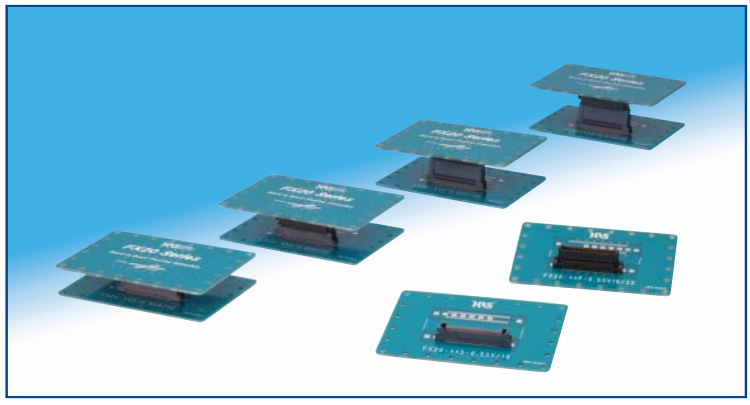
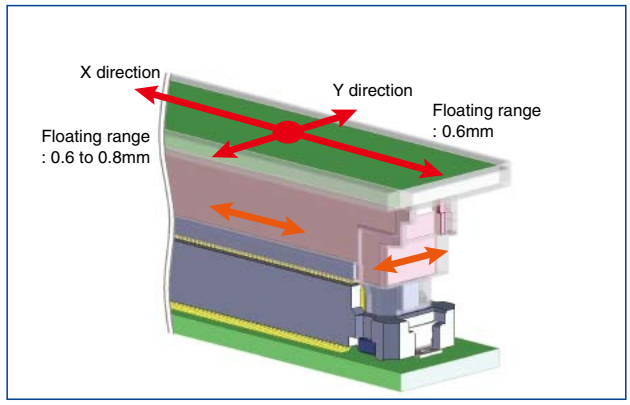
Floating Stacking 0.5mm Pitch Board to Board Connector

FX20 Series





■Features

1. 0.5mm pitch

2. Connection type: Stacking

3. Number of positions: 40, 60, 80, 100, 120 and 140

4. Floating range; X direction: ± 0.6 to 0.8mm, Y direction: ± 0.6mm

5. The Double beam contact design ensures a highly reliable contact(Refer to the right figure.)

6. Current capacity: 0.5A / pin

7. Effective contact length of 1.5mm

This connector utilizes a 1.5mm effective contact length for signal and provides a margin sufficient for mating stroke.

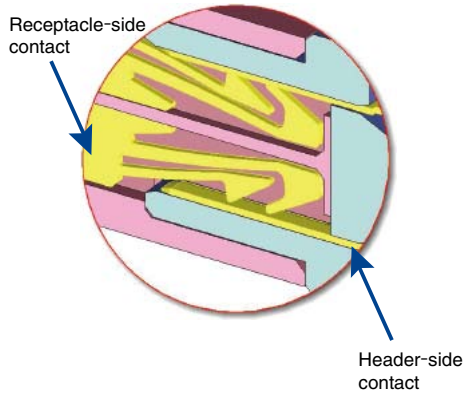
8. No restrictions on pattern area

9. Capability of automatic mounting (The connector has the vacuum pick-up area.)

10. Self aligning and self-guiding

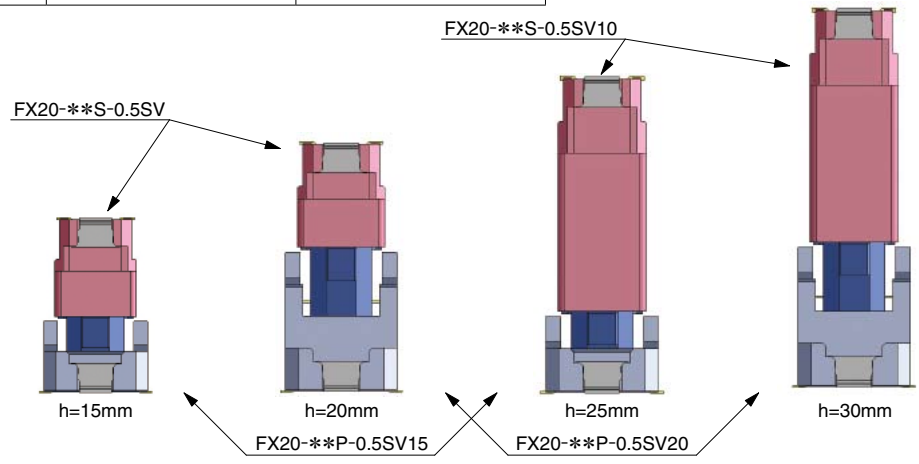
Built-in guide posts allow secure self-alignment

