PRODUCT SPECIFICATION

## 1. SCOPE

### 1.1. Content

This specification covers performance, tests and quality requirements for AMP* Reusable Component Receptacle designed to accommodate a wire diameter range of .018 inch to .054 inch. Product is designed to provide an electrical and mechanical connection to solid wire leads of type normally encountered on electrical and electronic component parts.

### 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 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)
C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
D. 114-1055: Application Specification
E. 501-180: Test Report

## 3. REQUIREMENTS

### 3.1. Design and Construction

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

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Product Code: 1336



| CONTROLLED DOCUMENT<br>This specification is a controlled document per AMP Specification 102-21. It is subject to change and Corporate Standards should be contacted for latest revision. | | | | DR Brent H. Beckley 8/12/92<br>CHK Steve Roberton 8/13/92<br>APP Jerry R. Gray | AMP Incorporated<br>Harrisburg, PA 17105-3608 | | |
|---|---|---|---|---|---|---|---|
| | | | | | NO 108-1079 | REV 0 | LOC B |
| 0 | Released per ECN AG-2991 | B/B | 9/22/92 | PAGE 1 OF 7 | TITLE RECEPTACLE, COMPONENT, REUSABLE | | |
| LTR | REVISION RECORD | APP | DATE | | | | |

3.2. Materials

A. Contact: Beryllium copper, gold or tin plated
B. Cup: Copper, gold or tin-lead plated
C. Spacer: Brass, tin-lead plated

3.3. Ratings

A. Current: 4 amperes maximum
B. Operating Temperature:
   (1) -55 to 105°C for tin contacts
   (2) -55 to 125°C for gold contacts

3.4. Performance and Test Description

Receptacles shall be designed to meet 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 AMP Spec 114-1055. | Visual, dimensional and functional per applicable inspection plan. |
| ELECTRICAL | | |
| Termination resistance, specified current. | 30 milliohms maximum. | Measure potential drop of receptacle engaged with wire.<br>Calculate resistance.<br>See Figure 4.<br>AMP Spec 109-25. |
| Termination resistance, dry circuit. | 15 milliohms maximum initial.<br>30 milliohms after testing. | Subject receptacle engaged with wire to 50 mv open circuit at 100 ma maximum.<br>See Figure 4.<br>AMP Spec 109-6-1. |
| Temperature rise vs current. | See Figure 2. | Subject receptacle engaged with wire to temperature rise at rated current.<br>See Figure 4.<br>AMP Spec 109-45-1. |
| MECHANICAL | | |
| Vibration, sinusoidal, high frequency. | No discontinuities greater than 1 microsecond.<br>See Note (a). | Subject receptacle engaged with wire to 15 G's at 10 to 2000 Hz with 100 ma current applied.<br>See Figure 4.<br>AMP Spec 109-21-3. |

Figure 1 (cont)

| Test Description | Requirement | Procedure |
|---|---|---|
| Physical shock. | No discontinuities greater than 1 microsecond. See Note (a). | Subject receptacle engaged with wire to 100 G's saw tooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4. AMP Spec 109-26-9. |
| Engaging force. | See Note (a). | Measure force to engage using appropriate gage to .175 engagement depth. See Figure 5. AMP Spec 109-35. |
| Separating force. | See Note (a). | Measure force to separate appropriate gage from receptacles from .175 separation depth. See Figure 5. AMP Spec 109-35. |
| Durability. | See Note (a). | Mate and unmate sockets with maximum diameter engaging force gage for 50 cycles. See Figure 5. AMP Spec 109-27. |
| Solderability. | Cups shall have minimum of 95% solder coverage.. | Subject receptacles to solderability. AMP Spec 109-11-3. |
| ENVIRONMENTAL | | |
| Thermal shock. | See Note (a). | Subject receptacle engaged with wire to 5 cycles between -55 and 105°C for tin plated receptacles and -55 to 125°C for gold plated receptacles. AMP Spec 109-22. |
| Humidity-temperature cycling. | See Note (a). | Subject receptacle engaged with wire to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. AMP Spec 109-23-3, Condition B. |
| Mixed flowing gas. | See Note (a). | Subject receptacle engaged with wire to environmental class II for 20 days. See Figure 4. AMP Spec 109-85-2. |

Figure 1 (cont)

| Test Description | Requirement | Procedure |
|---|---|---|
| Temperature life. | See Note (a). | Subject receptacle engaged with wire to temperature life at 85°C for 96 hours. AMP Spec 109-43. |

(a) Shall meet visual requirements and show no physical damage.

