QUALIFICATION TEST REPORT

SOCKET, SIMM, CAM-IN,
RIGHT ANGLE & VERTICAL
.050 & .100 CENTERLINE

501-209 Rev. A

Product Specification:	108-1297 Rev. 0
CTL No.:	CTL1710-001-001
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(R1710TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report
Cam-in SIMM Socket

1. Introduction

1.1 Purpose

Testing was performed on AMP* Cam-in SIMM Socket to determine its conformance to the requirements of AMP Product Specification 108-1297 Rev. 0.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Cam-in SIMM Socket manufactured by the Integrated Circuit Connector Products Division of the Capital Goods Business Group. The testing was performed between November 20, 1992 and January 12, 1993.

1.3 Conclusion

The Cam-in SIMM Socket meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1297 Rev. 0.

*Trademark

1.4 Product Description

The AMP SIMM (Single In-Line Memory Module), Cam-in, right angle & vertical sockets are designed to interface between a hybrid board and a circuit board. They are designed for automatic and semi-automatic applications, the number of circuits per socket range from 40 to 84 on .050 pitch styles and from 30 to 35 on .100 pitch style accommodating a module board thickness of .050.

The contacts are made of phosphor bronze, post plated tin/lead or gold over nickel. The housing are a liquid crystal polymer, glass filled, UL94V-0

1.5 Test Samples

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

Test Group	Quantity	Part Number	Description
2,3,4,5,6,7	5 ea.	8-382486-0	Rt. Angle SIMM II (Sn)
1	5	8-382487-0	Rt. Angle SIMM II (Au)

1.6 Qualification Test Sequence

	Test Groups						
Test or Examination	1	2	3	4	5	6	7
Examination of Product	1,5	1,5	1,6	1,9	1,7	1,4	1,4
Termination Resistance, Dry Circuit	2,4	2,4	2,5		2,6		
Dielectric Withstanding Voltage				4,8			
Insulation Resistance				2,7			
Capacitance				3			
Vibration					4		
Physical Shock					5		
Contact Retention						2	
Durability					3		
Housing Lock Strength							3
Solderability							2
Resistance to Soldering Heat						3	
Thermal Shock			3	5			
Humidity-Temperature Cycling			4	6			
Mixed Flowing Gas	3						
Temperature Life		3					

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 selected from normal current production lots. They were inspected and accepted by the Product Assurance Department of the Capital Goods Business Group.

2.2 Termination Resistance, Dry Circuit - Groups 1,2,3,5

All termination resistance measurements, taken at 100 milliamperes dc. and 20 millivolts open circuit voltage, were less than 20 milliohms initially and have a final maximum change in resistance of less than 20 milliohms (ΔR).

Test Group	No. of Samples	Condition	Min.	Max.	Mean
1	400	Initial	7.0	19.0	8.78
		After Industrial Gas (ΔR)	-9.1	+2.3	-0.70
2	30	Initial	5.4	6.7	5.84
		After Temperature Life (ΔR)	-0.8	+2.7	+0.68
3	30	Initial	5.2	7.1	6.14
		After Humidity (ΔR)	+1.3	+11.3	+6.06
5	30	Initial	5.6	7.9	6.82
		After Durability (ΔR)	-0.6	+3.0	+1.34

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 4

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent contacts.

2.4 Insulation Resistance - Group 4

All insulation resistance measurements were greater than 10,000 megohms initially and 5000 megohms after test.

2.5 Capacitance - Group 3

All capacitance measurements were less than 2 picofarads.

2.6 Vibration - Group 5

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

2.7 Physical Shock - Group 5

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.

2.8 Contact Retention - Group 6

No physical damage occurred to either the contacts or the housing, and no contacts dislodged from the housings as a result of applying an axial load of 2 pounds to the contacts.

2.9 Durability - Group 5

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

2.10 Housing Lock Strength - Group 7

Mated connectors did not unlatch with a 6 pound axial load applied.

2.11 Solderability - Group 2

The contact leads had a minimum of 95% solder coverage.

2.12 Resistance to Soldering Heat Group 6

No evidence of physical damage to either the contacts or the connector was visible as a result of soldering heat.

2.13 Thermal Shock - Groups 3,4

No evidence of physical damage to either the contacts or the connector was visible as a result of thermal shock.

2.14 Humidity-Temperature Cycling - Groups 3,4

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to humidity-temperature cycling.

2.15 Mixed Flowing Gas - Group 1

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

2.16 Temperature Life - Group 2

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to an elevated temperature.

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.

