

FOR BOARD-TO-CABLE CONNECTION

230 SERIES (GENERAL-PURPOSE TYPE)

DISCONTINUED

■ FEATURES

- 1.27 mm (0.050 in.) pitch contact arrangement in two rows enables high-density mounting.
- Connectors with 20 to 80 contacts are available for various purposes.
- Various types of board-to-cable connection can be performed.
- Discrete-wire (AWG #28, #30) I/O cables can be assembled by IDC or soldering. Metal covers completely protect sockets from EMI.
- Tails 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.
- Insulation is UL-approved (94V-0) and is washable.

■ SPECIFICATIONS

| Item | Specifications | | | | | |
|--------------------------------|--|-----|------|------|-----|-----|
| Operating temperature range | -55°C to +105°C | | | | | |
| Current rating | DC 1 A | | | | | |
| Voltage rating | AC 240 V | | | | | |
| Contact resistance | 30 mΩ max. (DC 6 V, 0.1 A) | | | | | |
| Insulation resistance | 1000 MΩ min. (DC 500 V) | | | | | |
| Dielectric withstand voltage | AC 750 V for 1 minute | | | | | |
| Insertion force [kg max.] | Number of contacts | 20 | 28 | 36 | 50 | 68 |
| | Force | 5.5 | 6.0 | 6.5 | 8.0 | 9.0 |
| Withdrawal force [kg min.] | Number of contacts | 20 | 28 | 36 | 50 | 68 |
| | Force | 0.8 | 1.12 | 1.44 | 2.0 | 2.3 |
| Applicable PC board (standard) | 1.6 mm (0.063 in.) thick | | | | | |
| Applicable wire (standard) | IDC: AWG #28 and #30 with ϕ 0.5 to 0.88 mm (0.019 to 0.035 in.) insulation diameter. The applicable wires depend on the number of contacts. See the descriptions of IDC sockets and metal covers. Soldering: AWG #26 max. (reference) | | | | | |



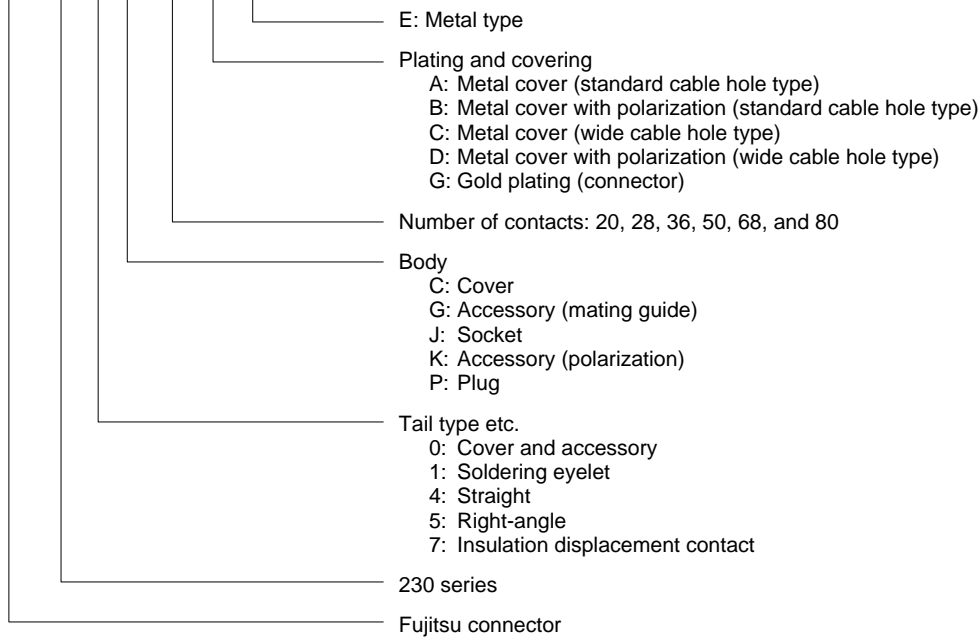
■ MATERIALS

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

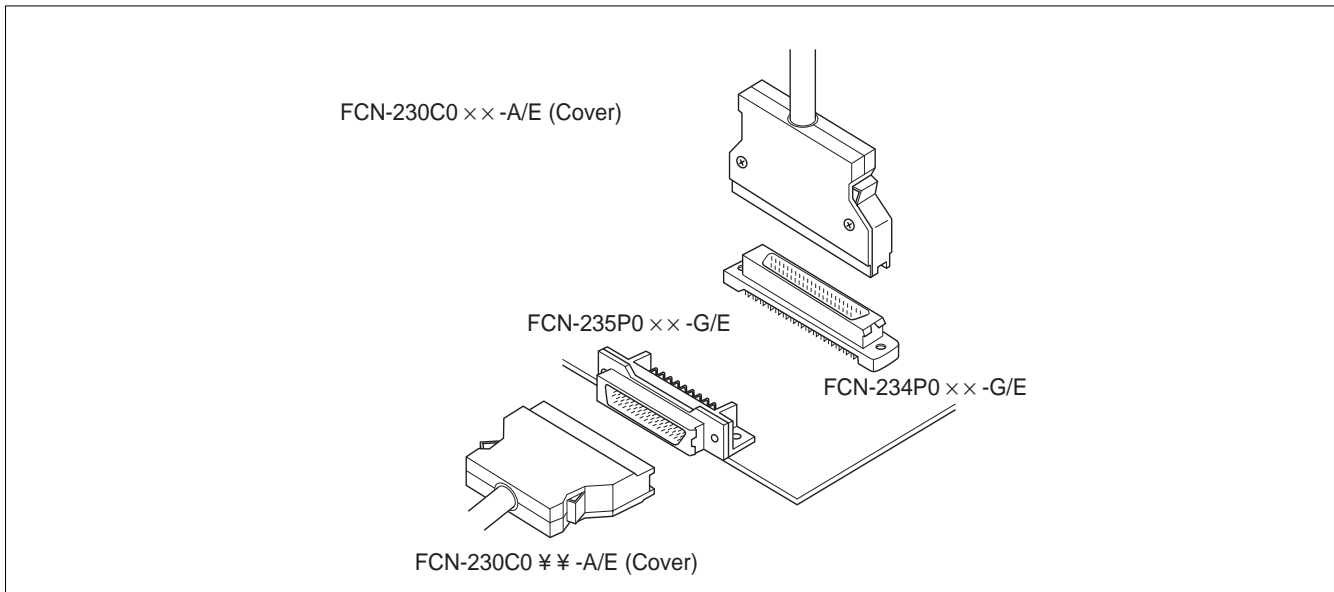
230 Series (General-Purpose Type)

