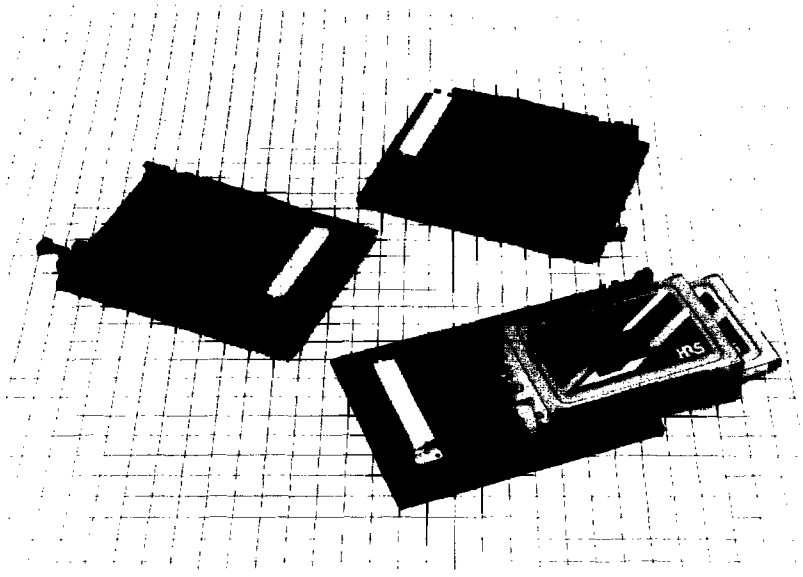
HRS IC8 SERIES

JEIDA Ver. 4.2 Compliant Two-slot Connectors For JEIDA/PCMCIA Type III Cards IC8 Series Two-Slot Connectors (for Surface Mounting)

■ GENERAL

The IC8 Series of miniature, lightweight, SMT connectors are equipped with two slots of pin connectors for use with JEIDA Ver. 4.2-compliant PC cards and can also be used with JEIDA/PCMCIA type III cards.



■ FEATURES

(1) For ease of operation, the IC8 type is equipped with both left and right eject buttons, and the IC8S type has an eject button on either the left or the right side which reduces the mounting space by about 10%.

(2) In consideration of the connector width and the ease with which the button can be depressed, the IC8S type is available in two types of button widths (4.5 mm and 7.0 mm).

(3) The weight has been reduced by about 15% with respect to our existing IC6 Series of products (of the 2-slot dip type).

(4) With regard to other functions, the product features of our well-received IC6 Series (2-slot dip type) have been transferred to the IC8 Series.
- Frame ground terminals are furnished for each of the two slots.
- In addition to a low profile type, a 2.2 mm or 5 mm stand-off type is available which allows parts to be mounted in the area under the connector. (A 4-mm size is also available in the IC8S type.)
- In addition to the standard type, a reverse type is available featuring a reversed direction of card insertion. This type can be used with low voltage cards.
- A dual-edge card ejection mechanism is used to eject the card smoothly.

(5) A high level of contact reliability has been achieved through the use of a SMT conversion connector developed independently by Hirose Electric so that boards and other parts do not intervene. (Patents pending)

(6) The connector side is equipped with M2 × 0.4 nuts in four locations which permit a reduction of the number of mounting tasks.
※ (In addition to the regular screw fastening from the bottom surface of the board, a specification of the IC8S type permitting screw fastening from the top surface of the connector is scheduled to be released soon.)

■ MATERIALS AND PROCESSING

Item			Material	Processing		Notes
Insulation	Main body		PBT resin	Black		UL94V-0
	SMT portion		PPS resin	Light brown		UL94V-0
Pins	Main body	Pins used for the card	Brass	Card contact portion	Gold plating	
				SMT contact portion	Solder plating	
		Frame ground pin	Phosphor bronze	Contact portion	Gold plating	
				Other	Nickel plating	
	SMT portion		Phosphor bronze	Solder plating		
Fittings of the eject portion			SUS			
Nuts			Steel	Nickel plating		

■ ELECTRICAL CHARACTERISTICS

Item	Condition	Rating
Current capacity	Per pin	0.5 A
Withstand voltage	One minute at the rated value	250 V AC (NOTE 1)
Insulation resistance	At 500 V DC	1,000 MΩ or greater
Contact resistance	At 1 mA DC	80 mΩ or less (NOTE 2)

NOTE 1: The standard value of the withstand voltage in JEIDA Ver. 4.2 is 500 V AC, but the value for this connector is 250 V AC because of the narrow contact pitch.

NOTE 2: The standard value of the contact resistance in JEIDA Ver. 4.2 is 40 mΩ or less, but the value for this connector is 80 mΩ (including conductor resistance) because the pins are long and the conductor resistance is large.

■ STRUCTURE OF THE PRODUCT NUMBER

● Main Body

IC8 S A – 136 PF R – SF – EJR

- Series name
- Button configuration type
  Blank : Eject buttons on both sides
  S : Eject buttons on one side
- Stand-off type
  Blank : No stand-offs
  A : 2.2 mm stand-off
  B : 5.0 mm stand-off
  C : 4.0 mm stand-off (only in the IC8S type)
- Number of contacts: 68 × 2 slots
- Eject button configuration and button width
  EJ : Buttons on both sides 5.0 mm
  EJR : Right button 4.5 mm
  EJRA : Right button 7.0 mm
  EJL : Left button 4.5 mm
  EJLA : Left button 7.0 mm
- Mounting method
  SF: Surface mount type
- Card insertion direction type
  Blank : Standard type
  R : Reverse type
- Pin connector type
  PF : For use with 5 V types
  PL : For use with 3.3 V types

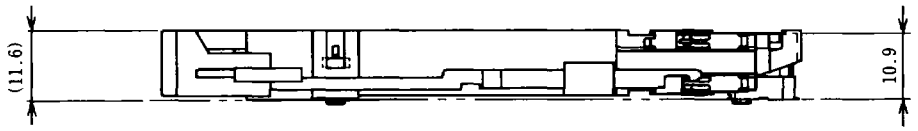
● SMT Portion

IC8 A – 136 RD – 0.635 SFA

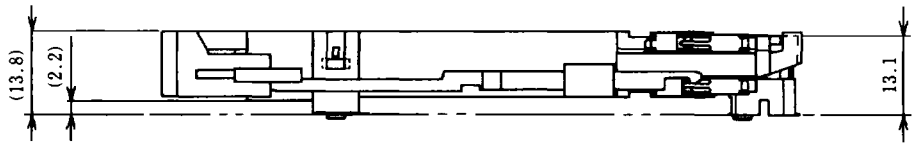
- Series name
- Stand-off type
  Blank : No stand-offs
  A : 2.2 mm stand-off
  B : 5.0 mm stand-off
  C : 4.0 mm stand-off (only in the IC8S type)
- Number of contacts: 68× 2 slots
- Mounting method
  SFA: Surface mount type
- Contact pitch: 0.635 mm
- Two-row receptacle connector

