



# PRODUCT SPECIFICATION

## (產品規格書)

產品名稱 Description	產品料號 Part No.	圖號 Drawing No.
9303 Series Male/Female Dip/ Press Fit Type	9303-x(Xxx)(Sxx)(Xxx)CBxxPLA(-Axxx)	9303-D0000-xxx
	9303-x(Xxx)(Sxx)(Xxx)CBxxDLA(-Axxx)	9303-D0000-xxx
	9303-x(Xxx)(Sxx)(Xxx)CBxxPA(-Axxx)	9303-D0000-xxx
	9303-x(Xxx)(Sxx)(Xxx)CBxxDA(-Axxx)	9303-D0000-xxx
	9303-x(Xxx)(X)(Xxx)(X)(Xxx)(X)(Xxx)CBxxDxA(-Axxx)	9303-D0000-xxx
	9303-x(Xxx)(X)(Xxx)(X)(Xxx)(X)(Xxx)CBxxPxA(-Axxx)	9303-D0000-xxx

PRODUCT NAME (產品名稱)	DOCUMENT No.: (文件編號)	Rev. (版本)	OUPIIN
9303 Series Male/Female Dip/Press Fit Type (RoHS)	Q9303-PSS-K001	H (I800)	(歐品)
	Approved (核准)	Checked (審核)	Prepared (製作)
	Q.A. Section Chief	Ruru Chen	2023.06.30



# PRODUCT SPECIFICATION OF OUPIIN

## 1. SCOPE 範圍

This product specification defines the product performance and the test methods to ascertain the performance of the 9303 Series Male/Female Dip/Press Fit Type, which is designed and manufactured by Oupiin Electronic Co.,Ltd. This product specification is applicable but not only for those part numbers which be shown in the cover page.

本產品規格書規定了由歐品電子有限公司生產的 9303 Series Male/Female Dip/Press Fit 型連接器，產品的特性及測試方法。本產品規格書適用於但不局限於封面所顯示的產品料號。

## 2. REFERENCE DOCUMENTS 參考文件

MIL-STD-1344	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
EIA364	Test method for electrical components 電子零件測試方法
JIS C 0051	Test method for electrical components 電子零件測試方法
MIL-G-45204C	Specification for gold plating 鍍金規格
IEC-512-3	IEC standard for current carrying capacity tests IEC 電流測試標準
QQ-N-290A	Specification for nickel plating 鍍鎳規格
MIL-P-81728A	Specification for tin/lead plating 鍍錫鉛規格
MIL-T-10727B	Specification for tin plating 鍍錫規格
UL1977	UL standard for safety of attachment plug and receptacle UL 安規要求標準
EN/ISO5961	Determination of total lead & cadmium content 總鉛和總鎘含量測定
EN1122	Determination of total lead & cadmium content 總鉛和總鎘含量測定
EN13346	Determination of heavy metals content 重金屬含量測定
EPA3052	Determination of total lead & cadmium content 總鉛和總鎘含量測定

## 3. FEATURE & DIMENSIONS 特徵及尺寸

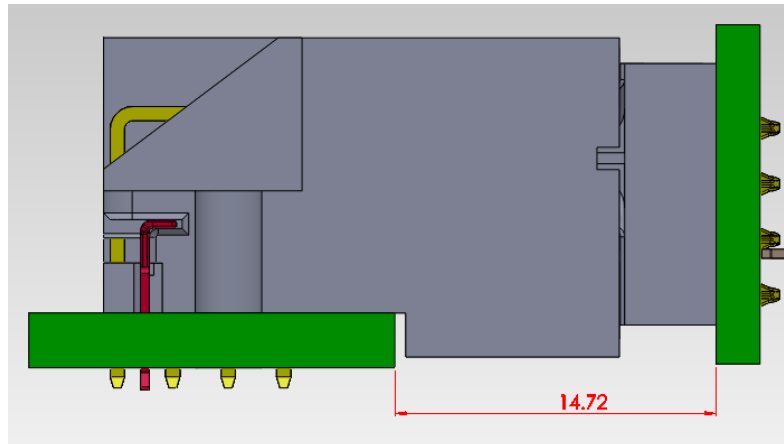
### 3.1. PRODUCT DIMENSION 產品尺寸

These connectors shall have the dimensions as shown in drawing.

