

规格承认书

Product acknowledgment

产品名称：无卤素阻燃型双面挠性覆铜板

Products name: 3-layer FCCL

产品规格：SF305 101820DRN250A LKN

Product Code:

供应商名称：广东生益科技股份有限公司

地址：广东省东莞市松山湖高新技术产业开发区工业西路5号，邮编523808。

Supplier Name and Address : NO.5, Western Industry Road, North Industry District, Dongguan SSL
SCI.&Tech.Industry Park, Dongguan City, Guangdong, P.R.China 523808

Customer:

Customer Approval (客户批准)

Manufacture: 广东生益科技股份有限公司

CONFIRMATION (确认)		
Sale Dept.	R&D Dept.	QA Dept.

修改记录(Corrective or Changing History)

序号 No.	日期 Date	修改前 Before	修改后 After	原因 Reason

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一、产品说明 Product description

本产品主要以 IPC-4204A 标准进行品质管控，系用作挠性印制电路的基材。产品所有之检测方法主要参照 IPC-TM-650 标准相应章节。本产品承认书没有纳入的性能规范和测试方法等项目，以行业公认的 IPC 标准为依据。

Quality controlled of this product is mainly according to IPC-4204A standards, which used for flexible printed circuit Base material. All the test methods of product are reference to IPC-TM-650 corresponding chapter. The projects such as property specifications and test methods which not included in this specification, based on the industry recognized IPC standards.

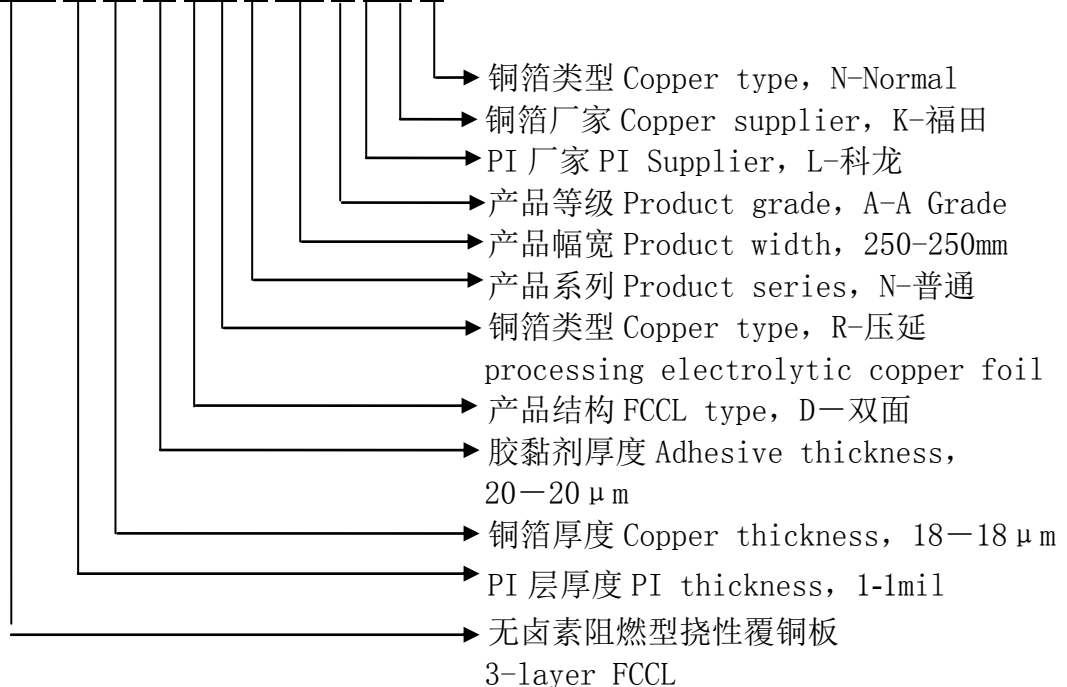
二、产品介绍 Product introduce

1、产品结构 Product structure

铜箔
无卤素环氧胶层
聚酰亚胺 PI
无卤素环氧胶层
铜箔

2、编码说明 Code description

例如：SF305 10 18 20 DRN 250 ALKN



三、产品品质 Product quality

1、外观品质 Appearance quality

挠性覆铜板外观平整，不应有孔洞、撕裂和缺胶；PI膜内不允许有金属性夹杂物，非金属性夹杂物在任何方向的尺寸应不大于0.50mm。PI层应没有影响使用的条纹、胶粒、色斑和脏污。

