Board-To-Board Power Tap, Receptacles and Pins

1. INTRODUCTION

1.1. Purpose

Testing was performed on AMP* Board-to-Board Power Taps to determine their conformance to the requirements of AMP Product Specification 108-1624-1 Revision A.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Board-to-Board Power Taps. Testing was performed at the Americas Regional Laboratory between 10Jan00 and 31Mar00. The test file number for this testing is CTL B009426-011. This documentation is on file at and available from the Americas Regional Laboratory.

1.3. Conclusion

The Board-to-Board Power Taps listed in paragraph 1.5., conformed to the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1624-1 Revision A.

1.4. Product Description

The Board-to-Board Power Tap receptacles and pins provide a high current, separable board-to-board connection. The 10 position configuration of the pin and receptacle is the standard Dual In-Line Pin (DIP) outline with .300 X .100 inch hole centers. They are designed with ACTION PIN* contacts to provide a low resistance interface with tin plated through holes in the printed circuit board, eliminating the need for soldering.

1.5. Test Specimens

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

Test Group	Quantity	Part Number	Description
1,2	10	796137-1	Silver plated right angle pin assembly
		796137-2	Gold plated right angle pin assembly
		796138-1	Silver plated vertical receptacle assembly
		796138-2	Gold plated vertical receptacle assembly

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

LOC B

1.7. Qualification Test Sequence

Test or Examination	Test Group (a)	
	1	2
	Test Sequence (b)	
Initial examination of product	1	1
Dry circuit resistance	3,7	2,7
Temperature rise vs current		3,8
Vibration	5	6(c)
Mechanical shock	6	
Durability	4	
Mating force	2	
Unmating force	8	
Temperature life		5
Mixed flowing gas		4(d)
Final examination of product	9	9

NOTE
(a) See paragraph 1.5.
(b) Numbers indicate sequence in which tests are performed.
(c) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per AMP Specification 102-6.
(d) Precondition specimens with 10 durability cycles.

Figure 2

2. SUMMARY OF TESTING

2.1. Examination of Product - All Test Groups

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

2.2. Termination Resistance - Test Groups 1and 2

All termination resistance measurements, taken at 100 milliamperes maximum and 20 millivolts maximum open circuit voltage were less than 0.34 milliohm initially and 0.5 milliohm after testing.

Test Group	Plating	Number of Data Points	Condition	Termination Resistance		
				Min	Max	Mean
1	Silver	5	Initial	0.261	0.278	0.267
			Final	0.256	0.282	0.272
2	Silver	5	Initial	0.219	0.264	0.248
			Final	0.294	0.329	0.311
1	Gold	5	Initial	0.305	0.329	0.318
			Final	0.319	0.328	0.323
2	Gold	5	Initial	0.304	0.324	0.313
			Final	0.368	0.486	0.414

NOTE *All values in milliohms.*

Figure 3

2.3 Temperature Rise vs Current - Test Group 2

All specimens had a temperature rise of less than 30°C above ambient when tested using a baseline rated current of 37.25 amperes.

2.4. Vibration - Test Groups 1 and 2

No discontinuities were detected during vibration testing (Test Group 1). Following vibration testing, no cracks, breaks, or loose parts on the specimens 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 specimens were visible.

2.6. Durability - Test Group 1

No physical damage occurred as a result of mating and unmating the specimens 25 times.

2.7. Mating Force - Test Group 1

All mating force measurements were less than 10 pounds.

2.8. Unmating Force - Test Group 1

All unmating force measurements were greater than 1 pound.

2.9. Temperature Life - Test Group 2

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

2.10. Mixed Flowing Gas - Test Group 2

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

3. TEST METHODS

3.1. Examination of Product

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

3.2. Termination Resistance

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

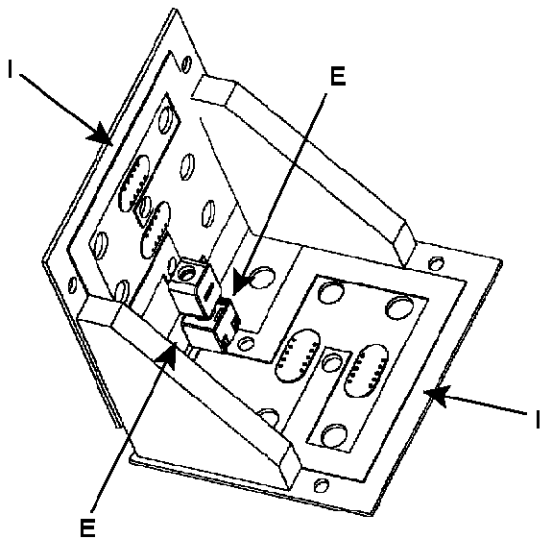

Figure 4
Typical Termination Resistance Measurement Points

3.3. Temperature Rise vs Current

Temperature rise curves were produced by measuring individual contact temperatures at 5 different current levels. These measurements were plotted to produce a temperature rise vs current curve. Thermocouples were attached to individual contacts to measure their temperatures. The ambient temperature was then subtracted from this measured temperature to find the temperature rise. When the temperature rise of 3 consecutive readings taken at 5 minute intervals did not differ by more than 1°C, the temperature measurement was recorded.

3.4. Vibration, Sinusoidal

Mated specimens 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 55 Hz and returned to 10 Hz in 1 minute. This cycle was performed 120 times in each of 3 mutually perpendicular planes for a total vibration time of 6 hours. Specimens for Test Group 1 were monitored for discontinuities of 1 microsecond or greater using a current of 100 milliamperes DC. Specimens for Test Group 2 were energized with 25.8 amperes to create an 18°C temperature rise above ambient.

3.5. Mechanical Shock, Half-sine

Mated specimens 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. Specimens were monitored for discontinuities of 1 microsecond or greater using a current of 100 milliamperes DC.

3.6. Durability

Specimens were mated and unmated 25 times at a maximum rate of 500 cycles per hour.

3.7. Mating Force

The force required to mate individual specimens was measured using a tensile/compression device with a free floating fixture and a rate of travel of 25.4 mm [1 in] per minute.

3.8. Unmating Force

The force required to unmate individual specimens was measured using a tensile/compression device with a free floating fixture and a rate of travel of 25.4 mm [1 in] per minute.

3.9. Temperature Life

Mated specimens were exposed to a temperature of 105°C for 1000 hours.

3.10. Mixed Flowing Gas, Class IIA

Mated specimens were exposed for 14 days to a mixed flowing gas Class IIA exposure. Class IIA exposure is defined as a temperature of 30°C and a relative humidity of 70% with the pollutants of Cl_2 at 10 ppb, NO_2 at 200 ppb, H_2S at 10 ppb and SO_2 at 100 ppb. Specimens were preconditioned with 10 cycles of durability.