本產品的相關尺寸參考圖面。

### 3.2. MALE AND FEMALE PRODUCT 公母產品裝配

#### 3.2.1. Male and Female assembly dimension 公母產品裝配尺寸



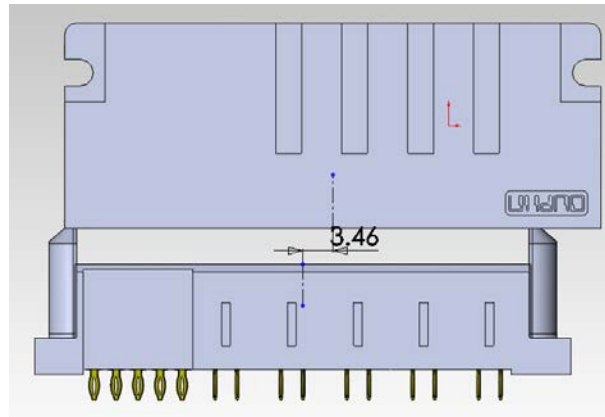
Distance between male's PCB and female's PCB is 14.72mm REF

公母PCB板之間的尺寸為14.72mm REF

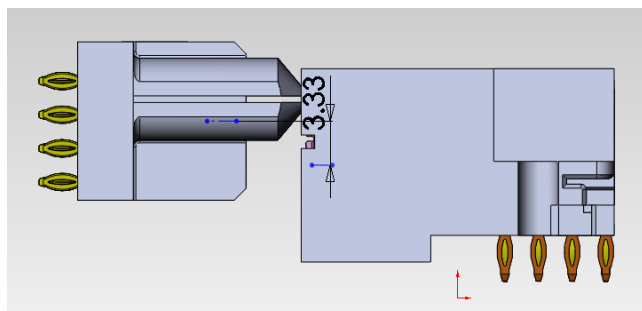
#### 3.2.2. Perpendicular to engaging direction 垂直插入方向

The design of the centering and guiding in the Mpc of the free and fixed board connector modules shall accept a misalignment of 3.46mm in transverse and 3.33mm in longitudinal axes of the connector

