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**Circular Plastic Connector With Size 20 Contacts**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) circular electrical connectors (plugs and receptacles) with size 20 contacts. These connectors are designed for use in electronic, electric power and control circuits.

## 1.2. Classification

Connectors shall be of the following series (high density using size 20 (.040 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.

## 1.4. Qualification Test Results

Successful qualification testing on the subject product line was completed in Apr00. The Qualification Test Report number for this testing is 501-483-3. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**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. TE Documents

- 108-10024: Product Specification (Connector, Circular Plastic)
- 108-40005: Product Specification (Connector, AMPLIMITE\* HDP-20 Subminiature D With Removable Crimp Contacts)
- 109-197: Test Specification (TE Test Specifications vs EIA and IEC Test Methods)
- 114-10038: Application Specification
- 501-483-3: 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.

3.2. Materials

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

3.3. Ratings

- Voltage: 250 volts AC/DC
- Current: 8.34 amperes
- Temperature: -55 to 105°C

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 Test 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.<br>Visual and dimensional inspection per product drawing.   |
| Final examination of product.   | Meets visual requirements.                          | EIA-364.<br>Visual inspection.                                       |
| <b>ELECTRICAL</b>               |   |  |
| Temperature rise vs current.    | 30°C maximum temperature rise at specified current. | EIA-364-70.<br>Measure temperature rise vs current.<br>See Figure 3. |
| <b>MECHANICAL</b>               |   |  |
| Contact retention.              | 22.25 N [5 lb].<br>See Note.                        | IEC 60512-15-1.  |

**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

3.6. Product Qualification and Requalification Test Sequence

| Test or Examination            | Test Group (a)    |   |
|--------------------------------|-------------------|---|
|                                | 1                 | 2 |
|                                | Test Sequence (b) |   |
| Initial examination of product | 1                 | 1 |
| Temperature rise vs current    |                   | 2 |
| Contact retention              | 2                 |   |
| Final examination of product   | 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 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 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.

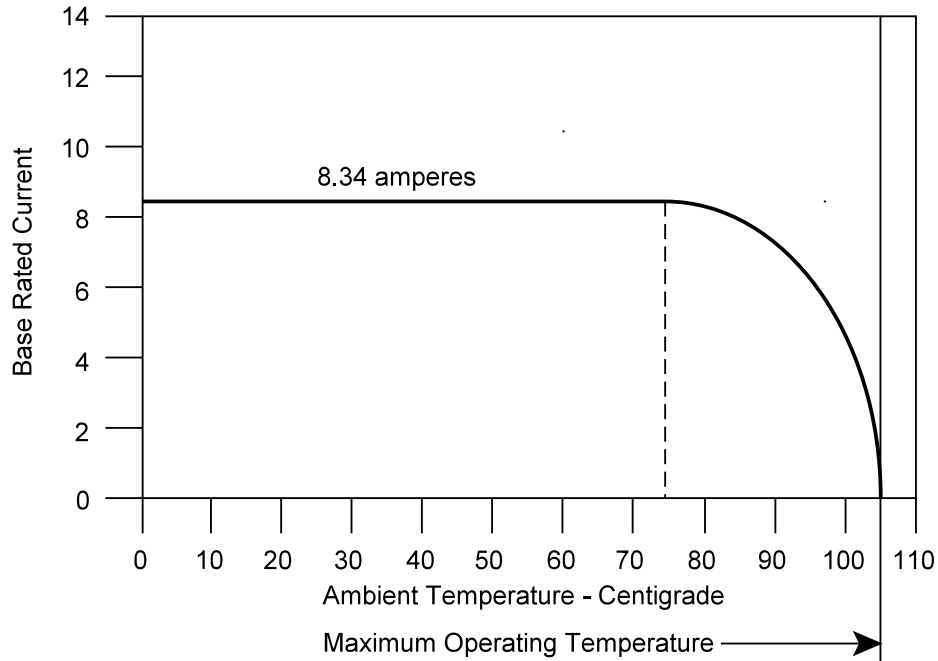


Figure 3A  
Current Carrying Capability

| Percent Connector Loading | Single Circuit |      | ≈ 50% |      | 100% |      |
|---------------------------|----------------|------|-------|------|------|------|
|                           | 22             | 20   | 22    | 20   | 22   | 20   |
| Wire Size                 | 22             | 20   | 22    | 20   | 22   | 20   |
| 8 position                | .929           | 1    | .298  | .438 | .259 | .322 |
| 9 position                | .920           | .995 | .269  | .324 | .205 | .310 |
| 28 position               | .910           | .993 | .246  | .299 | .180 | .275 |
| 63 position               | .900           | .990 | .229  | .270 | .159 | .172 |

**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 Figure 3A.

Figure 3B  
Multiplication Factor (F)

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