



## PRODUCT SPECIFICATION OF OUPIIN

# PRODUCT SPECIFICATION

## (產品規格書)

產品名稱 Description	產品料號 Part No.	圖號 Drawing No.
0.5mm Flip Lock Type Accepts FFC/FPC With Ear-Tabs	2537-JxxG00DBT	2537D02005

PRODUCT NAME (產品名稱)	DOCUMENT No.: (文件編號)	Rev. (版本)	OUPIIN
0.5mm Flip Lock Type Accepts FFC/FPC With Ear-Tabs (RoHS)	2537spec-J	A1 (I525A)	(歐品)
	<b>Approved</b> (核準)	<b>Checked</b> (審核)	<b>Prepared</b> (製作)
	Q.A. Section Chief	Jack Hsing	2020-8-11



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## 1. SCOPE (範圍)

This product specification defines the product performance and the test methods to ascertain the performance of the 0.5mm Flip Lock Type Accepts FFC/FPC With Ear-Tabs , which is designed and manufactured by Oupiin Electronic Co.,Ltd.

(本產品規格書規定了由歐品電子有限公司生產的0.5mm Flip Lock Type Accepts FFC/FPC With Ear-Tabs 型連接器,產品的特性及測試方法.)

## 2. REFERENCE DOCUMENTS (參考文件)

MIL-STD-1344A	Test method for electrical connector (電子連接器測試方法)
MIL-STD-202	Test method for electrical components (電子零件測試方法)
EIA 364	Test method for electrical components (電子零件測試方法)

## 3. FEATURE & DIMENSIONS (特徵及尺寸)

### 3.1. PRODUCT DIMENSION (產品尺寸)

These connectors shall have the dimensions as shown in drawing.

(本產品的相關尺寸參考圖面.)

### 3.2. PCB/PANEL LAYOUT (印刷電路板佈局)

The recommended PCB layout is shown in drawing.

(本產品適用的 PCB layout 參考圖面.)

### 3.3. BILL OF MATERIAL (材料清單)

Harmful material control follow the requirement of RoHS. The bill of material and product number is described in drawing.

(有害物質控制符合RoHS指令要求.本產品使用的材料參考附件.)

### 3.4. MECHANICAL & ELECTRICAL CHARACTERISTIC (機械及電氣特性)

The connector shall have the mechanical and electrical performance as described in drawing.

(本產品的機械及電氣特性見圖面)

### 3.5. PACKAGING (包裝)

Products shall be packaged according to requirements specified in purchase order for safe delivery, connector container and the packaging method are shown in package specification.

(產品可依客戶指定要求包裝, 包裝材料與包裝方式參見產品包裝規範.)



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### 3.6 RATING CURRENT AND RATING VOLTAGE 額定電流與額定電壓

Rating current is 0.5 A, rating voltage is 50V DC/AC.

額定電流 0.5 A，額定電壓 50V DC/AC。

### 3.7 STORAGE AND OPERATING TEMPERATURE 儲存與使用溫度

Temperature range: -25°C~+85°C, including terminal temperature rise for rating current.

溫度範圍：-25°C~+85°C，包含接觸端子的額定電流溫升。

## 4. ENVIRONMENTAL (環境要求)

### 4.1. SOLDERABILITY (可焊性)

Connectors meet solder ability to MIL-STD-202. Finish shall be free of contaminants.

(產品可焊性符合 MIL-STD-202 標準規定的相關要求，表面不得有污染物.)

### 4.2. RESISTANCE TO SOLDER HEAT (耐焊接熱)

#### INFRARED REFLOW (紅外線回流焊接)

Three cycles. Each cycle consisting of three consecutive phased.

(三個週期，每個週期包括三個連續的階段完成)

#### 1. Preheat (預熱)

Increase in temperature not to exceed 4°C per second.

