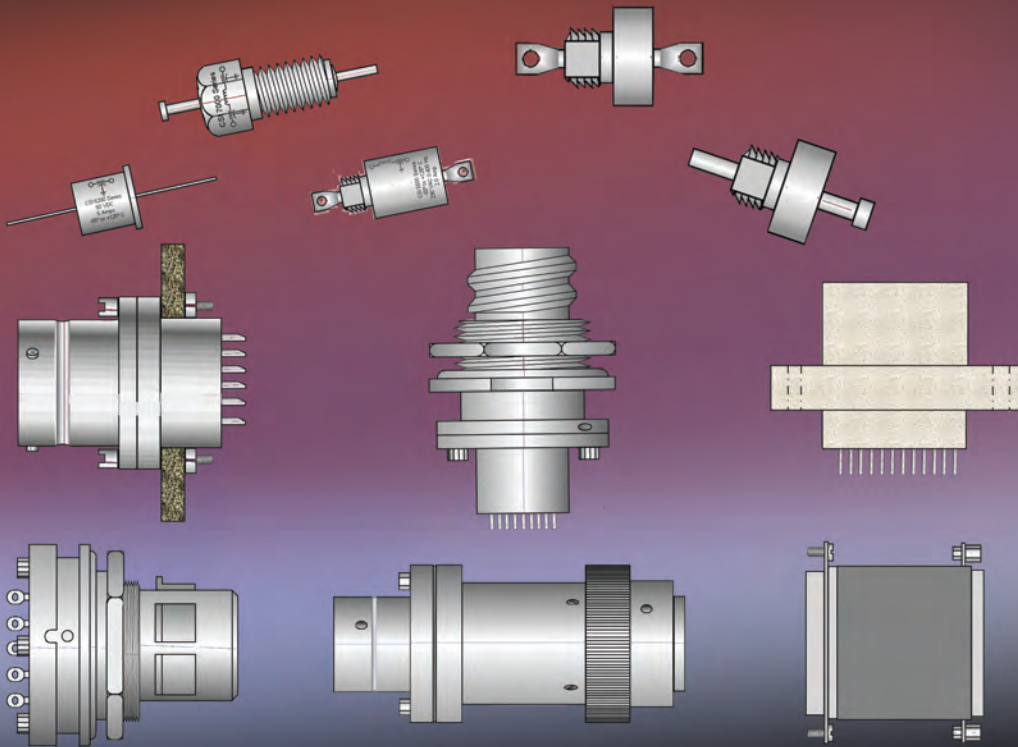


# CUSTOM SUPPRESSION



- Solder-mount microwave filters (eyelet)
- Bolt style filter packages
- Filtered interconnect devices
- Broadband filters
- Feedthrough capacitors
- Ceramic filters

## The CSI Family of EMC Problem Solvers

### **Engineering**

CSI provides design and problem solving services for your needs. Standard components and catalog filters are utilized wherever possible for the lowest installed cost. Modified and custom filters are supplied where required.

### **Service**

Our engineering department will assist you in defining your filtering needs and subsequent filter selection and documentation.

### **0300-FIC Series**

FIC (Filtered Inter-Connect) devices. High reliability filter systems for connectors using the latest planar array technology. Available for a wide range of connector styles, capacitances, current and voltage ratings for all connector insert arrangements.

### **6000 Series**

Solder-mount (eyelet) microwave filters that are hermetically sealed on one end for low installed cost.

### **7000-8000 Series**

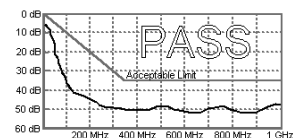
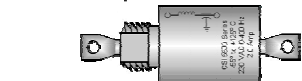
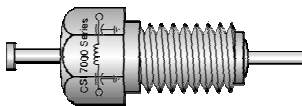
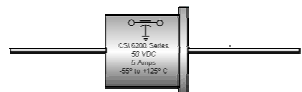
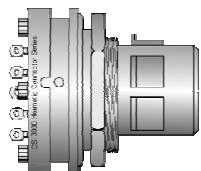
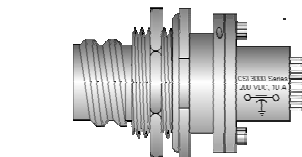
Bolt style filter packaging for low cost and ease of installation. Stock in C,  $\pi$ , and L configurations. Hermetic units available.

### **4000-5000 Series**

Hermetically-sealed QLP-style filters available in C,  $\pi$ , L, T, reverse-L and Multi-section configurations. Suited for 400 Hz AC applications.

### **Testing**

All filters produced are of the highest quality and reliability. CSI produces MIL-F-15733 QLP EMI filters and offers screening to hi-rel specs.



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# CUSTOM SUPPRESSION

## **Problem solving EMI & RFI at the leading edge**

As a manufacturer in Application Specific Intelligent Connectors (ASIC), filter pin connectors, EMI/RFI ceramic filters and feed-through capacitors, Custom Suppression offers a unique combination of technologies to solve industry's electromagnetic and radio interference problems.

Our abilities to respond to our customers' needs is enhanced by our CAD-CAM system and proprietary EMC/RF insertion loss filter performance design and simulation programs.

Put our extensive experience in consulting, servicing and manufacturing of custom and built-to-spec EMI, RFI and EMP suppression hardware and technology to work for you.

## **Feed-through capacitors and filters** (custom and standard values, threaded cases)

CSI feed-through capacitors and filters are available in 4-40, 8-32, 5/16-24 and 12-32 thread sizes. Also available are solder-mount gold plated microwave feedthrough capacitors, all with voltage ratings of 50-200 VDC and current ratings of up to 15 amps.

## **Broadband Filters** (Low Pass)

CSI offers a full line of hermetically sealed, low-pass filters, commercial and QPL. Voltage ratings are 50-300 VDC and 124 VAC 0-400 Hz. Current ratings are from 0.1 through 30 Amp. Current ratings are L, Pi, Tee and multi-section. Custom L, Pi, Tee, and multisection or double L-section filters are available on request.

## **Custom "Black Box" Filter Assemblies**

CSI will design and build to your "black box" filter specifications. Contact our engineering department with your requirements.

## **EMP (Electromagnetic Pulse)**

CSI will incorporate suppression devices in most filter products to address EMP dangers.



## CSI Suppression Modules for Cylindrical Connectors

CSI features a full line of modules for use with cylindrical connectors. These suppression modules offer the versatility of mounting either directly behind the connector or on the inside of the enclosure.

Within the suppression module, circular capacitor arrays with ferrite elements provide feed-through multi-section filtering characteristics per pin. The reactive arrays are metallurgical soldered in place in the adapter assemblies. Grounding, isolation and shielding integrity of the filter are implemented at the array/adapter interface providing improved insertion losses in the VHF / UHF frequency ranges.

A special ceramic/metallic-compatible semi-rigid epoxy is bonded to both sides of the capacitor array and ferrite elements. This coating is also applied to both sides of the adapter to provide optimum mechanical and environmental protection. All suppression modules are delivered completely tested and protectively packaged.

Numerous size and pin arrangements are available. Voltages range from 50-500 VDC with capacitance ranges from 10 pf to 1.0  $\mu$ f, depending on the size and number of contacts. Please speak with our engineering department for further information regarding customizing suppression modules for your specific requirements.

## “Q” Level Quality Screening Sequence

Since the early years of the filter industry, the “Q” Level quality screening technique has been very effective in eliminating both infant mortalities and long-term latent failures. When ordering, to specify “Q”-Level screening, simply add “Q” to the part number (ex: Q4010-020). Testing is 100% unless otherwise specified and summary data is provide for all tests.

Testing includes the following:

1. **Visual Inspection:** Prior to encapsulation, components are inspected at 7X magnification for proper solder joints, contamination, voids or cracks in the ceramic capacitor elements, loose solder and proper alignment of all components. Inspection will verify that the materials, design, construction, physical dimensions and workmanship are all in accordance with applicable requirements.
2. **Thermal Shock:** Five cycles from -55° to +125° C, in accordance with MIL-STD-202, Method 107D, Condition A.
3. **Burn-In:** 100 hours at 1.4X rated DC voltage at 125° C.
4. **Seal Test:** MIL-STD-202, Method 112, Condition A (does not apply to resin sealed units).

## “Q” Level Quality Screening Sequence – cont.

5. **Capacitance and Dissipation Factor:** MIL-STD-202, Method 305, Frequency 1 kHz.
6. **Dielectric Withstanding Voltage:** Two and a half times (2.5X) the rated DC voltage for  $5 \pm 1$  seconds @ 25° C with 50 mA (maximum) charging current.
7. **Insulation Resistance:** MIL-STD-202, Method 302, 125° C at rated DC voltage (maximum charging time) and at room temperature (25° C). The 125° C requirement will be within 10% of the 25° C requirement.
8. **DC Resistance:** MIL-STD-202, Method 303, per requirement.
9. **Insertion Loss Check Test:** 3 pieces or 10% of lot, whichever is greater. In accordance with MIL-STD-220 at full rated load.
10. **Visual Mechanical:** In accordance with MIL-F-15733.
11. **Marking:** All filters which have successfully completed “Q” Level screening sequence will be marked with a “Q” preceding the part number (ex: Q4010-020).

## Important Mounting and Installation Procedures

To avoid damage during the installation of the filters, it is necessary to take the following precautions to protect them from excessive heat or mechanical stress.

- Heat sinks should always be used when attaching leads.
- In addition to using heat sinks, care should be utilized when applying heat to the filter terminals. The soldering iron tip should not exceed 200° C. We recommend SN62 or 60/40 solder to attach leads. On epoxy filled filters and feed-through capacitors, if solder appears to flow up from the lead and into the epoxy junction, then the internal, high-temperature solder has reflowed. The typical contact time for the soldering iron to the lead of the filter should be no more than 5 to 10 seconds.
- Mounting hardware is supplied on all filters. Always use a torque wrench and do not exceed the recommended mounting torque.
- Do not apply excessive force (pliers, wrenches, etc) to the filter cases. This may result in cracking the ceramic capacitor.

## Important Mounting and Installation Procedures – cont.

- Insure that the filter is properly grounded to create an effective path for the interference.

## Miniature Ceramic EMI Filter General Specifications

Our L-Section, Pi-Section and Multi-Section Filters and Feed-through Capacitors all meet or exceed all applicable requirements stated in MIL-F-15733, including:

- **Dielectric Withstanding:** Two and a half times (2.5X) the rated DC voltage for 5±1 seconds at 25° C with 50 mA maximum charging current.
- **Insulation Resistance:** Greater than 1,000 MΩ at the minimum rated DC voltage with two minutes maximum charging time.
- **Operating Temperature Range:** All filters enclosed in this specification are designed to operate over the temperature range of -55° to +125° C.
- **Plating:** Corrosion resistant per MIL-F-15733. Tin plating per MIL-T-10727 is standard; other platings are available.

- **Marking:** CSI, CSI part number and date code. (Voltage and schematic when size permits.) Special marking are also available.

