

108-5202

NUMBER

Customer
Release
AMP SECURITY
CLASSIFICATION

DESIGN OBJECTIVES

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, AMP (Japan), Ltd. makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP (Japan), Ltd. may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

In case when "product specification" is referred to in this document, it should be read as "design objectives" for all times as applicable.

**AMP-ULTREX 2.54mm Pitch, Latch Type, Double Row Connectors
for 1.27mm pitch, Flat, Round Conductors**

(This specification may change without notice as a result of product design change and product performance evaluation testing.)

1. Scope

This specification covers requirements for product performance and test methods of AMP-ULTREX 2.54mm pitch, double row connector, (latch type) for terminating 1.27mm pitch flat round conductors.

Product Name		Product No.	Remarks	
Receptacle Housing Assy		X-173121-X	AWG#28 Stranded	20-Pos.
Wire Cover		X-173122-X		26-Pos.
Spring Header Assy	with Polarity	X-172870-X		30-Pos.
	without Polarity	X-173052-X		34-Pos.
				40-Pos.
				50-Pos.

2. Material and Finish

2-1 Receptacle Contact

- (1) Material: Phosphor Bronze
- (2) Plating: Pre-tinned (0.8 μm min. thick)

2-2 Spring Post

- (1) Material: Phosphor Bronze
- (2) Plating: Pre-tinned (0.8 μm min. thick)

2-3 Receptacle Housing/Header Housing:

- (1) Material: Glass-filled Polybutylene Terephthalate (PBT) (Black)
- (2) Flame Retardancy: UL 94V-0

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				DR <i>[Signature]</i>		AMP (Japan), Ltd. TOKYO, JAPAN	
				CHK		LOC J A	NO 108-5202
A1	Design Objectives			APP <i>[Signature]</i>	SHEET 1 OF 9		
A	Revised RFA-1048	<i>[Signature]</i>	9/18 '86		AMP-ULTREX 2.54mm Pitch, Latch Type, Double-Row Connectors for 1.27mm Pitch Flat Round Conductors		
O	Released	<i>[Signature]</i>	9/26/85				
LTR	REVISION RECORD	DR	CHK	DATE			

2-4 Wire Cover

(1) Material: Poly Vinyl Chloride (PVC) (Black)

(2) Flame Retardancy: UL 94V-0

3. Rating

3-1 Rated Voltage: 250V AC

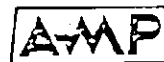
3-2 Rated Current: 1.0A max. Per Contact

3-3 Operating Temperature Range: -55°C ~ +85°C

4. Product Performance

Item	Test Item	Standard	Test Condition and Method
4.1	Appearance	To be free from scratch, crack deformation, blister, stain, burrs etc. that are detrimental to connector functions and product merchandising cosmetic value.	Visual Check
4.2	Low-level Termination Resistance	Initial Value: 20 mΩ max.	To be measured by circuit shown in Fig. 1 at break voltage of 50 mV max. and make current of 50 mA max.
4.3	Insulation Resistance	5000 MΩ min.	To be measured between adjacent mated contacts by applying test potential of 500V ± 10% in accordance with Test Condition B, Test Method 302 of MIL-STD-202.
4.4	Dielectric Strength	To be free from the abnormalities such as insulation breakdown or flashover.	AC 500V (actual) to be impressed 1 minute across adjacent mated contact in accordance with Test Method 301 of MIL-STD-202.

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REV.

A₁NAME AMP-ULTREX 2.54mm Pitch, Latch Type
Pitch Double-Row Connectors for
1.27-mm Pitch Flat Round Conductors

