



Low Force MEZALOK* Stacking Connector System

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Low Force MEZALOK* Stacking Connector System consisting of a 60 position (drawing 2369022), 114 position (drawing 2355825) and 320 (drawing 2355827) position socket, Printed Circuit Board (PCB) surface mount BGA connectors. The product is available in 10, 12, 17, and 18mm stack heights. The product mates to the legacy Mezalok pin connectors (see drawings 2102079 for 60pos, 2102060 for 114 pos, & 2102429 for 320 pos)

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed in March 2021 for test groups 1,2,3, and 6. Test Groups were qualified by similarity per the legacy Mezalok product (see 108-2411).

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 114-13279: Application Specification
- 501-134111: Qualification Test Report

2.2. Industry Documents

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Document

- [109-197](#) Test Specification (TE Test Specification vs EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Ratings

Voltage	Current	Temperature	Characteristic Impedance	Frequency Range
250VAC	1.5 amps max	-55 to 125°C	100 +/-5Ω	DC to 16GHz

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Initial examination of product	Meets requirements of product drawing.	EIA-364-18. Visual examination and dimensional (C of C) inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual examination.
ELECTRICAL		
10mm and 12mm Stack Heights, Low Level Contact Resistance (LLCR).	30 milliohms maximum initial. ΔR 15 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
17mm and 18mm Stack Heights, Low Level Contact Resistance (LLCR).	35 milliohms maximum initial. ΔR 15 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
10mm and 12mm Stack Heights, Contact Resistance Rated Current	30 milliohms maximum initial. ΔR 15 milliohms maximum.	EIA-364-6. Subject specimens to 1.5 amperes. See Figure 4.
17mm and 18mm Stack Heights, Contact Resistance Rated Current	35 milliohms maximum initial. ΔR 15 milliohms maximum.	EIA-364-6. Subject specimens to 1.5 amperes. See Figure 4.
Insulation resistance.	1000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 750 volts AC at sea level. Test between adjacent contacts of mated specimens.
Resistance to soldering heat.	See Note.	EIA-364-56, Procedure 6, Test Level 4. Subject specimens to 260 \pm 5/-0°C for 10 \pm 2 seconds

Figure 1

MECHANICAL		
TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Random vibration	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, with the exception that frequency and amplitude shall be as follows: 5 to 100 Hz, PSD increasing at 3 dB/octave; 100 to 1000 Hz, PSD = 0.1 g ² /Hz; 1000 to 2000 Hz; PSD decreasing at 6 DB/octave. One hour in each of 3 mutually perpendicular planes
Random Vibration (VITA 72)	No discontinuities of 1 microsecond or longer duration. See Note.	MIL-STD-810F, Method 514.5 1 hour in each mutually perpendicular planes per the L3 random profile shown in Figure 5, followed by 1 hour in each mutually perpendicular planes per the L3+3dB profile shown in Figure 6, followed by 12 hours in the z axis plane only per the L3+3dB profile shown in Figure 6.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Test Condition G. Subject mated specimens to 100 Gs sawtooth shock pulses of 6 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 500 cycles at a maximum rate of 475 cycles per hour.
Mating force.	50g times the number of contacts maximum. 320 position: 99 N average 114 position: 35 N average. 60 position: 19 N average	EIA-364-13, Method A. Measure force necessary to mate specimens at a maximum rate of 12.7 mm per minute. Calculate force per specimen.
Unmating force.	7g times the number of contacts minimum.	EIA-364-13, Method A. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm per minute. Calculate force per specimen.

Figure 1 (Continued)

ENVIRONMENTAL

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Thermal shock.	See Note.	EIA-364-32. Subject specimens to the specified number of cycles (see Figure 2) between -55 and 125°C with 30 minute dwells at temperature extremes and 1 minute maximum transition between temperatures.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life.	See Note.	EIA-364-17, Method A, Test Condition 5, Test Time Condition C. Subject mated specimens to 125°C for 500 hours.
Salt spray.	See Note.	EIA-364-26. Subject mated specimens to a 5% salt spray for 48 hours. Tested inside enclosure with specified drain holes per VITA 47 Section 4.6.

