

# FOR BOARD-TO-BOARD CONNECTION

## 210 SERIES

RoHS Compliant

### ■ FEATURES

- 1.27 mm (0.050 in.) pitch contact arrangement in two rows enables high-density mounting.
- Connectors are available with 30 to 120 contacts.
- Terminals are spaced in a four-row staggered arrangement (2.54 mm × 1.905 mm.) (0.100 in. × 0.075 in.) for easy PC board design.
- Sockets are available for board mounting and for 0.635 mm (0.025 in.) pitch flat cable.  
[See the description of the FCN-210 series (for board-to-cable connection).]
- Insulation is UL-approved (94V-0).

### ■ SPECIFICATIONS

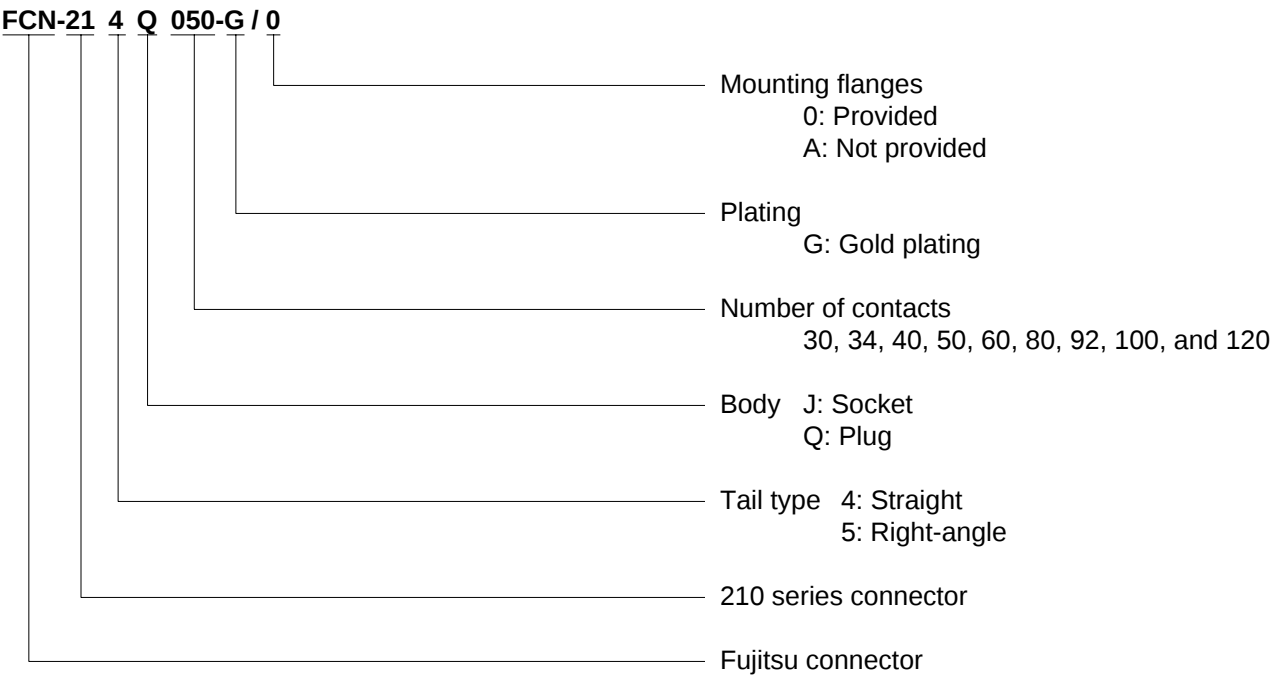
| Item                           | Specifications                                |
|--------------------------------|-----------------------------------------------|
| Operating temperature range    | −55°C to +105°C                               |
| Current rating                 | DC 2 A                                        |
| Voltage rating                 | AC 250 V                                      |
| Contact resistance             | 35 mΩ max. (DC 6 V, 0.1 V)                    |
| Insulation resistance          | 1000 MΩ min. (DC 500 V)                       |
| Dielectric withstand voltage   | 500 VAC for 1 minute                          |
| Insertion force                | 4 kg max. (10 pins)                           |
| Withdrawal force               | 250 g min. (10 pins)                          |
| Applicable PC board (standard) | Thickness: 0.8 to 1.6 mm (0.031 to 0.063 in.) |



### ■ MATERIALS

| Item      | Materials           |                   |
|-----------|---------------------|-------------------|
| Insulator | Polyester (UL94V-0) |                   |
| Conductor | Copper alloy        |                   |
| Plating   | Contact             | Gold plating      |
|           | Terminal            | Palladium plating |

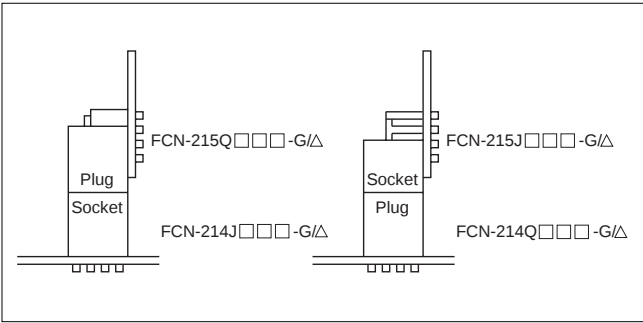
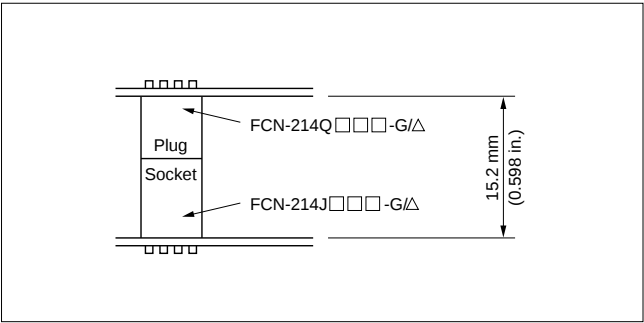
ORDERING CODE



