75 Ohm Mini-SMB Series Coaxial Connector

DESIGN OBJECTIVES
The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore AMP* Incorporated makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP Incorporated may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP* 75 ohm Mini-SMB Series coaxial connectors.

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 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
C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Government or Commercial Documents
D. 501- : 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. Voltage: 335 Vac
B. Current: Signal application only
C. Temperature: -65 to 165°C
D. Nominal Impedance: 75 ohms
E. Frequency Range: 0 to 3 GHz

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3.4. Performance and Test Description

Product is designed to meet the 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.	Visual and functional per applicable quality inspection plan.
	ELECTRICAL	
Dry circuit resistance.	Center contact: Maximum/minimum ΔR 7 milliohms. Outer contact: Maximum/minimum ΔR 1 milliohm.	AMP Spec 109-6-6. Subject center and outer contacts to 20 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	1000 megohms minimum.	AMP Spec 109-28-4. Test between center and outer contacts.
Dielectric withstanding voltage.	1000 vac at sea level. 1 minute hold with no breakdown or flashover.	AMP Spec 109-29-1. Test between center and outer contacts.
Shielding effectiveness.	30 dB from 50 to 3000 MHz.	AMP Spec 109-90. Measure shielding effectiveness between 50 and 3000 MHz.
RF insertion loss.	0.60 dB maximum at 3000 MHz.	AMP Spec 109-174-2. Measure RF insertion loss at 3000 MHz.
Voltage standing wave ratio.	1.4 from 50 to 3000 MHz.	AMP Spec 109-181. Measure VSWR between 50 and 3000 MHz.
	MECHANICAL	
Solderability. (Printed circuit board mounted connectors with nickel tin-lead plated shells)	Solderable area shall have minimum of 95% solder coverage.	AMP Spec 109-11-2. Subject solder tails to solderability.
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-7. Subject mated samples to 4.41 G's rms between 5-500 Hz. 15 minutes in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (cont)

Test Description	Requirement	Procedure
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. 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. See Figure 4.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate samples for 500 cycles at a maximum rate of 600 cycles per hour.
Mating force.	14 pounds maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate samples at a maximum rate of 0.5 inch per minute.
Unmating force.	4 pounds minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate samples at a maximum rate of 0.5 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 5 cycles between -65 and 165°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated samples to 10, 24 hour cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated samples to temperature life at 165°C for 95 hours.
Mixed flowing gas.	See Note.	AMP Spec 109-85-2. Subject mated samples to environmental class II for 14 days.

NOTE *Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.*

Figure 1 (end)

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3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Examination of product	1,9	1,5	1,5	1,8	1,5	1,3
Dry circuit resistance	3,7	2,4	2,4			
Insulation resistance				2,6		
Dielectric withstanding voltage				3,7		
Shielding effectiveness					4	
RF insertion loss					2	
Voltage standing wave ratio					3	
Solderability						2
Vibration	5					
Mechanical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Thermal shock				4		
Humidity-temperature cycling				5		
Temperature life		3(c)				
Mixed flowing gas			3(c)			

NOTE

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) 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. All test groups shall each consist of 10 samples.

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.

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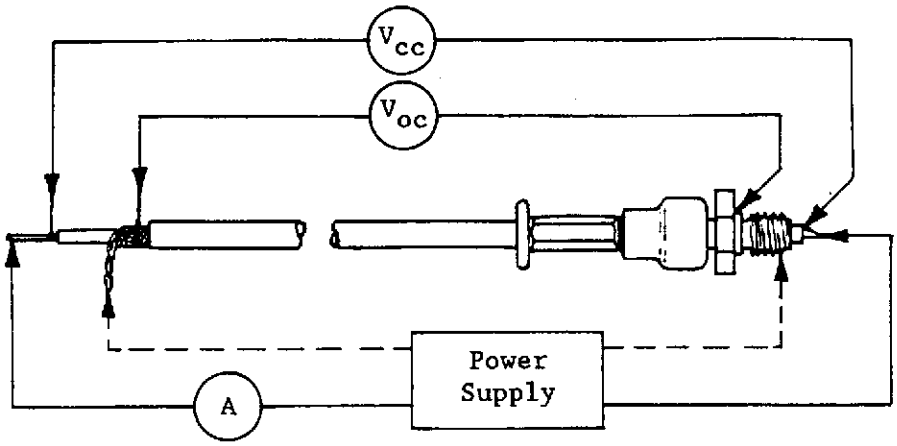
4.3. Acceptance

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. If 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

The applicable AMP quality inspection plan shall 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.



NOTE

(1) V_{CC} is center contact.
(2) V_{OC} is outer contact.
(3) Measure distance between probes and subtract equal wire length of resistance to obtain actual contact resistance.

Figure 3
Dry Circuit Resistance Measurement Points

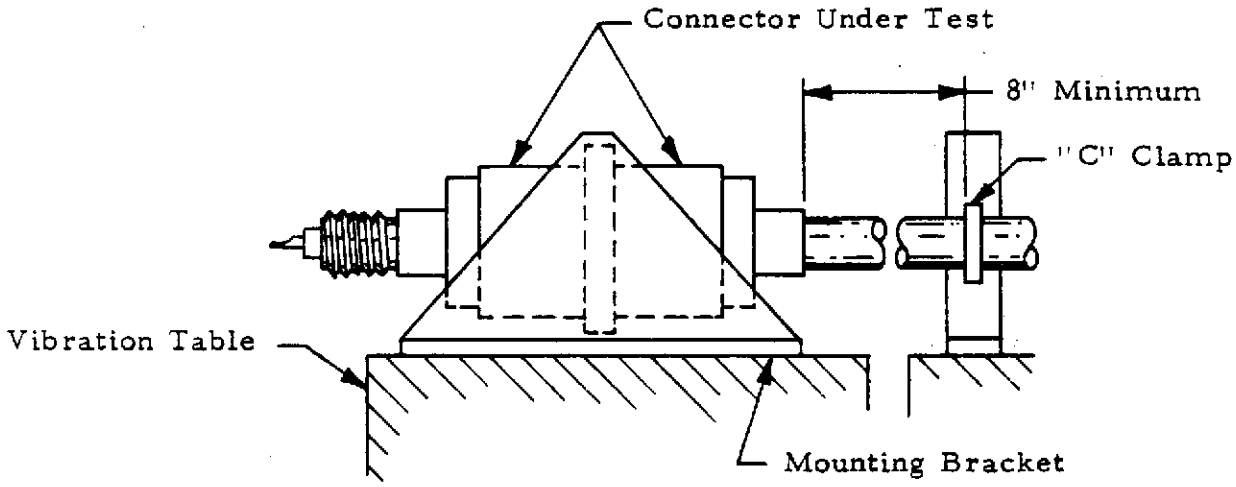


Figure 4
Vibration & Mechanical Shock Mounting Fixture

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