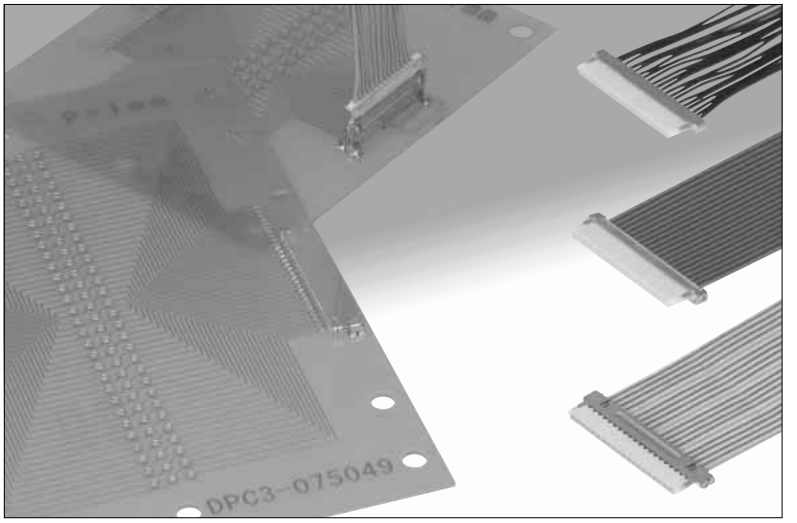
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1 mm Contact Pitch, Board-to-Cable, Board-to-FPC, Board-to-Micro-coaxial Cable Connectors

DF19 Series



■Overview

Industry and market accepted as “De facto” standard for LCD panel connections (panels under 12 inches).
High-performance connectors for LVDS high-speed differential signals.

■Features

1. Small configuration and board space

Thin design accepts discrete wire, thin micro-coaxial cable (ϕ1.5mm, ϕ1.6mm max.) and FPC 1.7 mm maximum thick.

2. Common use of receptacle

The same receptacle will accept plugs terminated with discrete wire, FPC or micro-coaxial cable.

3. Uniform external dimensions

The plug assembly external dimensions remain the same when is terminated with discrete wire, FPC or micro- coaxial cable.

4. Variety of mounting styles

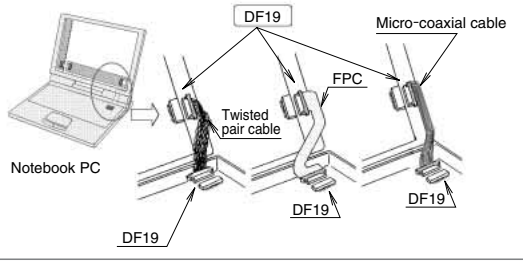
Device design engineers have a choice of mounting styles: top-board, offset, reverse mount offset and vertical.

5. Ground connection

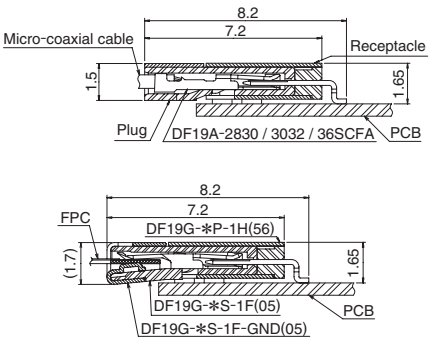
Metal grounding plates connect with the common ground line.

■Applications

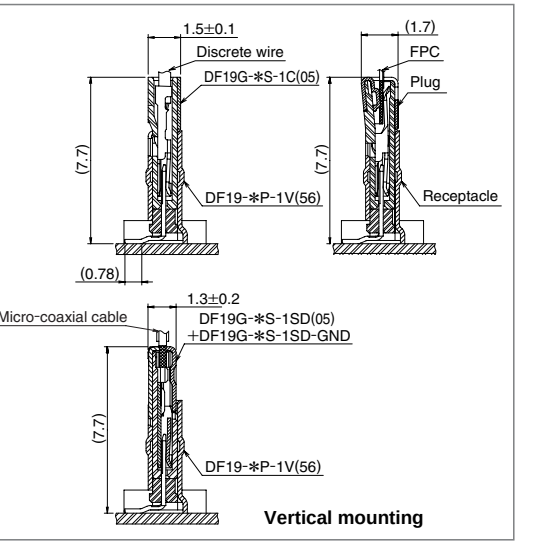
LCD connections in small consumer devices: digital cameras, notebook computers, PDA’s. Any device requiring high-density interconnection for consistent high speed transmission data rates.



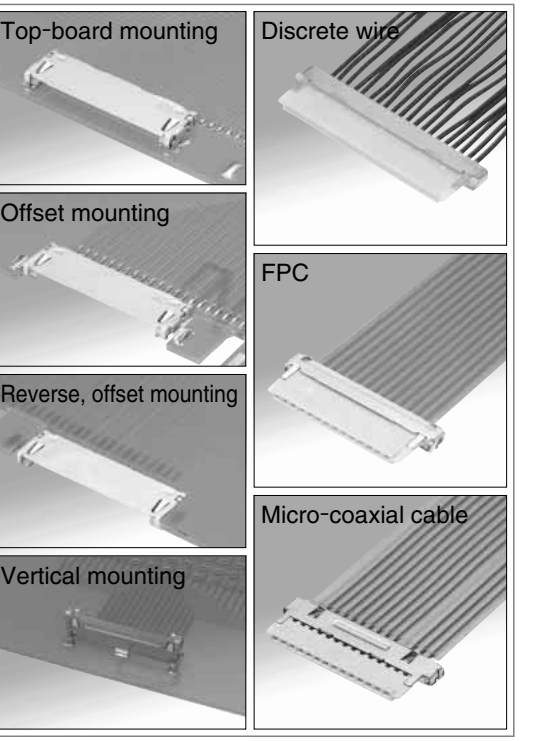
Small configuration and board space



Horizontal mounting



Vertical mounting



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■Product Specifications

Rating	Current rating	AWG#28 : 1A AWG#30 : 0.9A AWG#32 : 0.8A AWG#36 : 0.5A FPC : 0.5A Micro-coaxial cable AWG# 40: 0.3A	Operating temperature range	-35℃ to 85℃ Note 1 Note 2	Storage temperature range	-10℃ to 60℃ Note 2
	Voltage rating	100V AC	Operating humidity range	20% to 80%	Storage humidity range	40% to 70%

Item	Specification	Conditions
1.Insulation resistance	500 MΩ min.	100 V DC
2.Withstanding voltage	No flashover or insulation breakdown.	300 V AC / one minute
3.Contact resistance	30 mΩ max. (50 mΩ max. for FPC)	100 mA
4.Insertion-Extraction force (per contact)	Min. 0.2N, Max. 3N	Measured with a steel pin ϕ0.2±0.005
5.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 directions.
6.Humidity (Steady state)	Contact resistance: 30 mΩ max. (50 mΩ max. for FPC) Insulation resistance: 500 MΩ min.	96 hours at temperature of 40±2℃ and humidity of 90% to 95%
7.Temperature cycle	Contact resistance: 30 mΩ max. (50 mΩ max. for FPC) Insulation resistance: 500 MΩ min.	Temperature: -55℃ → +5℃ to +35℃ → +85℃ → +5℃ to +35℃ Time (Minutes): 30 → 10 → 30 → 10 5 cycles
8.Durability (insertion/ withdrawal)	Contact resistance: 30 mΩ max. (50 mΩ max. for FPC)	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

