

Wire-To-Board Serial, SMT, Pitch 1.0 connector

1. SCOPE

1.1. Contents

This specification covers the performance, tests and quality requirements for the Tyco Electronics Wire-To-Board Serial, SMT, Pitch 1.0 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.

2. APPLICABLE DOCUMENT

The following Tyco 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. Tyco Electronics Documents

- 109-201: Component Heat Resistance to Lead-Free Reflow Soldering.
- 501-57283: Qualification Test Report.

2.2. Commercial Standard

- JESD22-B102D: Solderability Test Method.

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

- A. Voltage: 50 volts AC/DC rms.
- B. Current: 1 ampere for AWG #28.
- C. Temperature: -55 to 105°C.

3.4. Performance Requirement 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

Item	Description	Requirement	Procedure
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection
Electrical Requirement			
2	Termination Resistance	20 mΩ Max. (Initial) ΔR 20 mΩ Max. (Final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 100mA Max. (See figure 4)
3	Insulation Resistance	100 MΩ Min. (Initial) 100 MΩ Min. (Final)	Impressed voltage 500 VDC Test between adjacent circuits and contact
4	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
5	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 Requirement			
6	Solderability	Wet solder coverage: 95% Min.	Solder Temperature: 235+/-5 degC Duration: 5+/-0.5 sec
7	Connector Mating Force	4.9 N/pin (0.5 kgf) Max.	Operation Speed: 10 mm/min. Measure the force required to mate connector
8	Connector Unmating Force	0.785 N/pin (0.08 kgf) Min.	Operation Speed: 10 mm/min. Measure the force required to unmate connector
9	Durability	No Damage	Operation Speed: 10 cycle/min. No. of Cycles: 50 Cycles
10	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.
11	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 Requirements			
12	Temperature Life (Heat Aging)	No Damage	Mated Connector 105°C, 250 hours

Figure 1 (continued)

Item	Description	Requirement	Procedure
Environmental Requirements			
13	Thermal Shock	No Damage	Mated Connector -55+/-3°C (30 minutes), +105+/-2°C (30 minutes) Making this a cycle, repeat 5 cycles
14	Humidity-Temperature Cycle	No Damage	Mated Connector 25 – 65°C, 95% RH, 10 Cycles (See Fig. 2)
15	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.
16	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
17	Insertion force	Insertion: 1.47 N (0.15 kgf) Max.	Operation Speed: 10 mm/min. Measure the force required for terminal to insert housing
18	Withdraw force	Withdraw: 5.88 N (0.6 kgf) Min.	Operation Speed: 10 mm/min. Measure the force required for terminal to withdraw housing
19	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
20	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

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.

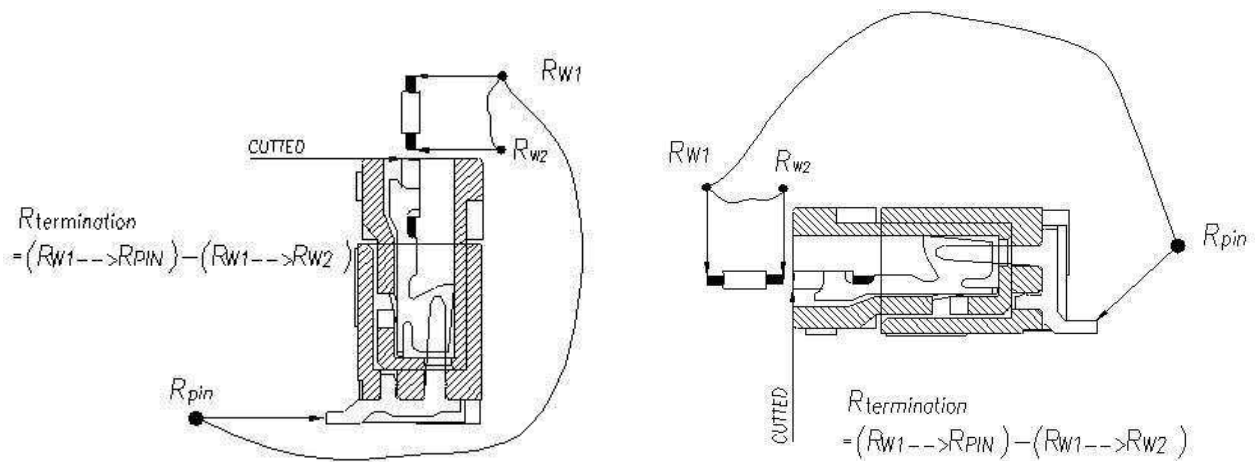
Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group												
	A	B	C	D	E	F	G	H	I	J	K	L	M
	Test Sequence (a)												
Examination of Product	1, 7	1, 9	1, 6	1, 5	1, 5	1, 5	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			
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						
Solderability								2					
Resistance to Reflow Soldering Heat									2				
Insertion & withdraw force										2			
Cramp Retention force											2		
Current Rating													2

NOTE (a) Numbers indicate sequence in which test are performed.

Figure 2



Termination Resistance Measurement Point

Figure 3