

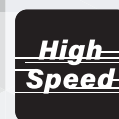
FX23/FX23L Series

# High Speed Transmission, 0.5mm Pitch Board-to-Board Floating Connectors

**FunctionMAX™**



Power / Signal



High Speed



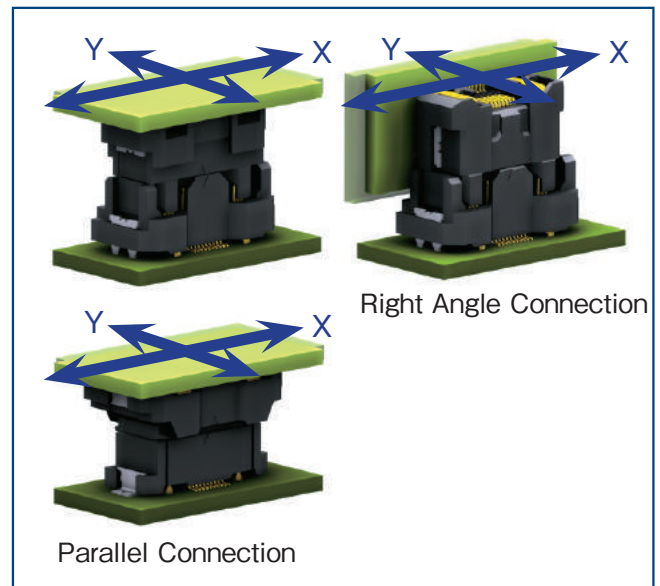
Floating



## Features

1. Pitch: 0.5mm
2. Connection Type:  
Stacking (Height 8 to 30mm)/  
Right Angle
3. Positions Available:  
20/40/60/80/100/120 for signal + 4 pins for power
4. Floating Range  
: X Direction:  $\pm 0.6\text{mm}$   
: Y Direction:  $\pm 0.6\text{mm}$

A floating movement above the connector pitch is possible.



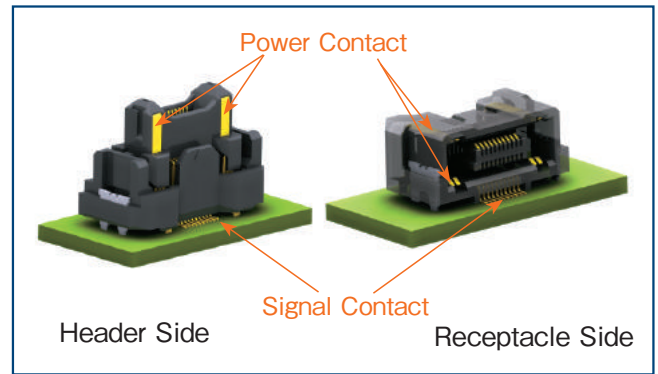
Floating Range:  $\pm 0.6\text{mm}$  in the X and Y directions

5. Supports PCIe Gen.4  
(16Gbps)

Note : Please contact our sales representatives regarding compatibility with other transmission standards

## 6. Hybrid Power Design (3A/pin×4 lines)

The guide posts on both sides of the connector are equipped with 4 lines of power contacts in addition to signal contacts.



Hybrid Power/Signal Contacts

## 7. Current Capacity: Signal Contact 0.5A/pin Power Contact 3A/pin

## 8. Pick & Place (suction tape attached as standard)

## 9. Large guide post for excellent mating performance

Easy mating operation due to large self-alignment range.

### ■ Signal Integrity

#### ● ICR (Insertion-loss-to-Crosstalk-Ratio)

The ICR containing cross-talk from 5 adjacent differential pairs provides adequate margin in comparison with the criteria based on the specification of IEEE802.3ap.

#### ● Differential Impedance

Differential impedance is  $100 \pm 10 \Omega$  at the rise time of 87.5ps (20 to 80%).

Product Specifications

|               |        |         |                                    |              |
|---------------|--------|---------|------------------------------------|--------------|
| Rated Current | Signal | Power   | Operating Temperature (Note 1)     | -55 to +105℃ |
|               | 0.5A   | 3A      | Storage Temperature Range (Note 2) | -10 to +60℃  |
| Rated Voltage | Signal | Power   |                                    |              |
|               | 50V AC | 200V AC |                                    |              |

|                          |                                                     |                        |                                                     |
|--------------------------|-----------------------------------------------------|------------------------|-----------------------------------------------------|
| Operating Humidity Range | 90% or less relative humidity (No dew condensation) | Storage Humidity Range | 90% or less relative humidity (No dew condensation) |
|--------------------------|-----------------------------------------------------|------------------------|-----------------------------------------------------|

| Items                 | Specifications                                                                                                                      | Conditions                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Contact Resistance    | Signal : 70mΩ Max.<br>Power : 20mΩ Max.                                                                                             | Measured at 100mA                                                                                                                  |
| Insulation Resistance | Signal : 100MΩ Max.<br>Power : 1,000MΩ Max.                                                                                         | Signal : Measured at 100V DC<br>Power : Measured at 250V DC                                                                        |
| Withstanding Voltage  | No insulation breakdown.                                                                                                            | Signal Contacts Energized at 150V AC for 1 min.<br>Power Contacts Energized at 600V AC for 1 min.                                  |
| Mating Durability     | Contact resistance of the signal part 80mΩ Max.<br>Power part 30mΩ Max.                                                             | 100 times                                                                                                                          |
| Vibration Proof       | No electrical discontinuity of 1 μs or more                                                                                         | Frequency 10 - 55Hz, half amplitude 0.75mm,<br>10 cycles in each of the 3-axis directions<br>each for 5 minutes per cycle          |
| Shock Resistance      | No electrical discontinuity of 1 μs or more                                                                                         | Acceleration of 490m/s <sup>2</sup> ; duration 11ms,<br>sine half-wave, 3 cycles in each of the 3 axes<br>each in both directions. |
| Moisture Resistance   | Contact Resistance<br>Signal : 80mΩ Max. / Power : 30mΩ Max.<br>Insulation Resistance<br>Signal : 100MΩ Min. / Power : 1,000MΩ Min. | Left to stand for 96 hours at a temperature<br>of +40℃ and a humidity of 90 to 95%                                                 |
| Temperature Cycle     | Contact Resistance<br>Signal : 80mΩ Max. / Power : 30mΩ Max.<br>Insulation Resistance<br>Signal : 100MΩ Min. / Power : 1,000MΩ Min. | Temperature -55 → +85℃<br>5 cycles for a series of time periods :<br>30 minutes → 30 minutes                                       |

Note 1 : Includes temperature rise due to current flow.  
Note 2 : The term "storage" refers to the long-term storage condition of unused products before mounting on PCB.

Materials / Finish

| Part              | Materials  |                 | Finish                                                                                        | UL Standard |
|-------------------|------------|-----------------|-----------------------------------------------------------------------------------------------|-------------|
| Insulator (FX23)  | Header     | Polyamide Resin | Black Color                                                                                   | UL94V-0     |
|                   | Receptacle | LCP Resin       |                                                                                               |             |
| Insulator (FX23L) | Header     | Polyamide Resin |                                                                                               | UL94V-0     |
|                   | Receptacle |                 |                                                                                               |             |
| Contact           | Header     | Copper Alloy    | Contacted Part : Gold Plating                                                                 | -           |
|                   | Receptacle |                 | Signal Contact-mounting Part : Gold Plating<br>Power Contact-mounting Part : Pure Tin Plating |             |
| Retention Tab     | Brass      |                 | Pure Tin Plating                                                                              | -           |

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.  
Please select from the product numbers listed in this catalog when placing orders.

■ Straight Header

**FX23 - 120 P - 0.5 SV 15**  
①                      ②                      ③                      ④                      ⑤                      ⑥

■ Straight Receptacle

**FX23 - 120 S - 0.5 SV 10**  
①                      ②                      ③                      ④                      ⑤                      ⑥

■ Right Angle Receptacle

**FX23 - 120 S - 0.5 SH**  
①                      ②                      ③                      ④                      ⑤

|                  |                                        |                       |                                                                                                       |
|------------------|----------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------|
| ① Series Name    | FX23                                   | ④ Contact Pitch       | 0.5mm                                                                                                 |
| ② No. of Pos.    | 20, 40, 60, 80, 100, 120               | ⑤ Product Type        | SV : Straight<br>SH : Right angle type                                                                |
| ③ Connector Type | P : Header type<br>S : Receptacle type | ⑥ Product Height Type | Mated Height [mm] =<br>Numerical value on the header side +<br>Numerical value on the receptacle side |

■ Straight Header

**FX23L - 120 P - 0.5 SV 8**  
①                      ②                      ③                      ④                      ⑤                      ⑥

■ Straight Receptacle

**FX23L - 120 S - 0.5 SV 10**  
①                      ②                      ③                      ④                      ⑤                      ⑥

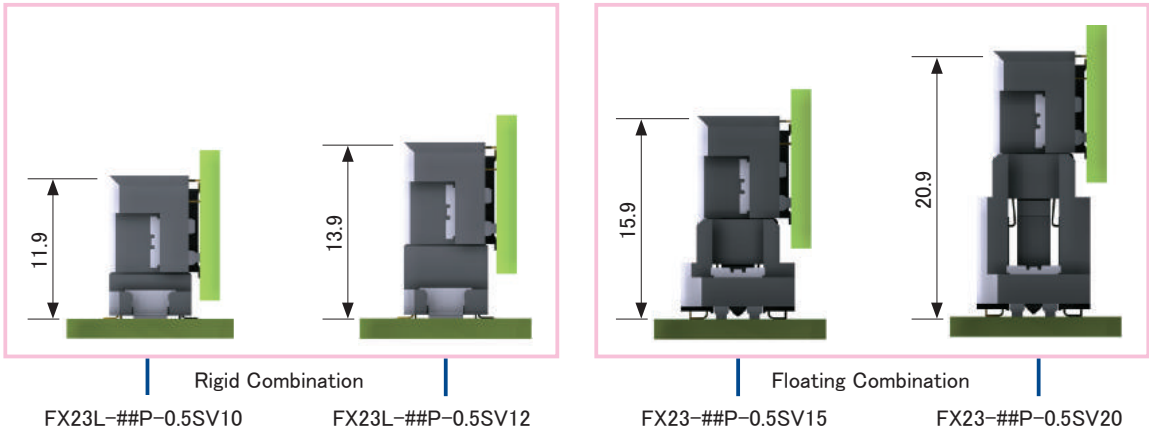
|                  |                                        |                       |                                                           |
|------------------|----------------------------------------|-----------------------|-----------------------------------------------------------|
| ① Series Name    | FX23L                                  | ④ Contact Pitch       | 0.5mm                                                     |
| ② No. of Pos.    | 20, 40, 60, 80, 100, 120               | ⑤ Product Type        | SV : Straight                                             |
| ③ Connector Type | P : Header type<br>S : Receptacle type | ⑥ Product Height Type | Mated Height [mm] =<br>Numerical value on the header side |

List of Connection Variations

Right Angle Connection

Right Angle Receptacle

FX23-##S-0.5SH

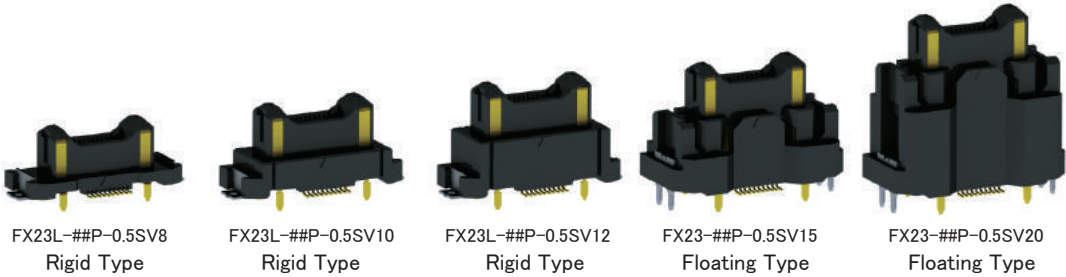


Straight Header

##⇒No. of Pos.: 20, 40, 60, 80, 100, 120

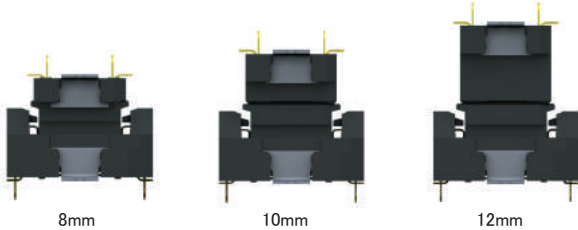
Note : FX23L-##P-0.5SV8 and FX23-##S-0.5SH cannot engage due to interference of the retention tab.

