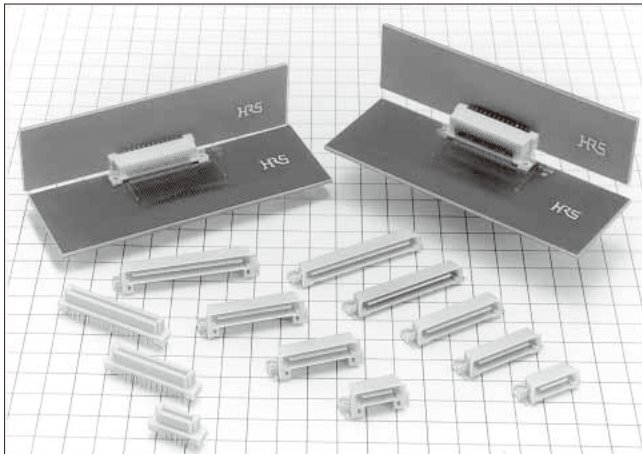


1mm Pitch Connectors for Vertical Connection

FX5 Series



Connecting Height: Low profile

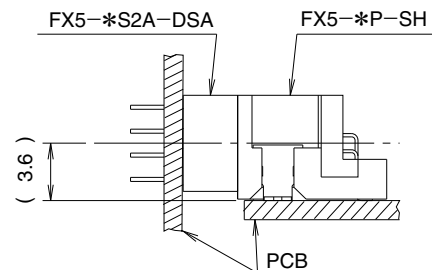


Fig.1

■ Features

1. Header Side : 2 Types Available

Two header types are available, low and high profiles. Combined with various contact positions, the FX5 is versatile to work in many application. (See Fig.1 and 2)

2. Two-step, Sequential Mating

The mating sequence features a 2-step, "first mate-last break" condition that helps to protect the circuit.

3. Mating Guide

A guide rib is provided along with a self-alignment range of ± 1 mm to allow for easy mating operations.

4. SMT Coplanarity

The coplanarity of SMT soldered area has a high accuracy of 0.1mm.

5. Miniaturization

The FX5 uses about 30% less mounting area on the board compared with a 1.27mm pitch connector.

Connecting Height: High profile

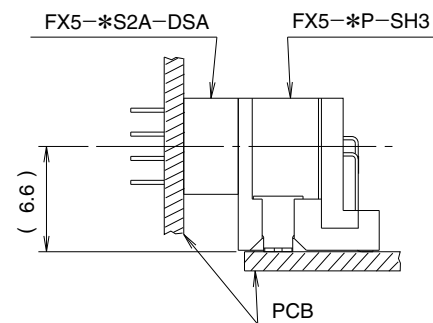


Fig.2

Product Specifications

| | | | |
|---------|------------------------|---|---|
| Ratings | Current rating 0.5A | Operating Temperature Range -55°C to +85°C (Note 1) | Storage Temperature Range -10°C to +60°C (Note 2) |
| | Voltage rating 100V AC | Operating Humidity Range 40% to 80% | Storage Humidity Range 40% to 70% |

| Items | Specifications | Conditions |
|---------------------------------|--|---|
| 1. Insulation Resistance | 100M ohms min. | 250V DC |
| 2. Withstanding voltage | No flashover or insulation breakdown. | 300V AC/1 minute |
| 3. Contact Resistance | 50m ohms max. | 100mA |
| 4. Vibration Resistance | No electrical discontinuity of 1μs or more | Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours in each of the 3 directions. |
| 5. Moisture Resistance | Contact resistance: 60m ohms max. Insulation resistance: 100M ohms min. | 96 hours at temperature of 40°C and humidity of 90% to 95% |
| 6. Temperature Cycle | Contact resistance: 60m ohms max. Insulation resistance: 100M ohms min. | (-55°C: 30 minutes, 15 to 35°C: 2 to 3 minutes 85°C: 30 minutes, 15 to 35°C: 2 to 3minutes) 5 cycles |
| 7. Mating Cycles | Contact resistance: 60m ohms max. | 500 cycles |
| 8. Resistance to Soldering heat | No deformation of components affecting performance. | SMT Reflow: At the recommended temperature profile Manual soldering: 360°C for 5 seconds |
| | | DIP Solder Bath: 260°C for 10 seconds Manual soldering: 360°C for 5 seconds |

Note 1: Includes temperature rise caused by current flow.

