



PRODUCT SPECIFICATION

產品規格書

產品名稱 Description	產品料號 Part No.	圖號 Drawing No.
9395 Series Max P60 Connector	9395-1A01S10D01B71DPG2A-A003	9395-D0000-008
	9395-2D01S10A01B71xNG2A	9395-D0000-XXX
	9395-4D01S10A01B72DPG2A	9395-D0000-012

PRODUCT NAME 產品名稱	DOCUMENT No.: 文件編號	Rev. 版本	OUPIIN
9395 Series Max P60 Connector (RoHS)	Q9395-PSS-002	E	歐品電子
	Approved 核准	Checked 審核	Prepared 制作
	Q.A. Section Chief	Jack Hsing	2020.10.30



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1. SCOPE 適用範圍

This product specification defines the product performance and the test methods to ascertain the performance of the Max P60 Power connector , 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設計生產的 Max P60 型電源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

3. FEATURE & DIMENSIONS 特征及尺寸

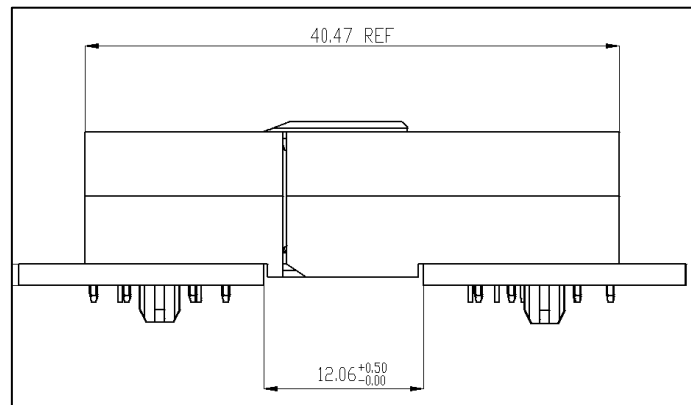
3.1. PRODUCT DIMENSION 產品尺寸

These connectors shall have the dimensions as shown in drawing.

