Connector, Champ .050 Series

1. SCOPE

1.1. Contents

This specification covers the performance, tests and quality requirements for the TE Connectivity Champ .050 Series connectors. These connectors have board configuration for vertical and right angle mounting.

1.2. Qualification

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

2. APPLICABLE DOCUMENT

The following 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.

2.1. TE Connectivity Documents

- 109-1: Component Heat Resistance to Lead-Free Reflow Soldering.
- 109-197: TE Test Specification vs EIA and IEC Test Methods
- 114-6045: Application Specification
- 114-6049: Application Specification
- 114-6064: Application Specification
- 501-173: Qualification Test Report. (For Gold Plating on contact)
- 501-57019: Qualification Test Report. (For Gold Flash over Palladium-Nickel Plating on contact)

2.2. Commercial Standard

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.
- JESD22-B102D: Solderability Test Method.

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the 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 or matte-tin on termination end all over Nickel.

B. Housing : Thermoplastic, UL 94V-0.

C. Materials used in the construction of this product shall be as specified on the applicable product drawing.

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.

3.4. Performance Requirement and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
ELECTRICAL		
Low level contact resistance	50 mΩ maximum initial. ΔR = 15 mΩ maximum final.	EIA-364-23. Subject specimens to 100 mA maximum and 20 mV maximum open circuit voltage. See Figure 3.
Insulation resistance	1000 MΩ minimum.	EIA-364-21. Test between adjacent contacts of unmated specimens.
Dielectric withstanding voltage	1 minute hold with no breakdown, flashover, or 0.5 mA maximum leakage.	EIA-364-20, Condition I. 750 volts AC at sea level. Test between adjacent contacts of unmated specimens.
MECHANICAL		
Solderability	The inspected area of each lead must have 95% solder coverage minimum.	JESD22-B102D, Condition C. Steam Aging Preconditioning: 93 +3/-5°C, 8 hours ±15 min. Reflow Temperature: 230-245°C Reflow Time: 50-70 s.
Vibration	No discontinuities of 1 microsecond or longer duration. See NOTE	EIA-364-28, Test Condition I, Condition E. Subject mated specimens to 10-55-10 Hz traversed in 1 minute at .06 inch total excursion. 2 hours in each of 3 mutually perpendicular planes. See Figure 4.
Physical shock	No discontinuities of 1 microsecond or longer duration. See NOTE	EIA-364-27, Method A, Subject mated specimens to 50G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability	See NOTE	EIA-364-9. Mate and unmate specimens with test boards for 500 cycles at a maximum rate of 600 cycles per hour.
Mating force	90 grams maximum initial per contact pair	EIA-364-13, Measure axial force necessary to mate specimens at a maximum rate of 12.7 mm [0.5 in] per minute
Unmating force	15 grams minimum final per contact pair	EIA-364-13, Measure axial force necessary to mate specimens at a maximum rate of 12.7 mm [0.5 in] per minute
Resistance to soldering heat	See NOTE	Subject product mounted on printed circuit boards to solder bath at 260°C for 10 seconds.

Figure 1 (Cont.)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock	See NOTE	EIA-364-32, Test Condition I, Subject specimens (per Figure 2) to 5 cycles between -55°C and 85°C.
Humidity-Temperature cycling	See NOTE	EIA-364-31, Method IV, Subject specimens (per Figure 2) to 10 cycles (10 days) between 25 and 65°C at 90 to 95% R.H.
Temperature life	See NOTE	EIA-364-17, Method A, Test Condition 2, Test Time Condition D. Subject mated specimens to 70°C for 1000 hours.
Mixed flowing gas	See NOTE	EIA-364-65, Class IIA. Subject mated specimens to environmental Class IIA for 20 days.

Figure 1 (End)

NOTE Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

3.6. Product Qualification and Requalification Test Sequence

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
Low level contact resistance	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 paragraph 4.1.A.
(b) Numbers indicate sequence in which test are performed.
(c) Precondition samples with 10 cycles durability

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 consist of the required sample selection to obtain a minimum of 40 data points. See Figure 3 and 4.