(溫度增加不超過 4°C /秒)

#### 2. Soldering (焊接)

Maximum allowable time above reflow temperature of 150~200°C is 90~120 seconds. Maximum temperature in this interval is 260°C, not to exceed 5 seconds.

(回流焊溫度150~200°C時最長不超過90~120秒。最高溫度260°C時間不超過5秒.)

#### 3. Cool Down (冷卻)

Cool down shall not exceed 6°C per second.

(冷卻速度不超過6°C/秒.)

#### Note: (說明)

Device temperature measurements are referenced from the top-center of the package outer surface.

(設備溫度量測時以從頂部中間位置測量為準.)



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### **5. PERFORMANCE AND TEST DESCRIPTION (性能及測試)**

#### **5.1. REQUIREMENT (要求)**

Product is designed to meet electrical, mechanical, and environmental performance requirements specified in **Table I**.

(本產品設計符合附表一所述的機械，電氣及環境要求.)

#### **5.2. TEST CONDITION (測試條件)**

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

(除非特別注明，所有測試在室溫條件下完成)

#### **5.3. SAMPLE SELECTION (樣品選擇)**

Test samples shall be selected at random from current production. No test samples shall be reused. Samples are pre-conditioned with 10cycles of durability. Each group shall be containing 5 test samples.

(測試樣品從現生產的產品中隨機抽取，所有測試過的樣品不得重複使用。樣品已預先插拔10次，每組測試有5個樣品)



## PRODUCT SPECIFICATION OF OUPIIN

**Table I: Test Requirements and Procedures**

(附錄一:測試要求)

Items (項目)	Requirements (要求)	Test Methods (檢測方法)
1. Confirmation of Product (產品確認)	Product shall be conforming to the requirements of applicable product drawing. (產品必須滿足相關檔的規定)	Check the dimensions and functions per applicable product drawing in your eyes. (目視，尺寸及功能依產品圖面檢查)
2. Contact Resistance (接觸阻抗)	30 mΩ Max. initial 最大.初態	Subject mated contacts assembled in housing to closed circuit of 10 mA max. at open circuit voltage of 20 mV max. 所述固定在外殼裏的端子連結到一個封閉迴路中測試：電流 10 mA，電壓 20 mV max.
3. Insulation Resistance (絕緣阻抗)	500 MΩ Min. 最小.	MIL-STD-202 Mate applicable FPC/FFC and apply 500V DC between adjacent terminal or ground. 配合適用的 FPC / FFC，並在相鄰端子或地面之間施加 500V DC.
4. Dielectric Strength (耐電壓)	Connector must withstand test potential of 200 V AC for 1 minute. 樣品必須承受測試電壓 200V AC，時間一分鐘.	MIL-STD-202 Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. 測試產品端子間以及端子與接地間的電壓..
5. Durability (Repeated Mating/Unmated) (耐久性)	After testing, no damage, Contact Resistance 40 mΩ Max. 測試後,產品無損壞， 接觸阻抗：40 mΩ最大.	The sample should be mounted the tester and fully mated and unmated 60 cycles. 重復進行配合產品 60 次插拔.
6. FPC/FFC Retention Force (FPC/FFC 保持力)	Pos.x0.04kgf { 0.4N } Min	Pull out force at a speed rate of 25±3mm per minute. 每分鐘以 25±3mm 的速度拉出力.
7. Contact Retention Force (保持力)	Pos.x0.08kgf { 0.8N } Min.	Apply axial pull out force at the rate of 25±3 mm/minute on the terminal assembled in the housing. 以 25±3mm / min 的速度在組裝在殼體中的端子上施加軸向拔出力.



