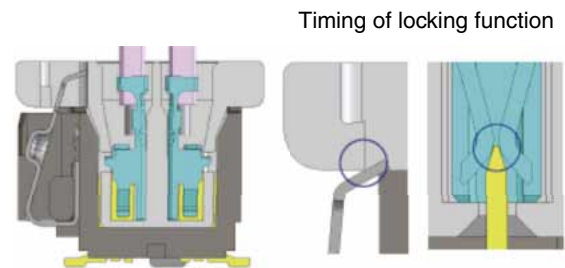


1mm Pitch, Board to Wire Lock Connector

DF50 Series



It provides clear tactile click and secure mating



Simultaneous timing of locking function and contact mating provides a clearer tactile click.

Fig.1

■ Features

1. It provides clear tactile click and secure mating

Locking function and contact mating occur simultaneously, for a clearer tactile click.(Fig.1)

2. Robust structure resistant to wrenching forces

Thick and robust housing wall provides higher strength against cracking. Insertion depth for mating housings protects against wrenching.(Fig.2)

3. Robust and reliable lance structure

High lance strength by mating with crimp contact on the surface.(Fig.3)

4. Ensured adsorption area eliminates the need for adsorption cap.

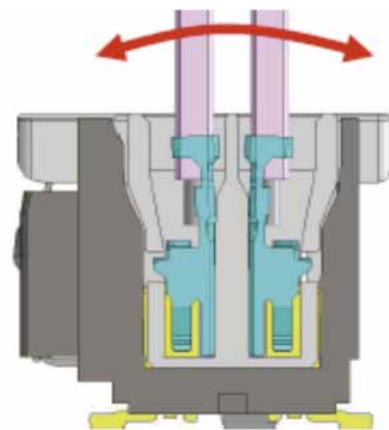
Adequate adsorption area is ensured despite the small size, allowing for automatic mounting without adsorption cap.

(*Specifications for adsorption cap may be provided according to your requirements)

5. Insulation outer diameter $\phi 0.9\text{mm}$, compatible with AWG#28

Despite 1 mm Pitch, it is compatible with $\phi 0.9\text{mm}$, UL1061·AWG#28 Cable ($\phi 0.127 \times 7$)

Robust structure resistant to wrenching forces

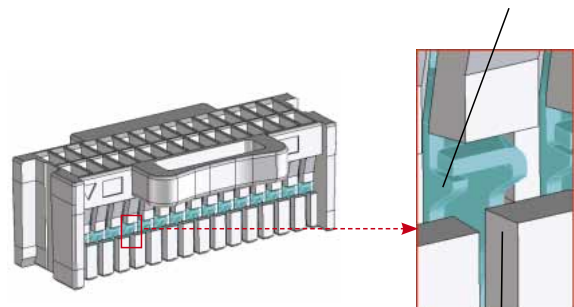


Insertion depth for mating protects against wrenching.
Thick and robust outer wall provides higher strength and prevents cracking.

Fig.2

Robust and reliable lance structure

The lance mates with the crimp contact on the surface.



It is possible to visually inspect the assembled lance.

Fig.3

Product Specifications

| | | | | |
|---------|----------------|------------|---|--|
| Ratings | Current Rating | 1A | Operating Temperature Range Operating Humidity Range | -35 to + 85°C (Note 1) 20 to 80% |
| | Voltage Rating | AC/DC 100V | Storage Temperature Range Storage Humidity Range | -10 to + 60°C (Note 2) 40 to 70% (Note 2) |

| Items | Specifications | Conditions |
|---------------------------------|--|---|
| 1. Insulation resistance | 500MΩ min. | 100V DC |
| 2. Withstand voltage | No flashover or breakdown | 300V AC/1min. |
| 3. Contact resistance | 30mΩ max. | 20mV max., at 1 mA. |
| 4. Vibration | No electrical discontinuity of 1μs or longer | Frequency 10-55 Hz, single amplitude of 0.75 mm 3 directions, 10 cycles in each direction. |
| 5. Shock | No electrical discontinuity of 1μs or longer | Acceleration: 490m/s ² for 11ms, half sine wave in 3 directions, 3 times for each direction |
| 6. Humidity | Contact resistance: 50mΩ max. Insulation resistance: 100MΩ min. | Temperature: 40±2°C; humidity: 90 to 95%, left for 96 hours |
| 7. Temperature cycles | Contact resistance: 50mΩ max. Insulation resistance: 500MΩ min. | (-55°C: 30 min. → 5 to 35°C: 2 to 3 min. → 85°C: 30 min. → 5 to 35°C: 2 to 3 min.) 5 cycles |
| 8. Durability | Contact resistance: 50mΩ max. | 30 times (Number of insertion and withdrawal) |
| 9. Resistance to soldering heat | No deformation of components affecting performance. | Reflow: according to the recommended temperature profile Hand soldering: 350°C for 3 to 4 sec. |

(Note 1) Including the temperature rise by current.

(Note 2) Apply to the condition of long term storage for unused products before PCB on board.

After PCB board, operating temperature and humidity range is applied for interim storage during transportation.

Materials

| Product | Part | Materials | Color / Treatment | UL Regulation |
|-----------------------------------|------------------------------|-----------------|--------------------------------|---------------|
| Pin header (on the board side) | Insulator | LCP | Black | UL94V-0 |
| | Contact | Brass | Gold plating | — |
| | Metal fitting | Brass (Note 1) | Tin Plating | — |
| | Locking metal fitting (DF50) | Stainless steel | — | — |
| Crimp socket | Insulator | PBT | Black (DF50A) White (DF50S) | UL94V-0 |
| Crimp contact | Contact | Phosphor Bronze | Gold plating | — |

(Note 1) Phosphor bronze is applied a material for only to the single-row straight pin header.

