

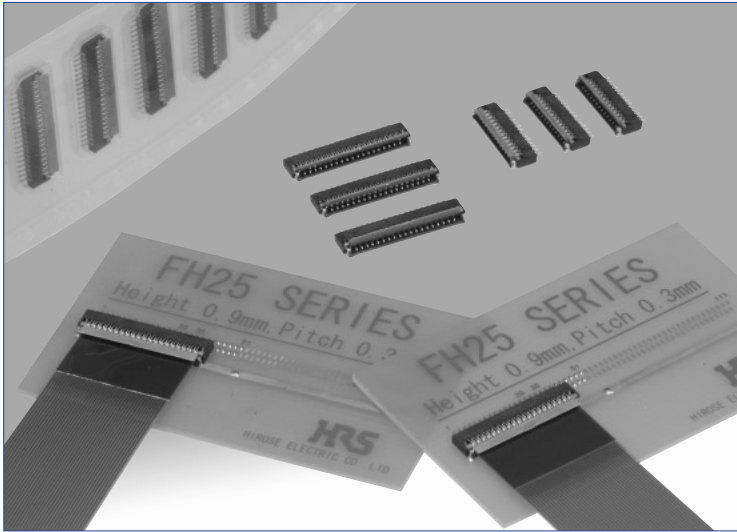


**THE DATASHEET OF  
FH25-33S-0.3SH(05)**



# 0.3 mm Contact Pitch, 0.9 mm above the board, Flexible Printed Circuit ZIF Connectors.

## FH 25 Series



### ■ Features

#### 1. Extremely light weight

The largest version, with all contacts loaded, weights only 0.11gramms.

#### 2. Conductive traces on the PCB can run under the connector

No exposed contacts on the bottom of the connector.

#### 3. High density together with reliable solderability on the board

Staggered contact points and the leads plus the nickel barriers assure sufficient distance to prevents solder bridging.

#### 4. Easy FPC insertion and reliable electrical connection

Proven Flip Lock® actuator allows easy insertion of FPC. Tactile sensation when fully closed confirms complete electrical and mechanical connection.

#### 5. Accepts standard thickness FPC

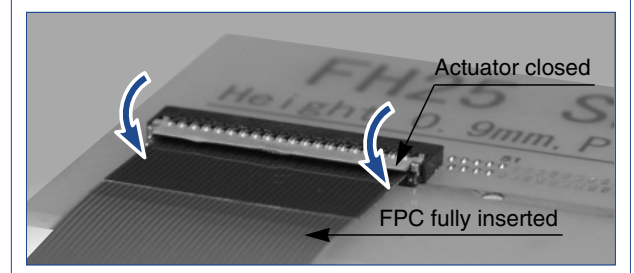
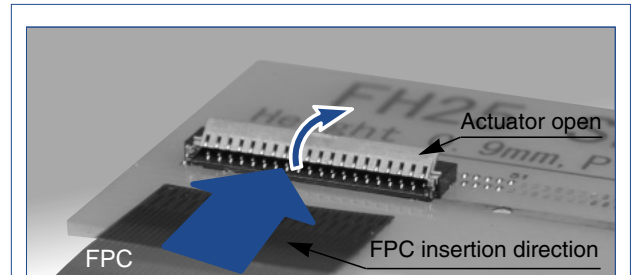
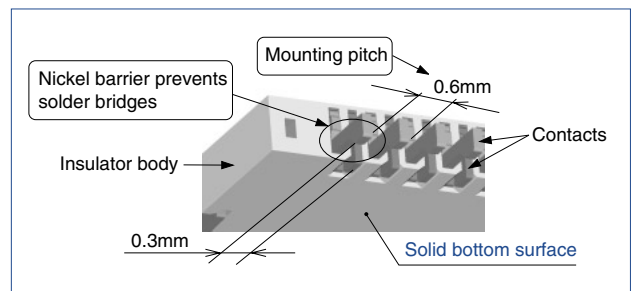
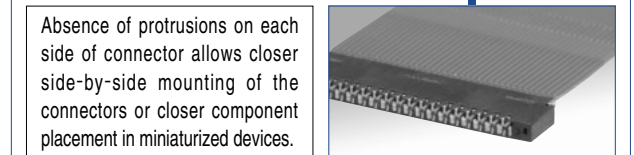
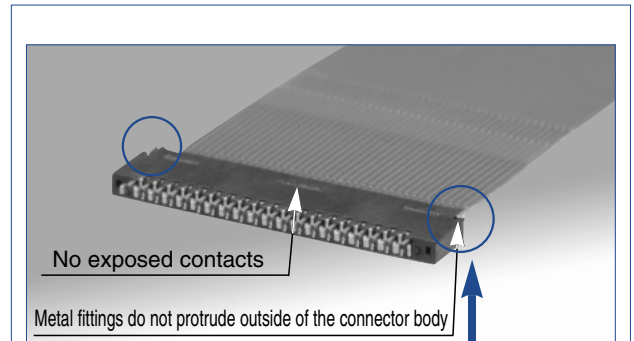
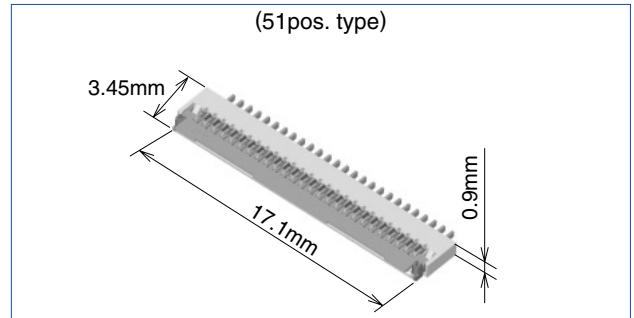
0.2 mm thick standard Flexible Printed Circuit board can be used. This is the only ultra-low profile ZIF connector allowing the use of standard FPC.

