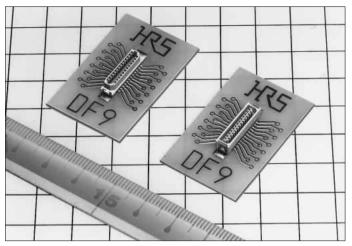
The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-RoHS products have been discontinued, or will be discontinued soon. Please check the products status on the Hirose website RoHS search at www.hirose-connectors.com, or contact your Hirose sales representative.

# 1mm Pitch SMT Board to Board Connector(Standard Interface Connector Compliant with VESA FPDI-1)

# **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.

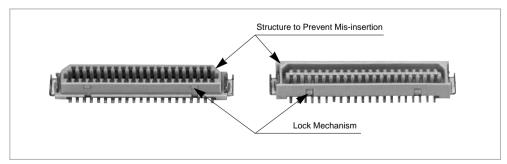
3. Equipped with Easy Lock Mechanism The easy lock mechanism assures the firm insertion and extraction properties as well as the insertion/extraction feeling touch.

#### 4. Smooth Insertion and Extraction Feeling

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

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

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



#### Applications

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

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-RoH& red star have been discriptioned smill be discontioned soon of less there the contract of the contrac

# ■Product Specifications

				1
Rating	Current rating 0.5A	Operating Temperature Range -45 to +125℃ (Note 1)	Storage Temperature Range -10 to $+60^{\circ}$ (Note 2)	
Raung	Voltage rating150V AC	Operating Humidity Range 40 to 80%	Storage Humidity Range 40 to 70%	

Item	specification	Condition				
1. Insulation Resistance	500M ohms min.	100V DC				
2. Withstanding voltage	No flashover or insulation breakdown.	250V AC/1 minute				
3. Contact Resistance	50m ohms max.	100mA				
4. Vibration	No electrical discontinuity of 1µs or more	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours in each of the 3 direction				
5. Humidity (Steady state)	Contact resistance: 50m ohms max. Insulation resistance: 500M ohms min.	96 hours at temperature of 40°C and humidity of 90% to 95%				
6. Temperature Cycle	Contact resistance: 50m ohms max. Insulation resistance: 500M ohms min.	(-55°C: 30 minutes 5 to 35°C: 10 minutes 85°C: 30 minutes 5 to 35°C: 10 minutes) 5 cycles				
7. Durability (Mating/un-mating)	Contact resistance: 50m ohms max:	Tin plating: 30 cycles Gold plating: 100 cycles				
Q. Desistance to Coldering heat	No deformation of components offecting performance	Reflow: At the recommended temperature profile				
8. Resistance to Soldering heat	No deformation of components affecting performance.	Manual soldering: 300°C for 3 seconds				

Note 1: Includes temperature rise caused by current flow.

Note 2: The term "storage" refers to products stored for long period of time prior to mounting and use. Operating Temperature Range and Humidity range covers non conducting condition of installed connectors in storage, shipment or during transportation.

#### Material

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

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

# Ordering Information

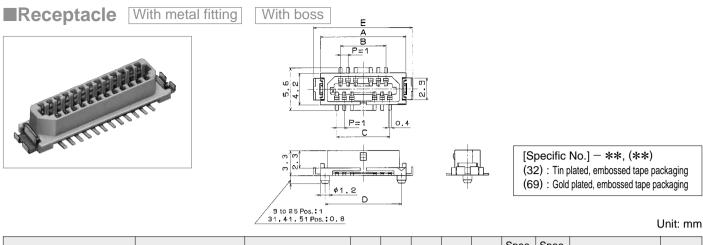
#### Receptacle/Header

# $\frac{DF9}{0} \quad \frac{\#}{2} - \frac{*}{3} \frac{S}{0} - \frac{1}{5} \frac{V}{3} \frac{(**)}{0}$

Series Name : D	DF9			Connector Type
Ууре	Blank A B C	Fitting × × ×	Boss O X X	S: Receptacle P: Header S Contact Pitch : 1mm Contact Type V: Straight SMT Contact Surface Finish/Packaging Type
Number of Contac 9 to 25,31,41,51	cts			(22)(32): Tin plated, embossed tape packaging (69): Gold plated, embossed tape packaging

