1. Scope:

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of SQUIB Connector 11DIA.

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

2. Applicable Documents:

The following documents form 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. 114-5234 :Application Specification Crimping of Squib Contacts
C. 501-5344 : Qualification Test Report of 11DIA SQUIB CONNECTOR
D. 501-5415 : Qualification Test Report of 11DIA SQUIB CONNECTOR SLIM TYPE
E. 501-5935 : Qualification Test Report of 11DIA SQUIB CONNECTOR MK-Ⅱ
F. 501-5477 : Qualification Test Report of 11DIA SQUIB CONNECTOR COMPACT TYPE

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 C3406 : Low-Voltage Wires and Cables for Automobiles
D. JIS D0203 : Method of Moisture, Rain and Spray Test for Automobile Parts
E. JIS D0204 : Method of High and Low Temperature Test for Automobile Parts
F. JIS D1601 : Vibration Testing Method for Automobile Parts
G. JIS R5210 : Portland Cement

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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:

Description	Material	Finish
Φ1mm Socket (Female)	Brass	Selective Gold and Tin plating over Ni under plating

Fig.1

B. Housing : PBT

C. Other : Ferrite

3.3 Ratings:

A.: Temperature Rating : -30℃ to 80℃

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.2 and Fig.3. All tests shall be performed in the room temperature, unless otherwise specified.

The interface for test shall be meet the customer-drawing.

3.5 Test Requirements and Procedures Summary:

Para.	Test Items	Requirements		Procedures
3.5.1	Confirmation of Product	Meet requirements of product drawing and AMP Specification 114-5234		Visually, dimensionally and functionally inspected per applicable quality inspection plan.
Electrical Requirements				
3.5.2	Termination Resistance (Low Level)	Contact	5mΩ Max.(Initial)	Subject mated contacts assembled in housing to 20 ± 5mV Max. open circuit at 10±0.5mA. Fig.4 AMP Spec. 109-5311-1
			10mΩ Max.(Final)	
		Shorting	100mΩ Max. (Initial, Final)	

Fig.2(To be continued)

Para.	Test Items	Requirements	Procedures
3.5.3	Dielectric Withstanding Voltage	No creeping discharge nor flashover shall occur.	Impressed voltage 1kVAC for 1 min. Mated connector. Fig.5 AMP Spec. 109-5301
3.5.4	Insulation Resistance	100MΩ Min.(Initial, Final)	Impressed voltage 500VDC Mated connector Fig.5 AMP Spec.109-5302
3.5.5	Current Leakage	3mA Max.	Impressed voltage 14VDC Fig.6 AMP Spec.109-5312
3.5.6	Instant Cutoff	No electrical discontinuity greater than 1 μsec. Shall occur.	Connect in series. Apply power with a waveform recorder, and check.
		Physical Requirements	
3.5.7	Handling Ergonomics	No abnormalities allowed in manual mating/unmating handling.	Manually operated
3.5.8	Connector Mating Force	70N Max.	Operation Speed: 100mm/min Measure the force required to mate connectors. AMP Spec. 109-5206
3.5.9	Connector Locking Strength	98N Min. (1612121/1612122:80N Min.) (1612121/1827120:80N Min.)	Operation Speed : 100mm/min Measure locking strength with button. AMP Spec. 109-5210
3.5.10	Contact Retention Force	98N Min.	Measure contact retention force with lid. Operation Speed: 100mm/min.
3.5.11	Crimp Tensile Strength	Wire Size (mm^2) / Tensile Strength (N) Min. 0.3 / 69* 0.5 / 88 *Included the insulation grip	Apply an axial pull-off load to crimped wire of contact secured on the tester. Operation speed: 100mm/min AMP Spec. 109-5205 Condition B
3.5.12	Resistance to "Kojiri"	Satisfy requirements of test item on the "3.6 sequence"	Manually insert and remove the connector 100 times.

Fig.2(To be continued)