#### 6. Board placement with automatic equipment

Flat top surface and packaging on the tape-and-reel allows use of vacuum nozzles. Standard reel contains 5,000 connectors.

### ■ Applications

Mobile phones, PDA's, digital cameras, digital video cameras, LCD connections, plasma displays (PDP), camera modules and other compact devices requiring Flexible Printed Circuit connections using high reliability ultra-small profile connectors.



## Product Specifications

Rating	Rated current 0.15 A DC Rated voltage 30 V AC	Operating temperature range -55°C to +85°C (Note 1) Operating humidity range Relative humidity 90% max. (No condensation)	Storage temperature range -10°C to +50°C (Note 2) Storage humidity range Relative humidity 90% max.
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Recommended FPC	Thickness: = 0.2±0.03mm thick, gold plated connecting traces
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Item	Specification	Conditions
1. Insulation resistance	50 M ohms min.	100 V DC
2. Withstanding voltage	No flashover or insulation breakdown.	90 V AC /one minute
3. Contact resistance	100 m ohms max. * Including FPC conductor resistance	1 mA
4. Durability (insertion/ withdrawal)	Contact resistance: 100 m ohms max. No damage, cracks, or parts dislocation.	10 cycles
5. Vibration	No electrical discontinuity of 1 μs or more. Contact resistance: 100 m ohms max. No damage, cracks, or parts dislocation.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 10 cycles,3 axis.
6. Shock	No electrical discontinuity of 1 μs. min. Contact resistance: 100 m ohms max. No damage, cracks, or parts dislocation.	Acceleration of 981 m/s <sup>2</sup> , 6 ms duration, sine half-wave waveform, 3 cycles,3 axis.
7. Humidity (Steady state)	Contact resistance: 100 m ohms max. Insulation resistance: 50 M ohms min. No affect on appearance or performance.	96 hours at temperature of 40°C and humidity of 90% to 95%.
8. Temperature cycle	Contact resistance: 100 m ohms max. Insulation resistance: 50 M ohms min. No damage, cracks, or parts looseness.	Temperature: -55°C → +15°C to +35°C → +85°C → +15°C to +35°C Time: 30 → 2 to 3 → 30 → 2 to 3 (Minutes) 5 cycles
9. Resistance to soldering heat	No deformation of components affecting performance.	Reflow: At the recommended temperature profile Manual soldering: 350°C±5°C for 5 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

