57P DOOR TO BODY CONNECTOR SPECIFICATION

（34pos. Rem0.64 + 17pos. Mcon1.2 + 4pos MCP2.8 + 2pos. Fakra）

57P DTB 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 57P door to body connector (here in after referred as DTB connector)。
This specification applies to these product below，but not limited to it.
57P REC PLUG: 2391347-1 Include 2391351-1, 1-2351080-1
57P TAB PLUG: 2391352-1 Include 2391356-1, 1-2351081-1
57P REC PLUG: 1-2391347-1 Include 2391351-1, 2410348-1, 2410351-1/2
57P TAB PLUG: 1-2391352-1 Include 2391356-1, 2410353-1, 2410351-1/2
Other detail information refer to corresponding customer drawing

本规范适用于 57p 车门到车身连接器(以下简称 DTB 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料号，并不限于此。
57p 母端插头: 2391347-1 包括 2391351-1, 1-2351080-1
57p 公端插头: 2391352-1 包括 2391356-1, 1-2351081-1
57p 母端插头: 1-2391347-1 包括 2391351-1, 2410348-1, 2410351-1/2
57p 公端插头: 1-2391352-1 包括 2391356-1, 2410353-1, 2410351-1/2

其他未尽细节请参照对应的客户图纸。

1.2 Qualification 鉴定

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

2.3 Other specifications 其他规范

108-18030	Product Specification for Micro Quadlok System
114-18021	Application Specification for Micro Quadlok System
108-xxxx	Mcon1.2
114-xxxx	Mcon1.2
108-18513	Product Specification for MCP 2.8 contact system
114-18148	Application Specification for MCP 2.8 contact system
108-xxxx	Fakra
114-xxxx	Fakra
IEC-60068	Electrical engineering, basic environmental testing procedures
DIN 40050 part 9	Road vehicles, IP code, degree of protection.

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	TE part no.	Raw material
Rec plug housing	2391348	PBT-GF20
Rec cavity block	2391349	PBT
Slider	2391350	PBT-GF20
Secondary lock	2379014	PBT 20% GF
Interface seal	2298004	SILICONE
Rec fakra cavity	2351034	PBT-GF30
Rec Rem0.64 TPA	2391351	PBT-GF30
Rec Mcp2.8 TPA	2351080	PBT-GF30
Tab housing	2391353	PBT
Pin protect plate	2391354	PBT-GF10
Panel seal	2298006	EPDM
Tab fakra cavity	2351045	PBT-G30
Tab Rem0.64 TPA	2391356	PBT-G30
Tab Mcp2.8 TPA	2351081	PBT-G30

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: -40~105°C
B. Storage Temperature / 储存温度: -40~105°C
C. Rated voltage / 额定工作电压: 12V
D. Application / 产品应用: 车门到车身电气连接

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 Item	Requirements	Method
		Mechanical Requirement	
3.6.1	Visual inspection	Product shall be conforming to the requirement of applicable product drawing and application specification	Visually, Dimensionally and Functionally inspected per applicable inspection plan Spec: USCAR-2 5.1.8
3.6.2	Terminal - Connector Insertion force	Insertion force with TPA open position: MQS 0.64: 15N max. MCON 1.2: 15N max. MCP 2.8: 30N max. FAKRA: 30N max. Forward stop/push-through force: 50N min. or cable bending The primary lock must latch audibly and must be checked by pulling it back (max. 10N) No physical damage allowed	Apply an axial load to Pin direction, Operation speed 50 mm/min. Spec: USCAR-2 5.4.1
3.6.3	Terminal - Connector Retention force	Retention force (Primary lock only): MQS 0.64: 25N min. MCON 1.2: 30N min. MCP 2.8: 60N min. FAKRA: 40N min. Retention force (Primary + Secondary Lock): MQS 0.64: 60N min. MCON 1.2: 70N min. MCP 2.8: 100N min. FAKRA: 100N min. No physical damage allowed	Apply an axial load to Pin direction, Operation speed 50 mm/min. Spec: USCAR-2 5.4.1
3.6.4	Connector to Connector Mating/Un-mating Force (with slider)	Slider open/close force： 30N Max. (unmated connector) Slider removal force： 50N Min. (unmated connector) Slider actuation force: 150N max. (mating/un-mating) Connector to connector Holding force: 110N min. (slider locked position)	Apply an axial load to Pin direction, Operation speed 50 mm/min. Spec: USCAR-2 5.4.3

