1. **Scope**

FPC Connector pitch 0.5mm series

This specification covers the FPC connector pitch0.5mm Series

2. **Ordering information**

Refer to the drawing.

3. **Connector Dimensions**

Refer to the drawing.

4. **Material**

Housing:Heat Resistant Polymer (UL94V-0)

Color :White ;Flammability Rating (UL94V-0)

Actuator:Heat Resistant Polymer (UL94V-0)

Color:Black;Flammability Rating (UL94V-0)

Contacts Terminal:Phosphor Bronze

Stopper:Phosphor Bronze

Plating:Tin/Gold Flash

5. **Accommodated P.C.B Layout**

Refer to the drawing.

6. **Rating**

Operating Voltage(Max.)	50V AC
Current Rating(Max.)	0.50A DC
Temperature Range-Operating	-25°C -- +85°C(Including terminal temperature rese)

7. **Performance**

Electrical Performance

Contact Resistance	20mΩ Max	Mate applicable FPC and measure by dry circuit.20mV Max. 10m
Insulation Resistance	500MΩ Min	Mate applicable FPC and apply 500V DC between adjacent terminal or ground
Dielectric Strength	No Breakdown	Mate applicable FPC,apply 200V AC(rms)for 1 minute between adjacent terminal or ground

Mechanical Performance

FPC Retention Force	Refer to Paragraph 9	Insert the actuator ,pull the FPC at a rate of 25±3mm per minute.
Terminal/Housing Retention Force	0.30Kgf (3.0N) Min	Apply axial pull out force at the rate of 25±3mm/minute on the terminal assembled in the housing.
Actuator Insertion/Withdrawal Force	Refer to Paragraph 8	Apply axial pull out force at the rate of 25±3mm/minute on the fitting assembled in the housing.

Environmental Performance and others

Repeated Actuator insertion/withdrawal	Insert and withdraw actuator up to 20 cycles at the speed rate of less than10 cycles/minute	Contact Resistance	40 mΩ Max
Temperature Rise	Mate applicable FPC and Measure the temperature rise of contact when the maximum AC rated current is passed	Temperature rise	30°C Max

Vibration	Mate connectors and subject to the following vibration conditions,for period of 2 hours in each of 3 mutually perpendicular axes,passing DC 1mA during the test . Amplitude:1.5mm P-P Frequency:10-55-10Hz in 1 munute Duration:2 hours in each of X.Y.Z axe	Appearance	No Damage
		Contact Resistance	40mΩ Max
		Discontinuity	1μsec Max
Shock	Mate applicable FPC and subject to the following shock conditions.3 times of shocks shall be applied for each 6 directions along 3 mutually perpendicular axes .passing DC 1mA current during the test. (Total of 18 shocks) Peak value:490m/S^2(50G)	Appearance	No Damage
		Contact Resistance	40mΩ Max
		Discontinuity	1μsec Max
Heat Resistance	Mate applicable FPC and expose to 85±2°C for 96 hours.upon completion of the exposure period the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours ,After which the specified measurements shall be performed.	Appearance	No Damage
		Contact Resistance	40mΩ Max
Cold Resistance	Mate applicable FPC and expose to -40±2°C for 96 hours ,upon completion of the exposure period,the test specimens shall be comditioned at ambient room conditions for 1 to 2 hours ,after which the specified measurements shall be performed.	Appearance	No Damage
		Contact Resistance	40mΩ Max
Humidity	Mate applicable FPC and expose to 60±2°C,relative humidity 90 to 95% for 96 hours,upon completion of the exposure period ,the test specimens shall be comditioned at ambient room conditions for 1 to 2 hours ,after which the specified measurements shall be	Appearance	No Damage
		Contact Resistance	40mΩ Max
		Dielectric strength	No Breakdow
		Insulation Resistanc	20mΩ Min
Temperature Cycling	Mate applicable FPC and subjectto the following conditions for 5 cycles.upon completion of the exposure period ,the test specimens shall be comditioned at ambient room conditions for 1 to 2 hours ,after which the specified measurements shall be performed. Cycle a)-55±3°C 30minutes b)+85±3°C 30minutes (Transit time shall be with in 3 minutes)	Appearance	No Damage
		Contact Resistance	40mΩ Max

