AMP DUAC Socket Connector

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1. SCOPE.

Content.

This specification covers the performance requirements for the AMP* DUAC-Socket Connector. This connector provides a reliable interconnection between wires and posts. It has a lower insertion force with sufficient contact pressure and elimination stubbing.

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.

IEC-512 Basic testing procedures and measuring methods for electromechanical component for electronic equipment.

3. REQUIREMENTS.

3.1. Design and Construction.

Connectors shall be of the design, construction and physical dimensions specified on the applicable AMP drawing.

3.2. Materials.

A.	Contact:	Phosphorbronze T14, tinplating, 106528, 106529
B.	Housing:	Nylon 6/6, UL 94V-2, PN 106527,

3.3. Ratings:

A.	Current:	9 Amperes maximum at 20°C (single contact)
B.	Voltage:	600 Vac
C.	Operating temperature:	-55° to 105°C.

3.4. Performance and Test Description.

Connector assemblies shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1a, b, c, d, e. The test sequence to check this performance is indicated in Figure 2.
The standard environmental conditions during measurements shall be:
temperature 20°C - 30°C, relative humidity 30% - 80%, unless otherwise specified.

4. CONNECTOR INSPECTION.

Test	Test Description	Requirements	Procedure
4.1.	Examination of product	Meets requirements of AMP drawing and AMP spec.	Visual, dimensional and functional per applicable inspection plan

Figure 1a

5. CONTACT REQUIREMENTS.

5.1. Electrical and environmental Requirements.

Test	Test Description	Requirements	Procedure
5.1.1.	Termination and contact resistance, low level	Female to post Initial 5 mΩ $\Delta R \leq 3{,}0$ mΩ	Subject mated contacts assembled in housing to 20mV open circuit at 100 mA maximum, see Figure 4 Ref.: IEC-512-2 test 2a
5.1.2.	Temperature rise vs Current Derating Curve	Maximum 30°C T-rise at specified current: AWG: 26 24 22 20 18 Amp: 4 5 6 7 8 See also Figure 3	Measure T-rise at specified current. All contacts from one connector wired in series. Ref.: IEC-512-3 test 5a+5b
5.1.3.	Electrical load and temperature	Termination + contact resistance measured with 100 mA current	Subjects mated connectors to 85°C during 500 hours with a current of 8A DC Ref.: IEC 512-5-9b
5.1.4.	Temperature-Humidity Cycling	Termination resistance.	Subject unmated connectors to pre-condition 8 hrs 50°C, then 6 damp heat cycles between 25° and 55°C at 95% RH; Duration of each cycle is 12 hrs. Ref.: IEC-512-6-11m
5.1.5.	Heat Age	Termination + contact resistance	Subject mated connectors to dry heat and to specify current Total temperature 105°C. Duration: 500 hrs IEC-512-6-11i
5.1.6.	Thermal Shock	Connectors shall remain mated and show no evidence of cracking or chipping. Termination + contact resistance.	Subject mated connectors to 10 cycles between -55° and 105°C. The duration at the extreme temperatures shall be 30 minutes. Ref.: IEC-512-6-11d
5.1.7.	Cold		Subject unmated to temperature of -55° during 2 hours Ref.: IEC 512-6-11j

