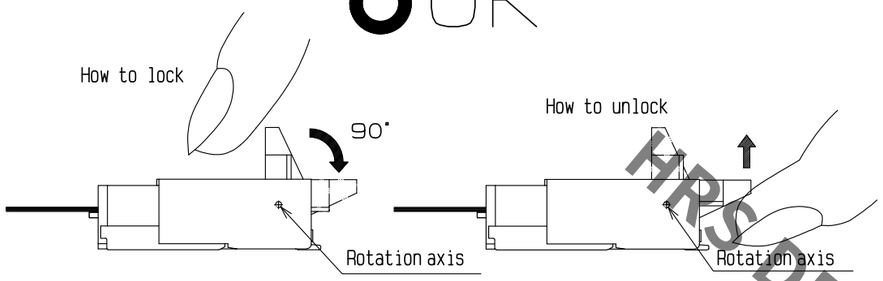
4. How to lock and unlock

The actuator rotates around the rotational axis.

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

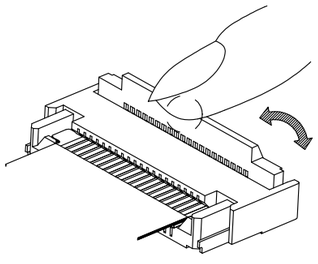
Unlock : Slowly flip up the Actuator lock

OK

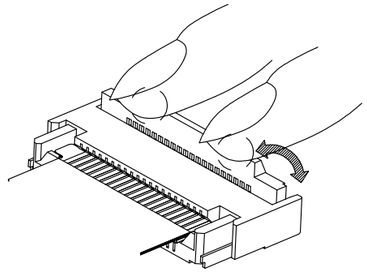


OK

Operate the center of the actuator

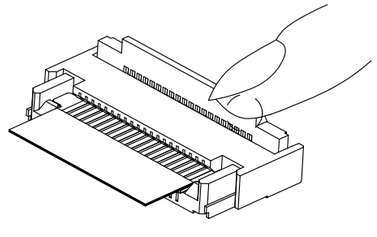


Operate near both-ends of the actuator at the same timing moment.
(Around 3 PIN from the end)



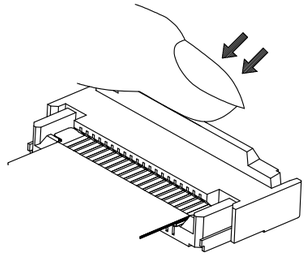
NG

Operate at one end of the actuator



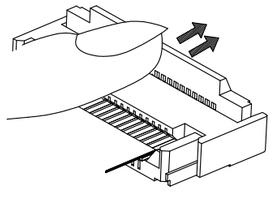
NG

Force from reverse direction to actuator.



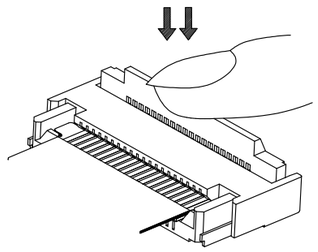
NG

Push horizontally to lock



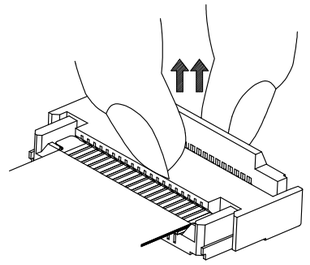
NG

Push vertical to lock



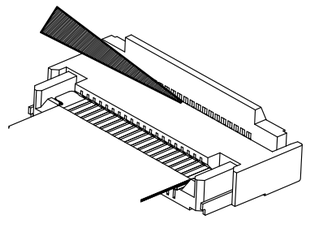
NG

Pick the actuator to lift



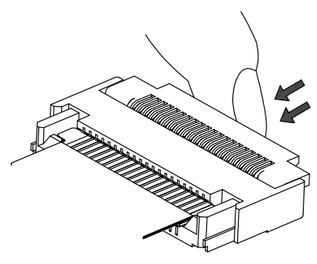
NG

Operate with a sharp tool



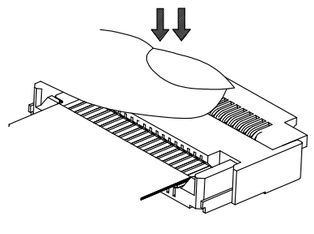
NG

Operation to push the actuator into connector



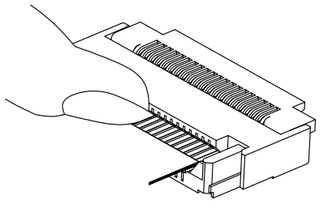
NG

Excessive force to housing



NG

Operation from FPC insertion opening side



<INSTRUCTION MANUAL(2)>

DRAWING NO.	EDC-392112-00-00
PART NO.	FH69-**S-0.5SH
CODE NO.	CL580

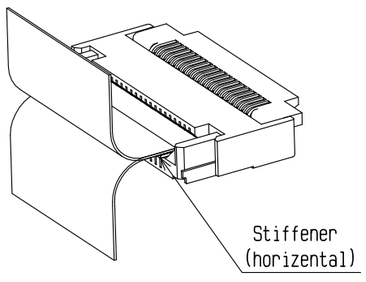
[Instructions for PCB layout] ⚠1

Please design a PCB layout not to apply load to connector and FPC.

[Cautions]
- If the FPC has to be curled/bended in your cabling design, please keep enough degree of freedom in your design to keep the FPC tension free. In this regard, the stiffener is parallel to the PCB.
- Do not mount other components underneath the FPC stiffener which may interfere with the connection.
- Please consult with the FPC manufacturer about FPC bending performance and wire breakage strength while making design.
- Keep enough space for the rotation of the actuator during PCB and component layout design.
- Please consult with our sales representative if you are using FPC with different configuration from our recommendation.

