

# FOR BOARD-TO-CABLE CONNECTION

## 230R SERIES (CONFORMS TO SCSI)

### ■ FEATURES

- 1.27 mm × 2.54 mm (0.050 in. × 0.100 in.) pitch contact arrangement enables high-density mounting.
- Cables and connectors are assembled by means of discrete wire IDC.
- Terminals are spaced in a four-row staggered arrangement (2.54 mm × 1.905 mm) (0.100 in. × 0.075 in.).
- Knife-fork two-point contacts are highly reliable.
- One-touch lock types and screw lock types are available for fixing the board-side connector and the cable-side connector.
- The following connectors conform to the SCSI standards recommended by ANSI:
  - (1) Single-operation lock types
    - 50-contact type: Conforms to the A-cable connectors prescribed in SCSI-II and SCSI-III
    - 68-contact type: Conforms to the B-cable connectors prescribed in SCSI-II
  - (2) Screw lock types
    - 68-contact type: Conforms to the P/Q-cable connectors prescribed in SCSI-III

\* SCSI: Small Computer System Interface

### ■ 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, 0.1A)
Insulation resistance	1000 MΩ min. (DC 500 V)
Dielectric withstand voltage	AC 750 V for 1 minute
Applicable wire (standard)	AWG #28 and #30 twisted-pair cables with φ 0.5 to 0.88 mm (0.020 to 0.035 in.) sheath diameter. (The applicable wires depend on the number of contacts. See the descriptions of IDC plugs and metal covers.)



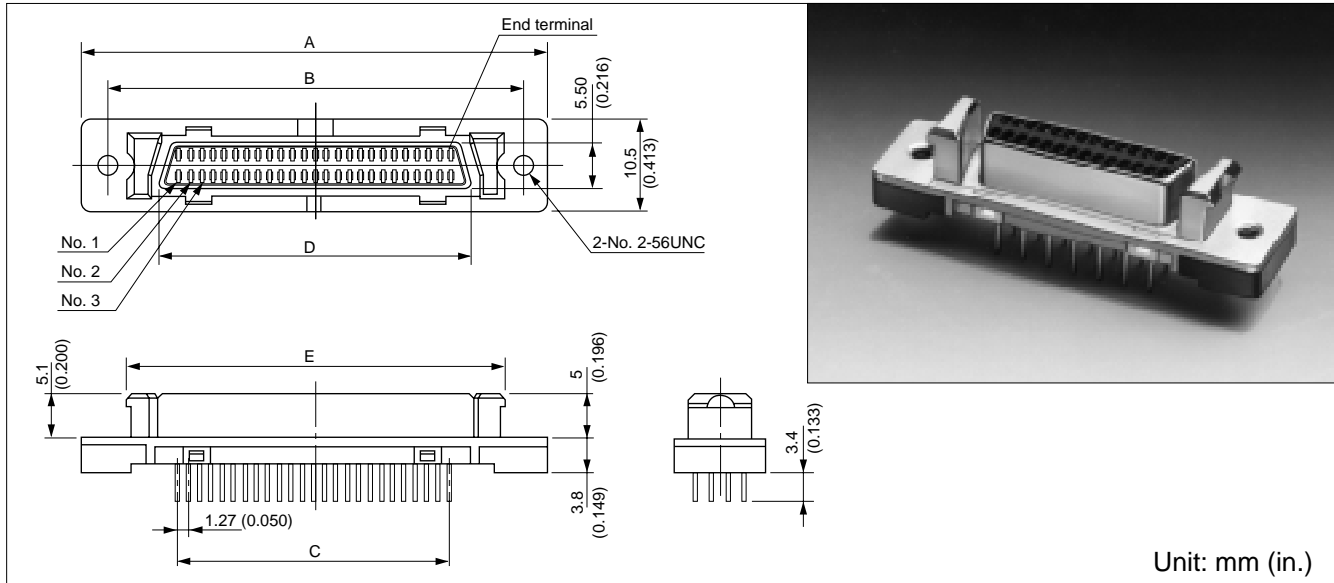
### ■ MATERIALS

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

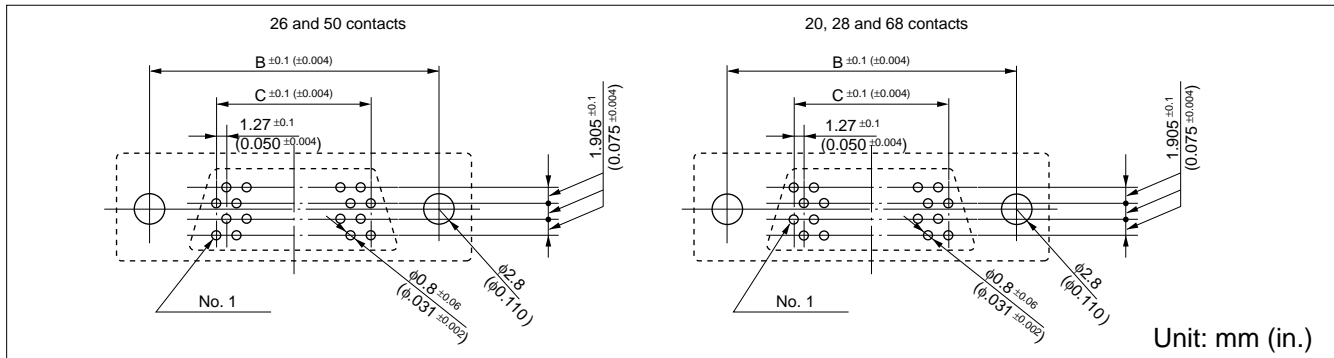
# 230R Series (Conforms to SCSI)

## STRAIGHT SOCKET (SINGLE-OPERATION LOCK TYPE)

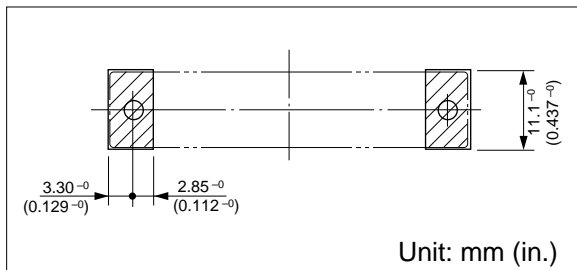
### ■ DIMENSIONS



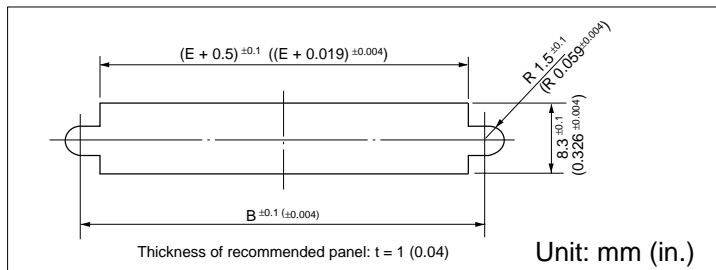
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

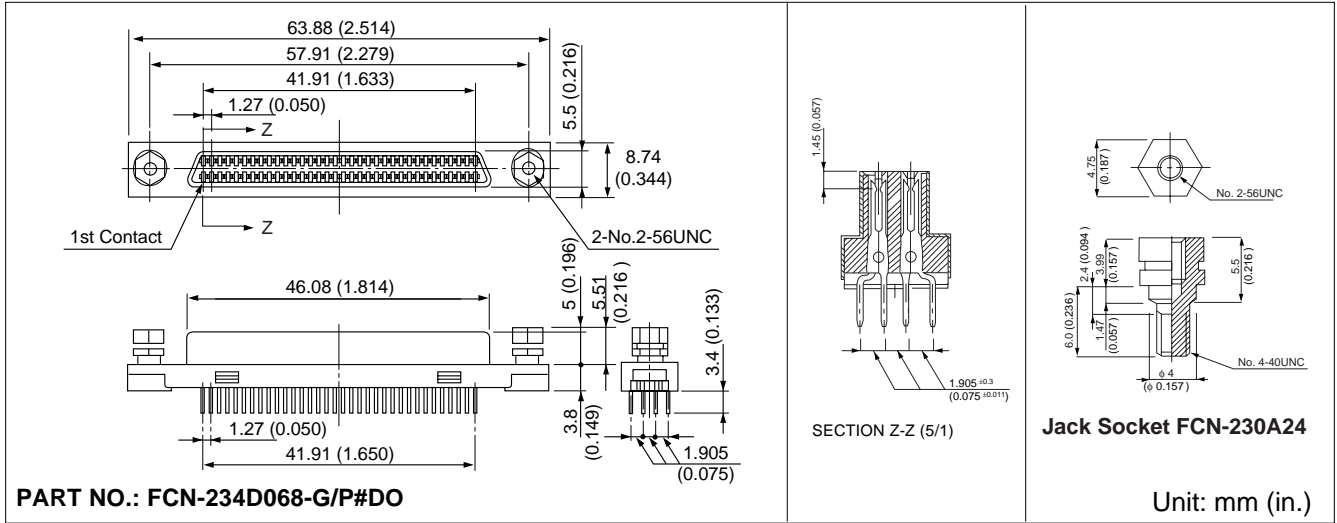
Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
20	FCN-234D020-G/E	33.40 (1.314)	27.43 (1.079)	11.46 (0.451)	15.60 (0.614)	23.24 (0.914)
26	FCN-234D026-G/E	37.21 (1.464)	32.24 (1.269)	15.24 (0.600)	19.41 (0.764)	27.05 (1.064)
28	FCN-234D028-G/E	38.48 (1.514)	32.51 (1.279)	16.51 (0.650)	20.68 (0.814)	28.32 (1.114)
40	FCN-234D040-G/E	46.10 (1.841)	40.13 (1.479)	24.13 (0.950)	28.30 (1.114)	35.94 (1.414)
50	FCN-234D050-G/E	52.45 (2.064)	46.48 (1.829)	30.48 (1.200)	34.65 (1.364)	42.29 (1.664)
68	FCN-234D068-G/E	63.88 (2.514)	57.91 (2.279)	41.91 (1.650)	46.08 (1.814)	53.72 (2.114)

This series includes connectors with M 2.5 threaded inserts for mounting on PC boards and panels. Specify a part number by replacing -G/E at the end with -G/C.

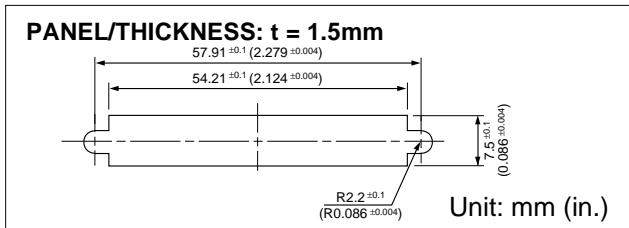
Example: FCN-234D050-G/C

# FCN-234D068-G/P\*\*\* 68 CONTACT STRAIGHT TYPE, BOARD-SOCKET, SCREW TYPE LOCK

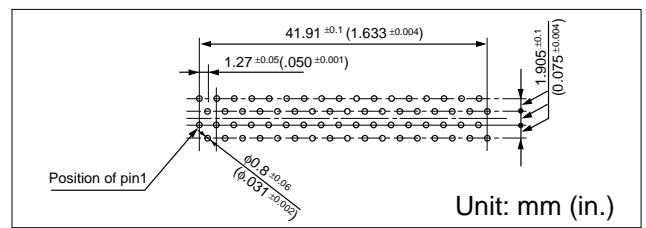
## DIMENSIONS



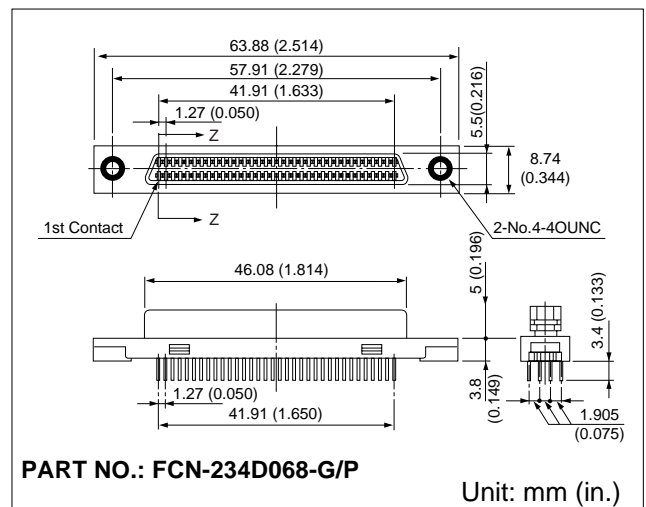
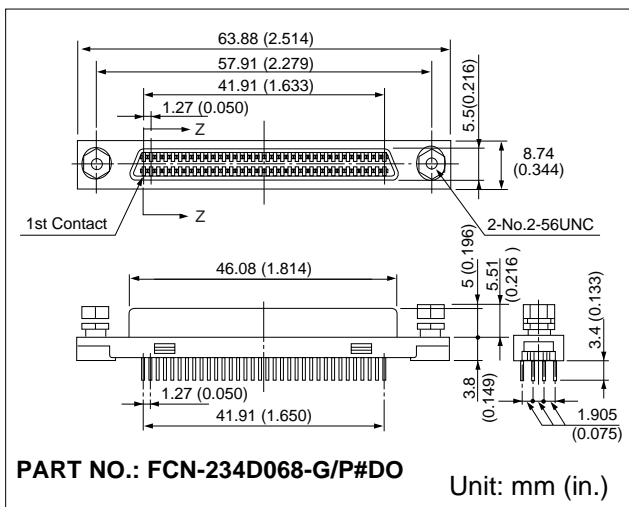
## PANEL LAYOUT



