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類別	GBE SERIES PRODUCT SPECIFICATION	頁次	1 / 8
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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	初次發行		全部	2018/07/24
A/1	Modify Unmating Force		4/8	2018/08/22
A/2	依據 ERNI 規格做調整		全部	2019/01/16
A/3	新增額定電流/溫升測試		3/8	2019/06/14
A/4	修正正弦掃頻,衝擊,半弦測試流程;新增高頻電氣標		4,5,6/8	2021/12/13
A/5	修改 5,6 項測試條件代碼		4/8	2022/01/05
B/0	文字內容修改		8/8	2022/03/29
B/1	修改近端、遠端串擾標準大小		6/8	2022/04/18
核准		審查	制定	賴昌僥
日期		日期	日期	2022/04/18

Greenconn [®]	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	2 / 9
		DATE:	2022/04/18	REV.	B / 1

1.0 SCOPE (范围) :

This specification covers the requirements for product performance and test methods of the GBE 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GBE 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 1.27mm BTB MALE CONNECTOR	GBE SERIES

4.0 PROPERTY (特性) :

4.1 Ratings (額定值) :

4.1.1 Current Rating (額定電流) : 1.7 Amp For 2x6 Pin Product , 0.8 Amp For Product

With Other Pin Numbers.

4.1.2 Operating Voltage (工作電壓) : 30V DC.

4.1.3 Operating Temperature Range (工作溫度) : -55°C~125°C.

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

4.2 Materials (材料) :

4.2.1 Housing (塑殼) : LCP, flame retardant 94V-0 per UL-94; or other high performance resin.

4.2.2 Contact (端子) : 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.

Greenconn [®]	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	3 / 9
		DATE:	2022/04/18	REV.	B / 1

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)	25mΩ Max
2 Dielectric Withstanding Voltage (电压)	Per EIA-364-20 Subject mated connector with a. voltage of 500V 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500V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。)		10000MΩ Min.
4 Current Rating /Temperature Rise (額定電流/ 溫升)	Per EIA-364-70 Measure the temperature rise at the rated current. Environmental requirement: In lab environment, 2X6pin is in series connection with 1.7A, from 2X7pin to 2X40 pin is in in series connection with 0.8A. (依照EIA-364-70, 在額定電	Mated (配對)	Temperature rise : Δ T30°C max. (溫升: Δ T30°C Max.)

Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	4 / 9
		DATE:	2022/04/18	REV.	B / 1

		流下溫升測試。環境要求：實驗室環境下，2X6PIN串聯通電流1.7A,2X7PIN~2X40PIN串聯通電流0.8A.		
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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)	0.5N Max. per 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的速度出插頭。)	Mating (配對)	0.5N Max. per 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。)		0.10N Min. per pin.
4 Durability (耐久度)	Per EIA-364-09 Perform 500 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500次。)		No evidence of physical damage 無物理損傷現象
5 Vibration, sine (正弦掃頻)	Mated connectors and subject to the following shock conditions. Passing DC 1mA current during the test. Per EIA-364-28 Condition IV, Frequency range 10Hz-2000Hz-10Hz, 196.1m/s ² , (20g). (配對狀態下, 测试过程中通过直流1mA的电流, 依照EIA-364-28 条件IV, 频率範圍: 10Hz-2000Hz -10Hz,196.1m/s ² , (20g)。)	Mating (配對)	1 μ s Max.
6 Shock, half sine (衝擊, 半弦)	Mated connectors and subject to the following shock conditions. Passing DC 1mA	Mating (配對)	1 μ s Max.

Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	5 / 9
		DATE:	2022/04/18	REV.	B / 1

	current during the test. Per EIA-364-27 Condition A, Profile: Half-Sine 490m/s ² , (50g), Duration: 11ms, 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A, 半正弦波, 490m/s ² , (50g), 持續時間: 11ms, 3個軸6個方向。)		
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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) Temperature °C Duration(Minutes) 溫度 持續時間(分) -55°C +0/-5 30 Min. +25°C +10/-5 5 Max. +125°C +3/-0 30 Min. +25°C +10/-5 5 Max.		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: 125°C, 96hours. (依照EIA-364-17,測試條件: 125°C, 96小時。)		No evidence of physical damage 無物理損傷現象
3 Humidity Test(濕度測 試)	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。)		No evidence of physical damage 無物理損傷現象
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。)		No evidence of physical damage 無物理損傷現象
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)		After exposure, the contact solder tails shall have a minimum of 95% solder coverage.

Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	6 / 9
		DATE:	2022/04/18	REV.	B / 1

			(風乾後，端子焊錫覆蓋率至少95%。)
6	Resistance to Soldering Heat (焊接耐熱性)	<p>Per EIA-364-56 Soldering iron method Solder Temp.: 350°C/3.5 seconds Max. Reflow(Only suitable for the materials with high temperature resistance): Please see recommended profile. Pre Heat: 150°C~200°C/60 to 120 seconds Heat: 217 °C;60-150 seconds Peak Temp.: 260°C/10 seconds Max. (依照EIA-364-56，手工焊接溫度：350°C/3.5秒最大，回流焊(適用於耐高溫材料)：預加熱：150°C~200°C /60-120秒；加熱：217 °C;60-150 秒；最高溫度：260°C/10秒最大。)</p>	<p>No evidence of physical damage 無物理損傷現象</p>

8.0 HIGH SPEED ELECTRICAL(高頻電氣)

Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	7 / 9
		DATE:	2022/04/18	REV.	B / 1

High Speed Electrical (高頻電氣)			
Item (項目)		Requirement (要求)	Standard (標準)
Differential insertion loss (插入損耗)		100MHz~3GHz 3GHz~4.1GHz	>-0.35 dB >-0.70 dB
Differential return loss (回波損耗)		100MHz~4.1GHz	<-12 dB
Near-end crosstalk NEXT (近端串擾)	AA_VV	100MHz~4.1GHz	<-20 dB
Near-end crosstalk NEXT (近端串擾)	AAVVX	100MHz~4.1GHz	<-20 dB
Near-end crosstalk NEXT (近端串擾)	AAXVV	100MHz~4.1GHz	<-30 dB
Far-end crosstalk FEXT (遠端串擾)	AA_VV	100MHz~4.1GHz	<-20 dB
Far-end crosstalk FEXT (遠端串擾)	AAVVX	100MHz~4.1GHz	<-20 dB
Far-end crosstalk FEXT (遠端串擾)	AAXVV	100MHz~4.1GHz	<-30 dB

Remarks (備註) :

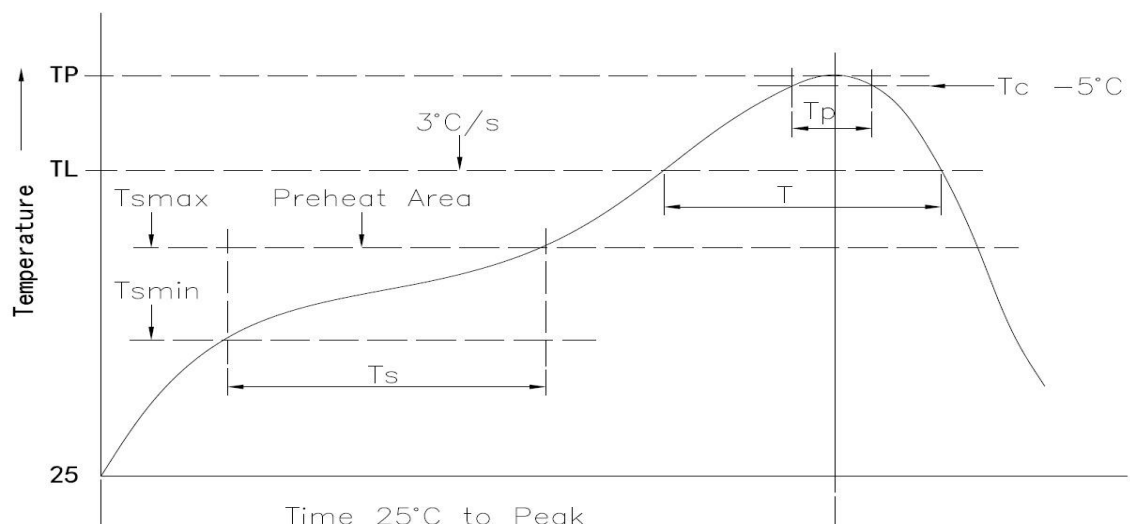
A:Aggressor (干擾源)

V:Victim (被干擾源)

X:Ground (接地)

AA_VV:AA and VV in opposite row (AA 和 VV 在對排)

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



Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	8 / 9
		DATE:	2022/04/18	REV.	B / 1

Profile Feature (特性)	Pb-Free Assembly (無鉛組裝)
Preheat & Soak (預熱&浸泡) Temperature min (T _{min}) (最低溫度) Temperature max (T _{max}) (最高溫度) Time (T _{min} to T _{max}) (ts) (時間)	150°C~200°C/60 to 120 seconds
Average ramp-up rate (T _{max} to T _p) (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 _p)* (封裝最高溫度)	260°C/10seconds Max
Time (t _p)** within 5 °C of the specified classification temperature (T _c) (在指定等級溫度5°C內的時間)	20~40seconds
Average ramp-down rate (T _p to T _{max}) (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。)

10.0 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)	1,3	1,7	1,6	1,10	1,9	1,5	1	1
Low level contact resistance (低階接觸阻抗)		2,6	2,5	2,9	2,8	2,4		
Insulation Resistance (絕緣阻抗)				3,8	3,7			

Greenconn®	GBE SERIES PRODUCT SPECIFICATION	FILE NO.	PS-N07-0068	PAGE:	9 / 9
		DATE:	2022/04/18	REV.	B / 1

Dielectric Withstanding Voltage (耐電壓)				4,7	4,6			
Temperature rise (溫升測試)	2							
Mating Force/ Unmating Force (插入拔出力)		3,5						
Durability (耐久)		4						
Contact Retention Force (保持力)								2
Vibration, sine (正炫掃頻)			3					
Shock,half sine (衝擊, 半炫)			4					
Thermal shock (冷熱衝擊)				5				
Humidity Test (濕度測試)				6				
Temperature Life (高溫壽命)					5			
Salt Spray (鹽霧)						3		
Solder ability (可焊性)							2	