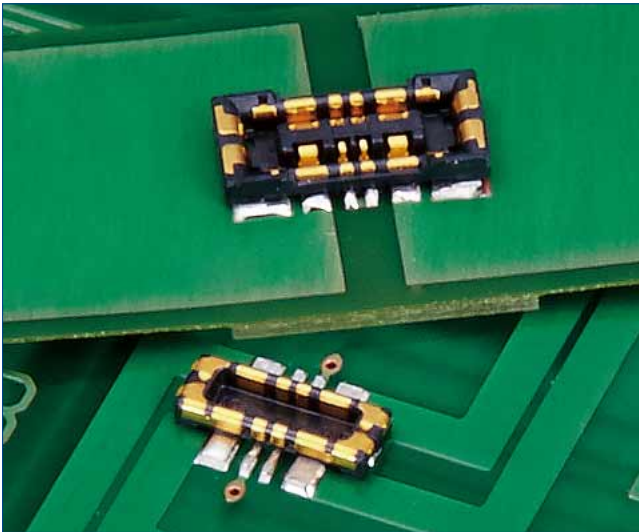


# 0.7mm height FPC-to-Board Connectors up to 10Amps

## BM25 Series



### ■ Features

#### 1. Capable of high current power supply [Rated current : 10A]

10Amps for power contact, 0.3Amps for signal contact.

Allows for power source design with a high safety rating.

#### 2. Robust [70N\*1]

Longitudinal metal coated guide mitigates damage in a misaligned mating.

#### 3. Contributes to power saving [1mΩ or less\*2]

Contact Resistance Specifications

Power contact : 5mΩ or less

Signal contact : 30mΩ or less

The above contact resistance specifications contribute to power saving.

Contact Resistance Measurement : Power contact : 1mΩ or less, Signal contact : 10mΩ or less

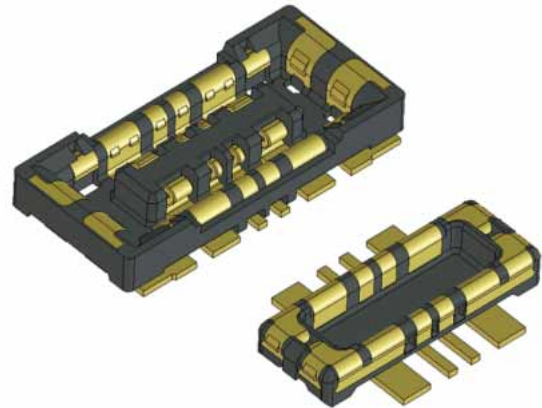
\*1 : Actual measurement of the failure strength in a misaligned mating operation.

\*2 : Actual contact resistance measurement of the power contact, does not guarantee that the value is 1mΩ or less.

### ■ Usage

Devices that are required to be thinner and smaller, such as mobile phones, wearable terminals and tablet PCs.

#### Capable of high current power supply



Power contact : 10A/pin  
Signal contact : 0.3A/pin

Fig.1

#### Space-saving

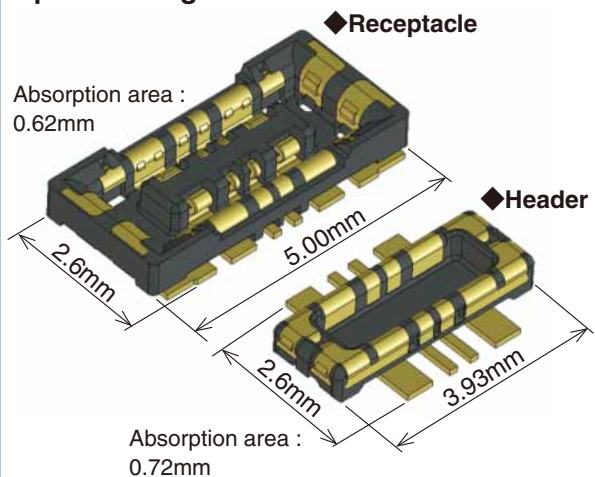


Fig.2

#### Robust Design

Unique metal guide considerably mitigates the housing damage due to incorrect mating

