产 品 规 格 书

PRODUCT SPECIFICATION

产品规格： GJ-A1004 系列	No.: EN-103(2019-04)	Date Issued: Sep.05, 2022
Specification: GJ-A1004 Series	Rev. : **A.0**	Date Revised:
1.00mm pitch/Disconnectable Crimp style connectors		Issued by: Engineering Dept.

Prepared by:	Checked by:	Reviewed by:	Approved by:
James.Kang	James.Kang		Liangdong.Yi

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

This specification is referred to 1.00mm SMT series wire to board connector.
本規格書內容係提供 1.00 mm SMT 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

-INDEX-

REV. (版次)	Revision Record (改版變更原因)	Date(日期)	ECN No

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

1.0 Product Name/Part Number & Drawing Number(產品名稱 / 產品型號及圖面型號):

Product Name(產品名稱)	Part Number(零件型號)	Drawing Number(圖面型號)
Crimp Terminal	A1002TM-PTS	
Housing	A1004HM	
Wafer	A1004WVS	
	A1004WRS	

Note: (xx) The number of the circuits.

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

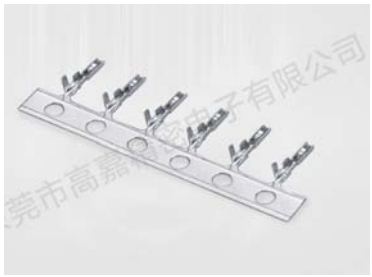
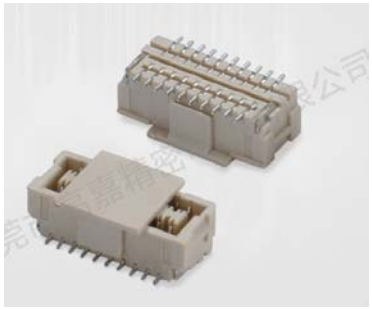
Part Name(零件名稱)		Material(材質)	Surface Finish(表面鍍層)
Crimp Terminal (铆壓端子)		Phosphor Bronze	Tin-plated
Housing (電線端連接器)		Nylon66	UL 94V-0
Wafer (電路板端連接器)	Contacts (導體)	Phosphor Bronze	Tin Plated
	Solder Tab (固定片)	Phosphor Bronze	Tin Plated
	Base (膠座)	LCP	UL 94V-0
	Cover(上蓋)		

3.0 Characteristic(產品特性):

Item(項目)		Standard(標準規範)		
3.1	額定電流 Rated Current	1A AC/DC (With AWG #28 is applied)		
3.2	額定電壓 Rated Voltage	50 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℃~+85℃ ； 85% R.H. Max Including 30℃ Terminal Temperature Rise at rated Current , (包括定額電流內 ，端子所產生 30℃以下溫昇)		
3.4	Applicable Wire 適用電線	3.4.1	(金屬導體之型號) Conductor Construction Size: AWG #28~#32	
		3.4.2	(電線絕緣材質外徑) Wire Insulation O.D.: 0.4mm~0.8mm	
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℃~+40℃ Percentage Humidity 相對濕度 ：70 % Max
		Term 保存期限	Housing	2 Years
			Crimp Terminal & Wafer	1 Year
3.6	Floor Life 拆封後使用期限	Wafer	Refer to 9.0 參照第 9.0 項 (IPC/JEDEC J-STD-020D.1 ; Table 5-1)	
		Crimp Terminal	3 Months	

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

4.0 Specimen(樣本圖示) :

Part Name / Part Number / Picture or Photograph 零件名稱 / 零件型號 / 樣本圖示			
Crimp Terminal *A1002TM-PTS*		Housing *A1004HM*	
Wafer *A1004WVS*		Wafer *A1004WRS*	

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 & Withdraw Force 嵌入力與拔出力	Insert and withdraw with connectors at the speed rate of 25 .4 ± 3 mm /minute. (Excluding Thumb Latch 不包含指壓活動卡榫結合力) 連接器兩端勘合，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)		Plug-in force≤3N （Per pin） Plug-out force ≥ 0.3N （Per pin）
6.2	Wire Pullout Force(Axial) 電線脫離端子包覆之拔出力	Pull out the cable from with 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 (EIA 364-08B)	AWG#28 size wire	1.0kgf/Min.(9.80N 牛頓)
			AWG#30 size wire	0.5kgf/Min.(4.90N 牛頓)
			AWG#32 size wire	0.3kgf/Min.(2.94N 牛頓)

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

Item(項目)		Test Condition(測試條件)	Requirement(規格)
6.3	Crimp Terminal Retention Force (in Housing) 铆線端子與膠座之間拔出力	Axial pullout force on the terminal in the plug housing at the speed rate of 25.4 ± 3 mm per minute. (EIA/ECA 364-29C) 對於已經存在於膠座當中铆線端子，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 0.5kgf/Min.
6.4	Contact Retention Force (in Base) 金屬導體與膠座之間拔出力	Axial pullout force on the Contact in the base at the speed rate of 25.4 ± 3 mm per minute. (EIA/ECA 364-29C) 對於已經存在於膠座當中金屬導體，施以每一分鐘25.4 ± 3mm速率之軸向拔出力	單一接觸點 Per Contact 最小容許值 0.3kgf/Min.

