



SGI 2.0 Connector Product Specification

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Signal Grace Inertial (SGI) 2.0 Connector System. The SGI 2.0 product is a wire-to-board and mass terminated using insulation displacement technology on 2.0mm centerlines and mate with 0.5 mm square posts providing a reliable interconnection between wires and posts mounted on printed circuit boards. The SGI 2.0 connector system is available in 2 through 10 positions. It is designed to be terminated to 26 AWG and 28 AWG wire. A complete connector consists of an assembled header and assembled plug housing & receptacle contact. For the header assembly, it provides through hole type and SMT type. The SGI 2.0 product can meet glow wire test required by IEC 60335-1.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 2 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 between 02May18 and 06Aug18. The Qualification Test Report number for this testing is 501-106266.

1.4. Revision Summary

Revisions to this specification include:

- Updated document to incorporate template by adding Paragraph 1.3, 1.4, 3.3, 4 and removing part number list.

2. APPLICABLE DOCUMENTS AND FORMS

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

- 114-106266 Application Specification
- 501-106266 Qualification Test Report

2.2. Commercial Standards and Specifications

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

2.3. Reference Documents

- 102-950 Qualification of Separable Interface Connectors
- 109-1 General Requirements for Testing
- 109-197 Test Specifications vs EIA and IEC Test Methods

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

3.2. Ratings

- A. Voltage Rating: 50 VAC
- B. Current Rating: See Figure 1 for applicable current carrying capability. Maximum rated current that can be carried by this product is limited by maximum operating temperature of the housings (105°C) and temperature rise of the housings (30°C). Variables to be considered for each application are: wire size, connector size, contact material, ambient temperature, and printed circuit board design.

Current Capacity/A		
Position \ Wire Size	2P~4P	5P~10P
26AWG	3.0 Max.	2.0 Max.
28AWG	2.0 Max.	

Figure 1

- C. Temperature Rating: -40°C to +105°C (The upper limit of the temperature includes the temperature rising by energized current.)

3.3. Performance Requirements and Test Description

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 2. All tests shall be performed at ambient environmental conditions otherwise specified.

3.4. Test Requirements and Procedure Summary

Test Description	Requirement	Procedure
Initial Examination of Product.	Meets requirements of product drawing and Application Specification 114-106266.	EIA-364-18. Visual and dimensional inspection per product drawing.
Final Examination of Product.	Meets visual requirements.	EIA-364-18. Visual examination.
Electrical		
Low Level Contact Resistance (LLCR).	10 milliohms maximum initial. 20 milliohms maximum final.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 4.
Insulation Resistance.	1000 megohm minimum initial. 5 megohm minimum final.	According to EN 60998 Part 1, Test 13.3. 500 volts DC for one minute hold. Test between adjacent contacts.
Withstanding Voltage.	One minute hold with no breakdown or flashover. 5.0 milliamperes maximum leakage current.	EIA-364-20, Condition I. 1100 volts AC at sea level. Test between adjacent contacts.
Temperature Rise vs. Current.	30°C maximum temperature rise.	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5 minutes intervals are within 1°C.

Figure 2 (continued)

Test Description	Requirement	Procedure
Mechanical		
Sinusoidal Vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition I. Subject mated specimens to 10 to 55 to 10Hz traversed in 1 minute with 1.5 mm maximum total excursion. Two hours in each of 3 mutually perpendicular planes.
Mechanical Shock.	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. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 25 cycles at a maximum rate of 500 cycles per hour.
Durability Preconditioning.	See Note.	EIA-364-9. Mate and unmate specimens for 5 cycles at a maximum rate of 500 cycles per hour.
Connector Mating Force.	4.0 N maximum per contact	EIA-364-13. Measure force necessary to mate specimens with companion headers a distance of 5.08 mm from point of initial contact at a maximum rate of 12.7 mm per minute. Measure the force required to mate / un-mate connectors without Housing Lock.
Connector Unmating Force.	0.9 N minimum per contact.	EIA-364-13, Method A. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm per minute with latch disengaged.
Tensile Strength of Wire Termination	26 AWG 19.6 N minimum in Axial direction 11.8 N minimum in Traverse direction 28 AWG 14.7 N minimum in Axial direction 11.8 N minimum in Traverse direction	EIA-364-8 Apply a pull-off load to terminated wire of contact secured on the tester, Operation Speed: 50 mm/min. The load is applied in (1) the axial and (2) the traverse directions as specified. See Figure 5.
Resistance to Soldering Heat.	See Note.	For Through hole type: Follow TE Spec. 109-202 condition C Solder Temperature: 260 +0/-5°C Immersion Duration: 5 +2/-0 Sec For SMT type: Follow TE Spec 109-201, condition B Peak Temperature: 260 +0/-5°C
Connector Locking Strength.	29.4 N minimum	EIA-364-98. Measure connector locking strength at a maximum rate of 100 mm [3.9 in] per minute.