■ ORDERING CODE

FCN-23 4 P 050-G / E



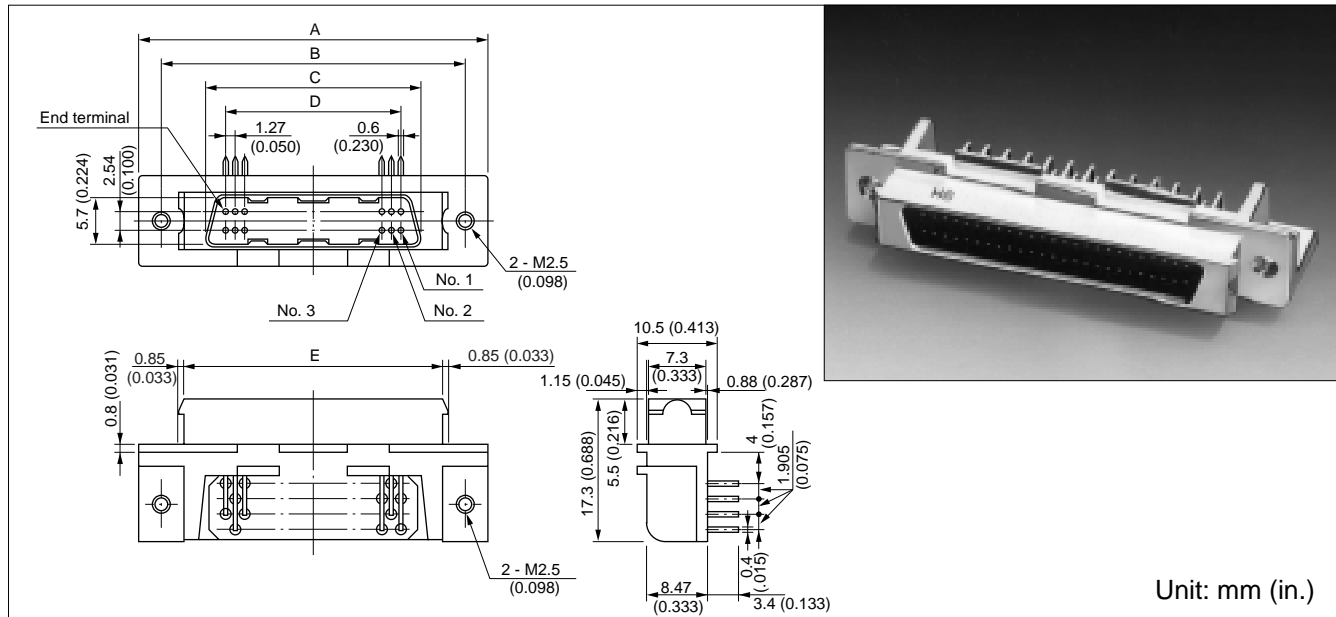
■ APPLICATIONS



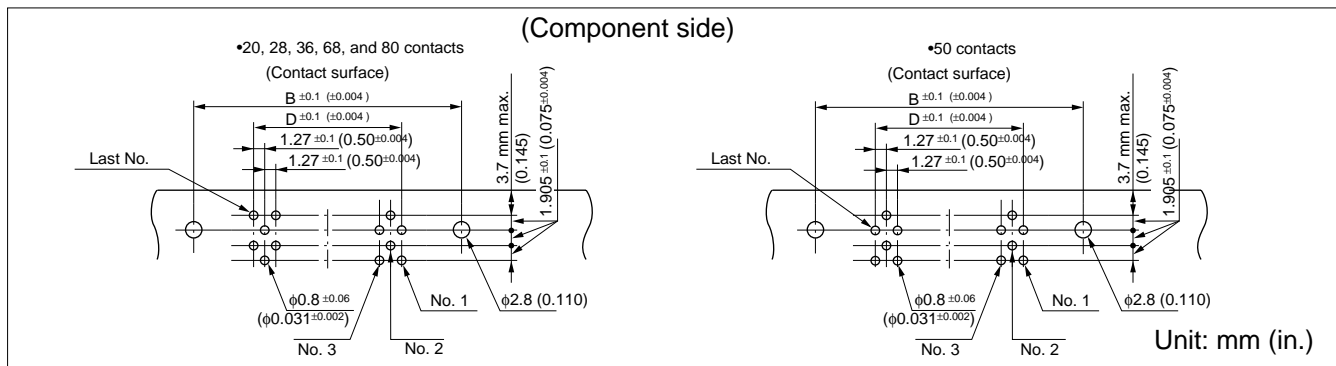
230 Series (General-Purpose Type)

