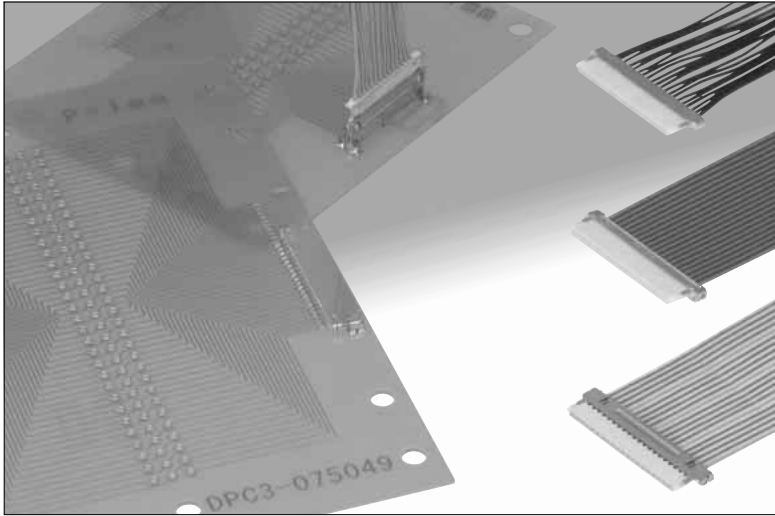


1 mm Contact Pitch, Board-to-Cable, Board-to-FPC, Board-to-Micro-coaxial Cable Connectors

DF19 Series



Overview

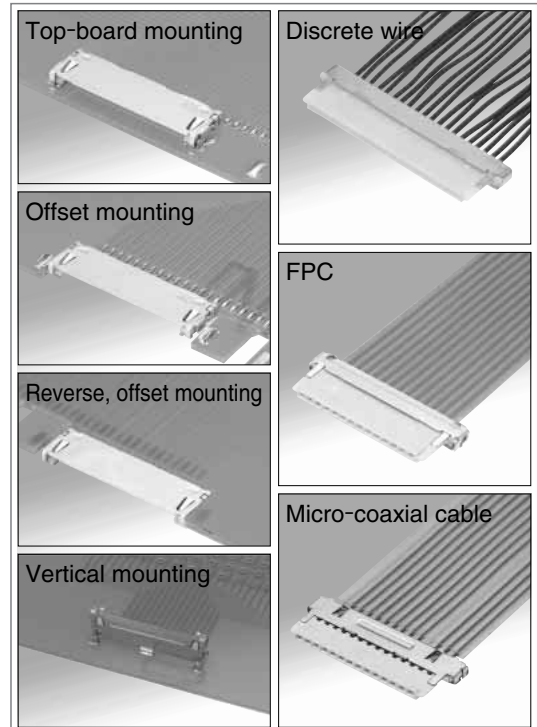
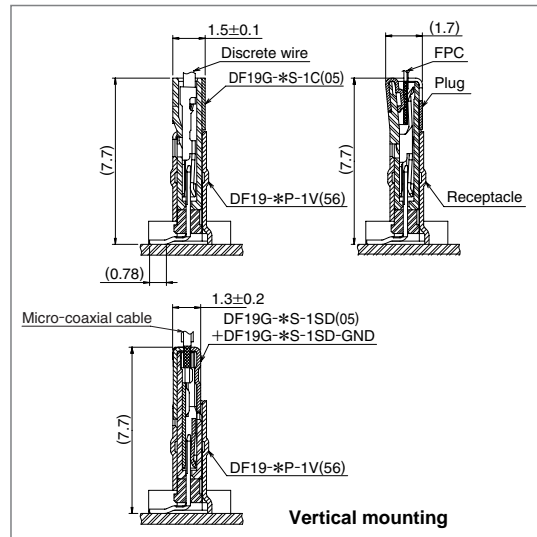
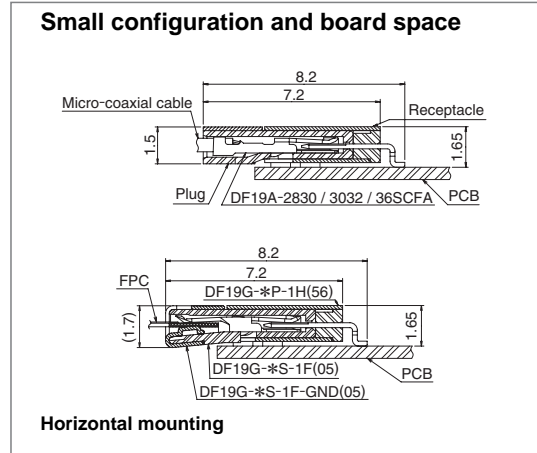
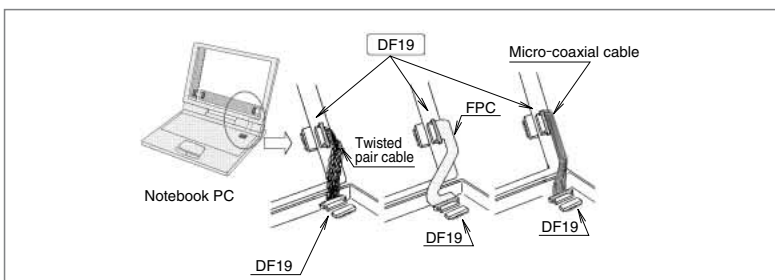
Industry and market accepted as “De facto” standard for LCD panel connections (panels under 12 inches).
 High-performance connectors for LVDS high-speed differential signals.

