

**REVISIONS**

LTR	DESCRIPTION	DATE	APPROVED
A	Update and validation of drawing. Editorial changes throughout.	00-07-20	K. Cottongim
B	Pure tin prohibition added. Removal of Tolerances (B and D) and Vendor. Editorial changes throughout. 5 year review	12-08-30	M. Radecki
C	Update Hyperlinks. Editorial changes throughout.	18-11-09	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](#)

Selected Item Drawing

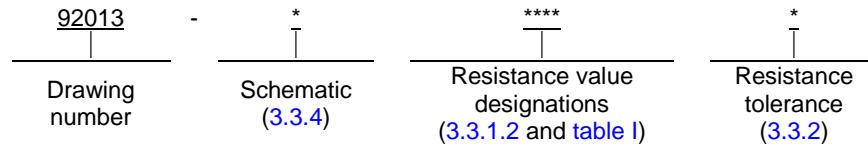
REV STATUS OF PAGES	REV	C	C	C	C	C	C										
	PAGES	1	2	3	4	5	6										

PMIC N/A	<b>PREPARED BY</b> Dennis L. Cross	<b>DEFENSE ELECTRONICS SUPPLY CENTER</b> DAYTON, OH	
Original date of drawing  92-10-09	<b>CHECKED BY</b> Andrew R. Ernst	<b>TITLE</b>  RESISTOR NETWORK, FIXED, FILM, 10 PIN, SIP, EXTENDED LEAD LENGTH	
	<b>APPROVED BY</b> David E. Moore		
	<b>SIZE</b> <b>A</b>	<b>CAGE CODE</b> <b>14933</b>	<b>DWG NO.</b>  <b>92013</b>
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## 1. SCOPE

1.1 Scope. This drawing describes the requirements for a 10 pin, single in line package (SIP), resistor network with a  $\pm 100$  ppm/ $^{\circ}$ C temperature coefficient.

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



## 2. APPLICABLE DOCUMENTS

### 2.1 Government documents.

2.1.1 Specifications and standards. 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 listed in the cited in the solicitation or contract (see 6.2).

#### DEPARTMENT OF DEFENSE SPECIFICATION

**MIL-PRF-83401** - Resistors Networks, Fixed, Film, and Capacitor-Resistor Networks, Ceramic Capacitor and Fixed Film Resistors, General Specification For.

#### DEPARTMENT OF DEFENSE STANDARDS

**MIL-STD-1285** - Marking of Electrical and Electronic Parts.

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

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 unless otherwise noted. 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-83401** and as specified herein.

3.2 Interface, and physical dimensions. The resistor shall meet the interface, and physical dimensions as specified in **MIL-PRF-83401** and herein (see [figure 1](#)).

### 3.3 Electrical characteristic.

3.3.1. Resistance. The resistance range shall be from 10 ohms to 1 megohms.

3.3.1.1 Resistance values. The nominal resistance is identified by four digits; the first three digits represent significant figures and the last digit specifies the number of zeros to follow. When the value of resistance is less than 100 ohms, or when fractional values of an ohm are required, the letter "R" is substituted for one of the significant digits of the group representing significant figures.

3.3.1.2 Resistance value designations. The resistance value designations is in accordance with **MIL-PRF-83401**. The resistance value designations for the "H" schematic are specified in table I.

3.3.2 Resistance tolerance. Resistor networks shall be in accordance with following tolerances:

<u>Tolerance code</u>	<u>Tolerance (percent)</u>
F	$\pm 1.0$
G	$\pm 2.0$
J	$\pm 5.0$