FCCL should be smooth, no holes, tears and lack of adhesive; PI film does not allow metallic inclusions, the size of non-metallic inclusions in any direction shall less than 0.50mm. PI layer should be no stripes, particles, stains and dirt which affecting use.

2、物理性能 Physical Property

Test Items 检测项目	Treatment Condition 实验条件	Units 单位	Index of quality 品质标准	Test method 测试方法
Thickness 厚度	A	μm	101±10%	生益企标 Shengyi method
Length 长度	A	%	+2/-0%	生益企标 Shengyi method
Width 宽度	A	mm	+2/-0	生益企标 Shengyi method
Peel strength 剥离强度	A	N/mm	≥0.7	IPC-TM-650 2.4.9
Solder resistance 耐热性	288℃, 10s	-	无分层起泡 No delaminate	IPC-TM-650 2.4.13
Dimensional stability 尺寸稳定性	A	%	±0.2	生益企标 Shengyi method
Chemical resistance 耐化学性	After chemical exposure 暴露在化学品中后	%	≥80	IPC-TM-650 2.3.2

3、电气性能 Electrical Property

Test Items 检测项目	Treatment Condition 实验处理条件	Units 单位	Index of quality 品质标准	Test method 测试方法
Dielectric constant (1MHz) 介电常数	RH50%, 23℃, 24h	-	≤4.0	IPC-TM-650 2.5.5.3
Dissipation factor (1MHz) 介质损耗角正切	RH50%, 23℃, 24h	-	≤0.04	IPC-TM-650 2.5.5.3
Volume resistivity 体积电阻率	RH90%, 35℃, 96h	MΩ·cm	>10 ⁶	IPC-TM-650 2.5.17
Surface resistance 表面电阻	RH90%, 35℃, 96h	MΩ	>10 ⁵	IPC-TM-650 2.5.17

四、保存条件 Storage condition

挠性覆铜板应密封包装在干燥、无紫外光照射的环境下，在此条件下自生产日期开始可存放 12 个月。

FCCL should be stored in sealed packaging at dry environment without UV irradiation, in this condition it can be stored for twelve months since the date of manufacture.

五、使用说明 Using instructions

1、请以原包装形式放在平台上或适宜的架上，防止存放方式不当而引起的无胶双面覆铜板形变。

Please put the FCCL of original packaging on the platform or a suitable frame, to prevent deformation caused by improper storage

2、请勿采用将箱子正面向下倒出产品的做法，以免造成材料的受损；请保持箱子的正面向上，采用从箱子里面小心拿出材料的做法。

Do not pour out product from the face down box, so as to avoid damage to the material; Please keep the box face up, take the product out from the box carefully.

3、请戴无尘手套小心地操作 FCCL。碰撞、滑动等会损伤材料；裸手操作会污染 FCCL，这些缺陷都可能会对 FCCL 的使用造成不良的影响。

Please wear clean gloves and be carefully while operate the FCCL. Collision, sliding and so on will damage the material; bare-handed operation will pollute the FCCL, these defects may be adverse effects on the use of FCCL.

4、PI 遇碱性药水容易出现咬噬，因此请尽可能避免或减少 PI 接触碱性药水的时间。PI 膜较容易吸潮，请谨防吸潮。

Because of PI is easy etched by the alkaline potion, so please avoid or reduce the time contact with alkaline potion as possible. PI film is easy to absorb moisture, please prevent of moisture absorption.