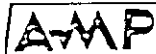
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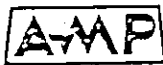
Item	Test Item	Specified Requirements			Test Condition and Method
		No. of Pos.	Insertion Force (kg) (Max.)	Extraction Force (kg) (min.)	
4.5	Connector Insertion/Extraction Force	20	6.0	2.5	Handle receptacle assembly and spring header assembly which has corresponding number of positions at a rate of 100 mm/min, and measure initial engage and disengage forces.
		26	7.0	3.0	
		30	8.0	3.0	
		34	9.0	3.0	
		40	9.0	3.5	
		50	10.0	3.5	
4.6	Durability (Repeated Insertion/Extraction)	No abnormalities shall be evident. Low-level Termination Resistance: 40 mΩ max.			Insert and extract the spring header assembly and receptacle assembly having corresponding number of contact positions for 50 times at a rate not exceeding 10 times a minute in normal manner of operation.
4.7	High-Frequency Vibration	No electrical discontinuity greater than 1 microsecond shall not take place in the circuit during the test. Low-level Termination Resistance: 40 mΩ max. To be free from abnormalities.			Test in accordance with Test Condition B, (15G's), Test Method 204 of MIL-STD-202 by applying sweeping vibration to change 10-2000-10 Hz reciprocating one cycle every 20 minutes to mated pair of receptacle assembly and spring header assembly, each having corresponding number of contact positions, and the latter of which is mounted on PCB, after having all the contacts series-wired. The maximum amplitude shall be 1.52mm, and vibration is applied in three axial directions (X, Y and Z) for 4 hours each, making a total of 12 hours. During the test, test current of 0.1A is applied to the circuit, and the circuit shall be monitored for the specified discontinuity taking place in the circuit, with the use of proper measuring apparatus.

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NAME		AMP ULTREX 2.54mm Pitch, Latch Type, Double Row Connectors for 1.27mm, Flat Round Conductors			
				REV.	A ₁

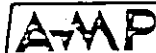
Item	Test Item	Standard	Test Condition and Method
4.8	Physical Shock	<p>No electrical discontinuity greater than 1 microsecond shall take place during the test.</p> <p>Low-level Termination Resistance: 40 mΩ max.</p> <p>To be free from visual abnormalities.</p>	<p>Test in accordance with Test Condition I, Test Method 213 of MIL-STD-202, by applying physical shock to three axial directions (X, Y and Z) of the sample consisting of receptacle assembly and spring header assembly, having corresponding number of contact positions, in mating condition, the latter of which is mounted on PCB. The intensity of the shock shall be such that sawtooth wave with the maximum velocity of 100G's shall be formed within 6 milliseconds. Three drops shall be applied to each directions. (Totally 18 drops)</p> <p>During the test, test current of 0.1A shall be applied, and the circuit shall be monitored for the specified discontinuity taking place in the circuit with the use of proper measuring apparatus.</p>
4.9	Soldering Heat Resistivity	To be free from physical problems such as play in post, cracking and deformation of housing and so on.	Mount spring header assembly on printed circuit board, and dip soldering tine area in solder bath of 260 ± 5°C for 10 ± 1 sec.
4.10	Humidity Resistance (Steady State)	<p>Insulation Resistance: 1000 MΩ min.</p> <p>Dielectric Strength: To meet the requirements specified in Para. 4.4.</p> <p>Low-level Termination Resistance: 40 mΩ max.</p>	<p>Test in accordance with Test Method 103 of MIL-STD-202 by exposing the sample consisting of receptacle assembly and spring header assembly in mated condition, having corresponding number of positions, in the atmosphere controlled at 40 ± 2°C with the relative humidity of 90-95%, for 96 hours. After completion the exposure, recondition in the room temperature for 1 hour before undergoing subsequent measurements.</p>