Enlarged view of contact area



■Stacking Variation

Receptacle \ Header		FX20-**P-0.5SV15	FX20-**P-0.5SV20
FX20-**S-0.5SV		15mm	20mm
FX20-**S-0.5SV10		25mm	30mm
Floating range	X direction	±0.6mm	±0.8mm
	Y direction	±0.6mm	±0.6mm



■Product specification

Rating	Current rating	0.5A	Operating temperature range	-55 to +85°C (Note 1)
	Voltage rating	AC 50V	Storage temperature range	-10 to +60 °C (Note 2)

Item	Specification	Condition
1. Contact resistance	70mΩ max.	Measured at 100mA
2. Insulation resistance	100MΩ min.	Measured at DC 100V
3. Withstanding voltage	No flashover and insulation breakdown	AC 150V for one minute
4. Number of mating and un-mating cycles	Amount of variation of contact resistance: 20mΩ max.	50 mating and un-mating cycles
5. Vibration resistance	No electrical discontinuity of 1 μs or more	Frequency: 10 to 55Hz, single amplitude of 0.75mm, 5 minutes for 1 cycle, 3 directions, 10 cycles for each direction
6. Shock resistance	No electrical discontinuity of 1 μs or more	Acceleration of 490m/s^2, duration of 11ms, three directions with sine half-wave for both sides, three times for each direction
7. Humidity resistance	Amount of variation of contact resistance: 20mΩ max. Insulation resistance: 100MΩ min.	Exposed for 96 hours at the temperature of 40°C and the humidity of 90 to 95%
8. Temperature cycle	Amount of variation of contact resistance: 20mΩ max. Insulation resistance: 100MΩ min.	Temperature: -55 and +85°C Time: 30 and 30 minutes for 5 cycles each

(Note 1) This includes the rise in temperature caused by the current flow.
(Note 2) The term “storage” refers to connectors stored for a long period of time prior to mounting on PCB and use.
(Note 3) The specification shown above represents the general requirements for this series. Please refer to “Delivery Specification” for a specific official agreement.

■Material

Part	Material		Finish	Specification
Insulator	Header	Polyamide resin	Color: Black	UL94V-0
	Receptacle	LCP (Liquid Crystal Polymer) resin	Color: Black	UL94V-0
Contact	Header	Copper alloy	Contact area: Gold plating Mounting area: Gold plating	————
	Receptacle	Phosphor bronze		
Metal fixture	Brass		Tin plating	————

