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**Connector, .125 Inch Blade & Receptacle**

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**1. SCOPE****1.1. Content**

This specification covers performance, tests and quality requirements for AMP\* .125 inch Blade and receptacle connector.

**1.2. Qualification**

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

**2. APPLICABLE DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the document applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and 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. 501-290: Test Report

**3. REQUIREMENTS****3.1. Design and Construction**

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

**3.2. Materials**

- A. Contact: Brass, pre-tin plated
- B. Housing: PBT or 6/6 nylon, UL94V-2

**3.3. Ratings**

- A. Voltage: 300 vac
- B. Current: See Figure 4 for applicable current carrying capability
- C. Temperature: -40 to 105°C

**3.4. Performance and Test Description**

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per AMP Specification 109-1.

**3.5. Test Requirements and Procedures Summary**

Test Description	Requirement	Procedure								
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.								
<b>ELECTRICAL</b>										
Termination resistance.	4 milliohms maximum initial. $\Delta R$ 5 milliohms maximum increase final.	AMP 109-6-1. Subject mated contacts assembled in housing to 50 mv maximum open circuit at 100 ma maximum. See Figure 3.								
Insulation resistance.	1000 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of mated samples.								
Dielectric withstanding voltage.	2200 vac at sea level.	AMP Spec 109-29-1. Test between adjacent contacts of mated samples.								
Temperature rise vs current.	30°C maximum temperature rise at specified current.	AMP Spec 109-45-1. Measure temperature rise vs current. See Figure 4.								
Current Cycling.	See Note.	AMP Spec 109-51. Subject mated contacts to 500 cycles at 200% rated current for 45 minutes ON and 15 minutes OFF.								
<b>MECHANICAL</b>										
Crimp tensile.	<table border="1" style="display: inline-table; vertical-align: top;"> <thead> <tr> <th>Wire Size AWG</th> <th>Pounds (N) Minimum</th> </tr> </thead> <tbody> <tr> <td>18</td> <td>20 (89.0)</td> </tr> <tr> <td>16</td> <td>30 (133.4)</td> </tr> <tr> <td>14</td> <td>50 (222.4)</td> </tr> </tbody> </table>	Wire Size AWG	Pounds (N) Minimum	18	20 (89.0)	16	30 (133.4)	14	50 (222.4)	AMP Spec 109-16. Determine crimp tensile at maximum rate of 1 inch per minute.
Wire Size AWG	Pounds (N) Minimum									
18	20 (89.0)									
16	30 (133.4)									
14	50 (222.4)									
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-1. Subject mated samples to 10-55-10 Hz traversed in 1 minute at .06 inch total excursion. 2 hours in each of 3 mutually perpendicular planes.								

Figure 1 (cont)

Test Description	Requirement	Procedure
Physical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-7. Subject mated samples to 50 G's sawtooth shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate samples for 5 cycles at maximum rate of 300 cycles per hour.
Contact retention.	18 pounds (80.0 N) for PBT housing. 10 pounds (44.5 N) for 6/6 nylon housing. Contacts shall not dislodge.	AMP Spec 109-30. Apply axial load to contacts by pulling on wire.
Contact insertion force.	2 pounds (8.9 N) maximum per contact.	AMP Spec 109-41. Measure force necessary to insert contact into housing.
Mating force.	12 pounds (53.4 N) maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate fully loaded samples at maximum rate of .5 inch per minute.
Unmating force.	3 pounds (13.3 N) minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate fully loaded samples at maximum rate of .5 inch per minute.
Housing lock strength.	25 pounds (111.2 N) minimum.	AMP Spec 109-50. Determine housing lock strength at maximum rate of 1 inch per minute.
<b>ENVIRONMENTAL</b>		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 25 cycles between -40 and 105°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH.

Figure 1 (cont)

Test Description	Requirement	Procedure
Temperature life.	See Note.	AMP Spec 109-43. Subject mated samples to temperature life at 105°C for 580 hours.

**NOTE** *Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.*

Figure 1 (end)

**3.6. Product Qualification and Requalification Test Sequence**

Test or Examination	Test Group (a)					
	1	2	3(c)	4	5	6
	Test Sequence (b)					
Examination of product	1,9	1,9	1,8	1,3	1,5	1,5
Termination resistance	3,7	2,7				2,4
Insulation resistance			2,6			
Dielectric withstanding voltage			3,7			
Temperature rise vs current		3,8				
Current cycling						3
Crimp tensile					4	
Vibration	5	6(d)				
Physical shock	6					
Durability	4					
Contact retention					3	
Contact insertion force					2	
Mating force	2					
Unmating force	8					
Housing lock strength				2		
Thermal shock			4			
Humidity-temperature cycling		5	5			
Temperature life		4(e)				

- NOTE**
- (a) See Para 4.1.A.
  - (b) Numbers indicate sequence in which tests are performed.
  - (c) Test group 3 applies only to product with an insulating system.
  - (d) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per AMP Specification 109-151.
  - (e) Precondition samples with 3 cycles durability.