● Parallel Connection  
Height Variation



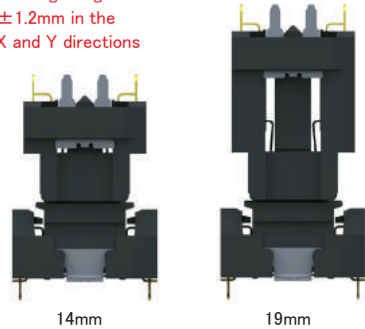
FX23L Series  
Standard Type

Floating Range :  
±0.6mm in the X and Y directions



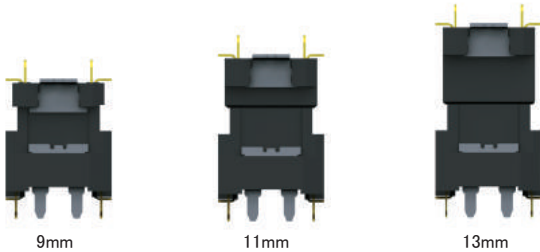
FX23 × FX23L Series  
Double Floating Type

Floating Range :  
±1.2mm in the  
X and Y directions



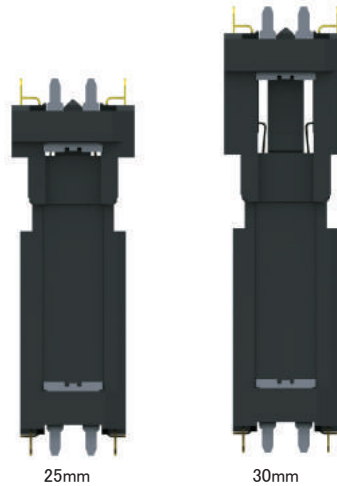
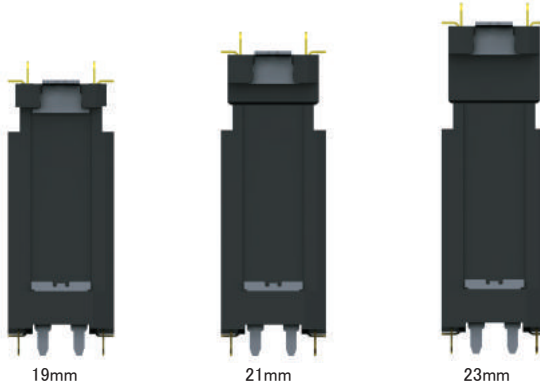
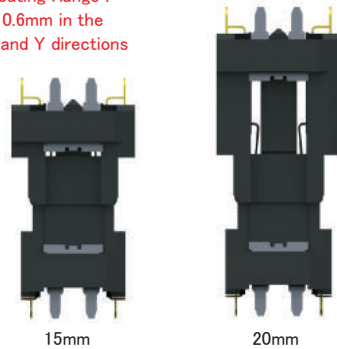
FX23 × FX23L Series  
Rigid Type

⚠ No floating ability



FX23 Series  
Standard Type

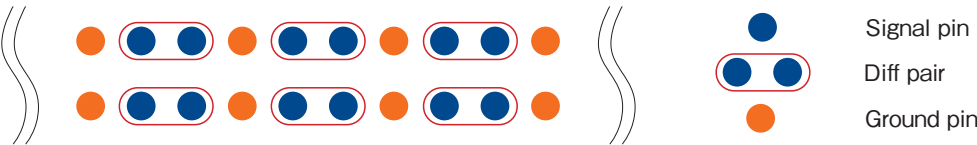
Floating Range :  
±0.6mm in the  
X and Y directions



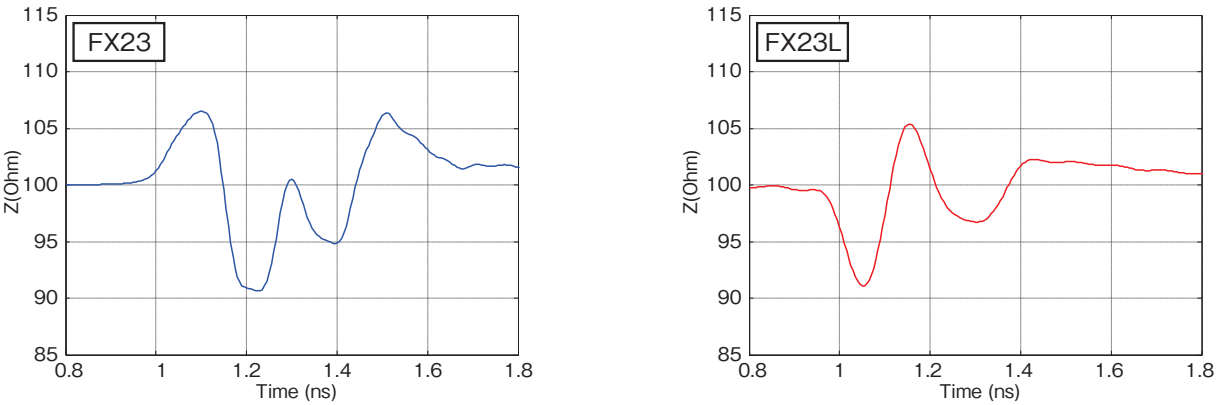
High Speed Transmission Properties (FX23 : h=15mm, FX23L : h=12mm)

● Pin Assignment

The following pin arrangement is recommended to match the 100Ω differential impedance and to contain cross-talk.

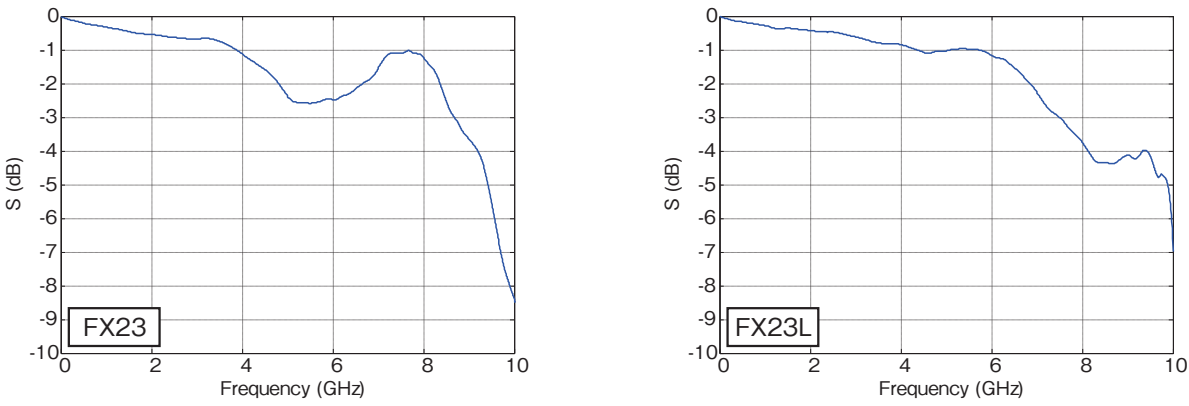


● Differential Impedance 80ps Rise Time (20 to 80%)

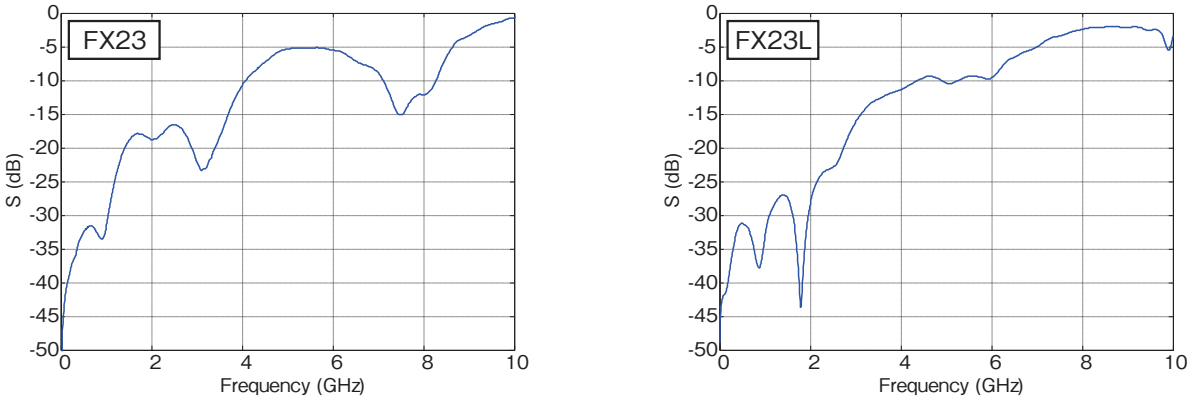


Meets the criterion of 100±10Ω at the rise time of 80ps (20 to 80%).

● Insertion Loss

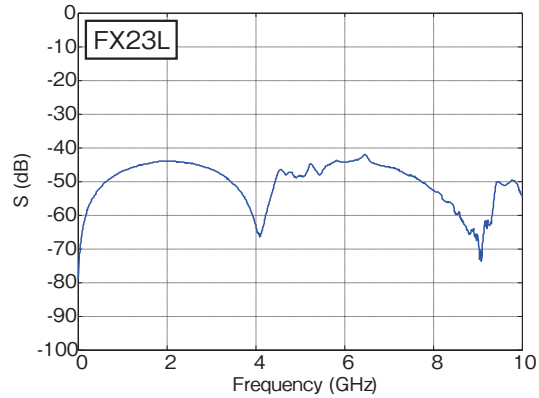
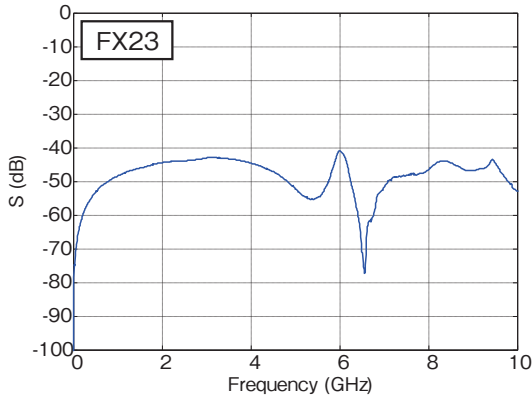


● Return Loss

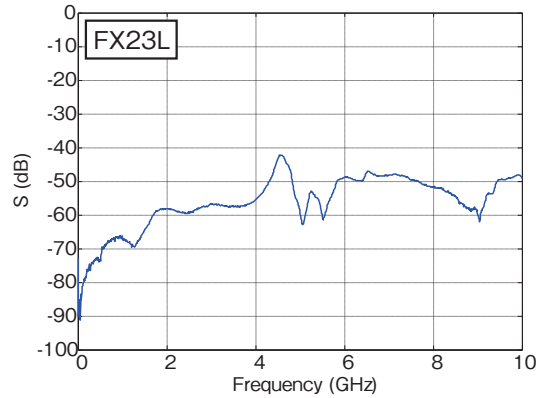
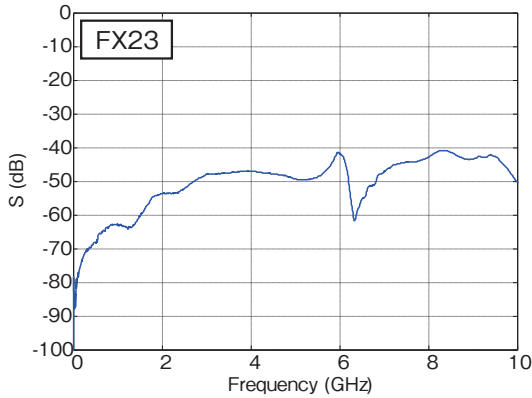


Superior insertion loss and return loss characteristics up to 5GHz.

## ● Near End Cross-talk (NEXT)

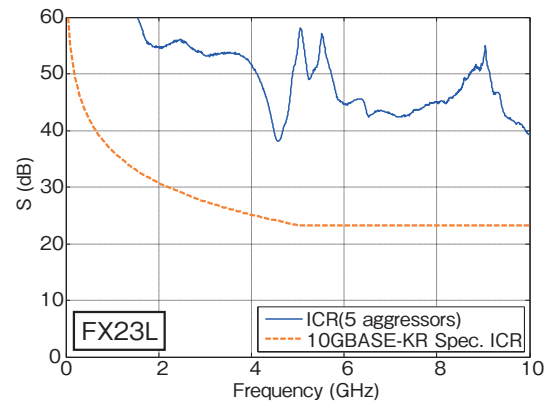
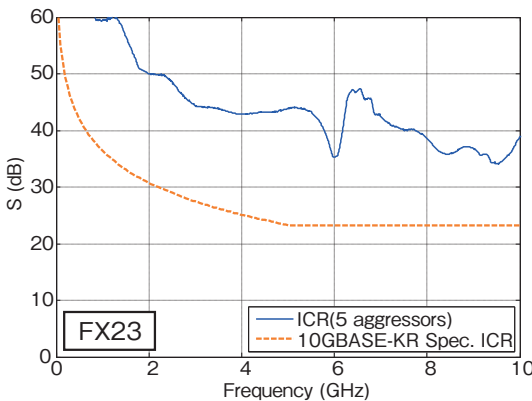
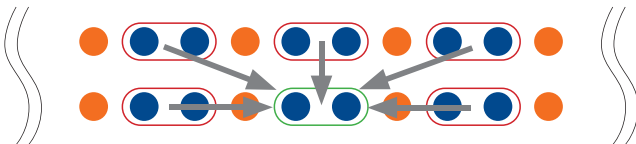


## ● Far End Cross-talk (FEXT)



Low cross-talk up to 10GHz.