## Environmental Specifications

Filters shall meet the following electrical and performance specifications per MIL-STD-202:

Test	Method	Condition
Salt spray	101	A
Thermal shock	107	A (125° C)
Immersion cycling <sup>3</sup>	104	A
Barometric pressure	105	C
Moisture resistance <sup>1,3</sup>	106	– Life <sup>2</sup> 108 D
Seal <sup>3</sup>	112	A
Shock	213	A
Vibration	204	D
Resistance to solder heat	210	B

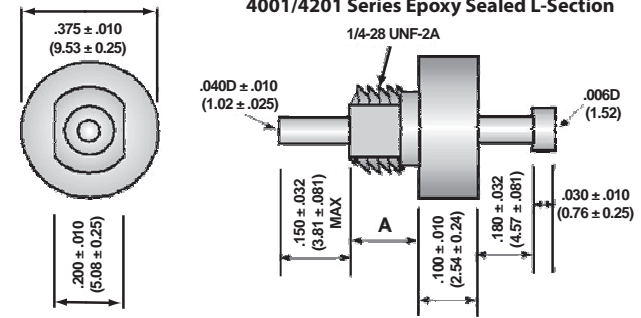
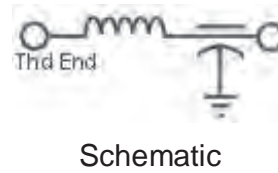
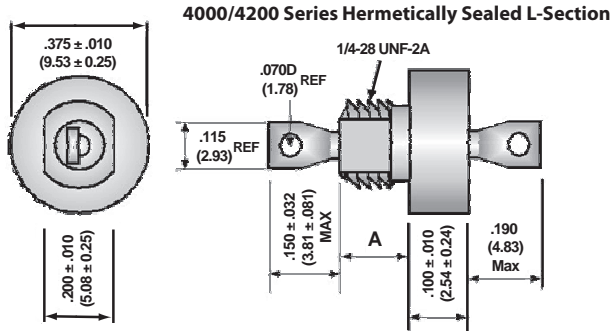
<sup>1</sup> 50 V polarizing voltage

<sup>2</sup> 140% rated voltage at 125° C

<sup>3</sup> 4000 series only

## L-Section Filters

4000 / 4001 / 4200 / 4201

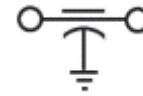
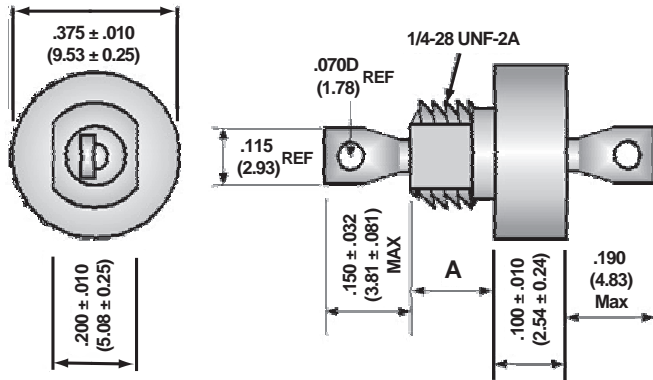


Part No		Min Cap $\mu f$	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
4000-110	4000-120	1.4	50 VDC	15	28	33	44	60	70	0.003	15 Amp
4001-110	4001-120										
4200-110	4200-120	.15	50 VDC	—	8	14	25	45	70	0.003	15 Amp
4201-110	4201-120										

Drawings may not be to scale; refer to dimensions.

## Miniature Ceramic Feed-thru Filters

4020 / 4120 / 4220



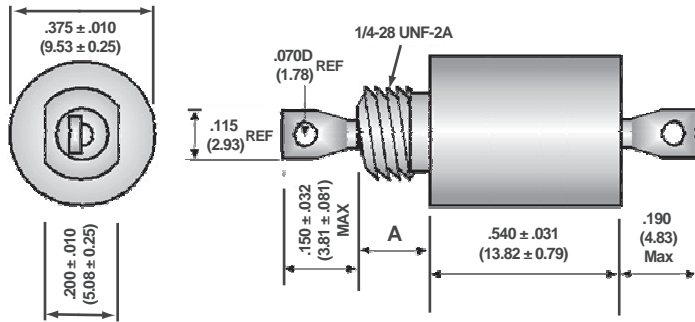
Schematic

Part No		Min Cap $\mu$ f	Working Voltage	Minimum Insertion Loss (dB)					Max DCR (ohms)	Rated DC Current
A = .187	A = .312			1 MHz	10 MHz	100 MHz	1 GHz	10 GHz		
4020-103	4020X103	.01	50 VDC	—	20	38	50	55	.006	15 Amp
4020-504	4020X504	.50		35	42	60	70	70		
4020-754	4020X754	.75		37	45	60	70	70		
4020-145	4020X145	1.4		40	50	70	70	70		
4120-103	4120X103	.01		100 VDC	—	20	38	50		
4120-504	4120X504	.50	35	42	60	70	70			
4120-105	4120X105	1.0	40	48	60	70	70			
4220-103	4220X103	.01	200 VDC	—	20	38	50	55		
4220-503	4220X503	.05		15	35	45	70	70		
4220-154	4220X154	.15		24	40	50	70	70		

Drawings may not be to scale; refer to dimensions.

## L-Section Filters

4000 / 4100 / 4200



Schematic \*

\* For a reverse configuration with the inductive element opposite the thread end, add an "R" suffix to the part number; i.e., 4200-010R

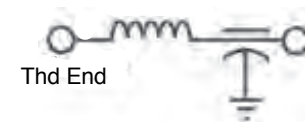
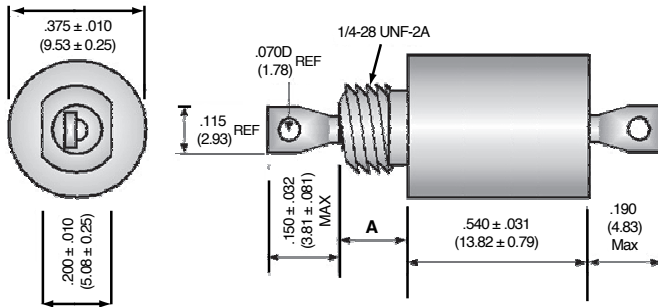


Part No		Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
<b>Series 4000-XXX</b>											
4000-010	4000-020	—	50 VDC	34	62	70	70	70	70	10	.10
4000-011	4000-021	—		25	53	65	70	70	70	4	.25
4000-012	4000-022	—		16	41	54	70	70	70	1	.50
4000-013	4000-023	—		15	31	42	63	70	70	.25	1.0
4000-014	4000-024	—		15	28	35	51	70	70	.063	2.0
4000-015	4000-025	—		15	28	34	45	70	70	.027	3.0
4000-016	4000-026	—		15	28	34	44	52	70	.003	10.0

Drawings may not be to scale; refer to dimensions.

## L-Section Filters

4000 / 4100 / 4200



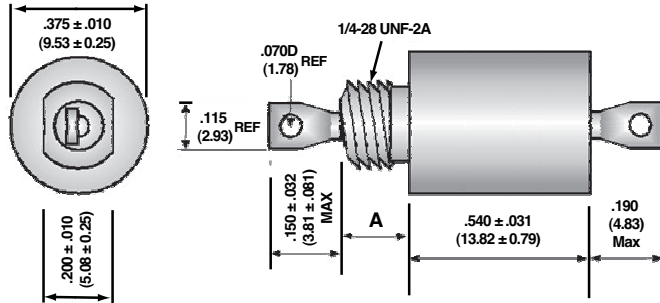
Schematic \*

\* For a reverse configuration with the inductive element opposite the thread end, add an "R" suffix to the part number; i.e., 4200-010R

Part No		Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
<b>Series 4100-XXX</b>											
4100-010	4100-020	—	100 VDC	34	62	70	70	70	70	10	.10
4100-011	4100-021	—		25	53	65	70	70	70	4	.25
4100-012	4100-022	—		16	41	54	70	70	70	1	.50
4100-013	4100-023	—		16	31	42	63	70	70	.25	1.0
4100-014	4100-024	—		16	28	35	51	70	70	.063	2.0
4100-015	4100-025	—		16	28	34	45	70	70	.027	3.0
4100-016	4100-026	—		16	28	34	44	52	70	.003	10.0
<b>Series 4200-XXX</b>											
4200-010	4200-020	—	250 VDC	14	42	54	70	70	70	10	.10
4200-011	4200-021	—		6	32	44	65	70	70	4	.25
4200-012	4200-022	—		—	23	35	56	70	70	1	.50
4200-013	4200-023	—		—	10	21	41	70	70	.25	1.0
4200-014	4200-024	—		—	8	14	30	70	70	.063	2.0
4200-015	4200-025	—		—	8	14	26	64	70	.027	3.0
4200-016	4200-026	—		—	8	14	25	45	70	.003	10.0

## Pi-Section Filters

4010 / 4110 / 4210



Schematic

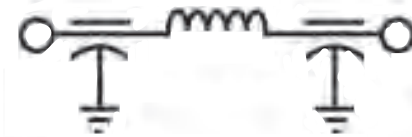
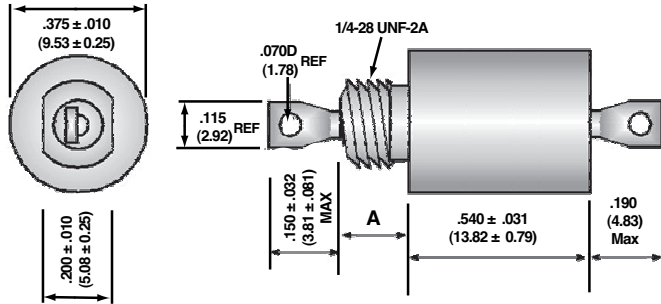
Part No		Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
<b>Series 4010-XXX</b>											
4010-010	4010-020	—	50 VDC	44	70	70	70	70	70	10	.10
4010-011	4010-021	—		36	70	70	70	70	70	4	.25
4010-012	4010-022	—		24	66	70	70	70	70	1	.50
4010-013	4010-023	—		15	54	70	70	70	70	.25	1.0
4010-014	4010-024	—		15	40	60	70	70	70	.063	2.0
4010-015	4010-025	—		15	30	50	70	70	70	.027	3.0
4010-016	4010-026	—		15	28	34	40	52	70	.003	10.0

Drawings may not be to scale; refer to dimensions.



## Pi-Section Filters

4010 / 4110 / 4210



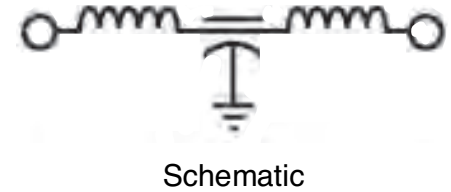
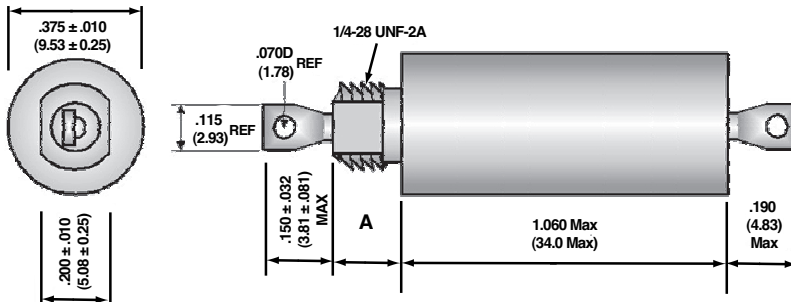
Schematic

Part No		Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
<b>Series 4110-XXX</b>											
4110-010	4110-020	—	100 VDC	40	70	70	70	70	70	10	.10
4110-011	4110-021	—		28	70	70	70	70	70	4	.25
4110-012	4110-022	—		18	60	70	70	70	70	1	.50
4110-013	4110-023	—		10	49	64	70	70	70	.25	1.0
4110-014	4110-024	—		9	36	53	70	70	70	.063	2.0
4110-015	4110-025	—		9	30	25	45	70	70	.027	3.0
4110-016	4110-026	—		9	24	19 (?)	40	70	70	.003	10.0
<b>Series 4210-XXX</b>											
4210-010	4210-020	—	250 VDC	21	60	70	70	70	70	10	.10
4210-011	4210-021	—		8	50	66	70	70	70	4	.25
4210-012	4210-022	—		—	40	56	70	70	70	1	.50
4210-013	4210-023	—		—	23	43	70	70	70	.25	1.0
4210-014	4210-024	—		—	18	33	63	70	70	.063	2.0
4210-015	4210-025	—		—	14	25	54	70	70	.027	3.0
4210-016	4210-026	—		—	14	20	30	70	70	.003	10.0

Drawings may not be to scale; refer to dimensions.