Product Number Structure

● Connector

DF 50 — * DP — 1 V **

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

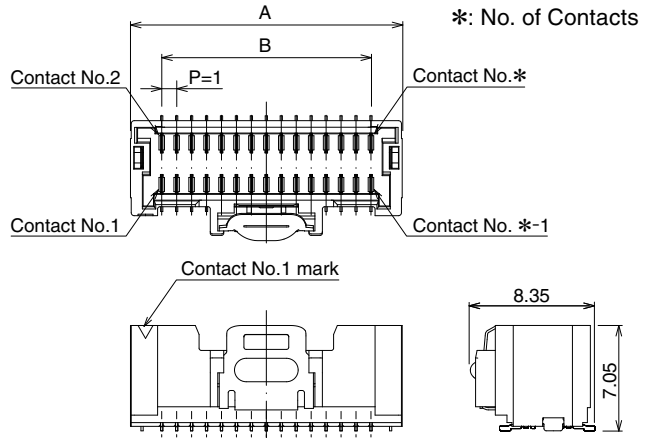
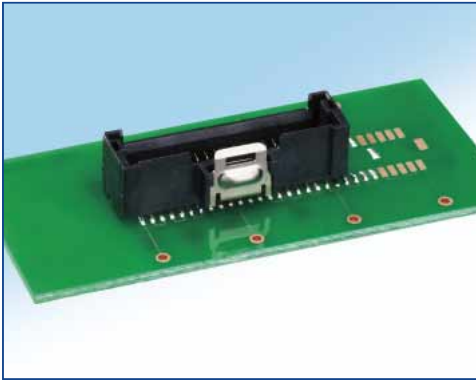
● Crimp contact

DF 50 — 2830 SCF A

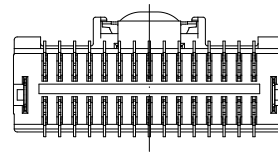
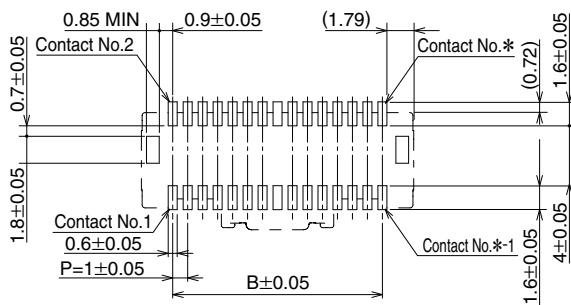
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

| | |
|--|--|
| ① Series Name: DF | ⑦ Mounting style / Wiring type V: SMT Straight Type H: SMT Right Angle Type C: Crimp socket |
| ② Series No.: 50 | ⑧ Specifications 51: SMT Embossed packaging 52: SMT Embossed packaging (with cap, DF50) |
| ③ Form Type: Blank: Double-row pin header S: Double-row crimp socket A: Single-row | |
| ④ Number of contacts: 20, 30, 40, 50 (Double-row) : 2 to 16 (Single-row) | ⑨ Applicable wire size 2830: AWG#28, 30 3032: AWG#30, 32 (Under development) |
| ⑤ Connector type DP: Double-row pin header DS: Double-row crimp socket P: Single-row pin header S: Single-row crimp socket | ⑩ Packaging style SCF: Socket contact reel |
| ⑥ Contact Pitch: 1mm | ⑪ Plating specifications A: Gold plating |

Double-row straight pin header



Recommended PCB Dimensions



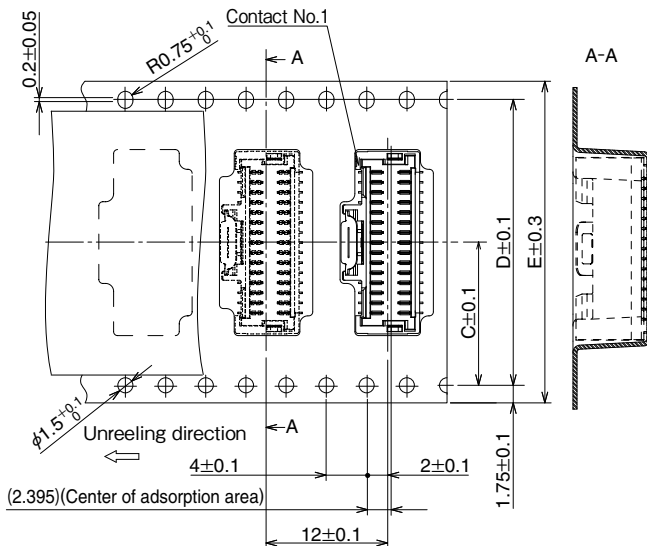
[Specification Number : **, (**)]
 (51): Gold plating, embossed packaging
 (52): Gold plating, embossed packaging, with adsorption cap

