

# 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.)

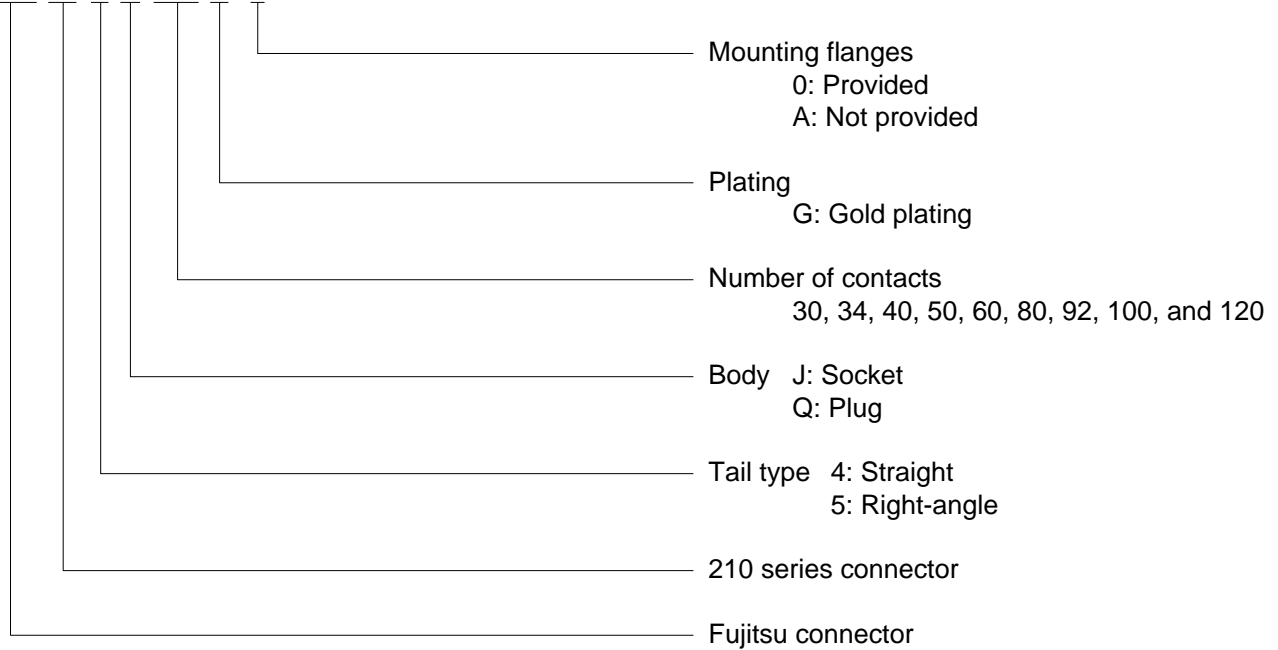


### ■ MATERIALS

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

## ■ ORDERING CODE

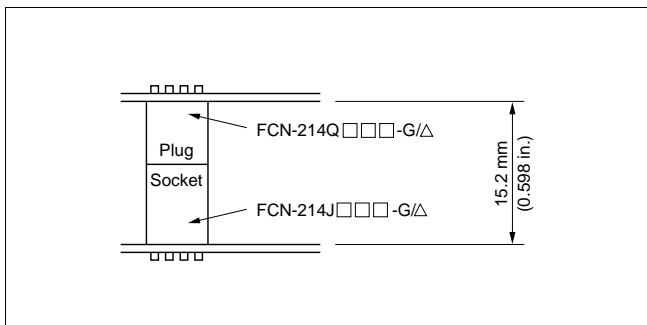
**FCN-21 4 Q 050-G / 0**



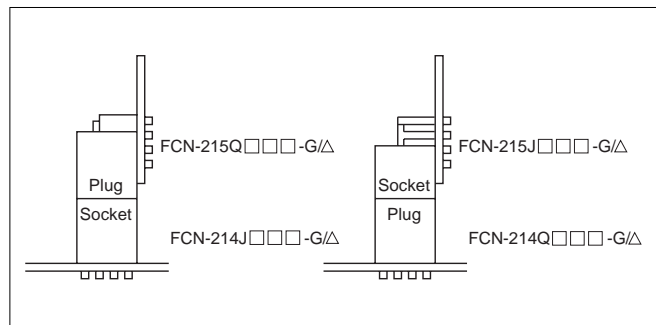
