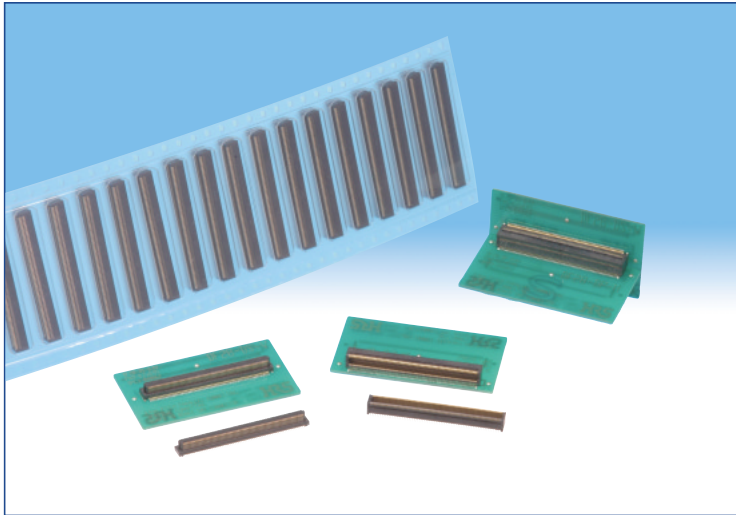
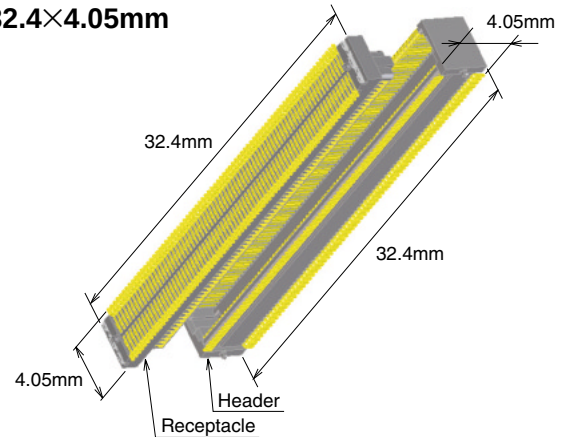


0.4 mm Contact Pitch, 150-Position SMT Perpendicular Board-to-Board Connectors

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

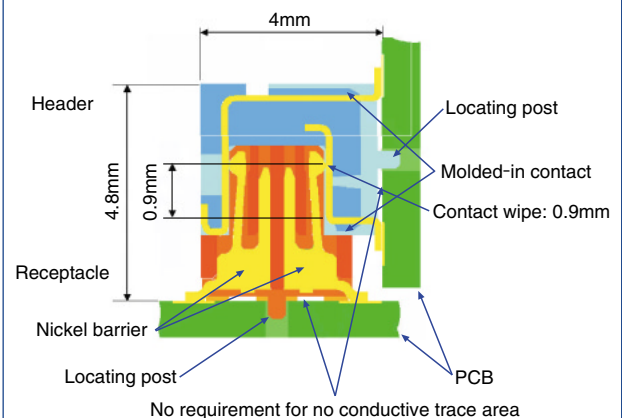
Flat top surfaces of 1.2mm for the receptacle and 1.65mm for the plug and packaging on the tape-and-reel allow use of vacuum nozzles for board placement with automatic equipment.

Standard reel contains 2,000 connectors.

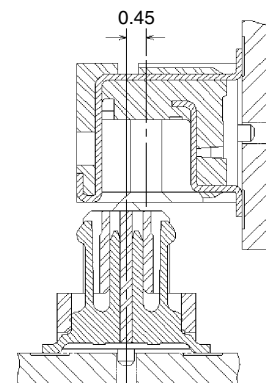
7. Supports lead-free environment

All components use lead-free materials.

Contact wipe of 0.9 mm



Self-alignment distance: 0.45mm



■ Applications

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

■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. 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. Insulation resistance: 50 MΩ min.	Temperature: -55°C → +5°C to +35°C → +85°C → +5°C to +35°C Time: 30 → 10 → 30 → 10 (Minutes) 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 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.

