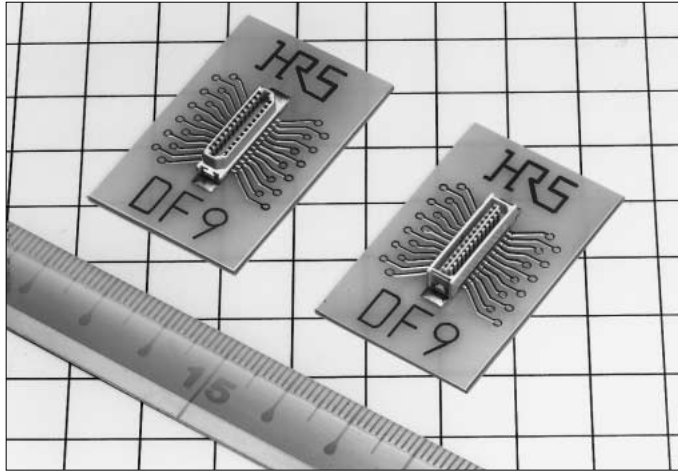


## DF9 Series



### ■ Features

#### 1. Compliant with the VESA FPDI-1 Standard Interface Connector

The 31 and 41 contact connectors comply with the standard connector specification for the flat panel display interface, which U.S VESA. has selected as FPDI-1.

VESA: Video Electronics Standards Association

FPDI-1: Flat Panel Display Interface

#### 2. Perfect Mis-insertion Prevention

The mating area is designed in a trapezoidal structure, and perfectly prevents the mis-insertion despite the miniature size.

#### 3. Equipped with Easy Lock Mechanism

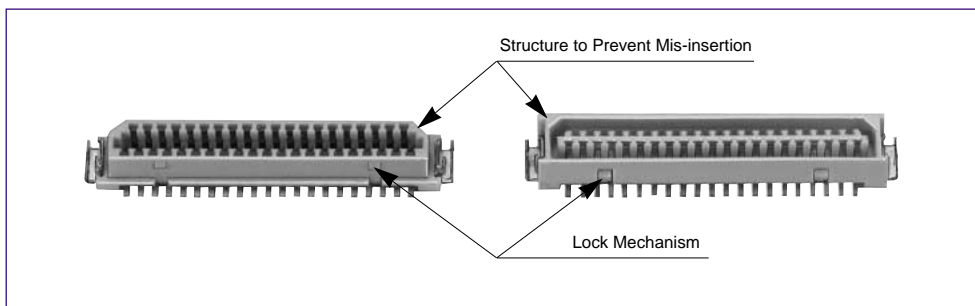
The easy lock mechanism assures the firm insertion and extraction properties as well as the insertion/extraction feeling touch.

#### 4. Smooth Insertion and Extraction Feeling

The contact is constructed without the material fragile surface in the contact portion, and provides a smooth insertion and use feeling.

#### 5. Setting Two Type Platings as Standard

Two type platings, tin plating and gold plating, are prepared, and either appropriate plating can be selected under cost and use conditions.



### ■ Applications

LCD (Liquid Crystal Display), Mobile phone, Note PC

## Product Specifications

Rating	Rated Current 0.5A	Operating Temperature Range -45~+85°C Note 1.	Storage Temperature Range -10~+60°C Note 2.
	Rated Voltage 150V AC	Operating Humidity Range 40~80%	Storage Humidity Range 40~70%

Item	specification	Condition	
1. Insulation Resistance	500MΩ min.	Measured at 100V DC	
2. Withstand voltage	Neither short or insulation breakdown	250V AC for 1 minute	
3. Contact Resistance	50mΩ max.	Measured at 100mA	
4. Vibration	Electrical discontinuity, 1μ S max.	10~55Hz and single amplitude 0.75mm in 3 directions for 2 hours, respectively.	
5. Moisture Resistance	Contact resistance: 50mΩ max. Insulation resistance: 500MΩ min.	Exposed to temperature 40±2°C and humidity 90~95% for 96 hours	
6. Temperature Cycle	Contact resistance: 50mΩ max. Insulation resistance: 500MΩ min.	(-55°C: 30 minutes 5~35°C: 10 minutes 85°C: 30 minutes 5~35°C: 10 minutes) 5 cycles	
7. Operating Life	Contact resistance: 50mΩ max:	Tin plating: 30 cycles	Gold plating: 100 cycles
8. Resistance to Soldering heat	No resion area fusion to degrade performance	Reflow: According to the recommended temperature profile	Manual soldering: Soldering iron temperature : 300°C for 3 seconds

Note 1: Temperature rise included when energized.