Diagram of Completed Mounting Condition

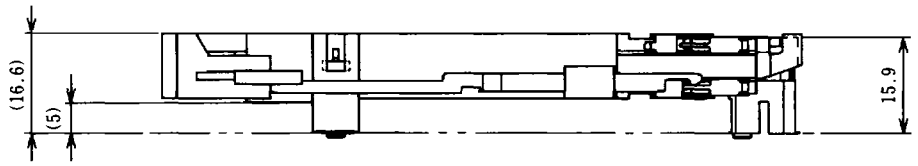
Type without stand-offs



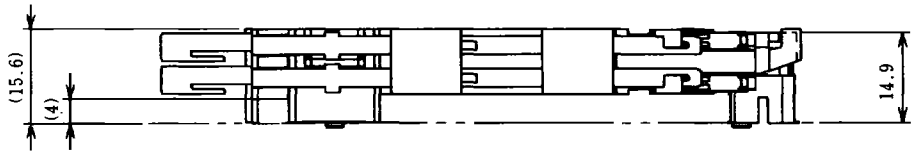
2.2 mm stand-off type

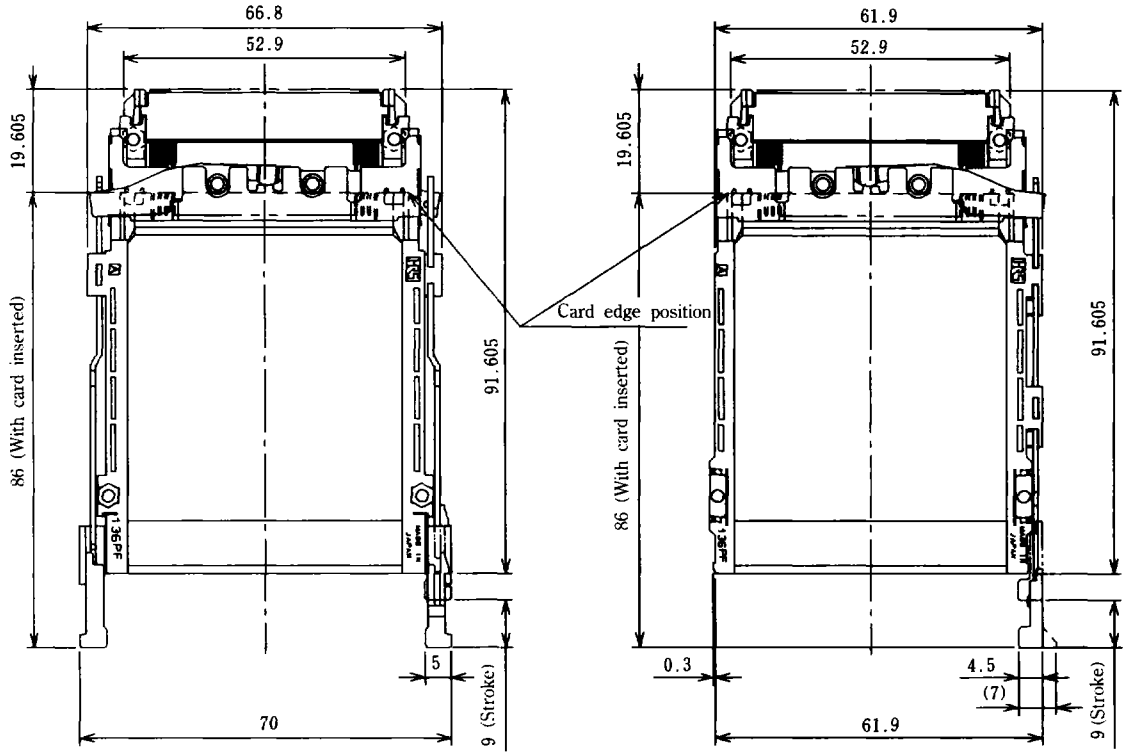


5 mm stand-off type



4 mm stand-off type (only in the IC8S type)



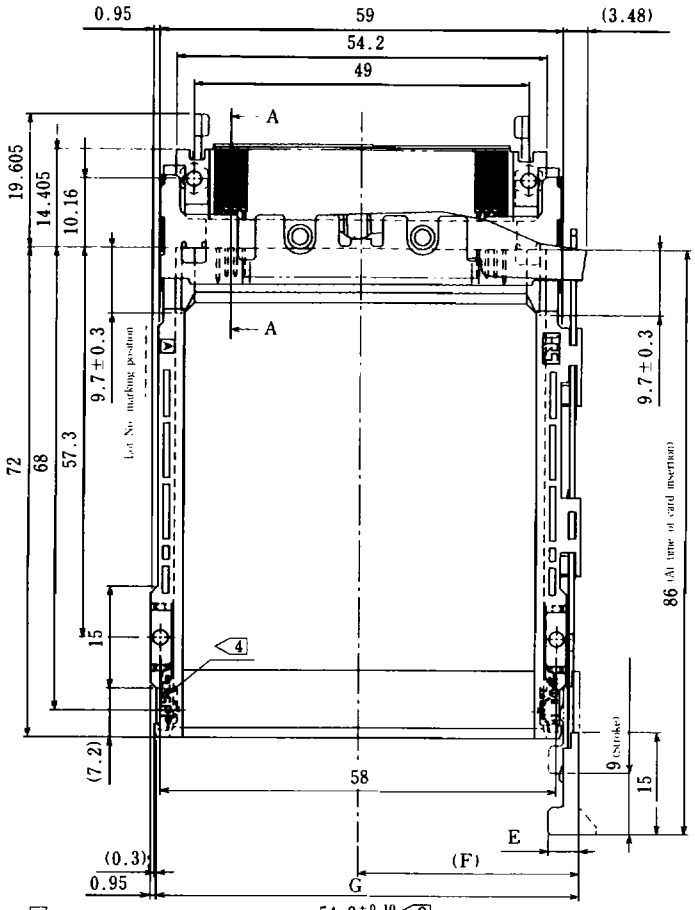


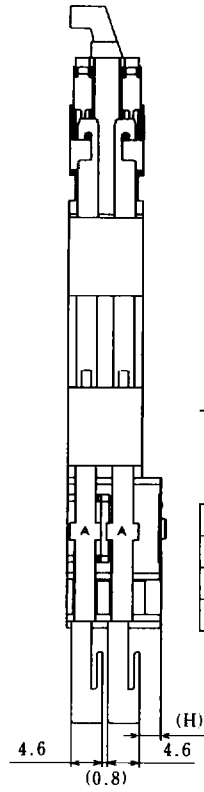
IC8 Type (Eject buttons on both sides)

IC8S Type (Eject button on one side)

■ 136-CONTACT PIN CONNECTOR (Main Body)

- **Right-side eject button type**
- **Standard type**





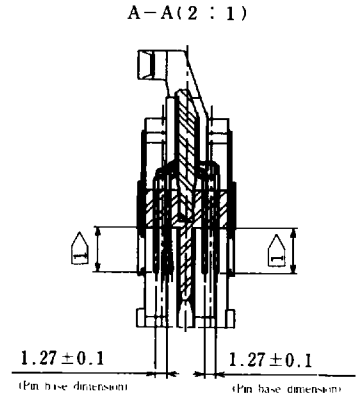
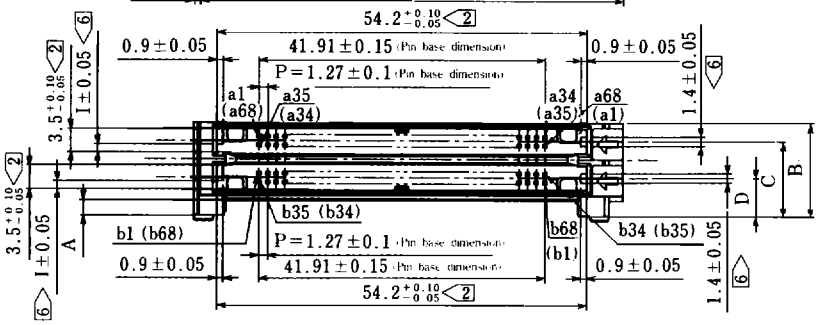