## ■ APPLICATIONS

### Board-to-board connection

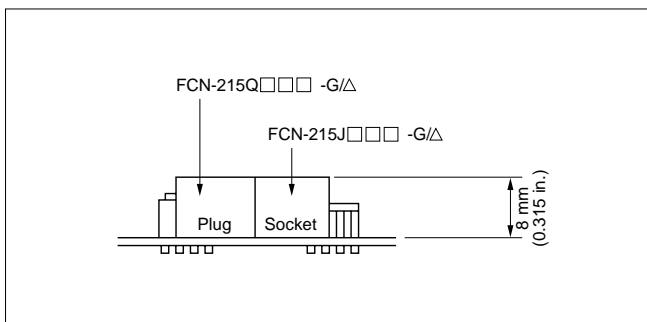
- Parallel PCB connection



- Vertical PCB connection

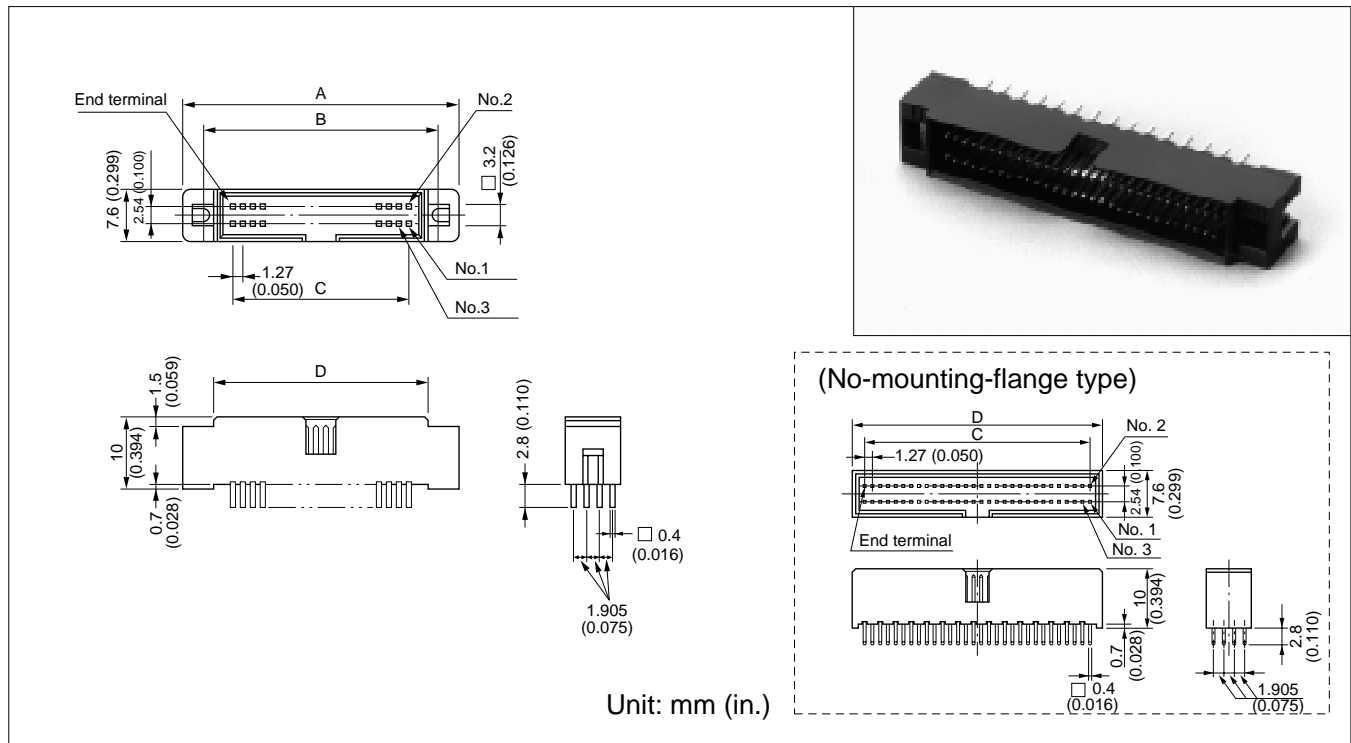


- Horizontal PCB connection

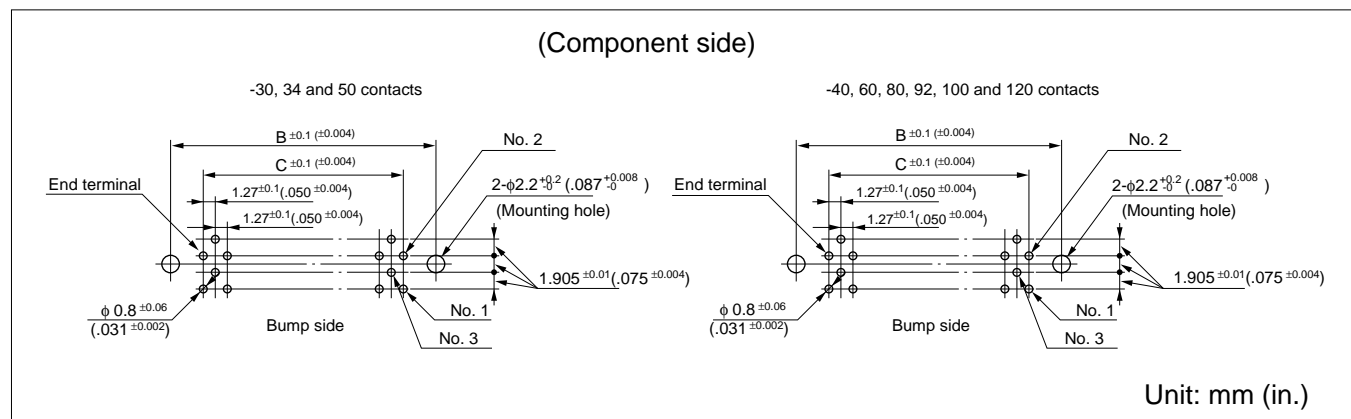


