

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Add test requirements to the PIN and new table, manufacturing eligibility paragraph and new vendor plant. Editorial changes throughout.	19 DEC 2013	M. Radecki
B	Add visual inspection. Add new vendor part numbers. Add QR code. Change vendor CAGE code. Editorial changes throughout.	16 NOV 2016	M. Radecki

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
HAS CHANGED NAMES TO:
DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990



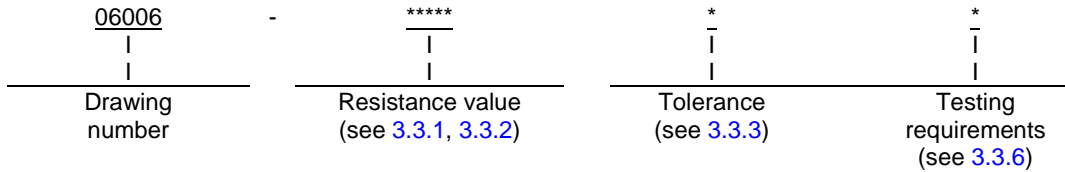
Prepared in accordance with [ASME Y14.100](#)

REV STATUS OF PAGES	REV	B	B	B	B	B	B												
	PAGES	1	2	3	4	5	6												
PMIC N/A	PREPARED BY Andrew R. Ernst							DESIGN ACTIVITY: DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO											
Original date of drawing 7 April 2006	CHECKED BY Andrew R. Ernst							TITLE RESISTOR, CHIP, FIXED, POWER METAL STRIP, SURFACE MOUNT, LOW VALUE (3 WATT), STYLE 4527											
	APPROVED BY Michael A. Radecki																		
	SIZE A	CODE IDENT. NO. 037Z3						DWG NO. 06006											
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a .455 X .275, 3 watt, fixed, power metal strip, surface mounted resistor.

1.2 Part or Identifying Number (PIN). The complete PIN is as follows:



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 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 or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-690 - Failure Rate Sampling Plans and Procedures.
MIL-STD-790 - 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 <http://quicksearch.dla.mil>.)

* 2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents cited in the solicitation or contract.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

J-STD-002 - Component Leads, Termination, Lugs, Terminals and Wires, Solderability Tests for.

(Applications for copies of these documents are online at <http://www.icp.org>).

2.4 Order of precedence. Unless otherwise noted herein or in the contract, or 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. Resistors shall meet the interface and physical dimensions as specified herein (see [figure 1](#)).

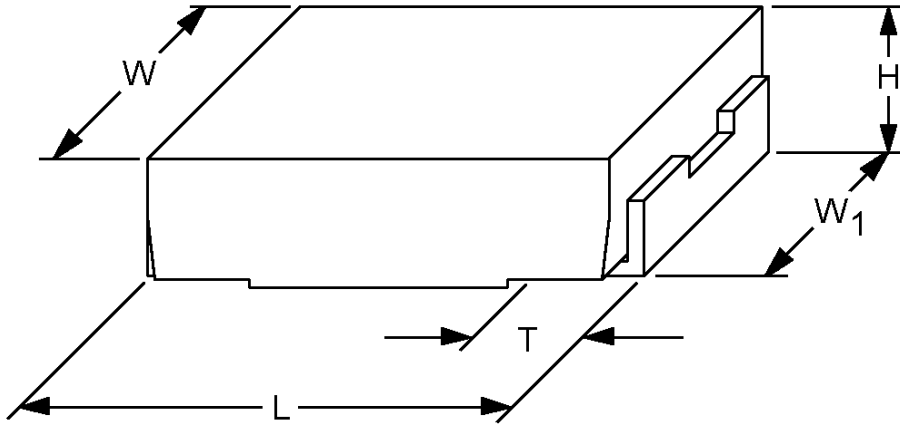
3.3 Electrical characteristics.

3.3.1 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. Resistance values from the standard resistance value table in MIL-PRF-55342 for 0.1 percent and 1.0 percent values shall be used.

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3.3.2 Resistance range. The resistance range shall be 0.01 ohms to 0.2 ohm (see 6.5).

3.3.3 Resistance tolerance. Resistance tolerances are available in (D) ±0.5 percent and (F) ±1 percent (see 6.5).



Dimensions				
L	H	T	W	W ₁
0.455 ±0.032 (11.56 ±0.813)	0.095 ±0.005 (2.41 ±0.127)	0.100 ±0.010 (2.54 ±0.254)	0.275 ±0.005 (6.98 ±0.127)	0.215 ±0.005 (5.46 ±0.127)

NOTES:

1. Dimensions are in inches, millimeters are shown in parentheses.
2. Millimeter equivalents are given for general information only.

FIGURE 1. Resistor, fixed, power metal strip, surface mount.

3.3.4 Power rating. The power rating shall be 3 watt at +70°C. For operation at temperatures greater than +70°C, derate in accordance with figure 2. Note: This part requires a minimum of 1050 square mil. Circuit traces connecting to the recommended solder pad.

3.3.5 Resistance temperature coefficient. The resistance temperature coefficient shall be 75 ppm.

3.3.6 Testing requirements. The requirement for testing shall be identified by a single letter in accordance with table I.

TABLE I. Testing.

Symbol	Testing requirements
(blank)	Group A
A	Group A and Group B
B	Group A and Power moisture
C	Group A, Group B and Power moisture

NOTE: Any testing requirements that are not specified in the PIN shall have a certificate of compliance issued (see 4.4.2).

