

NUMBER GS-12-1298	TYPE PRODUCT SPECIFICATION		
TITLE 0.5mm Board to board® Product Specification		PAGE 1 of 7	REVISION B
		AUTHORIZED BY Jim.Meng	DATE 19 Mar 15
		CLASSIFICATION UNRESTRICTED	

1.0 OBJECTIVE

This specification defines the performance, test, quality and reliability requirements of 0.5mm pitch Board to board® product.

2.0 SCOPE

This specification is applicable to the termination characteristics of 0.5mm pitch Board to board® family of products, which provides electrical connections between parallel mounted boards.

3.0 GENERAL

This document is composed of the following sections:

<u>PARAGRAPH</u>	<u>TITLE</u>
1.0	OBJECTIVE
2.0	SCOPE
3.0	GENERAL
4.0	APPLICABLE DOCUMENTS
4.1	Standards and Specifications
5.0	REQUIREMENTS
5.1	Qualification
5.2	Material
5.3	Finish
5.4	Design and Construction
5.5	Rating
6.0	PERFORMANCE
6.1	Performance
6.2	Test Methods
7.0	TEST SEQUENCE

4.0 APPLICABLE DOCUMENTS

4.1 Standards and Specifications

4.1.1MIL-STD-202: Test methods for electronic and electrical component parts.

4.1.2EIA 364: Electronic connector/socket test procedures including environmental classifications.

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

5.2.1 Housing: All housing materials shall be high temperature plastic, rated flame retardant 94V-0 in accordance with UL-94.

5.2.2 Receptacle Terminal: Copper alloy.

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5.2.3 Plug Terminal: Copper alloy.

5.2.4 Hold Down: Copper alloy.

5.3 Finish

The finish for applicable components shall be specified in product drawings with plating area, plating material and plating thickness.

5.4 The thickness of the PCB solder paste

Below data is FCI recommended dimension, For some customer's process are different (such as, PCB thickness, solder temperature, solder paste type, etc.), customer can according to the actual application environment adjust the solder paste thickness. using solder paste thickness 0.15mm Min.

5.5 Design and Construction

The connector shall be a multi-piece assembly having two rows of contacts with surface mount solder-tail terminations for installation on printed wiring board.

5.6 Rating

Voltage Rating	100V AC
Current Rating	0.5A Max.
Temperature Rating	-40°C ~ 125°C

6.0 PERFORMANCE

Unless otherwise specified, the performance of connectors given in the attached list shall satisfy the values specified in Table 6.1. The performance test shall follow the test method and the test sequence given in Table 6.2 & 6.3 under the environmental conditions listed below. All connectors to be tested shall be free of defects such as burr, flaw, void, blister etc. which will affect the life and application of connectors.

- Temperature ----- 15°C ~ 35°C
- Humidity ----- 25% ~ 85%
- Pressure ----- 86 ~ 106KPa