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<p>8. Temperature Rise (溫升測試)</p>	<p>30°C Max. 最大: 30°C</p>	<p>Mate applicable FPC/FFC and measure the temperature rise of contact when the maximum AC rated current is passed. (UL498) 配合適用的 FPC / FFC，並在通過最大交流額定電流時測量觸點的溫升。</p>
<p>9. Vibration (機械振動)</p>	<p>No electrical discontinuity less than 1μs shall occur, After testing, no damage, Contact Resistance 50 mΩ Max. 不允許出現超過 1 μs 的瞬間斷開， 測試後,產品無損壞， 接觸阻抗：50 mΩ 最大</p>	<p>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. Duration : 2 hours in each of X,Y,Z axes. 配合連接器並經受以下振動條件，在 3 個相互垂直的軸中的每個軸上持續 2 小時，在測試過程中通過 DC 1mA。 幅度：1.5mm P-P 頻率：1 分鐘內 10~55~10 Hz 時間：X，Y，Z 軸各 2 小時。</p>
<p>10. Shock (沖擊)</p>	<p>No electrical discontinuity less than 1μs shall occur, After testing, no damage, Contact Resistance 50 mΩ Max. 不允許出現超過 1 μs 的瞬間斷開， 測試後,產品無損壞， 接觸阻抗：50 mΩ 最大</p>	<p>Mate applicable FPC/FFC 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 : 490m/s2 {50G} 配合適用的 FPC/FFC，並受以下衝擊條件的影響。應沿 3 個相互垂直的軸在每個 6 個方向上施加 3 次衝擊，在試驗期間通過 1 mA 直流電流。(共 18 次電擊) 峰值：490m/s2{50G}</p>
<p>11. Heat Resistance (耐熱測試)</p>	<p>After testing, no damage, Contact Resistance 50 mΩ Max. 測試後,產品無損壞， 接觸阻抗：50 mΩ 最大。</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. 配合適用的 FPC / FFC，並在 85±2°C 下暴露 96 小時，暴露期結束後，應將試樣在室溫條件下調節 1 至 2 個小時，然後再進行規定的測量。</p>



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<p>12. Cold Test (耐冷測試)</p>	<p>After testing, no damage, Contact Resistance 50 mΩ max. 測試後,產品無損壞, 接觸阻抗: 50 mΩ 最大.</p>	<p>Mate applicable FPC/FFC and expose to <math>-40\pm 2^{\circ}\text{C}</math> for 2 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. 配合適用的 FPC / FFC, 並在 <math>-40\pm 2^{\circ}\text{C}</math> 下暴露 2 小時, 暴露期結束後, 應將試樣在室溫條件下調節 1 至 2 個小時, 然後再進行規定的測量.</p>
<p>13. Humidity (恆溫恆濕)</p>	<p>After testing, no damage, Contact Resistance 50 mΩ max. 測試後,產品無損壞, 接觸阻抗: 50 mΩ 最大.</p>	<p>Temperature : <math>40\pm 2^{\circ}\text{C}</math> 96 hours. (溫度: <math>40\pm 2^{\circ}\text{C}</math> 96 小時) Relative Humidity : 90-95%; (相對濕度 : 90-95% ; ) Duration : 96 Hours. MIL-STD-202 (時間: 96 小時; MIL-STD-202)</p>
<p>14. Temperature Cycling (溫度循環)</p>	<p>After testing, no damage, Contact Resistance 50 mΩ max. 測試後,產品無損壞, 接觸阻抗: 50 mΩ 最大.</p>	<p>Mate applicable FPC/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. 1 cycle a: <math>-55\pm 3^{\circ}\text{C}</math> 30minutes b: <math>+85\pm 3^{\circ}\text{C}</math> 30minutes (Transit time shall be with in 3 minutes) 配合適用的 FPC / FFC 並在以下條件下進行 5 個循環, 暴露期結束後, 應將試樣在室溫條件下調節 1 至 2 個小時, 然後再進行規定的測量。 1 個週期 a: <math>-55\pm 3^{\circ}\text{C}</math> 30 分鐘 b: <math>+ 85\pm 3^{\circ}\text{C}</math> 30 分鐘 (中轉時間應在 3 分鐘以內)</p>
<p>15. Salt Spray (鹽霧)</p>	<p>After testing, no damage, Contact Resistance 50 mΩ max. 測試後,產品無損壞, 接觸阻抗: 50 mΩ 最大.</p>	<p>NaCl solution Concentration : <math>5 \pm 1\%</math> Spray time : <math>48 \pm 4</math> hours Ambient temperature : <math>35 \pm 2^{\circ}\text{C}</math> NaCl 溶液濃度: <math>5\pm 1\%</math> 噴塗時間: <math>48\pm 4</math> 小時 環境溫度: <math>35\pm 2^{\circ}\text{C}</math></p>



