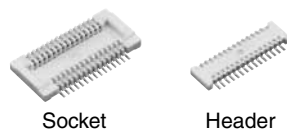


## NARROW-PITCH CONNECTORS FOR BOARD-TO-BOARD CONNECTION

## NARROW PITCH (0.5mm) CONNECTORS P5 SERIES — P5KL —

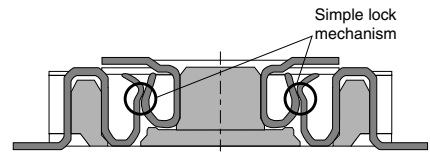


Socket Header

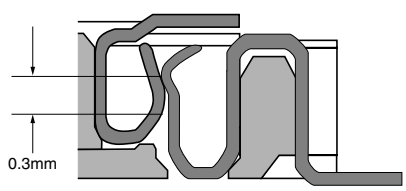
Compliance with RoHS Directive

### FEATURES

1. Low profile mating height of 1.2 mm with 0.5 mm pitch, was obtained. It contributes to device compactness.
2. Strong resistance to adverse environments! Utilizes **TOUGH CONTACT** construction for high contact reliability. (See Page 6 for details of the structure)
3. Simple lock structure employed to further increase connection reliability



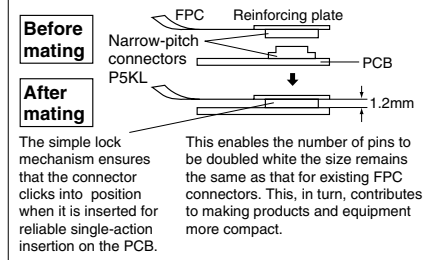
### 4. Effective mating length 0.3 mm



### APPLICATIONS

Compact portable devices “Cellular phones, DVC, Digital cameras, etc”

Ideal for Board-to-FPC connections



## ORDERING INFORMATION

|   |     |  |  |  |   |  |   |   |
|---|-----|--|--|--|---|--|---|---|
|   | AXK |  |  |  | 3 |  | 7 | G |
| 5L: Narrow Pitch Connector P5KL (0.5 mm pitch) Socket                         |     |  |  |  |   |  |   |   |
| 6L: Narrow Pitch Connector P5KL (0.5 mm pitch) Header                         |     |  |  |  |   |  |   |   |
| Number of contacts (2 digits)   |     |  |  |  |   |  |   |   |
| Mated height  |     |  |  |  |   |  |   |   |
| <Socket>  |     |  |  |  |   |  |   |   |
| 3: For mated height 1.2 mm  |     |  |  |  |   |  |   |   |
| <Header>  |     |  |  |  |   |  |   |   |
| 3: For mated height 1.2 mm  |     |  |  |  |   |  |   |   |
| Functions   |     |  |  |  |   |  |   |   |
| 3: With positioning bosses  |     |  |  |  |   |  |   |   |
| 4: Without positioning bosses   |     |  |  |  |   |  |   |   |
| Surface treatment (Contact portion / Terminal portion)                        |     |  |  |  |   |  |   |   |
| 7: Ni plating on base, Au plating on surface (for Ni barrier available)       |     |  |  |  |   |  |   |   |
| Packing   |     |  |  |  |   |  |   |   |
| G: 3,000 pieces embossed tape and plastic reel × 2 (for Ni barrier available) |     |  |  |  |   |  |   |   |

AXK(5/6)L

PRODUCT TYPES

| Mated height | No. of contacts | Part No.             |                      | Packing quantity         |                          |
|--------------|-----------------|----------------------|----------------------|--------------------------|--------------------------|
|              |                 | Socket               | Header               | Inner carton<br>(1-reel) | Outer carton             |
|              |                 | <i>TOUGH CONTACT</i> | <i>TOUGH CONTACT</i> |                          |                          |
| 1.2 mm       | 10              | AXK5L10347G          | AXK6L10347G          | 3,000 pieces             | 6,000 pieces<br>(2-reel) |
|              | 12              | AXK5L12347G          | AXK6L12347G          |                          |                          |
|              | 20              | AXK5L20347G          | AXK6L20347G          |                          |                          |
|              | 24              | AXK5L24347G          | AXK6L24347G          |                          |                          |
|              | 30              | AXK5L30347G          | AXK6L30347G          |                          |                          |
|              | 34              | AXK5L34347G          | AXK6L34347G          |                          |                          |
|              | 40              | AXK5L40347G          | AXK6L40347G          |                          |                          |
|              | 46              | AXK5L46347G          | AXK6L46347G          |                          |                          |
|              | 50              | AXK5L50347G          | AXK6L50347G          |                          |                          |
|              | 60              | AXK5L60347G          | AXK6L60347G          |                          |                          |