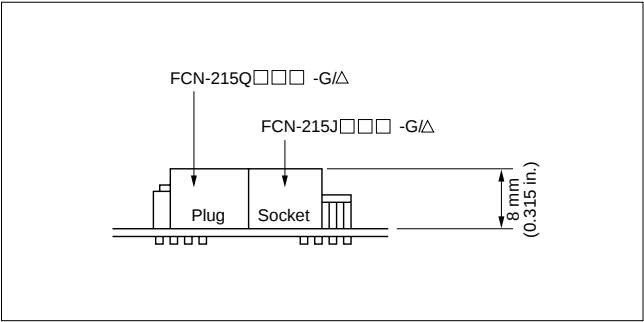
APPLICATIONS

Board-to-board connection

- Parallel PCB connection
- Vertical PCB connection

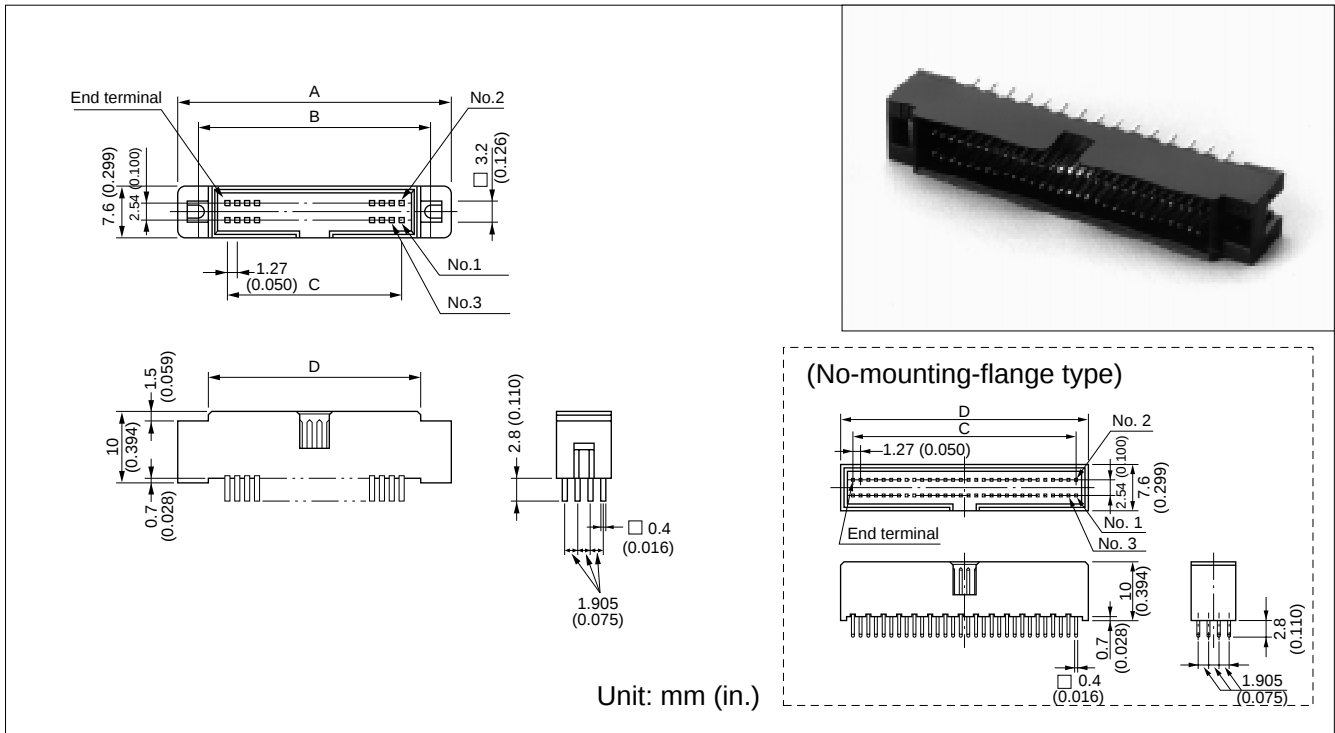


- Horizontal PCB connection

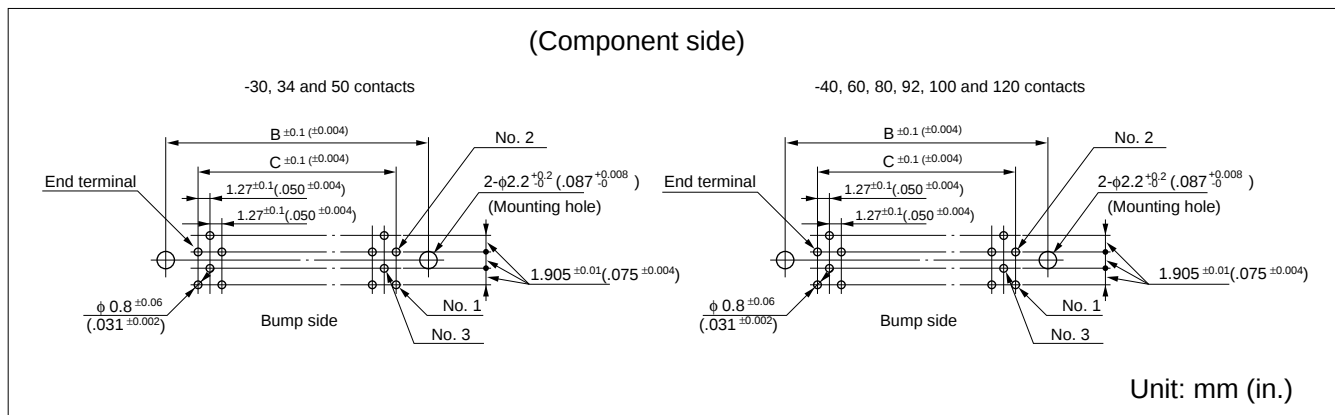


## STRAIGHT PLUG

### DIMENSIONS



### MOUNTING HOLE LAYOUT



The no-mounting-flange type does not require the mounting hole of 2-φ2.2 mm (0.09 in.).