Note1: Includes temperature rise caused by current flow.
Note2: 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.
Note3: Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

■Materials / Finish

Product	Component	Material	Finish/Color	Remarks
Receptacle	Insulator	Polyamide	Beige	UL94V-0
	Contacts	Phosphor bronze	Gold plated	———
	Grounding plate	Phosphor bronze	Tin-copper plated	———
Plug	Insulator	Polyamide	Beige	———
	Tin-lead plated	Stainless steel	Tin-copper plated	———
Crimp contact	Contact	Phosphor bronze	Gold Plated	———
Plug for PPC	Insulator	Polyamide	Beige	UL94V-0
	Contact	Phosphor bronze	Gold plated	———
Grounding plate for PPC	Grounding plate	Stainless steel	Tin-copper plated	———
Plug for micro-coaxial cable	Insulator	LCP	Beige	UL94V-0
	Contact	Phosphor bronze	Gold plated	———
	Grounding plate	Phosphor bronze	Tin plated	———
Grounding plate for micro-coaxial cable	Grounding plate	Phosphor bronze	Tin plated	———

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■Ordering information

● Connector

DF19 # - ✱ P - 1 H
❶ ❷ ❸ ❹ ❺ ❻

DF19 # - ✱ S - 1 F - GND
❶ ❷ ❸ ❹ ❺ ❻ ❼

❶ Series Name : DF19	❸ Number of contacts : 8,14,20,30 (Note 1)
❷ Configuration ■Receptacle G : Top-board mounting (1.65mm high) K : Offset mounting (1.0mm high) L : Offset mounting (1.1mm high) KR : Reverse offset mounting version of DF19K (1.0mm high) ■Plug Blank : No grounding plate G : With grounding plate ■Plug for FPC G : With grounding plate ■Grounding plate for FPC G : With grounding plate ■Plug for micro-coaxial cable G : With grounding plate ■Grounding plate for micro-coaxial cable G : With grounding plate	❹ Connector type S : Plug P : Receptacle ❺ Contact pitch : 1mm ❻ Mounting type/Termination type H : Horizontal SMT V : Vertical SMT C : Socket-discrete wire (crimp contact) F : Plug – FPC SD : Plug – micro-coaxial cable ❼ Additional separate component GND : Ground plate (Note 2)

Note 1: Number of contacts will differ depending on the connector style.
Note 2: Grounding plates are required when terminating with the FPC and micro-coaxial cable.

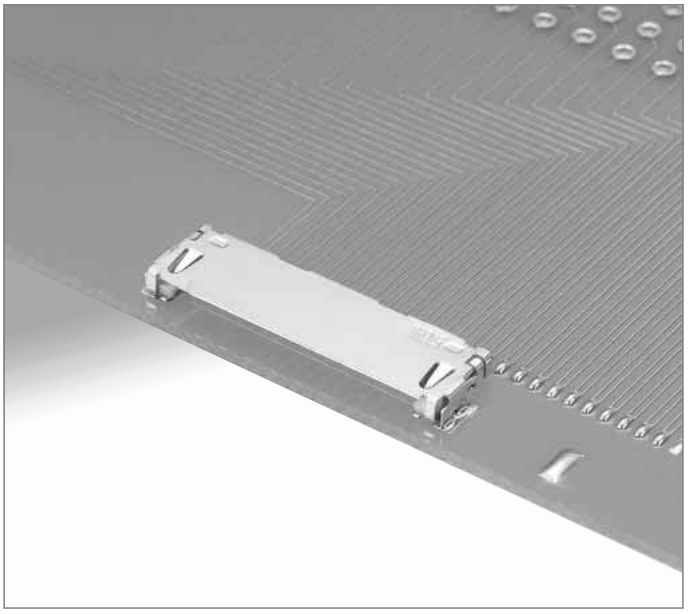
●Contact

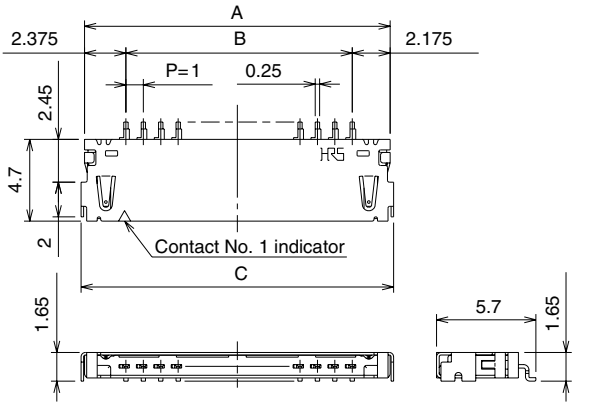
DF19A - 2830 SCF A (✱✱)
❶ ❷ ❸ ❹

❶ Conductor size 2830 : AWG#28～#30 3032 : AWG#30～#32 36 : AWG#36	❸ Plating A : Gold
❷ Contact type SCF : Plug contact, tape and reel packaging	❹ Packaging Blank : 10,000 pieces / reel (41) : 20,000 pieces / reel

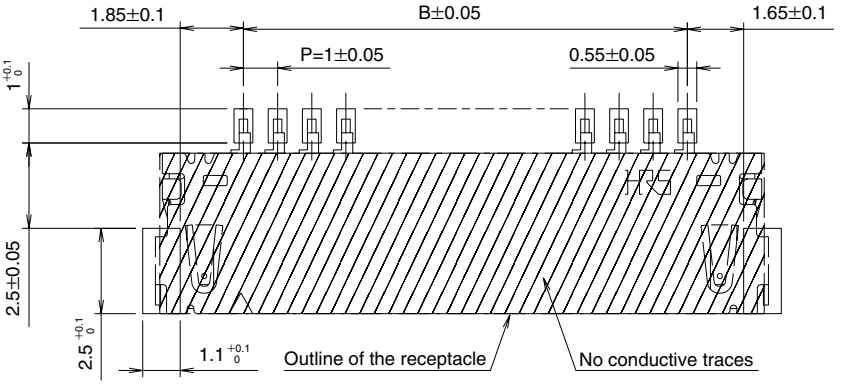
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■Right angle receptacle, top-board mounting





◆PCB mounting pattern



Specification
(56): Tape & reel packaging
(1,000 pieces per reel)