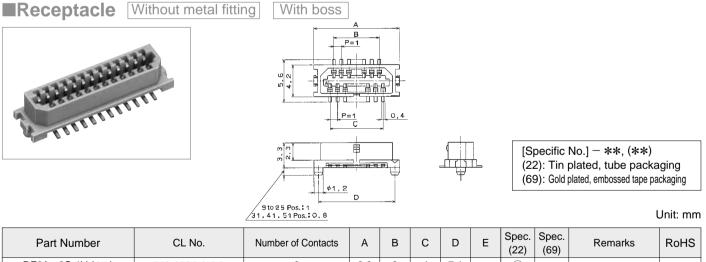
\*Refer to page A141 for the bottom entry type (DF9L).

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-RoHS products have been discontinuated with the second of the state of the



											01111
Part Number	CL No.	Number of Contacts	А	В	С	D	Е	Spec. (32)	Spec. (69)	Remarks	RoHS
DF9- 9S-1V (**)	540-0054-0-**	9	8.3	3	4	7.1	10.1	0	0		
DF9-11S-1V (**)	540-0055-2-**	11	9.3	4	5	8.1	11.1	0	0		
DF9-13S-1V (**)	540-0056-5-**	13	10.3	5	6	9.1	12.1	$\bigcirc$	$\bigcirc$		
DF9-15S-1V (**)	540-0057-8-**	15	11.3	6	7	10.1	13.1	0	$\bigcirc$	With metal	
DF9-17S-1V (**)	540-0058-0-**	17	12.3	7	8	11.1	14.1	0	0	fitting	
DF9-19S-1V (**)	540-0059-3-**	19	13.3	8	9	12.1	15.1	0	0	With boss	YES
DF9-21S-1V (**)	540-0060-2-**	21	14.3	9	10	13.1	16.1	0	0		
DF9-23S-1V (**)	540-0061-5-**	23	15.3	10	11	14.1	17.1	0	0	With pick and	
DF9-25S-1V (**)	540-0062-8-**	25	16.3	11	12	15.1	18.1	0	0	place tape	
DF9-31S-1V (**)	540-0063-0-**	31	19.3	14	15	18.1	21.1	0	0		
DF9-41S-1V (**)	540-0213-1-**	41	24.3	19	20	23.1	26.1	0	0		
DF9-51S-1V (**)	540-0064-3-**	51	29.3	24	25	28.1	31.1	_	0		

Note 1 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel) Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.



Part Number	CL No.	Number of Contacts	A	В	С	D	E	(22)	(69)	Remarks	RoHS
DF9A- 9S-1V (**)	540-0004-1-**	9	8.3	3	4	7.1	I	0	_		
DF9A-11S-1V (**)	540-0005-4-**	11	9.3	4	5	8.1	-	$\bigcirc$	-		
DF9A-13S-1V (**)	540-0006-7-**	13	10.3	5	6	9.1		0	0		
DF9A-15S-1V (**)	540-0007-0-**	15	11.3	6	7	10.1		0	0	Without metal	
DF9A-17S-1V (**)	540-0008-2-**	17	12.3	7	8	11.1	Ι	0	—	fitting	
DF9A-19S-1V (**)	540-0009-5-**	19	13.3	8	9	12.1	-	$\bigcirc$	—	With boss	YES
DF9A-21S-1V (**)	540-0010-4-**	21	14.3	9	10	13.1		0	0		
DF9A-23S-1V (**)	540-0011-7-**	23	15.3	10	11	14.1		0	-	With pick and	
DF9A-25S-1V (**)	540-0012-0-**	25	16.3	11	12	15.1	Ι	0	0	place tape	
DF9A-31S-1V (**)	540-0013-2-**	31	19.3	14	15	18.1		$\bigcirc$	0		
DF9A-41S-1V (**)	540-0222-2-**	41	24.3	19	20	23.1	Ι	$\bigcirc$	0		
DF9A-51S-1V (**)	540-0014-5- <b>*</b> *	51	29.3	24	25	28.1	Ι	-	0		

