PRODUCT SPECIFICATION

108-60020

CT DOUBLE ROW CONNECTOR
LEAD FREE VERSION

1. Scope:

1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of CT DOUBLE ROW CONNECTOR, LEAD FREE VERSION.

The applicable product description and part numbers are as shown in Fig.1:

Product Part No.	Descriptions of Lead Free Items	Remark
x-292252-x	POST HDR (V) NATURAL	WITHOUT BOSS
x-292141-x	POST HDR (V) NATURAL	WITH BOSS
x-292138-x	POST HDR (H) NATURAL	
x-175133-x	HOLDER NATURAL	REC CONN. SET OF 2 PIECES
x-176233-x	HOLDER BLACK	REC CONN. SET OF 2 PIECES
x-176236-x	HOLDER BLUE	REC CONN. SET OF 2 PIECES
x-176239-x	HOLDER YELLOW	REC CONN. SET OF 2 PIECES
x-1932156-x	POST HDR （V） NATURAL HIGH TEMP	WITH BOSS
x-1932169-x	POST HDR （V） NATURAL HIGH TEMP	WITHOUT BOSS

Fig. 1

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DIST

LTR	REVISION RECORD	DR	DATE
B	W20081027050103_300566	D.S	17SEP 08
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DR J.JIANG
CHK S.YAO
APP T.SASAKI

Tyco Electronics
Tyco Electronics AMP Shanghai Ltd

NO 108-60020 | REV B | LOC FB

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TITLE
CT DOUBLE ROW CONNECTOR, LEAD FREE VERSION

2. CONSTRUCTION

These connector constructions are as shown in Fig. 2.

