AMP

QUALIFICATION TEST REPORT

CONNECTOR, ACTION PIN*,
METRIMATE, DRAWER

501-207 Rev. 0

Product Specification:	108-1326 Rev. 0
CTL No.:	CTL5018-025-008
	CTL5018-004-001
	CTL5018-009-003
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(R5018TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report
Metrimate, ACTION PIN, Drawer Connector

1. Introduction

1.1 Purpose

Testing was performed on AMP's Metrimate Drawer Connector to determine its conformance to the requirements of AMP Product Specification 108-1326 Rev.0.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Metrimate Drawer Connector manufactured by the Interconnection Components & Assemblies Products Division of the Capital Goods Business Unit. The testing was performed between August 13, 1990 and January 6, 1993.

1.3 Conclusion

The Metrimate Drawer Connector meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1326 Rev. 0.

1.4 Product Description

The Metrimate drawer connector is a vertical mount printed circuit board connector with ACTION PIN posts, board contacts. The connector is suited for blind-mate, modular drawer applications. The connector is fully polarized for error-free mating with the plug connector.
The contacts are phosphor bronze plated tin over nickel. The housing is a thermoplastic, 94V-0 rated.

1.5 Test Samples

The test samples were randomly selected from normal current production lots, and the following part numbers were used for test:

Test Group	Quantity	Part Number	Description
1,2,3	10	213558-1	Header
1,2,3	8	211150-1	Housing
1,2,3	205	66598-1	Contact on 14 AWG

1.6 Qualification Test Sequence

	Test Groups		
Test or Examination	1	2	3
Examination of Product	1,9	1,9	1,8
Termination Resistance, Dry Circuit	3,7	2,7	
Dielectric Withstanding Voltage			3,7
Insulation Resistance			2,6
T-Rise vs. Current		3,8	
Vibration	5	6	
Physical Shock	6		
Mating Force	2		
Unmating Force	8		
Durability	4		
Thermal Shock			4
Humidity-Temperature Cycling		4	5
Temperature Life		5	

The numbers indicate sequence in which tests were performed.

2. Summary of Testing

2.1 Examination of Product - All Groups

All samples submitted for testing were selected from normal current production lots. They were inspected and accepted by the Product Assurance Department of the Capital Goods Business Unit Group.

2.2 Termination Resistance, Dry Circuit - Groups 1,2

All termination resistance measurements, taken at 100 milliamperes dc. and 50 millivolts open circuit voltage, were less than 10 milliohms.

Test Group	No. of Samples	Condition	Min.	Max.	Mean
1	125	Initial	2.5	3.7	2.69
		After Mechanical	2.9	6.7	3.62
2	75	Initial	2.8	3.6	3.09
		After Current Verif.	3.1	9.9	4.37

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 3

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent contacts.

2.4 Insulation Resistance - Group 3

All insulation resistance measurements were greater than 5000 megohms initially and 500 megohms after test.

2.5 Temperature Rise vs. Current - Group 2

All samples had a temperature rise of less than 30°C above ambient when a specified current of 6.0 amperes dc was applied.

2.6 Vibration - Groups 1,2

No discontinuities of the contacts were detected during vibration(Group 1). Following vibration, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.7 Physical Shock - Group 1

No discontinuities of the contacts were detected during physical shock. Following physical shock testing, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.8 Mating Force - Group 1

All mating force measurements were less than 75 pounds per connector.

2.9 Unmating Force - Group 1

All unmating force measurements were greater than 1.5 pounds per connector.

2.10 Durability - Group 1

No physical damage occurred to the samples as a result of mating and unmating the connector 50 times.

2.11 Thermal Shock - Group 3

No evidence of physical damage to either the contacts or the connector was visible as a result of thermal shock.

2.12 Humidity-Temperature Cycling - Groups 2,3

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to humidity-temperature cycling.

2.13 Temperature Life - Group 2

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to an elevated temperature.

3. Test Methods

3.1 Examination of Product

Product drawings and inspection plans were used to examine the samples. They were examined visually and functionally.

3.2 Termination Resistance, Low Level

Termination resistance measurements at low level current were made, using a four terminal measuring technique (Figure 1). The test current was maintained at 100 milliamperes dc, with an open circuit voltage of 50 millivolts dc.

