Product Specification

0.5mm PITCH FPC W/COVER BACK-LOCK SMT TYPE.

NO.	REV.	DATE	REV PAGE	REV CONTENT	REV BY

1. SCOPE

This specification covers the performance, tests and quality requirements for the0.5mmPITCH FPC W/COVER BACK-LOCK SMT TYPE .When tests are erformed on the subpectj product line, the procedures specified specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. REQUIREMENTS

2.1 PRODUCT DIMMENTIONS and APPLICABLE FFC/FPC&PCBLAYOUT

Product shall be of the design, construction and physical dimensions specified on the applicable Product Drawing.

See attached Product Drawing.

2.2 MATERIALS

ITEM DISCRIPTION	
Housing(主体)	High-Temp Plastic，UL 94V-0， Halogen Free
Cover(盖子)	High-Temp Plastic，UL 94V-0， Halogen Free
Terminal(端子)	Copper Alloy
Peg(接地片)	Copper Alloy
Terminal Plated(端子电镀)	See Product Drawing Plating Information
Peg Plated(接地片电镀)	

2.3 RATINGS

ITEM STANDARD	
Operating Voltage (Max.)	30V AC
Current Rating (Max.)	0.2A DC
Operating Temperature	-55°C~+85°C (Including terminal temperature rise)
Operating Humidity range	Relative humidity 90%Max.
Storage temperature range	-10°C ~ +50°C
Storage Humidity range	Relative humidity 90%Max.

