technical report

QUALIFICATION TEST
OF
AMP UNIVERSAL MATE-N-LOK
PRINTED CIRCUIT BOARD HEADERS

AMP Product Specification 108-1053

ELR 472-2 Unrestricted
S - 247 7/21/80

Environmental Testing Department

110-247
Rev C

Technical Services Division
AMP Incorporated · Harrisburg, Pennsylvania

AMP 1138-1 (4/71)
PUBLICATION RESTRICTION
Unrestricted

AMP INCORPORATED

RELEASE NO
ELR 472-2
S-247

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ENVIRONMENTAL TESTING DEPARTMENT

July 21, 1980

Qualification Test of AMP MATE-N-LOK Universal Headers; AMP Product Specification 108-1053, Revision 0, dated 6/19/78

INTRODUCTION:

AMP Universal MATE-N-LOK Headers were tested in the Environmental Laboratory to determine if they comply with the performance requirements of AMP Product Specification 108-1053, Revision 0.

SCOPE:

The headers were subjected to the sequence outlined in Figure 6 of the specification. All testing was conducted during the period of May 15, 1980 thru June 6, 1980.

CONCLUSION:

All samples tested successfully met the requirements of Figure 1, Test Requirements and Procedures Summary, of AMP Product Specification 108-1053, Revision 0, dated 6/19/78.

PRODUCT DESCRIPTION:

AMP Universal MATE-N-LOK printed circuit board headers are designed for interconnections between wiring harnesses and printed circuit boards. These headers include sizes ranging from two circuits to 15 circuits and a wire range from 30 AWG to 14 AWG.

Wire Characteristics:

All wires used in the test program were stranded, tin plated, copper which conform to the requirements of UL 1007 and UL 1015.

Items Tested:

Group No.	AMP Part No.	Product	Quantity
2	350536-1	MATE-N-LOK Socket Connector	12
2	350732-1	MATE-N-LOK Header	2
3	350536-1	MATE-N-LOK Socket Connector	30
3	350732-1	MATE-N-LOK Header	5
4	350732-1	MATE-N-LOK Header	5

Test Sequence:

Samples were subjected to the test sequence listed below, in accordance with paragraph 3.6, Connector Tests and Sequences.

Test Nomenclature	Test Groups 1	2	3	4
Examination of Product	1			
Dielectric Withstanding Voltage			8	
Insulation Resistance			9	
Termination Resistance		2		
Temperature Rise vs. Current		1		
Thermal Shock			6	
Solderability				1
Mating Force			1	
Unmating Force			5	
Durability			3	
Termination Resistance, Dry Circuit			2,4,7	

Summary of Test Results:

Examination of Product - Group 1 thru 4

Samples were visually inspected per quality inspection plan. The headers showed no evidence of physical or functional defects.

Summary of Test Results: (cont'd)

Dielectric Withstanding Voltage - Group 3

A potential of 2.9 kilovolts AC was applied between adjacent contacts of mated connector assemblies. Leakage current was set to 1.0 milliampere, rate of rise was 500 volts per second, and the potential was applied for one minute.

Summary of results

There was no breakdown. All connector assemblies were found to comply with the requirements of the specification.

Insulation Resistance - Group 3

A potential of 500 volts DC was applied between adjacent contacts of mated connector assemblies. Electrification time was two minutes.

Summary of results

	Results in Ohms		
Requirement in Ohms	Minimum	Maximum	Average
1.0×10^{8}	6.0×10^{13}	16.0×10^{13}	8.6×10^{13}

Termination Resistance, Rated Current - Group 2

Termination resistance was measured at 4.5 amperes DC test current.

Summary of results

	Results in Milliohms		
Requirement in Milliohms	Minimum	Maximum	Average
2.25 maximum	1.47	1.60	1.53

Temperature Rise vs. Current - Group 2

Samples were energized with a test current of 7.0 amperes DC. Housing and contact temperatures were recorded.

Summary of results

	Results in ^{o}C		
Requirement in ^{o}C	Minimum	Maximum	Average
30^{o} maximum temperature rise for contacts	17.2	21.6	19.4
	Housing A	Housing B	
105^{o} maximum housing temperature	44.3	43.7	

Summary of Test Results: (cont'd)

Thermal Shock - Group 3

Mated connectors were exposed to 25 cycles between -55°C and 85°C in accordance with AMP Specification 109-22. Each cycle consisted of:

0.5 hour exposure at -55°C

15 seconds transfer time between -55°C and 85°C

0.5 hour exposure at 85°C

15 second transfer time between 85°C and -55°C

Summary of results

Connectors remained mated and showed no evidence of cracking or chipping.

Solderability - Group 4

Samples were subjected to solderability in accordance with AMP Specification 109-11-3.

Summary of results

All samples were found to be in compliance with the specification.

Mating Force - Group 3

Connector assemblies were mated at a rate of 0.5 inch/minute. Mating forces were recorded.

Summary of results

	Results in Pounds		
Requirement in Pounds	Minimum	Maximum	Average
3.0 maximum per contact	2.43	2.97	2.78

Summary of Test Results: (cont'd)

Unmating Force - Group 3

Connector assemblies were unmated at a rate of 0.5 inch/minute. Unmating forces were recorded.

Summary of results

Requirement in Pounds	Results in Pounds Minimum	Maximum	Average
0.5 per contact minimum	1.23	1.88	1.49

Durability - Group 3

With the connector and header mounted on a printed circuit board, the assembly was subjected to 50 manual mating and unmating cycles.

Summary of results

At the conclusion of 50 cycles, the samples were visually inspected and they appeared to be free of physical damage.

Termination Resistance, Dry Circuit - Group 3

100 milliamperes DC with an open circuit potential of 50 millivolts was applied to mated connector assemblies.

Summary of results

Requirement in Milliohms	Results in Milliohms Minimum	Maximum	Average
2.5 milliohms initial maximum	1.24	1.65	1.48

Summary of Test Results: (cont'd)

After Durability

Requirement in Milliohms	Results in Milliohms Minimum	Maximum	Average
2.6 milliohms maximum	1.39	1.77	1.57

After Thermal Shock

Requirement in Milliohms	Results in Milliohms Minimum	Maximum	Average
12.0 milliohms maximum	1.35	1.75	1.53

VALIDATION:

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Ref: ATL 80-117