PRODUCT SPECIFICATION PS-7495 Rev. A

ORIGINAL

Title: Mini SAS HD Integrated Connector Product Specification

Part Number: G40H series

Description: Mini SAS HD Integrated Connector, 0.75 Pitch, Vertical, SMT Type

Revisions Control

Rev.	ECN Number	Originator	Approval	Issue Date
A	NE-13131	Hank Hsu		08.12.2013

ISSUED BY AMPHENOL TAIWAN PDF Format D.C.

Product Specification Origination

Originator: Date:	Checked by: Date:	Approved by: Date:
Hank Hsu 20130812	Sondra Sang 20130812	Hank Hsu 20130812

1. Scope

This document defines the detailed requirements for the Amphenol G40H Series Mini SAS HD integrated connector to insure functionality and reliability.

2. Applicable documents

2.1	EIA-364 Standard	Test methods for electrical connectors
2.2	UL-STD-94	Tests for flammability of plastic materials for parts in devices and appliances.
2.3	SFF-8643	SFF specification

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 Material and finish

3.2.1 Insulator

- High temperature thermoplastic, UL94V-0
- Color: Black

3.2.2 Contact

- Copper Alloy
- Contact area: Selected Gold plating
- SMT tail: Matte Tin plating
- Under-plating: Nickel plating overall

3.2.4 Board-lock

- Stainless steel
- Under-plating: Electroless Nickel overall

3.3 Rating

- Current: 0.5 A per contact
- Voltage: 30 VDC per contact
- Temperature:

  Operating: -40°C~ 85°C

  Non-operating: -55°C~ 85°C
- Durability

  30u” Au: 250 cycles

4. Performance and testing

4.1 Test requirements and procedures summary

Test	Test procedure	Test criteria
Visual & Dimensional inspection	EIA-364-18 Visual, dimensional and functional inspection.	Must meet the minimum requirements specified by product drawing.
Electrical:		
Low level Contact Resistance	EIA-364-23 Current: 100 mA maximum Voltage: 20 mV maximum	Baseline
Dielectric Withstanding Voltage	EIA-364-20 Apply a voltage between adjacent terminals. Voltage: 300 VDC Duration: 1 minute	No defect or breakdown No disruptive discharge No leakage current in excess of 5mA
Temperature Rise (via current cycling)	EIA-364-70 Measure the temperature rise at the rated current after 96 hours. (45 minutes ON and 15 minutes OFF)	30℃ maximum change from initial
Differential Impedance (connector area)	EIA-364-108 Rise time: 50ps (20-80%) Includes connector cable to connector interface and board termination pads and vias.	90-110 ohms (distribution) 100±5 ohms (distribution of average value)
Near End Isolation	EIA-364-90 50 MHz to 12.5 GHz	-40 dB minimum (Frequencies up to 6.25 GHz)
Insertion Loss	EIA-364-101 50 MHz to 12.5 GHz	1.0 dB maximum (Frequencies up to 6.25 GHz)
Mechanical:		
Durability (preconditioning)	EIA-364-09 50 unmate/mate cycles No lubrication to be used during cycling. Cycling to be performed manually unless otherwise specified.	No evidence of physical damage.

