

DF51 Series

# 2mm Pitch, Positive Lock, Wire-to-Board Connector (UL, C-UL Standard Certified Product)



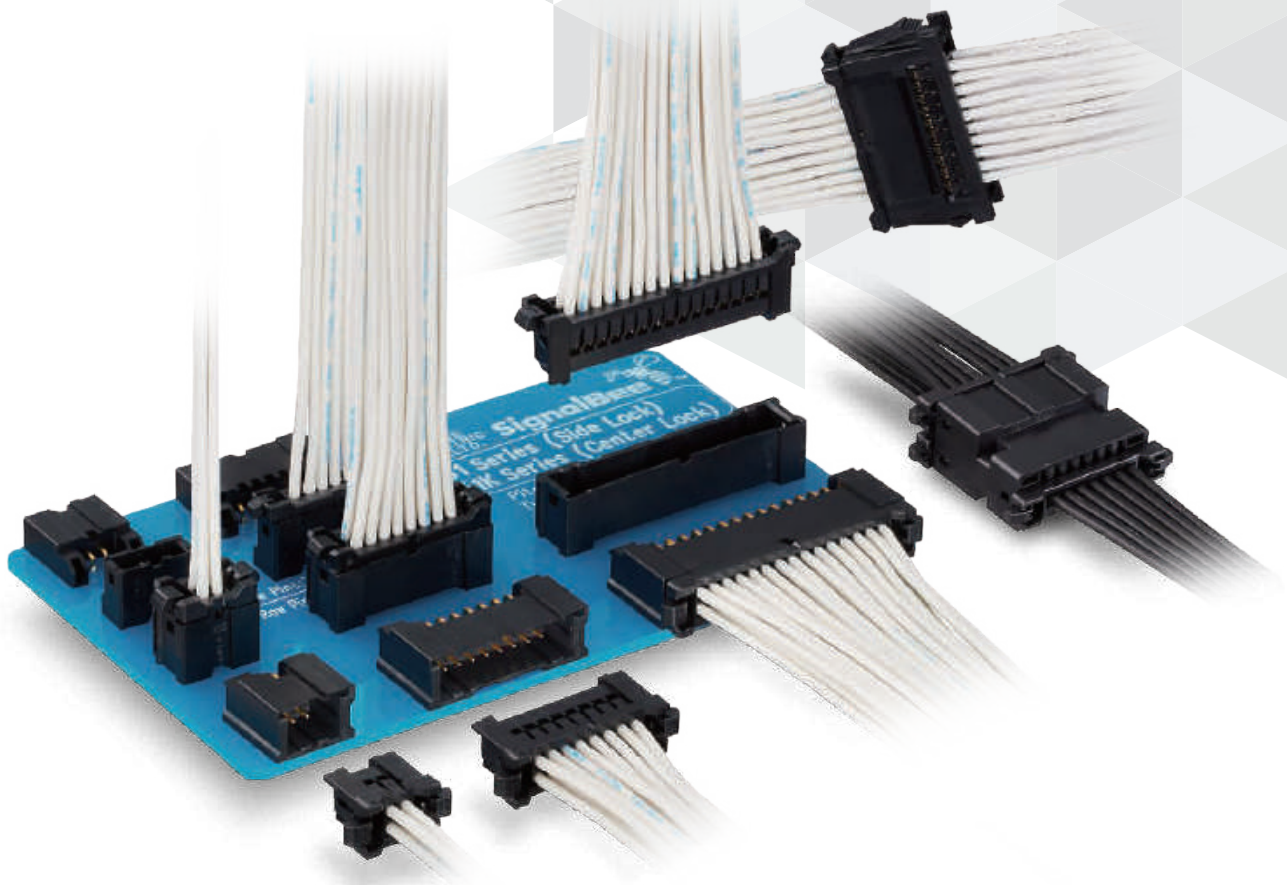
Positive-Lock



P=2.0 mm



Wide Variation



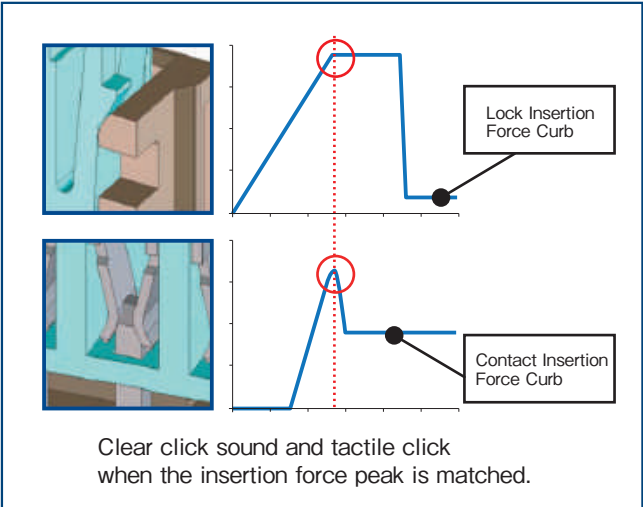
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# Features

## 1. Positive lock provides clear tactile click and secures reliable connection.

The lock delivers a clear tactile click during peak insertion force, preventing incomplete mating.



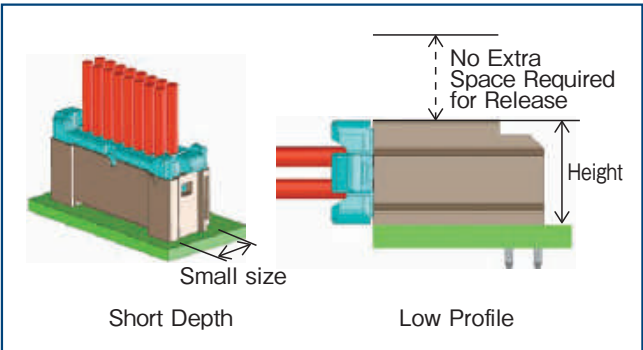
Secure Mating

## 2. Wide variation

Each of the straight/right angle/in-line configurations are available in single-row and dual-row for flexible design. Gold and Tin plating options support various application needs.

## 3. Secure Side-locking design

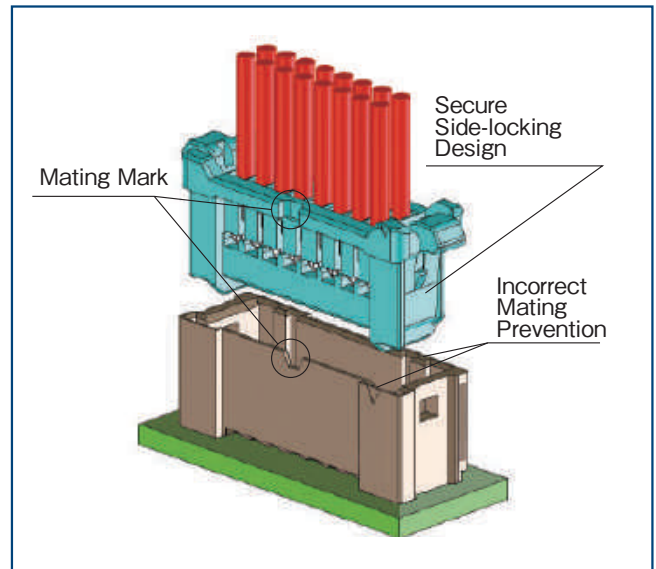
The straight type with short depth and the low profile right angle type are well suited for compact/thin equipment.



Reduces overall system size.

## 4. Prevents incorrect mating

Visual and mechanical polarized features will prevent reverse mating and incorrect mating between the different number of positions.