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6.1 Performance

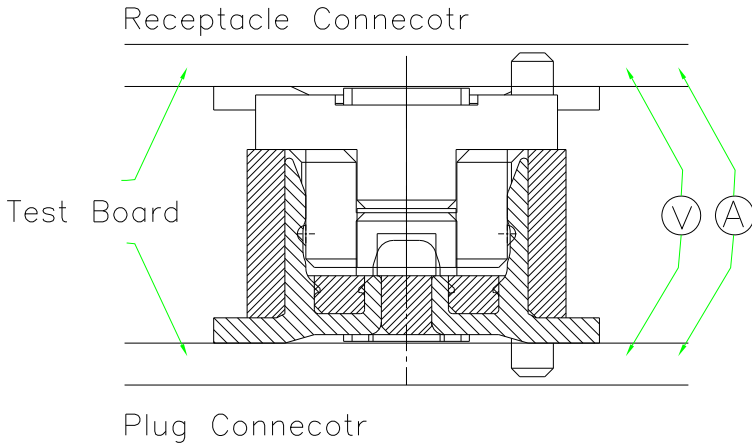
TABLE 6.1

	Test Item	Requirements
6.1.1	Visual Examination	Product shall meet the requirements of product drawings. Visual Examination performed under 10X magnification. Parts should be free from blistering, discoloration, cracks, etc
Electric Requirements		
6.1.2	Low Level Contact Resistance(LLCR)	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum
6.1.3	Dielectric Withstanding Voltage	150 VAC, 1 Minutes ,No evidence of arc-cover, insulation breakdown or leakage current in excess of 0.5 mA.
6.1.4	Insulation Resistance	500 MΩ Minimum
Mechanical Requirements		
6.1.5	Vibration	No discontinuity greater than 1 microsecond
6.1.6	Mating Force	1.47N Maximum per contact.
6.1.7	Un-mating Force	0.15N Minimum per contact.
6.1.8	Durability	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum
6.1.9	Solderability	Solder coverage ----- 95% Minimum
6.1.10	Resistance to Solder Heat	No evidence of physical or mechanical damage.
6.1.11	Contact Retention Force	0.98N Minimum per contact.
Environmental Requirements		
6.1.12	Thermal Shock	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum
6.1.13	Temperature Life	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum
6.1.14	Cyclical Humidity & Temperature	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum
6.1.15	Salt Spray	Initial ----- 30 mΩ Maximum After test ----- 50 mΩ Maximum

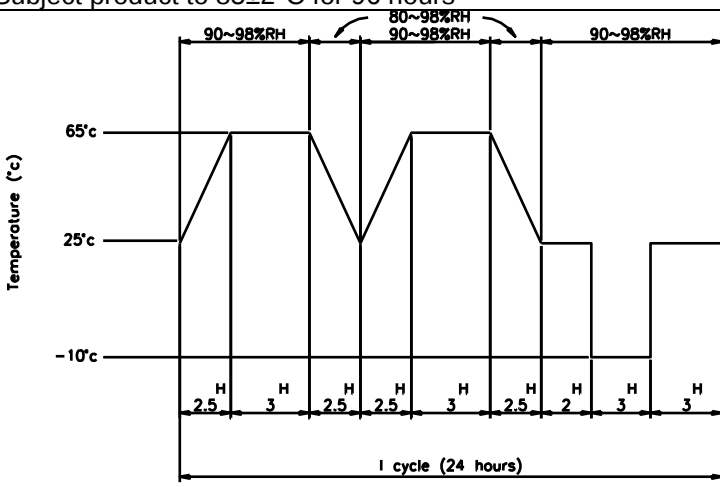
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6.2 Test Methods

TABLE 6.2

	Test Item	Test Methods
6.2.1	Visual Examination	Visually and functionally inspected. Under 10X magnification.
6.2.2	Low Level Contact Resistance(LLCR)	 Figure 1 EIA-364-23 Test method of connection as Figure 1. Test current ----- 100 mA Maximum Open circuit ----- 20 mV Maximum Number of readings ----- 100 separable contact interface minimum or 3 connectors whichever is greater
6.2.3	Dielectric Withstanding Voltage	MIL-STD-202 Method 301 Test voltage ----- 150 Vrms AC Duration ----- 1 minute Current----- 0.5 mA Max Measure between adjacent terminals of mated connectors. Number of readings ----- 30 (10 readings per connector set)
6.2.4	Insulation Resistance	MIL-STD-202 Method 302 Test voltage ----- 100 V DC Measure between adjacent terminals of mated connectors. Number of readings ----- 30 (10 readings per connector set)
6.2.5	Vibration	MIL-STD-202 Method 201 Frequency ----- 10-55-10 Hz Amplitude-----1.5mm Current----- 10 mA Max Duration ----- 2 hours in each of three mutually perpendicular axes (6 hours total).
6.2.6	Mating Force	EIA-364-13 Operating speed ----- 25 mm/minute No lubrication and utilize free-floating fixture. Number of connectors ----- 5 mated pair

