

1. Introduction

1.1 Testing was performed on the 2.0mm pitch CT Connector (M/T Type) to determine if it meets the requirements of AMP Specification, 108-60016.

1.2 Scope

This report covers the electrical, mechanical and environmental performance requirements of the 2.0mm pitch CT Connector (M/T Type).

1.3 Conclusion

The 2.0mm pitch CT Connector (M/T Type) meets the electrical, mechanical and environmental performance requirements of Product Specification, 108-60016.

1.4 Product Description

- 2.0mm pitch.M/T connector of low profile structure.
- Both acceptable wire size range of AWG #26,#28.
- Released AWG#24 Type

1.5 Test Samples

Samples were taken randomly from current production.

The samples of Fig.1 were used.

Part Number	Description
173977-2	Rec Ass'y 2P #26 #28Type
173977-5	Rec Ass'y 5P #26 #28Type
173977-6	Rec Ass'y 6P #26 #28Type
1-173977-0	Rec Ass'y 10P #26 #28Type
1-173977-2	Rec Ass'y 12P #26 #28Type
179694-2	Rec Ass'y 2P #24Type
179694-6	Rec Ass'y 6P #24Type
1-179694-2	Rec Ass'y 12P #24Type
292253-2	Post HDR Ass'y H 2P
292253-6	Post HDR Ass'y H 6P
1-292253-2	Post HDR Ass'y H 12P
292161-2	Post HDR Ass'y V 2P
292161-6	Post HDR Ass'y V 6P
1-292161-2	Post HDR Ass'y V 12P
292254-2	Post HDR Ass'y V 2P
292254-5	Post HDR Ass'y V 5P
1-292254-0	Post HDR Ass'y V 10P

Fig. 1

2. Test Contents

No.	Test Items	Requirements	Judgement		
2.1	Examination of Product	Visual Inspection No physical damage	Acceptable		
Electrical Requirements					
2.2	Termination Resistance (Low Level)	Initial 10mΩ Max. Final 20mΩ Max.	Acceptable		
2.3	Insulation Resistance	Initial 1000MΩ Min. Final 500MΩ Min.	Acceptable		
2.4	Dielectric withstanding Voltage	Initial/Final 1kV AC, (50 Hz), 1 minute No abnormality allowed.	Acceptable		
2.5	Temperature Rising	30°C Max. Test Current AWG #24:3A, #26:2A, #28:1A	Acceptable		
Mechanical Requirements					
2.6	Connector Mating/ Unmating Force	Head Operating Speed:50mm/minute Initial and 30 TH cycles see Fig.3	Acceptable		
2.7	Wire Retention Force	Wire Size	Axial Direction	Lateral Direction	Acceptable
		AWG			
		#24, #26	19.6N(2.0Kgf)	14.7(1.5Kgf)	
		#28	14.7(1.5Kgf)	11.76N(1.2Kgf)	
		Operation Speed 100mm/minute			
2.8	Post Retention Force	14.7N (1.5 kgf) Min. Operation Speed : 100mm/minute	Acceptable		
2.9	Contact Retention Force	9.8N (1.0 kgf) Min. Operation Speed : 50mm/minute	Acceptable		
2.10	Panel Mounting Force	49N (5.0 kgf) Min.	Acceptable		
2.11	Panel Retention Force	83.3 (8.5 kgf) Min.	Acceptable		
2.12	Vibration (Low Frequency)	10-55-10Hz/1minutes, 98 m/s ² (10 G), Amplitude : 1.5mm, X, Y & Z Axes : 2 hours each No electrical discontinuity greater than 1 μ sec shall occur.	Acceptable		
2.13	Physical Shock	No electrical discontinuity greater than 1 μ s allowed. 490m/s ² (50 G), Halfsine Wave., 11msec XYZ drops, Total 18 drops Final 20mΩ Max.	Acceptable		
2.14	Solderability	Solder Temperature : 245 ± 3 °C Immersion Duration : 3 ± 0.5 seconds Flux : Alpha 100 (NON-active rosin base)	Acceptable		
2.15	Resistance to Soldering Heat	<u>Flow Soldering</u> Test connector on PCB. Solder Temperature : 260 ± 5 °C Immersion Duration : 10 ± 1 sec. <u>Reflow Soldering</u> SMT product mounted on PCB to solder like Fig. 4 (measure at housing surface) No physical damage shall occur.	Acceptable		
Environmental Requirements					