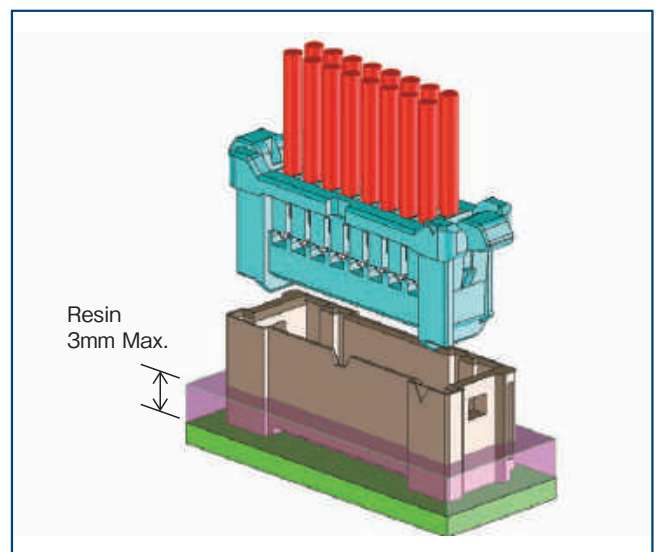


## 5. Uses the same contacts and crimping tools as DF11 Series

Wide applicable cable range: 22 to 30 AWG.

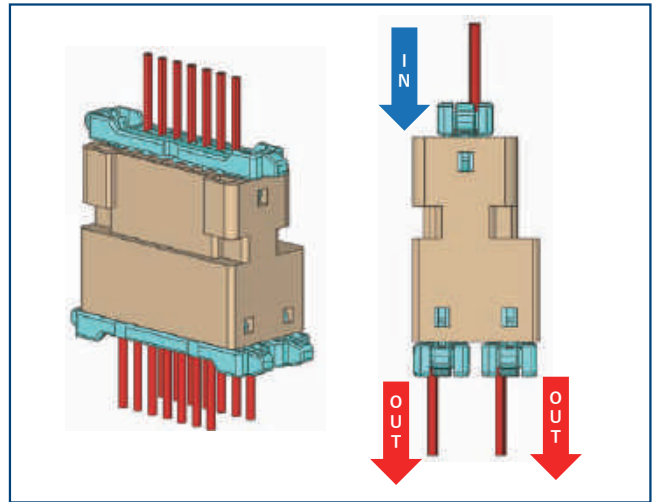
## 6. Suitable for potting

The straight header can be potted up to 3mm.



## 7. Branch Adapter

Branch types are also available.



## 8. UL, C-UL Certified

### Applications

Office automation, Industrial machinery, Industrial robots, Amusement equipment, Medical equipment.

## Product Specifications

| Ratings       | Rated Current (Note 1) | Pos.     | 22 AWG     | 24 AWG | 26 AWG | 28 AWG                             | 30 AWG | Operating Temperature (Note 2) | -55 to +105°C                   |                                   |
|---------------|------------------------|----------|------------|--------|--------|------------------------------------|--------|--------------------------------|---------------------------------|-----------------------------------|
|               |                        |          | Single-Row | 2      | 3A     | 2.5A                               | 2A     | 1A                             | 0.5A                            | Operating Humidity Range (Note 3) |
|               |                        | 3-7      |            | 2A     | 2A     | Storage Temperature Range (Note 4) |        |                                |                                 | -10 to +60°C                      |
|               |                        | Dual-Row | 4          | 3A     | 2.5A   | 1.5A                               |        |                                | Storage Humidity Range (Note 4) | 40 to 70%                         |
|               | 6-30                   |          | 2A         | 2A     |        |                                    |        |                                |                                 |                                   |
| Rated Voltage | 250V AC/DC             |          |            |        |        |                                    |        |                                |                                 |                                   |

| UL, C-UL<br>Safety Standard Approved Specification | Rated Current (Note 1) | 22 AWG    | 24 to 28 AWG | 30 AWG |
|--|------------------------|-----------|--------------|--------|
|  |                        | 2A        | 1A           | 0.5A   |
|  | Rated Voltage          | 30V AC/DC |              |        |

UL/C-UL File No. and Recognition No. UL, C-UL: E52653

Note 1 : The rated current depends on the wire size used.

Note 2 : Includes temperature rise due to current flow.

Note 3 : Use without condensation on parts.

Note 4 : The storage condition refers to long-term storage of the product on the shelf before assembly. The operating temperature and humidity are applicable after assembly when the product is not energized and during transportation.

Note 5 : For a branch adapter, the current is the maximum value before branching.

| Item                   | Specification  | Condition  |
|------------------------|--|--|
| Insulation Resistance  | 1,000M $\Omega$ Min.   | Measured at 500V DC  |
| Withstand Voltage      | No flashover or breakdown  | 650V AC is applied for 1 min.  |
| Contact Resistance     | 30m $\Omega$ Max.  | Measured at 1mA (DC or 1000Hz), 20mV Max.  |
| Vibration Resistance   | No electrical discontinuity of 1 $\mu$ s or greater                                    | Frequency 10 to 55 Hz, half amplitude 0.75mm, 10 times in each of the 3 directions                               |
| Shock Resistance       | No electrical discontinuity of 1 $\mu$ s or greater                                    | Accelerated velocity : 490 m/s <sup>2</sup> for 11ms, half-sine wave in 3 directions, 3 times for each direction |
| Moisture-resistance    | Contact resistance : 30m $\Omega$ Max.<br>Insulation resistance : 500M $\Omega$ Min.   | Temperature : 40 $\pm$ 2°C ; humidity: 90 to 95%, left as it is for 96 hours                                     |
| Temperature cycles     | Contact resistance : 30m $\Omega$ Max.<br>Insulation resistance : 1,000M $\Omega$ Min. | -55°C :30 minutes $\rightarrow$ 105°C : 30 minutes<br>5 cycles   |
| Durability             | Contact resistance : 30m $\Omega$ Max.   | Tin plated : 30 mating cycles,<br>Gold plated: 50 mating cycles  |
| Solder heat resistance | The resin parts should withstand the temperature and resist melting.                   | Flow : 260°C , 5 sec<br>Hand soldering : temperature of soldering iron at 270°C for 3 seconds                    |

## Materials / Finish

| Product              | Part      | Material               | Finish                    | Specification |
|----------------------|-----------|------------------------|---------------------------|---------------|
| Header               | Insulator | PBT (glass-reinforced) | Black                     | UL94V-0       |
|                      | Contact   | Brass                  | Tin Plated or Gold Plated | -             |
| Crimp Socket         | Insulator | PBT (glass-reinforced) | Black                     | UL94V-0       |
| Socket Contact       | Contact   | Phosphor Copper        | Tin Plated or Gold Plated | -             |
| In-line Plug         | Insulator | PBT (glass-reinforced) | Black                     | UL94V-0       |
| In-line Plug Contact | Contact   | Phosphor Copper        | Tin Plated or Gold Plated | -             |
| Adapter              | Insulator | PBT (glass-reinforced) | Black                     | UL94V-0       |
|                      | Contact   | Brass                  | Gold Plated               | -             |

## Product Number Structure

Refer to the chart below when determining the product specifications from the product number. Please select from the product numbers listed in this catalog when placing orders.

