

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the DIPLOMATE\* low force DIP socket. This family of sockets has been designed to provide a highly reliable, low cost space saving socket header with low force mating characteristics. They are available in 24, 28 and 40 positions with a row spacing of .600 and a 64 position with a row spacing of .900. A pusher and slide cam is utilized to lock the I.C. in place after mating.

1.2. Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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 of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. AMP Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114-1057 : Application Specification
- E. 501-120 : Test Report

3. REQUIREMENTS

3.1. Design and Construction

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

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				DR <i>Red Rumbold</i> 8/21/90 CHK <i>Rob Priddy</i> 9/17/90 APP <i>Myr. Gray</i>	<b>AMP</b> AMP Incorporated Harrisburg, PA 17105-3608
					NO 108-1073 REV 0 LOC B
O	Release per ECN AG-2023	<i>PR</i>	9/19/90	PAGE 1 OF 9	TITLE SOCKET, DIP, LOW FORCE, DIPLOMATE LF
LTR	REVISION RECORD	APP	DATE		

### 3.2. Materials

- A. Contact: Beryllium copper, pre-tin
- B. Housing and cams: Polyester, glass filled, 94V-0

### 3.3. Ratings

- A. Current/Voltage: 250 vac at 1 ampere maximum
- B. Operating temperature: -55° to 105°C, tin plating

### 3.4. Performance and Test Description

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient temperature unless otherwise specified.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and AMP Spec 114-1057.	Visual, dimensional and functional per applicable quality inspection plan.
<b>ELECTRICAL</b>		
Termination Resistance, Dry Circuit	20 milliohms maximum initial. $\Delta R$ = 10 milliohms maximum.	Subject socket mated I.C. package to 20 mv open circuit at 100 ma ma maximum, see Figure 3; AMP Spec 109-6-6, read all contacts
Dielectric Withstanding Voltage	1.0 kvac. One minute hold. No breakdown or flashover.	Test between adjacent contacts of unmated and unmounted socket assemblies; AMP Spec 109-29-1.
Insulation Resistance (b)	10,000 megohms minimum initial.	Test between adjacent contacts of unmated and unmounted socket assembly; AMP Spec 109-28-4.
Capacitance (b)	1.0 picofarad maximum.	Test between adjacent circuits of unmated and unmounted socket assembly; AMP Spec 109-47, cond E.

Figure 1 (cont)

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Test Description	Requirement	Procedure										
<b>MECHANICAL</b>												
Vibration (a)	No discontinuities greater than 1 microsecond.	Subject socket mated with I.C. package to 15 G's, 10-2000-10 Hz with 100 ma current applied; AMP Spec 109-21-3, except the 64 position only shall be 10 G's, 10-500-10 Hz; AMP Spec 109-21-2.										
Physical Shock (a)	No discontinuities greater than 1 microsecond.	Subject socket mated with I.C. package to 100 G's sawtooth in 6 milliseconds, with 100 ma current applied, 1 shock in each direction applied along the 3 mutually perpendicular planes, total 6 shocks; AMP Spec 109-26-9.										
Activating Force	<table border="1" data-bbox="619 770 999 977"> <thead> <tr> <th>Socket Size, Positions</th> <th>Force maximum, Kilograms</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>11.0</td> </tr> <tr> <td>28</td> <td>11.0</td> </tr> <tr> <td>40</td> <td>11.5</td> </tr> <tr> <td>64</td> <td>15.5</td> </tr> </tbody> </table>	Socket Size, Positions	Force maximum, Kilograms	24	11.0	28	11.0	40	11.5	64	15.5	After conditioning with one cycle actuation without the gage measure force necessary to activate the socket assembly and cluster gage Figure 5, or test lead frame .010 thick. Test at .5 inch per minute.
Socket Size, Positions	Force maximum, Kilograms											
24	11.0											
28	11.0											
40	11.5											
64	15.5											
Deactivating Force	<table border="1" data-bbox="619 1040 999 1239"> <thead> <tr> <th>Socket Size, Positions</th> <th>Force minimum Kilograms</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>0.5</td> </tr> <tr> <td>28</td> <td>0.5</td> </tr> <tr> <td>40</td> <td>1.0</td> </tr> <tr> <td>64</td> <td>2.0</td> </tr> </tbody> </table>	Socket Size, Positions	Force minimum Kilograms	24	0.5	28	0.5	40	1.0	64	2.0	Measure force necessary to deactivate socket and cluster gage .010 thick, see Figure 5, test at a rate of .5 inch/minute.
Socket Size, Positions	Force minimum Kilograms											
24	0.5											
28	0.5											
40	1.0											
64	2.0											
Contact Retention (b)	No damage or loosening of contacts.	Apply axial load of 340 grams to contact; AMP Spec 109-30.										
Durability	See note (a).	Activate and deactivate socket assemblies and test pin gage, (.010 thick, indicated in Figure 5) for 200 cycles; at a rate of .5 inch/minute.										
Figure 1 (cont)												
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Test Description	Requirement	Procedure
Solderability	Contact tabs shall have a solder coverage of 95% minimum.	Test sockets as specified; AMP Spec 109-11-1.
Separating Force (b)	40 grams minimum.	Measure force necessary to separate .008 x .015 gage, see Figure 4, at a rate of .5 inch/minute with socket activated; AMP Spec 109-35.
<b>ENVIRONMENTAL</b>		
Thermal Shock (a)	See note (c)	Subject socket unmated, see Figure 3, to 5 cycles between -55° and 105°C for tin and -55° and 125°C for gold; AMP Spec 109-22.
Humidity-Temperature Cycling	See note (c)	Subject socket mated with I.C. package, see Figure 3, to 10 humidity-temperature cycles between 25° and 65°C at 95% RH; AMP Spec 109-23, method III, cond B, with low frequency vibration and cold shock at -10°C.
Industrial Mixed Flowing Gas	See note (c)	Subject socket mated with I.C. package, see Figure 3, to IMFG per 109-85-2.
Temperature Life	See note (c)	109-43 96 hrs, 105°C mated w/I.C.

