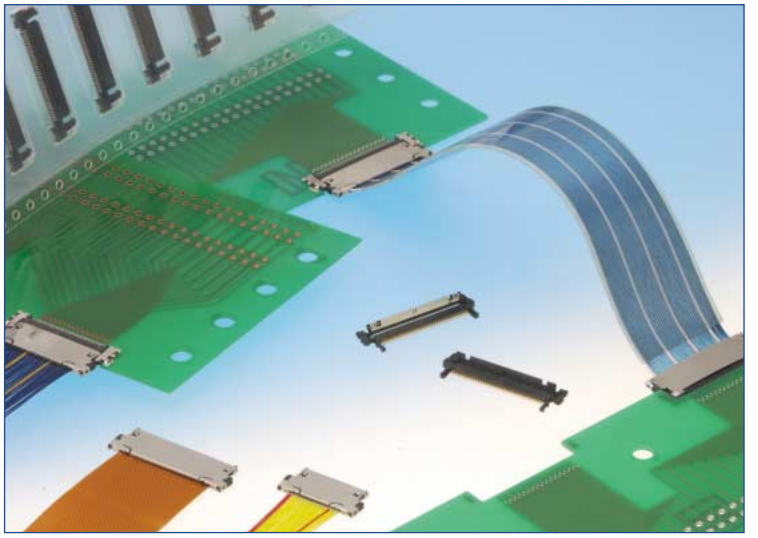
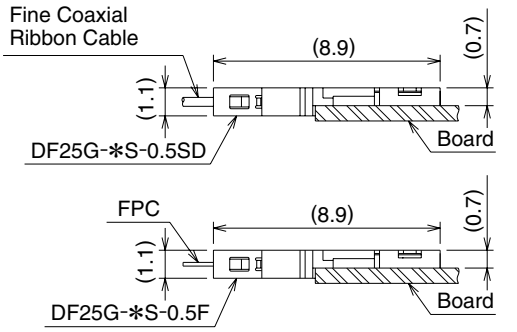
NEW

0.5 mm Contact Pitch, Board-to-FPC, Board-to-Fine Coaxial Ribbon Cable

DF25 Series





Features

1. Supports High Speed Data Transfer

Typical Data Transfer of 1.2 Gbps. Up to 2 Gbps in specific applications.

*The transmission characteristics depends on the specific conditions and may vary. It is recommended that verification be made with the actual device in use.

2. Small configuration and board space

0.5 mm contact pitch and body thickness of 1.1 mm. max.

3. Common Use of Receptacle

The board mounted receptacle assembly will accept mating connectors terminated to FPC or Fine Coaxial Cable Ribbon Cable.

4. Uniform External Dimensions

The Plug Assembly external dimensions remain the same when it is terminated with FPC or the Fine Pitch Coaxial Ribbon Cable.

5. Ground Connection

Metal Shield Covers connect with the common ground line.

6. Easy Termination of FFC or Fine Coaxial Ribbon Cable

Hirose Electric's unique termination method allows reduction of the number steps to terminate FFC or Fine Coaxial Ribbon Cable. Termination can be performed in any work environment since there is no need for the electric power supply.

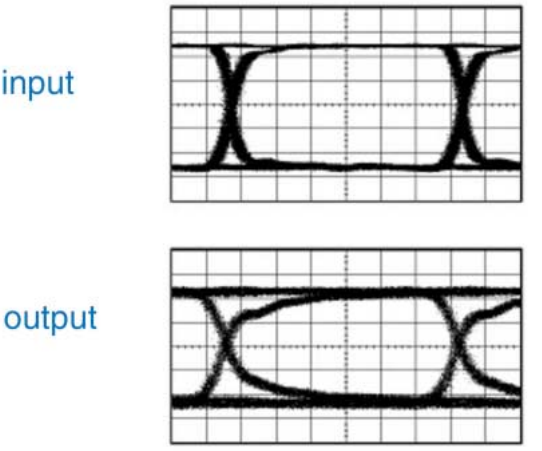
7. Environmental considerations

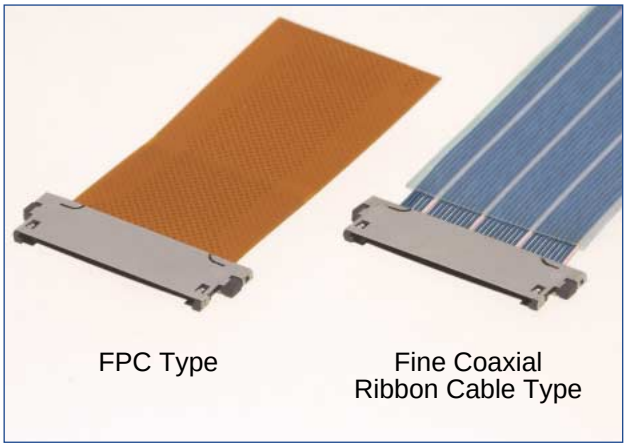
Plating compounds are lead-free.

Applications

LCD connections in small consumer devices, Digital Cameras, Notebook computers, PDA's.
Any device requiring high density interconnection for consistent high speed transmission data rates.