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3.4 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 6.3).

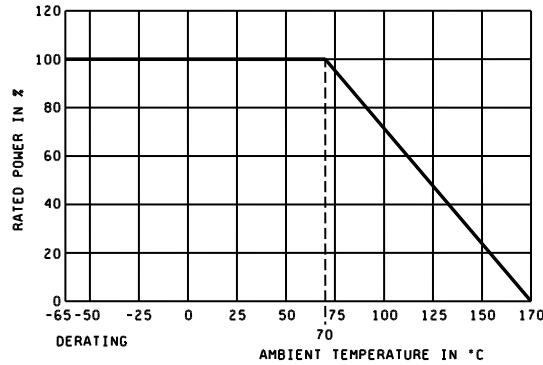


FIGURE 2. Derating curves for high ambient temperatures.

3.5 Short time overload. When resistors are tested as specified in 4.5, there shall be no evidence of arcing, burning, or charring; the change in resistance between the initial and final measurements shall not exceed $\pm(2.0 \text{ percent} + 0.0005 \text{ ohm})$.

3.6 Power moisture resistance. When resistors are tested as specified in 4.6, there shall be no evidence of mechanical damage; the change in resistance between the initial and final measurements shall not exceed $\pm(0.5 \text{ percent} + 0.0005 \text{ ohm})$.

3.7 Solder mounting integrity. When resistors are tested as specified in 4.7 there shall be no evidence of mechanical damage. Force applied shall be 1.8 kilograms.

* 3.8 Visual inspection. Resistors shall be inspected as specified in 4.9, to verify that the interface, physical dimensions, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.2, 3.10 and 3.13).

3.9 Manufacturers performance data. The manufacturer's technical specifications and performance data shall be made available to the customer for a period of two years.

3.10 Marking. Marking shall be as shown:

- 06006 (DLA Land and Maritime drawing number)
- R2000F (value and tolerance)
- XXXXX (CAGE code)

* 3.11 Recycled, recovered, environmentally preferable or biobased materials. Recycled, recovered, environmentally preferable or biobased 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.

* 3.12 Manufacturer eligibility. To be eligible for being added 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.

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

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

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4. VERIFICATION

4.1 Qualification inspection. Qualification inspection is not applicable to this document.

4.2 Reliability assurance program. The reliability assurance program specified in MIL-PRF-55342 and maintained in accordance with MIL-STD-790 is not applicable to this document.

4.3 Failure rate qualification. Failure rate qualification specified in MIL-PRF-55342 and MIL-STD-690 is not applicable to this document.

4.4 Conformance inspection.

* 4.4.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A inspection (ER level only, subgroup 2 (DC resistance only), subgroup 3 – shall be in accordance with 4.9, and subgroup 5 – the following exception shall apply: Resistors shall be examined for legibility under normal production room lighting by an inspector at 10X magnification, and ppm reporting is not applicable) and group B inspection of MIL-PRF-55342 (Subgroup 1 shall be performed on separate samples - 20 samples each). Additionally; a power moisture resistance test as specified in 4.5 shall be performed when specified in the PIN.

* 4.4.2 Certification. The manufacturer shall submit a certificate of compliance in lieu of the group B inspection and/or the power moisture resistance test, if not specified in the PIN.

4.5 Short time overload. Resistors shall be tested in accordance with MIL-PRF-55342. The following details and exceptions shall apply:

- * a. An overload dc test potential which will result in 5 times the rated wattage and shall be applied for 5 seconds.
- * b. Test board may have copper lamination in excess of the 70 micrometers copper (2 oz.) thickness as described in MIL-PRF-55342.
- * c. Separate resistors shall be used for short time overload and resistance temperature characteristic tests.

4.6 Power moisture resistance. Resistors shall be tested in accordance with MIL-PRF-55342. The following details and exceptions shall apply:

- a. The test is to be performed on an annual basis.
- b. A 30 piece sample shall be used with 0 defects allowed.

4.7 Solder mount integrity. Resistors shall be tested as specified in MIL-PRF-55342 and the following exceptions shall apply. Force applied 1.8 kilograms.

* 4.8 Solderability. Solderability shall be testes in accordance with MIL-PRF-55342 or as an alternated method J-STD-002 test method S with category 3 preconditioning may be used.

* 4.9 Visual inspection. Resistor shall be examined as listed below:

- a. Molded resistor body. The molded portion of the resistor shall be a smooth finish, free of cracks, holes or bubbles.
- b. Terminals. Terminals shall be uniformly fit the contour of the resistor body with a difference between an overall height for each side shall not be greater than .004". Both terminals terminations shall exhibit a continuous solder coating, free from defects for a minimum of 95% of the terminal. The critical area shall be the bottom of the termination and 1/4 of the terminal height.
- c. Marking. Marking shall remain legible after all tests.

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 Department 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.

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6. NOTES

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

6.1 Intended use. Surface mount resistors are used in electronic circuits where space is a major concern.

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 or certification of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for packaging and packing.

6.3 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).

6.4 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, Attn: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0552 or DSN 850-0552.

* 6.5 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, Attn: 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	Vendors similar designation or type number <u>1/</u>	Vendor CAGE	Vendor's name and address
06006-*****	WSR-3-29	2799A	Vishay Dale Electronics #3 Hakotser Street PO Box 2317 Beer Sheva, Israel 84874
06006-*****A	WSR-3-30		
06006-*****B	WSR-3-31		
06006-*****C	WSR-3-26		

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

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