
Product Specification

Hybrid Power Card Edge Connector

1. SCOPE:

1.1. Content:

This specification covers performance, tests and quality requirements for the TE Connectivity Hybrid Power Card Edge Connector.

1.2. Qualification

When tests are performed on subject product line, procedures specified in Figure 1 shall be used. All specifications shall be performed using the applicable inspection plane 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 Connectivity Specifications:

A. 501-60068: Qualification Test Report (Right Angle Hybrid Power Card Edge Connector)

2.2. Industry Standard

A. EIA-364: Electrical Connector/Socket Test procedures including Environment Classification.

B. GR-1217-CORE: Generic Requirements for Separable Electrical Connectors Used in Telecommunications hardware.

C. IEC 60512: Electromechanical Components for Electronic Equipment; Basic Testing Procedures and Measuring Methods Part 1: General

2.3. Reference Document

109-197: Test Specification (AMP Test Specification vs EIA and IEC Test Methods)

3. REQUIREMENTS:

Design Objective

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

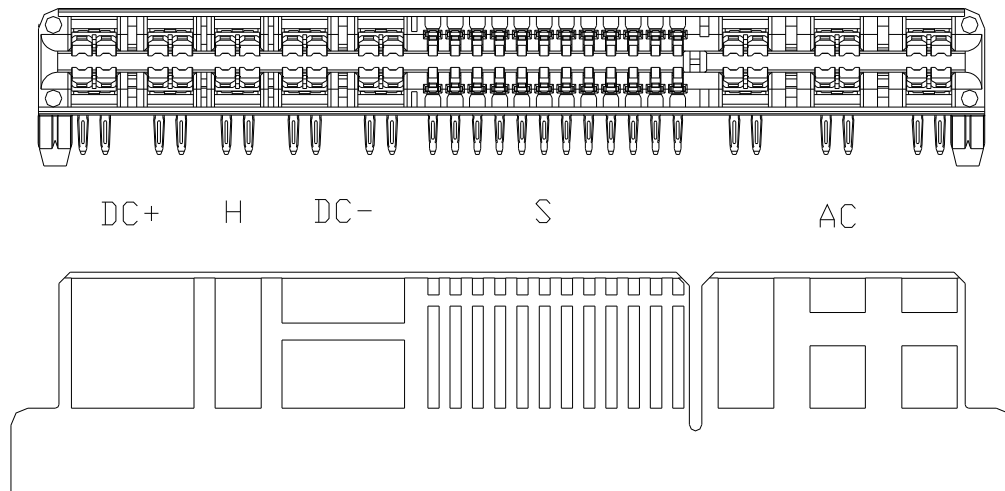
A. Voltage: 60 volts Max DC; 300 volts Max AC.

B. Current: (the following current capability to be tested with copper bar)

| | Current Rating | Remark |
|----------|----------------|-------------------------------|
| Signal | 1 A/Pin | 1.25 A Max/Pin |
| AC | 18 A Max | Per Pair |
| DC | 60 A Max | 30A Max/ Pair |
| Hot Swap | 5 A Max | Instant Current 67A Max/ Pair |

C. Temperature: -40 to 95 °C.

D. Humidity: 10 to 95% RH, non-condensing



3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5 Test Requirements and Procedures Summary

Design Objective

| Para. | Test Items | Requirements | Procedures |
|--------------------------------|------------------------------------|---|--|
| 3.5.1 | Visual Examination | Meets requirements of product drawing. | IEC 60512-1-1 Visual and dimensional (C of C) inspection per product drawing. (Connector interface, interface dimensions of plug-in card, creepage and clearance distance). |
| Electrical Requirements | | | |
| 3.5.2 | Termination Resistance (Low Level) | Signal: 25 mΩ Max. (Initial) ΔR=15mΩ Max. (Final) Power: 15 mΩ Max. (Initial) ΔR=10mΩ Max. (Final) | IEC 60512-2-1. Test 2a Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. |
| 3.5.3 | Dielectric withstanding Voltage | One minute hold with no breakdown or flashover. | IEC 60512-4-1. 1500V AC between DC power conductors mutually. 2000V AC between AC power conductors mutually. 100V AC between signal conductors mutually. |
| 3.5.4 | Insulation Resistance | 5000 megohms minimum between all power conductors, 500 megohms minimum between all signal conductors; And 500 megohms minimum between all power conductors; 100 megohms minimum between all signal conductors after moisture | IEC 60512-3-1. 500 volts DC. |
| 3.5.5 | Current carrying capacity | 30°C maximum temper ature rise at specified current | IEC 60512-5-1 Test with copper bar, all lines driven simultaneously. 1A DC per signal conductor; 18A AC per pair for AC conductors; 30A DC per pair for DC conductor. |