Note 2: This storage indicates a long-term storage state for the unused product before the board mounted.

The operating temperature and Humidity ranges are applied to the non-energized state after the connector has been installed to the board.

Note 3: The above standards represent this series. Individual formal agreement should be based on the "Specification".

## Material

Product	Part	Material	Finish	Remarks
Receptacle/Header	Insulator	Polyamide	Beige	UL94V-0
	Contact	Phosphor copper	Tin plating or gold plating	————
	Metal fitting	Brass	Tin plating	————

Note: The gold plated product contact area is plated with gold, and lead plated with tin-lead.

## Ordering Information

Please determine the specific product. If needed, please select and order products from the product No. as listed on catalog page A280~A284.

### Receptacle/Header

**DF 9 # - \* S - 1 V (※※)**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

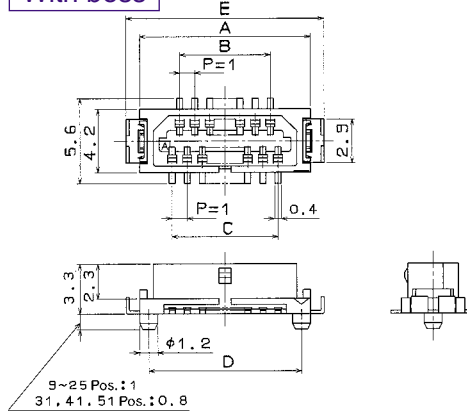
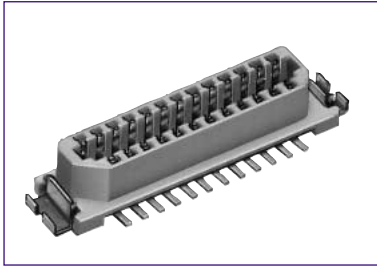
① Series Name : DF	④ Number of Contacts 9~25,31,41,51
② Series No. : 9	⑤ Connector Type S: Receptacle P: Header
③ Type Symbol	⑥ Contact Pitch : 1mm
	⑦ Contact Type V: Straight SMT
	⑧ Contact Surface Finish/Packaging Type (20): Tin plating, tube packaging (54): Gold plating, tube packaging (22): Tin plating, embossed tape packaging (59): Gold plating, embossed tape packaging

Symbol	Fitting	Boss
None	○	○
A	×	○
B	○	×
C	×	×

※Refer to page A284 for the bottom entry type (DF9L).

## ■Receptacle With metal fitting

## With boss



[Specific No.] - \*\*, (\*\*)  
 (20) : Tin plating, tube packaging  
 (54) : Gold plating, tube packaging  
 (22) : Tin plating, embossed tape packaging  
 (59) : Gold plating, embossed tape packaging

Unit: mm

Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Packaging Quantity	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks	
DF9- 9S-1V (**)	CL540-0054-0-**-	9	8.3	3	4	7.1	10.1	46	○	○	○	○	With metal fitting With boss	
DF9-11S-1V (**)	CL540-0055-2-**-	11	9.3	4	5	8.1	11.1	42	○	○	○	○		
DF9-13S-1V (**)	CL540-0056-5-**-	13	10.3	5	6	9.1	12.1	39	○	○	○	○		
DF9-15S-1V (**)	CL540-0057-8-**-	15	11.3	6	7	10.1	13.1	36	○	○	○	○		
DF9-17S-1V (**)	CL540-0058-0-**-	17	12.3	7	8	11.1	14.1	33	○	○	○	○		
DF9-19S-1V (**)	CL540-0059-3-**-	19	13.3	8	9	12.1	15.1	31	○	○	○	○		
DF9-21S-1V (**)	CL540-0060-2-**-	21	14.3	9	10	13.1	16.1	29	○	○	○	○		With pick and place tape for embossed tape packaging.
DF9-23S-1V (**)	CL540-0061-5-**-	23	15.3	10	11	14.1	17.1	28	○	○	○	○		
DF9-25S-1V (**)	CL540-0062-8-**-	25	16.3	11	12	15.1	18.1	26	○	○	○	○		
DF9-31S-1V (**)	CL540-0063-0-**-	31	19.3	14	15	18.1	21.1	22	○	○	○	○		
DF9-41S-1V (**)	CL540-0213-1-**-	41	24.3	19	20	23.1	26.1	18	○	○	○	○		
DF9-51S-1V (**)	CL540-0064-3-**-	51	29.3	24	25	28.1	31.1	15	—	○	—	○		