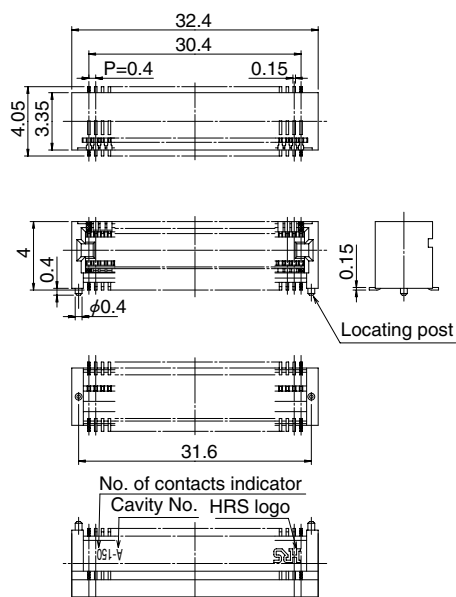
■Ordering information

●Receptacles and Headers

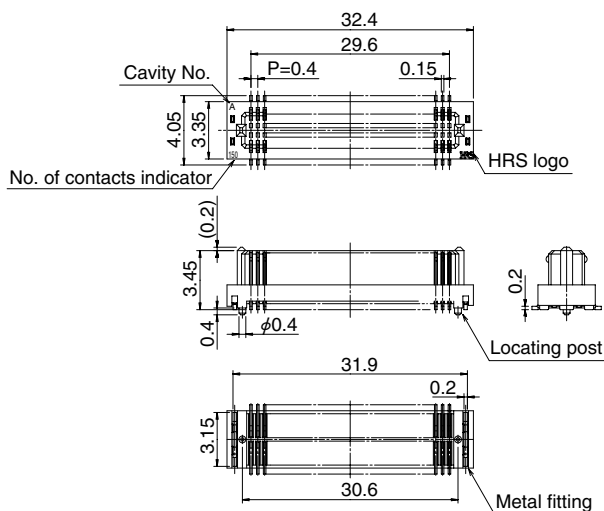
DF28 **N** **-** ***** **DS - 0.4** **V** **(**)**
①
②
③
④
⑤
⑥
⑦

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

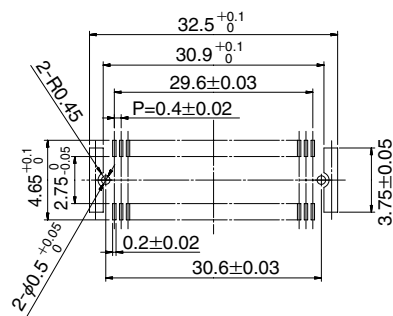
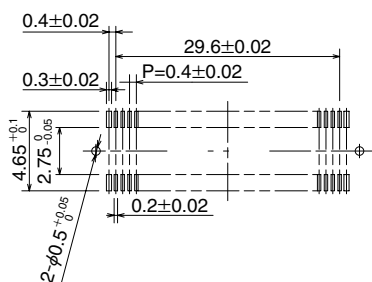
Header



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.

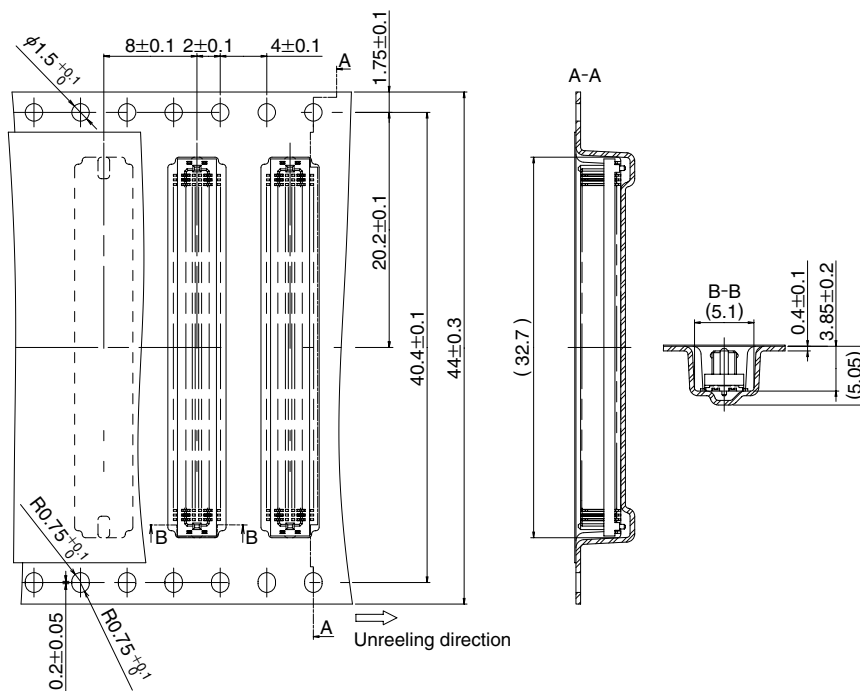
Note 2: Order by the number of reels.

