CMC 32POS HYBRID CONNECTOR PRODUCTION SPECIFICATION

CMC 32P 混合型密封连接器产品规范

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CONTENT

1. SCOPE 适用范围

1.1 Content 内容

This specification covers the performance, test and quality requirements for CMC 32POS, HYBRID, REC HSG ASSY, SLD (hereinafter referred to as 32WAY).
This specification applies to the product 2352158-* (*-2352205-*, *-2352206-*), but not limited to it.

本规范适用于 CMC 32POS,HYBRID,REC HSG ASSY,SLD (以下简称 32WAY) 的性能，测试和质量要求。
本规范适用但不仅限于以下零件号：2352158-* (*-2352205-*, *-2352206-*)

1.2 Qualification

When tests are performed, the following specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

本测试规范依照下面的规范及标准执行。所有的检验应依照合适的检验计划及产品图纸执行。

2. APPLICABLE DOCUMENTS 适用文件

2.1 Usable document 使用文件

In the event of conflict between the requirements of this specification and the drawing, the drawing shall take precedent.
In the event of conflict between the requirement of this specification and the referenced documents, this specification shall take precedent.

在本规范的要求与图纸发生冲突时，以产品图纸为准。在本规范的要求与参考文件发生冲突时，以本规范为准。

2.2 TE specifications 泰科电子规范

109-1: General requirements for Test Specifications / 测试通用规范
108-101283: CMC 32P DESIGN OBJECTIVES
C2352158: 32P REC HOUSING ASSY

2.3 Other specifications 其他规范

SAE/USCAR 2-6, 2013	Performance Specification for Automotive Electrical Connector System 汽车电子连接器系统的性能标准 SAE/USCAR
IEC60068-2-2,2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat 环境试验.第 2-2 部分:试验方法.试验 B: 干热
IEC60068-2-52,2017	Environmental testing - Part 2-52: Tests - Test Kb: Salt mist, cyclic 环境试验.第 2-52 部分:试验方法.试验 Kb: 循环盐雾
IEC60512-2-1,2002	Connectors for electronic equipment-Tests and measurements-Part 2-1, Test 2a: Contact resistance - Millivolt level method 电子设备连接器.试验和测量.第 2-1 部分,试验 2a: 接触电阻.毫伏级法
ISO16750-4,2010	Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads 道路车辆.电气和电子设备的环境条件和试验.第 4 部分：气候环境负荷
ISO20653,2013	Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access 道路车辆.防护等级（IP 代码）.防止异物、水和进入的电气设备保护

CTS-17.01.03-A2-2019	Technical Specification Of Automobile Connector (Changan Automobile) 汽车连接器技术规范 (长安汽车)
10098895QDO000AE, 2013	Category Quality Requirements for Connectors (Continental) 连接器的类别质量要求 (大陆集团)

3. REQUIREMENT 要求

3.1 Design and Construction 设计和结构

Products must meet the design, construction and physical dimensions specified in the applicable product drawings.

产品必须满足产品图纸上的设计，结构和尺寸要求。

3.2 Material 材料

Description of the material sees the related product drawings.

材料描述见相关产品图纸。

Component List	Part No.	Raw material	Surface Treatment
HOUSING ASSEMBLY	9-2352205-9	/	NA
HOUSING ASSEMBLY	9-2352206-9	/	NA
SHORT RETAINER	2050013-2	PBT-GF30	NA
RETAINER MQS	2050989-2	PBT-GF30	NA
COVER	2137149-1	PBT-GF30	NA

3.3 Test parameters and tolerances 测试参数与公差

Table 1: Test parameters and tolerances

Requirement 要求	Tolerance 公差
Ambient temperature 环境温度	23°C ± 5°C
Relative humidity 相对湿度	45% to 75%
Atmospheric pressure 大气压力	96kPa ± 10kPa

3.4 Ratings 等级

A. Operating Temperature / 工作温度: -40~125°C
B. Storage Temperature / 储存温度: -40~125°C
C. Rated voltage / 额定工作电压: 12V
D. Application / 产品应用: Transmission Control Unit, 变速箱控制单元

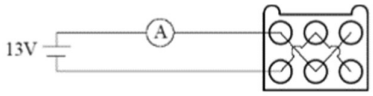
3.5 General Performance and Test description 通用性能和试验描述

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Para.4. All testes must be performed at the test condition of the TE test specification 109-1 unless otherwise specified.