■Ordering information

●Straight receptacle

FX20 – 60 S – 0.5 SV 10
❶ ❷ ❸ ❹ ❺ ❻

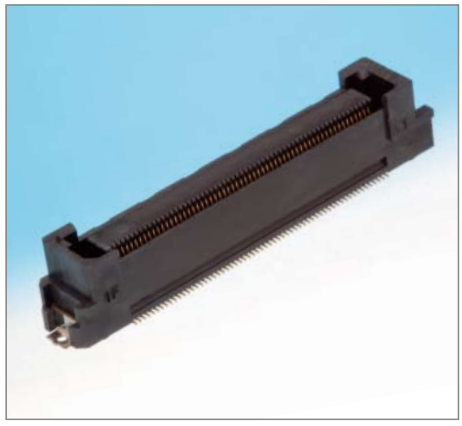
●Straight header

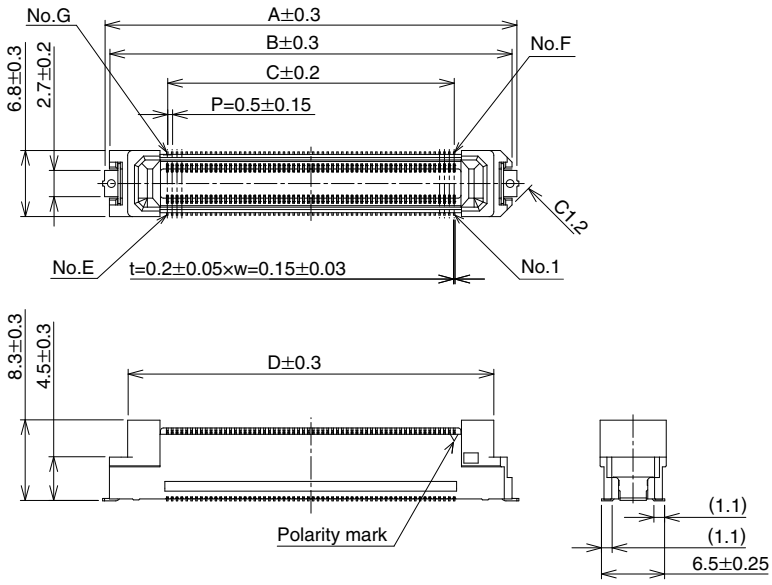
FX20 – 60 P – 0.5 SV 15
❶ ❷ ❸ ❹ ❺ ❻

❶	Series name	: FX20
❷	Number of contacts	
❸	Connector type	S: Receptacle type P: Header type
❹	Contact pitch	: 0.5mm
❺	Housing configuration	SV: Straight type
❻	Stacking height type	Mated height [mm] = Height of receptacle side + Height of header side

●Straight receptacle

[FX20-**S-0.5SV]



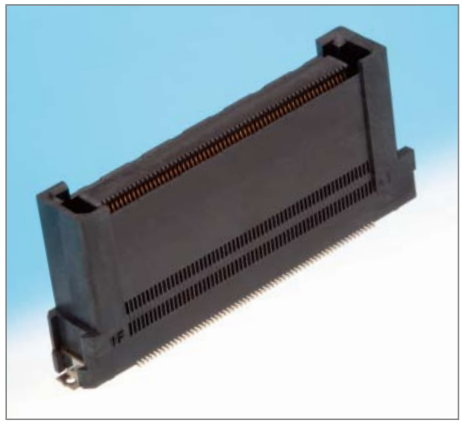


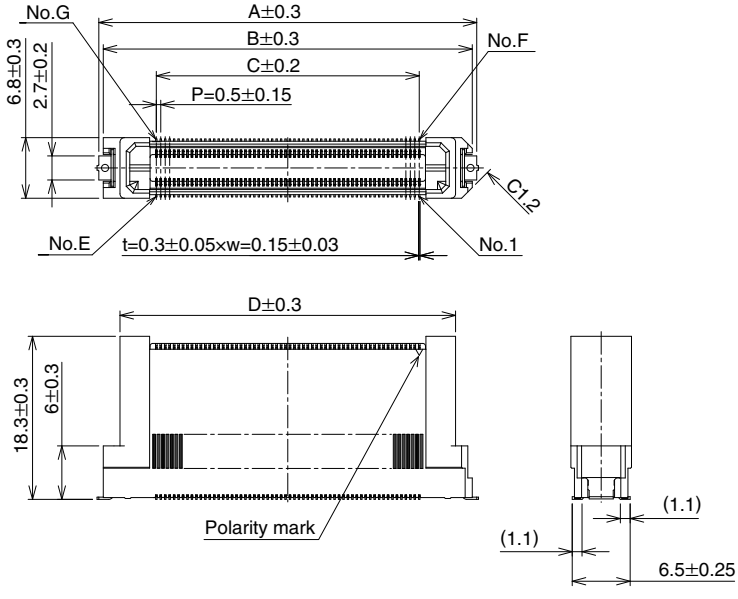
Unit : mm

	Part number	HRS No.	Number of contacts	A	B	C	D	E	F	G
★	FX20-40S-0.5SV	CL570-1101-5	40	22.4	21.4	9.5	17.65	20	21	40
★	FX20-60S-0.5SV	CL570-1102-8	60	27.4	26.4	14.5	22.65	30	31	60
★	FX20-80S-0.5SV	CL570-1103-0	80	32.4	31.4	19.5	27.65	40	41	80
	FX20-100S-0.5SV	————	100	37.4	36.4	24.5	32.65	50	51	100
★	FX20-120S-0.5SV	CL0570-1105-6	120	42.4	41.4	29.5	37.65	60	61	120
	FX20-140S-0.5SV	————	140	47.4	46.4	34.5	42.65	70	71	140

★ Indicates a released product. Others are under development.

