NUMBER 108-5058

AMP SECURITY CLASSIFICATION Customer Release

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.

1. Scope:

This specification covers general performance requirements and test methods for 1.47 Dia. P.C.B. Disconnect Receptacles and Pin Contacts of the numbers in Table 1.

2.

Part Nos. of 1.47 Dia. Pins	Part Nos. of 1.47 Dia Receptacles
60802	170136
60809	
171236	

Table 1

1.1 Applicable Printed Circuit Board:

Contact P/N	Diameter of Hole (mm)	Board Thickness (mm)
60802	1.17 - 1.27	1.6 - 2.4
60809	1.47 - 1.57	
171236	1.47 - 1.57	

Table 2

1.3 Current Rating:

Current rating of this product line shall be within 3 amperes.

2. Materials and Finish:

2.1 Pin Contact:

It shall be made of Brass, and tin-plated over copper underplate.

2.2 Receptacle Contact:

It shall be made of phosphor bronze, and tin-plated over copper underplate.

3. Appearance and Surface Treatment:

3.1 Appearance:

Contact shall have no defects such as cracks and break that are detrimental to connector functions. There shall be no dirt and discoloration on the surface.

3.2 Surface Finish:

Contact surface finish shall be conforming to the requirements specified in applicable customer product drawing(s).

LTR	REVISION RECORD	DR	CHK	DATE
B2	Design Objectives RFA 1905	KJ	S.K	2/9/78
B1	Revised RFA-1481			2-23-78
B	Rev. per RFA-344			4-11-78

DR 4-11-78
CHK 4-11-78
APP 4-11-78

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4. Product Design Feature, Construction and Dimensions:

4.1 Product Design Feature, Construction and Dimensions shall be conforming to the applicable customer product drawing(s).

4.2 Applicable Wire Size:

Receptacle contacts shall be crimped on the wires of specified sizes shown in applicable drawing(s).

5. Performance:

5.1 Initial Performance:

5.1.1 Termination Resistance:

When tested in accordance with the test method specified in Para. 7.1, termination resistance shall be not greater than 10mΩ.

5.1.2 Crimp Tensile Strength:

When tested in accordance with the test method specified in Para. 7.2, crimp tensile strength of contact shall be not less than the value specified in Table 3 below.

Wire Size		Crimp Tensile Strength	
mm^2	(AWG)	kg	(Pound)
0.2	(#24)	3.0	(6.61)
0.3	(#22)	5.0	(11.02)
0.5	(#20)	8.0	(17.64)

Table 3

5.1.3 Insertion and Extraction Force:

When tested in accordance with the test method specified in Para. 7.3, insertion and extraction force shall be conforming to the value specified in Table 4.

Insertion Force (Max.) at Initial Insertion		Extraction Force (Min.) at 10th. Extraction	
kg	(Pound)	kg	(Pound)
2.8	(6.17)	0.4	(0.88)

Table 4

5.1.4 Solderability:

When tested in accordance with the test method specified in Para. 7.4, more than 90% of tested area shall be covered with fresh, smooth and suffciently adhered solder, without concentration of pin holes, voids and rough points, the total area of which shall not exceed 10% of total tested area. Inspection must be done visually by using 10X magnifying glass.

5.2 Environmental Performance:

5.2.1 Vibration:

When tested in accordance with the test method specified in Para. 7.5, no electrical discontinuity greater than 5×10^{-6} second shall occur in the circuit, and after vibratile conditioning, connector assebmly shall show no physical abnormalities. Termination resistance after conditioning shall not exceed 14mΩ.

5.2.2 Salt Spray:

When tested in accordance with the test method specified in Para. 7.6, connector assembly shall show no physical abnormalities per Para. 3.1 and termination resistance after conditioning shall not exceed 14mΩ.

5.2.3 Temperature Cycling:

When tested in accordance with the test method specified in Para. 7.7, connector assembly shall show no physical abnormalities per Para. 3.1, and termination resistance after conditioning shall not exceed 14mΩ.

6. Test Conditions:

Unless otherwise specified, all the test shall be conducted in any combination of the following conditions.

Temperature:	15 - 35 °C
Relative Humidity:	45 - 75 %
Atmospheric Pressure:	650 - 800 mmHg

6.1 Test Specimens:

Test specimens employed for the test shall be not reused, unless otherwise specified.

