

1. SCOPE

1.1 Scope. This drawing describes the requirements for an 8 pin, resistor network.

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

87025-AKXXXXX

87025- - Drawing number
A - Schematic (1.2.1)
K - Characteristic (1.2.2)
XXXX - Resistance (1.2.3 and 3.3.6)
X - Tolerance (1.2.4 and 3.3.1)

1.2.1 Schematics. The schematic of the resistor network is identified by a single letter in accordance with the drawings (see figure 1). The resistor element R_{REF} is the reference resistor element used in determining the ratio accuracy (when applicable).

1.2.2 Characteristics. The characteristic is identified by a single letter and is in accordance with MIL-PRF-83401.

1.2.3 Resistance value designations. The resistance value designations are in accordance with MIL-PRF-83401. Resistance value designations for the schematic J are as specified in table I.

TABLE I. Standard resistance values.

Resistance designator	R ₁ (ohms)	R ₂ (ohms)	Resistance Designator	R ₁ (ohms)	R ₂ (ohms)
A001	82	130	A008	220	330
A002	120	200	A009	330	390
A003	130	210	A010	330	470
A004	160	260	A011	330	680
A005	180	240	A012	1,500	3,300
A006	180	390	A013	3,000	6,200
A007	220	270			

1.2.4 Resistance tolerance. For available resistance tolerances and designators, see 3.3.1.

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.

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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-83401

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

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

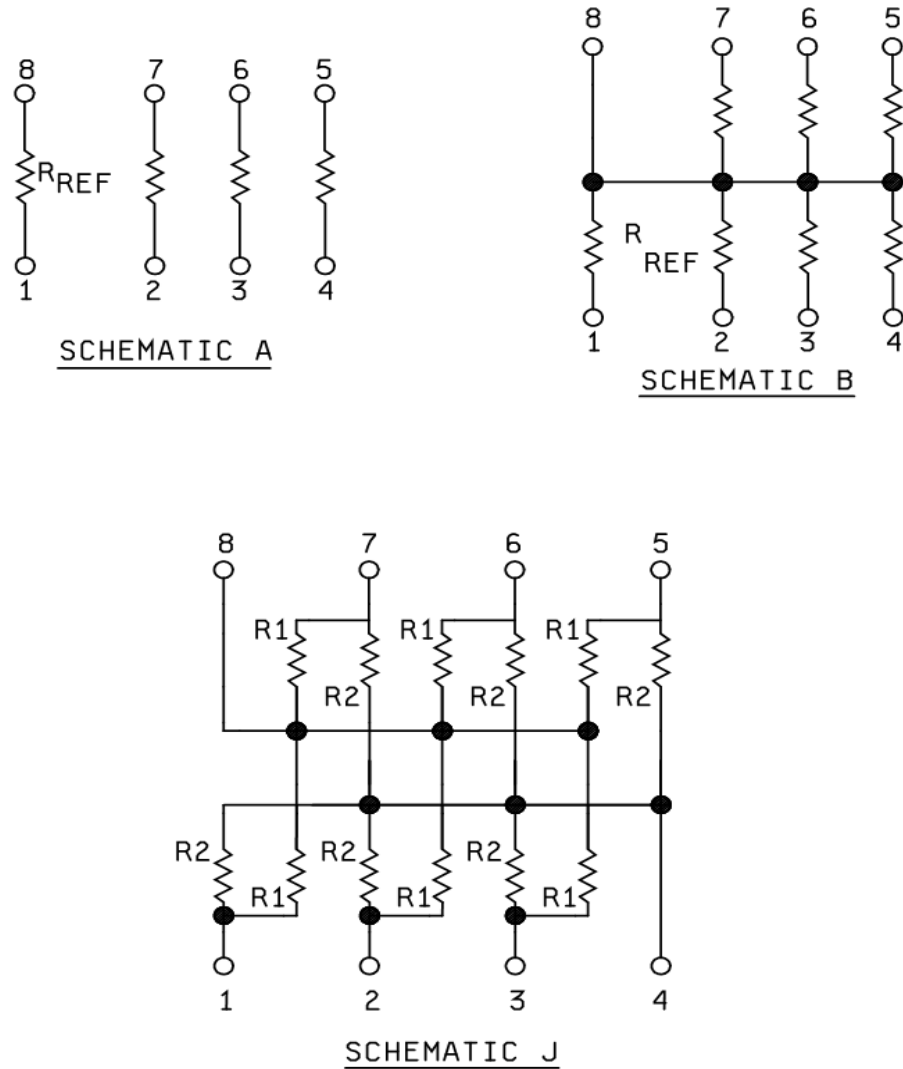


FIGURE 1. Resistor schematics.

