

# 产品规格书

## PRODUCT SPECIFICATION

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产品规格： GJ-A2003 系列	No.: EN-103(2019-04)	Date Issued: Sep.05, 2022
Specification: GJ-A2003 Series	Rev. : <b>A.0</b>	Date Revised:
Pitch 2.00mm Series Wire to Board Connector		Issued by: Engineering Dept.

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<b>Subject: GJ-A2003TF-PTS GJ-A2003HF-**-A0N GJ-A2003WVD-**-A0N GJ-A2003WRD-**-A0N</b>			<b>Issued By:</b>
<b>Pitch 2.00mm Series Wire to Board Connector</b>			<b>Engineering Dept.</b>

*This specification is referred to 2.00mm DIP series wire to board connector.*

本規格書內容係提供 2.00 mm DIP 系列產品相關參考，  
其用途為電線端相接於電路板端連接器

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REV. (版次)	Revision Record (改版變更原因)	Date(日期)	ECN No
A	新增上傳	2022/09/14	

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**1.0 Product Name/Part Number & Drawing Number(產品名稱 / 產品型號及圖面型號):** Note: (xx) The number of the circuits.

Product Name(產品名稱)		Part Number(零件型號)	Drawing Number(圖面型號)
Crimp Terminal		GJ-A2003TF-PTS	
Housing		GJ-A2003HF-**-A0N	
Wafer	Straight (直立式)	GJ-A2003WVD-**-A0N	
	Right Angle (臥式)	GJ-A2003WRD-**-A0N	

**2.0 Construction/Dimensions/Material & Surface Finish(材質以及表面鍍層):**

Part Name(零件名稱)		Material(材質)	Surface Finish(表面鍍層)
Crimp Terminal (鍍壓端子)	GJ-A2003TF-PTS	Phosphor Bronze	Stamping before tin plated 先衝壓後電鍍
Housing(電線端連接器)		Nylon 66	UL 94V-0
Wafer (電路板端連接器)	Normal Square Pin (一般方型導體)	Phosphor bronze	Tin-Plated or Matte - Plated
	Base (膠座)	Nylon 66	UL 94V-0
		PA46	UL 94V-0

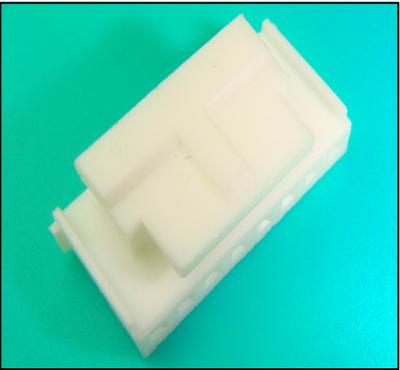
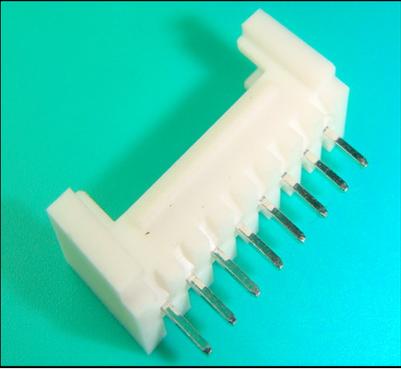
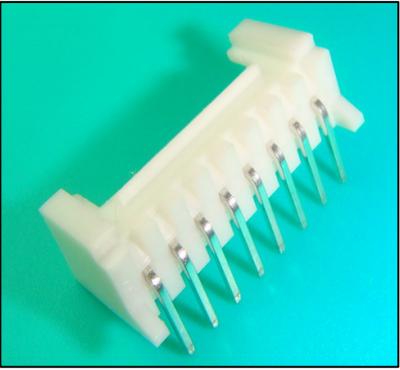
**3.0 Characteristic(產品特性):**

