

Connector, Standard Edge

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Standard Edge connector. This connector is a multi-contact, edge board type assembly having contacts of various lengths for plug-on, wrap or solder applications.

1.2. Qualification

When tests are performed on subject product line, procedures specified in 109 Series Test Specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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 Documents

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 501-227: Qualification Test Report

2.2. Military Standard

MIL-STD-275: Printed Wiring for Electronic Equipment

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

- Contact: Phosphor bronze, gold plating
- Housing: Polyester

3.3. Ratings

- Voltage: 400 volts (rms) at sea level
- Current:

| | | 1Pair | 3 Pair | 7 Pair | 15 Pair | 31 Pair |
|----------------|---------------|-------|--------|--------|---------|---------|
| Current rating | 2 Ounce board | 8.4A | 7A | 5.2A | 4.2A | 4.1A |
| | 4 Ounce board | 9.8A | 7.6A | 5.5A | 4.5A | 4.2A |

- Temperature: -55 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. All tests are performed at ambient temperature unless otherwise specified.

3.5. Test Requirements and Procedures Summary

| Test Description | Requirement | Procedure | | | | | | | | |
|--------------------------------------|---|--|------------|-----|---------|------|------|------|------|--|
| Examination of product. | Meets requirements of product drawing. | Visual, dimensional and functional per applicable quality inspection plan. | | | | | | | | |
| Termination resistance, dry circuit. | 10 milliohms maximum. | TE Spec 109-6-1. Subject mated contacts assembled in housing to 50 mv open circuit at 100 ma maximum. See Figure 3. | | | | | | | | |
| Dielectric withstanding voltage. | <table border="0"> <tr> <td>Test Voltage</td> <td>Centerline</td> </tr> <tr> <td>RMS</td> <td>Spacing</td> </tr> <tr> <td>1000</td> <td>.100</td> </tr> <tr> <td>1500</td> <td>.125</td> </tr> </table> 5 milliamperes maximum leakage. | Test Voltage | Centerline | RMS | Spacing | 1000 | .100 | 1500 | .125 | TE Spec 109-29-1. Test between adjacent contacts of unmated connector assemblies. |
| Test Voltage | Centerline | | | | | | | | | |
| RMS | Spacing | | | | | | | | | |
| 1000 | .100 | | | | | | | | | |
| 1500 | .125 | | | | | | | | | |
| Insulation resistance. | 5000 megohms minimum. | TE Spec 109-28-4. Test between adjacent contacts of unmated connector assemblies. | | | | | | | | |
| MECHANICAL | | | | | | | | | | |
| Vibration, random. | No discontinuities greater than 1 microsecond. | TE Spec 109-21-5, Condition C. Subject mated connectors to 9 G's rms for 3 minutes. See Figure 4. | | | | | | | | |
| Physical shock. | No discontinuities greater than 1 microsecond. | TE Spec 109-26-1. 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. See Figure 4. | | | | | | | | |
| Mating force. | 19 ounces maximum per contact pair. | TE Spec 109-42, Condition A. Measure force necessary to mate connector with daughter card from point of initial contact using free floating fixtures at a rate of .5 inch per minute. Calculate force per contact. | | | | | | | | |
| Unmating force. | 1.25 ounces minimum per contact pair. | TE Spec 109-42, Condition A. Measure force necessary to unmate assemblies at a rate of .5 inch per minute. Calculate force per contact. | | | | | | | | |