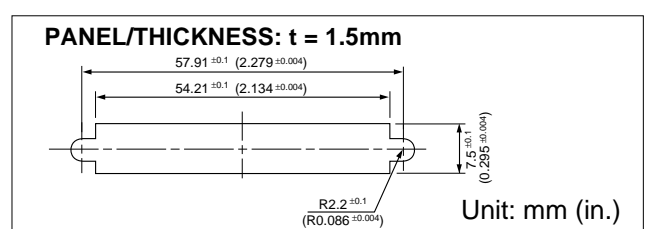
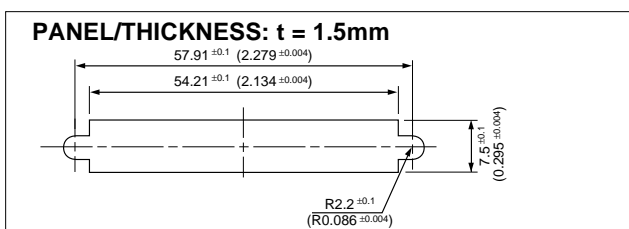
## MOUNTING HOLE LAYOUT



## DIMENSIONS



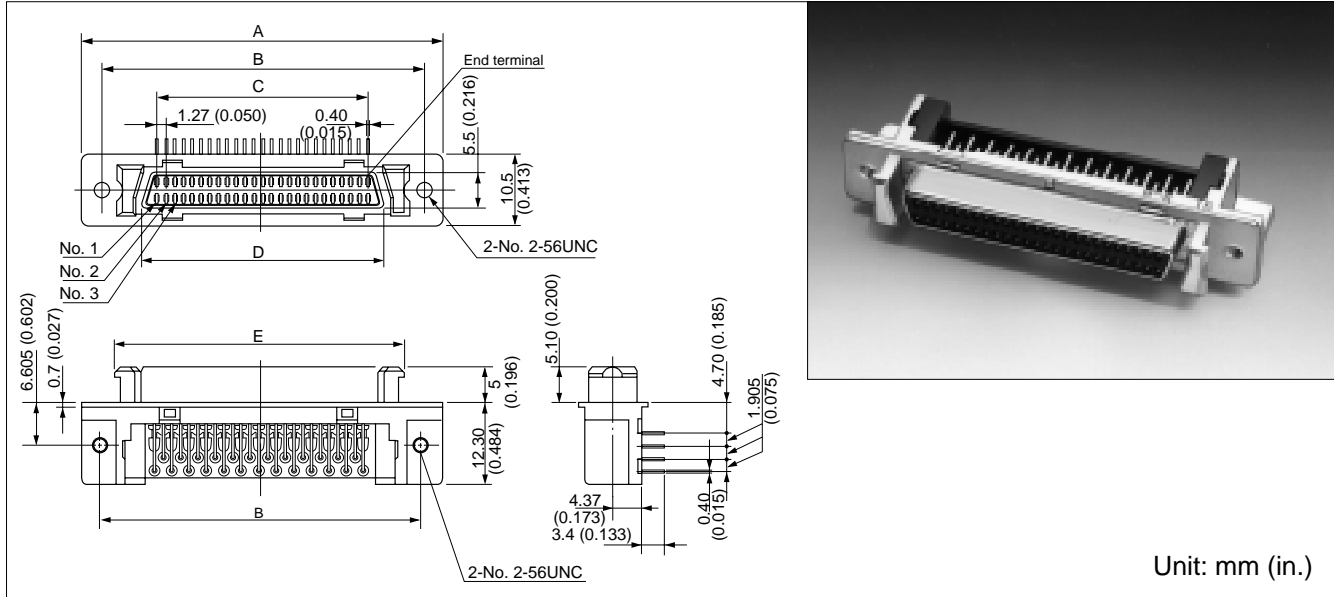
## PANEL LAYOUT



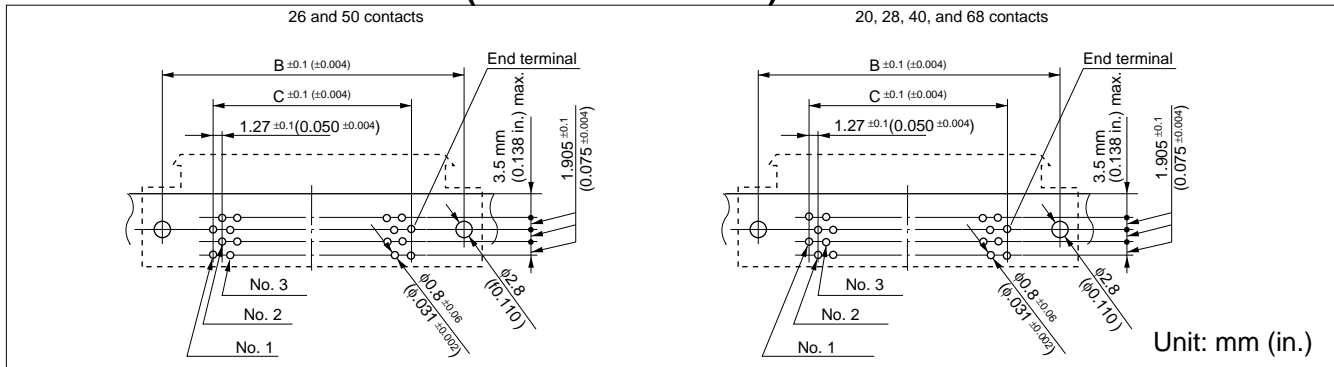
# 230R Series (Conforms to SCSI)

## RIGHT ANGLE SOCKET (SINGLE-OPERATION LOCK TYPE)

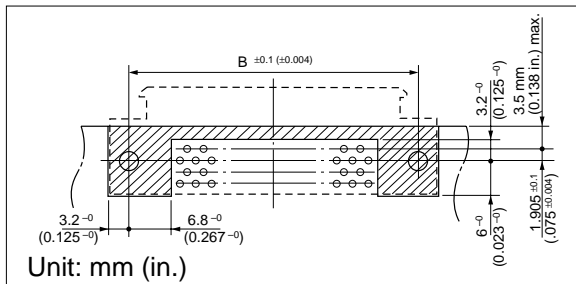
### ■ DIMENSIONS



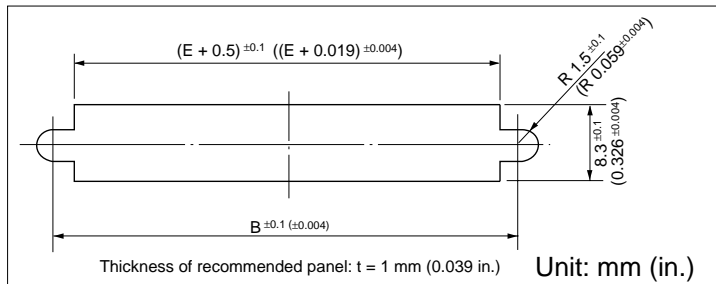
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
20	FCN-235D020-G/E	33.40 (1.314)	27.43 (1.079)	11.46 (0.451)	15.60 (0.614)	23.24 (0.914)
26	FCN-235D026-G/E	37.21 (1.464)	32.24 (1.269)	15.24 (0.600)	19.41 (0.764)	27.05 (1.064)
28	FCN-235D028-G/E	38.48 (1.514)	32.51 (1.279)	16.51 (0.650)	20.68 (0.814)	28.32 (1.114)
40	FCN-235D040-G/E	46.10 (1.841)	40.13 (1.479)	24.13 (0.950)	28.30 (1.114)	35.94 (1.414)
50	FCN-235D050-G/E	52.45 (2.064)	46.48 (1.829)	30.48 (1.200)	34.65 (1.364)	42.29 (1.664)
68	FCN-235D068-G/E	63.88 (2.514)	57.91 (2.279)	41.91 (1.650)	46.08 (1.814)	53.72 (2.114)

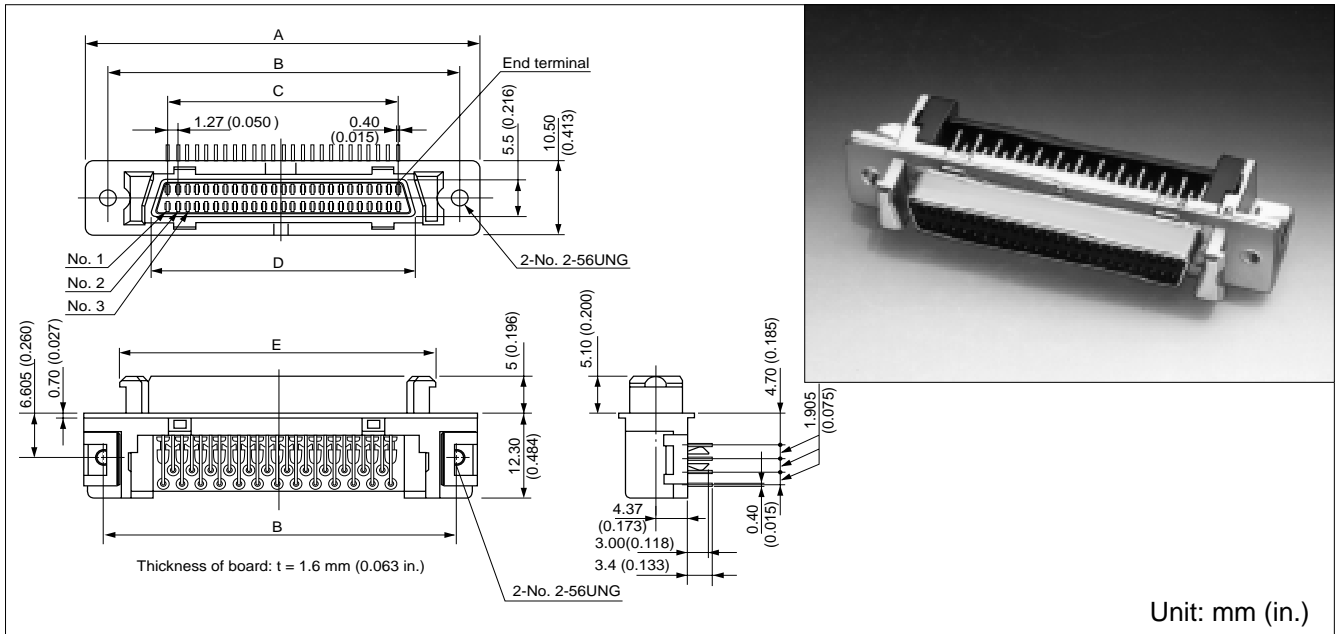
This series includes connectors with M 2.5 threaded inserts for mounting on PC boards and panels. Specify a part number by replacing -G/E at the end with -G/C.