固定板連接器模件的Mpc裡，連接器設計中心線橫向可接受3.46mm和縱向可接受3.33mm的偏差。



allowed misalignment in longitudinal axes 在橫向方向允許對插偏差量



allowed misalignment in longitudinal axes 在縱向方向允許對插偏差量

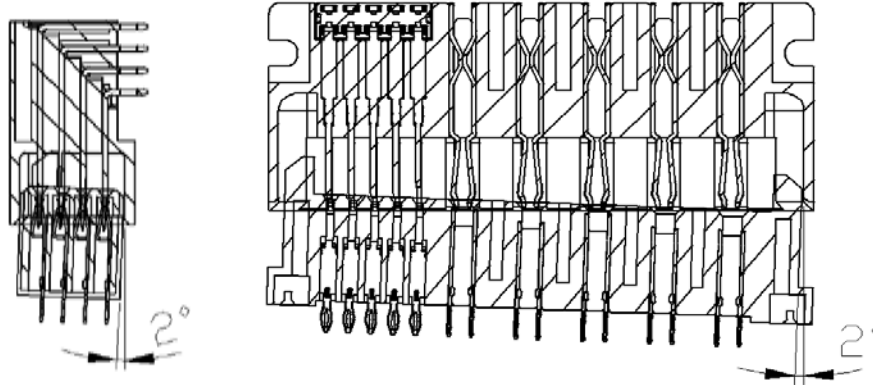


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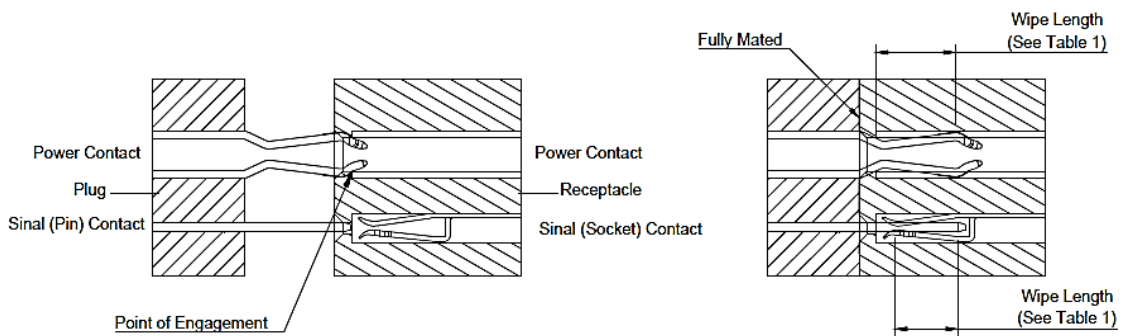
## 3.2.3. Inclination 傾向

The center and guiding in the Mpc of the free and the fixed board connector modules shall allow an initial angular misalignment of 2° the transverse axes and longitudinal axes

固定板連接器模件的在Mpc裡，連接器可接受橫向和縱向2° 的最大傾斜對插角度。



## 3.2.4. Capability for products wipe length 產品接觸長度等級



Contact	Mating Level	Wipe Length(Min)	Description of Drawing
High Power	1	4.88	FS
	2	3.61	FM
	3	4.17	FL
Low Power	2	3.61	NA
	3	2.59	NA
Signal	1	3.47	F
	2	3.28	G
	3	2.01	E
	4	0.74	H

## 3.3. 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。



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### 3.4. 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見圖面。

### 3.5. 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。

### 3.6. 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。

### 3.7. RATING CURRENT AND RATING VOLTAGE 額定電流與額定電壓

Rating current : Power Pin 65A , Signal Pin 2.5A

額定電流 : Power Pin 65A , Signal Pin 2.5A

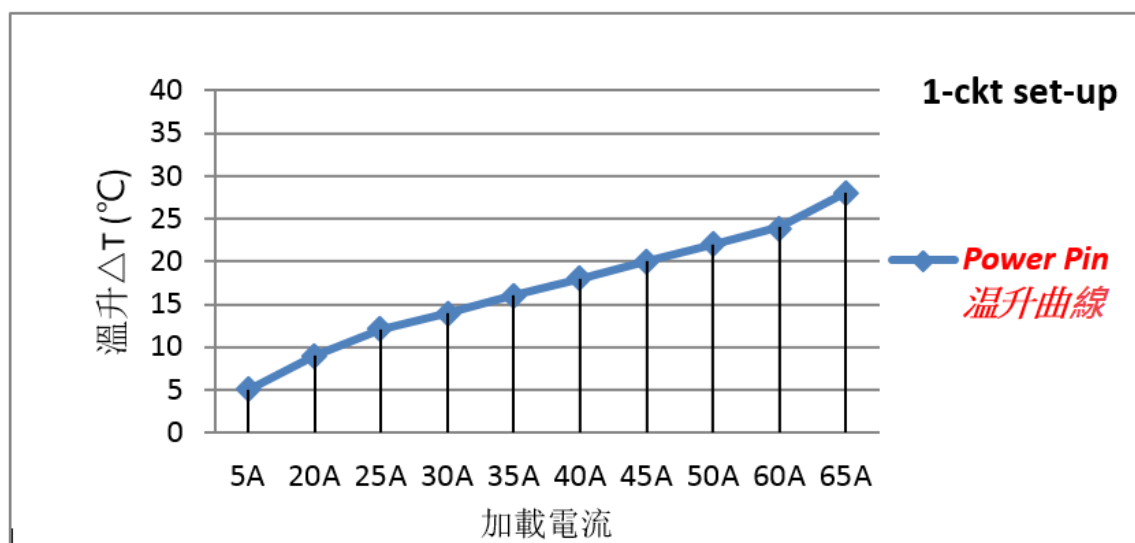
Rating voltage : Single Pin 50V DC RMS , Power Pin 200V DC RMS.

