



**ELCON Micro Power Connector**

**1. SCOPE**

1.1. Content

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

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 3 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line has been completed. The Qualification Test Report number will be issued upon successful qualification testing.

**2. APPLICABLE DOCUMENTS AND FORMS**

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 501-128069: Qualification Test Report (ELCON Micro Power Connector)

2.2. Industry Documents

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

2.3. Reference Document

- 109-197: Test Specification (TE Test Specification vs EIA and IEC Test Methods)

**3. REQUIREMENTS**

3.1. Design and Construction

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

3.2. Ratings

Voltage	Current	Temperature
600V, AC or DC	See Figure 2	-40 to 105°C

**Figure 1**

Current Rating (A/Pin)							
Circuit Size	2	4	6,8	10	12	14,16,18	20,22,24
16 AWG	12.5	12	10.5	10.5	9.0	8.5	8.0
18 AWG	10.5	9.5	8.5	8.0	8.0	7.5	7.0
20 AWG	9.0	9.0	7.0	6.5	6.5	6.0	5.5
22 AWG	6.0	5.0	4.5	4.0	4.0	3.5	3.5
24 AWG	5.5	5.0	4.5	4.0	3.5	3.5	3.0
26 AWG	4.5	4.0	4.0	3.5	3.5	3.0	2.5
28 AWG	4.0	3.5	3.0	3.0	3.0	2.5	2.0
30 AWG	3.5	3.0	3.0	2.5	2.5	1.5	1.0


**NOTE**

1. Values are for reference only.
2. Current ratings are based on not exceeding 30°C temperature rise.
3. Design of PCB trace can greatly affect temperature rise.

**Figure 2**
**3.3. Test Requirements and Procedures Summary**

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Initial examination of product	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance	5 milliohms maximum initial; 6 milliohms maximum final.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation resistance	1000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Dielectric withstanding voltage	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1000 volts DC at sea level. Test between adjacent contacts of mated specimens.

Temperature rise vs current	30°C maximum temperature rise at rated current.	EIA-364-70, Method 2. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C. Test with single energized contact and with all adjacent power contacts energized.
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**MECHANICAL**

Random vibration	No discontinuities of 1 microsecond or longer duration.	EIA-364-28, Test Condition VII, Condition Letter D. Subject mated specimens to 3.10 G's rms. Fifteen minutes in each of 3 mutually perpendicular planes.
Mechanical shock	No discontinuities of 1 microsecond or longer duration.	EIA-364-27, Method A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability	See Note.	EIA-364-9. Mate and un-mate specimens for 30 cycles at a maximum rate of 500 cycles per hour.
Mating force	8.0 N max. per circuit for Tin plated; 5.6 N max. per circuit for Gold plated.	EIA-364-13. Measure force necessary to mate specimens at a rate of 25.4 mm per minute.
Unmating force	2.0 N min. per circuit for Tin plated; 1.5 N min. per circuit for Gold plated.	EIA-364-13. Measure force necessary to unmate specimens at a rate of 25.4 mm per minute.
Terminal retention force	13.7 N min. per pin.	Pull out the terminal axially from the housing at a rate of 25.4 mm per minute.

**ENVIRONMENTAL**

Thermal shock	See Note.	EIA-364-32. Subject mated specimens to 5 cycles between -40°C and 105°C.
Humidity-temperature cycling	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25°C 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 240 hours.
Solderability	Solderable area shall have a minimum of 95% solder coverage.	EIA 364-52. Soldered at a temperature 260 ±5 °C for an immersion duration of 5 s.
Resistance to soldering heat	See Note.	Dip terminal areas in the solder bath. Temperature: 260±5°C.
Resistance to reflow soldering heat	Specimens were subject to the reflow profile. Shown in Figure 5.	TEC-109-201 Method-A, Condition-B. Subject SMD connector to 3x reflow curve 260°C peak.


**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 3**

## 3.4. Product Qualification and Requalification Test Sequence

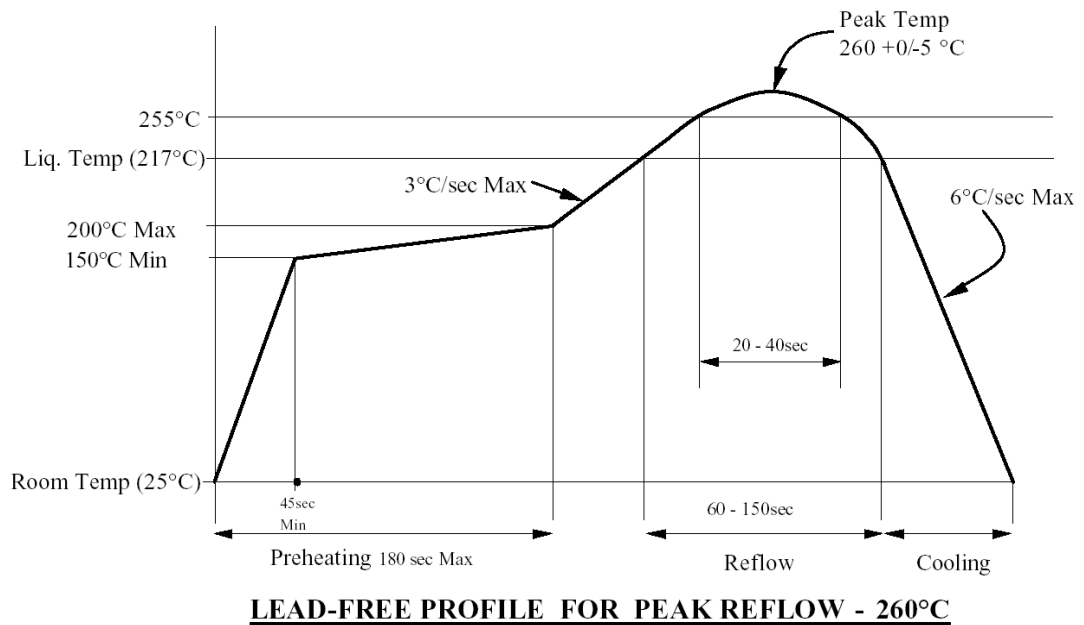
TEST OR EXAMINATION	TEST GROUP					
	1	2	3	4	5	6
	TEST SEQUENCE (a)					
Initial examination of product	1	1	1	1	1	1
Low level contact resistance	2,4		2,6,9			
Insulation resistance		2,6				
Dielectric withstanding voltage		3,7				
Temperature rise vs current				3		
Random vibration			7			
Mechanical shock			8			
Durability			5	2		
Mating force			3			
Unmating force			4			
Terminal retention force					4	
Thermal shock		4				
Humidity-temperature cycling		5				
Temperature life	3					
Solderability					2	
Resistance to soldering heat					3	
Resistance to reflow soldering heat						2
Final examination of product	5	8	10	4	5	3



**NOTE**

(a) Numbers indicate sequence in which tests are performed.

**Figure 4**



**Figure 5**

**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 of the test groups shall consist of 5 mated pair connectors.

**B. Test Sequence**

Qualification inspection shall be verified by testing specimens as specified in Figure 4.

**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 3. 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.