REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	Add new vendors. Add new tolerances. Editorial changes throughout.	14 Mar 88	D. Moore
B	Add New vendor.	17 Mar 92	A. Westphal
C	Remove vendors. Editorial changes throughout.	12 Feb 99	M. Radecki
D	Revise revision letter. Editorial changes throughout.	16 Jul 99	W. Sindelar
E	5 year review cycle. Editorial and procedural changes throughout.	2 Feb 05	K. Cottongim
F	Add pure tin, manufacturer eligibility, and high power pulse paragraphs. Editorial changes throughout.	9 Jun 11	M. Radecki
G	Add new vendor. Editorial changes throughout.	17 Apr 12	M. Radecki
H	Add resistance tolerance to the part number. Remove vendor. Editorial changes throughout.	15 Mar 13	M. Radecki

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Prepared in accordance with ASME Y14.100

REV STATUS OF PAGES																		
REV	H	H	H	H	H	H	H	H										
PAGES	1	2	3	4	5	6	7	8										

PMIC N/A	**PREPARED BY** Allan R. Knox	**DEFENSE ELECTRONICS SUPPLY CENTER, DAYTON, OH**
Original date of drawing 14 July 87	**CHECKED BY** David E. Moore	**TITLE** RESISTOR NETWORK, 10-PIN, SINGLE-IN-LINE PACKAGE (SIP)
	APPROVED BY David E. Moore	
	SIZE A / **CODE IDENT. NO.** 14933	**DWG NO.** 87032
	REV H	**PAGE** 1 **OF** 8

1.1 Scope. This drawing describes the requirements for a 10 pin, single-in-line package (SIP), resistor network.

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

87032	-	001	F
Drawing number		Schematic number (see figure 2)	Resistance tolerance (see 3.3.2)

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 SPECIFICATION

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

DEPARTMENT OF DEFENSE STANDARD

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

* (Copies of these documents are available online at https://assist.dla.mil/quicksearch/ or from the DLA Document Services 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 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 characteristics.

3.3.1 Resistance. Resistance values shall be as specified on figure 2.

3.3.2 Resistance tolerance. Resistors are available in (B) ±0.1 percent; (D) ±0.5 percent; (F) ±1.0 percent; (G) ±2.0 percent; and (J) ±5.0 percent.

3.3.3 Individual power ratings. The power ratings for individual resistors shall be 100 milliwatts.

3.3.4 Package power ratings. The power rating for the package shall be 500 milliwatts.

3.3.5 Voltage rating. Each resistor element shall have a maximum voltage rating of 50V dc or ac rms.

3.3.6 Characteristic. The resistor networks shall be in accordance with MIL-PRF-83401, characteristic K.

3.3.7 Schematic. Resistor networks are available in schematics listed on figure 2.

3.4 Environmental characteristic. Resistor networks shall be in accordance with all the environmental characteristics of MIL-PRF-83401.

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 6.4).

3.6 Marking. Resistors shall be marked with the PIN assigned herein (see 1.2) and the manufacturer's CAGE code (or logo) in accordance with MIL-STD-1285.

3.7 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.

3.8 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 an approved source of supply.

3.9 Workmanship. Resistors shall be processed in such a manner as to be uniform in quality and parts shall be free from any defects that will affect life, serviceability, or appearance.

