

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Page 2- Added space to PIN for case finish. Added silver as case finish option. Page 3 - Added case finish to marking example. Page 5- Table I, revised footnote 1. Page 6 - Added a source of supply.	4 Jan 88	David Withrow
B	Added additional packaging requirements. Added another suggested source of supply.	4 June 90	David Moore
C	Inactivated dash numbers 004 through 007. Page 2 - Deleted thermal shock/immersion and moisture resistance tests. Page 4 - Changed lockwasher dimension. Page 5 - Changed IL values on - 002 and - 003 at 100 MHz & 200 MHz. Added application note 6.2. Page 6 - Added user of record paragraph. Editorial changes.	30 Apr 93	David Moore
D	Inactivated dash numbers 001 through 003. Added gold case finish option; prohibited pure tin case finish. Changed sample rqmts for dc resistance/voltage drop test. Page 5- Added explanation of pure tin prohibition and cataloging information. Editorial changes.	12 Aug 94	David Moore
E	Table I - IL changes on several dash numbers at 200 MHz and 1 GHz. Added new column for minimum IL at resonant frequency and added new footnote 3.	12 July 96	A. Ernst
F	Added new suggested source of supply. Changed dash number 003, 200 MHz , insertion loss.	28 April 97	David Moore
G	Page 2 – Removed MIL-T-10727 reference. Page 3 – Added Workmanship paragraph. Page 7 - Removed suggested source of supply. Editorial changes throughout.	27 APR 01	K. A. Cottongim
H	Page 1 – Changed superseding document. Page 2 – Added hardware to the finish requirement paragraph (3.1.3). Added pure tin prohibition paragraph (3.1.4). Deleted inspection of packaging paragraph (4.2.3). Editorial and format changes throughout.	17 JAN 07	M. A. Radecki
J	Editorial changes, add QR code and update vendor's list.	25 JUN 15	M. A. Radecki

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

Dash numbers 004 through 007 are inactive for new design as of 30 Apr 1993.
Dash numbers 001 through 003 are inactive for new design as of 12 Aug 1994.
For new design, use DSCC drawing 88051.



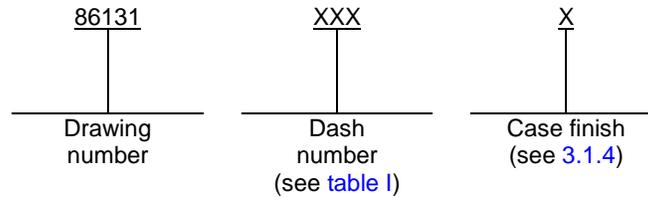
Prepared in accordance with ASME Y14.100

REV STATUS OF PAGES	REV	J	J	J	J	J	J	J										
	PAGES	1	2	3	4	5	6	7										
PMIC N/A	PREPARED BY Patrick Kyne								DEFENSE ELECTRONICS SUPPLY CENTER, DAYTON, OH									
Original date of drawing: 22 January 1987	CHECKED BY Edward H. Back								TITLE FILTERS AND CAPACITORS, RADIO FREQUENCY/ ELECTROMAGNETIC INTERFERENCE SUPPRESSION, NONHERMETICALLY SEALED									
	APPROVED BY David E. Moore																	
	SIZE A	CODE IDENT. NO. 14933							DWG NO. 86131									
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1. SCOPE

1.1 Scope. This drawing and [MIL-PRF-28861](#) describe the complete requirements for radio frequency interference filters and capacitors.

1.2 Part or Identifying Number (PIN). The complete PIN will 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 [6.5](#)).

DEPARTMENT OF DEFENSE SPECIFICATIONS

[MIL-PRF-28861](#) - Filters and Capacitors, Radio Frequency/Electromagnetic Interference, 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://quicksearch.dla.mil/>.)

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 drawing 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 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 after 13 February 1995 (see [6.3](#))).

3.1.4 Pure tin prohibition. Pure tin is prohibited as specified in [MIL-PRF-28861](#).

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 Thermal shock and immersion (group B). Not applicable.

