

# DESIGN OBJECTIVES

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore AMP Incorporated makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP Incorporated may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

## 1. SCOPE

### 1.1. Content

This specification covers the performance, tests and quality requirements for the ACTION PIN\* AMPOWER\* contact feature. This specification covers requirements for the tin/lead plated ACTION PIN contact feature when used in tin/lead over copper printed circuit boards. Product print must be referenced for applicability of this specification to specific product.

### 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 Documents

- 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)
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114- : Application Specification of Associated Product
- E. 501- : Test Report

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				CHK			
				APP	NO	108-18	REV
LTR	REVISION RECORD	APP	DATE	PAGE	TITLE		
				1 OF 6	CONTACT, ACTION PIN, AMPOWER, .018 THICK X .034 WIDE BLANK		

### 3. REQUIREMENTS

#### 3.1. Design and Construction

ACTION PIN contact feature shall be of the design, construction and physical dimensions specified on the applicable product drawing. The design of this ACTION PIN contact feature is not intended for use in applications without insulator housing support.

#### 3.2. Material

Copper alloy, see Figure 3 for plating

#### 3.3. Ratings

- A. Current: Per applicable Product Specification. However for this specification 6 amperes per contact will be utilized.
- B. Operating temperature: -40° to 65°C for epoxy glass

#### 3.4. Performance and Test Description

ACTION PIN contact feature 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 and associated AMP Spec 114 application specification	Visual, dimensional and functional per applicable inspection plan
ELECTRICAL		
Termination Resistance, Dry Circuit	0.5 milliohms maximum.	Subject ACTION PIN contact feature interface to 50 mv open circuit at 100 ma maximum, see Figure 4; AMP Spec 109-6-1.
Temperature Rise vs. Current	Maximum T-rise, at specified current, 30°C	T-rise at specified, current, see Figure 5; AMP Spec 109-45-1.

Figure 1 (cont)

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Test Description	Requirement	Procedure		
MECHANICAL				
Vibration	See note (a).	Subject ACTION PIN contact feature to 10 G's, 10-500-10 Hz, traversed in 15 minutes total time in each of 3 mutually perpendicular planes 3 hours; AMP Spec 109-21-2.		
Physical Shock	See note (a).	Subject ACTION PIN contact feature to 50G's half-sine wave in 11 milliseconds, 3 shocks in each direction applied along 3 mutually perpendicular planes total 18 shocks; AMP Spec 109-26-1.		
Contact Insertion Force	40 pounds maximum per ACTION PIN contact feature	Measure force to insert contact into printed circuit wiring board at a rate of 1 inch/min.; AMP Spec 109-41		
Contact Retention	Contact shall not dislodge at 7.5 pounds.	Measure axial push out force; AMP Spec 109-30.		
Pin Repair/Conditioning	See note (a).	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. Remove and replace in accordance with Applicable AMP Instruction Sheet.		
ENVIRONMENTAL				
Thermal Shock	See note (a).	Subject ACTION PIN contact feature to 5 cycles between -40° to 65°C; AMP Spec 109-22.		
Humidity-Temperature Cycling	See note (a).	Subject ACTION PIN contact feature to 10 humidity-temperature cycles between 25° and 65°C at 95% RH; AMP Spec 109-23-3, cond B.		
Figure 1 (cont)				
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Test Description	Requirement	Procedure
Temperature Life	See note (a).	Subject ACTION PIN contact feature to temperature life at 85° C for 1000 hours; AMP Spec 109-43, test level 3, test duration D.
Mixed Flowing Gas	See note (a)	Subject ACTION PIN contact feature to environmental class III for 20 days; AMP Spec 109-85-3.

(a) Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence.

Figure 1 (end)

### 3.6. ACTION PIN Contact Feature Qualification and Requalification Tests and Sequences.

Test or Examination	Test Group (a)			
	1	2	3(c)	4
	Test Sequence (b)			
Examination of Product	1,8	1,10	1,5	1,6
Termination Resistance, Dry Circuit	3,6	3,8		3,5
Temperature Rise vs Current				4
Vibration	4			
Physical Shock	5			
Contact Insertion Force			2	
Contact Retention	7	9	4	
Pin Repair/Conditioning	2	2	3	2
Thermal Shock		5		
Humidity-Temperature Cycling		6		
Temperature Life		4		
Mixed Flowing Gas		7		

(a) See Para 4.1.A.

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

(c) Test group 3 shall use the minimum size hole, all other groups shall use the maximum size hole.