Para.	Test Items	Requirements	Procedures
		Environmental Requirements	
3.5.13	Thermal Shock	Satisfy requirements of test item on the "3.6 sequence"	Mated connector. -30℃/30min., 80℃/30min. Making this a cycle. Repeat 1000 cycles. Fig.8
3.5.14	Humidity, Steady State	Satisfy requirements of test item on the "3.6 sequence"	Mated connector. 90~95% R.H.60±5℃ 500 hours 14V applied. Fig. 6
3.5.15	Industrial Gas(SO_2)	Satisfy requirements of test item on the "3.6 sequence"	Unmated connector SO_2 Gas: 25ppm, 75% R.H. 20℃, 96 hours
3.5.16	Temperature Life (Heat Aging)	Satisfy requirements of test item on the "3.6 sequence"	Mated connector, 120℃, ①300hours, ②120hours
3.5.17	Resistance to Cold	Satisfy requirements of test item on the "3.6 sequence"	Mated connector, -40℃, 300 hours
3.5.18	Dust Bombardment	Satisfy requirements of test item on the "3.6 sequence"	Mated connector Subject JIS R5210 cement blow of 1.5kg per 10 seconds in 15 minutes intervals for 8 cycles, with Unmate/Re-mating per 2 cycles AMP Spec. 109-5110
3.5.19	Compound Environment Resistance	Satisfy requirements of test item on the "3.6 sequence"	Temperature: 80℃ Vibration frequency: 20→200→20Hz/3min.(log) Accelerated Velocity: 44.1m/s^2 Vibration Direction: X,Y,Z Duration: 1000 hours Test Current: 10mA Mounting: Fig.9
3.5.20	Resistance to Shock	Satisfy requirements of test item on the "3.6 sequence"	Acceleration: 980～9800m/s^2 Waveform: Half sine wave Duration: 6msec. Number of drops: 3 times each directions four directions(upward, downward, to the left or right, and to the front or rear) Mounting: Fig.9

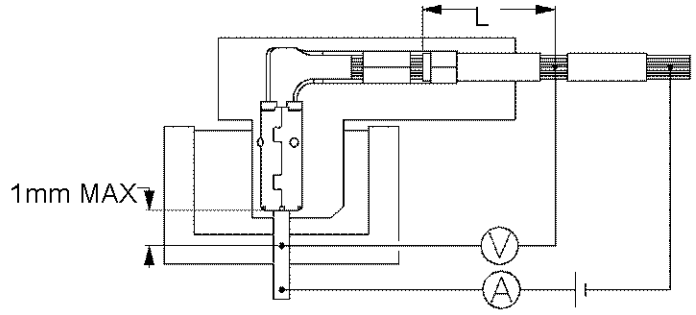
Fig.2(End)

3.6 Product Qualification Test Sequence

Test Examination	Test Group												
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Test Sequence*												
Examination of Product	1,6	1	1	1	1,6	1,6	1,6	1	1	1,4	1,6	1,7	1,7
Termination Resistance (Low Level)	3,7			2,4	2,4 7	2,7	2,7			2,5	2,4 7	2,4 8	2,4 8
Dielectric with standing Voltage						3,8	3,8						
Insulation Resistance	4,8					4,9	4,9						
Current Leakage													
Instant Cutoff												6	6
Handling Ergonomics	2												
Connector Mating Force		2											
Connector Locking Strength			2										
Contact Retention Force		3						3					
Crimp Tensile Strength			3						3				
Resistance to “Kojiri”				3									
Thermal Shock					5								
Humidity(Steady State)						5							
Industrial SO2 Gas							5						
Temperature Life (Heat Aging) ①	5							2	2				
Temperature Life (Heat Aging) ②					3						3	3	3
Resistance to Cold										3			
Dust Bombardment											5		
Compound Environment Resistance												5	
Resistance to Shock													5

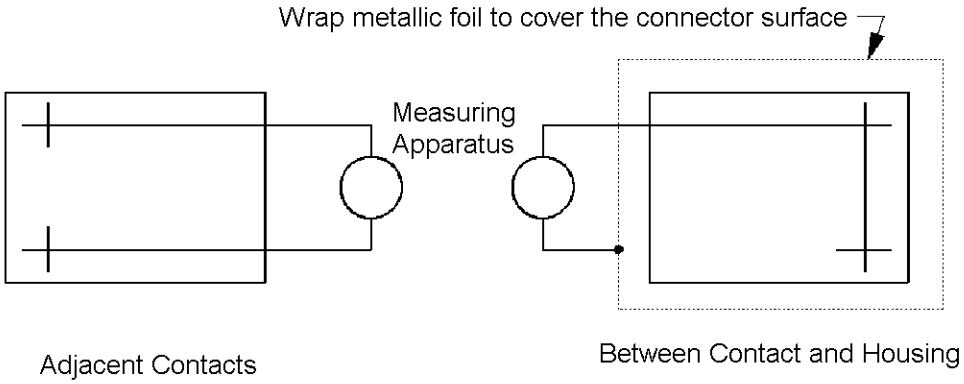
* Numbers indicate sequence in which tests are performed.