## STRAIGHT PLUG

### ■ DIMENSIONS



### ■ MOUNTING HOLE LAYOUT



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

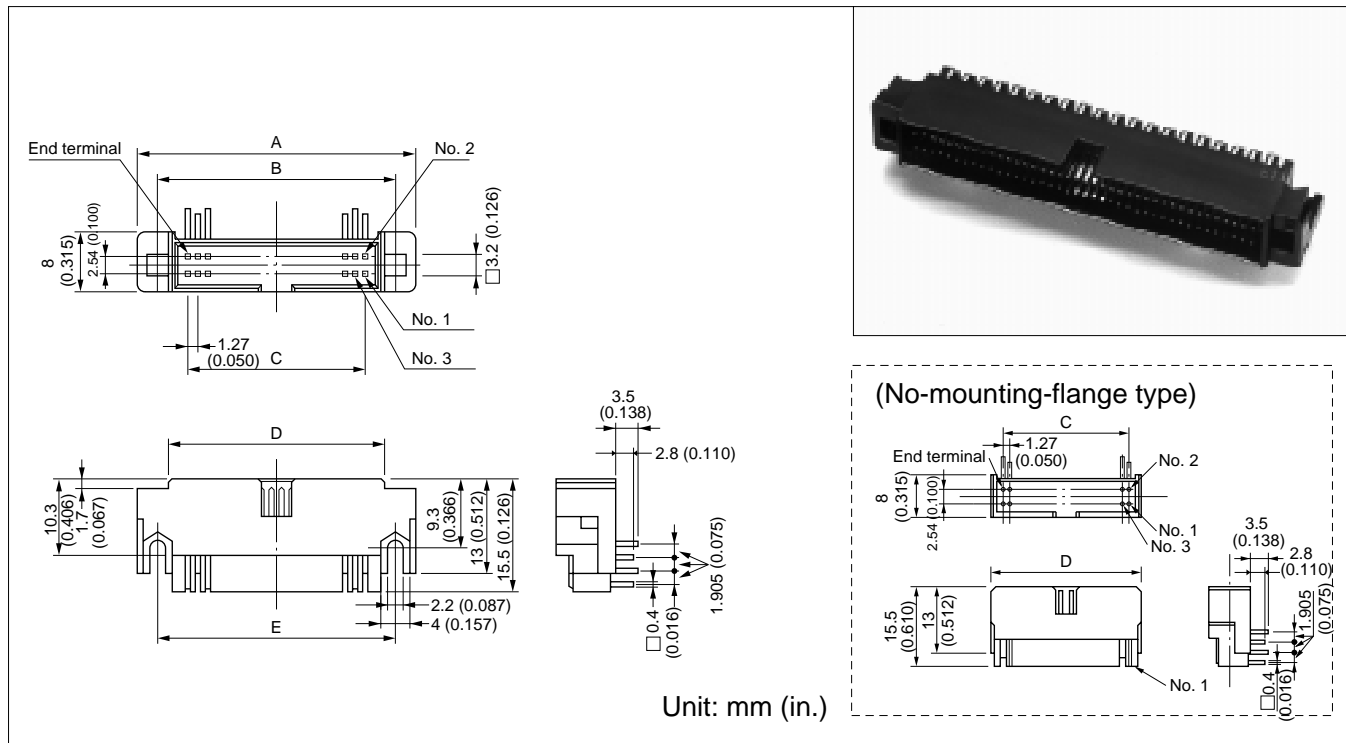
### ■ PART NUMBERS AND DIMENSIONS

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)

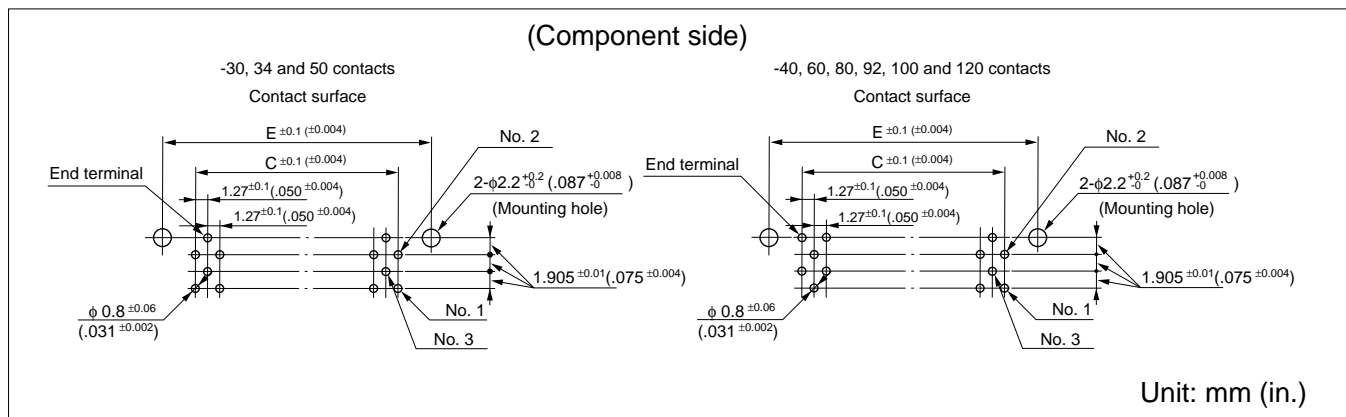
Replace “-G/0” with “-G/A” for no-mounting-flange type

