

1. Scope:

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of CIRCULAR LIGHTING SEALED Connector (SCPC). The connector used primarily in lighting, industrial applications. This is a wire-to-wire system and offering with 2P, 3P, 4P types.

2. Applicable Documents:

The following documents form a part of this specification to the extent specified herein. 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 Connectivity Documents:

501-137041: Test Report.

C-2834000, C-2834002, C-2834004 Customer drawing for plug

C-2834001, C-2834003, C-2834005 Customer drawing for receptacle

2.2 Commercial Standards and Specifications:

Standard	Description
IEC 60529	Degree of Protection Provided by Enclosures (IP code)
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:

A. Voltage Rating : 300V AC / DC

B. Current Rating : 7A Max (2 Position), 6A Max (3,4 Position)

C. Temperature Rating : -25°C to 80°C

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance

requirements specified Test Requirements and Procedures Summary. All tests shall be performed in the room temperature unless otherwise specified.

3.5 Test Requirements and Procedures Summary:

3.5.1 Examination:

Test Description	Requirement	Procedures
Examination of the product	Meets visual requirements.	Visual inspection per product drawing. Per EIA-364-18

3.5.2 ELECTRICAL REQUIREMENTS:

Test Description	Requirement	Procedures
Contact resistance	20 mΩ Max.	Subject the specimen to maximum allowed rating current and measure the contact resistance. Per EIA-364-06
Insulation resistance	Initial: 1000 MΩ Min. Final: 500 MΩ Min.	Test mated samples between one contact and the others and between contacts connected together and the body. Per EIA-364-21
Dielectric withstanding Voltage	No breakdown 1 minute hold with no breakdown or flashover, current leakage should not exceed 5mA	Measuring points for mated samples between contact and contact 2.2 k VAC for 1 minute per Per EIA-364-20
Temperature rise vs current	30° C maximum temperature rise at specified current	Mated cable assemble measured at rated current with series all contacts. Length of cable of samples: 150mm±25mm. Per EIA-364-70

3.5.3 MECHANICAL REQUIREMENTS:

Test Description	Requirement	Procedures
Durability	No mechanical damage; No change to performance;	Mate and unmate specimens for 50 cycles at a max rate of 500 cycles per hour. EIA-364-09
Mating force	30N Max. (Remove couple ring)	Measure force when mate specimens at a max rate of 12.7mm/min. EIA-364-13
Unmating force	30N Max. (Remove couple ring)	Measure force when unmate specimens at a max rate of 12.7mm/min. EIA-364-13
Mechanical strength impact	No physical damages allowed, A reduction of clearances and creepage distances is not allowed.	Dropping height: -750mm for specimens of mass ≤250g, -500mm for specimens of mass >250g, Dropping cycles: 8 Positions in 45° steps, one cycle per position. Per IEC61984—7.5 (A9)
Flexing test of cord	No damage is allowed. The cable support sleeve shall not be loosened from the body and the insulation shall show no signs of abrasion or of wear and tear. Broken strands shall not pierce the insulation.	Current of 6A, Mechanical load of 20N, as Figure 1 Numbers of bending: 100 cycles IEC61987-----7.3.9
Vibration	No electrical discontinuity greater than 1 μsec. occur. No mechanical damage and No change to performance	Subject mated specimens to 10-55-10 Hz traversed in 1 minute with 1.52mm max amplitude. 2 hours in each of 3 mutually perpendicular planes. EIA-364-28
Mechanical Shock	No electrical discontinuity greater than 1 μsec. occur. No mechanical damage No change to performance	Subject mated specimens to 50 G's half sine chock pulse of 11 ms duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, total 18 shocks. EIA-364-27, Condition H

3.5.4 ENVIRONMENTAL

Test Description	Requirement	Procedures
Thermal shock	No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence.	Subject mated connector to 10 cycles. 1 cycle: -55°C/30 minutes, 85°C/30minutes. Measurement is held after samples has been put in room temperature for 1~2 hours. Refer to EIA-364-32 Test condition I
Temperature life	No physical damage, and meet requirements of additional test specified in Product Qualification Test Sequence.	Subject mated cable assemble to 85°C for 250 hours. Measurement is held after samples has been put in room temperature for 1~2 hours. EIA-364-17, Method A, Condition 3.
Resistance to cold	No physical damage, and meet requirements of additional test specified in Product Qualification Test Sequence.	Subject mated connector to -25°C for 240 hour. Measurement is held after samples has been put in room temperature for 1~2 hours. EIA-364-59, Condition 3.
Humidity (Temperature cycling)	No physical damage, and meet requirements of additional test specified in Product Qualification Test Sequence.	Subject mated connector to 10 cycles. 1 cycle is at 25~65°C, 80~98% RH last for 24 hours. Measurement is held after samples has been put in room temperature for 1~2 hours. Per EIA-364-31, Method III.
Temporary immersion (IPX7)	Can meet requirements of additional tests specified in Product Qualification Test Sequence.	Immerse specimens at 1m below the water surface for 30 minutes. IEC 60529, IP67 level, paragraph 14.2.7.
Temporary immersion (IPX8)	Can meet requirements of additional tests specified in Product Qualification Test Sequence.	Immerse specimens at 1.5m below the water surface for 24 hours. Refer to IEC 60529

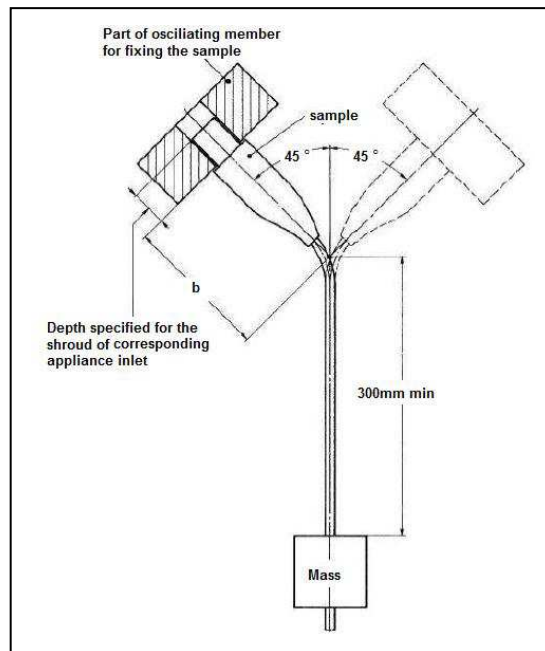


Figure 1: Flexing test of cord

3.6 Product Qualification Test Sequence (Sample size : 3 pcs Min. each group)

Test group	1	2	3	4	5	6	7	8	9
Examination of the product	1,6	1,13	1,9	1,9	1,3	1,7	1,3	1,3	1,7
Contact resistance	2,5	2,8,10,12	4,8	4,8					
Insulation resistance						2,5			2,5
Dielectric withstanding Voltage						3,6			3,6
Temperature rise vs current					2				
Durability		5							
Mating force		3,6	2,6	2,6					
Unmating force		4,7	3,7	3,7					
Mechanical strength impact							2		
Flexing test of cord								2	
Vibration	3								
Physical Shock	4								
Thermal shock		9							
Temperature life			5						
Resistance to cold				5					
Humidity (Temperature cycling)		11							
Temporary immersion (IPX7)						4			
Temporary immersion (IPX8)									4

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 3 specimens

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure2.

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 requirement of Figure 1. Failures attributes 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 resubmit.

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.