

Product Specification

108-60022

Hybrid Mini Drawer Connector, Lead Free Version

1. Scope:

1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of Hybrid Mini Drawer Connector, Lead Free Version.

The 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 this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements this specification and referenced documents, this specification shall take precedence.

2.1 AMP Specifications:

- A. 109-5000: Test Specification, General Requirements for Test Methods
- B. 114-5182: Application Specification
- C. 108-60016: CT Connector Product Specification
- D. 501-5231: Qualification Test Report

2.2 Commercial Standard and Specifications:

- MIL-STD-202: Test Methods for Electronic and Electrical Component Parts

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					APP	T.SASAKI	NO	108-60022	REV	LOC
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		PAGE 1 of 7	TITLE Hybrid Mini Drawer Connector, Lead Free Version							
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3. Requirements:

3.1 Design and Construction:

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

3.2 Materials:

- A. Signal Line Contact: Copper Alloy
 Finish: Mating Side: Gold plated over Nickel plated
 CT Conn. Side: Tin plated over Nickel plated
- B. Power Line Contact: Copper Alloy
 Finish: Gold Plating Vision
 Mating Side: Gold plated over Nickel plated
 Crimp Side: Tin plated over Nickel plated
 Tin plated Vision: Tin plated all over
- C. Housing: Thermoplastic UL94V-0

3.3 Ratings:

- A. Voltage Rating: A-1 Signal Line Contact: 30VAC
 A-2 Power Line Contact: 250VAC
- B. Current Rating: B-1 Signal Line Contact: 2A
 B-2 Power Line Contact: Refer to Fig.1
- C. Temperature Rating: -30°C to +105°C (Including temperature rising by energised current)

Wire		Current Rating
(mm ²)	AWG	
1.25	#16	15A
0.85	#18	10A
0.5	#20	7A
0.3	#22	5A
0.2	#24	4A

(Except Current Rating of 18 Pos.(6-12): 12A)

Fig.1


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. All tests shall be performed in the room temperature unless otherwise specified.

3.5 Test Requirements and Procedures Summary:


Pare.	Test Items	Requirements	Procedures			
3.5.1	Examination of Product	Product shall be conforming to the requirements of applicable product drawing and application specification	Visual inspection No physical damage			
Electrical Requirements						
3.5.2	Termination Resistance (Low Level)	Signal Line: 30 mΩ max.(Initial) 40 mΩ max.(Final) Power Line: 6 mΩ max.(Initial) 10 mΩ max.(Final)	Subject mated contacts assembled in housing to closed circuit of 10 mA max. at open circuit voltage of 20 mV max. Fig.4. AMP Spec. 109-5311-1			
3.5.3	Insulation Resistance	1,000 MΩ MIN. (Initial) 100 MΩ Min. (Final)	Impressed voltage 500 VDC. Test between adjacent circuits of mated connectors. AMP Spec.109-5302			
3.5.4	Dielectric Strength	No creeping discharge nor flashover shall occur. Current leakage: 1.0mA Max.	Signal Line: 1kVAC for 1 minute. Power Line: 1.8kVAC for 1 minute. Test between adjacent circuits of mated connectors. AMP Spec.109-5301			
3.5.5	Temperature Rising	30°C max. under loaded specified current.	Measure temperature rising by energized current. AMP Spec.109-5310 METHOD 2			
3.5.6	Crimp Tensile Strength	Wire Size		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		
		Crimp Tensile (Min)				
		mm ²	(AWG)		N	(kgf)
		0.2	#24		19.6	(2.0)
		0.3	#22		34.3	(3.5)
		0.5	#20		45.1	(4.6)
3.5.7	Contact Retention Force	Signal Line Contact: 9.8N(1kgf)Min.	Apply an axial pull-off load to crimped wire. Operation Speed: 100mm/min			
		Power Line Contact: 58.8N(6kgf)Min				
3.5.8	Contact Insertion Force	14.7N(1.5kgf) Max. per contact	Measure the force required to insert Power Line contact into housing			

Fig.2 (To be continued)

