DC Power Connector

1. INTRODUCTION

1.1. Purpose

Testing was performed on the TE DC POWER CONNECTOR to determine its conformance to the requirements of Product Specification 108-99040.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the DC POWER CONNECTOR.

1.3. Conclusion

DC POWER CONNECTOR meets the electrical, mechanical, and environmental performance requirements of the Product Specification 108-99040.

1.4. Test Samples

Samples 1-2129334-1, 1-21293458-1/-2 & 2129567-1 DC POWER CONNECTOR were taken randomly for tests.

1.5. Test Specimens

Test specimens were representative of normal production lots. The following specimens were used for test.

Test Group	Quantity	Description
1.2.3.4.5.6.7.8.9.10	5 ea.	DC POWER CONNECTOR

1.6. Qualification Test Sequence

Test Item	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence (a)									
Examination of Product	1, 9	1, 10	1,9	1, 3	1,7	1, 7	1, 3	1, 3	1,5	1,6
Low Level Contact Resistance	2, 8	2,9	2,5, 8		2,4, 6				2,4	2,5
Insulation Resistance						2, 5				
Dielectric Withstanding Voltage						3, 6				
Temperature Rise				2						
Solderability								2		
Resistance to Soldering Heat							2			
Mating Force	3,6	3,6								
Unmating Force	4,7	4,7								
Durability	5									
Durability (preconditioning)			3(b)							
Vibration (Random)					5					
Physical Shock					3					
Reseating(manually plug/unplug 3 times)		8	7							4
Connector Strength									3	
Humidity			6			4				
Temperature Life		5								
Thermal Shock			4							
Industrial Gas										3

Figure 1

Note (a) Numbers indicate sequence in which tests are performed.

(b) Preconditioning: Repeated Mating/Unmating 50 cycles. The mating and Unmating Cycle is at the maximum rate of 200 cycles per hour.

TEST RESULT

Test Group	Test Description	Requirement	Test Result				Judgment
			Max.	Min.	Ave.	σ	
1	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.05	2.55	2.78	0.22	Accepted
		Detect contact :10mΩ max	6.78	6.11	6.4	0.24	Accepted
		Power contact :7mΩ max	4.68	3.99	4.42	0.29	Accepted
	Mating force	3Kgf maximum	0.82	0.62	0.70	0.08	Accepted
	Unmating force	0.7 Kgf minimum	1.23	1.1	1.17	0.05	Accepted
	Durability	No physical damage.	PASSED				Accepted
	Mating force	3Kgf maximum	0.92	0.84	0.88	0.03	Accepted
	Unmating force	0.7 Kgf minimum	1.54	1.35	1.48	0.08	Accepted
	Low level contact resistance (final)	Ground contact : 10mΩ max.	4.98	3.51	4.14	0.56	Accepted
		Detect contact: △10mΩ max.	8.78	8.09	8.30	0.28	Accepted
			Max. △ is 2.36				
		Power contact : △10mΩ max.	5.82	4.98	5.31	0.36	Accepted
			Max. △ is 1.14				
2	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.6	2.57	2.98	0.41	Accepted
		Detect contact :10mΩ max	6.75	5.94	6.48	0.33	Accepted
		Power contact :7mΩ max	5.00	3.58	4.36	0.70	Accepted
	Mating force	3Kgf maximum	0.78	0.68	0.73	0.04	Accepted
	Unmating force	0.7 Kgf minimum	1.25	1.15	1.20	0.04	Accepted
	Temperature Life	No physical damage	PASSED				Accepted
	Mating force	3Kgf maximum	0.79	0.69	0.73	0.04	Accepted
	Unmating force	0.7 Kgf minimum	1.27	1.16	1.22	0.04	Accepted
	Reseating	No physical damage.	PASSED				Accepted
	Low level contact resistance	Ground contact : 10mΩ max.	3.74	2.74	3.33	0.41	Accepted
		Detect contact: △10mΩ max.	7.73	6.08	7.06	0.65	Accepted
			Max. △ is 1.26				
		Power contact : △10mΩ max.	5.31	3.96	4.80	0.63	Accepted
			Max. △ is 0.67				Accepted

Figure 2 (continued)