2 Gbps Eye Pattern





■Product Specifications

Ratings	Current rating	FPC: 0.5 A DC (Note 1) Fine Coaxial Ribbon Cable AWG#36: 0.5A Fine Coaxial Ribbon Cable AWG#40: 0.3A	Operating temperature	-35℃ to +85℃ (Note 2)	Operating temperature	-10℃ to +60℃ (Note 3)
	Voltage rating	50 V AC	Operating humidity	20% to 80%	Operating humidity	40% to 70% (Note 3)

Item	Specification	Conditions
1. Insulation resistance	500 M ohms min.	100 V DC
2. Withstanding voltage	No flashover or insulation breakdown	200 V AC / one minute
3. Contact resistance	50 m ohms max.	100 mA
4. Insertion-Extraction force (per contact)	Min. 0.15n, Max. 2N	Measured with a steel pin 0.15×0.26±0.005
5. Vibration	No electrical discontinuity of 1 μs or more.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours in each of the 3 directions
6. Humidity(Steady state)	Contact resistance: 120 m ohms max. Insulation resistance: 500 M ohms min.	96 hours at temperature of 40℃ and humidity of 90% to 95%
7. Temperature cycle	Contact resistance: 120 m ohms max. Insulation resistance: 500 M ohms min.	Temperature: -55℃ → +5℃ to +35℃ → +85℃ → +5℃ to +35℃ Time sequence: 30 → 10 → 30 → 10 (Minutes) 5 cycles
8. Durability (insertion/ withdrawal)	Contact resistance: 120 m ohms max.	30 cycles
9. Resistance to soldering heat	No deformation of the insulator parts affecting performance.	Re-flow soldering: At the recommended temperature profile Manual soldering: Soldering iron temperature 300℃, 3 seconds

Note 1: Please contact FPC manufacturer for specifications.
Note 2: Includes temperature rise caused by current flow.
Note 3: The term "storage" refers to connectors 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.

■Materials

Product	Part	Material	Finish	Color	Remarks
Receptacle	Insulator	Glass reinforced thermoplastic	———	Black	UL94V-0
	Contacts	Phosphor bronze	Gold plating	———	———
	Shield plate	Phosphor bronze	Tin plating	———	———
FPC Plug	Insulator	Glass reinforced thermoplastic	———	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	———	———
	Shield plate	Phosphor bronze	Tin plating	———	———
Fine Coaxial Ribbon Cable Plug	Insulator	Glass reinforced thermoplastic	———	Black	UL94V-0
	Contact	Phosphor bronze	Gold plating	———	———
Shield Cover		Stainless steel	Obverse side: Tin plating Reverse side: Insulation coating	———	———

■Ordering information

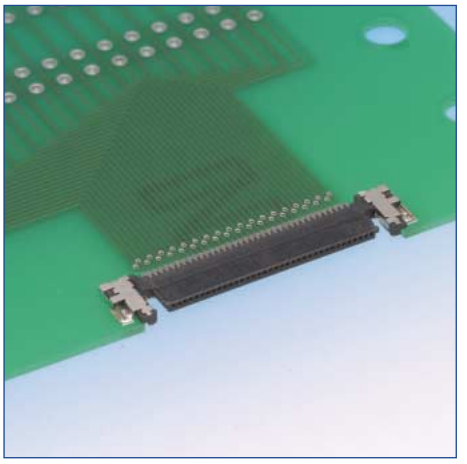
DF25 L - 36 P - 0.5 H
❶ ❷ ❸ ❹ ❺ ❻

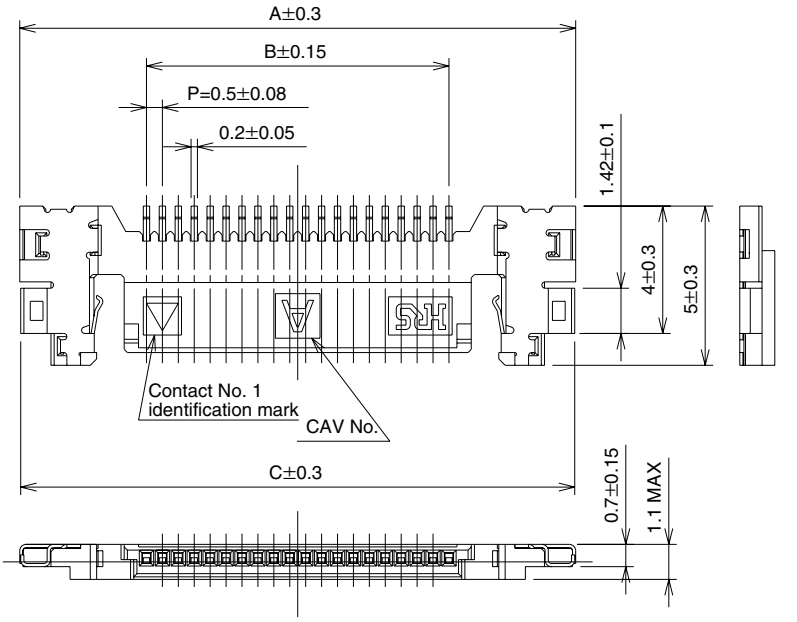
DF25 G - 36 S - 0.5 F/SD - GND
❶ ❷ ❸ ❹ ❺ ❻ ❼