額定電壓 : Single Pin 50V DC RMS , Power Pin 200V DC RMS.

### 3.8. TEMPERATURE RISE 溫升

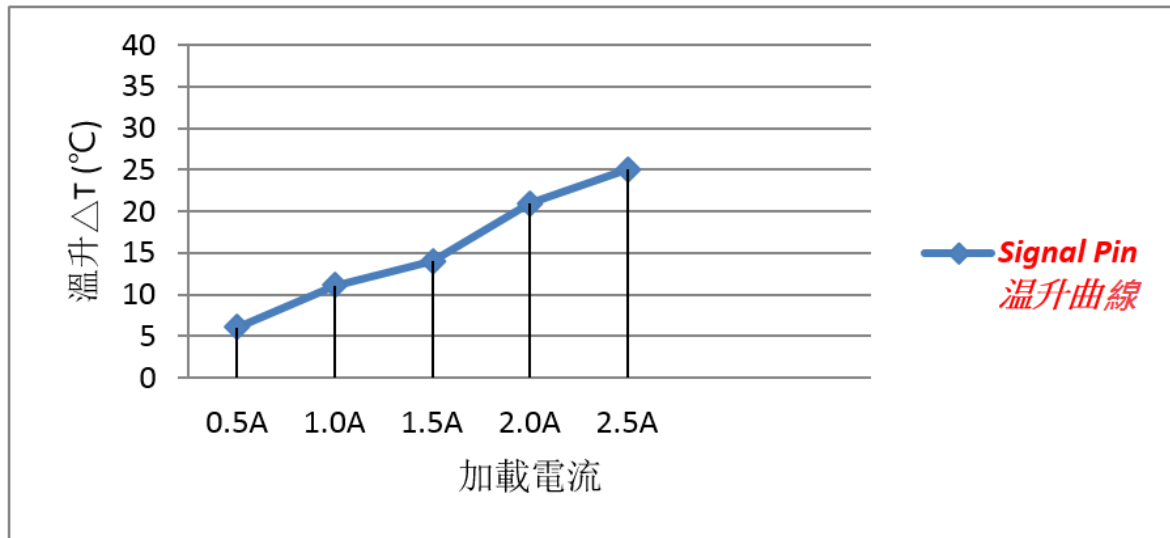
Chart of Temperature vs current( series connection with all contact of SPEC)

加載電流對應溫度曲線圖(相同規格的所有 PIN 串聯起來)





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### 3.9. STORAGE AND OPERATING TEMPERATURE 儲存與使用溫度

Temperature range :  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ , including terminal temperature rise for rating current.

Storage Temperature :  $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$ , Humidity : 80%RH under, Time limit is 12 months the products are stored.

溫度範圍： $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ ，包含接觸端子的額定電流溫升。

儲存溫度： $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$ ，濕度：80%RH以下，產品限存時間為12個月。

## 4. ENVIRONMENTAL 環境要求

### 4.1. SOLDERABILITY 可焊性

Connectors meet solder-ability to EIA-364-52.and shall be free of contaminants.

產品可焊性符合 EIA-364-52. 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

#### 4.2.1. WAVE SOLDER 波峰焊接

Each cycle consists of three consecutive phases. as shown in Table III.

每個焊接週期包括三個連續的階段,見附表三。

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。



## 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.

除非特別註明，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 10 cycles 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。

### 5.4. TEST SEQUENCE 測試順序

Product qualification test sequence as shown in Table II.