Fig. 3



Deduct the resistance of the wire "L" from the measured

Fig.4



Adjacent Contacts

Between Contact and Housing

Fig.5

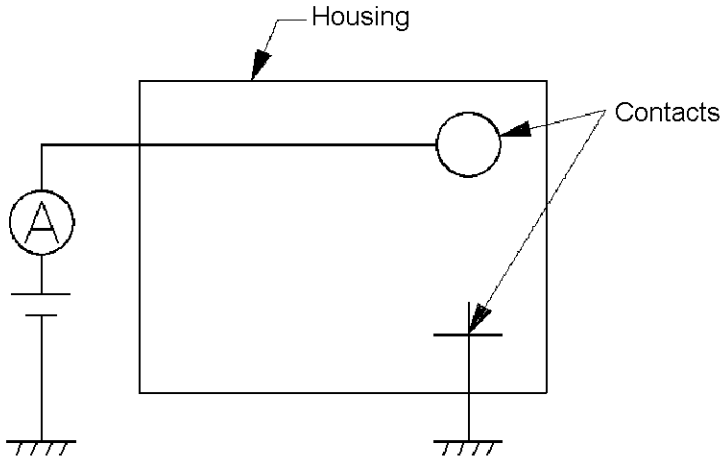


Fig.6

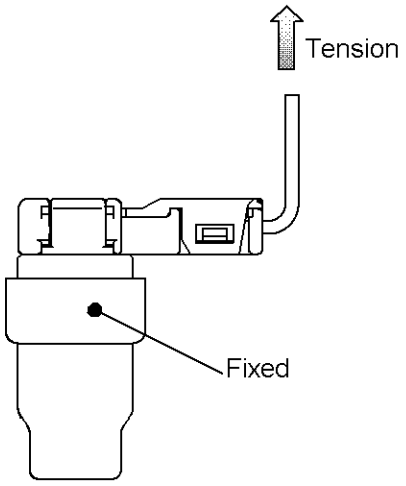


Fig.7

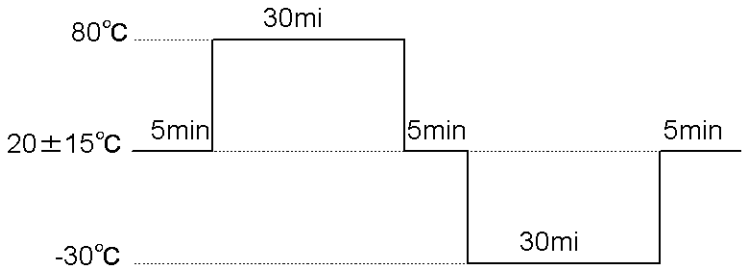


Fig.8

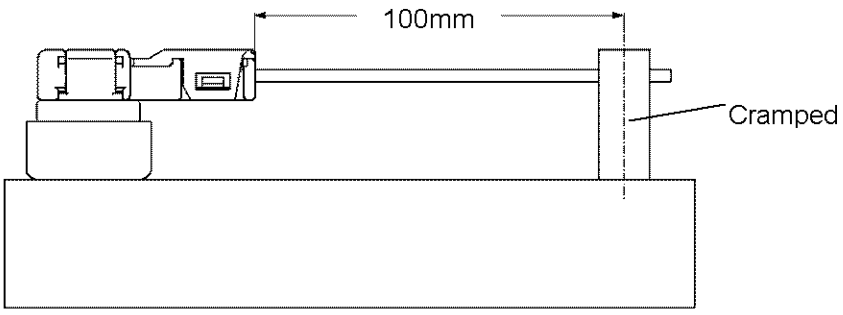


Fig.9

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

Product Part No.	Description
1376030	SQUIB CONNECTOR 11DIA PLUG HOUSING
1376031	SQUIB CONNECTOR 11DIA LOCKING BUTTON
353376	SQUIB CONTACT(Φ1mm SOCKET)
353379	FERRITE(SQUIB CONNECTOR)
699638	SHORT CIRCUIT RING ASSEMBLY
1376688	11DIA SQUIB CONNECTOR SLIM TYPE PLUG HOUSING
1376689	11DIA SQUIB CONNECTOR SLIM TYPE LOCKING BUTTON
1473139	11DIA SQUIB CONNECTOR MK-II PLUG HOUSING
1473140	11DIA SQUIB CONNECTOR MK-II LOCKING BUTTON
1612121	11DIA SQUIB CONNECTOR COMPACT TYPE PLUG HOUSING
1612122	11DIA SQUIB CONNECTOR COMPACT TYPE LOCKING BUTTON
1827120	11DIA SQUIB CONNECTOR COMPACT TYPE LOCKING BUTTON
1612123	FERRITE(SQUIB CONNECTOR)
1612124	Φ1mm SOCKET CONTACT