



1.00mm Wire To Board CONNECTOR

1. SCOPE

1.1. Content

This specification covers performance, tests, and quality requirements for 1.00mm Wire to Board CONNECTOR.

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 in Lab. The Qualification Test Report number for this testing is 501-161229 and 501-161230.

1.4. Revision Summary

Revisions to this specification include:

- Initial release of specification.

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

114-160811	Application Specification
501-161229	Qualification Test Report
501-161230	Qualification Test Report

2.2. Commercial Standards and Specifications

IEC 61984	International Standard – Safety Requirements and Tests
IEC 60335	International Standard – Safety of Household and Similar Appliance
IEC 60512	International Standard – Connectors for Electronic Equipment – Tests and Measurements
IEC 60695	International Standard – Fire Hazard Testing
UL 1977	Safety Standards – Component Connectors for Use in Data, Signal, Control, and Power Applications
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

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.

- A. Housing: Thermoplastic resin, Flammability: UL94V-0, Color: Natural
- B. Contacts: Copper Alloy, Matte Tin Plating at contact area and soldering area, over Ni plating.
- C. Ground lug: Copper Alloy, Matte Tin Plating at contact area and soldering area, over Ni plating.

3.3. Ratings

- A. Voltage Rating: Max. 50 V AC
- B. Current Rating: Max. 1.0 A per contact
- 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	Meets requirements of product drawing. No physical damage.	Visual inspection
Electrical		
Termination Resistance	20 mΩ Max. (Initial) Δ R 20 mΩ Max. (Final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 100mA Max.
Insulation Resistance	100 MΩ Min. (Initial) 100 MΩ Min. (Final)	Impressed voltage 500 VDC Test between adjacent circuits and contact
Dielectric Withstanding Voltage	No creeping discharge nor flashover shall occur. Current leakage: 0.5 mA MAX	500 VAC for 1minute Test between adjacent circuits and contact
Temperature Rising	30°C Max. under loaded rating current	Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value.
Mechanical		

Solderability	Wet solder coverage: 95% Min.	Solder Temperature: 235+/-5 degC Duration: 5+/-0.5 sec
Connector Mating Force	4.9 N/pin (0.5 kgf) Max.	Operation Speed: 10 mm/min. Measure the force required to mate connector
Connector Unmating Force	0.785 N/pin (0.08 kgf) Min.	Operation Speed: 10 mm/min. Measure the force required to unmate connector
Durability	No Damage	Operation Speed: 10 cycle/min. No. of Cycles: 50 Cycles
Vibration	No electrical discontinuity greater than 1microsecond shall occur. No Damage	Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.52mm amplitude 2 Hours each of 3 mutually perpendicular planes, passing DC 100mA current during the test.
Physical Shock	No electrical discontinuity greater than 1microsecond shall occur. No Damage	Accelerate Velocity: 490m/s ² 50G Waveform: Half-sine shock plus Duration: 11msec No. of Drops : 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops, passing DC 100mA current during the test.
Environmental		
Temperature Life (Heat Aging)	No Damage	Mated Connector 105°C , 250 hours
Thermal Shock	No Damage	Mated Connector -55+/-3°C (30 minutes), +105+/-2°C (30 minutes) Making this a cycle, repeat 5 cycles
Humidity-Temperature Cycle	No Damage	Mated Connector 25 – 65°C , 95% RH, 10 Cycles (See Fig. 2)
Salt Spray	No Damage	Subject mated connectors to 35+/-2°C and 5+/-1% salt condition for 48 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour.
Resistance to Reflow Soldering Heat	No physical damage shall occur	Pre Heat: 100 – 150°C, 60 to sec Min. Heat: 210°C, 30 sec. Min. Peak Temp.: 235°C
	Lead-free type No physical damage shall occur.	Pre-soak condition, 40°C / 95% R.H. for 48 hours. Pre Heat: 150 ~ 180°C, 90±30 sec.

		Heat: 220°C Min., 30±10 sec. Peak Temp.: 260 +0/-5°C. Duration: 2 cycles
Insertion force	Insertion: 1.47 N (0.15 kgf) Max	Operation Speed: 10 mm/min. Measure the force required for terminal to insert housing
Withdraw force	Withdraw: 5.88 N (0.6 kgf) Min	Operation Speed: 10 mm/min. Measure the force required for terminal to withdraw housing
Cramp retention force	9.8 N (1.0 kgf) Min.	Operation Speed: 10 mm/min. Measure the force required to lock the terminal on device and then pull the wire cable by load cell
Current Rating	30°C max. under loaded rating current for 1 Amp	Apply test current of loaded rating current to the wire gauge (UL1571 AWG #28), and measure the temperature rising, after the temperature becomes stabilized deduct ambient temperature from the measured value

Figure 1



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.

3.6. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
	TEST SEQUENCE (b)												
Examination of Product	1,7	1,9	1,6	1,5	1,5	1,3	1,5	1,3	1,3	1,3	1,3	1,3	1,3
Termination Resistance		2,8	2,5	2,4	2,4	2,4	2,4						
Insulation Resistance	2,5												
Dielectric withstanding Voltage	3,6												
Temperature Rising										2			
Solderability								2					
Connector Mating Force		3,7											
Connector Unmating Force		4,6											
Durability		5											
Vibration			3										
Physical Shock			4										
Temperature Life				3									
Thermal Shock					3								

Humidity Temperature Cycling	4					3						
Salt Spray							3					
Resistance to Reflow Soldering Heat									2			
Insertion & withdraw force										2		
Cramp Retention force											2	
Current Rating												2

Figure 2



NOTE

(a) See paragraph 4.2.

(b) Numbers indicate sequence in which tests are performed.

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 3.

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

Figure 3

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 2.

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.