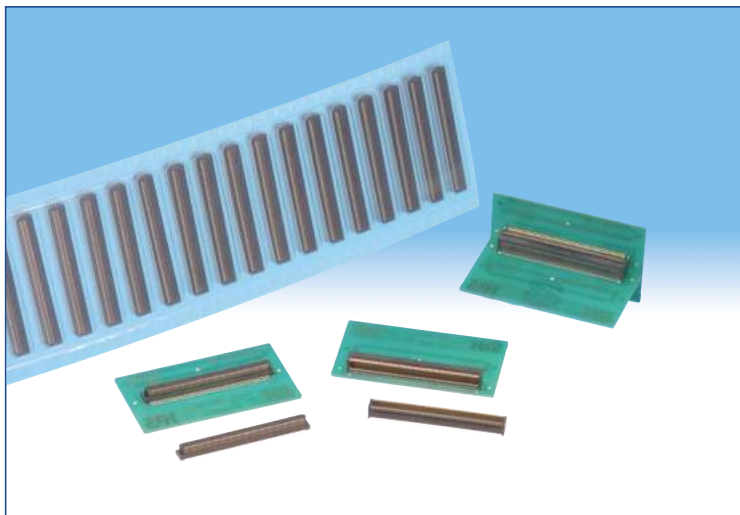


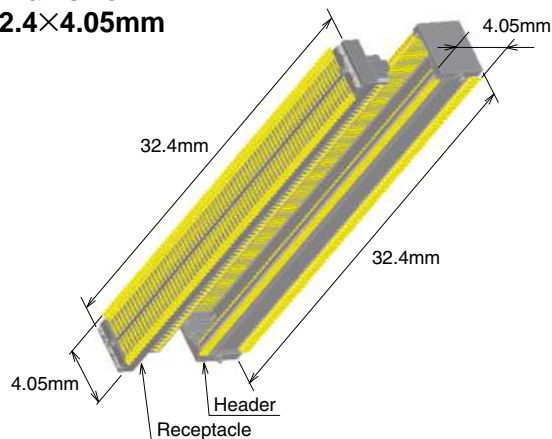
**NEW**

# 0.4 mm Contact Pitch, 150-Position SMT Perpendicular Board-to-Board Connectors

## DF28 Series



**Small size  
32.4×4.05mm**



### ■ Features

#### 1. Small size

Efficient use of materials and advanced manufacturing techniques resulted in small size and small board space requirement.

#### 2. Conductive traces on the PCB can be designed to run under the connectors

All bottom surface of the connector is solid, without any exposure of the contact.

#### 3. Reliable connection

Contact deflection coupled with long wipe guarantees reliable electrical and mechanical connection through the life of the device.

#### 4. Prevention of flux wicking

Nickel-plating barrier and molded-in contacts will not allow flux wicking into the critical areas.

#### 5. Self-alignment

When mating, connectors will self-align within 0.45 mm.

#### 6. Board placement with automatic equipment

Flat top surfaces of 1.2mm for the receptacle and 1.65mm for the plug and packaging on the tape-and-reel allow use of vacuum nozzles for board placement with automatic equipment.

Standard reel contains 2,000 connectors.

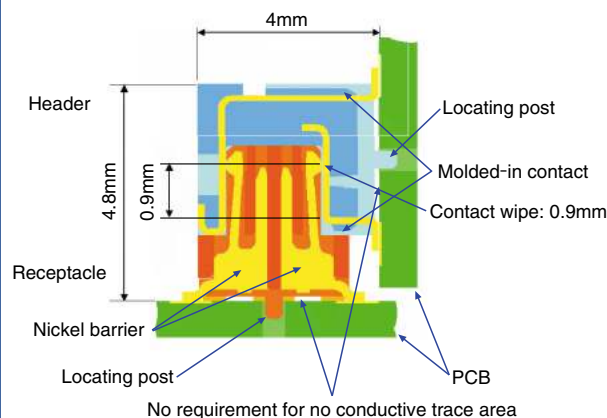
#### 7. Supports lead-free environment

All components use lead-free materials.

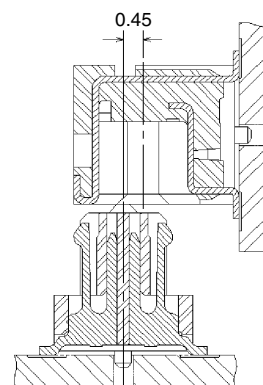
### ■ Applications

DSC (digital still cameras), DVC (digital video cameras), other small devices requiring high density/ high contact counts perpendicular Board-to-Board connection.