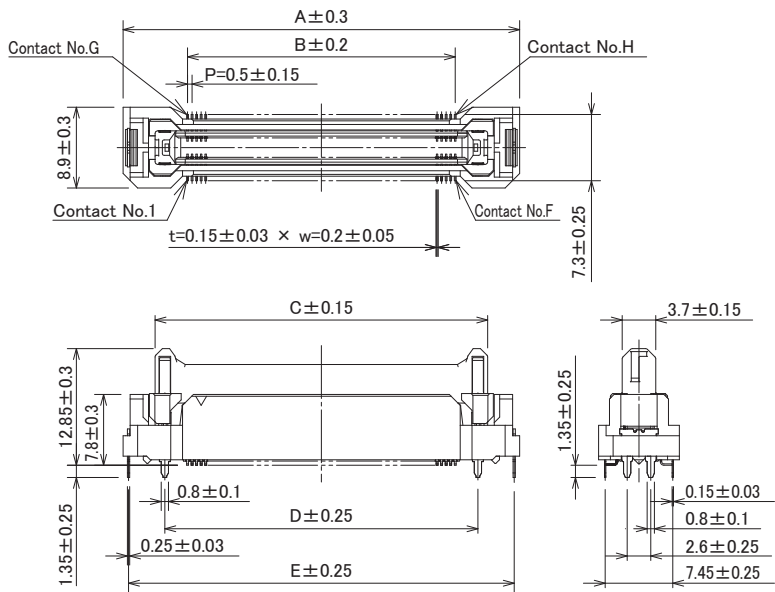
## ● Insertion Loss/Cross-talk Ratio (ICR) for FEXT



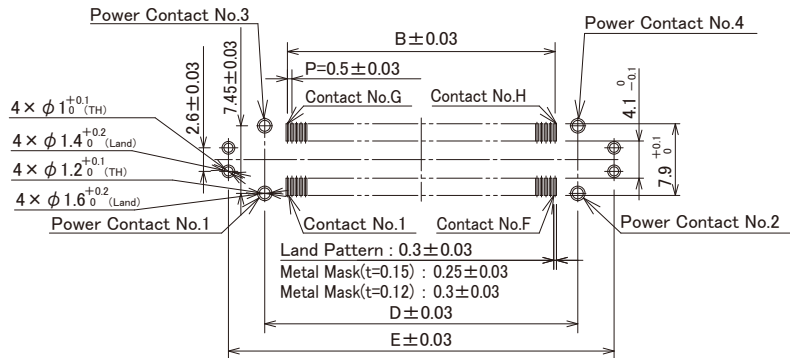
Insertion loss/cross-talk ratio (ICR) for FEXT using 5 sets of Aggressors has an adequate margin according to the specification of IEEE802.3ap.

## Product Dimensions FX23 Series

### ● Straight Header [FX23-##P-0.5SV15]



### ● Recommended PCB Layout

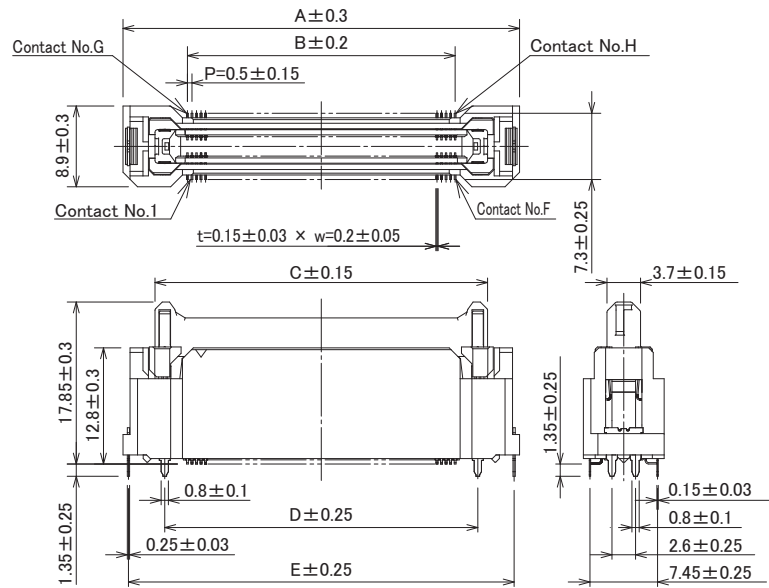


Unit : mm

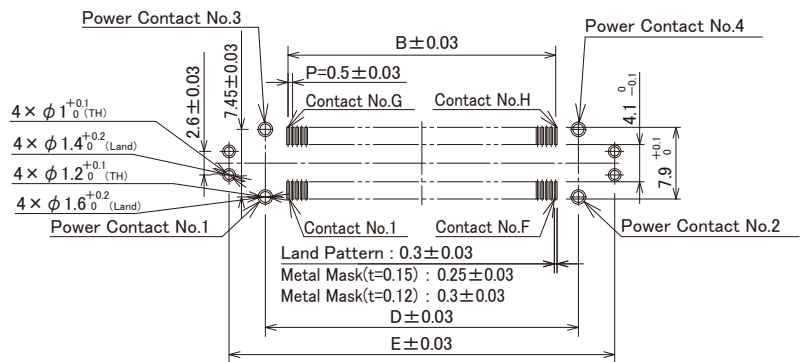
| Part No.              | HRS No.          | No. of Pos. | A    | B    | C     | D    | E    | F  | G  | H   |
|-----------------------|------------------|-------------|------|------|-------|------|------|----|----|-----|
| FX23-20P-0.5SV15(##)  | CL0573-3001-0-## | 20          | 18.7 | 4.5  | 11.65 | 9.5  | 17.5 | 10 | 11 | 20  |
| FX23-40P-0.5SV15(##)  | CL0573-3002-3-## | 40          | 23.7 | 9.5  | 16.65 | 14.5 | 22.5 | 20 | 21 | 40  |
| FX23-60P-0.5SV15(##)  | CL0573-3003-6-## | 60          | 28.7 | 14.5 | 21.65 | 19.5 | 27.5 | 30 | 31 | 60  |
| FX23-80P-0.5SV15(##)  | CL0573-3004-9-## | 80          | 33.7 | 19.5 | 26.65 | 24.5 | 32.5 | 40 | 41 | 80  |
| FX23-100P-0.5SV15(##) | CL0573-3005-1-## | 100         | 38.7 | 24.5 | 31.65 | 29.5 | 37.5 | 50 | 51 | 100 |
| FX23-120P-0.5SV15(##) | CL0573-3006-4-## | 120         | 43.7 | 29.5 | 36.65 | 34.5 | 42.5 | 60 | 61 | 120 |

[Specification Number] (##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

## [FX23-##P-0.5SV20]



## ● Recommended PCB Layout



Unit : mm

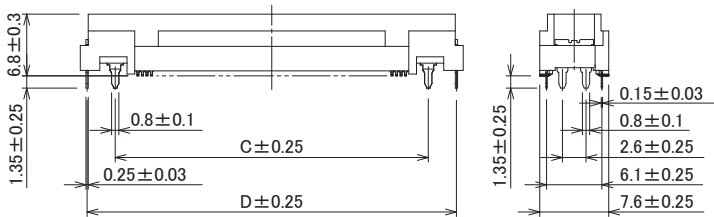
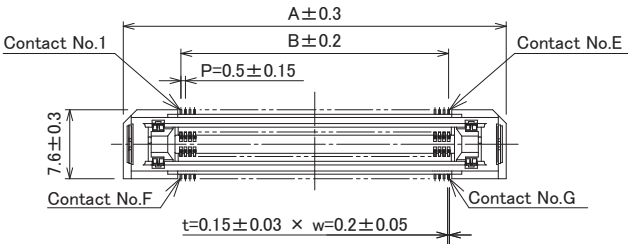
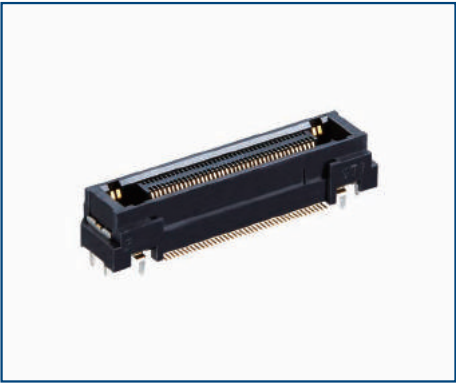
| Part No.              | HRS No.          | No. of Pos. | A    | B    | C     | D    | E    | F  | G  | H   |
|-----------------------|------------------|-------------|------|------|-------|------|------|----|----|-----|
| FX23-20P-0.5SV20(##)  | CL0573-3101-5-## | 20          | 18.7 | 4.5  | 11.65 | 9.5  | 17.5 | 10 | 11 | 20  |
| FX23-40P-0.5SV20(##)  | CL0573-3102-8-## | 40          | 23.7 | 9.5  | 16.65 | 14.5 | 22.5 | 20 | 21 | 40  |
| FX23-60P-0.5SV20(##)  | CL0573-3103-0-## | 60          | 28.7 | 14.5 | 21.65 | 19.5 | 27.5 | 30 | 31 | 60  |
| FX23-80P-0.5SV20(##)  | CL0573-3104-3-## | 80          | 33.7 | 19.5 | 26.65 | 24.5 | 32.5 | 40 | 41 | 80  |
| FX23-100P-0.5SV20(##) | CL0573-3105-6-## | 100         | 38.7 | 24.5 | 31.65 | 29.5 | 37.5 | 50 | 51 | 100 |
| FX23-120P-0.5SV20(##) | CL0573-3106-9-## | 120         | 43.7 | 29.5 | 36.65 | 34.5 | 42.5 | 60 | 61 | 120 |

【Specification Number】(##), ##

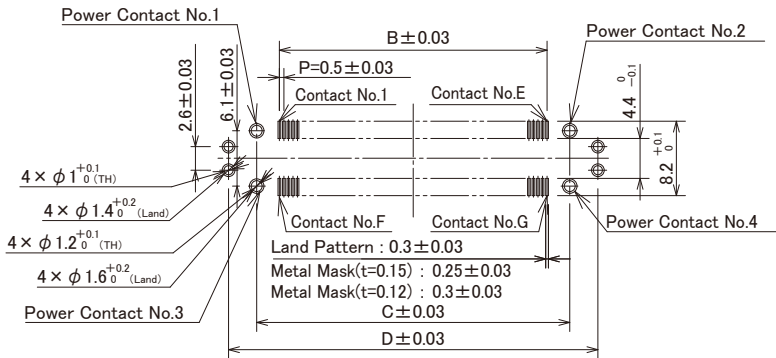
(00) : Tray Packaging

(20) : Embossed Packaging

● Straight Receptacle  
[FX23-##S-0.5SV]



● Recommended PCB Layout

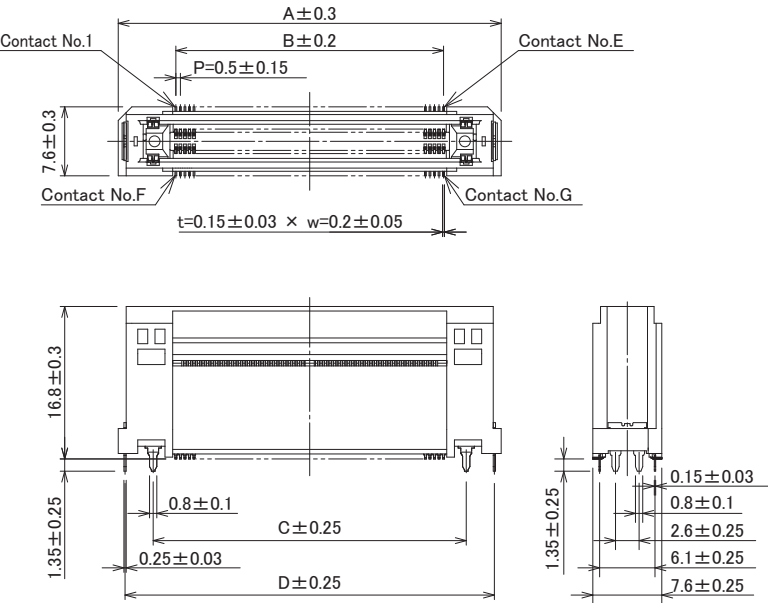


Unit : mm

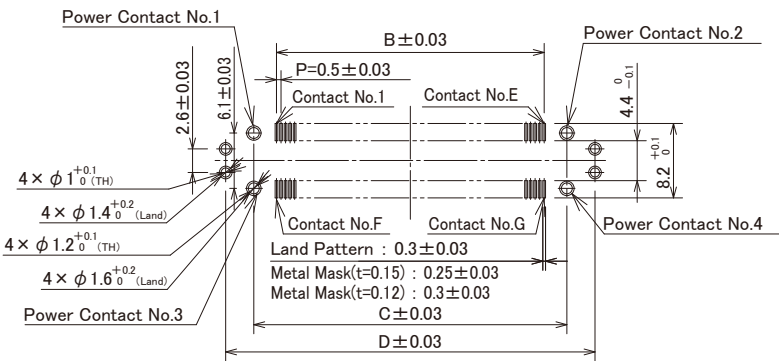
| Part No.            | HRS No.          | No. of Pos. | A    | B    | C    | D    | E  | F  | G   |
|---------------------|------------------|-------------|------|------|------|------|----|----|-----|
| FX23-20S-0.5SV(##)  | CL0573-3201-0-## | 20          | 17.2 | 4.5  | 9.5  | 15.7 | 10 | 11 | 20  |
| FX23-40S-0.5SV(##)  | CL0573-3202-2-## | 40          | 22.2 | 9.5  | 14.5 | 20.7 | 20 | 21 | 40  |
| FX23-60S-0.5SV(##)  | CL0573-3203-5-## | 60          | 27.2 | 14.5 | 19.5 | 25.7 | 30 | 31 | 60  |
| FX23-80S-0.5SV(##)  | CL0573-3204-8-## | 80          | 32.2 | 19.5 | 24.5 | 30.7 | 40 | 41 | 80  |
| FX23-100S-0.5SV(##) | CL0573-3205-0-## | 100         | 37.2 | 24.5 | 29.5 | 35.7 | 50 | 51 | 100 |
| FX23-120S-0.5SV(##) | CL0573-3206-3-## | 120         | 42.2 | 29.5 | 34.5 | 40.7 | 60 | 61 | 120 |