### Connector

**DF51 # - # P - 2 DSA**

① ② ③ ④ ⑤ ⑥

### Crimp Contact

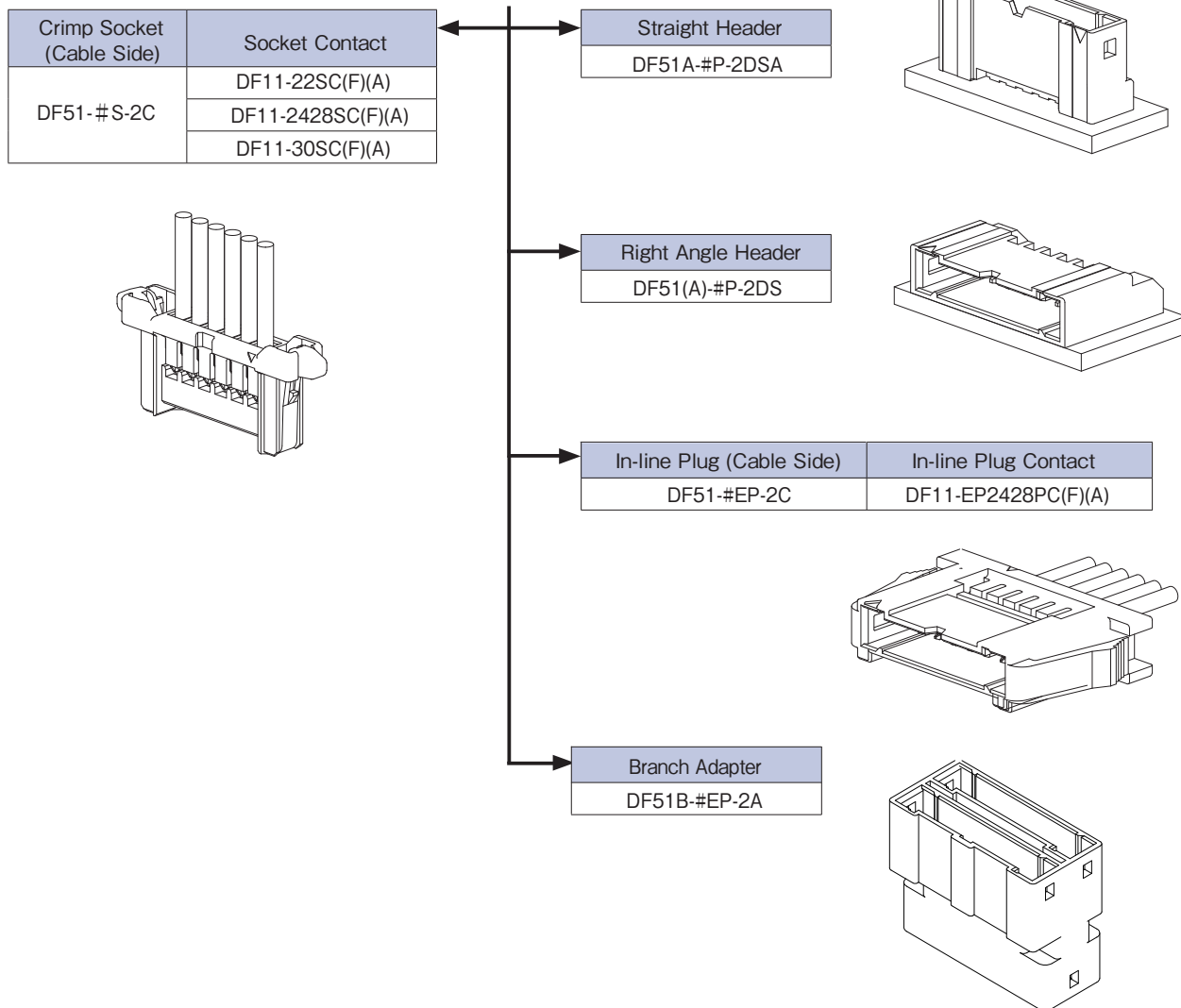
**DF11 - EP 2428 PCF A**

① ⑦ ⑧ ⑨ ⑩

|                       |   |                          |  |
|-----------------------|---|--------------------------|--|
| ① Series name         | DF51  | ⑥ Housing Type           | DSA : Straight Header<br>DS : Right Angle Header<br>C : Crimp Socket<br>A : Adapter  |
| ② Form Type           | Blank : Guide-boss Type<br>A : Without Guide-boss<br>B : Branch Type  | ⑦ Contact Type           | EP : In-line Plug  |
| ③ Number of Positions | Single-row : 2 to 6<br>Dual-row : 4 to 30<br>Branch Adapter : 2 to 4, 6, 7  | ⑧ Applicable Conductor   | 22 : 22 AWG<br>2428 : 24 to 28 AWG<br>30 : 30 AWG  |
| ④ Connector Type      | P : Single-row Pin Header<br>S : Single-row Crimp Socket<br>DP : Dual-row Pin Header<br>DS : Dual-row Crimp Socket<br>EP : Single-row In-line Plug<br>DEP : Dual-row In-line Plug | ⑨ Packaging Style        | SCF : Socket Contacts/Reel<br>SC : Socket Contacts/Bag<br>PCF : In-line Plug Contacts/Reel<br>PC : In-line Plug Contacts/Bag |
| ⑤ Contact Pitch       | 2mm   | ⑩ Plating Specifications | Blank : Tin Plated<br>A : Gold Plated  |

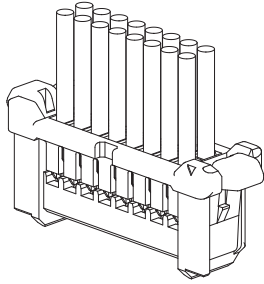
## Diagram of Connector Mating Combinations

### Single-row

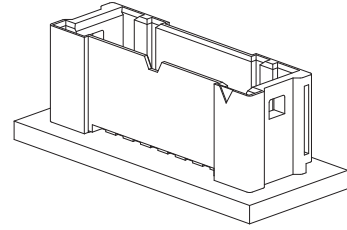


## Dual-row

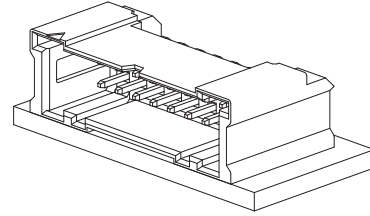
| Crimp Socket (Cable Side) | Socket Contact    |
|---------------------------|-------------------|
| DF51-#DS-2C               | DF11-22SC(F)(A)   |
|                           | DF11-2428SC(F)(A) |
|                           | DF11-30SC(F)(A)   |



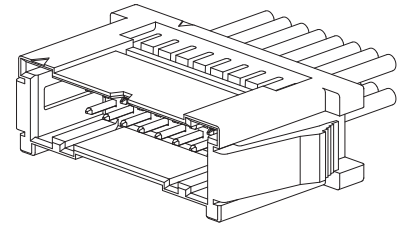
| Straight Header |
|-----------------|
| DF51A-#DP-2DSA  |



| Right Angle Header |
|--------------------|
| DF51(A)-#DP-2DS    |

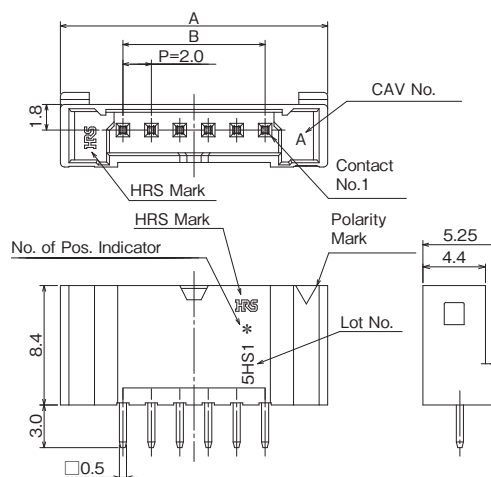


| In-line Plug (Cable Side) | In-line Plug Contact |
|---------------------------|----------------------|
| DF51-#DEP-2C              | DF11-EP2428PC(F)(A)  |

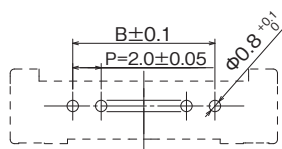




## Single-row Straight Header



Recommended PCB Layout (t=1.6mm)