3. Test Requirements and Procedures Summary

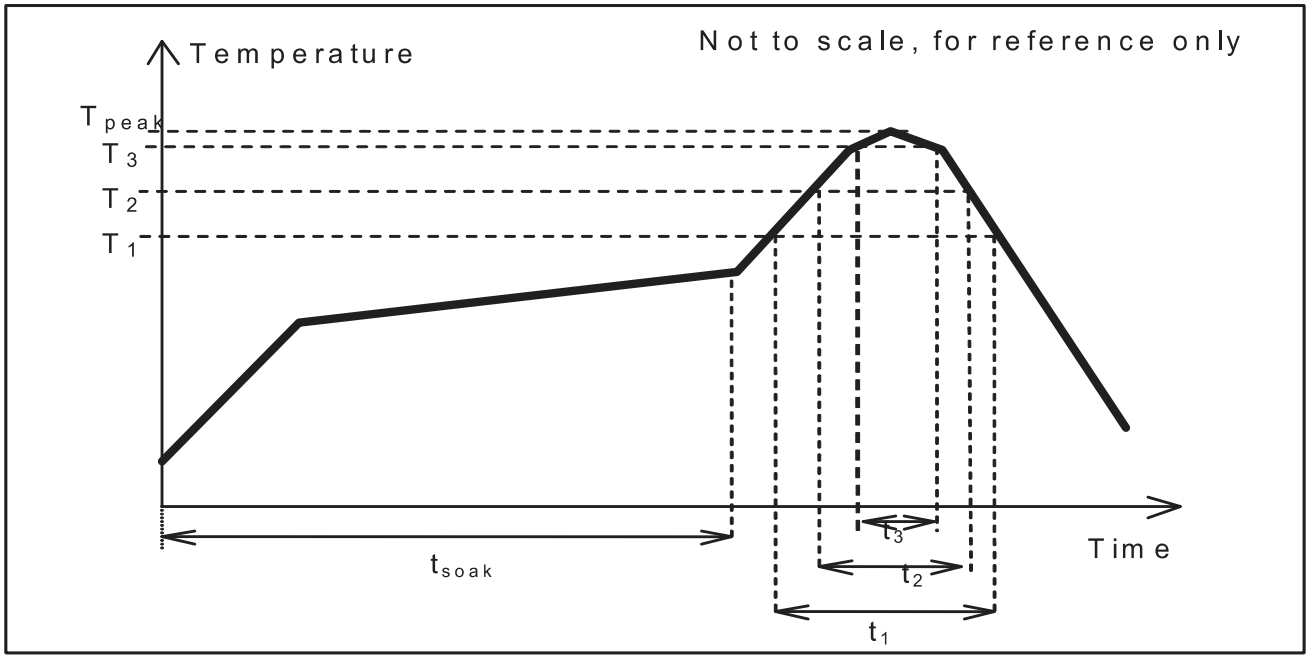
测试项目(Test Item)		规格(Requirement)		测试方式/条件(Test Condition)
1	外观检查 Examination of Product	符合图面外观，无任何损坏异状 No physical damage.		目视 Visual inspection.
电气特性(Electrical Requirement)				
2	接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.		将样品与适合之 FFC/FPC 连接，测试电压 20mV，限电流 10mA 下进行阻抗测试。 Mate applicable FPC and measure by dry circuit, 20mV Max,10mA. (EIA-364-6B)
3	绝缘阻抗 Insulation Resistance	[50] MΩ 以上. [50] MΩ Min.		将样品与适合之 FFC/FPC 连接，提供相邻端子间测试电压 500V DC 进行绝缘阻抗测试。 Mate applicable FPC and apply 500V DC between adjacent terminal and ground. (EIA-364-20B /MIL-STD-202 Method 302)
4	耐电压 Dielectric withstanding Voltage	目视外观无任何损坏异状 No Breakdown		将样品与适合之 FFC/FPC 连接，提供相邻端子间测试电压 500V DC 进行绝缘阻抗测试。 Mate applicable FPC and apply 500V DC between adjacent terminal and ground. (EIA-364-21C /MIL-STD-202 Method 302)
机械特性(Mechanical Requirement)				
5	FFC/FPC 保持力 FFC/FPC Retention Force	Pos. x 0.015Kgf {0.15N} 以上 Pos. x .015Kgf {0.15N} Min.		将盖子盖上与 FFC/FPC 连接，以操作速度每分钟位移 25±3mm 进行 FFC/FPC 保持力测试。 Insert the Cover; pull the FFC/FPC at a rate of 25±3mm per minute (EIA-364-13B).
6	盖子往返操作耐久测试 Repeated Actuator Insertion/ Withdrawal Durability Test	接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	将盖子与 FFC/FPC 反复连接，以每分钟小于 10 cycles 连续操作 10 次。 Insert and withdraw cover up to 10 cycles at the speed rate of less than 10 Cycles/Minute. (EIA-364-9C).
7	耐振性 Vibration	外观 Appearance	目视外观无任何 损坏异状 No Damage	通过 DC 电流 1mA，位移相对距离 1.5mm，振动周期 10～55～10 Hz 在 1 分钟内，持续 2 小时，方向在 X,Y,Z 轴做测试。 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 : 10～55～10 Hz in 1 minute. (EIA-364-28D, Condition Ⅰ /MIL-STD-202 Method 201)
		接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	
		瞬间断电 Discontinuity	1 μ sec 以下. 1 μ sec Max.	
8	耐冲击性 Mechanical Shock	外观 Appearance	目视外观无任何 损坏异状 No Damage	Duration: 2 hours in each of X, Y, Z axes. 将样品与适合之 FFC/FPC 连接，通过 DC 1mA 测试条件，连续测试 3 次。在 X、Y、Z 3 轴 6 个垂直方向施予重力加速度.490m/s2 {50G} 冲击。 Mate applicable FFC/FPC and subject to the following shock conditions. 3 times of shocks shall be applied for ach 6 directions along 3 mutually perpendicular axes, passing DC 1 mA current during the test. (EIA-364-27B, Method A /MIL-STD-202 Method 108)
		接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	
		瞬间断电 Discontinuity	1 μ sec 以下. 1 μ sec Max.	
环境特性及其他性能(Environment Performance and Others)				
9	耐湿性 Humidity	接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	将样品与适合之 FFC/FPC 连接，置于环境温 60±2°C，相对湿度 90～95%，测试时间 96 小时再置放于室温下 1～2 小时。 Mate applicable FFC/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 conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-31B /MIL-STD-202 Method 103)
		耐电压 Dielectric Strength	需能符合耐电压测试 No Breakdown	
		绝缘阻抗 Insulation Resistance	[50] MΩ 以上. [50] MΩ Min.	

