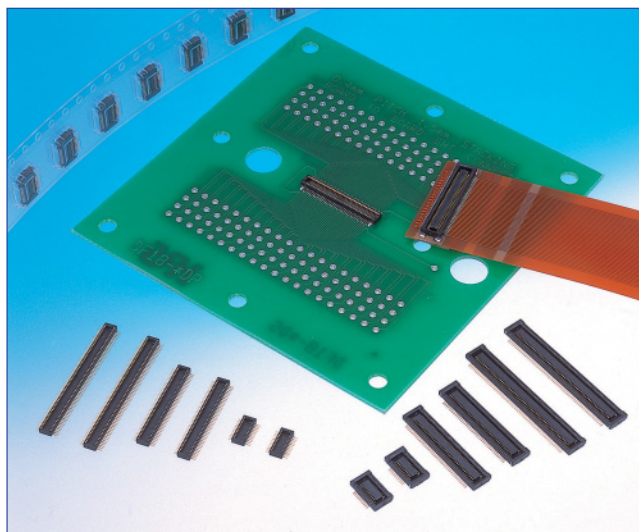


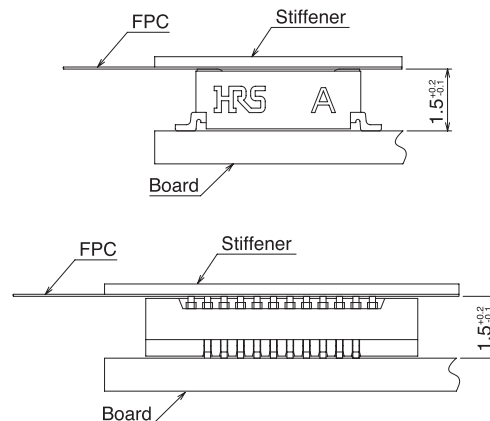
**NEW**

# 0.4mm Contact Pitch, 1.5mm above the board, Board-to-Board / Board-to-FPC Connectors

## DF18 Series



Low profile – Board-to-board distance of 1.5 mm



### ■ Features

#### 1. Allows higher mounting density of board components

Extremely small board mounting pattern and low above-the-board profile makes the connector suitable for small device applications.

#### 2. High Contact Reliability

Despite its small size and low profile the contacts have large deflection distance, guaranteeing reliable electrical performance.

#### 3. Good Mating Characteristics

Large lead-in distance of 0.33 mm in horizontal directions and tactile “click” confirms fully mated condition of connectors.

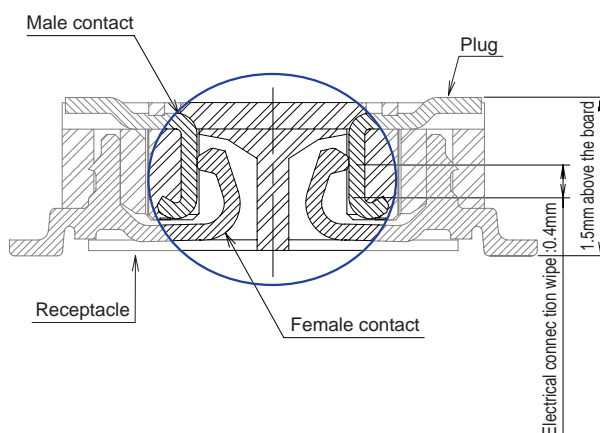
#### 4. Optional Additional Board Retention

For applications requiring extra-strong hold of connectors to the board connectors can be ordered with optional metal hold-down.

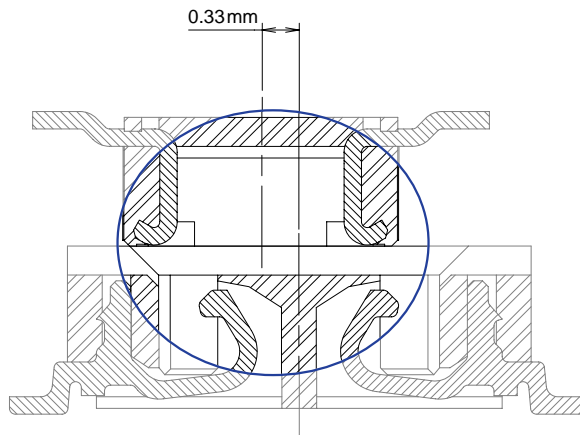
#### 5. Automatic Board Placement

Connectors have large flat width (Plug: 1.4 mm, Receptacle: 1.44mm) to accommodate pick-up with automatic placement machines.

