
High Density Hybrid Power Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for Tyco Electronics high density hybrid power connectors. These connectors, on .300 inch centerlines, are used in combination with 3 and 4 row HDI connectors with signal contacts on .100 inch centerlines. This specification only covers the requirements for power connectors.

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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 22Jul94. The Qualification Test Report number for this testing is 501-268. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

The following Tyco Electronics documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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.

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 501-268: Qualification Test Report (High Density Hybrid Power Connectors)

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

- Contact, power:
 - Pin: Brass
 - Socket: Beryllium copper
- Housing: Thermoplastic, glass filled, UL94V-0
- Locking ring: Stainless steel

3.3. Ratings

- Voltage: 250 volts AC
- Current: See Figure 4 for applicable current carrying capability
- Temperature: -65 to 125°C

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per Test Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	.75 milliohm maximum initial.	AMP Spec 109-6-1. Subject mated specimens to 50 millivolts maximum open circuit at 100 milliamperes maximum. See Figure 3.
Insulation resistance.	5000 megohms minimum initial.	AMP Spec 109-28-4. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Dielectric withstanding voltage.	One minute hold with no breakdown or flashover.	AMP Spec 109-29-1. 900 volts AC at sea level. 200 volts AC at 70000 feet. Test between adjacent contacts of mated specimens.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	AMP Spec 109-45-1. Measure temperature rise vs current. See Figure 4.
MECHANICAL		
Vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-3. Subject mated specimens to 10 to 2000 to 10 Hz traversed in 20 minutes with 0.06 inch total excursion or 15 G whichever is less. Four hours in each of 3 mutually perpendicular planes.
Physical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-9. Subject mated specimens to 100 G's sawtooth shock pulses of 6 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Figure 1 (continued)

Test Description	Requirement	Procedure
Durability.	See Note.	AMP Spec 109-27. Mate and unmate specimens for 250 cycles at maximum rate of 300 cycles per hour.
Mating force.	7.5 pounds maximum average per contact.	AMP Spec 109-42, Condition A. Measure force necessary to mate specimens a distance of .168 inch from point of initial contact at maximum rate of 1 inch per minute.
Unmating force.	4 ounces minimum average per contact.	AMP Spec 109-42, Condition A. Measure force necessary to unmate specimens at rate maximum of 1 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated specimens to 5 cycles between -65 and 125°C.
Humidity/temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated specimens to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated specimens to temperature life at 125°C for 1000 hours.
Mixed flowing gas.	See Note.	AMP Spec 109-85-3. Subject mated specimens to environmental class III 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 Test Sequence

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

NOTE

- (a) See paragraph 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.
 (c) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per Quality Specification 102-950.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall each consist of 3 specimens. Specimens for test group 3 shall be unmounted.

B. Test Sequence

Qualification inspection shall be verified by testing specimens 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 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 specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

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

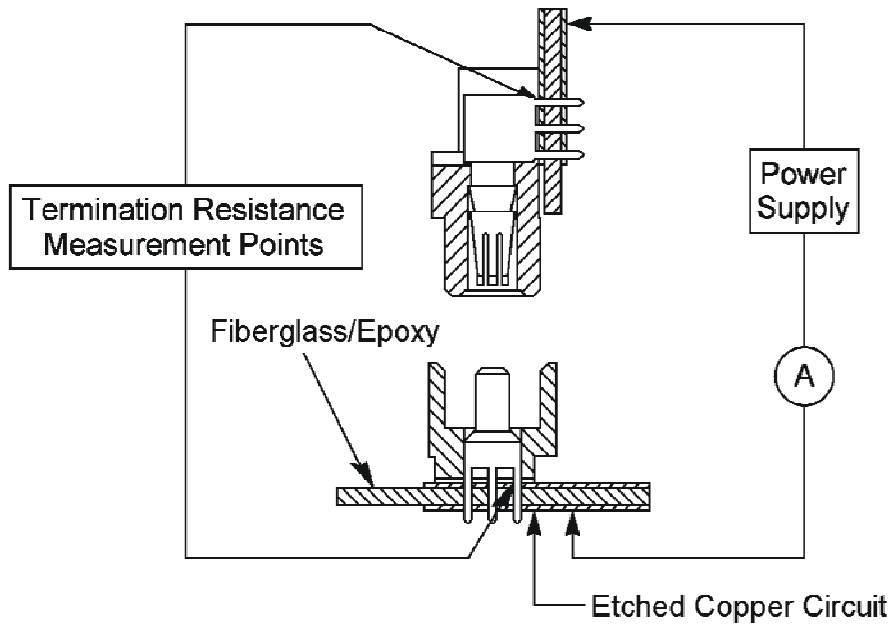


Figure 3
Termination Resistance Measurement Points

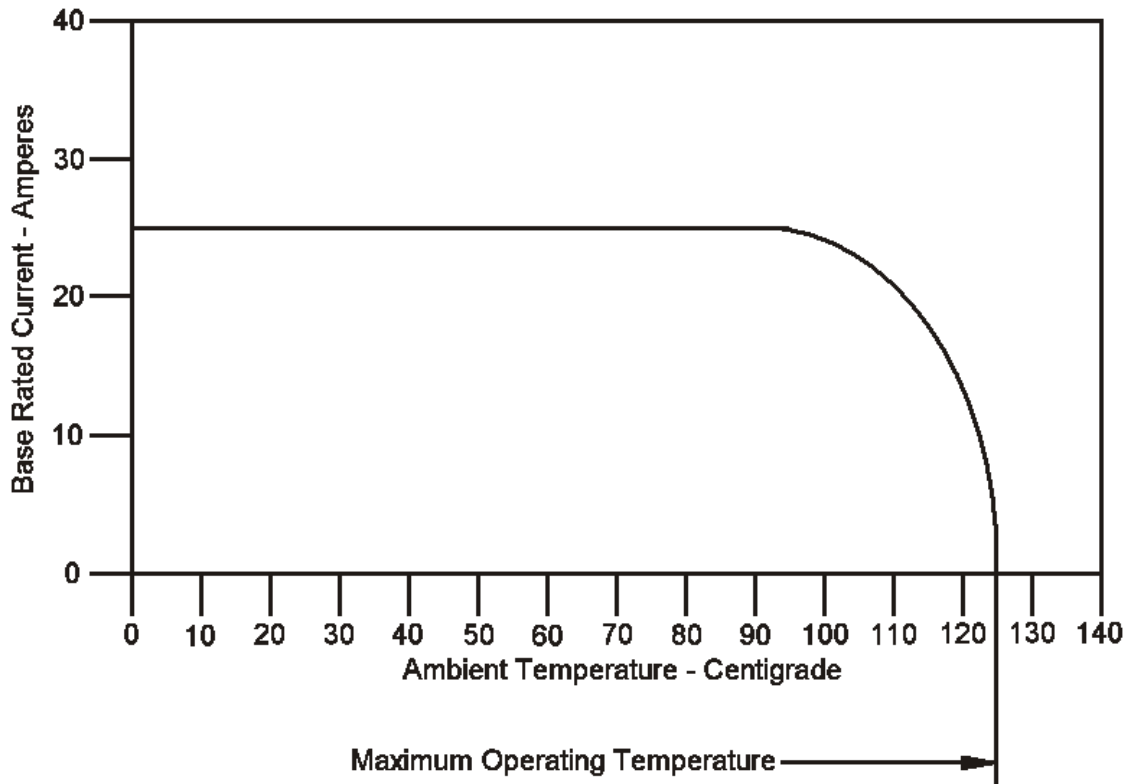


Figure 4
Current Carrying Capability