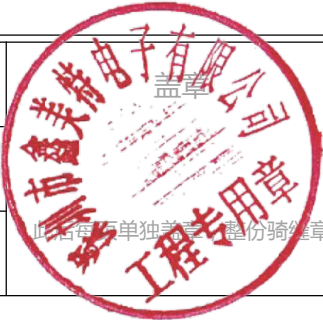


规格书

供应商名称	深圳市鑫美特电子有限公司
物料类别	线材类
物料编码	
物料名称	FFC 连接线
物料规格	0.5 间距 接触面异面系列
编制日期	2021.11.18

供应商签章			
编制	审核	批准	
陈历祥			

签章	
研发工程师	研发工程师主管

深圳市鑫美特电子有限公司

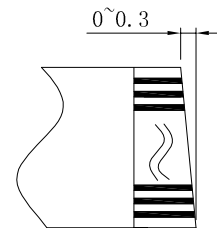
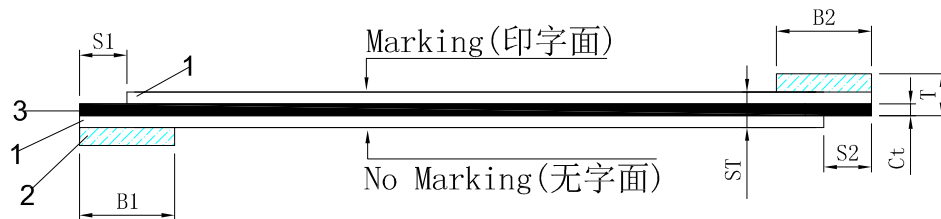
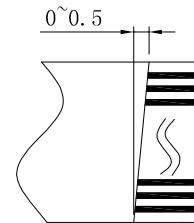
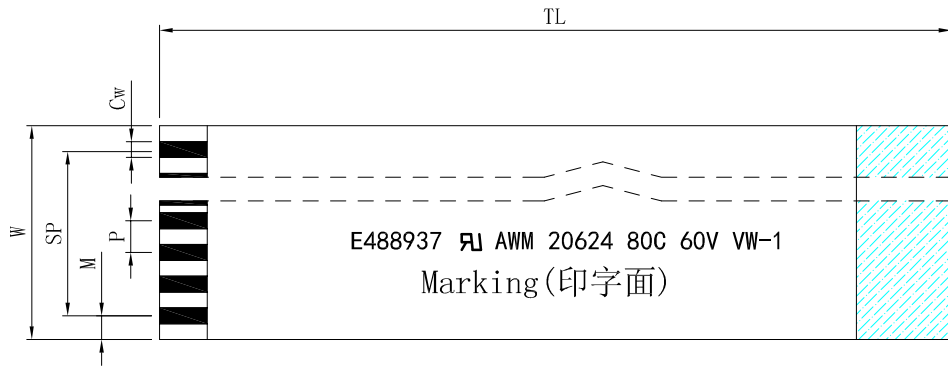
Shenzhen xinmeite electronics Co.,LTD

目录 CONTENT

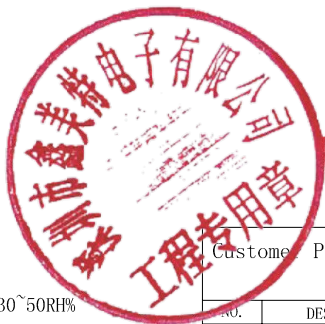


1、封面 (cover)	1
2、目录(Content)	2
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1		2		3			
STRUCTURE (构造)							
J	NO.	ITEM(项目)	SPECIFICATION (规格)				
	1	INSULATION (胶膜)	印字: E488937 UL20624 (43μm)				
I			白膜: 80℃ 60V (43μm)				
	2	SUPPORTING TAPE (补强板)	225μm		Blue(蓝色)		
	3	CONDUCTOR (导体)	Ct(厚度)	0.035	±0.005		
			Cw(宽度)	0.3	±0.03		
		CONDUCTOR (导体镀层)	PLATED(电镀)	锡Sn (1μm)	MIN		
PLATED(电镀)							
H							
DIMENSION (尺寸)							
G	No. of conductors (导体数目)		N	/			
	Pitch(间距)		P	0.5	±0.05		
	Span(总间距)		SP	0.5*(N-1)	±0.05		
	Width(总宽度)		W	0.5*(N+1)	±0.08		
	Margin(边缘宽度)		M	0.5	±0.07		
	Insert Thickness (插接端厚度)		T	0.30	±0.03		
	F	Surface Thickness (线身厚度)		ST	0.12	±0.03	
Strip Length (裸铜长度)		S1	4.0	±1.0			
E			S2	4.0	±1.0		
	Supporting Tape Length(补强板长度)		B1	8.0	±2.0		
			B2	8.0	±2.0		
	D	Total length (总长度)		TL	50及以下		±1.0
					50~100		±2.0
100~300					±3.0		
300~800					±5.0		
800以上					±10.0		