## T-Section Filters

## 4030 / 4130 / 4230 / 4330

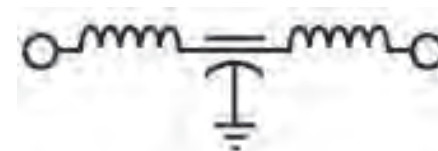
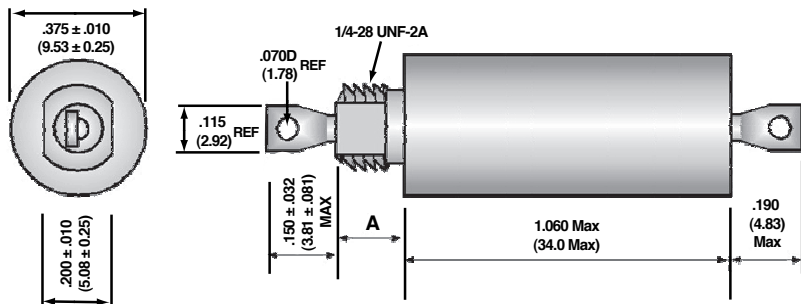


Schematic

Part No.		Working Voltage	Minimum Insertion Loss (dB)								Max DCR (ohms) @ 25° C	Rated DC Current
A=.187	A=.312		10 kHz	14 kHz	30 kHz	150 kHz	300 kHz	500 kHz	1 MHz	10 MHz - 1 GHz		
<b>Series 4030-XXX</b>												
4030-010	4030-020	50 VDC Multi-Section	30	50	70	70	70	70	70	80	12	.25
4030-011	4030-021		—	20	53	65	70	70	70	80	3	.50
4030-012	4030-022		—	—	20	55	70	70	70	80	.75	1.0
4030-013	4030-023		—	—	—	42	62	70	70	80	.189	2.0
4030-014	4030-024		—	—	—	33	54	70	70	80	.081	3.0
4030-015	4030-025		7	9	15	29	35	39	42	70	.006	10.0
<b>Series 4130-XXX</b>												
4130-010	4130-020	100 VDC Multi-Section	15	39	70	70	70	70	70	80	12	.25
4130-011	4130-021		—	11	47	70	70	70	70	80	3	.50
4130-012	4130-022		—	—	12	52	70	70	70	80	.75	1.0
4130-013	4130-023		—	—	—	33	56	70	70	80	.189	2.0
4130-014	4130-024		—	—	—	24	54	70	70	80	.081	3.0
4130-015	4130-025		4	6	12	25	32	36	42	70	.006	10.0

## T-Section Filters

## 4030 / 4130 / 4230 / 4330



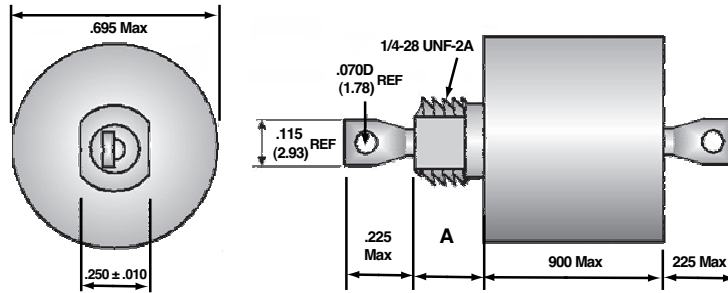
Schematic

Part No.		Working Voltage	Minimum Insertion Loss (dB)								Max DCR (ohms) @ 25° C	Rated DC Current (Amps)
A=.187	A=.312		10 kHz	14 kHz	30 kHz	150 kHz	300 kHz	500 kHz	1 MHz	10 MHz - 1 GHz		
<b>Series 4230-XXX</b>												
4230-010	4230-020	200 VDC Multi-Section	—	10	53	70	70	70	70	80	12	.25
4230-011	4230-021		—	—	17	66	70	70	70	80	3	.50
4230-012	4230-022		—	—	—	32	59	70	70	80	.75	1.0
4230-013	4230-023		—	—	—	6	34	55	70	70	.189	2.0
4230-014	4230-024		—	—	—	3	22	42	70	70	.081	3.0
4230-015	4230-025		—	—	5	14	21	26	34	55	.006	10.0
<b>Series 4330-XXX</b>												
4330-010	4330-020	300 VDC Multi-Section 125 VAC 0-400 Hz	—	—	11	55	70	70	70	70	10	.25
4330-011	4330-021		—	—	—	35	50	60	70	70	3	.50
4330-012	4330-022		—	—	—	12	30	40	70	70	.50	1.0
4330-013	4330-023		—	—	—	10	15	30	60	70	.15	2.0
4330-014	4330-024		—	—	—	10	15	25	50	70	.06	3.0
4330-015	4330-025		—	—	—	10	15	20	25	60	.01	10.0

Drawings may not be to scale; refer to dimensions.

## L-Section Filters

5000 / 5100 / 5200



Schematic \*

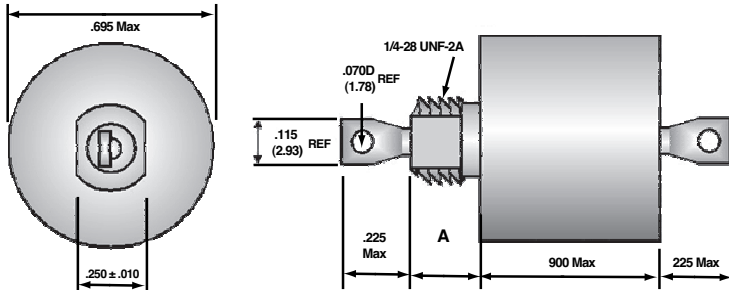
\* For a reverse configuration with the inductive element opposite the thread end, add an "R" suffix to the part number; i.e., 5200-010R

Part No		Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz		
<b>Series 5000-XXX</b>											
5000-010	5000-020	—	50 VDC	34	62	70	70	70	70	10	.10
5000-011	5000-021	—		25	53	65	70	70	70	4	.25
5000-012	5000-022	—		16	41	54	70	70	70	1	.50
5000-013	5000-023	—		15	31	42	63	70	70	.25	1.0
5000-014	5000-024	—		15	28	35	51	70	70	.063	2.0
5000-015	5000-025	—		15	28	34	45	70	70	.027	3.0
5000-016	5000-026	—		15	28	34	44	52	70	.003	10.0
<b>Series 5100-XXX</b>											
5100-010	5100-020	—	100 VDC	34	62	70	70	70	70	10	.10
5100-011	5100-021	—		25	53	65	70	70	70	4	.25
5100-012	5100-022	—		16	41	54	70	70	70	1	.50
5100-013	5100-023	—		16	31	42	63	70	70	.25	1.0
5100-014	5100-024	—		16	28	35	51	70	70	.063	2.0
5100-015	5100-025	—		16	28	34	45	70	70	.027	3.0
5100-016	5100-026	—		16	28	34	44	52	70	.003	10.0

Drawings may not be to scale; refer to dimensions.

## L-Section Filters

5000 / 5100 / 5200



Schematic \*

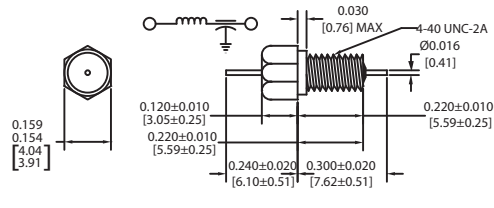
\* For a reverse configuration with the inductive element opposite the thread end, add an "R" suffix to the part number; i.e., 5200-010R

Part No		Min Cap μf	Working Voltage	Minimum Insertion Loss (dB)						Max DCR (ohms)	Rated DC Current	
A = .187	A = .312			30 kHz	150 kHz	300 kHz	1 MHz	10 MHz	1 GHz			
<b>Series 5200-XXX</b>												
5200-010	5200-020	—	200 VDC	14	42	54	70	70	70	10	.10	
5200-011	5200-021	—		6	32	44	65	70	70	4	.25	
5200-012	5200-022	—		—	23	35	56	70	70	1	.50	
5200-013	5200-023	—		—	10	21	41	70	70	.25	1.0	
5200-014	5200-024	—		—	8	14	30	70	70	.063	2.0	
5200-015	5200-025	—		—	8	14	26	64	70	.027	3.0	
5200-016	5200-026	—		—	8	14	25	45	70	.003	10.0	

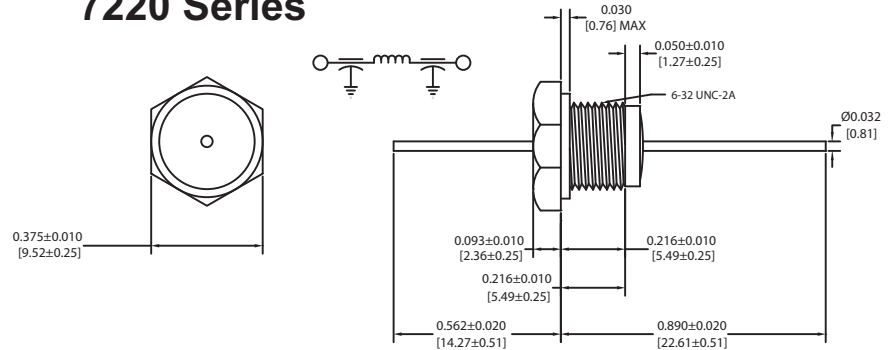
Drawings may not be to scale; refer to dimensions.

## Miniature Ceramic Feed-thru EMI Filters and Capacitors – Ref: Mil-F-15733

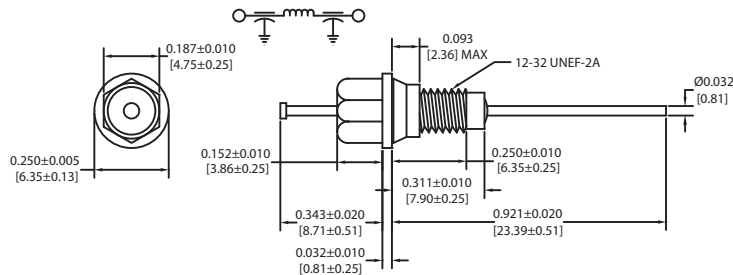
### 7110/7112 Series



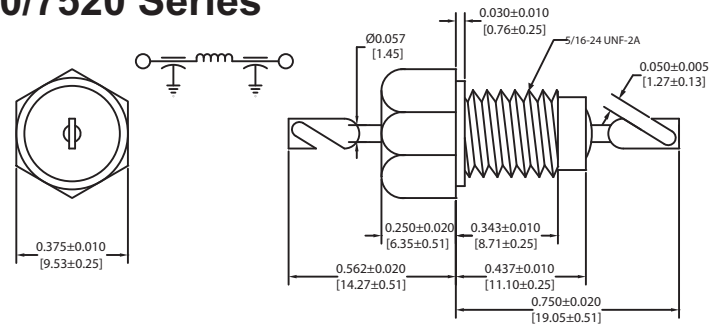
### 7220 Series



### 7410/7420 Series



### 7510/7520 Series



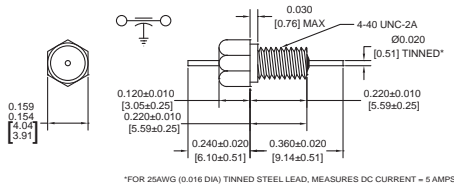
Part No	Min Cap µf	Working Voltage	Minimum Insertion Loss (dB)					Max DCR (ohms)	Rated DC Current
			1 MHz	10 MHz	100 MHz	200 MHz	1 GHz		
7110-000	.027	100 VDC L-Section	10	30	50	54	>70	.01	10
7112-000	.027	100 VDC L-Section	10	30	50	54	>70	.01	5
7220-000	.015	200 VDC Pi-Section	—	8	48	60	>70	.01	10
7410-000	.10	100 VDC Pi-Section	—	28	>70	>70	>70	.01	10
7420-000	.012	200 VDC Pi-Section	—	25	66	>70	>70	.01	10
7510-000	.10	100 VDC Pi-Section	10	40	>70	>70	>70	.003	25
7520-000	.02	200 VDC Pi-Section	—	27	>70	>70	>70	.003	25

Drawings are to scale.