【Specification Number】(##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

[FX23-##S-0.5SV10]



● Recommended PCB Layout

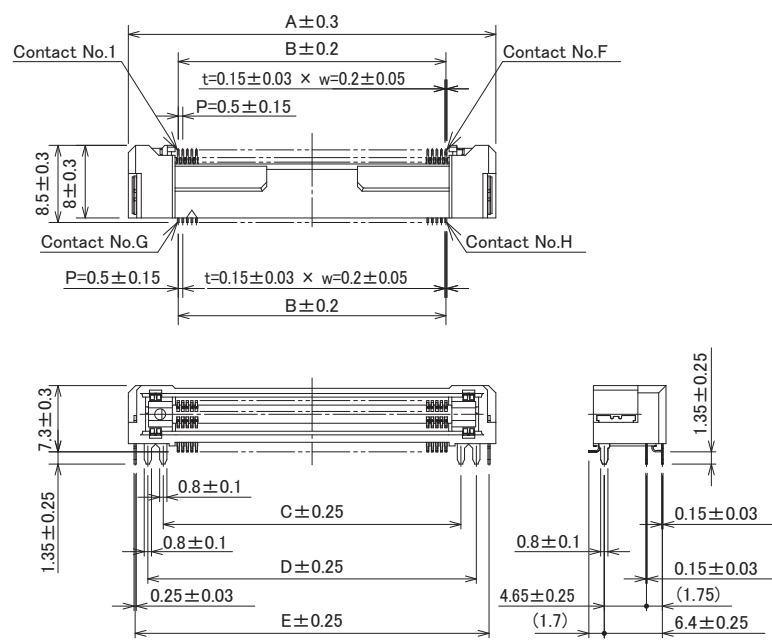


Unit : mm

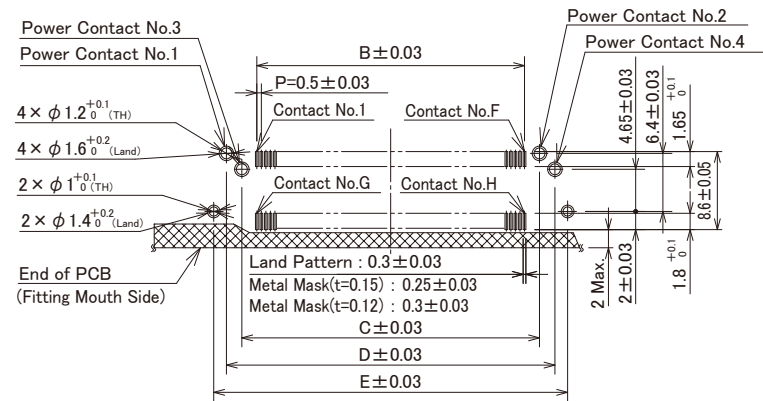
| Part No.              | HRS No.          | No. of Pos. | A    | B    | C    | D    | E  | F  | G   |
|-----------------------|------------------|-------------|------|------|------|------|----|----|-----|
| FX23-20S-0.5SV10(##)  | CL0573-3301-4-## | 20          | 17.2 | 4.5  | 9.5  | 15.7 | 10 | 11 | 20  |
| FX23-40S-0.5SV10(##)  | CL0573-3302-7-## | 40          | 22.2 | 9.5  | 14.5 | 20.7 | 20 | 21 | 40  |
| FX23-60S-0.5SV10(##)  | CL0573-3303-0-## | 60          | 27.2 | 14.5 | 19.5 | 25.7 | 30 | 31 | 60  |
| FX23-80S-0.5SV10(##)  | CL0573-3304-2-## | 80          | 32.2 | 19.5 | 24.5 | 30.7 | 40 | 41 | 80  |
| FX23-100S-0.5SV10(##) | CL0573-3305-5-## | 100         | 37.2 | 24.5 | 29.5 | 35.7 | 50 | 51 | 100 |
| FX23-120S-0.5SV10(##) | CL0573-3306-8-## | 120         | 42.2 | 29.5 | 34.5 | 40.7 | 60 | 61 | 120 |

[Specification Number] (##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

● Right Angle Receptacle  
[FX23-##S-0.5SH]



● Recommended PCB Layout



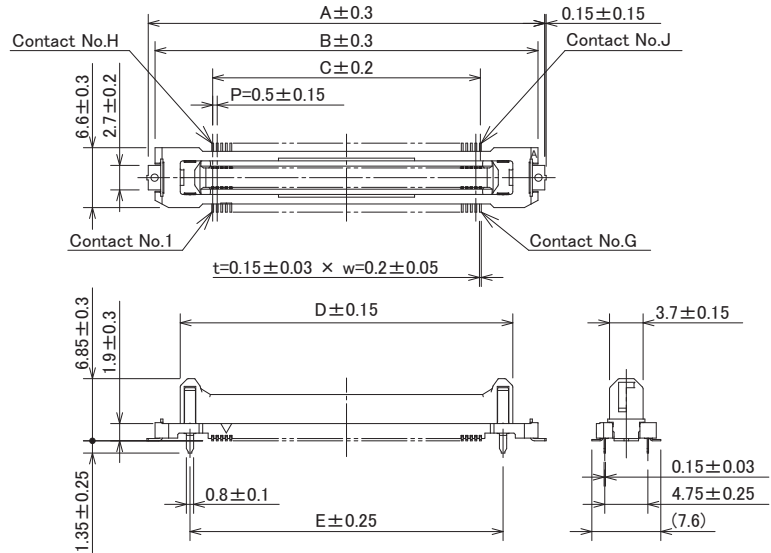
Unit : mm

| Part No.            | HRS No.          | No. of Pos. | A    | B    | C    | D    | E  | F  | G  | H   |
|---------------------|------------------|-------------|------|------|------|------|----|----|----|-----|
| FX23-20S-0.5SH(##)  | CL0573-3401-9-## | 20          | 15.5 | 4.5  | 7.8  | 11.2 | 14 | 10 | 11 | 20  |
| FX23-40S-0.5SH(##)  | CL0573-3402-1-## | 40          | 20.5 | 9.5  | 12.8 | 16.2 | 19 | 20 | 21 | 40  |
| FX23-60S-0.5SH(##)  | CL0573-3403-4-## | 60          | 25.5 | 14.5 | 17.8 | 21.2 | 24 | 30 | 31 | 60  |
| FX23-80S-0.5SH(##)  | CL0573-3404-7-## | 80          | 30.5 | 19.5 | 22.8 | 26.2 | 29 | 40 | 41 | 80  |
| FX23-100S-0.5SH(##) | CL0573-3405-0-## | 100         | 35.5 | 24.5 | 27.8 | 31.2 | 34 | 50 | 51 | 100 |
| FX23-120S-0.5SH(##) | CL0573-3406-2-## | 120         | 40.5 | 29.5 | 32.8 | 36.2 | 39 | 60 | 61 | 120 |

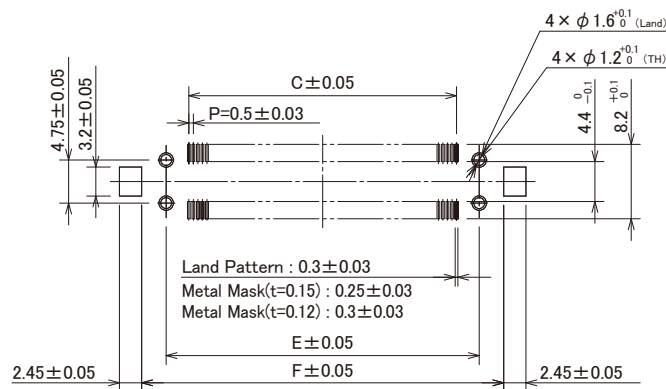
[Specification Number] (##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

## Product Dimensions FX23L Series

### ● Straight Header [FX23L-##P-0.5SV8]



### ● Recommended PCB Layout



Unit : mm

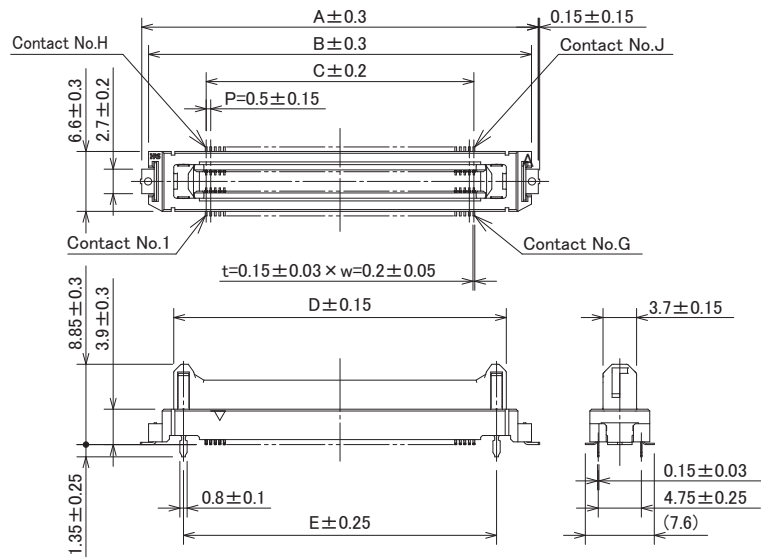
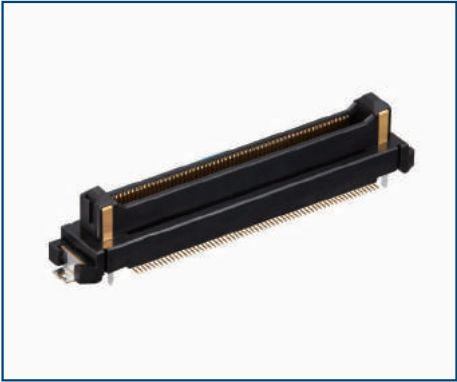
| Part No.              | HRS No.          | No. of Pos. | A    | B    | C    | D     | E    | F    | G  | H  | J   |
|-----------------------|------------------|-------------|------|------|------|-------|------|------|----|----|-----|
| FX23L-20P-0.5SV8(##)  | CL0573-2001-5-## | 20          | 18.7 | 17.2 | 4.5  | 11.65 | 9.5  | 14.9 | 10 | 11 | 20  |
| FX23L-40P-0.5SV8(##)  | CL0573-2002-8-## | 40          | 23.7 | 22.2 | 9.5  | 16.65 | 14.5 | 19.9 | 20 | 21 | 40  |
| FX23L-60P-0.5SV8(##)  | CL0573-2003-0-## | 60          | 28.7 | 27.2 | 14.5 | 21.65 | 19.5 | 24.9 | 30 | 31 | 60  |
| FX23L-80P-0.5SV8(##)  | CL0573-2004-3-## | 80          | 33.7 | 32.2 | 19.5 | 26.65 | 24.5 | 29.9 | 40 | 41 | 80  |
| FX23L-100P-0.5SV8(##) | CL0573-2005-6-## | 100         | 38.7 | 37.2 | 24.5 | 31.65 | 29.5 | 34.9 | 50 | 51 | 100 |
| FX23L-120P-0.5SV8(##) | CL0573-2006-9-## | 120         | 43.7 | 42.2 | 29.5 | 36.65 | 34.5 | 39.9 | 60 | 61 | 120 |