- 技术要求:
- 1、保存环境:
温度: 15~25℃ 湿度: 30~50RH%
 - 2、保质期:
镀金: 12个月 镀锡: 6个月
 - 3、产品符合ROHS 2.0标准



Customer P/N(客户料号):

深圳市鑫美特电子有限公司

NO.	DESCRIPTION(描述)	DATE	Drawing: (绘制) 陈历祥	Title: FFC CABLE 0.5间距 接触面在异面系列			
0	NEW DRAWING(新作成)	2021.11.18	Check: (审核)	Customer(客户)	Rev.(版次)	A/0	
			Approved: (核准)	Dwg NO.(图纸编码)	Page (页码)	1/1	
			Unit: mm		Weight (重量)		

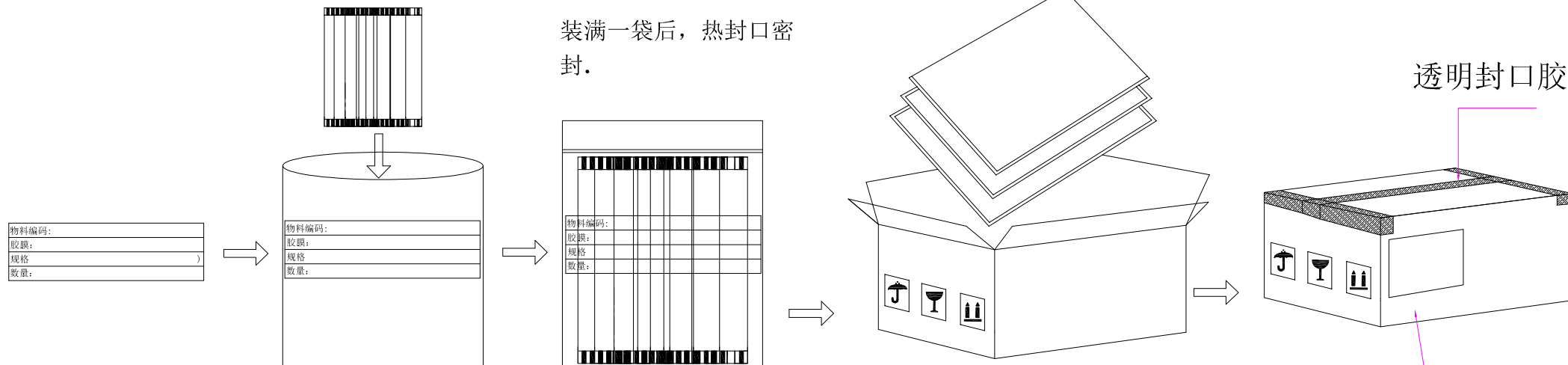
包装图

1. 每100PCS/PE袋，需根据产品规格尺寸来选择PE袋型号。

PE袋子外贴一张内标签，内标签样式如下：

2. 将装好袋的产品每1000pcs放入一个密封袋；将密封袋整齐放入纸箱中，每箱装入数量以实际产品的订单数量及产品规格确定。如下图：

3. 封箱时，纸箱要封成工字型，封箱胶带需压紧，（如下图示）：



包装项目	品名	料号	规格
1	纸箱	xxx	L35CM*W23CM*H16CM
2	纸箱	xxx	L20*W16CM*H14CM
3	隔板	xxx	L34CM*W22CM*0.2CM
4	隔板		L19*W15CM*H14CM
5	PE袋		xxxxmm*90mm*0.08mm 无印字（环保）

