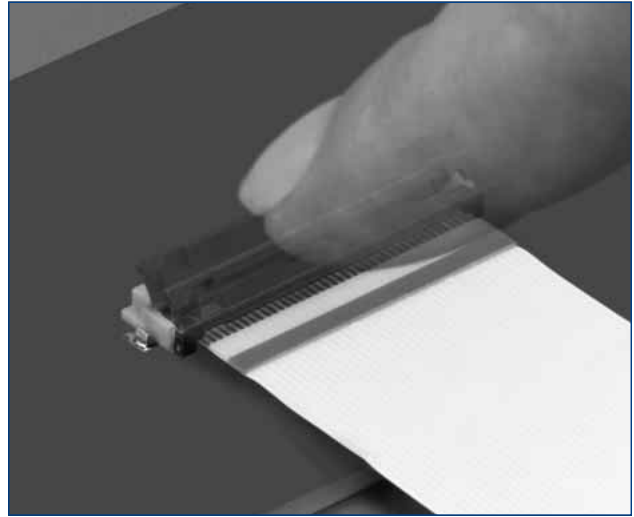
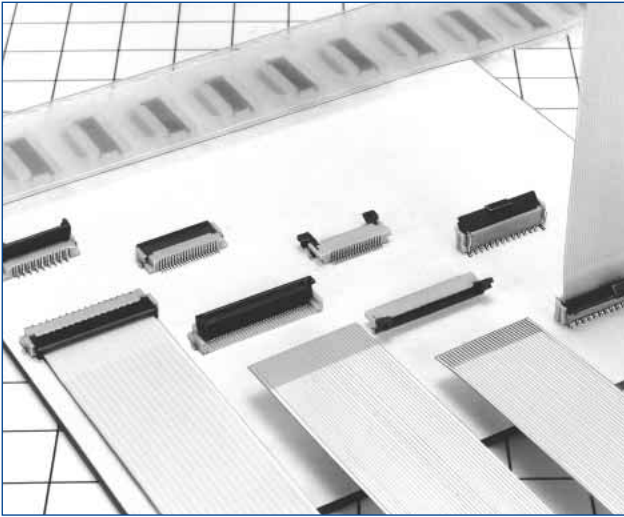


0.5 mm and 1 mm Pitch FPC/FFC Connectors

FH12 Series



■ Features

1. Rotating one-touch ZIF mechanism

The one-touch rotating ZIF mechanism is easier to operate and works with a light force.

2. Clear tactile click

A clear tactile click is delivered upon the successful completion of the mating process.

3. Supports high density mounting

The FH12's one-touch ZIF system requires less space than a slide locking connector and can be mounted in the center of the PCB.

4. Top & Bottom Contact and Vertical Mount type

There are three connection types available: top contact, bottom contact and a Vertical mount.

5. 1 mm pitch product

In addition to the 0.5 mm pitch connector, we also offer a 1 mm pitch connector.

6. Reinforced actuator

The FH12S version in 30, 40, 45, 50, and 53 pin counts are offered with a reinforced actuator that provides an extra measure of security against actuator breakage.

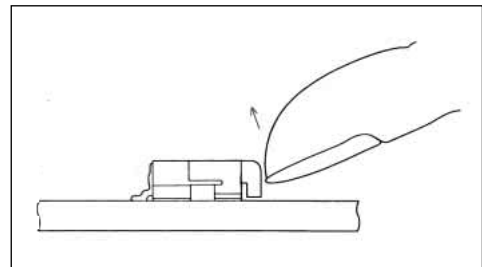
7. Supports 0.18 mm thick FPC

The FH12F version connector supports a 0.18 mm thick FPC (± 0.05).

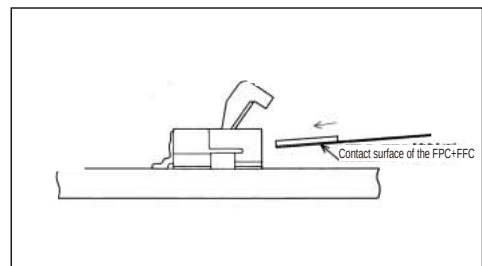
Double-sided FPC do not require a stiffener when used on the connectors.

Rotating one-touch ZIF mechanism

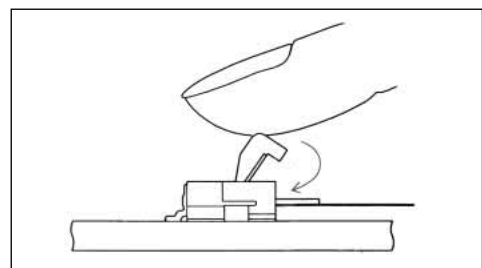
①



②



③



Product Specifications

Rating	Current rating: 0.5A DC(Note 1)	Operating Temperature Range: -40 to +85°C (Note 2)	Storage Temperature Range: -10 to +50°C (Note 3)
	Voltage rating: 50V AC	Operating Humidity Range: Relative humidity, 90% max. (Not dewed)	Storage Humidity Range: Relative humidity, 90% max. (Not dewed)

Adaptive FPC/FFC contact specifications	t=0.3±0.05 Gold plated	t=0.18 ± 0.05 for FH12F-*S-0.5SH
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Item	Specification	Conditions
1. Insulation resistance	500M ohms minimum	100V DC
2. Withstanding voltage	No flashover or insulation breakdown.	150V AC/1 minute
3. Contact resistance	50m ohms maximum	1mA
4. Durability (Insertion/withdrawal)	Contact resistance: 50m ohms maximum No damage, cracks, or parts dislocation.	20 cycles
5. Vibration	No electrical discontinuity of 1μs or more Contact resistance: 50m ohms maximum. No damage, cracks, or parts dislocation.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, for 10 cycles in 3 axial directions
6. Shock	No electrical discontinuity of 1μs or more Contact resistance: 50m ohms maximum. No damage, cracks, or parts dislocation.	Acceleration of 981 m/s ² , 6 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis
7. Humidity(Steady state)	Contact resistance: 50m ohms maximum. Insulation resistance: 50M ohms minimum. No damage, cracks, or parts dislocation.	96 hours at 40°C and humidity of 90% to 95%
8. Temperature Cycle	Contact resistance: 50m ohms maximum. Insulation resistance: 50M ohms minimum. No damage, cracks, or parts dislocation.	Temperature: -40°C → 15 to 35°C → 85°C → 15 to 35°C, Time: 30 → 2 to 3 → 30 → 2 to 3(minutes) 5 cycles
9. Resistance to Soldering heat	No deformation of components affecting performance.	Reflow: At the recommended temperature profile Manual soldering: 350±10°C for 5 seconds

Note 1: When passing the current through all of the contacts, use 70% of the current rating.

Note 2: Includes temperature rise caused by current flow.

Note 3: The term "storage" refers to products stored for long period of time prior to mounting and use. Operating Temperature Range and Humidity range covers nonconducting condition of installed connectors in storage, shipment or during transportation.