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Para.	Test Items	Requirements	Procedures		
3.5.9	Connector Mating Force	(Para 3.5.11)		Operation Speed: 100mm/min. Measure the force required to mated connectors.	
		Pos	Initial N (kgf)Max.		After Durability N (kgf) Max.
		4-8	38.2(3.9)		56.8(5.8)
		4-12	40.2(4.1)		60.8(6.2)
		6-12	43.1(4.4)		64.7(6.6)
		4-20	45.1(4.6)		67.6(6.9)
3.5.10	Connector Unmating Force	(Para 3.5.11)		Operation Speed: 100mm/min. Measure the force required to unmate connectors.	
		Initial and after Durability			
		4-8 Pos.	6.3N(0.64 kgf) Min.		
		4-12 Pos.	6.5N(0.66 kgf) Min.		
		6-12 Pos.	6.7N(0.68 kgf) Min.		
		4-20 Pos.	6.9N(0.70 kgf) Min.		
3.5.11	Durability (Repeated Mate/Unmating)	Signal Line: 40mΩ max. (Final)		Operation Speed: 100mm/min. No. of Cycles: Gold Plating Version: 3000cycles Tin Plating Version: 60cycles AMP Spec.109-5213	
		Power Line: 10mΩ max. (Final)			
3.5.12	Vibration (Frequency)	No electrical discontinuity greater than 1μsec. Shall occur.		Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52mm amplitude 2 hour each of 3 mutually perpendicular planes. 100mA Applied. AMP Spec.109-5201	
3.5.13	Physical Shock	No electrical discontinuity greater than 1μsec. Shall occur.		Accelerated Velocity: 490m/s ² (50G) Waveform: Halfsine Duration: 11msec. Velocity Change: 3.4m/s ² Number of Drops: 18Drops AMP Spec.109-5208	
3.5.14	Thermal Shock	Signal Line: 40mΩ max. (Final) Power Line: 10mΩ max. (Final)		-55°C/30 min., 85°C/30 min. Making this a cycle, repeat 25 cycles. AMP Spec.109-5103Condition A	
3.5.15	Humidity-Temperature Cycling	Insulation resistance (Final): 100 MΩ Min. Termination resistance: Signal Line: 40mΩ max. (Final) Power Line: 10mΩ max. (Final)		Mated connector, 25~65°C, 95% R.H. 10 cycles Cold shock -10°C AMP Spec.109-5106	
3.5.16	Salt Spray	Signal Line: 40mΩ max. (Final) Power Line: 10mΩ max. (Final)		Subject mated connectors to 5% Salt Concentration for 48 hours: MIL-STD-202, METHOD 101 AMP Spec.109-5101 ConditionA	

Fig.2. (End)

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3.6 Product Qualification and Test Sequence

Test or Examination	Test Groups								
	1	2	3	4	5	6	7	8	9
	Test Sequence (a)								
Examination of Product	1,3	1,4	1,3	1,5,8	1,8	1,4	1,4	1,4	1,5
Termination Resistance (Low Level)					3,9	2,5	2,5	2,5	2,6
Dielectric Strength				3,7					
Insulation Resistance				2,6					
Temperature Rising			2						
Vibration (Low Frequency)									3
Physical Shock									4
Connector Mating Force					2,6				
Connector Unmating Force					4,7				
Contact Insertion Force		2							
Contact Retention Force		3							
Contact Tensile Strength	2								
Durability (Repeated Mate/Unmating)					5				
Thermal Shock						3			
Humidity-Temperature Cycling				4			3		
Salt Spray								3	

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

Fig.3 (End)

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

Product Part No.	Product Descriptions
x-292185-x	Receptacle Ass'y, Lead Free
x-292186-x	Receptacle Ass'y 18P, Lead Free
x-292181-x	Plug Ass'y, Lead Free
x-292182-x	Plug Ass'y, Lead Free Sequential Type (Circuit No.1)
x-292183-x	Plug Ass'y 18P, Lead Free
x-179316-x	Receptacle Contact # 20 ~ 16 AWG
x-179317-x	Receptacle Contact # 24 ~ 20 AWG
x-316458-x	Receptacle Contact # 20 ~ 16 AWG Ground Contact
x-179321-x	Plug Tab Contact # 20 ~ 16 AWG
x-179322-x	Plug Tab Contact # 24 ~ 20 AWG
x-292302-x	CT hybrid Mini-Drawer Conn Plug Ass'y

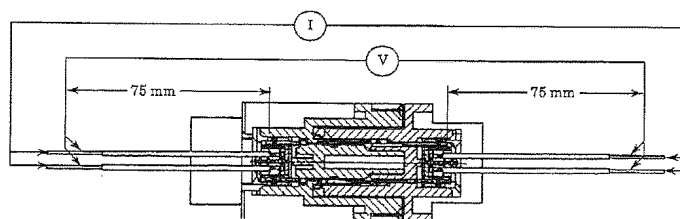


Fig. 4-1 Signal Line Termination Resistance Measuring Points

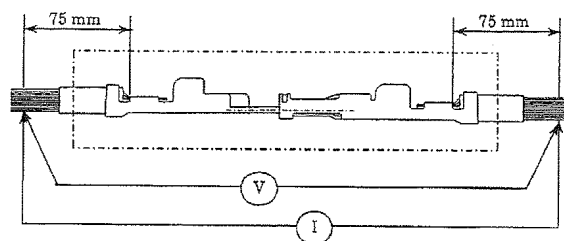


Fig. 4-2 Power Line Termination Resistance Measuring Points