

1.0 SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for 1.50mm pitch WtB Connector.

Applicable product descriptions and part numbers are as shown on product drawing.

1.2. Qualification:

When tests are performed on the subject product line, procedures specified shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2.0 APPLICABLE DOCUMENTS:

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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 TE Connectivity Documents:

114-137290: Application Specification

501-137290: Qualification Test Report

3.0 REQUIREMENTS:

3.1 Material:

A. Housing: Thermoplastic, UL94V-0, color: natural.

B. Contact : Copper Alloy, Tin plated over nickel under plated all over.

3.2 Ratings:

A. Current Rating: 2.5A AC, DC (AWG#24)

2.0A AC, DC (AWG#26)

1.5A AC, DC (AWG#28)

1.5A AC, DC (AWG#30)

B. Voltage Rating: 250V AC,

C. Operating temperature: -55°C to +105°C

D. Applicable wire: AWG #30 to #24, Insulation O.D.: 0.8 to 1.1mm Max.

E. Applicable PC board thickness: 0.6 to 1.2mm or 1.6mm.

3.3 Performance Requirements and Test Descriptions

The product is designed to meet the electrical, mechanical and environmental performance requirements as specified. Unless otherwise specified, all tests are performed at ambient environmental conditions.

3.4 TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM		REQUIREMENT	PROCEDURE																																													
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Per EIA-364-18 Visual inspection																																													
ELECTRICAL REQUIREMENT																																																
2	Low Level Contact Resistance	20mΩ Max (Initial) 40mΩ Max (Final)	Subject mated contacts assembled in housing to 20 mV max. open circuit voltage at 10 m A max																																													
3	Insulation Resistance	1000MΩ Min	Unmated connectors, apply 500V DC between adjacent terminals.																																													
4	Dielectric Withstanding Voltage	No breakdown.	Apply 500V AC (rms). between adjacent terminals or terminal and ground for 1 minute.																																													
MECHANICAL REQUIREMENT																																																
5	Insertion and Extraction Force	<table><tr><td>Pos.</td><td>Insertion Force</td><td>Extraction Force</td></tr><tr><td>2P</td><td>2.5 kgf Max</td><td>1.0~3.0 kgf</td></tr><tr><td>3P</td><td>3.0 kgf Max</td><td>1.0~3.5 kgf</td></tr><tr><td>4P</td><td>3.5 kgf Max</td><td>1.0~4.0 kgf</td></tr><tr><td>5P</td><td>4.0 kgf Max</td><td>1.0~4.5 kgf</td></tr><tr><td>6P</td><td>4.5 kgf Max</td><td>1.0~5.0 kgf</td></tr><tr><td>7P</td><td>5.0 kgf Max</td><td>1.0~5.5 kgf</td></tr><tr><td>8P</td><td>5.5 kgf Max</td><td>1.5~5.5 kgf</td></tr><tr><td>9P</td><td>5.5 kgf Max</td><td>1.5~5.5 kgf</td></tr><tr><td>10P</td><td>6.5 kgf Max</td><td>1.5~6.0 kgf</td></tr><tr><td>11P</td><td>6.0 kgf Max</td><td>1.5~6.0 kgf</td></tr><tr><td>12P</td><td>6.5 kgf Max</td><td>1.5~6.5 kgf</td></tr><tr><td>13P</td><td>6.5 kgf Max</td><td>1.5~6.5 kgf</td></tr><tr><td>14P</td><td>7.0 kgf Max</td><td>1.5~7.0 kgf</td></tr><tr><td>15P</td><td>7.0 kgf Max</td><td>1.5~7.0 kgf</td></tr></table>	Pos.	Insertion Force	Extraction Force	2P	2.5 kgf Max	1.0~3.0 kgf	3P	3.0 kgf Max	1.0~3.5 kgf	4P	3.5 kgf Max	1.0~4.0 kgf	5P	4.0 kgf Max	1.0~4.5 kgf	6P	4.5 kgf Max	1.0~5.0 kgf	7P	5.0 kgf Max	1.0~5.5 kgf	8P	5.5 kgf Max	1.5~5.5 kgf	9P	5.5 kgf Max	1.5~5.5 kgf	10P	6.5 kgf Max	1.5~6.0 kgf	11P	6.0 kgf Max	1.5~6.0 kgf	12P	6.5 kgf Max	1.5~6.5 kgf	13P	6.5 kgf Max	1.5~6.5 kgf	14P	7.0 kgf Max	1.5~7.0 kgf	15P	7.0 kgf Max	1.5~7.0 kgf	Subject terminated connector and header to mate and unmate to measure the force required to engage and disengage by operating at a rate of 25+/-3mm minute
		Pos.	Insertion Force	Extraction Force																																												
		2P	2.5 kgf Max	1.0~3.0 kgf																																												
		3P	3.0 kgf Max	1.0~3.5 kgf																																												
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6	Wire Retention Force	AWG # 24: 3.0kgf Min. AWG # 26: 2.0kgf Min. AWG # 28: 1.8kgf Min. AWG # 30: 0.8kgf Min.	Fix the crimped terminal, apply axial pull out force on the wire at speed rate of 25±3 mm/minute																																													

