26P HYBRID SEALED CONNECTOR PRODUCT SPECIFICATION

26P 混合型密封连接器 产品规范

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A	Initial Release	AX	2021/10/26	APP: Jun Zong DATE: 2021/10/26	Document No.: 108-32310	LOC: ES	REV: A
LTR	REVISION RECORD	PR	DATE				

CONTENT

1. SCOPE 适用范围

1.1 Content 内容

This specification covers the performance, test and quality requirements for 26P HYBRID SEALED CONNECTOR (hereinafter referred to as 26P connector).
This specification applies to the product 2355140-1&2355103-1, but not limited to it.

本规范适用于 26P 混合型密封连接器 (以下简称 26P 连接器) 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：2355140-1&2355103-1

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
C2355140 26P REC HOUSING ASSY
C2355103 26P COVER 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
DIN/EN60068-2-14,2008	Environmental testing Part 2-14, Test Nb: Change of temperature 环境试验.第 2-14 部分:试验.试验 Nb:温度变化
DIN 40050-9,1993	Road vehicles Degrees of protection (IP Code) Protection against foreign objects, water and access Electrical equipment 道路车辆 IP 防护代码 防杂质，防水和防接触物体；电器设备
DIN50018,2008	Testing in Alternating Condensation Atmosphere Containing Sulphur Dioxide 在含有二氧化硫的大气环境下的冷凝水-交变气候中的试验
DIN/EN 60068-2-11,2008	Environmental testing Part 2: Test Ka: Salt mist 电工电子产品环境试验 第 2 部分: 试验方法 试验 Ka: 盐雾
IEC60068-2-60,2008	Environmental testing Part 2: Test Ke: Flowing gas corrosion test 环境试验 第 2-64 部分: 试验方法 试验 Ke: 流动混合气体腐蚀试验

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	2355140-1	/	NA
HOUSING	2355108-1	PBT-GF30	NA
RADIAL SEAL	2355092-1	MVQ	NA
RETAINER	2354964-1	PBT-GF20	NA
INNER HSG	2354926-1	PBT-GF20	NA
LEVER	2355093-1	PBT-GF30	NA
COVER ASSEMBLY	2355103-1	/	NA
Cover	2355097-1	PBT-GF30	NA
CPA	2136455-1	PA66-GF35	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: Electronic Braking System 电子制动系统

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

General check and preconditioning test			
Para.	**Test items**	**Requirements**	**Procedures**
3.6.1	Visual Inspection	The connector assembly must not show, with the aid of 10X magnification, any evidence 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
3.6.2	Connector and/or terminal cycling	10 Times	Perform the test According to USCAR-2 5.1.7
3.6.3	Dry heat	No defect, crack, could not affect their fit and function	Perform the test According to IEC 60068-2-2, +150°C, 22h total
3.6.4	Cold	No defect, crack, could not affect their fit and function	Perform the test According to IEC 60068-2-1, 40°C, 2h total
Mechanical Test			
Para.	**Test items**	**Requirements**	**Procedures**
3.6.5	Terminal – Connector insertion force	Insertion: 1. Inserting force: 20N max for MCP1.5&2.8, 30N max for MCP4.8. 2.The forward stop push-through force 50N min.	Perform the test According to USCAR-2 5.4.1 Terminal –Connector inserting/ retention force
3.6.6	Terminal – Connector retention force	Retention: 1. Acc. USCAR Spec.: Primary lock retention Initial force(MCP1.5)= 45Nmin； Initial force(MCP2.8)= 60Nmin； Initial force(MCP4.8)= 80N min.. 2. Acc. To Bosch Spec.: Primary + Second lock after Moisture Condition. Final force(MCP1.5)= 70Nmin； Final force(MCP2.8)= 100Nmin； Final force(MCP4.8)= 130N min.. 3. Acc. To Bosch Spec.: Primary + Second lock after High Temperature storage Final force(MCP1.5&2.8)= 60N min； Final force(MCP4.8)= 80N min	Perform the test According to USCAR-2 5.4.1 &Bosch Spec. 1928 A01 90T-000 , refer section 4.4.6 Terminal –Connector inserting/ retention force Terminal: MCP 1.5 & 2.8 & 4.8