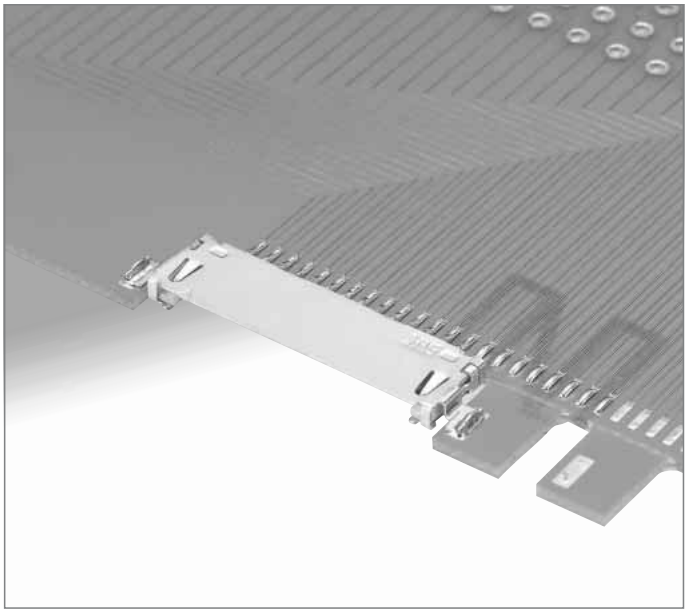
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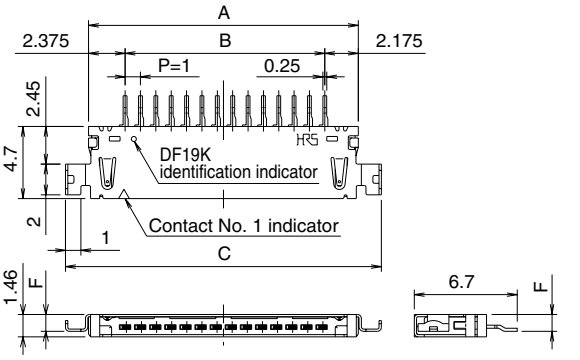
Part number	CL No.	Number of contacts	A	B	C	Remarks	RoHS
DF19G- 8P-1H (56)	685-0021-0-56	8	11.55	7	11.95	1.65mm high	YES
DF19G-14P-1H (56)	685-0004-0-56	14	17.55	13	17.95		
DF19G-20P-1H (56)	685-0006-6-56	20	23.55	19	23.95		
DF19G-30P-1H (56)	685-0015-7-56	30	33.55	29	33.95		

Note: Order by number of reels.

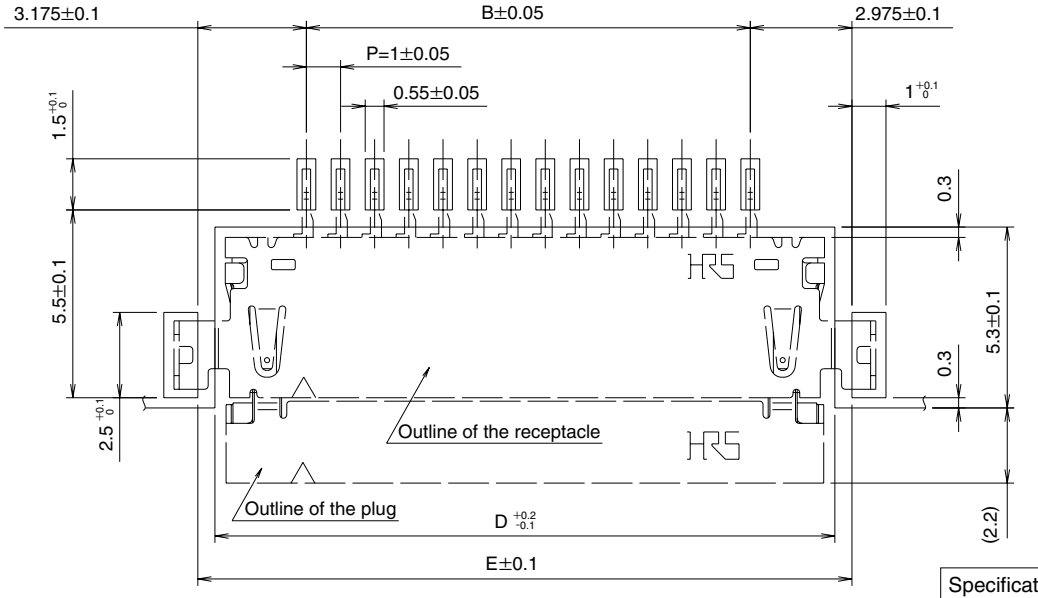
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■Right angle receptacle, offset mounting





◆PCB mounting pattern



Specification
(56): Tape & reel packaging
(1,000 pieces per reel)

Unit: mm

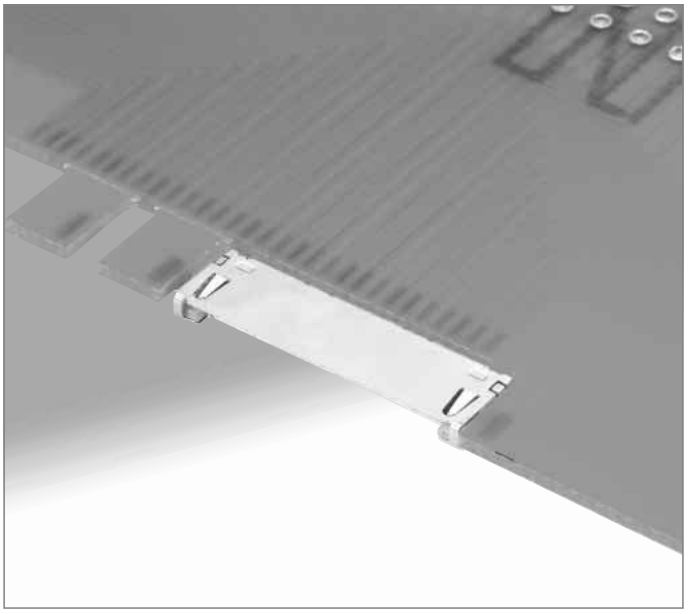
Part number	CL No.	Number of contacts	A	B	C	D	E	F	Remarks	RoHS
DF19K-20P-1H (56)	685-0008-1-56	20	23.55	19	26.55	24.15	25.15	0.1	1.0mm high	YES
DF19K-30P-1H (56)	685-0032-6-56	30	33.55	29	36.55	34.15	35.15	0.1		

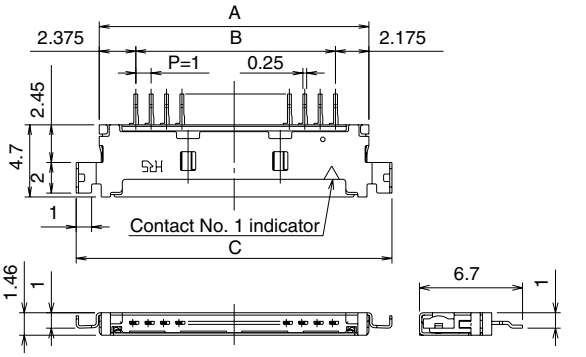
Part number	CL No.	Number of contacts	A	B	C	D	E	F	Remarks	RoHS
DF19L-14P-1H (56)	685-0003-8-56	14	17.55	13	20.55	18.15	19.15	1.1	1.1mm high	YES
DF19L-20P-1H (56)	685-0019-8-56	20	23.55	19	26.55	24.15	25.15	1.1		
DF19L-30P-1H (56)	685-0016-0-56	30	33.55	29	36.55	34.15	35.15	1.1		

Note: Order by number of reels.

