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		AUTHORIZED BY Fu Beer	DATE 13-Mar-08
CLASSIFICATION UNRESTRICTION			

1.0 OBJECTIVE

This specification defines the performance, test, quality, and reliability requirement of the vertical press fit type power edge connector.

2.0 SCOPE

This specification is applicable to the termination characteristic of separable power edge card when inserted to vertical type receptacle.

3.0 GENERAL

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4.0 APPLICABLE DOCUMENTS

4.1 Drawing – 10075664 Product Family, P/N show as 10075664-XXXXLFL.

4.2 Other Standard and Specification

4.2.1 UL-94 : Flammability

4.2.2 EIA-364: Electrical Connector Test Procedure Including Environmental Classifications


4.2.3 MIL-STD-1344A: Federal Specifications, Test Methods for Electrical Connectors.

4.2.4 ASTM B422-90: High Strength Copper Alloy

4.3 FCI SPECIFICATIONS

4.3.1 BUS-15-002/M Nickel Plating

4.3.2 BUS-16-831 High Strength Copper Alloy

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- 4.3.3 BUS-15-005 Gold Plating
- 4.3.4 GES-03-601 Current Rating
- 4.3.5 GES-31-002 Workmanship STD & Insp. Instruction
- 4.3.6 GS-14 -937 Package Specification
- 4.3.7 BUS-03-404: Normal Force Measurement

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.

Power Contacts - High Conductivity Copper alloy.

Receptacle Housing – Housing material shall be rated flame retardant 94V-0 in accordance with UL-94. The housing shall be glass filled, Nylon, or other high performance resin.

5.3 Finish


Minimum 30 micro-inches Au on contact area, Minimum 100 micro-inches matt pure tin on press fit tail. Both are over a minimum 50 micro-inch Ni.

5.4 Design and Construction

Connectors shall be of the design, construction and physical dimenions specified on the applicable product drawings. Part number shown as 10075664-XXXXXLF

5.5 Workmanship includes freedom from blistering, cracks, discoloration, etc.

5.6 Operating temperature range: -5 ~105

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6.0 ELECTRICAL CHARACTERISTICS

- 6.1 **Low Level Contact Resistance (LLCR)** – The low level contact resistance shall not exceed 10milliohm initially and 20milliohm after environmental exposure when measured in accordance with EIA364 TP 06. The following details shall apply,
- a) Test Voltage – 20 millivolts DC max open circuit.
 - b) Test Current – Not to exceed 100 milliamps.
- 6.2 **Insulation Resistance** – The insulation resistance of mated connectors shall not be less than 5,000 megohms for power contacts, and 500 megohms for signal initially and after environmental exposure when measured in accordance with EIA 364 TP21.
- a) Test Voltage 500 volts DC.
 - b) Electrification time – 2 minutes.
 - c) Points of Measurement – Between adjacent contacts.
- 6.3 **Dielectric Withstanding Voltage** – There shall be no evidence of arc-over, insulation breakdown, or excessive leakage current (>1 Milliampere) when mated connectors are tested in accordance with EIA 364 TP 20. The following detail apply.
- a) Test Voltage – 1000 volts, AC.
 - b) Test Duration – 60 seconds.
 - c) Test Condition – 760 Torr - sea level.
 - d) Points of Measurement – Between adjacent contacts.
- 6.4 **Current Rating** – The temperature rise above ambient shall not exceed 30 at any point in the system when 31 contacts are linked and powered at 7.0 amperes. The following detail shall apply:
- a) Ambient Conditions – Still air at 25
 - b) Reference – FCI Test Specification BUS-03-601.


7.0 MECHANICAL CHARACTERISTICS

- 7.1 **Contact Retention** – The individual terminal retention shall be not less than 300gf while apply a load to pull out an individual terminal from housing at a rate of 25 +/- 6mm per minute. (Per EIA 364-29; no movement > 0.38mm)
- 7.2 **Compliant Pin Insertion Force To PCB** – Insertion compliant pin into plated PCB hole at a rate of 25 +/- 6mm per minute with less than 4.54 Kgf per pin.
- 7.3 **Compliant Pin Retention Force To PCB** – Pull compliant pin axially out from plated PCB hole at a rate of 25 +/- 6mm per minute without less than 0.91 Kgf per pin.