5、由于挠性材料在生产加工过程中会产生一定的涨缩，因此在批量生产之前需结合板子结构及实际情况整理出 FCCL 合适的补偿参数，以免造成后续对位不良现象。

Because the FPCB process will bring some expansion and contraction, so need to make a suitable compensation parameters of FCCL before mass production according to FPCB structure and the actual process situation, in order to avoid misalignments.

6、挠性覆铜板所用 PI 薄膜的撕裂强度相比有胶型基材使用的 PI 薄膜低，因此在进行可能使板子受到撕裂剪切应力的操作时，需特别留意。

FCCL with PI film tear strength than plastic substrate using PI films low so that might be torn by shear stress when the Board, requiring special attention.

六、测试方法 Test method

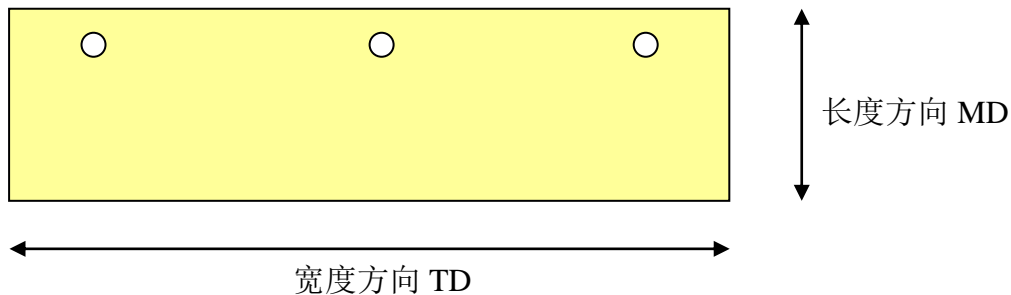
此承认书所列测试项目仅为行业内 IQC 对 FCCL 进行测试之常规项目，如剥离强度、耐热性、尺寸稳定性等。对 FCCL 的其它测试项目，如电气特性测试方法、阻燃性测试方法等不再单独列出。

The test items of this specification are normal IQC test items for FCCL, such as the peel strength, heat resistance, dimensional stability. Other tests items such as the electrical property, flame-resistant test methods are no longer listed separately.

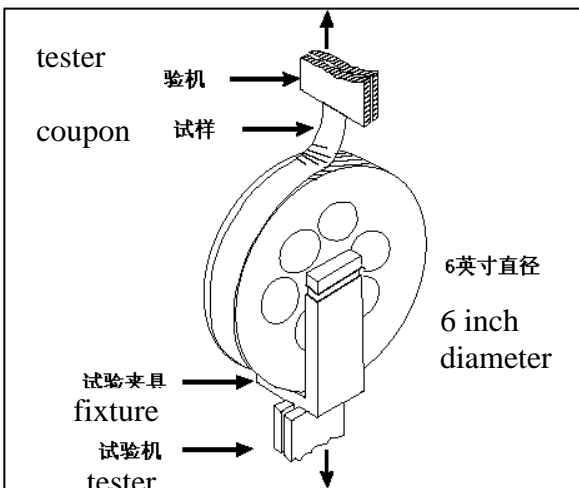
1、厚度 Thickness

用千分尺测量 FCCL 宽度方向左、中、右 3 个位置的厚度值（如下图所示），取 3 个值的平均值为产品的厚度值。

Use a micrometer to measure the thickness of three positions (width direction of the left, middle and right), which is the FCCL, as shown below. Take the average of three data for the thickness of product.



2、剥离强度 Peel strength



2.1 样品制作 coupon prepare

①采用蚀刻方法制作尺寸为 $3.0 \pm 1\text{mm} \times 100\text{mm}$ 的试样。

etching a sample with size of $3.0 \pm 1\text{mm} \times 100\text{mm}$.

②试样数量为 2 块试样，纵向和横向各一块。如果测试过程中试样断裂，应重新制样进行测试。

Make the sample of MD and TD each piece. If the sample broken down in the test, should re-

prepare the samples to test.