Example: FCN-235D050-G/C

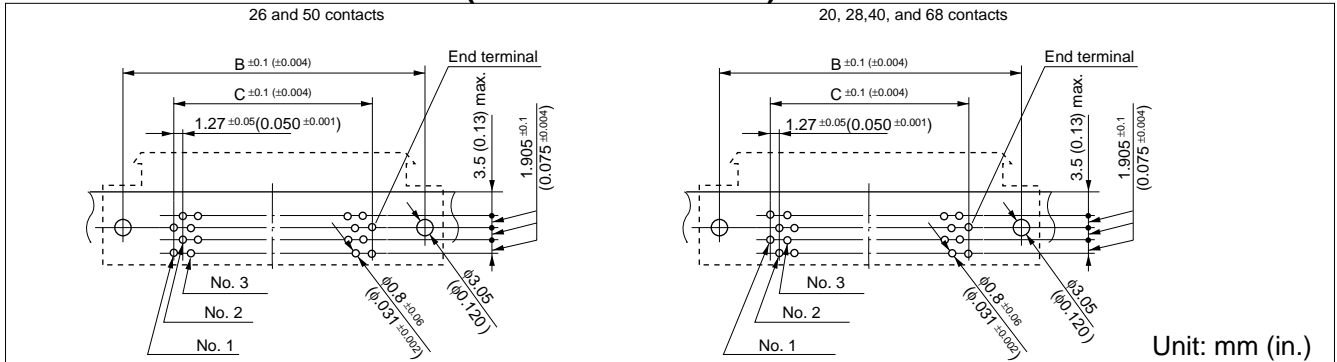
# 230R Series (Conforms to SCSI)

## RIGHT-ANGLE SOCKET WITH BOARD LOCK BRACKET (SINGLE-OPERATION LOCK TYPE)

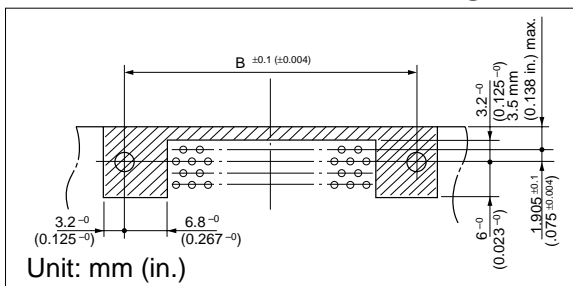
### ■ DIMENSIONS



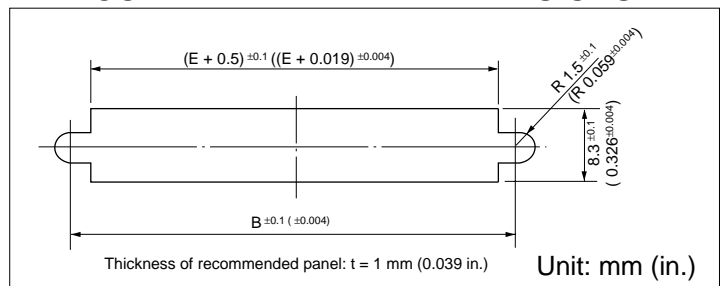
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

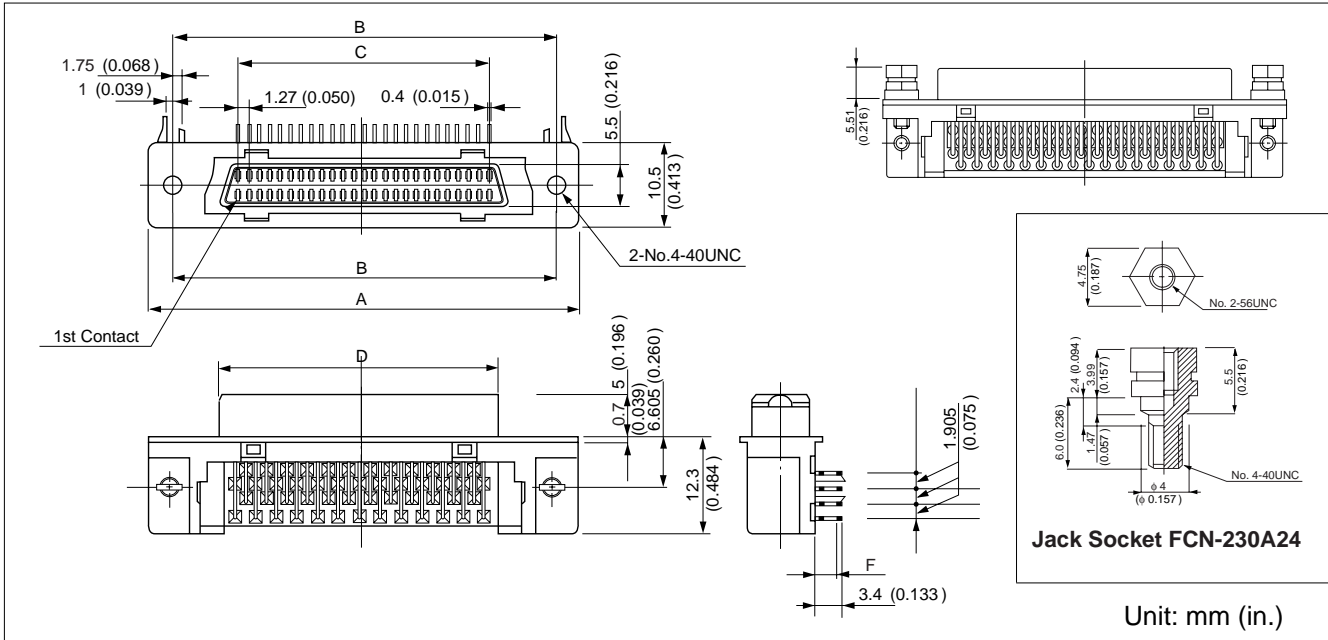
Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
20	FCN-235D020-G/H	33.40 (1.314)	27.43 (1.079)	11.46 (0.451)	15.60 (0.614)	23.24 (0.914)
26	FCN-235D026-G/H	37.21 (1.464)	32.24 (1.269)	15.24 (0.600)	19.41 (0.764)	27.05 (1.064)
28	FCN-235D028-G/H	38.48 (1.514)	32.51 (1.279)	16.51 (0.650)	20.68 (0.814)	28.32 (1.114)
40	FCN-235D040-G/H	46.10 (1.841)	40.13 (1.479)	24.13 (0.950)	28.30 (1.114)	35.94 (1.414)
50	FCN-235D050-G/H	52.45 (2.064)	46.48 (1.829)	30.48 (1.200)	34.65 (1.364)	42.29 (1.664)
68	FCN-235D068-G/H	63.88 (2.514)	57.91 (2.279)	41.91 (1.650)	46.08 (1.814)	53.72 (2.114)

This series includes connectors with M2.5 threaded inserts for mounting panels. Specify a part number by replacing -G/H at the end with -G/J. Example: FCN-235D050-G/J

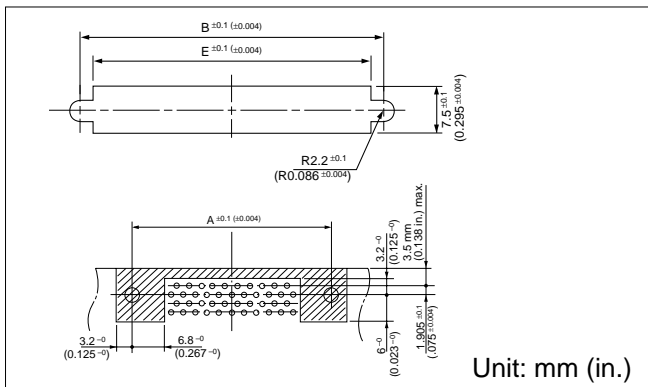
# 230R Series (Conforms to SCSI)

## FCN-235D-G/\*\* RIGHT ANGLE, BOARD-SOCKET, METAL SHELL, BOARDLOCKS (40 PinMII/100 base T std) (68 Pin SCSI III std)

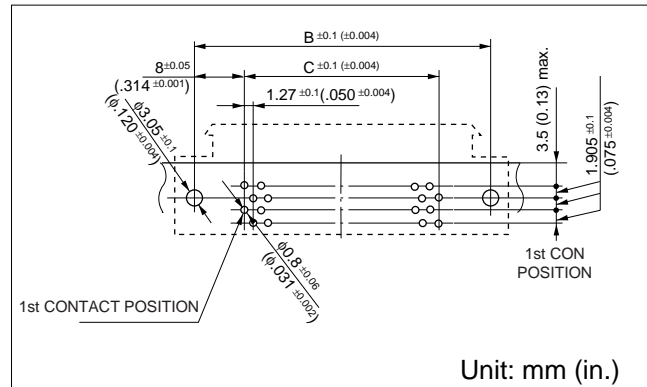
### ■ DIMENSIONS



### ■ PANEL LAYOUT



### ■ PCB LAYOUT

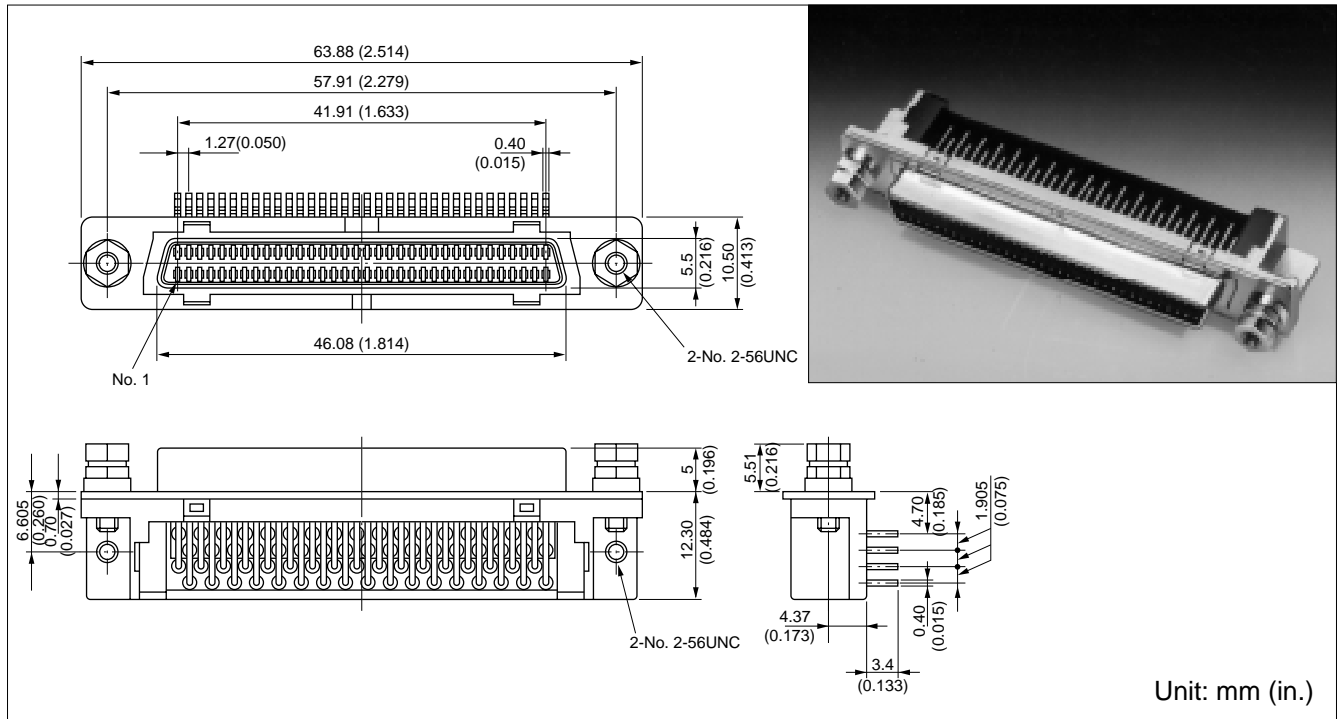


No. of Contacts	PART NUMBER	A	B	C	D	E	F	Jack Sockets
40	FCN-235D040-G/HASR-N	46.10(1.815)	40.13(1.830)	24.13(0.950)	28.30(1.114)	36.43(1.434)	2.54	INSTALLED
40	FCN-235D040-G/HAR-N	46.10(1.815)	40.13(1.830)	24.13(0.950)	28.30(1.114)	36.43(1.434)	3.40	INSTALLED
40	FCN-235D040-G/HBSR-N	46.10(1.815)	40.13(1.830)	24.13(0.950)	28.30(1.114)	36.43(1.434)	2.54	—
40	FCN-235D040-G/HBR-N	46.10(1.815)	40.13(1.830)	24.13(0.950)	28.30(1.114)	36.43(1.434)	3.40	—
68	FCN-235D068-G/HASR-N	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	2.54	INSTALLED
68	FCN-235D068-G/HAR-N	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	3.40	INSTALLED
68	FCN-235D068-G/HBSR-N	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	2.54	—
68	FCN-235D068-G/HBR-N	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	3.40	—

