



ICCON Power Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for ICCON Power Connectors.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Report number for this testing is 501-128034.

2. APPLICABLE DOCUMENTS

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. Tyco Electronics Documents

- 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- 114-13298: Application Specification (ICCON Power Connectors)
- 501-128034: Qualification Test Report (ICCON Power Connectors)

2.2. Industry Document

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

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

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

3.3. Ratings

- Voltage: See Figure 1
- Current: See Figure 1
- Temperature: -40 to 105°C

Connector Type	Voltage Rating (volts)	Current Rating (amperes)
Single Pole Standard	250	35
Single Pole Slimline	250	35
Stacked	250	25(Per Socket)

Figure 1

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 2. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance (LLCR).	1.5 milliohm maximum initial. 3 milliohm maximum final.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Contact resistance, specified current.	Single Pole: 35 millivolts at 35 amperes Stacked: 35 millivolts at 25 amperes	EIA-364-6. Measure millivolt drop at specified current.
Insulation resistance.	5000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1500 volts DC at sea level. Test between adjacent contacts of mated specimens.
Temperature rise vs current.	30°C maximum temperature rise.	EIA-364-70, Method 2. Increment through a minimum of 4 current levels, Stabilizing each until 3 readings at 5 minute intervals are within 1°C.

Figure 2 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Random vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition VII, Condition Letter E. Subject mated specimens to 4.90 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method A. Subject mated specimens 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.	EIA-364-9. Mate and unmate specimens for 50 cycles for regular plugging at a maximum rate of 500 cycles per hour.
Mating force.	40N Maximum.	EIA-364-13. Measure force necessary to mate and unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Umating Force.	5N Minimum.	EIA-364-13. Measure force necessary to mate and unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Compliant pin insertion.	120 N maximum per pin.	EIA-364-5. Measure force necessary to correctly apply a specimen to a printed circuit board at a maximum rate of 12.7 mm [.5 in] per minute.
Radial holes distortion.	0.050 mm maximum radial distortion. No evidence of damage to the plated hole.	EIA-364-96. Measure at 0.2 to 0.5 mm [.008 to .020 in] depth.
Compliant pin retention.	33 N minimum per pin.	EIA-364-29. Measure force necessary to remove a correctly applied specimen from its printed circuit board at a maximum rate of 12.7 mm [.5 in] per minute.
Component heat resistance to wave soldering.	See Note.	TE Electronics 109-202, Condition B.
Solderability dip test.	Solderable area shall have a minimum of 95% solder coverage. See Note.	EIA-364-52.

Figure 2 (continued)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32, Test Condition VIII. Subject mated specimens to 5 cycles between -40 to 105°C with 30 minutes dwells at temperature extremes and 1 minute transition between temperatures.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life.	See Note.	EIA-364-17, Method A, Test Condition 4. Subject mated specimens to 105°C for 584 hours.
Mixed flowing gas.	See Note.	EIA-364-65, Class IIA (4 gas). Subject specimens to environmental Class IIA for 14 days (7 days mated, 7 days unmated).

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 3.

Figure 2 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
Low level contact resistance (LLCR)	3,7	2,5	2,4			
Contact resistance, specified current		6				
Insulation resistance				2,6		
Withstanding voltage				3,7		
Temperature rise vs current		3,7				
Random vibration	5					
Mechanical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Compliant pin insertion						2
Radial holes distortion						3
Compliant pin retention						5
Component heat resistance to wave soldering					2	
Solderability dip test					3	
Thermal shock				4		

Humidity/temperature cycling				5		
Temperature life		4				4
Mixed flowing gas			3			
Final examination of product	9	8	5	8	4	6

NOTE (a) See paragraph 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.

Figure 3

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 a minimum of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

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.

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