

 <b>GREENCONN TECHNOLOGY CO.,LTD.</b>		文件編號	PS-N07-0063
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文件變更履歷表					
版次	制 / 修 / 廢原因			頁次	制 / 修 / 廢日期
A/0	新制產品規範			全部	2018/05/08
A/1	7.3 項增加鐵耳保持力 14.7N Min. per pin.			第 4 頁	2019/01/04
A/2	變更 4.2 項塑膠、端子材料說明；增加 CAP 和鐵耳材料說明			第 2 頁	2019/05/17
核 準	李輝	審 查	邱國延	制 定	鍾湖南
日 期	2019/05/17	日 期	2019/05/17	日 期	2019/05/17

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	2 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

### 1.0 SCOPE (範圍) :

This specification covers the requirements for product performance and test methods of the GPZC214 Series connector. Product shall be of the design, construction and physical dimensions specified in the applicable product drawing. (本規格書涵蓋了GPZC214 Series連接器的產品性能要求和測試方法。產品應符合適用產品圖面中規定的設計、結構、尺寸等。)

### 2.0 APPLICABLE DOCUMENTS (適用文件) :

The following document, of the latest issue in effect at the time of performance of the qualification tests, shall form a part of this specification to the extent specified herewith. (本版本中以下文件，在性能鑒定試驗時生效，將構成本規範的一部分。)

EIA-364 Test methods for electrical connectors. (EIA-364 電器連接器的測試方法)

### 3.0 PRODUCT DESCRIPTION AND PART NUMBER (產品描述和型號) :

Product description (產品描述)	Part No. (型號)
PITCH 2.20mm CMOD SERIES CONNECTOR	GPZC214-XXXXB001C1ZX

### 4.0 PROPERTY (特性) :

#### 4.1 Ratings (額定值) :

4.1.1 Current Rating (額定電流) : 3A (AC / DC).

4.1.2 Voltage Rating (額定電壓) : 250V AC.

4.1.3 Operating Temperature Range (工作溫度) : -40°C~105°C.

4.1.4 Operating Humidity (工作濕度) : 95% Max.

#### 4.2 Materials (材料) :

4.2.1 Housing (塑殼) : LCP+GF; UL 94V-0; Color: Black.

4.2.2 CAP (帽子) : LCP+GF; UL 94V-0; Color: Black.

4.2.3 Contact (端子) : Copper alloy, Tensile Strength: 430~510MPa,  
Conductivity Class (% IACS): 22% Min.

Stabilizer (鐵耳) : Copper alloy, Tensile Strength: 430~510MPa,  
Conductivity Class (% IACS): 22% Min.

Finish (表面處理) : Matte Tin plated over all 80~160u";

Nickel underplated over all 50u"~100u".

4.2.4 Harmful Material Should Be Compliant to GREENCONN Standards (Per QPNQ0817).

有害物質應符合格菱公司的標準(參考文件QPNQ0817)。

### 5.0 TEST CONDITION (測試條件) :

5.1 Temperature range (溫度範圍) : 15°C to 35°C.

5.2 Humidity range (濕度範圍) : 25% RH to 75%RH.

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	3 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

## 6.0 STORAGE CONDITION (儲藏條件) :

6.1 Temperature range (溫度範圍) : 25±5°C.

6.2 Humidity range (濕度條件) : ≤ 70%.

6.3 Shelf life (存儲期限) : 6 Months.

## 7.0 TEST METHODS AND REQUIREMENTS (測試方法和要求) :

### 7.1 GENERAL EXAM (一般測試) :

Test item (測試項目)	Test procedure (測試流程)	Condition of test specimens (測試狀態)	Requirement (要求)
1 Examination of Product (產品檢查)	Per EIA-364-18 Visual and functional inspection. (依照 EIA-364-18 外觀和功能性檢查)		Meet requirements of product drawing. No evidence of physical damage (符合圖面要求, 無物理損傷)