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Item	Test Item	Standard	Test Condition and Method															
4.11	Thermal Shock	Insulation Resistance: 1000 MΩ min. Dielectric Strength: To meet the require- ments specified in Para. 4.4. Low-level Termination Resistance: 40 mΩ max.	Engage receptacle assembly with spring header assembly which is mounted on printed circuit board and has corresponding number of positions, and test in 10 heat cycles on end on following con- ditions per "Test Method 107, MIL-STD-202". <table border="1"> <thead> <tr> <th>Cycle step</th> <th>Temp. (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55 +0 -3</td> <td>30</td> </tr> <tr> <td>2</td> <td>+10 25 -5</td> <td>5 Max.</td> </tr> <tr> <td>3</td> <td>+3 85 -0</td> <td>30</td> </tr> <tr> <td>4</td> <td>+10 25 -5</td> <td>5 Max.</td> </tr> </tbody> </table>	Cycle step	Temp. (°C)	Time (min.)	1	-55 +0 -3	30	2	+10 25 -5	5 Max.	3	+3 85 -0	30	4	+10 25 -5	5 Max.
Cycle step	Temp. (°C)	Time (min.)																
1	-55 +0 -3	30																
2	+10 25 -5	5 Max.																
3	+3 85 -0	30																
4	+10 25 -5	5 Max.																
4.12	Salt Spray Test	To be free from appearance problem. Low-level Termination Resistance: 40 mΩ max.	Engage receptacle assembly with spring header assembly which is mounted on printed circuit board and has corresponding number of positions, and test 48 hours per "Condition B, Test Method 101, MIL-STD-202". Salt Concentration: 5% Temperature : 35°C After test rinse test receptacle assembly in tap water and sit it one hour at room temperature before taking measurement.															
4.13	Sulfurous Acid Gas Resistivity	Insulation Resistance: 1000 MΩ max. Dielectric Strength: To meet the require- ment specified in Para. 4.4. Low-level Termination Resistance: 40 mΩ max.	Engage receptacle assembly with spring header assembly which is mounted on printed circuit board and has corresponding number of positions, and expose under Sulfurous acid gas in following conditions.															

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Item	Test Item	Standard	Test Condition and Method
			Sulfur dioxide concentration : 10 ± 3 ppm Humidity : 90% min. Temperature : Room Temperature Duration : 96 hours
4.14	Spring Post Retention Force	0.8 kg/Position	Place housing of spring header assembly on jig as shown in Fig. 2, depress post vertically in axial direction, and measure load which causes post to come off from housing.

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5. Test Sequence

Test Item	Paragraph Number	Test Group						
		I	II	III	IV	V	VI	VII
Appearance	4.1	①	①	①	①	①	①	①
Low-level Termination Resistance (Initial)	4.2	②	②	②	②	②		
Insulation Resistance (Initial)	4.3			③	③		②	
Dielectric Strength (Initial)	4.4			④	④		③	
Connector Insertion/Extraction Force (Initial)	4.5	③						
Durability (Repeated Insertion/Extraction)	4.6	④						
High-frequency Vibration	4.7					③		
Physical Shock	4.8					④		
Soldering Heat Resistivity	4.9							②
Humidity	4.10		③				④	
Thermal Shock	4.11			⑤				
Salt Spray	4.12	⑦						
Sulfurous Acid Gas	4.13				⑤			
Low-level Termination Resistance (Final)	4.2	⑥⑧	④	⑧	⑧	⑤		
Insulation Resistance (Final)	4.3			⑥	⑥		⑤	
Dielectric Strength (Final)	4.4			⑦	⑦		⑥	
Connector Insertion/Extraction Force (Final)	4.5	⑤						
Appearance	4.1	⑨	⑤	⑨	⑨	⑥	⑦	③

Note 1: Encircled figures indicate the sequence of the test in which the tests are conducted.

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6. Quality Assurance Provisions

6-1 Test Conditions

All the tests shall be conducted in any combination of the following test conditions.

Temperature : 15 - 35°C

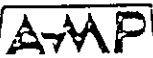
Humidity : 45 - 75%

Atmospheric Pressure : 650 - 800 mmHg

6-2 Test Samples

6-2-1 Unless otherwise specified, the cables conforming to the requirements specified in Product Specification, 108-5110, shall be used for all the tests.

6-2-2 Unless otherwise specified, no sample shall be reused.