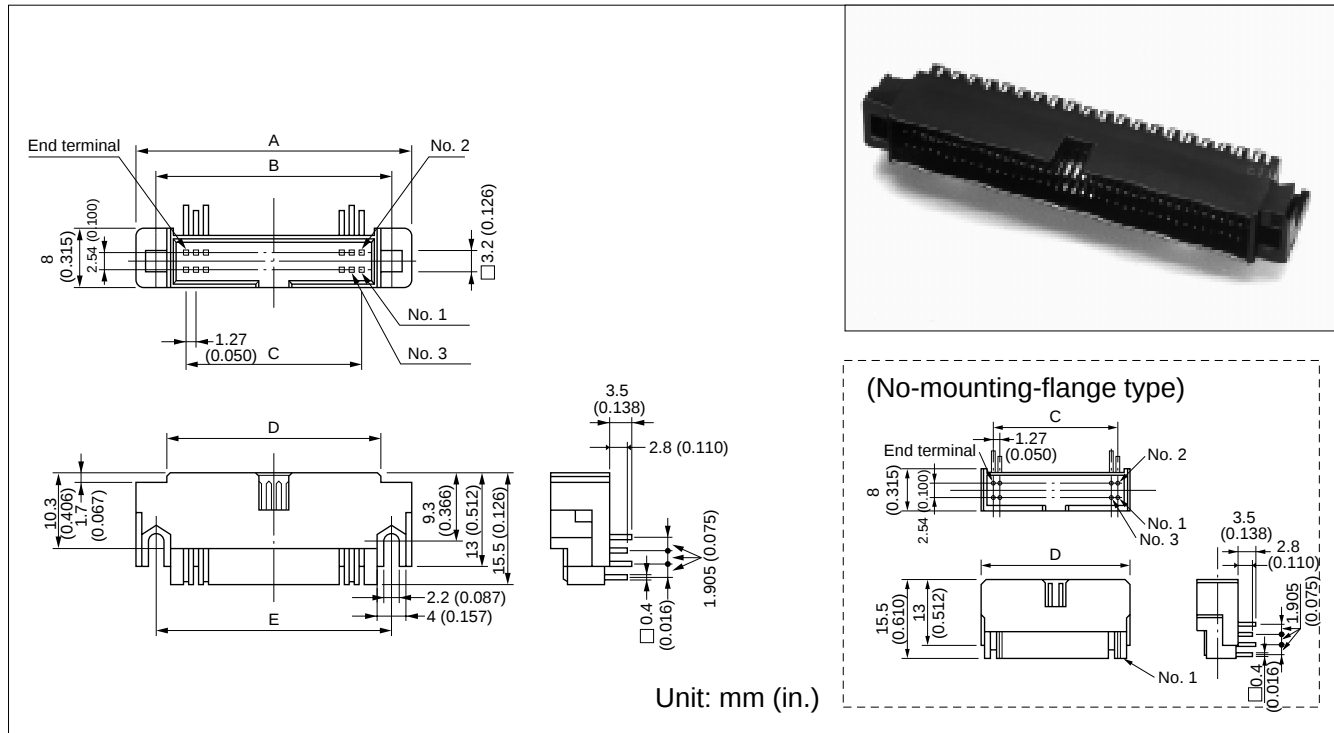
### PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|
|                    |                 | A                    | B             | C             | D             |
| 30                 | FCN-214Q030-G/0 | 31.83 (1.253)        | 26.28 (1.035) | 17.78 (0.700) | 23.08 (0.909) |
| 34                 | FCN-214Q034-G/0 | 34.73 (1.367)        | 28.82 (1.135) | 20.32 (0.800) | 25.62 (1.009) |
| 40                 | FCN-214Q040-G/0 | 38.18 (1.503)        | 32.63 (1.285) | 24.13 (0.950) | 29.43 (1.159) |
| 50                 | FCN-214Q050-G/0 | 44.35 (1.746)        | 38.98 (1.535) | 30.48 (1.200) | 35.78 (1.409) |
| 60                 | FCN-214Q060-G/0 | 50.88 (2.003)        | 45.33 (1.785) | 36.83 (1.450) | 42.13 (1.659) |
| 80                 | FCN-214Q080-G/0 | 63.58 (2.503)        | 58.03 (2.285) | 49.53 (1.950) | 54.83 (2.159) |
| 92                 | FCN-214Q092-G/0 | 71.20 (2.803)        | 65.65 (2.585) | 57.15 (2.250) | 62.45 (2.459) |
| 100                | FCN-214Q100-G/0 | 76.28 (3.003)        | 70.73 (2.785) | 62.23 (2.450) | 67.53 (2.659) |
| 120                | FCN-214Q120-G/0 | 88.98 (3.503)        | 83.43 (3.285) | 74.93 (2.950) | 80.23 (3.159) |

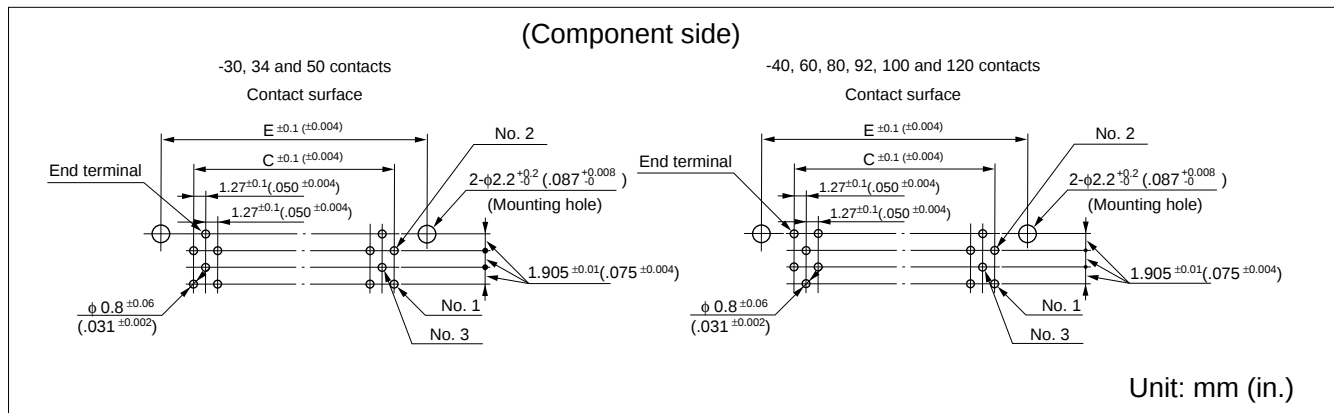
Replace "-G/0" with "-G/A" for no-mounting-flange type

## RIGHT-ANGLE PLUG

### ■ DIMENSIONS



### ■ MOUNTING HOLE LAYOUT



The no-mounting-flange type does not require the mounting hole of 2-φ2.2 mm (0.09 in.).

### ■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|---------------|
|                    |                 | A                    | B             | C             | D             | E             |
| 30                 | FCN-215Q030-G/0 | 31.83 (1.253)        | 26.28 (1.035) | 17.78 (0.700) | 23.08 (0.909) | 25.28 (0.995) |
| 34                 | FCN-215Q034-G/0 | 34.73 (1.367)        | 28.82 (1.135) | 20.32 (0.800) | 25.62 (1.009) | 27.82 (1.095) |
| 40                 | FCN-215Q040-G/0 | 38.18 (1.503)        | 32.63 (1.285) | 24.13 (0.950) | 29.43 (1.159) | 31.63 (1.245) |
| 50                 | FCN-215Q050-G/0 | 44.35 (1.746)        | 38.98 (1.535) | 30.48 (1.200) | 35.78 (1.409) | 37.98 (1.495) |
| 60                 | FCN-215Q060-G/0 | 50.88 (2.003)        | 45.33 (1.785) | 36.83 (1.450) | 42.13 (1.659) | 44.33 (1.745) |
| 80                 | FCN-215Q080-G/0 | 63.58 (2.503)        | 58.03 (2.285) | 49.53 (1.950) | 54.83 (2.159) | 57.03 (2.245) |
| 92                 | FCN-215Q092-G/0 | 71.20 (2.803)        | 65.65 (2.585) | 57.15 (2.250) | 62.45 (2.459) | 64.65 (2.545) |
| 100                | FCN-215Q100-G/0 | 76.28 (3.003)        | 70.73 (2.785) | 62.23 (2.450) | 67.53 (2.659) | 69.73 (2.745) |
| 120                | FCN-215Q120-G/0 | 88.98 (3.503)        | 83.43 (3.285) | 74.93 (2.950) | 80.23 (3.159) | 82.43 (3.245) |