### 7.2 ELECTRICAL PERFORMANCE (電氣性能) :

Test item (測試項目)	Test procedure (測試程)	Condition of test specimens (測試狀態)	Requirement (要求)
1 Low level contact resistance (低階接觸阻抗)	Per EIA-364-23 Subject mated connector with a max. voltage of 20mV and current of 100mA. (依照 EIA-364-23 在配對連接器上施加最大 20mV電壓和100mA電流。)	Mated (配對)	Initial = 8mΩ Max. Final= 16mΩ Max.
2 Dielectric Withstanding Voltage (耐电压)	Per EIA-364-20 Subject mated connector with a. voltage of 1000V AC for 1 minute between adjacent terminals. (依照EIA-364-20 在配對好的連接器的相鄰兩個端子上接通 1000V的交流電, 持續1分鐘。)	Mated (配對)	No Breakdown. leakage Current: 0.5mA Max. (無擊穿, 漏電電流: 0.5mA 最大)
3 Insulation Resistance (絕緣阻抗)	Per EIA-364-21 Subject mated connector with a. voltage of 500V DC for 2 minutes between adjacent terminals. (依照 EIA-364-21, 在配對好的連接器的相鄰兩個端子上接通 500V 的直流電, 持續 2 分鐘。)	Mated (配對)	1000MΩ Min.

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	4 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

4	Current Rating /Temperature Rise (額定電流/溫升)	Per EIA-364-70 Measure the temperature rise at the rated current. Ambient conditions: still air at lab ambient, 3A Per contact. (依照 EIA-364-70, 在額定電流下溫升測試。環境要求: 實驗室環境下, 3A每pin。)	Mated (配對)	Temperature rise : $\Delta T60^{\circ}\text{C}$ max. (溫升 : $\Delta T60^{\circ}\text{C}$ Max.)
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### 7.3 MECHANICAL PERFORMANCE (機械性能測試) :

Test item (測試項目)	Test procedure (測試流程)	Condition of test specimens (測試狀態)	Requirement (要求)	
1	Mating Force (插入力)	Per EIA-364-13 Insert a mating side at a rate of 25.4mm/ minute. (依照 EIA-364-13以25.4mm/ minute的速度插入對插件。)	Mated (配對)	8P 33.6N MAX. 16P 47.2N MAX. 24P 60.8N MAX. 40P 70N MAX.
2	Unmating Force (拔出力)	Per EIA-364-13 Withdrawal a mating side at a rate of 25.4mm/ minute. (依照EIA-364-13以25.4mm/ minute的速度拔出對插件。)	Mated (配對)	8P 18.6N MAX. 16P 32.2N MAX. 24P 45.8N MAX. 40P 70N MAX.
3	Contact/ Weld tap Retention Force (端子/鐵耳 保持力)	Per EIA-364-37 The end of a post shall be pushed in a perpendicular to base housing at a constant speed of 25.4mm/ minute. (依照 EIA-364-37, 垂直與基殼方向上以 25.4mm/ minute 恒定的測試速度推動端子末端。)		Contact 6.86N Min. per pin. Weld tap 14.7N Min. per pin. (端子每 PIN 保持力 6.86N 最小; 鐵耳每 PIN 保持力 14.7N 最小)
4	Durability (耐久度)	Per EIA-364-09 Perform 100 cycle Mating/ unmating at a rate of 25.4mm/ minute. (依照EIA-364-09以 25.4mm/ minute 勻速速度循環插拔 100次。)		No evidence of physical damage 無物理損傷現象

<b>Greenconn®</b>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	5 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