產品品質測試順序見附表二。



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### Table I : Test Requirements and Procedures

#### 附表一：測試要求與方法

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	Visually, dimensions and functionally inspected per applicable product drawing. 依相關產品圖面，檢查產品的外觀、尺寸及功能
2. Contact Resistance 接觸阻抗	Power pin : 0.7mΩ Max initial. Signal pin : 20mΩ Max initial. 電源端子初始狀態 0.7mΩ Max 信號端子初始狀態 20mΩ Max	Subject mated contacts assembled in housing to closed circuit of 20 mA max. Per EIA-364-06 所述固定端子連結到一個封閉回路中測試，電流 20 mA max，電壓 20 mV max 適用：EIA-364-06
3. Insulation Resistance 絕緣阻抗	Power Pin : 1000 MΩ Min. Signal Pin : 500 MΩ Min. 電源端子最小 1000 MΩ 信號端子最小 500 MΩ	Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. (500 V DC±10%). Per EIA-364-21 測試產品相鄰端子間以及端子與接地間的電阻 (500 V DC±10%). 適用：EIA-364-21
4. Dielectric Withstanding Voltage 耐電壓	Power pin must withstand test potential of 2500 VDC for 1 minute, current leakage must be 1.0mA Max. Signal Pin must withstand test potential of 1000 VDC RMS for 1 minute, current leakage must be 1mA Max. 電源端子必須承受測試電壓 2500 VDC，時間 1 分鐘，漏電流不大於 1.0 mA； 信號端子必須承受測試電壓 1000 VDC RMS，時間 1 分鐘，漏電流不大於 1 mA。	Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. Per EIA-364-20 對產品相鄰端子間以及端子與接地間加載電壓，並測試其漏電流 適用：EIA-364-20
5. Durability (Repeated Mating/Unmated) 耐久性	After testing, Contact Resistance : Power Pin : 0.7mΩ Max. Signal Pin : 20mΩ Max. 測試後，接觸阻抗： 電源端子最大 0.7mΩ 信號端子最大 20mΩ	Repeat mate and unmated for connector 500 cycles, at a speed of 25.4mm per minute. Per EIA-364-09 重復進行配合產品 500 次插拔，速度每分鐘 25.4mm 適用：EIA-364-09





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<p>6. Contact (lock) Retention Force 端子(耳扣)保持力</p>	<p>Power Pin : 1.36kg/Pin. Min. Signal Pin : 0.68kg/Pin. Min. Lock : 2.5Kg/Pin.Min 1.36kg/Pin. Min. 電源端子每支最小 1.36 kg 信號端子每支最小 0.68 kg 耳扣:每支最小 2.5kg(與 PCB 板孔同軸方向頂退) 每支最小 1.36Kg(與 PCB 板孔不同軸方向拔出)</p>	<p>Apply axial pull out (push) force at a speed of 25.4±3 mm/minute on the contact (Lock) assembled in the housing. Per EIA-364-29 以 25.4±3mm/分鐘的速度施加軸向拉(推)力從塑膠本體上拔出(頂退)端子(耳扣) 適用：EIA-364-29</p>
<p>7.1.Mating/Un-mating Force 插入力/拔出力</p>	<p>Mating force Power Pin : 0.709kg/PIN Max Signal Pin : 0.102kg/PIN Max. Un-mating force: Power Pin : 0.227kg/PIN Min Signal Pin : 0.02kg/PIN Min 插入力最大 電源端子：0.709kg/PIN 信號端子：0.102kg/PIN 拔出力最小 電源端子：0.227kg/PIN 信號端子：0.02kg/PIN</p>	<p>At a speed of 25.4±3mm/minute, apply axial insert the mating part into fully or pull out from the subject product. Per EIA-364-13 以 25.4±3mm/分鐘的速度，軸向完全插入對配外掛程式到被測產品中或從被測產品中拔出 適用：EIA-364-13</p>
<p>7.2 Connector Pin Press in/Retention Force 單支端子壓入/拉出 PCB 孔的力量</p>	<p>Press in Force Power Pin : (Male)75N/PIN Max (Female)60N/PIN Max Signal Pin : (Male)75N/PIN Max (Female)45N/PIN Max Retention in Force Power Pin : 10N/PIN Min Signal Pin : 10N/PIN Min. 壓入力 電源端子：(公端)75N/PIN Max (母端)60N/PIN Max 信號端子：(公端)75N/PIN Max (母端)45N/PIN Max 拉出力 電源端子：10N/PIN Min 信號端子：10N/PIN Min.</p>	<p>At a speed of 25.4±3 mm/minute, apply axial Press in PCB to Right Position or Pull out from PCB. 以 25.4±3 mm/分鐘的速度軸向施加壓力將 Press 部分壓入 PCB 孔適當位置或從 PCB 孔中拉出</p>