说明：根据线材长度、类型等选择最合适的包装材料规格。

备注：

- 同一个纸箱内放入两种以上规格的产品时需要用隔板间隔。
- 自检标签内容填写正确无误，外标签贴于正面左上角。
- 尾数箱未装满时，须使用填充物进行填满，避免产品在箱内晃动。



FFC USE: Internal wiring of class circuits in electronic equipment	
客户编号:	客户编号:
订单号码:	客户编号:
规格:	
数量:	日期:

外箱标签样式

Customer P/N: (客户料号)			深圳市鑫美特电子有限公司			
NO.	DESCRIPTION(描述)	DATE	Drawing: (绘制)	Title: FFC CABLE		
01	NEW DRAWING(新作成)	2018.08.23	Lilyen			
			Check: (审核)	客户(客户)	Rev. (版本)	A/0
			Approved: (核准)	Dwg. NO. (图纸编码)	Page (页码)	1/1
			Unit:	冲边模具编号	Weight (重量)	

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1、产品适用范围

Scope of product application

◎FFC 适用(Pitch0.5mm、0.8mm、1.0mm、1.25mm、1.27mm、2.54mm)

This specification covers the 0.5mm、0.8mm、1.0mm、1.25mm、1.27mm、2.54mm pitch FFC series

2、额定值

Ratings

项目 Item	规格 Standard
额定电压、电流及温度 Rating voltage,current and temperature	60V 0.5A 80℃
工作温度范围 Operating temperature range	-30℃~+80℃
工作湿度范围 Operating humidity range	10%~65%
阻燃等级 Flame retardant grade	VW-1

Revision	Date	Modify	Producer
A/0	2021.11.18		

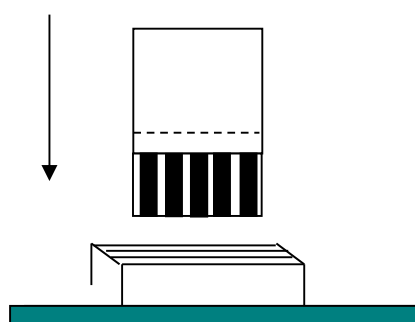
FFC 产品使用方法

1、使用范围

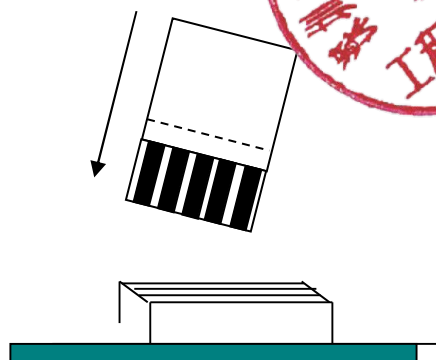
由于 FFC 具有体积小精密度高，柔韧性好，可弯曲使用及更易焊接等特点，现广泛用于：扫描仪、笔记本、计算机、DVD、VCD、液晶电视、显示器、传真机、打印机、数码相机、电话、录像机、摄像机、影碟机等。

