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**TE Solderless LED Socket, Type LS**

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**DESIGN OBJECTIVES**

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, TE Connectivity (TE) makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, TE may change these requirements based on the results of additional testing and evaluation. Contact TE Engineering for further details.

**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) Solderless LED Socket, Type LS designed for use with Lumileds Luxeon S LEDs.

## 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

- 114-13294: Application Specification (TE Solderless LED Socket, Type LS)
- 501-TBD: Qualification Test Report (TE Solderless LED Socket, Type LS)

## 2.2. Industry Document

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

## 2.3. Reference Document

109-197: Test Specification (TE 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.

PRELIMINARY

Luxeon is a registered trademark of Philips Lumileds Lighting Company LLC

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3.3. Ratings

- Voltage: 40 volts DC
- Current: 1.5 amperes
- 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 Application Specification 114-13294.	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).	15 milliohms maximum initial. $\Delta R$ 15 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Insulation resistance.	One megohm minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts and mounting plate of mated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1500 volts AC at sea level. Test between adjacent contacts and mounting plate of mated specimens.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C. 100% of the circuits energized.
MECHANICAL		
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 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (continued)

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Test Description	Requirement	Procedure
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's 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. Mount and unmount specimens for 5 cycles at a maximum rate of 500 cycles per hour.
Optic mating force.	20.0 N maximum.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm per minute.
Optic unmating force.	10.0 N minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm per minute.
Wire termination force.	236.2 N maximum.	EIA-364-13. Measure force necessary to seat 2 wires into the IDC contacts at a maximum rate of 12.7 mm per minute.
Termination tensile strength, parallel.	68.06 N minimum.	EIA-364-8. Determine tensile strength by pulling parallel to terminated wire at a maximum rate of 25.4 mm per minute. See Figure 5.
Termination tensile strength, perpendicular.	16.9 N minimum.	EIA-364-8. Determine tensile strength by pulling perpendicular to terminated wire at a maximum rate of 25.4 mm per minute. See Figure 6.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32, Test Condition VIII. Subject specimens to 25 cycles between -40 and 105°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
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.

Figure 1 (continued)

Test Description	Requirement	Procedure
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.

**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	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
LLCR	2,6	2,5,7,9				
Insulation resistance			2,6			
Withstanding voltage			3,7			
Temperature rise vs current		3,10				
Random vibration	4	8				
Mechanical shock	5					
Durability	3					
Optic mating force						2
Optic unmating force						3
Wire termination force				2	2	
Termination tensile strength, parallel				3		
Termination tensile strength, perpendicular					3	
Thermal shock			4			
Humidity/temperature cycling		4(c)	5			
Temperature life		6				
Final examination of product	7	11	8	4	4	4

**NOTE** (a) See paragraph 4.1.A.  
 (b) Numbers indicate sequence in which tests are performed.  
 (c) Precondition specimens with 5 durability cycles.

Figure 2

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#### 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 15 specimens.

###### 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.

**TBD**

Figure 3  
LLCR Measurement Points

**TBD**

Figure 4  
Vibration & Mechanical Shock Mounting Fixture

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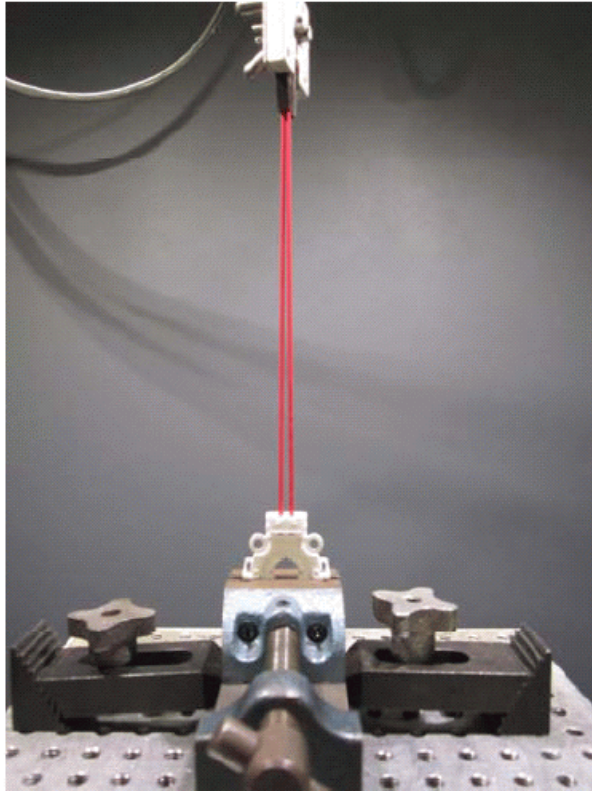


Figure 5  
Termination Tensile Strength, Parallel

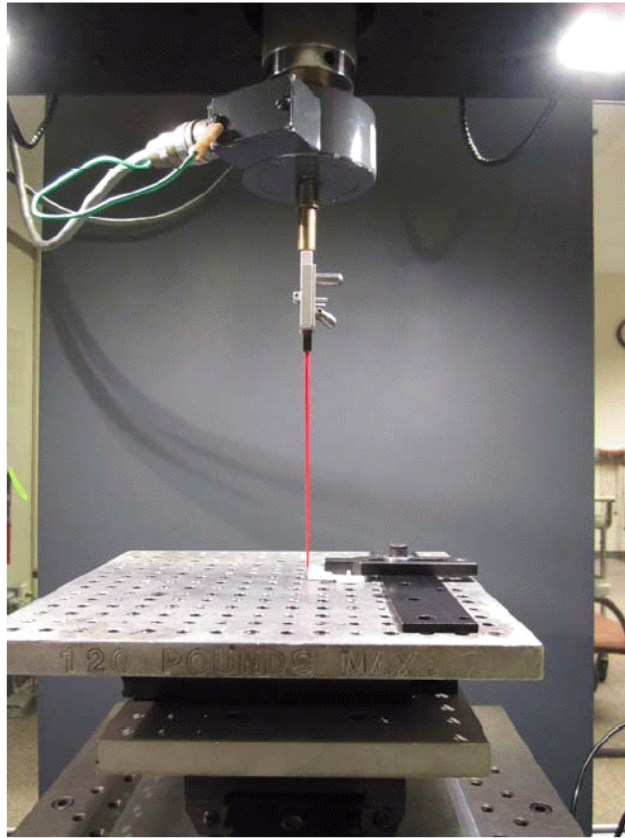


Figure 6  
Termination Tensile Strength, Perpendicular