Material

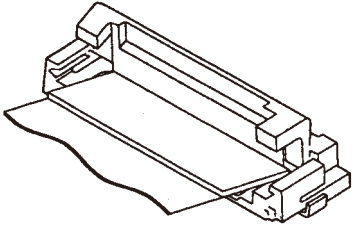
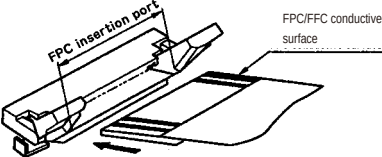
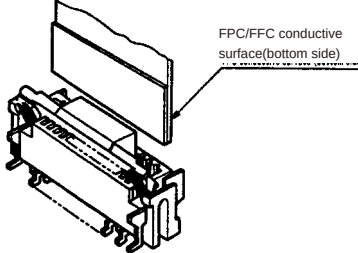
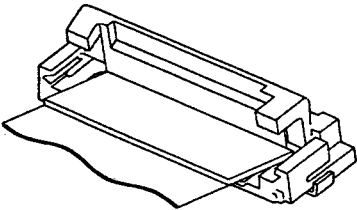
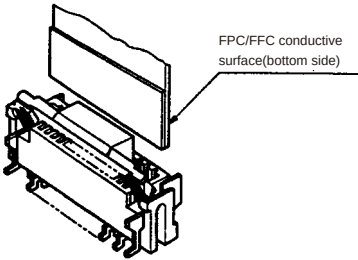
Part	Material	Finish	Remarks
Insulator	Polyamide, LCP(60 pos.)	Color : Beige	UL94V-0
	PPS	Color : Dark brown	
Contact	Phosphor bronze	Gold plated	_____
Metal Fittings	Brass	Tin plated	

Ordering Information

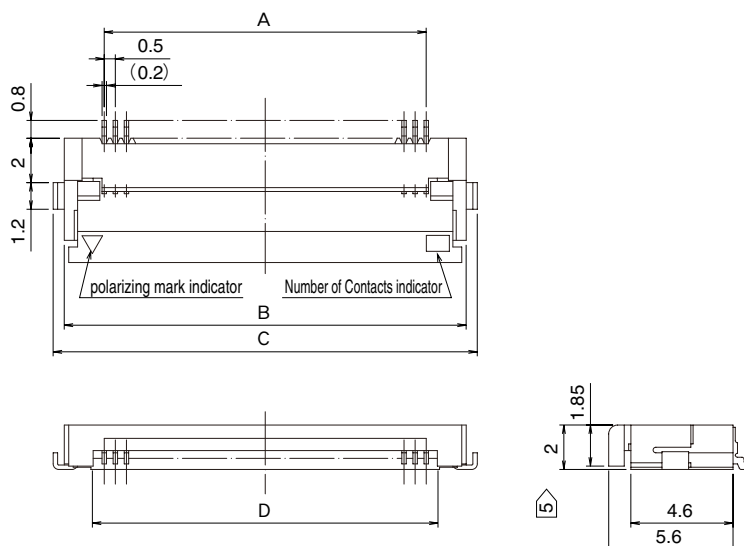
FH **12** **A** - **10** **(4)** **S** **A** - **0.5** **SH** **(**)**

① Series Name : FH	⑥ Contact alignment: Single
② Series No. : 12	⑦ Eccentric direction: Blank : standard type A : Eccentric type
③ Blank : standard type A : Top contact type S : Type with strengthened flip-lock actuator F : Type with 0.18mm FPC End Thickness	⑧ Contacts Pitch : 0.5mm, 1mm
④ Standard type : Number of contacts Eccentric type : Number of contacts in 0.5mm housing	⑨ Contact type SH : SMT horizontal mounting type SV : SMT vertical mounting type
⑤ Standard type : Blank Eccentric type : Number of contacts	⑩ Plating specification (54) : Selective gold plated (55) : Gold plated (1)(98) : Gold plated 500 pieces/reel

Series Configuration

Pitch	Bottom Contact Type	Top Contact Type	Vertical mounting Type
0.5mm	 FH12- ** S-0.5SH P.4 Number of contacts 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 33, 34, 35, 36, 40, 45, 50, 53		
	Type with Strengthened Lock Lever		
	FH12S- ** S-0.5SH P.5 Number of contacts 30, 40, 45, 50, 53		
	Type with 0.18mm FPC End Thickness		
	FH12F- ** S-0.5SH P.6 Number of contacts 6, 8, 10, 12, 13, 14, 15, 16, 18, 20, 22, 24, 25, 26, 28, 30, 32, 34, 36, 40	FH12A- ** S-0.5SH P.7 Number of contacts 10, 12, 15, 16, 18, 20, 22, 24, 26, 28, 29, 30, 32, 33, 34, 36, 40, 42, 45, 50	FH12- ** S-0.5SV P.8 Number of contacts 10, 12, 13, 15, 16, 17, 18, 20, 22, 24, 26, 30, 32, 33, 34, 36, 40, 45, 49, 50, 60
1mm	 Standard FH12- ** S-1SH P.9 Eccentric FH12- ** (**) SA-1SH Standard Number of contacts 5, 6, 7, 8, 9, 11, 12, 16, 17, 22, 26 Eccentric Number of contacts 4, 6, 8, 10, 11, 14, 19, 24		 FH12- ** S-1SV P.10 Number of contacts 6, 7, 8, 16, 20, 22, 24

0.5mm Pitch Bottom Contact Type



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

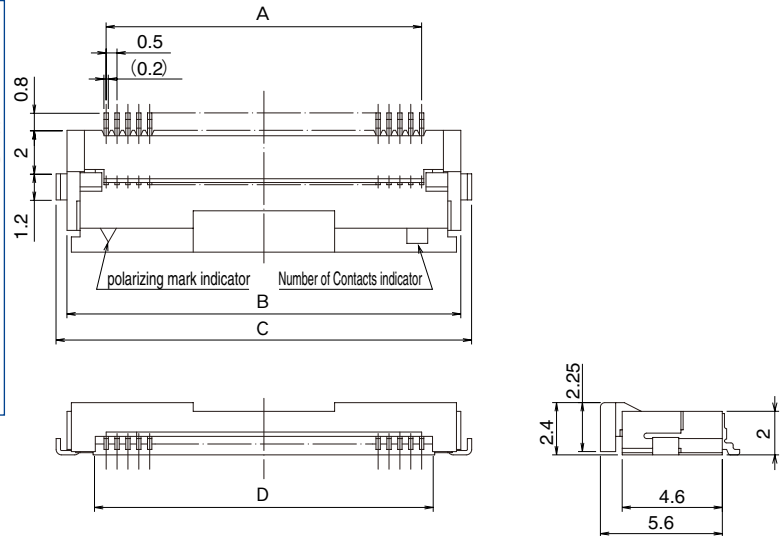
Note ⑤: If there is no problem with the connector height, we recommend the type with the strengthened Flip-lock actuator (FH12S-*S-0.5SH). Standard type connector height: 2 mm Connector height of type with strengthened Flip-lock actuator: 2.4 mm

Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D
FH12-6S-0.5SH(**)	586-0582-5-**-	6	2.5	6.1	7.1	3.57
FH12-8S-0.5SH(**)	586-0744-5-**-	8	3.5	7.1	8.1	4.57
FH12-10S-0.5SH(**)	586-0522-3-**-	10	4.5	8.1	9.1	5.57
FH12-11S-0.5SH(**)	586-0600-5-**-	11	5.0	8.6	9.6	6.07
FH12-12S-0.5SH(**)	586-0704-0-**-	12	5.5	9.1	10.1	6.57
FH12-13S-0.5SH(**)	586-0549-0-**-	13	6.0	9.6	10.6	7.07
FH12-14S-0.5SH(**)	586-0533-0-**-	14	6.5	10.1	11.1	7.57
FH12-15S-0.5SH(**)	586-0523-6-**-	15	7.0	10.6	11.6	8.07
FH12-16S-0.5SH(**)	586-0531-4-**-	16	7.5	11.1	12.1	8.57
FH12-17S-0.5SH(**)	586-0606-1-**-	17	8.0	11.6	12.6	9.07
FH12-18S-0.5SH(**)	586-0530-1-**-	18	8.5	12.1	13.1	9.57
FH12-19S-0.5SH(**)	586-0534-2-**-	19	9.0	12.6	13.6	10.07
FH12-20S-0.5SH(**)	586-0524-9-**-	20	9.5	13.1	14.1	10.57
FH12-22S-0.5SH(**)	586-0532-7-**-	22	10.5	14.1	15.1	11.57
FH12-24S-0.5SH(**)	586-0521-0-**-	24	11.5	15.1	16.1	12.57
FH12-25S-0.5SH(**)	586-0692-3-**-	25	12.0	15.6	16.6	13.07
FH12-26S-0.5SH(**)	586-0576-2-**-	26	12.5	16.1	17.1	13.57
FH12-28S-0.5SH(**)	586-0612-4-**-	28	13.5	17.1	18.1	14.57
Note ⑤ FH12-30S-0.5SH(**)	586-0525-1-**-	30	14.5	18.1	19.1	15.57
FH12-32S-0.5SH(**)	586-0681-7-**-	32	15.5	19.1	20.1	16.57
FH12-33S-0.5SH(**)	586-0520-8-**-	33	16.0	19.6	20.6	17.07
FH12-34S-0.5SH(**)	586-0617-8-**-	34	16.5	20.1	21.1	17.57
FH12-35S-0.5SH(**)	586-0740-4-**-	35	17.0	20.6	21.6	18.07
FH12-36S-0.5SH(**)	586-0526-4-**-	36	17.5	21.1	22.1	18.57
Note ⑤ FH12-40S-0.5SH(**)	586-0527-7-**-	40	19.5	23.1	24.1	20.57
Note ⑤ FH12-45S-0.5SH(**)	586-0528-0-**-	45	22.0	25.6	26.6	23.07
Note ⑤ FH12-50S-0.5SH(**)	586-0529-2-**-	50	24.5	28.1	29.1	25.57
Note ⑤ FH12-53S-0.5SH(**)	586-0595-7-**-	53	26.0	29.6	30.6	27.07

Note 1 : Embossed tape reel packaging (2,000 pieces/reel, 500 pieces/reel). Order by number of reels.

0.5mm Pitch Bottom Contact Type with Strengthened Flip-lock Actuator



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

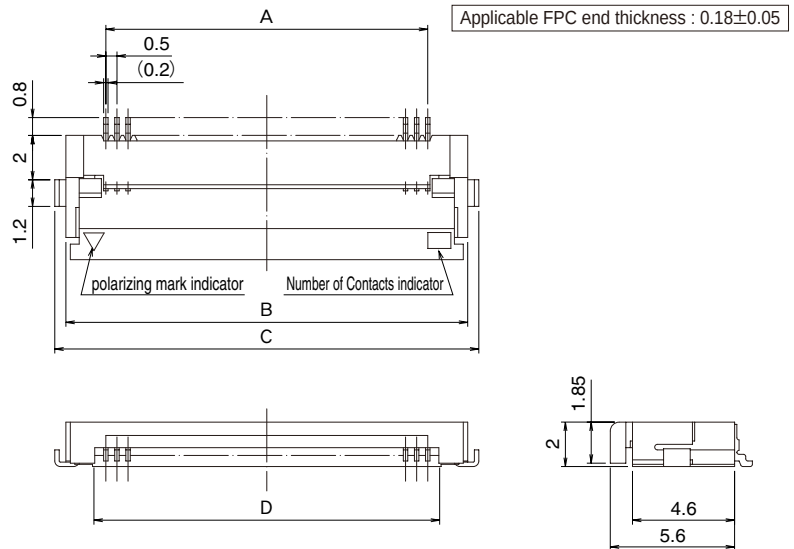
Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D
FH12S-30S-0.5SH(**)	586-0667-6-**-	30	14.5	18.1	19.1	15.57
FH12S-40S-0.5SH(**)	586-0640-0-**-	40	19.5	23.1	24.1	20.57
FH12S-45S-0.5SH(**)	586-0665-0-**-	45	22.0	25.6	26.6	23.07
FH12S-50S-0.5SH(**)	586-0642-5-**-	50	24.5	28.1	29.1	25.57
FH12S-53S-0.5SH(**)	586-0691-0-**-	53	26.0	29.6	30.6	27.07

Note 1 : Embossed tape reel packaging (2,000 pieces/reel, 500 pieces/reel).

Order by number of reels.

0.5mm Pitch Bottom Contact Type with 0.18mm FPC End Thickness



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

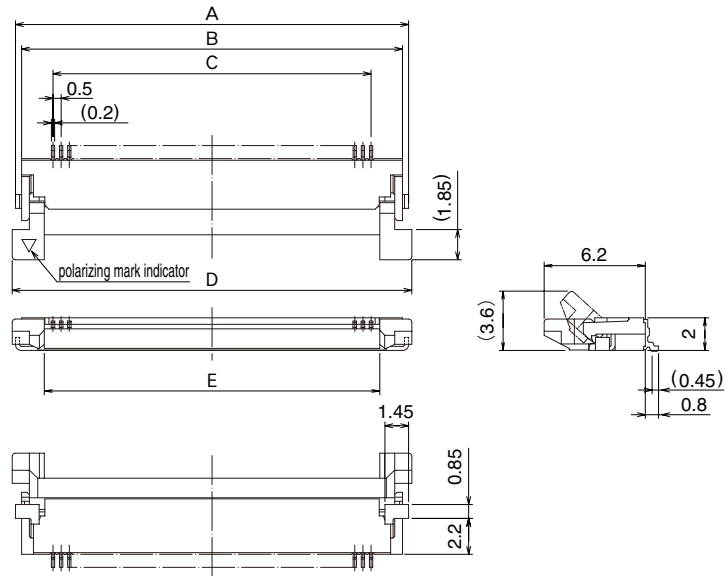
Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D
FH12F-6S-0.5SH(**)	586-0672-6-**-	6	2.5	6.1	7.1	3.57
FH12F-8S-0.5SH(**)	586-0738-2-**-	8	3.5	7.1	8.1	4.57
FH12F-10S-0.5SH(**)	586-0709-4-**-	10	4.5	8.1	9.1	5.57
FH12F-12S-0.5SH(**)	586-0653-1-**-	12	5.5	9.1	10.1	6.57
FH12F-13S-0.5SH(**)	586-0629-7-**-	13	6.0	9.6	10.6	7.07
FH12F-14S-0.5SH(**)	586-0655-7-**-	14	6.5	10.1	11.1	7.57
FH12F-15S-0.5SH(**)	586-0680-4-**-	15	7.0	10.6	11.6	8.07
FH12F-16S-0.5SH(**)	586-0673-9-**-	16	7.5	11.1	12.1	8.57
FH12F-18S-0.5SH(**)	586-0626-9-**-	18	8.5	12.1	13.1	9.57
FH12F-20S-0.5SH(**)	586-0636-2-**-	20	9.5	13.1	14.1	10.57
FH12F-22S-0.5SH(**)	586-0630-6-**-	22	10.5	14.1	15.1	11.57
FH12F-24S-0.5SH(**)	586-0632-1-**-	24	11.5	15.1	16.1	12.57
FH12F-25S-0.5SH(**)	586-0733-9-**-	25	12.0	15.6	16.6	13.07
FH12F-26S-0.5SH(**)	586-0627-1-**-	26	12.5	16.1	17.1	13.57
FH12F-28S-0.5SH(**)	586-0643-8-**-	28	13.5	17.1	18.1	14.57
FH12F-30S-0.5SH(**)	586-0628-4-**-	30	14.5	18.1	19.1	15.57
FH12F-32S-0.5SH(**)	586-0705-3-**-	32	15.5	19.1	20.1	16.57
FH12F-34S-0.5SH(**)	586-0677-0-**-	34	16.5	20.1	21.1	17.57
FH12F-36S-0.5SH(**)	586-0656-0-**-	36	17.5	21.1	22.1	18.57
FH12F-40S-0.5SH(**)	586-0635-0-**-	40	19.5	23.1	24.1	20.57

Note 1 : Embossed tape reel packaging (2,000 pieces/reel).