2 使用方法：

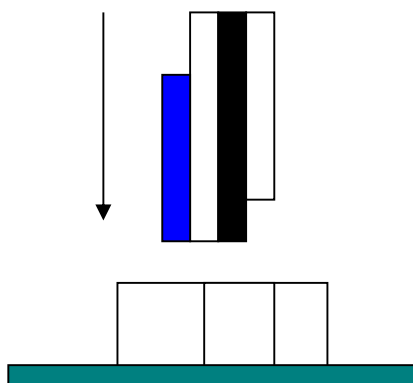
插拔时，手指捏住保强板端，垂直水平插拔



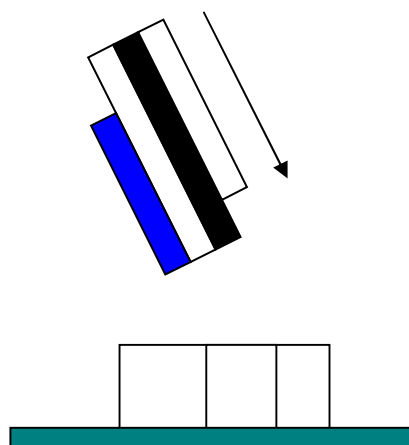
OK



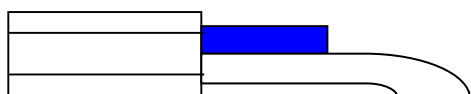
NG



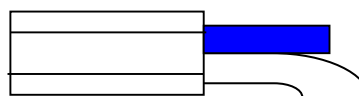
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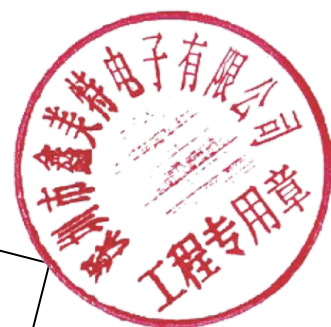
NG



OK



NG



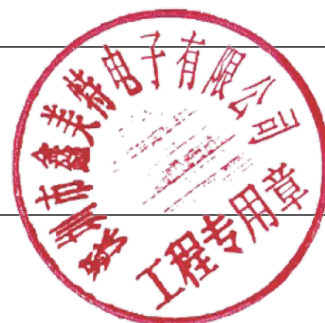
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3、保管条件

Storage condition (reference item)

项目 Item	规格内容 Standard
储存温度 Storage temperature	20±8℃
储存湿度 Storage humidity	65%以下 Less than 60%
储存期限 Storage life	6 个月



(1) 产品储存区域应保持清洁干燥，以免产品被污染或受潮变质。

To avoid product contamination or moisture deterioration ,Product storage area should be kept clean and dry,

(2) 产品的摆放应整齐，排列井然有序，叠放時要做到“上小下大、上轻下重”。

Products should be placed neatly in an orderly. The bigger and heavier the product is , the lower you put .

(3) 产品不可直接堆放在地板上，用卡板堆放。

Products should not directly stacked on the floor, please put them by card-board.

4、性能

Performance

试验条件

Test Conditions

1) 标准状态

Standard conditions

试验及测量如果没有特别的规定，就按周围温度 5~35℃，相对温度为 85%以下，普通气压 86~106kPa

来实施。但是，如果按此标准测量出的值有疑义时，以判定状态为准。

The test and measurement shall be conducted at the ambient temperature of5~35℃.relative

Humidity of85%or less,and normal atmospheric pressure of86~106kPa unless otherwise Specified.If the judgment made on the basis of the values measured standard conditions is

doubtful the test and measurement should be made under the judgment conditions.

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2) 判定状态

Judgment conditions

判定状态是指:有规定环境条件下测量。周围温度 $20\pm 2^{\circ}\text{C}$ ，相对湿度为 60-70%以下，普通气压 86~ 106kPa 的环境状态下测量。

Judgment conditions, environmental conditions under which the measurement is conducted. Are the conditions of ambient temperature of $20\pm 2^{\circ}\text{C}$ relative humidity of 60-70% normal atmospheric pressure of 86-106kPa.

4-1. 电气性能

Electrical performance

NO.	试验项目 Items	试验条件 Test Condition	规格 Requirement
4.1.1	绝缘电阻 Insulation Resistance	DC250V 1Minutes	100M Ω -m 以上
4.1.2	耐电压 Dielectric Strength	AC250V 1Minutes, 相邻两导体在空气中	无击穿现象 No breakdown

4-2. 机械性能

Mechanical Performance

NO.	试验项目 Items	试验条件 Test Condition	规格 Requirement	
4.2.1	耐 180° 曲折性 the resistance of 180° folding	来回曲折各一次 (1Cycle), 30Cycle 以上; fold back and forth as one time (1Cycle), more than 30 Cycles ;	外观 Appearance	无损坏 No damage
			电性 electrical	满足电气性能要求 Meet the electrical performance Requirements
4.2.2	耐曲绕性 Resistance of bending	导体厚度小于 0.1mm, 折曲弧度 $R15\pm 5\text{mm}$, 滑行距离 50mm, 以 500 次/min 速度做曲绕测试 10 万次。 The thickness of the conductor is less than 0.1mm, The bending radian is $R15\pm 5\text{mm}$, The sliding distance is 50mm, with the speed of 500 times one minute to do the test one hundred thousand times.	外观 Appearance	无损坏 No damage
			电性 electrical	满足电气性能要求 Meet the electrical performance requirements