Item(項目)		Standard(標準規範)						
3.1	額定電流 Rated Current	Conductor Size	AWG	22#	24#	26#	28#	30#
			Area(mm <sup>2</sup> )	0.342 mm <sup>2</sup>	0.220 mm <sup>2</sup>	0.14 mm <sup>2</sup>	0.089 mm <sup>2</sup>	0.05mm <sup>2</sup>
		Amp AC/DC		3 A	2 A	1 A	0.8 A	0.5A
3.2	額定電壓 Rated Voltage	250 V AC/DC						
3.3	Ambient Temperature Range 環境與操作溫度範圍	(操作使用溫度與濕度範圍) Operating Temp.: -25°C~+85°C ; 85% R.H. Max Including 30°C Terminal Temperature Rise at rated Current , (包括定額電流內, 端子所產生 30°C 以下溫昇)						
3.4	Applicable Wire 適用電線	3.4.1	(金屬導體型號) Conductor Construction Size: AWG #24~#30					
		3.4.2	(電線絕緣材質外徑) Wire Insulation O.D.: 1.13mm~1.45mm					
3.5	Storage of Package 包裝未拆封之保存	Temperature and Humidity Condition 溫濕度條件				Temperature 溫度 : -10°C~+40°C Percentage Humidity 相對濕度 : 70 % Max		
		Term 保存期限	Housing		2 Years			
			Crimp Terminal & Wafer		1 Year			

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3.6	Floor Life 拆封後使用期限	Crimp Terminal & Wafer	3 Months

Note: 適用電路板厚度 Applicable Printed Circuit Board Thickness: 1.6 mm

4.0 Specimen(樣本圖示) :

Part Name / Part Number / Picture or Photograph 零件型號 / 零件名稱 / 樣本圖示			
Crimp Terminal GJ-A2003TF-PTS		Housing GJ-A2003HF-**-A0N	
Wafer ; Straight GJ-A2003WVD-**-A0N		Wafer ; Right Angle GJ-A2003WRD-**-A0N	

5.0 Applicable Standards(適用規範):

ANSI/EIA 364 ; EIA/ECA 364 Testing method for electrical connectors.

電子連接器，所適用之 ANSI/EIA 364 ; EIA/ECA 364 測試規範

6.0 Mechanical Performance(機械性能):

Item(項目)		Test Condition(測試條件)	Requirement(規格)
6.1	Insertion & Withdrawal Force 嵌入力與拔出力	Insert and withdrawal with connectors at the speed rate of 25.4 ± 3 mm /minute. <b>( Excluding Thumb Latch 不包含指壓彈簧卡榫結合力 )</b> 連接器兩端堪合，以每一分鐘 25.4 ± 3mm 的速率，作嵌入與拔出往返測試 (EIA/ECA 364-13D)	Refer to 9.1 Table1. 參照第 9.1 項 表格 1

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Item(項目)		Test Condition(測試條件)	Requirement(規格)
6.2	Wire Pullout Force(Axial) 電線脫離端子包覆之拔出力(軸向)	Pull out the cable from contact terminal at the speed rate of 25.4± 3 mm/minute. 對端子所包覆電線，施以每一分鐘 25.4 ± 3 mm 速率之軸向拔出力 (CSA C22.2 No.182.3)	AWG#22 size wire <b>3.63kgf/Min. (35.6N 牛頓)</b>
			AWG#24 size wire <b>2.73kgf/Min. (26.7N 牛頓)</b>
			AWG#26 size wire <b>1.82kgf/Min. (17.8N 牛頓)</b>
			AWG#28 size wire <b>0.91kgf/Min. (8.9N 牛頓)</b>
			AWG#30 size wire <b>0.46kgf/Min. (4.4N 牛頓)</b>
6.3	Crimp Terminal Retention Force ( in Housing ) 錫線端子與膠座之間拔出力	Axial pullout force on the terminal in the housing at the speed rate of 25.4 ± 3 mm per minute. 對於已經存在於膠座當中錫線端子，施以每一分鐘 25.4 ± 3 mm 速率之軸向拔出力	單一接觸點 Per Contact 最小容許值 <b>1.3kgf/Min.</b>
6.4	Square Pin Retention Force ( in Base ) 方型導體與膠座之間保持力	Axial pullout force on the square pin in the base at the speed rate of 25.4 ± 3 mm per minute. 對於已經存在於膠座當中方型導體，施以每一分鐘 25.4 ± 3 mm 速率之軸向拔出力 (EIA/ECA 364-29C )	單一接觸點 Per Contact 最小容許值 <b>1.0kgf/Min.</b>

