

---

## SEC II Power Card Edge Connector

---

### 1. SCOPE

#### 1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Standard Edge II (SEC II) Power Card Edge Connector.

#### 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 28Apr05. The Qualification Test Report number for this testing is 501-608. 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. TE Connectivity Documents

- 109-197: Test Specification (TE Test Specifications vs EIA and IEC Test Methods)
- 501-608: Qualification Test Report (SEC II Power Card Edge Connector)

#### 2.2. Industry Standard

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

### 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: 400 volts AC
- Current:
  - Signal | Contact: 6 amperes per single contact, 4 amperes per 6 adjacent contacts
  - Power Contact: Straddle mount and right-angle versions: 38 amperes per single contact, 22 amperes per 4 adjacent contacts
  - Power Contact: Vertical version: 42 amperes per single contact, 28 amperes per 4 adjacent contacts
- Temperature: -55degrees to 105 degrees 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 per EIA-364.

## 3.5. Test Requirements and Procedures Summary

| Test Description                                             | Requirement                                                                           | Procedure                                                                                                                    |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Initial examination of product.                              | Meets requirements of product drawing.                                                | EIA-364-18.<br>Visual and dimensional (C of C) inspection per product drawing.                                               |
| Final examination of product.                                | Meets visual requirements.                                                            | EIA-364-18.<br>Visual inspection.                                                                                            |
| ELECTRICAL                                                   |                                                                                       |                                                                                                                              |
| Low level contact resistance.                                | 4 milliohms maximum for signal contacts.<br>1.5 milliohms maximum for power contacts. | EIA-364-23.<br>Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.<br>See Figure 3 |
| Insulation resistance.                                       | 5000 megohms minimum.                                                                 | EIA-364-21.<br>500 volts DC, 2 minute hold.<br>Test between adjacent contacts of unmated specimens.                          |
| Withstanding voltage.                                        | 1 minute hold with no breakdown or flashover.                                         | EIA-364-20, Condition I.<br>1500 volts AC at sea level.<br>Test between adjacent contacts of unmated specimens.              |
| Temperature rise vs current.                                 | 30° C maximum temperature rise at specified current.                                  | EIA-364-70, Method 1.<br>Stabilize at a single current level until 3 readings at 5 minute intervals are within 1° C.         |
| Temperature life with current cycling (power contacts only). | 15 amperes DC at 45° C ambient.                                                       | EIA-364-55, Method 3.<br>Subject specimens to 50 cycles of 30 minutes ON and 15 minutes OFF.                                 |

Figure 1 (cont'd)

| Test Description        | Requirement                           | Procedure                                                                                                                                                                                                                      |
|-------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MECHANICAL</b>       |                                       |                                                                                                                                                                                                                                |
| Vibration, random.      | See Note.                             | EIA-364-28.<br>Subject mated specimens to 0.02 G's/Hz between 20 to 500 Hz. Ten minutes in each of 3 mutually perpendicular planes.<br>See Figure 4.                                                                           |
| Mechanical shock.       | See Note.                             | EIA-364-27, Method A.<br>Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.<br>See Figure 4. |
| Durability.             | See Note.                             | EIA-364-9.<br>Mate and unmate specimens for 250 cycles for 30 $\mu$ in gold and 100 cycles for 15 $\mu$ in gold plating at a maximum rate of 500 cycles per hour.                                                              |
| Mating force.           | 19 ounces maximum per contact pair.   | EIA-364-13.<br>Measure force necessary to mate specimens at a maximum rate of .5 inch per minute.                                                                                                                              |
| Unmating force.         | 1.25 ounces minimum per contact pair. | EIA-364-13.<br>Measure force necessary to unmate specimens at a maximum rate of .5 inch per minute.                                                                                                                            |
| <b>ENVIRONMENTAL</b>    |                                       |                                                                                                                                                                                                                                |
| Thermal shock.          | See Note.                             | EIA-364-32, Test Condition VII.<br>Subject unmated specimens to 5 cycles between -55 and 105°C.                                                                                                                                |
| Humidity, steady state. | See Note.                             | EIA-364-31, Method II, Condition A.<br>Subject unmated specimens to 40°C and 90 to 95% RH for 96 hours.                                                                                                                        |
| Temperature life.       | See Note.                             | EIA-364-17, Method A, Test Condition 4, Test Time Condition C.<br>Subject mated specimens to 105°C for 500 hours.                                                                                                              |
| Mixed flowing gas.      | See Note.                             | EIA-364-65, Class IIA (4 gas).<br>Subject mated specimens to environmental Class IIA for 14 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

| Test or Examination                   | Test Group (a)    |      |     |
|---------------------------------------|-------------------|------|-----|
|                                       | 1                 | 2    | 3   |
|                                       | Test Sequence (b) |      |     |
| Initial examination of product        | 1                 | 1    | 1   |
| Low level contact resistance          | 3,7               | 2,10 |     |
| Insulation resistance                 |                   |      | 2,6 |
| Withstanding voltage                  |                   |      | 3,7 |
| Temperature rise vs current           |                   | 3,9  |     |
| Temperature life with current cycling |                   | 6    |     |
| Vibration, random                     | 5                 | 7(c) |     |
| Mechanical shock                      | 6                 | 8(c) |     |
| Durability                            | 4                 |      |     |
| Mating force                          | 2                 |      |     |
| Unmating force                        | 8                 |      |     |
| Thermal shock                         |                   |      | 4   |
| Humidity, steady state                |                   |      | 5   |
| Temperature life                      |                   | 4(d) |     |
| Mixed flowing gas                     |                   | 5(d) |     |
| Final examination of product          | 9                 | 11   | 8   |



**NOTE**

- a) See paragraph 4.1.A.
- b) Numbers indicate sequence in which tests are performed.
- c) Discontinuities not measured, specimens energized at 18/C level for 100% loading.
- d) Precondition specimens with 10 durability cycles.

