	TYPE	PRODUCT SPECIFICATION	NUMBER	GS-12-148 (was GES-12-148)	
	TITLE			PAGE	REVISION
0.8mm BergStak Product Specification			1 of 7	C	
			AUTHORIZED BY	DATE	
			David Teng	03/05/04	
			CLASSIFICATION		
			CONFIDENTIAL		

1.0 **OBJECTIVE**

This specification defines the performance, test, quality and reliability requirements of 0.8mm pitch BergStak product.

2.0 **SCOPE**

This specification is applicable to the termination characteristics of 0.8mm pitch BergStak family of products, which provides electrical connections between parallel mounted boards.


3.0 **GENERAL**

This document is composed of the following sections:

PARAGRAPH	TITLE
1.0	OBJECTIVE
2.0	SCOPE
3.0	GENERAL
4.0	APPLICABLE DOCUMENTS
4.1	Standards and Specifications
5.0	REQUIREMENTS
5.1	Qualification
5.2	Material
5.3	Finish
5.4	Design and Construction
5.5	Rating
6.0	PERFORMANCE
6.1	Performance
6.2	Test Methods
6.3	Test Sequence

4.0 **APPLICABLE DOCUMENTS**

- 4.1 Standards and Specifications
 - 4.1.1 MIL-STD-202: Test methods for electronic and electrical component parts.
 - 4.1.2 MIL-STD-1344: Test methods for electronic connectors.
 - 4.1.3 EIA 364: Electronic connector/socket test procedures including environmental classifications.
 - 4.1.4 QQ-N-290: Nickel plating.
 - 4.1.5 QQ-N-533: BeCu strip.
 - 4.1.6 MIL-G-45204: Gold plating electrodeposited.
 - 4.1.7 MIL-C-45662: Calibration system requirements.

	TYPE	PRODUCT SPECIFICATION		NUMBER	GS-12-148 (was GES-12-148)	
	TITLE			PAGE	REVISION	
0.8mm BergStak Product Specification			2 of 7	C		
			AUTHORIZED BY	DATE		
			David Teng	03/05/04		
			CLASSIFICATION			
			CONFIDENTIAL			

5.0 REQUIREMENTS

5.1 Qualification

Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

5.2 Material

5.2.1 Housing: All housing materials shall be rated flame retardant 94V-0 in accordance with UL-94. The housing shall be glass filled, Liquid Crystal Polymer (LCP), or equivalent.

5.2.2 Receptacle Terminal: Beryllium Copper.

5.2.3 Plug Terminal: Brass.

5.2.4 Metal Cap: Stainless steel.

5.2.5 Hold Down: Brass.

5.3 Finish

The finish for applicable components shall be specified in product drawings with plating area, plating material and plating thickness.

5.4 Design and Construction

The connector shall be a multi-piece assembly having two rows of contacts with surface mount solder tail terminations for installation on printed wiring board.

5.5 Rating

Voltage Rating	100V AC
Current Rating	0.5A Max.
Temperature Range	-40 ~ 85
Storage Temperature Range	-45 ~ 90


6.0 PERFORMANCE

Unless otherwise specified, the performance of connectors given in the attached list shall satisfy the values specified in Table 6.1. The performance test shall follow the test method and the test sequence given in Table 6.2 & 6.3 under the environmental conditions listed below. All connectors to be tested shall be free of defects such as burr, flaw, void, blister etc. which will affect the life and application of connectors.

•Temperature ----- 15 ~ 35

•Humidity ----- 25% ~ 85%


•Pressure ----- 86 ~ 106KPa

 <small>TITLE</small>	<small>TYPE</small> PRODUCT SPECIFICATION	<small>NUMBER</small> GS-12-148 (was GES-12-148)	
		<small>PAGE</small> 3 of 7	<small>REVISION</small> C
0.8mm BergStak Product Specification		<small>AUTHORIZED BY</small> David Teng	<small>DATE</small> 03/05/04
		<small>CLASSIFICATION</small> CONFIDENTIAL	