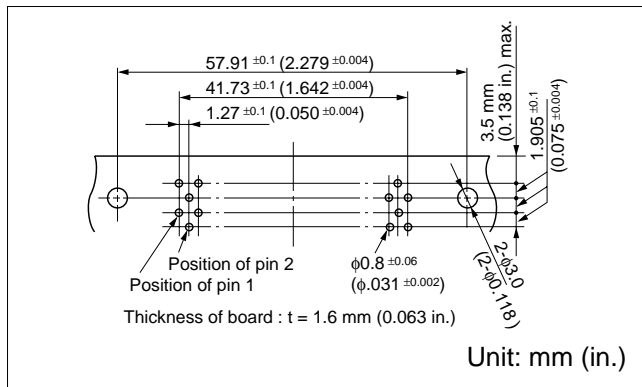
# 230R Series (Conforms to SCSI)

## RIGHT-ANGLE SOCKET (SCREW LOCK TYPE)

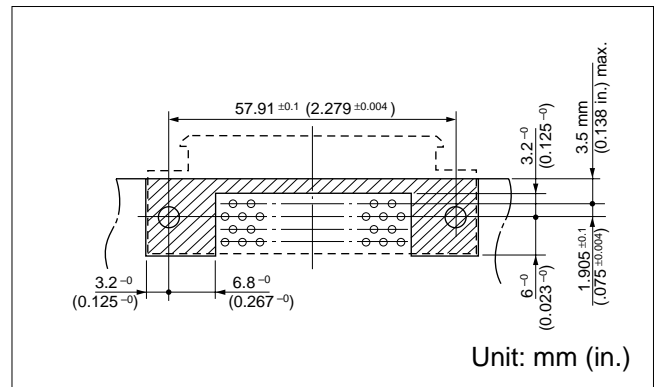
### ■ DIMENSIONS



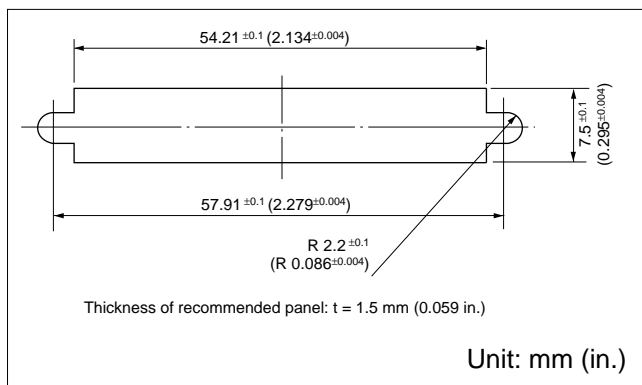
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBER

FCN-235D068-G/EA

### ■ NUMBER OF CONTACTS

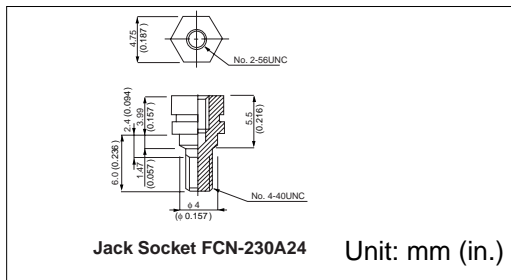
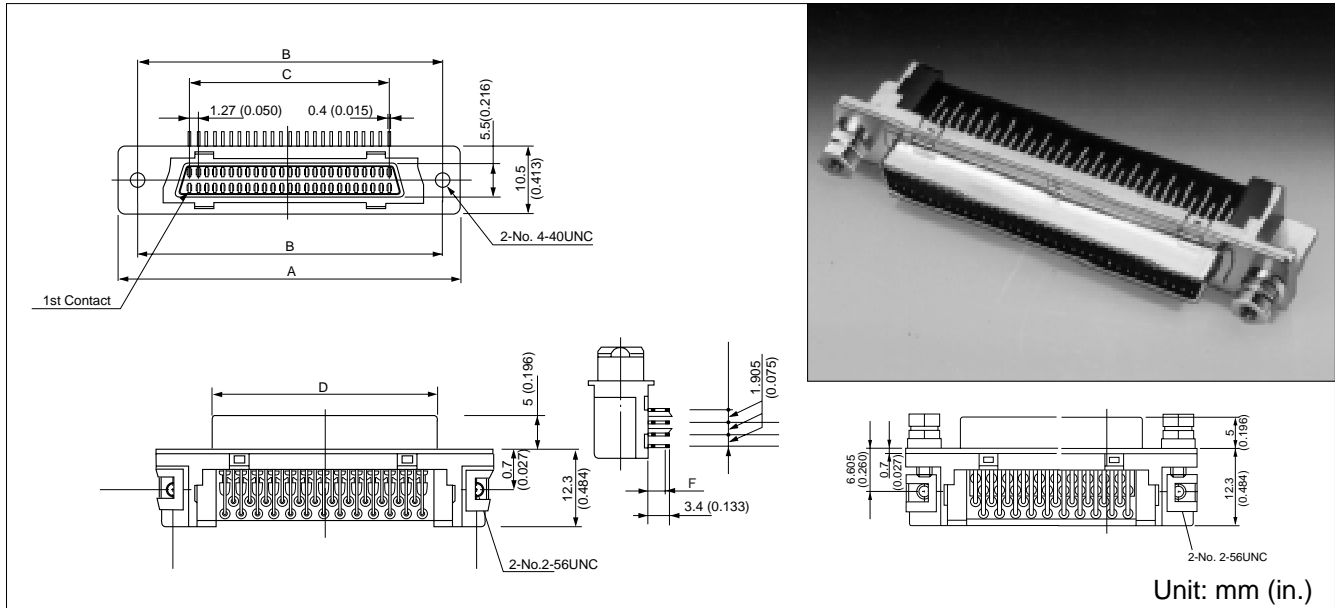
68 contacts

Note: Remove the spacer to mount the connector on the panel, then tighten the hexagon nuts. Make sure that the panel is sandwiched between the connector and nuts.

# 230R Series (Conforms to SCSI)

## STRAIGHT SOCKET (SINGLE-OPERATION LOCK TYPE)

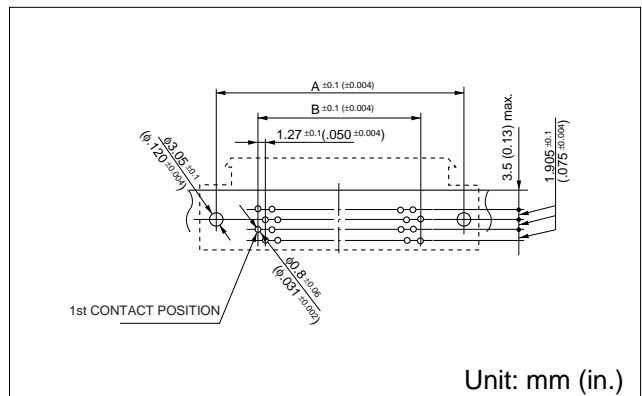
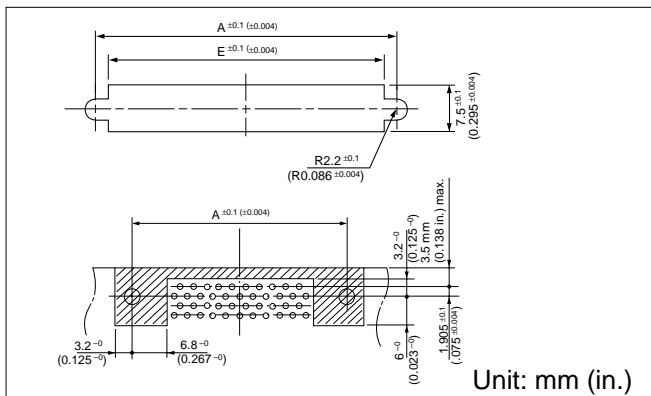
### ■ DIMENSIONS



### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)

### ■ PANEL LAYOUT

### ■ PCB LAYOUT



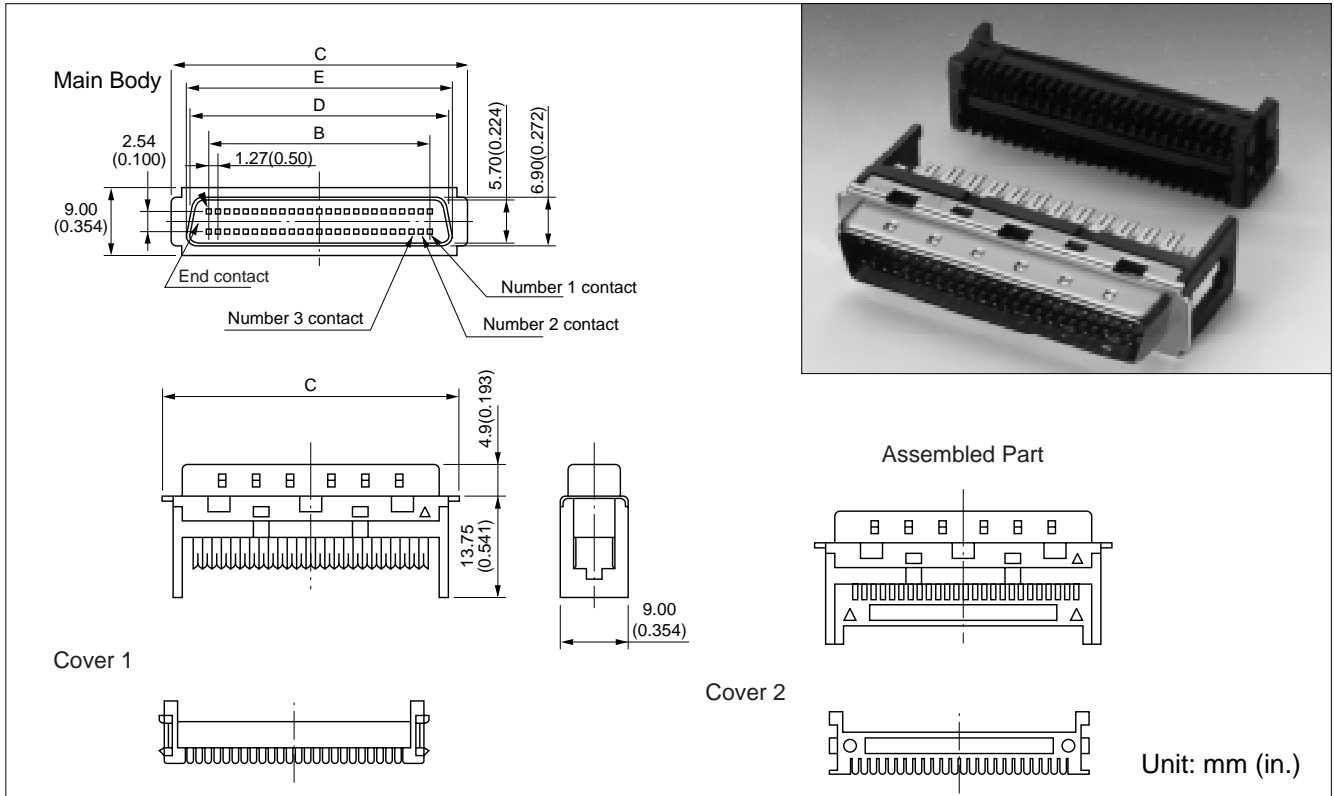
No. of Contacts	PART NUMBER	A	B	C	D	E	F	Jack Sockets
68	FCN-235D068-G/HA	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	3.40	Yes
68	FCN-235D068-G/HB	63.88(2.515)	57.91(2.280)	41.91(1.650)	46.08(1.814)	54.21(2.134)	3.40	No



