

**Product Specification**  
**108-60024**  
**AMP COMMON TERMINATION (CT)**  
**CARD EDGE CONNECTOR, LEAD FREE VERSION**

1. Scope:

1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of AMP Common Termination (CT) Card Edge Connector, Lead Free Version. The applicable product description and part numbers.

Product Part No.	Descriptions
x-292204-x	Amp Common Termination (CT) Card Edge Connector Assy (L: 19), Lead Free
x-292203-x	Amp Common Termination (CT) Card Edge Connector Assy (L: 20), Lead Free

2. Applicable Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements this specification and referenced documents, this specification shall take precedence.


2.1 AMP Specifications:

- A. 109-5000 Test Specification, General Requirements for Test Methods
- B. 108-60018 Amp CT Connector 2mm Pitch MT Product Spec for Lead Free.

2.2 Military Standard and Specifications:

MIL-STD-202: Test Methods for Electronic and Electrical Component Parts.

THIS INFORMATION IS CONFIDENTIAL AND IS DISCLOSED TO YOU ON CONDITION THAT NO FURTHER DISCLOSURE IS MADE BY YOU TO OTHER THAN AMP PERSONNEL WITHOUT WRITTEN AUTHORIZATION FROM AMP SHANGHAI LTD

<b>DR</b>	J. JIANG		 <b>Tyco Electronics</b> <b>AMP Shanghai Ltd</b>		
	S. YAO				
	T. SASAKI		NO 108-60024	REV O	LOC FB
	PAGE 1 of 8	TITLE <b>AMP Common Termination (CT) Card Edge Connector Lead Free Version</b>			
<b>O</b>	<b>RELEASED FB00-0040-03</b>	<b>J.J</b>	<b>04APR 03</b>		
<b>LTR</b>	<b>REVISION RECORD</b>	<b>DR</b>	<b>DATE</b>		

3. Requirements:

3.1 Design and Construction:

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2 Materials:

A. Contact : Phosphor Bronze Tin plating over Nickel underplating

B. Housing: Fiber glass reinforced polybutylene-terephthalate resin (P.B.T.), UL 94V-0

Color: Black

3.3 Ratings:

A. Voltage Rating: 125 VAC

B. Current Rating: 1A, current allowable; 2A/Pin. (1 hour rating)

C. Temperature Rating: -30°C to +105°C

Temperature rising due to energised current load is inclusive


3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.1. All tests shall be performed in the room temperature unless otherwise specified.

3.5 Test Requirements and Procedures Summary:


Para.	Test Items	Requirements	Procedures
3.5.1	Confirmation of Product	Product shall be confirmed to the requirements of applicable product drawing.	Visually, dimensionally and functionally inspected per applicable inspection plan

Fig. 1 (To be continued)

	<b>Tyco Electronics AMP Shanghai Ltd</b>	<b>PAGE</b> 2	<b>NO</b> 108-60024	<b>REV</b> O	<b>LOC</b> FB
---	--	------------------	------------------------	-----------------	------------------

Para.	Test Items	Requirements	Procedures
<b>Electrical Requirements</b>			
3.5.2	Termination Resistance (Low Level)	30 mΩ Max. (Initial) 50 mΩ Max. (Final)	Measure by applying closed circuit current of 10 mA at open circuit voltage of 20 mV to the mated contact test circuit and mated CT CONN REC. ASSEMBLY. See Fig. 2
3.5.3	Dielectric Strength	Connector must withstand test potential of 1 kV AC for 1 minute. Current leakage must be 0.5 mA Max.	Measure by applying test potential between the adjacent contacts, the mated CT CONNECTOR REC. ASSEMBLY. MIL-STD-202, Method 301
3.5.4	Insulation Resistance	1000 MΩ Min. (Initial) 500 MΩ Min. (Final)	Measure by applying test potential between the adjacent contacts, in the mated CT CONNECTOR REC. ASSEMBLY. MIL-STD-202, Method 302, Condition B
3.5.5	Temperature Rising vs. Current	30 °C Max, under loaded specified current	Measure temperature rising by energised current. Fig. 2 Rate current: 0.5 (A) 1 (A), 2 (A)
<b>Physical Requirements</b>			
3.5.6	Vibration (Low Frequency)	No electrical discontinuity greater than 1 microsecond shall occur. Termination Resistance 50 mΩ Max. (Final)	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. 100 mA applied. MIL-STD-202, Method 201 A.
3.5.7	Physical Shock	No electrical discontinuity greater than 1 microsecond(s) shall occur. Termination Resistance 50 mΩ Max. (Final)	Subject mated connectors to 490.3 m/s <sup>2</sup> halfsine shock pulsed of 11 millisecond duration; 3 shocks in each direction applied along the 3 mutually perpendicular planes total 18 shocks; MIL-STD-202, Method 213, Condition A
3.5.8	Connector Mating Force (CT Connector Rec Assembly Side)	14.0 N (1.43 kgf) max. Initial per contact	Using autograph measure the force required to mate connector by operating at 50 mm a minute. Record by using autograph. Calculate the value for a contact. AMP Spec. 109-5206

