
Connector, Locking Clip, .025 Inch Square, Tin

1. SCOPE**1.1. Content**

This specification covers performance, tests and quality requirements for AMP* locking clip contacts used to connect wire to .025 ± .001 inch square, .003 inch maximum corner radius wiring posts with a positive retention mechanism. Contacts may be used individually or in multiple position housings. Contacts are crimp type, snap-in design with tin plating.

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. 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. 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. 108-36028: Product Specification (Gold product)
- E. 114-25006: Application Specification
- F. 501-356-1: 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. Clip: Stainless steel
- B. Contact: Phosphor bronze, tin over nickel plating
- C. Housing: Polyester, UL94V-0

3.3. Ratings

- A. Current: See Figure 4 for applicable current carrying capability
- B. Temperature: -65 to 85°C

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per AMP Specification 109-1.

3.5. Test Requirements and Procedures Summary

| Test Description | Requirement | Procedure |
|----------------------------------|---|---|
| Examination of product. | Meets requirements of product drawing and AMP Spec 114-25006. | Visual, dimensional and functional per applicable quality inspection plan. |
| ELECTRICAL | | |
| Termination resistance. | 16 milliohms maximum change in resistance. | AMP 109-6-1. Subject mated contacts assembled in housing to 50 mv maximum open circuit at 100 ma maximum. See Figure 3. |
| Insulation resistance. | 5000 megohms minimum. | AMP Spec 109-28-4. Test between adjacent contacts and contacts to mounting hardware of unmated samples. |
| Dielectric withstanding voltage. | 750 vac at sea level. 300 vac at 50000 feet. 275 vac at 70000 feet. | AMP Spec 109-29-1. Test between adjacent contacts and contacts to mounting hardware of unmated samples. |
| Temperature rise vs current. | 30°C maximum temperature rise at specified current. | AMP Spec 109-45-1. Measure temperature rise vs current. See Figure 4. |
| MECHANICAL | | |
| Vibration, sinusoidal. | No discontinuities of 1 microsecond or longer duration. See Note. | AMP Spec 109-21-2. Subject mated samples to 10-500-10 Hz traversed in 15 minutes. 3 hours in each of 3 mutually perpendicular planes. See Figure 5. |
| Physical shock. | No discontinuities of 1 microsecond or longer duration. See Note. | AMP Spec 109-26-9. Subject mated samples to 100 G's sawtooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5. |
| Durability. | See Note. | AMP Spec 109-27. Mate and unmate samples for 50 cycles at maximum rate of 150 cycles per hour. |

Figure 1 (cont)

| Test Description | Requirement | Procedure |
|-------------------------------------|--|---|
| Contact retention. | Contact shall not dislodge from normal locking position in housing. | AMP Spec 109-30-1. Apply axial load of 5.5 pounds to each contact lead at maximum rate of 1 inch per minute. |
| Mating force. | 3 pounds maximum per contact. | AMP Spec 109-42, Condition A. Measure force necessary to mate samples at a maximum rate of .5 inch per minute. |
| Unmating force. | 2 ounces minimum per contact. | AMP Spec 109-42, Condition A. Measure force necessary to unmate samples at a maximum rate of .5 inch per minute. |
| Contact locking strength retention. | 5 pounds minimum for standard headers. 3 pounds minimum for breakaway headers. See Note. | Apply axial force at a maximum rate of 1 inch per minute. Force to separate locking clip contact from post shall be measured without releasing locking clip spring. |
| ENVIRONMENTAL | | |
| Thermal shock. | See Note. | AMP Spec 109-22. Subject mated samples to 5 cycles between -65 and 85°C. |
| Humidity-temperature cycling. | See Note. | AMP Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH. |
| Temperature life. | See Note. | AMP Spec 109-43. Subject mated samples to temperature life at 85°C for 500 hours. |

