1.25mm Pitch Wire to Board Connector with Latch

1. Introduction

1.1 Objective

Testing was performed on 1.25mm Pitch Wire to Board Connector with Latch to determine if it meets the requirements of Product Specification 108-115184.

1.2 Scope

This report covers the Electrical, Mechanical and environmental performance requirements of 1.25mm Pitch Wire to Board Connector with Latch.
The qualification testing was performed between 13-JUN-2021 and 15-JUL-2021.

1.3 Conclusion

1.25mm Pitch Wire to Board Connector with Latch meets the Electrical, Mechanical and Environmental performance requirements of Product Specification, 108-115183.

1.4 Product Description

Product Part No.	Description
x-2390144-x	Cable Housing of 1.25mm Pitch Wire to Board Connector with Latch
2390147-x	Cable Contact of 1.25mm Pitch Wire to Board Connector with Latch
x-2390138-x	Vertical Type Board Side of 1.25mm Pitch Wire to Board Connector with Latch
x-2390136-x	Right Angle Type Board Side of 1.25mm Pitch Wire to Board Connector with Latch

Fig. 1 (Single row)

Product Part No.	Description
x-2390905-x	Cable Housing of 1.25mm Pitch Double row WTB Connector with Latch
2390914-x	Cable Contact of 1.25mm Pitch Double row WTB Connector with Latch
x-2390892-x	Vertical Type Board Side of 1.25mm Pitch Double row WTB Connector with Latch

Fig. 1 (Double row)

2. Test Contents

Para.	Test Items	Requirements	Judgment
2.1	Examination of Product	Meets requirements of product drawing.	Acceptable
	Electrical Requirements		
2.2	Termination Resistance (Low Level)	Mated connectors with PCB. Measure device: Open-circuit 20mV max, Mesh currents 10mA 20 mΩ MAX initial, 10 mΩ MAX changed.	Acceptable
2.3	Dielectric withstanding voltage	No creeping discharge or flashover shall occur. Current leakage: 1mA Max.	Acceptable
2.4	Insulation Resistance	100 MΩ Min	Acceptable
2.5	Temperature Rising	30°C max, when apply current rate	Acceptable

Fig. 2(to be continued)

Mechanical Requirements			
Para.	Test Items	Requirements	Judgment
2.6	Connector Mating/Unmating Force	See item 3	Acceptable
2.7	Durability	30 cycles	Acceptable
2.8	Vibration (Low Frequency)	1 us Max.	Acceptable
2.9	Mechanical Shock	1 us Max.	Acceptable
2.10	Contact/Metal peg Retention Force of Board side	2N Min. for contact 3N Min. for metal peg	Acceptable
2.11	crimping Terminal Pull Strength of the housing (Cable size)	5N Min. per pin	Acceptable
2.12	Wire Crimping Strength	AWG #26: 20N Min. AWG #28: 10N Min. AWG #30: 5N Min.	Acceptable
2.13	Locking Force	2~3pin, 10N Min 4~6pin, 12N Min 7~9pin, 15N Min >10pin, 20N Min.	Acceptable
Enviromental Requirements			
2.14	Thermal Shock	See Product Qualification and Test Sequence Group 6	Acceptable
2.15	Humidity	See Product Qualification and Test Sequence Group 6	Acceptable
2.16	Salt Spray	See Product Qualification and Test Sequence Group 7	Acceptable
2.17	Temperature Life (Heat Aging)	See Product Qualification and Test Sequence Group 5	Acceptable
2.18	Solderability	Solder able area shall have minimum of 95% solder coverage.	Acceptable
2.19	Resistance to Soldering Heat	See Product Qualification and Test Sequence Group 10	Acceptable

Fig. 2 (End)

1.25mm Pitch Wire to Board Connector with Latch

3. Mating / Unmating Force:

Pos. No.	At initial		At 30th
	Mating Force. (Max)	Unmating Force (Min)	Unmating Force (Min)
2	17	0.3	0.3
3	18	0.6	0.6
4	19	0.9	0.9
5	20	1.2	1.2
6	21	1.5	1.5
7	22	1.8	1.8
8	23	2.1	2.1
9	24	2.4	2.4
10	25	2.7	2.7
11	26	3.0	3.0
12	27	3.3	3.3
13	28	3.6	3.6
14	29	3.9	3.9
15	30	4.2	4.2
20	50	5.0	5.0
30	60	6.0	6.0
40	70	7.0	7.0
50	80	8.0	8.0

Table 3 (Unit: N)

