

NUMBER GS-12-1541	TYPE GENERAL PRODUCT SPECIFICATION	Amphenol ICC	
TITLE 2.54pitch PC104 2*20P+2*32P Vertical DIP		PAGE 1 of 8	REVISION A
		AUTHORIZED BY Jason Wang	DATE 2019.7.22
		CLASSIFICATION UNRESTRICTED	

1.0 Objective

This specification defines the performance, test, quality and reliability requirements of the **2.54pitch PC104 2*20P+2*32P Vertical DIP** product.

2.0 Scope

This specification is applicable to the termination characteristics of the **2.54pitch PC104 2*20P+2*32P Vertical DIP** family of products which provides electrical connectors between parallel mounted boards..

3.0 Ratings

- 3.1 Operating Voltage Rating = 12 V_{DC}
- 3.2 Operating Current Rating = 3.0 (Amperes/qty. of contacts) MAX
- 3.3 Operating Temperature Range = -55~+105 (°C)

4.0 Applicable Documents

- 4.1 AFCI Specifications
 - 4.1.1 Engineering drawings: 10153301
 - 4.1.2 Material specification(s): Meets the European Union directives and other country regulation as described in GS-22-008
- 4.2 Industry or Trade Association standards: N/A

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4.3 National or International Standards

4.3.1 Flammability: UL94V-0 or similar applicable specification

4.3.2 EIA 364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

4.3.3 IEC 60512: Connectors for Electronic Equipment – Tests and Measurement

5.0 Requirements

5.1 Qualification

Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

5.2 Material

The material for each component shall be as specified herein or equivalent.

Refer to the drawing (Drawing No.:10153301)

5.3 Finish

The finish for applicable components shall be as specified herein or equivalent.

Refer to the drawing (Drawing No.:10153301)

5.4 Design and Construction

Connectors shall be of the design, construction, and physical dimensions specified on the applicable product drawing. There shall be no cracks, burrs, or other physical defects that may impair performance.

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6.0 Electrical Characteristics

6.1 Contact Resistance, Low Level (LLCR)

The low level contact resistance shall not exceed 20mΩ initially. The low level contact resistance shall also not exceed 30mΩ in resistance (from the initial measurement) after any treatment and/or environmental exposure. Measurements shall be in accordance with EIA 364-23.

The following details shall apply:

- a. Test Voltage - 20 milli-volts DC max open circuit.
- b. Test Current - Not to exceed 100 milli-amperes.

6.2 Insulation Resistance

The insulation resistance of unmated connectors shall not be less than 5000M ohms.

Measurements shall be in accordance with EIA 364-21.

The following details shall apply:

- a. Test Voltage - 1000 volts AC.
- b. Electrification Time - 1 minutes, unless otherwise specified.
- c. Points of Measurement - Between adjacent contacts.

Appearance: No electrical damage and spark.

6.3 Dielectric Withstanding Voltage

There shall be no evidence of arc-over, insulation breakdown, or excessive leakage current > 0.5mA when mated connectors are tested in accordance with EIA 364-20.

The following details shall apply:

- a. Test Voltage - 1000 volts AC.
- b. Test Duration - 60 seconds.
- c. Points of Measurement - Between adjacent contacts.

Appearance: No electrical damage and spark.

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7.0 Mechanical Characteristics

7.1 Mating/Unmating Force

The force to mate a receptacle connector and compatible header shall not exceed 2.6N per contact (Total shall not exceed No of contacts *2.6N).

The unmating force shall not be less than 0.45N per contact (Total shall not be less than No of contacts * 0.45N).

The following details shall apply:

- a. Cross Head Speed – 25.4 mm per minute.
- b. Lubrication – N/A.
- c. Utilize free floating fixtures.
- d. Reference –EIA 364-13.

Appearance: No physical damage for product and pin and housing.

7.2 Durability

The connector pairs shall be capable of withstanding 300 mating/unmating cycles.

Reference EIA-364-09.

7.3 Contact Retention force

The following details shall apply:

- a. Cross Head Speed – 25.4mm/Min.
- b. Lubrication – N/A.
- c. Utilize free floating fixtures.
- d. Reference –EIA 364-29

Appearance: Retention force is not less than 4.9N (0.5kgf) per pin

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8.0 Environmental Conditions

After exposure to the following environmental conditions in accordance with the specified test procedure and/or details, the product shall show no physical damage and shall meet the electrical and mechanical requirements per paragraphs 6.0 and 7.0 as specified in the Table 1 test sequences. Unless specified otherwise, assemblies shall be mated during exposure.

