Pin Assembly Press-Fit Tail Connector

1. SCOPE

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the Pin Assembly, Press-Fit Tail Connector.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in Tyco 109 series specifications 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 SPECIFICATIONS

A. 109-1: General Requirements for Test Specifications

B. 109-197：Tyco Specification vs EIA and IEC Test Methods

C. 501-57684：Test Report

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

A. Housing：Thermoplastic, UL94V-0

B. Contact：Copper Alloy, Gold Plating over contact area, Matte-Tin on solder tail with entire contact underplated Nickel all over.

3.3. RATINGS

A. Voltage: 250 VAC rms.

B. Current: 3.0 A Max.

C. Temperature: - 65 ℃ to 85 ℃

3.4. PERFORMANCE REQUEIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per AMP Specification 109-1TEST REQUIREMENTS AND PROCEDURES SUMMARY.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM		REQUIREMENT	PROCEDURE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection.
ELECTRICAL REQUIREMENT			
2	Contact Resistance	10 mΩ Max(Initial) 30 mΩMax(Final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-6B.
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX	500VAC for 1minute Test between adjacent circuits of unmated connector. EIA-364-20B
4	Insulation Resistance	1000 MΩ Min.(Initial) 100 MΩ Min.(Final)	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
5	Temperature Rising	30℃ 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	Vibration	No electrical discontinuity greater than 1 μsec shall occur. See Note.	Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.52mm amplitude 2 Hours each of 3 mutually perpendicular planes. 100mA Max. Applied. EIA-364-28D
7	Mechanical Shock	No electrical discontinuity greater than 1 μsec shall occur. See Note.	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 1mA current during the test. EIA-364-27B
8	Contact Insertion Force	18.16 Kgf Max. / 50 pin (40 pounds Max. / 50 pin)	Measure force to insert contact into printed circuit wiring board at a rate of 1 inch/min.
9	Contact Retention Force	3.41 Kgf Min. / 50 pin (7.5 pounds Min. / 50 pin)	Measure axial push out force.
10	Contact Torque	Contact shall not dislodge or move with 3 inch/ounces applied.	A twisting force of 3 inch/ounces shall be applied to each contact for 5 seconds in each direction.

Figure 1（Cont.）

ENVIRONMENTAL REQUIREMENTS			
11	Pin Repair / Conditioing	Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence.	Remove and replace contacts 2 times using a new pin each time and retain the third contact in the board for further testing. Record initial values.
12	Hole Distortion	1.5 mils average; 2 mils maximum.	Radial hole distortion; 1. Cross section and measurd 30 holes. 2. Cross section and measure 30 holes after pin repair.
13	Terminal Retention Force	0.9 Kgf (9N) Min.	Measure the contact retention force with Tensile strength tester.
ENVIRONMENTAL REQUIREMENTS			
14	Thermal Shock	See Note	Mated Connector -55+/-3℃(30 minutes), +85+/-2℃(30 minutes) Perform this a cycle, repeat 5 cycles EIA-364-32C
15	Humidity-Temp. Cycle	See Note	Mated Connector 25~65℃ , 90~95% RH, 10 Cycles EIA-364-31B.
16	Temperature Life	See Note	Mated Connector 85℃ , 96 hours, EIA-364-17B.

Figure 1（End）

NOTE：Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group					
	A	B	C	D	E	F
	Test Sequence（a）					
Examination of Product	1, 9	1, 10	1, 5	1, 6	1, 3	1, 5
Contact Resistance	3, 7	3, 7		3, 5		
Dielectric withstanding Voltage						3
Insulation Resistance						2, 4
Temperature Rising				4		
Vibration	4					
Mechanical Shock	5					
Contact Insertion Force			2			
Contact Retention Force	8	9				
Contact Torque	6	8				
Pin Repair / Conditioning	2	2	3	2		
Hole Distortion			4			
Terminal Retention Force					2	
Thermal Shock		5				
Humidity Temperature Cycling		6				
Temperature Life		4				

Figure 2

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

（b）Discontinuities shall not take place in this test group, during tests.

Figure 3. Contact Resistance & Resistance to flow solder heat