

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
ECONOSTIK™ Headers		PAGE 1 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

1.0 Objective

This specification defines the performance, test, quality and reliability requirements of the ECONOSTIK™ Headers with 0.025um (1u") gold flash product.

2.0 Scope

This specification is applicable to the termination characteristics of the ECONOSTIK Header 2.54MM pitch wiring to board family of products which provides interconnections via 0.635MM square pins between a printed wiring -board mounted straight or right angle or SMT interconnections.

3.0 Ratings

- 3.1 Operating Voltage Rating = 110 V_{DC}
- 3.2 Operating Current Rating = 3A Continue un-mating (Refer to 6.4 current rating)
- 3.3 Operating Temperature Range = -55 °C - +105 °C (Including temperature rise caused by application of current)

4.0 Applicable Documents

4.1 FCI Specifications

4.1.1 Engineering drawings

Header: 10129378, 10129379, 10129380, 10129381, 10129382, 10129383
 Receptacle: 68683-9xxLF

4.1.2 Process drawings

N/A

4.1.3 Application specification(s)

N/A

4.1.4 Material specification(s)

Meets the European Union directives and other country regulation as described in GS-22-008

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION	FCI	
TITLE ECONOSTIK™ Headers		PAGE 2 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

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 Housing – High Temperature thermoplastic

5.2.2 Terminal – brass

5.3 Finish

The finish for applicable components shall be as specified herein or equivalent.

Contact area: 1u" gold over 50u" Nickel.

Solder tail area: 1u" gold over 50u" Nickel.

5.4 Design and Construction

Connectors shall be of the design, construction, and physical dimensions specified on the applicable product drawing.

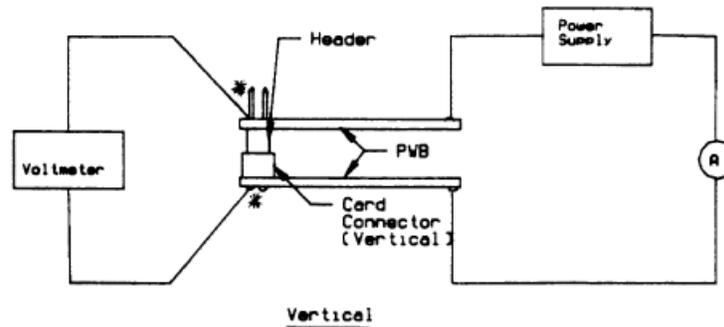


FIGURE 1 - CONTACT RESISTANCE

■Probe Positioned at Pin-to-Board and Terminal-to-Board Solder Connection.

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
TITLE ECONOSTIK™ Headers		PAGE 3 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

6.0 Electrical Characteristics

6.1 Contact Resistance, Low Level (LLCR)

The low level contact resistance shall not exceed 15 milliohms initially. The low level contact resistance shall also not exceed 20 milliohms increase in resistance (from the initial measurement) after any treatment and/or environmental exposure. Measurements shall be in accordance with IEC 60512-2-1 or EIA 364-23.

The following details shall apply:

- a. Method of Connection - Attach current and voltage leads as shown in Figure 1.
- b. Test Voltage - 20 milli-volts DC max open circuit.
- c. Test Current - Not to exceed 100 milli-amperes.

6.2 Insulation Resistance

The insulation resistance of unmated connectors shall not be less than 5000 Mohms initially and 1000 Mohms after environmental exposure.

Measurements shall be in accordance with IEC 60512-3-1 or EIA 364-21.

The following details shall apply:

- a. Test Voltage - 500 volts DC.
- b. Electrification Time - 2 minutes, unless otherwise specified.
- c. Points of Measurement - Between adjacent contacts (*and between contacts and other conductive surfaces, if applicable*).

6.3 Dielectric Withstanding Voltage

There shall be no evidence of arc-over, insulation breakdown, or excessive leakage current > 1 milli (amperes) when unmated connectors are tested in accordance with IEC 60512-4-1 or EIA 364-20.

