

INCH-POUND
MIL-PRF-10509/8F
2 June 2023
SUPERSEDING
MIL-R-10509/8E
w/Amendment 3
12 June 2017

PERFORMANCE SPECIFICATION

RESISTOR, FIXED, FILM (HIGH STABILITY),
STYLE RN50

INACTIVE FOR NEW DESIGN AFTER 22 NOVEMBER 1968.
USE [MIL-PRF-55182/7](#).

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-PRF-10509](#).

1. SCOPE

1.1 Scope. This specification covers the requirements for style RN50, high stability, film, fixed, resistors. This style is available in characteristics C and E.

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>RN50</u>	<u>D1003F</u>
Specification style number	Coded 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. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FSC 5905



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DEPARTMENT OF DEFENSE SPECIFICATIONS

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[MIL-PRF-10509](#)

- Resistor, Fixed, Film (High Stability), General Specification for

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(Copies of these documents are available online at <https://quicksearch.dla.mil>).

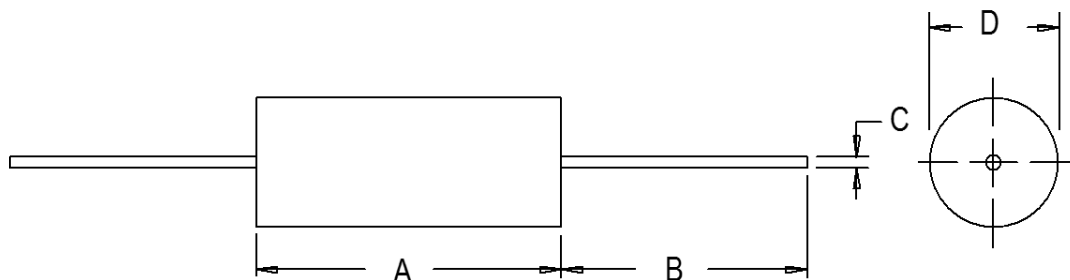
2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence unless otherwise noted. Nothing in this document,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

3. REQUIREMENTS

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3.1 General. The requirements for acquiring the product described herein shall consist of this document and [MIL-PRF-10509](#).

3.2 Interface and physical dimensions. Resistors shall meet the interface and physical dimensions specified on [figure 1](#).



<u>Dimension</u>	<u>Inches</u>	<u>mm</u>
A	150 $\pm$.020	3.81 $\pm$ 0.51
B	1.250 $\pm$.266	31.75 $\pm$ 6.76
C	.016 $\pm$.002	0.41 $\pm$ 0.05
D	.065 $\pm$.015	1.65 $\pm$ 0.38

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 250 percent of the normal lead diameter.
4. Maximum length is "clean lead" to "clean lead" (0.244 inch or 6.20 mm).

FIGURE 1. Style RN50.

3.3 Power rating. The power rating shall be 0.05 watt.

3.4 Voltage rating. The maximum continuous working voltage shall not exceed 200 volts.

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

TABLE I. Minimum and maximum resistance.

Characteristic	Resistance	
	Minimum (in Ohms)	Maximum (in Megohms)
C, E	10.0	0.100

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

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

6. NOTES

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6.1 Intended use. The notes specified in MIL-PRF-10509 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- Title, number, and date of this date of this specification, the applicable associated specification, and the complete PIN.
- 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.
- Packaging requirements (see 5.1).

6.3 Substitution data. The resistors specified herein are not for use in design after 22 November 1968. They are authorized for use in design contracts effective prior to or on 22 November 1968. Existing equipment shall be supported by substitute resistors in MIL-PRF-55182/7 of the same resistance value, resistance tolerance, and characteristic performance of this specification regardless of failure rate designation. Resistors specified in MIL-PRF-55182/7 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. Characteristic substitution shall be made as indicated in table II.

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MIL-PRF-10509/8F

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TABLE II. Characteristic substitution. 1/

MIL-PRF-10509 characteristic	Substitute MIL-PRF-55182 characteristic
C	H
E	J

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 high power pulse applications. Since they have not been qualified nor tested for such applications, damage and premature failure are possible. Designers MAY CONSIDER using DLA Land and Maritime drawing [03003](#) for high power pulse applications.

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6.6 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. 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 to the previous issue.

Custodians:

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

Preparing activity:
DLA - CC

(Project 5905-2023-015)

Review activities:

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

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