

Products pecification

1. Scope

This specification applies to the 0.5mm pitch FPC/FFC series connectors, specifying the product's performance indicators, test methods and test requirements. (Applicable Product Model: FFC05048 series)

2. Connector Dimensions

Refer to the drawing.

3. Materials and Plating

- A. Housing : Thermoplastic Without Halogen, UL94V-0, Color: Nature;
- B. Cover : Thermoplastic Without Halogen, UL94V-0, Color: Black;
- C. Contact : Copper Alloy, Gold or Tin plating over Nickel under plating Overall.
- D. Peg : Copper Alloy, Tin Plating over Nickel under plating overall.

4. Applicable P.C.B. Layout

Refer to the drawing

5. Rating

Operating Voltage: 50V AC

Current Rating: 0.5ADC

Operating Temperature: -40°C ~ +105°C (Including Terminal Temperature Rise)

6 TEST CONDITION

The test and measurement, unless otherwise specified, shall be carryout at a temperature of 15 to 35°C, Relative humidity of 25 to 85%, and atmospheric pressure of 86 to 106KPa. However, when any doubt arises on the judgment value under it, the test and measurement shall be carry out at a temperature of 20±2°C, relative humidity of 60 to 70%, and atmospheric pressure of 86 to 106KPa.

7. Performance

Test Item	Requirement	Test Condition
Examination of Product	Meets requirements of Product	Visual inspection.

Electrical Performance

Contact resistance	50mΩ Max.	Mate applicable FPC and measure by dry circuit 1mA (DC or 1000Hz)
Insulation resistance	500 MΩ Min.	[100]VDC for 1 minute Test between adjacent circuits of unmated connector.
Withstanding Voltage	No breakdown, flashover, or arcing	[150]VAC for 1 minute Test between adjacent circuits of unmated connector.

Mechanical Performance

Contact/Peg Retention Force	0.150kgf Min.		Apply axial pull out force at the rate of $[25.4\pm3]$ mm/min on the terminal assembled in the housing.
FPC/FFC Retention Force	Operation Speed: $[25.4\pm3]$ mm/min Measure the force required to unmated connector.		0.030kgf/Pin Min. (PIN $\geq$ 13) 0.040kgf/ Min. (PIN<13)
Durability	Appearance	No damage	Operation Speed: (10) cycle-max./min Durability Cycles: 30 Cycles
	Contact resistance	50m Ω Max.	
Vibration	Appearance	No damage	Frequency : 10 to 55Hz, single amplitude of 0.75mm, 10 cycles in each of the 3 directions
	Contact resistance	50m Ω Max.	
	Discontinuity	1 μ s Max	
Mechanical Shock	Appearance	No damage	The connectors shall be soldered on the P.C. board. /Acceleration: 50G. Time: 11ms.(half sine wave). Cycle: 3 cycle for 3 axis total 9 cycle.
	Contact resistance	50m Ω Max.	
	Discontinuity	1 μ s Max	
Temperature Rising	Contact Resistance	30m Ω Max.	Mate applicable FPC and measure the temperature rise of contact when the maximum AC mated current is.
Solder ability	$\geq$ 95% solder coverage, no voids, cold joints, etc.		Dwell time: 3 $\pm$ 0.5 seconds Solder temperature: 245 $\pm$ 5 $^{\circ}$ C
Resistance to Reflow Soldering Heat	Appearance	No damage	Pre Heat: 150~180 $^{\circ}$ C, 90 $\pm$ 30sec. Heat: 230 $^{\circ}$ C Min., 30 $\pm$ 10sec Peak Temp.: 250 $\pm$ 0/-5 $^{\circ}$ C, 10sec. Or less Duration: 3 cycles