Order by number of reels.

0.5mm Pitch Top Contact Type



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

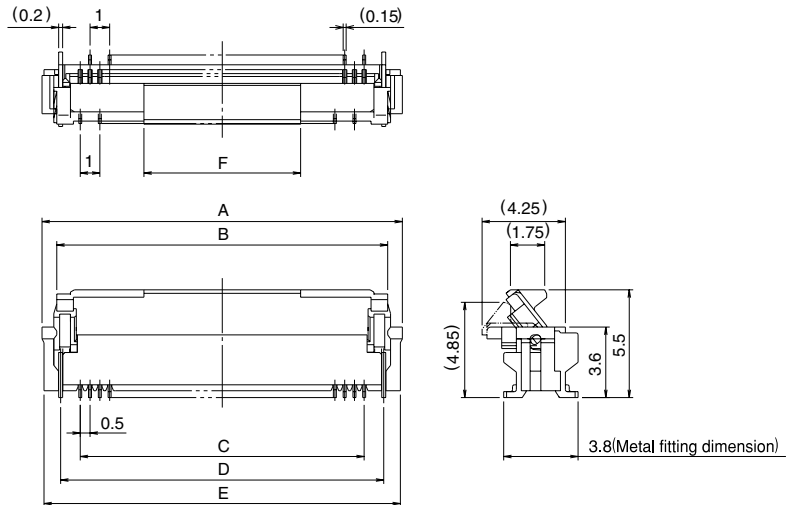
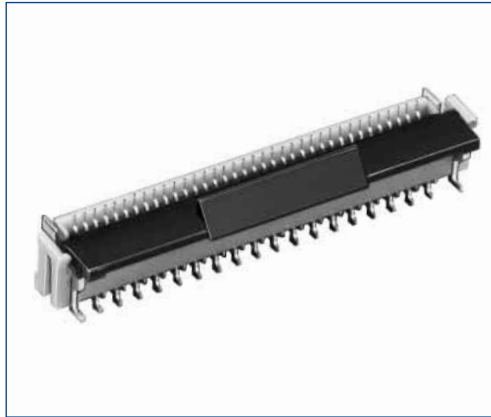
Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D	E
FH12A-10S-0.5SH(**)	586-0550-9-**-	10	9.1	8.35	4.5	9.5	5.57
FH12A-12S-0.5SH(**)	586-0696-4-**-	12	10.1	9.35	5.5	10.5	6.57
FH12A-15S-0.5SH(**)	586-0551-1-**-	15	11.6	10.85	7.0	12.0	8.07
FH12A-16S-0.5SH(**)	586-0552-4-**-	16	12.1	11.35	7.5	12.5	8.57
FH12A-18S-0.5SH(**)	586-0553-7-**-	18	13.1	12.35	8.5	13.5	9.57
FH12A-20S-0.5SH(**)	586-0554-0-**-	20	14.1	13.35	9.5	14.5	10.57
FH12A-22S-0.5SH(**)	586-0686-0-**-	22	15.1	14.35	10.5	15.5	11.57
FH12A-24S-0.5SH(**)	586-0555-2-**-	24	16.1	15.35	11.5	16.5	12.57
FH12A-26S-0.5SH(**)	586-0663-5-**-	26	17.1	16.35	12.5	17.5	13.57
FH12A-28S-0.5SH(**)	586-0725-0-**-	28	18.1	17.35	13.5	18.5	14.57
FH12A-29S-0.5SH(**)	586-0585-3-**-	29	18.6	17.85	14.0	19.0	15.07
FH12A-30S-0.5SH(**)	586-0556-5-**-	30	19.1	18.35	14.5	19.5	15.57
FH12A-32S-0.5SH(**)	586-0687-3-**-	32	20.1	19.35	15.5	20.5	16.57
FH12A-33S-0.5SH(**)	586-0570-6-**-	33	20.6	19.85	16.0	21.0	17.07
FH12A-34S-0.5SH(**)	586-0670-0-**-	34	21.1	20.35	16.5	21.5	17.57
FH12A-36S-0.5SH(**)	586-0662-2-**-	36	22.1	21.35	17.5	22.5	18.57
FH12A-40S-0.5SH(**)	586-0557-8-**-	40	24.1	23.35	19.5	24.5	20.57
FH12A-42S-0.5SH(**)	586-0698-0-**-	42	25.1	24.35	20.5	25.5	21.57
FH12A-45S-0.5SH(**)	586-0558-0-**-	45	26.6	25.85	22.0	27.0	23.07
FH12A-50S-0.5SH(**)	586-0559-3-**-	50	29.1	28.35	24.5	29.5	25.57

Note 1 : Embossed tape reel packaging (2,000 pieces/reel).

Order by number of reels.

0.5mm Pitch Vertical mounting Type



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

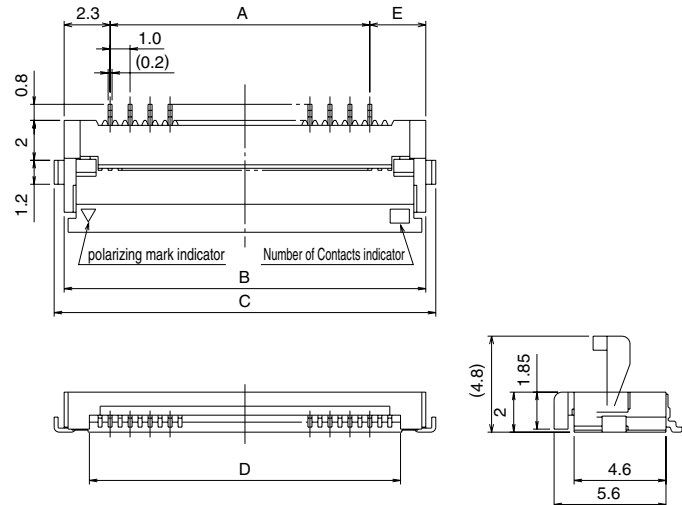
Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D	E	F
FH12-10S-0.5SV(**)	586-0560-2-**-	10	8.4	6.9	4.5	6.5	8.2	4
FH12-12S-0.5SV(**)	586-0615-2-**-	12	9.4	7.9	5.5	7.5	9.2	4
FH12-13S-0.5SV(**)	586-0575-0-**-	13	9.9	8.4	6.0	8.0	9.7	4
FH12-15S-0.5SV(**)	586-0561-5-**-	15	10.9	9.4	7.0	9.0	10.7	4
FH12-16S-0.5SV(**)	586-0572-1-**-	16	11.4	9.9	7.5	9.5	11.2	4
FH12-17S-0.5SV(**)	586-0601-8-**-	17	11.9	10.4	8.0	10.0	11.7	4
FH12-18S-0.5SV(**)	586-0573-4-**-	18	12.4	10.9	8.5	10.5	12.2	4
FH12-20S-0.5SV(**)	586-0562-8-**-	20	13.4	11.9	9.5	11.5	13.2	4
FH12-22S-0.5SV(**)	586-0589-4-**-	22	14.4	12.9	10.5	12.5	14.2	8
FH12-24S-0.5SV(**)	586-0563-0-**-	24	15.4	13.9	11.5	13.5	15.2	8
FH12-26S-0.5SV(**)	586-0664-8-**-	26	16.4	14.9	12.5	14.5	16.2	8
FH12-30S-0.5SV(**)	586-0564-3-**-	30	18.4	16.9	14.5	16.5	18.2	8
FH12-32S-0.5SV(**)	586-0699-2-**-	32	19.4	17.9	15.5	17.5	19.2	8
FH12-33S-0.5SV(**)	586-0565-6-**-	33	19.9	18.4	16.0	18.0	19.7	8
FH12-34S-0.5SV(**)	586-0706-6-**-	34	20.4	18.9	16.5	18.5	20.2	8
FH12-36S-0.5SV(**)	586-0641-2-**-	36	21.4	19.9	17.5	19.5	21.2	8
FH12-40S-0.5SV(**)	586-0566-9-**-	40	23.4	21.9	19.5	21.5	23.2	8
FH12-45S-0.5SV(**)	586-0567-1-**-	45	25.9	24.4	22.0	24.0	25.7	8
FH12-49S-0.5SV(**)	586-0602-0-**-	49	27.9	26.4	24.0	26.0	27.7	8
FH12-50S-0.5SV(**)	586-0568-4-**-	50	28.4	26.9	24.5	26.5	28.2	8
FH12-60S-0.5SV(**)	586-0735-4-**-	60	33.4	31.9	29.5	31.5	33.2	8