Part	Material	Finish	Remarks
Insulator	LCP	Color: Black	UL94V-0
	LCP	Color: Dark brown	
Contacts	Phosphor bronze	Gold plated	_____
Metal fittings	Phosphor bronze	Tin plated(No-lead)	_____

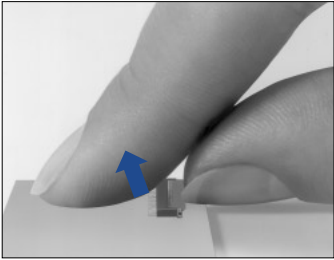
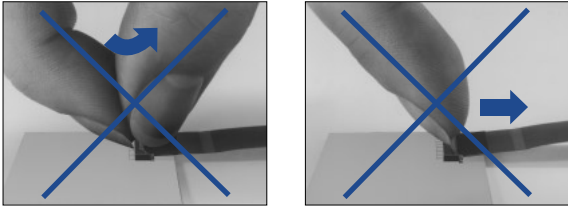
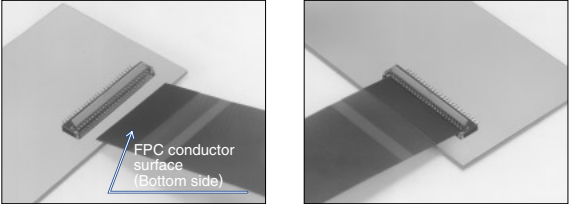
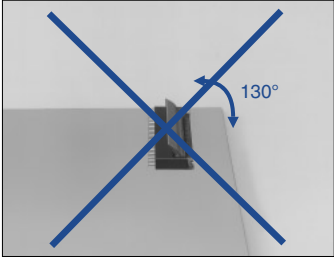
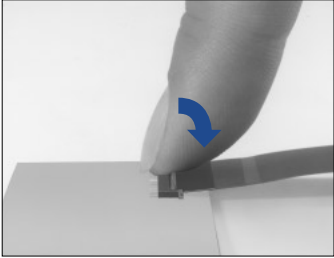
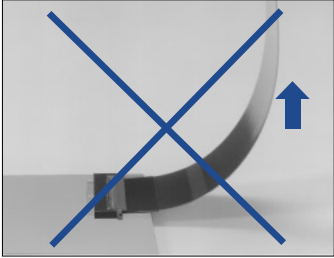
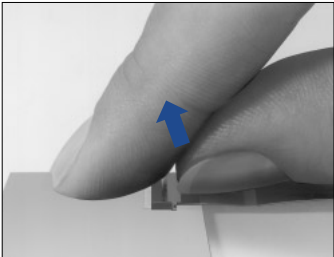
## Ordering information