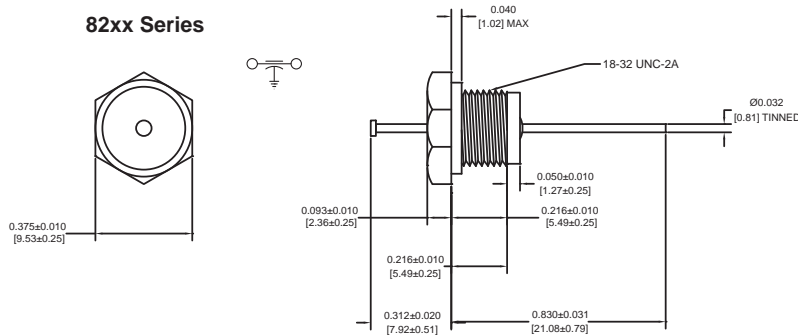
## Feed-Thru Filters

## 81xx / 82xx / 84xx / 85xx

### 81xx Series



### 82xx Series

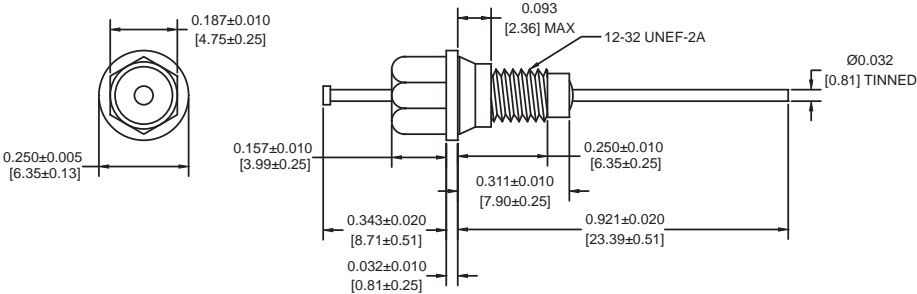


Note: Drawings on this page are in scale.

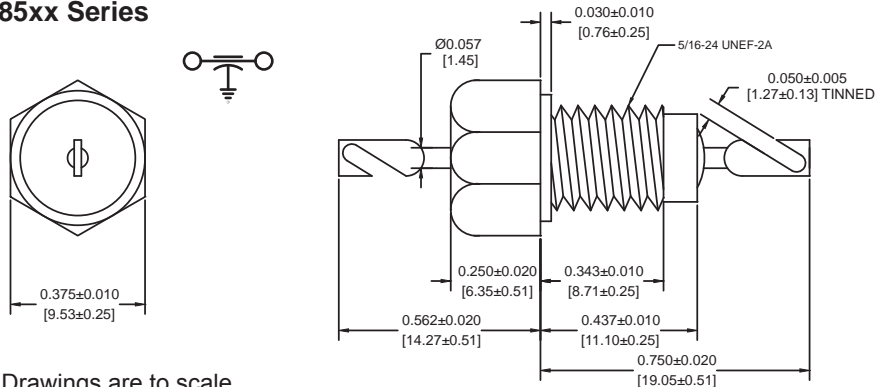
Part No:	8100-xxx	8110-xxx	8120-xxx
Voltage	50 WVDC	100 WVDC	200 WVDC
Max DC Current	10 Amps	10 Amps	10 Amps
Capacitance (gmV)	1000 pf	1000 pf	1000 pf
	5000 pf	5000 pf	5000 pf
	.010 µf	.010 µf	.010 µf
	.027 µf	.027 µf	.027 µf
Capacitance (gmV)	1000 pf	1000 pf	1000 pf
	5000 pf	5000 pf	5000 pf
	.010 µf	.010 µf	.010 µf
	.027 µf	.027 µf	.027 µf

## Feed-Thru Filters

### 84xx Series



### 85xx Series



Drawings are to scale.

## 81xx / 82xx / 84xx / 85xx

Part No:	8400-xxx	8410-xxx	8420-xxx
Voltage	50 WVDC	100 WVDC	200 WVDC
DC Current Max	10 Amps	10 Amps	10 Amps
Capacitance (gmV)	1000 pf	1000 pf	1000 pf
	5000 pf	5000 pf	5000 pf
	.010 µf	.010 µf	.010 µf
	.027 µf	.027 µf	.030 µf
	.050 µf	.050 µf	
	.100 µf	.100 µf	
	.300 µf		

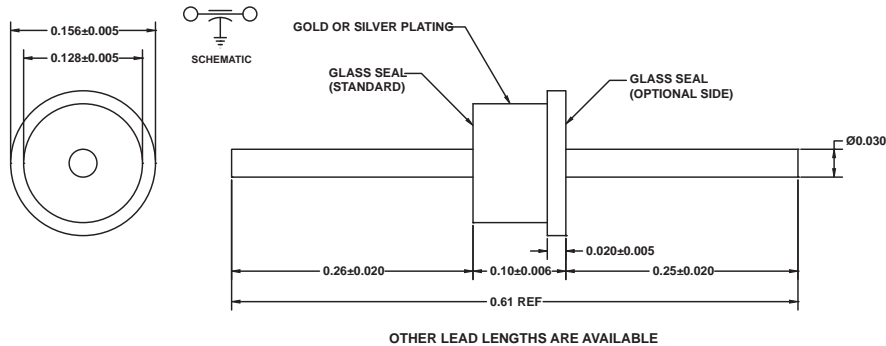
Part No:	8500-xxx	8510-xxx	8520-xxx
Voltage	50 WVDC	100 WVDC	200 WVDC
DC Current Max	10 Amps	10 Amps	10 Amps
Capacitance (gmV)	1000 pf	1000 pf	1000 pf
	3300 pf	3300 pf	3300 pf
	5000 pf	5000 pf	5000 pf
	.010 µf	.010 µf	.010 µf
	.033 µf	.050 µf	
	.050 µf		
	.100 µf		



## Feed-Thru Capacitors

## 6200 / 6210 / 6220 / 6230 / 6240

### 62xx Series



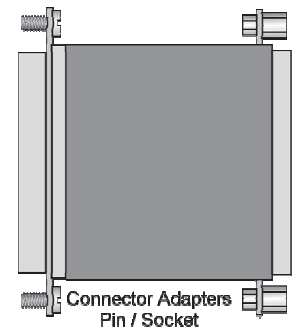
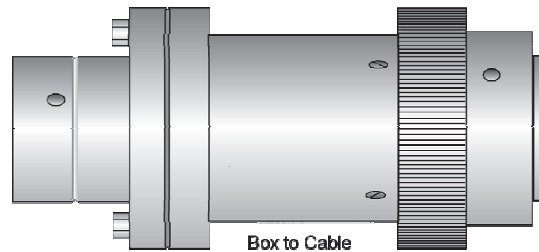
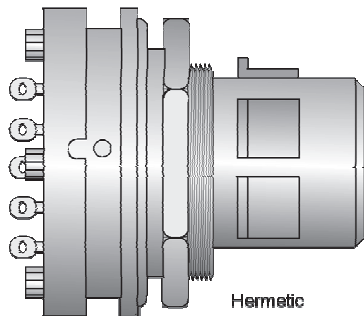
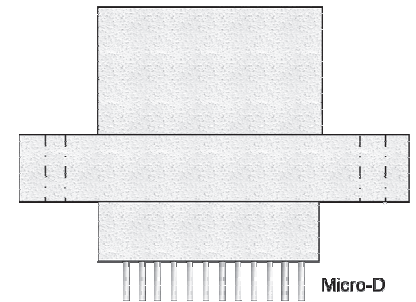
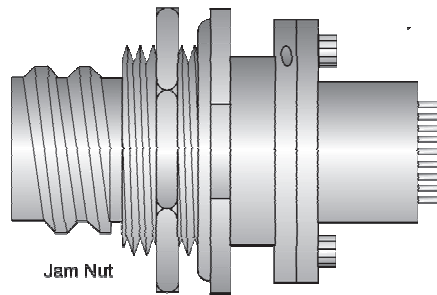
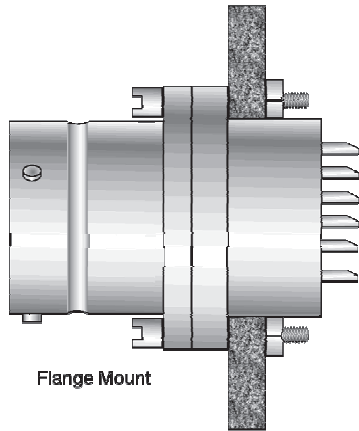
Note: Drawings on this page are in scale.

Series	6200	6210	6220	6230	6240
Voltage	50 VDC	100 VDC	200 VDC	300 VDC	400 VDC
Current	5 Amp	5 Amp	5 Amp	5 Amp	5 Amp
Capacitance (pf GMV)	<5 30 100 500 1000 1200 2200 2700 3900 5000 10000 15000 22000	<5 30 100 500 1000 1200 2200 2700 3900 5000	<5 30 100 500 1000 1200 2200 2700	<5 30 100 500 1000 1200 2200	<5 30 100 500 1000 1200

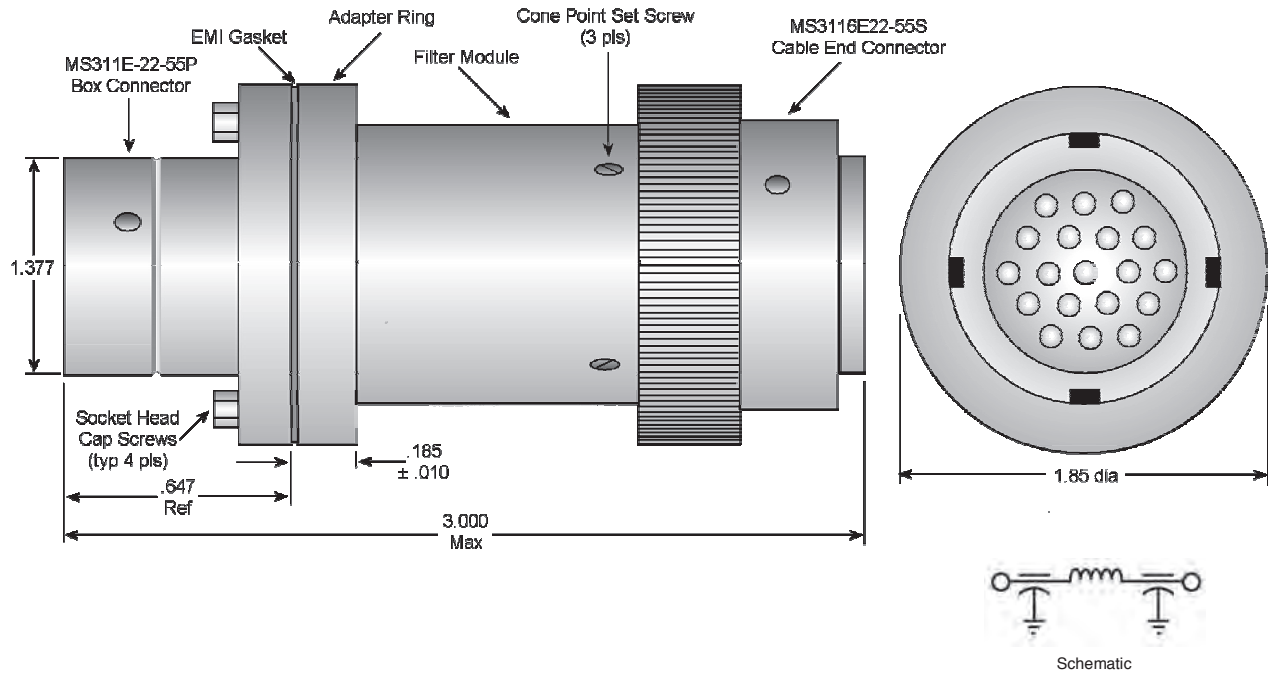
All units are hermetically sealed on glass end. The opposite end is epoxy sealed. These units are available with a glass seal at either end. A unit with a glass seal at the flange end has an "R" as a suffix to the part number. E.g. P/N 6200-500R = 500 pf min @ 50 VDC @ 5 Amps while P/N 6220-005 = <5 pf @ 200 VDC @ 5 Amps.

