

AMP-BLADE* Connector with Diallyl Phthalate Molded Housings

1. SCOPE

1.1. Content

This specification covers the performance requirements for the AMP-BLADE* connector with diallyl phthalate molded housings. These are multicontact plug and receptacle connectors for use with 1/16, 3/32 and 1/8 inch thick printed circuit boards.

1.2. Qualification

When testing or inspecting the subject product, this document shall always be supported by the applicable Product Drawing and by 109-9000, Packaging Components Division Connector Test Methods. In case of conflict the order of document precedence is as follows:

- A. Product Drawing
- B. This Product Specification
- C. 109-9000: Packaging Components Division Connector Test Methods

2. APPLICABLE DOCUMENTS

2.1. Applicable portions of the following documents form a part of the manufacturing control of this product.

- A. MIL-C-21097: Connectors, Electrical, Printed Wiring Board, General Purpose, General Specification for
- B. MIL-G-45204: Gold Plating, Electrodeposited
- C. MIL-STD-105: Sampling Procedures and Tables for Inspection by Attributes

2.2. The following documents describe handling and use of this product.

- A. 109-9000: Packaging Components Division Connector Test Methods
- B. MIL-STD-202: Test Methods for Electronic and Electrical Component Parts

3. PERFORMANCE REQUIREMENTS

3.1. Ratings

- A. Current: 5 amperes max per contact
- B. Temperature: -65° to 125°C

3.2. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meet requirements of drawing.	Dimensional and visual.

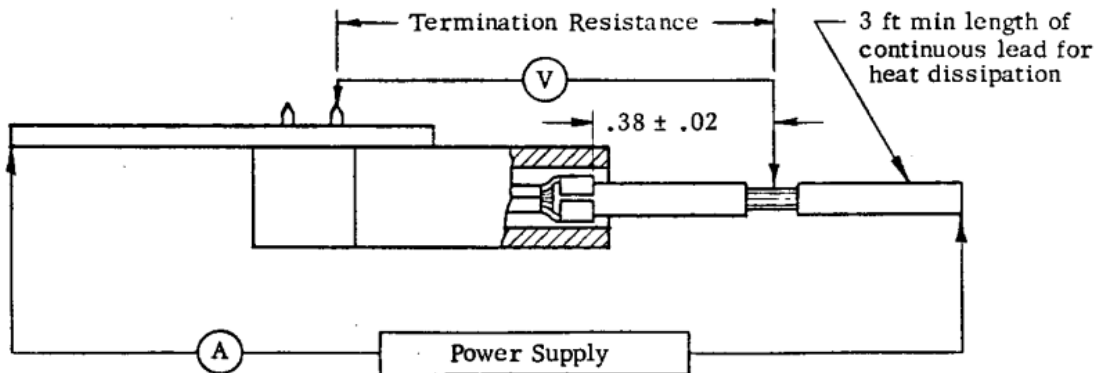
Figure 1 (cont)

Test Description	Requirement	Procedure								
Termination Resistance, Low Level	.005 ohm max.	50 mv max open circuit, 100 ma max short circuit.								
Termination Resistance, Rated Current	.005 ohm max.	5 amp.								
Insulation Resistance	50,000 megohms min initial, 5,000 megohms min final.	500 vdc.								
Dielectric Withstanding Voltage	<table border="1"> <thead> <tr> <th>Altitude</th> <th>Test Voltage, rms</th> </tr> </thead> <tbody> <tr> <td>Sea level</td> <td>1800</td> </tr> <tr> <td>50,000 ft</td> <td>700</td> </tr> <tr> <td>70,000 ft</td> <td>500</td> </tr> </tbody> </table>	Altitude	Test Voltage, rms	Sea level	1800	50,000 ft	700	70,000 ft	500	Unmated connectors, test between adjacent contacts, and contacts to mounting hardware.
Altitude	Test Voltage, rms									
Sea level	1800									
50,000 ft	700									
70,000 ft	500									
Contact Engaging Force	16.0 oz max.	Measure with blade simulator, AMP Gage #678973. Reference: MIL-C-21097/19.								
Contact Separating Force	2.0 oz min. initial, 1.0 oz min after durability.	Measure with blade simulator, AMP Gage #678973. Reference: MIL-C-21097/19.								
Connector Mating Force	16.0 oz max average per contact.	Completely wired connector assembly with printed wiring board shall be used for this test.								
Connector Separating Force	2.0 oz min average per contact.	Completely wired connector assembly with printed wiring board shall be used for this test.								
Durability	No mechanical damage; meet limits of contact separation force and termination resistance.	500 matings and unmatings at rate not exceeding 600 cycles per hour.								
Thermal Shock	No physical damage. Mate and unmate at temperature extremes.	-65° to 125°C, 5 cycles.								
Vibration	No interruption of continuity greater than 1 microsecond. No physical damage.	20 G's peak, 10-2000 Hz; mounted on PC board, mated as in normal service; energized with 100 milliamp dc current.								
Physical Shock	No interruption of continuity greater than 1 microsecond. No physical damage.	100 G's, 6 msec, sawtooth; mated; energized with 100 milliamps dc current.								
Moisture Resistance	Meet insulation resistance, final and dielectric withstanding voltage.	Mated, 90-98% RH, 65° ± 2°C 2 cycles per day for 10 days.								