Table 1 <1>

Pin No.	Pin Length
1, 17, 34, 35, 51, 68	5.0 ± 0.1
36, 67	3.5 ± 0.1
Other pins	4.25 ± 0.1



Unit: mm

HRS No.	Product No.	A	B	C	D	E	F	G	H	I	Power supply voltage type
CL640-0651-7	IC8S-136PF-SF-EJR	0	11.55	8.85	3.45	4.5	32.4	61.9	0.825	1.2	5 V
CL640-0652-0	IC8SA-136PF-SF-EJR	2.2	13.75	11.05	5.65	4.5	32.4	61.9	3.025	1.2	5 V
CL640-0653-2	IC8SB-136PF-SF-EJR	5	16.55	13.85	8.45	4.5	32.4	61.9	5.825	1.2	5 V
CL640-0663-6	IC9SC-136PF-SF-EJR	4	15.55	12.85	7.45	4.5	32.4	61.9	4.825	1.2	5 V
CL640-0677-0	IC8S-136PF-SF-EJRA	0	11.55	8.85	3.45	7	34.9	64.4	0.825	1.2	5 V
CL640-0678-3	IC8SA-136PF-SF-EJRA	2.2	13.75	11.05	5.65	7	34.9	64.4	3.025	1.2	5 V
CI640-0679-6	IC8SB-136PF-SF-EJRA	5	16.35	13.85	8.45	7	34.9	64.6	5.825	1.2	5 V
CI640-0671-4	IC8SC-136PL-SF-EJR	4	15.55	12.85	7.45	4.5	32.4	61.9	4.825	2.3	3.3V

NOTE: <1> The lengths of pins on the engagement side are indicated in Table 1.
<2> The applicable range of indicated dimensions ($54.2^{+0.1}_{-0.05}$, $3.5^{+0.1}_{-0.05}$) are taken as 10 mm from the bottom.
3 The frame ground (FG) terminal is pressed into contact with the ground area of the board with a screw. Employed from the bottom surface of the board, a screw (M2 × 0.4), flat washer, and spring washer are securely tightened to accomplish this.
(For details, see the screw fastening example on Page 56 of the Mounting Method section.)
<4> "136PFR" indicates the reverse type and "3.3 V" indicates the low voltage type.
5 Pin numbers in parentheses ( ) indicates pin numbers of the reverse type.
<6> The guide groove dimensions of the reverse type are left-right reversed.

■ 136-CONTACT PIN CONNECTOR (Main Body)

- **Left-side eject button type**
- **Standard type, reverse type, and low-voltage type**

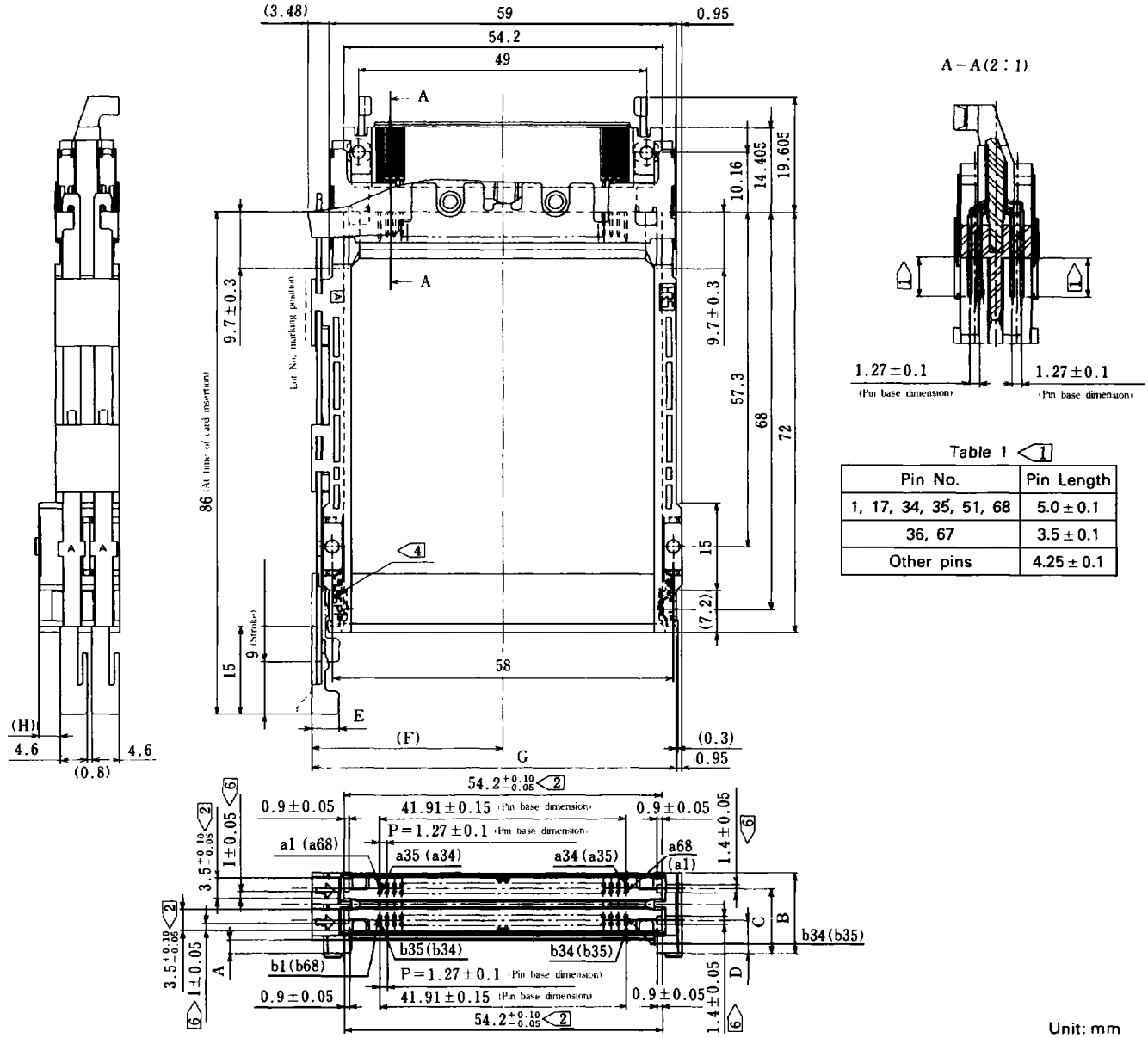


Table 1 <1>

Pin No.	Pin Length
1, 17, 34, 35, 51, 68	5.0±0.1
36, 67	3.5±0.1
Other pins	4.25±0.1