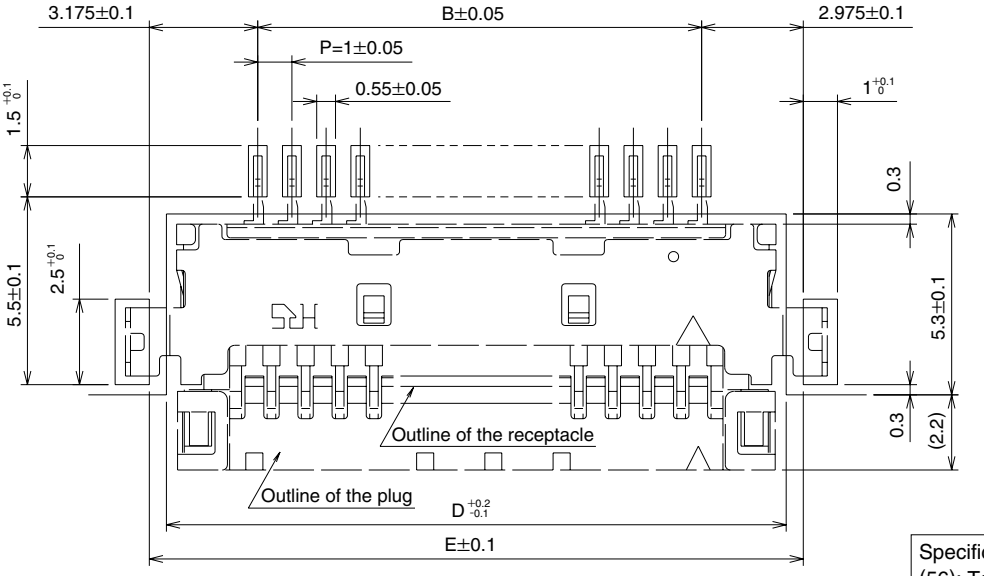
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■Right angle receptacle, reverse offset mounting





◆PCB mounting pattern



Specification
(56): Tape & reel packaging
(1,000 pieces per reel)

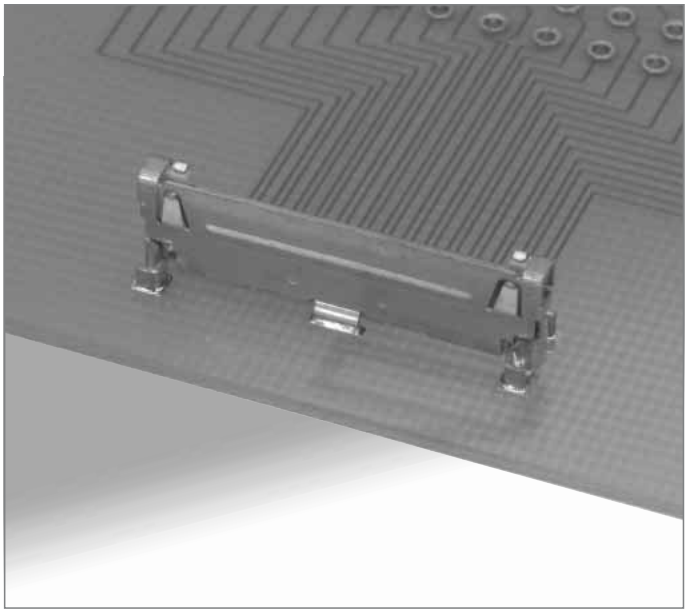
Unit: mm

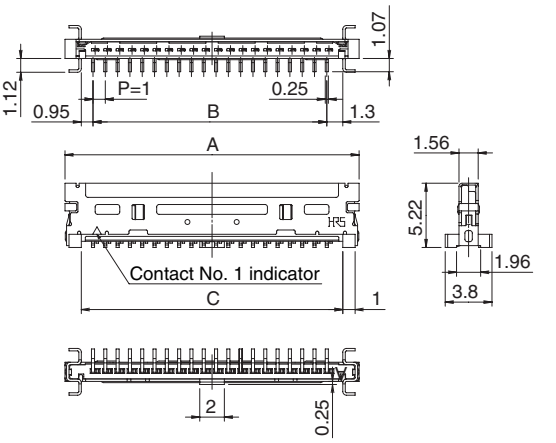
Part number	CL No.	Number of contacts	A	B	C	D	E	Remarks	RoHS
DF19KR-14P-1H (56)	685-0024-8-56	14	17.55	13	20.55	18.15	19.15	1.0mm high	YES
DF19KR-20P-1H (56)	685-0023-5-56	20	23.55	19	26.55	24.15	25.15		

Note: Order by number of reels.

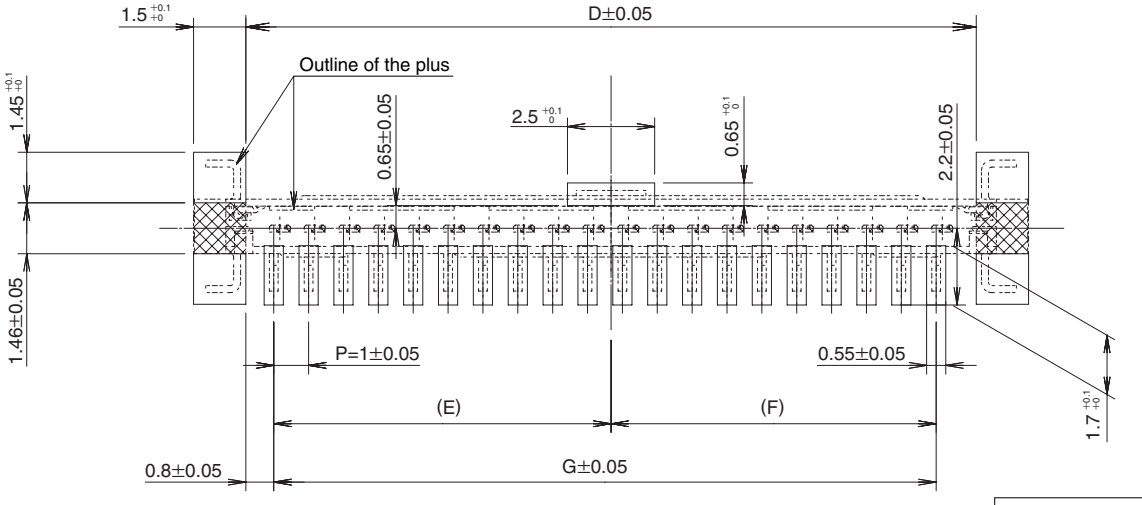
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■ Vertical receptacle





◆PCB mounting pattern



Conductive traces in this area must be covered by dielectric compound.

