
Connector, Low Profile Economy and Multi-Position Shunt

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) low profile economy and multi-position shunt connectors. These connectors are separable electrical connection devices for mating with two .025 inch square posts. Economy shunt mates with posts on .100 inch spacing while the multi-position shunt mates with posts on .100 or .200 inch spacing.

1.2. Qualification

When tests are performed on subject product line, procedures specified in AMP 109 series specifications 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. Unless otherwise specified, latest edition of the document applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification shall take precedence.

2.1. TE Documents

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 114-1059: Application Specification
- 501-265: Qualification Test Report

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: Beryllium copper or phosphor bronze, tin plating or localized gold over nickel plating
- Housing: Glass filled polyester

3.3. Ratings

- Current: Signal application only
- Temperature:
 - Tin plating: -40 to 85°C
 - Gold plating: -65 to 105°C

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 Test 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 Application Specification 114-1059.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	15 milliohms maximum initial. ΔR 10 milliohms maximum per contact pair.	Subject mated shunts to 20 mv open circuit at 100 ma maximum. See Figure 3. TE Spec 109-6-6.
Dielectric withstanding voltage.	1000 vac at sea level. No breakdown or flashover.	Test between adjacent shunts mated to posts. TE Spec 109-29-1.
Insulation resistance.	1000 megohms minimum.	Test between adjacent shunts mated to posts. TE Spec 109-28-4.
MECHANICAL		
Vibration, sinusoidal, high frequency.	No discontinuities greater than 1 microsecond. See Note.	Subject mated shunts to 15 G's between 10-2000 Hz traversed in 20 minutes. 4 hours in each of 3 mutually perpendicular planes. See Figure 4. TE Spec 109-21-3.
Physical shock.	No discontinuities greater than 1 microsecond. See Note.	Subject mated shunts to 100 G's sawtooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4. TE Spec 109-26-9.
Mating force.	26 ounces maximum per contact pair for gold plating. 33 ounces maximum per contact pair for tin plating.	Measure force necessary to mate shunt assembly to post headers using free floating fixtures at rate of .5 inch per minute. TE Spec 109-42, Condition A.
Unmating force.	5.4 ounces minimum per contact pair.	Measure force necessary to unmate shunt assembly at rate of .5 inch per minute. TE Spec 109-42, Condition A.
Durability.	See Note.	Mate and unmate shunt assemblies for 25 cycles for gold plating and 5 cycles for tin plating at maximum rate of 600 cycles per hour. TE Spec 109-27.

Figure 1 (continued)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock.	See Note.	Subject mated shunts to 5 cycles between -40 and 85°C for tin plating and -65 and 105°C for gold plating. TE Spec 109-22.
Humidity-temperature cycling.	See Note.	Subject mated shunts to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. TE Spec 109-23-3, Condition B.
Mixed flowing gas.	See Note.	Subject mated shunts to environmental class II for 14 days. TE Spec 109-85-2.
Temperature life.	See Note.	Subject mated shunts to temperature life at 85°C for 1000 hours. TE Spec 109-43.

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(c)	4(e)	5(f)
	Test Sequence (b)				
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(d)		3(d)
Mixed flowing gas				3(d)	
Temperature life		3(d)			

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Product with an insulating system only.
- (d) Precondition samples with 5 cycles durability.
- (e) Gold plated samples only.
- (f) Tin plated samples only.

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 10 tin plated and 10 gold plated shunts. All shunts shall be mated to .025 inch square posts for testing. Square post headers may be mounted to printed circuit boards.

B. Test Sequence

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

4.2. Requalification Testing

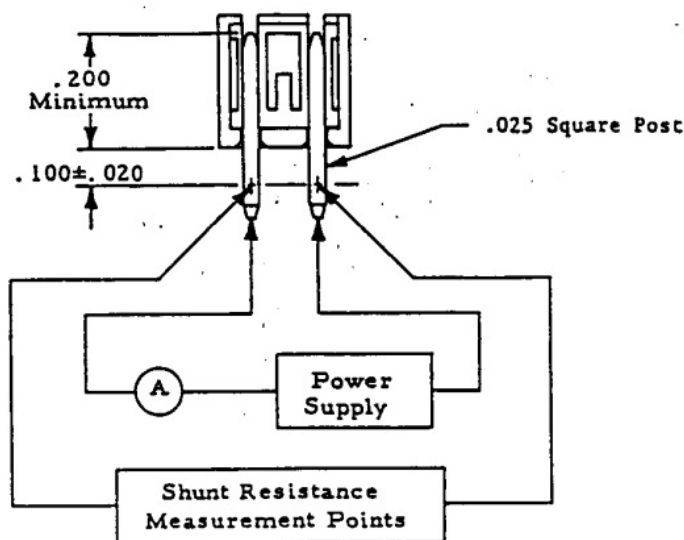
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify 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 quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.



NOTE Post plating shall be identical to shunt plating when conducting tests.

Figure 3
Shunt Resistance Measurement Points

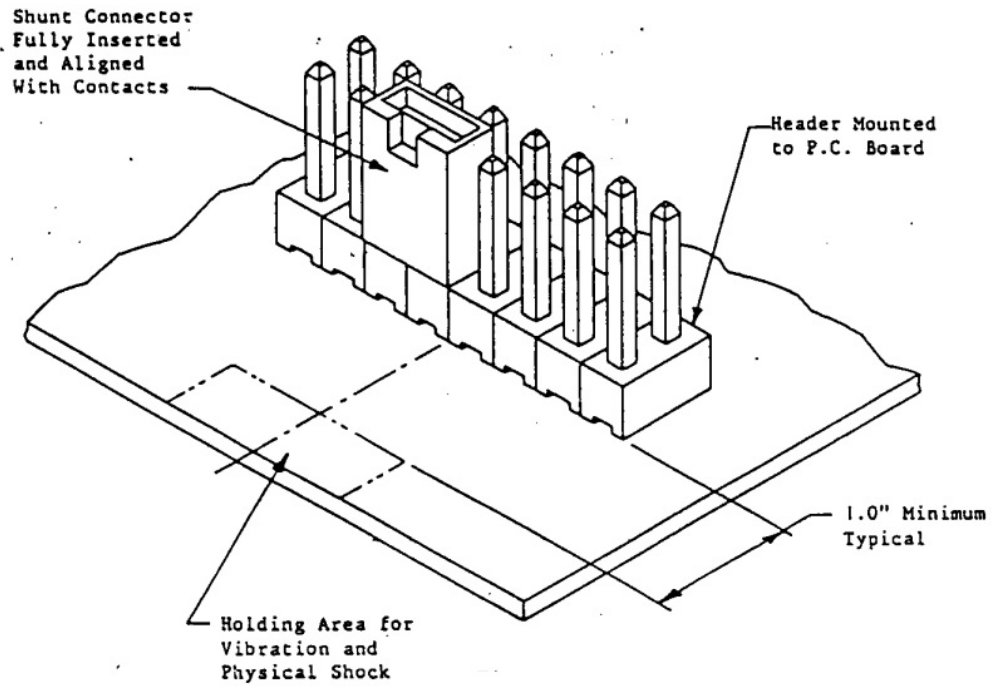


Figure 4
Vibration and Physical Shock