本產品的相關尺寸參見圖面。

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 12.06mm

公母PCB板之間的尺寸為12.06mm

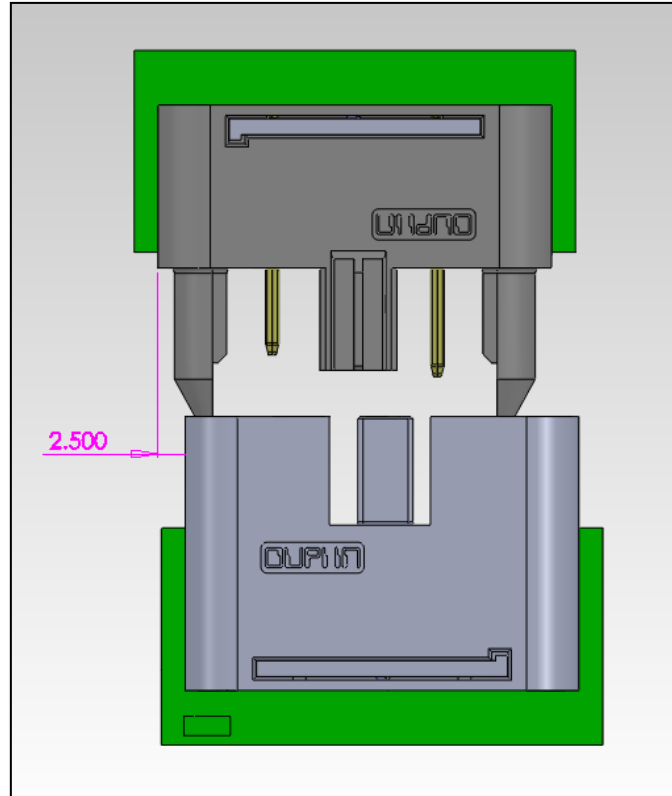


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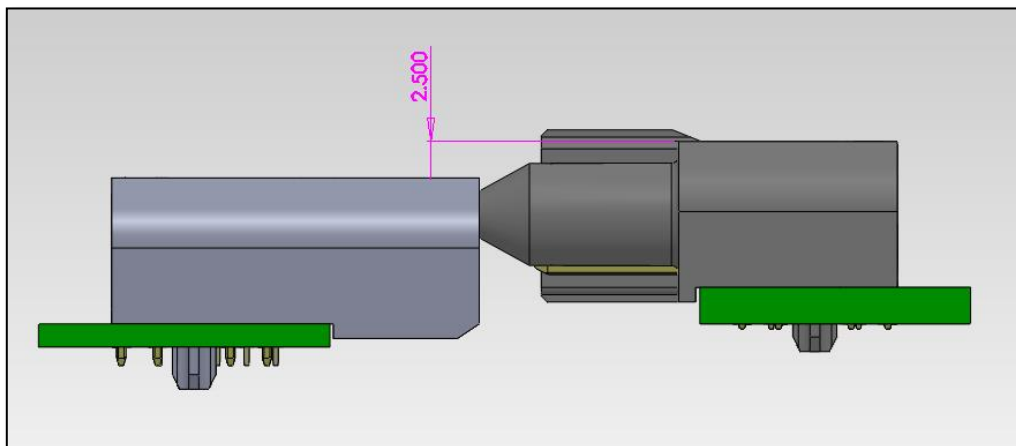
3.2.2 Perpendicular to engaging direction 垂直插入方向

The design of the centering and guiding in the mpc of the free and fixed board connector modules shall accept a misalignment of 2.50MM in transverse and 2.50MM 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2.50mm和縱向可接受2.50mm的偏差。



allowed misalignment in transverse 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

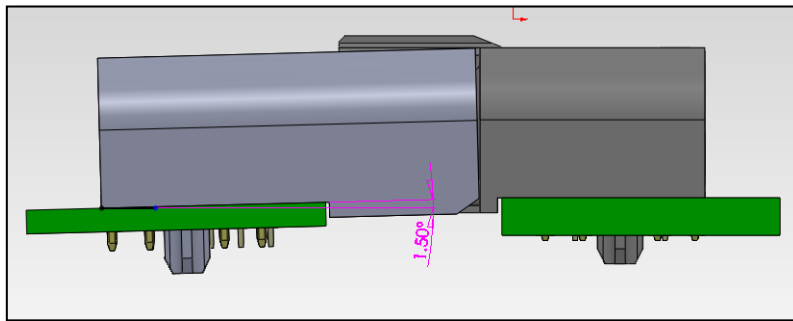
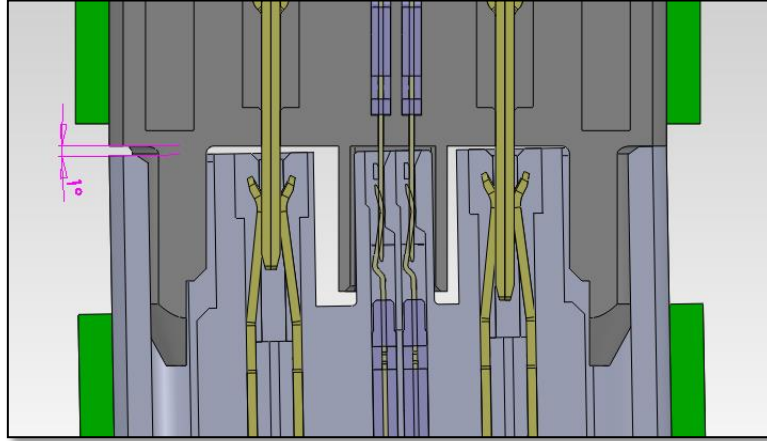


