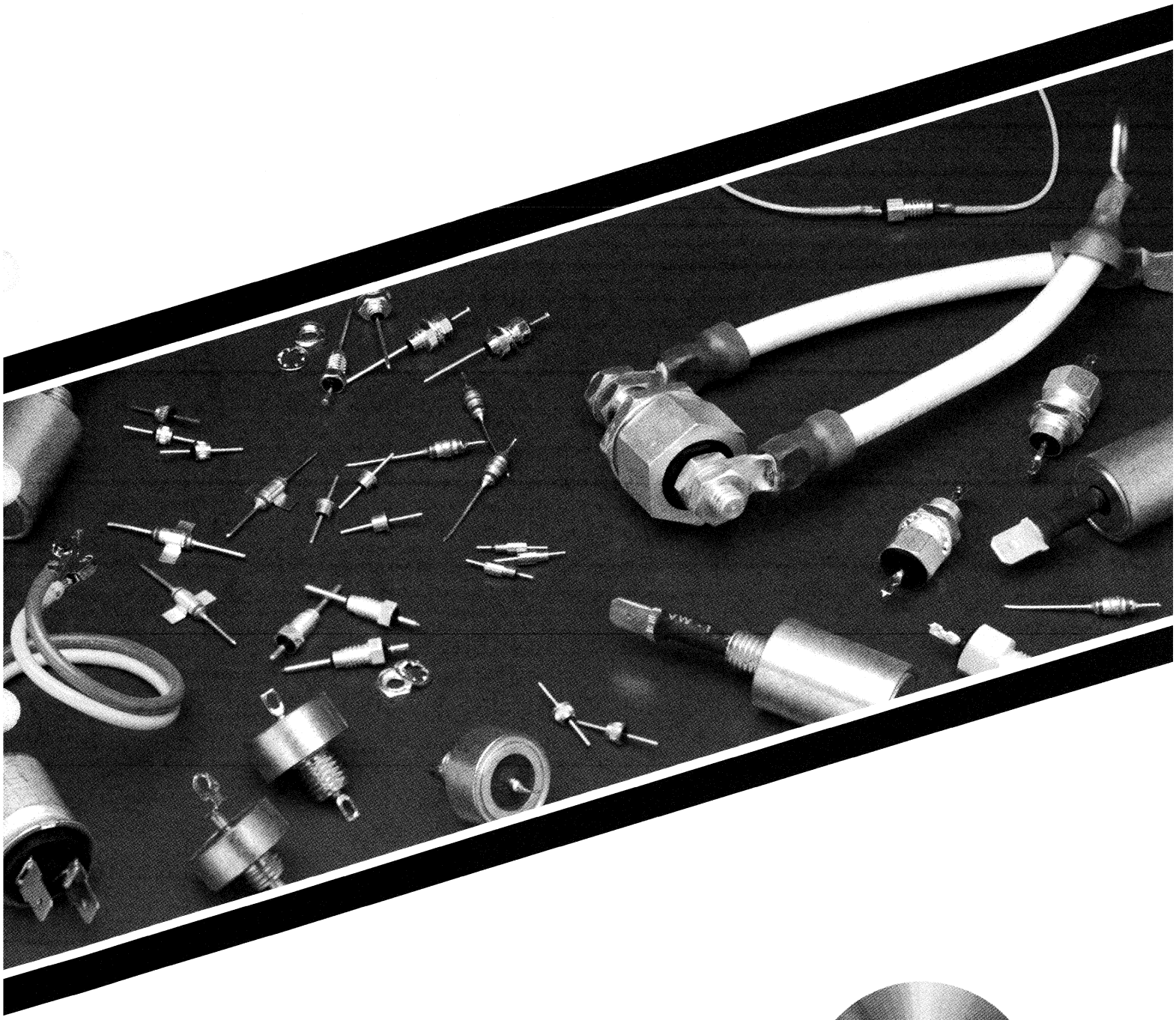
Low Pass EMI Filters



ISO 9001 CERTIFIED

SPECTRUM CONTROL INC.
A Control Products and Systems Company
Signal Products Group

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Low Pass Filter Selection Guide

Other Key Pages

Filter Installation 15
Performance Testing 16
Military Cross Reference 190-192

High Current Surface Mount EMI Filters

- High current surface mount filters
- LC type filter chips
- Three terminal filter chips
- High frequency PCB filters

The PSM and SSM series filters feature high temperature construction and have current ratings up to 20 Amps. Applications include power amplifiers, power supplies and high current bus lines. The filter chip series are non-polar and surface mountable with excellent performance characteristics. Applications include telecommunication equipment, computer and peripheral equipment and digital AV equipment.

Pages

PSM & SSM Surface Mount Filters 19-22
Three Terminal Chips ... 23-28
LC Type Chips 29-30
High Frequency PCB Filter 31

Solder-in Filters

- Small size to allow effective use of space
- Voltage ratings to 500 VDC
- Multiple circuit configurations: C & Pi standard L circuit also available
- High temperature construction to prevent reflow during installation
- MIL-F-15733 QPL and MIL-C-11015 (CK99) filters available

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 AC power lines.

Solder-in Filters
C 32-33
Pi 34-35
Miniature Solder-in Filters 36

Resin Sealed Bolt-in Filters

- Wide range of sizes: 4-40 thread through 5/16-24 thread
- Voltage ratings to 500 VDC/220 VAC
- MIL-F-15733 QPL filters available
- Multiple circuit configurations: C, L and Pi
- Metric Threaded filters available
- Spec-Spin and Spec-Mini Press filters

These filters are easily mounted in a tapped hole or thru-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. The Spec-Mini Press and Spec Spin Filters are ideal for use where solder is undesirable. Each offers easy filter substitution and are for use in microwave applications and other high frequency applications.

Spec-Mini Press 9900 Series ... 37
Spec Spin Filters 38
Threaded Filters
4-40 39-41
6-32 42
6-40 42
8-32 43-44
10-32 45
12-28/32 46-48
5/16-24, 5/16-32 49

High Current/High Voltage Resin Sealed Filters

- Current ratings up to 100 Amps
- Continuous voltage ratings up to 2500 VDC/240 VAC
- U.L. 1459 recognized and CSA C22.2 certified versions available
- Rugged bolt-in style for easy installation

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.

High Voltage Filters
25 Amp 50-51
UL/CSA Filters
50 Amp 50-51
100 Amp 50-51
Explosion Proof Filters ... 52-53

Hermetically Sealed Case Filters

- Popular .375/.410" and .690" case diameters
- Voltage ratings from 50 VDC to 400 VDC/ 240 VAC
- Filter configurations available: C, L, Pi, T and double T
- MIL-F-15733 and MIL-F-28861 QPL filters available

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 broadband high performance EMI filtering from 10 KHz to over 10 GHz.

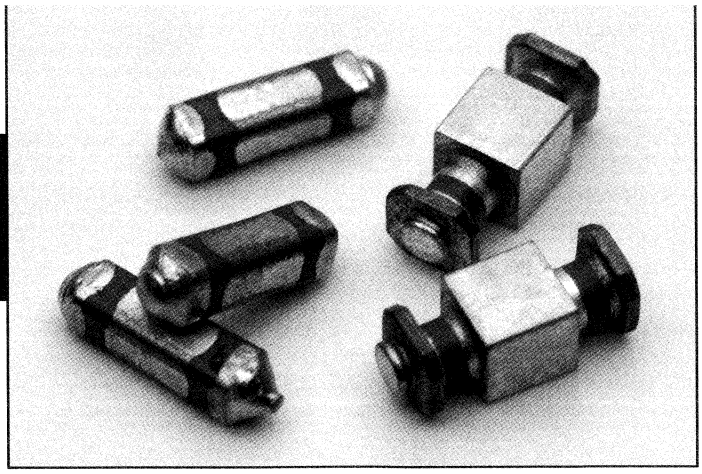
Case Dia.	*Filter*	
.375 / .410	*C*	54-55
	L	56-60
	Pi	61-62
	Transient Suppression Pi	62
	T	63
	TT	64
.690	*C*	65
	L	66-67
	Pi	68
	T	69

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Surface Mount EMI Filters

PSM & SSM Series



PSM Series filters are the first surface mount components to effectively filter EMI/RFI on printed circuit boards operating at currents up to 20 Amps. SSM Series filters lend themselves for mounting on densely populated circuit boards where currents of 10 Amps or less are desired. By eliminating the need to use conventional thru-hole filters at these higher currents, it will be possible to create an "RF fence" without expensive RFI bulkheads. SSM & PSM filters can be installed with pick and place equipment, providing time and cost savings compared to installing thru-hole filters.

Features

- High current up to 10 Amps (SSM) and 20 Amps (PSM)
- High temperature construction
- Excellent high frequency noise suppression
- Capacitance values up to 2,000pF (SSM) and 10,000pF (PSM)
- Superior performance in GHz applications
- Square mechanical geometry enhances SMT soldering

Applications

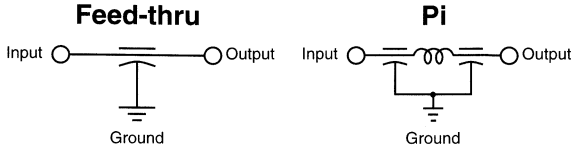
- Power amplifiers
- High current bus lines
- Switching power supplies
- Signal and data lines in electronic equipment

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Surface Mount EMI Filters

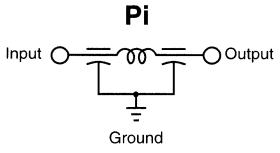
PSM & SSM Series

PSM



Voltage Rating DC . . . . . 200 VDC @ -55°C to +125°C
Voltage Rating AC . . . . . Contact factory
DWV . . . . . 700 VDC
Current Rating . . . . . 20 Amps (Feed-thru)
10 Amps (Pi)
Surge Current Capabilities . . . . . 100 A for 1 second (Feed-thru)
50 A for 1 second (Pi)
Insulation Resistance . . . . . 1.0 GOhms @ 25°C
Dissipation Factor . . . . . 4.0% maximum
D.C.R. . . . . . Max. .0005Ω, typ. .0002Ω

SSM



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

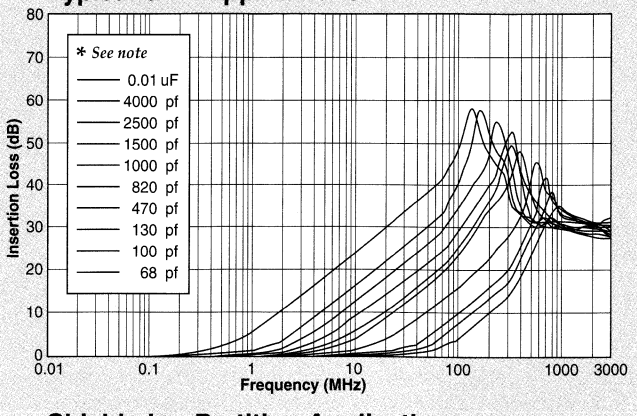
* ***Capacitance values for insertion loss curves are displayed left to right in the order shown.***

Note: Insertion loss for SSM product not shown. For reference purposes use chart as follows:

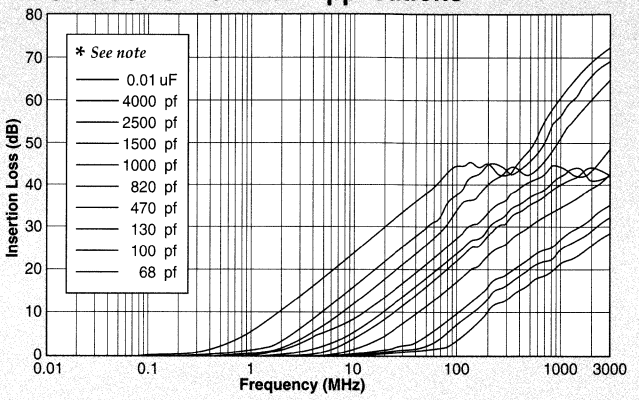
SSM Value	PSM Value
101z	100pF
501G	470pF
202G	1500pF

Feed-thru Insertion Loss

Typical SMT Applications

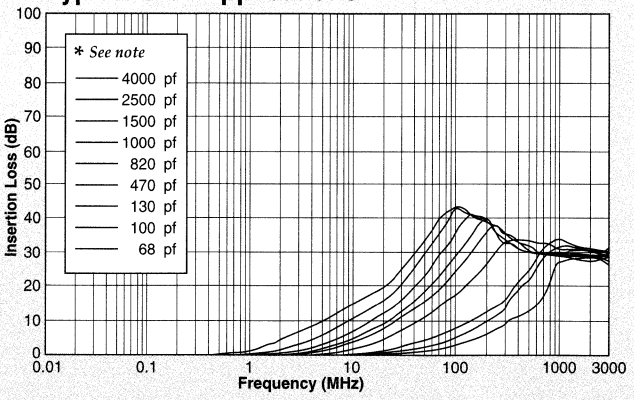


Shielded or Partition Applications

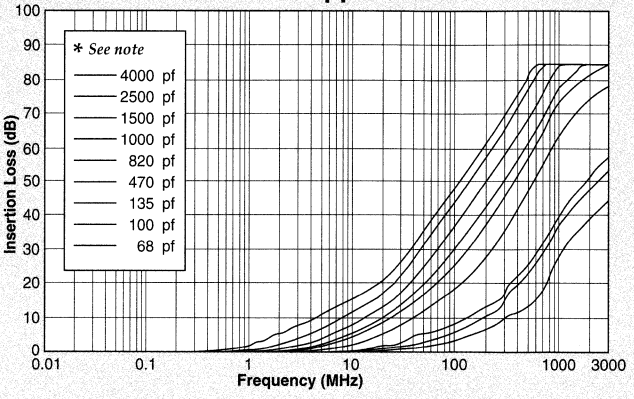


Pi Insertion Loss

Typical SMT Applications



Shielded or Partition Applications

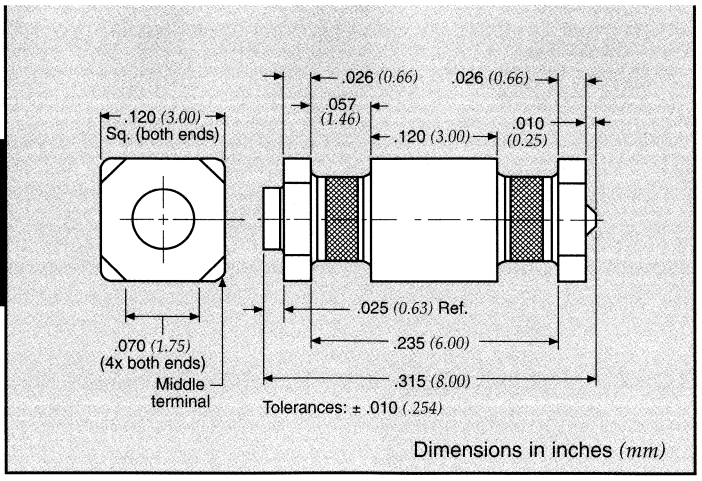


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SPECTRUM CONTROL INC.

Surface Mount EMI Filters

PSM & SSM Series



PSM Ordering Information

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

The part number shown represents a power surface mount feed-thru filter with a capacitance value of 4000 pF and capacitance tolerance of +80/-20%. The current rating of the part is 20 Amps and the packaging is tape and reel.

PSM - **4** - **402Z** - **20** - **T** - **0**

Power Surface Mount

Circuit Configuration
1 - Pi
4 - Feed-thru

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%

* *Other capacitance values available as special order.*

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

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

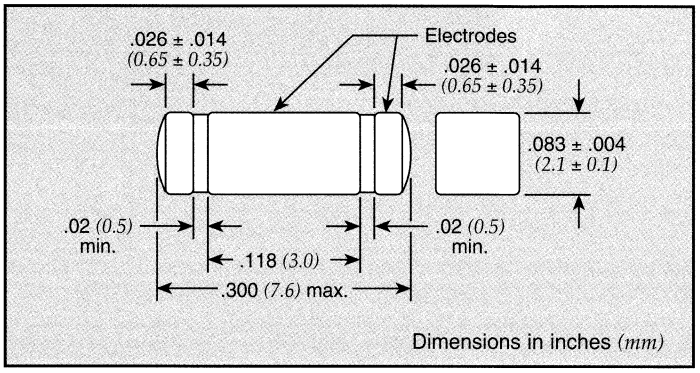
Packaging
T - Tape and reel packaging
B - Bulk packaging

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

† Also available through Spectrum Control's authorized distributors.

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

† PSM1-402Z-10T0 €
† PSM4-103Z-20T0 €
† PSM4-152M-20T0 €
† PSM4-402Z-20T0 €



SSM Ordering Information

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

SSM - **1** - **101Z** - **05** - **T** - **1**

Style

Circuit Configuration
1 - Pi

Capacitance

Code	Value	Tolerance
101Z	100 pF	+80%/-20%
501G	500 pF	GMV
152P	1500 pF	+100%/-0%
202G	2000 pF	GMV

Current Rating
05 - 5 Amps (Pi)

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 Spectrum Control's authorized distributors.

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

† SSM1-152P-05-T1 €

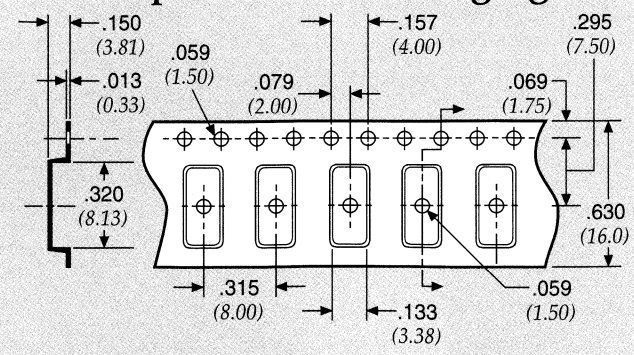
Surface Mount EMI Filters

PSM & SSM Series

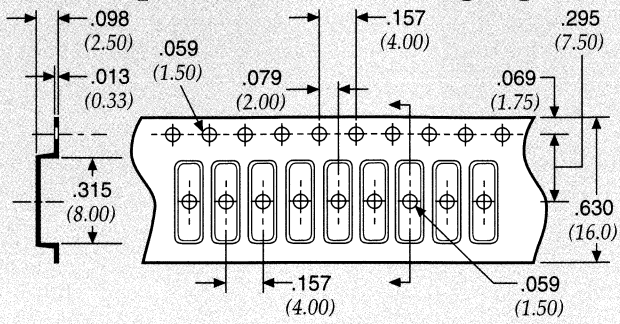
Technical Notes

- 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



SSM Tape and Reel Packaging



Dimensions in inches *(mm)*

PSM

Solder paste pattern

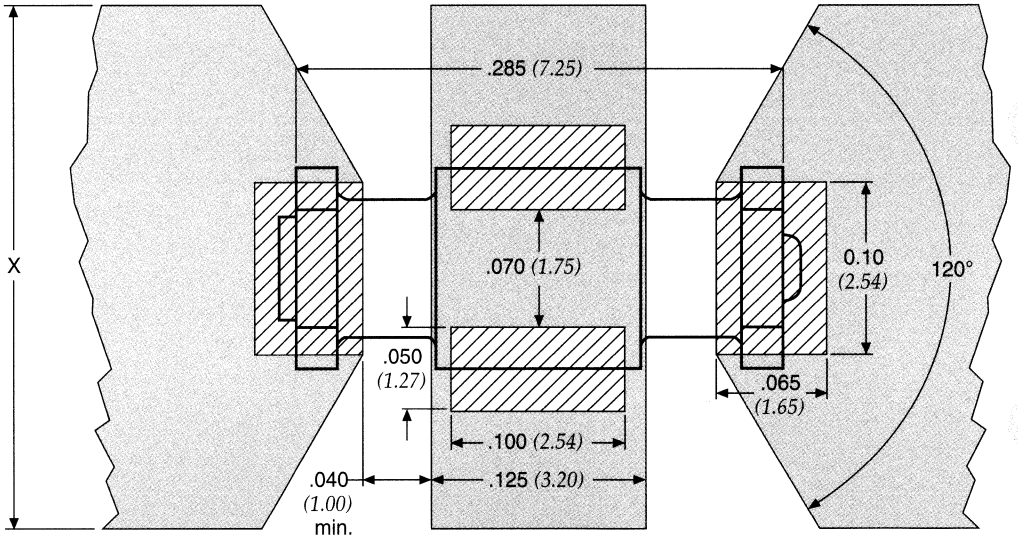
Recommended pad, must be able to support continuous signal current

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

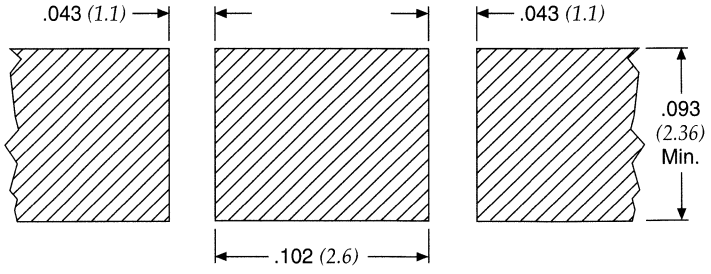
X = 0.200" minimum for 2 oz. copper (0.071 mm thickness)

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)*



SSM

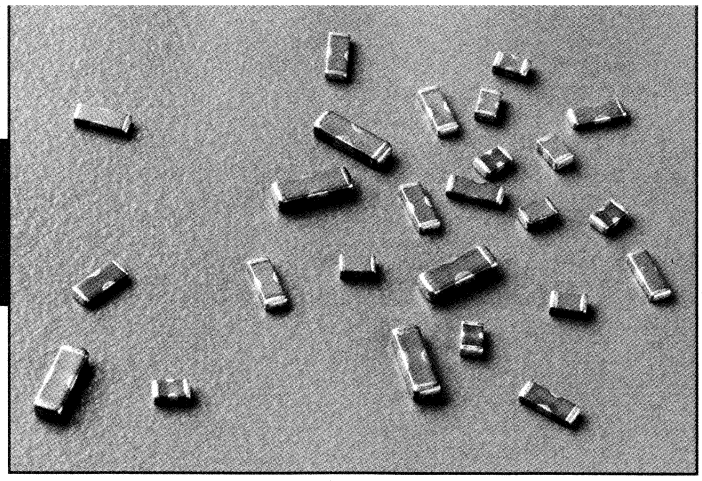


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SPECTRUM CONTROL INC.

Surface Mount EMI Filters

Three Terminal Chips



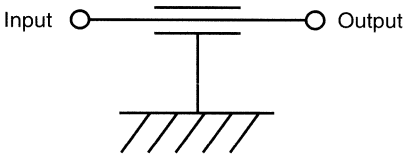
Features

- 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 0805, 1205 and 1806 body size
- Two amp current rating available

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
Capacitance Tolerance	COG (NPO)	± 50%/-20%
	X7R	± 50%/-20%
Temperature Coefficient	COG (NPO)	0 ±/30 ppm/°C, -55 to +125°C
	X7R	+/-15%, -55 to +125°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.

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.
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

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

† = Temperature Characteristic is +30/-80%

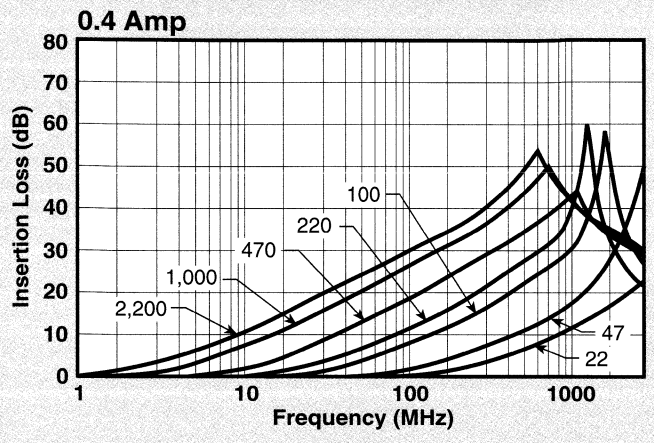
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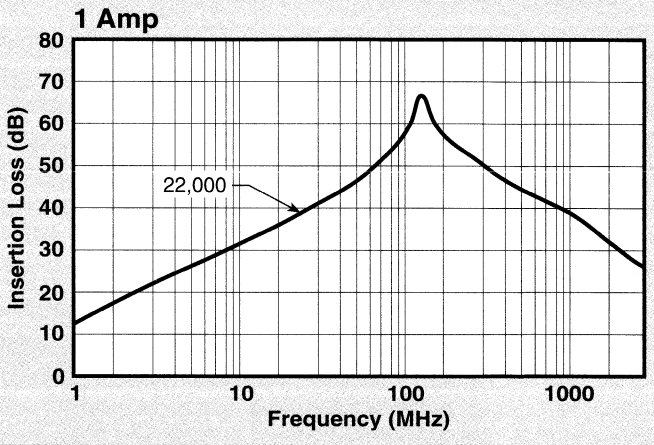
Surface Mount EMI Filters

Three Terminal Chips

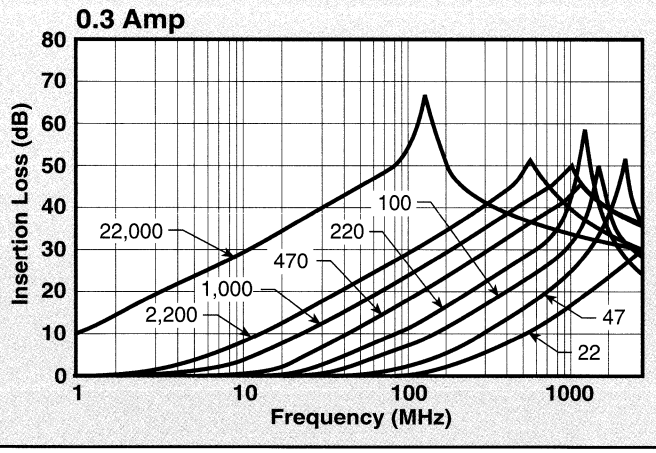
Insertion Loss (Per Mil Stand 220)

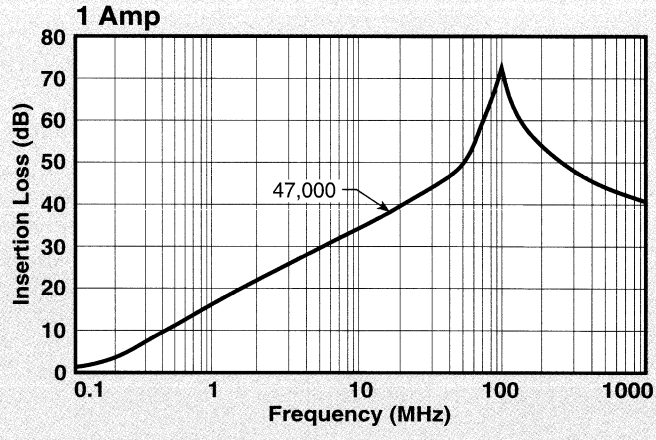
SF0805 Series



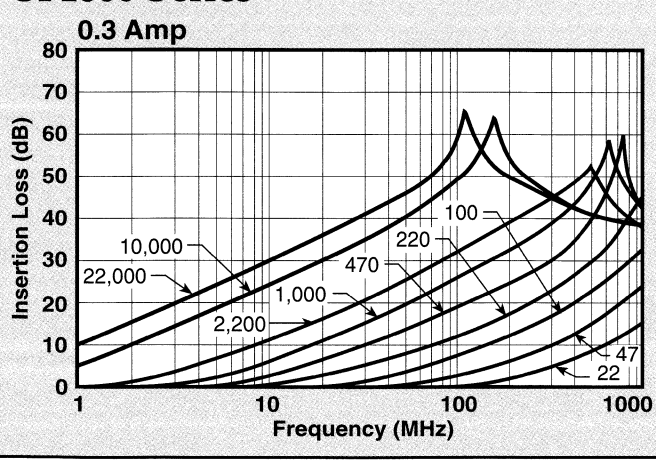


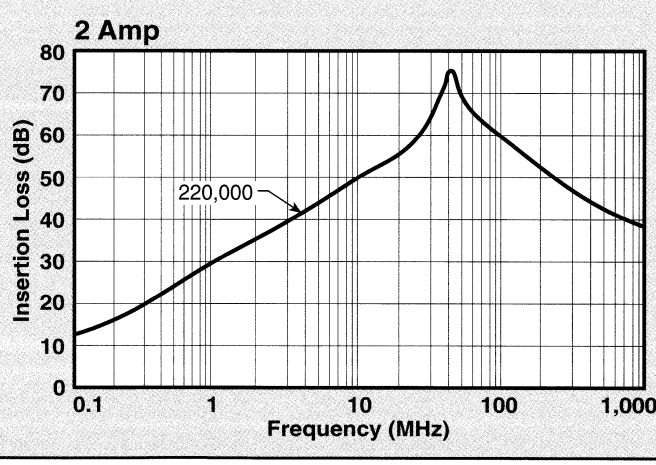
SF1205 Series





SF1806 Series

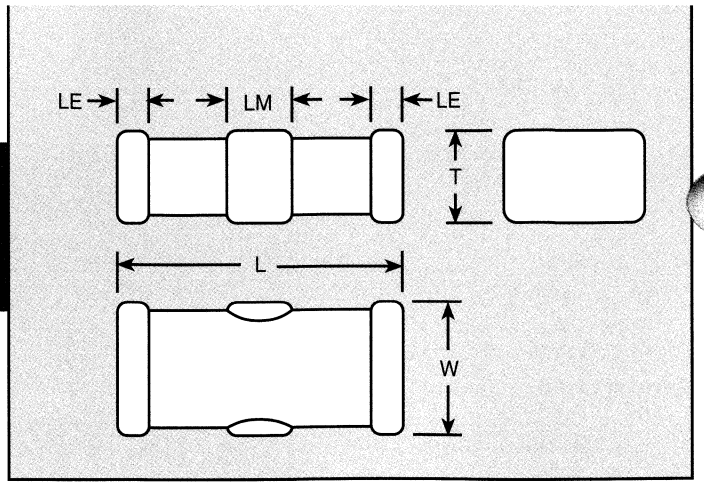




SPECTRUM CONTROL INC.

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)
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.

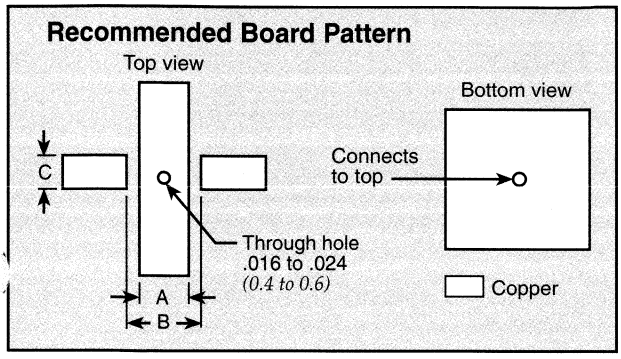
SF	**0805**	**C**	**221**	**S**	**B**	**N**	**C**	**T**
Style	**Size**	**Ceramic**	**Capacitance Code**	**Capacitance Tolerance**	**Rated Voltage (Vdc)**	**Termination**	**Current Rating**	**Packaging**
SF	**0805** **1205** **1806**	**C** - COG **X** - X7R **Y** - Y5V	First Two Numbers are Significant, the Third Number Refers to Number of Zeroes	**S** - +50%/-20% **Z** - +80%/-20%	**B** - 50 **D** - 100	**N** - Ni Barrier, Solder Plated	**B** - 0.3 A **C** - 0.4 A **D** - 1 A **E** - 2 A	**T** - Tape and Reel **B** - Bulk

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Three Terminal Chips Soldering Specifications

Soldering Instructions

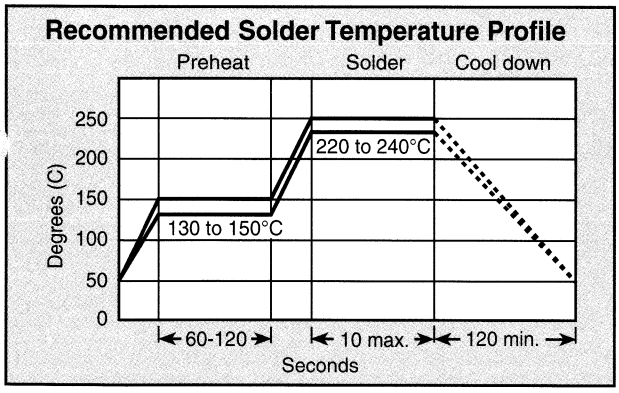
Reflow Soldering



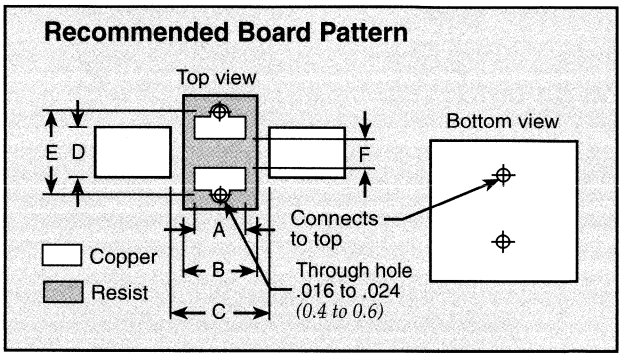
Board Pattern Dimensions in inches *(mm)*

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

Reflow Soldering



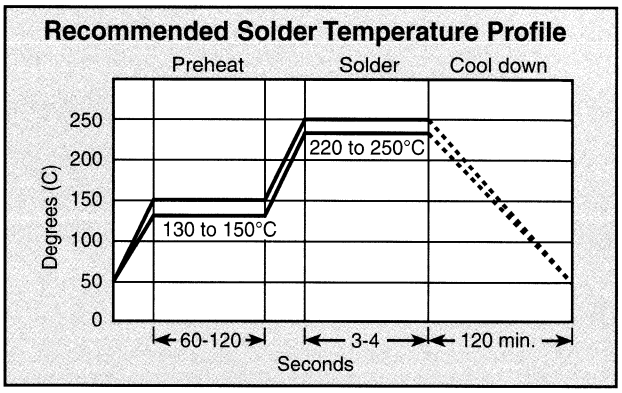
Flow Soldering



Board Pattern Dimensions in inches *(mm)*

Body Style/Size	Dimension					
	A	B	C	D	E	F
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)*	0.047 *(1.2)*	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

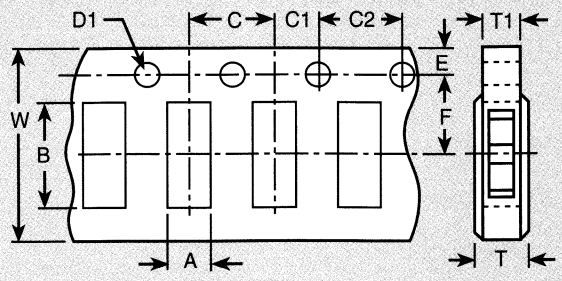
Three Terminal Chips Packaging Specifications

Package Quantities

Body Style/Size	Tape and Reel	Bulk
SF0805	4,000 units/reel	1,000 units/bag
SF1205	4,000 units/reel	1,000 units/bag
SF1806	2,000 units/reel	1,000 units/bag

Package Information

Paper Tape Dimensions
SF0805 and SF1205 Bodies



Dimensions in inches *(mm)*

Body Style/ Size	Chip Cavity Length A	Chip Cavity Width B	Tape Width W	Tape Center to End F	Tape Indexing to End E	Holes Center to Center C	Holes Indexing to Center C1	Holes Indexing to Indexing C2	Hole Diameter Indexing D1	Thickness Overall T (Max.)	Thickness Carrier Tape T1 (Max.)
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)*

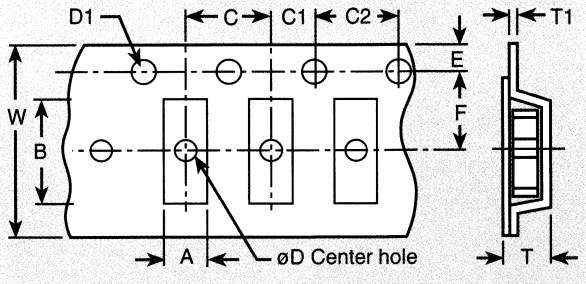
Plastic Reel Dimensions

Dimensions in inches *(mm)*

Body Style/Size	Diameter (Max.)	Width (Max.)
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)*

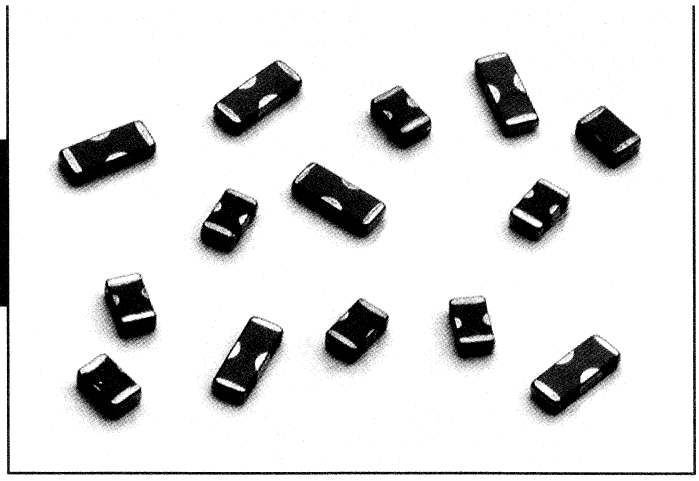
Body Style/ Size	Chip Cavity Length A	Chip Cavity Width B	Tape Width W	Tape Center to End F	Tape Indexing to End E	Holes Center to Center C	Holes Indexing to Center C1	Holes Indexing to Indexing C2	Hole Diameter Center D (Min.)	Hole Diameter Indexing D1	Thickness Overall T (Max.)	Thickness Tape T1 (Max.)
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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SPECTRUM CONTROL INC.

Surface Mount EMI Filters

LC Type Chips



Features

- High efficiency EMI surface mount filter
- Non-polar, surface mountable
- Ideally suited for high frequency signal lines
- Steep insertion loss (IL) characteristics
- Effective over a wide range of frequencies
- Monolithic construction of dielectric and ferrite materials
- Available in the 0805 and 1206 body sizes

Typical Electrical Characteristics

Cut-off Frequency Ranges . . . . . 10 MHz to 220 MHz

Cut-off Frequency Tolerances . . . . . ± 20%

Rated Voltage . . . . . 25 Volt

Rated Current . . . . . 100 milliamp

IR . . . . . 100 Megohms min.

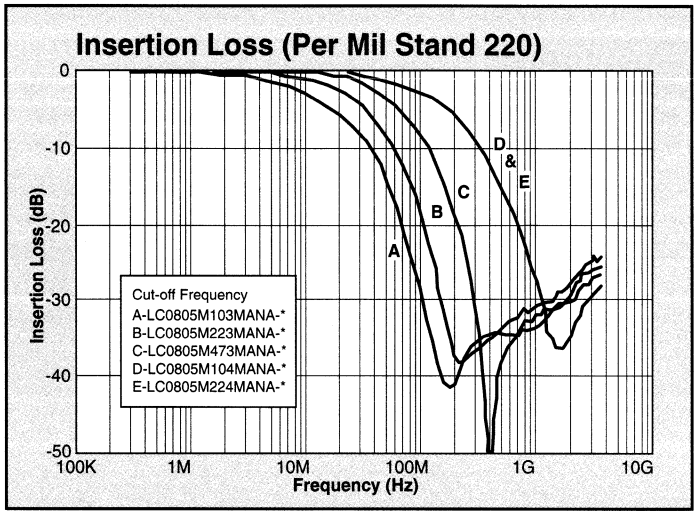
Temperature Range . . . . . -25°C to +85°C

DC Resistance . . . . . 6 ohms max.

Applications

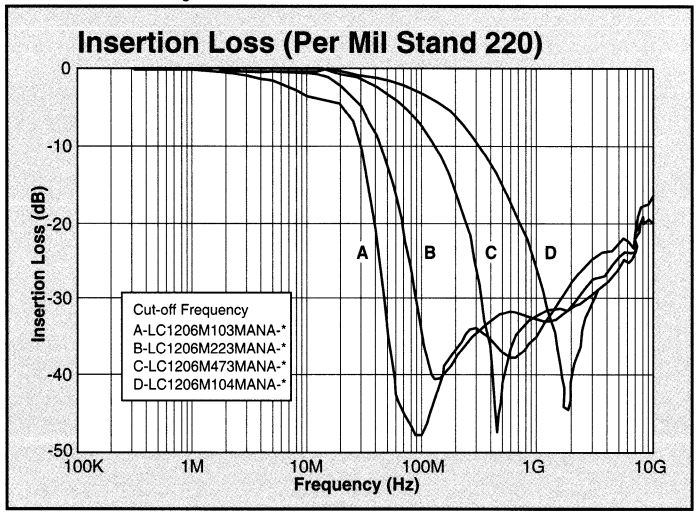
- Cellular telephones and base stations
- Telecommunication equipment
- Industrial electronic interface or programmable controllers
- Computer and peripheral equipment
- Digital AV equipment such as TV, VCR and DVD
- Digital circuit equipment

LC0805 Style



-* Denotes packaging style, replace with T for tape and reel or B for bulk

LC1206 Style

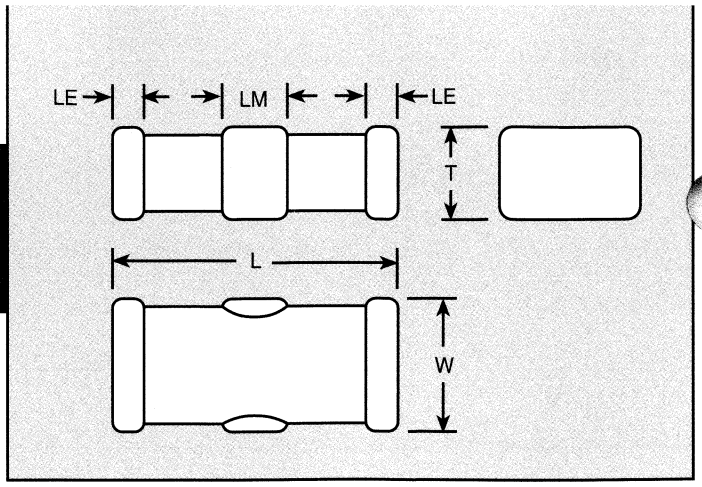


-* Denotes packaging style, replace with T for tape and reel or B for bulk

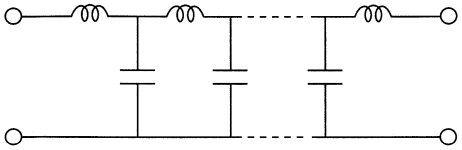
SPECTRUM CONTROL INC.

Surface Mount EMI Filters

LC Type Chips



Circuit Schematic



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)
LC0805	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)*
LC1206	0.126 ± 0.008 *(3.2 ± 0.2)*	0.058 ± 0.008 *(1.60 ± 0.2)*	0.0394± 0.008 *(1.0 ± 0.2)*	0.016 ± 0.012 *(0.4 ± 0.3)*	0.043 ± 0.012 *(1.1 ± 0.3)*

Selector Guide

Part Number	Body Size	Cut-off Frequency	Cut-off Frequency Tolerance	Rated Voltage	Rated Current	I.R.	Temperature Range
LC0805M103MANA-*	0805	10 MHz	± 20%	25 V	100 mA	100 MΩ	-25°C ~ +85°C
LC0805M223MANA-*		22 MHz					
LC0805M473MANA-*		47 MHz					
LC0805M104MANA-*		100 MHz					
LC0805M224MANA-*		220 MHz					
LC1206M103MANA-*	1206	10 MHz	± 20%	25 V	100 mA	100 MΩ	-25°C ~ +85°C
LC1206M223MANA-*		22 MHz					
LC1206M473MANA-*		47 MHz					
LC1206M104MANA-*		100 MHz					

-* Denotes packaging style, replace with T for tape and reel or B for bulk

Ordering Information

Example: LC1206M223MANAT

This part number represents an LC EMI filter chip with a body size of 1206. The cut-off frequency is 22 MHz with a tolerance of ± 20%, voltage rating is 25 Volts DC. It has nickel barrier, solder plated termination and a current rating of 0.1 Amp (100 milliamps). The parts are taped and reeled.

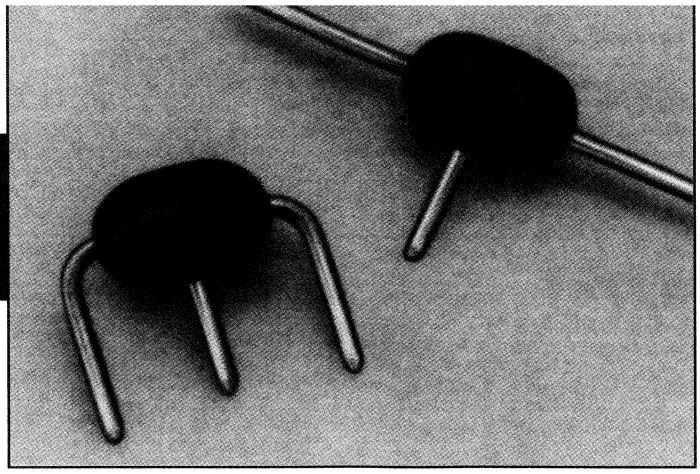
LC	**1206**	**M223**	**M**	**A**	**N**	**A**	**T**
Style	**Size**	**Cut-off Frequency**	**Cut-off Tolerance**	**Rated Voltage**	**Termination**	**Rated Current**	**Packaging**
LC	**0805** **1206**	**M103** = 10 MHz **M223** = 22 MHz **M473** = 47 MHz **M104** = 100 MHz **M224** = 220 MHz	**M** = ± 20%	**A** = 25 VDC	**N** = Ni Barrier, Solder Plated	**A** = 0.1 A (100 mA)	**T** = Tape and Reel **B** = Bulk

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SPECTRUM CONTROL INC.

Thru-hole Filters

High Frequency PCB Filters



The economical High Frequency PCB Filter offers electrical characteristics which allow many devices to meet most government and industry specifications for EMI control, while providing good electrostatic discharge protection.

A lossy ferrite filter with a center ground lead is terminated within the filter's thermoset epoxy body.

The High Frequency PCB Filter offers savings three ways. First is the low cost of the filter assembly. Second is the economy of installation. Three silver plated leads are inserted into holes in a printed circuit board which has a ground path circuit, for conventional flows-soldering with other components. No special mounting plate or brackets are needed and when the holes are placed as recommended in a .062 (1.57mm) thick board, no lead trimming is required. Elimination of hand soldering provides opportunities for improved quality in addition to applied-cost benefits.

A third savings results from placing a filter at the source of an EMI problem, potentially eliminating the need for additional filtering at other points in the circuit.

Features

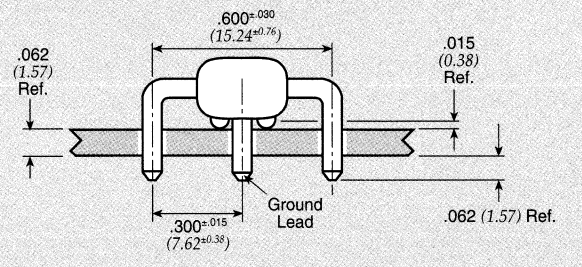
- Provides EMI filtering to protect low power digital circuits - helps equipment meet FCC and VDE specifications
- Mounts directly to printed circuit board with no bracket or plate for lower applied costs - can be flow soldered with other components
- Encapsulated for environmental protection
- Mounts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

Typical Electrical Characteristics

Current	Max. 10A DC; 0.3A RF
Operating Voltage	Max. 50 VDC, -25°C +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

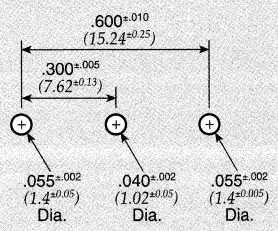
Preformed to Recommended Mounting Configuration
Part Number 842448-2

Recommended Mounting Configuration



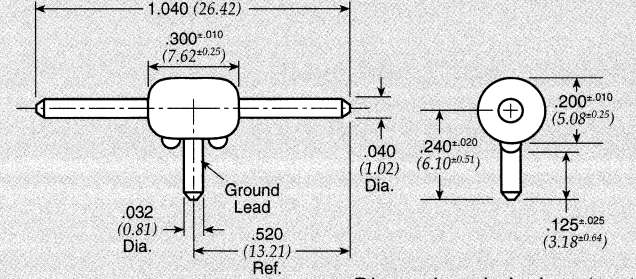
Dimensions in inches *(mm)*

Recommended PCB Hole Layout



Dimensions in inches *(mm)*

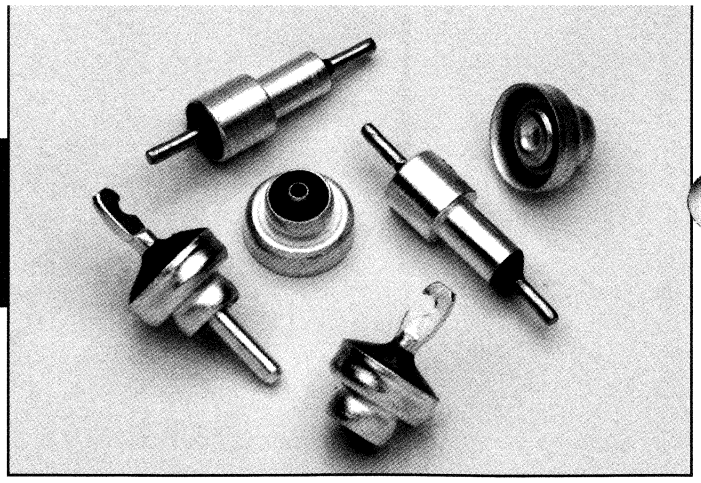
Standard Configuration Part Number 842448-1



Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

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 500 VDC
- Multiple circuit configurations: C, L & Pi available
- High temperature construction to prevent reflow during installation
- MIL-F-15733 QPL versions available

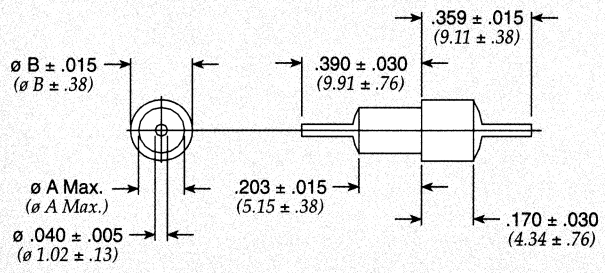


Figure 1

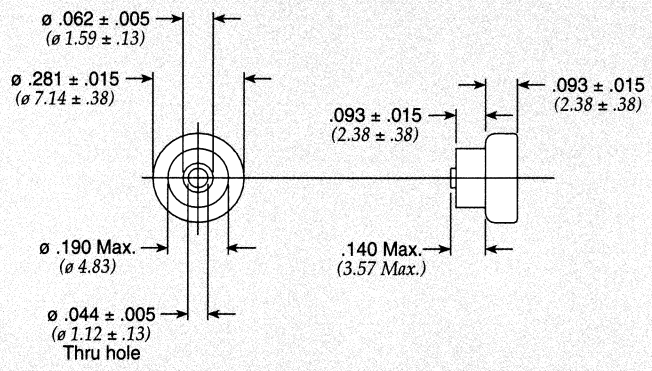


Figure 2

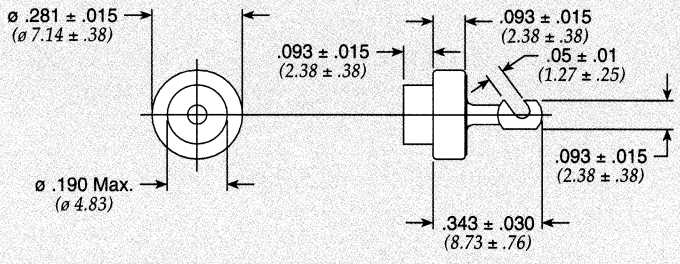


Figure 3

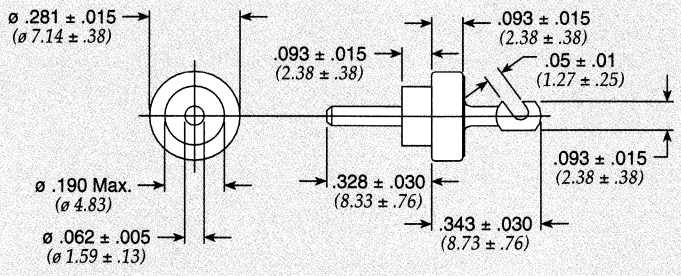


Figure 4

Dimensions in inches *(mm)*

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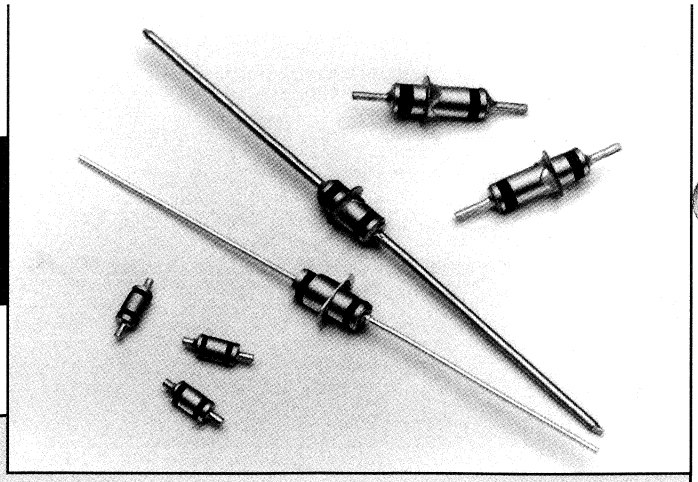
Solder-in Filters

Solder-in C Circuit

Part Number	See Pg. 32 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	20
54-785-002	1	0.125	*(3.18)*	0.170	*(4.32)*	100	10	0.05 µF	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

† Also available through Spectrum Control's authorized distributors.

Solder-in Filters



Solder-in Pi Circuit

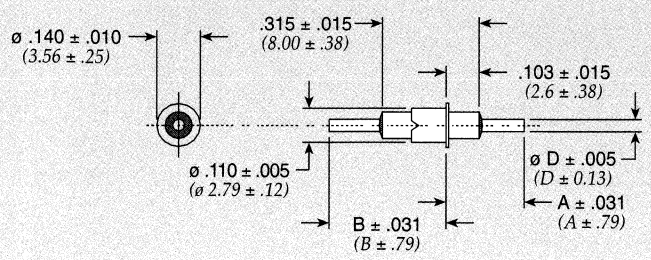


Figure 1

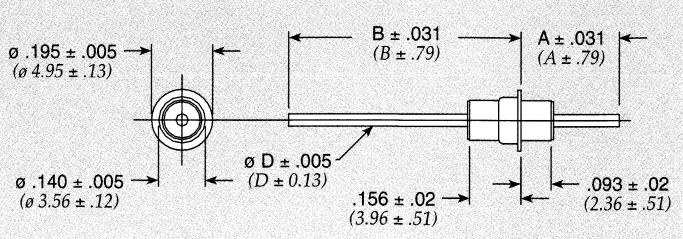


Figure 2

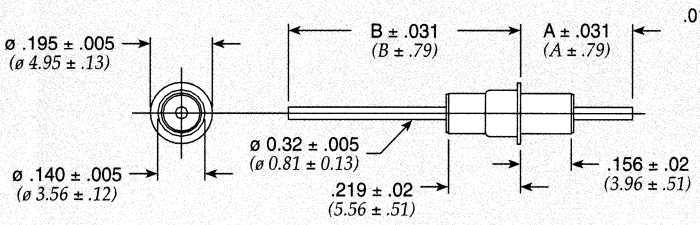


Figure 3

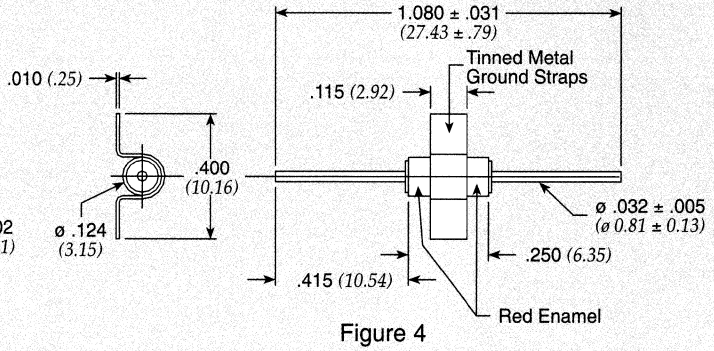


Figure 4

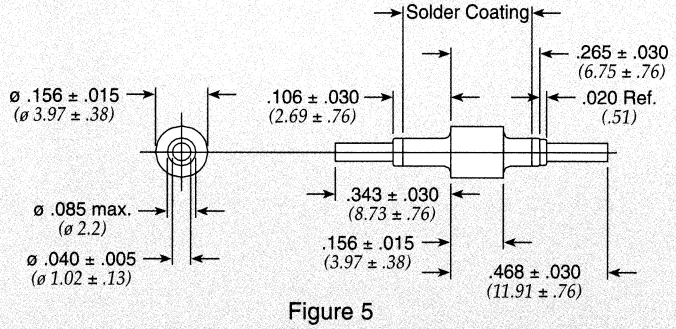


Figure 5

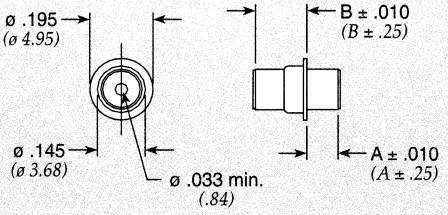


Figure 6

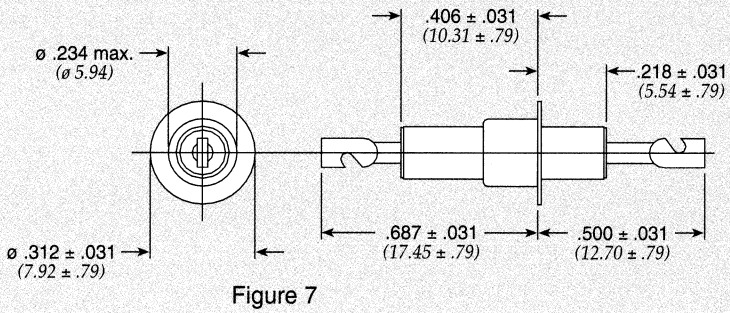


Figure 7

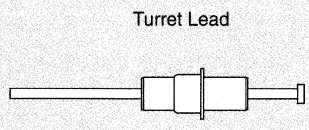


Figure 8

Dimensions in inches *(mm)*

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Solder-in Filters

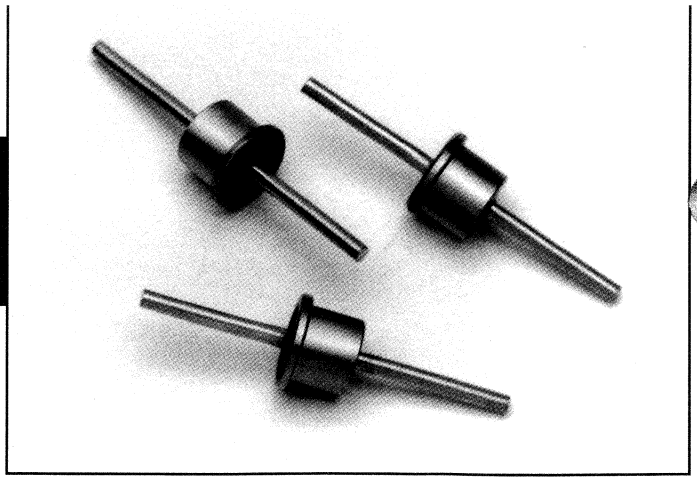
Solder-in Pi Circuit

Part Number	M15733 MIL Number	See Pg. 34 for Fig.	A		B		D		Rated Voltage 125°C		I	Min	Minimum Insertion Loss (dB)						
			In	(mm)	In	(mm)	In	(mm)	DC	AC	Amp	Cap	1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
1223-012	—	1	0.240	(6.10)	0.360	(9.14)	0.040	(1.02)	50	—	15	3000 pF	—	7	25	50	65	65	65
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	/64-0001	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	60
†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
51-723-301	—	5	—	—	—	—	—	—	200	—	10	5500 pF	—	14	30	55	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
†1204-050 €	—	7	—	—	—	—	—	—	500	—	25	3000 pF	—	8	25	50	65	70	70
51-704-002	/40-0001	7	—	—	—	—	—	—	500	350	25	3000 pF	—	7	25	55	65	70	70

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

SPECTRUM CONTROL INC.

