coaxial filters & interconnects

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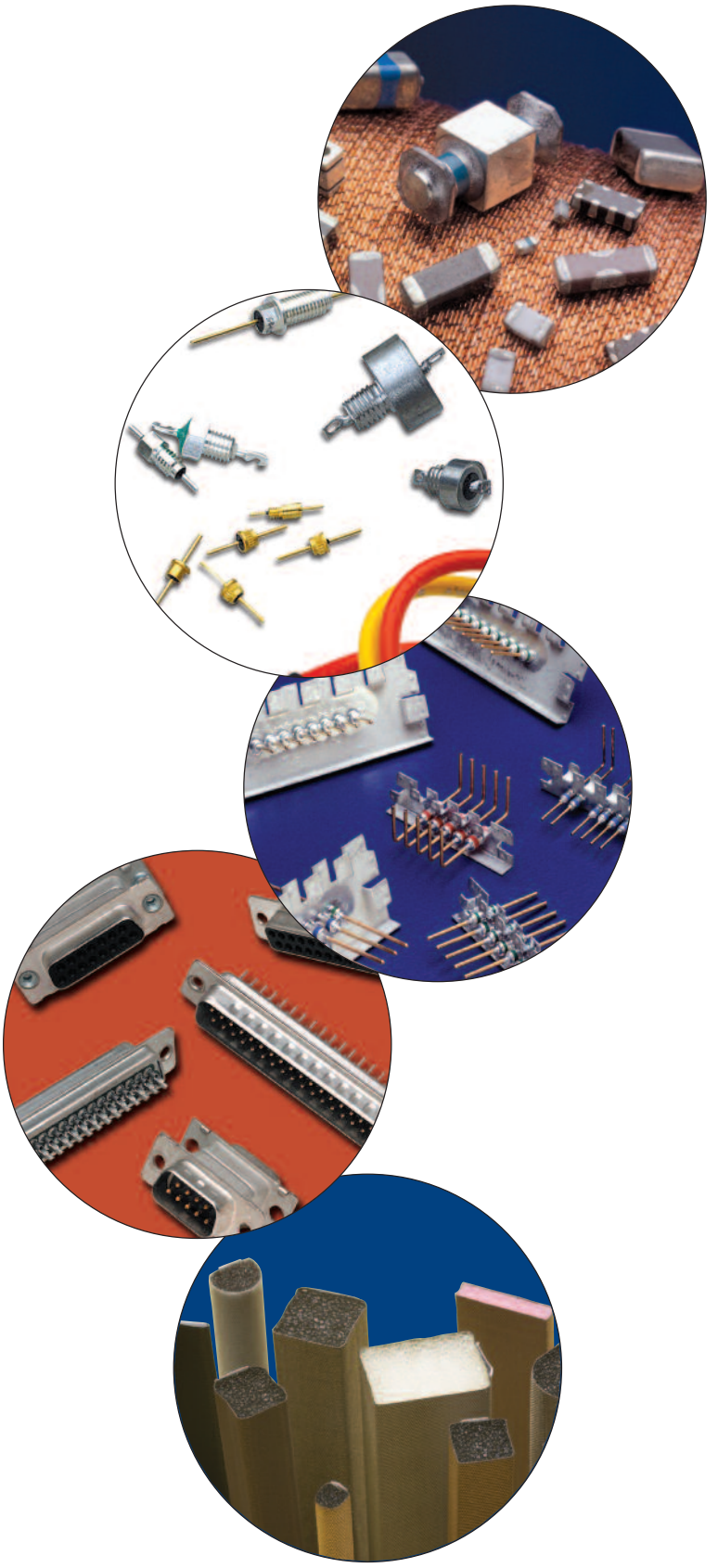
Coaxial Filters & Interconnects



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Application Guidelines

Sources of EMI

Electromagnetic interference occurs naturally from terrestrial sources such as lightning discharges, precipitation, and sand and dust storms, in addition to cosmic noise emanating from sources within and outside our solar system. Man-made sources include power lines, rotating machinery, ignition systems, television and radio receivers, fluorescent lights, power amplifiers, computing devices and transmitters of all types.

Interference Suppression

Filter networks suppress electromagnetic interference in two basic ways. The capacitor elements shunt the interference to ground, and the series inductor elements raise the impedance of the line making the shunt capacitor elements even more effective.

Capacitor Elements

The types of capacitors used in API's line of Spectrum Control filters are often referred to as feed-through capacitors due to their physical geometry.

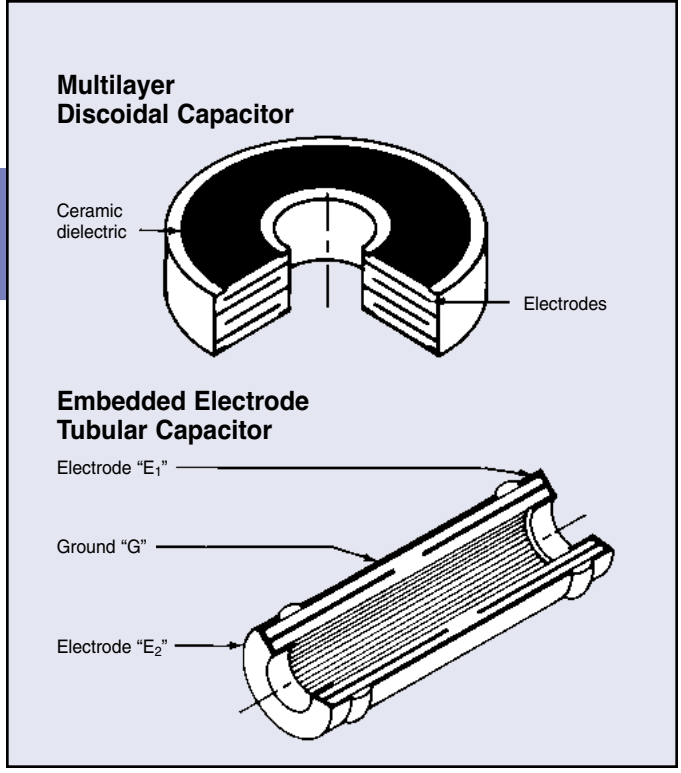
The feed-through design results in greatly reduced self-inductance compared to standard leaded capacitors. Also, this design effectively prevents radiation from the input coupling directly with the output of the capacitor, unlike leaded or chip capacitors. The combination of low inductance and high input/output isolation provides excellent shunting of EMI for frequencies up to and beyond 1 GHz.

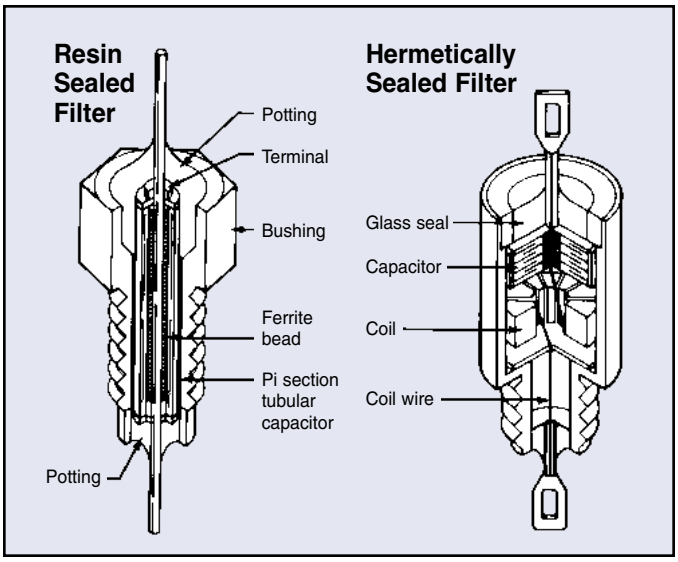
The simplest feed-through type is a ceramic tube that may have buried electrodes and can be constructed as a single capacitor or as two capacitors, as used in a Pi section filter. This type of device can have capacitance values from 10 pF to 0.1 µF and typical working voltage ratings up to 2500 VDC. Due to the simple construction, these capacitors are very efficient at frequencies up to 10 GHz and exhibit no pronounced resonances.

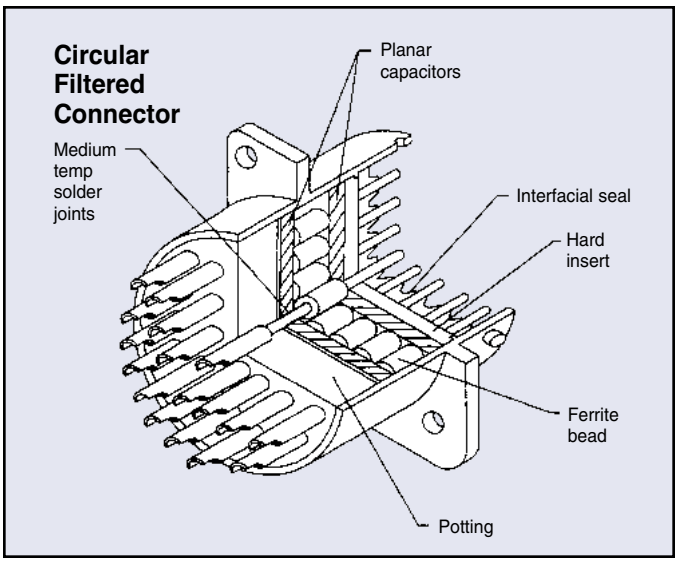
Multilayer monolithic discoidal capacitors are used for very high capacitance parts in standard sizes or for smaller filters where the required capacitance cannot be achieved by a ceramic tube. This type of capacitor consists of alternate layers of opposite polarity electrodes separated by a ceramic dielectric. Typical capacitance values from 100 pF to 10 µF are available with working voltages up to 400 VDC.

Inductive Elements

Ferrite sleeves are used with tubular capacitors since they can be conveniently accommodated inside the tube to provide a very compact filter. They are also used with discoidal capacitors in some applications. Wound inductors are used with discoidal capacitors to provide very high performance filters.







Application Guidelines

Low Pass EMI filters are available in the following circuit configurations:

C Filter

The C filter is a three terminal feed-through capacitor. It is used to attenuate high frequency signals.

L Filter

An L filter consists of one inductive element and one capacitive element. This type of filter can offer high impedance or low impedance input depending upon its orientation in the circuit. It is most commonly used in applications where one has a high impedance load and a low impedance source (see LT), or where one has a high impedance source and a low impedance load (see LB).

Pi Filter

The Pi filter contains two capacitive elements and one inductive element. It presents a low impedance to both the source and the load. Because of the additional element, it provides better high frequency performance than the C or L configurations. Due to the possibility of 'ringing', Pi filters are not recommended for switching applications.

Transient Suppression Pi Filter

The transient suppression Pi filter consists of a Pi filter with a transient suppressor at the input to the filter. The filter supplies the high frequency performance of the Pi filter with the added protection of the transient suppressor to protect the circuit from voltage spikes on the line.

T Filter

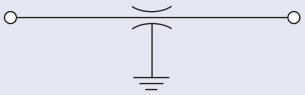
The T filter consists of two inductive elements and one capacitive element. This circuit configuration presents a high impedance input from either end. It has similar filter performance to the Pi circuit configurations. It does not have the ringing characteristic of the Pi filter and can be used in switching applications.

Multisection Filter (Double T)

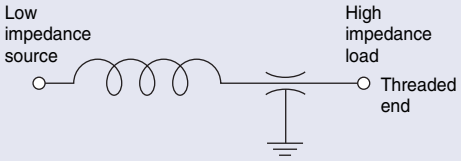
API's multielement filters are designed for optimum insertion loss in circuits with a relatively low source and load impedance. These filters are also recommended in any application where a high degree of filtering is required. The unit utilizes an inductor input for the best compatibility with a MIL-STD-461 test setup (10 µF feed-through capacitor).

Schematics

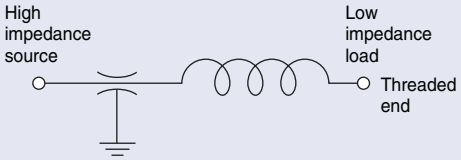
C Filter



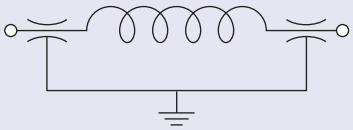
L-C Filter LT



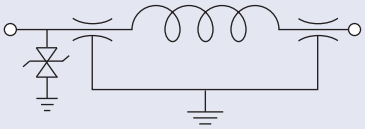
L-C Filter LB



Pi Filter

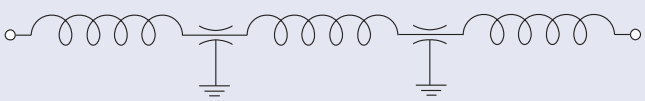


Transient Suppression Pi Filter



T Filter

Multi-section Filter (Double T)



Application Guidelines

Insertion Loss Measurement

Insertion loss (IL) is a measure of the effectiveness of a filter. It is defined as the ratio of the voltage (E1) across the circuit load without the filter and the voltage (E2) across the load with the filter. Since insertion loss is dependent on the source and load impedance in which the filter is to be used, IL measurements are defined for a matched 50 ohm system. The insertion loss is measured in decibels (dB) and defined as follows:

$$IL\ (dB) = 20 \log \left[\frac{E1}{E2} \right]$$

Circuit Impedance vs. Insertion Loss

In practical circuit applications the source and load impedances may be quite different from 50 ohms. If these impedances are known, API engineering can provide information on the expected insertion loss or an estimate can be made using the following formula:

$$IL\ (dB) = 20 \log \left[1 + \frac{Zs\ Zl}{Zt\ (Zs + Zl)} \right]$$

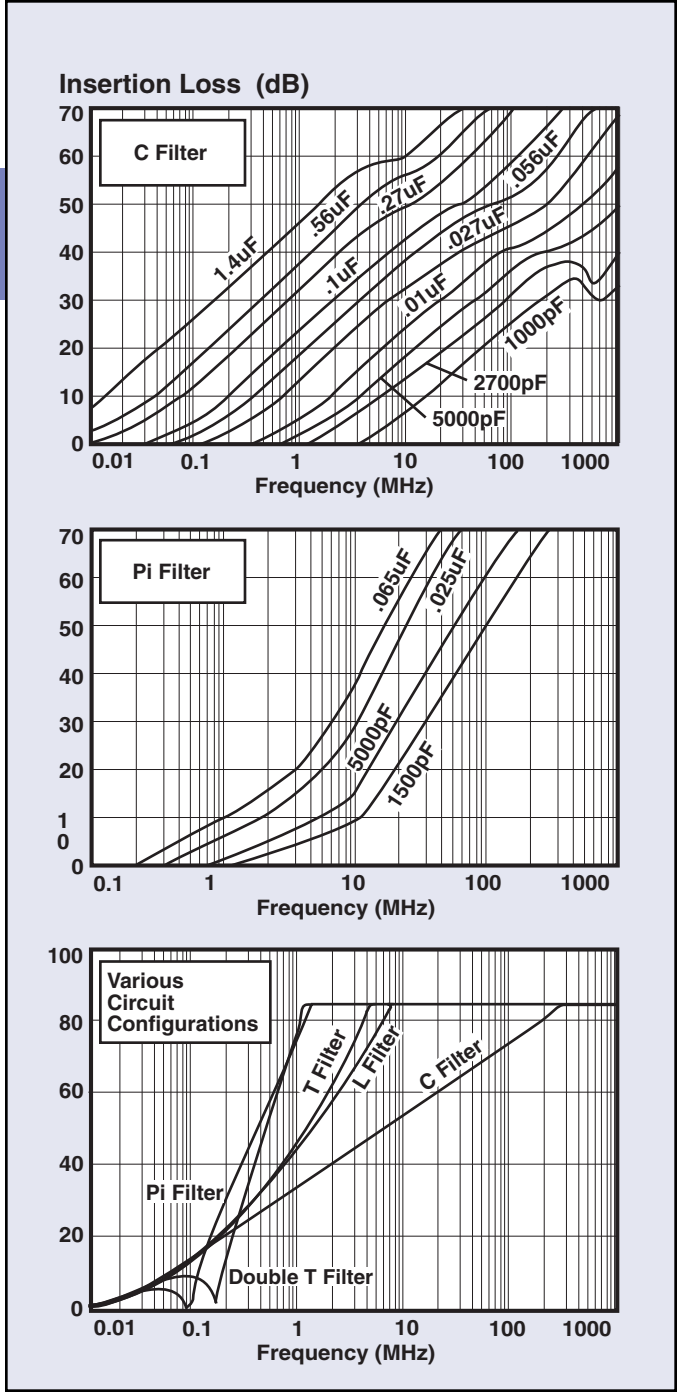
Where Zs = Source impedance in ohms
Zl = Load impedance in ohms
Zt = Transfer impedance in 50 ohm system

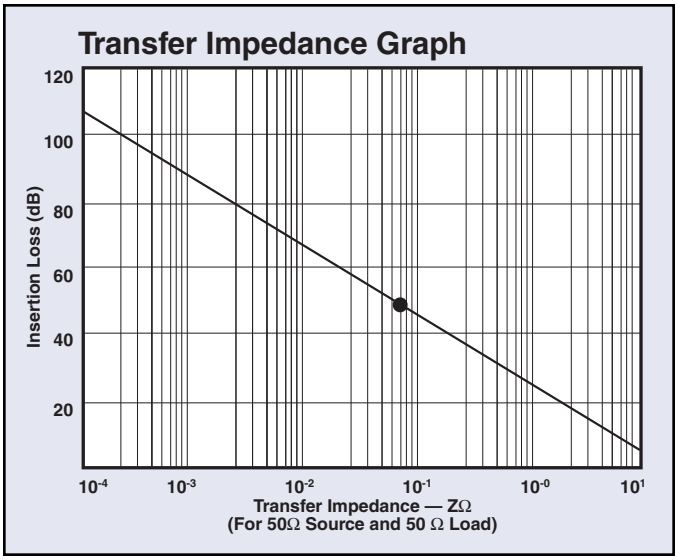
Example:

1. System source and load impedances are 100 ohms and 600 ohms respectively.
2. Selected filter has insertion loss of 50 dB at 100 MHz in a 50 ohm system.
3. From the IL vs Transfer Impedance curve (right) the transfer impedance is 0.08 ohms.
4. $IL = 20 \log \left[1 + \frac{100 \times 600}{0.08\ (100+600)} \right]$

   $= 20 \log 1072$

   $= 61$ dB





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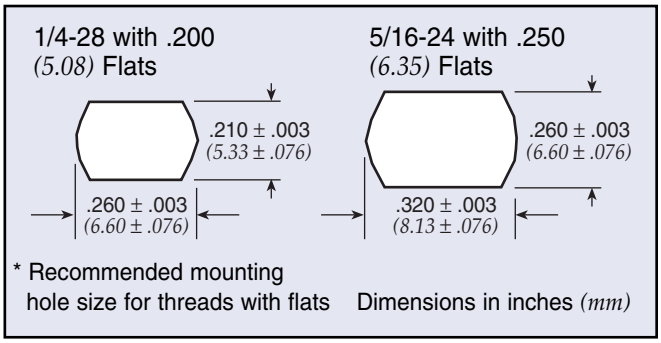
Filter Installation

Threaded Style Filters

Filter Thread Size	Maximum Mounting Torque		Mounting Hole Dia.		Drill Size	
	in-lbs	Nm	(in)	(mm)	English	Metric (mm)
4-40	1.5	0.170	0.120	3.05	# 31	3.10
6-40	3	0.339	0.147	3.73	# 26	3.75
6-32	3	0.339	0.147	3.73	# 26	3.75
8-32	4	0.452	0.173	4.39	# 17	4.40
10-32	4	0.452	0.190	4.83	# 8	5.10
12-28	6	0.678	0.228	5.79	# 1	5.80
12-32	6	0.678	0.228	5.79	# 1	5.80
1/4-28 *	7	0.791	0.261	6.63	# G	6.70
5/16-24 *	7	0.791	0.323	8.20	# P	8.25
5/16-32	7	0.791	0.323	8.20	# P	8.25
3/8-32	9	1.017	0.386	9.80	# W	9.90

Note: For 5/8-24 and 7/16-28 please refer to the specific instruction noted on part drawings or see page LP22 of the catalog.

- Exceeding recommended mounting torque may result in damage to the capacitor within the filter due to possible twisting or elongation of the case.
- For product without hex surfaces do not hold the filter with pliers or other gripping tools. Pressure exerted on the filter case may crack the ceramic capacitor element.
- Proper use of filters requires that the filter case be adequately grounded to form an effective path for the interference.



* Recommended mounting hole size for threads with flats

Dimensions in inches *(mm)*

Solder-in Style Filters

- A controlled temperature profile not exceeding 6°F (3°C) per second is recommended when soldering filters.
- When soldering to terminals of a filter, a heat sink should always be used adjacent to the body of the filter.
- 60-40 solder is recommended for installation of the filter into the chassis as well as soldering to the terminals. If a filter style without an eyelet is being soldered into a chassis, iron processes should be avoided and the recommended solder alloy is 60-38-2.
- Installation hole size for a solder-in filter should be 0.003-0.005" over the maximum tolerance of the minor diameter of the mounting portion of the eyelet with a ±0.002" tolerance.
- Machine/oven soldering 385-415°F (195-210°C) using a dwell and cycle time fast enough to reflow the solder and ramped to maintain less than 6°F/sec rate of change.
- For iron soldering to filter body, preheat components at 250-300°F (120-150°C), solder iron is recommended to be set at 500-550°F (260-290°C). The dwell on the solder joint should be less than 5 seconds.The time is dependent on the heat sinking provided by the chassis so a longer preheat may be required.

Soldering to Filter Terminals

- Use a temperature controlled soldering iron with tip temperature of 525 ± 10°F (275 ± 5°C).
- Use an SN 63 RMA flux core solder.
- Make mechanical wire connection.
- Use heat sink next to filter body where possible.
- Clean soldering iron tip.
- Clip end of solder (remove 0.5") to expose flux for soldering.
- Apply soldering iron to wire/flag junction at wetted solder tip region of iron (Wetted Bridge Method). Immediately apply solder. Dwell time for soldering iron tip on product should be 3-5 seconds maximum.

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EMI/RFI Filter and Capacitor Performance Testing

The resin sealed and hermetically sealed filters shown in this section have been designed to meet the requirements of this test plan as applicable. Group I tests are typically performed on most product. Groups II, III and IV tests are performed per specification requirements.

The information shown can be used as a basis for filter specifications. (Contact factory for additional details if necessary.)

Test Group	Order of Test	Examination or Test	Test Method	Post Test Requirements
I	*1	Visual and Mechanical Examination		In accordance with applicable requirements.
	*2	Materials, Designs, Construction and Workmanship		
	*3	Physical Dimensions and Marking		
	*4	Seal	Method 112†, Condition A	No leaks. Not applicable to resin sealed or solder-in products.
	*5	Capacitance	Method 305†, 1KHz. 2.5 VRMS Max. 25°C	Within specified tolerance.
	*6	Dielectric Withstanding Voltage	Method 301†, 2.5 times, DCWV, 5 seconds, 50 Ma max. charging current	No evidence of damage or breakdown.
	*7	Insulation Resistance	Method 302† at DCWV, at 2 minutes 50 ma charging current	Greater than 1000 megohms or 100 ohm farads, whichever is less.
	*8	Voltage Drop	MIL-F-15733, Paragraph 4.6.8	Per applicable requirements.
	*9	Insertion Loss	MIL-STD-220, 3pc, sample only	Per applicable requirements.
II	1	Temperature Rise	MIL-F-15733, Paragraph 4.6.4	Per applicable requirements.
	2	Overload	MIL-F-15733, Paragraph 4.6.10	Per applicable requirements.
	3	Barometric Pressure	Method 105†, Test Condition B hi-pot, (per method 301†) at 1.25 times DCWV	No evidence of damage or breakdown.
	4	Shock	Method 213†, Test Condition I	No mechanical damage, Insulation resistance greater than 500 ohm farads, whichever is less.
	5	Vibration	Method 204†, Test Condition B for Glass Seal, Condition D for Resin	No mechanical damage, Insulation resistance greater than 500 megohms or 50 ohm farads, whichever is less.
	6	Moisture Resistance	Method 106†	Insulation resistance greater than 500 megohms or 50 ohm farads whichever is less.
III	1	Terminal Strength	Method 211†, Test Condition A, 5 lbs.	No evidence of loosening or rupturing of terminal.
	2	Resistance to Soldering Heat	Method 210†, Test Condition B, Depth of immersion 1/16 plus or minus 1/32	Insulation resistance greater than 500 megohms or 50 ohm farads whichever is less.
	3	Thermal Shock	Method 107† Test Condition A -55°C to +125°C	Insulation resistance greater than 500 megohms or 50 ohm farads whichever is less.
	4	Immersion Cycling	Method 104† Test Condition A	Insulation resistance greater than 500 megohms or 50 ohm farads whichever is less.
IV	1	Solderability (5pcs only)	Method 208†	Per applicable requirements.
	2	Life	Method 108†, Test Condition D with 125% rated voltage at maximum operating temperature	Filters shall meet all initial requirements except insulation resistance shall not be less than 50% of initial guaranteed value.

* Acceptance tests typically performed on most products.
† Methods are from MIL-STD-202

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EMI/RFI Filter and Capacitor Performance Testing

Reliability Levels

Class B

Class B is outlined in MIL-F-28861 and is prescribed for most military/aerospace requirements. It is more stringent than MIL-F-15733 requiring 100% screening that includes thermal shock, voltage conditioning and x-ray.

Periodic Group B testing is performed on units selected at random from production lots.

Class B Test Sequence Summary

Inspection	Class B
Group I	
AC voltage drop (when applicable)	X
Voltage and temperature limits of capacitance	X
Insertion loss (at temperature)	X
Barometric pressure (reduced)	X
Temperature rise	X
Current overload	X
Terminal strength	X
Thermal shock and immersion	X
Group II	
Subgroup 1	
Life	X
Subgroup 2	
Resistance to soldering heat	X
Salt spray (corrosion)	X
Radiographic inspection	X
Subgroup 3	
Resistance to solvents	X
Group III	
Shock (specified pulse)	X
Vibration (high frequency)	X
Moisture resistance	X
Seal (when applicable)	X
Radiographic inspection	X

"R" level testing

"R" level screening is performed by Spectrum Control's Hi-Rel Laboratory as detailed below. Customers requiring special tests may order to their own specifications or simply order to level R and then note additions or deviations.

"R" level test sequence

(100% testing unless otherwise specified)

- Thermal Shock: 5 cycles from -55°C to +125°C in accordance with MIL-STD-202, Method 107D, Condition A.
- Burn-in: 100 hours at 1.4x rated DC voltage, 125°C.
- Seal Test: MIL-STD-202, Method 112, Test Condition A. Hermetic seal parts only.
- Capacitance and Dissipation Factor: MIL-STD-202, Method 305, frequency 1kHz.
- Dielectric Withstanding Voltage: 2.5 times the rated DC voltage for 5 ± 1 second at 25°C, with 50 mA maximum charging current.
- Insulation Resistance: MIL-STD-202, Method 302, 125°C at rated DC voltage and room temperature (25°C). The 125°C requirement shall be 10% of the specified catalog IR at 25°C.
- DC Resistance: MIL-STD-202, Method 303.
- Insertion Loss Test — Sample per MIL-F-15733. At full rated load in accordance with MIL-STD-220. The minimum insertion loss shall be defined in the filter catalog.
- Visual and Mechanical: in accordance with MIL-F-15733.
- Marking: All filters which have successfully completed the test sequence shall be marked with an "R" in the second part of the number. For example, a standard SCI-2130-004 becomes SCI-R2130-004 and 9051-100-0000 becomes 9051-R100-0000, and 51-719-011 becomes 51-R719-011 after completion of the Hi-Rel Level "R" Test Sequence.

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Military Cross Reference Qualified Components

MIL-F-15733

Military Designation MIL-F-15733	API Part Number
/23-0001	51-390-001
/23-0002	51-390-002
/23-0003	51-390-003
/23-0004	51-390-004
/23-0005	51-390-301
/23-0006	51-390-302
/23-0007	51-390-005
/23-0008	51-390-006
/23-0009	51-390-007
/23-0010	51-390-008
/23-0011	51-390-303
/23-0012	51-390-304
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/23-0014	51-390-010
/23-0015	51-390-011
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/23-0017	51-390-305
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/23-0036	51-390-312
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/23-0040	51-390-028
/23-0041	51-390-313
/23-0042	51-390-314
/23-0043	51-390-029
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Military Designation MIL-F-15733	API Part Number
/23-0059	51-390-319
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/24-0001	51-353-064
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Military Designation MIL-F-15733	API Part Number
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/34-0004	51-321-328
/34-0005	51-321-329
/34-0006	51-321-330
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/34-0010	51-311-007
/34-0011	51-320-058
/34-0013	51-320-060

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Military Cross Reference Qualified Components

MIL-F-15733 (cont'd)

Military Designation MIL-F-15733	API Part Number
/34-0014	51-311-340
/34-0015	51-444-005
/34-0016	51-444-105
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/39-0013	51-353-223
/39-0014	51-353-287
/39-0015	51-353-418
/39-0016	51-311-346
/39-0017	51-311-347
/39-0018	51-311-348
/40-0001	51-704-002
/43-0001	51-719-023
/43-0002	51-712-055
/44-0001	51-744-003
/44-0002	51-762-005
/44-0003	51-762-006
/46-0001	51-709-004
/48-0001	51-385-038
/48-0002	51-385-040
/48-0003	51-385-049
/48-0005	51-385-050
/49-0001	51-359-053
/49-0003	51-359-034
/49-0004	51-359-035
/49-0006	51-359-044
/49-0007	51-359-055
/49-0008	54-370-032
/49-0010	54-370-034
/51-0001	51-703-007
/51-0002	51-750-313

Military Designation MIL-F-15733	API Part Number
/54-0001	51-311-404
/54-0002	51-311-405
/54-0003	51-311-406
/54-0004	51-311-407
/54-0005	51-311-408
/54-0006	51-311-409
/54-0007	51-311-410
/54-0008	51-311-411
/54-0009	51-311-412
/54-0010	51-311-413
/54-0011	51-311-414
/54-0012	51-311-415
/54-0013	51-311-416
/54-0014	51-311-417
/54-0015	51-444-115
/54-0016	51-444-116
/54-0017	51-321-670
/54-0018	51-444-117
/54-0019	51-444-118
/56-0001	51-444-800
/57-0001	51-359-041
/58-0001	51-359-051
/58-0002	51-444-072
/58-0003	54-367-069
/58-0004	51-359-105
/61-0001	51-719-053
/61-0002	51-719-054
/61-0003	51-702-020
/61-0004	51-702-021
/61-0005	51-714-051
/61-0006	51-714-052
/61-0007	51-714-053
/61-0008	51-712-063
/61-0009	51-709-015
/61-0010	51-714-054
/61-0011	51-714-055
/61-0012	51-714-056
/61-0013	51-712-067
/61-0014	51-712-065
/62-0001	51-703-012
/62-0002	51-713-010
/62-0003	51-703-013
/62-0004	51-750-309
/63-0001	52-304-014
/66-0001	51-707-026
/67-0001	51-320-170
/67-0002	51-320-171
/67-0003	51-320-172
/67-0004	51-320-173
/67-0005	51-320-174
/67-0006	51-320-175
/67-0007	51-320-176
/67-0008	51-320-177
/67-0009	51-321-402
/67-0010	51-321-404
/67-0011	51-321-405
/67-0012	51-321-403

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Military Designation MIL-F-28861	API Part Number
/1-001	51-359-081
/1-002	54-367-049
/1-003	51-359-082
/1-004	54-367-050
/1-005	51-359-083
/1-006	54-367-051
/1-007	51-359-084
/1-008	54-367-052
/1-009	51-359-085
/1-010	54-367-053
/1-011	51-359-086
/1-012	54-367-054
/1-013	51-359-087
/1-014	54-367-055
/1-015	51-359-088
/1-016	54-367-056
/1-017	51-359-089
/1-018	54-367-057
/1-019	51-359-090
/1-020	54-367-058
/1-021	51-359-122
/1-022	54-367-085
/1-023	51-359-123
/1-024	54-367-086
/1-025	51-359-124
/1-026	54-367-087
/1-031	51-359-125
/1-032	54-367-088
/1-033	51-359-126
/1-034	54-367-089
/1-035	51-359-127
/1-036	54-367-090
/2-001	51-311-010
/2-002	51-311-011
/2-003	51-311-365
/2-004	51-311-012
/2-005	51-311-013
/2-006	51-311-366
/2-007	51-311-014
/2-008	51-311-015
/2-009	51-311-367
/2-010	51-311-016
/2-011	51-311-017
/2-012	51-311-368
/2-013	51-311-018
/2-014	51-311-019
/2-015	51-311-369
/2-016	51-311-020
/2-017	51-311-021
/2-018	51-311-370
/2-019	51-311-022
/2-020	51-311-023
/2-021	51-311-371
/2-022	51-311-024
/2-023	51-311-025
/2-024	51-311-372
/3-001	51-390-044
/3-002	51-390-045

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Military Cross Reference Qualified Components

MIL-F-28861 (cont'd)

Military Designation MIL-F-28861	API Part Number
/3-003	51-390-321
/3-004	51-390-046
/3-005	51-390-047
/3-006	51-390-322
/3-007	51-390-048
/3-008	51-390-049
/3-009	51-390-323
/3-010	51-390-050
/3-011	51-390-051
/3-012	51-390-324
/3-013	51-390-052
/3-014	51-390-053
/3-015	51-390-325
/3-016	51-390-054
/3-017	51-390-055
/3-018	51-390-326
/3-019	51-390-056
/3-020	51-390-057
/3-021	51-390-327
/3-022	51-390-058
/3-023	51-390-059
/3-024	51-390-328
/3-025	51-390-060
/3-026	51-390-061
/3-027	51-390-329
/3-028	51-390-062
/3-029	51-390-063
/3-030	51-390-330
/3-031	51-390-064
/3-032	51-390-065
/3-033	51-390-331
/3-034	51-390-066
/3-035	51-390-067
/3-036	51-390-332
/5-001	51-311-026
/5-002	51-311-027
/5-003	51-311-374
/5-004	51-311-028
/5-005	51-311-029
/5-006	51-311-375
/5-007	51-311-030
/5-008	51-311-031
/5-009	51-311-376
/5-010	51-311-032
/5-011	51-311-033
/5-012	51-311-377
/5-013	51-311-034
/5-014	51-311-035
/5-015	51-311-378
/5-016	51-311-036
/5-017	51-311-037
/5-018	51-311-379
/5-019	51-311-038
/5-020	51-311-039
/5-021	51-311-380
/5-022	51-311-040
/5-023	51-311-041
/5-024	51-311-381

DSCC 84084 Product

DSCC Designation	API Part Number
84084-001	54-310-042
84084-004	51-320-162
84084-005	51-320-163
84084-006	51-320-164
84084-007	51-320-165
84084-008	51-320-166
84084-009	51-320-167
84084-010	51-320-168
84084-011	51-320-169
84084-013	51-321-398
84084-014	51-321-399
84084-015	51-321-400
84084-016	51-321-401

MIL-C-11015

/32 CK#	API Part Number
CK99BW502M	SCI-9900-502AP
CK99BW272M	SCI-9910-272AQ
CK99BW101M	SCI-9920-101T
CK99BW501M	SCI-9920-501K
CK99BW122M	SCI-9920-122J

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API Technologies/AMP Part Number Cross Reference

AMP Part Number	API Part Number
1124033-1	56-407-001
1124034-1	56-403-001
1124082-1	56-614-001
1124174-1	56-413-001
1124175-1	56-423-001
1-842900-3	56-702-001-LI
1-842900-0	56-702-005-LI
1-842900-1	56-702-008-LI
1-842900-2	56-702-008-LI
1-842900-4	56-702-XXX-LI**
1-842901-3	56-712-001-LI
1-842901-0	56-712-005-LI
1-842901-1	56-712-008-LI
1-842901-2	56-712-008-LI
1-842901-4	56-712-XXX-LI**
1-842902-3	56-722-001-LI
1-842902-0	56-722-005-LI
1-842902-1	56-722-009-LI
1-842902-2	56-722-009-LI
1-842902-4	56-722-XXX-LI**
1-842903-3	56-732-001-LI
1-842903-0	56-732-005-LI
1-842903-1	56-732-007-LI
1-842903-2	56-732-007-LI
1-842903-4	56-732-XXX-LI**
1-842904-3	56-742-001-LI
1-842904-0	56-742-005-LI
1-842904-1	56-742-007-LI
1-842904-2	56-742-007-LI
1-842904-4	56-742-XXX-LI**
1-842905-3	56-704-001-LI
1-842905-0	56-704-005-LI
1-842905-1	56-704-008-LI
1-842905-2	56-704-008-LI
1-842905-7	56-704-XXX**
1-842905-4	56-704-XXX-LI**
1-842906-3	56-714-001-LI
1-842906-0	56-714-005-LI
1-842906-1	56-714-007-LI
1-842906-2	56-714-007-LI
1-842906-4	56-714-XXX-LI**
1-842907-3	56-724-001-LI
1-842907-0	56-724-005-LI
1-842907-1	56-724-009-LI
1-842907-2	56-724-009-LI
1-842907-4	56-724-XXX-LI**
1-842908-3	56-734-001-LI
1-842908-0	56-734-005-LI
1-842908-1	56-734-007-LI
1-842908-2	56-734-007-LI
1-842908-4	56-734-XXX-LI**
1-842909-3	56-744-001-LI
1-842909-0	56-744-005-LI
1-842909-1	56-744-007-LI
1-842909-2	56-744-007-LI
1-842909-4	56-744-XXX-LI**
1-842910-3	56-701-001-LI
1-842910-0	56-701-005-LI
1-842910-1	56-701-029-LI
1-842910-2	56-701-029-LI
1-842910-4	56-701-XXX-LI**
1-842911-3	56-711-001-LI
1-842911-0	56-711-005-LI
1-842911-1	56-711-029-LI
1-842911-2	56-711-029-LI
1-842911-4	56-711-XXX-LI**
1-842912-3	56-721-001-LI
1-842912-0	56-721-005-LI
1-842912-1	56-721-034-LI
1-842912-2	56-721-034-LI
1-842912-4	56-721-XXX-LI**
1-842913-3	56-731-001-LI
1-842913-0	56-731-005-LI
1-842913-1	56-731-029-LI
1-842913-2	56-731-029-LI
1-842913-4	56-731-XXX-LI**
1-842914-3	56-741-001-LI
1-842914-0	56-741-005-LI
1-842914-1	56-741-028-LI
1-842914-2	56-741-028-LI
1-842914-4	56-741-XXX-LI**
1-842915-3	56-703-001-LI
1-842915-0	56-703-005-LI
1-842915-1	56-703-023-LI
1-842915-2	56-703-023-LI
1-842915-4	56-703-XXX-LI**
1-842916-3	56-713-001-LI
1-842916-0	56-713-005-LI
1-842916-1	56-713-022-LI
1-842916-2	56-713-022-LI
1-842916-4	56-713-XXX-LI**
1-842917-3	56-723-001-LI
1-842917-0	56-723-005-LI
1-842917-1	56-723-024-LI
1-842917-2	56-723-024-LI
1-842917-4	56-723-XXX-LI**
1-842918-3	56-733-001-LI
1-842918-0	56-733-005-LI
1-842918-1	56-733-022-LI
1-842918-2	56-733-022-LI
1-842918-4	56-733-XXX-LI**
1-842919-3	56-743-001-LI
1-842919-0	56-743-005-LI
1-842919-1	56-743-022-LI
1-842919-2	56-743-022-LI
1-842919-4	56-743-XXX-LI**
1-842920-3	56-701-011-LI
1-842920-0	56-701-015-LI
1-842920-1	56-701-041-LI
1-842920-2	56-701-041-LI
1-842920-4	56-701-XXX-LI**
1-842921-3	56-711-011-LI
1-842921-0	56-711-015-LI
1-842921-1	56-711-041-LI
1-842921-2	56-711-041-LI
1-842921-4	56-711-XXX-LI**
1-842922-3	56-721-011-LI
1-842922-0	56-721-015-LI
1-842922-1	56-721-046-LI
1-842922-2	56-721-046-LI
1-842922-4	56-721-XXX-LI**
1-842923-3	56-731-011-LI
1-842923-0	56-731-015-LI
1-842923-1	56-731-041-LI
1-842923-2	56-731-041-LI
1-842923-4	56-731-XXX-LI**
1-842924-3	56-741-011-LI
1-842924-0	56-741-015-LI
1-842924-1	56-741-040-LI
1-842924-2	56-741-040-LI
1-842924-4	56-741-XXX-LI**
1-842925-3	56-706-001-LI
1-842925-0	56-706-005-LI
1-842925-1	56-706-007-LI
1-842925-2	56-706-007-LI
1-842925-8	56-706-XXX**
1-842925-4	56-706-XXX-LI**
1-842926-3	56-716-001-LI
1-842926-0	56-716-005-LI
1-842926-1	56-716-007-LI
1-842926-2	56-716-007-LI
1-842926-4	56-716-XXX-LI**
1-842927-3	56-726-001-LI
1-842927-0	56-726-005-LI
1-842927-1	56-726-007-LI
1-842927-2	56-726-007-LI
1-842927-4	56-726-XXX-LI**
1-842928-3	56-736-001-LI
1-842928-0	56-736-005-LI
1-842928-1	56-736-007-LI
1-842928-2	56-736-007-LI
1-842928-6	56-736-XXX**
1-842928-7	56-736-XXX**
1-842928-4	56-736-XXX-LI**
1-842929-3	56-746-001-LI
1-842929-0	56-746-005-LI
1-842929-1	56-746-007-LI
1-842929-2	56-746-007-LI
1-842929-4	56-746-XXX-LI**
1-842930-3	56-705-001-LI
1-842930-0	56-705-005-LI
1-842930-1	56-705-009-LI
1-842930-2	56-705-009-LI
1-842930-4	56-705-XXX-LI**
1-842931-3	56-715-001-LI
1-842931-0	56-715-005-LI
1-842931-1	56-715-008-LI
1-842931-2	56-715-008-LI
1-842931-4	56-715-XXX-LI**
1-842932-3	56-725-001-LI
1-842932-0	56-725-005-LI
1-842932-1	56-725-020-LI
1-842932-2	56-725-020-LI
1-842932-4	56-725-XXX-LI**
1-842933-3	56-735-001-LI
1-842933-0	56-735-005-LI
1-842933-1	56-735-009-LI
1-842933-2	56-735-009-LI
1-842933-4	56-735-XXX-LI**
1-842934-3	56-745-001-LI
1-842934-0	56-745-005-LI
1-842934-1	56-745-007-LI
1-842934-2	56-745-007-LI

*** There may be mechanical and/or electrical differences between the Amp and Spectrum part. Please consult factory.**
**** A standard part number does not currently exist but will be assigned upon ordering.**

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API Technologies/AMP Part Number Cross Reference

AMP Part Number	API Part Number
1-842934-4	56-745-XXX-LI**
1-93768-0	56-701-081-LI
1-93769-0	56-711-085-LI
1-93770-0	56-721-070-LI
1-93771-0	56-731-060-LI
1-93772-0	56-706-009-LI
1-93773-0	56-716-009-LI
1-93774-0	56-726-009-LI
1-93775-0	56-736-009-LI
267028-1	56-B12-000-K
267100-1	56-C31-001
267116-1	56-407-001
267161-2	56-423-001
267290-1	56-724-008-GBL
267292-1	56-624-XXX**
267397-1	56-413-001
267533-1	56-B22-000-S
267534-1	56-B42-000-S
267534-2	56-B42-000-K
267809-1	56-703-022
267810-1	56-713-021
267811-1	56-723-022
2-842919-6	56-743-003-LI
2-842920-2	56-701-042
2-842927-2	56-726-XXX**
3-842917-1	56-723-045-LI
3-842917-2	56-723-XXX**
3-842917-3	56-723-XXX**
842582-3	56-701-047
842582-4	56-701-047-LI
842583-3	56-711-048
842583-4	56-711-048-LI
842584-3	56-721-063
842584-4	56-721-063-LI
842585-3	56-731-048
842585-4	56-731-048-LI
842586-3	56-703-036
842586-4	56-703-036-LI
842587-3	56-713-037
842587-4	56-713-037-LI
842588-3	56-723-045
842588-4	56-723-045-LI
842589-3	56-733-035
842589-4	56-733-035-LI
842590-3	56-702-013
842590-4	56-702-013-LI
842591-3	56-712-017
842591-4	56-712-017-LI
842592-3	56-722-027
842592-4	56-722-027-LI
842593-3	56-732-009
842593-4	56-732-009-LI
842594-3	56-704-018
842594-4	56-704-018-LI
842595-3	56-714-017
842595-4	56-714-017-LI
842596-3	56-724-021
842596-4	56-724-021-LI
842597-3	56-734-012
842597-4	56-734-012-LI

AMP Part Number	API Part Number
842610-3	56-701-086
842610-4	56-701-086-LI
842611-3	56-711-088
842611-4	56-711-088-LI
842612-3	56-721-111
842612-4	56-721-111-LI
842613-3	56-731-076
842613-4	56-731-076-LI
842614-3	56-703-047
842614-4	56-703-047-LI
842615-3	56-713-045
842615-4	56-713-045-LI
842616-3	56-723-069
842616-4	56-723-069-LI
842617-3	56-733-046
842617-4	56-733-046-LI
842618-3	56-702-033
842618-4	56-702-033-LI
842619-3	56-712-039
842619-4	56-712-039-LI
842620-3	56-722-060
842620-4	56-722-060-LI
842621-3	56-732-023-LI
842621-4	56-732-023-LI
842622-3	56-704-035
842622-4	56-704-035-LI
842623-3	56-714-031
842623-4	56-714-031-LI
842624-3	56-724-046
842624-4	56-724-046-LI
842625-3	56-734-021
842625-4	56-734-021-LI
842638-3	56-701-028
842638-4	56-701-028-LI
842639-3	56-711-028
842639-4	56-711-028-LI
842640-3	56-721-033
842640-4	56-721-033-LI
842641-3	56-731-028
842641-4	56-731-028-LI
842642-3	56-703-022
842642-4	56-703-022-LI
842643-3	56-713-021
842643-4	56-713-021-LI
842644-3	56-723-023
842644-4	56-723-023-LI
842645-3	56-733-021
842645-4	56-733-021-LI
842646-3	56-702-007
842646-4	56-702-007-LI
842647-3	56-712-007
842647-4	56-712-007-LI
842648-3	56-722-008
842648-4	56-722-008-LI
842649-3	56-732-006
842649-4	56-732-006-LI
842650-3	56-704-007
842650-4	56-704-007-LI
842651-3	56-714-006
842651-4	56-714-006-LI

AMP Part Number	API Part Number
842652-3	56-724-008
842652-4	56-724-008-LI
842653-3	56-734-006
842653-4	56-734-006-LI
842666-3	56-701-002
842666-4	56-701-002-LI
842667-3	56-711-002
842667-4	56-711-002-LI
842668-3	56-721-002
842668-4	56-721-002-LI
842669-3	56-731-002
842669-4	56-731-002-LI
842670-3	56-703-002
842670-4	56-703-002-LI
842671-3	56-713-002
842671-4	56-713-002-LI
842672-3	56-723-002
842672-4	56-723-002-LI
842673-3	56-733-002
842673-4	56-733-002-LI
842674-3	56-702-002
842674-4	56-702-002-LI
842675-3	56-712-002
842675-4	56-712-002-LI
842675-5	56-712-002-LIM
842676-3	56-722-002
842676-4	56-722-002-LI
842677-3	56-732-002
842677-4	56-732-002-LI
842678-3	56-704-002
842678-4	56-704-002-LI
842679-3	56-714-002
842679-4	56-714-002-LI
842680-3	56-724-002
842680-4	56-724-002-LI
842681-3	56-734-002
842681-4	56-734-002-LI
842697-3	56-705-008
842697-4	56-705-008-LI
842697-5	56-705-026-LI
842697-5	56-705-XXX**
842698-3	56-715-007
842698-4	56-715-007-LI
842699-3	56-725-019
842699-4	56-725-019-LI
842699-4	56-725-019-LI
842700-3	56-735-008
842700-4	56-735-008-LI
842737-3	56-705-002
842737-4	56-705-002-LI
842738-3	56-705-026
842738-4	56-705-026-LI
842738-5	56-705-026-HV
842739-3	56-705-049
842739-4	56-705-049-LI
842740-3	56-715-002
842740-4	56-715-002-LI
842741-3	56-715-015
842741-4	56-715-015-LI
842742-3	56-715-040

*** There may be mechanical and/or electrical differences between the Amp and Spectrum part. Please consult factory.**
**** A standard part number does not currently exist but will be assigned upon ordering.**

api technologies corp.
Spectrum Control

API Technologies/AMP Part Number Cross Reference

AMP Part Number	API Part Number
842742-4	56-715-040-LI
842743-3	56-725-002
842743-4	56-725-002-LI
842744-3	56-725-064
842744-4	56-725-064-LI
842744-5	56-725-XXX**
842745-3	56-725-073
842745-4	56-725-073-LI
842746-3	56-735-002
842746-4	56-735-002-LI
842747-3	56-735-025
842747-4	56-735-025-LI
842748-3	56-735-034
842748-4	56-735-034-LI
842796-2	56-725-064-HV
842797-2	56-735-025-HV
842830-3	56-706-006
842900-1	56-702-003
842900-2	56-702-009
842900-3	56-702-005
842900-4	56-702-008
842900-5	56-702-008
842900-6	56-702-001
842900-7	56-702-XXX**
842900-8	56-702-003-LI
842900-9	56-702-009-LI
842901-1	56-712-003
842901-2	56-712-009
842901-3	56-712-005
842901-4	56-712-008
842901-5	56-712-008
842901-6	56-712-001
842901-7	56-712-XXX**
842901-8	56-712-003-LI
842901-9	56-712-009-LI
842902-1	56-722-003
842902-2	56-722-010
842902-3	56-722-005
842902-4	56-722-009
842902-5	56-722-009
842902-6	56-722-001
842902-7	56-722-XXX**
842902-8	56-722-003-LI
842902-9	56-722-010-LI
842903-1	56-732-003
842903-2	56-732-008
842903-3	56-732-005
842903-4	56-732-007
842903-5	56-732-007
842903-6	56-732-001
842903-7	56-732-XXX**
842903-8	56-732-003-LI
842903-9	56-732-008-LI
842904-1	56-742-003
842904-2	56-742-008
842904-3	56-742-005
842904-4	56-742-007
842904-5	56-742-007
842904-6	56-742-001
842904-7	56-742-XXX**
842904-8	56-742-003-LI
842904-9	56-742-008-LI
842905-1	56-704-003
842905-2	56-704-009
842905-3	56-704-005
842905-4	56-704-008
842905-5	56-704-008
842905-6	56-704-001
842905-7	56-704-XXX**
842905-8	56-704-003-LI
842905-9	56-704-009-LI
842906-1	56-714-003
842906-2	56-714-008
842906-3	56-714-005
842906-4	56-714-007
842906-5	56-714-007
842906-6	56-714-001
842906-7	56-714-XXX**
842906-8	56-714-003-LI
842906-9	56-714-008-LI
842907-1	56-724-003
842907-2	56-724-010
842907-3	56-724-005
842907-4	56-724-009
842907-5	56-724-009
842907-6	56-724-001
842907-7	56-724-XXX**
842907-8	56-724-003-LI
842907-9	56-724-010-LI
842908-1	56-734-003
842908-2	56-734-008
842908-3	56-734-005
842908-4	56-734-007
842908-5	56-734-007
842908-6	56-734-001
842908-7	56-734-XXX**
842908-8	56-734-003-LI
842908-9	56-734-008-LI
842909-1	56-744-003
842909-2	56-744-008
842909-3	56-744-005
842909-4	56-744-007
842909-5	56-744-007
842909-6	56-744-001
842909-7	56-744-XXX**
842909-8	56-744-003-LI
842909-9	56-744-008-LI
842910-1	56-701-003
842910-2	56-701-030
842910-3	56-701-005
842910-4	56-701-029
842910-5	56-701-029
842910-6	56-701-001
842910-7	56-701-XXX**
842910-8	56-701-003-LI
842910-9	56-701-030-LI
842911-1	56-711-003
842911-2	56-711-030
842911-3	56-711-005
842911-4	56-711-029
842911-5	56-711-029
842911-6	56-711-001
842911-7	56-711-XXX**
842911-8	56-711-003-LI
842911-9	56-711-030-LI
842912-1	56-721-003
842912-2	56-721-035
842912-3	56-721-005
842912-4	56-721-034
842912-5	56-721-034
842912-6	56-721-001
842912-7	56-721-XXX**
842912-8	56-721-003-LI
842912-9	56-721-035-LI
842913-1	56-731-003
842913-2	56-731-030
842913-3	56-731-005
842913-4	56-731-029
842913-5	56-731-029
842913-6	56-731-001
842913-7	56-731-XXX**
842913-8	56-731-003-LI
842913-9	56-731-030-LI
842914-1	56-741-003
842914-2	56-741-029
842914-3	56-741-005
842914-4	56-741-028
842914-5	56-741-028
842914-6	56-741-001
842914-7	56-741-XXX**
842914-8	56-741-003-LI
842914-9	56-741-029-LI
842915-1	56-703-003
842915-2	56-703-024
842915-3	56-703-005
842915-4	56-703-023
842915-5	56-703-023
842915-6	56-703-001
842915-7	56-703-XXX**
842915-8	56-703-003-LI
842915-9	56-703-024-LI
842916-1	56-713-003
842916-2	56-713-023
842916-3	56-713-005
842916-4	56-713-022
842916-5	56-713-022
842916-6	56-713-001
842916-7	56-713-XXX**
842916-8	56-713-003-LI
842916-9	56-713-023-LI
842917-1	56-723-003
842917-2	56-723-025
842917-3	56-723-005
842917-4	56-723-024
842917-5	56-723-024
842917-6	56-723-001
842917-7	56-723-XXX**
842917-8	56-723-003-LI
842917-9	56-723-025-LI
842918-1	56-733-003

*** There may be mechanical and/or electrical differences between the Amp and Spectrum part. Please consult factory.**
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api technologies corp.
Spectrum Control

API Technologies/AMP Part Number Cross Reference

AMP Part Number	API Part Number
842918-2	56-733-023
842918-3	56-733-005
842918-4	56-733-022
842918-5	56-733-022
842918-6	56-733-001
842918-7	56-733-XXX**
842918-8	56-733-003-LI
842918-9	56-733-023-LI
842919-1	56-743-003
842919-2	56-743-023
842919-3	56-743-005
842919-4	56-743-022
842919-5	56-743-022
842919-6	56-743-001
842919-7	56-743-XXX**
842919-8	56-743-003-LI
842919-9	56-743-023-LI
842920-1	56-701-013
842920-2	56-701-042
842920-3	56-701-015
842920-4	56-701-041
842920-5	56-701-041
842920-6	56-701-011
842920-7	56-701-XXX**
842920-8	56-701-013-LI
842920-9	56-701-042-LI
842921-1	56-711-013
842921-2	56-711-042
842921-3	56-711-015
842921-4	56-711-041
842921-5	56-711-041
842921-6	56-711-011
842921-7	56-711-XXX**
842921-8	56-711-013-LI
842921-9	56-711-042-LI
842922-1	56-721-013
842922-2	56-721-047
842922-3	56-721-015
842922-4	56-721-046
842922-5	56-721-046
842922-6	56-721-011
842922-7	56-721-XXX**
842922-8	56-721-013-LI
842922-9	56-721-047-LI
842923-1	56-731-013
842923-2	56-731-042
842923-3	56-731-015
842923-4	56-731-041
842923-5	56-731-041
842923-6	56-731-011
842923-7	56-731-XXX**
842923-8	56-731-013-LI
842923-9	56-731-042-LI
842924-1	56-741-013
842924-2	56-741-041
842924-3	56-741-015
842924-4	56-741-040
842924-5	56-741-040
842924-6	56-741-011
842924-7	56-741-XXX**
842924-8	56-741-013-LI
842924-9	56-741-041-LI
842925-1	56-706-003
842925-2	56-706-008
842925-3	56-706-005
842925-4	56-706-007
842925-5	56-706-007
842925-6	56-706-001
842925-7	56-706-XXX**
842925-8	56-706-003-LI
842925-9	56-706-005-LI
842926-1	56-716-003
842926-2	56-716-008
842926-3	56-716-005
842926-4	56-716-007
842926-5	56-716-007
842926-6	56-716-001
842926-7	56-716-XXX**
842926-8	56-716-003-LI
842926-9	56-716-008-LI
842927-1	56-726-003
842927-2	56-726-008
842927-3	56-726-005
842927-4	56-726-007
842927-5	56-726-007
842927-6	56-726-001
842927-7	56-726-XXX**
842927-8	56-726-003-LI
842927-9	56-726-008-LI
842928-1	56-736-003
842928-2	56-736-008
842928-3	56-736-005
842928-4	56-736-007
842928-5	56-736-007
842928-6	56-736-001
842928-7	56-736-XXX**
842928-8	56-736-003-LI
842928-9	56-736-008-LI
842929-1	56-746-003
842929-2	56-746-008
842929-3	56-746-005
842929-4	56-746-007
842929-5	56-746-007
842929-6	56-746-001
842929-7	56-746-XXX**
842929-8	56-746-003-LI
842929-9	56-746-008-LI
842930-1	56-705-003
842930-2	56-705-010
842930-3	56-705-005
842930-4	56-705-009
842930-5	56-705-009
842930-6	56-705-001
842930-7	56-705-XXX**
842930-8	56-705-003-LI
842930-9	56-705-010-LI
842931-1	56-715-003
842931-2	56-715-009
842931-3	56-715-005
842931-4	56-715-008
842931-5	56-715-008
842931-6	56-715-001
842931-7	56-715-XXX**
842931-8	56-715-003-LI
842931-9	56-715-009-LI
842932-1	56-725-003
842932-2	56-725-021
842932-3	56-725-005
842932-4	56-725-020
842932-5	56-725-020
842932-6	56-725-001
842932-7	56-725-XXX**
842932-8	56-725-003-LI
842932-9	56-725-021-LI
842933-1	56-735-003
842933-2	56-735-010
842933-3	56-735-005
842933-4	56-735-009
842933-5	56-735-009
842933-6	56-735-001
842933-7	56-735-XXX**
842933-8	56-735-003-LI
842933-9	56-735-010-LI
842934-1	56-745-003
842934-2	56-745-008
842934-3	56-745-005
842934-4	56-745-007
842934-5	56-745-007
842934-6	56-745-001
842934-7	56-745-XXX**
842934-8	56-745-003-LI
842934-9	56-745-008-LI
842938-1	56-701-004
842938-2	56-701-004-LI
842939-1	56-711-004
842939-2	56-711-004-LI
842940-1	56-721-004
842940-2	56-721-004-LI
842941-1	56-731-004
842941-2	56-731-004-LI
842942-1	56-703-004
842942-2	56-703-004-LI
842943-1	56-713-004
842943-2	56-713-004-LI
842944-1	56-723-004
842944-2	56-723-004-LI
842945-1	56-733-004
842945-2	56-733-004-LI
842946-1	56-702-004
842946-2	56-702-004-LI
842947-1	56-712-004
842947-2	56-712-004-LI
842948-1	56-722-004
842948-2	56-722-004-LI
842949-1	56-732-004
842949-2	56-732-004-LI
842950-1	56-704-004
842950-2	56-704-004-LI
842951-1	56-714-004
842951-2	56-714-004-LI

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api technologies corp.
Spectrum Control

API Technologies/AMP Part Number Cross Reference

AMP Part Number	API Part Number
842952-1	56-724-004
842952-2	56-724-004-LI
842953-1	56-734-004
842953-2	56-734-004-LI
842954-1	56-705-004
842954-2	56-705-004-LI
842955-1	56-715-004
842955-2	56-715-004-LI
842956-1	56-725-004
842956-2	56-725-004-LI
842956-3	56-725-004-LI
842957-1	56-735-004
842957-2	56-735-004-LI
842957-3	56-735-004-LI
859762-1	56-726-003
869202-1	56-715-004
869214-1	56-701-003-LIM
869248-1	56-711-003-LIM
869408-1	56-715-XXX**
869427-2	56-414-001-HD
869436-2	56-402-001
869442-2	56-422-001
869454-1	56-704-007-LI
869504-1 & 2	56-B32-000-S
869505-1	56-B52-000-S
869508-1 & 2	56-B32-000-K
869509-1	56-B52-000-K
869520-2	56-404-001
869521-2	56-424-001
93725-1	56-C33-001
93768-1	56-701-014
93768-2	56-701-012
93768-3	56-701-040
93768-4	56-701-087
93768-5	56-701-081
93768-6	56-701-014-LI
93768-7	56-701-012-LI
93768-8	56-701-040-LI
93768-9	56-701-087-LI
93769-1	56-711-014
93769-2	56-711-012
93769-3	56-711-040
93769-4	56-711-086
93769-5	56-711-085
93769-6	56-711-014-LI
93769-7	56-711-012-LI
93769-8	56-711-040-LI
93769-9	56-711-086-LI
93770-1	56-721-014
93770-2	56-721-012
93770-3	56-721-045
93770-4	56-721-112
93770-5	56-721-070
93770-6	56-721-014-LI
93770-7	56-721-012-LI
93770-8	56-721-045-LI
93770-9	56-721-112-LI
93771-1	56-731-014
93771-2	56-731-012
93771-3	56-731-040-LI
93771-4	56-731-077
93771-5	56-731-060
93771-6	56-731-014-LI
93771-7	56-731-012-LI
93771-8	56-731-040-LI
93771-9	56-731-077-LI
93772-1	56-706-004
93772-2	56-706-002
93772-3	56-706-006
93772-4	56-706-017
93772-5	56-706-009
93772-6	56-706-004-LI
93772-7	56-706-002-LI
93772-8	56-706-006-LI
93772-9	56-706-017-LI
93773-1	56-716-004
93773-2	56-716-002
93773-3	56-716-006
93773-4	56-716-013
93773-5	56-716-009
93773-6	56-716-004-LI
93773-7	56-716-002-LI
93773-8	56-716-006-LI
93773-9	56-716-013-LI
93774-1	56-726-004
93774-2	56-726-002
93774-3	56-726-006
93774-4	56-726-021
93774-5	56-726-009
93774-6	56-726-004-LI
93774-7	56-726-002-LI
93774-8	56-726-006-LI
93774-9	56-726-021-LI
93775-1	56-736-004
93775-2	56-736-002
93775-3	56-736-006
93775-4	56-736-015
93775-5	56-736-009
93775-6	56-736-004-LI
93775-7	56-736-002-LI
93775-8	56-736-006-LI
93775-9	56-736-015-LI

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Surface Mount EMI Filters

our family of surface mount filters is designed to provide a range of high performance EMI filtering options with a minimal PCB footprint

Three Terminal Chips offer superior ability to withstand transient voltages and surges, and deliver excellent filtering performance in high current applications while providing exceptional solderability and resistance to solder heat… **SM2-SM7**

SA Series Arrays incorporate four lines in one compact footprint. These arrays are nonpolar and designed to minimize residual inductance, thereby ensuring large insertion loss in a wide band and better cross talk control… **SM8-SM9**

MSM Mini-Surface Mount offers a multilayer electrode structure, high temperature construction and 10 Amps current ratings. The filter chips provide extreme elimination of residual inductance and the self-resonant frequency extends the microwave band… **SM11**

SSM Square Surface Mount square mechanical geometry enhances SMT soldering in applications up to 10 Amps. These filters come in a Pi circuit configuration and are designed to address EMI/RFI on crowded printed circuit boards… **SM12-SM13**

PSM Power Surface Mount are the first high temperature surface mount filter designed to effectively filter EMI/RFI at currents up to 20 Amps. These filters come in either a Feed-through or Pi circuit configuration and offer superior high frequency noise suppression… **SM14-SM15**

MSP Mini Surface Mount Power Filters offers a multilayer electrode structure, high temperature construction and 10 Amps current ratings. The filter chips provide extreme elimination of residual inductance and the self-resonant frequency extends to the microwave band… **SM16**

MPC Series Miniature PCB Power Filters are designed to fit a wide range of environments. These filters are ideal for personal computers and peripherals, home appliances, measuring instruments and medical equipment, and are all available lead free… **SM17-SM20**

High Frequency PCB Filters provide EMI filtering to protect low power digital circuits. With mounting directly on the printed circuit board, filtering begins at the source of the problem… **SM21**

Advantages of a Surface Mount Filter

With many years of experience in the design and manufacture of filters, API Technologies has a unique perspective on EMI and how to control it. We provide an integrated approach to EMC problems with services such as customer consulting, diagnostic testing, design and manufacturing. By offering a variety of custom assemblies, we are able to unite your specific requirements with our high performance filters.

API's Spectrum Control line of surface mount EMI filters are ideal for a wide range of PCB applications, including: automotive electronics, digital A/V equipment, computers, peripherals, telecommunications, switching power supplies and high current buss lines.

api technologies corp.
Spectrum Control

Surface Mount EMI Filters

Three Terminal Chips

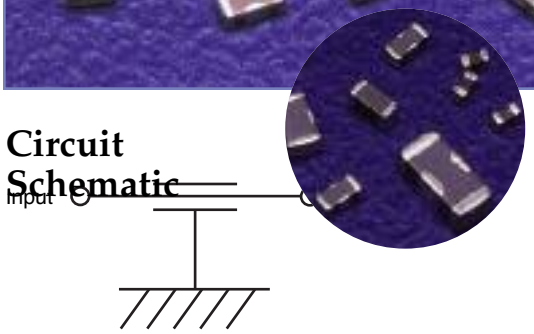
Features

- Excellent performance in high current applications
- Non-polar, surface mountable
- Superior filtering characteristics
- Superb ability to withstand transient voltages and surge
- Offers exceptional solderability and resistance to solder heat
- Available in 0603, 0805, 1205 and 1806 body size
- Two amp current rating available
- Available lead free/RoHS Compliant

Applications

- Cellular telephones and base stations
- Telecommunication equipment
- Industrial electronic interface or programmable controllers
- Electronic automotive equipment
- Computer and peripheral equipment

Circuit Schematic



Typical Electrical Characteristics

Capacitance Range	COG (NPO)	22 pF to 470 pF
	X7R	470 pF to 47,000 pF
	YV5	100,000 pF and 220,000 pF
Capacitance Tolerance	COG (NPO)	+50/-20%
	X7R	+50/-20%
	Y5V	+80/-20%
Temperature Coefficient	COG (NPO)	0 ±/30 ppm/°C, -55 to +125°C
	X7R	+/-15%, -55 to +125°C
	Y5V	-25 to +85˚C
Insulation Resistance	up to 22,000 pF	10000 Megohms
	47,000 pF	5000 Megohms
DC Resistance	0.4 Amp or less	0.3 ohm max.
	1 Amp	0.08 ohm max.
	2 Amp	0.04 ohm max.
Rated Voltage	up to 100 VDC	
Rated Current	up to 2 Amps	

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Surface Mount EMI Filters

Three Terminal Chips

Selection Guide

Part Number	Body Size	Capacitance (in picofarad)	Capacitance Tolerance	Temp. Charact.	Rated Voltage (Volts DC)	Rated Current (Amps DC)	IR (Megohms Min.)	DC Resistance (ohm Max.)	Operating Temp.
SF0603C220SBNB-*	0603	22	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C470SBNB-*	0603	47	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C101SBNB-*	0603	100	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C221SBNB-*	0603	220	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603X471SBNB-*	0603	470	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X102SBNB-*	0603	1,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X222SBNB-*	0603	2,200	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X223SANC-*	0603	22,000	+50/-20%	X7R	25	0.5	10,000	0.15	-55/+125°C
SF0603Y104MAND-*	**0603**	**100,000**	**±20%**	**Y5V†**	**25**	**1**	**1,000**	**0.08**	**-25/+85°C**
SF0805C220SBNC-*	0805	22	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C470SBNC-*	0805	47	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C101SBNC-*	0805	100	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C221SBNC-*	0805	220	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805X471SBNC-*	0805	470	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
SF0805X102SBNC-*	0805	1,000	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
SF0805X222SBNC-*	0805	2,200	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
SF0805X223SBND-*	**0805**	**22,000**	**+50/-20%**	**X7R**	**50**	**1.0**	**10,000**	**0.08**	**-55/+125°C**
SF1205C220SBNB-*	1205	22	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C470SBNB-*	1205	47	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C101SBNB-*	1205	100	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C221SBNB-*	1205	220	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205X471SBNB-*	1205	470	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X102SBNB-*	1205	1,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X222SBNB-*	1205	2,200	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X223SBNB-*	1205	22,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X473SBND-*	**1205**	**47,000**	**+50/-20%**	**X7R**	**50**	**1.0**	**5,000**	**0.08**	**-55/+125°C**
SF1806C220SDNB-*	1806	22	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C470SDNB-*	1806	47	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C101SDNB-*	1806	100	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C221SDNB-*	1806	220	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C471SDNB-*	1806	470	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806X102SDNB-*	1806	1,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X222SDNB-*	1806	2,200	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X103SDNB-*	1806	10,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X223SDNB-*	1806	22,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
2 AMP FILTER SF1806Y224ZBNE-*	**1806**	**220,000**	**+80/-20%**	**Y5V †**	**50**	**2.0**	**1,000**	**0.04**	**-25/+85°C**

Bold Letter = High Current Applications
† = Temperature Characteristic is +30/-80%

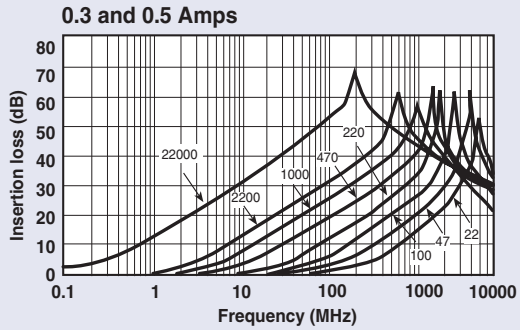
-* = Denotes Packaging Style. Replace with T for Tape and Reel or B for Bulk

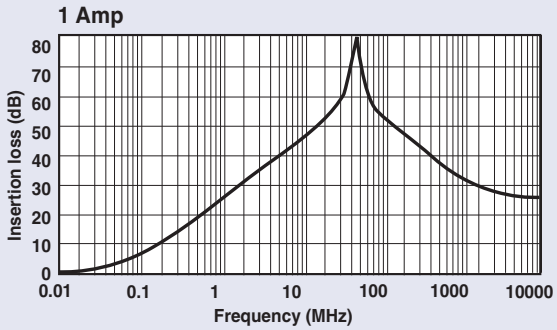
Surface Mount EMI Filters

Three Terminal Chips

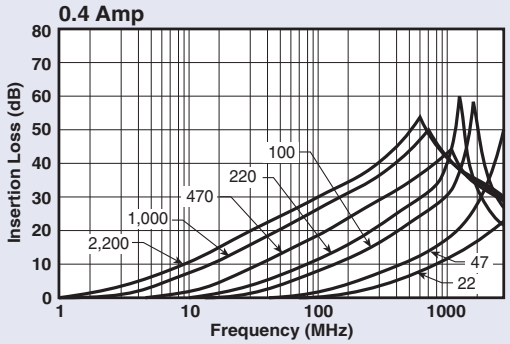
Insertion Loss (Per MIL-STD-220)

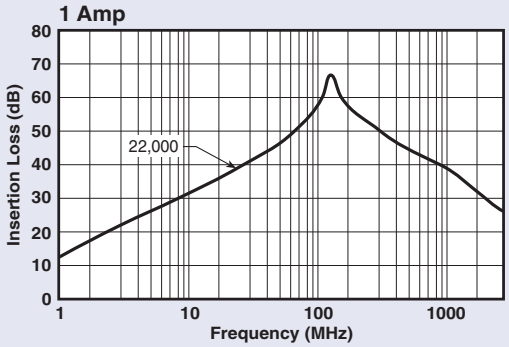
SF0603 Series



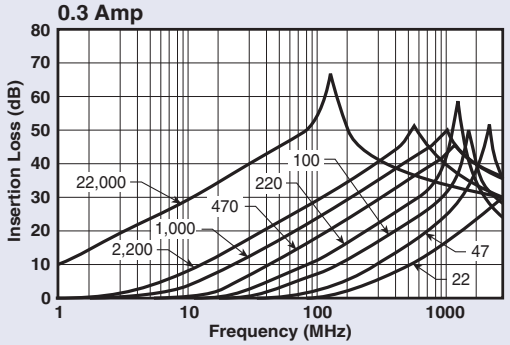


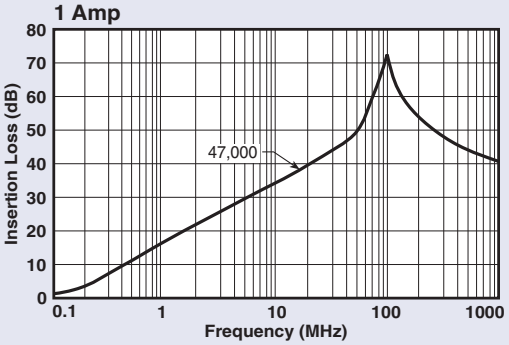
SF0805 Series



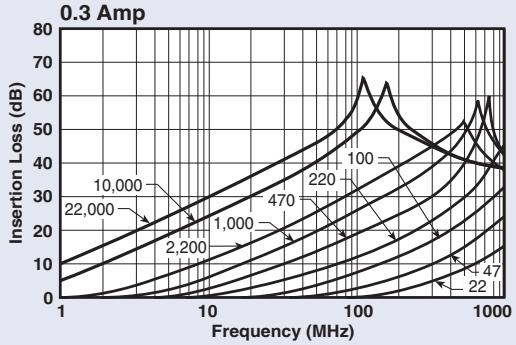


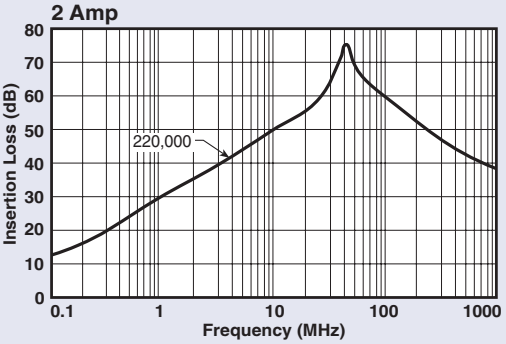
SF1205 Series





SF1806 Series





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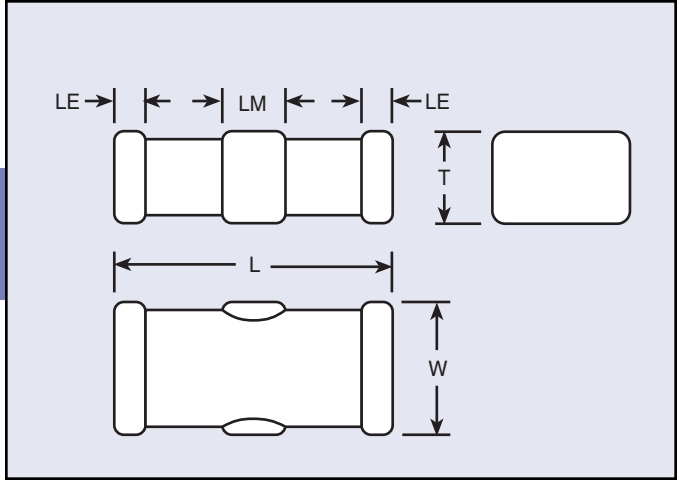
Surface Mount EMI Filters

Three Terminal Chips



Mechanical Dimensions

Dimensions in inches *(mm)*

Body Style/Size	Body Length (L)	Body Width (W)	Body Thickness (T)	End Terminal Length (LE)	Middle Terminal Length (LM)
SF0603	0.063 +/-0.006 *(1.60 +/-0.15)*	0.031 +/-0.006 *(0.80+/-0.15)*	0.023 +/-0.006 *(0.6+/-0.15)*	0.008 +/-0.006 *(0.2 +/-0.15)*	0.020 +/-0.006 *(0.5 +/-0.15)*
SF0805	0.079 +/-0.008 *(2.0 +/-0.2)*	0.049 +/-0.008 *(1.25 +/-0.2)*	0.032 +/-0.008 *(0.8 +/-0.2)*	0.012 +/-0.008 *(0.3 +/-0.2)*	0.024 +/-0.008 *(0.6 +/-0.2)*
SF1205	0.126 +/-0.008 *(3.2 +/-0.2)*	0.049 +/-0.008 *(1.25 +/-0.2)*	0.028 +/-0.008 *(0.7 +/-0.2)*	0.016 +/-0.012 *(0.4 +/-0.3)*	0.043 +/-0.012 *(1.1 +/-0.3)*
SF1806	0.177 +/-0.012 *(4.5 +/-0.3)*	0.063 +/-0.012 *(1.6 +/-0.3)*	0.039 +/-0.012 *(1.0 +/-0.3)*	0.020 +/-0.012 *(0.5 +/-0.3)*	0.055 +/-0.012 *(1.4 +/-0.3)*

Ordering Information

Example: SF0805C221SBNCT

This part number represents a three terminal chip with a body size of 0805 with a COG (NPO) dielectric. The capacitance is 220 pF with a capacitance tolerance of +50%/-20%. Voltage rating is 50 Volts DC. It has nickel barrier, solder plated terminations and a current rating of 0.4 Amp, (400 milliamps). The parts are taped and reeled.

SF	0805	C	221	S	B	N	C	T
Style	**Size**	**Ceramic**	**Capacitance Code**	**Capacitance Tolerance**	**Rated Voltage (Vdc)**	**Termination**	**Current Rating**	**Packaging**
SF	**0603** **0805** **1205** **1806**	**C -** COG **X -** X7R **Y -** Y5V	First two numbers are significant, the third number refers to number of zeroes	**S -** +50%/-20% **Z -** +80%/-20%	**A -** 25 **B -** 50 **D -** 100	**N -** Ni Barrier, Solder Plated	**B -** 0.3 A **C -** 0.4 A **D -** 1 A **E -** 2 A **F -** 3 A **G -** 4 A **H -** 5 A **I -** 6 A	**T -** Tape & Reel **B -** Bulk

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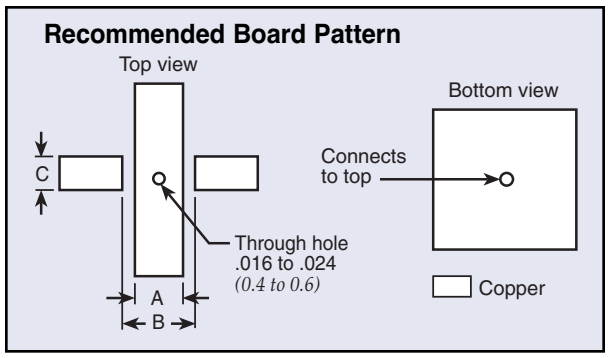
Surface Mount EMI Filters
Three Terminal Chips
Soldering Specifications

Soldering Instructions

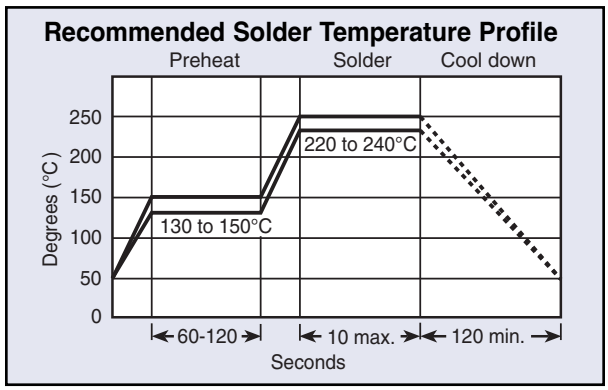
Reflow Soldering



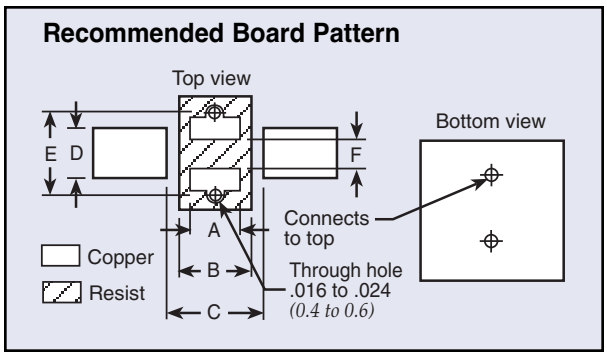
Board Pattern Dimensions in inches *(mm)*

Body Style/Size	Dimension		
	A	B	C
SF0603	0.020 (0.5)	0.047 (1.2)	0.031 (0.8)
SF0805	0.024 (0.6)	0.059 (1.5)	0.039 (1.0)
SF1205	0.051 (1.3)	0.091 (2.3)	0.047 (1.2)
SF1806	0.079 (2.0)	0.138 (3.5)	0.051 (1.3)

Reflow Soldering



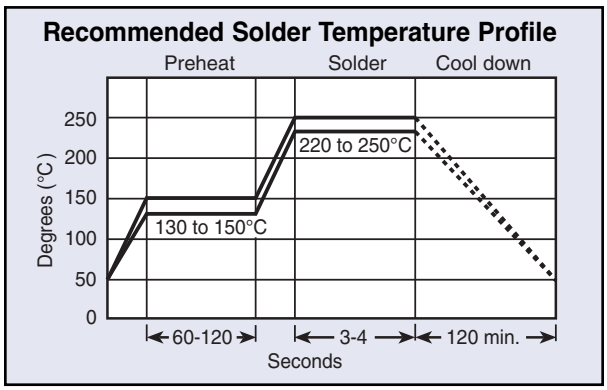
Flow Soldering



Board Pattern Dimensions in inches *(mm)*

Body Style/Size	Dimension					
	A	B	C	D	E	F
SF0603	0.020 (0.5)	0.031 (0.8)	0.047 (1.2)	0.031 (0.8)	0.071 (1.8)	0.016 (0.4)
SF0805	0.024 (0.6)	0.031 (0.8)	0.059 (1.5)	0.039 (1.0)	0.087 (2.2)	0.024 (0.6)
SF1205	0.051 (1.3)	0.059 (1.5)	0.091 (2.3)	0.047 (1.2)	0.118 (3.0)	0.024 (0.6)
SF1806	0.059 (1.5)	0.079 (1.5)	0.138 (3.5)	0.051 (1.3)	0.118 (3.0)	0.024 (0.6)

Flow Soldering



General Soldering Notes

1. High soldering temperatures and long soldering times can cause leaching of the termination and adversely affect adhesion. These conditions can also decrease capacitance value. Use the above recommended solder temperature cycle.
2. Due to the mechanical characteristic of ceramic composition, aggressive thermal shock will degrade performance. Preheat the assembly before soldering using the above solder temperature profile as a guide.
3. Use mild flux (less than 0.2% by weight of Chlorine), preferable rosin based. If water soluble, wash thoroughly to assure all residue is removed from the underside of components.
4. Ultrasonic Cleaning
   When using an ultrasonic cleaning method, the following range is recommended:

   Frequency: Not to exceed 28kHz
   Output Power: Not to exceed 20W/liter
   Cleaning Time: 5 minutes max

Surface Mount EMI Filters

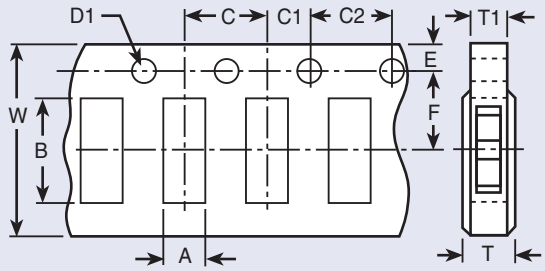
Three Terminal Chips Soldering Specifications

Package Quantities

Body Style/Size	Tape and Reel
SF0603	4,000 units/reel
SF0805	4,000 units/reel
SF1205	4,000 units/reel
SF1806	2,000 units/reel

Package Information

Paper Tape Dimensions
SF0805 and SF1205 Bodies



Dimensions in inches *(mm)*

Body Style/ Size	Chip Cavity		Tape			Holes			Hole Diameter	Thickness	
	Length A	Width B	Width W	Center to End F	Indexing to End E	Center to Center C	Indexing to Center C1	Indexing to Indexing C2	Indexing D1	Overall T (Max.)	Carrier Tape T1 (Max.)
SF0603	0.039 +/-0.00? *(1.0 +/-0.?)*	0.075 +/-0.00? *(1.9+/-0.?)*	0.315 +/-0.012 *(8.0 +/-0.3)*	0.138 +/-0.002 *(3.5 +/-0.05)*	0.069 +/-0.004 *(1.75 +/-0.1)*	0.157 +/-0.004 *(4.0 +/-0.1)*	0.079 +/-0.004 *(2.0 +/-0.1)*	0.157 +/-0.008 *(4.0 +/-0.1)*	0.059 +0.004/-0 *(1.5 +0.1/-0)*	0.043 *(1.1)*	0.039 *(1.0)*
SF0805	0.064 +/-0.008 *(1.62 +/-0.2)*	0.091 +/-0.008 *(2.3 +/-0.2)*	0.315 +/-0.012 *(8.0 +/-0.3)*	0.138 +/-0.002 *(3.5 +/-0.05)*	0.069 +/-0.004 *(1.75 +/-0.1)*	0.157 +/-0.004 *(4.0 +/-0.1)*	0.079 +/-0.004 *(2.0 +/-0.1)*	0.157 +/-0.008 *(4.0 +/-0.1)*	0.059 +0.004/-0 *(1.5 +0.1/-0)*	0.043 *(1.1)*	0.039 *(1.0)*
SF1205	0.067 +/-0.008 *(1.70 +/-0.2)*	0.138 +/-0.008 *(3.5 +/-0.2)*	0.315 +/-0.012 *(8.0 +/-0.3)*	0.138 +/-0.002 *(3.5 +/-0.05)*	0.069 +/-0.004 *(1.75 +/-0.1)*	0.157 +/-0.004 *(4.0 +/-0.1)*	0.079 +/-0.004 *(2.0 +/-0.1)*	0.157 +/-0.008 *(4.0 +/-0.1)*	0.059 +0.004/-0 *(1.5 +0.1/-0)*	0.043 *(1.1)*	0.039 *(1.0)*

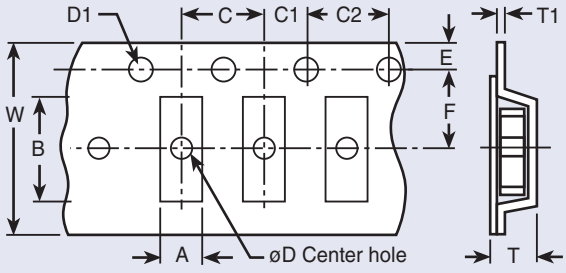
Plastic Reel Dimensions

Dimensions in inches *(mm)*

Body Style/Size	Diameter (Max.)	Width (Max.)
SF0603	7.00 *(180)*	0.46 *(11.5)*
SF0805	7.00 *(180)*	0.46 *(11.5)*
SF1205	7.00 *(180)*	0.46 *(11.5)*
SF1806	7.00 *(180)*	0.61 *(11.5)*

Package Information

Tape and Reel Specification
Plastic Carrier Tape Dimensions
SF1806 Body



Dimensions in inches *(mm)*

Body Style/ Size	Chip Cavity		Tape			Holes			Hole Diameter		Thickness	
	Length A	Width B	Width W	Center to End F	Indexing to End E	Center to Center C	Indexing to Center C1	Indexing to Indexing C2	Center D (Min.)	Indexing D1	Overall T (Max.)	Tape T1 (Max.)
SF1806	0.071 +/-0.008 *(1.80 +/-0.2)*	0.185 +/-0.008 *(4.70 +/-0.2)*	0.472 +/-0.008 *(12.0 +/-0.2)*	0.217 +/-0.002 *(5.5 +/-0.05)*	0.069 +/-0.004 *(1.75 +/-0.1)*	0.157 +/-0.004 *(4.0 +/-0.1)*	0.079 +/-0.004 *(2.0 +/-0.1)*	0.157 +/-0.008 *(4.0 +/-0.1)*	0.059 *(1.5)*	0.059 +0.004/-0 *(1.5 +0.1/-0)*	0.098 *(2.5)*	0.024 *(0.6)*

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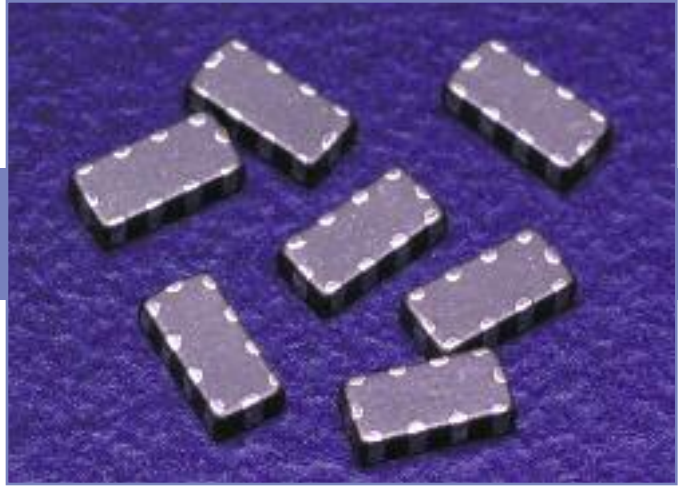
Surface Mount Filter Arrays
SA Series



Features

- The filter's structure minimizes residual inductance with a high self resonant frequency, ensuring large insertion loss in a wide band.
- The common ground electrode built into the chip ensures complete grounding of all lines at the ground on both ends. The filter is designed to control cross talk.
- An optimum constant can be selected from the capacity range of 22-22,000 pF to best suit the frequency.
- Solder plated nickel barrier terminations offer good solderability and resistance to soldering heat.
- Available lead free/RoHs compliant

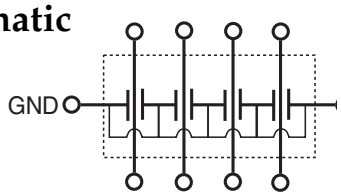
Applications

- Noise reduction for DC lines on computers
- Computer peripheral equipment
- Digital TV & VTR
- Cellular telephones
- Automotive electronics

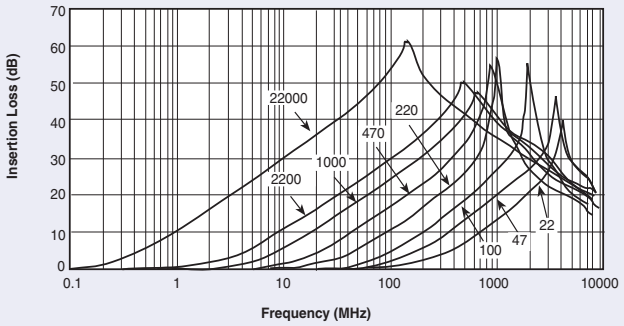
Typical Electrical Characteristics

Rated Voltage . . . . . 25 VDC to 50 VDC
Rated Current . . . . . 0.3 Amps
IR . . . . . 10,000 MΩ Min.
DC Resistance . . . . . 0.3 Ω Max.
Temperature Range . . . . . -55˚C to +125˚C
Capacitance Range . . . . . 22 pF to 22,000 pF
Capacitance Tolerance . . . . . ±20%

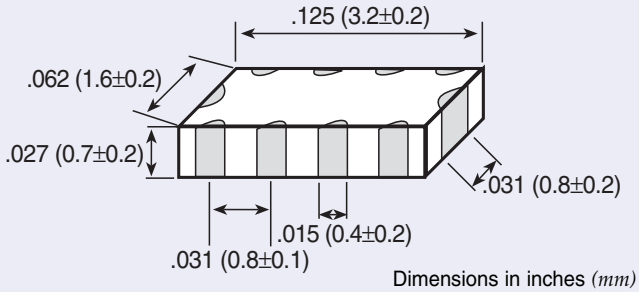
Circuit Schematic



Insertion Loss



Dimensions



Dimensions in inches *(mm)*

Specifications

Part Number	Rated Voltage (@ 50/60Hz)	Rated Current	Temperature Characteristic	IR	DC Resistance	Operating Temp	Capacitance (pF)
SA1206C220	50 VDC	0.3A DC	C	10,000 MΩ min.	0.3Ω max.	-55/+125˚C	22
SA1206C470			C				47
SA1206C101			C				100
SA1206C221			C				220
SA1206R471			U				470
SA1206R102			R				1,000
SA1206R222			R				2,200
SA1206R223	25 VDC		R				22,000

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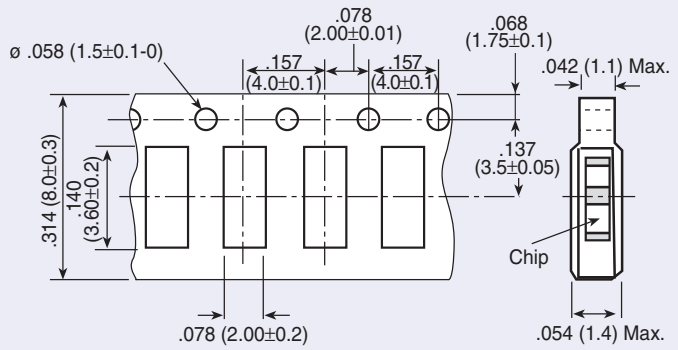
Surface Mount Filter Arrays
SA Series

Ordering Information

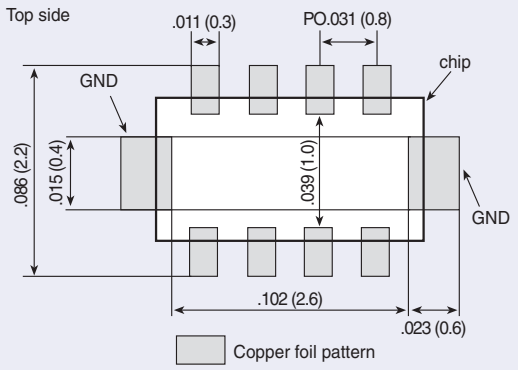
SA	1206	C	220	M	B	N	B
Style	**Size**	**Temperature Characteristics**	**Capacitance**	**Capacitance tolerance**	**Rated Voltage (Vdc)**	**Termination**	**Packaging**
SA Series	1206	**C** +/- 30 ppm/˚C **R** +/- 15% **U** -750 +/- 120 ppm/˚C	22 pF 47 pF 100 pF 220 pF 470 pF 1,000 pF 2,200 pF 22,000 pF	**M =** ± 20%	**A =** 25 **B =** 50	**N =** Ni Barrier Solder Plated	**T -** Tape and reel 4,000 pc/reel **B -** Bulk pack 1,000 pcs/bag

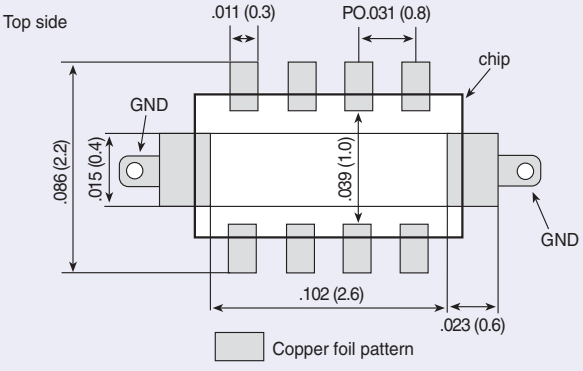
SA Tape and Reel Packaging

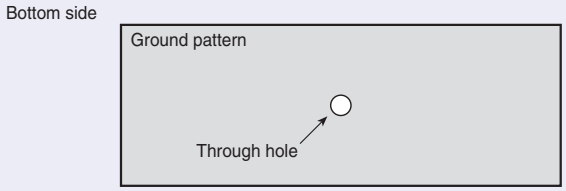


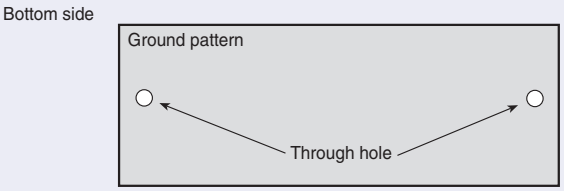
Dimensions in inches *(mm)*

Recommended Board Pattern









Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

Surface Mount Low Pass Filters

MSM, SSM, RSM & PSM Series

MSM - Miniature Surface Mount Chip Capacitors

The MSM series filters feature high temperature construction and have current ratings up to 10 Amps. The filter chips will hardly allow residual inductance and the self-resonant frequency extends to the microwave band. Applications include telecommunication equipment, computer and peripheral equipment and digital AV equipment, medical equipment, DC power supply lines.