Unit : mm

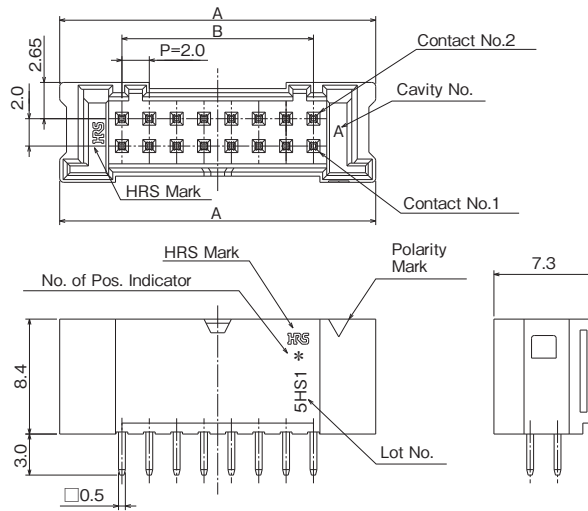
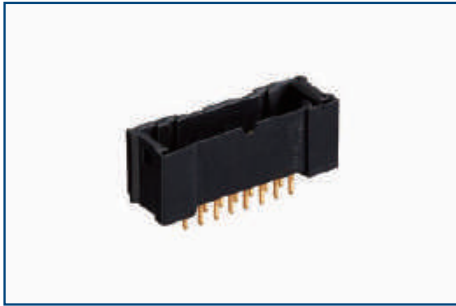
| Part No.          | HRS No.          | No. of Pos. | A    | B    | Purchase Unit     |
|-------------------|------------------|-------------|------|------|-------------------|
| DF51A-2P-2DSA(##) | CL0543-5105-0-## | 2           | 10.8 | 2.0  | 100pcs<br>per bag |
| DF51A-3P-2DSA(##) | CL0543-5106-0-## | 3           | 12.8 | 4.0  |                   |
| DF51A-4P-2DSA(##) | CL0543-5107-0-## | 4           | 14.8 | 6.0  |                   |
| DF51A-5P-2DSA(##) | CL0543-5108-0-## | 5           | 16.8 | 8.0  |                   |
| DF51A-6P-2DSA(##) | CL0543-5109-0-## | 6           | 18.8 | 10.0 |                   |

[Specification number] - ##、(##)

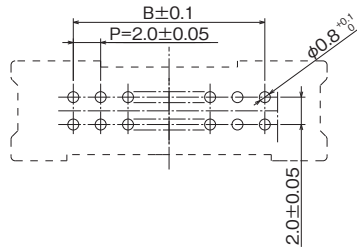
Blank : Tin plated

(01) : Gold plated

## Dual-row Straight Header



Recommended PCB Layout (t=1.6mm)



Unit : mm

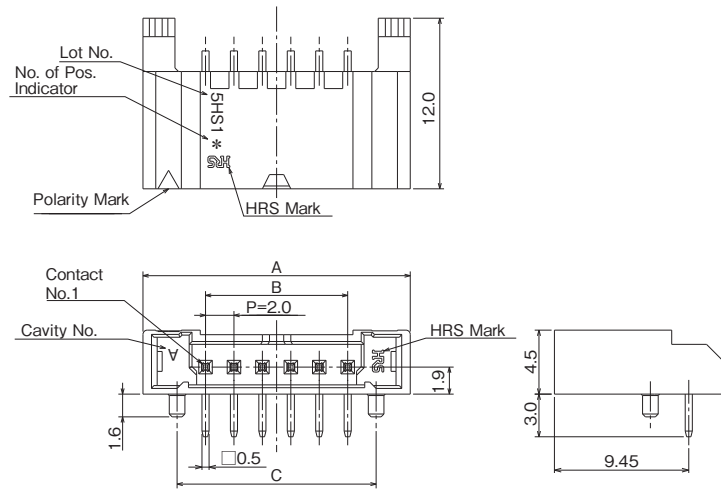
| Part No.            | HRS No.          | No. of Pos. | A    | B    | Purchase Unit  |
|---------------------|------------------|-------------|------|------|----------------|
| DF51A-4DP-2DSA(##)  | CL0543-5015-0-## | 4           | 11.1 | 2.0  | 100pcs per bag |
| DF51A-6DP-2DSA(##)  | CL0543-5044-0-## | 6           | 13.1 | 4.0  |                |
| DF51A-8DP-2DSA(##)  | CL0543-5045-0-## | 8           | 15.1 | 6.0  |                |
| DF51A-10DP-2DSA(##) | CL0543-5046-0-## | 10          | 17.1 | 8.0  |                |
| DF51A-12DP-2DSA(##) | CL0543-5047-0-## | 12          | 19.1 | 10.0 |                |
| DF51A-14DP-2DSA(##) | CL0543-5048-0-## | 14          | 21.1 | 12.0 |                |
| DF51A-16DP-2DSA(##) | CL0543-5049-0-## | 16          | 23.1 | 14.0 |                |
| DF51A-18DP-2DSA(##) | CL0543-5050-0-## | 18          | 25.1 | 16.0 |                |
| DF51A-20DP-2DSA(##) | CL0543-5051-0-## | 20          | 27.1 | 18.0 |                |
| DF51A-22DP-2DSA(##) | CL0543-5052-0-## | 22          | 29.1 | 20.0 |                |
| DF51A-24DP-2DSA(##) | CL0543-5053-0-## | 24          | 31.1 | 22.0 |                |
| DF51A-26DP-2DSA(##) | CL0543-5054-0-## | 26          | 33.1 | 24.0 |                |
| DF51A-28DP-2DSA(##) | CL0543-5055-0-## | 28          | 35.1 | 26.0 |                |
| DF51A-30DP-2DSA(##) | CL0543-5056-0-## | 30          | 37.1 | 28.0 |                |

[Specification number] - ##, (##)

Blank : Tin plated

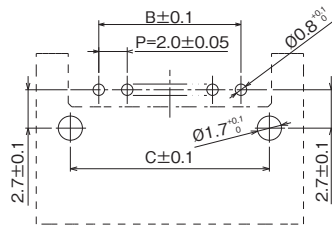
(01) : Gold plated

## Single-row Right Angle Header



Above drawing is guide-boss type.

### Recommended PCB Layout (t=1.6mm)

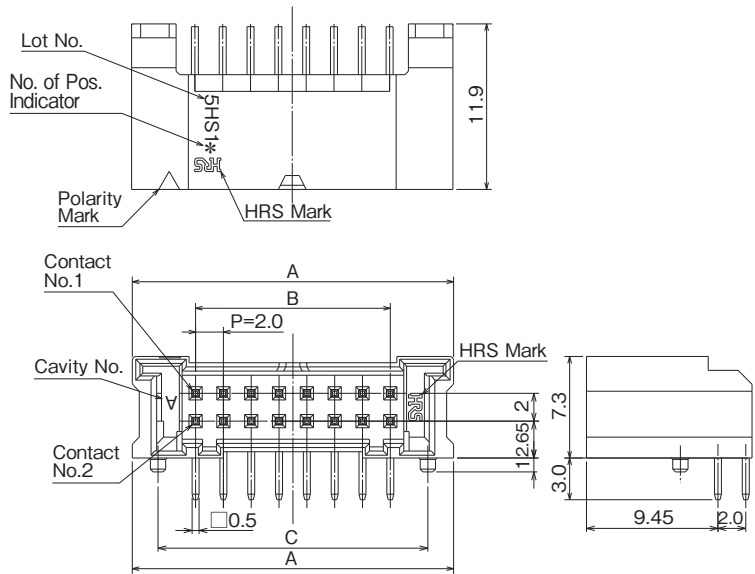


Unit : mm

| Part No.         | HRS No.          | Guide-boss   | No. of Pos. | A    | B    | C   | Purchase Unit   |
|------------------|------------------|--------------|-------------|------|------|-----|-----------------|
| DF51-2P-2DS(##)  | CL0543-5110-0-## | With boss    | 2           | 10.8 | 2.0  | 6.0 | 243pcs per tray |
| DF51-3P-2DS(##)  | CL0543-5111-0-## | With boss    | 3           | 12.8 | 4.0  | 8.0 | 207pcs per tray |
| DF51A-4P-2DS(##) | CL0543-5117-0-## | Without boss | 4           | 14.8 | 6.0  | -   | 171pcs per tray |
| DF51A-5P-2DS(##) | CL0543-5118-0-## | Without boss | 5           | 16.8 | 8.0  | -   | 153pcs per tray |
| DF51A-6P-2DS(##) | CL0543-5119-0-## | Without boss | 6           | 18.8 | 10.0 | -   | 135pcs per tray |

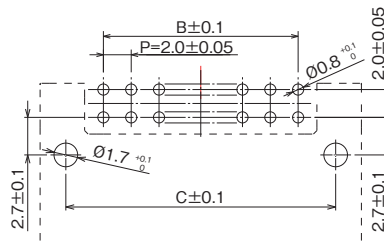
[Specification number] - ##, (##)  
 (20) : Tin plated, tray packaging  
 (50) : Gold plated, tray packaging

## Dual-row Right Angle Header



Above drawing is guide-boss type.