Notes) 1. Regarding ordering units: During production, Please make orders in 1-reel units. Samples for mounting confirmation: Please consult us. Samples: Small lot orders are possible. Please consult us.  
2. The standard type comes without positioning bosses. Connectors with positioning bosses are available for on-demand production.  
For this type of connector, 9th digit of the part no. changes from 4 to 3. e.g. 10 contacts for sockets: AXK5L10337G  
3. Previous non-*TOUGH CONTACT* types and current *TOUGH CONTACT* types are compatible for mating.

SPECIFICATIONS

1. Characteristics

|                               | Item  | Specifications   | Conditions  |
|-------------------------------|---|--|---|
| Electrical characteristics    | Rated current   | 0.5A/contact (Max. 10 A at total contacts)   |   |
|                               | Rated voltage   | 60V AC/DC  |   |
|                               | Breakdown voltage                                     | 150V AC for 1 minute   | Detection current: 1mA  |
|                               | Insulation resistance                                 | Min. 1,000MΩ (initial)   | Using 500V DC megger  |
|                               | Contact resistance                                    | Max. 90mΩ  | Based on the contact resistance measurement method specified by JIS C 5402.   |
| Mechanical characteristics    | Composite insertion force                             | Max. 0.981N {100gf}/contacts × contacts (initial)  |   |
|                               | Composite removal force                               | Min. 0.0588N {6gf}/contacts × contacts   |   |
|                               | Holding force of terminal securing section            | Min. 0.981N {100gf}/contact  | Measuring the maximum force.<br>As the contact is axially pull out.   |
| Environmental characteristics | Ambient temperature                                   | −55°C to +85°C   | No freezing at low temperatures   |
|                               | Soldering heat resistance                             | Max. peak temperature of 260°C (on the surface of the PC board around the connector terminals) | Infrared reflow soldering   |
|                               |   | 300°C within 5 seconds<br>350°C within 3 seconds   | Soldering iron  |
|                               | Thermal shock resistance (header and socket mated)    | 5 cycles, insulation resistance min. 100MΩ, contact resistance max. 90mΩ                       | Sequence<br>1. −55 <sup>+3</sup> °C, 30 minutes<br>2. ~, Max. 5 minutes<br>3. 85 <sup>+3</sup> °C, 30 minutes<br>4. ~, Max. 5 minutes |
|                               | Humidity resistance (header and socket mated)         | 120 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ                      | Bath temperature 40±2°C, humidity 90 to 95% R.H.  |
|                               | Saltwater spray resistance (header and socket mated)  | 24 hours, insulation resistance min. 100MΩ, contact resistance max. 90mΩ                       | Bath temperature 35±2°C, saltwater concentration 5±1%   |
|                               | H <sub>2</sub> S resistance (header and socket mated) | 48 hours, contact resistance max. 90mΩ   | Bath temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.   |
| Lifetime characteristics      | Insertion and removal life                            | 50 times   | Repeated insertion and removal speed of max. 200 times/hours  |
| Unit weight                   |   | 20 contacts; Socket: 0.05g; Header: 0.02g  |   |

