REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	Page 3 - changed manufacturer eligibility requirement. Pages 6 and 7 - Added an additional suggested source of supply.	21 Dec 87	David W. Withrow
B	Page 3 - Change paragraph reference. Page 6 - Added caution note concerning soldering temperature. Page 7 - Deleted one source of supply. Added a new source of supply.	22 Jun 90	D. Moore
C	Editorial changes throughout. Removed one source of supply.	8 Aug 2000	K. A. Cottongim
D	Editorial changes throughout.	28 July 2005	K. A. Cottongim
E	Editorial changes throughout. Added pure tin prohibition paragraphs 3.1.4 and 6.4.	2 Dec 2010	M. Radecki

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
HAS CHANGED NAMES TO:
DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990

Prepared in accordance with ASME Y14.100

Source control drawing

REV STATUS OF PAGES																		
	REV	E	E	E	E	E	E	E										
	PAGES	1	2	3	4	5	6	7										

PMIC N/A	**PREPARED BY** Randy Larson	**DESIGN ACTIVITY** **DEFENSE ELECTRONICS SUPPLY CENTER,** **DAYTON, OH**
Original date of drawing 11 Sep 84	**CHECKED BY** David E. Moore	**TITLE** **FILTERS AND CAPACITORS, RADIO FREQUENCY/ ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY SEALED ON ONE END ONLY**
	APPROVED BY Randy Larson	
	SIZE **A** / **CODE IDENT. NO.** **14933**	**DWG NO.** **84081**
	REV E	**PAGE** 1 **OF** 7

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:

84081	-	XXX
Drawing number		Dash number (see table I)

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 https://assist.daps.dla.mil/quicksearch/ or from the Standardization Document Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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 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 herein.

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

3.1.3 Finish. The case and lead finish shall be gold plated as specified in MIL-PRF-28861.

3.1.4 Pure tin prohibition. Pure tin shall be prohibited as specified in MIL-PRF-28861 (see 6.4).

3.1.5 Weight. The weight shall be as follows:

For C circuit parts - .25 gram, maximum.
For L circuit parts - .75 gram, maximum.

3.2 Operating temperature range. The operating temperature range shall be -55°C to +150°C.

3.3 Temperature rise. The temperature rise shall be +35°C maximum.

3.4 Electrical characteristics.

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

3.4.2 Rated current. The rated current shall be 10 amperes maximum.

3.4.3 Rated frequency. The rated frequency shall be dc.

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

3.4.5 Voltage and temperature limits of capacitance. Voltage and temperature limits of capacitance shall be +15, -40 percent.

3.4.6 Insulation resistance. Insulation resistance shall be as follows:

At +25°C: 1,000 megohm-microfarads or 100,000 megohms minimum, whichever is less.
At +125°C: 100 megohm-microfarads or 10,000 megohms minimum, whichever is less.

3.4.7 Insertion loss. Insertion loss shall be as follows:

At +25°C: In accordance with table I.
At -55°C and +150°C: A 3 dB degradation from the +25°C value shall be allowed.

3.4.8 Voltage drop. Voltage drop shall be .10 V dc.

3.4.9 DC resistance. DC resistance shall be 0.01 ohm, maximum.

3.5 Environmental and mechanical requirements. The environmental and mechanical requirements shall be in accordance with MIL-PRF-28861 for class B, non-hermetically sealed filters. The following details and exceptions shall apply.

3.5.1 Solderability of terminals. Solderability of terminals shall be in accordance with MIL-PRF-28861, except temperature of solder shall be +300°C ± 5°C.

3.5.2 Resistance to soldering heat. Resistance to soldering heat shall be in accordance with MIL-PRF-28861, except temperature of solder shall be +300°C ± 5°C.

3.5.3 Solderability of mounting termination. Solderability of mounting termination shall be in accordance with MIL-PRF-28861, except temperature of solder shall be +300°C ± 5°C.

