

【1. 適用範圍 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(R/A Type, Upper Contact)	無 鉛 LEAD FREE	5 2 4 3 5 - * * 2 9
5 2 4 3 5 - * * 2 9テーピング梱包品 Embossed Tape Package For 52435-**29	無 鉛 LEAD FREE	5 2 4 3 5 - * * 7 1

* : 図面参照 Refer to the 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 (Operating and Non-operating)	-40℃ ～+85℃ *1*2	

*1: 通電による温度上昇分を含む。

Including terminal temperature rise

*2: 適合FPCも本使用温度範囲を満足すること。

FPC must be meet temperature range specified in this standard.

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SHEET	1~11	1~11	1~11																
REVISE ON PC ONLY								TITLE:											
F	変 更 REVISED J2008-3522 '08/04/03 M.NABEI							0.5 mm PITCH FPC CONN ZIF SMT (UPPER CONTACT) -LEAD FREE- 製品仕様書											
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DESIGN CONTROL J				STATUS				WRITTEN BY: E.SUZUKI	CHECKED BY: K.TOYODA	APPROVED BY: N.UKITA	DATE: YR/MO/DAY 2004/12/06								
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【 4 . 性能 PERFORMANCE 】

4 - 1 . 電気的性能 Electrical 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 Megohm 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(rms) 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

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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/minuete.	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
4-2-3	端子保持力 Terminal/Housing Retention Force	各端子を、毎分25±3mmの速さで引っ張る。 Apply axial pull out force on the terminal assembled in the housing at the speed rate of 25+3/-3mm per minute.	3.0N { 0.3kgf } MINIMUM
4-2-3	金具保持力 Fitting Nail/Housing Retention Force	各金具を、毎分25±3mmの速さで引っ張る。 Apply axial pull out force on the fitting nail assembled in the housing at the speed rate of 25+3/-3mm per minute.	3.0N { 0.3kgf } MINIMUM

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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 cycles / minute.	接 触 抵 抗 Contact Resistance	40 milliohms 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 ℃ MAXIMUM
4-3-3	耐 振 動 性 Vibration	DC1mA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。 (JIS C 60068-2-6 /MIL-STD-202 試験法 201) Mate applicable FPC and subject to the following vibration conditions, for a period of 2 hours in each of 3 mutually perpendicular axes, passing DC 1mA during the test. Amplitude : 1.5mm P-P Frequency : 10-55-10 Hz shall be traversed in 1 minute. (JIS C 60068-2-6 /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}の衝撃を作業時間 11millisecondで各3回 加える。 (JIS C60068-2-27 / MIL-STD-202試験法 213) 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 DC1mA current during the test. (Total of 18 shocks) Test pulse : Half Sine Peak value : 490m/s ² {50G} Duration : 11 milliseconds (JIS C60068-2-27 / MIL-STD-202Method 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。 (JISC60068-2-2/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 C60068-2-2/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、-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 C60068-2-1) 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 C60068-2-1)	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 C60068-2-3/MIL-STD-202 試験方法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 C60068-2-3/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 Megohm 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±3℃に30分、+85±2℃に30分、これを1サイクルとし、5サイクル繰り返す。但し、温度移行時間は、3分以内とする。試験後1～2時間室温に放置する。 (JIS C0025) Mate applicable FPC connectors and subject to the following conditions for 5 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. 1 cycle a) -55+3/-3 degree C 30 minutes b) +85+2/-2 degree C 30 minutes (Transit time shall be with in 3 minutes) (JIS C0025)	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 C60068-2-11/MIL-STD-202 試験方法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 C60068-2-11/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.	接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM.
4-3-11	耐アンモニア性 NH ₃ Gas	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。 (1Lに対して25mLの割合) Mate applicable FPC exposed to NH ₃ gas evaporating from 28 % for 40 minutes.	接 触 抵 抗 Contact Resistance	40 milliohm MAXIMUM

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項目 Item		条件 Test Condition	規格 Requirement	
4-3-12	半田付け性 Solderability	端子先端より0.3mm、金具先端より0.3mmの位置まで245±3℃の半田に3±0.5秒浸す。 Dip soldertails and fitting nails into the molten solder{held at 245+3/-3 degree C}up to 0.3mm from the bottom of the housing for 3+0.5/-0.5 seconds.	濡れ性 Solder Wetting	浸漬面積の95%以上 95% 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 two times.	外観 Appearance	端子ガタ、割れ等 異状なきこと No Damage
		(手半田時) 端子先端より0.3mm、金具先端より0.3mmの位置まで370～400℃の半田ゴテにて最大5秒加熱後。 (Soldering iron method) Solder Time: 5 sec MAX. Solder Temperature: 370～400℃ 0.3mm from terminal tip and fitting nailtip.		