High Contact Reliability – Effective connection wipe of 0.4 mm



Self-alignment distance: 0.33 mm



### ■ Applications

Digital video cameras, Digital still cameras, cellular phones, miniature displays, cameras portable equipment and other applications requiring small reliable board-to-board and FPC-to-Board connections.

## Product Specifications

Rating	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	40°C to 80°C (Note 2)	Storage humidity range	40°C to 70°C (Note 2)

Item	Specification	Conditions
1. Insulation resistance	50 M ohms min.	100 V DC
2. Withstanding voltage	No flashover or insulation breakdown.	100 V AC / one minute
3. Contact resistance	60 m ohms max.	1 mA AC, 20mv max., 1KHz
4. Vibration	No electrical discontinuity of 1 ms or more.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 2 hours / 3 axis.
5. Humidity	Contact resistance: 60 m ohms max. Insulation resistance: 25 M ohms min.	96 hours at temperature of 40±2°C and humidity of 90 to 95%
6. Temperature cycle	Contact resistance: 60 m ohms max. Insulation resistance: 50 M ohms min.	Temperature: -55°C--> +15°C to +35°C--> +85°C--> +15°C to +35°C Duration: 30 --> 2 to 3 --> 30 --> 2 to 3 (Minutes) 5 cycles
7. Durability (insertion/ withdrawal)	Contact resistance: 60 m ohms max.	50 cycles
8. Resistance to soldering heat	No deformation of any component. No affect on contacts.	Reflow: At the recommended temperature profile Manual soldering: 300°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

Product	Part	Material	Finish	Remarks
Receptacles Plugs	Insulator	LCP	Color: Black	UL94V-0
	Contacts	Copper alloy	Gold plated	-
	Metal fittings	Brass	Tin plated	-

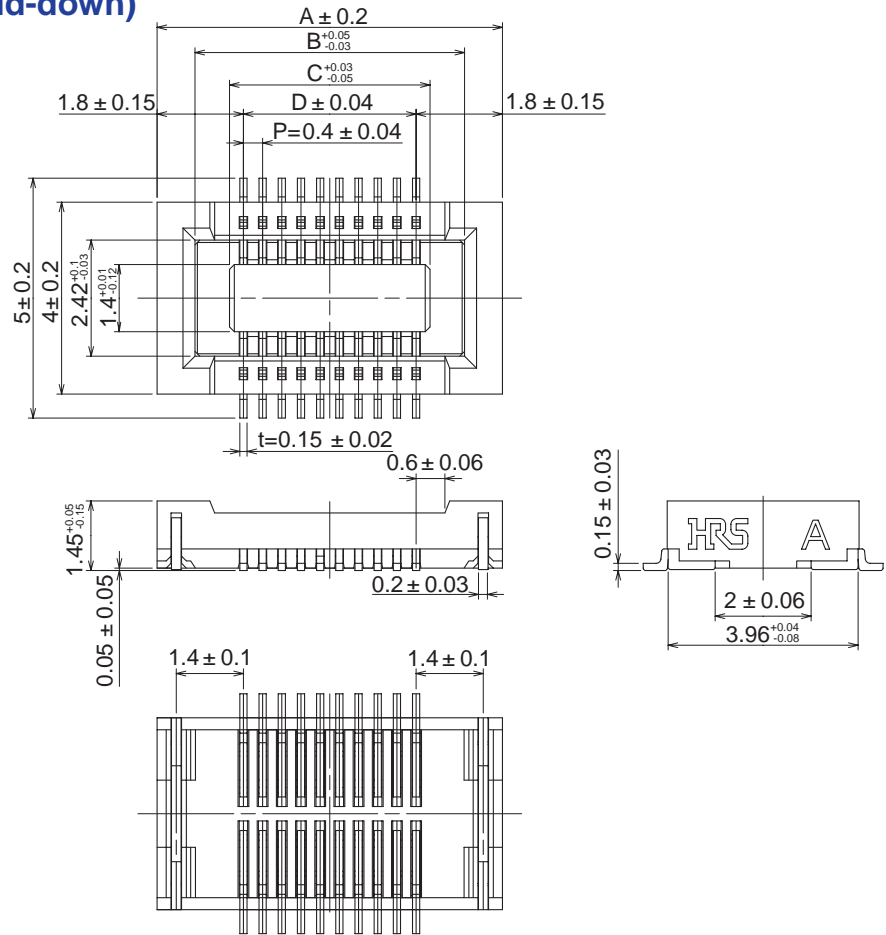
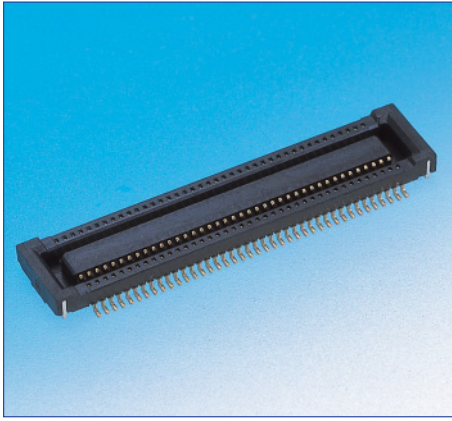
## Ordering Information