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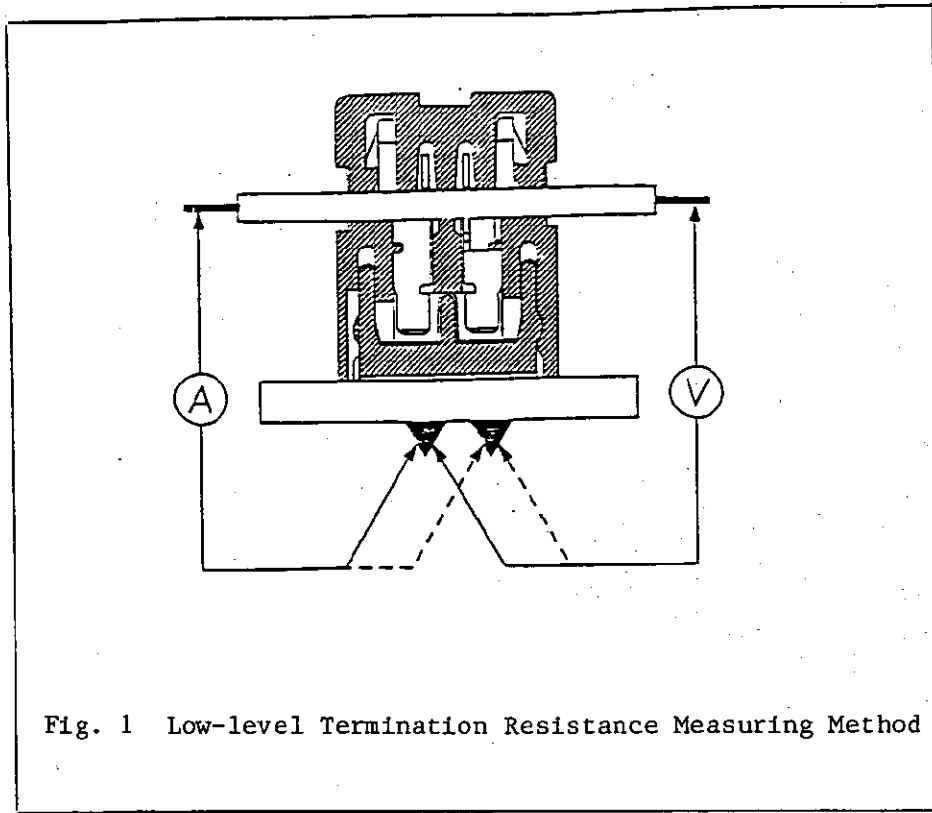


Fig. 1 Low-level Termination Resistance Measuring Method

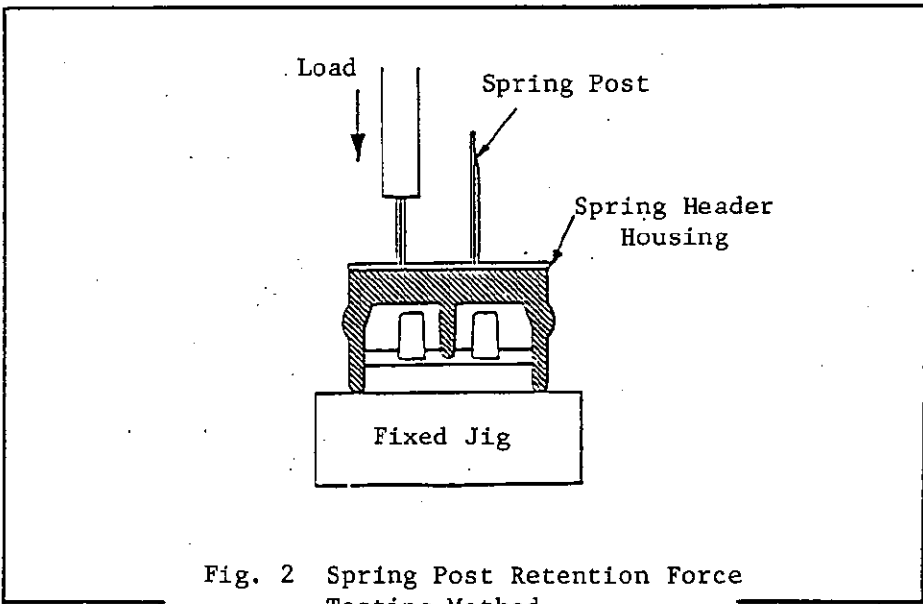


Fig. 2 Spring Post Retention Force Testing Method

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