Figure 1 (end)

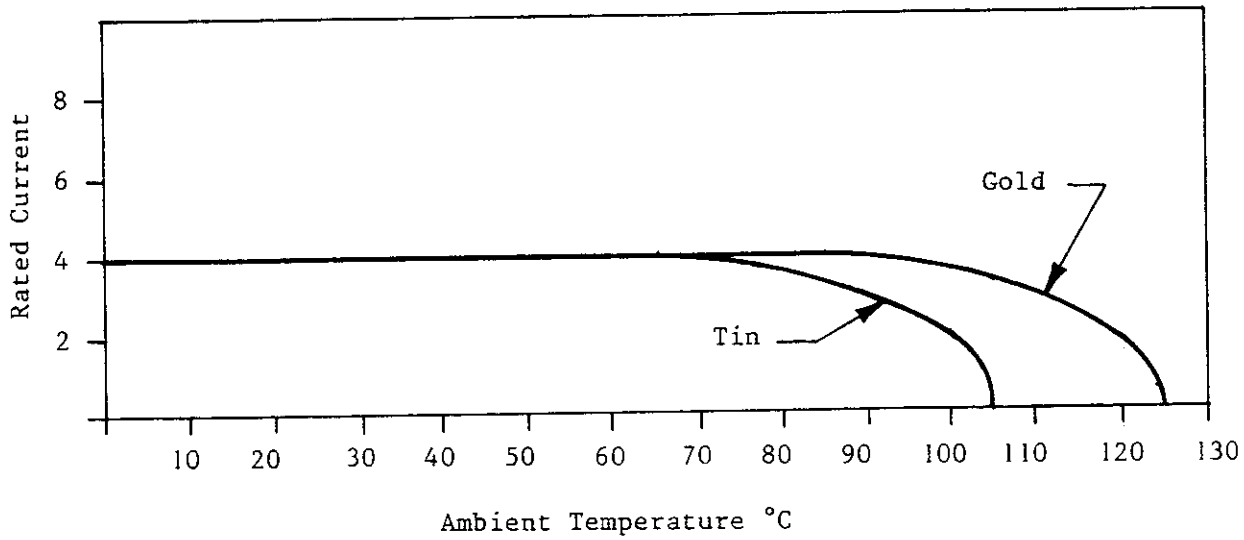



Figure 2
Current Carrying Capability

3.6. Receptacle Qualification and Requalification Tests and Sequences

| Test or Examination | Test Group (a) | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3(c) | 4 | 5 | 6 |
| | Test Sequence (b) | | | | | |
| Examination of product | 1,10 | 1,6 | 1,6 | 1,5 | 1,3 | 1,3 |
| Termination resistance, specified current | | 5 | 5 | | | |
| Termination resistance, dry circuit | 3,8 | 2,4 | 2,4 | 2,4 | | |
| Temperature rise vs current (d) | | | | | 2 | |
| Vibration | 6 | | | | | |
| Physical shock | 7 | | | | | |
| Engaging force | 2 | | | | | |
| Separating force | 9 | | | | | |
| Durability | 4 | | | | | |
| Solderability | | | | | | 2 |
| Thermal shock | 5 | | | | | |
| Humidity-temperature cycling | | 3(e) | | | | |
| Mixed flowing gas | | | 3(e) | | | |
| Temperature life | | | | 3 | | |

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) This group for gold plated parts only.
(d) Test maximum size at maximum current.
(e) Precondition with 5 cycles durability.