() :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 CKT	単位 UNIT	挿入力 (最大値) Insertion Force (MAX.)			抜去力 (最大値) Withdrawal Force (MAX.)		
		初 回 1st	6回目 6th	20回目 20th	初 回 1st	6回目 6th	20回目 20th
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}
21	N {kgf}	45.0 {4.6}	43.1 {4.4}	43.1 {4.4}	53.9 {5.5}	50.0 {5.1}	50.0 {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}

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【 7 . FPC保持力 FPC RETENTION FORCE】

極数 No. of CKT	単位 UNIT	保持力 (最小値) Retention Force (MIN.)		極数 No. of CKT	単位 UNIT	保持力 (最小値) Retention Force (MIN.)	
		初 回 1st	10回目 10th			初 回 1st	10回目 10th
16	N {kgf}	4.6 {0.47}	4.3 {0.44}	26	N {kgf}	7.5 {0.76}	7.0 {0.71}
21	N {kgf}	6.1 {0.62}	5.8 {0.59}	27	N {kgf}	7.8 {0.79}	7.2 {0.73}
22	N {kgf}	6.4 {0.65}	6.1 {0.62}	28	N {kgf}	8.1 {0.82}	7.4 {0.75}
23	N {kgf}	6.7 {0.68}	6.3 {0.64}	29	N {kgf}	8.4 {0.85}	7.7 {0.78}
24	N {kgf}	6.9 {0.70}	6.4 {0.65}	30	N {kgf}	8.7 {0.88}	7.9 {0.80}
25	N {kgf}	7.2 {0.73}	6.7 {0.68}				

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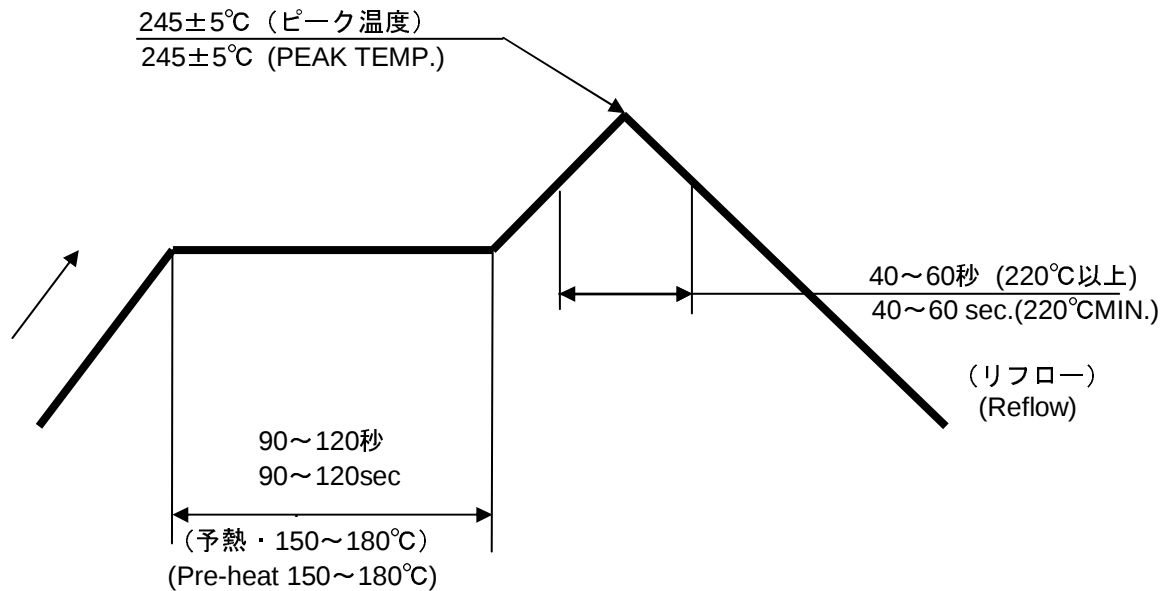
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【 8. 赤外リフロー条件 INFRARED REFLOW CONDITION】

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。
また吸湿などの前処理は行わないで下さい。

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.
No moisture treatment before reflow process.

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A	RELEASED	'04/12/06	J2005-1659	E.SUZUKI	K.TOYODA
B	REVISED	'05/08/30	J2006-0718	N.AIDA	K.TOYODA
C	REVISED	'06/03/01	J2006-2753	TE.NAGASE	T.HARUYAMA
D	REVISED	'07/08/08	J2008-0344	M.NABEI	K.TOYODA
E	REVISED	'07/09/20	J2008-0846	H.YAJIMA	T.HARUYAMA
F	REVISED	'08/04/03	J2008-3522	M.NABEI	T.HARUYAMA

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