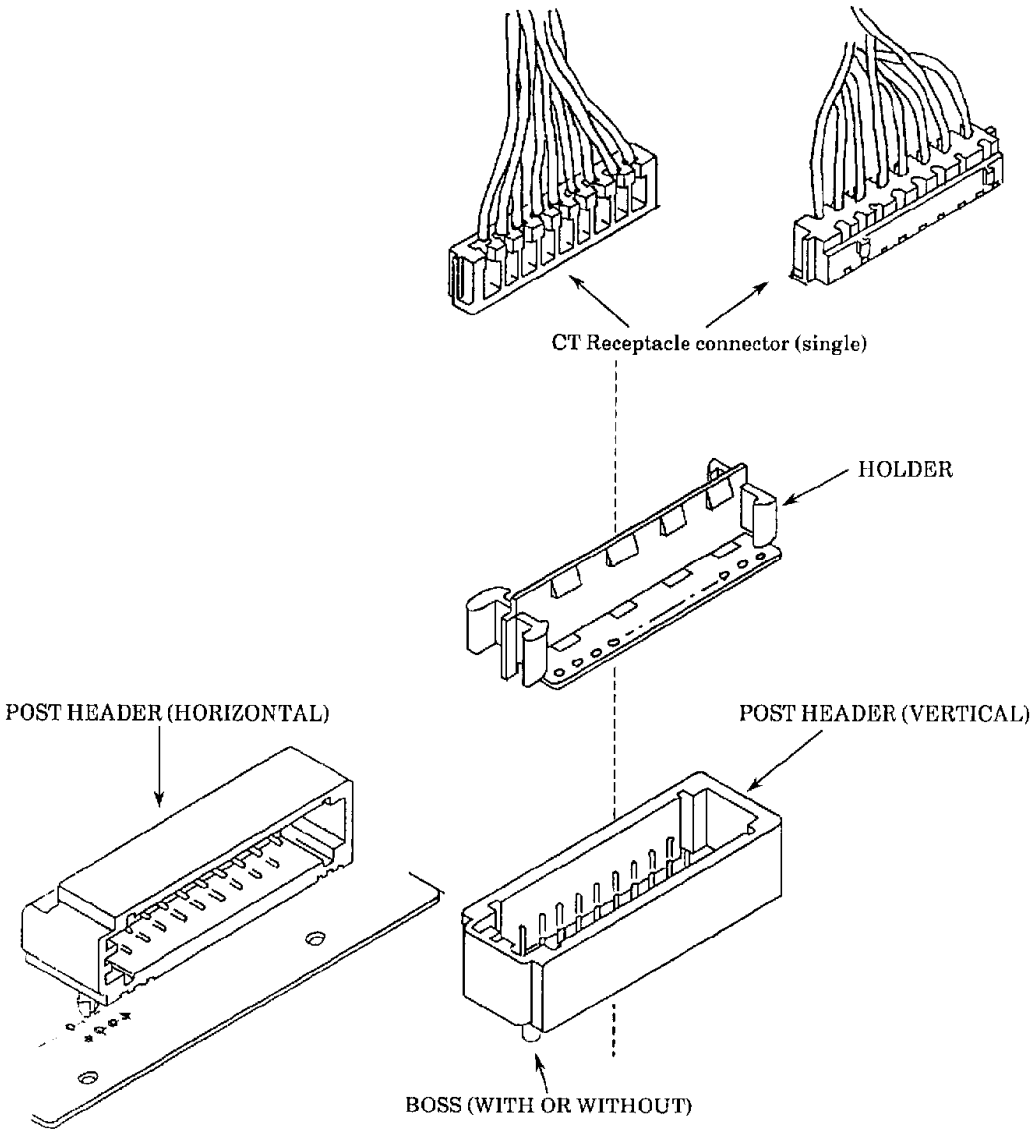


Fig. 2

3. 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.

3.1 AMP Specifications:

A. 108-60016: AMP common terminated (CT) connector 2mm pitch MT lead free version
B. 108-60029: AMP CT crimp type II connector series
C. 114-5104: AMP CT connector terminated (CT) connector 2mm pitch MT
D. 114-5179: AMP CT connector 2mm pitch receptacle contact crimp
E. 501-5100: Test Report

3.2 Military Standard and Specifications:

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

4. Requirements:

4.1 Design and Construction:

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

4.2 Materials:

A. Contact:
Material: Copper alloy
Finish: Tin Plate
B. Housing:
Material: Thermoplastic

4.3 Ratings:

A. Voltage Rating: 125 VAC

B. Current Rating : 1A AWG #26, #28 (MT)
2A AWG #26
3A AWG #24 } (CRIMP)
4A AWG #22

C. Temperature Rating: -30℃ to +105℃

4.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.3. All tests shall be performed in the room temperature unless otherwise specified.

4.5 Test Requirements and Procedures Summary:

The note (a) to be found in some of the following columns indicates. "Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence in Fig. 4"

Para.	Test Items	Requirements	Procedures
		Electrical Requirements	
4.5.1	Termination Resistance (Low Level)	10 mΩ Max. (Initial) 20 mΩ Max. (Final)	Subject mated contacts assembled in housing to closed circuit current of 10 mA max. at open circuit voltage of 20 mV max. Fig. 5. AMP Spec. 109-5306
4.5.2	Insulation Resistance	1000 MΩ Min. (Initial) 500 MΩ Min. (Final)	Measured by applying test potential between the adjacent contacts, and between the contacts and ground in the mated/unmated connector. MIL-STD-202, Method 302 Condition B
4.5.3	Dielectric Strength	Connector must withstand test potential of 1 KV(AC) for 1 minute. Current leakage must be 0.5 mA Max.	Measured by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connectors. MIL-STD-202. Method 301
4.5.4	Temperature Rising vs. Current	30 ^{o}C max. under loaded specified current	Measure temperature rising by energized current. AMP Spec. 109-5310
		Physical Requirements	
4.5.5	Vibration Sinusoidal Low Frequency	No electrical discontinuity greater than 1 microsecond shall occur	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. 10 mA applied. MIL-STD-202, Method 201

