

**NEW**  

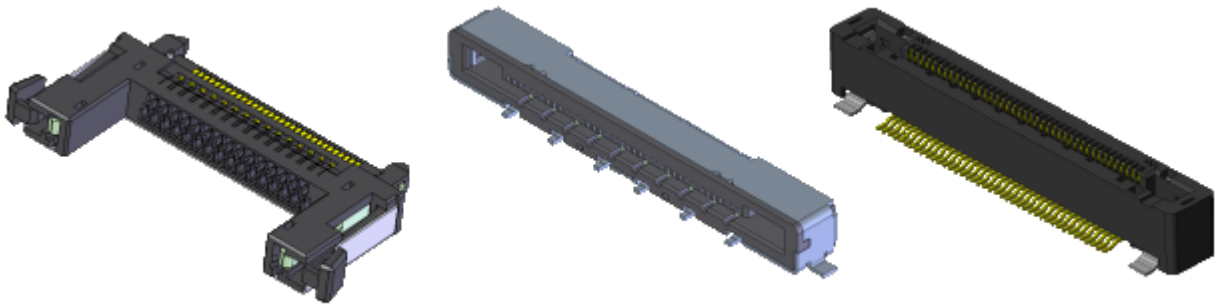

Connector for Internal Serial Transmission

CONNECTOR

MB-0153-1

November 2006

# FI-R Series

**RoHS Compliant**

&lt;&lt;Outline&gt;&gt;

High speed serial transmission such as LVDS, TMDS(HDMI), PCI express are beginning to be widely used, not only in the personal computer market but also in various markets such as TV, consumer device, PPC and medical device markets.

In these markets connectors are strongly demanded to have, not only the ability to transmit signals at high speed, but to have consideration on durability, ease of mating and width of variation that can respond to the demands from all designs.

FI-R is the connector just to answer those demands.

## Features

- Terminal pitch: 0.5mm, Connector height: 3.8mm, Compact design suitable for 21, 31, 41, 51pos.
- Stable mating condition with large mating guides on the plug side connector.
- Better PCB holding strength of a board side connector with hold downs to be soldered.
- Impedance matching 100 ohm, ground reinforced by improving structure of shell and hold down.
- Choices from, with and without shell, right angle and straight type for a board side. Board pattern is in common.
- Lineup of products with mechanical lock to prevent mis-mating and accidental unmating.
- Choices of cables from discrete wires for crimping, fine coaxial wires for soldering and FFC type etc., depending on a purpose.
- VESA standard connector for LCD interface of LCD television.

## General Specification

### Board side connector

A1. FI-R\*\*S-HF (Board side Right angel hold-down type)

A2. FI-R\*\*S-VF (Board side Straight hold-down type)

- No. of contacts: 21, 31, 41, 51pos.
- Contact resistance: 40m ohm max.
- Dielectric withstanding voltage: AC500Vr.m.s, 1 minute
- Operating temperature: -40Deg. C to +80Deg. C
- Rated current: AC, DC 0.8A each/ terminal
- Insulation resistance: 100M ohm min.
- Pitch: 0.5mm



A3. FI-RE\*\*S-HF (Board side Right angle Shell type)

A4. FI-RE\*\*S-VF (Board side Straight Shell type)

- No. of contacts: 21, 31, 41, 51pos.
- Contact resistance : 50m ohm max.
- Dielectric withstanding voltage: AC500Vr.m.s, 1 minute
- Operating temperature: -40Deg. C to +80Deg. C
- Rated current: AC, DC 0.8A each/ terminal
- Insulation resistance: 100M ohm min.
- Pitch: 0.5mm



### Cable side crimp type

B1. FI-R\*\*H (Crimp housing)

B3. FI-RC3-1A-1E-15000 (Upper contact for Crimp housing)

B4. FI-RC3-1B-1E-15000 (Lower contact for Crimp housing)

- No. of contacts: 21, 31, 41, 51pos.
- Contact resistance: 40m ohm max.
- Dielectric withstanding voltage: AC500Vr.m.s, 1 minute
- Operating temperature: -40Deg. C to +80Deg. C
- Rated current: AC, DC 0.8A each/ terminal
- Insulation resistance: 100M ohm min.
- Pitch: 0.5mm
- Applicable cable: AWG #30, 32, 36



B2. FI-RE\*\*HL (Crimp housing, Mechanical lock and shell type)

B3. FI-RC3-1A-1E-15000 (Crimp housing Upper contact for )

B4. FI-RC3-1B-1E-15000 (Crimp housing Lower contact for )

- No. of contacts: 21, 31, 41, 51pos.
- Contact resistance: 50m ohm max.
- Dielectric withstanding voltage: AC500Vr.m.s, 1 minute
- Operating temperature: -40Deg. C to +80Deg. C
- Rated current: AC, DC 0.7A each/ terminal
- Insulation resistance: 100M ohm min.
- Pitch: 0.5mm
- Applicable cable: AWG #30, 32, 36



## General Specification

### Cable side soldering type

C1. FI-RE\*\*CL (Soldering , Mechanical lock and shell type )

C2. FI-RE\*\*CL-SH2-3000 (Cable side Cover shell for Soldering type)

- No. of contacts: 21, 31, 41, 51pos.
- Rated current : AC, DC 0.7A each/ terminal
- Contact resistance: 50m ohm max.
- Insulation resistance: 100M ohm min.
- Dielectric withstanding voltage: AC500Vr.m.s, 1 minute
- Pitch: 0.5mm
- Operating temperature: -40Deg. C to +80Deg. C
- Applicable cable: Coaxial cable AWG#40



## Materials and Finishes

### Board side connector

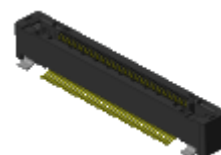
#### A1. FI-R\*\*S-HF (Board side Right angel hold-down type)

Components	Materials and Finishes
Contact	Copper alloy/ Contact area Au, SMT Terminal area Sn plating
Insulator	Heat resistant plastic/ None



#### A2. FI-R\*\*S-VF (Board side Straight hold-down type)

Components	Materials and Finishes
Contact	Copper alloy/ Contact area Au, SMT Terminal area Sn plating
Insulator	Heat resistant plastic/ None



#### A3. FI-RE\*\*S-HF (Board side Right angle shell type)

Components	Materials and Finishes
Contact	Copper alloy/ Contact area Au, SMT Terminal area Sn plating
Insulator	Heat resistant plastic/ None
Shell	Stainless steel/ None



#### A4. FI-RE\*\*S-VF (Board side Straight shell type)

Components	Materials and Finishes
Contact	Copper alloy/ Contact area Au, SMT Terminal area Sn plating
Insulator	Heat resistant plastic/ None
Shell	Stainless steel/ None



### Cable side crimp type

#### B1. FI-R\*\*H (Crimp housing)

Components	Materials and Finishes
Press fit shell	Copper alloy/ Sn plating
Insulator	Heat resistant plastic/ None



#### B2. FI-RE\*\*HL (Crimp housing Mechanical lock and shell type)

Components	Materials and Finishes
Press fit shell	Copper alloy/ Sn plating
Insulator	Heat resistant plastic/ None
Lock spring	Stainless steel/ None



Materials and Finishes
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**Cable side crimp type**B3. FI-RC3-1A-1E-15000 (Upper contact for Crimp housing)

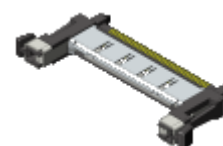
Components	Materials and Finishes
Contact	Phosphor bronze/ Contact area Au, Terminal area Sn plating

B4. FI-RC3-1B-1E-15000 (Lower contact for Crimp housing)

Components	Materials and Finishes
Contact	Phosphor bronze/ Contact area Au, Terminal area Sn plating

**Cable side soldering type**C1. FI-RE\*\*CL (Soldering Mechanical lock and shell type)

Components	Materials and Finishes
Contact	Copper alloy/ Contact area Au, Terminal area Sn plating
Press fit shell	Copper alloy/ Sn plating
Insulator	Heat resistant plastic/ None
Lock spring	Stainless steel/ None

C2. FI-RE\*\*CL-SH2-3000 (Cover shell for soldering type)

Components	Materials and Finishes
Cover shell	Stainless steel/ None





Ordering Information

Board side Right angel hold-down type  
Emboss (SJ104398)

FI-R \*\* S - HF - R1500

Series

No. of contacts :  
21, 31, 41, 51 pos.