❶ Ordering Information : DF25	❺ Contact pitch :0.5mm
❷ Configuration Receptacle L: Offset type (0.7mm above the board) Plug G: Ground connection type	❻ Termination section H: Right angle SMT F: FPC Plug SD: Plug - Fine Pitch Coaxial Ribbon Cable F/SD: Common to FPC Plug & Fine Coaxial Ribbon Cable Plug
❸ Number of contacts: 20,30,36	
❹ Connector type S: Plug P: Receptacle	❼ Metal shell G: Shielding plate

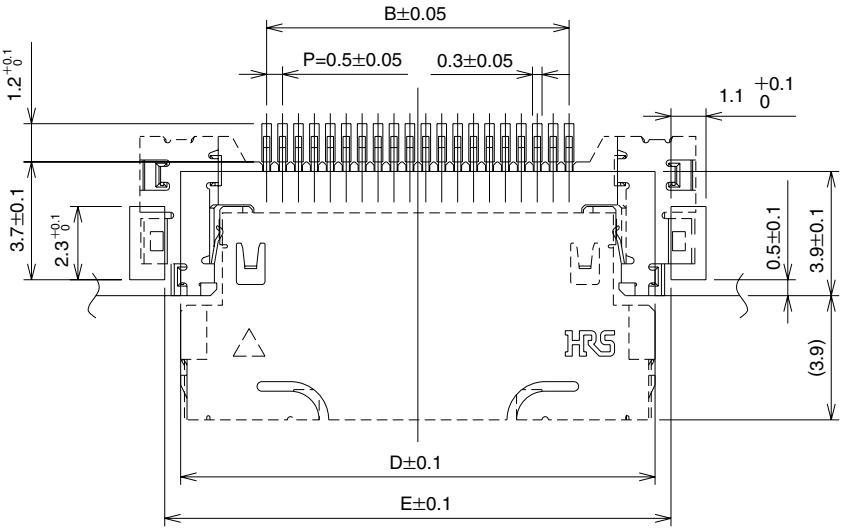
■ Right angle Receptacle (SMT)

(Offset mounting type)





◆ PCB mounting pattern



Packaging code: -**,(**)

(51): Embossed tape packaging (2,000 pieces per reel)

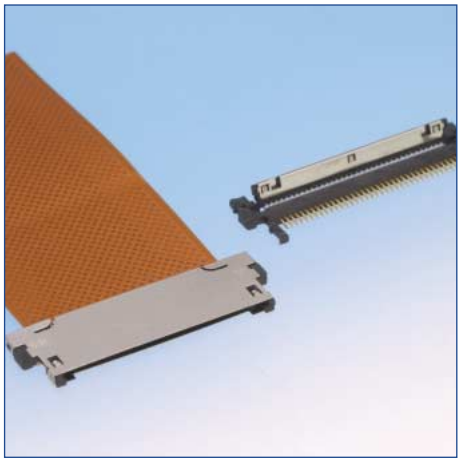
Unite: mm

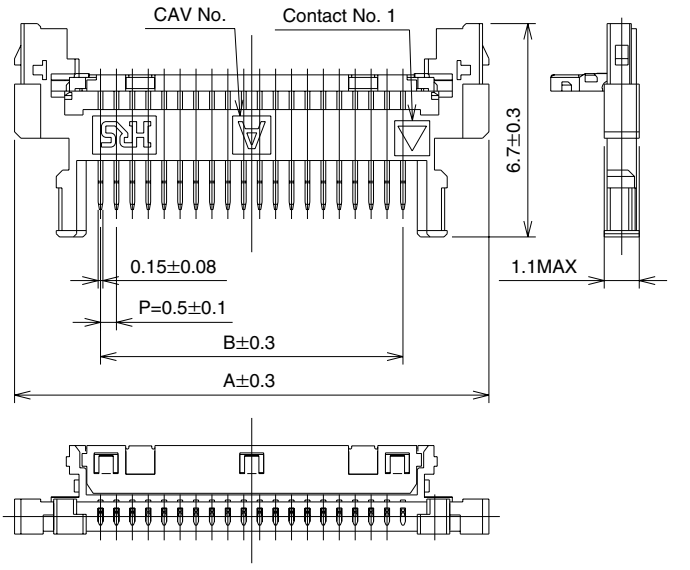
Part Number	CL No.	Number of contacts	A	B	C	D	E	Remarks
DF25L-20P-0.5H(**)	Reserved for	20	17.46	9.5	17.5	14.9	15.9	0.7mm above the board
DF25L-30P-0.5H(**)	product expansion	30	22.46	14.5	22.4	19.9	20.9	
DF25L-36P-0.5H(**)	662-0009-0-**	36	25.46	17.5	25.4	22.9	23.9	

Note: Embossed tape reel packaging (2,000 pieces/reel).Order by number of reels.