Figure 1 (continued)

| Test Description | Requirement | Procedure |
|-------------------------|--|--|
| Contact retention. | Contact shall not dislodge from normal locking position. | TE Spec 109-30. Apply axial load of 8 pounds to contacts. |
| Durability. | See Note. | TE Spec 109-27. Mate and unmate connector assemblies using daughter card for 250 cycles for 30 min gold plating and 100 cycles for 15 min gold plating at maximum rate of 500 cycles per hour. See Figure 5. |
| ENVIRONMENTAL | | |
| Thermal shock. | See Note. | TE Spec 109-22. Subject unmated connectors to 5 cycles between -55 and 85°C. |
| Humidity, steady state. | See Note. | TE Spec 109-23-2. Subject unmated connectors to steady state humidity at 40°C and 90-95% RH for 4 days. |
| Mixed flowing gas. | See Note. | TE Spec 109-85-2. Subject mated connectors to environmental class II for 14 days. |
| Temperature life. | See Note. | TE Spec 109-43. Subject mated connectors to temperature life at 85°C for 500 hours. |

NOTE

Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.

Figure 1 (end)

3.6. Connector Qualification and Requalification Tests and Sequences

| Test or Examination | Test Group (a) | | | |
|-------------------------------------|-------------------|------|------|-----|
| | 1 | 2 | 3 | 4 |
| | Test Sequence (b) | | | |
| Examination of product | 1,9 | 1,5 | 1,5 | 1,9 |
| Termination resistance, dry circuit | 3,7 | 2,4 | 2,4 | |
| Dielectric withstanding voltage | | | | 4,8 |
| Insulation resistance | | | | 3,7 |
| Vibration | 5 | | | |
| Physical shock | 6 | | | |
| Mating force | 2 | | | |
| Unmating force | 8 | | | |
| Contact retention | | | | 2 |
| Durability | 4 | | | |
| Thermal shock | | | | 5 |
| Humidity, steady state | | | | 6 |
| Mixed flowing gas | | | 3(c) | |
| Temperature life | | 3(c) | | |

- NOTE** (a) See paragraph 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.
 (c) Precondition with 5 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall consist of 10 connectors of greatest number of positions available. 5 connectors from each of 2 different plating configurations. Test groups 1, 2 and 3 shall be soldered to printed circuit boards. Where individual contact measurements are required, a minimum of 30 randomly selected contacts distributed among the 5 connectors shall be measured.

B. Test Sequence

Qualification inspection shall be verified by testing samples 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. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan will 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.