**7.0 Electrical Performance(電氣性能) :**

Item(項目)		Test Condition(測試條件)	Requirement(規格)
7.1	(Low –Signal Level) Contact Resistance (低階信號) 接觸阻抗	A maximum voltage of 20mV and a maximum current of 100mA are applied to the mate connector. 對組合狀態下連接器，於其兩端施以最大測試電壓 20mV 以及最大測試電流 100mA ( Does not include wire resistance 不包含電線阻抗 ) (EIA/ECA 364-23C)	Contact Resistance: <b>30 milliohms Max.</b> 最大容許值. 30 毫歐姆
7.2	Insulation Resistance 絕緣阻抗	Apply 500V D/C for 1 minute between adjacent contacts to measure the insulation resistance. 對相鄰兩接觸導體，於一分鐘時間內施予 500V D/C 電壓，並量測其間絕緣阻抗值 (EIA 364-21C)	Insulation Resistance: <b>Initial 1000 megohms Min</b> 最初容許值. 1000 兆歐姆
7.3	Withstanding Voltage 耐電壓	Apply <b>1000 A/C (rms)</b> for 1 minute and the leakage current shall not exceed <b>0.5mA</b> to the adjacent contacts and ground of the mate connectors. 對組合狀態下連接器，於其相鄰兩導體末端各施以電壓 <b>1000 A/C (實效值)</b> 時間 1 分鐘，且漏電流必須小於 <b>0.5mA(毫安培)</b> (EIA 364-20C)	No breakdown or flashover. 無損毀或者產生火花

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8.0 Environmental Performance(環境性能) :

Item(項目)	Test Condition(測試條件)	Requirement(規格)
8.1 <b>Durability</b> 耐久性	Mate Connectors up <b>50 Cycles</b> at a Maximun rate of <b>10 cycles</b> Per minute prior to environmental test 以組合狀態下連接器且未經環境測試，依每分鐘內進行 <b>10</b> 次嵌入與拔出之最大速率，連續 <b>50</b> 次嵌入與拔出往返測試 (EIA/ECA 364-09C )	(After the test) <b>Contact resistance</b> <b>40 mΩ Max</b> 經耐久性試驗後接觸阻抗 最大容許值 40 毫歐姆
8.2 <b>Temperature Rise</b> (Via Current Cycling) 溫度上昇 (經由電流循環操作)	Mate connector . measure the temperature rise of contact when the maximum rated current is passed 以組合狀態下連接器，通過最大容許電流 量測其導體溫度上昇值 (EIA 364-70B Conditions 1 . Method 1)	<b>Mate connectors</b> <b>Temperature Rise:</b> <b>+30℃/Max.</b> 組合狀態下之連接器溫度 上昇最大容許值+30℃
8.3 <b>Vibration</b> 耐振動	A mated connector shall be mounted on a printed Circuit board and subjected to a vibration test of the following conditions. During the test, test current continuity shall be checked. After the test, contact resistance shall be measured. 以組合狀態下連接器焊接於電路板作為試驗樣品,依照隨附如下規格要求,進行耐振動試驗，試驗過程中確認是否產生不連續電流(斷電)現象，並於試驗過後量測其接觸阻抗。 (EIA/ECA 364-28E-Condition 1 ) <b>Frequency(頻率) : 10~55~10 Hz/minute.</b> <b>Amplitude (振幅) : 1.5 mm P-P</b> <b>Direction (方向) :1. Axis of up and down.上下軸向(Y 軸)</b> <b>2. Axis of right the left. 左右軸向(X 軸)</b> <b>3. Axis of front and back.前後軸向(Z 軸)</b> <b>Period(週期) : 2 hours for each direction.</b> (每一個軸向持續 2 小時)	<b>Initial Contact Resistance :</b> <b>20 milliohms Max.</b> 接觸阻抗最初容許值 20 毫歐姆 (After the test) <b>Contact Resistance:</b> <b>40 milliohms Max.</b> 經耐振動試驗後接觸阻抗 最大容許值 40 毫歐姆  <b>No discontinuity current is longer than 1 microsecond.</b> 電流中斷現象， 時間不可多於1微秒