The following details shall apply:

- a. Test Voltage - 1500 volts (AC RMS, 60Hz).
- b. Test Duration - 60 seconds.
- c. Test Condition - 1 (760 Torr - sea level).
- d. Points of Measurement - Between adjacent contacts

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
ECONOSTIK™ Headers		PAGE 4 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

6.4 Current Rating

The temperature rise above ambient shall not exceed 30 °C at any point in the system, followed on below quantity of contacts in the table.

Quantity of total contact of product	Quantity of power contacts				
	1 contact	10(2*5) contacts	20(2*10) contacts	40(2*20) contacts	72(2*36) contacts
1 contact	8.0A	NA	NA	NA	NA
10(2*5) contacts	8.0A	3.5A	NA	NA	NA
20(2*10) contacts	8.0A	3.5A	3.0A	NA	NA
40(2*20)contacts	8.0A	3.5A	3.0A	2.5A	NA
72(2*36) contacts	8.0A	3.5A	3.0A	2.5A	2.0A

The following details shall apply:

- a. Ambient Conditions –Still air at 25°C.
- b. Reference - IEC 60512-5-1 or IEC 60512-5-2 or EIA 364-70

7.0 Mechanical Characteristics

7.1 Retention force

Individual contacts in an unsoldered header shall withstand a load applied in either direction, along the contact axis, the retention force should be more than 9 N before reflow.

7.2 Mating/Unmating Force

The force to mate a receptacle connector and compatible header shall not exceed 2.5 N per contact. The unmating force shall not be less than 0.3 N per contact.

The following details shall apply:

- a. Cross Head Speed - 25 mm or inch per minute.
- b. Lubrication - None
- c. Utilize free floating fixtures.
- d. Reference – IEC 60512-13-2 or EIA 364-13.

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
TITLE ECONOSTIK™ Headers		PAGE 5 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

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 electrical and mechanical requirements per paragraphs 6.0 and 7.0 as specified in the Table 1 test sequences. Unless specified otherwise, assemblies shall be mated during exposure.

- 8.1 Thermal Shock – IEC 60512-11-4 or EIA 364-32.
 - a. Number of Cycles – 5, 1 hour cycles
 - b. Temperature Range - Between -55 and +105 °C
 - c. Time at Each Temperature - 30 minutes
 - d. Transfer Time - 5 minutes, maximum
- 8.2 Humidity – IEC 60512-11-3 (steady state) or EIA 364-31 method II (steady state)
 - a. Relative Humidity - 90% Min.
 - b. Temperature - 40 °C
 - c. Duration - 96 hours
- 8.3 High Temperature Life – IEC 60512-9-2 or EIA 364-17.
 - a. Test Temperature - 105 °C
 - b. Test Duration - 250 hours
- 8.4 Mixed Flowing Gas corrosion (MFG) – IEC 60512-11-7 or EIA 364-65
 - a. Class - IIA
 - b. Duration - 5 days (80 hours for un-mating, 40 hours for mating)
- 8.5 Salt Spray – IEC 60512-11-6 or EIA-364-26
 - a. Test Condition – 5%
 - b. Duration - 24 hours
 - c. Acceptance criteria – (visual examination requirements and/or LLCR criteria)
- 8.6 Vibration – IEC 60512-6-4 or EIA 364-28
 - a. Test Condition - 3 (refer to specified test method for appropriate test condition)
 - b. Vibration Amplitude - +/-15 G
 - c. Frequency Range - 10 to 2000 hertz
 - d. Sweep Time and Duration - 20 minutes per sweep, 4 hours along each of three orthogonal axes (12 hours total)
 - e. Mounting - see Figure 4

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION	FCI	
TITLE ECONOSTIK™ Headers		PAGE 6 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

f. No discontinuities greater than 1 microsecond.