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3.2.3 Inclination 傾向

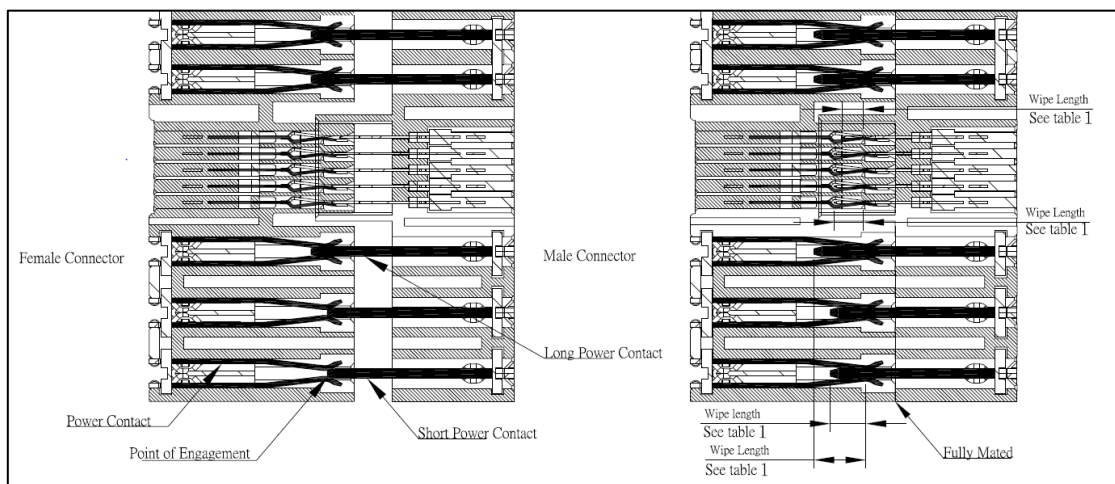
The center and guiding in the Mpc OF THE FREE AND THE FIXED BOARD connector modules shall allow an initial angular misalignment of 1.0 FROM in the transverse and 1.5 FROM in longitudinal axes.

固定板連接器模件的在Mpc裡,連接器可接受橫向1.0° 和縱向1.5° 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)
Power Pin	1	6.10mm
	2	4.10mm
Signal Pin	3	3.64mm and 2.64mm



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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 參見圖面。

3.4. BILL OF MATERIAL 材料清單

Harmful material controlling follows the requirements of RoHS. The bill of material 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參見圖面。

3.6. PACKAGING 包裝

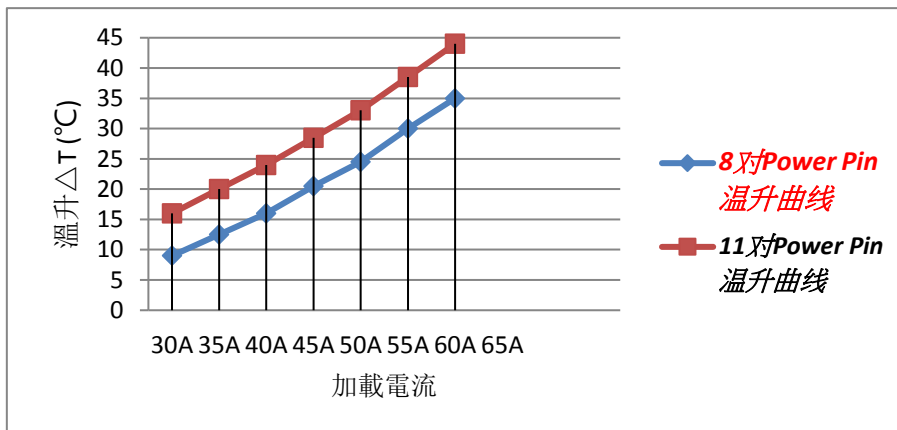
Products shall be packaged according to requirements specified in purchase order for safe delivery, connector container and the packaging method are shown in package specification.
產品可依客戶指定要求包裝，包裝材料與包裝方式參見產品包裝規範。

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

	Rating Voltage	Rating Current
Power (电源)	250V(DC PIN:P.C.B layout 5.5mm Pitch)	60A
	600V(AC PIN :P.C.B layout 7.5mm Pitch)	
HDS Signal (HDS 信号)	120V	2.5A
Legacy Signal (常规信号 Pin)	250V	2.5A

3.8. TEMPERATURE RISE 溫升

1.Chart of Temperature rise vs current(series connection with all contact of SPEC)
加載電流對應溫升曲線圖(相同規格的所有 PIN 串联起来)





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

Temperature range: $-40^{\circ}\text{C}\sim+105^{\circ}\text{C}$, 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 18 months the products are stored .

溫度範圍： $-40^{\circ}\text{C}\sim+105^{\circ}\text{C}$,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18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

4.1 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列的機械，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 at least.