Note 2: The term "storage" refers to products stored for a long time prior to use. Operating temperature and humidity range includes a non-conducting state of installed connectors in storage, shipment, or during transportation.

Material

| Part | Material | Finish | Remarks |
|--------------------|-----------------|----------------------------|---------|
| Insulator | Polyamide | Beige | UL94V-0 |
| Header Contact | Brass | Contact area : Gold plated | ——— |
| Receptacle Contact | Phosphor bronze | Lead area : Tin plated | ——— |

Note : The black dots on the insulator will not affect performance

Product Number Structure

Header

FX5 - ***** **P** - **SH** **3**

① ② ③ ④ ⑤

| | |
|---|--|
| ① Series Name : FX5 | ⑤ Connector Height Blank : 6.5mm 3 : 9.5mm |
| ② Number of Contacts : 20, 40, 52, 56, 68, 80 | |
| ③ Connector Type P: Header | |
| ④ Contact type SH : Right angle SMT type | |

Note: The 56 contact header is for SH 3 type only.

Receptacle

FX5 - ***** **S** **2** **A** - **DSA** **L**

① ② ③ ④ ⑤ ⑥ ⑦

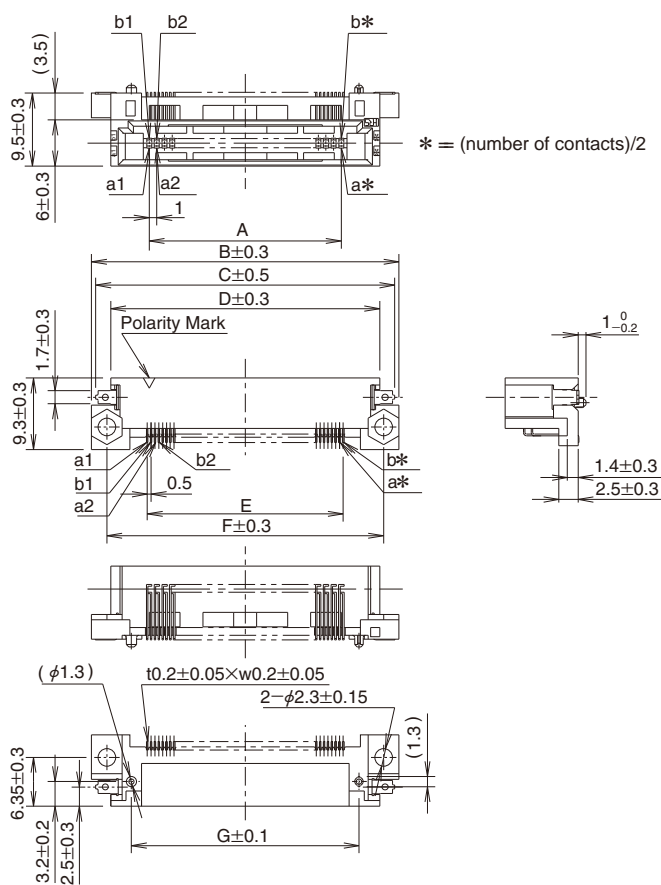
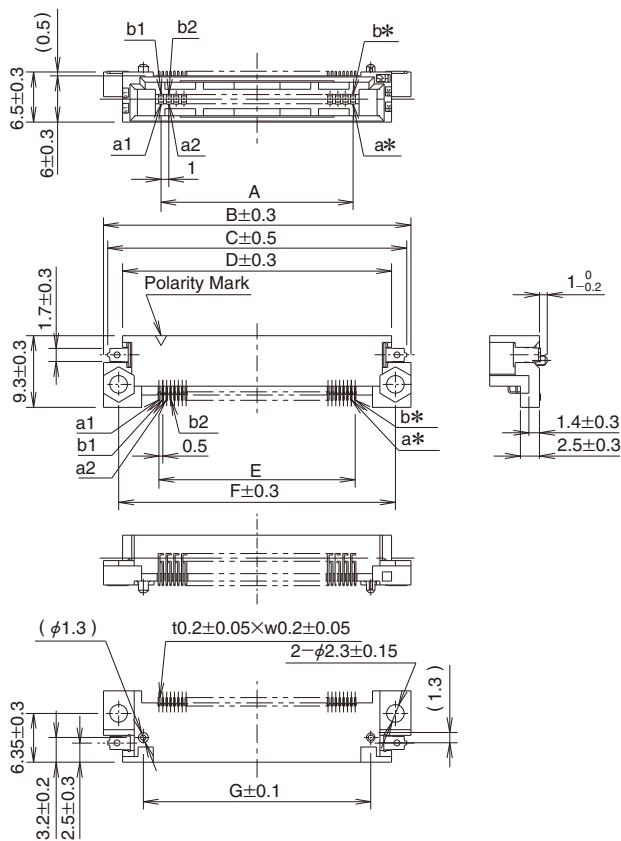
| | |
|---|---|
| ① Series Name : FX5 | ⑥ Contact type DSA : Straight through hole type |
| ② Number of Contacts : 20, 40, 52, 56, 68, 80 | |
| ③ Connector Type S: Receptacle | ⑦ Board prefixed pin Blank : Without board prefixed pin L : With board Prefixed pin |
| ④ Contact Sequence 2 : 2 Stages Sequence | |
| ⑤ Serial No. : A | |

