
Circular Plastic Connector With Type III+ Contacts

DESIGN OBJECTIVES

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore AMP* Incorporated makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP Incorporated may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP* circular electrical connectors (plugs and receptacles) with Type III+ contacts. These connectors are designed for use in electronic, electric power and control circuits.

1.2. Classification

Connectors shall be of the following series (standard density using size 16 (.062 inch diameter) contacts; and combination using standard and power contacts), classes (pressurized receptacle; general purpose; and environment resisting general purpose with jacketed cable and interfacial seals) and shell size (11, 13, 17 and 23) specified on the applicable product drawing.

1.3. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 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. Unless otherwise specified, the latest edition of the document applies. 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. 108-10024: Product Specification
- B. 108-10042: Product Specification
- C. 109 Series: Test Specifications indicated in Figure 1
- D. 109-197: AMP Test Specifications vs EIA and IEC Test Methods
- E. 114-10004: Application Specification
- F. 501- : Qualification Test Report

2.2. Commercial Standard

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

3. REQUIREMENTS

3.1. Design and Construction

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

DESIGN OBJECTIVES 28Jul00

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- A. Voltage:
 - 1. 250 volts AC/DC
 - 2. 600 volts AC/DC, Series I, VDE tested and select loaded only
- B. Current Base: 17 amperes (30°C temperature rise with single contact on 14 AWG wire)
- C. Temperature: -55 to 105°C
- D. VDE 0627: XA/630/4KV/2 - Series I, VDE tested only

3.4. Performance and Test Description

Product is designed to meet the 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
Initial examination of product.	Meets requirements of product drawing.	EIA-364. Visual and dimensional inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364. Visual inspection.
ELECTRICAL		
Dry circuit resistance.	4 milliohms maximum change.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	EIA-364-70. Measure temperature rise vs current. See Figure 3.
MECHANICAL		
Contact retention.	84.5 N [19 lb]. See Note.	AMP Spec 109-30.
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Condition IV. Subject mated specimens to 10-2000-10 Hz traversed in 20 minutes with 1.5 mm [0.06 in] maximum total excursion. 4 hours in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (cont)

DESIGN OBJECTIVES 28Jul00

Test Description	Requirement	Procedure
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Condition A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens for 100 cycles at a maximum rate of 600 cycles per hour.

NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Initial examination of product	1	1	1
Dry circuit resistance	2,6		
Temperature rise vs current		2	
Contact retention			2
Vibration	4		
Mechanical shock	5		
Durability	3		
Final examination of product	7	3	3

NOTE

- (a) See paragraph 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall each consist of a minimum of 3 specimens.

B. Test Sequence

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

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or 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.

4.3. 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. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable AMP quality inspection plan shall 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.

Percent Connector Loading	Single Circuit		≈ 50%		100%	
Wire Size	30	14	30	14	30	14
11-4	.291	1	.212	.905	.140	.684
13-9	.278	.995	.175	.750	.134	.567
17-16	.270	.990	.146	.625	.127	.472
23-24	.281	.985	.138	.550	.120	.416
37 position	.275	.985	.131	.497	.114	.376

NOTE

To determine acceptable current carrying capacity for percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base Rated Current for a single circuit at the maximum ambient operating temperature shown in paragraph 3.3.B.

Figure 3
Multiplication Factor (F)

DESIGN OBJECTIVES 28Jul00

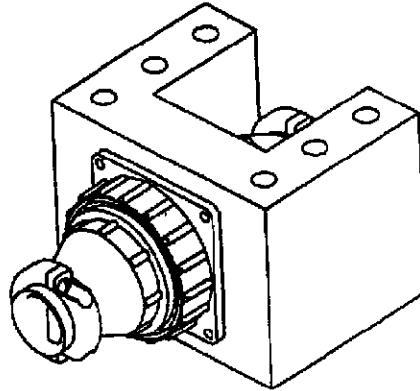


Figure 4
Vibration & Mechanical Shock Mounting Fixture

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