Miniature Solder-in Filters



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 .030µF
- Voltage ratings to 200 VDC/115 VAC 0–400 Hz
- Hermetically sealed on one end allows for thru-hole sealing between compartments
- High temperature construction meets MIL-F-28861 solderability and resistance to soldering heat requirements
- Gold plating compatible with gold bonding techniques

Marking

Color dot standard as follows:

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

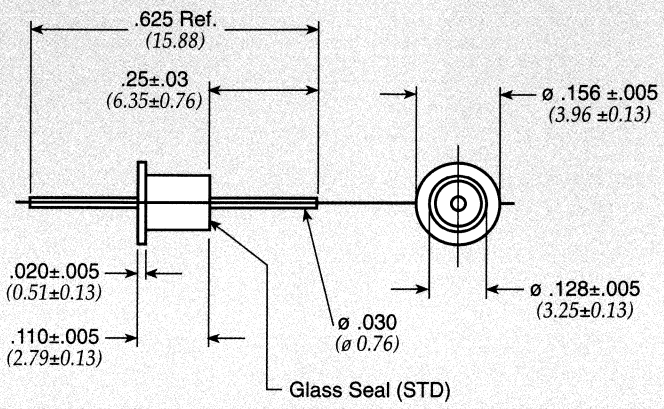


Figure 1

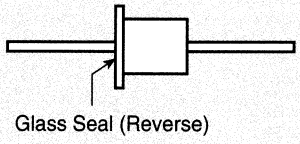


Figure 1 (Reverse)

Dimensions in inches *(mm)*

Miniature Solder-in C Circuit

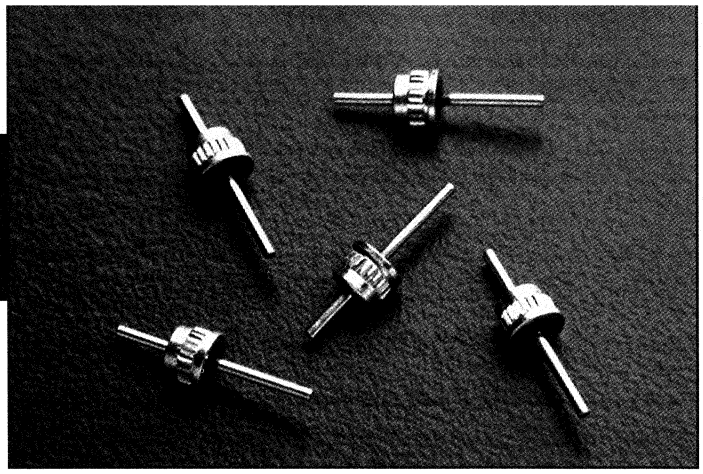
Part Number*	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
SCI-9900-153	1	50		5	0.015 µF	7	25	30	40	40	60	60
SCI-9900-303	1	50		5	0.030 µF	10	30	35	45	50	55	55
†**SCI-9910-272**	1	100		5	2700 pF	—	10	18	25	33	40	50
†**SCI-9910-502**	1	100		5	5000 pF	—	15	20	30	35	45	55
SCI-9900-000	1	200		5	10 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" after the first dash (SCI-R9900-153).
† Also available through Spectrum Control's authorized distributors.

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SPECTRUM CONTROL INC.

Spec-Mini Press 9900 Series



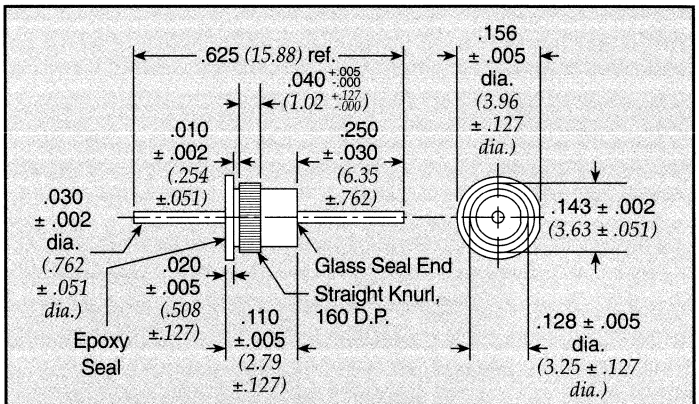
This new knurled filter is designed to be pressed into place and create a reliable mechanical bond. This feature makes it an excellent selection for applications where soldering is undesirable. Suitable plating is available that allows gold bonding to the terminals.

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" 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

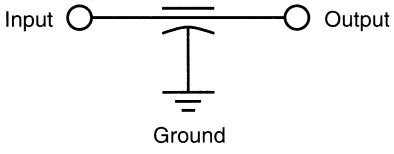
Plating . . . . . Gold

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

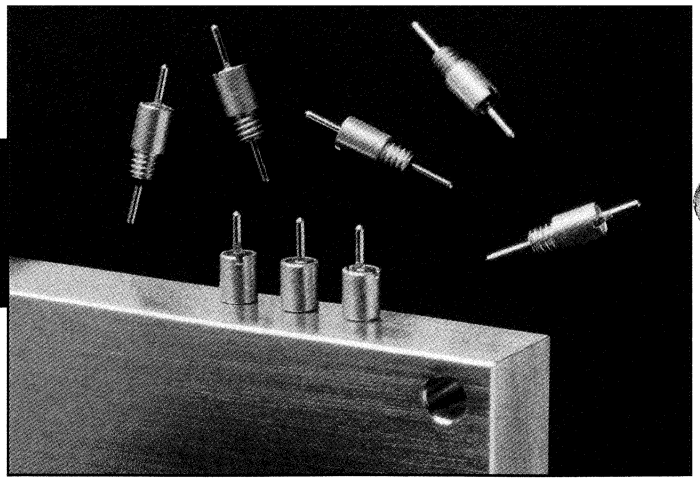


Part Number	Figure	Rated Voltage 125°C DC	I Amp	Cap	Minimum Insertion Loss (dB) 1 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†SCI-9925-153	1	50	5	0.015 µF +100%/-0%	7	25	30	40	40	60	60
†SCI-9925-303	1	50	5	0.030 µF +100%/-0%	10	30	35	45	50	55	55
†SCI-9925-502	1	100	5	5000 pF +100%/-0%	—	15	20	30	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

† Also available through Spectrum Control's authorized distributors.

SPECTRUM CONTROL INC.

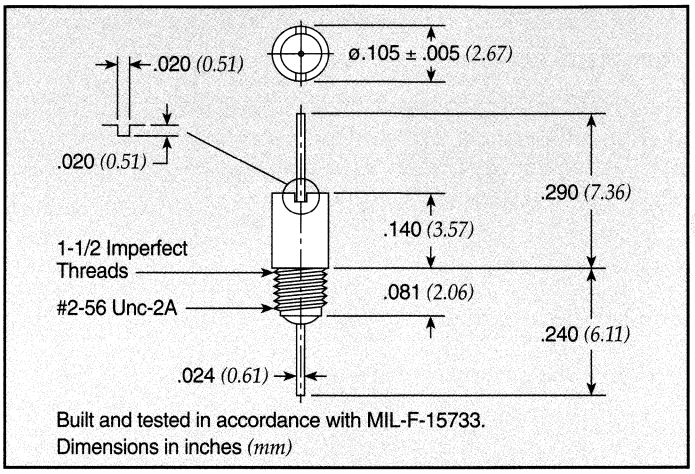
Spec-Spin Filters



Spectrum Control Inc. 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

Spectrum Control's 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 hi-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

Mechanical Specifications

Center Spacing. . . . . .0.110"

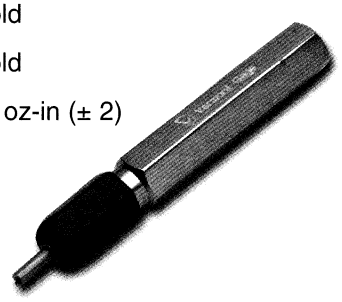
Lead Finish . . . . . Gold

Bushing Finish. . . . . Gold

Tightening Torque. . . . . 16 oz-in (± 2)

Insertion Tool

Part Number: 54-874-020

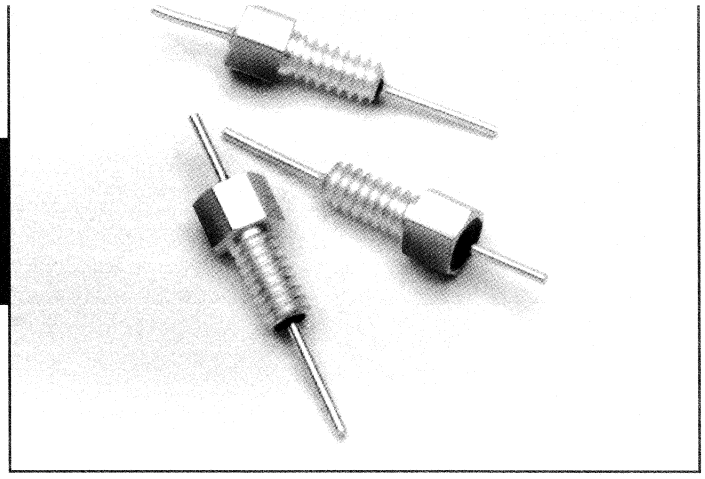


Part Number	Cap (pF)	Max. Tolerance	Circuit	Current	Voltage	DWV	I.R.	Temperature Range
54-874-010	10	+50%/-20%	C	5 A	50 VDC	125 VDC	1,000 MΩ	-55°C to +125°C
54-874-011	39							
54-874-012	100							
54-874-013	390							
54-874-014	1,000							
54-874-015	2,000							
54-874-016	3,300	+100%/-0%				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

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SPECTRUM CONTROL INC.

Resin Sealed Bolt-in Filters



These filters are easily mounted in a tapped hole or thru-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

4-40 C Circuit

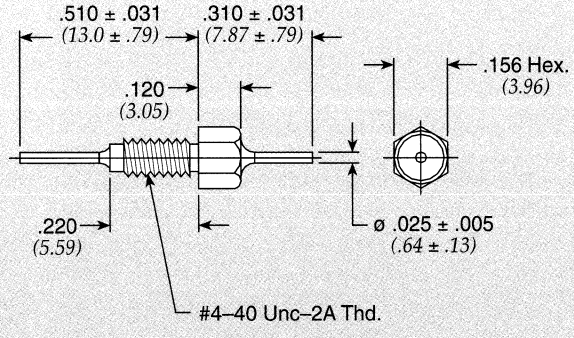


Figure 1

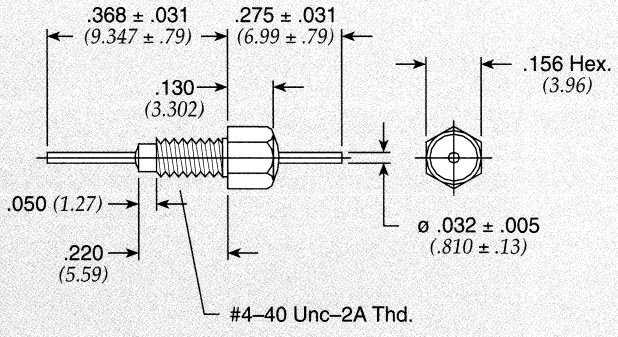


Figure 2

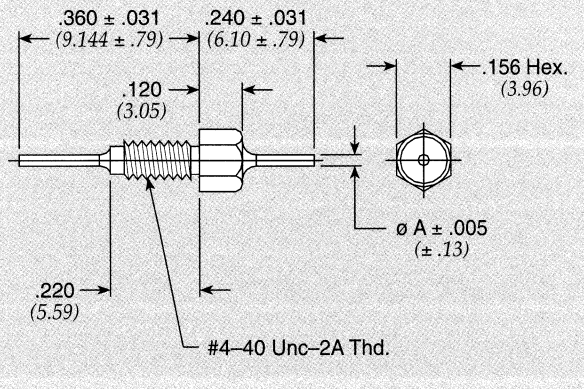


Figure 3

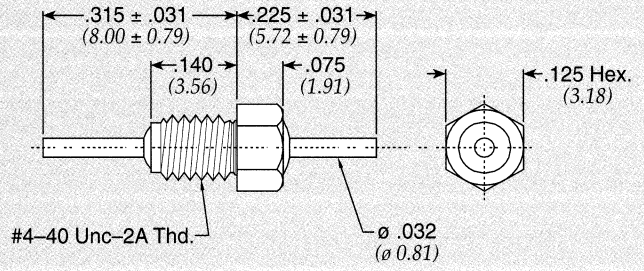


Figure 4

Dimensions in inches *(mm)*

Resin Sealed Bolt-in Filters

4-40 C Circuit

Part Number	See Pg. 39 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	0.056 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	68
†SCI-9120-102	3	200	115	10	1000 pF	0.020	*(0.51)*	—	—	—	11	20	28	28	68
†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	68
†54-790-021	1	300	—	10	0.01 µF	—	—	—	9	20	29	38	45	50	50

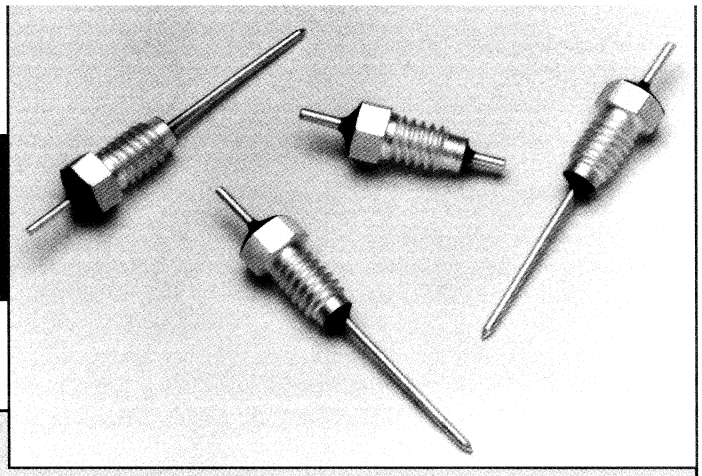
* Tinned, steel leads.

† Also available through Spectrum Control's authorized distributors.

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SPECTRUM CONTROL INC.

Resin Sealed Bolt-in Filters



4-40 L and Pi Circuit

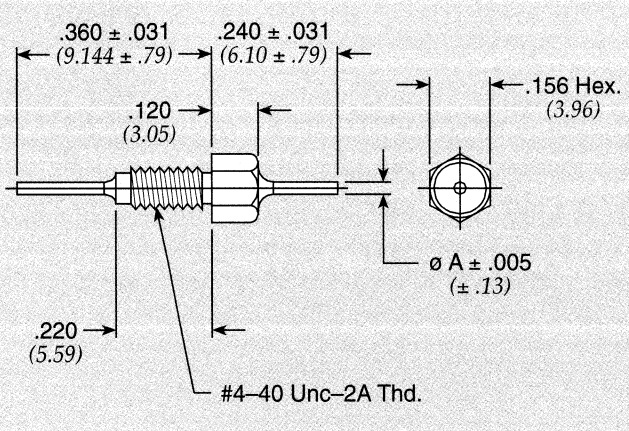


Figure 1

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	—	3	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 Spectrum Control's authorized distributors.

Resin Sealed Bolt-in Filters

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

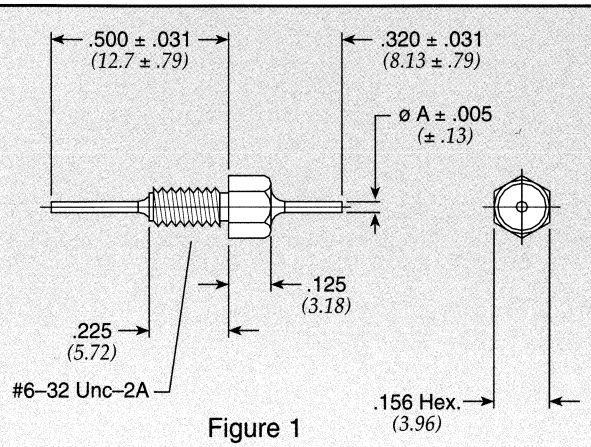


Figure 1

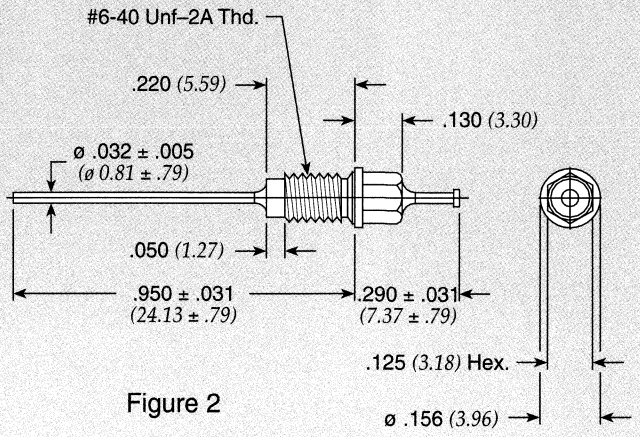


Figure 2

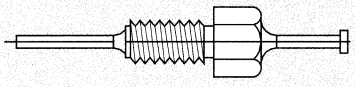


Figure 3

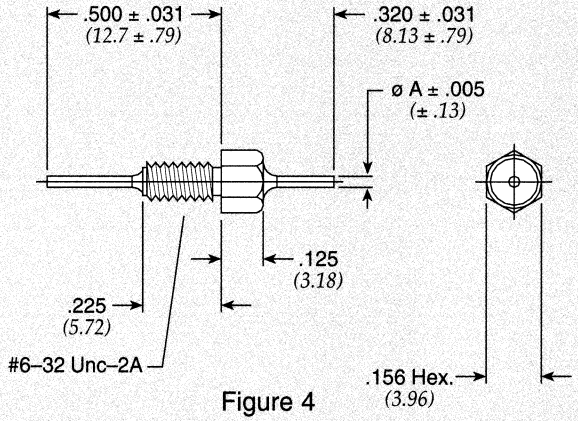


Figure 4

Dimensions in inches *(mm)*

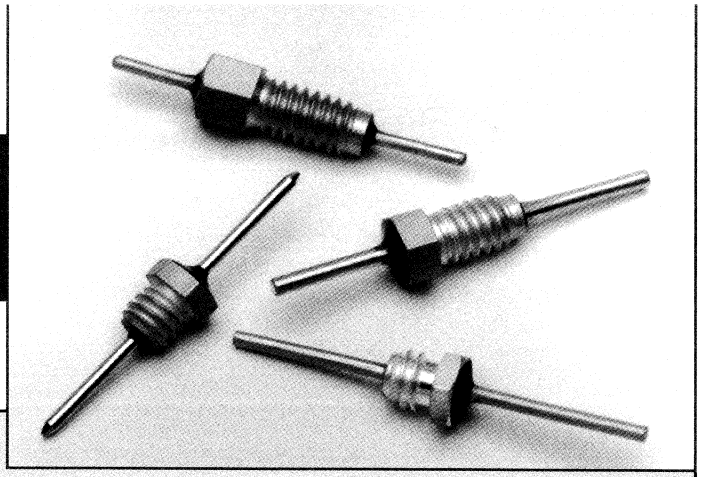
Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	A In	A (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
†51-726-008	1	50	—	3	Pi	5500 pF	0.018	(0.46)	—	7	14	30	55	70	70	70
†51-726-017	1	50	—	3	Pi	9000 pF	0.018	(0.46)	—	8	18	45	65	70	70	70
54-779-019	4	50	—	10	C	0.10 µF	0.032	(0.81)	22	31	40	44	47	55	65	65
†54779001X5F100M	4	100	—	10	C	10 pF ± 20%	0.032	(0.81)	—	—	—	—	—	—	10	10
†54779001X5U102P €	4	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	4	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	0.056 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	—	—	—	—	5	15	40	60	60	60
†1289-004	2	200	—	10	Pi	3000 pF	—	—	—	—	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 Spectrum Control's authorized distributors.
€ Also available through Spectrum Control's authorized European distributors/agents.

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SPECTRUM CONTROL INC.

Resin Sealed Bolt-in Filters



8-32 C Circuit

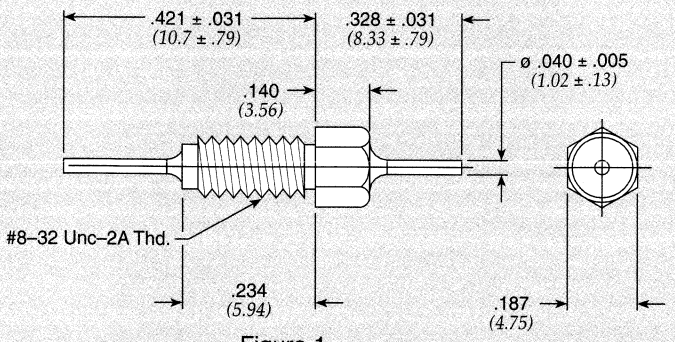


Figure 1

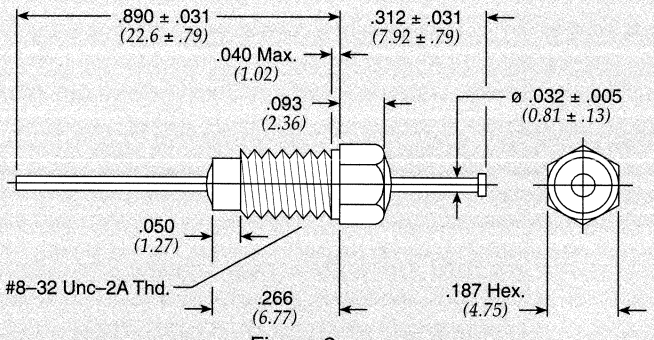


Figure 2

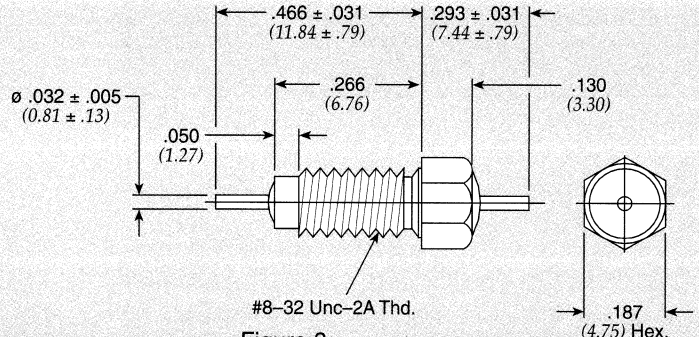


Figure 3

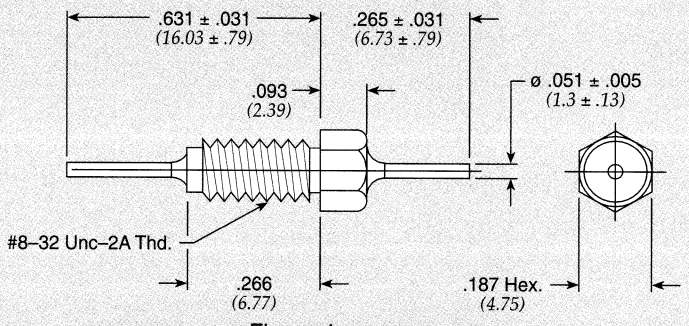


Figure 4

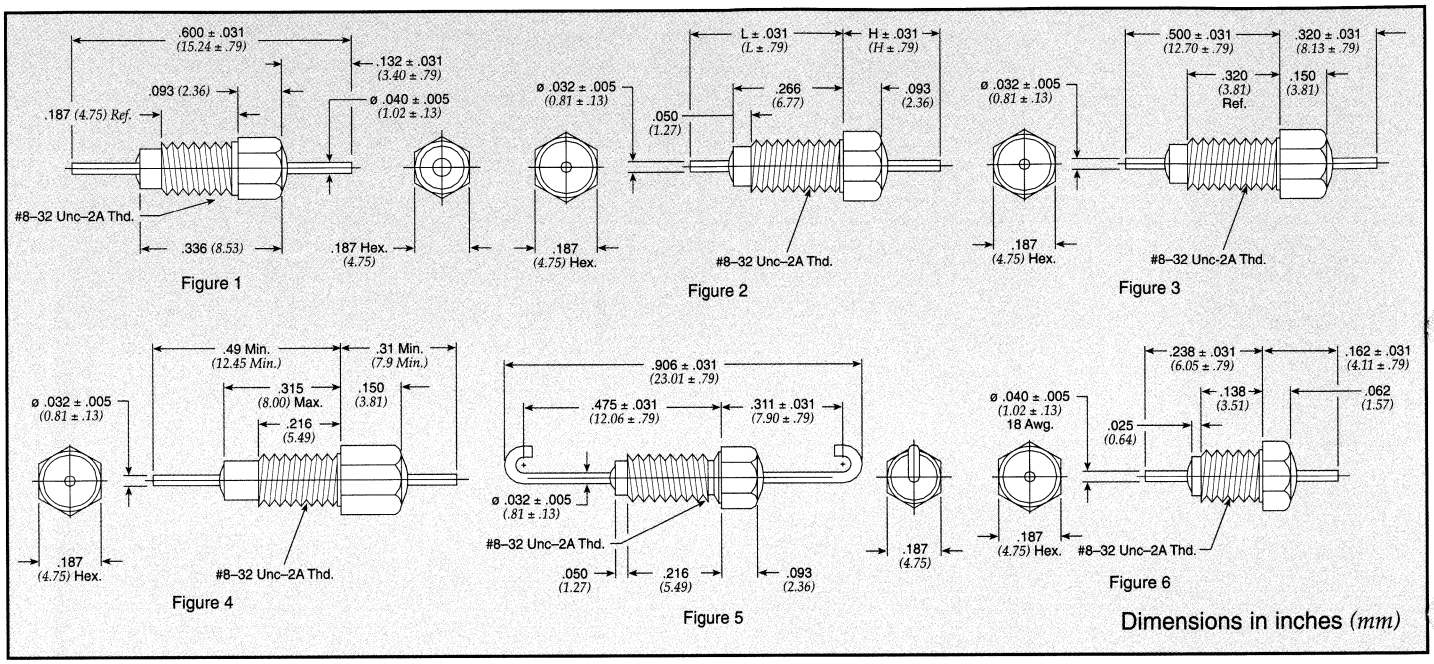
Dimensions in inches *(mm)*

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	100 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
9950-381-6007	3	100	—	10	0.05 µF	13	24	29	37	37	44	44	55
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 Spectrum Control's authorized distributors.

Resin Sealed Bolt-in Filters

8-32 L & Pi Circuit



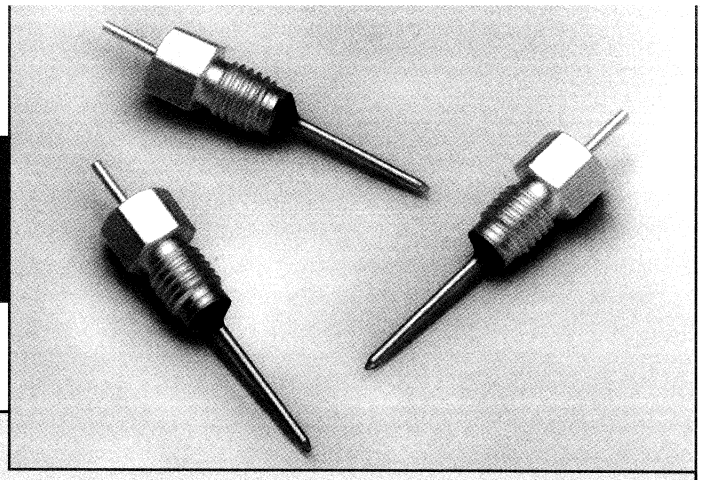
Part Number	M15733 MIL Number	Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	H In	H (mm)	L In	L (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-712-069 €	—	2	50	—	10	Pi	0.012 µF	0.265	(6.73)	0.413	(10.49)	5	9	18	45	65	70	70	70
†51-712-065	/61-0014	4	50	—	10	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	0.060 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	5	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	60	60	60
†51-712-001*	—	2	200	—	10	Pi	3000 pF	0.312	(7.92)	0.890	(22.61)	—	—	5	15	42	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 Spectrum Control's authorized distributors.
€ Also available through Spectrum Control's authorized European distributors/agents.
* Denotes parts with turret lead.
◊ Supplied with .040 diameter lead.

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SPECTRUM CONTROL INC.

Resin Sealed Bolt-in Filters



10-32 C & Pi Circuit

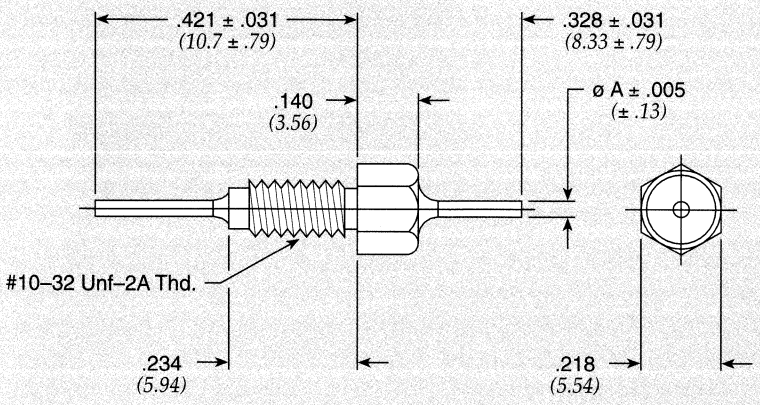


Figure 1

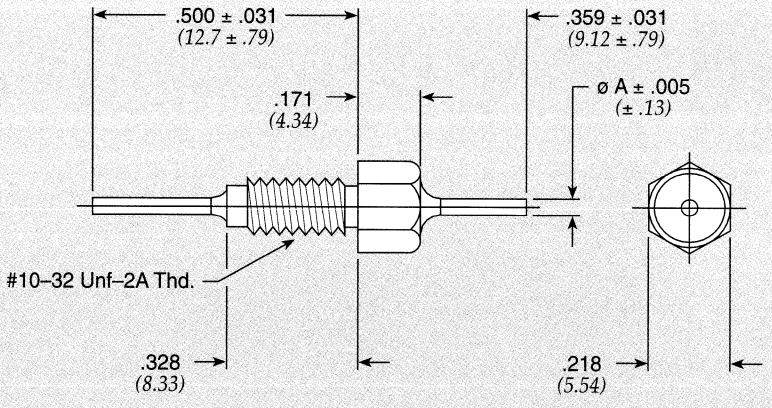


Figure 2

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	1 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 Spectrum Control's authorized distributors.

Resin Sealed Bolt-in Filters

12-28 C /12-32 C Circuit

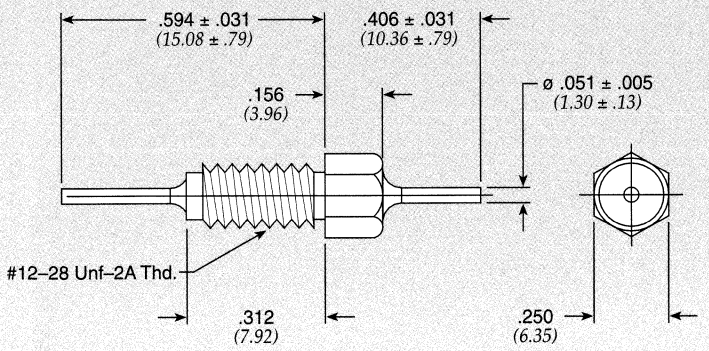


Figure 1

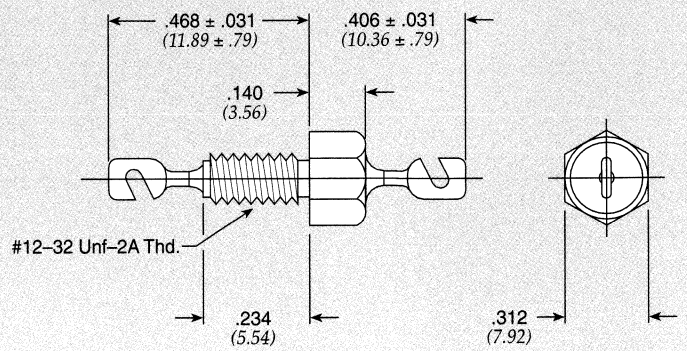


Figure 2

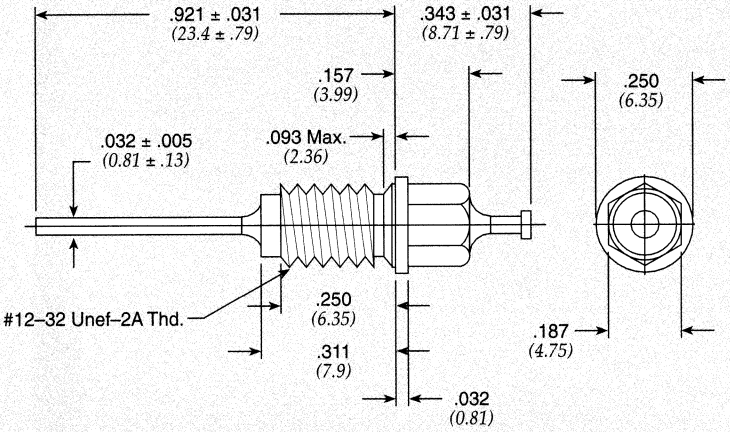


Figure 3

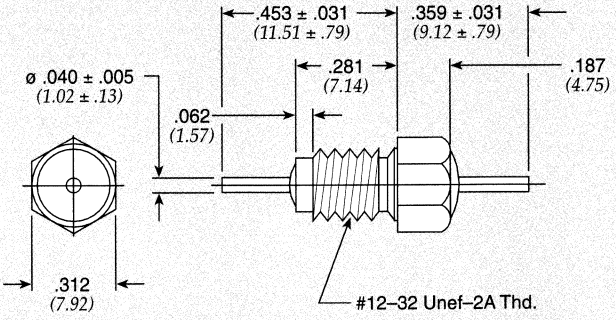


Figure 4

Dimensions in inches *(mm)*

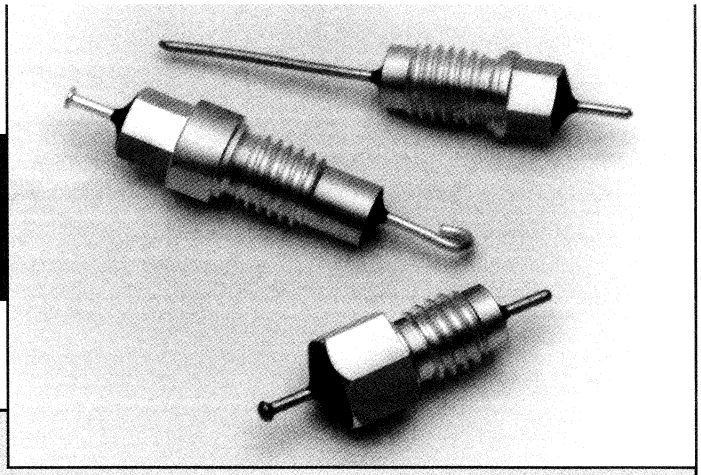
Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
9910-381-6004	4	35	—	15	C	1 µF	38	40	52	52	70	70	78	80
9910-381-6003	4	50	—	15	C	0.75 µF	35	37	51	51	61	61	65	70
SCI-9310-273	3	100	—	10	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 Spectrum Control's authorized distributors.

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SPECTRUM CONTROL INC.

Resin Sealed Bolt-in Filters



12-28 & 12-32 Pi Circuit

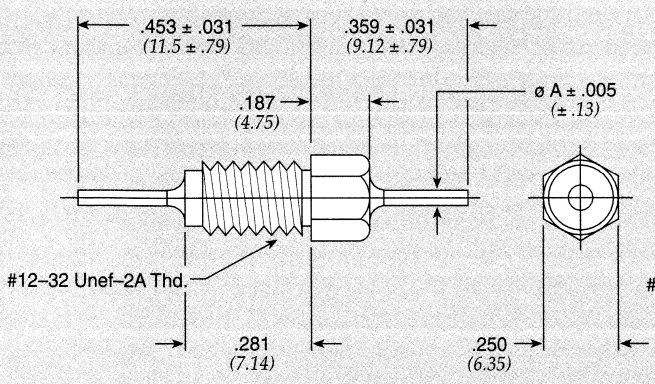


Figure 1

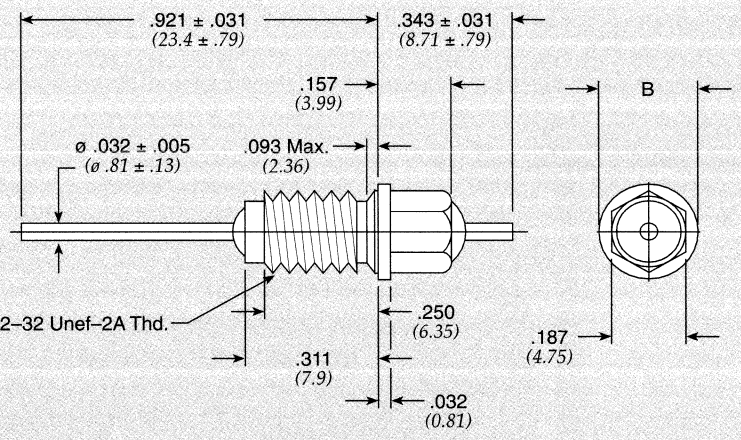


Figure 2

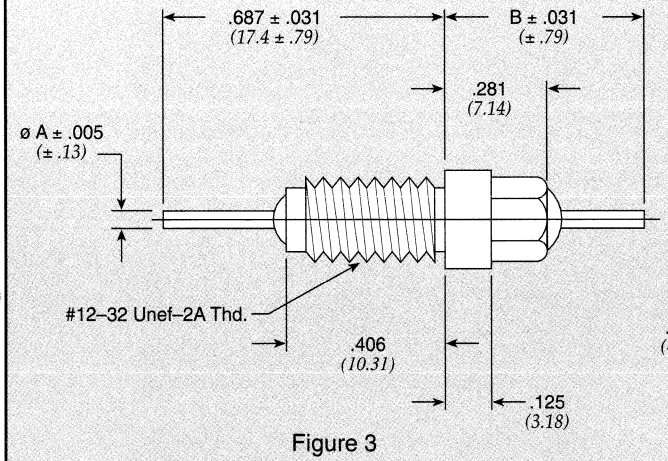
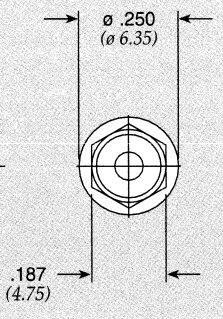


Figure 3



Same as Figure 3
Except as Shown.

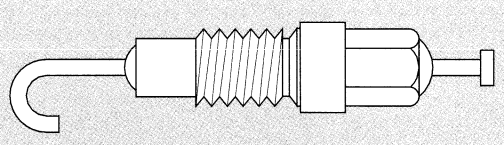


Figure 4

Same as Figure 1
Except as Shown.

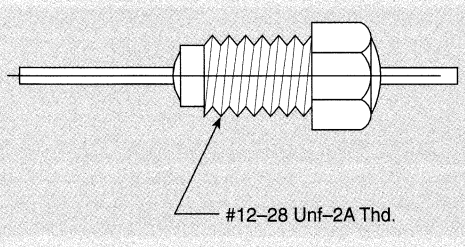


Figure 5

Same as Figure 2
Except as Shown.

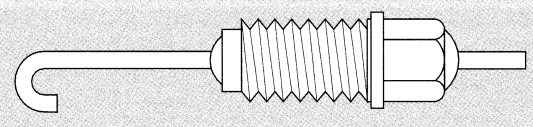


Figure 6

Turret Lead

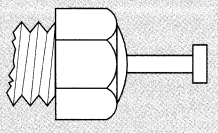


Figure 7

Dimensions in inches *(mm)*

Resin Sealed Bolt-in Filters

12-28 & 12-32 Pi Circuit

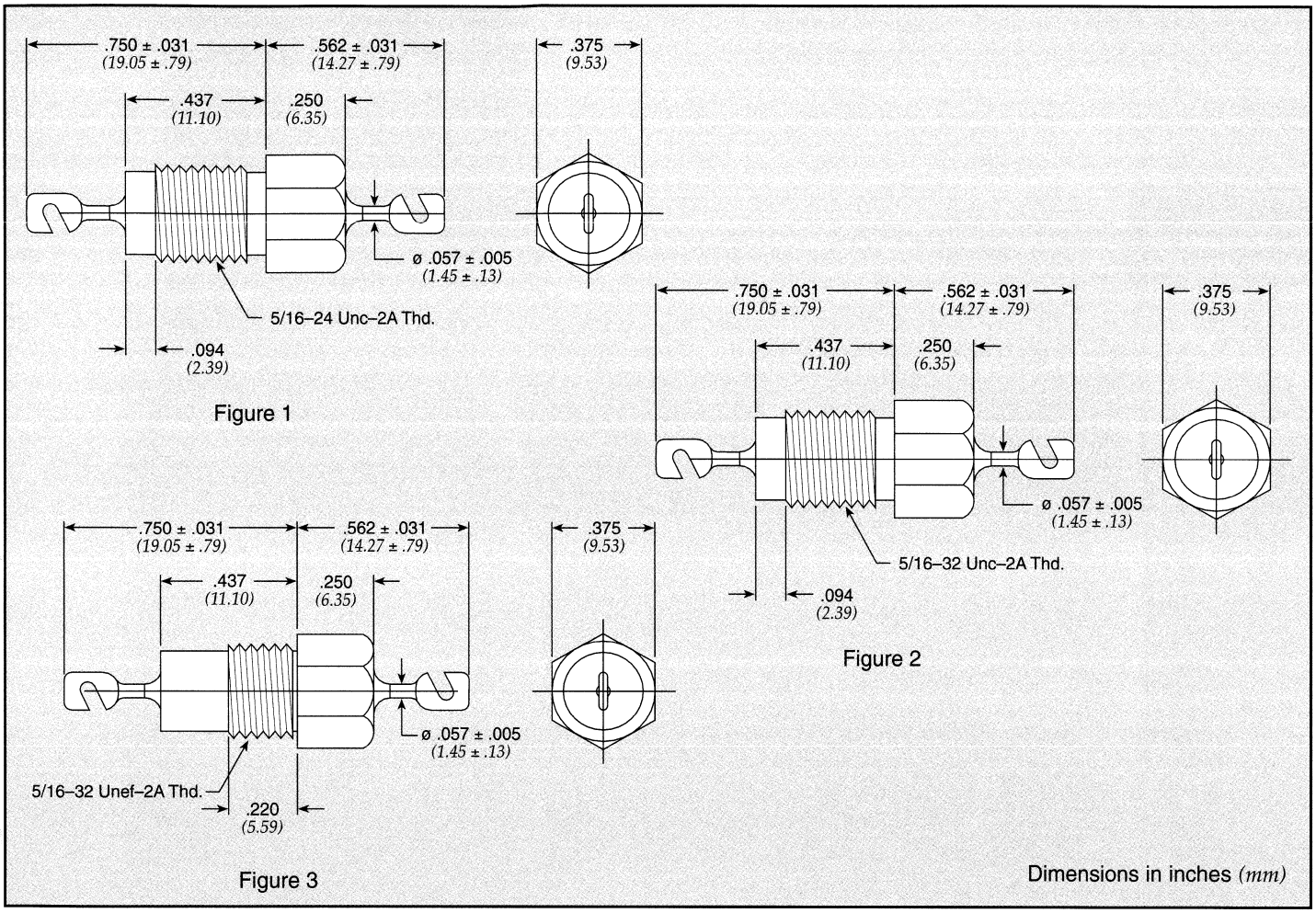
Part Number	M15733 MIL Number	See Pg. 47 for Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	Min Cap	A In	A (mm)	B In	B (mm)	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
51-709-013	—	3	50	—	10	0.1 µF	0.040	*(1.02)*	0.437	*(11.10)*	10	40	52	70	70	70	70	70
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	0.040	*(1.02)*	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	3000 pF	0.032	*(0.81)*	—	—	—	—	—	—	45	45	70	70
51-714-051*	/61-0005	2	200	140	10	3000 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	0.032	*(0.81)*	—	—	—	—	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 Spectrum Control's authorized distributors.
€ Also available through Spectrum Control'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.

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Resin Sealed Bolt-in Filters

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

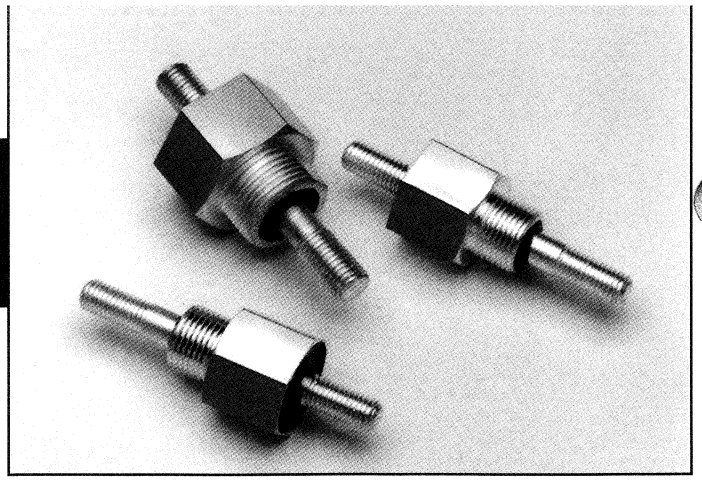


Part Number	M15733 MIL Number	Fig.	Rated Voltage 125°C DC	Rated Voltage 125°C AC	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
SCI-9510-503	—	1	100	—	25	C	0.05 µF	15	24	35	41	45	60	60	60
SCI-3513-000	—	1	100	—	25	Pi	0.1 µF	10	18	28	37	70	70	70	70
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 Spectrum Control's authorized distributors.
* Denotes parts with 5/16-24 Threads

SPECTRUM CONTROL INC.

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

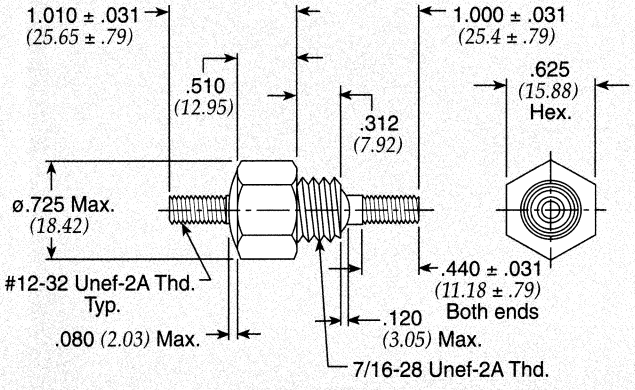


Figure 1

Terminal hardware to be torqued to 20-25 in.-lbs. (2.25-2.83 Nm)

Mounting hardware to be torqued to 180-200 in.-lbs. (20.3-22.6 Nm)

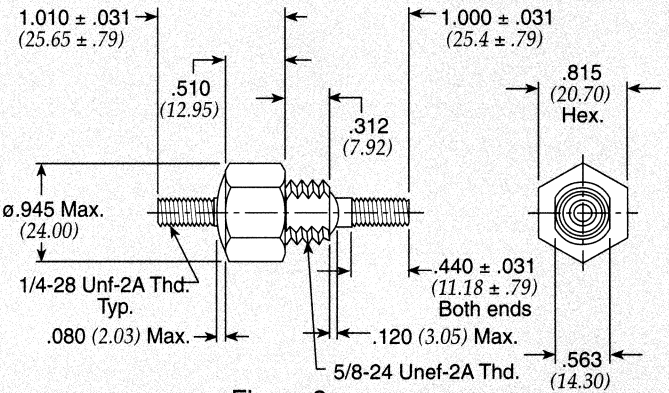


Figure 2

Terminal hardware to be torqued to 35-40 in.-lbs. (3.96-4.52 Nm)

Mounting hardware to be torqued to 280-300 in.-lbs. (31.6-33.9 Nm)

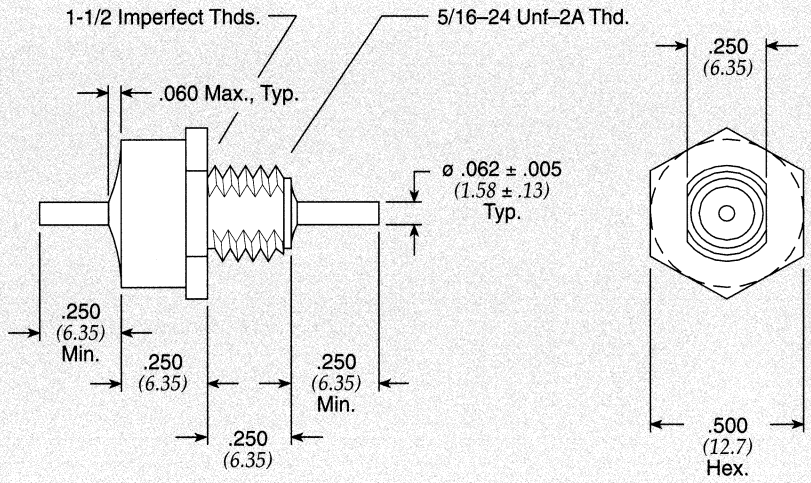


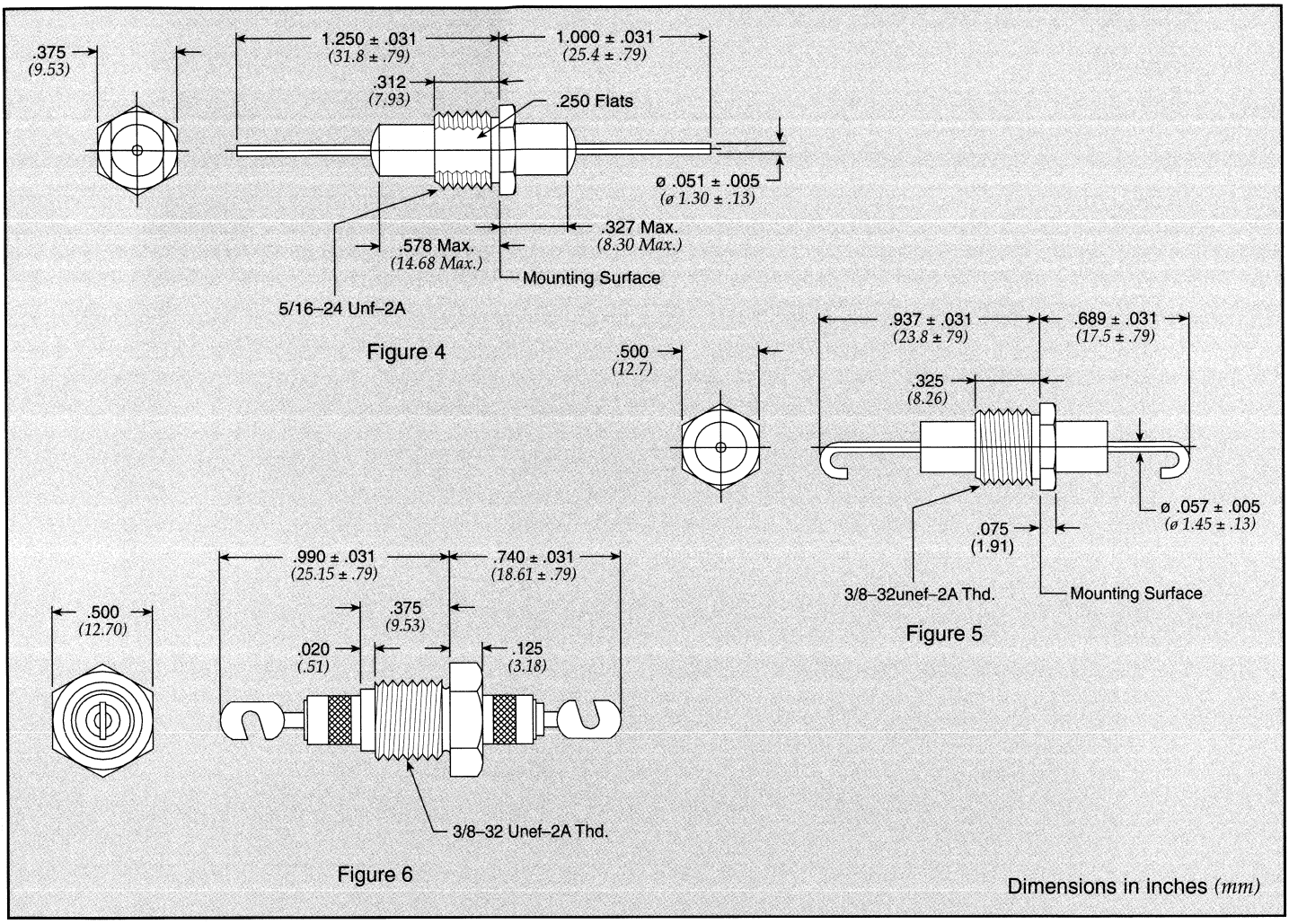
Figure 3

Dimensions in inches *(mm)*

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High Current/High Voltage Resin Sealed Filters

High Current High Voltage Feed-thru

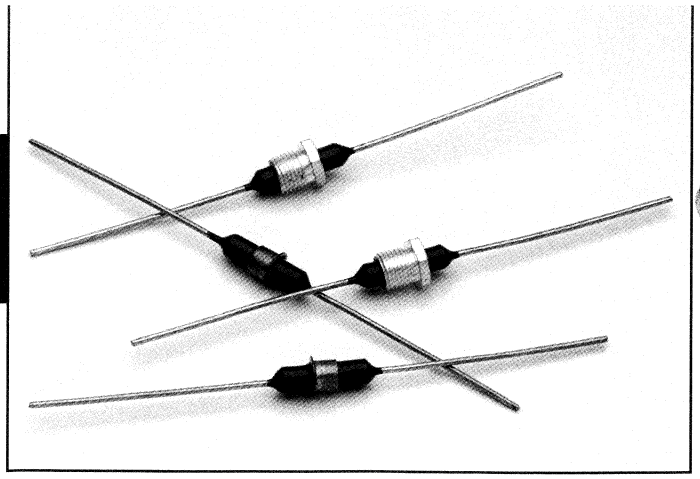


Part Number	Figure	Rated Voltage 125°C DC	Rated Voltage 125°C AC***	I Amp	CKT	Min Cap	Minimum Insertion Loss (dB) 1 MHz	3 MHz	10 MHz	30 MHz	100 MHz	300 MHz	1 GHz	10 GHz
54-848-005*	1	60	—	50	C	0.22 µF	20	30	40	50	50	50	50	50
54-853-001*	2	60	—	50	C	0.22 µF	20	30	40	50	50	50	50	50
54-853-004 €	2	200	140	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	5000 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 Spectrum Control's authorized distributors.
€ Also available through Spectrum Control's authorized European distributors/agents.
* Denotes parts that are UL recognized to UL 1459 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

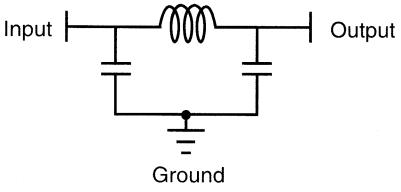
SPECTRUM CONTROL INC.

Explosion Proof Filters



Ceramic Pi Filter for Explosion Proof Equipment According to EN 50 020

Circuit Schematic



Typical Electrical Characteristics

Working Voltage . . . . . 250 VDC

Test Voltage . . . . . 1500 VDC 1 Min.
1060 VAC 1 Min.