Figure 1 (end)

NOTE



Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

3.4. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)					
	1	2	3	4	5	6
	TEST SEQUENCE (b)					
Initial examination of product	1	1	1	1	1	1
Low Leve Contact Resistance	3,9	2,5	2,5			2,4
Contact Resistance, Rated Current	4,10	3,6	3,6			
Insulation Resistance				2,6		
Dielectric Withstanding Voltage				3,7		
Resistance to Soldering Heat					2	
Random Vibration	6					
Mechanical Shock	7					
Durability	5					
Mating Force	2					
Un-mating Force	11					
Thermal Shock			4 (c)	4(d)		
Humidity / Temperature Cycling				5		
Temperature Life		4(e)				
Salt Spray	8					
Random Vibration (VITA 72)						3
Final examination of product	12	7	2	8	3	5

Figure 2

NOTE i

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) 2000 cycles
- (d) 5 cycles
- (e) Precondition specimens with 10 durability cycles

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups 1, 2 and 3 shall consist of a minimum of 4 specimens each. Test groups 4 and 5 shall consist of a minimum of 3 specimens each. B.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken, and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

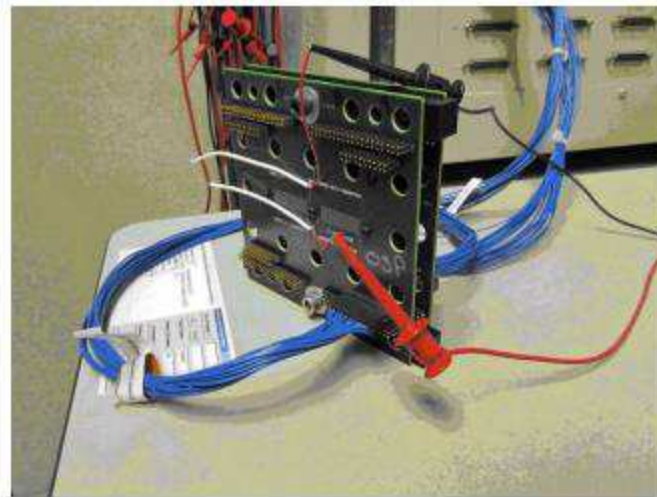


Figure 3, LLCR Measurement Points

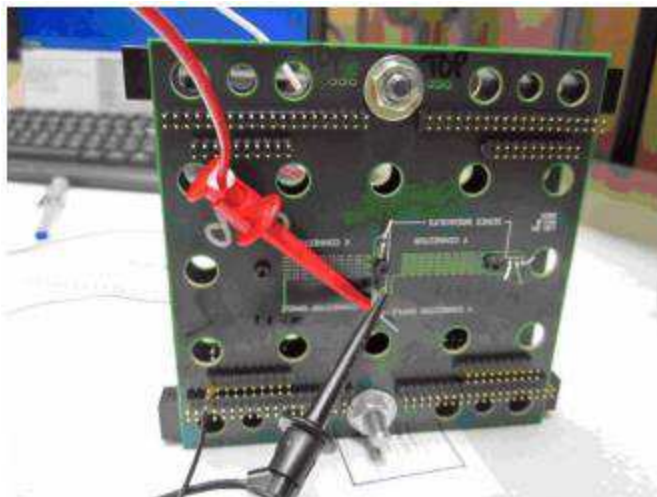


Figure 4, Contact Resistance at Rated Current Measurement

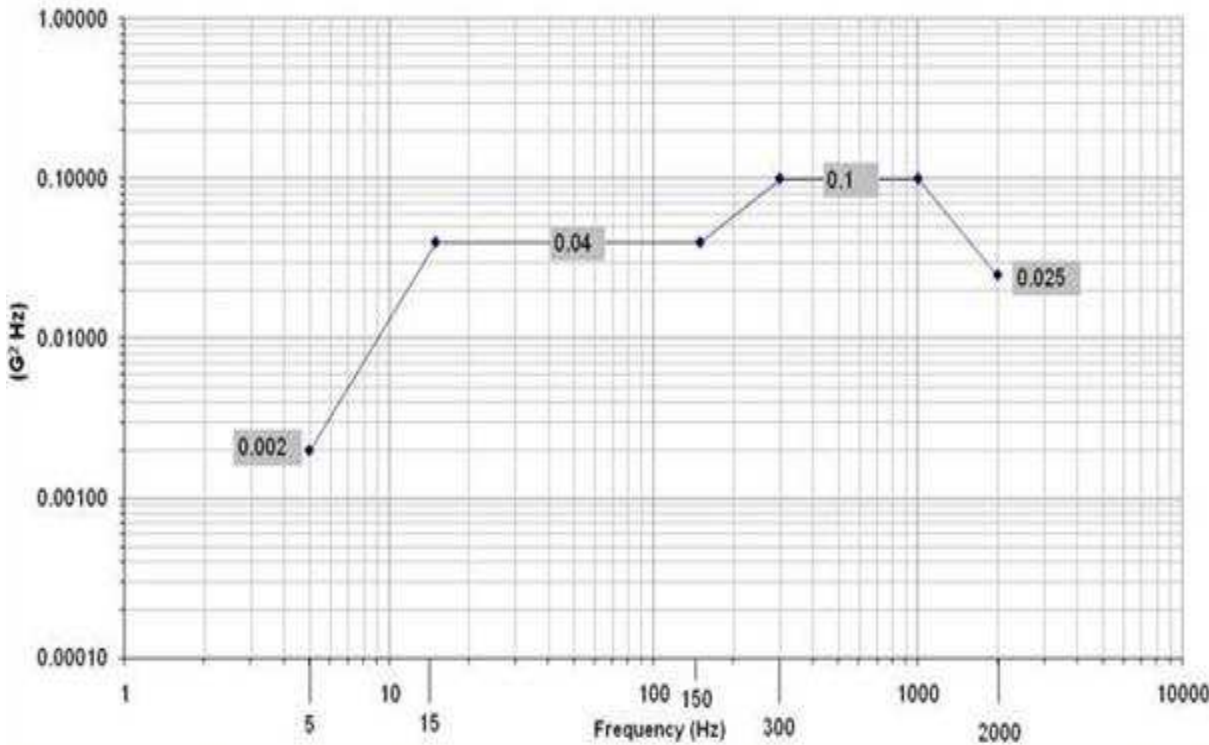


Figure 5, L3 Random Vibration Profile

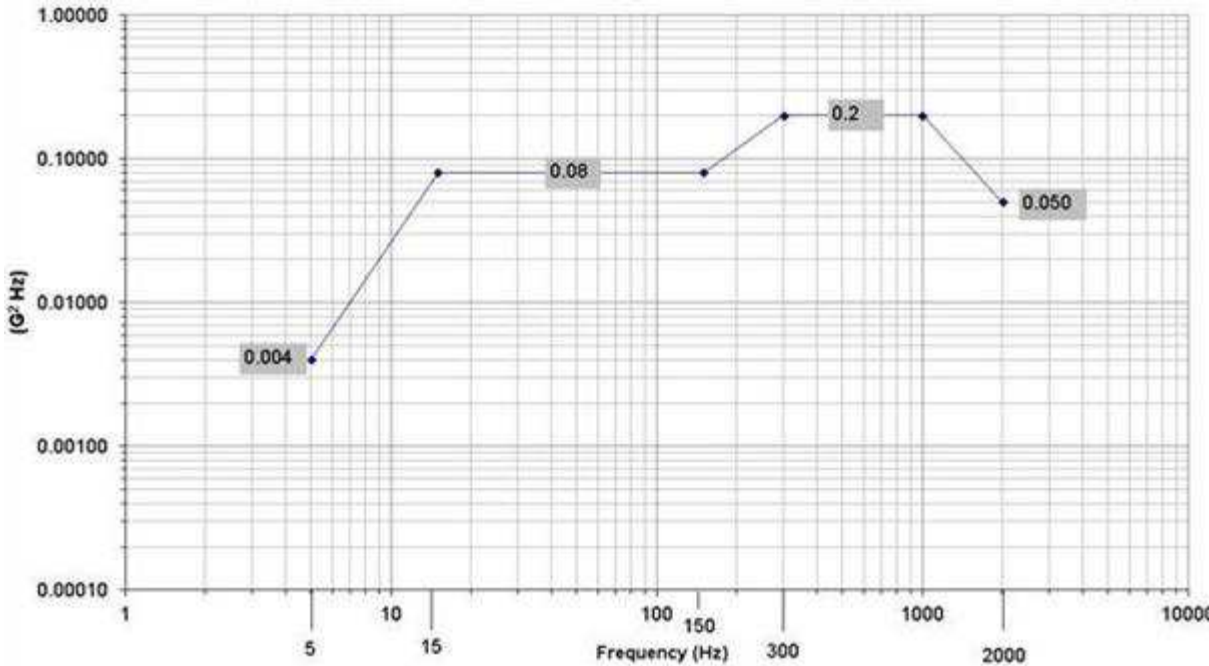


Figure 6, L3+3dB Random Vibration Profile