Standard part number example: 6220-122 = 1200 pf min @ 200 VCD @ 5 Amps.

## EMI Filtered Interconnect Series



## Cable Filter Adapter



Operating Voltage: 200 VDC  
 Operating Temperature: -55° C to +125° C  
 Operating Current: 2 Amp

Schematic: **TT**-section  
 DWV: 500 VDC for 5 sec ± 1 sec  
 Capacitance: .08  $\mu$ f - .12  $\mu$ f

Insertion Loss IAW Mil-Std-220 - 50  $\Omega$

1 MHz	10 MHz
14 dB	35 dB

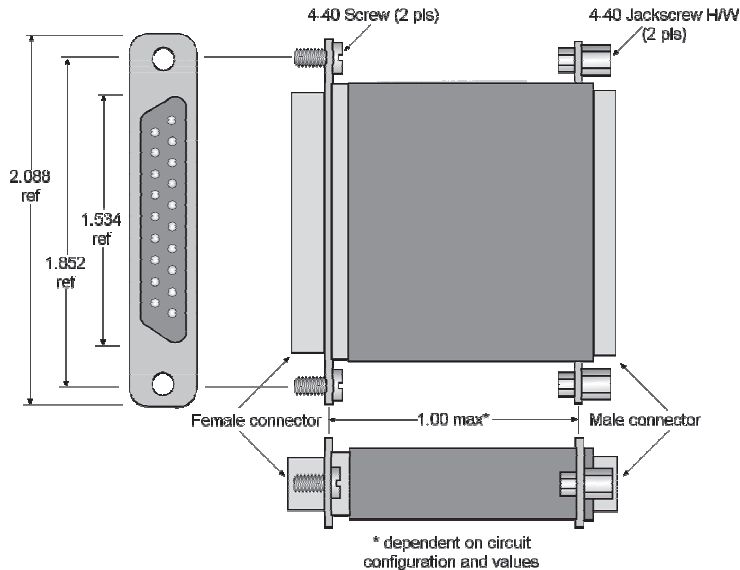
100 MHz  
> 70 dB

1 GHz  
>70 dB

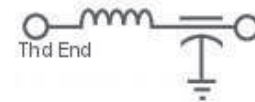
Drawings may not be to scale; refer to dimensions.

## Male to Female Filtered Connectors

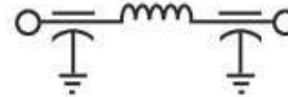
from 9-37 pin IAW Mil-C-24308, Commercial, Industrial or Military Styles



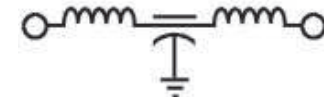
Feedthru Capacitor



L-Section



TT-Section



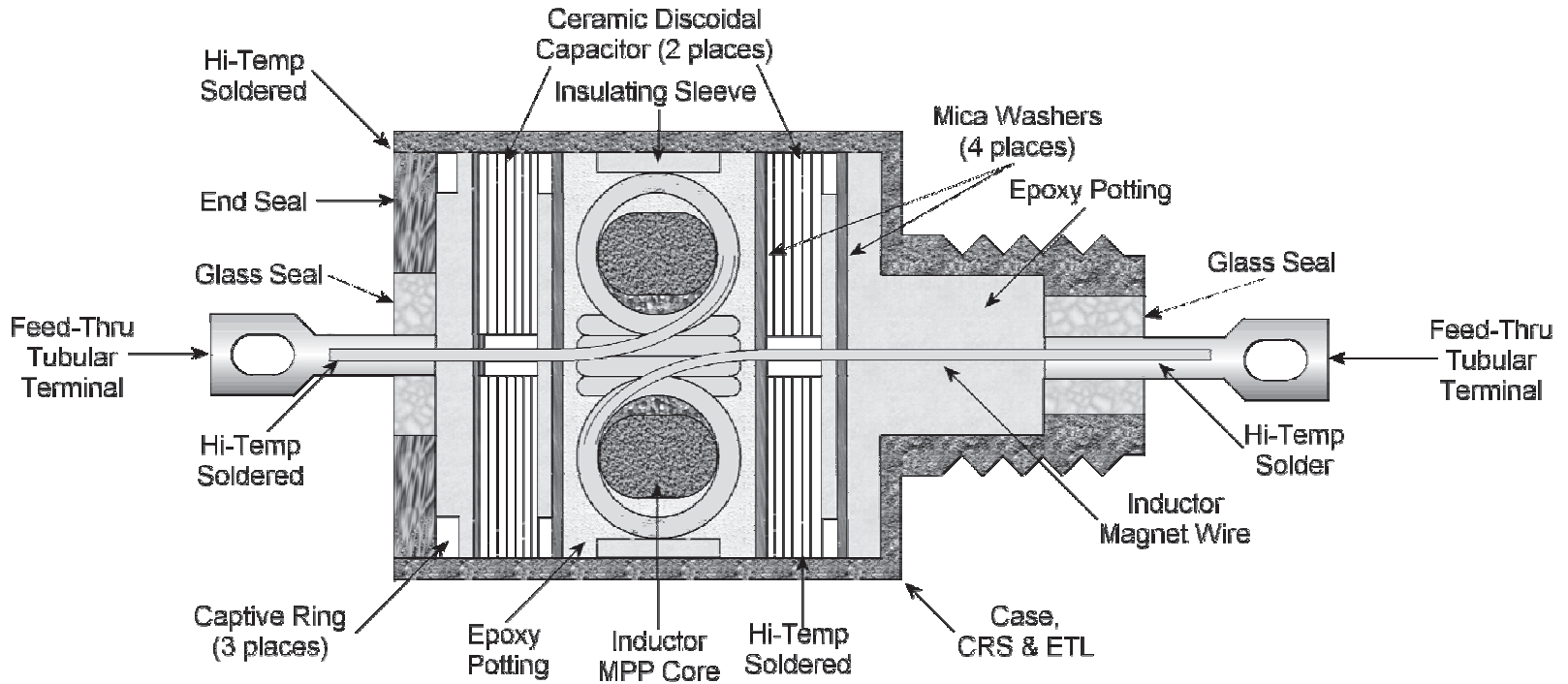
T-Section

### Electrical Specifications

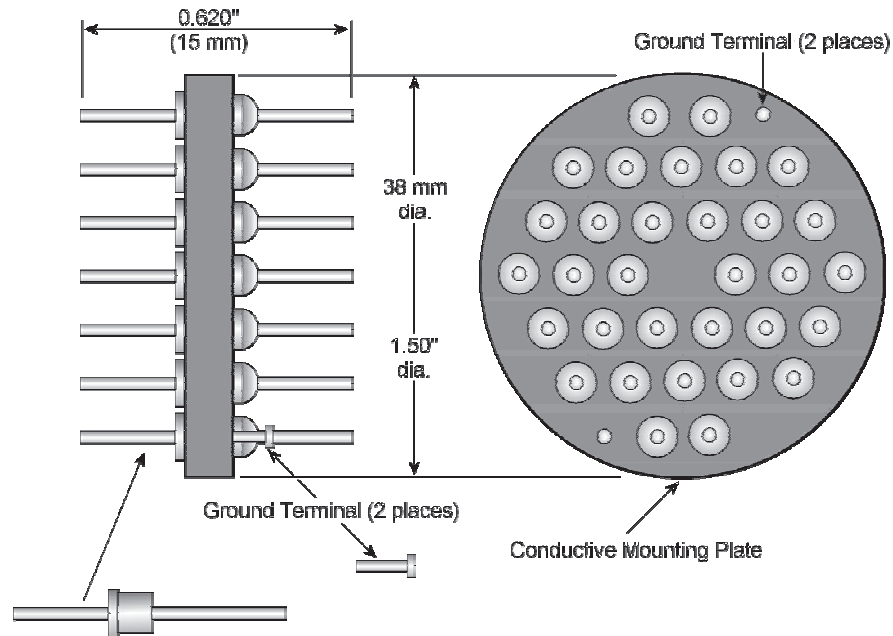
Capacitance: 50 pf thru 1.0  $\mu$ f @ 1 VRMS, 1 kHz  
 Insulation Resistance: 1000 M $\Omega$  @ 100 VDC  
 Operating Voltage: 50 VDC thru 200 VDC

Drawings may not be to scale; refer to dimensions.

## π Section Filter



## 32 Feed-thru Capacitor Assembly



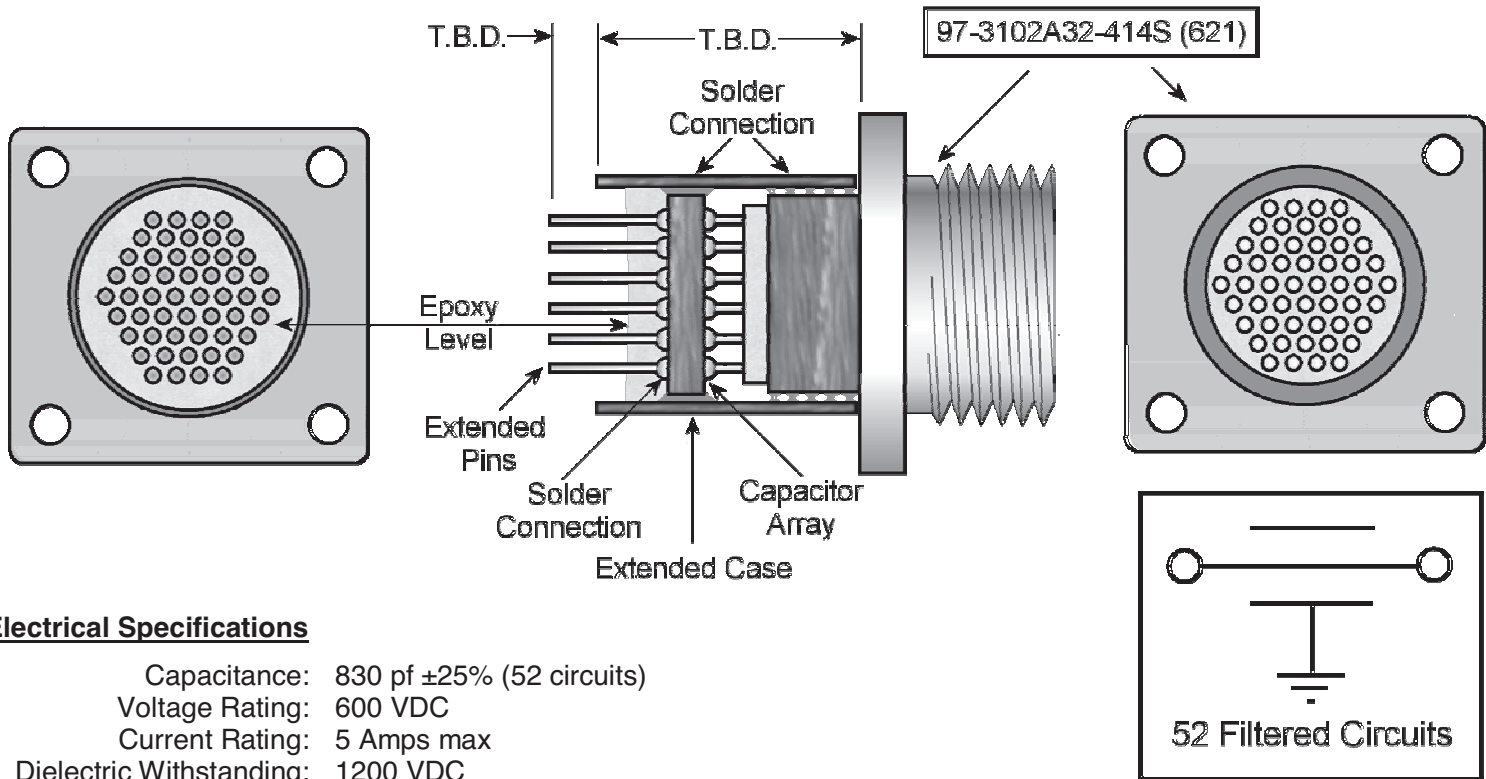
### Electrical Specifications

32 Feedthru capacitors  
 CSI 6210 Series 100 VDC

Attenuation / Frequency						
150 kHz	300 kHz	500 kHz	1 MHz	10 MHz	30 MHz	
3 dB	6 dB	10 dB	15 dB	40 dB	50 dB	

Drawings may not be to scale; refer to dimensions.

