

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the AMP-LATCH* ACTION PIN* header connector. Components of this type are intended to be inserted into printed wiring boards having either plated-through or unplated holes. For components installed into unplated holes, only the mechanical tests shall be considered. For components installed into plated-through holes, all electrical and mechanical tests shall be applicable. Bonding may be accomplished by either the press fit of the pins or by reflowing the solder plating in the hole. A select solder deposit may be applied to the component prior to the reflow operation.

1.2. Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. 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. AMP Specifications

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)

3. REQUIREMENTS

3.1. Design and Construction

Connectors shall be of the design, construction and physical dimensions specified on the applicable product drawing.

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B	Revise per ECN CF-1250	<i>PR</i>	10/14 86	CHK <i>T. Johnson</i> 8/26/83			
A	Revise per ECN CF 0040	<i>PR</i>	4/24 84	APP <i>Robert T. Anderson</i>	LOC B	NO 108-40019	REV B
A	0 Release per ECN 4222-3041	<i>PR</i>	8-29 83	SHEET 1 OF 7			
DIST 40	LTR	REVISION RECORD	APP				
					TITLE CONNECTOR, HEADER, ACTION PIN, AMP-LATCH		

3.2. Materials

- A. Terminal: Copper alloy
- B. Housing: Thermoplastic, black, UL 94V-0

3.3. Ratings

- A. Current: 1 ampere maximum per contact, see Para 3.5.(a)
- B. Operating Temperature: -65° to 105°C

3.4. Performance and Test Description

Connectors shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing.	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination Resistance, Rated Current	8 milliohms maximum.	Measure potential drop of mounted contacts assembled in housing at 1 ampere maximum, see Figure 5; AMP Spec 109-25, calculate resistance.
Termination Resistance, Dry Circuit (Low Level)	8 milliohms maximum.	Subject mounted contacts assembled in housing to 50 mv open circuit at 100 ma maximum, see Figure 5; AMP Spec 109-6-1.
Dielectric Withstanding Voltage	1.0 kvac (rms) dielectric withstanding voltage, one minute hold, no breakdown or flashover.	Test between adjacent contacts of mounted connector assemblies; AMP Spec 109-29-1.

Figure 1 (cont)

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Test Description	Requirement	Procedure
Insulation Resistance	5000 megohms minimum initial.	Test between adjacent contacts of mounted connector assembly; AMP Spec 109-28-4.
MECHANICAL		
Vibration	No physical damage.	Subject mounted connectors to 15 G's, 10-2000 Hz; AMP Spec 109-21-3.
Physical Shock	No physical damage.	Subject mounted connectors to 100 G's sawtooth in 6 milliseconds; 3 shocks in each direction applied along the 3 mutually perpendicular planes total 18 shocks; AMP Spec 109-26-9.
ACTION PIN Insertion Force	40 pounds maximum per contact.	Measure force to insert pin header into printed circuit board with hole dimensions specified in Figure 4.
ACTION PIN Retention	Pins shall not dislodge from printed circuit board.	Apply axial load of 10 pounds in opposite direction to insertion.
Pin Retention in Housing	2 pounds minimum, post shall not dislodge from housing; no physical damage.	Apply axial load of 2 pounds to each post in opposite direction of insertion, see Figure 3; AMP Spec 109-30.
Torque	Pins shall not deform or dislodge from the printed circuit board.	Apply a rotational torque of 2 inch-ounces to mounted posts; AMP Spec 109-64, cond E.
ENVIRONMENTAL		
Thermal Shock	Dielectric withstanding voltage.	Subject mounted connectors to 5 cycles between -65° and 105°C; AMP Spec 109-22.
Figure 1 (cont)		
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Test Description	Requirement	Procedure
Humidity-Temperature Cycling	1000 megohms final insulation resistance minimum.	Subject mounted connectors to 10 humidity-temperature cycles between 25° and 65°C at 95% RH; AMP Spec 109-23, method III, cond B, with 5 cold shocks at -10°C, less step 7b.
Corrosion, Salt Spray	No physical damage.	Subject mounted connectors to 5% salt concentration for 48 hours; AMP Spec 109-24, cond B.
Sulfur Dioxide Exposure	No physical damage.	Subject mounted connectors to 10% solution, 24 hours; AMP Spec 109-37, method 1.

- (a) The continuous current rating for individual contacts cannot be applied directly to the number of contacts as they are dependent on the thermal and physical properties of the materials. System design shall assure that continuous current rating does not create internal hot spots that exceed the temperature designated by the connector specification, during steady-state or transient conditions.

Figure 1 (end)

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3.6. Connector Tests and Sequences

Test or Examination	Test Group (a)	
	1	2
	Test Sequence (b) (d)	
Examination of Product	1	1
Termination Resistance, Rated Current	3,15	
Termination Resistance, Dry Circuit	2,14	4,10
Dielectric Withstanding Voltage	5,7	
Insulation Resistance	4,11	
Vibration	8	
Physical Shock	9	
ACTION PIN Insertion Force		3
ACTION PIN Retention		5,8
Pin Retention in Housing		2
Torque (c)		6,9
Thermal Shock	6	7
Humidity-Temperature Cycling	10	
Corrosion, Salt Spray	12	
Sulfur Dioxide Exposure	13	

(a) See Para 4.1.A.