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NO.	试验项目 Items	试验条件 Test Condition	规格 Requirement	
4.2.3	耐磨性 wearable resistance	R0.5mm, 荷重 600+/-5g, 以 60 次/min 速度, 行程 100mm 长做水平磨擦测试 10000 次。R0.5mm, The load is 600 +/- 5g, the trip length is 100mm, in the speed of 60 times one minute, To do the horizontal friction tests for 10,000 times.	外观 Appearance	无损坏 No damage
			电性 electrical	满足电气性能要求 Meet the electrical performance requirements
4.2.4	剥离强度 Peel strength	拉力器以 25+/-3mm/min 速度进行剥离 测试。 Rally with 25 + / -3mm/min speed, to do the peel test	胶膜对导体 Film to conductor	参考《FFC 剥离强度标准》 Refer to FFC peel strength standard
			胶膜对补强板 Film to board	参考《FFC 剥离强度标准》 Refer to FFC peel strength standard
4.2.5	重复插拔性 Repeate dinsertion/with drawal	以 10 次/min 的速度, 与相适合的 FPC 插拔 30 次。 10 times / min speed, Insert and withdraw FPC 30 cycles	外观 Appearance	无损坏 No damage
			电性 electrical	满足电气性能要求 Meet the electrical performance requirements

4-3.

环境性能

Environment Performance

NO.	试验项目 Items	试验条件 Test Condition	规格 Requirement	
4.3.1	耐热性 Heat resistance	80±2℃的空气中; 放置 96 小时; 再回到室温中放置 0.5-2 小时。 in the air 80±2 °C for 96 hours, and then return to the room temperature for 1-2 hours	外观 Appearance	无损坏 No damage
			电性 electrical	满足电气性能要求 Meet the electrical performance requirements

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NO.	试验项目 Items	试验条件 Test Condition	规格 Requirement	
			外观 Appearance	无损坏 No damage
4.3.2	耐湿性 Moisture resistance	40±2℃、相对湿度 90-95%的空气中； 放置 96 小时；再回到室温中 0.5-2 小时内 测定。 in the Temperature 40 ± 2 °C and 90-95% relative humidity for 96 hours, and then return to the room temperature for 0.5-2 hours	电性 electrical	满足电气性能要求 Meet the electrical performance requirements
			外观 Appearance	无损坏 No damage
4.3.3	耐寒性 Cold resistance	-40±2℃的空气中；放置 96 小时；再回到室温中放置 0.5-2 小时。 in the air with -40 ± 2 °C for 96 hours, and then return to room temperature for 0.5-2 hours	电性 electrical	满足电气性能要求 Meet the electrical performance requirements
			外观 Appearance	无损坏 No damage
4.3.4	温度循环性 Temperature cycling	-40±2℃ 2H→ 80±2℃ 2H → 25±2℃ 2H 循环 5 次 5cycles of :-40±2℃ 2H→ 80±2℃ 2H → 25±2℃ 2H	电性 electrical	满足电气性能要求 Meet the electrical performance requirements
			外观 Appearance	无损坏 No damage
4.3.5	盐雾性 Salt Spray	35±2℃、5±1%的盐水喷雾 (Au 24H Sn 12H)；试验后常温水洗，再室温干燥。 Use the saline in 35 ± 2 °C, 5±1% to spray the prodcuts (Au 24H Sn 12H), and then use water at room temperature to wash it ;at the end , to dry it also at room temperature for 96 hours; to return to room temperature for 1-2 hours in the place	电性 electrical	满足电气性能要求 Meet the electrical performance requirements
			外观 Appearance	无损坏 No damage

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◎ 测试方法说明

Test Method Description

◆ 耐 180°

曲折测试 (图 1 所示)

(1) 直尺、微电阻计。

(2) 将 FFC 线身部份对折 180° 并将折痕处抹平, 用直尺压住 FFC 线折痕处任意一边线身来回作 180° 折曲。

(3) 曲折试验后 FFC 线导体不可有折断、胶膜不可有剥离不良; 导体阻抗符合下表要求。

◆ The resistance test of 180° bending(as shown in picture 1)

(1) ruler, micro-ohmmeter.