Unit: mm

HRS No.	Product No.	A	B	C	D	E	F	G	H	I	Power supply voltage type
CL640-0657-3	IC8S-136PF-SF-EJL	0	11.55	8.85	3.45	4.5	32.4	61.9	1.475	1.2	5V
CL640-0658-6	IC8SA-136PF-SF-EJL	2.2	13.75	11.05	5.65	4.5	32.4	61.9	3.675	1.2	5V
CL640-0659-9	IC8SB-136PF-SF-EJL	5	16.55	13.85	8.45	4.5	32.4	61.9	6.475	1.2	5V
CL640-0683-3	IC8S-136PF-SF-EJLA	0	11.55	8.85	3.45	7	34.9	64.4	1.475	1.2	5V
CL640-0684-6	IC8SA-136PF-SF-EJLA	2.2	13.75	11.05	5.65	7	34.9	64.4	3.675	1.2	5V
CL640-0685-9	IC8SB-136PF-SF-EJLA	5	16.55	13.85	8.45	7	34.9	64.4	6.475	1.2	5V
<4> CI640-0696-5	IC8SA-136PF-SF-EJLA	2.2	13.75	11.05	5.65	7	34.9	64.6	3.675	2.3	3.3V
<4> CI640-0688-7	IC8SB-136PFR-SF-EJLA	5	13.85	13.85	8.45	7	34.9	64.6	6.475	1.2	5V

NOTE: <1> The lengths of pins on the engagement side are indicated in Table 1.
<2> The applicable range of indicated dimensions ($54.2^{+0.1}_{-0.05}$, $3.5^{+0.1}_{-0.05}$) are taken as 10 mm from the bottom.
3 The frame ground (FG) terminal is pressed into contact with the ground area of the board with a screw. Employed from the bottom surface of the board, a screw (M2 × 0.4), flat washer, and spring washer are securely tightened to accomplish this.
(For details, see the screw fastening example on Page 56 of the Mounting Method section.)
<4> "136PFR" indicates the reverse type and "3.3 V" indicates the low voltage type.
5 Pin numbers in parentheses ( ) indicates pin numbers of the reverse type.
<6> The guide groove dimensions of the reverse type are left-right reversed.

■ 136-CONTACT PIN CONNECTOR (Main Body)

- **Type with eject buttons on both sides**
- **Standard type, reverse type, and low-voltage type**

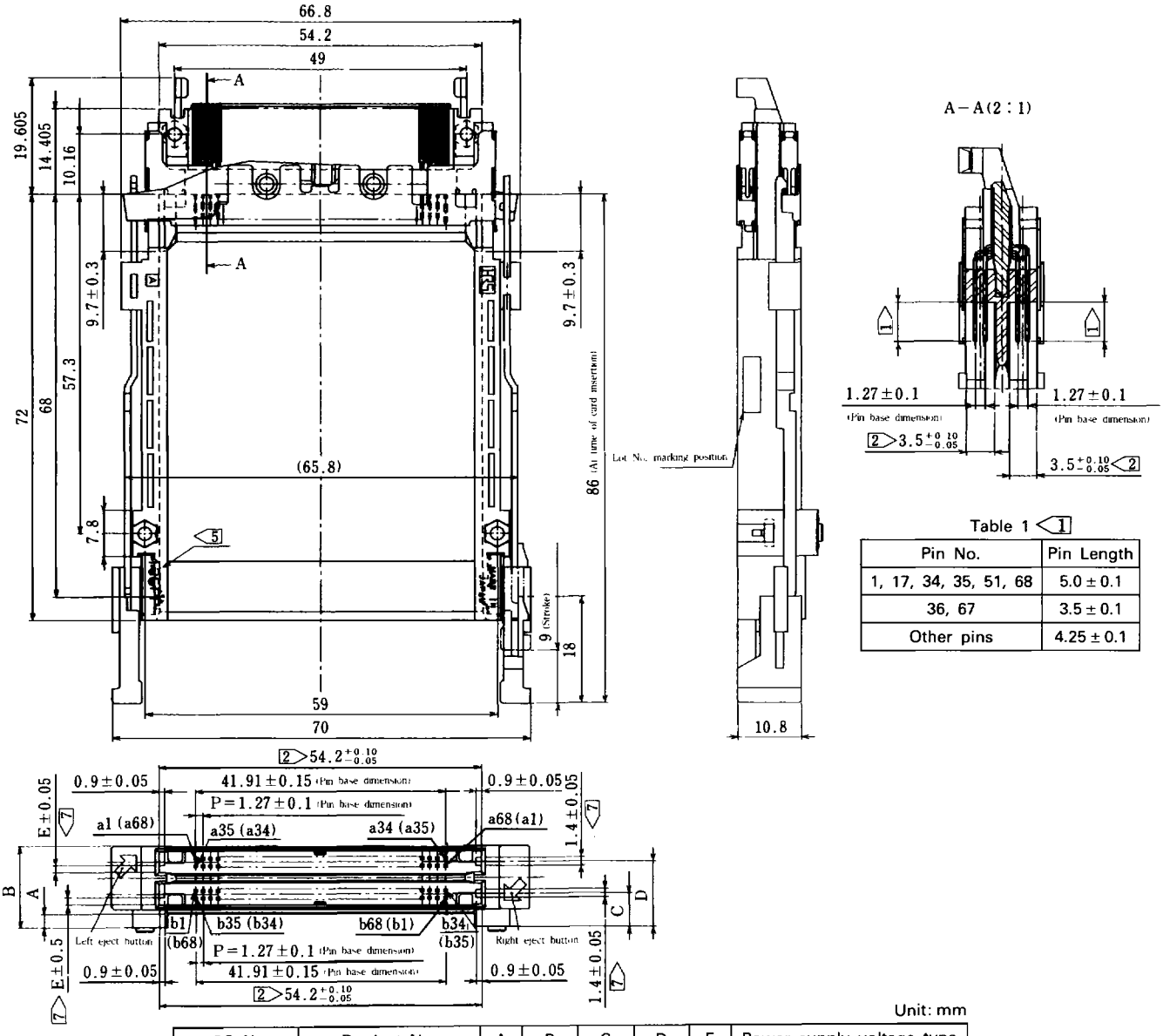


Table 1 <1>

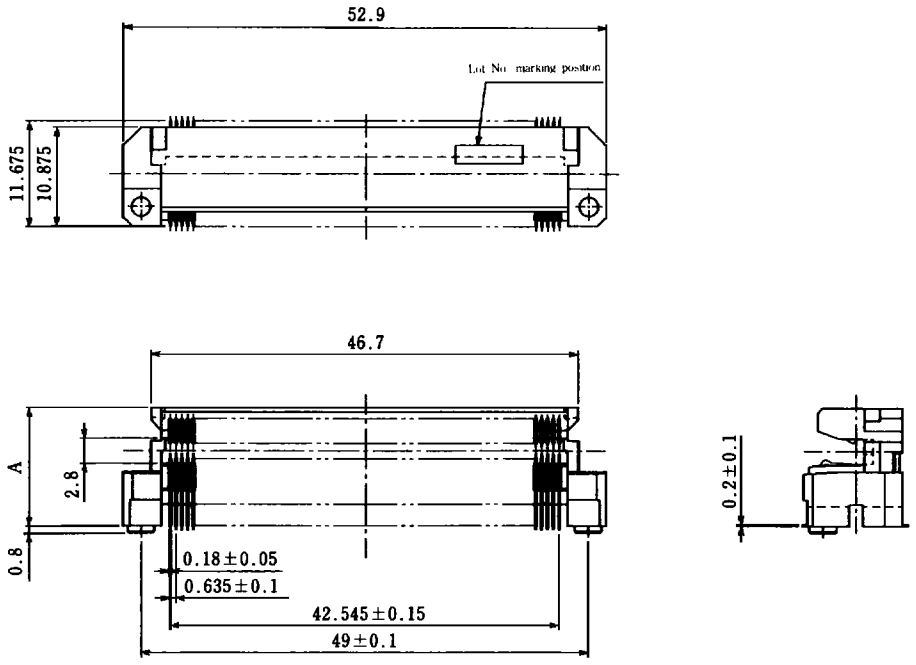
Pin No.	Pin Length
1, 17, 34, 35, 51, 68	5.0 ± 0.1
36, 67	3.5 ± 0.1
Other pins	4.25 ± 0.1