### Contact wipe of 0.9 mm



### Self-alignment distance: 0.45mm



## Product Specifications

|         |                       |   |   |
|---------|-----------------------|---|---|
| Ratings | Current rating 0.3A   | Operating temperature range -35°C to +85°C (Note 1) | Storage temperature range -10°C to +60°C (Note 2) |
|         | Voltage rating 30V AC | Operating humidity range 20% to 80%                 | Storage humidity range 40% to 70% (Note 2)        |

| Item                              | Specification   | Conditions  |
|-----------------------------------|---|---|
| Insulation resistance             | 50 MΩ min.  | 100V DC   |
| Withstanding voltage              | No flashover or insulation breakdown.                               | 100V AC/one minute  |
| Contact resistance                | 80 mΩ max.  | 100 mA  |
| Vibration                         | No electrical discontinuity of 1 μs or more.                        | Frequency: 10 to 55 Hz, single amplitude of 0.75mm, 2 hours, 3 axis   |
| Humidity                          | Contact resistance: 80 mΩ max.<br>Insulation resistance: 25 MΩ min. | 96 hours at temperature of 40±2°C and humidity of 90% to 95%.   |
| Temperature cycle                 | Contact resistance: 80 mΩ max.<br>Insulation resistance: 50 MΩ min. | Temperature: -55°C → +5°C to +35°C → +85°C → +5°C to +35°C<br>Time: 30 → 10 → 30 → 10 (Minutes)<br>5 cycles |
| Durability (insertion/withdrawal) | Contact resistance: 80 mΩ max.                                      | 50 cycles   |
| Resistance to soldering heat      | No deformation of components affecting performance.                 | Reflow: At the recommended temperature profile<br>Manual soldering: 350°C for 3 seconds                     |

Note 1: Includes temperature rise caused by current flow.

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

## Materials / Finish

| Product           | Component      | Material        | Finish/Color | Remarks |
|-------------------|----------------|-----------------|--------------|---------|
| Receptacle Header | Insulator      | LCP             | Black        | UL94V-0 |
|                   | Contact        | Phosphor bronze | Gold plated  | ——      |
|                   | Metal fittings | Phosphor bronze | Tin plated   | ——      |

Note: Lead-free product.

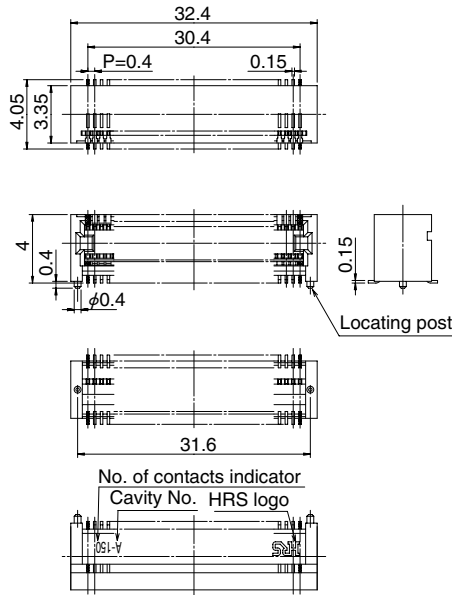
## Ordering information

### ● Receptacles and Headers

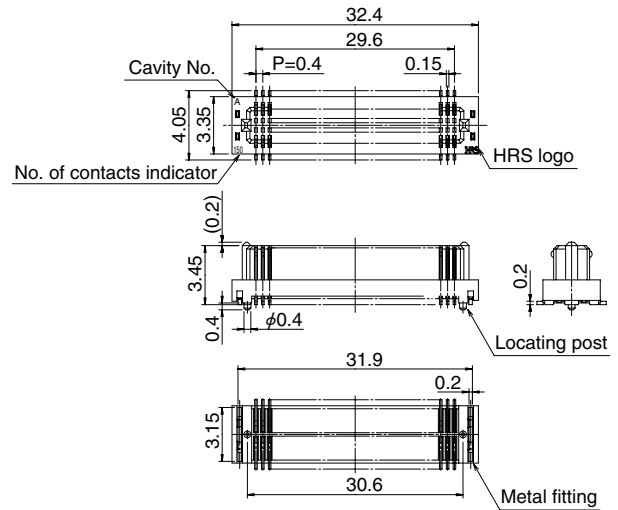
DF28  
①
N -
\*
DS - 0.4  
④
V  
⑥
(\*\*)  
⑦

|  |   |
|--|---|
| ① Series name : DF28   | ⑤ Contact pitch : 0.4mm   |
| ② Configuration<br>N: Metal fittings, locating posts                   | ⑥ Termination<br>V: Vertical SMT<br>H: Right angle SMT                  |
| ③ Number of conductive contacts : 150                                  | ⑦ Packaging<br>(51): Tape and reel packaging<br>(2,000 pieces per reel) |
| ④ Connector type<br>DS: Double row receptacle<br>DP: Double row header |   |