### FH25- 51S - 0.3 - SH (05)

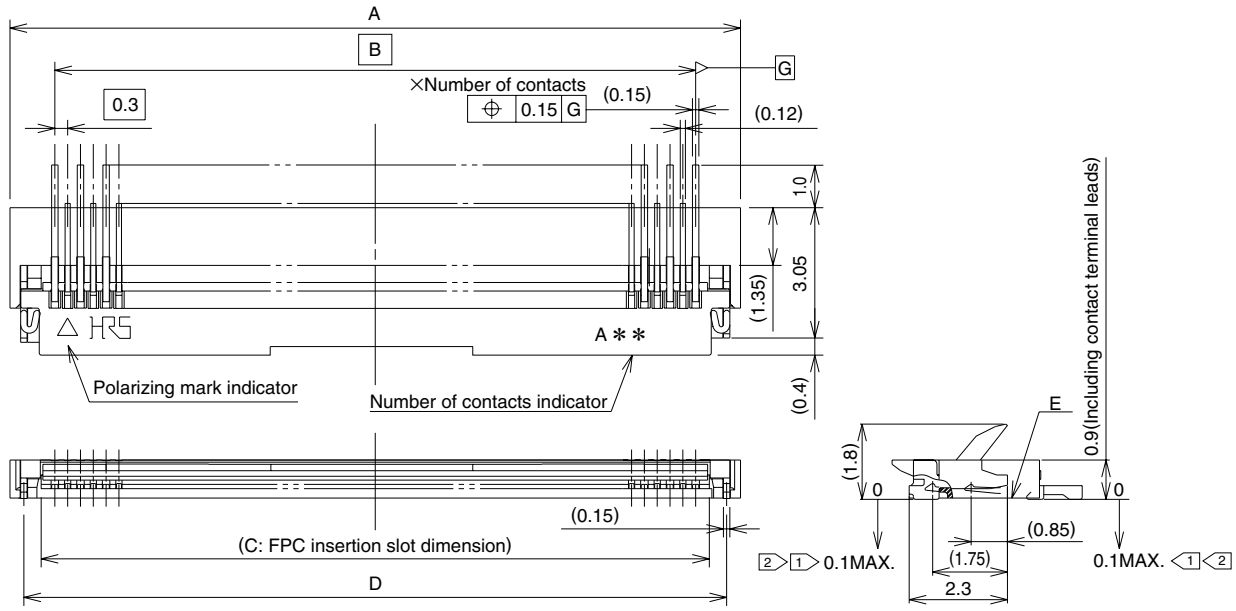
①      ②      ③      ④      ⑤

① Series name: FH25	④ Terminal type SH: SMT horizontal mounting type
② No. of contacts Number of contacts: 21, 27, 33, 39, 45, 51	
③ Contact pitch: 0.3 mm	⑤ Plating specifications (05): Gold, selective flash plated

## ◆ Operation and Precautions

Operation	Precautions
<p><b>1.FPC insertion procedure. Connector installed on the board.</b></p> <p>① Lift up the actuator. Use thumb or index finger.</p> 	<p>① Do not apply excessive force or use any type of tool to operate the actuator.</p> 
<p>② Fully insert the FPC in the connector parallel to mounting surface, with the exposed conductive traces facing down.</p> 	<p>② The connector will assure reliable performance when the actuator is open to 130° maximum. Do not exceed this angle, as this may cause permanent damage to the connector.</p> 
<p>③ Rotate down the actuator until firmly closed. It is critical that the inserted FPC is not moved and remains fully inserted.</p> 	<p>③ Exercise caution when applying upward force to the connected FPC. FPC conductor surface on opposite side.</p> 
<p><b>2.FPC removal</b></p> <p>① Lift up the actuator. Carefully withdraw the FPC.</p> 	

# Specifications



- Notes
- ① The coplanarity of each terminal lead is within 0.1.
  - ② The contact terminal lead position indicates the dimension from the E surface, the bottom surface of the insulator body.
  - ③ Slight variations in color of the plastic compounds do not affect form, fit or function of the connector.

Unit: mm

Part Number	CL No.	Number of Contacts	A	B	C	D
FH25-21S-0.3SH(05)	CL586-1204-3-05	21	8.1	6.0	6.64	7.45
FH25-27S-0.3SH(05)	CL586-1205-6-05	27	9.9	7.8	8.44	9.25
FH25-33S-0.3SH(05)	CL586-1207-1-05	33	11.7	9.6	10.24	11.05
FH25-39S-0.3SH(05)	CL586-1208-4-05	39	13.5	11.4	12.04	12.85
FH25-45S-0.3SH(05)	CL586-1209-7-05	45	15.3	13.2	13.84	14.65
FH25-51S-0.3SH(05)	CL586-1200-2-05	51	17.1	15.0	15.64	16.45