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Item(項目)	Test Condition(測試條件)	Requirement(規格)
8.4 Humidity (Steady State) 恆溫恆濕	<p>A mated connector shall be placed in a humidity chamber of the following conditions. After the test, leave the specimen at room temperature for 1~2 hours before the contact resistance, the insulation resistance and the dielectric withstanding voltage shall be measured.</p> <p>(EIA 364-31B Conditions II. Method A)</p> <p>以組合狀態下連接器放置於恆定溫度與濕度的空間，依照隨附如下規格要求，進行恆溫恆濕試驗，經試驗過後將樣品置於室溫 1~2 小時，再量測其接觸阻抗、絕緣阻抗、以及耐電壓測試。</p> <p>Temperature(溫度) : 40±2℃.</p> <p>Relative Humidity(相對濕度) : 90%~95% (RH).</p> <p>Period(週期) : 96 hours continuously. (持續 96 小時)</p>	<p>(After the test)</p> <p>Contact Resistance : <b>40milliohms Max.</b> 經恆溫恆濕試驗後接觸阻抗 最大容許值. 40 毫歐姆</p> <hr/> <p>(After the test)</p> <p>Insulation Resistance : <b>500Megohms Min.</b> 經恆溫恆濕試驗後絕緣阻 最小容許值. 500 兆歐姆</p> <hr/> <p>經恆溫恆濕試驗後測耐電壓</p> <p>(After the test)</p> <p>Withstanding Voltage: <b>1000V A/C for 1 minute</b></p>
8.5 Thermal Shock 冷熱衝擊	<p>A mated connector shall be subjected to a thermal shock test of the following conditions. After the test, leave the specimen at room temperature for 1~2 hours before the contact resistance, the insulation resistance and the dielectric withstanding voltage shall be measured.</p> <p>以組合狀態下連接器作為試驗樣品，依照隨附如下規格要求，進行冷熱衝擊試驗，經試驗過後將樣品置於室溫 1~2 小時，再量測其接觸阻抗、絕緣阻抗、以及耐電壓測試。</p> <p>(EIA/ECA 364-32D Conditions I. Method A)</p> <p>One Cycle Consists Of:</p> <p><b>-55°C+0/-3°C for 30 minutes. → Room Temp. 5 minutes</b></p> <p><b>85°C+3/-0°C for 30 minutes. → Room Temp. 5 minutes</b></p> <p>Total Cycles: 5 Cycles.</p> <p>以-55°C+0/-3°C溫度持續 30 分鐘，經室溫 5 分鐘，而後再以 85°C+3/-0°C溫度持續 30 分鐘，再經室溫 5 分鐘，構成一次冷熱循環，總計循環次數 5 次。</p>	<p>Same as paragraph 8.4 同 8.4 章節</p>

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8.6	Thermal Aging 高溫老化試驗	<p>A mated connector shall be placed in a heat oven of the following conditions. After the test, leave the specimen at room temperature for 1~2 hours before the contact resistance shall be measured. 以組合狀態下連接器放置於加熱烤箱當中，依照隨附如下規格要求，進行高溫老化試驗，經試驗過後將樣品置於室溫 1~2 小時，再量測其接觸阻抗。(EIA 364-17B Conditions 4 . Method A )</p> <p>Temperature(溫度) : 105±2℃</p> <p>Period(週期): 96 hours continuously . (持續 96 小時)</p>	<p>Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值 20 毫歐姆</p> <p>(After the test)</p> <p>Contact Resistance : <b>40milliohms Max.</b> 經高溫老化試驗後接觸阻抗 最大容許值.40 毫歐姆</p>	
8.7	Cold 耐寒測試 (Low Temperature)	<p>A mated connector shall be placed in a cold chamber of the following conditions. After the test, leave the specimen at room temperature for 1~2 hours before the contact resistance shall be measured. 以組合狀態下連接器放置於低溫空間內，依照隨附如下規格要求，進行耐寒試驗，經試驗過後將樣品置於室溫 1~2 小時，再量測其接觸阻抗。(EIA 364-59A Condition D ; Condition 4 )</p> <p>Temperature(溫度) : -25±3℃.</p> <p>Period(週期): 96 hours continuously . (持續 96 小時)</p>	<p>Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值 20 毫歐姆</p> <p>(After the test)</p> <p>Contact Resistance : <b>40 milliohms Max.</b> 經耐寒試驗後接觸阻抗 最大容許值. 40 毫歐姆</p>	
8.8	Salt Spray 鹽水噴霧	<p>A mated connector shall be subjected to a Salt Spray test of the following conditions. After the test , the specimen shall be washed with running water and dried naturally before the measurement of contact resistance. 以組合狀態下連接器作為試驗樣品，依照隨附如下規格要求，進行鹽水噴霧試驗，試驗過後將樣品用清水沖洗並經過自然風乾，而後量測其接觸阻抗。(EIA 364-26B Conditions B)</p> <p>Density(鹽水密度): 5 % in weight. Temperature(溫度): 35±2℃.</p> <p>Period(週期): <b>Terminal or contact (Stamping after tin plated for 8 hours ) ; Terminal or contact (Stamping before tin plated for 48 hours)</b> 端子或導體(先電鍍後沖壓 8 小時) ; 端子或導體 (先沖壓後電鍍 48 小時)</p> <p>Salt spray test only define the plating area,without plating area (as copper cross section) will not be defined. 鹽水噴霧測試只判定電鍍區域,無電鍍區域(如折斷面裸銅)則不做判定</p>	<p>Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值 20 毫歐姆</p> <p>(After the test)</p> <p>Contact Resistance : <b>40 milliohms Max.</b> 經鹽水噴霧試驗後接觸阻抗 最大容許值. 40 毫歐姆</p>	