Figure 1b

5.2. Mechanical Requirements.

Test	Test Description	Requirements	Procedures
5.2.1.	Tensile strength	Wire Size AWG / Strength min. Newton: 26 / 25; 24 / 35; 22 / 50; 20 / 80; 18 / 120	Determine barrel tensile at a rate of 25 mm/minute. Apply force parallel to axis of wire. Ref.: IEC-512-8 test 16d
5.2.2.	Mating Force	4 newton maximum initial per contact	Measure force necessary to mate connector assembly at a rate of 25 mm/minute. Use connectors without locking. Calculate force per contact. 50 cycles. Ref.: IEC-512-7 test 13b
5.2.3.	Unmating Force	0,5 Newton minimum final per circuit	Measure force necessary to unmate connector assembly at a rate of 25 mm/minute. Use connectors without locking. Calculate force per contact. 50 cycles Ref.: IEC-512-7 test 13b.
5.2.4.	Contact Retention in Housing	22 Newton minimum	Pull on contact using special cut away housing. Ref.: IEC-512-8 test 15a
5.2.5.	Vibration	No discontinuities greater than 1 microsecond; termination + contact resistance.	10-55-10 Hz traversed in 1 minute at 0,75 mm amplitude 2 hours in each of 3 mutually perpendicular directions. Ref.: IEC-512-4-6d
5.2.6.	Durability	Termination + contact resistance ΔR 3 mΩ max.	50 x mate + unmated Rec.: IEC-512-5-9a

Figure 1c

6. HOUSING REQUIREMENTS.

6.1. Electrical Environmental Requirements.

Test	Test Description	Requirements	Procedure
6.1.1.	Dielectric withstanding voltage	1250 Vac one minute	Test between adjacent contacts of unmated connector assemblies. Ref.: IEC-512-2 test 4a method C
6.1.2.	Insulation resistance	5000 megohms minimum initial 1000 megohms minimum final	Test between adjacent contacts of unmated connector assemblies. Measured at 100V Dc Ref.: IEC-512-2 test 3a method C
6.1.3.	Damp Heat Steady State	- Insulation resistance - Dielectric withstanding voltage	Subject unmated at temp 40° at 95% RH during 21 days

Figure 1d

6. HOUSING REQUIREMENTS

6.2. Mechanical Requirements.

Test	Test Description	Requirements	Procedure
6.2.1.	Locking and Unlocking Force	Locking force initial: 30 Newton max. per connector Unlocking force: 50 N min.	Measure force to lock and unlock connector housings without contacts at a rate of 25 mm/minute. Ref.: IEC-512-8-15f
6.2.2.	Durability of housing	Unlocking force	Mate and unmate connector assemblies for 50 cycles. Ref.: IEC-512-5 test 9a

Figure 1e

7. CONNECTOR TESTS AND SEQUENCES.

Test or Examination	Testgroup (a)							
	1	2	3	4	5	6	7	8
	Test Sequence							
Examination of product	0	0	0	0		0	0	0
Locking and unlocking force					1			
Termination + contact resistance, low level	*)	1,7	1,4			1,3		
Dielectric withstanding voltage		3,6						
Insulation resistance		2,5						
Temperature rise vs current + der. curve								1
Electr. load and temperature			3					
Mating force	1							
Unmating force	11							
Tensile strength							1	
Durability of housing								
Contact retention				1				
Vibration	3							
Temperature-Humidity cycling	7,9							
Thermal shock	5							
Durability of contacts			2					
Heat age	6**					2		
Cold	8							
Damp Heat Steady State		4						

(a) See para 8
*) 2, 4, 10
**) Duration 2 hrs

Figure 2

8. QUALITY ASSURANCE PROVISIONS.

8.1. Qualification Testing.

A. Sample Selection.

Testgroup 1, 2 and 3 shall consist of 3 mated assemblies per group, largest size in family, 24 contacts per connector.
Testgroup 4 shall consist of 24 contacts.
Testgroup 5 shall consist of 10 connectors.
Testgroup 6 shall consist of 3 connectors.
Testgroup 7 shall consist of 15 contacts of each wire size and 5 connectors with 16 contacts for each wire-size.
All wires shall be applied in accordance with AMP Specification 114-19009.

B. Test Sequence.

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

C. Acceptance.

(1) All samples tested in accordance with this specification shall meet the requirements as indicated in the requirements portion of Figure 1.
(2) Failures attributed to equipment, test set-up, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples re-submitted for qualification.

8.2. Quality Conformance Inspection.

The applicable AMP 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.