2.16	Thermal Shock	-55°C~+85°C,5 cycles Final 20mΩ Max.	Acceptable
2.17	Humidity-Temperature Cycling	40~65°C、90~95% RH、240Hrs Final 20mΩ Max.	Acceptable
2.18	Humidity (Steady State)	40°C, 90~95% RH, 96Hrs. Final 20mΩ Max.	Acceptable
2.19	Salt Spray	Salt concentration 5%, 48Hrs. Final 20mΩ Max.	Acceptable
2.20	Industrial SO ₂ Gas	3ppm,240Hrs, Final 20mΩ Max.	Acceptable
2.21	Temperature Life (Heat Aging)	85±2°C, 96Hrs. Final 20mΩ Max.	Acceptable
2.22	Resistance to Cold	-25°C, 48Hrs. Final 20mΩ Max.	Acceptable
2.22	Sequence Test	Temperature changes between 25°C and 65°C with 95%R.H. for 10 cycles after 30 cycles of repeated mating/Unmating Final 20mΩ Max.	Acceptable

Fig. 2 (End)

(Initial and 30th Cycle)

Pos.	Insertion Force	Extraction Force
2	34.3N(3.5Kgf)	4.9N(0.5Kgf)
3		
4		
5	49N(5.0Kgf)	6.86N(0.7Kgf)
6		
7		
8	63.7N(6.5Kgf)	9.8N(1.0Kgf)
9		
10		
11	73.5N(7.5Kgf)	13.72N(1.4Kgf)
1		
15		

Fig. 3 (Connector Mating/Unmating Force)

Product Qualification Test Sequence

Test Examination	Test Group															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Test Sequence (a)															
Examination of Product	1,4 .8	1,3	1,5	1	1,7	1,3	1,3	1,3	1,3	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Termination Resistance (LowLevel)			2,4		2,4 .6			2,4 .6		2,4	2,4	2,4	2,4	2,4	2,4	2,4
Dielectric Strength	3,7															
Insulation Resistance	2,6															
Temperature Rising		2														
Vibration (Low Frequency)			3													
Wire Retention Force				2												
Durability					3											
Housing Panel Retention Force						2										
Post Retention Force							2									
Solderability								2								
Resistance to soldering Heat									2							
Thermal Shock										3						
Humidity-Temperature Cycling					5						3					
Humidity (steady state)	5											3				
Salt Spray													3			
Industrial SO ₂ Gas														3		
Temperature Life (Heat Aging)															3	
Resistance to Cold																3

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

3.The Result of Evaluation Testing

3.1 Connector Mating/Unmating Force

Fasten connector halves on tensile testing machine and by operating the head with the speed at a minute,measure the force required to mate and unmate the connector in pair,

Connector mating Force(V) 2Pos

Unit: Kg

Test Condition	Connector mating Force(V) 2Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	0.96	0.71	0.84	0.10	3.5	Acceptable
30 Cycles	5	0.94	0.59	0.73	0.12	3.5	Acceptable

Connector Unmating Force(V) 2Pos

Unit: Kg

Test Condition	Connector Unmating Force(V) 2Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	1.56	1.28	1.41	0.09	0.5	Acceptable
30 Cycles	5	1.28	1.06	1.18	0.07	0.5	Acceptable

Connector mating Force(V) 6Pos

Unit: Kg

Test Condition	Connector mating Force(V) 6Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	1.70	1.40	1.57	0.12	5	Acceptable
30 Cycles	5	1.30	1.05	1.14	0.10	5	Acceptable

Connector Unmating Force(V) 6Pos

Unit: Kg

Test Condition	Connector Unmating Force(V) 6Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	2.05	1.65	1.90	0.15	0.7	Acceptable
30 Cycles	5	1.50	1.25	1.34	0.11	0.7	Acceptable

