



JAPANESE
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PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

【 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 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, apply 500V DC between adjacent terminal or ground. (JIS C5402 5.2/MIL-STD-202 Method 302)	100 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(rms) 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, apply 500V 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

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 繰返し動作 Repeated Actuator Insertion/ Withdrawal Force	無通電状態にて1分間に10回以下の速さで挿入、抜去を 30回繰り返す。 Insert and withdraw actuator up to 30 cycles at the speed rate of less than 10 cycle per minute.	挿抜力 Insertion/ Withdrawal Force	第6項参照 Refer to paragraph 6
			接触抵抗 Contact Resistance	40 milliohm MAXIMUM
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 mm per minute.	第7項参照 Refer to paragraph 7	
4-2-3	端子保持力 Terminal/Housing Retention Force	毎分25±3mmの速さで各ターミナルを軸方向に引き抜く。 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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	D	SEE SHEET 1 OF 10			
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	REV.	DESCRIPTION			
DOCUMENT NUMBER PS-52030-004				FILE NAME PS-52030-004.doc	SHEET 2 of 10
EN-37-1(019)					



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

4-3. その他 Environmental Performance and Others

項目 Item		条件 Test Condition	規格 Requirement	
4-3-1	温度上昇 Temperature Rise	適合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, 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
4-3-2	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
4-3-3	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	耐熱性 Heat Resistance	適合FPC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) 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. (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

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書
	D	SEE SHEET 1 OF 10	
	REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION
DOCUMENT NUMBER PS-52030-004			FILE NAME PS-52030-004.doc
			SHEET 3 of 10
EN-37-1(019)			



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

項目 Item		条件 Test Condition	規格 Requirement	
4-3-5	耐寒性 Cold Resistance	適合FPCを嵌合させ、 $-40\pm 2^{\circ}\text{C}$ 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) Mate applicable FPC and expose to $-40\pm 2^{\circ}\text{C}$ 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
4-3-6	耐湿性 Humidity	適合FPCを嵌合させ、 $40\pm 2^{\circ}\text{C}$ 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 $-40\pm 2^{\circ}\text{C}$, 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	50 Megohm MINIMUM
4-3-7	温度サイクル Temperature Cycling	適合FPCを嵌合させ、 $-55\pm 3^{\circ}\text{C}$ に30分、 $+85\pm 2^{\circ}\text{C}$ に30分、これを1サイクルとし、5サイクル繰り返し。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。(JIS C0025) Mate applicable FPC 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 $-55\pm 3^{\circ}\text{C}$ 30minutes $+85\pm 2^{\circ}\text{C}$ 30minutes (Transit time shall be within 5 minutes) (JIS C0025)	外 観 Appearance	異状なきこと No Damage
			接触抵抗 Contact Resistance	40 milliohm MAXIMUM

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書
	D	SEE SHEET 1 OF 10	
	REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION
DOCUMENT NUMBER PS-52030-004			FILE NAME PS-52030-004.doc
			SHEET 4 of 10
EN-37-1(019)			



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

項目 Item		条件 Test Condition	規格 Requirement	
4-3-8	塩水噴霧 Salt Spray	適合FPCを嵌合させ、 $35\pm 2^{\circ}\text{C}$ にて重量比 $5\pm 1\%$ 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 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 : $5\pm 1\%$ Spray time : 48 ± 4 hours Ambient temperature : $35\pm 2^{\circ}\text{C}$ (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
4-3-9	亜硫酸ガス SO_2 Gas	適合FPCを嵌合させ、 $40\pm 2^{\circ}\text{C}$ にて $50\pm 5\text{ppm}$ の亜硫酸ガス中に24時間放置する。 Mate applicable FPC and expose them to the following SO_2 gas atmosphere. Temperature $40\pm 2^{\circ}\text{C}$ Gas Density $50\pm 5\text{ppm}$ Duration 24 hours	外観 Appearance	異状なきこと No Damage
			接触抵抗 Contact Resistance	40 milliohm MAXIMUM
4-3-10	耐アンモニア性 NH_3 Gas	適合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 and 40 minutes exposure to NH_3 gas evaporating from 28% Ammonia solution.	外観 Appearance	異状なきこと No Damage
			接触抵抗 Contact Resistance	40 milliohm MAXIMUM
4-3-11	半田付け性 Solder Ability	ターミナル又はピンをフラックスに浸し、本体の取付け基準面より1.2mm迄、 $245\pm 5^{\circ}\text{C}$ の半田に 3 ± 0.5 秒浸す。 Soldering time : 3 ± 0.5 second Solder temperature : $245\pm 5^{\circ}\text{C}$ 1.2mm from terminal tip and nail tip.	濡れ性 Solder Wetting	浸漬面積の75%以上 75% of immersed area must show no voids, pin holes.