## 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.).

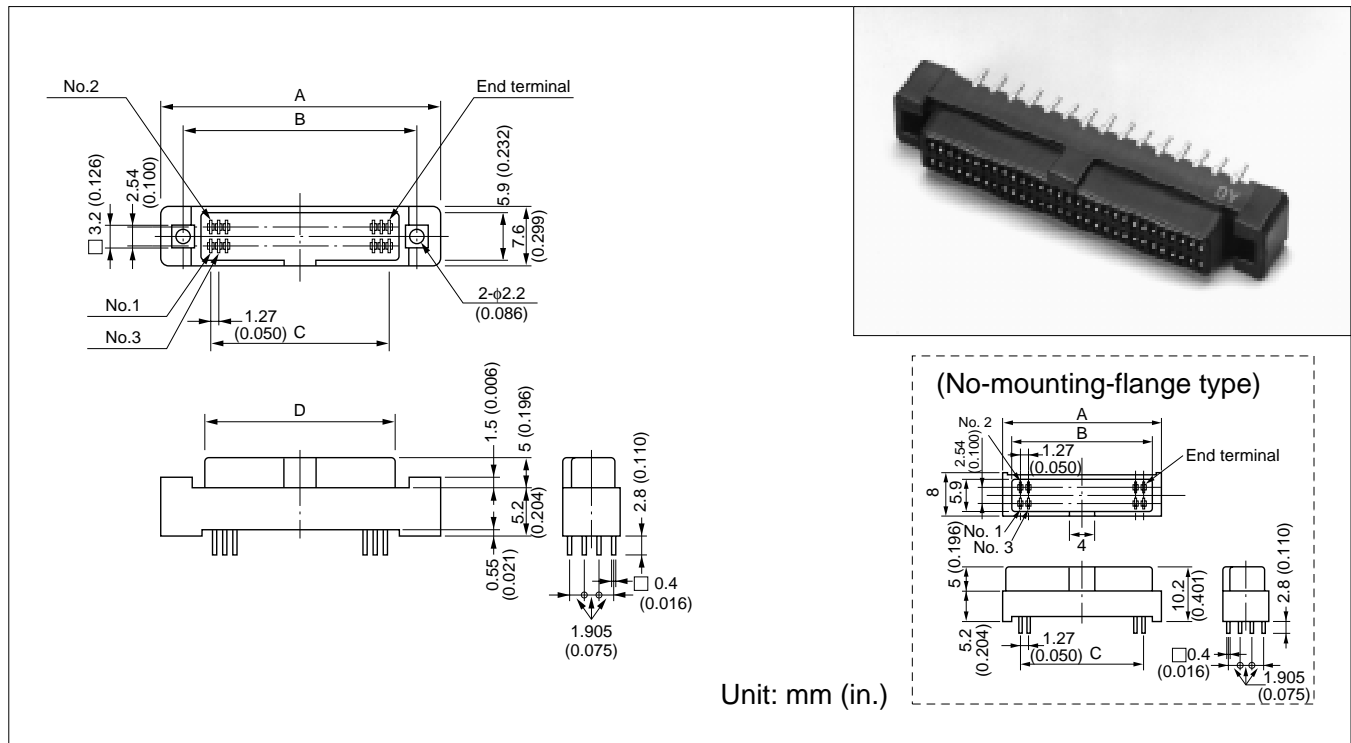
### ■ PART NUMBERS AND DIMENSIONS

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)

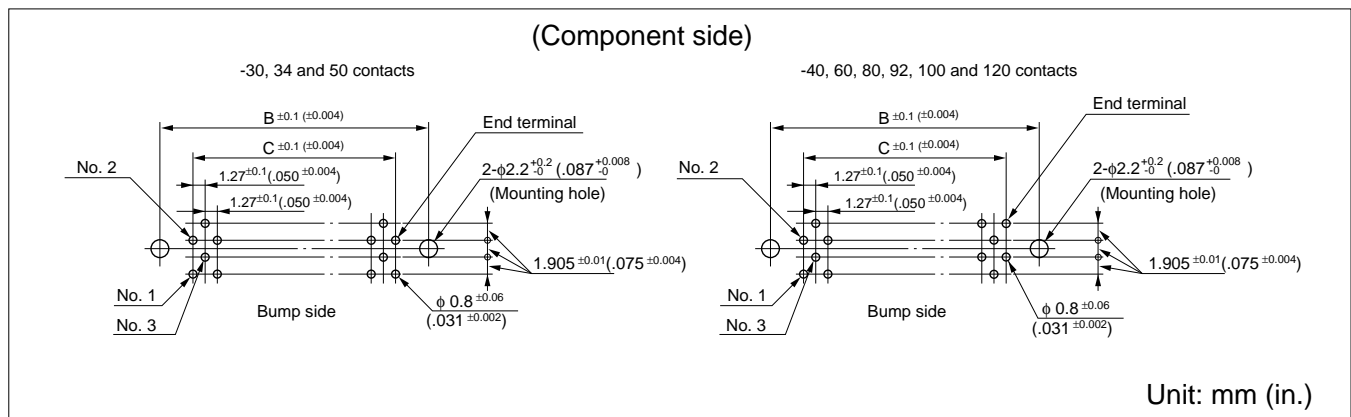
Replace "-G/0" with "-G/A" for no-mounting-flange type

