

# Product specification

## 108-60021

### 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 Mini Drawer Connector, Lead Free Version.

The applicable product description and part numbers are as shown in Fig.1:

Product Part No.	Descriptions	
x-292178-x	22P	Connector Assembly, Lead Free
x-292177-x	14P	Connector Assembly, Lead Free

Fig. 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. 501-5185 Test Report

- 2.2 Military Standard and Specifications:

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

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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 Materials:

A. Contact:

Material: Copper Alloy

Finish: All over nickel under plate

Mating area: Au plate

Post form area: Tin plate

B. Housing:

Material: Thermoplastic

3.3 Ratings:

A. Voltage Rating: 125 VAC

B. Current Rating : 1A

C. Temperature Rating: -20°C to +120°C

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:

Para.	Test Items	Requirements	Procedures
3.5.1	Termination Resistance (Low Level)	40 mΩ Max. (Initial) 50 mΩ Max. (Final)	Subject mated contacts assembled in housing to closed circuit current of 10 mA max. at open circuit voltage of 20 mV max. Fig. 4. AMP Spec. 109-5306
3.5.2	Insulation Resistance	1000 MΩ Min. (Initial) 100 MΩ Min. (Final)	Measured by applying test potential between the adjacent contacts, in the unmated connectors. MIL-STD-202, Method 302 Condition B
3.5.3	Dielectric Strength	Connector must withstand test potential of 1 kVAC for 1 minute. Current leakage must be 0.5 mA Max.	Measured by applying test potential between the adjacent contacts, in the unmated connectors. MIL-STD-202, Method 301
Physical Requirements			
3.5.4	Vibration (Low Frequency)	No electrical discontinuity greater than 1 microsecond shall occur.	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52 mm amplitude 2 hours each of 3 mutually perpendicular planes. MIL-STD-202, Method 201
3.5.5	Physical Shock	No electrical discontinuity greater than 1 microsecond shall occur	Subject mated connectors to 490.3 m/s <sup>2</sup> halfsine shock pulses of 11 millisecond duration: 3 shocks on each direction applied along the 3 mutually perpendicular planes totally 18 shocks; MIL-STD-202, Method 213, Condition A

Fig. 2 (To be continued)

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Para.	Test Items	Requirements			Procedures
3.5.6	Connector Mating Force	Pos	Initial	Finished	Using autograph, measure the force required to mate connector by operating at 100 mm a minute. AMP Spec. 109-5206
		14	14.7 N (1.5 kgf) Max.	24.5 N (2.5 kgf) Max.	
		22	24.5 N (2.5 kgf) Max.	39.2 N (4 kgf) Max.	
3.5.7	Connector Unmating Force	Pos	Initial	Finished	Using autograph, measure the force required to mate connector by operating at 100 mm a minute. AMP Spec. 109-5206
		14	2.9 N (0.3 kgf) Min.	2.9 N (0.3 kgf) Min.	
		22	4.9 N (0.5 kgf) Min.	4.9 N (0.5 kgf) Min.	
3.5.8	Contact Retention Force	14.7 N (1.5 kgf) Min.			Apply axial load to contact by operating at a rate of 100 mm a minute. AMP Spec. 109-30
3.5.9	Durability (Repeated Mate/Ummating)	Termination Resistance 50 mΩ Max. (Final)			Mate and unmate connectors for 1000 cycles at a rate of 100 mm/min. AMP Spec. 109-30
3.5.10	Thermal Shock	Termination Resistance 50 mΩ Max. (Final)			Subject mated connectors to 5 cycles between -55°C and +85°C MIL-STD-202, Method 107 Condition A
3.5.11	Humidity-Temperature Cycling	Insulation Resistance 100 MΩ Min. (Final) Termination Resistance 50 mΩ Max. (Final)			Subject mated connectors to 10 cycles of humidity-temperature changes between 25°C and 65°C at 95% R.H. MIL-STD-202, Method 106
3.5.12	Salt Spray	Termination Resistance 50 mΩ Max. (Final) Must meet visual & electrical requirements, where applicable.			Subject mated connectors to 5 % salt concentration for 48 hours; MIL-STD-202, Method 101 Condition B

Fig.2. (End)

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3.6 Product Qualification and Requalification Tests

Test or Examination	Test Group						
	1	2	3	4	5	6	7
	Test Sequence						
Examination of Product	1, 5	1, 5	1, 6	1, 3	1, 4	1, 4	1, 4
Termination Resistance (Low Level)		2, 6	3, 7		2, 5	2, 5	2, 5
Dielectric Withstanding Voltage	3, 7						
Insulation Resistance	2, 6						
Vibration (Low Frequency)		3					
Physical Shock		4					
Connector Mating Force			2				
Connector Unmating Force			4				
Contact Retention				2			
Durability (Repeated Mating/Unmating)			5				
Thermal Shock					3		
Humidity-Temperature Cycling	4					3	
Salt Spray							3

Fig. 3

4. Quality Assurance Provisions

4.1 Test Specimens:

4.1.1 The specimens to be employed for the test shall be conforming to the applicable product drawing (s)

4.1.2 No sample shall be reused, unless otherwise specified.

4.2 Test Conditions:

All the tests shall be performed under any combination of the following test conditions

Temperature: 15°C – 35°C

Relative humidity: 45% - 75%

Atmospheric Pressure: 86.7 – 107 kpa (650 – 800 mmHg)

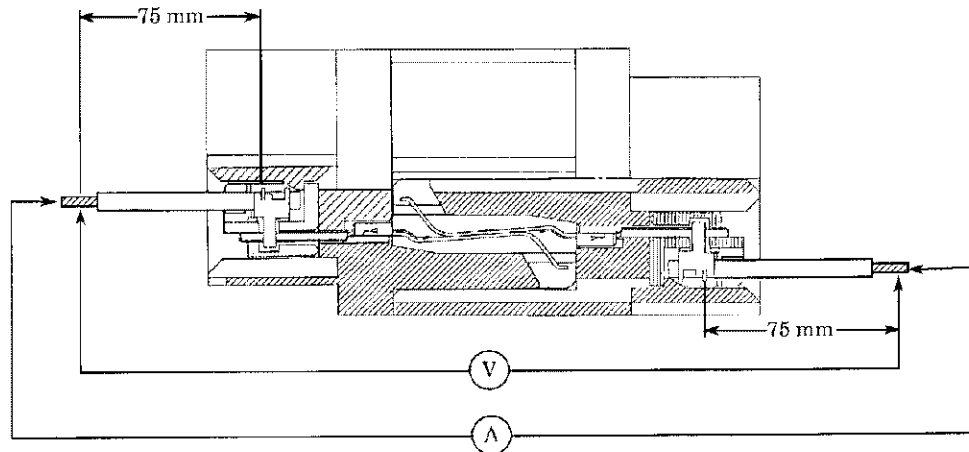


Fig. 4

Termination Resistance Measuring Circuit Diagram