### Recommended PCB Layout (t=1.6mm)

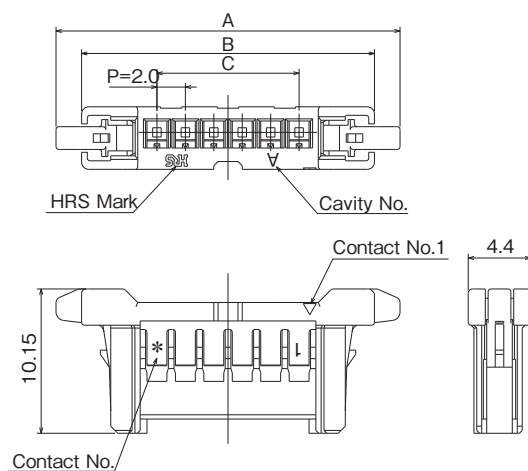


Unit : mm

| Part No.           | HRS No.          | Guide-boss   | No. of Pos. | A    | B    | C   | Purchase Unit   |
|--------------------|------------------|--------------|-------------|------|------|-----|-----------------|
| DF51-4DP-2DS(##)   | CL0543-5016-7-## | With boss    | 4           | 11.1 | 2.0  | 7.4 | 234pcs per tray |
| DF51-6DP-2DS(##)   | CL0543-5017-0-## | With boss    | 6           | 13.1 | 4.0  | 9.4 | 198pcs per tray |
| DF51A-8DP-2DS(##)  | CL0543-5059-0-## | Without boss | 8           | 15.1 | 6.0  | -   | 171pcs per tray |
| DF51A-10DP-2DS(##) | CL0543-5060-0-## | Without boss | 10          | 17.1 | 8.0  | -   | 153pcs per tray |
| DF51A-12DP-2DS(##) | CL0543-5061-0-## | Without boss | 12          | 19.1 | 10.0 | -   | 135pcs per tray |
| DF51A-14DP-2DS(##) | CL0543-5062-0-## | Without boss | 14          | 21.1 | 12.0 | -   | 126pcs per tray |
| DF51A-16DP-2DS(##) | CL0543-5063-0-## | Without boss | 16          | 23.1 | 14.0 | -   | 108pcs per tray |
| DF51A-18DP-2DS(##) | CL0543-5064-0-## | Without boss | 18          | 25.1 | 16.0 | -   | 99pcs per tray  |
| DF51A-20DP-2DS(##) | CL0543-5065-0-## | Without boss | 20          | 27.1 | 18.0 | -   | 90pcs per tray  |
| DF51A-22DP-2DS(##) | CL0543-5066-0-## | Without boss | 22          | 29.1 | 20.0 | -   | 90pcs per tray  |
| DF51A-24DP-2DS(##) | CL0543-5067-0-## | Without boss | 24          | 31.1 | 22.0 | -   | 81pcs per tray  |
| DF51A-26DP-2DS(##) | CL0543-5068-0-## | Without boss | 26          | 33.1 | 24.0 | -   | 72pcs per tray  |
| DF51A-28DP-2DS(##) | CL0543-5069-0-## | Without boss | 28          | 35.1 | 26.0 | -   | 72pcs per tray  |
| DF51A-30DP-2DS(##) | CL0543-5070-0-## | Without boss | 30          | 37.1 | 28.0 | -   | 72pcs per tray  |

[Specification number] - ##, (##)  
 (20) : Tin plated, tray packaging  
 (50) : Gold plated, tray packaging

## Single-row Crimp Socket

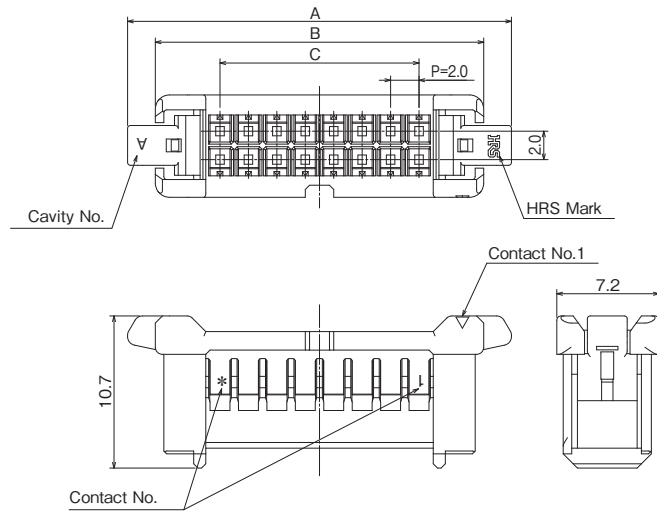


Unit : mm

| Part No.   | HRS No.          | No. of Pos. | A    | B    | C    | Purchase Unit     |
|------------|------------------|-------------|------|------|------|-------------------|
| DF51-2S-2C | CL0543-5120-0-00 | 2           | 16.2 | 12.6 | 2.0  | 100pcs<br>per bag |
| DF51-3S-2C | CL0543-5121-0-00 | 3           | 18.2 | 14.6 | 4.0  |                   |
| DF51-4S-2C | CL0543-5122-0-00 | 4           | 20.2 | 16.6 | 6.0  |                   |
| DF51-5S-2C | CL0543-5123-0-00 | 5           | 22.2 | 18.6 | 8.0  |                   |
| DF51-6S-2C | CL0543-5124-0-00 | 6           | 24.2 | 20.6 | 10.0 |                   |
| DF51-7S-2C | CL0543-5131-0-00 | 7           | 26.2 | 22.6 | 12.0 |                   |

Note : The 7 pos. mating partner is only a branch adapter.

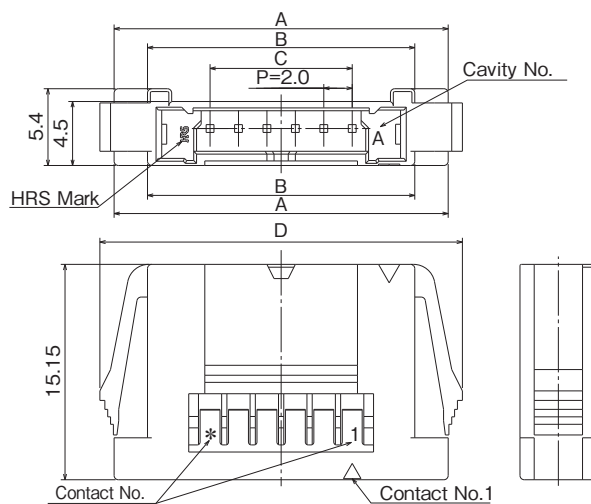
## Dual-row Crimp Socket



Unit : mm

| Part No.     | HRS No.          | No. of Pos. | A    | B    | C    | Purchase Unit     |
|--------------|------------------|-------------|------|------|------|-------------------|
| DF51-4DS-2C  | CL0543-5030-8-00 | 4           | 15.0 | 11.1 | 2.0  | 100pcs<br>per bag |
| DF51-6DS-2C  | CL0543-5031-0-00 | 6           | 17.0 | 13.1 | 4.0  |                   |
| DF51-8DS-2C  | CL0543-5032-3-00 | 8           | 19.0 | 15.1 | 6.0  |                   |
| DF51-10DS-2C | CL0543-5033-6-00 | 10          | 21.0 | 17.1 | 8.0  |                   |
| DF51-12DS-2C | CL0543-5034-9-00 | 12          | 23.0 | 19.1 | 10.0 |                   |
| DF51-14DS-2C | CL0543-5035-1-00 | 14          | 25.0 | 21.1 | 12.0 |                   |
| DF51-16DS-2C | CL0543-5036-4-00 | 16          | 27.0 | 23.1 | 14.0 |                   |
| DF51-18DS-2C | CL0543-5037-7-00 | 18          | 29.0 | 25.1 | 16.0 |                   |
| DF51-20DS-2C | CL0543-5038-0-00 | 20          | 31.0 | 27.1 | 18.0 |                   |
| DF51-22DS-2C | CL0543-5039-2-00 | 22          | 33.0 | 29.1 | 20.0 |                   |
| DF51-24DS-2C | CL0543-5040-1-00 | 24          | 35.0 | 31.1 | 22.0 |                   |
| DF51-26DS-2C | CL0543-5041-4-00 | 26          | 37.0 | 33.1 | 24.0 |                   |
| DF51-28DS-2C | CL0543-5042-7-00 | 28          | 39.0 | 35.1 | 26.0 |                   |
| DF51-30DS-2C | CL0543-5043-0-00 | 30          | 41.0 | 37.1 | 28.0 |                   |