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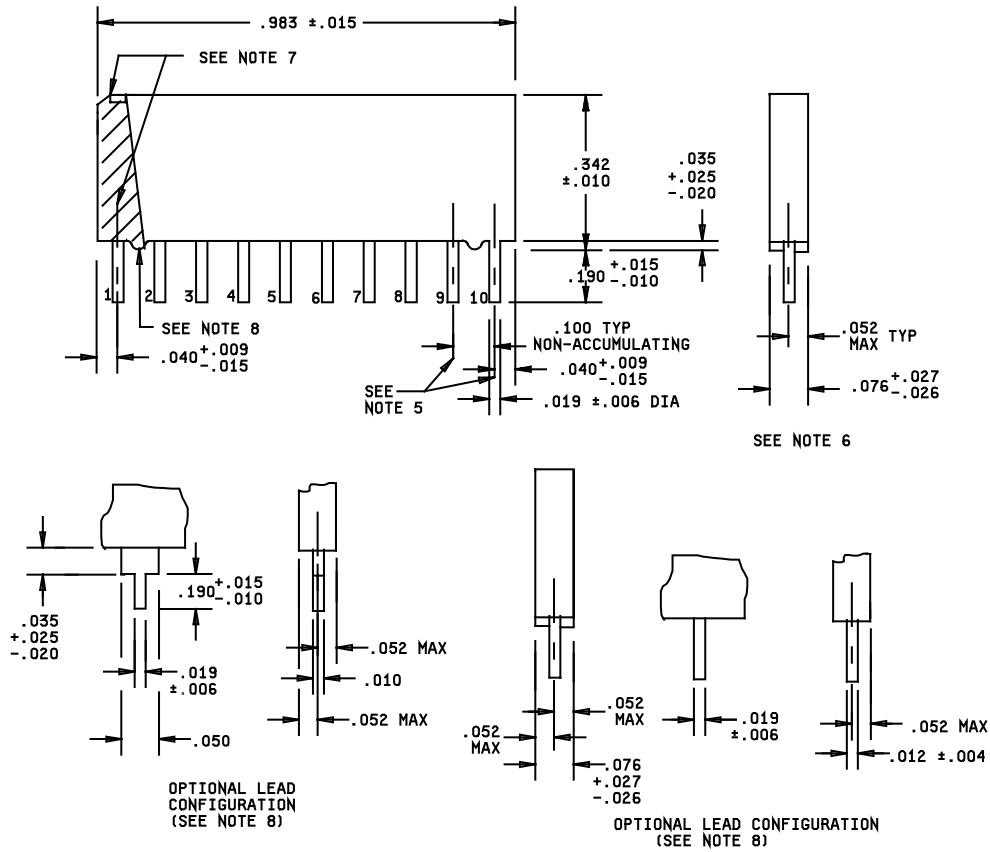
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<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>
.004	0.10	.010	0.25	.019	0.48	.035	0.98	.074	1.88	.342	8.69
.005	0.13	.012	0.30	.020	0.51	.040	1.02	.089	2.26	.983	24.97
.006	0.15	.014	0.36	.024	0.61	.049	1.24	.100	2.54		
.009	0.23	.015	0.38	.025	0.63	.050	1.27	.190	4.83		

**NOTES:**

1. Dimensions are in inches. Metric equivalents are given for general information only.
2. Unless otherwise specified, tolerances are  $\pm 0.005$  (0.13 mm).
3. The picturization 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. Terminal centerline to centerline measurements made at point of emergence of the lead from the body.
5. Measurement made at point of emergence of the lead from the body.
6. Pin 1 locator shall be a bevel, stripe, notch or a dot above pin number 1 in the shaded area.
7. If the standoffs are located on the body, a minimum of two standoffs are required as illustrated. As an option, additional standoffs may be located on the body of the resistor network. If leads with standoffs are used, standoffs on the body are not required

FIGURE 1. Resistor Network, 10 pin, SIP

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TABLE I. Standard resistance values.

Resistance designator	R <sub>1</sub> (ohms)	R <sub>2</sub> (ohms)	Resistance designator	R <sub>1</sub> (ohms)	R <sub>2</sub> (ohms)
A001	82	130	A011	330	680
A002	120	200	A012	1.5k	3.3k
A003	130	210	A013	3k	6.2k
A004	160	260	A014	620	910
A005	180	240	A015	180	270
A006	180	390	A016	270	270
A007	220	270	A017	560	560
A008	220	330	A018	560	1.2k
A009	330	390	A019	620	2.7k
A010	330	470			

3.3.3 Resistor power ratings. The power rating for schematics C, G, and H shall be as follows:

<u>Schematic</u>	<u>Element power rating (watts)</u>	<u>Network power rating (watts)</u>
C	0.2	1.8
G	0.2	1.0
H	0.11	1.8

3.3.3 Voltage rating. The maximum continuous working voltage for each resistor shall not exceed 50 V dc or ac rms.

3.3.4 Schematic. The schematic of the resistor network is identified by a single letter in accordance with [figure 2](#).

3.4 Environmental characteristic. The environmental characteristic shall be in accordance with [MIL-PRF-83401](#) characteristic K.

