Connector, Circular Plastic

1. INTRODUCTION

1.1. Purpose

Testing was performed on the AMP* Circular Plastic Connector to determine its conformance to the requirements of AMP Product Specification 108-10024 Revision G.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Circular Plastic Connector. Testing was performed at the Americas Regional Laboratory between 17Jul99 and 20Aug99. The test file number for this testing is CTL 5029-042. This documentation is on file at and available from the Americas Regional Laboratory.

1.3. Conclusion

The Circular Plastic Connector listed in paragraph 1.5, conformed to the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-10024 Revision G.

1.4. Product Description

The Circular Plastic Connector is an all plastic connector designed for use in electronic, electrical power and control circuits. These connectors are designed to accept standard density (size 16), high density (size 20), power (Type XII) contacts or combinations of standard and power contacts.

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
1,3	10	206136-1	Plug, 23-7, Series 3
1,3	10	206137-1	Receptacle, 23-7, Series 3
1,3	10	206612-1	Plug, 23-22, Series 4
1,3	10	206613-1	Receptacle, 23-22, Series 4
1,2,3	15	206150-1	Plug, 23-37, Series 1
1,2,3	15	206151-1	Receptacle, 23-37, Series 1
1,3	10	205842-1	Plug, 23-63, Series 2
1,3	10	205843-1	Receptacle, 23-63, Series 2
2	5	207485-1	Plug, 23-16, Series 4
2	5	207486-1	Receptacle, 23-16, Series 4
2	5	205839-3	Plug, 17-28, Series 2
2	5	205840-3	Receptacle, 17-28, Series 2
2	5	206037-2	Plug, 17-3, Series 3
2	5	206036-2	Receptacle, 17-3, Series 3

Figure 1

* Trademark
I Indicates change

LOC B

1.6. Environmental Conditions

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

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

1.7. Qualification Test Sequence

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

NOTE (a) *See paragraph 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 Product Assurance. Where specified, samples were visually examined and no evidence of physical damage detrimental to product performance was observed.

2.2. Insulation Resistance - Test Group 2

All insulation resistance measurements were greater than 1,000 megohms initially and 500 megohms after humidity exposure.

2.3. Dielectric Withstanding Voltage - Test Group 2

No dielectric breakdown or flashover occurred.

2.4. 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.

2.5. 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.

2.6. Durability - Test Group 1

No physical damage occurred as a result of mating and unmating the samples 500 times.

2.7. Mating Force - Test Group 1

All mating torque measurements were less than 20 inch pounds for size 23 shells.

2.8. Unmating Force - Test Group 1

All unmating torque measurements were less than 20 inch pounds for size 23 shells.

2.9. Impact - Test Group 3

No evidence of physical damage was visible as a result an impact test.

2.10. Thermal Shock - Test Group 2

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

2.11. Humidity-temperature Cycling - Test Group 2

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

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. Insulation Resistance

Insulation resistance was measured between adjacent contacts of mated samples. A test voltage of 500 volts DC was applied for 2 minutes before the resistance was measured.

3.3. Dielectric Withstanding Voltage

A test potential of 1,500 volts AC was applied between the adjacent contacts of mated samples. This potential was applied for 1 minute and then returned to zero.

3.4. Vibration, Sinusoidal

Mated samples were subjected to sinusoidal vibration, having a simple harmonic motion with an amplitude of 0.06 inch, double amplitude or 15 gravity units (g's peak) whichever was less. The vibration frequency was varied logarithmically between the limits of 10 and 2,000 Hz and returned to 10 Hz in 20 minutes. This cycle was performed 12 times in each of 3 mutually perpendicular planes for a total vibration time of 12 hours. Samples were monitored for discontinuities of 10 microseconds or greater using a current of 100 milliamperes DC.

3.5 Mechanical Shock, Half-sine

Mated samples were subjected to a mechanical 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 3 mutually perpendicular planes for a total of 18 shocks. Samples were monitored for discontinuities of 10 microseconds or greater using a current of 100 milliamperes DC.

3.6. Durability

Samples were manually mated and unmated 500 times at a rate of less than 600 times an hour.

3.7. Mating Force

The torque required to mate connector halves was measured using a torque load cell and strain indicator.

3.8. Unmating Force

The torque required to unmate connector halves was measured using a torque load cell and strain indicator.

3.9. Impact

Samples were mounted on a test rig with the face of the connector approximately 35 inches from the pivot point. The sample was raised to a position where the cable was in a horizontal plane. The sample was then released and allowed to free fall in an arc and impact a steel plate which was positioned directly beneath the pivot point. This procedure was performed 8 times for each sample and the pivot point was rotated 45° after each impact.

3.10. Thermal Shock

Mated samples were subjected to 5 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 and 65°C twice while maintaining high humidity (Figure 3).

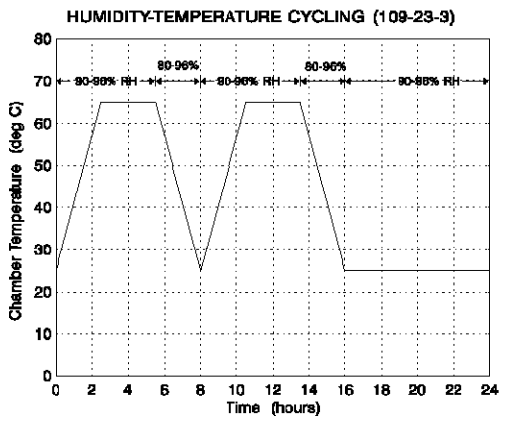

Figure 3
Typical Humidity-Temperature Cycling Profile