Feed-thru Current . . . . . Max. 10A

Insulation Resistance . . . . . Min. 10^4 MOhm

Capacitance (total) . . . . . 4nF -0/+100%

Inductance. . . . . . 1000nH -50/+100%

Soldering Conditions . . . . . Max. 250°C

Marking . . . . . None

Operating Temperature. . . . . . -55°C to +85°C

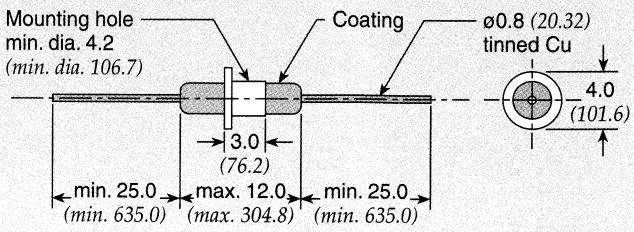
Part Numbers

Solder Mount: 1113243-1

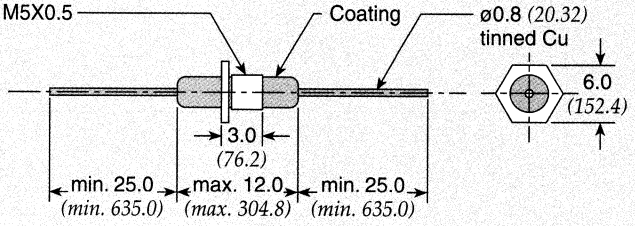
Bushing Mount: 1112522-1

Bushing Mount with Nut: 5-1112522-1

Solder Mount Type

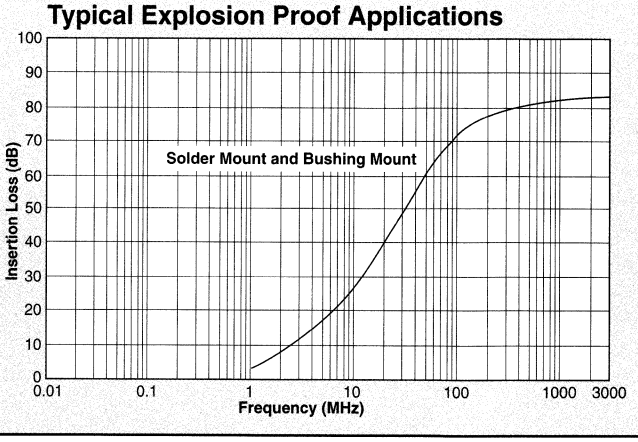


Bushing Mount Type



Dimensions in inches *(mm)*

Pi Insertion Loss



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Explosion Proof Filters for Industrial Processing Equipment

Ceramic Pi Filter for Explosion Proof Equipment According to EN 50 020

Bushing Mount (Figure 1)

Part Number: 1112523-1

Part Number with Nut: 5-1112523-1

Typical Electrical Characteristics

Working Voltage. . . . . 350 VDC

Test Voltage . . . . . 1700 VDC 1 min.
1060 VAC 1 min.

Feed-thru Current . . . . . Max. 10A

Insulation Resistance . . . . . Min. 10^4 MOhm

Capacitance (total) . . . . . 1600 pF -20/+80%

Inductance. . . . . 1000nH -50/+100%

Soldering Conditions. . . . . Max. 250°C

Marking. . . . . None

Operating Temperature. . . . . -55°C to +85°C

Bushing Mount (Figure 2)

Part Number: 1112529-1

Part Number with Nut: 5-1112529-1

Typical Electrical Characteristics

Working Voltage. . . . . 250 VDC

Test Voltage . . . . . 1500 VDC 1 Min.
1060 VAC 1 Min.

Feed-thru Current . . . . . Max. 10A

Insulation Resistance . . . . . Min. 10^4 MOhm

Capacitance (total) . . . . . 4nF -0/+100%

Inductance. . . . . 1000nH -50/+100%

Soldering Conditions. . . . . Max. 250°C

Marking. . . . . None

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

Metric Threaded Bushing Mount Type

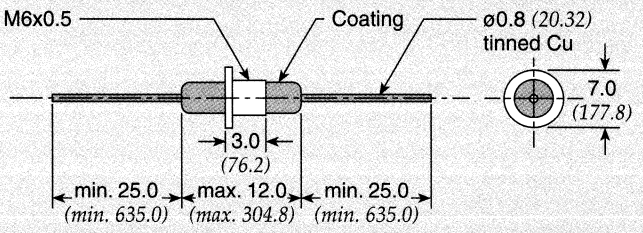


Figure 1 Dimensions in inches *(mm)*

English Thread Bushing Mount Type

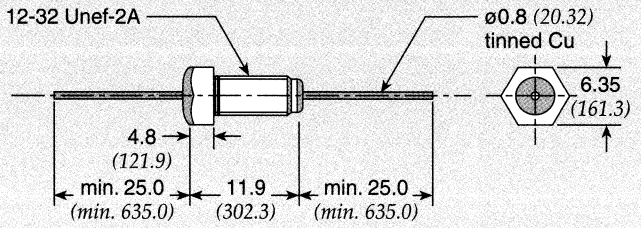
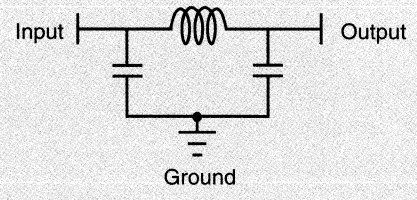


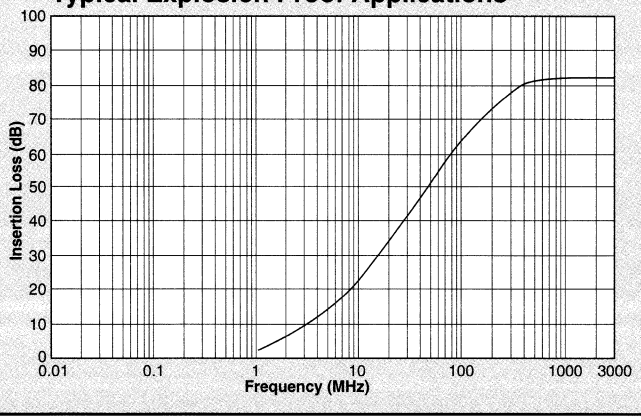
Figure 2 Dimensions in inches *(mm)*

Schematic for Both Filters



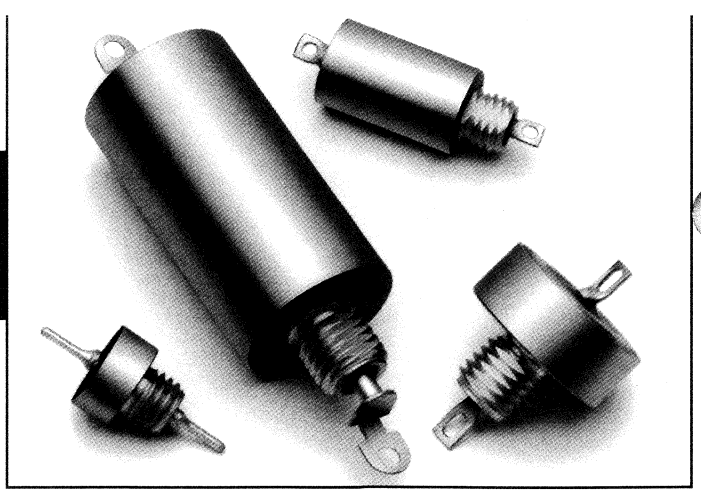
Pi Insertion Loss

Typical Explosion Proof Applications

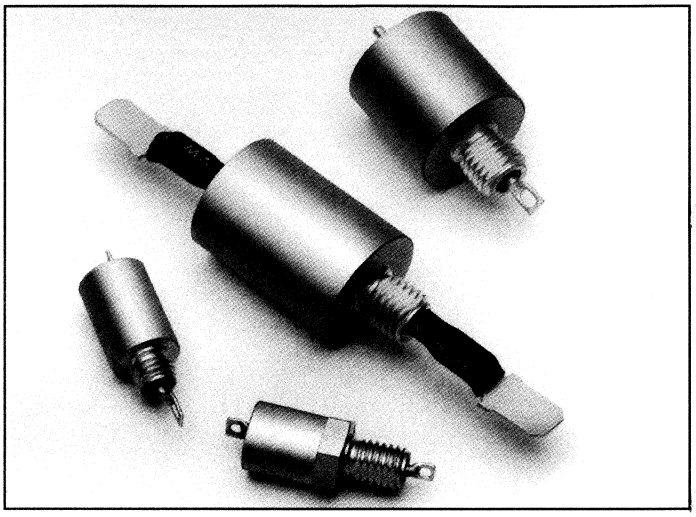


SPECTRUM CONTROL INC.

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

- Popular .375", .410" and .690" case diameters
- Voltage ratings from 50 VDC to 400 VDC/240 VAC, 400 Hz
- Filter configurations available: C, L, Pi, T and double T
- MIL-F-15733 and MIL-F-28861 QPL filters available

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

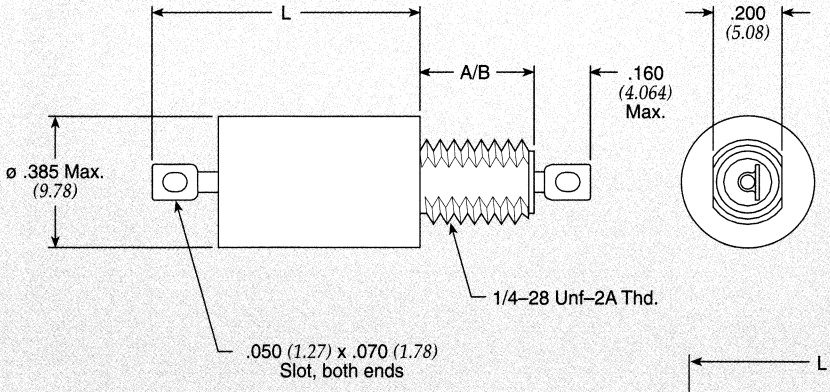
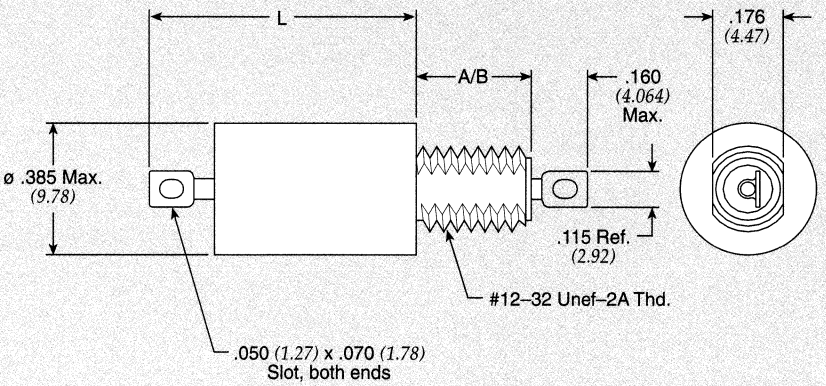


Figure 1



Note: ø .410 Max. for M28861 parts

Figure 2

Dimensions in inches *(mm)*

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Hermetically Sealed Threaded Case Filters

.375 ø C Circuit Standard

Part Number	MIL No	See Pg. 54 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 page 191 for complete MIL part number listing)

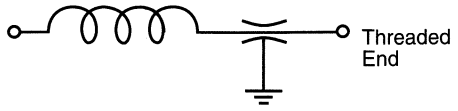
Part Number	M15733 M28861◊ MIL No	See Pg. 54 for Fig.	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
54-367-054	1-012◊	1	—	—	50	—	15	1.200	0.008	0.410	(10.414)	B	15	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 Spectrum Control's authorized distributors.

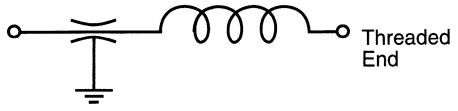
SPECTRUM CONTROL INC.

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)

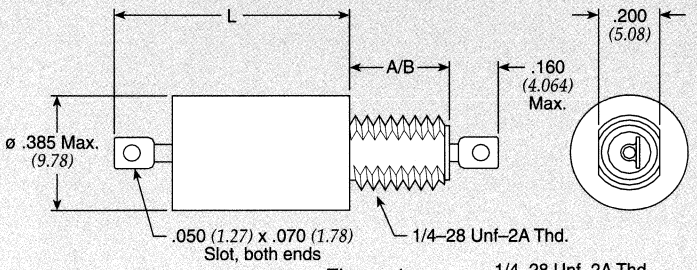


Figure 1

Note: ø .410 Max. for M28861 parts

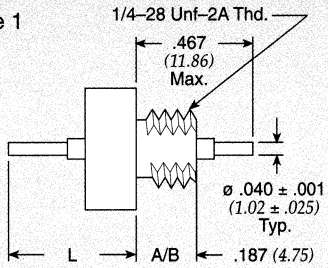
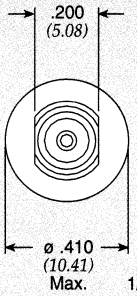


Figure 3



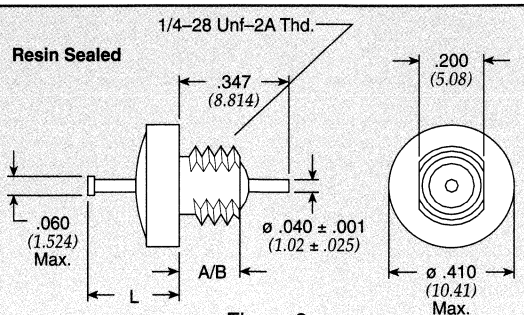


Figure 2

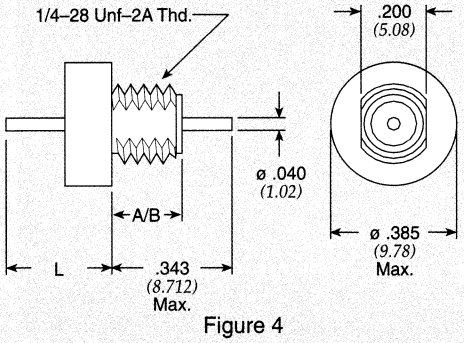


Figure 4

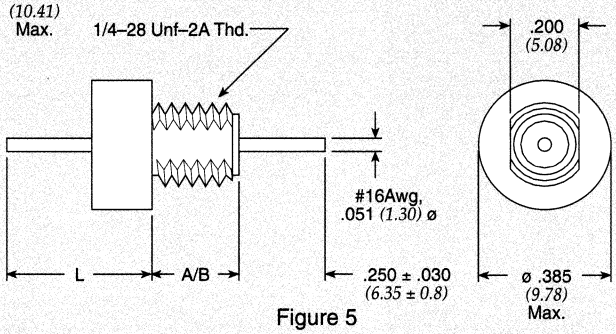


Figure 5

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	0.010	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	0.010	LB	0.325	(8.255)	A	15	28	33	44	60	70	70
51-344-006	—	4	80	—	50	—	15	1.400	0.010	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-1150-000 €	—	1	80	—	50	—	15	2.800	0.003	LB	0.450	(11.430)	A	20	34	40	49	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

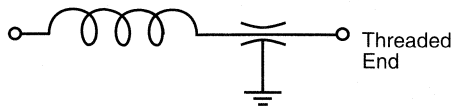
† Also available through Spectrum Control's authorized distributors.
€ Also available through Spectrum Control's authorized European distributors/agents.

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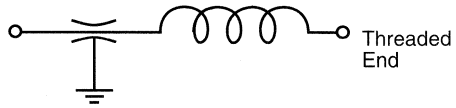
SPECTRUM CONTROL INC.

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. 56 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	0.010	LB	0.325	(8.255)	A	—	—	—	6	25	38	45
†51-359-007	—	1	250	125	200	125	15	0.015	0.010	LB	0.370	(9.398)	A	—	—	—	6	25	38	50
9050-100-0011	—	2	250	125	200	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

.375 ø L Circuit MIL Qualified Low Profile

(See MIL index on page 191 for complete MIL part number listing)

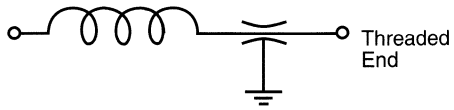
Part Number	M15733 M28861◊ MIL No	See Pg. 56 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
†51-359-021	38-0004	1		—	50	—	10	1.400	0.008	LB	0.370	(9.398)	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	0.030	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 Spectrum Control's authorized distributors.
€ Also available through Spectrum Control's authorized European distributors/agents.

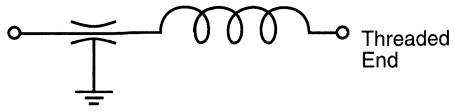
SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.375 ø L Circuit

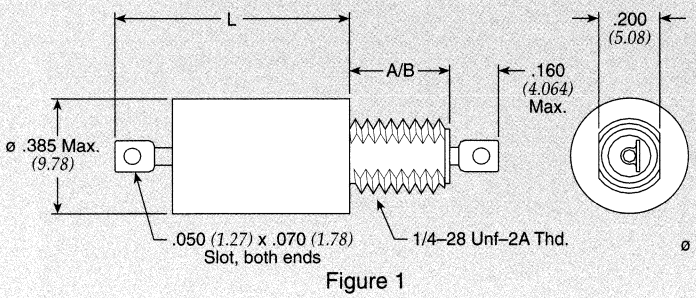


Figure 1

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

Note: ø .410 Max. for M28861 parts

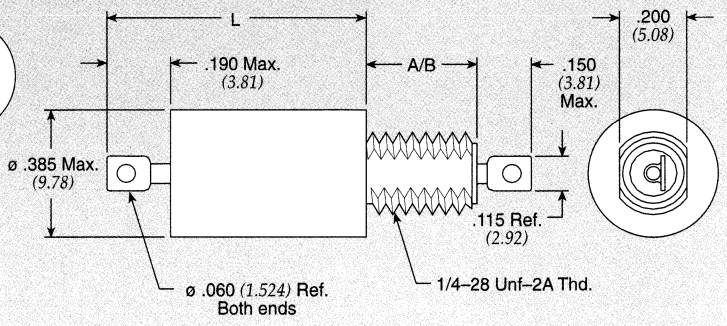


Figure 2

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

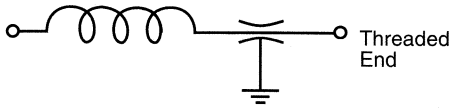
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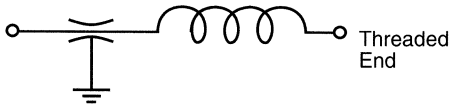
SPECTRUM CONTROL INC.

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. 58 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	0.450	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 190-191 for complete MIL part number listing)

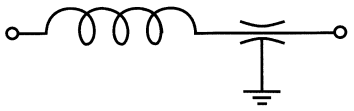
Part Number	M15733 MIL No	See Pg. 58 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-390-018	23-0026	1	—	—	50	—	0.50	1.400	0.360	LB	0.630	(16.002)	A	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

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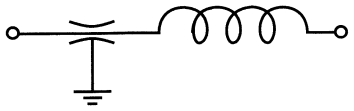
SPECTRUM CONTROL INC.

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 190-191 for complete MIL part number listing)

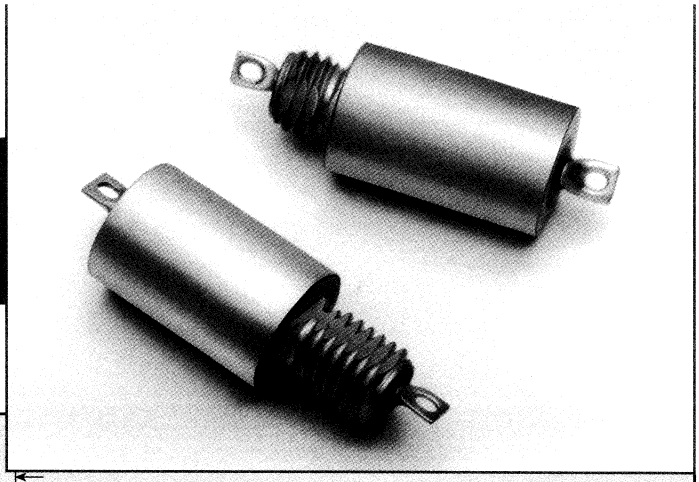
Part Number	M15733 MIL No	See Pg. 58 for Fig	Rated Voltage 85°C DC	85°C AC	125°C DC	125°C AC	I Amp	Min Cap µF	DCR Max Ohms	CKT	Max L In	Max L (mm)	Thd Lgth	Minimum Insertion Loss (dB) 30 KHz	150 KHz	300 KHz	1 MHz	10 MHz	100 MHz	1 GHz
51-444-040	25-0020	1	—	—	100		5.00	0.450	0.015	LB	0.738	*(18.745)*	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

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SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters



.375 ø Pi Circuit

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

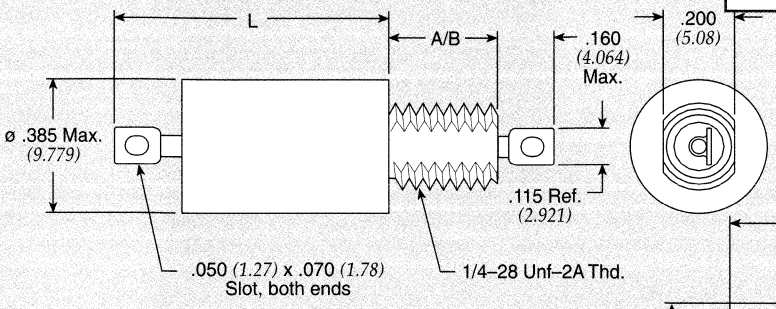


Figure 1

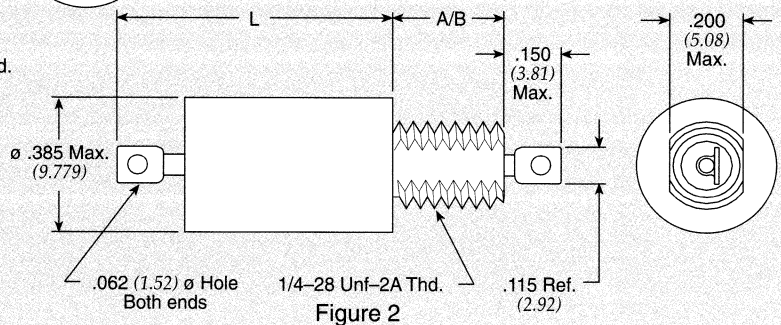


Figure 2

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 Spectrum Control's authorized distributors.

Hermetically Sealed Threaded Case Filters

.375 ø Pi Circuit MIL Qualified Product

(See MIL index on pages 190-191 for complete MIL part number listing)

Part Number	M15733 MIL No	See Pg. 61 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 Spectrum Control's authorized distributors.

Transient Suppression Pi Filters

Part Number	See Pg. 61 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

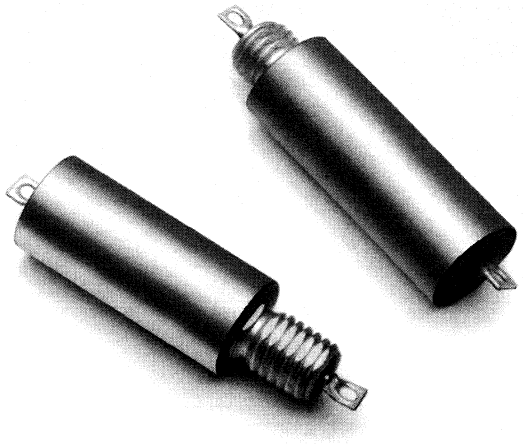
* Transient Suppression definitions and ratings

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

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SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters



.375 ø T Circuit

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

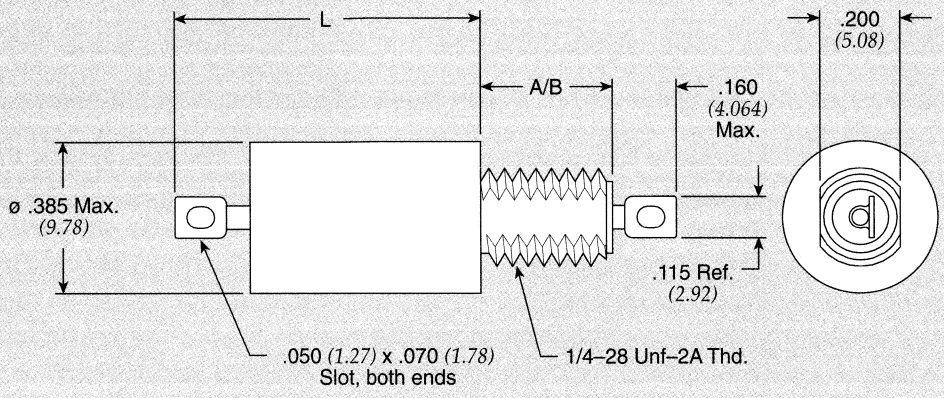


Figure 1

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 Spectrum Control's authorized distributors.

.375 ø T Circuit MIL Qualified Product

(See MIL index on page 190 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 Spectrum Control's authorized distributors.

Hermetically Sealed Threaded Case Filters

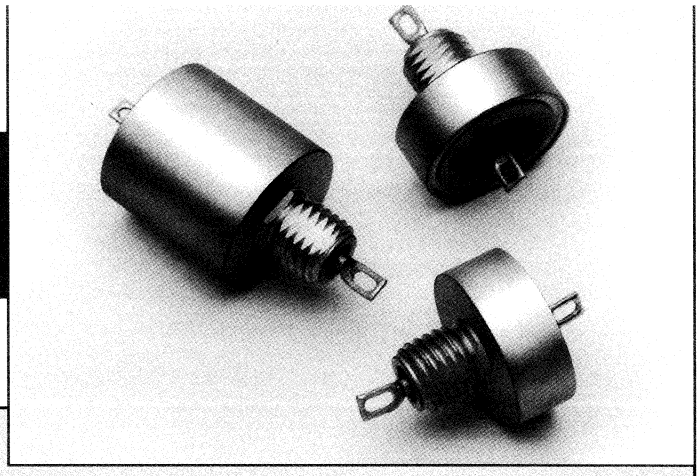
.375 ø TT Circuit Standard Product

Part Number	MIL No	See Pg. 63 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-2160-111	—	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	55

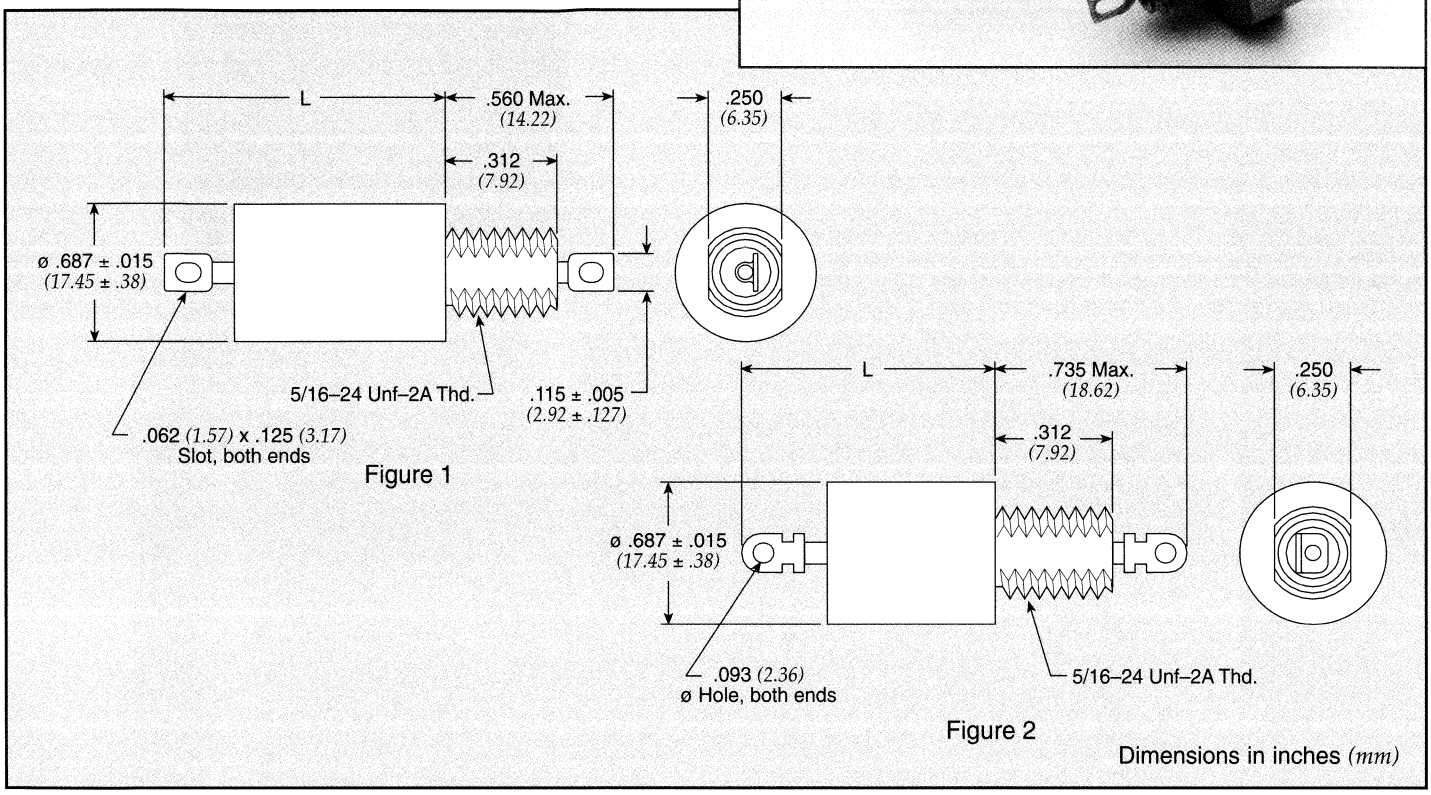
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SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters



.690 ø C Circuit



.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

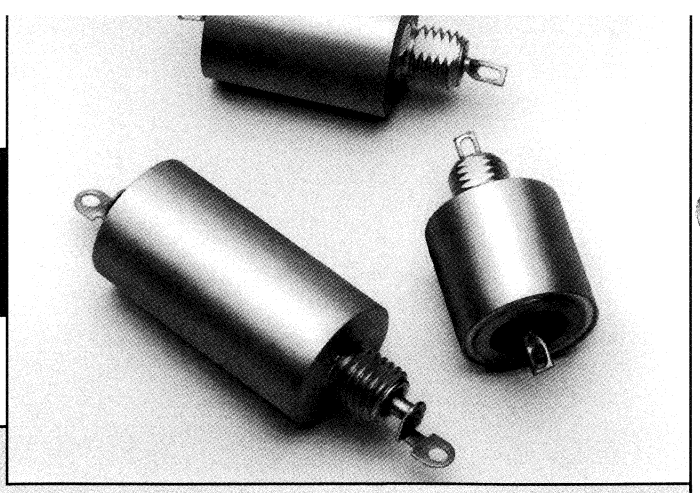
.690 ø C Circuit DSCC 84084 Product

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 Spectrum Control's authorized distributors.

SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters



.690 ø L Circuit

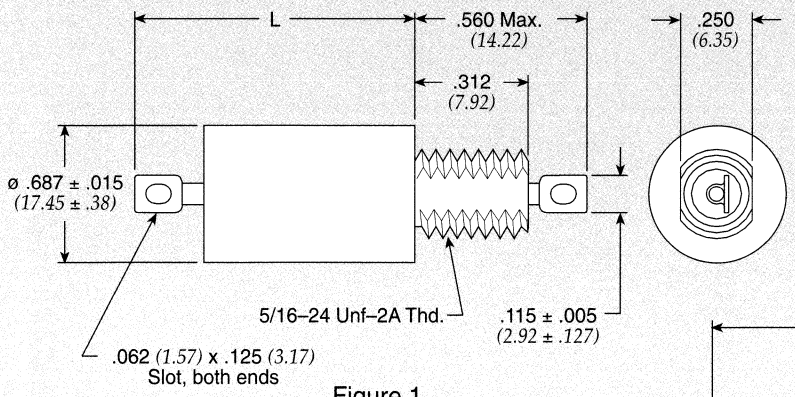


Figure 1

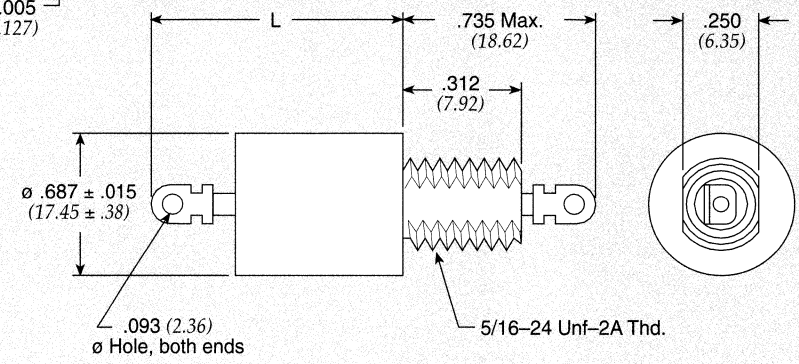


Figure 2

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	0.650	*(16.510)*	18	32	39	49	60	70	70
51-320-041	—	1	250	—	200	125	10.0	0.500	0.008	LT	0.650	*(16.510)*	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

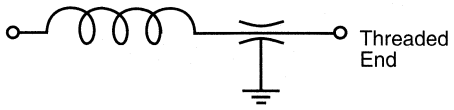
† Also available through Spectrum Control's authorized distributors.

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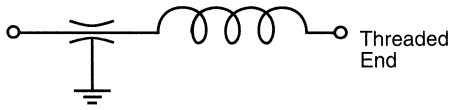
SPECTRUM CONTROL INC.

Hermetically Sealed Threaded Case Filters

L-C Filter LT



L-C Filter LB



.690 ø L Circuit MIL Qualified Product

(See MIL index on page 190 for complete MIL part number listing)

Part Number	M15733 MIL No	See Pg. 66 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. 66 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 Spectrum Control's authorized distributors.

Hermetically Sealed Threaded Case Filters

.690 ø Pi Circuit

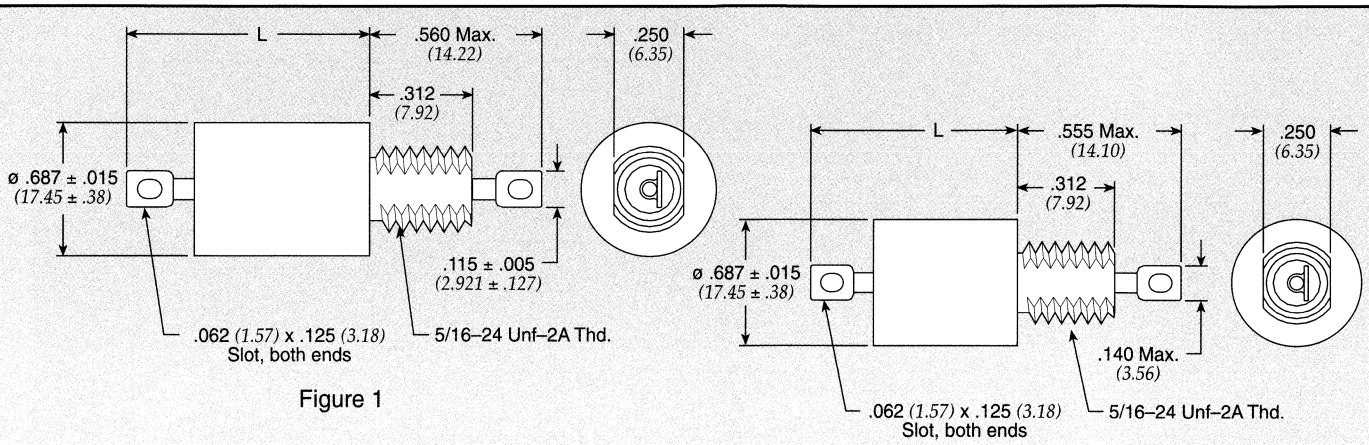


Figure 1

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	35	42	50	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

(See MIL index on page 190 for complete MIL part number listing)

.690 ø Pi 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
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 Spectrum Control's authorized distributors.

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Hermetically Sealed Threaded Case Filters

.690 ø T Circuit

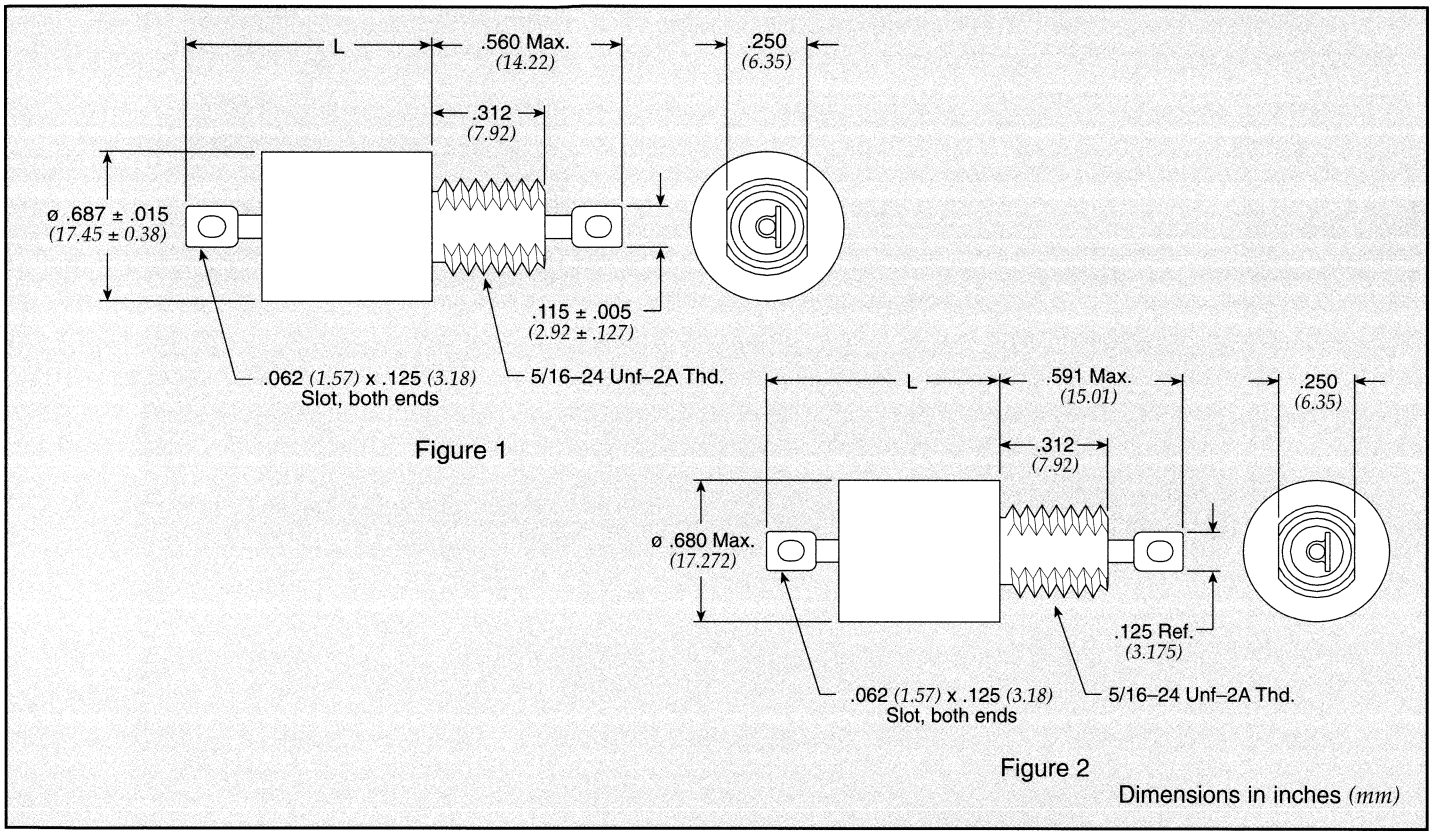


Figure 1

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 pags 190-191 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 Spectrum Control's authorized distributors.

Value-Added Low Pass Filter Assemblies

Spectrum Control's 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.

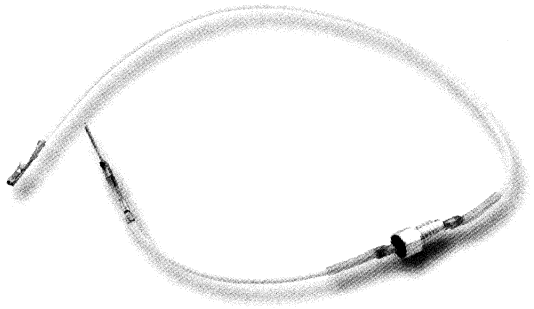


Features

- Build-to-order low pass filters from Spectrum Control, Inc.
- Custom low pass filter assemblies

Benefits

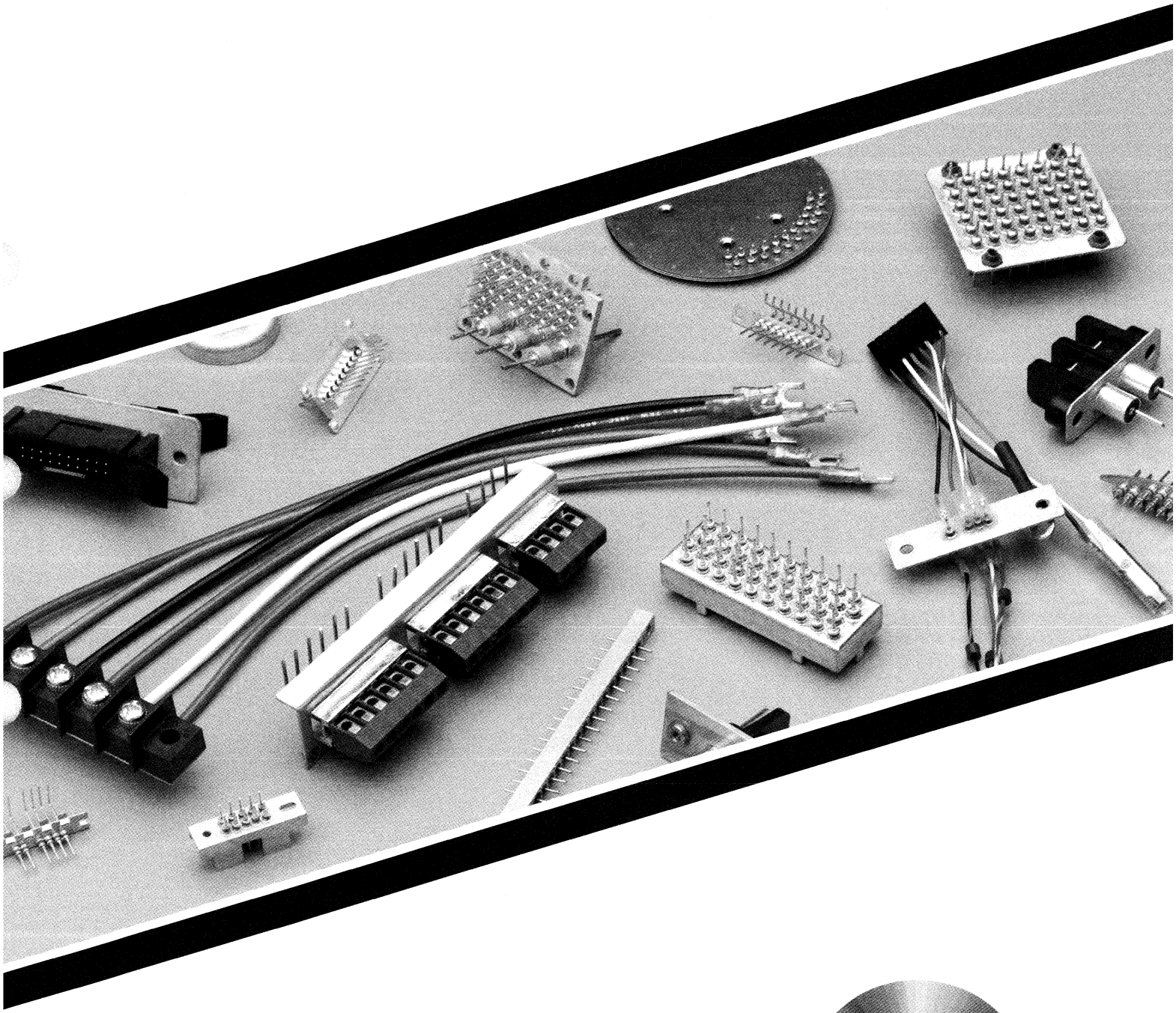
- Incorporates specific terminations, connectors or wire harnesses to accommodate your application
- Lowers the cost of acquisition and assembly
- Reduces production operations and lead times
- Allows you to stream line your bill of materials
- Reduces inventory/production costs





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Filtered Arrays



ISO 9001 CERTIFIED

SPECTRUM CONTROL INC.
A Control Products and Systems Company
Signal Products Group

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SPECTRUM CONTROL INC.

Filtered Array Selection Guide

ISO 9001 CERTIFIED

Easy Mate® Filter Plates

- Reduce installation time and overall cost
- Eliminate mounting hardware and prepwork
- Flexibility in mounting density, 0.100" and 2mm centers
- Multiple finger ground contacts provide excellent EMI filtering from 5 MHz to 18 GHz
- Maximize real estate on PCB
- Ideal for isolation of electronic compartments

The Easy Mate® & Easy Mate® Jr. filter plate family offer one of the most innovative EMI solutions in the electronic arena. The Easy Mate® concept of multiple finger ground contacts provides the lowest path of impedance for noise to ground.

The Easy Mate® family reduces your total installed cost by eliminating the need for prep work and hardware.

Pages

Easy Mate® Filter Plates 74-77
Easy Mate® Jr. Filter Plates 78-79

Bolt-in Filter Plates

- Eliminate the need to mount filters into bulkheads
- Excellent filtering from 5 MHz to 1 GHz, outperforms surface mount filters over 50 MHz
- Mixed capacitance values and circuits
- Maximize real estate on PCB
- Total installed cost savings compared to discrete filters
- Ideal for isolation of electronic compartments

Bolt-in style filter plates provide an excellent method for electronic system interface and EMI filtering of signal and power lines. Bolt-in filter plates are available in a variety of plate sizes and up to 74 lines per plate in Hi-Density, and 60 pins per plate in standard density configuration.

Bolt-in Filter Plates 80-83

Custom Filter Plates & Terminal Blocks

- Custom assemblies with varying cable lengths and terminations
- Integrate with other functional devices to supply a complete turnkey assembly
- Perform EMC evaluations on complete equipment and identify proper placement of EMI/RFI filtering components
- Custom High Reliability assemblies

Spectrum Control offers a number of value added features designed to specifically meet your manufacturing needs. Spectrum Control can build and provide product that meets the most stringent High Reliability specifications.

Shrouded Latch Filter Plates 84-85
Custom Filter Plates 86-87
Filter Plate Design Inquiry Form 89
Custom Terminal Blocks 94
Terminal Block Design Inquiry Form 94

Barrier Strip Filtered Terminal Blocks

- Rugged construction provides protection to filtering element
- 2 to 6 terminals in a single row available
- Cost effective solution for backplane EMI leakage problems
- 20 Amp rating
- UL recognized & CSA approved for DC voltages

The Barrier style terminal block is designed to provide excellent EMI filtering for both DC power and signal lines. These terminal blocks are available in sizes from 2 through 6 positions. Applications include power supplies in telecommunications equipment, metering, industrial controls, instrumentation and heavy equipment controls.

Barrier Strip Filtered Terminal Blocks 90-91

PCB Mount Filtered Terminal Blocks

- Fast and easy PCB installation and maintenance
- Cost effective solution for industrial interconnection EMI filtering problems
- Available with metric (5mm) or U.S. (.200") pin spacing
- 2 to 12 terminals available

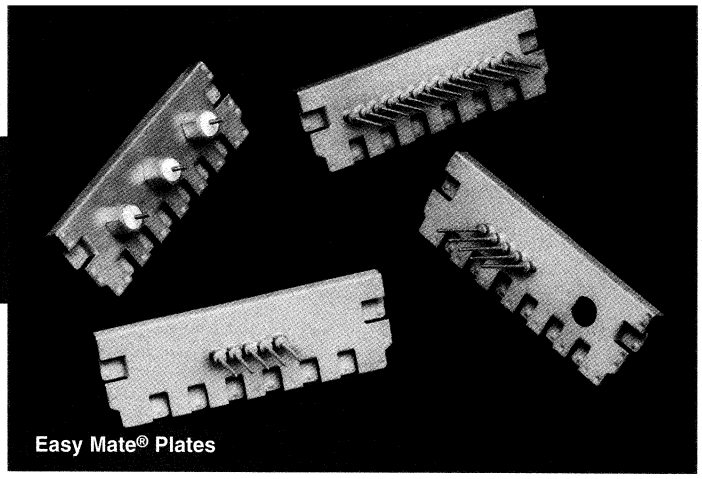
The PCB terminal block is designed to provide excellent EMI filtering of low voltage DC power and signal/control lines. These terminal blocks use a screw clamp system with wire protector, which provides for quick and simple installation. Applications include power supplies in telecommunications equipment, metering, industrial controls, instrumentation and heavy equipment controls.

PCB Mount Filtered Terminal Blocks 92-93

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SPECTRUM CONTROL INC.

Filter Plates

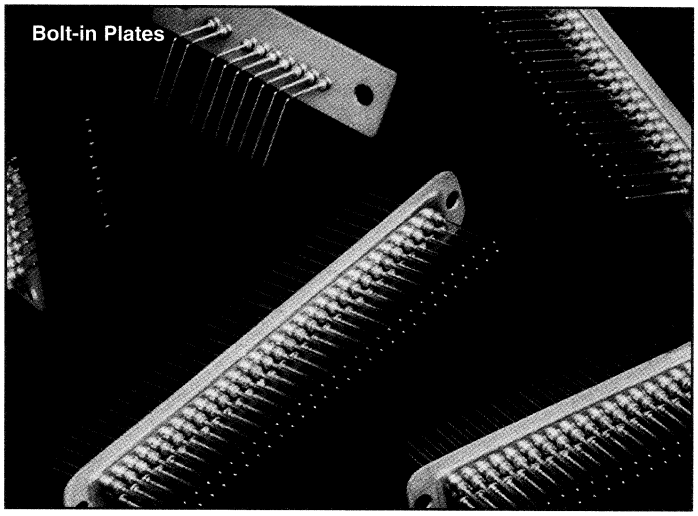

Easy Mate® Plates

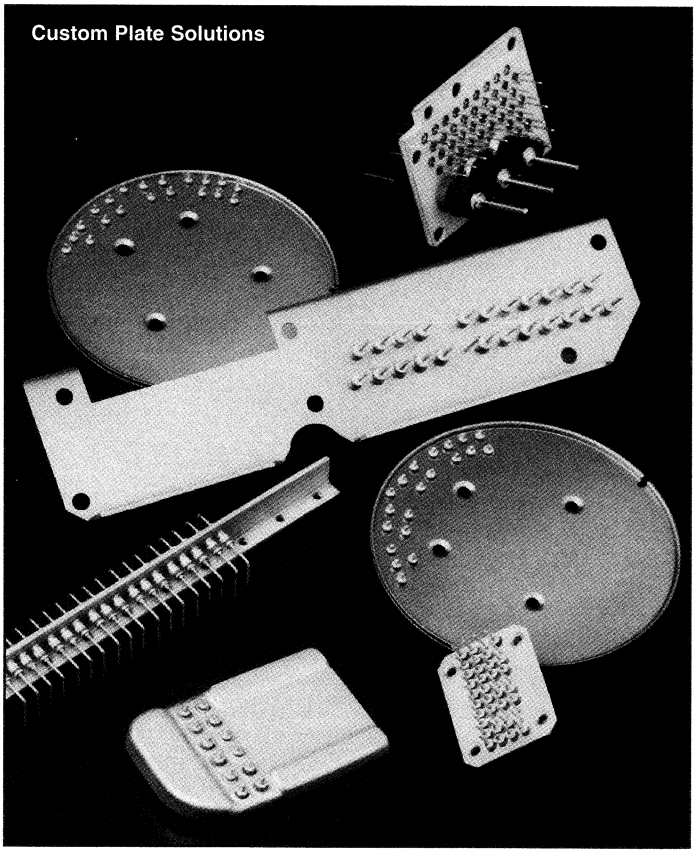
Eliminating EMI/RFI interference has become a stringently enforced matter and needs to be considered at the early stages of design for all electronic systems. Both internal and external interference sources have a major impact on the successful EMC performance of a new system.

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-thru 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, as well as reduce the risk of damaging filter elements during installation. Connecting to these Filter Plates is easily accomplished through several methods, either ribbon style connectors, harnesses, hard wiring or directly soldering leads at a 90° angle to the printed circuit board.

The drawings on pages 75, 81 and 85 illustrate how filter plates are incorporated into an electronic system.


Bolt-in Plates

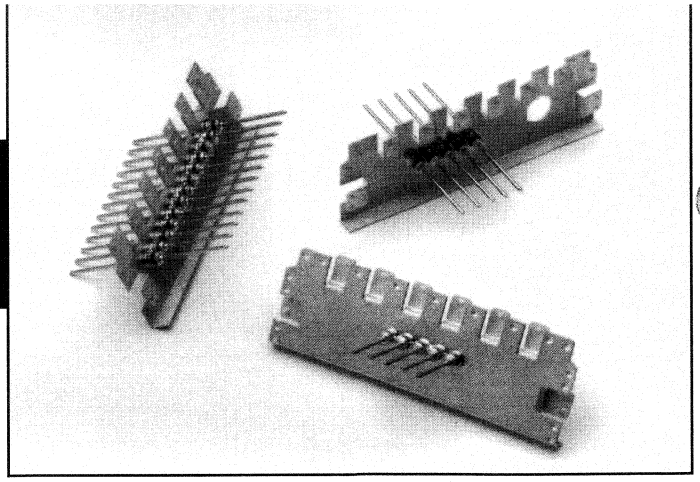

Custom Plate Solutions

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

SPECTRUM CONTROL INC.

Easy Mate® Filter Plates



Spectrum Control developed a new 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 75 shows the Easy Mate® design.

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

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 88. **

Plate Length
A - 1.092
B - 1.812

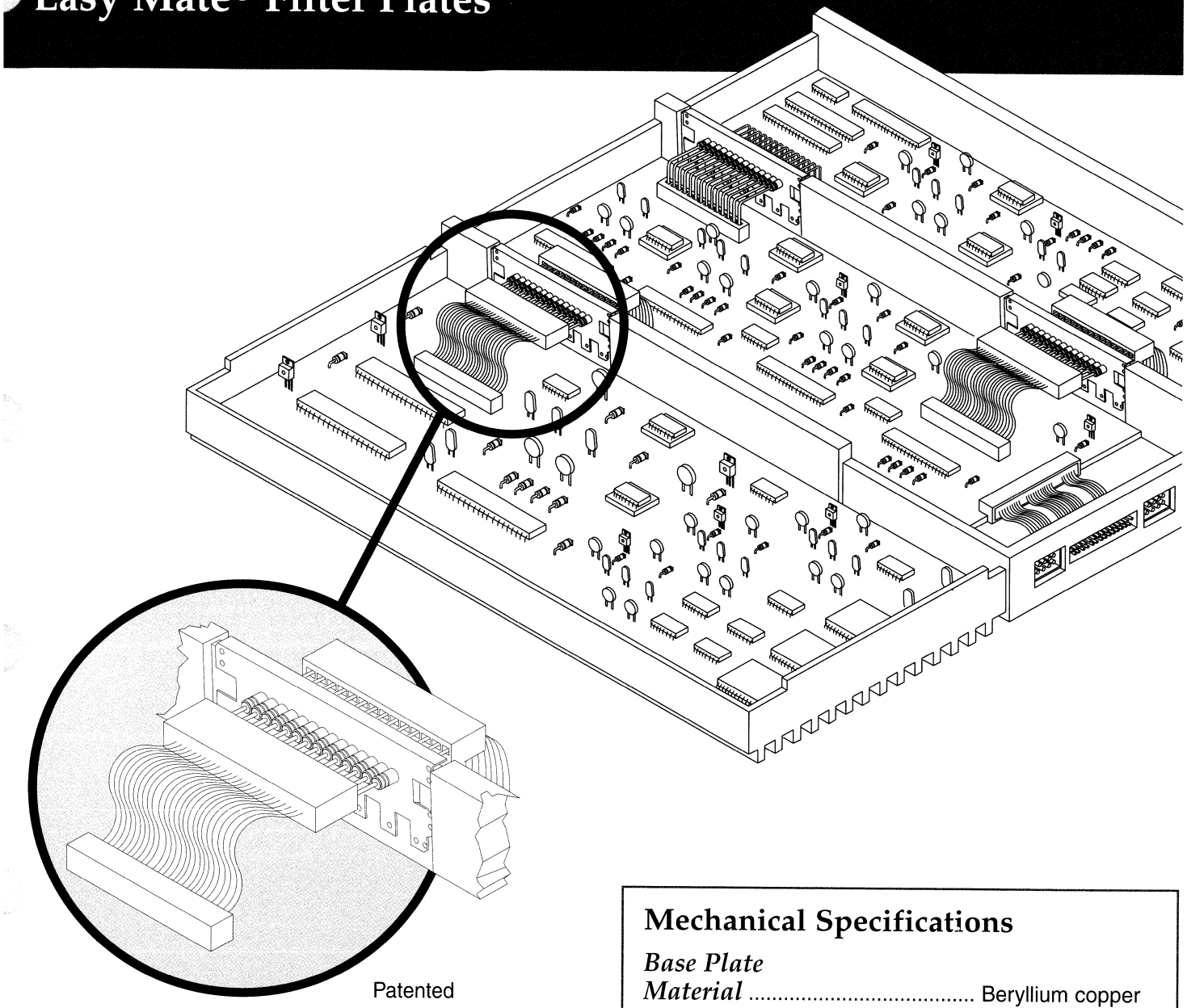
Lead Configuration
0 - Straight
1 - 90° (left)
2 - 90° (right)
3 - 90° (both)

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

** *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 89. 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

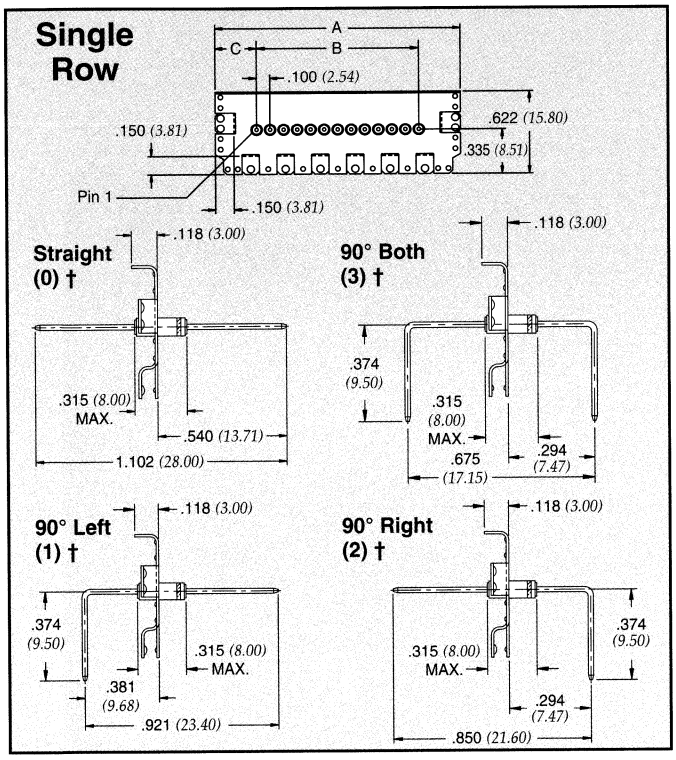
- Use a temperature controlled soldering iron with tip temperature of 525 ± 10° F (275 ± 5° C).
- Use an SN 63 RMA flux core solder.
- Make mechanical wire connection.
- Use heat sink next to filter body where possible.
- Clean soldering iron tip.
- Clip end of solder (remove 0.5") to expose flux for 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.

