PRODUCT SPECIFICATION

LANGUAGE
JAPANESE
ENGLISH

【１．適用範囲 SCOPE】

本仕様書は、＿＿＿＿＿＿＿＿＿＿殿　に納入する
0.5 mm ピッチ FPC用 コネクタ＿＿＿＿＿について規定する。
This specification covers the 0.5mm PITCH FPC CONNECTOR series.

【２．製品名称及び型番 PRODUCT NAME AND PART NUMBER】

製品名称 Product Name		製品型番 Material Number
ハウジング アッセンブリ Housing Assembly(Straight Type)	（無鉛） LEAD FREE	５４１０４－＊＊３９
５４１０４－＊＊３９テーピング梱包品 Embossed Tape Package For 54104-**39	（無鉛） LEAD FREE	５４１０４－＊＊９６

＊：図面参照　Refer to drawing.

【３．定格 RATINGS 】

項目 Item	規格 Standard	
最大許容電圧 Rated Voltage(MAXIMUM)	50V	[AC(実効値 rms)/DC]
最大許容電流 Rated Current (MAXIMUM)	0.5A	
使用温度範囲 Ambient Temperature Range	-20℃ ～+85℃ *1	

＊1：通電による温度上昇分を含む。
Including terminal temperature rise.

REV.	A	B														
SHEET	1-10	1-10														

REVISE ON PC ONLY

REV.	DESCRIPTION
B	変更 REVISED J2004-2241 '04/02/04 Y.SAKIYAMA

TITLE:
0.5 mm PITCH FPC CONN. ZIF
SMT (UPPER CONTACT)
-LEAD FREE-　製品仕様書

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J		Y.SAKIYAMA	M.SASAO	M.SASAO	2004/01/22

DOCUMENT NUMBER	FILE NAME	SHEET
PS-54104-069	PS54104069.doc	1 OF 10

【４．性能 PERFORMANCE 】

項目 Item		条件 Test Condition	規格 Requirement
4-1-1	接 触 抵 抗 Contact Resistance	適合FPCを嵌合させ、開放電圧 20mV 以下、短絡電流 10mA以下にて測定する。 (JIS C5402 5.4) Mate applicable FPC, measure by dry circuit , 20mV MAXIMUM, 10mA MAXIMUM. (JIS C5402 5.4)	20 milliohm MAXIMUM
4-1-2	絶 縁 抵 抗 Insulation Resistance	適合FPCを嵌合させ、隣接するターミナル間及びターミナル、アース間に、DC 500Vを印加し測定する。 (JIS C5402 5.2/MIL-STD-202 試験法 302) Mate applicable FPC together and apply 500V DC between adjacent terminal and ground. (JIS C5402 5.2/MIL-STD-202 Method 302)	50 Megaohm MINIMUM
4-1-3	耐 電 圧 Dielectric Strength	適合FPCを嵌合させ、隣接するターミナル間及びターミナル、アース間に、AC 250V（実効値）を1分間印加する。 (JIS C5402 5.1/MIL-STD-202 試験法 301) Mate applicable FPC, apply 250V AC for 1 minute between adjacent terminal or ground. (JIS C5402 5.1/MIL-STD-202 Method 301)	異状なきこと No Breakdown

４－２．機械的性能 Mechanical Performance

項目 Item		条件 Test Condition	規格 Requirement
4-2-1	アクチュエータ挿抜力 Actuator Insertion/ Withdrawal Force	適合FPCを嵌合させ、アクチュエータを毎分25±3mmの速さで挿入、抜去を行う。 Mate applicable FPC and insert and withdraw actuator at the speed rate of 25±3mm/min.	第6項参照 Refer to paragraph 6
4-2-2	FPC保持力 FPC Retention Force	アクチュエータ挿入状態にてFPCを毎分 25±3 mm の速さで引き抜く。 Insert the actuator, pull the FPC at the speed rate of 25+3/-3mm per minute.	第7項参照 Refer to paragraph 7

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4－3．そ　の　他 Environmental Performance and Others