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16. Solder ability (可焊性)	Appearance of the specimen shall be inspected after the test with the assistance of a magnifier capable of giving a magnification of 10 X for any damage such as pinholes, void or rough surface. (樣品在測試完成後，在放大倍數為 10 倍的顯微鏡下，檢查外觀損壞如：小孔，空焊，外觀粗糙度)	Soldering time: 3 to 5 Seconds (焊接時間：3~5 秒) Soldering Temperature: 245±5°C. (焊接溫度：245±5°C.)
17. Resistance to soldering heat (耐焊接熱)	No damage. 產品無損壞	Soldering time : 3 ±0.5seconds Max. Solder temperature : 380±5°C 焊接時間：3±0.5 秒 焊接溫度：380±5 °C





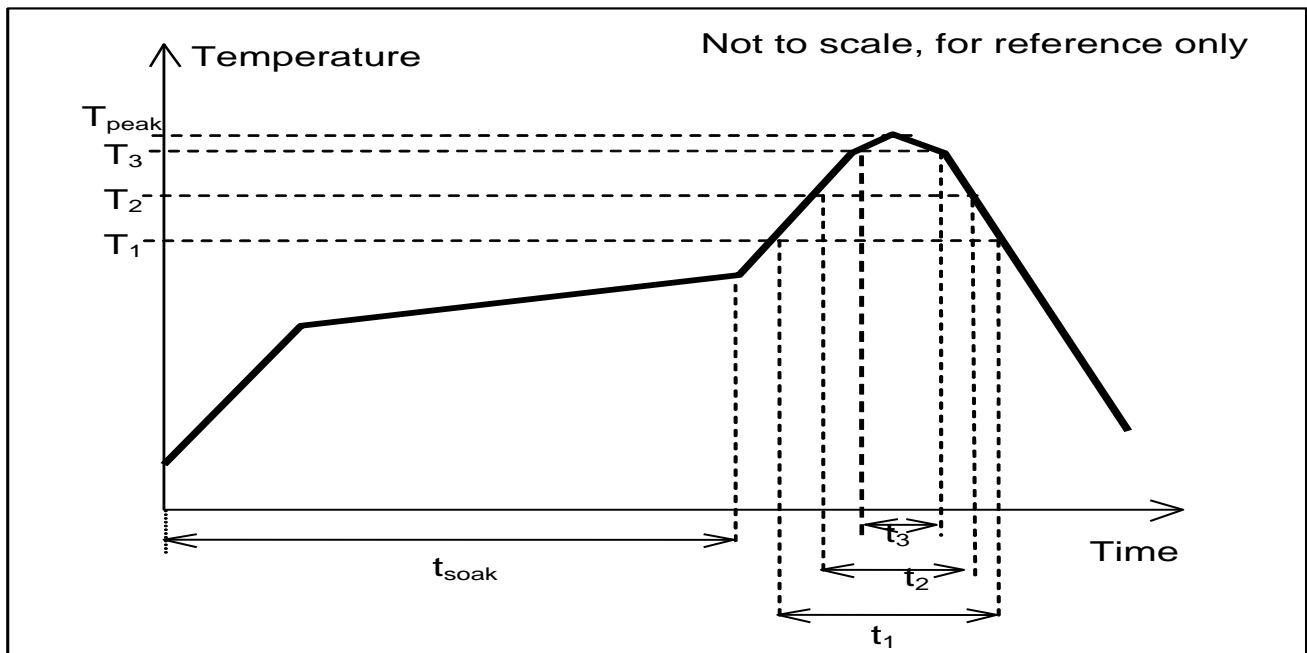
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**Table II: Reflow soldering profile**