[FX20-**S-0.5SV10]





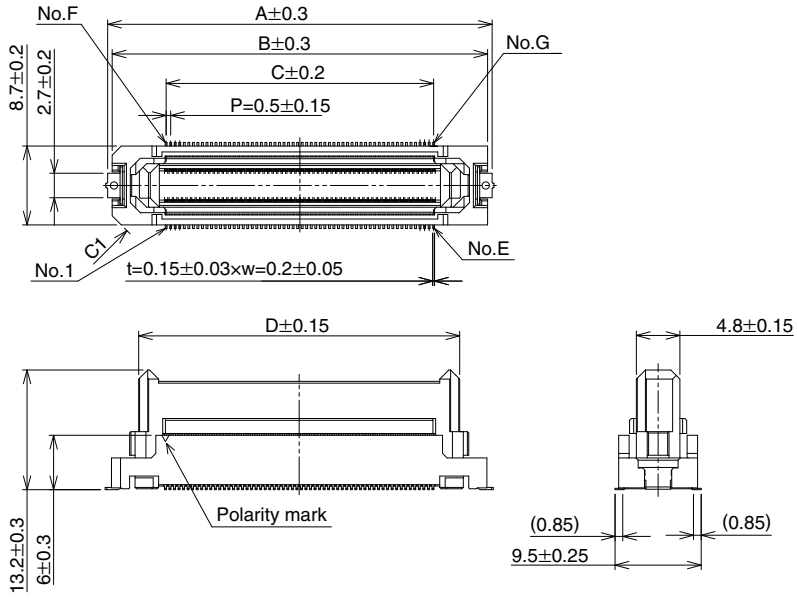
Unit : mm

	Part number	HRS No.	Number of contacts	A	B	C	D	E	F	G
★	FX20-40S-0.5SV10	CL570-1107-1	40	22.4	21.4	9.5	17.65	20	21	40
★	FX20-60S-0.5SV10	CL570-1108-4	60	27.4	26.4	14.5	22.65	30	31	60
★	FX20-80S-0.5SV10	CL570-1109-7	80	32.4	31.4	19.5	27.65	40	41	80
	FX20-100S-0.5SV10	————	100	37.4	36.4	24.5	32.65	50	51	100
★	FX20-120S-0.5SV10	CL0570-1111-9	120	42.4	41.4	29.5	37.65	60	61	120
	FX20-140S-0.5SV10	————	140	47.4	46.4	34.5	42.65	70	71	140

★ Indicates a released product. Others are under development.

●Straight header

[FX20-**P-0.5SV15]