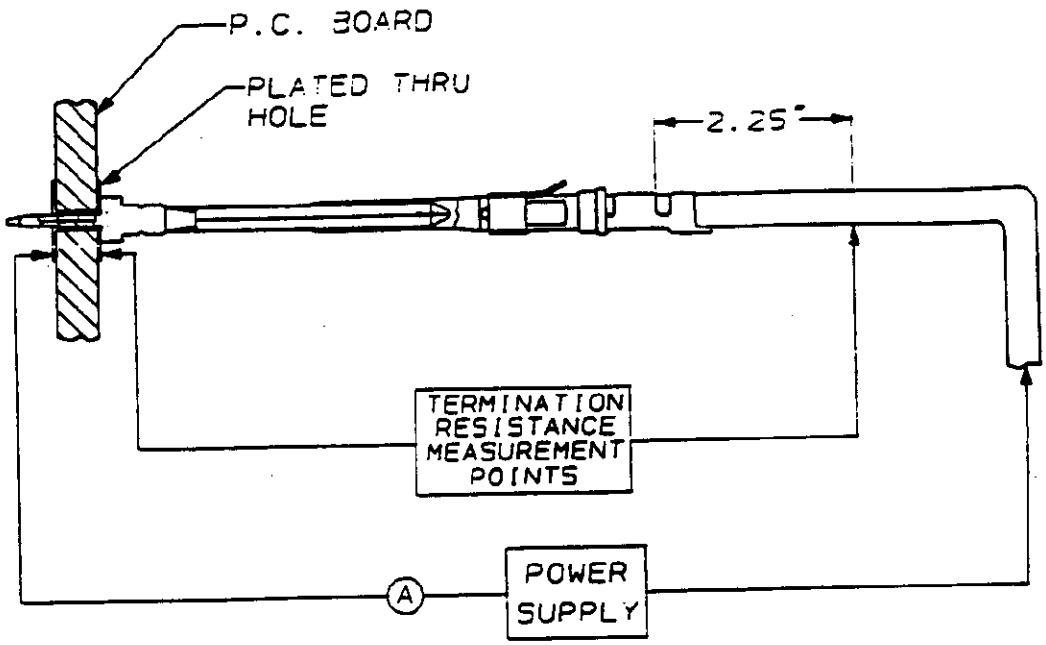

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 2000 vac was applied between the adjacent contacts. This potential was applied for one minute and then returned to zero.

3.4 Insulation Resistance

Insulation resistance was measured between adjacent contacts, using a test voltage of 500 volts dc. This voltage was applied for two minutes before the resistance was measured.

3.5 Temperature Rise vs Specified Current

Connector temperature was measured, while energized at the specified current of 6.0 amperes ac. Thermocouples were attached to the connectors to measure their temperatures. This temperature was then subtracted from the ambient temperature to find the temperature rise. When three readings at five minute intervals were the same, the readings were recorded.

3.6 Vibration, Random

Mated connectors were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 50 and 2000 hertz. The power spectral density at 50 hz is 0.01 G^2/Hz. The spectrum slopes up at 6 dB per octave to a PSD of 0.04 G^2/Hz at 100 Hz. The spectrum is flat at 0.04 G^2/Hz from 100 to 1000 Hz. The spectrum slopes down at 6 dB per octave to the upper bound frequency of 2000 Hz, at which the PSD is 0.01 G^2/Hz. The root-mean square amplitude of the excitation was 7.56 GRMS.

3.7 Physical Shock

Mated connectors were subjected to a physical shock test, having a half-sine waveform of 50 gravity units (g peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular planes, for a total of 18 shocks. The connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.8 Mating Force

The force required to mate individual connectors was measured, using a free floating fixture with the rate of travel at 1.0 inch/minute.

3.9 Unmating Force

The force required to unmate individual connectors was measured, using a free floating fixture with the rate of travel at 1.0 inch/minute.

3.10 Durability

Connectors were mated and unmated 50 times at a rate not exceeding 300 per hour.

3.11 Thermal Shock

Mated connectors were subjected to 10 cycles of temperature extremes, with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 130°C. The transition between temperatures was less than one minute.

3.12 Humidity-Temperature Cycling

Mated connectors were exposed to 10 cycles of humidity-temperature cycling. Each cycle lasted 24 hours and consisted of cycling the temperature between 25°C and 65°C twice, while the relative humidity was held at 95%. During five of the first nine cycles, the connectors were exposed to a cold shock at -10°C for 3 hours.

3.13 Temperature Life

Mated samples were exposed to a temperature of 105°C for 315 hours.

4. Validation

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