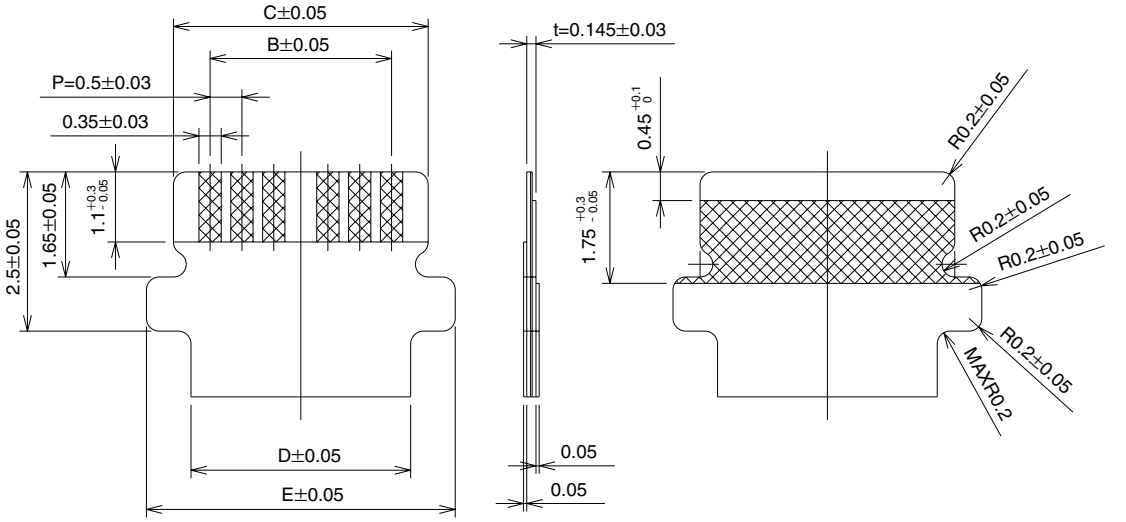
■ Plug (FPC Type)

Note 1: Requires use of plug and shield cover.
Note 2: Requires use of dedicated assembly tools.





◆ FPC pattern



Solder plated area: 1 to 5μm thick

Packaging code: -**,(**)
No symbol: Bag packaging (100 pieces per bag)

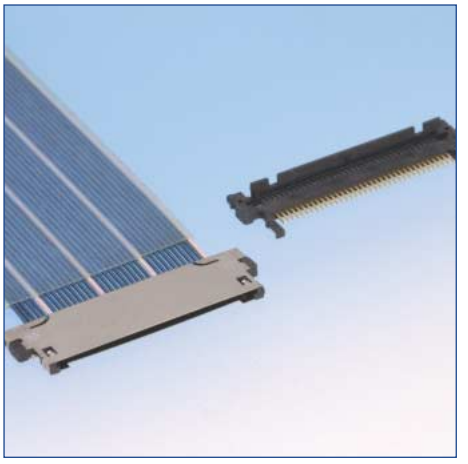
Unite: mm

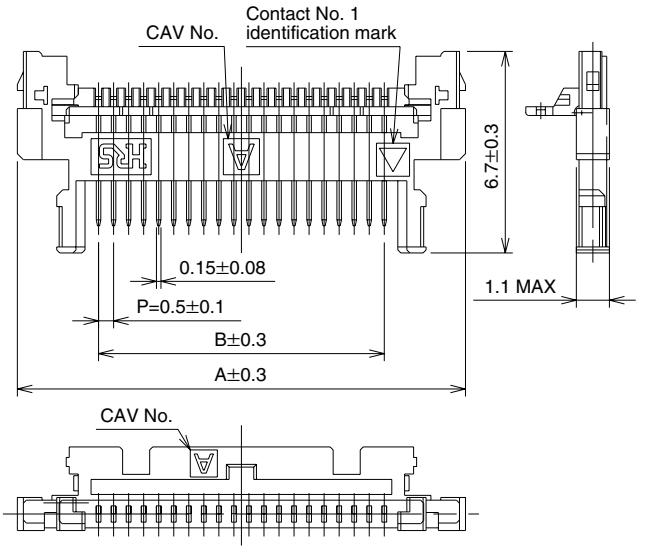
Part Number	CL No.	Number of contacts	A	B	C	D	E
DF25G-20S-0.5F(**)	Under development	20	14.9	9.5	10.65	10.1	11.5
DF25G-30S-0.5F(**)		30	19.9	14.5	15.65	15.1	16.5
DF25G-36S-0.5F(**)		36	22.9	17.5	18.65	18.1	19.5

Note: Bag packaging (100 pieces/bag).Order by number of bags.

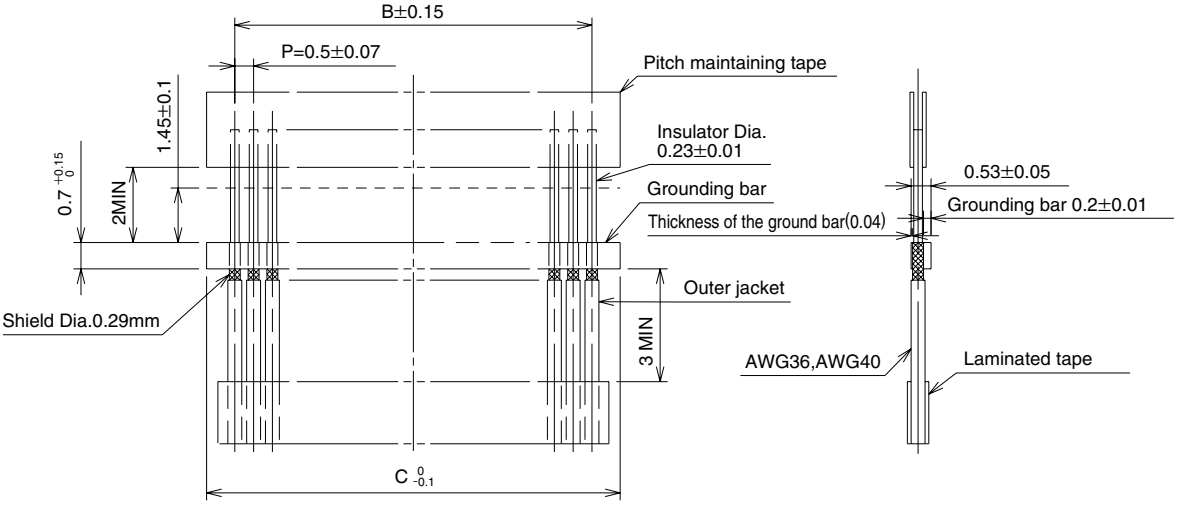
■ Plug (Fine Coaxial Ribbon Cable Type)