[Specification Number] (##), ##

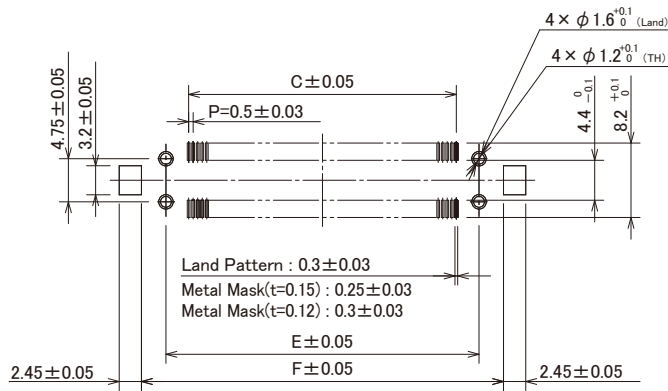
(00) : Tray Packaging

(20) : Embossed Packaging

[FX23L-##P-0.5SV10]



● Recommended PCB Layout

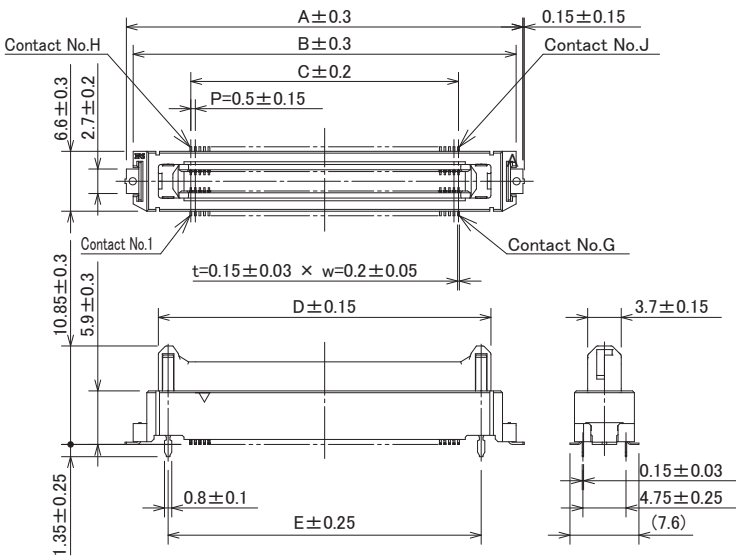
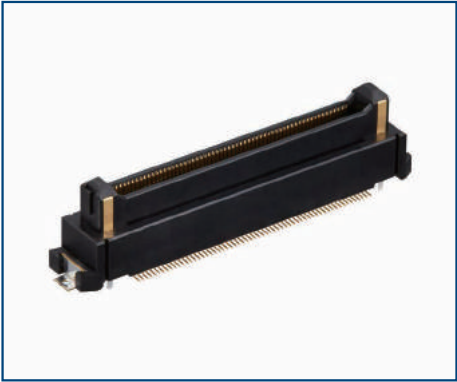


Unit : mm

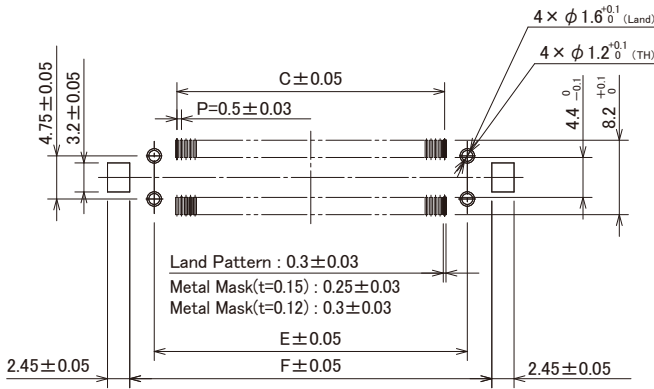
| Part No.               | HRS No.          | No. of Pos. | A    | B    | C    | D     | E    | F    | G  | H  | J   |
|------------------------|------------------|-------------|------|------|------|-------|------|------|----|----|-----|
| FX23L-20P-0.5SV10(##)  | CL0573-2101-0-## | 20          | 18.7 | 17.2 | 4.5  | 11.65 | 9.5  | 14.9 | 10 | 11 | 20  |
| FX23L-40P-0.5SV10(##)  | CL0573-2102-2-## | 40          | 23.7 | 22.2 | 9.5  | 16.65 | 14.5 | 19.9 | 20 | 21 | 40  |
| FX23L-60P-0.5SV10(##)  | CL0573-2103-5-## | 60          | 28.7 | 27.2 | 14.5 | 21.65 | 19.5 | 24.9 | 30 | 31 | 60  |
| FX23L-80P-0.5SV10(##)  | CL0573-2104-8-## | 80          | 33.7 | 32.2 | 19.5 | 26.65 | 24.5 | 29.9 | 40 | 41 | 80  |
| FX23L-100P-0.5SV10(##) | CL0573-2105-0-## | 100         | 38.7 | 37.2 | 24.5 | 31.65 | 29.5 | 34.9 | 50 | 51 | 100 |
| FX23L-120P-0.5SV10(##) | CL0573-2106-3-## | 120         | 43.7 | 42.2 | 29.5 | 36.65 | 34.5 | 39.9 | 60 | 61 | 120 |

[Specification Number] (##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

[FX23L-##P-0.5SV12]



●Recommended PCB Layout

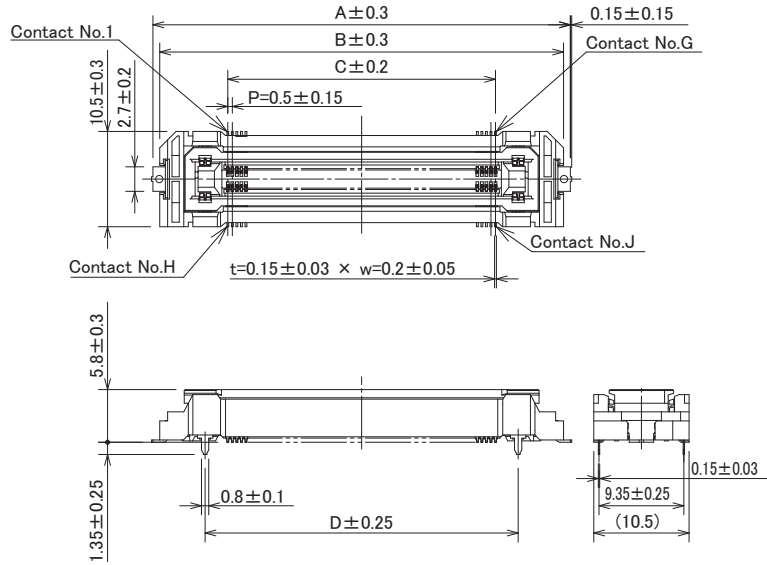


Unit : mm

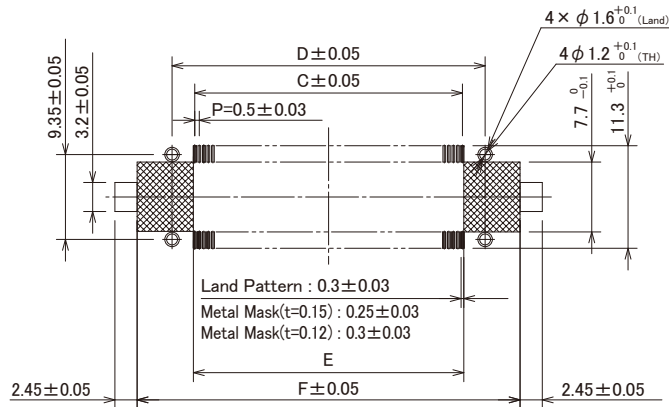
| Part No.               | HRS No.          | No. of Pos. | A    | B    | C    | D     | E    | F    | G  | H  | J   |
|------------------------|------------------|-------------|------|------|------|-------|------|------|----|----|-----|
| FX23L-20P-0.5SV12(##)  | CL0573-2201-4-## | 20          | 18.7 | 17.2 | 4.5  | 11.65 | 9.5  | 14.9 | 10 | 11 | 20  |
| FX23L-40P-0.5SV12(##)  | CL0573-2202-7-## | 40          | 23.7 | 22.2 | 9.5  | 16.65 | 14.5 | 19.9 | 20 | 21 | 40  |
| FX23L-60P-0.5SV12(##)  | CL0573-2203-0-## | 60          | 28.7 | 27.2 | 14.5 | 21.65 | 19.5 | 24.9 | 30 | 31 | 60  |
| FX23L-80P-0.5SV12(##)  | CL0573-2204-2-## | 80          | 33.7 | 32.2 | 19.5 | 26.65 | 24.5 | 29.9 | 40 | 41 | 80  |
| FX23L-100P-0.5SV12(##) | CL0573-2205-5-## | 100         | 38.7 | 37.2 | 24.5 | 31.65 | 29.5 | 34.9 | 50 | 51 | 100 |
| FX23L-120P-0.5SV12(##) | CL0573-2206-8-## | 120         | 43.7 | 42.2 | 29.5 | 36.65 | 34.5 | 39.9 | 60 | 61 | 120 |

【Specification Number】(##), ##  
(00) : Tray Packaging  
(20) : Embossed Packaging

## ● Straight Receptacle [FX23L-##S-0.5SV]



## ● Recommended PCB Layout



Unit : mm

| Part No.             | HRS No.          | No. of Pos. | A  | B    | C    | D    | E    | F    | G  | H  | J   |
|----------------------|------------------|-------------|----|------|------|------|------|------|----|----|-----|
| FX23L-20S-0.5SV(##)  | CL0573-2301-9-## | 20          | 21 | 19.5 | 4.5  | 9.5  | 4.8  | 17.2 | 10 | 11 | 20  |
| FX23L-40S-0.5SV(##)  | CL0573-2302-1-## | 40          | 26 | 24.5 | 9.5  | 14.5 | 9.8  | 22.2 | 20 | 21 | 40  |
| FX23L-60S-0.5SV(##)  | CL0573-2303-4-## | 60          | 31 | 29.5 | 14.5 | 19.5 | 14.8 | 27.2 | 30 | 31 | 60  |
| FX23L-80S-0.5SV(##)  | CL0573-2304-7-## | 80          | 36 | 34.5 | 19.5 | 24.5 | 19.8 | 32.2 | 40 | 41 | 80  |
| FX23L-100S-0.5SV(##) | CL0573-2305-0-## | 100         | 41 | 39.5 | 24.5 | 29.5 | 24.8 | 37.2 | 50 | 51 | 100 |
| FX23L-120S-0.5SV(##) | CL0573-2306-2-## | 120         | 46 | 44.5 | 29.5 | 34.5 | 29.8 | 42.2 | 60 | 61 | 120 |

【Specification Number】(##), ##

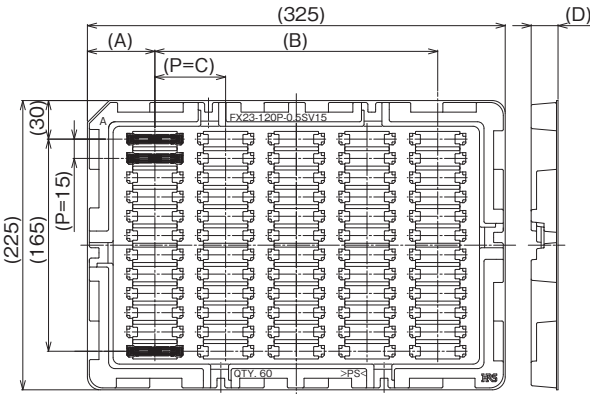
(00) : Tray Packaging

(20) : Embossed Packaging

Packaging Specifications

Tray Packaging for FX23

● Straight Header

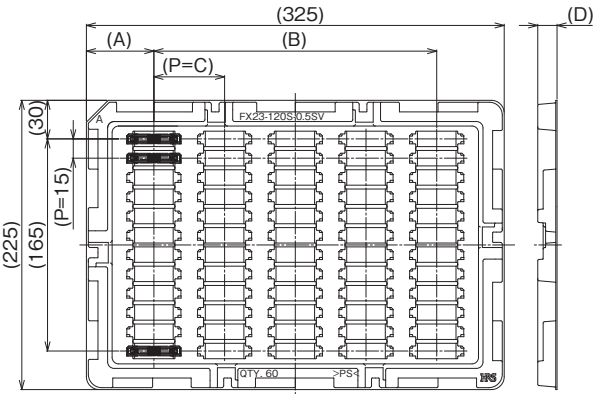


Unit : mm

| Part No.          | Packing Quantity<br>(pcs/tray) | A    | B   | C    | D    |
|-------------------|--------------------------------|------|-----|------|------|
| FX23-20P-0.5SV15  | 84                             | 50   | 225 | 37.5 | 20.9 |
| FX23-40P-0.5SV15  | 84                             | 50   | 225 | 37.5 | 20.9 |
| FX23-60P-0.5SV15  | 84                             | 50   | 225 | 37.5 | 20.9 |
| FX23-80P-0.5SV15  | 72                             | 50   | 225 | 45   | 20.9 |
| FX23-100P-0.5SV15 | 72                             | 47.5 | 230 | 46   | 20.9 |
| FX23-120P-0.5SV15 | 60                             | 52.5 | 220 | 55   | 20.9 |
| FX23-20P-0.5SV20  | 84                             | 50   | 225 | 37.5 | 25.9 |
| FX23-40P-0.5SV20  | 84                             | 50   | 225 | 37.5 | 25.9 |
| FX23-60P-0.5SV20  | 84                             | 50   | 225 | 37.5 | 25.9 |
| FX23-80P-0.5SV20  | 72                             | 47.5 | 230 | 46   | 25.9 |
| FX23-100P-0.5SV20 | 72                             | 47.5 | 230 | 46   | 25.9 |
| FX23-120P-0.5SV20 | 60                             | 52.5 | 220 | 55   | 25.9 |

Note : Order tray packaging in multiples of purchase unit.

