PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification contains performance, tests, and quality requirements for the AMP* preinsulated and uninsulated TERMASHIELD* printed circuit board connectors. These connectors are designed to provide a positive crimp connection between the shield or both the shield and the center conductor of a coaxial cable and a solder tab or solder tabs.

1.2. Description

The TERMASHIELD connectors covered by this specification consist of the following types:

A. Type F TERMASHIELD Connector

A one-piece, one crimp, preinsulated ferrule with an integral shield connecting solder tab for printed circuit board use.

B. Type G TERMASHIELD Connector

A one-piece, one-crimp, preinsulated ferrule with integral shield and center conductor connecting solder tabs for printed circuit board use.

C. Type H TERMASHIELD Connector

A one-piece, one-crimp uninsulated ferrule with integral shield connecting solder tabs for printed circuit board use.

1.3. Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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AMP | AMP INCORPORATED Harrisburg, Pa. 17105

LOC B | NO 108-12054 | REV O

SHEET 1 OF 10

TITLE: CONNECTOR, TERMASHIELD, PRINTED CIRCUIT BOARD, PREINSULATED AND UNINSULATED

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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 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 Specifications

A. 109-1: General Requirements for Test Specifications
B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with Mil-STD-1344 and EIA RS-364)
C. 501-22: Test Report

2.2. Military Specifications

A. MIL-C-17: Coaxial Cable, Radio Frequency
B. MIL-P-18177: Plastic Sheet, Laminated, Termosetting, Glass Fiber Base, Epoxy-Resin

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

Materials utilized in the manufacture of this product shall be in accordance with the applicable AMP Product Drawing.

3.3. Ratings

A. Operating Voltage: 300 vac rms
B. Operating Temperature: -65° to 105°C (when assembled to cable having polytetrafluoroethylene dielectric)
-65° to 85°C (cable with polyethylene dielectric)

3.4. Performance and Test Description

Connectors 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.	Visual, dimensional and functional per applicable inspection plan.
	ELECTRICAL	
Termination Resistance, Specified Current	Outer shield 5 milliohms maximum. Center termination (when applicable) 3 milliohms maximum.	Measure potential drop of connectors, see Figure 3; AMP Spec 109-25, calculate resistance.
Dielectric Withstanding Voltage	1000 vac rms, 60 Hz dielectric withstanding voltage, one minute hold. No breakdown or flashover.	Test between mutually insulated areas as illustrated in Figure 4; AMP Spec 109-29-1. Note: This test does not apply to Type H connectors.
	MECHANICAL	
Vibration	No discontinuities greater than 1 microsecond. (a)	Subject connectors to 10-55-10 Hz traversed in 1 minute at .06 inches total excursion; 6 hours in each of 2 planes mutually perpendicular to each other and the axis of the wire; AMP Spec 109-21-1. Mount test board firmly and clamp cable to table 3 inches from connectors.
Crimp Tensile	Connector Type / Crimp Tensile, pounds minimum: F 15; H 15; G 10	Determine crimp tensile at a rate of 1 inch/minute; AMP Spec 109-16. Cut cable between connectors and pull between cable and test boards.

Figure 1 (cont)

Test Description	Requirement	Procedure
Resistance to Soldering Heat (a)	No physical damage. No softening of insulation.	Mount connectors on boards illustrated in Figure 5. Test at 280°C for 30 seconds; AMP Spec 109-63-5.
ENVIRONMENTAL		
Thermal Shock (a)	No physical damage.	Subject connectors to 5 cycles between -65° and 105°C for polytetrafluoroethylene dielectric or -65° and 85°C for polyethylene dielectric; AMP Spec 109-22.
Corrosion, Salt Spray	No evidence of base metal exposure on plated parts.	Subject connectors to 5% salt concentration for 48 hours; AMP Spec 109-24, cond B.
Temperature Life (a)	No physical damage.	Subject connectors to temperature life, AMP Spec 109-43, test level A, (105°C except use 85°C if polyethylene dielectric), test duration A (96 hours).

(a) Shall show no evidence of damage, cracking, chipping, breaking, or loosening of parts.