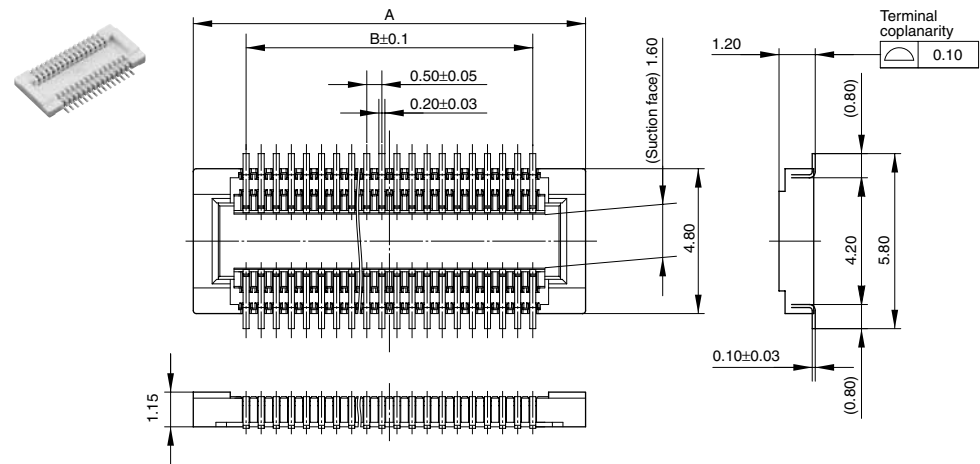
2. Material and surface treatment

| Part name      | Material                       | Surface treatment   |
|----------------|--------------------------------|---|
| Molded portion | Heat-resistant resin (UL94V-0) | —   |
| Contact/Post   | Copper alloy                   | Contact portion: Ni plating on base, Au plating on surface<br>Terminal portion: Ni plating on base, Au plating on surface (Except for thick of terminal)<br>The section close to the soldering portion has a nickel barrier.<br>(The nickel base is exposed.) |

**DIMENSIONS** (Unit: mm)      The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

- Socket (Mated height: 1.2mm)

**CAD Data**



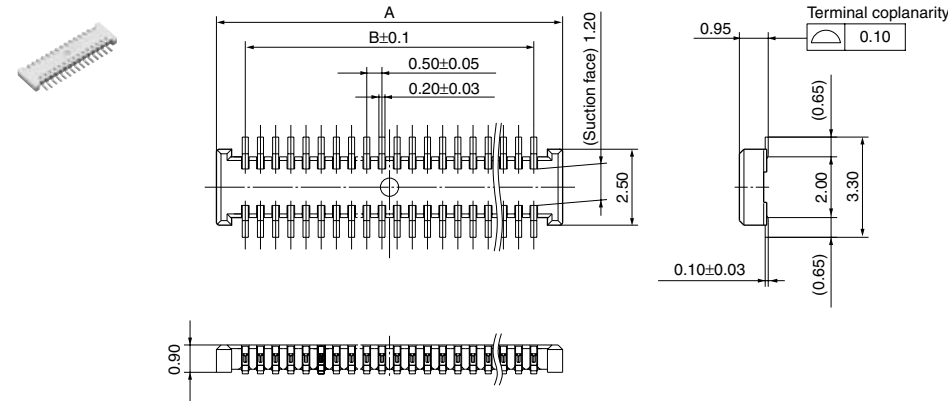
Dimension table (mm)

| No. of contacts | A     | B     |
|-----------------|-------|-------|
| 10              | 5.50  | 2.00  |
| 12              | 6.00  | 2.50  |
| 20              | 8.00  | 4.50  |
| 24              | 9.00  | 5.50  |
| 30              | 10.50 | 7.00  |
| 34              | 11.50 | 8.00  |
| 40              | 13.00 | 9.50  |
| 46              | 14.50 | 11.00 |
| 50              | 15.50 | 12.00 |
| 60              | 18.00 | 14.50 |

General tolerance: ±0.2

- Header (Mated height: 1.2mm)

**CAD Data**

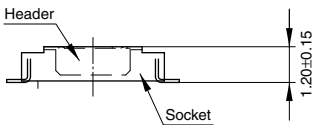


Dimension table (mm)

| No. of contacts | A     | B     |
|-----------------|-------|-------|
| 10              | 3.90  | 2.00  |
| 12              | 4.40  | 2.50  |
| 20              | 6.40  | 4.50  |
| 24              | 7.40  | 5.50  |
| 30              | 8.90  | 7.00  |
| 34              | 9.90  | 8.00  |
| 40              | 11.40 | 9.50  |
| 46              | 12.90 | 11.00 |
| 50              | 13.90 | 12.00 |
| 60              | 16.40 | 14.50 |

