
SOLKLIP* Grounding Clip For Photovoltaic Modules

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the SOLKLIP* Grounding Clip For Photovoltaic Modules terminated to 10 to 12 AWG uninsulated copper wire.

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.

1.3. Successful qualification testing on the subject product line was completed on 29Jun09. The Qualification Test Report number for this testing is 501-704. This documentation is on file at and available from Engineering Practices and Standards (EPS).

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 Document

501-704: Qualification Test Report (SOLKLIP* Grounding Clip For Photovoltaic Modules)

2.2. Industry Documents

- ! ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus
- ! EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- ! UL 467: Grounding and Bonding Equipment
- ! UL 486A-B: Wire Connectors
- ! UL 1703: Standard for Flat-Plate Photovoltaic Modules and Panels

2.3. Reference Document

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

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. Rating

Temperature: -40 to 75°C

3.4. Performance 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.

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).	30 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Current test.	750 amperes for 4 seconds.	UL 467, Section 7.5.
MECHANICAL		
Sinusoidal vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition I. Subject mated specimens to 10 to 55 to 10 Hz traversed in 1 minute with 0.03 minimum and 0.06 inch maximum total excursion. Two hours in each of 3 mutually perpendicular planes.
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens for 5 cycles.
Secureness.	5 pounds.	UL 486A-B, Section 9.3.2.
Pullout.	70 pounds for 12 AWG wire. 80 pounds for 10 AWG wire.	UL 486A-B, Section 9.3.4.
ENVIRONMENTAL		
Temperature/humidity cycling.	See Note.	UL 1703, Section 3.6.
Mixed flowing gas.	See Note.	EIA-364-65, Class IIA (4 gas). Subject specimens to environmental Class IIA for 10 days.
Salt fog.	See Note.	ASTM B117. Subject specimens to 5% salt solution at 35 ± 2°C for 10 days.

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.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Initial examination of product	1	1	1	1
LLCR		2,4	2,4	2,4,6,8,10
Current test		3		
Sinusoidal vibration				3
Durability			3	
Secureness	2			
Pullout	3			
Temperature/humidity cycling				5
Mixed flowing gas				7
Salt fog				9
Final examination of product	4	5	5	11

NOTE

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

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. Each test group shall consist of 5 specimens with 10 AWG wire, and 5 specimens with 12 AWG wire.

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.