产品应能满足段落 4 中的电气，机械和环境等性能要求。所有试验均需按照 TE 规范 109-1 中的测试条件进行，除非另有说明。

3.6 Tests requirement and method summary 测试要求及方法

Para.	Test items	Requirements	Procedures
3.6.1	Visual Inspection	The connector assembly must not show, with the aid of 10X magnification, any evidences of deterioration, cracks, deformities, etc…Connector locking mechanisms must function without breakage.	Visually, Dimensionally and Functionally inspected per applicable inspection plan. Perform the test According to USCAR-2 5.1.8
Mechanical Test			
3.6.2	Terminal – Connector insertion force	Insertion: 1. Inserting force: 30N max. 2.The forward stop push-through force 50N min. or wires bend.	Perform the test According to USCAR-2 5.4.1 Terminal –Connector inserting/ retention force
3.6.3	Terminal – Connector retention force	Retention: 1. Acc. To USCAR Spec.: Primary lock retention Initial force(MQS 0.64)= 30N min； Initial force(AMP 1.5)= 45N min.. 2. Acc. To USCAR Spec.: Primary + Second lock after Moisture Condition. Final force(MQS 0.64)= 60N min； Final force (AMP 1.5)= 70N min..	Perform the test According to USCAR-2 5.4.1 Terminal –Connector inserting/ retention force Terminal: MQS 0.64 & AMP 1.5
3.6.4	Connector to connector Mating /Unmuting force	1. Test C1: Lever close force (Mating force) ⩽ 75N 2. Test C3: Lever open force (Unmating force) ⩽ 75N	Perform the test According to USCAR-2 5.4.3 Connector to connector Mating/Unmating force
3.6.5	Connector Drop Test	No physical damage allowed single fall, 2 transition, 1m down to concrete floor	Perform the test According to 108-101283 section 3.6.11(IEC 60068-2-32)
3.6.6	Vibration/ Mechanical Shock	Perform the test According to USCAR 2-6, 5.4.6, Class V2, Random vibration test, 8h per axis,	Perform the test According to USCAR-2 5.4.6

Para.	Test items	Requirements	Procedures
ELECTRICAL Test			
3.6.7	Leakage current	Leakage current shall not exceed 1mA	Customer (Continental) Spec. 10098895QDO000AE, chapter 4.5: Engage housings as normal with terminals assembled to all electrodes and apply 13 VDC between terminals, as shown in the figure below, to measure the leak current 
3.6.8	Dielectric Rigidity	No discharge, crackling, shorting, incipient arcing or arcing must occur during the test.	Customer (Continental) Spec. 10098895QDO000AE, chapter 4.6: An effective alternate voltage of 1000 V ± 50 V, 50 Hz is applied for 60 s ± 5 s between terminals and between housing and terminals. Remarks left figure: Wrap the connector surface with Alu foil. All terminals shall be connected. 
3.6.9	Isolation Resistance	Greater than 100 MΩ	Perform the test According to USCAR-2 5.5.1 Isolation Resistance
3.6.10	Contact Resistance (Dry Circuit)	MQS 0.64: =<60 mΩ (Initial); =<10 mΩ (after test, resistance change) MCP 1.5: =<4 mΩ (Initial); =<20 mΩ (after test, resistance change)	Perform the test According to IEC 60512-2 test 2a Contact Resistance (Dry Circuit)
3.6.11	Circuit Continuity Monitoring	there must be no instance in which the resistance of any terminal pair exceeds 7.0 Ω for more than 1 microsecond.	Perform the test According to USCAR-2 5.1.9 Circuit Continuity Monitoring
3.6.12	Voltage Drop	Terminal 0.64: < 20 mV/A; Terminal 1.5: < 10 mV/A	Perform the test According to 108-101283 section 3.6.11

Para.	Test items	Requirements	Procedures
ENVIRONMENTAL Test			
3.6.13	High temperature test	No crack, deformation, anomalies and successfully complete the following test in the flow chart.	Perform the test According to IEC 60068-2-2 (125℃ 1000Hours)
3.6.14	Fluid Resistance	No defect, crack, could not affect their fit and function	Perform the test according to CTS-17.01.03-A2-2019 7.6.8
3.6.15	Submersion	No evidence of water or florescent dye shall be present in the interior of either mated connector	Perform the test According to ISO 16750-4 Climatic loads 2010-04-15 section 5.4.3
3.6.16	Pressure/Vacuum Leak	No evidence of water or florescent dye shall be present in the interior of either mated connector	Perform the test According to USCAR-2 5.6.6 Pressure/Vacuum Leak
3.6.17	Cold resistance	No defect, crack, could not affect their fit and function	Perform the test According to 108-101283 section 3.6.16, (- 40°C&120h）
3.6.18	Heat resistance	No defect, crack, could not affect their fit and function	Perform the test According to 108-101284 section 3.6.17, (+120°C&120h）
3.6.19	Degree protection (IP6KX)	No water intrusion to connecting system No damage, deformation, anomalies and successfully complete the following test	Perform the test according to ISO 20653_2013-02-15 IP6KX
3.6.20	Degree protection (IPX7)	No water intrusion to connecting system No damage, deformation, anomalies and successfully complete the following test	Perform the test according to ISO 20653_2013-02-15, IPX7
3.6.21	Degree protection (IPX9K)	No water intrusion to connecting system No damage, deformation, anomalies and successfully complete the following test	Perform the test according to ISO 20653_2013-02-15, IPX9K.
3.6.22	Sealing test	No air bubbles and no water immersion.	Perform the test according to CTS-17.01.03.00-A2-2019 7.3.11