Note 1 : Embossed tape reel packaging (1,000 pieces/reel, 500 pieces/reel).

Order by number of reels.

1mm Pitch Type Bottom Contact Type



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.

Note 2 : Packaged on tape and reel only. Check packaging specification.

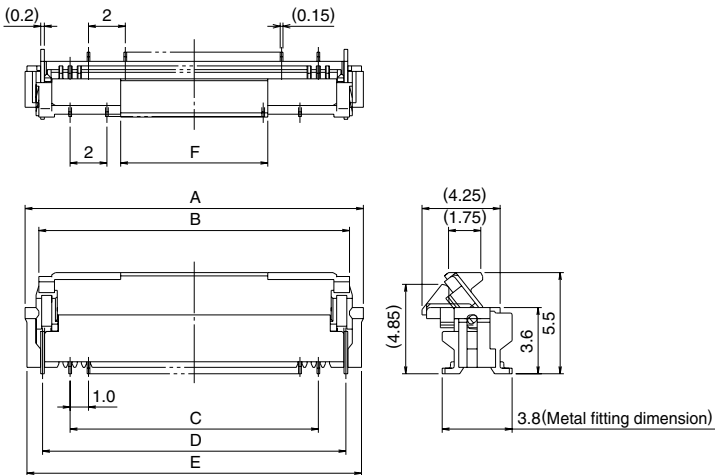
Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

Unit:mm

	Part Number	CL No.	Number of Contacts	A	B	C	D	E
Standard type	FH12-5S-1SH(**)	586-0591-6-**-	5	4	8.6	9.6	6.07	2.3
	FH12-6S-1SH(**)	586-0607-4-**-	6	5	9.6	10.6	7.07	2.3
	FH12-7S-1SH(**)	586-0535-5-**-	7	6	10.6	11.6	8.07	2.3
	FH12-8S-1SH(**)	586-0579-0-**-	8	7	11.6	12.6	9.07	2.3
	FH12-9S-1SH(**)	586-0540-5-**-	9	8	12.6	13.6	10.07	2.3
	FH12-11S-1SH(**)	586-0668-9-**-	11	10	14.6	15.6	12.07	2.3
	FH12-12S-1SH(**)	586-0741-7-**-	12	11	15.6	16.6	13.07	2.3
	FH12-16S-1SH(**)	586-0536-8-**-	16	15	19.6	20.6	17.07	2.3
	FH12-17S-1SH(**)	586-0739-5-**-	17	16	20.6	21.6	18.07	2.3
	FH12-22S-1SH(**)	586-0547-4-**-	22	21	25.6	26.6	23.07	2.3
	FH12-26S-1SH(**)	586-0592-9-**-	26	25	29.6	30.6	27.07	2.3
Eccentric type	FH12-10(4)SA-1SH(**)	586-0537-0-**-	4	3	8.1	9.1	5.57	2.8
	FH12-14(6)SA-1SH(**)	586-0538-3-**-	6	5	10.1	11.1	7.57	2.8
	FH12-18(8)SA-1SH(**)	586-0539-6-**-	8	7	12.1	13.1	9.57	2.8
	FH12-22(10)SA-1SH(**)	586-0541-8-**-	10	9	14.1	15.1	11.57	2.8
	FH12-24(11)SA-1SH(**)	586-0542-0-**-	11	10	15.1	16.1	12.57	2.8
	FH12-30(14)SA-1SH(**)	586-0543-3-**-	14	13	18.1	19.1	15.57	2.8
	FH12-40(19)SA-1SH(**)	586-0546-1-**-	19	18	23.1	24.1	20.57	2.8
	FH12-50(24)SA-1SH(**)	586-0548-7-**-	24	23	28.			

1mm Pitch Vertical Mounting Type



- Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1 mm Max.
 Note 2 : Packaged on tape and reel only. Check packaging specification.
 Note 3 : Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.
 Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

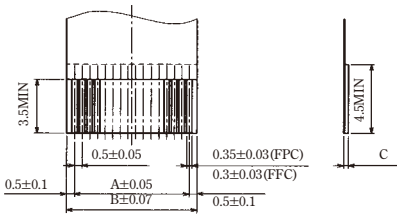
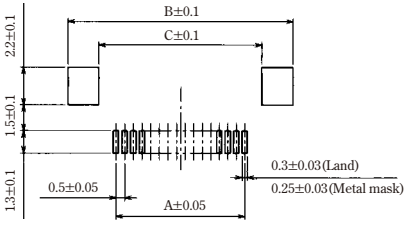
Unit:mm

Part Number	CL No.	Number of Contacts	A	B	C	D	E	F
FH12-6S-1SV(**)	586-0605-9-**-	6	9.9	8.4	5	8	9.7	4
FH12-7S-1SV(**)	586-0610-9-**-	7	10.9	9.4	6	9	10.7	4
FH12-8S-1SV(**)	586-0593-1-**-	8	11.9	10.4	7	10	11.7	4
FH12-16S-1SV(**)	586-0574-7-**-	16	19.9	18.4	15	18	19.7	8
FH12-20S-1SV(**)	586-0634-7-**-	20	23.9	22.4	19	22	23.7	8
FH12-22S-1SV(**)	586-0584-0-**-	22	25.9	24.4	21	24	25.7	8
FH12-24S-1SV(**)	586-0594-4-**-	24	27.9	26.4	23	26	27.7	8

- Note 1 : Embossed tape reel packaging (1,000 pieces/reel, 500 pieces/ree).
 Order by number of reels.