4. Product Qualification Test Sequence
Numbers indicate sequence in which the tests are performed.

Test or Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	…	…
	Test Sequence											
Examination of Product	1,3		1,5	1,5	1,6	1,7	1,4	1,3	1,3	1		
Low Level Contact Resistance			2,7	2,6	2,7	2,8	2,5		4			
Insulation Resistance					3,8	3,9						
Dielectric Withstanding Voltage					4,9	4,10						
Temperature rise	2											
Mating / Unmating Forces			3,6							2		
Contact Retention Force		1										
Fitting Nail Retention Force		2										
Crimping Pull Out Force		3										
Crimping Terminal / Housing Retention Force		4										
Durability			4									
Vibration				3								
Shock (Mechanical)				4								
Temperature life					5							
Thermal Shock						5						
Humidity						6						
Salt Spray							3					
Solder ability								2				
Resistance to Soldering Heat									2			
Housing Locking Force												
Sample Size	2	4	4	4	4	4	4	4	4	4		

Fig.3

1.25mm Pitch Wire to Board Connector with Latch

5. Test Results

TG	Test Item		N	Condition	Test Result			Requirement	Judgment
					Max	Min	Ave		
1	3-2390136-5	Examination of product	5	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Thermal Rising(15pos) (1A)	5	Final	2.0°C	1.8°C	1.9°C	30℃ Max.	Meet Spec
		Examination of product	5	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	5	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Thermal Rising(15pos) (1A)	5	Final	17.6°C	14.4°C	15.7°C	30℃ Max.	Meet Spec
		Examination of product	5	Final	No physical damage occurred.			No abnormalities	Meet Spec
2	Examination of product		4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390136-5	Pin retention force	4*3	Final	4.3N	2.3N	3.3N	2N Min.	Meet Spec
	1-2390892-5	Pin retention force	4*3	Final	7.74N	5.49N	6.38N	2N Min	Meet Spec
	Examination of product		4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390136-5	Fitting Nail retention force	4*2	Final	4.3N	3.5N	4.0N	2N Min.	Meet Spec
	1-2390892-5	Fitting Nail retention force	4*2	Final	4.6N	3.5N	4.1N	2N Min	Meet Spec
	Examination of product		4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
	2390147	Crimping Pull Out Force	4	Final	21.1N	13.6N	17.3N	5 NMin.	Meet Spec
	2390914	Crimping Pull Out Force	4	Final	25.4N	15.7N	19.1N	5 NMin.	Meet Spec
	Examination of product		4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
	2390147 2390144	Crimping Terminal / Housing Retention Force	4*3	Final	15.4N	12.4N	13.8N	5 NMin.	Meet Spec
	2390914 2390905	Crimping Terminal / Housing Retention Force	4*6	Final	21.8N	17.6N	20.3N	5 NMin.	Meet Spec
3	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	3.6mΩ	3.5 mΩ	3.2mΩ	20mΩ Max.	Meet Spec
		Mating force	4	Initial	16.0N	9.7N	11.8N	30N Max.	Meet Spec
		Unmating force	4	Initial	9.4N	7.1N	7.8N	4.2N Min.	Meet Spec
		Durability	4	30cycles	No physical damage occurred.			No abnormalities	Meet Spec
		Mating force	4	Final	12.9N	9.0N	10.9N	30N Max.	Meet Spec
		Unmating force	4	Final	8.1N	6.5N	7.3N	4.2N Min.	Meet Spec
		LLCR	4*5	Initial	6.3 mΩ	5.2mΩ	5.7mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390138-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	4.6mΩ	3.8 mΩ	3.5mΩ	20mΩ Max.	Meet Spec
		Mating force	4	Initial	17.2N	10.2N	12.1N	30N Max.	Meet Spec
		Unmating force	4	Initial	10.2N	8.1N	8.4N	4.2N Min.	Meet Spec
		Durability	4	30cycles	No physical damage occurred.			No abnormalities	Meet Spec
		Mating force	4	Final	13.2N	9.1N	11.2N	30N Max.	Meet Spec
		Unmating force	4	Final	8.3N	7.1N	7.6N	4.2N Min.	Meet Spec
		LLCR	4*5	Initial	7.3 mΩ	4.5mΩ	5.9mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	9.2mΩ	7.1mΩ	7.8mΩ	20mΩ Max.	Meet Spec
		Mating force	4	Initial	22.1N	17.1N	19.8N	80N Max.	Meet Spec
		Unmating force	4	Initial	21.6N	17.5N	19.5N	8N Min.	Meet Spec
		Durability	4	30cycles	No physical damage occurred.			No abnormalities	Meet Spec
		Mating force	4	Final	17.9N	14.6N	16.6N	80N Max.	Meet Spec
		Unmating force	4	Final	18.7N	14.9N	17.0N	8N Min.	Meet Spec
		LLCR	4*5	Initial	14.1mΩ	9.9mΩ	11mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec

