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## SlimSeal Solid State Lighting (SSL) Connector

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### 1. SCOPE

#### 1.1. Content

This specification defines performance, tests, and quality requirements for SlimSeal SSL connectors, which have wire-to-board and wire-to-wire configurations. The connectors are available with 2, 3, and 4 positions in a single-row configuration using wire sizes 24 to 18 AWG.

#### 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 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. TE Documents

[114-13261](#) Application Specification: SlimSeal Solid State Lighting (SSL) Connectors and Contacts

[109-197](#) Test Specification: Test Specifications vs EIA and IEC Test Methods

[501-134042](#) Qualification Test Report: SlimSeal SSL Connector

#### 2.2. Industry Documents

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

IEC 60529, "Degrees of Protection Provided By Enclosures (IP Code)"

UL 486D, "UL Standard for Safety Sealed Wire Connector Systems"

### 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: 400 volts AC or DC

Current: see Figure 1 for applicable current carrying capability

Temperature: -40° to 105°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 and 114-13261.	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)	20 milliohms maximum	EIA-364-23 Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Insulation Resistance	1000 megohms initial. 100 megohms final.	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. 0.5 milliampere maximum leakage	EIA-364-20, Condition I 1800 volts AC at sea level. Test between adjacent contacts of mated specimens.
Temperature Rise vs Current	35°C maximum temperature rise at specified current (100% energized)	
	Wire Size (AWG)	Amperes
	24	3.5
	22	
	20	5
18		
Mechanical		
Crimp Tensile	Wire Size (AWG)	Crimp Tensile (kg [lb] Minimum)
	24	3.7 [8]
	22	
	20	
18	9.1 [20]	
Random Vibration	No discontinuities of 1 microsecond or longer duration. See note.	EIA-364-28, Test Condition VII, Condition Letter D Subject mated specimens to 3.10 Gs rms between 20 and 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes. See Figure 4.
Mechanical Shock	No discontinuities of 1 microsecond or longer duration. See note.	EIA-364-27, Condition A Subject mated specimens to 50 Gs half-sine shock pulses of 11 milliseconds duration. Three 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 for 30 cycles for tin-plated specimens and 75 cycles for 15- $\mu$ in. gold-plated specimens at a maximum rate of 500 cycles per hour.
Header Contact Retention	Contact shall not dislodge. See note.	EIA-364-29 Apply an axial load of 1.40 kg [3.1 lb] in the mating direction at a maximum rate of 25.4 mm [1.0 in] per minute. The specified force shall be maintained for 6 $\pm$ 1 seconds.
Crimp Contact Retention	Contact shall not dislodge. See note.	EIA-364-29 Apply an axial load of 1.81 kg [4.1 lb] at a maximum rate of 25.4 mm [1.0 in] per minute. The specified force shall be maintained for 6 $\pm$ 1 seconds.
Crimp Contact Insertion Force	1.814 kg [4 lbs] maximum See note.	EIA-364-5 Measure force necessary to insert crimped contacts into housing.
Mating Force	3.74 kg [8.25 lbf] maximum per contact	EIA-364-13 Measure axial force necessary to unmate specimens without locking latches at a maximum rate of 5.08 mm [.2 in] per minute.
Unmating Force	0.0861 kg [0.19 lbf] minimum per contact	EIA-364-13 Measure axial force necessary to unmate specimens without locking latches at a maximum rate of 12.7 mm [.5 in] per minute.
Housing Lock Strength	2.7 kg [6 lb] minimum	EIA-364-98 Determine housing lock strength at a maximum rate of 12.7 mm [.5 in] per minute.
<b>Environmental</b>		
Thermal Shock	See note.	EIA-364-32, Test Condition VIII Subject specimens to 5 cycles between -40° and 105°C.
Humidity-Temperature Cycling	See note.	EIA-364-31, Method III Subject 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, Test Time Condition C Subject mated specimens to 105°C for 500 hours.
Mixed Flowing Gas	See note.	EIA-364-65, Class IIA (4 Gas) Subject mated specimens to environmental Class IIA for 20 days.
Ingress Protection	See note.	IEC 60529, IPX7

Use Aging	See note.	UL 486D, Sections 9.4.1.1(a). Subject specimens to 113±5°C for 168 hours.
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**i** **NOTE**  
Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the product qualification and re-qualification test sequence given in Figure 2.

**Figure 1**

3.6. Product Qualification and Re-Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)				
	1	2	3	4	5
	TEST SEQUENCE (b)				
Initial Examination of Product	1	1	1	1	1
LLCR	3	2,6			
Insulation Resistance			3,7		
Withstanding Voltage			4,8		
Temperature Rise vs Current		3,7			
Crimp Tensile				2	
Random Vibration	5				
Mechanical Shock	6				
Durability	4				
Header Contact Retention			10(c)		
Crimp Contact Retention			11		
Crimp Contact Insertion Force			2		
Mating Force	2				
Unmating Force	7				
Housing Lock Strength			9		
Thermal Shock			5		
Humidity-Temperature Cycling		4(d)	6		
Temperature Life		5			
Mixed Flowing Gas		4(d)			
Ingress Protection					3
Use Aging					2
Final Examination of Product	8	8	12	3	4

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Test omitted when testing wire-to-wire connectors.
- (d) The fourth test in this sequence will be either humidity/temperature cycling for tin-plated specimens or mixed flowing gas for gold-plated specimens.

**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 a minimum of 5 specimens.

B. Test Sequence

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

4.2. Re-Qualification Testing

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

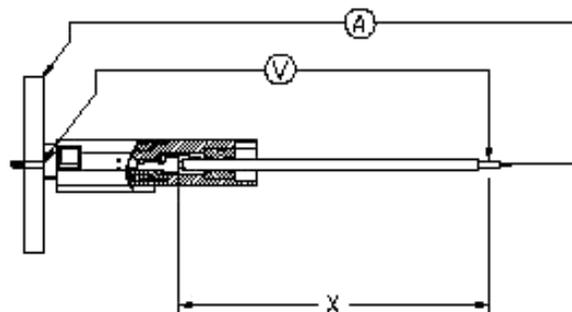
4.3. Acceptance

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 re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. Quality Conformance Inspection

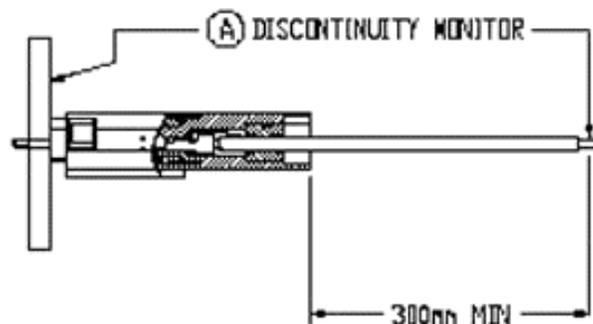
The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

**LLCR Measurement Points**



**Figure 3**

**Vibration and Mechanical Shock Mounting Fixture**



**Figure 4**