Mechanical Specifications

Base Plate Material	Beryllium copper
Base Plate Thickness	.012 inches
Plating	Tin
Lead Material	Copper alloy
Lead Plating	Gold plate
Lead Diameter	ø .025" for 0.100" centers (2.54mm) ø .020 for 0.079" centers (2.00mm)
Current Rating	5 Amps for .025" ø 3 Amps for .020" ø

Easy Mate® Filter Plates
Standard Density Centers .100"

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



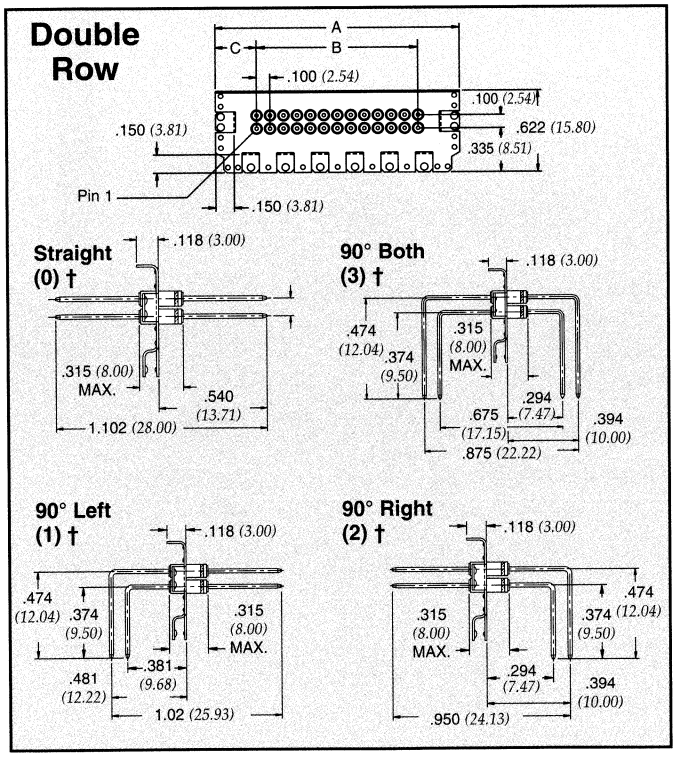
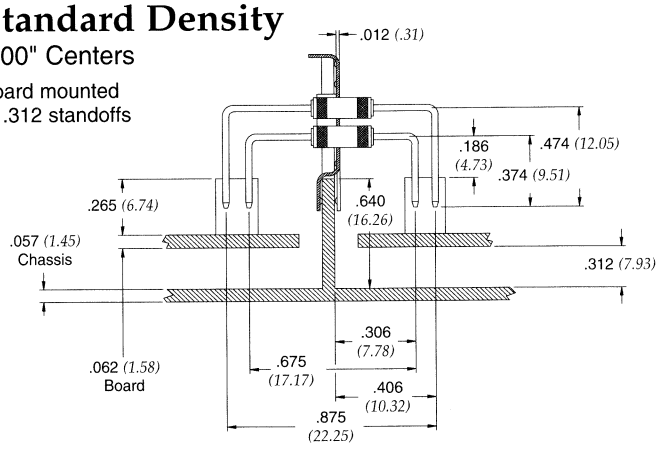


Plate length (A)	No. of filtered lines per row	52-898-XXX-XXX B		C	
1.092 *(27.74)*	1	0	*(0.00)*	0.496	*(12.60)*
	2	0.1	*(2.54)*	0.496	*(12.60)*
	3	0.2	*(5.08)*	0.396	*(10.06)*
	4	0.3	*(7.62)*	0.396	*(10.06)*
	5	0.4	*(10.16)*	0.296	*(7.52)*
	6	0.5	*(12.70)*	0.296	*(7.52)*
1.812 *(46.02)*	1	0	*(0.00)*	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

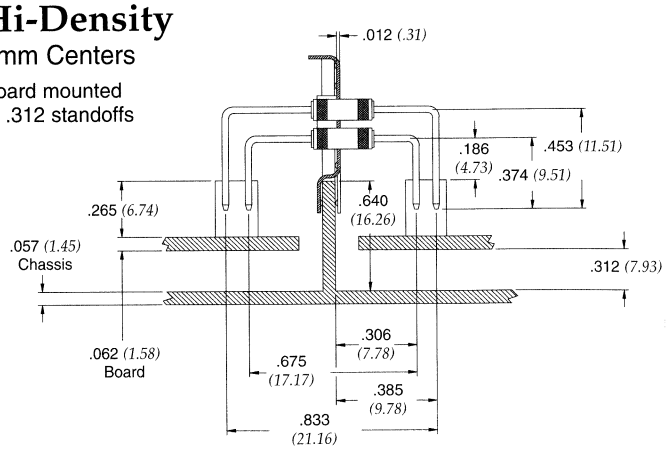
Standard Density
.100" Centers

Board mounted to .312 standoffs



Hi-Density
2mm Centers

Board mounted to .312 standoffs



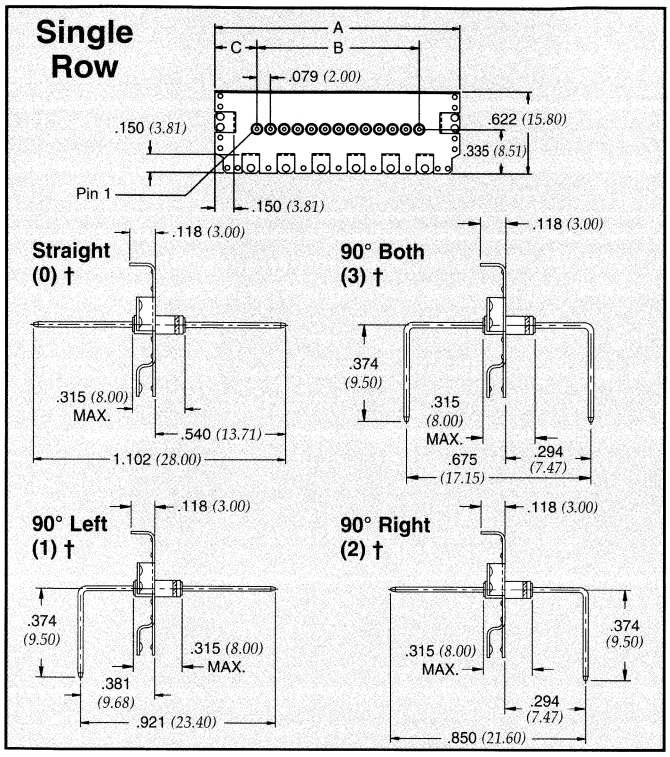
Patented
† Refers to lead configuration for part number/ordering information

Filter Plates

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Easy Mate® Filter Plates
Hi-Density Centers 2mm

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



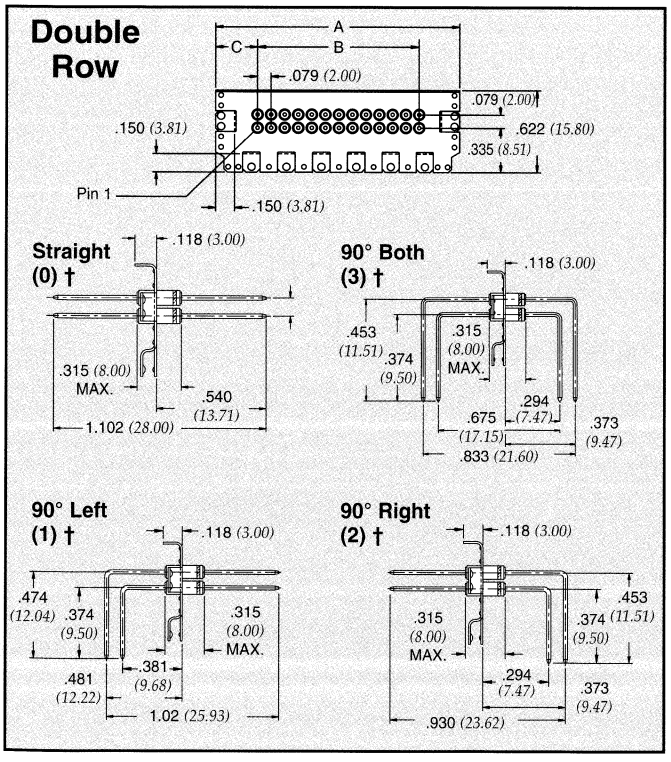
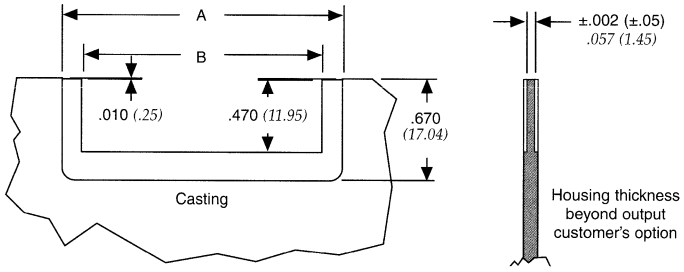


Plate length (A)	No. of filtered lines per row	52-960-XXX-XXX B	52-960-XXX-XXX C
1.092 *(27.74)*	2	0.079 *(2.00)*	0.463 *(11.77)*
	3	0.157 *(4.00)*	0.463 *(11.77)*
	4	0.236 *(6.00)*	0.385 *(9.77)*
	5	0.315 *(8.00)*	0.385 *(9.77)*
	6	0.394 *(10.00)*	0.306 *(7.77)*
	7	0.472 *(12.00)*	0.306 *(7.77)*
1.812 *(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



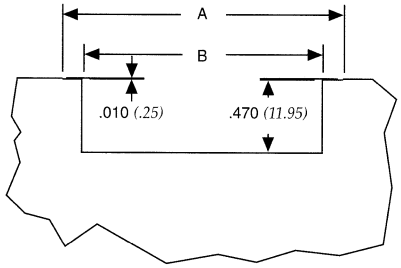
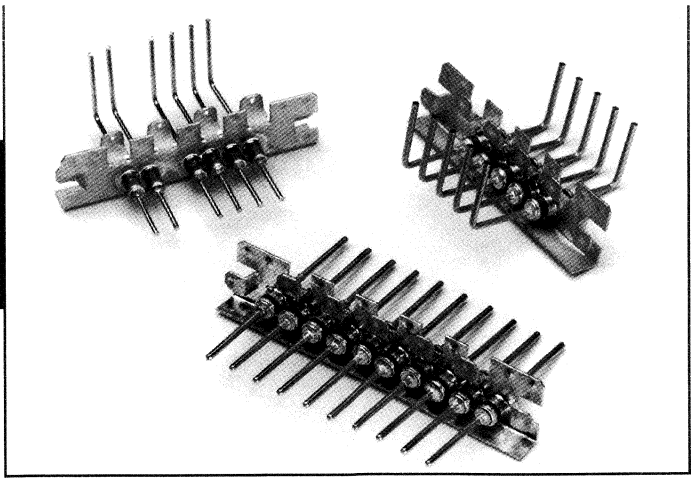


Plate Length	B	C
1.092 *(27.74)*	1.117 *(28.41)*	0.816 *(20.75)*
1.812 *(46.02)*	1.837 *(46.71)*	1.535 *(39.04)*

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

SPECTRUM CONTROL INC.

Easy Mate® Jr. Filter Plates



Spectrum Control has expanded its popular Easy Mate® family by adding two more package sizes. These new sizes are lower profile and facilitate installation of feed-thru 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

Mechanical Specifications

Base Plate Material	Beryllium copper
Base Plate Thickness	.010 inches
Plating	Tin
Lead Material	Copper alloy
Lead Plating	Gold plate
Lead Diameter	ø .025" for 0.100" centers (2.54mm) ø .020 for 0.079" centers (2.00mm)
Current Rating	5 Amps for .025" ø 3 Amps for .020" ø

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. Hi-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 88. **

Plate Length
A - .990
B - 1.240

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

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

** *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 89. We will review your request and provide you with a part number.*

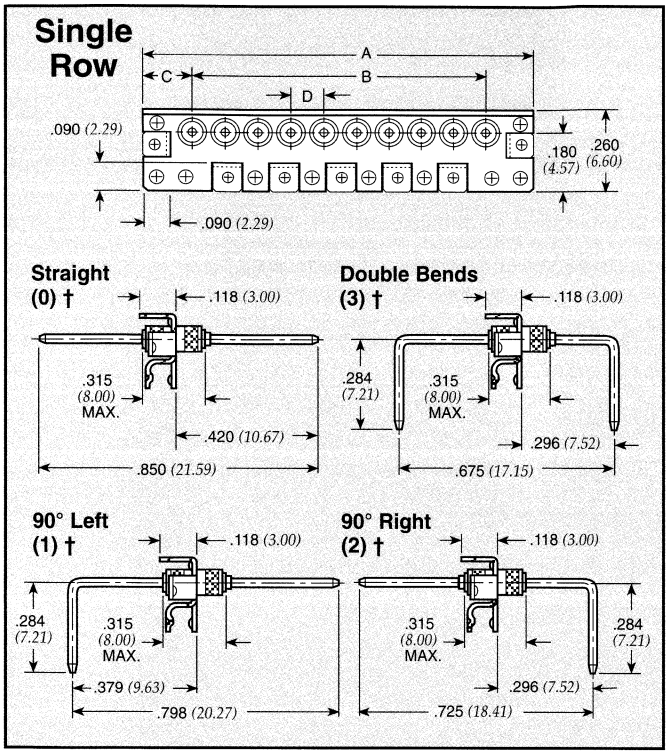
Filter Plates

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SPECTRUM CONTROL INC.

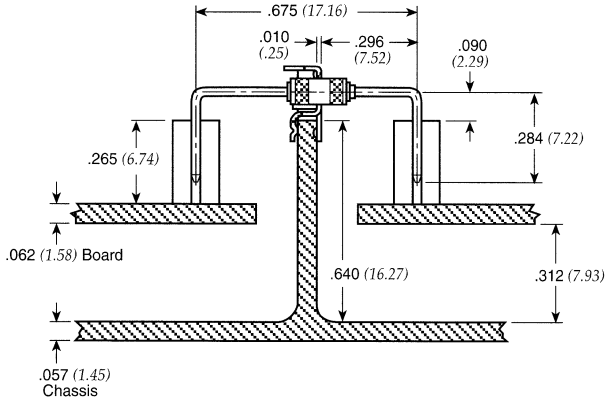
Easy Mate® Jr. Filter Plates

Dimensions: inches and *(mm)*



† Refers to lead configuration for part number/ordering information

Typical Mounting Application



Standard Density Centers .100" (D)

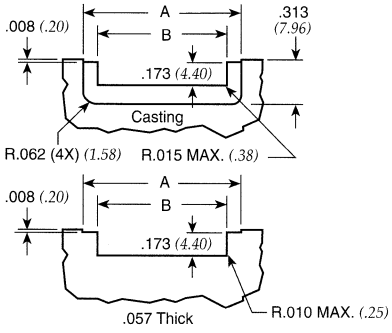
Plate length (A)	No. of filtered lines per row	52-978-XXX-XXX B	52-978-XXX-XXX C
.990 (25.15)	2	0.1 (2.54)	0.395 (10.03)
	3	0.2 (5.08)	0.395 (10.03)
	4	0.3 (7.62)	0.295 (7.49)
	5	0.4 (10.16)	0.295 (7.49)
	6	0.5 (12.70)	0.195 (4.95)
	7	0.6 (15.24)	0.195 (4.95)
1.24 (31.49)	2	0.1 (2.54)	0.570 (14.48)
	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



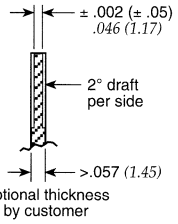
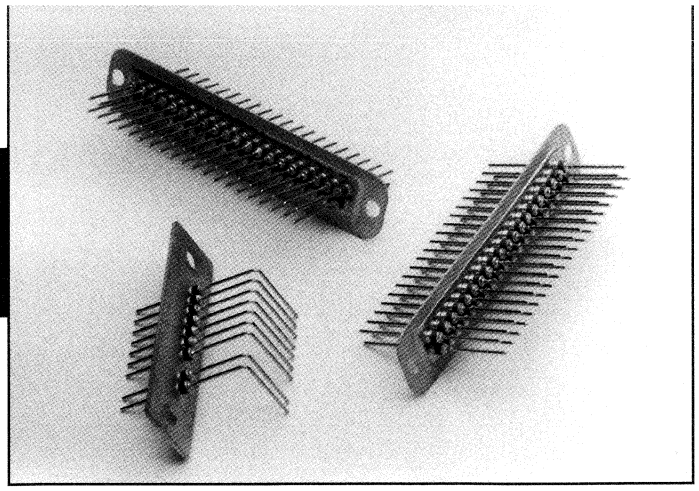


Plate Length	B	C
.990 (25.15)	1.015 (25.78)	0.834 (21.18)
1.24 (31.49)	1.265 (32.13)	1.084 (27.53)

SPECTRUM CONTROL INC.

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 hi-density (2mm) and 60 pins per plate in standard density (.100"). On the larger plate sizes, Spectrum ensures structural integrity through a unique, patent pending, coining process. The drawing on page 81 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

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 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 88. **

Plate Length
A - 1.060
B - 1.560
C - 2.560
D - 3.560

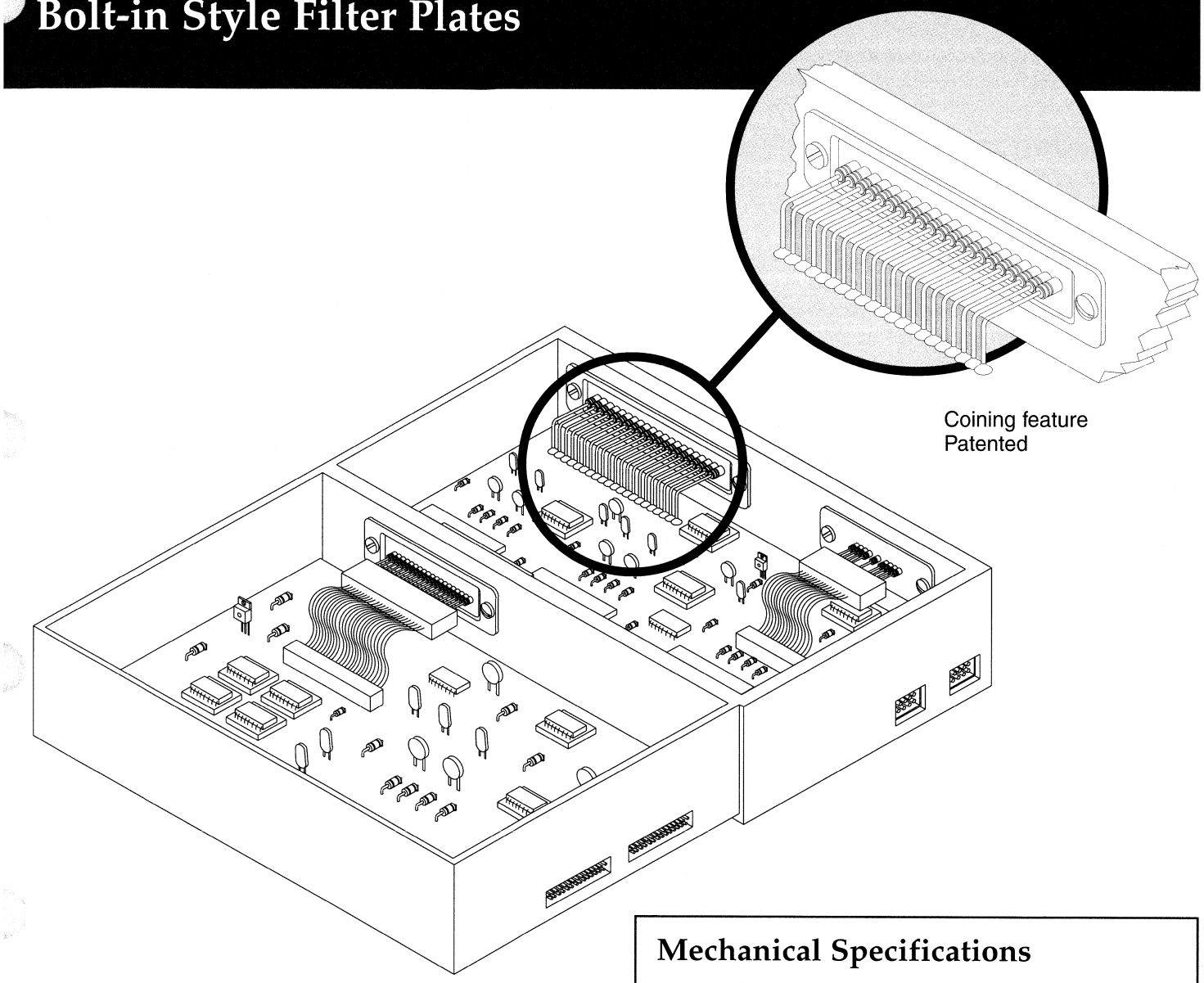
Lead Configuration
0 - Straight
1 - 90° (left)
2 - 90° (right)
3 - 90° (both)

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

** *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 89. We will review your request and provide you with a part number.*

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Bolt-in Style Filter Plates



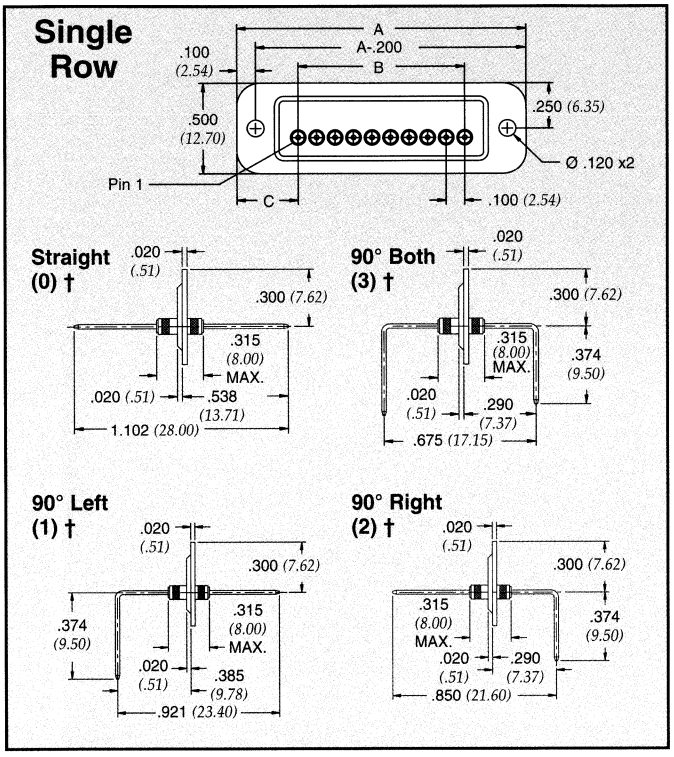
Coining feature
Patented

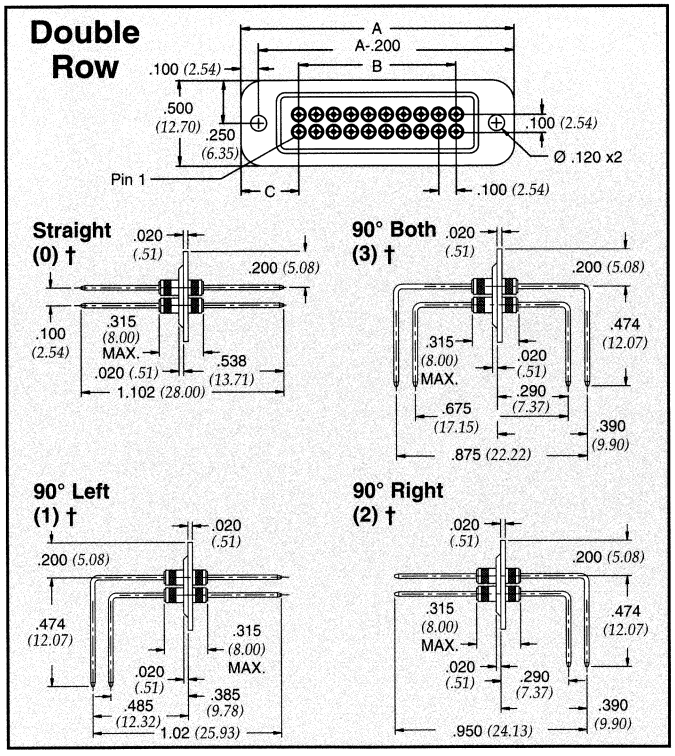
Mechanical Specifications

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

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

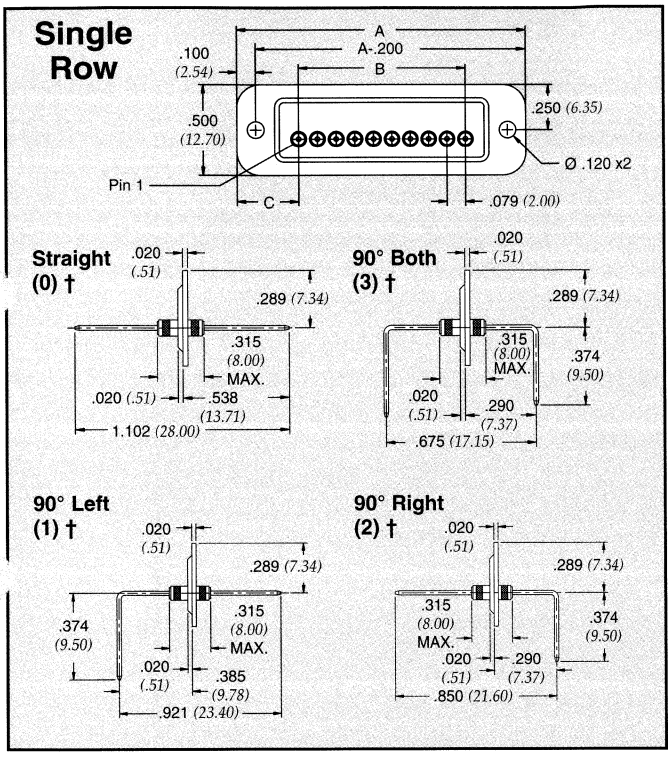
Plate length (A)	No. of filtered lines per row	52-970-XXX-XXX B		C	
1.060 * (26.92)	1	0	(0.00)	0.53	(13.46)
	2	0.1	(2.54)	0.43	(10.92)
	3	0.2	(5.08)	0.43	(10.92)
	4	0.3	(7.62)	0.33	(8.38)
	5	0.4	(10.16)	0.33	(8.38)
1.560 * (39.62)	1	0.0	(0.00)	0.73	(18.54)
	2	0.1	(2.54)	0.73	(18.54)
	3	0.2	(5.08)	0.63	(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)

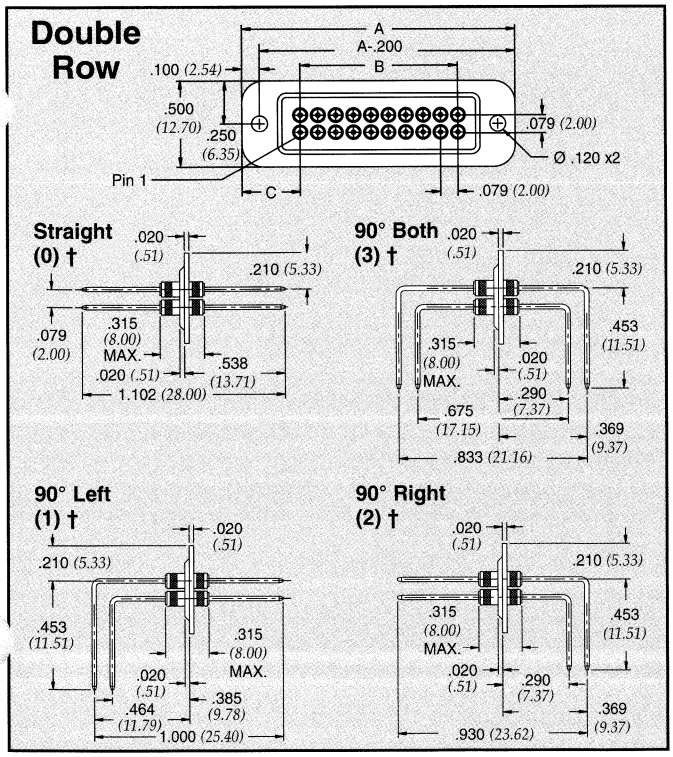
*** For plate widths 1.060 and 1.560 there will be no coining. For these plates, increase dimensions to the right .020". Thus, any dimension on left will be reduced by .020.**

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

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





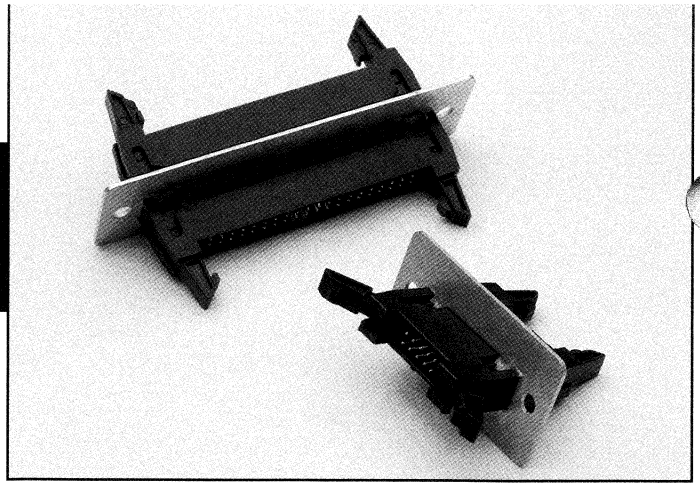
Coining feature patented
† Refers to lead configuration for part number/ordering information

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.**

SPECTRUM CONTROL INC.

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

Mechanical Specifications

Base Plate Material	Brass UNS C26000/C27000
Base Plate Thickness	.040" (1.0mm)
Plating	Tin
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**

53 / 038 — Shrouded Latch Filter Plate

0 / 14 — Total Number of Filtered Lines- 2 rows

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

B — Filter Designation

A - T from table on page 88. **

S — Latch Height

S - Short .435" (11.0mm)
L - Long .575" (14.6mm)
A - .475" (12.06mm)
B - .615" (15.62mm)
C - .655" (16.64mm)

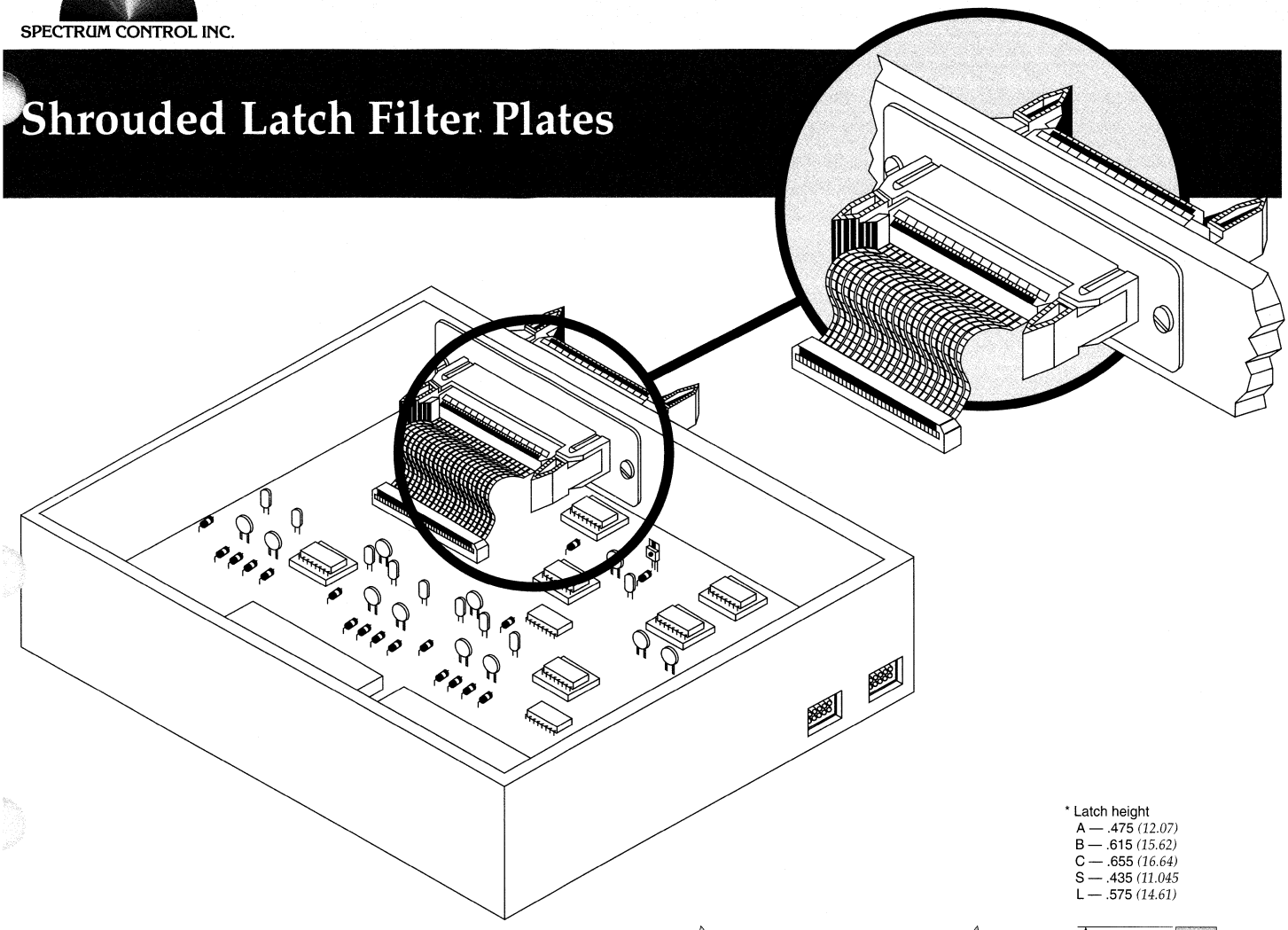
1 — Configuration

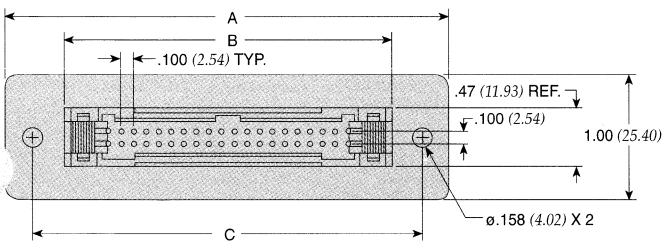
1 - Double shroud
2 - Single Shroud
3 - Single Shroud w/90° bend opposite side

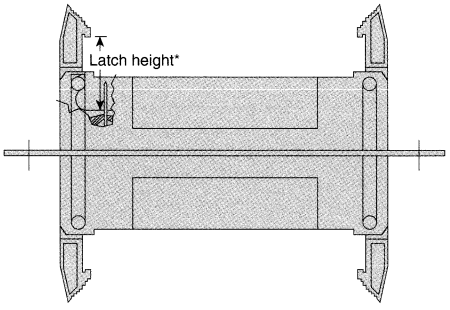
** *To request selective line filtering, a mechanical configuration or material specification not shown in this catalog, please complete and forward the design inquiry form on page 89. We will review your request and provide you with a part number.*

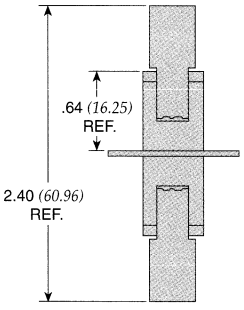
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Shrouded Latch Filter Plates









* Latch height
A — .475 *(12.07)*
B — .615 *(15.62)*
C — .655 *(16.64)*
S — .435 *(11.045*
L — .575 *(14.61)*

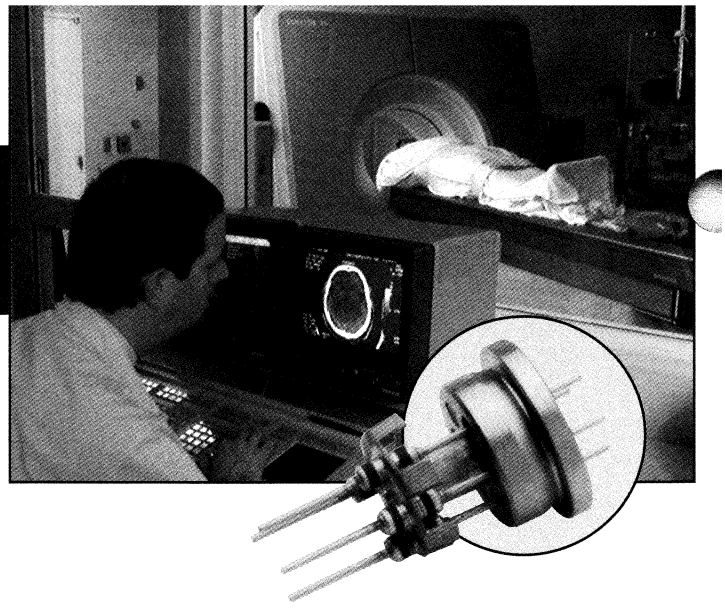
Part Number	Number of Circuits	A		B		C	
		in	*(mm)*	in	*(mm)*	in	*(mm)*
53-038-010-XXX*	10	2.00	*(50.8)*	1.10	*(27.9)*	1.58	*(40.1)*
53-038-014-XXX	14	2.20	*(55.9)*	1.30	*(33.0)*	1.78	*(45.2)*
53-038-016-XXX*	16	2.30	*(58.4)*	1.40	*(35.6)*	1.88	*(47.8)*
53-038-020-XXX*	20	2.50	*(63.5)*	1.60	*(40.6)*	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)*

* Indicate standard sizes

Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

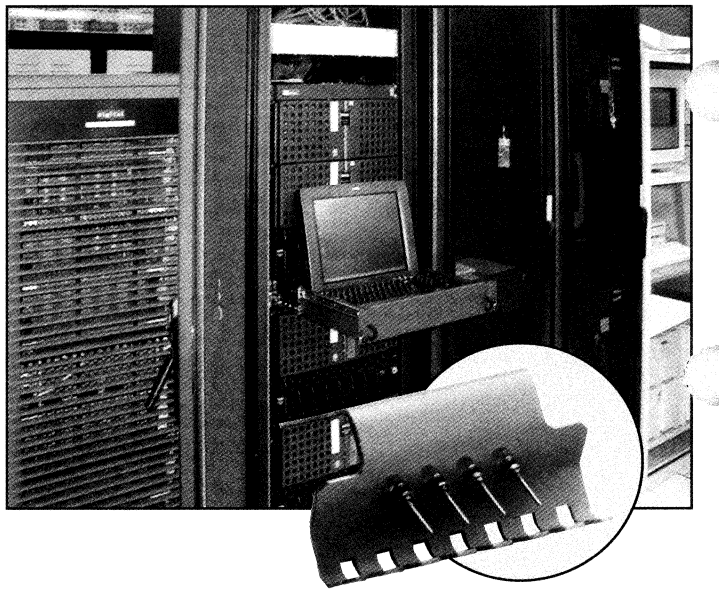
Custom Filter Plates



High Volume Industrial

As a long-term producer of filter plates for industrial applications, Spectrum Control 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.

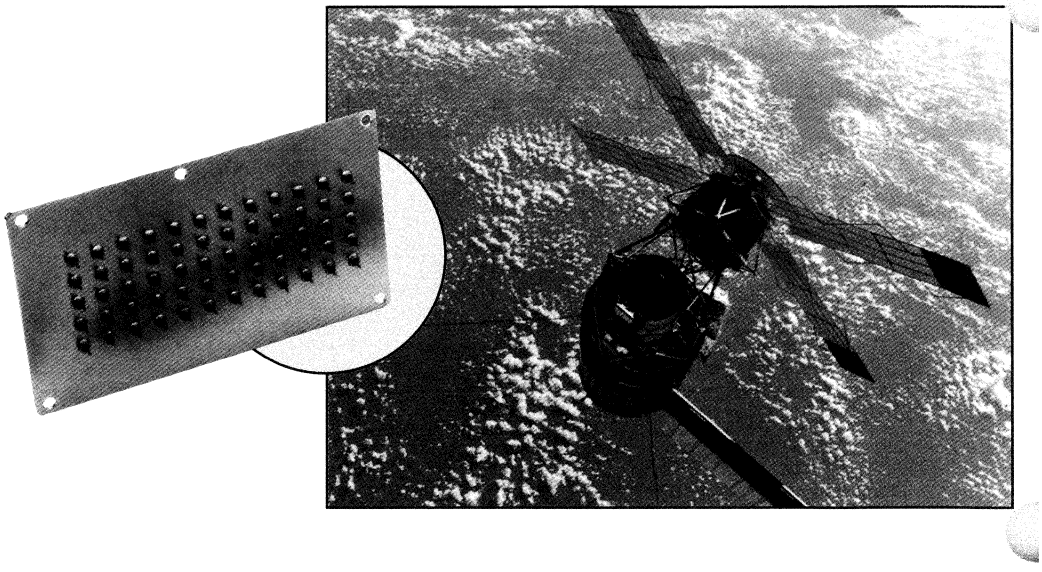
We have engineered a variety of capacitive only filter elements that provide excellent RF isolation from 5 MHz to 1 GHz and beyond. To determine the available capacitance values, contact Spectrum Control. Our technical staff will work with you to develop a solution that meets your system and budget needs.



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-thru filter plate assemblies for higher frequency isolation.

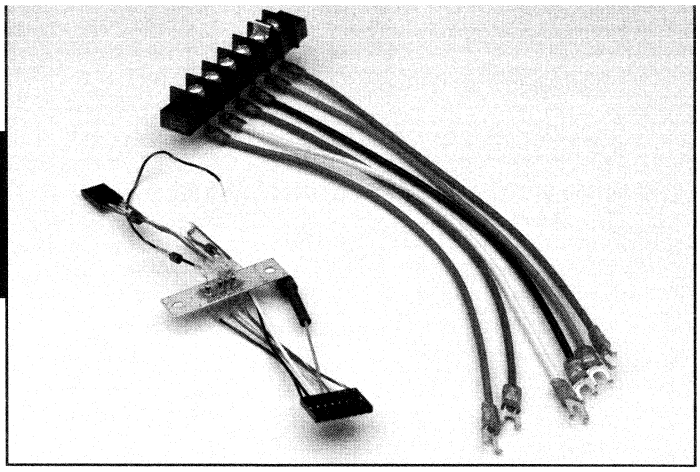
Spectrum Control will custom design a filter plate that meets your size, material and filtering requirements. We are capable of providing stringent testing and analysis of our filter plate assemblies to MIL-F-15733 and MIL-F-28861. To learn how Spectrum Control can satisfy your EMC application, fax or send us your requirements on the design inquiry form on page 89.



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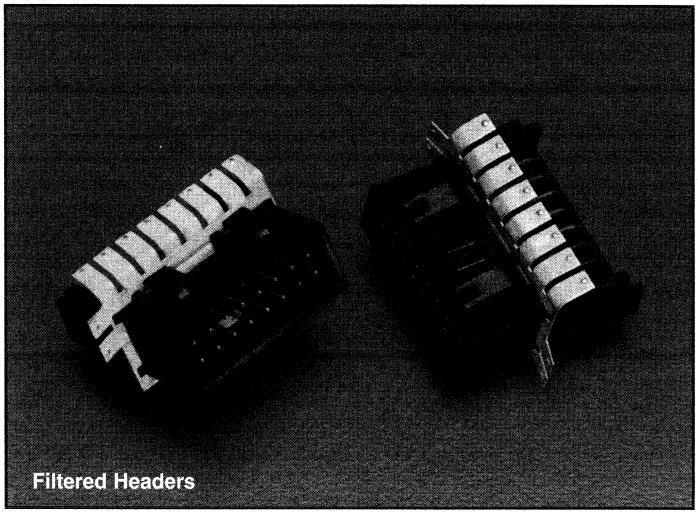
Custom Capabilities



In addition to our custom filter plates, Spectrum Control 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.

Spectrum 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

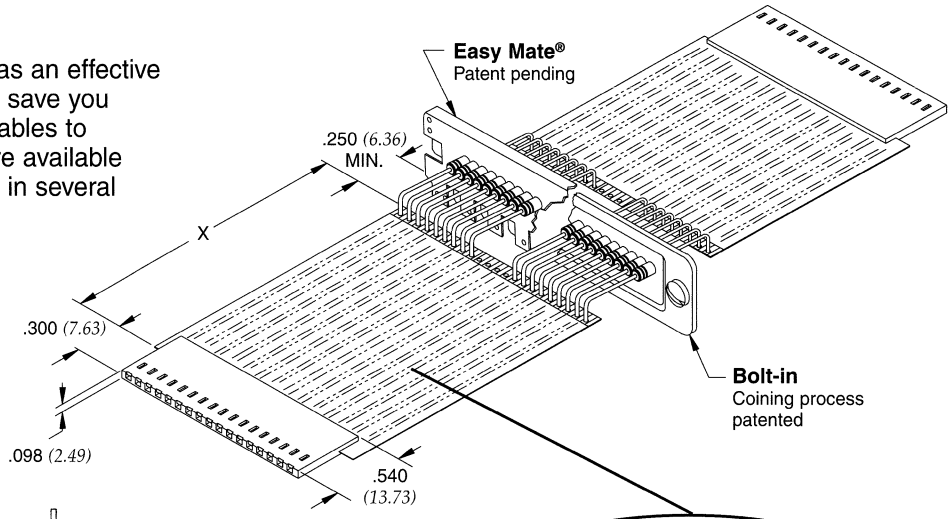
Replace the unfiltered connector on your PC board with Spectrum Control's low cost filtered header. This innovative new product allows you to meet EMC emissions and susceptibility standards with minimal or no board change.

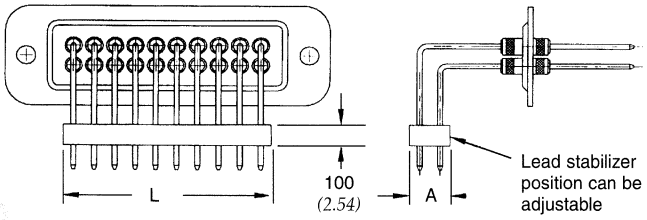
Flat Conductor Cables

Flat conductor cables are often selected as an effective method of interconnection. Spectrum 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

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





SPECTRUM CONTROL INC.

Filter Selection

EMI Filter Performance

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

Custom Filtering

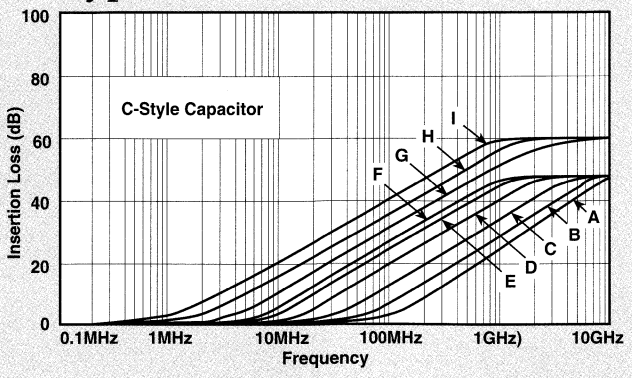
Spectrum Control filter plates are engineered to accommodate selective line filtering. Several different types of filters may be specified in a single, easy to install filter plate, allowing you to facilitate a wide range of filtering requirements.

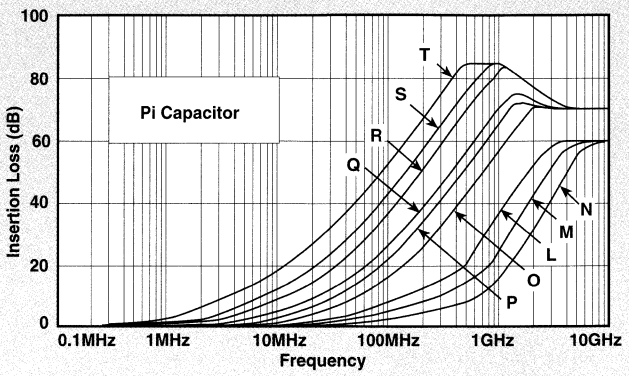
For selective line filtering, provide a sketch indicating the filters and positions required. The example below represents a 10 pin, 2 row plate with six 1000 pF feed-thru capacitors and four 1700 pF Pi type filters.

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 Spectrum Control.

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	C	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		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	Pi	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		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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SPECTRUM CONTROL INC.

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

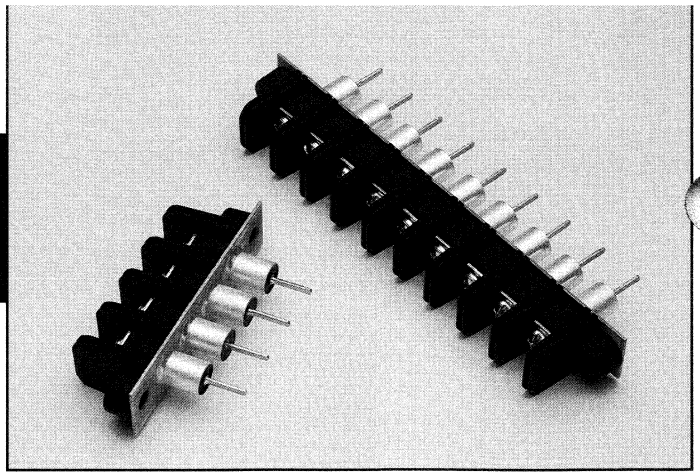
Center-to-Center Spacing			
(Not all capacitances available on all centers)	Standard (inch):	0.079	**0.100**
	Metric (mm):	2	**2.54**

Detailed Sketch and Comments Area

Include Mounting Detail

SPECTRUM CONTROL INC.

Barrier Strip Filtered Terminal Blocks



The barrier strip filtered terminal block is designed provide excellent EMI/RFI filtering of AC and DC power lines and control lines. This terminal block is available in various sizes, with terminal for soldering, spade lugs or wire pigtails. 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-22 AWG)

Specifications

ELECTRICAL *(P_i Schematic)*

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 Insertion Loss — dB: In 50 Ohm Circuit	
30 MHz.....22	300 MHz.....70
50 MHz.....32	500 MHz.....75
100 MHz.....48	1000 MHz.....75

MECHANICAL

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

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.

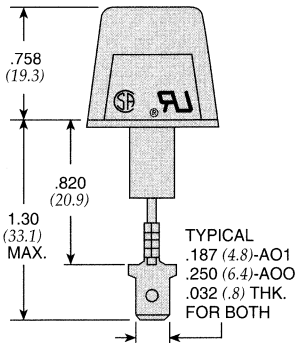
52 – **160** – **006** – **A** – **AOO**

Barrier Strip Terminal Block
160 - Front panel mount
188 - Rear panel mount

Number of Terminals
002 - 2 terminals through
006 - 6 terminals

Current Rating
A - 20 Amps

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)



Dimensions in inches *(mm)*

For instructions on soldering to filter terminals, please refer to page 75 in filter plate section.

For product with AC rating, consult factory for 52-257-Series product and request data sheet. Product UL/CSA recognized.

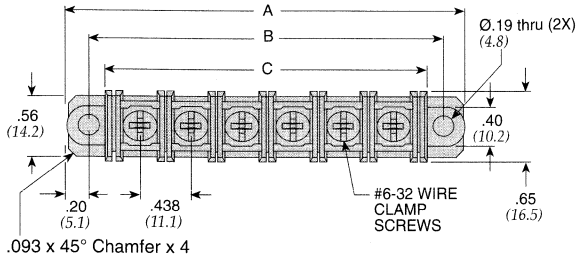
For custom designs see page 94 and consult with factory.

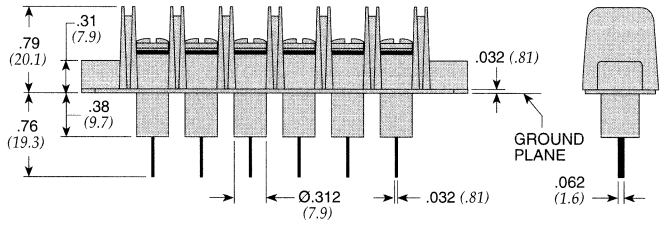
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SPECTRUM CONTROL INC.

Barrier Strip
Filtered Terminal Blocks

Front panel mount





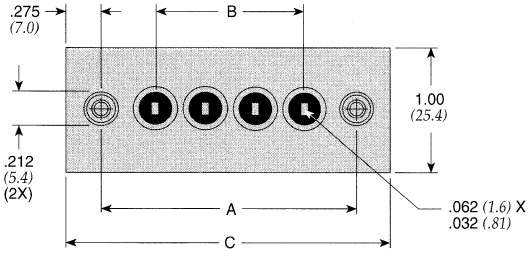
20 Amps

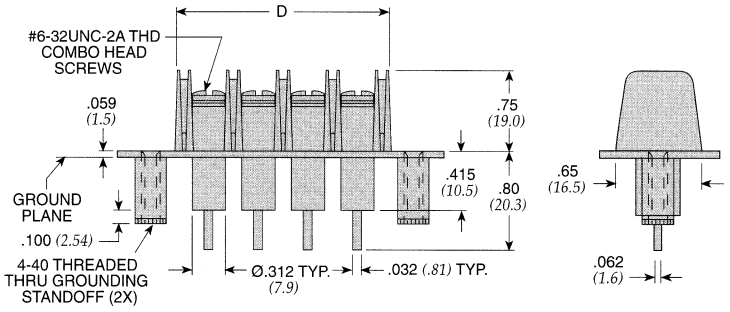
Dimensions in inches *(mm)*

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 Spectrum Control's authorized European distributors/agents.

Rear panel mount





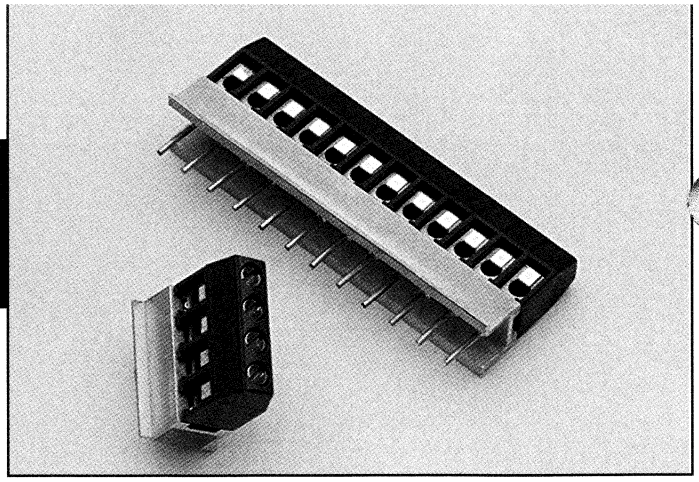
20 Amps

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)

SPECTRUM CONTROL INC.

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. Spectrum's 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

Specifications

ELECTRICAL

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:	.01 ohms max.

Typical Insertion Loss — dB: In 50 Ohm Circuit

10 MHz..... 10.4	500 MHz..... 43.9
50 MHz..... 23.9	1000 MHz..... 49.9
100 MHz..... 29.9	

MECHANICAL

Center spacing:	US .200: (5.08 mm) EURO .197" (5 mm)
Wire size:	AWG #12-26
Screw material:	steel, zinc chromate plate
Recommended PCB hole diameter:	.05" (1.30 mm) contact hole
Molded material:	UL rated 94VO polyamide
Tightening torque:	2.5 in.-lbs. max.
Terminal:	Brass, tin-plated

*** For filter elements with additional capacitance values, consult factory.**

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 93

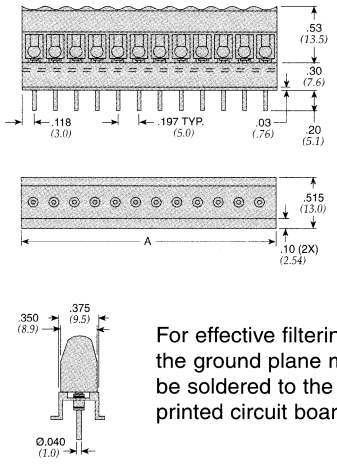
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SPECTRUM CONTROL INC.

