Timer Connector With .125 Inch Blade Receptacle

1. INTRODUCTION

1.1. Purpose

Testing was performed on the AMP* Timer Connector with .125 Blade Receptacle to determine its conformance to the requirements of AMP Product Specification 108-1271-1 Rev. O.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Timer Connector with .125 Blade Receptacle. Testing was performed at the Americas Regional Laboratory between 06Jan98 and 24Feb98.

1.3. Conclusion

The Timer Connector with .125 Blade Receptacle listed in paragraph 1.5., conformed to the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1271-1 Rev O.

1.4. Product Description

The connector is designed to mate directly with a variety of appliance timing mechanisms which incorporate the use of a .125 inch wide by .020/.025 inch thick blade.

1.5. Test Samples

The test samples were representative of normal production lots, and samples identified with the following part numbers were used for test:

Test Group	Quantity	Part Nbr	Description
1,2,3,4,5,6,7	130	1217039-1	Timer receptacle with 18 AWG wire
1,4,6,7	70	63747-1	Test Tab .125 x .020 inch, Tin plated
2,4,5,7	25	521158-1	7 Pos Dryer Motor Housing

1.6. Environmental Conditions

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

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

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| Indicates change

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1.7. Qualification Test Sequence

Test or Examination	Test Groups						
	1	2	3	4	5	6	7
	Test Sequence						
Examination of Product	1,3	1,4	1,3	1,5	1,3	1,5	1,5
Termination Resistance						2,4	2,4
Contact Mating Force	2						
Terminal Insertion Force		2					
Terminal Retention		3					
Conductor Pullout			2				
Temperature rise vs Current				2			
Current Cycling				3			
Millivolt Drop				4			
Dielectric Withstanding					2		
Environmental Sequence							3
Durability						3	

NOTE *The numbers indicate sequence in which tests were performed.*

2. SUMMARY OF TESTING

2.1. Examination of Product - All Groups

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

2.2. Termination Resistance - Groups 5 and 6

All termination resistance measurements, taken at 100 milliamperes maximum and 20 millivolts maximum open circuit voltage were less than 4.5 milliohms.

Test Group	Nbr of Data points	Condition	Termination Resistance Min	Max	Mean
6	20	Initial	0.73	0.91	0.789
		After Durability	0.77	0.95	0.849
7	20	Initial	0.70	0.95	0.805
		After Environmental Seq,	0.85	1.36	1.055

All values in milliohms

2.3. Contact Mating Force - Group 1

All mating forces were less than 3.5 pounds per contact.

2.4. Terminal Insertion Force - Group 2

The maximum force required to engage a terminal into its housing was less than 6.0 pounds.

2.5. Terminal Retention Force - Group 2

The minimum force required to remove a terminal from its housing was greater than 20 pounds.

2.6. Conductor Pullout - Group 3

The minimum force required to pull the conductor from the terminal was greater than 20 pounds.

2.7. Temperature Rise vs Current - Group 4

All samples had a temperature rise of less than 30°C above ambient when tested using a current of 10.0 amperes.

2.8. Current Cycling - Group 4

No evidence of physical damage was visible as a result of current cycling. The maximum temperature increase between cycle 24 and cycle 500 was less than 15°C. No measured temperature rise exceeded 85°C.

2.9. Millivolt Drop - Group 4

All millivolt drop measurements taken at 12 amperes were less than 36 millivolts after the 24th cycle of current cycling, and less than 54 millivolts after the 500th cycle.

2.10. Dielectric Withstanding Voltage - Group 5

No dielectric breakdown or flashover occurred.

2.11. Environmental Sequence - Group 7

No evidence of physical damage was visible as a result of the environmental sequence. After the steady state humidity portion of the environmental sequence, the maximum leakage current measured was 90 nanoamperes.

2.12. Durability - Group 6

No physical damage occurred to the samples as a result of mating and unmating the samples 10 times.

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. Termination Resistance

Termination resistance measurements at low level current were made using a 4 terminal measuring technique (Figure 1). The test current was maintained at 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage.