- Miniature footprint help in dense circuit configuration
- Rated at 10 Amps
- Packaged in tape and reel or bulk form
- Operating temperature ranges of -25˚C to +85˚C and -55˚C to +125˚C
- Available lead free/RoHs compliant

SSM - Square Surface Mount Filters

The SSM series filters feature high temperature construction and have current ratings up to 10 Amps. This filter chip series is nonpolar and surface mountable with excellent performance characteristics and comes in a Pi circuit configuration. Applications include telecommunication equipment, computer and peripheral equipment, digital AV equipment, power amplifiers, power supplies and high current bus lines.

- Square mechanical geometry enhances SMT soldering
- Rated to 10 Amps
- Packaged in tape and reel or bulk form
- Operating temperature range of –55˚C to +125˚C
- Available lead free/RoHs compliant

RSM - Round Surface Mount Filters

The RSM series filters feature high temperature construction and have current ratings up to 10 Amps. This filter chip series is nonpolar and surface mountable with excellent performance characteristics and comes in a Pi circuit configuration. Applications include telecommunication equipment, computer and peripheral equipment, digital AV equipment, power amplifiers, power supplies and high current bus lines.

- Round mechanical geometry enhances SMT soldering
- Rated to 10 Amps
- Packaged in tape and reel or bulk form
- Operating temperature range of –55˚C to +125˚C
- Available lead free/RoHs compliant

PSM - Power Surface Mount Filters

The PSM series filters feature high temperature construction and have current ratings up to 20 Amps. This filter series is nonpolar and surface mountable with excellent performance characteristics and comes in either a Feed-through or Pi circuit configuration. Applications include telecommunication equipment, computer and peripheral equipment, digital AV equipment, power amplifiers, power supplies and high current bus lines.

- Provides time and costs saving compared to through-hole filters
- Rated to 20 Amps
- Packaged in tape and reel or bulk form
- Operating temperature range of –55˚C to +125˚C
- Available lead free/RoHs compliant

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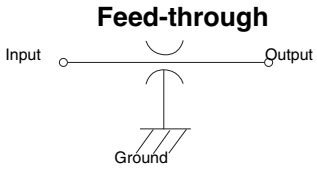
Spectrum Control

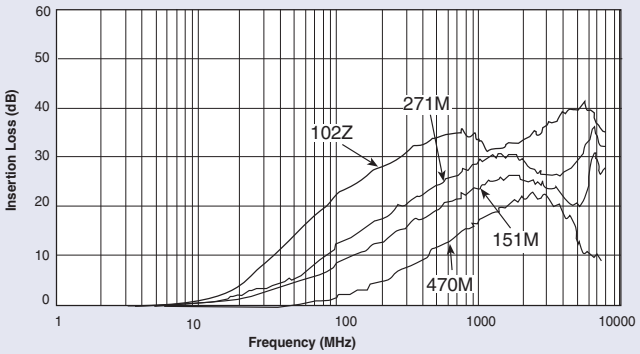
Surface Mount Low Pass Filters
MSM Series

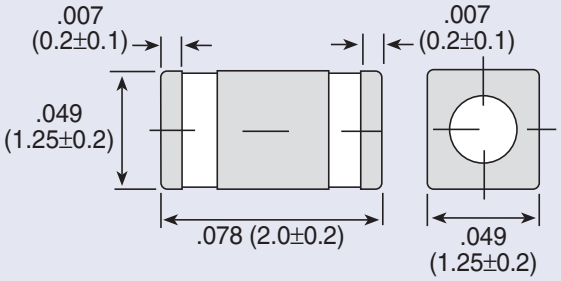
MSM



Working Voltage . . . . . 50 VDC
Test Voltage . . . . . 150 VDC
Current Rating . . . . . 10 Amps max.
Insulation Resistance . . . . . 1.0 MΩ
Terminations . . . . . Ni-Barrier
Soldering Conditions . . . . . Max. 250˚C-5 sec.

Insertion Loss





MSM

Dimensions in inches (mm)

MSM Ordering Information

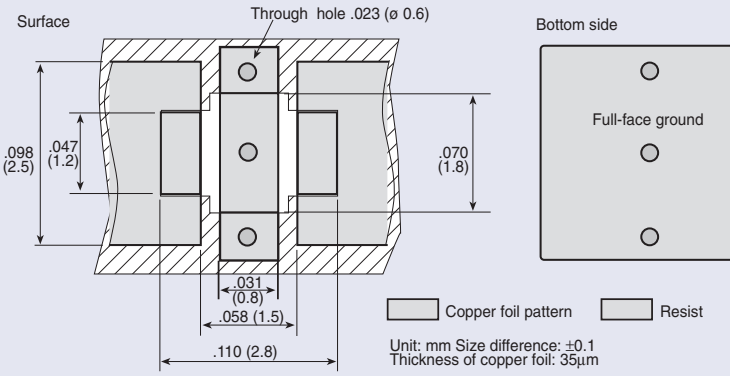
MSM	4	T	470M	10	T
Style	**Circuit Configuration**	**Temperature Characteristic**	**Capacitance**	**Current Rating**	**Packaging**
MSM (Miniature)	**4 -** Feed-Through	**R -** +/-15% **T -** +22/-33% **V -** +22/-82%		10 Amps	**T -** Tape and Reel 2,000 pcs/reel **B -** Bulk pack 1,000pcs/reel

Capacitance	
Value	**Tolerance**
47 pF	+50/- 20%

Specifications

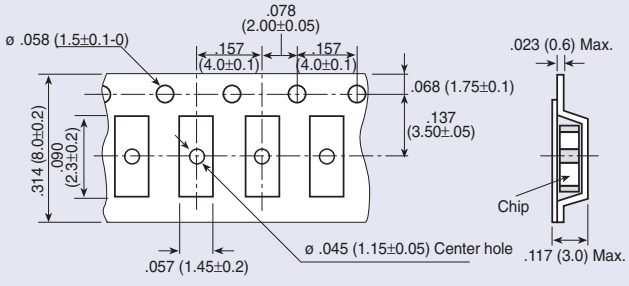
Part Number	Temperature Characteristics	Capacitance	Capacitance Tolerance	Current Rating	Rated Rating Rating	Temperature Range
MSM4T470M10	T	47pF	+50/-20%	10A	50VDC	-55/+125˚C
MSM4R151M10	R	150pF				-55/+125˚C
MSM4R271M10	R	270pF				-55/+125˚C
MSM4V102M10	V	1000pF				-25/+85˚C

MSM Recommended Board Pattern



Note: Exclusively for reflow soldering

MSM Tape and Reel Packaging



Dimensions in inches (mm)

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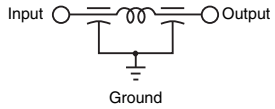
Spectrum Control

Surface Mount Low Pass Filters
SSM & RSM Series

SSM

Pi



Working Voltage . . . . . 100 VDC
Test Voltage . . . . . 250 VDC
Current . . . . . Max. 10 Amps
Insulation Resistance . . . . . Min. 10^4 MΩ
Terminations . . . . . Silver Ni-Tin plated
Soldering Conditions . . . . . Max. 250°C -5 sec.
Marking. . . . . . None
Packaging. . . . . . Bulk or tape and reel

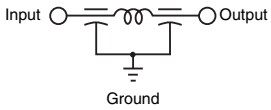
Note: Insertion loss shown for the following SSM values* only:

101Z
501P
202P

*Additional IL charts available by request.

RSM

Pi



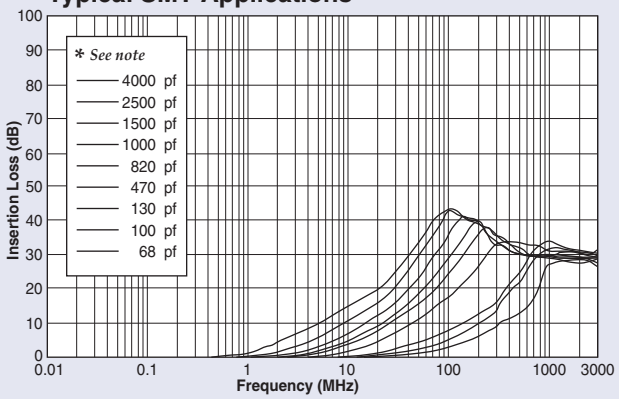
Working Voltage . . . . . 100 VDC
Test Voltage . . . . . 250 VDC
Current . . . . . Max. 10 Amps
Insulation Resistance . . . . . Min. 10^4 MΩ
Terminations . . . . . Silver Ni-Tin plated
Soldering Conditions . . . . . Max. 250°C -5 sec.
Marking. . . . . . None
Packaging. . . . . . Bulk or tape and reel

Note: Insertion loss shown for the following RSM values only:

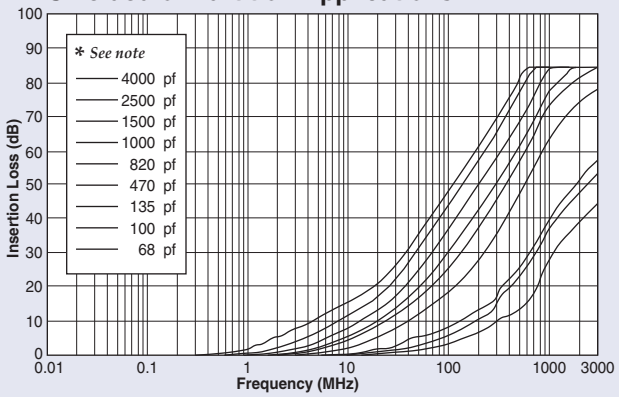
152P
402Z

Pi Insertion Loss

Typical SMT Applications

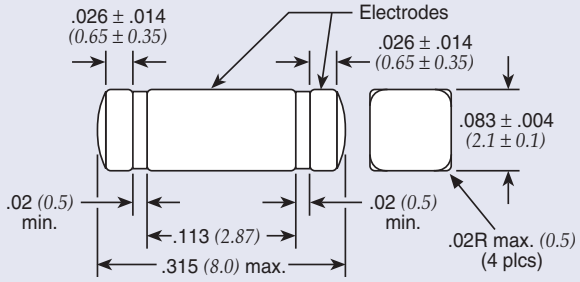


Shielded or Partition Applications

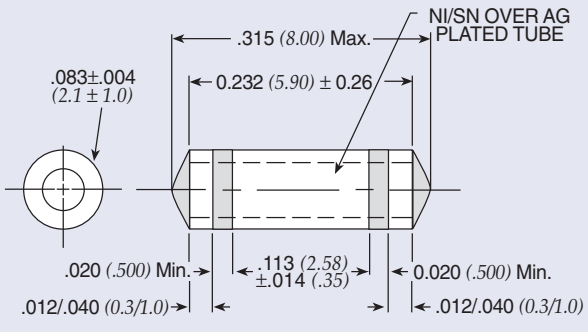


** Capacitance values for insertion loss curves are displayed left to right in the order shown.*

SSM



RSM



Dimensions in inches *(mm)*

Surface Mount Low Pass Filters

SSM & RSM Series

SSM & RSM Ordering Information

Example: **SSM1-101Z-05T**

SSM	1	-	101Z	-	05	T	1
Style	Circuit Configuration		Capacitance		Current Rating	Packaging	Tape and Reel

Style
SSM (Square)
RSM (Round)

Circuit Configuration
1 - Pi

Capacitance

Code	Value	Tolerance
101Z	100 pF	+80/-20%
501P	500 pF	+100/-0%
152P	1500 pF	+100/-0%
202P	2000 pF	+100/-0%
402E	4000 pF	±25
402Z	4000 pF	+80/-20%

Current Rating
05 - 5 Amps
10 - 10 Amps

Packaging
T - Tape and reel packaging
B - Bulk packaging

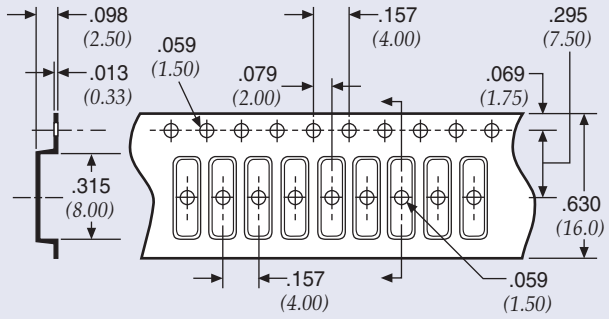
Tape and Reel
1 - 1,000 pieces
6 - 6,000 pieces
Note: Tape and reel packaging - 1,000 pieces (7") and 6,000 pieces (13")

† Also available through API's authorized distributors.

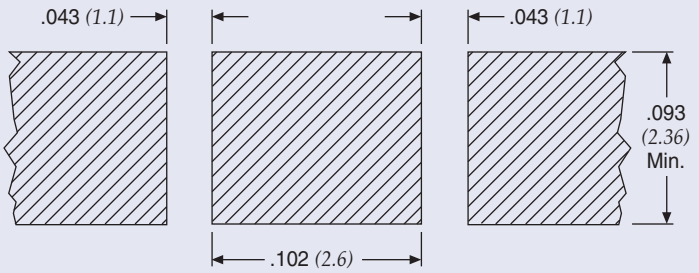
€ Also available through API's authorized European distributors/agents.

† SSM1-152P-05-T1 €

SSM/RSM Tape and Reel Packaging



SSM Recommended Board Pattern



Dimensions in inches *(mm)*

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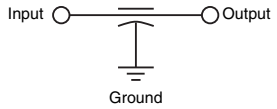
Spectrum Control

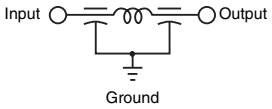
Surface Mount Low Pass Filters
PSM Series

PSM

Feed-Through



Pi

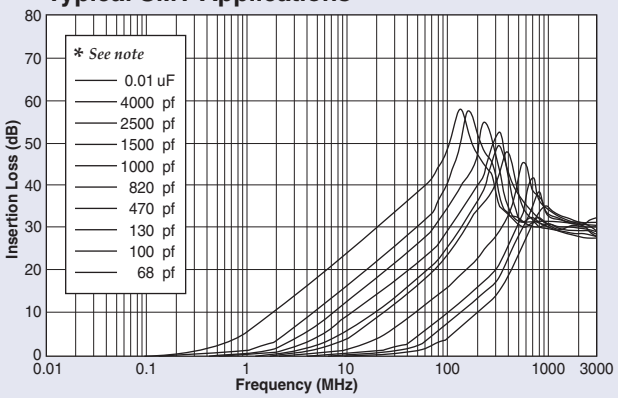


Voltage Rating DC . . . . . 200 VDC @ -55°C to +125°C
DWV . . . . . 700 VDC
Current Rating . . . . . 20 Amps (Feed-through) max.
10 Amps (Pi) max.
Insulation Resistance . . . . . 1.0 GΩ @ 25°C
Dissipation Factor . . . . . 4.0% maximum
D.C.R. . . . . . Max. .0005Ω, typ. .0002Ω

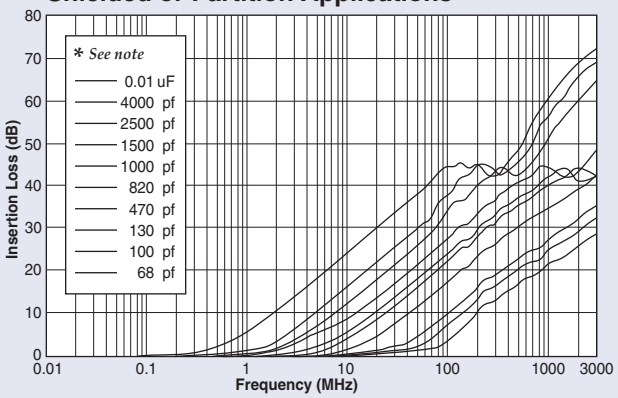
* AC rated parts available. Please consult factory.

Feed-Through Insertion Loss

Typical SMT Applications

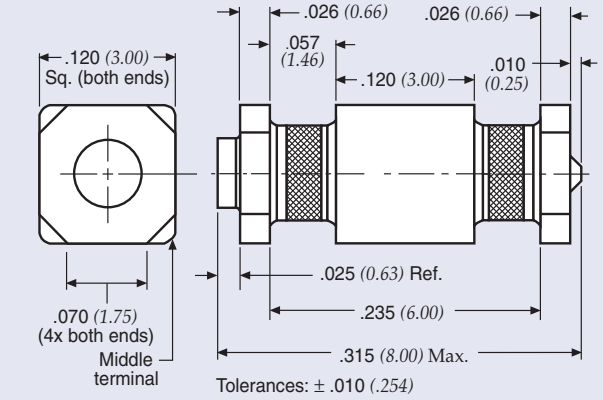


Shielded or Partition Applications



** Capacitance values for insertion loss curves are displayed left to right in the order shown.*

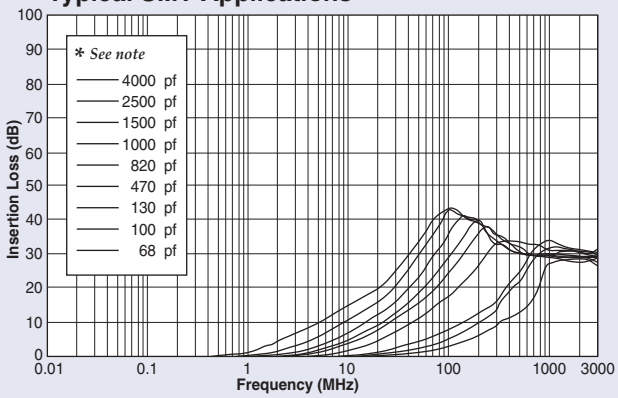
PSM



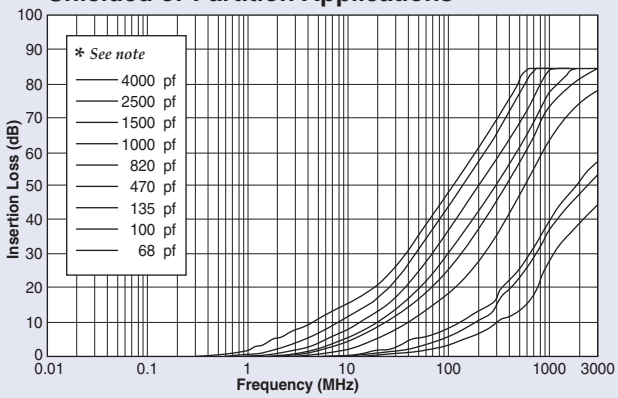
Dimensions in inches *(mm)*

Pi Insertion Loss

Typical SMT Applications



Shielded or Partition Applications



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Spectrum Control

Surface Mount Low Pass Filters
PSM Series

PSM Ordering Information

Example: **PSM4-402Z-20T0**

PSM	4	-	402Z	-	20	T	0
Style	Circuit Configuration		Capacitance		Current Rating	Packaging	Tape and Reel

Style
PSM (Power)

Circuit Configuration
1 - Pi
4 - Feed-through

† Also available through API's authorized distributors.

Capacitance

Code	Value*	Tolerance
680M	68 pF	±20%
101M	100 pF	±20%
131P	130 pF	+100/-0%
471P	470 pF	+100/-0%
821M	820 pF	±20%
102M	1000 pF	±20%
152M	1500 pF	±20%
252P	2500 pF	+100/-0%
402Z	4000 pF	+80/20%
103Z**	.01 µF	+80/-20%

Current Rating
10 - 10 Amps (Pi)
20 - 20 Amps (Feed-through)

Packaging
T - Tape and reel packaging
B - Bulk packaging

Tape and Reel
0 - 500 pieces
2 - 2,000 pieces
Note: Tape and reel packaging - 500 pieces (7") and 2,000 pieces (13")

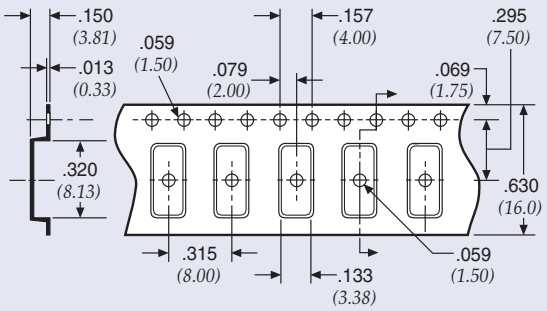
* *Other capacitance values available as special order.*

** *Available in Feed-through circuit only.*

Technical Notes

- Soldering recommendations supplied upon request
- Reflow temperature limit is 250°C
- Unit weight is approximately 0.4 grams
- Tape and reel packaging available for automated assembly

PSM Tape and Reel Packaging



Dimensions in inches *(mm)*

PSM Recommended Board Pattern

Solder paste pattern

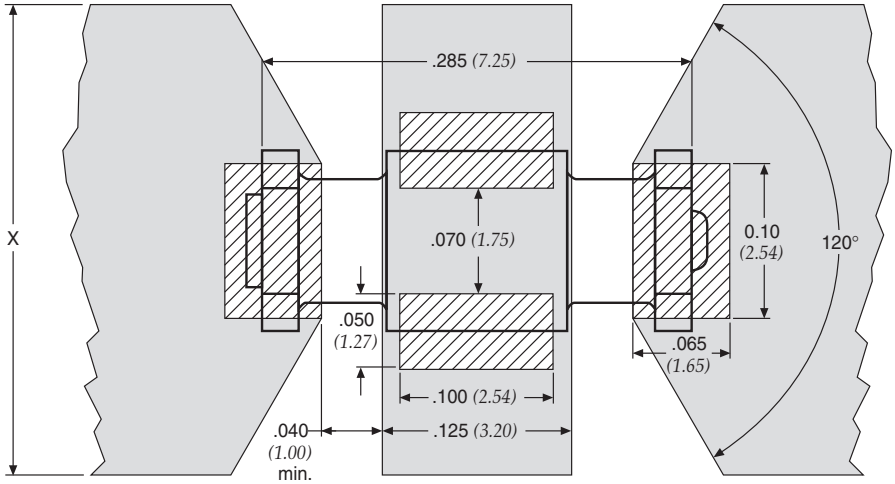
Recommended pad, must be able to support continuous signal current

X = 0.350" minimum for 1 oz. copper (0.036 mm thickness)

X = 0.200" minimum for 2 oz. copper (0.071 mm thickness)

For low current (10 Amp or less)
X = 0.130" minimum for 1 oz. copper (0.036 mm thickness for 10 Amp and 0.5 oz. copper - 0.018 mm thickness for 5 Amp or less)

Dimensions in inches *(mm)*



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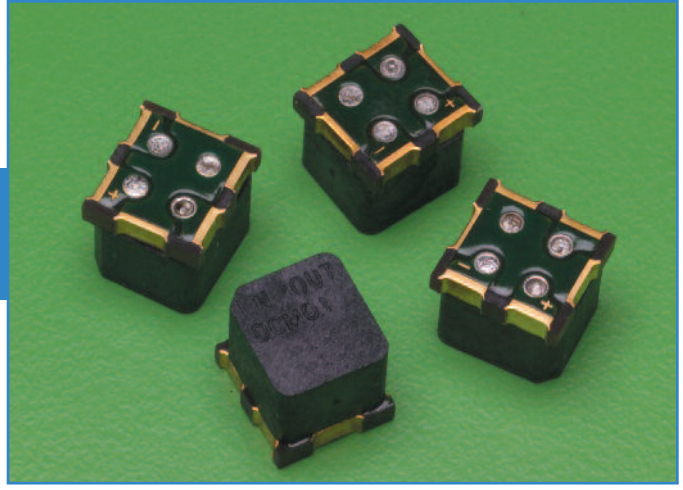
Spectrum Control

Mini Surface Mount Power Filters
MSP Series



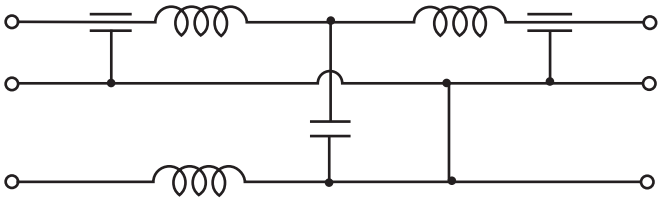
Features

- Designed for 10A DC power lines
- Offers high insertion loss in a wide frequency band by combining feed-through capacitors, multilayer ceramic capacitors and ferrite bead inductors with high self resonance frequency.
- Compact EMI package with plus and minus lines

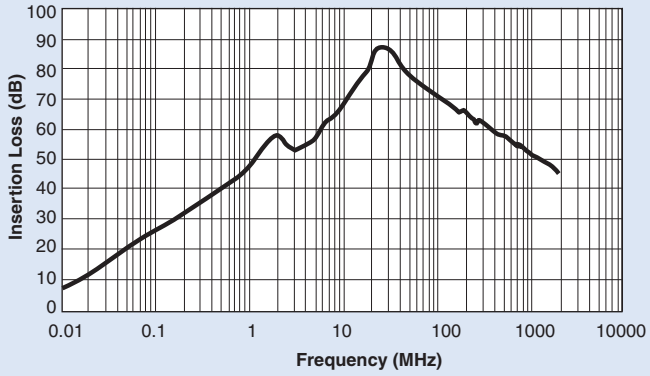
Applications

- Electronic measuring instruments
- Industrial equipment
- Automotive electronics
- Switching power supplies
- DC-DC converters

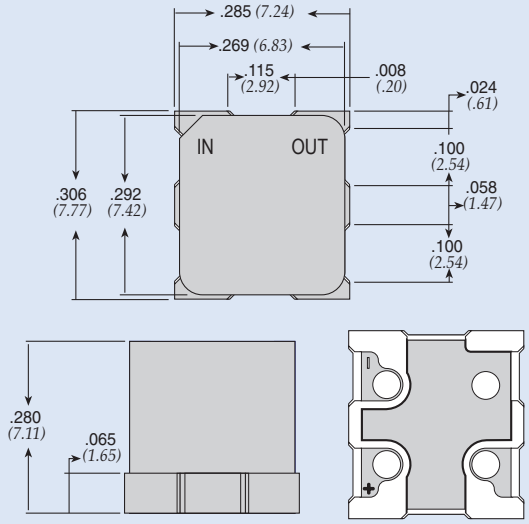
Circuit Schematic



Insertion Loss



Dimensions



Dimensions in inches *(mm)*

Specifications

Model	Rated Voltage	Rated Current	Insulation Resistance	Operating Temp.
MSP-007-050	50VDC	10A	500MΩ min.	-30°C ~ +105°C
MSP-010-050				-55°C ~ +125°C

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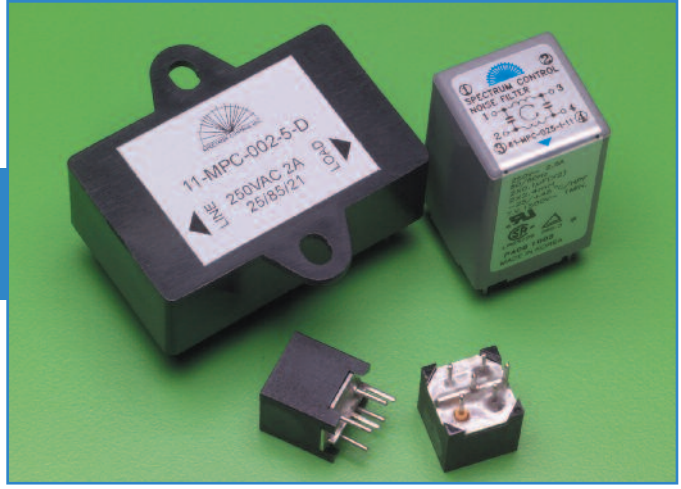
Spectrum Control

Miniature PCB Power Filters
MPC Series



Tested and found to be
IAW VDE 0565 Part 3

61-MPC Series

Rugged construction design enables parts to perform in industrial environments. The 61-MPC series is ideally suited for products that must conform to FCC part 15 regulations. Agency approvals: UL recognized, CSA certified, TUV approved (tested and found to be in accordance with VDE 0565 Part 30. Applications include:

- Personal computers and peripherals
- Measuring instruments
- Home appliances and vacuum cleaners
- Monitor and display units
- Switching power supplies
- Available lead free/RoHs compliant

11-MPC Series

Power filters are available in PCB mount, bolt-in, fast-on tab or solder lug. The 11-MPC series is ideally suited for products that have been limited board space and require a low cost alternative. Available in both metal and plastic cases. Applications include:

- Personal computers and peripherals
- Digital equipment
- Measuring instruments and medical equipment
- TV & VCR monitors and display units
- Available lead free/RoHs compliant

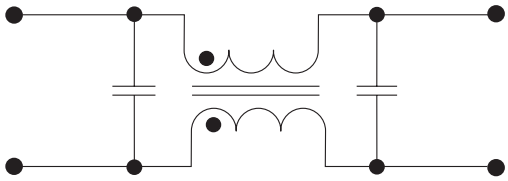
MPC-010/-015 Series

The compact design of the MPC-010 and -015 series power filters integrates a feed-through capacitor, multilayer ceramic capacitor and ferrite bead inductors. This series is ideally suited for dense PCB's and where both positive and negative lines have reduced EMI in one housing. Applications include:

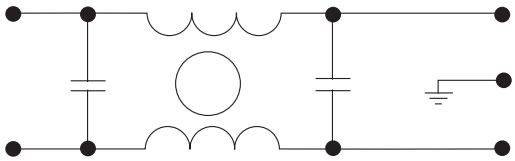
- DC power lines on industrial equipment
- Measuring instruments
- Home appliances and vacuum cleaners
- Monitor and display units
- Switching power supplies
- Available lead free/RoHs compliant

Circuit Diagrams

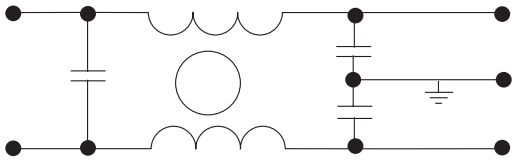
Circuit 1



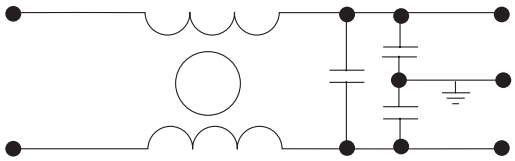
Circuit 2



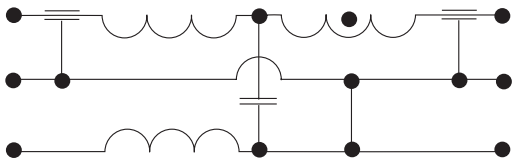
Circuit 3



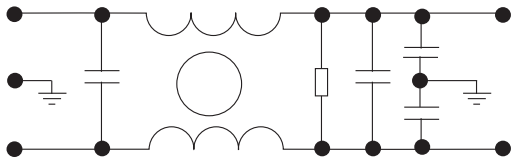
Circuit 4



Circuit 5



Circuit 6



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api technologies corp.
Spectrum Control

Miniature PCB Power Filters
MPC Series

Specifications

Model	Rated Voltage (@ 50/60Hz)	Rated Current	Leakage Current (Max.)	Inductance (L_1)	Temperature Rise (Max.)	Circuit Diagram	Figure
61-MPC-010-1-11	250VAC	1A	0.1mA	11mH	40˚C	1	A
61-MPC-016-1-11		1.6A		6.0mH			
61-MPC-025-1-11		2.5A		2.4mH			
61-MPC-036-1-11		3.6A		1.2mH			
11-MPC-001-2-B	120/250VAC	1A	5uA	———	30°C	2	B1
11-MPC-001-5-A			0.50mA			3	B
11-MPC-001-5-B							B1
11-MPC-002-5-B		2A				4	E
11-MPC-002-5-D							F
11-MPC-003-5-E		3A				3	B1
11-MPC-006-5-B		6A					D
11-MPC-006-5-C							
11-MPC-016-5-B		16A	0.2mA			6	C
MPC-010-050	50 VDC	10A	———	———	———	5	G
MPC-010-250	250 VDC						
MPC-015-050	50VDC	15A					

Note: Test voltage: 1500VAC one minute, line to ground. Insulation resistance: 300 MΩ min. at 500VDC. Voltage drop: 1V max. at rated current. Weight: 17.5g

Figure A

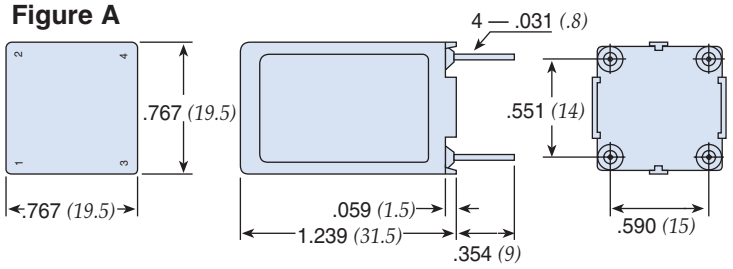


Figure B

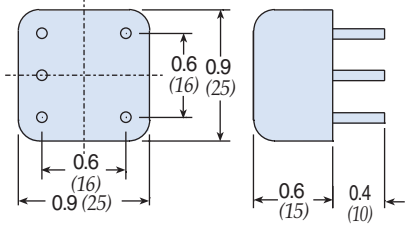


Figure B1

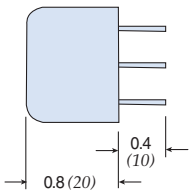


Figure C

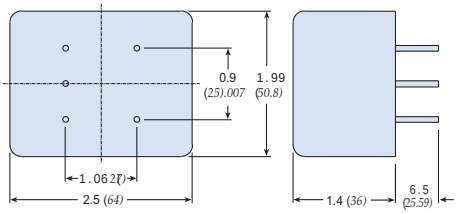


Figure D

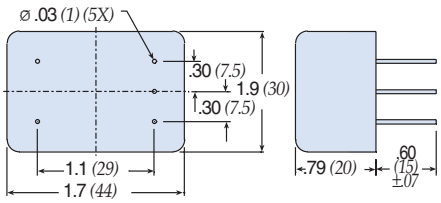


Figure E

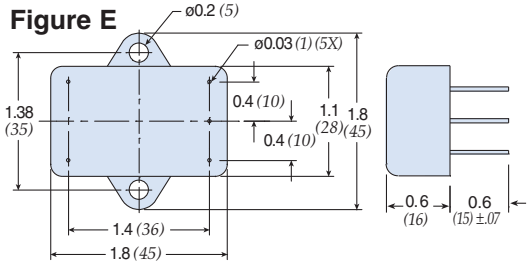


Figure F

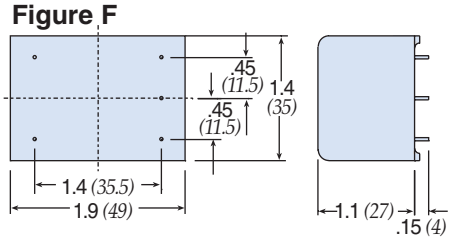
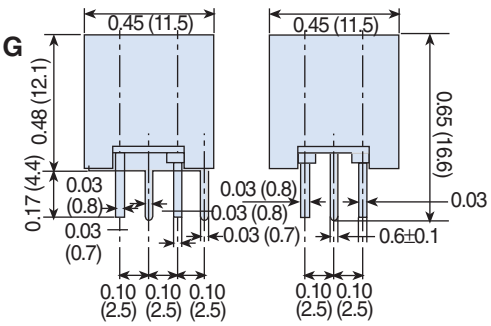


Figure G



Dimensions in inches *(mm)*

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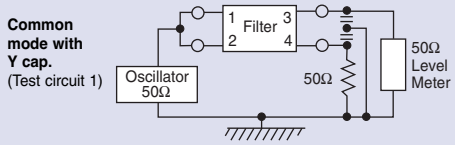
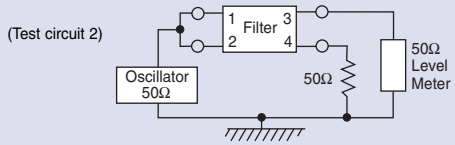
Miniature PCB Power Filters

MPC Series

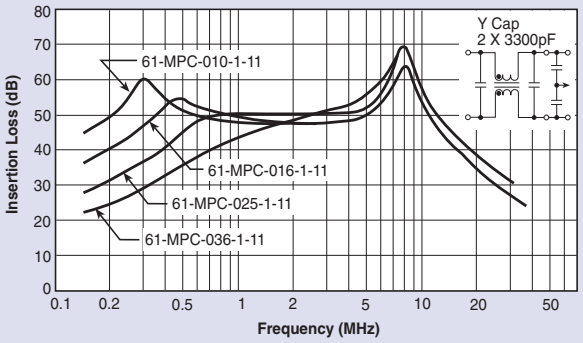
61-MPC Series

Common Mode





61-MPC



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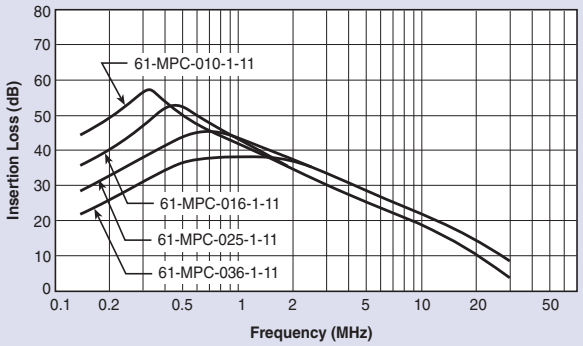
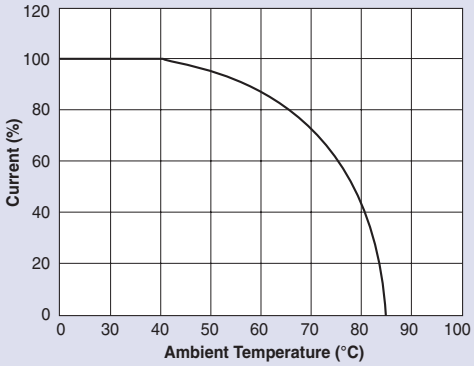
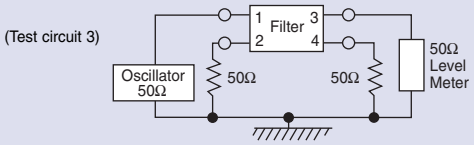


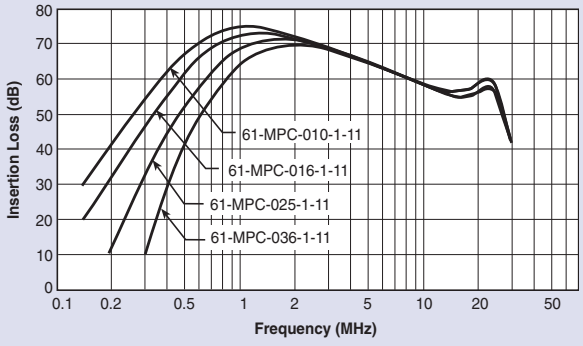
Temperature Characteristics



Normal Mode



61-MPC

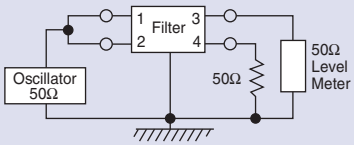


Miniature PCB Power Filters

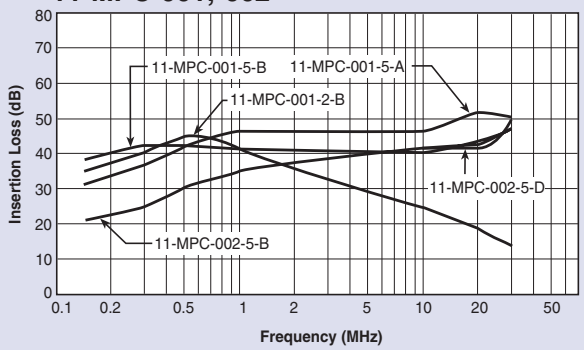
MPC Series

11-MPC Series

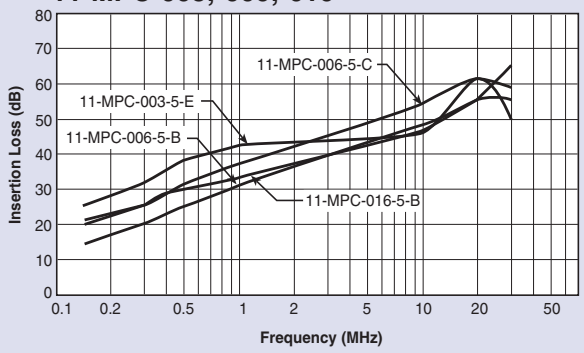
Common Mode



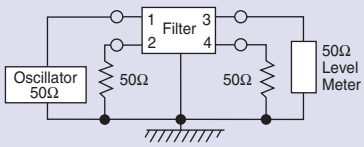
11-MPC-001;-002



11-MPC-003;-006;-016



Normal Mode



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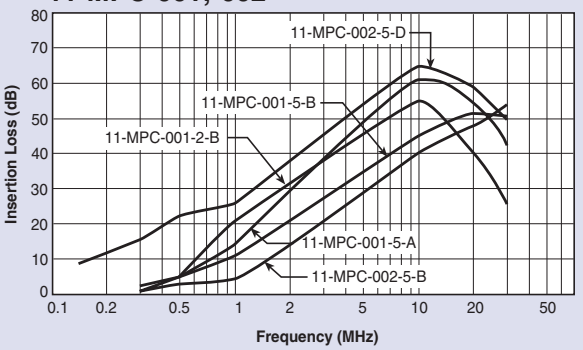
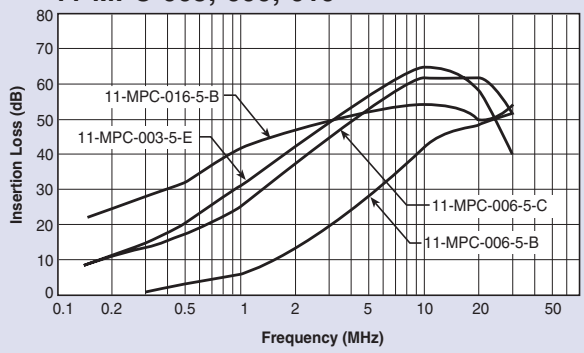
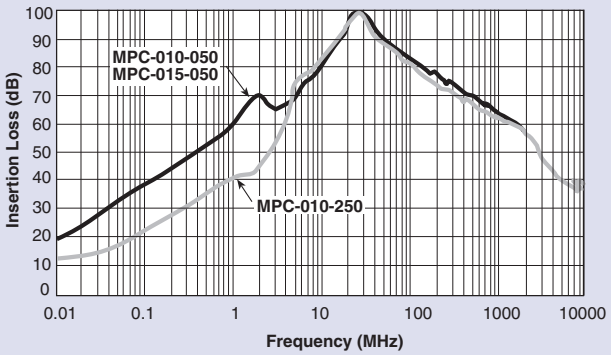


11-MPC-003;-006;-016



MPC-010 & 015 Series

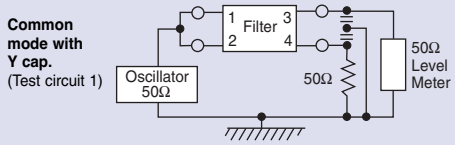


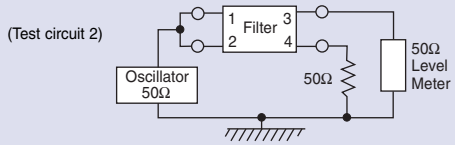
Miniature PCB Power Filters

MPC Series

61-MPC Series

Common Mode





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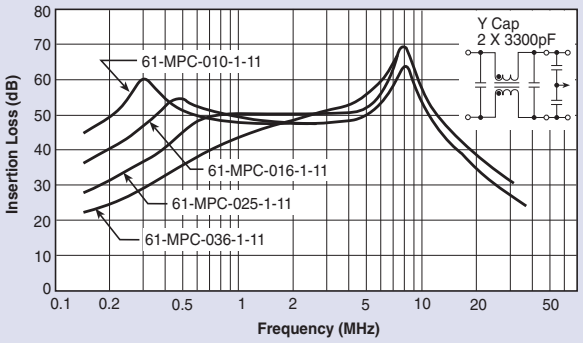

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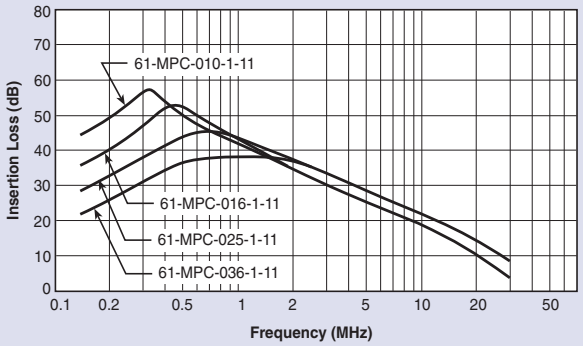
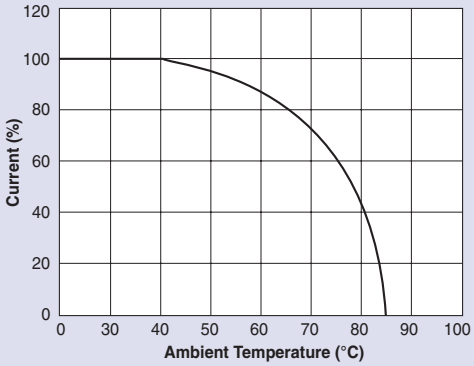
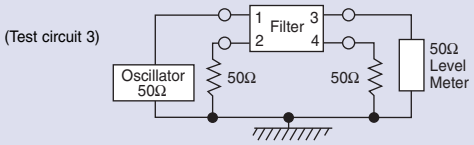


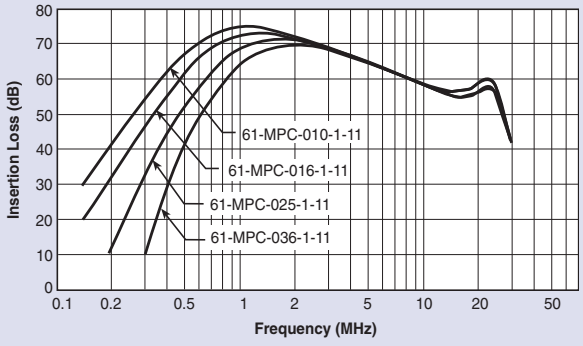
Temperature Characteristics



Normal Mode



61-MPC

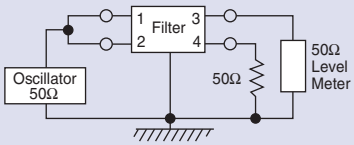


Miniature PCB Power Filters

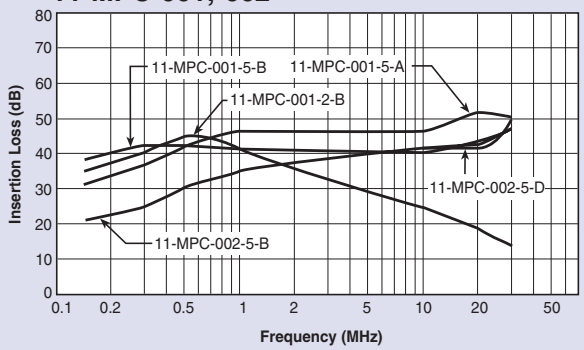
MPC Series

11-MPC Series

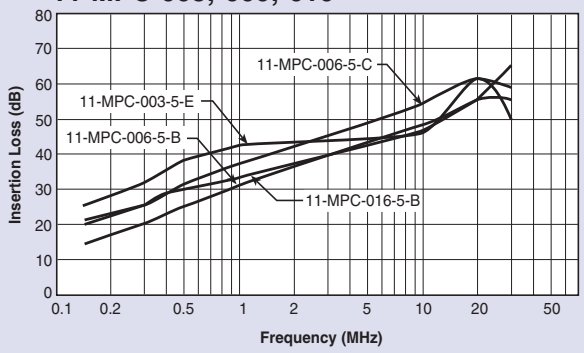
Common Mode



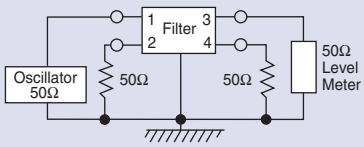
11-MPC-001;-002



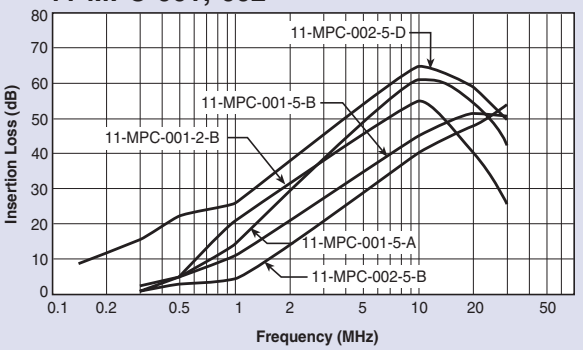
11-MPC-003;-006;-016



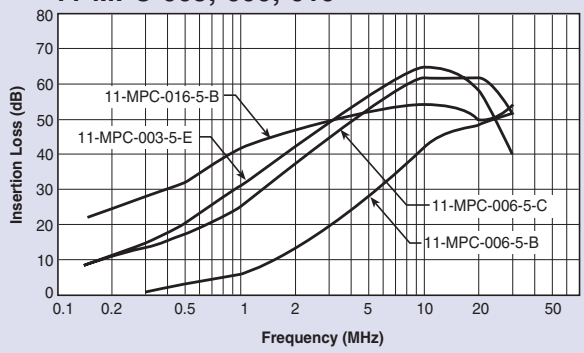
Normal Mode



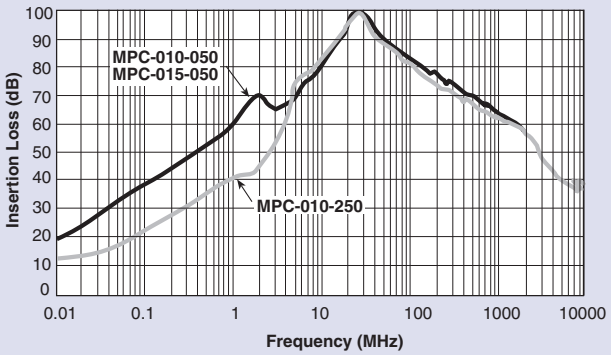
11-MPC-001;-002



11-MPC-003;-006;-016



MPC-010 & 015 Series



api technologies corp.
Spectrum Control

Through-hole Filters

High Frequency PCB Filters

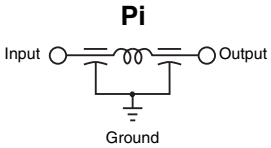
API Technologies' Spectrum Control line of high frequency PCB filter provides EMI filtering to protect low power digital circuits, while meeting most government and industrial specifications for EMI control. With low assembly and installation costs, the PCB filter helps keep your project on budget. By mounting the PCB filter at the source of the problem, we eliminate the need for additional filtering at other points in the circuit. The filter mounts directly to a printed circuit board with no mounting bracket or plate needed, providing you with a lower total installed cost. In addition, the PCB filter can be flow-soldered with other components.

API's PCB filter has built-in standoffs, which allow for cleaning or coating beneath the filter, and the filter is encapsulated for environmental protection.

Features

- Provides EMI filtering to protect low power digital circuits - helps equipment meet FCC and VDE specifications
- Mounts directly to printed circuit board with no bracket or plate for lower applied costs - can be flow soldered with other components
- Encapsulated for environmental protection
- Mounts on PCB to begin filtering at the source of the problem
- Built-in standoffs permit cleaning or coating under the filter

Circuit Schematic

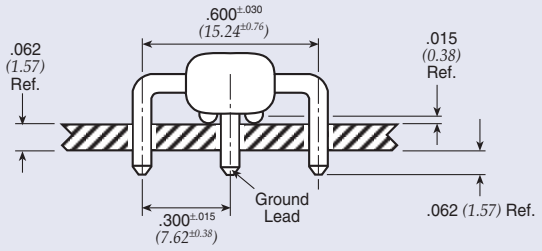


Typical Electrical Characteristics

Current	Max. 10A DC; 0.3A RF
Operating Voltage	Max. 50 VDC, -25°C to +85°C
Capacitance	800 pF min.
Dissipation Factor	0.1 Max.
Dielectric Withstanding Voltage	125 VDC for 5 seconds
Insulation Resistance	Min. 100 MegOhms at 100 VDC for 2 minutes and 25°C
Direct Current Resistance	0.002 ohms Max.
Minimum No-Load Insertion Loss	Per MIL-STD-220 at 25°C; PCB mounted, 50 ohm strip line 3dB @ 8 MHz 10dB @ 25 MHz 15dB @ 50 MHZ 20dB @ 100 MHz-1GHz

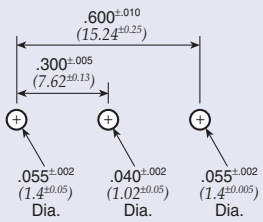
Preformed to Recommended Mounting Configuration
Part Number 842448-2

Recommended Mounting Configuration



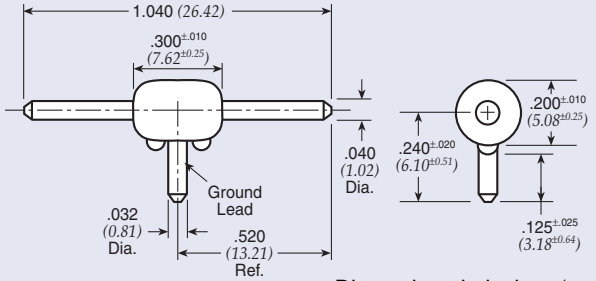
Dimensions in inches *(mm)*

Recommended PCB Hole Layout



Dimensions in inches *(mm)*

Standard Configuration **Part Number 842448-1**



Dimensions in inches *(mm)*

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Low Pass EMI Filters

the industry's most complete line of EMI filters gives you more style, size, IL performance and cost alternatives

Motor Line Feed-Through (MLFT) Filters are high capacitance filters specifically designed for DC motor and other lower voltage applications. This one-component solution addresses EMI noise issues and eliminates the need for multiple components and electrical connections… **LP2**

Solder-In Filters offer an ideal solution for applications in critical areas where space does not allow for use of mounting tools or hardware. Available in C, Pi and standard L circuit configurations and primarily used in filtering signal/data lines and AC power lines… **LP3-LP7**

9900 Series Filters have a knurled design allowing them to be pressed into place creating a reliable mechanical bond making them an excellent choice for applications where soldering is undesirable… **LP8-LP11**

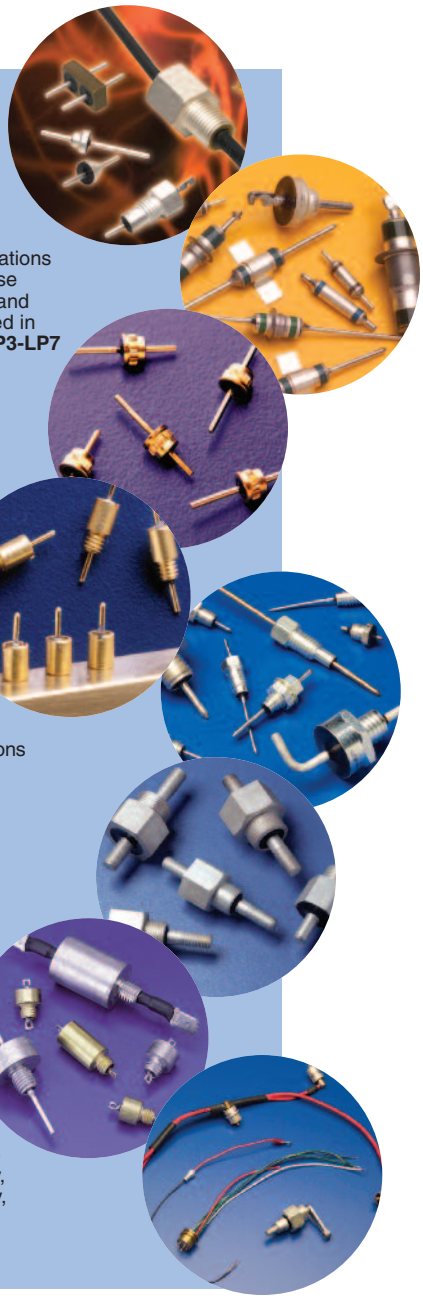
Spec Spin Filters are an excellent choice for applications that require many lines to be filtered in close proximity to each other due to their space saving #2-56 threaded miniature EMI spanner design. These filters are designed without a hex and do not require soldering for installation… **LP12**

Resin Sealed Filters provide excellent environmental protection in a rugged case that is resin sealed at both ends and easily mounted with a tapped hole or through hole. These filters are provided in C, L and Pi configurations with metric threading available… **LP13-LP24**

High Current Resin Sealed Filters are ideal for use in high current 5 volt logic buss, as well as ±48 VDC telephone rack buss, high current switch mode power supplies and DC charging systems. These filters feature rugged bolt-in style for easy installation… **LP25-LP26**

Hermetically Sealed Filters feature hermetic glass seals and high EMI filtering performance making them highly reliable in the toughest environmental conditions. These filters are available with C, L, Pi, T and double T configurations with MIL-F-15733 and MIL-F-28861 QPL filters available… **LP27-LP42**

Value Added Assemblies offer flexible solutions by allowing you to add connectors, modify terminations or add wire harnesses, thereby lowering your cost of acquisition and assembly, reducing your production time/costs and inventory, all while giving you a filter assembly that meets your unique design challenges… **LP43**



Low Pass EMI Advantages

API Technologies' Spectrum Control brand was founded in 1968 as a designer and manufacturer of Electromagnetic Interference (EMI) filters. Today, API continues that work, combining knowledge with excellence. These many years of experience have yielded an engineering-driven team that understands how and where potential EMI problems exist in an electronic system and how to best eliminate them. With an extensive library of standard products and a willingness to develop an application-specific custom solution, our customers count on us to help them satisfy global EMC standards while meeting demanding design parameters.

- Wide range of package sizes, mounting options and circuit configurations offering maximum design flexibility
- Develop custom application-specific solutions addressing your mechanical and electrical requirements
- High reliability construction… built in accordance to MIL-PRF-15733 or MIL-PRF-28861
- Over 800 standard QPL products and DSCC part numbers
- Effective filtering up to 18 GHz
- Reliability testing available for customer specific requirements

For complete specs and drawings, visit eis.apitech.com/low_pass_filters.asp

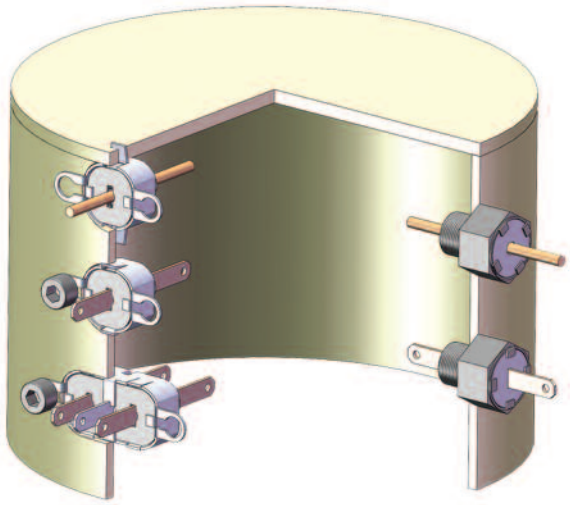
API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

api technologies corp.
Spectrum Control

Motor Line Feed-Through (MLFT) Filters (Patent Pending)

As the world leader in EMC, API Technologies' Spectrum Control brand has developed a family of high capacitance filters specifically designed for DC motor and other lower voltage applications. The Motor Line Feed-Through (MLFT) filter is a one-component solution that eliminates the need for multiple capacitors, inductive coils, leads and PCB assemblies requiring numerous electrical connections and large amounts of space. MLFT filters (patent pending) are engineered to provide the required EMI filtering and mechanical interface at a reduced cost.

MLFT filters offer significant insertion loss to pass global conductive and radiated EMC tests, such as CISPR 25. Our standard line of filters can be designed into mechanical packages for easy retrofit into existing designs or as custom assemblies to simplify installation during production. These filters are available in stamped or threaded housings, with single or dual lines, and round leads or Faston terminals for applications to 100 volts.



Benefits

- Easy installation, provides a connector interface
- Excellent EMI filtering through GHz range
- Competitive cost
- Space saving EMI solution
- Fewer electrical connections
- Failsafe DC open circuit for safety concerns
- Standard and custom filtering and mechanical packages
- Transient voltage and surge protection available

Ordering Information

Example: **MLFT2-001-TFCAC**

The part number shown represents a single line, threaded MLFT Filter with Faston Terminals, a capacitance rating of 0.20 µF and a voltage rating of 100V.

MLFT2	-	001	-	T	F	CA	C
Motor Line Feed-Through Filter				**Style** **T** = Single line threaded **S** = Single line stamped **D** = Dual line stamped	**Terminal** **F** = .110 Faston **R** = .062 round lead	**Capacitance** **CA** = .20 µF **CC** = 2000 pF **CD** = 20 pF	**Voltage Rating** **C** = 100V

api technologies corp.
Spectrum Control

Solder-in Filters

Solder-in filters are ideal for use in critical areas where space does not allow use of mounting tools or hardware. The solder-in feature also allows installation in unison with other board mounted components. Primarily used in filtering signal/data lines and DC power lines.

Features

- Small size to allow effective use of space
- Voltage ratings to 750 VDC
- Multiple circuit configurations: C, L & Pi available
- High temperature construction to prevent reflow during installation
- MIL-F-15733 QPL versions available

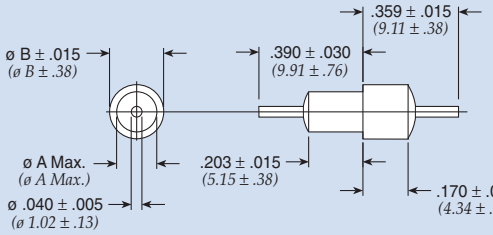


Figure 1

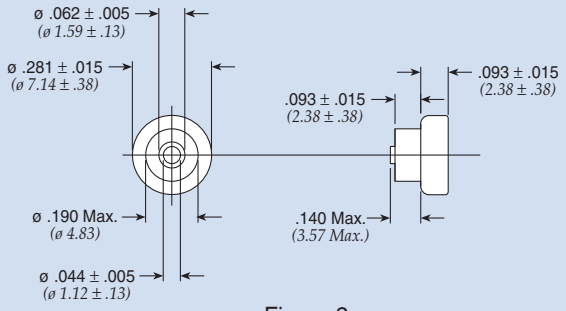


Figure 2

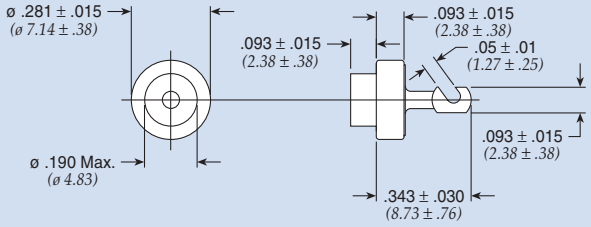


Figure 3

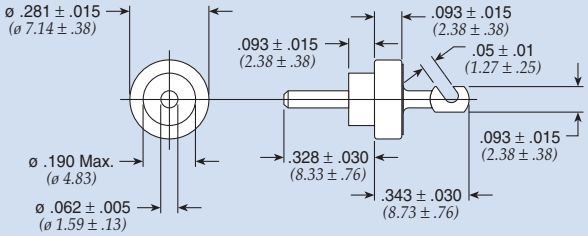


Figure 4

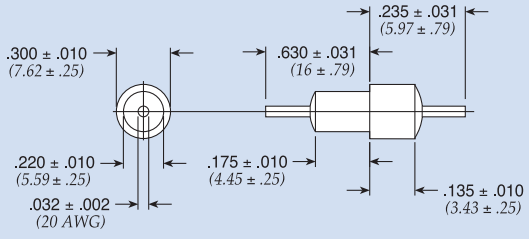


Figure 5

Dimensions in inches *(mm)*

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Solder-in Filters

Solder-in C Circuit

Part Number	See Pg. LP3 for Fig.	A In	A (mm)	B In	B (mm)	Rated Voltage 125°C DC	I Amp	Cap*	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
54-786-003	1	0.156	*(3.96)*	0.203	*(5.16)*	50	10	0.30 µF	32	47	54	60	66	70	70
54-785-002	1	0.125	*(3.18)*	0.184	*(4.67)*	100	10	0.05 µF (min)	16	33	41	45	48	50	50
54794002X5R101M	4	—	—	—	—	250	25	100 pF ± 20%	—	—	—	—	10	20	20
54803004X5R101M	3	—	—	—	—	250	25	100 pF ± 20%	—	—	—	—	10	20	20
54802002X5R101M	2	—	—	—	—	250	25	100 pF ± 20%	—	—	—	—	10	20	20
†**54794002X5R471M**	4	—	—	—	—	250	25	470 pF ± 20%	—	—	—	12	22	25	25
†**54803004X5R471M**	3	—	—	—	—	250	25	470 pF ± 20%	—	—	—	12	22	25	25
54802002X5R471M	2	—	—	—	—	250	25	470 pF ± 20%	—	—	—	12	22	25	25
†**54802002X5V102P**	2	—	—	—	—	250	25	1000 pF	—	—	—	15	25	35	40
†**54803004X5V102P**	3	—	—	—	—	250	25	1000 pF	—	—	—	15	25	35	40
†**54794002X5V102P**	4	—	—	—	—	250	25	1000 pF	—	—	—	15	25	35	40
†**54-786-077**	5	—	—	—	—	750	10	1000pF	—	4	—	20	25	35	40

† Also available through API's authorized distributors.

* Tolerances are +100/-0% unless noted.

Solder-in Filters

Solder-in Pi Circuit

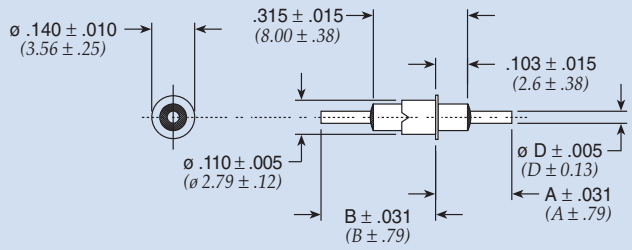


Figure 1

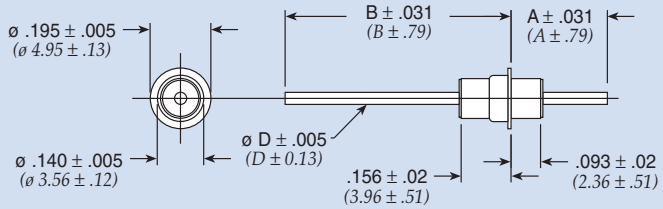


Figure 2

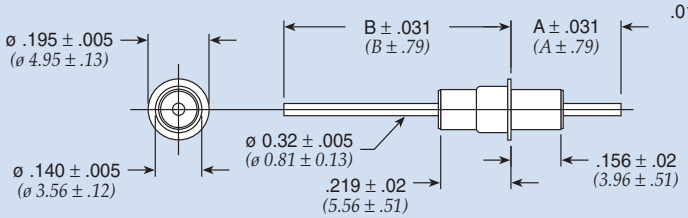


Figure 3

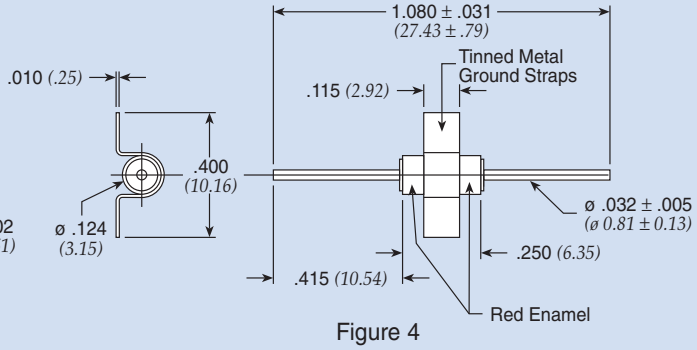


Figure 4

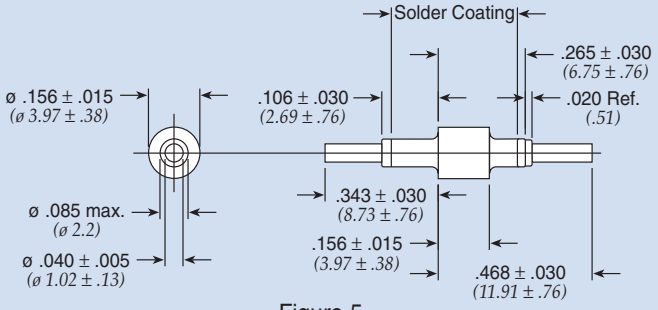


Figure 5

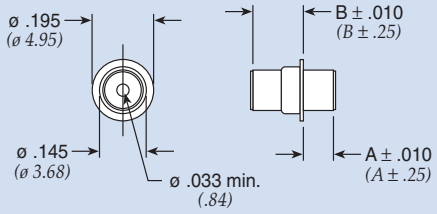
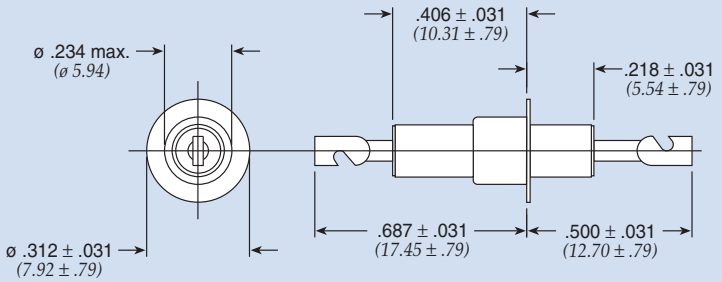


Figure 6



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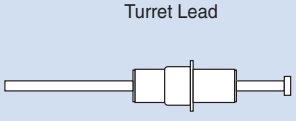

Figure 8

Dimensions in inches *(mm)*

Solder-in Filters

Solder-in Pi Circuit

Part Number	M15733 MIL Number	See Pg. LP5 for Fig.	A In	A (mm)	B In	B (mm)	D In	D (mm)	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-703-013*	/62-0003	3	0.312	*(7.92)*	0.469	*(11.91)*	0.032	*(0.81)*	70	—	10	1500 pF	—	5	12	50	50	65	65
51-750-309*	/62-0004	2	0.268	*(6.81)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.012 µF	5	22	50	70	70	65	65
†**1234-000*** €	—	2	0.257	*(6.53)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.012 µF	5	25	50	70	70	70	70
51-749-304	—	4	—	—	—	—	—	—	70	—	10	0.012 µF	5	25	50	70	70	65	65
1234-001	—	4	—	—	—	—	—	—	70	—	10	0.012 µF	5	25	50	70	70	65	65
†**51-750-301***	—	2	0.250	*(6.35)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.012 µF	5	25	50	70	70	70	70
†**1233-000*** €	—	3	0.312	*(7.92)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.022 µF	7	35	60	70	70	70	70
†**51-750-302***	—	3	0.312	*(7.92)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.022 µF	7	25	60	70	70	70	70
51-750-313	/51-0002	3	0.312	*(7.92)*	0.780	*(19.81)*	0.032	*(0.81)*	70	—	10	0.022 µF	7	25	60	70	70	70	70
†**51-723-303**	—	5	—	—	—	—	—	—	200	—	10	1300 pF	—	5	15	30	45	55	55
51-713-010	/62-0002	1	1.140	*(28.96)*	1.277	*(32.44)*	0.032	*(0.81)*	200	—	10	1500 pF	—	5	12	45	50	70	70
†**1251-001** €	—	1	1.109	*(28.17)*	1.206	*(30.63)*	0.032	*(0.81)*	200	—	10	1500 pF	—	5	15	40	50	70	70
51-703-001*	—	3	0.312	*(7.92)*	0.406	*(10.31)*	0.032	*(0.81)*	200	—	10	1500 pF	—	8	17	45	65	70	70
†**1203-050** €	—	3	0.312	*(7.92)*	0.406	*(10.31)*	0.032	*(0.81)*	200	—	10	1500 pF	—	5	15	45	50	70	70
51-703-012*	/62-0001	3	0.312	*(7.92)*	0.406	*(10.31)*	0.032	*(0.81)*	200	140	10	1500 pF	—	3	15	45	50	70	70
51-713-002	—	1	1.103	*(28.01)*	1.212	*(30.78)*	0.032	*(0.81)*	200	—	10	1500 pF	—	5	12	40	70	70	70
1214-029	—	2	0.288	*(7.31)*	0.780	*(19.81)*	0.032	*(0.81)*	200	—	10	1750 pF	—	5	15	50	60	60	70
†**1214-007** €	—	6	0.093	*(2.36)*	0.157	*(3.99)*	—	—	200	—	10	1750 pF	—	5	15	35	50	60	60
51-707-002*	—	2	0.288	*(7.31)*	0.780	*(19.81)*	0.032	*(0.81)*	200	—	10	1750 pF	—	8	17	50	65	70	70
†**1214-001***	—	2	0.288	*(7.31)*	0.780	*(19.81)*	0.032	*(0.81)*	200	—	10	1750 pF	—	5	15	50	50	60	60
†**51-707-006***	/33-0001	2	0.288	*(7.31)*	0.780	*(19.81)*	0.032	*(0.81)*	200	90	10	1750 pF	—	5	15	50	50	60	60
51-707-007	/33-0002	2	0.288	*(7.31)*	0.780	*(19.81)*	0.032	*(0.81)*	200	90	10	1750 pF	—	5	15	50	50	60	60
51-707-026	/66-0001	6	0.288	*(7.31)*	0.157	*(3.99)*	—	—	200	—	10	1750 pF	—	5	15	35	50	50	50
†**51-750-322**	—	2	1.123	*(28.52)*	1.347	*(34.21)*	0.040	*(1.02)*	200	—	10	3000 pF	—	7	25	50	65	65	65
51-703-007*	/51-0001	3	0.312	*(7.92)*	0.406	*(10.31)*	0.032	*(0.81)*	200	200	10	5500 pF	—	15	30	55	65	70	70
1223-012	—	1	0.240	*(6.10)*	0.360	*(9.14)*	0.040	*(1.02)*	200	—	15	3000 pF	—	7	25	50	65	65	65
†**1204-050** €	—	7	0.210	*(5.34)*	—	—	—	—	500	—	25	3000 pF	—	8	25	50	65	70	70
51-704-002	/40-0001	7	0.234	*(5.94)*	—	—	—	—	500	350	25	3000 pF	—	7	25	55	65	70	70

* Denotes parts with turret on one end per Figure 8.
† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.

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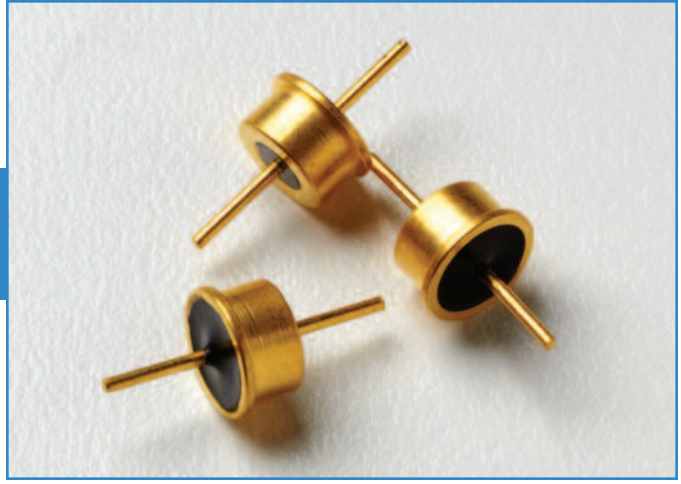
Spectrum Control

Large Diameter Solder-in High Temp Filters



Features

- .400" diameter mounting vs .128" diameter mounting
- High temperature construction withstands 300°C installation temperatures
- Increased capacitance values than standard 9900 series - up to 1.2uF
- EMI filtering from 500KHz up to 10GHz
- 15 Amp current rating
- Ideal for low to medium impedance circuits where large amounts of capacitance to ground can be tolerated (feed-thru "C" circuit)
- Glass seal one end provides protection from hostile environments and maintain hermeticity
- Rugged monolithic discoidal capacitor construction
- Gold plated suited for gold bonding
- Designed to be soldered into a package, bracket or bulkhead
- Reverse seal available
- Special lead length and end terminations available

Large Diameter Solder-in High Temp Filters

Part Number	Circuit	AMP	DC Voltage	Min Cap (µf)	Minimum Insertion Loss (dB)					
					500 KHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
SCI-9945-125H	C	15	50	1.2	33	37	52	70	70	70
SCI-9945-504H	C	15	100	.50	26	34	42	58	70	70
SCI-9945-754H	C	15	100	.75	31	37	43	62	70	70
SCI-9945-105H	C	15	100	1.0	31	40	48	64	70	70
SCI-9945-503HAC	C	15	200*	.050	7	15	34	42	70	70
SCI-9945-154HAC	C	15	200*	.15	17	24	38	50	70	70
SCI-9945-103H	C	15	400	.010	—	4	20	34	50	60
SCI-9945-503H	C	15	400	.050	7	15	34	44	70	70

* Rated 200VDC or 125VAC/400Hz

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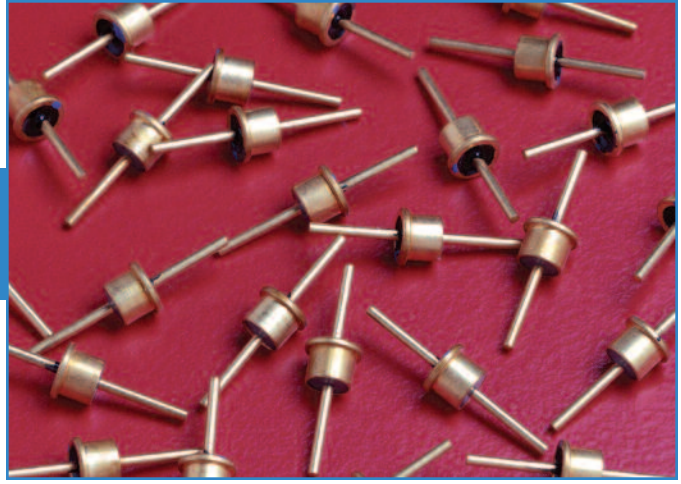
Spectrum Control

Miniature Solder-in Filters
9900 Series



These filters are ideal for microwave applications such as attenuators and oscillators, and perform well in high impedance circuits where large capacitance values are not practical.