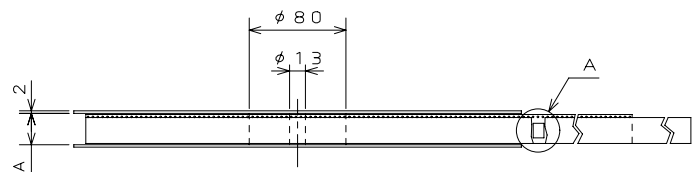
Embossed tape  
1500pcs. per reel

Right angle type

Board side



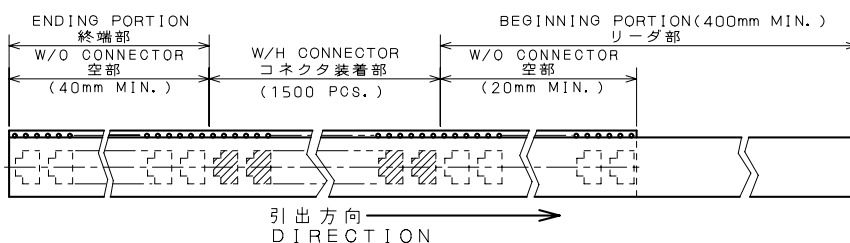
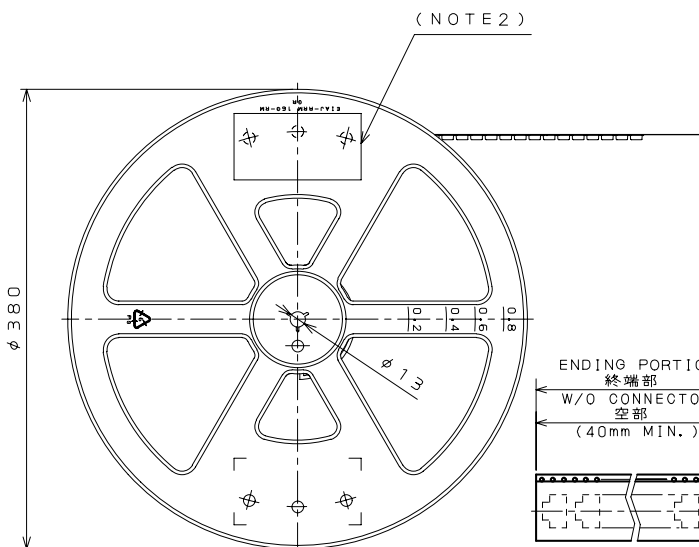
**A1**



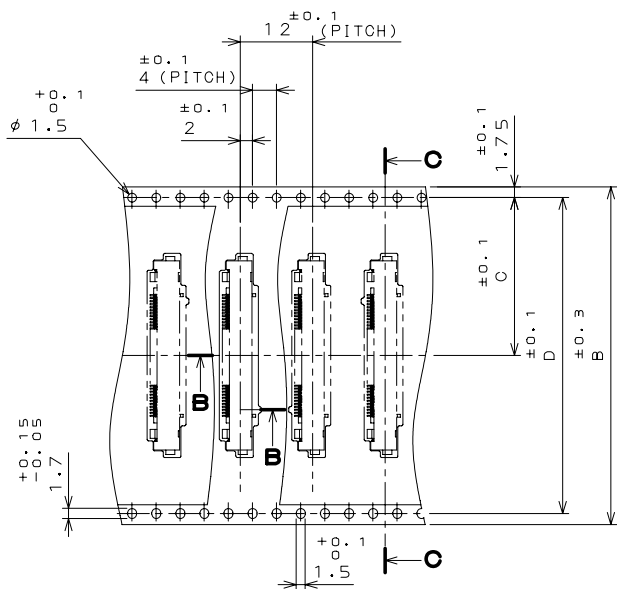
Unit: mm

Dimensions

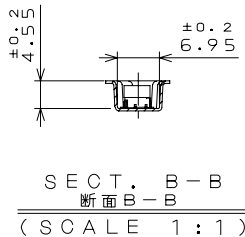
NO.OF CONTACT	A	B	C	D	E
3 1	46	44	20.2	40.4	28.85
4 1	58	56	26.2	52.4	33.85
5 1	58	56	26.2	52.4	38.85



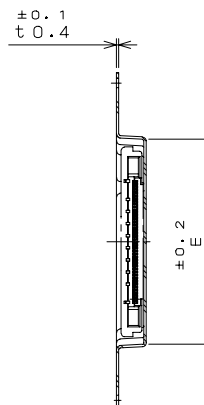
引出方向  
DIRECTION



DETAIL A  
A部詳細図  
(SCALE 1:1)



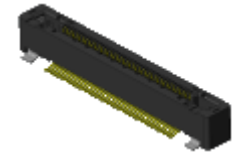
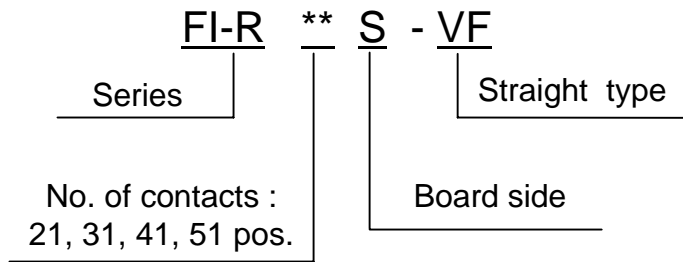
SECT. B-B  
断面B-B  
(SCALE 1:1)



SECT. C-C  
断面C-C  
(SCALE 1:1)

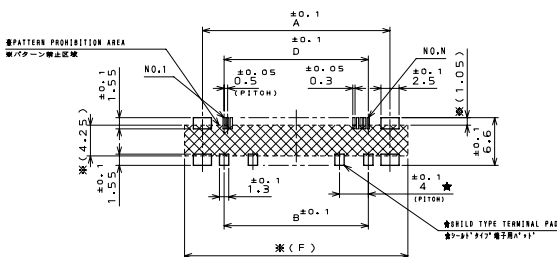
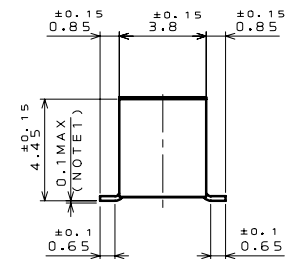
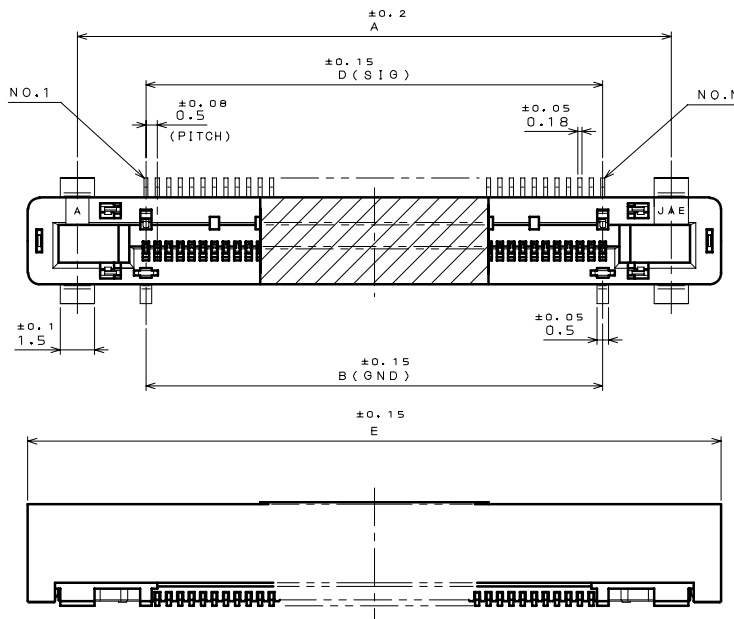
Ordering Information

Board side Straight hold-down type Individual connector (SJ102932)

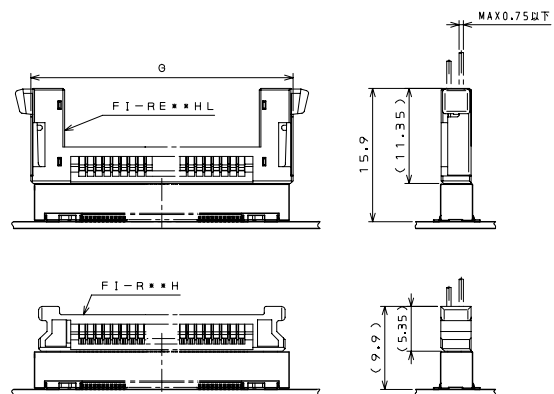


**A2**

Unit: mm



Recommended board dimensions



Drawing when mated (for reference)

Dimensions

NO. OF CONTACTS (N)	DIMENSION						
	A	B	C	D	E	F	G
31	21	12	—	15	25.35	25.95	26.25
41	26	20	—	20	30.35	30.95	31.25
51	31	25	—	25	35.35	35.95	36.25



Ordering Information

Board side Straight hold-down type Emboss (SJ102935)

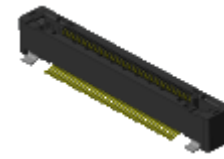
Series **FI-R \*\*** **S - VF - R1300**

No. of contacts: 21, 31, 41, 51 pos.