(附錄二:回流焊接曲線圖)

**Pb-free reflow profile requirements: (無鉛回流焊接曲線)**

Parameter (參數)	Reference (參考)	Specification (規格)
Average Temperature Gradient in Preheating (平均預熱溫度)		2.5°C/s
Soak Time 25~150°C	$T_{soak}$	60 Seconds (max)
Time Above 150~200°C	$t_1$	120 Seconds (max)
Time Above 200~230°C	$t_2$	50 Seconds (max)
Time Above 230~250°C	$t_3$	5 Seconds (max)
Peak temperature in reflow (回流焊接中最高溫度)	$T_{peak}$	260°C (-5/+0°C)
Temperature Gradient in Cooling (冷卻時溫度幅度)		Max -5°C/s



This profile is the minimum requirement for evaluating soldering heat resistance of components. Heat transfer method used for reflow soldering is hot air convection. The actual air temperatures used to achieve the specified profile largely dependent on the reflow equipment.

(這個曲線圖是評估原器件焊接抗熱的基本要求。應用在對流焊接中的熱傳遞方式是熱氣對流。達到特定曲線圖的實際溫度主要依賴於回流焊接設備。)



# PRODUCT SPECIFICATION OF OUPIIN

Material Housing : I525A-LCP 本色

[SGS Test Report Click here](#)

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Material Actuator : I525A-LCP 黑色

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## SUMIKASUPER® LCP E6808UHF

玻璃纤维增强材料

液晶聚合物

Sumitomo Chemical Co., Ltd.

产品说明

SUMIKASUPER LCP is a thermotropic liquid crystalline polyester, showing the highest heat resistance among engineering plastics.

### 基本信息

UL 黄卡	E54705-100068041	E240884-100002042		
填料/增强材料	玻璃纤维增强材料			
特性	低蠕变性 流动性高	低粘度 耐化学性良好	刚性高 耐摩擦性良好	良好的成型性能
用途	电气/电子应用领域			
形式	粒子			
加工方法	注射成型			
<b>物理性能</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
比重	1.72	g/cm <sup>3</sup>	ASTM D792	
收缩率			内部方法	
流动	0.22	%	内部方法	
横向流动	1.0	%	内部方法	
吸水率 (饱和)	0.020	%	ASTM D570	
<b>硬度</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
洛氏硬度 (R 级)	90		ASTM D785	
<b>机械性能</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
抗张强度 (屈服)	100	MPa	ASTM D688	
伸长率 (断裂)	5.0	%	ASTM D688	
弯曲强度 (23°C)	9400	MPa	ASTM D790	
弯曲强度 (屈服, 23°C)	120	MPa	ASTM D790	
<b>冲击性能</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
无缺口悬臂梁冲击 (0.40 mm)	350	J/m	ASTM D256	
<b>热性能</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
软化和热变形温度 (1.8 MPa, 未点火)	240	°C	ASTM D648	
线形热膨胀系数			内部方法	
流动: 150°C	1.0E-5	cm/cm/°C	内部方法	
横向: 150°C	0.2E-5	cm/cm/°C	内部方法	
<b>电气性能</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
体电阻率	1.0E+15	ohms cm	ASTM D257	
介电常数			ASTM D150	
1 MHz	3.80		ASTM D150	
1.00 GHz	3.40		ASTM D150	
耗散因数			ASTM D150	
1 MHz	0.033		ASTM D150	
1.00 GHz	4.0E-3		ASTM D150	
耐电弧性	132	sec	ASTM D495	
漏电流指数	200	V	IEC 60112	
<b>可燃性</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
UL 阻燃等级 (0.300 mm, NC, BK)	V-0		UL 94	
极限氧指数	48	%	JIS K7201	
<b>补充信息</b>	<b>额定值</b>	<b>单位制</b>	<b>测试方法</b>	
Soldering Resistance	290	°C	内部方法	



