REVISIONS			
LTR	**DESCRIPTION**	**DATE**	**APPROVED**
A	Editorial changes. Removed a source of supply. Added 2 new sources of supply.	14 MAY '01	K. A. Cottongim
B	Page 2 – Added hardware to the finish requirement paragraph (3.1.3). Added pure tin prohibition paragraph (3.1.4). Page 4 - Deleted inspection of packaging paragraph (4.2.3). Editorial and format changes throughout.	17 JAN 07	M.A. Radecki

Prepared in accordance with ASME Y14.100

Source control drawing

REV STATUS OF PAGES	**REV**	B	B	B	B	B	B											
	PAGES	1	2	3	4	5	6											

PMIC N/A	**PREPARED BY** Patrick Kyne	**DEFENSE SUPPLY CENTER, COLUMBUS** **COLUMBUS, OH**
Original date of drawing 18 May 1999	**CHECKED BY** Michael A. Radecki	**TITLE** FILTERS AND CAPACITORS, RADIO FREQUENCY/ ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY SEALED
	APPROVED BY James A. Crum	
	SIZE A / **CODE IDENT. NO.** 037Z3	**DWG NO.** **98024**
	REV B	**PAGE** 1 **OF** 6

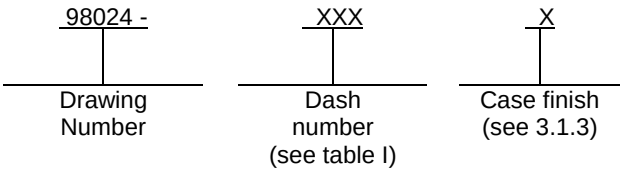
AMSC N/A

59GP-E059

1. SCOPE

1.1 Scope. This drawing and MIL-PRF-28861 describe the requirements for radio frequency interference filters and capacitors.

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 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 in sections 3 and 4 of this drawing, whether or not they are listed here.

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 (see 6.2).

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.

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

2.3 Order of precedence. 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 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-28861 and herein.

3.1.1 Terminals. Terminals shall be solderable and in accordance with figure 1.

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

3.1.3 Case and Hardware Finish. The finish shall be T (tin plated or tin-lead plated), S (silver plated), or G (gold plated); in accordance with MIL-PRF-28861. (NOTE: Pure tin finish is prohibited (see 6.3)).

3.1.4 Pure tin prohibition. Pure tin is prohibited as specified in MIL-PRF-28861.

3.1.5 Body-lead spacing (dash number -002 device only). The minimum spacing between conductive portions of the part body and conductive portions of the leads shall be .050 inches (1.27 mm) at all points. If required to achieve .050 inch (1.27 mm) spacing, the area shall be coated with Dymax 9002 encapsulant. The lead shall be free of coating material except within .030 inch (0.76 mm) from part body. Threads shall be free of coating material and coating material shall not interfere with mounting hardware.

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 Solderability of terminals. In accordance with MIL-PRF-28861.

3.5 Electrical characteristics.

3.5.1 Rated voltage. The rated voltage shall be in accordance with table I.

3.5.2 Rated current. The rated current shall be 25 amperes maximum.

3.5.3 Capacitance. Capacitance shall be in accordance with table I.

3.5.4 Dissipation factor. The dissipation factor shall be 2.5 percent maximum.

3.5.5 Voltage and temperature limits of capacitance. Voltage and temperature limits of capacitance shall be +10 percent, -30 percent.

3.5.6 Insulation resistance. Insulation resistance shall be as follows:

At +25°C: 1,000 megohm-microfarads or 1,000 megohms minimum, whichever is less.
At +125°C: 100 megohm-microfarads or 100 megohms minimum, whichever is less.

3.5.7 Dielectric withstanding voltage (DWV). DWV shall be in accordance with MIL-PRF-28861 except the test voltage shall be 200 percent of rated voltage.

3.5.8 Insertion loss. Insertion loss shall be as follows:

At +25°C: In accordance with table I.
At -55°C and +125°C: A 3 dB degradation from the +25°C value shall be allowed.

3.5.9 Voltage drop. Voltage drop shall be 0.125 volt, maximum.

3.5.10 DC resistance. DC resistance shall be 0.005 ohm, maximum.

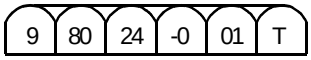
3.6 Environmental and mechanical requirements. The environmental and mechanical requirements shall be in accordance with MIL-PRF-28861, class B product. The following details and exceptions shall apply.

3.6.1 Seal. Seal shall be hermetic in accordance with MIL-PRF-28861 for class B product.

3.6.2 Barometric pressure (reduced). Filters shall be tested in accordance with MIL-PRF-28861 except that the test condition letter shall be C (70,000 feet) and the DWV test voltage shall be 120 percent of the rated voltage.

3.7 Product assurance level. In accordance with MIL-PRF-28861 class B.

3.8 Marking. Filters shall be marked, as a minimum, with the PIN as shown in the example. The unit package shall be marked 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, and current rating.



Example of marking for the PIN
on the hex flats - expanded view

3.9 Manufacturer eligibility. To be eligible for listing as an approved 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.

3.10 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.

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

TABLE I. Electrical characteristics.

Dash Number	Circuit	Rated voltage volts dc	Capacitance (μF) ± 20 percent	Minimum insertion loss (dB) in accordance with MIL-STD-220 1/ 2/						
				300 KHz	1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
001	C	500	.001	---	---	4	20	25	40	50
002	C	500	.03	---	9	29	39	46	65	65

1/ For C circuits, insertion loss measurements 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.