Features

- Miniature size to allow effective use of space
- Standard capacitance values from 5pF to .033µF
- Voltage ratings to 200 VDC/115 VAC 0–400 Hz
- Hermetically sealed on one end allows for through-hole sealing between compartments
- High temperature construction meets MIL-F-28861 solderability and resistance to soldering heat requirements
- Available in MIL-C-11015 versions — see page CF10
- Gold plating compatible with gold bonding techniques

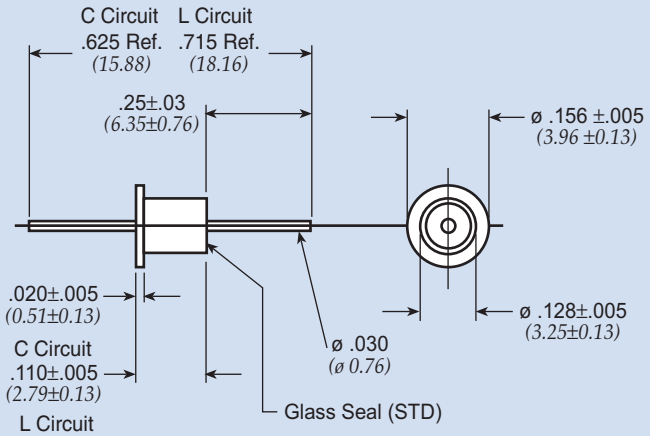


Figure 1

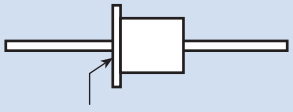


Figure 1 (Reverse)*

Dimensions in inches *(mm)*

Marking C Circuit

Color dot standard as follows:

- 101 Green – 100pF
- 501 Brown – 500pF
- 102 Purple – 1000pF
- 122 White – 1200pF
- 272 Red – 2700pF
- 502 Blue – 5000pF
- 153 Pink – 15000pF
- 000 None – 10pF max

Marking L Circuit

Color dot standard as follows:

- 100 Violet – 10pF
- 250 Blue – 25pF
- 102 White – 1000pF
- 152 White – 1500pF
- 502 Yellow – 5000pF
- 103 2White – .01µF
- 153 2White – .015µF
- 273 2Red – 27000pF
- 333 2Red – .033µF

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Miniature Solder-in Filters
9900 Series

Miniature Solder-in C Circuit

Part Number*	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
SCI-9900-153	1	50		5	0.015 µF	7	25	30	40	40	60	60
SCI-9900-303	1	50		5	0.030 µF	10	30	35	45	50	55	55
†SCI-9910-272	1	100		5	2700 pF	—	10	18	25	33	40	50
†SCI-9910-502	1	100		5	5000 pF	—	15	20	30	35	45	55
SCI-9900-000	1	200		5	4 pF max.	—	—	—	—	—	10	10
†SCI-9920-101	1	200	115	5	100 pF	—	—	—	3	10	20	28
†SCI-9920-501	1	200	115	5	500 pF	—	—	—	15	22	35	40
†SCI-9920-122	1	200	115	5	1200 pF	—	5	10	20	28	35	45

* For reverse glass seal add an "R" to the end of the part number (SCI-9900-153R).
† Also available through API's authorized distributors.
Parts are RoHS Compliant

Miniature Solder-in L Circuit

Part Number*	Figure	Rated Voltage 125°C DC	I Amp	Min Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
SCI-9980-100	1	200	10	10 pF	—	—	—	7	20
SCI-9980-101	1	200	10	100 pF	—	—	5	22	35
SCI-9980-102	1	200	10	1000 pF	—	8	25	40	42
SCI-9980-103	1	200	10	.01 uF	8	27	48	65	65
SCI-9980-122	1	200	10	1200 pF	—	8	28	42	50
SCI-9980-152	1	200	10	1500 pF	—	10	28	43	53
SCI-9980-153	1	200	10	.015 uF	10	28	50	65	65
SCI-9980-250	1	200	10	25 pF	—	—	—	13	25
SCI-9980-272	1	200	10	2700 pF	8	13	32	45	55
SCI-9980-273	1	50	10	27,000 pF	13	33	53	75	75
SCI-9980-333	1	200	10	.033 uF	13	35	55	75	75
SCI-9980-501	1	200	10	500 pF	—	—	18	37	38
SCI-9980-502	1	200	10	5000 pF	8	17	35	47	55

* Reverse seal available. Add R at the end of the part number. (SCI-9980-102R).
Note: Hi-rel versions available. Add R after the first dash. (SCI-R9980-102).
Lt circuit part number series SCI-9981-XXX.
Parts are RoHS Compliant

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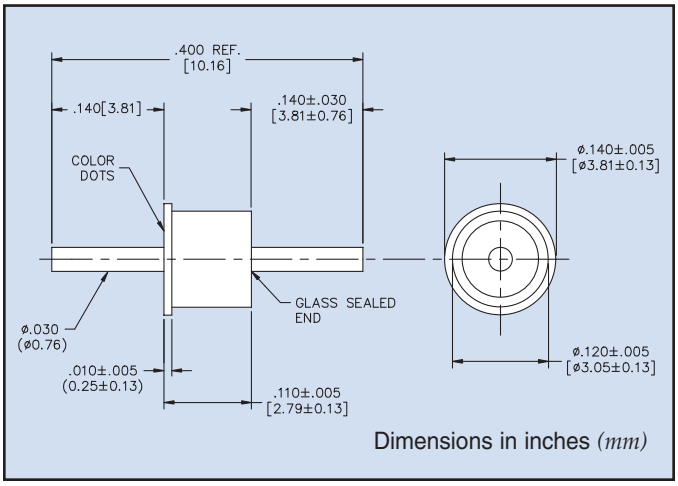
Spec Mini Solder-in Feed-Thru Filters

API Technologies miniature solder-in filters are hermetically sealed on one end for thru-hole sealing between compartments allowing it to be soldered into a package, bracket, or bulkhead while maintaining hermetically. These mini EMI filters are ideal for a variety of products intended for use in the microwave frequency spectrum including oscillators, attenuators, and synthesizers. The high temperature construction meets military requirements for solderability and resistance to soldering heat and its high-purity gold plating provides excellent compatibility with gold bonding techniques.



Dimensions in inches *(mm)*

Features

- .120" diameter mounting
- Capacitance values from 5pF to .027µF
- RoHS compliant
- Reverse seal available
- High temperature construction

Part Number	DC Amps	Working Voltage	Cap (µf)	Minimum Insertion Loss (dB)					
				500 KHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz
SCI-9909-008	5	200	5	—	—	—	—	—	5
SCI-9909-009	5	200	10	—	—	—	—	5	20
SCI-9909-010	5	200	25	—	—	—	—	10	25
SCI-9909-011	5	200	50	—	—	—	—	10	25
SCI-9909-012	5	200	100	—	—	—	3	20	28
SCI-9909-013	5	200	250	—	—	—	5	22	30
SCI-9909-014	5	200	500	—	—	—	15	35	40
SCI-9909-015	5	200	1000	—	—	5	20	35	45
SCI-9909-016	5	200	1500	—	—	5	22	35	45
SCI-9909-017	5	100	2700	—	—	10	25	40	50
SCI-9909-018	5	100	5000	—	—	15	30	45	55
SCI-9909-019	5	50	10,000	—	4	21	35	50	60
SCI-9909-020	5	50	27,000	—	10	28	42	55	65

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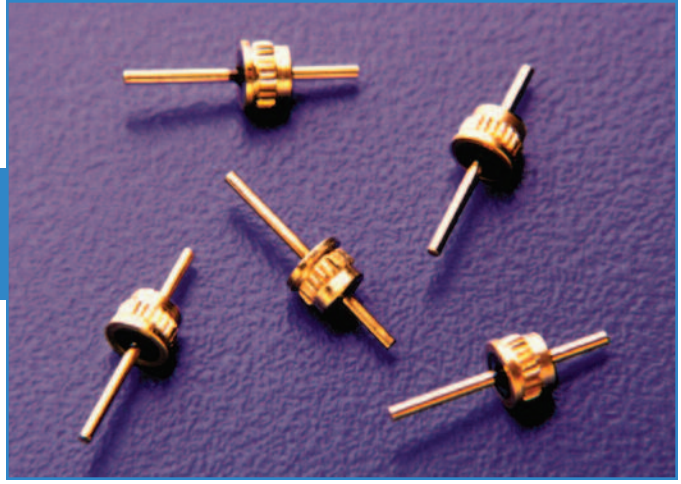
Spectrum Control

Spec Mini-Press 9900 Series



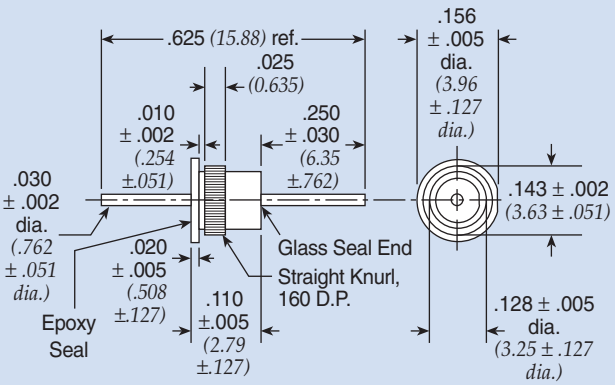
This new knurled filter is designed to be pressed into place and create a reliable mechanical bond. This feature makes it an excellent selection for applications where soldering is undesirable. Suitable plating is available that allows gold bonding to the terminals.

Applications

These filters are ideal for microwave and RF applications such as attenuators, synthesizers, and oscillators. They perform well in high impedance circuits where large capacitance values are not practical.

Installation

- .136" to .137" (3.45-3.48mm) diameter hole
- Hole must be free of all insulating materials.
- Installation tool must have a hole of sufficient depth and diameter to accept the terminal of the filter.
- Installation force must be applied gradually and smoothly until the flange of the filter is seated against the receiving part (request installation instructions).



Built and tested in accordance with MIL-F-15733.

Figure 1

Dimensions in inches *(mm)*

Mechanical Specifications

Installation . . . . . Press-in

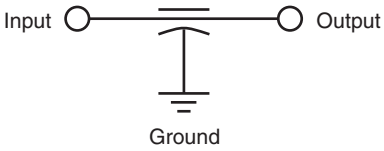
Plating . . . . . Gold

Seal . . . . . Glass sealed on one end, resin sealed on the other end

Termination Options . . . . . Plating suitable for gold bonding

Operating Temperature . . . . -55°C to +125°C

Circuit Schematic



Insertion Tool

Part Number: SCI-9925-200

Part Number	Figure	Rated Voltage 125°C DC	I Amp	Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†SCI-9925-153	1	50	5	0.015 µF +100%/-0%	7	25	30	40	40	60	60
†SCI-9925-303	1	50	5	0.030 µF +100%/-0%	10	30	35	45	50	55	55
†SCI-9925-502	1	100	5	5000 pF +100%/-0%	—	15	20	30	35	45	55
†SCI-9925-000	1	200	5	10 pF max.	—	—	—	—	—	10	10
†SCI-9925-101	1	200	5	100 pF +100%/-0%	—	—	—	3	10	20	28
†SCI-9925-501	1	200	5	500 pF +100%/-0%	—	—	—	15	22	35	40
†SCI-9925-122	1	200	5	1200 pF +100%/-0%	—	5	10	20	28	35	45
SCI-9925-272	1	200	5	2700 pF +100%/-0%	—	10	18	25	33	40	50

† Also available through API's authorized distributors.
Note: Parts are RoHS Compliant

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

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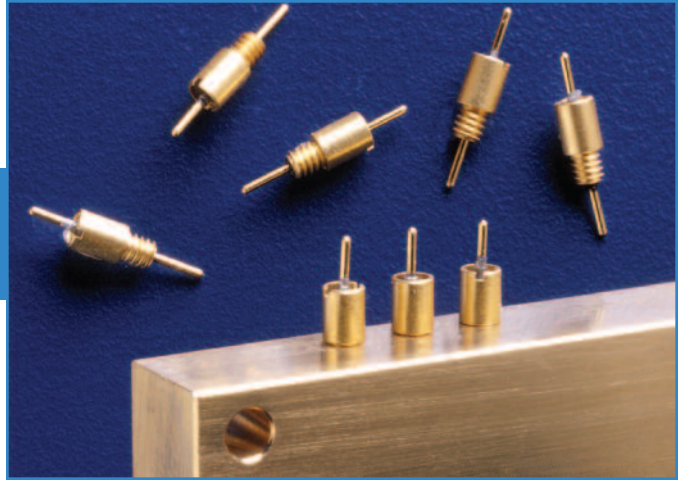
Spectrum Control

Spec Spin Filters



API Technologies' Spectrum Control brand introduces the new space saving #2-56 threaded miniature EMI spanner filter. This new threaded filter is designed without a hex and does not require soldering for installation. These features make it an excellent selection for applications that require many lines to be filtered in close proximity. The easy swap out also allows for flexibility in filter replacement and capacitance substitution. Easy filter substitution also allows for flexibility in filter placement. Custom design queries are always welcome.

Applications

API's Spectrum Control brand spanner filter offers superior insertion loss over a broad frequency range when compared to surface mount components. The filter is available in capacitance values up to 10,000 pF, and is featured in a microcircuit package used in microwave applications such as frequency synthesizers, power amplifiers, MMW radio, and is ideal for commercial and high-reliability applications.

Electrical Specifications

Operating Temperature . . . . -55°C to +125°C

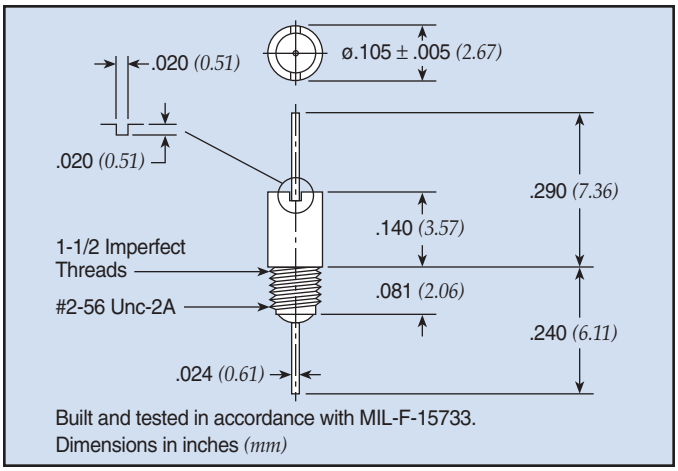
Voltage Rating . . . . . 50 VDC

Current Rating . . . . . 5 A

Effective Filtering From . . . . 1 MHz to 10 GHz

Capacitance . . . . . to 10,000 pF

Dielectric Withstanding Voltage . . . . . 125 VDC



Built and tested in accordance with MIL-F-15733.
Dimensions in inches *(mm)*

Mechanical Specifications

Center Spacing . . . . . .0.110"

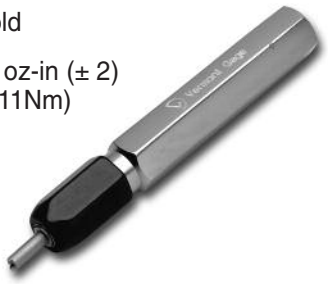
Lead Finish . . . . . Gold

Bushing Finish . . . . . Gold

Tightening Torque . . . . . 14 oz-in (± 2) (0.11Nm)

Insertion Tool

Part Number: 54-874-020



Part Number*	Cap (pF)	Max. Tolerance	Circuit	Current	Voltage	DWV	I.R.	Temperature Range
54-874-010	10	+0%/-20%	C	5 A	50 VDC	125 VDC	1,000 MΩ	-55°C to +125°C
54-874-011	39	+50%/-20%						
54-874-012	100							
54-874-013	390							
54-874-014	1,000							
54-874-015	2,000							
54-874-016	3,300	+100%/-0%						
54-874-017	4,700							
54-874-018	10,000	+80%/-20%						

Note: Parts are RoHS Compliant

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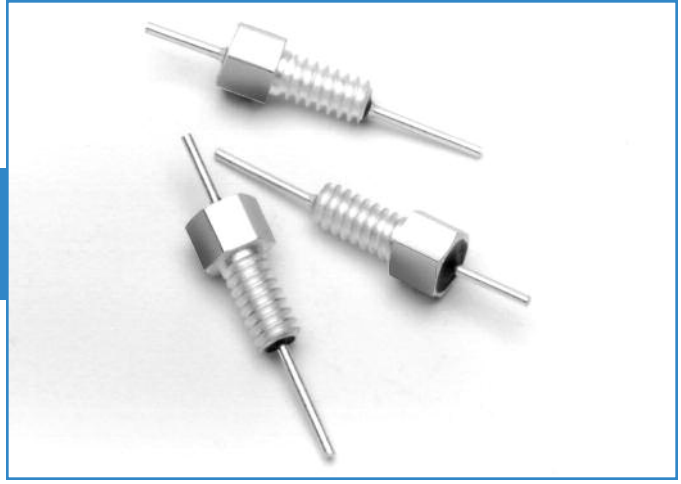
Spectrum Control

Resin Sealed Bolt-in Filters



These filters are easily mounted in a tapped hole or through-hole with supplied nut and lock-washer. The rugged case with resin seals at both ends provides excellent environmental protection. Primarily used in filtering signal/data lines and DC power lines.

Features

- Wide range of sizes: 4-40 thread through 5/16-24 thread
- Voltage ratings to 500 VDC/220 VAC (400 Hz)
- MIL-F-15733 QPL filters available
- Multiple circuit configurations: C, L and Pi
- Metric threaded filters available, consult factory

4-40 C Circuit

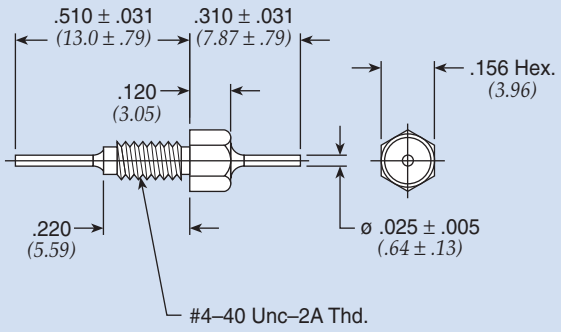


Figure 1

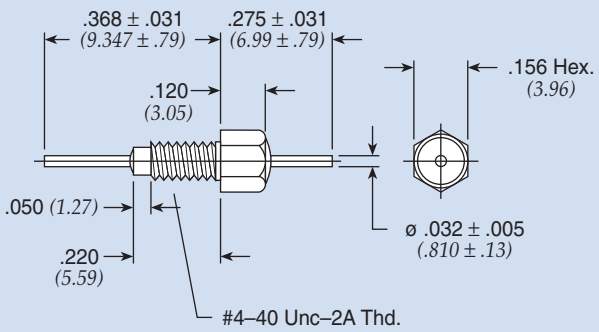


Figure 2

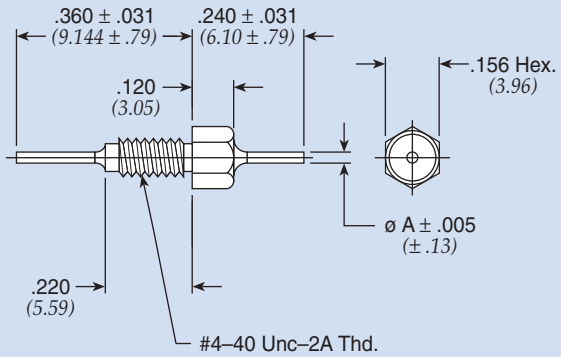


Figure 3

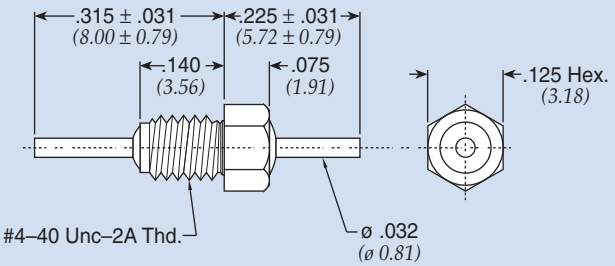


Figure 4

Dimensions in inches *(mm)*

Resin Sealed Bolt-in Filters

4-40 C Circuit

Part Number	See Pg. LP12 for Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	A In	A (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†SCI-9110-100	3	50	—	10	10 pF	0.032	*(0.81)*	—	—	—	—	—	—	10	10
†9900-381-6004	2	50	—	10	5000 pF	—	—	—	—	15	22	30	35	45	55
9900-381-6026	2	50	—	10	0.031 µF	—	—	12	20	25	35	40	45	55	60
†9900-381-6006	2	50	—	10	0.045 µF	—	—	14	22	30	40	45	50	55	60
†54-790-023	1	100	—	10	0.050 µF	—	—	15	24	34	41	45	50	60	60
†54790001X5F101M	1	100	—	10	100 pF ± 20%	—	—	—	—	—	—	—	10	20	25
54-790-019	1	100	—	10	2700 pF	—	—	—	—	9	18	27	33	35	35
9900-381-6013	2	100	—	10	2700 pF	—	—	—	—	10	18	25	33	40	50
54-790-020	1	100	—	10	5600 pF	—	—	—	—	15	24	33	37	40	40
SCI-9112-273	3	100	—	3	0.027 µF	0.016	*(0.41)**	10	20	30	37	45	45	55	60
SCI-9110-273	3	100	—	10	0.027 µF	0.020	*(0.51)*	10	20	30	37	45	45	55	60
54-790-022	1	100	—	10	0.027 µF	—	—	10	20	30	37	45	50	55	60
†SCI-9112-503	3	100	—	3	0.05 µF	0.016	*(0.41)**	15	24	35	41	45	50	60	60
SCI-9110-503	3	100	—	10	0.05 µF	0.020	*(0.51)*	15	24	35	41	45	50	60	60
54-862-001	4	200	—	10	10 pF	—	—	—	—	—	—	—	—	10	10
54-862-002	4	200	—	10	100 pF	—	—	—	—	—	—	3	10	20	28
54-862-003	4	200	—	10	1000 pF	—	—	—	—	—	—	15	25	35	40
†9900-381-6020	2	200	—	10	100 pF	—	—	—	—	—	—	3	10	20	28
SCI-9122-101	3	200	115	3	100 pF	0.016	*(0.41)**	—	—	—	—	—	10	20	20
SCI-9120-101	3	200	115	10	100 pF	0.020	*(0.51)*	—	—	—	—	—	10	20	20
9900-381-6021	2	200	—	10	500 pF	—	—	—	—	—	—	15	20	35	40
SCI-9122-102	3	200	115	3	1000 pF	0.016	*(0.41)**	—	—	—	11	20	28	28	40
SCI-9120-102	3	200	115	10	1000 pF	0.020	*(0.51)*	—	—	—	11	20	28	28	40
†9900-381-6022	2	200	—	10	1200 pF	—	—	—	—	5	9	20	28	35	45
SCI-9122-502	3	200	115	3	5000 pF	0.016	*(0.41)**	—	—	15	24	33	37	40	50
SCI-9120-502	3	200	115	10	5000 pF	0.020	*(0.51)*	—	—	15	24	33	37	40	50
SCI-9122-103	3	200	115	3	0.01 µF	0.016	*(0.41)**	—	12	20	29	38	45	50	55
SCI-9120-103	3	200	115	10	0.01 µF	0.020	*(0.51)*	—	12	20	29	38	45	50	55
9900-381-6005	2	200	—	10	0.015 µF	—	—	7	9	20	29	35	45	50	60
†54-790-018	1	300	—	10	1000 pF	—	—	—	—	—	9	20	28	28	40
†54-790-021	1	300	—	10	0.01 µF	—	—	—	9	20	29	38	45	50	50

* Tinned, steel leads.

† Also available through API's authorized distributors.

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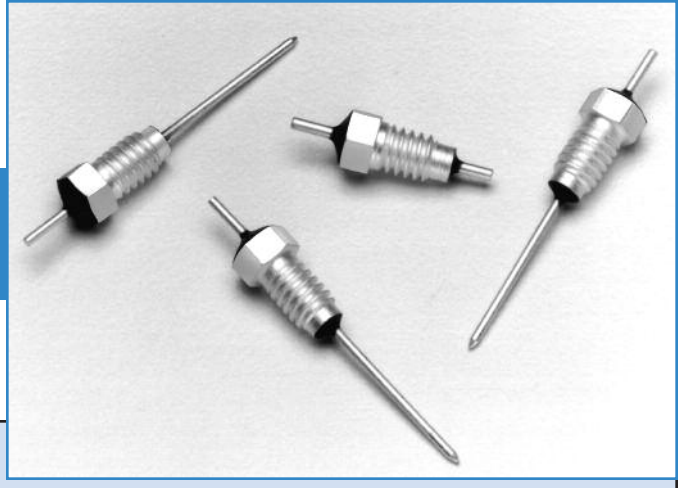
Resin Sealed Bolt-in Filters



4-40 L and Pi Circuit

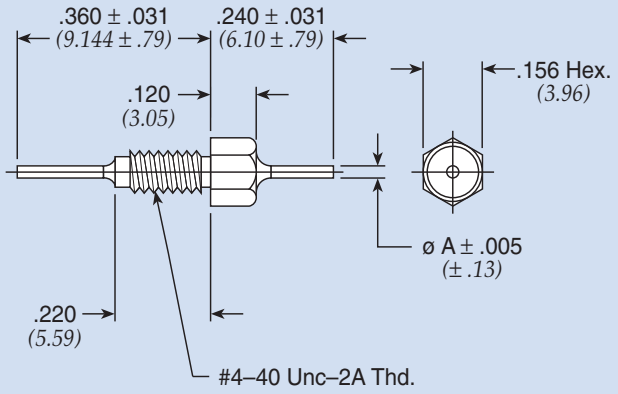


Figure 1

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	A In	A (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†51-729-305	1	50	—	3	Pi	5500 pF	0.018	(0.46)	—	7	14	40	60	70	70	70
†51-729-312	1	50	—	3	Pi	7000 pF	0.018	(0.46)	—	8	15	40	65	70	70	70
SCI-3102-002	1	50	—	3	LB	0.075 µF	0.016	(0.41)*	18	25	37	42	52	55	70	70
SCI-3102-000	1	50	—	5	LB	0.075 µF	0.016	(0.41)	18	25	37	42	52	55	70	70
SCI-3102-007	1	50	—	10	LB	0.075 µF	0.025	(0.64)	18	25	37	42	52	55	70	70
†51-729-304	1	100	—	3	LB	0.022 µF	0.018	(0.46)	7	17	27	34	43	47	55	55
†SCI-3112-002	1	100	—	5	LB	0.027 µF	0.016	(0.41)*	10	20	30	38	45	45	65	70
†SCI-3112-000	1	100	—	5	LB	0.027 µF	0.016	(0.41)	10	20	30	38	45	45	65	70
SCI-3112-007	1	100	—	10	LB	0.027 µF	0.025	(0.64)	10	20	30	38	45	45	65	70
SCI-3112-102	1	100	—	3	LB	0.05 µF	0.016	(0.41)*	15	24	35	42	54	56	70	70
SCI-3112-100	1	100	—	5	LB	0.05 µF	0.016	(0.41)	15	24	35	42	54	56	70	70
SCI-3112-107	1	100	—	10	LB	0.05 µF	0.025	(0.64)	15	24	35	42	54	56	70	70
†51-729-303	1	200	—	3	Pi	1500 pF	0.018	(0.46)	—	—	5	15	42	65	70	70
SCI-3122-002	1	200	115	3	LB	0.01 µF	0.016	(0.41)*	—	12	21	30	41	45	70	70
SCI-3122-000	1	200	115	5	LB	0.01 µF	0.016	(0.41)	—	12	21	30	41	45	70	70
SCI-3122-007	1	200	115	10	LB	0.01 µF	0.025	(0.64)	—	12	21	30	41	45	70	70

* Tinned, steel leads.

† Also available through API's authorized distributors.

Resin Sealed Bolt-in Filters

6-32 C, L, Pi/6-40 Pi

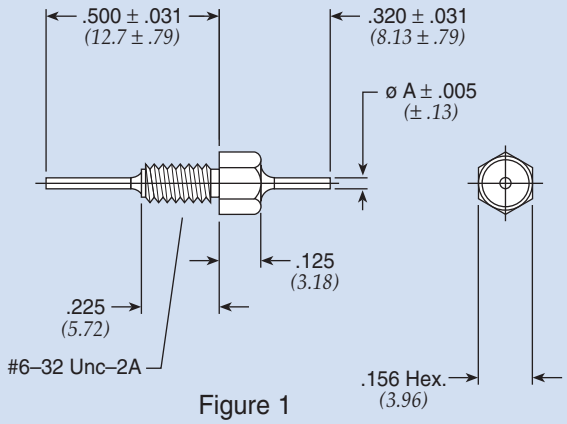


Figure 1

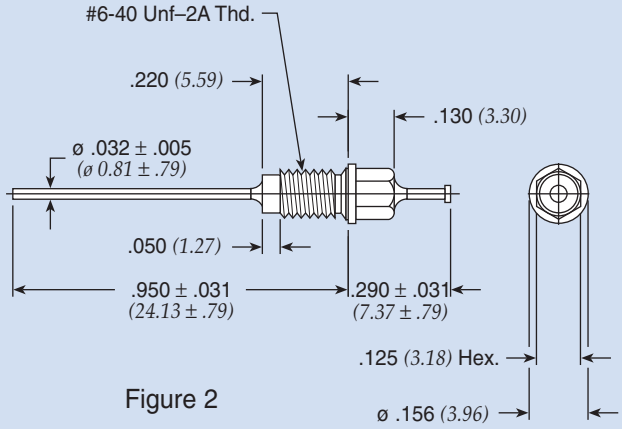


Figure 2

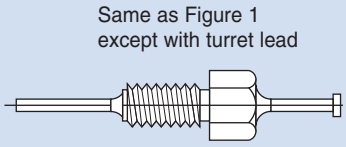


Figure 3

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	A In	A (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†51-726-008	1	50	—	3	Pi	5500 pF	0.018	(0.46)	—	7	14	30	55	70	70	70
51-726-017	1	50	—	3	Pi	9000 pF	0.018	(0.46)	—	8	18	45	65	70	70	70
54-779-019	1	50	—	10	C	0.10 µF	0.032	(0.81)	22	31	40	44	47	55	65	65
†54779001X5F100M	1	100	—	10	C	10 pF ± 20%	0.032	(0.81)	—	—	—	—	—	—	10	10
†54779001X5U102P €	1	100	—	10	C	1000 pF	0.032	(0.81)	—	—	—	10	21	28	28	28
54-779-014	1	100	—	10	C	2700 pF	0.032	(0.81)	—	—	9	18	27	33	35	35
54-779-016	1	100	—	10	C	0.01 µF	0.032	(0.81)	—	9	20	29	38	45	50	50
†51-726-002	3	100	—	10	LB	0.022 µF	0.032	(0.81)	7	17	27	34	43	50	60	60
54-779-017	1	100	—	10	C	0.027 µF	0.032	(0.81)	10	20	30	37	45	50	55	60
54-779-018	1	100	—	10	C	0.050 µF	0.032	(0.81)	15	24	34	41	45	50	60	60
†51-726-001	1	200	—	3	Pi	1500 pF	0.018	(0.46)	—	—	5	15	42	65	70	70
†1289-001	2	200	—	10	Pi	1500 pF	0.032	(0.81)	—	—	5	15	40	60	60	60
†1289-004	2	200	—	10	Pi	3000 pF	0.032	(0.81)	—	—	8	15	50	65	70	70
54-779-015	1	200	—	10	C	5600 pF	0.032	(0.81)	—	—	15	24	33	37	40	40

† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.

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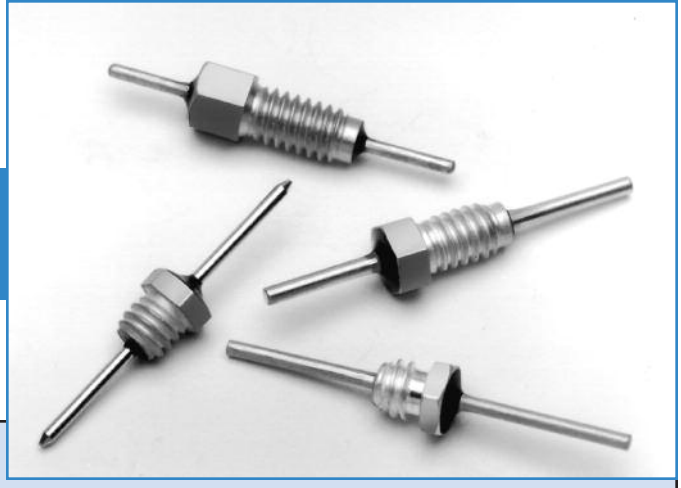
Spectrum Control

Resin Sealed Bolt-in Filters



8-32 C Circuit

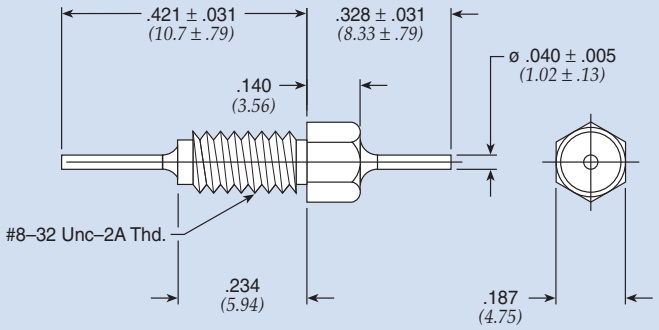


Figure 1

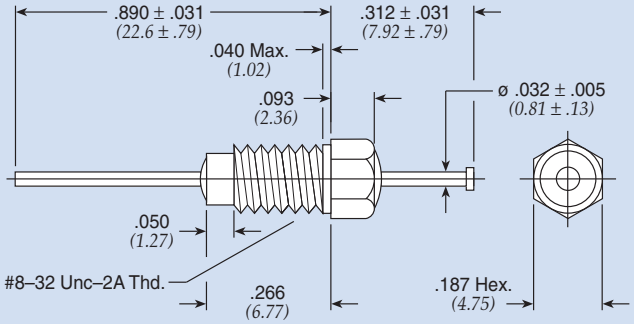


Figure 2

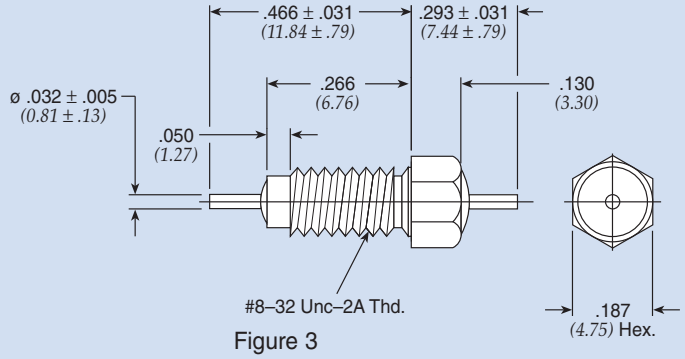


Figure 3

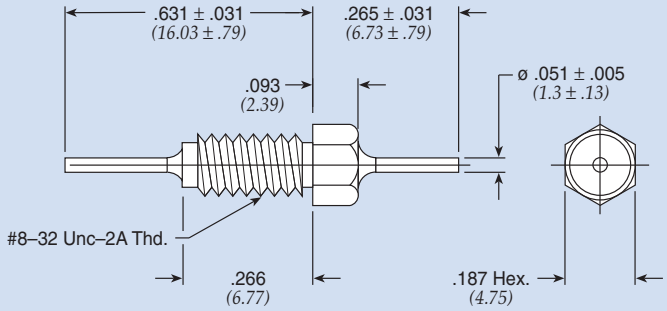


Figure 4

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
SCI-9200-503	2	50	—	10	0.05 µF	15	24	35	41	45	50	60	60
9950-381-6009	3	50	—	10	0.12 µF	20	30	43	45	55	55	55	55
54-785-017	1	50	—	10	0.21 µF	28	37	45	50	55	60	70	70
9950-381-6008	3	70	—	10	0.08 µF	15	24	37	41	51	51	55	55
†54713001X5F101M	4	100	—	10	80 pF	—	—	—	—	—	10	20	20
†54713001X5U102P	4	100	—	10	1000 pF	—	—	—	11	20	28	28	28
54-785-013	1	100	—	10	0.01 µF	—	9	20	29	38	45	50	55
SCI-9210-103	2	100	—	10	0.01 µF	—	12	20	29	38	45	50	50
SCI-9210-273	2	100	—	10	0.027 µF	10	20	30	36	45	50	55	60
†54-785-005	1	100	—	10	0.05 µF	15	24	34	41	45	50	60	60
54-785-016	1	100	—	10	0.1 µF	20	29	38	44	47	55	65	65
54-785-011	1	150	—	10	2000 pF	—	—	8	17	26	32	34	35
54-785-012	1	150	—	10	5000 pF	—	6	15	24	33	37	40	40
SCI-9220-101	2	200	115	10	100 pF	—	—	—	—	—	10	20	25
SCI-9220-102	2	200	115	10	1000 pF	—	—	—	11	20	28	28	28
SCI-9220-502	2	200	115	10	5000 pF	—	6	15	24	33	37	40	40

† Also available through API's authorized distributors.

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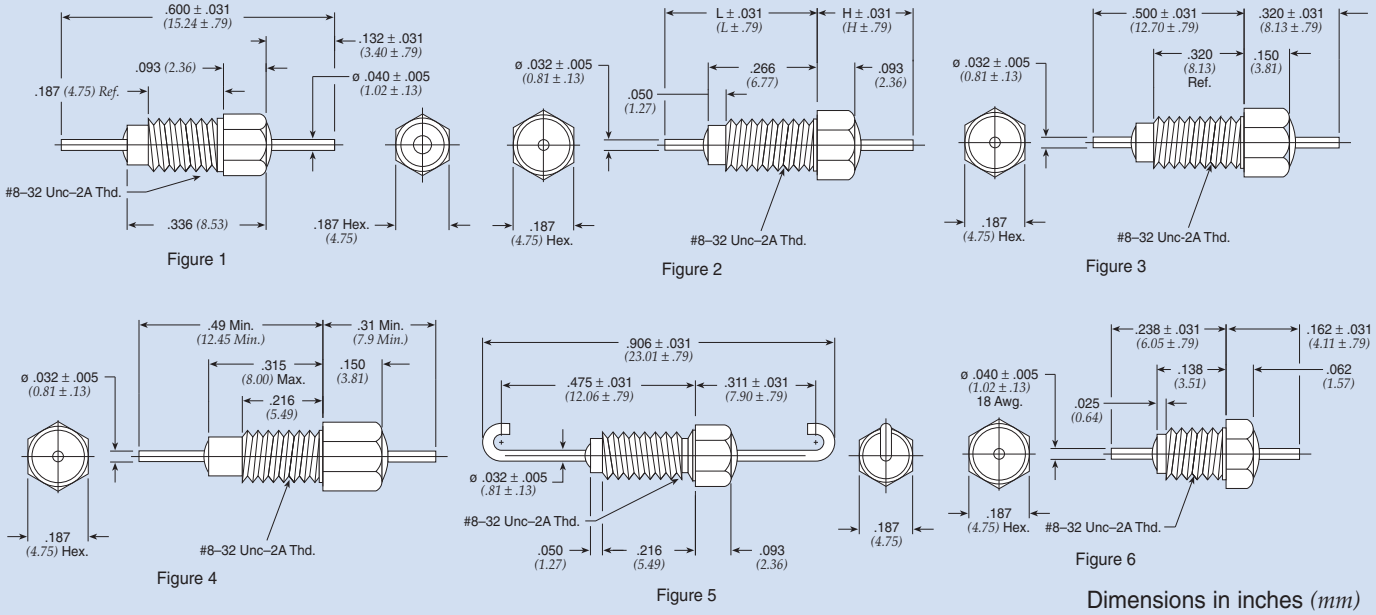
Spectrum Control

Resin Sealed Bolt-in Filters

8-32 L & Pi Circuit



Part Number	M15733 MIL Number	Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	H In	H (mm)	L In	L (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-712-069 €	—	2	50	—	10	Pi	0.012 µF	0.265	(6.73)	0.413	(10.49)	5	9	18	45	65	70	70	70
†**51-712-065**	/61-0014	4	50	—	20	Pi	0.012 µF	0.310	(7.87)	0.490	(12.45)	—	10	20	30	65	70	70	70
†**1250-054**	—	2	70	—	10	Pi	5000 pF	0.312	(7.92)	0.500	(12.70)	—	—	20	30	65	65	70	70
†**1293-001**	—	3	70	—	10	Pi	0.028 µF	—	—	—	—	10	14	38	65	75	75	75	75
51-712-055	/43-0002	2	100	70	10	Pi	3000 pF	0.312	(7.92)	0.578	(14.68)	—	—	5	15	45	50	50	50
†**51-712-014**	/28-0001	2	100	70	10	Pi	3000 pF	0.312	(7.92)	0.890	(22.61)	—	—	5	15	45	60	60	60
51-712-028	/28-0002	5	100	70	10	Pi	3000 pF	—	—	—	—	—	—	5	15	45	60	60	60
†**51-712-063***	/61-0008	2	100	70	10	Pi	5500 pF	0.312	(7.92)	0.500	(12.70)	—	—	15	35	65	70	70	70
†**51-712-003** ◊	—	2	100	—	10	LB	0.022 µF	0.280	(7.11)	0.850	(21.59)	7	17	27	34	43	50	60	60
51-712-060 ◊	/28-0004	2	100	70	10	LB	0.022 µF	0.312	(7.92)	0.890	(22.61)	10	17	28	34	41	50	60	60
†**51-712-067**	/61-0013	2	100	—	10	LB	0.031 µF	0.280	(7.11)	0.890	(22.61)	10	20	30	38	42	52	60	60
51-762-006	/44-0003	6	125	85	15	Pi	65 pF	—	—	—	—	—	—	—	—	—	—	16	42
†**1250-059**	—	6	125	—	15	Pi	1500 pF	—	—	—	—	—	—	5	15	35	45	60	60
†**51-762-005**	/44-0002	6	125	85	15	Pi	1500 pF	—	—	—	—	—	—	5	15	25	35	50	50
1250-062	—	1	125	—	15	Pi	3000 pF	—	—	—	—	—	—	5	15	45	45	70	70
†**51-744-003***	/44-0001	1	125	85	15	Pi	3000 pF	—	—	—	—	—	—	10	15	30	40	65	65
†**SCI-3223-000**	—	2	200	115	10	Pi	2000 pF	0.312	(7.92)	0.890	(22.61)	—	—	8	10	48	50	70	70
†**1250-003** €	—	2	200	—	10	Pi	3000 pF	0.312	(7.92)	0.890	(22.61)	—	—	5	15	45	65	70	70
†**51-712-001***	—	2	200	—	10	Pi	3000 pF	0.312	(7.92)	0.890	(22.61)	—	—	5	15	45	65	70	70
1250-049	—	2	200	—	10	Pi	3000 pF	0.312	(7.92)	0.578	(14.68)	—	—	5	15	45	65	65	60
†**51-744-002** ◊	—	2	200	—	10	Pi	5500 pF	0.265	(6.73)	0.413	(10.49)	—	7	14	30	55	70	70	70
†**1293-000**	—	3	200	—	10	Pi	0.012 µF	—	—	—	—	5	10	28	40	65	70	70	70

† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.
* Denotes parts with turret lead.
◊ Supplied with .040" (1.02mm) diameter lead.

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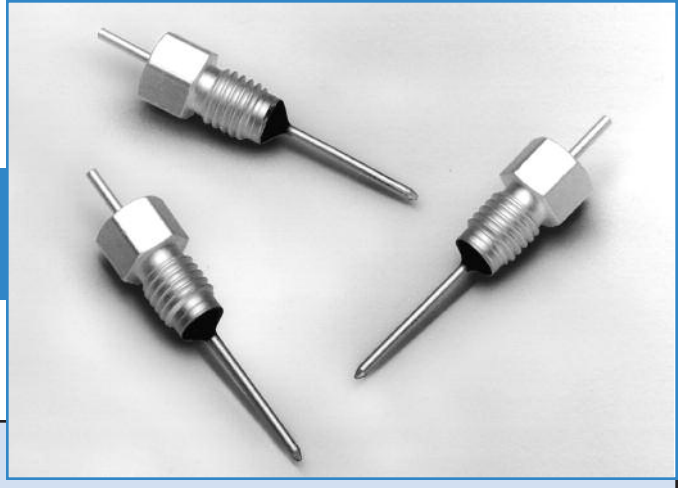
Spectrum Control

Resin Sealed Bolt-in Filters



10-32 C & Pi Circuit

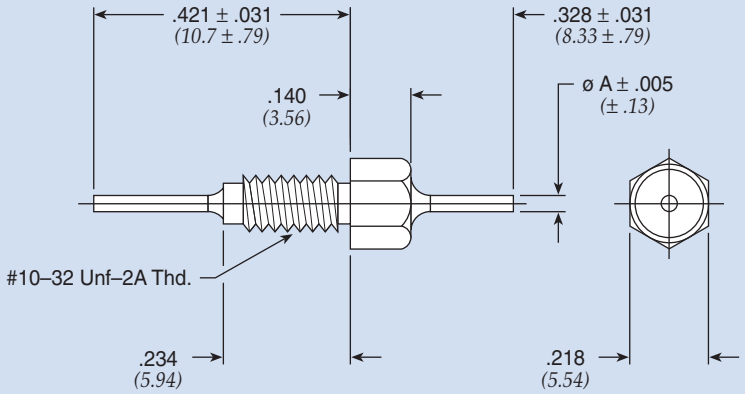


Figure 1

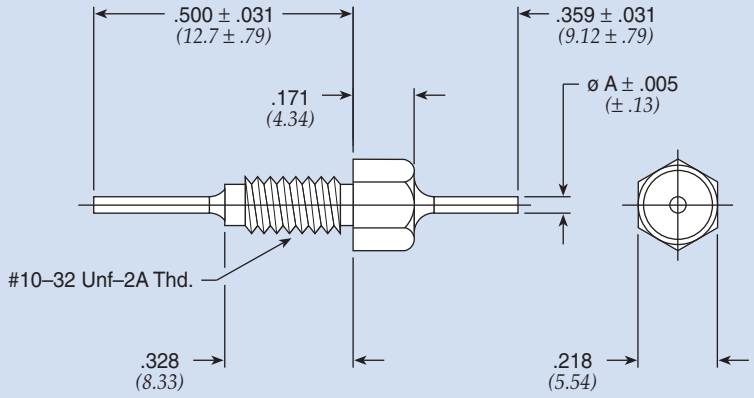


Figure 2

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	A In	A (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-761-002	1	50	—	10	Pi	0.018 µF	0.032	*(0.81)*	7	14	30	55	70	70	70	70
†**54-786-013**	1	50	—	10	C	0.3 µF	0.040	*(1.02)*	30	38	47	50	55	60	70	70
54-786-028	1	50	—	10	C	0.56 µF	0.040	*(1.02)*	35	43	50	52	60	65	70	70
†**54-786-014**	2	50	—	10	C	0.8 µF	0.040	*(1.02)*	40	46	52	54	70	70	70	70
51-761-001	1	100	—	10	Pi	0.01 µF	0.032	*(0.81)*	—	10	20	45	65	70	70	70
54-786-027	1	200	—	10	C	0.1 µF	0.040	*(1.02)*	20	29	38	44	47	55	65	65

† Also available through API's authorized distributors.

Resin Sealed Bolt-in Filters

12-28 C /12-32 C Circuit

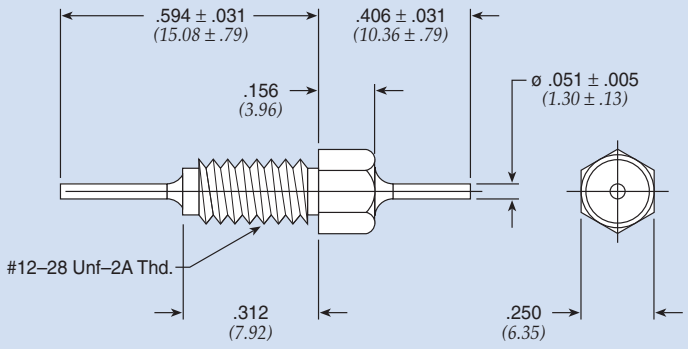


Figure 1

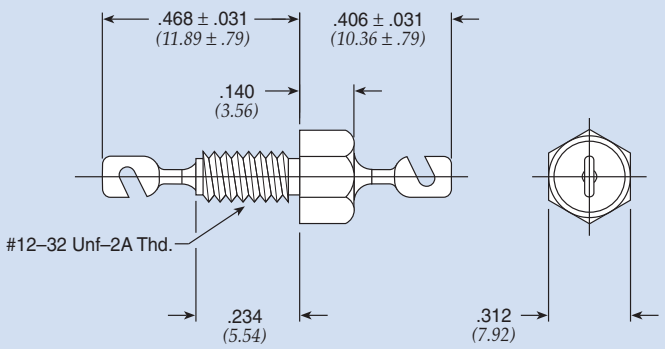


Figure 2

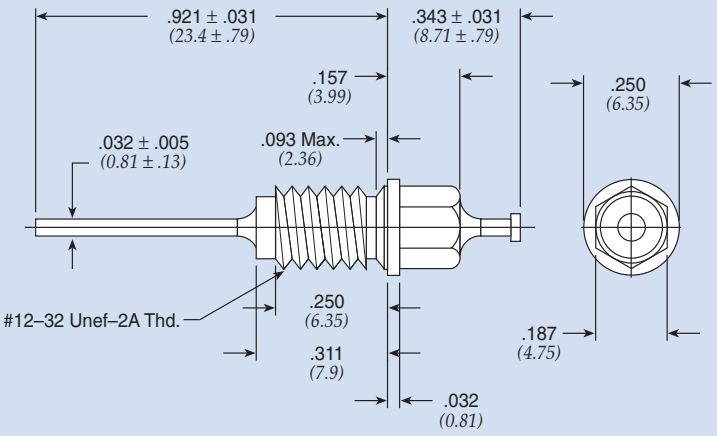


Figure 3

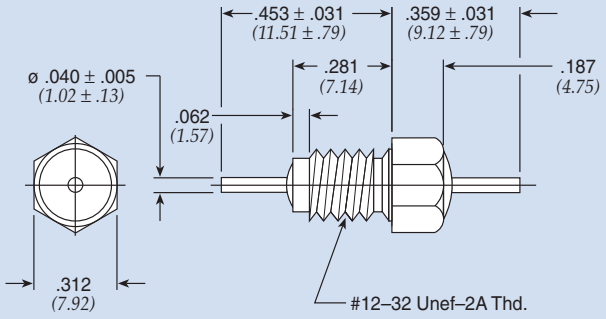


Figure 4

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
9910-381-6004	4	35	—	15	C	1 µF	38	40	52	52	70	70	78	80
9910-381-6003	4	50	—	15	C	0.75 µF	35	37	51	51	61	61	65	70
SCI-9310-273	3	100	—	10	C	0.027 µF	10	20	30	37	45	50	55	60
9910-381-6002	4	100	—	15	C	0.30 µF	28	30	45	50	55	55	60	65
54804002X5R101M	2	250	—	10	C	100 pF ± 20%	—	—	—	—	—	10	20	25
† **54804002X5R471M**	2	250	—	10	C	470 pF ± 20%	—	—	—	—	12	22	25	28
† **54804002X5V102P**	2	250	—	10	C	1000 pF	—	—	—	10	21	28	28	28
54743001X5U102Z	1	250	—	15	C	1000 pF	—	—	—	—	20	28	28	28

† Also available through API's authorized distributors.

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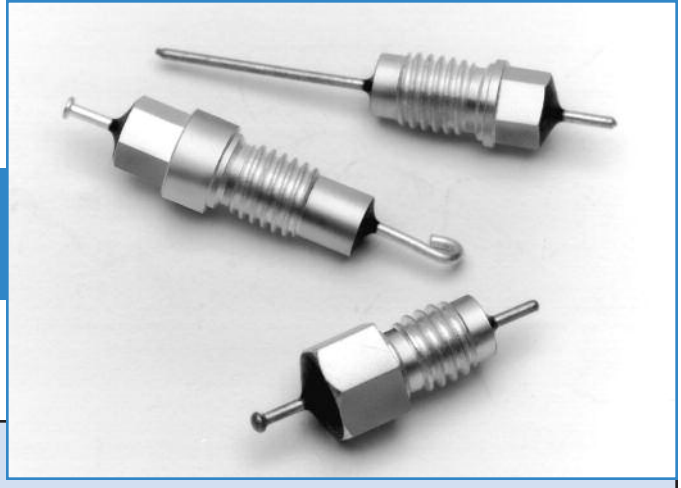
Resin Sealed Bolt-in Filters



12-28 & 12-32 Pi Circuit

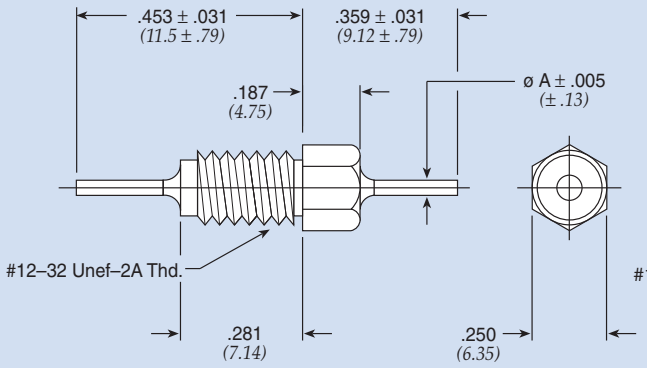


Figure 1

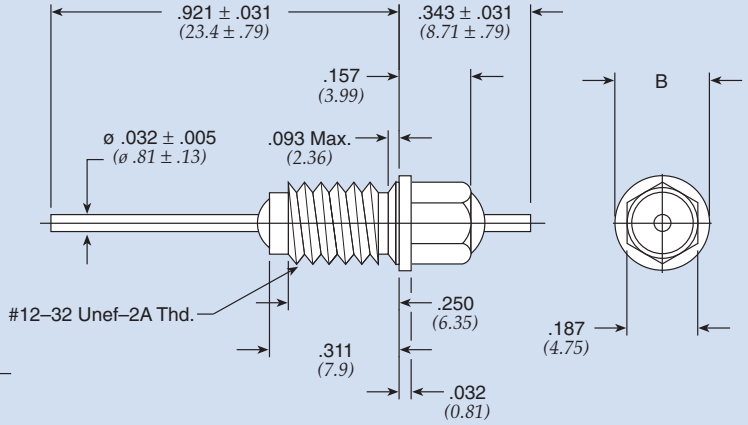


Figure 2

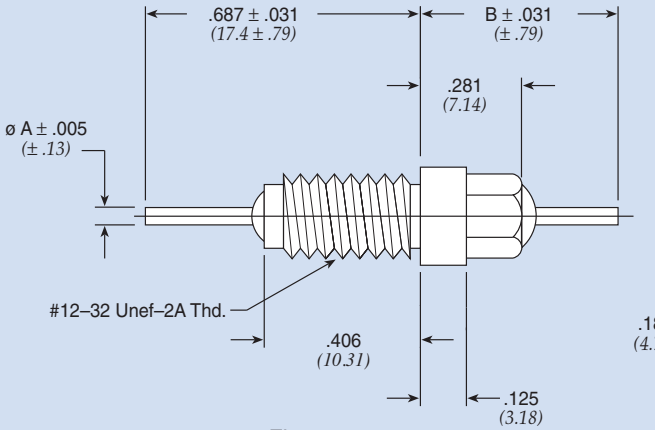
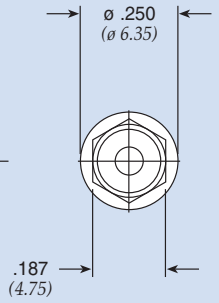


Figure 3



Same as Figure 3
Except as Shown.

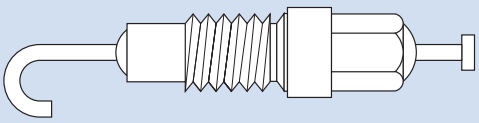


Figure 4

Same as Figure 1
Except as Shown.

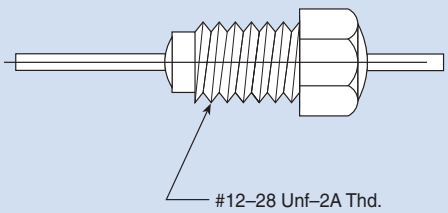


Figure 5

Same as Figure 2
Except as Shown.

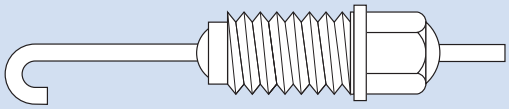


Figure 6

Turret Lead

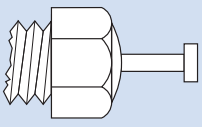


Figure 7

Dimensions in inches *(mm)*

Resin Sealed Bolt-in Filters

12-28 & 12-32 Pi Circuit

Part Number	M15733 MIL Number	See Pg. LP20 for Fig.	Rated Voltage 125°C		I	Min	A		B		Minimum Insertion Loss (dB)							
			DC	AC	Amp	Cap	In	(mm)	In	(mm)	1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-709-013	—	3	50	—	10	0.1 µF	0.040	(1.02)	0.437	(11.10)	10	40	52	70	70	70	70	70
SCI-3303-000*	—	2	50	—	10	0.15 µF	0.032	(0.81)	0.250	(6.35)	12	43	68	70	70	70	70	70
51-709-015	/61-0009	3	70	—	10	0.012 µF	0.032	(0.81)	0.470	(11.94)	—	—	—	—	65	65	65	65
†1216-001	—	3	70	—	10	0.050 µF	0.032	(0.81)	0.468	(11.89)	15	20	60	65	75	75	75	75
†1270-016*	—	2	100	—	10	5500 pF	0.032	(0.81)	0.250	(6.35)	—	7	20	35	65	70	70	70
†1270-025	—	2	100	—	10	5500 pF	0.032	(0.81)	0.235	(5.97)	—	7	20	35	65	70	70	70
†1201-066	—	1	100	—	10	5500 pF	0.032	(0.81)	—	—	—	7	20	40	68	70	70	70
51-714-055*	/61-0011	2	100	—	10	5500 pF	0.032	(0.81)	0.235	(5.97)	—	7	20	—	65	70	70	70
51-714-054*	/61-0010	2	100	—	10	5500 pF	0.032	(0.81)	0.250	(6.35)	—	7	20	—	65	70	70	70
51-714-053*	/61-0007	2	100	70	10	5500 pF	0.032	(0.81)	0.250	(6.35)	—	7	—	—	65	70	70	70
51-714-058*	—	2	100	—	10	0.025 µF	0.032	(0.81)	0.250	(6.35)	10	15	40	60	70	70	70	70
51-714-056	/61-0012	6	100	—	10	0.025 µF	0.032	(0.81)	0.235	(5.97)	—	—	—	—	65	65	65	65
†SCI-3313-000*	—	2	100	—	10	0.10 µF	0.032	(0.81)	0.250	(6.35)	10	40	65	70	70	70	70	70
51-719-022	—	1	200	—	10	1300 pF	0.040	(1.02)	—	—	—	—	5	10	35	60	70	70
†1201-052	—	5	200	—	10	3000 pF	0.032	(0.81)	—	—	—	—	5	15	45	45	70	70
†1201-054	—	1	200	—	10	3000 pF	0.032	(0.81)	—	—	—	—	5	15	45	45	70	70
51-714-001*	—	2	200	—	10	3000 pF	0.032	(0.81)	0.250	(6.35)	—	—	5	15	43	60	70	70
†1270-024	—	2	200	—	10	3000 pF	0.032	(0.81)	0.235	(5.97)	—	—	5	15	45	45	70	70
51-714-003*	—	2	200	—	10	3000 pF	0.032	(0.81)	0.235	(5.97)	—	—	5	15	43	60	70	70
†1270-009	—	2	200	—	10	3000 pF	0.032	(0.81)	0.250	(6.35)	—	—	5	15	45	45	70	70
51-719-053**	/61-0001	5	200	140	10	3000 pF	0.032	(0.81)	—	—	—	—	—	—	45	—	70	70
51-719-054*	/61-0002	1	200	140	10	1500 pF	0.032	(0.81)	—	—	—	—	—	—	45	45	70	70
51-714-051*	/61-0005	2	200	140	10	1500 pF	0.032	(0.81)	0.250	(6.35)	—	—	—	—	45	45	70	70
51-719-023*	/43-0001	5	200	140	10	3000 pF	0.032	(0.81)	—	—	—	—	—	—	—	45	45	45
51-714-052*	/61-0006	2	200	140	10	3000 pF	0.032	(0.81)	0.235	(5.97)	—	—	—	—	45	45	70	70
51-714-004*	—	2	200	—	10	5500 pF	0.032	(0.81)	0.235	(5.97)	—	7	14	35	60	70	70	70
†51-719-021	—	1	200	—	10	5500 pF	0.040	(1.02)	—	—	—	7	14	30	50	65	65	65
€51-714-002*	—	2	200	—	10	5500 pF	0.032	(0.81)	0.250	(6.35)	—	7	14	35	60	70	70	70
†SCI-3323-000*	—	2	200	115	10	0.012 µF	0.032	(0.81)	0.250	(6.35)	—	—	27	30	70	70	70	70
†1221-001	—	4	300	—	10	5500 pF	0.032	(0.81)	0.437	(11.10)	—	—	15	30	65	70	70	70
†51-709-004	/46-0001	4	300	—	10	5500 pF	0.032	(0.81)	0.437	(11.10)	—	—	—	—	65	70	70	70
1201-086	—	1	350	—	10	2500 pF	0.040	(1.02)	—	—	—	—	5	10	50	50	65	65
†51-719-011 €	—	1	500	—	10	3000 pF	0.040	(1.02)	—	—	—	—	12	20	45	60	60	60

† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.
* Denotes parts supplied with lead as shown in Figure 7.
** Bushing housing will have 1 1/2 imperfect threads at hex to thread interface.

Resin Sealed Bolt-in Filters

5/16-24 & 5/16-32 C & Pi Circuit

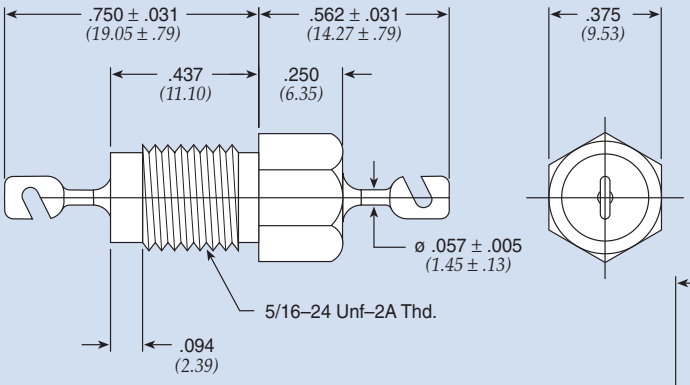


Figure 1

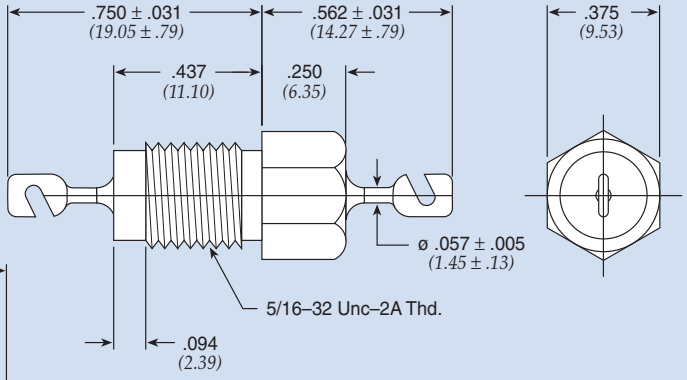


Figure 2

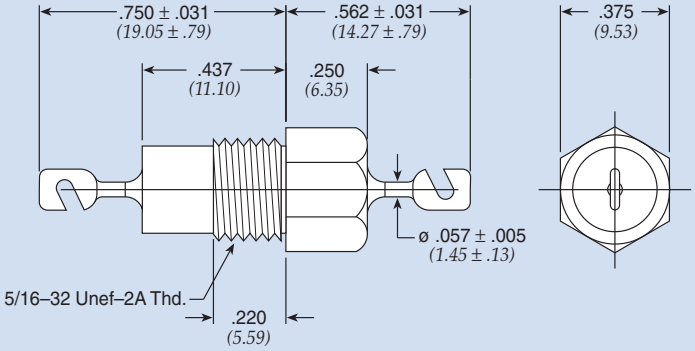


Figure 3

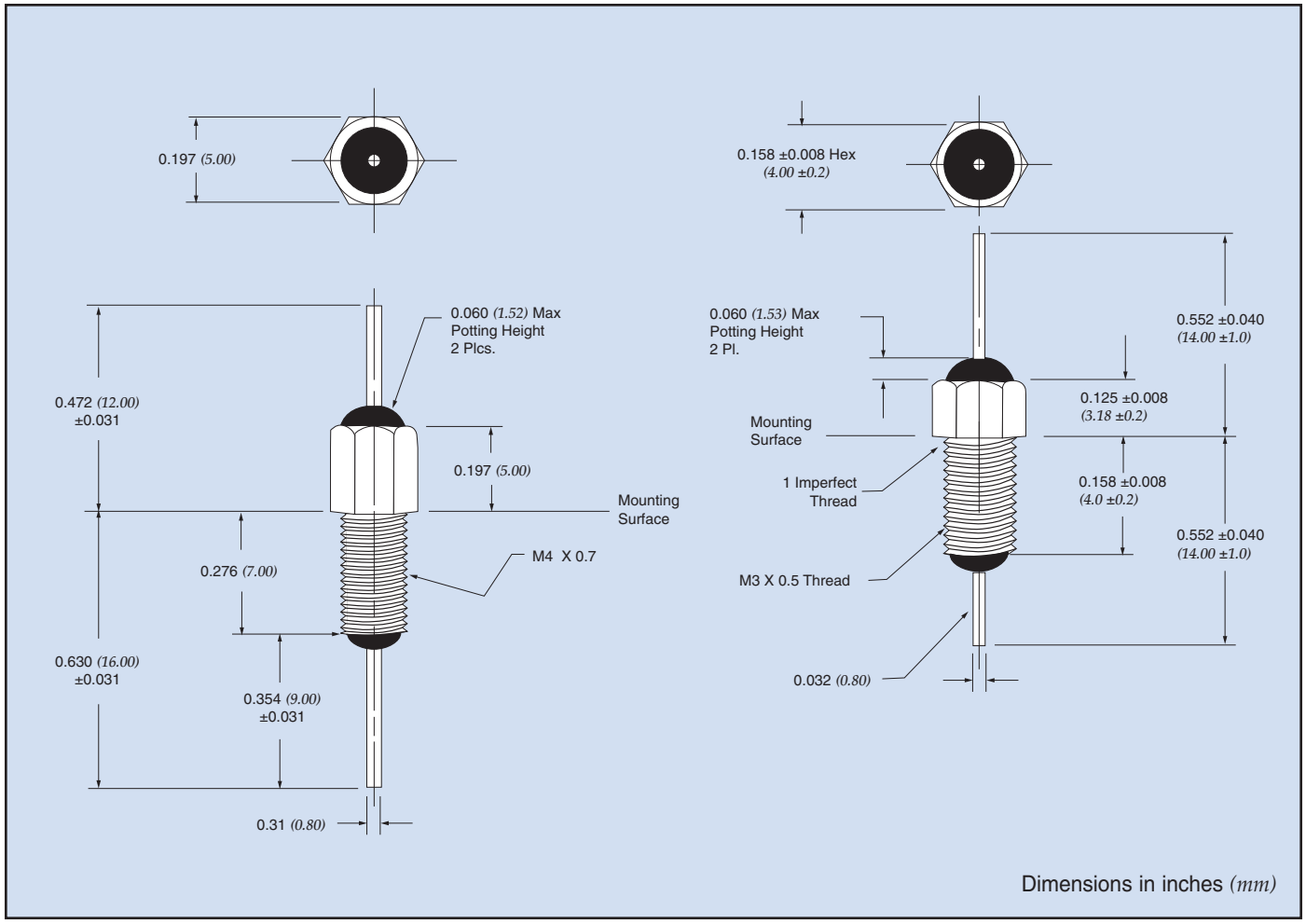
Dimensions in inches *(mm)*

Part Number	M15733 MIL Number	Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
SCI-9510-503	—	1	100	—	25	C	0.05 µF	15	24	35	41	45	60	60	60
SCI-3513-000	—	1	100	—	25	Pi	0.1 µF	10	18	28	37	70	70	70	70
SCI-3523-000	—	1	200	115	25	Pi	0.02 µF	—	—	25	50	66	66	70	70
SCI-3543-000	—	1	400	220	25	Pi	6000 pF	—	—	15	35	54	65	70	70
SCI-9550-102	—	1	500	115	25	C	1000 pF	—	—	—	11	20	28	28	28
†1202-052	—	1	500	—	25	Pi	3000 pF	—	—	10	35	55	55	70	70
†1202-054	—	2	500	—	25	Pi	3000 pF	—	—	10	35	55	55	70	70
51-702-020*	/61-0003	3	500	350	25	Pi	3000 pF	—	—	—	35	55	55	70	70
51-702-021	/61-0004	3	500	350	25	Pi	3000 pF	—	—	10	35	55	55	70	70
SCI-9550-332	—	1	500	115	25	C	3300 pF	—	—	12	20	30	33	40	40
SCI-3553-000	—	1	500	220	25	Pi	0.012 µF	—	—	18	28	52	52	70	70
†1202-005	—	2	700	—	25	Pi	2000 pF	—	—	5	20	50	55	70	70

† Also available through API's authorized distributors.
* Denotes parts with 5/16-24 Threads

Metric Resin Sealed Bolt-in Filters

M3 Pi Circuit & M4 C Circuit



Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	I Amp	CKT	Min Cap	Temperature Range
51-831-004	1	100	3	Pi	1000 pF	-55°C to +125°C
51-831-011	1	100	10	Pi	100 pF	-55°C to +125°C
51-831-012	1	100	10	Pi	1500 pF	-55°C to +125°C
51-831-013	1	100	10	Pi	3000 pF	-55°C to +125°C
51-831-014	1	70	10	Pi	5500 pF	-55°C to +125°C
51-831-015	1	100	10	Pi	12000 pF	-55°C to +125°C
54-863-004	2	100	10	C	10000 pF	-55°C to +125°C
54-863-005	2	100	10	C	100 pF	-55°C to +125°C
54-863-007	2	100	10	C	1000 pF	-55°C to +125°C
54-863-008	2	100	10	C	2000 pF	-55°C to +125°C
54-863-010	2	100	10	C	4700 pF	-55°C to +125°C

RoHS available.

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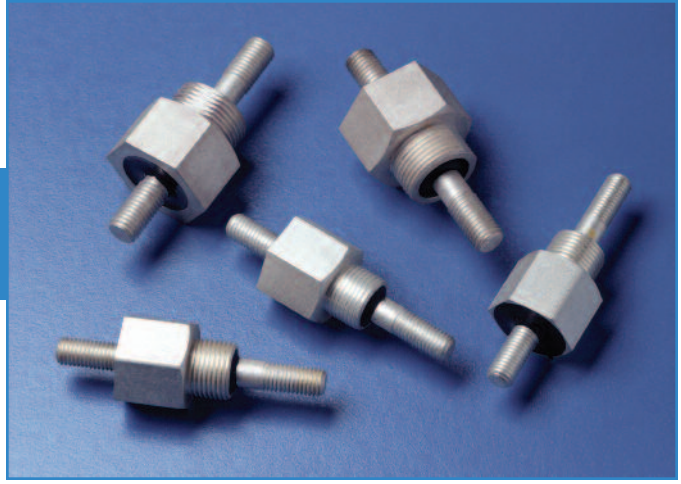
High Current/High Voltage Resin Sealed Filters



High current filters are ideal for use in high current 5 volt logic buss, but also can be used for ±48 VDC telephone rack buss, high current switch mode power supplies and DC charging systems. High voltage filters find use in high voltage power supplies and applications requiring U.L. Hi-Pot.

Features

- Current ratings up to 100 Amps
- Continuous voltage ratings up to 1250 VDC/240 VAC (400Hz)
- U.L. 1459 recognized and CSA C22.2 approved versions available
- Rugged bolt-in style for easy installation

Installation Notes

for Figure 1 & 2 — see below (Figure 3 see page CF6)

1. Mounting installation torque
   Method A: Mounting in full threaded through-hole
   Maximum torque: 96 in-lbs

   Method B: Mounting w/hardware
   Maximum torque: 84 in-lbs

2. Terminal installation torque
   Maximum torque: 20 in-lbs
   Note: Use two-wrench method to install terminal hardware

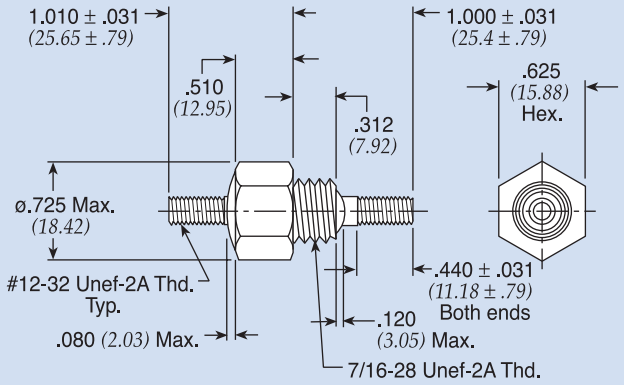


Figure 1

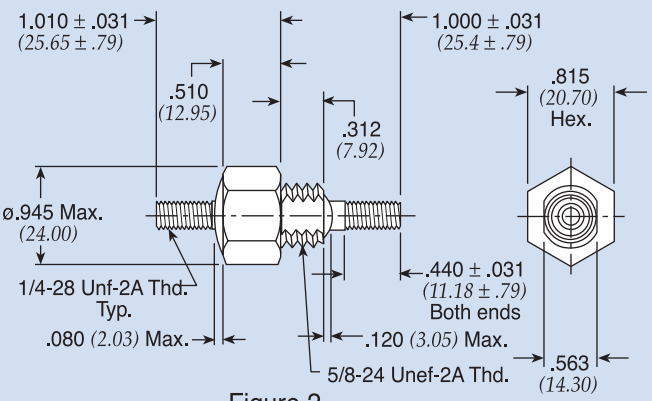


Figure 2

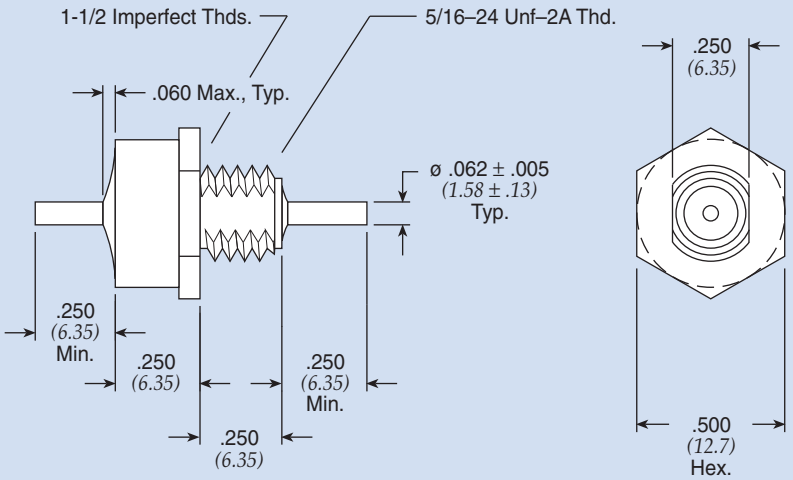


Figure 3

Dimensions in inches *(mm)*

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High Current/High Voltage Resin Sealed Filters

High Current High Voltage Feed-through

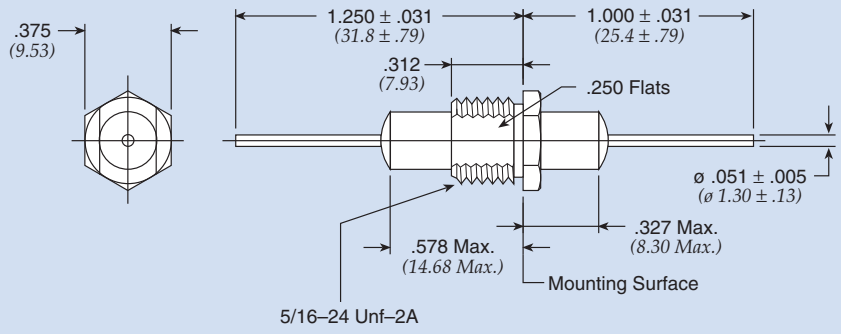


Figure 4

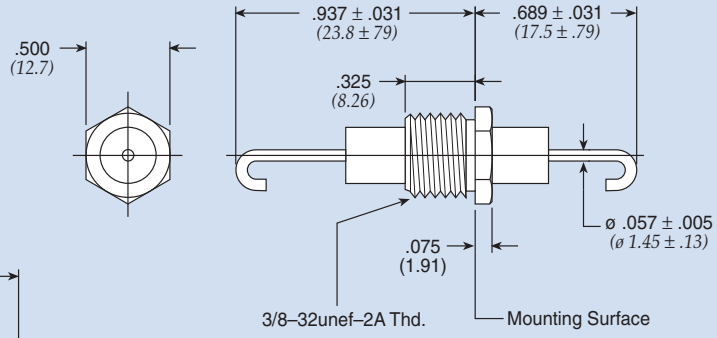


Figure 5

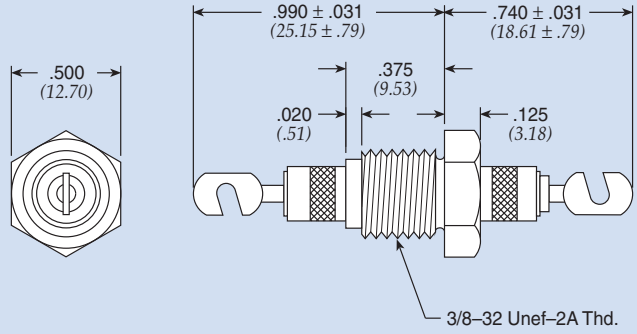


Figure 6

Dimensions in inches *(mm)*

Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC***	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
54-848-005*	1	60	—	50	C	0.22 µF	20	30	40	50	50	50	50	50
54-853-001*	2	60	—	50	C	0.22 µF	20	30	40	50	50	50	50	50
54-853-004 €	2	200	140	100	C	0.22 µF	20	30	40	50	50	50	50	50
54-848-008	1	200	140	100	C	0.22 µF	20	30	40	50	50	50	50	50
54-844-001**	3	600	240	25	C	4700 pF ± 20%	—	—	12	20	30	33	50	50
54-844-002**	3	600	240	25	C	0.01 µF ± 20%	3	7	20	25	35	40	57	57
54-763-008	4	750	—	25	C	1000 pF	—	—	—	10	20	28	28	28
54-763-009	4	750	—	25	C	4000 pF	—	—	10	22	32	35	35	40
54-789-003	5	1250	—	25	C	4000 pF	—	—	6	20	30	35	35	35
†**1280-060** €	6	2500	—	25	Pi	1500 pF	—	—	5	15	50	50	50	50

† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.
* Denotes parts that are UL recognized to UL 60950 and certified to CSA C22.2
** Denotes parts that meet 1500 VAC Dielectric Withstanding Voltage per UL 1283 and CSA C22.2
*** AC Voltage to be 400Hz

api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

This series of filters features hermetic glass seals and high EMI filtering performance. They are excellent for critical applications that demand high reliability in the toughest environmental conditions and provide broad-band high performance EMI filtering from 10 KHz to over 10 GHz.

Features

- MIL-F-15733 and MIL-F-28861, DSCC 84084 QPL filters available
- Popular .375", .410" and .690" case diameters
- Voltage ratings from 50 V to 400 VDC/240 AC, 400 Hz
- Impervious to high moisture environments, solvents and severe environmental conditions
- High temperature terminal construction
- D-slotted bushings
- High reliability testing available

Thread length: A - 0.187 (4.76) B - 0.312 (7.92)

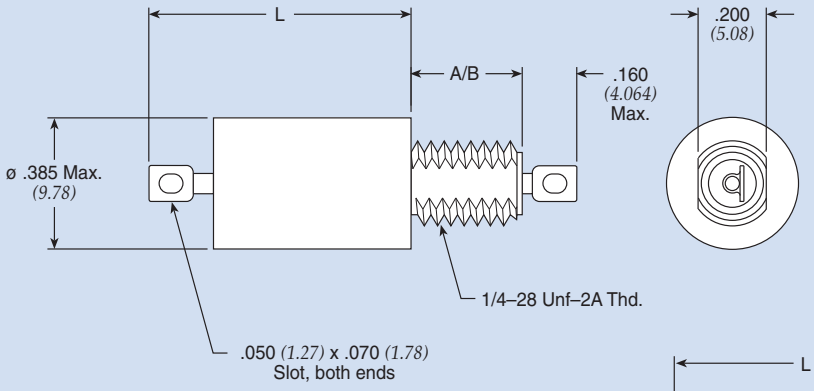
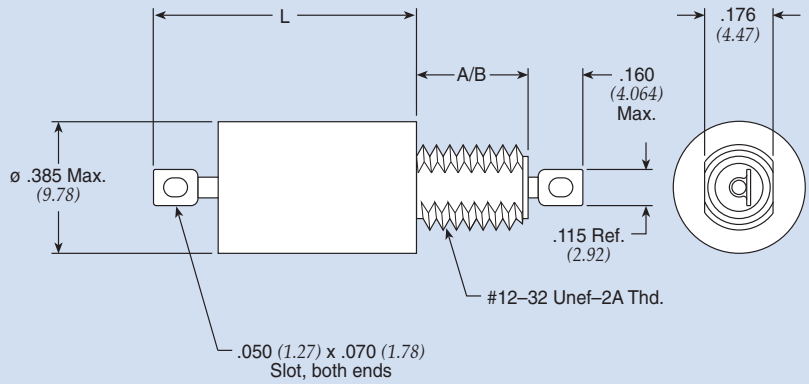


Figure 1



Note: ø .410 Max. for M28861 parts

Figure 2

Dimensions in inches *(mm)*

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API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

Hermetically Sealed Threaded Case Filters

.375 ø C Circuit Standard

Part Number	MIL No	See Pg. LP26 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†54-367-008	—	1	80	—	50	—	15	1.400	0.005	0.387	(9.830)	A	15	28	33	44	60	70	70
54-370-007	—	1	80	—	50	—	15	2.800	0.005	0.576	(14.630)	A	20	34	39	50	60	70	70
54-371-001	—	1	80	—	50	—	15	4.000	0.005	0.688	(17.475)	A	26	40	46	55	60	70	70
54-367-005	—	1	150	—	100	—	15	0.450	0.005	0.387	(9.830)	A	6	19	25	36	55	70	70
†9920-100-6002	—	1	200	—	150	125	15	0.150	0.005	0.387	(9.830)	A	—	6	15	26	42	55	70
54-367-007	—	1	250	—	200	125	15	0.015	0.005	0.387	(9.830)	A	—	—	—	6	25	45	50
†54-367-006	—	1	250	—	200	125	15	0.250	0.005	0.387	(9.830)	A	—	14	19	30	50	65	70
54-370-006	—	1	250	—	200	125	15	0.500	0.005	0.630	(16.002)	A	7	20	28	39	55	70	70
9923-100-6004	—	1	400	—	400	240	15	0.060	0.005	0.415	(10.541)	A	—	5	10	18	38	55	70

.375 ø C Circuit MIL Qualified

(See MIL index on pages CF9-11 for complete MIL part number listing)

Part Number	M15733 M28861◊ MIL No	See Pg. LP26 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
54-367-054	1-012◊	1	—	—	50	—	15	1.200	0.008	0.410	(10.414)	B	15	28	33	40	40	70	70
54-367-049	1-002◊	1	—	—	50	—	15	1.200	0.008	0.410	(10.414)	A	15	28	33	40	40	70	70
54-370-032	49-0008	1	—	—	50	—	15	2.100	0.010	0.576	(14.630)	A	20	33	40	50	65	70	70
54-367-055	1-014◊	1	—	—	70	—	15	0.700	0.008	0.410	(10.414)	B	10	24	30	40	40	64	70
54-370-030	34-0035	2	—	—	100	—	10	0.300	0.004	0.474	(12.040)	A	7	19	25	35	55	70	70
54-367-051	1-006◊	1	—	—	100	—	15	0.450	0.008	0.410	(10.414)	A	6	19	25	36	40	60	70
54-367-056	1-016◊	1	—	—	100	—	15	0.450	0.008	0.410	(10.414)	B	6	19	25	36	40	60	70
54-367-057	1-018◊	1	—	—	150	—	15	0.250	0.008	0.410	(10.414)	B	—	14	20	31	40	56	70
54-367-053	1-010◊	1	—	—	200	125	15	0.150	0.008	0.410	(10.414)	A	—	10	16	26	40	52	70
54-367-058	1-020◊	1	—	—	200	125	15	0.150	0.008	0.410	(10.414)	B	—	10	16	26	40	52	70
54-370-034	49-0010	1	—	—	330	—	15	0.062	0.004	0.680	(17.272)	A	—	2	7	17	37	55	70

† Also available through API's authorized distributors.