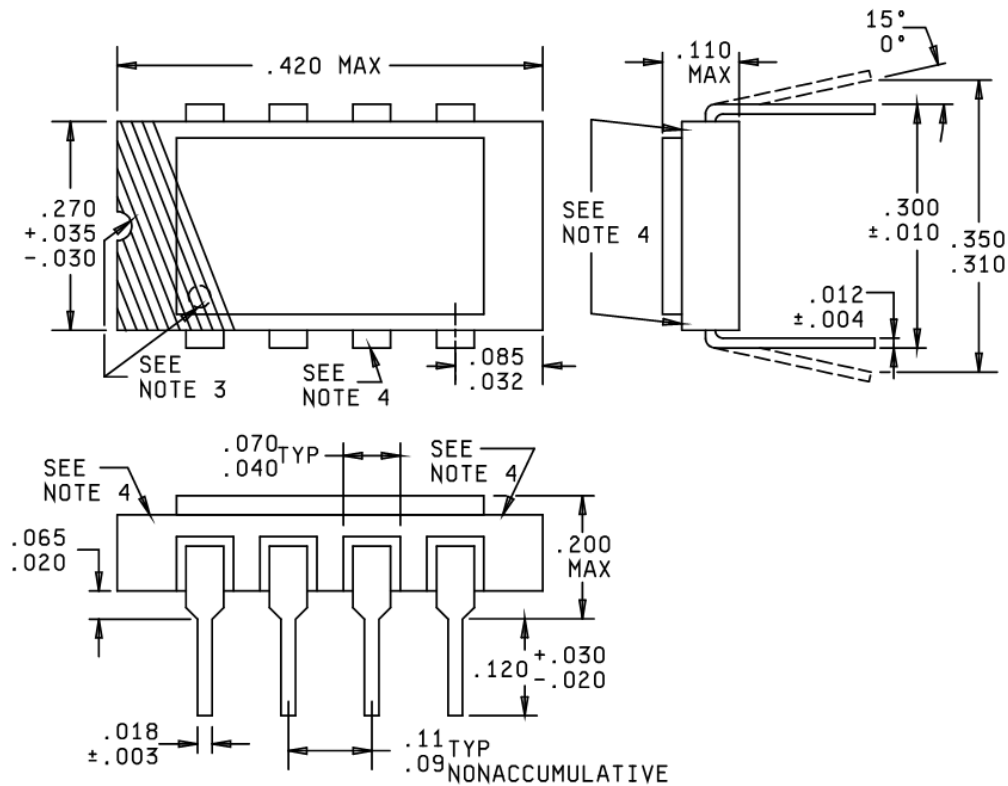
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2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, 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-83401](#) and as specified herein.

3.2 Interface and physical dimensions. Resistors shall meet the interface and physical dimensions as specified in [MIL-PRF-83401](#) and herein (see [figure 2](#)).



Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
0.003	0.08	0.020	0.51	0.065	1.65	0.11	2.8	0.310	7.87
0.004	0.10	0.030	0.76	0.070	1.78	0.120	3.05	0.350	8.89
0.010	0.25	0.032	0.81	0.080	2.03	0.200	5.08	0.420	10.67
0.012	0.30	0.035	0.89	0.085	2.16	0.270	6.86		
0.018	0.46	0.040	1.02	0.09	2.3	0.300	7.62		

NOTES:

1. Dimensions are given in inches.
2. Metric equivalents are given for general information only.
3. Pin 1 locator shall be a dot, or a notch in the shaded area.
4. Side brazed configuration optional.

FIGURE 2. Resistor network.

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3.3 Electrical characteristics.

3.3.1 Resistance tolerance. Resistors are available in accordance with table II:

TABLE II. Resistance tolerance.