Header

Low profile



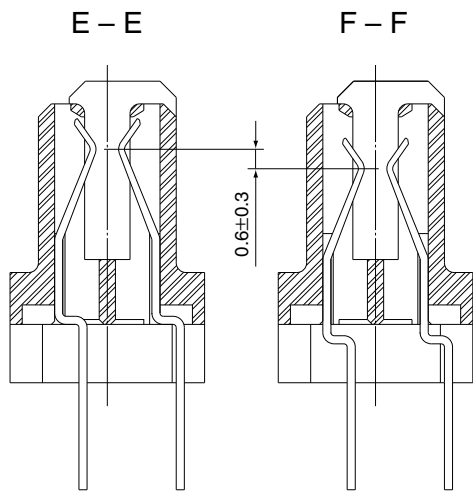
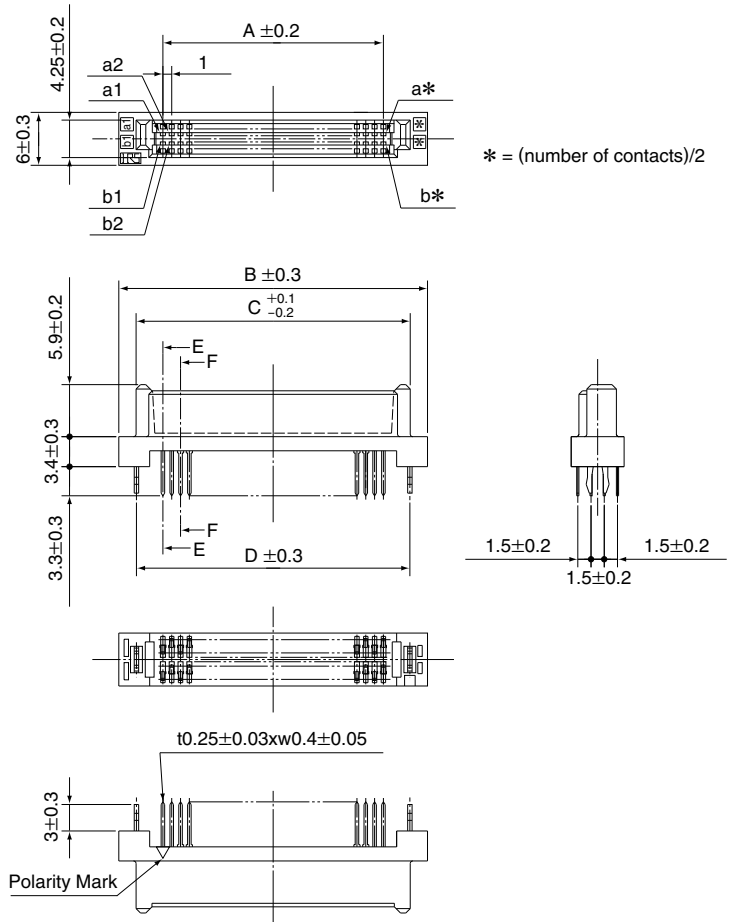
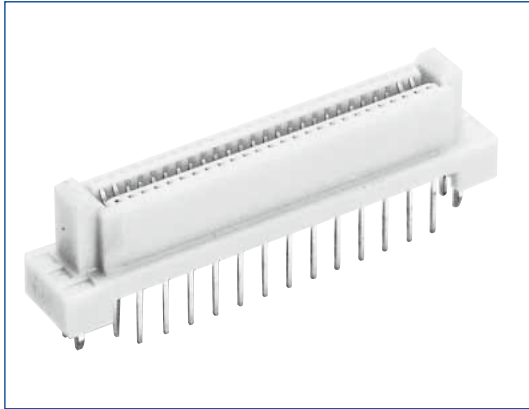
High profile