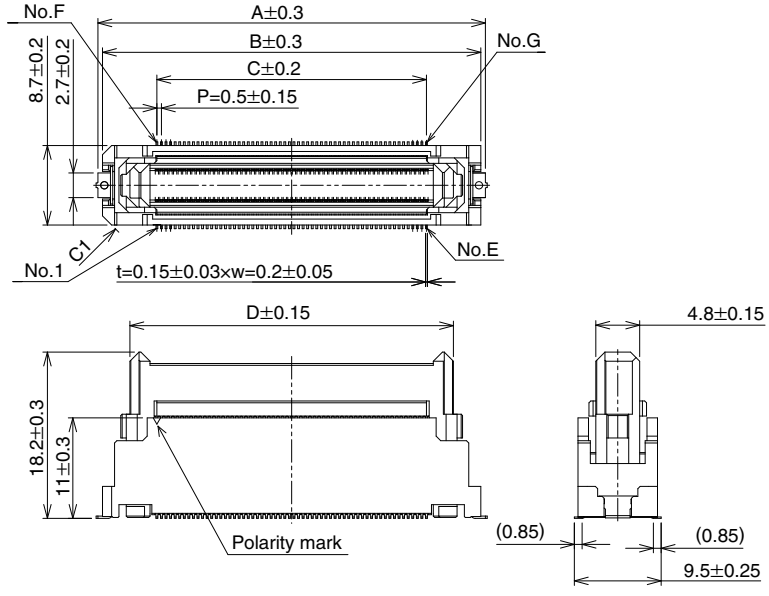


Unit : mm

	Part number	HRS No.	Number of contacts	A	B	C	D	E	F	G
★	FX20-40P-0.5SV15	CL570-1001-0	40	22.4	21.4	9.5	15.4	20	21	40
★	FX20-60P-0.5SV15	CL570-1002-3	60	27.4	26.4	14.5	20.4	30	31	60
★	FX20-80P-0.5SV15	CL570-1003-6	80	32.4	31.4	19.5	25.4	40	41	80
	FX20-100P-0.5SV15	————	100	37.4	36.4	24.5	30.4	50	51	100
★	FX20-120P-0.5SV15	CL0570-1005-1	120	42.4	41.4	29.5	35.4	60	61	120
	FX20-140P-0.5SV15	————	140	47.4	46.4	34.5	40.4	70	71	140

★ Indicates a released product. Others are under development.

[FX20-**P-0.5SV20]



Unit : mm

	Part number	HRS No.	Number of contacts	A	B	C	D	E	F	G
★	FX20-40P-0.5SV20	CL570-1007-7	40	22.4	21.4	9.5	15.4	20	21	40
★	FX20-60P-0.5SV20	CL570-1008-0	60	27.4	26.4	14.5	20.4	30	31	60
★	FX20-80P-0.5SV20	CL570-1009-2	80	32.4	31.4	19.5	25.4	40	41	80
	FX20-100P-0.5SV20	————	100	37.4	36.4	24.5	30.4	50	51	100
★	FX20-120P-0.5SV20	CL0570-1011-4	120	42.4	41.4	29.5	35.4	60	61	120
	FX20-140P-0.5SV20	————	140	47.4	46.4	34.5	40.4	70	71	140

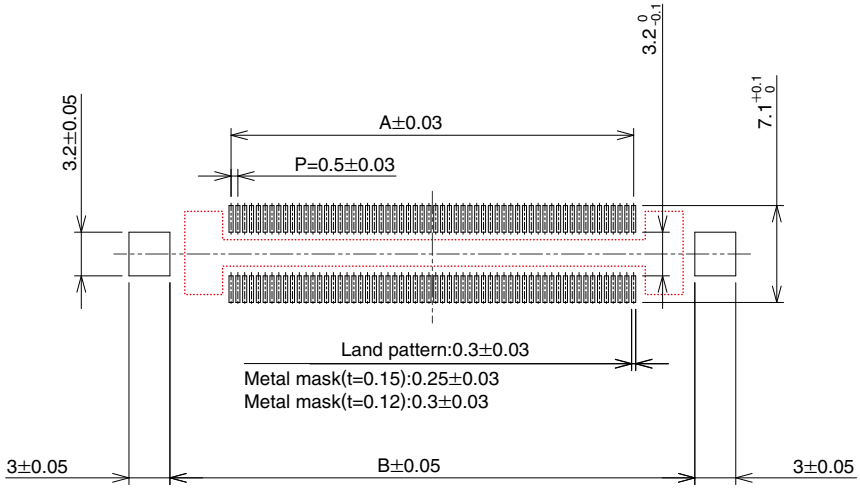
★ Indicates a released product. Others are under development.