Replace "-G/0" with "-G/A" for no-mounting-flange type

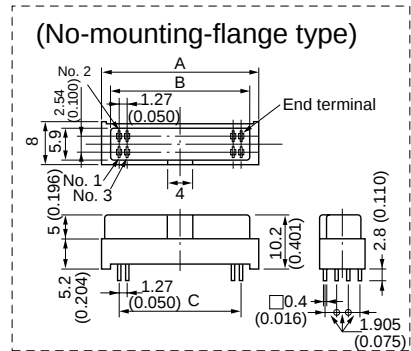
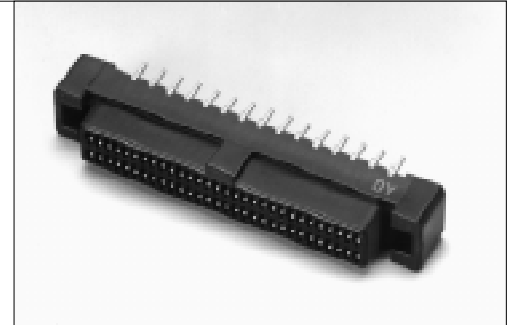
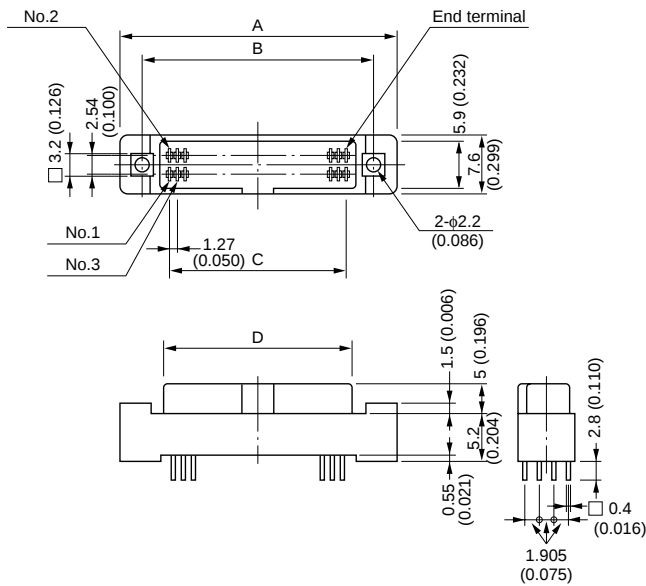
Specifications  
subject to change

Dimensions are in millimeters (inches)

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## STRAIGHT SOCKET

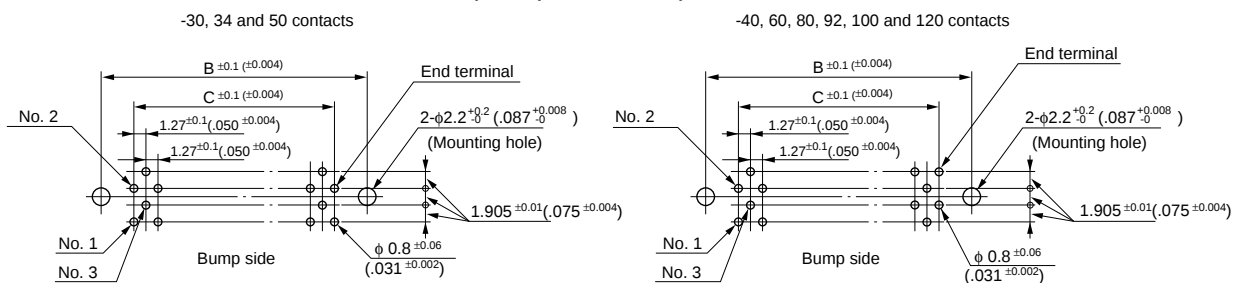
### ■ DIMENSIONS



Unit: mm (in.)

### ■ MOUNTING HOLE LAYOUT

(Component side)



Unit: mm (in.)

The no-mounting-flange type does not require the mounting hole of 2- $\phi$ 2.2 mm (0.09 in.).

### ■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|---------------|
|                    |                 | A                    | B             | C             | D             | E             |
| 30                 | FCN-214J030-G/0 | 31.83 (1.253)        | 26.28 (1.035) | 17.78 (0.700) | 20.68 (0.814) | 23.08 (0.909) |
| 34                 | FCN-214J034-G/0 | 34.73 (1.367)        | 28.82 (1.135) | 20.32 (0.800) | 23.22 (0.914) | 25.62 (1.009) |
| 40                 | FCN-214J040-G/0 | 38.18 (1.503)        | 32.63 (1.285) | 24.13 (0.950) | 27.03 (1.064) | 29.43 (1.159) |
| 50                 | FCN-214J050-G/0 | 44.35 (1.746)        | 38.98 (1.535) | 30.48 (1.200) | 33.38 (1.314) | 35.78 (1.409) |
| 60                 | FCN-214J060-G/0 | 50.88 (2.003)        | 45.33 (1.785) | 36.83 (1.450) | 39.73 (1.564) | 42.13 (1.659) |
| 80                 | FCN-214J080-G/0 | 63.58 (2.503)        | 58.03 (2.285) | 49.53 (1.950) | 52.43 (2.064) | 54.83 (2.159) |
| 92                 | FCN-214J092-G/0 | 71.20 (2.803)        | 65.65 (2.585) | 57.15 (2.250) | 60.05 (2.364) | 62.45 (2.459) |
| 100                | FCN-214J100-G/0 | 76.28 (3.003)        | 70.73 (2.785) | 62.23 (2.450) | 65.13 (2.564) | 67.53 (2.659) |
| 120                | FCN-214J120-G/0 | 88.98 (3.503)        | 83.43 (3.285) | 74.93 (2.950) | 77.83 (3.064) | 80.23 (3.159) |