PCB Mount
Filtered Terminal Blocks

US Pin Spacing

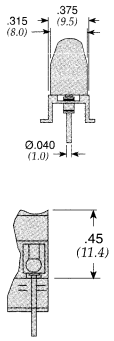
Part Number	Number of Circuits	A in.	A (mm)
52-227-002	2	.44	(11.2)
52-227-003	3	.64	(16.3)
52-227-004	4	.84	(21.4)
52-227-005	5	1.04	(26.5)
52-227-006	6	1.24	(31.5)
52-227-007	7	1.44	(36.6)
52-227-008	8	1.64	(41.7)
52-227-009	9	1.84	(46.8)
52-227-010	10	2.04	(51.9)
52-227-011	11	2.24	(57.0)
52-227-012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



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

Low Profile

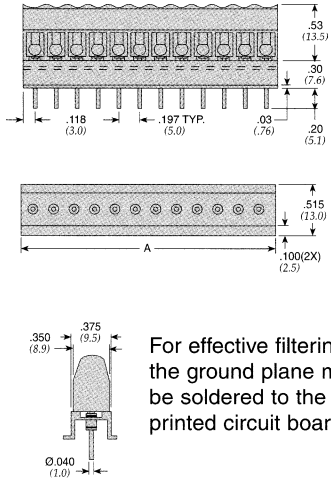
To order add -L- after part number.



Dimensions in inches (mm)

Metric Pin Spacing

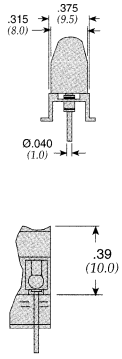
Part Number	Number of Circuits	A in.	A (mm)
52-228-002	2	.43	(10.9)
52-228-003	3	.63	(16.0)
52-228-004	4	.83	(21.1)
52-228-005	5	1.02	(25.9)
52-228-006	6	1.22	(31.0)
52-228-007	7	1.42	(36.1)
52-228-008	8	1.61	(40.9)
52-228-009	9	1.81	(46.0)
52-228-010	10	2.00	(50.8)
52-228-011	11	2.20	(55.9)
52-228-012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



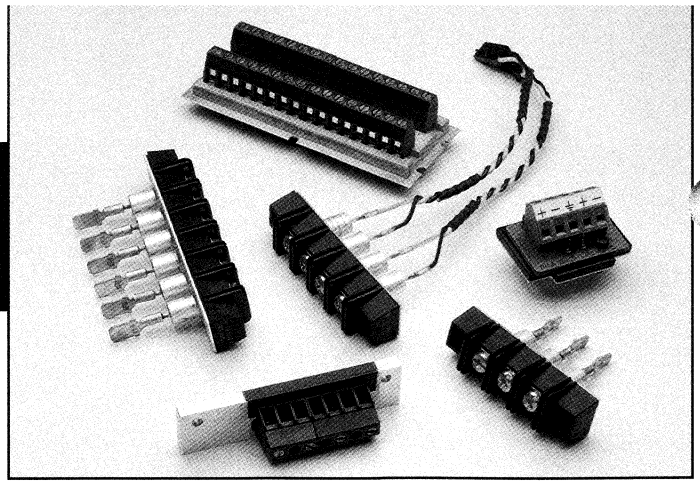
Dimensions in inches (mm)

Terminal Blocks

SPECTRUM CONTROL INC.

Custom Filtered Terminal Blocks

Terminal Block Design Inquiry Form



Spectrum Control 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. Spectrum Control 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: _____

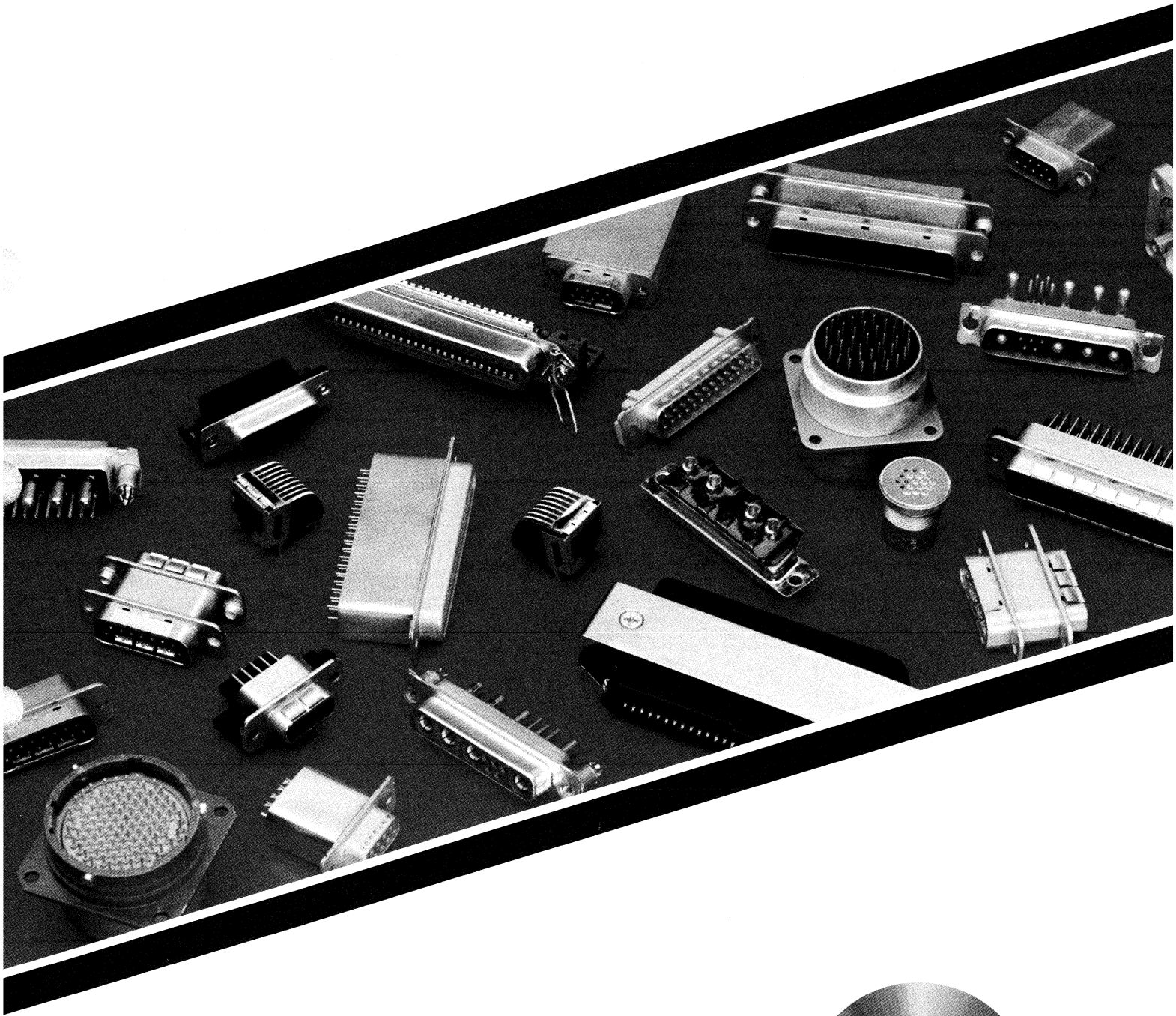
Intended application: _____ Quote quantity: _____

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

Detailed Sketch and Comments Area

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

EMI Filtered Connectors



ISO 9001 CERTIFIED

SPECTRUM CONTROL INC.
A Control Products and Systems Company
Signal Products Group

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Filtered Connector Selection Guide

Other Key Pages **Pages**

Part Numbers & Options 136-137
Adapter Test Kit.....153
High Voltage Adapters 154
Waved Metal Gaskets 155
Hooded Strain Reliefs 156
Custom Engineered Solutions.....157
Performance Testing 158
Board & Panel Cutouts.....159-160

Series 400 Ferrite Filtered Connectors

- Filtering of high frequency interference
- Short, space saving .318" footprint
- Replaces individual ferrite leads, saving cost and space
- Effective in meeting FCC, VDE, EN55022 and Japan's VCCI requirements

The Series 400 ferrite filtered connector is designed as a low cost EMI solution for high frequency interference. The space saving .318" footprint makes this product interchangeable with standard D-subminiature connectors.

Pages

Series 400 Ferrite Filtered Connectors 99-103

Series 500 Low Profile Feed-thru and Chip-on-Board Filtered Connectors

- Low cost, high performance connectors
- Available in 9, 15 and 25 shell sizes
- Compact design with a .318" footprint
- Solid ground plane design provides EMI shielding

The Series 500 and chip-on-board filtered D-Subminiature connectors feature a .318" footprint for 90° PCB connectors and a low profile housing on straight PCB connectors. These filtered D-subs are "drop-in" replacements for standard unfiltered D-subminiature connectors.

Chip-on-Board Filtered Connectors 104-105
Series 500 Filtered Connectors 106-109

Series 600 Hi-Density Filtered Connectors

- Available in 15, 26, 44, 62 and 78 shell sizes
- Compact design using one piece die cast housing
- Available in feed-thru capacitive configurations
- Selective line filtering is available

This line of connectors incorporates the high performance and reliable filtering of Spectrum's standard D-subs in a Hi-Density format. These connectors are also available in a pin/socket adapter.

Series 600 Hi-Density Connector 110-111
Series 600 Hi-Density Telecommunications Adapter 112-113

Series 700 High Performance Filtered Connectors

- Available in 9, 15, 25, 37 and 50 shell sizes
- One piece die cast housing design
- Available in both feed-thru capacitive and Pi configurations
- Selective line filtering is available
- Tubular capacitor filtering provides effective performance through 10 GHz

These connectors are a highly effective method of filtering at the I/O interface. The unique ability to selectively filter lines allows signals of various rates to pass without degrading signal integrity. Series 700 Connectors feature a .590" footprint in straight and right angle for both pin and socket contact and as an adapter.

Series 700 Connectors Filter Selection and Specifications 114-115
Shell Size 9 Connectors. 116-119
Shell Size 15 Connectors 120-123
Shell Size 25 Connectors 124-127
Shell Size 37 Connectors 128-131
Shell Size 50 Connectors 132-135

SPECTRUM CONTROL INC.

Filtered Connector Selection Guide

Filtered Combo D-Subminiature Connectors

- Excellent filtering of signal, power and coaxial contacts with high performing feed-thru capacitors
- Ground plane design provides superior EMI shielding
- Available in a wide variety of mixed versions

Spectrum's line of filtered combo D-subs provide high insertion loss with tubular capacitive filtering. These connectors are available with 20 Amp power contacts, 40 Amp power contacts, 50 ohm coaxial contacts or 75 ohm coaxial contacts. High strength epoxy potting protects ceramic elements.

Pages

Filtered Combo D-Subminiature Connectors 138-145

Dataline Surge Protection

- Fail safe design guards equipment in case of severe surge
- Connects directly between the serial or parallel port of your hardware and cable
- Available in 9, 15 and 25 line protection

Surge suppressors provide protection against data loss and damage due to transient over-voltages from a variety of sources including lighting, factory equipment, motors and AC power lines. Protects printers, personal computers, LANS, WANS, RS-232 and RS-422/485 equipment.

Dataline Surge Protection 146

Datacom Connectors

- Modular jack connectors available filtered with ferrite or capacitive film
- Miniature ribbon connectors and adapters filtered with chip capacitors
- Modular jack connectors available in single or multiport styles
- Miniature ribbon connectors and adapters available in 50 line configurations

Filtered datacom connectors are available for a wide variety of applications including original telephone manufacturing, operating telephone companies, cable reclamation, cable manufacturing and bay connectorization, LANs, WANs, network cards, broadband transmissions, workstations, peripherals, fax/modems, copy machines and multiplexing.

Filtered Miniature Ribbon Connectors and Adapters 147-150
Filtered Modular Jack Connectors 151-152

Custom Filtered Connectors

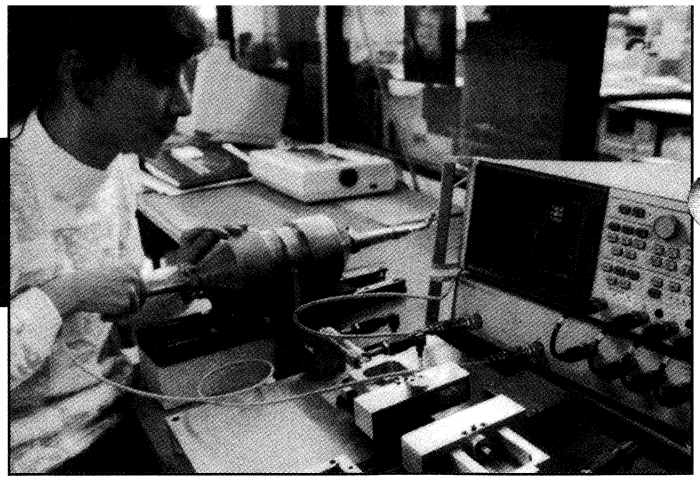
- Available in C, Pi, LC and T configurations
- Able to filter most connector interface types including circular, rack and panel, ARINC, etc.
- Value added options such as wire harnessing, flex circuits and hermeticity are available
- Selective line filtering available
- Use either tubular capacitors or planar arrays

This series of filtered connectors includes custom products ranging from MIL-C-38999, ARINC military connectors to filtered industrial connectors. These connectors are available with capacitor values up to 500,000 pF per line making it ideal for most applications. Common markets for custom filtered connectors are military, industrial and medical equipment.

Compact Shell Filtered Connectors 162
MIL-C-38999 163-168
Extended Shell Filtered Connectors . . . 169
MIL-C-38999 170-178
MIL-C-83723 179-182
MIL-C-26482 183-186
Custom Filtered Connectors 187-188
Quality Acceptance Test Specifications 189

SPECTRUM CONTROL INC.

Advantages of Spectrum Filtered Connectors



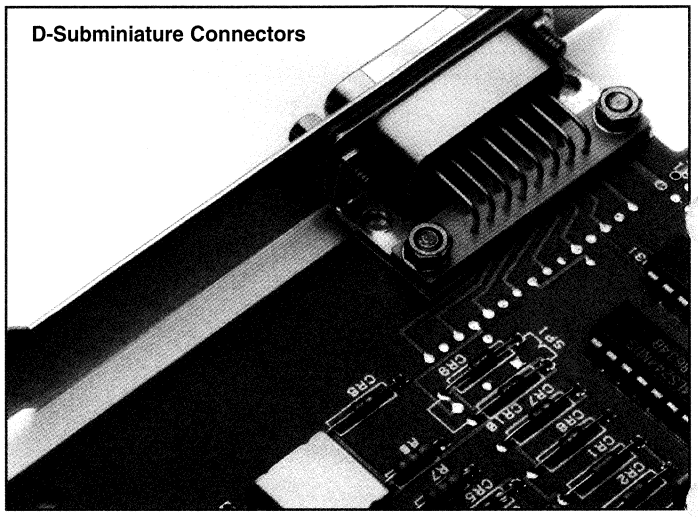
Spectrum offers the industry's most complete line of filtered D-subminiature connectors.

Features

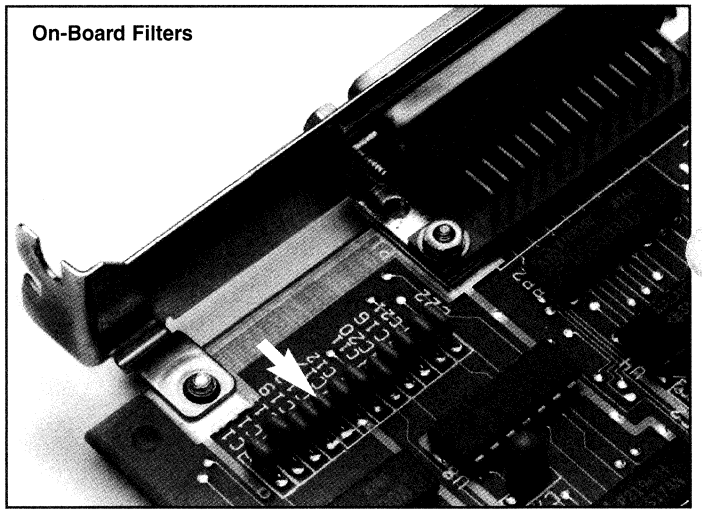
- All shell sizes (9, 15, 25, 37 and 50)
- Many termination types (PC mount, wire wrap, solder cup and 90° PCB)
- In house ceramic tube design for high performance filtering
- Filtering options:
  - Pi filter configuration *(provides 45-60 dB per decade slope to insertion loss curve)*
  - Capacitive only C filters *(provides cost effective EMI attenuation)*
  - Ferrite filtered Series 400 Connectors *(provides filtering in situations that do not tolerate capacitive loading of circuit)*
  - Series 500 Connectors *(Short .318" PCB footprint)*
  - Chip capacitor on PC board *(Short .318" PCB footprint)*
- Construction (Series 600 & 700)
  - One piece zinc diecast shell, nickel plated
  - Complete 360° grounding with ground plate
  - Patented coaxial springs ensure ground continuity

Factors to be considered when evaluating EMI filtering through filtered connector or on-board filter:

- EMI effectiveness
- Cost of components
- Hidden costs of extra components
- Design of board
- Reliability



D-Subminiature Connectors



On-Board Filters

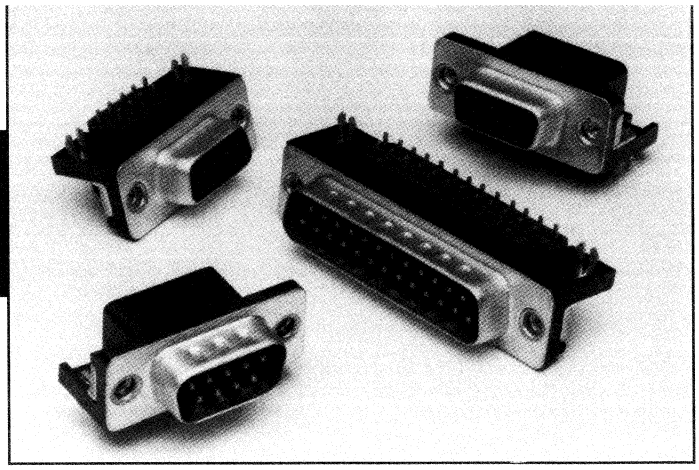
Advantages of a Filtered Connector

- **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 –** Spectrum Control 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 –** Spectrum Control tests 100% of filters, on-board filters are usually spot tested

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SPECTRUM CONTROL INC.

Series 400 Ferrite Filtered Connectors



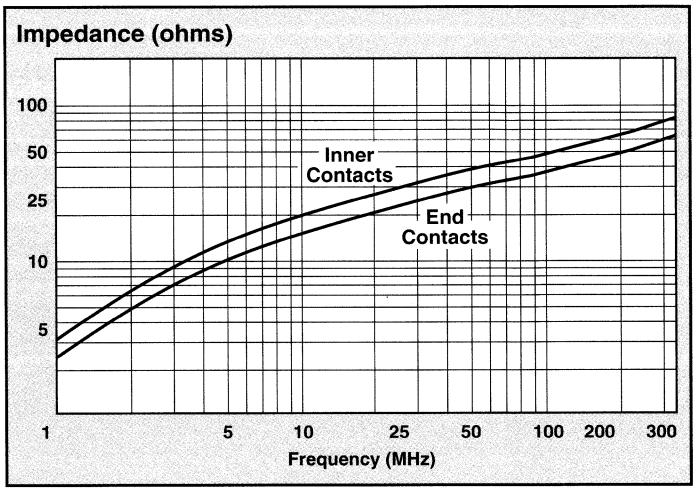
The Series 400 filtered D-subminiature connectors incorporate a solid slab of ferrite material as the filtering element. This rugged one piece design provides a compact connector that is a drop-in replacement for standard connectors. The ferrite material has been chosen for optimum filtering performance in the 10 to 300 MHz. range.

Series 400 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

- Superior filtering of high frequency interference
- Low cost, high performance ferrite filter
- Prevents common-mode noise in signal lines of data communication terminals and digital devices
- 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
- Stacked ferrite connectors also available. Consult factory for more information.



Mechanical Specifications

Shell . . . . . Steel (Tin Plated)

Insulators . . . . . PBT + 30% Glass Fiber (UL 94V-0)

Pin Contacts . . . . . Phosphor Bronze or Brass

Contact Plated . . . . . Gold Flash

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

Electrical Specifications

Impedance . . . . . @ 5 MHz – 15 ohms
@ 25 MHz – 30 ohms
@ 100 MHz – 50 ohms
@ 300 MHz – 75 ohms

Frequency Range . . . . . 10 – 300 MHz

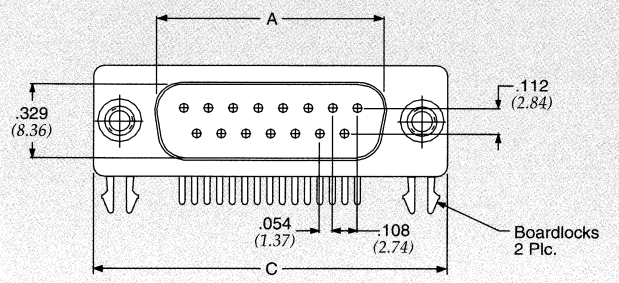
Current Rating . . . . . 5 Amps

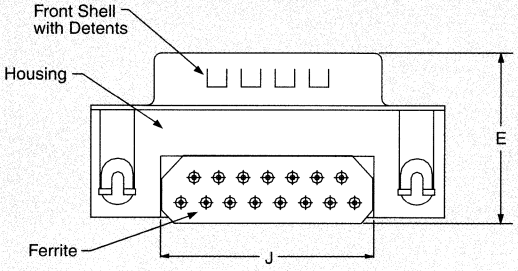
Dielectric Withstand Voltage . . . . . 1000 VRMS for one minute

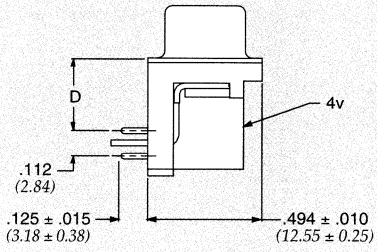
Insulator Resistance . . . . . 1000 megohms Min. @ 500VDC

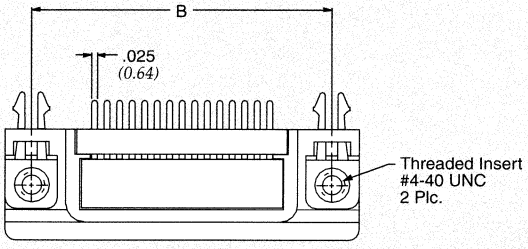
Series 400 Ferrite Filtered Connectors

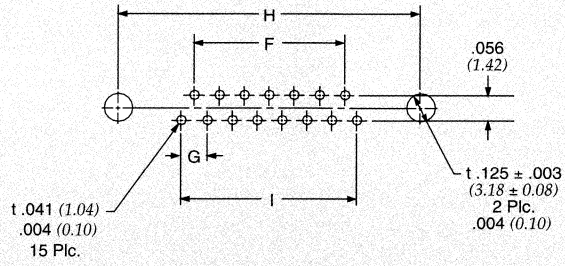
Pin Contact – Right Angle Mount











PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms) 25 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)
€ 56-402-001	D-Sub 9 pin	30	50	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)	0.162 (4.11)	0.054 (1.37)	0.492 (12.50)	0.216 (5.49)	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)	0.324 (8.23)	0.054 (1.37)	0.656 (16.66)	0.378 (9.60)	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)	0.598 (15.18)	0.055 (1.38)	0.926 (23.52)	0.652 (16.56)	1.476 (37.50)

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

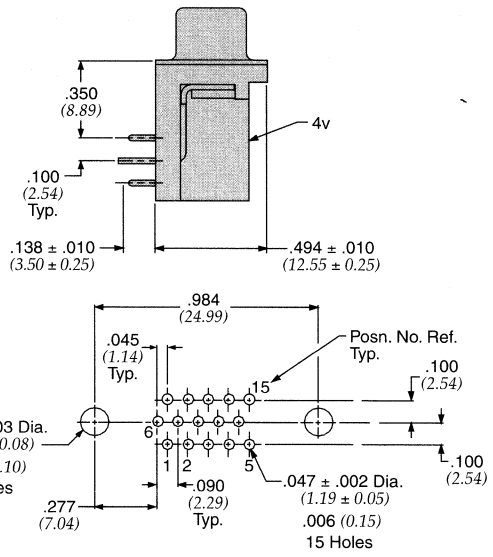
Dimensions in inches *(mm)*

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SPECTRUM CONTROL INC.

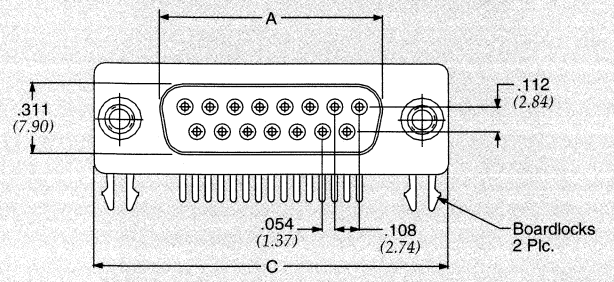
Series 400 Ferrite Filtered Connectors

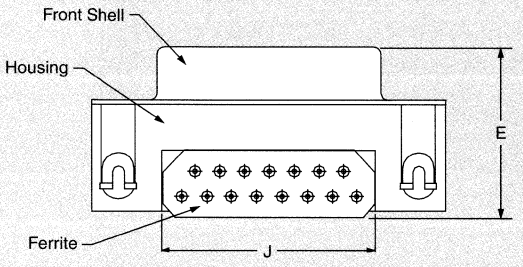
*Hi-Density

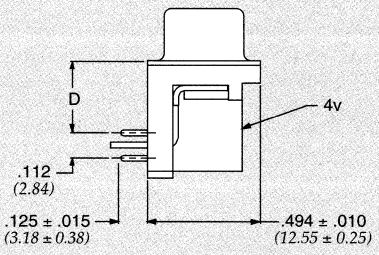


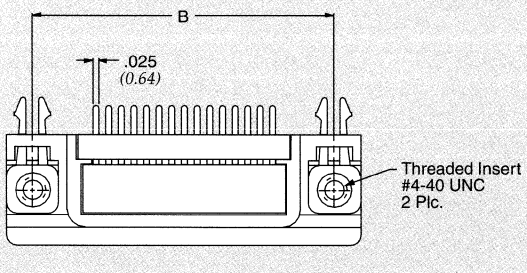
PC Board Mounting Dimensions

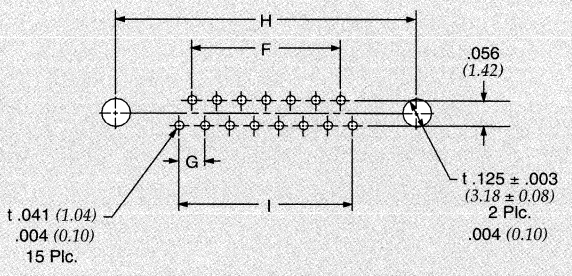
Socket Contact – Right Angle Mount











PC Board Mounting Dimensions

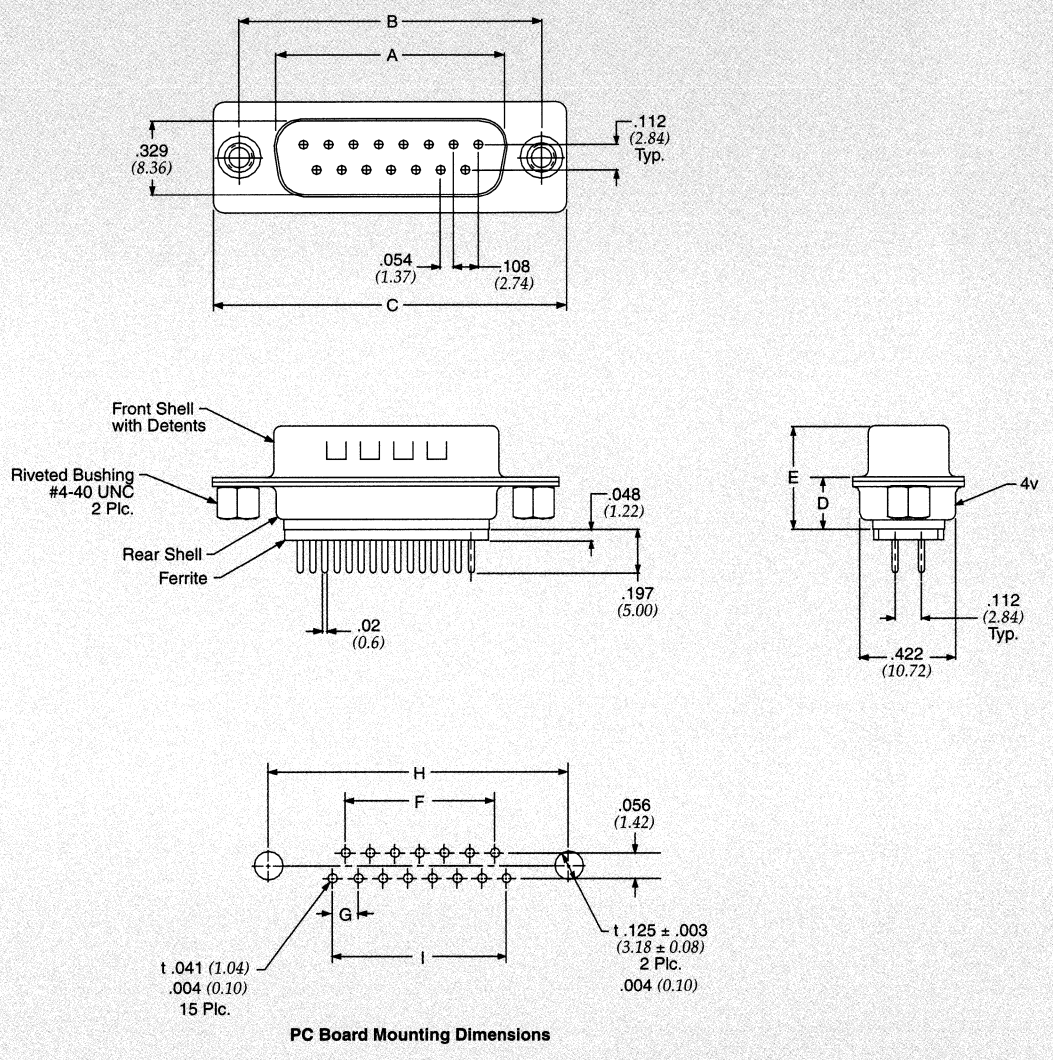
Part Number	Description	Typ. Impedance (Ohms) 25 MHz	Typ. Impedance (Ohms) 100 MHz	Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)	J +/- 0.005 (0.13)
€ 56-404-001	D-Sub 9 socket	30	50	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)	0.162 (4.11)	0.054 (1.37)	0.492 (12.50)	0.216 (5.49)	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)	0.324 (8.23)	0.054 (1.37)	0.656 (16.66)	0.378 (9.60)	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)	0.598 (15.18)	0.055 (1.38)	0.926 (23.52)	0.652 (16.56)	1.476 (37.50)
€ 56-414-001-HD	Hi-Density 15 socket				0.643 (16.33)	0.984 (25.00)	1.213 (30.81)	* See inset drawing						

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

Dimensions in inches *(mm)*

Series 400 Ferrite Filtered Connectors

Pin Contact – Vertical Mount



PC Board Mounting Dimensions

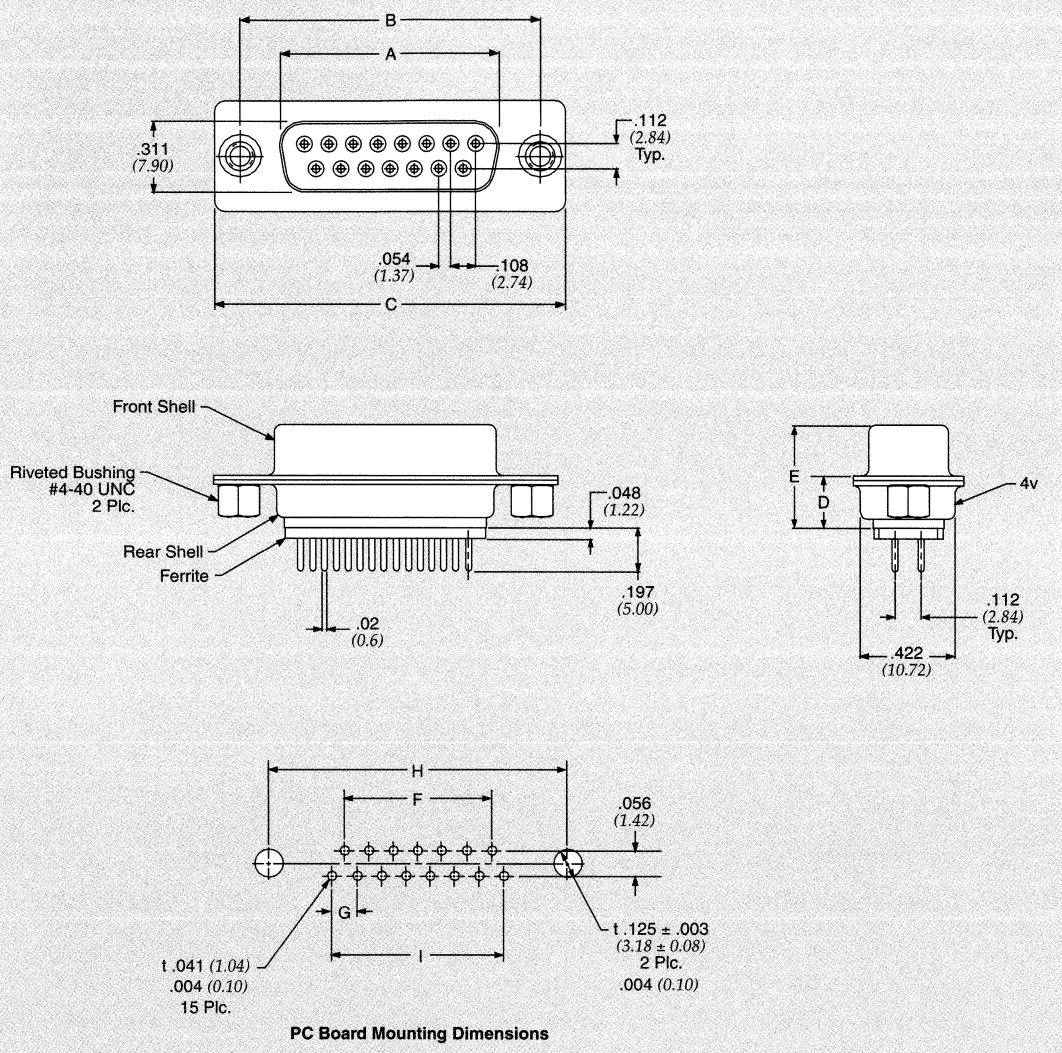
Part Number	Description	Typ. Impedance (Ohms) 25 MHz	Typ. Impedance (Ohms) 100 MHz	Frequency Range	A+/- 0.010 (0.25)	B +/- 0.005 (0.13)	C +/- 0.015 (0.38)	D +/- 0.010 (0.25)	E +/- 0.015 (0.38)	F +/- 0.005 (0.13)	G +/- 0.004 (0.10)	H +/- 0.005 (0.13)	I +/- 0.005 (0.13)
56-407-001	D-Sub 9 pin	30	50	10 MHz to 300 MHz	0.666 (16.92)	0.984 (25.00)	1.213 (30.81)	0.236 (5.99)	0.468 (11.88)	0.162 (4.11)	0.054 (1.37)	0.492 (12.50)	0.216 (5.49)
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)	0.324 (8.23)	0.054 (1.37)	.656 (16.66)	0.378 (9.60)
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)	.598 (15.18)	0.055 (1.38)	.926 (23.52)	.652 (16.56)

Dimensions in inches *(mm)*

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Series 400 Ferrite Filtered Connectors

Socket Contact – Vertical Mount



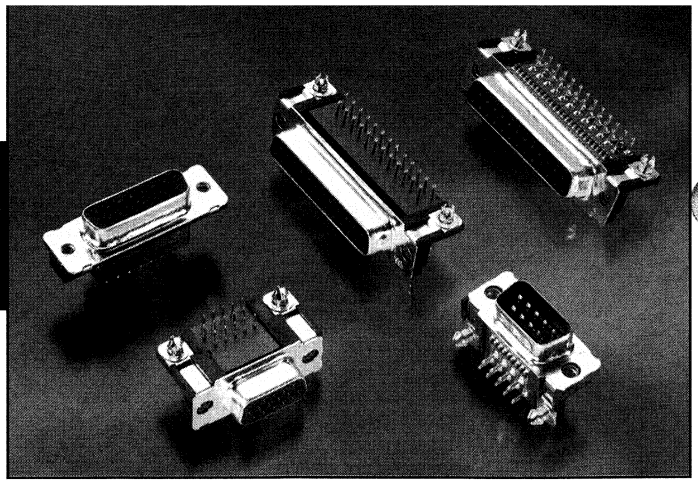
PC Board Mounting Dimensions

Part Number	Description	Typ. Impedance (Ohms) 25 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)
56-403-001	D-Sub 9 socket	30	50	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)	0.162 (4.11)	0.054 (1.37)	0.492 (12.50)	0.216 (5.49)
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)	0.324 (8.23)	0.054 (1.37)	.656 (16.66)	0.378 (9.60)
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)	.598 (15.18)	0.055 (1.38)	.926 (23.52)	.652 (16.56)

Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

Chip-on-Board Filtered Connectors



These versatile and widely used PCB connectors are an inexpensive filtering method that eliminates the problem of conductive electromagnetic interference (EMI).

Chip-on-board plug and receptacles are available in 9, 15 and 25 positions. These connectors are "drop-in" replacements for non-filtered subminiature D connectors with matched PCB footprints. Housings are made of high temperature UL 94V-0 rated thermoplastic material. Low cost front metal shells are compatible with full metal-shell threaded insert mating hardware and integral board-locks to secure posted connectors to the PC board, prior to soldering.

Features

- Offer economical EMI/RFI protection
- Matched PCB footprints mean "Drop-in" replacement for non-filtered connectors
- Chip capacitors on a PC board
- Connectors have industry standard interface
- Connector housing made of UL 94V-0 rated high temperature, thermoplastic
- Connector body is recognized under the Component Program of Underwriters Laboratories, Inc.
- Connector body is certified by the Canadian Standards Association

Mechanical Specifications

Front Shell . . . . . Steel, tin plated

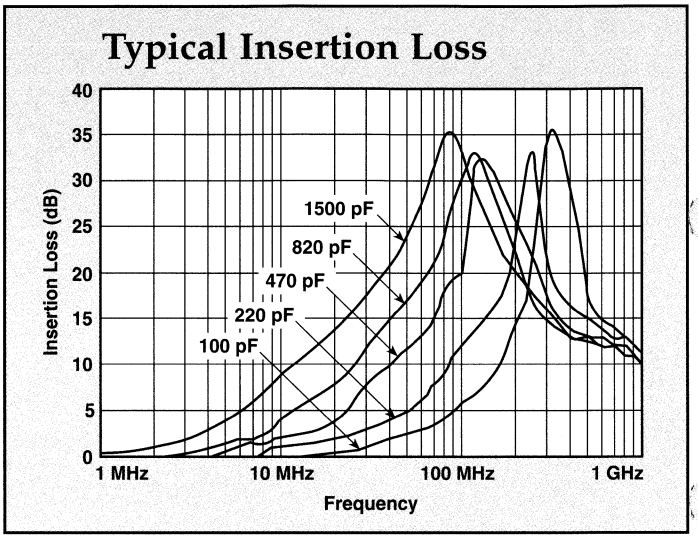
Housing . . . . . 94V-0 rated thermoplastic, black

Eyelets . . . . . Brass, tin plated

Threaded Inserts . . . . . Zinc

Boardlocks . . . . . Copper alloy, tin-lead plated

Pin Contacts (Posted). . . . . Brass, duplex plated as follows: .000030 (0.00076) gold on mating end, with entire contact .000050 (0.00127) (min.) nickel underplated.



Performance Specifications

Current Rating . . . . . 5 Amps

Contact Resistance. . . . . 8 Milliohms max.

Capacitance . . . . . 100, 220, 470, 820 and 1,500 pF ± 30%

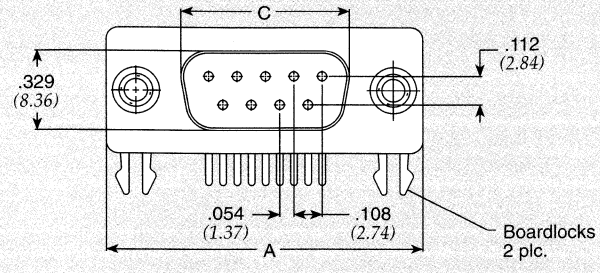
Dielectric Withstanding Voltage. . . . . 1,000 VAC min. for 1 minute

Insulator Resistance. . . . . 5,000 Megohms min.

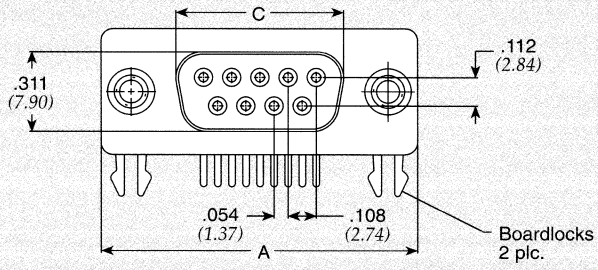
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Chip-on-Board Filtered Connectors

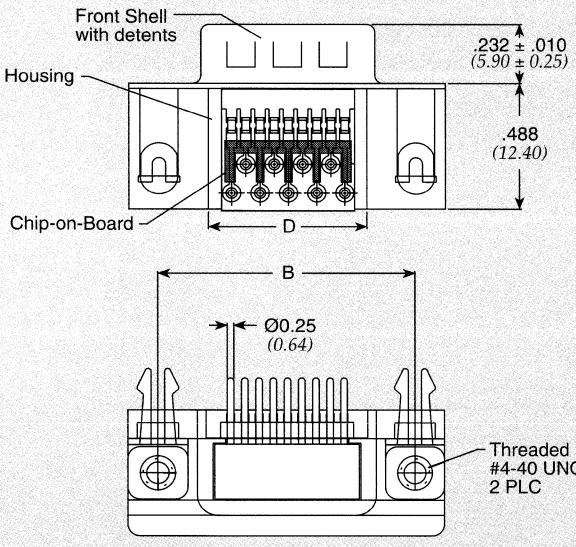
Pin Contact

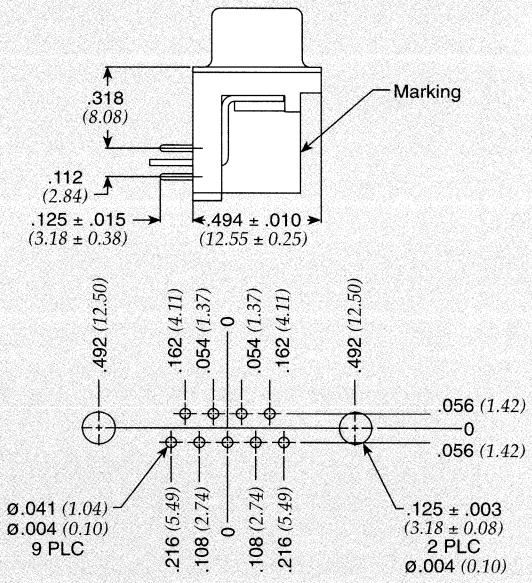


Socket Contact



Common to Pin and Socket Contact





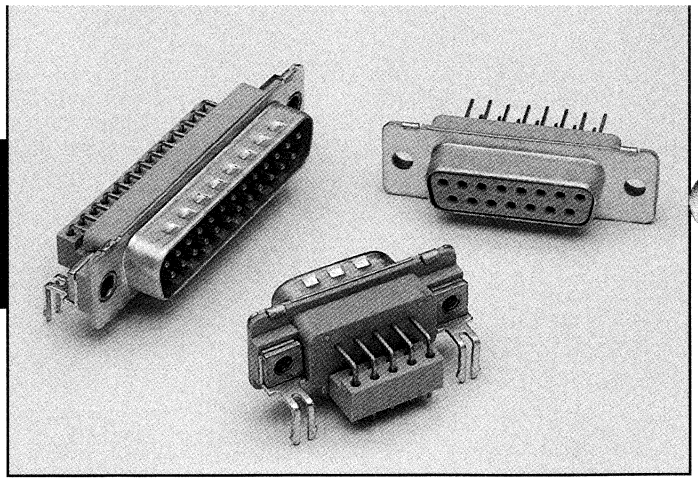
P.C. Board Mounting Dimensions

Pin Contact Part Number	Socket Contact Part Number	Capacitance pF	Shell Size	Number of Positions	Dimensions A	B	C (Pin)	C (Socket)	D
56-102-006	56-104-006	1500	1	9	1.213 ± .015 (30.81 ± 0.38)	.984 (25.00)	.666 ± .010 (16.92 ± 0.25)	.643 ± .010 (16.33 ± 0.25)	.606 (15.40)
56-102-005	56-104-005	820							
56-102-004	56-104-004	470							
56-102-003	56-104-003	220							
56-102-002	56-104-002	100							
56-112-006	56-114-006	1500	2	15	1.541 ± .015 (39.14 ± 0.38)	1.312 (33.32)	.994 ± .010 (25.25 ± 0.25)	.971 ± .010 (24.66 ± 0.25)	.929 (23.60)
56-112-005	56-114-005	820							
56-112-004	56-114-004	470							
56-112-003	56-114-003	220							
56-112-002	56-114-002	100							
56-122-006	56-124-006	1500	3	25	2.088 ± .015 (53.04 ± 0.38)	1.852 (47.04)	1.534 ± .010 (38.96 ± 0.25)	1.511 ± .010 (38.38 ± 0.25)	1.476 (37.50)
56-122-005	56-124-005	820							
56-122-005	56-124-004	470							
56-122-003	56-124-003	220							
56-122-002	56-124-002	100							

Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

Series 500 Low Profile Filtered Connectors



Spectrum Control's 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.

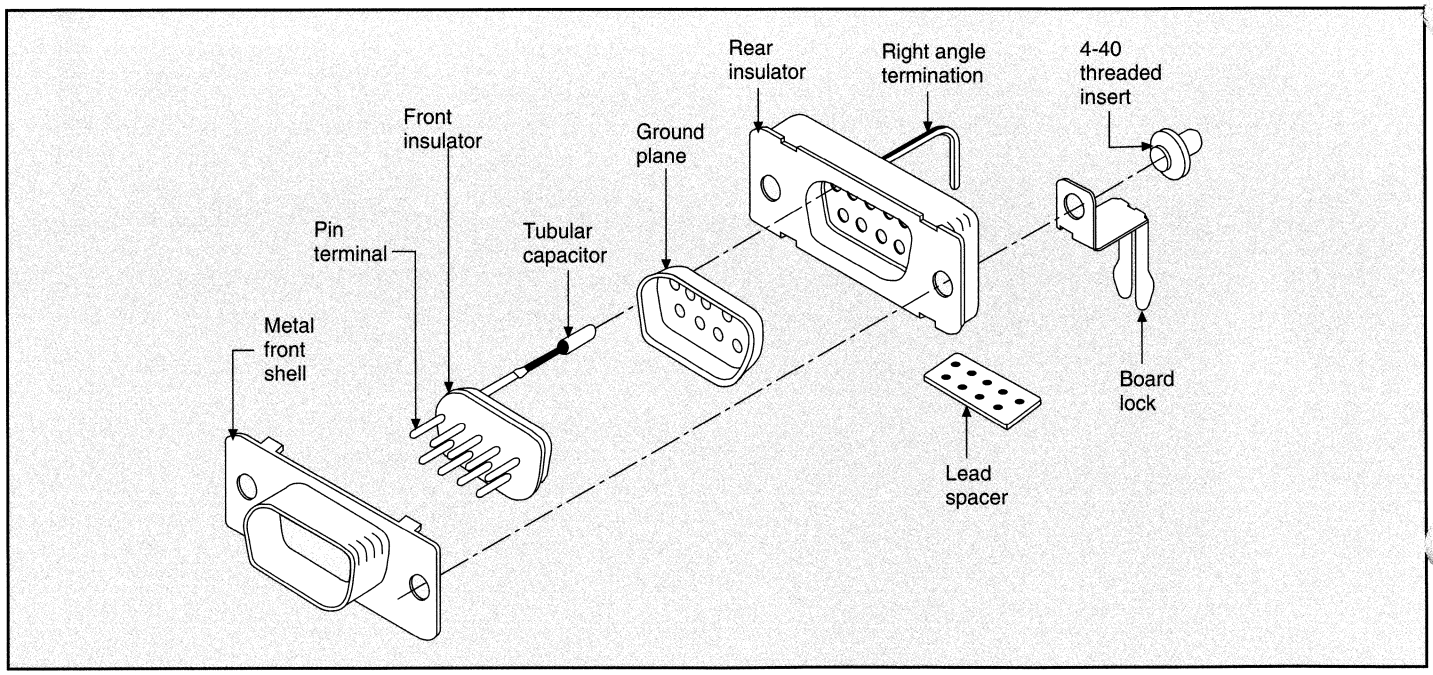
Series 500 capacitive filtered D-sub connectors are an ideal solution to FCC/EC/VCCI emissions problems. These connectors are designed to protect equipment from external EMI noise and eliminate system glitches.

Series 500 Applications

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

Features

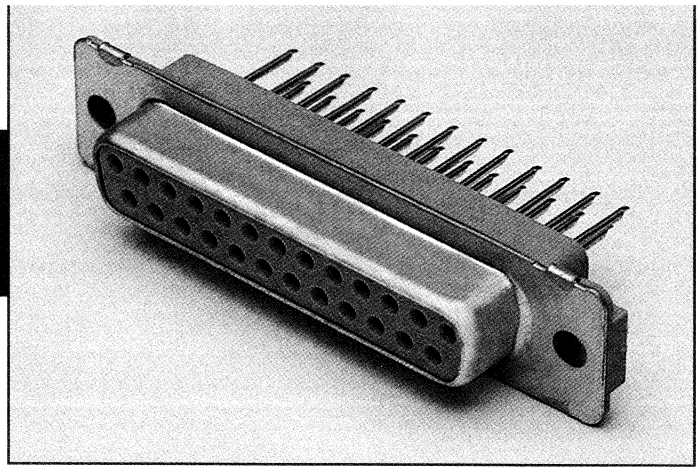
- "Drop-in" replacements for unfiltered D-subminiatures
- Compact design, featuring .318" footprint
- Tubular feed-thru capacitors provide filtering superior to on-board components
- Ground plane design provides EMI shielding
- Full interchangeability; based on MIL-C-24308
- Each connector position is tested 100% for critical electrical parameters to ensure consistent performance
- Insulators are UL recognized UL94-VO flammability rated
- 9, 15 and 25 shell sizes
- Available with board lock feature and 4-40 mounting threads
- Selective filtering available
- UL/CSA approval pending
- 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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SPECTRUM CONTROL INC.

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 mm)* gold plated* over nickel

Socket Contacts . . . . . Copper alloy CA725, 30 microinch *(0.76 mm)* 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 162.

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%

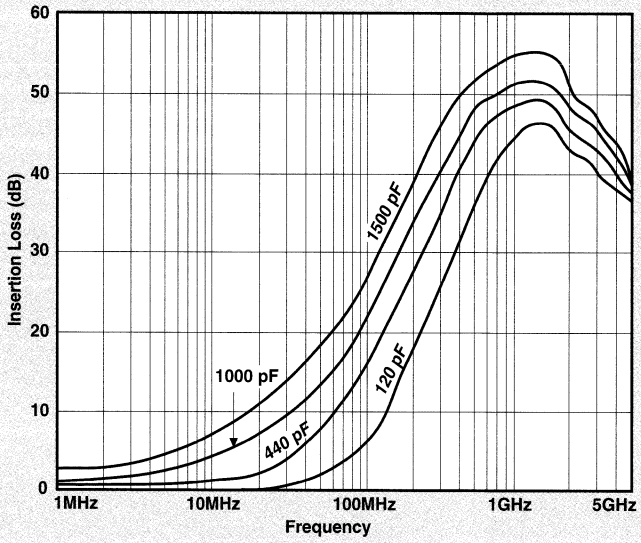
Working Voltage . . . . . 100 VDC

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 Spectrum Control.

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

Filter Performance

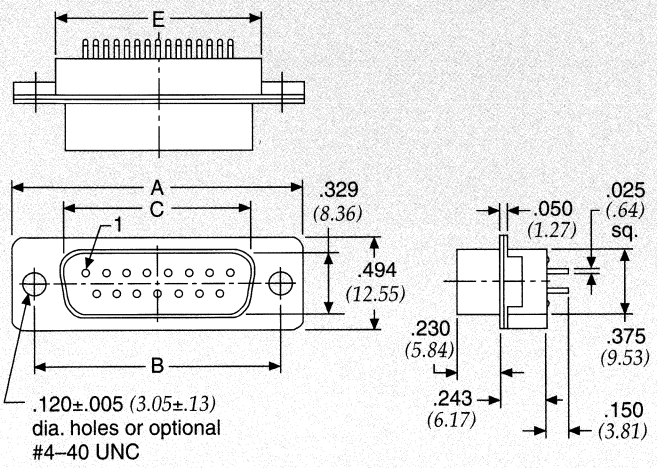
Cap. (pF) Value ±30%	3 dB Cut-off Freq. (MHz)	Insertion Loss (dB)					
		20 MHz	100 MHz	500 MHz	1 GHz	2 GHz	5 GHz
120	40	–	4	21	26	26	20
440	11	3	15	27	33	32	25
840	6	6	19	32	38	37	25
1000	3	8	21	35	41	38	25
1500	2	10	25	40	47	42	25

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

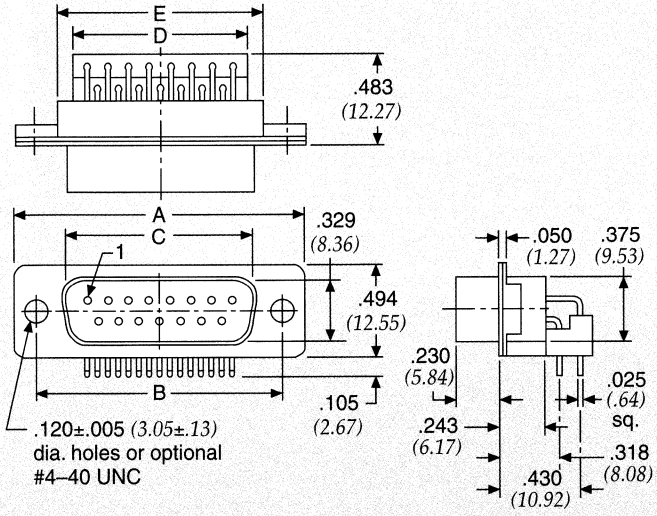
Series 500 Low Profile Filtered Connectors

Pin Contact *(plug)*

Straight PC Mount



90° PC Mount



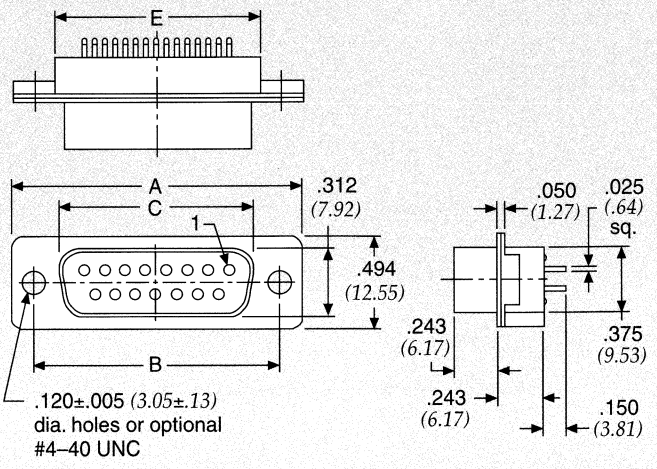
Size	A	B	C	D	E
9	1.213 *(30.81)*	0.984 *(24.99)*	0.666 *(16.92)*	0.540 *(13.72)*	0.748 *(19.00)*
15	1.541 *(39.14)*	1.312 *(33.32)*	0.994 *(25.25)*	0.867 *(22.02)*	1.076 *(27.33)*
25	2.088 *(53.04)*	1.852 *(47.04)*	1.534 *(38.96)*	1.412 *(35.86)*	1.616 *(41.05)*

Standard Tolerance = ±.015 *(0.38)*

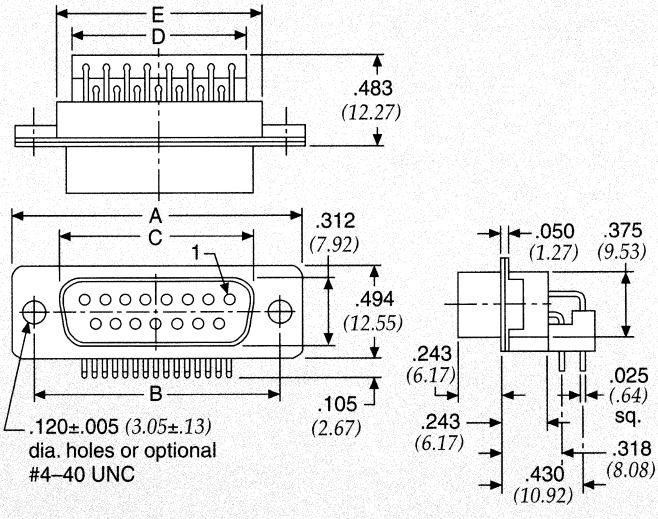
Dimensions in inches *(mm)*

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)*

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SPECTRUM CONTROL INC.

Series 500 Low Profile Filtered Connectors

Ordering Information

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

56 - **5** **2** **4** - **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 Spectrum Control engineering.