Unit: mm

	HRS No.	Product No.	A	B	C	D	E	Power supply voltage type
	CL640-0601-9	IC8-136PF-SF-EJ	0	11.55	3.45	8.85	1.2	5V
5	CL640-0602-1	IC8-136PFR-SF-EJ	0	11.55	3.45	8.85	1.2	5V
	CL640-0603-4	IC8A-136PF-SF-EJ	2.2	13.75	5.65	11.05	1.2	5V
5	CL640-0604-7	IC8A-136PFR-SF-EJ	2.2	13.75	5.65	11.05	1.2	5V
	CL640-0605-0	IC8-136PF-SF-EJ	5	16.55	8.45	13.85	1.2	5V
5	CL640-0606-2	IC8-136PFR-SF-EJ	5	16.55	8.45	13.85	1.2	5V
5	CL640-0613-8	IC8A-136PL-SF-EJ	2.2	13.75	5.65	11.05	2.3	3.3V

NOTE: 1 The lengths of pins on the engagement side are indicated in Table 1.
2 The applicable range of indicated dimensions ($54.2^{+0.1}_{-0.05}$, $3.5^{+0.1}_{-0.05}$) are taken as 10 mm from the bottom.
3 The frame ground (FG) terminal is pressed into contact with the ground area of the board with a screw. Employed from the bottom surface of the board, a screw (M2 × 0.4), flat washer, and spring washer are securely tightened to accomplish this.
(For details, see the screw fastening example on Page 56 of the Mounting Method section.)
4 At the time of card removal, pressing the right eject button serves to eject the card of the lower slot, whereas pressing the left eject button serves to eject the card of the upper slot.
5 "136PFR" indicates the reverse type and "136PL" indicates the low voltage type.
6 Pin numbers in parentheses ( ) indicates pin numbers of the reverse type.
7 The guide groove dimensions of the reverse type are left-right reversed.

■ 136-CONTACT RECEPTACLE CONNECTOR (SMT Portion)



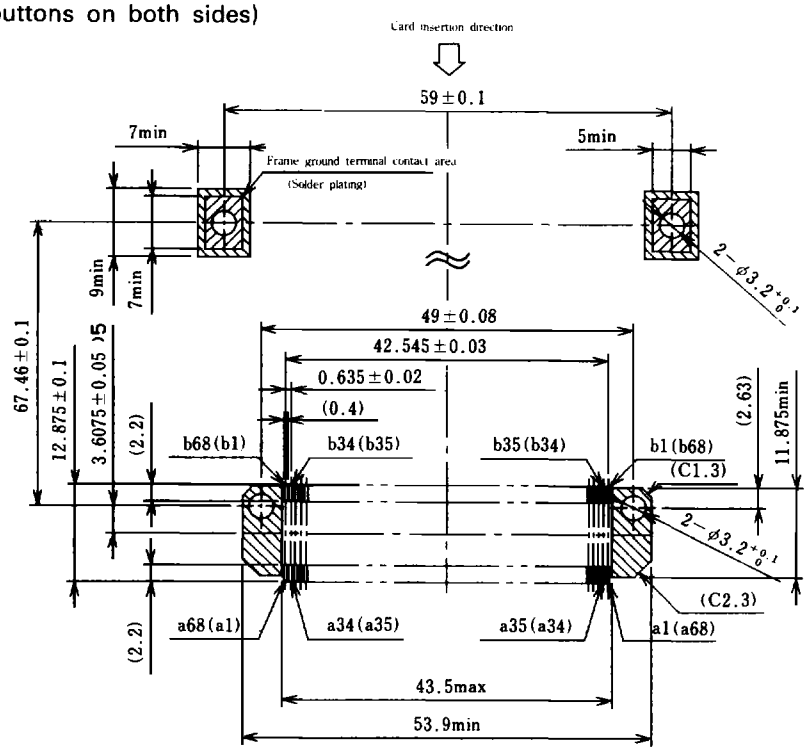
Unit: mm

	HRS No.	Product No.	A
	CL640-0640-0	IC8-136RD-0.635SFA	10.9
	CL640-0641-3	IC8A-136RD-0.635FA	13.1
	CL640-0642-6	IC8B-136RD-0.635SFA	15.9
2>	CL640-0643-9	IC8C-136RD-0.635SFA	14.9

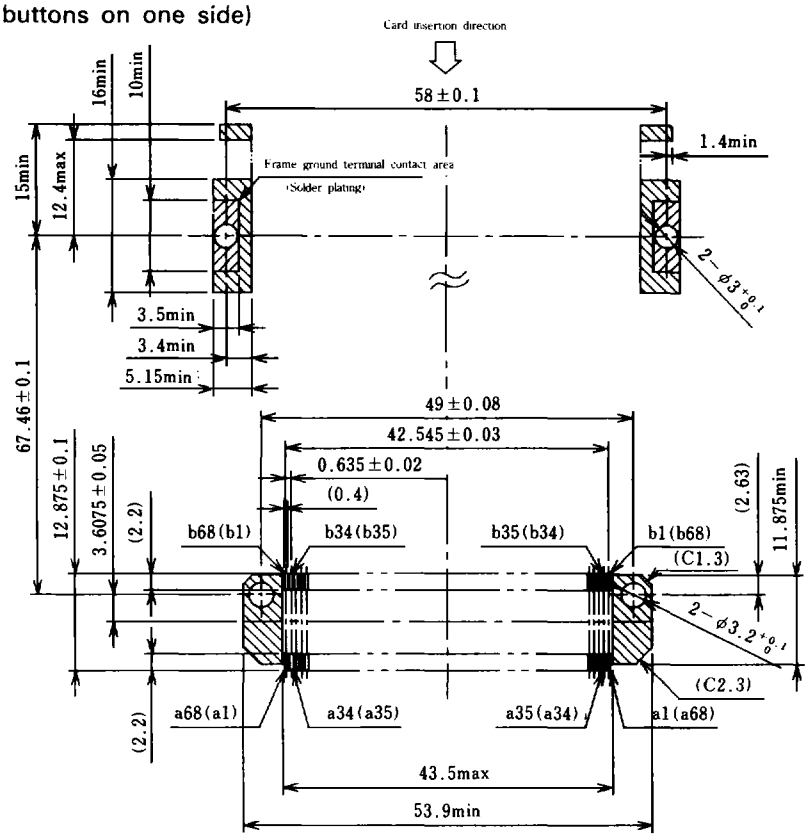
NOTE: 1 The screw is tightened after this product is engaged with the connector of the main body side. (For details, see the screw fastening example on Page 56 of the Mounting Method section.)
2> The 4 mm stand-off type only engages with IC8S type (with an eject button on one side).