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

(c) This test conducted on wire wrap tails only.

(d) Termination resistance and durability are a function of the mating receptacle connectors. When tested using AMP receptacle connectors, these headers will perform to the same requirements specified for the mating receptacle connectors. AMP cannot be responsible for durability and termination resistance when mated to other than AMP receptacle connectors.

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. All test groups shall consist of 6 headers. Six contacts in each header shall be randomly selected and identified. These contacts shall be used for all measurements, unless otherwise specified.

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B. Test Sequence

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

C. Acceptance

- (1) All samples tested in accordance with this specification shall meet the stated tolerance limit.
- (2) Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

4.2. Quality Conformance Inspection

The applicable AMP inspection plan will 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.

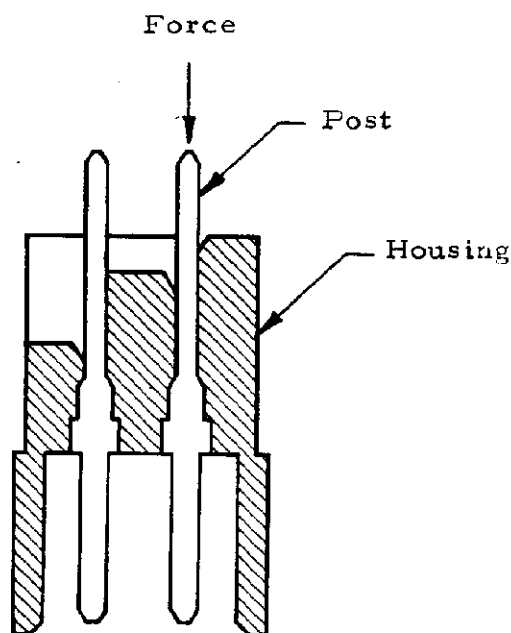


Figure 3
Pin Retention in Housing

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Hole, Type	Drilled Hole Diameter ±.001	Diameter After Copper Plate	Diameter After Tin/Lead Plate	Circuit Pad Minimum	After Reflow of Tin/Lead Plate
A	.0452	.040 min	$\frac{.037}{.043}$.062	.037 min
Z	.0452	Not plated through		.065	NA

Note: All dimensions are in inches.

Figure 4

Holes Printed Circuit Board

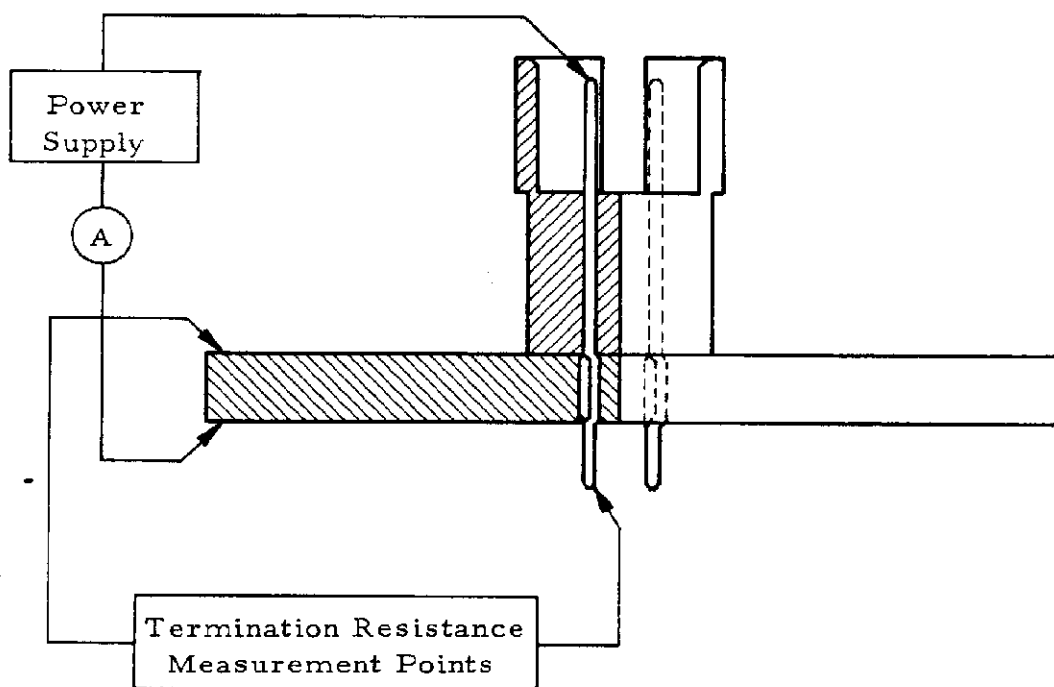


Figure 5

Termination Resistance Measurement Points

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