

**NOTE**

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, TE Connectivity (TE) makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, TE may change these requirements based on the results of additional testing and evaluation. Contact TE Engineering for further details.

SGI 2.0 Crimp Connector System

1. SCOPE

1.1. Content

This specification covers performance, tests, and quality requirements for the SGI 2.0 Crimp Connector System.

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 has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

1.4. Revision Summary

Revisions to this specification include:

- Updated Figure 2 to include termination resistance measurement points.

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

114-143160	Application Specification
501-139243	Qualification Test Report – SGI 2.0 Crimp Connector System

2.2. Commercial Standards and Specifications

IEC 60335	International Standard – Safety of Household and Similar Appliance
IEC 60695	International Standard – Fire Hazard Testing
EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Documents

109-1	General Requirements for Testing
102-950	Qualification of Separable Interface Connectors
114-5425	Application Specification – Crimping GIC 2.0 EV Series
114-106266	Application Specification – SGI 2.0 Connector System
108-106266	Product Specification – SGI 2.0 Connector System
108-106001	Product Specification – GIC 2.0 EV Series

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. Materials

Materials used in the construction of this product shall be as specified on the applicable TE drawing.

3.3. Ratings

- A. Voltage Rating: 50 VAC/DC
- B. Current Rating: See Figure 5
- C. Temperature Rating: -40°C to +105°C

3.4. Performance Requirements and Test Description

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions otherwise specified.

3.5. Test Requirements and Procedure Summary

Test Description	Requirement	Procedure
Examination of Product	Meet requirements of product drawing and TE application specification. After testing, there shall be no corrosive influence on the performance and no physical damage that would impair product performance.	EIA-364-18 Visual and dimensional (C of C) inspection per the product drawing.
Electrical		
Termination Resistance	Initial: 10 mΩ (milliohm) (maximum) Final: 20 mΩ (milliohm) (maximum)	EIA-364-23 Subject contacts assembled in a housing to 20mV (max.) open circuit at 10 mA. Subtract the resistance of the wire from the measurement. Test on mated connectors. See Figure 2
Insulation Resistance	Initial: 1000 MΩ (minimum) Final: 5 MΩ (minimum)	EIA-364-21 Apply 500 VDC and hold for 2 minutes. Test between contacts in adjacent circuits and between housing and contacts in a mated connector.
Dielectric Withstanding Voltage	1 minute hold without a creep discharge or flashover. Current Leakage: 5 mA (maximum)	EIA-364-20, Method A, Condition 1 Hold at 1.1 kV AC at sea level for 1 minute. Current Leakage: 5 mA (maximum) Test between contacts in adjacent circuits and between housing and all contacts in a mated connector.
Temperature Rise vs. Current	30°C maximum when subjected to rated current	EIA-364-70, Method 1 Measure temperature rise above ambient created by energizing current. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C

Figure 1 (continued)

Mechanical			
Random Vibration	No electrical discontinuity greater than 1 μ s shall occur. No physical damage that would impair product performance.		EIA-364-28, Condition VII, Level D Subject mated connector to 20-500 Hz for 15 minutes in each of 3 mutually perpendicular plans. 100 mA applied.
Mechanical Shock	No electrical discontinuity greater than 1 μ s shall occur. No physical damage that would impair product performance.		EIA-364-27, Condition H Subject mated connector to 30G's half-sine shock pulse of 11 ms duration. 3 drops each to normal and reversed directions of X, Y and Z axis. Total of 18 drops.
Durability	No physical damage that would impair product performance.		EIA-364-9 Manually mate and unmate connectors for 6 cycles.
Connector Mating Force	(4.5 x # of Positions) N		EIA-364-13, Method A Operation Speed: 25.4 mm/min Measure the force required to mate connectors without locking latches.
Connector Unmating Force	(.12 x # of Positions) N (minimum)		EIA-364-13, Method A Operation Speed: 25.4 mm/min Measure the force required to unmate connectors without locking latches.
Crimp Tensile Strength	Wire Size (AWG [mm²])	Crimp Tensile (minimum) (N [lbf])	EIA-364-8 Operation Speed: 25.4 mm/min Apply an axial pull force to the crimped wire. Contact to be secured to the tester. Insulation barrel crimp to be disabled. *Contact must be held in a fixture during testing to equalize forces during testing.
	22	40 N [9lbf]	
	24	28 N [6.3lbf]	
	26	15N [3.4lbf]	
	28	11N [2.5lbf]	
Contact Insertion Force	4.9 N (maximum) per contact		EIA-364-5
Contact Retention Force	14.7 N (minimum) per contact		EIA-364-29, Method A Operation Speed: 25.4 mm/min Measure the axial force required to remove contact from the housing with and without a TPA accessory.
Housing Locking Strength	29.4 N (minimum)		EIA-364-98 Operation Speed: 13 mm/min Ensure that locking latches are fully engaged.
Environmental			
Thermal Shock	No physical damage that would impair product performance.		EIA-364-32, Method A, Test Condition VIII Subject mated specimens to 10 cycles between -40°C and 105°C with 30 minute dwell time at temperature extremes and 5 minute transition (maximum) between temperatures.