Para.	Test items	Requirements	Procedures
3.6.7	Connector to connector Mating /Unmating force	1. Test A: The force to engage the connector to its End-lock position, Mating force ≤ *75N* 2. Test D: Un-mating force≥200N with the primary connector lock fully engaged (Meet Bosch Spec. after High temperature storage) 3. Test D: Un-mating force≤ *75N* with the primary connector lock completely disengaged/disabled (Meet Bosch Spec. and USCAR Spec.) 4. Test B: Lever close force (lever latch resistance force only) ≤ 60N 5. Test C: Lever open force (cover latch resistance force only) ≥60N	Perform the test According to Bosch Spec., section 4.2.2 & 4.2.3 & USCAR-2 5.4.3 Connector to connector Mating/Unmating force
3.6.8	TPA engage /disengage force	1.Pre-lock to end-lock *5.5N* min. (W/O terminal) and 60N Max.(W/terminal); 2.End-lock to pre-lock *6.5N* min. (W/O terminal) and 60N Max. (W/terminal); 3.Remove from Pre-stage 25N min.	Miscellaneous component engage /disengage force Perform the test According to USCAR 5.4.5.2
3.6.9	CPA engage /Disengage Force	1. CPA Pre-set to Lock unmated:60N Min. 2. CPA Pre-set to Lock mated:22N Max. 3. CPA Lock to Pre-set unmated: 10 N min., mated :30 N max. 4. CPA Remove from Pre-set:30N Min.	Miscellaneous component engage /disengage force Perform the test According to USCAR 5.4.5.2
3.6.10	Polarization feature effectiveness	3x the maximum value of mating connector (with force being ≥60N and ≤ 150N)	Perform the test According to USCAR-2 5.4.4 Polarization feature effectiveness
3.6.11	Connector Drop Test	*Record for reference.*	Perform the test According to USCAR-2 5.4.8 Connector Drop Test
3.6.12	Cavity Damage susceptibility	F≥80N	Perform the test According to USCAR-2 5.4.9 Cavity Damage susceptibility
3.6.13	Terminal/Cavity Polarization	Terminal inserted at a force 1.5 times the normal insertion force or 15N (whichever is greater) in reverse direction. Shall not fit or lock in to connector cavity.	Perform the test According to USCAR-2 5.4.10 Terminal/Cavity Polarization

Para.	Test items	Requirements	Procedures
3.6.14	Vibration/ Mechanical Shock	Perform the test According to USCAR 2-6, 5.4.6, Class *V3*, Random vibration test, 8h per axis,	Perform the test According to USCAR-2 5.4.6
3.6.15	Mechanical Assist Integrity	1. The lever/slide must withstand a 100 N force in the open and closed positions without separation or damage. 2. The lever/slide must withstand a 60 N force in the midpoint position (lever half –way closed) without separation or damage.	Perform the test According to USCAR-2 5.4.12
3.6.16	Conn. Seal Retention – Mated Connector	The resistance between every combination of two adjacent terminals in the CUT must exceed 100 Mat 500 VDC. This includes terminals that may be separated by one or more vacant terminal cavities.	Perform the test According to USCAR-2 5.4.14
3.6.17	Connector-to-Connector Audible Click	The values measured in this test shall be documented in the test report. These values should be considered for information only and are used to compare connector designs or to assist in the connector selection/wire harness design process.	Perform the test According to USCAR 2, 5.4.7
ELECTRICAL Test			
Para.	**Test items**	**Requirements**	**Procedures**
3.6.18	Isolation Resistance	All measured isolation resistance shall be greater than 100 MΩ at 500VDC	Perform the test According to USCAR-2 5.5.1 Isolation Resistance
3.6.19	Dry Circuit Resistance – Contact Resistance	MCP 1.5: =<10 mΩ (Initial); =<8 mΩ (after test, resistance change) MCP 2.8: =<5 mΩ (Initial); =<5 mΩ (after test, resistance change) MCP 4.8: =<3.5 mΩ (Initial); =<3.5 mΩ (after test, resistance change)	Perform the test According to USCAR-2 5.3.1 Dry Circuit Resistance – Contact Resistance
3.6.20	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
3.6.21	Voltage Drop	≤50mV	Perform the test According to USCAR-2 5.3.2