Salt Spray	Mate applicable FPC and expose to the following salt mist conditions.upon completion of the exposure period,salt deposits shall be removed by a gentle wash or dip in running water ,after which the specified measurements shall be performed . NaCl solution	Appearance	No Damage
		Contact Resistance	40mΩ Max
SO_2 Gas	Mate applicable FPC and exposethem to the following SO_2 gas atmosphere Temperature 40±2°C Gas Density 50±5 ppm Duration 24 hours	Appearance	No Damage
		Contact Resistance	40mΩ Max
NH_3 Gas	40 minutes exposure to NH3 gas evaporating from 28% Ammonia solution.	Appearance	No Damage
		Contact Resistance	40mΩ Max
Solderability	Tip of solder tails and fitting nails into the molten solder (held at 245±5°C) up to 0.1mm form the bottom of the housing for 3±0.5 seconds.	Solder Wetting	90% ofimmersed area must show no voids ,pin holes
Resistance to Soldering Heat	When reflowing Refer to paragraph 8. Soldering inon method 0.2mm from terminal tip and fitting nail tip. Soldering time :5 seconds Max Solder temperature :370-400°C	Appearance	No Damage

8. **Actuator insertion and withdrawal force**

NO.of CKT	UNIT	Insertion force(Maximum)			Witchdrawal force (Maximum)		
		1st	6th	20th	1st	6th	20th
4	N(kgf)	28.4(2.9)	26.4(2.7)	26.4(2.7)	37.2(3.8)	33.3(3.4)	33.3(3.4)
5	N(kgf)	29.4(3.0)	27.4(2.8)	27.4(2.8)	38.2(3.9)	34.3(3.5)	34.3(3.5)
6	N(kgf)	30.3(3.1)	28.4(2.9)	28.4(2.9)	39.2(4.0)	35.2(3.6)	35.2(3.6)
7	N(kgf)	31.3(3.2)	29.4(3.0)	29.4(3.0)	40.1(4.1)	36.2(3.7)	36.2(3.7)
8	N(kgf)	32.3(3.3)	30.3(3.1)	30.3(3.1)	41.1(4.2)	37.2(3.8)	37.2(3.8)
9	N(kgf)	33.3(3.4)	31.3(3.2)	31.3(3.2)	42.1(4.3)	38.2(3.9)	38.2(3.9)
10	N(kgf)	34.3(3.5)	32.3(3.3)	32.3(3.3)	43.1(4.4)	39.2(4.0)	39.2(4.0)