Unit : mm

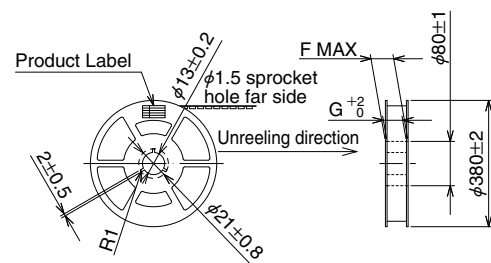
| Part No. | HRS No. | No. of Contacts | A | B | C | D | E | F | G |
|-------------------|---------------|-----------------|-------|----|------|------|----|------|------|
| DF50-20DP-1V (**) | 665-0019-3 ** | 20 | 13.18 | 9 | 14.2 | 28.4 | 32 | 38.4 | 32.4 |
| DF50-30DP-1V (**) | 665-0001-8 ** | 30 | 18.18 | 14 | | | | | |
| DF50-40DP-1V (**) | 665-0005-9 ** | 40 | 23.18 | 19 | 20.2 | 40.4 | 44 | 50.4 | 44.4 |
| DF50-50DP-1V (**) | 665-0011-1 ** | 50 | 28.18 | 24 | | | | | |

(Note) Please place orders for embossed packaged products by the multiple of the number of reels. (1,000 pcs/reel)

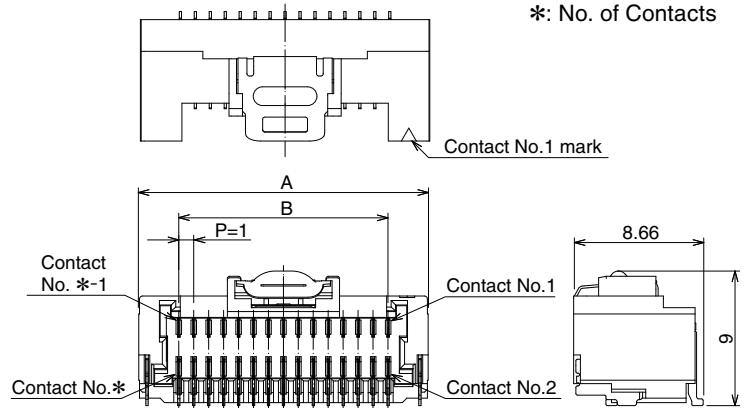
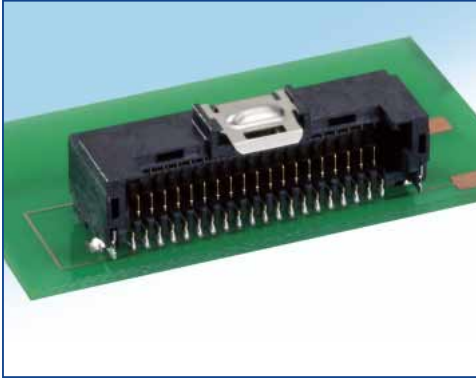
Emboss tape dimensions (JIS C 0806 compliant)



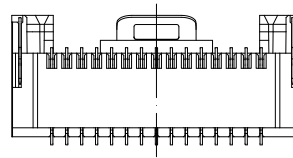
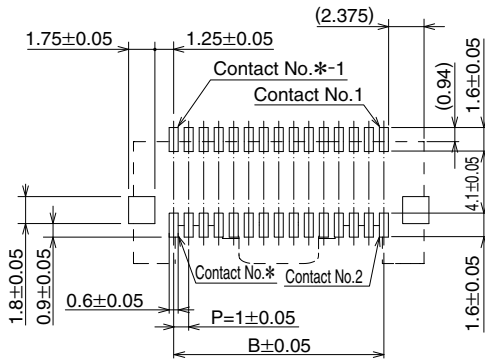
Reel Condition Dimensions



Double-row right angle pin header



Recommended PCB Dimensions



[Specification Number: **, (**)]
(51): Gold plating, embossed packaging

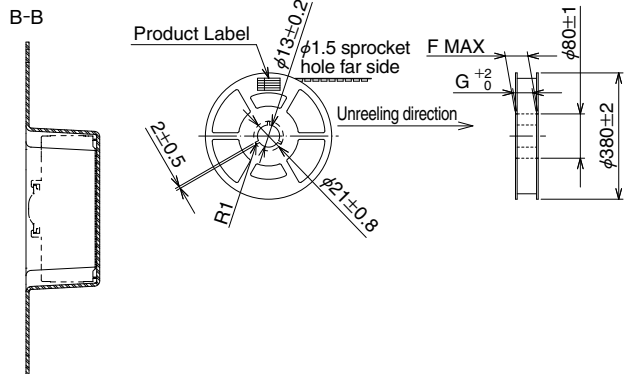
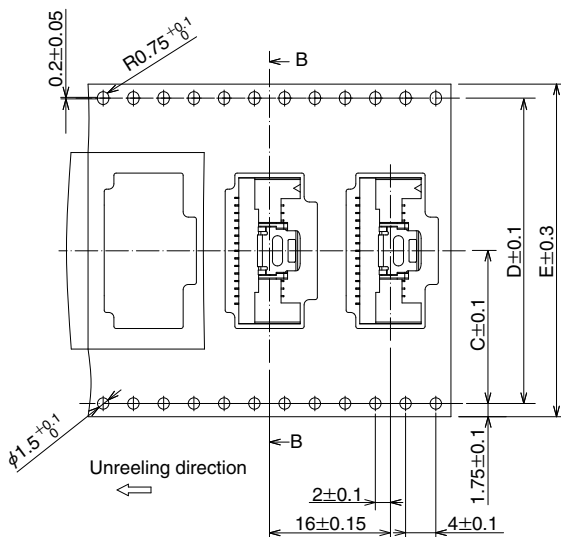
Unit : mm

| Part No. | HRS No. | No. of Contacts | A | B | C | D | E | F | G |
|------------------|---------------|-----------------|-------|----|------|------|----|------|------|
| DF50-20DP-1H(**) | 665-0016-5 ** | 20 | 14.35 | 9 | 14.2 | 28.4 | 32 | 38.4 | 32.4 |
| DF50-30DP-1H(**) | 665-0015-2 ** | 30 | 19.35 | 14 | 20.2 | 40.4 | 44 | 50.4 | 44.4 |
| DF50-40DP-1H(**) | 665-0014-0 ** | 40 | 24.35 | 19 | | | | | |
| DF50-50DP-1H(**) | 665-0013-7 ** | 50 | 29.35 | 24 | | | | | |