General tolerance: ±0.2

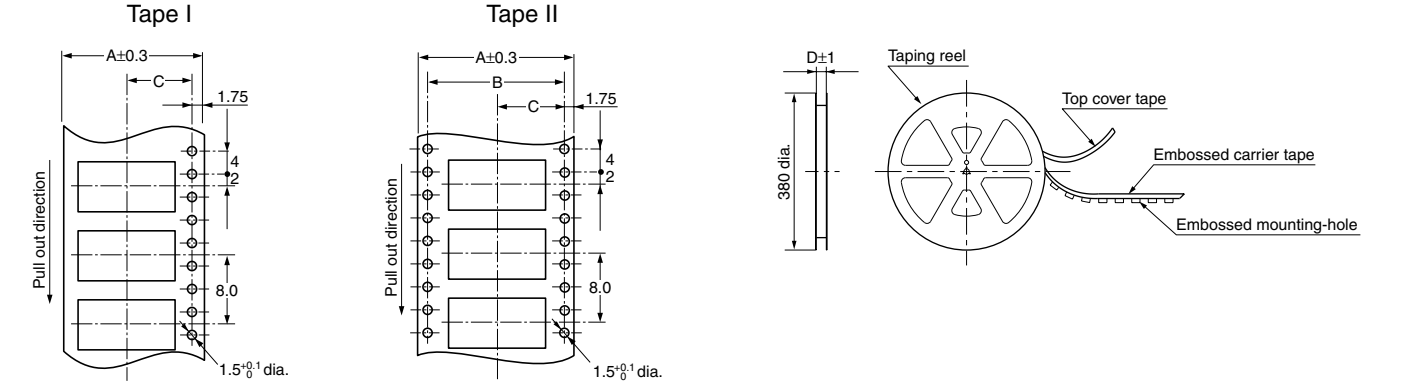
- Socket and header are mated



AXK(5/6)L

EMBOSSSED TAPE DIMENSIONS (unit: mm, Common for respective contact type, socket and header)

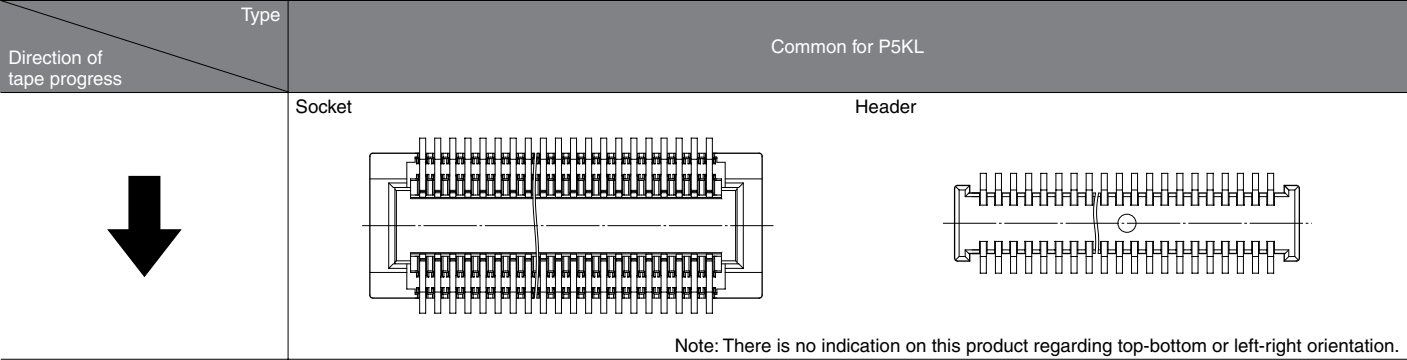
- Tape dimensions (Conforming to JIS C 0806-1990.  
However, some tapes have mounting hole pitches that do not comply with the standard.)
- Plastic reel dimensions (Conforming to EIAJ ET-7200B)



Dimension table (mm)  
Suffix: G (1 reel, 3,000 pieces embossed tape: Plastic reel package)

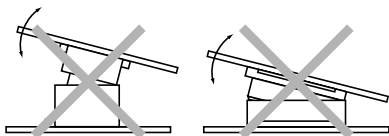
| Mated height                           | No. of contacts | Type of taping | A    | B    | C    | D    | Quantity per reel |
|--|-----------------|----------------|------|------|------|------|-------------------|
| Socket and header are common:<br>1.2mm | 10 to 18        | Tape I         | 16.0 | —    | 7.5  | 17.4 | 3,000 pcs.        |
|  | 20 to 50        | Tape I         | 24.0 | —    | 11.5 | 25.4 | 3,000 pcs.        |
|  | 60              | Tape II        | 32.0 | 28.4 | 14.2 | 33.4 | 3,000 pcs.        |

Connector orientation with respect to direction of progress of embossed tape

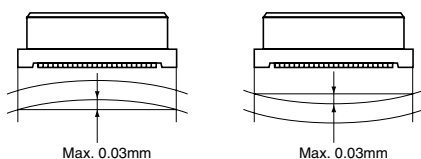


## NOTES

1. As shown below, excess force during insertion may result in damage to the connector or removal of the solder. Please be careful. Also, to prevent connector damage please confirm the correct position before mating connectors.