### Receptacles / Plugs

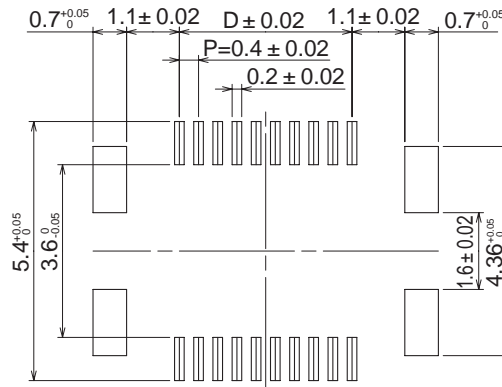
**DF18**   **C**   —   **\***   **DS**   —   **0.4**   **V**   (**\*\***)  
①   ②   ③   ④   ⑤   ⑥   ⑦

① Series name: DF18	③ Number of Contacts: 20, 30, 40, 50, 60, 70, 80, 100, 120	⑥ Terminal type V: SMT vertical mounting type
② Hold-down bracket type B: With metal hold-down, (receptacles only) C: With added hold-down contacts D: With added hold-down contacts, increased Removal Force Type(receptacle only) E: With added hold-down contacts, increased Removal Force Type(receptacle only)	④ Connector type DS: Double-row receptacle DP: Double-row plug	⑦ Packaging type (51): Plug, embossed tape packaging (2,000 pieces per reel) (81): Receptacle, embossed tape packaging (2,000 pieces per reel)
	⑤ Contact pitch 0.4 mm	

## ■ Receptacles (with metal hold-down)



## ◆ PCB mounting pattern

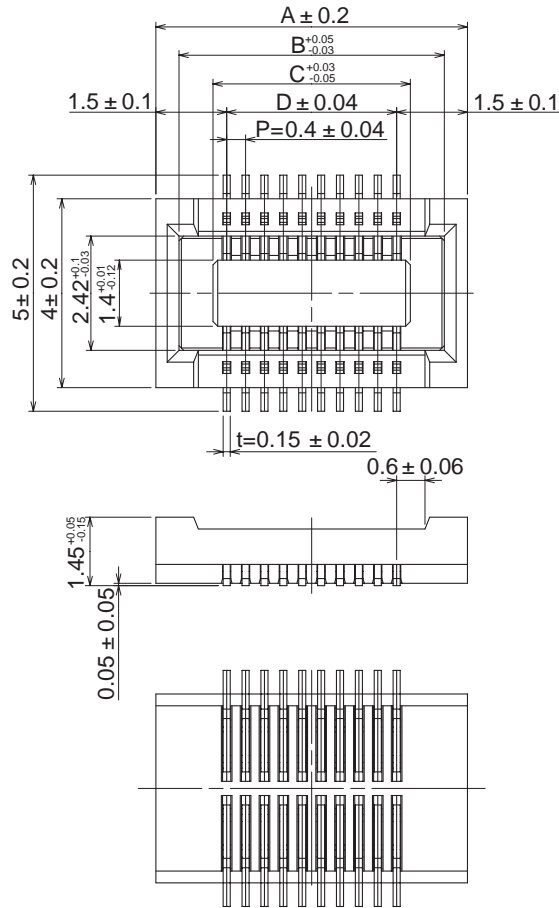
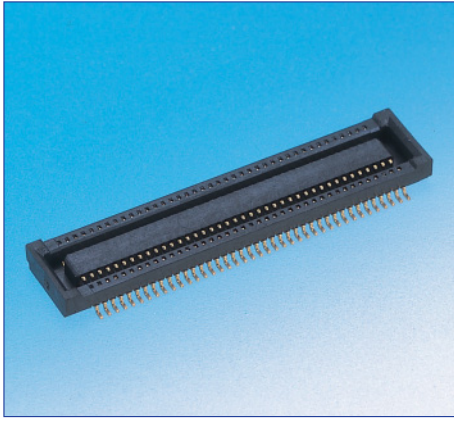