2.2 测试方法 Test method

①将试样用双面胶带、胶粘剂和/或机械夹具固定在试验夹具上。

Take the sample stickup to the test fixture with double sided adhesive tape and / or with mechanical clamps

②剥离长度为 50mm 范围内，最初剥起固定入夹具的 10mm 不计入。以 50mm/min 的速度（滑块速度）剥离试样。剥离负载应在试验机量程的 15-85%范围内。至少剥离 50mm，最初的 6mm 可忽略。

In the peel length of 50mm range, the first 10mm begin to peel which fix in the fixture is not included. Peel the sample with speed of 50 mm/min (crosshead speed). Peel load should be in 15-85% of test machine range. Peel length should at least 50mm, the initially 6mm can be ignored.

③观察并记录剥离过程中的最小拉力。测量试样条的实际宽度，准确至 0.02mm。

Observe and record the minimum tensile strength of the stripping process. Measure the actual wire width of sample, accurate to 0.02mm.

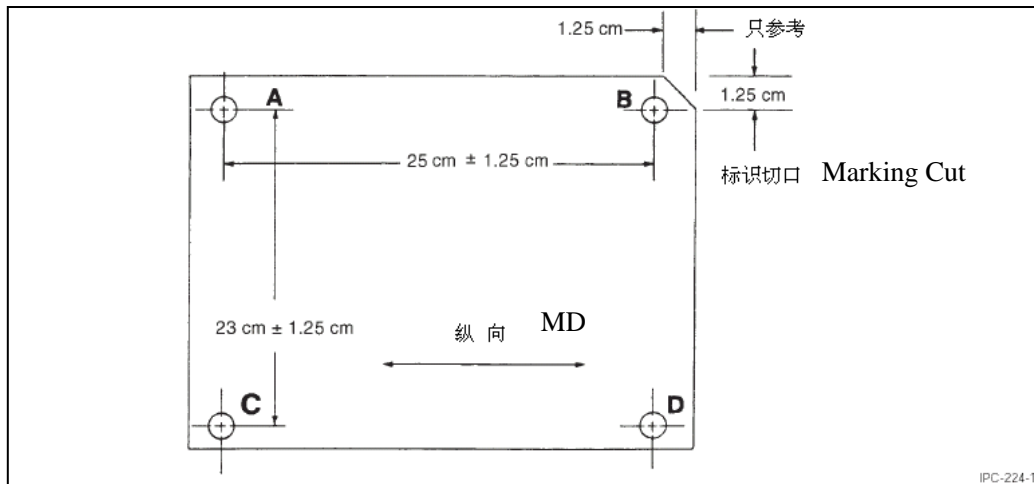
2.3 计算方法 calculating method

剥离强度 (N/mm) = 最小拉力 (N) / 试样导线宽度 (mm)。

Peel strength (N / mm) = minimum tensile strength (N) / sample wire width (mm).

3、尺寸稳定性 Dimensional stability

3.1 样品图形 coupon pattern



3.2 测试方法 Test method

①按以上样品图形制备样品，测量各孔间或各线间的中心距，记作初始测量值 (I)

Samples were prepared according to the above sample graph, measure the center distance between the lines or the wells, referred as the initial data (I).

②将样品平铺放入烘箱中，经过 150℃/30min 的烘烤，然后将样品自然平整的放置在测试台上。

Put the sample into the oven at 150℃, after thirty minutes. Then put the sample on the test platform natural and steady .

③重新测量各孔间或各线间的中心距，记作最终测量值（F）。

Measure the center distance of each hole or each line again, referred as the final measured data (F).