## STRAIGHT SOCKET

### ■ DIMENSIONS



### ■ MOUNTING HOLE LAYOUT



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

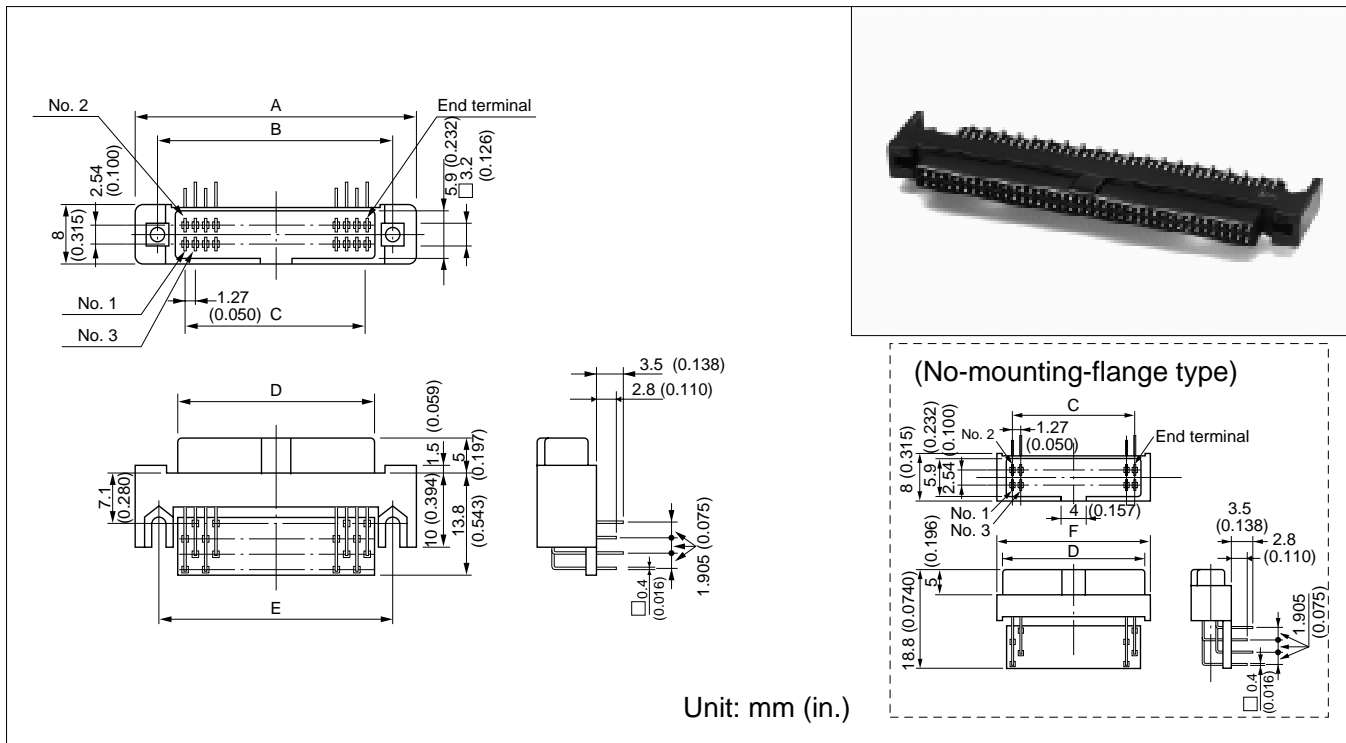
### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
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)

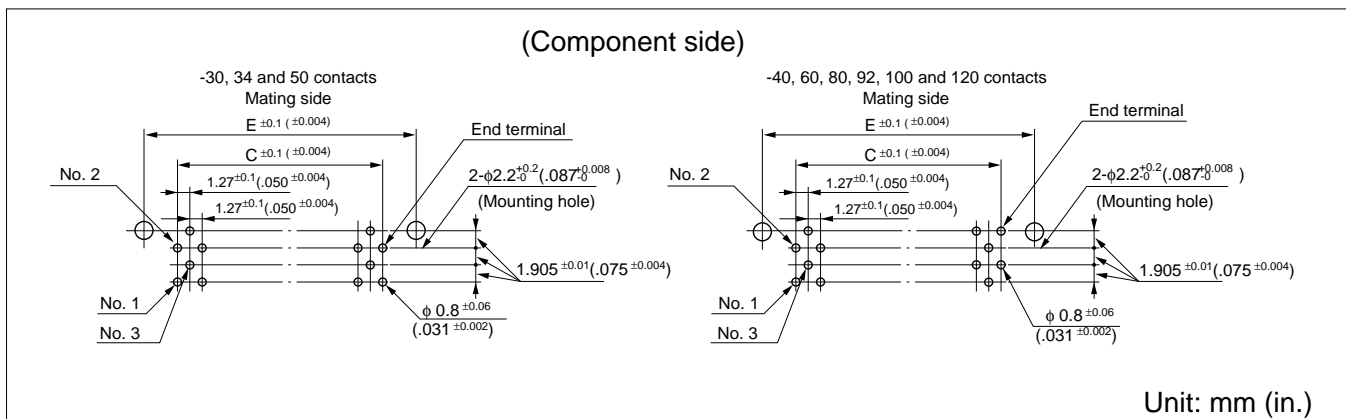
Replace "-G/0" with "-G/A" for no-mounting-flange type

## 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 (0.353)
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

# 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

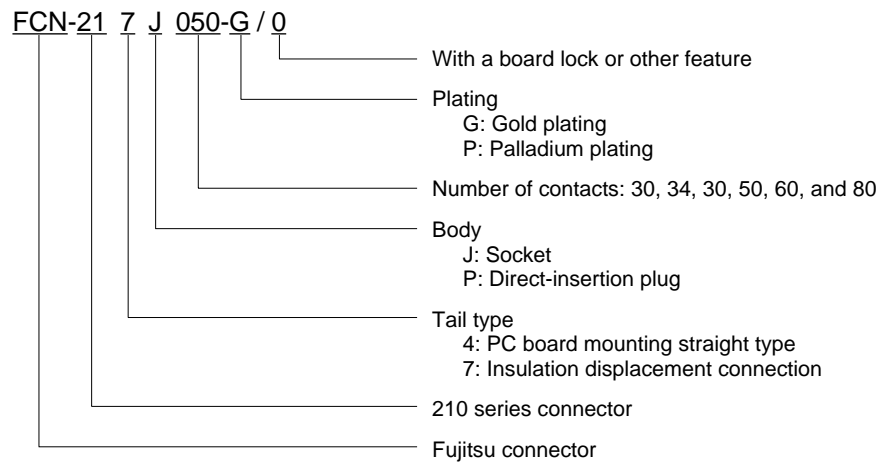
Item	Specifications
Operating temperature range	-55°C to +105°C
Current rating	0.5 A
Voltage rating	AC 250 V
Contact resistance	35 mΩ max. (DC 6 V, 0.1 A)
Insulation resistance	1000 MΩ min. (DC 500 V)
Dielectric withstand voltage	AC 500 V for 1 minute
Insertion force	4 kg max. (10 pins)
Withdrawal force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