5	Durability (Preconditioning) (耐久性(預處理))	Per EIA-364-09 Perform 20 cycle Mating/ unmating at a rate of 25.4mm/ minute. (依照EIA-364-09以25.4mm/ minute勻速速度循環插拔20次。)		No evidence of physical damage 無物理損傷現象
6	Reseating (修整)	Manually Mating/ unmating the connector with module board . Perform 3 such cycles. (手動插拔連接器，重複3次。)		No evidence of physical damage 無物理損傷現象
7	Vibration (機械振動)	Mated connectors and subject to the following shock conditions. Passing DC 1mA current during the test. Per EIA-364-28 Condition III, Frequency range 10Hz-2000Hz-10Hz, 147.1m/s <sup>2</sup> , (15g), 3 axis, 8 sweeps /direction. (配對狀態下，测试过程中通过直流1mA的电流，依照EIA-364-28條件III，頻率範圍：10Hz-2000Hz-10Hz,147.1m/s <sup>2</sup> , (15g)，3軸，8掃/方向。)	Mated (配對)	No evidence of physical Damage, Discontinuity < 1 microsecond (無物理損傷現象，間斷性<1微秒。)
8	Mechanical Shock (機械衝擊)	Mated connectors and subject to the following shock conditions. Passing DC 1mA current during the test. Per EIA-364-27 Condition C, Profile: Half-Sine 980m/s <sup>2</sup> , (100g), Duration: 6ms, 3 axis of 6 directions. (配對狀態下，测试过程中通过直流1mA的电流，依照 EIA-364-27 條件C，半正弦波，980m/s <sup>2</sup> , (100g)，持續時間：6ms，3個軸6個方向。)	Mated (配對)	No evidence of physical Damage, Discontinuity < 1 microsecond (無物理損傷現象，間斷性<1微秒。)

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	6 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

7.4 ENVIRONMENTAL PERFORMANCE (環境性能) :

Test item (測試項目)		Test procedure (測試流程)	Condition of test specimens (測試狀態)	Requirement (要求)
1	Thermal Shock (冷熱衝擊)	Per EIA-364-32, Mated connectors: expose to 5cycles of: (依照EIA-364-32, 配對狀態下, 執行如下條件的5次循環) Temperature °C      Duration(Minutes) 溫度                      持續時間(分) -40 +0/-5                30 Min. +25 +10/-5               5 Max. +105 +3/-0               30 Min. +25 +10/-5               5 Max.	Mated (配對)	No evidence of physical damage 無物理損傷現象
2	Temperature life(高溫壽命測試)	Per EIA-364-17 Test Condition: 105°C, 1008hours. (依照EIA-364-17, 測試條件: 105°C, 1008小時。)	Mated (配對)	No evidence of physical damage 無物理損傷現象
3	Temperature Life (Preconditioning) (高溫壽命測試(預處理))	Per EIA-364-17 Test Condition: 105°C, 504hours. (依照 EIA-364-17, 測試條件: 105°C, 504 小時。)	Mated (配對)	No evidence of physical damage 無物理損傷現象
4	Thermal cycling (熱循環測試)	Per EIA-364-1000, Test Group 5 Cycle the connector between 15 ±3°C. and 85±3°C, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 500 such cycles. (依照EIA-364-1000, 測試組5, 連接器在15 ±3°C. 和 85±3°C之間循環, 部件上測試的溫度。上升率最少2°C每分鐘, 持續時間應確保端子達到溫度極限(至少5分鐘)。濕度不受控。進行500次循環操作。)	Mated (配對)	No evidence of physical damage 無物理損傷現象

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	7 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

5	Thermal disturbance (热扰动)	Per EIA-364-1000, Test Group 4 Cycle the connector between 15 °C± 3 °C and 85 °C±3°C , as measured on the part.Ramps should be a minimum of 20C./minute, and dwell times should insure that the contacts reach the temperature extremes (a minimumof 5 minutes). Humidity is not controlled. Perform 10 such cycles. (依照 EIA-364-1000, 測試組4, 連接器在15 ±3 °C. 和 85±3°C之間循環, 部件上測試的溫度。上升率最少2°C每分鐘, 持續時間應確保端子達到溫度極限 (至少5分鐘)。濕度不受控。進行10次循環操作。)	Mated (配對)	No evidence of physical damage 無物理損傷現象
6	Cyclic temperature & humidity (循環溫濕度測試)	EIA-364-31 method III without conditioning, initial measurements,cold shock and vibration . (Except cycle the connector between 25±3°C at 80 %±3%RH and 65±3 °C at 50 % ±3%RH. Ramp times should be 0.5 hour and dwell times should be 1.0 hour.Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles.) (EIA-364-31 方法 3 無條件處理, 初始測試, 冷衝擊和振動。(除連接器或插座在 25±3°C 80 %±3%相對濕度和 65±3 °C 50 % ±3%相對濕度之間循環) 上升時間為 0.5 小時, 停留時間 1.0 小時, 停留時間從溫濕度達到規定值並穩定是開始計算。循環操作 24 次。)	Mated (配對)	No evidence of physical damage 無物理損傷現象
7	Salt Spray (鹽霧)	Per EIA-364-26 Test Condition: Temperature: 35±2°C; Atmosphere: 5% salt-solution. Duration:12 hours exposure (依照EIA-364-26 測試條件: 35±2 °C,12小時, 5% 鹽溶液。)		No evidence of physical damage 無物理損傷現象