Connector mating Force(V) 12Pos

Unit: Kg

Test Condition	Connector mating Force(V) 12Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	3.15	2.00	2.82	0.50	7.5	Acceptable
30 Cycles	5	2.70	1.85	2.28	0.31	7.5	Acceptable

Connector Unmating Force(V) 12Pos

Unit: Kg

Test Condition	Connector Unmating Force(V) 12Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	5	3.95	2.15	3.14	0.72	1.4	Acceptable
30 Cycles	5	2.70	1.90	2.34	0.31	1.4	Acceptable

A Direction (Feed THRU)2 pos
Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force 2Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	1.30	1.10	1.21	0.07	3.5	Acceptable
30 Cycles	10	1.35	1.12	1.23	0.08	3.5	Acceptable

A Direction (Feed THRU)2 pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force 2Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	1.55	1.00	1.29	0.18	0.5	Acceptable
30 Cycles	10	1.30	1.00	1.25	0.10	0.5	Acceptable

B Direction (Feed THRU)2 pos

Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force 2Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	2.40	1.80	2.10	0.20	5.0	Acceptable
30 Cycles	10	2.35	1.70	1.95	0.20	5.0	Acceptable

B Direction (Feed THRU)2 pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force 2Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	2.45	1.80	2.18	0.30	0.8	Acceptable
30 Cycles	10	2.37	1.94	2.12	0.13	0.8	Acceptable

A Direction (Feed THRU)5 pos

Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force 5Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	2.70	1.65	2.19	0.30	5.0	Acceptable
30 Cycles	10	2.50	1.70	2.12	0.27	5.0	Acceptable

A Direction (Feed THRU)5pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force 5Pos					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	2.90	1.90	2.26	0.33	0.7	Acceptable
30 Cycles	10	2.70	1.90	2.25	0.25	0.7	Acceptable

B Direction (Feed THRU)5 pos

Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force 5Pos					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	3.90	2.37	3.00	0.37	6.5	Acceptable
30 Cycles	10	3.75	2.14	2.83	0.48	6.5	Acceptable

B Direction (Feed THRU)5pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	3.60	2.53	3.05	0.35	1.0	Acceptable
30 Cycles	10	3.40	2.37	3.92	0.39	1.0	Acceptable

A Direction (Feed THRU)10pos

Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	3.40	2.07	2.53	0.38	6.5	Acceptable
30 Cycles	10	3.35	2.05	2.45	0.39	6.5	Acceptable

A Direction (Feed THRU)10pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	2.45	1.75	2.08	0.32	1.0	Acceptable
30 Cycles	10	2.80	1.70	2.35	0.38	1.0	Acceptable

B Direction (Feed THRU)10pos

Connector Mating Force

Unit: Kg

Test Condition	Connector mating Force					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	3.90	2.18	3.00	0.45	8.0	Acceptable
30 Cycles	10	4.65	2.42	3.35	0.40	8.0	Acceptable

B Direction (Feed THRU)10pos

Connector Unmating Force

Unit: Kg

Test Condition	Connector Unmating Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Initial	10	3.00	2.55	2.78	0.17	1.3	Acceptable
30 Cycles	10	3.60	2.90	3.31	0.32	1.3	Acceptable

3.2 Contact Unmating Force

After preconditioning by using applicable post for 3 cycles. Measure the force required to unmate post by

operating the head at a rate of 50mm a minute.

Sample:12Pos (V)

Contact Unmating Force Unit:g

Test Condition	Contact Unmating Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
After 3 cycles	12	200	120	157	26.68	80	Acceptable

3.3 Wire retention force

Apply a pull-off load to terminated wire of contact secured on the tester.At a rate of 100mm a minute the load is applied in the axial and lateral direction.