RIGHT-ANGLE PLUG

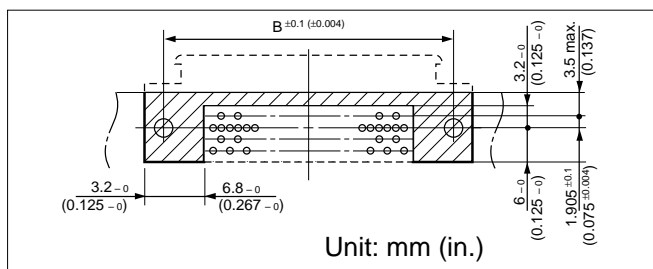
■ DIMENSIONS



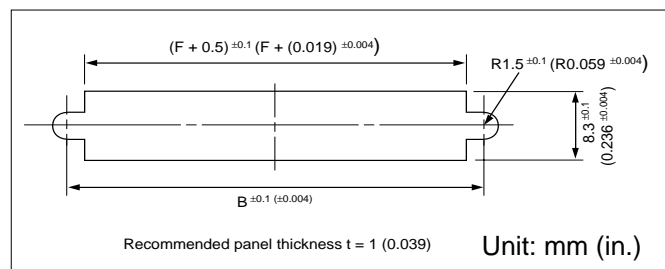
■ MOUNTING HOLE LAYOUT



■ PATTERN INHIBITED AREAS



■ RECOMMENDED PANEL DIMENSIONS



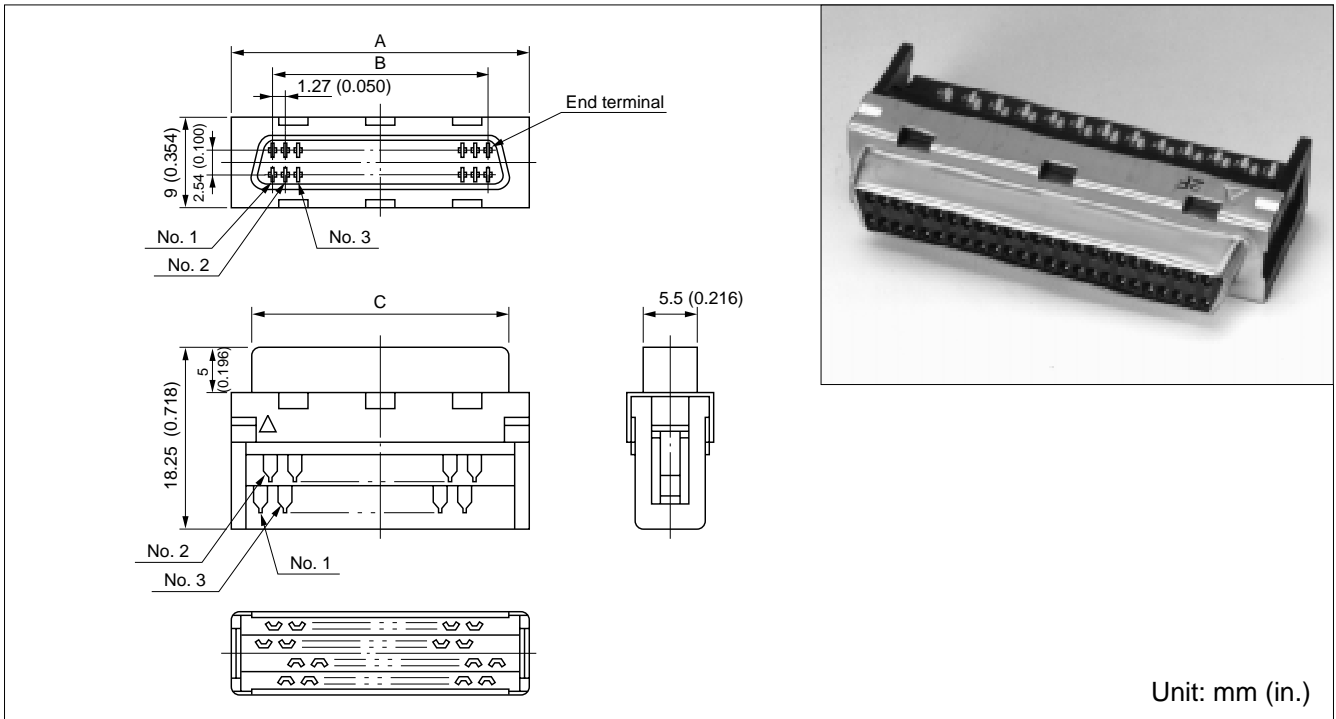
■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number | Dimensions: mm (in.) | | | | | |
|--------------------|-----------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| | | A | B | C | D | E | F |
| 28 | FCN-235P028-G/E | 38.48 (1.514) | 32.48 (1.278) | 20.88 (0.822) | 16.51 (0.650) | 26.68 (1.050) | 28.38 (1.117) |
| 36 | FCN-235P036-G/E | 43.56 (1.714) | 37.56 (1.478) | 25.96 (1.022) | 21.59 (0.850) | 31.76 (1.250) | 33.46 (1.317) |
| 50 | FCN-235P050-G/E | 52.45 (2.064) | 46.45 (1.828) | 34.85 (1.372) | 30.48 (1.200) | 40.65 (1.600) | 42.35 (1.607) |
| 68 | FCN-235P068-G/E | 63.88 (2.514) | 57.88 (2.278) | 46.28 (1.822) | 41.91 (1.650) | 52.08 (2.050) | 53.78 (2.117) |
| 80 | FCN-235P080-G/E | 71.50 (2.814) | 65.50 (2.587) | 53.90 (2.122) | 49.53 (1.950) | 59.70 (2.350) | 61.40 (2.417) |

230 Series (General-Purpose Type)

SOLDERING EYELET SOCKET

■ DIMENSIONS



■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number | Dimensions: mm (in.) | | |
|--------------------|-----------------|----------------------|---------------|---------------|
| | | A | B | C |
| 20 | FCN-231J020-G/E | 19.25 (0.757) | 11.43 (0.450) | 15.60 (0.614) |
| 28 | FCN-231J028-G/E | 24.33 (0.957) | 16.51 (0.650) | 20.68 (0.814) |
| 36 | FCN-231J036-G/E | 29.41 (1.157) | 21.59 (0.850) | 25.76 (1.014) |
| 50 | FCN-231J050-G/E | 38.30 (1.507) | 30.48 (1.200) | 34.65 (1.364) |
| 68 | FCN-231J068-G/E | 49.73 (1.957) | 41.91 (1.650) | 46.08 (1.814) |