Note 1: Requires use of plug and shield cover.
Note 2: Requires use of dedicated assembly tools.





◆ Cable Preparation



Unite: mm

Part Number	CL No.	Number of contacts	A	B	C
DF25G-20S-0.5SD(**)	Under development	20	14.9	9.5	11
DF25G-30S-0.5SD(**)		30	19.9	14.5	16
DF25G-36S-0.5SD(**)	662-0012-5-**	36	22.9	17.5	19

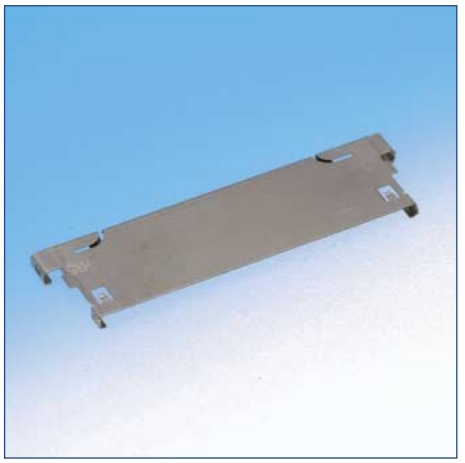
Packaging code: -**,(**)
No symbol : Bags packaging
(100 pieces per bag)

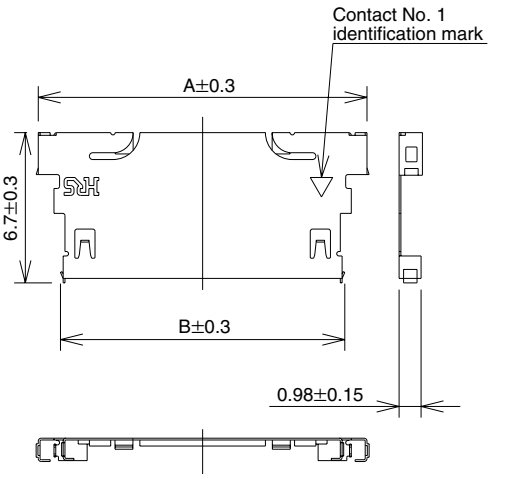
Note: Bag packaging (100 pieces/bag).Order by number of bags.

◆ Applicable thin-coaxial ribbon cable

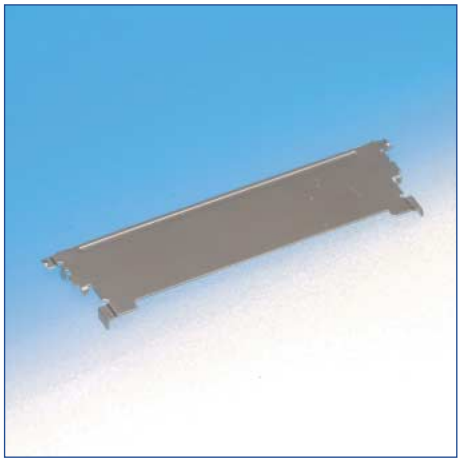
Jacket diameter (Stranded wire center conductor)	
AWG#36 (7/0.05mm)	0.3mm to 0.4mm
AWG#40 (7/0.03MM)	

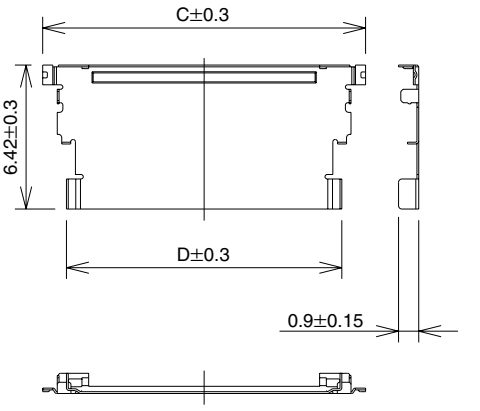
■ Shield Cover (Used on Plugs terminating with FPC or Fine Coaxial Ribbon Cable.)