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- 7.4 **Normal Force** – The contact normal force shall not be less than 150 grams per contact when tested in accordance with FCI Test Specification BUS-03-404.
- 7.5 **Mating/Un-mating Force**– The total force to mate a connector and power edge card module should not exceed 228gf per pin pair. The un-mating force shall not be less than 14gf per pin pair. Test per EIA 364-13.
- 7.6 **Reseating** – The connector pair needs to undergo 3 manual plug/unplug cycles, no lubrication to be used during cycling and no evidence of physical damage.
- 7.7 **Vibration Sinusoidal** – EIA 364 TP 28
- a) Test procedure – VII, test condition letter D.
 - b) Mounting – To eliminate relative motion between the contacts, both mating halves should be rigidly fixed.
 - c) Duration – 1 hour per axis/ 3 axis.
 - d) No evidence of physical damage, No interruptions > 1.0 microsecond.
- 7.8 **Mechanical Shock** – EIA 364-27
- a) Condition A (50G, 11 millisecond half sine wave)
 - b) Shocks – 3 shocks in both directions along each of three orthogonal axes. (18 total)
 - c) Mounting – Rigidly mount assemblies.
 - d) No discontinuities of greater than 1.0 microsecond.
- 7.9 **Durability** – Standard laboratory procedure as applicable to the specific product EIA-364-09
- a) Number of cycles – 200.
 - b) Cycling rate – 25.4mm per minute.
- 7.10 **Durability (Preconditioning)** – Intent of this test is encompassed in latest version of EIA-364-09.
- a) Number of cycles – 5.
 - b) Cycling to be performed manually unless otherwise specified.
 - c) No lubrication to be used during cycling and no evidence of physical damage.
 - d) Cycling rate – 500 cycles per hour.

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8.0 ENVIRONMENTAL CONDITIONS

After exposure to the following environmental conditions in accordance with the specified test procedure and/or details, the product shall show no physical damage and shall meet the applicable electrical and mechanical requirements of paragraph 6.0 and 7.0 as detailed in Table 1 test sequences. Unless otherwise specified, assemblies shall be mated during exposure.

8.1 Thermal Shock – EIA 364 TP 32

- a) Test condition – I,10 cycles.
- b) Temperature Range – -20 to 80 .
- c) Time at each temperature – 30 minutes minimum.
- d) Transfer time – 5 minutes, maximum.

8.2 Cycling Temperature and Humidity– EIA 364 TP31, Method II.

- a) Test condition A.
- b) Relative Humidity – 95%
- c) Temperature +40 .
- d) Test Duration – 96 hours.

8.3 High Temperature Life – EIA 364 TP 17.


- a) Test condition 4.
- b) Test time condition B – 250 Hours.
- c) Temperature 105 .
- d) Pre-condition – Perform number of durability cycles specified for product.

8.4 High Temperature Life (Preconditioning)

Test per EIA 364-1000.01 Table 9.
Duration of 120 hours at temperature 105 to pertaining of 65 for 10 years.

8.5 Mixed Flowing Gas (MFG) – EIA 364-65

- a) Class – IIA
- b) Duration – 10 days.
- c) Test per EIA 364-1000.01 Table 4, Note – For 1 piece connector.

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9.0 QUALITY ASSUREANCE PROVISIONS

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 QS9000.

9.2 Inspection Conditions

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

- a) Temperature: 25+/- 5
- b) Relative Humidity: 30% to 60%
- c) Barometric Pressure: Local ambient

9.3 Acceptance

- 9.3.1 Electrical and Mechanical requirements shall be as indicated in Paragraphs 6.0 and 7.0 using test data and appropriate statistical techniques.
- 9.3.2 Failures attributed to equipment, test setup or operator error shall not disqualify the product.

9.4 Qualification Testing

Qualification testing shall be performed on sample units predicted with equipment and procedures normally used in production. Test sequence is as shown in Table 1.

9.5 Re-qualification Testing

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

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



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TABLE 1: QUALIFICATION TESTING SEQUENCE

TEST	PARA	Test Group							
		#1	#2	#3	#4	#5	#6	#7	#8
		Test Sequence							
Examination of Product	5.5	1 7	1 11	1 9	1 10	1 8	1	1 3	1
LLCR	6.1	2 4 6	2 5 8 10	2 6 8	2 5 7 9		2 6		
Insulation Resistance	6.2		7			2 6			
Dielectric Withstanding Voltage	6.3					3 7			
Current Rating	6.4							2	
Contact Retention	7.1								4
Pin Insertion Force to PCB	7.2								5
Pin Retention Force to PCB	7.3								6
Normal Force	7.4								2
Mating/Un-Mating Force	7.5						3 5		3
Reseating	7.6	5	9		8				
Vibration Sinusoidal	7.7			5					
Mechanical Shock	7.8			7					
Durability	7.9						4		
Durability (Preconditioning)	7.10		3	3	3				
Thermal Shock	8.1		4			4			
Cycling Temperature and Humidity	8.2		6			5			
High Temperature Life	8.3	3							
High Temperature Life (Preconditioning)	8.4			4	4				
Mixed Flowing Gas	8.5				6				
Sample Quantity		5	5	5	5	5	5	5	5

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REVISION RECORD

REV	PAGE	DESCRIPTION	ECN#	DATE
A	All	Initial Release	DG07-0119	06/27//07
B	4	Section 7.5, mating force was changed from 500g max to 228g max.	DG08-0058	03/13/08

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