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<p>7.3 Every Lock Press in/Retention Force 單只耳扣壓入&amp;拔出 PCB 孔的力量</p>	<p>Press in Force per Pin : 1.5Kg/PIN Max Retention in Force per Pin : 0.45Kg/PIN Min 壓入力最大：1.5Kg/PIN 拉出力最小：0.45Kg/PIN</p>	<p>At a speed of 25.4±3 mm/minute, apply axial Press in PCB to Right Position or Pull out from PCB. 以 25.4±3 mm/分鐘的速度軸向施加壓力將 Press 部分壓入 PCB 孔適當位置或從 PCB 孔中拉出</p>
<p>8. Vibration 機械振動</p>	<p>No electrical discontinuity greater than 1 μs shall occur, Contact Resistance : Power Pin : 0.7mΩ Max. Signal Pin : 20mΩ Max 不允許出現超過 1 μs 的瞬間斷開， 接觸阻抗：電源端子最大 0.7mΩ 信號端子最大 20mΩ</p>	<p>Subject mated connector to 10-500-10 Hz traversed in 1 minute at 1.5 mm amplitude, 4 hours each of 3 mutually perpendicular plane, 10 mA potential applied. Per EIA-364-28. 對測試產品，在頻率變化每分鐘從 10-500-10 Hz, 振幅 1.5 mm 條件下，在互相垂直的三個面上，每個面 4 小時下測量，電流 10 mA 適用：EIA-364-28</p>
<p>9. Thermal Shock 溫度沖擊</p>	<p>After testing, no damage, Contact Resistance : Power Pin : 0.7mΩ Max. Signal Pin : 20mΩ Max. 測試後，產品無損壞，接觸阻抗： 電源端子最大0.7mΩ 信號端子最大20mΩ</p>	<p>Temperature range from -40°C to +125°C. Start from -40°C, after 30 minutes, change to +125°C; change time is no more than 5 minutes, total 36 cycles. Per EIA-364-32 溫度變化範圍：-40°C ~ +125°C。從-40°C開始，30 分鐘後換到+125°C，轉換時間不超過 5 分鐘，共 36 個循環 適用：EIA-364-32</p>
<p>10. Mechanical Shock 機械沖擊</p>	<p>Electrical discontinuity less than 1μs. 電流瞬斷時間小於1 μs.</p>	<p>Accelerate Velocity: 50G; Waveform : Half-sine shock plus ; Duration : 11 msec ; 3drops each to normal and reversed directions of X,Y and Z axes Per EIA-364-27. 速度 50G；半正弦波；持續 11 毫秒；±X, ±Y, ±Z，方向各 3 次 適用：EIA-364-27</p>