項目 Item		条件 Test Condition	規格 Requirement	
4-3-1	アクチュエータ繰返し動作 Repeated Actuator Insertion / Withdrawal	無通電状態にて、1分間に10回以下の速さで挿入、抜去を 20回繰り返す。 Insert and withdraw actuator up to 20 cycles, at the speed rate of less than 10 cycle per minute.	接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-2	温 度 上 昇 Temperature Rise	適合するFPCを嵌合させ、最大許容電流を通電し、コネクタの温度上昇分を測定する。(UL 498) Mate applicable FPC and measure the temperature rise of contact when the maximum AC rated current is passed. (UL 498)	温 度 上 昇 Temperature Rise	30 °C MAXIMUM
4-3-3	耐 振 動 性 Vibration	DC 1mA 通電状態にて、嵌合軸を含む互いに垂直な 3方向 に掃引割合 10~55~10 Hz/分 全振幅 1.5mmの振動を各 2時間加える。(MIL-STD-202 試験法 201) Amplitude: 1.5mm P-P Sweep time: 10~55~10 Hz in 1 minute Duration: 2 hours in each X.Y.Z. axes (MIL-STD-202 Method 201)	外　観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
			瞬　断 Discontinuity	1.0 microsecond MAXIMUM
4-3-4	耐 衝 撃 性 Shock	DC 1mA 通電状態にて、嵌合軸を含む互いに垂直な 6方向に 490m/s^2{50G} の衝撃を 各3回 加える。(JIS C0041/MIL-STD-202 試験法 213) 490m/s^2 {50G}, 3 strokes in each X.Y.Z. axes. (JIS C0041/MIL-STD-202 Method 213	外　観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
			瞬　断 Discontinuity	1.0 microsecond MAXIMUM

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項目 Item		条件 Test Condition	規格 Requirement	
4-3-5	耐 熱 性 Heat Resistance	適合するFPC嵌合させ、85±2℃ の雰囲気中に 96時間放置後取り出し、1～2時間 室温に放置する。 (JIS C0021/MIL-STD-202 試験法 108) Mate applicable FPC and expose to 85+2/-2 degree 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. (JIS C0021/MIL-STD-202 Method 108)	外 観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-6	耐 寒 性 Cold Resistance	適合するFPCを嵌合させ,ー40±2℃の雰囲気中に 96時間放置後取り出し、1～2時間室温に放置する。 (JIS C0020) Mate applicable FPC and expose to –40+2/-2 degree 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. (JIS C0020)	外 観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-7	耐湿性 Humidity	適合するFPCを嵌合させ、60±2℃、相対湿度90～95%の雰囲気中に96時間放置後、取り出し、1～2時間室温に放置する。 (JIS C0022/MIL-STD-202 試験法103) Mate applicable FPC and expose to 60+2/-2 degree C, relative humidity 90 to 95% 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. (JIS C0022/MIL-STD-202 Method 103)	外 観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
			耐 電 圧 Dielectric Strength	4-1-3項 満足のこと Must meet 4-1-3
			絶縁抵抗 Insulation Resistance	20 megaohm MINIMUM

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項目 Item		条件 Test Condition	規格 Requirement	
4-3-8	温度サイクル Temperature Cycling	適合するFPCを嵌合させ、-55℃に30分、+85℃に30分、これを1サイクルとし、10サイクル繰り返す。 但し温度移行時間は、5分以内とする。 試験後1～2時間室温に放置する。 Mate applicable FPC connectors and subject to the following conditions for 10 cycles. 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. 10 cycle of a) –55 degree C 30 minutes b) +85 degree C 30 minutes (Transit time shall be with in 5 minutes)	外 観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-9	塩水噴霧 Salt Spray	適合するFPCを嵌合させ、35±2℃ にて、重量比 5±1% の塩水を48±4時間噴霧し、試験後常温で水洗いした後、室温で乾燥させる。 (JIS C0023/MIL-STD-202 試験法 101) 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 Concentration : 5+1/-1 % Spray time : 48±4 hours Ambient temperature : 35+2/-2 degree C (JIS C0023/MIL-STD-202 Method 101)	外 観 Appearance	割れ、著しい腐食等 異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-10	亜硫酸ガス SO_2 Gas	適合するFPCを嵌合させ、40±2℃、50±5ppmの亜硫酸ガス中に24時間放置する。 Mate applicable FPC exposed to 50+5/-5ppm SO_2 gas at 40+2/-2 degree C for 24 hours.	外 観 Appearance	異状なきこと No Damage
			接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM.