Replace "-G/0" with "-G/A" for no-mounting-flange type

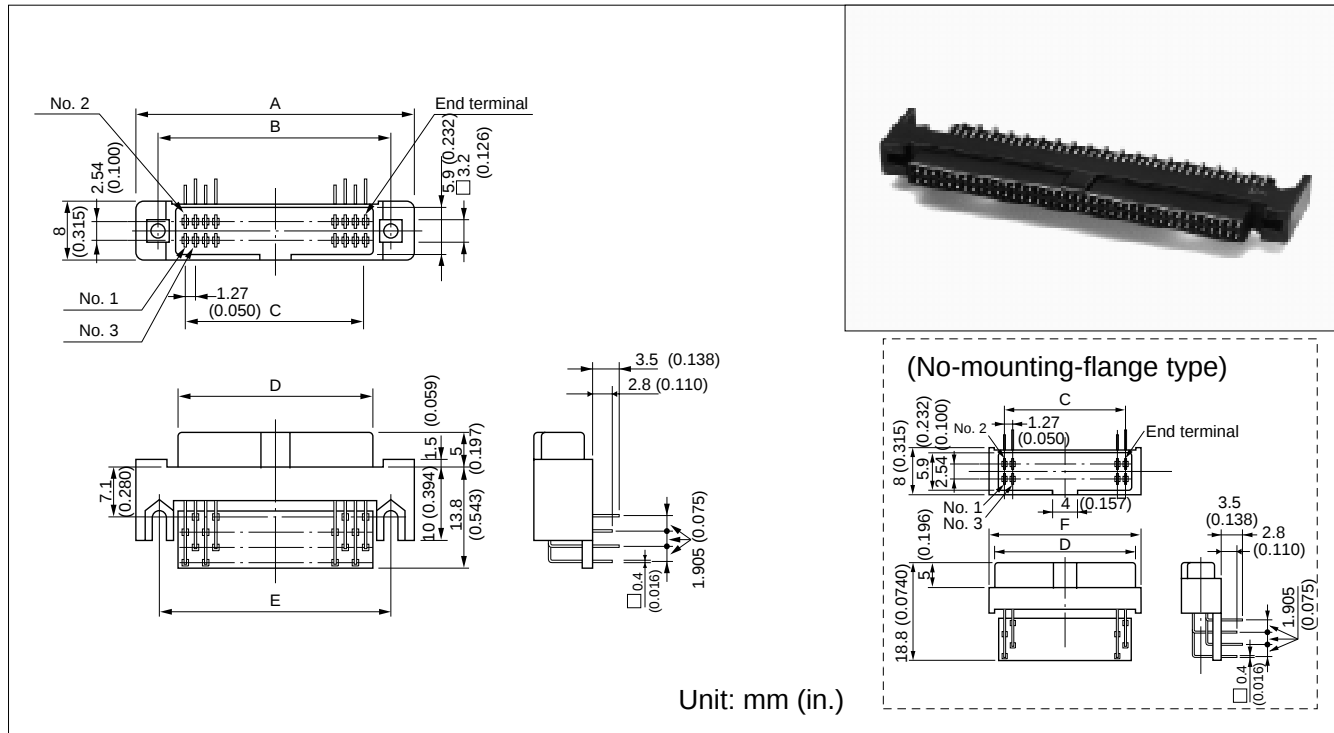
Specifications  
subject to change

Dimensions are in millimeters (inches)

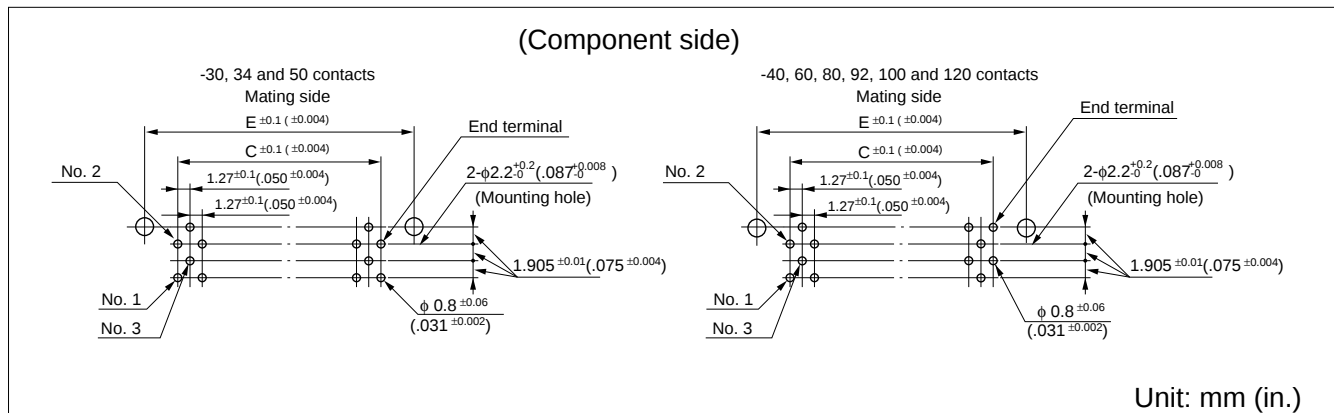
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## RIGHT-ANGLE SOCKET

### ■ DIMENSIONS



### ■ MOUNTING HOLE LAYOUT



The no-mounting-flange type does not require the mounting hole of 2-φ2.2 mm (0.09 in.).

### ■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |               |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|---------------|---------------|
|                    |                 | A                    | B             | C             | D             | E             | F             |
| 30                 | FCN-215J030-G/0 | 31.83 (1.253)        | 26.28 (1.035) | 17.78 (0.700) | 20.68 (0.814) | 25.28 (0.995) | 23.08 (0.908) |
| 34                 | FCN-215J034-G/0 | 34.73 (1.367)        | 28.82 (1.135) | 20.32 (0.800) | 23.22 (0.914) | 27.82 (1.095) | 34.37 (1.353) |
| 40                 | FCN-215J040-G/0 | 38.18 (1.503)        | 32.63 (1.285) | 24.13 (0.950) | 27.03 (1.064) | 31.63 (1.245) | 38.18 (1.503) |
| 50                 | FCN-215J050-G/0 | 44.35 (1.746)        | 38.98 (1.535) | 30.48 (1.200) | 33.38 (1.314) | 37.98 (1.495) | 44.53 (1.753) |
| 60                 | FCN-215J060-G/0 | 50.88 (2.003)        | 45.33 (1.785) | 36.83 (1.450) | 39.73 (1.564) | 44.33 (1.745) | 50.88 (2.003) |
| 80                 | FCN-215J080-G/0 | 63.58 (2.503)        | 58.03 (2.285) | 49.53 (1.950) | 52.43 (2.064) | 57.03 (2.245) | 63.58 (2.503) |
| 92                 | FCN-215J092-G/0 | 71.20 (2.803)        | 65.65 (2.585) | 57.15 (2.250) | 60.05 (2.364) | 64.65 (2.545) | 71.20 (2.803) |
| 100                | FCN-215J100-G/0 | 76.28 (3.003)        | 70.73 (2.785) | 62.23 (2.450) | 65.13 (2.564) | 69.73 (2.745) | 76.28 (3.003) |
| 120                | FCN-215J120-G/0 | 88.98 (3.503)        | 83.43 (3.285) | 74.93 (2.950) | 77.83 (3.064) | 82.43 (3.245) | 88.98 (3.503) |

Replace "-G/0" with "-G/A" for no-mounting-flange type

Specifications  
subject to change

Dimensions are in millimeters (inches)

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# BOARD-TO-CABLE CONNECTION

## 210 SERIES (FOR FLAT CABLE CONNECTION)

### ■ FEATURES

- 1.27 mm (0.050 in.) pitch contact arrangement in two rows enables high-density mounting.
- Connectors with 30 to 80 contacts are available.
- 0.635 mm (0.025 in.) pitch flat cables can be used (solid wires).
- Insulation is UL-approved (94V-0) and is washable.