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<p>11. Humidity-Temperature Cycle 溫濕度循環</p>	<p>After testing, no damage, Contact Resistance : Power Pin : 0.7mΩ Max Signal Pin : 20mΩ Max Dielectric Withstanding Voltage should be OK, Insulation Resistance should be 1000 MΩ Min. 測試後，產品無損壞，接觸阻抗： 電源端子最大 0.7mΩ； 信號端子最大 20mΩ； 耐電壓測試 OK，絕緣阻抗最小 1000 MΩ</p>	<p>Subject product to 25~40°C, 80-100%.R.H, 10 Cycles (10 days). Per EIA-364-31 產品置於 25~40°C，相對濕度：80-100%，循環 10 次(10 天) 適用：EIA-364-31</p>
<p>12. Test Temperature Rise for Rating Current 溫升測試</p>	<p>The temperature rise above ambient shall not exceed 30°C 溫度不能超過 30°C Ambient conditions - Still air 25°C 周圍環境溫度 25°C</p>	<p>Subject mated contacts assembled in housing to closed circuit of Single Pin 2.5A、Power Pin 65A max. Test Specification for 8 hours continuously Per EIA-364-70 所述固定在外殼包的端子連結到一個封閉回路中測試，Single Pin 2.5A、Power Pin 65A，連續 8 小時 適用：EIA-364-70</p>
<p>13. Salt Spray 鹽霧</p>	<p>After testing, no damage, Contact Resistance : Power Pin : 0.7mΩ Max Signal Pin : 20mΩ Max Dielectric Withstanding Voltage should be OK, Insulation Resistance should be 1000 MΩ Min. 測試後，產品無損壞，接觸阻抗： 電源端子最大 0.7mΩ； 信號端子最大 20mΩ； 耐電壓測試 OK，絕緣阻抗最小 1000 MΩ</p>	<p>5±1% salt concentration(PH=7.0), 48 hours, 35±2°C. Per EIA-364-26 鹽水濃度 5±1%(PH=7.0)，時間 48 小時，溫度 35±2°C 適用：EIA-364-26</p>
<p>14. High Temperature Life 高溫老化</p>	<p>After testing, no damage, Contact Resistance : Power Pin : 0.7mΩ Max. Signal Pin : 20mΩ Max 測試後，產品無損壞，接觸阻抗： 電源端子最大 0.7mΩ 信號端子最大 20mΩ；</p>	<p>Subject product to 125°C for 504 hours continuously. Per EIA-364-17 產品置於 125°C，連續 504 小時 適用：EIA-364-17</p>



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<p>15. Solder ability 可焊性</p>	<p>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.</p> <p>5% maximum dewetting</p> <p>產品在測試完成後，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 未沾錫區不大於 5%</p>	<p>Soldering time : 5 seconds. Temperature : 245±5°C. Per EIA-364-52 焊接時間：5 秒 溫度：245±5°C 適用：EIA-364-52</p>
<p>16. Torque Test 扭力測試</p>	<p>After the test, the screws did not slip out, and the plastic was not deformed, injured or crushed.</p> <p>測試後，螺絲無滑出，塑膠無變形、壓垮、壓傷現象</p>	<p>Pointer to 6kgf.cm used Rotary Torque Tester. 勻速旋轉扭力測試儀，直至指針指向 6Kgf.cm</p>



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Table II : Product Qualification Test Sequence