4. VERIFICATION

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

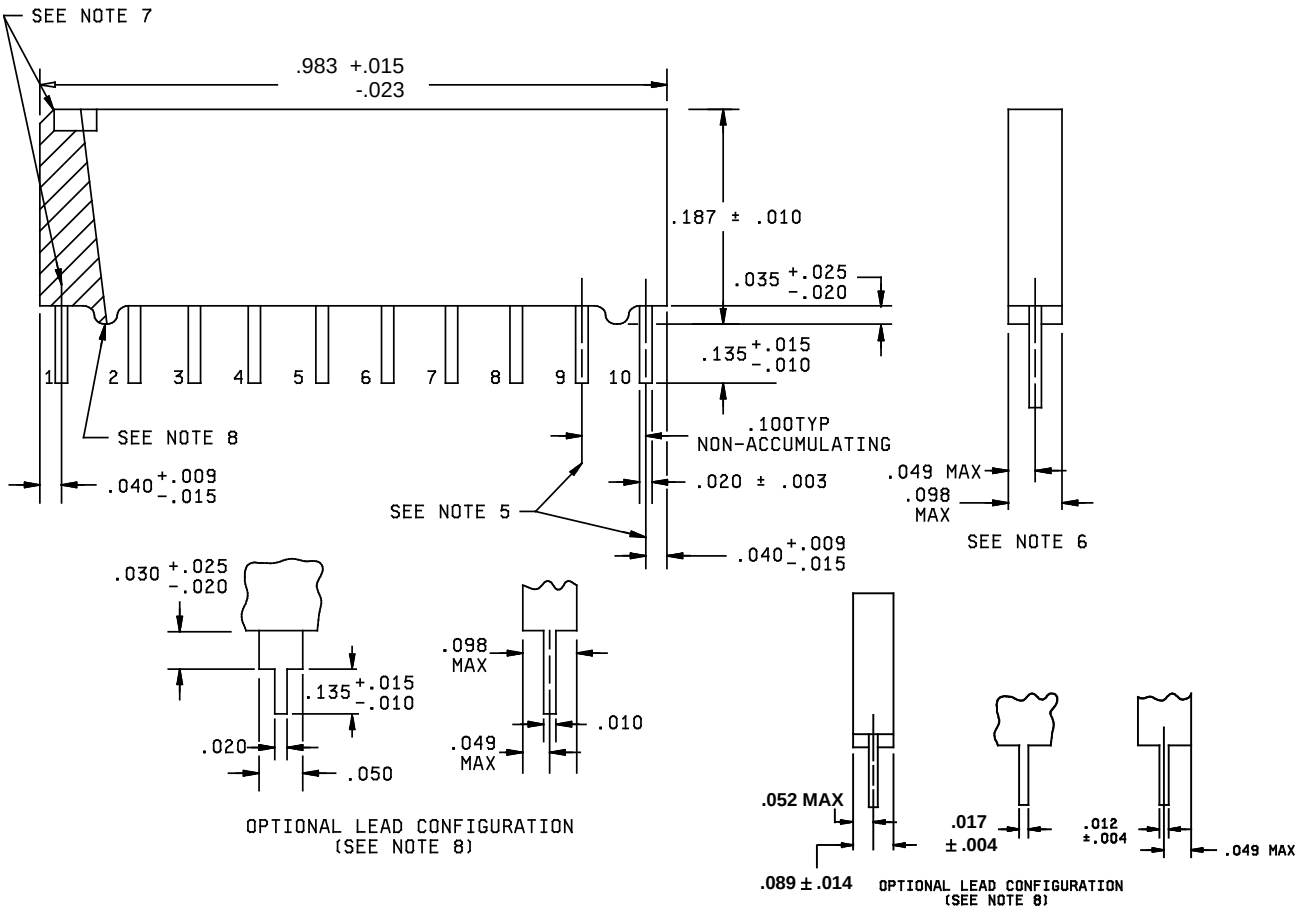
4.2 Conformance inspection.

4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A and B inspections of MIL-PRF-83401.

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

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.



Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
0.003	0.08	0.012	0.30	0.020	0.51	0.040	1.02	0.074	1.88	0.187	4.75
0.004	0.10	0.014	0.36	0.023	0.58	0.049	1.24	0.089	2.26	0.983	24.97
0.009	0.23	0.015	0.38	0.025	0.64	0.050	1.27	0.098	2.49		
0.010	0.25	0.017	0.43	0.035	0.89	0.052	1.32	0.135	3.43		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±0.005 (0.13mm).
4. 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.
5. Terminal centerline to centerline measurements made at point of emergence of the lead from the body.
6. Measurement made at point of emergence of the lead from the body.
7. Pin 1 locator shall be a bevel, bar or a dot above pin number 1 in the shaded area.
8. 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 the leads with standoffs are used, standoffs on the body are not required.