Note 1 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-Roll **Bred sterilized and the discontinued scard lease there the Assantia statu in the Hices Constructed Status and the Hices Hices Constructed Status and the Hices C** 

I		With metal fitting	Without boss									
	DEEEEEEEEE	II. S			5						No.] — **, (**) plated, tube packa	aging
							Π				plated, tube packa plated, embossed tape pa	
				╤╝	1	┎╢══┿┥	-ŋ					
					,	T						Unit: mm
	Part Number	CL No.	Number of Contacts	A	В	С	D	E	Spec. (32)	Spec. (69)	Remarks	Unit: mm RoHS
	Part Number DF9B- 9S-1V (**)	CL No. 540-0125-6-**		A 8.3	в 3	C 4	D —	E 10.1				
-			Number of Contacts				_		(32)	(69)		
-	DF9B- 9S-1V (**)	540-0125-6-**	Number of Contacts 9	8.3	3	4	_	10.1	(32)	(69)		
	DF9B- 9S-1V (**) DF9B-11S-1V (**)	540-0125-6-** 540-0126-9-**	Number of Contacts 9 11	8.3 9.3	3	4	-	10.1 11.1	(32) 〇	(69) 〇 一		
	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-**	Number of Contacts 9 11 13	8.3 9.3 10.3	3 4 5	4 5 6		10.1 11.1 12.1	(32) 〇 〇	(69) -	Remarks	
-	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**) DF9B-15S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-** 540-0128-4-**	Number of Contacts 9 11 13 15	8.3 9.3 10.3 11.3	3 4 5 6	4 5 6 7		10.1 11.1 12.1 13.1	(32) () () () () () () () () () (	(69) 	Remarks With metal	RoHS
	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**) DF9B-15S-1V (**) DF9B-17S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-** 540-0128-4-** 540-0129-7-**	9           11           13           15           17	8.3 9.3 10.3 11.3 12.3	3 4 5 6 7	4 5 6 7 8	-	10.1 11.1 12.1 13.1 14.1	(32) () () () () () () ()	(69) - 0 0 0	Remarks With metal fitting	
-	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**) DF9B-15S-1V (**) DF9B-17S-1V (**) DF9B-19S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-** 540-0128-4-** 540-0129-7-** 540-0247-3-**	Number of Contacts 9 11 13 15 17 19	8.3 9.3 10.3 11.3 12.3 13.3	3 4 5 6 7 8	4 5 6 7 8 9		10.1 11.1 12.1 13.1 14.1 15.1	(32) () () () () () () () () () (	(69)  0 0 0 0 0	Remarks With metal fitting	RoHS
	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**) DF9B-15S-1V (**) DF9B-17S-1V (**) DF9B-19S-1V (**) DF9B-21S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-** 540-0128-4-** 540-0129-7-** 540-0247-3-** 540-02131-9-**	Number of Contacts 9 11 13 15 17 19 21	8.3 9.3 10.3 11.3 12.3 13.3 14.3	3 4 5 6 7 8 9	4 5 6 7 8 9 10	- - - - - - - - - - -	10.1 11.1 12.1 13.1 14.1 15.1 16.1	(32) () () () () () () () () () (	(69) 	Remarks With metal fitting Without boss	RoHS
	DF9B- 9S-1V (**) DF9B-11S-1V (**) DF9B-13S-1V (**) DF9B-15S-1V (**) DF9B-17S-1V (**) DF9B-19S-1V (**) DF9B-21S-1V (**) DF9B-23S-1V (**)	540-0125-6-** 540-0126-9-** 540-0127-1-** 540-0128-4-** 540-0129-7-** 540-0247-3-** 540-0131-9-** 540-0132-1-**	Number of Contacts 9 11 13 15 17 19 21 23	8.3 9.3 10.3 11.3 12.3 13.3 14.3 15.3	3 4 5 6 7 8 9 10	4 5 6 7 8 9 10 11	- - - - - - - - - - - - -	10.1 11.1 12.1 13.1 14.1 15.1 16.1 17.1	(32) () () () () () () () () () (	(69) 	Remarks With metal fitting Without boss With pick and	RoH

24.3

29.3

19

24

20

25

26.1

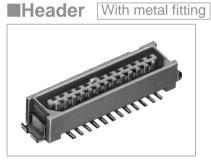
31.1

Note 1 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel)

Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.