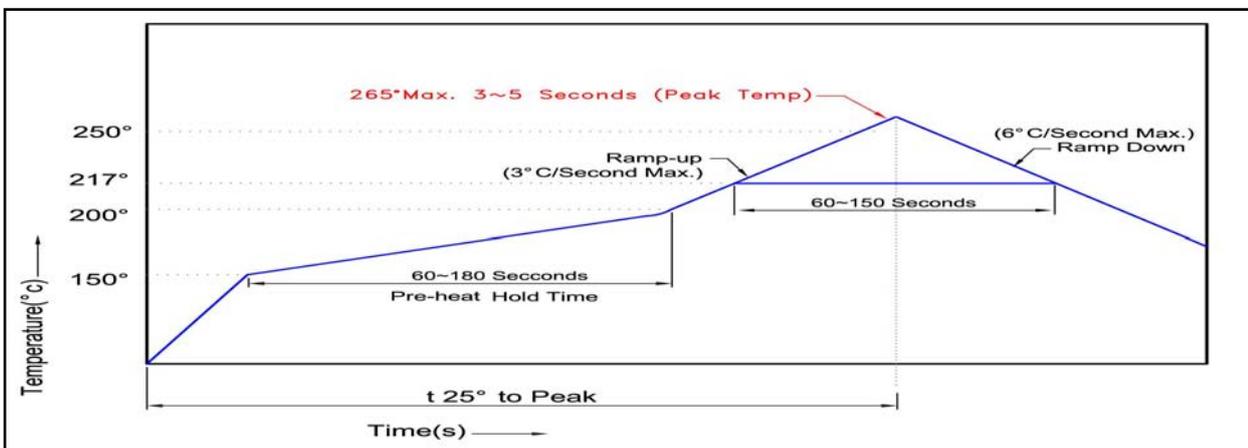
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Subject: GJ-A2003TF-PTS GJ-A2003HF-**-A0N GJ-A2003WVD-**-A0N GJ-A2003WRD-**-A0N Pitch 2.00mm Series Wire to Board Connector			Issued By: Engineering Dept.

Item(項目)	Test Condition(測試條件)	Requirement(規格)
8.9 Solder Ability 焊錫性	Fluxed soldering section of header shall be dipped in solder of the following conditions. 將連接器 pin 針基板嵌入端，接觸熱溶狀錫料，依照隨附如下規格要求，進行焊錫性試驗 Solder Temperature (焊錫溫度) : $245 \pm 5^{\circ}\text{C}$ . Immersion Period (沉浸週期) : $3 \pm 0.5$ Seconds (操作方式) : 料件焊錫位置，距離導體末端 1.5mm Method : 1.5mm from square pin tip (EIA 364-52B)	Solder entirely <b>95%</b> of immersed area must show no voids or pinholes. 焊料覆蓋面積必須達到 95%，而且不能產生氣孔或空隙
8.10 Resistance to Soldering Heat 焊錫耐熱性	Resistance to soldering heat when using PA46 使用 PA46，能夠承受焊錫耐熱範圍 (EIA 364-71B 4 Test Procedure) Refer to Temperature Profile 請參考 8.10.1.1 溫度曲線圖 Resistance to soldering heat when using PA66 使用 PA66，能夠承受焊錫耐熱範圍： Refer to Temperature Profile 請參考 8.10.1.2 溫度曲線圖 By soldering iron 手工烙鐵焊錫適用溫度範圍： $350 \pm 5^{\circ}\text{C}$ $3 \pm 0.5$ Seconds. (EIA/ECA 364-56C Procedure 3. Conditions A) (操作方式) : 零件焊錫位置，距離導體末端 1.5mm Method : 1.5mm from square pin tip	No deformation or damage. 不可有變形或損壞