● Straight Receptacle

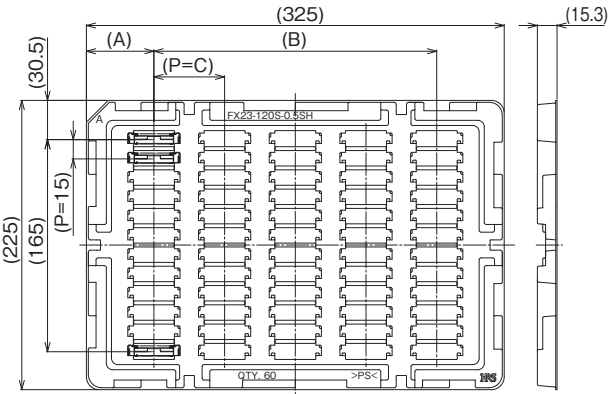


Unit : mm

| Part No.          | Packing Quantity<br>(pcs/tray) | A    | B   | C    | D    |
|-------------------|--------------------------------|------|-----|------|------|
| FX23-20S-0.5SV    | 84                             | 50   | 225 | 37.5 | 15   |
| FX23-40S-0.5SV    | 84                             | 50   | 225 | 37.5 | 15   |
| FX23-60S-0.5SV    | 84                             | 50   | 225 | 37.5 | 15   |
| FX23-80S-0.5SV    | 72                             | 47.5 | 230 | 46   | 15   |
| FX23-100S-0.5SV   | 72                             | 47.5 | 230 | 46   | 15   |
| FX23-120S-0.5SV   | 60                             | 52.5 | 220 | 55   | 15   |
| FX23-20S-0.5SV10  | 84                             | 50   | 225 | 37.5 | 25.2 |
| FX23-40S-0.5SV10  | 84                             | 50   | 225 | 37.5 | 25.2 |
| FX23-60S-0.5SV10  | 84                             | 50   | 225 | 37.5 | 25.2 |
| FX23-80S-0.5SV10  | 72                             | 47.5 | 230 | 46   | 25.2 |
| FX23-100S-0.5SV10 | 72                             | 47.5 | 230 | 46   | 25.2 |
| FX23-120S-0.5SV10 | 60                             | 52.5 | 220 | 55   | 25.2 |

Note : Order tray packaging in multiples of purchase unit.

● Right Angle Receptacle



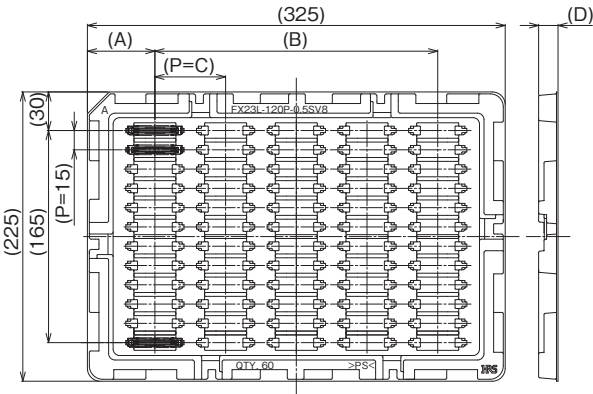
Unit : mm

| Part No.        | Packing Quantity<br>(pcs/tray) | A    | B   | C    |
|-----------------|--------------------------------|------|-----|------|
| FX23-20S-0.5SH  | 84                             | 50   | 225 | 37.5 |
| FX23-40S-0.5SH  | 84                             | 50   | 225 | 37.5 |
| FX23-60S-0.5SH  | 84                             | 50   | 225 | 37.5 |
| FX23-80S-0.5SH  | 72                             | 50   | 225 | 45   |
| FX23-100S-0.5SH | 72                             | 47.5 | 230 | 46   |
| FX23-120S-0.5SH | 60                             | 52.5 | 220 | 55   |

Note : Order tray packaging in multiples of purchase unit.

Tray Packaging for FX23L

● Straight Header

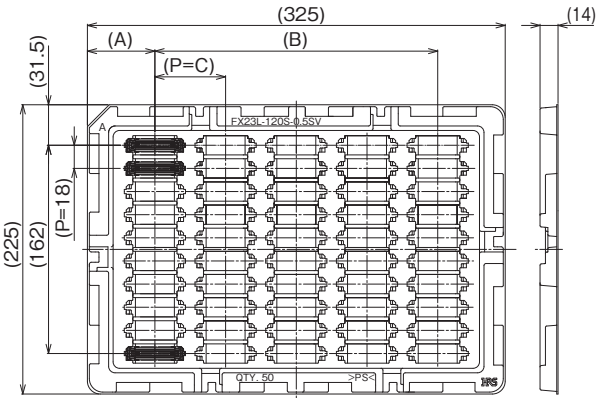


Unit : mm

| Part No.           | Packing Quantity<br>(pcs/tray) | A    | B   | C    | D    |
|--------------------|--------------------------------|------|-----|------|------|
| FX23L-20P-0.5SV8   | 96                             | 40   | 245 | 35   | 15.1 |
| FX23L-40P-0.5SV8   | 84                             | 50   | 225 | 37.5 | 15.1 |
| FX23L-60P-0.5SV8   | 72                             | 50   | 225 | 45   | 15.1 |
| FX23L-80P-0.5SV8   | 72                             | 50   | 225 | 45   | 15.1 |
| FX23L-100P-0.5SV8  | 60                             | 52.5 | 220 | 55   | 15.1 |
| FX23L-120P-0.5SV8  | 60                             | 52.5 | 220 | 55   | 15.1 |
| FX23L-20P-0.5SV10  | 96                             | 40   | 245 | 35   | 17.1 |
| FX23L-40P-0.5SV10  | 84                             | 50   | 225 | 37.5 | 17.1 |
| FX23L-60P-0.5SV10  | 72                             | 50   | 225 | 45   | 17.1 |
| FX23L-80P-0.5SV10  | 72                             | 50   | 225 | 45   | 17.1 |
| FX23L-100P-0.5SV10 | 60                             | 52.5 | 220 | 55   | 17.1 |
| FX23L-120P-0.5SV10 | 60                             | 52.5 | 220 | 55   | 17.1 |
| FX23L-20P-0.5SV12  | 96                             | 40   | 245 | 35   | 19.1 |
| FX23L-40P-0.5SV12  | 84                             | 50   | 225 | 37.5 | 19.1 |
| FX23L-60P-0.5SV12  | 72                             | 50   | 225 | 45   | 19.1 |
| FX23L-80P-0.5SV12  | 72                             | 50   | 225 | 45   | 19.1 |
| FX23L-100P-0.5SV12 | 60                             | 52.5 | 220 | 55   | 19.1 |
| FX23L-120P-0.5SV12 | 60                             | 52.5 | 220 | 55   | 19.1 |

Note : Order tray packaging in multiples of purchase unit.

● Straight Receptacle



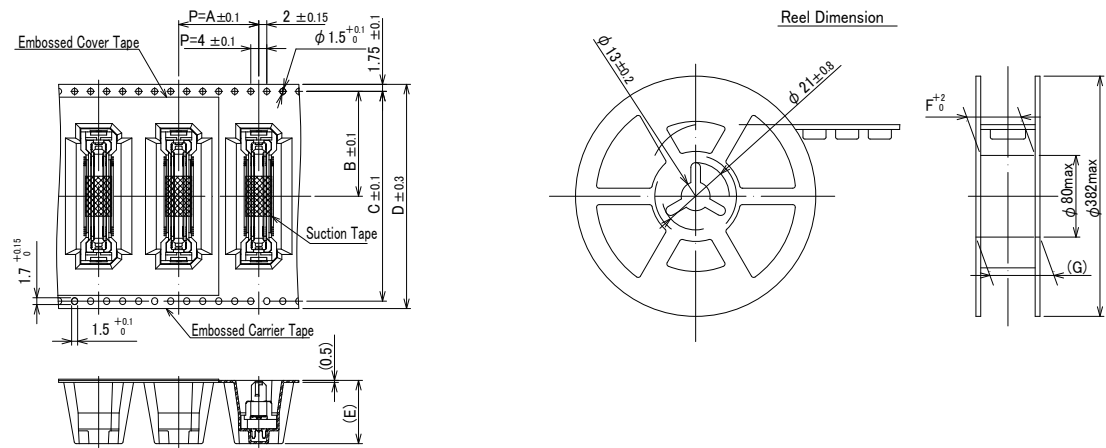
Unit : mm

| Part No.         | Packing Quantity<br>(pcs/ tray) | A    | B   | C  |
|------------------|---------------------------------|------|-----|----|
| FX23L-20S-0.5SV  | 90                              | 38.5 | 248 | 31 |
| FX23L-40S-0.5SV  | 80                              | 40   | 245 | 35 |
| FX23L-60S-0.5SV  | 70                              | 42.5 | 240 | 40 |
| FX23L-80S-0.5SV  | 60                              | 47.5 | 230 | 46 |
| FX23L-100S-0.5SV | 50                              | 52.5 | 220 | 55 |
| FX23L-120S-0.5SV | 50                              | 52.5 | 220 | 55 |

Note : Order tray packaging in multiples of purchase unit.

Embossed Carrier Tape Dimensions for FX23

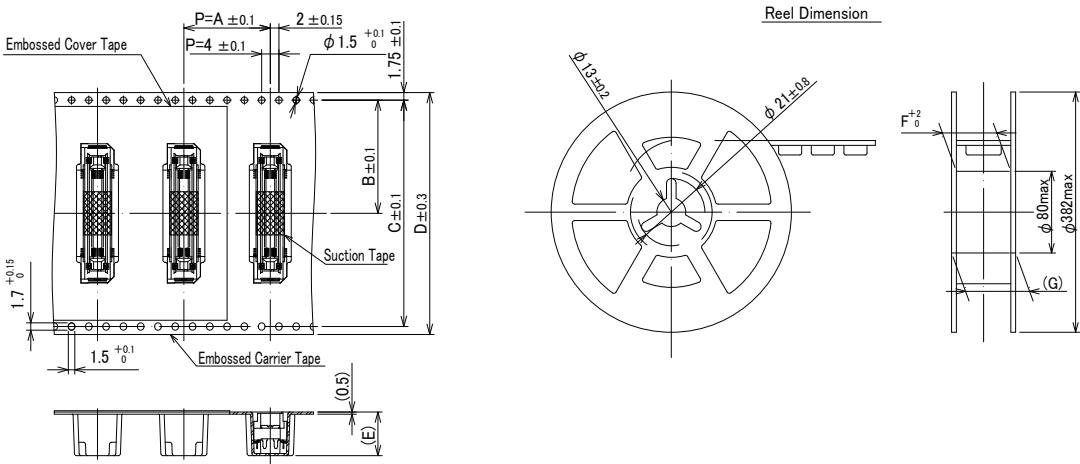
● Straight Header



Unit : mm

| Part No.              | Packing Quantity<br>(pcs/reel) | A  | B    | C    | D  | E     | F    | G    |
|-----------------------|--------------------------------|----|------|------|----|-------|------|------|
| FX23-20P-0.5SV15(20)  | 250                            | 20 | 20.2 | 40.4 | 44 | 15.8  | 44.4 | 50.4 |
| FX23-40P-0.5SV15(20)  | 250                            | 20 | 20.2 | 40.4 | 44 | 15.8  | 44.4 | 50.4 |
| FX23-60P-0.5SV15(20)  | 250                            | 20 | 20.2 | 40.4 | 44 | 15.8  | 44.4 | 50.4 |
| FX23-80P-0.5SV15(20)  | 250                            | 20 | 26.2 | 52.4 | 56 | 15.8  | 56.4 | 62.4 |
| FX23-100P-0.5SV15(20) | 250                            | 20 | 26.2 | 52.4 | 56 | 15.8  | 56.4 | 62.4 |
| FX23-120P-0.5SV15(20) | 250                            | 20 | 34.2 | 68.4 | 72 | 15.8  | 72.4 | 78.4 |
| FX23-20P-0.5SV20(20)  | 150                            | 24 | 20.2 | 40.4 | 44 | 20.45 | 44.4 | 50.4 |
| FX23-40P-0.5SV20(20)  | 150                            | 24 | 20.2 | 40.4 | 44 | 20.45 | 44.4 | 50.4 |
| FX23-60P-0.5SV20(20)  | 150                            | 24 | 26.2 | 52.4 | 56 | 20.45 | 56.4 | 62.4 |
| FX23-80P-0.5SV20(20)  | 150                            | 24 | 26.2 | 52.4 | 56 | 20.45 | 56.4 | 62.4 |
| FX23-100P-0.5SV20(20) | 150                            | 24 | 26.2 | 52.4 | 56 | 20.45 | 56.4 | 62.4 |
| FX23-120P-0.5SV20(20) | 150                            | 24 | 34.2 | 68.4 | 72 | 20.45 | 72.4 | 78.4 |