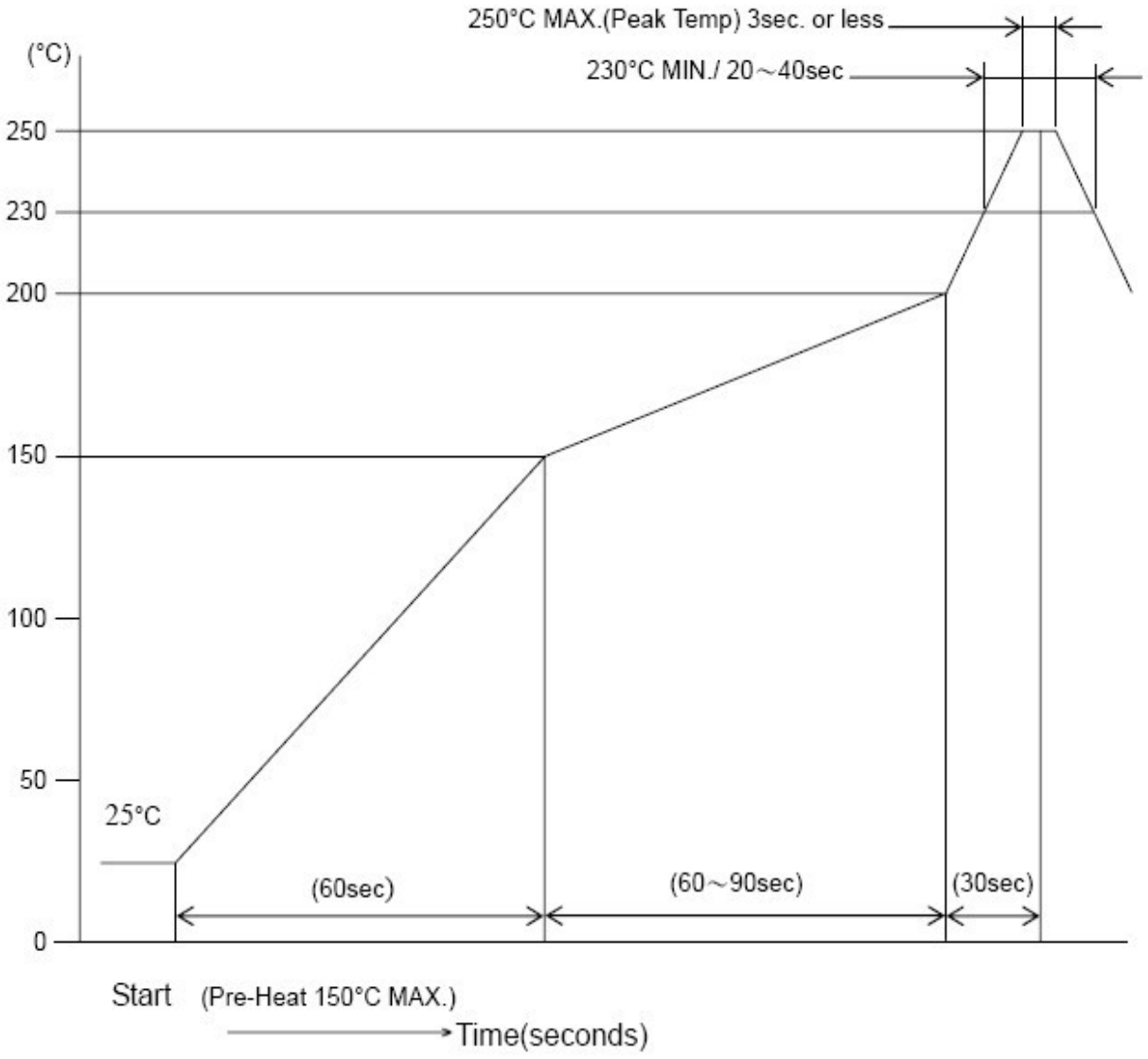
NO.of CKT	UNIT	Insertion force(Maximum)			Witchdrawal force (Maximum)		
		1st	6th	20th	1st	6th	20th
11	N(kgf)	35.2(3.6)	33.3(3.4)	33.3(3.4)	44.1(4.5)	40.1(4.1)	40.1(4.1)
12	N(kgf)	36.2(3.7)	34.3(3.5)	34.3(3.5)	45.1(4.6)	41.1(4.2)	41.1(4.2)
13	N(kgf)	37.2(3.8)	35.2(3.6)	35.2(3.6)	46.1(4.7)	42.2(4.3)	42.2(4.3)
14	N(kgf)	38.2(3.9)	36.2(3.7)	36.2(3.7)	47.0(4.5)	43.1(4.4)	43.1(4.4)
15	N(kgf)	39.2(4.0)	37.2(3.8)	37.2(3.8)	48.1(4.9)	44.1(4.5)	44.1(4.5)
16	N(kgf)	40.1(4.1)	38.2(3.9)	38.2(3.9)	49.0(5.0)	45.0(4.6)	45.0(4.6)
17	N(kgf)	41.1(4.2)	39.2(4.0)	39.2(4.0)	49.9(5.1)	46.0(4.7)	46.0(4.7)
18	N(kgf)	42.1(4.3)	40.1(4.1)	40.1(4.1)	50.9(5.2)	47.0(4.8)	47.0(4.8)
19	N(kgf)	43.1(4.4)	41.1(4.2)	41.1(4.2)	51.9(5.3)	48.0(4.9)	48.0(4.9)
20	N(kgf)	44.1(4.5)	42.1(4.3)	42.1(4.3)	52.9(5.4)	49.0(5.0)	49.0(5.0)
21	N(kgf)	45.0(4.6)	43.1(4.4)	43.1(4.4)	53.9(5.5)	49.9(5.1)	49.9(5.1)
22	N(kgf)	46.0(4.7)	44.1(4.5)	44.1(4.5)	54.8(5.6)	50.9(5.2)	50.9(5.2)
23	N(kgf)	47.0(4.8)	45.0(4.6)	45.0(4.6)	55.8(5.7)	51.9(5.3)	51.9(5.3)
24	N(kgf)	48.0(4.9)	46.0(4.7)	46.0(4.7)	56.8(5.8)	52.9(5.4)	52.9(5.4)
25	N(kgf)	49.0(5.0)	47.0(4.8)	47.0(4.8)	57.8(5.9)	53.9(5.5)	53.9(5.5)
26	N(kgf)	49.9(5.1)	48.0(4.9)	48.0(4.9)	58.8(6.0)	54.8(5.6)	54.8(5.6)
27	N(kgf)	50.9(5.2)	49.0(5.0)	49.0(5.0)	59.7(6.1)	55.8(5.7)	55.8(5.7)
28	N(kgf)	51.9(5.3)	49.9(5.1)	49.9(5.1)	60.7(6.2)	56.8(5.8)	56.8(5.8)
29	N(kgf)	52.9(5.4)	50.9(5.2)	50.9(5.2)	61.7(6.3)	57.8(5.9)	57.8(5.9)
30	N(kgf)	53.9(5.5)	51.9(5.3)	51.9(5.3)	62.7(6.4)	58.8(6.0)	58.8(6.0)