Failure strength : 70N

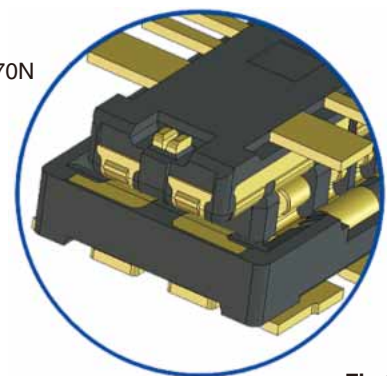


Fig.3

## Product Specifications

|         |                |                                              |                             |                      |
|---------|----------------|----------------------------------------------|-----------------------------|----------------------|
| Ratings | Current rating | Power contact : 10A<br>Signal contact : 0.3A | Operating temperature range | -40 to 85°C (Note 1) |
|         | Voltage rating | 30V AC/DC                                    | Storage temperature range   | -10 to 60°C (Note 2) |

| Item                      | Specification                                                                                                       | Conditions                                                                                                                                      |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Contact resistance     | Signal contact : Max of 30mΩ<br>Power contact : Max of 5mΩ                                                          | Measured at 20mV AC, 1kHz, 1mA                                                                                                                  |
| 2. Insulation resistance  | Minimum of 1000MΩ                                                                                                   | Measured at 100V DC                                                                                                                             |
| 3. Withstanding voltage   | No flashover or insulation breakdown                                                                                | Conduct 150V AC for 1 minute                                                                                                                    |
| 4. Durability             | Contact resistance : Signal contact Max of 30mΩ<br>Power contact Max of 5mΩ                                         | 10 mating cycles                                                                                                                                |
| 5. Vibration              | No electrical discontinuity of 1μs or longer                                                                        | Frequency : 10 to 55Hz, single amplitude of 0.75mm,<br>10 cycles in each of 3 axis directions for 5 minutes / cycle                             |
| 6. Humidity               | Contact resistance : Signal contact Max of 30mΩ<br>Power contact Max of 5mΩ<br>Insulation resistance : Min of 100MΩ | 96 hours at a temperature of 40 ±2°C and a<br>humidity range from 90 to 95%                                                                     |
| 7. Temperature cycle      | Contact resistance : Signal contact Max of 30mΩ<br>Power contact Max of 5mΩ<br>Insulation resistance : Min of 100MΩ | -55±3°C : 30 minutes → 85±2°C : 30 minutes,<br>5 cycles                                                                                         |
| 8. Solder Heat Resistance | No signs of melting or deformity on the<br>molded resin parts and no negative effects on<br>performance.            | Reflow : according to the Recommended Solder Profile<br>Hand soldering : Soldering iron temperature 350°C,<br>no more than 3 seconds of contact |

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The term "storage" here refers to products stored for a long period prior to board mounting and use. The operating temperature and humidity range covers the non-energized condition of connectors after board mounting and the temporary storage conditions during transportation, etc.

## Materials / Finish

| Product             | Part      | Material     | Finish      | UL standard |
|---------------------|-----------|--------------|-------------|-------------|
| Receptacle / Header | Insulator | LCP          | Black       | UL94V-0     |
|                     | Contacts  | Copper alloy | Gold plated | —           |

## 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.

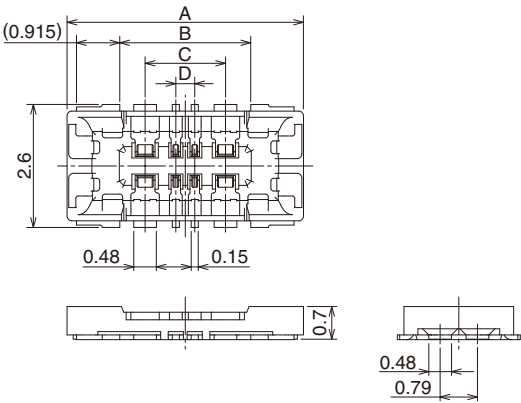
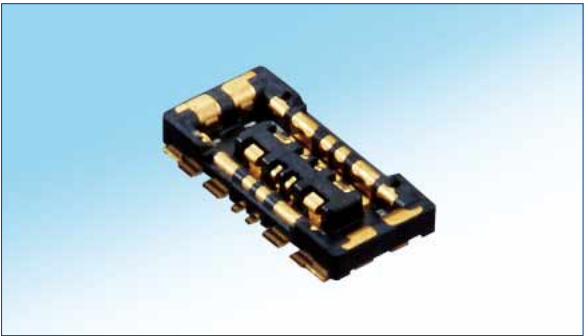
### ●Receptacles / Headers