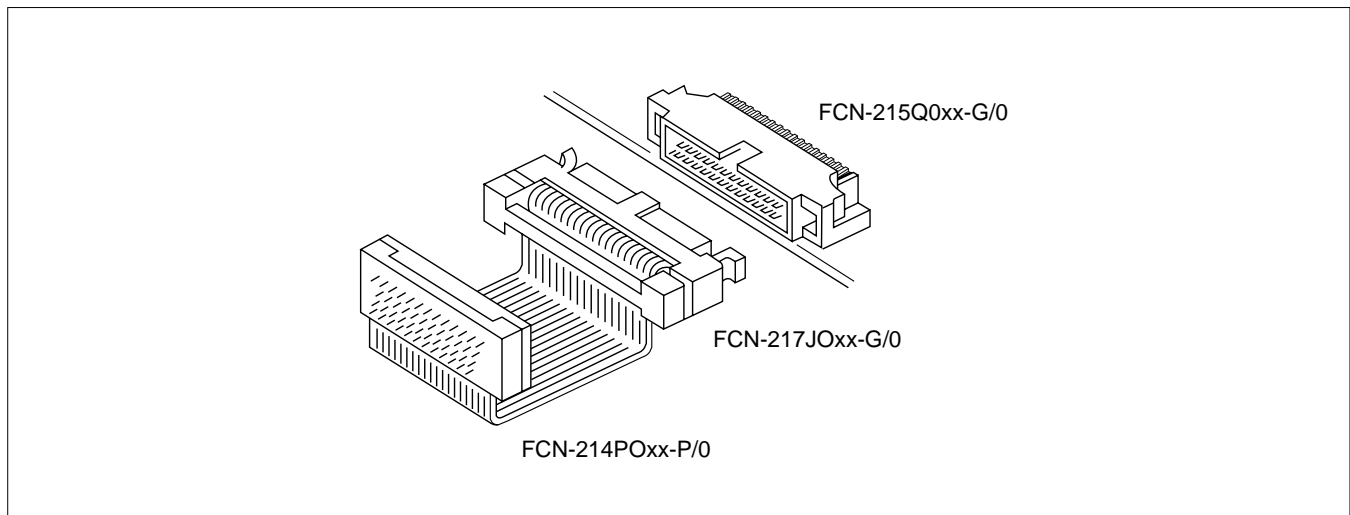
### ■ MATERIALS

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

## ■ ORDERING CODE



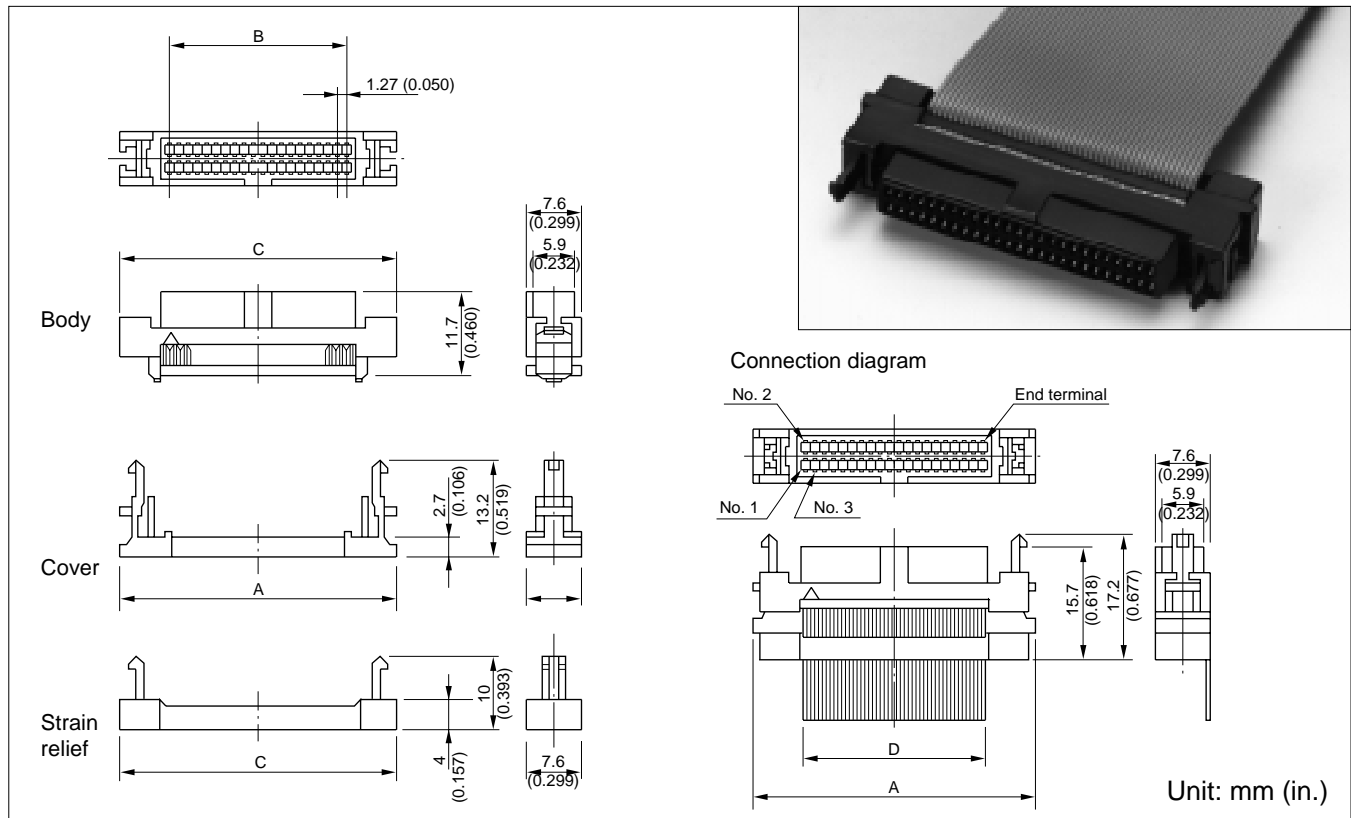
## ■ APPLICATION





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

### ■ DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

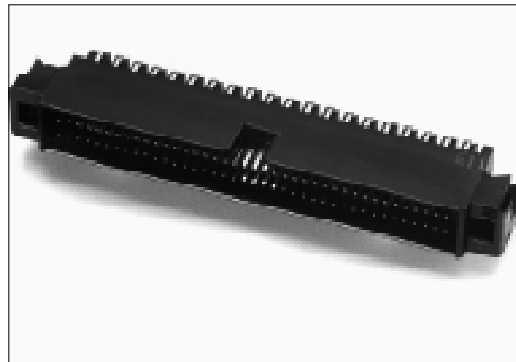
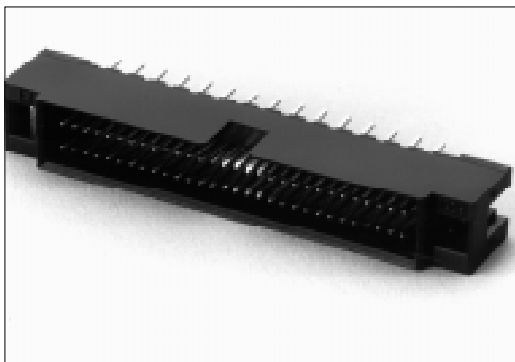
Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
30	FCN-217J030-G/0	33.43 (1.316)	17.78 (0.700)	31.83 (1.253)	20.68 (0.814)	19.05 (0.750)
34	FCN-217J034-G/0	35.97 (1.416)	20.32 (0.800)	34.37 (1.353)	23.22 (0.914)	21.59 (0.850)
40	FCN-217J040-G/0	39.78 (1.566)	24.13 (0.950)	38.18 (1.503)	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

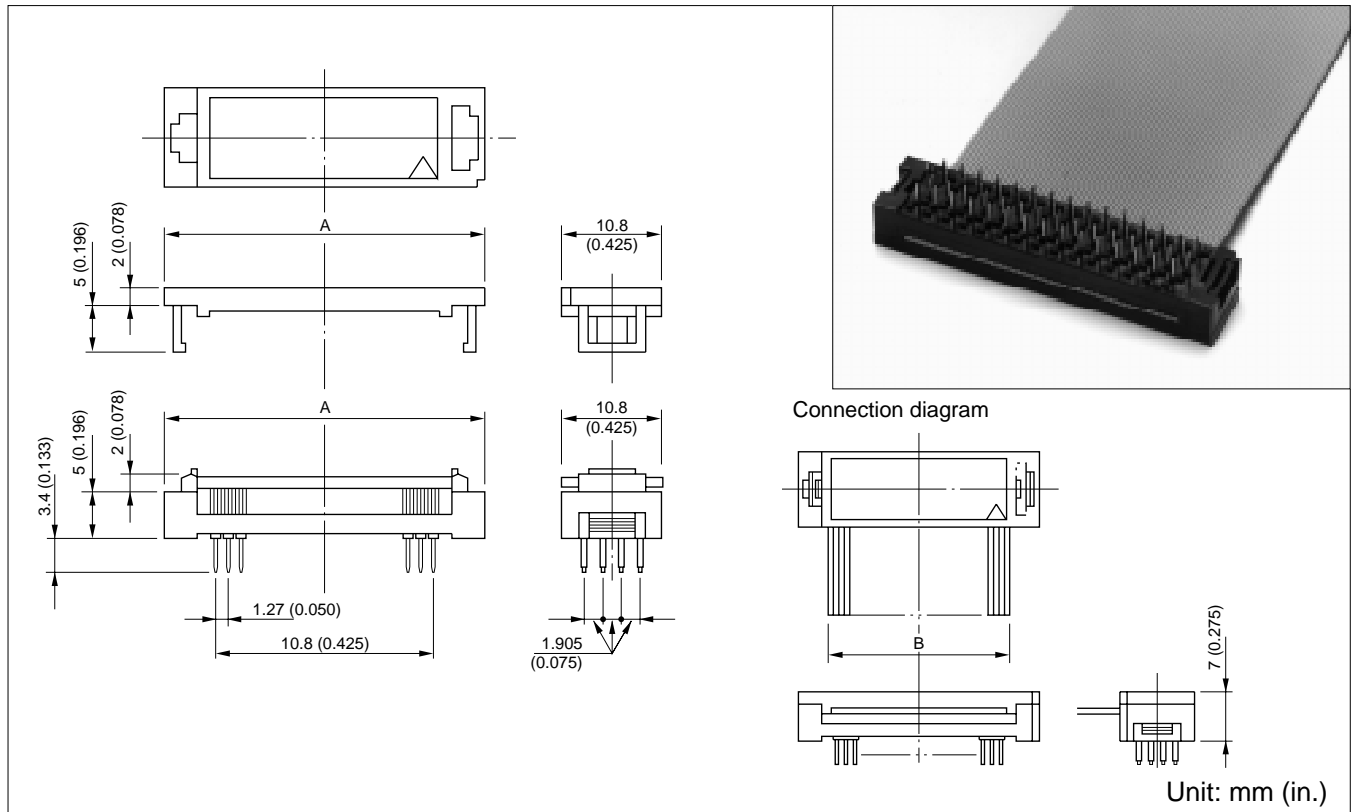
(Straight) FCN-214Qxxx-G/0 (xxx: number of contacts)