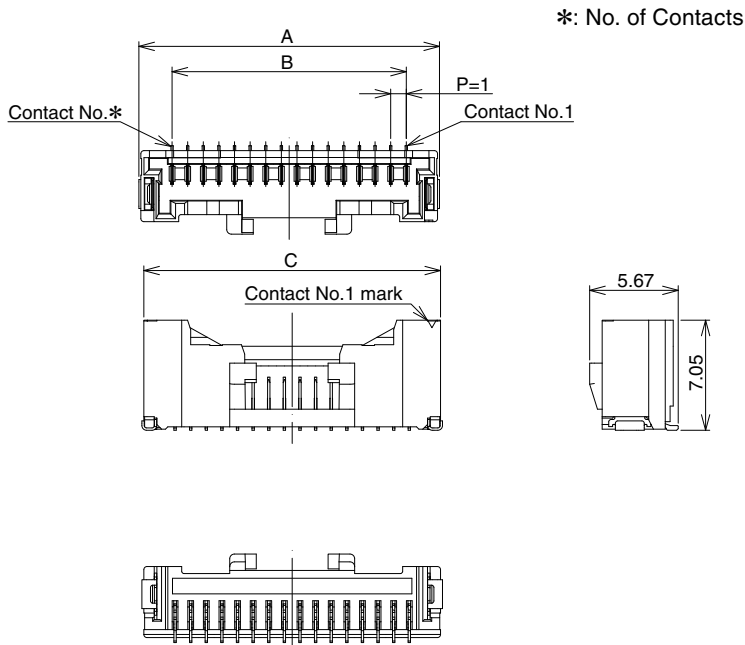
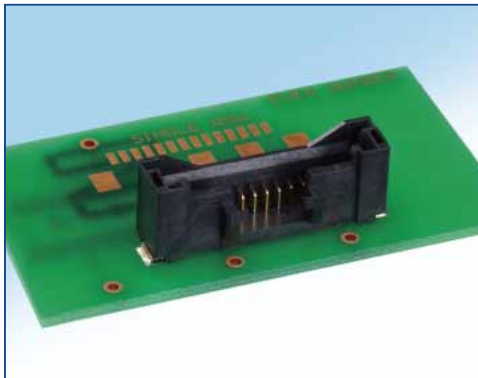
(Note) Please place orders for embossed packaged products by the multiple of the number of reels. (600 pcs/reel)

Emboss tape dimensions (JIS C 0806 compliant)

