

REVISIONS			
LT	DESCRIPTION	DATE	APPROVED
A	Para 3.4.6, changed insulation resistance requirements. TABLE I, changed insertion loss requirements for -010, -011, and -013. Para 6.4, changed vendor style numbers	85-01-09	Ivan R. Jones
B	Para 3.7, changed manufacturer eligibility requirement. Dimensional changes. TABLE I, changed insertion loss limits on several dash numbers. Changed dc resistance and voltage drops on -017 through -019. Added another suggested source of supply. Editorial changes throughout.	87-08-25	David E. Moore
C	Figure 1, changed tolerance on terminal slot major dimension. Added cataloging information.	88-12-05	David E. Moore
D	Added another suggested source of supply.	90-06-04	David E. Moore
E	Added a suggested source of supply. Editorial changes throughout.	91-11-14	David E. Moore
F	Page 2 - Changed PIN to include case finish - Para 3.1.3, added case finish options; prohibited pure tin as a case finish. Pages 4 and 6 - Added three new part numbers. Page 7 - Added para to explain prohibition of pure tin; added supersession table. Page 8 - Removed source of supply.	94-11-1	B. Boulter
G	Changes in accordance with NOR 59GP-R001-9B	98-03-24	David E. Moore
H	Editorial changes throughout. Page 2 - Added paragraph 2.1. - Paragraph 3.1.3; removed reference to MIL-T-10727. Added text to include prohibition of pure tin on the hardware and as an undercoat.	28 OCT 2003	Kendall A. Cottongim

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3  
DEFENSE LOGISTICS AGENCY  
DEFENSE SUPPLY CENTER COLUMBUS  
COLUMBUS, OHIO 43216-5000

Prepared in accordance with ASME Y14.100

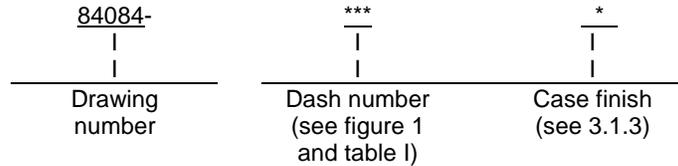
Selected item drawing

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 Randy Larson							DESIGN ACTIVITY DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OH 45444-5000									
Original date of drawing  11 July 1984	CHECKED BY Randy Larson							TITLE FILTERS AND CAPACITORS, RADIO FREQUENCY/ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY SEALED									
	APPROVED BY Ivan R. Jones																
	SIZE A	CODE IDENT. NO. 14933					DWG NO.  84084										
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1. SCOPE

1.1 Scope. This drawing and MIL-PRF-28861 describes the complete requirements for radio frequency/electromagnetic interference suppression, hermetically sealed, filters and capacitors.

1.2 Part or Identifying Number (PIN). The term Part or Identifying Number (PIN) is equivalent to the term part number that was previously used in this drawing. The complete PIN is as follows:



(NOTE: The PIN has been revised with revision F of this drawing to include a case finish option (see 3.1.3). For supersession data, see 6.6).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this drawing. This section does not include documents cited in other sections of this drawing 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 cited in sections 3, 4, or 5 of this drawing, 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 drawing to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-28861 - Filters and Capacitors, Radio Frequency/Electromagnetic Interference Suppression, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-220 - Method of Insertion Loss Measurement.  
 MIL-STD-1285 - Marking of Electrical and Electronic Parts.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Document Automation and Production Service, Building 4D (DPM-DoDSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this drawing 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

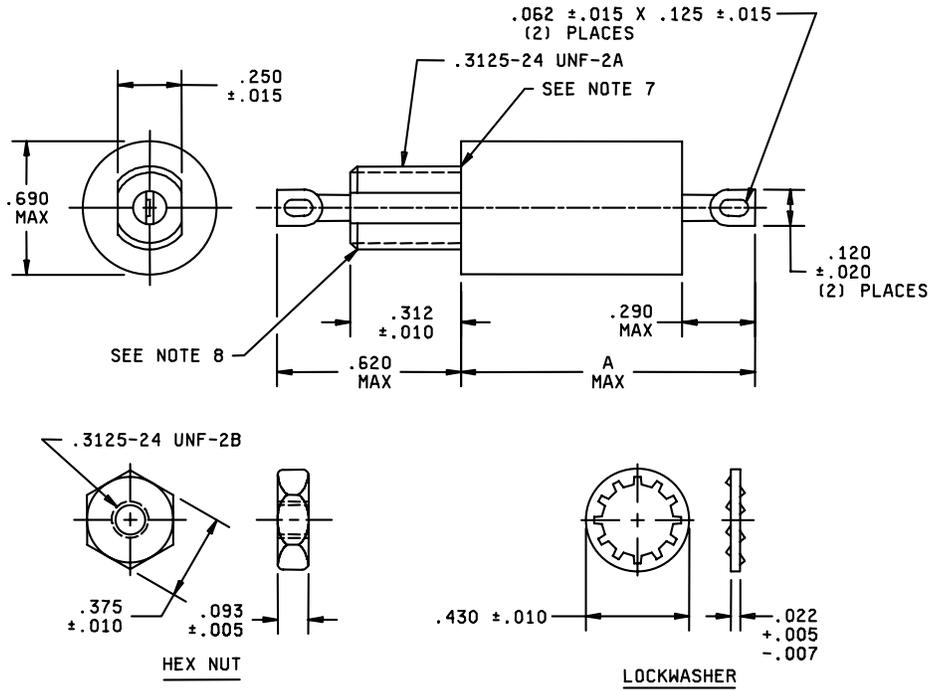
3.1 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-28861 and herein.