Figure 1 (end)

3.6. Connector Tests and Sequences

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Examination of Product	1	1	1
Termination Resistance, Specified Current	2,4,6,8	2,4	
Dielectric Withstanding Voltage		5	
Vibration	5		
Crimp Tensile	9		3
Resistance to Soldering Heat			2
Thermal Shock	3		
Corrosion, Salt Spray	7		
Temperature Life		3	

(a) See Para 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

Connectors shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Each test group shall consist of eight (8) connectors. Test Groups 1 and 2 specimens shall be crimped 1 to each end of an 8 inch length of cable conforming to MIL-C-17 and they shall be mounted on boards as illustrated in Figure 6. Test Group 3 specimens shall be crimped each to an 8 inch length of cable conforming to MIL-C-17. A test board as illustrated in Figure 5 shall be supplied with each specimen.

B. Test Sequence

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

C. Acceptance

(1) Test results from development on pre-qualification samples will be used to determine upper and lower one-sided statistical tolerance limits for 99% reliability at 95% confidence, as follows. Let X bar and s denote the sample average and standard deviation, respectively, of the test data. Let k denote the normal distribution one-sided tolerance factor for 95% confidence and 99% reliability. The value of k varies with sample size. Values of k are given in various tables, for example, NBS Handbook 91, Factors for One-Sided Tolerance Limits for Normal Distribution. Suitability of the normal distribution for representing the data shall be verified with normal probability plots, goodness of fit tests, etc.

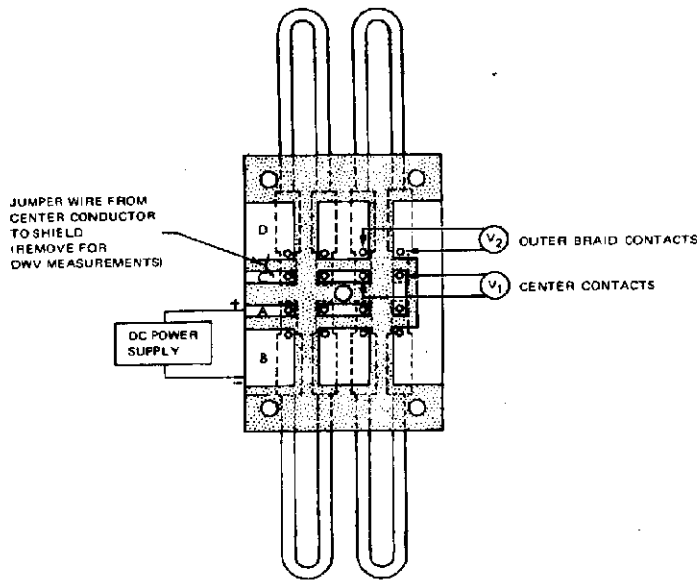
Then the upper one-sided tolerance limit for 99% reliability at 95% confidence is given by X bar + ks. The interpretation of this tolerance limit is as follows: based on the test data, and assuming a normal distribution for the test data, we can be 95% confident that 99% of the population of values represented by the sample data will not exceed X bar + ks. For any test parameter for which there is specified an upper requirement which is not to be exceeded, satisfactory performance of the product is achieved when the value of X bar + ks does not exceed the requirement value.

The lower one-sided tolerance limit for 95% confidence and 99% reliability is given by X bar - ks. This has a similar interpretation and corresponding application to lower requirement values.

(2) Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken.

4.2. 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 the applicable product drawing and this specification.



Notes:

(a) Measure shield at V_2 and center termination V_1 (if applicable) using a test current of 1.0 ampere dc.

(b) Measure a 30 inch length of equivalent cable and calculate milliohms per inch.

(c) Measure distance between probe points on test specimens and subtract an equal distance of cable resistance to determine actual termination resistance.

