
High Speed Serial Data Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) High Speed Serial Data Connector (HSSDC) designed for applications requiring extremely high data transfer rates over long distances. This fully shielded connector utilizes the CHAMP* .050 Series II contact interface with gold plated contacts on a 1.25 inch centerline. Surface mounted printed circuit board connectors are available in right angle and straddle mount configurations with both six and eight contacts. The connectors are “hot pluggable” with mate first break last ground contacts. The plug connector assembly includes a printed circuit board terminated to plug contacts on one end and cable on the other (the printed circuit board may or may not have equalization circuitry). The shielded cable has four conductors and is available in 22, 24, 28 and 30 AWG. The plug design includes a latching feature.

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 13Mar98. The test file number for this testing is 501-425. 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 Documents

- 109-197: TE Test Specifications vs EIA and IEC Test Methods
- 501-425: Qualification Test Report

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: 30 volts DC
- Current: Signal application only
- Temperature: -55 to 100°C
- Characteristic Impedance: 150 ohms
- Frequency Range: 0 to 2.4 Gbps

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
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance.	35 milliohms maximum.	EIA-364-23. Subject mated contacts assembled in housing to 20 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	1000 megohms minimum.	EIA-364-21. Test between adjacent contacts of unmated specimens.
Dielectric withstanding voltage.	350 volts AC at sea level. 1 minute hold with no breakdown or flashover.	EIA-364-20, Condition I. Test between adjacent contacts of unmated specimens.
MECHANICAL		
Solderability.	Solderable area shall have minimum of 95% solder coverage.	EIA-364-52, Category 3. Subject contacts to solderability.
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28. Subject mated specimens to 3.13 G's rms between 5-500 Hz. 15 minutes in each of 3 mutually perpendicular planes.

Figure 1 (continued)

Test Description	Requirement	Procedure
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 500 cycles at a maximum rate of 600 cycles per hour.
Mating force.	8 pounds maximum.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of .5 inch per minute.
Unmating force.	2 pounds minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of .5 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject unmated specimens to 5 cycles between -65 and 105°C.
Humidity-temperature cycling.	See Note.	EIA-364-31, Method III. Subject unmated specimens to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	EIA-364-17, Test Condition 4, Test Time Condition 3. Subject mated specimens to temperature life at 105°C for 500 hours.
Mixed flowing gas.	See Note.	EIA-364-65. Subject mated specimens to environmental class II 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	4	5
	Test Sequence (b)				
Examination of product	1,9	1,5	1,5	1,8	1,3
Termination resistance	3,7	2,4	2,4		
Insulation resistance				2,6	
Dielectric withstanding voltage				3,7	
Solderability					2
Vibration	5				
Physical shock	6				
Durability	4				
Mating force	2				
Unmating force	8				
Thermal shock				4	
Humidity-temperature cycling				5	
Temperature life		3(c)			
Mixed flowing gas			3(c)		

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition specimens with 10 cycles durability.

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, 2, 3 and 4 shall each consist of a minimum of 5 specimens. Test group 5 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. When 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.

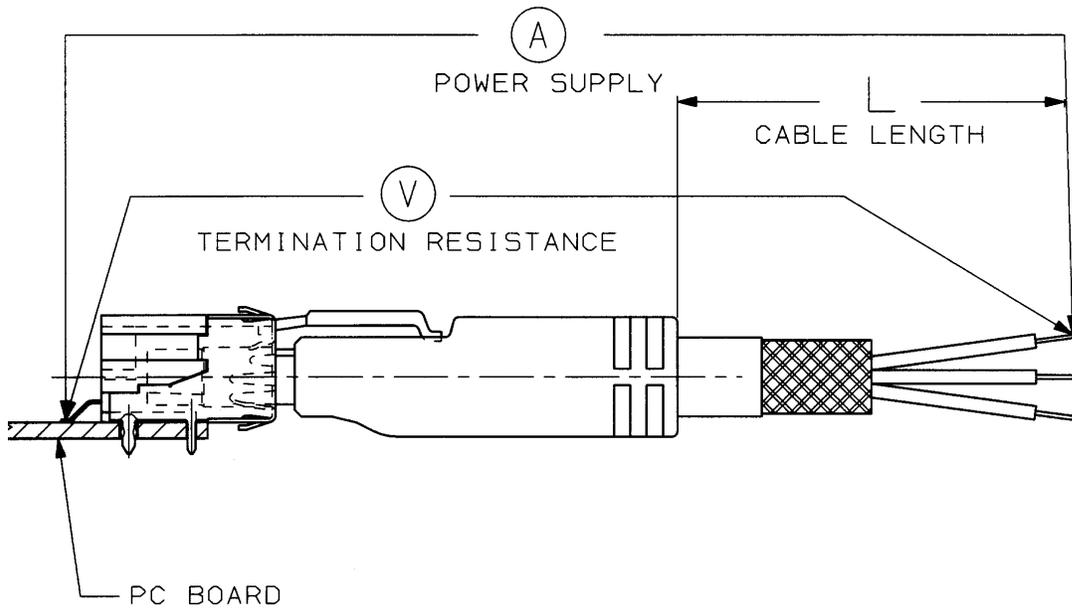


Figure 3
Termination Resistance Measurement Points