6.1 Performance

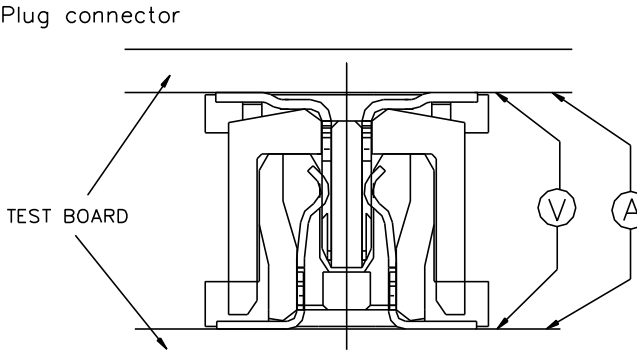
TABLE 6.1

Test Item	Requirements
Visual Examination	Product shall meet the requirements of product drawings.
Electric Requirements	
Low Level Contact Resistance(L.L.C.R.)	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max.
Dielectric Withstanding Voltage	No evidence of arc-cover, insulation breakdown or leakage current in excess of 1 mA.
Insulation Resistance	Initial ----- 500 MΩ Min. After test ----- 100 MΩ Min.
Mechanical Requirements	
Vibration	No discontinuity greater than 0.1μSec.
Shock	No discontinuity greater than 0.1μSec.
Mating Force	0.9N(90 gramf) Max. per contact.
Un-mating Force	0.1N(10 gramf) Min. per contact.
Durability	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max.
Solderability	Solder coverage ----- 95% Min.
Resistance to Solder Heat	No evidence of physical or mechanical damage.
Retention to PCB	50N Min. (force in un-mating direction)
Contact Retention Force	1N Min.
Insertion Force (Transition board to connector)	45N Max. (initial) (Just only for 80p connector)
Withdrawal Force (Transition board to connector)	25N Max. 10N Min. (Just only for 80p connector)
Environmental Requirements	
Thermal Shock	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max.
High Temperature	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max.
Humidity (steady state)	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max. Insulation resistance ----- 100 MΩ Min.
Humidity (moisture resistance)	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max. Insulation resistance ----- 100 MΩ Min.
SO ₂ Gas Exposure	Initial ----- 30 mΩ Max. After test ----- 50 mΩ Max.


 <small>TITLE</small>	<small>TYPE</small> PRODUCT SPECIFICATION	<small>NUMBER</small> GS-12-148 (was GES-12-148)	
		<small>PAGE</small> 4 of 7	<small>REVISION</small> C
0.8mm BergStak Product Specification		<small>AUTHORIZED BY</small> David Teng	<small>DATE</small> 03/05/04
		<small>CLASSIFICATION</small> CONFIDENTIAL	

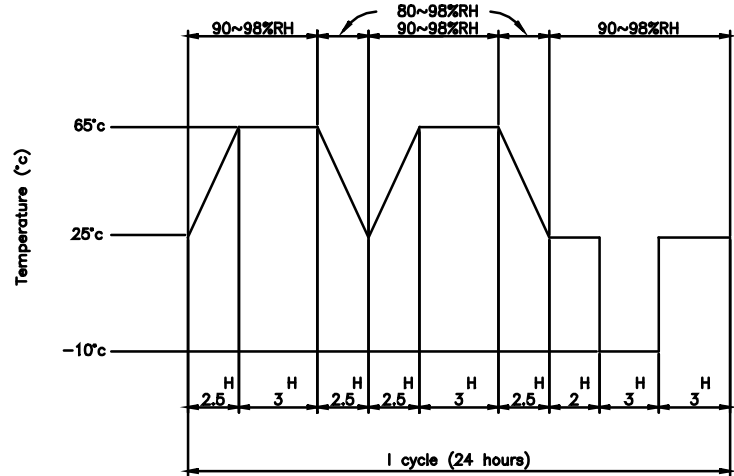
6.2 Test Methods

TABLE 6.2


Test Item	Test Methods
Visual Examination	Visually and functionally inspected.
Low Level Contact Resistance(L.L.C.R.)	<p>Plug connector</p>  <p>TEST BOARD</p> <p>Receptacle connector</p> <p>Figure 1</p> <p>Test method of connection as Figure 1. Test current ----- 10 mA Max. Open circuit ----- 20 mV Max.</p>
Dielectric Withstanding Voltage	Test voltage ----- 500 V AC (1 minute). Measure between adjacent terminals of the mated connectors.
Insulation Resistance	Test voltage ----- 500 V DC (1 minute). Measure between adjacent terminals of the mated connectors.
Vibration	Frequency ----- 10~55~10 Hz/min., sweep vibration. Amplitude ----- 1.5mm Max. Test current ----- 0.1 A Duration ----- 2 hours in each direction along three orthogonal axes (6 hours total).
Shock	Accelerated velocity : 490 m/s ² (50G). Waveform ----- saw tooth shock pulse. Duration ----- 11 mSec. Velocity change ----- 11.3 m/s. Number of cycles ----- 18.
Mating Force	Operating speed ----- 25 mm/min.
Un-mating Force	Operating speed ----- 25 mm/min.
Durability	Operating speed ----- 25 mm/min. Number of cycles ----- 100.
Solderability	Solder temperature ----- 230±5 . Immersion duration ----- 3±0.5 Sec. Flux immersion ----- 5~10 Sec. Flux and solder material are defined in MIL-STD-202, method 208.
Resistance to Solder Heat	Peak temperature ----- 240±5 . Duration ----- 30 Sec.