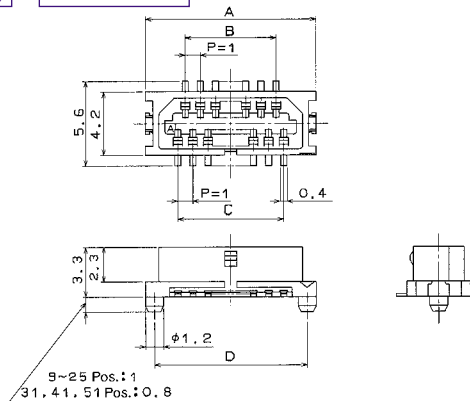
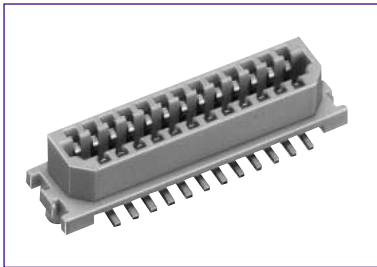
Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel)

Note 3 : — are not available. Regarding blank, please contact Hirose sales representative.

## ■Receptacle With metal fitting

## With boss



[Specific No.] - \*\*, (\*\*)  
 (20): Tin plating, tube packaging  
 (54): Gold plating, embossed tape packaging  
 (22): Tin plating, tube packaging  
 (59): Gold plating, embossed tape packaging

Unit: mm

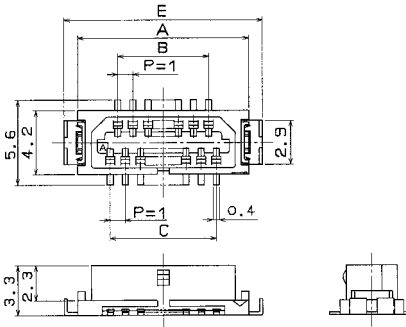
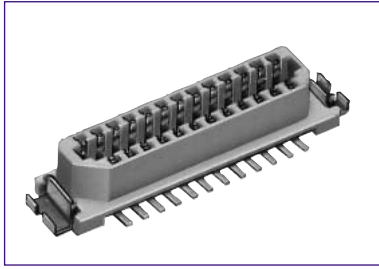
Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Package Quantity, Piece/Pack	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks	
DF9A- 9S-1V (**)	CL540-0004-1-**-	9	8.3	3	4	7.1	10.1	59	○		○		With metal fitting With boss	
DF9A-11S-1V (**)	CL540-0005-4-**-	11	9.3	4	5	8.1	11.1	52	○		○			
DF9A-13S-1V (**)	CL540-0006-7-**-	13	10.3	5	6	9.1	12.1	47	○		○	○		
DF9A-15S-1V (**)	CL540-0007-0-**-	15	11.3	6	7	10.1	13.1	43	○	○	○	○		
DF9A-17S-1V (**)	CL540-0008-2-**-	17	12.3	7	8	11.1	14.1	39	○					
DF9A-19S-1V (**)	CL540-0009-5-**-	19	13.3	8	9	12.1	15.1	36	○		○			
DF9A-21S-1V (**)	CL540-0010-4-**-	21	14.3	9	10	13.1	16.1	34	○		○	○		With pick and place tape for embossed tape packaging.
DF9A-23S-1V (**)	CL540-0011-7-**-	23	15.3	10	11	14.1	17.1	32	○					
DF9A-25S-1V (**)	CL540-0012-0-**-	25	16.3	11	12	15.1	18.1	30	○		○	○		
DF9A-31S-1V (**)	CL540-0013-2-**-	31	19.3	14	15	18.1	21.1	24	○	○	○	○		
DF9A-41S-1V (**)	CL540-0222-2-**-	41	24.3	19	20	23.1	26.1	20	○		○	○		
DF9A-51S-1V (**)	CL540-0014-5-**-	51	29.3	24	25	28.1	31.1	16	—	○	—	○		

Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 3 : — are not available. Regarding blank, please contact Hirose sales representative.

## ■ Receptacle With metal fitting Without boss



[Specific No.] – \*\*, (\*\*)  
 (20): Tin plating, tube packaging  
 (54): Gold plating, embossed tape packaging  
 (22): Tin plating, tube packaging  
 (59): Gold plating, embossed tape packaging

Unit: mm

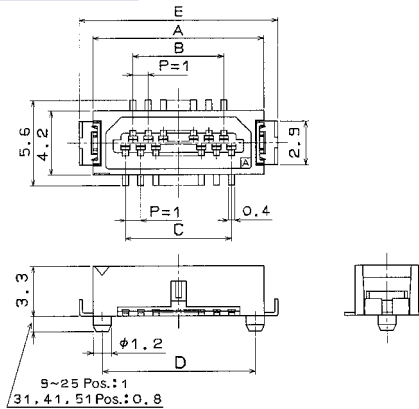
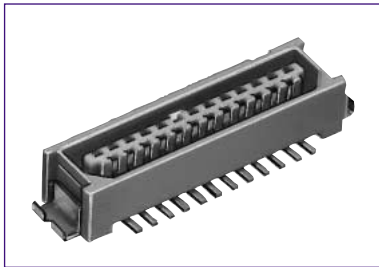
Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Package Quantity, Pcs./pack	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks
DF9B-9S-1V (**)	CL540-0125-6-**	9	8.3	3	4	—	10.1	46	—	○	○	○	With metal fitting Without boss
DF9B-11S-1V (**)	CL540-0126-9-**	11	9.3	4	5	—	11.1	42	○	—	○	○	
DF9B-13S-1V (**)	CL540-0127-1-**	13	10.3	5	6	—	12.1	39	○	—	○	○	With pick and place tape for embossed tape packaging.
DF9B-15S-1V (**)	CL540-0128-4-**	15	11.3	6	7	—	13.1	36	○	—	○	○	
DF9B-17S-1V (**)	CL540-0129-7-**	17	12.3	7	8	—	14.1	33	—	—	○	○	
DF9B-19S-1V (**)	CL540-0247-3-**	19	13.3	8	9	—	15.1	31	—	○	○	○	
DF9B-21S-1V (**)	CL540-0131-9-**	21	14.3	9	10	—	16.1	29	○	—	○	○	
DF9B-23S-1V (**)	CL540-0132-1-**	23	15.3	10	11	—	17.1	28	○	—	○	○	
DF9B-25S-1V (**)	CL540-0133-4-**	25	16.3	11	12	—	18.1	26	○	—	○	○	
DF9B-31S-1V (**)	CL540-0143-8-**	31	19.3	14	15	—	21.1	22	○	○	○	○	
DF9B-41S-1V (**)	CL540-0216-0-**	41	24.3	19	20	—	26.1	18	○	○	○	○	
DF9B-51S-1V (**)	CL540-0145-3-**	51	29.3	24	25	—	31.1	15	—	○	—	○	

Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel)

Note 3 : — are not available. Regarding blank, please contact Hirose sales representative.