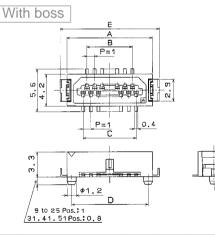
540-0216-0-\*\*

540-0145-3-\*\*



DF9B-41S-1V (\*\*)

DF9B-51S-1V (\*\*)



41

51

[Specific No.] - \*\*, (\*\*) (32): Tin plated, tube packaging (69): Gold plated, embossed tape packaging

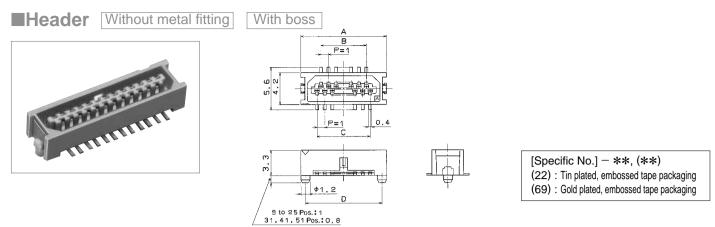
Unit: mm

Part Number	CL No.	Number of Contacts	А	В	С	D	Е	Spec. (32)	Spec. (69)	Remarks	RoHS
DF9- 9P-1V (**)	540-0066-9-**	9	8.3	3	4	7.1	10.1	0	0		
DF9-11P-1V (**)	540-0067-1-**	11	9.3	4	5	8.1	11.1	0	0		
DF9-13P-1V (**)	540-0068-4-**	13	10.3	5	6	9.1	12.1	0	0		
DF9-15P-1V (**)	540-0069-7-**	15	11.3	6	7	10.1	13.1	0	0	With metal	
DF9-17P-1V (**)	540-0070-6-**	17	12.3	7	8	11.1	14.1	0	0	fitting	
DF9-19P-1V (**)	540-0071-9-**	19	13.3	8	9	12.1	15.1	0	$\bigcirc$	With boss	YES
DF9-21P-1V (**)	540-0072-1-**	21	14.3	9	10	13.1	16.1	0	$\bigcirc$		123
DF9-23P-1V (**)	540-0073-4-**	23	15.3	10	11	14.1	17.1	0	0	With pick and	
DF9-25P-1V (**)	540-0074-7-**	25	16.3	11	12	15.1	18.1	0	0	place tape	
DF9-31P-1V (**)	540-0075-0-**	31	19.3	14	15	18.1	21.1	0	0		
DF9-41P-1V (**)	540-0214-4-**	41	24.3	19	20	23.1	26.1	0	0		
DF9-51P-1V (**)	540-0088-1-**	51	29.3	24	25	28.1	31.1	-	0		

Note 1 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.

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Unit: mm

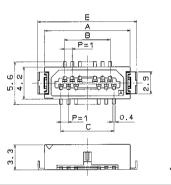
Part Number	CL No.	Number of Contacts	A	В	С	D	Е	Spec. (22)	Spec. (69)	Remarks	RoHS
DF9A- 9P-1V (**)	540-0016-0-**	9	8.3	3	4	7.1	-	0	_		
DF9A-11P-1V (**)	540-0017-3-**	11	9.3	4	5	8.1	—	$\bigcirc$	—		
DF9A-13P-1V (**)	540-0018-6-**	13	10.3	5	6	9.1	_	0	0		
DF9A-15P-1V (**)	540-0019-9-**	15	11.3	6	7	10.1	_	0	0	Without metal	
DF9A-17P-1V (**)	540-0020-8-**	17	12.3	7	8	11.1	—	$\bigcirc$	$\bigcirc$	fitting	
DF9A-19P-1V (**)	540-0021-0-**	19	13.3	8	9	12.1	—	$\bigcirc$	—	With boss	YES
DF9A-21P-1V (**)	540-0022-3-**	21	14.3	9	10	13.1	_	0	0		
DF9A-23P-1V (**)	540-0023-6-**	23	15.3	10	11	14.1	_	-	-	With pick and	
DF9A-25P-1V (**)	540-0024-9-**	25	16.3	11	12	15.1	—	$\bigcirc$	$\bigcirc$	place tape	
DF9A-31P-1V (**)	540-0025-1-**	31	19.3	14	15	18.1	—	$\bigcirc$	$\bigcirc$		
DF9A-41P-1V (**)	540-0223-5-**	41	24.3	19	20	23.1	-	0	-		
DF9A-51P-1V (**)	540-0026-4-**	51	29.3	24	25	28.1	-	-	0		

Note 1 : Please order the emboss packaging product per reel. (1000 pcs. per reel)

Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.