■ CONNECTOR COVER

FCN-230C□□□-A/E

FCN-230C□□□-B/E

FCN-230C□□□-C/E

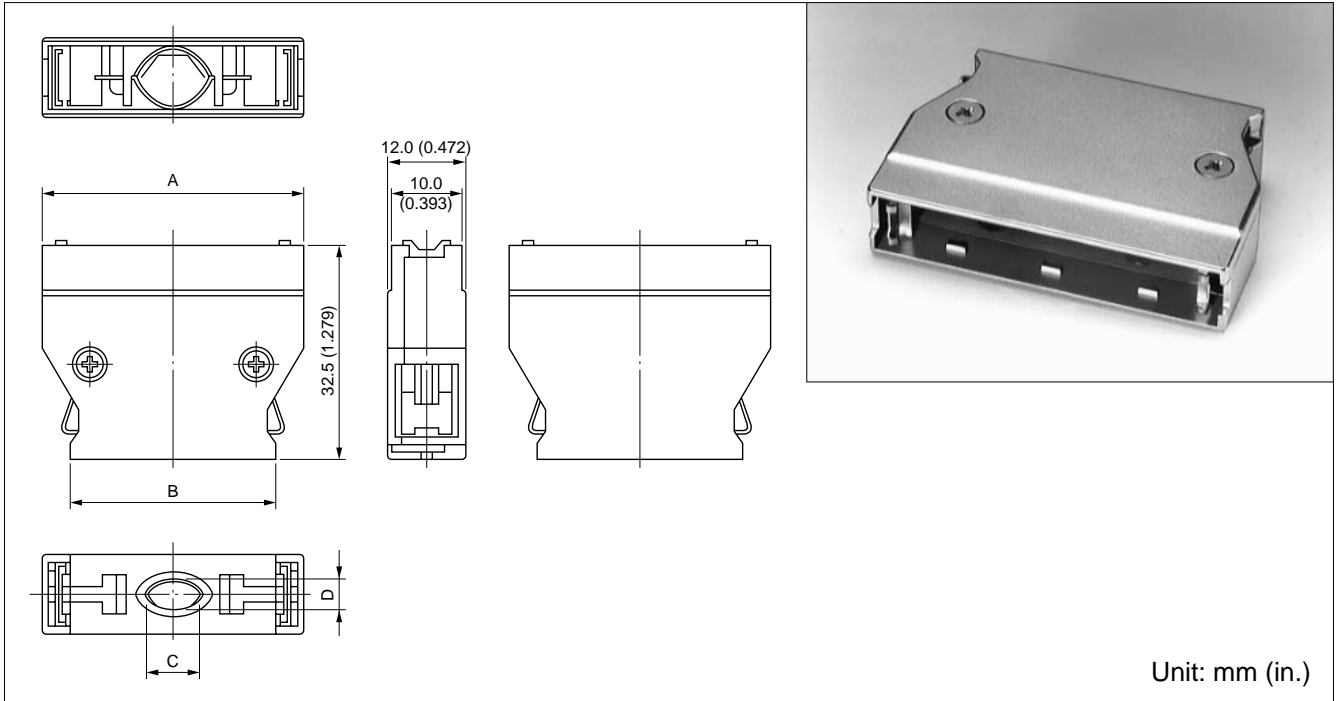
FCN-230C□□□-D/E

□□□: Number of contacts

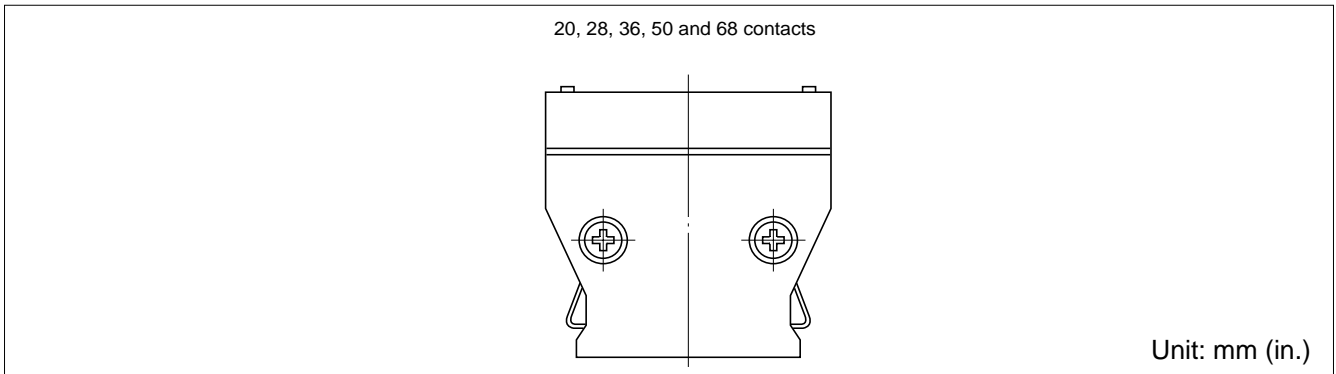
230 Series (General-Purpose Type)

METAL COVER [230 SERIES (GENERAL-PURPOSE), 230R SERIES (CONFORMING TO SCSI) AND 240 SERIES (GENERAL-PURPOSE)]