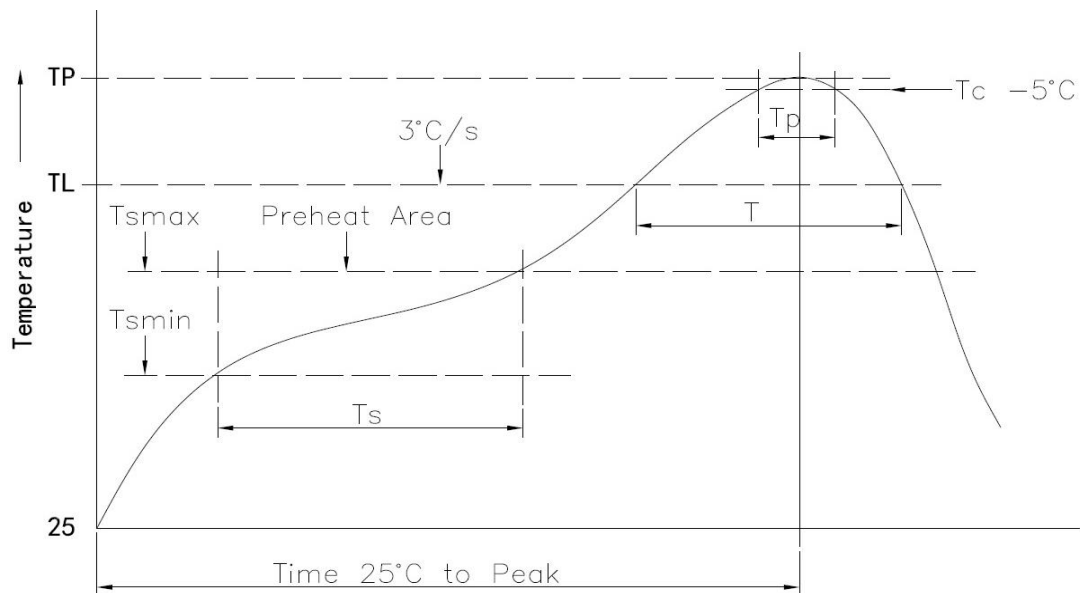
<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	8 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

8	Solder ability Test (可焊性測試)	Per EIA-364-71 Test Temperature: 245±3°C, 3~5sec. (依照EIA-364-71 測試溫度：245±3°C, 3~5秒)		After exposure, the contact solder tails shall have a minimum of 95% solder coverage. (風乾後,端子焊錫覆蓋率至少95%。)
9	Thermal Aging (耐熱老化性)	Per JESD22-B102 Table 4 Test Condition: Altitude 0 - 2,000 feet, Steam Temperature 93+3°C/-5°C, 8 hrs. (依照JESD22-B102表4 測試條件：海拔0-2000英尺,飽和蒸汽溫度93+3°C/-5°C, 8 小時。)		After exposure, the contact solder tails shall have a minimum of 95% solder coverage. (風乾後,端子焊錫覆蓋率至少95%。)
10	Resistance to Soldering Heat (焊接耐熱性)	Per EIA-364-56 Soldering iron method Solder Temp.:380±10°C/3~5 seconds. (依照EIA-364-56, 手工焊接, 焊接溫度：380±10°C/ 3~5 秒) Reflow:Please see recommended profile Pre Heat: 150°C~200°C/60 to 120 seconds Heat: 217 °C;60-150 seconds Peak Temp.: 270±5°C/7~9 seconds. (回流焊：依照如下條件, 預加熱：150°C~200°C / 60 -120 秒；加熱：217°C;60-150 秒；最高溫度：270±5°C/7~9 秒)		No evidence of physical damage 無物理損傷現象