Figure 2

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#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Test Specimen Selection

Contacts shall be prepared in accordance with applicable Instruction Sheets. Test specimens required for test groups 1 thru 4 are listed in Figure 4. Test specimens shall be individual pins and selected from current production. All test groups shall use the epoxy circuit boards. All test specimens shall be pressed onto the appropriate test board conforming to the requirements set forth in the associated AMP 114 Specification.

Test Groups	Pin Plating	Test Specimen per Group	Repair Pins per Group	Total
1,2,4	Tin/Lead	30	60	90
3	Tin/Lead	60	60	120
Total Required	Tin/Lead	150	240	390

Figure 3  
Test Specimen Requirements  
ACTION PIN Contact Feature

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

##### 4.2. Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or to the 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. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

##### 4.4. Quality Conformance Inspection

The applicable AMP quality 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.

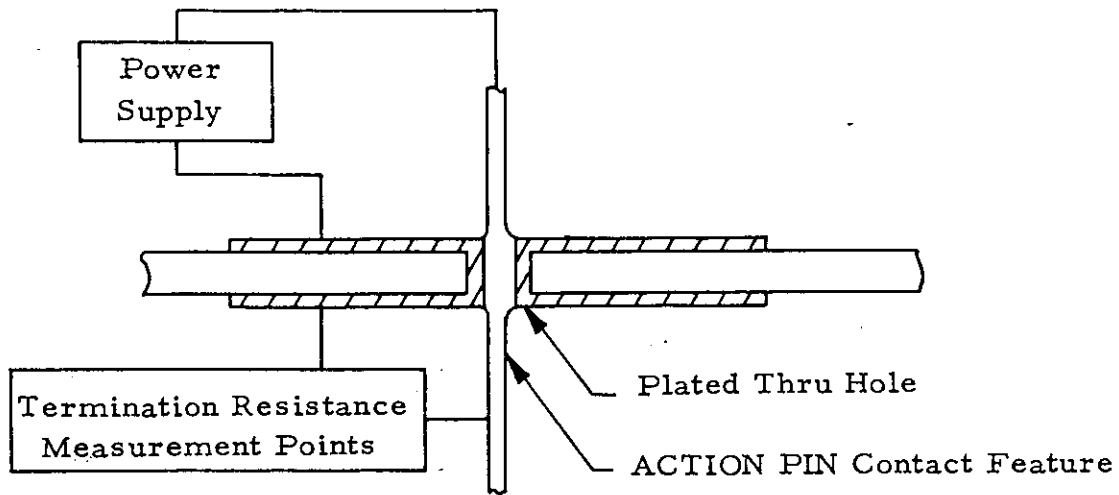


Figure 4  
Termination Resistance

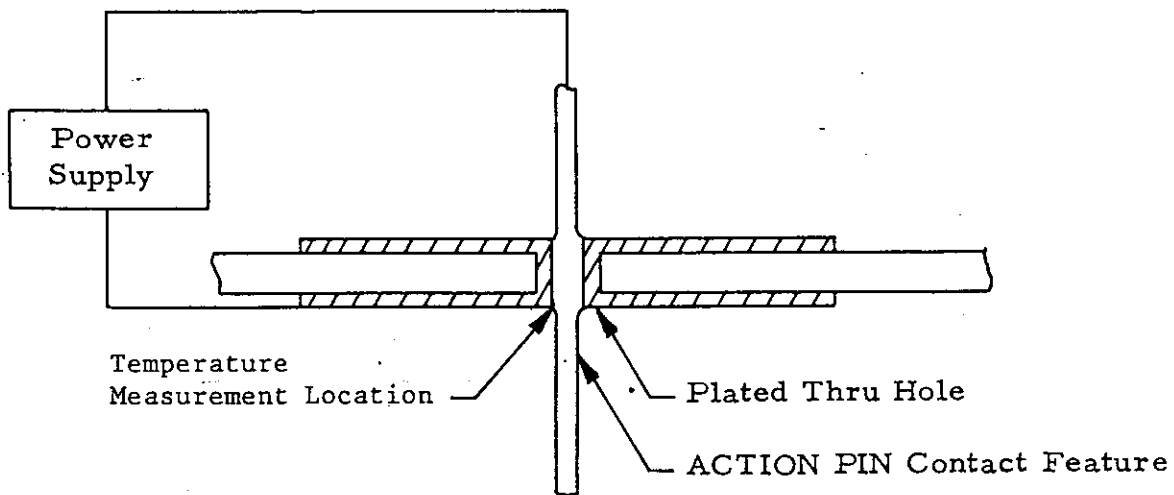


Figure 5  
Temperature Measurement Points