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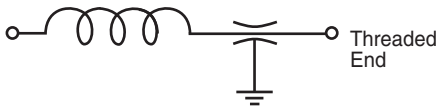
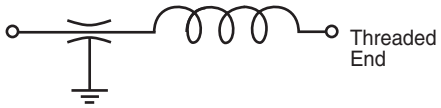
Spectrum Control

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Circuit

Thread length: A - 0.187 (4.76) B - 0.312 (7.92)

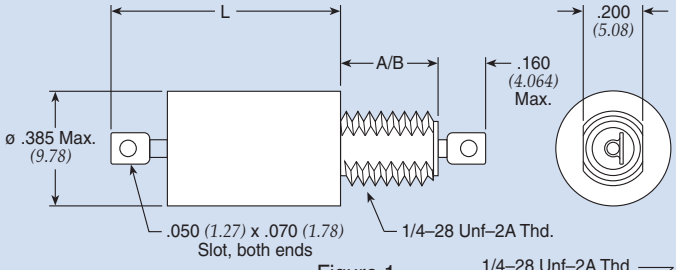


Figure 1

Note: ø .410 Max. for M28861 parts

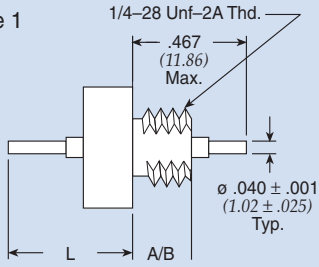


Figure 3

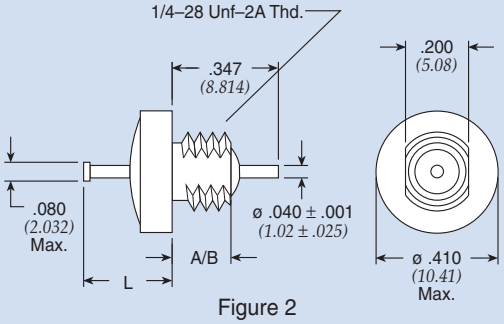
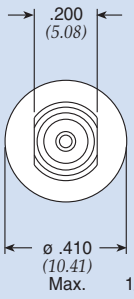


Figure 2
Resin Sealed
Not Hermetically Sealed



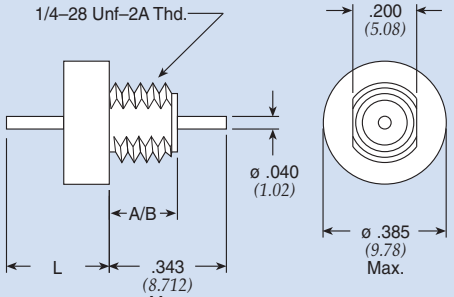


Figure 4

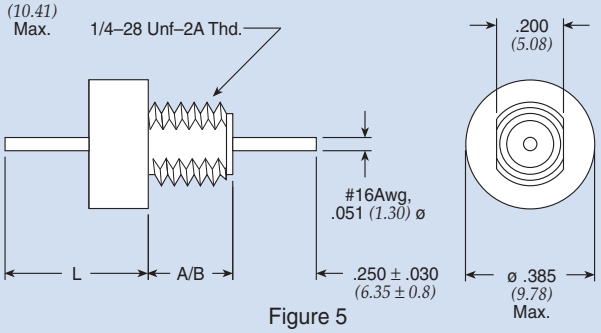


Figure 5

Dimensions in inches *(mm)*

.375 ø L Standard Low Profile

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†9051-100-0000	—	1	80	—	50	—	15	1.200	0.005	LB	0.370	(9.398)	A	15	25	34	44	60	70	70
†51-359-001 €	—	1	80	—	50	—	15	1.400	0.005	LB	0.370	(9.398)	A	15	28	33	44	60	70	70
SCI-1021-000	—	2*	80	—	50	—	15	1.400	0.003	LB	0.280	(7.112)	A	15	28	33	44	60	70	70
†9053-100-0001	—	1	80	—	50	—	15	1.400	0.005	LB	0.370	(9.398)	A	15	25	34	44	60	70	70
†51-717-001 €	—	2*	80	—	50	—	15	1.400	0.005	LB	0.325	(8.255)	A	15	28	33	44	60	70	70
51-344-006	—	4	80	—	50	—	15	1.400	0.005	LB	0.330	(8.382)	A	15	28	33	44	60	70	70
†SCI-1020-000	—	1	80	—	50	—	15	1.400	0.003	LB	0.370	(9.398)	A	15	28	33	44	60	70	70
SCI-1021-020	—	2◊*	80	—	50	—	15	1.400	0.003	LB	0.280	(7.112)	B	15	28	33	44	60	70	70
†SCI-1020-020	—	1	80	—	50	—	15	1.400	0.003	LB	0.370	(9.398)	B	15	28	33	44	60	70	70
SCI-1150-001	—	1	80	—	50	—	15	2.800	0.003	LB	0.450	(11.430)	B	20	34	40	49	60	70	70
9051-101-0018	—	5	80	—	50	—	25	1.400	0.001	LB	0.450	(11.430)	A	15	25	34	44	60	70	70
†9053-100-0008	—	1	100	—	70	—	15	0.700	0.005	LB	0.370	(9.398)	A	9	20	29	39	52	70	70

* Part is resin sealed, this is not a hermetic part.
† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.
◊ Note: 0.462" (11.73mm) length from mounting surface to end of lead — not 0.347" (8.8mm).

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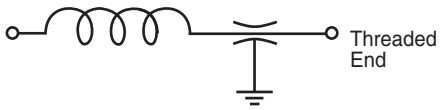
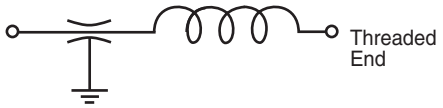
Spectrum Control

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Standard Low Profile *continued*

Part Number	MIL No	See Pg. LP28 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†9050-100-0008	—	2*	100	—	70	—	15	0.750	0.005	LB	0.325	(8.255)	A	9	20	29	39	52	70	70
†9053-100-0002	—	1	150	—	100	—	15	0.500	0.005	LB	0.370	(9.398)	A	4	12	21	31	48	70	70
SCI-1250-001	—	1	150	—	100	—	15	0.500	0.003	LB	0.450	(11.430)	B	8	20	25	34	50	64	70
€SCI-2150-000	—	1	150	—	100	—	15	1.000	0.003	LB	0.450	(11.430)	A	10	25	30	41	56	70	70
SCI-2150-001	—	1	150	—	100	—	15	1.000	0.003	LB	0.450	(11.430)	B	10	25	30	41	56	70	70
†51-717-007	—	2*	250	125	200	125	15	0.015	0.005	LB	0.325	(8.255)	A	—	—	—	6	25	38	45
†51-359-007	—	1	250	125	200	125	15	0.012	0.005	LB	0.370	(9.398)	A	—	—	—	6	25	38	50
9050-100-0011	—	2	350	125	300	125	15	0.150	0.008	LB	0.325	(8.255)	A	—	10	15	25	40	52	60
€SCI-2350-000	—	1	300	125	300	125	15	0.250	0.003	LB	0.450	(11.430)	A	4	15	21	31	50	70	70
SCI-2350-001	—	1	300	125	300	125	15	0.250	0.003	LB	0.450	(11.430)	B	4	15	21	31	50	70	70

* Part is resin sealed, this is not a hermetic part.

.375 ø L Circuit MIL Qualified Low Profile

(See MIL index on pages CF9-11 for complete MIL part number listing)

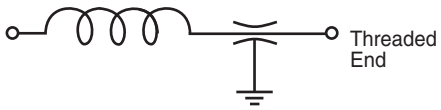
Part Number	M15733 M28861◊ MIL No	See Pg. LP28 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†51-359-021	38-0004	1		—	50	—	10	1.400	0.008	LB	0.370	(9.398)	A	15	28	33	44	60	70	70
†51-359-024	38-0005	1	80	—	50	—	10	1.400	0.008	LB	0.370	(9.398)	A	15	28	33	44	60	70	70
†51-359-051	58-0001	1	80	—	50	—	10	1.400	0.008	LB	0.545	(13.843)	A	15	28	33	44	60	70	70
51-359-105	58-0004	1	80	—	50	—	10	1.400	0.008	LT	0.545	(13.843)	B	15	28	33	44	60	70	70
†51-359-044	49-0006	1	100	—	50	—	15	1.200	0.010	LB	0.370	(9.398)	A	15	28	33	44	60	70	70
†51-359-055	49-0007	3	100	—	50	—	15	1.200	0.010	LB	0.450	(11.43)	A	15	28	33	44	60	70	70
51-359-081	1-001◊	1	—	—	50	—	15	1.400	0.008	LB	0.410	(10.414)	A	15	28	33	40	40	70	70
51-359-086	1-011◊	1	—	—	50	—	15	1.400	0.008	LB	0.410	(10.414)	B	15	28	33	40	40	70	70
†51-359-053	49-0001	4	100	—	50	—	15	0.680	0.010	LB	0.319	(8.103)	A	8	20	28	38	55	70	70
51-359-082	1-003◊	1	—	—	70	—	15	0.700	0.008	LB	0.410	(10.414)	A	10	24	30	40	40	64	70
51-359-083	1-005◊	1	—	—	100	—	15	0.450	0.008	LB	0.410	(10.414)	A	6	19	25	36	40	60	70
51-359-088	1-015◊	1	—	—	100	—	15	0.450	0.008	LB	0.410	(10.414)	B	6	19	25	36	40	60	70
51-359-084	1-007◊	1	—	—	150	—	15	0.250	0.008	LB	0.410	(10.414)	A	—	14	20	31	40	56	70
51-359-050	38-0008	1	—	—	200	125	15	0.150	0.008	LB	0.370	(9.398)	A	—	—	—	6	25	42	60
51-359-085	1-009◊	1	—	—	200	125	15	0.150	0.008	LB	0.410	(10.414)	A	—	10	16	26	40	52	70
51-359-090	1-019◊	1	—	—	200	125	15	0.150	0.008	LB	0.410	(10.414)	B	—	10	16	26	40	52	70

† Also available through API's authorized distributors.
€ Also available through API's authorized European distributors/agents.

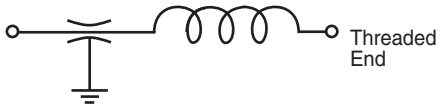
api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Circuit

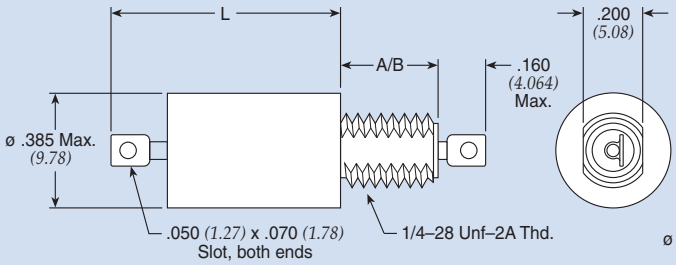
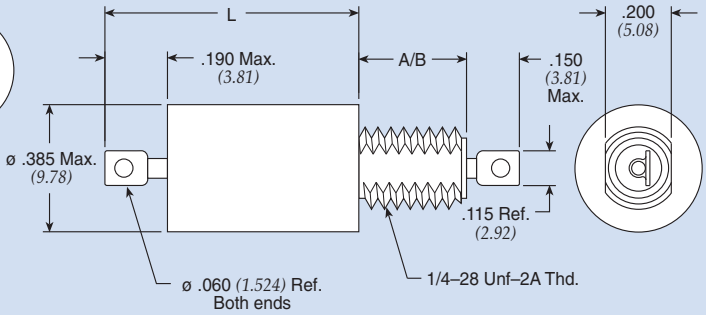


Figure 1



Thread length:
A - 0.187 (4.76)
B - 0.312 (7.92)

Note: ø .410 Max. for M28861 parts

Dimensions in inches *(mm)*

.375 ø L Circuit Standard Product

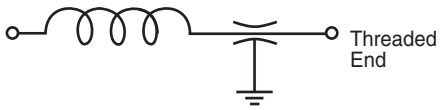
Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-353-007	—	1	80	—	50	—	0.06	1.400	70.000	LB	0.770	(19.558)	A	44	70	70	70	70	70	70
51-353-095	—	1	80	—	50	—	0.15	1.400	12.000	LT	0.960	(24.384)	A	21	52	64	70	70	70	70
51-353-003	—	1	80	—	50	—	0.45	1.400	1.200	LB	0.770	(19.558)	A	16	31	37	55	70	70	70
51-353-099	—	1	80	—	50	—	1.00	1.400	0.250	LT	0.770	(19.558)	A	16	33	44	70	70	70	70
51-353-100	—	1	80	—	50	—	5.00	1.400	0.015	LT	0.770	(19.558)	A	15	28	33	46	70	70	70
†9200-300-0025	—	1	80	—	50	—	10.00	1.200	0.010	LB	0.450	(11.430)	A	15	28	33	44	60	70	70

† Also available through API's authorized distributors.

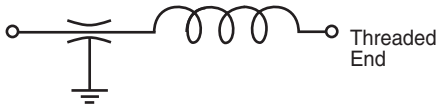
api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Circuit Standard Product *continued*

Part Number	MIL No	See Pg. LP30 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†9200-303-0095	—	1	80	—	50	—	10.00	1.200	0.010	LB	0.450	(11.430)	B	15	28	33	44	60	70	70
51-353-101	—	1	80	—	50	—	10.00	1.400	0.010	LT	0.450	(11.430)	A	14	28	33	44	60	70	70
51-353-109	—	1	80	—	50	—	10.00	1.400	0.010	LT	0.450	(11.430)	B	15	28	33	44	60	70	70
51-353-120	—	1	150	—	100	—	1.00	0.750	0.250	LB	0.758	(19.253)	A	9	27	36	57	70	70	70
9000-103-0019	—	1	150	—	100	—	5.00	0.450	0.015	LT	0.758	(19.253)	B	6	20	26	37	68	70	70
SCI-2120-014	—	1	150	—	100	—	10.00	1.000	0.003	LB	0.450	(11.430)	B	14	28	34	44	52	70	70
51-353-110	—	1	250	—	200	125	1.00	0.250	0.250	LT	0.758	(19.253)	A	—	17	29	50	70	70	70
†51-353-111	—	1	250	—	200	125	1.00	0.250	0.250	LB	0.758	(19.253)	A	—	17	29	50	70	70	70
51-353-112	—	1	250	—	200	125	3.00	0.250	0.050	LT	0.758	(19.253)	A	—	13	20	35	70	70	70
†51-353-113	—	1	250	—	200	125	3.00	0.250	0.050	LB	0.758	(19.253)	A	—	13	20	35	70	70	70
51-353-114	—	1	250	—	200	125	5.00	0.250	0.015	LT	0.758	(19.253)	A	—	12	20	30	62	70	70
51-353-116	—	1	250	—	200	125	10.00	0.250	0.010	LT	0.450	(11.430)	A	—	15	20	30	50	70	70
SCI-2320-010	—	1	300	—	300	125	0.50	0.150	1.000	LB	0.758	(19.253)	B	—	23	35	56	70	70	70
SCI-2320-004	—	1	300	—	300	125	1.00	0.150	0.250	LB	0.758	(19.253)	A	—	10	21	41	70	70	70
SCI-2320-005	—	1	300	—	300	125	2.00	0.150	0.063	LB	0.758	(19.253)	A	—	8	14	30	70	70	70
SCI-2320-006	—	1	300	—	300	125	3.00	0.150	0.027	LB	0.758	(19.253)	A	—	8	14	26	64	70	70
SCI-2320-007	—	1	300	—	300	125	10.00	0.150	0.003	LB	0.450	(11.430)	A	—	8	14	25	45	52	70
SCI-2320-014	—	1	300	—	300	125	10.00	0.150	0.003	LB	0.450	(11.430)	B	—	8	14	25	45	52	70

.375 ø L Circuit MIL Qualified Profile

(See MIL index on pages CF9-11 for complete MIL part number listing)

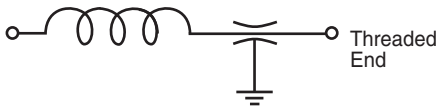
Part Number	M15733 MIL No	See Pg. LP30 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-390-018	23-0026	1	—	—	50	—	0.50	1.400	0.360	LB	0.630	(16.002)	A	12	36	48	69	70	70	70
51-390-026	23-0038	1	—	—	50	—	1.00	1.400	0.140	LB	0.630	(16.002)	A	11	26	36	55	70	70	70
51-390-034	23-0050	1	—	—	50	—	2.00	1.400	0.070	LB	0.630	(16.002)	A	10	24	32	48	70	70	70
†51-353-067	24-0006	1	80	—	50	—	10.00	1.400	0.010	LB	0.760	(19.304)	B	15	28	31	42	56	70	70
51-353-207	34-0007	1	—	—	50	—	10.00	1.400	0.010	LB	0.760	(19.304)	A	15	28	31	42	56	70	70
51-444-072	58-0002	1	80	—	50	—	10.00	1.400	0.008	LT	0.545	(13.843)	A	15	28	33	44	60	70	70
†51-353-066	24-0005	1	80	—	50	—	10.00	1.400	0.010	LB	0.760	(19.304)	A	15	28	31	42	56	70	70
51-353-287	39-0014	1	—	—	50	—	10.00	1.400	0.003	LT	0.760	(19.304)	B	14	28	34	44	52	70	70
†51-444-060	24-0008	1	80	—	50	—	10.00	1.400	0.010	LT	0.740	(18.796)	B	15	28	31	42	56	70	70
†51-343-028	38-0002	1	—	—	50	—	15.00	1.400	0.008	LB	0.481	(12.217)	A	15	28	33	44	64	70	70
†51-343-034	38-0006	1	—	—	50	—	15.00	1.400	0.008	LB	0.481	(12.217)	B	15	28	33	44	64	70	70
51-353-053	25-0003	1	—	—	100	—	1.00	0.450	0.250	LB	0.738	(18.745)	A	6	23	34	55	70	70	70
†51-353-054	25-0005	1	—	—	100	—	5.00	0.450	0.015	LT	0.758	(19.253)	A	6	17	23	35	69	70	70
†51-353-055	25-0008	1	—	—	100	—	5.00	0.450	0.015	LB	0.738	(18.745)	A	6	17	23	35	69	70	70
51-353-155	39-0008	1	—	—	100	—	5.00	0.450	0.015	LB	0.760	(19.304)	A	6	20	26	35	60	60	70
51-444-039	25-0017	1	—	—	100	—	5.00	0.450	0.015	LT	0.758	(19.253)	B	6	17	23	35	69	70	70

† Also available through API's authorized distributors.

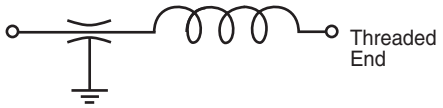
api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Circuit MIL Qualified Profile *continued*

(See MIL index on pages CF9-11 for complete MIL part number listing)

Part Number	M15733 MIL No	See Pg. LP30 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-444-040	25-0020	1	—	—	100		5.00	0.450	0.015	LB	0.738	*(18.745)*	B	6	17	23	35	69	70	70
51-353-156	39-0009	1	—	—	100		10.00	0.450	0.003	LT	0.760	*(19.304)*	A	6	20	26	35	56	60	70
51-353-157	39-0010	1	—	—	100		10.00	0.450	0.003	LB	0.760	*(19.304)*	A	6	20	26	35	56	60	70
†**51-353-076**	26-0001	1	—	—	150	125	1.00	0.250	0.250	LT	0.758	*(19.253)*	A	—	13	24	45	80	70	70
†**51-353-077**	26-0003	1	—	—	150	125	1.00	0.250	0.250	LB	0.738	*(18.745)*	A	—	13	24	45	80	70	70
51-444-043	26-0013	1	—	—	150	125	1.00	0.250	0.250	LT	0.758	*(19.253)*	B	—	13	24	45	80	70	70
51-444-044	26-0015	1	—	—	150	125	1.00	0.250	0.250	LB	0.738	*(18.745)*	B	—	13	24	45	80	70	70
51-390-040	23-0058	1	—	—	150		2.00	0.250	0.070	LT	0.630	*(16.002)*	A	3	15	23	38	60	70	60
51-390-039	23-0057	1	—	—	150		2.00	0.250	0.070	LT	0.630	*(16.002)*	B	3	15	23	38	60	70	60
51-444-005	34-0015	1	—	—	150	125	3.00	0.150	0.050	LT	0.758	*(19.253)*	B	—	8	15	30	68	70	70
†**51-353-078**	26-0004	1	—	—	150	125	3.00	0.250	0.050	LT	0.758	*(19.253)*	A	—	8	15	30	68	70	70
†**51-353-079**	26-0006	1	—	—	150	125	3.00	0.250	0.050	LB	0.738	*(18.745)*	A	—	8	15	30	68	70	70
†**51-444-046**	26-0018	1	—	—	150	125	3.00	0.250	0.050	LB	0.738	*(18.745)*	B	—	8	15	30	68	70	70
51-444-047	26-0019	1	—	—	150	125	5.00	0.250	0.015	LT	0.758	*(19.253)*	B	—	8	14	25	58	70	70
†**51-353-080**	26-0007	1	—	—	150	125	5.00	0.250	0.015	LT	0.758	*(19.253)*	A	—	8	14	25	58	70	70
51-353-081	26-0010	1	—	—	150	125	5.00	0.250	0.015	LB	0.738	*(18.745)*	A	—	8	14	25	58	70	70
51-444-027	34-0030	1	—	—	200	125	5.00	0.250	0.150	LB	0.900	*(22.860)*	A	2	15	21	32	60	70	70
51-444-117	54-0018	2	—	—	300	125	1.00	0.150	0.250	LB	0.740	*(18.796)*	A	—	10	21	41	70	70	70

† Also available through API's authorized distributors.

api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

.375 ø Pi Circuit

Thread length: A - 0.187 (4.76) B - 0.312 (7.92)

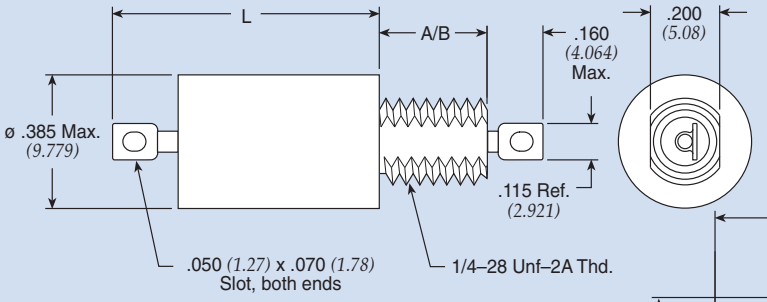


Figure 1

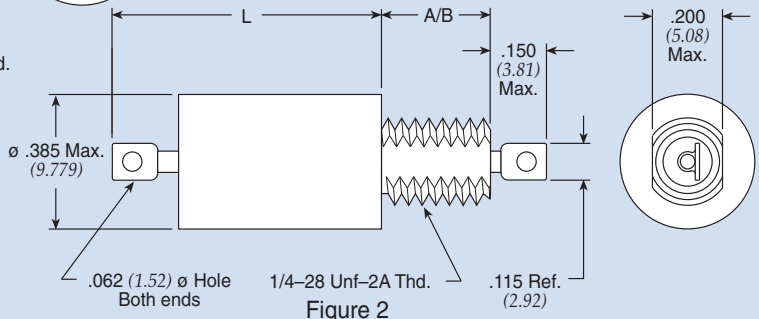


Figure 2

Dimensions in inches *(mm)*

.375 ø Pi Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
SCI-2030-010	—	2	80	—	50	—	0.50	1.500	1.000	0.758	(19.253)	B	24	66	70	70	70	70	70
SCI-2030-004	—	2	80	—	50	—	1.00	1.500	0.250	0.758	(19.253)	A	15	54	70	70	70	70	70
SCI-2030-005	—	2	80	—	50	—	2.00	1.500	0.063	0.758	(19.253)	A	—	45	62	70	70	70	70
SCI-2030-006	—	2	80	—	50	—	3.00	1.500	0.027	0.758	(19.253)	A	—	35	55	70	70	70	70
SCI-2030-013	—	2	80	—	50	—	3.00	1.500	0.027	0.758	(19.253)	B	—	35	55	70	70	70	70
†9001-100-1080	—	1	80	—	50	—	5.00	2.800	0.015	0.758	(19.253)	A	—	18	60	70	70	70	70
†9001-100-1081	—	1	80	—	50	—	10.0	2.800	0.005	0.758	(19.253)	A	21	32	40	35	68	70	70
SCI-2130-009	—	1	150	—	100	—	0.25	1.000	4.000	0.758	(19.253)	B	28	70	70	70	70	70	70
51-311-319	—	1	150	—	100	—	0.50	1.000	0.600	0.758	(19.253)	A	—	51	69	70	70	70	70
†9001-100-1010	—	1	150	—	100	—	0.50	1.000	0.600	0.758	(19.253)	A	6	39	68	70	70	70	70
51-311-320	—	1	150	—	100	—	1.00	1.000	0.250	0.758	(19.253)	A	—	41	60	70	70	70	70
†9001-100-1013	—	1	150	—	100	—	1.00	1.000	0.250	0.758	(19.253)	A	—	28	59	70	70	70	70
51-311-321	—	1	150	—	100	—	3.00	1.000	0.060	0.758	(19.253)	A	—	16	41	70	70	70	70
†51-311-322	—	1	150	—	100	—	5.00	1.000	0.015	0.758	(19.253)	A	—	—	28	65	70	70	70
SCI-2130-007	—	1	150	—	100	—	10.0	1.000	0.003	0.758	(19.253)	A	9	24	29	40	70	70	70
SCI-2130-014	—	1	150	—	100	—	10.0	1.000	0.005	0.758	(19.253)	B	9	24	29	40	70	70	70
51-311-316	—	1	250	125	200	125	1.00	0.300	0.250	0.758	(19.253)	A	—	20	40	70	70	70	70
51-311-317	—	1	250	125	200	125	3.00	0.300	0.050	0.758	(19.253)	A	—	—	20	55	70	70	70
†9001-100-1025	—	1	250	125	200	125	5.00	0.300	0.015	0.758	(19.253)	A	—	—	12	50	70	70	80
SCI-2330-009	—	1	300	125	300	125	0.25	0.300	4.000	0.758	(19.253)	B	8	50	66	70	70	70	70
SCI-2330-010	—	1	300	125	300	125	0.50	0.300	1.000	0.758	(19.253)	B	—	40	56	70	70	70	70
SCI-2330-012	—	1	300	125	300	125	2.00	0.300	0.063	0.758	(19.253)	B	—	18	33	63	70	70	70
SCI-2330-007	—	1	300	125	300	125	10.0	0.300	0.003	0.758	(19.253)	A	—	14	20	30	70	70	70

† Also available through API's authorized distributors.

Hermetically Sealed Threaded Case Filters

.375 ø Pi Circuit MIL Qualified Product

(See MIL index on pages CF9-11 for complete MIL part number listing)

Part Number	M15733 MIL No	See Pg. LP33 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-390-305	23-0017	1	—	—	50	—	0.30	2.800	0.770	0.730	(18.542)	B	29	73	80	80	80	80	80
51-390-314	23-0042	1	—	—	50	—	1.00	2.800	0.140	0.730	(18.542)	A	8	52	71	80	80	80	80
†51-390-318	23-0054	1	—	—	50	—	2.00	1.500	0.070	0.730	(18.542)	A	—	46	65	80	80	80	80
†51-390-317	23-0053	1	—	—	50	—	2.00	1.500	0.070	0.730	(18.542)	B	—	46	65	80	80	80	80
51-311-311	25-0010	1	—	—	100	—	0.25	0.900	1.500	0.793	(20.142)	A	—	48	66	80	80	80	70
†51-311-308	25-0002	1	—	—	100	—	1.00	0.500	0.250	0.793	(20.142)	A	—	33	52	80	80	80	70
†51-311-309	25-0004	1	—	—	100	—	3.00	0.660	0.050	0.793	(20.142)	A	—	17	34	68	80	80	70
†51-311-310	25-0006	1	—	—	100	—	5.00	0.900	0.015	0.793	(20.142)	A	—	—	17	57	80	80	70
51-353-344	39-0011	1	—	—	100	—	10.0	0.990	0.003	0.760	(19.304)	A	9	24	29	40	70	70	70
51-353-345	39-0012	1	—	—	100	—	10.0	0.990	0.003	0.760	(19.304)	A	9	24	29	40	70	70	70
†51-311-314	26-0011	1	—	—	150	125	0.25	0.300	1.500	0.793	(20.142)	A	—	29	47	70	80	80	70
51-390-312	23-0036	1	—	—	150	—	0.50	0.500	0.360	0.730	(18.542)	A	—	48	66	70	70	70	70
51-390-311	23-0035	1	—	—	150	—	0.50	0.500	0.360	0.730	(18.542)	B	—	48	66	70	70	70	70
†51-353-336	26-0002	1	—	—	150	125	1.00	0.300	0.250	0.793	(20.142)	A	—	11	32	63	80	80	70
51-390-315	23-0047	1	—	—	150	—	1.00	0.500	0.140	0.730	(18.542)	B	—	32	51	70	70	70	70
51-311-312	26-0005	1	—	—	150	125	3.00	0.300	0.050	0.793	(20.142)	A	—	5	6	47	80	80	70
51-311-408	54-0005	2	—	—	300	115	1.00	0.300	0.250	0.761	(19.329)	A	—	23	43	70	70	70	70

† Also available through API's authorized distributors.

Transient Suppression Pi Filters

Part Number	See Pg. LP33 for Fig.	Rated Volt. VDC	I Amp	Min Cap µF	DCR Min Mohms	Max RDC Ohms	Transient Suppressor* VR* (VDC)	BV* (VDC)	IT* (MA)	IPP* (A)	Length In	Length (mm)	Max Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-570-300	1	5	0.50	1.400	0.500	0.600	6.5	7.22/7.98	10	44.7	1.179	(29.947)	A	23	57	70	70	70	70
51-570-301	1	5	1.00	1.400	0.500	0.350	6.5	7.22/7.98	10	44.7	1.179	(29.947)	A	3	47	70	70	70	70
51-570-302	1	5	3.00	1.400	0.500	0.060	6.5	7.22/7.98	10	44.7	1.179	(29.947)	A	—	23	58	70	70	70
51-570-303	1	5	5.00	1.400	0.500	0.015	6.5	7.22/7.98	10	44.7	1.179	(29.947)	A	—	17	48	70	70	70
51-570-304	1	5	10.00	1.400	0.500	0.005	6.5	7.22/7.98	10	44.7	1.179	(29.947)	A	16	26	35	40	60	70
51-570-310	1	28	0.50	1.400	30.000	0.600	33.0	36.7/40.6	1	9.4	1.179	(29.947)	A	23	57	70	70	70	70
51-570-311	1	28	1.00	1.400	30.000	0.350	33.0	36.7/40.6	1	9.4	1.179	(29.947)	A	3	47	70	70	70	70
51-570-312	1	28	3.00	1.400	30.000	0.060	33.0	36.7/40.6	1	9.4	1.179	(29.947)	A	—	23	58	70	70	70
51-570-313	1	28	5.00	1.400	30.000	0.015	33.0	36.7/40.6	1	9.4	1.179	(29.947)	A	—	17	48	70	70	70
51-570-314	1	28	10.00	1.400	30.000	0.005	33.0	36.7/40.6	1	9.4	1.179	(29.947)	A	16	26	35	40	60	70
51-570-320	1	50	0.50	1.400	50.000	0.600	58.0	64.4/71.2	1	5.3	1.179	(29.947)	A	23	57	70	70	70	70
51-570-321	1	50	1.00	1.400	50.000	0.350	58.0	64.4/71.2	1	5.3	1.179	(29.947)	A	3	47	70	70	70	70
51-570-322	1	50	3.00	1.400	50.000	0.060	58.0	64.4/71.2	1	5.3	1.179	(29.947)	A	—	23	58	70	70	70
51-570-323	1	50	5.00	1.400	50.000	0.015	58.0	64.4/71.2	1	5.3	1.179	(29.947)	A	—	17	48	70	70	70
51-570-324	1	50	10.00	1.400	50.000	0.005	58.0	64.4/71.2	1	5.3	1.179	(29.947)	A	16	26	35	40	60	70

* Transient Suppression definitions and ratings

VR = Reverse standoff voltage
BV = Breakdown voltage
IPP = Max. peak pulse current
IT = Test current

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Hermetically Sealed Threaded Case Filters

.375 ø T Circuit

Thread length: A - 0.187 (4.76) B - 0.312 (7.92)

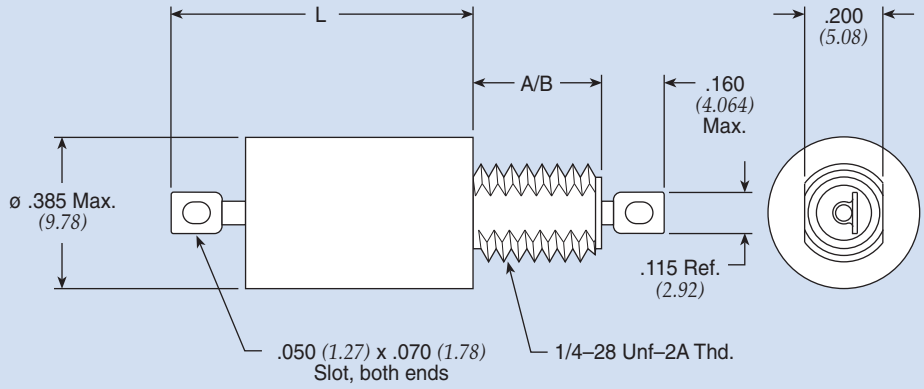

Figure 1

Note: Max. O.D. is ø .416" for Military QPL Filters.

Dimensions in inches *(mm)*

.375 ø T Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
SCI-2040-012	—	1	80	—	50	—	2.00	1.400	0.126	1.071	(27.203)	B	8	22	30	55	70	70	70
SCI-2040-013	—	1	80	—	50	—	3.00	1.400	0.054	1.071	(27.203)	B	8	22	28	43	70	70	70
†9004-100-2017	—	1	80	—	50	—	15.0	1.400	0.005	1.179	(29.947)	A	17	27	34	44	60	70	70
SCI-2140-004	—	1	150	—	100	—	1.00	0.500	0.500	1.070	(27.178)	A	4	25	40	70	70	70	70
SCI-2140-006	—	1	150	—	100	—	3.00	0.500	0.054	1.071	(27.203)	A	4	19	24	39	70	70	70
SCI-2140-007	—	1	150	—	100	—	10.0	0.500	0.010	1.071	(27.203)	A	4	19	24	34	57	70	70
SCI-2340-009	—	1	300	—	300	125	0.25	0.150	8.000	1.071	(27.203)	B	11	57	70	70	70	70	70
SCI-2340-004	—	1	300	—	300	125	1.00	0.150	0.500	1.071	(27.203)	A	—	13	29	59	70	70	70
SCI-2340-013	—	1	300	—	300	125	3.00	0.150	0.054	1.071	(27.203)	B	—	8	14	29	70	70	70
SCI-2340-014	—	1	300	—	300	125	10.0	0.150	0.010	1.071	(27.203)	B	—	8	14	24	47	70	70

† Also available through API's authorized distributors.

.375 ø T Circuit MIL Qualified Product

(See MIL index on pages CF9-11 for complete MIL part number listing)

Part Number	M15733 MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-382-609	25-0024	1	—	—	100	—	2.00	0.750	0.100	1.179	(29.947)	B	10	22	31	55	80	70	70
51-382-603	25-0007	1	—	—	100	—	4.00	0.750	0.063	1.345	(34.163)	A	10	22	28	43	80	70	70
†51-351-604	26-0012	1	—	—	150	125	2.00	0.250	0.100	1.179	(29.947)	A	—	13	21	43	80	70	70
51-351-603	26-0008	1	—	—	150	125	4.00	0.250	0.063	1.345	(34.163)	A	—	11	18	33	80	70	70

† Also available through API's authorized distributors.

Hermetically Sealed Threaded Case Filters

.375 ø TT Circuit Standard Product

Part Number	MIL No	See Pg. LP35 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
SCI-2060-009	—	1	—	—	50	—	0.25	1.500	12.000	1.241	(31.521)	B	70	70	70	70	70	70	70
SCI-2060-013	—	1	—	—	50	—	3.00	1.500	0.081	1.241	(31.521)	B	—	33	54	70	70	70	70
SCI-2060-007	—	1	—	—	50	—	10.0	1.500	0.006	1.241	(31.521)	A	15	29	35	42	55	70	70
SCI-2060-014	—	1	—	—	50	—	10.0	1.500	0.006	1.241	(31.521)	B	15	29	35	42	55	70	70
SCI-2160-011	—	1	—	—	100	—	1.00	1.500	0.750	1.241	(31.521)	B	12	52	70	70	70	70	70
SCI-2160-012	—	1	—	—	100	—	2.00	1.500	0.189	1.241	(31.521)	B	—	33	56	70	70	70	70
SCI-2160-013	—	1	—	—	100	—	3.00	1.500	0.081	1.241	(31.521)	B	—	24	54	70	70	70	70
SCI-2160-014	—	1	—	—	100	—	10.0	1.400	0.006	1.241	(31.521)	B	12	25	32	42	55	70	70
SCI-2360-011	—	1	—	—	300	125	1.00	0.500	0.750	1.241	(31.521)	B	—	48	70	70	70	70	70
SCI-2360-006	—	1	—	—	300	125	3.00	0.500	0.080	1.241	(31.521)	A	—	12	38	70	70	70	70
SCI-2360-007	—	1	—	—	300	125	10.0	0.500	0.006	1.241	(31.521)	A	5	18	24	34	55	70	70
SCI-2360-014	—	1	—	—	300	125	10.0	0.500	0.006	1.241	(31.521)	B	5	18	24	34	55	70	70

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Hermetically Sealed Threaded Case Filters

.690 ø C Circuit

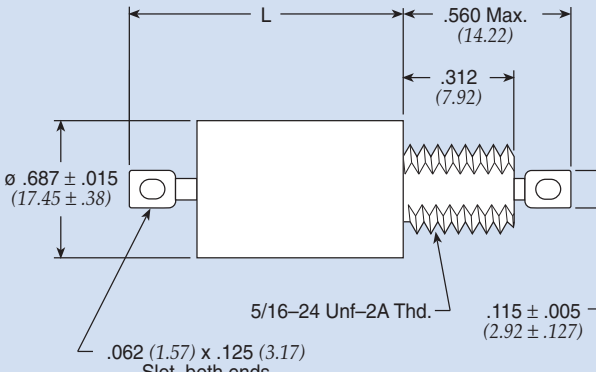

Figure 1

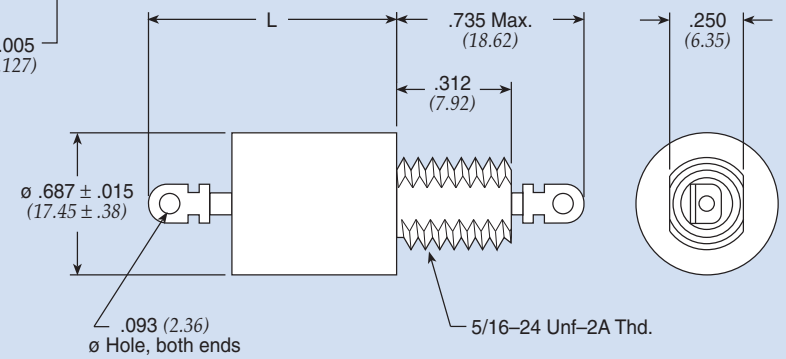

Figure 2

Dimensions in inches *(mm)*

.690 ø C Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†9932-100-6004	—	1	200	—	150		15	2.600	0.005	0.702	(17.831)	10	29	39	50	60	70	70
54-310-001	—	1	300	—	300	125	15	0.500	0.005	0.560	(14.224)	6	19	25	36	50	70	70
54-310-005	—	2	250	—	200	125	25	0.500	0.005	0.750	(19.050)	6	19	25	36	50	70	70
54-310-009	—	1	450	240	400	240	15	0.250	0.005	0.560	(14.224)	—	14	19	30	45	60	70
†9932-100-6005	—	1	450	240	400	240	15	0.250	0.005	0.560	(14.224)	—	14	19	30	50	70	70

.690 ø C Circuit MIL Qualified Product

Part Number	M15733 MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
54-310-039	34-0037	1	—	—	275	125	15	0.200	0.005	0.575	(14.605)	5	15	21	31	51	70	70

.690 ø C Circuit DSCC 84084 Product

Part Number	84084 No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
54-310-042	-001	1	—	—	400	230	15	0.150	0.005	0.700	(17.780)	—	10	16	26	40	52	70

† Also available through API's authorized distributors.

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Hermetically Sealed Threaded Case Filters

.690 ø L Circuit

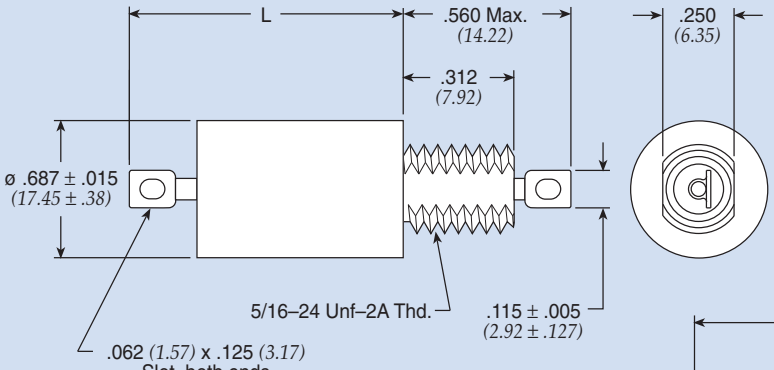

Figure 1

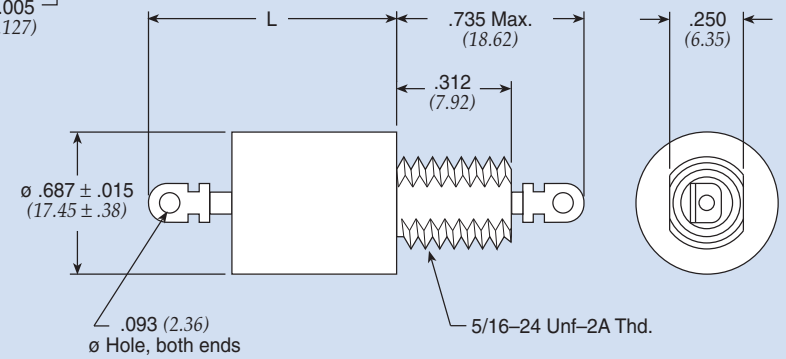

Figure 2

Dimensions in inches *(mm)*

.690 ø L Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
9010-100-0049	—	1	150	—	100	—	10.0	1.400	0.005	LT	0.905	(22.987)	16	24	34	44	60	70	70
SCI-6120-008	—	1	150	—	100	—	10.0	2.600	0.006	LB	0.959	(24.359)	18	32	39	49	70	70	70
SCI-6120-009	—	1	150	—	100	—	20.0	2.600	0.001	LB	0.905	(22.987)	18	32	39	49	60	70	70
51-320-041	—	1	250	—	200	125	10.0	0.500	0.008	LT	0.905	(22.987)	5	19	25	35	50	70	70
51-320-024	—	1	450	240	400	240	1.00	0.360	0.210	LT	0.905	(22.987)	5	30	38	60	70	70	70
51-320-100	—	1	450	240	400	240	1.00	0.250	0.210	LT	0.905	(22.987)	—	21	33	55	70	70	70
†51-320-026	—	1	450	240	400	240	3.00	0.360	0.030	LT	0.905	(22.987)	5	19	25	45	70	70	70
51-320-103	—	1	450	240	400	240	5.00	0.360	0.010	LB	0.905	(22.987)	—	12	18	30	60	70	70
51-322-007	—	1	450	240	400	240	15.0	0.360	0.007	LB	0.650	(16.510)	5	19	25	35	48	62	70
51-322-015	—	2	450	240	400	240	25.0	0.360	0.007	LT	0.750	(19.050)	5	17	23	34	48	62	70
51-322-036	—	2	450	240	400	240	25.0	0.250	0.007	LB	0.750	(19.050)	—	10	16	29	45	60	70
9010-100-0054	—	1	450	240	300	240	1.00	0.150	0.250	LT	0.905	(22.987)	—	14	32	52	70	70	70
SCI-6320-004	—	1	300	—	300	125	1.00	0.400	0.300	LB	0.959	(24.359)	6	24	35	56	70	70	70

† Also available through API's authorized distributors.

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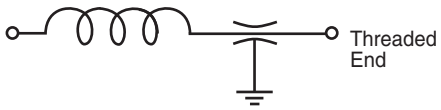
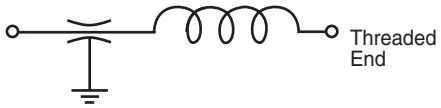
Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.690 ø L Circuit MIL Qualified Product

(See MIL index on pages CF9-11 for complete MIL part number listing)

Part Number	M15733 MIL No	See Pg. LP38 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†51-320-015	27-0005	1	—	—	200	125	3.00	0.250	0.033	LT	0.900	(22.860)	—	14	21	39	80	70	70
51-320-017	27-0008	1	—	—	200	125	5.00	0.250	0.016	LT	0.900	(22.860)	—	13	19	32	69	70	70
51-320-018	27-0009	1	—	—	200	125	5.00	0.250	0.016	LB	0.900	(22.860)	—	13	19	32	69	70	70
51-323-003	27-0011	1	—	—	200	125	10.0	0.250	0.005	LT	1.031	(26.187)	—	13	19	30	61	70	70
51-323-004	27-0012	1	—	—	200	125	10.0	0.250	0.005	LB	1.031	(26.187)	—	13	19	30	61	70	70
†51-322-009	27-0014	2	—	—	200	125	15.0	0.250	0.007	LT	1.763	(44.780)	—	19	25	36	60	70	70
51-322-017	34-0002	2	—	—	200	125	20.0	0.360	0.050	LB	1.763	(44.780)	—	19	25	35	57	70	70

.690 ø L Circuit DSCC 84084 Product

Part Number	84084 No	See Pg. LP38 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-320-162	-004	1	—	—	400	230	1.00	0.150	0.150	LT	0.905	(22.987)	—	19	30	46	60	70	70
51-320-163	-005	1	—	—	400	230	1.00	0.150	0.150	LB	0.905	(22.987)	—	19	30	46	60	70	70
51-320-164	-006	1	—	—	400	230	3.00	0.150	0.026	LT	0.905	(22.987)	—	11	19	36	60	70	70
51-320-165	-007	1	—	—	400	230	3.00	0.150	0.026	LB	0.905	(22.987)	—	11	19	36	60	70	70
51-320-166	-008	1	—	—	400	230	5.00	0.150	0.013	LT	0.905	(22.987)	—	10	16	28	54	70	70
51-320-167	-009	1	—	—	400	230	5.00	0.150	0.013	LB	0.905	(22.987)	—	10	16	28	54	70	70
51-320-168	-010	1	—	—	400	230	10.0	0.150	0.008	LT	0.905	(22.987)	—	10	16	25	48	70	70
51-320-169	-011	1	—	—	400	230	10.0	0.150	0.008	LB	0.905	(22.987)	—	10	16	25	48	70	70

† Also available through API's authorized distributors.

api technologies corp.
Spectrum Control

Hermetically Sealed Threaded Case Filters

.690 ø Pi Circuit

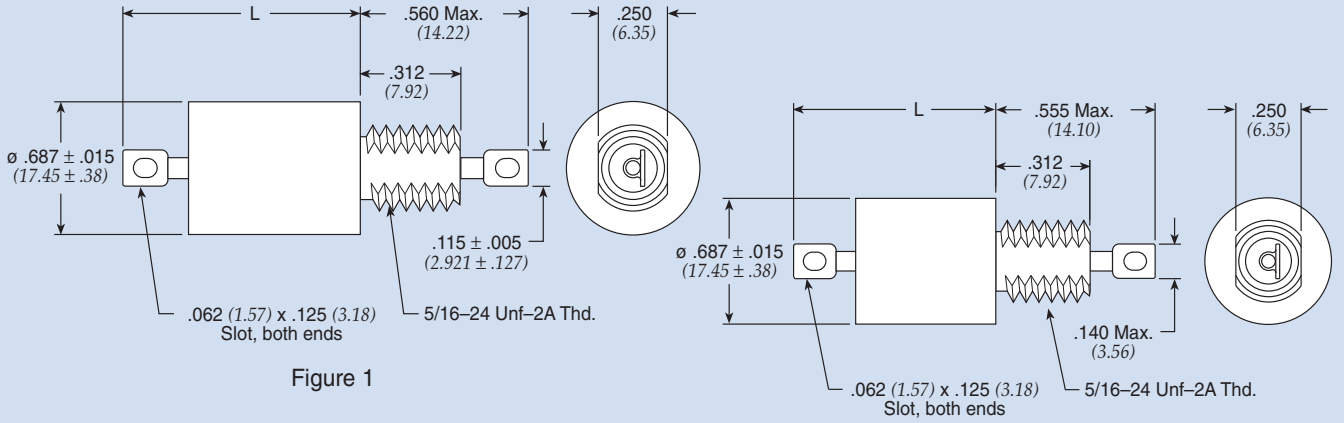


Figure 1

Figure 2

Dimensions in inches *(mm)*

.690 ø Pi Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-321-322	—	1	150	—	100	—	1.00	2.800	0.210	1.195	(30.353)	35	69	70	70	70	70	70
SCI-6130-009	—	1	150	—	100	—	20.0	5.200	0.001	1.195	(30.353)	23	31	35	35	70	70	70
51-321-317	—	1	450	240	400	*240	1.00	0.720	0.400	1.195	(30.353)	—	53	70	70	70	70	70
†51-321-318	—	1	450	240	400	*240	3.00	0.720	0.030	1.195	(30.353)	—	31	51	70	70	70	70
†51-321-319	—	1	450	240	400	*240	5.00	0.720	0.020	1.195	(30.353)	—	11	30	65	70	70	70

* 0-60 Hz

.690 ø Pi Circuit MIL Qualified Product

(See MIL index on pages CF8-10 for complete MIL part number listing)

Part Number	M15733 MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-321-312	27-0004	1	—	—	200	125	1.00	0.500	0.250	1.195	(30.353)	—	47	65	80	80	70	70
51-323-313	27-0003	1	—	—	200	125	1.00	0.500	0.270	1.031	(26.187)	—	43	61	80	80	70	70
51-321-313	27-0010	1	—	—	200	125	5.00	0.500	0.024	1.195	(30.353)	—	10	28	64	80	70	70
†51-321-314	27-0013	1	—	—	200	125	10.0	0.500	0.008	1.195	(30.353)	—	16	18	48	80	70	70
51-321-329	34-0005	1	—	—	200	125	10.0	0.500	0.075	1.195	(30.353)	—	16	18	48	80	70	70

.690 ø Pi Circuit DSCC 84084 Product

Part Number	84084 No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-321-398	-013	2	—	—	400	230	1.00	0.200	0.150	1.200	(30.480)	—	27	46	74	80	80	80
51-321-399	-014	2	—	—	400	230	3.00	0.200	0.026	1.200	(30.480)	—	—	30	60	80	80	80
51-321-400	-015	2	—	—	400	230	5.00	0.200	0.013	1.200	(30.480)	—	—	12	50	80	80	80
51-321-401	-016	2	—	—	400	230	10.0	0.200	0.008	1.200	(30.480)	—	—	—	30	80	80	80

† Also available through API's authorized distributors.

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Hermetically Sealed Threaded Case Filters

.690 ø T Circuit

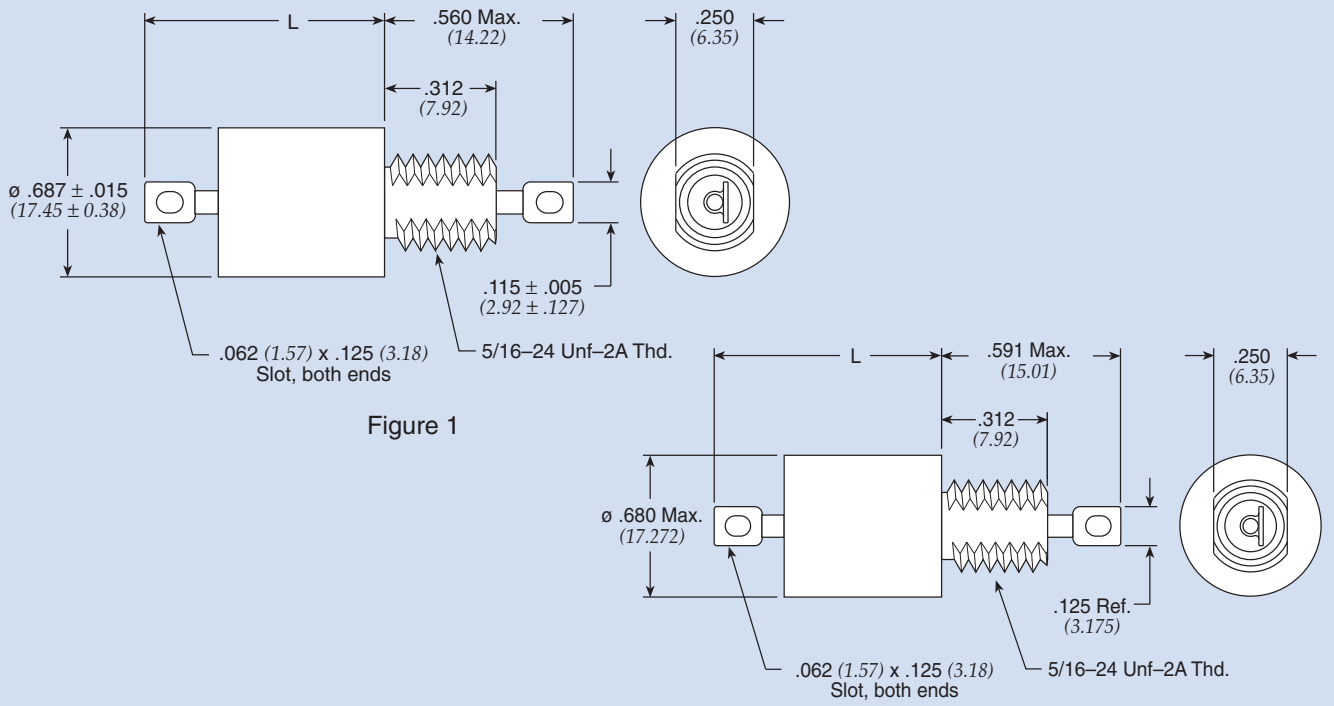

Figure 1

Figure 2

Dimensions in inches *(mm)*

.690 ø T Circuit Standard Product

Part Number	MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
SCI-6140-004	—	1	150	—	100	—	1.00	2.600	0.600	1.195	(30.353)	23	54	70	70	70	70	70
SCI-6140-006	—	1	150	—	100	—	3.00	2.600	0.100	1.195	(30.353)	21	35	46	70	70	70	70
SCI-6140-007	—	1	150	—	100	—	5.00	2.600	0.060	1.195	(30.353)	21	34	41	58	70	70	70
SCI-6140-009	—	1	150	—	100	—	20.0	2.600	0.002	1.195	(30.353)	21	35	41	50	60	70	70
51-321-649	—	1	250	125	200	125	2.00	0.360	0.090	1.195	(30.353)	—	24	38	65	70	70	70
†51-321-610	—	1	450	240	400	240	1.00	0.360	0.600	1.195	(30.353)	7	43	60	70	70	70	70

.690 ø T Circuit MIL Qualified Product

(See MIL index on pages CF8-10 for complete MIL part number listing)

Part Number	M15733 MIL No	Figure	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-321-607	27-0017	1	—	—	200	125	1.50	0.250	0.133	1.195	(30.353)	—	19	32	62	70	70	70
51-321-608	27-0018	1	—	—	200	125	4.00	0.250	0.025	1.195	(30.353)	—	14	21	36	70	70	70
51-321-670	54-0017	2	—	—	300	115	10.0	0.500	0.006	1.177	(29.896)	5	20	23	35	60	70	60

† Also available through API's authorized distributors.

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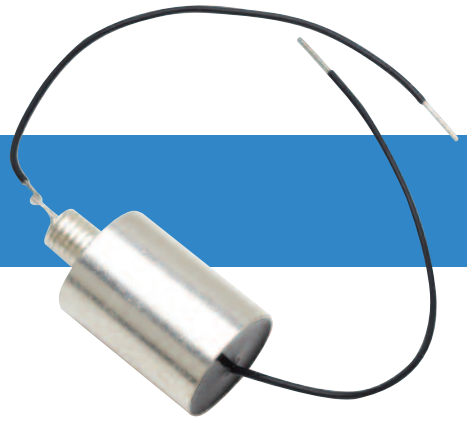
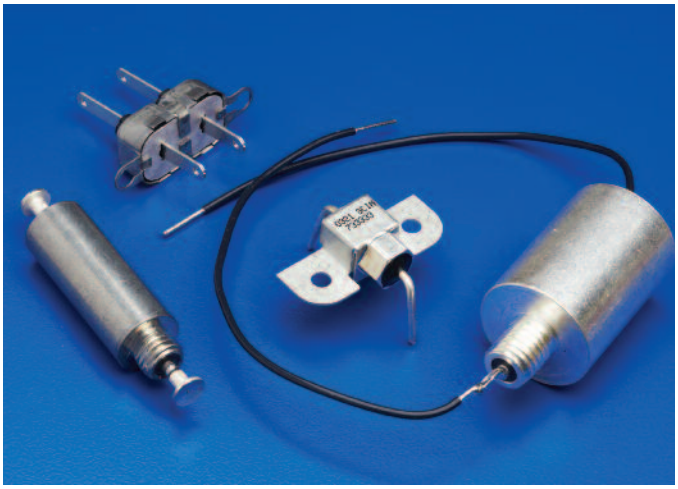
Value-Added Low Pass Filter Assemblies

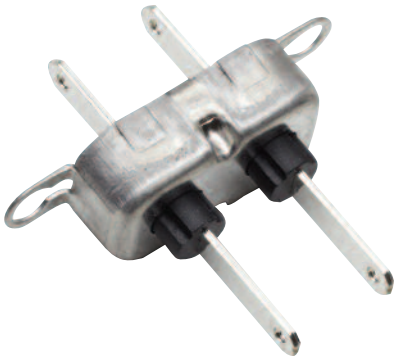


API Technologies' Spectrum Control line of value-added low pass filters provide flexible solutions to meet your unique design challenges. Our manufacturing process allows you to add connectors, modify terminations or add wire harnesses without adding much cost or drastically increasing lead times.

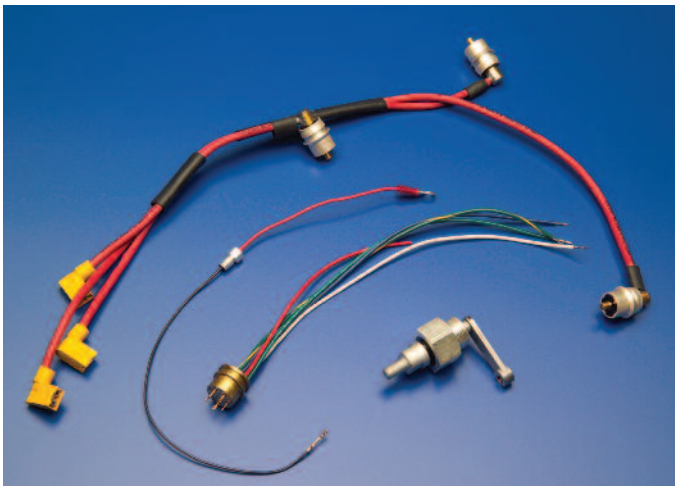
For custom requirements and exceptional needs, contact our design/manufacturing team.

Incorporate specific terminations, connectors or wire harnesses to accommodate your application.





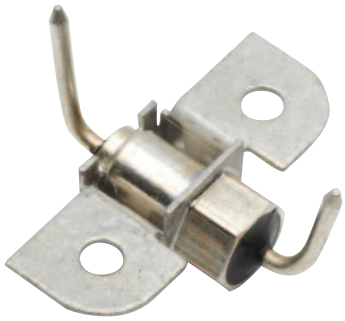
Lower the cost of acquisition and assembly.



Reduce production operations and lead times.

Our value-added services:

- Allow you to stream-line your bill of materials.
- Reduce inventory/production costs.
- Offer custom application-specific low pass filter assemblies.



Build-to-order low pass filters.

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

EMI Filtered Arrays

our filter plates and terminal blocks provide exceptional EMI protection of signal and power lines at a lower total installed cost

Easy Mate® Filter Plates reduce installation time and overall cost with its patented snap-in design to maximize real estate on PCBs. The Easy Mate® Jr. offers a lower profile for installation of feed-through filters into small hardware applications…**FA3-FA8**

Bolt-In Filter Plates provide EMI filtering for signal and power lines and an excellent method for electronic system interface. These plates eliminate the need to mount filters into bulkheads and are ideal for the isolation of electronic compartments to suppress EMI… **FA9-FA12**

Shrouded Latch Filter Plates combine a bolt-in filter plate with the latching feature of a ribbon cable header providing an easy to install and highly effective method for an electronic interface and EMI solution in one package… **FA13-FA14**

Barrier Strip Filtered Terminal Blocks are available in 2 to 6 terminal versions and our filter elements provide high insertion loss for EMI/RFI filtering of AC and DC power and control lines…**FA19-FA20**

PCB Mount Filtered Terminal Blocks with 2 to 12 terminals available, they provide quick and easy PCB installation and maintenance with a filter element that delivers high insertion loss for EMI/RFI filtering of low voltage DC power and control lines…**FA22-FA23**

Custom Filtered Arrays help meet your design or manufacturing parameters through special mechanical and electrical specifications or by adding varying cable lengths and terminations for a complete turnkey assembly. Custom high reliability assemblies available…**FA24**

Advantages of a Filtered Array

- Provide an EMI filtered signal or power line between electronic system modules
- Reduce cost . . . economical method to meet EMC requirements
- Reduce labor . . . eliminate need to assemble filters into a bulkhead
- Outperform surface mount EMI filters at frequencies above 50 MHz
- Reduce risk of damage to filter elements due to thermal shock and installation
- Improve reliability . . . every filter plate is 100% tested for key parameters
- Maximize real estate on PCB
- Mixed schematics in a single filter plate package

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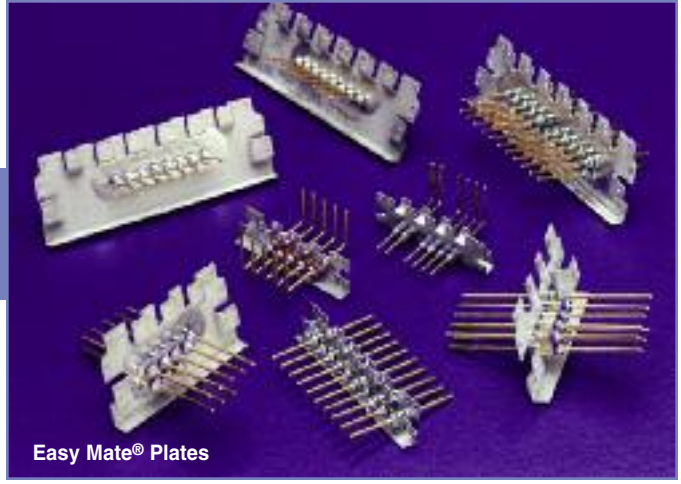
Filter Plates


Easy Mate® Plates


Bolt-in Plates


Custom Plate Solutions

Eliminating EMI/RFI interference has become a stringently enforced matter and needs to be considered at the early stages of design for all electronic systems. Both internal and external interference sources have a major impact on the successful EMC performance of a new system.

Shielding alone is unsatisfactory in shunting unwanted harmonics, conducted or radiated, on power/control lines that run through compartments of an electronic enclosure. This is particularly applicable in systems operating at frequencies above 50 MHz. Isolation and the incorporation of feed-through filters (Filter Plates) to facilitate entering or leaving sensitive compartments in an assembly are excellent methods to bring electronic interdependent functions/systems into compliance.

Filter plates allow a means of interfacing voltage and/or data (controlling instructions) to distant areas of a system without compromising its performance. Filter plates provide excellent isolation from 5 MHz to 18 GHz and beyond, reduce the labor involved for installation, and reduce the risk of damaging filter elements during installation. Connecting to these filter plates is easily accomplished through several methods, including ribbon style connectors, harnesses, hard wiring or directly soldering leads at a 90° angle to the printed circuit board.

The drawings on pages FA4, FA10 and FA14 illustrate how filter plates are incorporated into an electronic system.

Filter Plate Advantages

- Provide an EMI filtered signal line between electronic system modules
- Reduce cost . . . economical method to meet EMC requirements
- Reduce labor . . . eliminate need to assemble filters into a bulkhead
- Outperform surface mount EMI filters at frequencies above 50 MHz
- Reduce risk of damage to filter elements due to thermal shock and installation
- Improve reliability . . . every filter plate is 100% tested for key parameters
- Maximize real estate on PCB
- Mixed schematics in a single filter plate package

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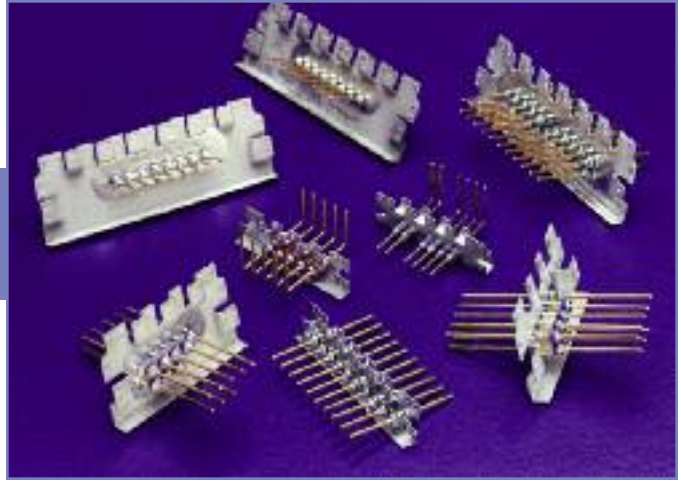
Easy Mate® Filter Plates



API's Spectrum Control brand developed an EMI/RFI filter plate, Easy Mate®, which simplifies installation and eliminates the need for mounting hardware. The Easy Mate®, **patented**, is designed to "snap" into the chassis of electronic systems, reducing the labor required to complete a plate installation. The drawing on page FA4 shows the Easy Mate® design.

These plates are available in two lengths and in both standard density centers (.100") and high-densitycenters (2mm). Standard density Easy Mate® plates offer up to 26 lines per plate in a double row configuration, while high-density plates offer up to 32 lines. Custom sizes for Easy Mate® plates are available.

Easy Mate® Advantages

- Reduces installation time and overall cost
- Eliminates mounting hardware and prepwork
- Flexibility for 1 or 2 rows and standard density centers (.100") or high density centers (2mm)
- Improves overall quality and reliability
- Multiple dimpled finger ground contacts provides excellent long term EMI filtering from 5 MHz to 18 GHz
- Outperforms surface mount devices
- Maximize real estate on PCB
- Mixed capacitance values and schematics
- Ideal for isolation of electronic compartments
- Available in RoHS compliant versions

Ordering Information

Example: **52-898-206-BA2**

The part number shown represents an Easy Mate® filter plate with 2 rows, 6 filters per row. Filters are C style with a capacitance value of 100pF. The plate length is 1.092", and the leads are bent 90° to the right side.

52	**	898	-	2	06	-	B	A	2
Filter Plates		**898** Easy Mate® Standard Density **960** Easy Mate® Hi-density *		**No. of Rows** **1** = 1 row **2** = 2 rows	**No. of Filters** **Number of Lines per Row** If less than 10, use a 0 (zero) first.		**Filter Designation** A - T from table on page 118. ***	**Plate Length** **A** - 1.092 (27.74mm) **B** - 1.812 (46.02mm)	**Lead Configuration** **0** - Straight **1** - 90° (left) **2** - 90° (right) **3** - 90° (both)

* *Maximum capacitance up to 4000pF C style filter*

** *Replace "–" with "F" for RoHS complaint version*

*** *To request selective line filtering, a mechanical configuration or material specification not shown in this catalog, please complete and forward the design inquiry form on page FA18. We will review your request and provide you with a part number.*

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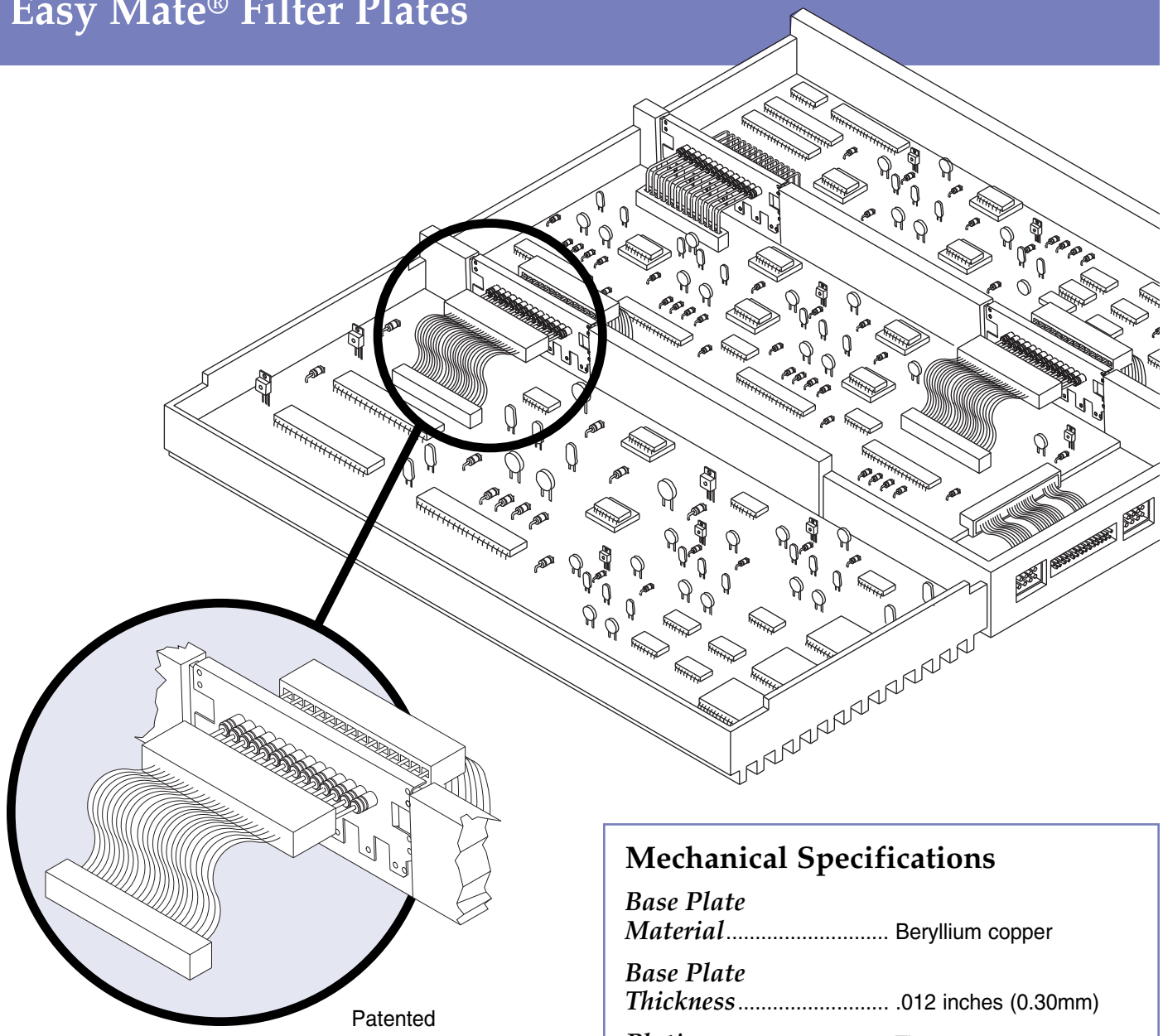
Easy Mate® Filter Plates



Patented

Soldering to Filter Terminals

- Use a temperature controlled soldering iron with tip temperature of 525 ± 10° F (275 ± 5° C).
- Use an SN 63 RMA flux core solder.
- Make mechanical wire connection.
- Use heat sink next to filter body where possible.
- Clean soldering iron tip.
- Clip end of solder—remove 0.5" (12.7mm) to expose flux for soldering.
- Apply soldering iron to wire/flag junction at wetted solder tip region of iron (Wetted Bridge Method). Immediately apply solder. Dwell time for soldering iron tip on product should be 3-5 seconds maximum. (For non-RoHS versions only)

Mechanical Specifications

Base Plate Material	Beryllium copper
Base Plate Thickness	.012 inches (0.30mm)
Plating	Tin, RoHS version will be silver
Lead Material	Copper alloy
Lead Plating	Gold plate
Lead Diameter	ø .025" (.64mm) for 0.100" centers (2.54mm) ø .020 (.51mm) for 0.079" centers (2.00mm)
Current Rating	5 Amps for .025" ø (.64mm) 3 Amps for .020" ø (.51mm)

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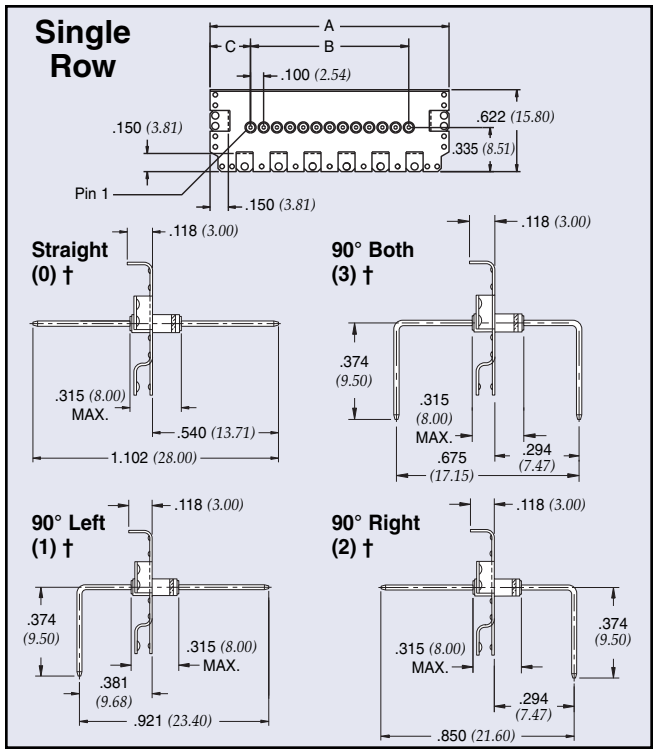
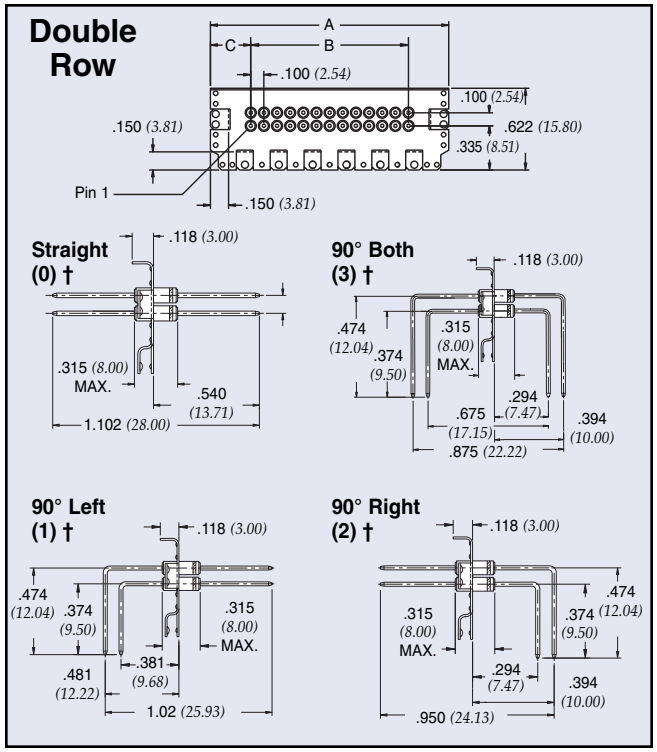
Easy Mate® Filter Plates
Standard Density Centers .100"

Dimensions: inches and *(mm)*
Lead Spacing: .100" *(2.54 mm)*



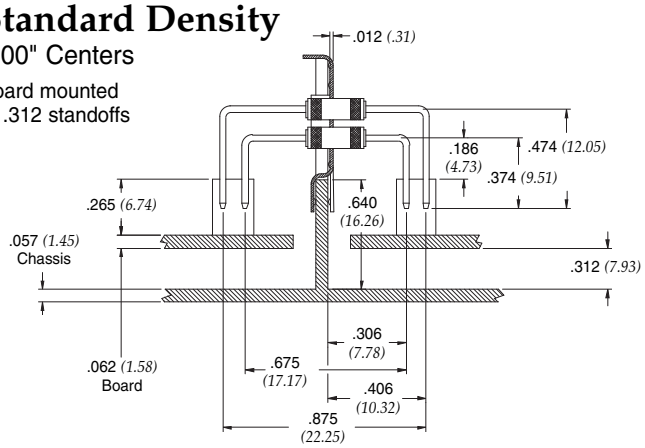


Patented
† Refers to lead configuration for part number/ordering information

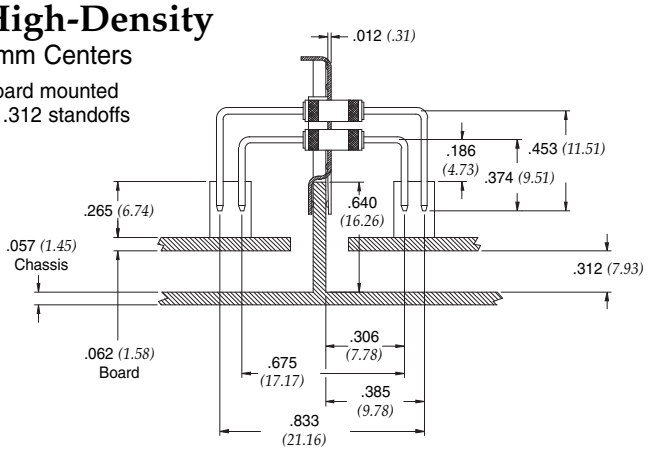
Plate length (A)	No. of filtered lines per row	52-898-XXX-XXX B		C	
1.092 *(27.74)*	1	0	*(0.00)*	0.496	*(12.60)*
	2	0.1	*(2.54)*	0.496	*(12.60)*
	3	0.2	*(5.08)*	0.396	*(10.06)*
	4	0.3	*(7.62)*	0.396	*(10.06)*
	5	0.4	*(10.16)*	0.296	*(7.52)*
	6	0.5	*(12.70)*	0.296	*(7.52)*
1.812 *(46.02)*	1	0	*(0.00)*	0.906	*(23.01)*
	2	0.1	*(2.54)*	0.806	*(20.47)*
	3	0.2	*(5.08)*	0.806	*(20.47)*
	4	0.3	*(7.62)*	0.706	*(17.93)*
	5	0.4	*(10.16)*	0.706	*(17.93)*
	6	0.5	*(12.70)*	0.606	*(15.39)*
	7	0.6	*(15.24)*	0.606	*(15.39)*
	8	0.7	*(17.78)*	0.506	*(12.85)*
	9	0.8	*(20.32)*	0.506	*(12.85)*
	10	0.9	*(22.86)*	0.406	*(10.31)*
	11	1.0	*(25.40)*	0.406	*(10.31)*
	12	1.1	*(27.94)*	0.306	*(7.77)*
	13	1.2	*(30.48)*	0.306	*(7.77)*

Typical Mounting Applications

Standard Density
.100" Centers
Board mounted to .312 standoffs



High-Density
2mm Centers
Board mounted to .312 standoffs



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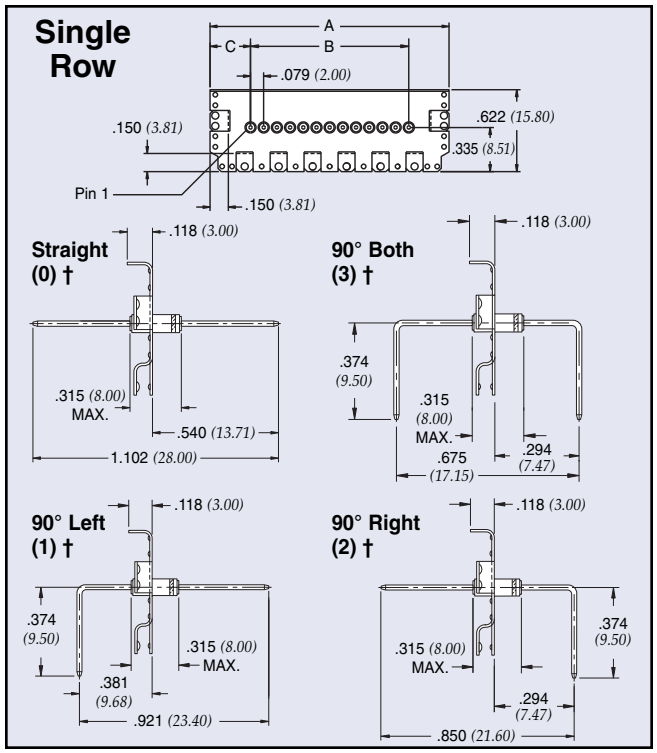
Easy Mate® Filter Plates
Hi-Density Centers 2mm

Dimensions: inches and *(mm)*
Lead Spacing: .079" *(2.00 mm)*



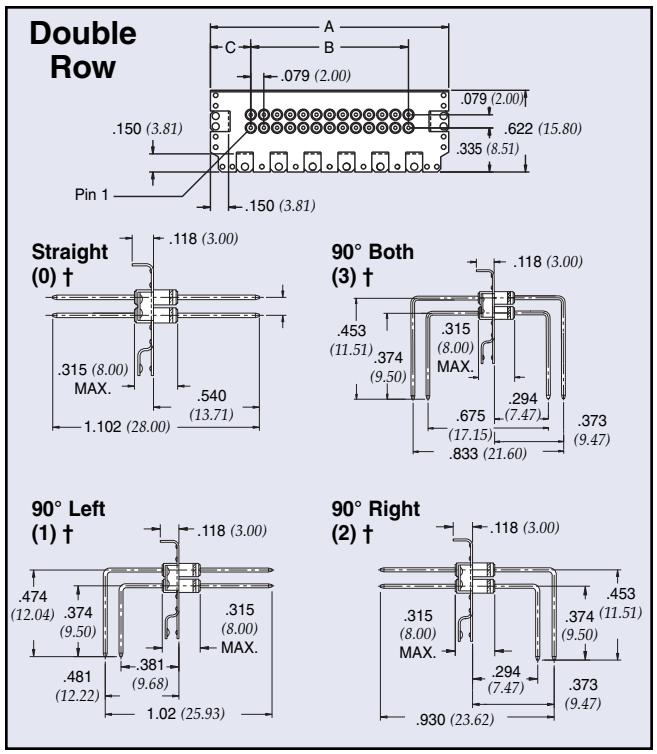
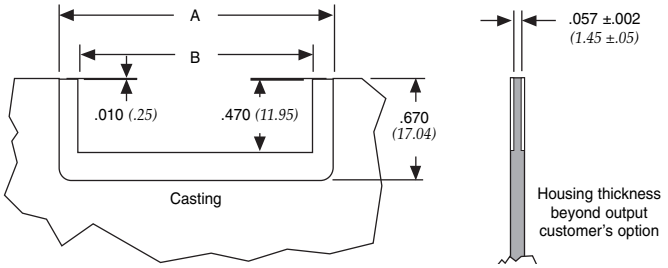


Plate length (A)	No. of filtered lines per row	52-960-XXX-XXX B	52-960-XXX-XXX C
1.092 *(27.74)*	2	0.079 *(2.00)*	0.463 *(11.77)*
	3	0.157 *(4.00)*	0.463 *(11.77)*
	4	0.236 *(6.00)*	0.385 *(9.77)*
	5	0.315 *(8.00)*	0.385 *(9.77)*
	6	0.394 *(10.00)*	0.306 *(7.77)*
	7	0.472 *(12.00)*	0.306 *(7.77)*
1.812 *(46.02)*	2	0.079 *(2.00)*	0.866 *(22.00)*
	3	0.157 *(4.00)*	0.787 *(20.00)*
	4	0.236 *(6.00)*	0.787 *(20.00)*
	5	0.315 *(8.00)*	0.709 *(18.00)*
	6	0.394 *(10.00)*	0.709 *(18.00)*
	7	0.472 *(12.00)*	0.630 *(16.00)*
	8	0.551 *(14.00)*	0.630 *(16.00)*
	9	0.630 *(16.00)*	0.551 *(14.00)*
	10	0.709 *(18.00)*	0.551 *(14.00)*
	11	0.787 *(20.00)*	0.472 *(12.00)*
	12	0.866 *(22.00)*	0.472 *(12.00)*
	13	0.945 *(24.00)*	0.394 *(10.00)*
	14	1.024 *(26.00)*	0.394 *(10.00)*
	15	1.102 *(28.00)*	0.315 *(8.00)*
	16	1.181 *(30.00)*	0.315 *(8.00)*

Easy Mate® Chassis Cut-out Design
Patent Pending



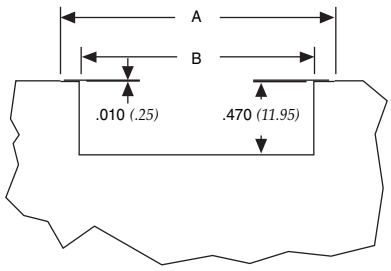


Plate Length	A	B
1.092 *(27.74)*	1.117 *(28.41)*	0.816 *(20.75)*
1.812 *(46.02)*	1.837 *(46.71)*	1.535 *(39.04)*

Patented
† Refers to lead configuration for part number/ordering information

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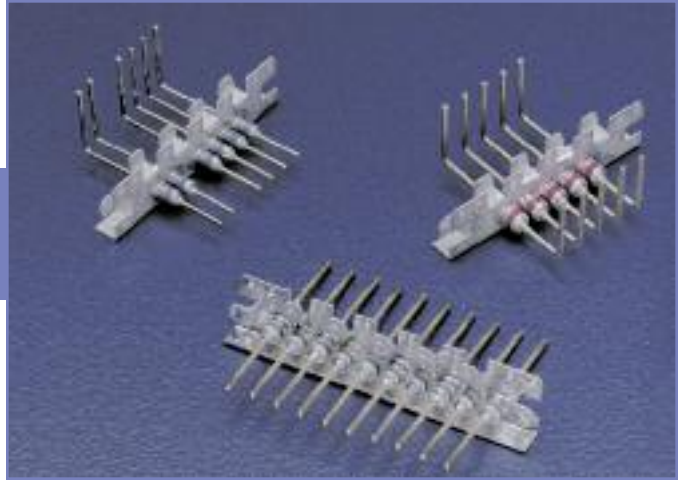
Easy Mate® Jr. Filter Plates



API's Spectrum Control brand has expanded its popular Easy Mate® family by adding two more package sizes. These new sizes are lower profile and facilitate installation of feed-through filters into small hardware applications such as PCS linear power amplifiers and RF transmitters. The Easy Mate® Jr. is available in two plate lengths, .990" and 1.240", and in standard (.100") and high density centers (2mm).

Easy Mate® Jr. Advantages

- Reduces installation time and overall cost
- Eliminates mounting hardware and prepwork
- Increase flexibility with standard density centers (.100") or high density centers (2mm)
- Improves overall quality and reliability
- Multiple finger ground contacts provide excellent EMI filtering from 5 MHz to 18 GHz
- Outperforms surface mount devices
- Maximize real estate on PCB
- Mixed capacitance values and schematics
- Ideal for isolation of electronic compartments
- Available in RoHS compliant versions

Mechanical Specifications

Base Plate Material .....Beryllium copper

Base Plate Thickness .....010 inches (.25mm)

Plating.....Tin,
RoHS version will be silver

Lead Material.....Copper alloy

Lead Plating .....Gold plate

Lead Diameter.....ø .025" (.64mm)
for 0.100" centers (2.54mm)

ø .020 (.51mm)
for 0.079" centers (2.00mm)

Current Rating .....5 Amps for .025" ø (.64mm)
3 Amps for .020" ø (.51mm)

Ordering Information

Example: **52-978-106-BA2**

The part number shown represents an Easy Mate® Jr. filter plate with 6 filters. Filters are C style with a capacitance value of 100pF. The plate length is .990", and the leads are bent 90° to the right side.

52 - ** **978** - **1** **06** - **B** **A** **2**

Filter Plates

978
Easy Mate® Jr. Standard Density

979
Easy Mate® Jr. High-density *

No. of Rows
1 = 1 row

No. of Filters

Number of Lines per Row
If less than 10, use a 0 (zero) first.