3.3 计算方法 Calculating method

$$M.D.(%) = \frac{\frac{(A-B)_F - (A-B)_I}{(A-B)_I} + \frac{(C-D)_F - (C-D)_I}{(C-D)_I}}{2} \times 100$$

$$T.D.(%) = \frac{\frac{(A-C)_F - (A-C)_I}{(A-C)_I} + \frac{(B-D)_F - (B-D)_I}{(B-D)_I}}{2} \times 100$$

4、浸锡耐热性 Solder resistance

4.1 样品制作 Coupon prepare

将测试材料裁切成 5cm 大小的正方形，每个测试材料制备 3 个样品；
Cut the sample into the size of 5cm square, 3 coupons were prepared.

4.2 测试方法 Test method

样品进行 135℃烘烤 1h 除湿处理后浸入温度为 288℃的高温锡炉，浸入 10s 后取出观察；
The coupon were baked at 135 °C for 1h to dehumidify, then dipped into the solder of 288 °C for 10s, removed and observation;









4.3 测试评判 Pass judgment

样品无分层起泡等不良。
No delaminate and blister

七、产品包装 Package

1、挠性覆铜板包装方法如下

The package of FCCL as follow

步骤 step	1. 包隔离纸 Pack with paper	2. 包缓冲膜 Pack with cushion film	3. 贴小标签 Stick the small label
图表 picture			
步骤 step	4. 套塑料袋后扎带封口 Pack the plastic bag and seal	5. 套包装方环 Pack the square ring	6. 装包装箱 Put in the box
图表 picture			
步骤 step	7. 贴检验单 Stick inspection label	8. 包装纸箱封口 Seal the carton	
图表 picture			

2、产品内外标签单

如下图（左图绿色标签单贴在包装箱外，右图白色标签单贴在产品塑料管内）：

The label inside and outside of product as shown below (left green label stick outside the box, right white label stick inside the plastic tube of product).

 <p>SHENGYI INSPECTION</p> <p>良性电路板 FCC</p> <p>MADE IN CHINA</p>	产品规格 SPEC	SF305 107025DTN250A LMN 无卤		
	聚酯薄膜厚度 PET FILM THICKNESS	25 (μm)	胶层厚度 ADHESIVE THICKNESS	25 (μm)
	铜箔厚度 CU THICKNESS	70 (μm)	铜箔类型 CU TYPE	ED/DOUBLE
	宽度 WIDTH	250 (mm)	长度 LENGTH	50 (m)
	面积 AREA	12.5 (m ²)	接头数 SPLICE NUMBER	1
	净重 N.W	15.92 (kg)	毛重 G.W	17.66 (kg)
	贮存条件 STORAGE	室温	贮存期 SHELF LIFE	1 YEAR
	生产日期 PRO DATE	2016.11.24	批号/箱号 LOT NO.	CCB1616366
	检验结果 RESULT	备注 REMARK		
	 <p>FSLK10225DTNMN250A 50 CCB1616366</p>			

无卤/HF产品	
物料: SF305 107025DTN	
批次: CCB1616366	
长度: 50 (m)	
备注: 20.6m处接口	
级别: A	检验员: 7637
GP RoHS	
	

3、产品的接头数和接头间的最短距离如下表

The splices and splice-free length of product in the follow table

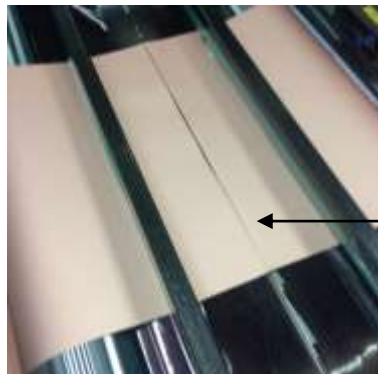
卷长 (米) Length of roll (m)	接头数 (个) splices	接头间最短距离 (米) Minimum length between splices (m)
卷长 Length ≤ 50	≤ 2	3
50 < 卷长 length ≤ 100	≤ 3	3
100 < 卷长 length ≤ 200	≤ 5	3
非标准卷	根据四舍五入圆整判断不能超出的接头数	3

*每批产品的出货检测报告随货送达。

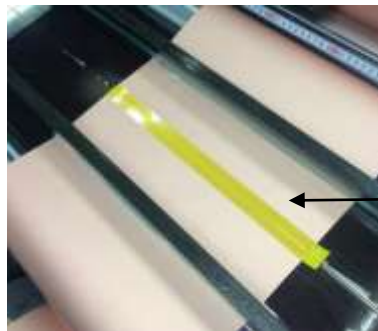
*Test report of each batch product is provide with the goods delivered.