3.6.5	Polarization Feature Effectiveness	>3X mating force and 60~150N	Apply an axial load to Pin direction, Operation speed 50 mm/min. Spec: USCAR-2 5.4.4
3.6.6	Miscellaneous Component Engage/Disengage Force	Secondary lock close force: 60N max. Secondary lock open force: 25N min.	Apply an axial load to Pin direction, Operation speed 50 mm/min. Spec: USCAR-2 5.4.5
3.6.7	Vibration/Mechanical Shock	No abnormalities in appearance; No electrical discontinuity greater than 1us.	Follow Vibration class V1 Spec: USCAR-2 5.4.6
3.6.8	Drop test	No physical damage allowed Single fall,2 transition,1m down to concrete floor	Acc. to ISO 16750-3 and IEC 60068-2-32 Spec: USCAR-2 5.4.8
3.6.9	Mechanical Assist Integrity	Slider Integrity: open positions: 30N min. closed positions: 80N min. midpoint position: 30N min.	Apply an axial load lever of connector, Operation speed 50 mm/min. Spec: USCAR-2 5.4.12
3.6.10	Pin Protection Plate (PPP) Blocking/Removal Force	Blocking Force Pre-Set to Lock: 25N min. Reset Force Lock to Pre-Set: 60N max. Manual reset only Complete Removal from Pre-Set 25N min	Apply an axial load lever of connector, Operation speed 50 mm/min. Spec: USCAR-2 5.4.5
3.6.11	Connector cycling	No functional damage	Completely mate and un-mate each connector 10 times. Spec: USCAR-2 5.1.7
		Electrical Requirement	
3.6.12	Dry Circuit Resistance	MQS 0.64: 20 mV/A Mcon1.2: 15 mV/A MCP 2.8: 10 mV/A	Measured by applying 1A, 12V DC to connector by probing at 200mm apart from the wire crimp Spec: NDS 2.2.1
3.6.13	Dielectric Withstanding Voltage	No flash over or breakdown between adjacent contacts	Measured after applying 1000V AC between the adjacent terminals and between a terminal and the housing 1 minute. Spec: NDS 2.2.5

3.6.14	Insulation resistance	Value and nature of the test voltage: 500V direct voltage R>100MΩ	Measured after applying 500V DC to adjacent connector circuits of mated connector assembly. Spec: NDS 2.2.4
Environment Requirement			
3.6.15	Thermal Shock	Termination resistance（Low Level） MQS 0.64: 20mΩ Max. MCON1.2: 15mΩ Max. MCP 2.8: 10mΩ Max.	Mated connector -40℃/30min. 105℃/30min. Making this a cycle, Repeat 100cycles. Spec: USCAR2-5.6.1
3.6.16	Temperature/Humidity Cycling	Insulation resistance 100MΩ Min. （Final） Termination resistance（Low Level） 20mΩ Max. (Final)	Spec: USCAR2-5.6.2
3.6.17	High Temperature Exposure	Insulation resistance 100MΩ Min. （Final） Termination resistance（Low Level） MQS 0.64: 20mΩ Max. MCON1.2: 15mΩ Max. MCP 2.8: 10mΩ Max.	1008h @105°C Spec: USCAR2-5.6.3
3.6.18	Degree of protection test	No water leakage	Acc. ISO 20653 IP X4K Water pressure/temperature: 4bar/RT Duration: 10min. (Connector mount on door)

3.7 Test sequence 试验顺序

Test or examination	Test Group										
	1	2	3	4	5	6	7	8	9		
3.6.1 Visual Examination	1,4	1,4	1,3	1,3	1,4	1,6	1,8	1,7	1,9		
3.6.2 Terminal -Connector Insertion	2										
3.6.3 Terminal -Connector retention	3							8	10		
3.6.4 Connector-Connector Mating/Un-mating force		2									
3.6.5 Polarization Feature Effectiveness		3									
3.6.6 Miscellaneous Component Engage/Disengage Force			2								
3.6.7 Vibration/Mechanical shock						4					
3.6.8 Drop test				2							
3.6.9 Mechanical Assist Integrity					2						
3.6.10 Pin Protection Plate (PPP) Blocking/Removal Force					3						
3.6.11 Connector cycling						2	2	2	2,5		
3.6.12 Dry Circuit Resistance						3,5	3,6	3,5	3,6		
3.6.13 Dielectric Withstanding Voltage									8		
3.6.14 Insulation resistance								6	7		
3.6.15 Thermal Shock							5				
3.6.16 Temperature/Humidity Cycling								4			
3.6.17 High Temperature Exposure									4		
3.6.18 Degree of protection test							4,7				
Sample Size	4	4	5	5	5	5	5	5	5		

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 3.6. 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。