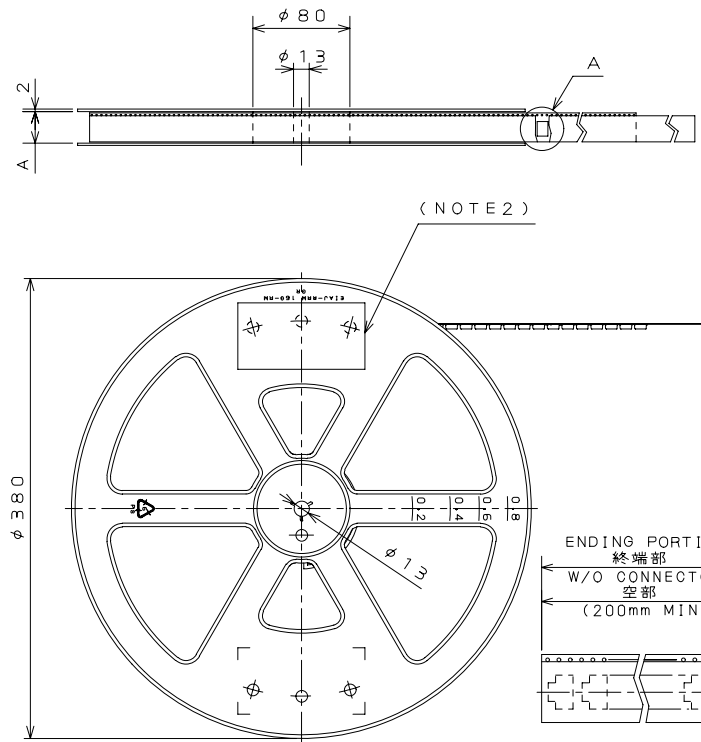
Embossed tape 1300pcs. per reel

Straight type

Board side



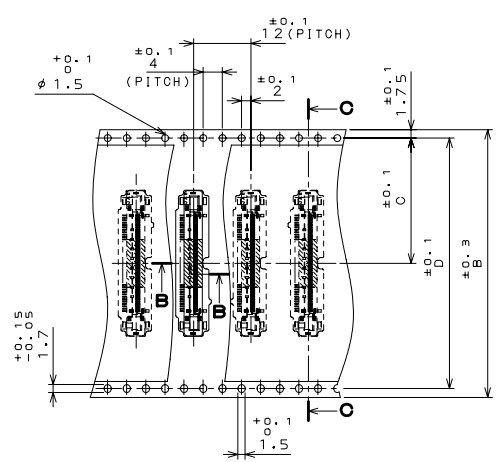
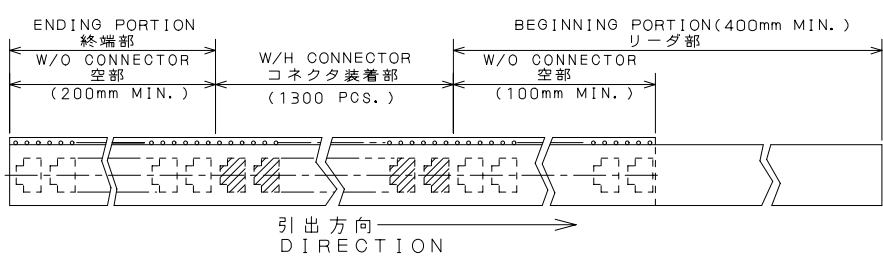
**A2**



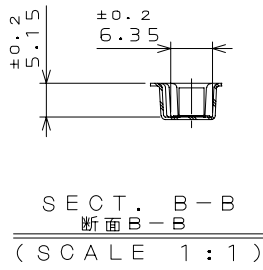
Dimensions

Unit: mm

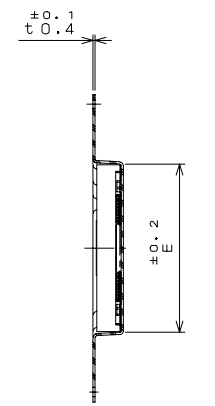
NO.OF CONTACT	A	B	C	D	E
31	46	44	20.2	40.4	25.6
41	58	56	26.2	52.4	30.6
51	58	56	26.2	52.4	35.6



DETAIL A  
A部詳細図  
(SCALE 1:1)



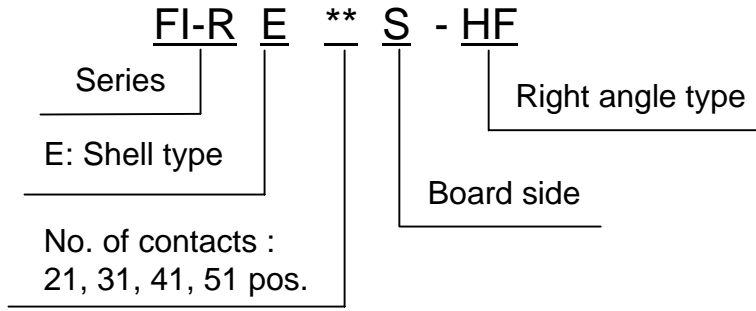
SECT. B-B  
断面B-B  
(SCALE 1:1)



SECT. C-C  
断面C-C  
(SCALE 1:1)

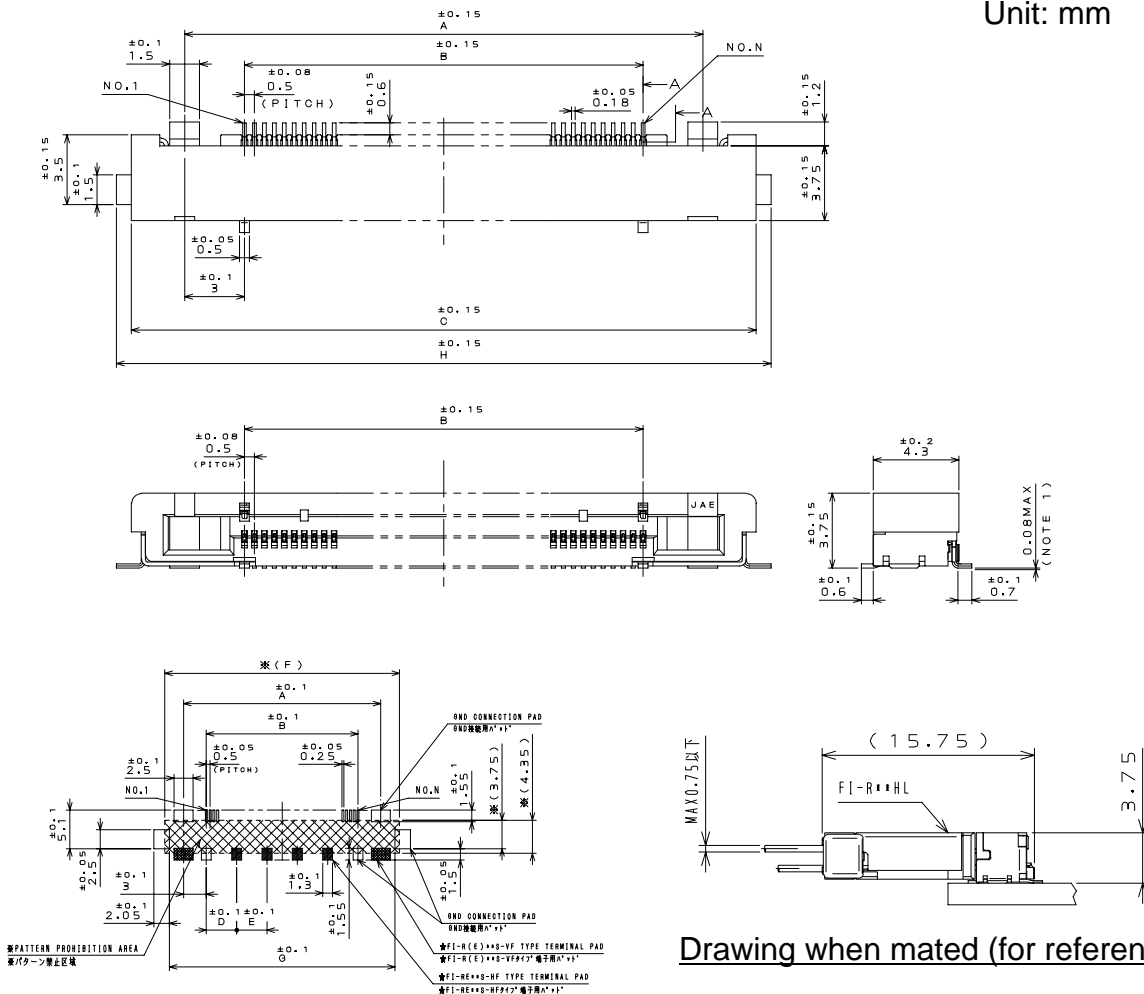
Ordering Information

Board side Right angle Shell type Individual connector (SJ102934)