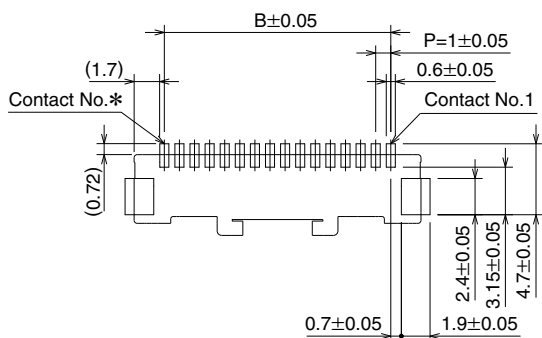
Reel Condition Dimensions



Single-row straight pin header



Recommended PCB Dimensions



[Specification Number: **, (**)]
(51): Gold plating, embossed packaging

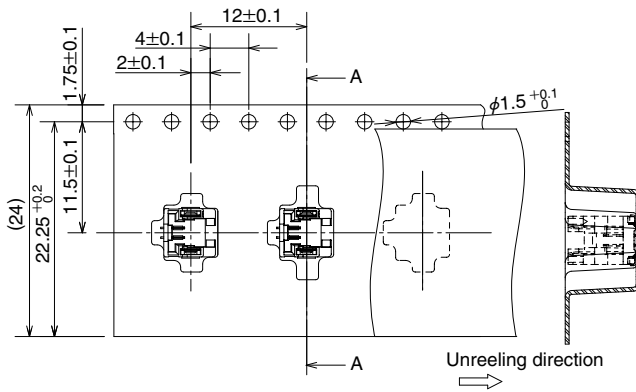
Unit : mm

| Part No. | HRS No. | No. of Contacts | A | B | C |
|-------------------|---------------|-----------------|-------|----|----|
| DF50A-2P-1V (**) | 665-1001-3 ** | 2 | 5.25 | 1 | 5 |
| DF50A-3P-1V (**) | 665-1004-1 ** | 3 | 6.25 | 2 | 6 |
| DF50A-4P-1V (**) | 665-1006-7 ** | 4 | 7.25 | 3 | 7 |
| DF50A-5P-1V (**) | 665-1008-2 ** | 5 | 8.25 | 4 | 8 |
| DF50A-6P-1V (**) | 665-1010-4 ** | 6 | 9.25 | 5 | 9 |
| DF50A-7P-1V (**) | 665-1012-0 ** | 7 | 10.25 | 6 | 10 |
| DF50A-8P-1V (**) | 665-1014-5 ** | 8 | 11.25 | 7 | 11 |
| DF50A-9P-1V (**) | 665-1016-0 ** | 9 | 12.25 | 8 | 12 |
| DF50A-10P-1V (**) | 665-1017-3 ** | 10 | 13.25 | 9 | 13 |
| DF50A-11P-1V (**) | 665-1019-9 ** | 11 | 14.25 | 10 | 14 |
| DF50A-12P-1V (**) | 665-1021-0 ** | 12 | 15.25 | 11 | 15 |
| DF50A-13P-1V (**) | 665-1023-6 ** | 13 | 16.25 | 12 | 16 |
| DF50A-14P-1V (**) | 665-1025-1 ** | 14 | 17.25 | 13 | 17 |
| DF50A-15P-1V (**) | 665-1027-7 ** | 15 | 18.25 | 14 | 18 |
| DF50A-16P-1V (**) | 665-1029-2 ** | 16 | 19.25 | 15 | 19 |

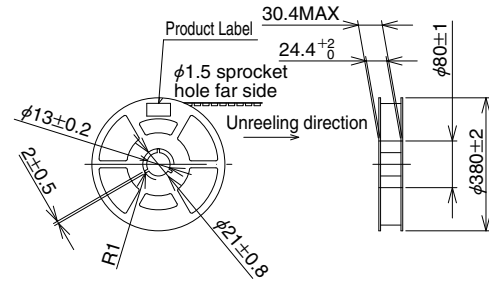
(Note) Please place orders for embossed packaged products by the multiple of the number of reels. (1,000 pcs/reel)

◆ Emboss tape dimensions (JIS C 0806 compliant)

● DF50A-2P-1V to DF50A-8P-1V (Number of contacts: 2 to 8)

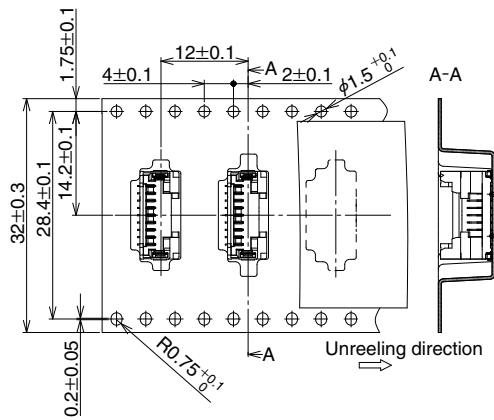


◆ Reel Condition Dimensions

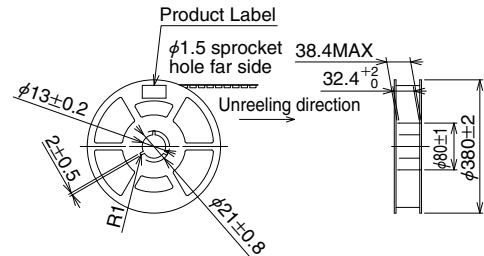


◆ Emboss tape dimensions (JIS C 0806 compliant)

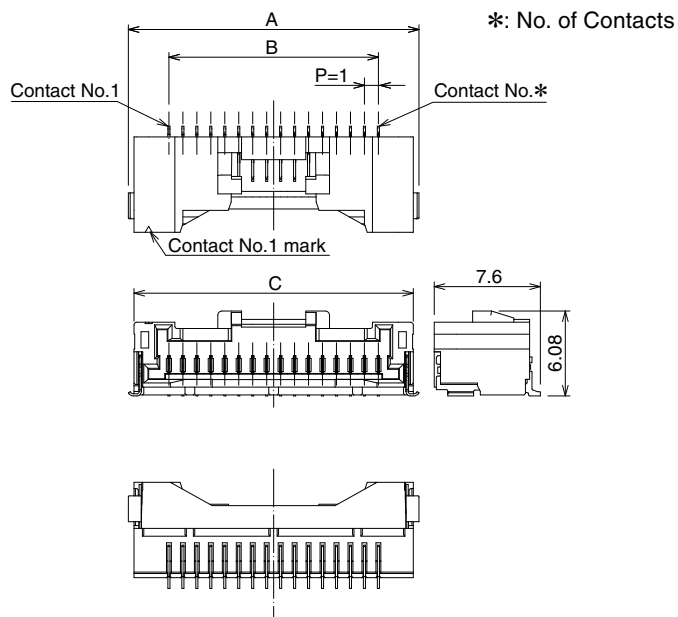
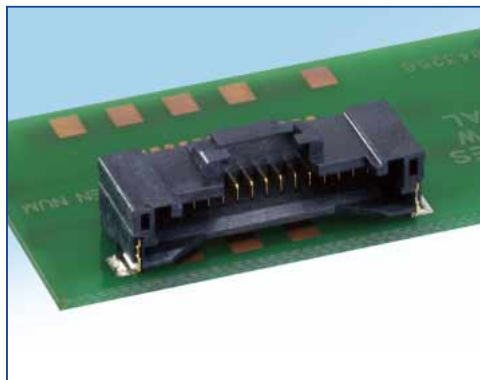
● DF50A-9P-1V to DF50A-16P-1V (Number of contacts: 9 to 16)