# 230R Series (Conforms to SCSI)

## FCN-237R\*\*-G/\* IDC TYPE, CABLE-PLUG

### ■ DIMENSIONS

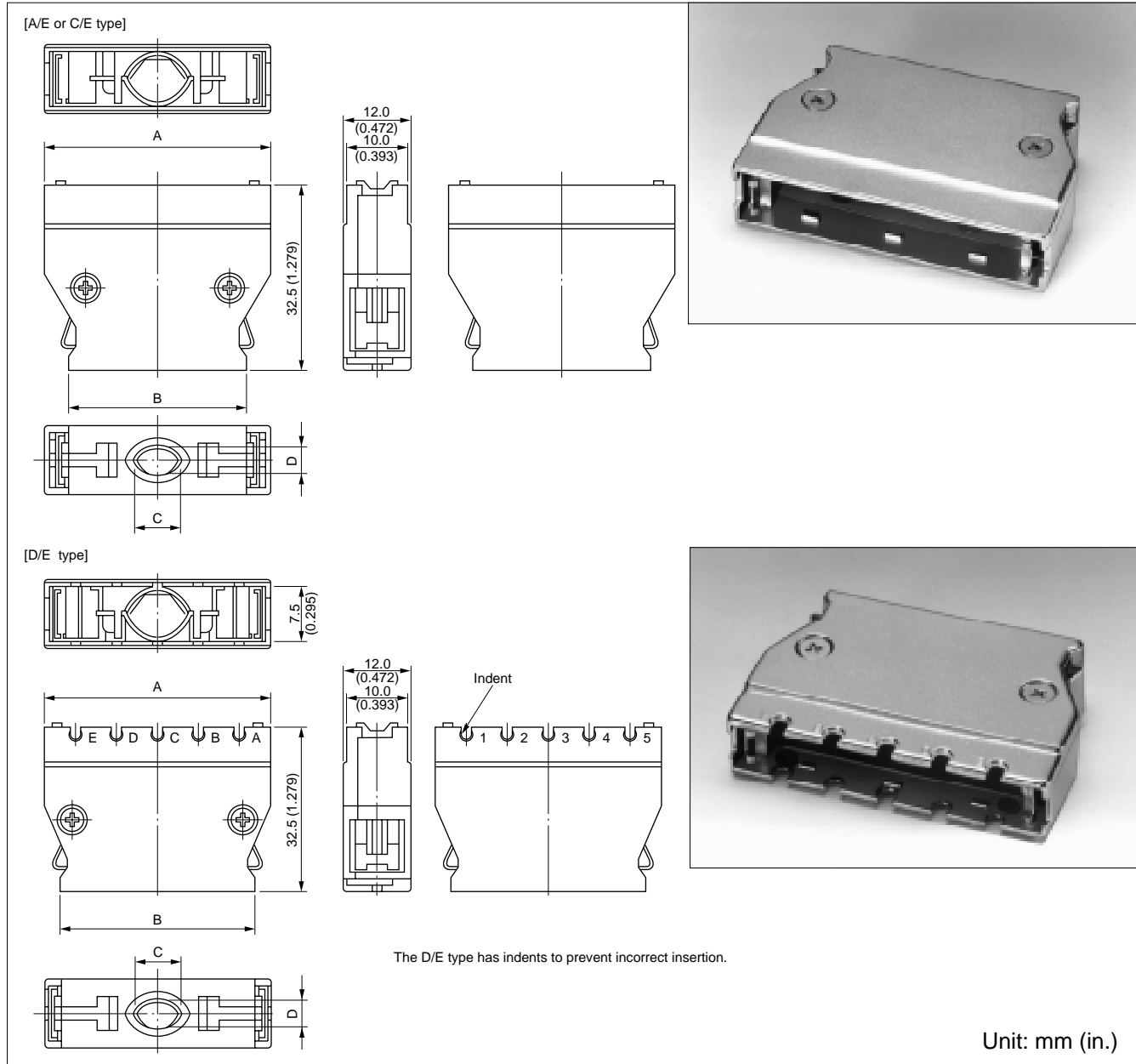


### ■ PART NUMBERS AND DIMENSIONS

No. of Contacts	External Diameter of Applied Wire	PART NUMBER	Dimensions mm (in.)				
			A	B	C	D	E
20	φ0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R020-G/F	16.75(0.659)	11.43(0.450)	21.25(0.837)	15.80(0.622)	17.00(0.669)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R020-G/E					
	0.66 to 0.79 mm (0.026 to 0.030)	FCN-237R020-G/G					
26	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R026-G/F	20.65(0.809)	15.24(0.600)	25.06(0.987)	19.61(0.722)	20.81(0.819)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R026-G/E					
28	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R028-G/F	21.83(0.859)	16.51(0.650)	26.33(1.037)	20.88(0.822)	22.08(0.869)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R028-G/E					
40	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R040-G/F	29.45(1.159)	24.13(0.950)	33.95(1.377)	28.50(1.122)	29.70(1.169)
	0.66 to 0.79 mm (0.026 to 0.030)	FCN-237R040-G/G					
50	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R050-G/F	35.80(1.409)	30.48(1.200)	40.30(1.587)	34.85(1.587)	36.05(1.419)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R050-G/E					
	0.66 to 0.79 mm (0.026 to 0.030)	FCN-237R050-G/G					
68	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R068-G/F	47.23(1.859)	41.91(1.650)	51.73(2.037)	46.28(1.822)	47.48(1.869)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R068-G/E					
	0.66 to 0.79 mm (0.026 to 0.030)	FCN-237R068-G/G					
100	0.8 to 0.88 mm (0.031 to 0.035)	FCN-237R100-G/F	67.55(2.659)	62.23(2.450)	72.05(2.837)	66.60(2.622)	67.80(2.669)
	0.5 to 0.65 mm (0.020 to 0.026)	FCN-237R100-G/E					

# 230R Series (Conforms to SCSI)

## METAL COVER (ONE-TOUCH LOCK TYPE) ■ DIMENSIONS



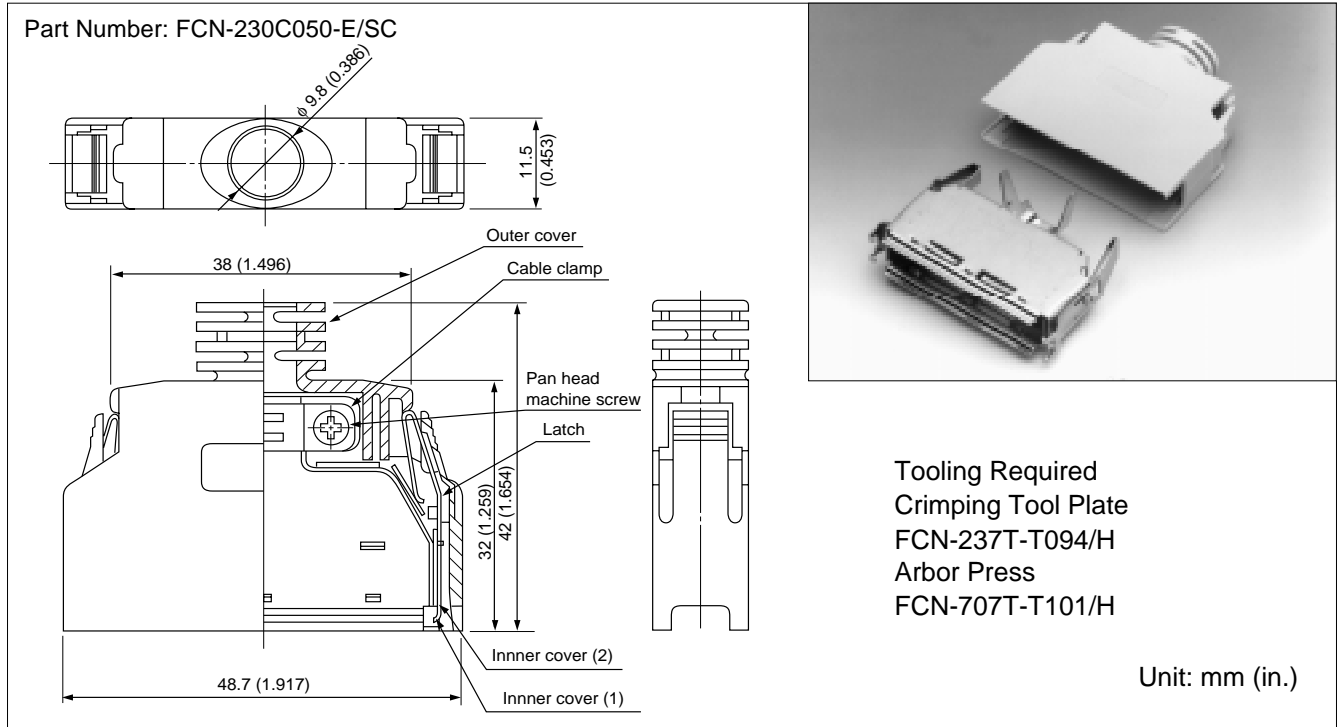
## ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)		
		A	B	C
20	FCN-230C020-A/E	28.95 (1.139)	21.15 (0.832)	6.5 × 4.5 (0.255 × 0.177)
	FCN-230C020-C/E			8.5 × 8.2 (0.334 × 0.322)
26	FCN-230C026-C/E	32.76 (1.298)	24.96 (0.982)	7.2 × 8.5 (0.283 × 0.334)
28	FCN-230C028-A/E	34.03 (1.339)	26.23 (1.032)	6.5 × 6.0 (0.255 × 0.236)
	FCN-230C028-C/E			7.2 × 8.5 (0.289 × 0.334)
40	FCN-230C040-C/E	41.65 (1.639)	33.85 (1.332)	9.0 × 10.0 (0.354 × 0.393)
50	FCN-230C050-A/E	48.00 (1.889)	40.20 (1.582)	8.5 × 7.0 (0.334 × 0.275)
	FCN-230C050-C/E			10.0 × 9.7 (0.395 × 0.381)
	FCN-230C050-D/E			14.7 × 10.4 (0.585 × 0.409)
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 (0.395 × 0.354)
	FCN-230C068-D/E			14.7 × 10.4 (0.585 × 0.409)