## ■ Header With metal fitting Without boss



[Specific No.] – \*\*, (\*\*)  
 (20): Tin plating, tube packaging  
 (54): Gold plating, embossed tape packaging  
 (22): Tin plating, tube packaging  
 (59): Gold plating, embossed tape packaging

Unit: mm

Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Package Quantity, Piece/Pack	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks
DF9-09P-1V (**)	CL540-0066-9-**	9	8.3	3	4	7.1	10.1	46	○	○	○	○	With metal fitting Without boss
DF9-11P-1V (**)	CL540-0067-1-**	11	9.3	4	5	8.1	11.1	42	○	○	○	○	
DF9-13P-1V (**)	CL540-0068-4-**	13	10.3	5	6	9.1	12.1	39	○	○	○	○	With pick and place tape for embossed tape packaging.
DF9-15P-1V (**)	CL540-0069-7-**	15	11.3	6	7	10.1	13.1	36	○	○	○	○	
DF9-17P-1V (**)	CL540-0070-6-**	17	12.3	7	8	11.1	14.1	33	○	○	○	○	
DF9-19P-1V (**)	CL540-0071-9-**	19	13.3	8	9	12.1	15.1	31	○	○	○	○	
DF9-21P-1V (**)	CL540-0072-1-**	21	14.3	9	10	13.1	16.1	29	○	○	○	○	
DF9-23P-1V (**)	CL540-0073-4-**	23	15.3	10	11	14.1	17.1	28	○	○	○	○	
DF9-25P-1V (**)	CL540-0074-7-**	25	16.3	11	12	15.1	18.1	26	○	○	○	○	
DF9-31P-1V (**)	CL540-0075-0-**	31	19.3	14	15	18.1	21.1	22	○	○	○	○	
DF9-41P-1V (**)	CL540-0214-4-**	41	24.3	19	20	23.1	26.1	18	○	○	○	○	
DF9-51P-1V (**)	CL540-0088-1-**	51	29.3	24	25	28.1	31.1	15	—	○	—	○	

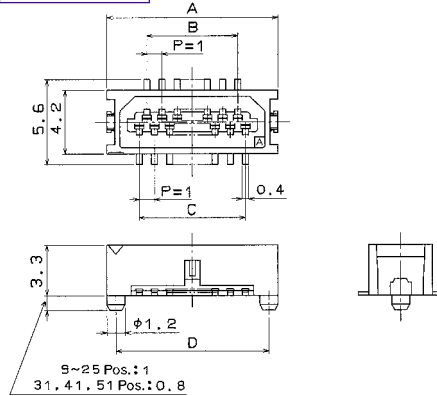
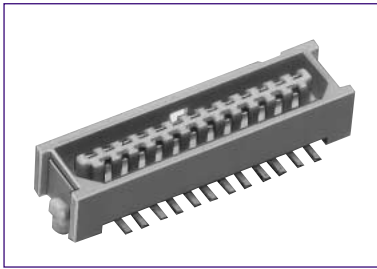
Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 3 : — are not available. Regarding blank, please contact Hirose sales representative.

## Header Without metal fitting

## With boss



[Specific No.] - \*\*, (\*\*)  
 (20) : Tin plating, tube packaging  
 (54) : Gold plating, tube packaging  
 (22) : Tin plating, embossed tape packaging  
 (59) : Gold plating, embossed tape packaging

Unit: mm

Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Package Quantity, Pcs./pack	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks
DF9A- 9P-1V (**)	CL540-0016-0-**-	9	8.3	3	4	7.1	-	59	○		○		Without metal fitting With boss With pick and place tape for embossed tape packaging.
DF9A-11P-1V (**)	CL540-0017-3-**-	11	9.3	4	5	8.1	-	52	○	○	○		
DF9A-13P-1V (**)	CL540-0018-6-**-	13	10.3	5	6	9.1	-	47	○		○	○	
DF9A-15P-1V (**)	CL540-0019-9-**-	15	11.3	6	7	10.1	-	43	○	○	○	○	
DF9A-17P-1V (**)	CL540-0020-8-**-	17	12.3	7	8	11.1	-	39	○			○	
DF9A-19P-1V (**)	CL540-0021-0-**-	19	13.3	8	9	12.1	-	36	○		○		
DF9A-21P-1V (**)	CL540-0022-3-**-	21	14.3	9	10	13.1	-	34	○		○	○	
DF9A-23P-1V (**)	CL540-0023-6-**-	23	15.3	10	11	14.1	-	32	○				
DF9A-25P-1V (**)	CL540-0024-9-**-	25	16.3	11	12	15.1	-	30	○	○	○	○	
DF9A-31P-1V (**)	CL540-0025-1-**-	31	19.3	14	15	18.1	-	24	○	○	○	○	
DF9A-41P-1V (**)	CL540-0223-5-**-	41	24.3	19	20	23.1	-	20	○	○	○		
DF9A-51P-1V (**)	CL540-0026-4-**-	51	29.3	24	25	28.1	-	16	-	○	-	○	