Features

- Small configuration and board space**
Thin design accepts discrete wire, thin micro-coaxial cable ($\phi 1.5\text{mm}$, $\phi 1.6\text{mm}$ max.) and FPC 1.7 mm maximum thick.
- Common use of receptacle**
The same receptacle will accept plugs terminated with discrete wire, FPC or micro-coaxial cable.
- Uniform external dimensions**
The plug assembly external dimensions remain the same when is terminated with discrete wire, FPC or micro-coaxial cable.
- Variety of mounting styles**
Device design engineers have a choice of mounting styles: top-board, offset, reverse mount offset and vertical.
- 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.



DF19 Series 1 mm Contact Pitch, Board-to-Cable, Board-to-FPC, Board-to-Micro-coaxial Cable Connectors

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°C to 85°C Note 1 Note 2 | Storage temperature range | -10°C to 60°C 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 $\phi 0.2 \pm 0.005$ |
| 5. Vibration | No electrical discontinuity of 1 μ s 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 \pm 2°C 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°C \rightarrow +5°C to +35°C \rightarrow +85°C \rightarrow +5°C to +35°C Time (Minutes): 30 \rightarrow 10 \rightarrow 30 \rightarrow 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°C, 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 | —— |

Ordering information

Connector

DF19 # - * P - 1 H
① ② ③ ④ ⑤ ⑥
DF19 # - * S - 1 F - GND
① ② ③ ④ ⑤ ⑥ ⑦

| | |
|---|---|
| ① Series Name : DF19 ② 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 | ③ Number of contacts : 8,14,20,30 (Note 1) ④ Connector type S : Plug P : Receptacle ⑤ Contact pitch : 1mm ⑥ Mounting type/Termination type H : Horizontal SMT V : Vertical SMT C : Socket-discrete wire (crimp contact) F : Plug – FPC SD : Plug – micro-coaxial cable ⑦ 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.

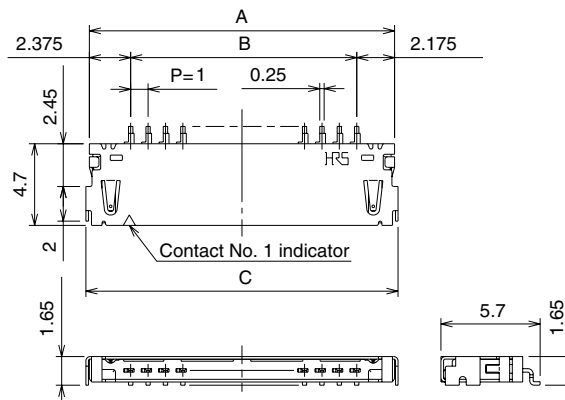
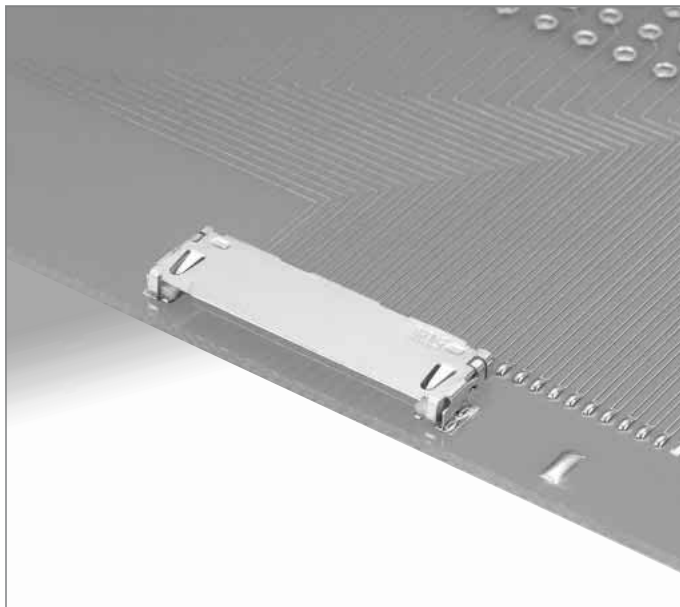
Contact

DF19A - 2830 SCF A ()**
① ② ③ ④

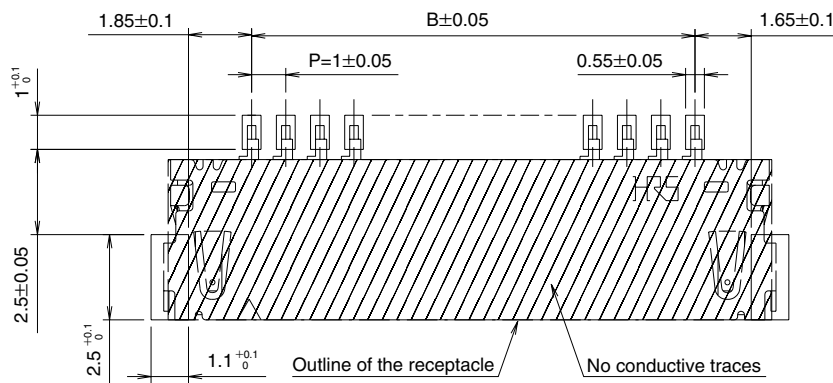
| | |
|--|---|
| ① Conductor size 2830 : AWG#28~#30 3032 : AWG#30~#32 36 : AWG#36 | ③ Plating A : Gold |
| ② Contact type SCF : Plug contact, tape and reel packaging | ④ Packaging Blank : 10,000 pieces / reel (41) : 20,000 pieces / reel |

