
**Connector, SMB Series, 50 ohm, Coaxial,
Printed Circuit Board Mounted**

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) commercial SMB series printed circuit board coaxial connector.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure1 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. TE Connectivity (TE) Documents

- A. 109-1: General Requirement for Test Specification.
- B. 109-197: 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. 501-122: 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

- A. Inner contact: Plug, beryllium copper, gold plating over Ni plating
- B. Outer contact (shell): Plug copper
- C. Insulation, dielectric: Polypropylene
- D. Spring: Beryllium copper

3.3. Ratings

- A. Operating Voltage:
 - (1) 335 volts (rms) sea level
 - (2) 85 volts (rms) 70,000 feet
- B. Temperature Range: -65 to 85 °C
- C. Normal Impedance: 50 ohms

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 are performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure												
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.												
ELECTRICAL														
Termination Resistance, Specified Current	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Type</th> <th colspan="2">Resistance</th> </tr> <tr> <th>Contact</th> <th>milliohms initial</th> <th>maximum final</th> </tr> </thead> <tbody> <tr> <td>Center</td> <td>6.0</td> <td>8.0</td> </tr> <tr> <td>Outer</td> <td>2.0</td> <td>2.5</td> </tr> </tbody> </table>	Type	Resistance		Contact	milliohms initial	maximum final	Center	6.0	8.0	Outer	2.0	2.5	Measure potential drop of mated contacts 1 ampere maximum, see Figure 4; AMP Spec 109-25, calculate resistance.
Type	Resistance													
Contact	milliohms initial	maximum final												
Center	6.0	8.0												
Outer	2.0	2.5												
Dielectric Withstanding Voltage	1000 vrms dielectric withstanding voltage, one minute hold. No breakdown or flashover	Test between center contact and outer shell Of unmated connector AMP Spec 109-29-1.												
Insulation Resistance	1000 megohms minimum.	Test between center contact and outer shell of unmated connector; AMP Spec 109-28-4.												
Permeability	Shall not exceed 2 Mu.	Measure magnetic Permeability using 2 Mu pellet; AMP Spec 109-88.												
RF High Potential	700 volts (rms) at 5 MHZ; no breakdown or flash- over; 1 minute hold.	Subject mated connectors to 700 volts instant- aneously applied between center contact and outer shell; AMP Spec 109-29-1, except at 5 MHZ.												

Test Description	Requirement	Procedure
Figure 1 (continued)		
MECHANICAL		
Vibration	No discontinuities greater than 1 microsecond.	Subject mated connectors to 20 G's, 10-2000 Hz with 100 ma current applied; AMP Spec 109-21-4.
Physical Shock	No discontinuities greater than 1 microsecond.	Subject mated connectors to 75 G's saw tooth in 6 milliseconds; 3 shocks in each direction applied along the 3 mutually Perpendicular planes; total 18 shocks; AMP Spec 109-26-8.
Mating Force	14 pounds maximum.	Measure force necessary to mate connector assembly, incorporating free floating fixture at a rate of .5 inch/minute; AMP Spec 109-42, cond A.
Unmating Force	2-16 pounds initially and 2-14 pounds after environments or 5 conditioning cycles.	Measure force necessary to unmate connector assembly at a rate of .5 inch/minute; AMP Spec 109-42, cond A.
Durability	Mating-unmating force; contact engaging and separating force.	Mate and un-mate connectors for 500 cycles at a maximum rate of 12 cycles per minute measuring LLCR every 100 cycles; AMP Spec 109-27.
Connector to Board Retention	30 pounds minimum. No loss of electrical continuity	Apply axial load of 30 pounds between P.C.B. and connector, maintain for 30 seconds then remove, and check for electrical continuity using a low voltage lamp circuit.
Resistance to Soldering Heat	No physical damage or melting of dielectric.	Subject connectors to solder bath at 260 +/- 5 °C for 10 +/- 1 second; AMP Spec 109-63-2.

Test Description	Requirement	Procedure
Figure 1 (continued) ENVIRONMENTAL		
Thermal Shock	No physical damage.	Subject unmated connectors to 5 cycles between -65 °C and 85 °C; AMP Spec 109-22.
Humidity-Temperature Cycling	1000 megohms final insulation resistance; maximum termination resistance, specified current.	Subject mated connector to 10 humidity-temperature cycles between 25 °C and 65 °C at 95% RH; AMP Spec 109-23, method III, condition B.
Industrial Mixed Flowing Gas	Maximum termination resistance.	Precondition connectors to 10 durability cycles. Subject mated connectors to environmental class II for 20 days; AMP Spec 109-85-2
Temperature Life	Termination resistance.see note	Subject mated connectors to temperature life; AMP Spec 109-43, test level 4, test duration A. 125 °C at 96 hours.