Unit: mm

| Part No. | HRS No. | No. of contacts | A | B | C | D | E | F | G | RoHS |
|-----------------|---------------|-----------------|----|----|------|----|------|----|------|------|
| FX5-20P-SH(71) | 575-0001-7 71 | 20 | 9 | 24 | 22.9 | 19 | 9.5 | 20 | 13.6 | Yes |
| FX5-20P-SH3(71) | 575-0041-1 71 | | | | | | | | | |
| FX5-40P-SH(71) | 575-0005-8 71 | 40 | 19 | 34 | 32.9 | 29 | 19.5 | 30 | 23.6 | |
| FX5-40P-SH3(71) | 575-0045-2 71 | | | | | | | | | |
| FX5-52P-SH(71) | 575-0006-0 71 | 52 | 25 | 40 | 38.9 | 35 | 25.5 | 36 | 29.6 | |
| FX5-52P-SH3(71) | 575-0046-5 71 | | | | | | | | | |
| FX5-56P-SH3(71) | 575-1001-2 71 | 56 | 27 | 42 | 40.9 | 37 | 27.5 | 38 | 31.6 | |
| FX5-68P-SH(71) | 575-0008-6 71 | 68 | 33 | 48 | 46.9 | 43 | 33.5 | 44 | 37.6 | |
| FX5-68P-SH3(71) | 575-0048-0 71 | | | | | | | | | |
| FX5-80P-SH(71) | 575-0009-9 71 | 80 | 39 | 54 | 52.9 | 49 | 39.5 | 50 | 43.6 | |
| FX5-80P-SH3(71) | 575-0049-3 71 | | | | | | | | | |