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. (EIA/ECA 364-23C) 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)	Contact Resistance: 20 milliohms Max. 最大容許值. 20m 歐姆
7.2	Insulation Resistance 絕緣阻抗	Apply 250V D/C for 1 minute between adjacent contacts to measure the insulation resistance. (EIA 364-21C) 對相鄰兩接觸導體，於一分鐘時間內施予 250V D/C 電壓，並量測其間絕緣阻抗值	Insulation Resistance: Initial 100 megohms Min 最初容許值. 100 M 歐姆
7.3	Withstanding Voltage 耐電壓	Apply 500V A/C (rms) for 1 minute and the leakage current shall not exceed 0.5mA to the adjacent terminal and ground of the mate connectors. (EIA 364-20C) 對組合狀態下連接器，於其相鄰兩導體末端各施以電壓 500V A/C(實效值) 時間 1 分鐘， 且漏電流必須小於 0.5mA(毫安培)	No breakdown or flashover. 無損毀或者產生火花

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

8.0 Environmental Performance(環境性能)：

Item(項目)		Test Condition(測試條件)	Requirement(規格)
8.1	Durability 耐久性	Mate Connectors up 50 Cycles at a Maximun rate of 10 cycles Per minute prior to environmental test (EIA/ECA 364-09C) 以組合狀態下連接器且未經環境測試，依每分鐘內進行10次嵌入與拔出之最大速率，連續50次嵌入與拔出往返測試	(After the test) Contact resistance： 經耐久性試驗後接觸阻抗： 40 mΩ Max
8.2	Temperature Rise (Via Current Cycling) 溫昇 (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)	Mate connectors Temperature Rise: ＋30℃/Max. 組合狀態下之連接器溫度上昇最大容許值＋30℃
8.3	Vibration 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. (EIA/ECA 364-28E-Condition I) 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。 Frequency(頻率) : 10~55~10 Hz/minute. Amplitude (振幅) : 1.5 mm P-P Direction (方向) :1. Axis of up and down.上下軸向(Y 軸) 2. Axis of right the left. 左右軸向(X 軸) 3. Axis of front and back.前後軸向(Z 軸) Period(週期) : 2 hours for each direction. (每一個軸向持續 2 小時)	Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值: 20m 歐姆 (After the test) Contact Resistance: 40 milliohms Max. 經耐振動試驗後接觸阻抗： 最大容許值 40m 歐姆 No discontinuity current is longer than 1 microsecond. 電流中斷現象， 時間不可多於1微秒

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

Item(項目)		Test Condition(測試條件)	Requirement(規格)
8.4	Humidity (Steady State) 恆溫恆濕	A mated connector shall be placed in a humidity chamber of the following conditions. After the test, the contact resistance, the insulation resistance and the dielectric withstanding voltage shall be measured. (EIA 364-31B Conditions III . Method A) 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，並於試驗過後量測其接觸阻抗 、 絕緣阻抗 、以及耐電壓測試。 Temperature(溫度) : 40±2℃. Relative Humidity(相對濕度) : 90%~95% (RH). Period(週期) : 96 hours continuously. (持續 96 小時)	(After the test) Contact Resistance: 80 milliohms Max. 經恆溫恆濕試驗後接觸阻抗 : 最大容許值. 80m 歐姆 (After the test) Insulation Resistance : 50 Megohms Min. 經恆溫恆濕試驗後絕緣阻抗 : 最小容許值. 50 M 歐姆 經恆溫恆濕試驗後測耐電壓 : (After the test) Withstanding Voltage: 500V A/C for 1 minute
8.5	Thermal Shock 冷熱衝擊	A mated connector shall be subjected to a thermal shock test of the following conditions. After the test, the contact resistance, the insulation resistance and the dielectric withstanding voltage shall be measured. 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 ，並於試驗過後量測其接觸阻抗 、 絕緣阻抗 、以及耐電壓測試。 (EIA/ECA 364-32D Conditions I . Method A) One Cycle Consists Of: -55 +0/-3℃for 30 minutes. → Room Temp.5 minutes 85+3/-0℃ for 30 minutes. → Room Temp.5 minutes Total Cycles: 5 Cycles. 以-55+0/-3℃溫度持續 30 分鐘 ，經室溫 5 分鐘 ，而後再以 85+3/-0℃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。	Same as paragraph 8.4 同 8.4 章節

