

PRODUCT SPECIFICATION

PS-7681

Rev. **AX1**

Title: Mini Cool Edge IO Integrated Connector
Product Specification

Part Number: G42 series

Mini Cool Edge IO Integrated Connector,

Description: 0.6 Pitch, SMT Type

Revisions Control

Rev.	ECN Number	Originator	Approval	Issue Date
AX1	NE-XXXXX	Joan Lu		02.13.2018

Product Specification Origination

Originator:	Date:	Checked by:	Date:	Approved by:	Date:
Joan Lu	02.13.2018				

This document is the property of Amphenol Corporation and is delivered on the express condition that it is not to be disclosed, reproduced or used, in whole or in part, for manufacture or sale by anyone other than Amphenol Corporation without its prior consent, and that no right is granted to disclose or to use any information in this document.

PRODUCT SPECIFICATION**PS-7681**Rev. **AX1****1. Scope**

This document defines the detailed requirements for the Amphenol **G42 Series Mini Cool Edge IO 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 Serial Attached SCSI-4 Specification, Revision 0.9
SCSI-4(SAS-4)

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 Housing

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

3.2.2 Contact

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

3.2.3 Shell

- Stainless steel
- Solder area: Nickel under-plated 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

PRODUCT SPECIFICATION

PS-7681

Rev. AX1

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	Initial: Baseline After test: $\Delta R=30$ milliohms maximum
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. Ambient temperature: 25°C	30°C maximum change from initial
Minimum $ S_{DD21}(f) ^b$	$0.05 \text{ GHz} \leq f \leq \left(\frac{3}{4}\right) f_{\text{baud}}$	$-0.08\sqrt{f/1 \times 10^9} - 0.336(f/1 \times 10^9)$
Maximum $ S_{DD21}(f) ^b$	$0.05 \text{ GHz} \leq f \leq \left(\frac{3}{4}\right) f_{\text{baud}}$	$-0.12 - 0.475\sqrt{f/1 \times 10^9} - 0.364(f/1 \times 10^9)$
Maximum $ S_{DD22}(f) ^{c,d}$	$0.05 \text{ GHz} \leq f \leq \left(\frac{3}{4}\right) f_{\text{baud}}$	$-20\log_{10}[W(f)^{0.353}] - 12$
Maximum $ S_{DD21}(f) ^e$	$\begin{cases} 0.05 \text{ GHz} \leq f \leq \frac{f_{\text{baud}}}{2} \\ \frac{f_{\text{baud}}}{2} < f \leq \left(\frac{3}{4}\right) f_{\text{baud}} \end{cases}$	$\begin{cases} -25 + 20\left(\frac{f}{f_{\text{baud}}}\right) \\ -18 + 6\left(\frac{f}{f_{\text{baud}}}\right) \end{cases}$
Maximum $ S_{DD22}(f) ^f$	$\begin{cases} 0.05 \text{ GHz} \leq f \leq \frac{f_{\text{baud}}}{2} \\ \frac{f_{\text{baud}}}{2} < f \leq \left(\frac{3}{4}\right) f_{\text{baud}} \end{cases}$	$\begin{cases} -25 + 20\left(\frac{f}{f_{\text{baud}}}\right) \\ -18 + 6\left(\frac{f}{f_{\text{baud}}}\right) \end{cases}$

PRODUCT SPECIFICATION**PS-7681**Rev. **AX1**

Mechanical:		
Durability (preconditioning)	EIA-364-09 50 unmate/mate cycles	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	0.6N Max./per pin
Un-mating Force (Module only)	EIA-364-13 Rate: 25.4 mm/minute	0.06N Min./per pin
Active Latch Retention Strength	EIA-364-13 Rate: 25.4 mm/minute	50 N minimum
Wrenching strength (W/ mated Cable- Passive Latch)	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.	25 N minimum
Wrenching strength (W/ mated Cable- Active Latch)	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.	40 N minimum
Contact Normal Force	EIA-364-04 Rate: 25.4 mm/minute	0.49 N (50 grams) minimum at nominal
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 50 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 unmate/mate the connector 3 cycles.	No evidence of physical damage.

PRODUCT SPECIFICATION

PS-7681 Rev. AX1

Environmental:		
Thermal Shock	EIA-364-32, Method A Test condition 1 -65 °C to 105 °C (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°C/ 80%RH and 65°C/ 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°C for 72 hours	No Damage
Temperature Life	EIA-364-17, Method A Test Condition 2, Test Time Condition C Subject mated specimens to 105°C for 750 hours	No Damage 10 mOhms maximum change from initial (baseline) contact resistance
Mixed flowing gas (MFG)	EIA-364-65, class IIA RH: 70±2% Temperature: 30±1°C Cl ₂ : 10±3 ppb NO ₂ : 200±50 ppb H ₂ S: 10±5 ppb SO ₂ : 100±20 ppb Duration: 7 days	No evidence of physical damage
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°C Duration: 5 seconds	95% of immersed area must show no voids or pin holes.
Resistance to soldering heat (Infrared reflow)	EIA-364-29 Average ramp rate: 1~4°C per second Temperature(board surface): 250 +10°C/-0°C Duration:30~35 seconds	No evidence of physical damage

PRODUCT SPECIFICATION

PS-7681 Rev. AX1

4.2 Test Sequence

Test or Examination	Test Groups											
	A	B	C	D	E	F	G	H	J	K	L	M
Low Level Contact Resistance	1,4,6	1,4,6,8	1,4,6,8	2,4						1,4,6		
Dielectric Withstanding Voltage				1,5								
Temperature Rise					V							
Minimum $I_{S_{DD21}(f)}$ ^b								V				
Maximum $I_{S_{DD21}(f)}$ ^b								V				
Maximum $I_{S_{DD22}(f)}$ ^{c,d}								V				
Maximum $I_{S_{DD21}(f)}$ ^e								V				
Maximum $I_{S_{DD22}(f)}$ ^f								V				
Durability (preconditioning)	2	2	2						2			
Durability				3								
Mating Force (Module only)						V						
Un-mating Force (Module only)						V						
Plug Un-mating Force (Active Latch)						V						
Contact Normal Force							V					
Vibration			7									
Mechanical Shock			5									
Reseating	5	7							5			
Thermal Shock		3										
Humidity-Temperature Cycling		5										
Temperature life (preconditioning)			3									
Temperature life	3											
Mixed flowing gas (MFG)									3			
Solderability										1		
Resistance to soldering heat (Infrared reflow)										2		
Wrenching strength (W/ mated Cable- Passive Latch)											V	
Wrenching strength (W/ mated Cable- Active Latch)												V

Note:

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

PRODUCT SPECIFICATION**PS-7681**Rev. **AX1****List of Appendix** Product Drawing Qualification Test Report :