(2) First, fold the FFC in 180°, and then smooth the creases. At the end, use the ruler to press the FFC at one side, and fold the FFC back and forth in 180° at the other side.

(3) After the bending test, the FFC cable conductor should not break, the film should not Peel off; the conductor impedance should meet the following requirements.

导体规格	T (mm) W	0.028 × 0.3	0.035 × 0.3	0.035 × 0.65	0.035 × 0.7	0.05 × 0.3	0.05 × 0.5	0.05 × 0.65	0.05 × 0.7	0.05 × 0.8	0.1 × 0.3	0.1 × 0.5	0.1 × 0.65	0.1 × 0.8	0.1 × 1.27
镀锡导体电阻	Ω/m	≤2.5	≤2.0	≤1.0	≤0.91	≤1.4	≤0.9	≤0.7	≤0.58	≤0.6	≤0.7	≤0.42	≤0.35	≤0.28	≤0.18
裸铜导体电阻	Ω/m	≤2.1	≤1.66	≤0.85	≤0.78	≤1.2	≤0.75	≤0.6	≤0.52	≤0.5	≤0.6	≤0.35	≤0.3	≤0.25	≤0.15

◆ 耐磨测试 (图 2 所示)

(1) 检测设备为耐磨擦测试机, 绝缘耐压测试机。

(2) 试片规格为 150mm 长度。

(3) 测试原理见图 1 所示。

(4) 摩擦槌及摩擦棒荷重 600±50g, 摩擦棒 R0.5mm 接触被测试片, 以 60 次/min 的速度水平摩擦试片。

(5) 试片经 100000 次后不可有外观磨损(露铜或印刷脱落), 不可有耐压、绝缘、开路不良。

◆ Wearable Test(as shown in picture 2)

(1) The test equipment is abrasion testing machine and dielectric strength testing machine.

(2) The size of the test piece in 150mm length.

(3) The test principle is as shown in picture 1.

(4) The height of the friction harmer and the friction stick is 600±50g, The friction stick touch the test piece in the horizontal direction with R0.5mm, 60 times per minute.

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(5) After 100,000times, the test piece can not have the appearance of wear, peeling paint or exposed situations such as copper of printed ;in should not be open circuit, short circuit and other undesirable electrical characteristics.

◆ 耐曲绕测试 (图 3 所示)

(1) 检验设备为耐曲绕测试仪, 耐压绝缘测试仪。

(2) 试片规格为 360mm 长。

(3) 将待测 FFC 线试片固定于测试机上下模座中间, 折弯弧度为 $R15 \pm 5\text{mm}$ 。

(4) 下模座以马达连带驱动平移 50mm, 移动速度为每分钟 500 次往复。

(5) 曲绕 1000000 次后取下试片观察其外观及检测电气性能。

(6) 试片外观不可磨损、剥离不良, 导体不可有断线, 不可有绝缘及耐压不良。

◆ test resistance of bending (as shown in picture 3) .

(1) Testing equipment is bending tester and voltage insulation tester.

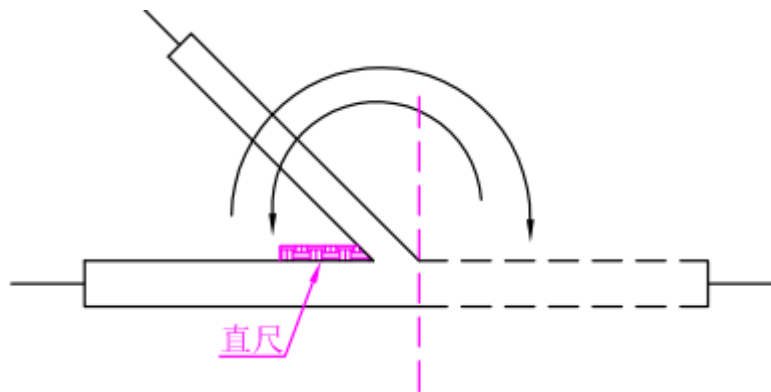
(2) The long of the test pieces are 360mm.

(3) The test pieces need to be fixed in the middle of the upper and lower mold, bending radian is $R15 \pm 5\text{mm}$.

