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**1.0 mm Mezzanine Connectors**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics 1.0 mm Mezzanine Connectors.

## 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 on 18Sep97. The Qualification Test Report number for this testing is 501-667. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**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. Tyco Electronics Documents

- ! 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- ! 114-25045: Application Specification (1.0 mm Free Height (FH) Plug and Receptacle Connectors Using Surface Mount Technology (SMT))
- ! 501-667: Qualification Test Report (1.0 mm Mezzanine Connectors)
- ! 502-1079: Engineering Report (Qualification of 1.0 mm Mezzanine Connectors to EIA-700AAAB)

## 2.2. Industry Documents

- ! EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- ! EIA-700AAAB: Detail Specification for 1.0 mm, Two-Part Connectors for Use with Parallel Printed Boards

**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 ampere maximum per circuit
- ! Temperature: -40 to 85°C

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.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
<b>ELECTRICAL</b>		
Low Level Contact Resistance (LLCR).	24 milliohms maximum initial for 8 mm stack height. 45 milliohms maximum initial for 15 mm stack height. $\Delta R$ 15 milliohms maximum increase from initial.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation resistance.	1000 megohms minimum.	EIA-364-21. 250 volts DC, 1 minute hold. Test between adjacent contacts of mated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20. 250 volts AC at sea level. Test between adjacent contacts of mated specimens.
<b>MECHANICAL</b>		
Solderability.	Solderable area shall have a minimum of 95% solder coverage.	EIA-364-52, Category 3. Subject contacts to solderability.
Random vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28. Subject mated specimens to 9.26 G's rms between 50 to 2000 Hz. Fifteen minutes in each of 3 mutually perpendicular planes.

Figure 1 (continued)

Test Description	Requirement	Procedure
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27. Subject mated specimens to 50 G's sawtooth shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for a total of 100 cycles; 25 cycles before the first mating force test, and 75 cycles before the second mating force test. Cycle rate shall be a maximum of 300 cycles per hour.
Mating force.	0.0625 kg maximum average per contact for 8 mm stack height. 0.0469 kg maximum average per contact for 15 mm stack height.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 25.4 mm per minute.
Unmating force.	0.0234 kg minimum average per contact for 8 mm stack height. 0.0170 kg minimum average per contact for 15 mm stack height.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 25.4 mm per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32, Test Condition VIII. Subject mated specimens to 5 cycles between -40 and 105°C with 30 minute dwells at temperature extremes and less than 1 minute transition time between temperatures.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life with electrical load.	See Note.	EIA-364-17, Test Condition 2, Test Time Condition B. Subject mated specimens to 70°C for 250 hours while fully energized at 1 ampere DC.
Mixed flowing gas.	See Note.	EIA-364-65. Subject unmated specimens to environmental Class II for 7 days.

**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.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Tests Performed	Test Groups (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
LLCR	2,5	2,10	2,5		2,4	
Insulation resistance				2,6		
Withstanding voltage				3,7		
Solderability						2
Random vibration	4					
Mechanical shock	3					
Durability		3,6				
Mating force		4,8				
Unmating force		5,9				
Thermal shock			3	4		
Humidity/temperature cycling			4	5		
Temperature life					3	
Mixed flowing gas		7				
Final examination of product	6	11	6	8	5	3

**NOTE** (a) See paragraph 4.1.A.  
 (b) Numbers indicate sequence in which tests are performed.

Figure 2

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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. Each test group shall consist of 2 row, 64 position, 1.0 mm Mezzanine plug and receptacle connectors fully loaded with 30 microinch gold plated contacts. Two connector sizes having parallel board to board mated stack heights of 8 and 15 mm were tested in each group.

###### 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.