FIGURE 1. Resistor network.

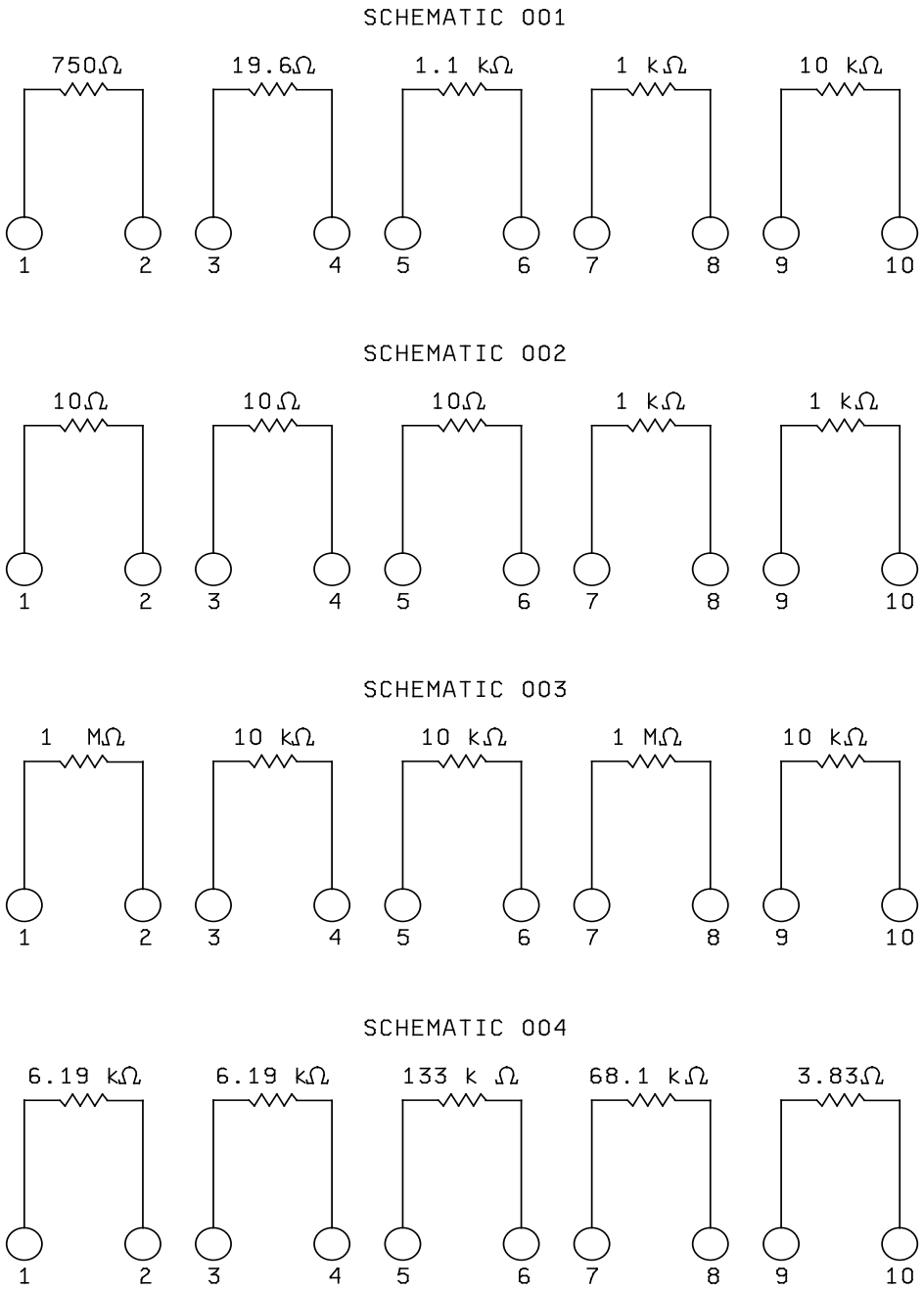
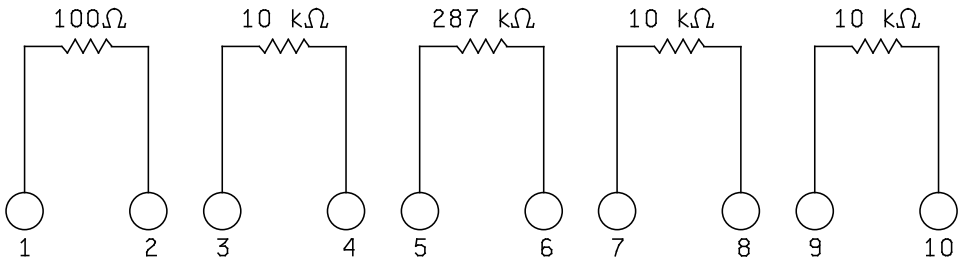
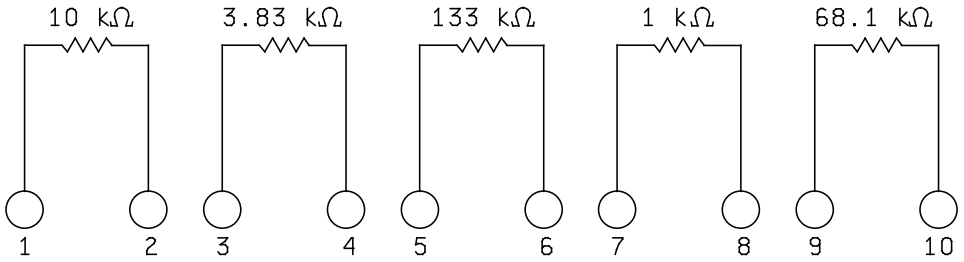