Specification
(56): Tape & reel packaging
(1,000 pieces per reel)

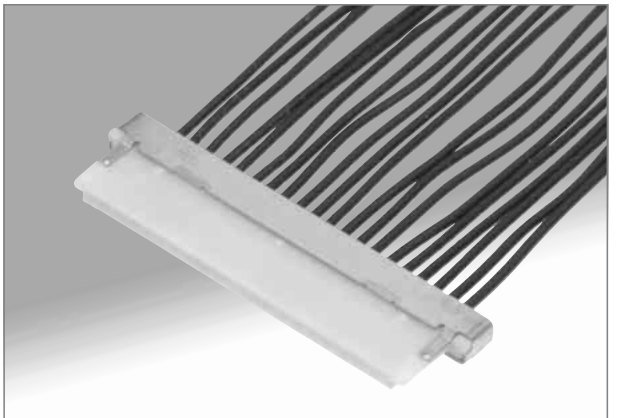
Unit: mm

Part number	CL No.	Number of contacts	A	B	C	D	E	F	G	RoHS
DF19-14P-1V (56)	685-0036-7-56	14	17.9	13	15.25	14.95	6.675	6.325	13	YES
DF19-20P-1V (56)	685-0037-0-56	20	23.9	19	21.25	20.95	9.675	9.325	19	

Note: Order by number of reels.

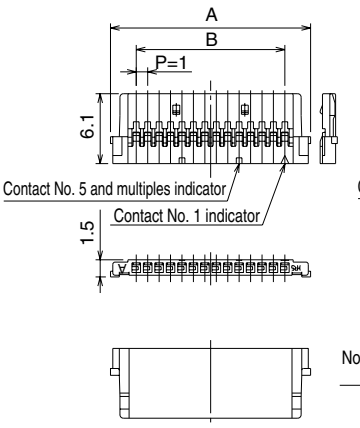
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■Plug (Discrete wire)

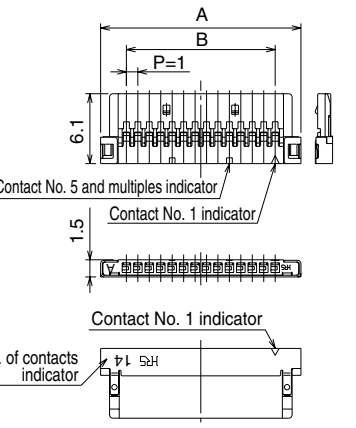


Shown with terminated and installed contacts

DF19-∗S-1C



DF19G-∗S-1C(05)



Specification
Blank,(05): Bag packaging
(100 pieces per bag)

Unit: mm

Part number	CL No.	Number of contacts	A	B	RoHS
DF19 - 8S-1C	685-0029-1	8	11.5	7	YES
DF19 -14S-1C	685-0012-9	14	17.5	13	
DF19 -20S-1C	685-0011-6	20	23.5	19	
DF19 -30S-1C	685-0013-1	30	33.5	29	

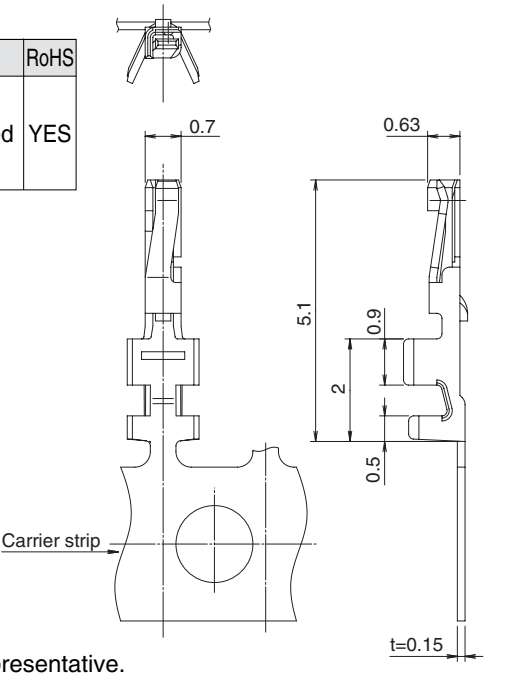
Part number	CL No.	Number of contacts	A	B	RoHS
DF19G - 8S-1C(05)	685-0022-2-05	8	11.5	7	YES
DF19G -14S-1C(05)	685-0005-3-05	14	17.5	13	
DF19G -20S-1C(05)	685-0007-9-05	20	23.5	19	
DF19G -30S-1C(05)	685-0014-4-05	30	33.5	29	

Note: Order by number of bags.

■Crimp contacts

Part number	CL No.	Packaging	Quantity	Finish	RoHS
DF19A-2830SCFA (∗∗)	685-0048-6-∗∗	Tape & reel	See Specifications number below	Gold plated	YES
DF19A-3032SCFA (∗∗)	685-0046-0-∗∗				
DF19A- 36SCFA (∗∗)	685-0047-3-∗∗				

Specification number ∗∗(∗∗)
Blank: Tape & reel packaging (10,000 pieces per reel)
(41) : Tape & reel packaging (20,000 pieces per reel)



●Applicable cable (Tin plated annealed conductor)

Wire size (stranded wire conductor)	Jacket diameter
AWG#28 (7/ 0.127 mm)	0.5mm to 0.6mm
AWG#30 (7/ 0.1 mm)	
AWG#32 (7/ 0.08 mm)	
AWG#36 (7/ 0.05 mm)	0.27mm

●Applicable UL style
UL1571 (Note2)

●Strip length
1.2mm to 1.9mm

Note 1: When using other than the recommended wire, contact your Hirose sales representative.
Note 2: Contact your Hirose sales representative when using AWG#36.