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，每組測試至少有5個樣品。



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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。



Table I: Test Requirements and Methods

附表一：測試要求與方法

Items 項目	Requirements 要求	Test Methods 測試方法
1. Confirmation of Product 產品確認	Product shall be conforming to the requirements of applicable product drawing. 產品必須符合相關產品圖面的要求。	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: 0.30mΩ Max initial. Signal pin: 30mΩ Max initial. 電源 PIN 初始狀態 0.30mΩ Max 信號 PIN 初始狀態 30mΩ Max	EIA-364-23 Subject mated contacts assembled in housing to closed circuit of 20 mA max and voltage of 20mV max. 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。
3. Insulation Resistance 絕緣阻抗	Power and Signal pin: 5000 MΩ Min. 電源 PIN 與信號 PIN: 最小 5000 MΩ.	EIA-364 -21 Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. (500 V DC±10%). 測試產品相鄰端子間以及端子與接地間的電阻 (500 V DC±10%)。
4. Dielectric Withstanding Voltage 耐電壓	Power pin must withstand test potential of 1500VDC for 1 minute, current leakage must be 1 mA Max. Signal pin must withstand test potential of 500VDC for 1 minute, current leakage must be 1 mA Max. 電源 PIN 必須承受測試電壓 1500 VDC，時間 1 分鐘，漏電流不大於 1 mA。 信號 PIN 必須承受測試電壓 500 VDC，時間 1 分鐘，漏電流不大於 1 mA。	EIA-364-20. Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connector. 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。



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<p>5. Durability (Repeated Mating/Un-mating) 耐久性</p>	<p>After testing :Maximum Change: Signal Contact:10 milliohm , Power Contact: 0.5 milliohm 測試後：信號 PIN 最大變化 10mΩ; 電源 PIN 最大變化 0.5mΩ</p>	<p>EIA-364-09. Repeat mate and unmated for connector 200 cycles, at a speed of 25.4 ±3 mm per minute. Per 重復進行配合產品 200 次插拔，速度 25.4±3 mm/分鐘。</p>												
<p>6. Contact Retention Force 端子保持力</p>	<p>R/A Power Pin :1336 g Min 彎式電源 PIN:1336g 最小 Vert Power Pin:754g Min 直式電源 PIN:754g 最小 R/A Signal Pin :544 g Min 彎式信號 PIN :544g 最小 Vert Signal Pin:275g Min 直式信號 PIN:275g 最小</p>	<p>EIA-364-29 Apply axial pull out force at a speed of 25.4±3 mm/minute on the contact assembled in the housing. 以 25.4±3mm/分鐘的速度施加軸向拉力從塑膠本體上拔出端子。</p>												
<p>7. Mating /Un-mating Force 插入力/拔出力</p>	<table border="1"> <tr> <td colspan="2" data-bbox="437 860 885 943"> <p>Legacy Signal : 75g/ckt max (Mating) 普通信號 PIN 插入力： 75g 最大</p> </td> </tr> <tr> <td data-bbox="437 943 639 1279"> <p>Power : Vert Recept to R/A Plug 756g/ckt max (Mating) 電源 PIN:直母配彎公端插入力: 756 g 最大</p> </td> <td data-bbox="639 943 885 1279"> <p>Power : R/A Recept to R/A Plug 650g/ckt max (Mating) 電源 PIN:彎母配彎公端插入力:650g 最大</p> </td> </tr> <tr> <td colspan="2" data-bbox="437 1279 885 1375"> <p>HDS Signal : 55g/ckt max HDS 信號插入力： 55g/支最大</p> </td> </tr> <tr> <td colspan="2" data-bbox="437 1375 885 1471"> <p>Legacy Signal : 23g/ckt min 普通信號 PIN 拔出力： 23g 最小</p> </td> </tr> <tr> <td data-bbox="437 1471 639 1839"> <p>Power : Vert Recept to R/A Plug 316g/ckt min (Un-mating, after upper board) 電源 PIN:直母配彎公端拔力:316 g 最小(打板后)</p> </td> <td data-bbox="639 1471 885 1839"> <p>Power : R/A Recept to R/A Plug 253g/ckt min (Un-mating, after upper board) 電源 PIN:彎母配彎公端拔出力:253g 最小(打板后)</p> </td> </tr> <tr> <td colspan="2" data-bbox="437 1839 885 2000"> <p>HDS Signal : 25g Per Contact min HDS 信號 PIN 拔出力： 25g 最小</p> </td> </tr> </table>	<p>Legacy Signal : 75g/ckt max (Mating) 普通信號 PIN 插入力： 75g 最大</p>		<p>Power : Vert Recept to R/A Plug 756g/ckt max (Mating) 電源 PIN:直母配彎公端插入力: 756 g 最大</p>	<p>Power : R/A Recept to R/A Plug 650g/ckt max (Mating) 電源 PIN:彎母配彎公端插入力:650g 最大</p>	<p>HDS Signal : 55g/ckt max HDS 信號插入力： 55g/支最大</p>		<p>Legacy Signal : 23g/ckt min 普通信號 PIN 拔出力： 23g 最小</p>		<p>Power : Vert Recept to R/A Plug 316g/ckt min (Un-mating, after upper board) 電源 PIN:直母配彎公端拔力:316 g 最小(打板后)</p>	<p>Power : R/A Recept to R/A Plug 253g/ckt min (Un-mating, after upper board) 電源 PIN:彎母配彎公端拔出力:253g 最小(打板后)</p>	<p>HDS Signal : 25g Per Contact min HDS 信號 PIN 拔出力： 25g 最小</p>		<p>EIA-364-13 At a speed of 25.4±3 mm/minute, apply axial insert the mating part into fully or pull out from the subject product. Per EIA-364-13. 以 25.4±3 mm/分鐘的速度，軸向完全插入對配插件到被測產品中或從被測產品中拔出。</p>
<p>Legacy Signal : 75g/ckt max (Mating) 普通信號 PIN 插入力： 75g 最大</p>														
<p>Power : Vert Recept to R/A Plug 756g/ckt max (Mating) 電源 PIN:直母配彎公端插入力: 756 g 最大</p>	<p>Power : R/A Recept to R/A Plug 650g/ckt max (Mating) 電源 PIN:彎母配彎公端插入力:650g 最大</p>													
<p>HDS Signal : 55g/ckt max HDS 信號插入力： 55g/支最大</p>														
<p>Legacy Signal : 23g/ckt min 普通信號 PIN 拔出力： 23g 最小</p>														
<p>Power : Vert Recept to R/A Plug 316g/ckt min (Un-mating, after upper board) 電源 PIN:直母配彎公端拔力:316 g 最小(打板后)</p>	<p>Power : R/A Recept to R/A Plug 253g/ckt min (Un-mating, after upper board) 電源 PIN:彎母配彎公端拔出力:253g 最小(打板后)</p>													
<p>HDS Signal : 25g Per Contact min HDS 信號 PIN 拔出力： 25g 最小</p>														