NOTE

Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

| Test or Examination | Test Group (a) | | | |
|------------------------------------|-------------------|------|-----|-----|
| | 1 | 2 | 3 | 4 |
| | Test Sequence (b) | | | |
| Examination of product | 1,9 | 1,9 | 1,8 | 1,4 |
| Termination resistance | 3,7 | 2,7 | | |
| Insulation resistance | | | 2,6 | |
| Dielectric withstanding voltage | | | 3,7 | |
| Temperature rise vs current | | 3,8 | | |
| Vibration | 5 | 6(c) | | |
| Physical shock | 6 | | | |
| Durability | 4 | | | |
| Contact retention | | | | 2 |
| Mating force | 2 | | | |
| Unmating force | 8 | | | |
| Contact locking strength retention | | | | 3 |
| Thermal shock | | | 4 | |
| Humidity-temperature cycling | | 4(d) | 5 | |
| Temperature life | | 5 | | |

NOTE

- (a) See Para 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per AMP Specification 109-151.
- (d) Precondition samples with 10 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test group 1 shall consist of 10 samples, 5 of each of the smallest and largest position sizes available. Test group 2 shall consist of 3 samples of the largest position size available. Test group 3 shall consist of 5 samples of the largest position size available. Test group 4 shall consist of 5 samples. Mating headers shall be of the appropriate size. All contacts shall be crimped to 22 AWG wire in accordance with AMP Specification 114-25006.

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 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. 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 the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

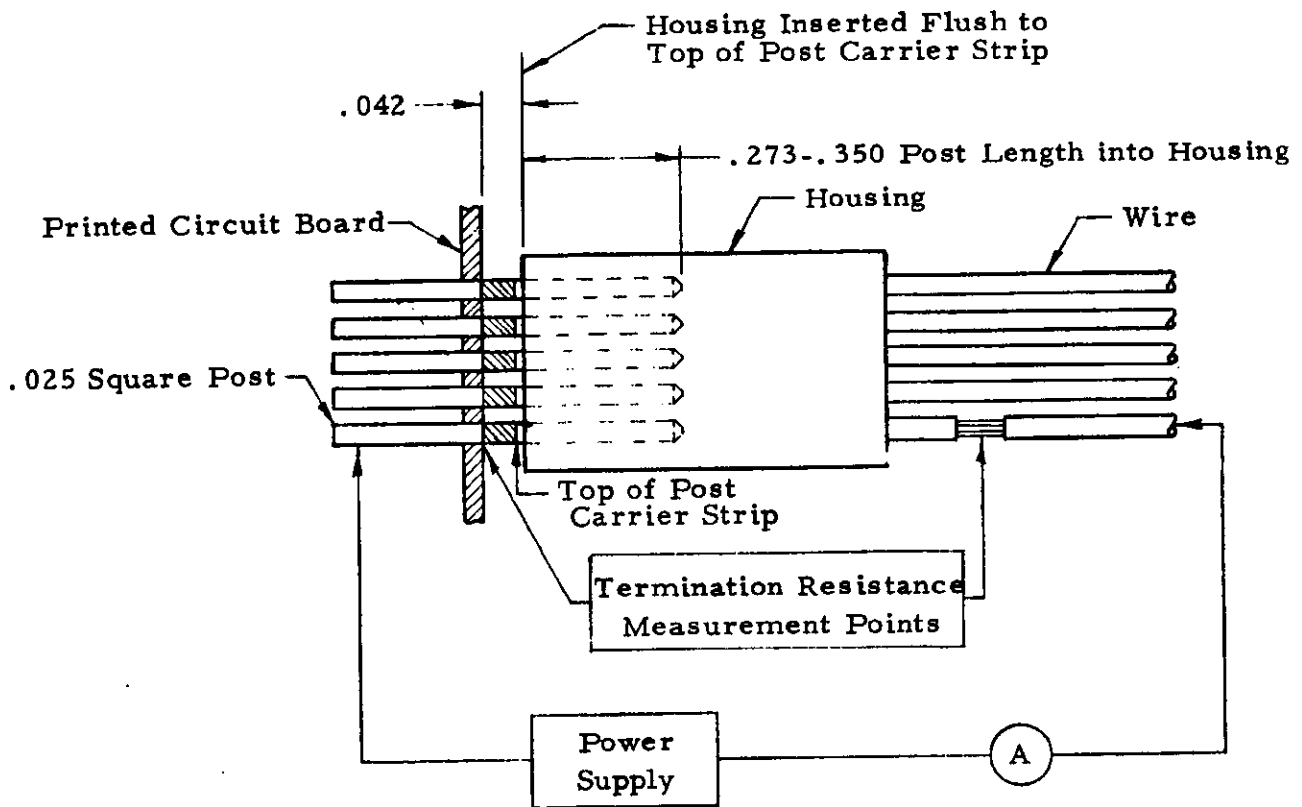


Figure 3
Termination Resistance Measurement Points

CURRENT vs T-RISE

.025" SQ LOCKING CLIP, TIN

UTL

(95% Confidence, 99% Reliability)