Code	Tolerance (+)	Code	Tolerance (+)
B	0.1	G	2.0
D	0.5	J	5.0
F	1.0		

3.3.2 Power rating. The power rating per schematics shall be in accordance with table III:

TABLE III. Power rating per schematic.

Schematic	Characteristics	Element power rating (watts)	Network power rating (watts)
A	C, R, V, and Y H, K, and M	0.1	0.4
		0.2	0.8
B	C, R, V, and Y H, K, and M	0.05	0.35
		0.1	0.7
J	C and V H, K, and M	0.025	0.3
		0.050	0.6

3.3.3 Temperature range. The operating temperature range shall be -55°C to +125°C.

3.3.4 Resistance temperature characteristic. The resistance temperature characteristic shall be in accordance with [MIL-PRF-83401](#).

3.3.5 TC tracking. The TC tracking shall be ± 5 ppm/°C.

3.3.6 Resistance. The resistance values shall be 10 ohms to 1 megohm.

3.3.7 Operating voltage. The maximum operating voltage shall be in accordance with table IV

TABLE IV. Maximum operating voltage.

Schematic	Maximum operating voltage (in Vdc)
A	54
B	22
J	100

3.4 Marking. Resistors shall be marked with the PIN assigned herein (see 1.2) and manufacturer's identification code (CAGE or logo). Pin 1 indicator shall be located adjacent to pin 1.

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 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 materials meet or exceed the operational and maintenance requirements, and promote economically advantageous life cycle costs.

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3.7 Manufacturer eligibility. To be eligible for being added 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.

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

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

4. VERIFICATION

4.1 Qualification inspection. Qualification inspection in accordance with [MIL-PRF-83401](#) 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 (M level part) and group B inspections of [MIL-PRF-83401](#).

4.2.2 Certification. The acquiring activity, at its discretion, may accept a certificate of compliance with group B requirements in lieu of performing group B tests (see [6.2c](#)).

4.2.3 Power conditioning. The power conditioning shall be performed at rated power.

4.3 Schematic J tests. For the tests on schematic J, 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 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 which may be helpful, but is not mandatory.)

6.1 Intended use. Resistor networks are intended to be used in electronic circuit where miniaturization is required.

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 a certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Whether the manufacturer performs the group B tests or provides certification of compliance with group B requirements (see [4.2.2](#)).
- d. Requirements for packaging and packing.

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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 onetime pulse (Short-time overload) as part of the group B inspection of [MIL-PRF-83401](#).

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, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-8754 or DSN 850-8754.

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, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-8754 or DSN 850-8754.

DLA Land and Maritime Drawing PIN	Vendors similar designation or type number ^{1/}	Vendor CAGE	Vendor's name and address
87025-AXXXXXX characteristics: H, K, M, R, V, Y res. values: 10 to 400k ohms all tolerances 87025-BXXXXXX characteristics: H, K, M, R, V, Y res. values: 10 to 200k ohms all tolerances	1959-XX-XXXXX 1954-XX-XXXXX	57027	International Resistive Company 4222 South Staples Street Corpus Christi, TX 78411-2796
87025-AXXXXXX characteristics: C, R, V res. values: 100 to 499k ohms all tolerances 87025-BXXXXXX characteristics: C, R, V res. values: 100 to 499k ohms all tolerances	103 - 455	57489	Vishay Thin Film 2160 Liberty Drive Niagara Falls, NY 14304
87025-AXXXXXX characteristics: C, R, V res. values: 10 to 33k ohms all tolerances 87025-AYXXXXX res. values: 300 to 33k ohms all tolerances 87025-BXXXXXX characteristics: C, R, V res. values: 25 to 10k ohms all tolerances 87025-BYXXXXX res. values: 300 to 10k ohms all tolerances	1440	0066A	Vishay Precision Group, Inc. 3 Great Valley Parkway Suite 150 Malvern, PA 19355-1417 <u>Plant:</u> Vishay Advanced Technologies, Ltd. 2 Dr. Felix Zandman Street Holon 58125, Israel

^{1/} Parts must be purchased to the DLA Land and Maritime CAGE CODE and PIN to assure that all performance and test requirements are met.

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