Sample:15 pos

Wire retention Force(AWG #24) Unit:Kg

Test Condition	Wire retention Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Lateral Direction	15	5.07	4.02	4.68	0.36	2.0	Acceptable
Axial Direction	45	2.27	1.73	1.98	0.12	1.5	Acceptable

Sample:12 pos

Wire retention Force(AWG #26) Unit:Kg

Test Condition	Wire retention Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Lateral Direction	24	3.70	2.85	3.28	0.29	2.0	Acceptable
Axial Direction	24	3.20	2.70	3.02	0.13	1.5	Acceptable

Sample:15 pos

Wire retention Force(AWG #24) Unit:Kg

Test Condition	Wire retention Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
Lateral Direction	24	2.50	2.15	2.36	0.11	1.5	Acceptable
Axial Direction	24	2.30	1.95	2.16	0.12	1.2	Acceptable

3.4 Post retention force

Sample:12pos(V),6Pos(H),10Pos(FEED THRU)

Post Retention Force Unit:Kg

Test Condition	retention Force					Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG	SIG		
V Type	24	4.16	3.35	3.73	0.18	1.5	Acceptable
H Type	18	4.52	3.51	4.14	0.27	1.5	Acceptable
FEED THRU	10	5.40	4.00	4.64	0.35	1.5	Acceptable

3.5 Panel mounting and retention force

The Force required to complete mounting of connector on mounting panel ,and the force of required to

dislodge the mounted connector from the panel was measured.

Sample:12Pos

Panel mounting and retention force

Unit:Kg

Test Condition	mounting and retention force				Spec. limit (MIN)	Judgement
	N	MAX	MIN	AVG		
mounting	10	3.70	3.00	3.45	5.0 MAX	Acceptable
retention	10	21.4	18.0	19.5	8.5 MIN	Acceptable

All samples showed deformation of housing,as they were dislodge from panel.

3.6 Dielectric strength

Apply test potential of 1,000V AC for 1 minute to the test specimens.

As a result of testing,all the samples withstood test potential of 1,000V AC for 1 minute,Initially and after environmental testing,without flashover and dielectric break-down,meeting the requirement.

3.7 Insultion Resistance

Apply test potential of 500V DC for 1 minute to test specimens

As a result of testing,all the samples withstood test potential of 1,000 mΩ MIN between the contact and the earth,initially and after environmental testing.

3.8 Temperature Raising

Measure the Temperature rise result by applying rated current to the test circuit.(specified current 3A:#24,2A:#26,1A:#28)

Sample:15Pos(V)

Temperature Raising(AWG #24)

Unit: °C

Test Condition	Temperature Raising					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
1.0 A	10	2.8	1.7	2.38	0.35	30°C	Acceptable
2.0 A	10	10.4	6.9	8.81	1.10	30°C	Acceptable
2.5 A	10	16.0	10.6	13.67	1.63	30°C	Acceptable
3.0 A	10	22.8	15.0	19.22	2.43	30°C	Acceptable

Sample:12Pos(V)

Temperature Raising(AWG #26)

Unit: °C

Test Condition	Temperature Raising					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
1.0 A	11	2.7	0.3	1.75	0.85	30°C	Acceptable
2.0 A	11	10.2	1.9	7.13	2.42	30°C	Acceptable
3.0 A	11	21.3	3.8	15.45	5.00	30°C	Acceptable

Sample:12Pos(V)

Temperature Raising(AWG #28)

Unit: °C

Test Condition	Temperature Raising					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
1.0 A	11	4.2	0.9	2.87	0.95	30°C	Acceptable
2.0 A	11	13.5	2.1	9.56	3.66	30°C	Acceptable
3.0 A	11	28.7	3.2	19.90	7.86	30°C	Acceptable

3.9 Low Frequency Vibration Test

10-55-10HZ per minute,XYZ 2 Hours MIL-STD-202,method 201,Condition A.

Sample:15 Pos

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.64	2.02	2.36	0.18	10 mΩ	Acceptable
Final	30	2.86	2.15	2.46	0.21	20 mΩ	Acceptable

No electrical discontinuity greater than 1microsecond took place during low frequency vibration test.

Sample:12 Pos

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.04	2.14	2.49	0.21	10 mΩ	Acceptable
Final	24	2.89	2.22	2.51	0.19	20 mΩ	Acceptable

Sample:12 Pos

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.32	2.13	2.55	0.31	10 mΩ	Acceptable
Final	24	3.95	2.10	2.60	0.41	20 mΩ	Acceptable

No electrical discontinuity greater than 1microsecond took place during low frequency vibration test.