ENVIRONMENTAL Test			
Para.	**Test items**	**Requirements**	**Procedures**
3.6.22	Thermal Shock	No defect, crack, could not affect their fit and function	Perform the test According to USCAR-2 5.6.1 Thermal Shock Class 3(-40℃ to + 125℃), 99Cycle
3.6.23	Temperature humidity Cycling	No defect, crack, could not affect their fit and function	Perform the test According to USCAR-2 5.6.2 Temperature humidity Cycling. -40℃ to + 125℃,40Cycle
3.6.24	High temperature exposure	No defect, crack, could not affect their fit and function	Perform the test According to USCAR-2 5.6.3 high temperature exposure 125℃ 1008Hours
3.6.25	Fluid Resistance	No defect, crack, could not affect their fit and function	Perform the test according to USCAR 2-6, 5.6.4
3.6.26	Submersion	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.5 Submersion 125℃ chamber 2H,Transmission within30 seconds, 0℃ salt water 30 Minute
3.6.27	Pressure/Vacuum Leak	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.6 Pressure/Vacuum Leak air pressure: 48 kPa (7 psig) of vacuum 15 seconds
3.6.28	High pressure spray	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.7 High pressure spray Water pressure: 8000~10000KPa Water temperature: 85+/-5℃
ADDITIONAL TEST ACC. TO BOSCH SPEC.			
Para.	**Test items**	**Requirements**	**Procedures**
3.6.29	(Bosch Spec.) TPA engage /disengage force	1. Closing force (With all terminals correctly mounted; Pre-lock to end-lock): 10N min. and 30N Max.; 2. Closing force (one terminal incorrectly mounted; Pre-lock to end-lock): 100N min.; 3. Opening force (With all terminals correctly mounted; end-lock to Pre-lock): *20N* min. and 70N Max.;	Actuation force secondary lock Perform the test According to Bosch Spec., section 4.2.5
3.6.30	(Bosch Spec.) Cover retention Force	Cover retention Force ≥ 150N	Cover retention Force Perform the test According to Bosch Spec., section 4.2.4
3.6.31	(Bosch Spec.) Connector Drop Test	*Record the test result*	Connector Drop Test Perform the test According to Bosch Spec.，Section 4.2.6

Para.	Test items	Requirements	Procedures
3.6.32	(Bosch Spec.) Voltage Resistance	Terminal to terminal and terminal to housing: 1000V AC, duration 60 s, No flash and breakdown.	Perform the test According to Bosch Spec.，Section 4.3.2 Voltage Resistance
3.6.33	(Bosch Spec.) Temperature cycle	No defect, crack, could not affect their fit and function	Perform the test According to Bosch Spec.，Section 4.4.5 (DIN/EN60068-2-14 Nb, -40℃ ~120℃, transfer time 10s, 1000 cycles)
3.6.34	(Bosch Spec.) Temperature humidity Cycling	No defect, crack, could not affect their fit and function	Perform the test According to USCAR-2 5.6.2 Temperature humidity Cycling. -40℃ to + 150℃,240h total
3.6.35	(Bosch Spec.) High temperature storage	No defect, crack, could not affect their fit and function	Perform the test According to Bosch Spec.，Section 4.4.6 high temperature exposure 150℃ , 240Hours
3.6.36	(Bosch Spec.) Pressure Leak	No visible bubbles.	Perform the test according to Bosch Spec. 4.4.5, At a positive overpressure of 0.5 bar.
3.6.37	(Bosch Spec.) Degree protection (IPX6K)	No evidence of water or florescent dye shall be present in the interior of either mated connector	Perform the test according to Bosch Spec.，section 4.4.3 (DIN 40050 Part9)
3.6.38	(Bosch Spec.) Degree protection (IPX7)	No evidence of water or florescent dye shall be present in the interior of either mated connector	Perform the test according to Bosch Spec.，section 4.4.3 (DIN 40050 Part9)
3.6.39	(Bosch Spec.) Degree protection (IPX9K)	No evidence of water or florescent dye shall be present in the interior of either mated connector	Perform the test according to Bosch Spec.，section 4.4.3 (DIN 40050 Part9)
3.6.40	(Bosch Spec.) Industrial Climate	MCP 1.5: =<8 mΩ (after test, resistance change) MCP 2.8: =<5 mΩ (after test, resistance change) MCP4.8: =<3.5 mΩ (after test, resistance change) All measured isolation resistance shall be greater than 100 MΩ at 500VDC.	Perform the test according to Bosch Spec.，section 4.4.3, (DIN 50018, 3Cycles a 24H, KFW2.0S)
3.6.41	(Bosch Spec.) Salt spray fog test	MCP 1.5: =<8 mΩ (after test, resistance change) MCP 2.8: =<5 mΩ (after test, resistance change) MCP4.8: =<3.5 mΩ (after test, resistance change) All measured isolation resistance shall be greater than 100 MΩ at 500VDC.	Perform the test according to Bosch Spec.，section 4.4.4, (DIN/EN 60068-2-11; 168H)
3.6.42	(Bosch Spec.) Flowing gas corrosion	MCP 1.5: =<8 mΩ (after test, resistance change) MCP 2.8: =<5 mΩ (after test, resistance change) MCP 4.8: =<3.5 mΩ (after test, resistance change)	Perform the test according to Bosch Spec.，section 4.5.2, (IEC 60068-2-60)

