QUALIFICATION TEST REPORT

CONNECTOR. ZIF-LINE 50 & 100, FLEXIBLE FLAT CONDUCTOR CABLE, .050 & .100 INCH CENTERLINES

501-240 Rev. O

Product Specification:	108-16025 Rev. O
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(R1012ts)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP* ZIF-Line 50 & 100 Connectors to determine its conformance to the requirements of AMP Product Specification 108-16025 Rev. O.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the ZIF-Line 50 & 100 Connectors manufactured by the Interconnection Components & Assemblies Product Division of the Capital Goods Business Unit.

1.3 Conclusion

The ZIF-Line 50 & 100 Connectors meet the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-16025 Rev. O.

* Trademark

1.4 Product Description

The ZIF-Line 50 flat flexible discrete circuit .050 inch centerline connector provide a connection for FEC (Flexible Etched Circuit) and can accommodate a thickness range between .004 and .012 inch in the contact area. The connectors are for vertical mounting on .062 inch thick printed circuit boards. The contacts are Phosphor bronze with tin-lead plating. The housing material is glass filled Polyester UL94V-O.

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 Nbr	Description
1	5	5-487576-0	5 Pos ZIF-Line 50
1	5	487927-5	5 Pos .050 Cable
2	5	2-487576-0	28 Pos ZIF-Line 50
2	5	2-487927-8	28 Pos .050 Cable
3,5	5 ea.	1-487576-2	20 Pos ZIF-Line 50
3	5	2-487927-0	20 Pos .050 Cable
4	5	4-487576-2	50 Pos ZIF-Line 50
4	5	5-487927-0	50 Pos .050 Cable

1.6 Qualification Test Sequence

	Test Groups				
Test or Examination	1	2	3	4	5
Examination of Product	1,8	1,5	1,5	1,7	1,3
Termination Resistance, Dry Circuit	2,6	2,4	2,4		
Dielectric Withstanding Voltage				3,6	
Insulation Resistance				2,5	
Vibration	4				
Physical Shock	5				
Cable Retention	7				
Durability	3				
Solderability					2
Thermal Shock				4	
Humidity-Temperature Cycling			3	5	
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 Unit.

2.2 Termination Resistance, Dry Circuit - Groups 1,2,3

All termination resistance measurements, taken at 100 milliamperes DC maximum and 50 millivolts open circuit voltage had a change in resistance (ΔR) of less than 20 milliohms.

Test Group	Nbr of Samples	Condition	Min	Max	Mean
1	25	After Mechanical	+1.08	+11.25	+4.576
2	140	After Temp Life	+1.44	+14.59	+4.592
3	25	After Humidity	-0.27	+0.42	+0.079

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 4

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

2.4 Insulation Resistance - Group 4

All insulation resistance measurements were greater than 500 megohms.

2.5 Vibration - Group 1

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 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.

2.7 Cable Retention - Group 1

There was no cable pullout as a result of applying a 1.0 pound axial load to each mated sample.

2.8 Durability - Group 1

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

2.9 Solderability - Group 5

The contact leads had a minimum of 95% solder coverage.

2.10 Thermal Shock - Group 4

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

2.11 Humidity-Temperature Cycling - Groups 3,4

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

2.12 Temperature Life - Group

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.

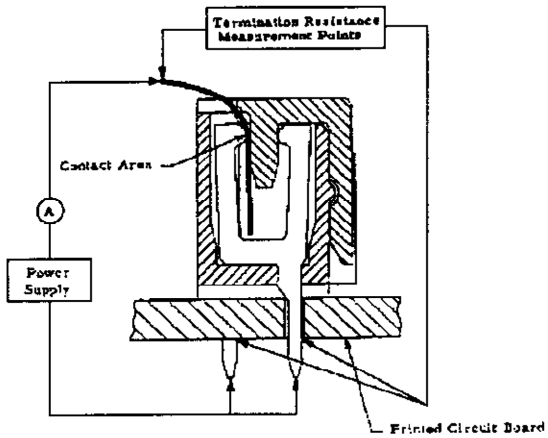

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 500 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 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 0.005 G^2/Hz. The spectrum slopes up at 6 dB per octave to a PSD of 0.02 G^2/Hz at 100 Hz. The spectrum is flat at 0.02 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 0.005 G^2/Hz. The root-mean square amplitude of the excitation was 5.35 GRMS.

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 Cable Retention

An axial load was applied between the connector and cable. This load was applied at a rate of 0.5 inch per minute.

3.8 Durability

Connectors were mated and unmated 50 times at a rate not exceeding 600 cycles per hour.

3.9 Solderability

Connector assembly contact solder tails were subjected to a solderability test by immersing them in a nonactivated rosin flux for 5 to 10 seconds, allowed to drain for 10 to 60 seconds, then held over molten solder without contact for 2 seconds. The solder tails were then immersed in the molden solder at a rate of approximately one inch per second, held for 3 to 5 seconds, then withdrawn. After cleaning in isopropyl alcohol, the samples were visually examined for solder coverage. The solder used for testing was 60/40 tin lead composition and was maintained at a temperature of 245°C.

3.10 Thermal Shock

Mated connectors were subjected to 25 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 105°C. The transition between temperatures was less than one minute.

3.11 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.

3.12 Temperature Life

Mated samples were exposed to a temperature of 105°C for 500 hours.

4. Validation

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