Figure 1 (cont)

Test Description	Requirement	Procedure																																
Salt Spray (Corrosion)	Termination resistance, low level and rated current.	5% solution, 48 hours																																
Contact Retention (Crimped Contacts)	Contacts shall not dislodge from its normal locking position.	Axial load of 15.0 lb applied to contacts lead. After 10 extractions with applicable tool, axial load of 10.0 lb.																																
Crimp Resistance	<table border="1"> <thead> <tr> <th>Wire Size, AWG</th> <th>Current, amp</th> <th colspan="2">Resistance, mohm</th> </tr> <tr> <th></th> <th></th> <th>Initial</th> <th>Final</th> </tr> </thead> <tbody> <tr> <td>28</td> <td>1.0</td> <td>3.0</td> <td>5.0</td> </tr> <tr> <td>26</td> <td>1.0</td> <td>2.5</td> <td>4.0</td> </tr> <tr> <td>24</td> <td>3.0</td> <td>2.0</td> <td>3.3</td> </tr> <tr> <td>22</td> <td>5.0</td> <td>1.2</td> <td>2.0</td> </tr> <tr> <td>20</td> <td>5.0</td> <td>0.7</td> <td>1.2</td> </tr> <tr> <td>18</td> <td>5.0</td> <td>0.5</td> <td>0.8</td> </tr> </tbody> </table>	Wire Size, AWG	Current, amp	Resistance, mohm				Initial	Final	28	1.0	3.0	5.0	26	1.0	2.5	4.0	24	3.0	2.0	3.3	22	5.0	1.2	2.0	20	5.0	0.7	1.2	18	5.0	0.5	0.8	Measure potential drop across crimped contact between wire as it enters the wire barrel and the end of the wire barrel nearest the contact transition.
Wire Size, AWG	Current, amp	Resistance, mohm																																
		Initial	Final																															
28	1.0	3.0	5.0																															
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24	3.0	2.0	3.3																															
22	5.0	1.2	2.0																															
20	5.0	0.7	1.2																															
18	5.0	0.5	0.8																															
Current Cycling	Crimp resistance shall not exceed "Final" value.	125% rated current for 30 minutes, 15 minutes no current, total of 50 cycles.																																
Crimp Tensile	<table border="1"> <thead> <tr> <th>Wire Size, AWG</th> <th>Tensile Strength, lb min</th> </tr> </thead> <tbody> <tr> <td>28</td> <td>3.0</td> </tr> <tr> <td>26</td> <td>5.0</td> </tr> <tr> <td>24</td> <td>8.0</td> </tr> <tr> <td>22</td> <td>12.0</td> </tr> <tr> <td>20</td> <td>20.0</td> </tr> <tr> <td>18</td> <td>30.0</td> </tr> </tbody> </table>	Wire Size, AWG	Tensile Strength, lb min	28	3.0	26	5.0	24	8.0	22	12.0	20	20.0	18	30.0	Axial tensile load as shown. Wire shall not separate from contact.																		
Wire Size, AWG	Tensile Strength, lb min																																	
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26	5.0																																	
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Figure 1 (end)


 Termination Resistance Test Circuit
 Figure 2

3.3. Connector Tests and Sequence

Test	MIL-STD-202 Method	109-9000 Requirement Paragraph	Test Sequence (a)		
			1	2	3
Examination of Product		5.1.	X	X	X
Connector Mating Force		5.8.		X	
Termination Resistance, Low Level (b)		5.2.	X	X	
Termination Resistance, Rated Current (b)	307	5.3.	X	X	
Connector Unmating Force		5.9.		X	
Insulation Resistance	302, Cond B	5.4.	X	X	
Dielectric Withstanding Voltage	301	5.5.	X	X	
Contact Engaging Force		5.6.		X	
Contact Separation Force		5.7.		X	
Thermal Shock	107, Cond B	5.11.	X		
Durability Contact Separation Force		5.10.	X	X	
Vibration	204, Cond D	5.12.		X	
Physical Shock	213, Cond I	5.13.		X	
Moisture Resistance Insulation Resistance Dielectric Withstanding Voltage	106, except step 7b	5.14.	X		
Salt Spray (Corrosion)	101, Cond B	5.15.B.		X	
Termination Resistance, Low Level (b)		5.2.	X	X	
Termination Resistance, Rated Current (b)	307	5.3.	X	X	
Contact Retention		5.16.	X	X	
Crimp Resistance		5.17.			X
Current Cycling		5.18.			X
Crimp Resistance		5.17.			X
Crimp Tensile		5.19.			X

(a) Test sequence 1 and 2 are for connectors with contacts and hardware. Test sequence 3 is for contacts.

(b) See Figure 2.

Figure 3

3.4. Selection of Test Samples

- A. Test samples shall consist of 2 connectors of each connector length offered, 1 each test sequence 1 and test sequence 2.
- B. Thirty contacts of each style and desired wire size shall be tested to test sequence 3.

3.5. Acceptance Quality Level

MIL-STD-105, Inspection Level II, Normal Inspection, AQL, 1.5%