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

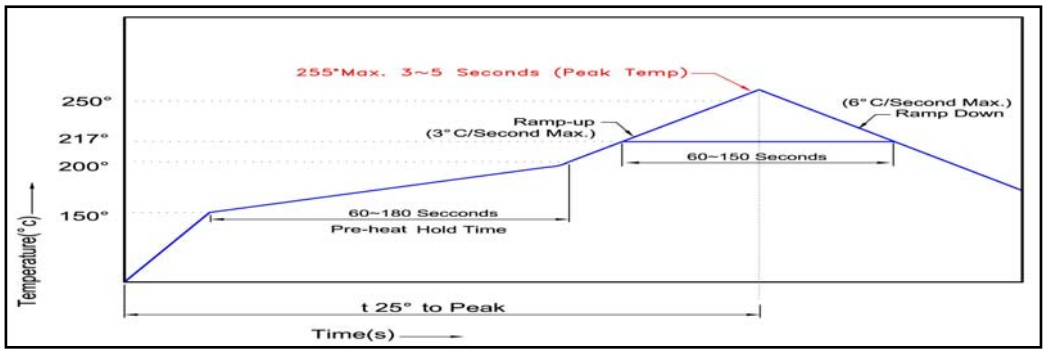
Item(項目)		Test Condition(測試條件)	Requirement(規格)
8.6	Heat Aging 高溫老化試驗	A mated connector shall be placed in a heat oven of the following conditions. After the test, contact resistance shall be measured. (EIA 364-17B Conditions III . Method A) 以組合狀態下連接器放置於加熱烤箱當中，依照隨附如下規格要求，進行高溫老化試驗 ，並於試驗過後量測其接觸阻抗。 Temperature(溫度) : 85±2℃. Period(週期): 96 hours continuously.(持續 96 小時)	Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值:20m 歐姆 (After the test) Contact Resistance : 40 milliohms Max. . 經高溫老化試驗後接觸阻抗 : 最大容許值. 40m 歐姆
8.7	Salt Spray 鹽水噴霧	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 (EIA 364-26B Conditions B) 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。 Density(鹽水密度): 5 % in weight. Temperature(溫度): 35±2℃. Period(週期): Terminal or contact (Stamping after tin plated for 8 hours) ; Terminal or contact (Stamping before tin plated for 24 hours) 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 24 小時)	Initial Contact Resistance : 20 milliohms Max. 接觸阻抗最初容許值:20m 歐姆 (After the test) Contact Resistance: 80 milliohms Max. 經鹽水噴霧試驗後接觸阻抗 : 最大容許值. 80m 歐姆
8.8	Solder Ability 焊錫性	Fluxed soldering section of header shall be dipped in solder of the following conditions. (EIA 364-52B) 將連接器 pin 針基板嵌入端 ，浸以熱溶狀錫料 ，依照隨附如下規格要求，進行焊錫性試驗 Solder Temperature (焊錫溫度) : 245 ± 5℃. Immersion Period (沉浸週期) : 3±0.5 Seconds (操作方式) : 零件焊錫位置 ，距離導體以及固定片末端 0.5mm Method : 0.5mm from contact tip and solder tab tip	Solder entirely (Tin Plated : 95% / Gold Plated : 75%) of immersed area must show no voids or pinholes. 焊料覆蓋面積必須達到 (鍍錫 95% / 鍍金 75%), 而且不能產生氣孔或空隙

Type Document	Product Specification	Revised /Edition	A
Date Issued	2022/09/05	Data Revised	
Subject: A1002TM-PTS A1004HM A1004WVS A1004WRS Pitch 1.00mm SMT Series Wire to Board Connector (Dual-Row Design)			Issued By: Engineering Dept.

Item(項目)		Test Condition(測試條件)	Requirement(規格)
8.9	Resistance To Soldering Heat 焊錫耐熱性	By reflow soldering 迴焊適用溫度範圍 ： Refer to Temperature Profile 請參考 8.9.1 溫度曲線圖	No deformation or damage. 不可有變形或損壞
		By soldering iron 手工烙鐵焊錫適用溫度範圍 ： 350 ± 5℃ 3±0.5 Seconds. (操作方式)：零件焊錫位置，距離導體以及固定片末端 0.5mm Method : 0.5mm from contact tip and solder tab tip (EIA/ECA 364-56C Procedure 3. Conditions A)	

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

8.9.1 Temperature Profile(溫度曲線圖) :



10.0 Caution (注意事項) : Parts are made of hydrophilic Polyamide 9T and apt to absorb moisture. Once the vacuum-packing unpacked, please keep parts in the environment of temperature < 30℃/ humidity < 60% RH, and send to re-flowing within 72 hours to prevent parts blistered or deformed during soldering.

尼龍9T塑料因具親水之特性，故採用真空包裝以減少吸濕受潮。真空包裝經拆封應避免曝露於溫度高於30℃，濕度高於 60% RH的環境中，並在拆封72 小時內全數使用完畢，以防止後續迴焊製程產生起泡變形現象。

11.0Remark(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: James.Kang Approved: James.Kang Verified: Liangdong.Yi