Durability	EIA-364-09 Cycle rate: 500±50 per hour Number of cycles: 250 cycles	No evidence of physical damage.
Mating Force (Module only)	EIA-364-13 Rate: 25.4 mm/minute	50 N maximum
Un-mating Force (Module only)	EIA-364-13 Rate: 25.4 mm/minute	10 N maximum
Plug Mating Force (Active Latch)	EIA-364-13 Rate: 25.4 mm/minute	4X - 50 N maximum 8X - 100 N maximum
Plug Un-mating Force (Active Latch)	EIA-364-13 Rate: 25.4 mm/minute	4X - 30 N maximum 8X - 50 N maximum
Contact Normal Force	EIA-364-04 Rate: 25.4 mm/minute	0.49 N (50 grams) minimum
Vibration	EIA-364-28, Test Condition VII, Condition D Subject mated specimens to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes.	No Damage No discontinuity longer than 1usec allowed. 10 mOhms maximum change from initial (baseline) contact resistance
Mechanical Shock	EIA-364-27, Test Condition H Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.	No Damage 10 mOhms maximum change from initial (baseline) contact resistance
Reseating	Manually un-mate/mate the connector 3 cycles.	No evidence of physical damage.
4 -Axes Continuity Test	Subject mated connectors and apply 30 N push force in each direction at a rate of 25 mm per minute.	There shall be no discontinuities of 1us or longer duration.
Plug Pull out Force	Subject mated connectors and apply an axial pull out force on the wire at a rate of 25 mm per minute.	50 N minimum Force to overcome latch
Environmental:		
Thermal Shock	EIA-364-32, Method A Test condition 1 -55 ℃ to 85 ℃ (10 cycles)	No Damage 10 mOhms maximum change from initial (baseline) contact resistance

Humidity-Temperature Cycling	EIA-364-31, Method III Subject unmated specimens to 24 cycles between 25℃/ 80%RH and 65℃/ 50%RH Ramp times should be 0.5 hour and dwell times should be 1.0 hour	No Damage 10 mOhms maximum change from initial (baseline) contact resistance
Temperature Life (preconditioning)	EIA-364-17, Method A Subject mated specimens to 105 ℃ for 336 hours	No Damage
Temperature Life	EIA-364-17, Method A Test Condition 2, Test Time Condition C Subject mated specimens to 105 ℃ for 840 hours	No Damage 10 mOhms maximum change from initial (baseline) contact resistance
Solderability	EIA-364-52 The surfaces to be tested shall be immersed in the flux for a minimum of 5 to 10 seconds. Any droplets of flux that may form shall be removed by blotting, taking care not to remove the flux coating from the surfaces to be tested. The test samples being tested shall be allowed to dry in ambient air for 5 to 20 seconds prior to solder immersion. The test sample termination shall be immersed to a depth equal to a length from its tip to a location normally not less than 0.5 mm below the connector seating plane. Temperature: 245±5℃ Duration: 4~5 seconds	95% of immersed area must show no voids or pin holes.
Resistance to soldering heat (dip and wave solder terminations)	EIA-364-52 Temperature(solder): 260±5℃ Duration: 20±2 seconds	No evidence of physical damage
Resistance to soldering heat (Infrared reflow)	EIA-364-29 Average ramp rate: 1~4℃ per second Temperature(board surface): 250 +10℃/-0℃ Duration:30~35 seconds	No evidence of physical damage