Unit: mm

Part Number	CL No.	Number of Contacts	A	B	C	D
DF18B - 20DS-0.4V (81)	684-0021-3-81	20	7.20	5.62	4.18	3.60
DF18B - 30DS-0.4V (81)	684-0022-6-81	30	9.20	7.62	6.18	5.60
DF18B - 40DS-0.4V (81)	684-0023-9-81	40	11.20	9.62	8.18	7.60
DF18B - 50DS-0.4V (81)	684-0005-7-81	50	13.20	11.62	10.18	9.60
DF18B - 60DS-0.4V (81)	684-0006-0-81	60	15.20	13.62	12.18	11.60
DF18B - 70DS-0.4V (81)	684-0024-1-81	70	17.20	15.62	14.18	13.60
DF18B - 80DS-0.4V (81)	Reserved for product expansion	80	19.20	17.62	16.18	15.60
DF18B-100DS-0.4V (81)	684-0008-5-81	100	23.20	21.62	20.18	19.60
DF18B-120DS-0.4V (81)	Reserved for product expansion	120	27.20	25.62	24.18	23.60

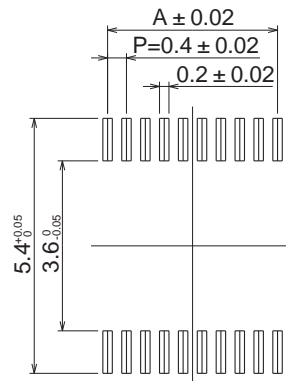
Note: Embossed tape reel packaging(2,000 pieces/reel)  
Order by the number of reels.

## ■ Receptacles (without metal hold-down)



Note: Please specify metal fittings when connecting rigid PCB's.

## ◆ PCB mounting pattern



Unit: mm

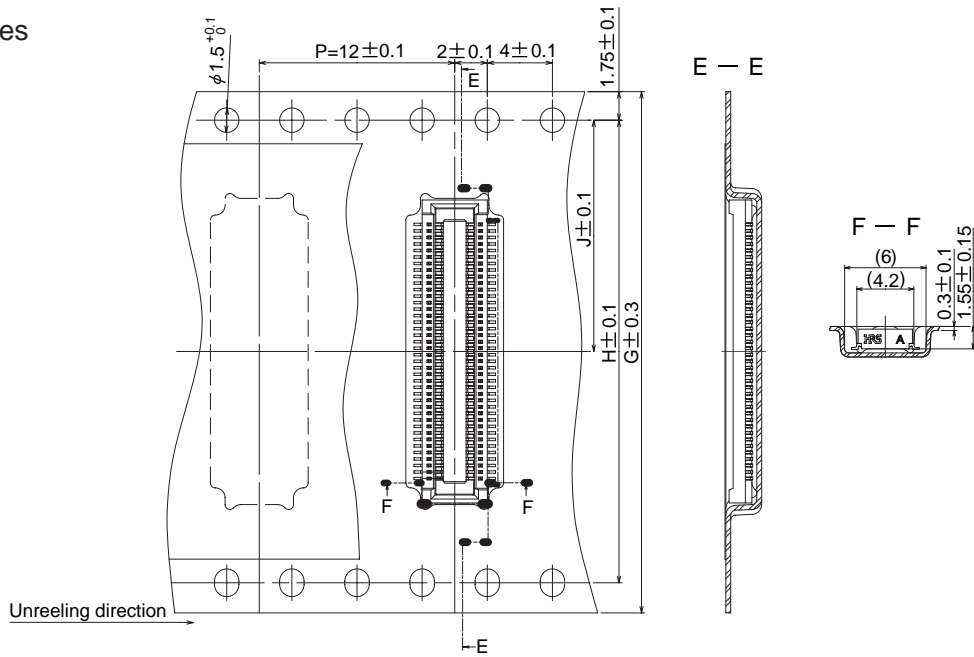
Part Number	CL No.	Number of Contacts	A
DF18C - 20DS-0.4V (81)	684-0017-6-81	20	3.60
DF18C - 30DS-0.4V (81)	684-0018-9-81	30	5.60
DF18C - 40DS-0.4V (81)	684-0019-1-81	40	7.60
DF18C - 50DS-0.4V (81)	684-0001-6-81	50	9.60
DF18C - 60DS-0.4V (81)	684-0002-9-81	60	11.60
DF18C - 70DS-0.4V (81)	684-0020-0-81	70	13.60
DF18C - 80DS-0.4V (81)	684-0003-1-81	80	15.60
DF18C-100DS-0.4V (81)	684-0004-4-81	100	19.60
DF18C-120DS-0.4V (81)	684-0013-5-81	120	23.60

