

INCH-POUND

MIL-PRF-28861/3C  
W/Amendment 2  
20 August 2019  
SUPERSEDING  
MIL-PRF-28861/3C  
W/Amendment 1  
23 January 2009

## PERFORMANCE SPECIFICATION SHEET

### FILTERS, RADIO FREQUENCY/ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY SEALED, STYLE FS30

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

The requirements for acquiring the product described herein  
shall consist of this specification sheet and [MIL-PRF-28861](#).

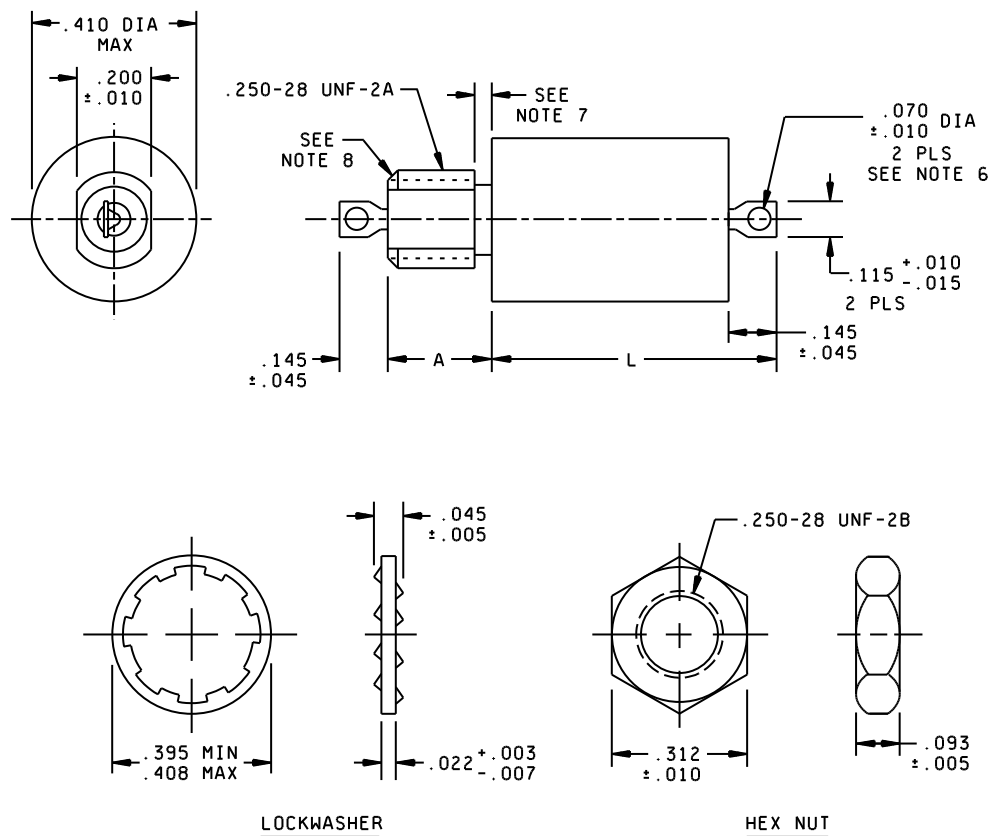
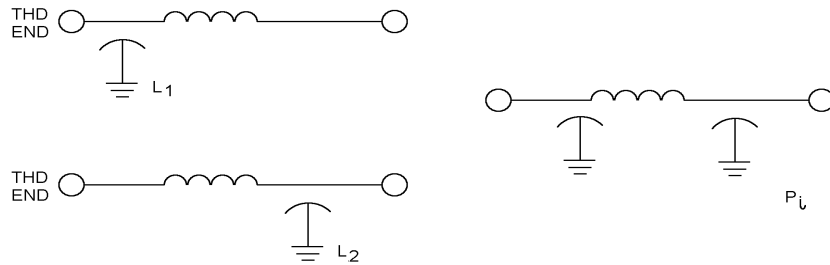


FIGURE 1. Case and hardware dimensions and circuit diagrams.



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CIRCUIT DIAGRAMS

| Dash number | A dimension<br>( $\pm.010$ ) | L dimension<br>max | Dash number | A dimension<br>( $\pm.010$ ) | L dimension<br>max |
|-------------|------------------------------|--------------------|-------------|------------------------------|--------------------|
| 001         | .187                         | .630               | 019         | .312                         | .630               |
| 002         | .187                         | .630               | 020         | .312                         | .630               |
| 003         | .187                         | .730               | 021         | .312                         | .730               |
| 004         | .187                         | .630               | 022         | .312                         | .630               |
| 005         | .187                         | .630               | 023         | .312                         | .630               |
| 006         | .187                         | .730               | 024         | .312                         | .730               |
| 007         | .187                         | .630               | 025         | .312                         | .630               |
| 008         | .187                         | .630               | 026         | .312                         | .630               |
| 009         | .187                         | .730               | 027         | .312                         | .730               |
| 010         | .187                         | .630               | 028         | .312                         | .630               |
| 011         | .187                         | .630               | 029         | .312                         | .630               |
| 012         | .187                         | .730               | 030         | .312                         | .730               |
| 013         | .187                         | .630               | 031         | .312                         | .630               |
| 014         | .187                         | .630               | 032         | .312                         | .630               |
| 015         | .187                         | .730               | 033         | .312                         | .730               |
| 016         | .187                         | .630               | 034         | .312                         | .630               |
| 017         | .187                         | .630               | 035         | .312                         | .630               |
| 018         | .187                         | .730               | 036         | .312                         | .730               |