■Drawing for recommended land pattern dimensions

(Board thickness: t=1.6mm / Metal mask thickness: t=0.15mm and t=0.12mm)

●Straight receptacle

FX20-**S-0.5SV
FX20-**S-0.5SV10



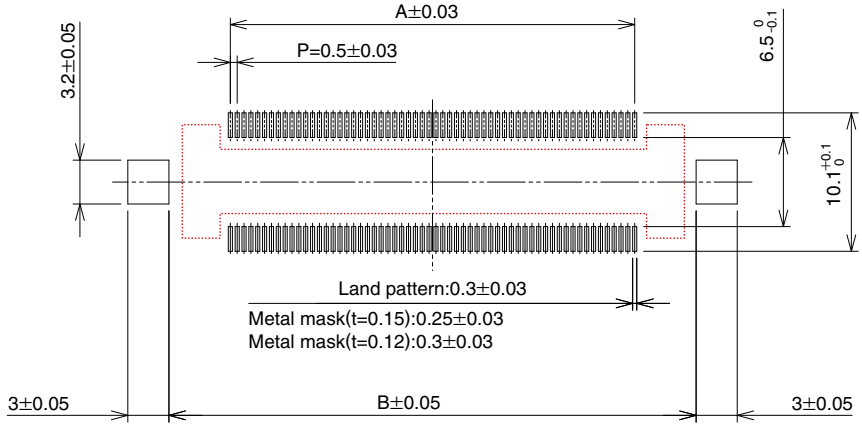
*Pattern wiring can be implemented in the area.

Unit : mm

	A	B
40 positions	9.5	18.46
60 positions	14.5	23.46
80 positions	19.5	28.46
100 positions	24.5	33.46
120 positions	29.5	38.46
140 positions	34.5	43.46

●Straight header

FX20-**P-0.5SV15
FX20-**P-0.5SV20



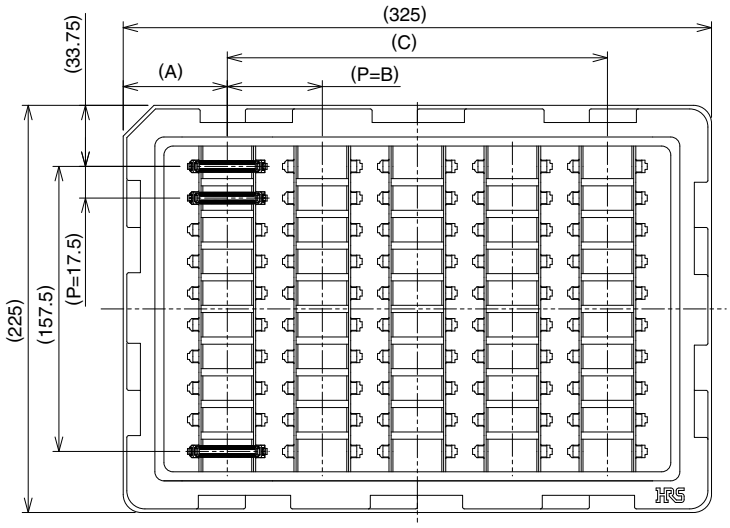
*Pattern wiring can be implemented in the area.

Unit : mm

	A	B
40 positions	9.5	18.46
60 positions	14.5	23.46
80 positions	19.5	28.46
100 positions	24.5	33.46
120 positions	29.5	38.46
140 positions	34.5	43.46

■Tray package drawing

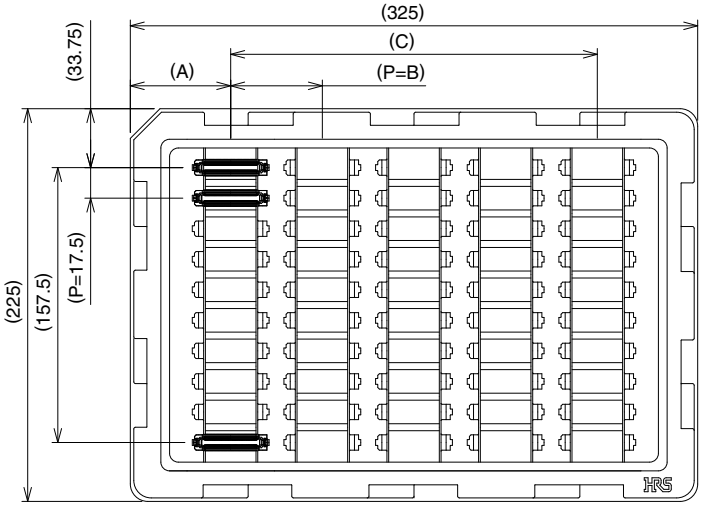
●Straight receptacle



Unit : mm

Part number	Quantity	A	B	C
FX20-40S-0.5SV FX20-40S-0.5SV10	80 pieces	40	35	245
FX20-60S-0.5SV FX20-60S-0.5SV10	70 pieces	50	37.5	225
FX20-80S-0.5SV FX20-80S-0.5SV10	60 pieces	50	45	225
FX20-100S-0.5SV FX20-100S-0.5SV10	50 pieces	57.5	52.5	210
FX20-120S-0.5SV FX20-120S-0.5SV10	50 pieces	57.5	52.5	210
FX20-140S-0.5SV FX20-140S-0.5SV10	40 pieces	57.5	70	210

