Connector, Standard Edge II With .0125 Inch Thick Contact

1. INTRODUCTION

1.1. Purpose

Testing was performed on AMP* Standard Edge II connector with .0125 inch thick contact to determine its conformance to the requirements of AMP Product Specification 108-1248 Rev. A.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Standard Edge II connector with .0125 inch thick contact manufactured by the Printed Circuit Board Division of the Capital Goods Business Unit. The testing was performed between October 13, 1995 and April 11, 1996. The test file number for this testing is CTL 5253-074-018. This documentation is on file and available from the Americas Regional Laboratory.

1.3. Conclusion

The Standard Edge II connector with .0125 inch thick contact, listed in paragraph 1.5, meet the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1248 Rev A.

1.4. Product Description

The Standard Edge II connector with .0125 inch thick contact is a multi-contact, edge board type assembly. The contacts are phosphor bronze and available in various thicknesses of gold plating. The housing material is polyester.

1.5. Test Samples

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

Test Group	Quantity	Part Number	Description
1,2,3,4	5 each	340507	Standard Edge II connector with .0125 inch thick contact

Figure 1

* Trademark
I Indicates change

1.6. Qualification Test Sequence

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Examination of product	1,9	1,5	1,5	1,9
Termination resistance, dry circuit	3,7	2,4	2,4	
Dielectric withstanding voltage				4,8
Insulation resistance				3,7
Vibration	5			
Physical shock	6			
Mating force	2			
Unmating force	8			
Contact retention				2
Durability	4			
Thermal shock				5
Humidity, steady state				6
Mixed flowing gas			3(c)	
Temperature life		3(c)		

NOTE

(a) See Para 1.5.
(b) Numbers indicate sequence in which tests are performed.
(c) Precondition with 5 cycles durability.

Figure 2

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 and 3

All termination resistance measurements, taken at 100 milliamperes DC and 50 millivolts open circuit voltage were less than 12 milliohms initially and had a final maximum increase in resistance (ΔR) of less than 5 milliohms.

Test Group	Number of Data Points	Condition	Termination Resistance		
			Min	Max	Mean
1	150	Initial	3.74	7.39	5.759
		After mechanical	-6.03	-1.17	-3.324
2	150	Initial	3.99	7.74	6.007
		After temperature life	-1.83	1.77	0.517
3	150	Initial	4.26	7.25	6.009
		After mixed flowing gas	-0.70	1.15	-0.014

NOTE *All values in milliohms*

Figure 3

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 5000 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. Mating Force - Group 1

All mating force measurements were less than 19 ounces per contact pair.

2.8. Unmating Force - Group 1

All unmating force measurements were greater than 1.25 ounces per contact pair.

2.9. Contact Retention - Group 4

No physical damage occurred to either the contacts or the housing, and no contacts dislodged from the housings as a result of supplying an axial load of 8 pounds to the contacts.

2.10. Durability - Group 1

No physical damage occurred to the samples as a result of mating and unmating the connector 100 times for contacts plated with 15 microinch gold.

2.11. Thermal Shock - Group 4

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

2.12. Humidity, Steady State - Group 4

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to a steady state humidity environment.

2.13. Mixed Flowing Gas - Group 3

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

2.14. 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 4). The test current was maintained at 100 milliamperes DC with an open circuit voltage of 50 millivolts DC.

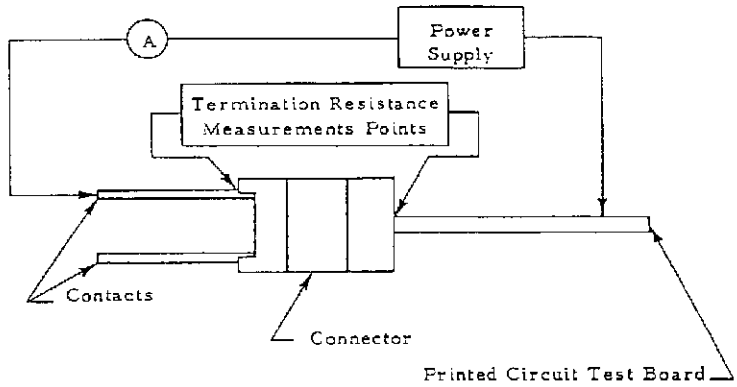

Figure 4
Typical Termination Resistance Measurement Points

3.3. Dielectric Withstanding Voltage

A test potential of 1000 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 Hz. The power spectral density at 50 Hz is 0.015 G^2/Hz. The spectrum slopes up at 6 dB per octave to a PSD of 0.06 G^2/Hz at 100 Hz. The spectrum is flat at 0.06 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 0.015 G^2/Hz. The root-mean square amplitude of the excitation was 9.26 GRMS. This was performed for 15 minutes in each of three mutually perpendicular planes, for a total vibration time of 45 minutes. Connectors were monitored for discontinuities of one microsecond or greater, using a current of 100 milliamperes DC.

3.6. 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. Connectors were monitored for discontinuities of one microsecond or greater, using a current of 100 milliamperes DC.

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.

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.

3.9. Contact Retention

I An axial load of 8 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 100 times at a rate of 500 cycles per hour.

3.11. Thermal Shock

Unmated connectors were subjected to 5 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55 and 85°C. The transition between temperatures was less than one minute.

3.12. Humidity, Steady State

Unmated connectors were subjected to a relative humidity of 90-95% and a temperature of 40°C for a period of 4 days.

3.13. Mixed Flowing Gas, Class II

Mated connectors were exposed for 14 days to a mixed flowing gas Class II exposure. Class II exposure is defined as a temperature of 30°C and a relative humidity of 70% with the pollutants of $C1_2$ at 10 ppb, NO_2 at 200 ppb, and H_2S at 10 ppb. Samples were preconditioned with 5 cycles of durability.

3.14. Temperature Life

Mated samples were exposed to a temperature of 85°C for 500 hours.

4. VALIDATION

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