Figure 2

**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 and 3 shall each consist of 5 specimens. Test group 2 shall consist of 3 specimens.

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.

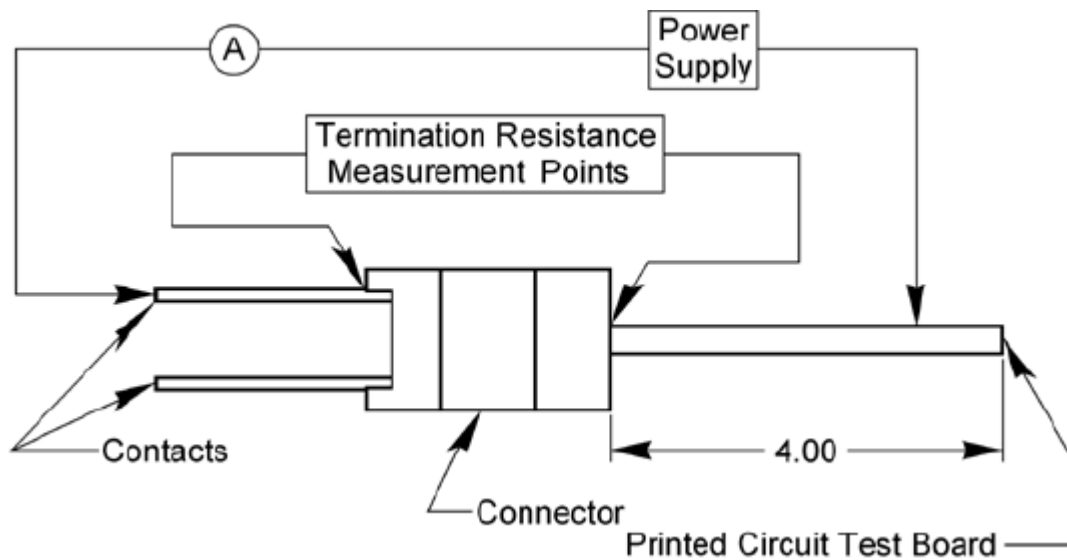
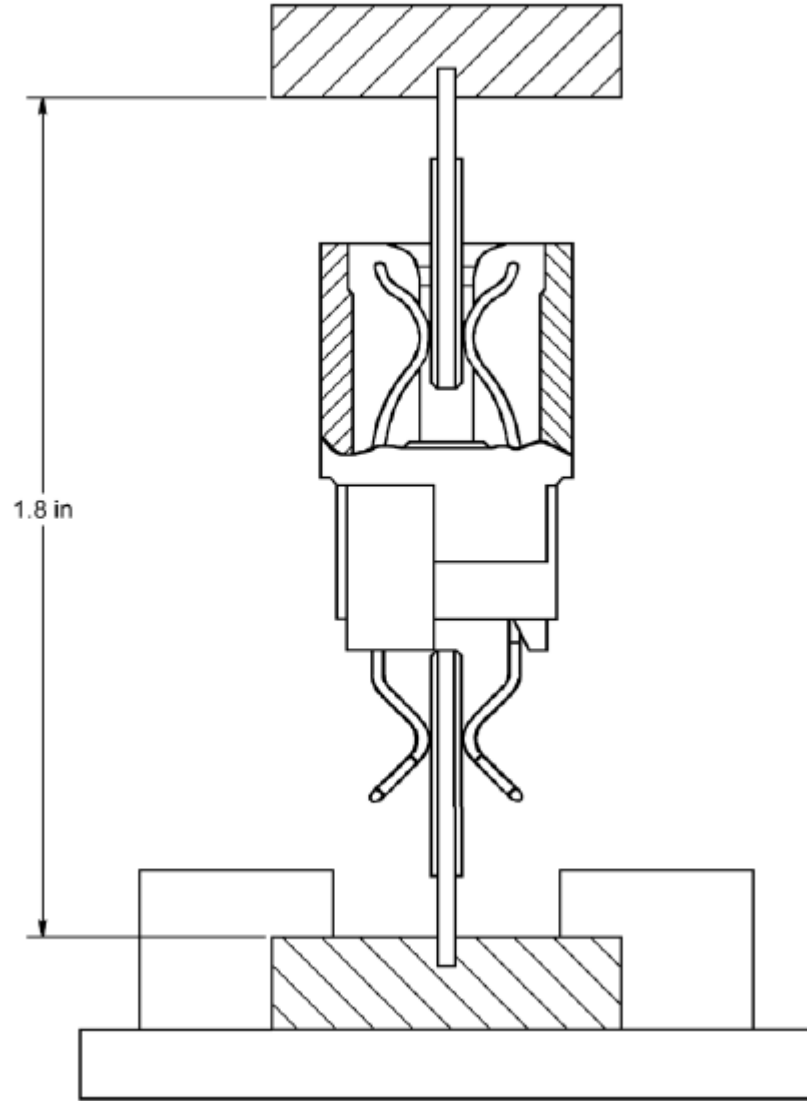


Figure 3



Vibration & Mechanical Shock Mounting Fixture

Figure 4