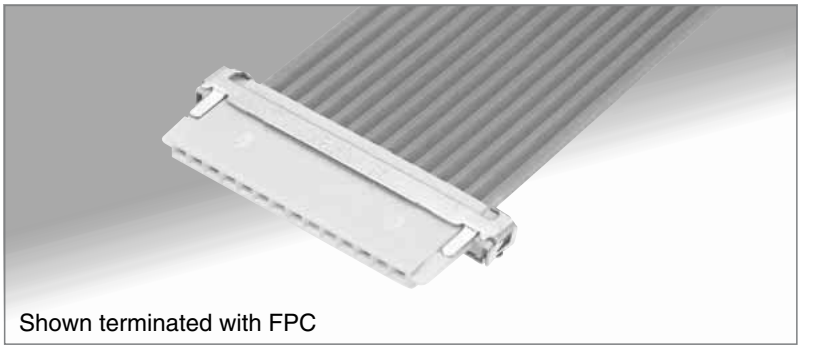
●Tools

Part	Part number	CL No.
Applicator	AP105-DF19S	901-4571-3
Press unit	CM-105	901-0005-4

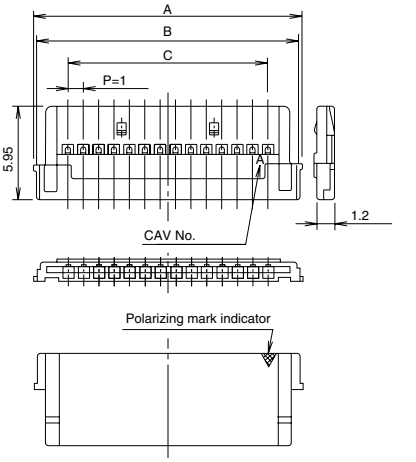
Note 1: Use of other than Hirose Electric approved tools will void the product warranties.
Note 2: Contact Hirose for the wire striping, contact crimp and contact insertion instructions.

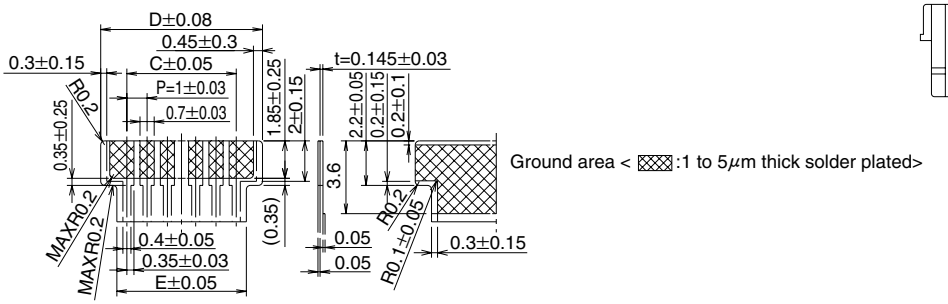
■Plug (Flat Printed Circuit)

Note: Socket and grounding plate is required.



Shown terminated with FPC





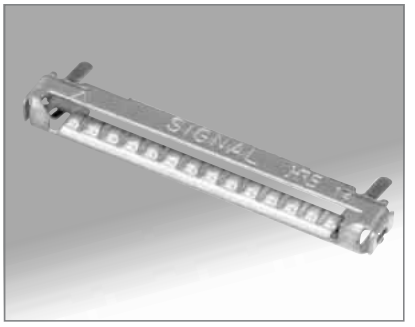
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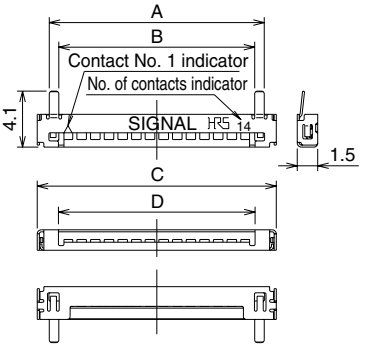
Part number	CL No.	Number of contacts	A	B	C	D	E	RoHS
DF19G-14S-1F(05)	685-0017-2-05	14	17.5	17.1	13	15.6	14	YES
DF19G-20S-1F(05)	685-0009-4-05	20	23.5	23.1	19	21.6	20	
DF19G-30S-1F(05)	685-0033-9-05	30	33.5	33.1	29	31.6	30	

Specification
(05): Bag packaging
(100 pieces per bag)

Note: Order by number of bags.

■Ground plate for FPC





Unit: mm

Part number	CL No.	Number of Contacts	A	B	C	D	RoHS
DF19G-14S-1F-GND(05)	685-0018-5-05	14	15.75	14.35	17.5	14.4	YES
DF19G-20S-1F-GND(05)	685-0010-3-05	20	21.75	20.35	23.5	20.4	
DF19G-30S-1F-GND(05)	685-0034-1-05	30	31.75	30.35	33.5	30.4	

Specification
(05): Bag packaging
(100 pieces per bag)

Note: Order by number of bags.

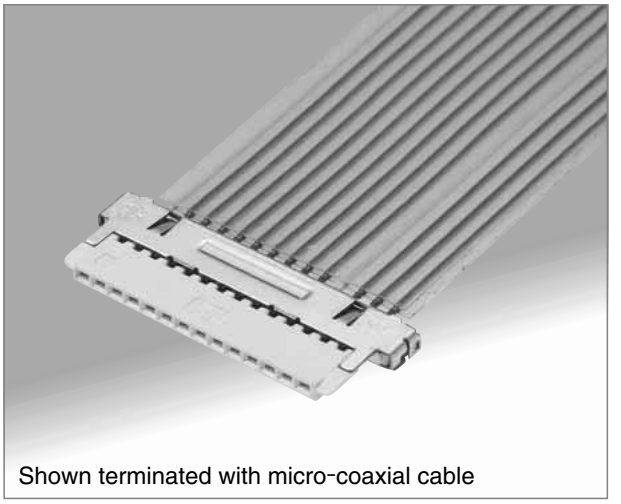
●Grounding plate installation tools

Type	Part number	CL No.
Desktop tool (for 14 pos.)	DF19G-14S/PR-MD2	902-4514-6
Desktop tool (for 20 pos.)	DF19G-20S/PR-MD2	902-4513-3
Desktop tool (for 30 pos.)	DF19G-30S/PR-MD2	902-4518-7

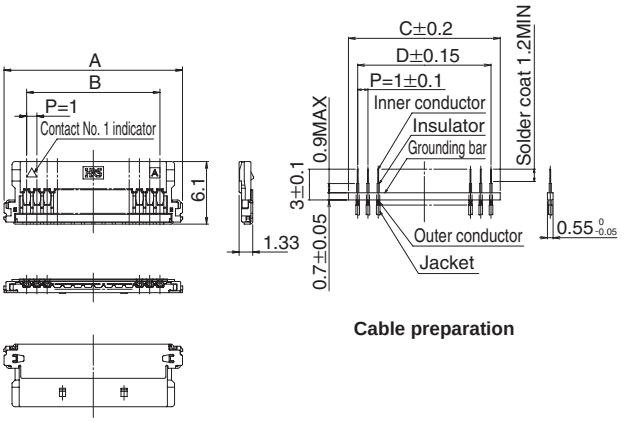
Note1: Product is not guaranteed unless Hirose approved tools are used.

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■Plug (Micro-coaxial cable)



Shown terminated with micro-coaxial cable



Cable preparation

Note 1: Connectors are designed to allow termination without cutting of the pitch loss prevention tape.
Note 2: Required Solder coating for inner conductor.
Note 3: When using 2-conductor micro-coaxial cable some contact positions will not be used.
Contact your Hirose sales representative.