3.1.1 Terminals. Terminals shall be solderable.

3.1.2 Case dimensions. The case dimensions shall be in accordance with figure 1.

3.1.3 Case and hardware finish. T (tin plated or tin-lead plated), S (silver plated), or G (gold plated), in accordance with MIL-PRF-28861. Pure tin finish is prohibited as a final finish and as an undercoat. When used, tin plating shall have a minimum lead content of 3 percent (see MIL-PRF-28861).

<b>DEFENSE ELECTRONICS SUPPLY CENTER</b>	<b>SIZE</b>	<b>CODE IDENT NO.</b>	<b>DWG NO.</b>
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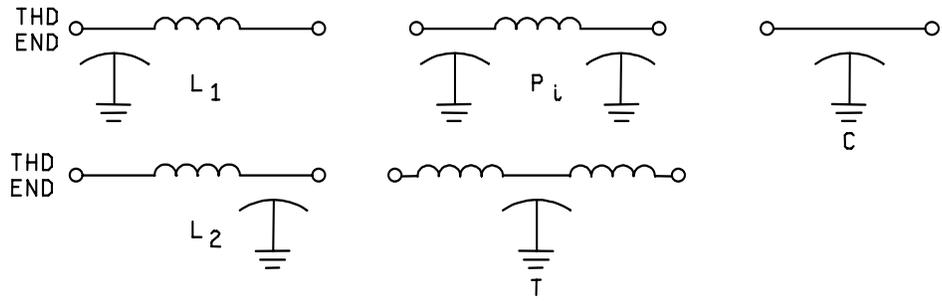


MOUNTING HARDWARE

Inches	mm	Inches	mm
.005	0.13	.250	6.35
.007	0.17	.290	7.36
.010	0.25	.312	7.92
.015	0.38	.3125	7.937
.020	0.51	.375	9.53
.022	0.56	.430	10.92
.035	0.89	.620	15.75
.062	1.57	.690	17.52
.093	2.36	.700	17.78
.120	3.05	1.060	26.92
.125	3.18	1.205	30.61
		1.400	35.56

FIGURE 1. Case dimensions and circuit configurations.

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CIRCUIT DIAGRAMS

PIN 84084-	A max	PIN 84084-	A max
001*	.700	012*	1.205
002*	1.060	013*	1.205
003*	1.060	014*	1.205
004*	1.060	015*	1.205
005*	1.060	016*	1.205
006*	1.060	017*	1.400
007*	1.060	018*	1.400
008*	1.060	019*	1.400
009*	1.060	020*	.700
010*	1.060	021*	.700
011*	1.060	022*	.700

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Circuit diagram is for information only.
4. All filters shall be supplied with mounting hardware (hex nut and lockwasher). Mounting hardware shall be furnished with the same finish as the filter case.
5. Terminal identification (nonsymmetrical filters): The case shall be marked at the threaded end of the filter, with the symbol "C" or the symbol "L", as follows, or the circuit diagram shall be marked on the case.

Circuit	Symbol
L <sub>1</sub>	C
L <sub>2</sub>	L

6. Recommended mounting torque: 60 oz-in ±4 oz-in.
7. Imperfect thread or undercut optional .062 inch (1.57 mm) maximum.
8. One imperfect thread allowed .035 inch (0.89 mm) maximum.

FIGURE 1. Case and hardware dimensions and circuit diagrams - Continued.