Recommended Pad Pattern Dimensions Diagram (Mounting Surface Side)

IC8 Type (Eject buttons on both sides)



IC8S Type (Eject buttons on one side)



NOTE 1. Pin numbers in parentheses ( ) indicate the pin numbers of the reverse type.

2. Mounting of parts is not permitted in areas indicated by diagonal shading. Types without stand-offs do not permit the mounting of parts in any area.

3. Suitable board thicknesses are 0.8 mm or greater.

Mounting Method

1. Mount the SMT-side connector (IC8※-136RD-0.635SFA) to the board.
   NOTE 1. Insert so that the SMT-side connector positioning boss is aligned with the board hole. **(See Figure 1.)**
   NOTE 2. The FG terminal contact area of the recommended pad pattern dimensions will differ depending on the connector of the main body side (i.e., the IC8 type for a button configuration on both sides and the IC8S type for a one-side button configuration) and this should be noted at the time of pattern design. **(See the Recommended Pad Pattern Dimensions Diagram.)**

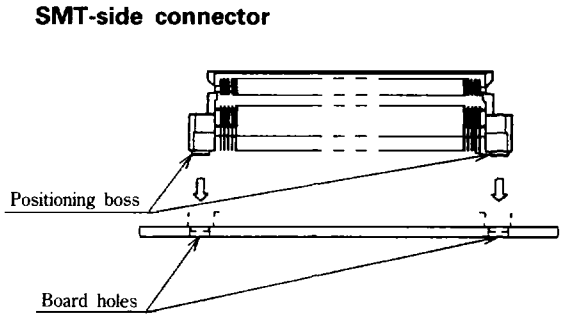
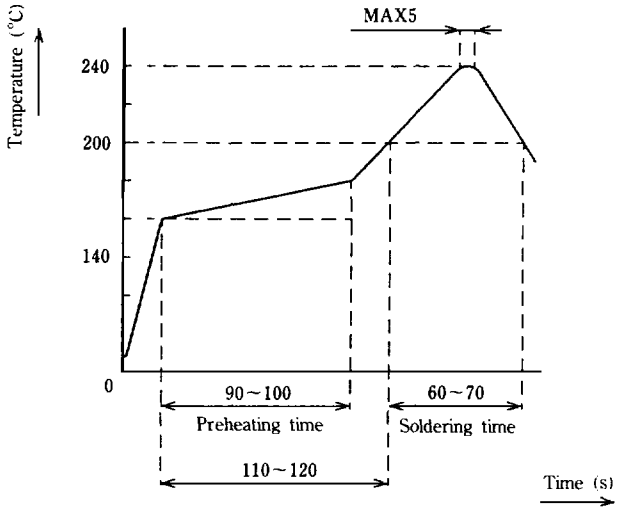


Figure 1

Mounting Temperature Profile (Reference)



Board
Dimensions: 170 × 125 × 1.6 (mm)
Material: Glass epoxy
Cream Solder
Composition: 63 Sn/37 Pb (Flux component of 9 wt%)
Metal mask thickness: 0.15 mm
Reflow Method:
IR reflow
Recommended Pad Pattern Dimensions Diagram:
Appears on the next page

NOTE:
This mounting temperature profile was performed by Hirose Electric under the aforementioned conditions.
The profile may differ depending on the conditions including the mounting equipment, board, and cream solder.

2. Insert the connector of the main body side to the connector of the SMT side on an angle of about 20° until it reaches the very back. **(See Figures 2-1 and 2-2.)**

NOTE 1. The simple lock portion at the end of the connector of the main body side serves to determine the angle of incline and guide the spacing direction.
Insert so that the inside of the simple lock portion is aligned with the side of the SMT-side connector.

NOTE 2. After main body side connector insertion to the SMT-side connector, do not apply a force other than a rotational one to the connector of the main body side. Application of excessive stress to the simple lock portion will cause the simple lock portion to break. **(See Figure 3.)**

