
Socket, Production, LP, SL, ZIF, PGA

1. SCOPE**1.1. Content**

This specification covers performance, tests and quality requirements for AMP* Low Profile (LP), Single Lever (SL), Zero Insertion Force (ZIF) Pin Grid Array (PGA) production sockets. Sockets of this type are of square grid array design which are soldered to a printed circuit board and are intended for use with Pin Grid Array substrates. They are zero insertion and removal force sockets which are handle operated.

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, latest edition of the document applies. 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. 114-1100: Application Specification
- E. 501-308: 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 alloy with gold over nickel plating at contact point and tin-lead over nickel plating on soldertail
- B. Cover: Thermoplastic, UL94V-0
- C. Housing: Thermoplastic, UL94V-0
- D. Lever: Stainless steel

3.3. Ratings

- A. Voltage: 120 vac
- B. Current: Signal application only, 1 ampere maximum per individual contact
- C. Temperature: -55 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 114-1100.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance.	ΔR 20 milliohms maximum.	AMP 109-6-1. Subject mated samples to 50 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	1000 megohms minimum.	AMP Spec 109-28-4. Test between 10 adjacent and 10 opposite contacts of unmated samples.
Dielectric withstanding voltage.	1000 vac at sea level.	AMP Spec 109-29-1. Test between adjacent contacts of unmated samples.
MECHANICAL		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note (a).	AMP Spec 109-21-5. Subject mated samples to 7.56 G's rms between 50 to 2000 Hz. 45 minutes in each of 3 mutually perpendicular planes with 100 ma current applied.
Physical shock.	No discontinuities of 1 microsecond or longer duration. See Note (a).	AMP Spec 109-26-1. Subject mated samples to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note (a).	AMP Spec 109-27. Open and close samples for 50 cycles using package.

Figure 1 (cont)

Test Description	Requirement	Procedure
Package retention force, closed position.	15 grams minimum average per contact.	AMP Spec 109-42, Condition A. Measure force necessary to separate test substrate from sample with sample in closed position at maximum rate of 1 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note (a).	AMP Spec 109-22. Subject mated and unmated samples to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note (a).	AMP Spec 109-23-3, Condition B. Subject mated and unmated samples to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note (a).	AMP Spec 109-43. Subject mated samples to temperature life at 85°C for 300 hours.
Mixed flowing gas.	See Note (a).	AMP Spec 109-85-2. Subject mated and unmated samples to environmental class II for 14 days.

- (a) 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	5
	Test Sequence (b)				
Examination of product	1,10	1,9	1,9	1,5	1,7
Termination resistance		2,6,8	4,7	2,4	2,4,6
Insulation resistance	2,5,8		2(c)		
Dielectric withstanding voltage	3,6,9		3(c),8(d)		
Vibration			6(e)		
Physical shock			5(e)		
Durability		4			
Package retention force		3,5			
Thermal shock	4				3
Humidity-temperature cycling	7				5
Temperature life		7			
Mixed flowing gas				3(f)	

- (a) See Para 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Test shall be performed unmated and unmounted.
- (d) Test shall be performed unmated.
- (e) Total mass of mating device shall include heat sink weight per appropriate socket selection: 65 to 75 grams for socket 3; 80 to 90 grams for socket 5; 110 to 130 grams for socket 7; and 182 grams for socket 8.
- (f) Precondition 2 mated and 2 unmated 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 2 samples which shall be tested loose piece. Test groups 2 and 5 shall consist of 2 mated samples which shall be soldered onto appropriate test boards prior to test. Test group 3 shall consist of 4 samples which shall be soldered onto appropriate test boards prior to test. 2 of the samples shall be wired for discontinuity monitoring and 2 samples wired for termination resistance measurements. Test group 4 shall consist of 4 samples which shall be soldered onto appropriate test boards prior to test.

B. Test Sequence

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

4.2. Requalification Testing

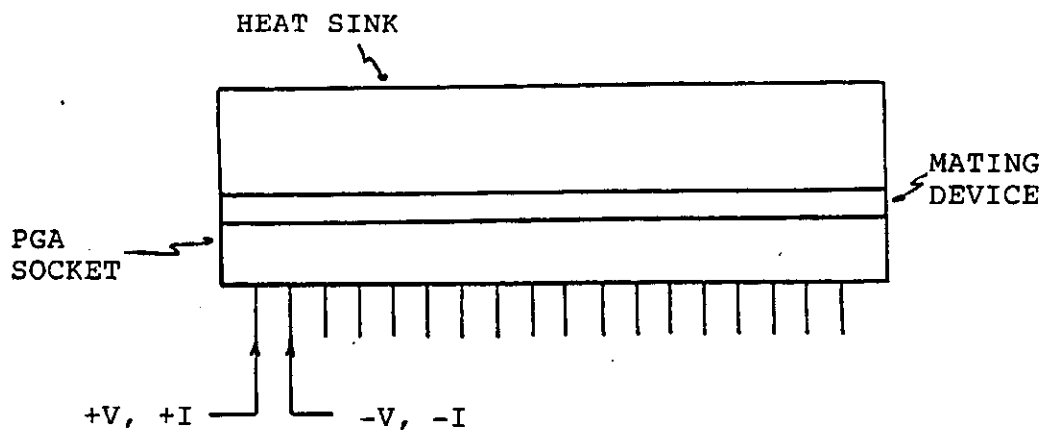
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

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.



Note: If ambient temperature varies by more than 4°C between measurements, all values shall be corrected to standard ambient temperature.

Figure 3
Termination Resistance Measurement Points