Fig. 3 (To be continued)

<table>
<tr><th>Para.</th><th>Test Items</th><th colspan="3">Requirements</th><th>Procedures</th></tr>
<tr><td>4.5.6</td><td>Physical Shock</td><td colspan="3">No electrical discontinuity greater than 1 microsecond shall occur.</td><td>Subject mated connectors to 490.3 m/s^2 sawtooth or halfsine hock pulses 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</td></tr>
<tr><td rowspan="10">4.5.7</td><td rowspan="10">Connector Mating/Unmating Force</td><td colspan="3">(Initial and 30 cycles)</td><td rowspan="10">Using auto graph measure the force mate/unmate connector operating at 50mm a minute.</td></tr>
<tr><td>Pos</td><td>Mating [N (Max.)]</td><td>Unmating [N (Min.)]</td></tr>
<tr><td>16</td><td>78.5</td><td>12.7</td></tr>
<tr><td>18</td><td>88.3</td><td>14.7</td></tr>
<tr><td>20</td><td>98.1</td><td>15.7</td></tr>
<tr><td>22</td><td>107.9</td><td>17.7</td></tr>
<tr><td>24</td><td>117.7</td><td>19.6</td></tr>
<tr><td>26</td><td>127.5</td><td>20.6</td></tr>
<tr><td>28</td><td>137.3</td><td>22.6</td></tr>
<tr><td>30</td><td>147.1</td><td>23.5</td></tr>
<tr><td>4.5.8</td><td>Contact Retention Force</td><td colspan="3">14.7 N Min</td><td>Apply a pull-off load to the contact in vertical direction until the contact dislodged.</td></tr>
<tr><td>4.5.9</td><td>Contact Unmating Force (By Piece)</td><td colspan="3">784.5 mN Min per contact.</td><td>Insert post contact 3 cycles and measure force required to insert 4th time</td></tr>
<tr><td>4.5.10</td><td>Solderability</td><td colspan="3">Solderability area shall have a solder coverage of 95% Min.</td><td>Subject contacts to solderability testing. MIL-STD-202, Method 208</td></tr>
</table>

<table>
<tr><td>4.5.11</td><td>Resistance to Soldering Heat</td><td>No physical damage</td><td>
<table>
<tr><td>x-292252-x
x-292141-x</td><td>Subject product mounted on printed circuit boards to solder bath at 245±5 °C for 10±1 seconds.</td></tr>
<tr><td>x-292138-x
x-1932169-x
x-1932156-x</td><td>Subject product mounted on printed circuit boards to solder bath at 260±5 °C for 10±1 seconds.</td></tr>
</table>
MIL-STD-202, Method 210 except as indicated above when testing by manual soldering iron, apply it as 350±10°C for 3 +1/-0 seconds without forcing pressure to affect the tine of contact.
</td></tr>
<tr><td colspan="4">Environmental Requirements</td></tr>
<tr><td>4.5.12</td><td>Thermal Shock</td><td>Termination Resistance
20 mΩ (Final)</td><td>Subject mated connectors to 5 cycles between –55 °C and +85 °C.
MIL-STD-202, Method 107
Condition A</td></tr>
<tr><td>4.5.13</td><td>Humidity, Steady State</td><td>Must meet Insulation Resistance
500 MΩ Min. (Final)
Termination Resistance
20 mΩ Max. (Final)</td><td>Subject mated connectors to steady state humidity at 40 °C and 90-95% (R.H)
MIL-STD-202, Method 103
Condition B</td></tr>
</table>

Fig.3. (To be continued)