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Receptacles shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test group 1 shall consist of 60 receptacles mounted on printed circuit boards. Test groups 2, 3 and 4 shall each consist of 30 receptacles mounted on printed wiring boards. Test groups 5 and 6 shall consist of 5 receptacles each.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 3.

4.2. Requalification Testing

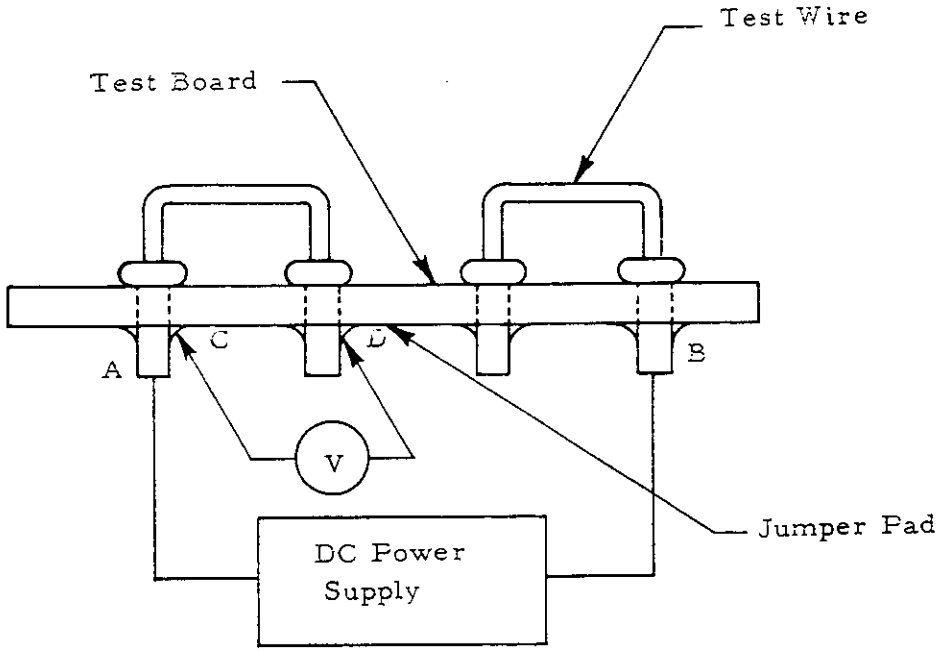
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

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.

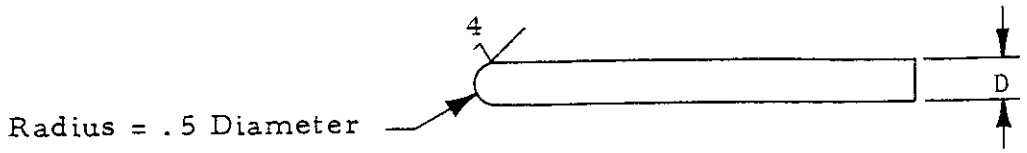



Note: (1) Test wire type shall be commercial, tin-plated, solid, uninsulated. Remove all burrs caused by cutting. Length of all test wires shall be 1 inch.

(2) Test wire diameter:
(a) Receptacles with .018 to .040 range use 18 and 24 AWG.
(b) Receptacles with .036 to .054 range use 16 and 18 AWG.

(3) Test wire for temperature rise shall use maximum gage wire in each receptacle.

Figure 4
Resistance & Temperature Measurement Points




| Gage Number | "D" Diameter | Engaging Force (ounces maximum) | Separating Force (ounces minimum) |
|---|---|---|---|
| 1 | .020 | 18 | 0.5 |
| 2 | .040 | 48 | 0.5 |
| 3 | .036 | 33 | 0.5 |
| 4 | .054 | 65 | 0.5 |

Note: (1) Material shall be hardened tool steel.
(2) Radius on end of pin shall be 1/2 the diameter of that pin.
(3) Gage numbers 1 and 2 shall be used for .018 to .040 sockets; gage numbers 3 and 4 shall be used for .036 to .054 sockets.

Figure 5
Engaging/Separating & Durability Pin Gage