DF19 Series 1 mm Contact Pitch, Board-to-Cable, Board-to-FPC, Board-to-Micro-coaxial Cable Connectors

■ Right angle receptacle, top-board mounting



◆ PCB mounting pattern



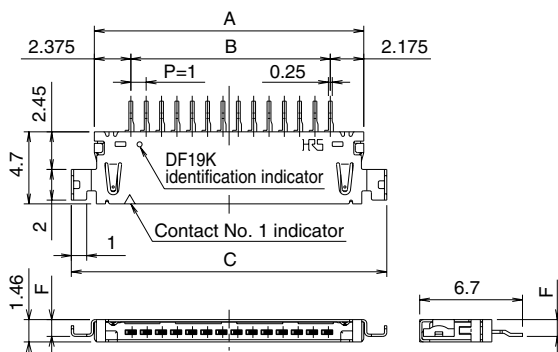
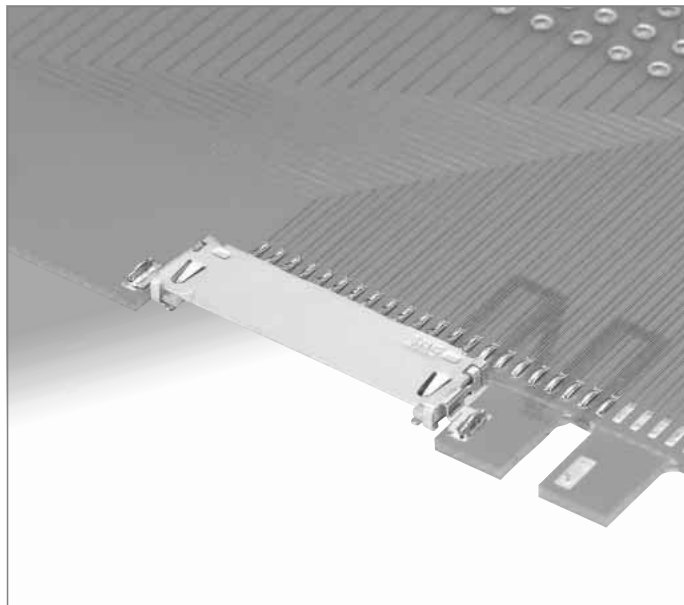
Specification
 (56): Tape & reel packaging
 (1,000 pieces per reel)

Unit: mm

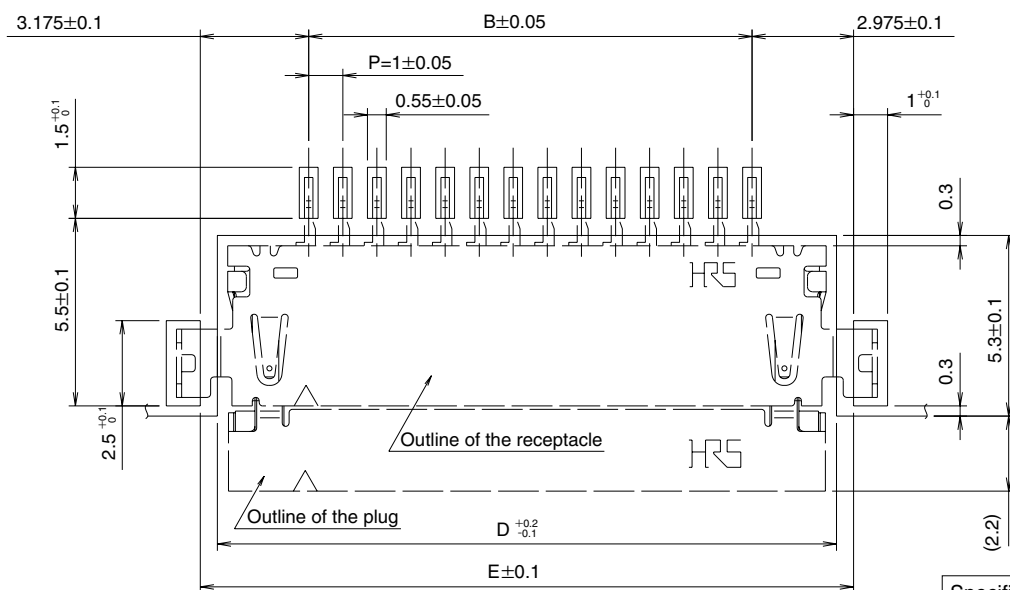
| Part number | CL No. | Number of contacts | A | B | C | Remarks | RoHS |
|-------------------|---------------|--------------------|-------|----|-------|-------------|------|
| DF19G- 8P-1H (56) | 685-0021-0-56 | 8 | 11.55 | 7 | 11.95 | 1.65mm high | YES |
| DF19G-14P-1H (56) | 685-0004-0-56 | 14 | 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.