1.25mm Pitch Wire to Board Connector with Latch

4	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	5.4mΩ	4.1mΩ	4.7mΩ	20mΩ Max.	Meet Spec
		Vibration	4	Final	No electrical discontinuity greater than 0.1μsec. shall occur.			No abnormalities	Meet Spec
		Physical Shock	4	Final	No electrical discontinuity greater than 0.1μsec. shall occur.			No abnormalities	Meet Spec
		LLCR	4*5	Final	11.3mΩ	8.6mΩ	10.3mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390138-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	6.1mΩ	4.5mΩ	5.2mΩ	20mΩ Max.	Meet Spec
		Vibration	4	Final	No electrical discontinuity greater than 0.1μsec. shall occur.			No abnormalities	Meet Spec
		Physical Shock	4	Final	No electrical discontinuity greater than 1μsec. shall occur.			No abnormalities	Meet Spec
		LLCR	4*5	Final	11.6mΩ	9.3mΩ	10.5mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	9.7mΩ	8.6mΩ	9.2mΩ	20mΩ Max.	Meet Spec
		Vibration	4	Final	No electrical discontinuity greater than 1μsec. shall occur.			No abnormalities	Meet Spec
		Physical Shock	4	Final	No electrical discontinuity greater than 1μsec. shall occur.			No abnormalities	Meet Spec
		LLCR	4*5	Final	12.1mΩ	9.9mΩ	11.5mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
5	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	6.1mΩ	4.0mΩ	5.1mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100 MΩ			100 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Temperature life	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			100 MΩ Min	Meet Spec
		LLCR	4*5	Final	8.0mΩ	5.2mΩ	6.8mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390138-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	5.9mΩ	4.2mΩ	5.2mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100 MΩ			100 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Temperature life	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			1000 MΩ Min	Meet Spec
		LLCR	4*5	Final	7.8mΩ	5.6mΩ	6.7mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	8.7mΩ	7.0mΩ	8.0mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100 MΩ			1000 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Temperature life	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			1000 MΩ Min	Meet Spec
		LLCR	4*5	Final	11.4Ω	9.0mΩ	10.1mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec

1.25mm Pitch Wire to Board Connector with Latch

6	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	7.4mΩ	5.6mΩ	6.5 mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100 MΩ			1000 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Thermal Shock	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Humidity	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			100 MΩ Min	Meet Spec
		LLCR	4*5	Final		9.1mΩ	9.8mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390138-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	7.6mΩ	5.9 mΩ	6.8mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100 MΩ			100 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Thermal Shock	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Humidity	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			100 MΩ Min	Meet Spec
		LLCR	4*5	Final		9.3 mΩ	10.1mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	9.8mΩ	8.1mΩ	8.9mΩ	20mΩ Max.	Meet Spec
		Insulation Resistance	4	Initial	>100MΩ			100 MΩ Min	Meet Spec
		Dielectric withstanding Voltage	4	Initial	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Thermal Shock	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Humidity	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		Dielectric withstanding Voltage	4	Final	No breakdown or flashover occurred.			No abnormalities	Meet Spec
		Insulation Resistance	4	Final	>100 MΩ			100 MΩ Min	Meet Spec
		LLCR	4*5	Final			12.3mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
7	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	6.7mΩ	5.5mΩ	6.2mΩ	20mΩ Max.	Meet Spec
		Salt Spray	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Final	9.8mΩ	9.1mΩ	8.5mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Initial	9.7mΩ	8.6mΩ	9.2mΩ	20mΩ Max.	Meet Spec
		Salt Spray	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Final	13.9mΩ	12.1mΩ	12.7mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
8	Examination of product		4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
	Solder ability		4	Final	No physical damage occurred.			No abnormalities	Meet Spec

1.25mm Pitch Wire to Board Connector with Latch

9	3-2390136-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Resistance to Soldering Heat	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Final	6.8mΩ	5.7 mΩ	6.1mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	3-2390138-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Resistance to Soldering Heat	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	4*5	Final	7.1mΩ	5.6mΩ	6.2mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
	1-2390892-5	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Resistance to Soldering Heat	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		LLCR	15	Final	9.8mΩ	8.7mΩ	9.3mΩ	30mΩ Max.	Meet Spec
		Examination of product	4	Final	No physical damage occurred.			No abnormalities	Meet Spec
10	2390144 (3pos)	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Lock force	4	Final	20.7N	12.1N	16.6N	10 N Min.	Meet Spec
	2390144 (5pos)	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Lock force	4	Final	30.8N	18.3N	26.0N	12 N Min.	Meet Spec
	2390144 (8pos)	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Lock force	4	Final	47.4N	29.3N	37.0N	15 N Min.	Meet Spec
	2390144 (10pos)	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Lock force	4	Final	51.8N	33.1N	43.2N	20 NMin.	Meet Spec
	2390905 (20pos)	Examination of product	4	Initial	No physical damage occurred.			No abnormalities	Meet Spec
		Lock force	4	Final	39.79N	34.79N	37.16N	20 N Min.	Meet Spec

----------END