PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP* compliant pin SIP socket. This family of sockets incorporates ACTION PIN* contacts, .012 mil tails which allows for solderless insertion in 1/16 inch and thicker printed circuit boards and are intended for use with SIP devices.

1.2. Qualification

When tests are performed on subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using 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 requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and 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. 501-205: Test Report

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

A. Contact: Phosphor bronze, tin plated
B. Housing: Polyester, glass filled, UL 94V-0

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Product Code: 1419

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0	Release per EC 0160-3182-92	BJB	2/22/93

NO 108-1251 | REV 0 | LOC B

TITLE: SOCKET, SIP, COMPLIANT PIN

3.3. Ratings

A. Voltage: 250 vac
B. Operating temperature: -55 to 105°C
C. Current: 1 ampere (single contact only)

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient temperature unless otherwise specified.

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 quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	15 milliohms maximum initial. ΔR 10 milliohms maximum.	Subject socket mated with dummy SIP module to 20 mv open circuit at 100 ma maximum. See Figures 3 and 4. AMP Spec 109-6-6.
Dielectric withstanding voltage.	1 kvac rms dielectric withstanding voltage. 1 minute hold. No breakdown or flashover. See Note (b).	Test between adjacent contacts of unmated and unmounted socket assemblies. AMP Spec 109-29-1.
Insulation resistance.	10000 megohms minimum. See Note (b).	Test between adjacent contacts of unmated and unmounted socket assemblies. AMP Spec 109-28-4.
Capacitance.	1 picofarad maximum. See Note (b).	Test between adjacent circuits of unmated and unmounted socket assemblies. AMP Spec 109-47, Condition E.
Temperature rise vs current.	10°C maximum temperature rise at specified current.	Measure temperature rise at rated current. See Figure 5 . AMP Spec 109-45-1.

Figure 1 (cont)

Test Description	Requirement	Procedure
MECHANICAL		
Vibration, sinusoidal, high frequency.	No discontinuities greater than 1 microsecond. See Note (a).	Subject socket mated with dummy SIP module to 20 G's between 10-2000 Hz. See Figures 4 and 6. AMP Spec 109-21-4.
Physical shock.	No discontinuities greater than 1 microsecond. See Note (a).	Subject socket mated with dummy SIP module to 100 G's half-sine shock pulses of 6 milliseconds duration 1 shock in each direction applied along 3 mutually perpendicular planes, 6 total shocks. See Figures 4 and 6. AMP Spec 109-26-3.
Mating force.	250 grams maximum average per contact.	Measure force necessary to mate connector assemblies using free floating fixtures at rate of .5 inch per minute. Calculate force per contact. AMP Spec 109-42, Condition A.
Unmating force.	15 grams minimum per contact.	Measure force necessary to unmate connector assemblies at rate of .5 inch per minute. AMP Spec 109-42, Condition A.
Contact retention.	See Note (a).	Apply axial load of 340 grams to contacts in unmounted socket. AMP Spec 109-30.
Durability.	See Note (a).	Mate and unmate socket assemblies using dummy module for 10 cycles at maximum rate of 500 cycles per hour. AMP Spec 109-27.
Compliant pin retention force.	2.5 pounds minimum average per pin.	Measure force necessary to simultaneously push out all pins inserted into test board in axial direction opposite that of insertion. Calculate force per contact.

Figure 1 (cont)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock.	See Note (a).	Subject socket mated with dummy SIP module to 5 cycles between -55 and 105°C. See Figure 4. AMP Spec 109-22.
Humidity-temperature cycling.	See Note (a).	Subject socket mated with dummy SIP module to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. See Figure 4. AMP Spec 109-23-4, Condition B. Take final measurements during recovery period.
Temperature life.	See Note (a).	Subject socket mated with dummy SIP module to temperature life at 118°C for 300 hours duration. See Figure 4. AMP Spec 109-43.

(a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.
(b) Measure 7 readings per socket.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence.

