

108-5528

NUMBER:

Customer Release

SECURITY CLASSIFICATION:

108 - 5528 Product Specification

High Current Drawer Connector

1. Scope :

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of High Current Drawer Connector.

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. 501-5228 Test Report :

2.2 Commercial Standards and Specifications :

A. MIL-STD-202 Military Specification : on : Test Methods for Electronic and Electric Parts

					DR. 30 Jul'96	SHEET 1 OF 7	AMP AMP (Japan), Ltd. Kawasaki, Japan			
					Y. Watanabe		LOC J	LOC A	NO 108-5528	REV A
					CHK. 30 Jul'96					
					T. Yamada					
PRINT	DIST.	A	Revised (FJ00-1083-97)	Y.W	APP. 30 Jul'96	NAME High Current Drawer Connector				
		0	Release (FJ00-4531-96)	Y.W T.Y						
		LTR	REVISION RECORD	DR	CHK	DATE				

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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 : Signal Line Contact Copper Alloy, Gold plate over Nickel plate.
- Power Line Contact Receptacle : Copper, Gold plate over Nickel plate
- Pin : Copper, Gold plate over Nickel plate

B. Housing : Thermoplastic, UL 94 V-0

C. Other : Bush Copper Alloy, Zinc plate

3.3 Ratings :

- A. Voltage Rating : 250 VAC
- B. Current Rating : Refer to Fig. 1 for maximum allowable current to be applied.
(However, at temperatures 60 °C Max.)
- C. Temperature Rating : - 20 °C to 120 °C
(However, this includes a temperature rise and shall be set as low as possible in actual use.)

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.

Wire Size (AWG)	Signal	Power
AWG #24	4 A Max.	-
AWG #22	5 A Max.	
AWG #20	7 A Max.	
AWG #18	8 A Max.	
AWG #16	9 A Max.	12 A Max.
AWG #14	-	17 A Max.
AWG #12		20 A Max.

Note : The power circuit is defined as one of two poles per side (four poles in total). The signal circuit is defined as one other than the signal circuit.

Fig. 1

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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	Visual inspection No physical damage
Electrical Requirements			
3.5.2	Termination Resistance (Specified Current)	Signal : Initial 10 m Ω Max. Final 20 m Ω Max. Power : Initial 2 m Ω Max. Final 4 m Ω Max.	Subject mated contacts in assembled connectors to 5 V (DC) open circuit at 1 A (DC) closed circuit. Measure potential drop of the contact and remove potential drop due to the 75 mm equivalent wire length (150 mm in total) from all readings. Calculate resistance. AMP Spec. 109-5311-2
3.5.3	Dielectric withstanding Voltage	No creeping discharge nor flashover shall occur.	2 kVAC for 1 minute. Test between adjacent circuits of mated connectors. AMP Spec. 109-5301
3.5.4	Insulation Resistance	5000 M Ω Min. (Initial) 2000 M Ω Min. (Final)	Impressed voltage 500 V DC. Test between adjacent circuits of mated connectors. AMP Spec. 109-5302
3.5.5	Temperature Rising	Signal : 60 °C Max. Power : 30 °C Max.	Measure temperature rising by energized current. Fig. 1 AMP Spec. 109-5310

Fig. 2 (CONT)