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項目 Item		条件 Test Condition	規格 Requirement	
4-3-11	耐アンモニア性 NH_3Gas	適合するFPCを嵌合させ、濃度28%のアンモニア水を入れた容器中に40分間放置する。 Mate applicable FPC exposed to NH_3 gas evaporating from 28 % for 40 minutes.	接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM
4-3-12	半田付け性 Solderability	端子先端より0.2mm、金具先端より0.2mmの位置まで、245±5°Cの半田に3±0.5秒浸す。 Soldering Time: 3±0.5second Solder Temperature: 245±5°C 0.2mm from terminal tip 0.2mm from fitting nail tip	濡 れ 性 Solder Wetting	浸漬面積の90%以上 90% of immersed area must show no voids, pin holes
4-3-13	半田耐熱性 Resistance to Soldering Heat	（リフロー時）第8項の条件を２回繰り返す。 (When reflowing) Repeat paragraph 8, condition twe times.. （手半田時） 端子先端より0.2mm、金具先端より0.2mmの位置まで、370～400℃ の半田ゴテにて3±1秒加熱後。 Solder Time: 3±1second Solder Temperature: 370～400℃ 0.2mm from terminal tip 0.2mm from fitting nail tip	外観 Appearance	端子ガタ、割れ等異常なきこと No Damage

( ) : 参考規格 Reference Standard
{ } : 参考単位 Reference Unit

【５．外観形状、寸法及び材質 PRODUCT SHAPE, DIMENSIONS AND MATERIALS】
図面参照 Refer to the drawing.

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【6．アクチュエータ挿抜力 ACTUATOR INSERTION/WITHDRAWAL FORCE】

極数 No. of CIRCUIT	単位 UNIT	挿入力（最大値） INSERTION FORCE (MAXIMUM)			抜去力（最大値） WITHDRAWAL FORCE (MAXIMUM)		
		初回 1st	6回目 6th	20回目 20th	初回 1st	6回目 6th	20回目 20th
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}
32	N {kgf}	55.8 {5.7}	53.9 {5.5}	53.9 {5.5}	64.6 {6.6}	60.7 {6.2}	60.7 {6.2}
33	N {kgf}	56.8 {5.8}	54.8 {5.6}	54.8 {5.6}	65.6 {6.7}	61.7 {6.3}	61.7 {6.3}
34	N {kgf}	57.8 {5.9}	55.8 {5.7}	55.8 {5.7}	66.6 {6.8}	62.7 {6.4}	62.7 {6.4}
35	N {kgf}	58.8 {6.0}	56.8 {5.8}	56.8 {5.8}	67.6 {6.9}	63.7 {6.5}	63.7 {6.5}
36	N {kgf}	59.7 {6.1}	57.8 {5.9}	57.8 {5.9}	68.6 {7.0}	64.6 {6.6}	64.6 {6.6}
38	N {kgf}	61.7 {6.3}	59.7 {6.1}	59.7 {6.1}	70.5 {7.2}	66.6 {6.8}	66.6 {6.8}
40	N {kgf}	63.7 {6.5}	61.7 {6.3}	61.7 {6.3}	72.5 {7.4}	68.6 {7.0}	68.6 {7.0}
43	N {kgf}	66.6 {6.8}	64.6 {6.6}	64.6 {6.6}	75.4 {7.7}	71.5 {7.3}	71.5 {7.3}
45	N {kgf}	68.6 {7.0}	66.6 {6.8}	66.6 {6.8}	77.4 {7.9}	73.5 {7.5}	73.5 {7.5}
46	N {kgf}	69.6 {7.1}	67.6 {6.9}	67.6 {6.9}	78.4 {8.0}	74.5 {7.6}	74.5 {7.6}
50	N {kgf}	73.5 {7.5}	71.5 {7.3}	71.5 {7.3}	82.3 {8.4}	78.4 {8.0}	78.4 {8.0}