FIGURE 2. Network schematics and resistance values.

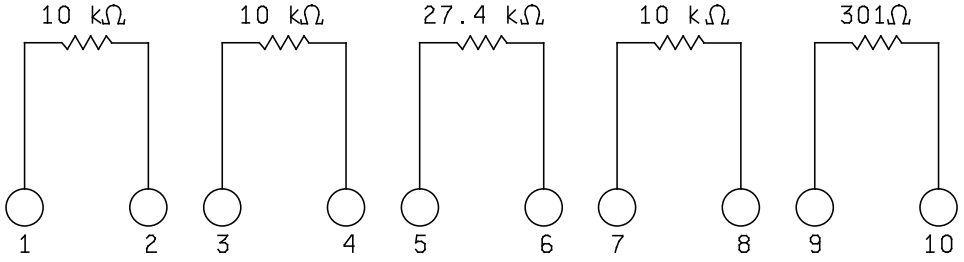
SCHEMATIC 005



SCHEMATIC 006



SCHEMATIC 007



NOTES:
1. All resistance values are in ohms.
2. Kilohms designated by k and megohms designated by M.

FIGURE 2. Network schematics and resistance values - Continued.

6. NOTES

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

6.1 Intended use. Resistors conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for the OEM application. Resistor networks described herein are intended to be used in electrical circuits where miniaturization is required.

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.

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).

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 which 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.

* 6.6 PIN supersession. The PIN in the original 87032 and through revision G has been superseded by a new PIN in revision H that includes a code for resistance tolerance. Table I illustrates a generic PIN substitution.

TABLE I. PIN supersession.

Revisions through G	Revision H
87032-001	87032-001F

6.7 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.

* 6.8 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 87032-	Vendor similar designation or type number 1/	Vendor CAGE	Vendor name and address
-001 thru -007 2/	MSM06A 2/	91637	Vishay Dale 1122 23rd Street Columbus, NE 68601-06097
-001, & -002; Res. Tol. F -003 thru -007; Res. Tol. B, D, & F	112-082	57489	Vishay Thin Film 2160 Liberty Drive Niagara Falls, NY 14304

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

2/ Does not manufacturer the B or D resistance tolerance.