7. Test Methods:

7.1 Termination Resistance:

Install the pin contacts onto the printed circuit board which are mated with crimped receptacle contacts as shown in Fig. 1. Termination resistance of the terminated area is obtained by measuring voltage drop across the probing points X - X', by using closed circuit test current of 50mA maximum at open circuit voltage of 50mV maximum flowing through the circuit. Termination resistance is calculated from the measured value after deducting the resistance of a 75mm-long crimped wire.

7.2 Crimp Tensile Strength:

Fasten wire crimped contact onto the head of tensile testing machine and apply an axial pull-off load to the end of wire by operating the head to travel with the speed at a rate of 100mm a minute. Crimp tensile strength is determined when the wire is broken or is pulled off from the wire crimp as shown in Fig. 2.

7.3 Insertion and Extraction Force:

Insertion and extraction force of contact is measured by using gage pin P/N 289001-17, after installing the contact and gage pin on tensile testing machine properly. The force required to insert into and extract from the receptacle contact is measured by operating the head to travel with the speed at a rate of 100mm a minute.

7.4 Solderability:

Solderability test is conducted in accordance with the following conditions.

(1) Temperature of Solder Tub:	230 ±5°C (446 ±9°C)
(2) Flux:	Alpha 100 or equivalent
(3) Solder:	60% Tin and 40% Lead
(4) Time of Immersion into Flux:	5 - 10 seconds
(5) Time of Immersion into Solder:	5 ±0.5 seconds

7.5 Vibration:

Install 10 pin contacts onto printed circuit board as shown in Fig. 1, and after having them mated with receptacle contacts, and series wired, securely fasten the test assembly on vibrating table. The test circuit is monitored for occurence of electrical discontinuity greater than the specified value during the vibration test of the following conditions.

Frequency of Vibration:	50 Hz.
Accelerated Velocity:	5 G's
Direction of Vibration:	in three axial planes (X, Y, & Z)
Duration of Vibration:	2 hours for each plane (6 hours totally)
Test Current Applied:	0.1 - 3 A DC

7.6 Salt Spray:

Salt spray test is conducted in accordance with Test Condition B, Test Method 101 of MIL-STD-202. After test conditioning, sample assembly is removed out of test chumber, and after being linsed in tap water, dried in room temperature with normal relative humidity for 30 minutes.

7.7 Temperature Cycling:

Temperature cycling test is conducted in accordance with Test Condition C, Test Method 102 of MIL-STD-202. After exposure, sample assembly is removed out of oven, and reconditioned in room temperature with normal relative humidity for 30 minutes.

8. Remarks:

8.1 Wires Used for Sample Preparation:

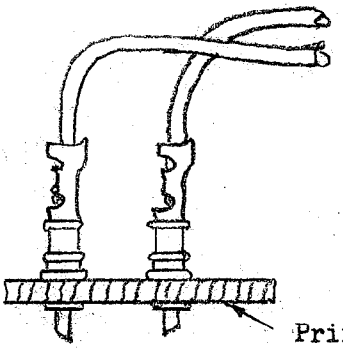
For this product line, stranded wires of soft annealed copper conducter only shall be used. No other type of wires such as solid wire, aluminum wire and hard copper wires must not be used.

8.2 Application Tooling:

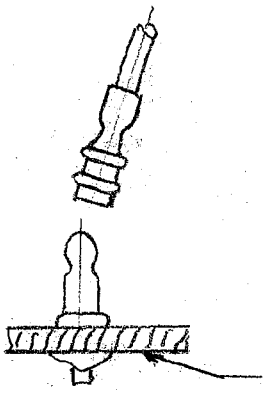
AMP recommended appropreate application tooling shall be used for insertion of pin into printed circuit, and crimping receptacle contacts.

8.3 Operation:

(1)



Circuit wiring must be loosely led from termination, without tension that may result ill affection to receptacle contact.



Insertion and extraction of receptacle contact must be done always in axial direction, not to be done in the direction amiss to contact axis.