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (c)				
Examination of product	1,12	1,7	1,6	1,9	1,3
Termination resistance, dry circuit	4,9	2,5	2,5		
Dielectric withstanding voltage				3,6	
Insulation resistance				2,5	
Capacitance				7	
Temperature rise vs current					2
Vibration	7				
Physical shock	8				
Mating force	2				
Unmating force	3,10	3,6			
Contact retention				8	
Durability	6		3		
Compliant pin retention	11		7		
Thermal shock	5				
Humidity-temperature cycling			4	4	
Temperature life		4			

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Sockets shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups 1, 2, 3 and 5 shall consist of 2 samples each which shall be press fitted into appropriate test boards prior to test. Test group 4 shall consist of 2 samples which shall be tested loose piece. When connectors are required to be mated, they shall be mated with dummy SIP modules per Figure 4.

B. Test Sequence

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 product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify 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

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.

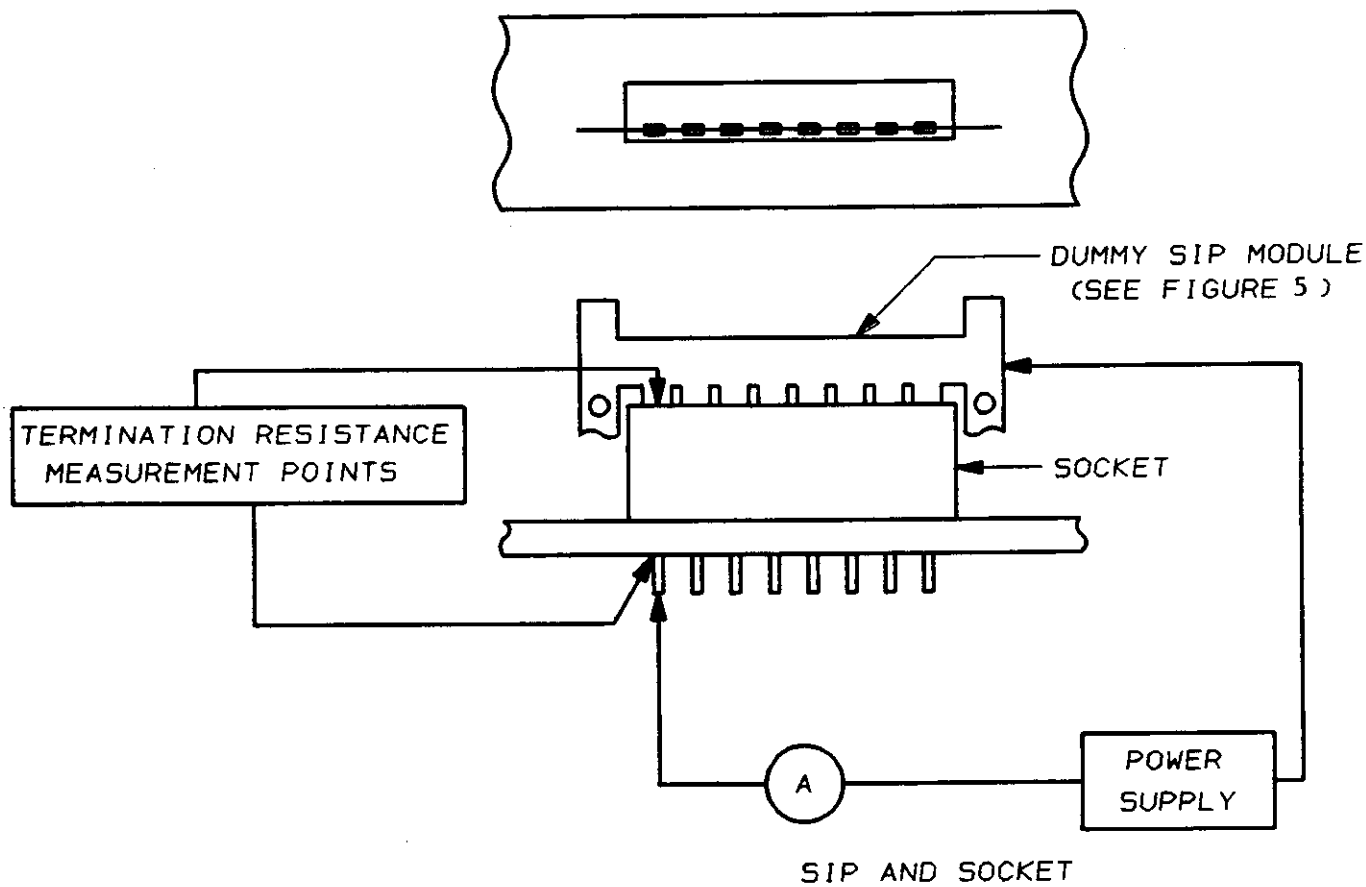
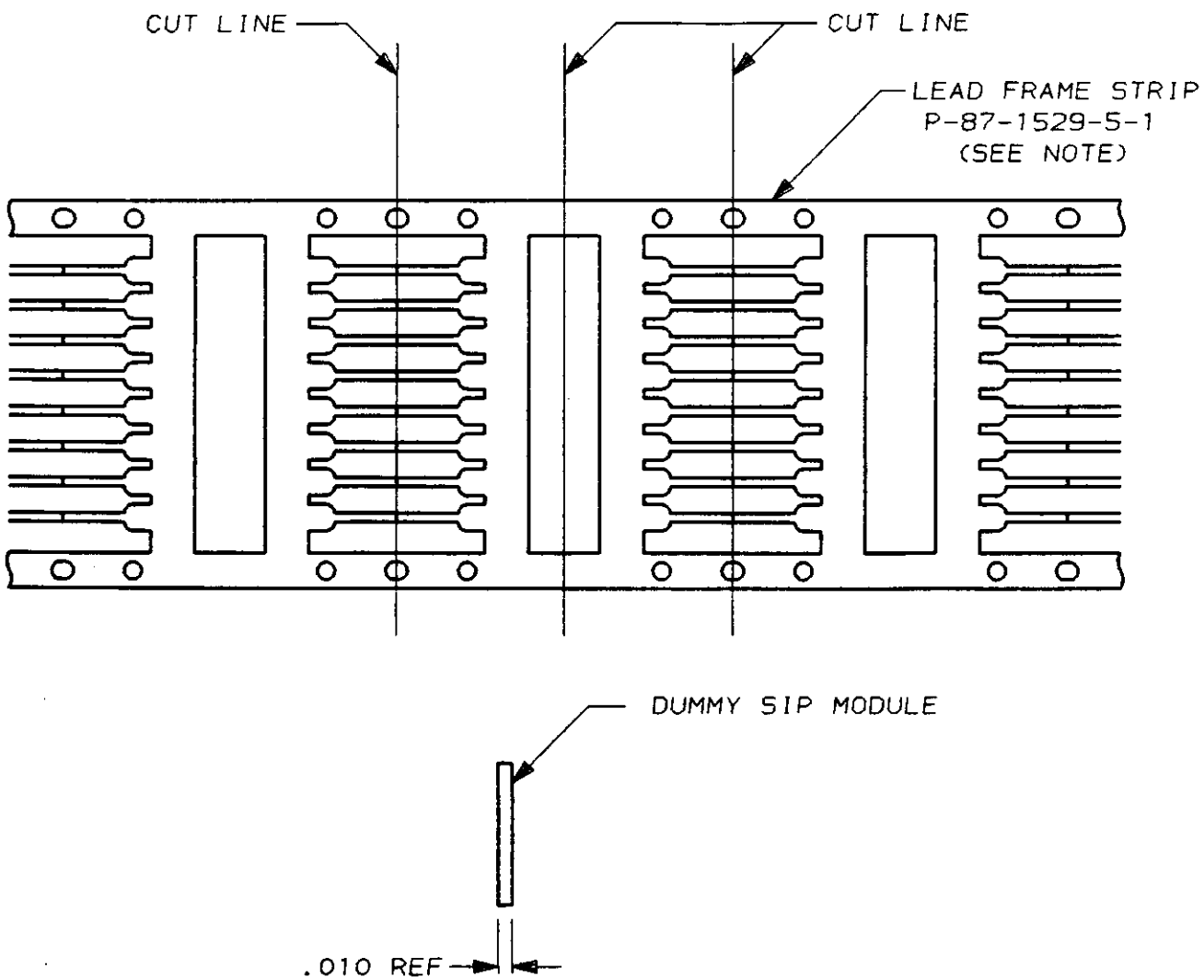
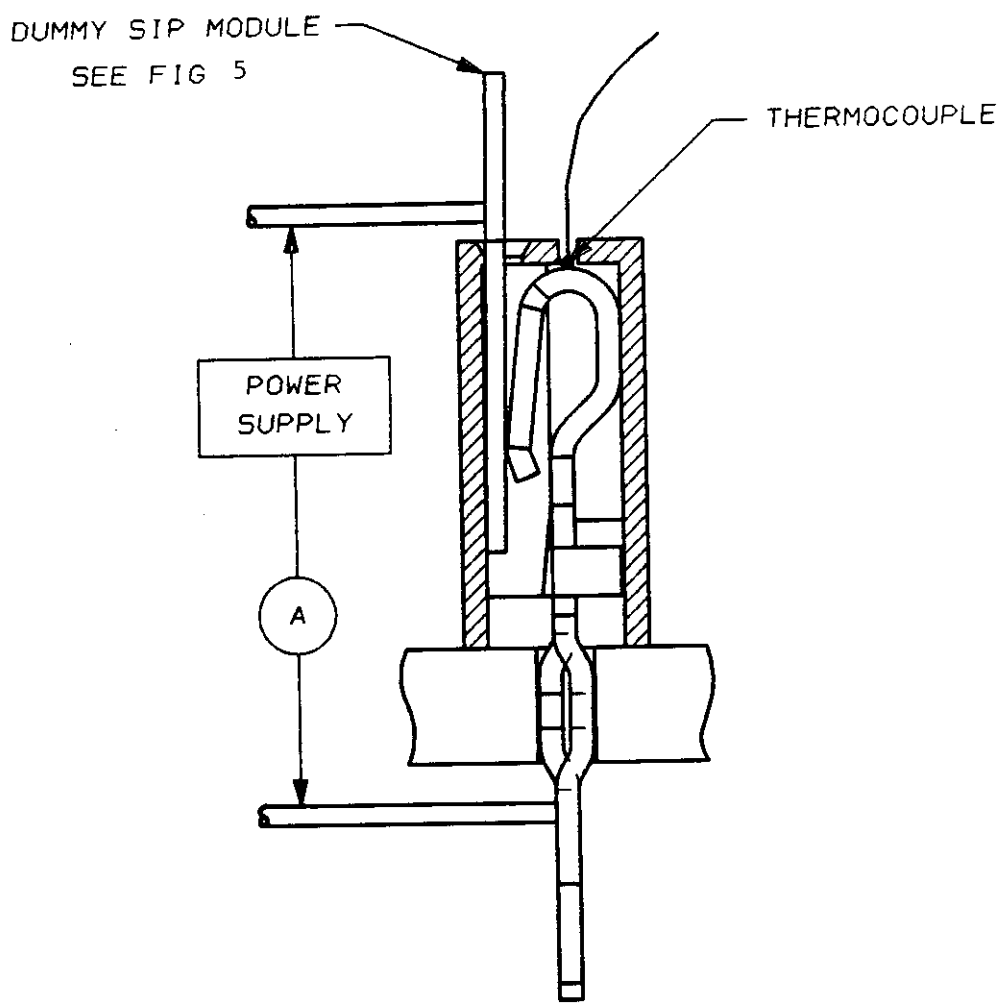