- (a) Shall remain mated and show no evidence of damage, cracking or chipping.  
 (b) Measure seven readings per socket.  
 (c) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Figure 2.

Figure 1

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### 3.6. Qualification, Requalification and Retention Tests and Sequences

Test or Examination	Test Group (a) (d)						
	1	2	3	4	5	6	7
	Test Sequence (b)						
Examination of Product	1,11	1,6	1,6	1,5	1,8	1,4	1
Termination Resistance, Dry Circuit	3,10	2,5	2,5	2,4			
Dielectric Withstanding Voltage					3,7		
Insulation Resistance					2,6		
Capacitance						2	
Vibration	5						
Physical Shock	6						
Activating Force	2						
Deactivating Force	8						
Contact Retention							2
Durability	4	3	3				
Solderability						3	
Separating Force	9						
Thermal Shock					4		
Humidity-Temperature Cycling		4			5		
Industrial Mixed Flowing Gas (c)			4				
Temperature Life				3			

(a) See Para 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

(c) For gold plated contacts only

(d) Test groups 1 and 5 shall be used for retention of qualification.

Figure 2

#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Sample Selection

Sockets shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test group 1 shall consist of 2 sockets of each size. Test groups 2 through 7 shall consist of 2 sockets of any size..

###### B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 2.

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#### 4.2. Retention of Qualification

If, in a five-year period, no changes to the product or process occur, the product shall be subjected to groups 1 and 5 of the testing described in the test sequence, see Figure 2. Justification for exceeding this time limit must be documented and approved by the division manager.