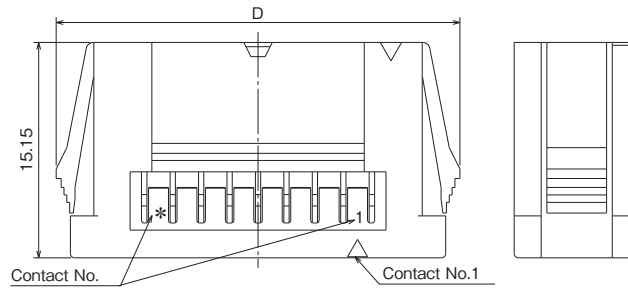
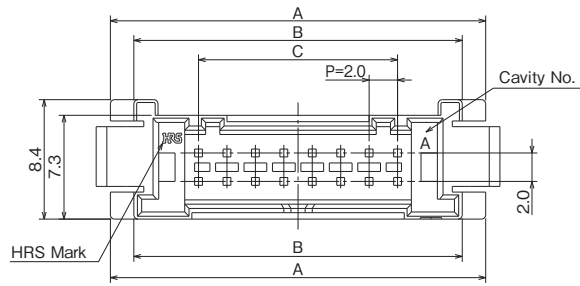
## Single-Row In-line Plug



Unit : mm

| Part No.    | HRS No.          | No. of Pos. | A    | B    | C    | D    | Purchase Unit     |
|-------------|------------------|-------------|------|------|------|------|-------------------|
| DF51-2EP-2C | CL0543-5125-0-00 | 2           | 15.5 | 10.8 | 2.0  | 17.5 | 100pcs<br>per bag |
| DF51-3EP-2C | CL0543-5126-0-00 | 3           | 17.5 | 12.8 | 4.0  | 19.5 |                   |
| DF51-4EP-2C | CL0543-5127-0-00 | 4           | 19.5 | 14.8 | 6.0  | 21.5 |                   |
| DF51-5EP-2C | CL0543-5128-0-00 | 5           | 21.5 | 16.8 | 8.0  | 23.5 |                   |
| DF51-6EP-2C | CL0543-5129-0-00 | 6           | 23.5 | 18.8 | 10.0 | 25.5 |                   |

## Dual-row In-line Plug



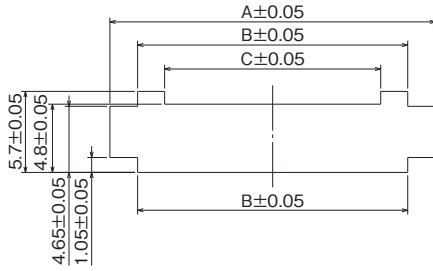
Unit : mm

| Part No.      | HRS No.          | No. of Pos. | A    | B    | C    | D    | Purchase Unit  |
|---------------|------------------|-------------|------|------|------|------|----------------|
| DF51-4DEP-2C  | CL0543-5071-0-00 | 4           | 14.4 | 11.1 | 2.0  | 16.4 | 100pcs per bag |
| DF51-6DEP-2C  | CL0543-5072-0-00 | 6           | 16.4 | 13.1 | 4.0  | 18.4 |                |
| DF51-8DEP-2C  | CL0543-5073-0-00 | 8           | 18.4 | 15.1 | 6.0  | 20.4 |                |
| DF51-10DEP-2C | CL0543-5074-0-00 | 10          | 20.4 | 17.1 | 8.0  | 22.4 |                |
| DF51-12DEP-2C | CL0543-5075-0-00 | 12          | 22.4 | 19.1 | 10.0 | 24.4 |                |
| DF51-14DEP-2C | CL0543-5076-0-00 | 14          | 24.4 | 21.1 | 12.0 | 26.4 |                |
| DF51-16DEP-2C | CL0543-5077-0-00 | 16          | 26.4 | 23.1 | 14.0 | 28.4 |                |
| DF51-18DEP-2C | CL0543-5078-0-00 | 18          | 28.4 | 25.1 | 16.0 | 30.4 |                |
| DF51-20DEP-2C | CL0543-5079-0-00 | 20          | 30.4 | 27.1 | 18.0 | 32.4 |                |
| DF51-22DEP-2C | CL0543-5080-0-00 | 22          | 32.4 | 29.1 | 20.0 | 34.4 |                |
| DF51-24DEP-2C | CL0543-5081-0-00 | 24          | 34.4 | 31.1 | 22.0 | 36.4 |                |
| DF51-26DEP-2C | CL0543-5082-0-00 | 26          | 36.4 | 33.1 | 24.0 | 38.4 |                |
| DF51-28DEP-2C | CL0543-5083-0-00 | 28          | 38.4 | 35.1 | 26.0 | 40.4 |                |
| DF51-30DEP-2C | CL0543-5084-0-00 | 30          | 40.4 | 37.1 | 28.0 | 42.4 |                |



## In-line Plug Panel Cutouts

### ● Single-row



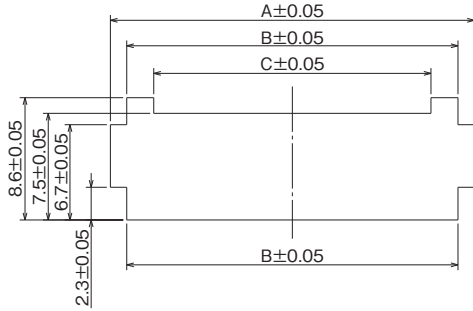
Unit : mm

| Part No.    | HRS No.          | No. of Pos. | A                              |            |            |            | B    | C    |
|-------------|------------------|-------------|--------------------------------|------------|------------|------------|------|------|
|             |                  |             | Panel Board Thickness (Note 1) |            |            |            |      |      |
|             |                  |             | 0.5 to 0.8                     | 0.9 to 1.3 | 1.4 to 1.8 | 1.9 to 2.3 |      |      |
| DF51-2EP-2C | CL0543-5125-0-00 | 2           | 14.9                           | 15.2       | 15.6       | 16.0       | 11.0 | 7.2  |
| DF51-3EP-2C | CL0543-5126-0-00 | 3           | 16.9                           | 17.2       | 17.6       | 18.0       | 13.0 | 9.2  |
| DF51-4EP-2C | CL0543-5127-0-00 | 4           | 18.9                           | 19.2       | 19.6       | 20.0       | 15.0 | 11.2 |
| DF51-5EP-2C | CL0543-5128-0-00 | 5           | 20.9                           | 21.2       | 21.6       | 22.0       | 17.0 | 13.2 |
| DF51-6EP-2C | CL0543-5129-0-00 | 6           | 22.9                           | 23.2       | 23.6       | 24.0       | 19.0 | 15.2 |

Note 1 : The A dimension of the mounting hole varies based on panel board thickness.

Note 2 : Do not use a rounded surface at the panel tab portion.