Without boss

# Header With metal fitting



[Specific No.] - **\*\***, (**\*\***) (32) : Tin plated, embossed tape packaging (69) : Gold plated, embossed tape packaging

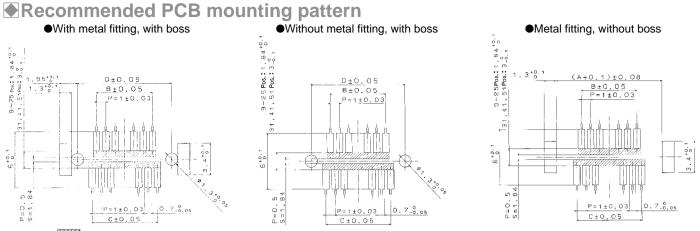
Unit: mm

RoHS	Remarks	Spec. (69)	Spec. (32)	E	D	С	В	А	Number of Contacts	CL No.	Part Number
		0	$\bigcirc$	10.1	—	4	3	8.3	9	540-0134-7-**	DF9B- 9P-1V (**)
		0	$\bigcirc$	11.1	-	5	4	9.3	11	540-0135-0-**	DF9B-11P-1V (**)
		_	$\bigcirc$	12.1	-	6	5	10.3	13	540-0136-2-**	DF9B-13P-1V (**)
	With metal	0	0	13.1	_	7	6	11.3	15	540-0137-5-**	DF9B-15P-1V (**)
	fitting	0	$\bigcirc$	14.1	—	8	7	12.3	17	540-0138-8-**	DF9B-17P-1V (**)
YES	Without boss	0	$\bigcirc$	15.1	-	9	8	13.3	19	540-0248-6-**	DF9B-19P-1V (**)
		0	$\bigcirc$	16.1	-	10	9	14.3	21	540-0140-0-**	DF9B-21P-1V (**)
	With pick and	_	0	17.1	_	11	10	15.3	23	540-0141-2-**	DF9B-23P-1V (**)
	place tape	-	0	18.1	_	12	11	16.3	25	540-0142-5-**	DF9B-25P-1V (**)
		0	$\bigcirc$	21.1	—	15	14	19.3	31	540-0144-0-**	DF9B-31P-1V (**)
	]	$\bigcirc$	0	26.1	—	20	19	24.3	41	540-0221-0-**	DF9B-41P-1V (**)
		0	-	31.1	-	25	24	29.3	51	540-0146-6-**	DF9B-51P-1V (**)

Note 1 : Please order the emboss packaging product per reel. (1000 pcs./reel)

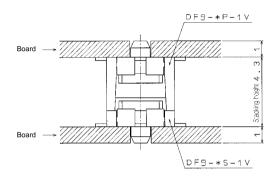
Note 2 : - are not available. Regarding blank, please contact Hirose sales representative.

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-Roll Brod ster have been disc price of some board cose there the conductor statu and the discover of the second cose there the conductor statu and the discover of the second cose of the second co



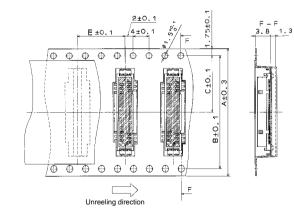
Note 1 : 7777 If the pattern is included in the shaded area and not treated with resist, it could touch the connector contact . Note 2 : Please refer to each product size pattern for the universal size on the above patterns (A, B, C, D...).