### ■ SPECIFICATIONS

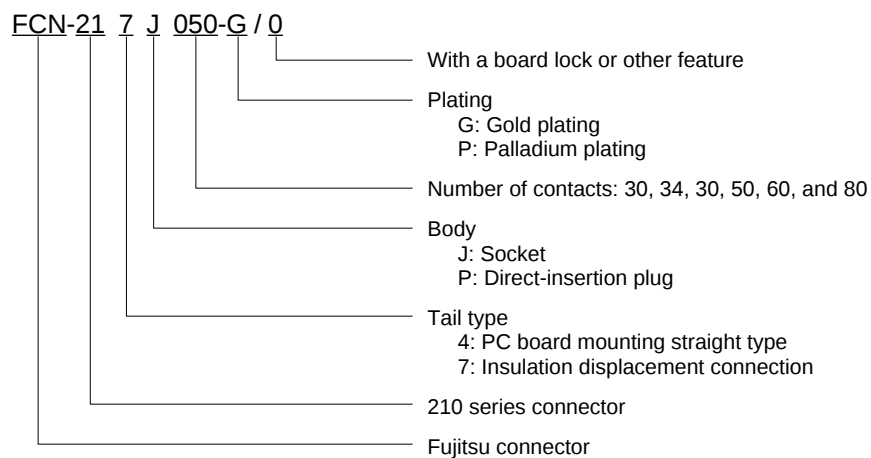
| Item                           | Specifications                                           |
|--------------------------------|----------------------------------------------------------|
| Operating temperature range    | −55°C to +105°C                                          |
| Current rating                 | 0.5 A                                                    |
| Voltage rating                 | AC 250 V                                                 |
| Contact resistance             | 35 mΩ max. (DC 6 V, 0.1 A)                               |
| Insulation resistance          | 1000 MΩ min. (DC 500 V)                                  |
| Dielectric withstand voltage   | AC 500 V for 1 minute                                    |
| Insertion force                | 4 kg max. (10 pins)                                      |
| Withdrawal force               | 250 g min. (10 pins)                                     |
| Applicable wire                | 0.635 mm (0.025 in.) flat cable<br>AWG #30 (solid wires) |
| Applicable PC board (standard) | Thickness: 0.8 to 1.6 mm (0.031 to 0.063 in.)            |



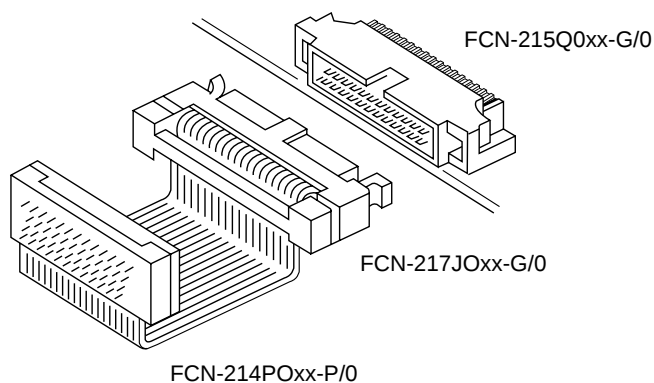
### ■ MATERIALS

| Item      | Materials           |                   |
|-----------|---------------------|-------------------|
| Insulator | Polyester (UL94V-0) |                   |
| Conductor | Copper alloy        |                   |
| Plating   | Contact             | Gold plating      |
|           | Terminal            | Palladium plating |