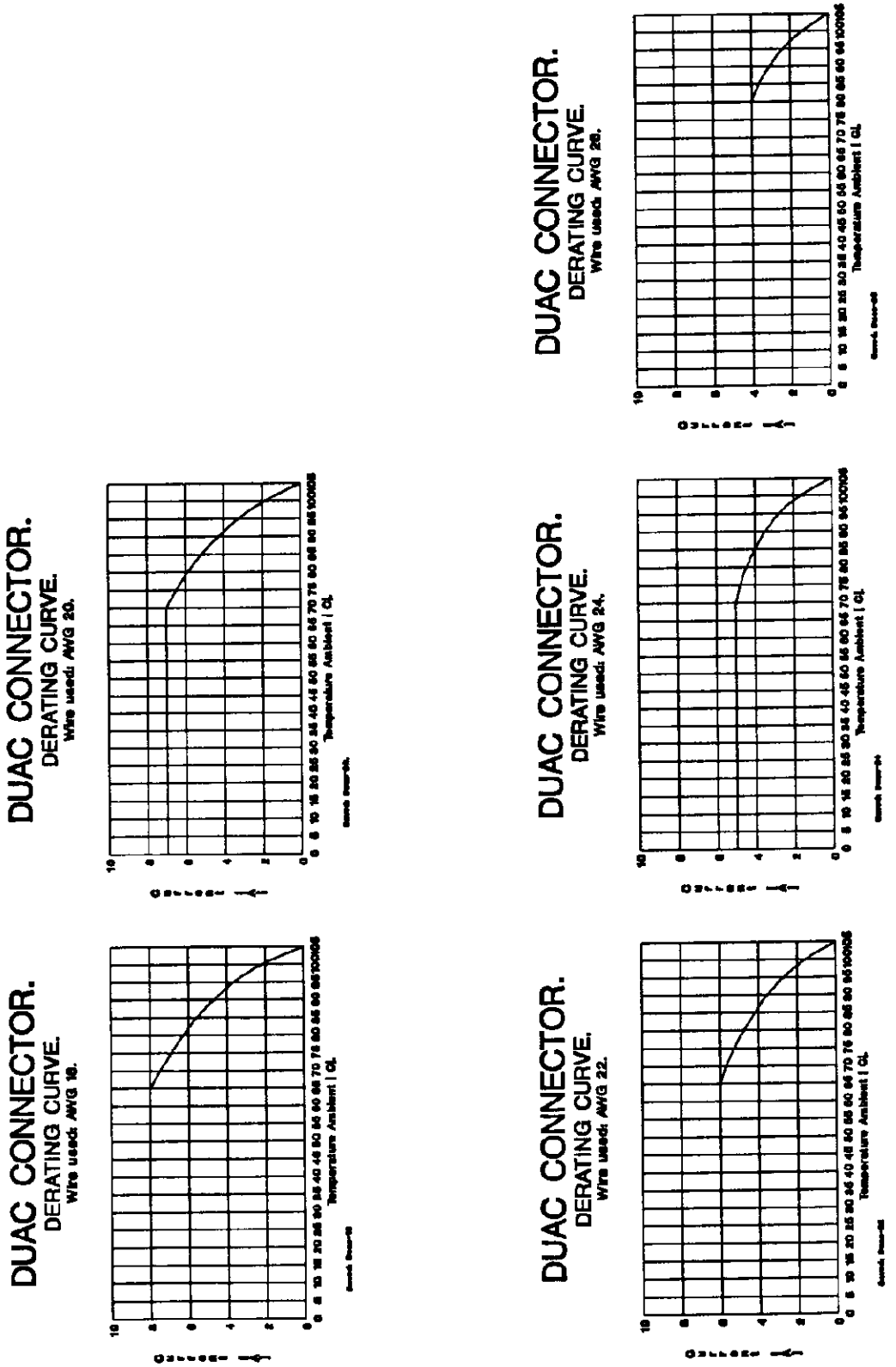

Figure 3
Terminal Temperature vs Current/Derating Curve
24 Circuit Assembly