BOX HEADER SERIES CONNECTOR

1. SCOPE

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the BOX HEADER SERIES CONNECTOR.

1.2. QUALIFICATION

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

2. APPLICABLE DOCUMENT

The following TE 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 ELECTRONICS SPECIFICATIONS

A. 109-1: General Requirements for Test Specifications

B. 109-197：TE Specification vs EIA and IEC Test Methods

C. Test Report：501-99100

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 UL94V-0

B. Contact：Copper Alloy, Tin plating overall, Nickel under-plating overall.

3.3. RATINGS

A. Voltage: 250 VAC rms.

B. Current: 3A Max

C. Temperature: - 55 ℃ to 105℃

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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 mΩ Max. Initial 40 mΩ Max. Final	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-6B.
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA Max.	1.0K VAC for 1minute Test between adjacent circuits of unmated connector. EIA-364-20B
4	Insulation Resistance	10,000 MΩ Min.	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
5	**Temperature Rising**	**30℃ Max. Under loaded rating current**	**EIA-364-70, Method 2 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	0.34 Kgf/Pin Max.	Operation Speed： 50 mm/min. Measure the force required to mate connector. EIA-364-13B
7	Connector Unmating Force	0.042 Kgf/Pin Min.	Operation Speed： 50 mm/min. Measure the force required to unmate connector. EIA-364-13B
8	Durability	See Note	Operation Speed： 9 cycle/min. Durability Cycles：100 Cycles EIA-364-9C
9	Vibration	No electrical discontinuity greater than 1 μsec. shall occur. See Note.	Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.5mm amplitude 2 Hours each of 3 mutually perpendicular planes. 100mA Max. Applied. EIA-364-28D
10	Mechanical Shock	No electrical discontinuity greater than 1 μsec. 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

Figure 1（Cont.）

TEST ITEM		REQUIREMENT	PROCEDURE
11	Contact Retention Force	800 gf/pin Min.	Measure the contact retention force with Tensile strength tester.
12	Solder ability	Wet solder coverage：95% Min.	Solder Temperature：235+/-5℃ Duration：5+/-0.5 sec, J-STD-002B
Environmental Requirements			
13	Resistance to Wave Soldering Heat	No physical damage shall occur.	Solder Temp.：265±5℃, 10±0.5sec. Tyco spec. 109-202, Condition B
14	Thermal Shock	See Note	Mated Connector -55℃(30 minutes), +105℃(30 minutes) Perform this a cycle, repeat 5 cycles EIA-364-32C
15	Humidity-Temperature Cycle	See Note	Mated Connector 38~42℃ , 90~95% RH, 96Hours EIA-364-31B.
16	Temperature Life (Heat Aging)	See Note	Mated Connector 85+/-2℃ , 250 hours, EIA-364-17B.
17	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2 ℃ and 5+/-1% salt condition for 48+/-4hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.

Figure 1（End）

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

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group								
	A	B	C	D	E	F	G	H	I
	Test Sequence（a）								
Examination of Product	1, 7	1, 9	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3	1, 4
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						
Contact Retention Force								4	
Solderability									3
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.