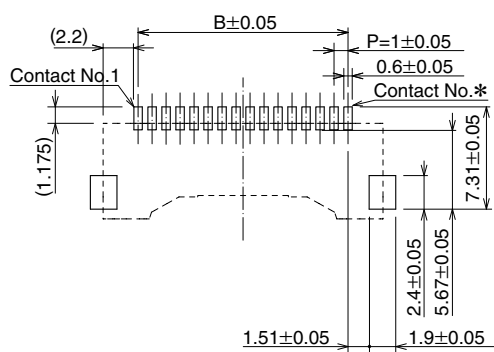
◆ Reel Condition Dimensions



Single-row right angle pin header



Recommended PCB Dimensions



[Specification Number: **, (**)]
(51): Gold plating, embossed packaging

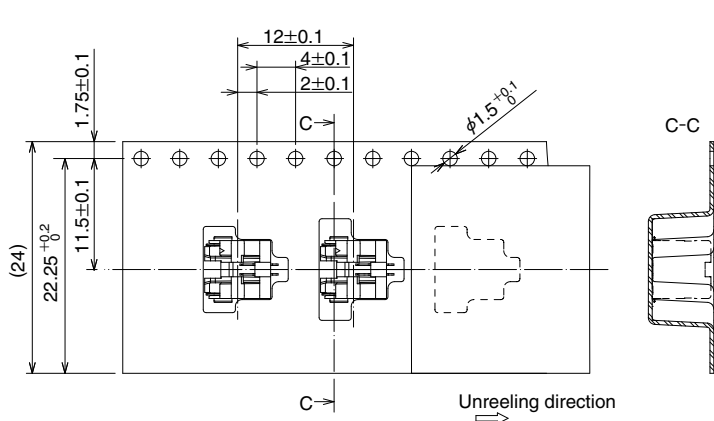
Unit : mm

| Part No. | HRS No. | No. of Contacts | A | B | C |
|-------------------|---------------|-----------------|-------|----|----|
| DF50A-2P-1H (**) | 665-1031-4 ** | 2 | 6.81 | 1 | 6 |
| DF50A-3P-1H (**) | 665-1032-7 ** | 3 | 7.81 | 2 | 7 |
| DF50A-4P-1H (**) | 665-1033-0 ** | 4 | 8.81 | 3 | 8 |
| DF50A-5P-1H (**) | 665-1034-2 ** | 5 | 9.81 | 4 | 9 |
| DF50A-6P-1H (**) | 665-1035-5 ** | 6 | 10.81 | 5 | 10 |
| DF50A-8P-1H (**) | 665-1037-0 ** | 8 | 12.81 | 7 | 12 |
| DF50A-10P-1H (**) | 665-1039-6 ** | 10 | 14.81 | 9 | 14 |
| DF50A-12P-1H (**) | 665-1041-8 ** | 12 | 16.81 | 11 | 16 |
| DF50A-16P-1H (**) | 665-1045-9 ** | 16 | 20.81 | 15 | 20 |

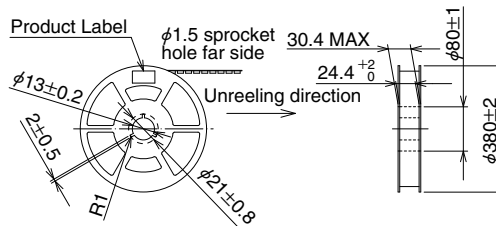
(Note) Please place orders for embossed packaged products by the multiple of the number of reels. (1,000 pcs/reel)

◆ Emboss tape dimensions (JIS C 0806 compliant)

● DF50A-2P-1H to DF50A-6P-1H (Number of contacts : 2 to 6)

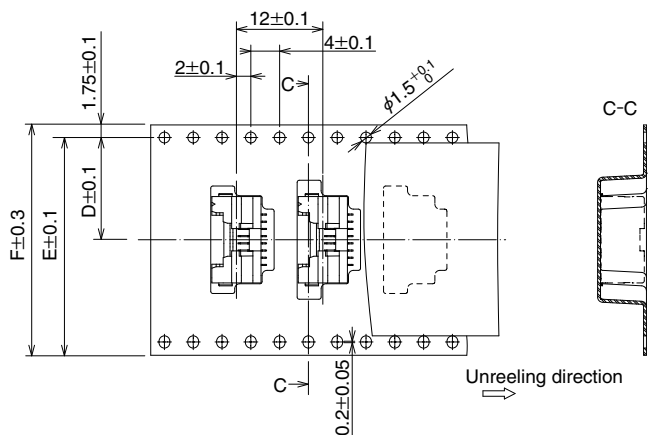


◆ Reel Condition Dimensions

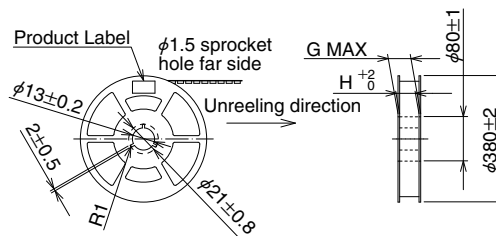


◆ Emboss tape dimensions (JIS C 0806 compliant)

● DF50A-8P-1H to DF50A-16P-1H (Number of contacts : 8 to 16)