Receptacle



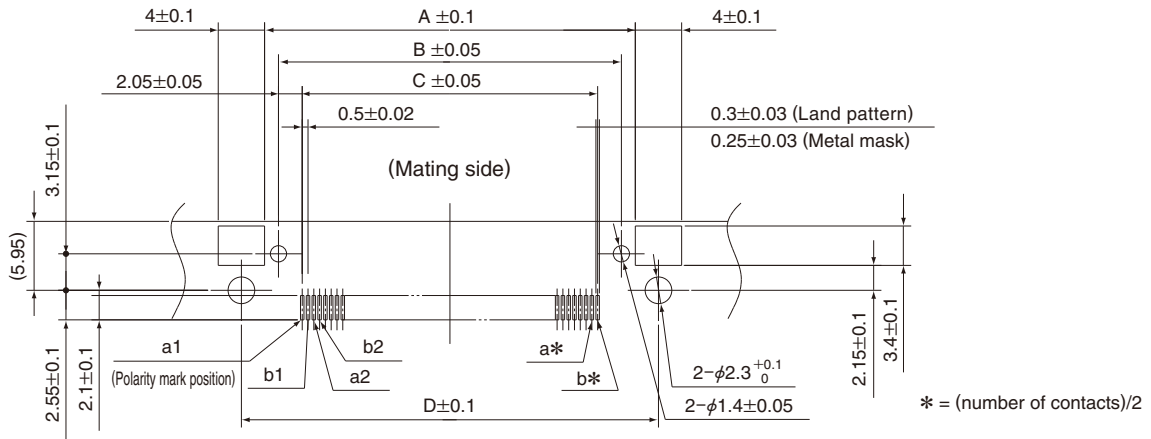
Unit: mm

| Part No. | HRS No. | No. of contacts | A | B | C | D | Order of Contact Sequence(Contact No.) | | RoHS |
|--------------------|---------------|-----------------|----|----|-------|----|--|-----------|------|
| | | | | | | | 1 | 2 | |
| FX5-20S2A-DSA(71) | 575-0101-1 71 | 20 | 9 | 19 | 15.08 | — | a1,a2,a9,a10 | a3 to a8 | Yes |
| FX5-20S2A-DSAL(71) | 575-0121-9 71 | | | | | 15 | b1,b2,b9,b10 | b3 to b8 | |
| FX5-40S2A-DSA(71) | 575-0105-2 71 | 40 | 19 | 29 | 25.08 | — | a1,a2,a19,a20 | a3 to a18 | |
| FX5-40S2A-DSAL(71) | 575-0125-0 71 | | | | | 25 | b1,b2,b19,b20 | b3 to b18 | |
| FX5-52S2A-DSA(71) | 575-0106-5 71 | 52 | 25 | 35 | 31.08 | — | a1,a2,a25,a26 | a3 to a24 | |
| FX5-52S2A-DSAL(71) | 575-0126-2 71 | | | | | 31 | b1,b2,b25,b26 | b3 to b24 | |
| FX5-56S2A-DSA(71) | 575-0107-8 71 | 56 | 27 | 37 | 33.08 | — | a1,a2,a27,a28 | a3 to a26 | |
| FX5-56S2A-DSAL(71) | 575-0127-5 71 | | | | | 33 | b1,b2,b27,b28 | b3 to b26 | |
| FX5-68S2A-DSA(71) | 575-0108-0 71 | 68 | 33 | 43 | 39.08 | — | a1,a2,a33,a34 | a3 to a32 | |
| FX5-68S2A-DSAL(71) | 575-0128-8 71 | | | | | 39 | b1,b2,b33,b34 | b3 to b32 | |
| FX5-80S2A-DSA(71) | 575-0109-3 71 | 80 | 39 | 49 | 45.08 | — | a1,a2,a39,a40 | a3 to a38 | |
| FX5-80S2A-DSAL(71) | 575-0129-0 71 | | | | | 45 | b1,b2,b39,b40 | b3 to b38 | |

PCB mounting pattern

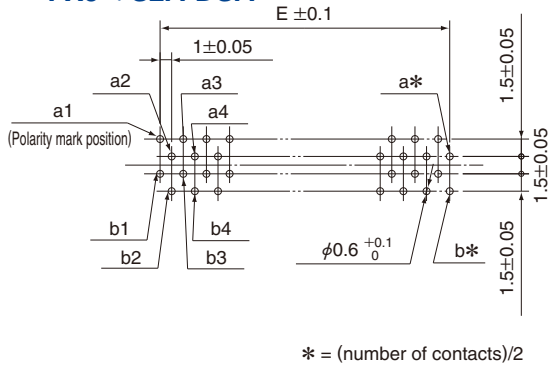
Header

FX5-*-SH, FX5-*-SH3

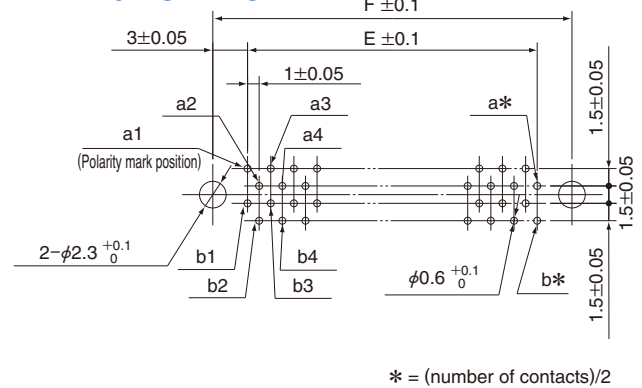


Receptacle

FX5-*-S2A-DSA



FX5-*-S2A-DSAL

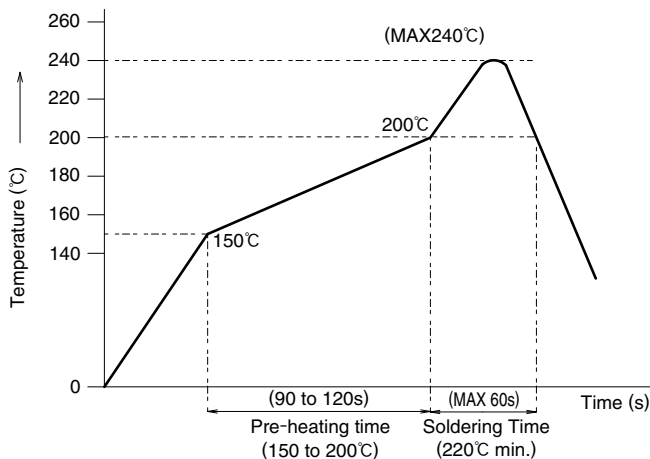


Unit: mm

| No. of contacts | A | B | C | D | E | F |
|-----------------|----|------|------|----|----|----|
| 20 | 16 | 13.6 | 9.5 | 20 | 9 | 15 |
| 40 | 26 | 23.6 | 19.5 | 30 | 19 | 25 |
| 52 | 32 | 29.6 | 25.5 | 36 | 25 | 31 |
| 56 | 34 | 31.6 | 27.5 | 38 | 27 | 33 |
| 68 | 40 | 37.6 | 33.5 | 44 | 33 | 39 |
| 80 | 46 | 43.6 | 39.5 | 50 | 39 | 45 |