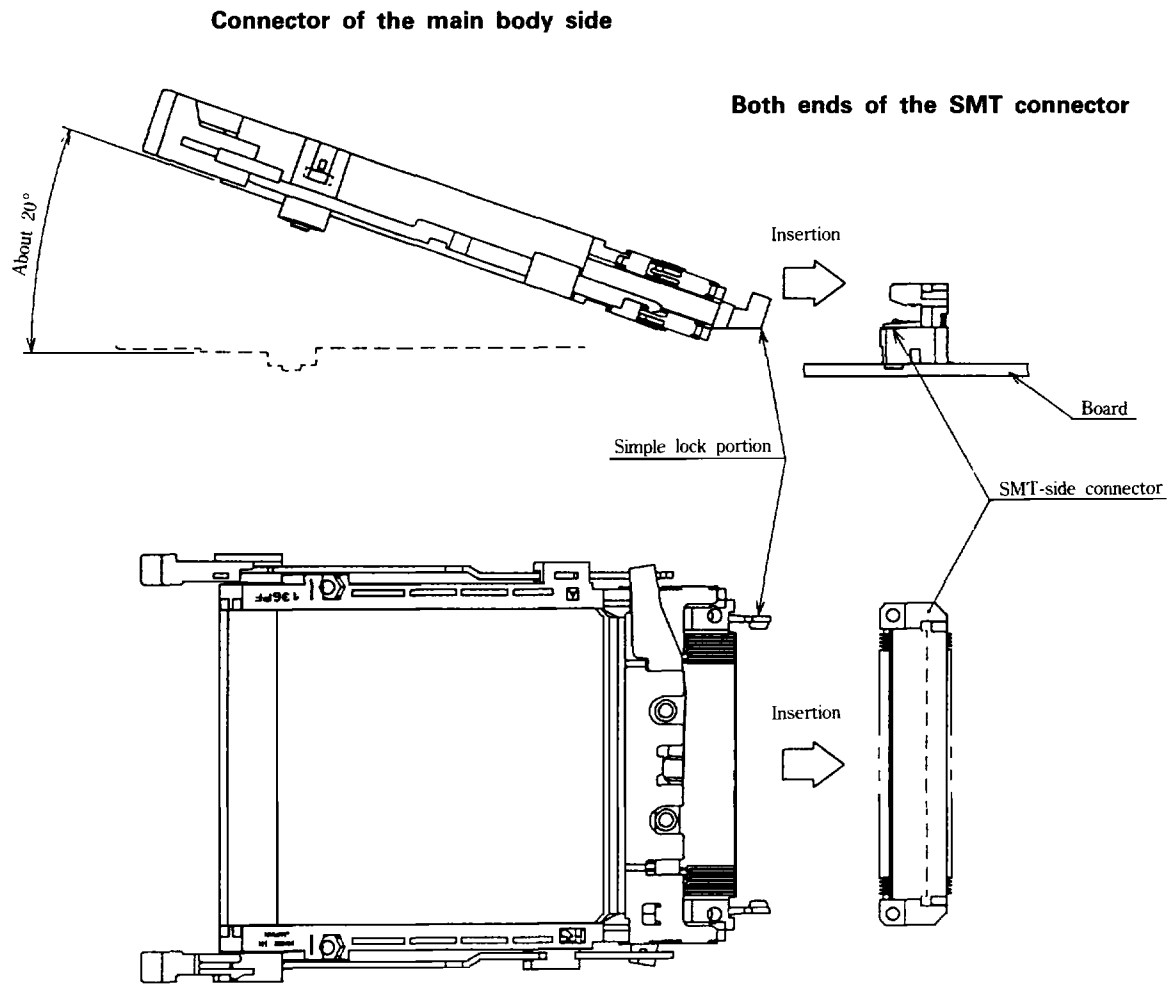


Figure 2-1

Condition of completed insertion

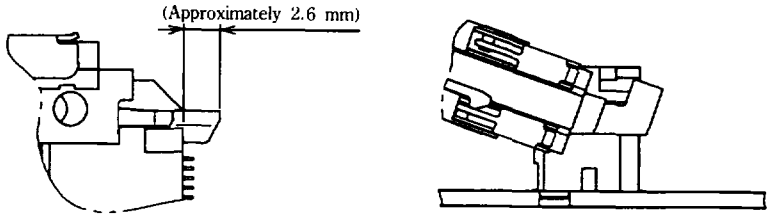
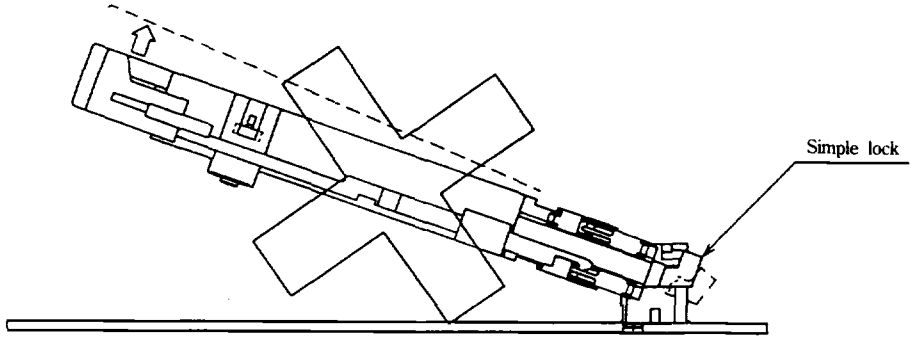


Figure 2-2

Upward direction



Spacing direction

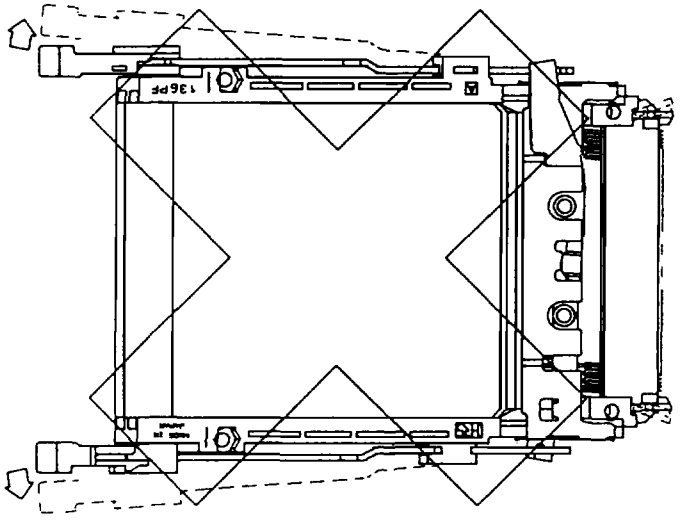


Figure 3

3. Rotate the connector of the main body side until it is horizontal. **(See Figure 4.)**
   (When rotation is insufficient, both ends of the simple lock will not engage. Check that the lock has engaged securely.)
   NOTE 1. Rotate until the FG terminal positioning boss of the connector of the main body side has entered the board hole.
   NOTE 2. The connector of the main body side will remain slightly raised even after the simple lock has become engaged.
   NOTE 3. When only one side of the simple lock is engaged, it is possible that the connector of the main body side will be raised; therefore, follow the withdrawal method of the simple lock, release it, and then reinsert it.

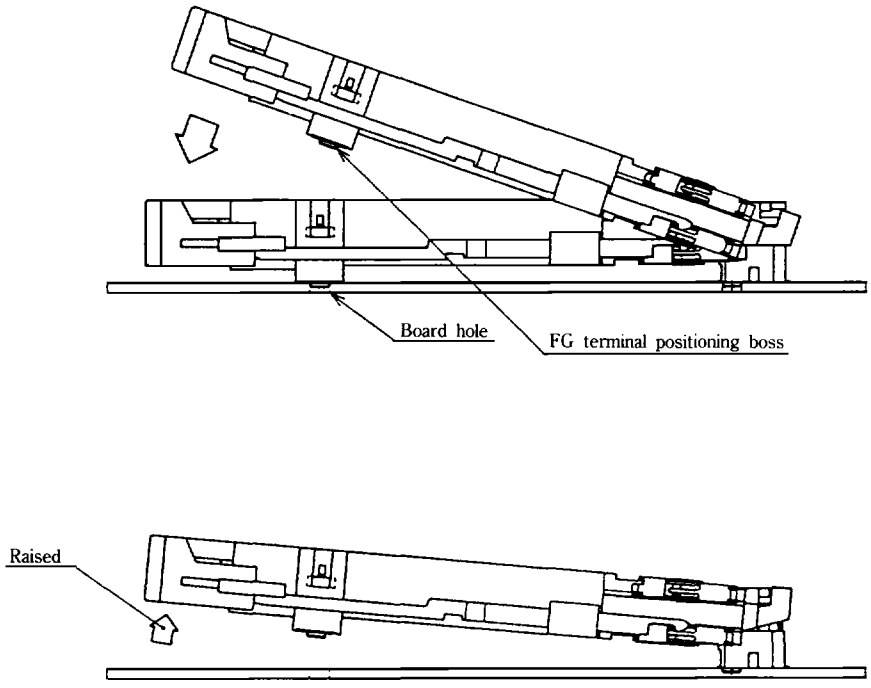


Figure 4

4. For the standard product, tighten screws at two locations from the mounting surface of the connector of the main body side (FG terminal portion) and the SMT-side connector. (Note that a nut is furnished on the connector side.) **(See Figure 5.)**

   NOTE 1. Fasten the screws from two locations on the SMT-side connector. After fastening the screws of the SMT-side connector, the connector of the main body side will become entirely horizontal, like the broken line of the diagram.

   NOTE 2. Following the various screw fastening examples of the FG terminal section and SMT-side connector section, securely perform the fastening using the screw (M2 × 0.4), flat washer, and spring washer. Select the screw length to be used from Table 1. Note that the screw length can be made the same for the four locations.

   Also note that the reference tightening torque is 0.147 N·m (1.5 kgf·cm).

   The maximum tightening torque is assumed to be 0.196 N·m (2 kgf·cm).