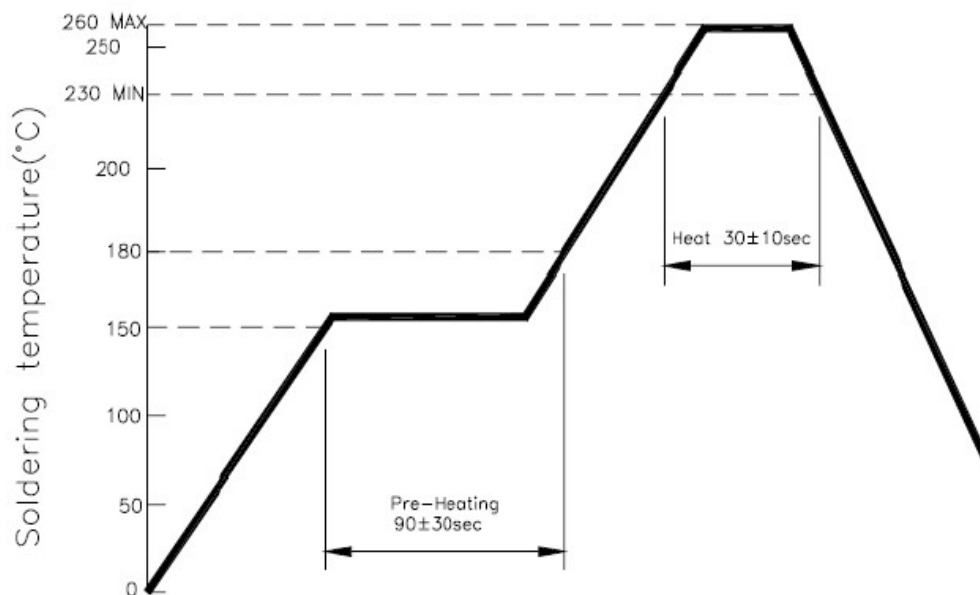
Environmental & Other Performance

Thermal shock	Contact Resistance	50m Ω Max.	Mated connectors, 5 cycles: -55 $^{\circ}$ C for 30 min $\rightarrow$ +85 $^{\circ}$ C for 30 min
Humidity-Temperature Cycle	Appearance	No damage	40 $\pm$ 2 $^{\circ}$ C in temperature and 90~95%RH for 96 hours. After testing connector shall be left alone for 1 to 2 hours in a room ambient.
Temperature life	Contact Resistance	50m Ω Max.	Mated connectors, 85 $^{\circ}$ C for 250 hours
Salt Spray	Appearance	No damage	Mated connectors, 35 $\pm$ 2 $^{\circ}$ C, 5 $\pm$ 1% NaCl, 24 hours (or as customer required)
	Contact Resistance	50m Ω Max.	

8. Test Sequence

Test Item	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence									
Examination of Product	1, 7	1, 9	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3	1, 3	1, 3
Contact resistance		2, 8	2, 5	2, 4	2, 4	2, 4	2, 4			
Withstanding Voltage	3, 6									
Insulation resistance	2, 5									
Contact/ Peg Retention Force		3, 7								
FPC/FFC Retention Force		4, 6								
Durability		5								
Vibration			3							
Mechanical Shock			4							
Temperature Rising								2		
Solder ability										2
Resistance to Soldering Heat									2	
Thermal Shock				3						
Humidity Temperature Cycling	4				3					
Temperature Life						3				
Salt Spray Cycling							3			

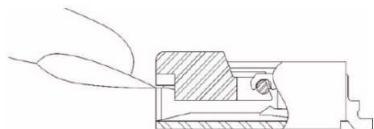
Refer to Fig.2: Resistance to Reflow Soldering Heat



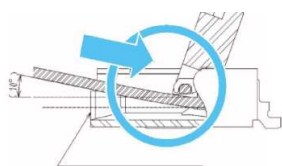
9. Operation and Precautions

【Operation】

1. FPC/FFC Insertion ① Lift the actuator upward. (Lock release)
You can easily pop it up with the thumbnail or index-finger nail.



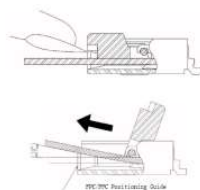
② Insert the FPC or FFC with the exposed conductive traces facing down.
When connecting a tabbed FPC/FFC, ensure that the FPC/FFC is inserted at an angle of approximately 10° with respect to the board surface and perpendicular to the connector.



③ Rotate down the actuator until firmly closed.



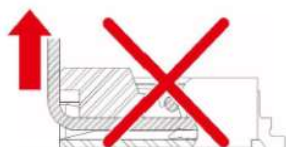
2. FPC/FFC removal ① Lift the actuator upward. After the lock has been released slightly lift up the FPC/FFC and pull it out.



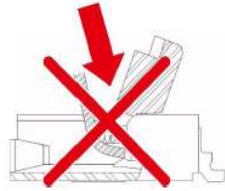
【Precautions】 ① The H2.0 Series actuator does not rotate open beyond 110°. Do not apply a force to open it beyond this point. The actuator may come off or be permanently damaged.



② The connector does not have a strong upward tensile strength due to its design. Secure the FPC or FFC when it is subjected to a tensile force.

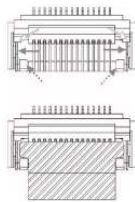


③ When inserting an FPC or FFC, do not rub it vigorously against the bottom side of the connector opening. Excessive contact between the contacts and the FPC or FFC may result in the deformation of contacts, peeling of conductive traces, or other faults.



【How to insert】

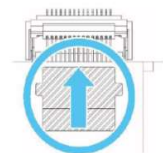
Insert the cable so that the tabs align in the interspace between the mold walls on both ends of the cable insertion port and the guide walls on the insides of both sides of the connector.



【Precautions when mating/ un-mating】 ① Avoid insertion in diagonal direction. Do not insert the cable in diagonal direction. The corner of the cable may touch the contact, resulting in contact deformation.



Be sure to insert the FPC or FFC straight into the connector opening.



Perpendicular to the Connector

② Avoid Overlap

Avoid inserting the cables in way that it overlaps the guides on either side. Do not close the actuator with the cables overlapped on the guides as it may result in conduction failure.

Overlap on Both Guides



Overlap on Right Guide



Correct Insertion