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

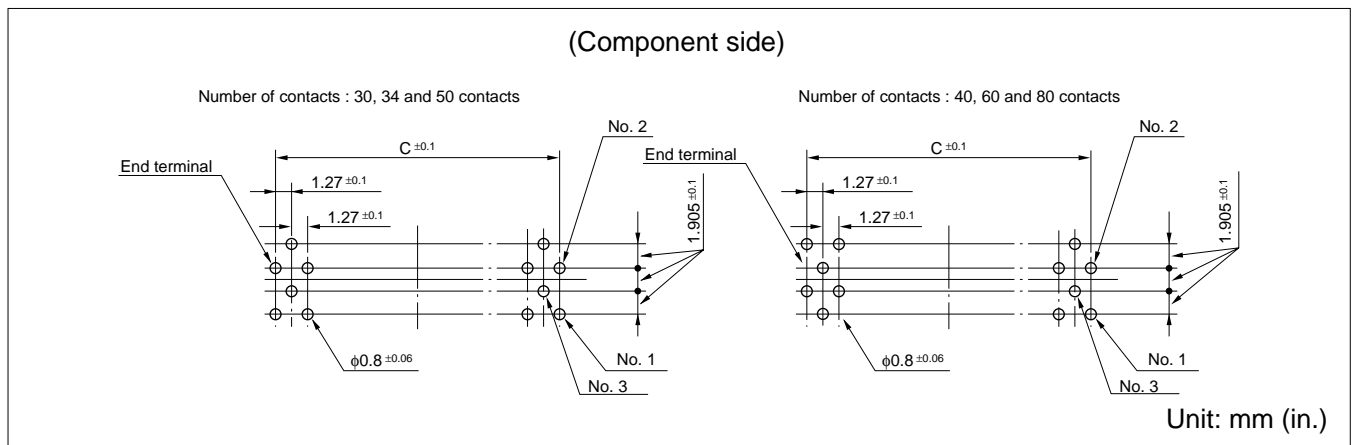


## PC BOARD MOUNTING PLUG (FOR 0.635 MM (0.025 IN.) PITCH FLAT CABLES)

### ■ DIMENSIONS



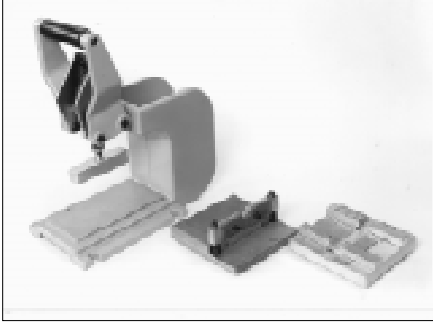


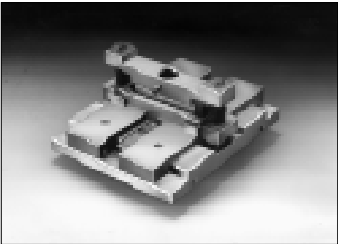
### ■ MOUNTING HOLE LAYOUT



### ■ PART NUMBERS AND DIMENSIONS

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

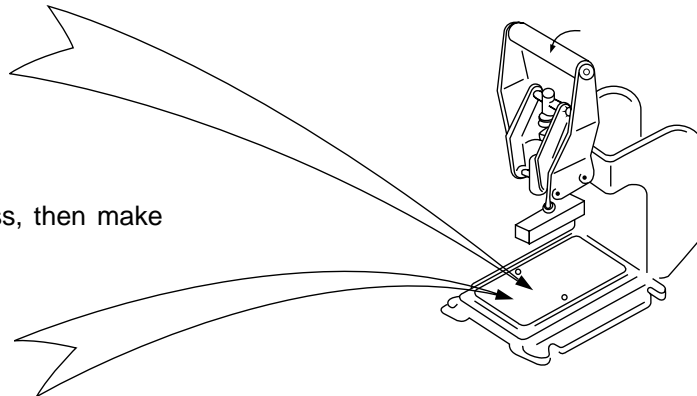
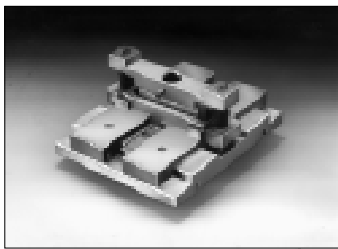
Tool Name	Part Number
Cable cutter (common)	FCN-707T-T001/H
Hand Press (common) To be used with locator plate FCN-217T-T032/H and FCN-217T-T034/H	FCN-707T-T101/H
Hand Press (special) To be used with locator plate FCN-217T-T073/H	FCN-707T-T107/H
Locator Plate (socket) (FCN-217J □□□ - Series) (special)	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-217P □□□ - Series)	FCN-707T-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  $10 < L \leq 100$  cm (39.370 in.),  $\pm (L/100 + 2)$  mm ( $L/100$  in. + 0.787 in.) for  $100 < L \leq 1800$  cm (708.661 in.), and  $\pm 20$  mm ( $\pm 0.787$  in.) for  $L > 1800$  cm (708.661 in.).

Connection type	No.1	No.2	No.3	No.4
Connector name				
210 series socket	L cm 1st cable	1st cable	1st cable	1st cable
210 series PC board mounting plug	1st cable	L cm 1st cable	1st cable 4th cable	1st cable 2nd cable

Specifications subject to change

Dimensions are in millimeters (inches)

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