Para.	Test items	Requirements	Procedures
3.6.23	Salt Spray Test	Acceptance Criteria: No damage, deformation, anomalies and successfully complete the following test in the flowchart (Refer to Criteria: • The DUTs are judged to have passed, if they must successfully complete the tests described in the tests matrix, see chapter 3 and a visual inspection finds no damage or anomalies. • A documentation of all test results is necessary, especially in case electrical malfunctions and mechanical damages such as corrosion, porosity of surface or cracks are detected.)	ACC.to IEC 60068-2-52 Kb, Initial Evaluation of Test: Before starting the environmental test the samples may not show any mechanical damage on the visual inspection. Test solution: -Concentration of NaCl: 5% +/-1% (95%NaCL 2,5% MgCl and 2,5 CaCl) in ionised water -PH-value at (20 ± 2) °C: 6.5~7.2 -Severity: 5 -Test cycle: see table below Test Cycle Spray: Spray at (35 +0 -3) °C Humidity storage: (40 ± 2) °C at (93 +2 -3) % R.H. Storage: (23 ± 2) °C at (45-55) % R.H. Spray | Humidity storage | Spray | Humidity storage | Spray | Humidity storage | Spray | Humidity storage | Storage 2 h | (20 + 2) h | 2 h | (20 + 2) h | 2 h | (20+2) h | 2 h | (20 + 2) h | 72 h Test duration of one cycle: 168 h **2.1 Operating Modes** Operating Mode 1.1 - No Voltage applied to test samples - Test sample is not connected to wiring harness Operating Mode 1.2 - Voltage is applied to the test sample - Test sample is connected to wiring harness Operating Mode 1.3 - No Voltage applied to test samples - Test sample is connected to wiring harness -Number of test cycle: 4 cycles -Test duration: 28 days -Operating mode: 1.1

3.7 Test sequence 试验顺序

Table 2: Test Sequence

TEST ITEM	TEST GROUP								
	1	2	3	4	5	6	7	8	9
3.6.1	1,4	1,3	1,3	1,5	1,10,15	1	1,6	1,6	1,6
3.6.2	2								
3.6.3	3								
3.6.4		2							
3.6.5			2						
3.6.6				3					
3.6.7					7				
3.6.8					9				
3.6.9					4,8				3
3.6.10				2,4	2,6				
3.6.11				3					
3.6.12							2,4	2,4	
3.6.13					5				
3.6.14						2			
3.6.15					14				8
3.6.16					3	3			2
3.6.17								3	
3.6.18							3		
3.6.19				6	11				5
3.6.20					13				7
3.6.21				7	12				6
3.6.22							5	5	
3.6.23									4
Sample Size	10	10	10	10	10	10	10	10	10

4. QUALITY 质量

4.1 Qualification test 鉴定

Samples must be in accordance with drawings and be taken in a random way in the production in progress.

样件必须与产品图纸一致，并且是生产过程中随机选取的。

4.2 Requalification test 重新鉴定

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by product engineering.

如果产品或者制造过程中有显著影响外观，装配和功能的设变，质保需要协调按照原先工程部定义的测试顺序，重新验证全部或者部分测试项目。

4.3 Acceptance 验收

Acceptance is based on verification that the product meets the requirements of section **Error! Reference source not found.**. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

归咎于测试设备，样件安装或者操作员的失误的失效不应判定产品不合格。当产品失效发生时，需要有纠正措施以及重新提交样件进行验证。在重新验证前，需确认已有纠正措施。

4.4 Quality conformance inspection 质量合格检验

The applicable TE Connectivity quality inspection plan will 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

TE Connectivity 的质量检验计划将指定适用的质量标准。尺寸和功能要求，应按照适用的产品图纸和本规范。