A3

Unit: mm



Recommended board dimensions

Dimensions

NO.OF CONTACTS(N)	DEMENSION	A	B	C	D	E	F	G	H
21		16	10	21.35			20.95	19.75	22.85
31		21	15	26.35			25.95	24.75	27.85
41		26	20	31.35			30.95	29.75	32.85
51		31	25	36.35			35.95	34.75	37.85

Ordering Information

Board side Right angle Shell type Emboss (SJ102937)

FI-R E \*\* S - HF - R1500

Series  
E: Shell type

Embossed tape  
1500pcs. per reel

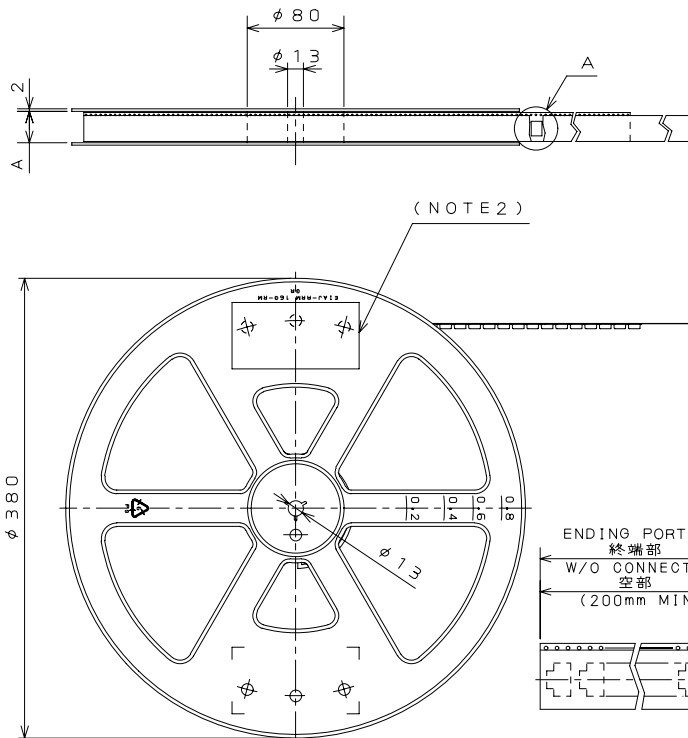
Right angle type

No. of contacts:  
21, 31, 41, 51  
pos.

Board side



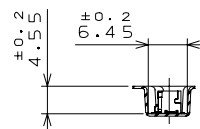
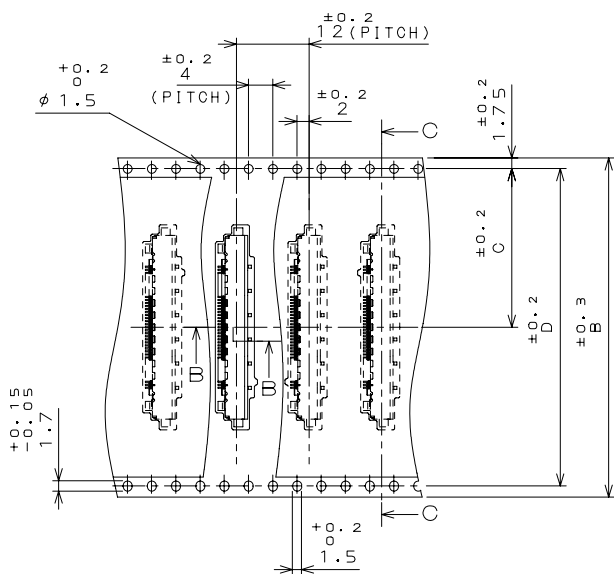
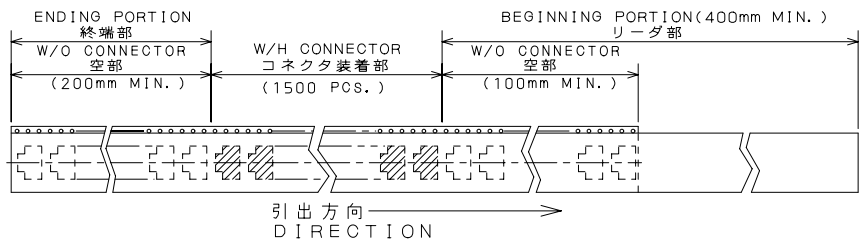
**A3**



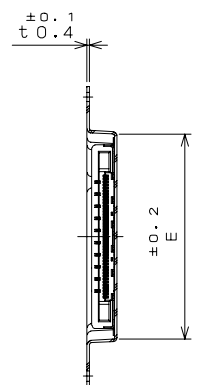
Unit: mm

Dimensions

NO.OF CONTACT	A	B	C	D	E
2 1	46	44	20.2	40.4	23.85
3 1	46	44	20.2	40.4	28.85
4 1	58	56	26.2	52.4	33.85
5 1	58	56	26.2	52.4	38.85



SECT. B-B  
断面B-B  
(SCALE 1:1)

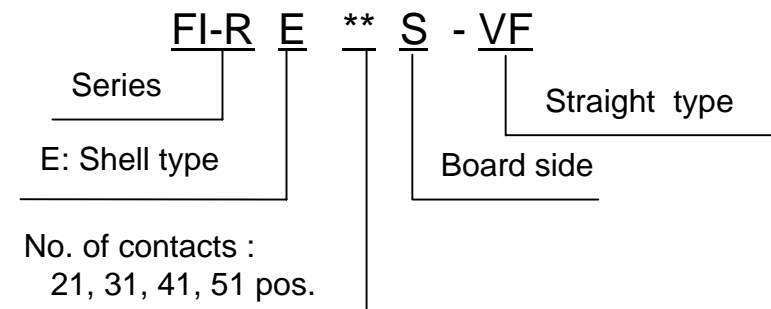


SECT. C-C  
断面C-C  
(SCALE 1:1)

DETAIL A  
A部詳細図  
(SCALE 1:1)

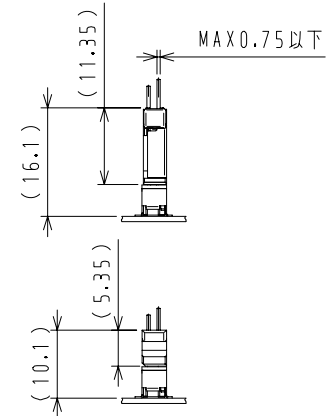
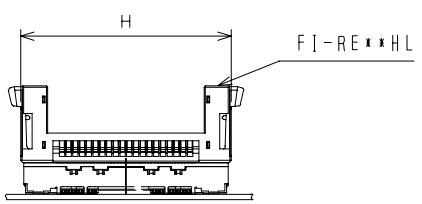
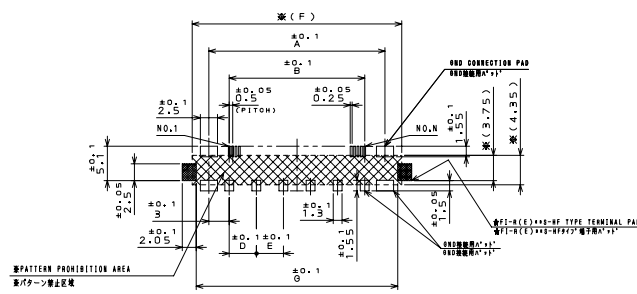
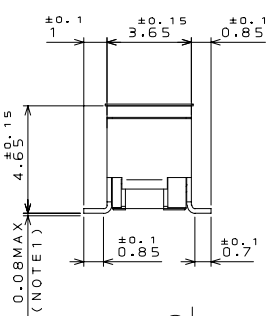
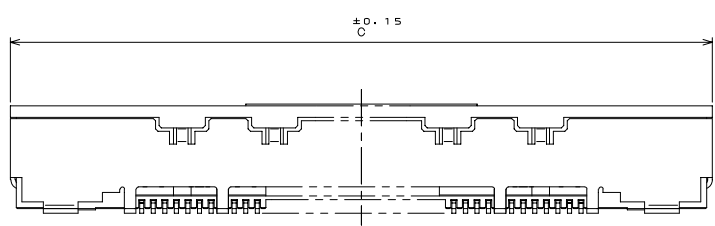
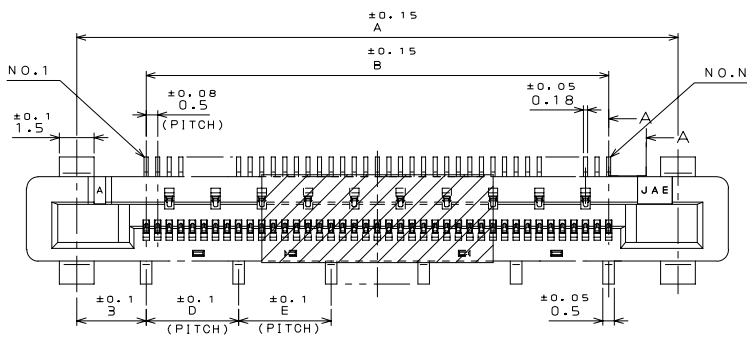
Ordering Information

