

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Title clarification and part number correction.	28 Mar 85	S. Searcy
B	Changed manufacturer's eligibility.	26 Feb 87	S. Searcy
C	Changes in accordance with NOR 5945-R005.	02 Mar 00	K. Cottongim
D	Validation and update.	17 Sep 03	K. Cottongim
E	Incorporated boilerplate updates.	18 Sep 08	Michael A. Radecki

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3  
 DEFENSE LOGISTICS AGENCY  
 DEFENSE SUPPLY CENTER COLUMBUS  
 COLUMBUS, OHIO 43218-3990

Prepared in accordance with ASME Y14.100

Source control drawing

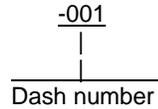
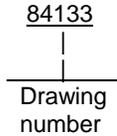
<b>REV STATUS OF PAGES</b>	<b>REV</b>	E	E	E	E	E	E	E										
	<b>PAGES</b>	1	2	3	4	5	6	7										

<b>PMIC N/A</b>	<b>PREPARED BY</b> Richard A. Yannitti		<b>DESIGN ACTIVITY</b> <b>DEFENSE ELECTRONICS SUPPLY CENTER</b> <b>DAYTON, OH 45444-5000</b>															
Original date of drawing 28 September 1984	<b>CHECKED BY</b> Max E. Lewis		<b>TITLE</b> RELAYS, ELECTROMAGNETIC, PERMANENT MAGNET DRIVE, 2PDT, LOW LEVEL TO 5 AMPERES (SIMILAR TO MIL-R-6106/27 EXCEPT FOR 12 V DC COIL AND INVERTED STUD MOUNT)															
	<b>APPROVED BY</b> Steven Searcy																	
	<b>SIZE</b> A	<b>CODE IDENT. NO.</b> 14933		<b>DWG NO.</b> <b>84133</b>														
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a hermetically sealed electromechanical relay supplied to the requirements of an established reliability version of MIL-PRF-83536/1 (see 6.5), except as noted herein.

1.2 Part or Identifying Number (PIN). The complete PIN shall be 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-83536](#) - Relays, Electromagnetic, Established Reliability, General Specification For.

[MIL-PRF-83536/1](#) - Relays, Electromagnetic, Established Reliability, DPDT, Low Level to 5 Amperes, Permanent Magnetic Drive, Hermetically Sealed, All Welded, DC Coils.

DEPARTMENT OF DEFENSE STANDARDS

[MIL-STD-202](#) - Electronic and Electrical Component Parts.

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

2.3 Order of precedence. Unless otherwise noted herein, 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-83536](#), [MIL-PRF-83536/1](#), and as specified herein.

3.2 Interface and physical dimensions. The interface and physical dimensions shall be as specified in [MIL-PRF-83536](#), [MIL-PRF-83536/1](#), and herein (see [figure 1](#)).

3.2.1 Design documentation. Unless otherwise specified in the contract or purchase order, the design documentation shall be in accordance with [MIL-PRF-83536](#), and shall be retained by the manufacturer and available for review by the acquiring activity or contractor upon request.

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3.3 Electrical characteristics. Relays shall meet all electrical characteristics as specified in MIL-PRF-83536/1 and herein.

3.3.1 Coil data and operational data. See table I.

3.3.2 Contact data and load rating. See MIL-PRF-83536/1.

3.3.3 Operate time. 4 milliseconds maximum with rated coil voltage at 25°C.

3.3.4 Release time. 4 milliseconds maximum from rated coil voltage at 25°C.

3.3.5 Contact bounce. 1 millisecond maximum.

3.3.6 Overload current. 20 amperes dc, 30 amperes ac.

3.3.7 Rupture current. 25 amperes dc, 40 amperes ac.

3.4 Physical. Physical requirements of the relay shall be as specified in MIL-PRF-83536/1 and herein.

3.4.1 Mounting studs. The mounting studs shall be corrosion resistant steel.

3.4.2 Dimension and configuration. See figure 1.

TABLE I. Operating characteristics.

Coil data										
At 25 °C					Over temperature range			Maximum pickup voltage		
Coil voltage (V dc) <u>1/</u>		Coil resistance (ohms) minimum	Specified pickup voltage (V dc) <u>2/</u>	Specified hold voltage (V dc) <u>2/</u>	Specified dropout voltage (V dc) <u>2/</u>	Specified pickup voltage (V dc) <u>2/</u>	Specified hold voltage (V dc) <u>2/</u>	Specified dropout voltage (V dc) <u>2/</u>	High temperature test	Continuous current test
Rated	Max									
12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.5	9.9	11.25

1/ CAUTION: The use of any coil voltages less than the rated coil voltage will compromise the operation of the relay.