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			Para.	Test Items	Requirements	Procedures	
Mechanical Requirements							
	3.5.6	Crimp Tensile Strength	Signal	Wire Size (AWG)	Strength	Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 100 mm / min. AMP Spec. 109-5205	
				0.2 mm ² (#24)	29.4 N (3 kgf) Min.		
				0.3 mm ² (#22)	49 N (5 kgf) Min.		
				0.5 mm ² (#20)	78.4 N (8 kgf) Min.		
				0.75 mm ² (#18)	117.6 N (12 kgf) Min.		
				1.25 mm ² (#16)	186.2 N (19 kgf) Min.		
				2.0 mm ² (#14)	225.4 N (23 kgf) Min.		
				Power	1.25 mm ² (#16)		196 N (20 kgf) Min.
					2.0 mm ² (#14)		313.6 N (32 kgf) Min.
3.3 mm ² (#12)	470.4 N (48 kgf) Min.						
	3.5.7	Contact Retention Force	Signal 49 N (5 kgf) Min. Power 196 N (20 kgf) Min.	Apply an axial pull-off load to crimped wire. However, for wire sizes smaller than 0.3 mm ² (AWG #22), use 0.5 mm ² or larger wire to make sample, because the size of wire is smaller than its crimp in strength. Operation Speed : 100 mm / min. AMP Spec. 109-5205			
	3.5.8	Connector Mating Force	4-10 Pos. : 240.1 N (24.5 kgf) Max.	Operation Speed : 100 mm / min. Measure the force required to mate connectors. AMP Spec. 109-5206			
	3.5.9	Connector Unmating Force	4-10 Pos. : 17.15 N (1.75 kgf) Min.	Operation Speed : 100 mm / min. Measure the force required to unmate connectors. AMP Spec. 109-5206			
	3.5.10	Durability (Repeated Mate / Unmating) *1	Signal : 20 mΩ Max. (Final) Power : 4 mΩ Max. (Final)	Operation Speed : 50 cm/sec. No. of Cycles : 2000 cycles AMP Spec. 109-5213			

Fig. 2 (CONT)

*1 No evaluation of contact surface condition after durability test.

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Para.	Test Items	Requirements	Procedures
3.5.11	Vibration (Low Frequency)	No electrical discontinuity greater than 0.1 μ sec. shall occur. Signal : 20 m Ω Max. (Final) Power : 4 m Ω Max. (Final)	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. 100 mA applied. AMP Spec. 109-5201 Fix a half of connectors
Environmental Requirements			
3.5.12	Humidity, Steady State	Insulation resistance (Final) 2000 M Ω Min. Signal : 20 m Ω Max. (Final) Power : 4 m Ω Max. (Final)	Mated connector, 90~95 % R. H. 40 °C 96 hours AMP Spec. 109-5105
3.5.13	Salt Spray	Signal : 20 m Ω Max. (Final) Power : 4 m Ω Max. (Final)	Subject mated connectors to 5 % salt concentration for 96 hours : AMP Spec. 109-5101
3.5.14	Temperature Life (Heat Aging)	Signal : 20 m Ω Max. (Final) Power : 4 m Ω Max. (Final)	Mated connector 100 °C. Duration : 4 days AMP Spec. 109-5104

Fig. 2 (End)

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3.6 Product Qualification Test Sequence

Test of Examination	Test Group								
	1	2	3	4	5	6 (b)	7	8	9
	Test Sequence (a)								
Examination of Product	1, 5, 8	1, 3	1, 3	1, 3	1, 8	1, 4	1, 4	1, 4	1, 4
Termination Resistance (Rated Current)					3, 9	2, 5	2, 5	2, 5	2, 5
Dielectric withstanding Voltage	3, 7								
Insulation Resistance	2, 6								
Temperature Rising		2							
Vibration (Low Frequency)						3			
Connector Mating Force					2, 6				
Connector Unmating Force					4, 7				
Contact Retention Force				2					
Crimp Tensile Strength			2						
Durability (Repeated Mate/Unmating)					5				
Humidity (Steady State)	4						3		
Salt Spray								3	
Temperature Life (Heat Aging)									3

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

(b) Discontinuities shall not take place in this test group, during tests.

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

Product Part No.	Description
<input type="checkbox"/> -353010- <input type="checkbox"/>	High Current Drawer Conn. Hs'g
0-170484-1	Signal Contact
0-66255-6	Power Pin Contact
0-172740-2	Power Receptacle Contact

Appendix. 1

SHEET 7 OF 7	AMP		AMP (Japan), Ltd. Kawasaki, Japan	
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