7	Terminal / Housing Retention Force (For Plug)	0.8 kgf Min.	Apply axial pull out force at the speed rate of 25±3 mm/minute on the terminal assembly in the housing
8	Terminal Retention Force (For Header)	1.0 kgf Min.	Apply axial pull out force at the speed rate of 25±3 mm/minute
ENVIRONMENTAL REQUIREMENTS			
9	Heat Resistance	No Physical damage & Contact resistance: 40 m Ω Max After test	Subject mated connectors to temperature life at 105± 2°C for 96 hours. Measure Signal.
10	Cold Resistance	No physical damage & Contact resistance: 40 m Ω Max After test	Mate connectors: Duration: 96 hours; Temperature: -55 ± 2°C
11	Humidity	No physical damage & Contact resistance: 40 m Ω Max after test & Insulation resistance: 10 MΩ Min & Dielectric withstanding voltage No breakdown	Subject mated plug and connector, soldered to P.C. Board, to relative humidity 90~95%RH and a temperature of 60°C ± 2°C relative humidity for 96 hour. It shall be subjected to standard atmospheric condition for 1 hour after which measurements shall be made.
12	Salt Spray	No Physical damage & Contact resistance: 40 m Ω Max after test	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C for 8 hours.
13	Solder ability	Solder coverage: 95% Min.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5°C for 3±0.5sec.
14	Resistance to Reflow Soldering Heat (SMT TYP)	Visual: No damage or discoloration of Connector materials.	Pre heat: 150°C~180°C, 60~90sec. Heat: 230°C min., 40sec min. Peak temp: 260°C max, 10sec max.
15	Resistance to Wave Soldering Heat (DIP TYPE)	No damage	Solder Temp: 250°C ±5°C for 3±0.5sec.

16	Resistance To Hand Soldering Heat	No damage	Apply solder iron in solder tail Temperature: 350±10°C, 3~5 sec.
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3.5 PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test or Examination	Test Group											
	A	B	C	D	E	F	G	H	I	J	K	L
	Test Sequence (a)											
Examination of Product	1,5	1,9	1	1	1	1,5	1,5	1,5	1	1,3	1,3	1
Contact Resistance	2,4	2,8				2,4	2,4	2,4				
Insulation Resistance		3,7										
Dielectric withstanding Voltage		4,6										
Insertion and Extraction Force	3											
Wire Retention Force			2									
Terminal/Housing Retention Force (For Plug)				2								
Terminal Retention Force (For Header)												
Heat Resistance						3						
Cold Resistance							3					
Humidity		5										
Salt Spray								3				
Solder ability									2			
Resistance to Reflow Soldering Heat(SMT TYP)										2		
Resistance to Wave Soldering Heat (DIP TYPE)											2	
Resistance To Hand Soldering Heat												2
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5

4.0 Quality Assurance Provisions

4.1 Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified.

4.2 Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3 Acceptance

Acceptance is based on verification that the product meets the requirements. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

4.4 Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used.

Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.