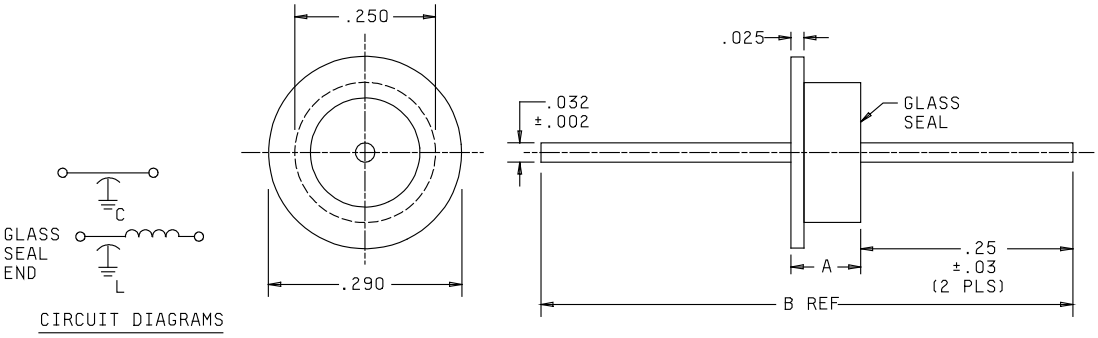
3.6 Product assurance level. Class B only.

3.7 Marking. Filters and capacitors shall not be marked. The unit package shall be marked in accordance with MIL-STD-1285, except the part number shall be as specified in 1.2 with the manufacturer's name or code, date code, voltage rating, and current rating.

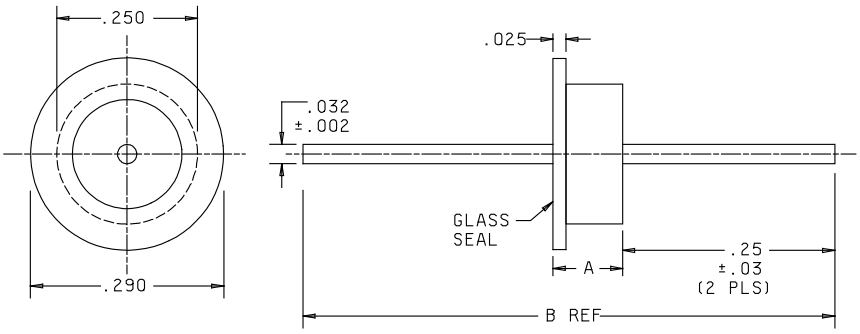
3.8 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the MIL-PRF-28861 Qualified Products List for at least one part or, perform first article inspection in accordance with the MIL-PRF-28861 qualification inspection requirements for class B.

3.9 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. Filters and capacitors 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 or 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.



CONFIGURATION 1



CONFIGURATION 2

Inches	mm
.002	0.05
.005	0.13
.025	0.64
.030	0.76
.03	0.8
.032	0.81
.150	3.81
.25	6.4
.250	6.35
.290	7.37
.650	16.51
.750	19.05

Circuit diagram	Dimensions	
	A ±.005	B Ref
L	.250	.750
C	.150	.650

Dash No.	Configuration
001 through 018	1
019 through 036	2

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.005.
4. Circuit diagram is for information only.
5. Filters shall be supplied with 60/40 solder preform.
6. Potting on nonhermetically sealed end shall not extend beyond .030 inch from the filter body.
7. Filters shall be installed using the recommended installation methods in 6.6.1.3 (solder-in style paragraph) of MIL-PRF-28861.

FIGURE 1. Circuit diagrams and case and hardware dimensions.

TABLE I. Electrical characteristics.