Board side Straight shell type Individual connector (SJ102933)

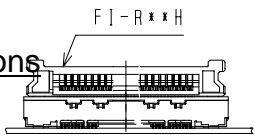


**A4**

Unit: mm



Recommended board dimensions



Drawing when mated (for reference)

Dimensions

NO.OF CONTACTS (N)	A	B	C	D	E	F	G	H
21	16	10	20.35	3	—	20.95	19.75	21.25
31	21	15	25.35	4	—	25.95	24.75	26.25
41	26	20	30.35	4	4	30.95	29.75	31.25
51	31	25	35.35	5	5	35.95	34.75	36.25

Ordering Information

Board side Shell type  
Emboss (SJ102936)

Series **FI-R E \*\* S - VF - R1300**

E: Shell type

No. of contacts :  
21, 31, 41, 51 pos.

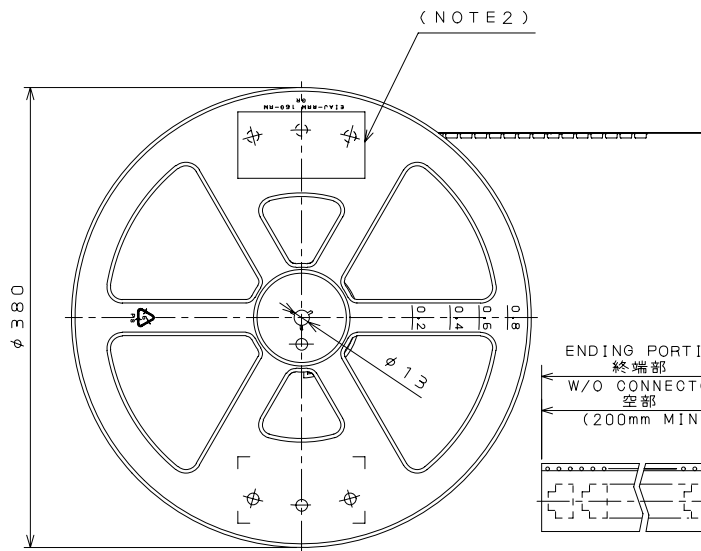
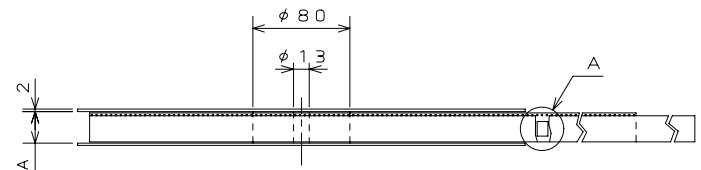
Embossed tape  
1300pcs. per reel

Straight type

Board side



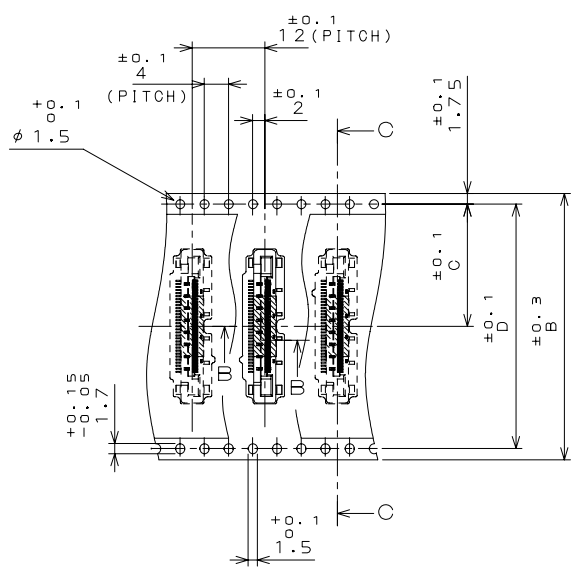
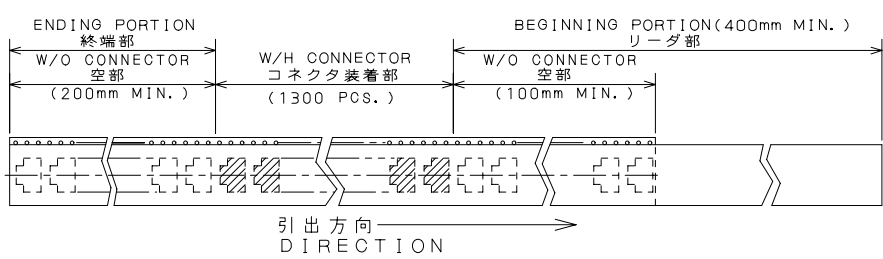
**A4**



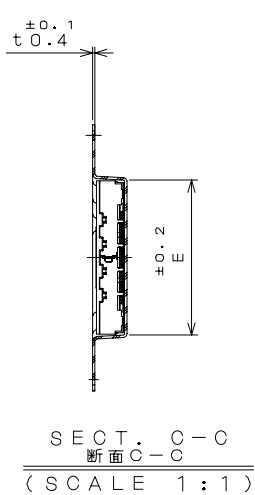
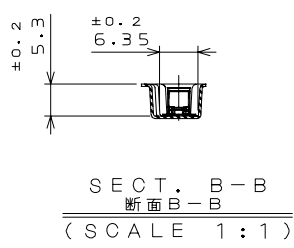
Dimensions

Unit: mm

NO.OF CONTACT	A	B	C	D	E
21	46	44	20.2	40.4	20.6
31	46	44	20.2	40.4	25.6
41	58	56	26.2	52.4	30.6
51	58	56	26.2	52.4	35.6

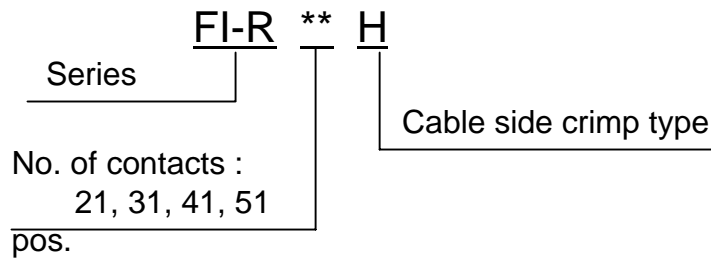


DETAIL A  
A部詳細図  
(SCALE 1:1)