B. Test Sequence

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

4.2. Requalification Testing

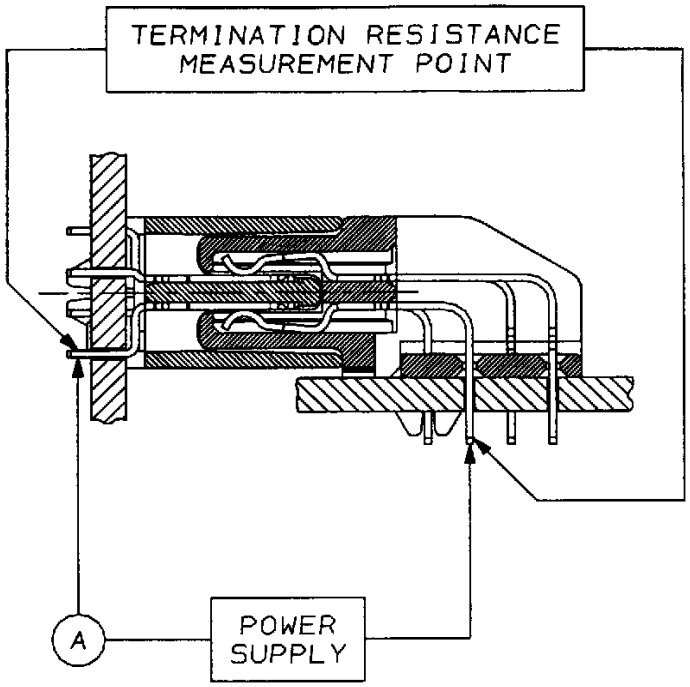
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

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

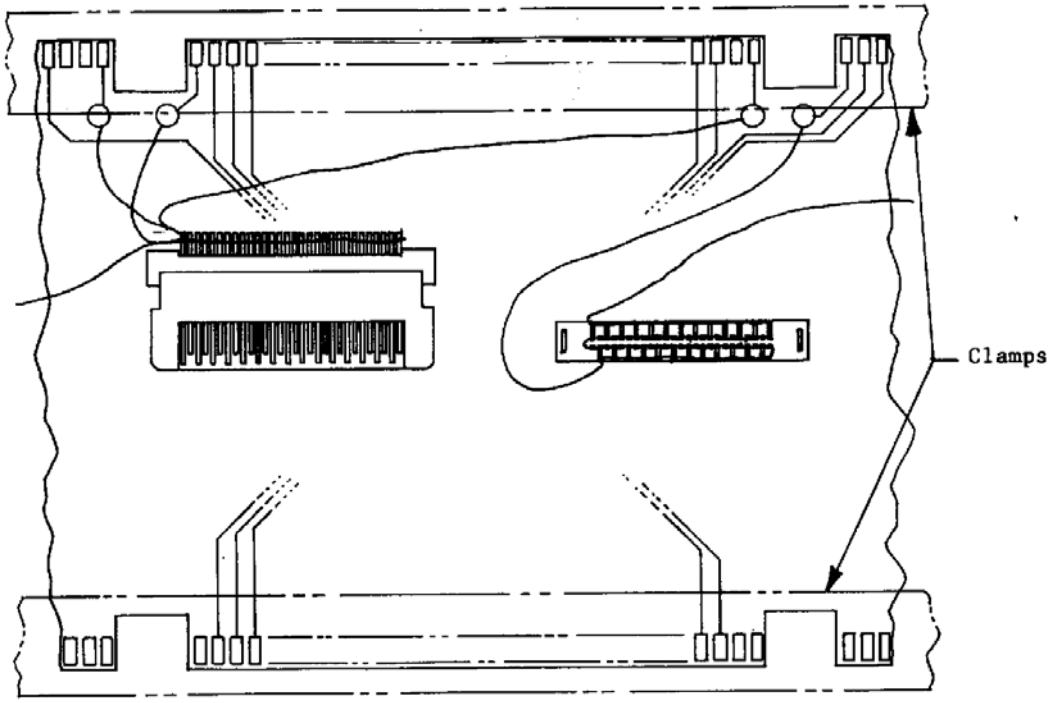
4.4. Quality Conformance Inspection

The applicable quality inspection plan shall 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.



Resistance Measurement Points

Figure 3



Typical Mounting And Clamping Locations For Vibration And Physical Shock

Figure 4