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			S. Fierro		31 Jul 06	
			CLASSIFICATION			
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1.0 OBJECTIVE

This specification defines the performance , test, quality and reliability requirements of Press Fit Bergstik® II Headers.

2.0 SCOPE

This specification is applicable to the termination characteristics of the Press Fit Bergstik® II Headers when mated with FCI Mini PV™ terminals or other .025 pin compatible receptacles on .100" centerlines. This product provides board to board, board to cable, board to discrete wire and board to flex interconnect capabilities in vertical one. Two or three row configurations.

3.0 GENERAL


This document is composed of the following sections:

<u>Paragraph</u>	<u>Title</u>
1.0	Objective
2.0	Scope
3.0	General
4.0	Applicable Documents
5.0	Requirements
5.1	Qualification
5.2	Material
5.3	Finish
5.4	Design and Construction
6.0	Electrical Characteristics
7.0	Mechanical Characteristics
8.0	Environmental Conditions
9.0	Quality Assurance Provisions
9.1	Equipment Calibration
9.2	Inspection Conditions
9.3	Sample Quantity
9.4	Acceptance
9.5	Qualification Testing
9.6	Re-qualification Testing
TABLE 1	Qualification Testing Matrix

4.0 APPLICABLE DOCUMENTS:

4.1 Specifications

- 4.1.1 Engineering drawings
- 4.1.2 Process drawing

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4.2 Military Standards

- 4.2.1 MIL-STD-202: Test methods for electronic and electrical component parts.
- 4.2.2 MIL-STD-1344: Test methods for electrical connectors
- 4.2.3 MIL-STD-2166: Connector, Electrical, Compliant Pin
- 4.2.4 MIL-C-45662: Calibration system requirements
- 4.2.5 MIL-G-45204: Gold Plated Electrodeposited
- 4.2.6 MIL-P-81728: Plating, Tin-Lead, Electrodeposited
- 4.2.7 ISO 9000: Calibration system requirements

4.3 Federal Specifications

- 4.3.1 QQ-N-290 Nickel Plating (Electrodeposited)
- 4.3.2 QQ-W-343 Wire, Electrical and Non-Electrical, Copper (Un-Insulated)

4.4 Other Standards / Specifications

- 4.4.1 UL-94-V0: Flammability
- 4.4.2 ASTM B-159

4.5 Berg Lab Reports – Supporting Data

- 4.4.1 EL-95-006 & -006A

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

The material for each component shall be as specified herein or equivalent.

5.2.1 Pins:

Pins shall be Phosphor Bronze Alloy UNS C51000 drawn wire in accordance with ASTM B-159.

5.2.2 Insulator:


High temperature resin with flame retardant rating of UL-94-V0.

5.3 Finish

The finish of the pins shall be as specified herein for the options as listed in the product drawings under consideration.

5.3.1 Duplex Plate Solder tails:

100u" minimum thickness of 60/40 tin lead per MIL-P-81728 over 50u" nickel per QQ-N-290, Class 2.

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5.3.2 Duplex Plated Contact Area:

As defined by product drawings, will be plated with the specified thickness of gold per MIL-G-45204, Type II over 50u" nickel per QQ-N-290, Class 2.

5.3.3 Simplex Plated Pins:

As defined by product drawings, tin lead pins will be plated with 150u" of 93/7 tin lead per MIL-P-81728 over 50u" nickel per QQ-N-290, Class 2.

5.3.4 All Other Pin Areas:

50u" of nickel per QQ-N-290, Class 2 except for pin tips as defined by the product drawings.

5.4 Design and Construction

Connector shall be of the design, construction and physical dimensions specified on the applicable product drawings.

6.0 ELECTRICAL CHARACTERISTICS

6.1 Insulation Resistance

The insulation resistance of the unmated connector shall not be less than 5,000 megohms when measured in accordance with MIL-STD-202, Method 302. The following details shall apply:

- a. Test Voltage: 500VDC Applied for 1 minute
- b. Points of Measurements: Between Individually paired adjacent and opposing contacts.

6.2 Dielectric Withstanding Voltage


There shall be no evidence of arc-over, Insulation breakdown or excessive leakage current (>1 milli ampere) when the unmated connector is tested in accordance with MIL-STD-1344, Method 3001.1. The following details shall apply:

- a. Test Voltage: 1500 Volts (DC, RMS or AC, 60Hz).
- b. Test Duration: 60 seconds.
- c. Test Condition: 1 (760 Torr-sea level).
- d. Points of Measurement: Between individual paired adjacent and opposing contacts.