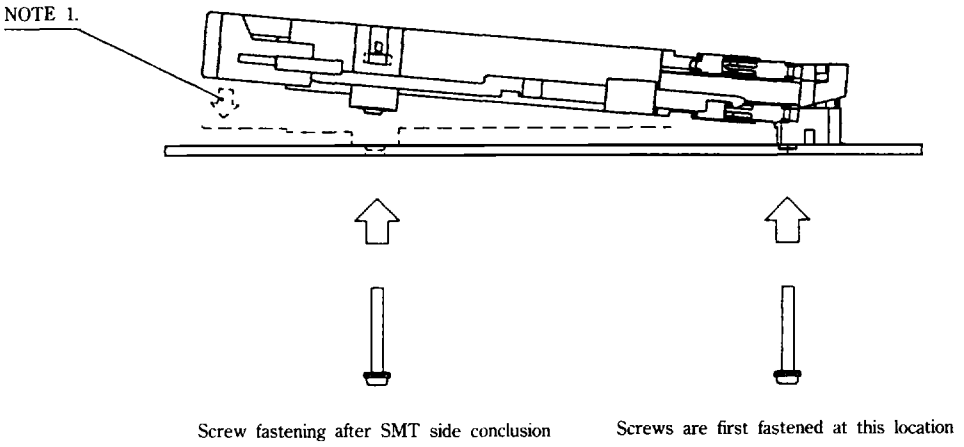
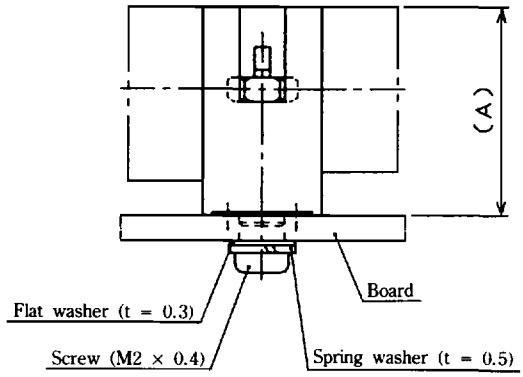


Figure 5

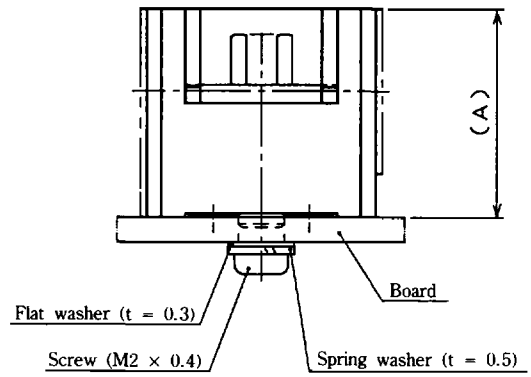
Screw Tightening Examples

FG terminal portion (Connector of the main body side)

IC8 Type



IC8S Type



SMT-side connector portion

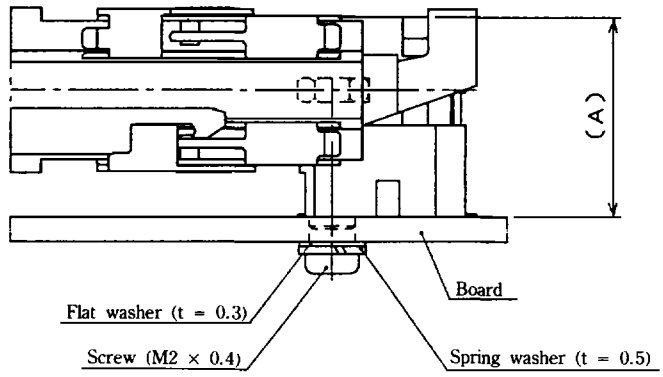


Table 1

Unit: mm

Stand-off Type: Type Name	Nominal Length of Screw	External Dimension: A
Type without stand-offs: IC8 and IC8S Series	12 or greater	10.9
2.2 mm stand-off type: IC8A and IC8SA Series	14 or greater	13.1
5 mm stand-off type: IC8B and IC8SB Series	16 or greater	15.9
4 mm stand-off type: IC8SC Series	16 or greater	14.9

NOTE: Nominal length of screw when the board thickness is t = 1.6.

- **Method of Withdrawing the Connector of the Main Body Side**

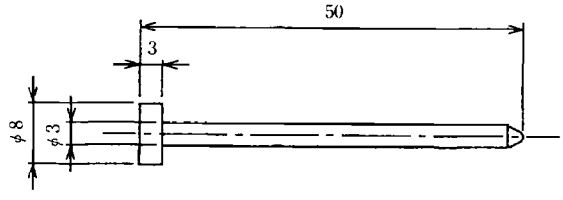
  Withdrawal is performed according to the reverse order of the mounting method.

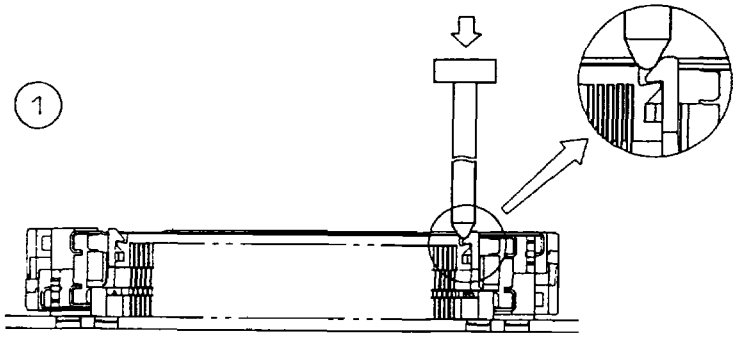
  1. Remove the screws fastened at two locations of the connector of the main body side (i.e., the FG terminal portion).
  2. Remove the screws fastened at two locations of the SMT-side connector portion.
  3. Release the simple lock of the connector of the main body side which is engaged with the SMT-side connector. **(See the section titled Simple Lock Release Method.)**
  4. Withdraw the connector of the main body side from the SMT-side connector.

— Simple Lock Release Method —

Simple Lock Release Tool

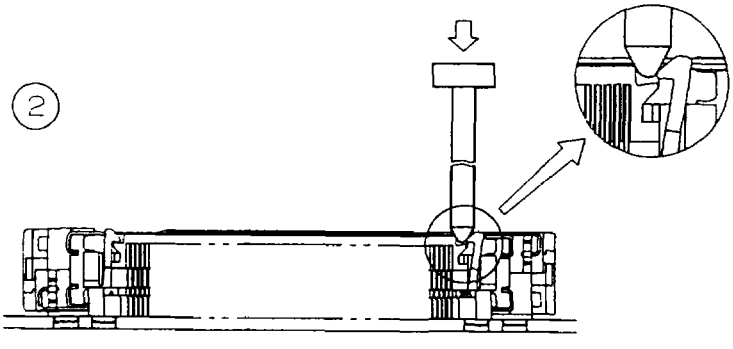
HRS No.	Product No.
CL640-0650-4	IC8-PF-HE





① Insert the tip portion of the simple lock release tool (illustrated above) between the SMT connector and the simple lock as illustrated in the diagram to the left.

② The simple lock can be released easily (as illustrated in the diagram to the left) by pressing this tool from above. Perform this procedure at each of the left and right sides and release the simple lock.



NOTE: Releasing the simple lock by using your finger tips to spread it apart may lead to deforming the lock or breakage and therefore it is recommended that the aforementioned method be used.