Recommended FPC/FFC dimensions and Land/Metal Mask dimensions

●0.5mm Pitch Product

	FPC/FFC dimensions	Land / Metal Mask dimensions																																																																																																																																																																																																																					
0.5mm Pitch Bottom Contact Type 0.5mm Pitch Top Contact Type	 <table border="1"> <thead> <tr> <th>Product Type</th><th>C Dimension</th></tr> </thead> <tbody> <tr> <td>Types other than those below</td><td>0.3±0.05min Stiffener thickness should be 0.188 mm (7.5 mil) min</td></tr> <tr> <td>FH12F</td><td>0.18±0.05</td></tr> </tbody> </table> Unit: mm <table border="1"> <thead> <tr> <th>Dimension Number of Contacts</th><th>A</th><th>B</th><th>Dimension Number of Contacts</th><th>A</th><th>B</th></tr> </thead> <tbody> <tr><td>6</td><td>2.5</td><td>3.5</td><td>25</td><td>12.0</td><td>13.0</td></tr> <tr><td>8</td><td>3.5</td><td>4.5</td><td>26</td><td>12.5</td><td>13.5</td></tr> <tr><td>10</td><td>4.5</td><td>5.5</td><td>28</td><td>13.5</td><td>14.5</td></tr> <tr><td>11</td><td>5.0</td><td>6.0</td><td>29</td><td>14.0</td><td>15.0</td></tr> <tr><td>12</td><td>5.5</td><td>6.5</td><td>30</td><td>14.5</td><td>15.5</td></tr> <tr><td>13</td><td>6.0</td><td>7.0</td><td>32</td><td>15.5</td><td>16.5</td></tr> <tr><td>14</td><td>6.5</td><td>7.5</td><td>33</td><td>16.0</td><td>17.0</td></tr> <tr><td>15</td><td>7.0</td><td>8.0</td><td>34</td><td>16.5</td><td>17.5</td></tr> <tr><td>16</td><td>7.5</td><td>8.5</td><td>35</td><td>17.0</td><td>18.0</td></tr> <tr><td>17</td><td>8.0</td><td>9.0</td><td>36</td><td>17.5</td><td>18.5</td></tr> <tr><td>18</td><td>8.5</td><td>9.5</td><td>40</td><td>19.5</td><td>20.5</td></tr> <tr><td>19</td><td>9.0</td><td>10.0</td><td>42</td><td>20.5</td><td>21.5</td></tr> <tr><td>20</td><td>9.5</td><td>10.5</td><td>45</td><td>22.0</td><td>23.0</td></tr> <tr><td>22</td><td>10.5</td><td>11.5</td><td>50</td><td>24.5</td><td>25.5</td></tr> <tr><td>24</td><td>11.5</td><td>12.5</td><td>53</td><td>26.0</td><td>27.0</td></tr> </tbody> </table>	Product Type	C Dimension	Types other than those below	0.3±0.05min Stiffener thickness should be 0.188 mm (7.5 mil) min	FH12F	0.18±0.05	Dimension Number of Contacts	A	B	Dimension Number of Contacts	A	B	6	2.5	3.5	25	12.0	13.0	8	3.5	4.5	26	12.5	13.5	10	4.5	5.5	28	13.5	14.5	11	5.0	6.0	29	14.0	15.0	12	5.5	6.5	30	14.5	15.5	13	6.0	7.0	32	15.5	16.5	14	6.5	7.5	33	16.0	17.0	15	7.0	8.0	34	16.5	17.5	16	7.5	8.5	35	17.0	18.0	17	8.0	9.0	36	17.5	18.5	18	8.5	9.5	40	19.5	20.5	19	9.0	10.0	42	20.5	21.5	20	9.5	10.5	45	22.0	23.0	22	10.5	11.5	50	24.5	25.5	24	11.5	12.5	53	26.0	27.0	 Recommended metal mask thickness : 0.15mm Unit: mm <table border="1"> <thead> <tr> <th>Dimension Number of Contacts</th><th>A</th><th>B</th><th>C</th><th>Dimension Number of Contacts</th><th>A</th><th>B</th><th>C</th></tr> </thead> <tbody> <tr><td>6</td><td>2.5</td><td>8.1</td><td>4.5</td><td>25</td><td>12.0</td><td>17.6</td><td>14.0</td></tr> <tr><td>8</td><td>3.5</td><td>9.1</td><td>5.5</td><td>26</td><td>12.5</td><td>18.1</td><td>14.5</td></tr> <tr><td>10</td><td>4.5</td><td>10.1</td><td>6.5</td><td>28</td><td>13.5</td><td>19.1</td><td>15.5</td></tr> <tr><td>11</td><td>5.0</td><td>10.6</td><td>7.0</td><td>29</td><td>14.0</td><td>19.6</td><td>16.0</td></tr> <tr><td>12</td><td>5.5</td><td>11.1</td><td>7.5</td><td>30</td><td>14.5</td><td>20.1</td><td>16.5</td></tr> <tr><td>13</td><td>6.0</td><td>11.6</td><td>8.0</td><td>32</td><td>15.5</td><td>21.1</td><td>17.5</td></tr> <tr><td>14</td><td>6.5</td><td>12.1</td><td>8.5</td><td>33</td><td>16.0</td><td>21.6</td><td>18.0</td></tr> <tr><td>15</td><td>7.0</td><td>12.6</td><td>9.0</td><td>34</td><td>16.5</td><td>22.1</td><td>18.5</td></tr> <tr><td>16</td><td>7.5</td><td>13.1</td><td>9.5</td><td>35</td><td>17.0</td><td>22.6</td><td>19.0</td></tr> <tr><td>17</td><td>8.0</td><td>13.6</td><td>10.0</td><td>36</td><td>17.5</td><td>23.1</td><td>19.5</td></tr> <tr><td>18</td><td>8.5</td><td>14.1</td><td>10.5</td><td>40</td><td>19.5</td><td>25.1</td><td>21.5</td></tr> <tr><td>19</td><td>9.0</td><td>14.6</td><td>11.0</td><td>42</td><td>20.5</td><td>26.1</td><td>22.5</td></tr> <tr><td>20</td><td>9.5</td><td>15.1</td><td>11.5</td><td>45</td><td>22.0</td><td></td></tr></tbody></table>	Dimension Number of Contacts	A	B	C	Dimension Number of Contacts	A	B	C	6	2.5	8.1	4.5	25	12.0	17.6	14.0	8	3.5	9.1	5.5	26	12.5	18.1	14.5	10	4.5	10.1	6.5	28	13.5	19.1	15.5	11	5.0	10.6	7.0	29	14.0	19.6	16.0	12	5.5	11.1	7.5	30	14.5	20.1	16.5	13	6.0	11.6	8.0	32	15.5	21.1	17.5	14	6.5	12.1	8.5	33	16.0	21.6	18.0	15	7.0	12.6	9.0	34	16.5	22.1	18.5	16	7.5	13.1	9.5	35	17.0	22.6	19.0	17	8.0	13.6	10.0	36	17.5	23.1	19.5	18	8.5	14.1	10.5	40	19.5	25.1	21.5	19	9.0	14.6	11.0	42	20.5	26.1	22.5	20	9.5	15.1	11.5	45	22.0	
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■Recommended FPC/FFC dimensions and Land/Metal Mask dimensions

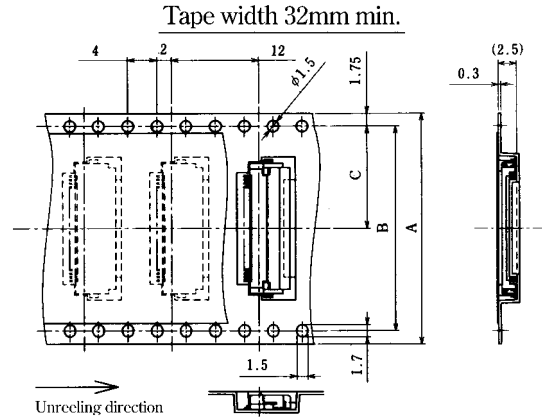
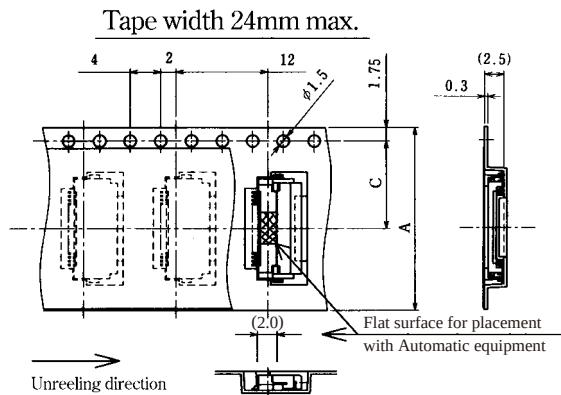
●1mm Pitch Product

