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**Commercial Press-Fit BNC Coaxial PCB Receptacle Connector**

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**1. SCOPE**

1.1. Content

This specification covers performance, tests and quality requirements for AMP\* commercial press-fit BNC coaxial printed circuit board receptacle connector when used in printed circuit boards having tin/lead over copper plated through holes.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

**2. APPLICABLE DOCUMENTS**

The following AMP 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.

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Government or Commercial Documents
- D. 114-12001: Application Specification
- E. 501-67: Qualification Test Report

**3. REQUIREMENTS**

3.1. Design and Construction

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

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- A. Operating Temperature: -65 to 125°C
- B. Nominal Impedance: 50 or 75 ohms
- C. Frequency Range: 0 to 2 GHz
- D. Operating Voltage: 500 volts rms at sea level

3.4. Performance and Test Description

Product 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 AMP Spec 114-12001.	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination resistance, specified current.	Center contact: 2.5 milliohms maximum initial. 3 milliohms maximum final. Outer contact: 2 milliohms maximum initial. 2.5 milliohms maximum final.	AMP Spec 109-25. Measure potential drop of mated contacts to PCB at 1 ampere DC maximum. Calculate resistance. See Figure 3.
Insulation resistance.	5000 megohms minimum initial.	AMP Spec 109-28-4. Test between center contact and outer shell of mated samples.
Dielectric withstanding voltage.	1500 volts AC dielectric withstanding voltage. 1 minute hold with no breakdown or flashover. 5 milliamperes maximum leakage current.	AMP Spec 109-29-1. Test between center contact and outer shell of mated samples.
RF high potential.	1000 volts rms 5 MHz for 1 minute. No breakdown or flashover.	AMP Spec 109-29-1, except 5 MHz AC. Test between center and outer contacts of mated samples.
Capacitance.	± 10%. See applicable product drawing.	AMP Spec 109-47, Condition C. Test adjacent circuits of unmated samples.
Permeability.	2 M $\mu$ maximum.	AMP Spec 109-88. Measure permeability using 2 M $\mu$ pellet.
MECHANICAL		
Vibration.	No discontinuities greater than 1 microsecond. See Note.	AMP Spec 109-21-3. Subject mated samples to 15 G's, 10-2000 Hz with 100 milliampere current applied.
Physical shock.	No discontinuities greater than 1 microsecond. See Note.	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.	AMP Spec 109-27. Mate and unmate samples for 500 cycles at a maximum rate of 720 cycles per hour.

Figure 1 (cont)

Test Description	Requirement	Procedure
Connector retention.	100 pounds minimum. No discontinuities. See Note.	AMP Spec 109-30. Apply an axial load of 100 pounds to the sample in a direction away from the board at a rate of 1 inch per minute and hold for 30 seconds. Monitor for discontinuities using a low voltage lamp circuit.
Contact engaging force.	32 ounces maximum for center contact.	AMP Spec 109-35. Precondition 1 time using Gage 3, then measure force necessary to engage Gage 1 to a depth of 0.125 inch excluding lead. See Figure 4.
Contact separating force.	2 ounces minimum.	AMP Spec 109-35. Insert Gage 2 to a depth of 0.125 inch and measure force necessary to separate. See Figure 4.
Connector insertion force.	500 pounds maximum.	AMP Spec 109-41. Measure force necessary to insert sample into printed circuit board.

ENVIRONMENTAL

Thermal shock.	Dielectric withstanding voltage. 2.5 milliohms maximum for outer contact and 3 milliohms maximum for center contact termination resistance. See Note.	AMP Spec 109-22. Subject mated samples to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	200 megohms final insulation resistance. See Note.	AMP Spec 109-23-3. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH.
Corrosion, salt spray.	No base metal exposure on interface or mating surfaces.	AMP Spec 109-24. Subject mated samples to 5% salt concentration for 48 hours.