Note: Embossed tape reel packaging (2,000 pieces/reel)  
Order by the number of reels.

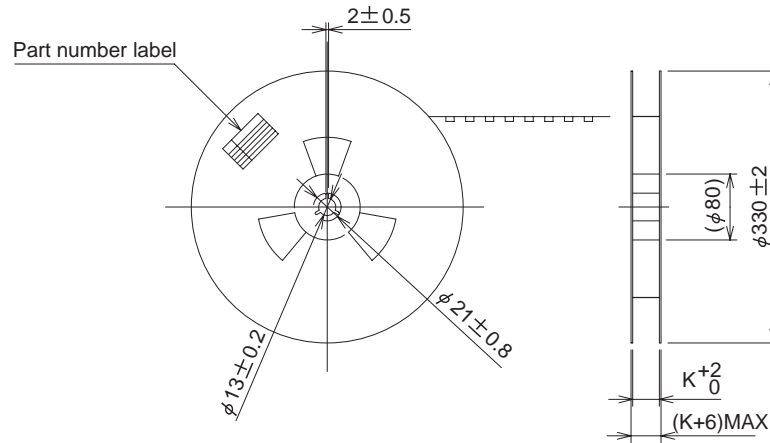


## ◆ Embossed Carrier Tape Dimensions

### ● Receptacles



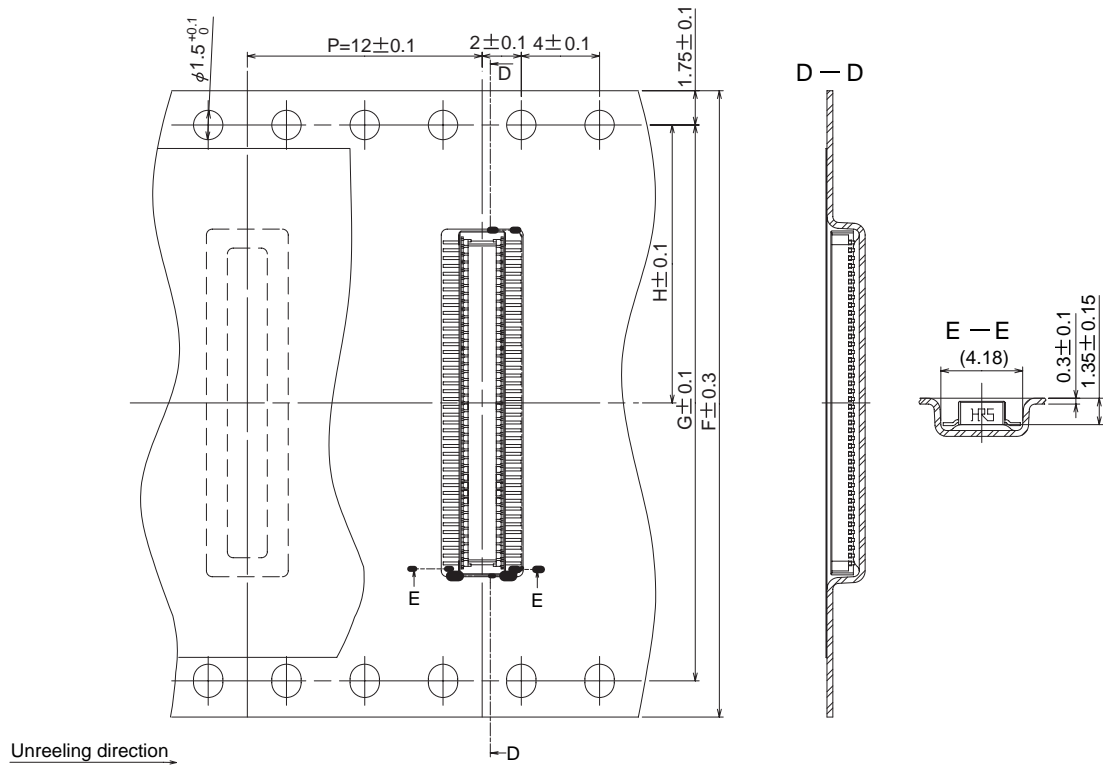
### ● Reel dimensions



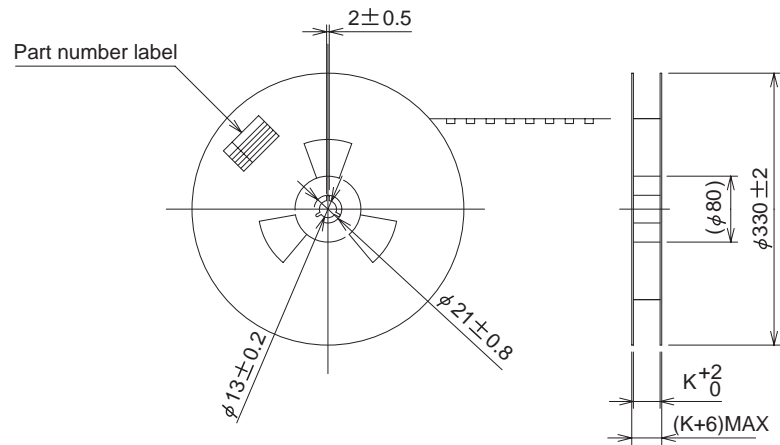
Part Number	G	H	J	K
DF18B - 20DS-0.4V	16.0	-	7.5	16.4
DF18C - 20DS-0.4V				
DF18B - 30DS-0.4V	24.0	-	11.5	24.4
DF18C - 30DS-0.4V	16.0	-	7.5	16.4
DF18B - 40DS-0.4V	24.0	-	11.5	24.4
DF18C - 40DS-0.4V				
DF18B - 50DS-0.4V	24.0	-	11.5	24.4
DF18C - 50DS-0.4V				
DF18B - 60DS-0.4V	24.0	-	11.5	24.4
DF18C - 60DS-0.4V				
DF18B - 70DS-0.4V	32.0	28.4	14.2	32.4
DF18C - 70DS-0.4V	24.0	-	11.5	24.4
DF18B - 80DS-0.4V	32.0	28.4	14.2	32.4
DF18C - 80DS-0.4V				
DF18B-100DS-0.4V	44.0	40.4	20.2	44.4
DF18C-100DS-0.4V				
DF18B-120DS-0.4V	44.0	40.4	20.2	44.4
DF18C-120DS-0.4V				

Note: Bottom side feed holes are added to embossed tape when  $G = 32.0$  or greater.