2. Keep the PC board warp no more than 0.03 mm in relation to the overall length of the connector.

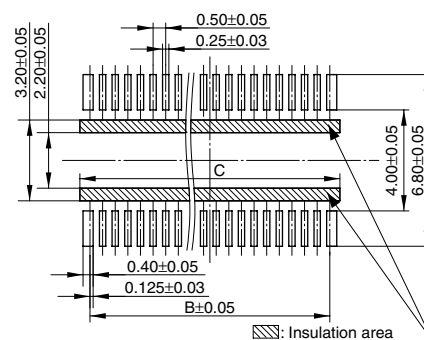


### 3. PC Boards and Recommended Metal Mask Patterns

Connectors are mounted with high density, with a pitch interval of 0.4 to 0.5 mm. It is therefore necessary to make sure that the right levels of solder are used, in order to reduce solder bridge and other issues. The figures to the right are recommended metal mask patterns. Please use them as a reference.

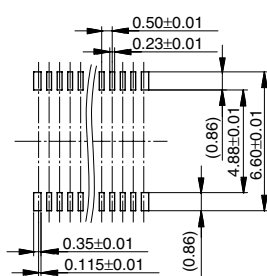
#### • Socket

Recommended PC board pattern (TOP VIEW)



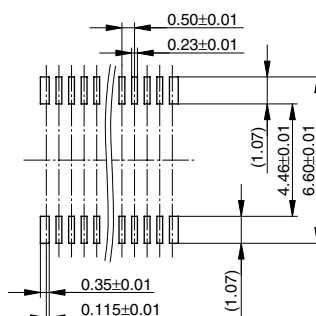
Recommended metal mask pattern

Metal mask thickness: 150  $\mu$ m  
(Terminal portion opening area ratio: 57%)



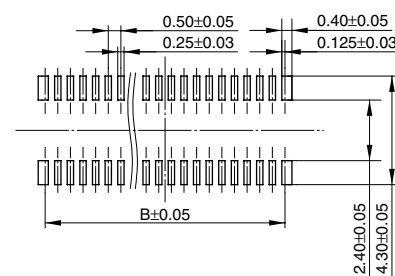
Recommended metal mask pattern

Metal mask thickness: 120  $\mu$ m  
(Terminal portion opening area ratio: 70%)



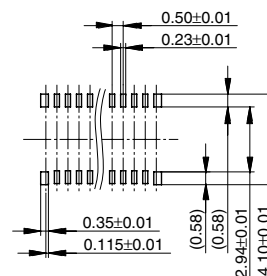
#### • Header

Recommended PC board pattern (TOP VIEW)



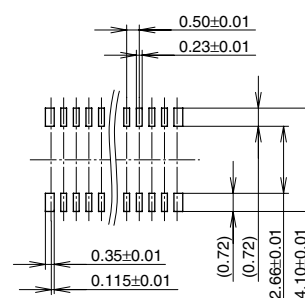
Recommended metal mask pattern

Metal mask thickness: 150  $\mu$ m  
(Terminal portion opening area ratio: 56%)



Recommended metal mask pattern

Metal mask thickness: 120  $\mu$ m  
(Terminal portion opening area ratio: 70%)



- Notes: 1. See the dimension table on page 81 for more information on the B dimension of the socket and header.  
2. The socket C dimension is the B dimension in the dimensions table with 0.8 added.

**For other details, please verify with the product specification sheets.**

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|                                    |                                    |                                    |                                    |                                    |                                    |                                    |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| <a href="#"><u>AXK5L10337G</u></a> | <a href="#"><u>AXK5L10347G</u></a> | <a href="#"><u>AXK5L12337G</u></a> | <a href="#"><u>AXK5L12347G</u></a> | <a href="#"><u>AXK5L20337G</u></a> | <a href="#"><u>AXK5L20347G</u></a> | <a href="#"><u>AXK5L24337G</u></a> |
| <a href="#"><u>AXK5L24347G</u></a> | <a href="#"><u>AXK5L30337G</u></a> | <a href="#"><u>AXK5L30347G</u></a> | <a href="#"><u>AXK5L34337G</u></a> | <a href="#"><u>AXK5L34347G</u></a> | <a href="#"><u>AXK5L40337G</u></a> | <a href="#"><u>AXK5L40347G</u></a> |
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| <a href="#"><u>AXK6L60337G</u></a> | <a href="#"><u>AXK6L60347G</u></a> | <a href="#"><u>AXK5L10345G</u></a> |                                    |                                    |                                    |                                    |