2/ Pickup, hold, and dropout voltages as shown are for test purposes only and are not to be used for design criteria.

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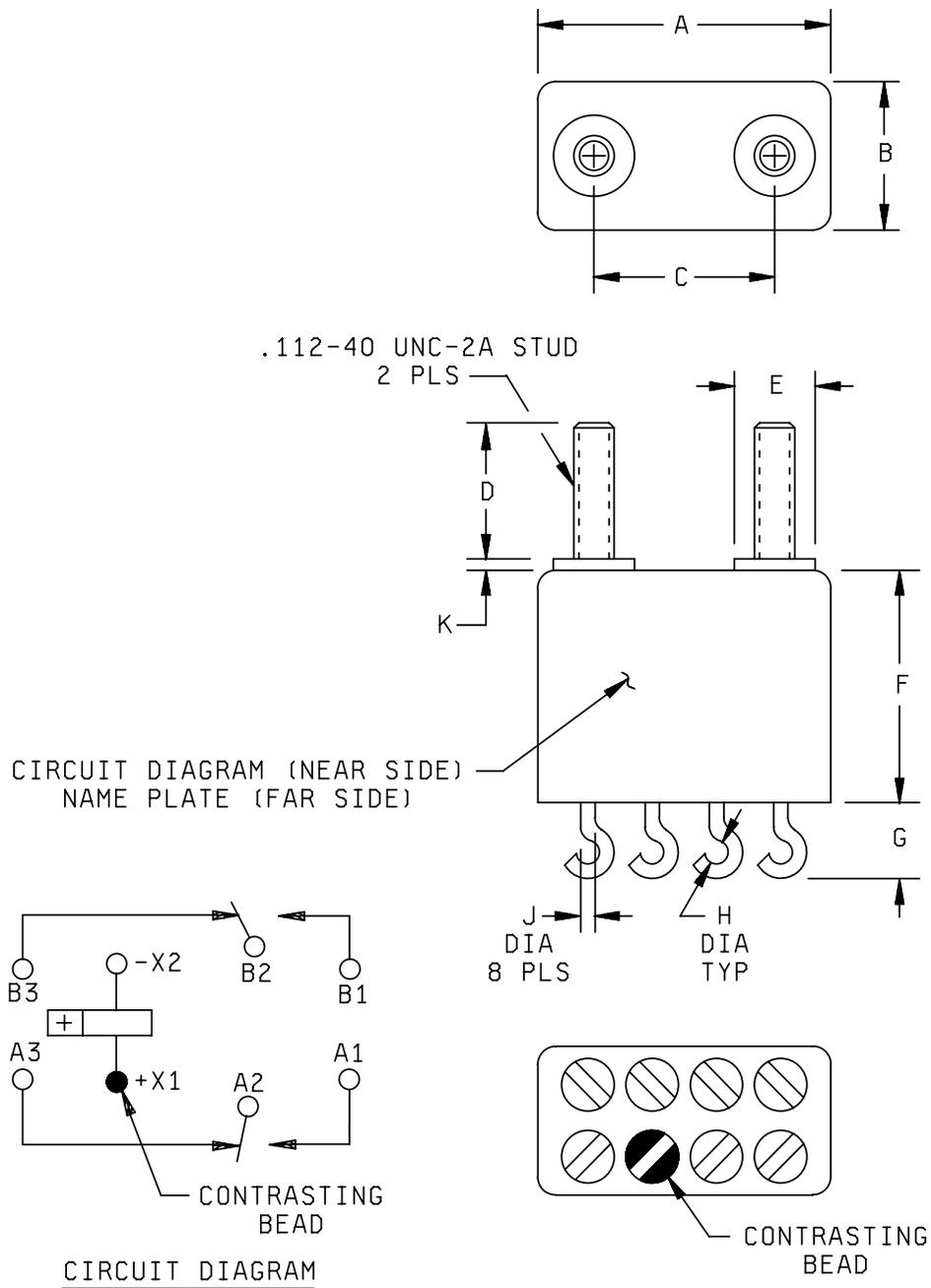


FIGURE 1. Outline drawing (for details, see table I).

