

PERFORMANCE SPECIFICATION SHEET

RESISTOR, CHIP, FIXED, BULK METAL FOIL, TERMINATION G, ESTABLISHED RELIABILITY, SPACE LEVEL, STYLE RFG2010

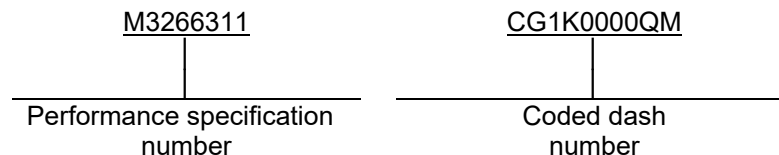
This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall
consist of this specification sheet and [MIL-PRF-32663](#).

1. SCOPE

1.1 Scope. This specification covers the requirements for style RFG2010, fixed, bulk metal foil, chip, established reliability, and space level resistors. This style is available in characteristics C, D and E, resistance tolerances: T, Q, A, B, C, D, F and termination G only.

1.2 Part or Identifying Number (PIN). Chip resistors covered by this specification must be identified by a PIN which must consist of basic number of this specification and a coded dash number. The PIN must be in the following form:



The coded dash number is derived in accordance with [MIL-PRF-32663](#).

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 or 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.

Comments, suggestions, or questions on this document should be addressed to DLA Weapons Support (Columbus), 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>.



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2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-32663 - Resistor, Chip, Fixed, Bulk Metal Foil, Established Reliability, Space Level, General Specification for

(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. 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-PRF-32663**.

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

3.3 Power rating. The power rating for all characteristics shall be:

- a) 600 milliwatts when assembled on ceramic or polyimide substrates.
- b) 400 milliwatts when assembled on FR4.

3.4 Voltage rating. The maximum continuous working voltage shall not exceed 190 volts.

3.5 Characteristic. The characteristic shall be listed as in [table I](#).

3.6 Resistance and resistance tolerance. The resistance values and resistance tolerances shall be as listed in [table I](#).

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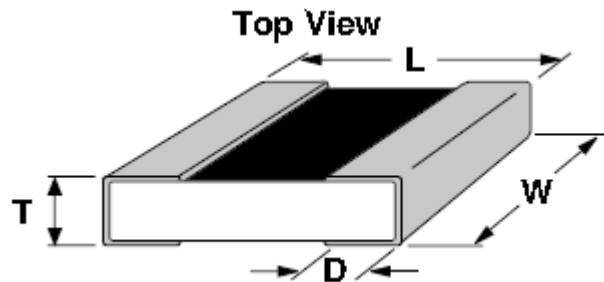
TABLE I. Resistance and resistance tolerance.

Resistance tolerance Percent ($\pm$)			Resistance (Ω)	
Characteristic C <u>1/</u>	Characteristic D <u>2/</u>	Characteristic E <u>3/</u>	Minimum	Maximum
T (0.01)	Q (0.02)	-	250	55.0k
Q (0.02)	A (0.05)	B (0.1)	100	55.0k
A (0.05)	B (0.1)	C (0.25)	50	55.0k
B (0.1)	C (0.25)	D (0.5)	25	55.0k
C (0.25)	D (0.5)	F (1.0)	10	55.0k

1/ Characteristic C shall be ± 3 ppm/ $^{\circ}$ C for resistance values 250 ohm and above, and ± 5 ppm/ $^{\circ}$ C for resistance value 100 ohms to <250 ohms.

2/ Characteristic D shall be ± 5 ppm/ $^{\circ}$ C for resistance values 250 ohm and above, and ± 8 ppm/ $^{\circ}$ C for resistance value 100 ohms to <250 ohms.

3/ Characteristic E shall be ± 10 ppm/ $^{\circ}$ C.



Inches	mm	Inches	mm
0.005	0.13	0.097	2.46
0.025	0.64	0.198	5.03

Dimension L inch	Dimension W inch	Dimension T inch	Dimension D inch
0.198 $\pm$ 0.005	0.097 $\pm$ 0.005	0.025 max	0.025 $\pm$ 0.005

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.005 (0.13 mm).
4. The pictorial view of the style above is given as representative of the envelope of the item. Slight deviations from the outline shown, which are contained within the envelope and do not alter the functional aspects of the device, are acceptable.

FIGURE 1. Style RFG2010.

4. VERIFICATION

4.1 Verification. Verification shall be in accordance with [MIL-PRF-32663](#).

4.2 High temperature exposure. The test shall be performed in accordance with paragraph 4.8.7 of [MIL-PRF-32663](#), except:

- a. Test temperature shall be $+200^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- b. The resistors shall be mounted on a suitable test board capable to withstand the required temperature (ceramic or polyimide board), as specified in paragraph 4.8.1.3 of [MIL-PRF-32663](#).

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.

5.2 Bulk packaging. The use of bulk packaging for chip resistors is prohibited. The use of bulk packaging may cause scratches and/or voids to the chip terminal pad, resistive element and/or chipping of the substrate.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Chip resistors are intended to be used in surface mount applications.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, date of this specification, the applicable associated specification, and the complete PIN (see [1.2](#)).
- 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](#)), (i.e. Electrostatic discharge (ESD) sensitive packaging).
- d. Allowable substitution (see [MIL-PRF-32663](#)).

6.3 Electrostatic charge effects. In general, the bulk metal foil resistors are non-sensitive to electrostatic charge. However, common rules of handling, associated with small electronic components, should be followed. Direct shipments to the government are controlled by [MIL-DTL-39032](#), which specifies a preventive packaging procedure.

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6.4 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications 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.

Custodians:

Army - CR
Navy - EC
Air Force - 85
NASA - NA

Preparing activity:

DLA - CC

Review activities:

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

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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.dla.mil>.