Connector, Surface Mount Matched Impedance For Board-To-Board Applications Greater Than .495 Inch

1. INTRODUCTION

1.1. Purpose

Testing was performed on AMP* Extended Height Surface Mount, Matching Impedance (MICTOR*)Connector to determine its conformance to the requirements of AMP Product Specification 108-1422-1 Rev. O.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Extended Height MICTOR Connector manufactured by the Division of the Global Personal Computer Business Group. The testing was performed between June 7, 1996 and September 18, 1996.

1.3. Conclusion

The Extended Height MICTOR Connector, listed in paragraph 1.5., meet the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1422-1 Rev O.

1.4. Product Description

The MICTOR connector is designed for board to board applications with spacing greater than 0.495 inches. These two piece connector designs accommodate a variety of printed circuit board thicknesses. The plug assemblies are loaded with .008 inch thick MICTOR contacts, in dual row, which mate with hermaphroditic contacts in the receptacle assembly. Ground buss members are located between the dual rows of signal contacts for improved high speed signal transmission. Both plug and receptacle assemblies are available in signal counts of 38 to 266 position in 38 pin increments for .025 inch centerline and signal counts of 20 to 140 position in 20 pin increments for .050 inch centerline

1.5. Test Samples

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

Quantity	Part Nbr	Description
5	767042-5	0.738 Plug Assembly
5	2-767004-6	Receptacle Assembly

1.6. Qualification Test Sequence

Test or Examination	Test Group
Examination of Product	1,9
Termination Resistance, Dry Circuit	3,7
Vibration	5
Physical Shock	6
Mating Force	2
Unmating Force	8
Durability	4

The numbers indicate sequence in which tests were performed.

2. SUMMARY OF TESTING

2.1. Examination of Product

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

2.2. Termination Resistance, Dry Circuit

All termination resistance measurements, taken at 100 milliamperes DC and 50 millivolts open circuit voltage has less than a 10 milliohm increase (ΔR) in resistance when the initial measurements were compared to the final measurements.

Number of Samples	Condition	Min	Max	Mean
54	After Mechanical	-1.54	+1.29	+0.079

All values in milliohms

2.3. Vibration, Random

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

2.4. Physical Shock

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.

2.5. Mating Force

All mating force measurements were less than 9.5 pounds per half inch of connector. One half inch of connector (1 module) equals 38 signal contacts and 1 ground buss.

2.6. Unmating Force

All unmating force measurements were greater than 19 ounce per half inch of connector. One half inch of connector (1 module) equals 38 signal contacts and 1 ground buss.

2.7. Durability

No physical damage occurred to the samples as a result of mating and unmating the connector 25 times.

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.

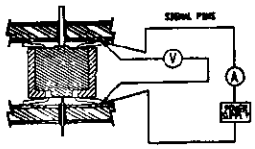

Figure 1
Typical Termination Resistance Measurement Points

3.3. 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 was 0.025 G^2/Hz. The spectrum sloped up at 6 dB per octave to a PSD of 0.10 G^2/Hz at 100 Hz. The spectrum was flat at 0.10 G^2/Hz from 100 to 1000 Hz. The spectrum sloped down at 6 dB per octave to the upper bound frequency of 2000 Hz, at which the PSD was 0.025 G^2/Hz. The root-mean square amplitude of the excitation was 11.95 GRMS. The samples were subjected to this test for 90 minutes in each of the three mutually perpendicular axes, for a total test time of 4.5 hours. The connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.4. 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.

3.5. Mating Force

The force required to mate connector assemblies was measured using a tensile/compression device with the rate of travel at 1.0 inch/minute and a free floating fixture.

3.6. Unmating Force

The force required to unmate connector assemblies was measured using a tensile/compression device with the rate of travel at 1.0 inch/minute and a free floating fixture.

3.7. Durability

Connector assemblies were mated and unmated 25 times at a rate not exceeding 600 per hour.

4. VALIDATION

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