Part number	CL No.	Number of contacts	A	B	C	D	RoHS
DF19G-14S-1SD(05)	685-0026-3-05	14	17.4	13	14.8	13	YES
DF19G-20S-1SD(05)	685-0025-0-05	20	23.4	19	20.8	19	

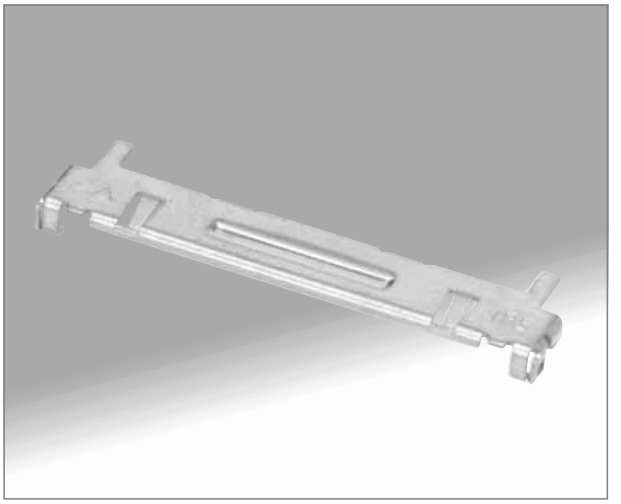
Specification
(05): Bag packaging
(100 pieces per bag)

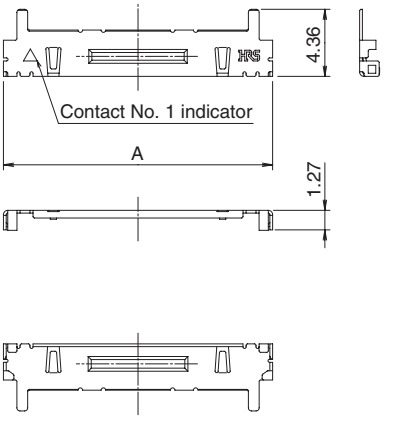
Note: Order by number of bags.

●Applicable cable (Micro-coaxial cable)

Wire size (stranded wire center conductor)	Jacket diameter
AWG#40 (7/ 0.03mm)	0.3mm to 0.4mm

■Grounding plate for micro-coaxial cable





Specification
Blank: Bag packaging
(100 pieces per bag)

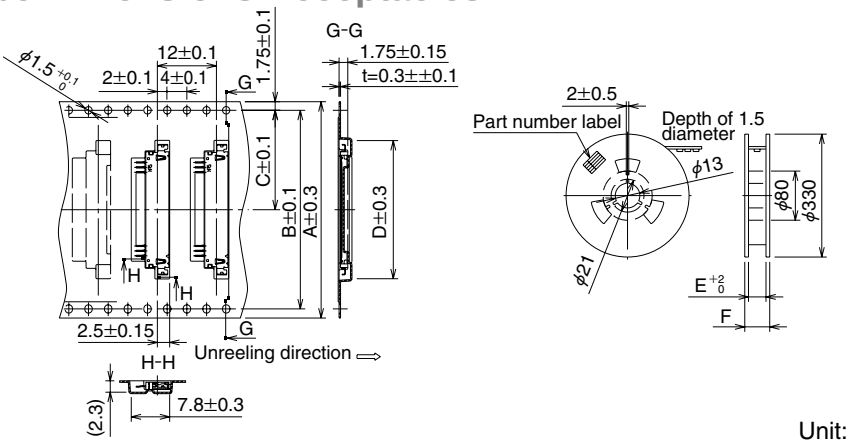
Unit: mm

Part number	CL No.	Number of contacts	A	RoHS
DF19F-14S-1SD-GND	685-0028-9	14	17.5	YES
DF19G-20S-1SD-GND	685-0027-6	20	23.5	

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Embossed Carrier Tape Dimensions Receptacles

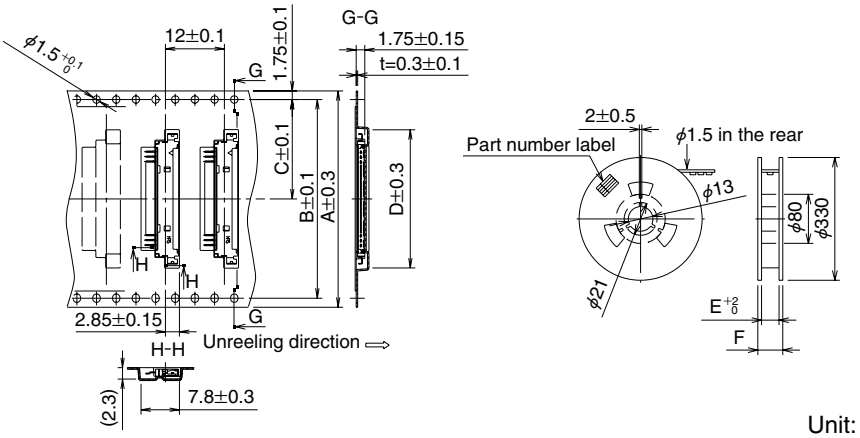
●DF19G-∗P-1H(56)
●DF19K-∗P-1H(56)
●DF19L-∗P-1H(56)



Unit: mm

Connector	Number of contacts	A	B	C	D	E	F	Remarks
DF19G- 8P-1H(56)	8	24	———	11.5	16.1	24.4	30.4	Top-board mounting (1.65mm high)
DF19G-14P-1H(56)	14	44	40.4	20.2	22.1	44.4	50.4	
DF19G-20P-1H(56)	20	44	40.4	20.2	28.1	44.4	50.4	
DF19G-30P-1H(56)	30	56	50.2	26.2	38.1	56.4	62.4	
DF19K-20P-1H(56)	20	44	40.4	20.2	28.1	44.4	50.4	Offset mounting (1.0mm high)
DF19K-30P-1H(56)	30	56	52.4	26.2	38.1	56.4	62.4	
DF19L-14P-1H(56)	14	44	40.4	20.2	22.1	44.4	50.4	Offset mounting (1.1mm high)
DF19L-20P-1H(56)	20	44	40.4	20.2	28.1	44.4	50.4	
DF19L-30P-1H(56)	30	56	52.4	26.2	38.1	56.4	62.4	

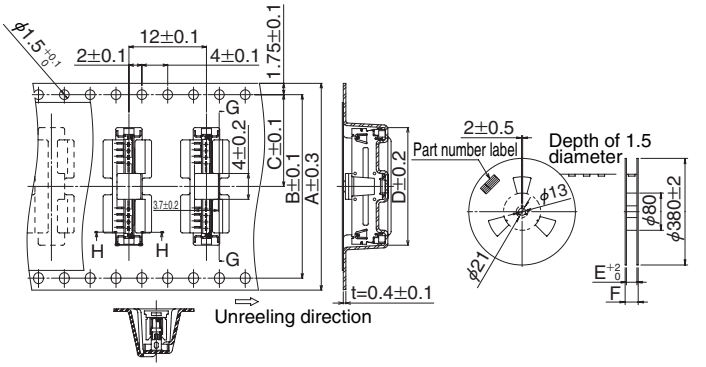
●DF19KR-∗P-1H(56)