<b>Greenconn®</b>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	9 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

### 8.0 INFRARED REFLOW CONDITION (LEAD-FREE)( 紅外回流焊條件 (無鉛) ):



Profile Feature (特性)	Pb-Free Assembly (無鉛組裝)
Preheat & Soak (預熱&浸泡) Temperature min (T <sub> Amin</sub> ) (最低溫度) Temperature max (T <sub>smax</sub> ) (最高溫度) Time (T <sub> Amin</sub> to T <sub>smax</sub> ) (ts) (時間)	150°C~200°C/60 to 120 seconds
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> ) (平均溫升率)	3 °C/second max.
Liquidous temperature (TL) (液化溫度) Time at liquidous (tL) (液化時間)	217 °C 60-150 seconds
Peak package body temperature (T <sub>p</sub> )* (封裝最高溫度)	270±5°C /7~9 seconds
Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>c</sub> ) (在指定等級溫度5°C內的時間)	20~40seconds
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> ) (平均溫度下降速率)	6 °C/second max.
Time 25 °C to peak temperature (25 °C至峰值溫度的時間)	8 minutes max.

- (a) Per IPC/JEDECJ-SID-020 Clause 5.6. (依照 IPC/JEDECJ-SID-020 中 5.6 小節.)
- (b) Test Condition: Test connector shall be placed on the p.c. board. (測試條件：須在 PCB 板上測試連接器。)
- (c) Temperature condition graph: Temperature on board pattern side. (溫度條件曲線圖：在板子圖案面的溫度。)
- (d) Thickness of steel mesh: 0.13mm Min. (鋼網厚度：最小 0.13mm.)
- (e) Lead-free Process : DURATION = 2 TIMES. (無鉛製程：持續=2 回。)

<b>Greenconn</b> <sup>®</sup>	GPZC214 SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0063	PAGE:	10 / 10
		DATE:	2019 / 05 / 17	REV.	A/2

### 9.0 PRODUCT QUALIFICATION AND TEST SEQUENCE (產品認證和測試序列):

Test Item	A	B	C	D	E	F	G	H	I	J	K	L
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5
Examination of Product (產品檢查)	1,12	1,14	1,10	1,10	1,10	1,9	1,11	1	1,4	1,3	1,9	1,15
Low level contact resistance (低階接觸阻抗)	2,7,9	2,7,9,11	2,5,7,9	2,5,7,9	2,5,7,9	2,4,6,8	3,9				2,8	2,6,8,14
Dielectric Withstanding Voltage (耐电压)	5,11	5,13					2,10				4,6	
Insulation Resistance (絕緣阻抗)	4,10	4,12									3,7	
Current Rating /Temperature Rise (額定電流/溫升)										2		
Mating Force (插入力)							4,7					3,9,12
Unmating Force (拔出力)							5,8					4,10,13
Contact Retention Force (端子保持力)								2				
Durability (耐久度)							6					11
Durability (Preconditioning) (耐久性(預處理))	3	3	3	3	3	3						
Reseating (修整)	8	10		8	8	7						7
Vibration (機械振動)			6									
Mechanical Shock (機械衝擊)			8									
Thermal Shock (冷熱衝擊)		6										
Temperature life (高溫壽命測試)	6											
Temperature Life (Preconditioning) (高溫壽命測試(預處理))			4	4	4							5
Thermal cycling (熱循環測試)					6							
Thermal disturbance (熱扰动)				6		5						
Cyclic temperature & humidity (循環溫濕度測試)		8										
Resistance to Soldering Heat (焊接耐熱性)												
Salt Spray (鹽霧)											5	
Solder ability Test (可焊性測試)									3			
Thermal Aging (耐熱老化性)									2			