

【1. 適用範囲 SCOPE】

本仕様書は、_____ 殿 に納入する。

1. 0mm ピッチFPC/FFC用コネクタ について規定する。

This specification covers the 1.0mm PITCH FPC/FFC 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	52793-**-19
52793-**-19 エンボス梱包 Embossed Tape Package for 52793-**-19	無鉛 LEAD FREE	52793-**-70

* : 図面参照 Refer to the drawings.

【3. 定格 RATINGS】

項目 Item	規格 Standard	
最大許容電圧 Rated Voltage (MAXIMUM)	50 V	[AC (実効値 rms) /DC]
最大許容電流 Rated Current (MAXIMUM)	0.5 A	
使用温度範囲 Ambient Temperature Range	-20°C ~ +85°C ^{*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 met temperature range specified in this standard.

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SHEET	1-11	1-10	1-10	1-10						
REVISE ON PC ONLY					TITLE:					
D	変更 REVISED J2013-0436 '12/10/17 T.MORISHITA				1.0mm PITCH FFC / FPC CONNECTOR -LEAD FREE-					
					PRODUCT SPECIFICATION 製品仕様書					
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REV.	DESCRIPTION				WRITTEN BY:	CHECKED BY:	APPROVED BY:	DATE: YR/MO/DAY		
	DESIGN CONTROL J		STATUS		E.SUZUKI	K.TOJO	M.SASAO	2004/02/16		
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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/FFC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/FFC, measure by dry circuit, 20mV MAXIMUM, 10mA MAXIMUM. (JIS C5402 5.4)	30 milliohm MAXIMUM
4-1-2 絶縁抵抗 Insulation Resistance	適合FPC/FFC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/FFC and apply 500V DC between adjacent terminal and ground. (JIS C5402 5.2/MIL-STD-202 Method 302)	100 Megohm MINIMUM
4-1-3 耐電圧 Dielectric Strength	適合FPC/FFC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 500V（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 /FFC apply 500V AC (rms) for 1 minute between adjacent terminal or ground. (JIS C5402 5.1/MIL-STD-202 Method 301)	異常なきこと No Breakdown

4-2. 機械的性能 Mechanical Performance

項目 Item	条件 Test Condition	規格 Requirement
4-2-1 挿入力及び抜去力 Insertion and Withdrawal Force	適合FFCを用いて、毎分25±3mmの速さで挿入、抜去を行う。 Insert and withdraw the applicable FFC to the connector at the speed rate of 25±3mm/minute.	第 6 項 参 照 Refer to paragraph 6
4-2-2 ターミナル保持力 Terminal /Housing Retention Force	ターミナルを毎分25±3mmの速さで引張る。 Apply axial pull out force at the speed rate of 25±3mm/minute on the terminal assembled in the housing.	5.9N {0.6kgf} MINIMUM

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TITLE:

1.0mm PITCH FFC / FPC CONNECTOR
-LEAD FREE-

PRODUCT SPECIFICATION

製品仕様書

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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	繰り返し挿抜 Repeated Insertion / Withdrawal	1分間に10回以下の速さで挿入、抜去を10回繰り返す。 When mated up to 10 cycles repeatedly by the rate of 10 cycles per minute.	接触抵抗 Contact Resistance	50 milliohm MAXIMUM
4-3-2	温度上昇 Temperature Rise	適合FPC/FFC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/FFC, 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10~55~10Hz/分、全振幅1.5mmの振動を各2時間加える。 (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 1 mA during the test. Amplitude : 1.5 mm P-P Frequency : 10-55-10 Hz Shall be traversed in 1 minute. (MIL-STD-202, Method 201)	外観 Appearance	異常なきこと No Damage
			接触抵抗 Contact Resistance	50 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 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 DC 1 mA current during the test. (Total of 18 shocks) Peak value : 490 m/s ² {50 G} (JIS C60068-2-27/MIL-STD-202 Method 213)	外観 Appearance	異常なきこと No Damage
			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	<p>適合FPC/FFCを嵌合させ、85±2°C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 C60068-2-2/MIL-STD-202 試験法 108)</p> <p>Mate applicable FPC/FFC 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. (JIS C60068-2-2/MIL-STD-202 Method 108)</p>	外観 Appearance	異常なきこと No Damage
			接触抵抗 Contact Resistance	50milliohm MAXIMUM
4-3-6	耐寒性 Cold Resistance	<p>適合FPC/FFCを嵌合させ、-40±2°C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)</p> <p>Mate applicable FPC/FFC and expose to -40±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. (JIS C60068-2-1)</p>	外観 Appearance	異常なきこと No Damage
			接触抵抗 Contact Resistance	50 milliohm MAXIMUM
4-3-7	耐湿性 Humidity	<p>適合FPC/FFCを嵌合させ、40±2°C 相対湿度 90~95%の雰囲気中に96時間放置後取り出し、30分以内に測定、水滴は拭き取る。 (JIS C60068-2-3/MIL-STD-202 試験方法103)</p> <p>Temperature : 40±2°C Relative Humidity : 90~95% Duration : 96 hours (JIS C60068-2-3/MIL-STD-202 Method 103)</p>	外観 Appearance	異常なきこと No Damage
			接触抵抗 Contact Resistance	50 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	50 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FPC/FFC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)	外 観 Appearance	異状なきこと No Damage
		Mate applicable FFC/FFC 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. -55±3℃ 30minutes +85±2℃ 30minutes (Transit time shall be with in 3 minutes) (JIS C0025)	接触抵抗 Contact Resistance	50 milliohm MAXIMUM
4-3-9	塩水噴霧 Salt Spray	適合FPC/FFC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)	外 観 Appearance	割れ、著しい腐食等 異状なきこと No Damage
		Mate applicable FP/FFC and expose to the following salt mist condition. 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% Spray time : 48±4 hours Ambient temperature : 35±2℃ (JIS C60068-2-11/MIL-STD-202 Method 101)	接触抵抗 Contact Resistance	50 milliohm MAXIMUM
4-3-10	亜硫酸ガス SO ₂ Gas	適合FFC/FFCを嵌合させ、40±2℃にて50±5ppmの亜硫酸ガス中に24時間放置する。 Mate applicable FFC/FFC and expose them to the following SO ₂ gas atmosphere. Temperature : 40±2℃ Gas Density : 50±5ppm Duration : 24 hours	接触抵抗 Contact Resistance	50 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 ₃ Gas	適合FFC/FFC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 FFC/FFC and 40 minutes exposure to NH ₃ gas evaporating from 28% Ammonia solution.	接触抵抗 Contact Resistance	50 milliohm MAXIMUM
4-3-12	半田付け性 Solder Ability	端子先端より1.5mm、金具先端より1.5mmの位置まで245±3℃の半田に 3±0.5秒浸す。 Dip terminal and fitting nail (held at 245±3°C) up to 1.5mm from the tip for 3±0.5 seconds.	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7項の条件を2回繰り返す。 (When reflowing) Repeat paragraph 7, condition two times.	外 観 Appearance	端子ガタ 割れ等 異状無き事 No Damage
		(手半田時) 端子先端より1.5mm、金具先端まで1.5mmの位置まで、370～400℃の半田ゴテにて最大5秒加熱する。 Dip terminal and fitting nail (held at 370～400°C) up to 1.5mm from the tip for 5 seconds MAX.		

() : 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. 挿入力及び抜去力 INSERTION/EXTRACTION FORCE】

下記の F F C を使用した場合 (参考)
 厚さ : 0.3 (mm)
 In case of used the following FFC (Reference)
 Thickness : 0.3(mm)

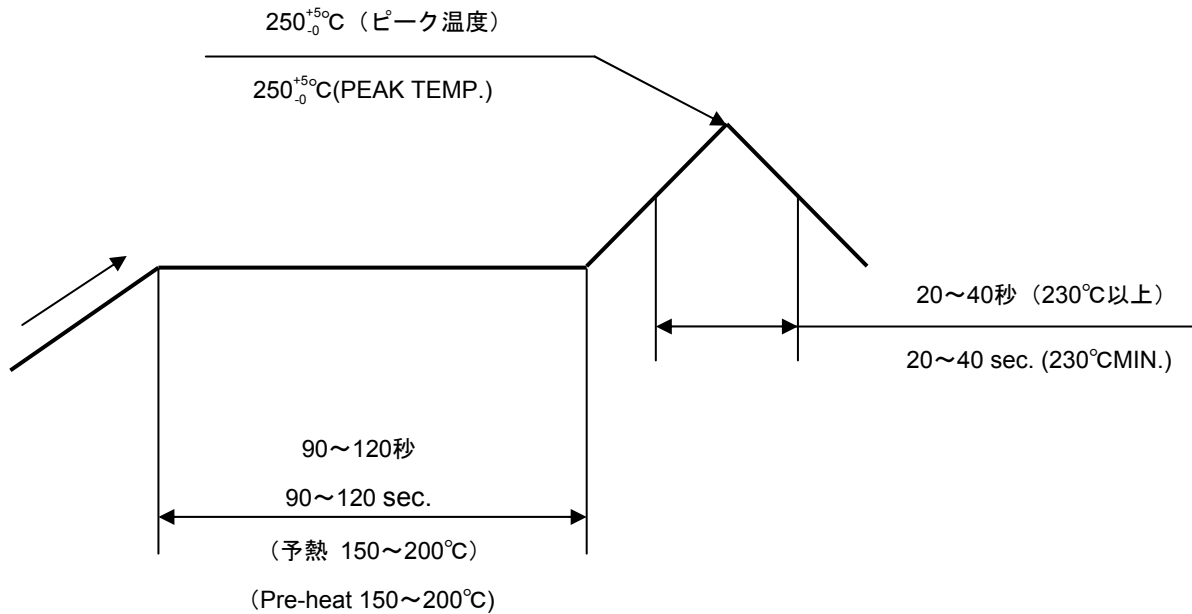
極数 No. of CKT	挿入力 (最大値) Insertion Force(MAX.)			抜去力 (最小値) Withdrawal Force(MIN.)		
	初回 1st	6回目 6th	10回目 10th	初回 1st	6回目 6th	10回目 10th
4	11.2 {1.15}	14.2 {1.45}	14.2 {1.45}	0.4 {0.04}	0.3 {0.03}	0.3 {0.03}
5	12.7 {1.30}	15.6 {1.60}	15.6 {1.60}	0.5 {0.05}	0.4 {0.04}	0.4 {0.04}
6	14.2 {1.45}	17.1 {1.75}	17.1 {1.75}	0.6 {0.06}	0.5 {0.05}	0.5 {0.05}
7	15.6 {1.60}	18.6 {1.90}	18.6 {1.90}	0.7 {0.07}	0.6 {0.06}	0.6 {0.06}
8	17.1 {1.75}	20.0 {2.05}	20.0 {2.05}	0.8 {0.08}	0.7 {0.07}	0.7 {0.07}
9	18.6 {1.90}	21.5 {2.20}	21.5 {2.20}	0.9 {0.09}	0.8 {0.08}	0.8 {0.08}
10	20.0 {2.05}	23.0 {2.35}	23.0 {2.35}	1.0 {0.10}	0.9 {0.09}	0.9 {0.09}
11	21.5 {2.20}	24.5 {2.50}	24.5 {2.50}	1.1 {0.11}	1.0 {0.10}	1.0 {0.10}
12	23.0 {2.35}	25.9 {2.65}	25.9 {2.65}	1.2 {0.12}	1.1 {0.11}	1.1 {0.11}
13	24.5 {2.50}	27.4 {2.80}	27.4 {2.80}	1.3 {0.13}	1.2 {0.12}	1.2 {0.12}
14	25.9 {2.65}	28.9 {2.95}	28.9 {2.95}	1.4 {0.14}	1.3 {0.13}	1.3 {0.13}
15	27.4 {2.80}	30.3 {3.10}	30.3 {3.10}	1.5 {0.15}	1.4 {0.14}	1.4 {0.14}
16	28.9 {2.95}	31.8 {3.25}	31.8 {3.25}	1.6 {0.16}	1.5 {0.15}	1.5 {0.15}