●Straight header

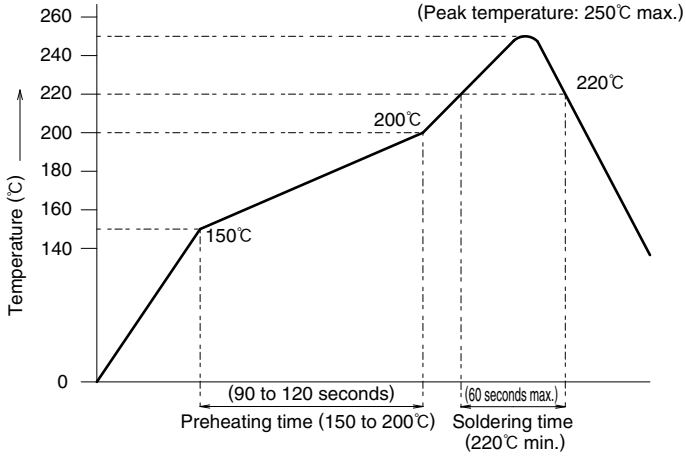


Unit : mm

Part number	Quantity	A	B	C
FX20-40P-0.5SV15 FX20-40P-0.5SV20	80 pieces	40	35	245
FX20-60P-0.5SV15 FX20-60P-0.5SV20	70 pieces	50	37.5	225
FX20-80P-0.5SV15 FX20-80P-0.5SV20	60 pieces	50	45	225
FX20-100P-0.5SV15 FX20-100P-0.5SV20	50 pieces	57.5	52.5	210
FX20-120P-0.5SV15 FX20-120P-0.5SV20	50 pieces	57.5	52.5	210
FX20-140P-0.5SV15 FX20-140P-0.5SV20	40 pieces	57.5	70	210

■Recommended temperature profile

●This temperature profile is based on the setting conditions shown below and is for reference only. For individual applications, the temperature profile may vary in accordance with the conditions. Please confirm the profile before mounting.



<Applicable conditions>

Test board dimension	: 110 × 50 × 1.6mm
material	: Glass epoxy
Solder composition	: Sn-3Ag-0.5Cu
Flux content	: 11wt%
Metal mask thickness	: 0.12mm and 0.15mm

(Note 1) This is a recommended temperature profile.
(Note 2) Reflow process shall be 2 cycles max.
(Note 3) This temperature profile may slightly vary depending on the type and amount of the cream solder.

■Cleaning condition

●Organic solvent cleaning

Solvent type	Room temperature cleaning	Heated cleaning
IPA (Isopropyl alcohol)	○	○
HCFC (Hydrochlorofluorocarbon)	○	○

●Water based cleaning

When using water based cleaning agents (including terpene, and alkali saponifiers), pay special attention to how the cleaning agent will react to specific metals and plastics before selecting one of them. Various cleaning agent manufacturers publish reaction tables for their cleaning agents. Do not leave connectors with moisture remaining on them.