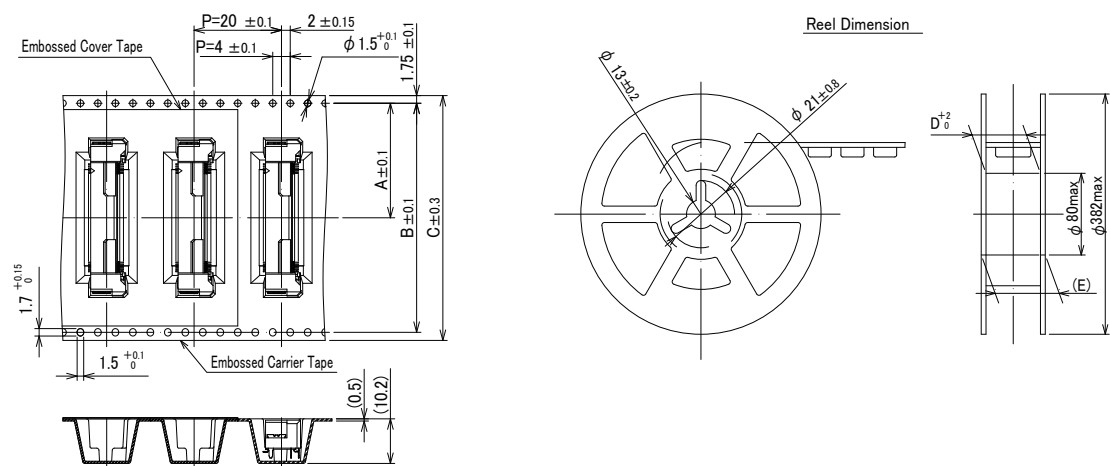
● Straight Receptacle



Unit : mm

| Part No.              | Packing Quantity<br>(pcs/reel) | A  | B    | C    | D  | E     | F    | G    |
|-----------------------|--------------------------------|----|------|------|----|-------|------|------|
| FX23-20S-0.5SV(20)    | 400                            | 20 | 14.2 | 28.4 | 32 | 10.10 | 32.4 | 38.4 |
| FX23-40S-0.5SV(20)    | 400                            | 20 | 20.2 | 40.4 | 44 | 10.10 | 44.4 | 50.4 |
| FX23-60S-0.5SV(20)    | 400                            | 20 | 20.2 | 40.4 | 44 | 10.10 | 44.4 | 50.4 |
| FX23-80S-0.5SV(20)    | 400                            | 20 | 26.2 | 52.4 | 56 | 10.10 | 56.4 | 62.4 |
| FX23-100S-0.5SV(20)   | 400                            | 20 | 26.2 | 52.4 | 56 | 10.10 | 56.4 | 62.4 |
| FX23-120S-0.5SV(20)   | 400                            | 20 | 26.2 | 52.4 | 56 | 10.10 | 56.4 | 62.4 |
| FX23-20S-0.5SV10(20)  | 150                            | 24 | 20.2 | 40.4 | 44 | 19.85 | 44.4 | 50.4 |
| FX23-40S-0.5SV10(20)  | 150                            | 24 | 20.2 | 40.4 | 44 | 19.85 | 44.4 | 50.4 |
| FX23-60S-0.5SV10(20)  | 150                            | 24 | 26.2 | 52.4 | 56 | 19.85 | 56.4 | 62.4 |
| FX23-80S-0.5SV10(20)  | 150                            | 24 | 26.2 | 52.4 | 56 | 19.85 | 56.4 | 62.4 |
| FX23-100S-0.5SV10(20) | 150                            | 24 | 26.2 | 52.4 | 56 | 19.85 | 56.4 | 62.4 |
| FX23-120S-0.5SV10(20) | 150                            | 24 | 34.2 | 68.4 | 72 | 19.85 | 72.4 | 78.4 |

● Right Angle Receptacle

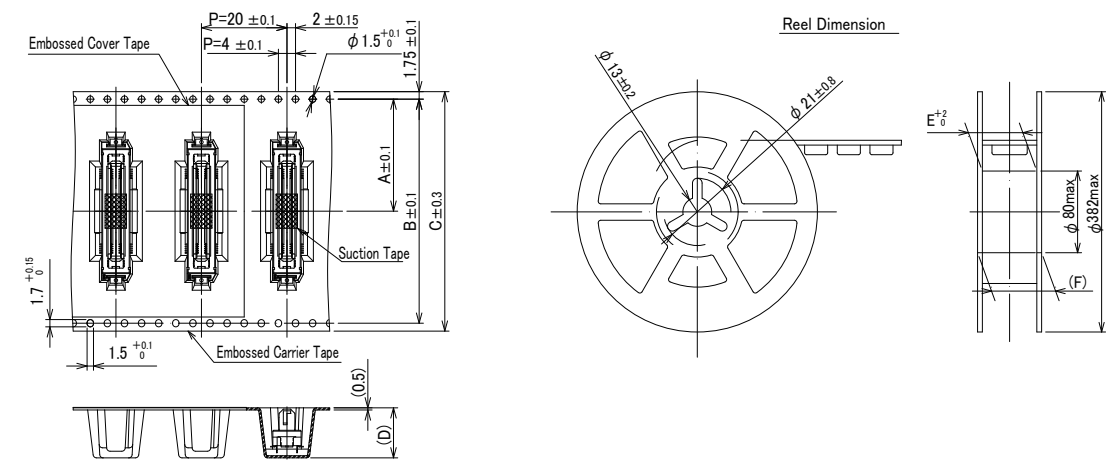


Unit : mm

| Part No.            | Packing Quantity<br>(pcs/reel) | A    | B    | C  | D    | E    |
|---------------------|--------------------------------|------|------|----|------|------|
| FX23-20S-0.5SH(20)  | 400                            | 14.2 | 28.4 | 32 | 32.4 | 38.4 |
| FX23-40S-0.5SH(20)  | 400                            | 20.2 | 40.4 | 44 | 44.4 | 50.4 |
| FX23-60S-0.5SH(20)  | 400                            | 20.2 | 40.4 | 44 | 44.4 | 50.4 |
| FX23-80S-0.5SH(20)  | 400                            | 20.2 | 40.4 | 44 | 44.4 | 50.4 |
| FX23-100S-0.5SH(20) | 400                            | 26.2 | 52.4 | 56 | 56.4 | 62.4 |
| FX23-120S-0.5SH(20) | 400                            | 26.2 | 52.4 | 56 | 56.4 | 62.4 |

## Embossed Carrier Tape Dimensions for FX23L

### ● Straight Header

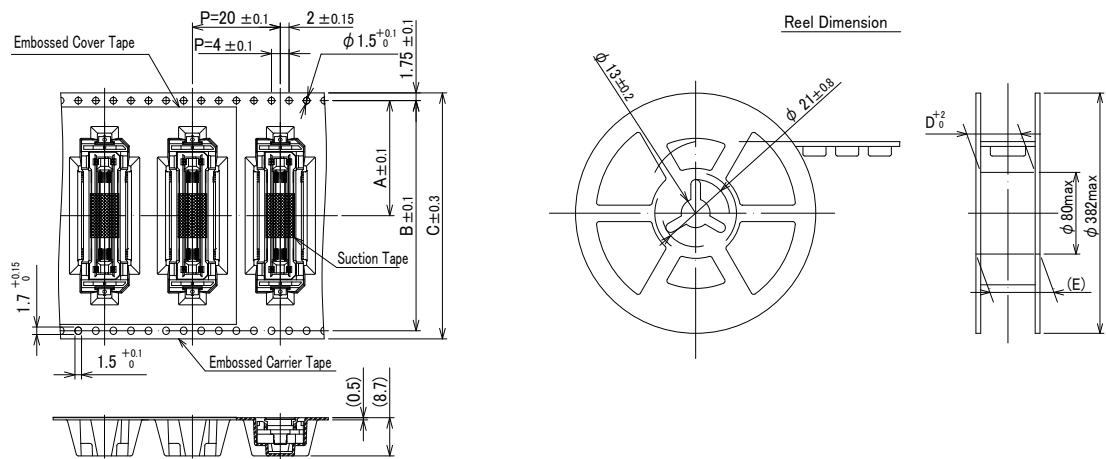


Unit : mm

| Part No.               | Packing Quantity<br>(pcs/reel) | A    | B    | C  | D    | E    | F    |
|------------------------|--------------------------------|------|------|----|------|------|------|
| FX23L-20P-0.5SV8(20)   | 450                            | 20.2 | 40.4 | 44 | 9.7  | 44.4 | 50.4 |
| FX23L-40P-0.5SV8(20)   | 450                            | 20.2 | 40.4 | 44 | 9.7  | 44.4 | 50.4 |
| FX23L-60P-0.5SV8(20)   | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-80P-0.5SV8(20)   | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-100P-0.5SV8(20)  | 450                            | 26.2 | 52.4 | 56 | 9.7  | 56.4 | 62.4 |
| FX23L-120P-0.5SV8(20)  | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-20P-0.5SV10(20)  | 350                            | 20.2 | 40.4 | 44 | 11.7 | 44.4 | 50.4 |
| FX23L-40P-0.5SV10(20)  | 350                            | 20.2 | 40.4 | 44 | 11.7 | 44.4 | 50.4 |
| FX23L-60P-0.5SV10(20)  | 350                            | 26.2 | 52.4 | 56 | 11.7 | 56.4 | 62.4 |
| FX23L-80P-0.5SV10(20)  | 350                            | 26.2 | 52.4 | 56 | 11.7 | 56.4 | 62.4 |
| FX23L-100P-0.5SV10(20) | 350                            | 26.2 | 52.4 | 56 | 11.7 | 56.4 | 62.4 |
| FX23L-120P-0.5SV10(20) | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-20P-0.5SV12(20)  | 300                            | 20.2 | 40.4 | 44 | 13.7 | 44.4 | 50.4 |
| FX23L-40P-0.5SV12(20)  | 300                            | 20.2 | 40.4 | 44 | 13.7 | 44.4 | 50.4 |
| FX23L-60P-0.5SV12(20)  | 300                            | 26.2 | 52.4 | 56 | 13.7 | 56.4 | 62.4 |
| FX23L-80P-0.5SV12(20)  | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-100P-0.5SV12(20) | -                              | -    | -    | -  | -    | -    | -    |
| FX23L-120P-0.5SV12(20) | -                              | -    | -    | -  | -    | -    | -    |

Note : For item whose dimensions are "-", please contact our sales representative.

● Straight Receptacle



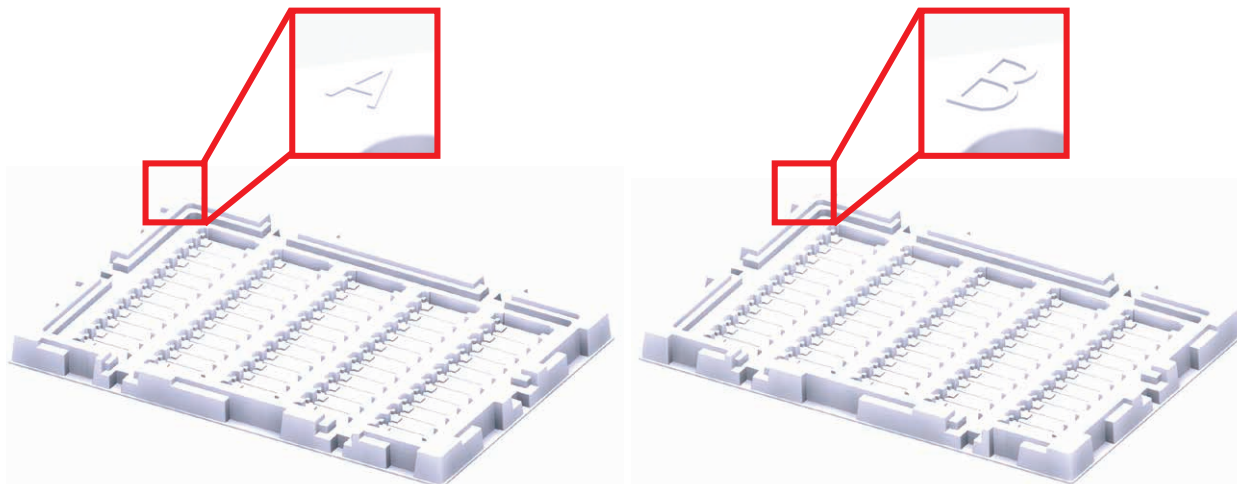
Unit : mm

| Part No.             | Packing Quantity<br>(pcs/reel) | A    | B    | C  | D    | E    |
|----------------------|--------------------------------|------|------|----|------|------|
| FX23L-20S-0.5SV(20)  | 500                            | 20.2 | 40.4 | 44 | 44.4 | 50.4 |
| FX23L-40S-0.5SV(20)  | 500                            | 20.2 | 40.4 | 44 | 44.4 | 50.4 |
| FX23L-60S-0.5SV(20)  | 500                            | 26.2 | 52.4 | 56 | 56.4 | 62.4 |
| FX23L-80S-0.5SV(20)  | 500                            | 26.2 | 52.4 | 56 | 56.4 | 62.4 |
| FX23L-100S-0.5SV(20) | 500                            | 26.2 | 52.4 | 56 | 56.4 | 62.4 |
| FX23L-120S-0.5SV(20) | -                              | -    | -    | -  | -    | -    |

Note : For item whose dimensions are "-", please contact our sales representative.