●Dual-row

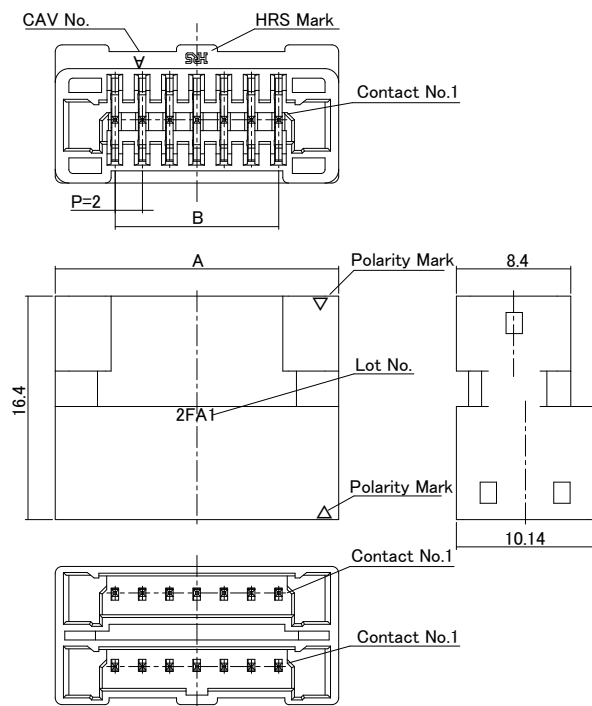


Unit : mm

| Part No.      | HRS No.          | No. of Pos. | A                              |            |            |            | B    | C    |
|---------------|------------------|-------------|--------------------------------|------------|------------|------------|------|------|
|               |                  |             | Panel Board Thickness (Note 1) |            |            |            |      |      |
|               |                  |             | 0.5 to 0.8                     | 0.9 to 1.3 | 1.4 to 1.8 | 1.9 to 2.3 |      |      |
| DF51-4DEP-2C  | CL0543-5071-0-00 | 4           | 13.6                           | 14.1       | 14.5       | 14.9       | 11.3 | 7.5  |
| DF51-6DEP-2C  | CL0543-5072-0-00 | 6           | 15.6                           | 16.1       | 16.5       | 16.9       | 13.3 | 9.5  |
| DF51-8DEP-2C  | CL0543-5073-0-00 | 8           | 17.6                           | 18.1       | 18.5       | 18.9       | 15.3 | 11.5 |
| DF51-10DEP-2C | CL0543-5074-0-00 | 10          | 19.6                           | 20.1       | 20.5       | 20.9       | 17.3 | 13.5 |
| DF51-12DEP-2C | CL0543-5075-0-00 | 12          | 21.6                           | 22.1       | 22.5       | 22.9       | 19.3 | 15.5 |
| DF51-14DEP-2C | CL0543-5076-0-00 | 14          | 23.6                           | 24.1       | 24.5       | 24.9       | 21.3 | 17.5 |
| DF51-16DEP-2C | CL0543-5077-0-00 | 16          | 25.6                           | 26.1       | 26.5       | 26.9       | 23.3 | 19.5 |
| DF51-18DEP-2C | CL0543-5078-0-00 | 18          | 27.6                           | 28.1       | 28.5       | 28.9       | 25.3 | 21.5 |
| DF51-20DEP-2C | CL0543-5079-0-00 | 20          | 29.6                           | 30.1       | 30.5       | 30.9       | 27.3 | 23.5 |
| DF51-22DEP-2C | CL0543-5080-0-00 | 22          | 31.6                           | 32.1       | 32.5       | 32.9       | 29.3 | 25.5 |
| DF51-24DEP-2C | CL0543-5081-0-00 | 24          | 33.6                           | 34.1       | 34.5       | 34.9       | 31.3 | 27.5 |
| DF51-26DEP-2C | CL0543-5082-0-00 | 26          | 35.6                           | 36.1       | 36.5       | 36.9       | 33.3 | 29.5 |
| DF51-28DEP-2C | CL0543-5083-0-00 | 28          | 37.6                           | 38.1       | 38.5       | 38.9       | 35.3 | 31.5 |
| DF51-30DEP-2C | CL0543-5084-0-00 | 30          | 39.6                           | 40.1       | 40.5       | 40.9       | 37.3 | 33.5 |

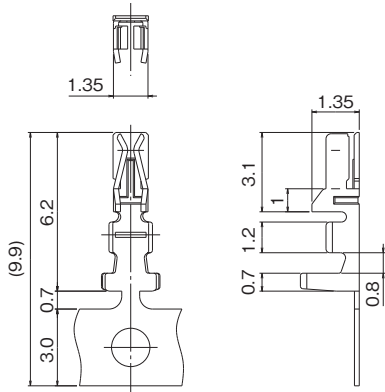
Note 1 : The A dimension of the mounting hole varies based on panel board thickness.  
 Note 2 : Do not use a rounded surface at the panel tab portion.

## Branch Adapter



| Part No.     | HRS No.          | No. of Pos. | A    | B    | Purchase Unit  |
|--------------|------------------|-------------|------|------|----------------|
| DF51B-2EP-2A | CL0543-5133-0-00 | 2           | 10.8 | 2.0  | 100pcs per bag |
| DF51B-3EP-2A | CL0543-5134-0-00 | 3           | 12.8 | 4.0  |                |
| DF51B-4EP-2A | CL0543-5135-0-00 | 4           | 14.8 | 6.0  |                |
| DF51B-6EP-2A | CL0543-5136-0-00 | 6           | 18.8 | 10.0 |                |
| DF51B-7EP-2A | CL0543-5132-0-00 | 7           | 20.8 | 12.0 |                |

## Socket Contact



| Part No.          | HRS No.          | Category      | Purchase Unit      | Finish      |
|-------------------|------------------|---------------|--------------------|-------------|
| DF11-22SCF        | CL0543-0601-0-00 | Reel Contact  | 10,000pcs per reel | Tin Plated  |
| DF11-22SC         | CL0543-0602-2-00 | Loose Contact | 100pcs per bag     |             |
| DF11-2428SCF      | CL0543-0500-2-00 | Reel Contact  | 10,000pcs per reel |             |
| DF11-2428SC       | CL0543-0501-5-00 | Loose Contact | 100pcs per bag     |             |
| DF11A-2428SCF     | CL0543-0634-9-00 | Reel Contact  | 10,000pcs per reel |             |
| DF11A-2428SC      | CL0543-0635-1-00 | Loose Contact | 100pcs per bag     |             |
| DF11-30SCF        | CL0543-0605-0-00 | Reel Contact  | 10,000pcs per reel |             |
| DF11-30SC         | CL0543-0606-3-00 | Loose Contact | 100pcs per bag     |             |
| DF11-22SCFA(04)   | CL0543-0603-5-04 | Reel Contact  | 10,000pcs per reel | Gold Plated |
| DF11-22SCA        | CL0543-0604-8-00 | Loose Contact | 100pcs per bag     |             |
| DF11-2428SCFA(04) | CL0543-0550-0-04 | Reel Contact  | 10,000pcs per reel |             |
| DF11-2428SCA      | CL0543-0551-3-00 | Loose Contact | 100pcs per bag     |             |
| DF11-30SCFA(04)   | CL0543-0607-6-04 | Reel Contact  | 10,000pcs per reel |             |
| DF11-30SCA        | CL0543-0608-9-00 | Loose Contact | 100pcs per bag     |             |

Note : DF11A-2428SCF/SC is the tin plated low insertion/extraction force type.

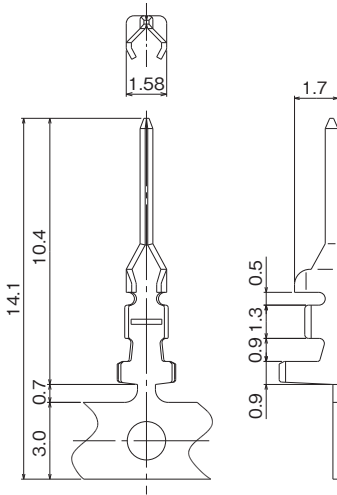
### ◆Applicable Wire (Tinned, Annealed Copper Wire)

- Recommended Wire  
UL1061, UL1007 (Note 2)
- Strip Length  
1.7 to 2.3mm

| Wire Size (Stranded Wire Conductor) | Jacket Diameter |
|-------------------------------------|-----------------|
| 22 AWG (17/0.16)                    | φ 1.2-1.45mm    |
| 24 AWG (11/0.16)                    | φ 0.9-1.45mm    |
| 26 AWG (7/0.16)                     |                 |
| 28 AWG (7/0.127)                    |                 |
| 30 AWG (7/0.1)                      | φ 0.75-1.2mm    |

Note 1 : Contact your Hirose representative when using a cable other than those specified.  
 Note 2 : DF11-22SCF/SC/SCFA/SCA is for UL1061.