3.7 Test sequence 试验顺序

Table 2: Test Sequence

Item 项目	Test No.	Test Group (测试分组)																								
		USCAR Spec.																Aditional test								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
VISUAL INSPECTION /外观检查	3.6.1	1,4	1,6	1	1,3	1	1	1	1	1	1	1,7	1,7	1	1	1,3	1,10	1,10	1	1,8	1	1	1,7,9	1	1	1	1
Connector and/or terminal cycling /手工插拔	3.6.2											2	2	2	2		2	2		2	2	2	2				
Dry heat / 干热	3.6.3																				4						
Cold/低冷测试	3.6.4																				6						
Terminal –Connector insertion force /端子插入护套力	3.6.5	2																									
Terminal - Connector retention force /端子保持力	3.6.6	3															14	14				8					
Connector to connector Mating /Unmating force /连接器插拔力	3.6.7				2															7		7					
TPA engage /disengage force /TPA啮合/分离力	3.6.8		3																								
CPA engage /Disengage Force /CPA啮合/分离力	3.6.9		2																								
Polarization feature effectiveness /极性测试	3.6.10					2																					
Connector Drop Test /跌落测试	3.6.11						2																				
Cavity Damage susceptibility /塑胶端子Cavity损伤性测试	3.6.12							2																			
Terminal/Cavity Polarization /塑胶端子Cavity极性测试	3.6.13								2																		
Vibration/ Mechanical Shock /振动冲击测试	3.6.14											4															
Mechanical Assist Integrity /机械辅助完整性测试	3.6.15									2																	
Conn. Seal Retention - Mated Connector /密封性保持力	3.6.16										2																
Connector-to-Connector Audible Click /Click声音	3.6.17			2																							
Isolation Resistance /绝缘阻抗测试	3.6.18																3.6.8, 11,13	3.6.8, 11,13			10		3,8	2,5	2,5		
Dry Circuit Resistance - Contact Resistance /干电路电阻测试	3.6.19											3,5	3,5	3,5	3,5					3,5	3,8	3,5		3,6	3,6		2,4
Circuit Continuity Monitoring /瞬断监控	3.6.20											4	4														
VOLTAGE DROP /电压降试验	3.6.21											6	6	6	6												
Thermal Shock /温度冲击测试	3.6.22												4														
Temperature humidity Cycling / 湿,热循环测试	3.6.23													4			5										
High temperature exposure /高温暴露测试	3.6.24														4			5									
Fluid Resistance /耐液体测试	3.6.25															2											
Submersion /浸没测试	3.6.26																9	9									
Pressure/Vacuum Leak /正负压泄露测试	3.6.27																4,7	4,7									
High pressure spray /高压水冲测试	3.6.28																12	12									
TPA engage /disengage force for BOSCH /TPA啮合/分离力_博世规格	3.6.29		4																								
Cover retention Force for BOSCH /盖子的保持力_博世规格	3.6.30		5																								
Connector Drop Test for BOSCH /跌落测试_博世规格	3.6.31																		2								
Voltage Resistance for Bosch /耐电压测试_博世规格	3.6.32																									2	
Temperature cycle for Bosch /温度循环测试_博世规格	3.6.33																			4							
Temperature humidity Cycling for Bosch /温,湿循环测试_博世规格	3.6.34																				5,7						
High temperature storage for Bosch /高温储存测试_博世规格	3.6.35																					4					
Pressure Leak for Bosch /正压泄露测试_博世规格	3.6.36																			6	9	6					
Degree protection (IPX6K) for Bosch /保护度测试 (IPX6K) _博世规格	3.6.37																						4				
Degree protection (IPX7) for Bosch /保护度测试 (IPX7) _博世规格	3.6.38																						5				
Degree protection (IPX9K) for Bosch /保护度测试 (IPX9K) _博世规格	3.6.39																						6				
Industrial Climate for Bosch /耐工业环境测试_博世规格	3.6.40																							4			
Salt spray fog test for Bosch /盐雾测试 _博世规格	3.6.41																								4		
Flowing gas corrosion for Bosch /流动气体腐蚀测试 _博世规格	3.6.42																										3

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。