**BM 25 - \* S / 2 - V (51)**

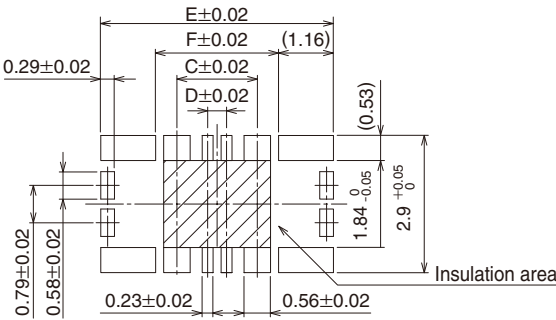
① ② ③ ④ ⑤ ⑥ ⑦

|                                                    |                                                                                                                                    |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| ① Series name : BM                                 | ⑤ Number of power contacts                                                                                                         |
| ② Series No. : 25                                  | ⑥ Termination type<br>V : Straight SMT                                                                                             |
| ③ Number of signal contacts                        | ⑦ Gold plated specification and packaging status<br>(51) : Gold plate thickness 0.05μm<br>Embossed tape packaging (20,000pcs/reel) |
| ④ Connector type :<br>S : Receptacle<br>P : Header |                                                                                                                                    |

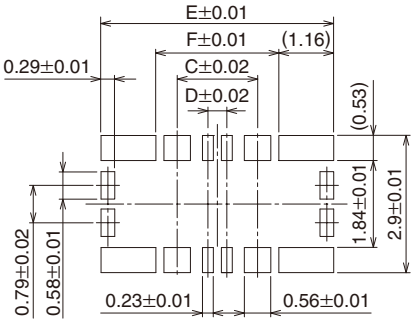
■Receptacle



◆Recommended PCB layout



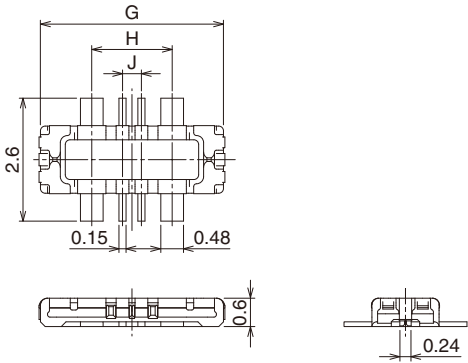
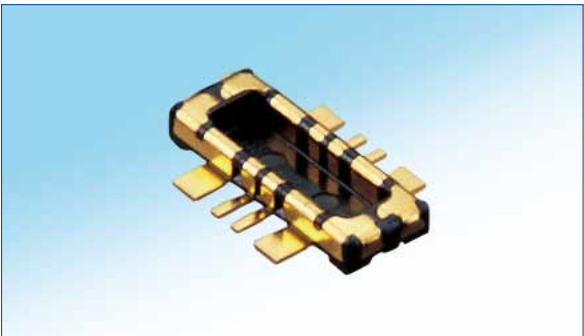
◆Recommended metal mask dimensions (mask thickness : 100μm)



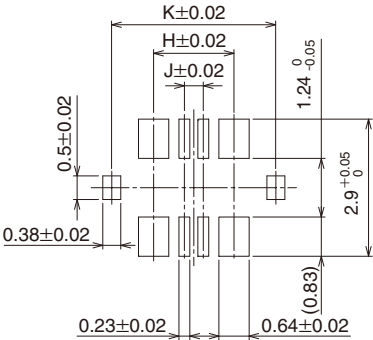
Unit : mm

| Part No.        | HRS No.       | No. of contacts |       | A | B    | C   | D   | E    | F   |
|-----------------|---------------|-----------------|-------|---|------|-----|-----|------|-----|
|                 |               | Signal          | Power |   |      |     |     |      |     |
| BM25-4S/2-V(51) | 677-1200-0 51 | 4               | 2     | 5 | 2.77 | 1.7 | 0.4 | 4.92 | 2.6 |