Fig. 1. (To be continued)

	Tyco Electronics AMP Shanghai Ltd	PAGE 3	NO 108-60024	REV O	LOC FB
---	--------------------------------------	-----------	-----------------	----------	-----------

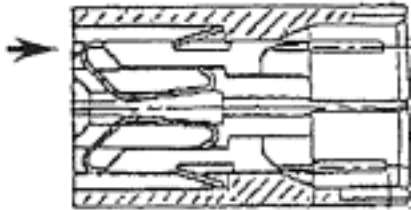
Para.	Test Items	Requirements	Procedures
3.5.9	Connector Unmating Force (CT Connector Rec Assembly Side)	1.2 N (0.12kgf) min. per contact	Using autograph measure the force required to unmate connector by operating at 50 mm a minute. Calculate value for a contact.
3.5.10	Contact Retention Force	Contact shall not dislodge a distance from housing	Apply axial load 8.8 N (0.90 kgf) to contact by operating at a rate of 100 mm a minute.  
3.5.11	Durability (Repeated Mate/Unmating)	Termination Resistance 50 mΩ Max. (Final)	Mate and unmate test P.C.B. 25 cycles at a maximum rate of 10 cycles/minute
3.5.12	Thermal Shock	Termination Resistance 50 mΩ Max. (Final)	Subject mated /CT REC Connector assembly and test P.C.B. (*1) to 5 cycles between -55 °C and +85 °C. MIL-STD-202, Method 107 Condition A
3.5.13	Humidity-Temperature Cycling	Termination Resistance 50 mΩ Max. (Final)	Subject mated CT REC Connector assembly and test P.C.B. (*1) to 10 cycles of humidity-temperature changes between 25 °C and 65 °C at 95% R.H. MIL-STD-202, Method 106 (without low frequency vibration with cold shock as -10 °C
3.5.14	Humidity, Steady State	Insulation Resistance 500 MΩ Min. (Final) Termination Resistance 50 mΩ Max. (Final)	Subject mated CT REC Connector assembly and test P.C.B. (*1) to steady state humidity at 40 °C and 90-95% R.H. MIL-STD-202, Method 103, Condition B

Fig. 1 (To be continued)

<b>tyco</b> Electronics	Tyco Electronics AMP Shanghai Ltd	PAGE 4	NO 108-60024	REV O	LOC FB
----------------------------	--------------------------------------	-----------	-----------------	----------	-----------