| Inches | mm   | Inches | mm   | Inches | mm   | Inches | mm    |
|--------|------|--------|------|--------|------|--------|-------|
| .003   | 0.08 | .022   | 0.56 | .145   | 3.68 | .395   | 10.03 |
| .005   | 0.13 | .045   | 1.14 | .187   | 4.75 | .408   | 10.36 |
| .007   | 0.18 | .070   | 1.78 | .200   | 5.08 | .410   | 10.41 |
| .010   | 0.25 | .093   | 2.36 | .250   | 6.35 | .630   | 16.00 |
| .015   | 0.38 | .115   | 2.92 | .312   | 7.92 | .730   | 18.54 |

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Circuit diagrams are for information only.
4. All filters shall be supplied with mounting hardware (hex nut and lock washer). 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 |
|---------|--------|
| L1      | C      |
| L2      | L      |
6. Optional slot may be supplied,  $.050 \pm .010$  inches ( $1.27 \pm 0.25$  mm) x  $.070 \pm .010$  inches ( $1.78 \pm 0.25$  mm).
7. Imperfect thread or undercut optional  $.050$  inch ( $1.27$  mm) maximum.
8. One imperfect thread allowed  $.035$  inch ( $0.89$  mm) maximum.
9. Recommended mounting torque: 44 inch-ounces  $\pm$  4 inch-ounces.

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

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REQUIREMENTS:

Design and construction:

Dimensions and configuration: See figure 1.

Weight: 10 grams maximum.

Case finish: T, S, or G in accordance with [MIL-PRF-28861](#) (pure tin finish is prohibited).

Mounting hardware: Shall be furnished with the same finish as the filter case (pure tin finish is prohibited).

Terminals: Solderable.

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

Rated voltage: 150 V dc.

Rated current: See table I.

Capacitance: See table I for minimum capacitance value.

Dissipation factor: 3 percent maximum.

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

Insulation resistance:

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

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

Insertion loss: See table I.

Voltage drop: See table I.

DC resistance: See table I.

Seal: In accordance with [MIL-PRF-28861](#). Leakage rate for class S filters shall not exceed  $1 \times 10^{-7}$  atm cm<sup>3</sup>/s.

Temperature rise: +25°C maximum.

Solderability of terminals: In accordance with [MIL-PRF-28861](#).

Product assurance level: In accordance with [MIL-PRF-28861](#) and table I.

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

|                                                        |             |                                                                                            |
|--------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------|
| M28861/03 - <u>XXX</u>                                 | <u>X</u>    | <u>X</u>                                                                                   |
|                                                        |             |                                                                                            |
| _____                                                  | _____       | _____                                                                                      |
| Dash no. in<br>accordance with<br>figure 1 and table I | Case finish | Product assurance<br>level in accordance with<br><a href="#">MIL-PRF-28861</a> and table I |

TABLE I. Electrical characteristics.