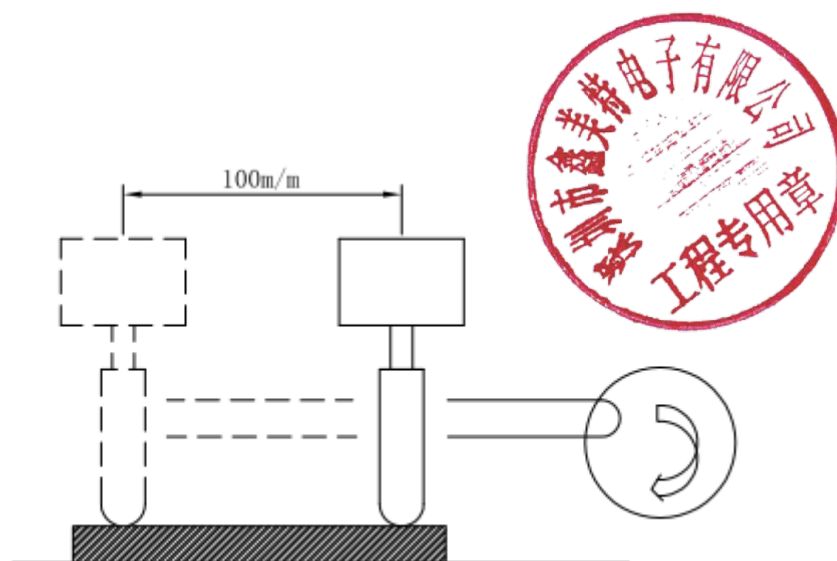
(4) The lower mold do parallel movement 50mm droved by the motor, the moving speed keep in 500 times per minute back and forth.

(5) After bending for one million times, check the test pieces' appearance and test electrical performance.

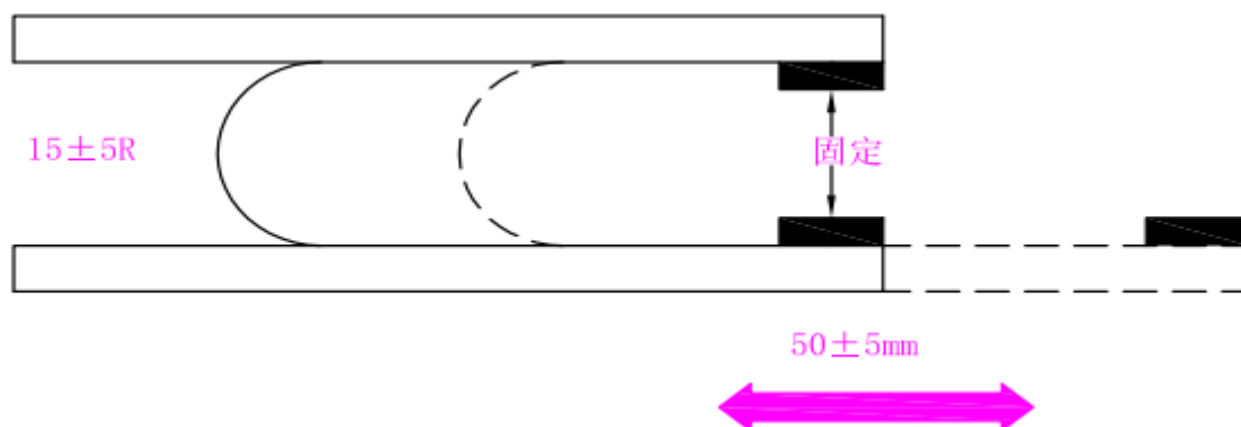
(6) The appearance of the test pieces can not be damaged, stripped bad, the conductor should not be broken anf can not have bad insulation and pressure.



