
D-Sub Connector

1. SCOPE**1.1. CONTENTS**

This specification covers the performance, tests and quality requirements for the D-Sub Connector.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in Tyco 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENT

The following Tyco documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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. TYCO SPECIFICATIONS

- A. 109-1: General Requirements for Test Specifications
- B. 109-197 : Tyco Specification vs EIA and IEC Test Methods
- C. 501-57623 : Test Report

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. Housing : Thermoplastic or Thermoplastic High Temp., UL94V-0.
- B. Contact : Copper Alloy, Gold plated on mating end over Nickel under-plated;
Tin or Tin/lead plated on soldering end over Nickel under-plated
- C. Shell : Steel, Nickel plated
- D. Screwlock : Copper Alloy, Nickel plated
- E. Boardlock : Copper Alloy, Tin or Tin/lead over Nickel under-plated

3.3. RATINGS

- A. Voltage: 250 VAC rms.
- B. Current: 2 A Max
- C. Temperature: - 55 °C to 105 °C

DR	DATE	APVD	DATE
Joseph Lee	07-Nov-2005	Wei-Jer Ke	07-Nov-2005

3.4.PERFOMANCE REQUEIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per AMP Specification 109-1 TEST REQUIREMENTS AND PROCEDURES SUMMARY.

3.5.TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM		REQUIREMENT	PROCEDURE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection.
ELECTRICAL REQUIREMENT			
2	Contact Resistance	20 m Ohm Max. Initial 40 m Ohm Max. Final	Subject mated contacts assembled in housing to 20mV Max open circuit at 100mA Max. EIA-364-6B.
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA Max.	1000VAC for 1minute Test between adjacent circuits of unmated connector. EIA-364-20B
4	Insulation Resistance	1000 M Ohm Min.	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
5	Temperature Rising	30°C Max. Under loaded rating current	Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value.
MECHANICAL REQUIREMENT			
6	Connector Mating Force	300 gf /per pin Max.	It should be tested in accordance with method 2013.1 of MIL-STD-1344A. Two mating connectors shall be fully mated or coupled at a rated specified.
7	Connector Unmating Force	20 gf /per pin Min.	It should be tested in accordance with method 2013.1 of MIL-STD-1344A. Two mating connectors shall be fully mated or coupled at a rated specified.
8	Durability	See Note	It should be tested in accordance with method 2016 of MIL-STD-1344A. Connector shall be subject to 100 cycles of insertion and withdrawal.
9	Vibration	No electrical discontinuity greater than 1 μ sec shall occur. See Note.	The connector mated with another connector shall be vibrated in accordance with method 2005.1 of MIL-STD-1344A test condition B. There shall be no current discontinuity longer than 1 micro-second during the test.

Figure 1 (Cont.)

MECHANICAL REQUIREMENT			
TEST ITEM		REQUIREMENT	PROCEDURE
10	Mechanical Shock	No electrical discontinuity greater than 1 μ sec shall occur. See Note.	Accelerate Velocity : 490m/s ² (50G) Waveform : Half-sine shock plus Duration : 11msec No. of Drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test. EIA-364-27B
11	Solderability	The inspected area of each lead must have 95% solder coverage minimum.	Steam Aging Preconditioning : 93+3/-5°C 、100%HR 、8hrs. <J-STD-002 category 3 aging> Solder pot temperature: 245±5°C, 5sec
ENVIRONMENTAL REQUIREMENTS			
12	Resistance to Wave Soldering Heat [For customer drawing is applied with wave process. See note 2]	No physical damage shall occur. (Apply to products whose contacts with non-Lead plating)	Solder Temp. : 265±5°C, 10±0.5sec. Tyco spec. 109-202, Condition B
	Resistance to Reflow Soldering Heat [For customer drawing is applied with Reflow process. See note 2]	No physical damage shall occur. (Apply to products whose contacts with non-Lead plating , soldering on small PCB)	Pre-soak condition, 85°C/85% RH for 168 hours. Pre Heat : 150~180°C, 90±30sec. Heat : 230°C Min., 30±10sec. Peak Temp. : 260+0/-5°C, 20~40sec. Duration : 3 cycles Tyco spec. 109-201, Condition B
13	Thermal Shock	See Note	Mated Connector -55+/-3°C (30 minutes), +85+/-2°C (30 minutes) Perform this a cycle, repeat 5 cycles EIA-364-32C
14	Humidity-Temperature Cycle	See Note	Mated Connector 25~65°C , 90~95% RH, 10 Cycles EIA-364-31B.
15	Temperature Life (Heat Aging)	See Note	Mated Connector 85°C , 250 hours, EIA-364-17B.
16	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2 °C and 5+/-1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.

Figure 1 (End)

Note 1 : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

Note 2 : Resistance to soldering process is indicated on notes of customer drawing. Select the appropriate test type which drawing notes are matched with

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group									
	A	B	C	D	E	F	G	H	I	J
	Test Sequence (a)									
Examination of Product	1, 7	1, 9	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3	1, 3	1, 3
Contact Resistance		2, 8	2, 5	2, 4	2, 4	2, 4	2, 4			
Dielectric withstanding Voltage	3, 6									
Insulation Resistance	2, 5									
Temperature Rising								2		
Mating Force		3, 7								
Unmating Force		4, 6								
Durability		5								
Vibration			3							
Mechanical Shock			4							
Solderability										2
Resistance to Soldering Heat									2	
Thermal Shock				3						
Humidity Temperature Cycling	4				3					
Temperature Life						3				
Salt Spray							3			

Figure 2

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

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