

1. Introduction

1.1 Testing was performed on the 2mm Pitch Battery Connector to determine if it meets the requirements of Product Specification, 108-78292

1.2 Scope

This report covers the electrical, mechanical and environmental performance requirements of the 2mm Pitch Battery Connector.

The qualification testing was performed between 04JUL, 2005 and 02AUG, 2005.

1.3 Conclusion

The 2mm Pitch Battery Connector meets the electrical, mechanical and environmental performance requirements of Product Specification, 108-78292

1.4 Product Description

This product has been developed for Battery Pack of mobile PC.

1.5 Test Samples

Samples were taken randomly from current production. The following samples were used :


Part Number	Description
1827654-1	PLUG CONNECTOR 7Pos.
1932154-1	PLUG CONNECTOR 7Pos. Reverse
1827684-1 1-1827684-3 1939229-1	RECEPTACLE CONNECTOR 7Pos.
1827685-1 1939230-1	RECEPTACLE CONNECTOR 7Pos. Reverse type
1932008-1	RECEPTACLE CONNECTOR 7Pos
2229293-1 1-2229293-1	RECEPTACLE CONNECTOR 7Pos.
1932010-1	PLUG CONNECTOR 7Pos

Fig. 1

2. Test Contents


No.	Test Items	Requirements	Judgment
2.1	Examination of Product	Visual inspection No physical damage	Acceptable
Electrical Requirements			
2.2	Termination Resistance (Low Level)	Initial ; 30mΩ Max. Final ; Δ R 20mΩ Max.	Acceptable
2.3	Dielectric withstanding Voltage	Initial / Final ; 1 kV AC, 1 minute No abnormality allowed.	Acceptable
2.4	Insulation Resistance	Initial ; 1000MΩ Min. Final ; 100MΩ Min.	Acceptable
2.5	Temperature Rising	30 °C Max. under loaded specified rating current.	Acceptable
Mechanical Requirements			
2.6	Connector Mating Force	2N Max./ 1 Pos. Head Operation Speed : 100mm/min.	Acceptable
2.7	Connector Unmating Force	0.3N Min./1 Pos. Head Operation Speed : 100mm/min.	Acceptable
2.8	Durability(Repeated Mating/ Unmating)	Repeated mating/unmating for 6000 cycles with Plug, 2000 cycles with Rec. at a rate of 100mm/min. Δ R 20mΩ Max.	Acceptable
2.9	Vibration (Low Frequency)	10-55-10Hz/1minutes Amplitude :1.52mm, X, Y & Z Axes :2hours each No electrical discontinuity greater than 0.1 μ sec shall occur. Δ R 20mΩ Max.	Acceptable
2.10	Physical Shock	No electrical discontinuity greater than 0.1 μ sec allowed. 490m/s ² (50G), Halfsine Wave. X,Y,Z 3 drops, Total 18 drops Δ R 20mΩ Max.	Acceptable

Fig. 2 (to be continued)

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No.	Test Items	Requirements	Judge- ment
2.11	Solderability	Solder Temperature : $230 \pm 5^{\circ}\text{C}$, Flux ; Alpha-100 Wet solder coverage : 95% Min.	Acceptable
2.12	Thermal Shock	$-40^{\circ}\text{C}/30\text{min}$, $85^{\circ}\text{C}/30\text{min}$, 5cycles ΔR 20m Ω Max.	Acceptable
2.13	Temperature-Humidity Cycling	$25^{\circ}\text{C} \sim 65^{\circ}\text{C}$, 90~95% R.H. 24 Hrs. Insulation resistance 100M Ω Min. (Final), ΔR 20m Ω Max.	Acceptable
2.14	Salt Spray	5%, 35°C , 24Hrs. ΔR 20m Ω Max.	Acceptable
2.15	Resistance to Soldering Heat	Solder Temperature : $260 \pm 5^{\circ}\text{C}$, Flux ; Alpha-100 No physical damage shall occur.	Acceptable
2.16	Industrial SO2 Gas	10ppm, 25, 95% R.H., 24Hrs. ΔR 20m Ω Max.	Acceptable
2.17	Temperature Life	85°C , 96Hrs. ΔR 20m Ω Max.	Acceptable

Fig. 2 (End)

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3. Product Qualification Test Sequence

Test Items	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence (a)										
Examination of Product	1,7	1,5	1,9	1,6	1,5	1,5	1,5	1,5	1,3	1,3	1,3
Termination Resistance (Low Level)		2,4	2,8	2,5	2,4	2,4	2,4	2,4			
Dielectric withstanding Voltage	3,6										
Insulation Resistance	2,5										
Vibration (Low Frequency)				3							
Physical Shock				4							
Connector Mating Force			3,6								
Connector Unmating Force			4,7								
Durability (Repeated Mating/Unmating)			5								
Solderability									2		
Temperature-Humidity Cycling	4	3									
Resistance to Soldering Heat										2	
Thermal Shock					3						
Salt Spray						3					
Industrial SO ₂ Gas							3				
Temperature Life (Heat Aging)								3			
Temperature Rising											2