Para.	Test Items	Requirements	Procedures											
<b>Environmental Requirements</b>														
3.5.15	Salt Spray	Termination Resistance 50 mΩ Max. (Final)	Subject mated CT REC Connector assembly and test P.C.B. (*1) to 5±1% salt concentration for 48 hours; MIL-STD-202, Method 101, Condition A.											
3.5.16	SO <sub>2</sub> Gas	Termination Resistance 50 mΩ Max. (Final)	Subject mated CT REC Connector assembly and test P.C.B. (*1) to SO <sub>2</sub> gas 3±1 PPM concentration, temperature 40±2 °C for 240 hours.											
3.5.17	PCB Mating Force	Initial <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Pos.</th> <th>Mating Force N (kgf) Max.</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>7.6 (0.78)</td> </tr> <tr> <td>8</td> <td>10.3 (1.05)</td> </tr> </tbody> </table>	Pos.	Mating Force N (kgf) Max.	6	7.6 (0.78)	8	10.3 (1.05)	Measure the force required to mate test PCB (*1) with connector					
Pos.	Mating Force N (kgf) Max.													
6	7.6 (0.78)													
8	10.3 (1.05)													
3.5.18	PCB Unmating Force	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Pos.</th> <th colspan="2">Unmating Force N (kgf) Min.</th> </tr> <tr> <th>Initial</th> <th>After Durability</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>2.0 (0.20)</td> <td>1.6 (0.16)</td> </tr> <tr> <td>8</td> <td>2.5 (0.26)</td> <td>2.0 (0.20)</td> </tr> </tbody> </table>	Pos.	Unmating Force N (kgf) Min.		Initial	After Durability	6	2.0 (0.20)	1.6 (0.16)	8	2.5 (0.26)	2.0 (0.20)	Measure the force required to unmate test PCB (*1) with connector. Initial and after 25 cycles
Pos.	Unmating Force N (kgf) Min.													
	Initial	After Durability												
6	2.0 (0.20)	1.6 (0.16)												
8	2.5 (0.26)	2.0 (0.20)												

Fig. 1 (End)


<b>tyco</b> Electronics	Tyco Electronics AMP Shanghai Ltd	PAGE <b>5</b>	NO 108-60024	REV O	LOC FB
----------------------------	--------------------------------------	------------------	-----------------	----------	-----------

### 3.6 Product Qualification and Requalification Tests

Test or Examination	Test Group												
	1	2	3	4	5	6	7	8	9	10	11	12 (c)	13 (c)
	Test Sequence (a)												
Examination of Product	1, 5	1, 5	1, 3	1	1, 4	1,5,8	1, 5	1, 5	1, 5	1, 5	1, 4	1, 5	1, 5
Termination Resistance (Low Level)						2,4,7	2, 4	2, 4	2, 4	2, 4		2, 4	2, 4
Dielectric Withstanding Voltage	2, 4												
Insulation Resistance		2, 4											
Temperature Rising vs Current			2										
Vibration (Low Frequency)												3	
Physical Shock													3
Connector Mating Force					2								
Connector Unmating Force					3								
Contact Retention Force				2									
Durability (Repeated Mate/Unmating)						3							
Thermal Shock							3						
Humidity-Temperature Cycling						6							
Humidity, Steady State	3	3						3					
SO <sub>2</sub> Gas										3			
PCB Mating Force											2		
PCB Unmating Force											3		

- (a) See Para 4.1
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuity shall not take place in this test group, during tests

Fig. 4

	Tyco Electronics AMP Shanghai Ltd	PAGE 6	NO 108-60024	REV O	LOC FB
---	--------------------------------------	-----------	-----------------	----------	-----------

4. Quality Assurance Provisions

4.1 Test Specimens:

4.1.1 The specimens to be employed for the test shall be confirming to the applicable product drawing (s)

4.1.2 No sample shall be reused, unless otherwise specified.

4.2 Test Conditions:

A. All the tests shall be performed under any combination of the following test conditions

Temperature: 15°C – 35°C

Relative humidity: 45% - 75%

Atmospheric Pressure: 86.7 – 107 Kpa (650 – 800 mmHg)

C. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Fig. 4

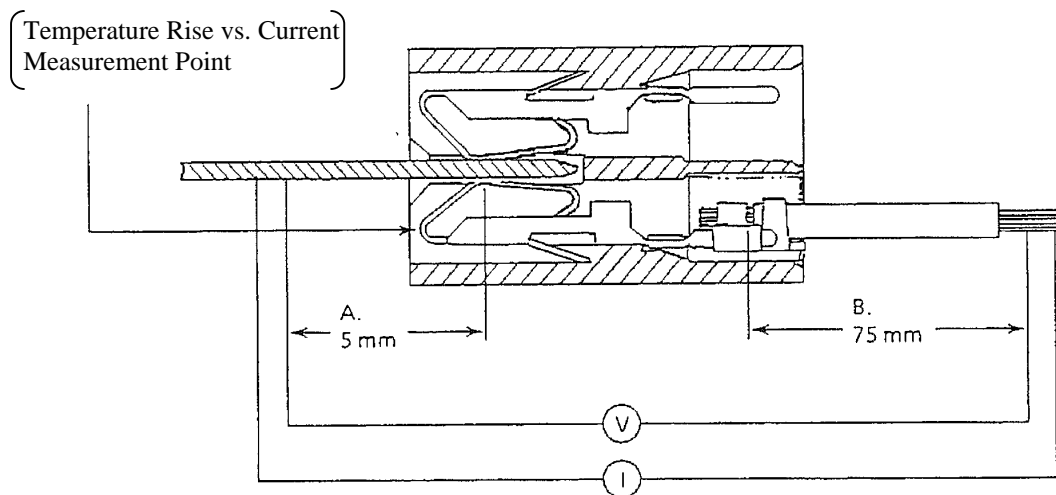


Fig. 2 Termination Resistance and Temperature Rise vs. Current Measuring Circuit Diagram

Termination Resistance = Measured Reading – Wire Resistance (75m) – PCB Resistance (5mm)

\*1. Test PCB

The test PCB used for this testing shall conductors clad on both sides, having thickness of  $1.6 \pm 0.15$ mm. See Fig. 3

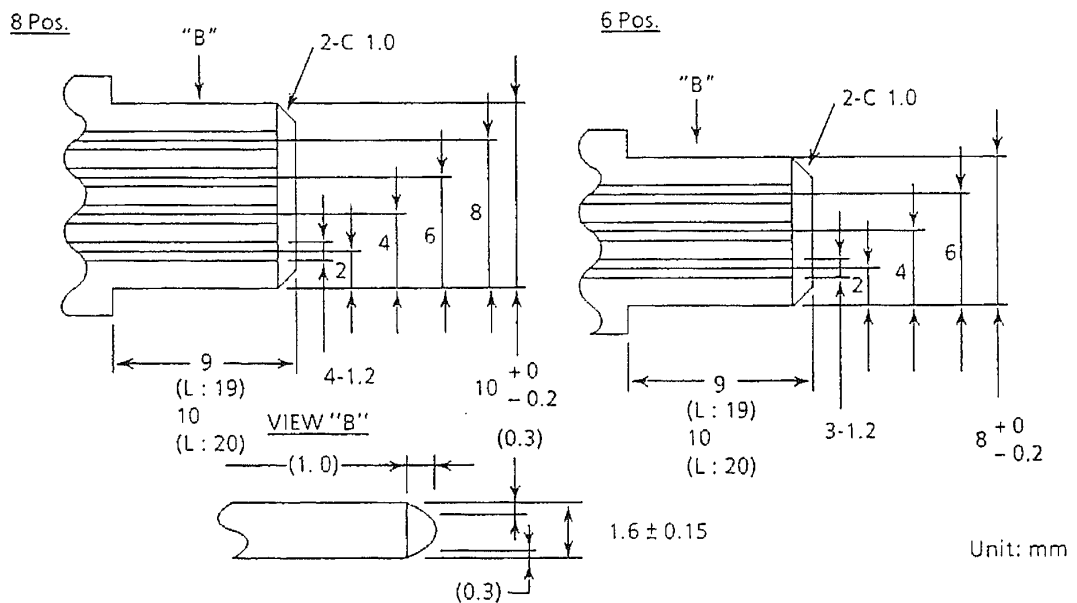


Fig. 3 Test PCB

	<p>Tyco Electronics AMP Shanghai Ltd</p>	<p>PAGE 8</p>	<p>NO 108-60024</p>	<p>REV O</p>	<p>LOC FB</p>
--	--	-------------------	-------------------------	------------------	-------------------