● Plugs



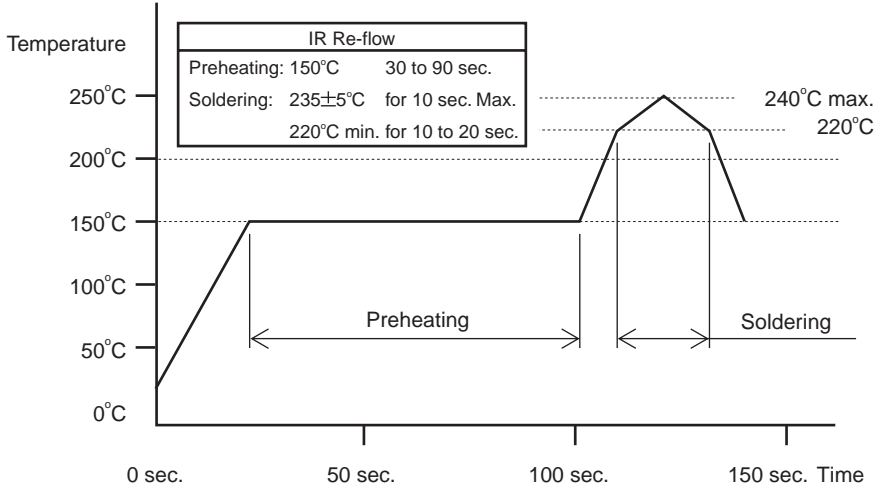
● Reel dimensions



Part Number	F	G	H	K
DF18D - 20DP-0.4V	16.0	-	7.5	16.4
DF18D - 30DP-0.4V	16.0	-	7.5	16.4
DF18E - 40DP-0.4V	24.0	-	11.5	24.4
DF18E - 50DP-0.4V	24.0	-	11.5	24.4
DF18C - 60DP-0.4V	24.0	-	11.5	24.4
DF18C - 70DP-0.4V	24.0	-	11.5	24.4
DF18C - 80DP-0.4V	32.0	28.4	14.2	32.4
DF18C-100DP-0.4V	44.0	40.4	20.2	44.4
DF18C-120DP-0.4V	44.0	40.4	20.2	44.4

Note: Bottom side feed holes are added to embossed tape when  $F = 32.0$  or greater.

## ◆ Usage 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 (for surface mounted plug assembly).</p>
<p>2. Recommended soldering conditions</p>	<p>Soldering temperature: <math>290 \pm 10^{\circ}\text{C}</math>, soldering time: within 2 sec.</p>
<p>3. Recommended screen thickness and open area ratio (Pattern area ratio)</p>	<p>Thickness: 0.12 mm Open area ratio: 70%</p>
<p>4. Board warping</p>	<p>Maximum of 0.03mm at the connector center section, 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>■ Excessive twisting when mating/un-mating may cause damage to the connectors.</li> <li>■ Specify receptacles with the metal hold-down when connecting rigid (non- flexible) printed circuit boards.</li> </ul>

### USA:

#### HIROSE ELECTRIC U.S.A., INC.

2688 Westhills Court, Simi Valley, CA 93065-6235

Phone : 1 805 522 7958

Fax : 1 805 522 3217

<http://www.hiroseusa.com>

### UNITED KINGDOM:

#### HIROSE ELECTRIC UK LTD.

Crownhill Business Centre 22 Vincent Avenue

Crownhill, Milton Keynes MK8 OAB

Phone : 44 1908 305400

Fax : 44 1908 305401

<http://www.hirose.co.uk>

### HONG KONG:

#### HIROSE ELECTRIC CO., LTD.

Unit 506, Energy Plaza. 92 Granville Road, Tsim Sha

Tsui East, Kowloon

Phone : 852 2803 5338

Fax : 852 2591 6560

### GERMANY:

#### HIROSE ELECTRIC GmbH

Zeppelinstrasse-42 D-73760 Ostfildern Kemnat

Phone : 49 711 4560021

Fax : 49 711 4560729

<http://www.hirose.de>

### KOREA:

#### HIROSE KOREA CO., LTD.

(#2NA311, Shihwa Industrial Complex),

1261-10, Jeoungwhang-Dong, Shihung-City, Kyunggi-Do

Phone : 886 2 2557 7351, 7352

Fax : 886 2 2552 9851

<http://www.hirose.co.kr>

### TAIWAN:

#### HIROSE ELECTRIC TAIWAN CO., LTD.

No.28 Lane 247 Sec. 2 Yen Ping N.Rd.Taipei

Phone : 886 2 2557 7351, 7352

Fax : 886 2 2552 9851

### THE NETHERLANDS:

#### HIROSE ELECTRIC B.V.

Beechavenue 46.1119PV

Schiphol-Rijk

Phone : 31 20 6557 460

Fax : 31 20 6557 469

<http://www.hiroseurope.com>

### CHINA:

#### HIROSE ELECTRIC TRADING(SHANGHAI) CO., LTD.

3705,Bund Center,222 Yan An Road(E),

Shanghai 20002

Phone : 86 21 6335 2538

Fax : 86 21 6335 0767

### SINGAPORE:

#### HIROSE ELECTRIC CO., LTD.

10 Anson Road #34-13 International Plaza 079903

Phone : 65 6324 6113

Fax : 65 6324 6123



## HIROSE ELECTRIC CO., LTD.

5-23,OSAKI 5-CHOME,SHINAGAWA-KU,TOKYO 141-8587,JAPAN

PHONE: 81-3-3491-9741, FAX: 81-3-3493-2933

<http://www.hirose.com>

<http://www.hirose-connectors.com>