Figure 2 (continued)

Test Description	Requirement	Procedure
Post Retention Force	20 N minimum	EIA-364-29 Measure post retention at a maximum rate of 25.4 mm per minute.
Solderability	Wet Solder Coverage 95% Min.	Solder Temperature: 240±5°C Immersion duration: 3±0.5s Flux: Non-activated rosin base.
Environmental		
Thermal Shock.	See Note.	EIA-364-32, Test Condition VII. Subject mated specimens to 10 cycles between -55 and 105°C with 30 minutes dwells at temperature extremes and 5 minutes transition between temperatures.
Humidity/temperature Cycling.	See Note.	EIA-364-31, Method III. Subject specimens to 10 cycles (10 days) between 25 and 65°C at 90 to 95% RH.
Temperature Life.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition C. Subject mated specimens to 105°C for 96 hours.
Salt Spray.	See Note.	EIA-364-26. Subject mated specimens to 5% salt concentration for 48 hours.
Hydrogen Sulfide.	See Note.	Subject mated specimens to 3 ± 1 ppm H ₂ S gas concentration maintained at 40 ± 2°C for 96 hours.
Ammonia.	See Note.	Subject mated specimens in atmosphere that rated 25 mL/L of 3% NH ₃ for 7 hours.
Resistance to Cold	See Note.	IEC 60068-2-1 Mated connectors, -40±2°C, 96 hours

Figure 2 (end)



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 3.

3.5. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	TEST SEQUENCE (b)													
Initial examination of product	1	1	1	1,3	1	1	1	1	1	1	1	1	1	1
LLCR	3,7	2,4	2,5								2,4	2,4	2,4	2,4
Withstanding Voltage					3,7									
Insulation Resistance					2,6									
Temperature Rise vs. Current				2										
Sinusoidal Vibration	5													
Mechanical Shock	6													
Durability	4													
Durability Preconditioning			3											
Connector Mating Force	2													
Connector Unmating Force	8													
Tensile Strength of Wire Termination						2								
Resistance to Soldering Heat							2		3					
Connector Locking Strength								2						
Post Retention Force									2,4					
Solderability										2				
Thermal Shock					4									
Humidity/Temperature Cycling			4		5									
Temperature Life		3												
Salt Spray											3			
Hydrogen Sulfide												3		
Ammonia													3	
Resistance to Cold														3
Final Examination of Product	9	5	6	4	8	3	3	3	5	3	5	5	5	5

Figure 3



NOTE

- (a) See paragraph 4.2.
- (b) Numbers indicate sequence in which tests are performed.

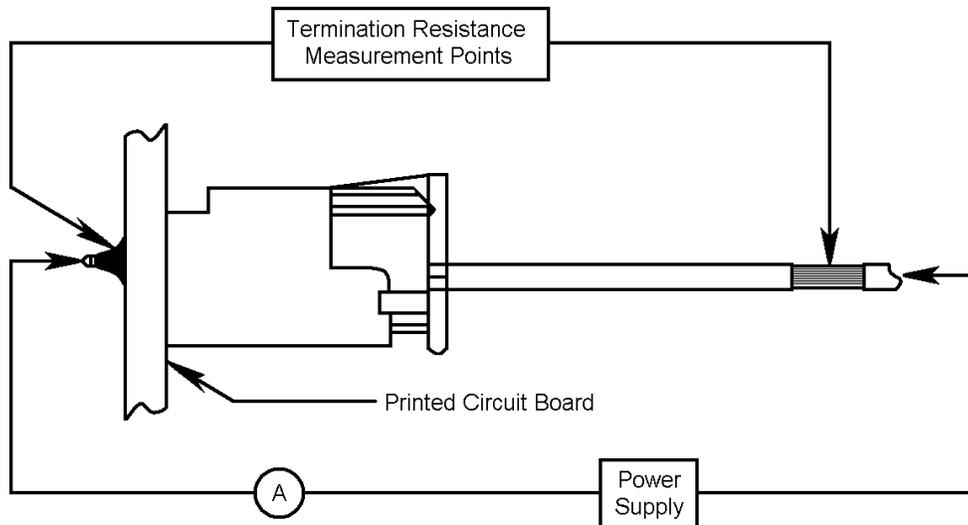


Figure 4: LLCR Measurement Points (Subtract Wire Bulk)

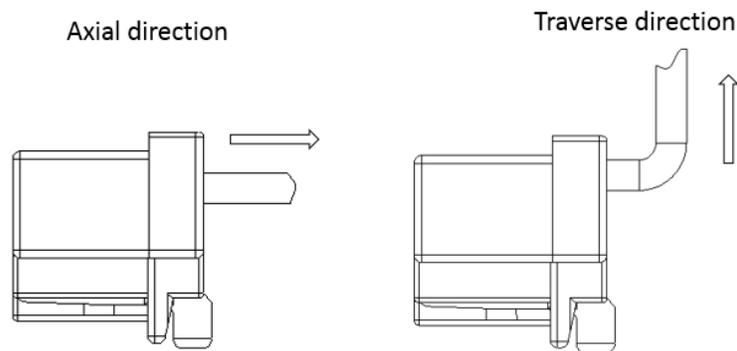


Figure 5

4. QUALITY ASSURANCE PROVISIONS

4.1. Test Conditions

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Figure 6.

Temperature	15°C – 35°C
Relative Humidity	45% – 75%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 6

4.2. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

4.3. 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.

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements in Figure 2. 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

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.