Right angle receptacle, offset mounting



PCB mounting pattern



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

Unit: mm

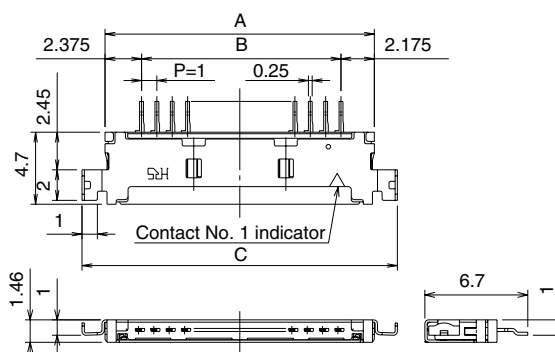
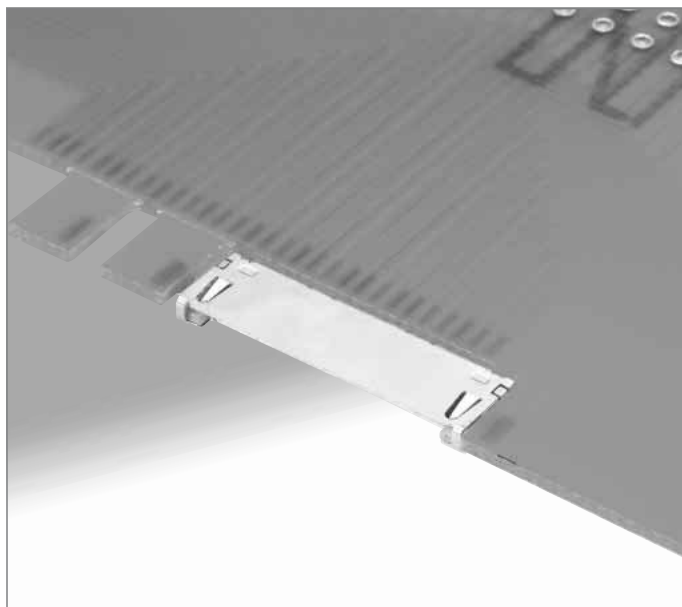
| Part number | CL No. | Number of contacts | A | B | C | D | E | F | Remarks | RoHS |
|-------------------|---------------|--------------------|-------|----|-------|-------|-------|-----|------------|------|
| DF19K-20P-1H (56) | 685-0008-1-56 | 20 | 23.55 | 19 | 26.55 | 24.15 | 25.15 | 0.1 | 1.0mm 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 | | |

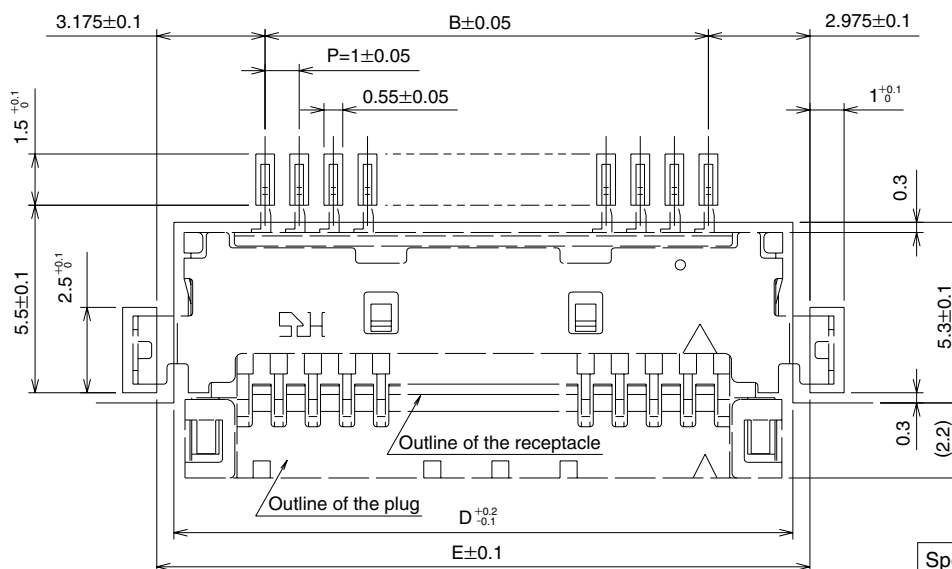
Note: Order by number of reels.

DF19 Series 1 mm Contact Pitch, Board-to-Cable, Board-to-PCB, Board-to-Micro-coaxial Cable Connectors