Figure 1 (continued)

Humidity-Temperature Cycling	No physical damage that would impair product performance.	EIA-364-31, Method IV Subject mated specimen to 10 cycles between 25°C and 65°C at 80-100% RH. Measurements to be recorded after specimens are held for 3 hours at ambient temperature and humidity. 1 cycle is 24 hours.
Temperature Life	No physical damage that would impair product performance.	EIA-364-17, Method A, Test Condition A, Test Condition 4 Subject mated connector to 105°C for a duration of 96 hours. Measurements to be recorded after specimens are held for 3 hours at ambient temperature and humidity.
Glow Wire Test 750°C (GWT version only)	Test at 750°C (Flame duration ≤ 2 seconds). Lighted tissue paper shall not burn.	IEC 60695-2-11 and IEC 60335-1 Tests to be conducted on each of 3 perpendicular sides. Perform a visual check and take picture after the test.

Figure 1 (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.

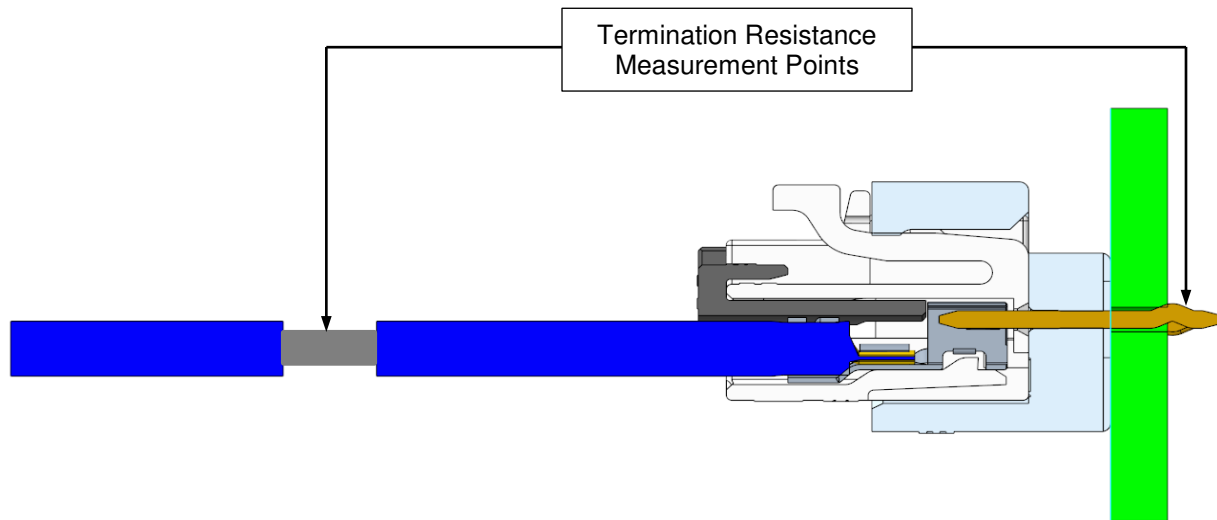


Figure 2: Termination Resistance Measurement Points

3.6. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)								
	1 Mechanical	2 Current Rating	2 Temperature Life	3 Environmental	4 Housing Electricals	5 Insertion/Retention	6 Crimp Tensile	7 Locking Strength	8 Glow Wire
	TEST SEQUENCE (b)								
Examination of Product	1, 9	1,5	1, 5	1, 5	1, 8	1, 4	1, 3	1, 3	1, 3
Termination Resistance	3, 7	2,4	2, 4	2, 4					
Insulation Resistance					2, 6				
Dielectric Withstanding Voltage					3, 7				
Temperature Rise vs. Current		3							
Random Vibration	5								
Mechanical Shock	6								
Durability	4								
Connector Mating Force	2								
Connector Unmating Force	8								
Thermal Shock					4				
Humidity-Temperature Cycling				3(c)	5				
Temperature Life			3(c)						
Contact Insertion Force						2			
Contact Retention Force						3			
Crimp Tensile Strength							2		
Housing Locking Strength								2	
Glow Wire (GWT versions only)									2

Figure 3



NOTE

- (a) See paragraph 4.2.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Connectors shall be preconditioned by mating and unmating for 5 cycles.

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 4.

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

Figure 4

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 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

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.

Position	Wire Size			
	22 AWG	24 AWG	26 AWG	28 AWG
2-10P	2.5 A	2.2 A	2 A	1.5 A

Figure 5: Current Rating