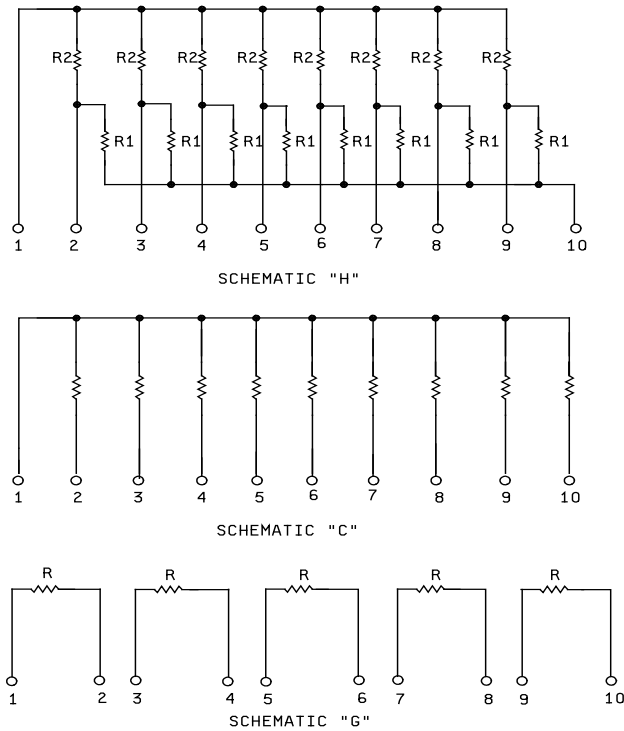


FIGURE 2. Schematics.

<b>DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OHIO</b>	<b>SIZE A</b>	<b>CAGE CODE 14933</b>	<b>DWG NO. 92013</b>
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3.5 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).

3.6 Marking. Marking shall be accordance with [MIL-STD-1285](#), except the resistors shall be marked with the PIN assigned herein (see 1.2), manufacturer's identification code (CAGE or logo), and date and lot codes.

3.7 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.

3.8 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the [MIL-PRF-83401 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.

3.8.1 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be a suggested source of supply.

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

#### 4. VERIFICATION

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

4.2 Conformance inspection.

4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A and group B inspection of [MIL-PRF-83401](#).

4.2.2 Certification. The procuring activity may accept a certificate of compliance in lieu of Group B inspection.

4.3 Inspection of packaging. Inspection of packaging shall be in accordance with [MIL-PRF-83401](#).

4.4 "H" schematic tests. For the tests on "H" schematic, the dc resistance measurements, resistance temperature characteristics measurement, and short time overload power application shall be made between each terminal and the application common terminal without compensation for the shunt circuits. The pin to pin dc resistance measurement shall be used directly to determine the acceptability to section 3 requirements.

#### 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 requisite 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 Department's Services System Command. 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. Resistors networks are intended to be used in thick or thin film circuits where microcircuitry is intended, also, for use in surface mounting application.

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

- a. Complete DLA Land and Maritime CAGE CODE and 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.
- d. Whether the manufacturer performs the group B tests or provides a certificate of compliance with group B requirements. If purchase order makes no reference to Group B screening the manufacturer will provide a certification of compliance (see 4.2.2).

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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 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.

6.5 Users of record. Coordination of this document for future revisions is coordinated only with the approved sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing may be achieved on-line at [resistor@dla.mil](mailto:resistor@dla.mil) or in writing to: DLA Land and Maritime, ATTN: VAT, P.O. Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-8754 or DSN 850-8754.

6.6 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. Assistance in the use of this drawing may be obtained on on-line at [resistor@dla.mil](mailto:resistor@dla.mil) or contact DLA Land and Maritime, Attn: VAT, P.O. Box 3990, Columbus, OH 43218-3990, or by telephone (614) 692-8754 or DSN 850-8754.

DLA Land and Maritime drawing PIN	Vendor similar designation or type number <sup>1/</sup>	Vendor CAGE	Vendor's name and address
92013-*****	MSP10C**-YYYY-SNNN or 10L	91637	<u>Sales:</u> Vishay Dale, Inc. Post Office Box 609 Columbus, NE 68601-0609  <u>Plant:</u> Electronica Dale De Mexico S.A. De CV, C. Joule No. 1920, Parque Ind. Antonio J. Bermudez, C.P. 32470, CD. Juarez, Chihuahua, Mexico

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

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