Test Group	Test Description	Requirement	Test Result				Judgment
			Max.	Min.	Ave.	σ	
3	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.87	3.17	3.46	0.26	Accepted
		Detect contact :10mΩ max	6.57	6.08	6.28	0.20	Accepted
		Power contact :7mΩ max	4.81	3.27	3.97	0.59	Accepted
	Durability (preconditioning)	No physical damage	PASSED				Accepted
	Thermal Shock	No physical damage.	PASSED				Accepted
	Low level contact resistance	Ground contact :10mΩ max.	4.41	3.50	3.80	0.35	Accepted
		Detect contact: △10mΩ max.	6.70	6.12	6.41	0.24	Accepted
			Max. △ is 0.27				
		Power contact : △10mΩ max.	5.62	3.50	4.59	0.88	Accepted
			Max. △ is 0.92				
	Humidity	No physical damage.	PASSED				Accepted
	Reseating	No physical damage.	PASSED				Accepted
	Low level contact resistance (final)	Ground contact :10mΩ max.	4.43	3.31	3.85	0.40	Accepted
		Detect contact: △10mΩ max.	6.68	6.19	6.46	0.23	Accepted
			Max. △ is 0.39				
		Power contact : △10mΩ max.	5.89	3.46	4.63	0.90	Accepted
			Max. △ is 1.08				
4	Examination of product.	No physical damage.	PASSED				Accepted
	Temperature rising (Cable type Jack)	10.7 [A]	28.8°C				Accepted
		12.5 [A]	22.8°C				Accepted
	Temperature rising (DIP type Jack)	10.7 [A]	21.1°C				Accepted
		12.5 [A]	27.7°C				Accepted
	Examination of product.	No physical damage.	PASSED				Accepted

30℃ maximum

Figure 2 (continued)

Test Group	Test Description	Requirement	Test Result				Judgment
			Max.	Min.	Ave.	σ	
5	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.89	2.41	2.81	0.62	Accepted
		Detect contact :10mΩ max	6.54	5.80	6.16	0.30	Accepted
		Power contact :7mΩ max	5.28	4.34	4.81	0.38	Accepted
	Physical Shock	Discontinuity < 1 μ second.	PASSED				Accepted
	Low level contact resistance	Ground contact :10mΩ max.	2.97	2.11	2.35	0.36	Accepted
		Detect contact: △10mΩ max.	6.85	5.74	6.09	0.45	Accepted
			Max. △ is 0.85				
		Power contact : △10mΩ max.	5.66	4.67	5.31	0.39	Accepted
			Max. △ is 0.98				
	Vibration	Discontinuity < 1 μ second.	PASSED				Accepted
	Low level contact resistance	Ground contact :10mΩ max.	2.88	2.11	2.33	0.32	Accepted
		Detect contact: △10mΩ max.	6.39	5.47	5.86	0.38	Accepted
			Max. △ is 0.39				
		Power contact : △10mΩ max.	6.09	4.34	5.25	0.78	Accepted
			Max. △ is 1.03				
6	Insulation Resistance	500MΩ min.	PASSED				Accepted
	Dielectric withstanding voltage	No physical damage.	PASSED				Accepted
	Humidity	No physical damage.	PASSED				Accepted
	Insulation Resistance	500MΩ min.	PASSED				Accepted
	Dielectric withstanding voltage	No physical damage.	PASSED				Accepted
7	Examination of product.	No physical damage.	PASSED				Accepted
	Resistance to soldering Heat	No physical damage.	PASSED				Accepted
8	Examination of product.	No physical damage.	PASSED				Accepted
	Solder ability	Wet solider coverage 95% Min	PASSED				Accepted

Figure 2 (continued)

Test Group	Test Description	Requirement	Test Result				Judgment
			Max.	Min.	Ave.	σ	
9	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.07	2.47	2.71	0.23	Accepted
		Detect contact :10mΩ max	6.22	5.91	6.05	0.13	Accepted
		Power contact :7mΩ max	6.07	4.28	5.04	0.64	Accepted
	Connector Strength	No physical damage.	PASSED				Accepted
	Low level contact resistance	Ground contact :10mΩ max.	3.35	2.23	2.82	0.44	Accepted
		Detect contact: △10mΩ max.	6.44	5.89	6.25	0.22	Accepted
			Max. △ is 0.49				
		Power contact : △10mΩ max.	5.58	4.63	5.04	0.42	Accepted
			Max. △ is 1.11				
10	Low level contact resistance (Initial)	Ground contact :7mΩ max	3.51	2.82	3.21	0.29	Accepted
		Detect contact :10mΩ max	6.26	6.08	6.19	0.07	Accepted
		Power contact :7mΩ max	4.79	3.52	4.23	0.49	Accepted
	Industrial Gas	No physical damage.	PASSED				Accepted
	Reseating	No physical damage.	PASSED				Accepted
	Low level contact resistance	Ground contact :10mΩ max.	4.42	2.82	3.68	0.70	Accepted
		Detect contact: △10mΩ max.	6.61	6.27	6.40	0.14	Accepted
			Max. △ is 0.53				
		Power contact : △10mΩ max.	5.12	4.2	4.55	0.40	Accepted
			Max. △ is 0.68				

Figure 2 (End)