56 – **Filtered D-sub Connectors**

5 – **Series 500 Connectors**

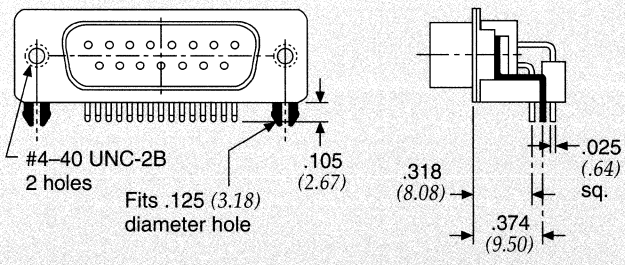
2 – **Shell Size/ Number of Contacts**
- **0** - 9 size
- **1** - 15 size
- **2** - 25 size

4 – **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

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

GBL – **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

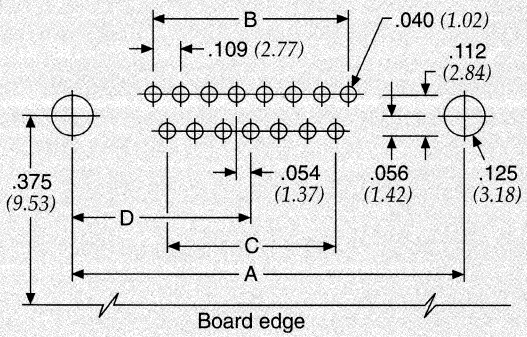


Features
- Snap-in retention to PC board, requires no hardware
- Ensures low ground impedance for superior filtering
- 4-40 threads on mounting flange eliminate loose hardware

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)*

SPECTRUM CONTROL INC.

Series 600 Hi-Density Filtered Connectors

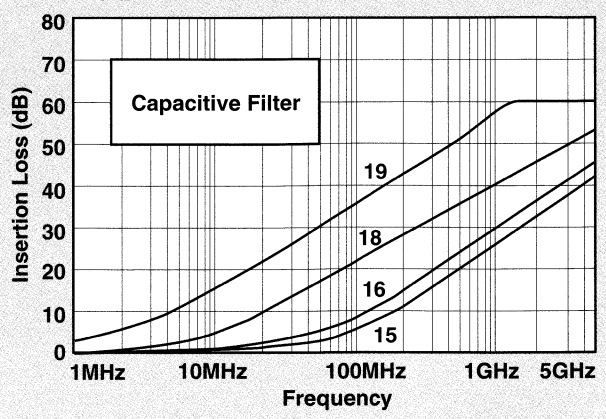
The miniaturization of electronic systems and sub-systems is pushing designers to increase circuit densities within smaller packages. To address this growing need, Spectrum Control has developed a line of filtered Hi-Density D-subminiature connectors. This new line of connectors incorporates the high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

Features

- Connectors designed to MIL-C-24308
- Capacitance values from 75 pF to 4000 pF
- Filter type feed-thru C
- Selectively specify and filter each contact position
- Available in feed-thru capacitive configurations

Mechanical Specifications:
Same as Series 700 connectors, page 115.

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: Hi-Density Connectors

Filter Designations	Filter Circuits	Capacitance Value	Capacitance Tol.	3 dB Cut-off Frequency Max. (MHz)	Dielectric Withstanding Voltage	Working Voltage DC -55°C to +125°C	Minimum Insertion Loss - Decibels (dB) 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

Shell Size**
0 = 15
1 = 25
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

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

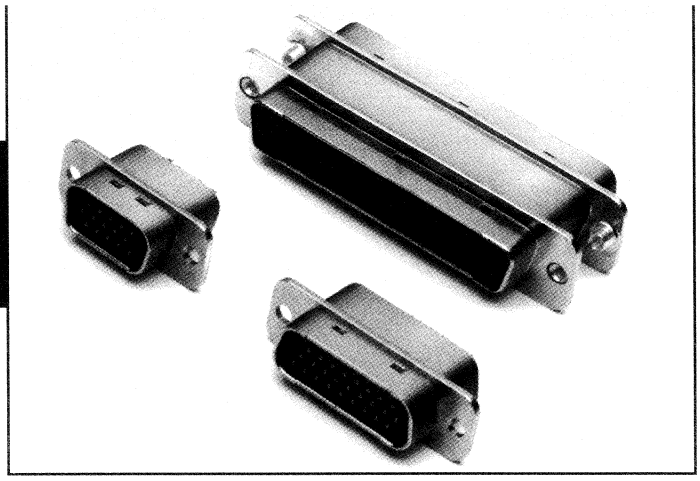
Options
LI = 4-40 inserts
S = Solder dip tails
50G = µ gold

Some shell sizes require minimum order quantity. Consult Spectrum Control for details.

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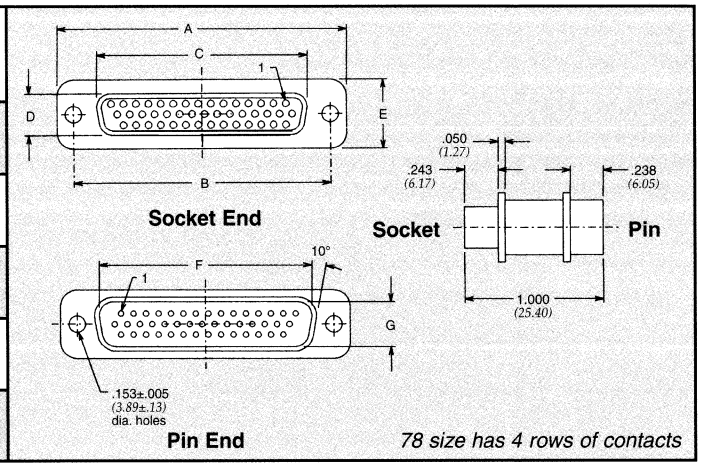
SPECTRUM CONTROL INC.

Series 600 Hi-Density Filtered Connectors



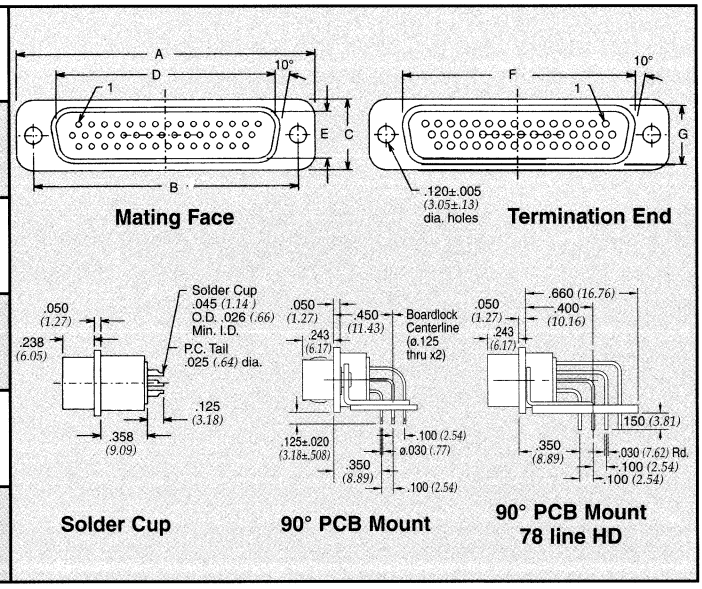
Pin/Socket Adapter

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

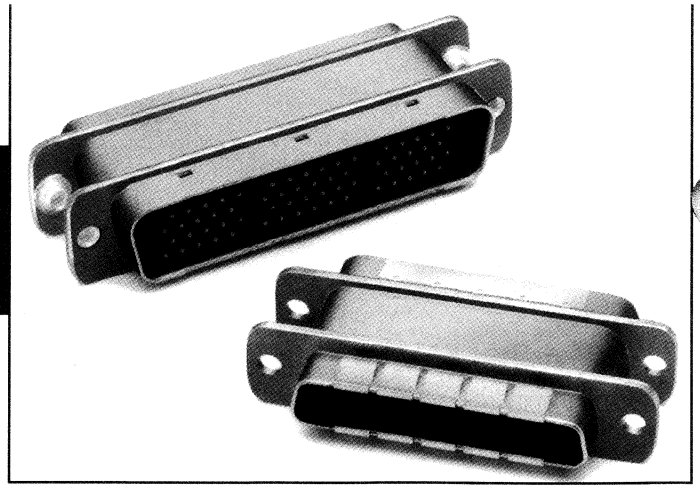
Size	A	B	C	D	E	F	G
15	1.213 *(30.81)*	.984 *(24.99)*	.505 *(12.83)*	.666 *(16.92)*	.333 *(8.46)*	.757 *(19.23)*	.420 *(10.67)*
26	1.541 *(39.14)*	1.312 *(33.32)*	.505 *(12.83)*	.994 *(25.25)*	.333 *(8.46)*	1.085 *(27.56)*	.420 *(10.67)*
44	2.088 *(53.04)*	1.852 *(47.04)*	.505 *(12.83)*	1.534 *(38.96)*	.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)*

SPECTRUM CONTROL INC.

Hi-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

Spectrum Control, in response to these unique requirements of the telecommunication industry, has developed a new Hi-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 Hi-Density arrangements
- 64 contact positions standard, with 78 positions available by request in any filter combination

Mechanical Specifications

Shell . . . . . Zinc diecast, nickel plated 150 microinches *(3.81 mm)* min.

Insulators . . . . . Thermoplastic, UL94V-O

Contacts . . . . . One-piece, screw machined Copper alloy, contact area plated 50 micro inches *(1.27 mm)* gold over 50 micro inches *(1.27 mm)* 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-thru 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)

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SPECTRUM CONTROL INC.

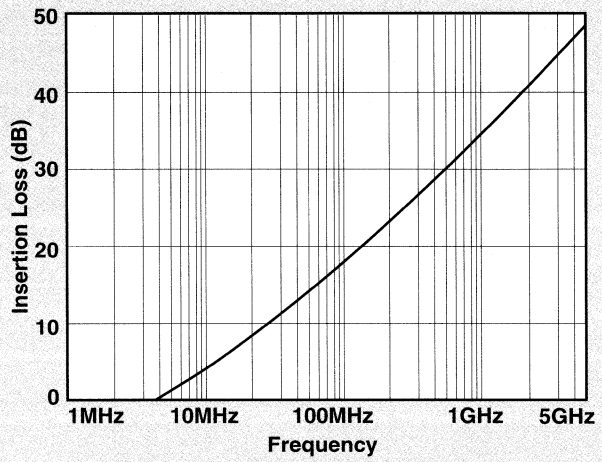
Hi-Density Filtered Adapter for Telecommunications

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

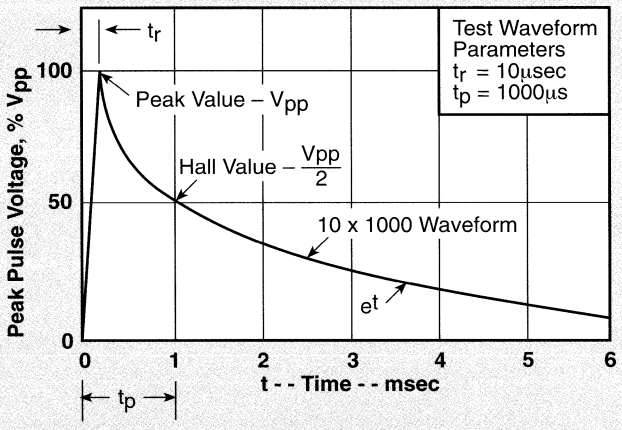
Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load. Above data represents guaranteed minimum.

Typical Insertion Loss



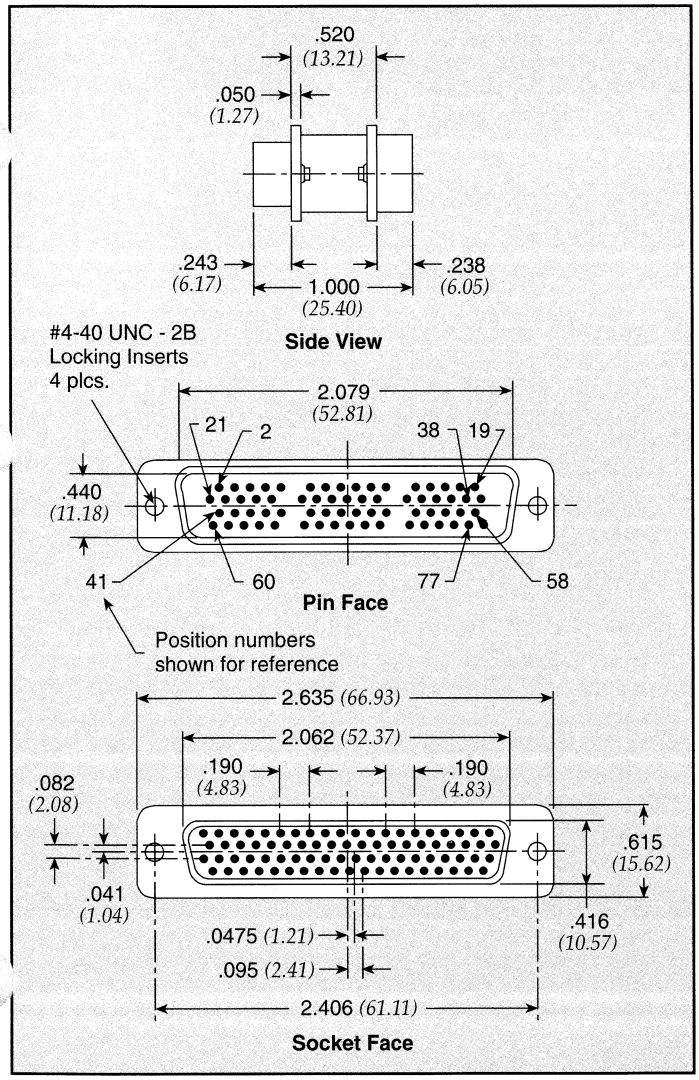
Above curves represent application of proper grounding fundamentals, for assistance consult with Spectrum Control.

Pulse Wave Form* (10 x 1000)



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

Part Number for Ordering: #56-645-002



Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

Series 700 High Performance Filtered Connectors

Filter Selection

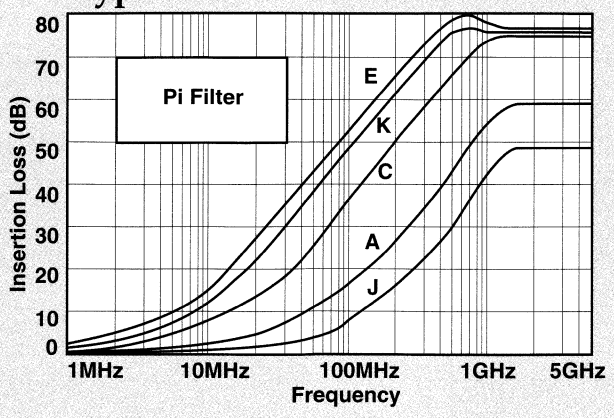
Spectrum Control Series 700 connectors offer the highest performance filtering for all types of professional applications.

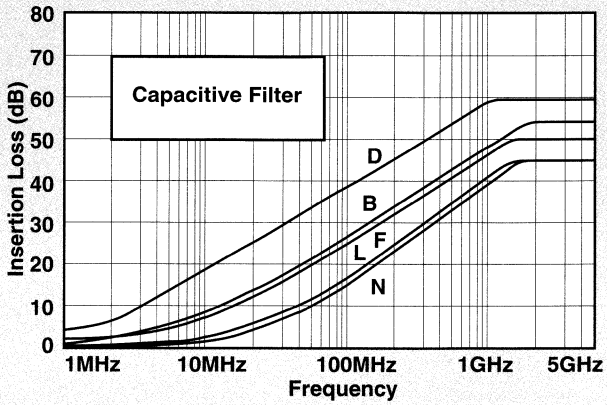
Features

- 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 Spectrum Control.

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

Electrical Specifications: Hi-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
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	+100 -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.

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SPECTRUM CONTROL INC.

Series 700
Specifications and Connector Ordering

Mechanical Specifications

Shell . . . . . Zinc diecast, nickel plated 150 microinches *(3.81 mm)* min.

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

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

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

* *Heavier gold plating available upon request.* *See pg. 137: 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

Note:
For additional mechanical, electrical, and environmental specifications, refer to page 158.

Ordering Your Connector

STEP 1: SELECTING THE FILTER

- Using the insert loss graphs on page 114 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-thru capacitor or Pi. The Pi is generally considered better due to its superior high frequency performance and steeper curve. The feed-thru capacitor is lower cost.
- Select capacitance value.
- Note the Spectrum letter designation for the filter chosen from the table on page 114.

STEP 2: SELECTING THE CONNECTOR

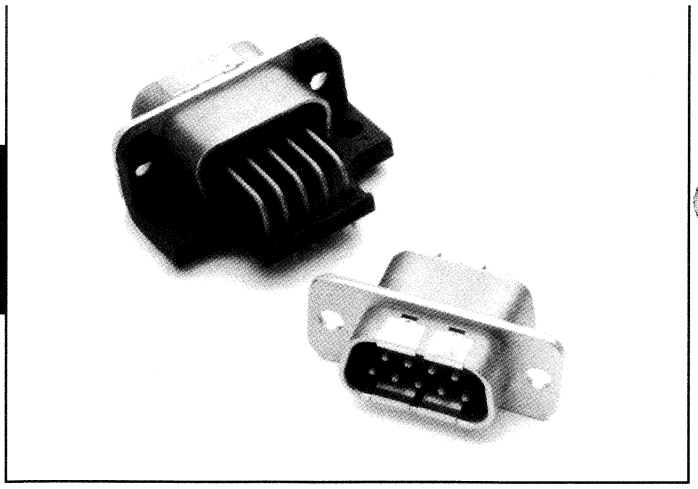
- Turn to the appropriate size section. (9, 15, 25, 37, 50)
- Choose either pin contacts (plug) or socket contacts (receptacle).
- Choose the required termination type.
- From the table on the appropriate connector page, using the filter letter designation chosen in step 1 above, select the part number.

STEP 3: SPECIFYING OPTIONS

- Refer to page 137 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.

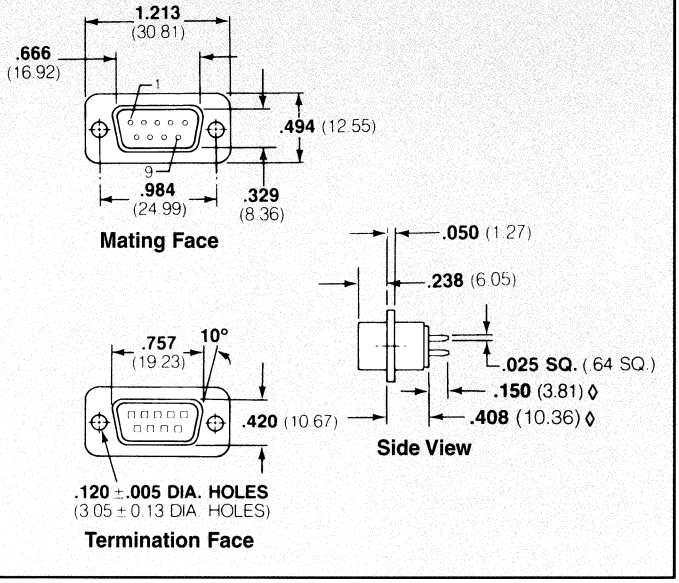
SPECTRUM CONTROL INC.

9 Shell Size Series 700 Pin Contact



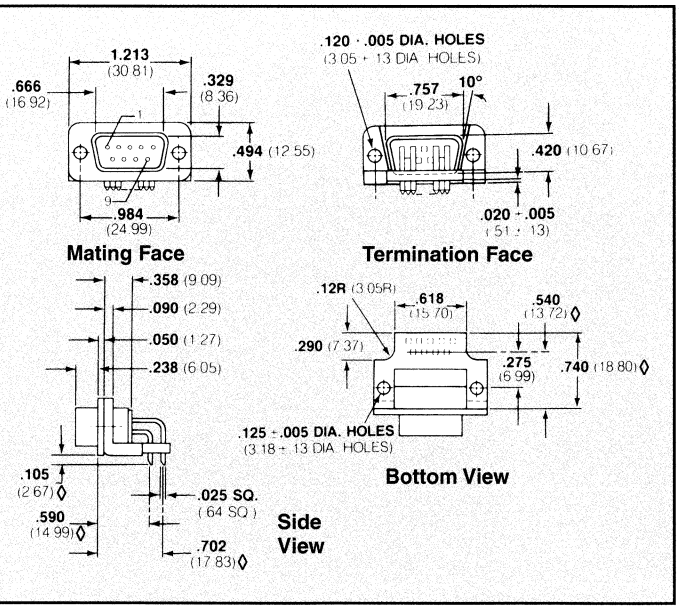
Printed Circuit Board Mount

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



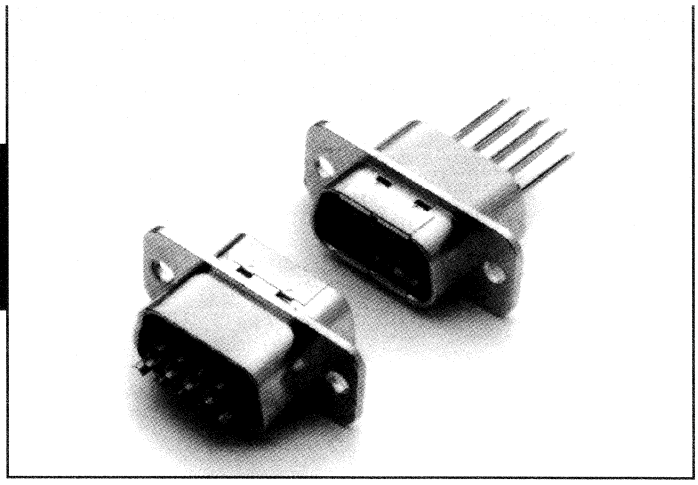
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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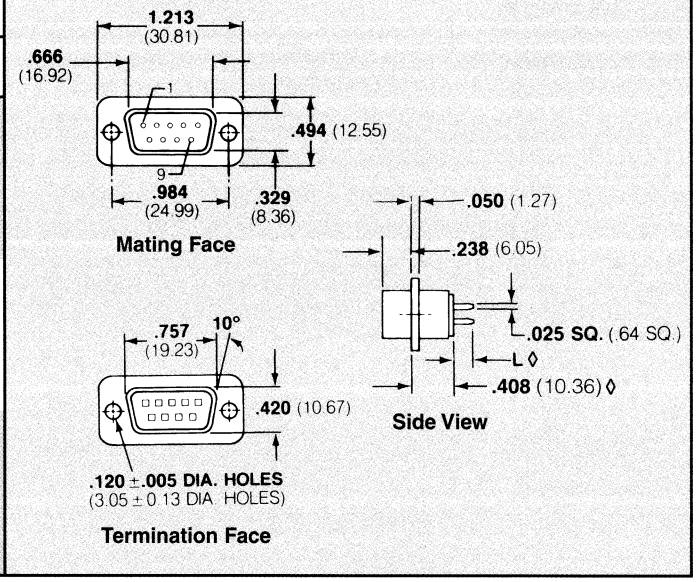
SPECTRUM CONTROL INC.

9 Shell Size — Series 700 Pin Contact



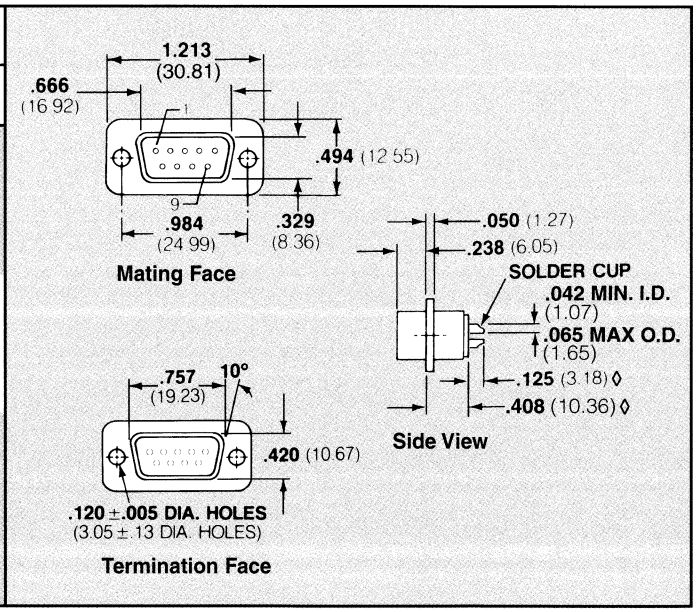
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .225	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

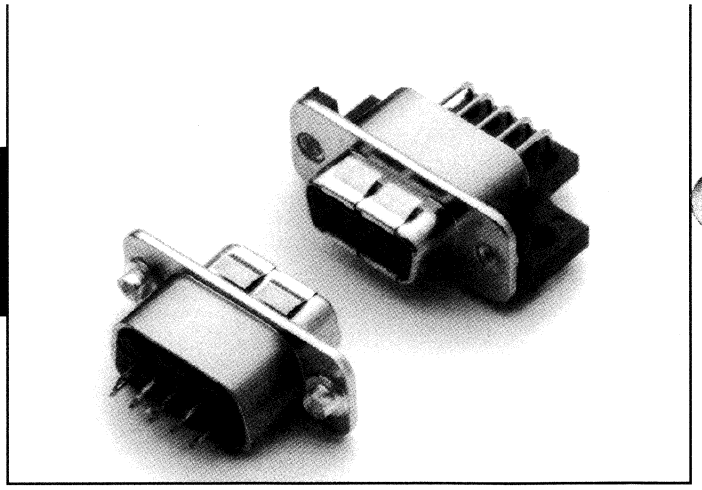


* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

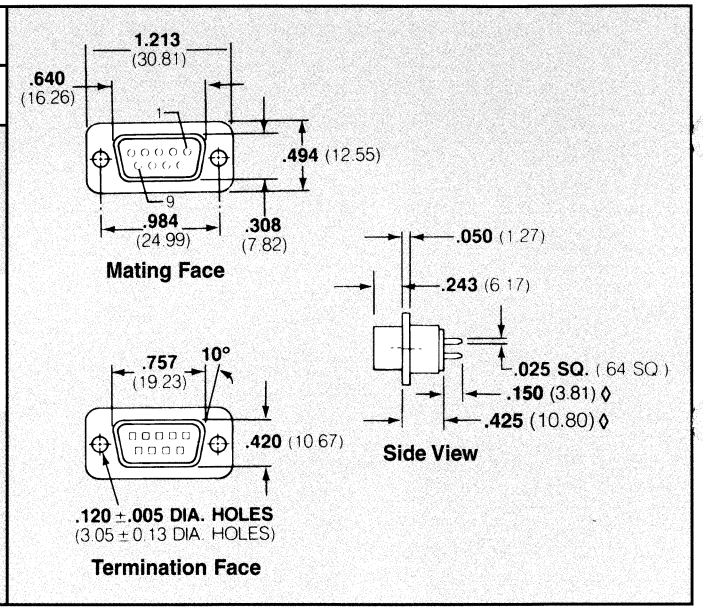
SPECTRUM CONTROL INC.

9 Shell Size Series 700 Socket Contact



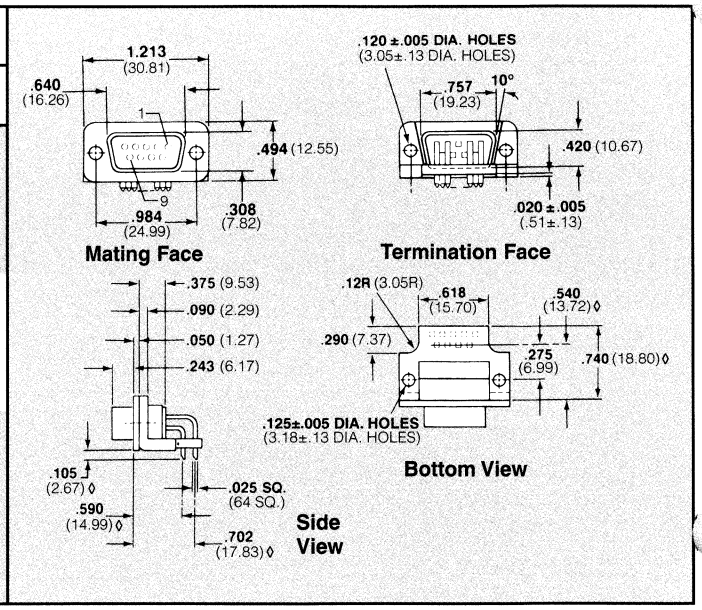
Printed Circuit Board Mount

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 114 for filter performance.**

Standard Tolerance = ±.005 except where noted, ◊ = ±.015

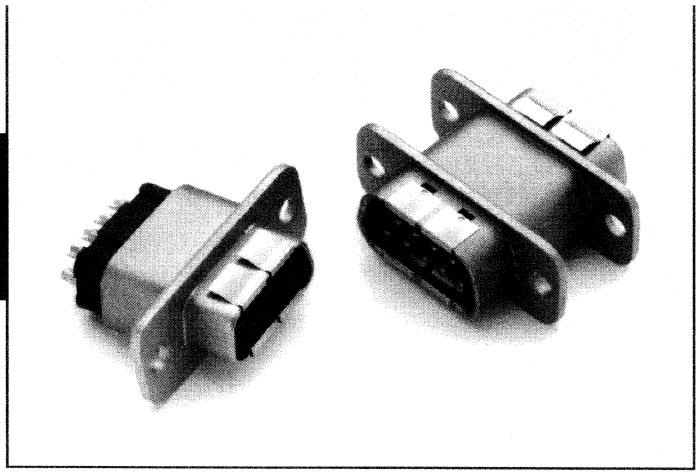
Dimensions in inches *(mm)*

Series 700 High Performance Filtered Connectors

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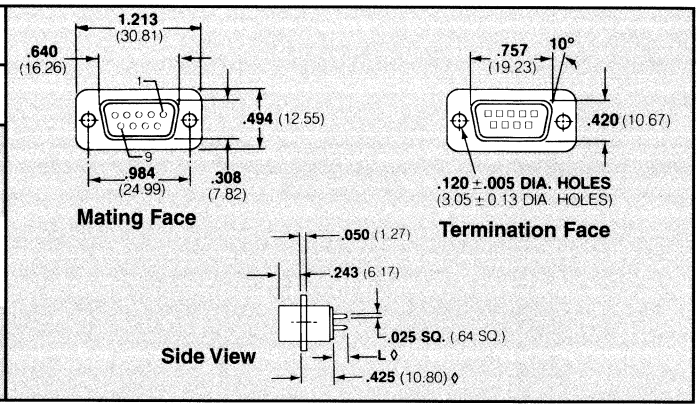
SPECTRUM CONTROL INC.

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



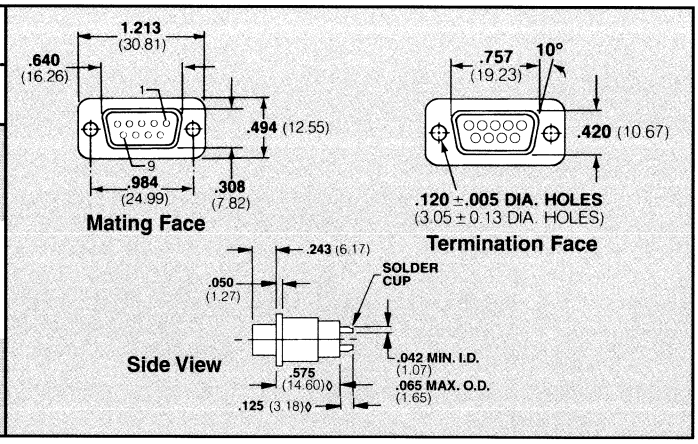
Solderless Wire Wrap

Spectrum Part Number (Select one) L .500	L .375	L .250	EMI Filter Filter Desig.**	Cap. Value
56-703	-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



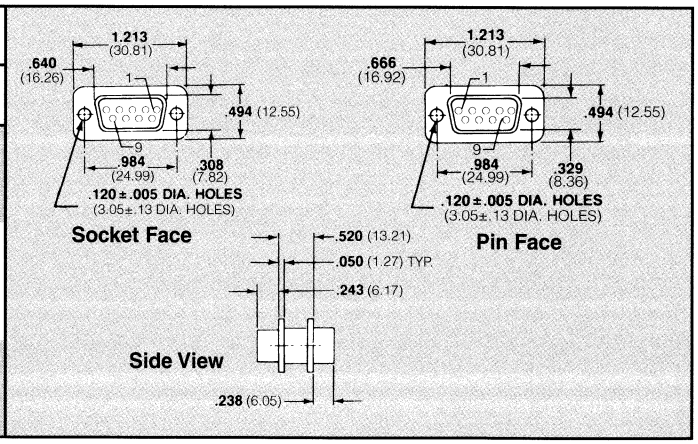
Solder Cup Termination

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

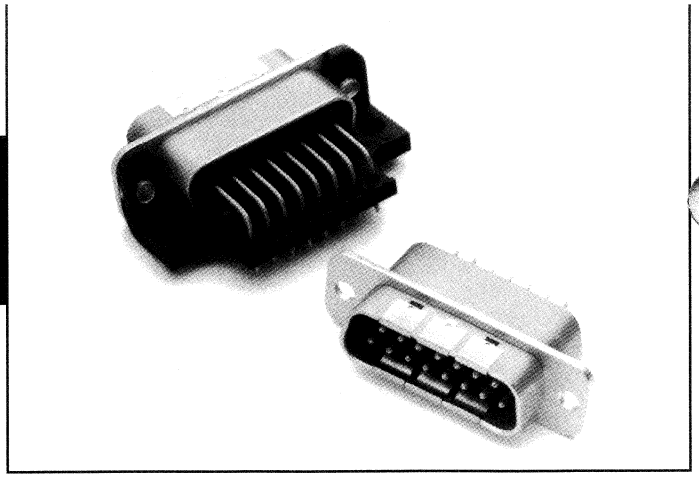


€ Also available through Spectrum Control's authorized European distributors/agents.
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

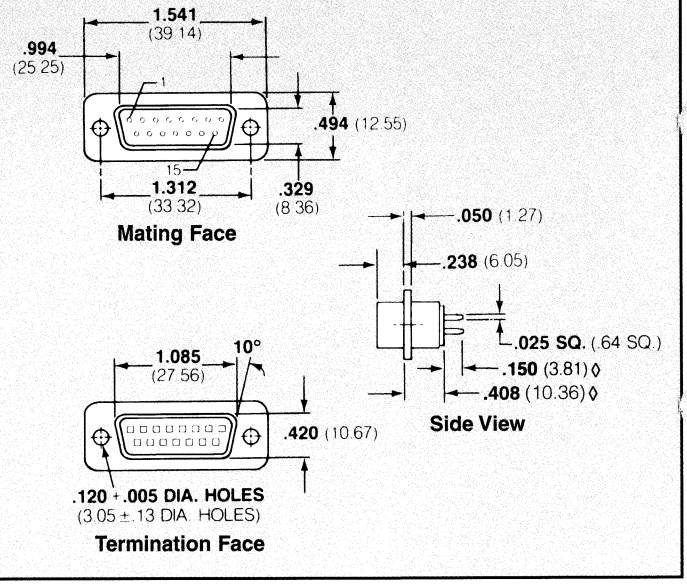
SPECTRUM CONTROL INC.

15 Shell Size Series 700 Pin Contact



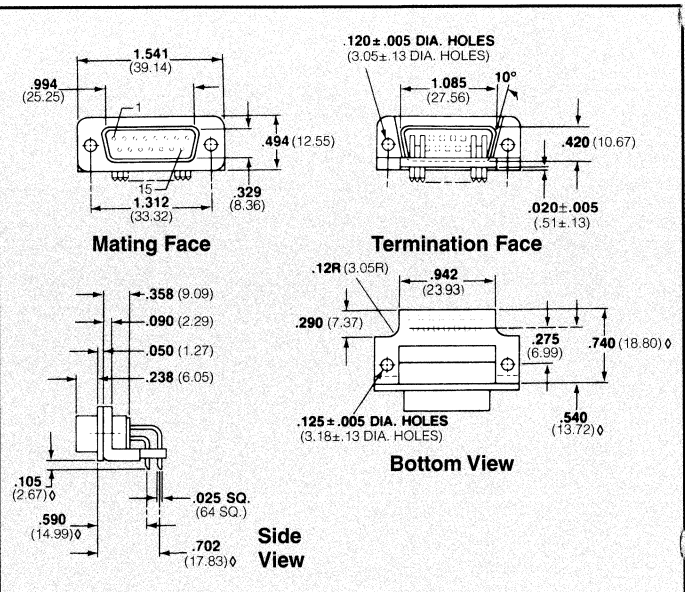
Printed Circuit Board Mount

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



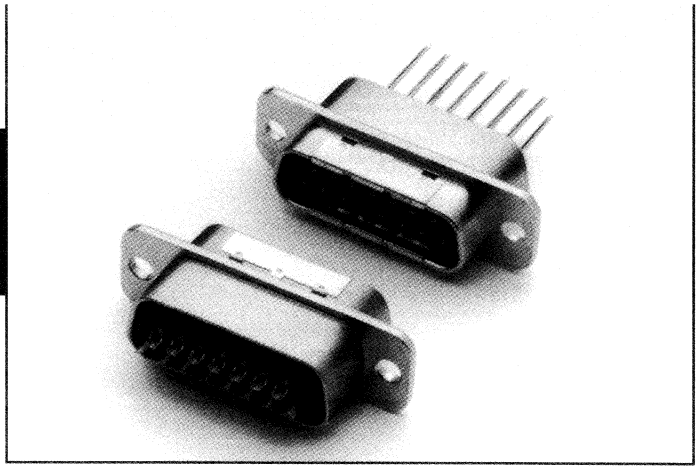
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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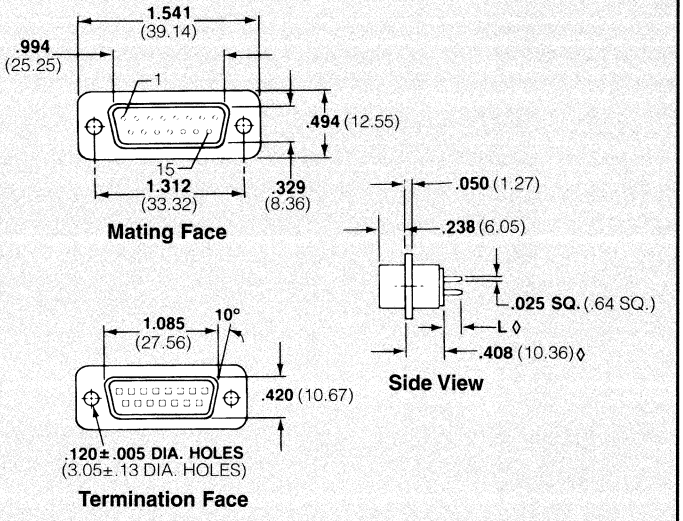
SPECTRUM CONTROL INC.

15 Shell Size Series 700 Pin Contact



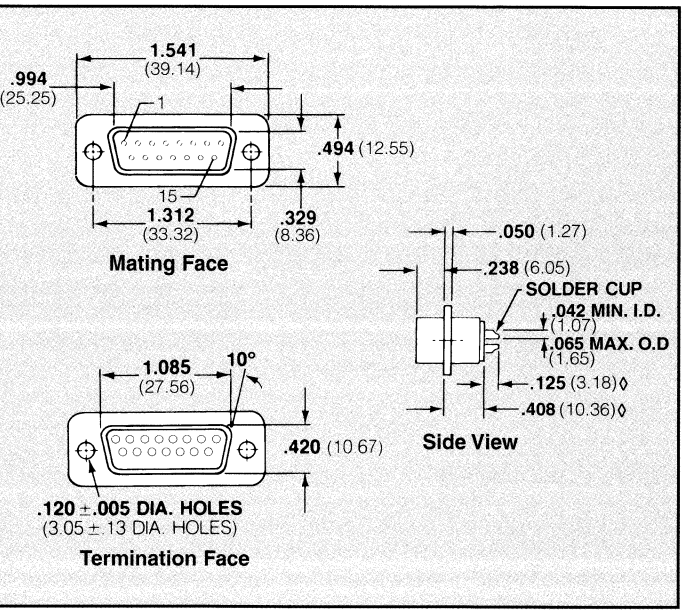
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .225	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

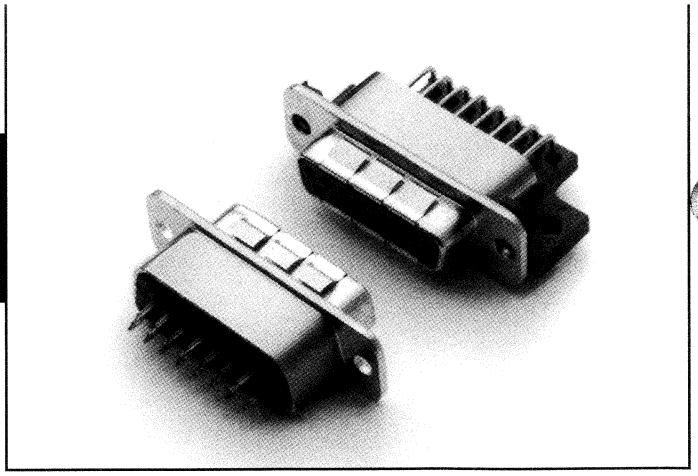


* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

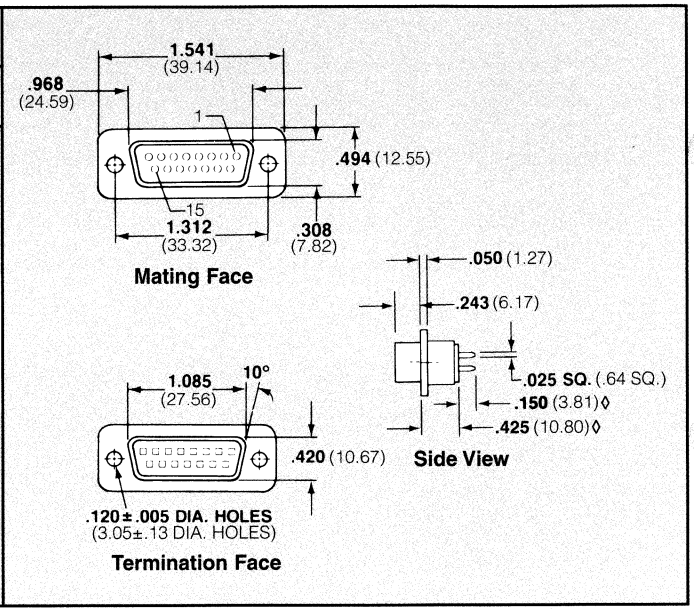
SPECTRUM CONTROL INC.

15 Shell Size Series 700 Socket Contact



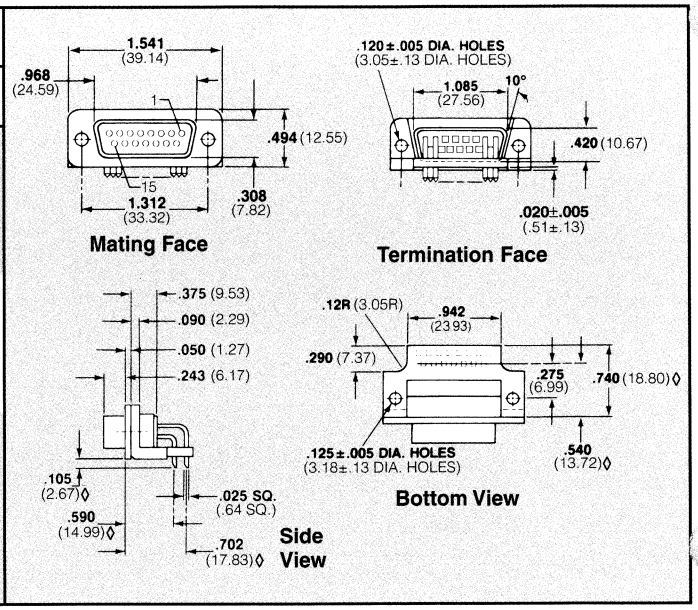
Printed Circuit Board Mount

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



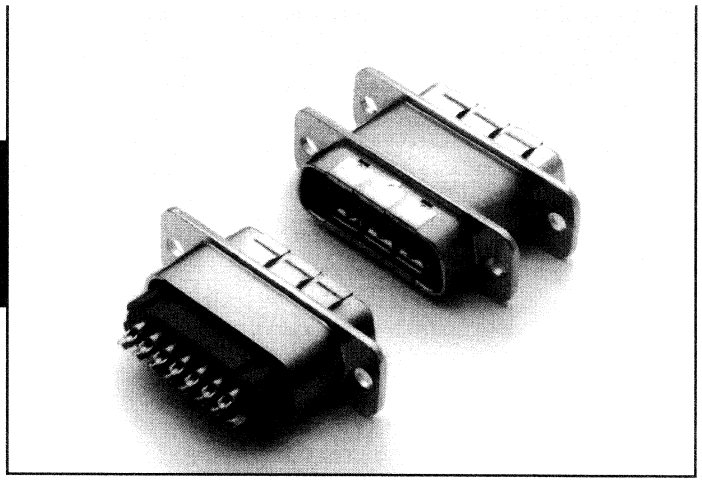
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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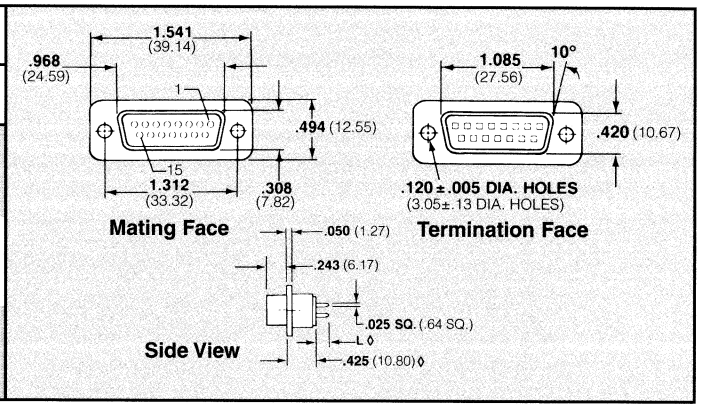
SPECTRUM CONTROL INC.

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



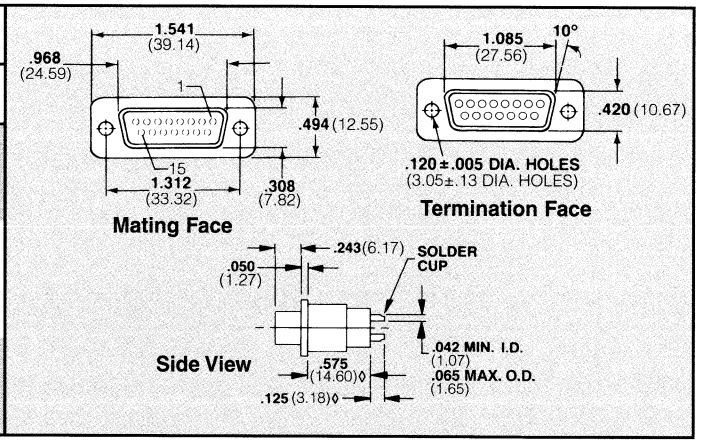
Solderless Wire Wrap

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



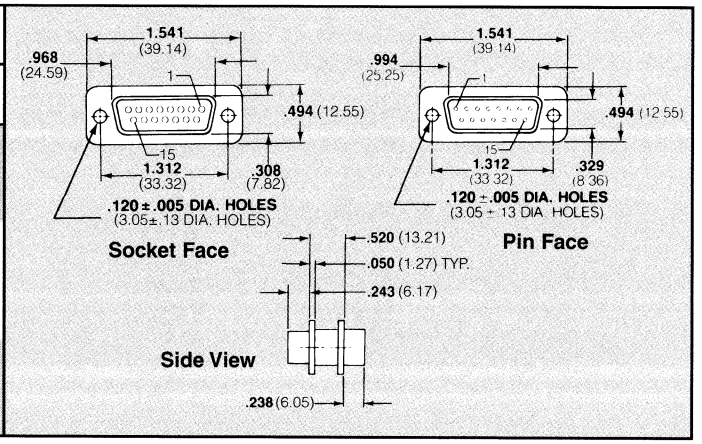
Solder Cup Termination

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

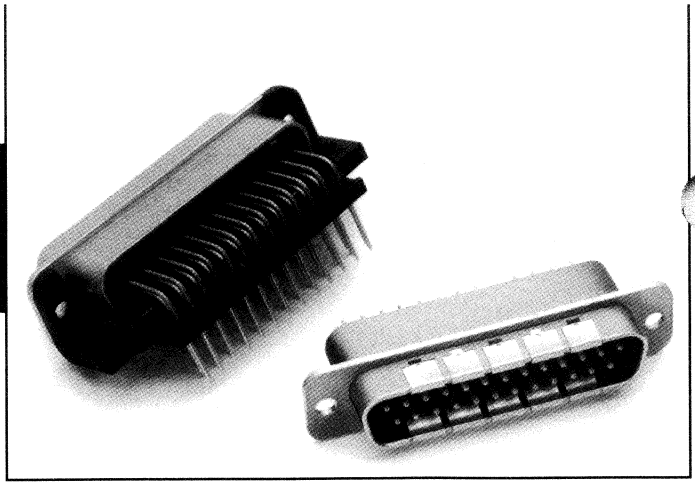


€ **Also available through Spectrum Control's authorized European distributors/agents.**
* **May be available from distributor stock.**
** **See page 114 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

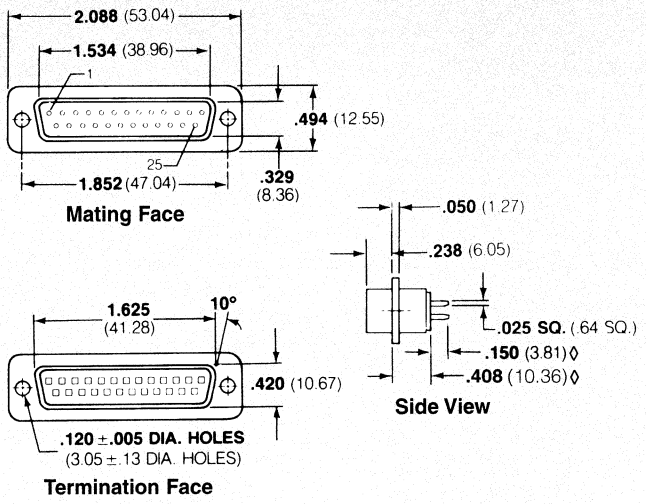
SPECTRUM CONTROL INC.

25 Shell Size Series 700 Pin Contact



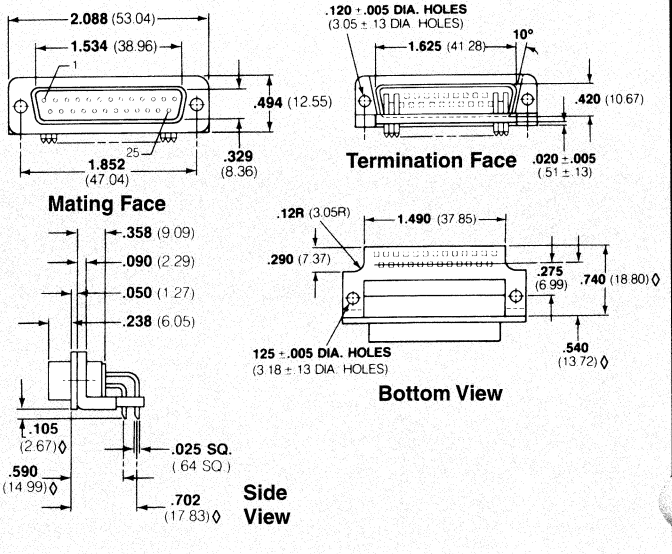
Printed Circuit Board Mount

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



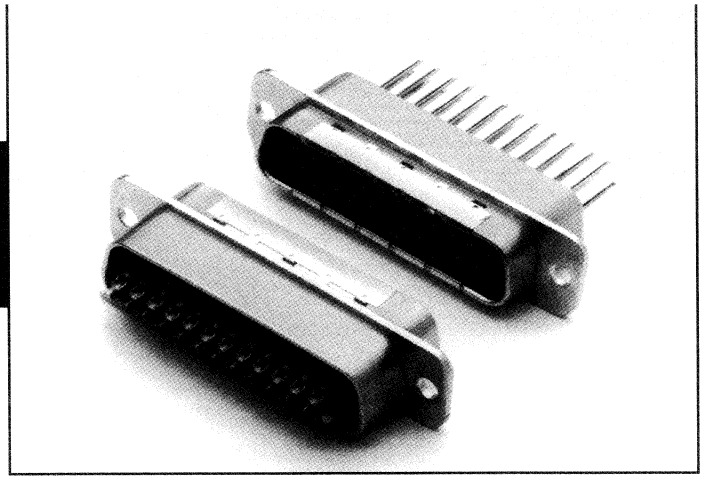
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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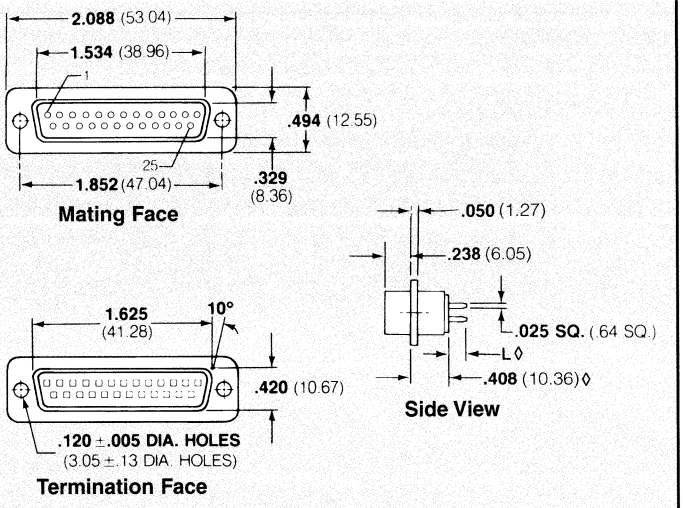
SPECTRUM CONTROL INC.

25 Shell Size Series 700 Pin Contact



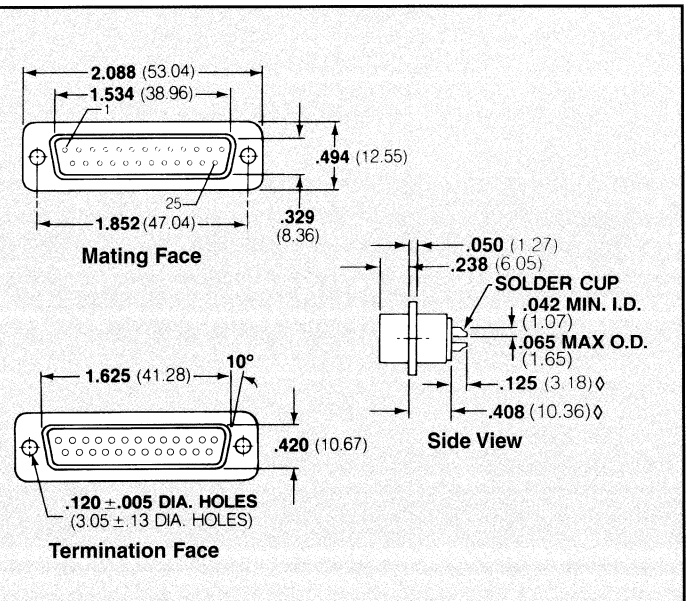
Solderless Wire Wrap

Spectrum Part Number *Select one*				EMI Filter	
	L .500	L .375	L .225	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

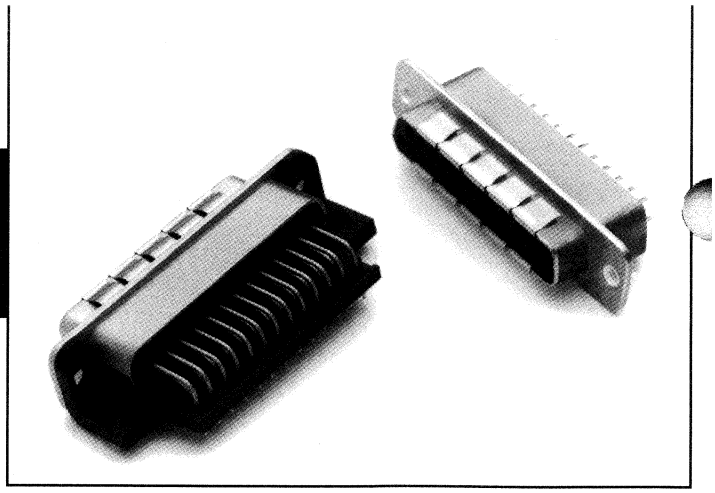


* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

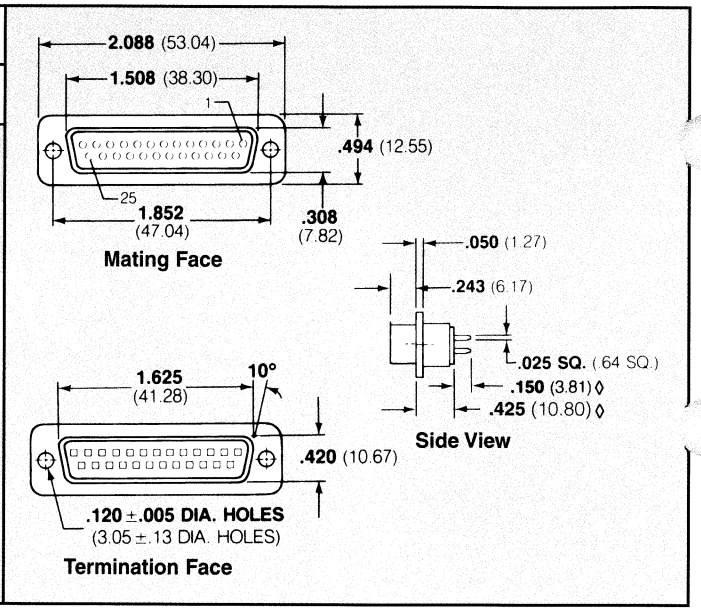
SPECTRUM CONTROL INC.

