

INCH-POUND

MIL-PRF-28861/12F

14 February 2008

SUPERSEDING

MIL-PRF-28861/12E

27 February 2003

## PERFORMANCE SPECIFICATION SHEET

FILTERS, AND CAPACITORS, RADIO FREQUENCY/ELECTROMAGNETIC INTERFERENCE,  
SUPPRESSION, HERMETICALLY SEALED ON ONE END ONLY, STYLE FS70

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

The complete requirements for acquiring the filters described herein shall  
consist of this specification and the latest issue of [MIL-PRF-28861](#).

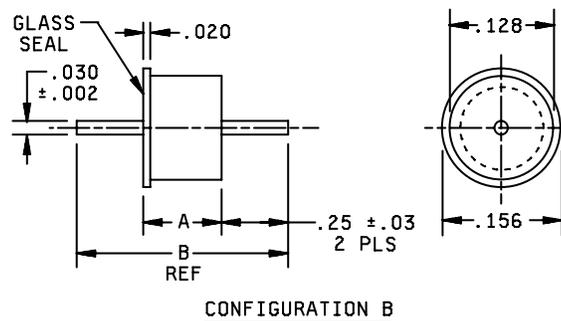
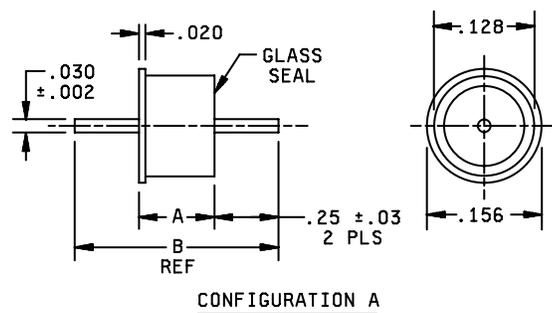
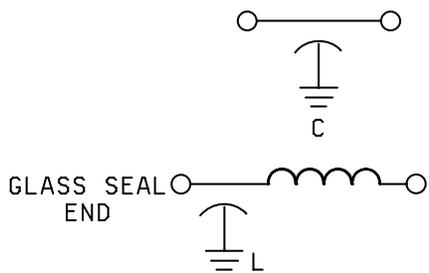


FIGURE 1. Case dimensions and circuit diagrams.

## MIL-PRF-28861/12F

CIRCUIT DIAGRAMS

Dash number	Configuration
001 thru 016 033 and 034	A
017 thru 032 035 and 036	B

Circuit diagram	A $\pm.005$	B Ref
L	.200	.715
C	.110	.625

<u>Inches</u>	<u>mm</u>
.002	0.05
.005	0.13
.020	0.51
.030	0.76
.110	2.79
.128	3.25
.156	3.96
.200	5.08
.250	6.35
.625	15.88
.715	18.16

## NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerance is  $\pm.005$  (0.13 mm).
- Circuit diagrams are for information only.
- Filters shall be supplied with 60/40 solder preform.
- Potting on non-hermetically sealed end shall not extend beyond .030 inch (0.76 mm) from the filter body.
- Filters shall be installed using the recommended installation methods (solder-in style of [MIL-PRF-28861](#)).

FIGURE 1. Case dimensions and circuit diagrams - Continued.

MIL-PRF-28861/12F

REQUIREMENTS:

Design and construction:

Dimensions and configuration: See [figure 1](#). Filters and capacitors shall be hermetically sealed on one end as shown in [figure 1](#) for the respective style.

Weight: .25 gram maximum for C circuit parts.  
.75 gram maximum for L circuit parts.

Case and lead finish: G only (gold plated).

Terminals: Solderable.

Operating temperature range: -55°C to 125°C.

Rated voltage: See [table I](#).

Rated current: 5 amperes maximum.

Capacitance: See [table I](#).

Dissipation factor: 2 percent maximum for capacitance values 10 pF through 100pF and 3 percent maximum for values greater than 100pF.

Voltage and temperature limits of capacitance: +15 percent, -40 percent.

Insulation resistance:

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.

Insertion loss:

At +25°C: In accordance with [table I](#).

At -55°C and +125°C: A 3 dB degradation from +25°C value shall be allowed.

Voltage drop: 0.05 volt maximum.

DC resistance: 0.01 ohm maximum.

Seal: Not applicable.

Temperature rise: +25°C maximum.

Solderability of terminals: In accordance with [MIL-PRF-28861](#), except temperature of solder shall be 300°C +0°C, -5°C.