Filter Designation
A - T from table on page FA17. ***

Plate Length
A - .990 (25.15mm)
B - 1.240 (31.49mm)

Lead Configuration
0 - Straight
1 - 90° (left)
2 - 90° (right)
3 - 90° (both)

* *Maximum capacitance up to 4000pF C style filter*

** *Replace "–" with "F" for RoHS complaint version*

*** *To request selective line filtering, a mechanical configuration or material specification not shown in this catalog, please complete and forward the design inquiry form on page FA18. We will review your request and provide you with a part number.*

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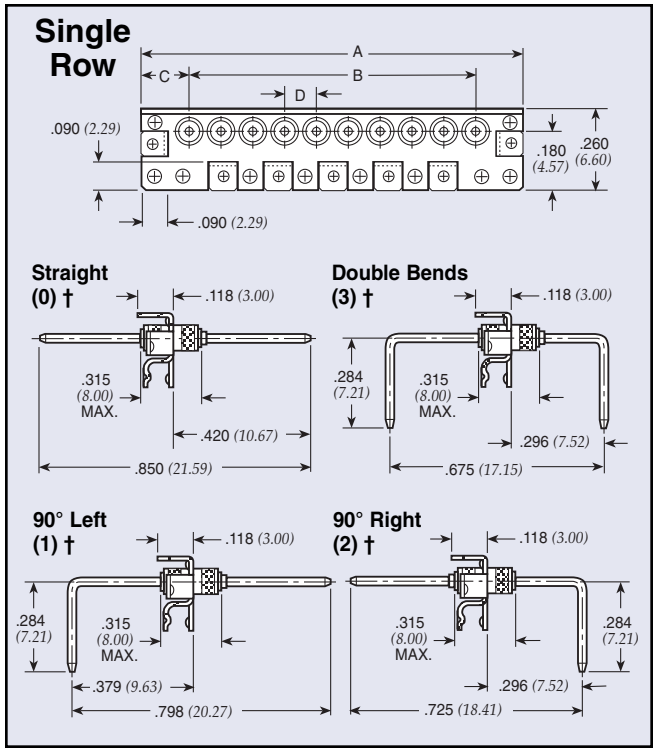
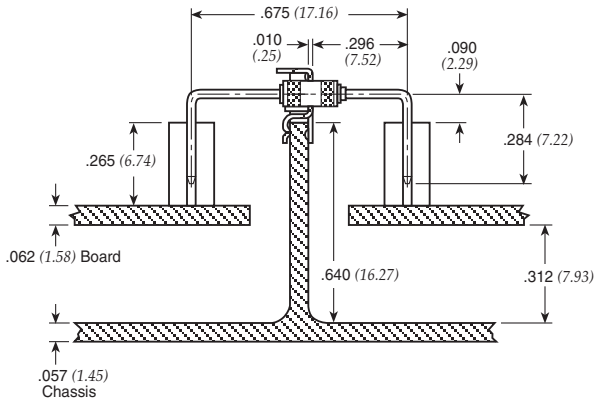
Easy Mate® Jr. Filter Plates

Dimensions: inches and *(mm)*



† Refers to lead configuration for part number/ordering information

Typical Mounting Application



Standard Density Centers .100" (D)

Plate length (A)	No. of filtered lines per row	52-978-XXX-XXX B	52-978-XXX-XXX C
.990 *(25.15)*	2	0.1 *(2.54)*	0.395 *(10.03)*
	3	0.2 *(5.08)*	0.395 *(10.03)*
	4	0.3 *(7.62)*	0.295 *(7.49)*
	5	0.4 *(10.16)*	0.295 *(7.49)*
	6	0.5 *(12.70)*	0.195 *(4.95)*
	7	0.6 *(15.24)*	0.195 *(4.95)*
1.24 *(31.49)*	2	0.1 *(2.54)*	0.570 *(14.48)*
	3	0.2 *(5.08)*	0.470 *(11.94)*
	4	0.3 *(7.62)*	0.470 *(11.94)*
	5	0.4 *(10.16)*	0.370 *(9.40)*
	6	0.5 *(12.70)*	0.370 *(9.40)*
	7	0.6 *(15.24)*	0.270 *(6.86)*
	8	0.7 *(17.78)*	0.270 *(6.86)*
	9	0.8 *(20.32)*	0.170 *(4.32)*
	10	0.9 *(22.86)*	0.170 *(4.32)*

High Density Centers 2mm (D)

Plate length (A)	No. of filtered lines per row	52-979-XXX-XXX B	52-979-XXX-XXX C
.990 *(25.15)*	2	0.079 *(2.00)*	0.417 *(10.58)*
	3	0.157 *(4.00)*	0.417 *(10.58)*
	4	0.236 *(6.00)*	0.338 *(8.58)*
	5	0.315 *(8.00)*	0.338 *(8.58)*
	6	0.394 *(10.00)*	0.259 *(6.58)*
	7	0.472 *(12.00)*	0.259 *(6.58)*
1.24 *(31.49)*	2	0.079 *(2.00)*	0.580 *(14.75)*
	3	0.157 *(4.00)*	0.502 *(12.75)*
	4	0.236 *(6.00)*	0.502 *(12.75)*
	5	0.315 *(8.00)*	0.423 *(10.75)*
	6	0.394 *(10.00)*	0.423 *(10.75)*
	7	0.472 *(12.00)*	0.344 *(8.75)*
	8	0.551 *(14.00)*	0.344 *(8.75)*
	9	0.630 *(16.00)*	0.266 *(6.75)*
	10	0.709 *(18.00)*	0.266 *(6.75)*

Easy Mate® Jr. Chassis Cut-out Design

Patented

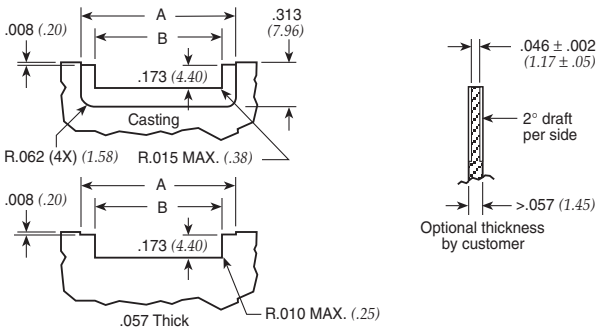


Plate Length	A	B
.990 *(25.15)*	1.015 *(25.78)*	0.834 *(21.18)*
1.24 *(31.49)*	1.265 *(32.13)*	1.084 *(27.53)*

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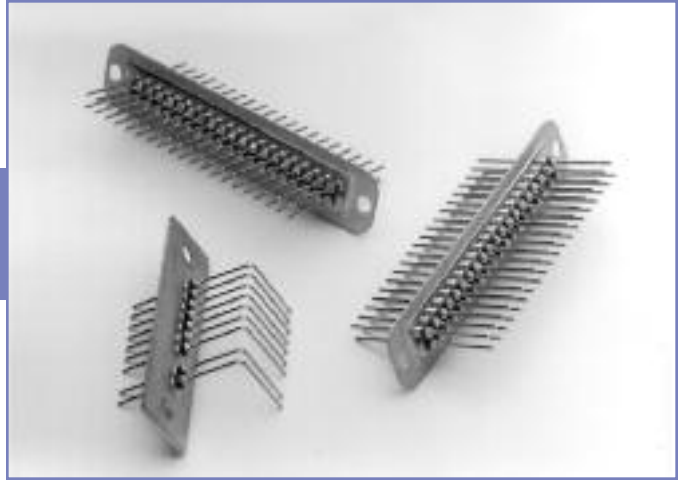
Bolt-in Style Filter Plates



The Bolt-in style plate provides an excellent method for electronic system interface and EMI filtering. Bolt-in filter plates are available in a variety of plate sizes and up to 74 lines per plate in high-density (2mm) and 60 pins per plate in standard density (.100"). On the larger plate sizes, API ensures structural integrity through a unique, patent pending, coining process. The drawing on page FA10 shows an electronic system utilizing Bolt-in style filter plates.

Bolt-in Filter Plate Advantages

- Eliminates the need to assemble filters into a bulkhead
- Excellent filtering from 5 MHz to 1 GHz
- Total cost savings vs. customer installed discrete filter elements
- Ideal for isolation of electronic compartments to suppress EMI
- Outperforms surface mount filters over 50 MHz
- Improved reliability
- Mixed capacitance values and schematics
- Maximize real estate on PCB
- Available in RoHS compliant versions

Ordering Information

Example: **52-970-208-BB2**

The part number shown represents a Bolt-in style filter plate with 2 rows, 8 filters per row. Filters are C style with a capacitance value of 100pF. The plate length is 1.560", and the leads are bent 90° to the right side.

52	**	970	-	2	08	-	B	B	2
Filter Plates		**970** Bolt-in Standard Density **971** Bolt-in High Density *		**No. of Rows** **1** = 1 row **2** = 2 rows	**No. of Filters** **Number of Lines per Row** If less than 10, use a 0 (zero) first.		**Filter Designation** A - T from table on page FA17. ***	**Plate Length** **A** - 1.060 (26.92mm) **B** - 1.560 (39.62mm) **C** - 2.560 (65.02mm) **D** - 3.560 (90.42mm)	**Lead Configuration** **0** - Straight **1** - 90° (left) **2** - 90° (right) **3** - 90° (both)

* *Maximum capacitance up to 4000pF C style filter*

** *Replace "–" with "F" for RoHS complaint version*

*** *To request selective line filtering, a mechanical configuration or material specification not shown in this catalog, please complete and forward the design inquiry form on page FA18. We will review your request and provide you with a part number.*

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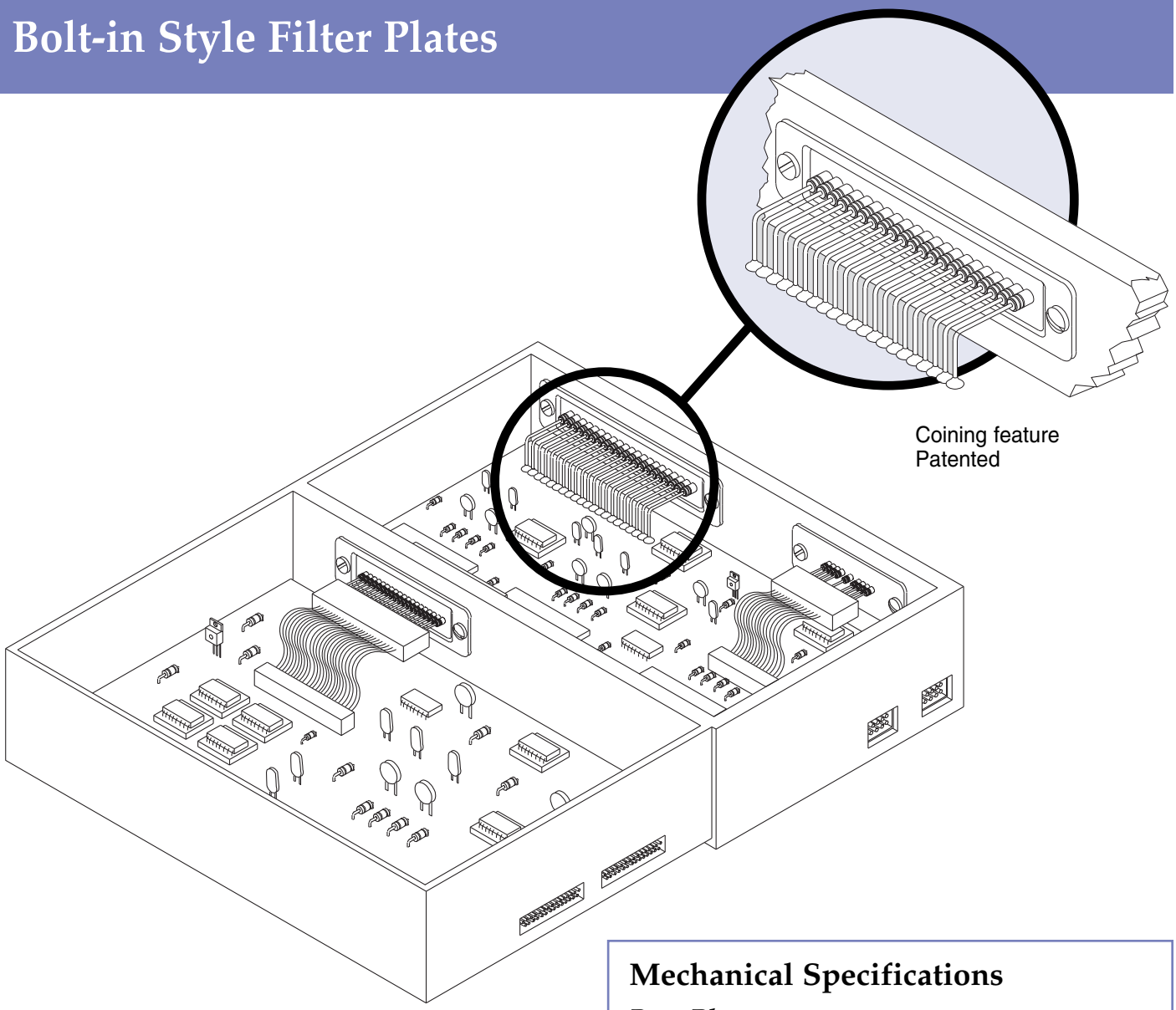
Bolt-in Style Filter Plates



Mechanical Specifications

Base Plate Material	Brass UNS C26000/C27000
Base Plate Thickness	.020 inches (.51mm)
Plating	Tin, RoHS version will be silver
Lead Material	Copper alloy
Lead Plating	Gold plate
Lead Diameter	ø .025" (.64mm) for 0.100" centers (2.54mm) ø .020 (.51mm) for 0.079" centers (2.00mm)
Current Rating	5 Amps for .025" (.64mm) ø 3 Amps for .020" (.51mm) ø

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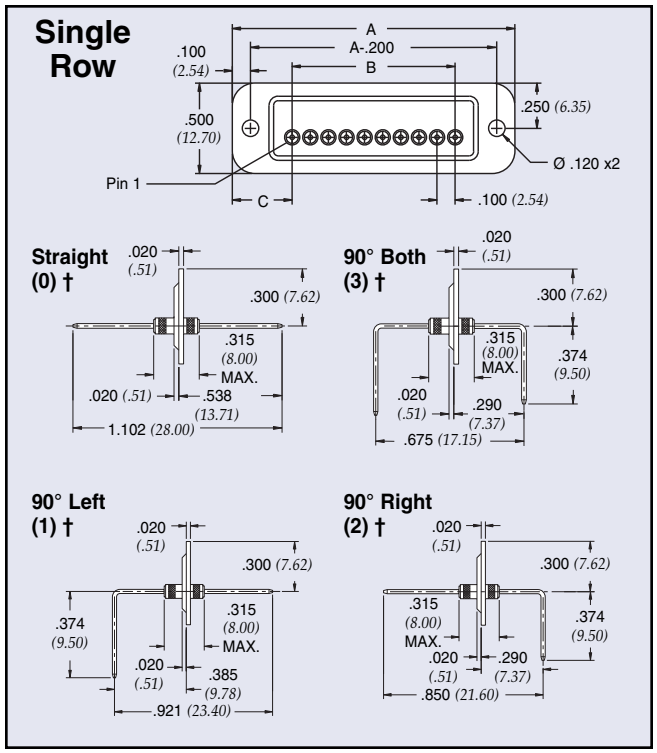
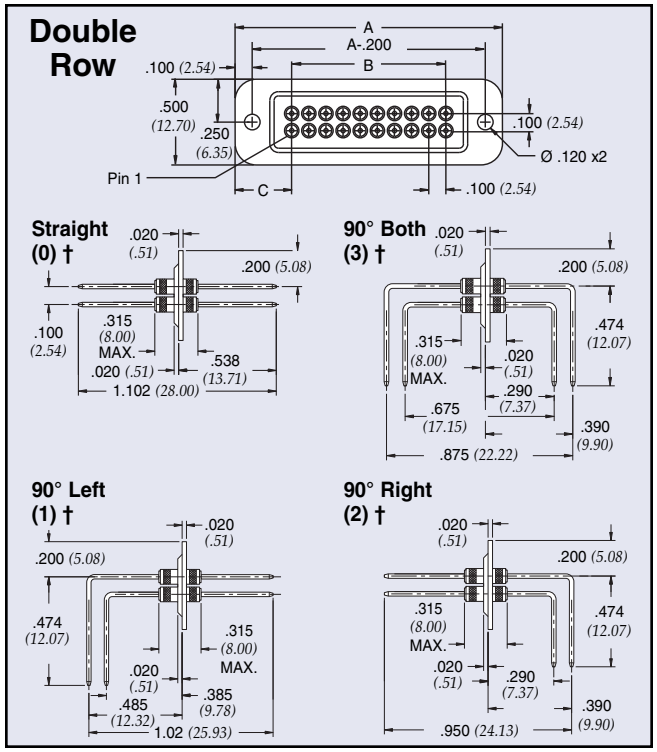
Bolt-in Style Filter Plates
Standard Density Centers .100"

Dimensions: inches and *(mm)*
Lead Spacing: .100" *(2.54 mm)*





Coining feature patented
† Refers to lead configuration for part number/ordering information

Plate length (A)	No. of filtered lines per row	52-970-XXX-XXX B	52-970-XXX-XXX C
1.060 * (26.92)	1	0 (0.00)	0.53 (13.46)
	2	0.1 (2.54)	0.43 (10.92)
	3	0.2 (5.08)	0.43 (10.92)
	4	0.3 (7.62)	0.33 (8.38)
	5	0.4 (10.16)	0.33 (8.38)
1.560 * (39.62)	1	0.0 (0.00)	0.73 (18.54)
	2	0.1 (2.54)	0.73 (18.54)
	3	0.2 (5.08)	0.63 (16.00)
	4	0.3 (7.62)	0.63 (16.00)
	5	0.4 (10.16)	0.53 (13.46)
	6	0.5 (12.70)	0.53 (13.46)
	7	0.6 (15.24)	0.43 (10.92)
	8	0.7 (17.78)	0.43 (10.92)
	9	0.8 (20.32)	0.33 (8.38)
	10	0.9 (22.86)	0.33 (8.38)
2.560 (65.02)	5	0.4 (10.16)	1.03 (26.16)
	6	0.5 (12.70)	1.03 (26.16)
	7	0.6 (15.24)	0.93 (23.62)
	8	0.7 (17.78)	0.93 (23.62)
	9	0.8 (20.32)	0.83 (21.08)
	10	0.9 (22.86)	0.83 (21.08)
	11	1.0 (25.40)	0.73 (18.54)
	12	1.1 (27.94)	0.73 (18.54)
	13	1.2 (30.48)	0.63 (16.00)
	14	1.3 (33.02)	0.63 (16.00)
	15	1.4 (35.56)	0.53 (13.46)
	16	1.5 (38.10)	0.53 (13.46)
	17	1.6 (40.64)	0.43 (10.92)
	18	1.7 (43.18)	0.43 (10.92)
	19	1.8 (45.72)	0.33 (8.38)
	20	1.9 (48.26)	0.33 (8.38)
3.560 (90.42)	13	1.2 (30.48)	1.13 (27.70)
	14	1.3 (33.02)	1.13 (27.70)
	15	1.4 (35.56)	1.03 (26.16)
	16	1.5 (38.10)	1.03 (26.16)
	17	1.6 (40.64)	0.93 (23.62)
	18	1.7 (43.18)	0.93 (23.62)
	19	1.8 (45.72)	0.83 (21.08)
	20	1.9 (48.26)	0.83 (21.08)
	21	2.0 (50.80)	0.73 (18.54)
	22	2.1 (53.34)	0.73 (18.54)
	23	2.2 (55.88)	0.63 (16.00)
	24	2.3 (58.42)	0.63 (16.00)
	25	2.4 (60.96)	0.53 (13.46)
	26	2.5 (63.50)	0.53 (13.46)
	27	2.6 (66.04)	0.43 (10.92)
	28	2.7 (68.58)	0.43 (10.92)
	29	2.8 (71.12)	0.33 (8.38)
	30	2.9 (73.66)	0.33 (8.38)

*** For plate widths 1.060 and 1.560 there will be no coining. For these plates, increase dimensions to the right .020". Thus, any dimension on left will be reduced by .020.**

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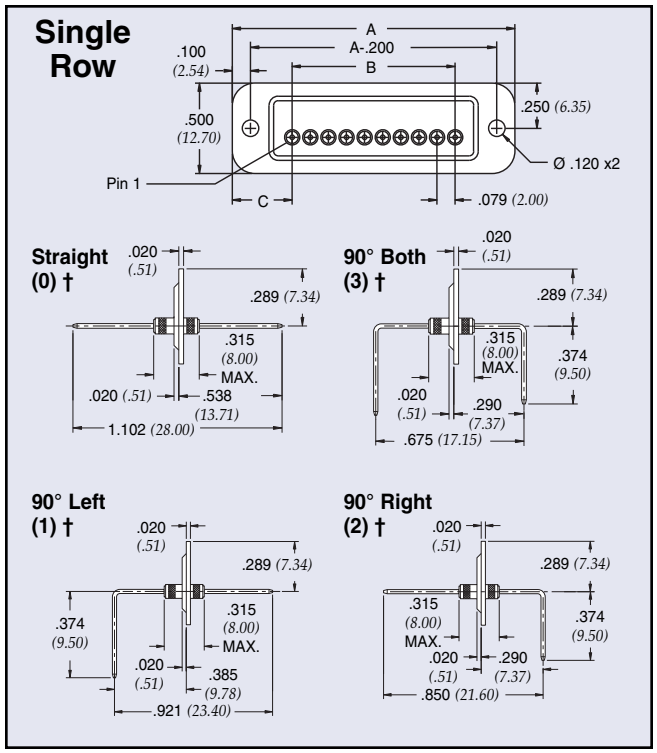
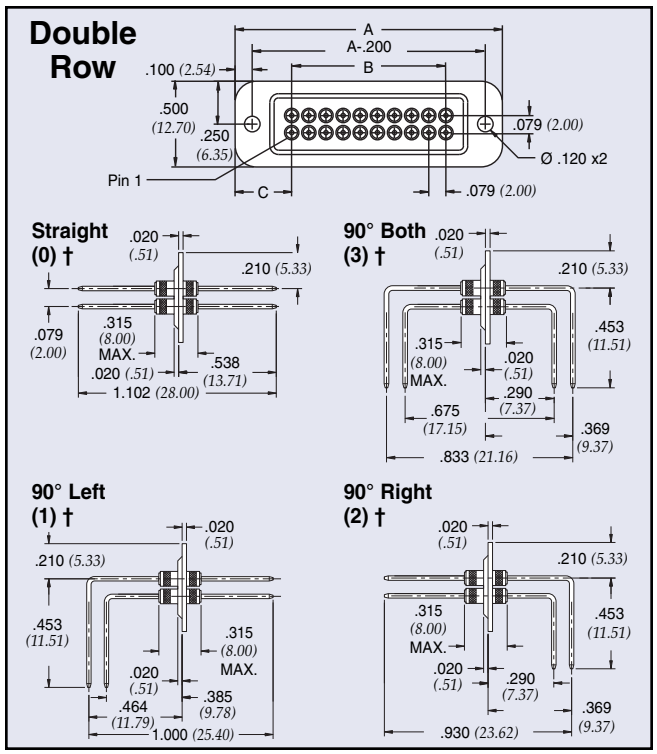
Bolt-in Style Filter Plates
High-Density Centers 2mm

Dimensions: inches and *(mm)*
Lead Spacing: .079" *(2.00 mm)*





Coining feature patented
† Refers to lead configuration for part number/ordering information

Plate length (A)	No. of filtered lines per row	52-971-XXX-XXX B	52-971-XXX-XXX C
1.060 * (26.92)	2	0.079 (2.00)	0.487 (12.38)
	3	0.157 (4.00)	0.409 (10.38)
	4	0.236 (6.00)	0.409 (10.38)
	5	0.315 (8.00)	0.330 (8.38)
	6	0.394 (10.00)	0.330 (8.38)
1.560 * (39.62)	3	0.157 (4.00)	0.662 (16.81)
	4	0.236 (6.00)	0.662 (16.81)
	5	0.315 (8.00)	0.583 (14.81)
	6	0.394 (10.00)	0.583 (14.81)
	7	0.472 (12.00)	0.504 (12.81)
	8	0.551 (14.00)	0.504 (12.81)
	9	0.630 (16.00)	0.426 (10.81)
	10	0.709 (18.00)	0.426 (10.81)
	11	0.787 (20.00)	0.347 (8.81)
	12	0.866 (22.00)	0.347 (8.81)
2.560 (65.02)	10	0.709 (18.00)	0.886 (22.51)
	11	0.787 (20.00)	0.886 (22.51)
	12	0.866 (22.00)	0.807 (20.51)
	13	0.945 (24.00)	0.807 (20.51)
	14	1.024 (26.00)	0.729 (18.51)
	15	1.102 (28.00)	0.729 (18.51)
	16	1.181 (30.00)	0.650 (16.51)
	17	1.260 (32.00)	0.650 (16.51)
	18	1.339 (34.00)	0.571 (14.51)
	19	1.417 (36.00)	0.571 (14.51)
	20	1.496 (38.00)	0.492 (12.51)
	21	1.575 (40.00)	0.492 (12.51)
	22	1.654 (42.00)	0.414 (10.51)
	23	1.732 (44.00)	0.414 (10.51)
	24	1.811 (46.00)	0.335 (8.51)
	25	1.890 (48.00)	0.335 (8.51)
3.560 (90.42)	20	1.496 (38.00)	0.993 (25.22)
	21	1.575 (40.00)	0.993 (25.22)
	22	1.654 (42.00)	0.914 (23.22)
	23	1.732 (44.00)	0.914 (23.22)
	24	1.811 (46.00)	0.835 (21.22)
	25	1.890 (48.00)	0.835 (21.22)
	26	1.969 (50.00)	0.757 (19.22)
	27	2.047 (52.00)	0.757 (19.22)
	28	2.126 (54.00)	0.678 (17.22)
	29	2.205 (56.00)	0.678 (17.22)
	30	2.283 (58.00)	0.599 (15.22)
	31	2.362 (60.00)	0.599 (15.22)
	32	2.441 (62.00)	0.520 (13.22)
	33	2.520 (64.00)	0.520 (13.22)
	34	2.598 (66.00)	0.442 (11.22)
	35	2.677 (68.00)	0.442 (11.22)
	36	2.756 (70.00)	0.363 (9.22)
	37	2.835 (72.00)	0.363 (9.22)

*** For plate widths 1.060 and 1.560 there will be no coining. For these plates, increase dimensions to the right .020". Thus, any dimension on left will be reduced by .020.**

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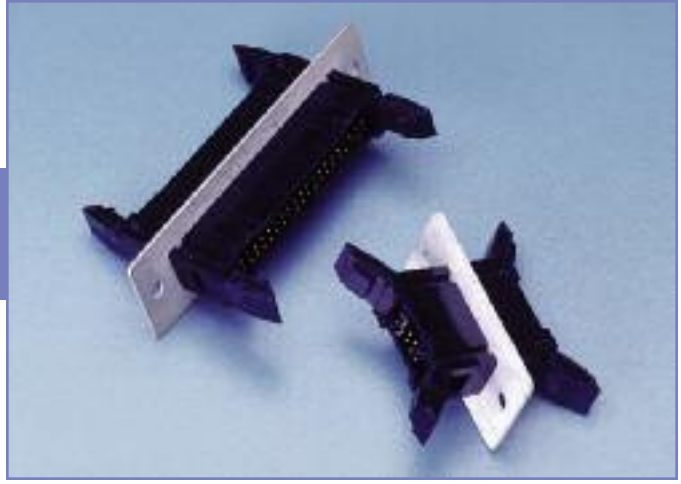
Shrouded Latch Filter Plates



Shrouded Latch Filter Plates are an effective method for combining an electronic interface and EMI solution in one package. The shrouded latch incorporates the bolt-in concept filter plate with the latching feature of popular ribbon cable headers. This product is available in pin counts of 10 through 64 positions. The latch is available in a variety of standard heights.

The shrouded latch filter plate is ideal for securing and protecting the filter element from exposure to mechanical shock and vibration which could loosen the cable interface.

Shrouded Latch Filter Plate Advantages

- Available in 10 to 64 positions
- Mates to most ribbon cable connectors
- Variety of latch ejector heights available
- Pins on .100" centers
- Reliable cable retention for high vibration applications
- Mixed capacitance values and schematics available
- Excellent filtering from 5 MHz to 1 GHz and beyond
- Shroud protects filter elements from potential damage
- Available in RoHS compliant versions

Mechanical Specifications

Base Plate Material	Brass UNS C26000/C27000
Base Plate Thickness	.040" (1.0mm)
Plating	Tin, RoHS version will be silver
Shrouded Material	Thermoplastic Polyester UL94V-0
Lead Material	Copper alloy
Lead Plating	Gold plate
Lead Diameter	ø .025" (0.6mm)
Current Rating	5 Amps

Ordering Information

Example: **53-038-014-BS1**

The part number shown represents a shrouded latch filter plate with 14 filtered lines. Filters are C style with a capacitance value of 100pF. The plate has a short latch height and double shroud configuration.

53 - * 038 - 0 14 - B S 1

Shrouded Latch Filter Plate

Total Number of Filtered Lines- 2 rows

10	34
14	40
16	44
20	50
24	60
26	64
30	

Filter Designation

A - T from table on page FA17. **

Latch Height

S - Short .435" (11.0mm)
L - Long .575" (14.6mm)

Configuration

1 - Double Shroud
2 - Single Shroud
3 - Single Shroud w/90° bend opposite side

* *Replace "–" with "F" for RoHS complaint version*

** *To request selective line filtering, a mechanical configuration or material specification not shown in this catalog, please complete and forward the design inquiry form on page FA18. We will review your request and provide you with a part number.*

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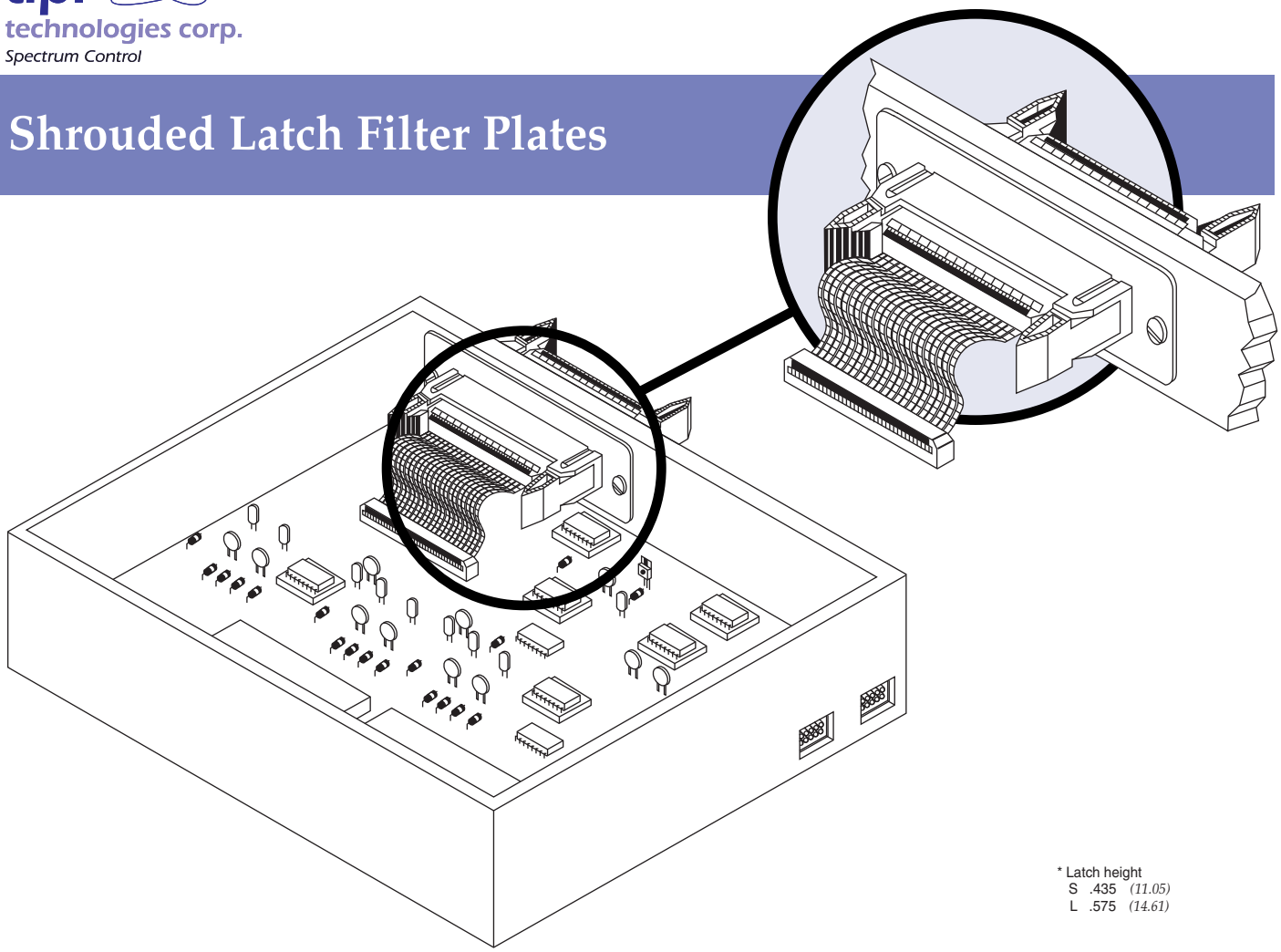
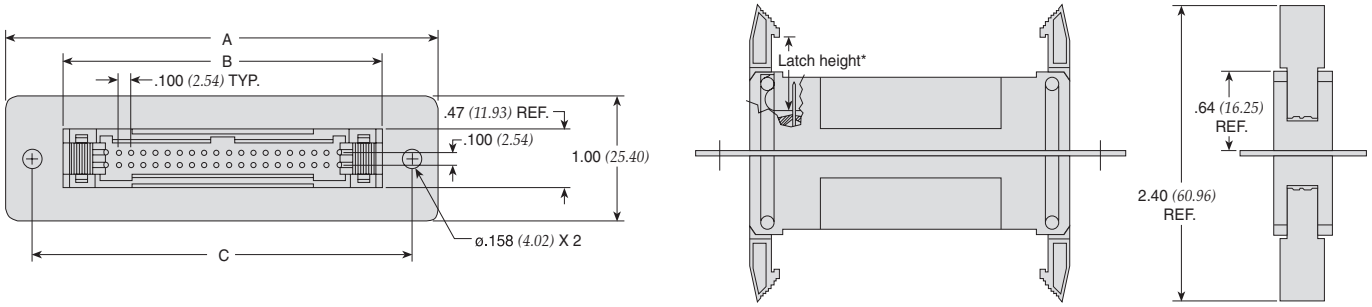
Shrouded Latch Filter Plates





* Latch height
S .435 (11.05)
L .575 (14.61)

Part Number	Number of Circuits	A		B		C	
		in	(mm)	in	(mm)	in	(mm)
53-038-010-XXX*	10	2.00	(50.8)	1.10	(27.9)	1.58	(40.1)
53-038-014-XXX	14	2.20	(55.9)	1.30	(33.0)	1.78	(45.2)
53-038-016-XXX*	16	2.30	(58.4)	1.40	(35.6)	1.88	(47.8)
53-038-020-XXX*	20	2.50	(63.5)	1.60	(40.6)	2.08	(52.8)
53-038-024-XXX	24	2.70	(68.6)	1.80	(45.7)	2.28	(57.9)
53-038-026-XXX	26	2.80	(71.1)	1.90	(48.3)	2.38	(60.5)
53-038-030-XXX	30	3.00	(76.2)	2.10	(53.3)	2.58	(65.5)
53-038-034-XXX	34	3.20	(81.3)	2.30	(58.4)	2.78	(70.6)
53-038-040-XXX*	40	3.50	(88.9)	2.60	(66.0)	3.08	(78.2)
53-038-044-XXX	44	3.70	(94.0)	2.80	(71.1)	3.28	(83.3)
53-038-050-XXX*	50	4.00	(101.6)	3.10	(78.7)	3.58	(90.9)
53-038-060-XXX	60	4.50	(114.3)	3.60	(91.4)	4.08	(103.6)
53-038-064-XXX*	64	4.70	(119.4)	3.80	(96.5)	4.28	(108.7)

* Indicates standard sizes

Dimensions in inches *(mm)*

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API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

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Custom Filter Plates

High Volume Industrial

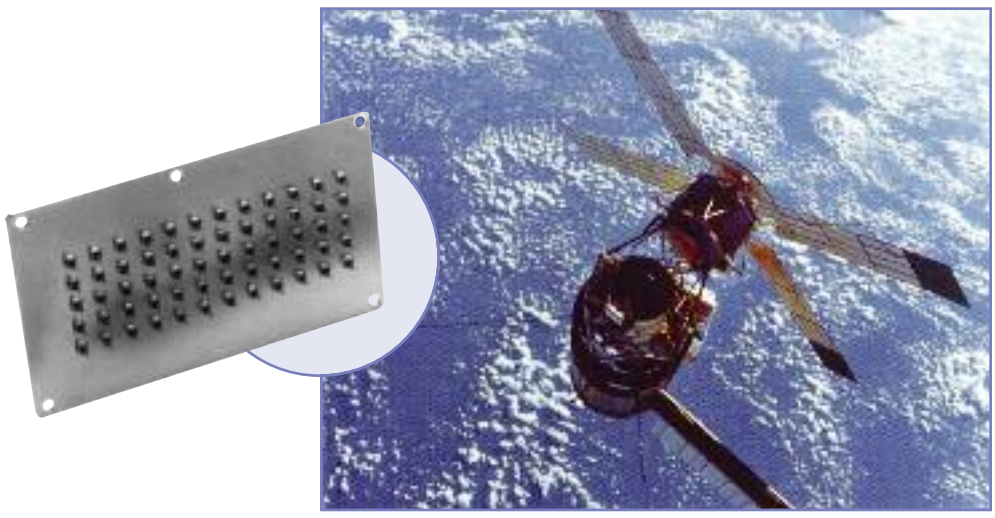
As a long-term producer of filter plates for industrial applications, API Technologies understands the cost requirements of this market. In turn, we have established a program to develop and manufacture custom designed filter plates for cost sensitive industrial applications.

We have engineered a variety of capacitive only filter elements that provide excellent RF isolation from 5 MHz to 1 GHz and beyond. To determine the available capacitance values, contact API. Our technical staff will work with you to develop a solution that meets your system and budget needs.

Military/High Reliability

Improving the electromagnetic compliance (EMC) of electronic systems is an area of intense focus within the defense and avionics industries. To achieve this goal, many companies are replacing discrete filter elements and surface mount filters with feed-through filter plate assemblies for higher frequency isolation.

API will custom design a filter plate that meets your size, material and filtering requirements. We are capable of providing stringent testing and analysis of our filter plate assemblies to MIL-F-15733 and MIL-F-28861.



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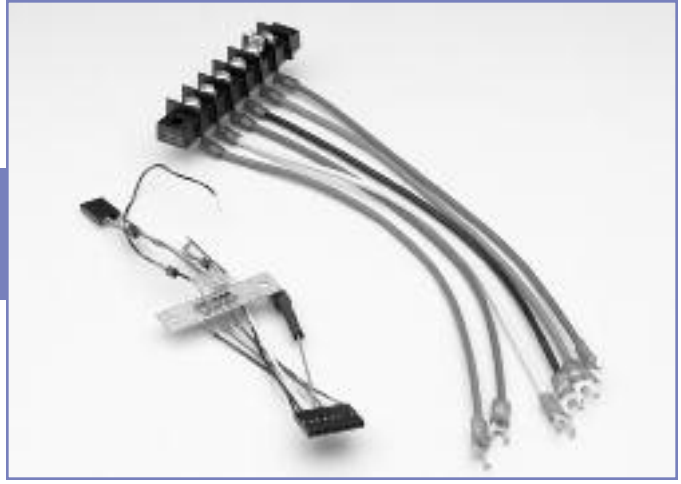
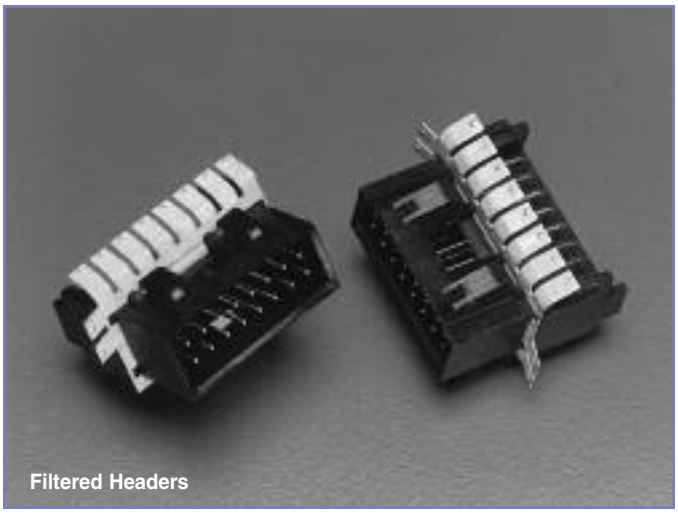
Custom Capabilities



In addition to our custom filter plates, API Technologies' Spectrum Control brand offers a number of value-added features designed to complement your manufacturing operation. Our marketing and engineering staff will evaluate your design or manufacturing parameters and develop a filter solution which provides increased filtering performance economically.

API Capabilities

- Custom assemblies with varying cable lengths and impedances for high clock speeds associated with digital electronics
- Integrate a filter solution with other components to ensure a completely functional device
- Perform EMC evaluations on your equipment, recommending proper placement of EMI/RFI filtering components



Filtered Headers

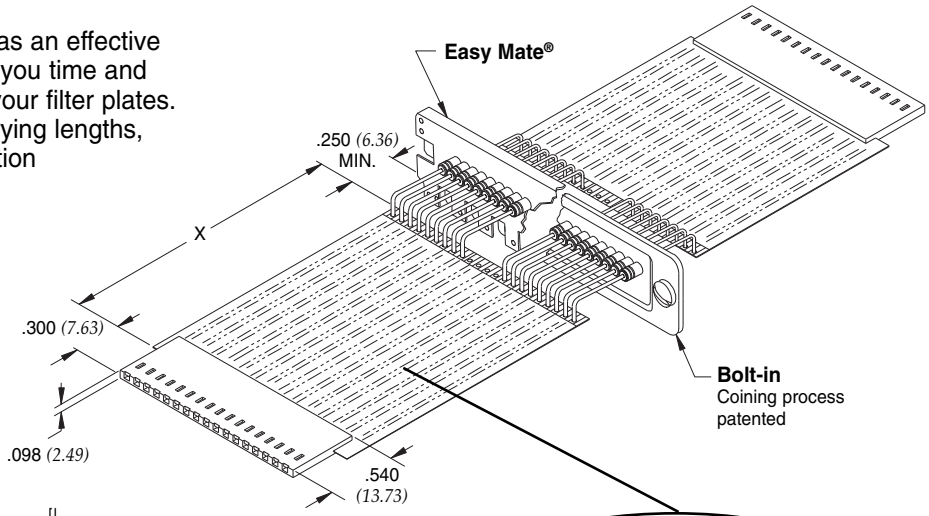
Replace the unfiltered connector on your PC board with API's low cost filtered header. This innovative new product allows you to meet EMC emissions and susceptibility standards with minimal or no board change.

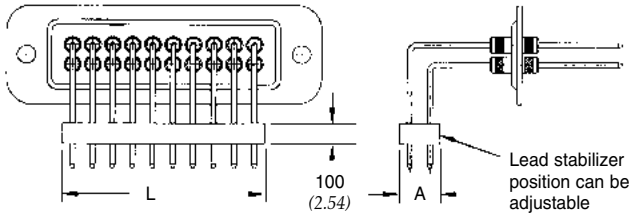
Flat Conductor Cables

Flat conductor cables are often selected as an effective method of interconnection. API can save you time and money by installing conductor cables to your filter plates. Flat conductor cables are available in varying lengths, conductor counts, and in several termination configurations.

Lead Stabilizer

API has developed a filter plate lead stabilizer bar to protect leads during installation and ensure proper alignment to PCB.





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Spectrum Control

Filter Selection

EMI Filter Performance

The electrical characteristics table and insertion loss graphs indicate the performance of feed-through capacitors and Pi type filters. Utilize this information to specify the EMI filtering components included in your filter plate.

Custom Filtering

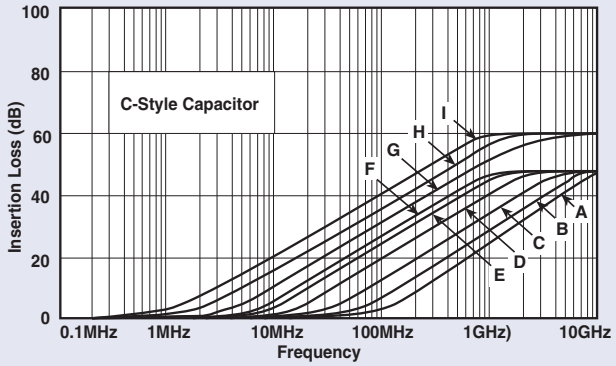
API Technologies' Spectrum Control line of filter plates are engineered to accommodate selective line filtering. Several different types of filters may be specified in a single, easy to install filter plate, allowing you to facilitate a wide range of filtering requirements.

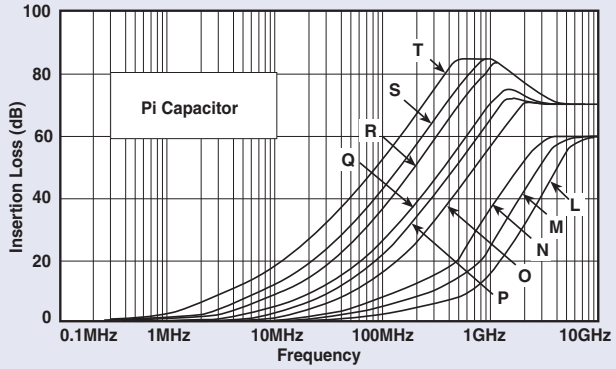
For selective line filtering, provide a sketch indicating the filters and positions required. The example below represents a 10 pin, 2 row plate with six 1000 pF feed-through capacitors and four 1700 pF Pi type filters.

Part Number
Based on front view of plate

10	F	F	F	R	R	6
1	F	F	F	R	R	5

Typical Insertion Loss





Above curves represent application of proper grounding fundamentals, for assistance consult with API.

Filter Designation	Filter** Circuits	Capacitance Value	Capacitance Tolerance	3 dB Max Cut-off Frequency (MHz)*	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB) 50 ohm system per MIL-STD-220 (no load) 5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz
A		68 pF	±20%	77	100V	—	—	—	—	—	3	10	16
B		100 pF	±20%	53	100V	—	—	—	—	1	6	14	19
C		135 pF	+100/-0%	23	100V	—	—	—	1	5	10	16	20
D	C	470 pF	±20%	11	100V	—	—	2	7	13	19	25	27
E		820 pF	±20%	6	100V	—	2	6	12	18	24	30	33
F		1000 pF	±20%	5	100V	—	3	7	14	20	26	32	35
G		1500 pF	±20%	3.5	100V	1	4	10	16	22	29	36	37
H		2500 pF	+100/-0%	1.3	100V	5	11	17	23	29	35	38	40
I		4000 pF	+100/-0%	.8	100V	9	15	21	27	34	38	42	46
J	Insulated	10 pF	Max.	635	100V	—	—	—	—	—	—	—	—
K	Grounded Insert					—	—	—	—	—	—	—	—
L		68 pF	±20%	65	100V	—	—	—	—	1	6	17	23
M		100 pF	±20%	46	100V	—	—	—	—	2	9	22	28
N		135 pF	+100/-0%	25	100V	—	—	—	1	6	17	26	34
O		470 pF	±20%	11	100V	—	—	—	9	18	22	36	43
P	Pi	820 pF	±20%	6	100V	—	—	4	13	23	31	45	52
Q		1000 pF	±20%	5	100V	—	2	7	16	24	36	51	59
R		1700 pF	+100/-0%	1.9	100V	1	6	14	28	35	49	64	69
S		2500 pF	+100/-0%	1.3	50V	4	9	16	28	41	54	70	70
T		5000 pF	+100/-0%	.7	100V	9	15	28	41	53	66	70	70

*** 3 dB cut-off frequency calculated at the maximum capacitance.**
**** For Hi-Density centers (2 mm) only C style filters are available, to a maximum of 4000pF.**

All high density capacitors are 50 volts @ 125°C.

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Custom Filter Plates
Filter Plate Design Inquiry Form

General Information

Customer: _____ Location: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact: _____ Title: _____

Phone: _____ Fax: _____

Project Information

Project name: _____ Annual usage: _____ Target price: _____

Intended application: _____ Quote quantity: _____

Function of circuit filter is used in: _____ Target cost: _____

Functional Detail NOTE: Bold lettering represents standard, readily available material (Circle the appropriate parameters needed)

Lead Diameter	Total Lead Length	Lead Material	Lead Plating
0.020" **0.025"** 0.032" 0.040"	0.700" 1.00" **1.102"**	**Phosphor Bronze** Copper	**Gold** Tin Silver

Base Plate Material

Brass UNS C26000/C27000 Cold Rolled Steel (CRS) UNS G10080/G10180 Aluminum UNS A93003/A96061 Beryllium Copper*

* For Beryllium Copper, ask about our new **"Easy Mate®"** Plate

Plate Thickness (± 0.002")	Plating of Base Plate
(0.010" for **Easy Mate®Jr.)** **(0.012"** for **Easy Mate®)** **(0.020"** for **Bolt-in)** 0.026" 0.033" 0.041"	**Tin** Silver 90/10 Solder Nickel

Center-to-Center Spacing			
(Not all capacitances available on all centers)	Standard (inch):	0.079	**0.100**
	Metric (mm):	2	**2.54**

Detailed Sketch and Comments Area

Include Mounting Detail

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Barrier Strip Filtered Terminal Blocks

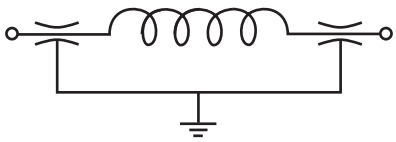
The barrier strip filtered terminal block is designed to provide excellent EMI/RFI filtering of AC and DC power lines and control lines. This terminal block is available in various sizes, with terminals for soldering or spade lugs. Application examples include filtering power supplies in telecommunications equipment, metering, industrial controls, instrumentation and EDP equipment.

Features

- UL recognized and CSA approved for DC voltages
- E133076, UL 1059
- LR92537, CSA STD 22.2 N°158-1987 and ECN584B
- Filter element provides high insertion loss for EMI/RFI filtering of AC and DC power and control lines
- Rugged construction provides protection to filtering element; especially useful for repeated changes in wiring or field connections
- 2 to 6 terminals available (combine if larger number of terminals needed)
- Cost-effective solution for industrial interconnection EMI filtering problems
- Termination options available: straight lead, male or female disconnects, pigtail (12 AWG = 0.081" (2.05mm); 22 AWG = 0.025" (0.64mm)
- Available in RoHS compliant versions

Circuit Schematic

Pi Filter



Ordering Information

Example: **52-160-006-A AOO**

The part number shown represents a barrier strip terminal block with six terminals and rated for 20 Amps. Male disconnects (.250") are the method of termination.

52	* –	160	–	006	–	A
		Barrier Strip Terminal Block		**Number of Terminals**		**Current Rating**
		160 - Front panel mount		**002** - 2 terminals through		**A** - 20 Amps
		188 - Rear panel mount		**006** - 6 terminals		

For instructions on soldering to filter terminals, please refer to page FA4 in filter plate section.

* *Replace "–" with "F" for RoHS complaint version*

Mechanical Specifications

Center Spacing . . . . . .438" (11.1 mm)
Wire Size . . . . . AWG #12 max for 20A
Screw Size . . . . . 20A - #6-32, zinc-plated philslot screws
Molded Material . . . . . Black, UL rated 94VO thermoplastic
Tightening Torque . . . . . 9 in.-lbs. max.
Terminal . . . . . Brass, tin-plated

Electrical Specifications

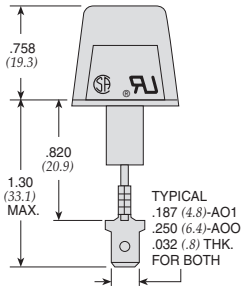
Operating Temperature . . -55° C to 105° C
Working Voltage 100VDC
Capacitance . . . . . 2,500 pF to 5,200 pF
Dielectric Withstanding Voltage . . . 1700VDC
Current Rating 20A
D.C. Resistance . . . . . .01 ohms max.

Typical Loss (dB) In 50 Ohm Circuit

Frequency	Insertion Loss (dB)
30 MHz	22
50 MHz	32
100 MHz	48
300 MHz	70
500 MHz	75
1000 MHz	75

AOO

Dimensions in inches *(mm)*



Special Terminations Code
Note: Leave blank if ordering standard product.

Male quick disconnects directly on terminal block.

AO1 . . . . . .187 (4.8)
AOO 250 (6.4)

For custom designs see page FA18 and consult with factory.

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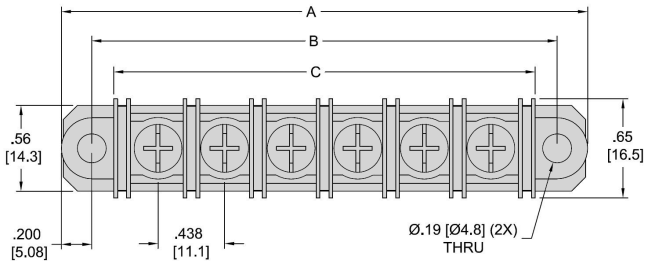
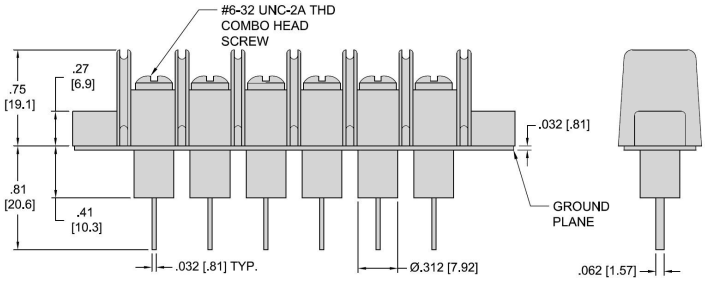
Barrier Strip
Filtered Terminal Blocks

Front panel mount





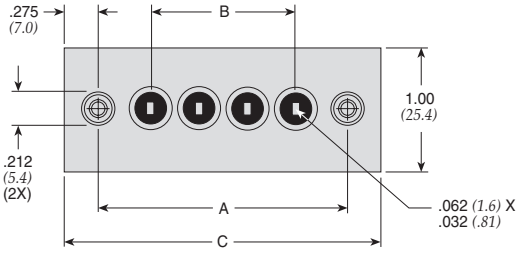
20 Amps

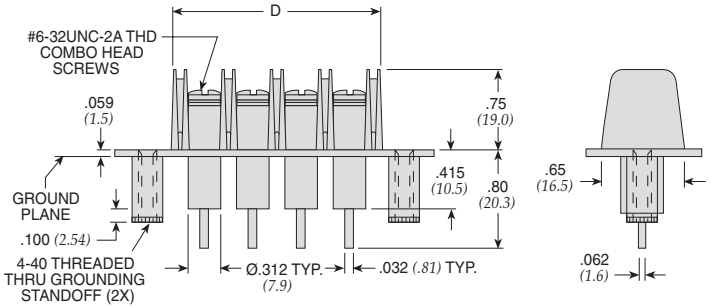
Dimensions in inches *(mm)*

Part Number	Number of Circuits	A in.	A *(mm)*	B in.	B *(mm)*	C in.	C *(mm)*
€ 52-160-002-A	2	1.71	*(43.4)*	1.31	*(33.3)*	1.02	*(25.9)*
52-160-003-A	3	2.15	*(54.6)*	1.75	*(44.5)*	1.46	*(37.1)*
52-160-004-A	4	2.59	*(65.8)*	2.19	*(55.6)*	1.90	*(48.3)*
52-160-005-A	5	3.02	*(76.7)*	2.62	*(66.5)*	2.32	*(58.9)*
52-160-006-A	6	3.46	*(87.9)*	3.06	*(77.7)*	2.77	*(70.4)*

€ Also available through API's authorized European distributors/agents.

Rear panel mount





20 Amps

Dimensions in inches *(mm)*

Part Number	Number of Circuits	A in.	A *(mm)*	B in.	B *(mm)*	C in.	C *(mm)*	D in.	D *(mm)*
52-188-002-A	2	1.31	*(33.3)*	.438	*(11.1)*	1.86	*(47.3)*	1.02	*(25.9)*
52-188-003-A	3	1.75	*(44.4)*	.875	*(22.2)*	2.30	*(58.4)*	1.46	*(37.1)*
52-188-004-A	4	2.19	*(55.6)*	1.313	*(33.3)*	2.74	*(69.5)*	1.90	*(48.3)*
52-188-005-A	5	2.62	*(66.6)*	1.750	*(44.4)*	3.17	*(80.6)*	2.32	*(58.9)*
52-188-006-A	6	3.06	*(77.7)*	2.188	*(55.6)*	3.61	*(91.7)*	2.77	*(70.4)*

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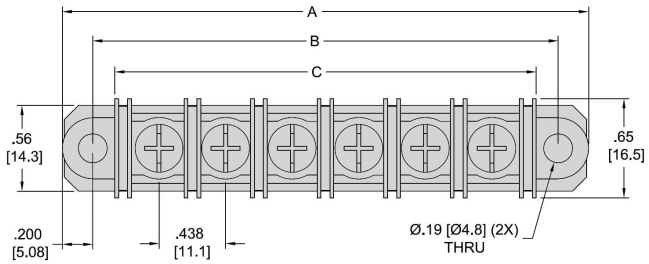
Spectrum Control

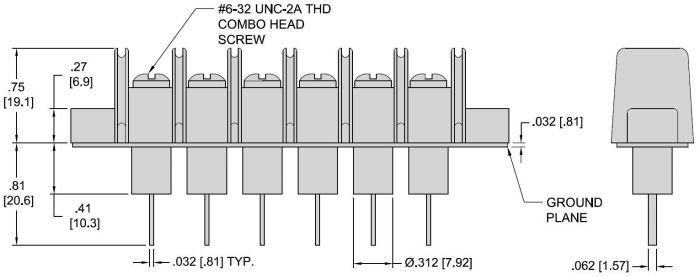
250 Volt AC Rated Filtered Terminal Blocks

API Technologies' Spectrum Control line of filtered terminal block provides superior EMI/RFI filtering of AC power and control lines. This terminal block is available in various sizes, with terminals for soldering, spade lugs, or wire pigtails. Termination options available: straight lead male or female disconnects, or wire pigtails in lengths to your specification.

Features

- UL recognized and CSA approved for AC voltages.
- E133076, UL 1059.
- LR92537, CSA STD 22.2 N°158-1987 and ECN584B.
- Termination options available: straight lead, male or female disconnects, pigtail (12 AWG-22 AWG).





Applications

- Metering equipment
- Programmable controllers
- Industrial process control
- Heavy equipment controls
- Power supplies
- Regulators
- Surge sensing equipment
- Power factor correction
- Telecommunications power management, ATM, Sonet, etc.
- Medical equipment

Specifications

ELECTRICAL

Operating Temperature:	-55° C to +105° C
Voltage Rating:	250VAC
Current Rating:	20 Amps
Wire Range:	12-22AWG
Torque:	9 lb-in.
Capacitance:	2000pF to 5200pF
Dielectric Withstanding Voltage:	1500VAC @ 25° C

MECHANICAL

Center Spacing:	.438" (11.1 mm)
Wire Size:	AWG #12 max. for 20 Amp
Screw Size:	20A - #6-32, zinc plated philslot
Molded Material:	UL rated 94VO polyamide
Tightening Torque:	9 in.-lbs. max.
Terminal Options:	straight lead, male or female disconnects, pigtail

Part Number	Number of Circuits	A in.	A (mm)	B in.	B (mm)	C in.	C (mm)
52-257-002	2	1.71	(43.4)	1.31	(33.3)	1.02	(25.9)
52-257-003	3	2.15	(54.6)	1.75	(44.5)	1.46	(37.1)
52-257-004	4	2.59	(65.8)	2.19	(55.6)	1.90	(48.3)
52-257-005	5	3.02	(76.7)	2.62	(66.5)	2.32	(58.9)
52-257-006	6	3.46	(87.9)	3.06	(77.7)	2.77	(70.4)

Dimensions in inches *(mm)*

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

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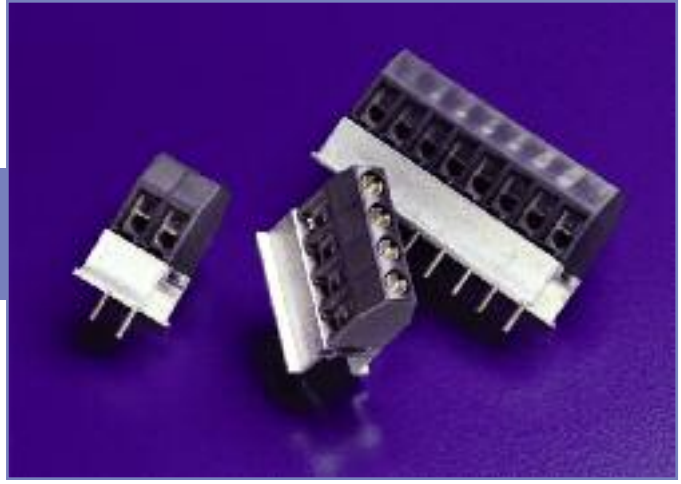
Spectrum Control

PCB Mount Filtered Terminal Blocks



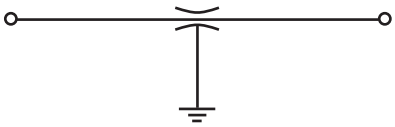
The PCB mount filtered terminal block is designed to provide excellent EMI/RFI filtering of low voltage DC power lines and control lines. These new terminal blocks use a unique screw clamp system with a wire protector which provides for quick and easy installation. API's Spectrum Control line of PCB Mount terminal blocks can be used for a variety of power supply filtering applications in telecommunications equipment, metering, industrial controls, instrumentation and EDP equipment.

Features

- Filter element provides high insertion loss for EMI/RFI filtering of DC power and control lines
- Rugged construction provides protection to filtering element; especially useful for repeated changes in wiring or field connections
- 2 to 12 terminals available (combine if larger number of terminals needed)
- Quick and easy PCB installation and maintenance
- Cost-effective solution for industrial interconnection EMI filtering problems
- Selectively loaded filter pins to economically meet exact filtering requirements
- Available with European (5 mm) or US (.200") pin spacing
- Available in RoHS compliant versions

Circuit Schematic

C Filter



Ordering Information

Example: **52-227-006-L**

The part number shown represents a low profile PCB mount terminal block for thru-hole grounding with six terminals (US spacing).

52 - *** 227** - **006** - **L**

Terminal Block type
227 U.S. pin spacing
228 Metric pin spacing

Number of terminals
002 - 2 terminals thru
012 - 12 terminals

Low profile sizing
See page FA23

* *Replace "–" with "F" for RoHS complaint version*

Mechanical Specifications

Center Spacing . . . . . US .200: (5.08 mm)
EURO .197" (5 mm)
Wire Size . . . . . AWG 12 through 26
Screw Material . . . . . Steel, zinc chromate plate
Recommended PCB Hole Diameter . . . . . 0.05" (1.30 mm) contact hole
Molded Material . . . . . UL rated 94VO polyamide
Tightening Torque . . . . . 2.5 in.-lbs. max.
Terminal . . . . . Brass, tin-plated

Electrical Specifications

Operating Temperature . . -40° C to 80° C
Working Voltage 100VDC
Capacitance . . . . . 2500 pF +80% / -20%
Dielectric Withstanding Voltage . . . 707VDC
Current Rating . . . . . 12 Amps max.
D.C. Resistance . . . . . 0.01 ohms max.

Typical Loss (dB) In 50 Ohm Circuit

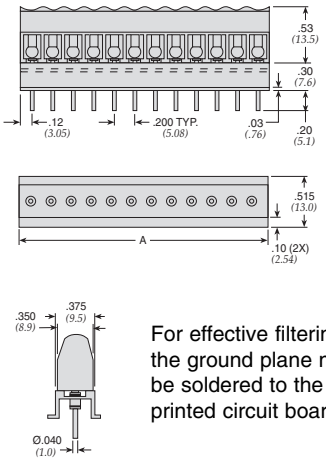
Frequency	Insertion Loss (dB)
10 MHz	10.4
50 MHz	23.9
100 MHz	29.9
500 MHz	43.9
1000 MHz	49.9

api technologies corp.
Spectrum Control

PCB Mount
Filtered Terminal Blocks

US Pin Spacing

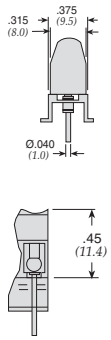
Part Number	Number of Circuits	A in.	A (mm)
52-227-002	2	.44	(11.2)
52-227-003	3	.64	(16.3)
52-227-004	4	.84	(21.4)
52-227-005	5	1.04	(26.5)
52-227-006	6	1.24	(31.5)
52-227-007	7	1.44	(36.6)
52-227-008	8	1.64	(41.7)
52-227-009	9	1.84	(46.8)
52-227-010	10	2.04	(51.9)
52-227-011	11	2.24	(57.0)
52-227-012	12	2.44	(62.0)



For effective filtering, the ground plane must be soldered to the printed circuit board.

Low Profile

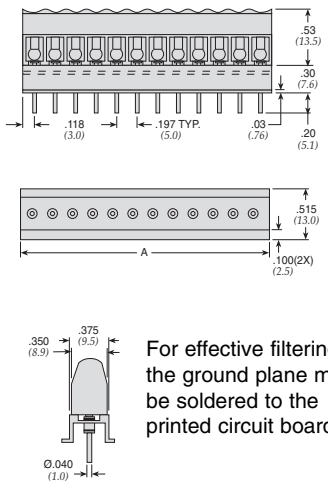
To order add -L- after part number.



Dimensions in inches *(mm)*

Metric Pin Spacing

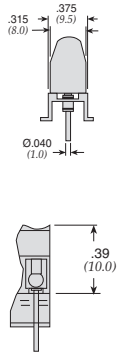
Part Number	Number of Circuits	A in.	A (mm)
52-228-002	2	.43	(10.9)
52-228-003	3	.63	(16.0)
52-228-004	4	.83	(21.1)
52-228-005	5	1.02	(25.9)
52-228-006	6	1.22	(31.0)
52-228-007	7	1.42	(36.1)
52-228-008	8	1.61	(40.9)
52-228-009	9	1.81	(46.0)
52-228-010	10	2.00	(50.8)
52-228-011	11	2.20	(55.9)
52-228-012	12	2.40	(61.0)



For effective filtering, the ground plane must be soldered to the printed circuit board.

Low Profile

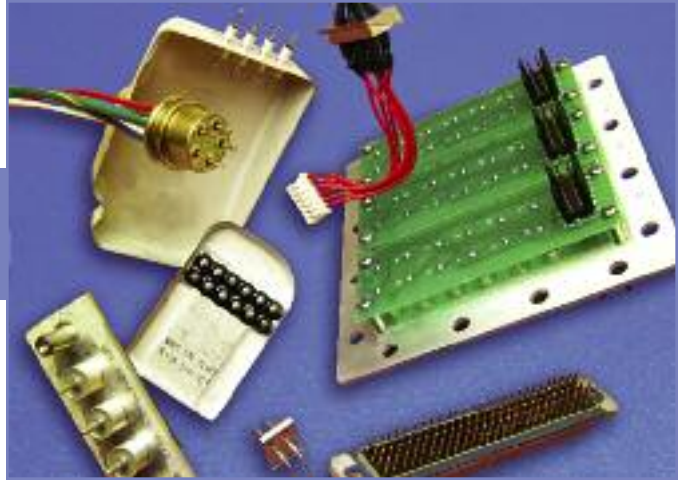
To order add -L- after part number.



Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

Custom Filtered Arrays



API Technologies' Spectrum Control brand will custom design a filter plate or terminal block that meets your size, material and filtering requirements. We have engineered a variety of capacitive only filter elements that provide excellent RF isolation from 5 MHz to 1 GHz and beyond. In addition, we are capable of providing stringent testing and analysis of our filter plate or terminal block assemblies to MIL-F-15733 and MIL-F-28861.

In addition to our standard and custom filter plates and terminal blocks, we offer a number of value-added features designed to complement your manufacturing operation. Our marketing and engineering staff will evaluate your design or manufacturing parameters and develop a filter solution which provides increased filtering performance economically.

API Capabilities

- Custom assemblies with varying cable lengths and terminations
- Integrate a filter solution with other components to ensure a completely functional device
- Perform EMC evaluations on your equipment, recommending proper placement of EMI/RFI filtering components
- Custom high reliability assemblies

Filtered Headers

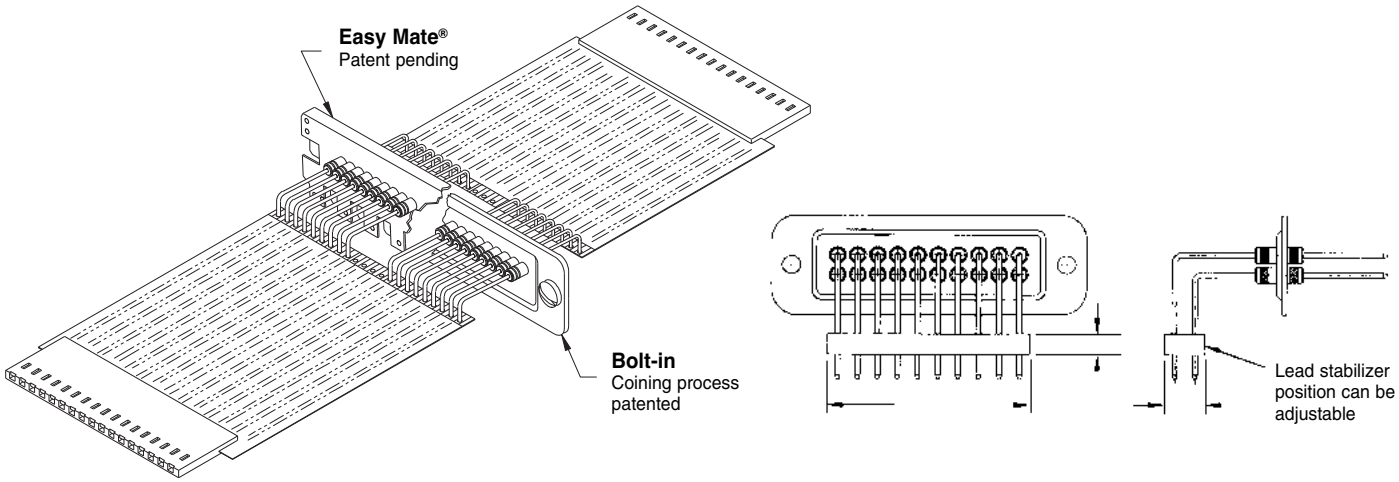
Replace the unfiltered connector on your PC board with API's low cost filtered header. This innovative new product allows you to meet EMC emissions and susceptibility standards with minimal or no board change.

Flat Conductor Cables

Flat conductor cables are often selected as an effective method of interconnection. API can save you time and money by installing conductor cables to your filter plates. Flat conductor cables are available in varying lengths, conductor counts and in several termination configurations.

Lead Stabilizer

API Technologies' Spectrum Control brand has developed a filter plate lead stabilizer bar to protect leads during installation and ensure proper alignment to PCB.



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Custom Filtered Terminal Blocks

Terminal Block Design Inquiry Form

API Technologies' Spectrum Control brand can incorporate EMI filters into a variety of terminal block designs. We offer product variations from several terminal block manufacturers. In addition to developing a filtering solution, we will add custom wiring and terminations to meet your requirements. API offers:

- Unique package integration for customer specific needs
- Wide range of designs from numerous terminal block manufacturers
- Custom assemblies with varying cable lengths and terminations

Terminal Block Design Inquiry Form

General Information

Customer: _____ Location: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact: _____ Title: _____

Phone: _____ Fax: _____

Project Information

Project name: _____ Annual usage: _____ Target price: _____

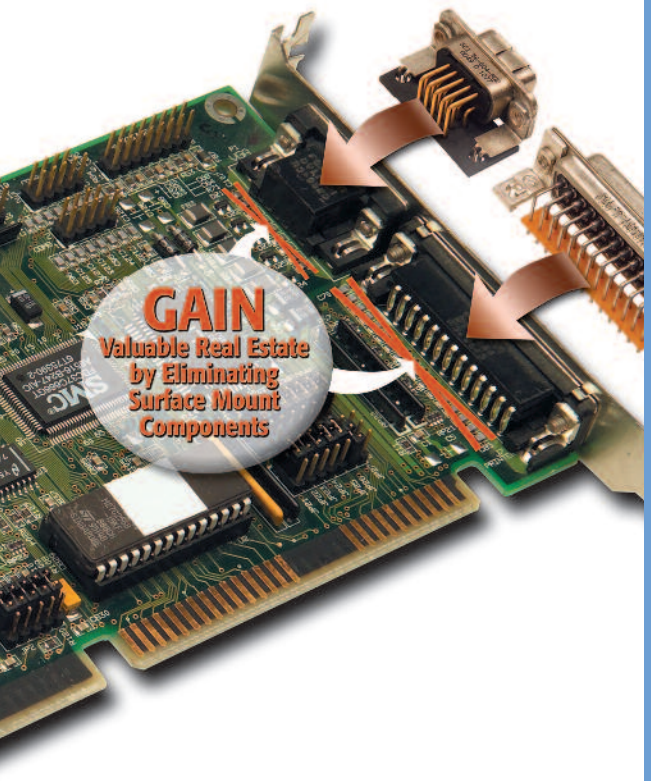
Intended application: _____ Quote quantity: _____

Function of circuit filter is used in: _____ Target cost: _____

Detailed Sketch and Comments Area

EMI Filtered Connectors

from performance to board space, to cost, we offer many reasons and options for managing EMI @ the signal & power I/O



Series F Ferrite Filtered Connectors offer a low cost, space saving solution for high frequency interference… **FC3-FC7**

Series 500 Low-Profile Feed-Through Connectors deliver reliable EMI filtering in 90° PCB and straight PCB connectors… **FC8-FC11**

Series 600 Hi-Density Filtered Connectors meet the growing need for increased circuit densities in smaller packages… **FC12-FC13**

Series 700 High Performance Connectors feature feed-through capacitive and Pi filters for the most effective filtering… **FC16-FC37**

Filtered Combo D-Sub Connectors use tubular capacitors for high insertion loss in signal, power and coaxial contacts… **FC38-FC48**

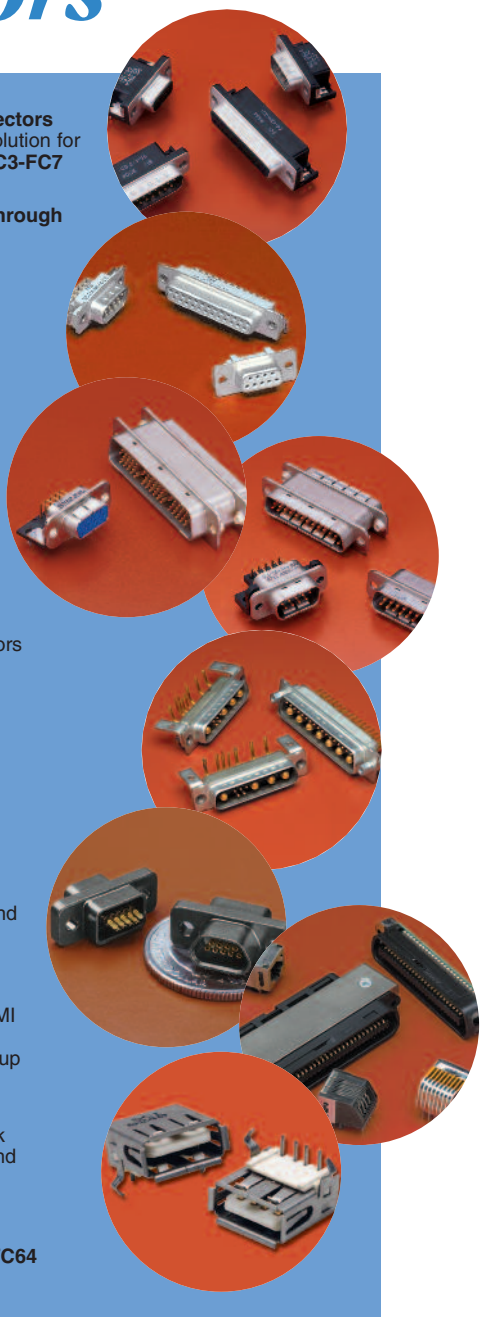
Micro D Series Connectors allow designers to incorporate EMI filtering into even smaller packages… **FC49-FC53**

Datacom Connectors including modular jack, miniature ribbon and mini-DIN protect critical datacom lines… **FC54-FC58**

USB Connectors incorporate EMI filtering and ESD protection into standard USB packages freeing up valuable board space… **FC59**

Hooded Strain Reliefs for shock protection from exposed wires and short circuits… **FC60**

Performance Specifications & Board/Panel Cutouts… **FC62-FC64**



Advantages of a Filtered Connector

- **Low ground impedance –** Full ground plate and metallic shell provide minimal impedance and superior performance compared to on-board filter with high impedance
- **Eliminate re-radiation –** Filtered connector at interface leaves no path for bypassing the filter
- **Ground plane shielding –** API's filtered connector ground planes shield the box even at the connector port
- **Efficient space utilization –** Filters located in the connectors provide additional space on PCB board
- **Consistent performance –** Filtered connectors provide more consistent pin to pin performance
- **Fewer components –** Filtered connectors reduce component count creating cost savings
- **Reliability –** API tests 100% of filters, on-board filters are usually spot tested

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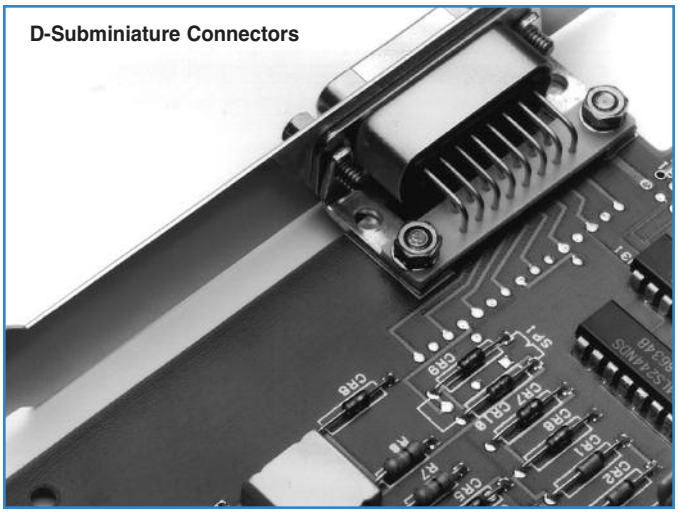
Advantages of API Filtered Connectors

API Technologies' Spectrum Control brand offers the industry's most complete line of filtered D-subminiature connectors. Our connectors are available in shell sizes from 9 to 50, and come in many termination types, such as PC mount, wire wrap, solder cup and 90° PCB. In addition, API offers a wide range of filtering options, allowing you to find the right balance between performance and economy.

EMI filter options include our Pi filter configuration, which provides 45-60 dB per decade slope to insertion loss curve, our capacitive-only C filters that provide cost-effective EMI attenuation, ferrite filtered series F connectors (designed for filtering in situations that do not tolerate capacitive loading of circuit), as well as our series 500 connectors, with small .318" footprints.

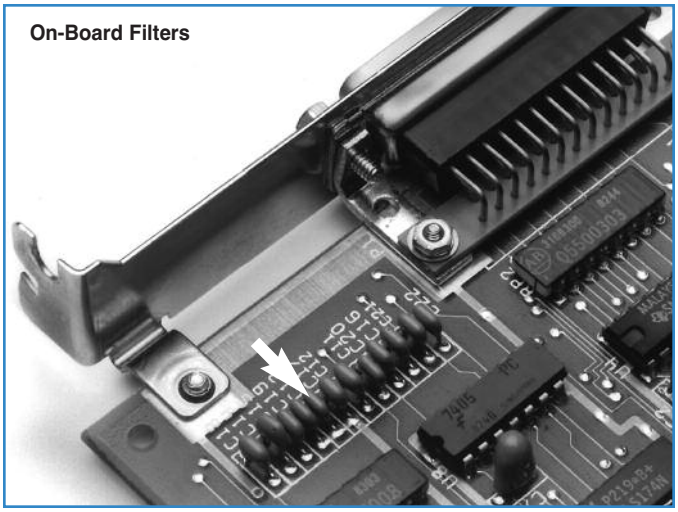
The construction of our high performance Series 600 and 700 connectors features a one-piece zinc diecast shell, which is subsequently nickel-plated. Each filter is constructed with 360° grounding with ground plate, and our patented coaxial springs ensure ground continuity. And with API's advanced in-house ceramic tube design, you'll get a reliable, high performance filter from start to finish.



D-Subminiature Connectors

Advantages of an API Filtered Connector

- **Low ground impedance –** Full ground plate and metallic shell provide minimal impedance and superior performance compared to on-board filter with high impedance
- **Eliminate re-radiation –** Filtered connector at interface leaves no path for bypassing the filter
- **Ground plane shielding –** API filtered connector ground planes shield the box even at the connector port
- **Efficient space utilization –** Filters located in connector provides additional space on PCB board
- **Consistent performance –** Filtered connectors provide more consistent pin to pin performance
- **Fewer components –** Filtered connectors reduce component count creating cost savings
- **Reliability –** API tests 100% of filters, on-board filters are usually spot tested



On-Board Filters

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Series F Ferrite Filtered Connectors

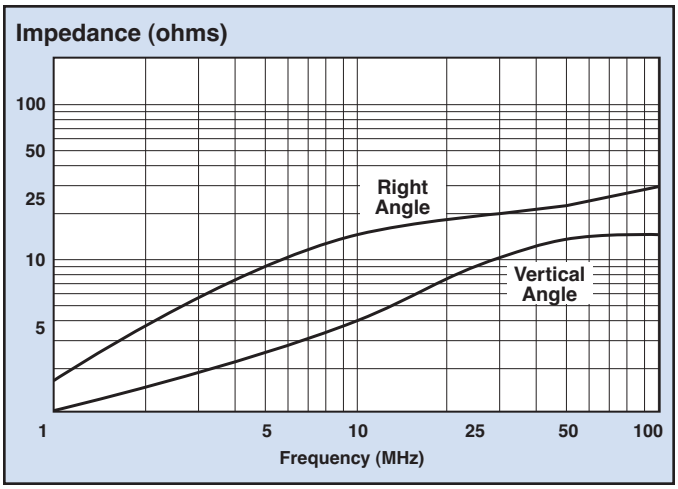
The Series F filtered D-subminiature connectors incorporate a solid slab of ferrite material as the filtering element. This rugged one-piece design provides a com-pact connector that is a drop-in replacement for standard connectors. The ferrite material has been chosen for optimum filtering performance in the 10 to 300 MHz range.

Series F Applications

- Personal computers, microcomputer-applied products and peripheral/terminal equipment
- Eliminates common-mode noise along data lines in data communication terminals and digital equipment

Features

- Low cost, high performance ferrite filter
- No distortion of wave forms
- Replaces individual ferrite bead filters, saving cost and space
- Provides both pin to ground and pin to pin filtering
- Effective in helping meet requirements of FCC, VDE, EN55022 and Japan's VCCI
- Short, space saving .318" footprint
- Interchangeable with standard D-subminiature connectors
- Can be installed directly over PCB trace pattern with no shorting
- 4–40 UNC locking insert eliminates loose hardware
- Metal shielding front shell
- Gold plated contacts
- RoHS compliant versions available (replace 56- with 56F)



Mechanical Specifications

Front Shell . . . . . Steel (Tin plated)

Housing . . . . . UL 94V-0 Rated thermoplastic, black

Contacts . . . . . Phosphor bronze (sockets) or brass (pins)

Contact Plating . . . . . Gold Flash (<10µ in.) over nickel

Operating Temperature . . . . . –40°C to +105°C

Electrical Specifications

Frequency (MHz)	Impedance (Ohms)	
	Right Angle	Vertical
1	2	1
10	15	6
30	20	10
50	23	12
100	27	15

Frequency Range . . . . . 10 – 300 MHz

Current Rating . . . . . 5 Amps

Dielectric Withstand Voltage . . 1000 VAC for one minute

Insulation Resistance . . . . . 1000 megohms Min. @ 500VDC

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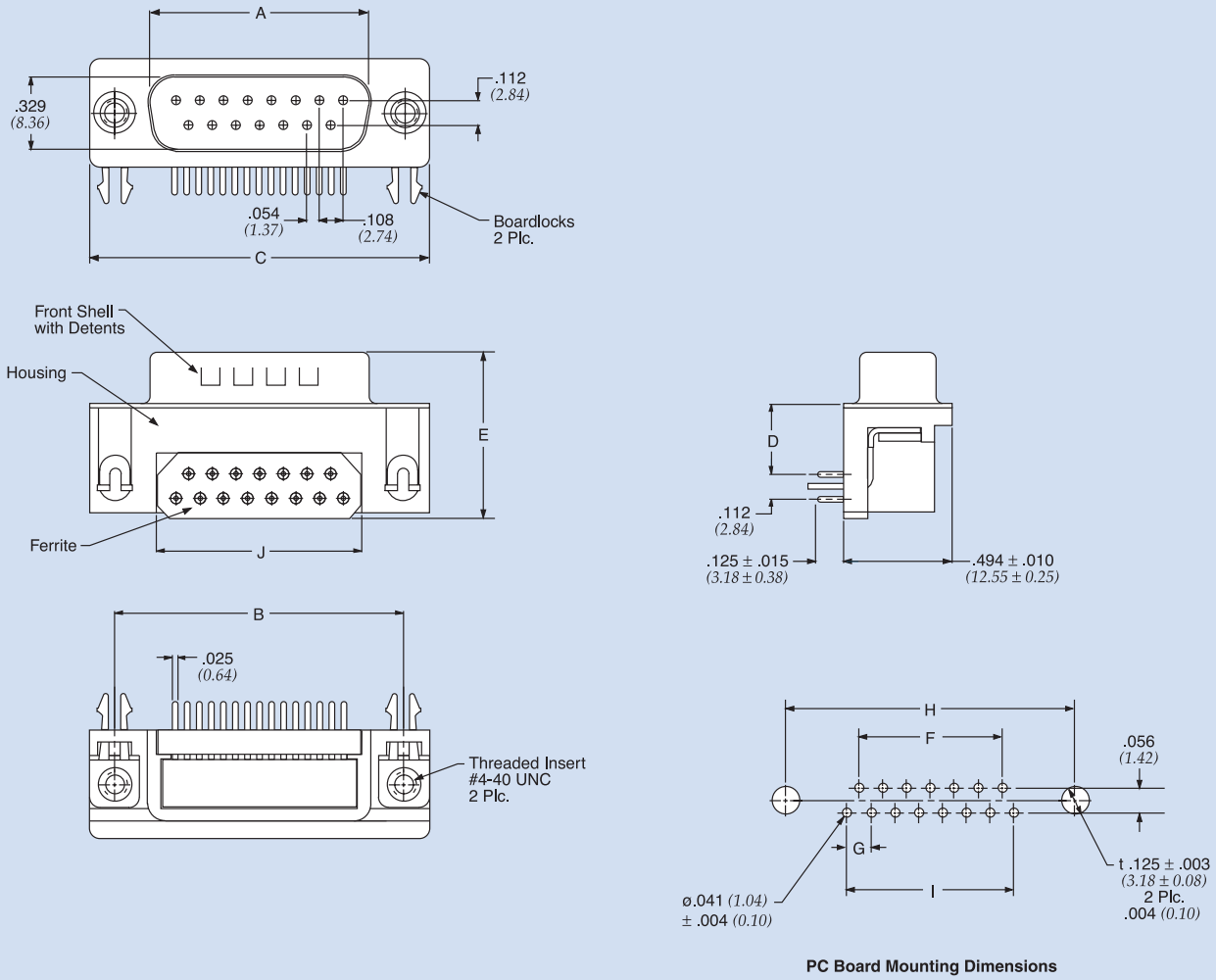
Series F Ferrite Filtered Connectors

Pin Contact – Right Angle Mount



PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms)		Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)	J +/- 0.005 (0.13)
		30 MHz	100 MHz											
€ 56-402-001	D-Sub 9 pin	20	27	10 MHz to 300 MHz	0.666 (16.92)	0.984 (25.00)	1.213 (30.81)	0.318 (8.08)	0.751 (19.10)	0.324 (8.22)	0.108 (2.74)	0.984 (25.00)	0.432 (10.98)	0.606 (15.40)
€ 56-412-001	D-Sub 15 pin				0.994 (25.25)	1.312 (33.32)	1.541 (39.14)	0.318 (8.08)	0.751 (19.10)	0.648 (16.46)	0.108 (2.74)	1.312 (33.32)	0.756 (19.20)	0.929 (23.60)
€ 56-422-001	D-Sub 25 pin				1.534 (38.96)	1.852 (47.04)	2.088 (53.04)	0.318 (8.08)	0.751 (19.10)	1.196 (30.36)	0.110 (2.76)	1.852 (47.04)	1.304 (31.12)	1.476 (37.50)

€ Also available through API's authorized European distributors/agents.