■ Right angle receptacle, reverse offset mounting



◆ PCB mounting pattern



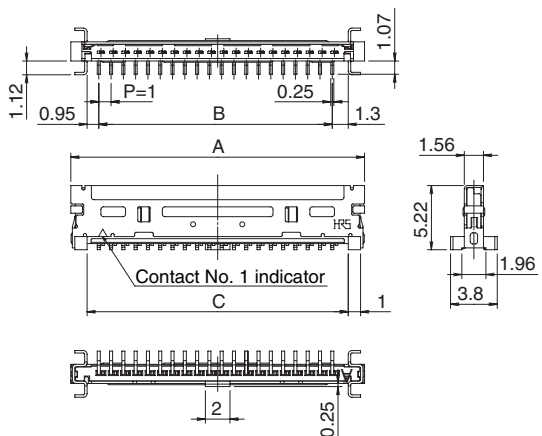
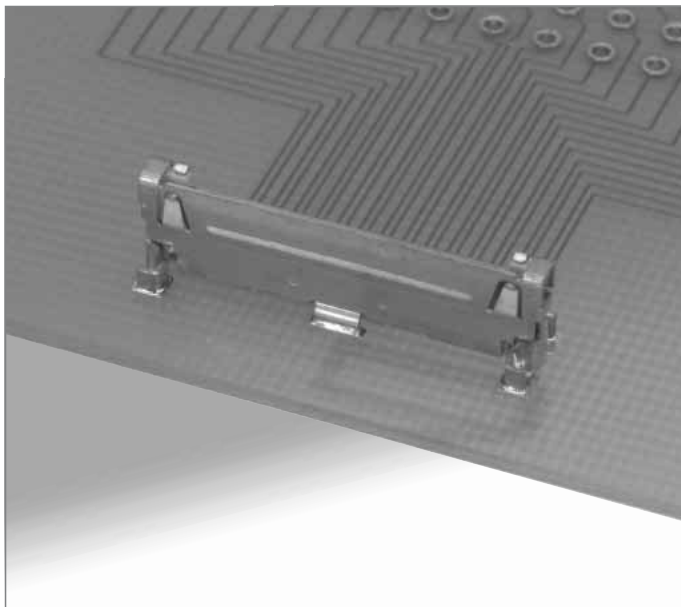
Specification
 (56): Tape & reel packaging
 (1,000 pieces per reel)

Unit: mm

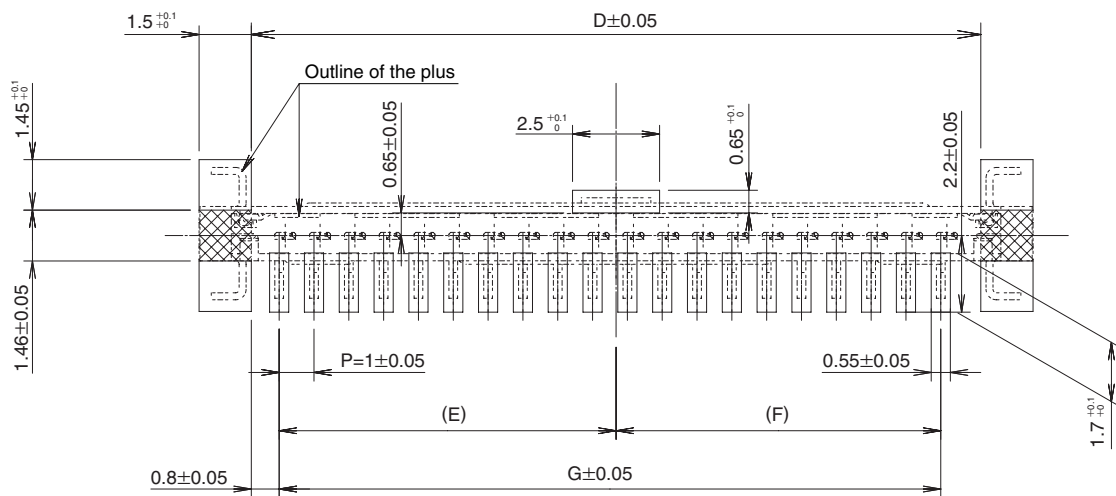
| Part number | CL No. | Number of contacts | A | B | C | D | E | Remarks | RoHS |
|--------------------|---------------|--------------------|-------|----|-------|-------|-------|------------|------|
| DF19KR-14P-1H (56) | 685-0024-8-56 | 14 | 17.55 | 13 | 20.55 | 18.15 | 19.15 | 1.0mm high | YES |
|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

Note: Order by number of reels.

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)

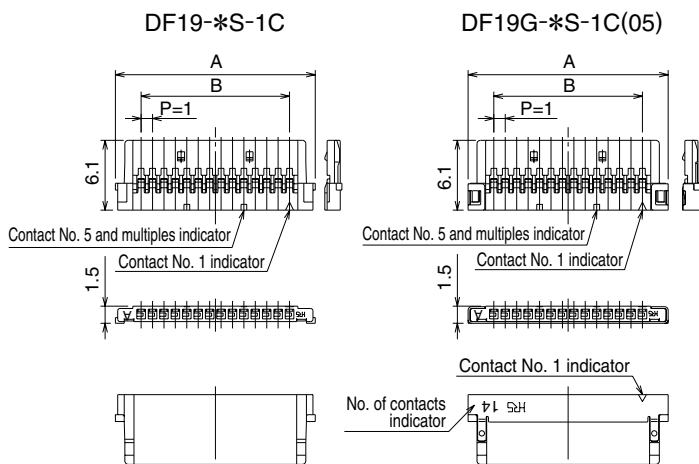
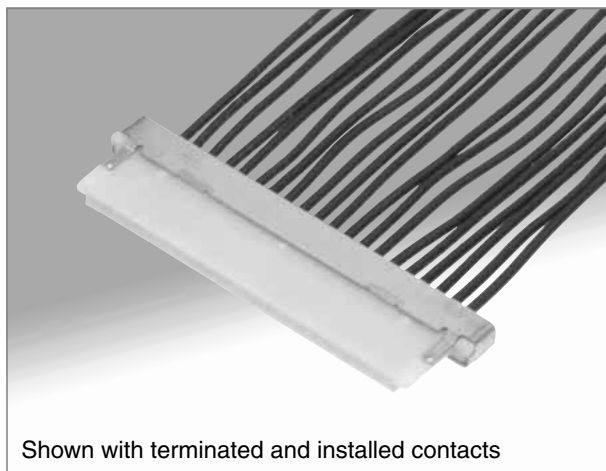
Unit: mm

| 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.

