Small Form Factor Pluggable, 0.8 mm Centerline Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Small Form-factor Pluggable (SFP) 20, 30, 40 and 70 position connectors.

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 18Aug00. The Qualification Test Report number for this testing is 501-494. 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
- 501-494: Qualification Test Report

2.2. Commercial 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: 120 volts AC
- Current: Signal application only, 0.5 ampere maximum per individual contact
- Temperature: -55 to 85℃
- Inductance: 3.5 nH maximum
- Capacitance: 1.1 pF maximum
- Differential Impedance: 100 ohms

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. Visual and dimensional inspection (C of C) per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364. Visual inspection.
ELECTRICAL		
Dry circuit resistance.	35 milliohms maximum.	EIA-364-23. Subject mated specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Dielectric withstanding voltage.	300 volts AC minimum. 1 minute hold with no breakdown or flashover.	EIA-364-20. Test between SFP contacts 12/13 and 18/19 of unmated specimens.
MECHANICAL		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA RS-364-28, Condition VII, Level D. Subject mated specimens to 3.10 G's rms between 20-500 Hz. 15 minutes in each of 3 mutually perpendicular planes.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Condition A. 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.

Figure 1 (continued)

Test Description	Requirement	Procedure
Durability.	See Note.	EIA-364-9. Manually plug and unplug specimens for 100 cycles at a maximum rate of 600 cycles per hour with latch retention feature operable.
Solderability.	Solderable areas shall have a minimum of 95% solder coverage.	EIA-638.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject mated specimens to 10 cycles between -55 and 85℃.
Humidity-temperature cycling.	See Note.	EIA-364-31. Cycle mated specimens between 25 ± 3℃ at 80 ± 3% RH and 65 ± 3℃ at 50 ± 3% RH. Ramp times shall be .5 hour, dwell times shall be 1 hour. Perform 24 such cycles.
Temperature life.	See Note.	EIA-364-17. Subject mated specimens to 115℃ for 432 hours.
Mixed flowing gas.	See Note.	EIA-364-65. Subject specimens to environmental Class IIA for 14 days.
Thermal disturbance.	See Note.	Cycle the specimens between 15 ± 3℃ and 85 ± 3℃ as measured on the part. Ramps shall be a minimum of 2℃ per minute, dwell times shall insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 10 such cycles.

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	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
Dry circuit resistance	2,5(c)	2,4(c)	2,5	2,4,6(c)		2,5
Dielectric withstanding voltage						3,6
Vibration			3(d)(e)			
Mechanical shock			4			
Durability						4
Solderability					2	
Thermal shock	3(f)					
Humidity-temperature cycling	4					
Temperature life		3(f)				
Mixed flowing gas				3(d)		
Thermal disturbance				5		
Final examination of product	6	5	6	7	3	7

NOTE

(a) See paragraph 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) Post-stress reseating 3 times and reread dry circuit resistance.
(d) Precondition specimens with 20 durability cycles and temperature life of 192 hours at 115℃.
(e) Socket shall be mated with a mechanical device of the approximate size and mass of the module.
(f) Precondition specimens with 20 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. All test groups shall each consist of 5 lower cages, 5 upper cages and 5 connectors.

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.

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