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<p>8. Compliant Pin Insertion Force 壓接力 Compliant Pin Retention Force 壓接保持力</p>	<p>Legacy Signal Module: 5.7 Kg/ckt MAX HDS module: 4.54 kg/ckt MAX 普通信號PIN: 5.7Kg/片最大 HDS端子: 4.54 Kg/片最大</p> <p>Vertical Power Receptacle: 8.41 kg/pin MAX. 直式電源片: 8.41Kg/Pin最大 R/A Power Plug: 7.98 kg/pin MAX 彎式電源公端: 7.98Kg/Pin 最大</p> <p>Legacy Signal Module 0.5 Kg/pin MIN, 普通信號端子模塊: 0.5Kg/Pin最小 HDS Module: 0.45 Kg/pin MIN。 高密度信號模塊: 0.45Kg/pin最小</p> <p>Vertical Power Receptacle : 1.08 Kg/pin MIN, 直式電源片: 1.08Kg/Pin 最小 R/A Power Plug:1.09 Kg/pin MIN 彎式電源公端: 1.09Kg/Pin最小</p>	<p>Insert / Pull-out contact at a rate of 25.4±3 mm per minute 以 25.4±3mm/分鐘的速度插入/拔出端子</p>
<p>9. Vibration 機械振動</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號 PIN 最大變化 10mΩ;電 源 PIN 最大變化 0.50mΩ。</p>	<p>EIA-364-28 Subject mated connector to 20-500Hz traversed at Power spectral density 0.02g² /Hz, Overall rms 3.10 g 15 minutes each of 3 mutually perpendicular planes, test current at:10mA. 20-500 Hz, 0.02g² /Hz, 3.10 g(rms)條件下, 在 互相垂直的三個面上, 每個面 15 分鐘下測量, 測試電流 10 mA。</p>
<p>10. Mechanical Shock 機械衝擊</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號 PIN 最大變化 10mΩ; 電源 PIN 最大變化 0.50mΩ。</p>	<p>EIA-364-TP-27 Subject mated connector and shock at 50g with 1/2 sine wave (11millisecond) shocks in the 3 axes (18 shocks total), Per EIA-364-27. 加載 50g 半正玄波, 持續 11 毫秒, 三個方向 共 18 次。</p>