25 Series 700 Socket Contact
Shell Size



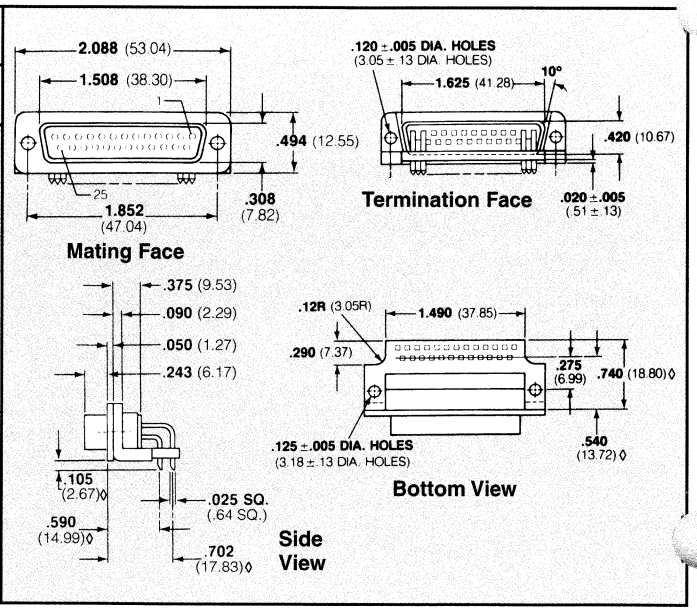
Printed Circuit Board Mount

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



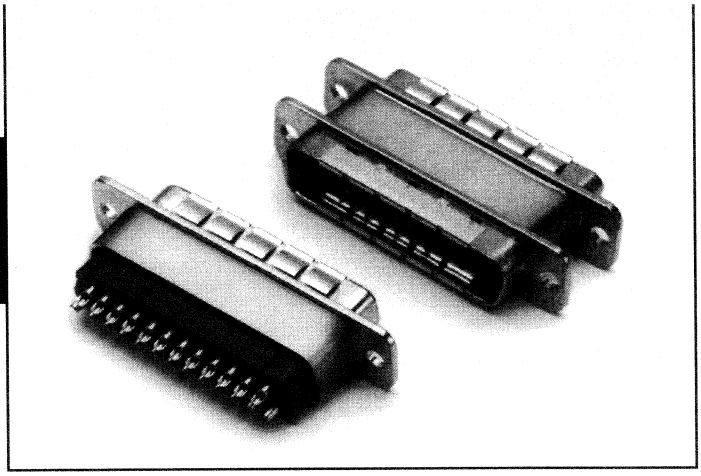
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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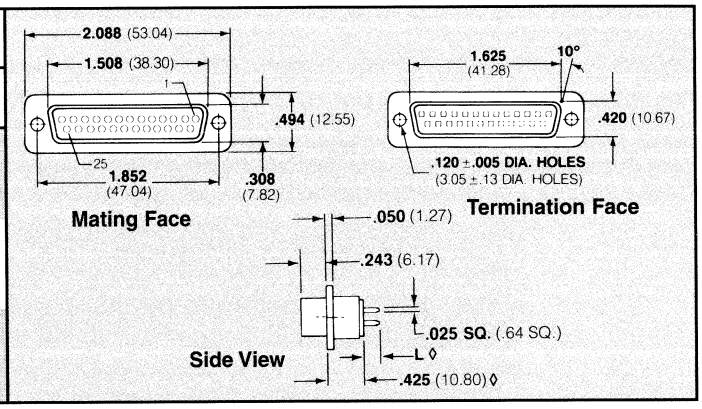
SPECTRUM CONTROL INC.

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



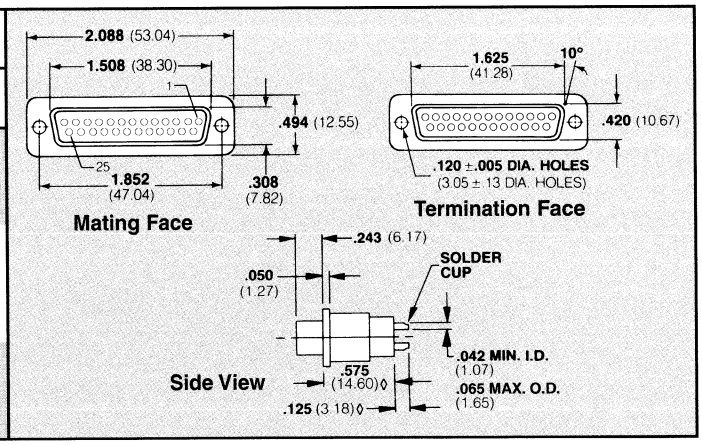
Solderless Wire Wrap

Spectrum Part Number *Select one*				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
* 56-723	-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



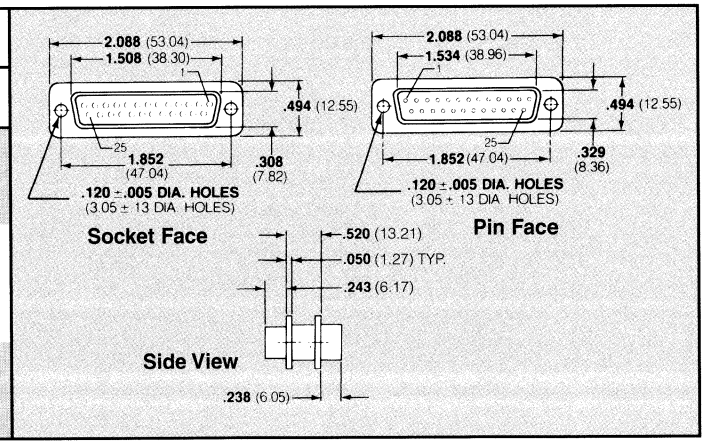
Solder Cup Termination

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 Spectrum Control's authorized European distributors/agents.**
* **May be available from distributor stock.**
** **See page 114 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

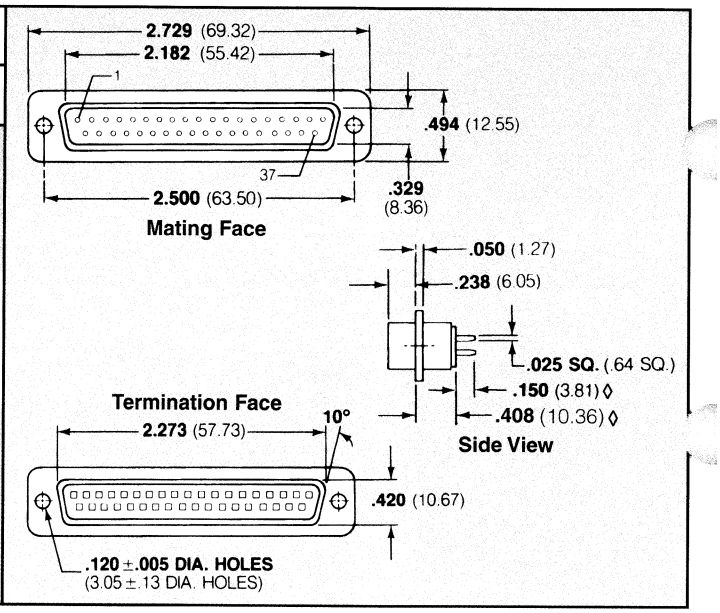
SPECTRUM CONTROL INC.

37 Shell Size Series 700 Pin Contact



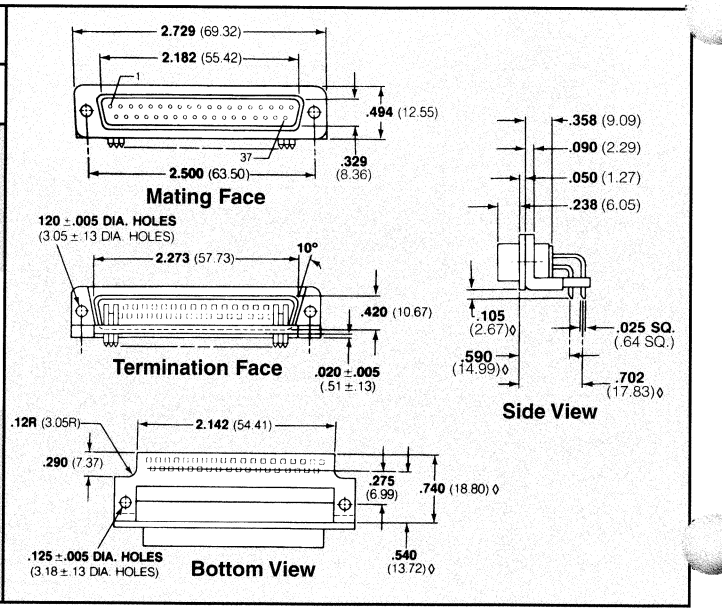
Printed Circuit Board Mount

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 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

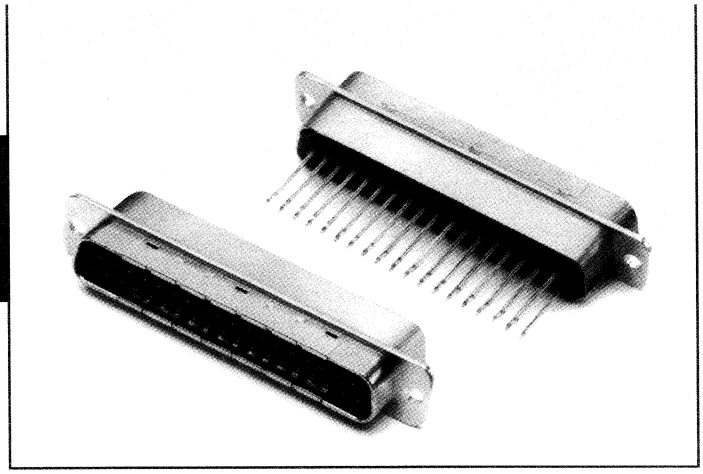
Dimensions in inches *(mm)*

Series 700 High Performance Filtered Connectors

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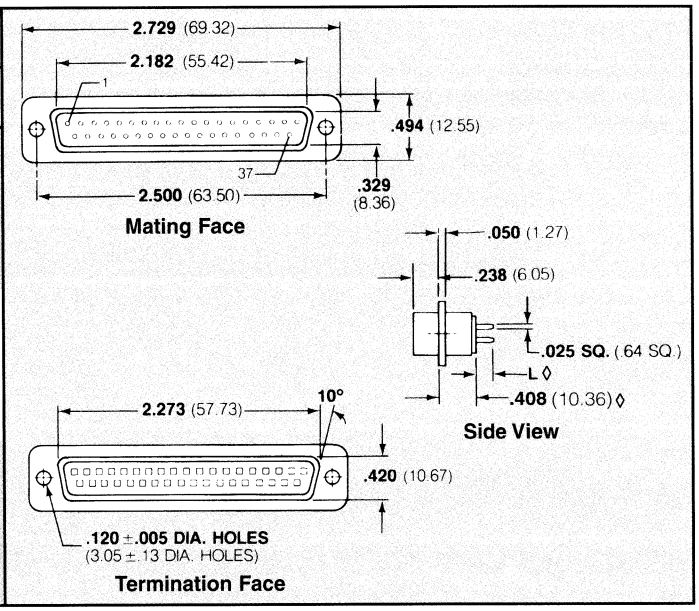
SPECTRUM CONTROL INC.

37 Shell Size Series 700 Pin Contact



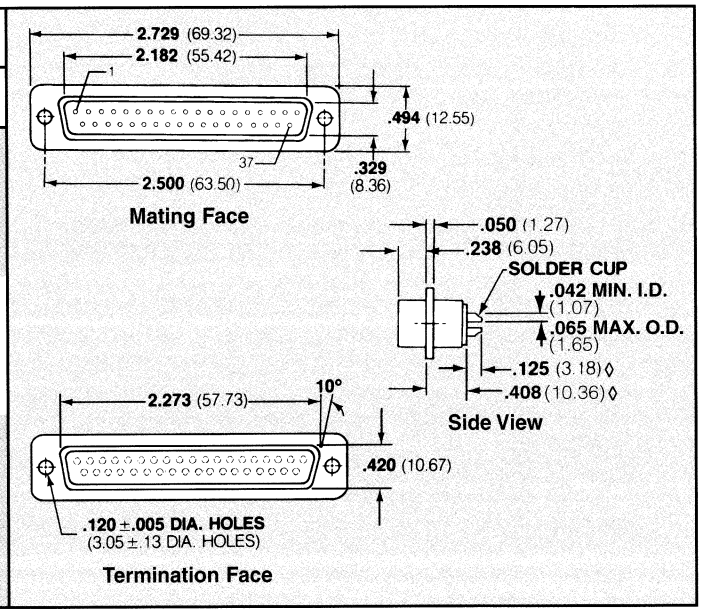
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .225	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

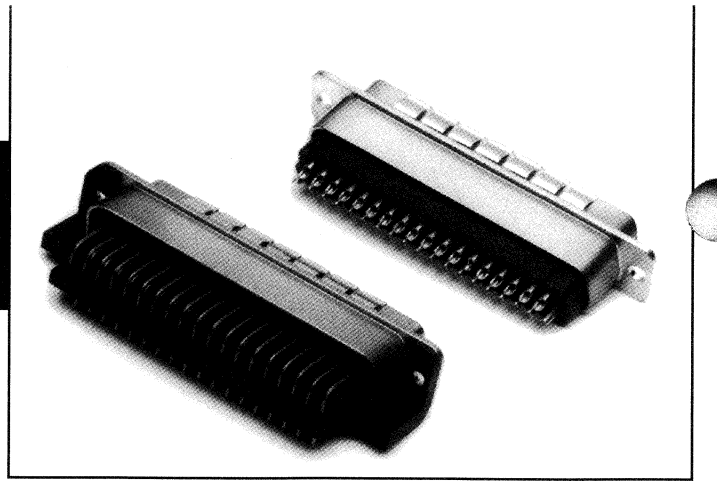


* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

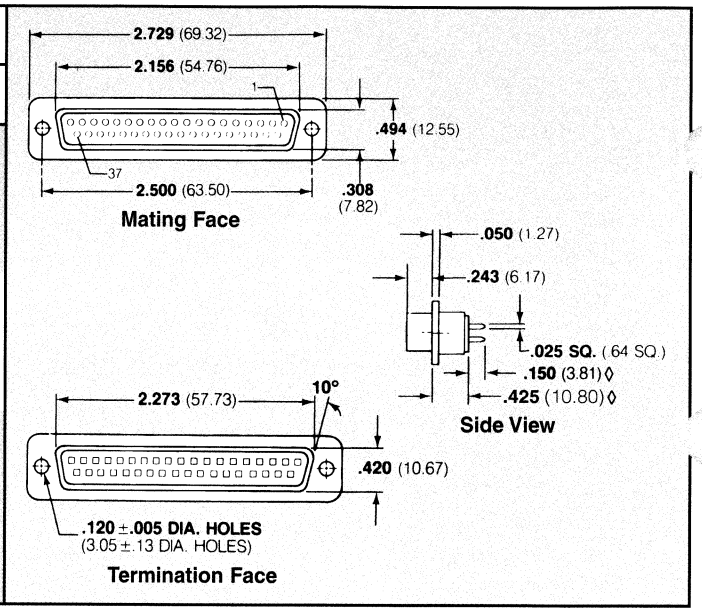
SPECTRUM CONTROL INC.

37 Shell Size Series 700 Socket Contact



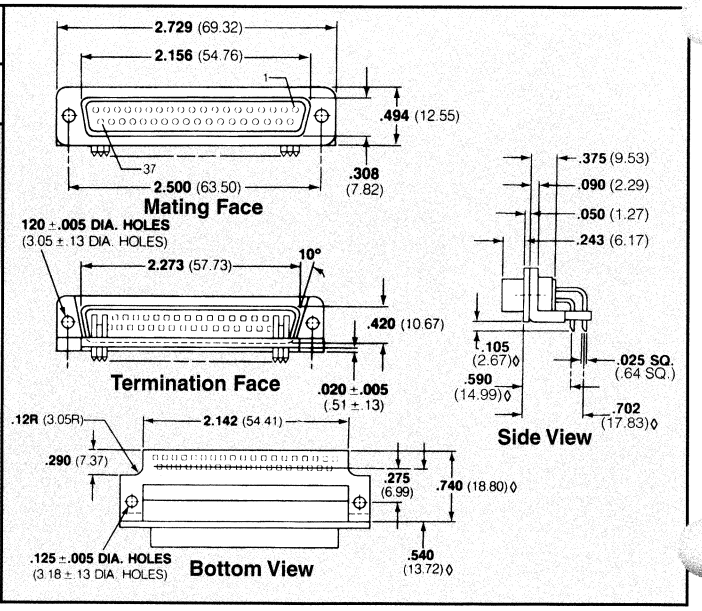
Printed Circuit Board Mount

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



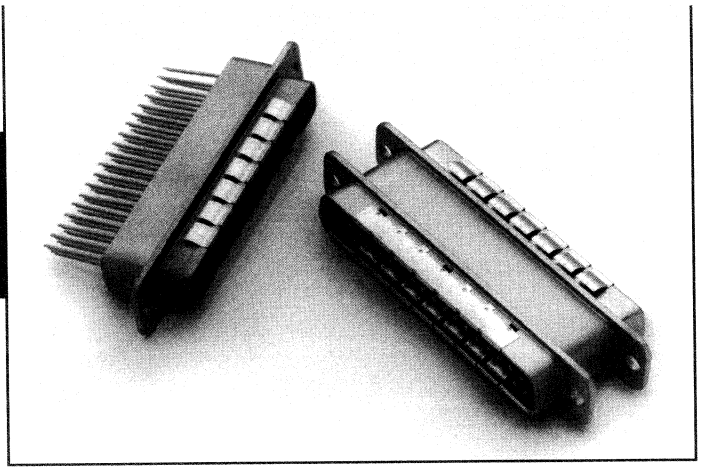
* **May be available from distributor stock.**
** **See page 114 for filter performance.**
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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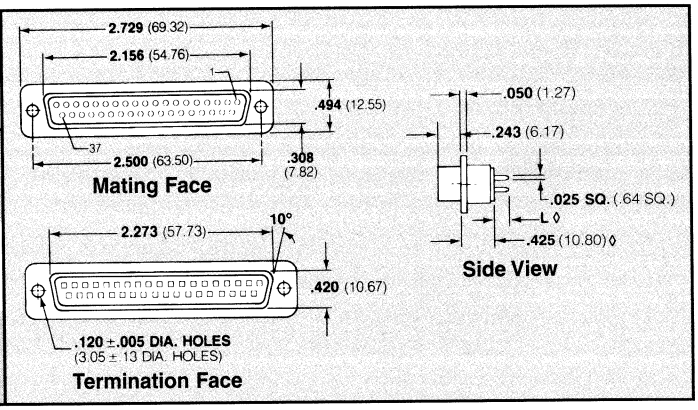
SPECTRUM CONTROL INC.

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



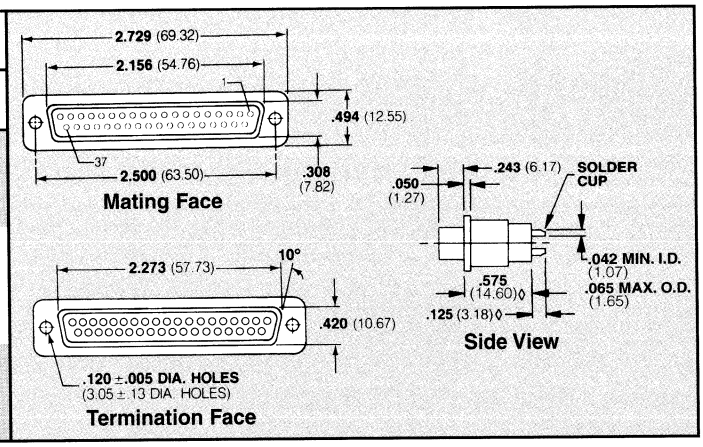
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .250	Filter Desig.**	Cap. Value
* 56-733	-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



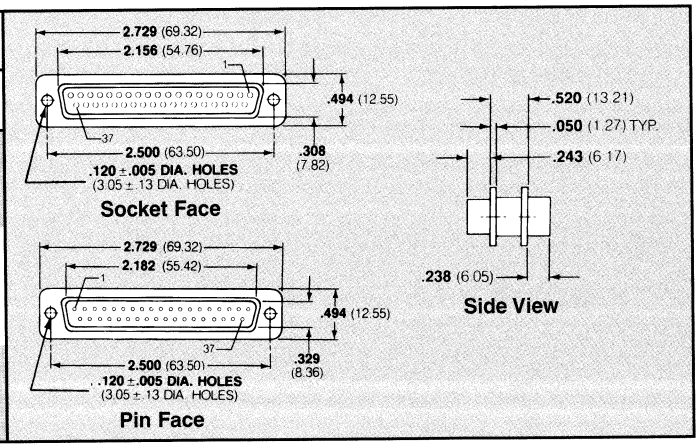
Solder Cup Termination

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 Spectrum Control's authorized European distributors/agents.**

* **May be available from distributor stock.**

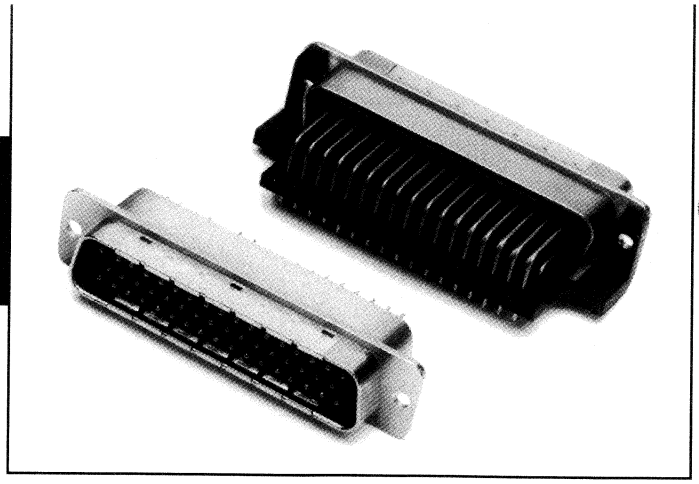
** **See page 114 for filter performance.**

Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

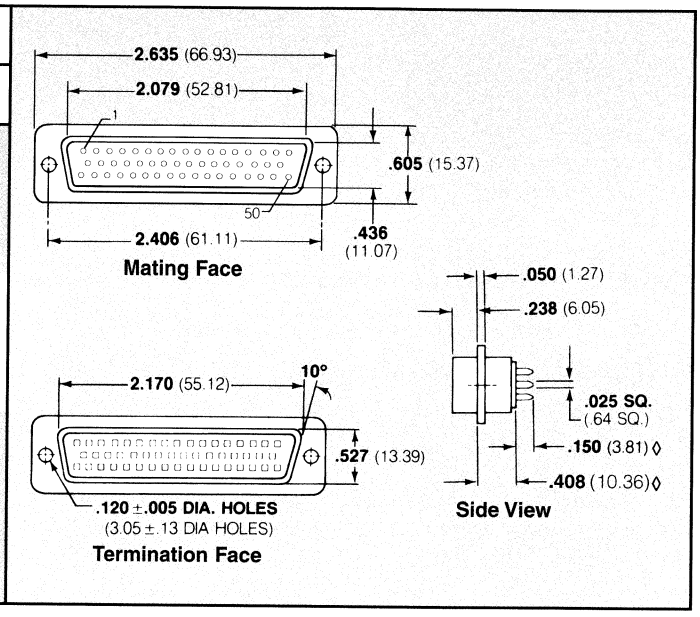
SPECTRUM CONTROL INC.

50 Shell Size Series 700 Pin Contact



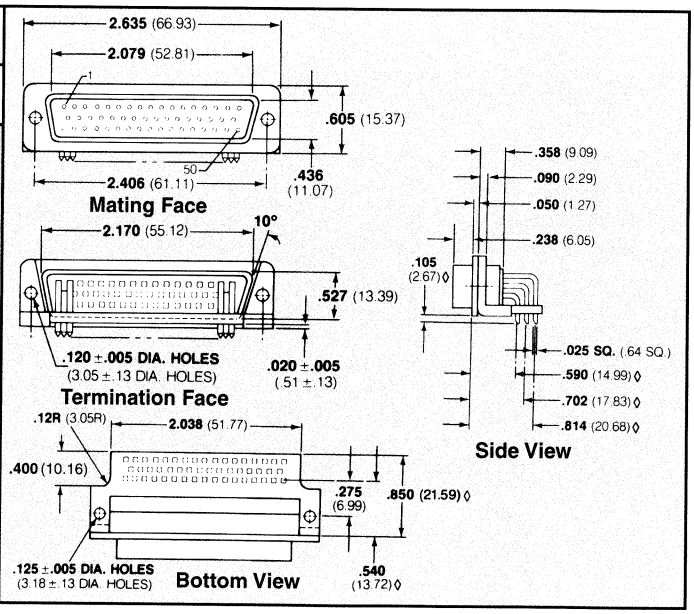
Printed Circuit Board Mount

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



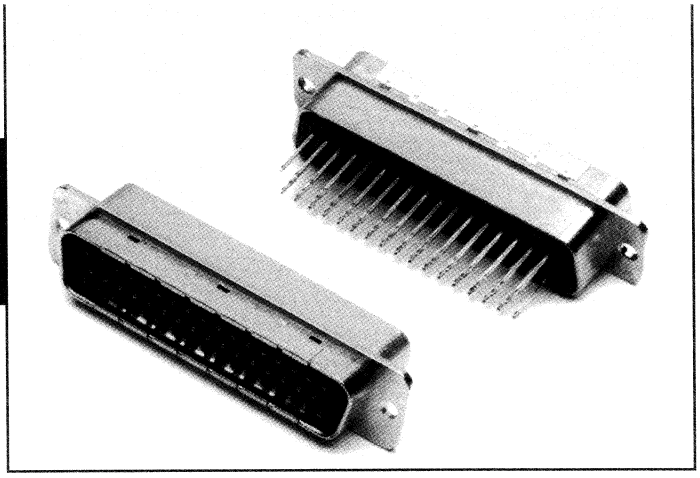
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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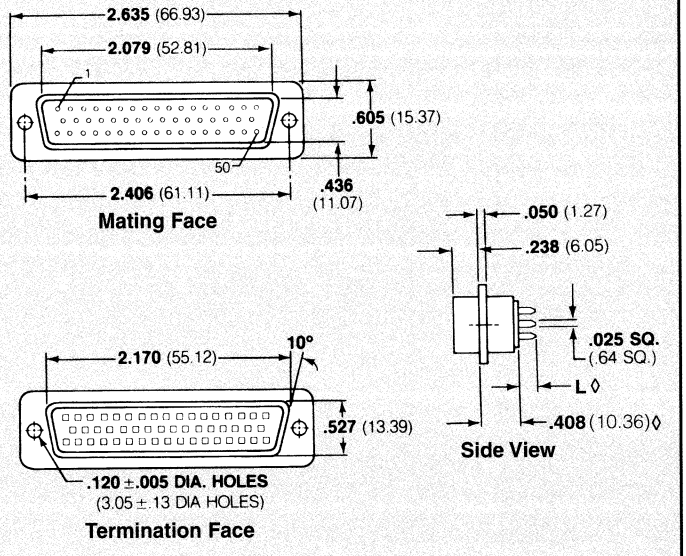
SPECTRUM CONTROL INC.

50 Shell Size Series 700 Pin Contact



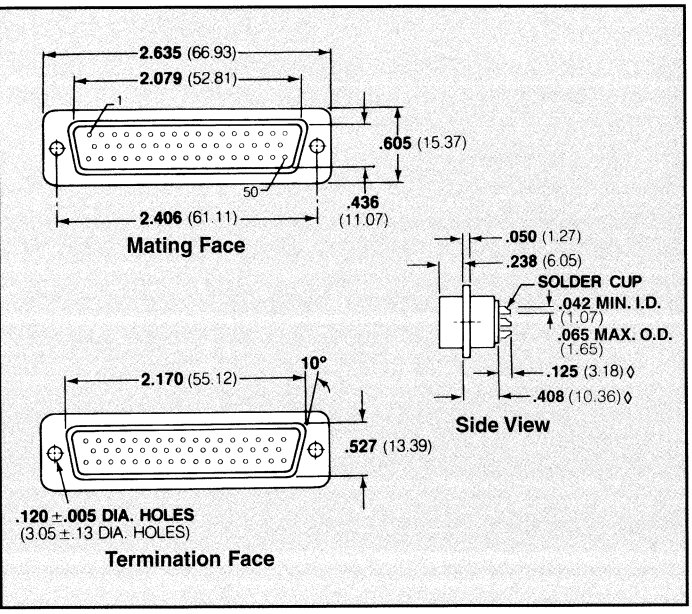
Solderless Wire Wrap

Spectrum Part Number (Select one)				EMI Filter	
	L .500	L .375	L .225	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

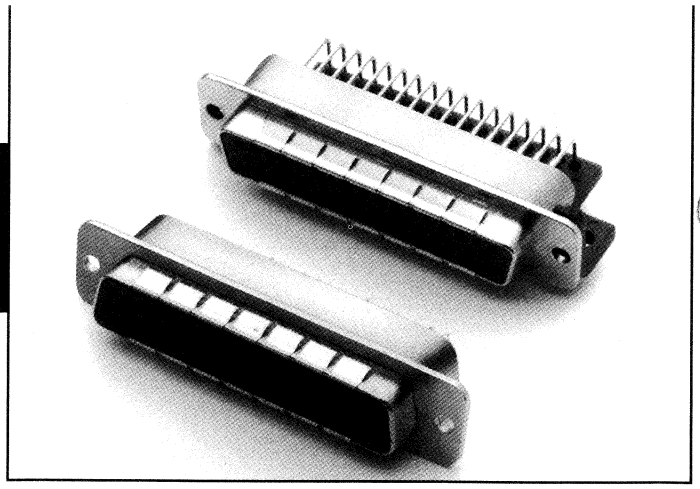


* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

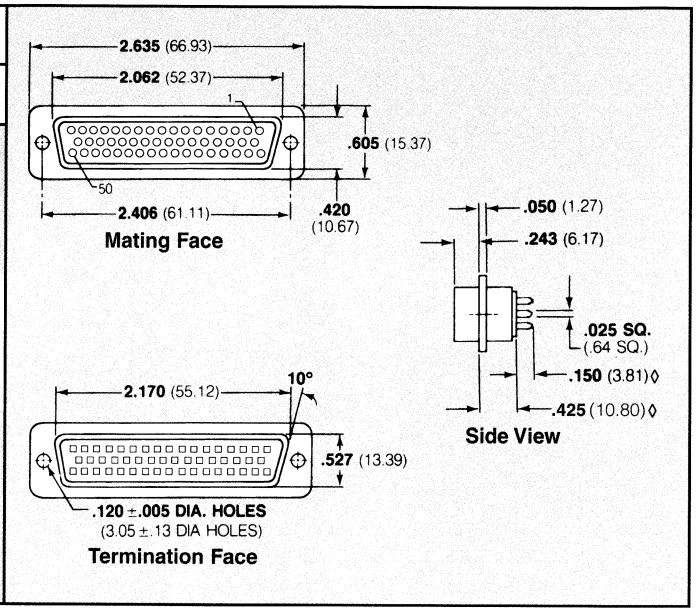
SPECTRUM CONTROL INC.

50 Shell Size Series 700 Socket Contact



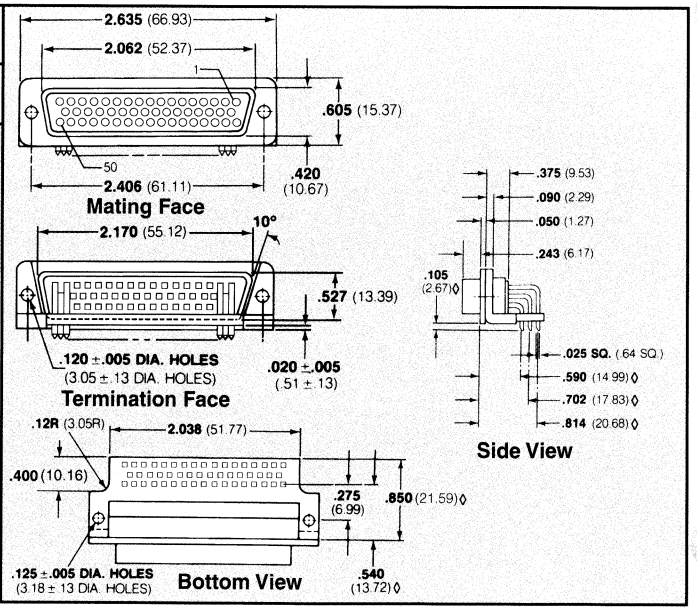
Printed Circuit Board Mount

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



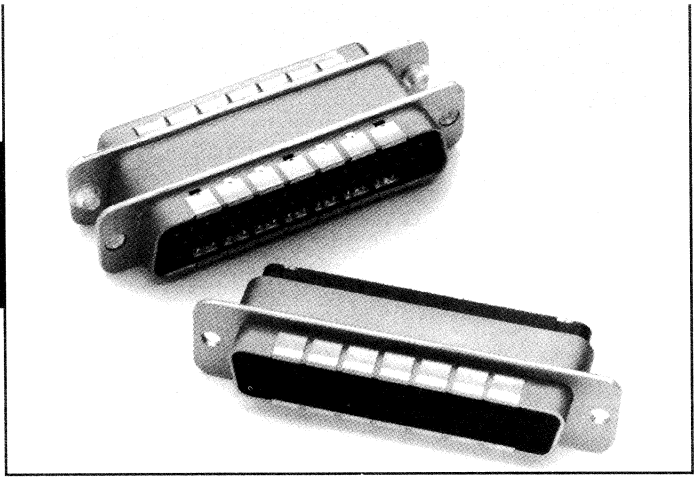
* May be available from distributor stock.
** See page 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

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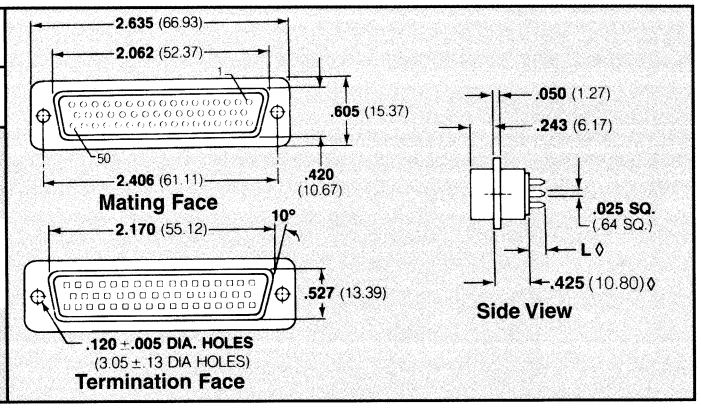
SPECTRUM CONTROL INC.

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



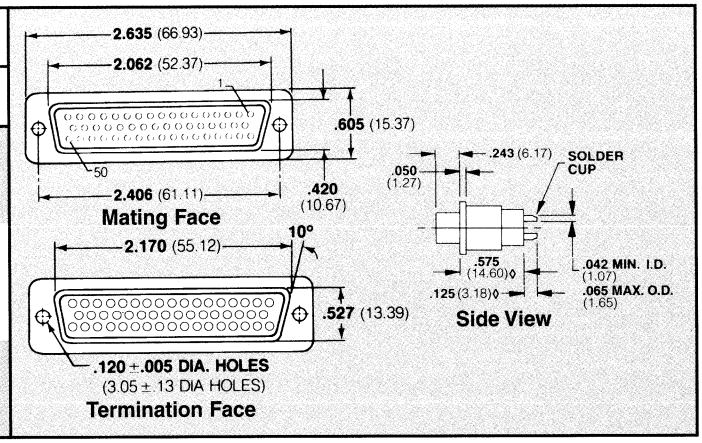
Solderless Wire Wrap

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



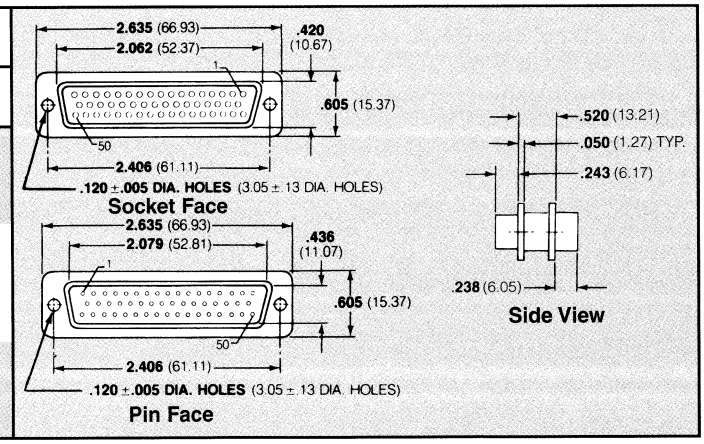
Solder Cup Termination

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 114 for filter performance.
Standard Tolerance = ±.005 except where noted, ◊ = ±.015

Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

D-Subminiature Part Numbering System

Ordering Information

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

56 - **5** **1** **3** - **0** **12** - **TI**

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.*

56 — **Filtered D-Subminiature Connectors**

5 — **Product Series**

- **1** = **Chip-on-Board**
- **4** = **Series 400 Ferrite**
- **5** = **Series 500 Low Profile**
- **6** = **Series 600 Hi-Density**
- **7** = **Series 700 High Performance**

1 — **Shell Size**

Series 400, Chip-on-Board & 500
- **0** = 9 Contacts
- **1** = 15 Contacts
- **2** = 25 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

3 — **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
Chip-on-Board only 2 & 4
Series 500 only 2, 3, 4 & 7
Series 600 only 1, 2, 3, 4, 5, 7
Series 700 1 thru 7

Note: 1 can be Pin to solder cup or Pin to PCB for Series 700. See charts pages 116-135.

0 — **Line Filtering**

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

12 — **Capacitance Value**

Series 400
- **01** = Always

Chip-on-Board
- **02** = 100 pF
- **03** = 220 pF
- **04** = 470 pF
- **05** = 820 pF
- **06** = 1500 pF

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 114 and select part numbers from Series 700 charts pages 116-135.

TI — **Options**

See options descriptions on page 137 add suffix ending

Series 400
- **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 mm)* gold

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)
- **GBL9** = for .093" boards (straight PCB mount
- **50G** = 50 µ *(1.27 mm)* gold plating
- **S** = Solder dipped tails
- **JS** = Jackscrew mounting

For option combinations, consult factory.

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SPECTRUM CONTROL INC.

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" (1.27mm) gold over 50µ" (1.27mm) nickel

Solder Dipped Tails

Available on Series 600 & 700 connectors

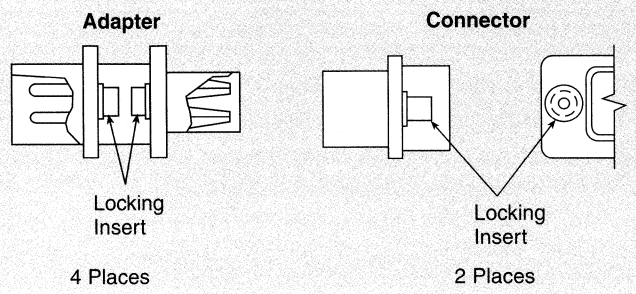
- Solder dipped tails added to standard gold flash

Water Block

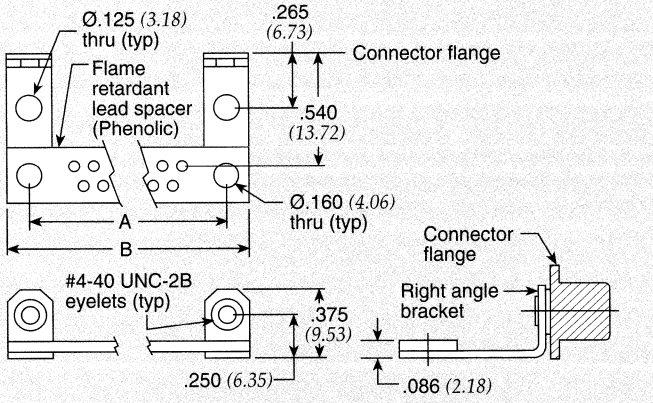
Consult Spectrum Control engineers for specifics.

- Internally sealed in accordance with NEMA Standard Rain Test

Threaded Inserts

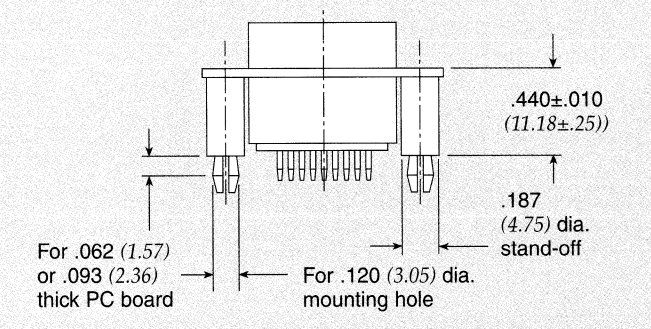


Grounding Brackets

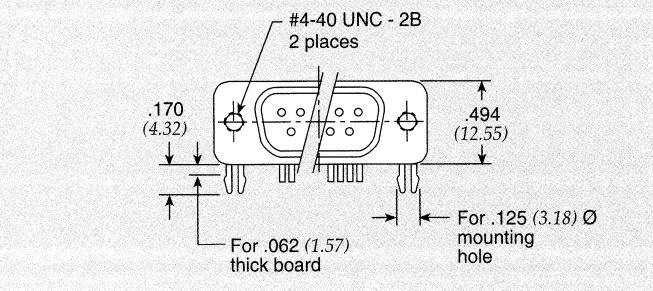


Size	A		B	
9	.984	(24.99)	1.214	(30.84)
15	1.312	(33.32)	1.542	(39.17)
25	1.852	(47.04)	2.088	(53.04)
37	2.500	(63.50)	2.730	(69.34)

Stand-off with Board Lock



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

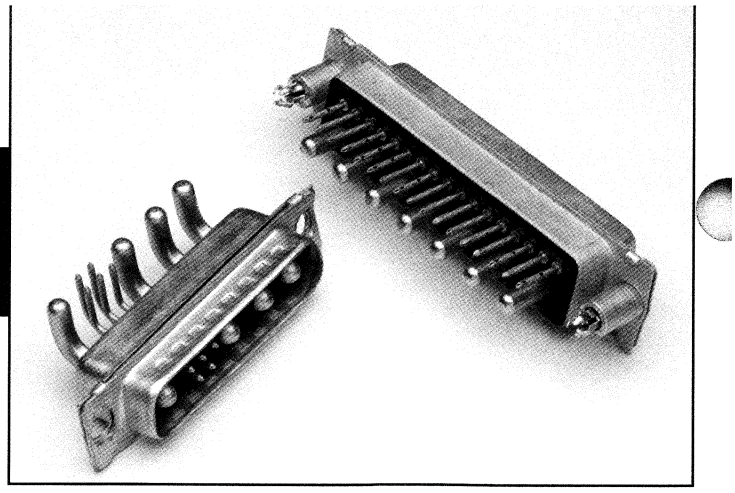


Dimensions in inches *(mm)*

Series 700 High Performance Filtered Connectors

SPECTRUM CONTROL INC.

Filtered Combo D-Subminiature Connectors



Spectrum's line of filtered combo D-subs provide high insertion loss with tubular capacitive filtering. These connectors are available with 20 Amp power contacts, 40 Amp power contacts, 50 ohm coaxial contacts or 75 ohm coaxial 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. minimum
Signal Contacts	Pin: brass, gold plated .000030 in. min. Socket: copper alloy, gold plated .000030 in. min.
Insulator	Glass-filled polyester, flammability UL94V-0
Operating Temperature	-55°C to +125°C
Capacitors	Proprietary barium titanate ceramic formulations

Electrical Specifications

Operating Voltage	100 VDC
Current Rating	30 Amp, 40 Amp
Insulation Resistance	1 Gohm at 100 VDC
Capacitance	470, 820, 1000, or 1500 pF ±20% (10 - 5000 pF available for signal pins, consult factory for part number on values above 1500 pF and below 470 pF)
Dielectric Withstanding Voltage	600 VDC

Ordering Information

Example: **563A03W3101GBL9**

56	3	A	03W3	101	GBL9

A: Pin - PCB Power
B: Pin - Right Angle Power
C: Pin - Solder Cup Power
D: Pin - PCB Coax
E: Pin - Right Angle Coax
F: Pin - Solder Cup Coax
G: Socket - PCB Power
H: Socket - Right Angle Power
J: Socket - Solder Cup Power
K: Socket - PCB Coax
L: Socket - Right Angle Coax
M: Socket - Solder Cup Coax
N: Custom Combination

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

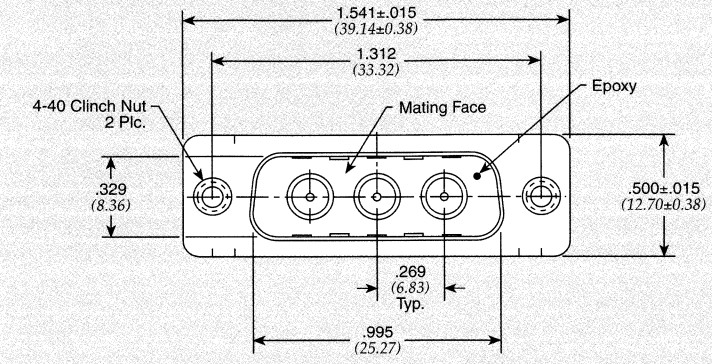
Capacitance Value
101 = 470 pF
102 = 820 pF
103 = 1000 pF
104 = 1500 pF

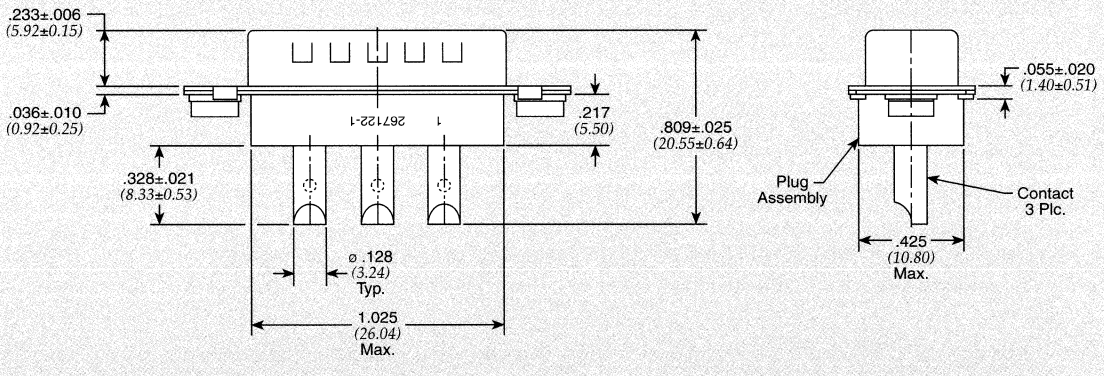
Options
See options descriptions on page 137 add suffix ending
LI = 4-40 UNC inserts
LIM = Metric M3.0 self-locking threads
GB = Metal bracket provides ground connection, includes 4-40 self-locking threads (for right angle mount only)
GBL = Grounded board lock (right angle)
GBL6 = for .062" boards (straight PCB mount)
GBL9 = for .093" boards (straight PCB mount
50G = 50 µ *(1.27 mm)* gold plating
S = Solder dipped tails
JS = Jackscrew mounting
For option combinations, consult factory.

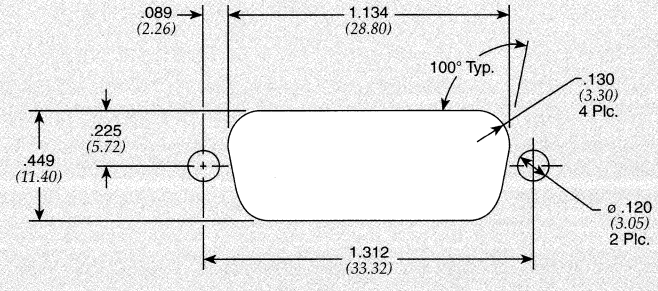
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Filtered Combo D-Subminiature Connectors
3W3

Plug - Solder Cup







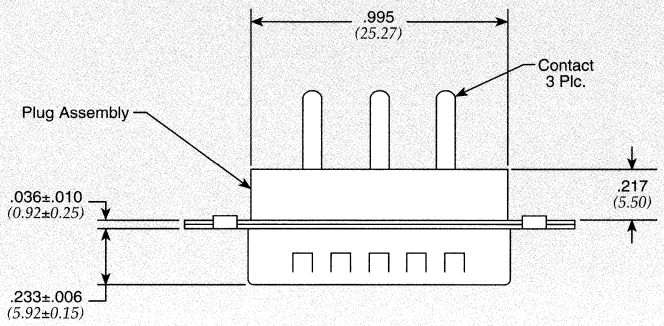
Recommended Panel Cutout

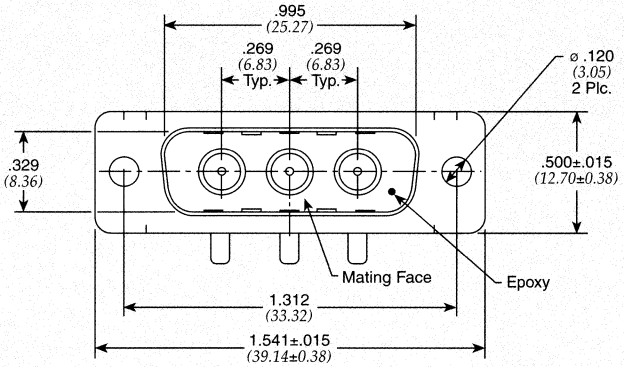
Only represents a few of our available configurations. Consult factory for more information.

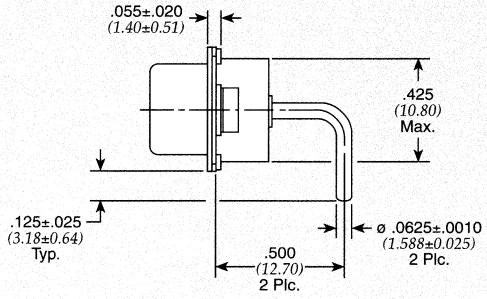
Dimensions in inches *(mm)*

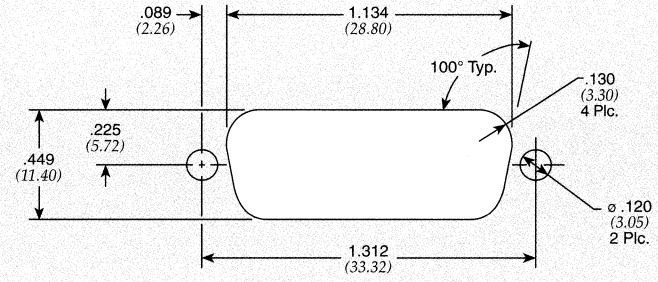
Filtered Combo D-Subminiature Connectors
3W3

Plug - Right Angle

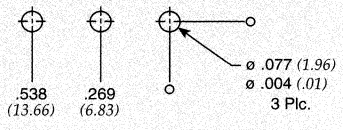








Recommended Panel Cutout



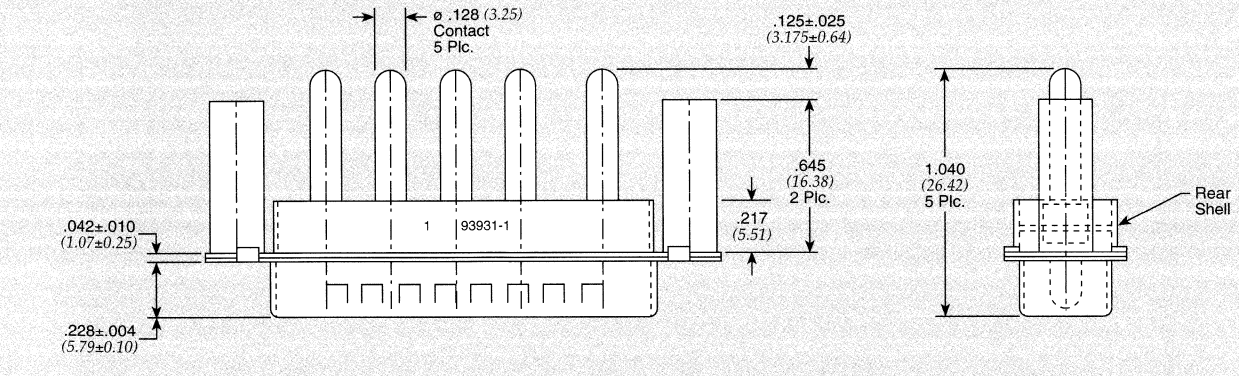
Only represents a few of our available configurations. Consult factory for more information.

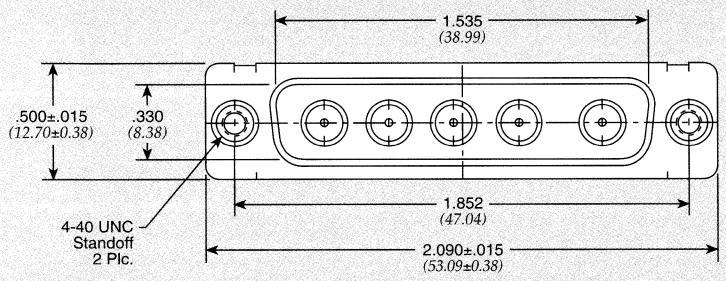
Dimensions in inches *(mm)*

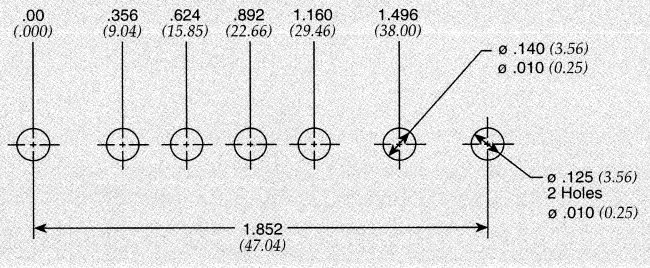
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Filtered Combo D-Subminiature Connectors
5W5

Plug - Vertical







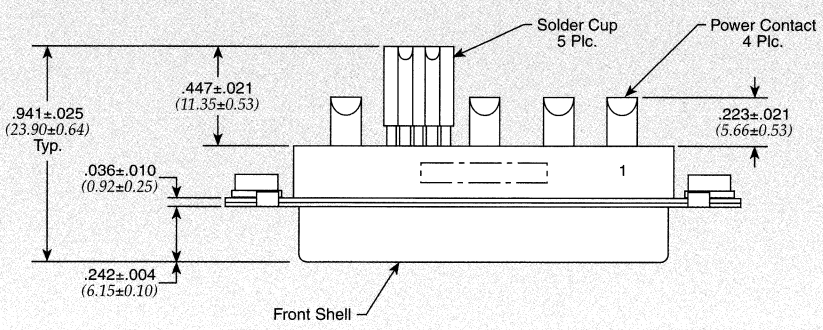
Recommended PCB Layout

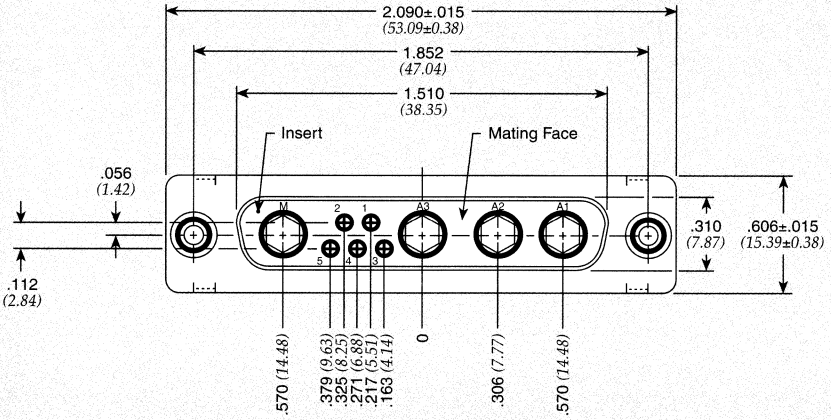
Only represents a few of our available configurations. Consult factory for more information.