3.12 Workmanship. Filters shall be processed in such a manner as to be uniform in quality and shall be free from cold soldering, corrosion, pits, dents, cracks, rough sharp edges, misalignments, and other defects that will affect life, serviceability, or appearance. Cracks in glass seals are not allowed; however, minor meniscus crazing is acceptable.

4. VERIFICATION

4.1 Qualification inspection. Qualification inspection is not required.

4.2 Conformance inspection.

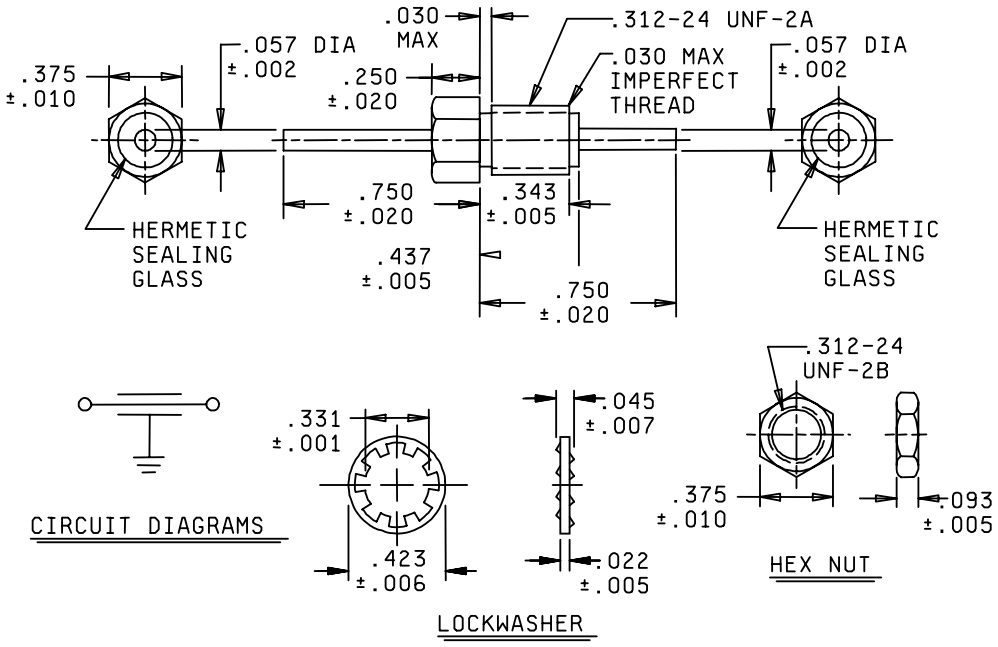
4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A and group B inspections of MIL-PRF-28861 for class B. (The dc resistance/dc voltage drop test shall be performed on a sample basis as specified in MIL-PRF-28861 group A inspection table.)

4.2.2 Certification. The acquiring activity, at its discretion, may accept a certification of compliance with group B requirements in lieu of performing group B tests (see 6.2d).

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2c). When actual packaging of materiel is to be performed by DoD or in-house 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 Service or Defense Agency, or within the Military Service'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.

5.1.1 Mounting hardware. Mounting hardware (hex nut and lockwasher) shall be packaged with each filter but need not be assembled.



Inches	mm	Inches	mm
.001	0.03	.057	1.45
.002	0.05	.093	2.36
.005	0.13	.250	6.35
.006	0.15	.331	8.41
.007	0.18	.343	8.71
.010	0.25	.375	9.53
.020	0.51	.423	10.74
.022	0.56	.437	11.10
.030	0.76	.750	19.05
.045	1.14		

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).
5. Recommended mounting torque: 32 oz-inch ±4 oz-inch.

FIGURE 1. Case and hardware dimensions and circuit diagram.

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 Qualified Products List (QPL) 28861, this drawing becomes obsolete and will not be used for new design. The QPL-28861 product should be the preferred item for all applications.

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

a. Complete PIN (see 1.2).

b. Requirements for delivery and one copy of the quality conformance inspection data or certificate of compliance that parts have passed quality 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 certification of compliance with group B requirements.

e. Requirements for notification of change of product to acquiring activity, if applicable.

6.3 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).

6.4 Cataloging information. Dash numbers 001 and 002 should be cataloged under FSC 5910 as feedthrough ceramic capacitors.

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

6.6 Users of record. Coordination of this document for future revisions is coordinated only with the suggested sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing should be in writing to Defense Supply Center Columbus, DSCC-VAT, P.O Box 3990, Columbus, OH 43218-3990, by telephone (614) 692-0562 or DSN 850-0562, or by email to capacitorfilter@dla.mil.

6.7 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact Defense Supply Center Columbus, DSCC-VAT, P.O Box 3990, Columbus, OH 43218-3990, by telephone (614) 692-0562 or DSN 850-0562, or by email to capacitorfilter@dla.mil.

DSCC drawing PIN 98024-	Vendor similar designation or type number 1/	Vendor CAGE	Vendor similar designation or type number 1/	Vendor CAGE
001	218Z-5281-300	66230	SR1F1-102A	59942
002	218Z-5281-303	66230	SR1F1-303A	59942

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

Vendor CAGE	Vendor name and address
66230	Pacific Aerospace & Electronics, Inc Filter Division 434 Olds Station Road Wenatchee, WA 98801
59942	AVX Filters Corporation 11144 Penrose Street Unit 5 Sun Valley, CA 91352