	FPC/FFC dimensions	Land / Metal Mask dimensions																																																																																																																																																																																																																												
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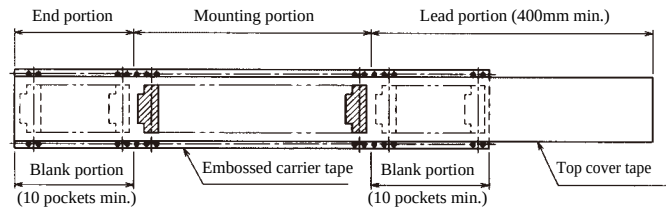
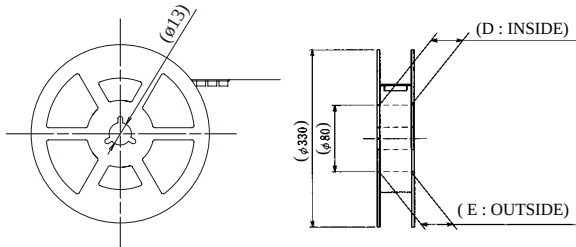
Packaging Specification

Embossed Carrier Tape Dimensions

Horizontal Type (Common to Bottom/Top Contact, 0.5mm/1mm Pitch)



Reel Dimensions (Common to All Types)



0.5mm Pitch Bottom/Top Contact Type

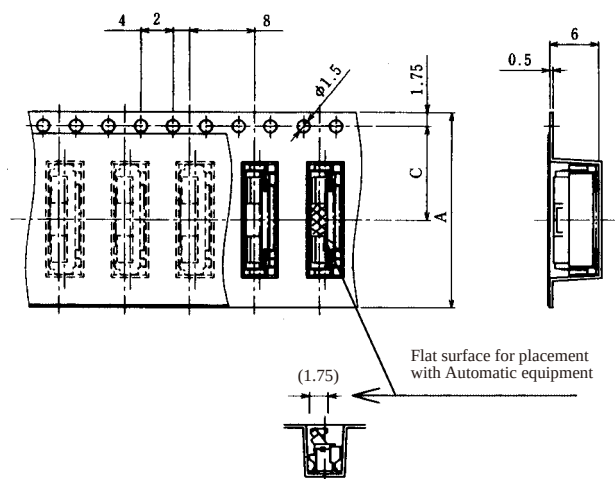
Unit:mm

Dimension Number of Contacts	A	B	C	D	E
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8	16	—	7.5	17.4	21.4
10	16	—	7.5	17.4	21.4
11	16	—	7.5	17.4	21.4
12	24	—	11.5	25.4	29.4
13	24	—	11.5	25.4	29.4
14	24	—	11.5	25.4	29.4
15	24	—	11.5	25.4	29.4
16	24	—	11.5	25.4	29.4
17	24	—	11.5	25.4	29.4
18	24	—	11.5	25.4	29.4
19	24	—	11.5	25.4	29.4
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22	24	—	11.5	25.4	29.4
24	24	—	11.5	25.4	29.4

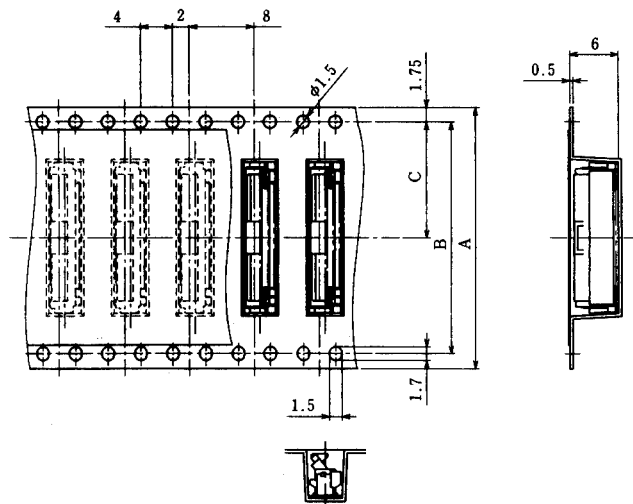
Dimension Number of Contacts	A	B	C	D	E
25	24	—	11.5	25.4	29.4
26	24	—	11.5	25.4	29.4
28	32	28.4	14.2	33.4	37.4
29	32	28.4	14.2	33.4	37.4
30	32	28.4	14.2	33.4	37.4
32	32	28.4	14.2	33.4	37.4
33	32	28.4	14.2	33.4	37.4
34	32	28.4	14.2	33.4	37.4
35	44	40.4	20.2	45.4	49.4
36	44	40.4	20.2	45.4	49.4
40					

Vertical Mounting Type (Common to 0.5mm/1mm Pitch)

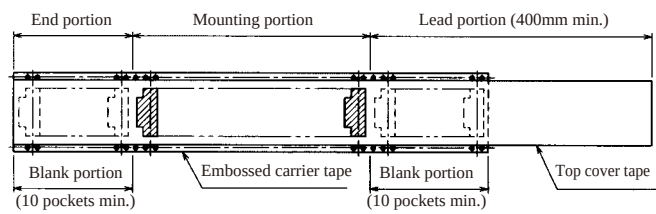
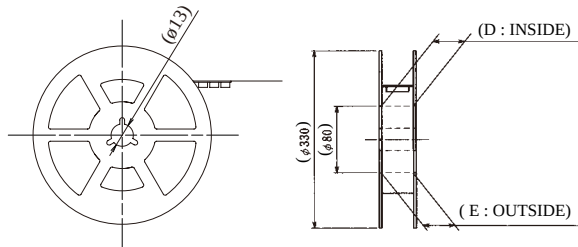
Tape width 24mm max.



Tape width 32mm min.



Reel Dimensions (Common to All Types)



●0.5mm Pitch Vertical mounting Type

Unit:mm

Dimension Number of Contacts	A	B	C	D	E
10	16	—	7.5	17.4	21.4
12	16	—	7.5	17.4	21.4
13	24	—	11.5	25.4	29.4
15	24	—	11.5	25.4	29.4
16	24	—	11.5	25.4	29.4
17	24	—	11.5	25.4	29.4
18	24	—	11.5	25.4	29.4
20	24	—	11.5	25.4	29.4
22	24	—	11.5	25.4	29.4
24	24	—	11.5	25.4	29.4

Dimension Number of Contacts	A	B	C	D	E
26	24	—	11.5	25.4	29.4
30	32	28.4	14.2	33.4	37.4
32	32	28.4	14.2	33.4	37.4
33	32	28.4	14.2	33.4	37.4
34	44	40.4	20.2	45.4	49.4
36	44	40.4	20.2	45.4	49.4
40	44	40.4	20.2	45.4	49.4
45	44	40.4	20.2	45.4	49.4
49	44	40.4	20.2	45.4	49.4
50	44	40.4	20.2	45.4	49.4
60	56	52.4	26.2	57.4	61.4