Figure 3

Resistance Measurement Points

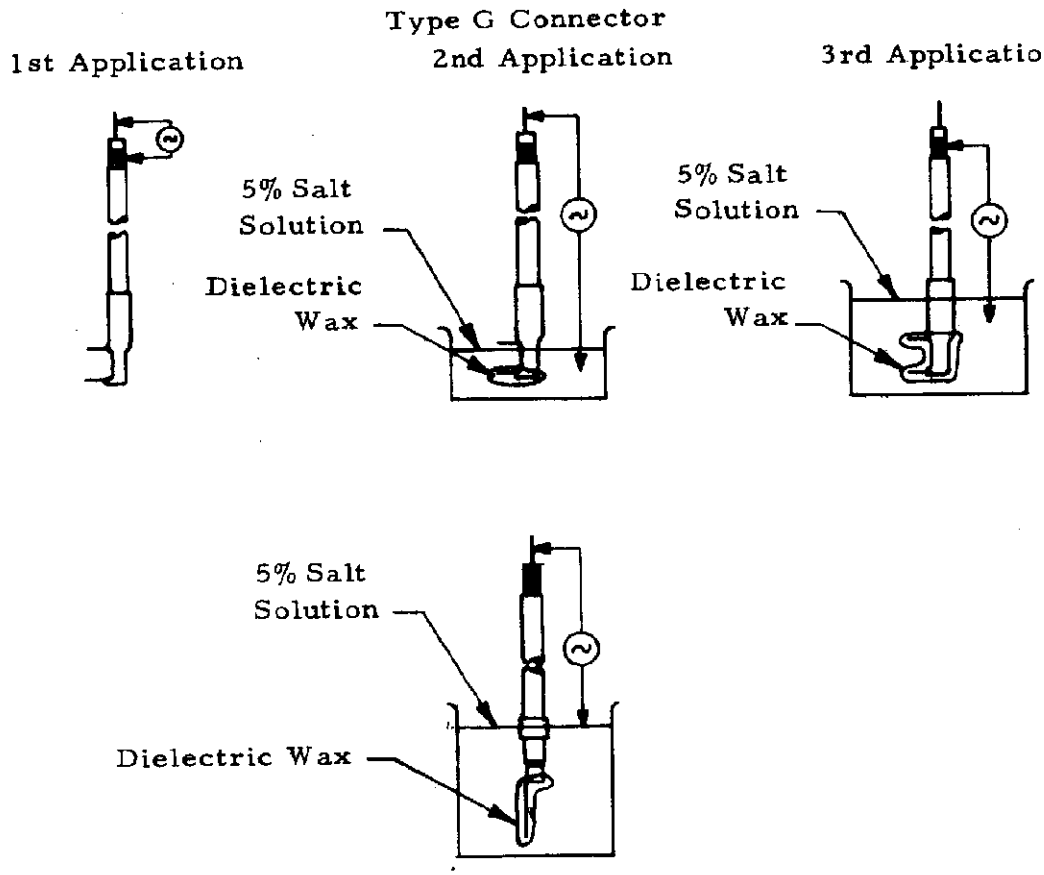
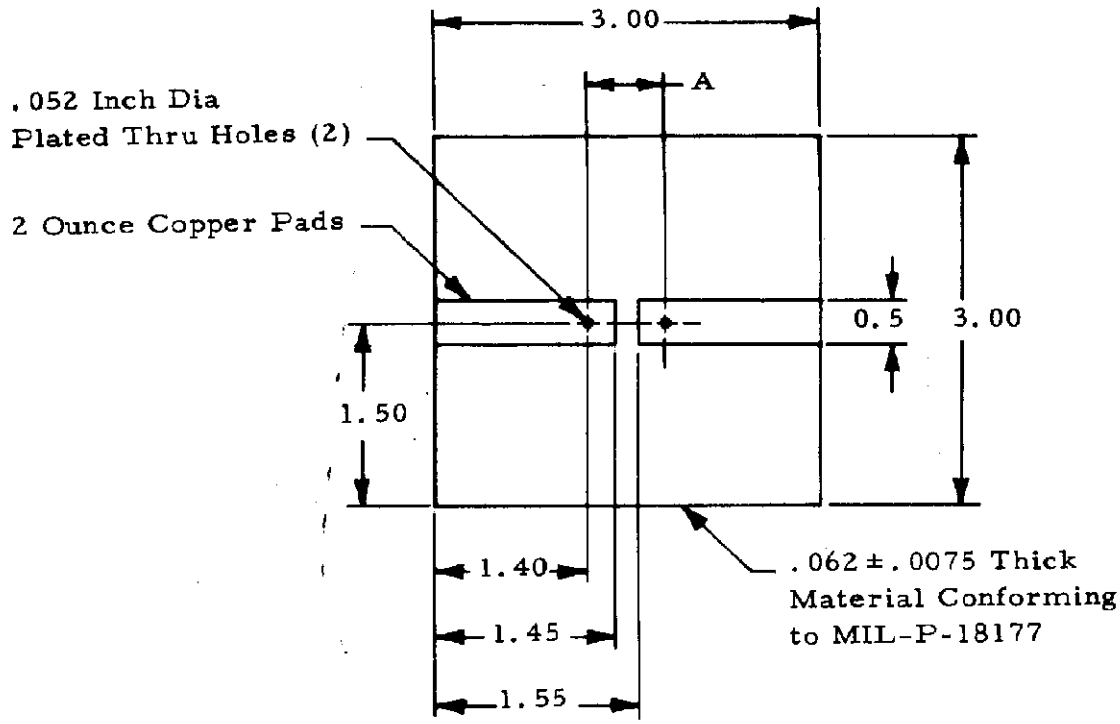