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書
	D	SEE SHEET 1 OF 10	
	REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION
DOCUMENT NUMBER PS-52030-004			FILE NAME PS-52030-004.doc
			SHEET 5 of 10
EN-37-1(019)			



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

項目 Item		条件 Test Condition	規格 Requirement	
4-3-12	半田耐熱性 Resistance to Soldering Heat	ターミナル又はピンを本体の取付け基準面より 1.2mm迄、 $260\pm 3^{\circ}\text{C}$ の半田に5秒浸す。 Soldering time : 5 seconds Solder temperature : $260\pm 3^{\circ}\text{C}$ 1.2mm from terminal tip and nail tip.	外 観 Appearance	端子ガタ 割れ等 異状無き事 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.

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書		
	D	SEE SHEET 1 OF 10			
			THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION		
	REV.	DESCRIPTION			
DOCUMENT NUMBER PS-52030-004				FILE NAME PS-52030-004.doc	SHEET 6 of 10
EN-37-1(019)					



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

【 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	30回目 30th	初 回 1st	6回目 6th	30回目 30th
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}
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}	40.2 {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}
11	N {kgf}	35.2 {3.6}	33.3 {3.4}	33.3 {3.4}	44.1 {4.5}	40.2 {4.1}	40.2 {4.1}
12	N {kgf}	36.2 {3.7}	34.3 {3.5}	34.3 {3.5}	45.0 {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}	46.0 {4.7}	42.1 {4.3}	42.1 {4.3}
14	N {kgf}	38.2 {3.9}	36.2 {3.7}	36.2 {3.7}	47.0 {4.8}	43.1 {4.4}	43.1 {4.4}
15	N {kgf}	39.2 {4.0}	37.2 {3.8}	37.2 {3.8}	48.0 {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}
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}
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}
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}

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書		
	D	SEE SHEET 1 OF 10			
			THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION		
	REV.	DESCRIPTION			
DOCUMENT NUMBER PS-52030-004				FILE NAME PS-52030-004.doc	SHEET 7 of 10
EN-37-1(019)					



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

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	30回目 30th	初 回 1st	6回目 6th	30回目 30th
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}
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}
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}
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}

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書		
	D	SEE SHEET 1 OF 10			
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	REV.	DESCRIPTION			
DOCUMENT NUMBER PS-52030-004				FILE NAME PS-52030-004.doc	SHEET 8 of 10
EN-37-1(019)					



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE
ENGLISH

【 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
4	N {kgf}	5.9 {0.60}	4.9 {0.50}	15	N {kgf}	11.3 {1.15}	10.3 {1.05}
6	N {kgf}	6.9 {0.70}	5.9 {0.60}	16	N {kgf}	11.8 {1.20}	10.8 {1.10}
7	N {kgf}	7.4 {0.75}	6.4 {0.65}	18	N {kgf}	12.8 {1.30}	11.8 {1.20}
8	N {kgf}	7.9 {0.80}	6.9 {0.70}	20	N {kgf}	13.8 {1.40}	12.8 {1.30}
9	N {kgf}	8.4 {0.85}	7.4 {0.75}	22	N {kgf}	14.7 {1.50}	13.8 {1.40}
10	N {kgf}	8.9 {0.90}	7.9 {0.80}	24	N {kgf}	15.7 {1.60}	14.7 {1.50}
11	N {kgf}	9.3 {0.95}	8.4 {0.85}	26	N {kgf}	16.7 {1.70}	15.7 {1.60}
12	N {kgf}	9.8 {1.00}	8.9 {0.90}	28	N {kgf}	17.7 {1.80}	16.7 {1.70}
13	N {kgf}	10.3 {1.05}	9.3 {0.95}	30	N {kgf}	18.7 {1.90}	17.7 {1.80}
14	N {kgf}	10.8 {1.10}	9.8 {1.00}				

	REVISE ON PC ONLY		TITLE: 1.0 FPC CONN. ZIF ST -LEAD FREE- 製品仕様書		
	D	SEE SHEET 1 OF 10			
			THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION		
	REV.	DESCRIPTION			
DOCUMENT NUMBER PS-52030-004				FILE NAME PS-52030-004.doc	SHEET 9 of 10
EN-37-1(019)					

