 GREENCONN TECHNOLOGY CO.,LTD.		文件編號	PS-N07-0025
		版次	A/1
類別	CSM SERIES PRODUCT SPECIFICATION	頁次	1 / 7
PS		制定部門	研發單位
		公佈日期	2020年01月03日

文件變更履歷表					
版次	制 / 修 / 廢原因			頁次	制 / 修 / 廢日期
A/0	新增產品規範			全部	2018/3/12
A/1	細化了 4.2.1/7.0 項說明,增加 7.3 第七項手工焊接條件要求,增加了 9.0 備注欄內容			全部	2020/01/03
核準	李輝	審查	邱國延	制定	劉先平
日期	2020/01/03	日期	2020/01/03	日期	2020/01/03

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1.0 SCOPE (範圍) :

This specification covers the requirements for product performance and test methods of the CSM 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CSM 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 5.08mm FEMALE CONNECTOR	CSM SERIES

4.0 PROPERTY (特性) :

4.1 Ratings (額定值) :

4.1.1 Current Rating (額定電流) : 7.9A (AC / DC) Per contact.

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

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

4.1.4 Operating Humidity (工作濕度) : 85% Max.

4.2 Materials (材料) :

4.2.1 Housing (塑殼) : High Temperature Thermoplastic(高溫熱塑性塑膠): LCP, Nylon 6T, Nylon 9T or Nylon 46, flame retardant 94V-0 per UL-94; or other high performance resin.

Thermoplastic(熱塑性塑膠):PBT or Nylon 66,flame retardant 94V-0 per UL-94; or other high performance resin.

4.2.2 Contact (端子) : Brass, Phosphor Bronze or other equivalent copper alloys.

Finish (表面處理) : See plating drawing.

4.2.3 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) : 20°C to 30°C.

5.2 Humidity range (濕度範圍) : 30% RH to 70%RH.

6.0 STORAGE CONDITION (儲藏條件) :

6.1 Temperature range (溫度範圍) : 5°C ~30°C.

6.2 Humidity range (濕度條件) : ≤65%.

6.3 Shelf life (存儲期限) : 1 Year.

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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. Visual: No damage (符合圖面要求, 目視:無損壞)

7.2 ELECTRICAL PERFORMANCE (電氣性能) :

Test item (測試項目)	Test procedure (測試流程)	Condition of test specimens(測 試狀態)	Requirement (要求)
1 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。)	Mating (配對)	Initial =30mΩ Max. Final = 50mΩ Max. (測試前最大 30 毫歐; 測試后最大 50 毫歐)
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。)	Mating (配對)	No Breakdown. leakage Current: 5mA Max. (無擊穿, 漏電 電流: 5mA 最大)
3 Insulation Resistance (絕緣阻抗)	Per EIA-364-21 Subject mated connector with a. voltage of 500V DC 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。)		1000MΩ Min. (最小 1000 兆歐)

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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 card at a rate of 25.4mm/ minute. (依照EIA-364-13以25.4mm/ minute的速度插入插頭。)	Mating (配對)	7.00N Max. per pin. (最大 7N 每 PIN)
2 Unmating Force (拔出力)	Per EIA-364-13 Withdrawal a card at a rate of 25.4mm/ minute. (依照EIA-364-13以25.4mm/ minute的速度拔出插頭。)	Mating (配對)	0. 5N Min. per pin. (最小 0.5N 每 PIN)
3 Contact Retention Force (保持力)	Per EIA-364-37 The end of a post shall be pulled 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 恒定的測試速度拉端子末端。)		Before high Temperature: \geq 9.8N per pin. (高溫前: \geq 9.8N/PIN)
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。)		Visual: No damage (目視:無損壞)

