
0.64/2.3 SERIES CONNECTOR

1. Scope

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of 0.64/2.3 hybrid connector. Applicable product description and part numbers are as shown in Fig.10.

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.

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2.1 AMP Specifications:

- A. 109-5000 : Test Specification General Requirements for Test Methods
- B. 114-5329 : Application Spec. (0.64Rec)
- C. 114-5411 : Application Spec. (2.3Rec)
- D. 501-5943 : 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 C3406 Low Voltage Wires and Cables for Automobiles
- D. JIS D0204 Method of High and Low Temperature Test for Automobile Parts
- E. JIS D1601 Vibration Testing Method for Automobile Parts
- F. MIL-STD-202 Testing Method 208: Method of Soldering

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 Materials:

A. Contact:

Description	Material	Finish
0.64 Tab(Male)	Brass	Tin plating
2.3 Tab(Male)	Brass	Tin plating
*2.3 Tab(Male)	Copper Alloy	Tin plating
0.64 Receptacle(Female)	Copper Alloy	Tin plating
2.3 Receptacle(Female)	Copper Alloy	Tin plating

Fig.1

*apply to 1939608-3, 1939608-4

B. Housing : PBT

C. Wire

Contact	Wire Size
0.64	0.3~0.5mm ²
2.3	0.3~2.0mm ²

Fig.2

3.3 Ratings:

A.Voltage rating: 12 V DC

B.Temperature rating: -40°C to 105°C (Include a temperature rise by the electricity)

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.3 and Fig.4. 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	Confirmation of Product	Meets requirements of product drawing and AMP Specification 114-5411 , 114-5329.		Visually ,dimensionally and functionally inspected per applicable quality inspection plan
Electrical Requirements				
3.5.2	Termination Resistance (Low Level)	0.64	30 mΩ Max. (Initial) 30 mΩ Max. (Final)	Subject mated contacts assembled in housing to 20 mV Max. open circuit at 10 mA. Fig. 5 AMP Spec. 109-5311-1
		2.3	10 mΩ Max. (Initial) 10 mΩ Max. (Final)	
3.5.3	Termination Resistance (Specified Current)	0.64	10 mΩ Max. (Initial) 30 mΩ Max. (Final)	Subject mated contacts assembled in housing to 12 V Max. open circuit at 1A. Fig.5 AMP Spec. 109-5311-2
		2.3	3 mΩ Max. (Initial) 6 mΩ Max. (Final)	
3.5.4	Dielectric Withstanding Voltage	No creeping discharge or flashover shall occur.		Impressed voltage 1kVAC for 1 min. Mated connector. Fig.6 AMP Spec. 109-5301
3.5.5	Insulation Resistance	100 MΩ Min. (Initial) 100 MΩ Min. (Final)		Impressed voltage 500VDC Mated connector. Fig.6 AMP Spec. 109-5302
3.5.6	Temperature Rise	0.64	60°C Max.	Measure temperature rising at wire crimped by applied current to all positions. Fig.9 AMP Spec. 109-5310
		2.3	60°C Max.	
3.5.7	Fuse matching property	No ignition is allowed during the test.		Apply the current to only one position. Applied Current : Fig. 7
Physical Requirements				
3.5.8	Vibration	No electrical discontinuity greater than 1 μ sec. shall occur. Satisfy requirements of test item on the “3.6 sequence”.		Vibration Frequency : 10→200→10Hz/10min. Acceleration : 29.4 m / s ² Vibration Direction : X, Y, Z Duration: Back and Forth:4hours Other:2hours Mounting: Fig. 8

Fig.3 (To be continued)

Para.	Test Items	Requirements	Procedures
3.5.9	Shock	No electrical discontinuity greater than 1 μ sec. shall occur.	Acceleration : 981m/s ² Waveform : Half sine wave Duration : 6ms.Velocity Number of Drops: 3 drops each directions of X, Y,Z axes, totally 9 drops Mounting : Fig. 8 AMP Spec. 109-5208
3.5.10	Connector Mating Force	75N Max.	Operation Speed: 100mm/min. Measure the force required to mate connectors. AMP Spec. 109-5206
3.5.11	Connector Unmating Force	98N Max.	Operation Speed: 100mm / min. Measure the force required to unmate connectors. (without housing lock) AMP Spec. 109-5206
3.5.12	Connector Locking Strength	100N Min.	Apply an axial pull-off load to one of the mated housing, measure locking strength. Operation Speed: 100mm/min. AMP Spec. 109-5210
3.5.13	Contact Retention Force(Secondary Lock)	100N Min.	Measure contact retention force with secondary lock set it effect. Operation Speed: 100mm/min. AMP Spec. 109-5212
3.5.14	Durability (Repeated Mate/Unmating)	Satisfy requirements of test item on the Para.3.6 Test Sequence	Number of Cycles : 20 cycles. AMP Spec. 109-5213
3.5.15	Solder ability	Wet Solder Coverage : (Plated area only) 95 % Min.	Solder bath : Sn-40Pb Solder Temperature :235 \pm 5 $^{\circ}$ C Immersion Duration :5 \pm 0.5sec. Flux : Alpha100 AMP Spec.109-5203
3.5.16	Resistance to soldering heat	After the test, do not produce the physical damage.	Solder bath : Solder temperature : 260 \pm 5 $^{\circ}$ C Immersion duration : 10 \pm 1sec. Manual solder : Solder temperature : 350 \pm 10 $^{\circ}$ C Immersion duration : 1~2sec. Perform it so that power is not added to the soldering department.