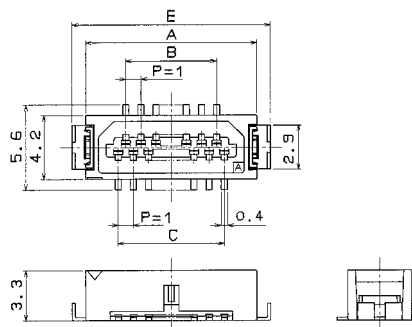
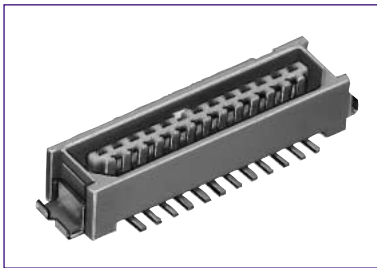
Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 3 : - are not available. Regarding blank, please contact Hirose sales representative.

## Header Without metal fitting

## Without boss



[Specific No.] - \*\*, (\*\*)  
 (20) : Tin plating, tube packaging  
 (54) : Gold plating, tube packaging  
 (22) : Tin plating, embossed tape packaging  
 (59) : Gold plating, embossed tape packaging

Unit: mm

Product No.	HRS No.	Number of Contacts	A	B	C	D	E	Tube Package Quantity, Pcs./pack	Spec. (20)	Spec. (54)	Spec. (22)	Spec. (59)	Remarks
DF9B- 9P-1V (**)	CL540-0134-7-**-	9	8.3	3	4	-	10.1	46	-	○	○	○	Without metal fitting With boss With pick and place tape for embossed tape packaging.
DF9B-11P-1V (**)	CL540-0135-0-**-	11	9.3	4	5	-	11.1	42	○	-	○		
DF9B-13P-1V (**)	CL540-0136-2-**-	13	10.3	5	6	-	12.1	39	○	-	○		
DF9B-15P-1V (**)	CL540-0137-5-**-	15	11.3	6	7	-	13.1	36	○	-	○	○	
DF9B-17P-1V (**)	CL540-0138-8-**-	17	12.3	7	8	-	14.1	33	-	-		○	
DF9B-19P-1V (**)	CL540-0248-6-**-	19	13.3	8	9	-	15.1	31	-	○		○	
DF9B-21P-1V (**)	CL540-0140-0-**-	21	14.3	9	10	-	16.1	29	○	-	○		
DF9B-23P-1V (**)	CL540-0141-2-**-	23	15.3	10	11	-	17.1	28	-	-	○		
DF9B-25P-1V (**)	CL540-0142-5-**-	25	16.3	11	12	-	18.1	26	○	-	○		
DF9B-31P-1V (**)	CL540-0144-0-**-	31	19.3	14	15	-	21.1	22	○	○	○	○	
DF9B-41P-1V (**)	CL540-0221-0-**-	41	24.3	19	20	-	26.1	18	○	-	○		
DF9B-51P-1V (**)	CL540-0146-6-**-	51	29.3	24	25	-	31.1	15	-	○	-	○	