Note: If the connector uses a mounting area over the recommended size, it could cause defects in mounting and soldering. For best results, mount the connector using the recommended PCB mounting pattern.

Recommended Temperature Profile



HRS test conditions

Test board Glass epoxy 110mm×40mm×1.6mm thick

Solder method : Reflow

Solder composition : Paste, 96.5%Sn/3%Ag/0.5%Cu

Metal mask : 0.15mm thick

Reflow cycles : 1 cycles

The temperature profile is based on the above conditions.

In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.

◆ Cleaning Conditions

1. Organic Solvent Cleaning

| Solvent | Cold Cleaning | |
|-------------------------|---------------|-----|
| IPA (Isopropyl alcohol) | Yes | Yes |

*Methylene chloride is not suitable for this product.

2. Liquid Cleaning

2. When cleaning with liquid detergents (e.g. terpene, alkali saponifiers), consult the manufacturer's specifications and make make sure that the cleaner is suitable for use with the metal and resin components of this connector. Also, do not leave the connector outside where it moisture could infiltrate the product.

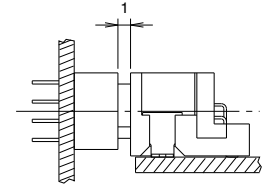
3. Cautions for Cleaning

3. If any organic solvent or other liquid cleaner or flux remains in the connector, it can cause eletrical performance degradation. Please make sure that the connector is completely free of any cleaner or flux before use.

◆ Connector Precautions

1. Tolerance Clearance on Mating Side

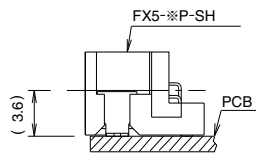
The effective clearance of this product is 1.6mm. Please make sure that your design accounts for 1mm mating clearance between the header and receptacle.



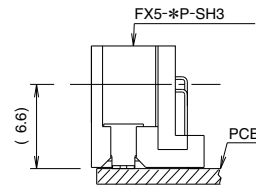
2. Header Connector Height

Because the SMT height specification for the header does not account for the thickness of the solder paste, please remember to account for the extra height in the total stacking height.

Mating Height: Low profile

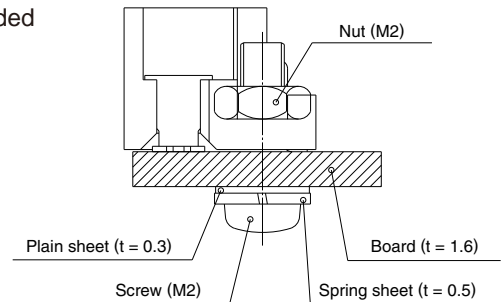


Mating Height: High profile



3. Screw Fastening Torque (SMT Type)

When the screw is fastened, please use the M2 screw. The recommended fastening torque is 0.15(N.m) max.

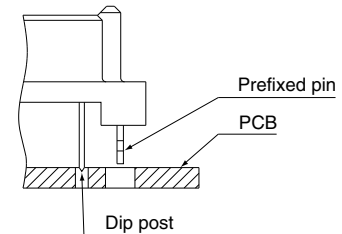


4. Prefixed Process to Board (Through hole Type)

If the prefixed process is required for board mounting, please use the prefixed pin type. (Applicable Thickness $t = 1.6 \pm 0.1$)

Note:

When the connector is mounted on the board, the dip post is guided into the through-hole first. To prevent dip post damage, make sure that the connector is parallel to the board during this process.



5. Plug and Play

Please consult your Hirose representative if you will be mating/unmating the connector while the circuit is energized.

6. Others

- Excessive force during mating/unmating will damage the connector.
- Avoid using the mated connectors as a means of holding the PCB together.
The PCBs need to be secured together with screws, spacers or other means which do not rely on the connectors as the primary support mechanism.
- The resin color of the product may vary slightly with different production lots.
This does not effect the performance.

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