<b>DEFENSE ELECTRONICS SUPPLY CENTER</b> <b>DAYTON, OHIO</b>	<b>SIZE</b> <b>A</b>	<b>CODE IDENT NO.</b> <b>14933</b>	<b>DWG NO.</b> <b>84133</b>
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Inches	mm
.001	0.03
.002	0.05
.032	0.81
.040	1.02
.065	1.65
.112	2.84
.210	5.33
.224	5.69
.375	9.53
.410	10.41
.500	12.70
.640	16.26
.810	20.57

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is  $\pm .010$  (0.25 mm).
4. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
5. These relays are polarized monostable.
6. This relay shall not operate or be damaged by reverse polarity. Semiconductors shall not be used for this purpose.
7. Permanent magnet drive consists of a permanent magnet with its flux path switched and combined with the electro-magnet flux.
8. Metric equivalents are given for general information only.

FIGURE 1. Outline drawing (for details, see table I) - Continued.

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3.5 Environmental characteristics. Relays shall meet all environmental requirements as specified in [MIL-PRF-83536/1](#) and herein.

3.5.1 Vibration.

3.5.1.1 Sinusoidal. .12 inch double amplitude, 10 to 57 Hz, 20g's, 57 to 2,000 Hz.

3.5.1.2 Random. Random vibration, method 214 of MIL-STD-202, test condition IE, 0.2G<sup>2</sup>/Hz (50 Hz to 2,000 Hz) for a duration of 15 minutes in each plane.

3.5.1.3 Shock. 100g's for a duration of 6 ±1milliseconds.

3.6 Conformance requirements. Relays furnished under this drawing shall have been subjected to, and passed all the requirements, tests, and inspections detailed herein.

3.6.1 Conformance inspection. Conformance inspection shall be in accordance with [MIL-PRF-83536](#) and 4.2 herein.

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 a approved source of supply, a manufacturer shall be listed on the [MIL-PRF-83536](#) Qualified Product List for at least one part, or perform the group A and group C inspections specified herein on a sample of parts agreed upon by the manufacturer and DSCC-VA.

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

3.10 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).

3.11 Marking. Marking shall be in accordance with [MIL-PRF-83536](#), except the PIN shall be in accordance with 1.2 herein. The "M83536/1-XXXM" PIN shall not be used.

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

#### 4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with [MIL-PRF-83536](#) except as modified herein.

4.2 Conformance inspection. Conformance inspection shall be in accordance with group A listing of [MIL-PRF-83536](#). Group A testing shall be performed on each inspection lot and manufacturers shall keep lot records for 3 years (minimum), monitor for compliance to the prescribed procedures, and observe that satisfactory manufacturing conditions and records on lots are maintained for these relays.

4.2.1 Group A inspection. Group A inspection shall consist of all tests specified in [MIL-PRF-83536](#) for failure rate level "M".

4.3 Inspection of packaging. Inspection of packaging shall be in accordance with [MIL-PRF-83536](#).

#### 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.3). When actual packaging of materiel is to be performed by DoD 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 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.

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6. NOTES

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

6.1 Notes. Only definitions of the notes specified in MIL-PRF-83536 will apply to this drawing.

6.2 Intended use. Relays 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 OEM application. This drawing is intended exclusively to prevent the proliferation of unnecessary duplicate specifications, drawings, and stock catalog listings. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-83536, this drawing will become inactive for new design. The QPL-83536 product shall be the preferred item for all applications.

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

- a. Complete PIN (see 1.2).
- b. Requirements for delivery of one copy of the conformance inspection data or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for packaging and packing.

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 Replaceability. Relays covered by this drawing will replace the same generic device covered by a contractor prepared specification or drawing.

6.6 Supersession data. MIL-R-6106/27 was cancelled on 2 October 1995 and superseded by MIL-PRF-83536/1 and MIL-PRF-83536/2.

6.7 Users of record. Coordination of this document for future revisions is coordinated only with the approved source(s) 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 <mailto:relay@dla.mil> or if in writing to: Defense Supply Center, Columbus, ATTN: DSCC/VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4481 or DSN 850-4481.

6.8 Approved source(s) of supply. Approved source(s) of supply are listed herein. Additional sources will be added as they become available. Assistance in the use of this drawing may be obtained online at <mailto:relay@dla.mil>, or by contacting Defense Supply Center, Columbus, ATTN: DSCC-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4481 or DSN 850-4481.

DSCC drawing PIN	Vendor similar designation or type number <sup>1/</sup>	Vendor CAGE	Vendor name and address
84133-001	X-G2B-010	58657	Leach International Corporation 6900 Orangethorpe Avenue Buena Park, CA 90620-1351 Phone: (631) 244-1490

<sup>1/</sup> Parts must be purchased to the DSCC PIN to assure that all performance requirements and tests are met.

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