

1. Scope

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of Seat Sensor FPC Connector unsealed type.

Applicable product description and part numbers are as shown in Appendix 1.

2. Applicable Documents:

The following documents from 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 AMP Specifications:

- A. 109-5000 : Test Specification, General Requirements for Test Methods
- B. 114-5257 : Application Specification, FPC Conn 2pos unsealed cap Assy.
- C. 501-5338 : Test Report

2.2 Commercial Standards and Specifications.

- A. JASO D605 Multi-pole Connector for Automobiles
- B. JASO D7101 Test Methods for Plastic Molded Parts
- C. JIS D0203 Method of Moisture, Rain and Spray Test for Automobile Parts
- D. JIS D0204 Method of High and Low Temperature Test for Automobile Parts
- E. JIS D1601 Vibration Testing Method for Automobile Parts

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 Material

A. Contact :FPC Tab (Male) Contact :Copper alloy (Pretinned)

B. Cap Housing : PBT

3.3 Ratings

A.Temperature Rating : -30°C to 80°C

B. Circuit Rating : 12V,10mA(MAX20mA)

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.1 and Fig.2. All tests shall be performed in the room temperature, unless otherwise specified.

3.5 Test Requirements and Procedures Summary:

Para.	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing and AMP Specification 114-5257	Visually inspection. No physical damage.
Electrical Requirements			
3.5.2	Termination Resistance (Low Level)	(1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Measure resistance of the contacts with crimped FPC and mated connector wire in open circuit at 20mV and close circuit at 12mA. AMP Spec.109-5311-1
3.5.3	Dielectric with-standing Voltage	No creeping discharge nor flash-over shall occur.	Mated connector. 1kV AC for 1 minute. Fig.3 AMP Spec. 109-5301
3.5.4	Current leakage	100MΩ Min (Initial) 100MΩ Min (Final)	Impressed voltage 500V DC Fig.3 AMP Spec. 109-5302
Mechanical Requirements			
3.5.5	FPC crimp tensile strength.	15.0N Min (Initial) 15.0N Min (Final)	Fix the contact and then,pull at the FPC to axis direction. Operation speed : 100mm/min. Fig.4
3.5.6	FPC tensile strength.	100.0N Min (Initial) 100.0N Min (Final)	Fix the housing and then,pull at the FPC to axis direction. Operation speed : 100mm/min. Fig.5
3.5.7	Contact Retention Force(Housing Lance Only)	40N Min	Fix the housing,pull at the contact to axis direction. Operation speed : 100mm/min.
3.5.8	Vibration (High frequency)	No electrical discontinuity greater than 1 μ sec. shall occur. Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Vibration Frequency : 20°C→200→20Hz/ 3min (Log) Accelerated Velocity : 44.1m/s ² (4.5G) Vibration Direction : X,Y,Z Duration : 9hours(each 3hours)
3.5.9	Compound Environment Resistance	No electrical discontinuity greater than 1 μ sec. shall occur. Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Vibration Frequency : 20°C→200→20Hz/ 3min (Log) Accelerated Velocity : 44.1m/s ² (4.5G) Vibration Direction : X,Y,Z Duration : 300hours(each 100hours) Current : 12mA,45minON,15minOFF Environment : 80±3°C

Fig.1 (To be continued)

Para	Test Items	Requirements	Procedures
Environmental Requirements			
3.5.10	Temperature Life (Heat Aging)	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	100±3°C, Duration : 120hours AMP Spec 109-5104
3.5.11	Thermal shock	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	-30°C/30min. 80°C/30min. Making this a cycle, repeat 300cycles. AMP Spec 109-5103
3.5.12	Resistance to Cold	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	-30±3°C, 120hours AMP Spec 109-5108
3.5.13	Humidity, Steady State	Current leakage: 100MΩ Min(Final) Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	90~95%R.H,60±5°C 96hours AMP Spec 109-5105
3.5.14	Resistance to "Kojiri"	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Unmate/Re-mating connector as kojiri in front-rear, and right-left directions for 10 cycles.
3.5.15	Dust Bombardment	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Mated connector Subject JIS R 5210 cement blow of 14N per 10 seconds in 15 minutes intervals for 8 cycles, with Unmate/Re-mating per 2 cycles. AMP Spec. 109-5110
3.5.16	Humidity-Temperature Cycling	Termination Resistance: (1) Tab contact×Rece contact 5mΩ Max (Initial) 10mΩ Max (Final) (2) FPC×Tab contact 36mVMax	Mated connector Condition:Fig6 Duration : 10 cycles Test current:10mA