This document is the property of and embodies CONFIDENTIAL and PROPRIETARY information of FCI Electronics. No part of the information shown on this document may be used in any way without the written consent of FCI Electronics.

 TITLE	TYPE	PRODUCT SPECIFICATION	NUMBER
	0.8mm BergStak Product Specification		GS-12-148 (was GES-12-148)
		PAGE	REVISION
		5 of 7	C
		AUTHORIZED BY	DATE
		David Teng	03/05/04
		CLASSIFICATION	
		CONFIDENTIAL	

Retention to PCB	Operating speed ----- 25 mm/min.
Contact Retention Force	Operating speed ----- 25 mm/min.
Insertion Force	Operating speed ----- 25 mm/min.
Withdrawal Force	Operating speed ----- 25 mm/min.
Thermal Shock	Temperature range ----- -40 (+0/-5) ~ 85 (+5/-0) (30 min.) (30 min.) Number of cycles ----- 5.
High Temperature	Temperature ----- 95±5 . Duration ----- 96 hours.
Humidity (steady state)	Ambient temperature ----- 40±2 . Relative humidity ----- 90~95%. Duration ----- 96 hours.
Humidity (moisture resistance)	Temperature and humidity are listed figure 2. Duration ----- 10 cycles. <div style="text-align: center;">  <p>Figure 2</p> </div>
SO ₂ Gas Exposure	Ambient temperature ----- 40±2 . Relative humidity ----- 90%. H ₂ S density ----- 10 ppm. Duration ----- 24 hours.


This document is the property of and embodies CONFIDENTIAL and PROPRIETARY information of FCI Electronics. No part of the information shown on this document may be used in any way without the written consent of FCI Electronics.

 <small>TITLE</small>	<small>TYPE</small> PRODUCT SPECIFICATION	<small>NUMBER</small> GS-12-148 (was GES-12-148)	
		<small>PAGE</small> 6 of 7	<small>REVISION</small> C
0.8mm BergStak Product Specification		<small>AUTHORIZED BY</small> David Teng	<small>DATE</small> 03/05/04
		<small>CLASSIFICATION</small> CONFIDENTIAL	

6.3 Test Sequence

TABLE 6.3

TEST ITEM	TEST GROUP										
	1	2	3	4	5	6	7	8	9	10	11
Visual Examination	1 9	1 9	1 5	1 5	1 4	1 5	1 3	1 3	1 5	1 5	1 5
Low Level Contact Resistance (L.L.C.R.)	2 6	2 6	2 4	2 4		2 4			2 4	2 4	2 4
Dielectric Withstanding Voltage	4 8	4 8									
Insulation Resistance	3 7	3 7									
Vibration			3								
Shock				3							
Mating Force					2						
Un-mating Force					3						
Durability						3					
Solderability							2				
Resistance To Solder Heat								2			
Thermal Shock									3		
High Temperature										3	
Humidity (steady state)	5										
Humidity (moisture resistance)		5									
SO ₂ Gas Exposure											3

	TYPE	PRODUCT SPECIFICATION	NUMBER	GS-12-148 (was GES-12-148)			
	TITLE	0.8mm BergStak Product Specification		PAGE	7 of 7	REVISION	C
				AUTHORIZED BY	David Teng	DATE	03/05/04
				CLASSIFICATION	CONFIDENTIAL		

REVISION RECORD

REV	PAGE	DESCRIPTION	ECR #	DATE
A	All	RELEASED	T03-0046	02/07/03
B	3	6.1 Insertion Force (Transition board to connector) 6.1 Withdrawal Force (Transition board to connector)	T03-0285	07/10/03
C	All	TRANSFER GUARDIANSHIP TO FCI SINGAPORE	T04-0094	03/05/04

This document is the property of and embodies CONFIDENTIAL and PROPRIETARY information of FCI Electronics. No part of the information shown on this document may be used in any way without the written consent of FCI Electronics.