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**MEZALOK\* Stacking Connector System**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the MEZALOK\* Stacking Connector System consisting of a 60 position, 114 position and 320 position pin and socket, Printed Circuit Board (PCB) surface mount BGA connectors. The product is available in 10, 12, 15 and 18mm stack heights.

## 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. Successful qualification testing for the 60 position and 114 position portion of the product line was completed on 21Dec10. Additional testing was completed on 25May11, 14Dec12, and 12Feb16. The Qualification Test Report number for this testing is 501-736.

**2. APPLICABLE DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

## 2.1. TE Connectivity (TE) Documents

- 114-13279: Application Specification (MEZALOK Stacking PC Board Connectors)
- 501-736: Qualification Test Report (MEZALOK\* Stacking Connector System)

## 2.2. Industry Document

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

## 2.3. Reference Document

109-197: Test Specification (TE Test Specifications vs EIA and IEC Test Methods)

**3. REQUIREMENTS**

## 3.1. Design and Construction

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

## 3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

### 3.3. Ratings

- Voltage: 250 volts AC
- Current: 1.5 amperes maximum
- Temperature: -55 to 125°C
- Characteristic Impedance:  $100 \pm 5$  ohms
- Frequency Range: DC to 10+ GHz

### 3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing and Application Specification 114-13279.	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.
<b>ELECTRICAL</b>		
Low Level Contact Resistance (LLCR).	30 milliohms maximum initial. $\Delta R$ 15 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Contact resistance, rated current.	30 milliohms maximum initial. $\Delta R$ 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, continued

## MECHANICAL

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 <sup>2</sup> /Hz; 1000 to 2000 Hz; PSD decreasing at 6 dB/octave. One hour in each of 3 mutually perpendicular planes.
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.	136 Gs times the number of contacts maximum. 320 position: 260 N average 114 position: 139 N average. 60 position: 70 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.	13 Gs 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.

## ENVIRONMENTAL

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.

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*

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Initial examination of product	1	1	1	1	1
LLCR	3,9	2,5	2,5		
Contact resistance, rated current	4,10	3,6	3,6		
Insulation resistance				2,6	
Withstanding voltage				3,7	
Resistance to soldering heat					2
Random vibration	6				
Mechanical shock	7				
Durability	5				
Mating force	2				
Unmating force	11				
Thermal shock			4(c)	4(d)	
Humidity/temperature cycling				5	
Temperature life		4(e)			
Salt spray	8				
Final examination of product	12	7	7	8	3

Figure 2

**NOTE**

- (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.

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#### 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. 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.

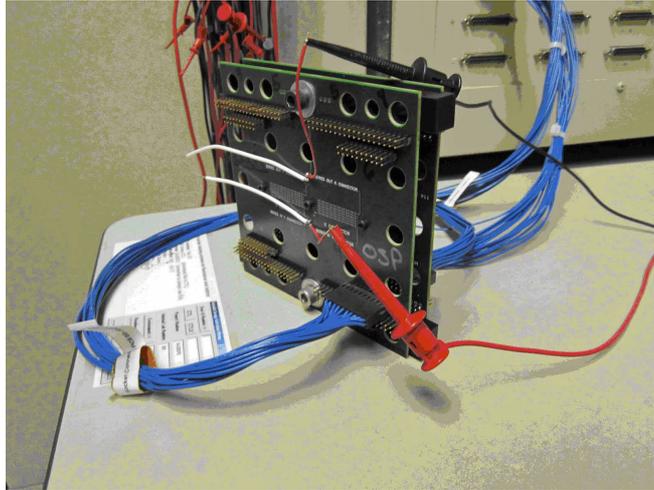


Figure 3  
LLCR Measurement Points

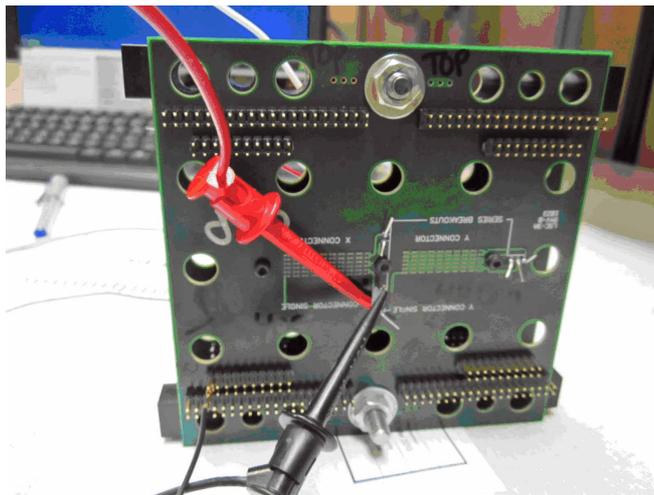


Figure 4  
Contact Resistance, Rated Current Measurement Points