■ DIMENSIONS



■ SHAPE DEPENDING ON THE NUMBER OF CONTACTS



■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number | Dimensions: mm (in.) | | |
|--------------------|-----------------|----------------------|---------------|----------------------------|
| | | A | B | C × D |
| 20 | FCN-230C020-A/E | 28.95 (1.139) | 21.15 (0.852) | 6.5 × 4.5 (0.255 × 0.177) |
| | FCN-230C020-C/E | | | 8.5 × 8.2 (0.334 × 0.322) |
| 28 | FCN-230C028-A/E | 34.30 (1.350) | 26.23 (1.032) | 6.5 × 6.0 (0.255 × 0.236) |
| | FCN-230C028-C/E | | | 7.2 × 8.5 (0.283 × 0.334) |
| 36 | FCN-230C036-A/E | 39.11 (1.539) | 31.31 (1.232) | 9.5 × 8.0 (0.374 × 0.314) |
| | FCN-230C036-C/E | | | 9.0 × 10.0 (0.354 × 0.393) |
| 50 | FCN-230C050-A/E | 48.00 (1.899) | 40.20 (1.582) | 8.5 × 7.0 (0.334 × 0.275) |
| | FCN-230C050-C/E | | | 10.0 × 9.7 (0.393 × 0.381) |
| 68 | FCN-230C068-A/E | 59.43 (2.339) | 51.63 (2.032) | 9.0 × 8.0 (0.354 × 0.314) |
| | FCN-230C068-C/E | | | 10.0 × 9.0 (0.393 × 0.354) |

230 Series (General-Purpose Type)

METAL COVER WITH POLARIZATION [230 SERIES (GENERAL-PURPOSE) AND 240 SERIES (GENERAL-PURPOSE)]

This metal cover prevents a connector from being incorrectly inserted when two or more connectors with the same number of contacts are mounted on a PC board. Use the metal cover together with the polarization guide.

■ DIMENSIONS

Unit: mm (in.)

Rivet
Part number : C630-5296-X801
Purchase a rivet if necessary.

■ SHAPES OF MAIN BODY DEPENDING ON THE NUMBER OF CONTACTS

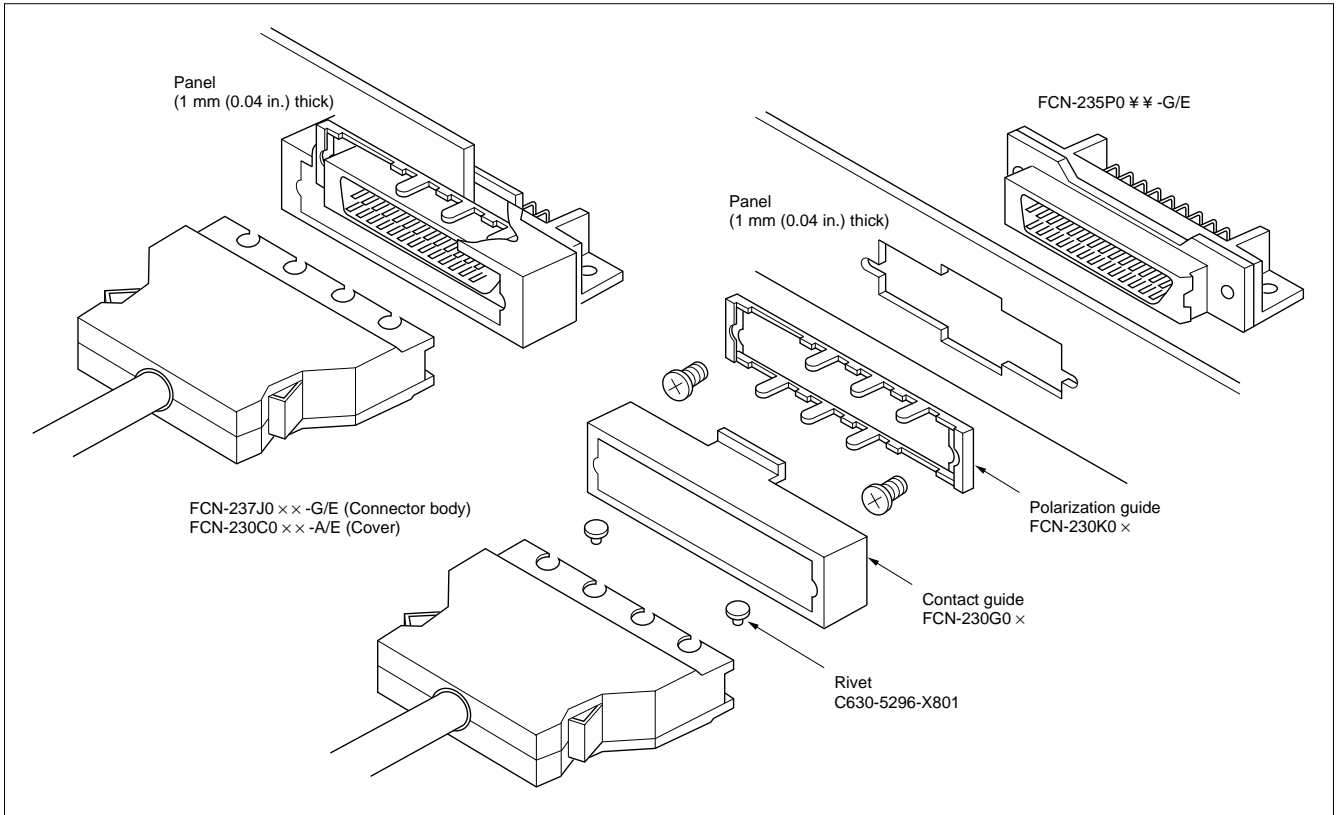
Unit: mm (in.)