3.10 Physical Shock

Apply physical shock of 50G in 11 millisecond duration to the normal and reversed direction of three mutual axes(X,Y,Z) of the sample product for three drops each, totally 18 drops.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.83	2.19	2.52	0.19	10 mΩ	Acceptable
Final	30	2.98	2.16	2.54	0.20	20 mΩ	Acceptable

No electrical discontinuity greater than 1 μ s took place during the physical shock test.

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	2.92	2.29	2.54	0.20	10 mΩ	Acceptable
Final	24	3.06	2.14	2.51	0.22	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	2.87	2.01	2.53	0.23	10 mΩ	Acceptable
Final	24	3.10	2.17	2.53	0.22	20 mΩ	Acceptable

No electrical discontinuity greater than 1 μ s took place during the physical shock test.

3.11 Temperature Life

Test Samples are subject to exposure under the evaluated temperature at 85°C in the oven for 96 hours.

Sample:15 Pos(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.56	2.00	2.24	0.11	10 mΩ	Acceptable
After 96 Hrs	30	2.63	1.93	2.26	0.14	20 mΩ	Acceptable
After 240 Hrs	30	2.79	2.05	2.31	0.15	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	36	2.97	1.94	2.36	0.21	10 mΩ	Acceptable
After 96 Hrs	36	3.08	2.01	2.36	0.21	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	36	2.96	2.05	2.50	0.25	10 mΩ	Acceptable
After 96 Hrs	36	2.92	1.75	2.44	0.35	20 mΩ	Acceptable

3.12 Resistance to Cold

Test Samples are subject to exposure under the evaluated temperature at -25°C in the chamber for 48 Hours.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.86	2.35	2.52	0.08	10 mΩ	Acceptable
After 48 Hrs	30	2.93	2.42	2.54	0.10	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.57	2.84	3.05	0.18	10 mΩ	Acceptable
After 48 Hrs	24	3.28	2.79	3.00	0.12	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.96	2.33	3.26	0.31	10 mΩ	Acceptable
After 48 Hrs	24	3.66	2.71	3.15	0.22	20 mΩ	Acceptable

3.13 Humidity

Test Samples are subject to exposure under the test condition in the test chamber where 40°C with 90±5% R. H. is maintained for 96 hours.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.55	1.94	2.24	0.13	10 mΩ	Acceptable
After 96 Hrs	30	2.50	1.98	2.25	0.12	20 mΩ	Acceptable
After 240 Hrs	30	2.53	2.10	2.30	0.12	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	36	2.65	2.06	2.31	0.12	10 mΩ	Acceptable
After 48 Hrs	36	2.72	2.06	2.31	0.15	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	36	2.90	2.16	2.55	0.18	10 mΩ	Acceptable
After 48 Hrs	36	3.05	2.27	2.57	0.20	20 mΩ	Acceptable

3.14 Thermal shock

Test Samples are subject to 5 cycles of temperature changes,each cycle consisting of temperature extremes at -55°C and 85°C staying for 30 minutes each changing in reciproduction.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.63	1.98	2.29	0.17	10 mΩ	Acceptable
After 96 Hrs	30	3.32	2.05	2.40	0.26	20 mΩ	Acceptable
After 240 Hrs	30	3.57	2.14	2.49	0.29	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.34	2.74	2.95	0.13	10 mΩ	Acceptable
Final	24	3.47	1.59	3.04	0.35	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.68	2.87	3.18	0.18	10 mΩ	Acceptable
Final	24	4.35	3.00	3.40	0.31	20 mΩ	Acceptable

3.15 Salt Spray

Test Samples are subject to 5±1% salt spray at 35°C for 48 hours

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.55	2.01	2.28	0.14	10 mΩ	Acceptable
After 48 Hrs	30	2.98	2.15	2.53	0.24	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.37	2.71	3.04	0.16	10 mΩ	Acceptable
After 48 Hrs	24	4.79	2.76	3.23	0.42	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.63	2.68	3.19	0.26	10 mΩ	Acceptable
After 48 Hrs	24	5.64	2.71	3.68	0.79	20 mΩ	Acceptable