DF19 Series 1 mm Contact Pitch, Board-to-Cable, Board-to-PCB, Board-to-Micro-coaxial Cable Connectors

■ Plug (Discrete wire)



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)**

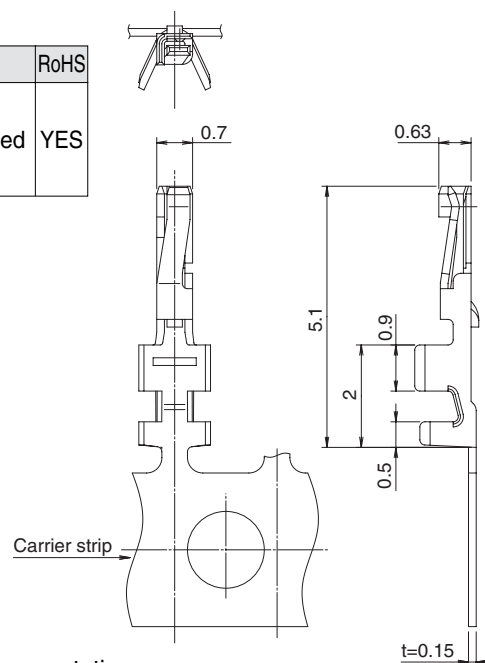
**● Strip length
 1.2mm to 1.9mm**

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

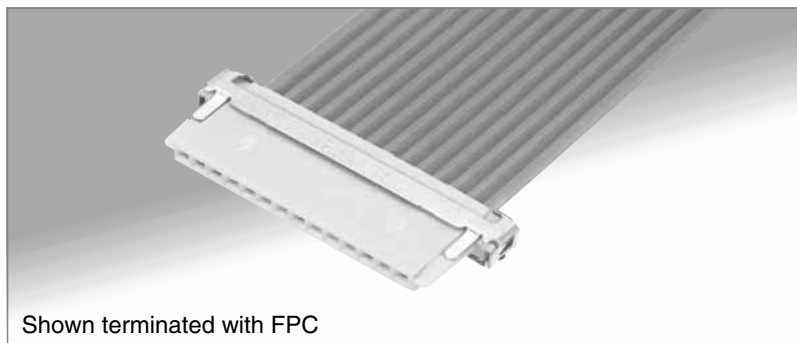
| Part | Part number | CL No. |
|------------|-------------|------------|
| Applicator | AP105-DF19S | 901-4571-3 |
| Press unit | CM-105 | 901-0005-4 |

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

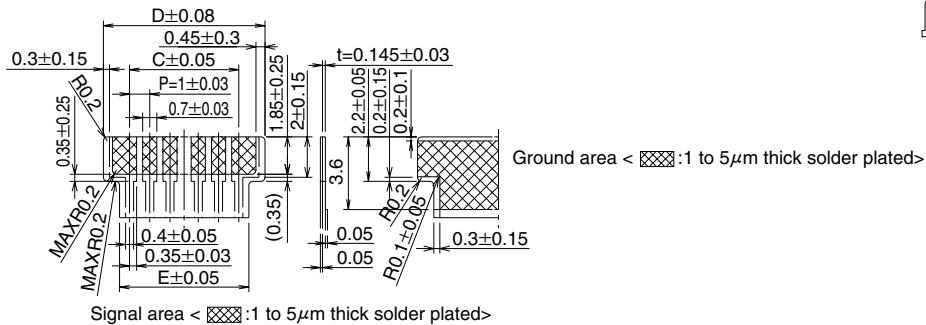
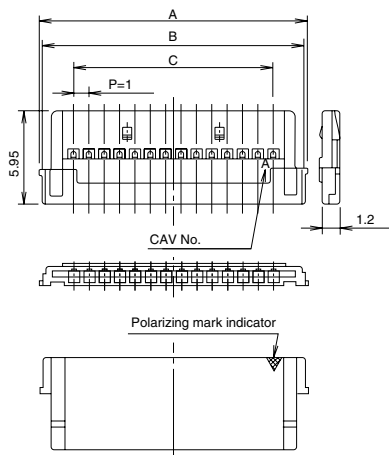


■ Plug (Flat Printed Circuit)

Note: Socket and grounding plate is required.



Shown terminated with FPC



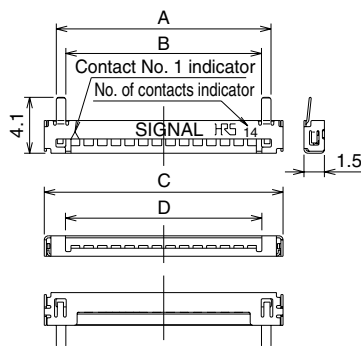
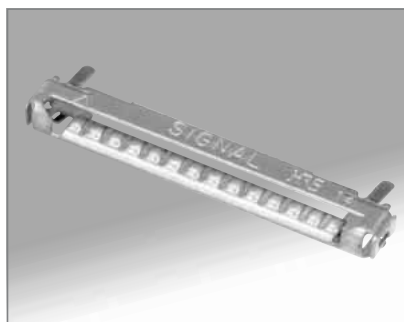
Unit: mm

| 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.