Fig.3 (To be continued)

Para.	Test Items	Requirements	Procedures
3.5.17	Handling Ergonomics	No abnormalities allowed in manual mating/unmating handling.	Manually operated.
3.5.18	Retention force of Tab	15N Min.	Measure the retention force between housing and tab contact. Operation speed: 100mm/min
3.5.19	Thermal Shock	Satisfy requirements of test item on the "3.6 sequence".	-40°C/30min., 85°C/30min. Making this a cycle, repeat 500 cycles. AMP Spec. 109-5103
3.5.20	Temperature Life (Heat Aging)	Satisfy requirements of test item on the "3.6 sequence".	85°C, 96hours AMP Spec. 109-5104
3.5.21	Resistance to Cold	Satisfy requirements of test item on the "3.6 sequence".	-40°C, 72hours AMP Spec. 109-5108

Fig.3 (End)

3.6 Product Qualification Test Sequence

No.	Test Examination	Test Group										
		1	2	3	4	5	6	7	8	9	10	11
		Test Sequence ^(a)										
3.5.1	Confirmation of Product	1	1	1,3	1,5	1,3	1,7	1,5	1,6	1,5	1,3	1,3
3.5.2	Termination Resistance (Low Level)	3			2,6		2,5	2,6	2,7	2,6		
3.5.3	Termination Resistance (Rated Current)	4			3,7		3,6	3,7	3,8	3,7		
3.5.4	Dielectric withstanding Voltage	7										
3.5.5	Insulation Resistance	6										
3.5.6	Temperature Rise	5							4,9			
3.5.7	Fuse matching property			2								
3.5.8	Vibration				4							
3.5.9	Shock					2						
3.5.10	Connector Mating Force	2										
3.5.11	Connector Unmating Force	8										
3.5.12	Connector Locking Strength		3									
3.5.13	Contact Retention Force		4									
3.5.14	Durability (Repeated Mate/Unmating)						4					
3.5.15	Solder ability		2									
3.5.16	Resistance to soldering heat										2	
3.5.17	Handling Ergonomics							8	10	8		
3.5.18	Retention force of Tab											2
3.5.19	Thermal Shock							4				
3.5.20	Temperature Life(Heat Aging)								5			
3.5.21	Resistance to Cold									4		

(a) Numbers indicate sequence in which tests are performed.