## ■ ORDERING CODE

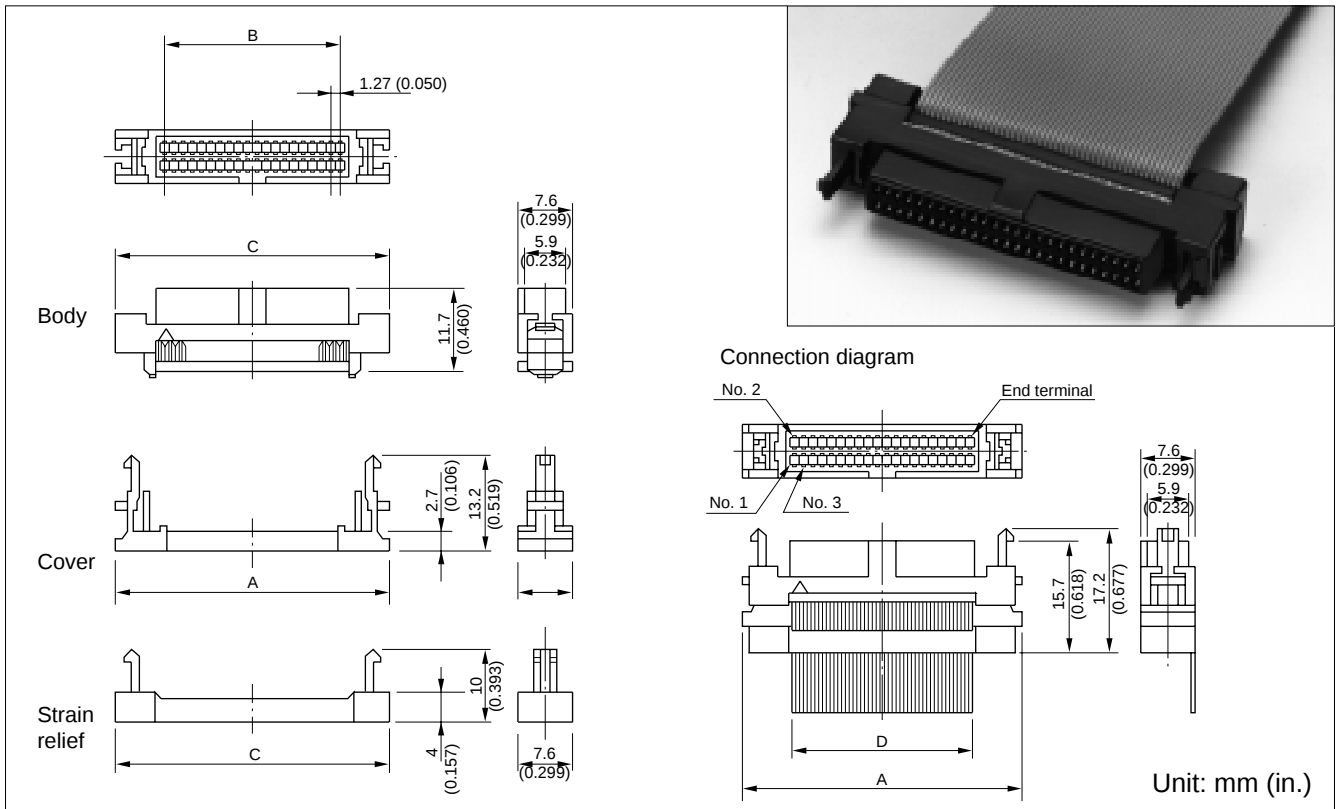


## ■ APPLICATION



## IDC SOCKET (FOR 0.635 MM (0.025 IN.) PITCH FLAT CABLES)

### ■ DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

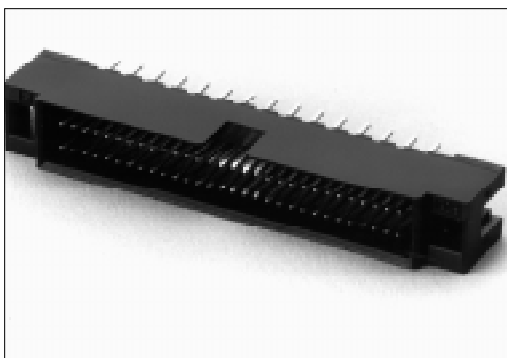
| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|---------------|
|                    |                 | A                    | B             | C             | D             | E             |
| 30                 | FCN-217J030-G/0 | 33.43 (1.316)        | 17.78 (0.700) | 31.83 (1.253) | 20.68 (0.814) | 19.05 (0.750) |
| 34                 | FCN-217J034-G/0 | 35.97 (1.416)        | 20.32 (0.800) | 34.37 (1.353) | 23.22 (0.914) | 21.59 (0.850) |
| 40                 | FCN-217J040-G/0 | 39.78 (1.566)        | 24.13 (0.950) | 38.18 (1.503) | 27.03 (1.064) | 25.40 (1.000) |
| 50                 | FCN-217J050-G/0 | 46.13 (1.816)        | 30.48 (1.200) | 44.53 (1.753) | 33.38 (1.314) | 31.75 (1.250) |
| 60                 | FCN-217J060-G/0 | 52.48 (2.066)        | 36.83 (1.450) | 50.88 (2.003) | 39.73 (1.564) | 38.10 (1.500) |
| 80                 | FCN-217J080-G/0 | 65.18 (2.566)        | 49.53 (1.950) | 63.58 (2.503) | 52.43 (1.064) | 50.80 (2.000) |
| 100                | FCN-217J080-G/0 | 77.83 (3.066)        | 62.23 (2.450) | 76.28 (3.003) | 65.13 (2.564) | 63.50 (2.500) |

See page 2-19 for IDC tools.

### ■ MATING HEADER

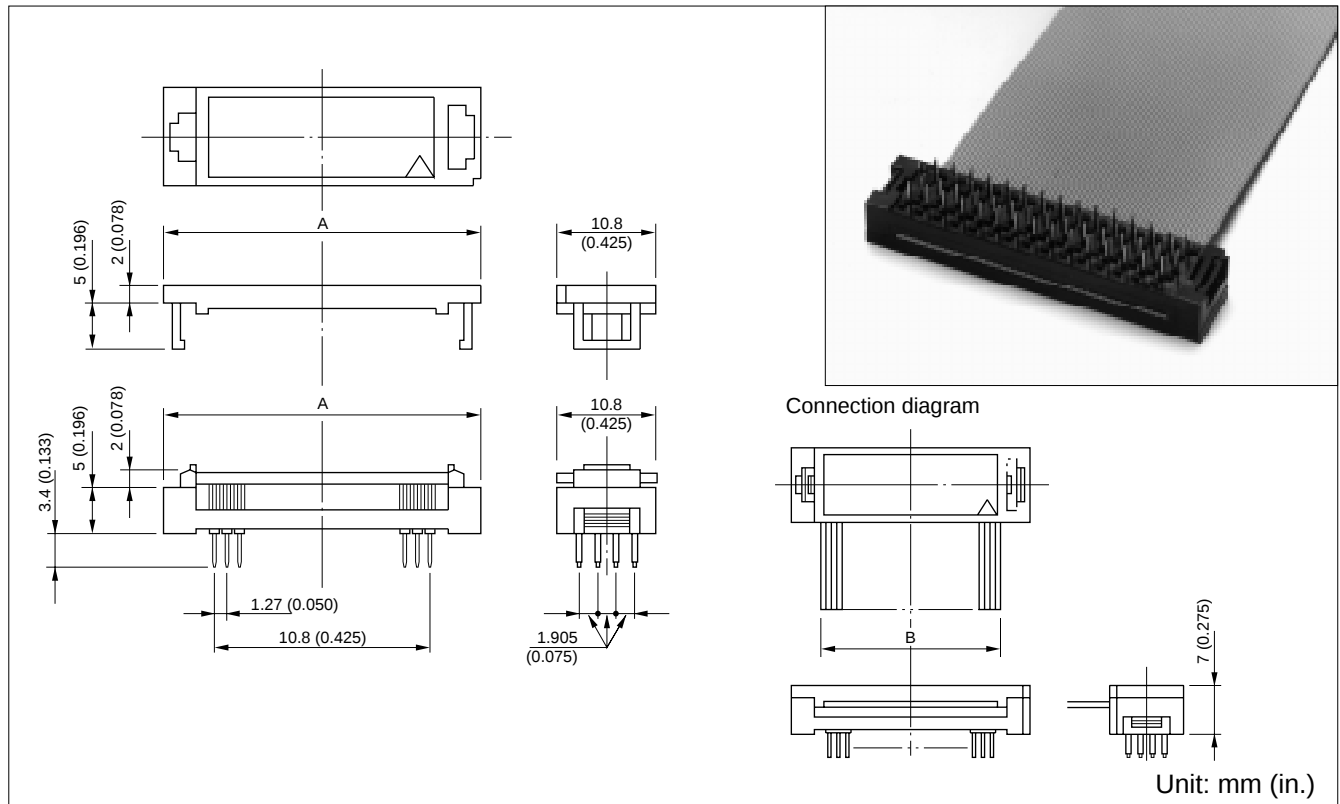
(Straight) FCN-214Qxxx-G/0 (xxx: number of contacts)

(Right-angle) FCN-215Qxxx-G/0 (xxx: number of contacts)