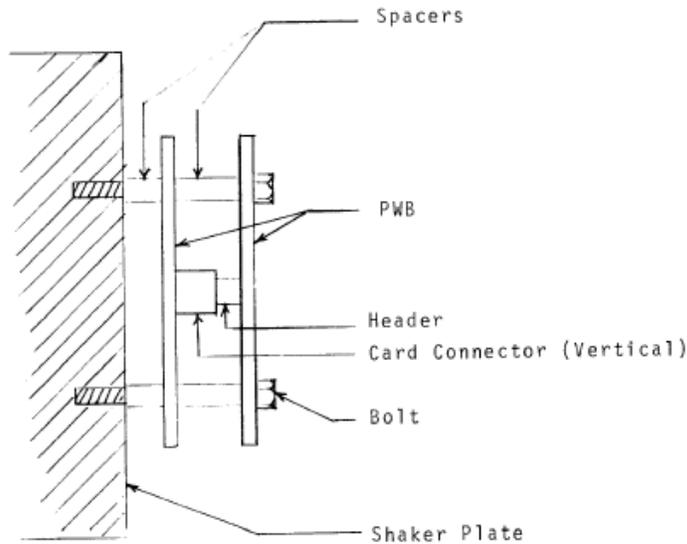


FIGURE 4 - SHOCK AND VIBRATION FIXTURING

- 8.7 Mechanical Shock – IEC 60512-6-3 or EIA 364-27
 - a. Condition - A (refer to specified test method for appropriate test condition)
(50 G, 11 millisecond, half-sine pulse type)
 - b. Shocks - 3 shocks in both directions along each of three orthogonal axes (18 shocks total)
 - c. Mounting - see Figure 4
 - d. No discontinuities greater than 1 microseconds
- 8.8 Durability - IEC 60512-9-1 or EIA 364-09
 - a. Number of Cycles - 50 cycles
 - b. Cycling Rate – 125±5 mm/min
 - c. Use free floating fixtures
- 8.9 Solderability – IEC 60512-12-1 or EIA-364-52 or ANSI-J-STD-002 or FCI GS-19-037
 - a. Test Condition A
 - b. Steam or dry aging - 1 hours
 - c. Minimum solder coverage: 95 %

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
ECONOSTIK™ Headers		PAGE 7 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

- 8.10 Resistance to Solder Heat – IEC 60512-12-4 or EIA 364-56
- a. Test Condition - B
 - b. There shall be no evidence of physical or mechanical damage

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
TITLE ECONOSTIK™ Headers		PAGE 8 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

9.0 QUALITY ASSURANCE 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 ANSI Z-540 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 °C
- b. Relative Humidity: 30% to 60%
- c. Barometric Pressure: Local ambient

9.3 Acceptance

9.4.1 Electrical and mechanical requirements placed on test samples as indicated in paragraphs 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 setup, or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

9.4 Qualification Testing

Qualification testing shall be performed on sample units produced with equipment and procedures normally used in production. The test sequences shall be as shown in the qualification test table.

9.5 Re-Qualification Testing

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

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
TITLE ECONOSTIK™ Headers		PAGE 9 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
CLASSIFICATION UNRESTRICTED			

- 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 be 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.

9.6 Qualification Test Table

Test Items	Test Group #									
	1	2	3	4	5	6	7	8	9	10
Examination of product	1,7	1,7	1,3	1,10	1,7	1,5	1,5	1,3	1,3	1,5
LLCR	2,6	2,4,6			2,4,6	2,4	2,4			2,4
Insulation resistance				2,5,8						
DWV				3,6,9						
Humidity		5		7						
Vibration					5					
Salt Spray						3				
MFG							3			
Current Rating									2	
Mating / un-mating force	3,5									
Durability	4									
Mechanical Shock					3					
Contact retention			2							
Thermal shock		3		4						
Solderability								2		
High temperature life										3
Sample Quantity	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs

NUMBER GS-12-1223	TYPE PRODUCT SPECIFICATION		
TITLE ECONOSTIK™ Headers		PAGE 10 of 10	REVISION B
		AUTHORIZED BY Zheng Kun Hu	DATE 2014-6-20
		CLASSIFICATION UNRESTRICTED	

REVISION RECORD

Rev	Page	Description	EC#	Date
A	ALL	New spec releasing	NA	2014-6-20
B	ALL	Use new name" ECONOSTIK" to replace " BERGSTIK"	ELX-N-18563	2014-8-14