## 3102A Filtered Connector

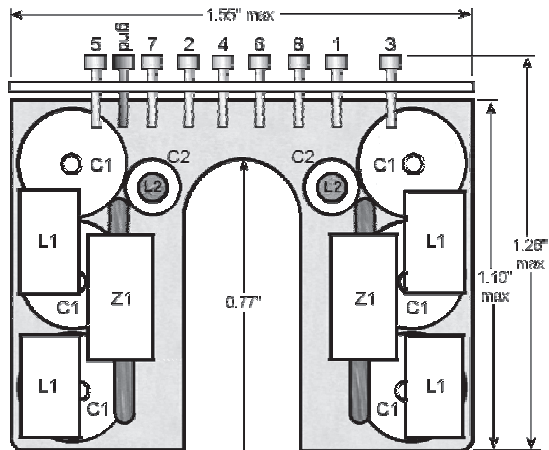
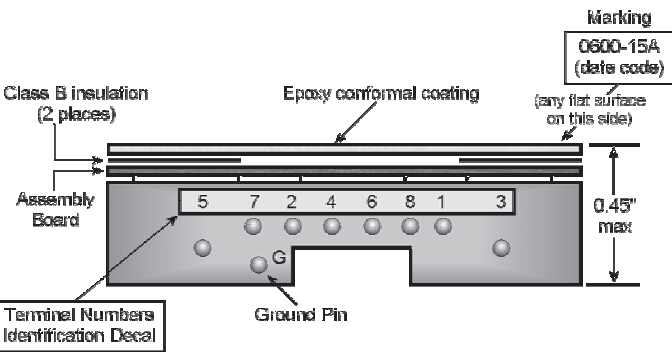


### Electrical Specifications

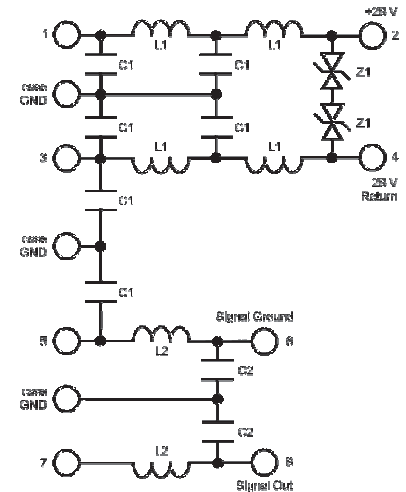
- Capacitance: 830 pf  $\pm 25\%$  (52 circuits)
- Voltage Rating: 600 VDC
- Current Rating: 5 Amps max
- Dielectric Withstanding: 1200 VDC

Drawings may not be to scale; refer to dimensions.

## 0600-015A RF Filter Assembly Board



$L1 = 475 \mu\text{H}, +50\%, -0\%$   
 $L2 = (1 \mu\text{H ferrite bead})$   
 $C1 = 1.4 \mu\text{f}, +50\%, -0\%$   
 $C2 = .027 \mu\text{f}, +50\%, -0\%$   
 $Z1 = 1.5\text{KE24CA}$



### Typical Readings

1-2 = 1.0 mH  
 3-4 = 1.0 mH  
 1-g = 3.0  $\mu\text{F}$   
 2-g = 3.2  $\mu\text{F}$   
 3-g = 4.5  $\mu\text{F}$   
 4-g = 5.0  $\mu\text{F}$   
 5-g = 1.5  $\mu\text{F}$   
 6-g = 1.5  $\mu\text{F}$   
 7-g = .03  $\mu\text{F}$   
 8-g = .03  $\mu\text{F}$

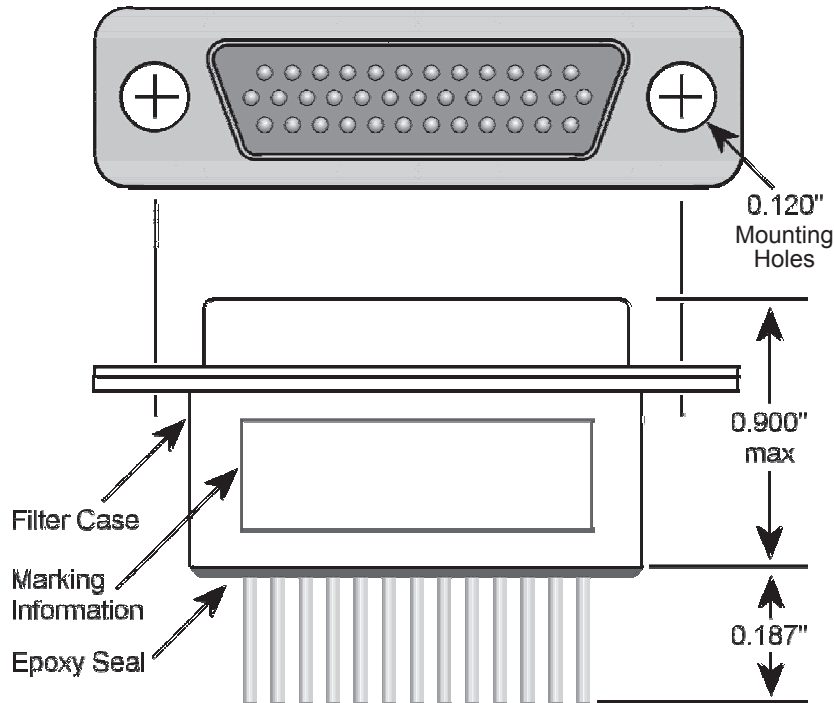
### Range

(950  $\mu\text{H}$  - 1.4 mH)  
 (950  $\mu\text{H}$  - 1.4 mH)  
 (2.8  $\mu\text{F}$  - 4.2  $\mu\text{F}$ )  
 (3.0  $\mu\text{F}$  - 4.5  $\mu\text{F}$ )  
 (4.2  $\mu\text{F}$  - 6.3  $\mu\text{F}$ )  
 (4.6  $\mu\text{F}$  - 6.9  $\mu\text{F}$ )  
 (1.4  $\mu\text{F}$  - 2.1  $\mu\text{F}$ )  
 (1.4  $\mu\text{F}$  - 2.1  $\mu\text{F}$ )  
 (.027  $\mu\text{F}$  - .041  $\mu\text{F}$ )  
 (.027  $\mu\text{F}$  - .041  $\mu\text{F}$ )

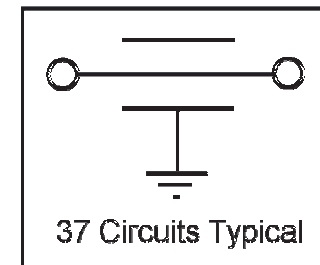
g = GND



## 37 Pin D-Sub Female Filtered Connector

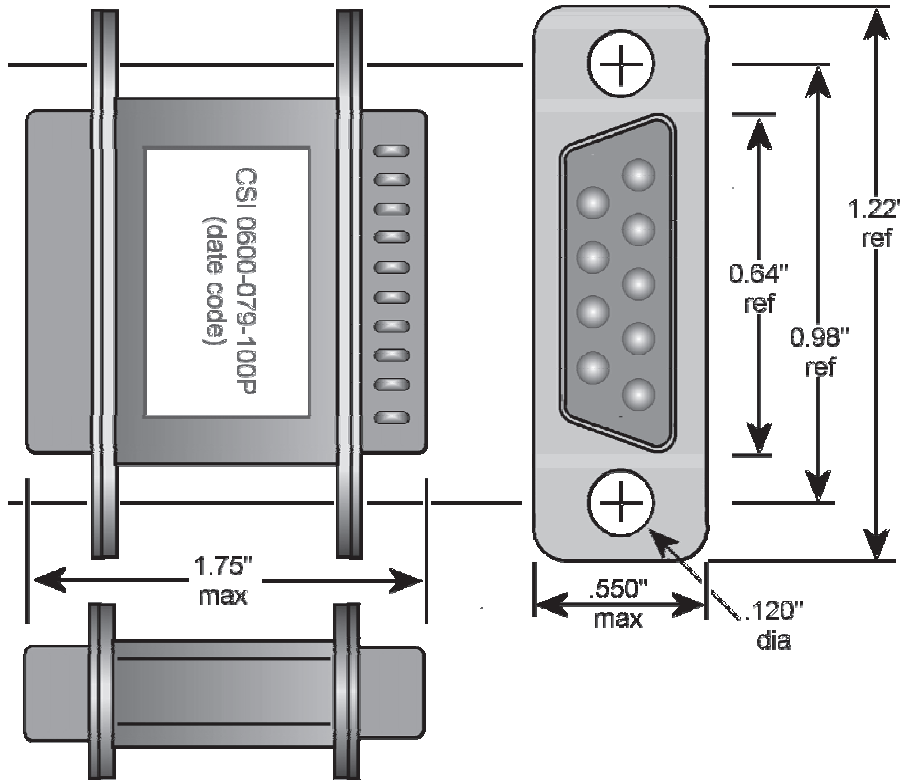


Connector Size:	37
Gender:	Female
Capacitance:	830 pf, $\pm 25\%$ (37 cktks)
Voltage Rating:	600 VDC
Current Rating:	5 Amps
Dielectric Strength:	1200 VDC
Shell & Filter Case:	Tin Plated
Pins:	30 $\mu$ -in gold over 50 $\mu$ -in nickel
Temperature Range:	-40° C to + 80 ° C

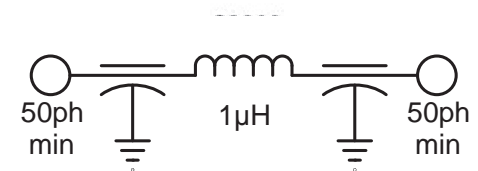


Drawings may not be to scale; refer to dimensions.

## 9 Pin D-Sub Filtered Connector, $\pi$ Circuit

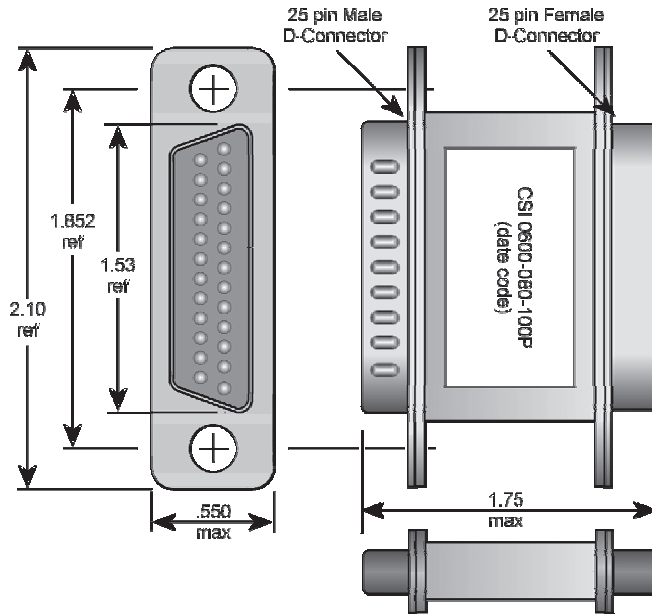


Operating Voltage:	100 VDC
Operating Current:	3 Amp DC
Insulation Resistance:	1000 M $\Omega$ min @ 50 VDC
Capacitance:	100 pf GVM (9 pins)
Inductance:	1 $\mu$ H minimum
Insertion Loss	(50 $\Omega$ System)
	2 dB @50 MHz
	6 dB @100 MHz
	12 dB @200 MHz
	30 dB @ 500 MHz
	40 dB @ 1 GHz

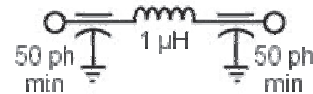


Drawings may not be to scale; refer to dimensions.