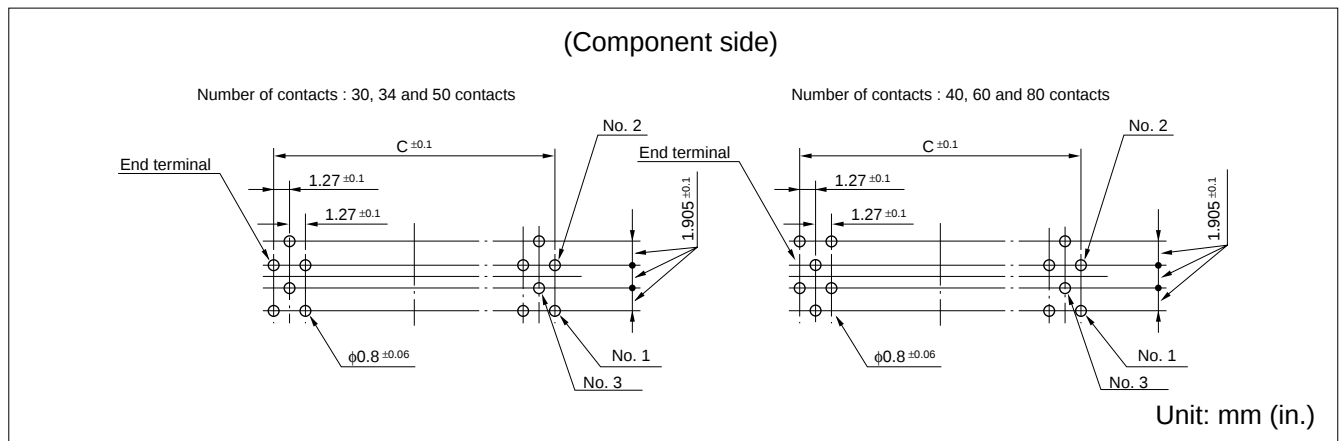


## PC BOARD MOUNTING PLUG (FOR 0.635 MM (0.025 IN.) PITCH FLAT CABLES)

## ■ DIMENSIONS



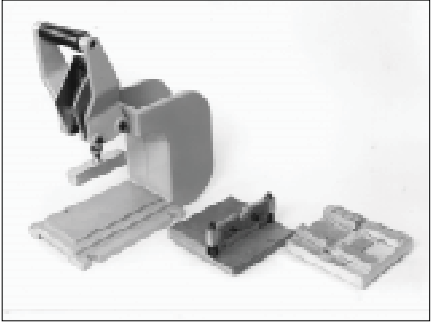
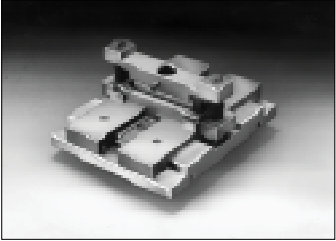
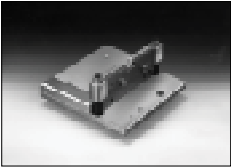
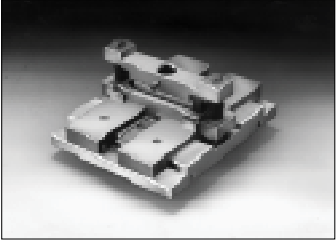
## ■ MOUNTING HOLE LAYOUT



## ■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number     | Dimensions: mm (in.) |               |               |
|--------------------|-----------------|----------------------|---------------|---------------|
|                    |                 | A                    | B             | C             |
| 30                 | FCN-214P030-P/0 | 28.35 (1.116)        | 19.05 (0.750) | 17.78 (0.700) |
| 34                 | FCN-214P034-P/0 | 30.89 (1.126)        | 21.59 (0.850) | 20.32 (0.800) |
| 40                 | FCN-214P040-P/0 | 34.70 (1.366)        | 25.40 (1.000) | 24.13 (0.950) |
| 50                 | FCN-214P050-P/0 | 41.05 (1.616)        | 31.75 (1.250) | 30.48 (1.200) |
| 60                 | FCN-214P060-P/0 | 47.40 (1.866)        | 38.10 (1.500) | 36.83 (1.450) |
| 80                 | FCN-214P080-P/0 | 60.10 (2.366)        | 50.80 (2.000) | 49.53 (1.950) |

## IDC TOOLS

|                                                                                                                                            |                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Hand press</b></p>  <p><b>FCN-707T-T101/H</b></p>   | <p><b>Locator plate (for sockets)</b></p>  <p><b>FCN-217T-T032/H</b></p>                 |
| <p><b>Cable cutter</b></p>  <p><b>FCN-707T-T001/H</b></p> | <p><b>Locator plate (for PC board mounting plugs)</b></p>  <p><b>FCN-217T-T034/H</b></p> |

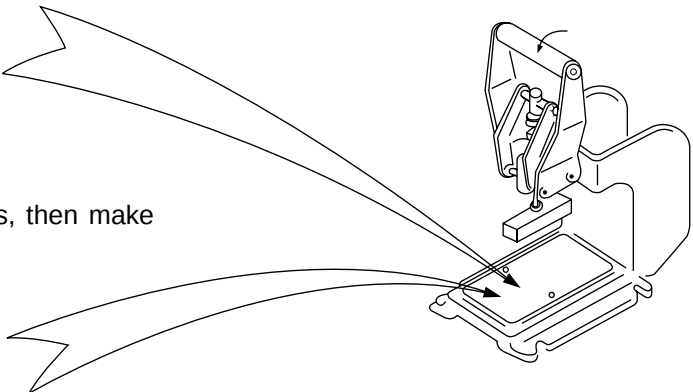
| Tool Name                                                                                | Part Number                           |
|------------------------------------------------------------------------------------------|---------------------------------------|
| Cable cutter (common)                                                                    | FCN-707T-T001/H                       |
| Hand Press (common)<br>To be used with locator plate FCN-217T-T032/H and FCN-217T-T034/H | FCN-707T-T101/H                       |
| Hand Press (special)<br>To be used with locator plate FCN-217T-T073/H                    | FCN-707T-T107/H                       |
| Locator Plate (socket) (FCN-217J - Series) (special)                                     | FCN-217T-T073/H (80 and 100 position) |
| Locator Plate (socket) (FCN-217J - Series) (common)                                      | FCN-217T-T032/H (30 thru 60 position) |
| Locator Plate (PCB plug) (FCN-214P - Series)                                             | FCN-217T-T034/H                       |

■ CONNECTION PROCEDURE (OUTLINE)

- 1. Set the cable cutter on the hand press, then cut the flat cable to length.



- 2. Set the locator plate on the hand press, then make connection (IDC).



■ CONNECTION TYPES

• Flat cable connection types

There are several types of connection of a connector and flat cable. Select a connection method from those in the figures below according to your application. Fujitsu will assemble the connector as specified.

• Cable length

The length of each cable is defined as shown in the figures below and represented in units of cm (in.). The minimum cable length is 7 cm (2.756 in.). The specified tolerance of cable length is  $\pm 10\%$  ( $\pm 5$  mm (0.197 in.) min.) for L  $\leq$  10 cm (3.937 in.),  $\pm 1$  cm (0.394 in.) for 100 cm (39.370 in.)  $\leq$  L  $\leq$  10 cm (3.937 in.),  $\pm (L/100$  cm + 2 cm) (L/100 in. + 0.787 in.) for 100 cm (39.370 in.)  $\leq$  L  $\leq$  1800 cm (708.661 in.), and  $\pm 20$  cm (7.874 in.) for L  $\geq$  1800 cm (708.661 in.).

| Connection type<br>Connector name | No.1 | No.2 | No.3 | No.4 |
|-----------------------------------|------|------|------|------|
| 210 series socket                 |      |      |      |      |
| 210 series PC board mounting plug |      |      |      |      |

Specifications subject to change

Dimensions are in millimeters (inches)

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