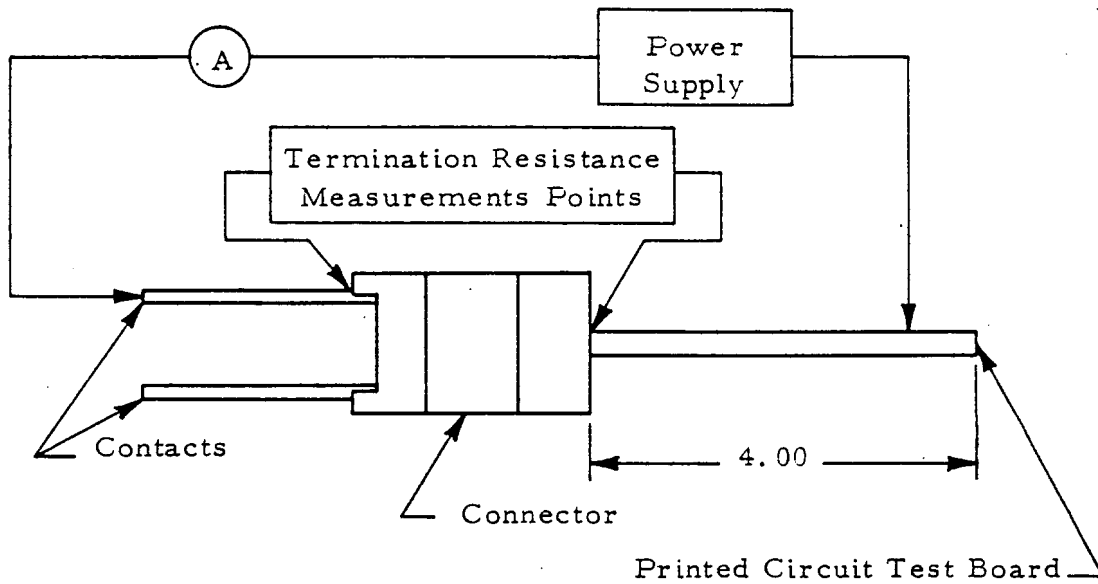


Figure 3
Termination Resistance Measurement Points

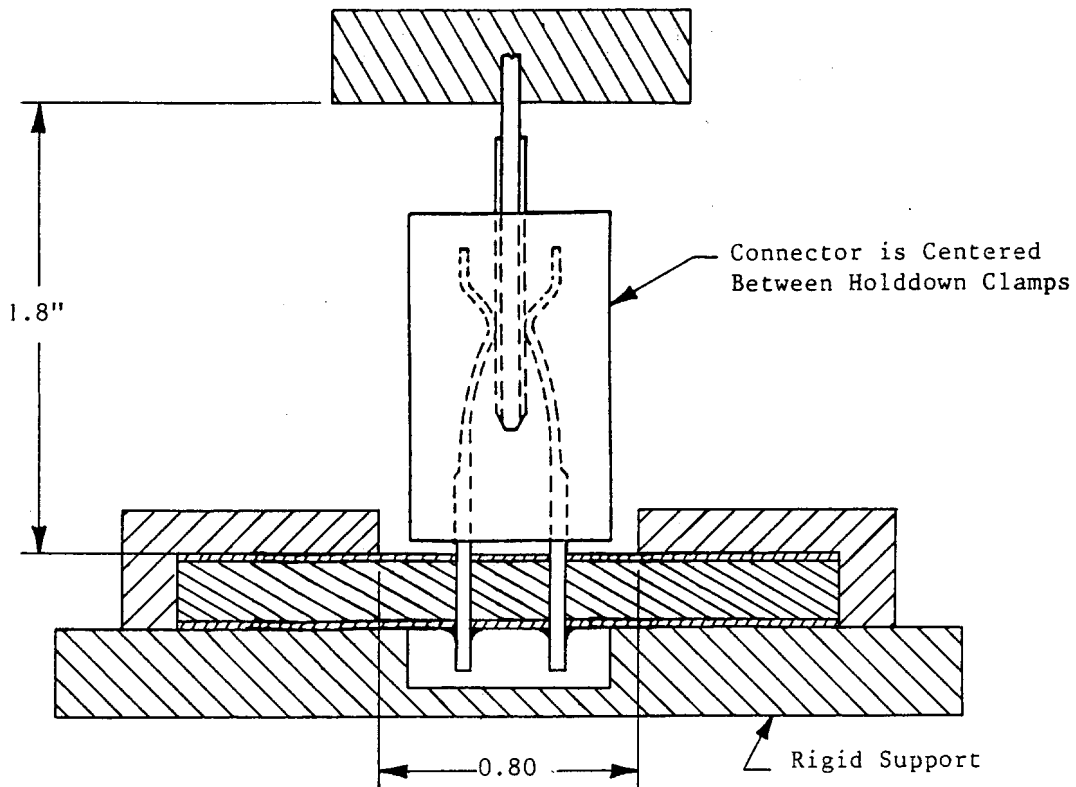
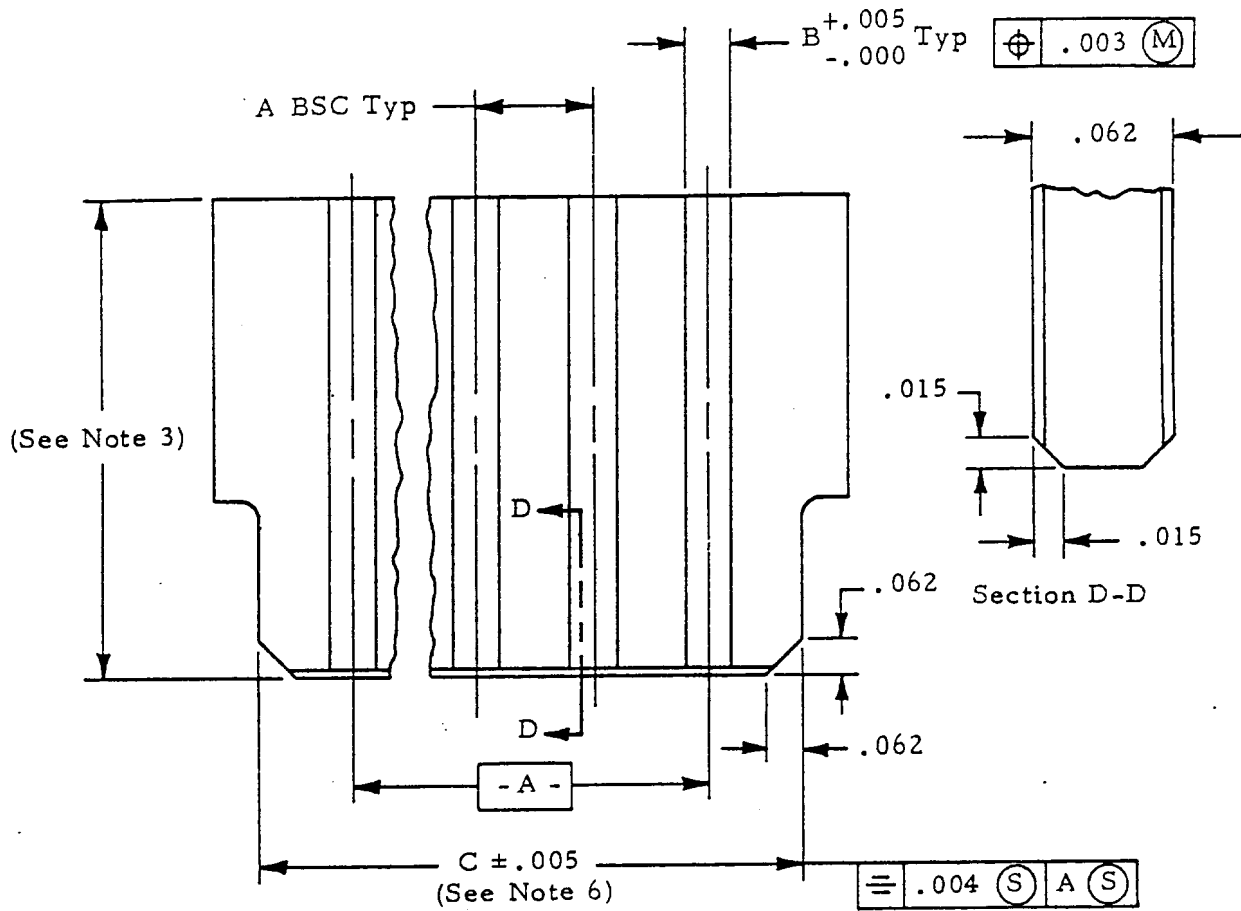


Figure 4
Vibration & Physical Shock



| Connector Contact Spacing | A BSC Dimension | B Dimension |
|---------------------------|-----------------|-------------|
| .100 | .100 | .052 |
| .125 | .125 | .078 |

NOTE

- (1) Dimensions are in inches.
- (2) Unless otherwise specified, tolerance is $\pm .005$.
- (3) Test card shall extend $4.00 \pm .02$ from receptacle after insertion. See Figure 3.
- (4) Number of contacts shall be same as on corresponding printed wiring connector.
- (5) Printed circuit test board shall be 2 ounces copper and gold over nickel plating per MIL-STD-275.
- (6) Dimension shall be minimum connector card slot length minus .008.
- (7) Conductor configuration optional beyond card slot depth.
- (8) Printed wiring shall be identical on both sides.

Figure 5
Printed Circuit Board