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- 3.1.4 Weight. The weight shall be as follows:
- a. 19 grams, maximum for dash number 001, 020, 021, and 022.
  - b. 21 grams, maximum for dash numbers 002 through 011.
  - c. 30 grams, maximum for dash numbers 012 through 019.
- 3.2 Operating temperature range. The operating temperature range shall be -55°C to +125°C.
- 3.3 Temperature rise. The temperature rise shall be +25°C maximum.
- 3.4 Electrical characteristics.
- 3.4.1 Rated voltage. The rated voltage shall be 400 volts dc and 230 volts ac rms.
- 3.4.2 Rated current. The rated current shall be in accordance with table I.
- 3.4.3 Rated frequency. The rated frequency shall be dc to 400 Hz.
- 3.4.4 Capacitance. See table I.
- 3.4.5 Voltage and temperature limits of capacitance. +15, -40 percent.
- 3.4.6 Insulation resistance.
- a. At +25°C: 1,000 megohms minimum.
  - b. At +125°C: 100 megohms minimum.
- 3.4.7 Insertion loss.
- a. At +25°C: In accordance with table I.
  - b. At -55°C and +125°C: A 2 dB degradation from the +25°C value shall be allowed except at 1 GHz.
- 3.4.8 Voltage drop. Voltage drop shall be in accordance with table I.
- 3.4.9 DC resistance. DC resistance shall be in accordance with table I.
- 3.4.10 Seal. In accordance with MIL-PRF-28861, class B.
- 3.4.11 Solderability of terminals. In accordance with MIL-PRF-28861.
- 3.5 Product assurance level. Class B only.
- 3.6 Marking. Marking shall be in accordance with MIL-STD-1285 except the PIN shall be as specified in 1.2 with the manufacturer's name or code, date code, voltage rating, current rating, and terminal identification.
- 3.7 Manufacturer eligibility. To be eligible for listing as a suggested source of supply, a manufacturer shall be listed on the MIL-PRF-28861 qualified products list for at least one part or, perform first article inspection in accordance with the MIL-PRF-28861 qualification inspection requirements for class B.
- 3.8 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as a suggested source of supply (see 6.3).
- 3.9 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.
- 3.10 Workmanship. Parts shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

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TABLE I. Electrical characteristics.

PIN 84084-	Circuit	Voltage drop maximum		Maximum rated current (amps)	Capaci- tance ( $\mu$ F) -0, +100%	DC resistance (ohms) maximum	Minimum insertion loss (dB) in accordance with MIL-STD-220 <u>1/ 2/</u>						
		Volts ac rms	Volts dc				100 kHz	150 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz
001*	C	.14	.12	15	.15	.008	7	10	16	26	40	52	70
002*	L1	.47	.165	0.5	.15	.330	18	24	32	50	60	70	70
003*	L2	.47	.165	0.5	.15	.330	18	24	32	50	60	70	70
004*	L1	.47	.15	1.0	.15	.150	12	19	30	46	60	70	70
005*	L2	.47	.15	1.0	.15	.150	12	19	30	46	60	70	70
006*	L1	.32	.078	3.0	.15	.026	7	11	19	36	60	70	70
007*	L2	.32	.078	3.0	.15	.026	7	11	19	36	60	70	70
008*	L1	.21	.065	5.0	.15	.013	7	10	16	28	54	70	70
009*	L2	.21	.065	5.0	.15	.013	7	10	16	28	54	70	70
010*	L1	.12	.08	10.0	.15	.008	7	10	16	25	48	70	70
011*	L2	.12	.08	10.0	.15	.008	7	10	16	25	48	70	70
012*	Pi	.47	.165	0.5	.20	.330	24	34	52	80	80	80	80
013*	Pi	.47	.15	1.0	.20	.150	16	27	46	74	80	80	80
014*	Pi	.32	.078	3.0	.20	.026	---	---	30	60	80	80	80
015*	Pi	.21	.065	5.0	.20	.013	---	---	12	50	80	80	80
016*	Pi	.12	.08	10.0	.20	.008	---	---	---	30	80	80	80
017*	T	.22	.07	1.0	.15	.07	6	12	25	48	70	70	70
018*	T	.32	.10	2.0	.15	.05	6	10	18	40	64	70	70
019*	T	.22	.12	4.0	.15	.03	6	10	16	31	58	70	70
020*	C	.14	.12	15	.01	.008	---	---	---	2	20	40	60
021*	C	.14	.12	15	.0027	.008	---	---	---	---	10	28	50
022*	C	.14	.12	15	.001	.008	---	---	---	---	2	20	35

1/ Insertion loss measurements shall be made under full load over the frequency range of 100 kHz to 10 MHz. Insertion loss measurements above this frequency range shall be made under no load.

2/ The insertion loss requirements between any two adjacent specified frequencies shall be that of the lower of the two frequencies in order to accommodate resonant dips.

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#### 4. VERIFICATION

4.1 Qualification inspection. Qualification inspection is not required.

4.2 Conformance inspection.

4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections of MIL-PRF-28861.

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 6.3c).

#### 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 Departments 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. Filters 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-28861, this drawing becomes obsolete and will not be used for new design. The QPL-28861 product shall be the preferred item for all applications.

6.2 Tin plated finish. Pure tin plating is prohibited since it may result in tin whisker growth. Tin whisker growth could adversely affect the operation of electronic equipment systems. For additional information on this matter, refer to ASTM B545 (Standard Specification for Electrodeposited Coating of Tin).