Dimensions in inches *(mm)*

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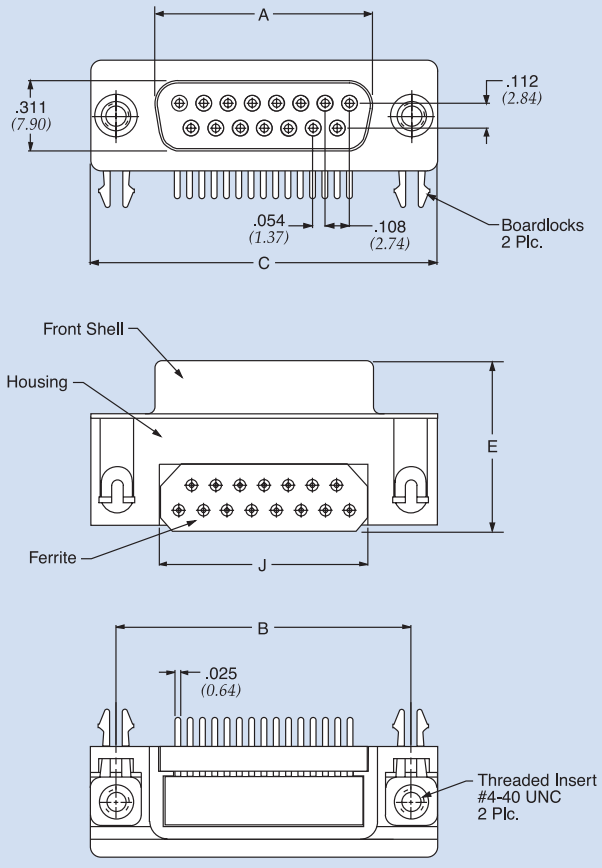
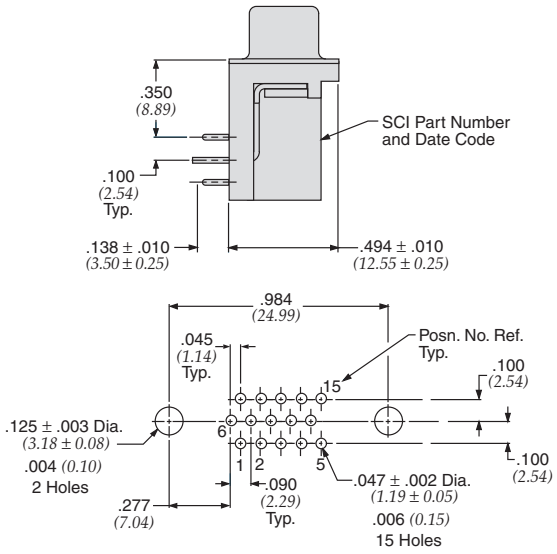
Series F Ferrite Filtered Connectors

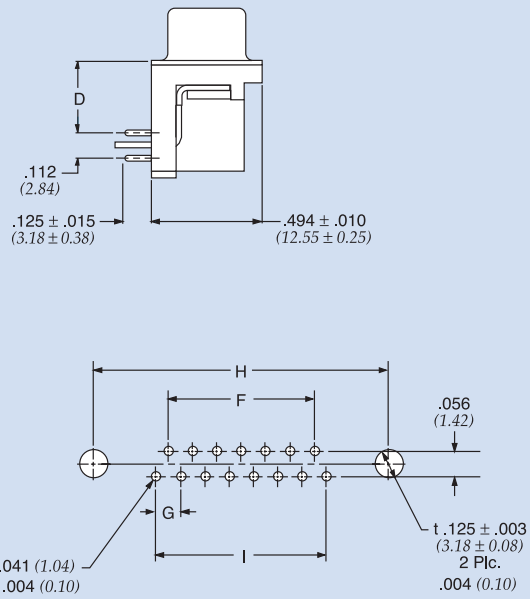
Socket Contact – Right Angle Mount



*High-Density



PC Board Mounting Dimensions



PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms) 30 MHz	Typ. Impedance (Ohms) 100 MHz	Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)	J +/- 0.005 (0.13)
€ 56-404-001	D-Sub 9 socket	20	27	10 MHz to 300 MHz	0.643 (16.33)	0.984 (25.00)	1.213 (30.81)	0.318 (8.08)	0.755 (19.20)	0.324 (8.22)	0.108 (2.74)	0.984 (25.00)	0.432 (10.98)	0.606 (15.40)
€ 56-414-001	D-Sub 15 socket				0.971 (24.66)	1.312 (33.32)	1.541 (39.14)	0.318 (8.08)	0.755 (19.20)	0.648 (16.46)	0.108 (2.74)	1.312 (33.32)	0.756 (19.20)	0.929 (23.60)
€ 56-424-001	D-Sub 25 socket				1.511 (38.38)	1.852 (47.04)	2.088 (53.04)	0.318 (8.08)	0.755 (19.20)	1.196 (30.36)	0.110 (2.76)	1.852 (47.04)	1.304 (31.12)	1.476 (37.50)
€ 56-414-001-HD	Hi-Density 15 socket	16	26		0.643 (16.33)	0.984 (25.00)	1.213 (30.81)	★ See inset drawing						

€ Also available through API's authorized European distributors/agents.

Dimensions in inches *(mm)*

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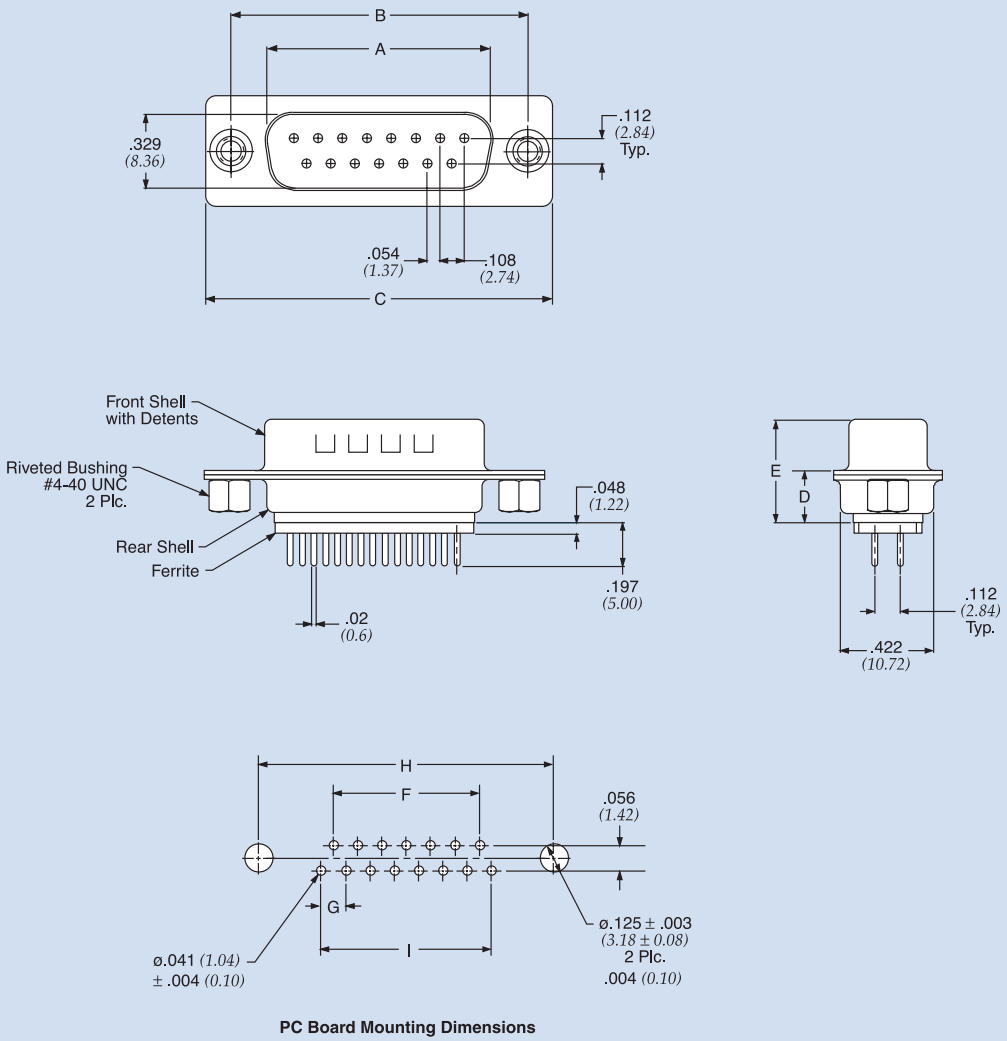
Series F Ferrite Filtered Connectors

Pin Contact – Vertical Mount



PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms)		Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)
		30 MHz	100 MHz										
56-407-001	D-Sub 9 pin	10	15	10 MHz to 300 MHz	0.666 (16.92)	0.984 (25.00)	1.213 (30.81)	0.236 (5.99)	0.468 (11.88)	0.324 (8.22)	0.108 (2.74)	0.984 (25.00)	0.432 (10.98)
56-417-001	D-Sub 15 pin				.994 (25.25)	1.312 (33.32)	1.541 (39.14)	0.236 (5.99)	0.468 (11.88)	0.648 (16.46)	0.108 (2.74)	1.312 (33.32)	0.756 (19.20)
56-427-001	D-Sub 25 pin				1.534 (38.96)	1.852 (47.04)	2.088 (53.04)	0.236 (5.99)	0.468 (11.88)	1.196 (30.36)	0.110 (2.76)	1.852 (47.04)	1.304 (31.12)

Dimensions in inches *(mm)*

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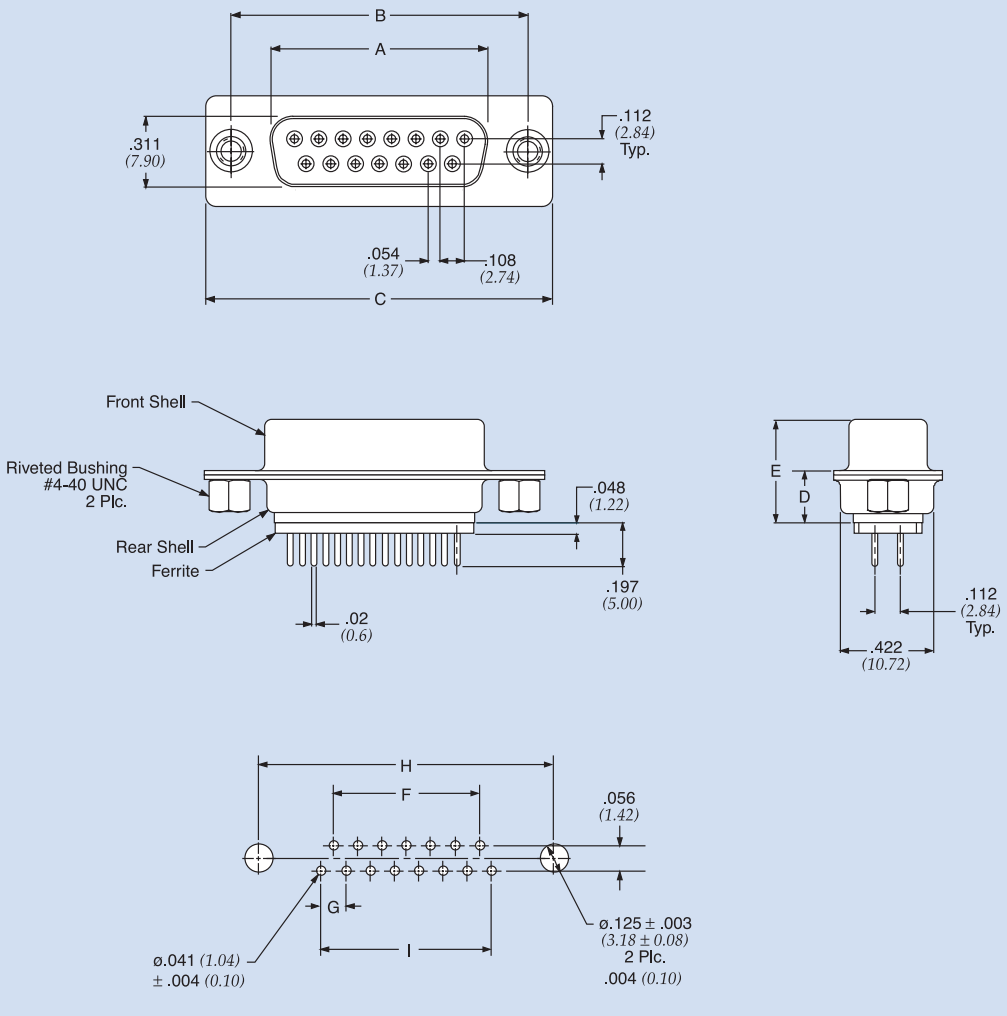
Series F Ferrite Filtered Connectors

Socket Contact – Vertical Mount



PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms)		Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)
		30 MHz	100 MHz										
56-403-001	D-Sub 9 socket	10	15	10 MHz to 300 MHz	0.643 (16.33)	0.984 (25.00)	1.213 (30.81)	0.236 (5.99)	0.472 (11.98)	0.324 (8.22)	0.108 (2.74)	0.984 (25.00)	0.432 (10.98)
56-413-001	D-Sub 15 socket				.971 (24.66)	1.312 (33.32)	1.541 (39.14)	0.236 (5.99)	0.472 (11.98)	0.648 (16.46)	0.108 (2.74)	1.312 (33.32)	0.756 (19.20)
56-423-001	D-Sub 25 socket				1.511 (38.38)	1.852 (47.04)	2.088 (53.04)	0.236 (5.99)	0.472 (11.98)	1.196 (30.36)	0.110 (2.76)	1.852 (47.04)	1.304 (31.12)

Dimensions in inches *(mm)*

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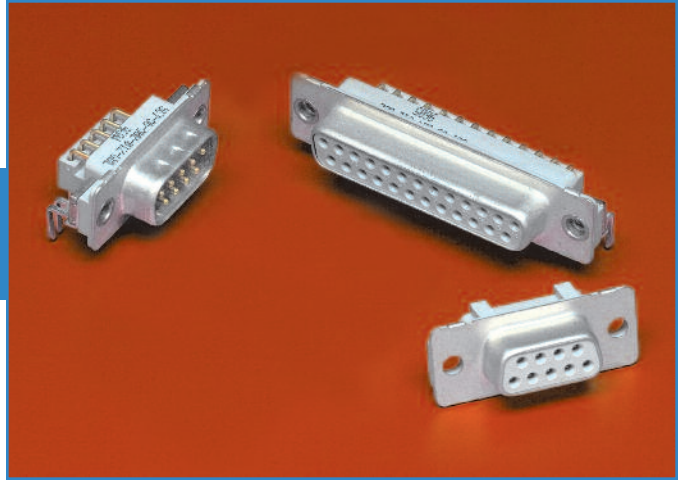
Series 500 Low Profile Filtered Connectors



API's Spectrum Control brand of Series 500 are cost effective, highly reliable EMI filtered D-subminiature connectors that feature a .318" footprint for 90 degree PCB connectors and a low profile housing on straight PCB connectors. Series 500 filtered D-subs are "drop-in" replacements for standard unfiltered D-sub connectors.

The ability of these connectors to achieve EMI filtering within the smaller footprint is the result of technical advances in ceramic capacitors. Series 500 connectors use tubular capacitors for high performance EMI filtering. Quality features for these connectors include board lock mounting, metal front shells and gold plated contacts.

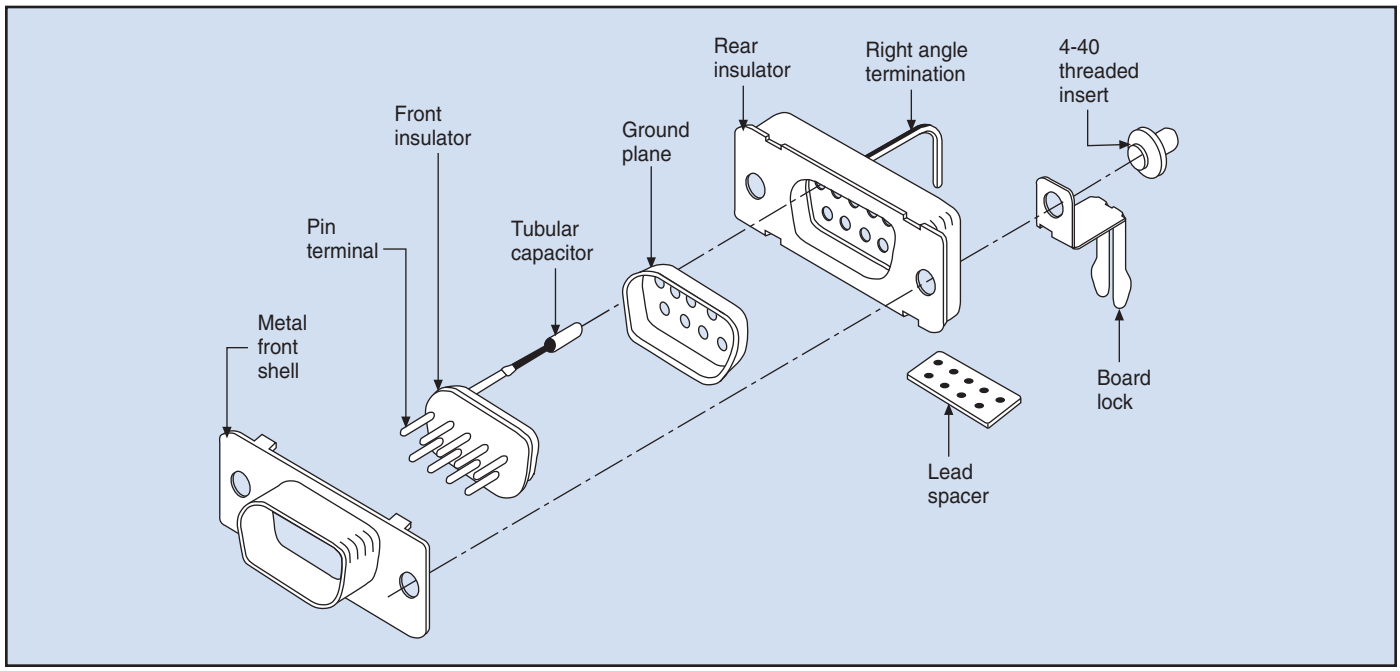
Series 500 capacitive filtered D-sub connectors are an ideal solution to FCC/EC/VCCI emissions problems. These connectors are designed to protect equipment from external EMI noise and eliminate system glitches.

Series 500 Applications

- Personal computers
- Industrial process equipment
- Graphics workstations
- PBX telecommunications equipment
- Cellular base stations and medical electronics

Features

- "Drop-in" replacements for unfiltered D-subminiatures
- Compact design, featuring .318" footprint
- Tubular feed-through capacitors provide filtering superior to on-board components
- Ground plane design provides EMI shielding
- Full interchangeability; based on MIL-C-24308
- Each connector position is tested 100% for critical electrical parameters to ensure consistent performance
- Insulators are UL recognized UL94-V0 flammability rated
- 9, 15 and 25 shell sizes
- Available with board lock feature and 4-40 mounting threads
- Selective filtering available
- UL/CSA approved
- Greater than 40 dB filtering up through 1 GHz without resonances
- Bi-directional control of EMI at the I/O ports



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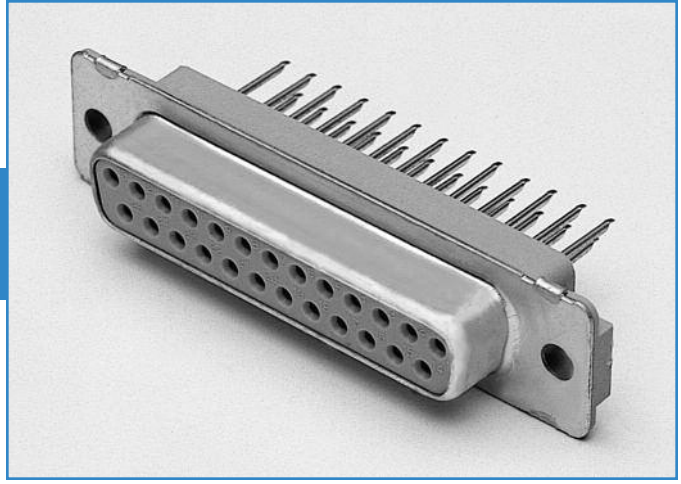
Series 500 Low Profile Filtered Connectors



Mechanical Specifications

Shell . . . . . Steel, tin plated

Insulators . . . . . Glass-filled polyester, flammability UL94V-O

Pin Contacts . . . . . Copper alloy CA725, 15 microinch *(0.38 µm)* gold plated* over nickel

Socket Contacts . . . . . Copper alloy CA725, 30 microinch *(0.76 µm)* gold plated* over nickel

**Heavier gold plating available upon request.*

Ground Plane . . . . . Phosphor bronze, nickel plated

Operating Temperature . . . . . -40°C to +125°C

Capacitors . . . . . Proprietary barium titanate ceramic formulations

Other environmental tests such as shock, vibration, humidity, etc. are performed as detailed in our filtered connector performance specifications on page FC81.

Electrical Specifications

Current Rating . . . . . 5 Amps

RF Current Rating . . . . . 0.3 Amps

Contact Resistance . . . . . 10 milliohms maximum

Capacitance . . . . . 120, 440, 840, 1000, 1500 pF ±30%

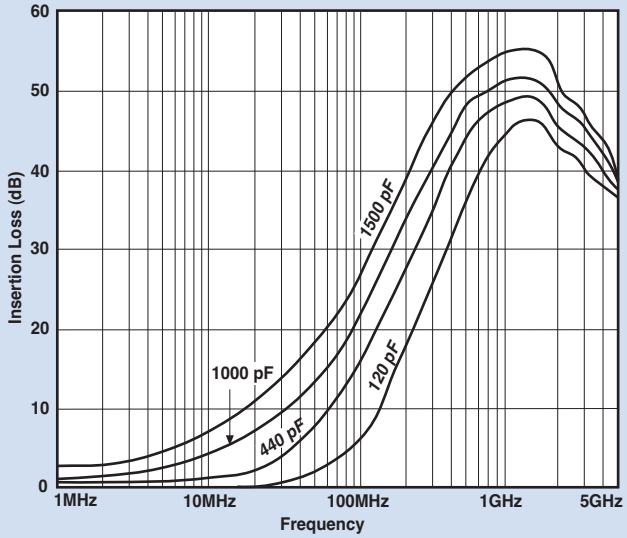
Working Voltage . . . . . 100 VDC

Dielectric Withstanding Voltage . . . . . 300 VDC

Insulation Resistance . . . . . 1 Gohm minimum

UL Recognized . . . . . Under category of communication circuit accessories, File #E149046

Typical Insertion Loss



Above curves represent application of proper grounding fundamentals. For assistance consult API.

840 pF is typically within 2 dB of 1000 pF curve.

Filter Performance

Cap. (pF) Value ±30%	3 dB Cut-off Freq. (MHz)	Insertion Loss (dB)					
		20 MHz	100 MHz	500 MHz	1 GHz	2 GHz	5 GHz
120	40	–	4	21	26	26	20
440	11	3	15	27	33	32	25
840	6	6	19	32	38	37	25
1000	3	8	21	35	41	38	25
1500	2	10	25	40	47	42	25

Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load. Above data represents guaranteed minimum.

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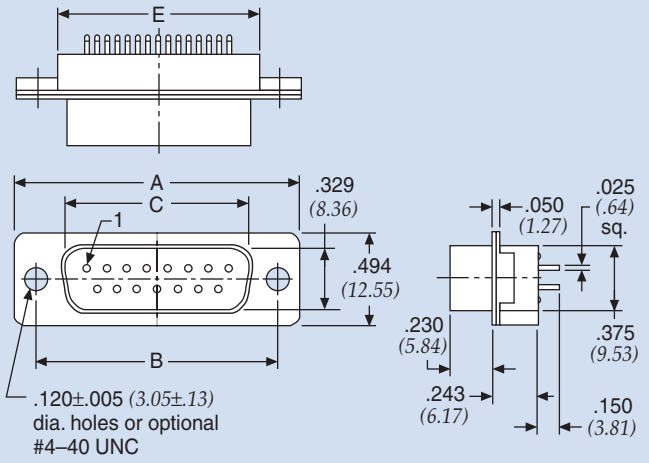
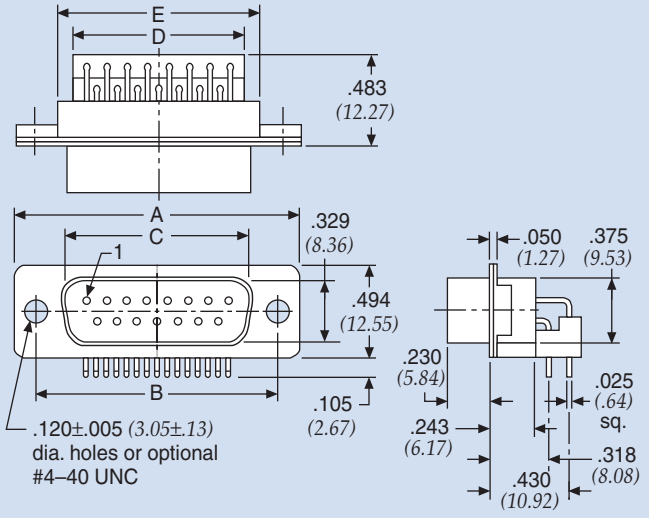
Series 500 Low Profile Filtered Connectors

Pin Contact *(plug)*

Straight PC Mount



90° PC Mount



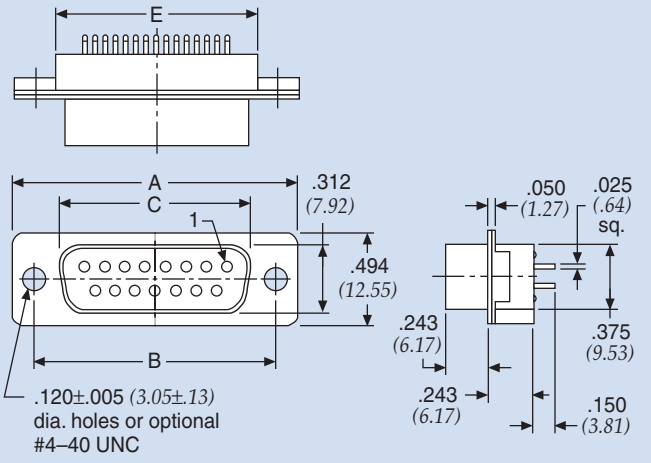
Size	A	B	C	D	E
9	1.213 *(30.81)*	0.984 *(24.99)*	0.666 *(16.92)*	0.540 *(13.72)*	0.748 *(19.00)*
15	1.541 *(39.14)*	1.312 *(33.32)*	0.994 *(25.25)*	0.867 *(22.02)*	1.076 *(27.33)*
25	2.088 *(53.04)*	1.852 *(47.04)*	1.534 *(38.96)*	1.412 *(35.86)*	1.616 *(41.05)*

Standard Tolerance = ±.015 *(0.38)*

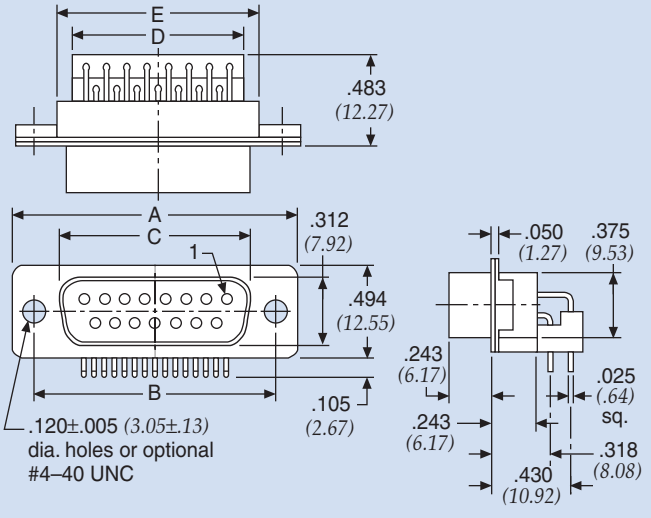
Dimensions in inches *(mm)*

Socket Contact *(receptacle)*

Straight PC Mount



90° PC Mount



Size	A	B	C	D	E
9	1.213 *(30.81)*	0.984 *(24.99)*	0.642 *(16.31)*	0.540 *(13.72)*	0.748 *(19.00)*
15	1.541 *(39.14)*	1.312 *(33.32)*	0.970 *(24.64)*	0.867 *(22.02)*	1.076 *(27.33)*
25	2.088 *(53.04)*	1.852 *(47.04)*	1.510 *(38.35)*	1.412 *(35.86)*	1.616 *(41.05)*

Standard Tolerance = ±.015 *(0.38)*

Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

Series 500 Low Profile Filtered Connectors

Ordering Information

Example: **56-524-013-GBL**

This part number represents a Series 500 filtered D-sub connector with 25 contacts, socket to 90° PCB mount configuration. The filter has a capacitance value of 1000 pF and the connector includes a grounded board lock.

For special needs or combinations of features, contact API engineering.

56 - **5** **2** **4** - **013** - **GBL**

Filtered D-sub Connectors
– - Standard connector
F - RoHS compliant version

Series 500 Connectors

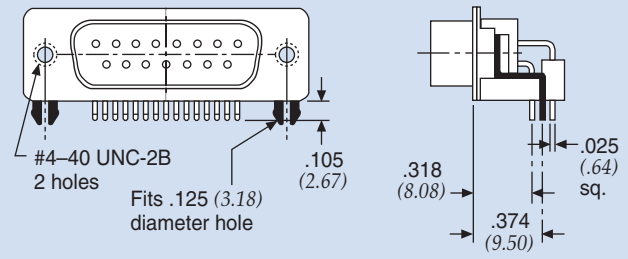
Shell Size/ Number of Contacts
0 - 9 size
1 - 15 size
2 - 25 size

Contact Type/Termination
2 - Pin to 90° PCB mount
3 - Socket to straight PCB mount
4 - Socket to 90° PCB mount
7 - Pin to straight PCB mount

Capacitance Value
010 - 120 pF
011 - 440 pF
012 - 840 pF
013 - 1000 pF
014 - 1500 pF

Mounting or Hardware Options
TI - 4-40 threads on mounting flange (.120" (3.05mm) hole if not selected)
GBL - Grounded board lock, includes 4-40 threads (available only on 90° PCB)
GBLF - Grounded board lock and ferrite slab, provides the enhanced performance of an (LC) filter (available only on 90° PCB)

GBL Option

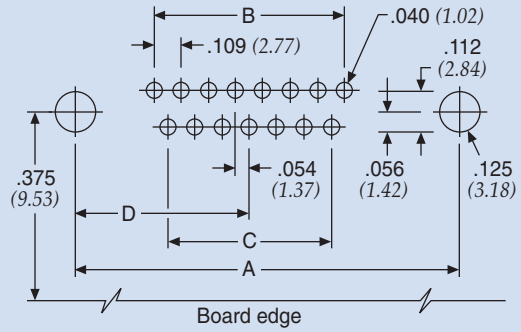


Features
- Snap-in retention to PC board, requires no hardware
- Ensures low ground impedance for superior filtering
- 4-40 threads on mounting flange eliminate loose hardware

Dimensions in inches *(mm)*

Board Layout

Typical Layout for .318" (8.08) Footprint



Shell Size	A	B	C	D
9	.984 *(24.99)*	.436 = 4 x .109 *(11.07 = 4 x 2.77)*	.327 = 3 x .109 *(8.31 = 3 x 2.77)*	.492 *(12.50)*
15	1.312 *(33.32)*	.763 = 7 x .109 *(19.38 = 7 x 2.77)*	.654 = 6 x .109 *(16.61 = 6 x 2.77)*	.656 *(16.66)*
25	1.852 *(47.04)*	1.308 = 12 x .109 *(33.22 = 12 x 2.77)*	1.199 = 11 x .109 *(30.45 = 11 x 2.77)*	.926 *(23.52)*

Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

Series 600 High-Density Filtered Connectors

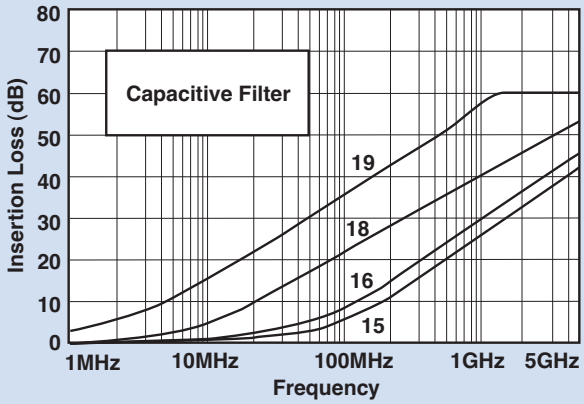
The miniaturization of electronic systems and sub-systems is pushing designers to increase circuit densities within smaller packages. To address this growing need, API Technologies' Spectrum Control brand has developed a line of filtered High-Density D-subminiature connectors. This new line of connectors incorporates the high performance and reliable filtering of API's standard D-subs in the High-Density format.

Features

- Connectors designed to MIL-C-24308
- Capacitance values from 85 pF to 4000 pF
- Filter type feed-through C
- Selectively specify and filter each contact position
- Available in feed-through capacitive configurations

Mechanical Specifications:
Same as Series 700 connectors, page FC21.

Typical Insertion Loss



Above curves represent application of proper grounding fundamentals, for assistance consult with Spectrum Control.

Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load.

Electrical Specifications

Current Rating . . . . 3 Amps
RF Current Rating . . 0.3 Amps
Contact Resistance . . 15 milliohms maximum
UL Recognized . . . . . Under category of communication circuit accessories, File #E149046

Electrical Specifications: High-Density Connectors

Filter Designations	Filter Circuits	Capacitance		3 dB Cut-off Frequency Max. (MHz)	Dielectric Withstanding Voltage	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB)									
		Value	Tol.				5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz	2 GHz	5 GHz
15	C	85 pF	±25%	60	300V	100V	—	—	—	—	1	6	16	21	22	20
16		180 pF	±25%	28	300V	100V	—	—	—	1	8	10	18	25	26	24
18		1000 pF	±25%	5.1	300V	100V	—	3	8	14	20	25	32	35	41	39
19		4000 pF	±25%	1.3	300V	100V	8	13	19	26	31	37	45	48	52	47

Filter designation "G" for grounded contacts, "I" for insulated (not filtered) contacts.
Filter designation "O" for omitted contact and no hole in ground plane.

Above data represents guaranteed minimum.

Ordering Information

Example: **56-605-015-LI**

This part number represents a Series 600 Hi-Density filtered D-Sub connector with 15 contacts, pin-socket adapter configuration. The FT filters have a capacitance value of 85 pF and the connector includes 4-40 locking inserts.

56 - **6** **0** **5** - **0** **15** - **LI**

D-Sub Connector
Hi-Density
- Standard connector
F - RoHS compliant version

Shell Size**
0 = 15
1 = 26
2 = 44
3 = 62
4 = 78

Contact/Termination
1 - Pin to solder cup
2 - Pin to 90° PCB mount*
3 - Socket to PCB mount
4 - Socket to 90° PCB* mount
5 - Pin-socket adapter
7 - Pin to PCB mount

Special
0 = All positions same
9 = Special loading

** Some shell sizes require minimum order quantity. Consult API for details.

Filter Designation
15 - 85 pF FT
16 - 180 pF FT
18 - 1,000 pF FT
19 - 4,000 pF FT
20 - Insulated contact

Options
LI = 4-40 inserts
S = Solder dip tails
50G = µ gold
GBL = Grounding board lock

* Required on right angle parts

Note: VGA adapters also available. Consult factory

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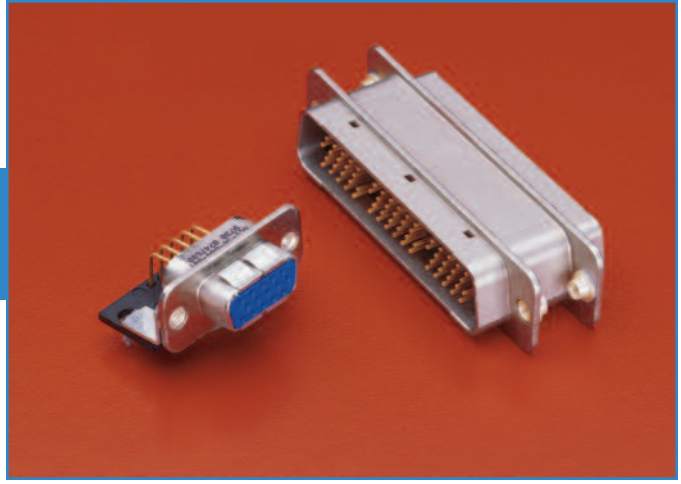
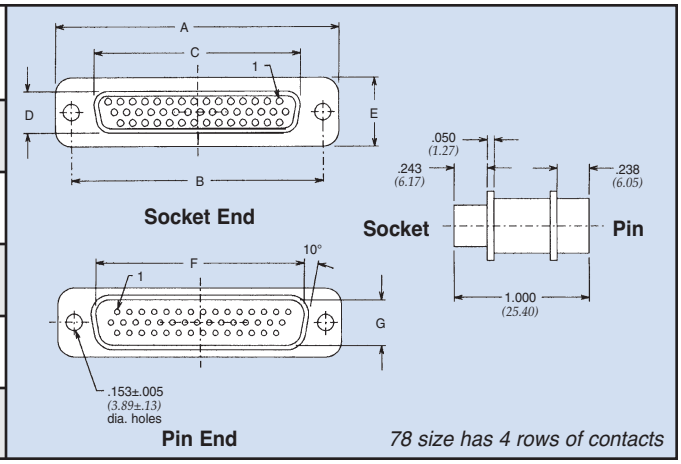
Series 600 High-Density Filtered Connectors



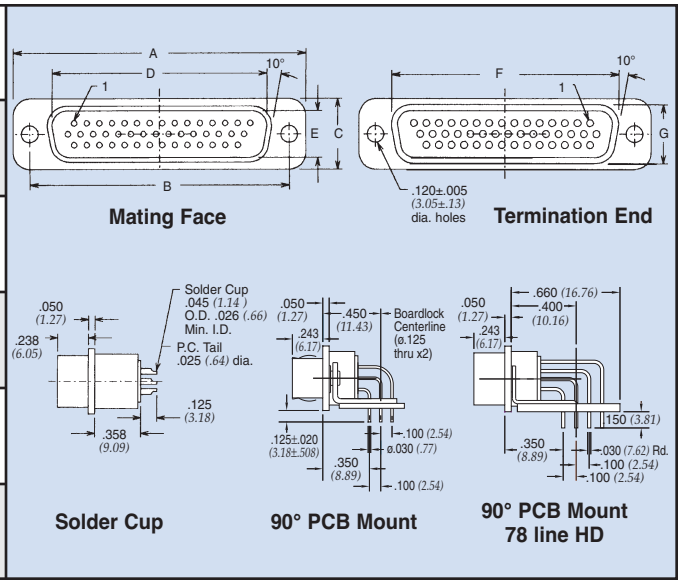
Pin/Socket Adapter

Size	A	B	C	D	E	F	G
15	1.213 *(30.81)*	.984 *(24.99)*	.640 *(16.26)*	.304 *(7.72)*	.505 *(12.83)*	.666 *(16.92)*	.333 *(8.46)*
26	1.541 *(39.14)*	1.312 *(33.32)*	.968 *(24.59)*	.304 *(7.72)*	.505 *(12.83)*	.994 *(25.25)*	.333 *(8.46)*
44	2.088 *(53.04)*	1.852 *(47.04)*	1.508 *(38.30)*	.304 *(7.72)*	.505 *(12.83)*	1.534 *(38.96)*	.333 *(8.46)*
62	2.729 *(69.32)*	2.500 *(63.50)*	2.156 *(54.76)*	.304 *(7.72)*	.505 *(12.83)*	2.182 *(55.42)*	.333 *(8.46)*
78	2.635 *(66.93)*	2.406 *(61.11)*	2.062 *(52.37)*	.416 *(10.57)*	.615 *(15.62)*	2.079 *(52.81)*	.420 *(11.18)*



Pin or Socket to Solder Cup, PCB Mount and 90° PCB Mount

Size	A	B	C	D	E	F	G
15	1.213 *(30.81)*	.984 *(24.99)*	.505 *(12.83)*	.666 *(16.92)*	.333 *(8.46)*	.757 *(19.23)*	.420 *(10.67)*
26	1.541 *(39.14)*	1.312 *(33.32)*	.505 *(12.83)*	.994 *(25.25)*	.333 *(8.46)*	1.085 *(27.56)*	.420 *(10.67)*
44	2.088 *(53.04)*	1.852 *(47.04)*	.505 *(12.83)*	1.534 *(38.96)*	.333 *(8.46)*	1.625 *(41.28)*	.420 *(10.67)*
62	2.729 *(69.32)*	2.500 *(63.50)*	.505 *(12.83)*	2.182 *(55.42)*	.333 *(8.46)*	2.273 *(57.73)*	.420 *(10.67)*
78	2.635 *(66.93)*	2.406 *(61.11)*	.615 *(15.62)*	2.079 *(52.81)*	.440 *(11.18)*	2.170 *(55.12)*	.527 *(13.39)*



Dimensions in inches *(mm)*

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Spectrum Control

High-Density Filtered Adapter for Telecommunications

Within the telecommunications industry, it has been standard practice to use an adapter (male/female) type of EMI filtered connector as the interface between the switching system electronics and the premise wiring. These filtered adapters provide effective containment of EMI compared to either D-subminiature or 50-position "ribbon" contact type connectors.

The following several factors have mandated the development of a new generation of filtered adapters.

Special Requirements

- Higher density wiring
- The need for more contacts, usually a multiple of 16
- Higher reliability contact geometries
- Bellcore TR-NWT-001089 requirements
  - 1000 volts AC withstand for one minute
  - 2500 volts spike surge testing
- Improved flammable resistant plastic insulators

API's Spectrum Control brand, in response to these unique requirements of the telecommunication industry, has developed a new high-density filtered adapter.

Features

- New ceramic technology and filter element construction to accept higher voltages
- Improved reliability compared to "ribbon" type connectors
- Integral ground plane and one-piece diecast housing for the highest level of EMI integrity
- More contacts/wires per square inch of panel space through high-density arrangements
- 64 contact positions standard, with 78 positions available by request in any filter combination

Mechanical Specifications

Shell . . . . . Zinc or aluminum diecast, nickel plated 150 µ inches *(3.81 µm)* min.

Insulators . . . . . Thermoplastic, UL94V-0

Contacts . . . . . One-piece, screw machined Copper alloy, contact area plated 50 µ inches *(1.27 µm)* gold over 50 µ inches *(1.27 µm)* nickel

Ground Plane . . . . . Brass, solder plated

Grounding Springs . . . . . Beryllium copper, tin plated per MIL-T-10727

Operating Temperature . . . . . -55°C to +125°C

Capacitor . . . . . High performance ceramic feed-through utilizing ultra low ESR design

Electrical Specifications

Rated Voltage . . . . . 100 VDC

Current Rating . . . . . 3 Amps

DC Resistance . . . . . 15 milliohm max.

Dielectric Withstanding Voltage . . . . . 1000 VRMS (FCC Part 68 test)

Capacitance . . . . . 1000 pF, ±25%

Voltage Surge . . . . . meets 2500 volts surge (10/1000) (See Wave form figure on next page)

api technologies corp.
Spectrum Control

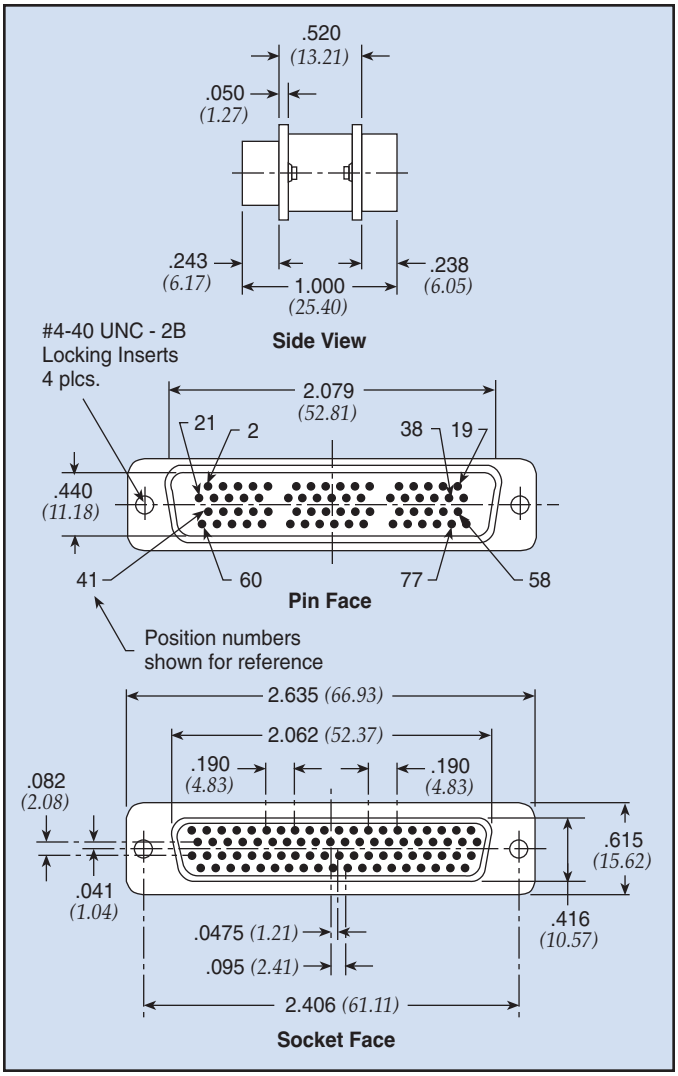
High-Density Filtered Adapter for Telecommunications

Filter Performance

Minimum Insertion Loss	
20 MHz	7 dB
50 MHz	14 dB
100 MHz	20 dB
500 MHz	32 dB
1 GHz	35 dB
2 GHz	41 dB
5 GHz	39 dB

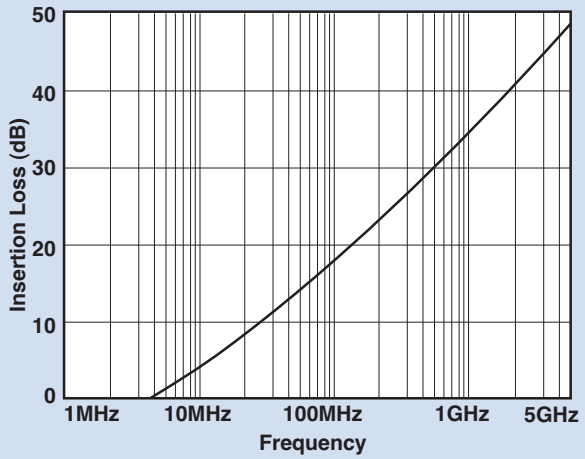
Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load. Above data represents guaranteed minimum.

Part Number for Ordering: #56-645-002



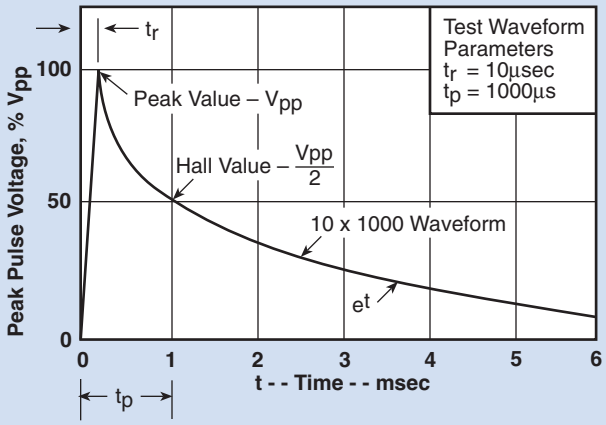
Dimensions in inches *(mm)*

Typical Insertion Loss



Above curves represent application of proper grounding fundamentals, for assistance consult with API.

Pulse Wave Form* (10 x 1000)



* Reference Bellcore TR-NWT-1089, V_{pp} = 1000V

api technologies corp.
Spectrum Control

Series 700 High Performance Filtered Connectors

Filter Selection

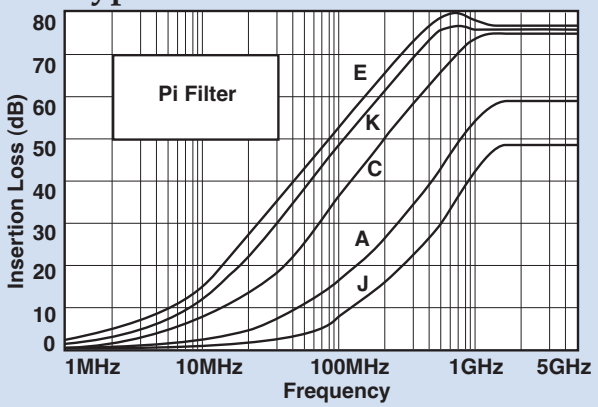
API's Spectrum Control brand of Series 700 connectors offer the highest performance filtering for all types of professional applications.

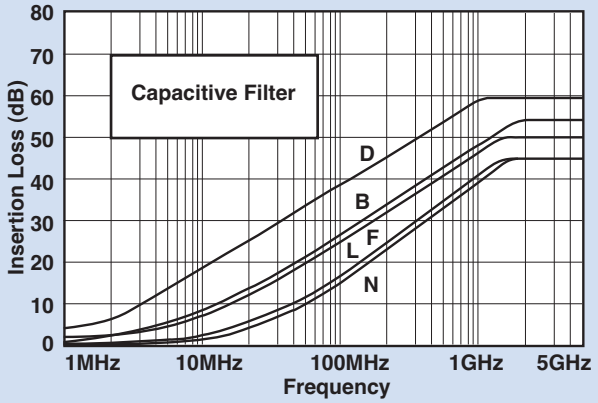
Features

- Available in 9, 15, 25, 37 and 50 shell sizes
- Variety of termination configurations including right angle and straight PCB for both pin and socket contact and as an adapter
- Capacitive and Pi type filters in a full range of capacitance values

The catalog data for this series is presented in order of shell size, and grouped by pin and socket contacts. Part numbers must be selected from the tables within the series section.

Typical Insertion Loss





Above curves represent application of proper grounding fundamentals, for assistance consult with API.

Insertion loss measured per MIL-STD-220, no load, 50ohm source and load.

Electrical Specifications: High Performance Connectors

Filter Designations	Filter Circuits	Capacitance		3 dB Cut-off Frequency Max. (MHz)	Dielectric Withstanding Voltage	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB)									
		Value	Tol.				5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz	2 GHz	5 GHz
J	Pi	100 pF	+100 -0%	32	300V	100V	—	—	—	2	6	11	27	40	43	40
A		310 pF	±20%	17	300V	100V	—	—	3	7	13	21	36	43	50	45
C		1000 pF	+150 -0%	3.2	300V	100V	—	5	9	19	30	43	62	70	68	63
K		2500 pF	+100 -0%	1.3	150V	50V	8	13	18	33	45	58	73	78	70	65
E		4000 pF	+100 -0%	0.8	150V	50V	8	13	20	35	48	61	76	80	70	65
N	C	375 pF	±20%	14	600V	200V	—	—	2	7	13	20	29	35	30	29
L		500 pF	±20%	10.6	600V	200V	—	—	3	10	15	22	31	37	33	31
F		830 pF	±20%	6.4	600V	200V	—	4	9	16	22	28	35	39	38	36
B		1000 pF	+100 -0%	3.2	600V	200V	—	5	10	17	23	30	37	43	44	42
D		5000 pF	+100 -0%	0.64	300V	100V	10	16	22	30	35	41	50	52	52	50

Filter designation "G" for grounded contacts, "I" for insulated (not filtered) contacts.
Filter designation "O" for omitted contact and no hole in ground plane.

Above data represents guaranteed minimum.

api technologies corp.
Spectrum Control

Series 700
Specifications and Connector Ordering

Mechanical Specifications

Shell . . . . . Zinc or aluminum diecast, nickel plated 150 µ inches *(3.81 µm)* min.

Insulators . . . . . Glass-filled polyester, flammability UL94V-0

Pin Contacts . . . . . Copper alloy, 15 µ inches *(0.38 µm)* gold plated * over nickel

Socket Contacts . . . . Copper alloy, 30 µ inches *(0.76 µm)* gold plated * over nickel

* *Heavier gold plating available upon request.*
See pg. FC43: Connector Options

Terminations . . . . . Gold flash for PCB mount and solder cups. Solder dipped also available.

Ground Plane . . . . . Brass, solder plated

Grounding Springs . . . . . Beryllium copper, tin plated per MIL-T-10727

Operating Temperature . . . . . -55°C to +125°C

Capacitors . . . . . Proprietary barium titanate ceramic formulations

Electrical Specifications

Current Rating . . . . 5 Amps

R.F. Current Rating . . . . . 0.3 Amps

Contact Resistance . . . . . 10 milliohms maximum

UL Recognized . . . . . Under category of communication circuit accessories, File #E149046

Inductance on PI Filters . . . . . ~ 860 nH between 100 kHz and 1 MHz

Solder cups accept up to a 20 gauge wire.

Note:
For additional mechanical, electrical, and environmental specifications, refer to page FC79.

Ordering Your Connector

STEP 1: SELECTING THE FILTER

- Using the insert loss graphs on page FC20 determine which filters provide the required attenuation at the troublesome frequency, while not affecting the signal frequency by more than 3 to 6 dB.
- Choose the filter type, either feed-through capacitor or Pi. The Pi is generally considered better due to its superior high frequency performance and steeper curve. The feed-through capacitor is lower cost.
- Select capacitance value.
- Note the Spectrum letter designation for the filter chosen from the table on page FC20.

STEP 2: SELECTING THE CONNECTOR

- Turn to the appropriate size section. (9, 15, 25, 37, 50)
- Choose either pin contacts (plug) or socket contacts (receptacle).
- Choose the required termination type.
- From the table on the appropriate connector page, using the filter letter designation chosen in step 1 above, select the part number.

STEP 3: SPECIFYING OPTIONS

- Refer to page FC43 for special options including heavy gold plating, 4-40 mounting threads, grounding brackets, hardware, and others.
- Most options are available within the standard lead times.
- Some options require a part number suffix, while other combinations may require factory assistance for part number assignment. If a suffix is shown, add it to your selected part number. If more than one option is needed, consult with factory for part number assignment.

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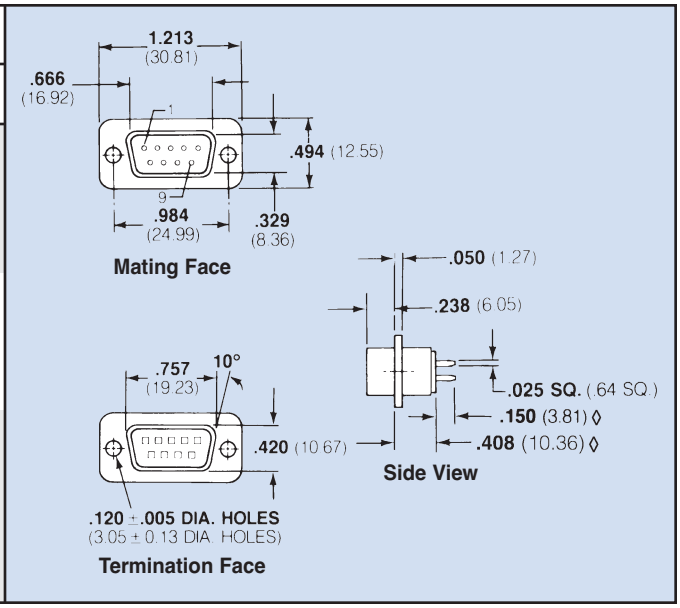
9 Shell Size Series 700 Pin Contact

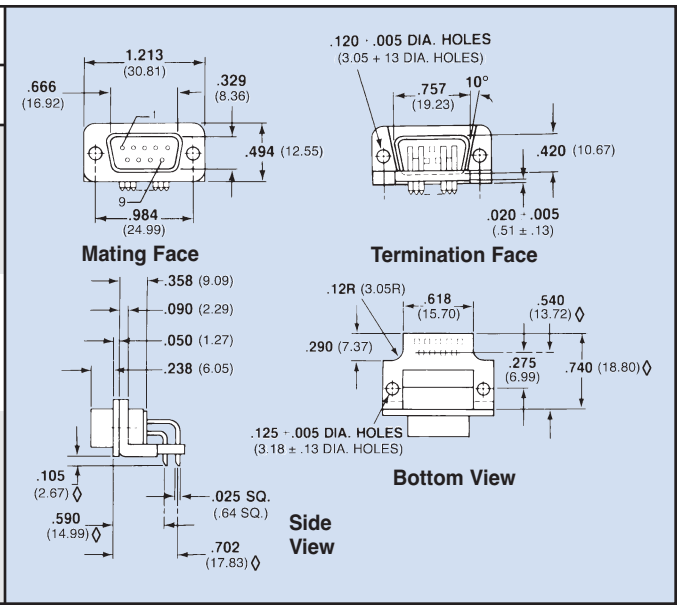
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-701-001	A	310 pF Pi
56-701-002	B	1000 pF C
56-701-003	C	1000 pF Pi
56-701-004	D	5000 pF C
56-701-005	E	4000 pF Pi
56-701-028	F	830 pF C
56-701-029	J	100 pF Pi
56-701-030	K	2500 pF Pi
56-701-047	N	375 pF C
56-701-086	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-702-001	A	310 pF Pi
56-702-002	B	1000 pF C
* 56-702-003	C	1000 pF Pi
56-702-004	D	5000 pF C
* 56-702-005	E	4000 pF Pi
56-702-007	F	830 pF C
56-702-008	J	100 pF Pi
56-702-009	K	2500 pF Pi
56-702-013	N	375 pF C
* 56-702-033	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

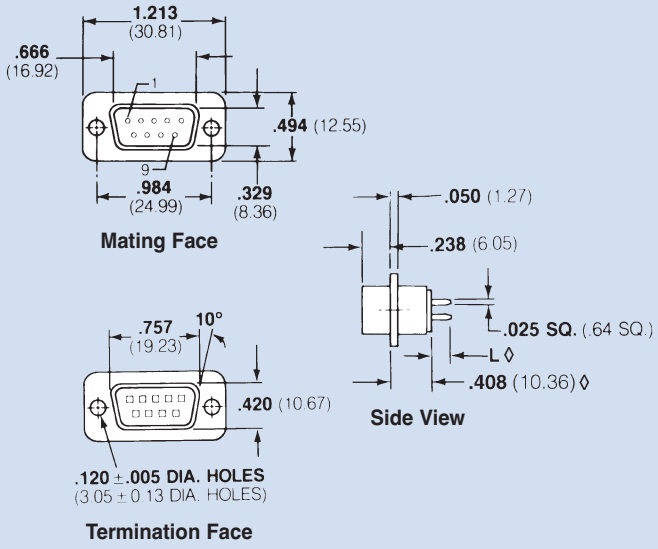
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

9 Shell Size Series 700 Pin Contact

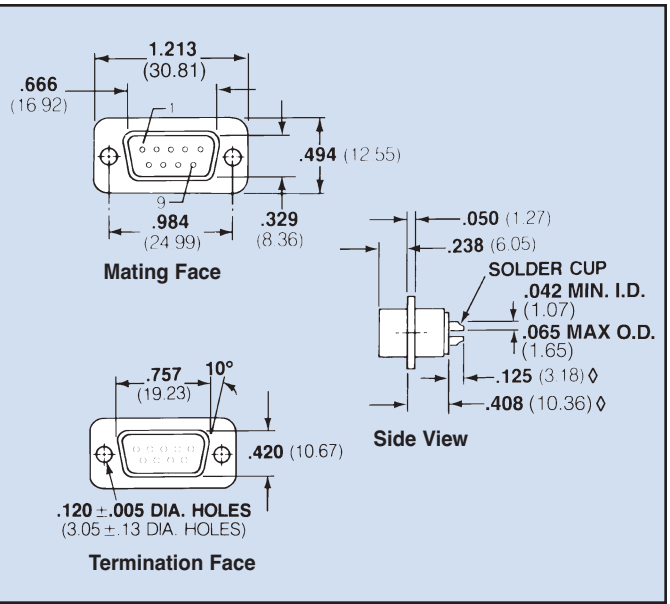
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-701	-006	-022	-017	A	310 pF Pi
56-701	-007	-023	-018	B	1000 pF C
56-701	-008	-024	-019	C	1000 pF Pi
56-701	-009	-025	-020	D	5000 pF C
56-701	-010	-026	-021	E	4000 pF Pi
56-701	-037	-034	-031	F	830 pF C
56-701	-038	-035	-032	J	100 pF Pi
56-701	-039	-036	-033	K	2500 pF Pi
56-701	-050	-049	-048	N	375 pF C



Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-701-011	A	310 pF Pi
* 56-701-012	B	1000 pF C
* 56-701-013	C	1000 pF Pi
* 56-701-014	D	5000 pF C
* 56-701-015	E	4000 pF Pi
* 56-701-040	F	830 pF C
56-701-041	J	100 pF Pi
56-701-042	K	2500 pF Pi
56-701-081	N	375 pF C
56-701-087	L	500 pF C

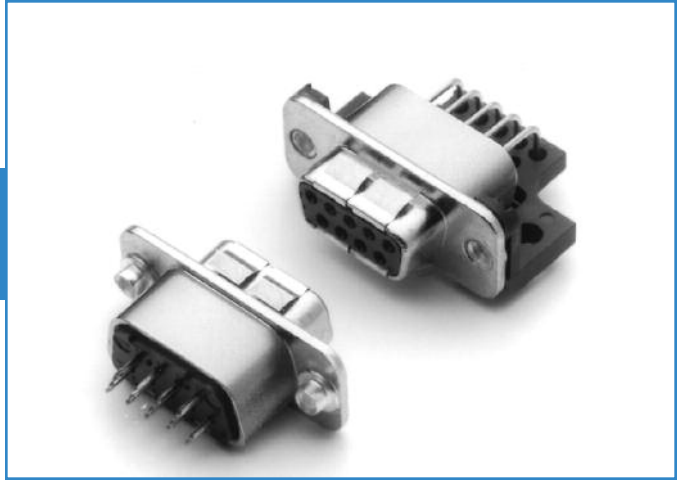


* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

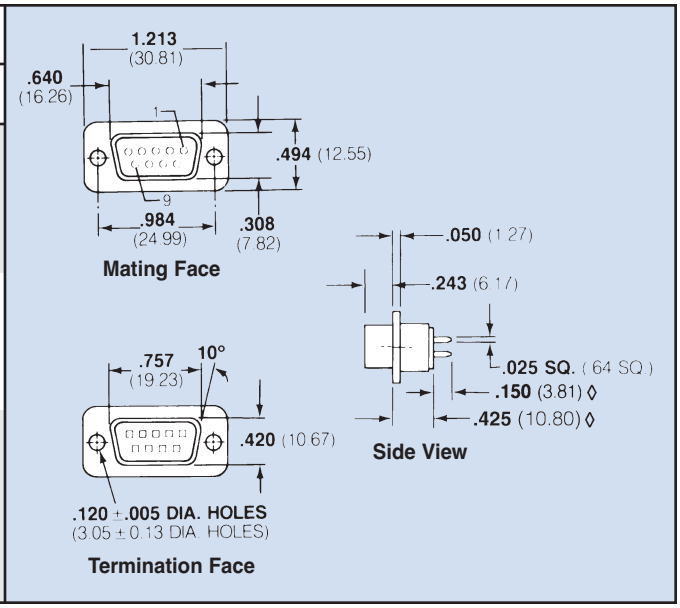
api technologies corp.
Spectrum Control

9 Shell Size Series 700 Socket Contact



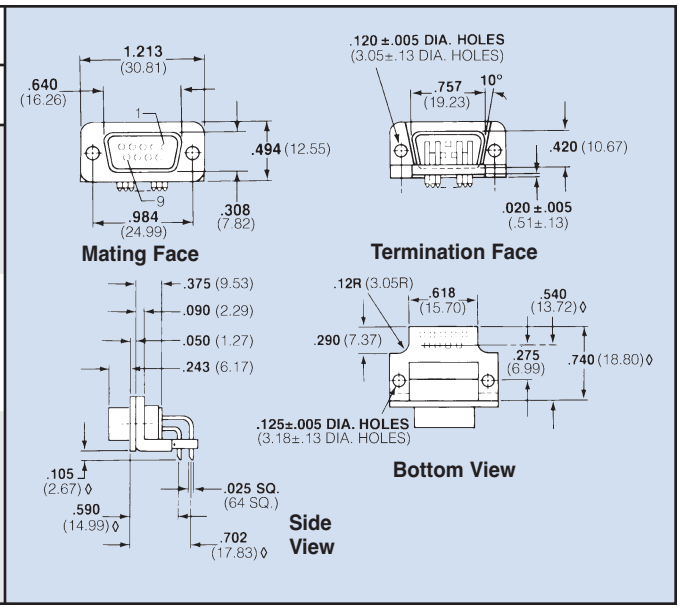
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-703-001	A	310 pF Pi
56-703-002	B	1000 pF C
56-703-003	C	1000 pF Pi
56-703-004	D	5000 pF C
56-703-005	E	4000 pF Pi
56-703-022	F	830 pF C
56-703-023	J	100 pF Pi
56-703-024	K	2500 pF Pi
56-703-036	N	375 pF C
56-703-047	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-704-001	A	310 pF Pi
56-704-002	B	1000 pF C
* 56-704-003	C	1000 pF Pi
56-704-004	D	5000 pF C
* 56-704-005	E	4000 pF Pi
56-704-007	F	830 pF C
56-704-008	J	100 pF Pi
56-704-009	K	2500 pF Pi
56-704-018	N	375 pF C
56-704-035	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

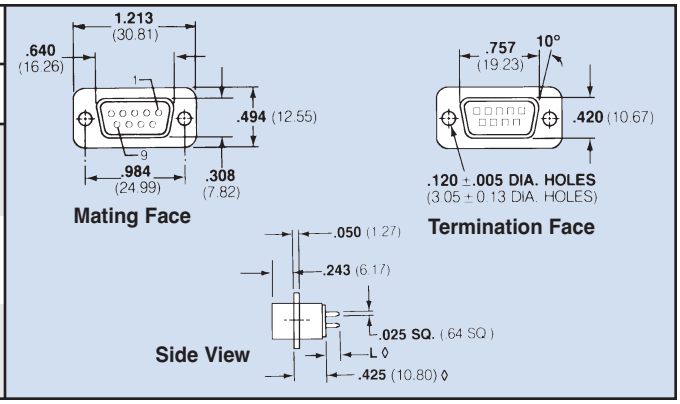
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

9 Shell Size Series 700 Socket Contact & Pin/Socket Adapter

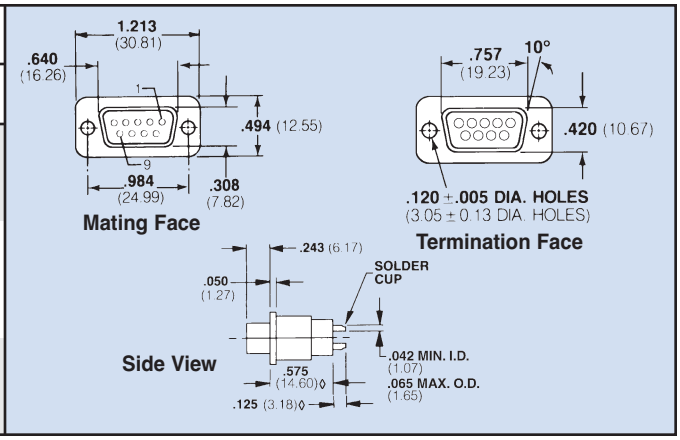
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-703	-006	-016	-011	A	310 pF Pi
56-703	-007	-017	-012	B	1000 pF C
56-703	-008	-018	-013	C	1000 pF Pi
56-703	-009	-019	-014	D	5000 pF C
* 56-703	-010	-020	* -015	E	4000 pF Pi
56-703	-031	-028	-025	F	830 pF C
56-703	-032	-029	-026	J	100 pF Pi
56-703	-033	-030	-027	K	2500 pF Pi
56-703	-039	-038	-037	N	375 pF C



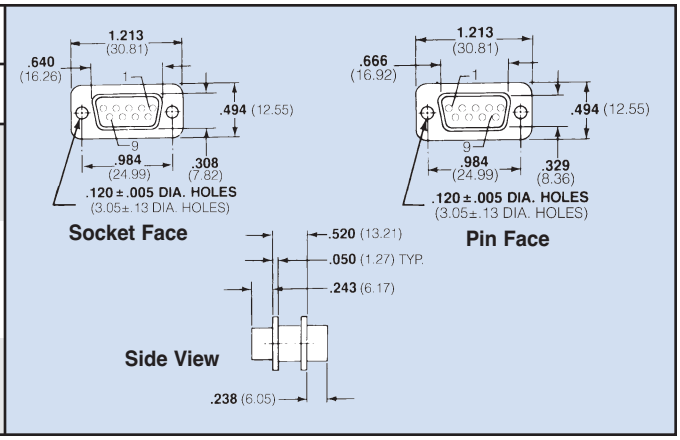
Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-706-001	A	310 pF Pi
56-706-002	B	1000 pF C
* 56-706-003	C	1000 pF Pi
56-706-004	D	5000 pF C
* 56-706-005	E	4000 pF Pi
56-706-006	F	830 pF C
56-706-007	J	100 pF Pi
* 56-706-008	K	2500 pF Pi
56-706-009	N	375 pF C
56-706-017	L	500 pF C



Pin/Socket Adapter

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-705-001	A	310 pF Pi
56-705-002	B	1000 pF C
* 56-705-003 €	C	1000 pF Pi
56-705-004	D	5000 pF C
* 56-705-005 €	E	4000 pF Pi
* 56-705-008	F	830 pF C
56-705-009	J	100 pF Pi
56-705-010	K	2500 pF Pi
56-705-026	N	375 pF C
56-705-049	L	500 pF C



€ Also available through API's authorized European distributors/agents.
* May be available from distributor stock.
** See page FC20 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

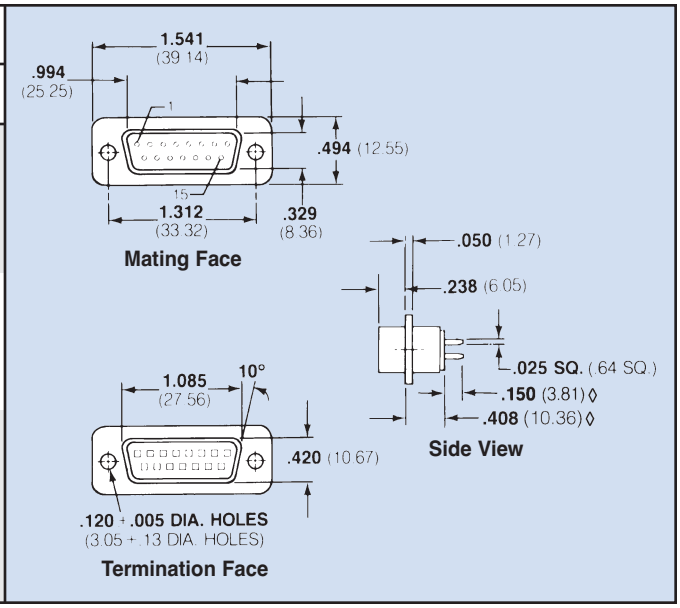
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

15 Shell Size Series 700 Pin Contact

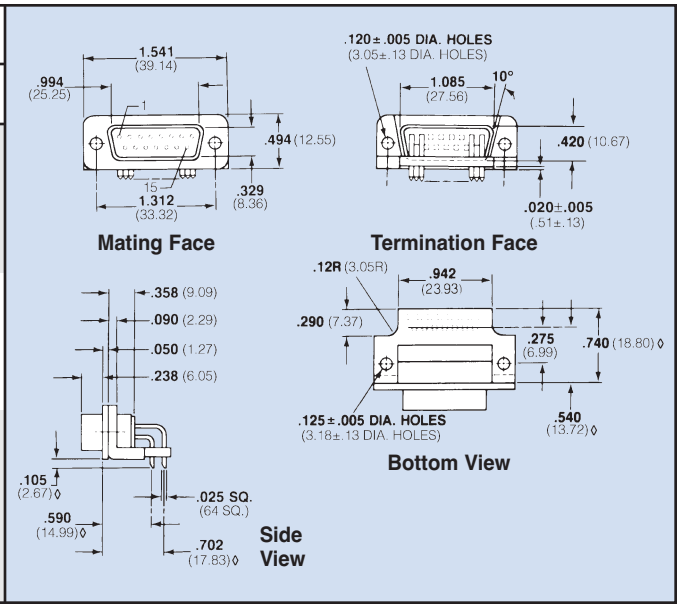
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-711-001	A	310 pF Pi
56-711-002	B	1000 pF C
56-711-003	C	1000 pF Pi
56-711-004	D	5000 pF C
56-711-005	E	4000 pF Pi
56-711-028	F	830 pF C
56-711-029	J	100 pF Pi
56-711-030	K	2500 pF Pi
56-711-048	N	375 pF C
56-711-088	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-712-001	A	310 pF Pi
56-712-002	B	1000 pF C
* 56-712-003	C	1000 pF Pi
56-712-004	D	5000 pF C
* 56-712-005	E	4000 pF Pi
* 56-712-007	F	830 pF C
56-712-008	J	100 pF Pi
56-712-009	K	2500 pF Pi
56-712-017	N	375 pF C
56-712-039	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

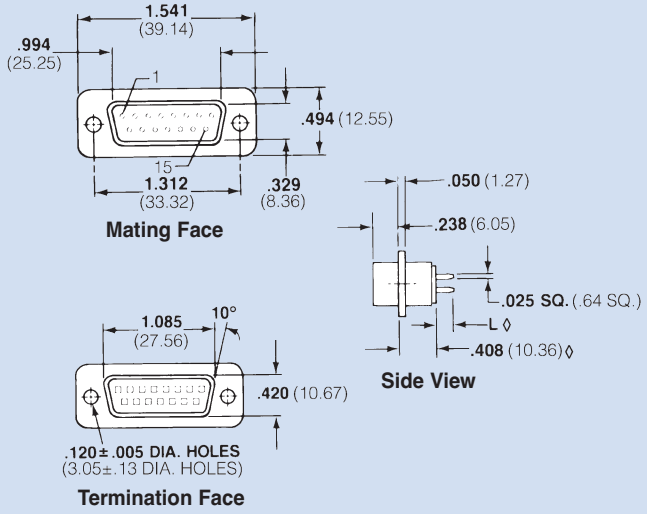
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

15 Shell Size Series 700 Pin Contact

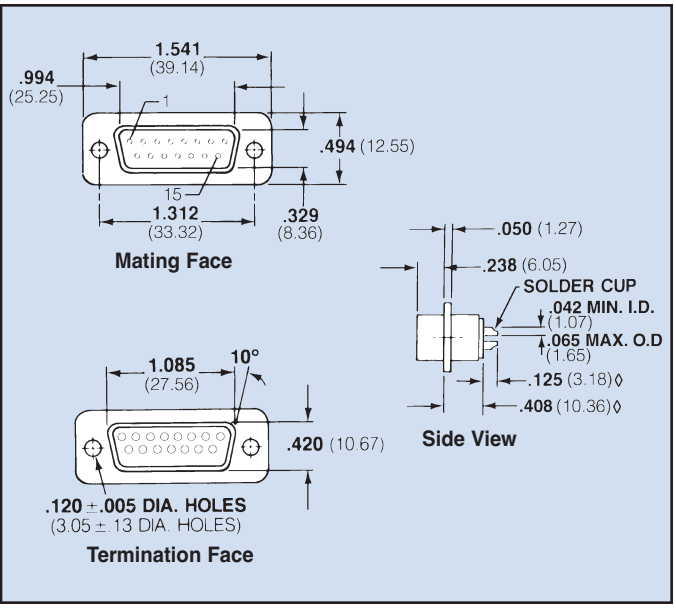
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-711	-006	-023	-018	A	310 pF Pi
56-711	-007	-024	-019	B	1000 pF C
56-711	-008	-025	-020	C	1000 pF Pi
56-711	-009	-026	-021	D	5000 pF C
56-711	-010	-027	-022	E	4000 pF Pi
56-711	-037	-034	-031	F	830 pF C
56-711	-038	-035	-032	J	100 pF Pi
56-711	-039	-036	-033	K	2500 pF Pi
56-711	-051	-050	-049	N	375 pF C



Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-711-011	A	310 pF Pi
56-711-012	B	1000 pF C
* 56-711-013	C	1000 pF Pi
56-711-014	D	5000 pF C
* 56-711-015	E	4000 pF Pi
* 56-711-040	F	830 pF C
56-711-041	J	100 pF Pi
56-711-042	K	2500 pF Pi
56-711-085	N	375 pF C
56-711-086	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

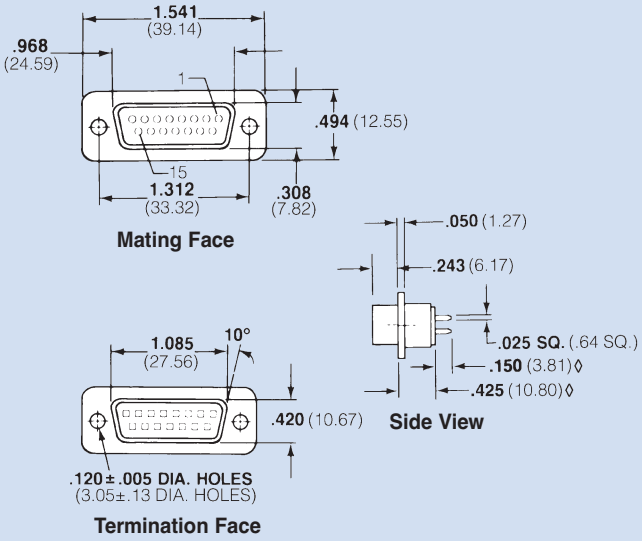
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

15 Shell Size Series 700 Socket Contact

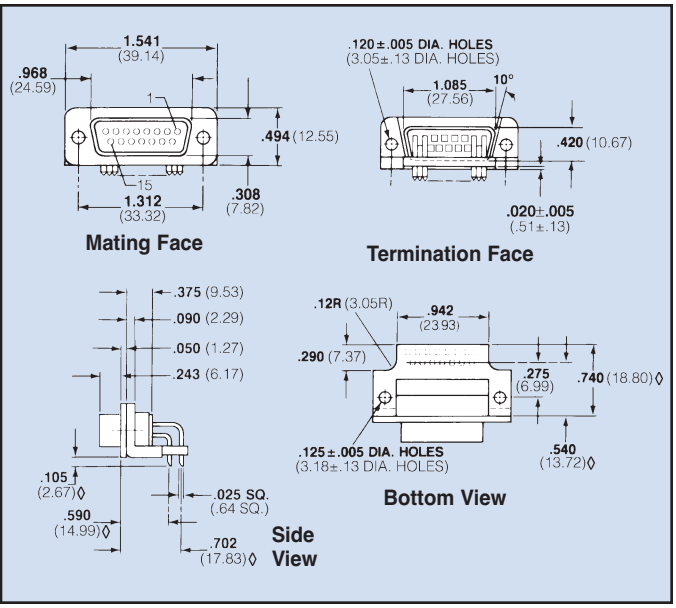
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-713-001	A	310 pF Pi
56-713-002	B	1000 pF C
56-713-003	C	1000 pF Pi
56-713-004	D	5000 pF C
56-713-005	E	4000 pF Pi
56-713-021	F	830 pF C
56-713-022	J	100 pF Pi
56-713-023	K	2500 pF Pi
56-713-037	N	375 pF C
56-713-045	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-714-001	A	310 pF Pi
56-714-002	B	1000 pF C
* 56-714-003	C	1000 pF Pi
56-714-004	D	5000 pF C
* 56-714-005	E	4000 pF Pi
* 56-714-006	F	830 pF C
56-714-007	J	100 pF Pi
56-714-008	K	2500 pF Pi
56-714-017	N	375 pF C
56-714-031	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

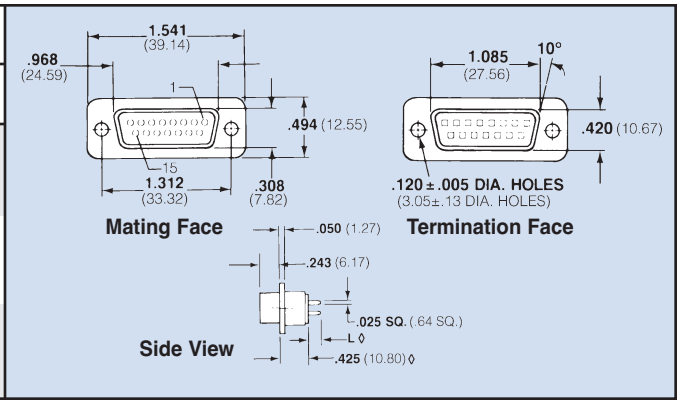
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

15 Shell Size Series 700 Socket Contact & Pin/Socket Adapter

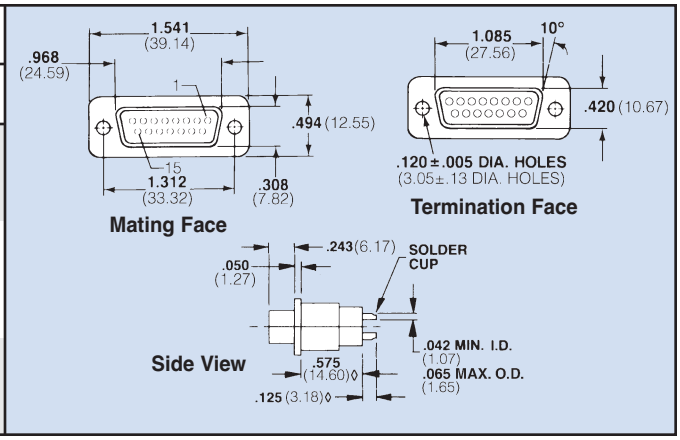
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-713	-006	-016	-011	A	310 pF Pi
56-713	-007	-017	-012	B	1000 pF C
56-713	-008	-018	-013	C	1000 pF Pi
56-713	-009	-019	-014	D	5000 pF C
56-713	-010	-020	-015	E	4000 pF Pi
56-713	-030	-027	-024	F	830 pF C
56-713	-031	-028	-025	J	100 pF Pi
56-713	-032	-029	-026	K	2500 pF Pi
56-713	-040	-039	-038	N	375 pF C



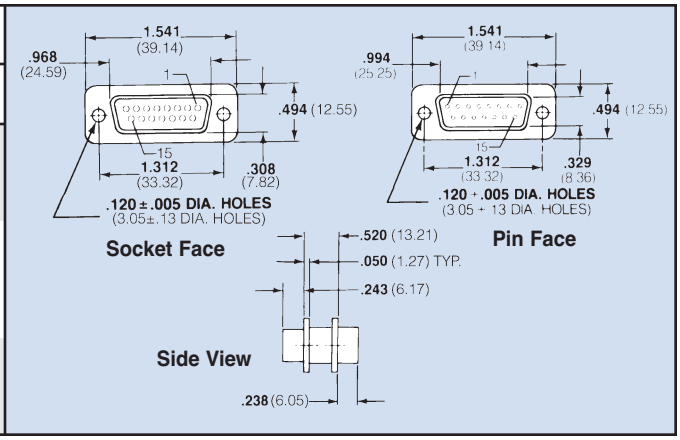
Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-716-001	A	310 pF Pi
56-716-002	B	1000 pF C
* 56-716-003	C	1000 pF Pi
56-716-004	D	5000 pF C
* 56-716-005	E	4000 pF Pi
56-716-006	F	830 pF C
56-716-007	J	100 pF Pi
* 56-716-008	K	2500 pF Pi
56-716-009	N	375 pF C
56-716-013	L	500 pF C



Pin/Socket Adapter

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-715-001	A	310 pF Pi
56-715-002	B	1000 pF C
* 56-715-003 €	C	1000 pF Pi
56-715-004	D	5000 pF C
* 56-715-005 €	E	4000 pF Pi
56-715-007	F	830 pF C
56-715-008	J	100 pF Pi
56-715-009	K	2500 pF Pi
56-715-015	N	375 pF C
56-715-040	L	500 pF C



€ **Also available through API's authorized European distributors/agents.**
* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

