2.0 mm Pitch Wire-To-Board Connector

1. SCOPE

1.1. Contents

This specification covers the performance, tests and quality requirements for the Tyco Electronics 2.0 mm Pitch 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.

2. APPLICABLE DOCUMENT

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. Tyco Electronics Documents

- 109-202: Component Heat Resistance to Wave Soldering.
- 501-57030: Qualification Test Report.

2.2. Commercial Standard

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.
- 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: 250 volts AC rms.

B. Current: (Maximum.)

AWG #22	AWG #24	AWG #26	AWG #28
3 Amperes	2 Amperes	1.5 Amperes	1 Ampere

C. Temperature: -25 to 85°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

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
ELECTRICAL		
Low level contact resistance.	20 mΩ maximum initial. 40 mΩ maximum final.	EIA-364-23. Subject mated contact assembled in housing to 20 mV maximum open circuit at 100 mA maximum.
Dielectric withstanding voltage.	1 minute hold with no breakdown, flashover, or 0.5 mA maximum leakage.	EIA-364-20, Condition I. 800 volts AC at sea level. Test between adjacent contacts of unmated specimens.
Insulation resistance.	1000 MΩ minimum.	EIA-364-21. Test between adjacent contacts of unmated specimens.
Temperature rise.	30°C maximum under loaded rating current.	EIA-364-70, Method 2. 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		
Connector mating force.	5 Kgf maximum	EIA-364-13. Measure force necessary to mate specimens with test boards at a maximum rate of 25 mm per minute.
Connector unmating force.	1.2 Kgf minimum.	Measure force necessary to unmate specimens with test boards at a maximum rate of 25 mm per minute.
Durability.	See NOTE	EIA-364-9. Mate and unmate specimens with test boards for 50 cycles at a maximum rate of 300 cycles per hours.
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See NOTE	EIA-364-28, Condition I. Subject mated specimens to 10-55-10 Hz traversed in 1 minute with 1.52 mm maximum total excursion. 2 hours in each of 3 mutually perpendicular planes.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See NOTE	EIA-364-27, Condition A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Pin retention force.	0.5 Kgf minimum.	EIA 364-29 Axial pullout force on the pin in the housing at a rate of 25.4 mm/minute.
Receptacle contact retention force.	1 Kgf minimum.	Load the wire-crimped contact into the cavity position and apply an axial pull-off to the wire with the speed at a rate of 25.4 mm/minute. Receptacle contact force is determined when the contact is dislodged from the cavity position.

Figure 1 (continued)

Test Description	Requirement		Procedure
MECHANICAL			
Crimp tensile strength.	Tensile (min.)	Wire Size (AWG)	Apply an axial pull-off load to crimped wire of contact secured on the tester. Operation speed: 50 mm/min without insulation support crimp set in effect.
	4.5 Kgf	#22	
	3 Kgf	#24	
	2 Kgf	#26	
	1.3 Kgf	#28	
ENVIRONMENTAL			
Solderability.	The inspected area of each lead must have 95% solder coverage minimum.		JESD22-B102D, Condition C. Steam Aging Preconditioning: 93 +3/-5°C, 8 hours ±15 min. Solder Temperature: 245 ±5°C. Solder Immersion Time: 5 ±0.5 s.
Resistance to wave soldering heat.	See NOTE		109-202, Condition B. Solder Temp.: 265 ±5°C, 10 +2/-0 s.
Thermal shock.	See NOTE		EIA-364-32, Condition I. Subject mated specimens to 5 cycles between -55 and 85°C
Humidity-temperature cycling.	See NOTE		EIA-364-31, Method III, Condition B. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 90 to 95% R.H.
Temperature life.	See NOTE		EIA-364-17, Method A, Temperature condition 3, Time condition B. Subject mated specimens to 85°C for 250 hours.
Salt spray.	No evident corrosion.		EIA-364-26, Condition B. Subject mated specimens to 5% salt at 35°C for 48 hours. After test, rinse the specimens with water and recondition the room temperature for 1 hour.

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)											
	A	B	C	D	E	F	G	H	I	J	K	L
	Test Sequence (b)											
Examination of product.	1, 7	1, 9	1	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3	1	1, 3	1
Low level contact resistance.		2, 8		2, 5	2, 4	2, 4	2, 4	2, 4				
Dielectric withstanding voltage.	3, 6											
Insulation resistance.	2, 5											
Temperature rise.									2			
Connector mating force.		3, 7										
Connector unmating force.		4, 6										
Durability.		5										
Vibration, sinusoidal.				3								
Mechanical shock.				4								
Pin retention force.										3		
Receptacle contact retention force.			2									
Crimp tensile strength.												2
Solderability.											2	
Resistance to wave soldering heat.										2		
Thermal shock.					3							
Humidity-temperature cycling.	4					3						
Temperature life.							3					
Salt spray.								3				

NOTE (a) See paragraph 4.1.A.
(b) Numbers indicate sequence in which test are performed.

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 a minimum of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

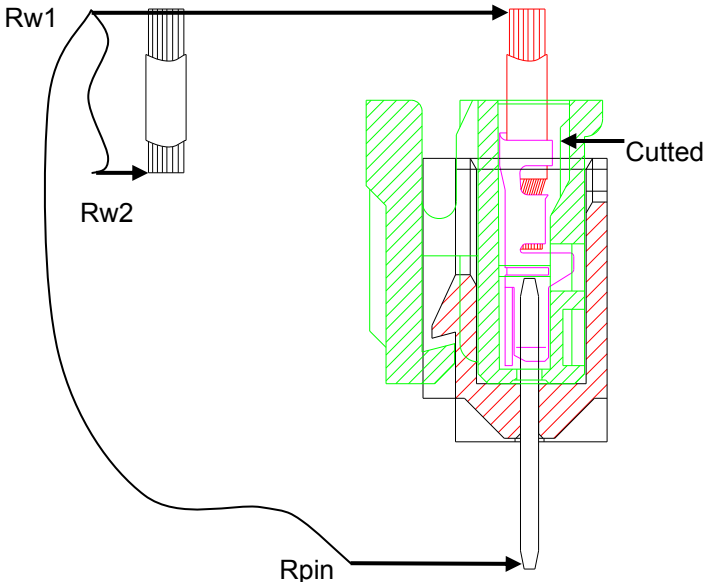
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

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.



R termination
=(Rw1→ Rpin)-(Rw1→ Rw2)

Low Level Contact Resistance Measurement Points

Figure 3