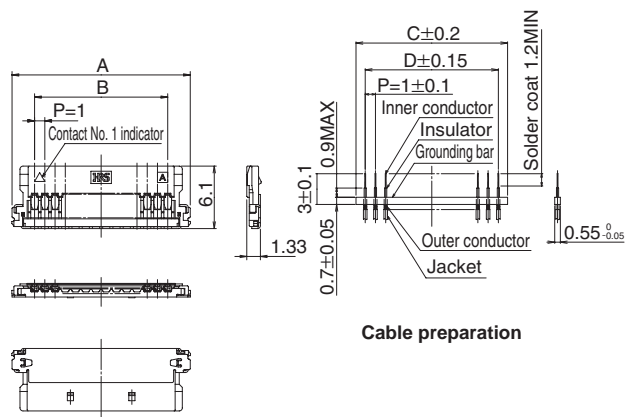
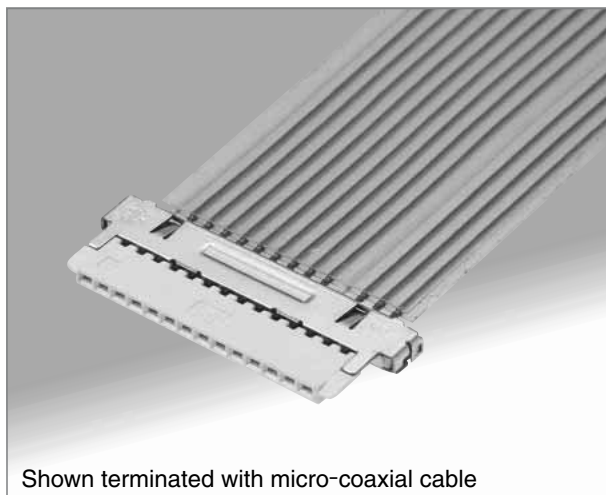
● Grounding plate installation tools

| 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.

DF19 Series 1 mm Contact Pitch, Board-to-Cable, Board-to-PPC, Board-to-Micro-coaxial Cable Connectors

■ Plug (Micro-coaxial cable)



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 | |

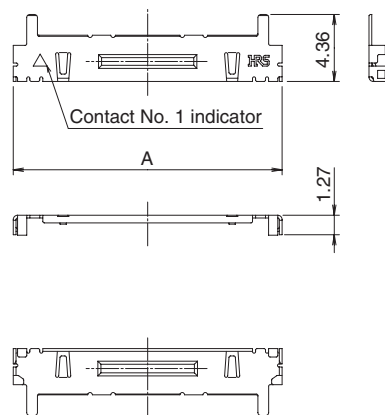
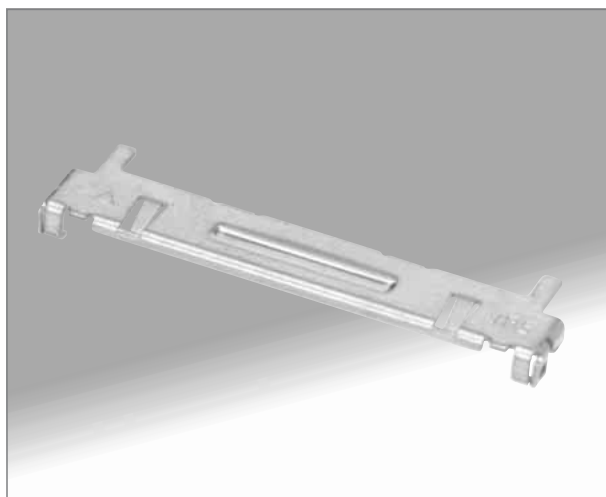
Specification
 (05): Bag packaging
 (100 pieces per bag)

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



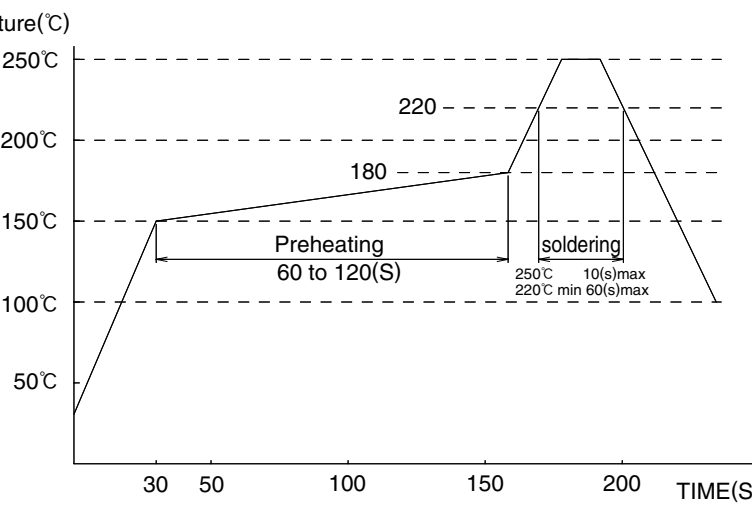
Specification
 Blank: Bag packaging
 (100 pieces per bag)