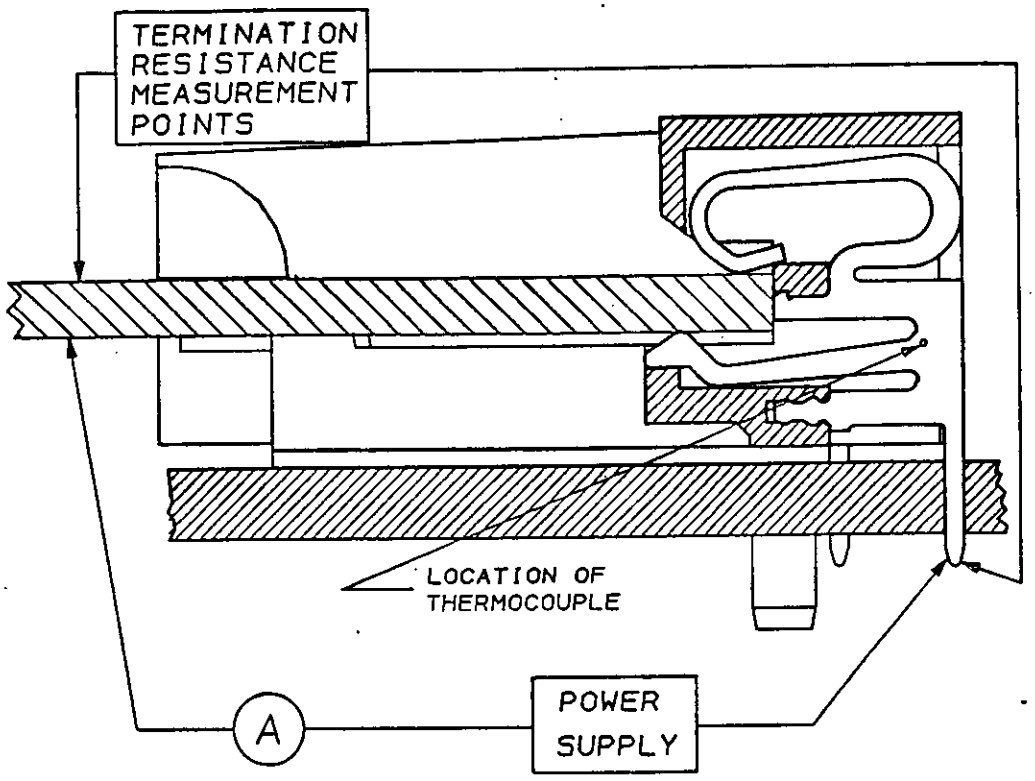

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 1000 vac was applied between the adjacent contacts. This potential was applied for one minute and then returned to zero.

3.4 Insulation Resistance

Insulation resistance was measured between adjacent contacts, using a test voltage of 500 volts dc. This voltage was applied for one minutes before the resistance was measured.

3.5 Capacitance

Capacitance was measured between the adjacent contacts of unmated connectors, using a test frequency of 1.00 MHz.

3.6 Vibration, Sine

Mated connectors 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 minutes. This cycle was performed 120 times in each of three mutually perpendicular planes, for a total vibration time of 6 hours. Connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.7 Physical Shock

Mated connectors were subjected to a physical 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 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.

3.8 Contact Retention

An axial load of 2 pounds was applied to each contact and held for 60 seconds. The force was applied in a direction to cause removal of the contacts from the housing.

3.9 Durability

Connectors were mated and unmated 25 times using an .054 thick gage, at a rate not exceeding 500 per hour.

3.10 Housing Lock Strength

The force to unlatch an .050 inch gage was measured. The force was applied in a direction normal to the plane of the connector.

3.11 Solderability

Connector assembly contact solder tails were subjected to a solderability test by immersing them in a active rosin flux for 5 to 10 seconds, allowed to drain for 10 to 60 seconds, then held over molten solder without contact for 2 seconds. The solder tails were then immersed in the molten solder, at a rate of approximately one inch per second, held for 3 to 5 seconds, then withdrawn. After cleaning in isopropyl alcohol, the samples were visually examined for solder coverage. The solder used for testing was 60/40 tin lead composition and was maintained at a temperature of 245°C.

3.12 Resistance to Soldering Heat

Connectors were lowered into a solder pot until the entire solder tail surface was immersed in molten solder. The temperature of the solder was 260°±5°C, and the duration of the immersion was 10± 2 seconds.

3.13 Thermal Shock

Mated connectors were subjected to 25 cycles of temperature extremes, with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 105°C. The transition between temperatures was less than one minute.

3.14 Humidity-Temperature Cycling

Mated connectors 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 the relative humidity was held at 95%. During five of the first nine cycles, the connectors were exposed to a cold shock at -10°C for 3 hours followed by 15 minutes of low frequency vibration.

3.15 Mixed Flowing Gas, Class II

Mated connectors were exposed for 20 days to an mixed flowing gas Class II exposure. Class II 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, and H_2S at 10 ppb.

3.16 Temperature Life

Mated samples were exposed to a temperature of 105°C for 160 hours.

4. Validation

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1/14/93

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