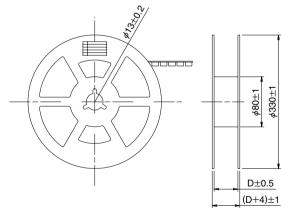
#### Application Pattern



Note 1 : The board to board size 4.3mm in the pattern does not include the soldering paste thickness.

# Embossed Carrier Tape Dimensions





	 ∲330±1	
-	D±0.5 (D+4)±1	

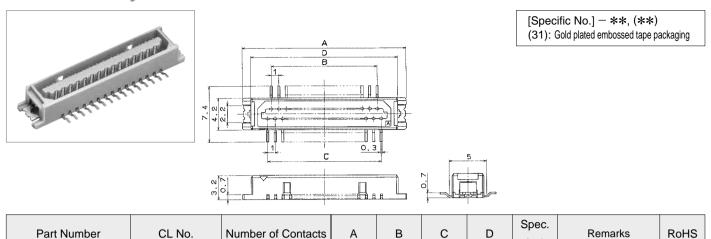
Unit:mm

Product Type Size	Number of Contacts	A	В	С	D	E
	9 to 25	24		11.5	25.5	12
DF9-*S/P-1V	31	32	28.4	14.2	33.5	12
	41, 51	44	40.4	20.2	45.5	12
	9 to 13	16		7.5	17.5	8
	15 to 25	24		11.5	22.5	12
DF9A-*S/P-1V	31	32	28.4	14.2	33.5	12
	41, 51	44	40.4	20.2	45.5	12
	9 to 25	24		11.5	25.5	12
DF9B-*S/P-1V	31	32	28.4	14.2	33.5	12
	41, 51	44	40.4	20.2	45.5	12

A140 **HS** 

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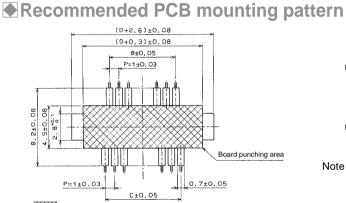
# Bottom Entry Header

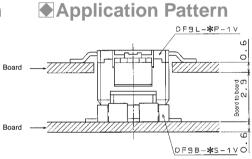


DF9L-31P-1V (\*\*) 540-0215-7-\*\* 31 21.64 14 15 19.4

Note 1 : Please order the embossed tape packaging product per reel. (1000 pcs. per reel)

Note 2 : 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.





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

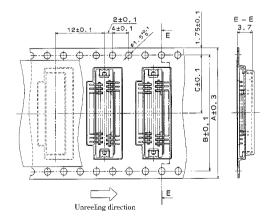
(31)

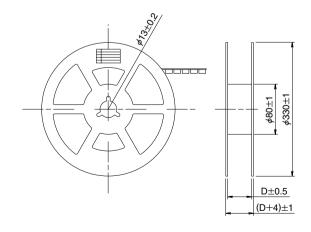
With metal fitting

YES

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

### Embossed Carrier Tape Dimensions





Unit: mm

Product Type Size	Number of Contacts	А	В	С	D
DF9L-31P-1V	31	32	28.4	14.2	33.5

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information. All non-Roh Bradster has been discribed and been also representative.

# ● Precautions for Use

1. Recommended Temperature Profile (SMT)	Temperature (°C)				
	250 r 250°C				
	220°C				
	200				
	150 - 150°C -				
	100 90~120sec				
	Preheating				
	Room temperature				
	0 50 100 150 200 250 300				
	5 50 100 150 200 250 500 Time (sec.)				
	Time (sec.)				
	Note1: Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle.				
	Note2: The temperature profile indicates the board surface temperature at the point of contacts				
	with the connector terminals.				
2. Recommended Manual Soldering Condition (SMT)	Soldering iron temperature: 370±10°C, Soldering time: Within 3 seconds				
3. Recommended Screen Thickness (SMT)	0.15mm				
4. Board Warp(SMT)	Maximum 0.03mm in the connector center area, based on both connector edges.				
5. Cleaning Condition	Refer to the "Nylon Connector Use Hand book".				
6. Cautions	Avoid retaining the board with the connector only, and fix the board by any other means than the connector.				
	Where the board is not mounted, the insertion or extraction will cause damage or deformation in contacts.				
	<ul> <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> </ul>				
	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.				
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