■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number | Dimensions: mm (in.) | | |
|--------------------|-----------------|----------------------|---------------|-----------------------------|
| | | A | B | C × D |
| 20 | FCN-230C020-B/E | 28.95 (1.139) | 21.15 (0.852) | 6.5 × 4.5 (0.255 × 0.177) |
| 28 | FCN-230C028-B/E | 34.03 (1.339) | 26.23 (1.032) | 6.5 × 6.0 (0.255 × 0.236) |
| 36 | FCN-230C036-B/E | 39.11 (1.539) | 31.31 (1.232) | 9.5 × 8.0 (0.374 × 0.314) |
| | FCN-230C036-D/E | | | 10.0 × 9.0 (0.393 × 0.354) |
| 50 | FCN-230C050-B/E | 48.00 (1.899) | 40.20 (1.582) | 8.5 × 7.0 (0.334 × 0.275) |
| | FCN-230C050-D/E | | | 14.7 × 10.4 (0.578 × 0.409) |
| 68 | FCN-230C068-B/E | 59.43 (2.339) | 51.63 (2.032) | 9.0 × 8.0 (0.354 × 0.314) |
| | FCN-230C068-D/E | | | 14.7 × 10.4 (0.578 × 0.409) |
| 80 | FCN-230C080-D/E | 67.05 (2.639) | 59.25 (2.322) | 9.0 × 10.0 (0.354 × 0.393) |

230 Series (General-Purpose Type)

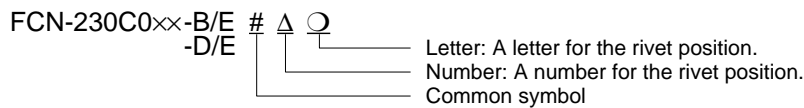
■ APPLICATIONS



■ PART NUMBERING FOR POLARIZATION COVER VARIATIONS (WITH RIVETS)

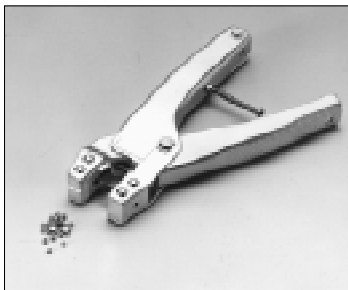
When specifying the positions of rivets for polarization, specify the part number as follows:

Part number for polarization: Specify # Δ ○ at the end of the part number.

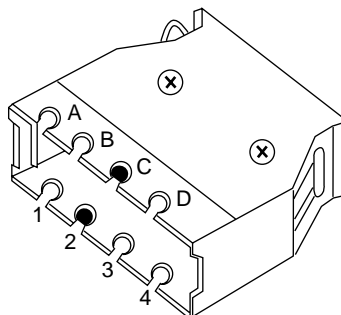


Example: FCN-230C036 -B/E #2C
-D/E

#2C indicates that rivets (C630-5296-X801) are placed at positions 2 and C on the cover with a riveting tool (FCN-230T-T001/H).



Riveting tool
(FCN-230T-T001/H)



FCN-230C0xx-B/E #2C
-D/E

Standard specifications of rivet positions for polarization

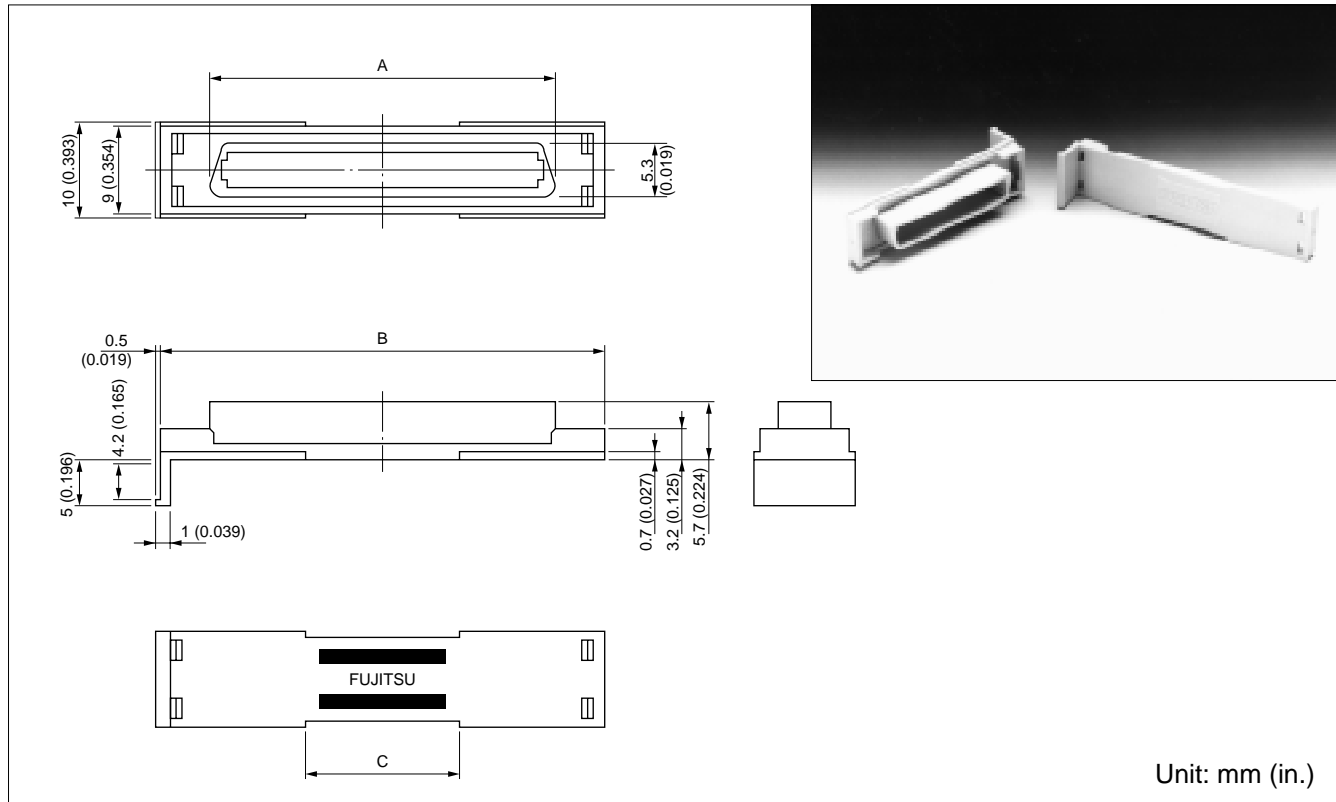
| | | | | |
|-------------|----|----|----|----|
| 20 contacts | 1B | 1C | 2A | 3A |
| 28 contacts | 1D | 2C | 3B | 4A |
| 36 contacts | 1D | 2C | 3B | 4A |
| 50 contacts | 1E | 2D | 4B | 5A |
| 68 contacts | 1E | 2D | 4B | 5A |