9. **FPC Retention Force**

NO.of CKT	UNIT	Rention force(Minimum)		NO.of CKT	UNIT	Rention force(Minimum)	
		1st	10th			1th	10th
4	N(kgf)	1.5(0.15)	1.4(0.14)	12	N(kgf)	5.4(0.55)	3.8(0.38)
5	N(kgf)	2.0(0.20)	1.7(0.17)	13	N(kgf)	5.9(0.60)	4.1(0.41)
6	N(kgf)	2.5(0.25)	2.0(0.20)	14	N(kgf)	6.4(0.65)	4.4(0.44)
7	N(kgf)	3.0(0.30)	2.3(0.23)	15	N(kgf)	6.9(0.70)	4.6(0.47)
8	N(kgf)	3.5(0.35)	2.6(0.26)	16	N(kgf)	7.4(0.75)	4.9(0.50)
9	N(kgf)	4.0(0.40)	2.9(0.29)	17	N(kgf)	7.9(0.8)	5.2(0.53)
10	N(kgf)	4.5(0.45)	3.2(0.32)	18	N(kgf)	8.4(0.85)	5.5(0.56)
11	N(kgf)	4.9(0.50)	3.5(0.35)	19	N(kgf)	8.9(0.90)	5.8(0.59)

NO.of CKT	UNIT	Rention force(Minimum)		NO.of CKT	UNIT	Rention force(Minimum)	
		1st	10th			1th	10th
20	N(kgf)	9.4(0.95)	6.1(0.62)	26	N(kgf)	12.3(1.25)	7.9(0.80)
21	N(kgf)	9.8(1.00)	6.4(0.65)	27	N(kgf)	12.8(1.30)	8.2(0.83)
22	N(kgf)	10.3(1.05)	6.7(0.68)	28	N(kgf)	13.3(1.35)	8.5(0.86)
23	N(kgf)	10.8(1.10)	7.0(0.71)	29	N(kgf)	13.8(1.40)	8.8(0.89)
24	N(kgf)	11.3(1.15)	7.3(0.74)	30	N(kgf)	14.3(1.45)	9.1(0.92)
25	N(kgf)	11.8(1.20)	7.6(0.77)				

10 **Infrared reflow condition**



Temperature condition graph
Temperature on board pattern side