Connector, CHAMP*, 050, Board-To-Board, Vertical and Right Angle Mounting

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for CHAMP* 050, Series I and High Density connectors. These connectors have board to board configuration for vertical and right angle mounting.

1.2. Qualification

When tests are performed on subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. AMP Documents

A. 109-1: General Requirements for Test Specifications
B. 109 Series: Test Specifications as indicated in Figure 1.
C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Government or Commercial Documents
D. 114-6045: Application Specification
E. 114-6049: Application Specification
F. 501-173: Test Report

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of design, construction and physical dimensions specified on the applicable product drawing.

3.2. Materials

A. Contacts: Phosphor bronze, selective gold in contact area, tin-lead on termination end all over nickel.
B. Housing: Thermoplastic polybutyleneteraphthalate (PBT), black, UL94V-0

3.3. Ratings

A. Voltage: 250 volts alternating current
B. Current: For signal application only, 1 ampere maximum
C. Temperature: -55 to 85°C nylon housing, -55 to 105°C xydar housing

* Trademark
I Indicates change

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-6045 and 114-6049.	Visual, dimensional and functional per applicable quality inspection plan.
	ELECTRICAL	
Termination resistance, dry circuit.	ΔR 15 milliohms maximum.	AMP Spec 109-6-1. Subject mated contacts assembled in housing to 50 mV open circuit at 50 ma maximum. See Figures 5 and 6.
Insulation resistance.	1000 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of mated connector assemblies.
Dielectric withstanding voltage.	750 vac dielectric withstanding voltage. 1 minute hold. 1 milliampere maximum leakage current.	AMP Spec 109-29-1. Test between adjacent contacts of mated connector assemblies.
	MECHANICAL	
Solderability.	Solderable area shall have a minimum of 95% solder coverage.	AMP Spec 109-11-2. Subject contacts to solderability.
Vibration, sinusoidal, low frequency.	No discontinuities greater than 1 microsecond. See Note.	AMP Spec 109-21-1. Subject mated connectors to 10-55-10 Hz traversed in 1 minute at .06 inch total excursion. 2 hours in each of 3 mutually perpendicular planes.
Physical shock.	No discontinuities greater than 1 microsecond. See Note.	AMP Spec 109-26-1. Subject mated connectors to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes. 18 total shocks.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate connector assemblies for 500 cycles at maximum rate of 600 cycles per hour.

Figure 1 (cont)

Test Description	Requirement	Procedure
Mating force.	90 grams maximum initial per contact pair.	AMP Spec 109-42, Condition A. Measure force necessary to mate connectors using free floating fixtures at rate of 0.5 inch per minute. Calculate force per contact.
Unmating force.	15 grams minimum final per contact pair.	AMP Spec 109-42, Condition A. Measure force necessary to unmate connectors with locking latches removed at rate of 0.5 inch per minute.
Resistance to soldering heat.	See Note.	AMP Spec 109-63-2. Subject product mounted on printed circuit boards to solder bath at 260°C for 10 seconds.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated connectors to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-5, Condition B. Subject mated connectors to 10 humidity-temperature cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated connectors to temperature life at 70°C for 1000 hours.
Mixed flowing gas.	See Note.	AMP Spec 109-85-2. Subject mated connectors to environmental class II for 20 days.

NOTE *Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in test sequence in Figure 2.*

Figure 1 (end)

3.6. Product Qualification and Requalification Tests and Sequences

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Examination of product	1,9	1,5	1,5	1,8	1	1
Termination resistance, dry circuit	3,7	2,4	2,4			
Insulation resistance				2,6		
Dielectric withstanding voltage				3,7		
Solderability						2
Vibration	5					
Physical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Resistance to soldering heat					2	
Thermal shock				4		
Humidity-temperature cycling				5		
Temperature life		3(c)				
Mixed flowing gas			3(c)			

NOTE

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) Precondition samples with 10 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall consist of the required sample selection to obtain a minimum of 40 data points, see Figures 4 and 5.

Required Number Of Positions		Required Number of Connectors	
Series I	High Density	Series I	High Density
80	140	12	12
130	188	12	12

Figure 3

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 2.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable AMP quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