Top shield cover





Bottom shield cover

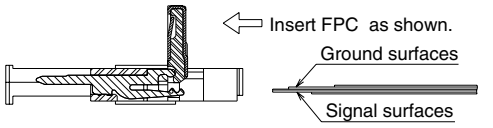
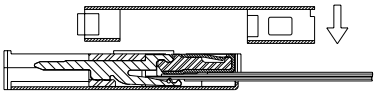
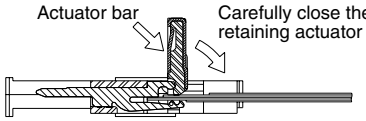
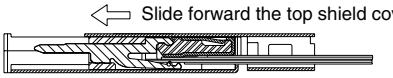
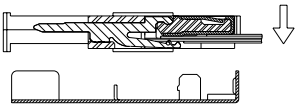
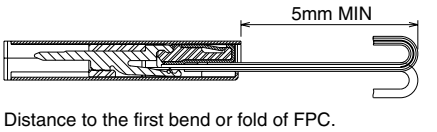
Packaging code: -**,(**)
No symbol: Bag packaging
(100 pieces per bag)

Dimensions in mm

Part Number	CL No.	Number of contacts	A	B	C	D
DF25G-20S-0.5F/SD-GND(**)	Under development	20	14.66	12.68	14.4	12.28
DF25G-30S-0.5F/SD-GND(**)		30	19.66	17.68	19.44	17.28
DF25G-36S-0.5F/SD-GND(**)	662-0011-2-**	36	22.66	20.68	22.4	20.28

Note: Bag packaging (100 pieces/bag).Order by number of bags.
Complete assembly consist of Top shield cover and Bottom shield cover.

■ Plug (FPC Type) Termination Procedures Dedicated assembly tooling is required.

Step 1		Step 4	Place top shield cover over the assembly, exercising caution as not to damage or deform any part of it. 
Step 2		Step 5	
Step 3	Insert the assembly (with the signal surface of FPC facing down) in the bottom shield cover. Excercise caution not to deform any parts of the shield cover. 	Completed termination	 Distance to the first bend or fold of FPC.

Note 1: The shield cover and the plug are supplied as separate components.

Note 2: Dedicated assembly fixtures are required at each stage of the termination process.For details refer to the instruction manual supplied with the tools.

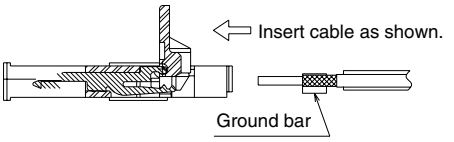
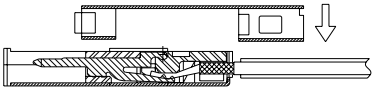
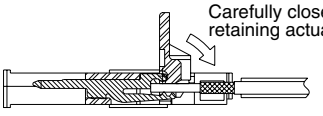
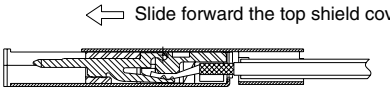
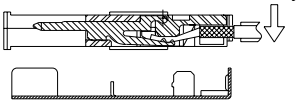
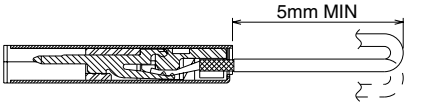
Note 3: To protect the FPC, insertion and disconnection of the connector should be performed parallel to the mating direction.

Note 4: To protect the FPC, please do not apply excessive tension to it.

Note 5: When the FPC is to be bent, refer to FPC manufacturer for bending radius and other specific recommendations.

Note 6: The connector body can be used only one time.

■ Plug (For Fine Pitch Ribbon Coaxial Cable) Assembly Procedures

Step 1		Step 4	Place top shield cover over the assembly, exercising caution as not to damage or deform any part of it. 
Step 2		Step 5	
Step 3	Insert the assembly (with the signal surface of FPC facing down) in the bottom shield cover. Excercise caution not to deform any parts of the shield cover. 	Completed termination	 Distance to the first bend or fold of FPC.

Note 1: The shield cover and the plug are supplied as separate components.

Note 2: Dedicated assembly fixtures are required at each stage of the termination process.For details refer to the instruction manual supplied with the tools.

Note 3: To protect the FPC, insertion and disconnection of the connector should be performed parallel to the mating direction.

Note 4: To protect the FPC, please do not apply excessive tension to it.

Note 5: When the FPC is to be bent, refer to FPC manufacturer for bending radius and other specific recommendations.

Note 6: Neither the coaxial cable nor the connector body can be used re-used.