Figure 1 (continued)

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 Figure2.*
 Figure 1 (end)

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	1,7	1,8	1	1
Termination Resistance, Specified Current	3,7	2,4	2,6			
Dielectric Withstanding Voltage				3,7		
Insulation Resistance				2,6		
Permeability			3			
RF High Potential			4			
Vibration	5					
Physical Shock	6					
Mating Force (c)	2					
Unmating Force	8					
Durability	4					
Connector to Board Retention						2
Resistance to Soldering Heat					2	
Thermal Shock				4		
Humidity-Temperature Cycling				5		
Industrial Mixed Flowing Gas			5			
Temperature Life		3				

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Not applicable for all type product

Figure 2

3.7. Retention of Qualification

Test or Examination	Test Group (a)	
	1	2
	Test Sequence (b)	
Examination of Product	1,8	1,8
Termination Resistance, Specified Current		3,7
Dielectric Withstanding Voltage	3,7	
Insulation Resistance	2,6	
Mating Force		2
Unmating Force		6
Durability		4
Thermal Shock	4	
Humidity-Temperature Cycling	5	5

(a) See Para 4.1.A

(b) Numbers indicate sequence in which tests are performed

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Connector assembly and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test groups 1-4 shall consist of 5 mated, loose piece connectors and 5 connectors mounted on printed circuit boards except group 4 not Mounted. Test group 5 and 6 shall consist of 5 connectors which shall be mounted on to appropriate printed circuit boards. Mating connectors shall be crimped to 10 inch lengths of cable. Free ends shall be stripped, see Figure4, and equalizers applied to center conductors and shields. A 3 foot length of cable shall also be prepared to determine resistance of 1 inch of cable for both center conductor and shield.

B. Test Sequence

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

4.2. Retention of Qualification

If in a five-year period, no changes to the product or process occur, the product shall be subjected to the two groups of the testing described in the test sequence, see Figure 3. Justification for exceeding this time limit must be documented and approved by the division manager.

4.3. Requalification Testing

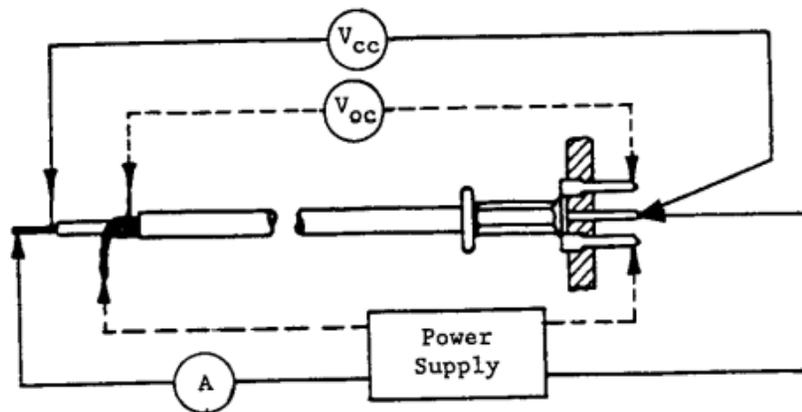
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.4. 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 specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

4.5. Quality Conformance Inspection

The applicable 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.



Notes:

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

Figure 4
Termination Resistance Measurement Points

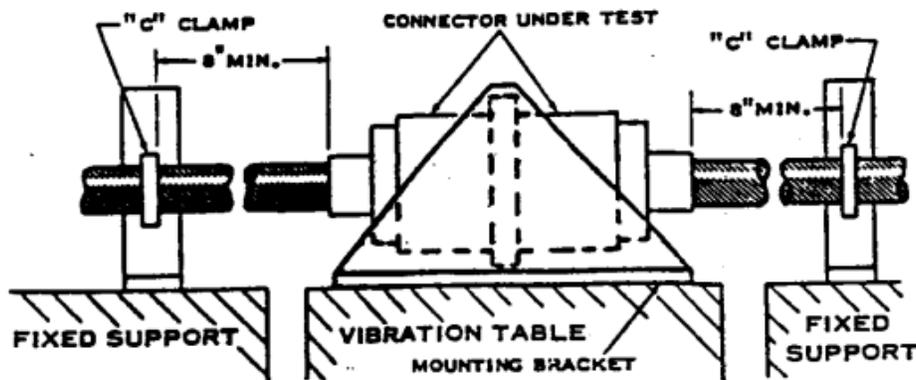


Figure 5 Mounting and Clamping Location for Vibration and Physical Shock