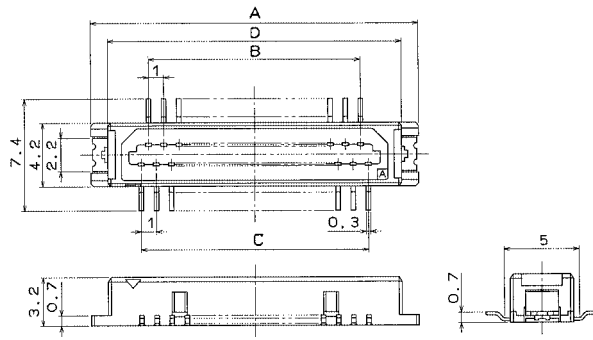
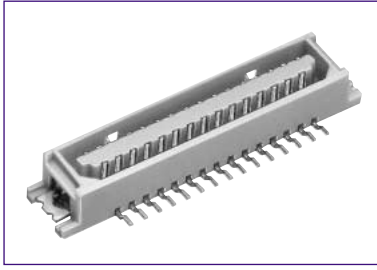
Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the emboss packaging product per reel. (1000 pcs./reel)

Note 3 : - are not available. Regarding blank, please contact Hirose sales representative.



## Bottom Entry Header



[Specific No.] - \*\*, (\*\*)  
 (20): Tin plating tube packaging  
 (21): Gold plating embossed tape packaging

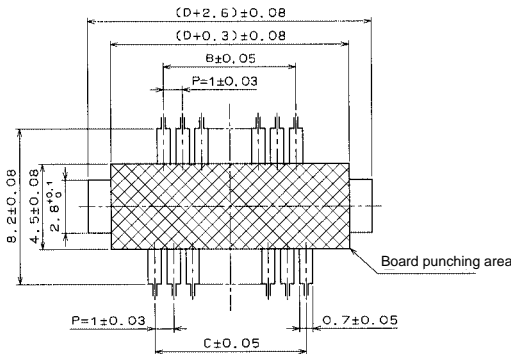
Product No.	HRS NO.	Number of Contacts	A	B	C	D	Tube Packaging Quantity	Spec. (29)	Spec. (21)	Remarks
DF9L-31P-1V (**)	CL540-0215-7-**	31	21.64	14	15	19.4	22	○	○	With metal fitting

Note 1 : Please order the tube packaging product by multiplying the packaging quantity ( pcs.).

Note 2 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel)

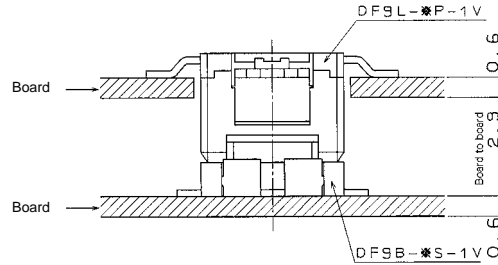
Note 3 : The vacuum area on the embossed tape product utilizes the connector case surface. However, it is necessary to check the previous vacuum, because the surface isn't always plain.

## Recommended PCB Footprints



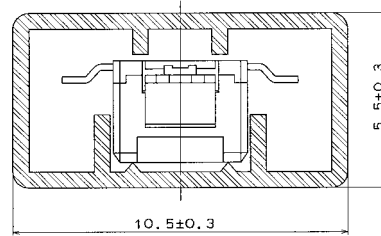
Note : The shaded area indicates the through-hole area.

## Application Pattern

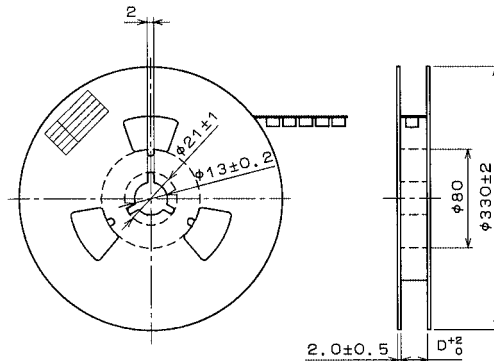
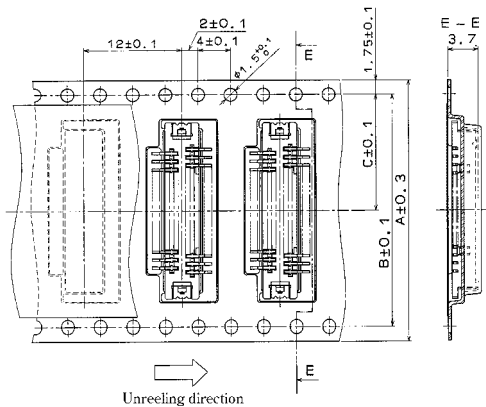


Note : The 2.9mm board to board size does not include the soldering paste thickness.