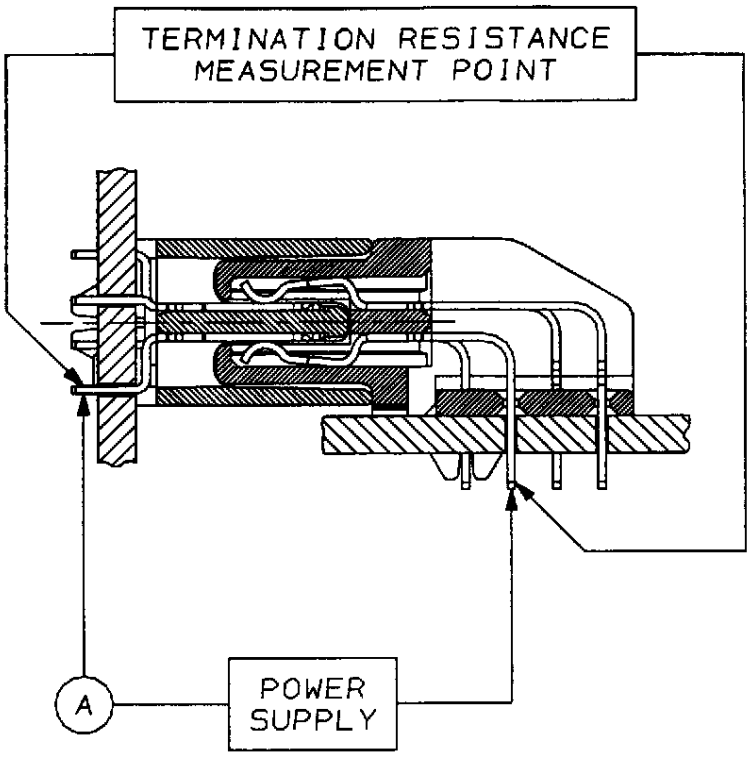

Figure 4
Series I Resistance Measurement Points

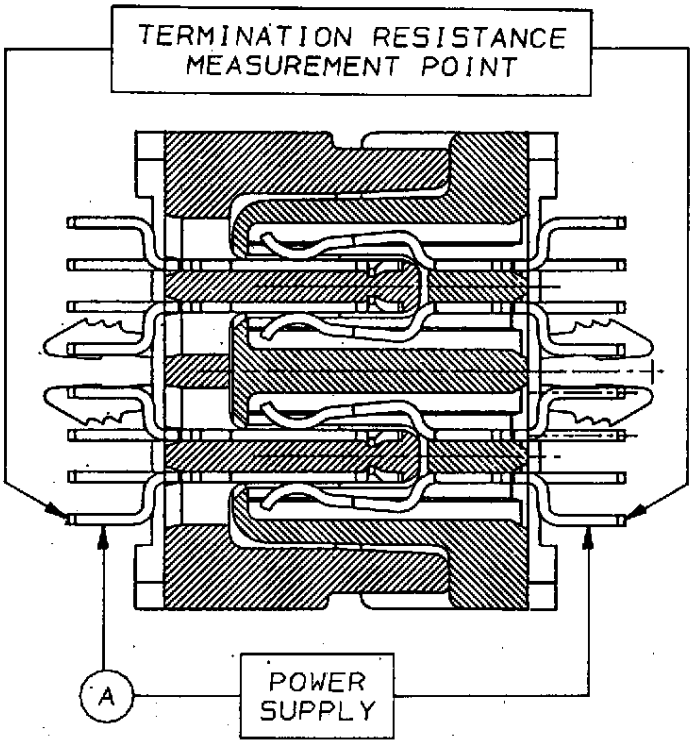

Figure 5
High Density Resistance Measurement Points

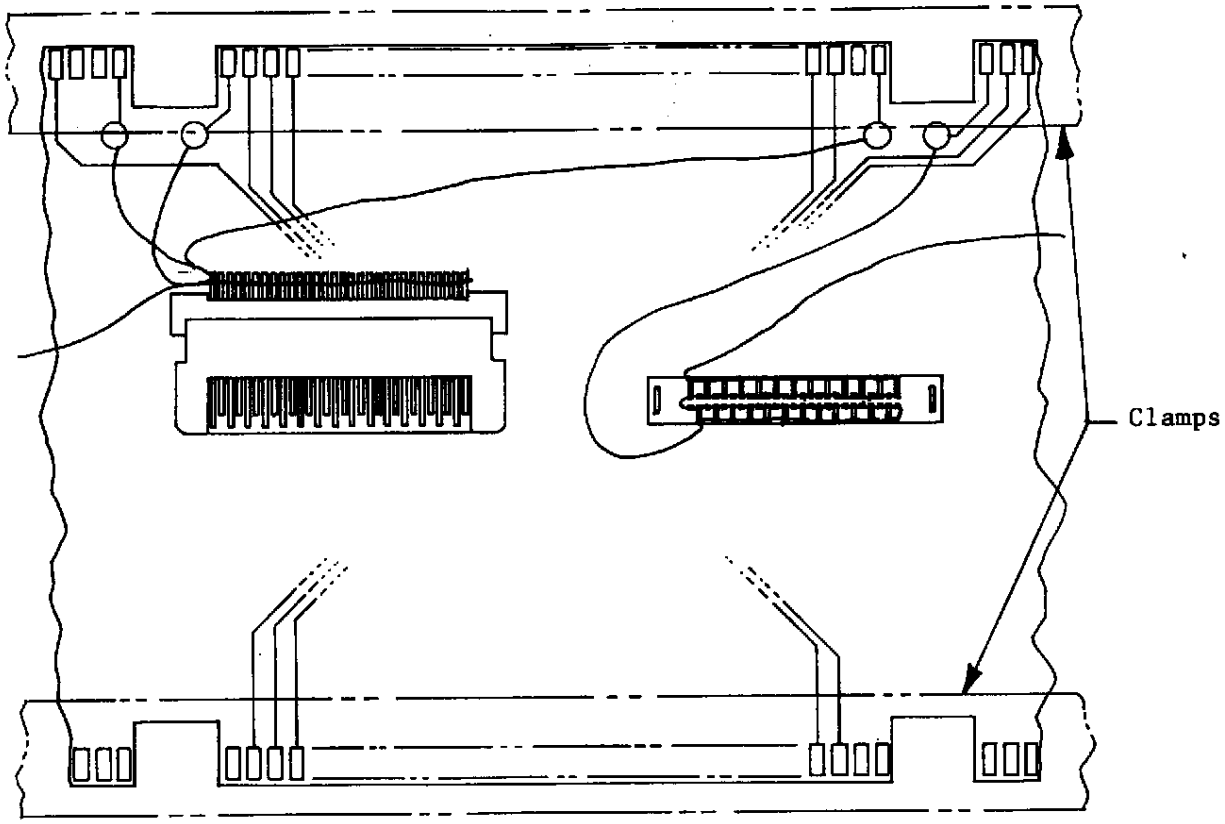

Figure 6
Typical Mounting And Clamping Locations For Vibration And Physical Shock