Metric MICRO-PITCH* Soldertail Style Connector

1. INTRODUCTION

1.1. Purpose

Testing was performed on the metric MICRO-PITCH* soldertail style connector to determine its conformance to the requirements of AMP Product Specification 108-1223-2 Revision A.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the metric MICRO-PITCH soldertail style connector. Testing was performed at the Global Automotive Division Americas North Product Reliability Center between 22Jan96 and 25Mar96 and between 04Feb98 and 09Apr98. The test file numbers for this testing are ACL 0341009 and ACL 35030002. This documentation is on file at and available from the Global Automotive Division Americas North Product Reliability Center.

1.3. Conclusion

The metric MICRO-PITCH* soldertail style connector listed in paragraph 1.5., conformed to the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1223-2 Revision A.

1.4. Product Description

The metric MICRO-PITCH* soldertail style connector is a two-piece connector providing a method of handling and socketing the standard JEDEC (MO-069) Plastic Quad Flat Pack (PQFP). During insertion, the contacts wipe on the inside of the PQFP leads, ensuring reliable electrical contact.

1.5. Test Samples

Test samples were representative of normal production lots. Samples identified with the following part numbers were used for test:

Test Group	Quantity	Part Number	Description
1	4	822114-4	160 position socket
	4	822115-4	Cover
2,3,4,5	2 each	822114-4	160 position socket
	2 each	822115-4	Cover

Figure 1

1.6. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15 to 35°C
Relative Humidity: 20 to 80%

* Trademark
I Indicates change

1.7. Qualification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Examination of product	1,8	1,6	1,6	1,9	1,5
Dry circuit resistance	3,7	2,5	2,5		2,4
Insulation resistance				2,6	
Dielectric withstanding voltage				3,7	
Vibration	5				
Mechanical shock	6				
Durability	4	3	3		
Contact retention				8	
Mating force	2				
Thermal shock				4	3
Humidity-temperature cycling			4	5	
Temperature life		4			

NOTE *(a) See Para 1.5.*
(b) Numbers indicate sequence in which tests are performed.

Figure 2

2. SUMMARY OF TESTING

2.1. Examination of Product - All Test Groups

All samples submitted for testing were representative of normal production lots. A Certificate of Conformance was issued by the Product Assurance Department. Where specified, samples were visually examined and no evidence of physical damage detrimental to product performance was observed.

2.2. Dry Circuit Resistance - Test Groups 1, 2 and 3

All dry circuit resistance measurements, taken at 100 milliamperes maximum and 20 millivolts maximum open circuit voltage had a change in resistance (ΔR) of less than 10 milliohms after testing.

2.3. Insulation Resistance - Test Group 4

All insulation resistance measurements were greater than 5000 megohms.

2.4. Dielectric Withstanding Voltage - Test Group 4

No dielectric breakdown or flashover occurred.

2.5. Vibration - Test Group 1

No discontinuities were detected during vibration testing. Following vibration testing, no cracks, breaks, or loose parts on the samples were visible.

2.6. Mechanical Shock - Test Group 1

No discontinuities were detected during mechanical shock testing. Following mechanical shock testing, no cracks, breaks, or loose parts on the samples were visible.

2.7. Durability - Test Group 1

No physical damage occurred as a result of mating and unmating the samples 15 times.

2.8. Contact Retention - Test Group 4

No physical damage occurred to either the contacts or the housing and no contacts dislodged from the housing.

2.9. Mating Force - Test Group 1

All mating force measurements were less than 0.5 pound.

2.10. Thermal Shock - Test Groups 4 and 5

No evidence of physical damage was visible as a result of exposure to thermal shock.

2.11. Humidity-temperature Cycling - Test Groups 3 and 4

No evidence of physical damage was visible as a result of exposure to humidity-temperature cycling.

2.12. Temperature Life - Test Group 2

No evidence of physical damage was visible as a result of exposure to temperature life.

3. TEST METHODS

3.1. Examination of Product

Where specified, samples were visually examined for evidence of physical damage detrimental to product performance.

3.2. Dry Circuit Resistance

Dry circuit resistance measurements at low level current were made using a 4 terminal measuring technique (Figure 3). The test current was maintained at 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage.