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 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.
- d. Requirements for notification of change of product to acquiring activity, if applicable.
- e. Requirements for packaging and packing.

6.4 Replaceability. Filters covered by this drawing will replace the same commercial device covered by a contractor-prepared specification or drawing.

6.5 Cataloging information. Dash number 001\* and 020\* through 022\* shall be cataloged under FSC 5910 as a feed-through ceramic capacitor. Dash numbers 002\* through 019\* shall be cataloged under FSC 5915 as radio frequency interference filters.

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6.6 Supersession data. Table II provides a list of supersession data from previous revisions to the superseding PIN of revision F and later. The superseding PIN indicates only the "T" case finish since that was the only case finish available prior to revision F.

TABLE II. Supersession data.

Superseded PIN	Superseding PIN
84084-	84084-
001	001T
002	002T
003	003T
004	004T
005	005T
006	006T
007	007T
008	008T
009	009T
010	010T
011	011T
012	012T
013	013T
014	014T
015	015T
016	016T
017	017T
018	018T
019	019T

6.7 Suggested sources of supply. Suggested sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact DSCC-VAT, P.O. Box 3990, Columbus, OH or telephone (614) 692-0562 or e-mail [capacitorfilter@dsccl.dla.mil](mailto:capacitorfilter@dsccl.dla.mil).

DESC drawing PIN 1/ 84084-	Vendor CAGE number	Similar vendor type						
001*	59942	JD1EB-154M*	66230	3158-9083-100B	0LSP2	54-310-042	13619	RF12719-1
002*	59942	JD2EB-R07M*	66230	3352-9083-100B	0LSP2	51-320-160	13619	RF12719-2
003*	59942	JD2EB-S07M*	66230	3252-9083-100B	0LSP2	51-320-161	13619	RF12719-3
004*	59942	JD2EB-R08M*	66230	3353-9083-100B	0LSP2	51-320-162	13619	RF12719-4
005*	59942	JD2EB-S08M*	66230	3253-9083-100B	0LSP2	51-320-163	13619	RF12719-5
006*	59942	JD2EB-R10M*	66230	3354-9083-100B	0LSP2	51-320-164	13619	RF12719-6
007*	59942	JD2EB-S10M*	66230	3254-9083-100B	0LSP2	51-320-165	13619	RF12719-7
008*	59942	JD2EB-R11M*	66230	3355-9083-100B	0LSP2	51-320-166	13619	RF12719-8
009*	59942	JD2EB-S11M*	66230	3255-9083-100B	0LSP2	51-320-167	13619	RF12719-9
010*	59942	JD2EB-R12M*	66230	3356-9083-100B	0LSP2	51-320-168	13619	RF12719-10
011*	59942	JD2EB-S12M*	66230	3256-9083-100B	0LSP2	51-320-169	13619	RF12719-11
012*	59942	JD3EB-P07M*	66230	3452-9083-100B	0LSP2	51-321-397	13619	RF12719-12
013*	59942	JD3EB-P08M*	66230	3453-9083-100B	0LSP2	51-321-398	13619	RF12719-13
014*	59942	JD3EB-P10M*	66230	3454-9083-100B	0LSP2	51-321-399	13619	RF12719-14
015*	59942	JD3EB-P11M*	66230	3455-9083-100B	0LSP2	51-321-400	13619	RF12719-15
016*	59942	JD3EB-P12M*	66230	3456-9083-100B	0LSP2	51-321-401	13619	RF12719-16
017*	59942	JD4EB-T08M*	66230	3553-9083-100B	0LSP2	51-321-667	13619	RF12719-17
018*	59942	JD4EB-T09M*	66230	3559-9083-100B	0LSP2	51-321-668	13619	RF12719-18
019*	59942	JD4EB-T16M*	66230	3550-9083-100B	0LSP2	51-321-669	13619	RF12719-19
020*	59942	JD1EB-103M*	66230	3158-9083-101B	0LSP2	54-310-054	13619	RF12719-20
021*	59942	JD1EB-272M*	66230	3158-9083-102B	0LSP2	54-310-055	13619	RF12719-21
022*	59942	JD1EB-102M*	66230	3158-9083-103B	0LSP2	54-310-056	13619	RF12719-22

1/ Parts must be purchased to this DESC PIN to assure all performance requirements and tests are met.

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Vendor CAGE number	Vendor name and address
0LSP2	Spectrum Control, Incorporated 8061 Avonia Road Fairview, PA 16415-2829
59942	AVX Filters Corporation 11144 Penrose Street Unit 5 Sun Valley, CA 91352
66230	Pacific Aerospace & Electronics, INC. Filter Division 434 Olds Station Road Wenatchee, WA 98801
13619	RFI Corporation 100 Pine Aire Drive Bay Shore, L.I., NY 11706-1107

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