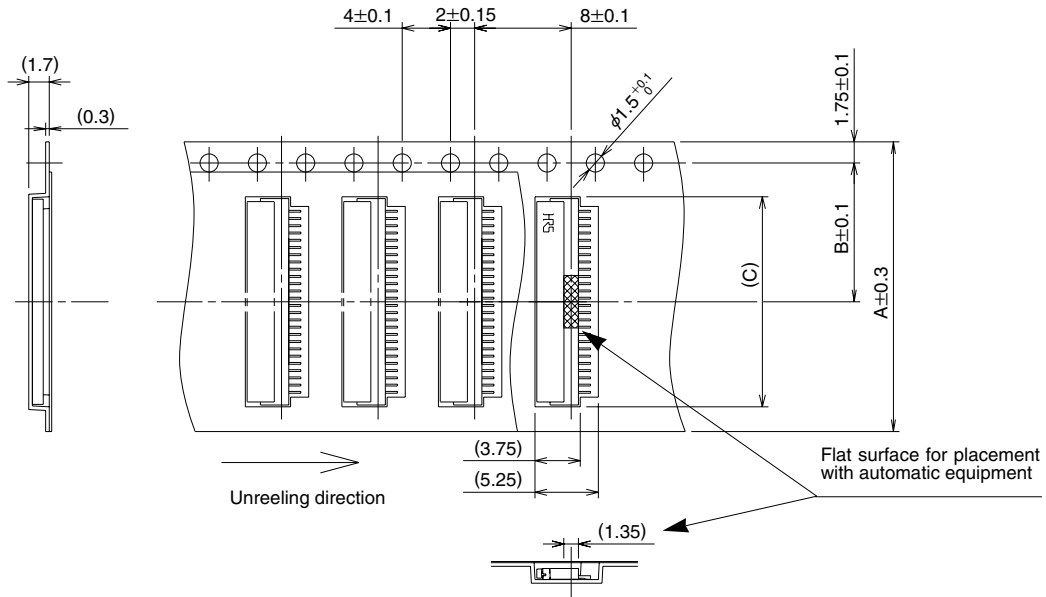
Embossed tape reel packaging (5,000 pieces/reel).

Order by number of reels.