OK

No load applied to stiffener



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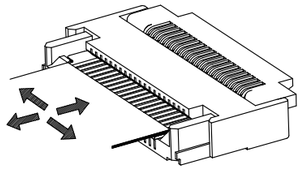
Load applied to FPC



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Load applied to stiffener

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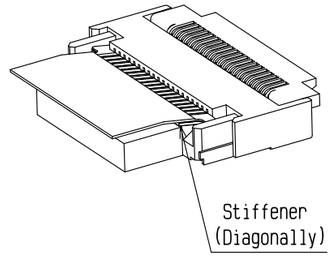
Housing or parts interfering with the FPC



[Instructions for mounting on the PCB] ⚠1

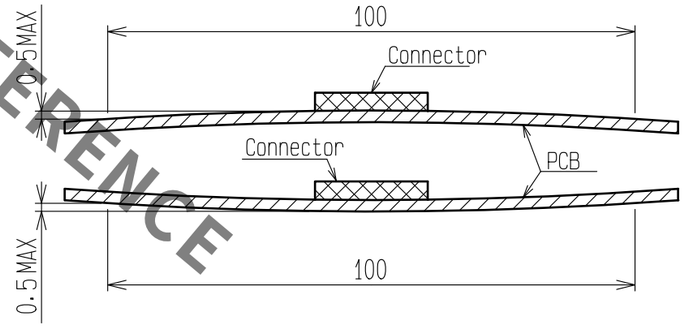
- Refer to recommended layouts for PCB, stencil pattern and FPC dimension. Please inspect the size of solder fillet and flux climbing height of the mounted connector while using different land/stencil pattern from our recommendation.
- Please verify your solder resist/silk screening design carefully before implementing the design.
- 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.
- Please try to minimize the warpage of the PCB. Soldering failure could still occur due to the PCB warpage even if the coplanarity of the connector is under 0.1mm.
- If the connector is mounting on FPC, please make sure to put a stiffener on the backside of the FPC. Recommended stiffner: Glass epoxy material with thickness of 0.3mm MIN.
- Do not apply 0.5N or greater external force on the connector when unreeling or handling the connector before mounting. Excessive mechanical stress may damage the connector before mounting.

[Instructions for PCB handling after mounting the connector]

The warpage of PCB may apply excessive stress on the connector and damage the connector.

- ·Splitting a large PCB into several pieces
  ·Installing mounting screw on PCB

During the assembly processes decribed above, care shall be taken so as not to give any stresses of deflection or twisting to the PCB.
- The warpage of a 100mm wide PCB should remain within 0.5mm.



[Instructions of hand soldering]

- Do not perform hand soldering with the FPC inserted into the connector.
- Do not apply excessive heat. And soldering iron must not touch connector except terminal leads area.
- Do not supply excessive solder (flux).

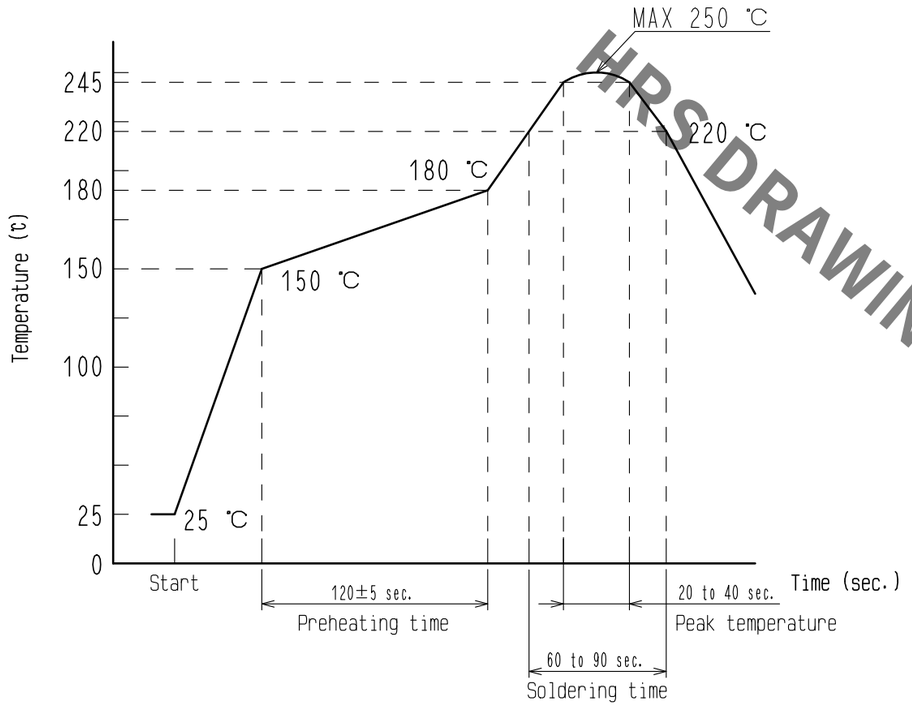
<INSTRUCTION MANUAL(3)>

DRAWING NO.	EDC-392112-00-00
PART NO.	FH69-**S-0.5SH
CODE NO.	CL580

|Recommended reflow temperature profile| ⚠1

The temperatures mentioned above refer to the PCB surface temperature near the connector leads.
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.

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



<INSTRUCTION MANUAL(4)>

HRS	DRAWING NO.	EDC-392112-00-00
	PART NO.	FH69-**S-0.5SH
	CODE NO.	CL580 ⚠1 8/8