AMP

QUALIFICATION TEST REPORT

CONNECTOR, LOW PROFILE ECONOMY
& MULTI-POSITION SHUNT

501-265 Rev. O

Product Specification:	108-1476 Rev. O
CTL No.:	CTL5239-039-017
Date:	July 20, 1994
Classification:	Unrestricted
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(R5239TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP* Low Profile Economy Shunt Connector to determine its conformance to the requirements of AMP Product Specification 108-1467 Rev. O.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Low Profile Economy Shunt Connector manufactured by the Integrated Circuit Connector Product Division. The testing was performed between May 13, 1994 and July 18, 1994.

1.3 Conclusion

The Low Profile Economy Shunt Connector meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1467 Rev. O.

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1.4 Product Description

The Low Profile Economy Shunt Connector is a separable electrical connection device for mating with two .025 inch square post on .100 inch spacing. The contact is available in both beryllium copper or phosphor bronze with either tin or gold plating. The housing material is glass filled polyester.

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 Nbr	Description
1,2,3,5	30	382811-5	Economy Shunt Sn/Pb
1,2,3,4	30	382811-6	Economy Shunt Au
1,2,3,5	4	102844-1	Post Header Sn/Pb
1,2,3,4	4	4-103327-0	Post Header Au

1.6 Qualification Test Sequence

	Test Groups				
Test or Examination	1	2	3	4	5
Examination of Product	1,9	1,5	1,8	1,5	1,5
Termination Resistance, Dry Circuit	3,7	2,4		2,4	2,4
Dielectric Withstanding Voltage			3,7		
Insulation Resistance			2,6		
Vibration	5				
Physical Shock	6				
Mating Force	2				
Unmating Force	8				
Durability	4				
Thermal Shock			4		
Humidity-Temperature Cycling			5		3
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 Integrated Circuit Connector Product Division.

2.2 Termination Resistance, Dry Circuit - Groups 1,2,4,5

All termination resistance measurements, taken at 100 milliamperes DC and 20 millivolts open circuit voltage were less than 15 milliohms initially and had a change in resistance (ΔR) of less than 10 milliohms per contact pair.

Test Group	Nbr of Samples	Condition	Min	Max	Mean
1	20	Initial	7.03	9.54	7.930
		After Mechanical (ΔR)	-0.55	+1.98	+0.482
2	20	Initial	7.14	10.57	8.024
		After Temp Life (ΔR)	-1.38	+0.69	+0.092
4	10	Initial	8.21	8.70	8.445
		After Mixed Gas (ΔR)	-0.09	+0.48	+0.136
5	10	Initial	7.24	7.57	7.388
		After Humidity (ΔR)	-0.07	0.00	-0.031

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 3

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent shunts mated to posts.

2.4 Insulation Resistance - Group 3

All insulation resistance measurements were greater than 1,000 megohms.

2.5 Vibration - Group 1

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

2.6 Physical Shock - Group 1

No discontinuities of the contacts were detected during physical shock. Following physical shock testing, no cracks, breaks, or loose parts on the shunt assemblies were visible.

2.7 Mating Force - Group 1

All mating force measurements were less than 33 ounces per shunt for tin plated contacts and 26 ounces per shunt for gold plated contacts

2.8 Unmating Force - Group 1

All unmating force measurements were greater than 5.4 ounces per shunt for both tin and gold plated contacts.

2.9 Durability - Group 1

No physical damage occurred to the samples as a result of mating and unmating the shunt 25 times for gold plated contacts and 5 times for tin plated contacts.

2.10 Thermal Shock - Group 3

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

2.11 Humidity-Temperature Cycling - Groups 3,5

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

2.12 Mixed Flowing Gas - Group 4

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

2.13 Temperature Life - Group 4

No evidence of physical damage to either the contacts or the shunt 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 20 millivolts DC.

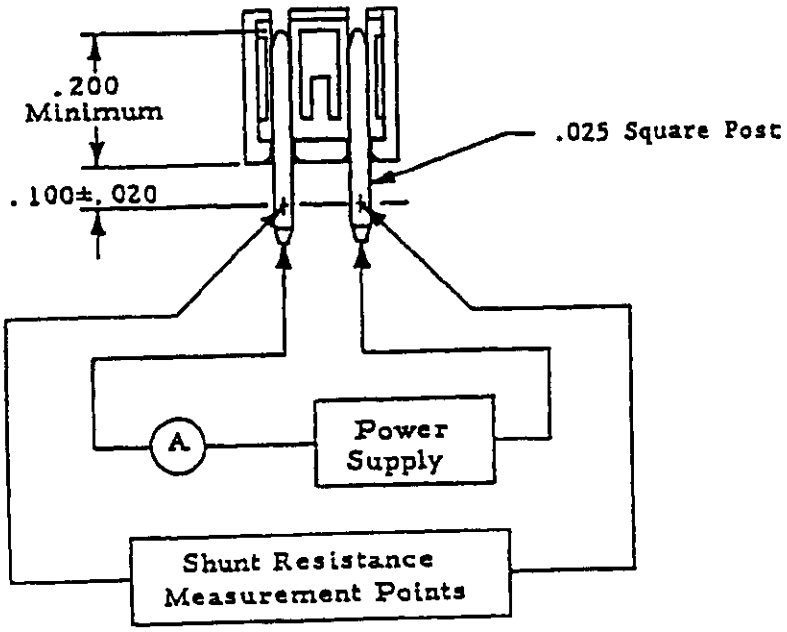

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 1,000 vac was applied between the adjacent shunts mated to posts. This potential was applied for one minute and then returned to zero.

3.4 Insulation Resistance

Insulation resistance was measured between adjacent shunts mated to posts, using a test voltage of 500 volts DC. This voltage was applied for two minutes before the resistance was measured.

3.5 Vibration, Sine

Shunts mated to posts were subjected to sinusoidal vibration, having a simple harmonic motion with an amplitude of 0.06 inch, double amplitude. The vibration frequency was varied logarithmically between the limits of 10 and 2000 Hz and returned to 10 Hz in 20 minutes. This cycle was performed 12 times in each of three mutually perpendicular planes, for a total vibration time of 12 hours. Shunts were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.6 Physical Shock

Shunts mated to posts were subjected to a physical shock test, having a sawtooth waveform of 100 gravity units (g peak) and a duration of 6 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular planes, for a total of 18 shocks. The shunts were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.7 Mating Force

The force required to mate individual shunts to posts was measured, using a free floating fixture with the rate of travel at 0.5 inch/minute.

3.8 Unmating Force

The force required to unmate individual shunts from posts was measured using a free floating fixture with the rate of travel at 0.5 inch/minute.

3.9 Durability

Shunts were mated and unmated 25 times for gold and 5 times for tin at a rate not exceeding 600 per hour.

3.10 Thermal Shock

Shunts mated to posts were subjected to 5 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -40°C and 85°C for tin and -65°C and 105°C for gold. The transition between temperatures was less than one minute.

3.11 Humidity-Temperature Cycling

Shunts mated to posts 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%.

3.12 Mixed Flowing Gas, Class II

Mated shunts were exposed for 14 days to a 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 $C1_2$ at 10 ppb, NO_2 at 200 ppb, and H_2S at 10 ppb.

3.13 Temperature Life

Shunts mated to posts were exposed to a temperature of 85°C for 1,000 hours.

4. Validation

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7/21/94

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