Para.	Test Items	Requirements	Procedures
4.5.14	Salt Spray	Termination Resistance 20 mΩ Max. (Final) Must meet visual & electrical requirements, where applicable	Subject mated connectors to 5% salt concentration for 48 hours; MIL-STD-202, Method 101, Condition B
4.5.15	Temperature Life	Must meet Termination Resistance 20 mΩ Max. (Final)	Subject mated connectors to temperature life; AMP Spec. 109-43, Test Level 3 Duration A
4.5.16	Low Temperature Life	Must meet Termination Resistance 20 mΩ Max. (Final)	Subject mated connectors to -25±3 °C low temperature life for 48 hours. Next measure termination resistance after one hour.
4.5.17	Sequence Test	Termination Resistance (Low Level) Initial: 10 mΩ Max. (Initial) Final: 20 mΩ Max. (Final)	Subjected mated connectors to sequence test as follows. 1. Repeated mated / unmating connectors mate and unmate 30 cycles by hand operated. 2. Humidity-temperature cycling. Subject mated connectors to 5 cycles of humidity-temperature conform to JIS-C-5024.
4.5.18	Temperature Humidity Cycling	After testing, termination resistance (low level) shall be met Initial: 10 mΩ Max. (Initial) Final: 20 mΩ Max. (Final)	Subject mated connector to temperature changes between 25°C and 65°C with 95 %(R.H.) for 5 cycles. JIS C 0028

Fig. 3 (End)

4.6 Product Qualification and Requalification Tests.

Test of Examination	Test Group							
	1	2	3	4	5	6	7	8
	Test Sequence							
Examination of Product	1, 3	1, 7	1, 3	1	1	1	1	1, 4
Termination Resistance, Dry Circuit								2, 5
Dielectric Withstanding Voltage		3, 6						
Insulation Resistance		2, 5						
Temperature Rising vs Current			2					
Vibration (Low Frequency)								
Physical Shock								
Connector Mating/Unmating Force	2, 4							
Contact Retention				2				
Contact Unmating Force (By Piece)					2			
Solderability						2		
Resistance to Soldering Heat							2	
Thermal Shock								3
Humidity-Temperature Cycling								
Humidity, Steady State		4						
Corrosion, Salt Spray								
Temperature Life								
Low Temperature Life								

Fig. 4 (To be continued)

Test of Examination	Test Group						
	9	10	11	12	13	14	15
	Test Sequence						
Examination of Product	1, 4	1, 4	1, 4	1	1, 3	1, 3	1, 5
Termination Resistance, Dry Circuit	2, 5	2, 5	2, 5	2			2, 6
Dielectric Withstanding Voltage							
Insulation Resistance							
Temperature Rising vs Current							
Vibration (Low Frequency)					2		
Physical Shock						2	
Connector Mating/Unmating Force							3
Contact Retention							
Contact Unmating Force (By Piece)							
Solderability							
Resistance to Soldering Heat							
Thermal Shock							
Humidity-Temperature Cycling							4
Humidity, Steady State	3						
Corrosion, Salt Spray		3					
Temperature Life			3				
Low Temperature Life				3			

Fig. 4 (End)

5. Quality Assurance Provisions

5.1 Testing Specimens

5.1.1 The specimens to be used in the tests shall be conformed to the applicable product drawing (s).

5.1.2 No sample shall be used, unless otherwise specified

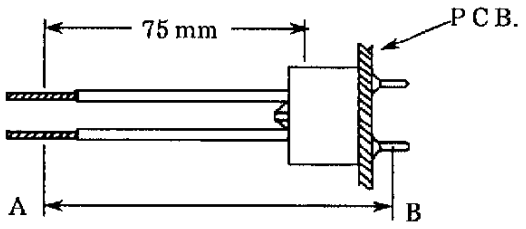
5.2 Test Conditions:

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

Temperature: 15 ~ 35 °C

Relative Humidity: 45 ~ 75%

Atmosphere pressure: 86.7 ~ 107 kPa (650 ~ 800 mmHg)



Termination resistance shall be found by subtracting the resistance of 75 mm long wire from measured to between A and B.

Fig. 5 Termination Resistance (Low Level)