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6.2.7	Un-mating Force	EIA-364-13 Operating speed ----- 25 mm/minute No lubrication and utilize free-floating fixture. Number of connectors ----- 5 mated pair
6.2.8	Durability	EIA-364-09 Operating speed ----- 25 mm/minute Number of cycles ----- 50
6.2.9	Solder-ability	MIL-STD-202, method 208 For Non- leaded: Solder temperature ----- 230 ± 5°C. Dip duration =3 sec Criteria: 95% coverage min
6.2.10	Resistance to Solder Heat	For Non- leaded: Peak temperature ----- 260 ± 5°C. Duration ----- 60 seconds No damage
6.2.11	Contact Retention Force	Operating speed ----- 25 mm/minute
6.2.12	Thermal Shock	EIA-364-32 Method A Temperature range ----- -40 +0/-5°C to 125 +5/-0°C Time at temperature extremes ----- 30 minutes Test Duration (A-4) ----- 10 cycles Transfer Time ----- 5 minutes maximum
6.2.13	Temperature Life	MIL-STD-202, Method 108 Subject product to 85±2°C for 96 hours
6.2.14	Cyclical Humidity & Temperature	 Temperature (°C) 65°C 25°C -10°C 90~98%RH 80~98%RH 90~98%RH 90~98%RH 2.5 H 3 H 2.5 H 2.5 H 3 H 2.5 H 2 H 3 H 3 H 1 cycle (24 hours) EIA-364-31, Method III (omit step 7b) Temperature and humidity are listed figure 2. Duration ----- 10 cycles.
6.2.15	Salt Spray	MIL-STD-202, Method 101 Condition B. 5±1% salt concentration 48±4 hours 35±2°C

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7.0 QUALIFICATION TEST MATRIX

Table 7.1

TEST ITEM										
	Section	1	2	3	4	5	6	7	8	9
Visual Examination	6.1.1	1 , 9	1, 5	1, 3	1 ,3	1 ,3	1, 5	1, 5	1 ,5	1 7
Low Level Contact Resistance (LLCR)	6.1.2	2 ,8	2, 4				2 4	2 4	2 4	2 6
Dielectric Withstanding Voltage	6.1.3									4
Insulation Resistance	6.1.4									3
Vibration	6.1.5		3							
Mating Force	6.1.6	3, 6								
Un-mating Force	6.1.7	4, 7								
Durability	6.1.8	5								
Solder-ability	6.1.9			2						
Resistance to Solder Heat	6.1.10				2					
Contact Retention Force	6.1.11					2				
Thermal Shock	6.1.12						3			
Temperature Life	6.1.13							3		
Cyclical Humidity & Temperature	6.1.14								3	
Salt Spray	6.1.15									5
Number of Samples		5	3	3	3	3	3	3	3	5

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8.0 RECORD RETENTION

REVISION RECORD

REV	PAGE	DESCRIPTION	ECR #	DATE
A	ALL	NEW RELEASE	--	19 Mar 15
B	ALL	MAJOR RELEASES	ELX-N-20800	30 Apr 15

Mouser Electronics

Authorized Distributor

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FCI / Amphenol:

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<u>10132797-025100LF</u>	<u>10132798-012100LF</u>	<u>10132798-021100LF</u>	<u>10132798-022100LF</u>	<u>10132798-011100LF</u>
<u>10132798-031100LF</u>	<u>10132798-032100LF</u>	<u>10132797-017120LF</u>	<u>10132797-047130LF</u>	<u>10132797-065110LF</u>
<u>10132797-055110LF</u>	<u>10132797-011110LF</u>	<u>10132797-015120LF</u>	<u>10132797-041120LF</u>	<u>10132797-061120LF</u>
<u>10132797-051110LF</u>	<u>10132797-061110LF</u>	<u>10132797-031130LF</u>	<u>10132797-021120LF</u>	<u>10132797-021110LF</u>
<u>10132797-025120LF</u>	<u>10132797-051130LF</u>	<u>10132797-021130LF</u>	<u>10132797-061130LF</u>	<u>10132797-031120LF</u>
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