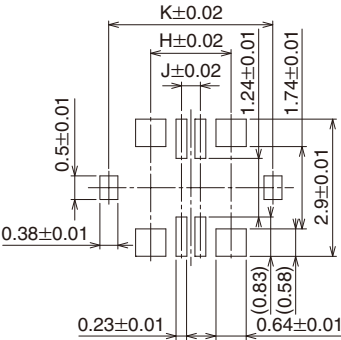
■Header



◆Recommended PCB layout



◆Recommended metal mask dimensions (mask thickness : 100μm)

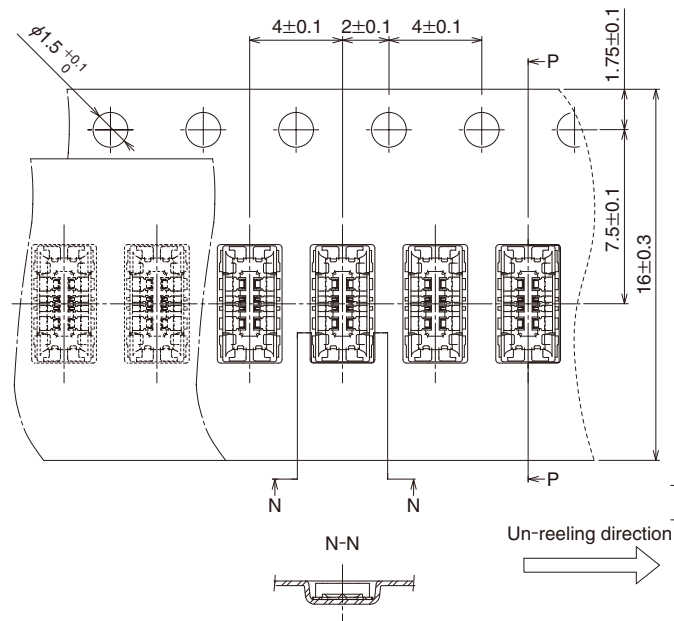


Unit : mm

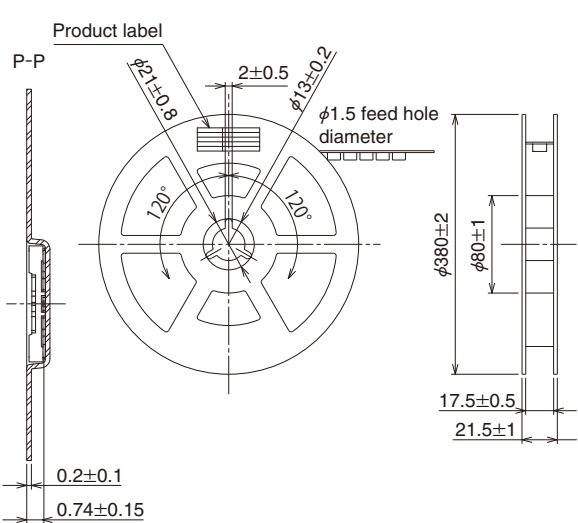
| Part No.        | HRS No.       | No. of contacts |       | G    | H   | J   | K    |
|-----------------|---------------|-----------------|-------|------|-----|-----|------|
|                 |               | Signal          | Power |      |     |     |      |
| BM25-4P/2-V(51) | 677-1201-2 51 | 4               | 2     | 3.93 | 1.7 | 0.4 | 3.47 |

