QUALIFICATION TEST REPORT

Connector, Receptacle Contact,
ACTION PIN*,

501-158 Rev. 0

Product Specification:	108-9069 Rev 0
CTL No.:	CTL5478-009-003
Date:	September 16, 1991
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(R5478TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report
Connector, Receptacle contact,
ACTION PIN

1. Introduction

1.1 Purpose

Testing was performed on AMP's Receptacle Contact Connectors, with ACTION PIN to determine its conformance to the requirements of AMP Product Specification 108-9069 Rev.0.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Receptacle Contact Connector manufactured by the Printed Circuit Board Products Division of the Capital Goods Business Sector. The testing was performed between June 28, 1991 and August 26, 1991.

1.3 Conclusion

The Receptacle Contact Connector meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-9069 Rev. 0.

1.4 Product Description

The AMP Receptacle with ACTION PIN connector is a vertical mulit-contact receptacle type connector. When used in conjunction with HDI pin assemblies, they are designed for electronic applications requiring a high level of reliability and high pin count.

AMP Receptacle with ACTION PIN connectors are available with two, three or four rows of contacts on a .100 inch grid with a maximum of 150 positions in the two row version, and 225 position in the three and 300 position for the four row connectors.

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	3 ea.	532773-1	120 Pos Receptacle
1,2,3,4,5	6 ea.	532448-9	[1]240 Pos Header
1,2,3,4,5	6 ea.	533427-9	240 Pos Receptacle

[1] where needed, for testing purposes only

1.6 Qualification Test Sequence

	Test Groups				
Test or Examination	1	2	3	4	5
Examination of Product	1,9	1,9	1,6	1,5	1,5
Termination Resistance, Dry Circuit		3,7	2,5	2,4	2,4
Dielectric Withstanding Voltage	2,7				
Insulation Resistance	3,6				
Vibration		5			
Physical Shock		6			
Mating Force		2			
Unmating Force		8			
Contact Retention	8				
Durability		4			
Thermal Shock	4		3		
Humidity-Temperature Cycling	5		4		
Industrial Mixed Flowing Gas				3	
Temperature Life					3

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 Sector.

2.2 Termination Resistance, Dry Circuit - Groups 2,3,4,5

All termination resistance measurements, taken at 100 milliamperes dc. max. and 50 millivolts open circuit voltage, were less than 15.0 milliohms initially and 20.0 milliohms after testing.

Test Group	No. of Samples	Condition	Min.	Max.	Mean
2	360	Initial	8.5	10.8	9.73
		After Mechanical	8.6	10.7	9.67
3	360	Initial	8.2	11.0	9.67
		After Humidity	8.7	11.8	9.87
4	720	Initial	5.2	8.0	5.86
		After Temp. Life	5.1	7.0	5.79
5	720	Initial	3.3	7.2	5.57
		After IMFG	2.0	7.2	5.46

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 1

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

2.4 Insulation Resistance - Group 1

All insulation resistance measurements were greater than 5000 megohms initially and 1000 megohms after test.

2.5 Vibration - Group 2

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

2.6 Physical Shock - Group 2

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.

2.7 Mating Force - Group 2

All mating force measurements were less than 7.0 ounces maximum average per contact.

2.8 Unmating Force - Group 2

All unmating force measurements were greater than 0.4 ounce minimum average per contact.

2.9 Contact Retention - Group 1

No physical damage occurred to either the contacts or the housing, and no contacts dislodged from the housings as a result of applying an axial load to each contact.

2.10 Durability - Group 2

No physical damage occurred to the samples as a result of mating and unmating the connector 250 times.

2.11 Thermal Shock - Groups 1,3

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 1,3

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 Industrial Mixed Flowing Gas - Group 5

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to the pollutants of industrial mixed flowing gas.

2.14 Temperature Life - Group 4

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.