4.2 Test Sequence

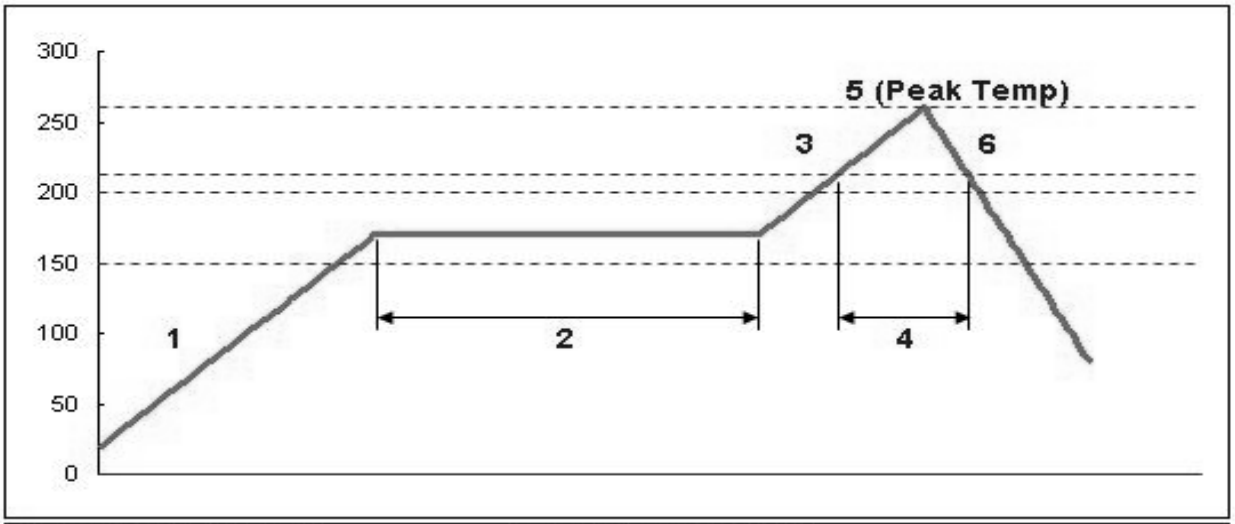
Test or Examination	Test Groups									
	1	**2**	**3**	**7**	**A**	**B**	**C**	**D**	**E**	**F**
Low Level Contact Resistance	1,4,6	1,4,6,8	1,4,6,8	2,4						
Dielectric Withstanding Voltage				**1,5**						
Temperature Rise					V					
Differential Impedance (connector area)								V		
Near End Isolation								V		
Insertion Loss								V		
Durability (preconditioning)	2	2	2							
Durability				3						
Mating Force (Module only)						V				
Un-mating Force (Module only)						V				
Plug Mating Force (Active Latch)						V				
Plug Un-mating Force (Active Latch)						V				
Contact Normal Force							V			
Vibration			**7**							
Mechanical Shock			**5**							
Reseating	5	7								
4-Axes Continuity Test										V
Plug Pull out Force										V
Thermal Shock		3								
Humidity-Temperature Cycling		5								
Temperature life (preconditioning)			3							
Temperature life	**3**									
Solderability									V	
Resistance to soldering heat (dip and wave solder terminations)									V	
Resistance to soldering heat (Infrared reflow)									V	

Note:

1. Test specimen: 5 PCS/ group unless otherwise specified.
2. Test specimen shall be sure to meet the drawing before the testing.

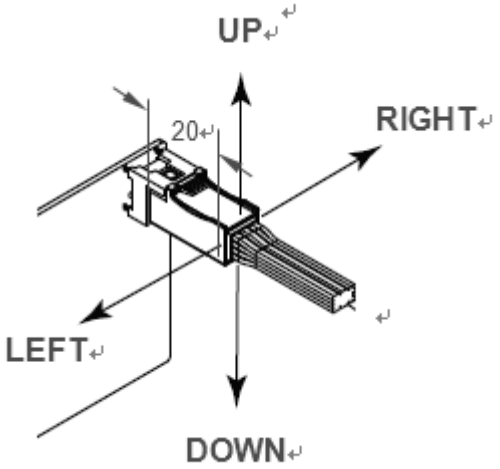
3. Test group A-E need to implement individual test.

4.3 Recommended IR reflow profile(Lead-free)



1	Average ramp rate	3°C per second max.
2	Pre-heat temp.(minimum)	150°C
	Pre-heat temp.(maximum)	200°C
	Pre-heat time	60 to 120 seconds
3	Ramp to peak	3°C per second max.
4	Time over liquidus(217°C)	60 to 150 seconds
5	Peak temp.	260 +0/-10°C
	Time within 5°C of peak	10 seconds max.
6	Ramp- cool down	6°C per second max.
	Time 25°C to peak	8 minutes max.

4.4 4-Axes continuity test



List of Appendix

☑ Product Drawing : G40H2XXXXXXXX-X, G40H3XXXXXXXX-X, G40H4XXXXXXXX-X

☐ Qualification Test Report :