## 25 Pin D-Sub Filtered Connector, $\pi$ Circuit

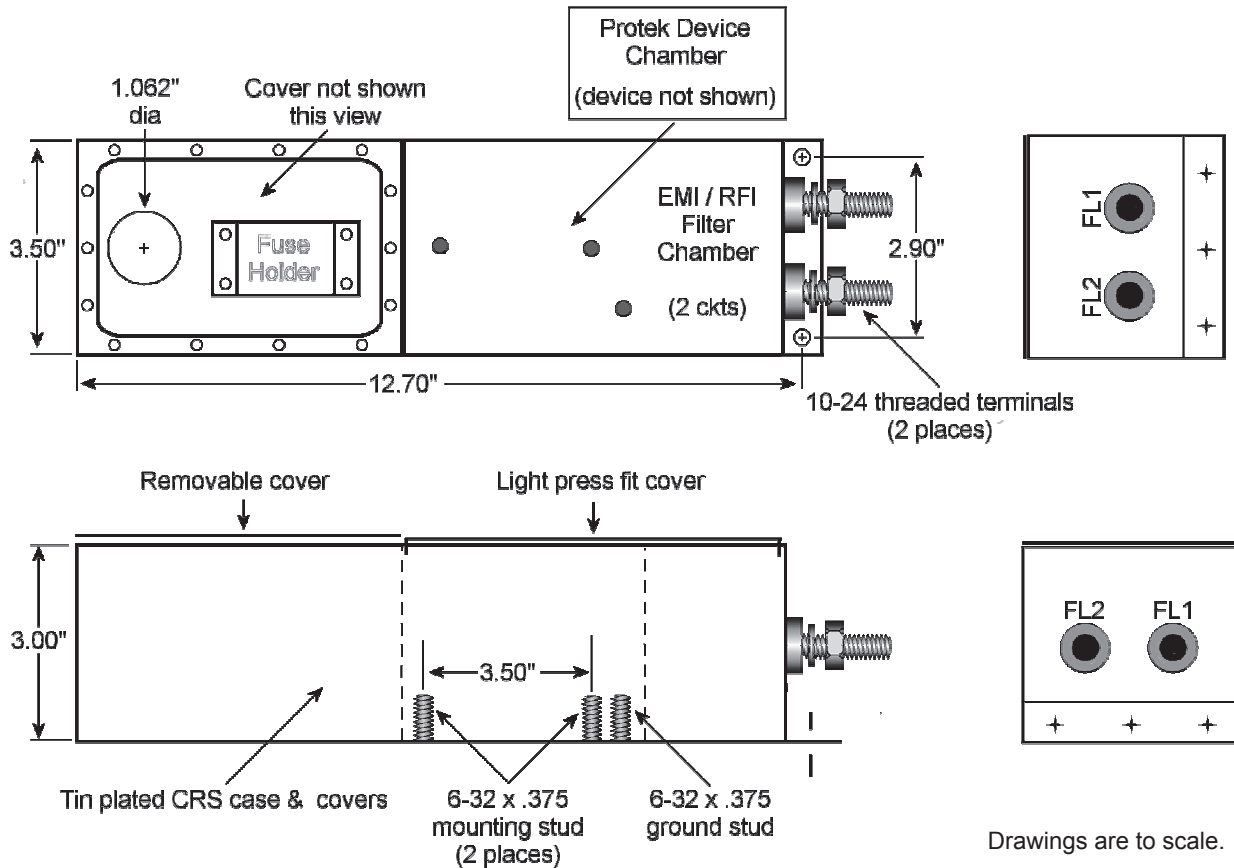


Operating Voltage:	100 VDC
Operating Current:	3 Amp DC
Insulation Resistance:	1000 M $\Omega$ min @ 50 VDC
Capacitance:	100 pf GVM (25 pins)
Inductance:	1 $\mu$ H minimum
Insertion Loss (50 $\Omega$ System)	
	2 dB @50 MHz
	6 dB @100 MHz
	12 dB @200 MHz
	30 dB @ 500 MHz
	40 dB @ 1 GHz



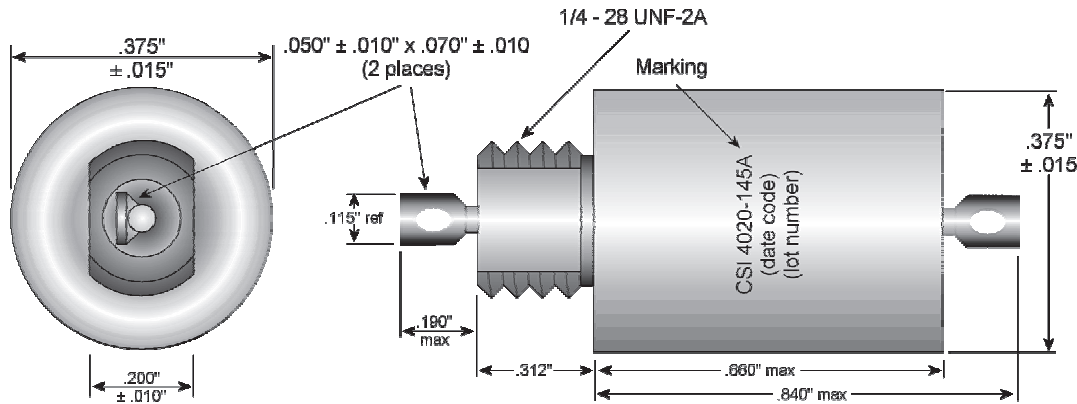
Drawings may not be to scale; refer to dimensions.

## EMI / RFI Filter Chamber



## EMI Filter, Feed-thru Hermetic

### 4020-145A



Electrical Specifications	
Operating Voltage:	50 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	10.0 Amp
Capacitance:	1.4 $\mu$ f minimum
DCR:	.01 $\Omega$ max

Drawings may not be to scale; refer to dimension

#### Insertion Loss

15 dB	@ 30 kHz
28 dB	@ 150 kHz
33 dB	@ 300 kHz
44 dB	@ 1 MHz
61 dB	@ 10 MHz
70 dB	@ 1 GHz

Part Number includes:

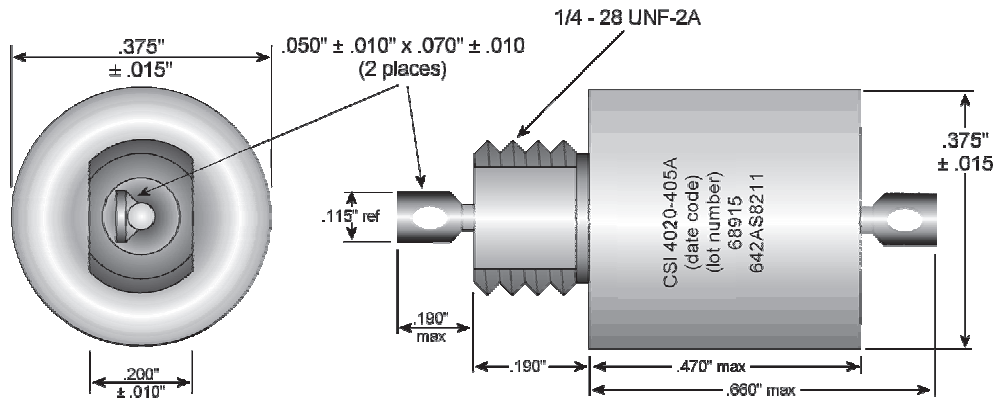
1 each P/N 082-000-001ETL (not shown for clarity)

1 each P/N 084-000-001ETL (not shown for clarity)



## EMI Filter, Feed-thru Hermetic

### 4020-405A



Electrical Specifications	
Operating Voltage:	100 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	10.0 Amp
Capacitance:	4 $\mu\text{f}$
DCR:	.01 $\Omega$ max

Drawings may not be to scale; refer to dimension

#### Insertion Loss

30 dB	@ 50 kHz
32 dB	@ 100 kHz
40 dB	@ 150 kHz
46 dB	@ 300 kHz
55 dB	@ 1 MHz
60 dB	@ 10 MHz

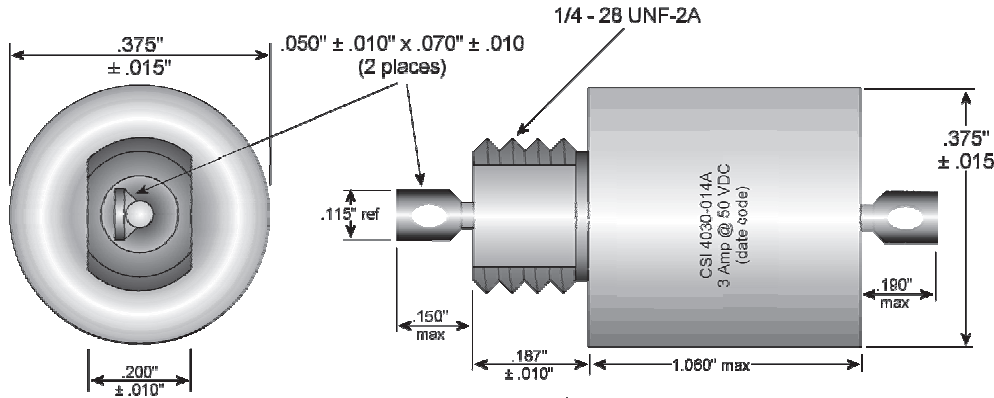
Part Number includes:

- 1 each internal tooth lockwasher (not shown for clarity)
- 1 each hex nut (not shown for clarity)



## EMI Filter, Feed-thru Hermetic, 5 poles

## 4030-014A

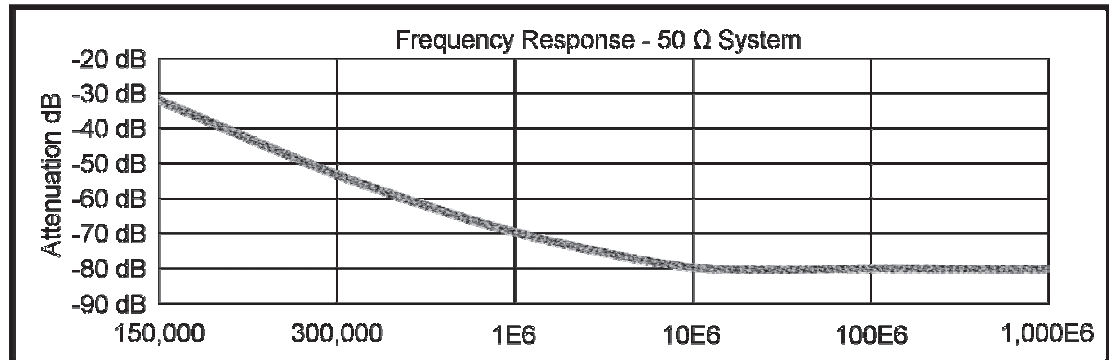
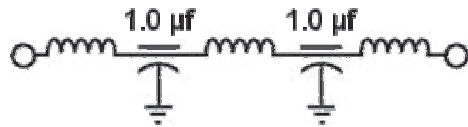


### Electrical Specifications

Operating Voltage:	50 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	3.0 Amp
Capacitance:	2.0 $\mu\text{f}$ min
DCR:	.085 $\Omega$ max

Included is plated 1/4-28 nut and internal tooth lockwasher.