## In-line Plug Contact



| Part No.        | HRS No.          | Category      | Purchase Unit      | Finish      |
|-----------------|------------------|---------------|--------------------|-------------|
| DF11-EP2428PCF  | CL0543-0615-4-00 | Reel Contact  | 10,000pcs per reel | Tin Plated  |
| DF11-EP2428PC   | CL0543-0616-7-00 | Loose Contact | 100pcs per bag     |             |
| DF11-EP2428PCFA | CL0543-0617-0-00 | Reel Contact  | 10,000pcs per reel | Gold Plated |
| DF11-EP2428PCA  | CL0543-0618-2-00 | Loose Contact | 100pcs per bag     |             |

### ◆Applicable Wire (Tinned, Annealed Copper Wire)

- Recommended Wire  
UL1061, UL1007
- Strip Length  
1.9 to 2.3mm

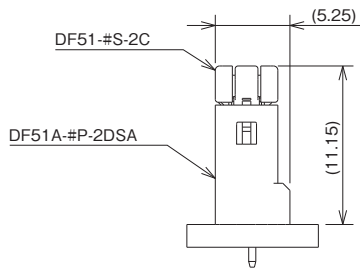
| Wire Size (Stranded Wire Conductor) | Jacket Diameter |
|-------------------------------------|-----------------|
| 24 AWG (11/0.16)                    | φ 0.9-1.45mm    |
| 26 AWG (7/0.16)                     |                 |
| 28 AWG (7/0.127)                    |                 |

Note : Contact your Hirose representative when using a cable other than those specified.

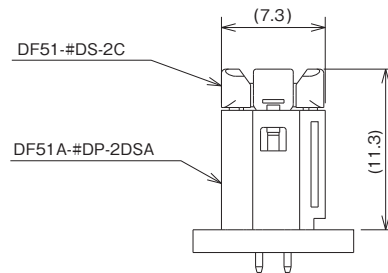
## Mated Dimensions

### ● Wire-to-Board Connection (Straight Header)

#### 【Single-row】

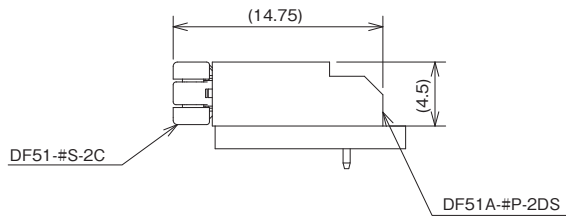


#### 【Dual-row】

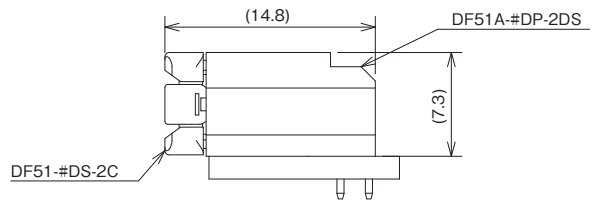


### ● Wire-to-Board Connection (Right Angle Header)

#### 【Single-row】

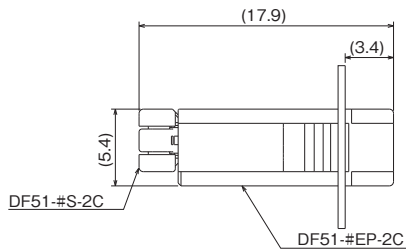


#### 【Dual-row】

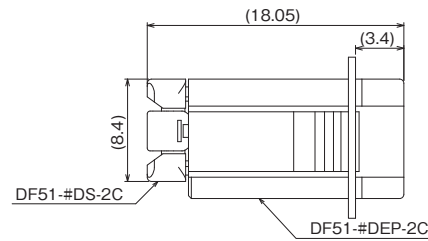


### ● Wire-to-Wire Connection

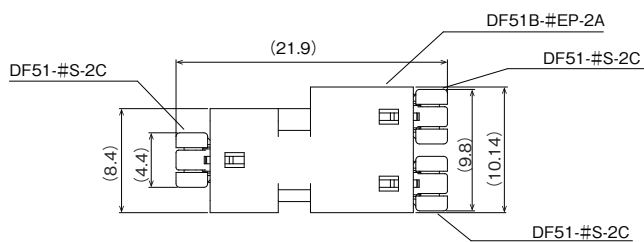
#### 【Single-row】



#### 【Dual-row】



#### 【Adapter】



## Applicable Crimping Tool

| Type                    | Part No.              | HRS No.          | Wire Type                          | Applicable Contacts                    |
|-------------------------|-----------------------|------------------|------------------------------------|--|
| Applicator              | AP105-DF11-22S        | CL0901-4529-7-00 | UL1061 (Note 3, 5)                 | DF11-22SCF/SCFA(04)                    |
|                         | AP105-DF11-2428S      | CL0901-4511-1-00 | UL1007 (Note 3)<br>UL1061 (Note 3) | DF11-2428SCF/SCFA(04)<br>DF11A-2428SCF |
|                         | AP105-DF11-30S        | CL0901-4532-1-00 | UL1007 (Note 3)<br>UL1061 (Note 3) | DF11-30SCF/SCFA(04)                    |
|                         | AP105-DF11-EP2428P    | CL0901-4528-4-00 | UL1007 (Note 3)<br>UL1061 (Note 3) | DF11-EP2428PCF/PCFA                    |
| Press Unit              | CM-105C               | CL0901-0001-0-00 | -                                  | -                                      |
| Hand Tool               | HT801/DF11-22S(A)     | CL0550-0407-5-00 | UL1061 (Note 4, 5)                 | DF11-22SC/SCA                          |
|                         | HT801/DF11-2428S(A)   | CL0550-0403-4-00 | UL1007 (Note 4)<br>UL1061 (Note 4) | DF11-2428SC/SCA<br>DF11A-2428SC        |
|                         | HT801/DF11-30S(A)     | CL0550-0408-8-00 | UL1007 (Note 4)<br>UL1061 (Note 4) | DF11-30SC/SCA                          |
|                         | HT801/DF11-EP2428P(A) | CL0550-0409-0-00 | UL1007 (Note 4)<br>UL1061 (Note 4) | DF11-EP2428PC/PCA                      |
| Contact Extraction Tool | DF-C-PO(B)            | CL0550-0179-2-00 | -                                  | DF11-####SCF<br>DF11-EP####PCF         |

Note 1 : Please conduct crimping based on the "Crimp Quality Standard" and "Crimp Condition" table.

Note 2 : Any problems that occur from using tools other than those specified by Hirose are not covered by warranty.

Note 3 : Applicator dies can be switched to crimp other wire sizes and types. The additional dies are sold separately.

Note 4 : Hand tool dies cannot be switched.

Note 5 : The compatible wire is limited to UL1061, 22 AWG

## Precautions for Use

- The connector could be damaged if it is pulled out forcibly. When it is hard to pull out, push it in slightly first and then depress the lock and un-mate.  
Please refer to the "DF51 Series Mating/Unmating Operation Instruction Manual" (ETAD-H0847-00) for handling precautions during mating.
- When inserting a crimped contact into a socket, please refrain from inserting at a diagonal as doing so may affect performance reliability.  
Refer to the "DF51 Series Cable Assembly Procedure" (ETAD-H0923-00) for precautions during cable assembly.

## Operating Environment

Please contact us if you are designing this connector into environmental conditions where high and low temperatures are repeated.

## While Taking into Consideration

Specifications mentioned in this catalog are reference values.

When considering to order or use this product, please review the Drawing and Product Specifications sheets.

Use an appropriate cable when using the connector in combination with cables.

If considering usage of a non-specified cable, please contact your sales representative.

If assembly process is done by jigs & tools which are not identified by Hirose, the warranty of the product may be affected.

If considering usage for below mentioned applications, please contact your sales representative.

In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/defense etc. Hirose must review before assurance of reliability can be given.