Applicable tools

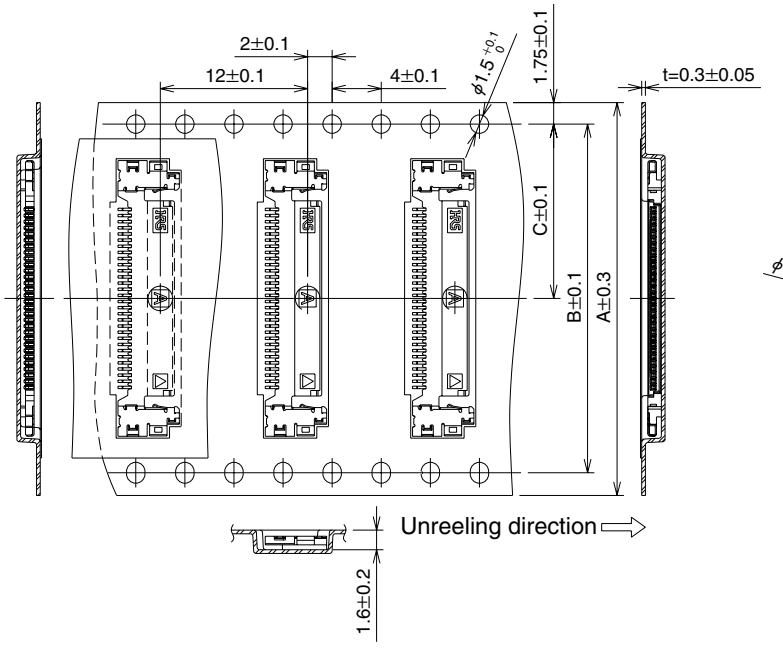
Name of Process \ Connector		DF25G-30S-0.5F	DF25G-36S-0.5F	Remarks
1	Wire forming	(Manual)	(Manual)	
2	Piercing	DF25G-30S-0.5F/ID-MP CL902-4532-8	DF25G-36S-0.5F/ID-MP CL902-4526-5	Especially for FPC
3	Placing of bottom shield cover (A)	DF25G-30S/CV-MP-A CL902-4534-3	DF25G-36S/CV-MP-A CL902-4529-3	For both FPC Plug and thin coaxial cable Plug
4	Placing of top shield cover (B)	DF25G-30S/CV-MP-B CL902-4533-0	DF25G-36S/CV-MP-B CL902-4538-4	For both FPC Plug and thin coaxial cable Plug

Name of Process \ Connector		DF25G-30S-0.5F	DF25G-36S-0.5F	Remarks
1	Trimming the extra cable length	DF25G-30S-0.5SD/CU-MP CL902-4530-2	DF25G-36S-0.5SD/CU-MP CL902-4528-0	Especially for thin coaxial cable Plug
2	Wire forming and piercing	DF25G-30S-0.5SD/CAID-MP CL902-4531-5	DF25G-36S-0.5SD/CAID-MP CL902-4527-8	Especially for thin coaxial cable Plug
3	Placing of bottom shield cover (A)	DF25G-30S/CV-MP-A CL902-4534-3	DF25G-36S/CV-MP-A CL902-4529-3	For both FPC and thin coaxial cable Plug
4	Placing of top shield cover (B)	DF25G-30S/CV-MP-B CL902-4533-0	DF25G-36S/CV-MP-B CL902-4538-4	For both FPC and thin coaxial cable Plug

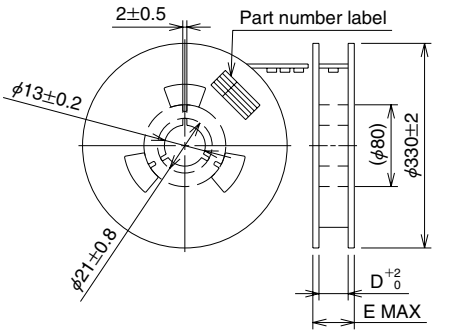
Note 1: To assure that the part selection and termination procedures are correct Hirose Electric representative may be contacted at any time.

Note 2: Only tools and fixtures recommended by Hirose Electric must be used. Use of any other tools or fixtures will void the product warranty.

Embossed Carrier Tape Dimensions



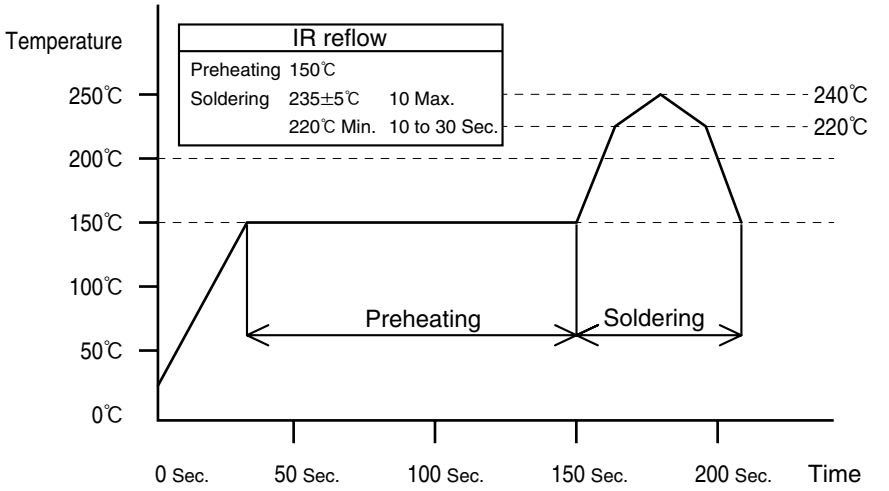
Reel dimensions



Unite: mm

Connector	Number of contacts	A	B	C	D	D	Remarks
DF25L-20P-0.5H(**)	20	24	———	11.5	24.2	30.4	Offset type (0.7mm above the board)
DF25L-30P-0.5H(**)	30	32	28.4	14.2	32.4	38.4	
DF25L-36P-0.5H(**)	36	44	40.4	20.2	44.4	50.4	