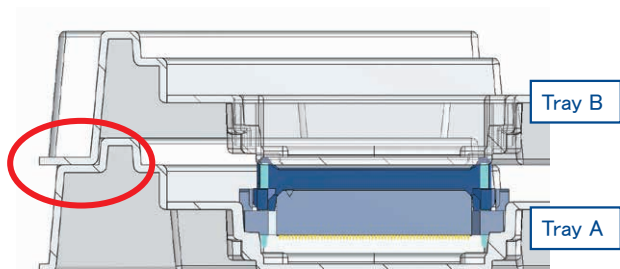
## Storing FX23 Series

There are two types of trays (A and B) for the FX23 Series.  
These have been designed to stack in alternating order (A-B-A-B...) for shipping and storage.



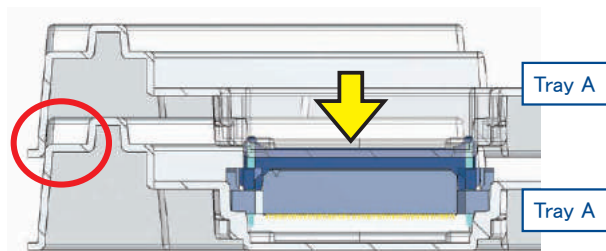
If tray A is stacked on top of another tray A, or if tray B is stacked on top of another tray B, the trays will put a load on the connectors, potentially causing connector breakage or deformation.

OK



When stacked correctly, the outer structure of the trays will prevent any load from being placed on the connectors below.

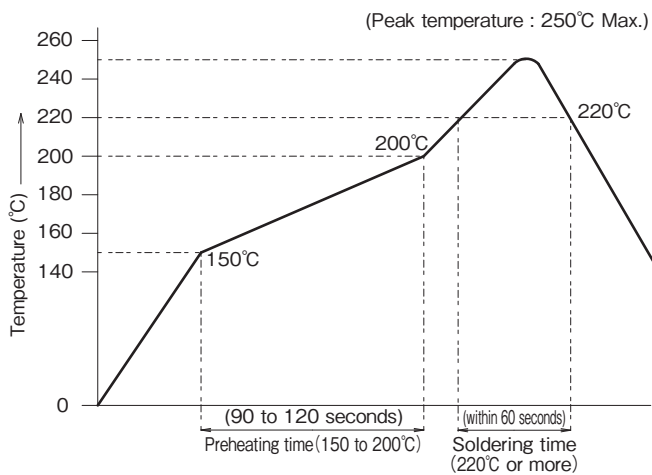
X



When stacked incorrectly, the outer structure of the trays will not function, resulting in a load added to the connector.

When storing the FX23 Series, please ensure that the trays are stacked in alternating order.

## Recommended Temperature Profile



### < Applicable Conditions >

Test PCB Dimensions : 110 × 60 × 1.6mm  
 Material : Glass epoxy  
 Solder Composition : Sn-3Ag-0.5Cu  
 Flux Content : 11wt%  
 Metal Mask Thickness : 0.12mm, 0.15mm  
 Number of Reflow Times : 2 times Max.

\*The temperature profile is a reference under the condition of the above settings : Temperature profile may change depending on solder paste types, manufacturers, PCB size, and other soldering materials. Please fully check the mounting conditions before use.

## Cleaning Conditions

### ● Cleaning with Organic Solvent

| Solvent                 | Cleaning at Normal Temperature | Heated Cleaning |
|-------------------------|--------------------------------|-----------------|
| IPA (Isopropyl alcohol) | ○                              | ○               |

### ● Cleaning with Water

When water-type cleaning agents (terpene, alkaline saponification agents) are used, select cleaning agents based on the 'Table of Influence' on metals and resins issued by the cleaning agent manufacturer.

Caution : Do not leave with any water content left.

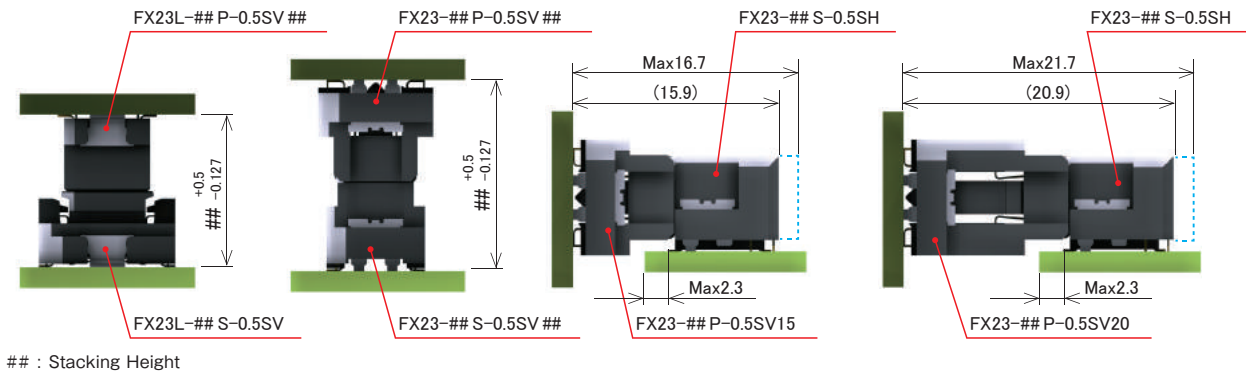
### ● Cleaning Precautions

When cleaning the parts with organic solvents and water-type agents, if flux or cleaning agents remain in the connector, it could cause the deterioration of electric performance. Please be sure to check if adequate cleaning has been carried out.

## Usage Precautions

### ● About the Specified Dimension Between PCBs

The dimension between PCBs shall be within the following range :

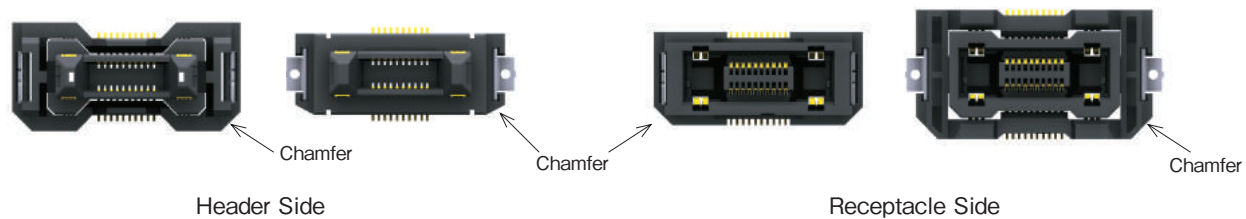


### ● Securing PCBs

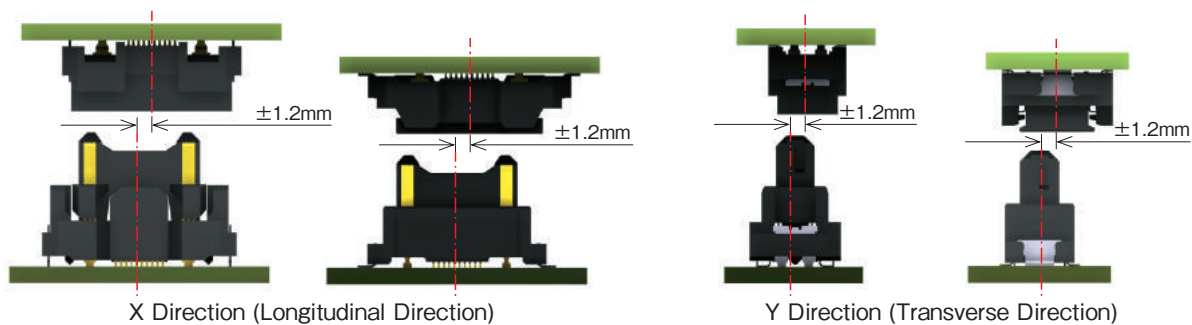
Please take measures to secure the PCB other than using connectors. Using only the connectors to support the board may result in a load to the connector that results in damage or contact failure.

### ● Cautions in Mating Operations

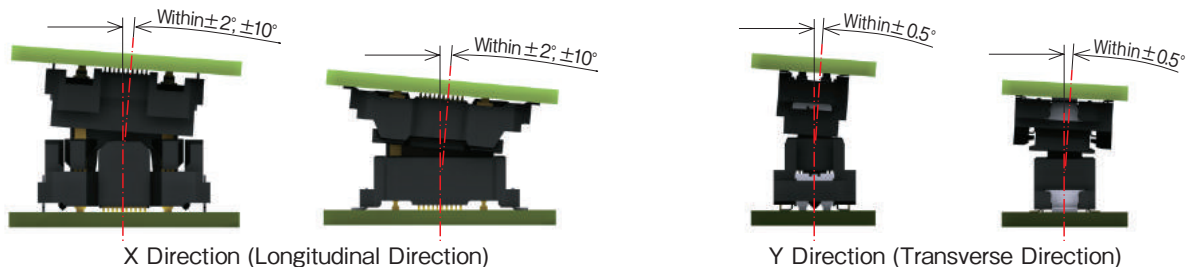
- This connector is designed to prevent reverse insertion. The connector could be damaged if excessive force is exerted when mating. Avoid excessive force when mating. Mate only after confirming the following connector properties (chamfer of the external face) :



- The self-alignment range is  $\pm 1.2\text{mm}$  in both the X and Y directions. After beginning to mate the connectors within the misalignment range, proceed by mating in a straight line without forcing the connector.



- When mating/un-mating, it is strongly recommended to insert or remove in a straight line. If not possible due to board layout, insertion and removal should be carried out within the following inclination angle.  
Moreover, during the mating operation, be sure to proceed without forcibly applying a load to the connector.  
Allow the connector to be placed straight when the mating operation is completed.
- X Direction (Longitudinal Direction) ⇒ for 20, 40, 60pos. : within 2°  
for 80, 100, 120pos. : within 10°
- Y Direction (Transverse Direction) ⇒ within 0.5°

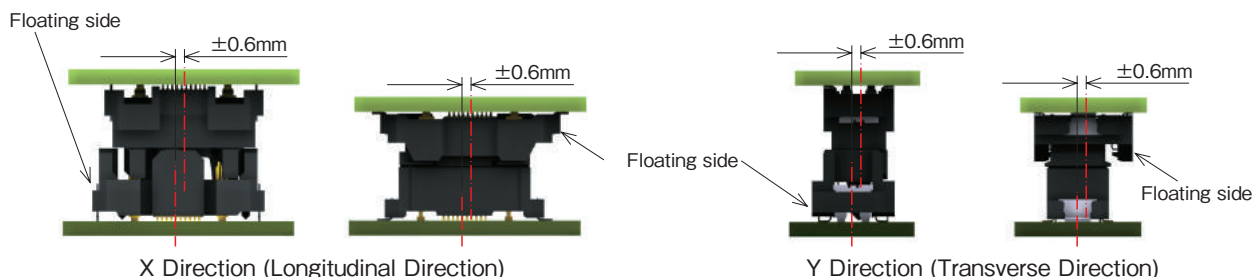


Note : This is not a recommended operation. Damage to the connector could occur.

### ● Permissible Misalignment in the Mated State (Floating Amount)

This connector is designed to float when mated. The permissible misalignment between PCBs in the mated state is  $\pm 0.6\text{mm}$  in both the X and Y directions.

However, this connector is not suitable for misalignment absorption when the misalignment amount is constantly changing due to vibration, etc. Be sure to secure PCBs after mating. Additionally, the number of repetitive floating operations shall be according to the number of connector insertion/withdrawal cycles. (100 times Max.)



## While Taking into Consideration

Specifications mentioned in this catalog are reference values.

When considering to order or use this product, please review the Drawing and Product Specifications sheets.

Use an appropriate cable when using the connector in combination with cables.

If considering usage of a non-specified cable, please contact your sales representative.

If assembly process is done by jigs & tools which are not identified by Hirose, the warranty of the product may be affected.

If considering usage for below mentioned applications, please contact your sales representative.

In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/defense etc. Hirose must review before assurance of reliability can be given.

HIROSE

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HIROSE ELECTRIC CO.,LTD.

2-6-3 Nakagawa Chuoh, Tsuzuki-Ku, Yokohama-Shi 224-8540, JAPAN  
<https://www.hirose.com>