# 230R Series (Conforms to SCSI)

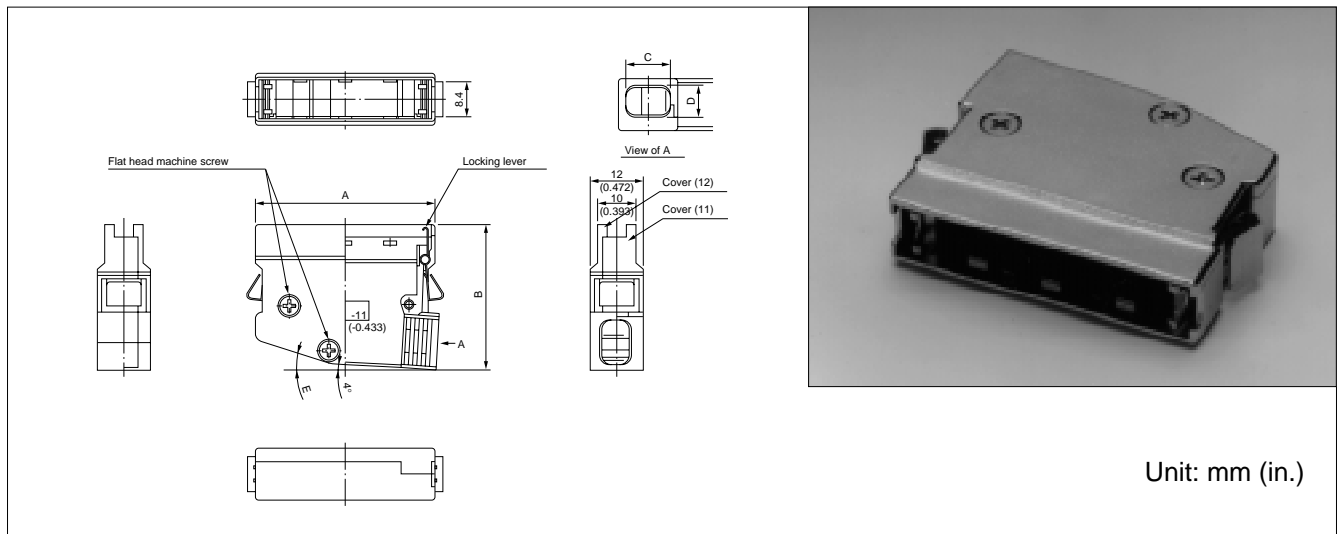
## BACKSHELL KIT (METAL CAN , PLASTIC SLIDE ON BOOT) SCSI II

### ■ DIMENSIONS



## METAL OBTUSE ANGLE CABLE OUT COVER (SINGLE-OPERATION LOCK TYPE)

### ■ DIMENSIONS



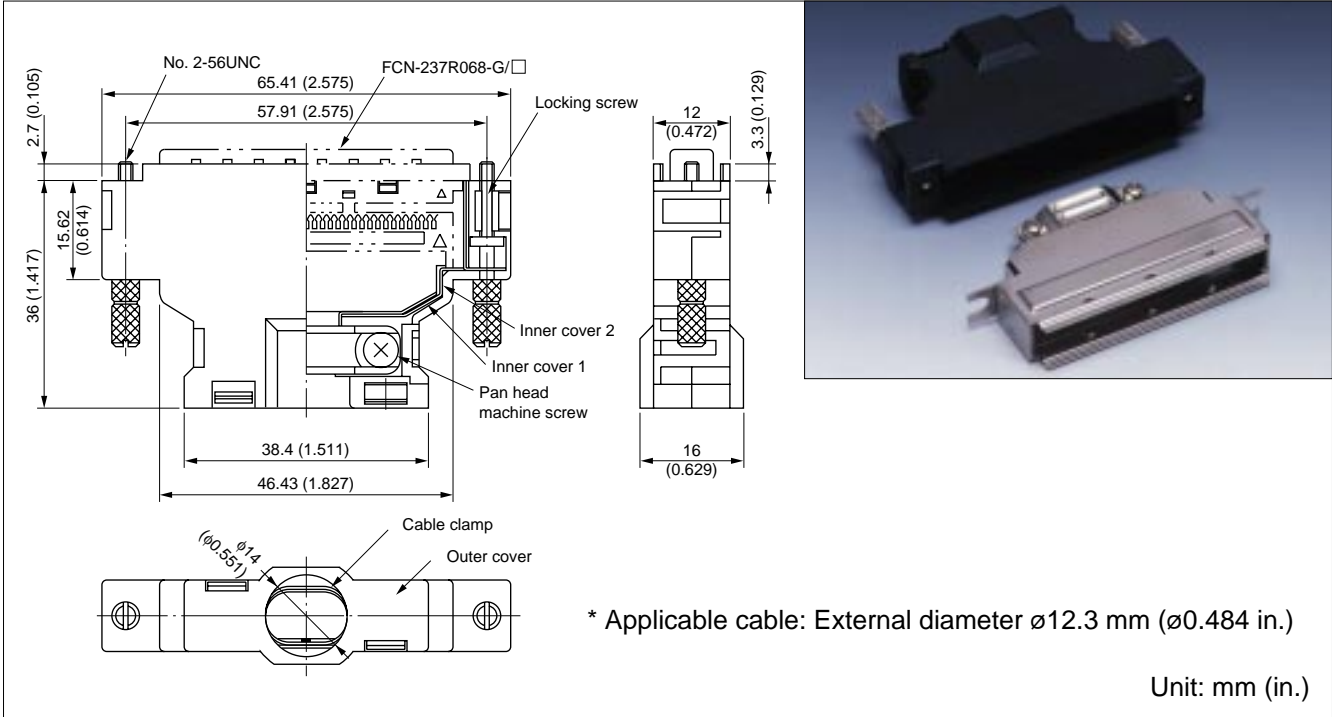
### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)				
		A	B	C	D	E
40	FCN-230C040-L/E	41.65 (1.639)	33.80 (1.330)	10.60 (0.417)	6.34 (0.249)	19°
50	FCN-230C050-L/E	48.00 (1.889)	35.50 (1.397)	11.38 (0.448)	6.70 (0.263)	15°

# 230R Series (Conforms to SCSI)

## EMI/ESD RESISTANT COVER (SCREW LOCK TYPE) SCSI III 68 POSITION

### ■ DIMENSIONS



### ■ PART NUMBERS

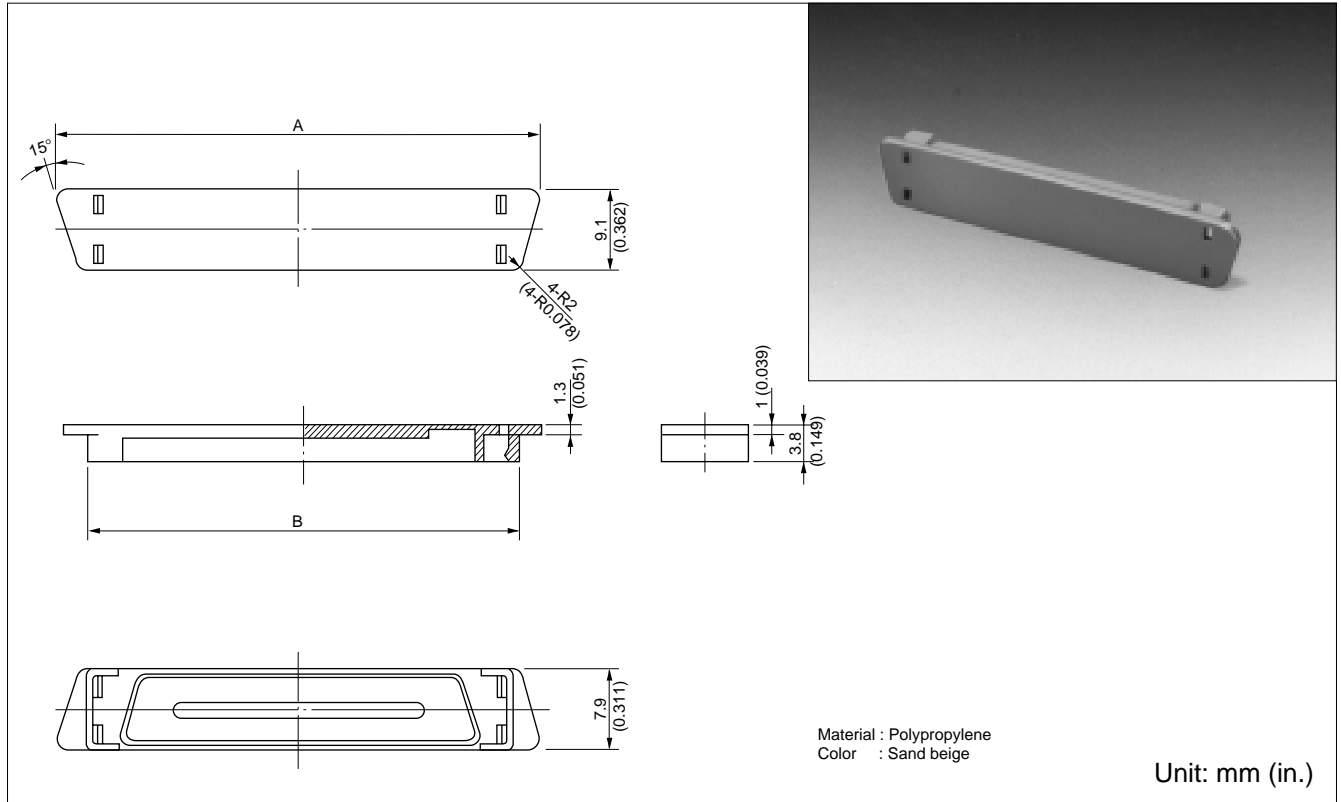
Part number	Applicable Cable
FCN-230C068-E/S	$\varnothing 12.3$ mm ( $\varnothing 0.484$ in.)
FCN-230C068-E/SA	$\varnothing 11.5$ mm ( $\varnothing 0.452$ in.)

# 230R Series (Conforms to SCSI)

## ACCESSORY (DUST CAP FOR SOCKET) (230R SERIES AND 240R SERIES)

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

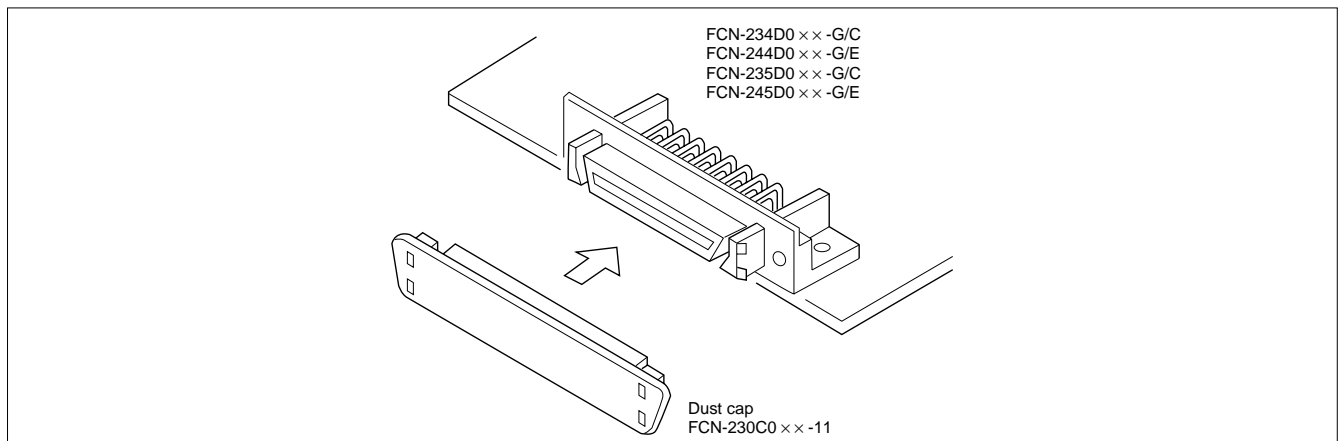
### ■ DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)	
		A	B
28	FCN-230C028-11	35.7 (1.405)	30.1 (1.185)
36	FCN-230C036-11	40.8 (1.606)	35.2 (1.385)
50	FCN-230C050-11	49.7 (1.956)	44.1 (1.736)
68	FCN-230C068-11	61.1 (2.405)	55.5 (2.185)

### ■ APPLICATIONS



# 230R Series (Conforms to SCSI)

## CABLE ASSEMBLY TOOLS

The following tools are needed to assemble FCN-230/230R/240/240R series connectors.

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

### 1. Cable Aligner

Item	Semiautomatic cable aligner			Hand tool
	Body/Controller	Bed	Adaptor	
FCN-237J	FCN-M561-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

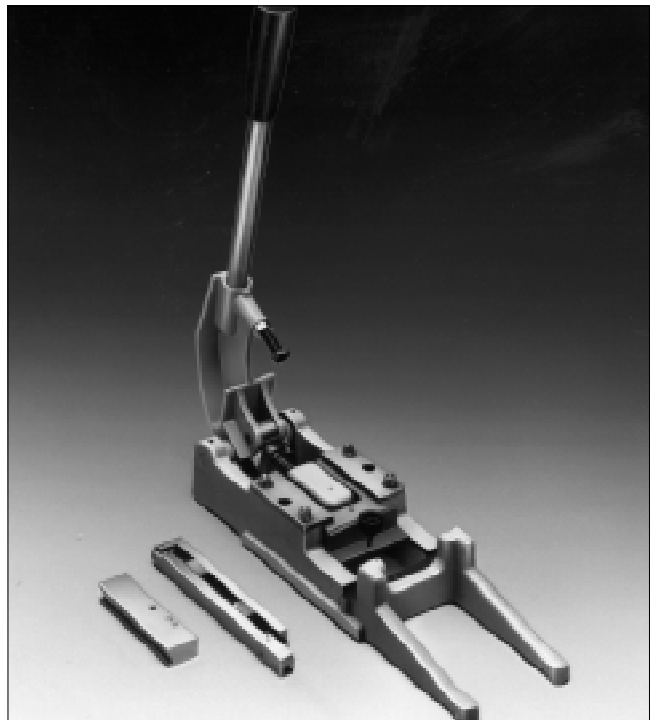
xxx indicates the number of contacts.