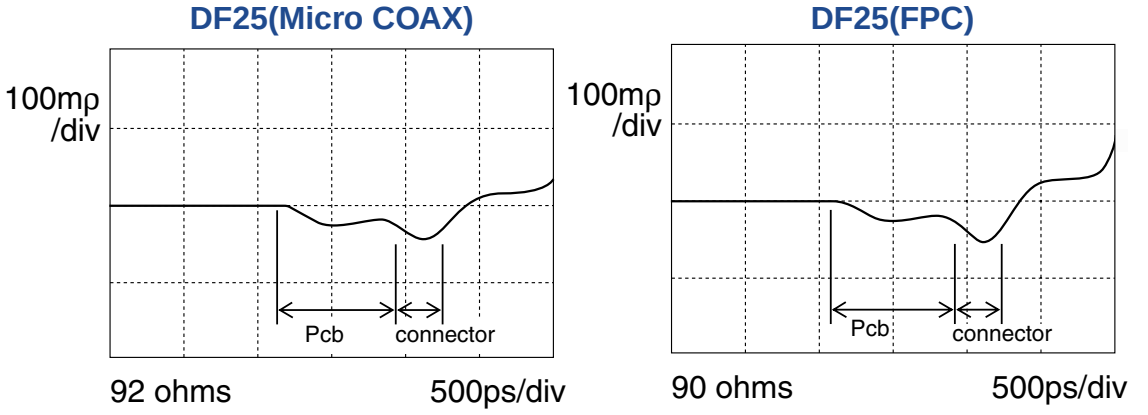
Usage Recommendations

1. Recommended temperature profile	 Note 1: 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. Note 2: The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals (for surface mounted receptacle).
2. Recommended manual soldering	Manual soldering: 290±10℃ for 3 seconds
3. Recommended screen thickness	0.15mm
4. Board warpage	Maximum of 0.03mm at the connector center, with both ends of the connector as reference points.
5. Cleaning conditions	Refer to "Nylon Connector Use Handbook".
6. Termination Conditions	Refer to "Handling Manual" of each tools.
7. Precautions	Excessive twisting when mating/un-mating may cause damage to the connectors.

High Speed Transmission Characteristics (Typical data)

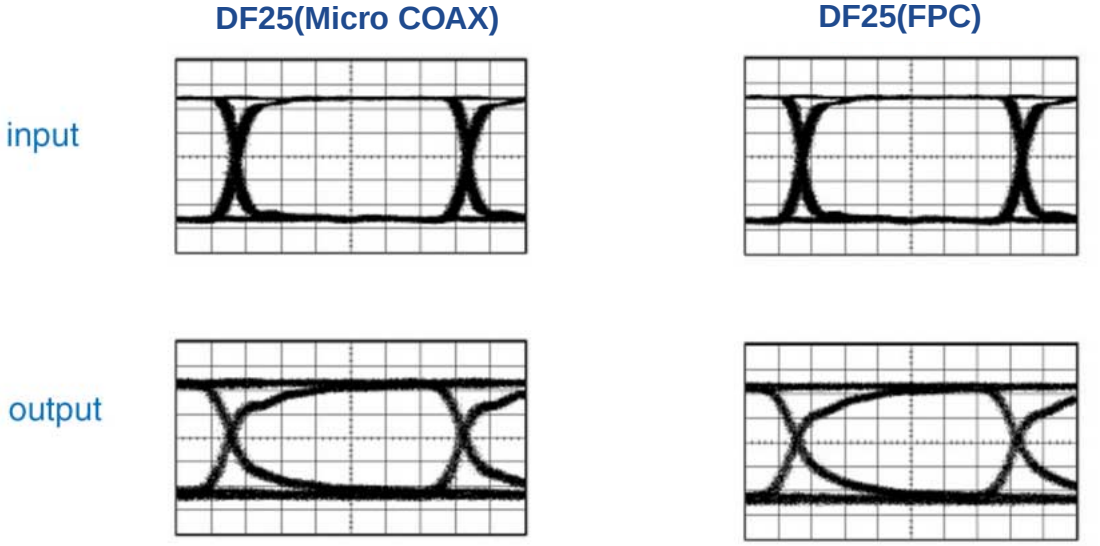
●Reflection Characteristics (Differential TDR Method)

Standard impedance: 100 ohms
Signal rise time: 250 ps
Scale Vertical axis: 100 mρ/div
Horizontal axis: 500 ps/div

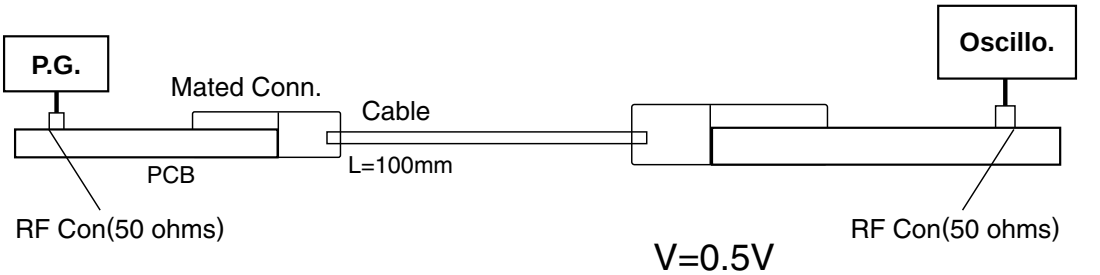


●Eye Pattern

Signal speed: 2 Gbps
Scale Vertical axis: 100 mV/div
Horizontal axis: 75 ps/div



2Gbps(X=75ps/div)



V=0.5V

Test Set-up