(a) Numbers indicate sequence in which the tests are performed


4. Test Results

Test Group	Test Items			Unit	Test Results					Spec.	Judgment
					Set	N	Max.	Min.	Ave.		
1	Humidity-Temperature Cycling	Insulation Resistance	Initial	MΩ	3	3	1000 MΩ Min.			1000 MΩ Min.	Acceptable
			Final	MΩ	3	3	100 MΩ Min.			100 MΩ Min.	Acceptable
		Dielectric withstanding Voltage	Initial	—	3	3	No Abnormalities			No Abnormalities	Acceptable
			Final	—	3	3	No Abnormalities			No Abnormalities	Acceptable
2	Humidity-Temperature Cycling	Termination Resistance	Initial	mΩ	3	21	2.57	2.02	2.34	30 mΩ Max.	Acceptable
			Final	mΩ	3	21	2.94	2.06	2.46	—	Acceptable
			ΔR	mΩ	3	21	0.73	-0.24	0.12	20 mΩ Max.	Acceptable
3	Repeated Mate / Unmating	Mating Force	Initial	N	6	6	4.91	4.53	4.71	14N Max.	Acceptable
			Final	N	6	6	5.50	4.86	5.23	14N Max.	Acceptable
		Unmating Force	Initial	N	6	6	4.09	2.18	3.08	2.1N Min.	Acceptable
			Final	N	6	6	4.71	2.40	3.41	2.1N Min.	Acceptable
		Termination Resistance	Initial	mΩ	2	14	2.62	2.15	2.34	30 mΩ Max.	Acceptable
			Final	mΩ	2	14	2.72	2.23	2.43	—	Acceptable
			ΔR	mΩ	2	14	0.28	-0.09	0.08	20 mΩ Max.	Acceptable

Test Group	Test Items			Unit	Test Results					Spec.	Judgement
					Set	N	Max.	Min.	Ave.		
4	Vibration (Low Frequency) • Physical Shock	Discontinuity	Vibration	—	2	14	No discontinuity occurred greater than 0.1 μ sec.			0.1 μ sec. Max.	Acceptable
			Physical Shock	—	2	14	No discontinuity occurred greater than 0.1 μ sec.			0.1 μ sec. Max.	Acceptable
		Termination Resistance	Initial	m Ω	2	14	2.70	2.05	2.36	30 m Ω Max.	Acceptable
			Final	m Ω	2	14	2.97	2.17	2.59	—	Acceptable
			ΔR	m Ω	2	14	0.52	-0.30	0.23	20 m Ω Max.	Acceptable
5	Thermal Shock	Termination Resistance	Initial	m Ω	3	21	2.62	2.13	2.35	30 m Ω Max.	Acceptable
			Final	m Ω	3	21	2.80	2.16	2.40	—	Acceptable
			ΔR	m Ω	3	21	0.31	-0.13	0.05	20 m Ω Max.	Acceptable
6	Salt Spray	Termination Resistance	Initial	m Ω	3	21	2.43	2.05	2.26	30 m Ω Max.	Acceptable
			Final	m Ω	3	21	2.71	2.02	2.39	—	Acceptable
			ΔR	m Ω	3	21	0.36	-0.15	0.12	20 m Ω Max.	Acceptable
7	Industrial SO2 Gas	Termination Resistance	Initial	m Ω	3	21	2.59	2.11	2.38	30 m Ω Max.	Acceptable
			Final	m Ω	3	21	2.99	2.19	2.67	—	Acceptable
			ΔR	m Ω	3	21	0.61	-0.14	0.28	20 m Ω Max.	Acceptable
8	Temperature Life (Heat Aging)	Termination Resistance	Initial	m Ω	3	21	2.59	2.09	2.35	30 m Ω Max.	Acceptable
			Final	m Ω	3	21	2.72	2.08	2.42	—	Acceptable
			ΔR	m Ω	3	21	0.27	-0.14	0.07	20 m Ω Max.	Acceptable
9	Solderability		Initial	—	3	3	No Abnormalities			No Abnormalities	Acceptable
			Final	—	3	3	Wet solder coverage: 95% Min.			Wet solder coverage : 95% Min.	Acceptable



Test Group	Test Items		Unit	Test Results					Spec.	Judgement
				Set	N	Max.	Min.	Ave.		
10	Resistance to Soldering Heat	Initial	—	3	3	No Abnormalities			No Abnormalities	Acceptable
		Final	—	3	3	No physical damage.			No Abnormalities	Acceptable
11	Temperature Rising	Initial	°C	5	5	15.9	-----	-----	30°C Max	Acceptable

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