Unit: mm

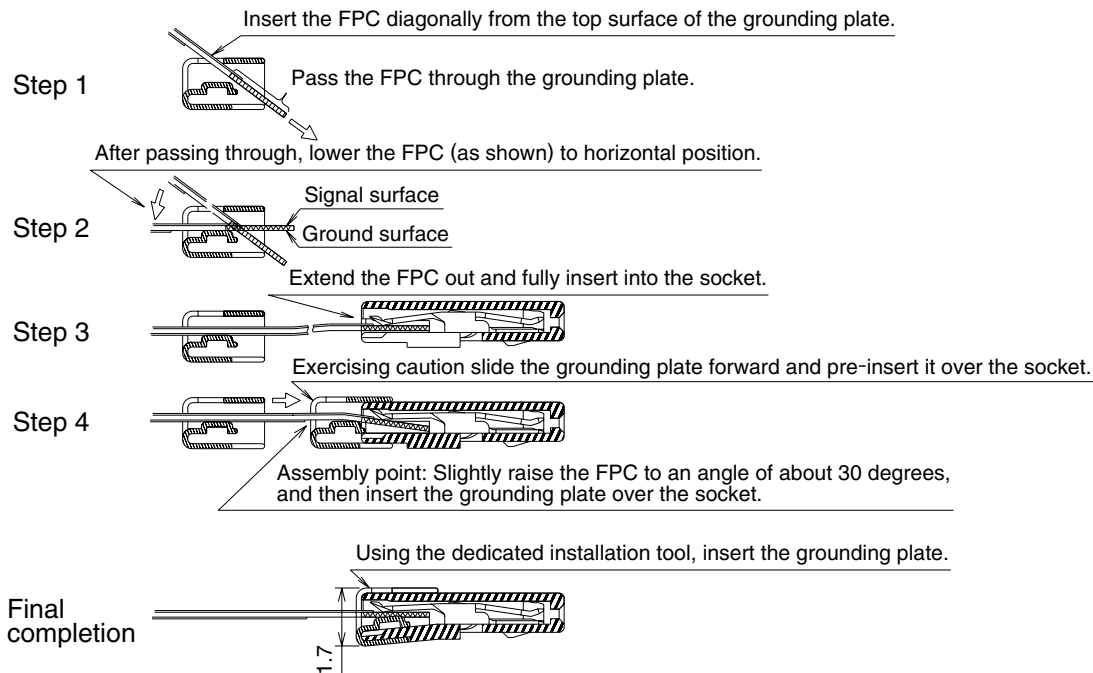
| Part number | CL No. | Number of contacts | A | RoHS |
|-------------------|------------|--------------------|------|------|
| DF19F-14S-1SD-GND | 685-0028-9 | 14 | 17.5 | YES |
| DF19G-20S-1SD-GND | 685-0027-6 | 20 | 23.5 | |

DF19 Series 1mm Contact Pitch, Board-to-Cable, Board-to-PPC, Board-to-Micro-coaxial Cable Connectors

◆ Use recommendations

| | |
|---|---|
| <p>1. Recommended temperature profile</p> |  <p>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.</p> <p>Note 2: The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.</p> <p>Note 3: The product can be used without trouble though the surface of a grounding plate might discolor.</p> |
| <p>2. Manual soldering</p> | <p>Manual soldering: 290±10°C for 3 seconds</p> |
| <p>3. Screen thickness</p> | <p>0.15mm</p> |
| <p>4. Board warpage</p> | <p>Maximum of 0.03mm at the connector center, with both ends of the connector as reference points.</p> |
| <p>5. Cleaning conditions</p> | <p>Refer to “Nylon Connector Use Handbook.”</p> |
| <p>6. Termination conditions</p> | <p>Refer to “Nylon Connector Use Handbook.”</p> |
| <p>7. Precautions</p> | <p>■ Do not twist when mating/un-mating.</p> |
| <p>8. Precautions</p> | <p>Refer to “Nylon Connector Use Handbook.”</p> |

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



Note 1: The grounding plate and the plug are supplied as separate components.

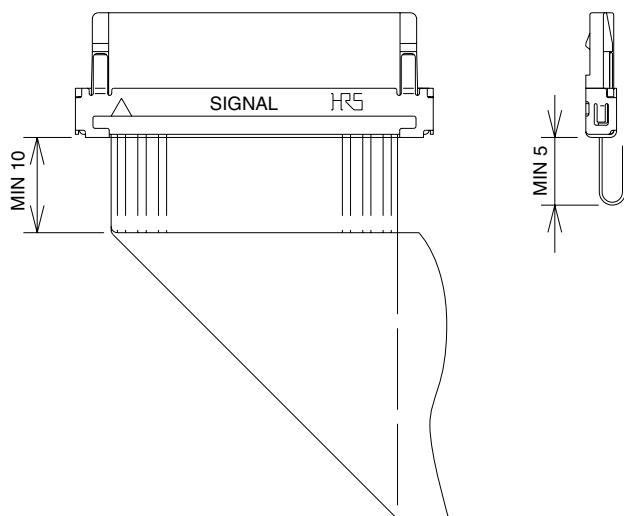
Note 2: Dedicated assembly fixtures are required at each stage of the termination process. For detail, refer to the instruction manual supplied with the tools.

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.