REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

Prepared in accordance with ASME Y14.100

Source control drawing

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PMIC N/A	PREPARED BY Andrew R. Ernst	DLA LAND AND MARITIME COLUMBUS, OH 43218-3990
Original date of drawing 6 July 2012	CHECKED BY Andrew R. Ernst	TITLE: RESISTOR, CHIP, FIXED, FILM, VALUES LESS THAN 1 OHM, STYLE 0505
	APPROVED BY Michael A. Radecki	
	SIZE A / CODE IDENT. NO. 037Z3	DWG NO. 12004
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a fixed, film, chip resistor of very low resistance values and a wide range of characteristics and tolerances, style 0505.

1.2 Part or Identifying Number (PIN). The complete PIN is shown in the following example:

12003	-	K	R1000	F	B
Drawing number		Characteristic (see 3.3.1)	Resistance (see 3.3.2)	Tolerance (see 3.3.3)	Termination material (see 3.3.4)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards 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 or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-55342 - Resistors, Chip, Fixed, Film, Nonestablished Reliability, Established Reliability, Space Level, General Specification for.

MIL-PRF-55342/2 - Resistors, Chip, Fixed, Film, Nonestablished Reliability, Established Reliability, Space Level, Style 0502.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-690 - Failure Rate Sampling Plans and Procedures.
MIL-STD-790 - Standard Practice for Established Reliability and High Reliability Qualified Products List (QPL) Systems for Electrical, Electronic, and Fiber Optic Parts Specifications.

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

2.2 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 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-55342, and as specified herein.

3.2 Interface and physical dimensions. The resistor shall meet the interface and physical dimensions as specified in MIL-PRF-55342/2 and herein (see figure 1).

3.3 Electrical characteristics.

3.3.1 Characteristic. Resistors are available in characteristics K (±100ppm), L (±200ppm), M (±300ppm), N (±400ppm), W (±500ppm), X (700ppm), and Z (±800ppm) in accordance with paragraph 6.7 herein.

3.3.1.1 Characteristics L, N, W, X, and Z. The maximum change in resistance for conformance pertaining to characteristics L, N, W, X, and Z shall be as specified in MIL-PRF-55342, table I, characteristic M.

3.3.2 Resistance. The nominal resistance is expressed in ohms and is identified by five digits. The letter "R" is substituted for one of the significant digits to represent the decimal point. The succeeding digits of the group represent the significant figures. Minimum and maximum values are as specified (see 3.3.2.1 and 6.7).

3.3.2.1 Resistance measurement. When measuring the dc resistance of this device the side opposite the film shall be the referee point.

3.3.2.2 Resistance range. The resistance range shall be 0.0499 ohms to 0.9999 ohms inclusive in accordance with table I and paragraph 6.7 herein.

TABLE I. Resistance value designations.

Designation	Resistance ohms
R0499 to R0999 incl.	0.0499 to 0.0999 incl.
R1000 to R4999 incl.	0.1000 to 0.4999 incl.
R5000 to R9990 incl.	0.5000 to 0.9990 incl.

3.3.3 Resistance tolerance. Resistors are available in resistance tolerances F (±1 percent), G (±2 percent), J (±5 percent), K (±10 percent), and M (±20 percent) in accordance with paragraph 6.7 herein.

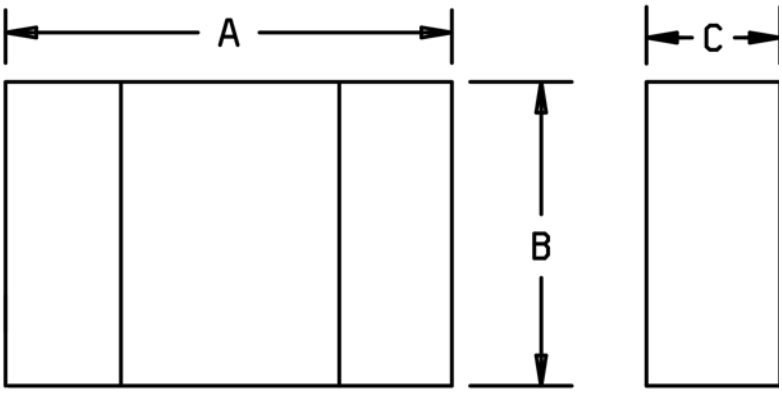
3.3.4 Termination material. Termination material shall be in accordance with MIL-PRF-55342, code letter B.

3.3.4.1 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).

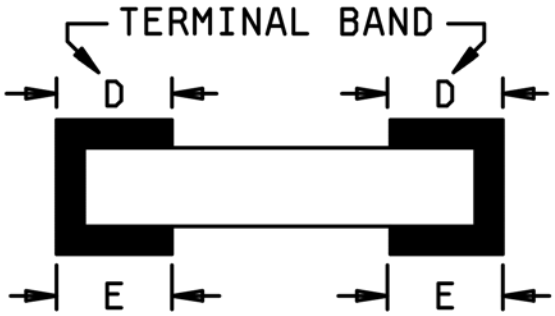
3.3.5 Power rating. The power rating for all characteristics shall be 125 milliwatts at 70°C derated to zero power at +150°C.