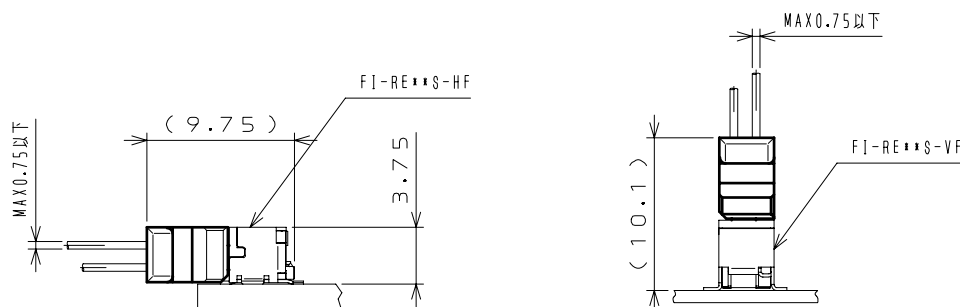
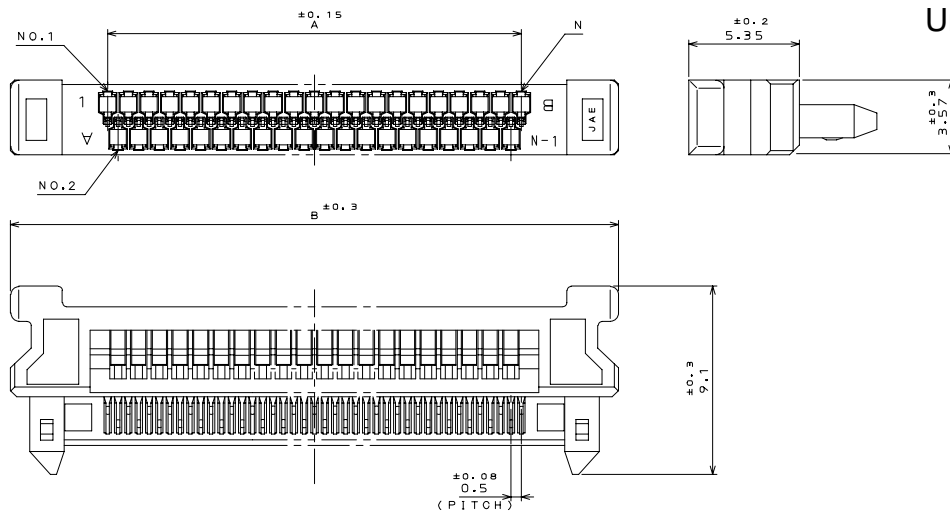
Ordering Information

Cable side Crimp housing  
Individual connector (SJ103062)



**B1**

Unit: mm



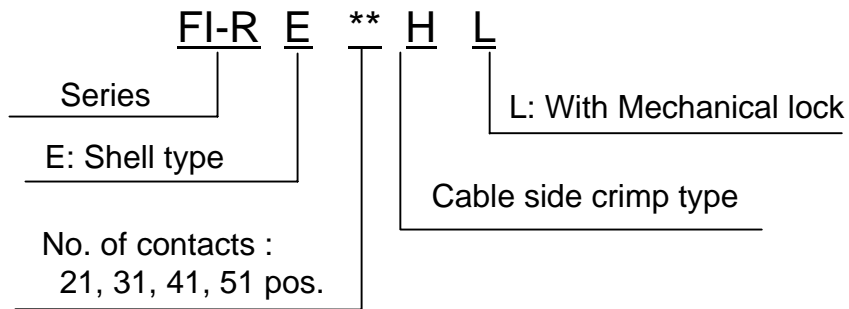
Drawing when mated (for reference)

Dimensions

NO.OF CONTACTS (N)	DEMENSION	A	B
21		10	19.4
31		15	24.4
41		20	29.4
51		25	34.4

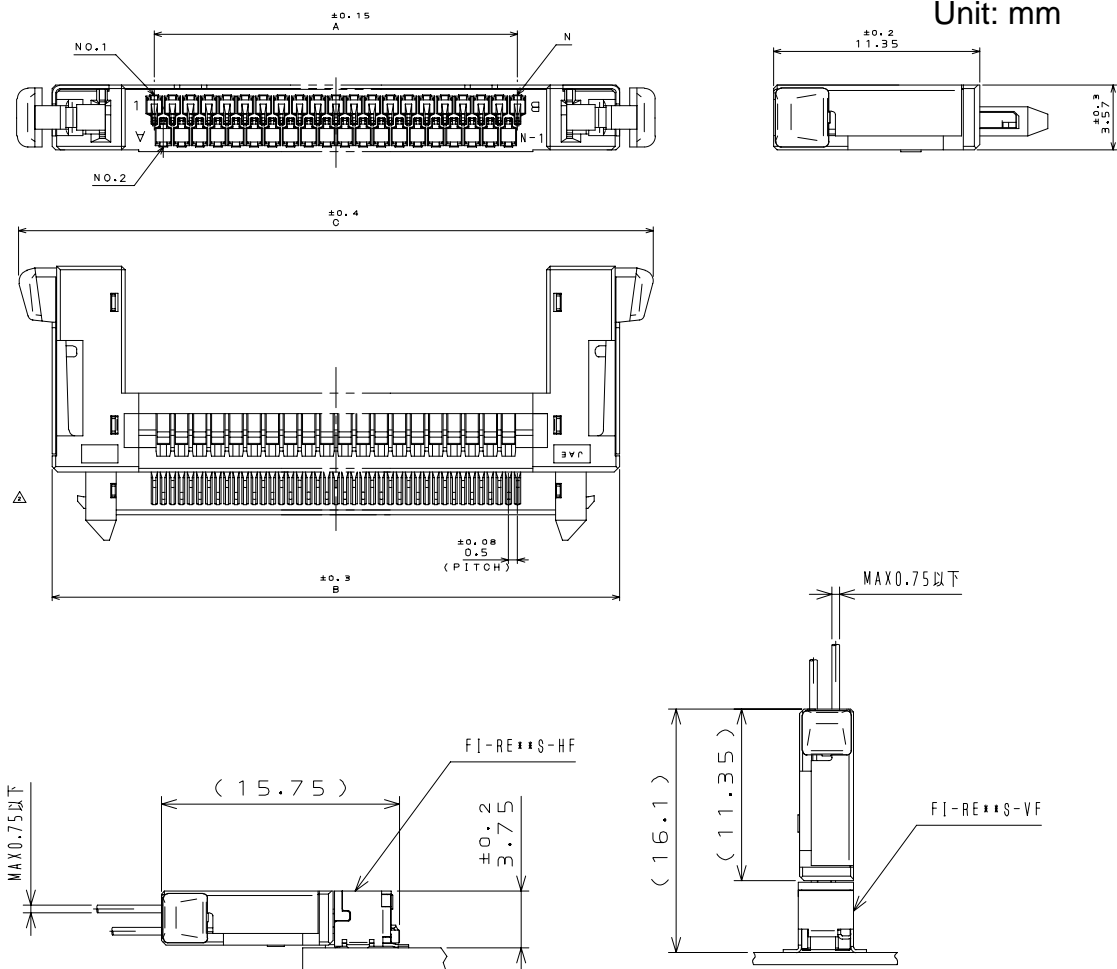
Ordering Information

Crimp housing mechanical lock and shell type Individual connector (SJ103062)



**B2**

Unit: mm



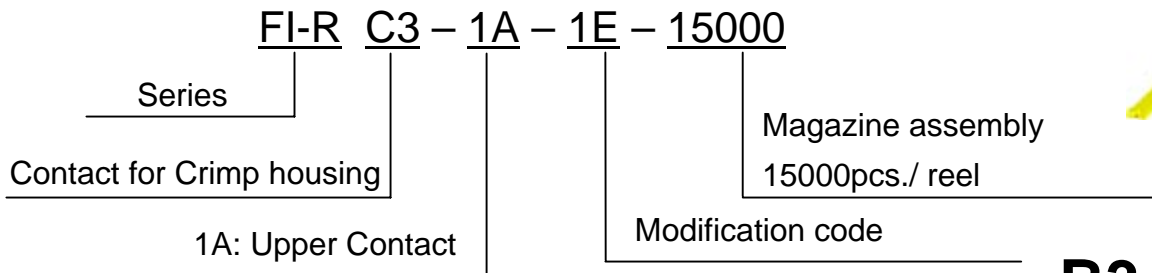
Drawing when mated (for reference)

Dimensions

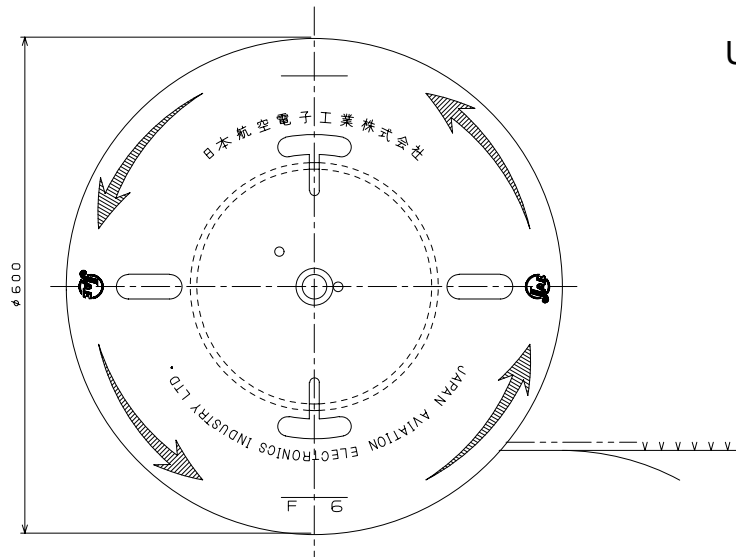
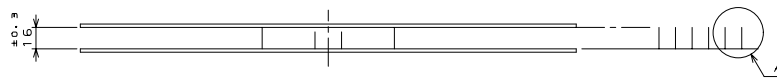
NO.OF CONTACTS (N)	DEMENSION		
	A	B	C
21	10	21.25	24.95
31	15	26.25	29.95
41	20	31.25	34.95
51	25	36.25	39.95