Figure 4

Dielectric Voltage Application Points

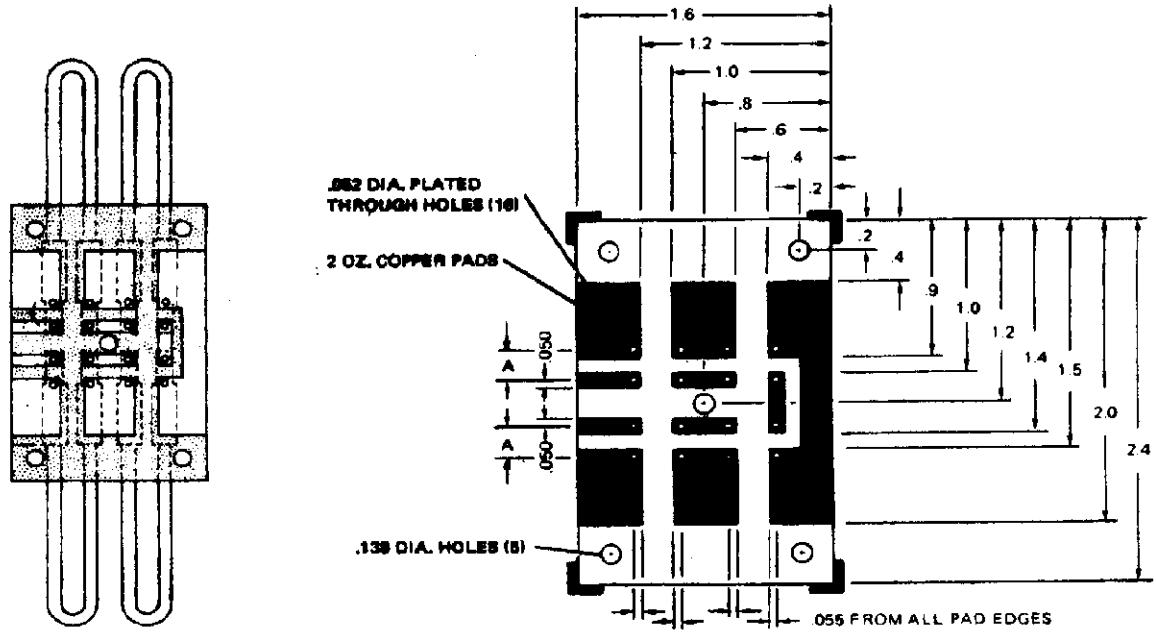


Note:

(a) "A" dimension - .200 or .250 inch between hole centerlines, as applicable for connectors being tested.

Figure 5

Resistance to Soldering Heat Mounting Board



Note:

(a) A dimension - .200 or .250 inch between hole centerlines, as applicable for connectors being tested.

Figure 6

Test Board Dimensions and Mounting Configuration