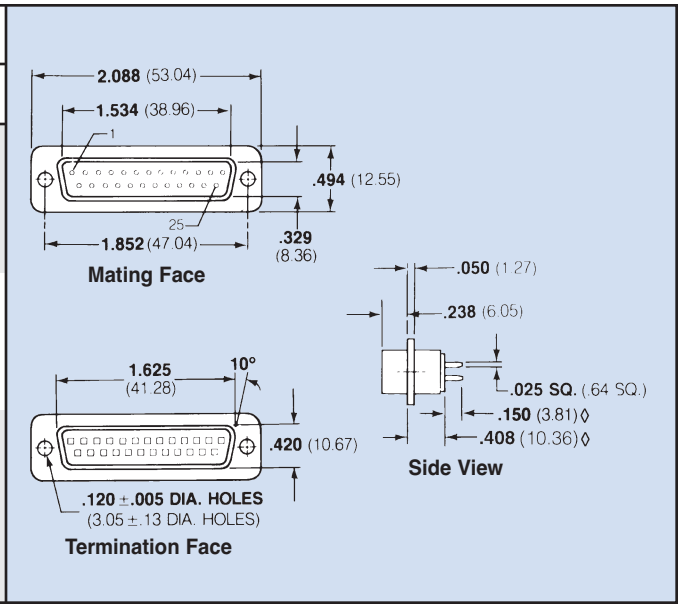
API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

api technologies corp.
Spectrum Control

25 Shell Size Series 700 Pin Contact

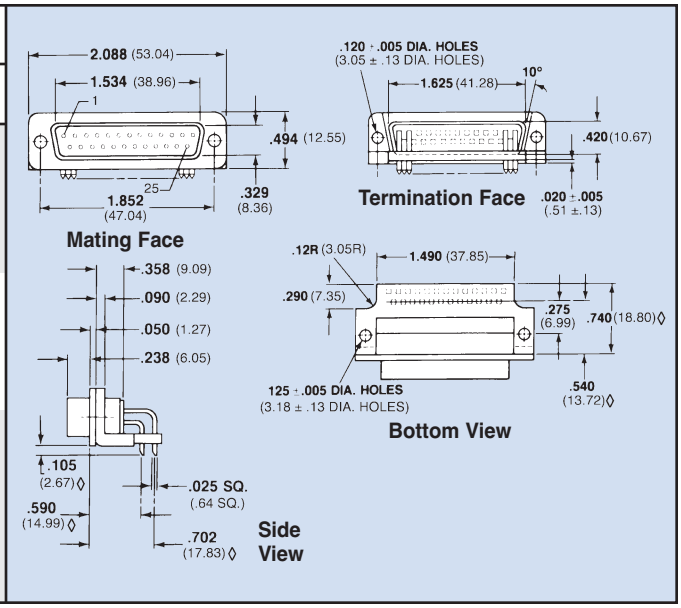
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-721-001	A	310 pF Pi
56-721-002	B	1000 pF C
56-721-003	C	1000 pF Pi
56-721-004	D	5000 pF C
56-721-005	E	4000 pF Pi
56-721-033	F	830 pF C
56-721-034	J	100 pF Pi
56-721-035	K	2500 pF Pi
56-721-063	N	375 pF C
56-721-111	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-722-001	A	310 pF Pi
56-722-002	B	1000 pF C
* 56-722-003	C	1000 pF Pi
56-722-004	D	5000 pF C
* 56-722-005	E	4000 pF Pi
* 56-722-008	F	830 pF C
56-722-009	J	100 pF Pi
56-722-010	K	2500 pF Pi
56-722-027	N	375 pF C
56-722-060	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

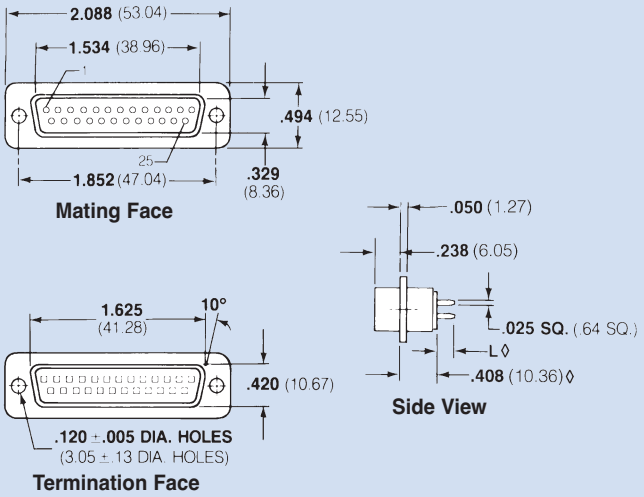
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

25 Shell Size Series 700 Pin Contact

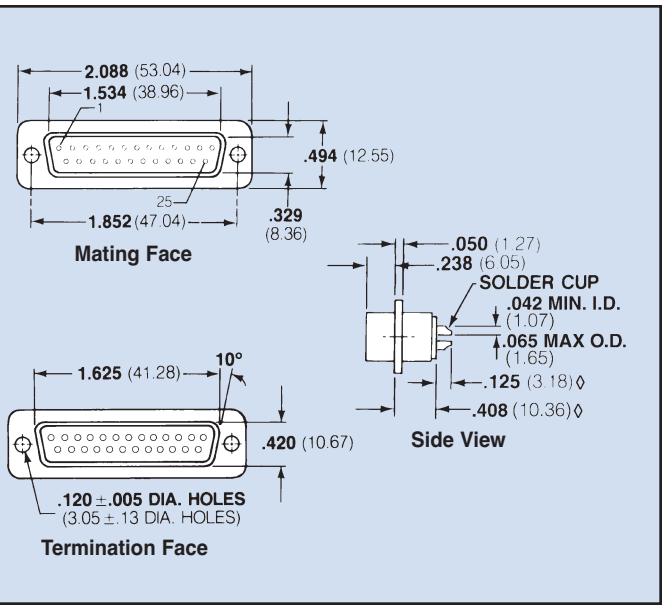
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-721	-006	-028	-024	A	310 pF Pi
56-721	-007	-029	-025	B	1000 pF C
56-721	-008	-030	-026	C	1000 pF Pi
56-721	-009	-031	-022	D	5000 pF C
56-721	-010	-032	-027	E	4000 pF Pi
56-721	-042	-039	-036	F	830 pF C
56-721	-043	-040	-037	J	100 pF Pi
56-721	-044	-041	-038	K	2500 pF Pi
56-721	-066	-065	-064	N	375 pF C



Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-721-011	A	310 pF Pi
* 56-721-012	B	1000 pF C
* 56-721-013	C	1000 pF Pi
56-721-014	D	5000 pF C
* 56-721-015	E	4000 pF Pi
* 56-721-045	F	830 pF C
56-721-046	J	100 pF Pi
56-721-047	K	2500 pF Pi
56-721-070	N	375 pF C
56-721-112	L	500 pF C

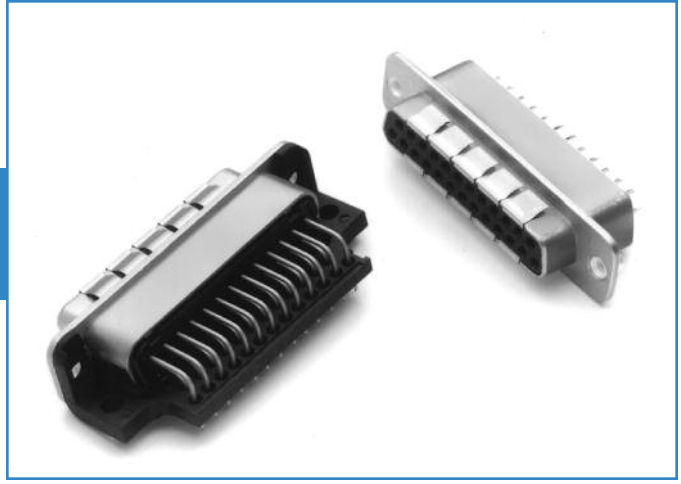


* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

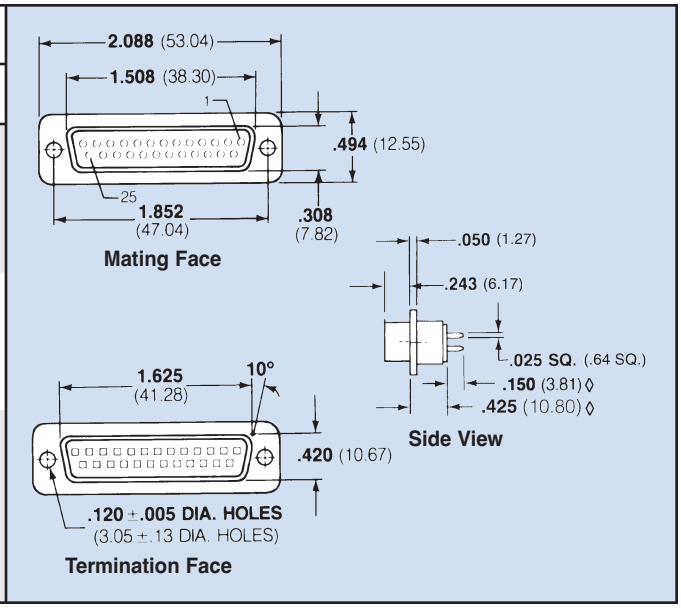
api technologies corp.
Spectrum Control

25 Shell Size Series 700 Socket Contact



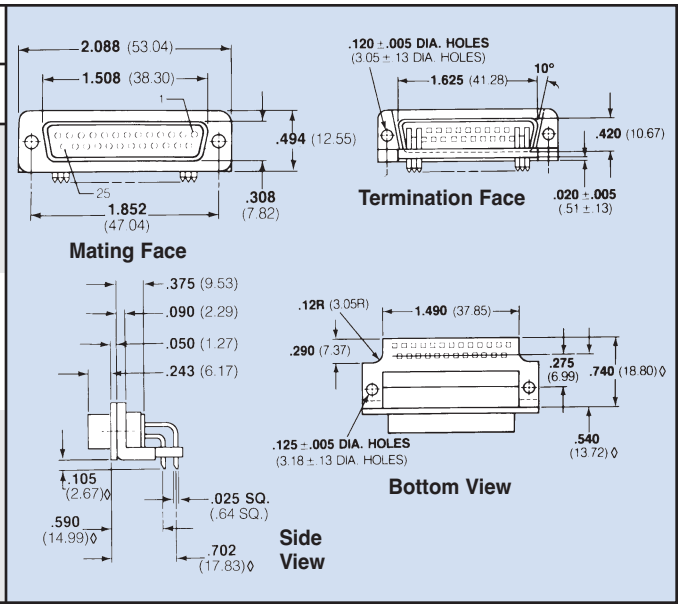
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-723-001	A	310 pF Pi
56-723-002	B	1000 pF C
56-723-003	C	1000 pF Pi
56-723-004	D	5000 pF C
56-723-005	E	4000 pF Pi
56-723-023	F	830 pF C
56-723-024	J	100 pF Pi
56-723-025	K	2500 pF Pi
56-723-045	N	375 pF C
56-723-069	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-724-001	A	310 pF Pi
56-724-002	B	1000 pF C
* 56-724-003	C	1000 pF Pi
56-724-004	D	5000 pF C
* 56-724-005	E	4000 pF Pi
* 56-724-008	F	830 pF C
56-724-009	J	100 pF Pi
56-724-010	K	2500 pF Pi
56-724-021	N	375 pF C
56-724-046	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

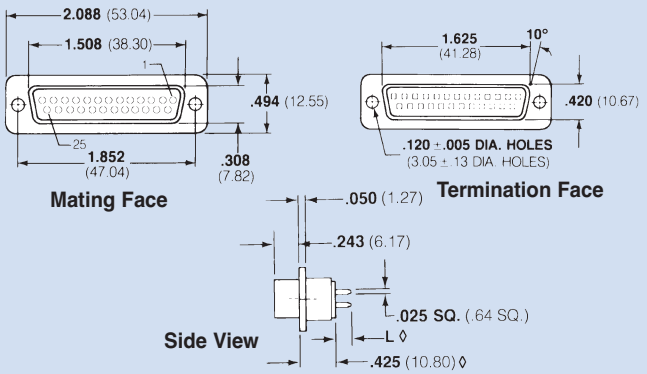
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

25 Shell Size Series 700 Socket Contact & Pin/Socket Adapter

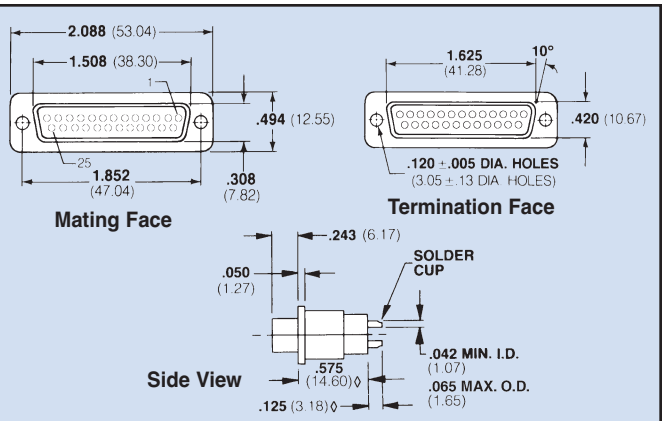
Solderless Wire Wrap

Spectrum Part Number (Select one) L .500	L .375	L .250	EMI Filter Filter Desig.**	Cap. Value
* 56-723	-006	-017	* -012	A	310 pF Pi
56-723	-007	-018	-013	B	1000 pF C
* 56-723	-008	-019	* -014	C	1000 pF Pi
56-723	-009	-020	-015	D	5000 pF C
* 56-723	-010	-021	* -016	E	4000 pF Pi
* 56-723	-032	-029	* -026	F	830 pF C
56-723	-033	-030	-027	J	100 pF Pi
56-723	-034	-031	-028	K	2500 pF Pi
56-723	-048	-047	-046	N	375 pF C



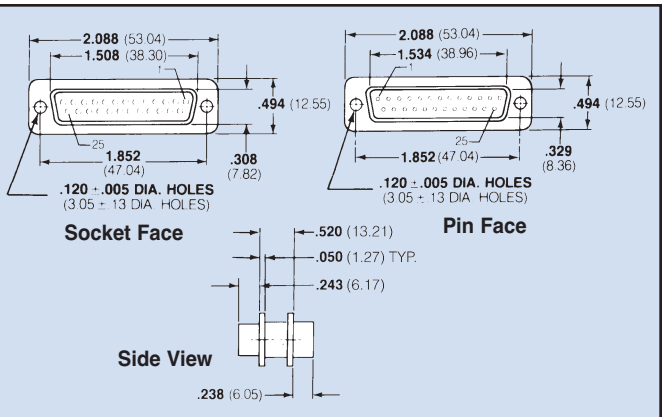
Solder Cup Termination

Spectrum Part Number	EMI Filter Filter Designation**	Cap. Value
* 56-726-001	A	310 pF Pi
56-726-002	B	1000 pF C
* 56-726-003	C	1000 pF Pi
56-726-004	D	5000 pF C
* 56-726-005	E	4000 pF Pi
56-726-006	F	830 pF C
56-726-007	J	100 pF Pi
* 56-726-008	K	2500 pF Pi
56-726-009	N	375 pF C
56-726-021	L	500 pF C



Pin/Socket Adapter

Spectrum Part Number	EMI Filter Filter Designation**	Cap. Value
* 56-725-001	A	310 pF Pi
56-725-002	B	1000 pF C
* 56-725-003 €	C	1000 pF Pi
56-725-004	D	5000 pF C
* 56-725-005 €	E	4000 pF Pi
* 56-725-019	F	830 pF C
56-725-020	J	100 pF Pi
* 56-725-021	K	2500 pF Pi
56-725-064	N	375 pF C
56-725-073	L	500 pF C



€ Also available through API's authorized European distributors/agents.
* May be available from distributor stock.
** See page FC20 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

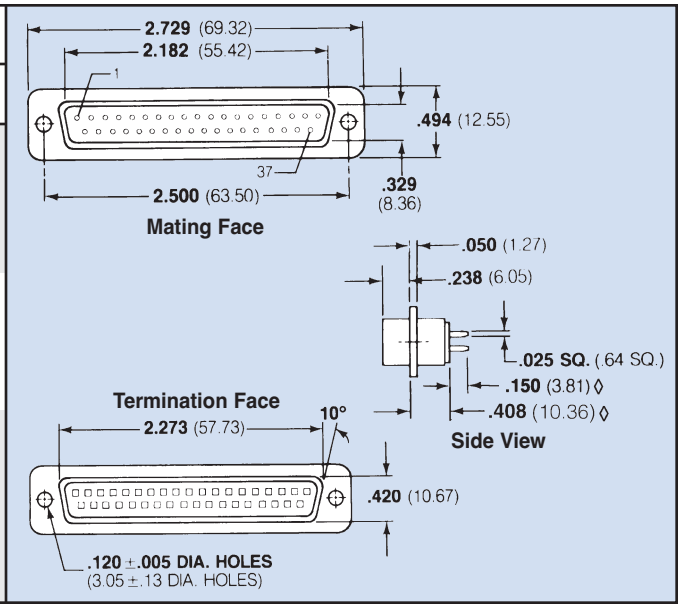
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

37 Shell Size Series 700 Pin Contact

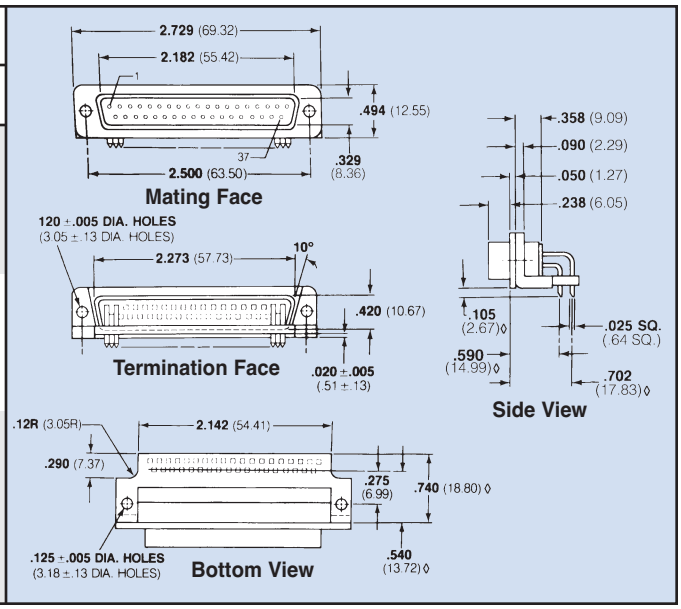
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-731-001	A	310 pF Pi
56-731-002	B	1000 pF C
56-731-003	C	1000 pF Pi
56-731-004	D	5000 pF C
56-731-005	E	4000 pF Pi
56-731-028	F	830 pF C
56-731-029	J	100 pF Pi
56-731-030	K	2500 pF Pi
56-731-048	N	375 pF C
56-731-076	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-732-001	A	310 pF Pi
56-732-002	B	1000 pF C
* 56-732-003	C	1000 pF Pi
56-732-004	D	5000 pF C
* 56-732-005	E	4000 pF Pi
56-732-006	F	830 pF C
56-732-007	J	100 pF Pi
56-732-008	K	2500 pF Pi
56-732-009	N	375 pF C
56-732-023	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

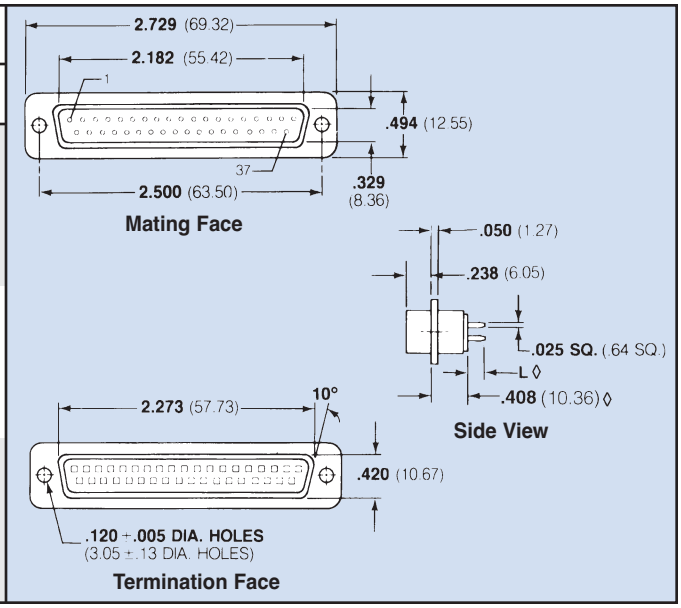
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

37 Shell Size Series 700 Pin Contact

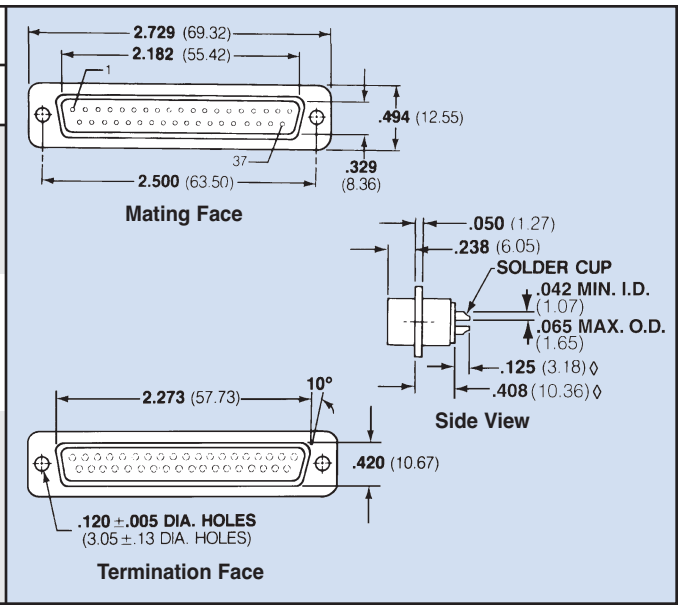
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-731	-006	-023	-018	A	310 pF Pi
56-731	-007	-024	-019	B	1000 pF C
56-731	-008	-025	-020	C	1000 pF Pi
56-731	-009	-026	-021	D	5000 pF C
56-731	-010	-027	-022	E	4000 pF Pi
56-731	-037	-034	-031	F	830 pF C
56-731	-038	-035	-032	J	100 pF Pi
56-731	-039	-036	-033	K	2500 pF Pi
56-731	-051	-050	-049	N	375 pF C



Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-731-011	A	310 pF Pi
56-731-012	B	1000 pF C
* 56-731-013	C	1000 pF Pi
56-731-014	D	5000 pF C
* 56-731-015	E	4000 pF Pi
* 56-731-040	F	830 pF C
56-731-041	J	100 pF Pi
56-731-042	K	2500 pF Pi
56-731-060	N	375 pF C
56-731-077	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

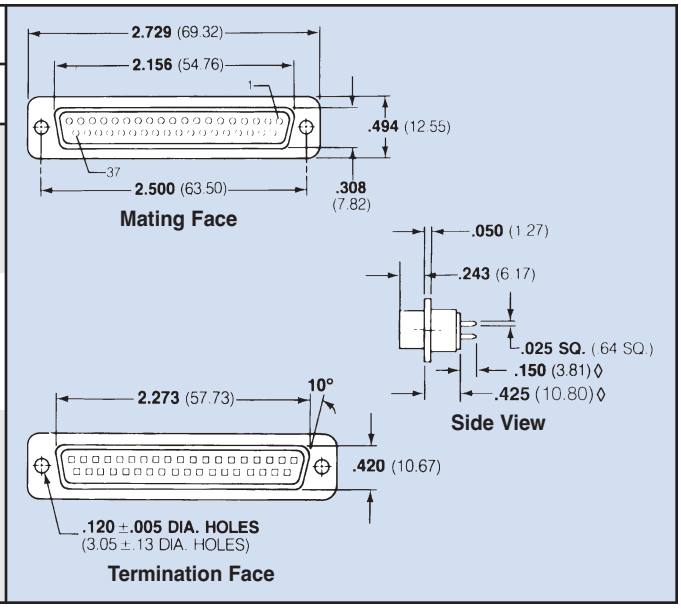
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

37 Shell Size Series 700 Socket Contact

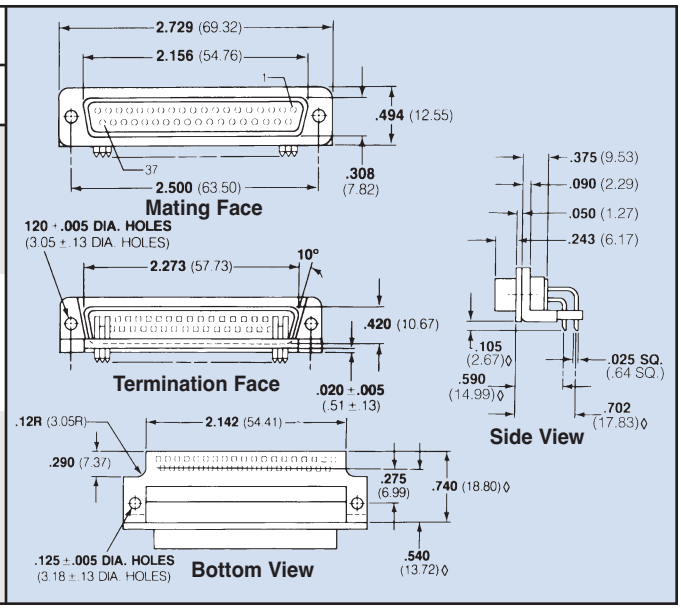
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-733-001	A	310 pF Pi
56-733-002	B	1000 pF C
56-733-003	C	1000 pF Pi
56-733-004	D	5000 pF C
56-733-005	E	4000 pF Pi
56-733-021	F	830 pF C
56-733-022	J	100 pF Pi
56-733-023	K	2500 pF Pi
56-733-035	N	375 pF C
56-733-046	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-734-001	A	310 pF Pi
56-734-002	B	1000 pF C
56-734-003	C	1000 pF Pi
56-734-004	D	5000 pF C
56-734-005	E	4000 pF Pi
56-734-006	F	830 pF C
56-734-007	J	100 pF Pi
56-734-008	K	2500 pF Pi
56-734-012	N	375 pF C
56-734-021	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

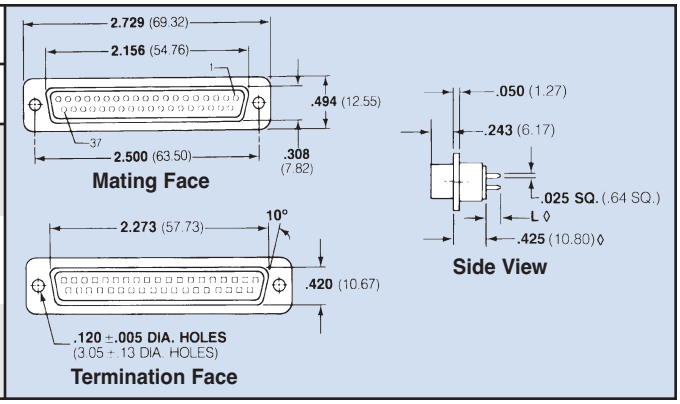
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

37 Shell Size Series 700 Socket Contact & Pin/Socket Adapter

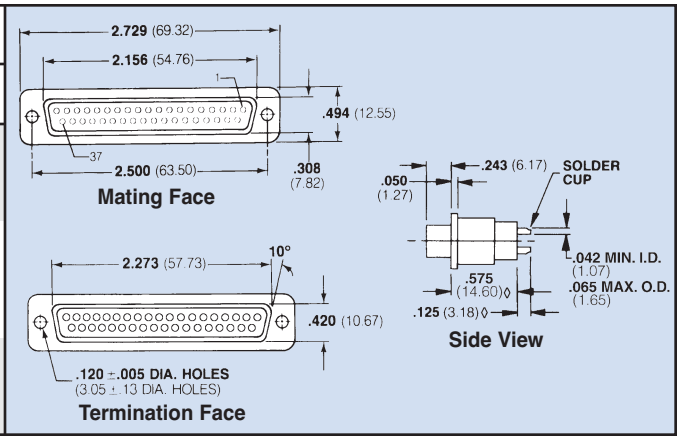
Solderless Wire Wrap

Spectrum Part Number (Select one) L .500	L .375	L .250	EMI Filter Filter Desig.**	Cap. Value
* 56-733	-006	-016	* -011	A	310 pF Pi
56-733	-007	-017	-012	B	1000 pF C
56-733	-008	-018	-013	C	1000 pF Pi
56-733	-009	-019	-014	D	5000 pF C
56-733	-010	-020	-015	E	4000 pF Pi
56-733	-030	-027	-024	F	830 pF C
56-733	-031	-028	-025	J	100 pF Pi
56-733	-032	-029	-026	K	2500 pF Pi
56-733	-038	-037	-036	N	375 pF C



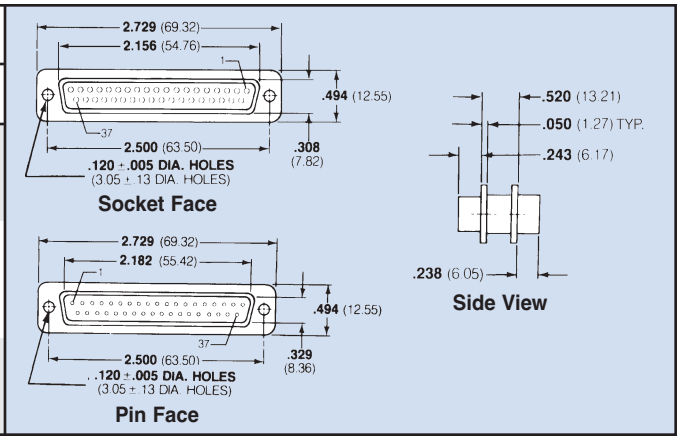
Solder Cup Termination

Spectrum Part Number	EMI Filter Filter Designation**	Cap. Value
* 56-736-001	A	310 pF Pi
56-736-002	B	1000 pF C
* 56-736-003	C	1000 pF Pi
56-736-004	D	5000 pF C
* 56-736-005	E	4000 pF Pi
56-736-006	F	830 pF C
56-736-007	J	100 pF Pi
* 56-736-008	K	2500 pF Pi
56-736-009	N	375 pF C
56-736-015	L	500 pF C



Pin/Socket Adapter

Spectrum Part Number	EMI Filter Filter Designation**	Cap. Value
* 56-735-001	A	310 pF Pi
56-735-002	B	1000 pF C
* 56-735-003 €	C	1000 pF Pi
56-735-004	D	5000 pF C
* 56-735-005 €	E	4000 pF Pi
* 56-735-008	F	830 pF C
56-735-009	J	100 pF Pi
56-735-010	K	2500 pF Pi
56-735-025	N	375 pF C
56-735-034	L	500 pF C



€ **Also available through API's authorized European distributors/agents.**
* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

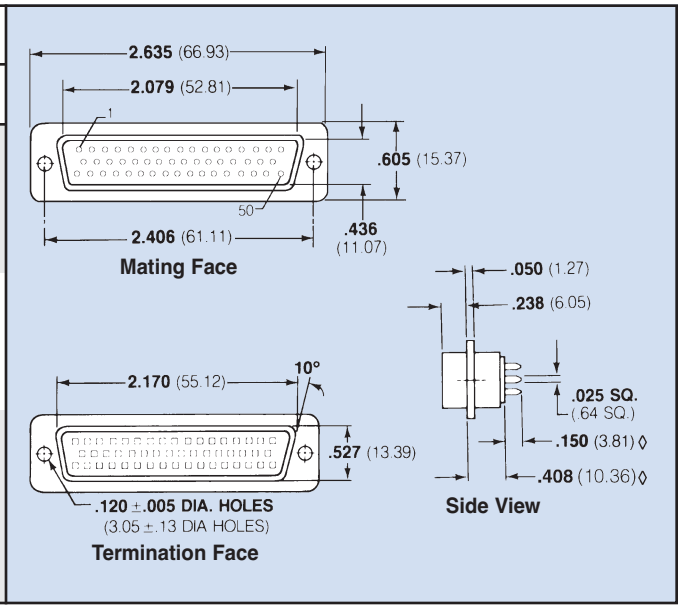
API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

api technologies corp.
Spectrum Control

50 Shell Size Series 700 Pin Contact

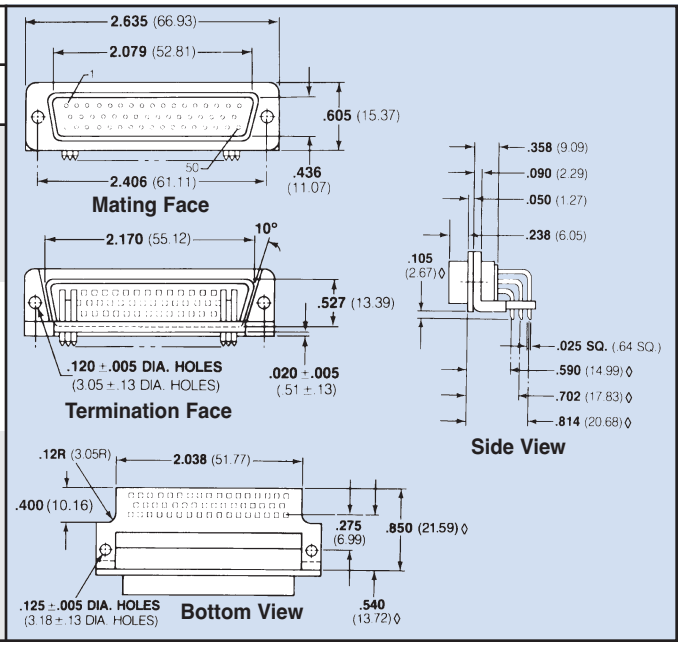
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-741-001	A	310 pF Pi
56-741-002	B	1000 pF C
56-741-003	C	1000 pF Pi
56-741-004	D	5000 pF C
56-741-005	E	4000 pF Pi
56-741-027	F	830 pF C
56-741-028	J	100 pF Pi
56-741-029	K	2500 pF Pi
56-741-042	N	375 pF C
56-741-066	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-742-001	A	310 pF Pi
56-742-002	B	1000 pF C
56-742-003	C	1000 pF Pi
56-742-004	D	5000 pF C
56-742-005	E	4000 pF Pi
56-742-006	F	830 pF C
56-742-007	J	100 pF Pi
56-742-008	K	2500 pF Pi
56-742-009	N	375 pF C
56-742-022	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

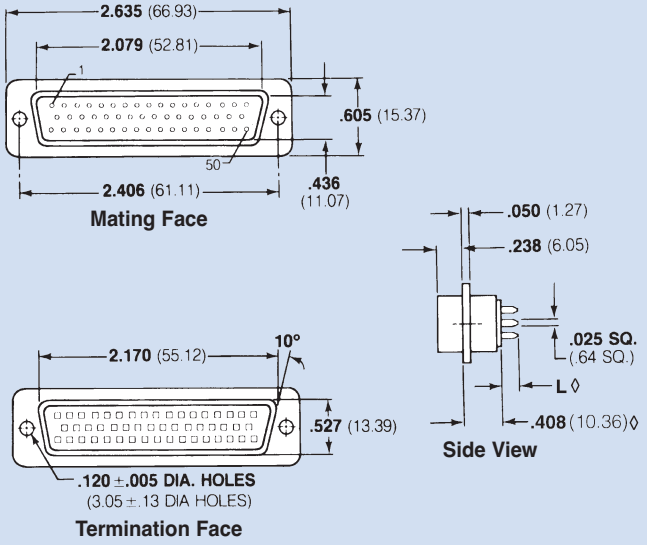
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

50 Shell Size Series 700 Pin Contact

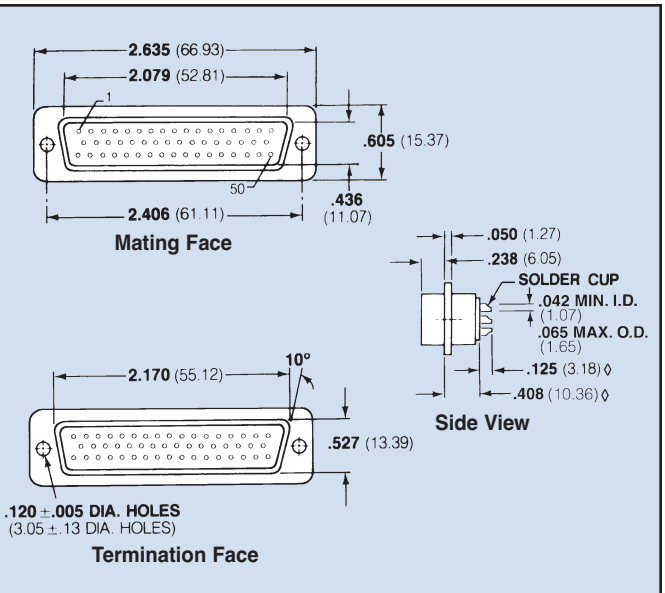
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-741	-006	-022	-017	A	310 pF Pi
56-741	-007	-023	-018	B	1000 pF C
56-741	-008	-024	-019	C	1000 pF Pi
56-741	-009	-025	-020	D	5000 pF C
56-741	-010	-026	-021	E	4000 pF Pi
56-741	-036	-033	-030	F	830 pF C
56-741	-037	-034	-031	J	100 pF Pi
56-741	-038	-035	-032	K	2500 pF Pi
56-741	-045	-044	-043	N	375 pF C



Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-741-011	A	310 pF Pi
* 56-741-012	B	1000 pF C
* 56-741-013	C	1000 pF Pi
* 56-741-014	D	5000 pF C
* 56-741-015	E	4000 pF Pi
56-741-039	F	830 pF C
56-741-040	J	100 pF Pi
56-741-041	K	2500 pF Pi
56-741-063	N	375 pF C
56-741-067	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

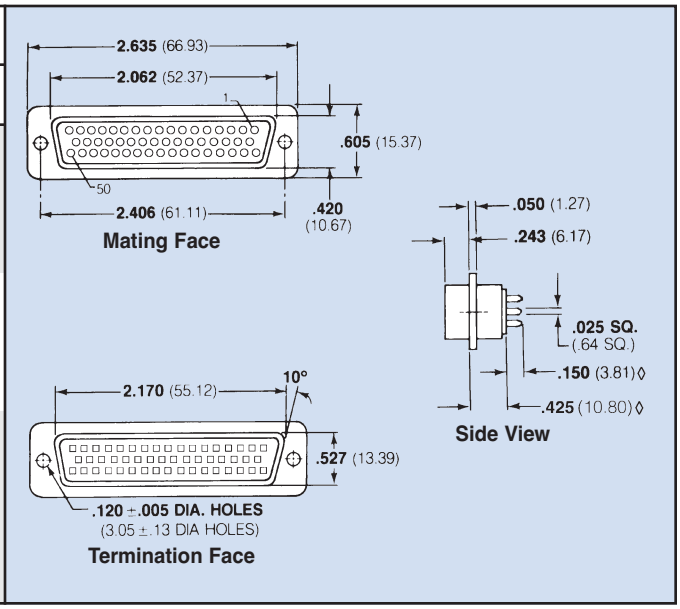
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

50 Shell Size Series 700 Socket Contact

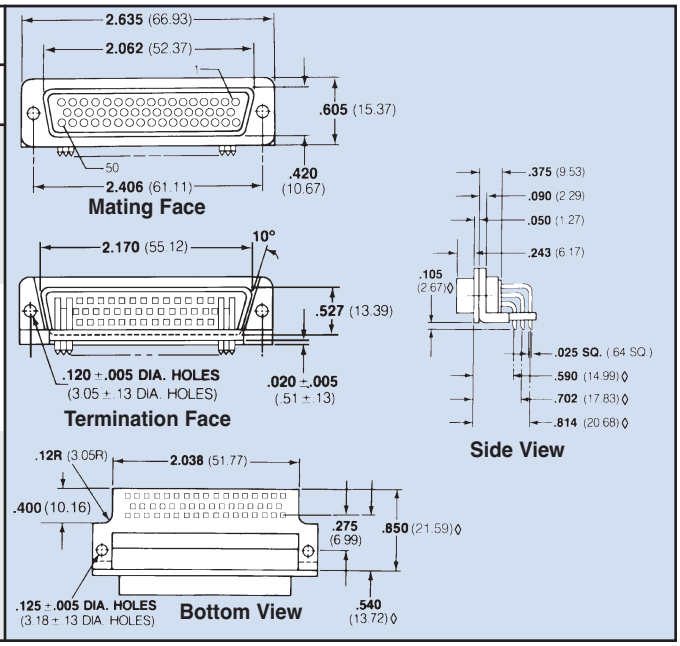
Printed Circuit Board Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-743-001	A	310 pF Pi
56-743-002	B	1000 pF C
56-743-003	C	1000 pF Pi
56-743-004	D	5000 pF C
56-743-005	E	4000 pF Pi
56-743-021	F	830 pF C
56-743-022	J	100 pF Pi
56-743-023	K	2500 pF Pi
56-743-033	N	375 pF C
56-743-043	L	500 pF C



Printed Circuit Board Right Angle Mount

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-744-001	A	310 pF Pi
56-744-002	B	1000 pF C
56-744-003	C	1000 pF Pi
56-744-004	D	5000 pF C
56-744-005	E	4000 pF Pi
56-744-006	F	830 pF C
56-744-007	J	100 pF Pi
56-744-008	K	2500 pF Pi
56-744-009	N	375 pF C
56-744-012	L	500 pF C



* **May be available from distributor stock.**
** **See page FC20 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

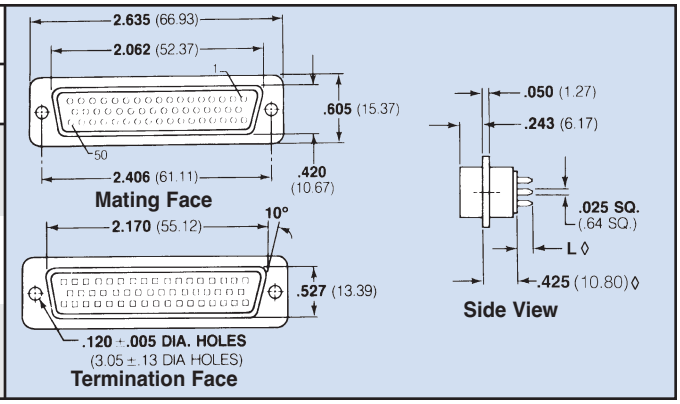
Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

50 Shell Size Series 700 Socket Contact & Pin/Socket Adapter

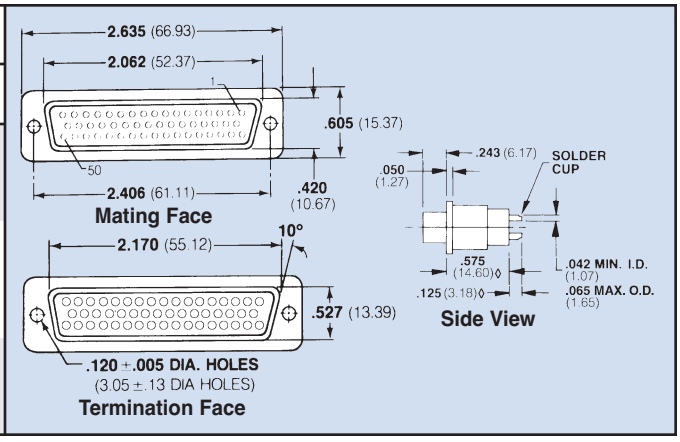
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
56-743	-006	-016	-011	A	310 pF Pi
56-743	-007	-017	-012	B	1000 pF C
56-743	-008	-018	-013	C	1000 pF Pi
56-743	-009	-019	-014	D	5000 pF C
56-743	-010	-020	-015	E	4000 pF Pi
56-743	-030	-027	-024	F	830 pF C
56-743	-031	-028	-025	J	100 pF Pi
56-743	-032	-029	-026	K	2500 pF Pi
56-743	-036	-035	-034	N	375 pF C



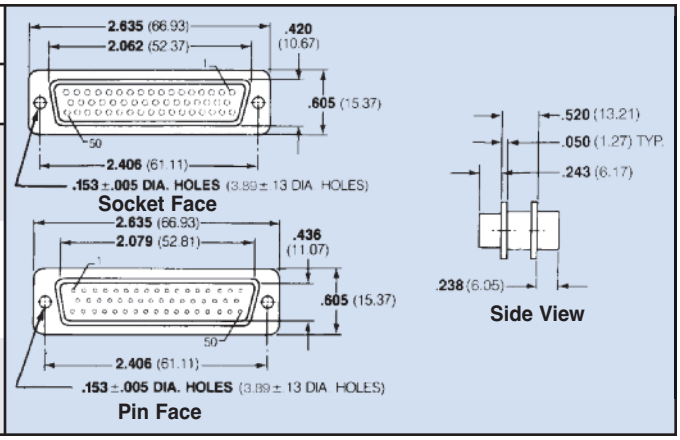
Solder Cup Termination

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
56-746-001	A	310 pF Pi
56-746-002	B	1000 pF C
56-746-003	C	1000 pF Pi
56-746-004	D	5000 pF C
56-746-005	E	4000 pF Pi
56-746-006	F	830 pF C
56-746-007	J	100 pF Pi
56-746-008	K	2500 pF Pi
56-746-009	N	375 pF C
56-746-018	L	500 pF C



Pin/Socket Adapter

Spectrum Part Number	EMI Filter	
	Filter Designation**	Cap. Value
* 56-745-001	A	310 pF Pi
56-745-002	B	1000 pF C
* 56-745-003	C	1000 pF Pi
56-745-004	D	5000 pF C
* 56-745-005	E	4000 pF Pi
56-745-006	F	830 pF C
56-745-007	J	100 pF Pi
56-745-008	K	2500 pF Pi
56-745-019	N	375 pF C
56-745-027	L	500 pF C



* May be available from distributor stock.
** See page FC20 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

D-Subminiature Part Numbering System

Ordering Information

Example: **56-513-012-TI**

56 - 5 1 3 - 0 12 - TI

Filtered D-Subminiature Connectors

- Standard connector
F - RoHS compliant version

Product Series

4 = Series F Ferrite
5 = Series 500 Low Profile
6 = Series 600 Hi-Density
7 = Series 700 High Performance

Shell Size

Series 400 & Series 500
0 = 9 Contacts
1 = 15 Contacts
2 = 25 Contacts
3 = 37 Contacts

Series 600 Hi-Density
0 = 15 Contacts
1 = 26 Contacts
2 = 44 Contacts
3 = 62 Contacts
4 = 78 Contacts

Series 700
0 = 9 Contacts
1 = 15 Contacts
2 = 25 Contacts
3 = 37 Contacts
4 = 50 Contacts

Contact Type/Termination

1 = Pin to solder cup
2 = Pin to 90° PCB mount
3 = Socket to straight PCB mount
4 = Socket to 90° PCB mount
5 = Pin-socket adapter
6 = Socket to solder cup
7 = Pin to straight PCB mount

Styles available for:
Series 400 only 2, 3, 4, 7
Series 500 only 2, 3, 4 & 7
Series 600 only 1, 2, 3, 4, 5
Series 700 1 thru 7

Note: 1 can be Pin to solder cup or Pin to PCB for Series 700. See charts pages FC22-FC41.

Line Filtering

0 = All positions same
9 = Special loading (Series 600 only)

Capacitance Value

Series 400
01 = Always

Series 500
10 = 120 pF
11 = 440 pF
12 = 840 pF
13 = 1000 pF
14 = 1500 pF

Series 600
15 = 85 pF FT
16 = 180 pF FT
18 = 1000 pF FT
19 = 4000 pF FT
20 = Insulated contact

Series 700
See filter specification chart on page FC20 and select part numbers from Series 700 charts pages FC22-FC41.

Options

See options descriptions on page FC43 add suffix ending

Series F
HD =Hi-Density (15 socket only)

Series 500
TI = 4-40 threads on mounting flange (.125" hole if not selected)
GBL = Grounded board lock includes 4-40 threads (available only on 90° PCB)
GBLF = Grounded board lock and ferrite slab provides enhanced LC performance. (Available only on 90° PCB)

Series 600 Hi-Density
LI = 4-40 UNC inserts
S = Solder dipped tails
50G = 50 µ *(1.27 µm)* gold
GBL = Ground board lock

Series 700
LI = 4-40 UNC inserts
LIM = Metric M3.0 self-locking threads
GB = Metal bracket provides ground connection, includes 4-40 self-locking threads (for right angle mount only)
GBL = Grounded board lock (right angle)
GBL6 = for .062" boards (straight PCB mount) (1.57mm)
GBL9 = for .093" boards (straight PCB mount (2.36mm)
50G = 50 µ *(1.27 µm)* gold plating
S = Solder dipped tails
JS = Jackscrew mounting

For option combinations, consult factory.

To assist your efforts in selecting the correct Filtered Connector to meet your needs, we have developed a part numbering system. All of the standard products are shown in their respective catalog pages.

*Part number **56-513-012-TI** represents a Series 500 connector with 15 contacts in a socket to straight PCB mount configuration. All connector positions have a capacitance value of 840 pF and there are 4-40 threads on mounting flange.*

api technologies corp.
Spectrum Control

D-Subminiature Connector Options

Threaded Inserts

Available on Series 500, 600 & 700

- #4-40 UNC or metric M3.0 threaded inserts in mounting flanges
- Allows ease of panel-assembly
- Plated steel inserts with last thread upset for torque

Grounding Bracket

For right angle mount PCB connectors, available on Series 700

- Metal bracket in place of plastic
- Provides ground connection direct from circuit board
- Allows shell grounding to board
- Includes 4-40 threads

Stand-off with Board Lock Feature

For straight PCB connectors, available on Series 700

- Allows shell grounding to board
- Eliminates stress on filter terminations
- Tin plated brass stand-off with snap-in feature
- Available for .062" (1.57mm) or .093" (2.36mm) thick boards

Grounding Bracket with Board Lock

For right angle mount PCB connectors, available on Series 500 & 700

- Metal bracket provides grounding
- Snap-in, no hardware needed, 4-40 threads included
- For use on .062" (1.57mm) thick boards

Gold Plating

Available on Series 600 & 700

- High reliability applications, 50µ" (1.27 µm) gold over 50µ" (1.27 µm) nickel

Solder Dipped Tails

Available on Series 600 & 700 connectors

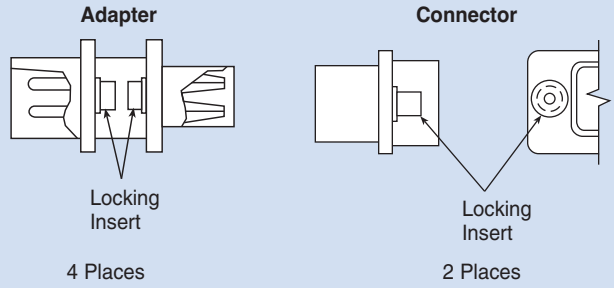
- Solder dipped tails added to standard gold flash

Water Block

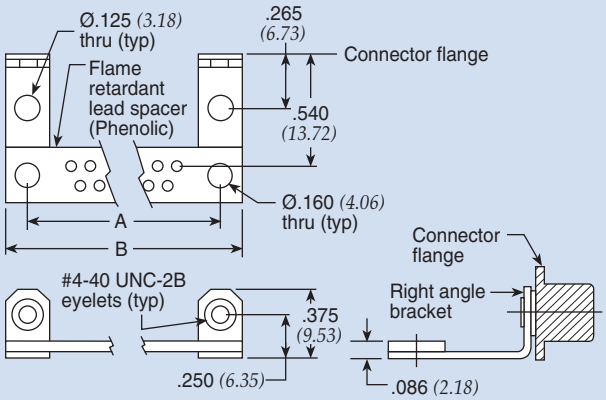
Consult API engineers for specifics.

- Internally sealed in accordance with NEMA Standard Rain Test section 6.4 (also UL50 part 28 ram test for submersion, section 6.10.1)

Threaded Inserts

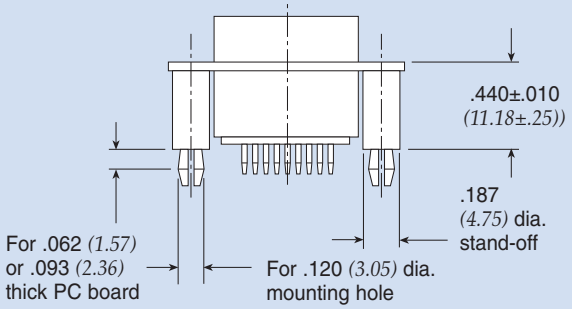


Grounding Brackets

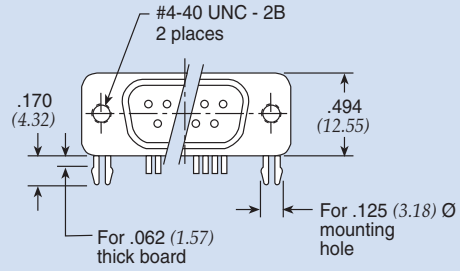


Size	A		B	
9	.984	(24.99)	1.214	(30.84)
15	1.312	(33.32)	1.542	(39.17)
25	1.852	(47.04)	2.088	(53.04)
37	2.500	(63.50)	2.730	(69.34)

Stand-off with Board Lock



Grounding Bracket with Board Lock
(see above for grounding bracket details)



Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

Filtered Combo D-Subminiature Connectors

API's Spectrum Control line of filtered combo D-subs provide high insertion loss with capacitive filtering. These connectors are available with 20 Amp power contacts or 40 Amp power contacts. Configurations include male and female versions with straight PC terminals, right angle PC terminals or solder cup terminals. Standard D-sub shell sizes provide intermateability with unfiltered connectors. High strength epoxy potting protects ceramic elements.

Capacitive filtering is available in 470, 820, 1000 and 1500 pF. Additional capacitance ranges and configurations can be provided upon request. Please consult factory for more information.

Applications

- Telecommunications base station equipment
- Switching and transmission equipment
- Power supplies
- Industrial equipment
- Computer work stations

Mechanical Specifications

Shell . . . . . Steel, tin plated

Power Contacts . . . . . Brass, gold plated .000030 in. *(0.762 µm)* minimum

Signal Contacts . . . . . Pin: brass, gold plated .000015 in. *(0.762 µm)* min. Socket: copper alloy, gold plated .000030 in. *(0.762 µm)* min.

Insulator . . . . . Glass-filled polyester, flammability UL94V-0

Operating Temperature . . . . -55°C to +125°C

Capacitors . . . . . MLCC

Electrical Specifications

Operating Voltage . . . . . 200 VDC

*Current Rating** . . . . . 40 Amp power/ 5 Amp signal

Insulation Resistance . . . . . 1 Gohm at 100 VDC

Capacitance . . . . . See below for MLCC values. For other capacitance values contact factory.

Dielectric Withstanding Voltage . . . . . 600 VDC

***30 Amp available. Consult factory.**

Ordering Information

Example: **563A03W3101GBL9**

56	*	3	A	03W3	101	GBL9

A: Pin - PCB Power
B: Pin - Right Angle Power
C: Pin - Solder Cup Power
G: Socket - PCB Power
H: Socket - Right Angle Power
J: Socket - Solder Cup Power
N: Custom Combination

* Insert "F" for RoHS compliant

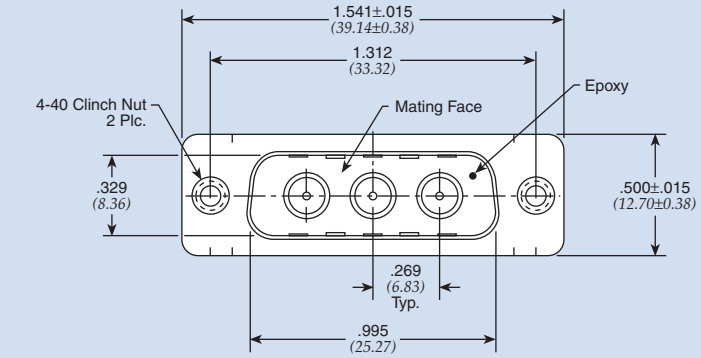
Contact Arrangement
03W3 = 3W3
05W5 = 5W5
09W4 = 9W4
24W7 = 24W7

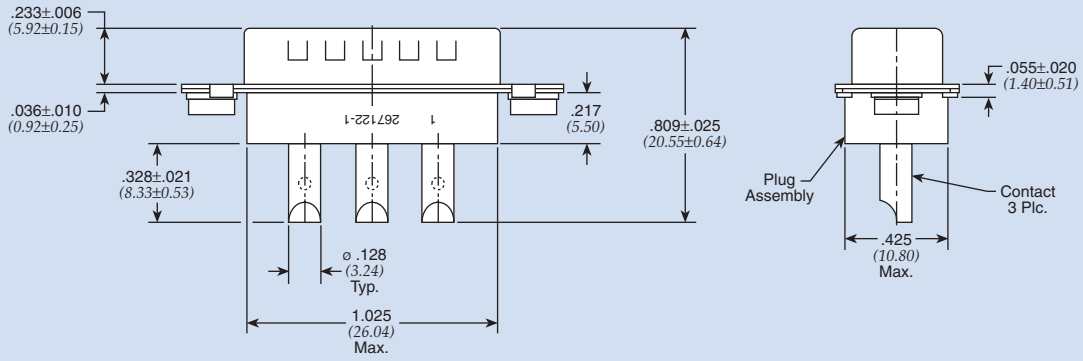
Capacitance Value
MLCC
201 = 470 pF
202 = 820 pF
203 = 1000 pF
204 = 1500 pF

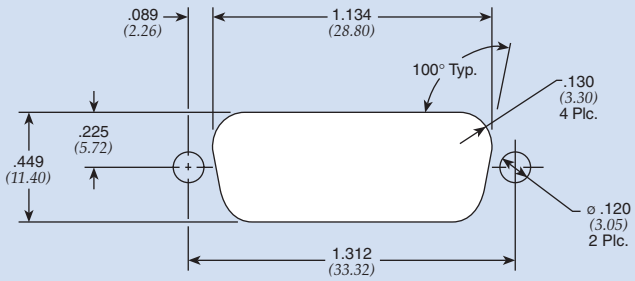
Options
See options descriptions on page FC43 add suffix ending
LI = 4-40 UNC inserts
LIM = Metric M3.0 self-locking threads
GB = Metal bracket provides ground connection, includes 4-40 self-locking threads (for right angle mount only)
GBL = Grounded board lock (right angle)
GBL6 = for .062" boards (straight PCB mount)
GBL9 = for .093" boards (straight PCB mount
50G = 50 µ *(1.27 µm)* gold plating
S = Solder dipped tails
JS = Jackscrew mounting
For option combinations, consult factory.

Filtered Combo D-Subminiature Connectors
3W3

Plug - Solder Cup







Recommended Panel Cutout

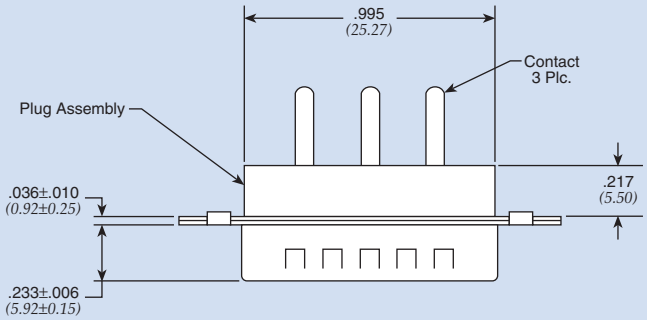
Only represents a few of our available configurations. Consult factory for more information.

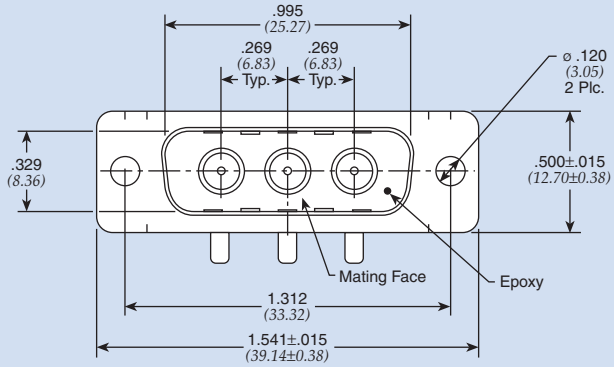
Dimensions in inches *(mm)*

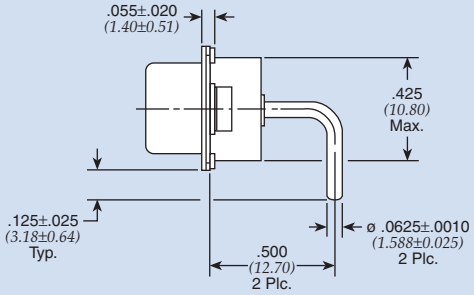
api technologies corp.
Spectrum Control

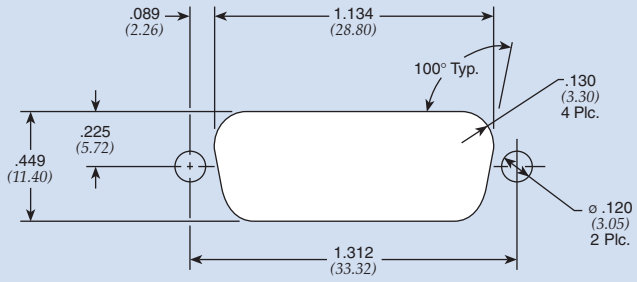
Filtered Combo D-Subminiature Connectors
3W3

Plug - Right Angle

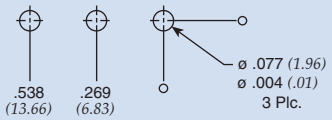








Recommended Panel Cutout



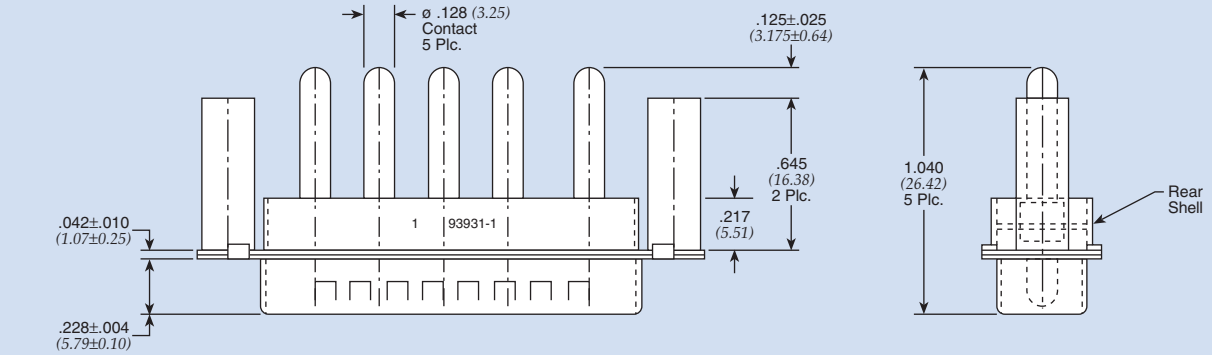
Only represents a few of our available configurations. Consult factory for more information.

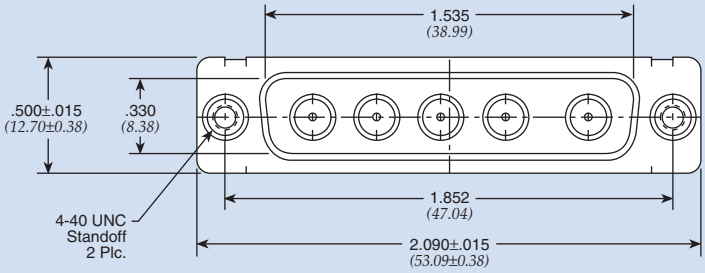
Dimensions in inches *(mm)*

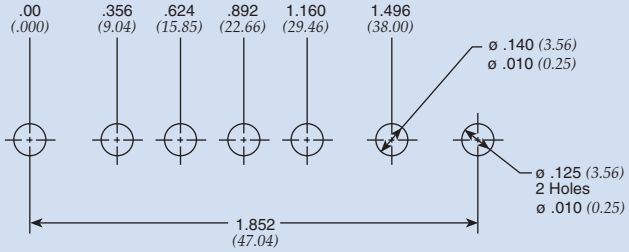
api technologies corp.
Spectrum Control

Filtered Combo D-Subminiature Connectors
5W5

Plug - Vertical







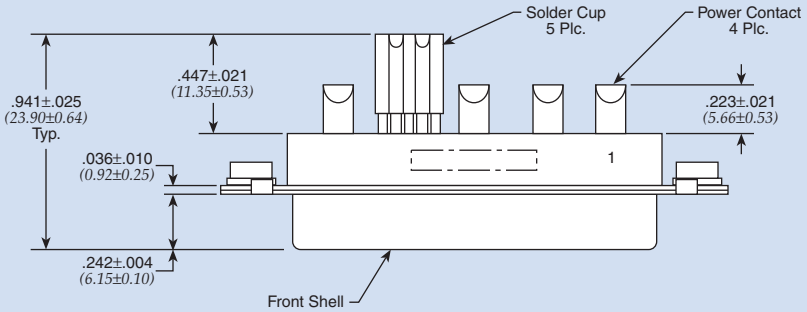
Recommended PCB Layout

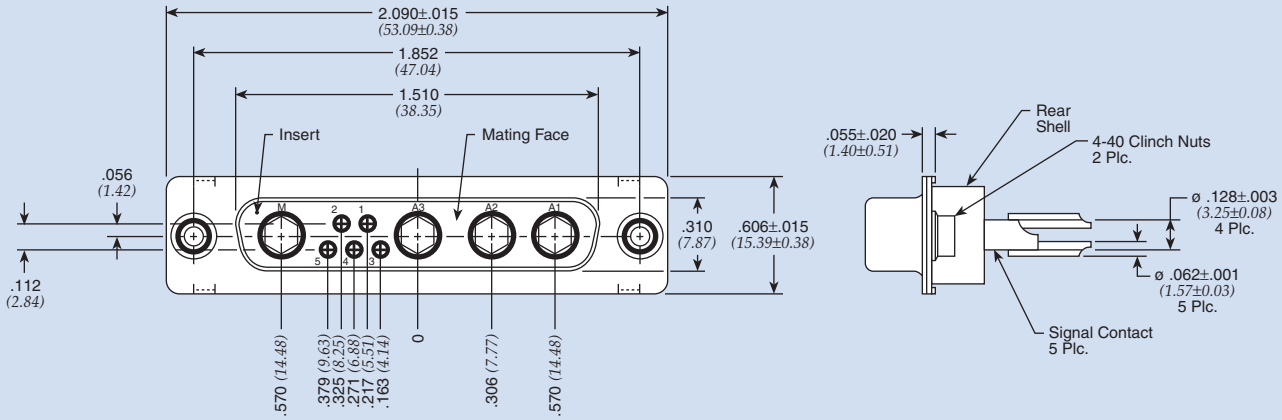
Only represents a few of our available configurations. Consult factory for more information.

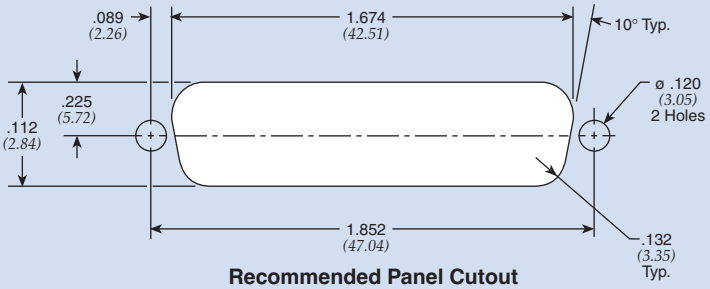
Dimensions in inches *(mm)*

Filtered Combo D-Subminiature Connectors
9W4

Socket - Solder Cup







Recommended Panel Cutout

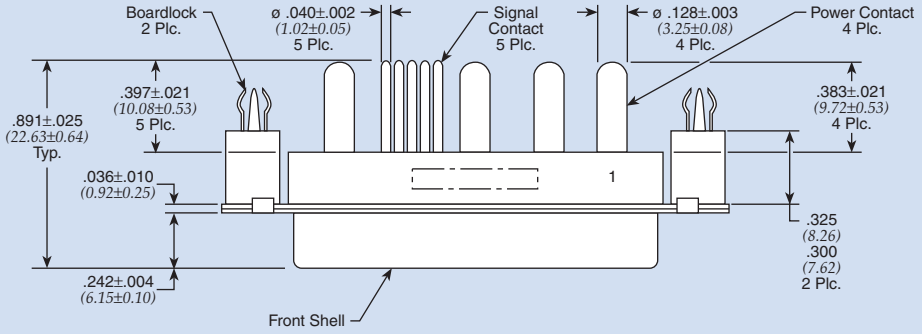
Only represents a few of our available configurations. Consult factory for more information.

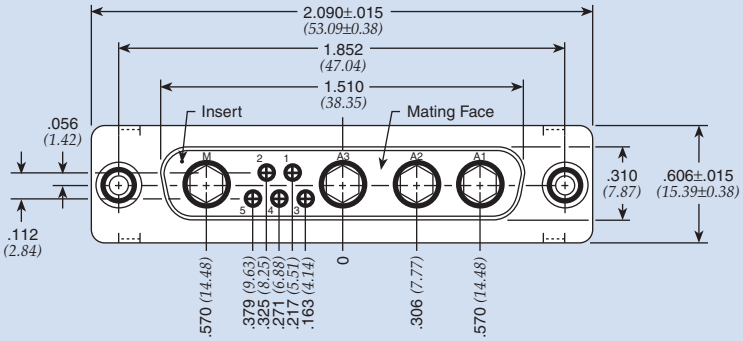
Dimensions in inches *(mm)*

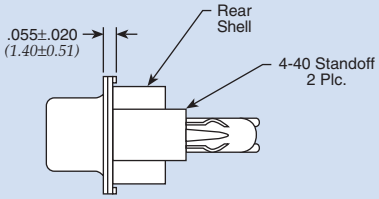
api technologies corp.
Spectrum Control

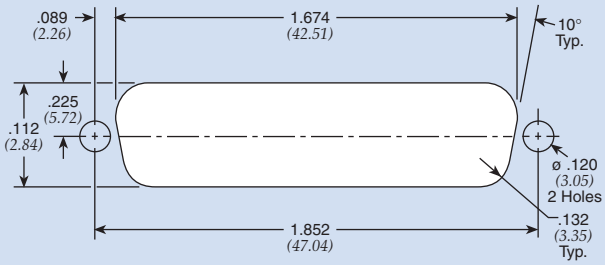
Filtered Combo D-Subminiature Connectors
9W4

Socket - Vertical

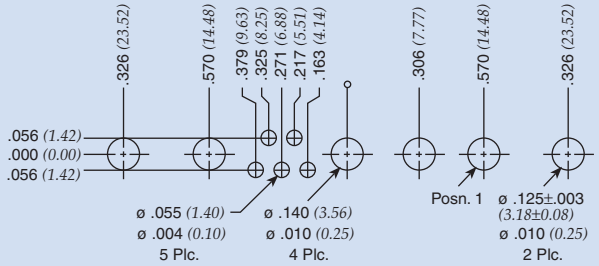








Recommended Panel Cutout



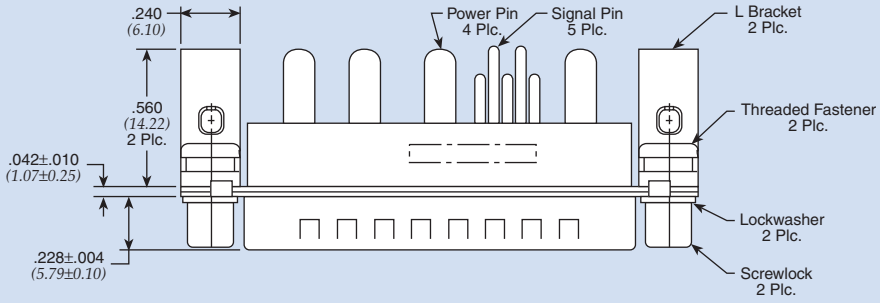
Recommended PC Board Mounting Dimensions

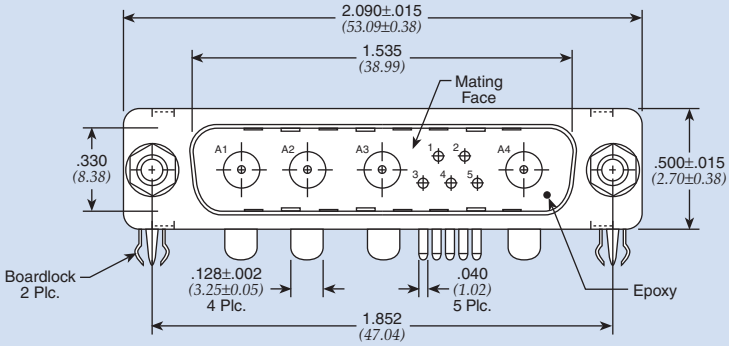
Only represents a few of our available configurations. Consult factory for more information.

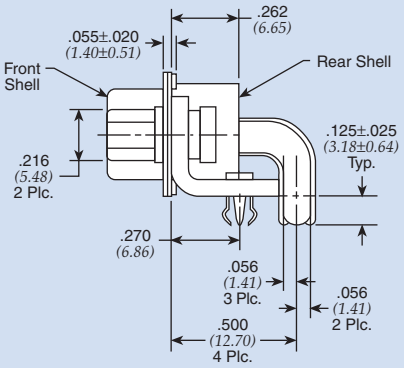
Dimensions in inches *(mm)*

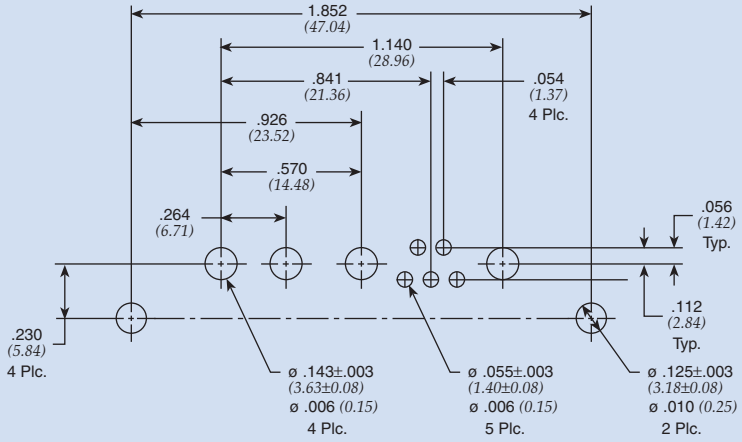
Filtered Combo D-Subminiature Connectors
9W4

Plug - Right Angle









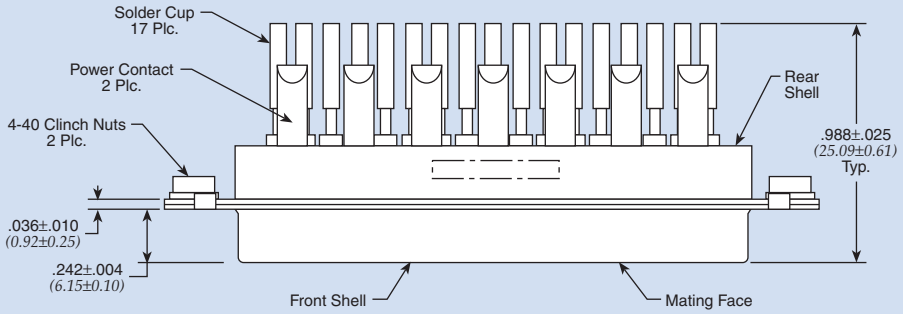
Recommended PC Board Mounting Dimensions

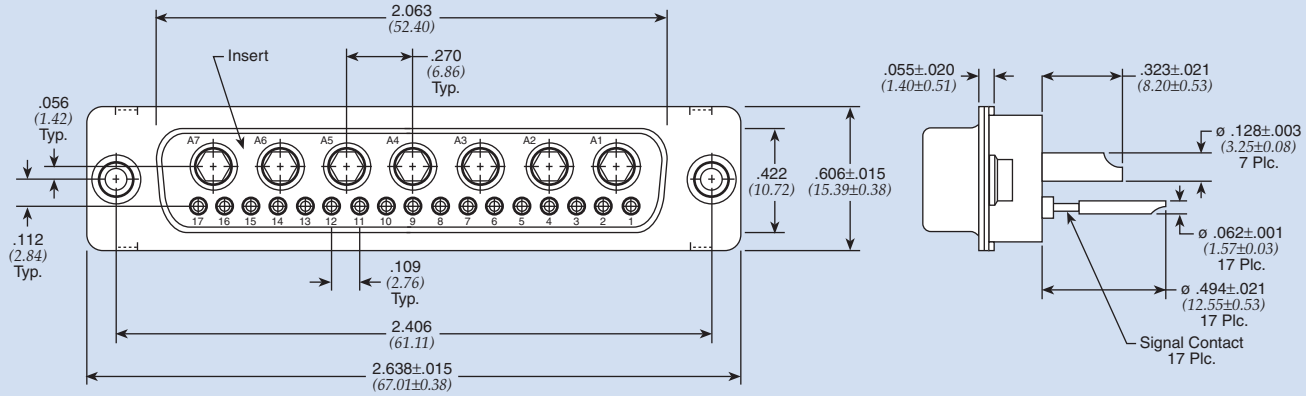
Only represents a few of our available configurations. Consult factory for more information.

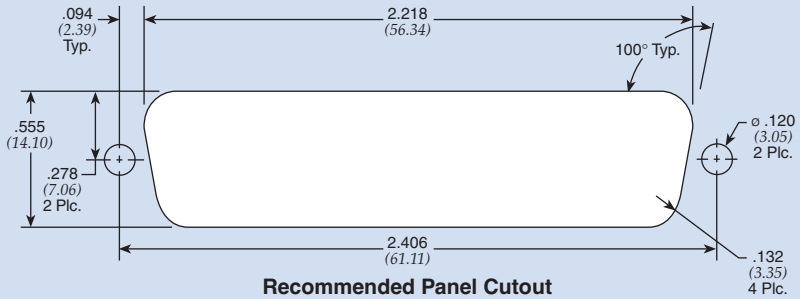
Dimensions in inches *(mm)*

Filtered Combo D-Subminiature Connectors
24W7

Socket - Solder Cup







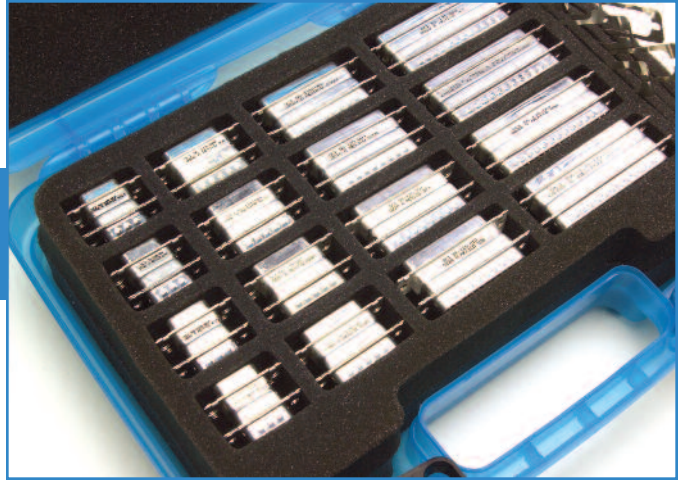
Recommended Panel Cutout

Only represents a few of our available configurations. Consult factory for more information.

Dimensions in inches *(mm)*

api technologies corp.
Spectrum Control

D-Subminiature Adapter Test Kit & Hardware



Adapter Test Kit

Adapter Test Kit

Specially designed for EMI evaluation process

- Male/female adapter part
- Easily plugged into equipment under testing conditions
- Ideal for new products and retrofitting
- Each adapter test kit includes:
  - 20 filtered adapters
  - Four shell sizes 9, 15, 25 and 37
  - Four filter ranges:

    Series 700

    - 310 pF Pi
    - 830 pF FT
    - 1000 pF Pi
    - 4000 pF Pi

Ordering Information

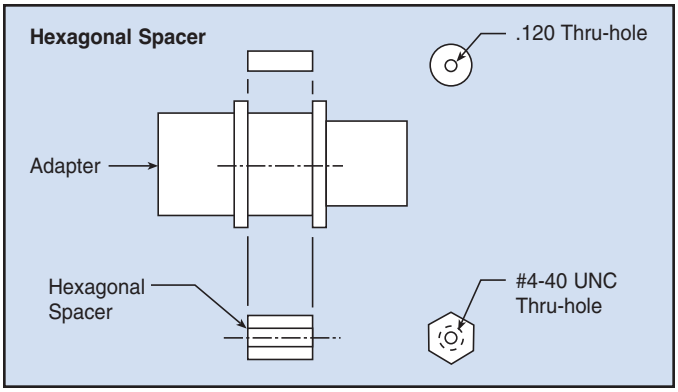
Description	API Part Number
Adapter test kit	56-700-002
Adapter test kit with Jackscrew *Includes 40 pcs. 56-201-006*	56-700-002-JS
Hexagonal Spacer	56-201-001 (1 per)
Jackscrew Mounting Hardware *For .312" (7.92 mm) length*	56-201-004 (1 per)
Jackscrew Mounting Hardware *For .688" (17.47 mm) length*	56-201-006 (2 per)
Tubular Spacer	56-201-003 (1 per)

Hardware

Designed to provide simple and effective mounting

Hexagonal Spacer

- Tapped spacer fits between flanges
- Provide retrofit of 4-40" threads
- Two spacers per adapter required, packaged in bulk



Jackscrew Mounting Hardware

- Male/female jackscrews
- Standard 4-40 threads for compatibility
- Two male thread lengths available
- Two screws per adapter required
- Lockwasher included, packaged in bulk

api technologies corp.
Spectrum Control

Micro D Series
Filtered Connectors

For designs that require even smaller connector packages, API's Spectrum Control brand has designed a line of filtered Micro D-Subminiature connectors. This line of connectors offers a range of reliable filtering options, including capacitive and ESD versions, and several sizes and termination options. API has a Micro D-sub connector to satisfy your smallest space constraints.

Features

- Light weight
- Compact size
- Environmentally sealed contact area when mated
- Corrosion resistant
- Durable (500 cycles min.)
- Superior electrical performance
- RoHS compliant

Mechanical Specifications

Shell . . . . . Aluminum, electroless nickel plated 500 µ in (12.7 µm) minimum

Insulator . . . . . High temperature plastic, flammability UL94V-0

Contacts . . . . . Copper alloy, gold plated 50 µ in (1.27 µm) minimum

Potting . . . . . Flammability UL94V-0

Interfacial Seal . . . . . Silicon

Electrical Specifications

Operating Voltage . . . . . 100 VDC

Dielectric Withstanding Voltage . . . 300 VDC

Current Rating . . . . . 3 Amps

Insulation Resistance . . . 5G ohms @ 100 VDC

Ordering Information

Example: **56-F011-110-JP**

This part number represents a micro D-sub connector with a shell size of 15 and a pin to solder cup configuration. All lines are filtered with same capacitance value, which is 100 pF COB. The connector includes an optional #2-56 jack post.