8.1 Thermal Shock –EIA 364-32.

- a. Number of Cycles – 5cycles
- b. Temperature Range - Between -55 and +105 deg C
- c. Time at Each Temperature - 30 minutes
- d. Transfer Time - 5 minutes, maximum

8.2 Humidity –EIA 364-31 method II steady state

- a. Relative Humidity – 90~95% (for cyclic humidity, specify for temperature ramps, if applicable, and temperature dwells)
- b. Temperature - 55 deg C
- c. Duration - 96 hours

Appearance: No physical damage for product and pin and housing, no oxidation for pin.

8.3 High Temperature Life –EIA 364-17.

- a. Test Temperature - 105±2 deg C
- b. Test Duration - 96 hours

Appearance: No physical damage for product and pin and housing, no oxidation for pin


8.4 Salt Spray –EIA-364-26

- a. Test Condition - 35±1 °C, 5±1%NaCl, PH:6.5~7.2
- b. Duration - 24 hours

Acceptance: Visual examination requirements, no physical damage for product and pin and housing, no oxidation for pin.

8.5 Solderability / Steam Test –EIA-364-52

- a. Solderability test condition 245±5 °C, 3~5sec
- b. Steam or dry aging - 8_hours±5min @ 90~96 °C
- c. Minimum solder coverage: 95 %

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9.0 QUALITY ASSURANCE PROVISIONS

9.1 Equipment Calibration

All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with ANSI Z-540 and ISO 9000.

9.2 Inspection Conditions

Unless otherwise specified herein, all inspections shall be performed under the following ambient conditions:

- a. Temperature: 25 +/- 5 deg C
- b. Relative Humidity: 30% to 60%
- c. Barometric Pressure: Local ambient

9.3 Sample Quantity And Description

Connector shall be prepared according to applicable instruction sheets. Samples shall be selected at random from current production.

9.4 Acceptance

9.4.1 Electrical and mechanical requirements placed on test samples as indicated in paragraphs 6.0 and 7.0 shall be established from test data using appropriate statistical techniques or shall otherwise be customer specified, and all samples tested in accordance with this product specification shall meet the stated requirements.

9.4.2 Failures attributed to equipment, test setup, or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

9.5 Qualification Testing

Qualification testing shall be performed on sample units produced with equipment and procedures normally used in production. The test sequences shall be as shown in the qualification test table. Data shall be provided with the samples noting production history: production lot codes for components and assemblies, components and assemblies produced to print revision __, verification of plating composition and thickness, etc.

9.6 Re-Qualification Testing

If any of the following conditions occur, the responsible product engineer shall initiate requalification testing consisting of all applicable parts of the qualification test matrix.

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- a. A significant design change is made to the existing product which impacts the product form, fit or function. Examples of significant changes shall include, but not be limited to, changes in the plating material composition or thickness, contact force, contact surface geometry, insulator design, contact base material, or contact lubrication requirements.
- b. A significant change is made to the manufacturing process which impacts the product form, fit or function.
- c. A significant event occurs during production or end use requiring corrective action to be taken relative to the product design or manufacturing process.

9.7 Qualification Test Table

No.	Test Items	Test Group										
		A	B	C	D	E	F	G	H	I	J	K
Examination		1	1,3	1,3	1,4	1,4	1	1,4,7,9	1,4,7,9	1,4,7,9	1,4,7,9	1,3,5
6.1	LLCR	2			2,5	2,5		2,5	2,5	2,5	2,5	
6.2	Insulation Resistance		2					8	8	8	8	
6.3	Withstanding Voltage			2				6	6	6	6	
7.1	Mating/Unmating Force				3							
7.2	Durability					3						
7.3	Contact Retention force						2					
8.1	Thermal Shock								3			
8.2	Humidity							3				
8.3	High Temperature Life									3		
8.4	Salt Spray										3	
8.5	Solderability											4
	Steam Test											2
Sample Quantity		5	5	5	5	5	5	5	5	5	5	5

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A		New release	/	2019/08/01