230 Series (General-Purpose Type)

ACCESSORY (DUST CAP FOR PLUG) [230 SERIES (GENERAL-PURPOSE) AND 240 SERIES (GENERAL-PURPOSE)]

Used to prevent dust from entering the contact section of a plug connector.

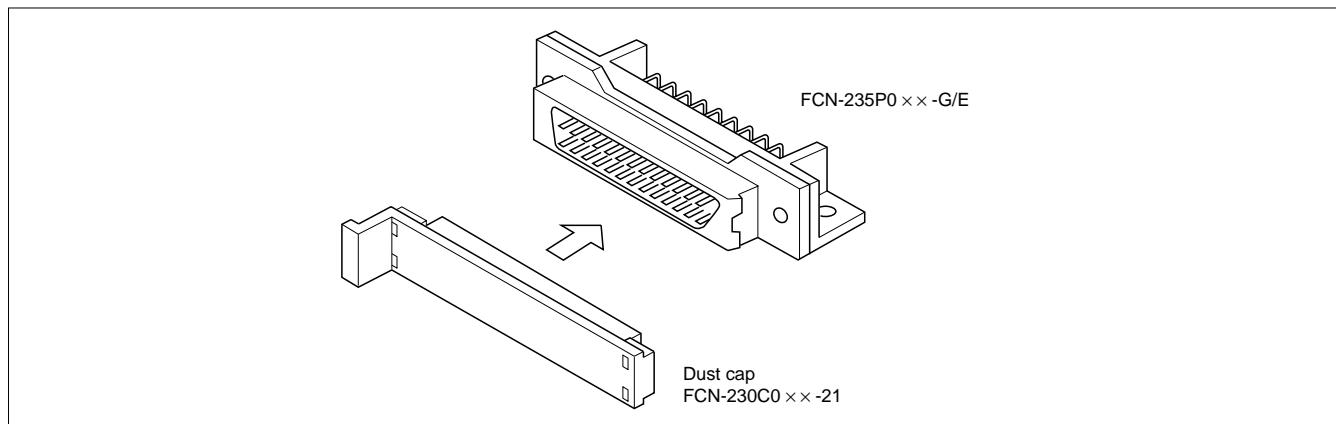
■ DIMENSIONS



■ PART NUMBERS AND DIMENSIONS

| Number of contacts | Part number | Dimensions: mm (in.) | | |
|--------------------|----------------|----------------------|---------------|---------------|
| | | A | B | C |
| 20 | FCN-230C020-21 | 15.60 (0.614) | 25.50 (1.003) | 10.00 (0.393) |
| 28 | FCN-230C028-21 | 20.68 (0.814) | 30.58 (1.203) | 10.00 (0.393) |
| 36 | FCN-230C036-21 | 25.76 (1.014) | 35.66 (1.403) | 10.00 (0.393) |
| 50 | FCN-230C050-21 | 34.65 (1.364) | 44.55 (1.753) | 15.00 (0.590) |
| 68 | FCN-230C068-21 | 46.08 (1.814) | 55.98 (2.203) | 20.00 (0.787) |

■ APPLICATIONS



230 Series (General-Purpose Type)

CABLE ASSEMBLY TOOLS

The following tools are needed to assemble connectors.

- Cable aligner (semiautomatic cable aligner or hand tool)
- IDC tool

The tools shown below can also be used for the 230R/240/240R series.

1. Cable Aligner

| Part number | Semiautomatic cable aligner | | | Hand tool |
|-------------|-----------------------------|--------------|----------------|-----------------|
| | Body/Controller | Bed | Adaptor | |
| FCN-237J | FCN-M562-A/C | FCN-P560-2/A | FCN-K560-A-xxx | FCN-237T-T062/H |
| FCN-237R | | | FCN-K560-R-xxx | |
| FCN-247J | | | FCN-K560-K-xxx | |
| FCN-247R | | FCN-P560-2/J | FCN-K560-J-xxx | FCN-247T-T061/H |

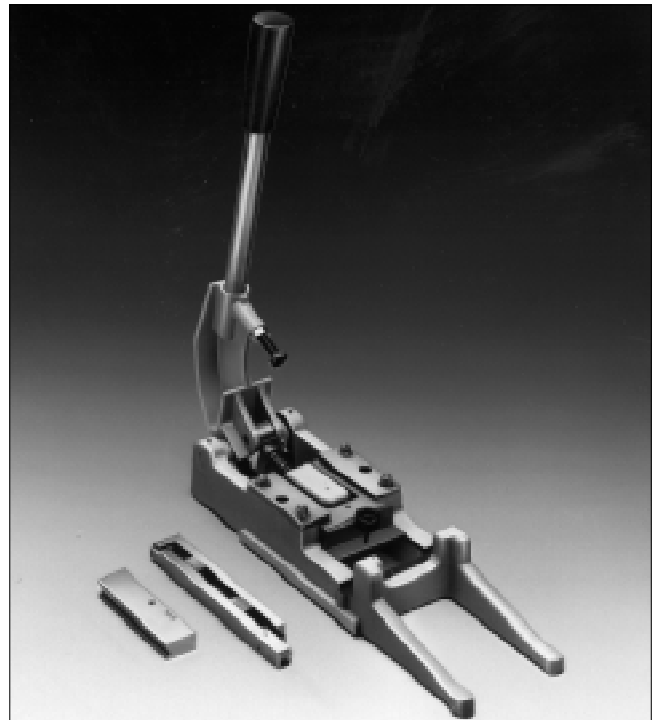
xxx indicates the number of contacts.