## ◆ Embossed Tape Dimensions (conforms to JIS C 0806)

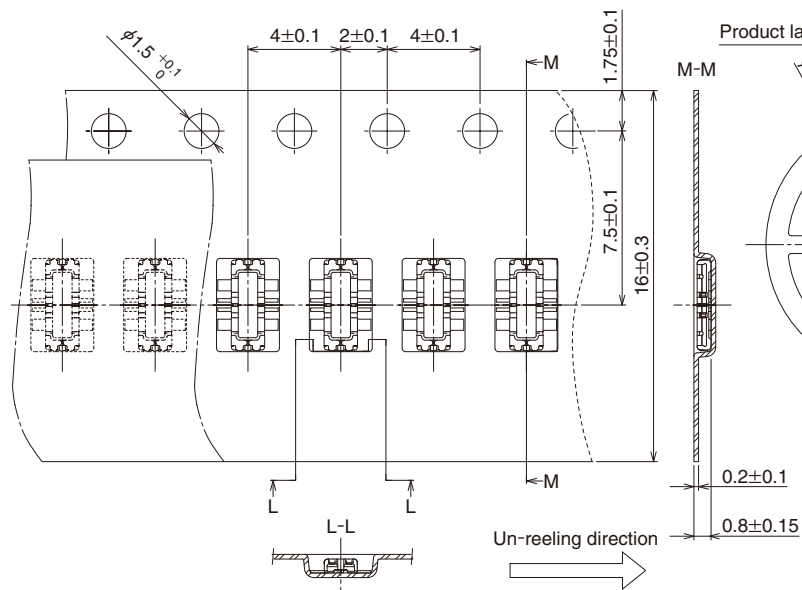
### ● Receptacle



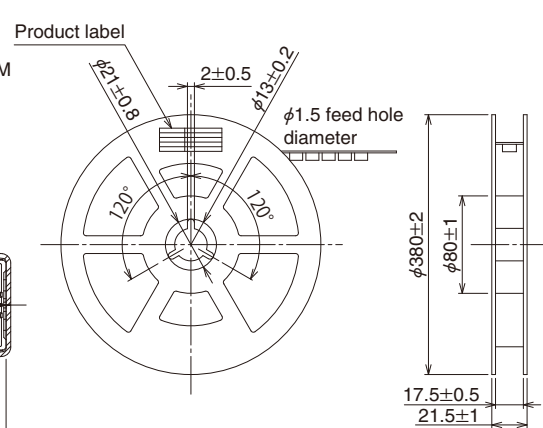
### ● Reel dimensions



### ● Header



### ● Reel dimensions



## ◆Precautions

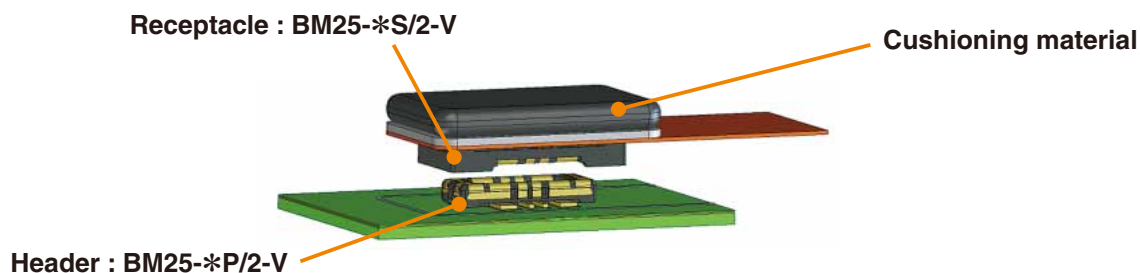
|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Recommended temperature profile                                  | <p>Temperature (°C)</p> <p>Time (seconds)</p> <p>Start</p> <p>25°C</p> <p>150°C</p> <p>180°C</p> <p>220°C</p> <p>MAX 250°C</p> <p>(60 seconds)</p> <p>90 to 120 seconds</p> <p>(60 seconds)</p> <p>Preheating time</p> <p>Soldering time</p> <p>[Conditions]</p> <ol style="list-style-type: none"> <li>1. Peak temperature : 250°C</li> <li>2. Heating unit : No less than 220°C for no more than 60 seconds</li> <li>3. Preheating unit : 150 to 180°C for 90 to 120 seconds</li> <li>4. Number of times : No more than 2 times</li> </ol> <p>Note 1 : The temperature is the surface temperature of the PCB in the vicinity of the connector lead part.</p> <p>Note 2 : When you use nitrogen reflow, please mount the product with the oxygen concentration at a minimum of 1,000 [ppm].<br/>Please contact us if the concentration is below 1,000 [ppm].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2. Recommended hand soldering conditions                            | <p>Soldering iron temperature : <math>340 \pm 10^\circ\text{C}</math>,<br/>Soldering time : within 3 seconds</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3. Recommended screen thickness/aperture ratio (pattern area ratio) | <p>Thickness : 0.1mm<br/>Open area ratio : 100% for signal contact, and 100% for power contact on the Receptacle side.<br/>100% for signal contact, and 70% for power contact on the Header side.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4. Warpage of the PCB                                               | <p>A maximum of 0.02mm at the center part of the connector based on both ends of the connector.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 5. Cleaning                                                         | <p>Not recommended. If you clean this product, please evaluate the performance before using it.<br/>(Cleaning may cause a change in the mating/unmating property and its resistance to environment)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6. Notes                                                            | <ul style="list-style-type: none"> <li>■ Care should be taken that mating/unmating operation when the product is not mounted on the PCB could cause damage or deformation, etc. of the contact.</li> <li>■ Avoid supporting the PCB only by connectors, and support it by other means than connectors.</li> <li>■ Care should be taken that excessive prying mating/unmating could cause damage.</li> <li>■ During hand soldering, do not apply flux which will cause flux oozing on connector.</li> <li>■ This product may differ in hue due to production lot variability, but it doesn't have any influence on the performance.</li> <li>■ Please refer to the next page for the precautions for mating/unmating.</li> <li>■ Considering the possibility of disengagement due to the counterforce caused by the drop, impact and routing of FPC, fix the mated state by the use of housings and cushion materials, etc.</li> <li>■ Caution! Do not use the connector in non-recommended conditions (i.e., rated current, rated voltage, PCB design and operating environment, etc.). Such usage could lead to material outgassing, ignition, or short-circuit, etc.<br/>Refer to the specifications and the guidelines for board pattern dimensions, board cautions, and connector treatment.<br/>Please contact Hirose if using the connector under conditions other than those described in the specifications and the guidelines is being considered.</li> </ul> |