Figure 2

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test group 1 shall consist of 7 pairs of 4 position housings fully loaded with contacts crimped on 18 AWG wire. Test group 2 shall consist of 7 pairs of 4 position housings fully loaded with contacts crimped on 18 AWG wire and 7 pairs of 4 position housings fully loaded with contacts crimped on 14 AWG wire. Test groups 3, 5 and 6 shall each consist of 7 pairs of 4 position housings fully loaded with contacts crimped on 14 AWG wire. Test group 4 shall consist of 10 pairs of 4 position housings with no contacts loaded.

#### B. Test Sequence

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

### 4.2. Requalification Testing

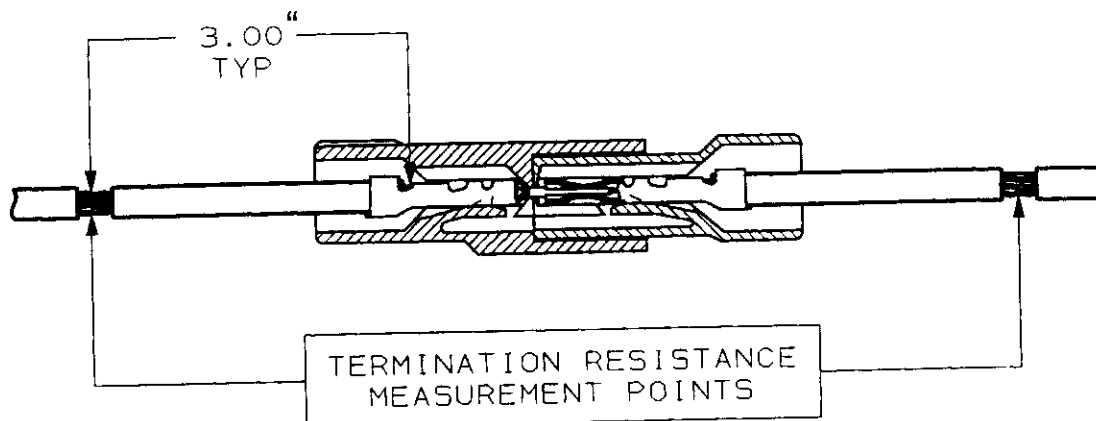
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

### 4.3. Acceptance

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

### 4.4. Quality Conformance Inspection

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

**NOTE**

*Termination resistance equals total resistance less resistance in 6 inches of wire.*

Figure 3  
Termination Resistance Measurement Points

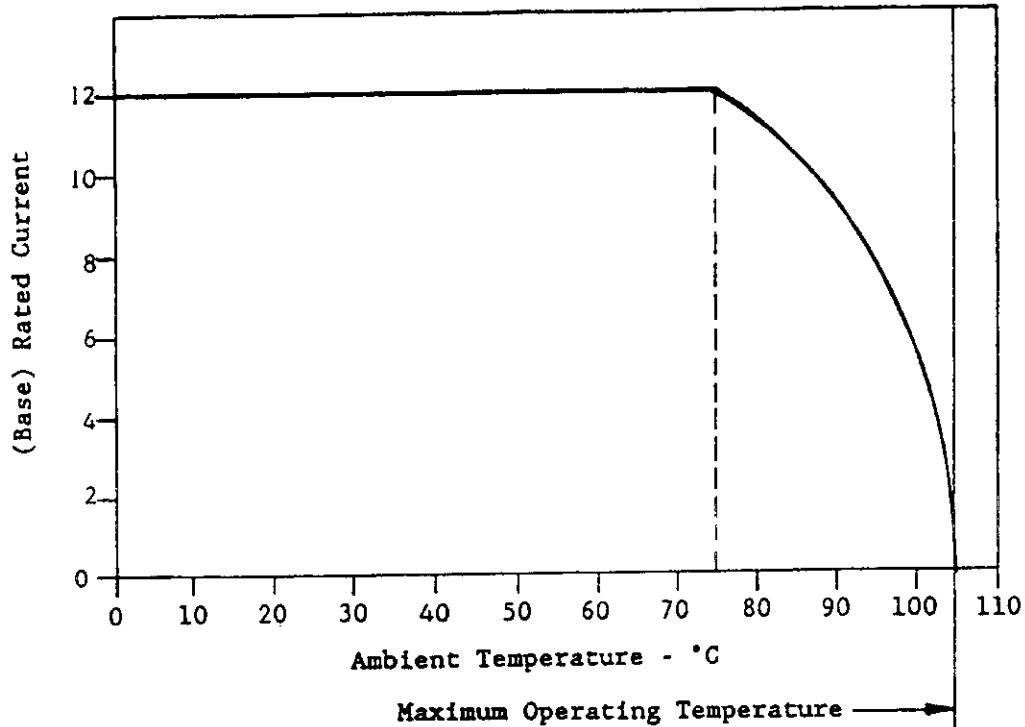


Figure 4A  
Current Carrying Capability

Percent Connector Loading	Wire Size AWG		
	18	16	14
Single Contact	.78	.88	1
50	.56	.68	.73
100	.45	.54	.62

**NOTE**

To determine acceptable current carrying capacity for percentage connector loading and wire gage indicated, use Multiplication Factor (F) from above chart and multiply it times Base Rated Current for a single circuit at maximum ambient operating temperature as shown in Figure 4A.

Figure 4B  
Current Rating