### 2. Insulation Displacement Connection (IDC) tool

Item	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



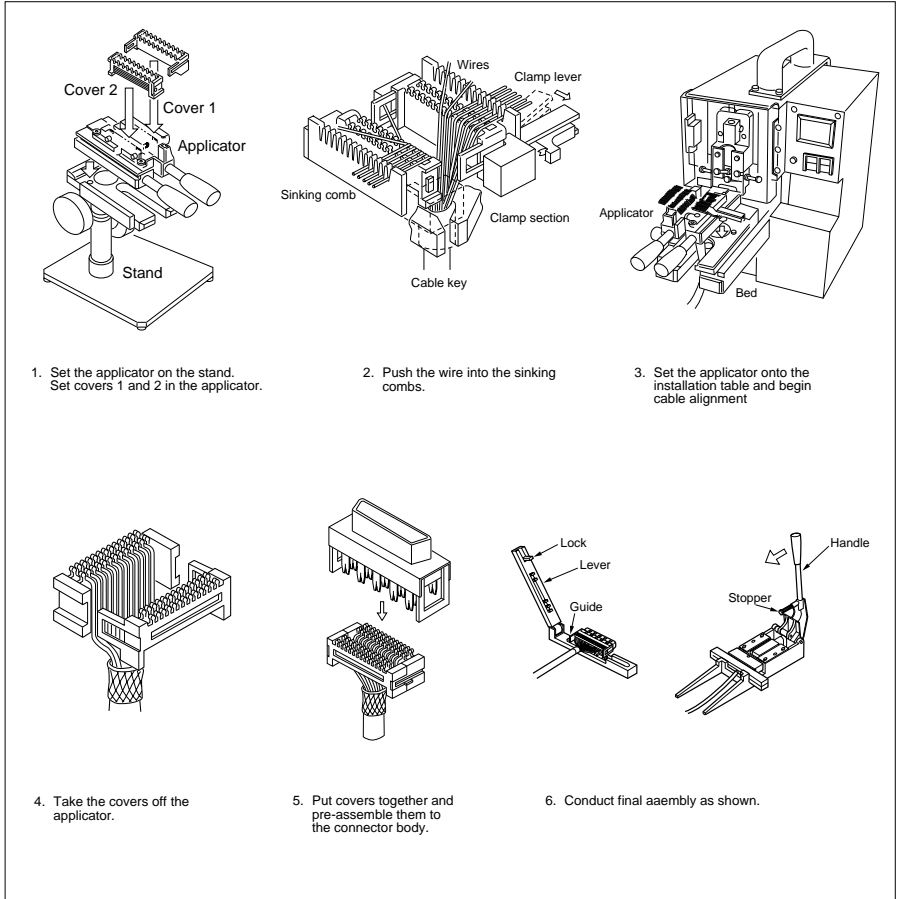
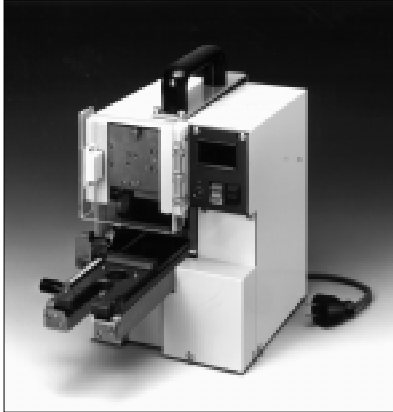
• Cable aligner



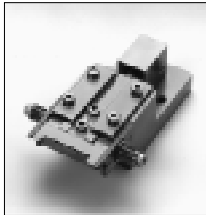
• Insulation displacement connection (IDC) tool

# 230R Series (Conforms to SCSI)

**Semi-Automatic Tools  
Cable Aligning Machine  
Main Body (FCN-M551-120, FCN-M551-220)**



Head (FCN-H550-1/A)



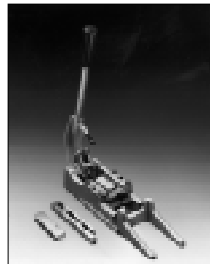
Stand (FCN-D550)



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



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



## FCN-230R SERIES SCSI II CABLE CONNECTORS

SOCKET: FCN-237R\*\*\*-G/E, G/F (\*\*\*: 020, 026, 028, 050, 068)

Pos No.	Applied Wire (wire Dia.: mm)	Connector Part number	Cable Aligner		IDC Tool
			Hand Tool	Semi-Auto	
20   68	#28 or #30 (0.8 to 0.88)	FCN-237R020-G/F   FCN-237R068-G/F	FCN-237T-T062/H   FCN-237t-t043/H	(See below*)	HAND PRESS: FCN-237T-T109/H HEAD & Locator: FCN-237T-T067/H
	#28 or #30 (0.5 to 0.65)	FCN-237R020-G/E   FCN-237R068-G/E			

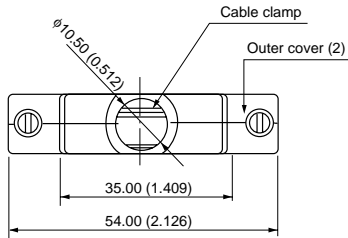
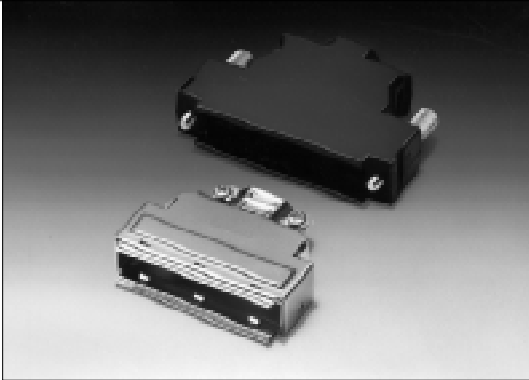
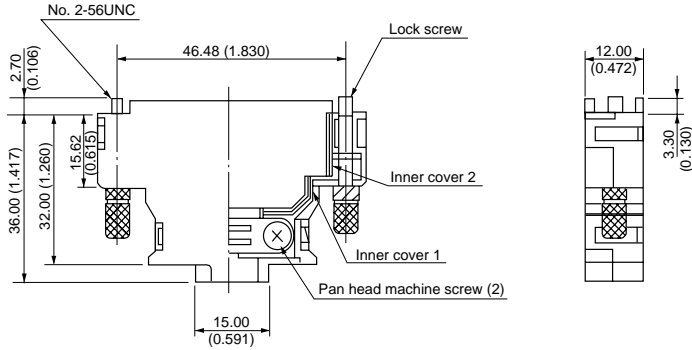
Semi-automatic-Medium Level  
 Body: :FCN-M551-120  
 Head Assembly: :FCN-H550  
 Applicator: :FCN-A550-1/A-\*\*\*(\*\*\*: 020, 028, 036, 050, 068, 080)  
 Stand: :FCN-D550

# 230R Series (Conforms to SCSI)

## EMI/ESD RESISTANT COVER

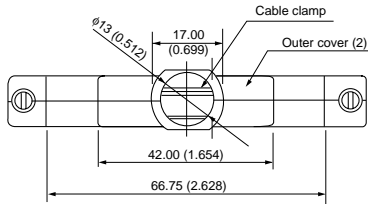
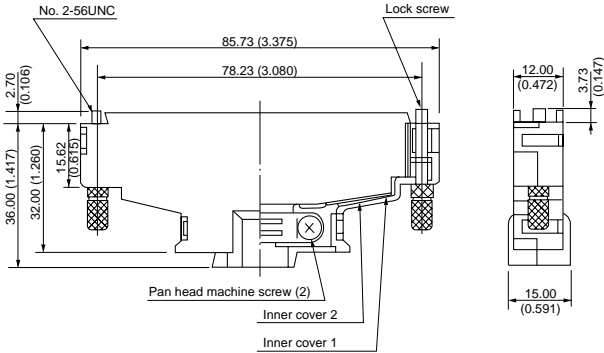
### ■ DIMENSIONS

Number of contacts: 50 contacts  
 Part number: FCN-230C050-E/S



Unit: mm (in.)

Number of contacts: 100 contacts  
 Part number: FCN-230C100-E/S



Unit: mm ((in.))

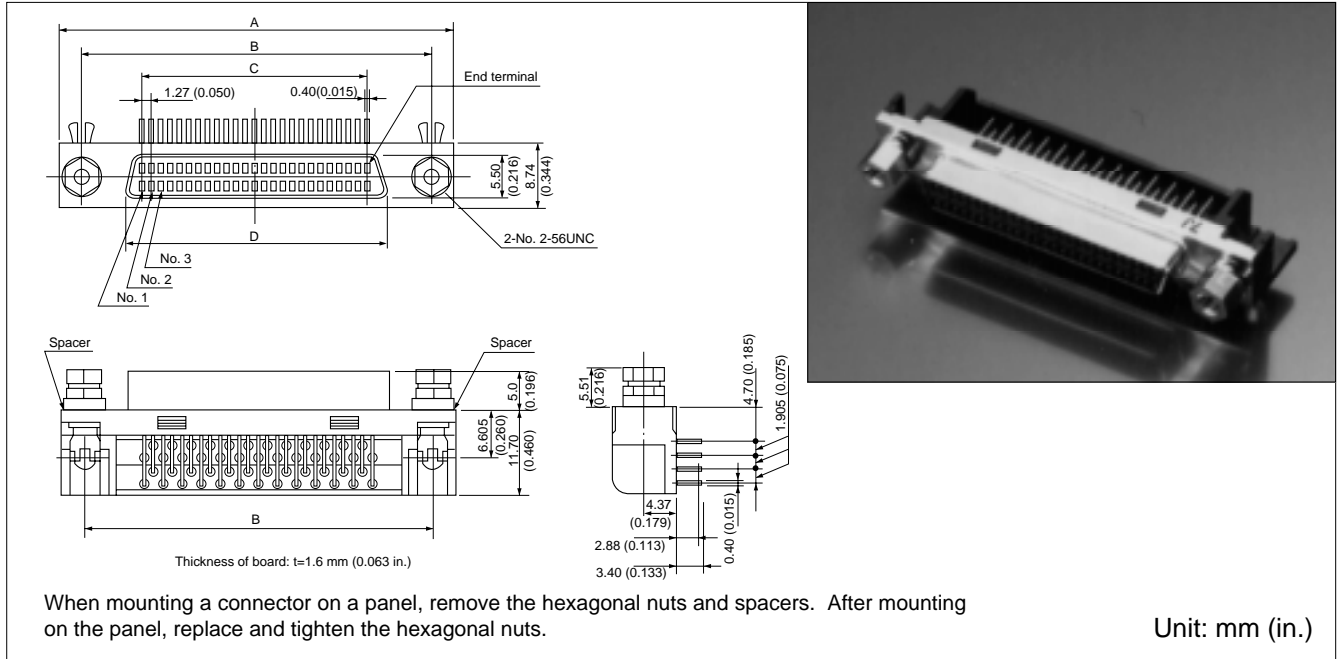
This series includes connectors with No.4-40UNC lock screws. Specify a part number by replacing -E/S at the end with -F/S.  
 Example: FCN-230C100-F/S