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- 3.5 Moisture resistance. Not applicable.
- 3.6 Seal. Not applicable.
- 3.7 Solderability of terminals. Solderability of terminals shall be in accordance with [MIL-PRF-28861](#).
- 3.8 Electrical characteristics.
- 3.8.1 Rated voltage. The rated voltage shall be in accordance with [table I](#).
- 3.8.2 Rated current. The rated current shall be 5 amperes maximum.
- 3.8.3 Capacitance. See [table I](#).
- 3.8.4 Dissipation factor. The dissipation factor shall be 3 percent maximum.
- 3.8.5 Voltage and temperature limits of capacitance. The voltage and temperature limits of capacitance shall be +15 percent, -40 percent.
- 3.8.6 Insulation resistance:
- At +25°C: 1,000 megohm-microfarad or 100,000 megohms minimum, whichever is less.
 At +125°C: 100 megohm-microfarad or 10,000 megohms minimum, whichever is less.
- 3.8.7 Insertion loss:
- 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.
- 3.8.8 Voltage drop: The voltage drop shall be 0.1 volt, maximum.
- 3.8.9 DC resistance. The dc resistance shall be 0.02 ohm, maximum.
- 3.9 Product assurance level: Product assurance level shall be class B only.
- 3.10 Marking: Filters shall be marked, as a minimum, with the PIN as shown in the following 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, voltage rating, and current rating.



EXAMPLE OF MARKING FOR THE PIN
ON THE HEX FLATS - EXPANDED VIEW.

- 3.11 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 (QPL) for at least one part or perform first article inspection in accordance with the [MIL-PRF-28861](#) qualification inspection requirements for class B.
- 3.12 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be an approved source of supply.
- 3.13 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 material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.
- 3.14 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 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.

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TABLE I. Electrical characteristics.

Dash number 86131	Circuit	Rated voltage V dc	Capacitance (μ F) -0, +100 percent	Minimum insertion loss (dB) in accordance with MIL-STD-220 1/ 2/						Minimum insertion loss at resonant frequency 3/
				1 MH z	10 MH z	100 MH z	200 MH z	1 GH z	10 GH z	
001	C	100	.027	10	30	39	43	65	70	40 Db 200 MHz - 1 GHz
002	L2	100	.027	10	30	50	45	70	70	-----
003	L2	100	.045	14	37	45	45	70	70	-----
004	C	200	1,000 pF	--	4	20	25	30	55	-----
005	C	200	5,000 pF	--	15	34	41	42	55	30 dB 200 MHz - 1 GHz
006	C	200	.01	4	21	35	42	50	70	35 dB 200 MHz - 1 GHz
007	L2	200	.01	4	21	35	44	50	70	35 dB 200 MHz - 1 GHz

1/ For C circuits, insertion loss measurements shall be made under no load. For L2 circuits, insertion loss measurements shall be made under full load over the frequency range of 1 MHz to 10 MHz; above this frequency range, insertion loss measurements shall be made under no load.

2/ Except as specified in 3/, 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/ The frequency range in which the resonant dip will occur and the minimum insertion loss at the resonant frequency.

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 certificate of compliance with group B requirements in lieu of performing group B tests (see 6.5c).

5. PACKAGING

5.1 Packaging. 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 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.

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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 Application note. These nonhermetically sealed filters may be susceptible to moisture intrusion when subjected to repeated thermal cycling. If these items are to be utilized in applications enduring harsh environments, the user should consider placing them within hermetic enclosures.

6.3 Tin plated finish. Pure tin plating is prohibited since it may result in 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 Coating of Tin).

6.4 Cataloging information. Dash numbers 86131-001, -004, -005, and -006 shall be cataloged under FSC 5910 as feed-through ceramic capacitors. Dash numbers 86131-002, -003, and -007 shall be cataloged under FSC 5915 as radio frequency interference filters.

6.5 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 quality 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.

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

6.7 User 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 capacitorfilter@dla.mil or if in writing to: DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0551 or DSN 850-0551.

6.8 Approved sources 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 capacitorfilter@dla.mil, or by contacting DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0551 or DSN 850-0551.

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DLA Land and Maritime Drawing PIN 86131-	Vendor CAGE number	Similar vendor type <u>1/</u>
001	59942	SA1A1273E
002	59942	SA2A1273W
003	59942	SA2A1453C
004	59942	SA1B1102C
005	59942	SA1B1502E
006	59942	SA1B1103B
007	59942	SA2B1103A

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

Vendor CAGE

Vendor name and address

59942

AVX Filters Corporation
11144 Penrose Street
Sun Valley, CA 91352-2756

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