7.4 ENVIRONMENTAL PERFORMANCE (環境性能) :

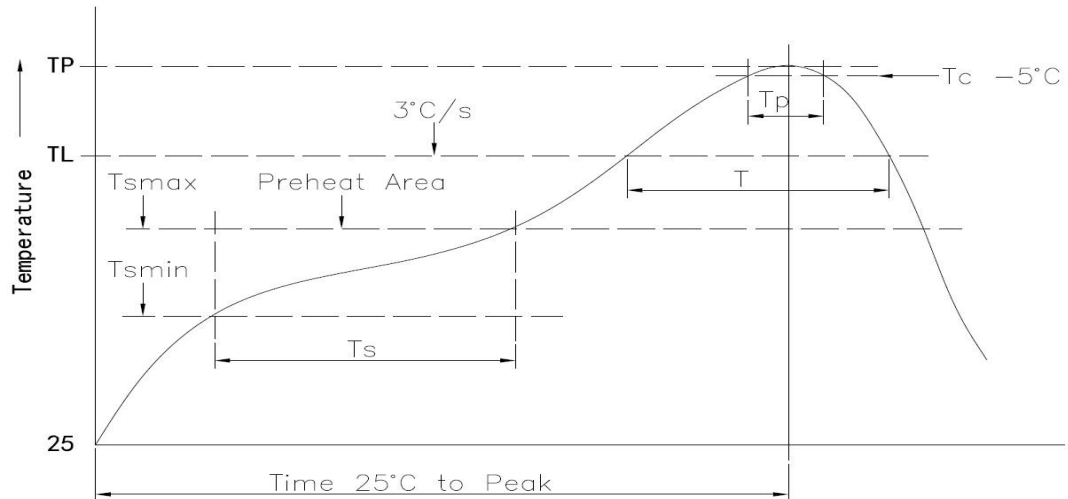
Test item (測試項目)	Test procedure (測試流程)	Condition of test specimens (測試 狀態)	Requirement (要求)												
1 Thermal Shock (冷熱衝擊)	Per EIA-364-32, Mated connectors: expose to 5cycles of: (依照EIA-364-32,執行如下條件的5次循環) <table border="0" style="margin-left: 20px;"> <tr> <td>Temperature^{°C}</td> <td>Duration(Minutes)</td> </tr> <tr> <td>溫度</td> <td>持續時間(分)</td> </tr> <tr> <td>-40^{°C} +0/-5</td> <td>30 Min.</td> </tr> <tr> <td>+25^{°C} +10/-5</td> <td>5 Max.</td> </tr> <tr> <td>+105^{°C} +3/-0</td> <td>30 Min.</td> </tr> <tr> <td>+25^{°C} +10/-5</td> <td>5 Max.</td> </tr> </table>	Temperature ^{°C}	Duration(Minutes)	溫度	持續時間(分)	-40 ^{°C} +0/-5	30 Min.	+25 ^{°C} +10/-5	5 Max.	+105 ^{°C} +3/-0	30 Min.	+25 ^{°C} +10/-5	5 Max.		Visual: No damage (目視:無損壞)
Temperature ^{°C}	Duration(Minutes)														
溫度	持續時間(分)														
-40 ^{°C} +0/-5	30 Min.														
+25 ^{°C} +10/-5	5 Max.														
+105 ^{°C} +3/-0	30 Min.														
+25 ^{°C} +10/-5	5 Max.														

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2	Temperature life (溫度壽命)	Per EIA-364-17 Test Condition: 105°C, 96hours. (依照EIA-364-17,測試條件: 105°C, 96小時。)		Visual: No damage (目視:無損壞)
3	Humidity Test (恒溫恒濕)	Per EIA-364-31 Test Condition: 40±2°C, 90-95% RH, 96 hrs. (依照 EIA-364-31, 測試條件: 40±2°C, 90-95% RH,96 小時。)		Visual: No damage (目視:無損壞)
4	Salt Spray (鹽霧)	Per EIA-364-26 Test Condition: Temperature: 35±2°C; Atmosphere: 5% salt-solution. Duration: 16 hours exposure for gold area; 8 hours exposure for tin area. (依照 EIA-364-26 測試條件: 35±2°C, 錫區域: 8 小時; 金區域: 16 小時, 5% 鹽 溶液。)		Visual: No damage (目視:無損壞)
5	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)		solder coverage: 95% minimum (吃錫覆蓋須達 到95%以上)
6	Resistance to Soldering Heat (焊接耐熱 性)	Reflow(Apply to High Temperature Thermoplastic): Please see recommended profile. Pre Heat: 150°C~200°C/60 to 120 seconds Heat: 217 °C;60-150 seconds Peak Temp.: 260±5°C/5~15 seconds. 回流焊(適用於高溫熱塑性塑膠): 預加 熱: 150°C~200°C /60-120 秒; 加熱: 217 °C;60-150 秒; 最高溫度: 260±5°C/5~15 秒)		Visual: No damage to insulator material (目視:絕緣體材 料無損壞)
7	manual welding (手工焊接)	Per EIA-364-56 Soldering iron method Solder Temp.: 380±10°C/3~5 seconds. (依照EIA-364-56, 手工焊接溫度: 380±10°C/3~5秒)		Visual: No damage to insulator material (目視:絕緣體材 料無損壞)

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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 (最低溫度) Temperature max (最高溫度) Time (時間)	150°C~200°C/60 to 120 seconds
Average ramp-up rate (平均溫升率)	3 °C/second max.
Liquidus temperature (液化溫度) Time at liquidus (液化時間)	217 °C 60-150 seconds
Peak package body temperature (封裝最高溫度)	260±5°C/5~15 seconds
Time within 5 °C of the specified classification temperature (在指定等級溫度5°C內的時間)	20~40seconds
Average ramp-down rate (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: 0.15mm Min. (鋼網厚度：最小 0.15mm。)

(e) Lead-free Process : DURATION = 2 TIMES. (無鉛製程：持續=2 回。)

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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
Sample Size	3	3	3	3	5	3	3	3
Examination of Product (產品檢查)	1,5	1,5	1,9	1,7	1,9	1	1,3	1,3
Low level contact resistance (低階接觸阻抗)	2,4	2,4	2,8		2,8			
Insulation Resistance (絕緣阻抗)			3,7	2,5				
Dielectric Withstanding Voltage (耐電壓)			4,6	3,6				
Temperature Life (溫度壽命)		3						
Humidity Test (恒溫恒濕測試)				4				
Thermal shock (冷熱衝擊)	3							
Solder ability (可焊性)								2
Resistance to Soldering Heat (焊接耐熱性)							2	
Mating Force (插入力)					3,7			
Unmating Force (拔出力)					4,6			
Contact Retention Force (保持力)						2		
Durability (耐久)					5			
Salt Spray (鹽霧)			5					

Note: the thermoplastic has no need for test group G.

備注: 熱塑性塑膠無需做 G 群組測試