3.16 Resistance to sulfuric acid gas

Test samples are subject to exposure in the test atmosphere for 240 hours, where SO₂ Gas of 10ppm concentration is filled at 40°C.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.53	1.89	2.23	0.14	10 mΩ	Acceptable
After 48 Hrs	30	2.62	2.00	2.23	0.15	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.62	2.95	3.11	0.16	10 mΩ	Acceptable
After 48 Hrs	24	3.85	2.77	3.05	0.24	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	4.04	2.73	3.14	0.28	10 mΩ	Acceptable
After 48 Hrs	24	4.25	2.67	3.07	0.32	20 mΩ	Acceptable

3.17 Solderability

Subject contacts to solderability testing as specified solder temperature:245±3°C time:3 ± 0.5 seconds

Samples:12 Pos (N=3 EA) vertical and horizontal type.

More than 90% of tested area was covered with fresh wet solder.

3.18 Resistance to soldering heat

Subject product mounted on PCB to solder bath at 260±5°C for 10±1 seconds.

For SMT type product mounted on PCB to solder like Fig. 4 (measure at housing surface)

Samples:12Pos (N=3EA) vertical and horizontal type.

All test samples proved acceptable,

Test samples showed no evidense of effects such as deformation etc.

That are detrimental to connector function.

3.19 Sequence testing

Subject connector ass'y to 30 cycles of repeated mating/unmating at a rate of 10 cycles a minute and mated connector to temperature changes between 25°C and 65°C with 90-95% R.H. for 10 cycles. MIL-STD202-16.

Sample:15P(V)

Low Level Termination Resistance (AWG #24)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	30	2.75	2.00	2.24	0.14	10 mΩ	Acceptable
30 Times	30	3.07	2.37	2.49	0.26	20 mΩ	Acceptable
Final	30	2.58	2.12	2.83	0.33	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #26)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	2.92	2.21	2.47	0.19	10 mΩ	Acceptable
30 times	24	3.97	2.37	2.99	0.36	20 mΩ	Acceptable
Final	24	5.66	2.39	3.32	0.71	20 mΩ	Acceptable

Sample:12P(V)

Low Level Termination Resistance (AWG #28)

Unite: mΩ

Test Condition	Termination Resistance					Spec. limit (MAX)	Judgement
	N	MAX	MIN	AVG	STD		
Initial	24	3.20	2.18	2.55	0.25	10 mΩ	Acceptable
30 Times	24	5.73	2.52	3.20	0.64	20 mΩ	Acceptable
Final	24	5.71	2.59	3.63	1.47	20 mΩ	Acceptable

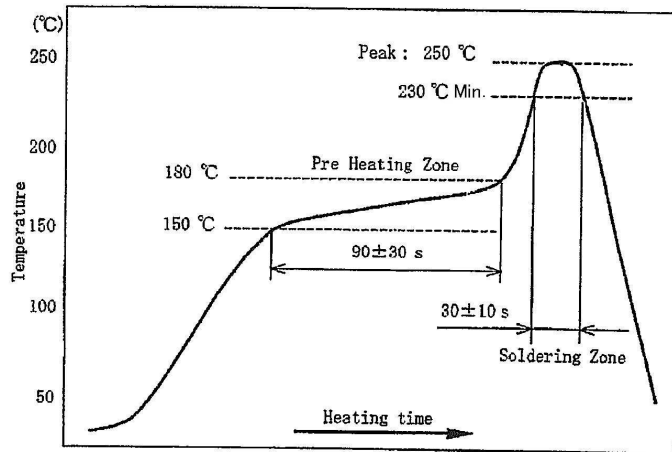


Fig.4 (Measured at housing surface)

A	Released	(FB00-0188-04)	29.SEP.'04	J.Z	S.Y	I.E
O	Released	(FB00-0130-04)	29.JUN.'04	R.H	S.Y	I.E
LTR	Revision Record		Date	Prepared.by	Reviwed by	Approved by

Qualification Test Report

AMP Common Termination(CT)Connector
2.0mm Pitch (M/T Type)

501-60003

Rev. A

Product Specification : 108-60016
Reference Test Report No. : TR-99062 TR-100143
Date : 29. JUN. '04
Classification : Unrestricted

Prepared by	Reviewed by	Reviewed by	Approved by
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