## ● Handling warning when mating the connector

**Please use cushioning material to prevent incorrect mating.**

The connector may disconnect due to the impact from drop etc.

Please use cushioning material of appropriate size covering the entire connector.



### Mating procedure

#### 1. Align the connector.

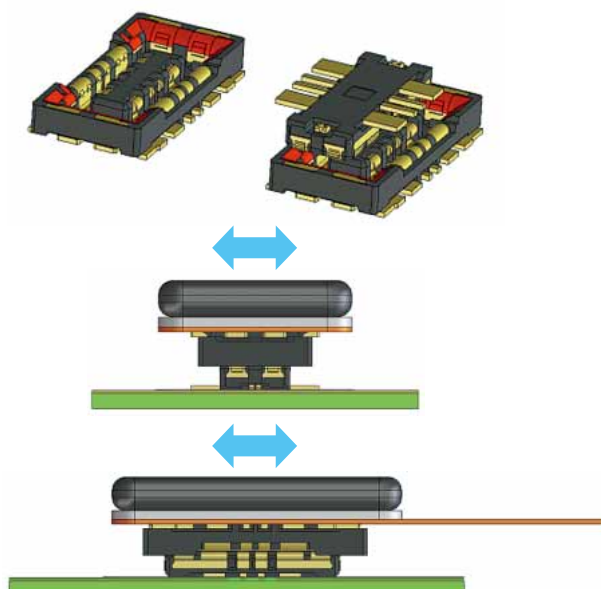
Product has a guide rib on the outer wall to support mating operation. Align the connector using this guide rib.

When aligning the connector, look for the guide port without applying excessive force.

#### 2. Mate the connector after alignment.

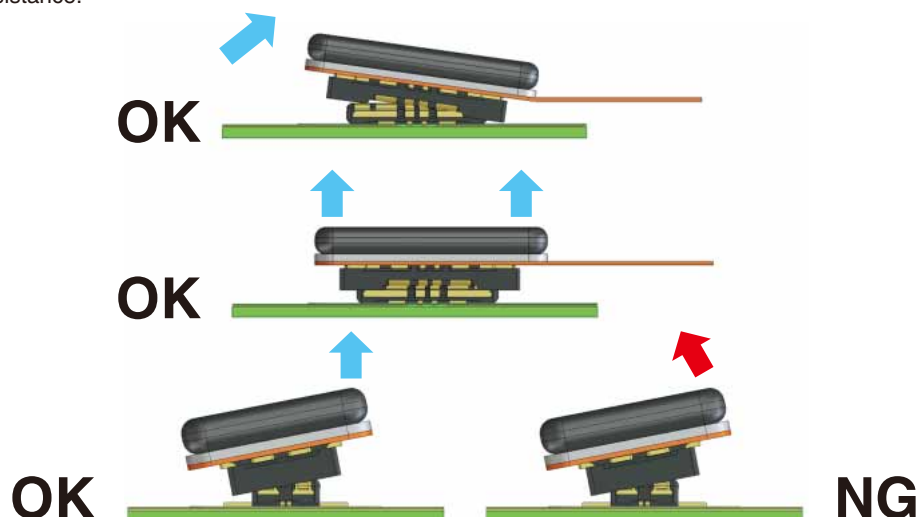
#### 3. Check the mated status.