Fig.4

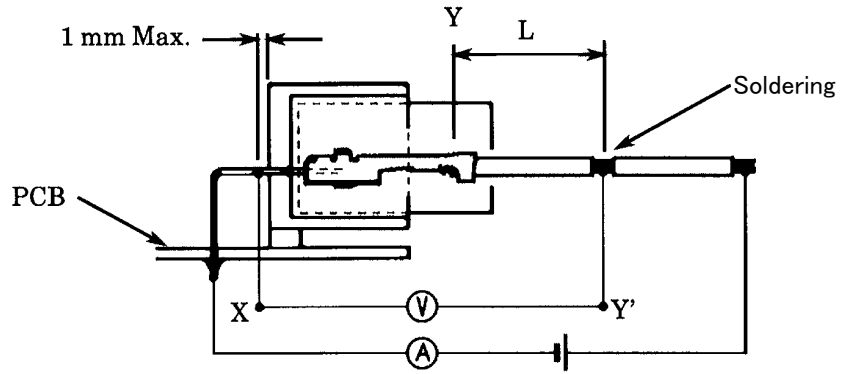


Fig.5

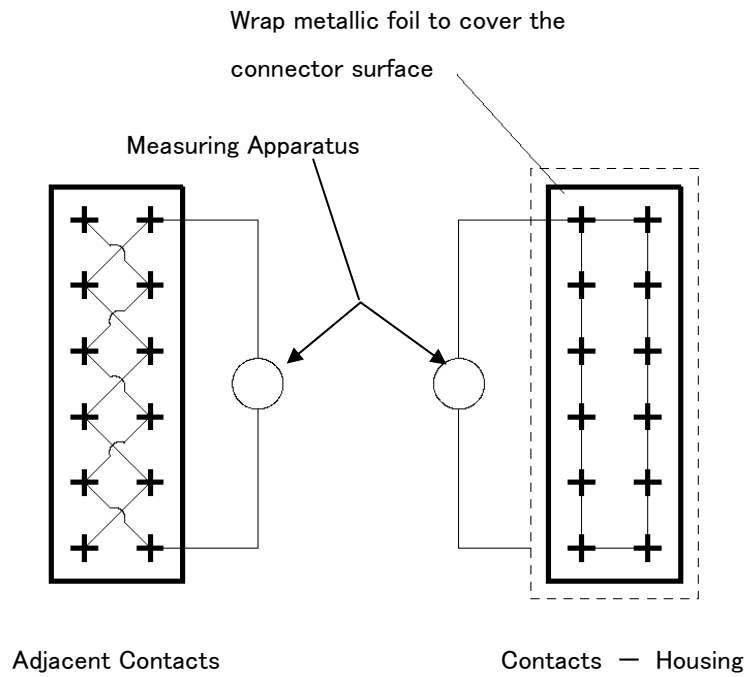


Fig.6

Wire Size (mm ²)	Test Current (A)	Duration(hours)
1.25	22	24
	27	1

Fig.7

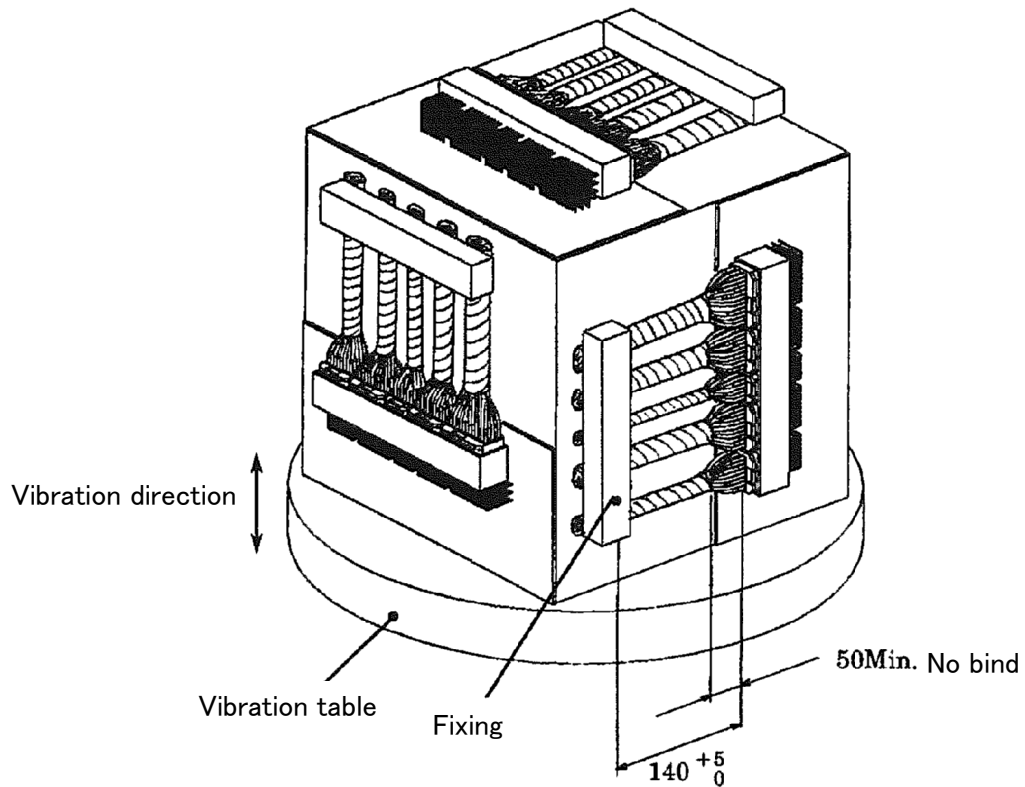


Fig.8

Pos.	Contact Size	Wire Size(mm ²)	Current(A)	Temperature Rising
20	0.64	0.5	3.0	60°C以下
	2.3	2.0	10.0	

Fig.9

製品型番	名称
1939608-1	0.64/2.3 20Position Cap Assembly H-Type (Male Connector)
1939608-2	0.64/2.3 18Position Cap Assembly H-Type (Male Connector)
1939608-3	0.64/2.3 20Position Cap Assembly H-Type (Male Connector)
1939608-4	0.64/2.3 18Position Cap Assembly H-Type (Male Connector)
*11939605	0.64/2.3 20Position Plug Asembly (Female Connector)
*11674311	0.64Ⅲ Receptacle Contact (Sn)
*11981341	2.3 Receptacle Contact (Sn)

Fig.10

*1Note: Part number is consisted from listed base number and 1 digit numeric prefix and Suffix with dash. Refer to catalog or customer drawing for specific part numbers for each base number. When prefix is zero, zero and dash are omitted.