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

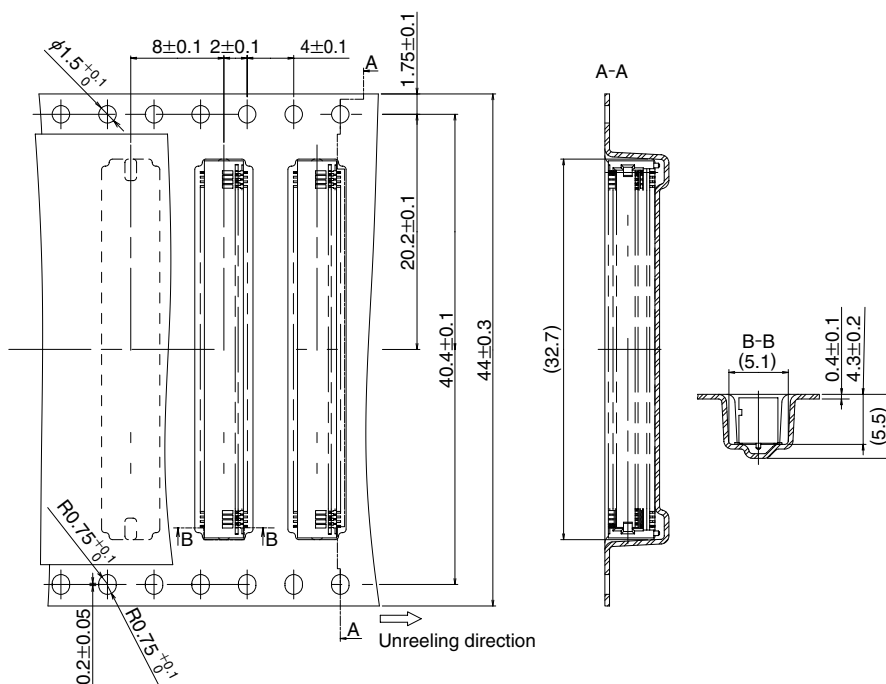
Note 4: Receptacle without locating post can be supplied. Contact Hirose's sales representative.

◆ Packaging specifications

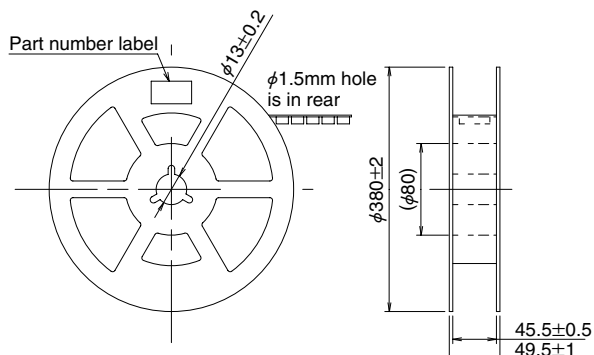
● Receptacle



● Header



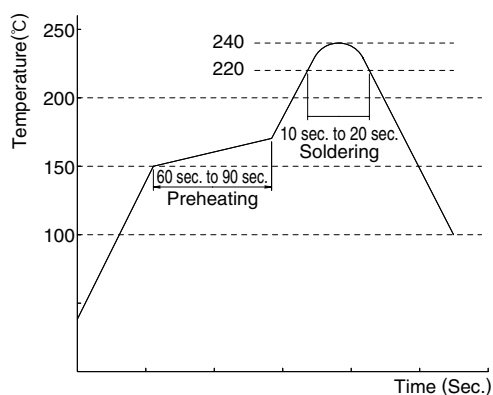
● Reel dimensions



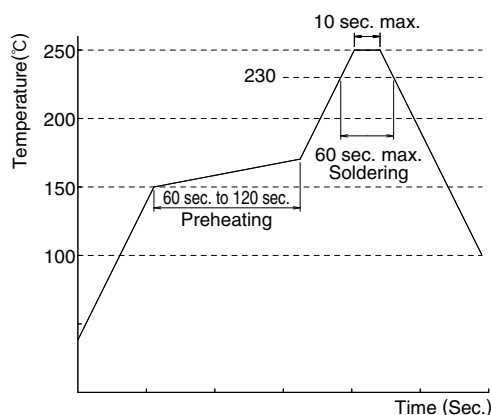
◆ Usage recommendations

1. Temperature profile

● Using typical solder paste



● Using lead-free solder paste



2. Manual soldering

Manual soldering: $350 \pm 10^\circ\text{C}$ for 3 seconds. No flux.

3. Screen thickness and open area ratio (Pattern area ratio)

Thickness: 0.12mm
Opening area ratio: 80%

4. Board warpage

Maximum of 0.02mm at the connector center, with both ends of the connector as reference points.

5. Cleaning conditions

Refer to "Nylon Connector Use Handbook".

6. Precautions

- The receptacle has exposed contacts. Exercise caution when handling with bare hands. Electrostatic discharge may cause contact failures.
- Mating / un-mating of the connectors when not mounted on the boards is NOT RECOMMENDED.
- 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.
- Do not twist the PCB when mating/un-mating.
- Color shade variations between production lots will not affect form, fit or function of the connectors.