7.0 MECHANICAL CHARACTERISTICS

7.1 Pin Retention

Individual pins withstand an axial load of 2.0 pounds minimum applied at a rate of 0.2 inches/minute without dislodging from the insulator prior to soldering or heat exposure. Reference MIL-STD-1344A, Method 2007.1.

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7.2 Individual Pin Insertion Force

The force required to insert an individual compliant pin into a plated through hole in a printed circuit board at a rate of 0.5 inches/minute shall not exceed 40 pounds. The retention force in an axial direction opposite that of insertion shall not be less than 7.5 pounds.

Board Hole Parameters: Drill hole size .0453 +/- .001
Copper Plate .003 thick
Solder Plating .0003 to .0007 thick
Finished hole size .040

8.0 ENVIRONMENTAL CONDITIONS

After exposure to the following environmental conditions in accordance with the specific test procedure and details, the product shall show no physical damage and shall meet the electrical requirements per paragraph 6.0 as specified in Table 1 test sequences. Connectors shall be unmated during exposure.

8.1 Thermal Shock – MIL-STD-202, Method 107G

- a. Test Condition: A (25, 1 hour cycles).
- b. Temperature Range: -55 to + 105 deg. Celsius
- c. Time at Each Temperature: 30 minutes.
- d. Transfer Time: 5 minutes maximum.

8.2 Humidity, Steady State – MIL-STD-202, Method 103B

- a. Temperature: +40 deg. Celsius.
- b. Relative Humidity: 95%
- c. Test Condition: B (96 hours)

8.3 High Temperature Life – MIL-STD-202, Method 108A

- a. Test Temperature: 105 deg. Celsius.
- b. Test Duration: 315 hours

9.0 QUALITY ASSURANCE PROVISION


9.1 Equipment Calibration

All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with MIL-C-45662 and ISO 9000.

9.2 Inspection Conditions

Unless otherwise specified herein, all inspections shall be performed under the following ambient conditions:

- a. Temperature: 25 +/- 5 degrees Celsius
- b. Relative Humidity: 30 to 60 %
- c. Barometric Pressure: Local Ambient

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9.3 Sample Quantity and Description

9.3.1 The qualification samples shall consist of nine of the largest size connectors up to 12 pins maximum of the particular type being tested.

9.4 Acceptance

9.4.1 Electrical and mechanical requirements placed on test samples as indicated in paragraph 6.0 and 7.0 shall be established from test data using appropriate statistical techniques or shall otherwise be customer specified, and all samples tested in accordance with this product specification shall meet the stated requirements.

9.4.2 Failures attributed to equipment, test set-up or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

9.5 Qualification Testing

Qualification testing shall be performed on samples produced with equipment and procedures normally used in production. The sequence shall be as shown in Table 1.

9.6 Re-qualification Testing

If any of the following conditions occur, the responsible product engineer shall initiate re-qualification testing consisting of all applicable parts of the qualification test matrix, Table 1.

- a. A significant design change is made to the existing product, which impacts the product form, fit or function. Examples of significant changes shall include, but not limited to, changes in the plating material composition or thickness, contact force, contact surface geometry, insulator design, contact base material or contact lubrication requirements.
- b. A significant change is made to the manufacturing process, which impacts the product form, fit or function.
- c. A significant event occurs during production or end use requiring corrective action to be taken relative to the product design or manufacturing process.

10.0 Reference Documents N/A



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TABLE 1 - QUALIFICATION TESTING

TEST	PARA.	TEST GROUP		
		1	2	3
		TEST SEQUENCE		
NUMBER OF SAMPLES	9.3.1	3	3	3
EXAMINATION OF PRODUCT	5.4	1,5,9,13	1	1
INSULATION RESISTANCE	6.1	2,6,10,14		
DIELECTRIC WITHSTANDING VOLT	6.2	3,7,11,15		
PIN RETENTION	7.1			2
PIN INSERTION / RETENTION	7.2		2	
THERMAL SHOCK	8.1	4		
HUMIDITY, STEADY STATE	8.2	8		
HIGH TEMPERATURE LIFE	8.3	12		

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REVISION RECORD

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1	ALL	PRELIMINARY		10/24/95
A	ALL	RELEASE	V05-0211	6/17/05
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