Figure 1 (continued)

| Para. | Test Items | Requirements | Procedures |
|--------------------------------|------------|--------------|------------|
| Mechanical Requirements | | | |

Design Objective

| | | | |
|-----------------------------------|-------------------------------|---|--|
| 3.5.6 | Vibration | No electrical discontinuity greater than 1.0 μ sec. See Note | IEC 60512-6-4. Frequency 10 to 500 Hz, amplitude 0.35mm or 50m/s, full duration 3x8 hours in 3 mutually perpendicular planes. |
| 3.5.7 | Mechanical Shock | No electrical discontinuity greater than 1.0 μ sec. See Note | IEC 6512-6-3. Subject mated specimens to 50G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. |
| 3.5.8 | Engaging/separating force | 80N maximum engaging force 40N maximum separating force | IEC 60512-13-1 Maximum rate of 12.5mm per minutes. |
| 3.5.9 | Durability | Initial 200 operations See Note | IEC 60512-5, Test 9a 10 cycles at a max rate of 10mm per second. 5 second rest in the unmated condition. Replace test card after 50cycles. |
| 3.5.10 | Compliant Pin Insertion Force | 40.0N Max. Per Power Pin 50.0N Max. Per Signal Pin | EIA-364-5 |
| 3.5.11 | Compliant Pin Retention Force | 10.0N Min. Per Power Pin 15.0N Min. Per Signal Pin | EIA-364-5 |
| 3.5.12 | Solderability (Lead free) | Solderable area shall have a minimum of 95% solder coverage. | EIA-364-52. |
| Environmental Requirements | | | |
| 3.5.13 | Thermal Shock | See Note | Subject mated specimens to 50 cycles between -55°C and 125°C. EIA 364-32 Test Condition I |
| 3.5.14 | Humidity-Temperature Cycling | See Note | Subject mated specimens to 20 cycles between 25 and 65°C at 80 to 100% RH. According to EIA-364-31 Method III. 500 hours |
| 3.5.15 | Temperature life, 500 hours | See Note | EIA-364-17, method A, test Condition 5. Subject mated specimens to 125°C for 500h, Two hours recovery time. |
| 3.5.16 | Mixed flowing gas | See Note | EIA-364-65, Class IIA. Subject specimens to environmental Class IIA for 10days (first 5 days unmated, remaining 5 days mated). |

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 Figure2.*

Figure 1 (end)

Design Objective

Product Qualification Test Sequence

| Test Examination | Test Group (a) | | | | |
|---------------------------------|-------------------|-----|-----|-----|------|
| | A | B | C | D | E |
| | Test Sequence (b) | | | | |
| Visual examination | 1, 9 | 1,7 | 1,8 | 1,9 | 1,5 |
| Contact Resistance (Low Level) | 2,6,8 | 2,6 | | 2,7 | |
| Dielectric withstanding Voltage | | | 3,7 | | |
| Insulation Resistance | | | 2,6 | | |
| Current carrying capacity | | | | 4,8 | |
| Vibration | | 4 | | | |
| Mechanical Shock | | 5 | | | |
| Engaging/separating forces | 3,5 | | | 3,6 | |
| Durability | 4 | 3 | | | |
| Compliant Pin Insertion Force | | | | | 2(c) |
| Compliant Pin Retention Force | | | | | 3(c) |
| Solderability (Lead free) | | | | | 4(c) |
| Thermal Shock | | | 4 | | |
| Temperature Humidity Cycling | | | 5 | | |
| Temperature life | | | | 5 | |
| Mixed flowing gas | 7 | | | | |

- NOTE**
- (a) See paragraph 4.1.A.
 - (b) Numbers indicate sequence in which the tests are performed.
 - (c) The proper test item should be selected according to the product type, press-fit or solder type.

Figure 2

Design Objective

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

4.2.

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 a minimum of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.3. Requalification Testing

If changes significantly affecting form, fit or function is made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequences as determined by development/product, quality and reliability engineering.

4.4. 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.

4.5. Quality Conformance Inspection

4.6.

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be accordance with the applicable product drawing and this specification.