If the connector is not correctly mated, remove it once and mate it again.



### How to pull it out

If you apply a strong force in the horizontal direction when un-mating, the contact could be deformed and increase the contact resistance.

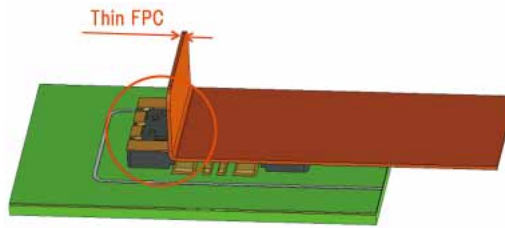




## ●Handling warning when un-mating the connector

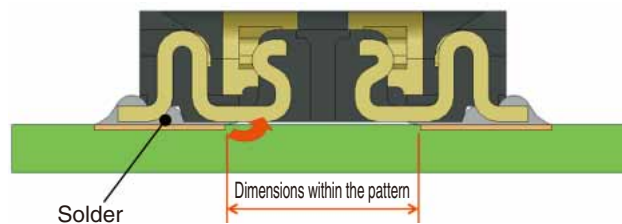
### Caution for FPCs that are not strong enough

In the case of a thin FPC board or a board without any reinforcing plate, please evaluate the mating.  
 If the FPC board doesn't have enough rigidity, the solder joint could fail.  
 Please check the mated status in advance with the FPC board you intend to use.  
 Recommended thickness of the reinforcing plate : SUS 0.2mm, FR-40.3mm

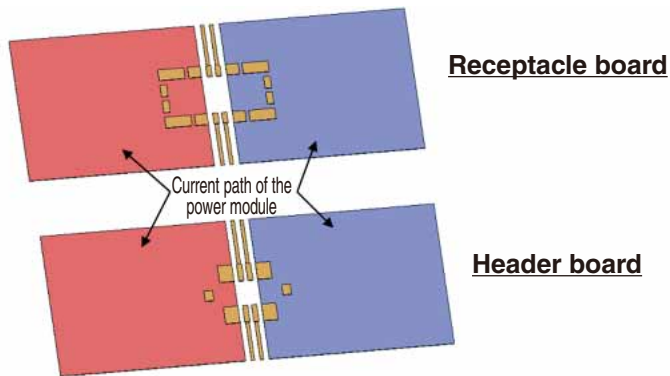


### Caution for the dimensions within the receptacle pattern

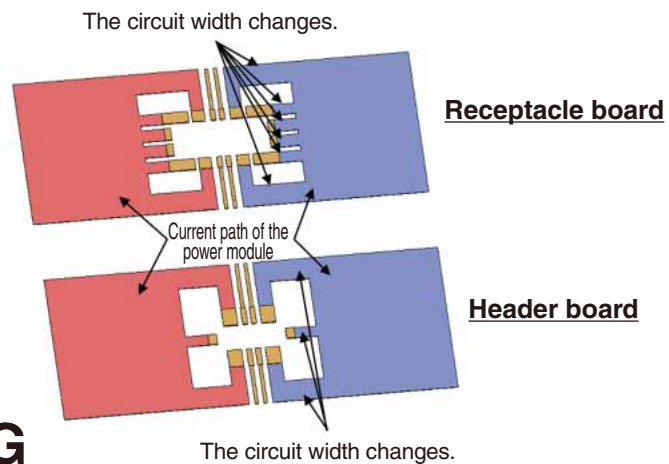
Please meet the recommended pattern width.  
 If not, solder wicking could occur.



Please design without dividing the current path of the power PAD module into multiple branches.



**OK**



**NG**

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