Unit: mm

Connector	Number of contacts	A	B	C	D	E	F	Remarks
DF19KR-14P-1H(56)	14	44	40.4	20.2	22.1	44.4	50.4	Reverse type of DF19K
DF19KR-20P-1H(56)	20	44	40.4	20.2	28.1	44.4	50.4	Offset mounting (1.0mm high)

●DF19-∗P-1V(56)

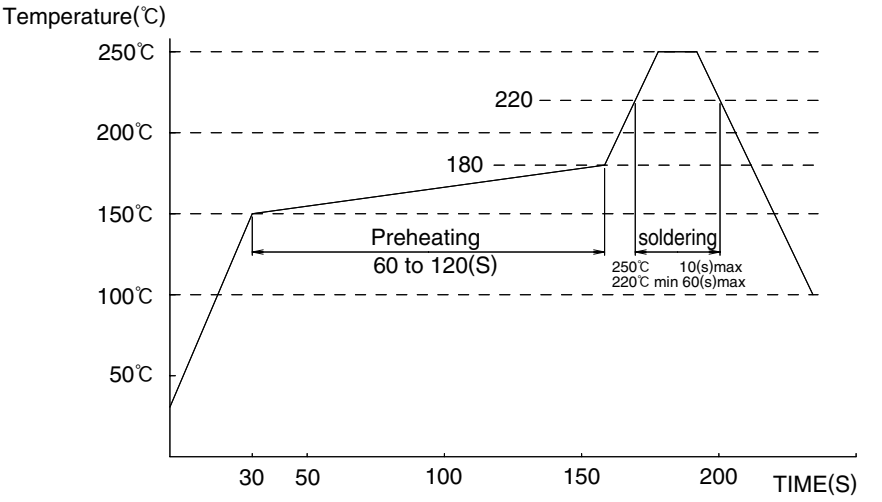


Unit: mm

Connector	Number of contacts	A	B	C	D	E	F	Remarks
DF19-14P-1V(56)	14	32	28.4	14.2	18.2	32.4	38.4	Vertical receptacle
DF19-20P-1H(56)	20	44	40.4	20.2	24.2	44.4	50.4	

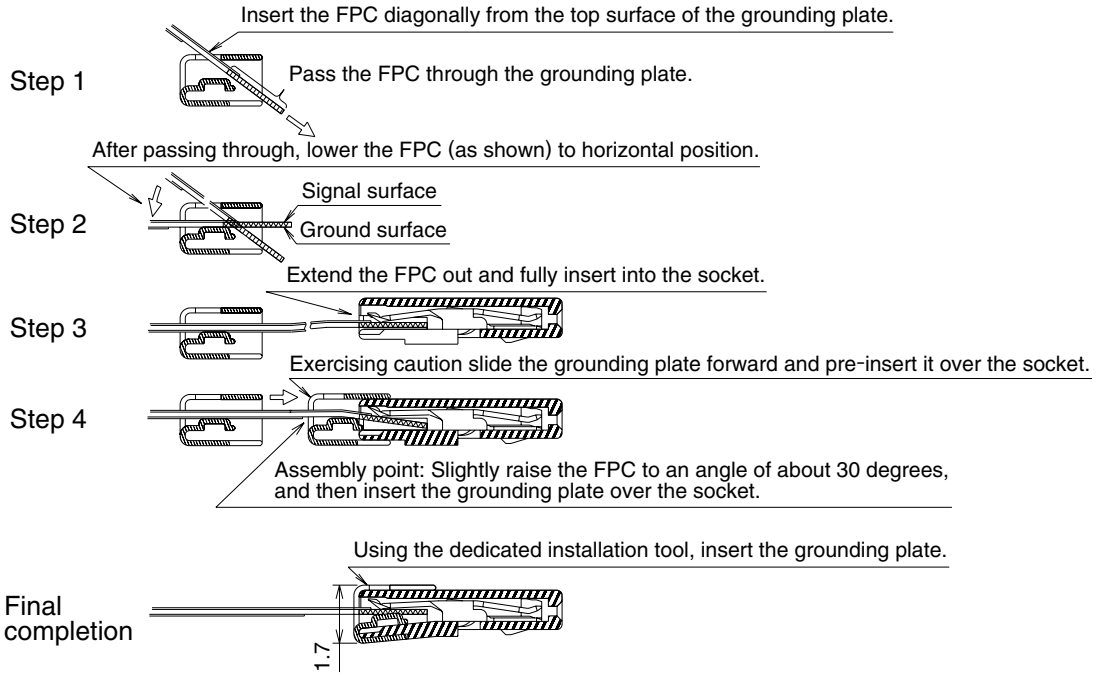
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◆Use recommendations

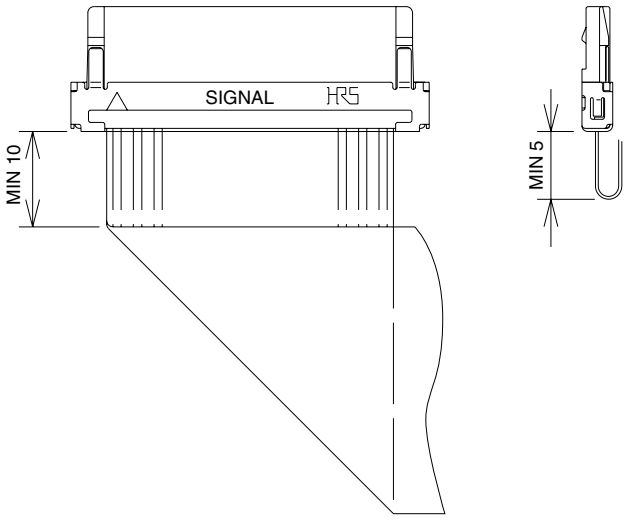
1. Recommendedtemperature profile	 Note 1: Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle. Note 2: The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals. Note 3: The product can be used without trouble though the surface of a grounding plate might discolor.
2. Manual soldering	Manual soldering: 290±10℃ for 3 seconds
3. 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 “Nylon Connector Use Handbook.”
7. Precautions	■ Do not twist when mating/un-mating.
8. Precautions	Refer to “Nylon Connector Use Handbook.”

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Plug (FPC Type) Termination Procedures (Dedicated Assembly Tooling is required.)



Note 1: The grounding plate and the plug are supplied as separate components.
Note 2: Dedicated assembly fixtures are required at each stage of the termination process. For detail, refer to the instruction manual supplied with the tools.
Note 3: Do not apply excessive forces to FPC (Bending or twisting) as it may introduce cracks in the copper foil (on the cover film edge).
Note 4: To protect the FPC, insertion and disconnection of the connectors should be performed parallel to the mating direction.
Note 5: Do not apply excessive tension to FPC.
Note 6: Refer to FPC manufacturer for bend radius and other specific recommendation. Distance should be allowed for the bending position, as illustrated below.



Note 7: Follow the instruction manuals for the termination and assembly fixtures and tools.

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