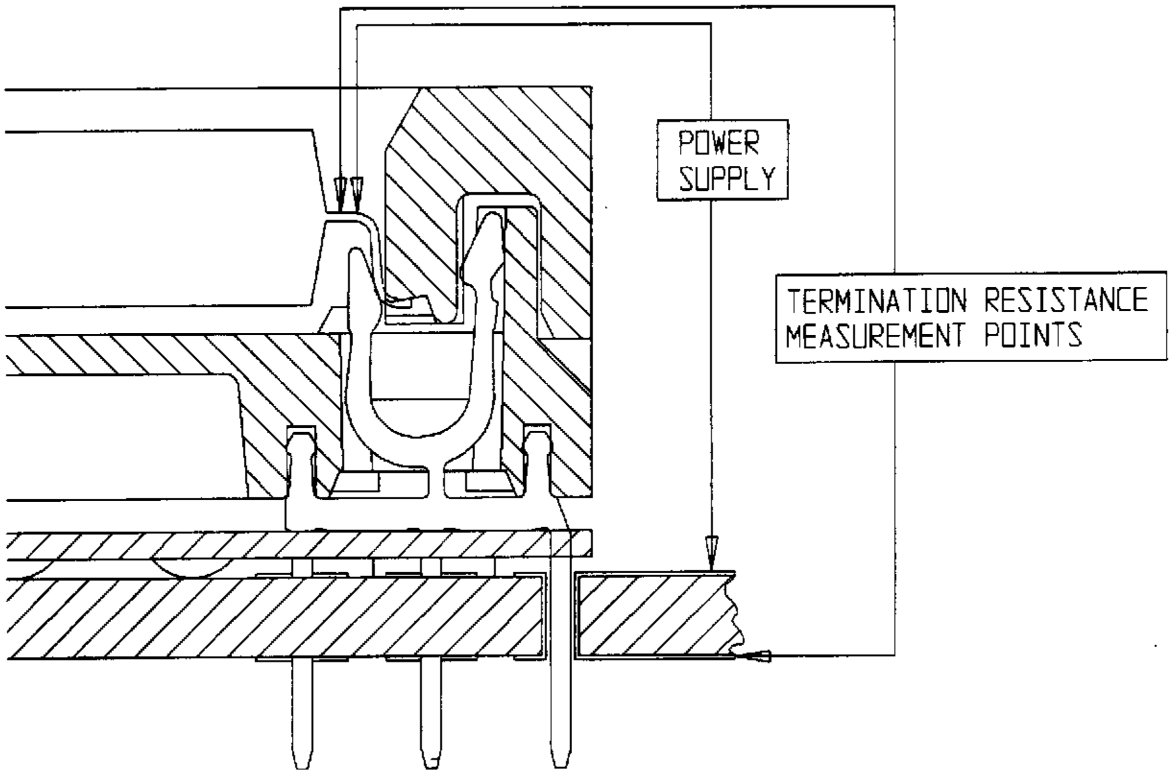

Figure 3
Typical Dry Circuit Resistance Measurement Points

3.3. Insulation Resistance

Insulation resistance was measured between adjacent contacts of unmated samples. A test voltage of 500 volts DC was applied for 1 minute before the resistance was measured.

3.4. Dielectric Withstanding Voltage

A test potential of 750 volts AC was applied between the adjacent contacts of unmated samples. This potential was applied for 1 minute and then returned to zero.

3.5. Vibration, Sinusoidal

Mated samples were subjected to sinusoidal vibration, having a simple harmonic motion with an amplitude of 0.06 inch, double amplitude. The vibration frequency was varied uniformly between the limits of 10 and 2000 Hz and returned to 10 Hz in 10 minutes. This cycle was performed 24 times in each of 3 mutually perpendicular planes for a total vibration time of 12 hours. Samples were monitored for discontinuities of 1 microsecond or greater using a current of 100 milliamperes DC.

3.6. Mechanical Shock, Sawtooth

Mated samples were subjected to a mechanical shock test, having a sawtooth waveform of 50 gravity units (g peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the 3 mutually perpendicular planes, for a total of 18 shocks. Samples were monitored for discontinuities of 1 microsecond or greater, using a current of 100 milliamperes DC.

3.7. Durability

Samples were mated and unmated 15 times at a maximum rate of 600 cycles per hour.

3.8. Contact Retention

An axial load of 12 ounces was applied to each contact and held for 5 seconds. The force was applied in a direction to cause remove of the contact from the housing.

3.9. Mating Force

The force required to mate individual samples was measured using a tensile/compression device with a free floating fixture and a rate of travel of 0.5 inch per minute. The maximum average force per contact was calculated.

3.10. Thermal Shock

Mated samples were subjected to 25 cycles of thermal shock with each cycle consisting of 30 minute dwells at -55 and 105°C. The transition between temperatures was less than 1 minute.

3.11. Humidity-temperature Cycling

Mated samples 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 maintaining high humidity (Figure 4).

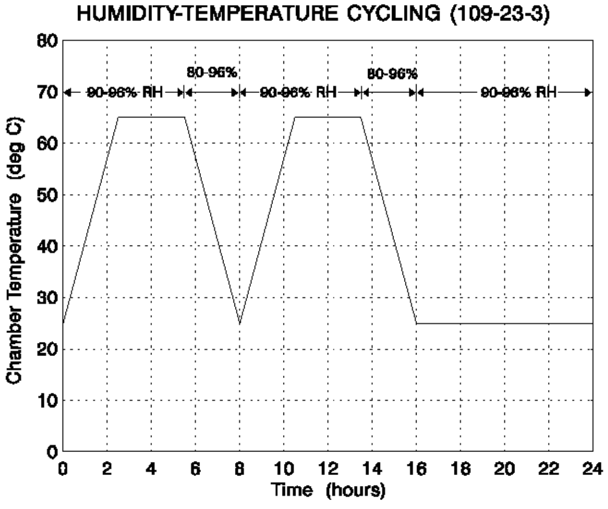

Figure 4
Typical Humidity-Temperature Cycling Profile

3.12. Temperature Life

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