| Dash number | Product assurance level |   | Circuit | Maximum current (amps) | Minimum capacitance (μF) | Maximum voltage drop (volts) | Maximum DC resistance (ohms) | Minimum insertion loss (dB) in accordance with MIL-STD-220 1/ 2/ |         |         |       |        |         |       |                     |         |         |       |        |         |       |
|-------------|-------------------------|---|---------|------------------------|--------------------------|------------------------------|------------------------------|------------------------------------------------------------------|---------|---------|-------|--------|---------|-------|---------------------|---------|---------|-------|--------|---------|-------|
|             | Class                   |   |         |                        |                          |                              |                              | At +25°C                                                         |         |         |       |        |         |       | At -55°C and +125°C |         |         |       |        |         |       |
|             | B                       | S |         |                        |                          |                              |                              | 100 kHz                                                          | 150 kHz | 300 kHz | 1 MHz | 10 MHz | 100 MHz | 1 GHz | 100 kHz             | 150 kHz | 300 kHz | 1 MHz | 10 MHz | 100 MHz | 1 GHz |
| 001, 019    | X                       | X | L1      | 0.1                    | 0.25                     | 0.17                         | 1.7                          | 32                                                               | 39      | 51      | 60    | 60     | 60      | 70    | 30                  | 37      | 49      | 58    | 60     | 60      | 70    |
| 002, 020    | X                       | X | L2      | 0.1                    | 0.25                     | 0.17                         | 1.7                          | 32                                                               | 39      | 51      | 60    | 60     | 60      | 70    | 30                  | 37      | 49      | 58    | 60     | 60      | 70    |
| 003, 021    | X                       | X | π       | 0.1                    | 0.50                     | 0.17                         | 1.7                          | 49                                                               | 60      | 70      | 80    | 80     | 80      | 80    | 47                  | 58      | 68      | 78    | 80     | 80      | 80    |
| 004, 022    | X                       | X | L1      | 0.3                    | 0.25                     | 0.23                         | 0.77                         | 25                                                               | 30      | 44      | 60    | 60     | 60      | 70    | 23                  | 29      | 42      | 58    | 60     | 60      | 70    |
| 005, 023    | X                       | X | L2      | 0.3                    | 0.25                     | 0.23                         | 0.77                         | 25                                                               | 30      | 44      | 60    | 60     | 60      | 70    | 23                  | 29      | 42      | 58    | 60     | 60      | 70    |
| 006, 024    | X                       | X | π       | 0.3                    | 0.50                     | 0.23                         | 0.77                         | 43                                                               | 53      | 70      | 80    | 80     | 80      | 80    | 41                  | 51      | 68      | 78    | 80     | 80      | 80    |
| 007, 025    | X                       | X | L1      | 0.5                    | 0.25                     | 0.18                         | 0.36                         | 20                                                               | 26      | 39      | 59    | 60     | 60      | 70    | 18                  | 24      | 37      | 57    | 60     | 60      | 70    |
| 008, 026    | X                       | X | L2      | 0.5                    | 0.25                     | 0.18                         | 0.36                         | 20                                                               | 26      | 39      | 59    | 60     | 60      | 70    | 18                  | 24      | 37      | 57    | 60     | 60      | 70    |
| 009, 027    | X                       | X | π       | 0.5                    | 0.50                     | 0.18                         | 0.36                         | 37                                                               | 48      | 66      | 80    | 80     | 80      | 80    | 35                  | 46      | 64      | 78    | 80     | 80      | 80    |
| 010, 028    | X                       | X | L1      | 1.0                    | 0.25                     | 0.14                         | 0.14                         | 12                                                               | 16      | 26      | 48    | 60     | 60      | 70    | 10                  | 14      | 24      | 46    | 60     | 60      | 70    |
| 011, 029    | X                       | X | L2      | 1.0                    | 0.25                     | 0.14                         | 0.14                         | 12                                                               | 16      | 26      | 48    | 60     | 60      | 70    | 10                  | 14      | 24      | 46    | 60     | 60      | 70    |
| 012, 030    | X                       | X | π       | 1.0                    | 0.50                     | 0.14                         | 0.14                         | 28                                                               | 40      | 58      | 80    | 80     | 80      | 80    | 26                  | 38      | 56      | 78    | 80     | 80      | 80    |
| 013, 031    | X                       | X | L1      | 3.0                    | 0.25                     | 0.15                         | 0.05                         | 11                                                               | 15      | 20      | 36    | 60     | 60      | 70    | 9                   | 13      | 18      | 34    | 60     | 60      | 70    |
| 014, 032    | X                       | X | L2      | 3.0                    | 0.25                     | 0.15                         | 0.05                         | 11                                                               | 15      | 20      | 36    | 60     | 60      | 70    | 9                   | 13      | 18      | 34    | 60     | 60      | 70    |
| 015, 033    | X                       | X | π       | 3.0                    | 0.50                     | 0.15                         | 0.05                         | ---                                                              | ---     | 38      | 70    | 80     | 80      | 80    | ---                 | ---     | 36      | 68    | 80     | 80      | 80    |
| 016, 034    | X                       | X | L1      | 5.0                    | 0.25                     | 0.075                        | 0.015                        | 8                                                                | 12      | 20      | 32    | 60     | 60      | 70    | 6                   | 10      | 18      | 30    | 60     | 60      | 70    |
| 017, 035    | X                       | X | L2      | 5.0                    | 0.25                     | 0.075                        | 0.015                        | 8                                                                | 12      | 20      | 32    | 60     | 60      | 70    | 6                   | 10      | 18      | 30    | 60     | 60      | 70    |
| 018, 036    | X                       | X | π       | 5.0                    | 0.50                     | 0.075                        | 0.015                        | ---                                                              | ---     | 20      | 63    | 80     | 80      | 80    | ---                 | ---     | 18      | 61    | 80     | 80      | 80    |

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

[MIL-STD-220](#)

Amendment notations. The margins of this specification sheet are marked with vertical lines to indicate modifications generated by this amendment. 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.

Custodians:

Army - CR  
Navy - EC  
Air Force - 85  
DLA - CC  
NASA - NA

Preparing activity:

DLA - CC

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Review activities:

Army - AV, MI  
Navy - AS, MC, OS, SH  
Air Force - 19

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