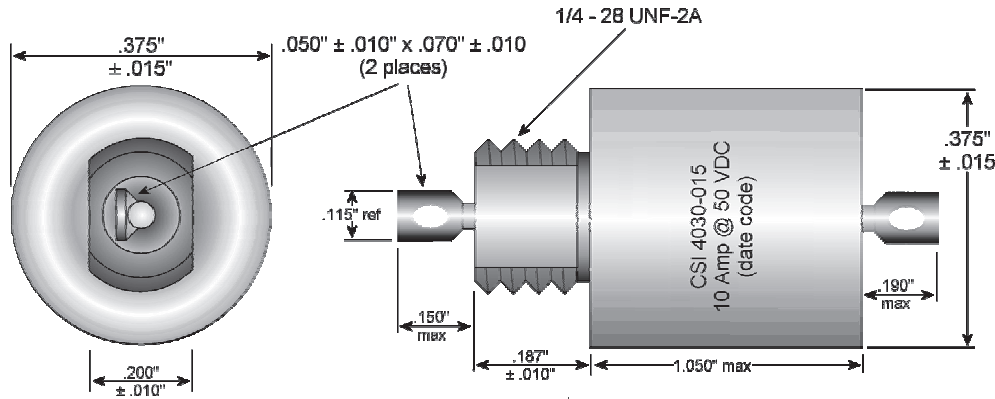
Case: CRS, electro-tin plated



Drawings may not be to scale; refer to dimensions.

## EMI Filter, Feed-thru Hermetic, 5 poles

### 4030-015

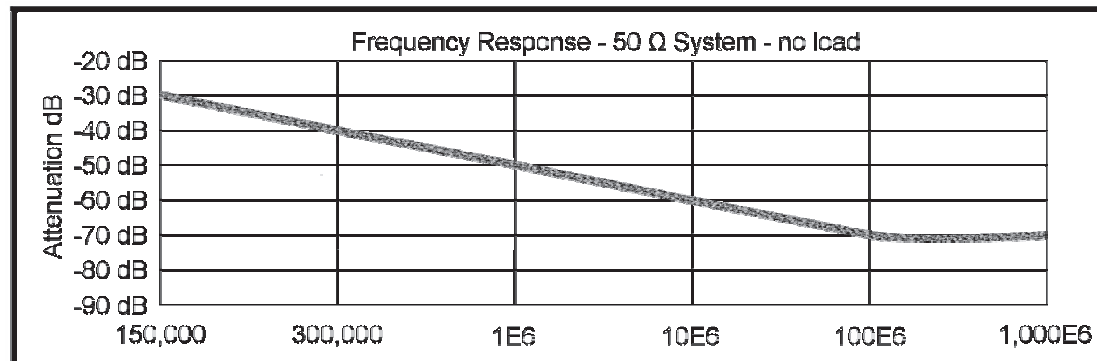
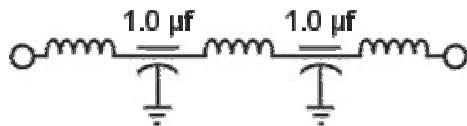


#### Electrical Specifications

Operating Voltage:	50 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	10.0 Amp
Capacitance:	2.0 $\mu$ f min
DCR:	.006 $\Omega$ max

Included is plated 1/4-28 nut and internal tooth lockwasher.

Case: CRS, electro-tin plated

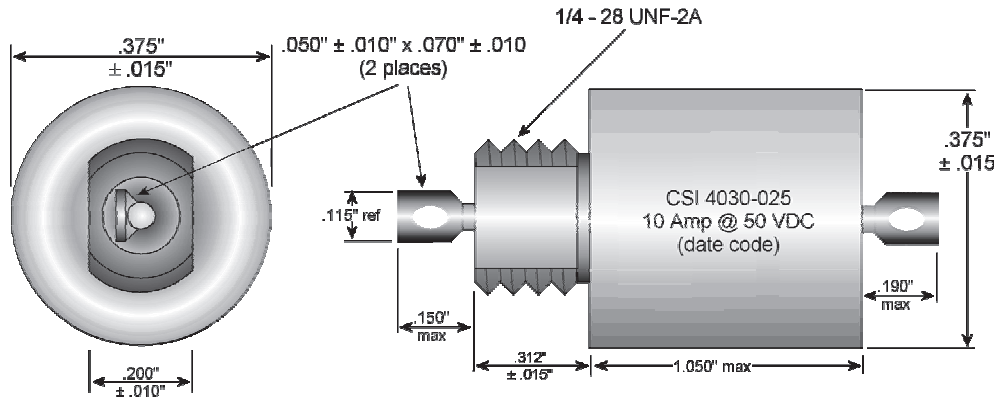


Drawings may not be to scale; refer to dimensions.



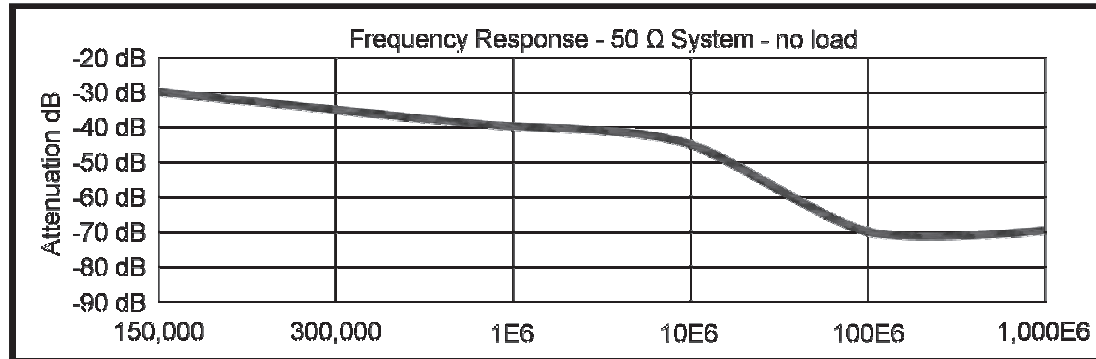
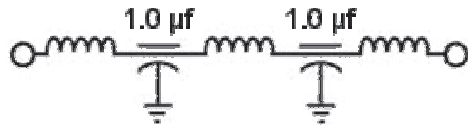
## EMI Filter, Feed-thru Hermetic, 5 poles

### 4030-025



Electrical Specifications	
Operating Voltage:	50 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	10.0 Amp
Capacitance:	2.0 $\mu$ f min
DCR:	.006 $\Omega$ max

Included is plated 1/4-28 nut and internal tooth lockwasher.  
Case: CRS, electro-tin plated

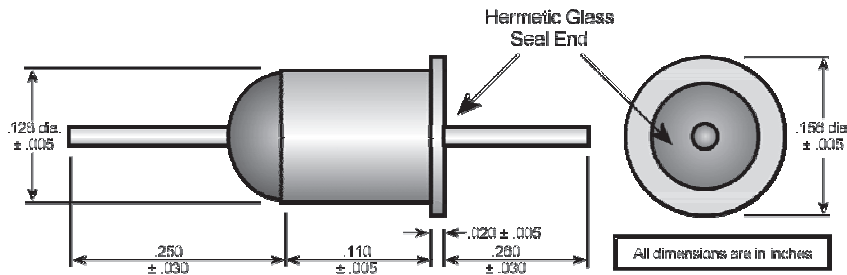


Drawings may not be to scale; refer to dimensions



## Feedthru Capacitor

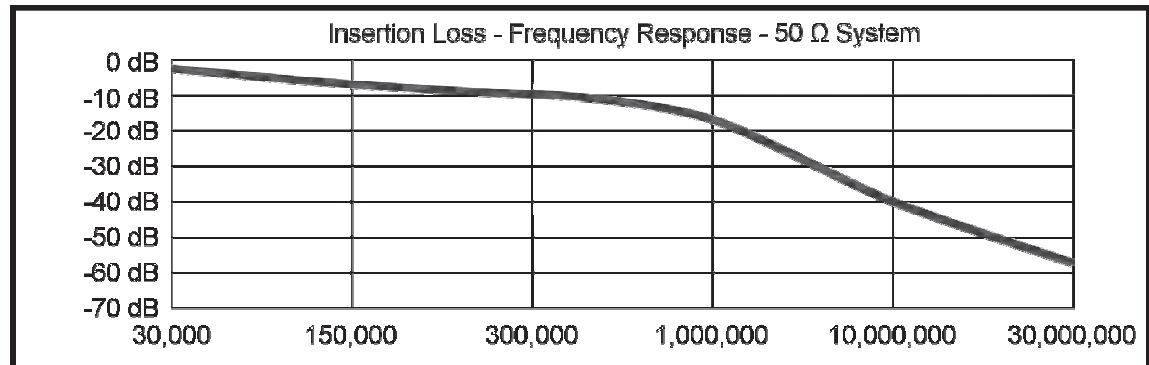
## 6210-333A



### Electrical Specifications

Operating Voltage:	100 VDC
Operating Temperature:	-55° C to +125° C
Operating Current:	5.0 Amp maximum
Schematic:	Feed-thru
Capacitance:	.033 $\mu\text{f}$ , +100%, -0%

Case & Lead Finish: Gold Plated



Drawings may not be to scale; refer to dimensions.



# CUSTOM SUPPRESSION

## Electro Technik Companies

### Magnetics Products

#### Hytronics Corp.

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-535-0413 fax: 727-531-1592  
hy\_sales\_service@electrotechnik.com  
www.hytronicscorp.com

■ Power Transformers and Power Inductors

#### Raycom Electronics, Inc.

P.O. Box 250, 1 Raycom Rd., Dover, PA 17315  
tel: 717-292-3641 fax: 717-292-2919  
raycomsaleservice@electrotechnik.com  
www.raycomelectronics.com

■ Custom Military and Avionics Magnetics

#### Goguen Industries

1100 S. Plumer Avenue, Tucson, AZ 85719  
tel: 520-573-0221 fax: 520-573-0520  
goguensales@electrotechnik.com  
www.goguenindustries.com

■ Specialty Inductors, Transformers,  
and Air Coils

#### Inductech Technologies, Inc. (I-Tech)

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-532-4459 fax: 727-531-1592  
techsales@electrotechnik.com  
www.inductech.com

■ Standard Catalog Inductors and  
Transformers

#### Winatic Corp.

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-538-8917 fax: 727-531-1592  
win\_sales\_service@electrotechnik.com  
www.winatic.com

■ Transformers and Inductors for  
Medical Devices and Equipment

### Capacitive Products

#### Arizona Capacitors, Inc.

1100 S. Plumer Avenue, Tucson, AZ 85719  
tel: 520-573-0221 fax: 520-573-0520  
azcapsales@electrotechnik.com  
www.arizonacapacitors.com

■ Wound Film Capacitors and  
Electronic Filters

#### Custom Suppression, Inc.

1100 S. Plumer Avenue, Tucson, AZ 85719  
tel: 520-573-0223 fax: 520-573-0520  
csisales@electrotechnik.com  
www.customsuppression.com

■ Broadband, Microwave, EMI and RFI Filters,  
Filtered Connectors, and Assemblies

### Microwave Products

#### Res-Net Microwave, Inc.

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-530-9555 fax: 727-531-8215  
res\_sales\_service@electrotechnik.com  
www.res-netmicrowave.com

■ RF/Microwave Resistors, Attenuators,  
Terminations

#### Wavetronix Corp.

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-530-9555 fax: 727-531-8215  
wave\_sales\_service@electrotechnik.com  
www.wavetronix-eti.com

■ RF/Microwave Cable Assemblies and  
Semi-Rigid Coaxial Cables, Flexible Cable

### Resistive Products

#### Tepro of Florida, Inc.

P.O. Box 18802, Clearwater, FL 33762  
tel: 727-796-1044 fax: 727-791-7425  
tep\_sales\_service@electrotechnik.com  
www.tepro-vamistor.com

■ Wirewound and Metal Film Resistors

#### Vamistor

P.O. Box 1260, Clearwater, FL 33757  
tel: 727-796-1044 fax: 727-791-7425  
tep\_sales\_service@electrotechnik.com  
www.tepro-vamistor.com

■ Carbon Film and RL 42 Resistors