◆ Reel Condition Dimensions

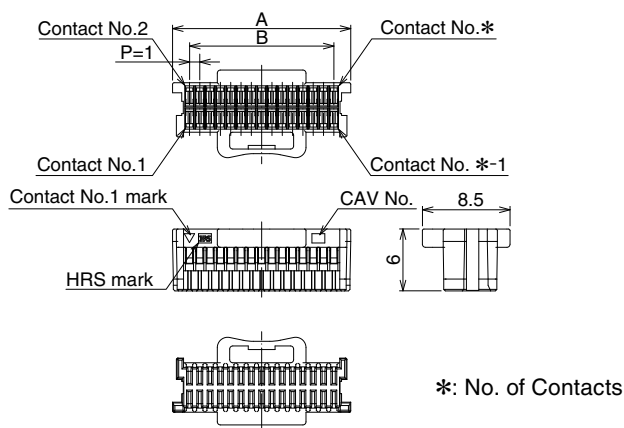


Unit : mm

| Part No. | HRS No. | No. of Contacts | D | E | F | G | H |
|-------------------|-----------------|-----------------|------|------|----|------|------|
| DF50A-8P-1H (**) | 665-1037-0 (**) | 8 | 14.2 | 28.4 | 32 | 38.4 | 32.4 |
| DF50A-10P-1H (**) | 665-1039-6 (**) | 10 | | | | | |
| DF50A-12P-1H (**) | 665-1041-8 (**) | 12 | | | | | |
| DF50A-16P-1H (**) | 665-1045-9 (**) | 16 | 20.2 | 40.4 | 44 | 50.4 | 44.4 |

(Note) Please place orders for embossed packaged products by the multiple of the number of reels. (1,000 pcs/reel)

■ Double-row crimp socket

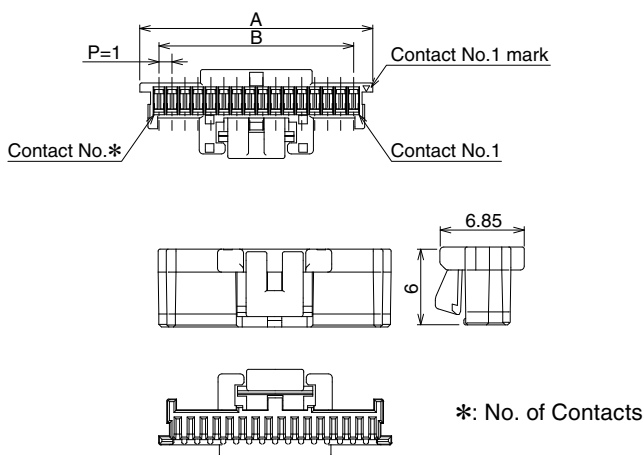


Unit : mm

| Part No. | HRS No. | No. of Contacts | A | B |
|---------------|---------------|-----------------|-------|----|
| DF50S-20DS-1C | 665-0020-2 00 | 20 | 12.28 | 9 |
| DF50S-30DS-1C | 665-0021-5 00 | 30 | 17.28 | 14 |
| DF50S-40DS-1C | 665-0022-8 00 | 40 | 22.28 | 19 |
| DF50S-50DS-1C | 665-0012-4 00 | 50 | 27.28 | 24 |

(Note) Sold in 100 pcs/pack.

■ Single-row crimp socket

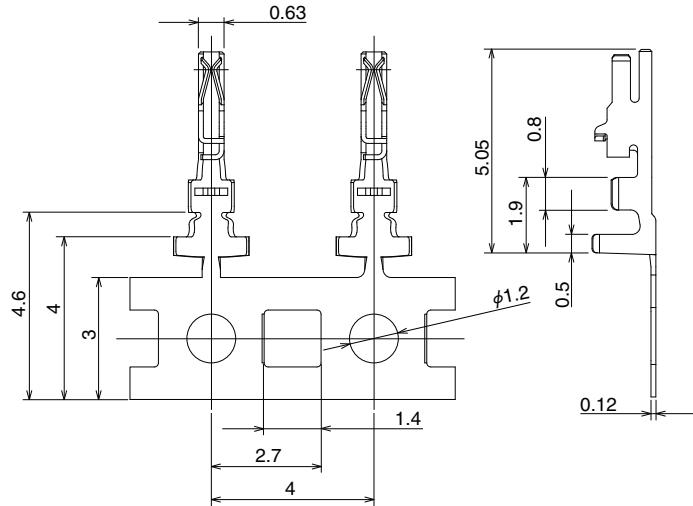


Unit : mm

| Part No. | HRS No. | No. of Contacts | A | B |
|--------------|---------------|-----------------|-------|----|
| DF50A-2S-1C | 665-1002-6 00 | 2 | 3.95 | 1 |
| DF50A-3S-1C | 665-1005-4 00 | 3 | 4.95 | 2 |
| DF50A-4S-1C | 665-1007-0 00 | 4 | 5.95 | 3 |
| DF50A-5S-1C | 665-1009-5 00 | 5 | 6.95 | 4 |
| DF50A-6S-1C | 665-1011-7 00 | 6 | 7.95 | 5 |
| DF50A-7S-1C | 665-1013-2 00 | 7 | 8.95 | 6 |
| DF50A-8S-1C | 665-1015-8 00 | 8 | 9.95 | 7 |
| DF50A-9S-1C | 665-1100-5 00 | 9 | 10.95 | 8 |
| DF50A-10S-1C | 665-1018-6 00 | 10 | 11.95 | 9 |
| DF50A-11S-1C | 665-1020-8 00 | 11 | 12.95 | 10 |
| DF50A-12S-1C | 665-1022-3 00 | 12 | 13.95 | 11 |
| DF50A-13S-1C | 665-1024-9 00 | 13 | 14.95 | 12 |
| DF50A-14S-1C | 665-1026-4 00 | 14 | 15.95 | 13 |
| DF50A-15S-1C | 665-1028-0 00 | 15 | 16.95 | 14 |
| DF50A-16S-1C | 665-1030-1 00 | 16 | 17.95 | 15 |

(Note) Sold in 100 pcs/pack.