## ◆ Packaging Specification

### ● Embossed Carrier Tape Dimensions

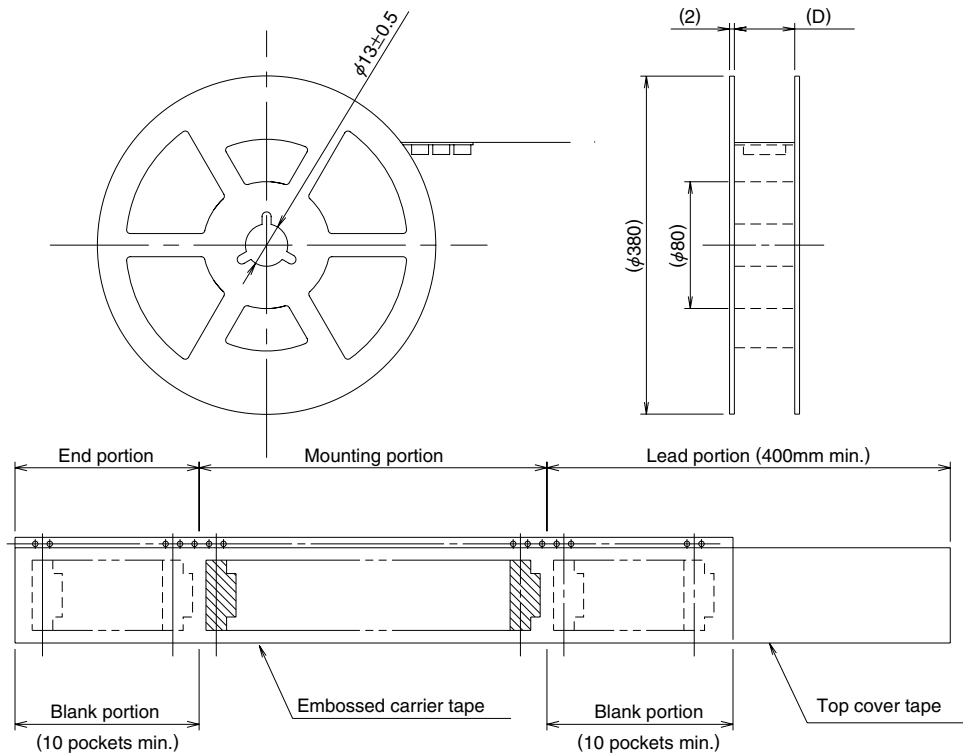


Unit: mm

Part Number	CL No.	Number of Contacts	A	B	C	D
FH25-21S-0.3SH(05)	CL586-1204-3-05	21	16	7.5	8.4	16.5
FH25-27S-0.3SH(05)	CL586-1205-6-05	27	24	11.5	10.2	24.5
FH25-33S-0.3SH(05)	CL586-1207-1-05	33	24	11.5	12.0	24.5
FH25-39S-0.3SH(05)	CL586-1208-4-05	39	24	11.5	13.8	24.5
FH25-45S-0.3SH(05)	CL586-1209-7-05	45	24	11.5	15.6	24.5
FH25-51S-0.3SH(05)	CL586-1200-2-05	51	24	11.5	17.4	24.5

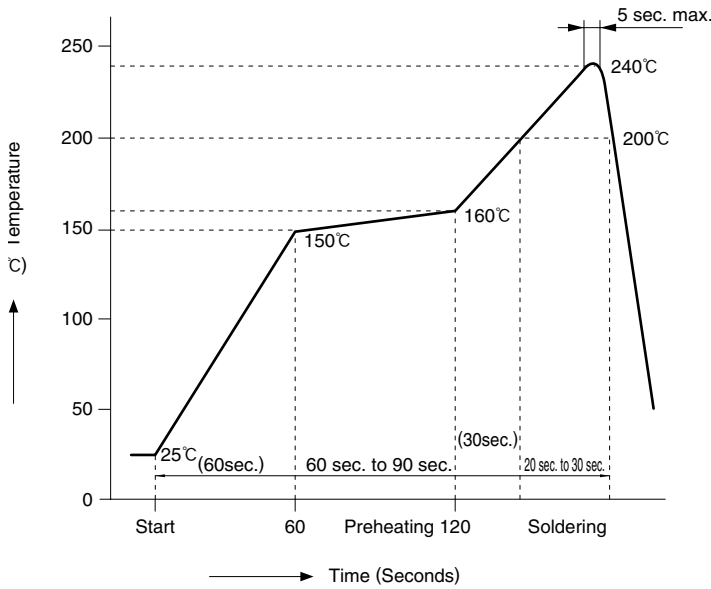
5,000 pieces per reel.

### ● Reel Dimensions



## ◆ Recommended Temperature Profile

### ● Using Typical Solder Paste



#### HRS test conditions

Solder method :Reflow, IR/hot air  
(Nihon Den-nettsu Co., Ltd.'s Part Number: SENSBY NR-II)

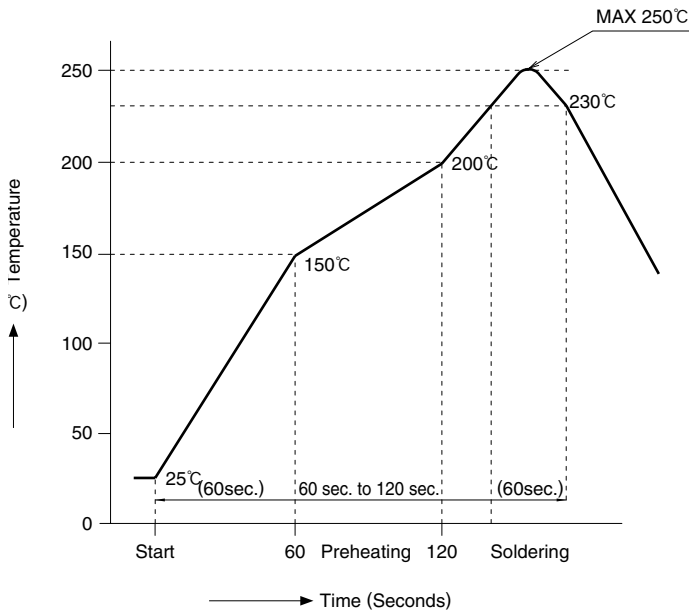
Environment :Room air

Solder composition :Paste, 63%Sn/37%Pb  
(Senju Metal Industry, Co., Ltd.'s Part Number: OZ63-201C-50-9)