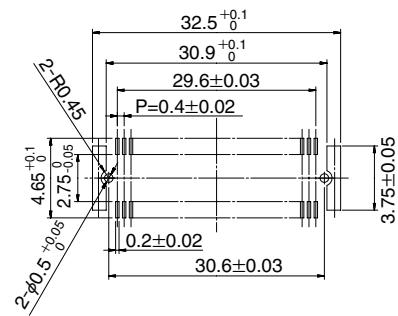
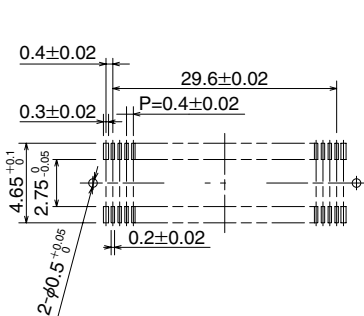
## Header



## Receptacle



## PCB mounting pattern



| Part Number          | CL No.        | Number of conductive contacts |
|----------------------|---------------|-------------------------------|
| DF28N-150DP-0.4H(51) | 684-2005-8-51 | 150                           |

Note 1: Lead coplanarity: 0.1 maximum.

Note 2: Each contact of the four corners is a metal fitting and is non-conductive. The total number of contacts is equal to the number of positions plus 4.

Example: Total count of 154 contacts will have 150 conducting contact positions.

Note 3: Order by the number of reels.

Note 4: Header without locating posts can be supplied. Contact Hirose's sales representative.

| Part Number          | CL No.        | Number of conductive contacts |
|----------------------|---------------|-------------------------------|
| DF28N-150DS-0.4V(51) | 684-2004-5-51 | 150                           |

Note 1: Lead coplanarity: 0.1 maximum.

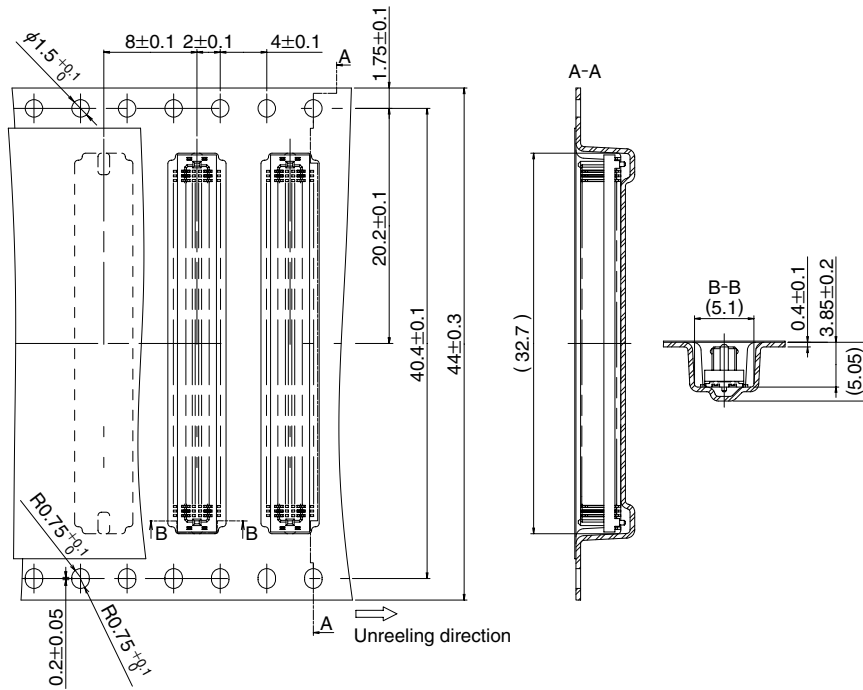
Note 2: Order by the number of reels.

Note 3: Receptacle without metal fittings can be supplied. Contact Hirose's sales representative.