#### 4.3. Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

#### 4.4. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

#### 4.5. Quality Conformance Inspection

The applicable AMP quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

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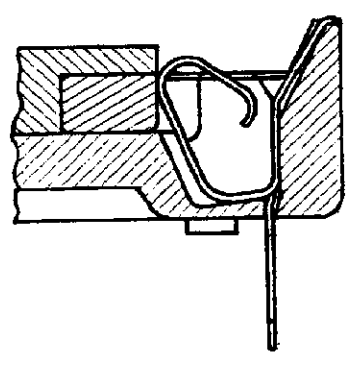
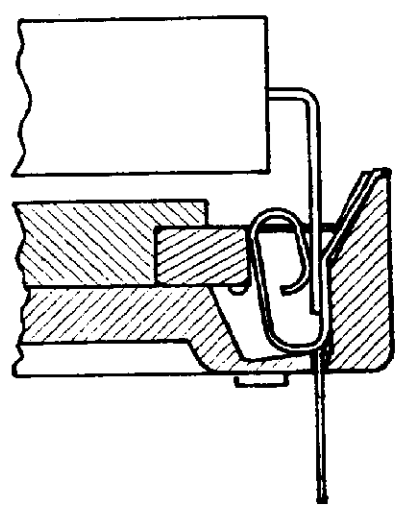
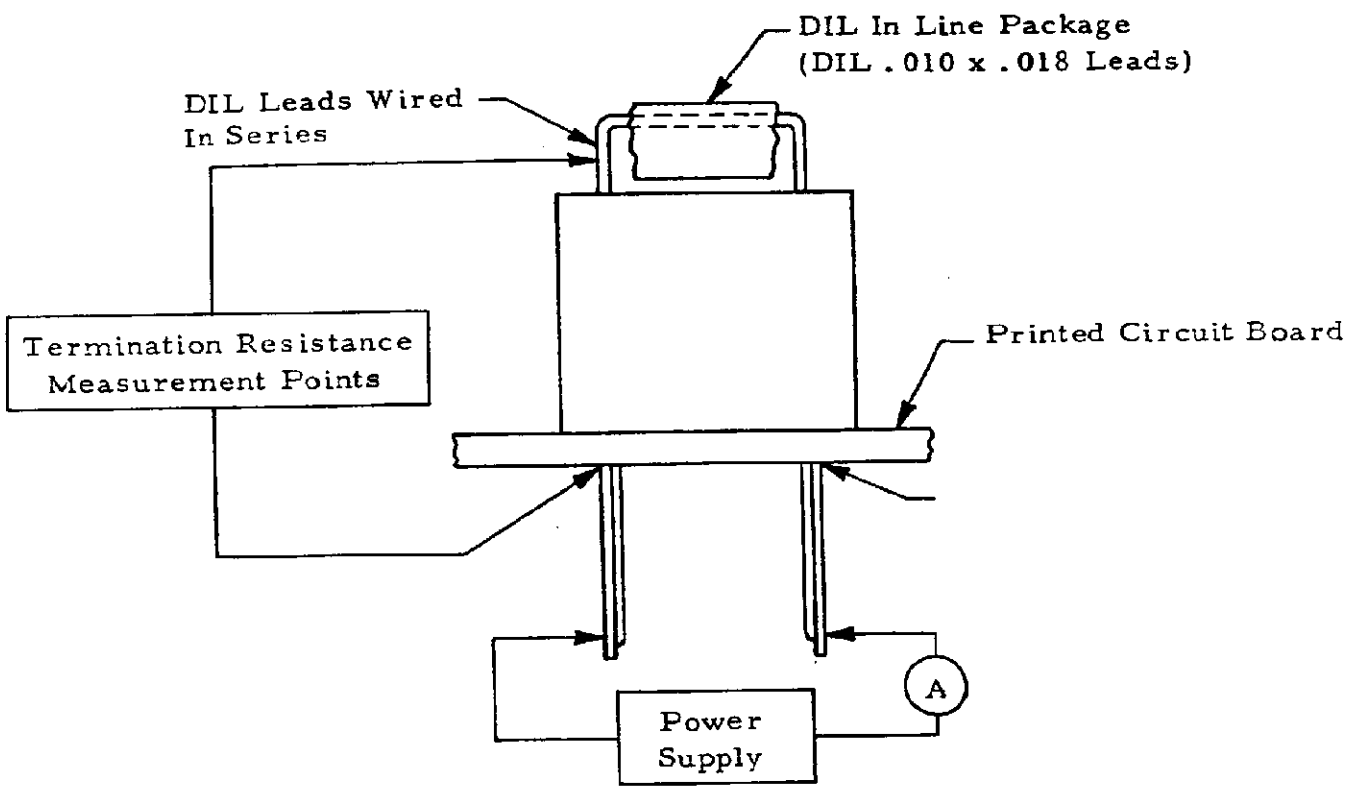


Figure 3  
Termination Resistance Measurement Points

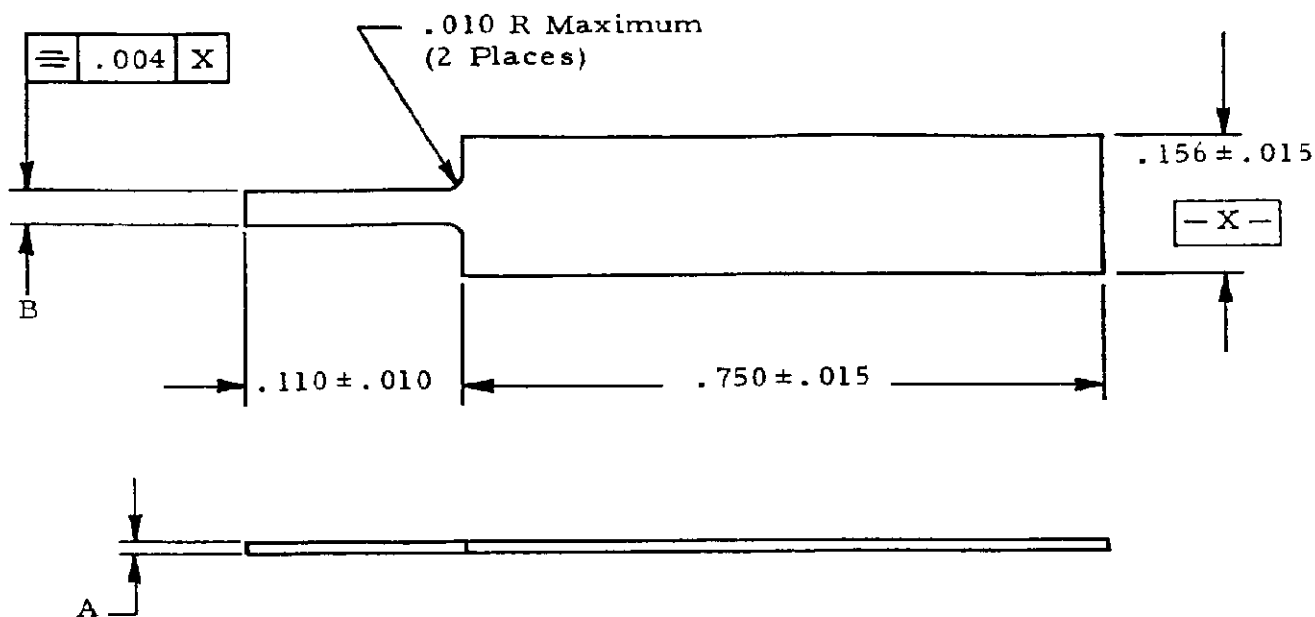
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Test Pin	Part No	A	B
1	103460-4	.008 +.0000 -.0005	.015 +.0000 -.0005