Test board :Glass epoxy 70mm×80mm×1.6mm thick  
Land dimensions:  
0.3mm×0.65mm, 0.3mm×0.8mm

Metal mask :0.23×0.55×0.1mm thick,  
0.23×0.65×0.1mm thick

### ● Using Lead-free Solder Paste



#### HRS test condition

Solder method :Reflow, IR/hot air  
(Nihon Den-nettsu Co., Ltd.'s Part Number: SENSBY NR-II)

Environment :Room air

Solder composition :Paste, 96.5%Sn/3.0%Ag/0.5%Cu  
(Senju Metal Industry, Co., Ltd.'s Part Number: M705-221CM5-42-10.5)

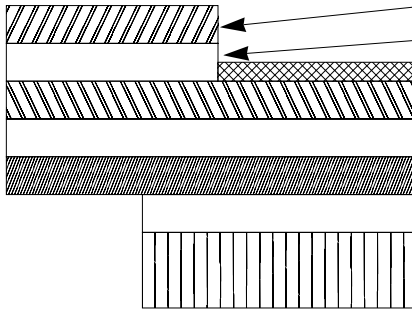
Test board :Glass epoxy 70mm×80mm×1.6mm thick  
Land dimensions:  
0.3mm×0.65mm, 0.3mm×0.8mm

Metal mask :0.23×0.55×0.1mm thick,  
0.23×0.65×0.1mm thick

The temperature profiles are based on the above conditions. In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.

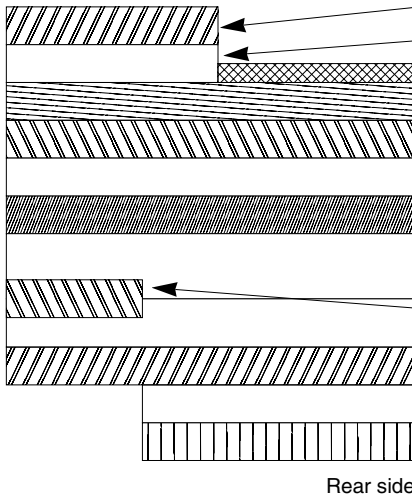
## ◆FH25 Series FPC Construction (Recommended)

### 1. Using Single-sided FPC



Name	Material	Thickness (μm)
Covering film layer	Polyamide 1 mil thick.	25
Cover adhesive		25
Surface treatment	1 μm to 5 μm nickel underplated 0.2 μm gold plated	(3)
Copper foil	Cu 1oz	35
Base adhesive		25
Base film	Polyamide 1 mil thick	25
Reinforcement material adhesive		30
Stiffener	Polyamide 3 mil thick	75
Total		193

### 2. Using Double-sided FPC



Name	Material	Thickness (μm)
Covering film layer	Polyamide 1 mil thick	25
Cover adhesive		25
Surface treatment	1 μm to 5 μm nickel underplated 0.2 μm gold plated	(3)
Through-hole copper	Cu	15
Copper foil	Cu 1/2oz	18
Base adhesive		18
Base film	Polyamide 1 mil thick	25
Base adhesive		18
Copper foil	Cu 1/2oz	18
Cover adhesive		25
Covering layer film	Polyamide 1 mil thick	25
Reinforcement material adhesive		25
Stiffener	Polyamide 1 mil thick	25
Total		197


To prevent release of the lock due to FPC bending, use of the FPC with copper foil on rear side is NOT RECOMMENDED.

### 3. Precautions







Note: Recommended specification for FPC 0.2 ± 0.03 mm thick.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View FH25-33S-0.3SH\(05\) on WIN SOURCE](#)
-  [Hirose Electric Co Ltd Information](#)

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