■ Crimp contact



| Part No. | HRS No. | Type | Quantity | Treatment |
|----------------|-------------------|--------------|-----------------|--------------|
| DF50-2830SCFA | 665-0002-0 00 | Reel contact | 30,000 pcs/reel | Gold plating |
| DF50K-2830SCFA | 665-0017-8 00 | | | |
| DF50-3032SCFA | Under development | — | — | — |

(Note) As this product is sold 30,000 pcs/reel, please place orders by the multiple of the number of reels.

● Applicable wire (Tinned Annealed Copper Wire)

| Part No. | HRS No. | Recommended wire | | |
|----------------|---------------|------------------|---------------------------------|----------------------|
| | | Cable name | Conductor size (Core structure) | Diameter of the wire |
| DF50-2830SCFA | 665-0002-0 00 | UL1061 | AWG#28 (7 / φ0.127mm) | φ0.8 to 0.9mm |
| | | | AWG#30 (7 / φ0.102mm) | |
| DF50K-2830SCFA | 665-0017-8 00 | UL1571 | AWG#28 (7 / φ0.13mm) | φ0.58mm |

● Strip length
1.3 to 1.7mm

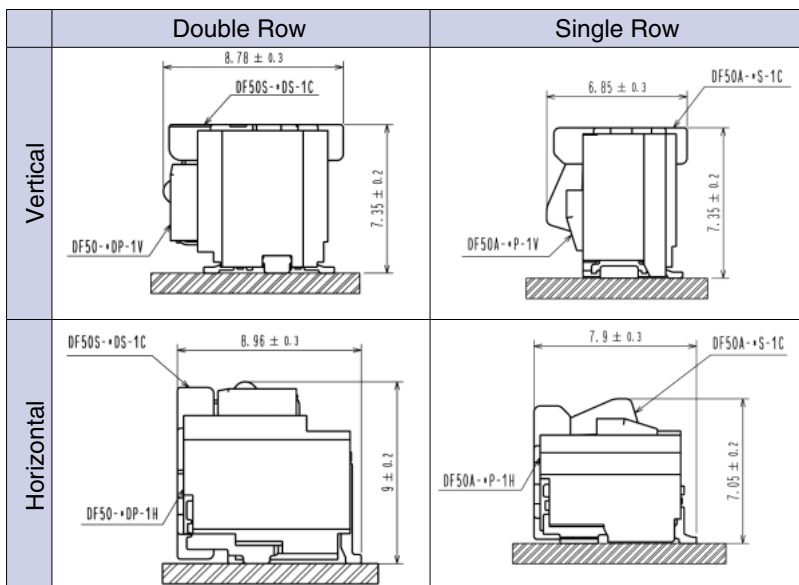
(Note) Please contact our Sales Department when you are using wires other than applicable wires.

◆ Applicable crimping tool

| Type | Part No. | HRS No. | Applicable contact |
|-----------------------|-------------------|------------|--------------------|
| Applicator | AP105-DF50-2830S | 901-4616-0 | DF50-2830SCFA |
| Press body | CM-105 | 901-0005-4 | — |
| Hand tool | HT305/DF50-2830HC | 902-4634-8 | DF50-2830SCFA |
| Contact pull-out tool | DF-C-PO(B) | 550-0179-2 | |

(Note) Problems caused by tools other than our specified ones are out of warranty events.

◆ Application Pattern



◆ Precautions

| | |
|---|--|
| <p>1. Recommended Temperature Profile (Compatible with lead-free soldering)</p> | <p>[Applicable Conditions]</p> <ol style="list-style-type: none"> 1. Peak temperature: a maximum of 250°C for no more than 10 seconds 2. Heating unit: no less than 220°C for no more than 60 seconds 3. Preheating unit: 150 to 180°C for 90 to 120 seconds 4. Number of times: no more than 2 times <p>* Measurement is conducted at the contact lead part As it may change depending on the conditions such as solder paste types, manufacturers, PCB size, and other soldering materials, please fully check the mounting conditions before use.</p> <p>(Note 1) This temperature profile is a recommended value.</p> |
| <p>2. Recommended hand soldering conditions</p> | <p>Temperature of soldering iron: 350±10°C, soldering time: 3 to 4 seconds</p> |
| <p>3. Recommended screen thickness and aperture ratio (Pattern surface ratio)</p> | <p>Thickness: 0.1mm, aperture ratio: 100%</p> |
| <p>4. Warpage of the Board</p> | <p>A maximum of 0.02mm at the center of connector, as measured from either end of the connector</p> |
| <p>5. Cleaning Conditions</p> | <p>IPA cleaning is allowed. (Cleaning is not recommended because cleaning may change the push/pull feeling etc. Please contact us when you use other cleaning agents.)</p> |
| <p>6. Precautions</p> | <ul style="list-style-type: none"> ▪ When inserting a crimp contact into a crimp socket, do not insert it at a slanted angle in order to maintain the reliability of its performance. ▪ Please refrain from pushing/pulling operation when the PCB is not mounted. It may cause breakage, contact deformation, etc. ▪ Please refrain from pushing/pulling operation with wires in your hand. It may cause damage. ▪ During hand soldering, do not apply flux which will cause flux oozing on connector. ▪ This product may have a little difference in its molded color depending on the production lot, but the difference doesn't have any influence on the performance. ▪ Please refer to the operation manual for more information. ▪ Please refer to the documents "Cable assembly procedure", "Crimp condition" and "Crimp quality standards" for the cable assembly procedure. |

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