**NOTE**

*Shall remain mated and show no evidence of damage, cracking or chipping.*

Figure 1 (end)

3.6. Connector Qualification and Requalification Tests and Sequences

Test or Examination	Test Group (a)			
	1	2	3	4(c)
	Test Sequence (b)			
Examination of product	1	1	1	1
Termination resistance, specified current	5,10	3,8	4,7	3,9
Insulation resistance	6		3,6	4,11
Dielectric withstanding voltage	7	9		5
RF high potential		6		
Capacitance	2			
Permeability	3			
Vibration	8			6
Physical shock	9			7
Durability			8	
Connector retention	12	10	9	14
Contact engaging force		4		12
Contact separating force		5		13
Connector insertion force	4	2	2	2
Thermal shock		7		8
Humidity-temperature cycling			5	10
Corrosion, salt spray	11			

**NOTE** (a) See paragraph 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

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 3 receptacles and 3 mating commercial BNC plugs each terminated to 12 inches of cable. Receptacles shall be terminated to appropriate test boards in sequence 3. Test groups 2 and 3 shall each consist of 3 receptacles and 3 mating BNC plugs each terminated to 12 inches of cable. Receptacles shall be terminated to appropriate test boards in sequence 2. Cable used for testing shall be RG-142 B/U or equivalent. Test boards shall conform to requirements set forth in AMP Specification 114-12001.

B. Test Sequence

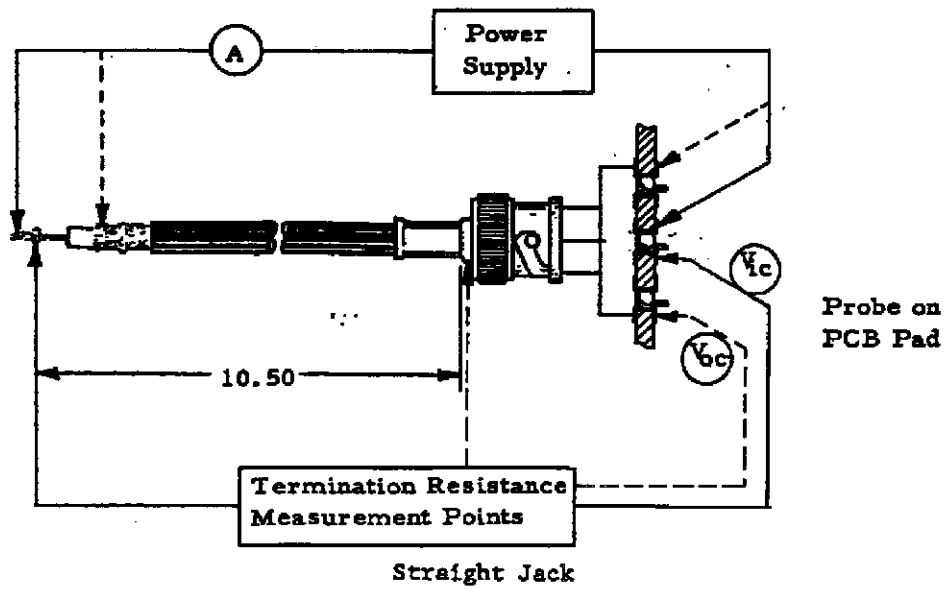
Qualification inspection shall be verified by testing samples as specified in Figure 2.

#### 4.2. 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.

#### 4.3. Quality Conformance Inspection

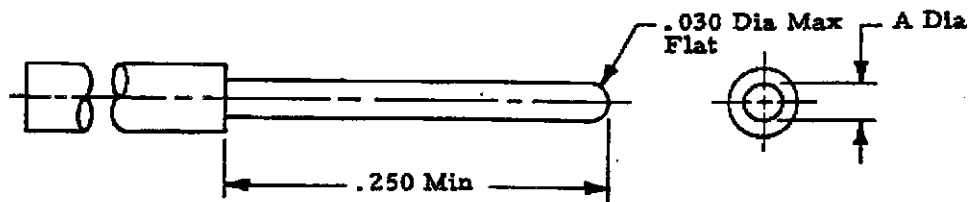
The applicable AMP inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.



**NOTE**

- (a)  $V_{OC}$  is outer contact measurement.
- (b)  $V_{IC}$  is inner contact measurement.
- (c) Also measure 3 feet of wire and calculate milliohms per inch. Measure distance between probes on specimens and subtract an equal distance of wire resistance to obtain actual contact resistance.

Figure 3  
Resistance & Temperature Measurement Points



Gage Number	"A" Diameter
1	.0540 +.0001 -.0000
2	.0520 +.0000 -.0001
3	.0570 +.0001 -.0000

Figure 4  
Contact Engaging/Separating Gages