



**AMPLIMITE\* PCB Mounted Connectors**

**1. SCOPE**

1.1. Content

This specification covers performance, tests and quality requirements for D-sub right angle printed circuit board mounted connectors. Applicable product descriptions and part numbers are as shown on product drawing

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

Qualification Testing has been successfully completed. See Qualification Test Report 501-130012.

**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

- 114-40010: Application Specification (Right Angle Front Metal Shell Connectors)
- 501-130012: Qualification Test Report (AMPLIMITE\* HD-20 Board Mount Connectors)

2.2. Industry Documents

- EIA-364-XX: EIA Test Specifications

**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   |
|---------|--------------------|---------------|
| 250 VAC | 3A Max per Contact | -55 C to 85 C |

Storage: -55 C to 105 C Relative Humidity: 15% - 70%

3.3. Test Requirements and Procedures Summary

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

| TEST DESCRIPTION                | REQUIREMENT  | PROCEDURE  |
|---------------------------------|--|--|
| Examination of product          | Meets requirements of product drawing.                                       | Visual inspection per product drawing. Per EIA-364-18  |
| <b>ELECTRICAL</b>               |  |  |
| Low Level Contact Resistance    | 20 mΩ max. initial<br>30 mΩ max. final.                                      | Per EIA 364-6B.<br>Subject mated contacts assembled in housing to 50 mV open circuit at 100 mA maximum.  |
| Dielectric Withstanding Voltage | No creeping discharge or flashover shall occur.<br>Leak current: <0.5mA Max. | Per EIA 364-20B<br>Apply 1000V AC for 1 minute at sea level at adjacent contacts and between contacts and metal shell of unmated connector assemblies.   |
| Insulation Resistance           | 1000 MΩ minimum  | Per EIA 364-21.<br>500V DC for 1 minute, test between adjacent contacts of unmated connector assemblies  |
| Temperature Rise                | 30°C maximum temperature rise at specified current.                          | All positions series wired individually forming a single circuit in each connector. Apply rated current and measure temperature after it stabilizes. Subtract initial (unloaded) reading at ambient. |
| <b>MECHANICAL</b>               |  |  |
| Vibration, Random               | No discontinuities greater than 1 microsecond.<br>See Note.                  | Per EIA 364-28, condition V, test letter A<br>Random, 50-2000Hz; PSD: 3.13g<br>Duration: 15 minutes in each of three mutually perpendicular planes.  |
|                                 |  |  |
| Mating Force                    | 0.30Kgf max/contact.   | Per EIA 364-37.<br>Measure force necessary to mate connector assemblies at rate of 100mm per minute.   |
| Unmating Force                  | 0.02Kgf min/contact .  | Per EIA 364-37.<br>Measure force necessary to unmate connector assemblies at rate of 100mm per minute.   |
| Durability                      | See note.  | Per EIA 364-09<br>Mate and unmate connector assemblies for 100 cycles at a maximum rate of 300 cycles per hour.  |

**ENVIRONMENTAL**

|                              |  |   |
|------------------------------|--|---|
| Solderability                | Solderable area shall have minimum of 95% solder coverage. | Per EIA 364-52 Cat 3<br>Steam age for 8 hrs +/- 5mins;<br>Solder temp: 260 +/-5C; 4 – 5 seconds dwell.  |
| Resistance to Soldering Heat | See note.  | Per EIA 364-56 Procedure 3<br>Test Condition C<br>235 +/-5 C; 5 +/-1 second dwell.  |
| Thermal Shock                | See note.  | Per EIA 364-32C<br>Subject mated connectors to 5 cycles Between –55 +/-3°C and +85 +/-2°C with each cycle consisting of 30 minute dwells at -55 and 85°C. The transition between temperatures:<5 minutes. |
| Humidity                     | See note.  | Per EIA 364-31B Method III test condition A<br>Subject mated connectors to 10 hours at 25 - 65°C with 95% RH.   |
| Temperature Life             | See note.  | Per EIA 364-17 test condition 3 Method A<br>Subject mated connectors to temperature life at 85 +/-2°C for 96 hours.   |
| Salt Spray                   | See note.  | Per EIA 364-26 Test Condition A; Mated and unmated connectors; Salt concentration: 5%; 35±2° C; 95 – 98% RH; 24 hours   |


**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)    |     |     |     |     |     |     |     |     |     |
|---------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                 | A                 | B   | C   | D   | E   | F   | G   | H   | I   | J   |
|                                 | TEST SEQUENCE (b) |     |     |     |     |     |     |     |     |     |
| Initial examination of product  | 1,7               | 1,9 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,3 | 1,3 | 1,3 |
| Low Level Contact Resistance    |                   | 2,8 | 2,4 | 2,4 | 2,4 | 2,4 | 2,4 |     |     |     |
| Dielectric Withstanding Voltage | 3,6               |     |     |     |     |     |     |     |     |     |
| Insulation Resistance           | 2,5               |     |     |     |     |     |     |     |     |     |
| Temperature Rise                |                   |     |     |     |     |     |     | 2   |     |     |
| Mating Force                    |                   | 3,6 |     |     |     |     |     |     |     |     |
| Unmating Force                  |                   | 4,7 |     |     |     |     |     |     |     |     |
| Durability                      |                   | 5   |     |     |     |     |     |     |     |     |
| Vibration, Random               |                   |     | 3   |     |     |     |     |     |     |     |
| Solderability                   |                   |     |     |     |     |     |     |     |     | 2   |
| Resistance to Soldering Heat    |                   |     |     |     |     |     |     |     | 2   |     |
| Thermal Shock                   |                   |     |     | 3   |     |     |     |     |     |     |
| Humidity                        | 4                 |     |     |     | 3   |     |     |     |     |     |
| Temperature Life                |                   |     |     |     |     | 3   |     |     |     |     |
| Salt Spray                      |                   |     |     |     |     |     | 3   |     |     |     |

(a) See paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Sample Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall consist of 5 connector pairs.

#### B. Test Sequence

Testing shall be performed in the sequence as defined in paragraph 3.4.

#### 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. 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 resubmitted.