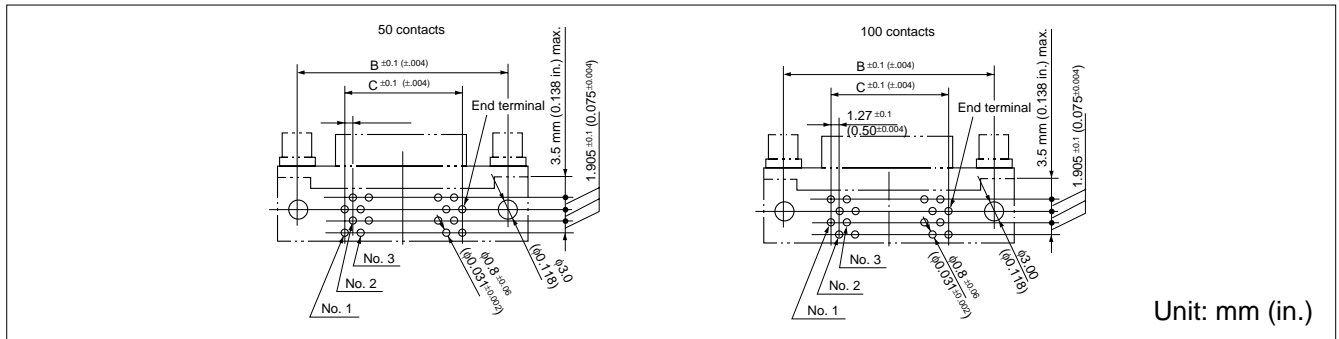
# 230R Series (Conforms to SCSI)

## RIGHT-ANGLE SOCKET WITH HEXAGONAL NUTS FOR BOARD LOCK

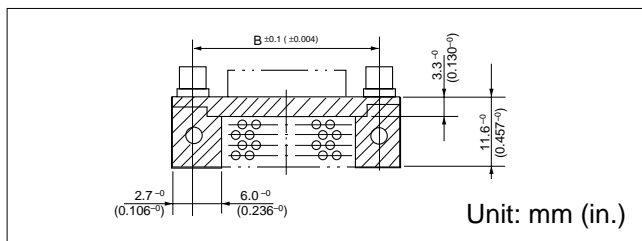
### ■ DIMENSIONS



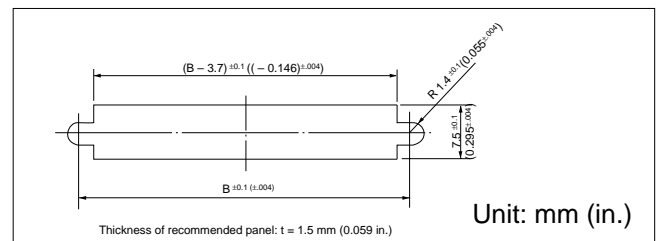
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)			
		A	B	C	D
50	FCN-235D050-G/P#BA	52.45 (2.065)	46.48 (1.830)	30.48 (1.200)	34.65 (1.364)
100	FCN-235D100-G/P#BA	84.20 (3.315)	78.23 (3.080)	62.23 (2.450)	66.40 (2.614)

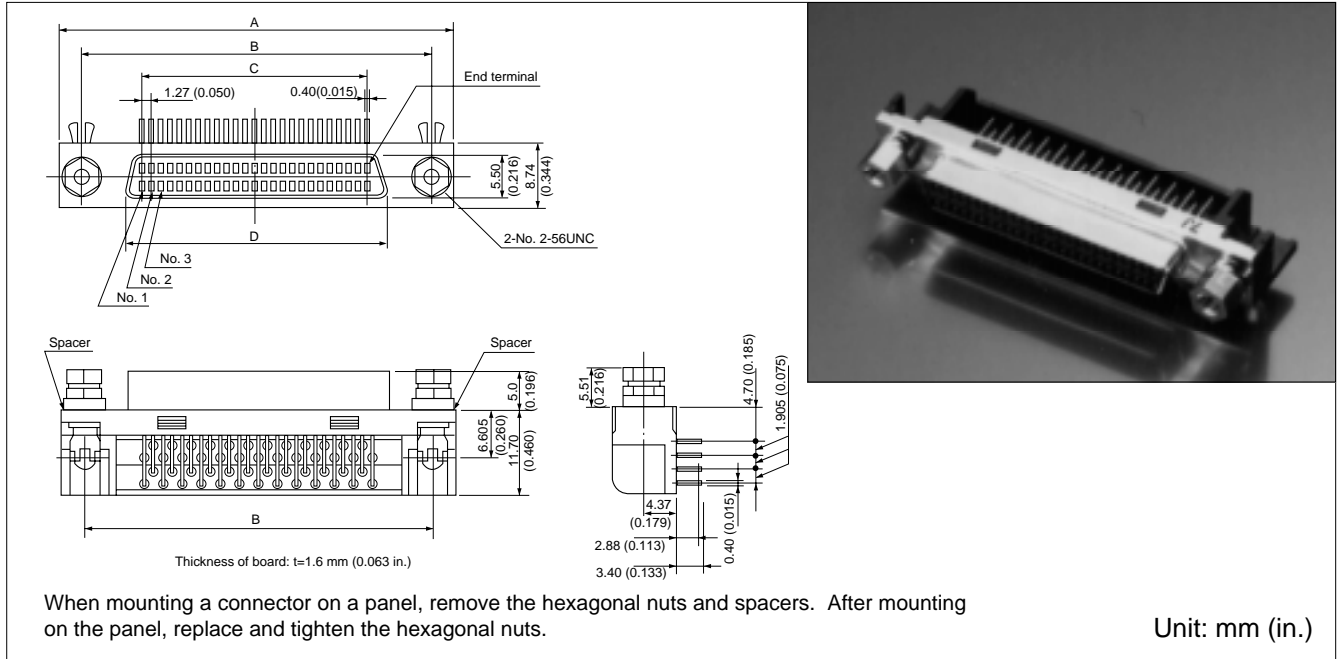
This series includes connectors with No.4-40UNC screws for hexagonal nuts. Specify a part number by replacing #BA at the end with #AA.

Example: FCN-235D100-G/P#AA

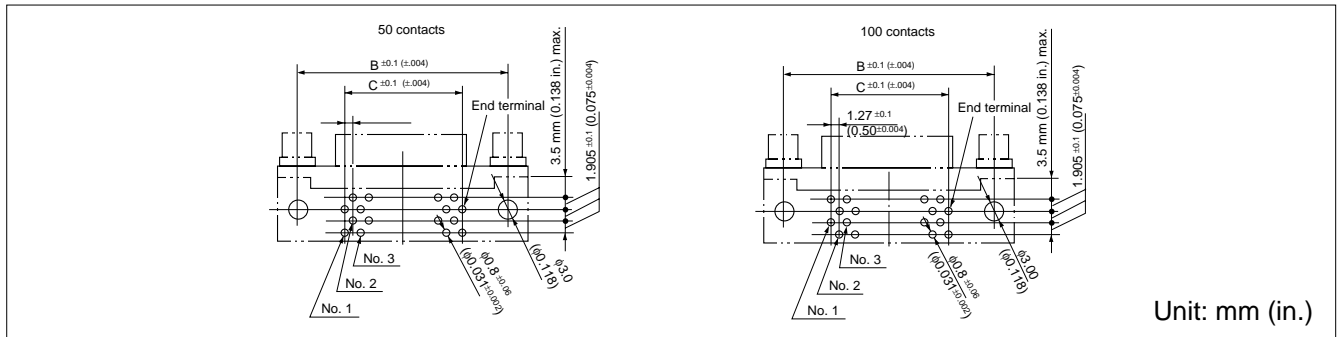
# 230R Series (Conforms to SCSI)

## RIGHT-ANGLE SOCKET WITH HEXAGONAL NUTS FOR BOARD LOCK

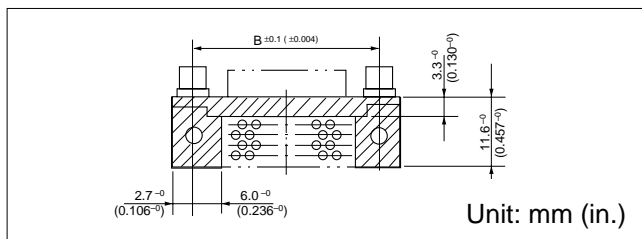
### ■ DIMENSIONS



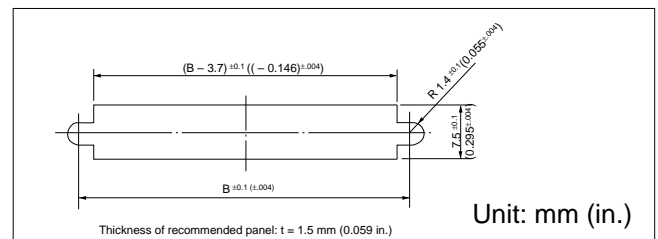
### ■ MOUNTING HOLE LAYOUT (COMPONENT SIDE)



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)			
		A	B	C	D
50	FCN-235D050-G/P#BA	52.45 (2.065)	46.48 (1.830)	30.48 (1.200)	34.65 (1.364)
100	FCN-235D100-G/P#BA	84.20 (3.315)	78.23 (3.080)	62.23 (2.450)	66.40 (2.614)

This series includes connectors with No.4-40UNC screws for hexagonal nuts. Specify a part number by replacing #BA at the end with #AA.

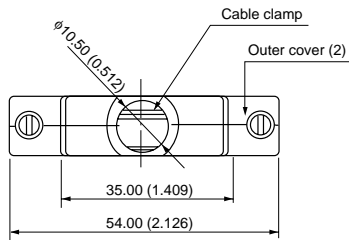
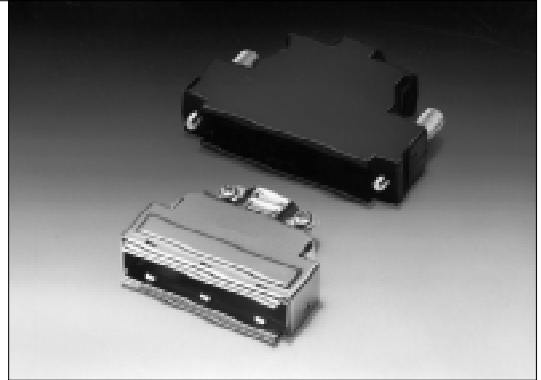
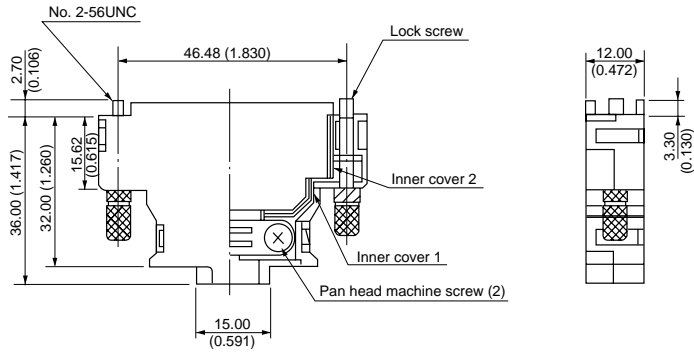
Example: FCN-235D100-G/P#AA

# 230R Series (Conforms to SCSI)

## EMI/ESD RESISTANT COVER

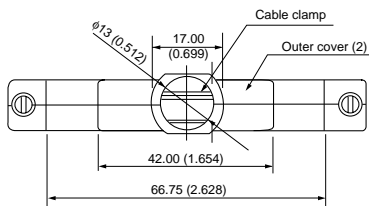
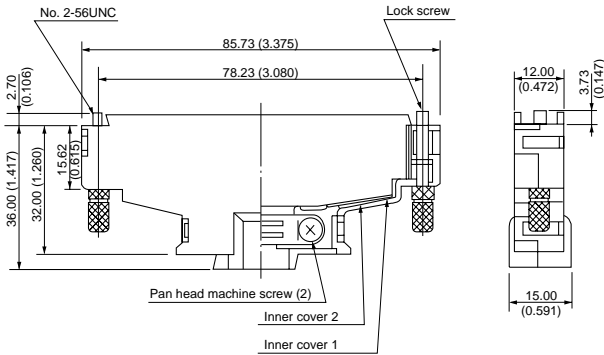
### ■ DIMENSIONS

Number of contacts: 50 contacts  
Part number: FCN-230C050-E/S



Unit: mm (in.)

Number of contacts: 100 contacts  
Part number: FCN-230C100-E/S



Unit: mm ((in.))

This series includes connectors with No.4-40UNC lock screws. Specify a part number by replacing -E/S at the end with -F/S.  
Example: FCN-230C100-F/S

# 230R Series (Conforms to SCSI)

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