●Applicable Wire (Tin plated soft copper wire)

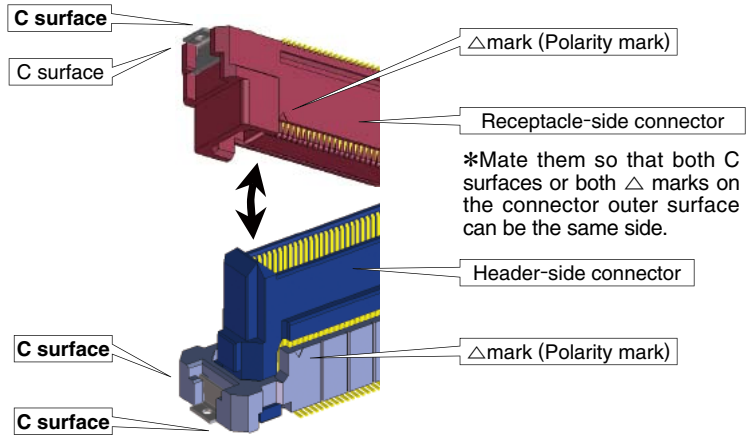
The electrical performance may deteriorate if the flux or cleaning agent is left on the connector after organic solvent cleaning or water based cleaning. Check thoroughly to ensure that there is no residue left on any of the surfaces.

■Precautions

●Tolerance clearance on mating

The effective contact length of each product is 1.5mm. In the mated condition, the header and receptacle shall have a clearance between them of no more than 1mm.

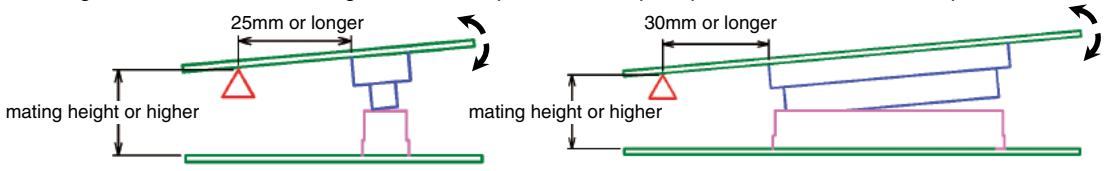
●Using excessive force when mating these connectors may result in damage and alter their performance. Although they are designed with a prevention mechanism to resist incorrect insertion, do not forcibly mate them. Before mating the connector confirm the connector polarity as shown below.



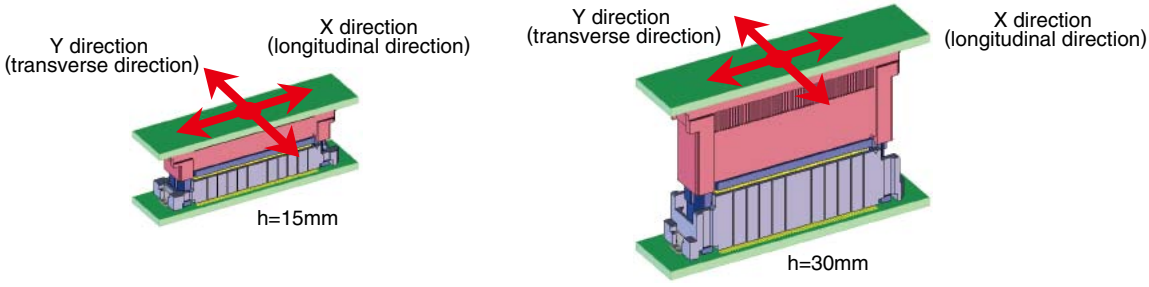
●Do not retain the board with only a connector. Implement a measure to fix the board other than using connector.

●Mating and un-mating with excessive prying force or rotating force may result in damage to the connector or contact failure.

If you have no choice but to mate and un-mate with prying force or rotating force based on your usage environment, use a point as a pivot shown by △ mark in the figure below when you apply those forces. The point shall be a certain distance away from the connector end and has equal or higher height of the mating height.
(Please refer to the guideline for details including the relationship between the pivot position and the connector position, and usage examples.)



●This connector has a floating structure, but the floating range may vary depending on the type of header (which has a floating mechanism).



Header-side	Receptacle-side	Stacking height	Floating range	
			X direction (longitudinal direction)	Y direction (transverse direction)
FX20-✻✻P-0.5SV15	FX20-✻✻S-0.5SV	15mm	0.6mm	0.6mm
FX20-✻✻P-0.5SV20		20mm	0.8mm	0.6mm
FX20-✻✻P-0.5SV15	FX20-✻✻S-0.5SV10	25mm	0.6mm	0.6mm
FX20-✻✻P-0.5SV20		30mm	0.8mm	0.6mm

Creative Links to World Electronics ®
HRS

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