Fig1(To be continued)

3.5.17	Physical Shock	No electrical discontinuity greater than 1 μ sec. shall occur.	Test condition:Fig7
3.5.18	Industrial Gas	Termination Resistance: (1) Tab contact×Rece contact 5m Ω Max (Initial) 10m Ω Max (Final) (2) FPC×Tab contact 36mVMax	Unmated connector SO ₂ Gas:25ppm,75%R.H. 20~25°C, 96hours

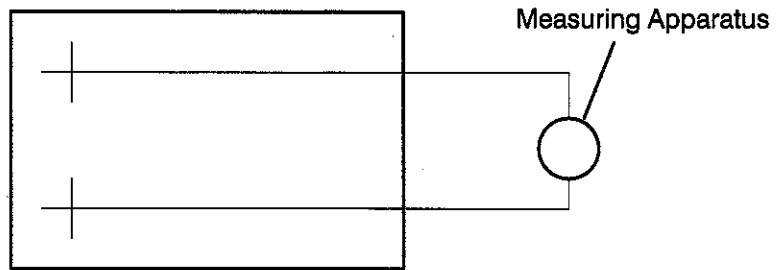
Fig.1(END)

3.6 Product Qualification Test Sequence

Para.	Test Examination	Test Group											
		1	2	3	4	5	6	7	8	9	10	11	12
		Test Sequence ⁽¹⁾											
3.5.1	Examination of Product	1	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1	1,4
3.5.2	Termination Resistance	2	2,5	2,5,7	2,5	2,5	2,5,7	2,5	2,5	2,5	2,8		2,5
3.5.3	Dielectric with-standing Voltage	4				7					9		
3.5.4	Current leakage	3				6					10		
3.5.5	FPC crimp ten-sile strength	6	7	9	7	9					5		6
3.5.6	FPC tensile strength	5	6	8	6	8					6		
3.5.7	Contact Reten-sion Force(Hous-ing Lance Only)	7	8	10	8	10					7		
3.5.8	Vibration(High frequency)						6						
3.5.9	Compound Envi-ronment Resis-tance							3					
3.5.10	Temperature Life(Heat Aging)		3	3				3					
3.5.11	Thermal shock			6									
3.5.12	Resistance to Cold				3								
3.5.13	Humidity,Steady State					3							
3.5.14	Resistance to "Kojiri"								3				
3.5.15	Dust Bombard-ment									3			
3.5.16	Humidity-Tem-perature Cycling										3		
3.5.17	physical Shock											3	
3.5.18	Industrial Gas												3

(1) Numbers indicates sequence in which tests are performed.