Resistance to soldering heat: In accordance with [MIL-PRF-28861](#), except temperature of solder shall be 300°C +0°C, -5°C.

## MIL-PRF-28861/12F

Solderability of mounting termination: In accordance with MIL-PRF-28861, except temperature of solder shall be 300°C +0°C, -5°C.

Quality assurance provisions: In accordance with MIL-PRF-28861.

Product assurance level: In accordance with table I.

Dash Number	Circuit	Product Assurance level		Rated Voltage Volts dc	Capacitance (pF) -0 +100 percent	Minimum insertion loss (dB) in Accordance with MIL-STD-220 <u>1/</u> <u>2/</u>					Minimum Insertion loss At resonant Frequency <u>3/</u>
		Class				1 Mhz	10 Mhz	100 Mhz	1 Ghz	10 Ghz	
		B	S								
001, 017	L	X	---	50	15,000	7	25	42	50	60	35dB
002, 018	C	X	---	50	15,000	7	25	40	50	60	100Mhz – 1Ghz
003, 019	L	X	X	100	2,700	---	10	25	40	60	-----
004, 020	C	X	X	100	2,700	---	10	25	40	60	-----
005, 021	L	X	X	100	5,000	---	15	30	45	60	-----
006, 022	C	X	X	100	5,000	---	15	30	45	60	-----
007, 023	L	X	X	200	10	---	---	---	5	10	-----
008, 024	C	X	X	200	10	---	---	---	4	10	-----
009, 025	L	X	X	200	25	---	---	---	10	15	5dB
010, 026	C	X	X	200	25	---	---	---	10	15	1Ghz – 10Ghz
011, 027	L	X	X	200	100	---	---	3	20	30	10dB
012, 028	C	X	X	200	100	---	---	3	20	30	1Ghz – 10Ghz
013, 029	L	X	X	200	500	---	---	15	30	50	28dB
014, 030	C	X	X	200	500	---	---	15	30	50	1Ghz – 10Ghz
015, 031	L	X	X	200	1,000	---	4	20	33	55	25dB
016, 032	C	X	X	200	1,000	---	4	20	31	55	1Ghz – 10Ghz
033, 035	L	X	---	50	10,000	4	20	38	50	60	35dB
034, 036	C	X	---	50	10,000	4	20	35	48	60	100Mhz – 1Ghz

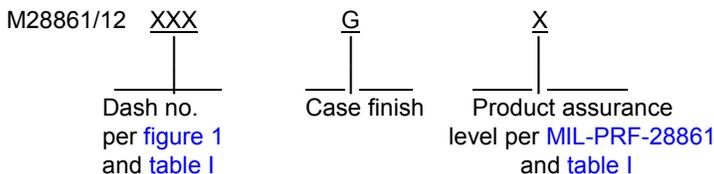
1/ For C circuits, insertion loss measurements shall be made under no load. For L circuits, insertion loss measurements shall be made under full load over the frequency range of 1Mhz to 10Mhz. Insertion loss measurements above this frequency range shall be made under no load.

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 frequency dip will occur and the minimum insertion loss at the resonant frequency.

## MIL-PRF-28861/12F

Part or identifying Number (PIN): The PIN shall be as follows:



Marking: Class B capacitors and filters shall not be marked. Class S filters and capacitors shall be marked with a green dot in accordance with color number 14187 of [FED-STD-595/14187](#). Full marking, in accordance with [MIL-PRF-28861](#) shall be marked on the unit package.

Soldering temperature. Caution: These devices shall not be exposed to soldering temperatures exceeding 300°C. Exposure time to soldering temperature of 300°C shall not exceed 1 minute.

Installation note: These devices are intended to be installed into hermetically sealed packages with the glass seal oriented toward the outside world.

Cataloging information: Circuits 'C's shall be cataloged under FSC 5910 as feed-through ceramic capacitors. Circuits 'L's shall be cataloged under FSC 5915 as radio frequency interference filters.

## NOTES:

- \* Reference documents. In addition to [MIL-PRF-28861](#), this specification sheet references the following documents.

[MIL-STD-220](#)  
[FED-STD-595/14187](#)

- \* (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).
- \* CHANGES FROM PREVIOUS ISSUE The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:  
Army - CR  
Navy - EC  
Air Force - 11  
DLA - CC  
NASA - NA

Preparing activity:  
DLA - CC

(Project 59GP-2008-002)

Review activities:  
Army - AR, AT, AV, MI  
Navy - AS, MC, OS, SH  
Air Force - 19, 99

- \* NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <http://assist.daps.dla.mil>.