## Tube Size



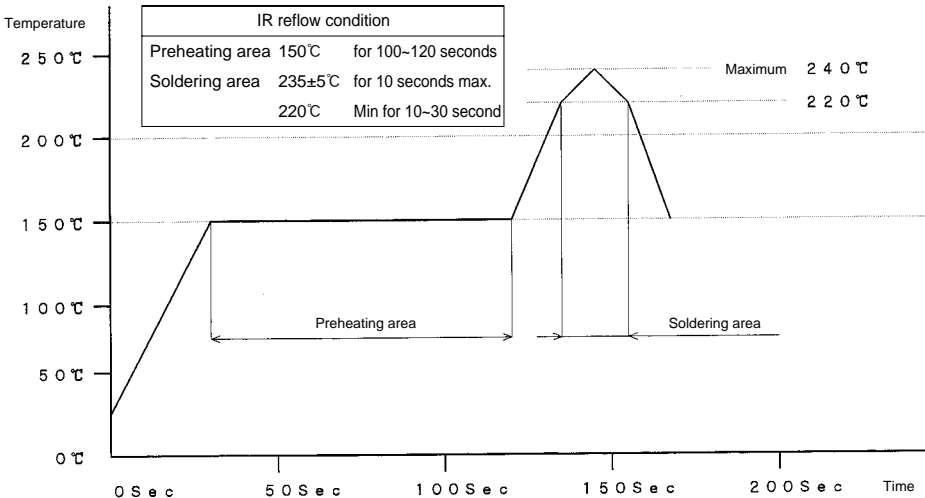
## Embossed Carrier Tape Dimensions



Unit: mm

Product Type	Size	Number of Contacts	A	B	C	D
DF9L-31P-1V		31	32	28.4	14.2	32.4

## ◆Precautions for Use

<p>1. Recommended Temperature Profile (SMT)</p>	 <p>IR reflow condition</p> <table border="1" data-bbox="698 170 1063 297"> <tr> <td>Preheating area</td> <td>150°C</td> <td>for 100-120 seconds</td> </tr> <tr> <td>Soldering area</td> <td>235±5°C</td> <td>for 10 seconds max.</td> </tr> <tr> <td></td> <td>220°C</td> <td>Min for 10-30 second</td> </tr> </table> <p>Maximum 240°C 220°C</p> <p>Preheating area      Soldering area</p> <p>Note 1 : Maximum twice action is allowed under the same condition. However, the interval between the first process and second actions must be maintained at the room temperature.</p> <p>Note 2 : The temperature indicates the board surface temperature in the connector lead area.</p>	Preheating area	150°C	for 100-120 seconds	Soldering area	235±5°C	for 10 seconds max.		220°C	Min for 10-30 second
Preheating area	150°C	for 100-120 seconds								
Soldering area	235±5°C	for 10 seconds max.								
	220°C	Min for 10-30 second								
<p>2. Recommended Manual Soldering Condition (SMT)</p>	<p>Soldering iron temperature: 290±10°C, Soldering time: Within 2 seconds</p>									
<p>3. Recommended Screen Thickness (SMT)</p>	<p>0.15mm</p>									
<p>4. Board Warp(SMT)</p>	<p>Maximum 0.03mm in the connector center area, based on both connector edges.</p>									
<p>5. Cleaning Condition</p>	<p>Refer to the "Nylon Connector Instruction Manual".</p>									
<p>6. Cautions</p>	<ul style="list-style-type: none"> <li>■ Avoid retaining the board with the connector only, and fix the board by any other means than the connector.</li> <li>■ Where the board is not mounted, the insertion or extraction will cause damage or deformation in contacts.</li> <li>■ Excessive scoop insertion or extraction may result in damage.</li> <li>■ In the manual soldering process, don't carry out flux coating which will cause a flux blister on the connector.</li> <li>■ The color phase of this product may be slightly different from that of the forming product according to the manufacturing lot. However, the difference doesn't affect the performance.</li> </ul>									