Picture 1



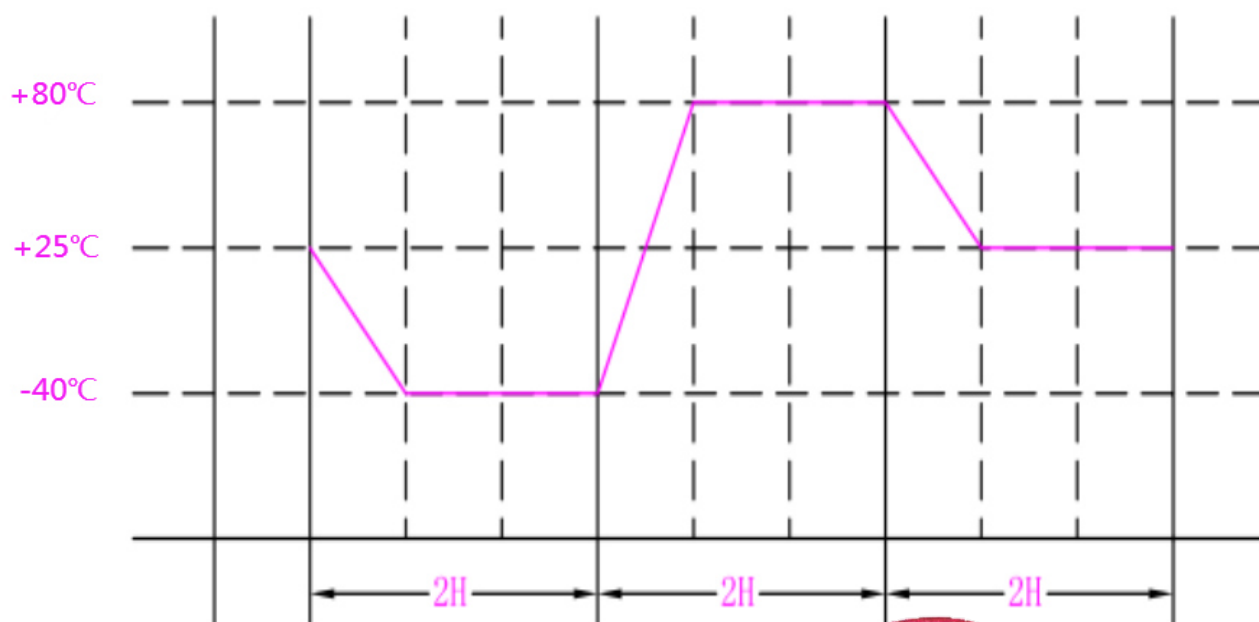
Picture 2



Picture 3

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Picture 4



FFC 剥离强度标准

FFC Peel strength standard

【导体与绝缘层剥离强度】

The conductor and the insulating layer's peel strength

导体宽度	绝缘层 43 μm	绝缘层 60 μm
0.3mm	0.18N Min (18gf Min)	0.18N Min (18gf Min)
0.5mm	0.25N Min (25gf Min)	0.30N Min (30gf Min)
0.65mm	0.30N Min (30gf Min)	0.40N Min (40gf Min)
0.7mm	0.35N Min (35gf Min)	0.50N Min (50gf Min)
0.8mm	0.50N Min (50gf Min)	0.60N Min (60gf Min)

【补强板与绝缘层剥离强度】

The reinforce and the insulating layer's peel strength
根据补强板的宽度计算其剥离强度，剥离强度 F 的计算方式

如下：

According to the width of reinforcing palte, the peei strength F is calculaed as follows:

$$F=f*W*N*0.1 \text{ Min}$$

f—表示单位宽度剥离强度,w—表示补强板宽度,N—表示 pin 数, 0.1—为固定系数)

f—means a unit width' s peel strength,w —means reinforcing palte width,N — means pinNumber,0.1—means fixed coefficient)
 $f=1000\text{gf/inch}(25.4\text{mm})=39.37\text{g/mm}$

例如: 1.0pitch 20pin 产品计算其补强板剥离强度:

For exampale:the way how to calculate the peel stength of 1.0pich 20pin produt

$$F=39.37*[1.0*(20+1)]*20*0.1=1654\text{g}=16.54\text{N}$$

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Open the line need one piece product per line to do the peel strength test ,The peel strength test should be done for every products on the left middle, and right pins, and in accordance with the test results, we should record the Datas truthfully.

注： 1 信赖性试验因测试时间的不同无法测试到每一款产品，以类似品试验结果为参考；

Remark: 1、 Depending on the test time, the reliability test cannot be tested to each product, and the results of similar tests are referenced.

2、 相同间距、相同材质的产品统称为类似品，类似品不受产品长度、宽度影响。

2 、 Products with the same spacing and the same materials are collectively referred to as similar products, and similar products are not affected by product length or width.