10	冷热冲击 Temperature Cycling	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品与适合之 FFC/FPC 连接，承受 5 cycles 冷热冲击后,置放于室温下 1～2 小时. 1 cycle time 如下:a) -55±3°C,30 分钟 b) +85±3°C,30 分钟 Mate applicable FFC/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 a) -55±3°C,30minutes b) +85±3°C,30minutes (Transit time shall be within 3 minutes) (EIA-364-17B)
		接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	
11	盐水喷雾 Salt Spray	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品与适合之 FFC/FPC 连接，使用 5±1%浓度盐水，测试温度 35±2°C，测试时间 48±4 小时,后于室温下使用清水 冲洗后再干燥。 (JIS C0023 / MIL-STD-202 Method 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 NaCl solution Concentration: 5 ± 1% Spray time:48 ± 4 hours Ambient temperature: 35 ± 2°C (EIA-364-26B, Condition B /MIL-STD-202 Method 101)
		接触阻抗 Contact Resistance	[100] mΩ 以下. [100] mΩ Max.	
12	焊锡性 Solder ability	润湿性 Solder Wetting	润湿面积 95%以上,并不得有漏焊针孔现象 95% of immersed area must show no voids, pin holes.	锡温 245±5°C，将导电端子浸入锡炉液面至 Housing 距离锡面 0.1mm 位置,焊锡时间 3~5 秒。 Tip of solder tails and fitting nails into the molten solder (held at 245±5°C) up to 0.1mm from the bottom of the housing for 3~5 seconds. (JESD22-B102D, Condition C)
13	温升 Temperature Rising	在额定电流范围内 30℃ 最大 30℃ Max. Under loaded rating current		量测通过 FPC 最大容许电流时，样品接触点之温升（UL498）. Mate applicable FPC and measure the temperature rise of contact when the maximum AC rated current is passed.(UL 498)
14	焊锡耐热性 Resistance to Soldering Heat	外观 Appearance	目视外观无任何损坏异状 No Damage	使用红外线回焊时请参考第 4 点 When reflowing…Refer to paragraph 4.
				手工焊锡. 焊接时间:5 秒 Max ，焊接温度: 370~400℃ Hand soldering: Soldering time: 5 seconds Max. Solder temperature : 370~400°C

4. Resistance to flow solder heat

Pb-free reflow profile requirements:

Parameter Reference		Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	t_{soak}	2-3 minutes
Time above 217°C	t_1	60 s
Time above 230°C	t_2	50 s
Time above 260°C	t_3	5 s
Peak temperature in reflow	T_{peak}	260°C (–5/+0°C)
Temperature gradient in cooling		Max -5°C/s



NOTE: Please check the re-flow soldering condition by your own devices beforehand.
Because the condition changes by the soldering devices, p.c. boards, and so on.

5.Qualification and Requalification Test

Test or Examination	Test Group								
	A B		C D		E	F	G	H	I
	Test Sequence								
Examination of Product	1,9	1,4 1,5	1,5		1, 5	1,5 1,3		1,3	1,3
Contact Resistance	2,6	2,4		2,4	2, 4	2,4			
Dielectric withstanding Voltage	3,7								
Insulation Resistance	4,8								
FPC/FFC Retention Force		2							
Durability		3							
Vibration			3						
Mechanical Shock				3					
Humidity	5								
Temperature Rising									2
Temperature Cycling					3				
Salt Spray						3			
Solder ability							2		
Resistance to Soldering Heat								2	

6.Packing Specification

6.1Tape and Reel Dimensions：

See attached Packing drawings.

6.2Packing Specification

See attached Packing drawings.