Ordering Information

Upper contact for Crimp housing (SJ103060 )



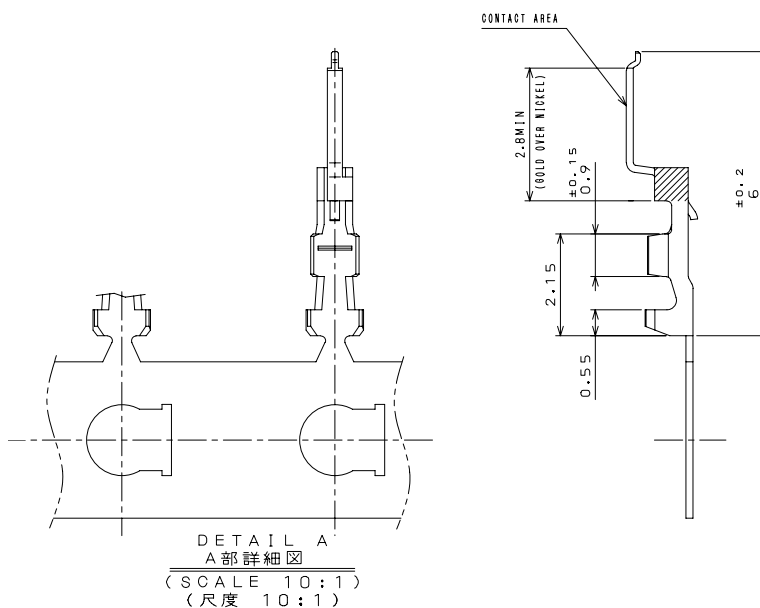
**B3**



Unit: mm



EXCLUDING CRIMP POT  
 クリンプポット部は除く





Ordering Information

Lower contact for Crimp housing (SJ103061)

FI-R C3 - 1A - 1E - 15000

Series

Contact for Crimp housing

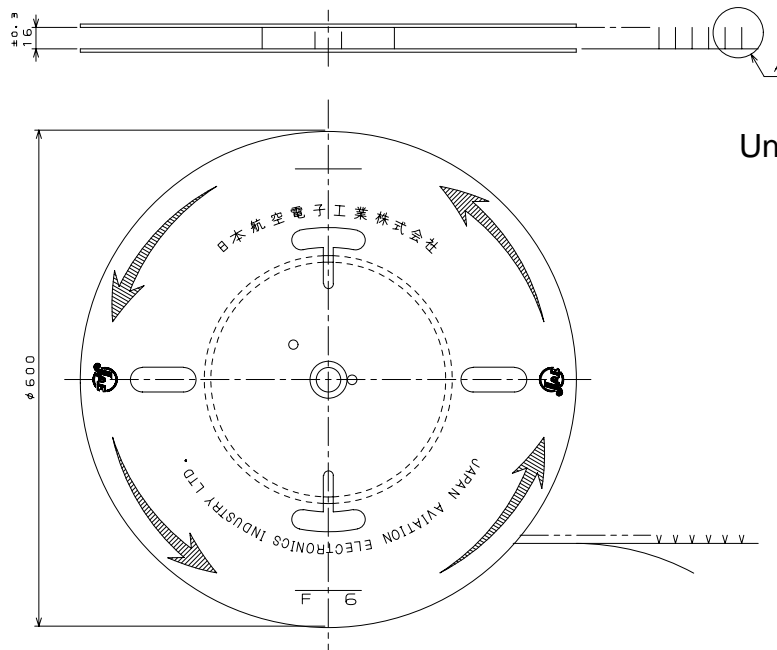
1B: Lower contact

Magazine assembly  
15000pcs./ reel

Modification code



**B4**

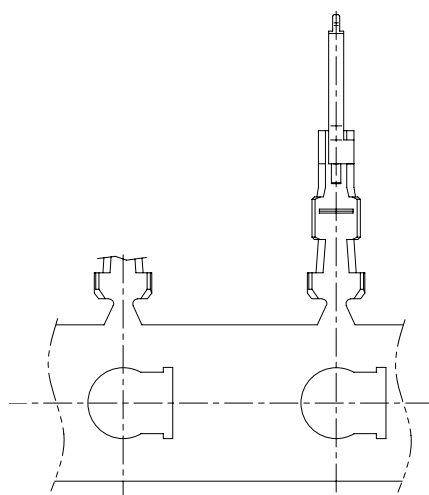


Unit: mm

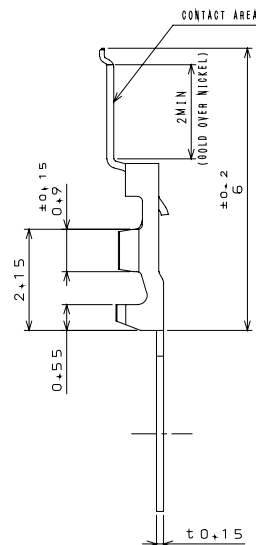


EXCLUDING CRIMP POT

クリンプポット部は除く

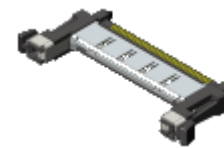
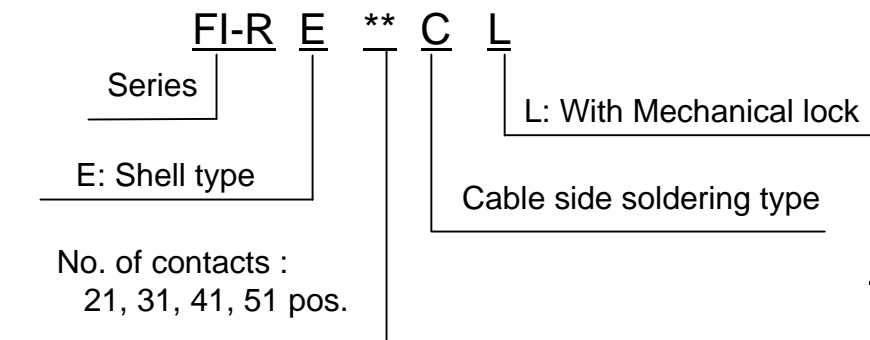


DETAIL A  
A部詳細図  
(SCALE 10:1)  
(尺度 10:1)

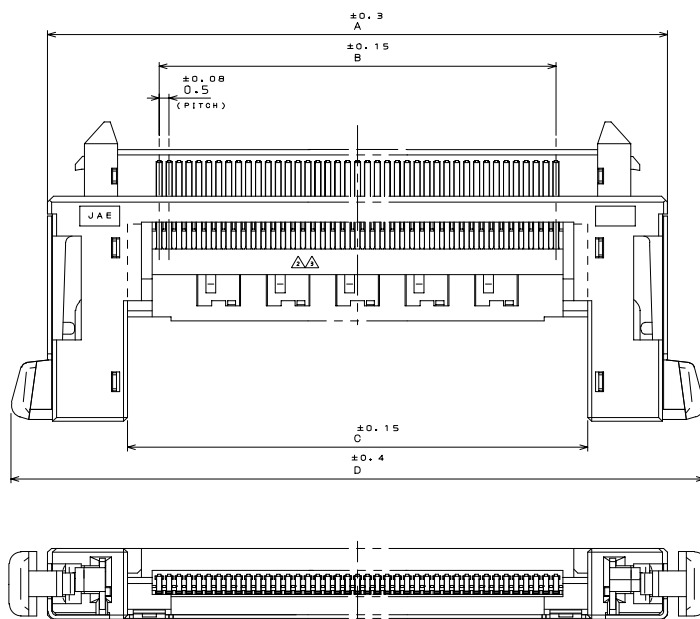


Ordering Information

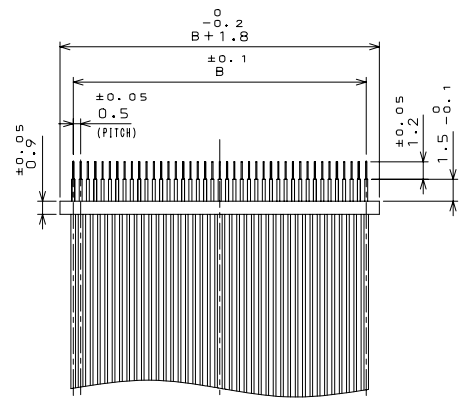
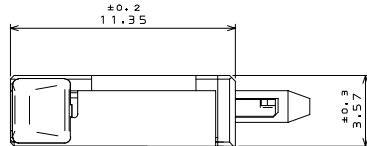
Soldering  
Mechanical lock and shell type (SJ104311)