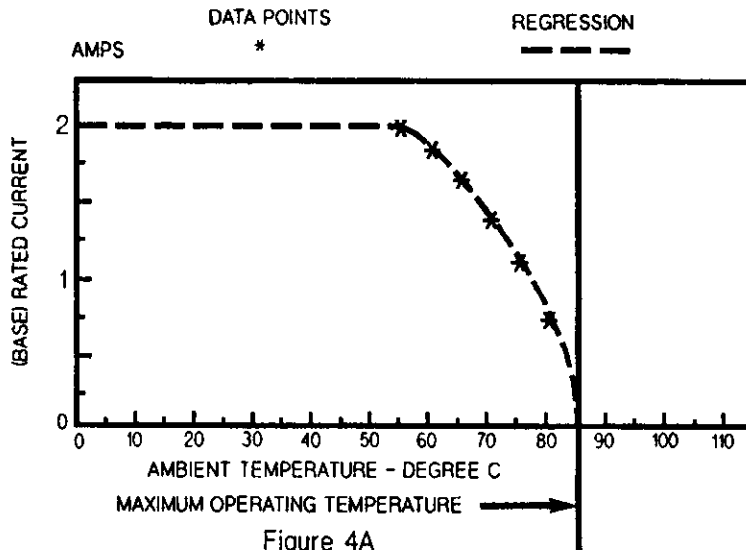


Figure 4A
Current Carrying Capability

| Percent Connector Loading | Wire Size AWG | | | | | |
|---------------------------|---------------|-----|-----|-----|-----|-----|
| | 30 | 28 | 26 | 24 | 22 | 20 |
| Single Contact | .76 | .81 | .86 | .90 | .95 | 1 |
| 25 | .69 | .74 | .78 | .81 | .83 | .80 |
| 50 | .62 | .66 | .70 | .73 | .71 | .81 |
| 75 | .56 | .60 | .63 | .67 | .67 | .73 |
| 100 | .51 | .54 | .57 | .60 | .63 | .66 |

NOTE

To determine acceptable current carrying capacity for the percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base Rated Current for a single circuit at maximum ambient operating temperature as shown in Figure 4A.

Figure 4B
Current Rating

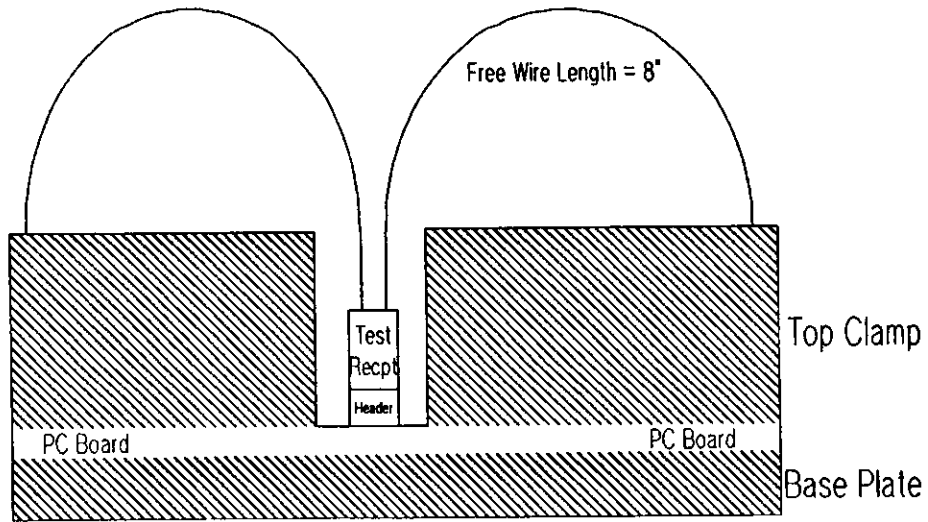


Figure 5
Vibration & Physical Shock Mounting Fixture