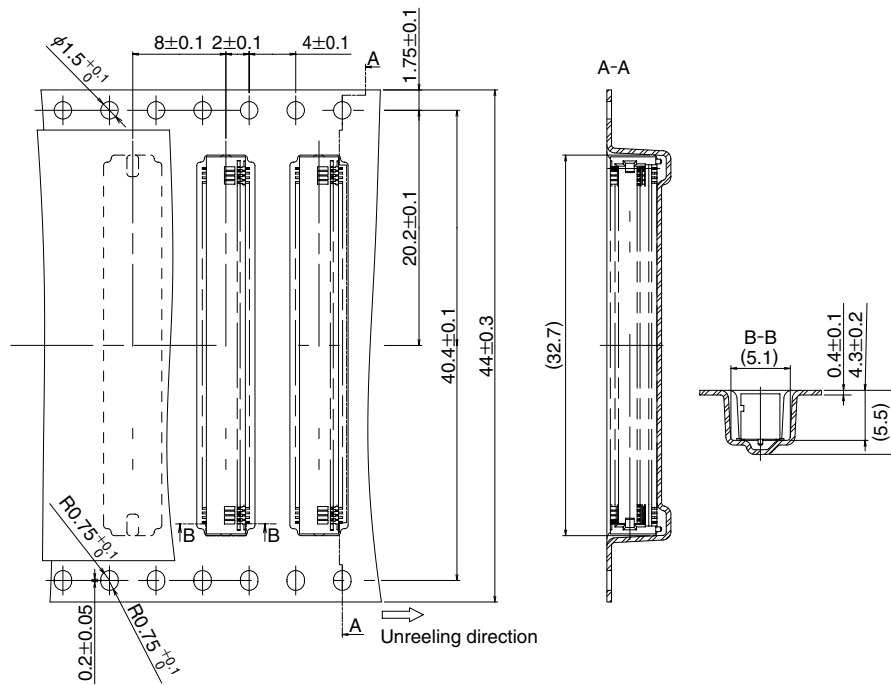
Note 4: Receptacle without locating post can be supplied. Contact Hirose's sales representative.

## ◆ Packaging specifications

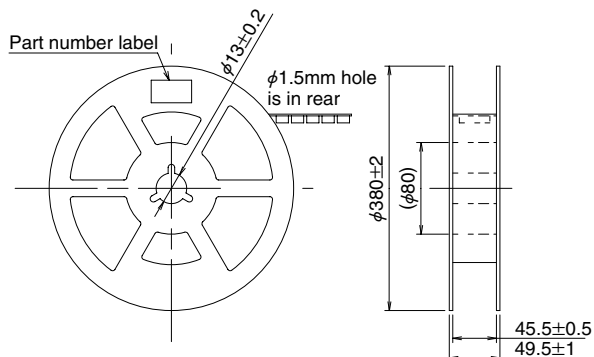
### ● Receptacle



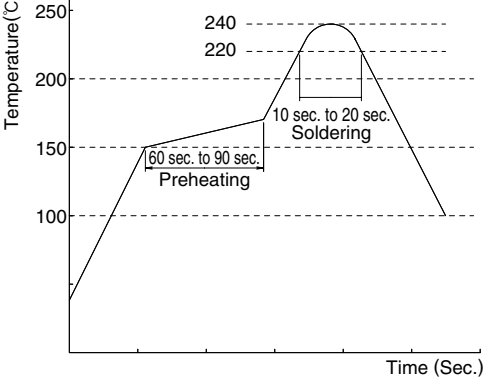
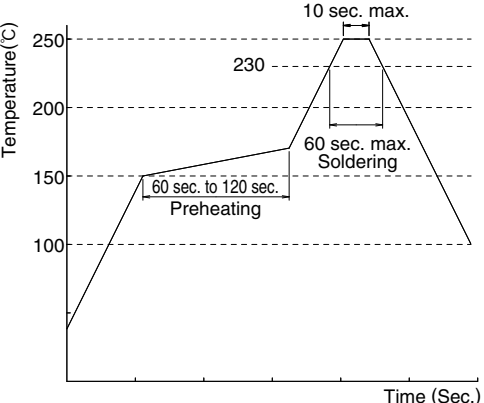
### ● Header



### ● Reel dimensions



## ◆ Usage recommendations

|   |  |
|---|--|
| <p>1. Temperature profile</p>                                       | <p>● Using typical solder paste</p>  <p>● Using lead-free solder paste</p>    |
| <p>2. Manual soldering</p>  | <p>Manual soldering: <math>350 \pm 10^\circ\text{C}</math> for 3 seconds. No flux.</p>   |
| <p>3. Screen thickness and open area ratio (Pattern area ratio)</p> | <p>Thickness: 0.12mm<br/>Opening area ratio: 80%</p>   |
| <p>4. Board warpage</p>   | <p>Maximum of 0.02mm 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. Precautions</p>   | <ul style="list-style-type: none"> <li>■ The receptacle has exposed contacts. Exercise caution when handling with bare hands. Electrostatic discharge may cause contact failures.</li> <li>■ Mating / un-mating of the connectors when not mounted on the boards is NOT RECOMMENDED.</li> <li>■ Do not use mated connectors for the support of Printed Circuit Boards. Provide additional attachment to assure that the boards will NOT rely on the connectors to maintain angle alignment.</li> <li>■ Do not twist the PCB when mating/un-mating.</li> <li>■ Color shade variations between production lots will not affect form, fit or function of the connectors.</li> </ul> |