**C1**



Unit: mm



Drawing when cable is connected (for reference)

Dimensions

NO. OF CONTACTS (N)	A	B	C	D
21	21.25	10.0	13.2	24.95
31	26.25	15.0	18.2	29.95
41	31.25	20.0	23.2	34.95
51	36.25	25.0	28.2	39.95

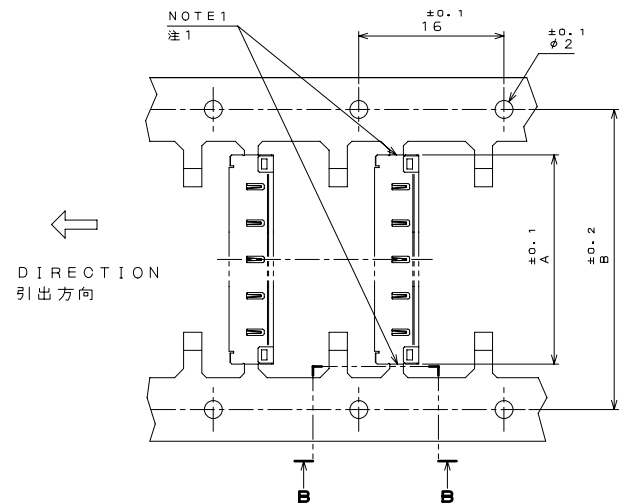
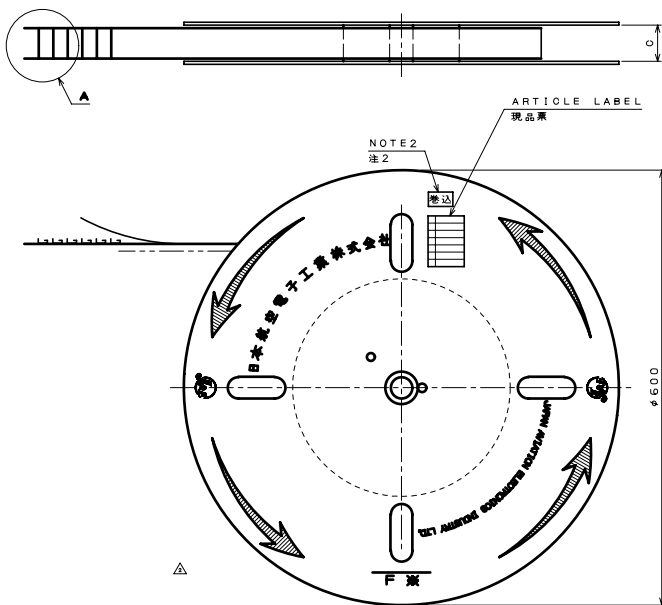
Ordering Information

Cover shell for Soldering type (SJ104716)

**FI-R E \*\* C L - SH2 - 3000**  
 Series  
 E: Shell type  
 Embossed tape  
 3000pcs. per reel  
 Cover shell  
 L: With Mechanical lock  
**C2**  
 No. of contacts :  
 21, 31, 41, 51 pos.  
 Cable side soldering type



Unit: mm

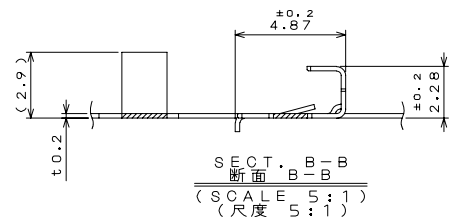


Dimensions

NO. OF CONTACT 芯数	A	B	C
21	13.0	19.0	26.0
31	18.0	28.0	40.0
41	23.0	35.0	50.0
51	28.0	34.0	40.0



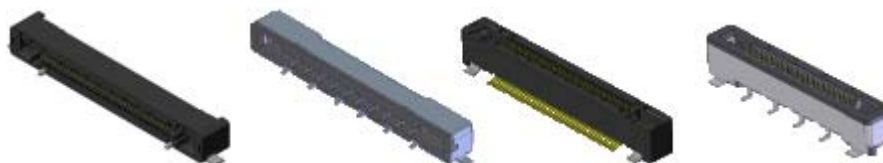
DETAIL A  
 A部詳細図  
 (SCALE 2:1)  
 (尺度 2:1)



SECT. B-B  
 断面 B-B  
 (SCALE 5:1)  
 (尺度 5:1)

## Lineup

Board side



Number of Contacts	Type	Mounting direction	Part Number	Reel Part Number
21	Hold-down	Right angle	FI-R21S-HF	FI-R21S-HF-R1500
		Straight	FI-R21S-VF	FI-R21S-VF-R1300
	Shell	Right angle	FI-RE21S-HF	FI-RE21S-HF-R1500
		Straight	FI-RE21S-VF	FI-RE21S-VF-R1300
31	Hold-down	Right angle	FI-R31S-HF	FI-R31S-HF-R1500
		Straight	FI-R31S-VF	FI-R31S-VF-R1300
	Shell	Right angle	FI-RE31S-HF	FI-RE31S-HF-R1500
		Straight	FI-RE31S-VF	FI-RE31S-VF-R1300
41	Hold-down	Right angle	FI-R41S-HF	FI-R41S-HF-R1500
		Straight	FI-R41S-VF	FI-R41S-VF-R1300
	Shell	Right angle	FI-RE41S-HF	FI-RE41S-HF-R1500
		Straight	FI-RE41S-VF	FI-RE41S-VF-R1300
51	Hold-down	Right angle	FI-R51S-HF	FI-R51S-HF-R1500
		Straight	FI-R51S-VF	FI-R51S-VF-R1300
	Shell	Right angle	FI-RE51S-HF	FI-RE51S-HF-R1500
		Straight	FI-RE51S-VF	FI-RE51S-VF-R1300

Note 1

Note 1

Note 1

Cable side crimp type



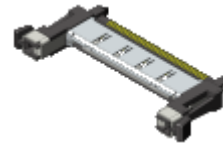
Number of Contacts	Type	Mechanical lock	Part Number
21	-	No	FI-R21H
	Shell	Yes	FI-RE21HL
31	-	No	FI-R31H
	Shell	Yes	FI-RE31HL
41	-	No	FI-R41H
	Shell	Yes	FI-RE41HL
51	-	No	FI-R51H
	Shell	Yes	FI-RE51HL

Note 1

Note 1

Note 1) Development under concern Nov. 2006

Lineup
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Cable side soldering type

Number of Contacts	Type	Mechanical lock	Part Number	Cover shell Part Number
21	Shell	Yes	FI-RE21CL	FI-RE21CL-SH2-3000
31			FI-RE31CL	FI-RE31CL-SH2-3000
41			FI-RE41CL	FI-RE41CL-SH2-3000
51			FI-RE51CL	FI-RE51CL-SH2-3000

Related Documents
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- Contact Crimp tool (Manual)

Part Number: CT150-4C-FIR  
Handling Instruction: T700276

- Contact Crimp tool (Semi-automatic machine)

Press machine

Part Number: CT215-4B  
Handling Instruction: T707064

Applicator

Part Number: 350-FI-2B  
Handling Instruction: T703263

## **Japan Aviation Electronics Industry, Limited**

Product Marketing Division  
Aobadai Building, 3-1-19, Aobadai, Meguro-ku, Tokyo 153-8539  
Phone: +81-3-3780-2787 FAX: +81-3-3780-2946

**Notice:** Products shown in this leaflet are made for the applications listed below. However, if the above-mentioned products are to be used in aerospace devices, marine cable-connection devices, atomic power control systems, medical equipment for life-support systems, and any other specific application requiring extremely high reliability, please contact JAE for further information.

Recommended applications: Computers, Office machines, Measuring devices, Telecommunication devices (Terminals, Mobile devices), AV devices, Household applications, FA devices, etc.