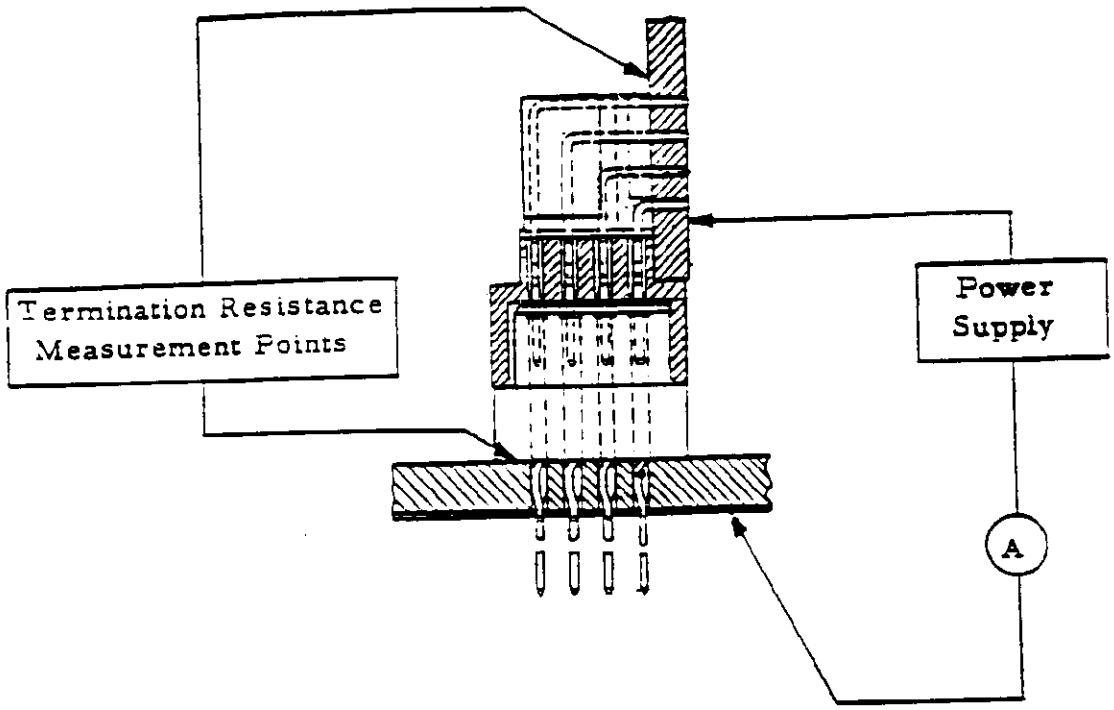

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 900 vac (at Sea Level) was applied between the adjacent contacts. This test was repeated at 70,000 ft with a test potential of 200 vac. 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 Vibration, Sine

Mated connectors were subjected to sinusoidal vibration, having a simple harmonic motion with an amplitude of 0.06 inch, double amplitude. The vibration frequency was varied logarithmically between the limits of 10 and 2000 Hz and returned to 10 Hz in 20 minutes. This cycle was performed 12 times in each of three mutually perpendicular planes, for a total vibration time of 12 hours. Connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.6 Physical Shock

Mated connectors were subjected to a physical shock test, having a sawtooth waveform of 100 gravity units (g peak) and a duration of 6 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.

3.7 Mating Force

The force required to mate individual connectors was measured, using a free floating fixture with the rate of travel at 0.5 inch/minute. The force per contact was calculated.

3.8 Unmating Force

The force required to unmate individual connectors was measured, using a free floating fixture with the rate of travel at 0.5 inch/minute. The force per contact was calculated.

3.9 Contact Retention

An axial load of 3 pounds was applied to each contact and held for 60 seconds. The force was applied in a direction to cause removal of the contacts from the housing.

3.10 Durability

Connectors were mated and unmated 250 times at a rate not exceeding 250 per hour.

3.11 Thermal Shock

Mated connectors were subjected to 5 cycles of temperature extremes, with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -65°C and 125°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%.

3.13 Industrial Mixed Flowing Gas, Class III

Mated connectors were exposed for 20 days to an industrial mixed flowing gas Class III exposure. Class III exposure is defined as a temperature of 30°C and a relative humidity of 75%, with the pollutants of Cl_2 at 20 ppb, NO_2 at 200 ppb, and H_2S at 100 ppb.

3.14 Temperature Life

Mated samples were exposed to a temperature of 118°C for 33 days.

4. Validation

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