COOLSPLICE CONNECTOR

- NOT TO SCALE -

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1. SCOPE

1.1 Content

This specification covers performances, tests and quality requirements for the: “COOL SPLICE CONNECTOR” with **P/N 293545-1 , P/N 293545-2 , P/N 293545-3 and P/N 293545-4**, applied according application specification 114-19136.

1.2 Qualification

Products manufactured according the appropriate drawings (including work instructions, QIP, etc), applied according application specification 114-19136 and meeting the requirements according this specification, are qualified towards this specification.

2. APPLICABLE – REFERENCED 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 requirements of this Specification and Product Inspection Drawings, Product Inspection Drawings shall take precedence.
In the event of conflict between requirements of this Specification and referenced documents, this Specification shall take precedence.

2.1 Tyco Electronics documents

- Tyco Electronics Product Drawing (293545)
- Tyco Electronics Spec. 109-1 : General Requirements for Test Specifications
- Tyco Electronics Spec. 114-19136 : CoolSplice Application Specification
- TE Validation Report 502-19831 , 501-19155

2.2 Other documents

• IEC 60068-x	Environmental Testing
• IEC 60512-x	Connectors for Electronic Equipment - Tests & Measurements
• IEC 60998-x	Connecting Devices for Low Voltage Circuits for Household and Similar Purposes
• IEC 60695-x	Fire Hazard Testing
• IEC 60598-x	Luminaires : General Requirements

3. REQUIREMENTS

3.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on the applicable production drawings and applied according to the related application specification

3.2 Materials

Materials used in the construction of this product :
Plastic parts : PolyCarbonate
Contacts : Copper Alloy with Nickel-Tin plating

3.3 Ratings

3.3.1 Electrical parameters :
- 293545-1 and -2
  Voltage / Current : 230 Vac with 2.5 A
  or 50 Vac / 120 Vdc with 5 A
- 293545-3 and -4
  Voltage / Current : 50 Vac with 5 A (AWG 20)
  50 Vac with 3 A (AWG 22)

(Stranded and solid wire, both according application spec nr. 114-19136)

3.3.2 Environmental parameters :
Temperature range: -40℃ to +85℃ (increase due to current load excluded)

4. REQUIREMENTS AND TESTING PROCEDURES

Product is designed to meet the performance requirements according to the test conditions specified at §4.1.

4.1 Quality assurance description

SAMPLES PREPARATION
The samples for testing must be selected at random from the current production and in accordance with relevant inspection drawings. All samples shall be stored during 1 day at 50% Relative Humidity. All used samples for testing must not be used again, unless otherwise specified.

SAMPLES COMPOSITION
Unless otherwise specified, each test group will consist of at least 6 connectors.

ENVIRONMENTAL TEST CONDITIONS
Unless otherwise specified, standard atmospheric conditions per IEC 60068 - 1 :

- Temperature: 25±10℃
- Relative humidity: 45÷75%
- Pressure: 860÷1060 mbar

4.2 Test Requirements and Procedures

1. PRODUCT EXAMINATION		
TEST	***REQUIREMENT***	***PROCEDURE***
1.1 Product Confirmation	The product must meet the requirements of related drawings.	Visual, dimensional and functional inspection, according to the Quality Inspection Plan.
1.2 Visual Examination	The product must not have visible marks of damage, break or defect before and after the execution of the tests.	(Acc. to IEC 60512-1-1) Visual inspection

2. MECHANICAL REQUIREMENTS		
TEST	***REQUIREMENT***	***PROCEDURE***
2.1 Cable retention force	Pull test 50 N minimum	Acc. to IEC 60998-2-3 UL Testing speed 25mm/min.
2.2 Vibration Test	Frequency: 10-200-10 Hz Peak to peak amplitude 1,0mm	Speed: 1 octave/min. Acceleration: 5 g Duration: 4 hours for each axis (x, y, z). (Acc. to IEC 60068-2-6)

3. ELECTRICAL REQUIREMENTS		
TEST	***REQUIREMENT***	***PROCEDURE***
3.1 Voltage proof	Value and nature of test voltage: 2000 Vac	Acc. to IEC 60512-4-1, Test 4a Duration: 60 s
3.2 Insulation Resistance	10^9 Ω min.	Acc. to IEC 60998 Part 1 Test 13.3 Duration: 60 s
3.3 Contact Resistance	Initial value: ≤ 15 mΩ ΔR = 10 mΩ max (final: ≤ 25 mΩ) (this value includes 2 IDC terminations + the contact bulk)	Acc. to IEC 60512-2-2 Current: 1 A
3.4 Current Temperature Rise / Derating	ΔT<30℃ with I = 7.5 A	Acc. to IEC 60512-5-1/2, test 5a & 5b Test on 1 sample

4. ENVIRONMENTAL REQUIREMENTS		
TEST	***REQUIREMENT***	***PROCEDURE***
4.1 Degree of Protection	IP65 / IP67 Tests 1, 3.2	Acc. To IEC 60529
4.2 Cold	Temperature: -40℃ Tests 1, 3.1, 3.2, 3.3, 4.3, 4.4	Acc. to IEC 60068-2-1 Duration: 2h
4.3 Dry Heat	Temperature: +100℃ Tests 1, 3.1, 3.2, 3.3, 4.2, 4.4	Acc. to IEC 60068-2-2 Duration: 2h
4.4 Damp Heat	Temperature: +40±2 ℃ Tests 1, 3.1, 3.2, 3.3, 4.2, 4.3	Acc. to IEC 60068-2-3 Relative humidity: 93 +3/-2 % Duration: 4 days
4.5 Thermal shock	T_A = -40℃ ; T_B = +100℃ 100 cycles, 30min/30min Tests 1, 3.3	Acc. to IEC 60068-2-14, Test Na

4.6 Thermal cycling	T_A=+20℃ (t=30 min. including transition) T_B=+50°C (t=30 min. including transition) Number of cycles: 192 Tests 1, 3.3	Temperature transition rate: 5℃/min. Total cycle duration: 1h (Acc. to IEC 60068-2-14, test Nb) Current : 1,5A for 45min. / 0A for 15 min.

5. TEST SEQUENCES

		TEST GROUPS						
	SAMPLE DESCRIPTION	**A**	**B**	**C**	**D**	**E**	**F**	**G**
	293545-1, 4x 18 AWG solid	3	3		3	3	3	3
	293545-1, 4x 18 AWG stranded	3	3		3	3	3	3
	293545-2, 4x 18 AWG solid	3	3	3	3	3	3	3
	293545-2, 4x 18 AWG stranded	3	3	3	3	3	3	3
TEST	**DESCRIPTION**							
1	PRODUCT EXAMINATION	1,3	1,5	1,5	1,11	1,3	1,5	1,5
2.1	Cable retention force	2						
2.2	Vibration test		3					
3.1	Voltage Proof				4,10			
3.2	Insulation resistance			2,4	3,9			
3.3	Contact Resistance		2,4		2,8		2,4	2,4
3.4	Temperature Rise / Derating					2		
4.1	Degree of Protection			3				
4.2	Cold				5			
4.3	Dry Heat				6			
4.4	Damp Heat				7			
4.5	Thermal Shock						3	
4.6	Thermal Cycling							3

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TE Connectivity:

293545-1 293545-2