附表二：產品測試順序

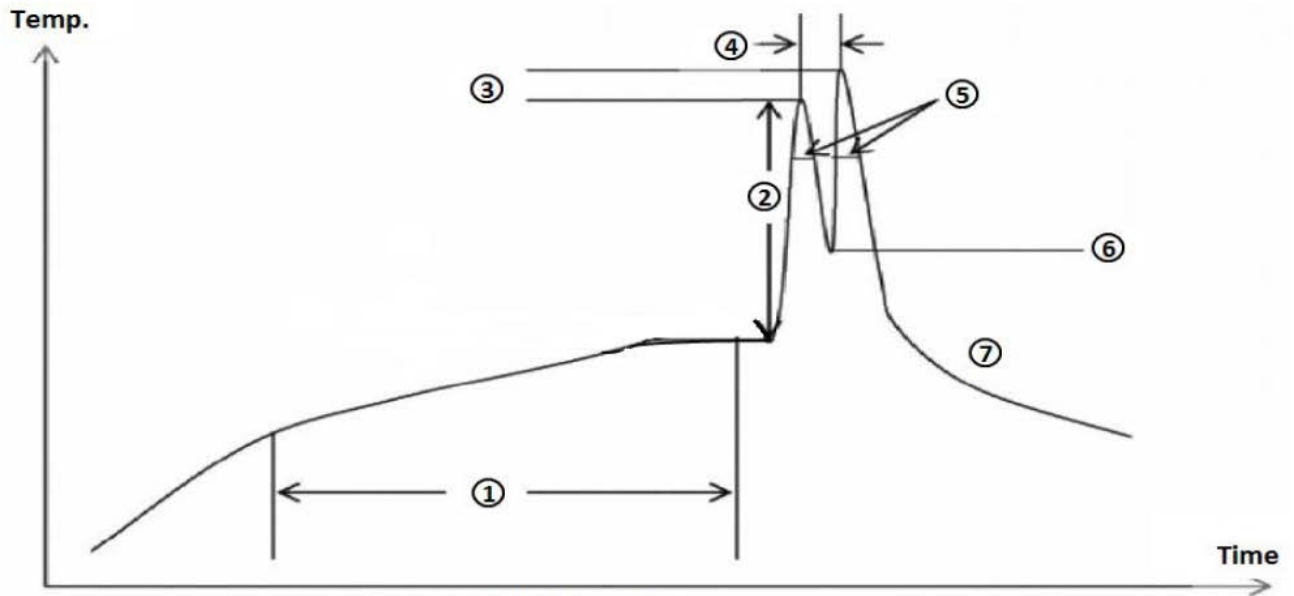
Test Description 測試描述	Test Group 測試分組												
	A	B	C	D	E	F	G	H	I	J	K	L	M
1. Conformation of Product 產品確認	1	1,6	1,9	1	1,9	1,9	1,9	1,9	1,9	1,9	1	1	1,3
2. Contact Resistance 接觸阻抗		2,5	2,6		2,6	2,6	2,6	2,6	2,6	2,6			
3. Insulation Resistance 絕緣阻抗			3,7		3,7	3,7	3,7	3,7	3,7	3,7			
4. Dielectric Withstanding Voltage 耐電壓			4,8		4,8	4,8	4,8	4,8	4,8	4,8			
5. Durability(Repeated Mating/Un-mating) 耐久性		4											
6. Contact (lock) Retention Force 端子(耳扣)保持力	2												
7.1 Mating/Un-mating Force 插入/拔出力		3											
7.2 Connector Pin Press in / Retention Force 單只端子壓入&拔出 PCB 孔的力量				2									
7.3 Every Lock Press in/Retention Force 單只耳扣壓入&拔出 PCB 孔的力量												2	
8. Vibration 機械振動					5								
9. Thermal Shock 溫度沖擊						5							
10. Mechanical Shock 機械沖擊			5										
11. Humidity-Temperature Cycle 溫濕度循環							5						
12. Current rating 溫升測試								5					
13. Salt Spray 鹽霧									5				
14. High Temperature Life 高溫老化										5			
15. Solder-ability 可焊性											2		
16. Torque Test 扭力測試													2



PRODUCT SPECIFICATION OF OUPIIN

Table III : Weld the curve graph in crest

附表三：波峰焊曲線圖



- |                                  |                         |
|----------------------------------|-------------------------|
| ① Preheat 80sec (1~2°C/s)        | ⑤ Dip Time 3~6sec       |
| ② $\Delta T < 150^\circ\text{C}$ | ⑥ $> 200^\circ\text{C}$ |
| ③ 235~265°C                      | ⑦ Cooling -5°C/s        |
| ④ 1~3sec                         |                         |