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## Material Housing :UL

Component - Plastics [\[guide info\]](#)

E54705

### SUMITOMO CHEMICAL CO LTD

Tokyo Sumitomo Twin Bldg, 27-1 Shinkawa 2-Chome, Chuo-Ku, Tokyo 104-8260 JP

### E6808UHF(gr)

Liquid Crystal Polymer (LCP), "SUMIKASUPER", furnished as pellets

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
NC, BK	0.3	V-0	-	-	130	130	130

Comparative Tracking Index (CTI): -

Inclined Plane Tracking (IPT): -

Dielectric Strength (kV/mm): -

Volume Resistivity (10<sup>X</sup> ohm-cm): -

High-Voltage Arc Tracking Rate (HVTR): -

High Volt, Low Current Arc Resis (D495): -

Dimensional Stability (%): -

(gr) - Virgin and Re grind from 1 to 25% by weight incl., have same basic material characteristics. In addition, 26 to 50% regrind by weight incl. Have same flammability characteristics in the natural and black colors.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2011-08-30

Last Revised: 2011-08-31

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### IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.3	V-0 (NC, BK)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m <sup>2</sup>	-	-
ISO Izod Impact	ISO 180	kJ/m <sup>2</sup>	-	-
ISO Charpy Impact	ISO 179-2	kJ/m <sup>2</sup>	-	-



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Material Contact : I525A-C5191

[SGS Test Report Click here](#)

[如需 SGS 測試報告請點選此處](#)

## 东莞市正伟铜材有限公司 材质分析报告

客户名称:	交货日期:2019-12-28	检验标准:GB-4910
规格名称: C5191/210-2300.35*32.5	数量:500kg	包装方式:卷料

本部件所用的材料均符合 (ROHS) 指令

编号	组成部件	制造商	MSDS物料成分表		导电率 (%IACS)	延展率 (%)	拉伸强度 (MPA)	电阻率 P20 (Ω mm/m)	备注	
			原材料层	化学元素层						
1	铜	东莞市正伟铜材有限公司	整合体	铜Cu:	96.85%	15.00%	23.00%	665	0.018	比重8.9
				锡Sn:	3.1000%					
				铋Bi:	0.0002%					
				锑Sb:	0.0004%					
				砷As:	0.0005%					
				铅Pb:	0.0020%					
				铁Fe:	0.0005%					
				镍Ni:	0.0290%					
				锌Zn:	0.0120%					
				硒Se:	0.0002%					
				碲Te:	0.0002%					
				银Ag:	0.0026%					
				硫S:	0.0014%					
氧O:	0.0005%									

此证明本表所列产品,均依材料规格制造及试验,并符合规格之要求.

核准: 梁如冰

审核: 徐君



制表: 夏松月



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Material Solder Tab : I525A-C2680

[SGS Test Report Click here](#)

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## 东莞市正伟铜材有限公司

### 产品质量保证书

#### MATERIAL CERTIFICATION REPORT

客户名称	深圳市联鸿盛科技有限公司	出货日期	2019-12-13	产品批号	1912028-AA-010	厚度公差	-0.01
牌号	H65	规格及状态	0.25*33	净重	293.7	状态	H
化学成份%							
Cu%	64.1	P%	0.0002	Fe%	0.006	Pb%	0.0049
Zn%	35.81	Cd%	0.0003	Sn%	0.003	Hg%	ND
机械物理性能							
抗拉强度Mpa	460	伸张率%	22	硬度HV	151	杯突值	/
执行标准	GB/T 2059-2000			检验员	谢程培	日期	2019年12月 16日