Figure 3
Termination Resistance Measurement Points



Note: Lead frame strip P-87-1529-5-1 is phosphor bronze alloy per AMP Specification 100-221 and shall be plated with .000100 minimum tin per AMP Specification 112-16-3. After plating, dummy SIP module shall be cut from strip as indicated. Approximate mass of SIP is .20 grams.

Figure 4
Dummy SIP Module For 8 Position Socket



Note: (1) Attach thermocouple on contact via small hole drilled in top of socket housing.

(2) Perform test on 1 contact by energizing with 1 ampere attaching conductor to dummy SIP module post and end of socket pin.

(3) Lead in conductors shall be of same diameter as width of socket pin.

(4) Samples may be tested by optional thermography method.

Figure 5
Temperature Rise Vs Current

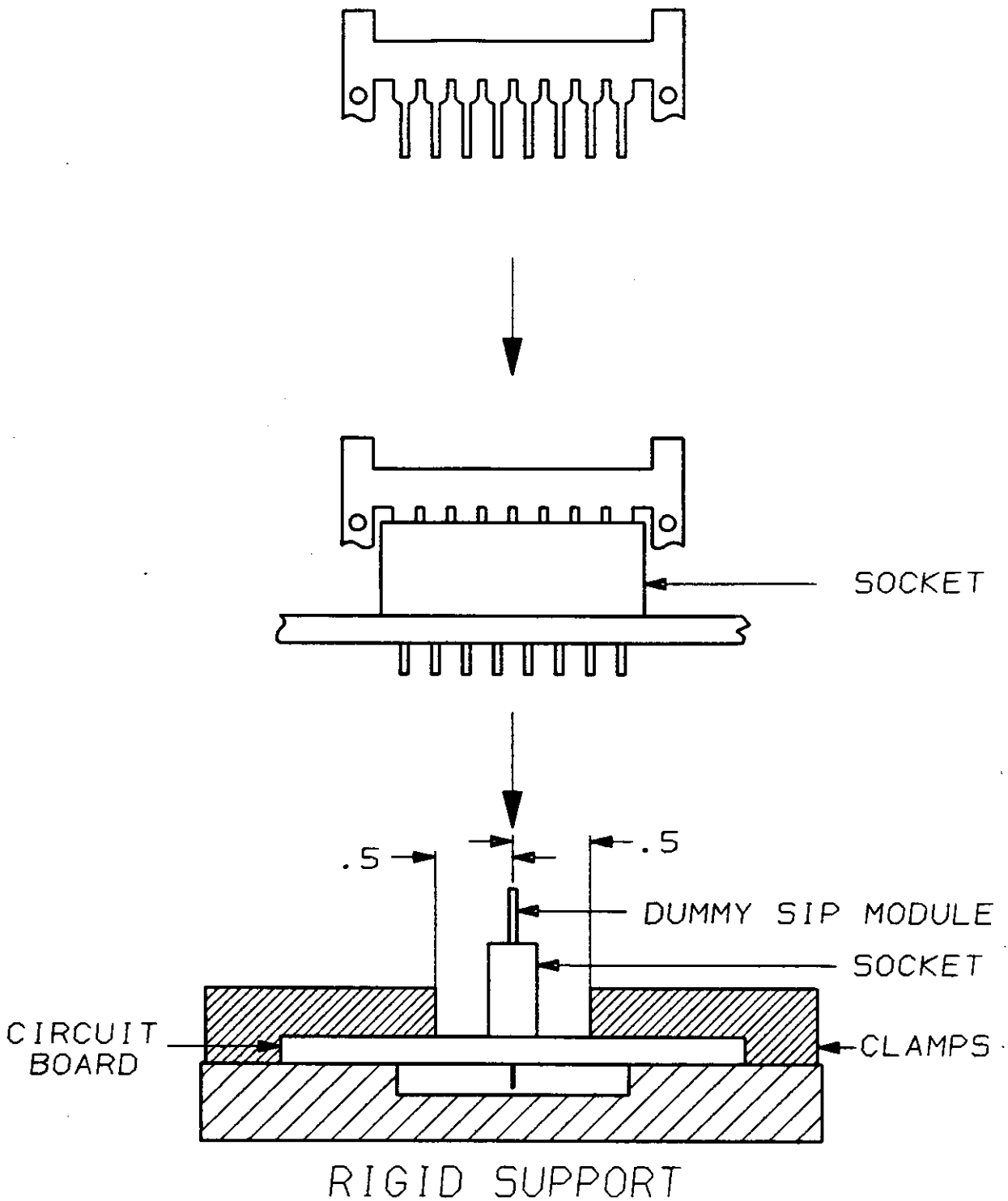


Figure 6
Mounting & Clamping Locations For Vibration & Physical Shock