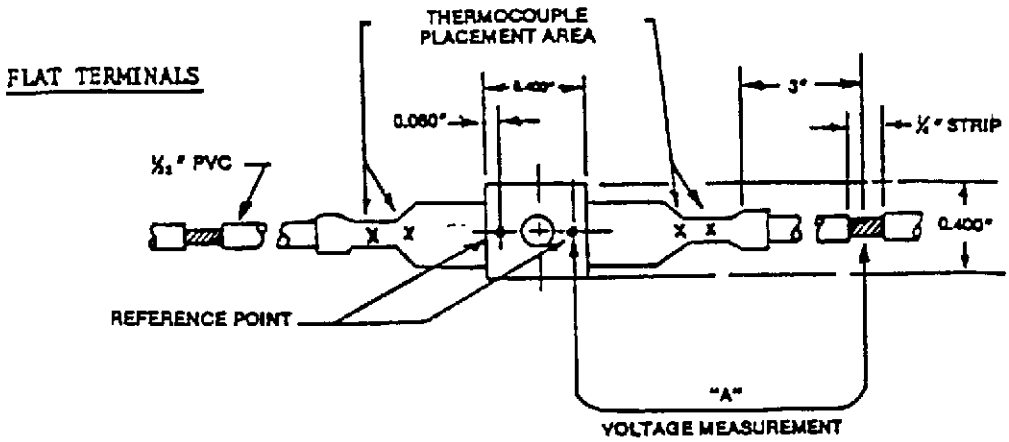

Figure 1
Typical Termination Resistance Measurement Points

3.3. Contact Mating Force

The force required to mate individual samples was measured using a tensile/compression device with the rate of travel at 0.5 inch/minute and a free floating fixture.

3.4. Terminal Insertion Force

Contacts were inserted, using the appropriate insertion tool mounted in a hand held force gage, until the contact locked in place inside the connector housing.

3.5. Terminal Retention Force

Contacts were extracted from the connector housing by gripping the attached 18 AWG wire with jaws attached to a tensile/compression device. The jaws has a rate of 0.5 inch/minute.

3.6. Conductor Pullout

The force load was applied to each sample using a tensile/compression device with the rate of travel at 0.5 inch/minute.

3.7. Temperature Rise vs Current

Samples were energized with 10 amperes A.C. 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.

3.8. Current Cycling

Testing consisted of 500 cycles of current cycling, with each cycle having current on for 45 minutes and current off for 15 minutes. The test current was 12 amperes A.C. Temperature measurements were taken after cycle 24 and 500.

3.9. Millivolt Drop

Millivolt drop measurements were made using a 4 terminal measuring technique (Figure 1). The test current was maintained at 12 amperes A.C.

3.10. Dielectric Withstanding Voltage

A test potential of 1240 volts A.C. was applied between the adjacent contacts of unmated samples. This potential was applied for 1 minute and then returned to zero.

3.11. Environmental Sequence

Samples were subjected to the following:

A. 96 hours at 70°C and 0 to 10% R.H.
B. 96 hours at -40°C
C. 96 hours at 40°C and 96 ± 2% R.H. After testing leakage current was measured between adjacent contacts. The test voltage was 120 volts A.C.
D. Seven cycles of the following :
   (1) 2.5 hour transition from 25°C to 70°C at 96 ± 2% R.H.
   (2) 3.0 hours steady state at 70°C and 96 ± 2% R.H.
   (3) 2.5 hour transition from 70°C to 25°C at 96 ± 2% R.H.
   (4) 2.5 hour transition from 25°C to 70°C at 96 ± 2% R.H.
   (5) 3.0 hours steady state at 70°C and 96 ± 2% R.H.
   (6) 2.5 hour transition from 70°C to 25°C at 96 ± 2% R.H.
   (7) 1.0 hour steady state at 25°C and 96 ± 2% R.H.
   (8) 1.5 hour transition from 25°C to -40°C at uncontrolled R.H.
   (9) 3.0 hour steady state at -40°C and uncontrolled R.H.
   (10) 1.5 hour transition from -40°C to 25°C at uncontrolled R.H.
   (11) 1.0 hour steady state at 25°C and 96 ± 2% R.H.

3.12. Durability

Samples were mated and unmated 10 times at a maximum rate of 600 cycles per hour.

4. VALIDATION

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