2. Insulation Displacement Connection (IDC) tool

| Part number | Hand press | Head/Table |
|-------------|-----------------|-----------------|
| FCN-237J | FCN-237T-T109/H | FCN-237T-T064/H |
| FCN-237R | | FCN-237T-T067/H |
| FCN-237D | | FCN-237T-T075/H |
| FCN-247J | | FCN-247T-T066/H |
| FCN-247R | | FCN-247T-T068/H |
| FCN-247D | | FCN-247T-T077/H |



• Cable aligner

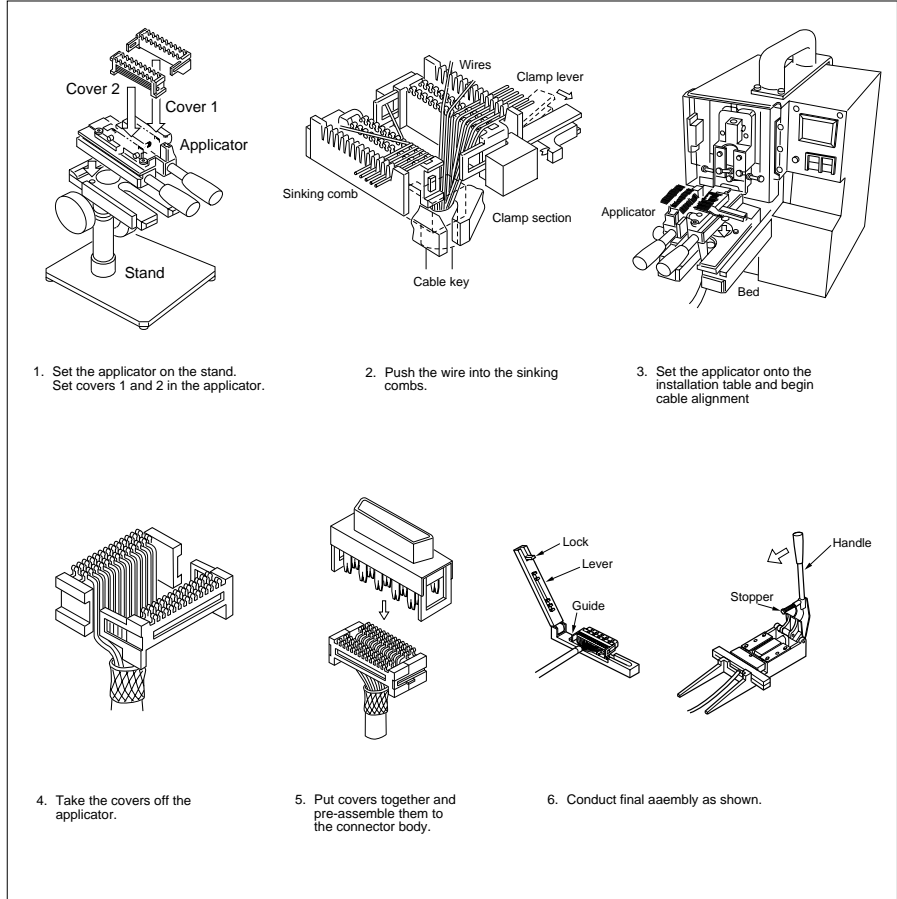
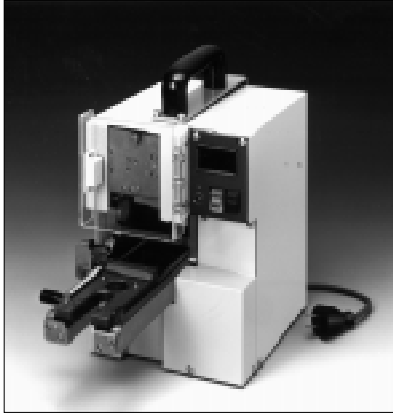


• Insulation displacement contact (IDC) tool

230 Series (General-Purpose Type)

Semi-Automatic Tools Cable Aligning Machine

Main Body (FCN-M551-120, FCN-M551-220)



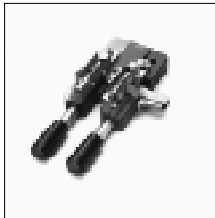
Head (FCN-H550-1/A)



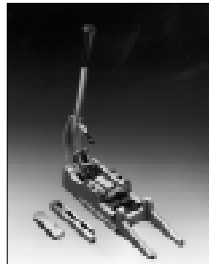
Stand (FCN-D550)



Applicator (FCN-A550-1/A-xxx)



IDC Tool (FCN-237T-T109/H,
FCN-237T-T067/H locator)



SOCKET: FCN-237J***-G/E (***: 020, 028, 036, 050, 068, 080)

| Pos No. | Applied Wire (wire Dia.: mm [in.]) | Connector Part number | Cable Aligner | | IDC Tool |
|---------------|--|---|---|--------------|--|
| | | | Hand Tool | Semi-Auto | |
| 20 68 | #28 to #30 (0.5 to 0.65) | FCN-237R020-G/E FCN-237J080-G/E | FCN-237T-T062/H FCN-237T-T043/H | (See below*) | HAND PRESS: FCN-237T-T109/H HEAD & Locator: FCN-237T-T067/H |

Semi-automatic-Medium Level
 Body: :FCN-M551-120
 Head Assembly: :FCN-H550
 Applicator: :FCN-A550-1/A-***(***: 020, 028, 036, 050, 068, 080)
 Stand: :FCN-D550

230 Series (General-Purpose Type)

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