Dash Number	Circuit	Rated voltage dc volts	Capacitance (μF) -0, +100 percent	Minimum insertion loss (dB) in accordance with MIL-STD-220 1/ 2/					
				500 kHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
001, 019 002, 020	L C	50 50	.20 .20	18 18	29 28	42 40	55 52	70 70	70 70
003, 021 004, 022	L C	50 50	.15 .15	17 17	26 24	40 38	53 50	70 70	70 70
005, 023 006, 024	L C	100 100	.10 .10	14 14	20 20	39 38	52 48	70 70	70 70
007, 025 008, 026	L C	100 100	.075 .075	12 12	18 18	37 37	51 46	70 70	70 70
009, 027 010, 028	L C	100 100	.05 .05	9 9	15 15	36 35	50 44	70 70	70 70
011, 029 012, 030	L C	200 200	.027 .027	4 4	10 10	30 30	48 42	65 65	70 70
013, 031 014, 032	L C	200 200	.015 .015	--- ---	7 7	25 25	45 40	60 55	60 60
015, 033 016, 034	L C	300 300	.010 .010	---- ----	4 4	20 20	38 35	55 52	60 60
017, 035 018, 036	L C	300 300	.005 .005	---- ----	---- ----	15 15	35 34	55 50	60 60

1/ For C circuits, insertion loss measurements shall be made under no load. For L circuits, insertion loss measurements shall be made under full load over the frequency range of 1 MHz to 10 MHz. Insertion loss measurements above and below this frequency range shall be made under no load.
2/ The insertion loss requirements between any two adjacent frequencies shall be that of the lower of the two frequencies in order to accommodate resonant dips.

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 for class B.

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 6.2c).

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual 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 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 services' 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 that 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 Acquisition data. The acquisition document 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.

6.3 Soldering temperature. Caution: These devices should not be exposed to soldering temperatures exceeding 300°C. Exposure time to soldering temperature of 300°C should not exceed one minute.

6.4 Pure tin prohibition. Pure tin is prohibited since it may result in tin whisker growth. The use of alloys with tin content greater than 97 percent 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 Coating of Tin).

6.5 Users of record. Military and industry users of his drawing should inform DLA Land and Maritime when a system application requires configuration control. DLA Land and Maritime-VAT will maintain a record of users and this list will be used for coordination and distribution of changes to this drawing. Coordination of this document for future revisions is coordinated only with the approved 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: DLA Land and Maritime-VAT, PO Box 3990, Columbus, OH 43218-3990, by e-mail to capacitorfilter@dla.mil, or by telephone (614) 692-4709 or facsimile (614) 693-1644.

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

6.7 Approved sources of supply. The 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 DLA Land and Maritime-VAT, PO Box 3990, Columbus, OH 43218-3990, by e-mail at capacitorfilter@dla.mil, by telephone (614) 692-4709 or facsimile (614)693-1644.

DSCC drawing PIN 84081-	Vendor similar designation or type number 1/	Vendor CAGE	Vendor name and address
001	XS2C2-204HM	59942	AVX Filters Corp 11144 Penrose Street Sun Valley, CA 91352-3921
002	XS1C2-204HM	59942	
003	XS2C2-154HM	59942	
004	XS1C2-154HM	59942	
005	XS2A2-104HM	59942	
006	XS1A2-104HM	59942	
007	XS2A2-753HM	59942	
008	XS1A2-753HM	59942	
009	XS2A2-503HM	59942	
010	XS1A2-503HM	59942	
011	XS2B2-273HM	59942	
012	XS1B2-273HM	59942	
013	XS2B2-153HM	59942	
014	XS1B2-153HM	59942	
015	XS2L2-103HM	59942	
016	XS1L2-103HM	59942	
017	XS2L2-502HM	59942	
018	XS1L2-502HM	59942	
019	XR2C2-204HM	59942	
020	XR1C2-204HM	59942	
021	XR2C2-154HM	59942	
022	XR1C2-154HM	59942	
023	XR2A2-104HM	59942	
024	XR1A2-104HM	59942	
025	XR2A2-753HM	59942	
026	XR1A2-753HM	59942	
027	XR2A2-503HM	59942	
028	XR1A2-503HM	59942	
029	XR2B2-273HM	59942	
030	XR1B2-273HM	59942	
031	XR2B2-153HM	59942	
032	XR1B2-153HM	59942	
033	XR2L2-103HM	59942	
034	XR1L2-103HM	59942	
035	XR2L2-502HM	59942	
036	XR1L2-502HM	59942	

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