



**AMPLIMITE\* PCB Mounted Connectors**

**1. SCOPE**

1.1. Content

This specification covers performance, tests and quality requirements for D-sub right angle and vertical 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 501-32048.

**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)
- ◆ 114-40023: Application Specification (Straight Posted Front Metal Shell)
- ◆ 501-32048: 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 | Right Angle: 2A Max per Contact<br>Straight Posted: 1.5A Max per contact | -55 C to 105 C |

Storage: -25 C to 40 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   |
|---------------------------------|--|---|
| Initial examination of product  | Meets requirements of product drawing.   | Visual inspection per product drawing. Per EIA-364-18   |
| Final examination of product    | Meets visual requirements.   | Visual inspection per product drawing. Per EIA-364-18   |
| <b>ELECTRICAL</b>               |  |   |
| Low Level Contact Resistance    | 25 mΩ max. for 30 μin gold plated product.<br>30 mΩ max. for 15 μin and gold flash plated product. | Per EIA 364-23.<br>Subject mated contacts assembled in housing to 20 mV open circuit at 100 mA maximum.   |
| Dielectric Withstanding Voltage | No creeping discharge or flashover shall occur.<br>Leak current: 1mA Max.                          | Per EIA 364-20<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           | 5000 MΩ minimum initial.<br>1000 MΩ minimum final.   | 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.  | EIA 364-70<br>Measure temperature rise vs current.<br>All positions series wired individually forming a single circuit in each connector.<br>Rated current when all contacts are loaded             |
| <b>MECHANICAL</b>               |  |   |
| Vibration, Random               | No discontinuities greater than 1 microsecond.<br>See Note.  | Per EIA 364-28, condition V, test letter F<br>Duration 15 minutes.<br>15 minutes in each of three mutually per planes.  |
| Physical Shock                  | No discontinuities greater than 1 microsecond.<br>No physical damage.<br>See Note.                 | Per EIA 364-27<br>Subject mated connectors to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. |
| Mating Force                    | 150N max.  | Per EIA 364-13.<br>Measure force necessary to unmate connector assemblies at rate of 1 inch per minute.   |
| Unmating Force                  | 150N max.  | Per EIA 364-13.   |

|            |           |  |
|------------|-----------|--|
|            |           | Measure force necessary to unmate connector assemblies at rate of 1 inch per minute.   |
| Durability | See note. | Per EIA 364-09<br>Mate and unmate connector assemblies for 100 cycles for gold flash and 15µin gold plating , 500 cycles for 30 µin gold plating at maximum rate of 200 cycles per hour. |

**ENVIRONMENTAL**

|                  |  |   |
|------------------|--|---|
| Solderability    | Solderable area shall have minimum of 95% solder coverage. | Per EIA 364-52<br>For wave soldering<br>Temperature: 245°C±5°C<br>Immersion duration : 5 seconds<br>After 1 hour± 5 minutes steam aging   |
| Thermal Shock    | See note.  | Per EIA 364-32, test condition VII<br>Subject mated connectors to 5 cycles Between -55°C and +105°C with each cycle consisting of 30 minute dwells at -55 and 105°C. The transition between temperatures was less than 5 minutes. |
| Humidity         | See note.  | Per EIA 364-31 Method II test condition A<br>Subject mated connectors to 96 hours at 40°C with 90% to 95% RH.   |
| Temperature Life | See note.  | Per EIA 364-17 test condition IV Method A<br>Subject mated connectors to temperature life at 105°C for 500 hours.   |
| Salt Spray       | See note.  | Per EIA 364-26<br>Mated connector<br>Salt concentration: 5%, 35±2°C,<br>8 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)    |     |     |   |   |   |   |  |
|---------------------------------|-------------------|-----|-----|---|---|---|---|--|
|                                 | 1                 | 2   | 3   | 4 | 5 | 6 | 7 |  |
|                                 | TEST SEQUENCE (b) |     |     |   |   |   |   |  |
| Initial examination of product  | 1                 | 1   | 1   | 1 | 1 | 1 | 1 |  |
| Low Level Contact Resistance    | 2,5               | 2,5 | 2,4 |   |   |   |   |  |
| Dielectric Withstanding Voltage |                   |     |     |   | 4 |   |   |  |
| Insulation Resistance           |                   |     |     |   | 5 |   |   |  |
| Temperature Rise                |                   |     |     | 2 |   |   |   |  |
| Vibration, Random               | 3                 |     |     |   |   |   |   |  |
| Physical Shock                  | 4                 |     |     |   |   |   |   |  |
| Mating Force                    | 6                 |     |     |   |   |   | 3 |  |
| Unmating Force                  | 7                 |     |     |   |   |   | 4 |  |
| Durability                      |                   | 3   |     |   |   |   | 2 |  |
| Solderability                   |                   |     |     |   |   | 2 |   |  |
| Thermal Shock                   |                   |     |     |   | 2 |   |   |  |
| Humidity                        |                   |     |     |   | 3 |   |   |  |
| Temperature Life                |                   | 4   |     |   |   |   |   |  |
| Salt Spray                      |                   |     | 3   |   |   |   |   |  |
| Final examination of product    | 8                 | 6   | 5   | 3 | 6 | 3 | 5 |  |



**NOTE**

- (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.