3.3.6 Voltage rating. The maximum continuous working voltage shall not exceed 40 volts.

Configuration A



Inches	mm
0.005	0.13
0.006	0.15
0.010	0.25
0.015	0.38
0.025	0.64
0.030	0.76
0.033	0.84
0.050	1.27
0.055	1.40



Configuration B

Configuration	Dimension A Inches	Dimension B Inches	Dimension C Inches	Dimension D Inches	Dimension E Inches
A	0.050 ±0.005	0.050 ±0.005	0.010 / 0.030	0.010 ±0.005	N/A
B	0.055 ±0.006	0.050 ±0.005	0.012 / 0.033	0.010 ±0.005	0.015 ±0.005

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The pictorial view of the styles 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.
4. Configuration A is not applicable to this document.

FIGURE 1. Chip resistor.

3.4 Marking. Marking is not required on the resistor; however, each unit package shall be marked with the PIN assigned herein (see 1.2), vendor CAGE code, and date and lot codes.

3.5 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements and promotes economically advantageous life cycle costs.

3.6 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the MIL-PRF-55342 Qualified Products List for at least one part, or perform the group A and group B inspections specified herein on a sample agreed upon by the manufacturer and DLA Land and Maritime-VAT.

3.6.1 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be an approved source of supply.

3.7 Workmanship. Resistors shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Product assurance program. The product assurance program specified in MIL-PRF-55342 and maintained in accordance with MIL-STD-790 is not applicable to this document.

4.2 Product level qualification. The product level qualification specified in MIL-PRF-55342 and MIL-STD-690 is not applicable to this document.

4.3 Conformance inspection.

4.3.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A inspection (ER level only and the ppm reporting is not applicable) and group B inspection of MIL-PRF-55342.

4.3.2 Certification. The procuring activity may accept a certificate of compliance in lieu of group B inspection (see 6.2d).

4.4 Visual and mechanical examination. Resistors shall be examined to verify that the materials, design, construction, physical dimensions, marking, and workmanship are in accordance with the applicable requirements of MIL-PRF-55342.

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 activities within the Military Service or Defense Agency, or within the military service's 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

(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 for use in thick or thin film circuits where microcircuitry is intended. Chip resistors can also be used in surface mount applications.

6.2 Ordering data. The contract or purchase order should specify the following:

a. Complete PIN (see 1.2).

b. Requirements for delivery: One copy of the conformance inspection data that parts have passed conformance inspection, with each shipment of parts by the manufacturer.

c. Packaging requirements.

d. Whether the manufacturer performs the group B inspection or provides a certificate of compliance (see 4.3.2).

6.3 Electrostatic charge. Under several combinations of conditions, these resistors can be electrically damaged, by electrostatic charges, and drift from specified value. Users should consider this phenomena when ordering or shipping resistors. Direct shipment to the Government is controlled by MIL-DTL-39032 that specifies a preventive packaging procedure.

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 the above resistors in high power pulse applications. Since they have not been qualified nor tested for such applications, damage and premature failure are possible. These resistors only see a one-time pulse (Short-time overload) as part of the group B inspection of MIL-PRF-55342.

6.6 User of record. Coordination of this document for future revisions is coordinated only with the approved source of supply and the users of record of this document. Requests to be added as a recorded user of this drawing may be achieved online at resistor@dla.mil or in writing to: DLA Land and Maritime-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0552 or DSN 850-0552.

6.7 Approved source of supply. Approved source of supply is listed herein. Additional sources will be added as they become available. Assistance in the use of this drawing may be obtained online at resistor@dla.mil or contact DLA Land and Maritime-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0552 or DSN 850-0552.

DLA Land and Maritime drawing PIN 12004-*******B	Vendor similar designation or type number 1/	Vendor CAGE	Vendor name and address
Char. K, L, M, N, W, X, & Z; Res. Values 0.0499Ω to 0.999Ω incl; Res. Tol. 2, 5, 10, & 20 pct.	H0505CPX*******(D12004)	56235	State of the Art, Inc. 2470 Fox Hill Rd. State College, PA 16803-1797
Char. K, L, M, N, W, X, & Z; Res. Values 0.100Ω to 0.999Ω incl; Res. Tol. 1, 2, 5, 10, & 20 pct. Char. L, M, N, W, X, & Z; Res. Values 0.0499Ω to 0.0976Ω incl; Res. Tol. 1, 2, 5, 10, & 20 pct.	RCWP-550-100	SH903	Vishay Dale Electronics 1122 23rd Street Columbus, NE 68601-3647 Plant: Vishay Israel, LTD Emek-Sara "B" Industrial Park Beer Sheva, Israel 84874
Char. M & N; Res. Values 0.1000Ω to 0.9999Ω incl; Res. Tol. 1, 2, 5, & 10 pct.	L0505M*****YB	57489	Vishay Thin Film 2160 Liberty Drive Niagara Falls, NY 14304-3676

1/ Parts must be purchased to the DLA Land and Maritime PIN to assure that all performance requirements and tests are met.