

INCH-POUND  
MIL-R-10509/1M  
w/Amendment 1  
22 February 2011  
SUPERSEDING  
MIL-R-10509/1M  
10 August 2001

MILITARY SPECIFICATION  
RESISTORS, FIXED, FILM (HIGH STABILITY),  
STYLE RN60

INACTIVE FOR NEW DESIGN AFTER 9 MAY 1972.  
USE [MIL-PRF-55182/3](#).

This specification is approved for use by all Departments  
And Agencies of the Department of Defense.

The requirements for acquiring the product described herein  
shall consist of this specification sheet and [MIL-R-10509](#).

## 1. SCOPE

1.1 Scope. This specification covers the requirements for style RN60, high stability, film, fixed, resistors. This style is available in characteristics C, D, E and G.

1.2 Part or Identifying Number (PIN). Resistors covered by this specification is identified by a PIN which consist of the style of this specification and a coded number. The PIN is in following form:

|                               |                 |
|-------------------------------|-----------------|
| <u>RN60</u>                   | <u>D1003F</u>   |
| Specification<br>style number | Coded<br>number |

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information are as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

### 2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation (see 6.2).

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, or emailed to [Resistor@dla.mil](mailto:Resistor@dla.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

MIL-R-10509/1M  
w/Amendment 1

## DEPARTMENT OF DEFENSE SPECIFICATIONS

## MIL-R-10509 - Resistors, Fixed, Film (High Stability), General Specification for.

(Copies of these documents are available online at <https://assist.daps.dla.mil/quicksearch> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence unless otherwise noted. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 General. The requirements for acquiring the product described herein shall consist of this document and MIL-R-10509.

3.2 Interface and physical dimensions. Resistors shall meet the interface and physical dimensions specified on figure 1.

3.3 Power rating. The power rating shall be 0.125 watt. For characteristic D, the power rating shall be 0.25 watt.

3.4 Voltage rating. The maximum continuous working voltage shall not exceed 250 volts. For characteristic D, the maximum continuous working voltage shall not exceed 300 volts.

3.5 Resistance. Minimum and maximum resistance values shall be as follows in table I.

TABLE I. Minimum and maximum resistance.

| Characteristic | Resistance           |                         |
|----------------|----------------------|-------------------------|
|                | Minimum<br>(in Ohms) | Maximum<br>(in Megohms) |
| D, G           | 10.0                 | 1.0                     |
| C, E, F        | 49.9                 | 0.4999                  |

3.6 Pure tin. The use of pure tin, as an underplate or final finish is prohibited both internally and externally. Tin content of resistor components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.4).

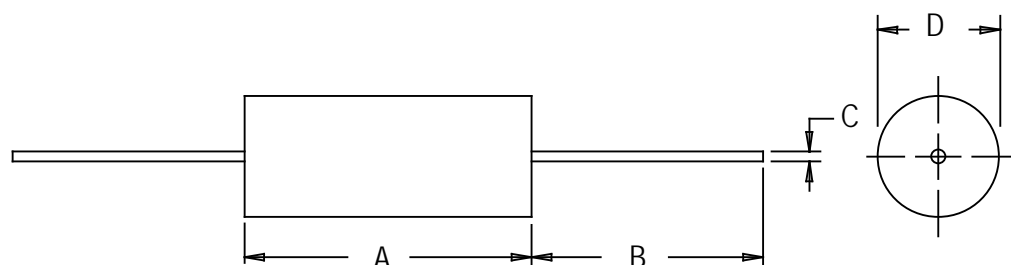
## 4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-R-10509.

4.2 Terminal strength. Direct load shall be applied gradually until the load reaches 2 pounds.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military services system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

MIL-R-10509/1M  
w/Amendment 1

| Dimension | Inches |         |        | mm     |        |       |
|-----------|--------|---------|--------|--------|--------|-------|
| A         | 0.375, | +0.062, | -0.092 | 9.53,  | +1.57, | -2.34 |
| B         | 1.500, | ±0.125  |        | 38.10, | ±3.18  |       |
| C         | 0.025, | ±0.002  |        | 0.64,  | ±0.05  |       |
| D         | 0.125, | +0.040, | -0.031 | 3.18,  | +1.02, | -0.79 |

## NOTE:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The end of the body shall be that point at which the body diameter equals the nearest drill size larger than 150 percent of the normal lead diameter, or 300 percent of the nominal lead diameter. The same drill size shall be used for each end of the body.
4. The leads shall be solderable to within 0.062 (1.58 mm) of the resistor body.

FIGURE 1. Style RN60.

## 6. NOTES

6.1 Intended use. The notes specified in [MIL-R-10509](#) are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this date of this specification, the applicable associated specification, and the complete PIN.
- b. Unless otherwise specified (see 2.1), the versions of the individual documents referenced will be those in effect on the date of release of the solicitation.
- c. Packaging requirements (see 5.1).

6.3 Substitution data. The resistors specified herein are not for use in design after 9 May 1972. They are authorized for use in design contracts effective prior to or on 9 May 1972. Existing equipment shall be supported by substitute resistors in [MIL-PRF-55182/3](#) of the same resistance value, resistance tolerance, and characteristic performance of this specification regardless of failure rate designation. Resistors specified in [MIL-PRF-55182/3](#) are preferred for design and regardless of failure rate designation can be used as substitutes for inactivated resistors of the same resistance value, tolerance, and characteristic performance of this specification. Characteristics C, E, and G were previously inactivated for design by revision H of this specification, dated 22 November 1968. Characteristic substitution shall be made as indicated in table II.

MIL-R-10509/1M  
w/Amendment 1TABLE II. Characteristic substitution.

| MIL-R-10509<br>characteristic | Substitute<br>MIL-PRF-55182<br>characteristic |
|-------------------------------|---|
| C                             | H   |
| D                             | K   |
| E                             | J   |
| G                             | C   |

6.4 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to [ASTM-B545](#) (Standard Specification for Electrodeposited Coatings of Tin).

6.5 Pulse applications. Designers are CAUTIONED on using these resistors in pulse applications. These resistors are subject to damage and premature failures when they see excessive pulsing

6.6 Amendment notification. The margins of this specification are marked with vertical lines to indicate modification generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship.

## Custodians:

Army - CR  
Navy - EC  
Air Force - 85  
DLA - CC

Preparing activity:  
DLA - CC

(Project 5905-2010-031)

## Review activities:

Army - AR, AT, CR4, MI  
Navy - AS, CG, MC, OS  
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.