4、产品驳接方式 Product connectiongs

如下图



产品用裁刀切断
Product used cutter cutting



产品切口上下方用胶带对接
Cut top and bottom with tape and docking

八、技术反馈 Technical feedback

贵司在使用我司产品过程中，若有任何疑问和建议，请随时直接或通过贵司采购联系我们的技术或业务人员，我们将在第一时间给贵司提供技术服务。

If you have any doubts and suggestions while using our products, please contact our technical engineer and seller directly or through the purchaser at any time. We will provide technical services to your company in the first time.

对产品特殊案例中无法满足使用要求或有疑问的情况，双方依据行业相关标准和具体情况秉持真诚合作的原则进行协商处理。

If the products could not meet the requirements or have any questions in special cases, we will deal the problem with principle of sincere cooperation, and base on the correlative industry standards and actual situation.

九、出货报告 Shipment report



检验报告 (TEST REPORT)						
客户 CUSTOMER:	订单号 P/O NO.:			出货日期 DATE:		
型号 TYPE:	SF305 107025D TN250A LMN			数量 QUANTITY:		
组成及厚度 (μm) Composition and Thickness(μ)	PI	25	Cu	TD70	Ad	25
批号 (生产日期) LOT NO.:						
测试项目 Test Item	试验条件 Test Condition	单位 Unit	指标值 Specification	测试结果 Test Result	测试频率 Test Frequency	测试方法 Test Method
厚度 Thickness	Accepted	μm	215±21	220	每批	IPC-TM-650 2.2.18
宽幅 width	Accepted	mm	250+2/-0	250	每批	卷尺 Tape
剥离强度(90°) Peel Strength(90°)	Accepted	N/mm	≥0.9	1.8	每批	IPC-TM-650 2.4.9D
	288℃、5s		≥0.9	1.4		
耐热性 Solder Resistance	288℃、10s	-	无分层起泡 No delamination	PASS	每批	IPC-TM-650 2.4.13F
尺寸稳定性 Dimensional Stability	MD	E-0.5/150	%	-0.05	每批	IPC-TM-650 2.2.4C
	TD			±0.2		
耐化学性 Chemical Resistance	暴露化学溶剂后 After Chemical Exposure	%	≥80	91	3个月	IPC-TM-650 2.3.2G
电气强度 Electric Strength	D-48/50+D-0.5/23	KV/mm	≥80	136	3个月	IPC-TM-650 2.5.6.2A
体积电阻率 Volume Resistivity	C-96/35/90	MΩ.cm	≥1×10 ⁸	1.89×10 ⁸	12个月	IPC-TM-650 2.5.17E
表面电阻 Surface Resistance	C-96/35/90	MΩ	≥0.1×10 ⁸	6.24×10 ⁸	12个月	IPC-TM-650 2.5.17E
介电常数 (1MHz) Dielectric Constant (1MHz)	C-24/23/50	/	≤4.0	3.5	12个月	IPC-TM-650 2.5.5.9
介电损耗角正切 (1MHz) Dissipation Factor (1MHz)	C-24/23/50	/	≤0.04	0.028	12个月	IPC-TM-650 2.5.5.9

说明 Remark:

以上性能指标依据IPC-4204A标准有关规定。

The above specification are according to the requirement of the IPC-4204A standard.

本产品满足RoHS指令要求，并达到UL94 V-0级别，UL档案号为E109769。

The product meets the requirements of the RoHS directive and achieve UL94 V-0 level, its UL file number is E109769.

结果评判 (Grade): A

检验人 (Inspected by): 李显琴

审核人 (Approved by): 刘云花