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極数 No. of CKT	挿入力 (最大値) Insertion Force(MAX.)			抜去力 (最小値) Withdrawal Force(MIN.)		
	初回 1st	6回目 6th	10回目 10th	初回 1st	6回目 6th	10回目 10th
17	30.3 {3.10}	33.3 {3.40}	33.3 {3.40}	1.7 {0.17}	1.6 {0.16}	1.6 {0.16}
18	31.8 {3.25}	34.7 {3.55}	34.7 {3.55}	1.8 {0.18}	1.7 {0.17}	1.7 {0.17}
19	33.3 {3.40}	36.2 {3.70}	36.2 {3.70}	1.9 {0.19}	1.8 {0.18}	1.8 {0.18}
20	34.7 {3.55}	37.7 {3.85}	37.7 {3.85}	2.0 {0.20}	1.9 {0.19}	1.9 {0.19}
21	36.2 {3.70}	39.2 {4.00}	39.2 {4.00}	2.1 {0.21}	2.0 {0.20}	2.0 {0.20}
22	37.7 {3.85}	40.6 {4.15}	40.6 {4.15}	2.2 {0.22}	2.1 {0.21}	2.1 {0.21}
23	39.2 {4.00}	42.1 {4.30}	42.1 {4.30}	2.3 {0.23}	2.2 {0.22}	2.2 {0.22}
24	40.6 {4.15}	43.6 {4.45}	43.6 {4.45}	2.4 {0.24}	2.3 {0.23}	2.3 {0.23}
25	42.1 {4.30}	45.0 {4.60}	45.0 {4.60}	2.5 {0.25}	2.4 {0.24}	2.4 {0.24}
26	43.6 {4.45}	46.5 {4.75}	46.5 {4.75}	2.6 {0.26}	2.5 {0.25}	2.5 {0.25}
27	45.0 {4.60}	48.0 {4.90}	48.0 {4.90}	2.7 {0.27}	2.6 {0.26}	2.6 {0.26}
28	46.5 {4.75}	49.4 {5.05}	49.4 {5.05}	2.8 {0.28}	2.7 {0.27}	2.7 {0.27}
29	48.0 {4.90}	50.9 {5.20}	50.9 {5.20}	2.9 {0.29}	2.8 {0.28}	2.8 {0.28}
30	49.4 {5.05}	52.4 {5.35}	52.4 {5.35}	3.0 {0.30}	2.9 {0.29}	2.9 {0.29}

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【7. 温風リフロー条件 HOT WIND CONDITION】



温度条件グラフ
(温度は基板パターン面)
TEMPERATURE CONDITION GRAPH
(TEMPERATURE ON THE SURFACE OF P.C.BOARD PATTERN)

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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A	RELEASED	'04/02/16	J2004-2431	E.SUZUKI	K.TOJO
B	REVISED	'04/11/12	J2005-1430	E.SUZUKI	K.TOJO
C	REVISED	'05/11/07	J2006-1512	E.SUZUKI	K.TOYODA
D	REVISED	'12/10/17	J2013-0436	T.MORISHITA	K.TAKAHASHI

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