Notes :

1. All dimensions are in inches.
2. Test pins shall be steel feeler gage stock with a 4 microinch finish on mating surface.
3. Acceptable chamfer on pin .002-.004 x 45° all sides

Figure 4  
Separating Force Test Pin

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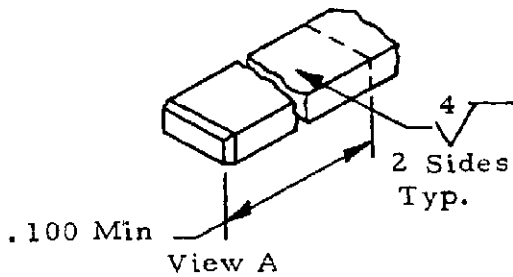
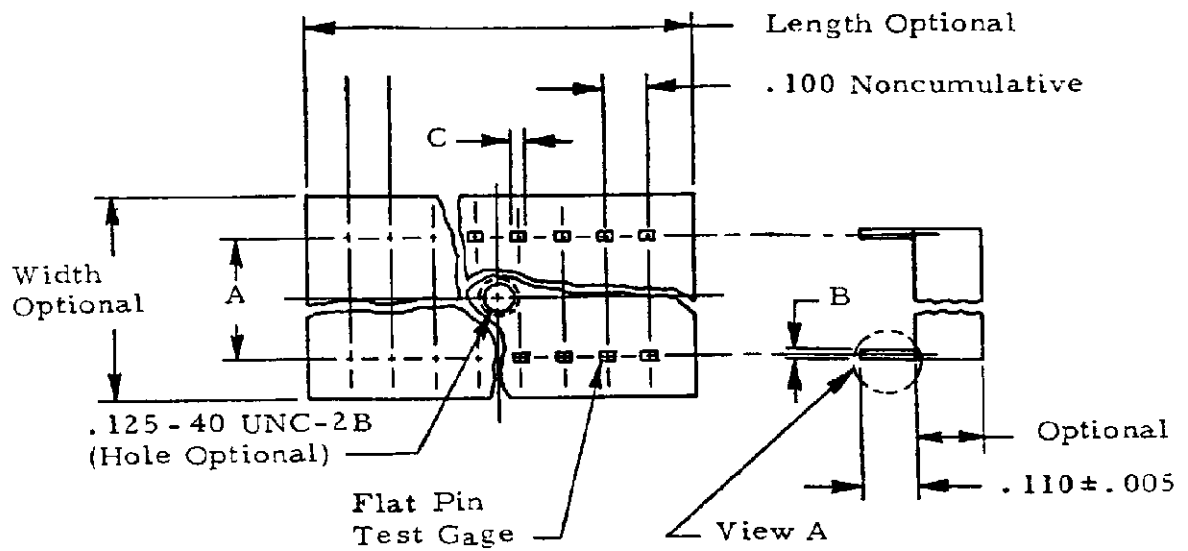
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Number of Leads	Leads Per Row	A ± .001	B	C
			.0100 -.0005 +.0000	.0200 -.0005 +.0000
24	12	.600	↓	↓
28	14	.600		
40	20	.600		
64	32	.900		

Note: Acceptable chamfer on flat pin to be .003/.005 x 45° all sides.

Figure 5  
Mating Test Gage Pins

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