Notes : Flowing Mixed Gas (EIA 364-65A) shall be conduct by Customer request 混合流動氣體測試遵照客戶需求

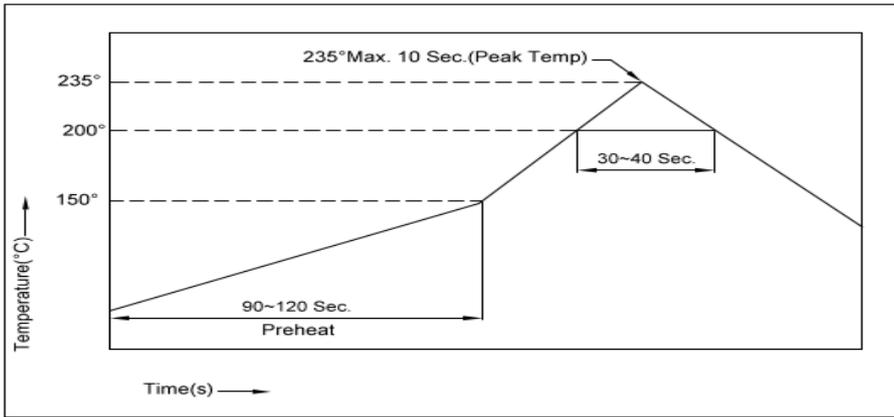
8.10.1 Temperature Profile(溫度曲線圖) :

8.10.1.1 Wave Peak Soldering In-Lead Free Process 波焊無鉛制程



<b>Type Document</b>	<b>Product Specification</b>	<b>Revised /Edition</b>	<b>A</b>
<b>Date Issued</b>	<b>2020/6/30</b>	<b>Data Revised</b>	
<b>Subject: GJ-A2003TF-PTS GJ-A2003HF-**-A0N GJ-A2003WVD-**-A0N GJ-A2003WRD-**-A0N</b> <b>Pitch 2.00mm Series Wire to Board Connector</b>			<b>Issued By:</b> <b>Engineering Dept.</b>

8.10.1.2 Wave Peak Soldering In- General Process 波焊一般制程



9.0 Tables & Attachments

9.1 Table 1. Insertion Force (I.F.) & Withdrawal Force (W.F.) for user reference:

No. of Circuits 極數	AT INITIAL 首次嵌入與拔出(初始值)		AT 50 <sup>TH</sup> 50次嵌入與拔出之後	No. of Circuits 極數	AT INITIAL 首次嵌入與拔出(初始值)		AT 50 <sup>TH</sup> 50次嵌入與拔出之後
	I.F. (MAX) 嵌入力	W.F. (MIN) 拔出力	W.F. (MIN) 拔出力		I.F. (MAX) 嵌入力	W.F. (MIN) 拔出力	W.F. (MIN) 拔出力
	02	1.20	0.40		0.25	10	6.00
03	1.80	0.60	0.40	11	6.60	2.20	1.60
04	2.40	0.80	0.55	12	7.20	2.40	1.75
05	3.00	1.00	0.70	13	7.80	2.60	1.90
06	3.60	1.20	0.85	14	8.40	2.80	2.05
07	4.20	1.40	1.00	15	9.00	3.00	2.20
08	4.80	1.60	1.15	16	9.60	3.20	2.35
09	5.40	1.80	1.30				

Unit : Kg/f

10.0 Remark(備註) : Any change or revision for the product specification will not be announced in advance.

Please contact our sales representative for the latest information.

有關規格書內容經變更或改版，如未能夠及時發佈與通知，煩請連絡我司業務人員以提供產品最新資訊

Reviewed: Liangdong.Yi Approved: James.Hang Verified: James.Hang