56 F 0 1 1 - 1 10 - JP

56 – Filtered Connectors

F 0 – RoHS Compliant, Micro D

1 – Shell Size/Number of Contacts
- **0 -** 9 contacts
- **1 -** 15 contacts
- **2 -** 21 contacts
- **3 -** 25 contacts
- **4 -** 31 contacts
- **5 -** 37 contacts

1 – Contact Type/Termination
- **1 -** Pin to solder cup
- **2 -** Pin to right angle*
- **3 -** Socket to PC tail*
- **4 -** Socket to right angle*
- **6 -** Socket to solder cup
- **7 -** Pin to PC tail*
- **8 -** Pin to pigtail
- **9 -** Socket to pigtail

1 – Line Filtering
- **1 -** All positions same
- **2 -** Select load

10 – Capacitance Value/Type

High Performance
- **01 -** 100 pF FT
- **02 -** 470 pF FT
- **03 -** 820 pF FT
- **04 -** 1500 pF FT
- **05 -** 4700 pF FT

Standard Performance
- **10 -** 100 pF COB
- **11 -** 470 pF COB
- **12 -** 820 pF COB
- **13 -** 1500 pF COB
- **14 -** 4700 pF COB

JP – Options
- **JP -** #2-56 jack post
- **JS -** #2-56 jackscrew
- **TI -** Threaded insert
- **JT -** Jack post and threaded insert
- **GB -** Grounding Bracket

** Right angle and PC tail length is 0.109. Other lengths available, consult factory.*

All capacitance values ±20% @ 25°C

api technologies corp.
Spectrum Control

Micro D Series Filtered Connectors

High Performance

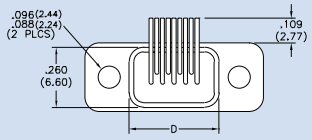
Filter Designation	Type	Capacitance		Dielectric Withstanding Voltage	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB) 50 ohm system per MIL-STD-220 (no load)							
		Value	Tolerance			5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz
01	FT	100 pF	±20%	300V	100V	—	—	—	—	1	6	14	20
02	FT	470 pF	±20%	300V	100V	—	—	2	8	14	20	28	34
03	FT	820 pF	±20%	300V	100V	—	2	6	13	19	25	33	39
04	FT	1500 pF	±20%	300V	100V	—	5	10	18	24	30	38	44
05	FT	4700 pF	±20%	300V	100V	8	14	20	28	34	40	48	54

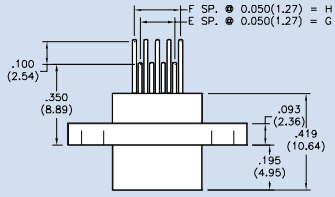
Standard Performance

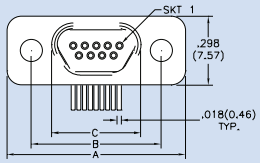
Filter Designation	Type	Capacitance		Dielectric Withstanding Voltage	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB) 50 ohm system per MIL-STD-220 (no load)							
		Value	Tolerance			5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz
10	COB	100 pF	±20%	300V	100V	—	—	—	—	1	6	14	20
11	COB	470 pF	±20%	300V	100V	—	—	2	8	14	20	28	32
12	COB	820 pF	±20%	300V	100V	—	2	6	13	19	25	32	32
13	COB	1500 pF	±20%	300V	100V	—	5	10	18	24	30	32	32
14	COB	4700 pF	±20%	300V	100V	8	14	20	28	32	32	32	32

Right Angle PCB

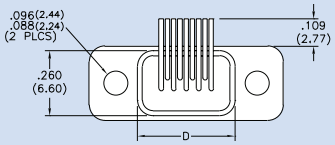
Receptacle

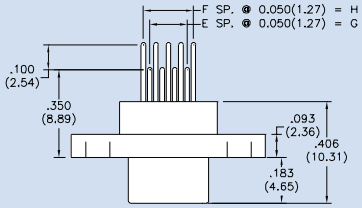


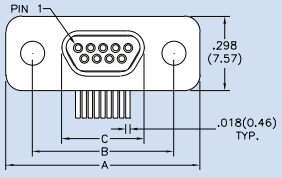




Plug







Size	A	B	C (RCPT)	C (Plug)	D	E	F	G	H
9	.775 *(19.69)*	.565 *(14.35)*	.388 *(9.86)*	.330 *(8.38)*	.390 *(9.91)*	4	5	.200 *(5.08)*	.250 *(6.35)*
15	.925 *(23.50)*	.715 *(18.16)*	.538 *(13.67)*	.480 *(12.19)*	.540 *(13.72)*	7	8	.350 *(8.89)*	.400 *(10.16)*
21	1.075 *(27.31)*	.865 *(21.97)*	.688 *(17.48)*	.630 *(16.00)*	.690 *(17.53)*	10	11	.500 *(12.70)*	.550 *(13.97)*
25	1.175 *(29.85)*	.965 *(24.51)*	.788 *(20.02)*	.730 *(18.54)*	.790 *(20.07)*	12	13	.600 *(15.24)*	.650 *(16.51)*
31	1.325 *(33.66)*	1.115 *(28.32)*	.938 *(23.83)*	.880 *(22.35)*	.940 *(23.88)*	15	16	.750 *(19.05)*	.800 *(20.32)*
37	1.475 *(37.47)*	1.265 *(32.13)*	1.088 *(27.64)*	1.030 *(26.16)*	.1.090 *(27.69)*	18	19	.900 *(22.86)*	.950 *(24.13)*

Dimensions in inches *(mm)*

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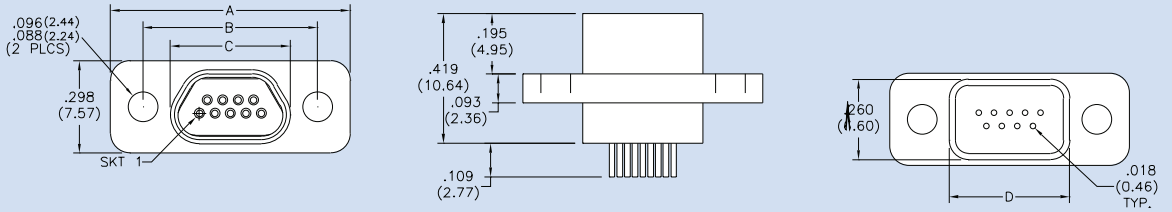
Micro D Series
Filtered Connectors

Size	A	B	C (RCPT)	C (Plug)	D
9	.775 *(19.69)*	.565 *(14.35)*	.388 *(9.86)*	.330 *(8.38)*	.390 *(9.91)*
15	.925 *(23.50)*	.715 *(18.16)*	.538 *(13.67)*	.480 *(12.19)*	.540 *(13.72)*
21	1.075 *(27.31)*	.865 *(21.97)*	.688 *(17.48)*	.630 *(16.00)*	.690 *(17.53)*
25	1.175 *(29.85)*	.965 *(24.51)*	.788 *(20.02)*	.730 *(18.54)*	.790 *(20.07)*
31	1.325 *(33.66)*	1.115 *(28.32)*	.938 *(23.83)*	.880 *(22.35)*	.940 *(23.88)*
37	1.475 *(37.47)*	1.265 *(32.13)*	1.088 *(27.64)*	1.030 *(26.16)*	.1.090 *(27.69)*

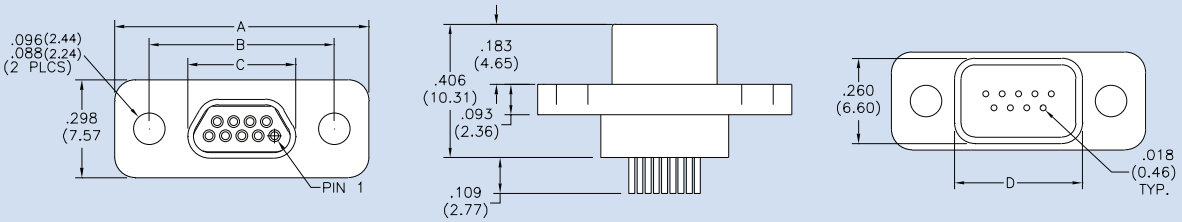
Dimensions in inches *(mm)*

Vertical PCB

Receptacle

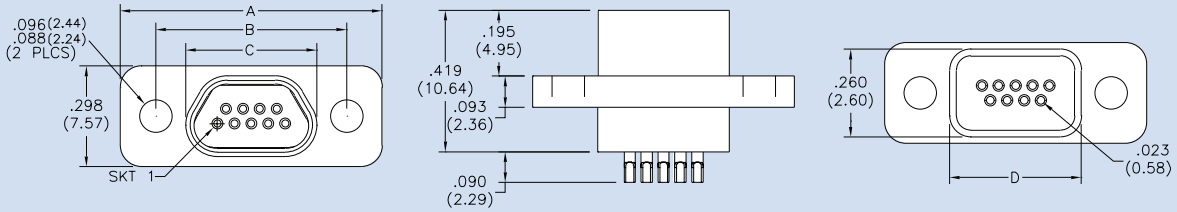


Plug

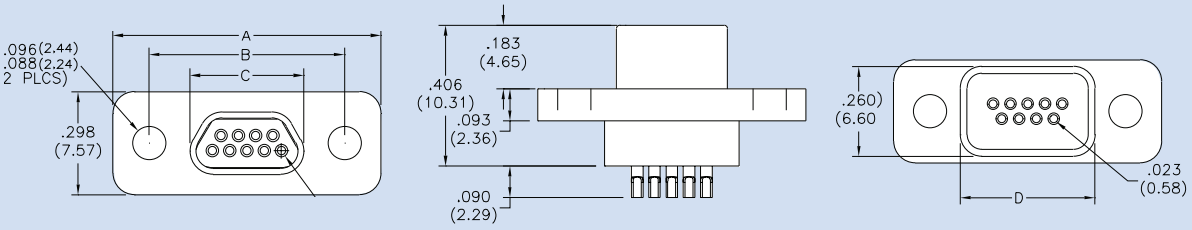


Solder Cup

Receptacle



Plug



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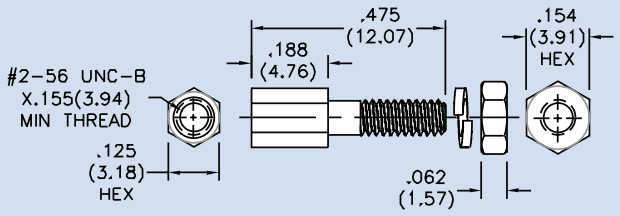
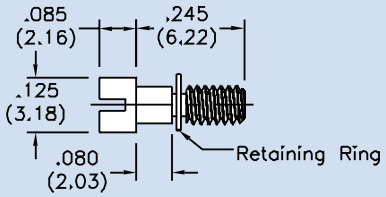
Micro D Series Filtered Connectors
Options

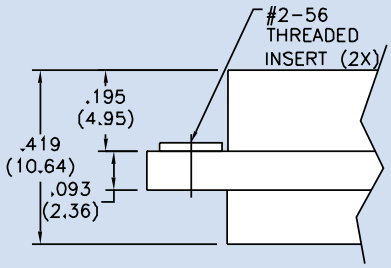
JP - #2-56 Jack Post M83513/05-07



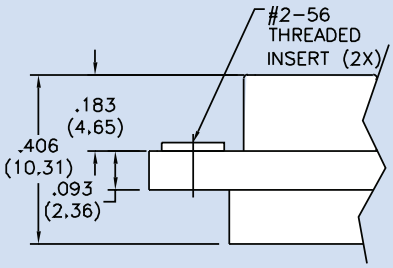
JS - #2-56 Jack Screw M83513/05-05



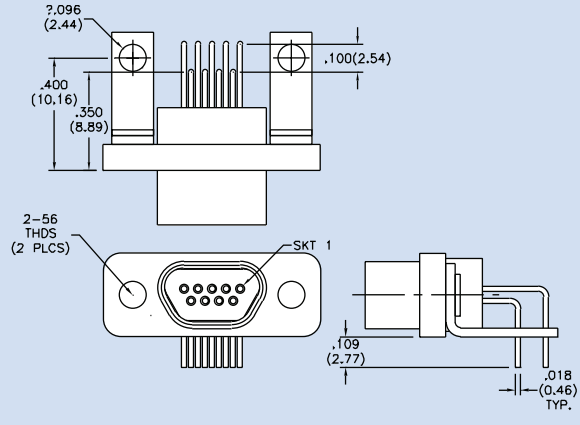
TI - Threaded Insert Receptacle



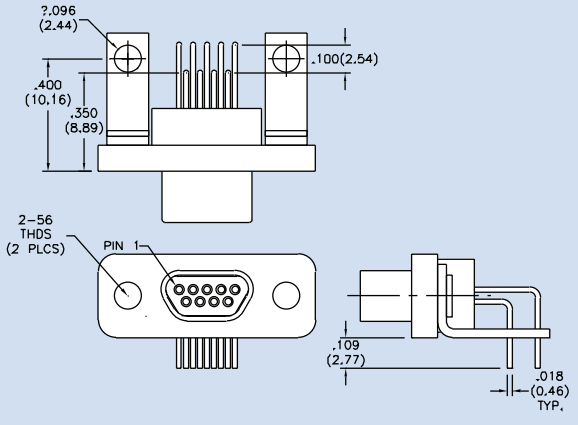
TI - Threaded Insert Plug



GB - Ground Bracket Receptacle



GB - Ground Bracket Plug



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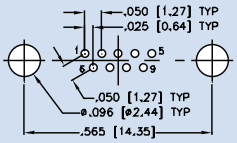
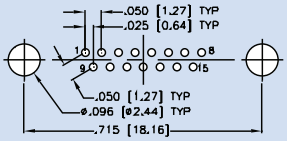
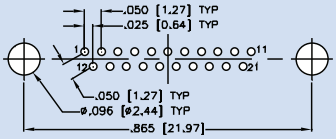
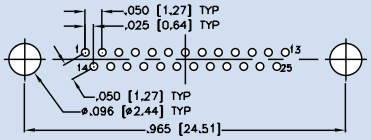
Micro D Series Filtered Connectors
Board and Panel Cutouts

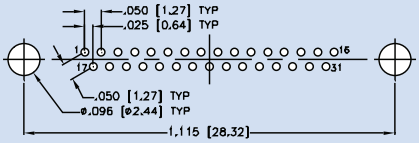
Vertical PCB Layouts
Pin Connector Shown

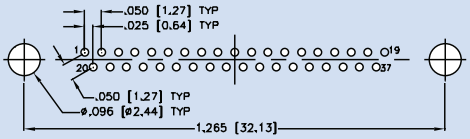
9 Contacts


15 Contacts


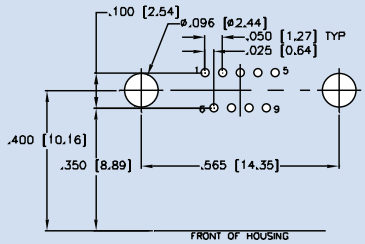
21 Contacts


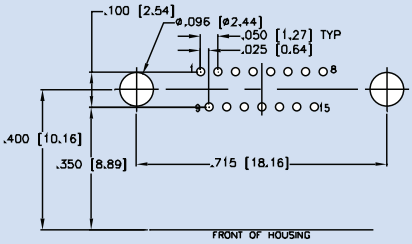
25 Contacts


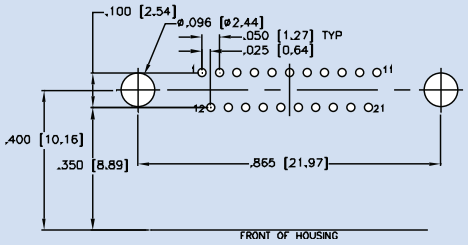
31 Contacts


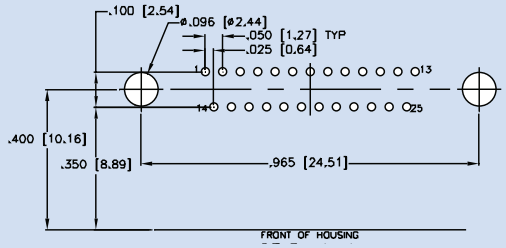
37 Contacts


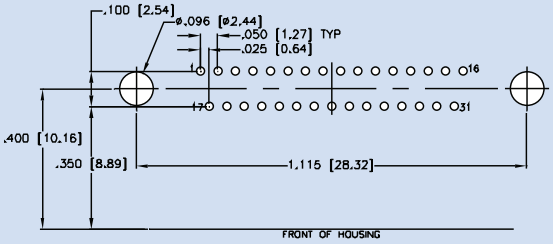
Right Angle PCB Layouts
Pin Connector Shown

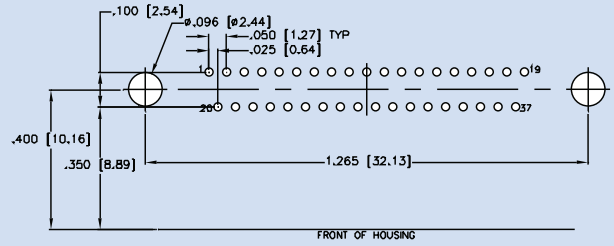
9 Contacts


15 Contacts


21 Contacts


25 Contacts


31 Contacts


37 Contacts


Notes: PC Tail Diameter 0.018 ±0.002 (0.46 ±0.05) Contact numbers shown are pin connector.
Reverse for socket. Patterns shown are for connector mounting side of PC board.

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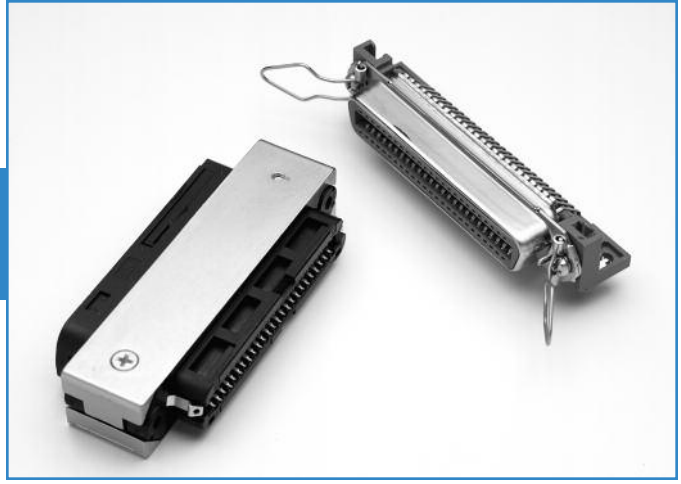
Filtered Miniature Ribbon Connectors



Filtered miniature ribbon connectors are fully intermateable and interchangeable with existing standard product. Rugged design construction and predictable capacitive filter performance is available in right-angle and male/female adapter versions.

Applications for this type of connector are widely diversified and include all phases of the telecommunications industry including original telephone manufacturing, operating telephone companies, cable reclamation, cable manufacturing and bay connectorization. The filtered miniature ribbon connector line is also ideally suited for use in printers, computer terminals, test equipment, business and copying machines, telemetering, and various equipment used in the security industry.

Features

- Lower installed cost
- Assists with FCC Part 15; available for Part 68 requirements
- Applicable for VDE specifications 0871, 0875-0878, Vfg Federal Regulations and VCCI noise requirements
- Drop-in replacement, matched footprint
- All circuit lines filtered
- Connector body is recognized under the Component Recognition Program of Underwriters Laboratories, Inc.
- Plastic components are UL94V-0 rated
- Connector body is certified by Canadian Standard Association

Mechanical Specifications - Adapter

Shell . . . . . Zinc

Thermoplastic Insert . . . . . Black, high strength

Contacts . . . . . Copper alloy

Contact Plating . . . . . 30uin (.76um) (min.) gold over nickel

Mechanical Specifications - Connector

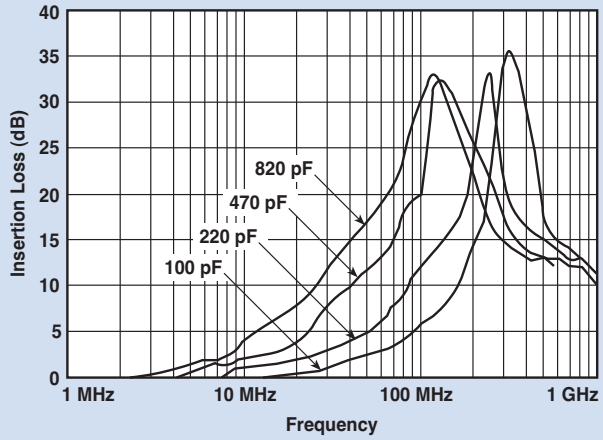
Shell . . . . . Steel, tin plated

Thermoplastic Insert . . . . . Blue, 30% glass filled

Contacts . . . . . Phosphor bronze

Contact Plating . . . . . Gold flash (<10 µ in) over nickel

Typical Insertion Loss



Electrical Specifications

Operating Temperature . . . . . -55°C - 105°C

Dielectric Withstanding Voltage . . . . . 1000 VAC min per (FCC Part 68 test)

Capacitance . . . . . 100 pF, 220 pF, 470 pF, 820 pF, ±15% (adapter), ±20% (connector)

Dissipation Factor . . . . . 2.5% max (adapter) 5% max (connector)

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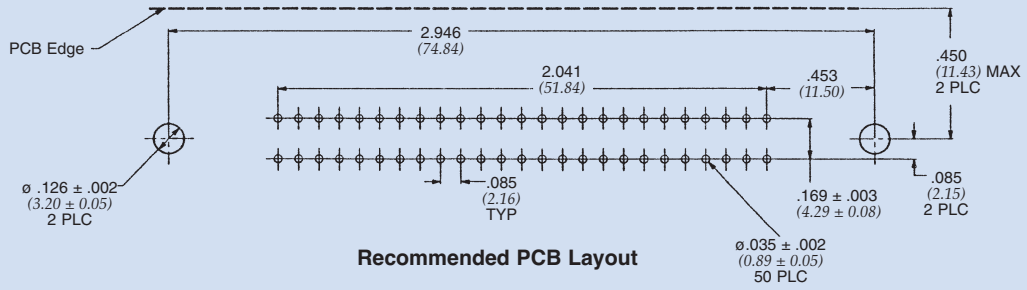
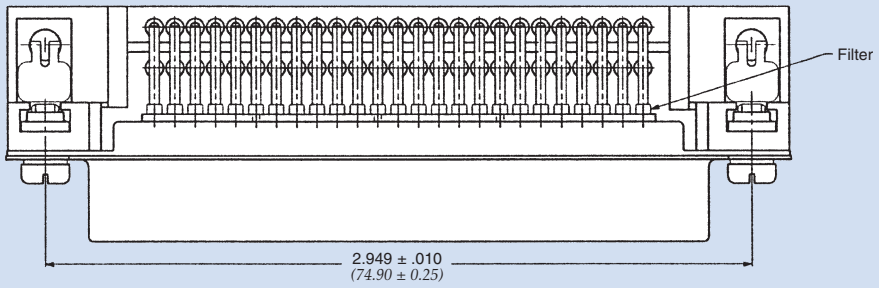
Filtered Miniature Ribbon Connectors
50 Position

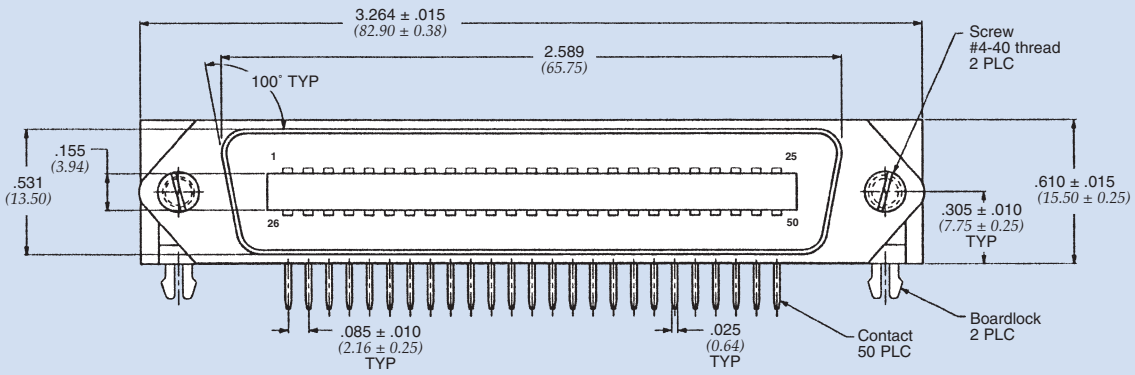
Pin Contact *(plug)*



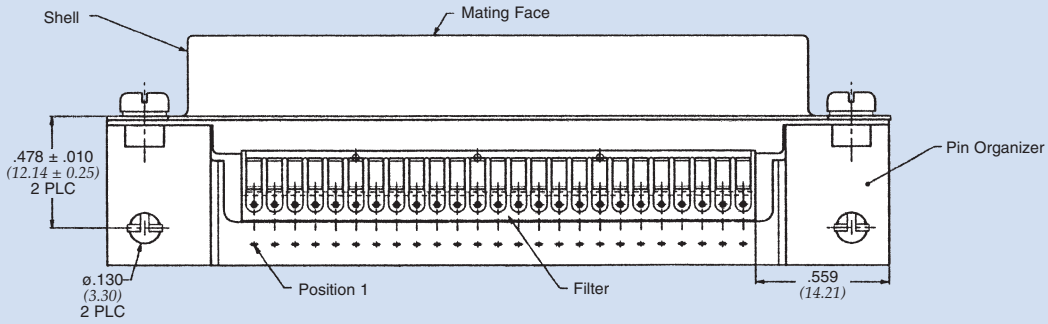
Recommended PCB Layout

Top





Bottom



Dimensions in inches *(mm)*

Part Number	Capacitance Value
56-882-002	100 pF, ±20%
56-882-003	220 pF, ±20%
56-882-004	470 pF, ±20%
56-882-005	820 pF, ±20%

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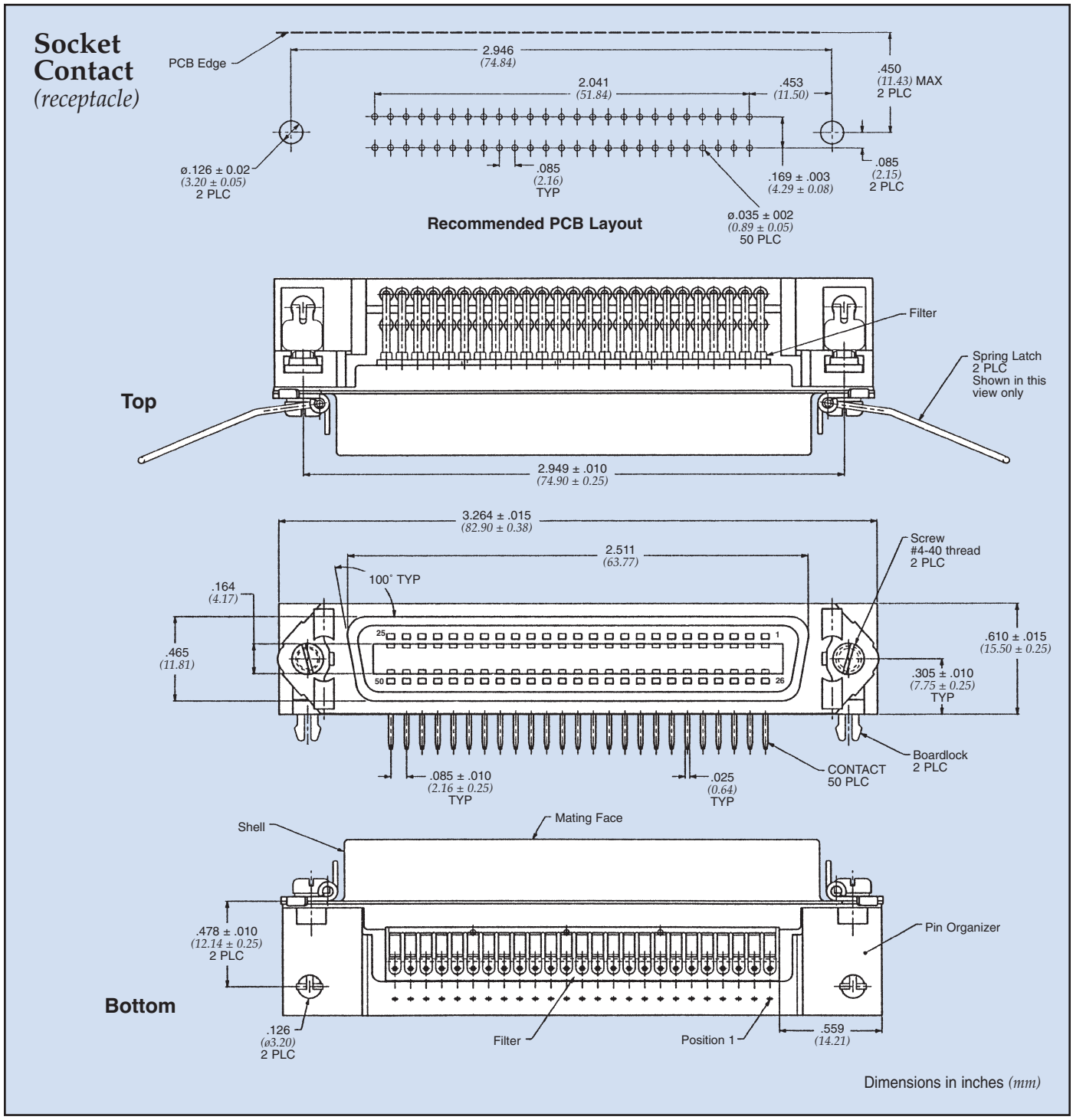
Filtered Miniature Ribbon Connectors
50 Position



Part Number	Capacitance Value
56-886-002	100 pF, ±20%
56-886-003	220 pF, ±20%
56-886-004	470 pF, ±20%
56-886-005	820 pF, ±20%

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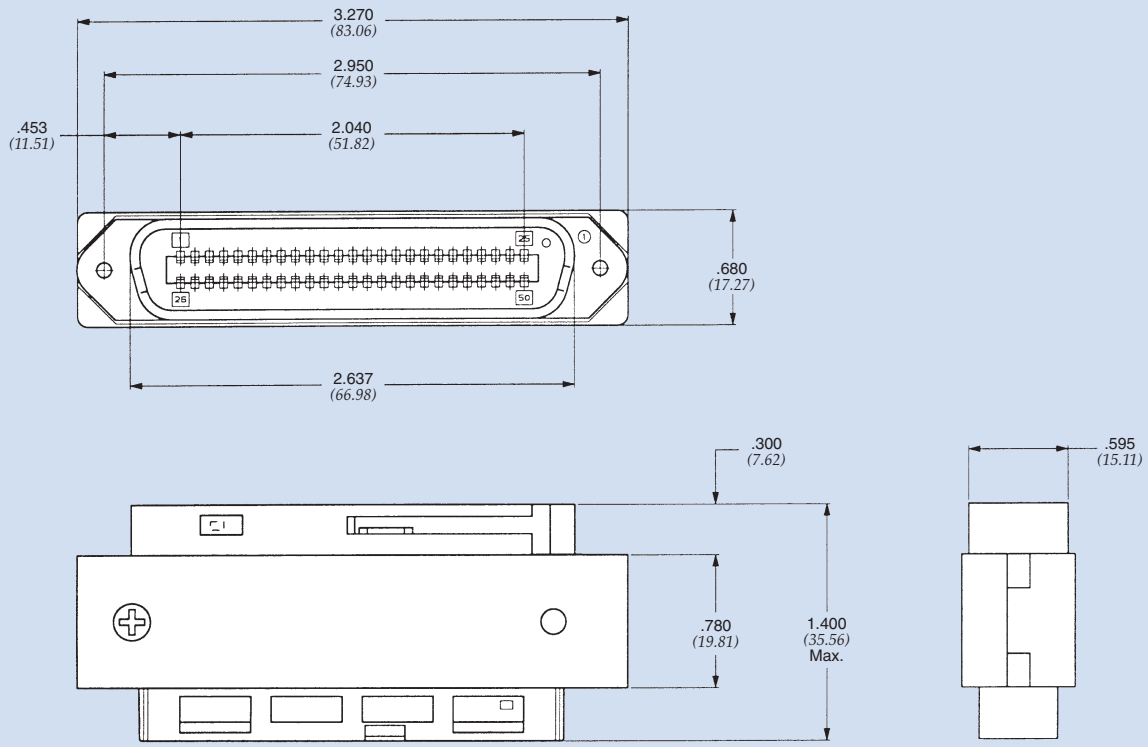
Filtered Miniature Ribbon Connectors
50 Position

Adapter



Dimensions in inches *(mm)*

Part Number	Capacitance Value
56-889-002	100 pF ±15%
56-889-003	220 pF ±15%
56-889-004	470 pF ±15%
56-889-005	820 pF ±15%

Hardware options also available. Consult factory for more information.

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Hooded Strain Reliefs

Hooded strain reliefs are used whenever a connector is used on a cable assembly which will be exposed to users and subject to multiple disconnects. Hoods are designed to protect users from shock hazard by exposed solder joints, as well as provide a strain relief for the wires and protection against accidental short circuits.

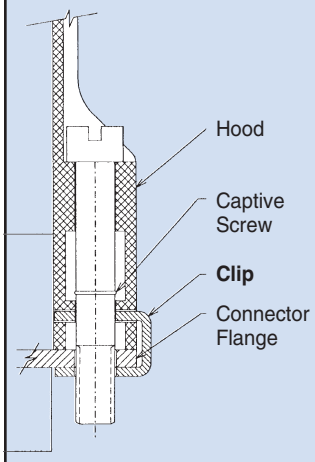
Since most filter connectors are larger than standard connectors, there had been a problem fitting most commercially available hoods. Spectrum Control solves this problem. Our hoods are molded of thin wall plastic, providing extra internal space to accommodate larger filter connectors. The hood is constructed of extremely durable polycarbonate and meets the flammability requirements for UL94V-0.

In addition, hoods are ideal for use on applications which require the use of extra components such as resistors or varistors on the wires. The nonconductive hood conveniently houses the connector, components, and protects any joints.

- **2560-9000-XX** is supplied with metal retention clips to hold the connector within the hood assembly. This item is recommended for use with Spectrum Filtered D-subs, most other filtered D-subs, and most standard D-subs.
- **2560-9001-XX** is meant to be used with a connector which has a special eyelet on the mounting flange. This feature is available as an option on the Spectrum Filtered D-sub. Contact factory for additional information.

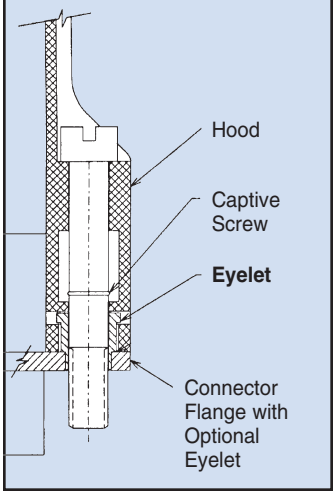
#2560-9000-XX

Retention Clip Version
(For use with most connectors)



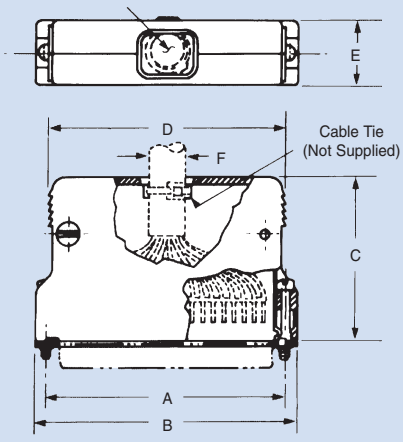
#2560-9001-XX

"Eyelet"
(For use with "Eyelet" connectors)



Ordering Information and Dimensions

Part Number	Con-nector Size	A ±.005	B Max	C Max	D Max	E Max	F Max
2560-9000-01 **2560-9001-01**	9	0.984 *(24.99)*	1.228 *(31.19)*	1.710 *(43.43)*	0.985 *(25.02)*	.685 *(17.40)*	.240 *(6.07)*
2560-9000-02 **2560-9001-02**	15	1.312 *(33.33)*	1.556 *(39.52)*	1.710 *(43.43)*	1.310 *(26.71)*	.685 *(17.40)*	.300 *(7.62)*
2560-9000-03 **2560-9001-03**	25	1.852 *(47.04)*	2.103 *(53.42)*	1.710 *(43.43)*	1.850 *(46.99)*	.685 *(17.40)*	.400 *(10.16)*
2560-9000-04 **2560-9001-04**	37	2.500 *(63.50)*	2.744 *(69.70)*	1.710 *(43.43)*	2.500 *(63.50)*	.685 *(17.40)*	.400 *(10.16)*



Dimensions in inches *(mm)*

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Custom Engineered Solutions

Despite the breadth of our filtered connector product line, there exist certain applications which demand a custom EMC solution. Our engineering staff will work with your design team to provide a custom filtered connector which meets your individual requirements. Examples of custom projects are shown below.

Special Mounting Flanges

- Housings can be designed to be integrated into the customer's equipment. The housings are constructed of machined materials, or precision diecast zinc.

Value-added Assemblies

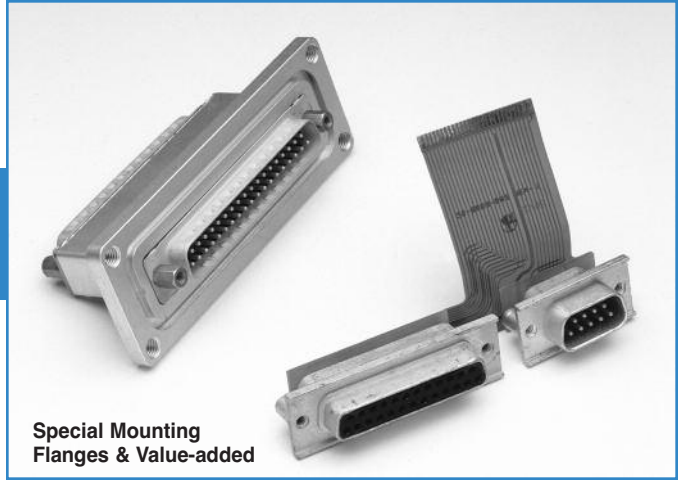
- API's capabilities extend beyond just supplying filter connectors. Additional operations such as sourcing and assembling flexible circuits, adding flying leads, or making connector to connector assemblies, all can be provided in conjunction with the filter connector.

Custom Filter Arrangements

- Complex filters involving unbalanced Pi types, LC types with large inductive components, special pin-in to pin-out translations, and overvoltage protective devices such as diodes and varistors can be packaged within the connector.

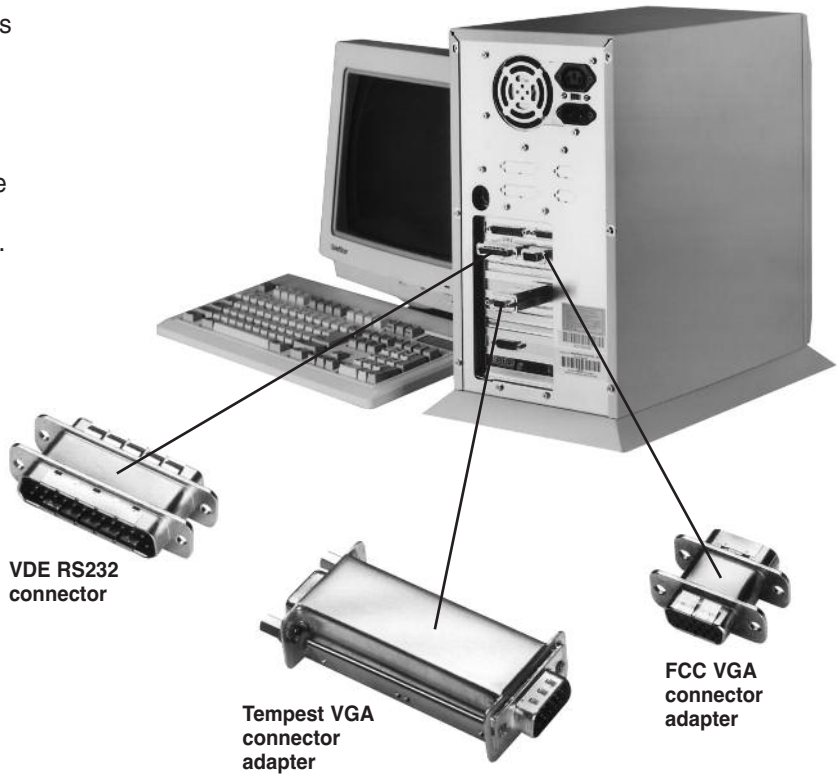
Other Connector Formats

- Manufacturer specific connectors also can be filtered. Our involvement ranges from complete design to implementing minor modifications to include the addition of the filter components. Medical equipment and hand-held devices are examples of excellent applications for these connectors.



Special Mounting Flanges & Value-added

Custom Filter Arrangements & Connectors



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Filtered Connector Performance Specifications

The filtered D-subminiature connectors shown in this catalog have been designed and tested to the following test plan.

The information shown can be used as a basis for your filtered connector specifications. (Contact API for additional details.)

Test Group	Order of Test	Examination of Test	Test Method	Post Test Requirements
I	1	Visual and Mechanical Examination		In accordance with applicable requirements.
	2	Materials, Designs Construction and Workmanship		
	3	Physical Dimensions and Marking		
	4	Capacitance	MIL-STD-202 Method 305 1 KHz, 1VRMS max. 25°C	WIthin specified tolerance.
	5	Dielectric Withstanding Voltage	MIL-STD-202 Method 301	No breakdown or damage.
	6	Insulation Resistance	MIL-STD-202 Method 302, test condition at rated voltage	5000 megohm minimum.
	7	Insertion Loss	MIL-STD-220 No load	In accordance with applicable requirements.
II	1	Contact Engagement and Separation	MIL-C-24308, Para. 3.5.10	Maximum engagement force 18.0 oz., minimum separation force 0.7 oz.
	2	Mating and Unmating Force	MIL-C-24308, Para. 3.5.4	MIL-C-24308, Para. 3.5.4 Table II Limits: Shell size 1-5, class G only.
	3	Durability	MIL-C-24308, Para. 3.5.16, 4.7.18, except 100 cycles	MIL-C-24308, Para. 3.5.9 Contact resistance at 1 amp. 20 millohms max.
	4	Thermal Shock	MIL-STD-202 Method 107, Test condition B, -55°C to +125°C	No evidence of damage. Insulation resistance not less than 2500 megohms.
	5	Solderability	MIL-STD-202; Method 208, RMA-Flux	Terminals shall meet solderability requirements.
	6	Moisture Resistance	MIL-STD-202 Method 106, less step seven	Insulation resistance not less than 500 megohms. Meet dielectric withstanding voltage requirements.
	7	Resistance to Soldering Heat	MIL-STD-202 Method 210, Test condition D	Insulation resistance not less than 500 megohms. Meet dielectric withstanding voltage requirements.
III	1	Vibration	MIL-STD-202 Method 204, Test condition D, 100 mA, current	No interruption of current flow longer than 1 microsecond. Insulation resistance greater than 5000 megohms.
	2	Shock	MIL-STD-202 Method 213. Test Condition G, 100 mA, current	No interruptions of current flow longer than 1 microsecond.
				Contact resistance at 1 amp. 15 millohms max.
				Capacitance within specified limits.
				Insulation resistance greater than 2500 megohms.
	3	Mounting Inserts a. Prevailing torque (locking) b. Installation torque (locking) c. Push-out Force	IFI-100	a. 3 inch-pounds max. b. 6 inch-pounds without damage c. 10 pounds axial force without loosening insert
IV	1	Life	MIL-STD-202 Method 108, Test condition D, within 125% of rated voltage at the maximum operating temperature.	Filter shall meet all initial requirements except insulation resistance shall not be less than 500 megohms.

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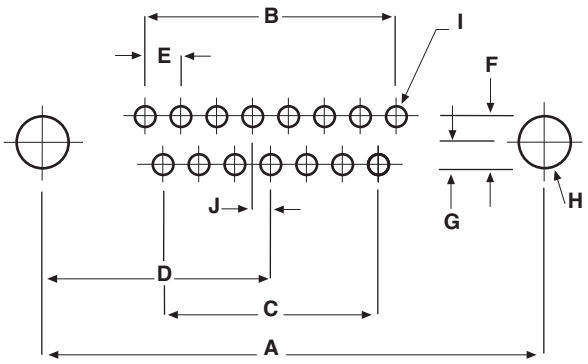
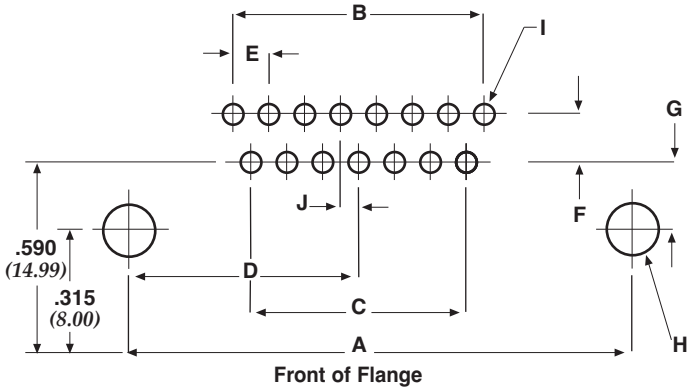
Spectrum Control

Board & Panel Cutouts



Printed Circuit
Vertical Board Mount (standard density)



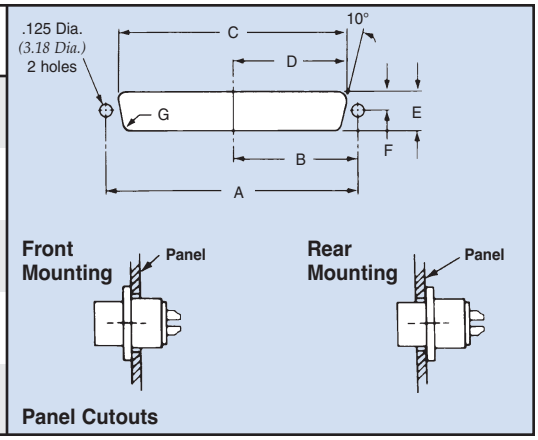
Printed Circuit
Right Angle Mount (standard density)

Board Layout (Pin and Socket Contact) for Standard D-Sub Connectors

Shell Size	A	B	C	D	E	F	G	H	I (Dia.)	J
9 (0)	.984 *(25.00)*	.436 = 4 x .109 *(11.07)* *(2.77)*	.327 = 3 x .109 *(8.31)* *(2.77)*	.492 *(12.50)*	.109 *(2.77)*	.112 *(2.84)*	PCB Mount .056 *(1.42)*	.125 *(3.18)*	.045 *(1.14)*	.054 *(1.37)*
15 (1)	1.312 *(33.32)*	.763 = 7 x .109 *(19.38)* *(2.77)*	.654 = 6 x .109 *(16.61)* *(2.77)*	.656 *(16.66)*			PCB Mount Rt Angle .275 *(6.99)*			
25 (2)	1.852 *(47.04)*	1.308 = 12 x .109 *(33.22)* *(2.77)*	1.199 = 11 x .109 *(30.45)* *(2.77)*	.926 *(23.52)*						
37 (3)	2.500 *(63.50)*	1.962 = 18 x .109 *(49.83)* *(2.77)*	1.853 = 17 x .109 *(47.07)* *(2.77)*	1.250 *(31.75)*			0.112 2 rows			
50 (4)	2.406 *(61.11)*	1.744 = 16 x .109 *(44.30)* *(2.77)* 2 rows	1.635 = 15 x .109 *(41.35)* *(2.77)* 1 row	1.203 *(30.56)*			0.00 1 row			

Panel Cutouts (Front or Rear Mounting) for Standard and High-Density D-Sub Connectors

Shell Size	A ±.015 *(.38)*	B ±.015 *(.38)*	C ±.015 *(.38)*	D ±.015 *(.38)*	E ±.003 *(.08)*	F ±.005 *(.13)*	G ±.002 *(.05)*
9 (0)	.984 *(24.99)*	.492 *(12.49)*	.777 *(19.74)*	.388 *(9.87)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
15 (1)	1.312 *(33.32)*	.656 *(16.66)*	1.105 *(28.07)*	.552 *(14.03)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
25 (2)	1.852 *(47.04)*	.926 *(23.52)*	1.645 *(41.78)*	.822 *(20.89)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
37 (3)	2.500 *(63.50)*	1.250 *(31.75)*	2.293 *(58.24)*	1.146 *(29.12)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
50 (4)	2.406 *(61.11)*	1.203 *(30.55)*	2.190 *(55.63)*	1.095 *(27.81)*	.550 *(13.97)*	.275 *(6.98)*	.150 *(3.81)*



Dimensions in inches *(mm)*

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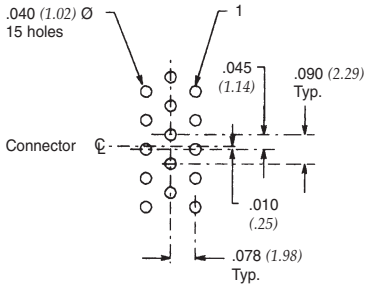
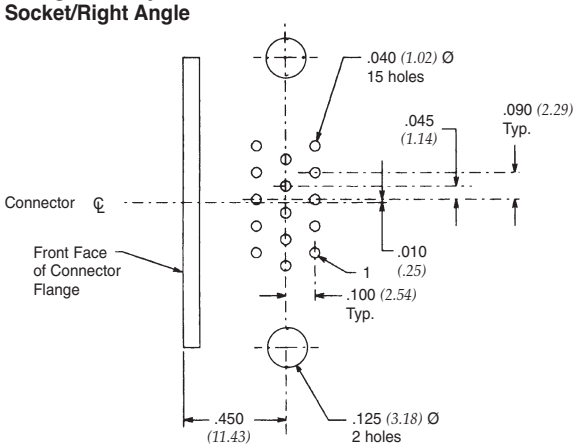
Board & Panel Cutouts

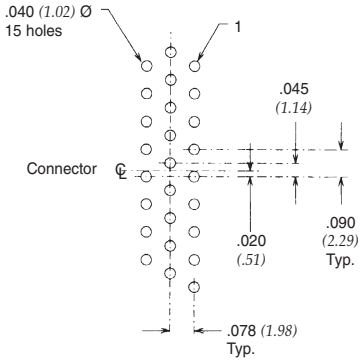
15 High-Density Pin/PCB



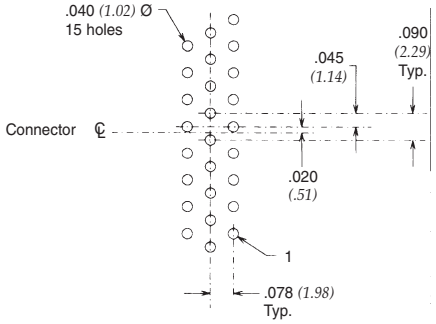
15 High-Density Socket/Right Angle



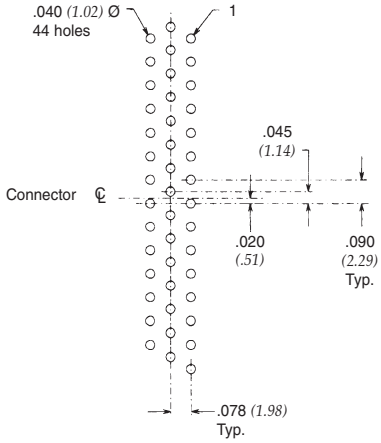
26 High-Density Pin/PCB



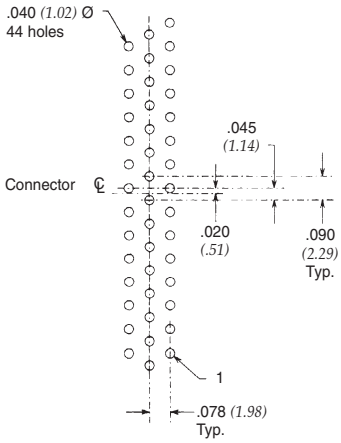
26 High-Density Socket/PCB



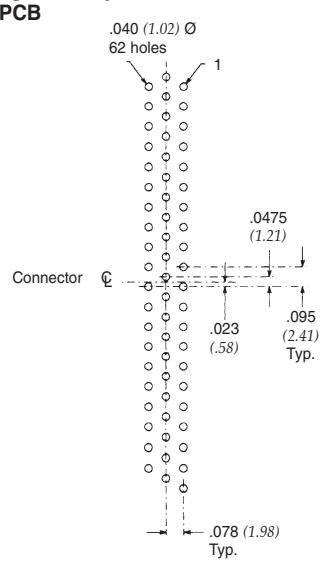
44 High-Density Pin/PCB



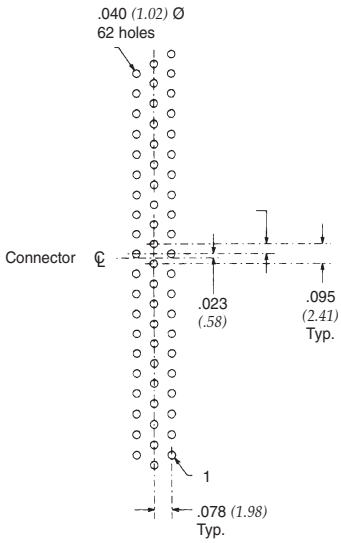
44 High-Density Socket/PCB



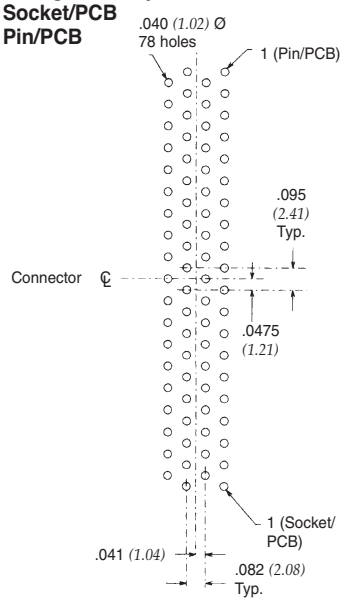
62 High-Density Pin/PCB



62 High-Density Socket/PCB



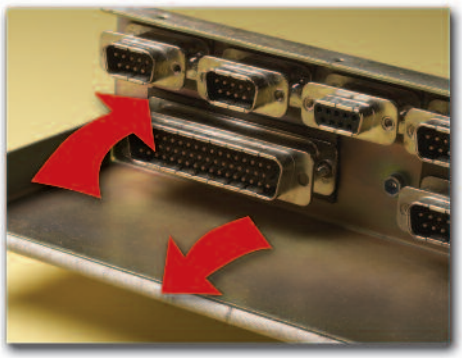
78 High-Density Socket/PCB Pin/PCB



Dimensions in inches *(mm)*

Quietshield™ Gaskets & Shielding

flexible, conformable and lightweight Quietshield™ products deliver effective EMI shielding across seams or gaps within an enclosure



Fabric-Over-Foam Gaskets are low cost, soft and easy to apply. These gaskets are available in a variety of materials and profiles, including rectangular, "D" shaped, FL shaped and DD shaped… **FC68-FC69**

Waved Metal and Fabric-Over-Foam I/O Gaskets are flat products used to provide a ground contact between a metal connector and the electronic enclosure or mating connector… **FC70**

Shielding Tapes and Fabrics are flexible, lightweight, and easy-to-install shielding materials offering high conductivity with a low electrical resistance and are available in a variety of fabric styles… **FC71**

Wire Mesh Gaskets are available as all mesh or elastomer core mesh gaskets. They provide excellent heat and corrosion resistance and are used between two surfaces to maintain electrical continuity while shielding electromagnetic waves… **FC72**

Conductive Silicone is used for its heat resistant properties and can be produced in many different forms such as sheets, molded parts, die-cuts or strips. These conductive elastomers are water resistant, can eliminate static electricity, and act as an absorber at high frequencies… **FC73**

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Shielding Theory and Introduction

Shielding Theory

Electromagnetic shielding is used to prevent electromagnetic signals such as radio signals from leaving or entering a box or enclosure. Signals inadvertently emitted by an electronic device can cause distortion or interruption in normal radio communications in a localized area. This is the basis of most laws and regulations concerning electromagnetic interference. In addition, normal radio signals can cause unprotected electronic devices to malfunction. Depending on the device's function, a malfunction in the device could be a minor inconvenience such as static on a radio, or life threatening such as the malfunction of a life support system at a hospital.

Introduction

The electromagnetic shield in most cases is the electronic housing itself. The housing/shield forms a metal cage around the electronic circuits in a device. Most of the electromagnetic signal is absorbed with a small portion (3 to 10 dB) of the signal reflected off the metal housing. Most of the absorbed signal creates alternating currents at radio frequencies which travels on the surface of metal. This allows the electromagnetic shield to keep signals from outside the enclosure on the outside of the shield and signals from inside signals on the inside of the shield.

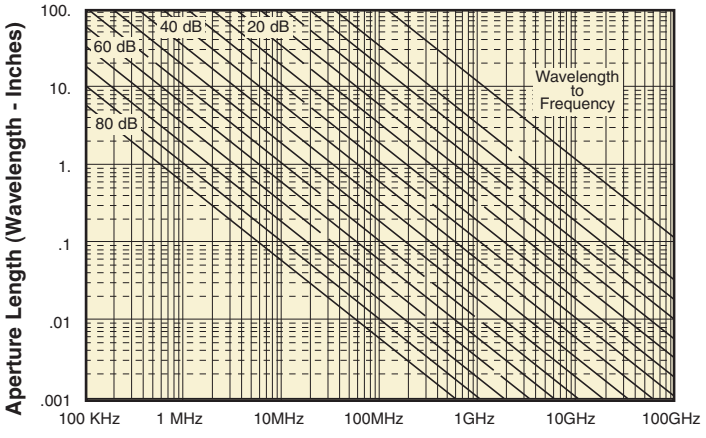
The shield will continue to function as long as there are no holes in the electromagnetic shield which would allow the currents to flow from one side of the shield to the other. Holes are a necessity in an electronic enclosure. Connectors, wires, and cables are needed to transmit information to and from electronic devices. Doors and covers are needed to get access to components to maintenance, service, and keypads may also be required. The problem is that all of these items cause openings in the shield which reduce the performance of the shield.

Special devices such as shielding gaskets, shielding ventilation panels, shielded filtered connectors, and shielded switches minimize the effect of a hole in the shield.

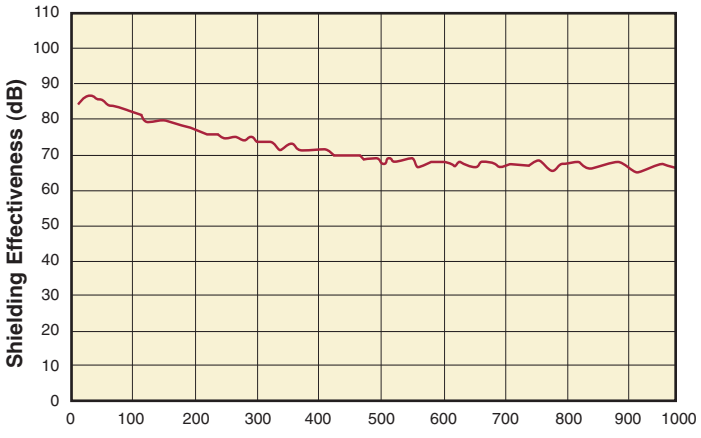
The length of the hole and wavelength of the signal that needs to be shielded are the major factors determining the shielding effectiveness of an electronic enclosure. The distance between spotwelds, or screws which hold a metal housing together count as long narrow holes. Higher frequencies (lower wavelengths) flow more easily through smaller holes, and so the highest frequency needed to be shielded is the frequency of concern when designing shielding.

Aperture versus frequency charts can give a rough estimate of the shielding effectiveness of a metallic electronic housing.

SHIELDING EFFECTIVENESS



TYPICAL SHIELDING EFFECTIVENESS



Test Methods: ASTM D-4935-89
Test Fixture: Flanged coaxial transmission line

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Quietshield™ Part Number System

Example: **57D1211205 - 7200**

The part number shown represents a gasket with woven foam made of neoprene, conductive PSA.
The gasket has copper-nickel plating that is 0.120" wide x 0.050" thick x 72" long.

57 **D** **1** **2** **1** **12** **05** **-** **7200**

Gaskets

Shapes/Styles

D, R, L, P, C, K, O, V, U — Fabric-over-Foam

R, P, O, V — Mesh

A, D, H, J, P, O, P, Z — Conductive Elastomer

F — Formed/Stamped

T — Tape/Foil/Fabric

S – Special

Fabric/Foil

0 — Non-woven
1 — Woven
2 — Woven Ripstop
3 — Woven DTY Filament
4 — Mesh
5 — Net
6 — Knit
7 — Aluminum Foil
8 — Copper Foil
9 — None

Material

0 — None
1 — Foam neoprene, no PSA
2 — Foam neoprene, conductive PSA
3 — Foam neoprene, non-conductive PSA
4 — Solid
5 — Sponge
6 — Silicone
7 — Hollow silicone
8 — Conductive elastomer
9 — Hollow conductive elastomer
A — No core, conductive PSA one side
B — No core, non-conductive PSA one side
C — No core, conductive PSA double side
D — No core, non-conductive PSA double side
E — Monel mesh with silicone sponge
F — Al wire with silicone sponge
G — No core, conductive, no PSA
H — Monel mesh solid
Z — Z-foam

Note: PSA = pressure sensitive adhesive

Plating

0 — Copper - Nickel (std)
2 — Copper - Nickel - Gold
4 — Copper - Nickel - Resin
5 — Copper - Nickel - P.S. Coating
6 — Iron - Copper - Nickel
7 — Copper - Nickel - Carbon
9 — Ni - Graphite

Height/Thickness

Profiles — thickness in inches

I/O — height in inches

Width or Type & Size

Profiles — width in inches

I/O — first digit is I/O Type
(D, d-sub)
second digit is shell size
(1, 2, 3, 4, or 5)

Length

Length (ex: -1205 = 12.05)
[Standard is 36 (-3600)]

Custom part number for special application (-X001)
X must be the first character

Sample Kit

Quietshield sample kits are available from API Technologies. Order number KIT-QSHIELD-57.

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Quietshield™ Fabric-over-Foam Gaskets

Features

- Maintain shielding effectiveness across seams or gaps
- Shielding Effectiveness (SE) of 70 - 100 dB between 1 MHz to 18 GHz
- Flexible and conformable
- No creasing or tearing
- Lightweight material

Profile Gaskets

Quietshield™ EMI/RFI Gaskets maintain shielding effectiveness (SE) across a seam or gap in the electronic equipment's shielding material.

Quietshield gaskets provide unique solutions to your most stringent shielding, grounding, ESD and packaging requirements. It's the cost-effective avenue for creativity in design. These gaskets consist of polyurethane foam combined with highly conductive fabrics. Specially designed polyurethane foam is soft, resilient and provides the perfect fit. Our gaskets are made with seven different types of fabric plating and two types of thermal adhesive, standard or flame retardant. Our flame retardant adhesive complies with UL94VTM-1 and VTM-0. If necessary, the polyurethane foam core can also be plated with Cu and Ni to provide additional conductivity.

Fabric-over-Foam Gaskets, unlike elastomer or finger strip gaskets, provide softness for easy application with a variety of materials and designs at low cost. The best quality with high conductivity, low electrical resistance and minimum oxidation can be achieved by using gold gaskets with additional gold plating to provide superior shielding.

Profile gaskets are currently available in a variety of shapes and lengths. API's Spectrum Control line of gaskets provide a variety of applications with lightweight and flexible solutions. Various thicknesses and shapes are available. These range from commonly used ones such as rectangular and "D" shape, to uncommon ones such as FL-shape (folding leaf) and DD-shape (Double DD-shape). We are able to produce gaskets with different shapes and sizes, based upon the customer's requests.

The mounting style available for most profile gaskets is pressure sensitive adhesive.These adhesives allow simple place and press mounting on smooth and clean metal surfaces.The parts can be cut to the desired length with common scissors or ordered to the exact length required. The adhesive provides high strength with aggressive initial tack, which increases in strength over time or after exposure to elevated temperatures.

I/O Gaskets

API offers a complete line of standard and custom I/O connector Electromagnetic Shielding Gaskets. I/O gaskets are flat gaskets used to provide a ground contact between a metal connector and the electronic enclosure or mating connector. They ensure that the shield remains continuous from the input/output cable to the electronic enclosure.

I/O Gaskets are available in the same materials as the fabric-over-foam profile gaskets, or as all-metal waved gaskets.

API's line of metal waved gaskets is designed to minimize the gaps between a D-Sub connector and the panel it is mounted to. These gaskets ensure the maximum "gap length" will not exceed the wave pitch, 0.200" (5.08 MM), even on surfaces with poor flatness. This ensures maximum filter performance to 1GHz and beyond.

Test	Performance
Shielding Effectiveness*	68 dB - 88 dB
Composition (STD)	Woven
Plating (STD)	Copper and Nickel
Temperature Limit	200°C
Abrasion Resistance	Good
Electric Resistance	<0.08 Ohm
Flamibility Rating**	94VTM-1, V0 Grade
Shelf Life***	20 years

* Provides shielding effectiveness of 68 dB min. between 30 MHz to 1 GHz, this will vary slightly depending on fabric type.

** Rubber rating only.

*** Fabric-over-foam gaskets.

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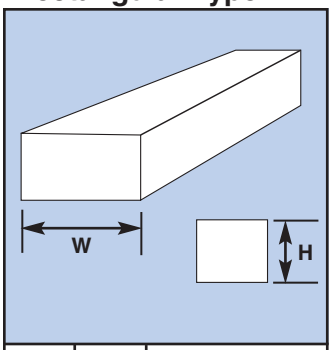
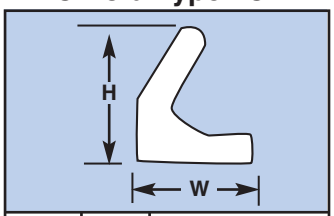
Quietshield™ Fabric-over-Foam Profile Gaskets

Rectangular Type "R"



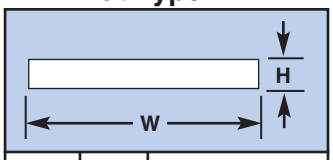
W	H	Part Number
1.000	0.374	57R121C037-xxxx
0.118	0.079	57R1211208-xxxx
0.154	0.118	57R1211512-xxxx
0.158	0.079	57R1211608-xxxx
0.158	0.158	57R1211616-xxxx
0.130	0.189	57R1211913-xxxx
0.197	0.197	57R1212020-xxxx
0.252	0.126	57R1212512-xxxx
0.315	0.472	57R1213247-xxxx
0.374	0.126	57R1213713-xxxx
0.374	0.374	57R1213737-xxxx
0.394	0.394	57R1213939-xxxx
0.102	0.400	57R1214012-xxxx
0.394	0.236	57R1214022-xxxx
0.488	0.370	57R1214937-xxxx
0.500	0.126	57R1215013-xxxx
0.252	0.500	57R1215025-xxxx
0.500	0.500	57R1215050-xxxx
0.512	0.118	57R1215112-xxxx
0.512	0.394	57R1215140-xxxx
0.984	0.394	57R1219839-xxxx

C-Fold Type "C"



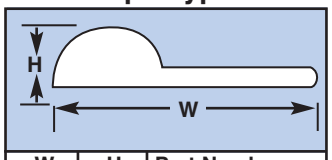
W	H	Part Number
0.295	0.138	57L1213014-xxxx
0.315	0.315	57L1213232-xxxx
0.394	0.394	57L1213939-xxxx
0.421	0.386	57L1214339-xxxx
0.681	0.591	57L1216859-xxxx

Flat Type "R"



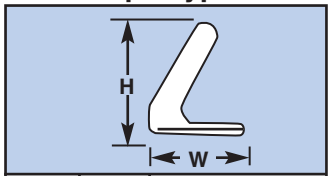
W	H	Part Number
0.118	0.039	57R1211204-xxxx
0.158	0.031	57R1211603-xxxx
0.158	0.035	57R1211604-xxxx
0.158	0.039	57R1211604-xxxx
0.158	0.047	57R1211605-xxxx
0.197	0.020	57R1212002-xxxx
0.197	0.039	57R1212004-xxxx
0.197	0.047	57R1212005-xxxx
0.197	0.059	57R1212006-xxxx
0.197	0.071	57R1212007-xxxx
0.236	0.039	57R1212404-xxxx
0.236	0.059	57R1212406-xxxx
0.276	0.020	57R1212802-xxxx
0.276	0.039	57R1212804-xxxx
0.276	0.047	57R1212805-xxxx
0.276	0.059	57R1212806-xxxx
0.276	0.071	57R1212807-xxxx
0.299	0.063	57R1213006-xxxx
0.315	0.031	57R1213203-xxxx
0.315	0.039	57R1213204-xxxx
0.354	0.039	57R1213604-xxxx
0.394	0.020	57R1214002-xxxx
0.394	0.039	57R1214004-xxxx
0.394	0.047	57R1214005-xxxx
0.394	0.071	57R1214007-xxxx
0.472	0.039	57R1214704-xxxx
0.472	0.059	57R1214706-xxxx
0.512	0.028	57R1215103-xxxx
0.512	0.035	57R1215104-xxxx
0.512	0.059	57R1215106-xxxx
0.551	0.059	57R1215506-xxxx

P-Shape Type "P"



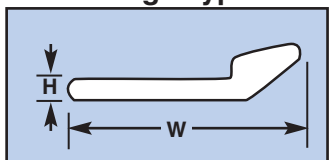
W	H	Part Number
0.315	0.079	57P1213208-xxxx
0.520	0.130	57P1215216-xxxx

L-Shape Type "L"



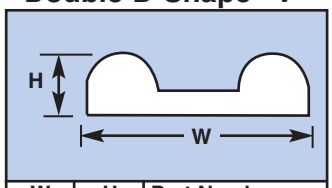
W	H	Part Number
0.430	0.395	57L1214339-7200
0.433	0.433	57L1214343-7200
0.551	0.591	57L1215559-7200
0.578	0.673	57L1215767-7200

Knife Edge Type "K"



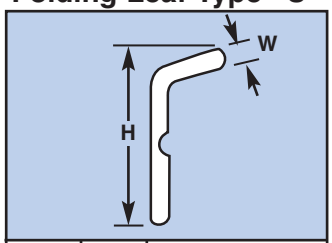
W	H	Part Number
0.492	0.138	57K1214914-xxxx
0.500	0.094	57K1215009-xxxx
0.500	0.098	57K1215010-xxxx
0.752	0.252	57K1217525-xxxx

Double D-Shape "V"



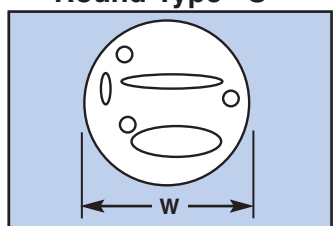
W	H	Part Number
0.378	0.126	57V1213813-xxxx

Folding Leaf Type "U"



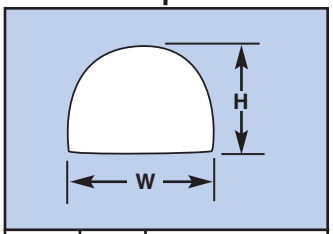
W	H	Part Number
0.709	0.311	57U1217131-xxxx

Round Type "O"

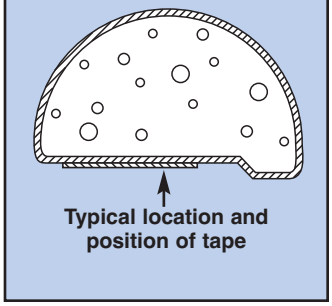


W	Part Number
0.098	57O1211010-xxxx
0.106	57O1211111-xxxx
0.126	57O1211313-xxxx
0.177	57O1211818-xxxx
0.197	57O1212020-xxxx
0.347	57O1213535-xxxx
0.394	57O1213939-xxxx
0.433	57O1214343-xxxx

D-Shape "D"



W	H	Part Number
0.090	0.091	57D1210909-xxxx
0.091	0.126	57D1210912-xxxx
0.102	0.126	57D1211012-xxxx
0.118	0.079	57D1211208-xxxx
0.118	0.138	57D1211214-xxxx
0.150	0.059	57D1211506-xxxx
0.150	0.118	57D1211512-xxxx
0.158	0.157	57D1211616-xxxx
0.197	0.197	57D1212020-xxxx
0.236	0.079	57D1212408-xxxx
0.236	0.177	57D1212418-xxxx
0.236	0.197	57D1212420-xxxx
0.236	0.217	57D1212422-xxxx
0.252	0.118	57D1212512-xxxx
0.256	0.134	57D1212514-xxxx
0.256	0.197	57D1212520-xxxx
0.315	0.394	57D1213240-xxxx
0.354	0.118	57D1213512-xxxx
0.354	0.126	57D1213513-xxxx
0.374	0.236	57D1213725-xxxx
0.386	0.252	57D1213925-xxxx
0.394	0.157	57D1213916-xxxx
0.394	0.177	57D1213918-xxxx
0.394	0.197	57D1213920-xxxx
0.394	0.217	57D1213922-xxxx
0.394	0.236	57D1213924-xxxx
0.394	0.276	57D1213928-xxxx
0.394	0.295	57D1213930-xxxx
0.394	0.394	57D1213939-xxxx
0.433	0.138	57D1214314-xxxx
0.433	0.177	57D1214318-xxxx
0.433	0.217	57D1214322-xxxx
0.709	0.551	57D1217155-xxxx
0.709	0.787	57D1217177-xxxx
0.709	0.906	57D1217191-xxxx



NOTE: All dimensions in inches

api technologies corp.
Spectrum Control

Quietshield™ Fabric-over-Foam I/O & Waved Metal Gaskets

Specifications

Material . . . . . Beryllium Copper, CA 172 (per QQ-C-533)

Finish . . . . . STD: Electro tin plate, 100 micro inches (per MIL-T-10727)

For RoHS: Nickel - change last 2 p/n digits to - NI

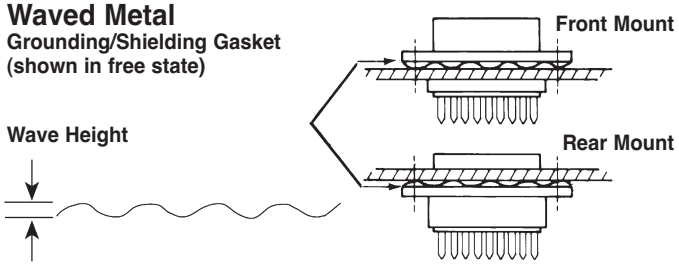
For Hi-Rel: Gold - change last 2 p/n digits to - AU

Material Thickness . . . . . .005" (.13mm) compressed

Wave Height . . . . . .030"+.020/-.015 (.76+.51/-.38mm)

Length increase when flattened . . . . . 0.008" (.20mm) per inch

Waved Metal
Grounding/Shielding Gasket
(shown in free state)



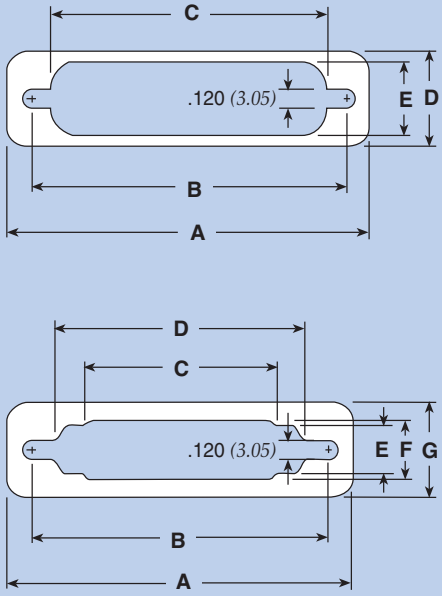
Waved Metal Gaskets *(Select part number by filling in "xxx": 572019-00xxx-70)*

Mounting: Front mounted pin or socket connector, rear mounted pin connector.

Shell Size	A ±.020 (0.51)	B ±.020 (0.51)	C ±.020 (0.51)	D ±.020 (0.51)	E ±.005 (0.13)	"xxx"
9	1.213 (30.81)	.984 (24.99)	.777 (19.74)	.600 (15.24)	.440 (11.18)	100
15	1.541 (39.14)	1.312 (33.32)	1.105 (28.07)	.600 (15.24)	.440 (11.18)	101
25	2.088 (53.04)	1.852 (47.04)	1.645 (41.78)	.600 (15.24)	.440 (11.18)	102
37	2.729 (69.32)	2.500 (63.50)	2.293 (58.24)	.600 (15.24)	.440 (11.18)	103
50	2.635 (66.93)	2.406 (61.11)	2.190 (55.63)	.710 (18.03)	.550 (13.97)	104

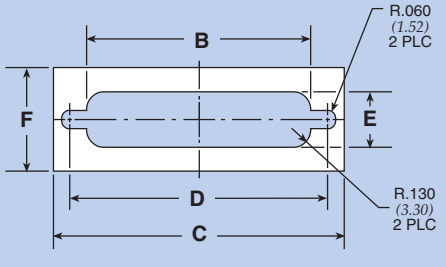
Mounting: Rear mounted socket connectors only.

Shell Size	A ±.020 (0.51)	B ±.020 (0.51)	C ±.020 (0.51)	D ±.020 (0.51)	E ±.005 (0.13)	F ±.005 (0.13)	G ±.020 (0.51)	"xxx"
9	1.213 (30.81)	.984 (24.99)	.450 (11.43)	.660 (16.76)	.324 (8.23)	.360 (9.14)	.600 (15.24)	105
15	1.541 (39.14)	1.312 (33.32)	.670 (17.02)	.988 (25.10)	.324 (8.23)	.360 (9.14)	.600 (15.24)	106
25	2.088 (53.04)	1.852 (47.04)	1.110 (28.19)	1.528 (38.81)	.324 (8.23)	.360 (9.14)	.600 (15.24)	107
37	2.729 (69.32)	2.500 (63.50)	1.550 (39.37)	2.176 (55.27)	.324 (8.23)	.360 (9.14)	.600 (15.24)	108
50	2.635 (66.93)	2.406 (61.11)	1.550 (39.37)	2.082 (52.88)	.436 (11.07)	.470 (11.94)	.710 (18.03)	109



Fabric-over-Foam I/O Gaskets

Shell Size	Thickness A	Dimensions B	C	D	E	F	Fabric Type	Part Number
1	0.012 0.040 0.070	0.746 (18.95)	1.213 (30.81)	0.984 (24.99)	0.400 (10.16)	0.750 (19.05)	nonwoven woven woven	57F01-D112-1275 57F11-D140-1275 57F11-D170-1275
2	0.012 0.040 0.070	1.074 (27.28)	1.541 (39.14)	1.312 (33.32)	0.400 (10.16)	0.750 (19.05)	nonwoven woven woven	57F01-D212-1575 57F11-D240-1575 57F11-D270-1575
3	0.012 0.040 0.070	1.614 (41.00)	2.088 (53.04)	1.852 (47.04)	0.400 (10.16)	0.750 (19.05)	nonwoven woven woven	57F01-D312-2075 57F11-D340-2075 57F11-D370-2075
4	0.012 0.040 0.070	2.266 (57.56)	2.720 (69.09)	2.500 (63.50)	0.400 (10.16)	0.750 (19.05)	nonwoven woven woven	57F01-D412-2775 57F11-D440-2775 57F11-D470-2775
5	0.012 0.040 0.070	2.158 (54.81)	2.63 (66.80)	2.406 (61.11)	0.500 (12.70)	0.850 (21.59)	nonwoven woven woven	57F01-D512-2685 57F11-D540-2685 57F11-D570-2685



Dimensions in inches *(mm)*

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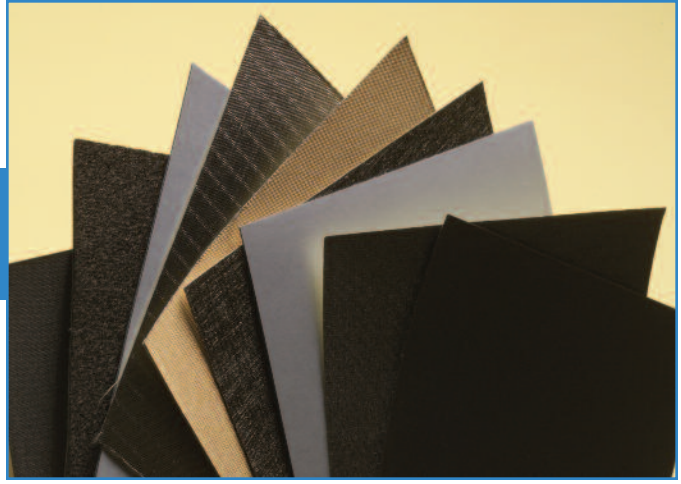
Spectrum Control

Shielding Tapes & Fabric



Flexible and lightweight tapes provide easy installation and high conductivity and low electrical resistance provide a good shielding effect. Our products use stronger pressure sensitive adhesive to provide better adhesion. Standard widths are 1", 2", 3" and 42". Standard roll lengths are 200'.

API Technologies' Spectrum Control brand of conductive tapes consist of conductive fabric and adhesive which can be either conductive or non-conductive. Conductive tapes come in various types: conductive fabric tapes, Cu/Al foil tapes and double side conductive adhesive tapes. Anticorrosion coating is done on foil tapes and flame retardant coating is available, which complies with UL94VTM-1 and VTM-0.

Styles

- Nonwoven polyester taffeta
- Conductive woven polyester taffeta
- Woven ripstop
- Woven DTY filament
- Mesh
- Aluminum foil
- Copper foil

Material	Plating	Weight (lb/sf)	Weight (g/sm)	Thickness (mm)	Tensile Strength (Kgf)	Surface Resistance (ohm/sq)	Shielding Effectiveness (min dB)	Part Number
Conductive Woven	Cu/Ni	0.015566	76.0	0.08	38.0	0.20	58	57T1A14200-XXXX
Conductive Woven	Cu/Ni/Au	0.005325	26.0	0.10	29.0	0.06	72	57T1A24200-XXXX
Conductive Woven	Cu/Ni/Fe	0.016385	80.0	0.10	32.0	0.06	63	57T1A64200-XXXX
Conductive Woven	Cu/Ni/Ag	0.015975	78.0	0.10	32.0	0.06	67	57T1A34200-XXXX
Conductive Woven	Cu/Ni/Resin	0.016385	80.0	0.11	32.0	0.06	78	57T1A44200-XXXX
Conductive Rip-Stop	Cu/Ni	0.014951	73.0	0.09	39.0	0.08	62	57T2A14200-XXXX
Conductive Rip-Stop	Cu/Ni/Ag	0.015566	76.0	0.10	34.0	0.06	78	57T2A34200-XXXX
Conductive Rip-Stop	Cu/Ni/Fe	0.014951	73.0	0.09	33.0	0.06	63	57T2A64200-XXXX
Conductive Rip-Stop	Cu/Ni/Resin	0.014951	73.0	0.09	34.0	0.06	68	57T2A44200-XXXX
Conductive Non-Woven	Cu/Ni	0.013927	68.0	0.16	10.0	0.08	72	57T0A14206-XXXX
Conductive Non-Woven	Cu/Ni	0.024372	119.0	0.32	21.0	0.06	80	57T0A14201-XXXX
Conductive Non-Woven	Cu/Ni	0.024577	120.0	0.43	30.0	0.06	83	57T0A14202-XXXX
Conductive Mesh	Cu/Ni	0.005120	25.0	0.08	18.0	0.20	52	57T4014200-XXXX
Conductive Mesh	Cu/Ni/Resin	0.005523	27.0	0.08	19.0	0.10	53	57T4044200-XXXX
Conductive Mesh	Cu/Ni/Au	0.003072	15.0	0.08	17.0	0.10	57	57T4034200-XXXX
Aluminum				0.08		0.05		57T7A-4200-XXXX
Aluminum				0.08		0.07		57T7C-4200-XXXX
Copper				0.80		0.02		57T8A-4200-XXXX

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Wire Mesh Gaskets

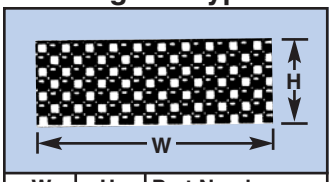
API's Spectrum Control brand mesh gaskets include all mesh gaskets and elastomer core mesh gaskets.

Layers of knitted wire are covered over the wire core in API's all mesh gaskets. Using its electrical conductivity, they are used between two surfaces to maintain electrical continuity while shielding electromagnetic waves. They offer good resilience and excellent heat and corrosion resistance. Any types of metal can be used to produce mesh gaskets but common materials used are aluminum, stainless steel and monel.

API's elastomer core mesh gaskets are composed of wire mesh over elastomer core. Both these materials provide excellent shielding effects creating the maximum outcome. Both all-mesh gaskets and Elastomer-core mesh gaskets can be produced with different types of materials and also in many different forms.

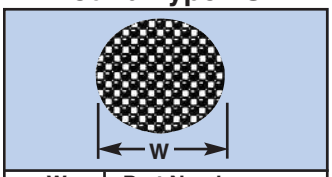
All Mesh Gaskets - Structure

Rectangular Type "R"



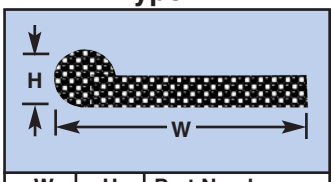
W	H	Part Number
0.138	0.059	57R40-1406-xxxx
0.142	0.098	57R40-1410-xxxx
0.181	0.102	57R40-1810-xxxx
0.197	0.118	57R40-2012-xxxx
0.189	0.189	57R40-2020-xxxx
0.236	0.118	57R40-2412-xxxx
0.252	0.063	57R40-2506-xxxx
0.256	0.177	57R40-2618-xxxx
0.354	0.118	57R40-3512-xxxx

Round Type "O"



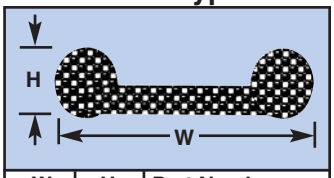
W	Part Number
0.039	57O40-0404-xxxx
0.059	57O40-0606-xxxx
0.079	57O40-0808-xxxx
0.102	57O40-1010-xxxx
0.138	57O40-1414-xxxx
0.157	57O40-1616-xxxx
0.185	57O40-1919-xxxx
0.217	57O40-2222-xxxx
0.307	57O40-3131-xxxx
0.362	57O40-3636-xxxx

P-Type "P"



W	H	Part Number
0.138	0.512	57P40-1451-xxxx
0.138	0.638	57P40-1464-xxxx
0.138	0.795	57P40-1478-xxxx
0.205	0.516	57P40-2152-xxxx
0.205	0.768	57P40-2177-xxxx
0.264	0.764	57P40-2626-xxxx

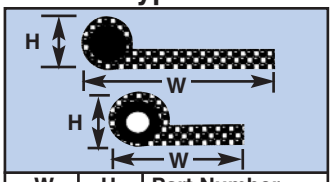
Double P-Type "V"



W	H	Part Number
0.138	0.386	57V40-1439-xxxx
0.138	0.512	57V40-1451-xxxx
0.138	0.638	57V40-1464-xxxx
0.205	0.642	57V40-2164-xxxx
0.205	0.768	57V40-2177-xxxx
0.205	1.016	57V40-2100-xxxx
0.264	0.638	57V40-2669-xxxx
0.264	0.764	57V40-2676-xxxx
0.264	1.012	57V40-2600-xxxx

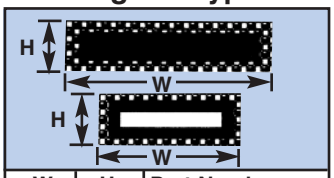
Elastomer Core Mesh Gaskets

P-Type "P"



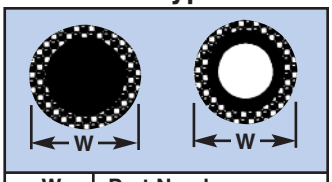
W	H	Part Number
0.138	0.512	57P46-1451-xxxx
0.138	0.638	57P46-1464-xxxx
0.138	0.795	57P46-1480-xxxx
0.205	0.516	57P46-2152-xxxx
0.205	0.768	57P46-2177-xxxx
0.264	0.764	57P46-2676-xxxx

Rectangular Type "R"



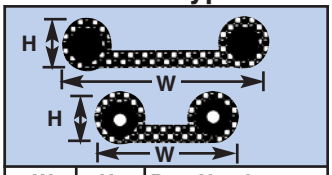
W	H	Part Number
0.138	0.059	57R46-1406-xxxx
0.142	0.098	57R46-1410-xxxx
0.181	0.102	57R46-1810-xxxx
0.189	0.189	57R46-1919-xxxx
0.197	0.118	57R46-2012-xxxx
0.236	0.118	57R46-2412-xxxx
0.252	0.063	57R46-2506-xxxx
0.256	0.157	57R46-2616-xxxx
0.256	0.177	57R46-2618-xxxx
0.354	0.118	57R46-3512-xxxx

Round Type "O"



W	Part Number
0.039	57O46-0404-xxxx
0.059	57O46-0606-xxxx
0.079	57O46-0808-xxxx
0.102	57O46-1010-xxxx
0.138	57O46-1414-xxxx
0.157	57O46-1616-xxxx
0.185	57O46-1919-xxxx
0.217	57O46-2222-xxxx
0.307	57O46-3131-xxxx
0.362	57O46-3636-xxxx

Double P-Type "V"



W	H	Part Number
0.138	0.386	57V46-1439-xxxx
0.138	0.512	57V46-1451-xxxx
0.138	0.638	57V46-1464-xxxx
0.205	1.016	57V46-2100-xxxx
0.205	0.642	57V46-2164-xxxx
0.205	0.768	57V46-2177-xxxx
0.264	1.012	57V46-2600-xxxx
0.264	0.638	57V46-2669-xxxx
0.264	0.764	57V46-2676-xxxx

NOTE: All dimensions in inches

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Spectrum Control

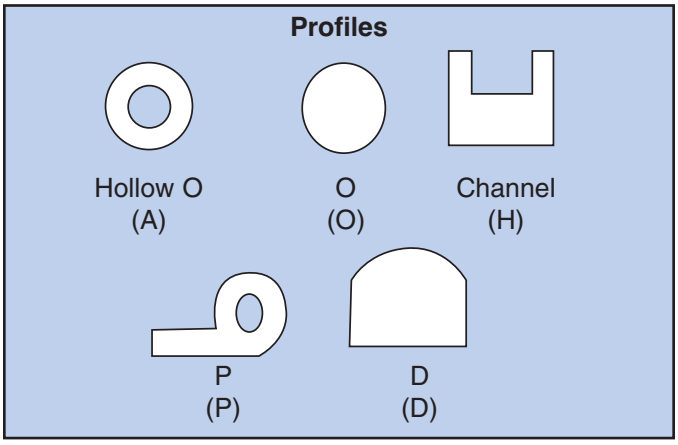
Conductive Elastomers

API's Spectrum Control line of conductive elastomers are composed of silicon rubber using its heat resistant property. Unique features of conductive elastomers include water resistance and elimination of static electricity, which is different from general foam gaskets. It also acts as an absorber at high frequency showing 60dB shielding at 30MHz ~ 10GHz.

Excellent electrical conductivity, grounding and shielding are provided. Due to its superior properties conductive elastomers are often used in military equipment. They can be produced in many forms such as sheets, molded parts, die-cuts or strips.

Typical Properties of Silicone Gaskets

Material	Conductive Silicone (Rubber) Gasket
Hardness Shore Micro	97-5
Volume Resistivity ohms	5-10
Elongation %	240
Tensile Strength Mpa	4.43
Tear Resistance KN/m	10.4
Texture and Color	Black or Beige
Specific Gravity	1.39
Temperature Range	-55 to +200



Part Number	ID Size	OD Size	Type	Profile
57A99-0606-xxxx	0.019	0.059	Hollow	A
57A99-0909-xxxx	0.039	0.091	Hollow	A
57A99-2828-xxxx	0.196	0.276	Hollow	A
57D98-2525-xxxx	W:0.250	H:0.250	D-Tubing	D
57H98-3022-xxxx	W:0.295	H:0.217	Channel	H
57O98-1414-xxxx		0.138	O-Profile	O
57P98-9830-xxxx	W:0.984	H:0.295	P-Shape	P

NOTE: All dimensions in inches