FAI DATA SHEET

FAI#: F190430002

Drawing Number:		Part umber	FPC	Supplier :	研发部	New: ■ Page: 1 of 1
Release Date:	/	Part Title:	0.5 mm P FPC W/COVER BACK-LOCK SMT TYPE	Cavity / Tool #	/	Revised: ☐
Revision:	A0	Material Spec	/	Date:	2016-4-30	Resubmissio ☐

DRAWING SPECIFICATIONS				INSPECTION RESULTS									INSPECTION ANALYSIS				Inspect Method	Remarks	
				Sample Number				Deviation from Nominal				Mean	% Tolerance		Acc/Rej			Supplier Remarks	Engineering Disposition
ITEM	NOMINAL	+TOL	-TOL	1#	2#	3#	4#	1#	2#	3#	4#		UPPER	LOWER	HIGH	LOW			
1	5.50	0.15	0.15	5.524	5.490	5.526	5.538	0.02	-0.01	0.03	0.04	5.52	25%	7%			CM		
2	2.40	0.10	0.10	2.422	2.422	2.416	2.416	0.02	0.02	0.02	0.02	2.42	22%	0%			CM		
3	0.30	0.10	0.10	0.292	0.310	0.299	0.279	-0.01	0.01	0.00	-0.02	0.30	10%	21%			CM		
4	0.30	0.10	0.10	0.319	0.315	0.315	0.290	0.02	0.02	0.02	-0.01	0.31	19%	10%			CM		
5	0.60	0.10	0.10	0.549	0.586	0.582	0.561	-0.05	-0.01	-0.02	-0.04	0.57	0%	51%			CM		
6	3.00	0.10	0.10	3.015	2.967	2.987	3.007	0.02	-0.03	-0.01	0.01	2.99	15%	33%			CM		
7	3.63	0.10	0.00	3.652	3.647	3.668	3.646	0.02	0.02	0.04	0.02	3.65	38%				CM		
8	4.95	0.10	0.10	4.932	4.922	4.903	4.919	-0.02	-0.03	-0.05	-0.03	4.92	0%	47%			CM		
9	0.10	0.15	0.15	0.111	0.124	0.115	0.110	0.01	0.02	0.02	0.01	0.12	16%	0%			CM		
10	0.47	0.10	0.10	0.470	0.455	0.477	0.485	0.00	-0.02	0.01	0.02	0.47	15%	15%			CM		
11	0.30	0.10	0.10	0.306	0.304	0.299	0.283	0.01	0.00	0.00	-0.02	0.30	6%	17%			CM		
12	0.10	0.15	0.15	0.125	0.128	0.121	0.128	0.03	0.03	0.02	0.03	0.13	19%	0%			CM		
13	3.25	0.15	0.15	3.238	3.230	3.260	3.279	-0.01	-0.02	0.01	0.03	3.25	19%	13%			CM		
14	0.10	盖子方向		0.030	0.040	0.020	0.030	-0.07	-0.06	-0.08	-0.07	0.03					CM		
15	0.10	框口方向		0.020	0.021	0.035	0.042	-0.08	-0.08	-0.07	-0.06	0.03					CM		

Comments:(P.S.: C: Caliper; P: Optical Comparator; CM: Coordinate Measuring Machine; T: Tape measure; H: Height Gauge; R: Scale;MM: Measuring Microscope ; CMM: Three Coordinate Measuring Machine;S: Visual)

Approved: TERRY　　Checked: KEPING.YAN　　Inspector: 舒丽

Shelf life:Three years

测试报告

Product Name: 0.3mm Pitch FPC

1.目的:(说明测试/实验要澄清或解决的问题)

1.1.试验项目: 接触电阻、绝缘电阻、耐电压、拔出力、耐久、IR 测试、焊板 (数量:各 5PCS）

1.2.试验依据: 产品规范

1.3.测试类型: 品质验证

1.4.申请单位: 研发部

2.方法:(说明本测试/实验所使用的工具，设备，仪器及其装置方法和设定的条件)

2.1.试验时间: 2016-05-22

2.2.试验地点: 品保实验室

2.3.测试设备: 低电阻测试仪、绝缘耐压测试仪、插拔力试验机、回流炉

2.4.试验方法:

2.4.1.接触电阻：将试样配对好后用四线法测其接触电阻，要求初期/终期电阻 100mΩ max。

2.4.2.绝缘电阻：将试样配合好后，在相邻两 PIN 端子间施加 500V DC 1 分钟要求绝缘电阻 50 MΩ Min

2.4.3.耐电压：将试样配合好后，在相邻两 PIN 端子间施加 500V DC 1 分钟，要求试样无击穿电弧现象。

2.4.4.拔出力：将试样焊板后插入厚 0.20mm 排线并固定至测试台上,以 25 毫米/分钟的速度将排线从扣合好的试样中拔出,测其拔出力.要求拔出力 0.165kgf min。

2.4.5.耐久：将试样焊板后插入厚 0.20mm 排线模拟使用方式连续插拔 10 次后观察试样外观变化，要求试样经测试后外观不得有明显不良现象。

2.4.6.IR 测试：将试样放置在峰值温度为 260℃回流焊炉中，经六个温区流出后观察，要求试样经测试后无明显不良现象。

2.4.7.焊板：将试样焊接部位放置在锡膏厚度为 0.1mm 的 PCB 上，经峰值温度为 260℃回流焊炉焊接后观察，要求试样焊接部位吃锡饱满，无空焊现象。

3.记录:（记录测试/试验过程中所获得的数据资料或观察到的现象）

3.1.测试数据

项目		测定值					标准	判定
		1#	2#	3#	4#	5#		
拔出力（kgf）	初期	0.60	0.56	0.64	0.61	0.63	0.165kgf min	合格
	终期	0.52	0.50	0.58	0.55	0.52	0.165kgf min	合格
接触电阻（mΩ）	初期	36.42mΩ max		11.05mΩ min		23.06mΩavrg	100mΩ max	合格
	终期	37.26mΩ max		11.46mΩ min		23.69mΩavrg	100mΩ max	合格
绝缘电阻		绝缘电阻均大于 9999MΩ					50MΩ Min	合格
耐电压		无击穿、电弧等不良现象					无击穿、电弧	合格
耐久		经耐久 10 次后无明显功能不良					无功能损伤	合格
焊板		焊接部位吃锡饱满，无空焊					吃锡饱满，无空焊	合格
IR		试验经测试后无变形、气泡等不良					无明显外观不良	合格

接 触 电 阻 测 试 数 据

P/N		0.5mm Pitch FPC CONN					Sample QTY		5PCS		
Spec		Initia max.100mΩ Final max:100mΩ				Unit	mΩ	Pins of Sample			11
Initial max.		36.42		Initial min.		11.05	Initial avg	23.06	Initial stdev		10.80
Final max.		37.26		Final min.		11.46	Final avg	23.69	Final stdev		11.30
Test pin / Test sample		初期					终期				
		1#	2#	3#	4#	5#	1#	2#	3#	4#	5#
T1	Pin1	14.05	14.42	15.09	14.39	11.46	15.63	14.98	12.29	12.94	15.52
	Pin2	11.53	11.61	12.35	12.18	12.64	14.57	12.98	12.75	13.83	13.14
	Pin3	13.40	14.26	12.58	14.04	11.71	12.67	13.82	14.71	12.12	14.28
	Pin4	14.14	12.17	14.96	14.99	12.85	12.54	14.74	12.01	13.59	11.71
	Pin5	12.11	14.15	11.05	14.12	15.26	12.74	11.46	15.19	12.49	14.86
	Pin6	12.83	15.02	12.60	14.01	14.38	14.91	12.82	12.80	15.67	11.98
T2	Pin7	35.50	33.86	34.15	35.63	34.48	34.46	36.30	36.61	37.18	37.23
	Pin8	34.17	35.28	34.86	34.53	33.25	36.65	35.08	37.26	36.41	36.24
	Pin9	35.31	34.87	35.31	35.85	34.40	34.79	34.52	36.23	34.81	35.91
	Pin10	36.42	33.57	33.72	36.13	36.18	36.25	34.87	36.79	34.98	34.85
	Pin11	33.78	34.20	34.74	34.31	33.50	35.13	35.08	36.00	37.08	36.73
以下空白											