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<p>11. Thermal Shock 溫度沖擊</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號PIN最大變化10mΩ; 電 源PIN最大變化0.50mΩ。</p>	<p>EIA-364-32 Temperature range from -55°C to +85°C. Start from -55°C, after 30 minutes, change to +85°C; change time is no more than 5 minutes, total 5 cycles. EIA-364-32 溫度變化範圍： -55°C~ +85°C。從 -55°C 開始，30 分鐘後換到+85°C，轉換時間不超過 5 分鐘，共 5 個循環。</p>
<p>12. Humidity- Temperature Cycle 溫濕度循環</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號 PIN 最大變化 10mΩ; 電 源 PIN 最大變化 0.50mΩ。</p>	<p>EIA-364-31. Subject product to 25~65°C, 50-80%.R.H 10Cycles. 產品置於 25~65°C,相對濕度：50-80%,循環 10 次。</p>
<p>13. Test temperature rise for rating current 溫升測試</p>	<p>The temperature above ambient shall not exceed $\Delta 30^{\circ}\text{C}$ at one point in the system when one power powered. The temperature above ambient shall not exceed $\Delta 30^{\circ}\text{C}$ at one point in the system when one signal contact are powered. 當一個電源觸點通電時，測試中該點的 溫度不得超過 $\Delta 30^{\circ}\text{C}$。當一個信號觸 點通電時，測試中該點的溫度不超得過 $\Delta 30^{\circ}\text{C}$。</p>	<p>EIA-364-70 a. Ambient conditions Still air at 25°C b. Demand test current is Power Pin 60 Amp, Signal Pin 2.5 Amp. c. Test time is 8H. a.環境條件靜止空氣在 25°C。 b.需求測試電流為 Power Pin 60A, Signal Pin 2.5A。 c.測試時間 8H。</p>
<p>14. Salt Spray 鹽霧</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號 PIN 最大變化 10mΩ; 電 源 PIN 最大變化 0.50mΩ。</p>	<p>EIA-364-26 5±1% salt concentration(PH=7.0) ,48 hours 35±2°C 鹽水濃度 5±1%(PH=7.0),時間 48 小時，溫度 35±2°C。</p>



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<p>15. High Temperature Life 高溫老化</p>	<p>After testing, no damage, Contact Resistance: Maximum Change: Signal Contact: 10 milliohm Power Contact: 0.50 milliohm. 測試後: 接觸阻抗信號 PIN 最大變化 10mΩ; 電源 PIN 最大變化 0.50mΩ。</p>	<p>EIA-364-17 Subject product to 105°C for 240 hours continuously. 產品置於 105°C 連續 240 小時。</p>
<p>16. 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. 5% maximum dewetting.- 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>EIA-364-52 Solder-bath temperature 245±5°C , duration 5 sec. 錫爐溫度為 260±5 度，沾錫時間 5 秒</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
1. Conformation of Product 產品確認	1,7	1,4	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,3
2. Contact Resistance 接觸阻抗	2,6		2,6	2,6	2,6	2,6	2,6	2,6	2,6	
3. Insulation Resistance 絕緣阻抗	3		3,7	3,7	3,7	3,7	3,7	3,7	3,7	
4. Dielectric Withstanding Voltage 耐電壓	4		4,8	4,8	4,8	4,8	4,8	4,8	4,8	
5. Durability 耐久性	5									
6. Contact Retention Force 端子保持力	8									
7. Mating/Un-mating Force 插入/拔出力		2								
8. Compliant Pin Insertion Force 壓接力 Compliant Pin Retention Force 壓接保持力		3								
9. Vibration Sinusoidal Low Frequency 低頻正弦振動			5							
10. Mechanical shock 機械衝擊				5						
11. Thermal Shock 溫度衝擊					5					
12. Humidity-Temperature Cycle 溫濕度循環						5				
13. Current rating 溫升測試							5			
14. Salt Spray 鹽霧								5		
15. High Temperature Life 高溫老化									5	
16. Solder-ability 可焊性										2



PRODUCT SPECIFICATION OF Oupiin

Table III : Weld the curve graph in crest

附表III：波峰焊曲線圖