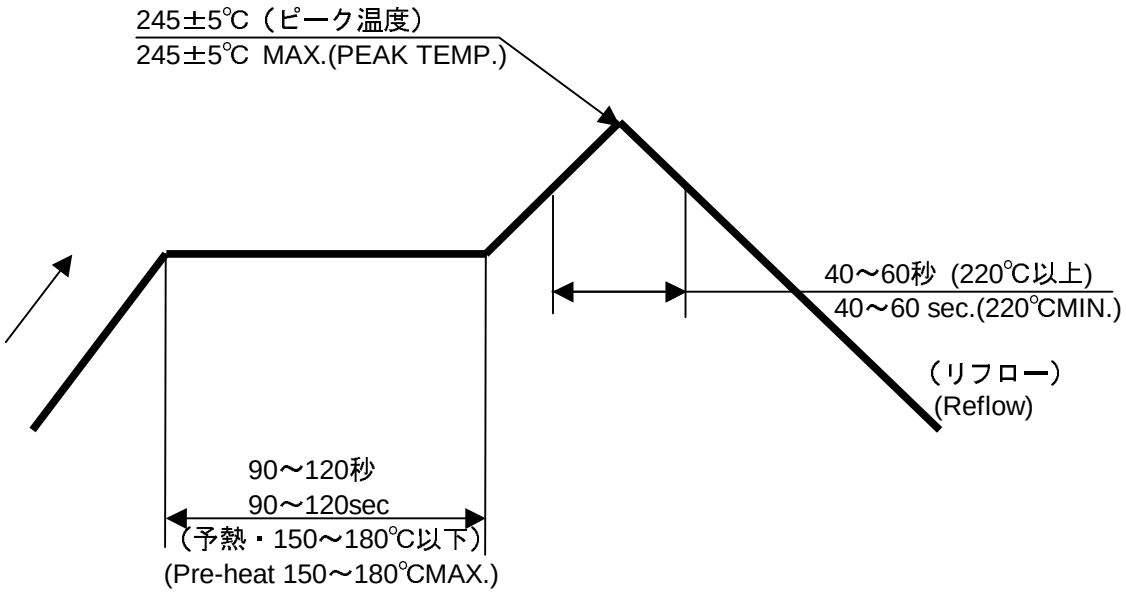
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【7．FPC保持力 FPC RETENTION FORCE】

極数 No. of CIRCUIT	単位 UNIT	保持力（最小値） RETENTION FORCE (MINIMUM)		極数 No. of CIRCUIT	単位 UNIT	保持力（最小値） RETENTION FORCE (MINIMUM)	
		初回 1st	10回目 10th			初回 1st	10回目 10th
30	N {kgf}	5.4 {0.55}	4.9 {0.50}	38	N {kgf}	9.4 {0.95}	8.9 {0.90}
32	N {kgf}	6.4 {0.65}	5.8 {0.60}	40	N {kgf}	10.3 {1.05}	9.8 {1.00}
33	N {kgf}	6.9 {0.70}	6.4 {0.65}	43	N {kgf}	11.8 {1.20}	11.3 {1.15}
34	N {kgf}	7.4 {0.75}	6.9 {0.70}	45	N {kgf}	12.7 {1.30}	12.2 {1.25}
35	N {kgf}	7.9 {0.80}	7.4 {0.75}	46	N {kgf}	13.2 {1.35}	12.7 {1.30}
36	N {kgf}	8.4 {0.85}	7.9 {0.80}	50	N {kgf}	15.2 {1.55}	14.7 {1.50}

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【８．赤外リフロー条件 INFRARED REFLOW CONDITION】



温 度 条 件 グ ラ フ
（温度は基板パターン面）
TEMPERATURE CONDITION GRAPH
(TEMPERATURE ON BOARD PATTERN SIDE)

注記；本リフロー条件に関しては、リフロー装置及び基板などにより
条件が異なりますので、事前にリフロー評価の確認をお願い致します。
NOTE; Please check the reflow soldering condition by your own devices beforehand.
Because the condition changes by the soldering devices,p.c.boards,and so on.

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