MICRO SATA CONNECTOR

1.0 SCOPE

This specification covers the requirements for product performance, test methods and quality assurance provisions of Micro SATA Connector Pair consisting of matching Plugs and Receptacles.

2.0 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. 501-51072 Qualification Test Report

2.2 Commercial Standards and specifications

A. EIA-364 Electronic Industries Association

* Trademark
| Indicates change

3.0 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: Gold on mating area and Matte Tin or Gold on solder area, over Nickel on entire contact

B. Housing

Material:	High Temperature Thermoplastics, Glass Filled
Flame Class Rating:	UL 94V-0

3.3 Ratings

A. Contact

Voltage:	30V DC
Current:	1.5A per contact
Temperature:	-40°C to 85°C (inclusive of temperature rise)

3.4 Performance Requirements and Test Descriptions

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.4.1 Test Environment

All tests shall be performed in the environmental conditions listed below, unless otherwise specified.

Temperature:	15°C to 35°C
Humidity:	20% to 80% RH
Atmospheric Pressure:	650 to 800mm Hg

3.4.2 Test Specimens

The test specimens used for tests shall be conforming to the applicable product drawing(s).

Unless otherwise specified, no sample shall be used.

3.5 Test Requirements and Procedures Summary

Para	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing.	Visually, dimensionally and functionally inspected per applicable inspection plan and EIA 364-18.
ELECTRICAL			
3.5.2	Insulation Resistance	1000 MΩmin.	Subject a voltage of 500 V DC for 1 minute between adjacent contacts of mated and unmated connector assemblies per EIA 364-21.
3.5.3	Dielectric Withstanding Voltage	No breakdown or flashover.	Subject a voltage of 500 V AC for 1 minute at sea level between adjacent contacts of mated and unmated connector assemblies per EIA 364-20 Method B.
3.5.4	Low Level Contact Resistance	30 mΩmax initial. 15 mΩ max change from initial.	Subject a voltage of 20 mV max open circuit at a current of 100 mA max on mated connector assemblies per EIA 364-23.
3.5.5	Current Rating (apply only to 9 positions)	Temperature rise at thermal equilibrium shall not exceed 30°C above ambient at any point when current is applied (ambient condition is 25°C at still air).	With connector mounted on PCB, wire contact P1 & P6 in parallel for power and wire contact P3 & P4 in parallel for return. Apply 3 A total DC current to parallel contacts P1 & P6 and return from parallel contact P3 & P4.
3.5.6	Solderability	Solderable area shall have a solder coverage of 95% min.	Test solderable portion of contact per AMP 109-11-11.
3.5.7	Soldering Heat Resistivity	See note (a).	Test connector per EIA 364-56B, Procedure 6, Level 4.
MECHANICAL			
3.5.8	Cable Pull-Out	See note (a).	Subject mated connector assemblies to a 40 N axial load for 1 minute min while clamping one end of cable plug.

3.5.9	Cable Flexing	See note (a). Discontinuity < 1 µs.	Round Cable: EIA-364-41 Condition I, Dimension x=3.7 x cable diameter, 100 cycles in each of 2 planes. Flat Cable: EIA-364-41 Condition II, 250 cycles using either Method 1 or 2.
3.5.10	Mating Force	Cabled Signal Connector: 45 N max.	Cabled Signal Connector: Mate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
		Cabled Power Connector: 45 N max.	Cabled Power Connector: Mate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
		Backplane Connector: 20 N max.	Backplane Connector: Mate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
3.5.11	Unmating Force	Cabled Signal Connector (Non-latching): 10 N min through 50 cycles.	Cabled Signal Connector (Non-latching): Unmate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
		Cabled Power Connector (Non-latching): 10 N min for cycles 1 through 5. 8 N min through 50 cycles.	Cabled Power Connector (Non-latching): Unmate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
		Backplane Connector: 2.5 N min after 500 cycles.	Backplane Connector: Unmate connector assemblies at a rate of 12.5 mm per minute max per EIA 364-13.
		Cabled Latching Connector Includes Power & Signal Connectors: See note (a). No disconnect through 50 mating cycles.	Cabled Latching Connector Includes Power & Signal Connectors: Subject mated connector assemblies to a static 25 N unmating test load per EIA 364-13.

3.5.12	Durability	See note (a).	Mate and unmate connector assemblies at a rate of 200 cycles/hour max for 50 cycles (internal cabled application) or 500 cycles (backplane/blindmate application) per EIA 364-09.
3.5.13	Vibration (Random)	See note (a). Discontinuity < 1 µs.	Subject mated connector assemblies to 5.35 g's RMS, 30 minutes in 3 perpendicular planes per EIA 364-28, Condition V, Letter A.
3.5.14	Physical Shock	See note (a). Discontinuity < 1 µs.	Subject mated connector assemblies to 30 g's, ½ sine wave shock (11 milliseconds) in 3 perpendicular planes (total 18 shocks) per EIA 364-27, Condition H.
ENVIRONMENTAL			
3.5.15	Humidity	See note (a).	Subject mated connector assemblies to 96 hours at 40 °C with 90~95% relative humidity per EIA 364-31, Method II, Condition A.
3.5.16	Temperature Life	See note (a).	Subject mated connector assemblies to 85 °C for 500 hours per EIA 364-17, Method A, Condition III.
3.5.17	Thermal Shock	See note (a).	Subject mated connector assemblies to 10 cycles between -55 °C and 85 °C per EIA 364-32, Condition I.
3.5.18	Mixed Flowing Gas	See note (a).	Expose half of samples unmated for 7 days then mated for 7 additional days and expose other half of samples mated for 14 days per EIA 364-65, Class 2A.

Note:

(a) Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence in Figure 2.

Figure 1

3.6 Product Qualification Test Sequence

Test Item	Test Group						
	1	2	3	4	5	6	7
	Test Sequence (a)						
Examination of Product	1,5	1,9	1,8	1,8	1,7	1,5	1,3
Low Level Contact Resistance	2,4	3,7	2,4,6		4,6	2,4	
Insulation resistance				2,6			
Dielectric Withstanding Voltage				3,7			
Current Rating			7				
Solderability							2
Soldering Heat Resistivity						3	
Mating Force		2					
Unmating force		8					
Durability	3	4(b)			2(b)		
Vibration (Random)		5					
Physical Shock		6					
Reseating (manually plug/unplug 3 time)			5		5		
Humidity				5			
Temperature Life			3				
Thermal Shock				4			
Mixed Flowing Gas					3		

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

(b) Preconditioning, 20 cycles for the 50-durability cycle requirement, 50 cycles for the 500-durability cycle requirement. The mating and unmating cysle is at the maximum rate of 200 cycles per hour.

Figure 2

4.0. QUALITY ASSURANCE PROVISIONS

4.1 Qualification Testing

A. Sample Selection

Samples shall be selected at random from current production. The number of test points will correspond to the number of positions on the connector.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 1 and 2.

C. Test sequence shall be serialised for tractability.

4.2 Re-Qualification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product quality assurance shall co-ordinate re-qualification testing, consisting of all or part of the original testing sequence as determined by development/ product, quality and reliability engineers.

4.3 Acceptance

Acceptance is based upon verification that product meets requirements of Figure 1 and 2. Failures attributed to equipment, test set-up or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4 Quality Conformance Inspection

Applicable Tyco quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be accordance with applicable product drawing and specification.