Fig.2



Adjacent Contacts
Fig.3

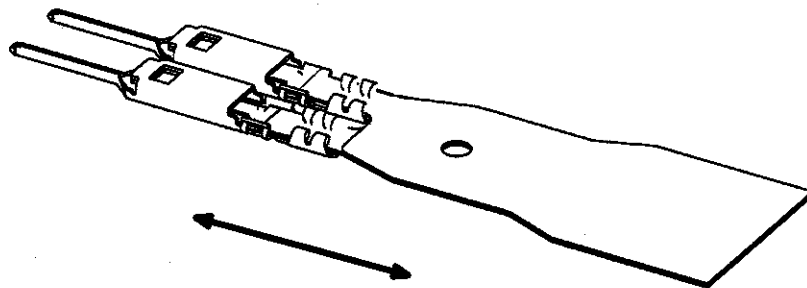


Fig.4 FPC Crimp tensile strength

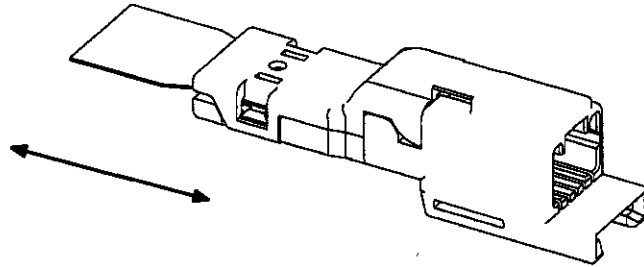


Fig.5 FPC tensile strength

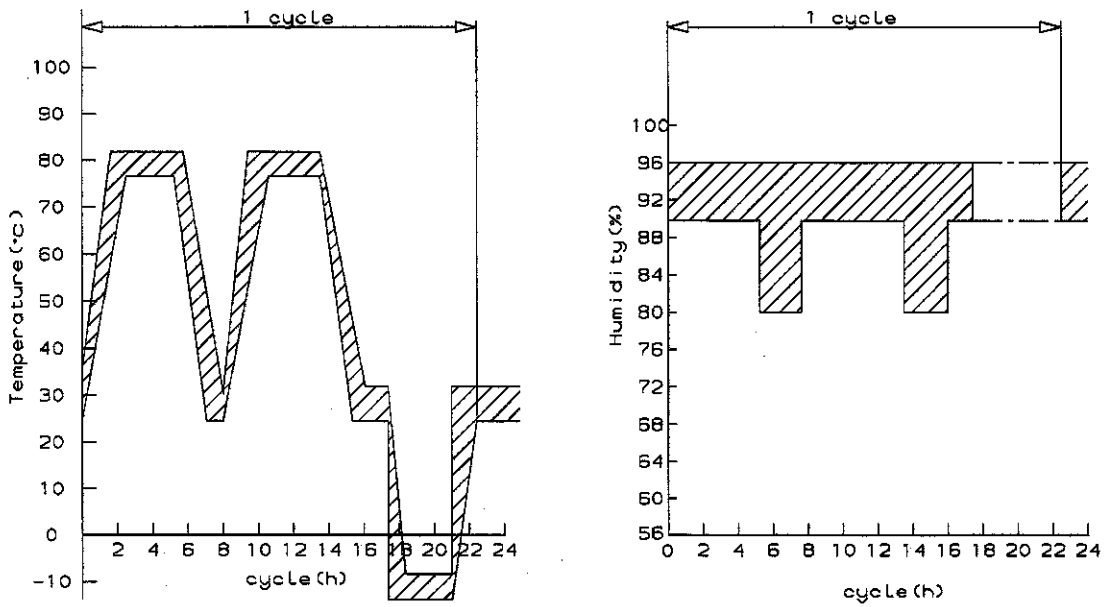
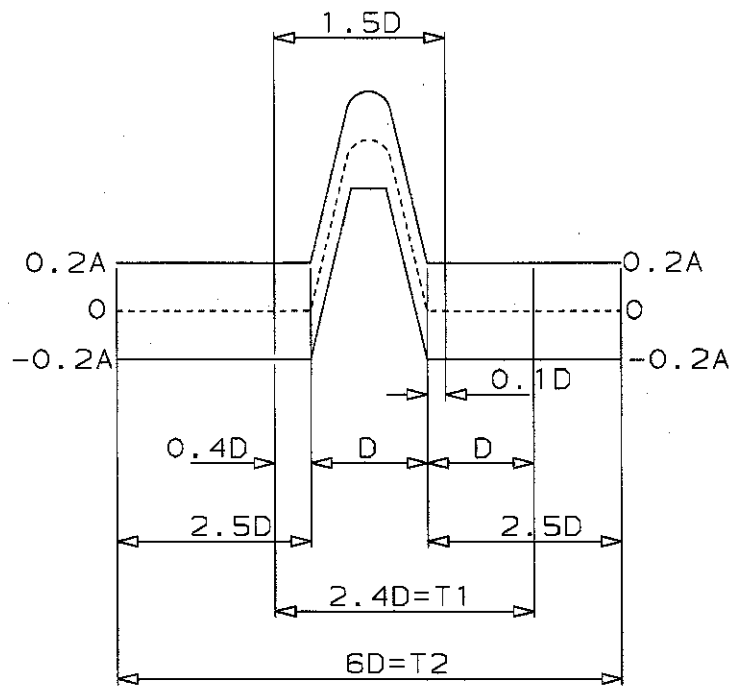


Fig.6 Humidity-Temperature condition

Para.	Test Condition
Peak acceleration	980m/s ²
duration	6msec.Velocity

Waveform
(Half sine wave)



----- Ideal wave
 ——— Permissible Limit
 Ideal wave duration
 A: Peak acceleration of ideal wave
 T1: In case of shock machine
 The minimum time to watch shock
 T2: In case of vibration machine
 The minimum time to watch shock

Directions	X, Y and Z axis (6 directions)
Number of drops	3 drops each

Fig.7 Physical Shock condition

The applicable product descriptions and part numbers are as shown in Appendix.1.

Part number	Description
1123899	FPC seat sensor connector 2pos cap housing assy

Appendix.1