9. Test Items and Sequence:

Test Items	Paragraph Numbers in Reference	Sample Group				
		A	B	C	D	E
Product Conformance Inspection	3.1	1	1	1	1	
Termination Resistance (Initial)	7.1		2	2	2	
Crimp Tensile Strength	7.2	2				
Insertion and Extraction Force	7.3		3	3	3	
Vibration	7.5		4			
Salt Spray	7.6			4		
Temperature Cycling	7.7				4	
Termination Resistance (Final)	7.1		5	5	5	
Solderability	7.4					1
Appearance Inspection	3.1		6	6	6	
Number of Sample Pieces		10	10	10	10	10

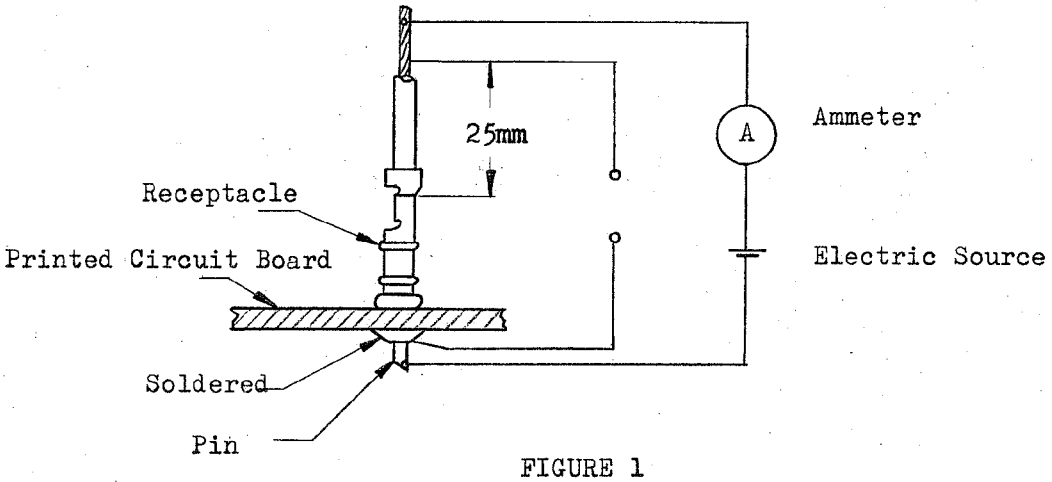


FIGURE 1

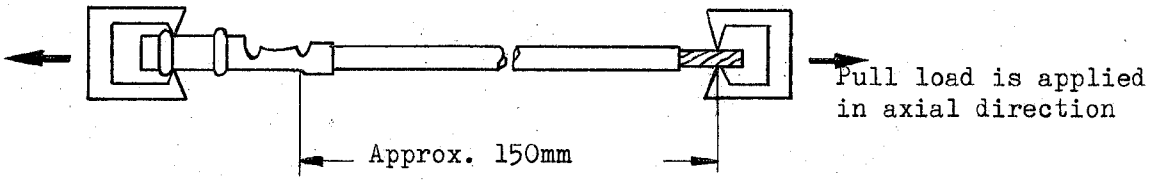


Fig. 2

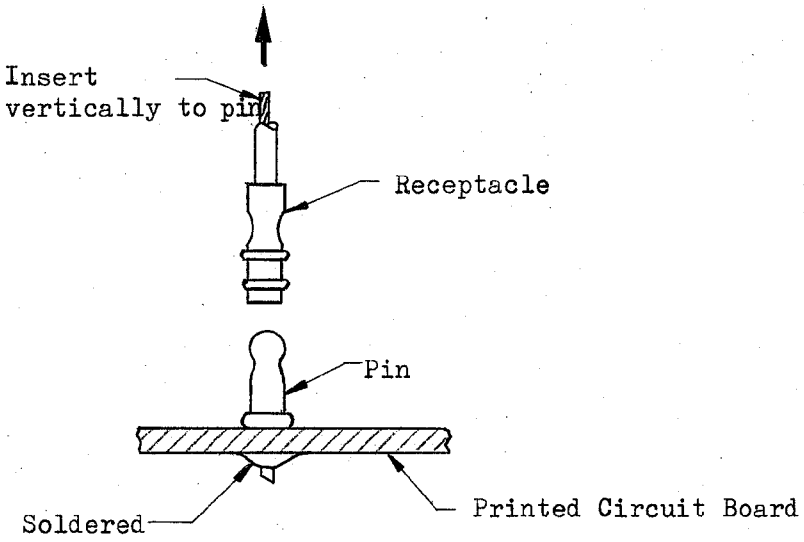


Fig. 3

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