●1mm Pitch Vertical mounting Type

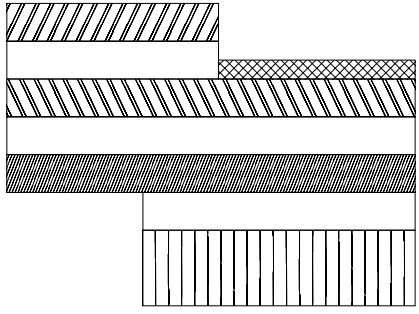
Unit:mm

Dimension Number of Contacts	A	B	C	D	E
6	24	—	11.5	25.4	29.4
7	24	—	11.5	25.4	29.4
8	24	—	11.5	25.4	29.4
16	32	28.4	14.2	33.4	37.4
20	44	40.4	20.2	45.4	49.4

FH12 Series FPC/FFC Construction (Recommended Specifications)

1. FFC

FFC : Flexible Flat Cable



Material Name	Material	Thickness (μm)
Polyester film		(12)
Adhesive	Thermoplastic polyester	(30)
(Nickel under plated / Gold plated), soft copper film		35
Adhesive	Polyester type	30
Polyester		12
Adhesive	Polyester type	30
Stiffener	Polyester type	188 (Note)
Total		295

*Real tolerance of thickness dimension is on the order of $\pm 20 \mu\text{m}$ (275 to 315 μm)

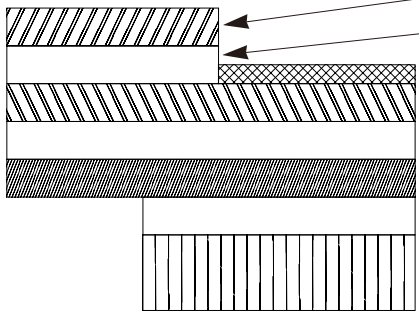
Note: Use of a thicker FFC results in a stiffer lock action and the lock is more easily released.

A factor that contributes to thicker FFC is the use of 250 μm stiffener which is thicker than the standard (188 μm) product. This results in a total thickness of 357 μm .

When using FFC, control of FFC thickness becomes easy if you indicate to us the thickness of the stiffener.

2. FPC

FPC : Flexible Printed Circuit

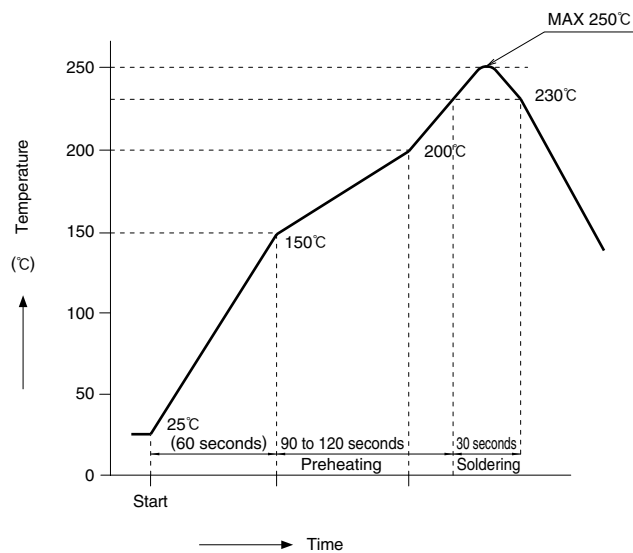


Material Name	Material	Thickness (μm)
Covering layer film	Polyimide 1 mil	(25)
Cover adhesive		(25)
Surface treatment	Nickel under plated 1to 5μm / Gold plated 0.2μm	3
Copper foil	Cu 1oz	35
Base adhesive	Heat-hardened adhesive	25
Base film	Polyimide 1 mil	25
Reinforcement material adhesive	Heat-hardened adhesive	30
Stiffener	Polyimide 7 mil	175
Total		293

3. Precautions

1. This specification is a recommendation for the construction of the FH12 Series FPC and FFC ($t=0.3 \pm 0.05$).
2. For details about the construction, please contact the FPC/FFC manufacturers.

Recommended Temperature Profile

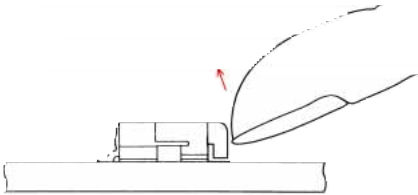
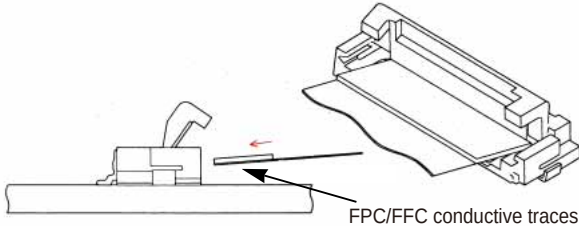


HRS test conditions

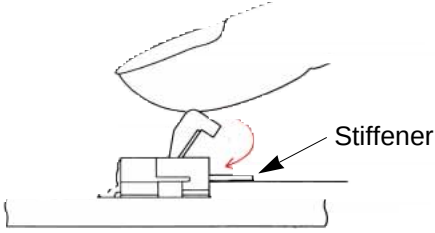
Solder method	:Reflow, IR/hot air
Environment:	:Room air

■ Connector Operating Instructions, precautions and recommendations

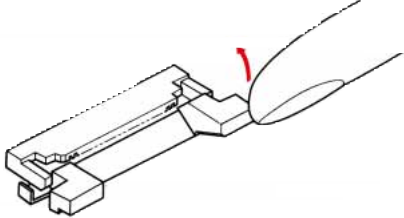
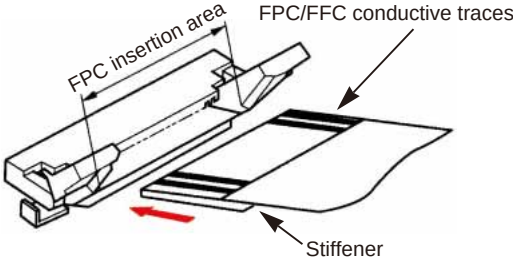
● Bottom Contact Type (common for 0.5mm/1mm Pitch)

Operation	Precautions
1. FPC/FFC Termination procedure. Connector installed on the board. 1) Lift up the actuator. Use thumb or index finger.  2) Fully insert the FPC/FFC parallel to mounting surface, with the exposed conductive traces facing down. 	1) Avoid

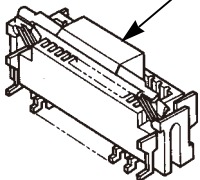
●Bottom Contact Type (common for 0.5mm/1mm Pitch)

Operation	Precautions
3) Rotate down the actuator until firmly closed. It is critical that the inserted FPC/FFC is not moved and remains fully inserted. Should the FPC/FFC be moved, open the actuator and repeat the process, starting with Step 1.  2. FPC/FFC Removal 1) Lift up the actuator. 2) Carefully remove the FPC/FFC.	

●Top Contact Type

Operation	Precautions
1. FPC/FFC Termination procedure. Connector installed on the board. 1) Lift up the actuator. Use thumb or index finger.  2) Fully insert the FPC/FFC parallel to mounting surface, with the exposed conductive traces facing UP.  3) Rotate down the actuator until firmly closed. It is critical that the inserted FPC/FFC is not moved and remains fully inserted. Should the FPC/FFC be moved, open the	

●Vertical Mounting type (common for 0.5 mm/1 mm pitch)

Operation	Precautions
1. FPC/FFC Termination procedure. Connector installed on the board. 1) Verify that the actuator is positioned upright. If the actuator has rotated to the side, carefully rotate it upright. Actuator upright  2) Insert the FPC/FFC vertically in the connector slot assuring that the conductive traces of the FPC/FFC are facing away from the actuator.	

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