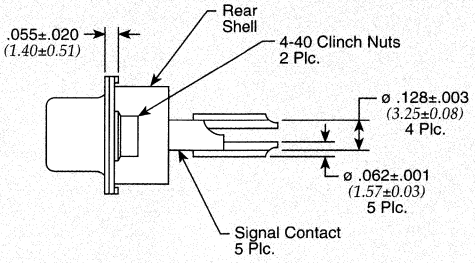
Dimensions in inches *(mm)*

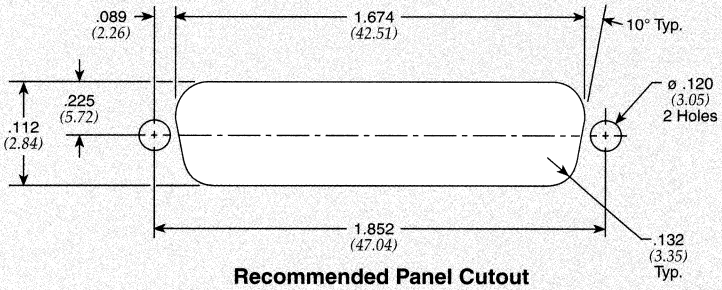
Filtered Combo D-Subminiature Connectors
9W4

Socket - Solder Cup









Recommended Panel Cutout

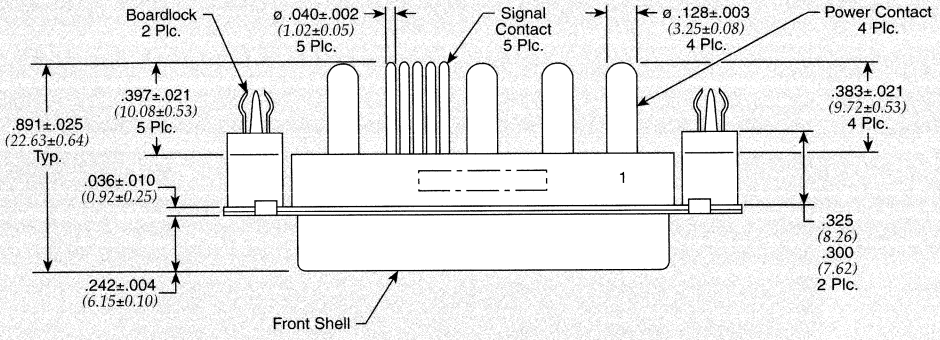
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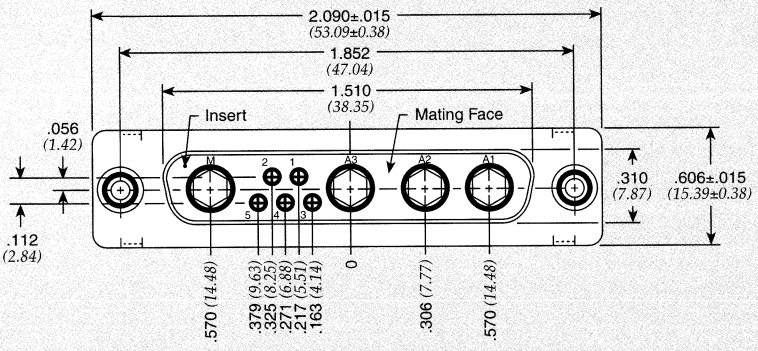
Dimensions in inches *(mm)*

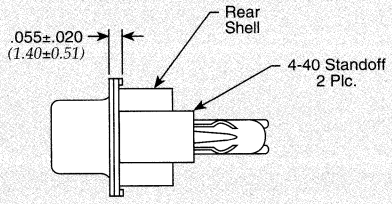
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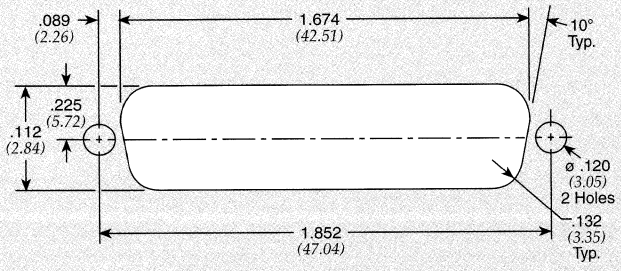
Filtered Combo D-Subminiature Connectors
9W4

Socket - Vertical

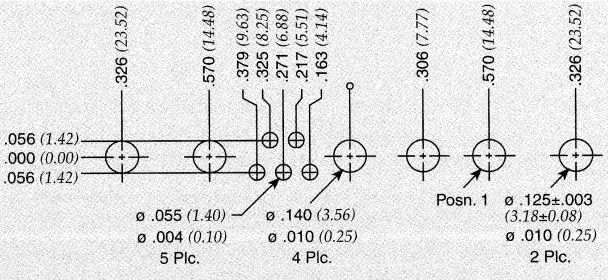








Recommended Panel Cutout



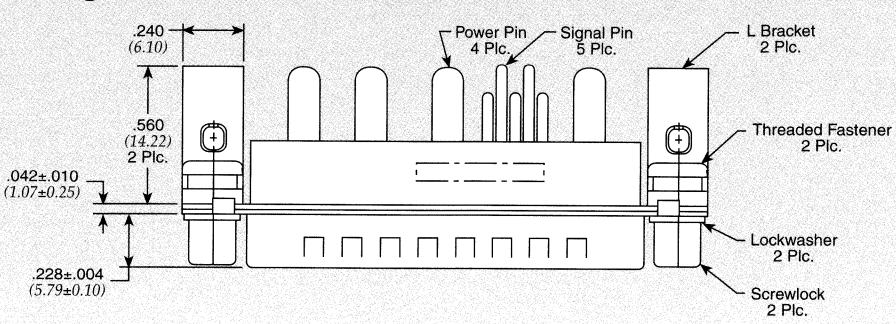
Recommended PC Board Mounting Dimensions

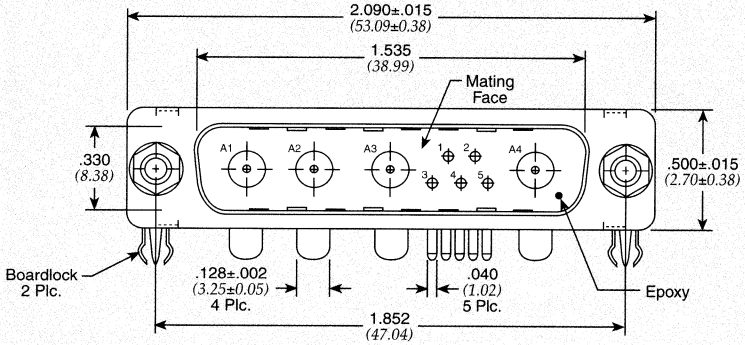
Only represents a few of our available configurations. Consult factory for more information.

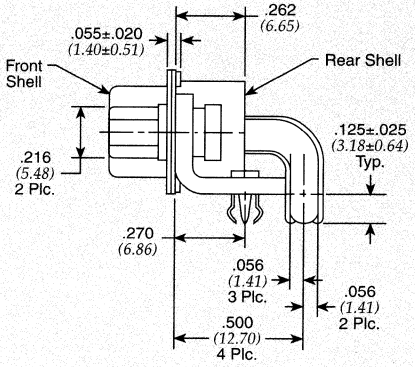
Dimensions in inches *(mm)*

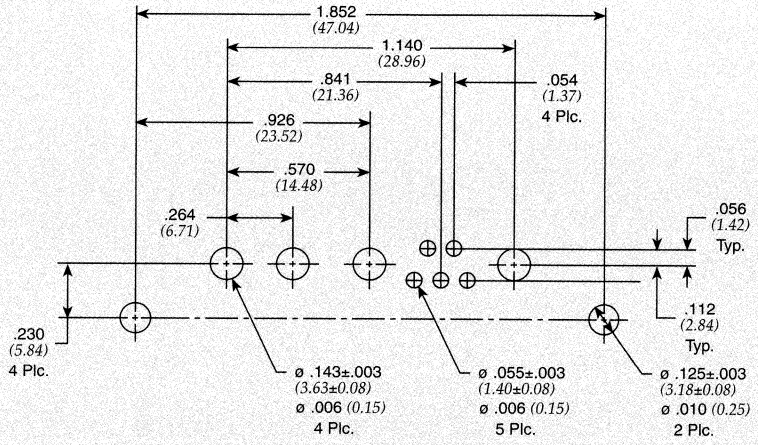
Filtered Combo D-Subminiature Connectors
9W4

Plug - Right Angle









Recommended PC Board Mounting Dimensions

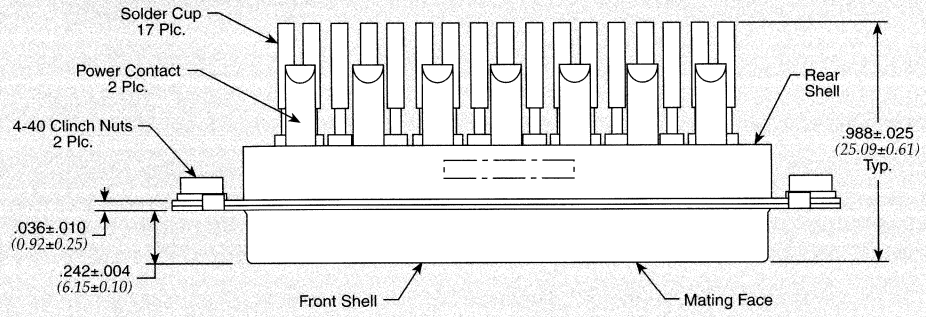
Only represents a few of our available configurations. Consult factory for more information.

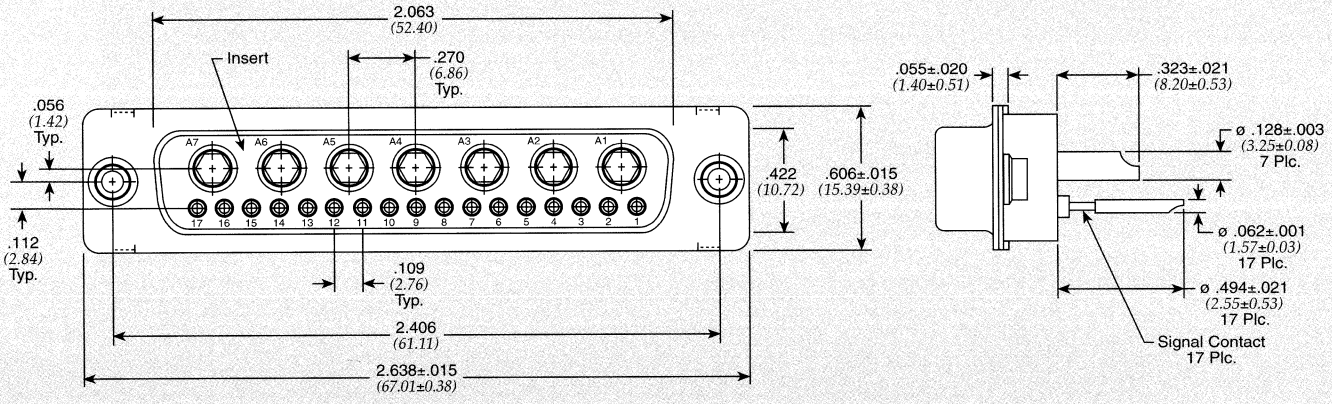
Dimensions in inches *(mm)*

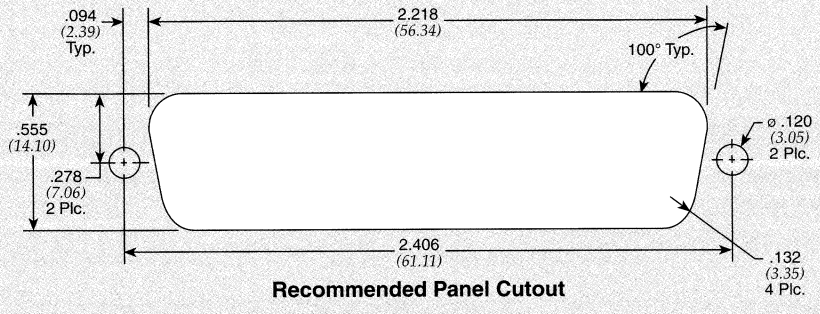
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Filtered Combo D-Subminiature Connectors
24W7

Socket - Solder Cup







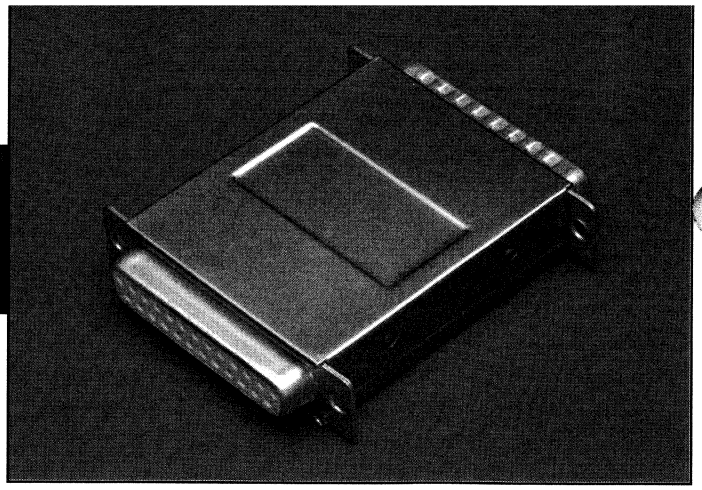
Recommended Panel Cutout

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

Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

Dataline Surge Protection



Surge suppressors provide protection against data loss and damage due to transient overvoltages from a variety of sources including lighting, factory equipment, motors, and AC power lines. Avoid equipment damage, downtime, scrap and quality problems by protecting against transients with these protectors.

Universal Features

- Available in 9, 15 and 25 line protection. The male-female protectors connect directly between the hardware port and the cable port for parallel, serial and other applications.
- Each protector is tested for 100% critical electrical parameters to ensure consistent performance.
- Fail safe design guards equipment in case of severe surge.
- All protectors use TVS diodes which have response times around 2 nanosecond.
- Shunts damaging surges safely to chassis ground (and pin 1 as indicated)
- All protectors feature full metal shells
- Capacitance: <500pF
- Temperature: -55°C to +125°C

Parallel Surge Protectors

Protects printers and PCs from transients induced onto printer cabling

Part Number	Connector	Pins Protected	Clamp Voltage	Surge Capacity
56-925-025	25 Pin D-Sub	All 25 pins	6.8V	1500W*
56-955-034	Centronics®	34 pins	6.8V	1500W*[1]

* Rating per line. Wattage is for an industry standard waveform of 10/1000 usec.
[1] Total capacity

RS-232 Surge Protectors

Part Number	Number of Lines	Pins Protected	Clamp Voltage	Surge Capacity
56-905-109	9	All 9 pins	27V	1500W*
56-915-115	15	All 15 pins	27V	1500W*
56-925-125	25	All 25 pins	27V	1500W*
56-925-104	25	2, 3, 7, 20 (pin 1 grounded)	27V	1500W*
56-925-108	25	2, 3, 4, 5, 6, 7, 8, 20 (pin 1 grounded)	27V	1500W*
56-925-112	25	2, 3, 4, 5, 6, 7, 8, 11, 20, 22, 24, 25 (pin 1 grounded)	27V	1500W*
56-925-111	25	2, 3, 4, 5, 6, 7, 8, 15, 17, 22, 24 (pin 1 grounded)	27V	1500W*

* Rating per line. Wattage is for an industry standard waveform of 10/1000 usec.

RS-422/RS-485 Surge Protectors

Protects RS-422 & RS-485 equipment

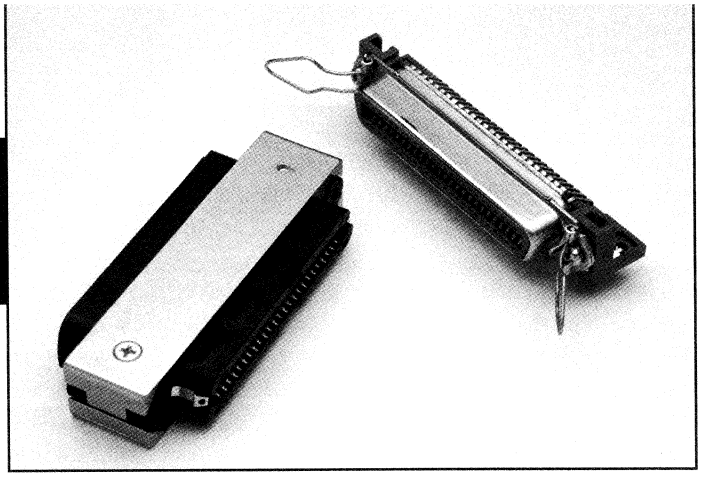
Part Number	Protocol	Number of Lines	Pins Protected	Clamp Voltage	Surge Capacity
56-905-209	RS-422	9	All 9 pins	6.8V	1500W*
56-915-315	RS-422, RS-485	15	All 15 pins	6.8V	1500W*

* Rating per line. Wattage is for an industry standard waveform of 10/1000 usec.

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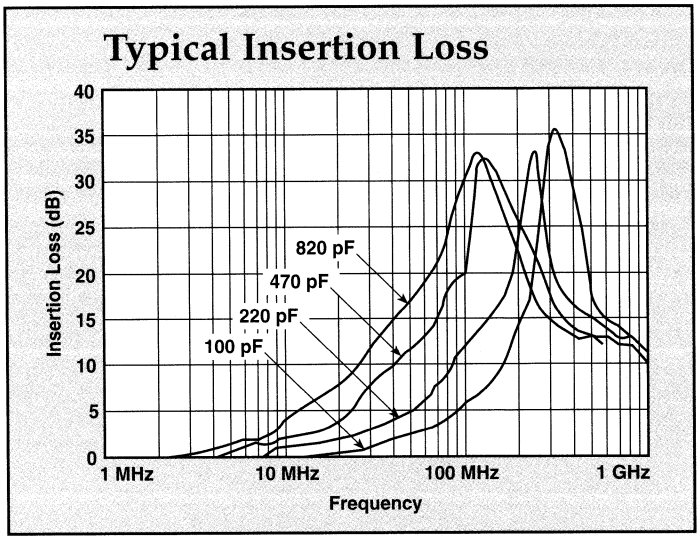
SPECTRUM CONTROL INC.

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.

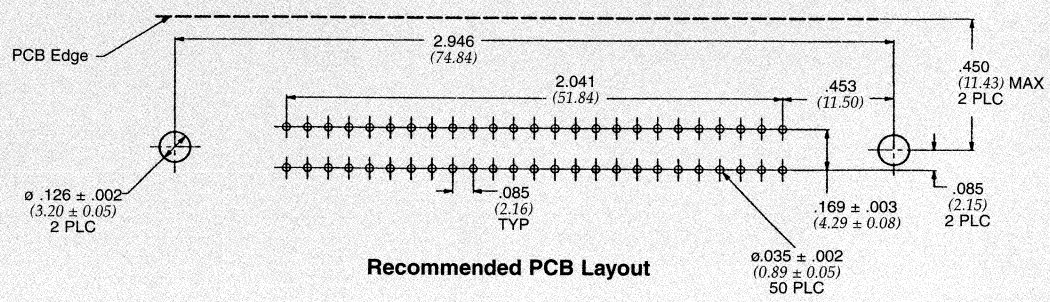


Features

- 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 protected
- Dielectric withstanding voltage up to 1,000 VAC
- Insulation resistance 10 Gohm @ 100 VDC
- Wide wire range
- Connector body is recognized under the Component Recognition Program of Underwriters Laboratories, Inc.
- Connector body is certified by Canadian Standard Association

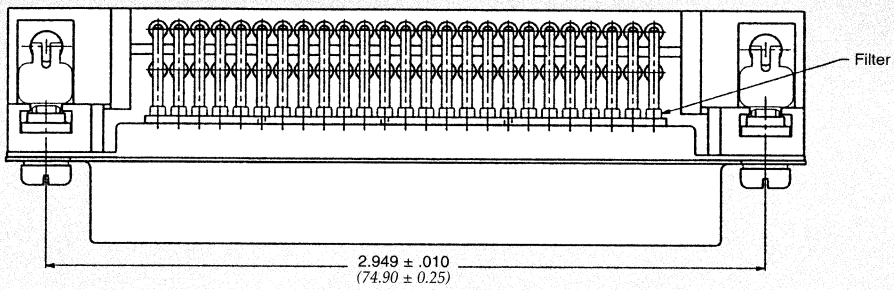
Filtered Miniature Ribbon Connectors
50 Position

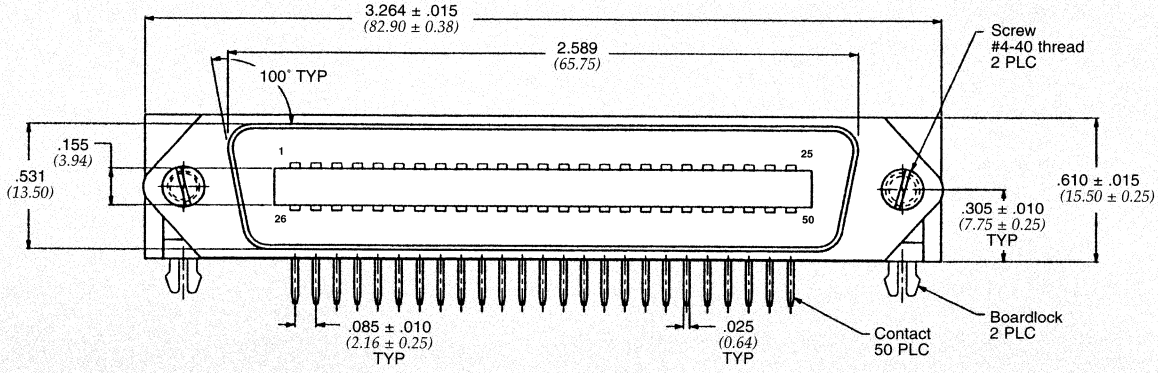
Pin Contact *(plug)*



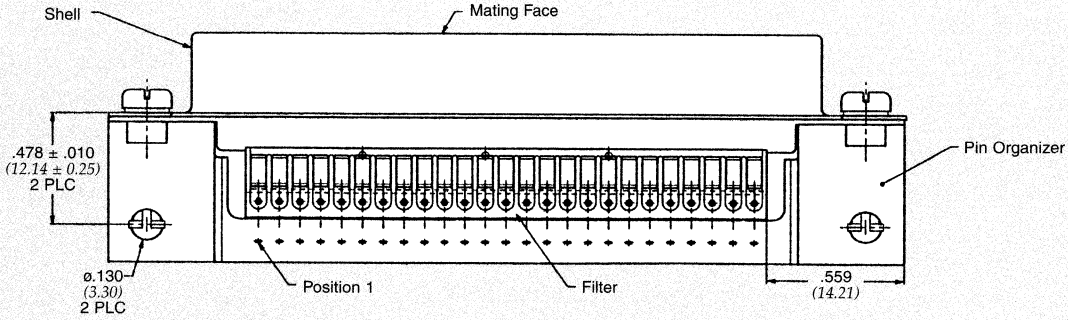
Recommended PCB Layout

Top





Bottom

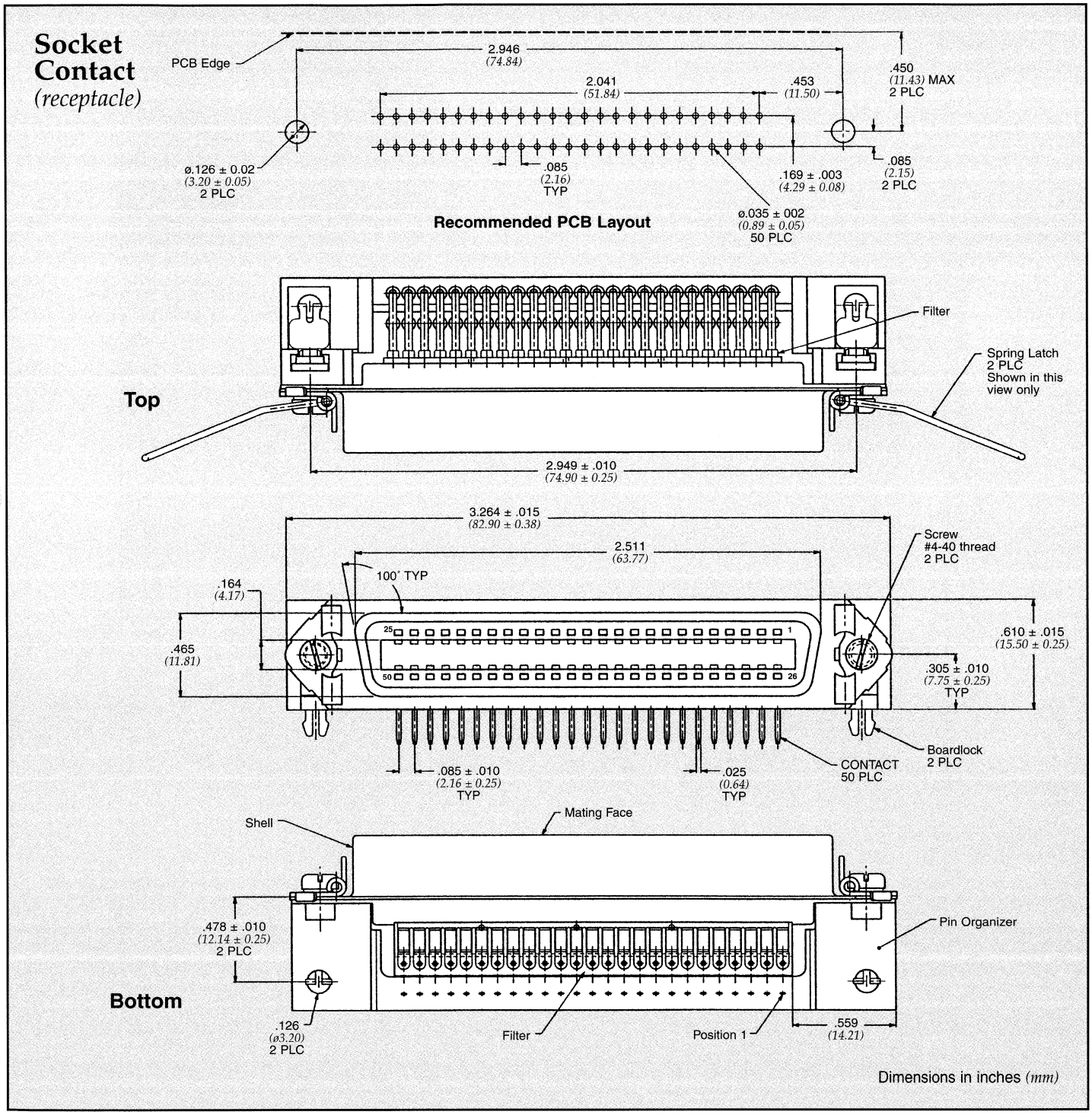


Dimensions in inches *(mm)*

Part Number	Capacitance Value
56-882-002	100 pF, 1,000 VAC
56-882-003	220 pF, 1,000 VAC
56-882-004	470 pF, 1,000 VAC
56-882-005	820 pF, 1,000 VAC

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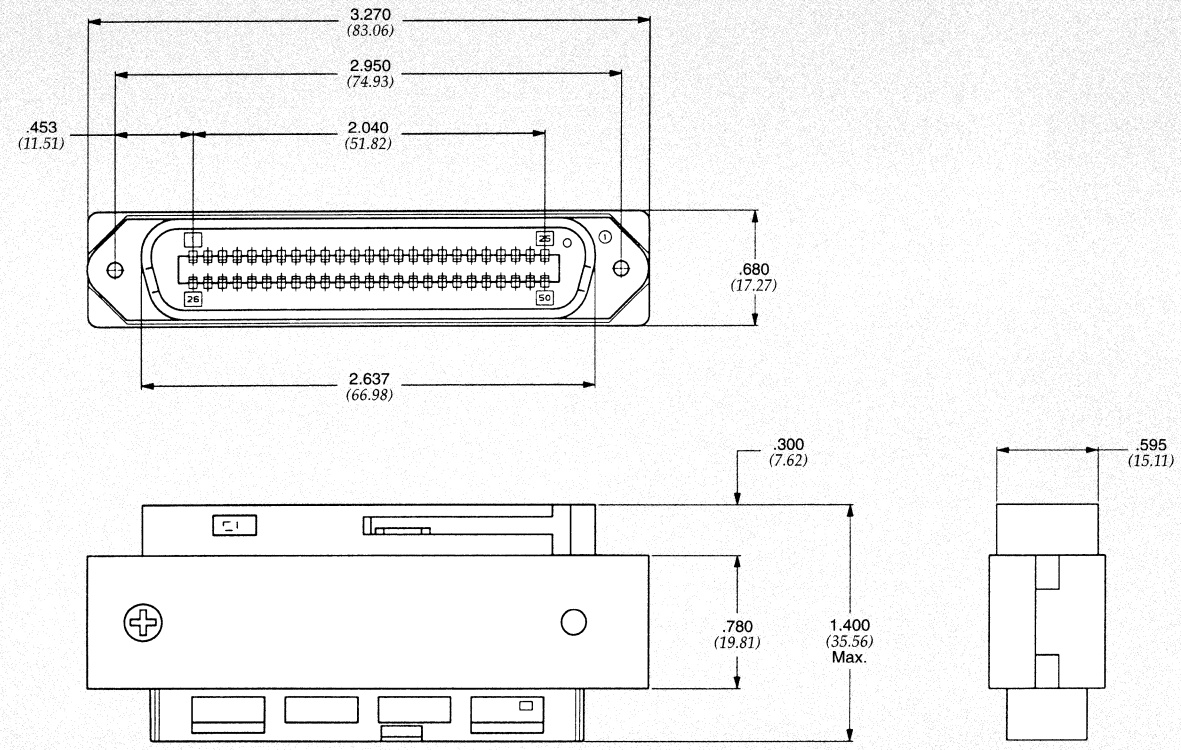
Filtered Miniature Ribbon Connectors
50 Position



Part Number	Capacitance Value
56-886-002	100 pF, 1,000 VAC
56-886-003	220 pF, 1,000 VAC
56-886-004	470 pF, 1,000 VAC
56-886-005	820 pF, 1,000 VAC

Filtered Miniature Ribbon Connectors
50 Position

Adapter



Dimensions in inches *(mm)*

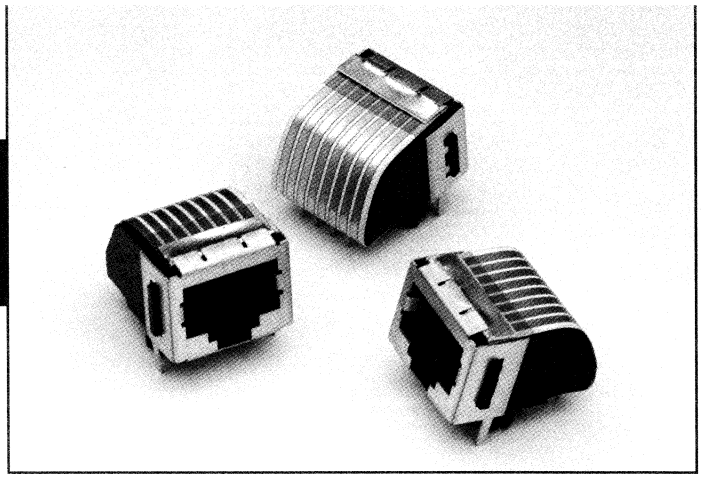
Part Number	Capacitance Value
56-889-002	100 pF ±15%
56-889-003	220 pF ±15%
56-889-004	470 pF ±15%
56-889-005	820 pF ±15%

Hardware options also available. Consult factory for more information.

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SPECTRUM CONTROL INC.

Filtered Modular Jack Connectors



Protecting signals from electromagnetic interference (EMI) is now more important than ever. Spectrum Control gives you more choices in keeping your signals clean and free of EMI. Whatever the level of protection your application requires, we offer signal conditioning products that meet any level of price and performance.

These compact, low-cost, filtered printed circuit board RJ45 modular jack connectors from Spectrum Control offer an inexpensive way to protect equipment from conducted and radiated electromagnetic interference (EMI), while meeting all appropriate performance requirements. Offering compact size and high reliability, these new connectors are fully intermateable and interchangeable with existing standard product. The low profile and narrow width of the multi-port style allows more ports to be packed into less space.

Filtering options include ferrite only (L), or capacitive film only (C). Ferrite versions can be supplied in fully shielded, partially shielded or unshielded versions. Capacitive versions come with full, or partial shielding. Redundant shielding tabs ensure that a low impedance ground path is maintained across the interface; tabs are available in board-ground or panel-ground versions, with panel-ground jacks also incorporating board-ground legs. These flame retardant polyester thermoplastic connectors are compatible with wave solder environments, and employ duplex plated contacts with solder tails.

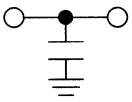
Modular jack connectors assist with FCC Part 15 A & B; and CISPR 22 compliance.

Applications for this type of connector are widely diversified and include: LANs, WANs, network cards, broadband transmission equipment, workstations, peripherals, fax/modems, copy machines and multiplexing.

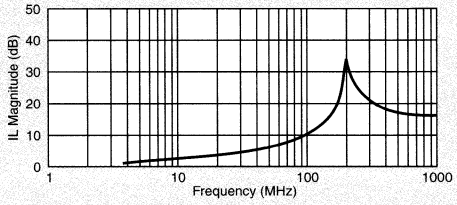
Features

- Lower installed cost
- Assists with FCC Part 15 A & B; and CISPR 22 compliance
- Drop-in replacement, matched footprint
- All circuit lines protected
- Inductor or capacitor versions
- Capacitive versions feature:
  - Dielectric withstanding voltage 500 VDC maximum
  - Insulation resistance 1 Gohm @ 100 VDC
  - Current capacitance values of 110 pF ± 30%
- Available with two grounding options – PCB or parallel
- Unshielded, partial or fully shielded versions
- Certified by Canadian Standards Association File No. LR 7189
- Certified by Underwriters Laboratories, Inc., File Number E81956

Equivalent Circuit (Capacitive Version)



Typical Insertion Loss vs. Frequency (Capacitive Version)

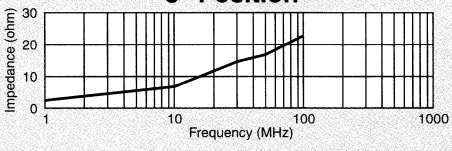


Equivalent Circuit (Ferrite Version)

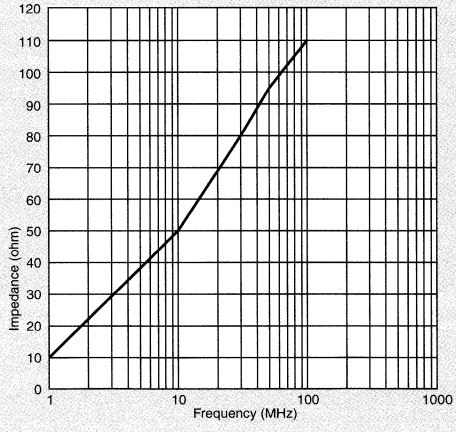


Typical Impedance vs. Frequency (Ferrite Version)

"8" Position



Multi-Port



Filtered Modular Jack Connectors

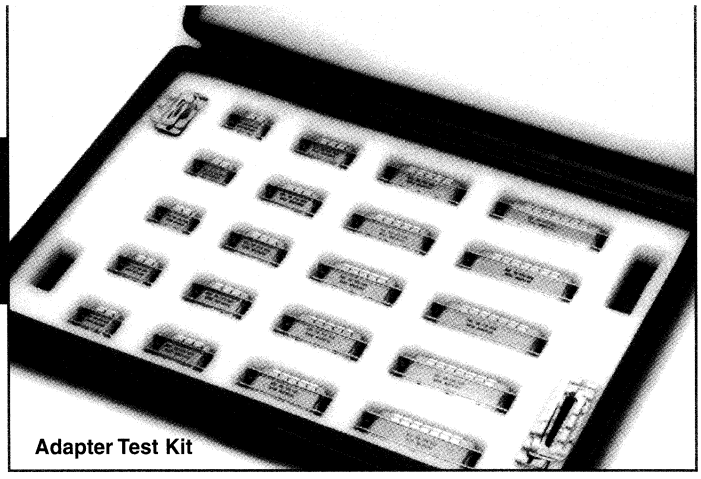
Filtered Part Number	Position	Filter Type	Shielding	Tab	Ground
267437-1	8	Capacitive Film 110 pF/500 VDC	Full	2	PCB
93538-1	8	Capacitive Film 110 pF/500 VDC	Partial	2	PCB
93782-1	8	Ferrite	Extended	2	Panel
93546-1	8	Ferrite	Full	2	PCB
93570-1	8	Ferrite	None	NA	NA
93653-1	8	Ferrite	None	NA	NA
267245-1	8	Ferrite	Partial	2	Panel
93534-1	8	Ferrite	Partial	2	PCB
93655-1	Multigang 1	Capacitive Film 110 pF/500 VDC	Full	2	PCB
93754-1	Multigang 1	Ferrite	Full	2	PCB
93801-1	Multigang 1	Ferrite	None	NA	NA
267038-1	Multigang 2	Capacitive Film 110 pF/500 VDC	Full	3	PCB
93795-1	Multigang 2	Ferrite	Full	3	PCB
93802-1	Multigang 2	Ferrite	None	NA	NA
93580-1	Multigang 4	Capacitive Film 110 pF/500 VDC	Full	3	PCB
93580-2	Multigang 4	Capacitive Film 110 pF/500 VDC	Full	5	Panel
93580-3	Multigang 4	Capacitive Film 110 pF/500 VDC	Full	5	PCB
93580-4	Multigang 4	Capacitive Film 110 pF/500 VDC	Full	2	PCB
267884-1	Multigang 4	Capacitive Film 110 pF/500 VDC	Full	5	PCB
93579-1	Multigang 4	Ferrite	Full	3	PCB
93579-2	Multigang 4	Ferrite	Full	5	Panel
93579-3	Multigang 4	Ferrite	Full	5	PCB
93579-4	Multigang 4	Ferrite	Full	2	PCB
93578-1	Multigang 4	Ferrite	None	NA	NA
93584-1	Multigang 6	Capacitive Film 110 pF/500 VDC	Full	3	PCB
93584-2	Multigang 6	Capacitive Film 110 pF/500 VDC	Full	2	PCB
93584-3	Multigang 6	Capacitive Film 110 pF/500 VDC	Full	3	Panel
93583-1	Multigang 6	Ferrite	Full	3	PCB
93583-2	Multigang 6	Ferrite	Full	2	PCB
93583-3	Multigang 6	Ferrite	Full	3	Panel
93582-1	Multigang 6	Ferrite	None	NA	NA
93588-1	Multigang 8	Capacitive Film 110 pF/500 VDC	Full	3	PCB
93588-2	Multigang 8	Capacitive Film 110 pF/500 VDC	Full	3	Panel
93587-1	Multigang 8	Ferrite	Full	3	PCB
93587-2	Multigang 8	Ferrite	Full	3	Panel
93586-1	Multigang 8	Ferrite	None	NA	NA

Note: Consult factory or web site for dimensions.

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SPECTRUM CONTROL INC.

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
  - Five filter ranges:
    - 310 pF Pi
    - 830 pF FT
    - 1000 pF Pi
    - 2500 pF Pi
    - 4000 pF Pi

Ordering Information

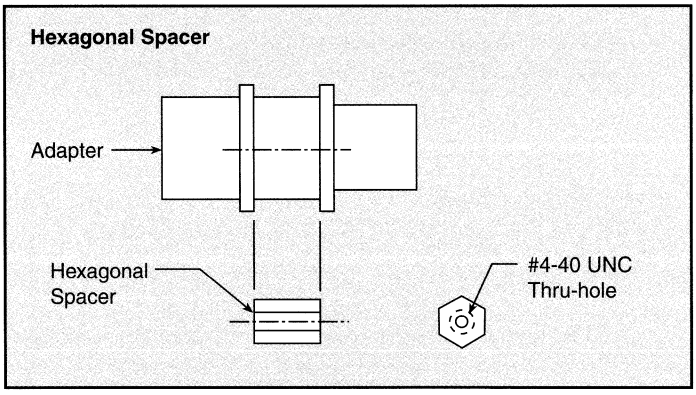
Description	Spectrum Part Number
Adapter test kit	56-700-002
Adapter test kit with Jackscrew *Includes 40 pcs. 56-201-006*	56-700-002-JS
Hexagonal Spacer	56-201-001
Jackscrew Mounting Hardware *For .312" (7.92 mm) length*	56-201-004
Jackscrew Mounting Hardware *For .688" (17.47 mm) length*	56-201-006

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

SPECTRUM CONTROL INC.

High Voltage Filtered Connector Adapters

Spectrum Control has developed a male/female filtered connector adapter for EMI filtering that is built to withstand 1000 volts RMS for one minute.

The Series 700 filtered connector adapter is designed to meet **Bellcore technical requirement NWT-001089 and FCC (Part 68 test)** specifications while providing superb EMI filtering performance out to 5 GHz.

Applications

- High speed data transmission

Features

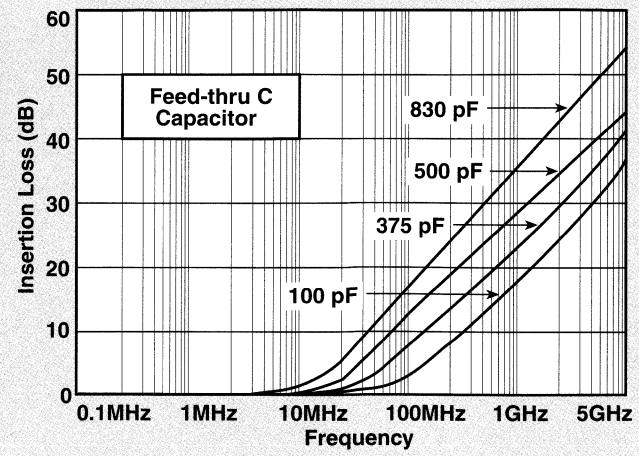
- Capacitance values ranging from 100 pF to 830 pF
- Superior rugged mechanical construction
- Excellent core grounding through Spectrum Control's wider contact area

Ordering Information

Capacitance Values	9 Pin	15 Pin	25 Pin
100 pF	56-705-202	56-715-202	56-725-202
375 pF	56-705-204	56-715-204	56-725-204
500 pF	56-705-205	56-715-205	56-725-205
830 pF	56-705-206	56-715-206	56-725-206

Minimum order quantity applies, call Spectrum Control for details.

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.

Mechanical Specifications

(Same as Series 700, see page 115)

Shell . . . . . Zinc diecast, nickel plated

Insulators . . . . . Glass filled polyester

Contacts . . . . . Copper alloy, Socket 30µ inch gold Pins 15µ inch gold

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

Electrical Specifications

Rated Voltage . . . . . 200 VDC

Current Rating . . . . . 5 Amps

DC Resistance . . . . . 15 milliohm maximum

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

Insertion Loss Chart

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) 5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz	2 GHz	5 GHz
C	100 pF	±25%	53	200 V	—	—	—	—	1	6	14	19	25	35
	375 pF	±25%	23	200 V	—	—	—	4	10	16	22	24	30	40
	500 pF	±25%	20	200 V	—	—	2	7	13	19	25	27	33	43
	830 pF	±25%	6	200 V	—	2	6	12	18	24	30	33	39	50

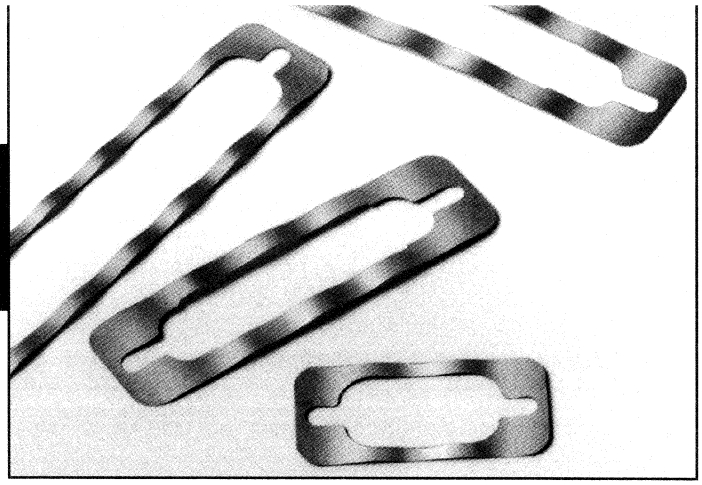
For additional high voltage capabilities contact Spectrum Control.

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

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SPECTRUM CONTROL INC.

Waved Metal Gaskets



Proper mounting of an EMI filter is critical to achieving optimum filtering performance. For applications requiring very high attenuation, it is necessary to fill the gaps at the mounting surface-to-connector interface. The length of any gap must be short, relative to the wavelength of the signal to be attenuated. Spectrum Control supplies a line of "waved" gaskets. This design ensures the maximum "gap length" will not exceed the wave pitch, .200" (5.08mm), even on surfaces with poor flatness. This ensures maximum filter performance to 1GHz and beyond.

Specifications

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

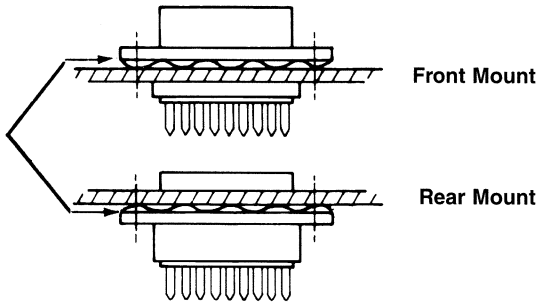
Finish . . . . . Electro tin plate, 100 micro inches (per MIL-T-10727)

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

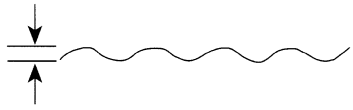
Wave Height . . . . . .030"+.020/-.015 (.76+.51/-.38mm)

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

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



Wave Height



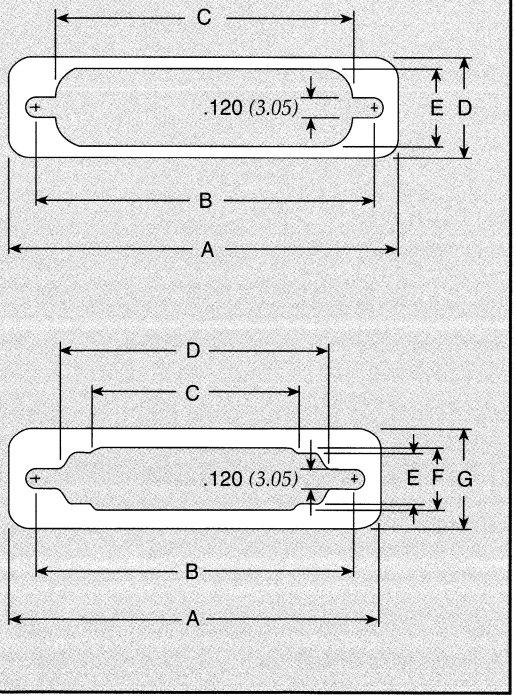
Ordering Information *Select part number by filling in "xxx": 572019-00xxx-70*

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.

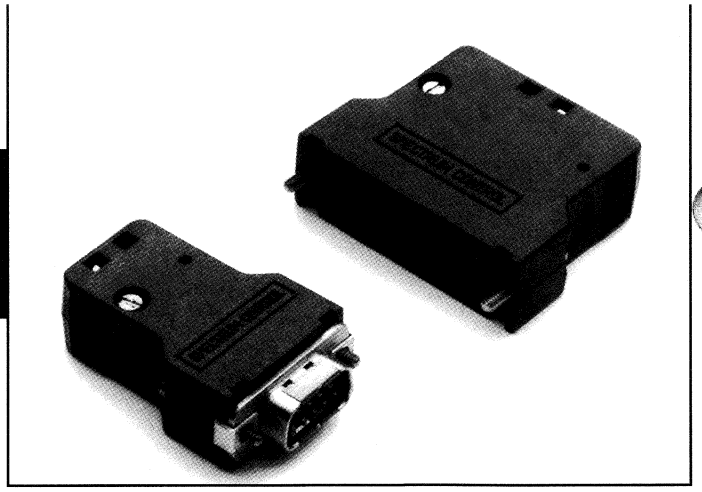
Shell Size	A ±.020 (0.51)	B ±.020 (0.51)	C ±.020 (0.51)	D ±.020 (0.51)	E ±.005 (0.13)	F ±.005 (0.13)	G ±.020 (0.51)	"xxx"
9	1.213 (30.81)	.984 (24.99)	.450 (11.43)	.660 (16.76)	.324 (8.23)	.360 (9.14)	.600 (15.24)	105
15	1.541 (39.14)	1.312 (33.32)	.670 (17.02)	.988 (25.10)	.324 (8.23)	.360 (9.14)	.600 (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



Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

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.

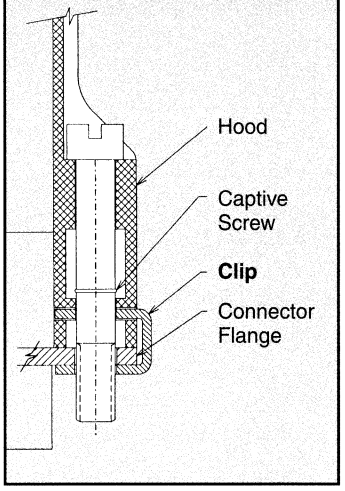
Since most filter connectors are larger than standard connectors, there had been a problem fitting most commercially available hoods. Spectrum Control solves this problem. Our hoods are molded of thin wall plastic, providing extra internal space to accommodate larger filter connectors. The hood is constructed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

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.

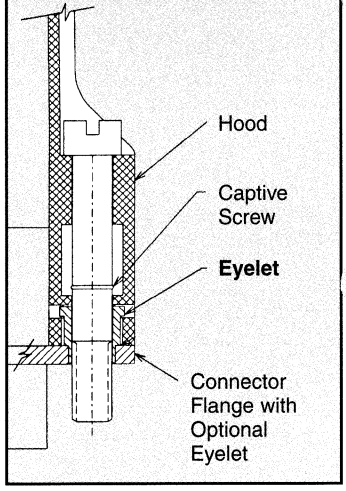
#2560-9000-XX

Retention Clip Version
(For use with most connectors)



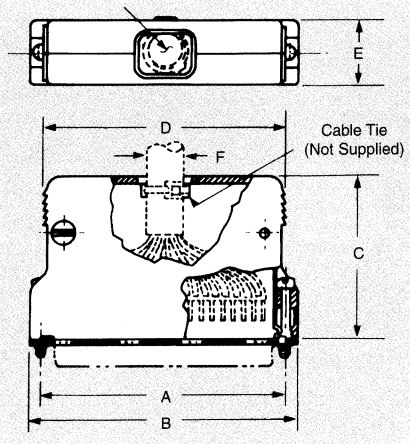
#2560-9001-XX

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



Ordering Information and Dimensions

Part Number	Connector 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)*



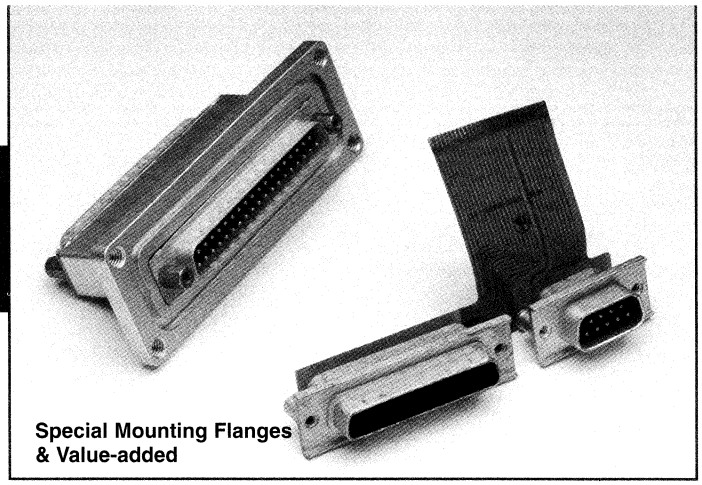
Dimensions in inches *(mm)*

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SPECTRUM CONTROL INC.

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.



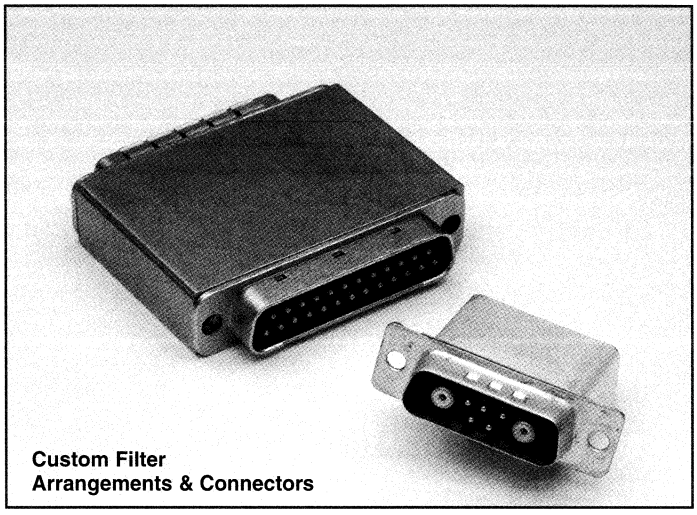
Special Mounting Flanges & Value-added

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

- Spectrum'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.



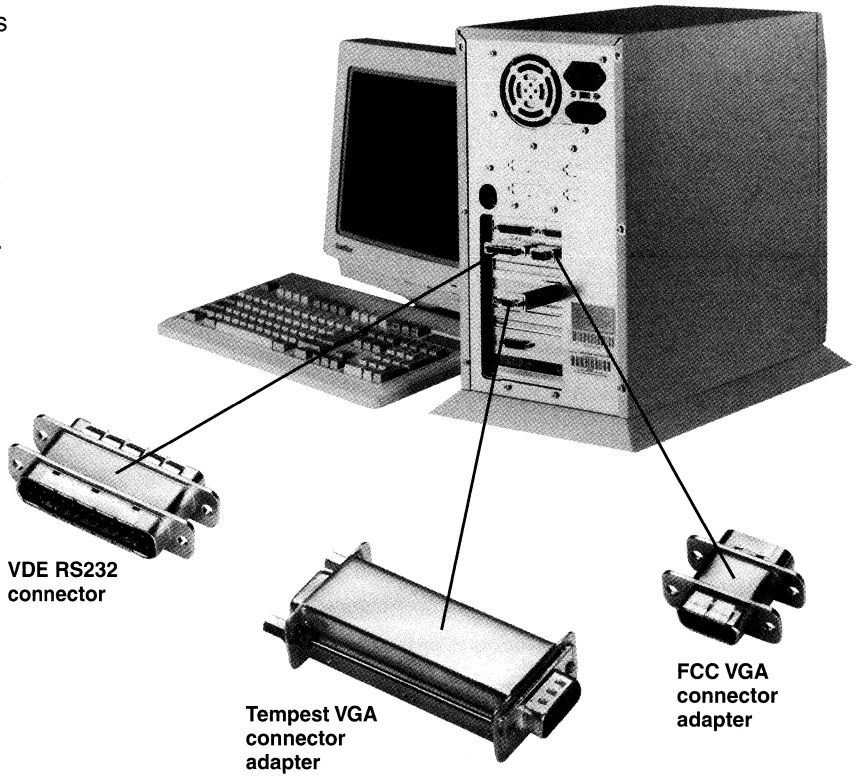
Custom Filter Arrangements & Connectors

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.



VDE RS232 connector

Tempest VGA connector adapter

FCC VGA connector adapter

Filtered Connector Performance Specifications

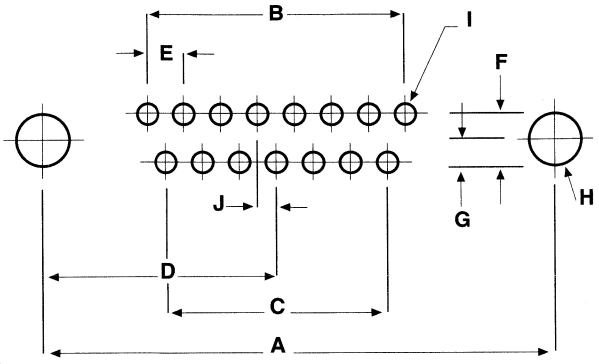
The filtered D-subminiature connectors shown in this catalog have been designed and tested to the following test plan.

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

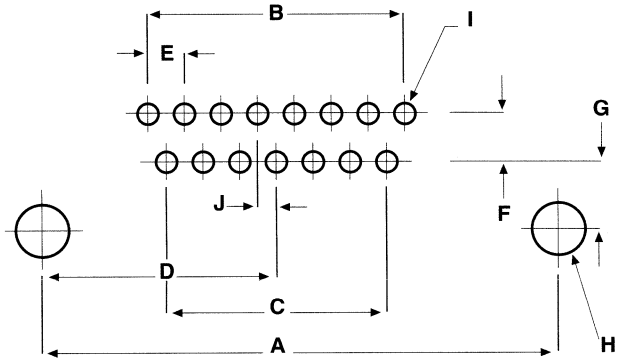
Test Group	Order of Test	Examination of Test	Test Method	Post Test Requirements
I	1	Visual and Mechanical Examination		In accordance with applicable requirements.
	2	Materials, Designs Construction and Workmanship		
	3	Physical Dimensions and Marking		
	4	Capacitance	MIL-STD-202 Method 305 1 KHz, 1VRMS 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, 4.7.17, 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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Board & Panel Cutouts



Printed Circuit
Board Mount (standard density)



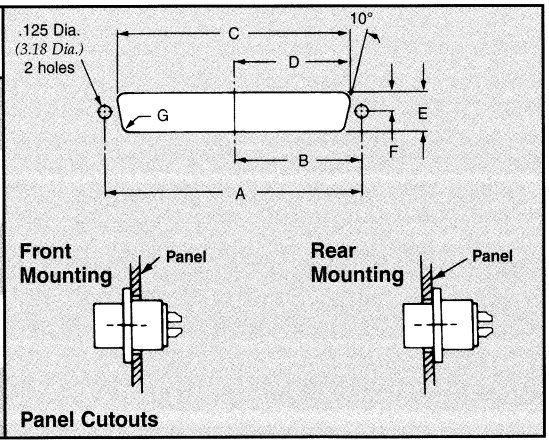
Printed Circuit
Right Angle Mount (standard density)

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	.984 *(25.00)*	.436 = 4 x .109 *(11.07)* *(2.77)*	.327 = 3 x .109 *(8.31)* *(2.77)*	.492 *(12.50)*						
15	1.312 *(33.32)*	.763 = 7 x .109 *(19.38)* *(2.77)*	.654 = 6 x .109 *(16.61)* *(2.77)*	.656 *(16.66)*						
25	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)*	.109 *(2.77)*	.112 *(2.84)*	.058 *(1.42)*	.125 *(3.18)*	.045 *(1.14)*	.054 *(1.37)*
37	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)*						
50	2.406 *(61.11)*	1.744 = 16 x .109 *(44.30)* *(2.77)* 2 rows	1.635 = 15 x .109 *(41.35)* *(2.77)*	1.203 *(30.56)*						

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

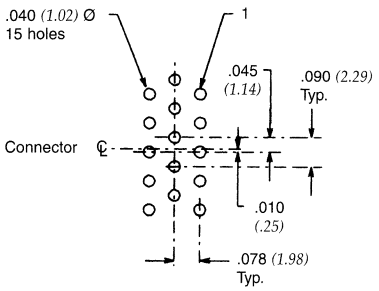
Shell Size	A ±.015 *(.38)*	B ±.015 *(.38)*	C ±.015 *(.38)*	D ±.015 *(.38)*	E ±.003 *(.08)*	F ±.005 *(.13)*	G ±.002 *(.05)*
9	.984 *(24.99)*	.492 *(12.49)*	.777 *(19.74)*	.388 *(9.87)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
15	1.312 *(33.32)*	.656 *(16.66)*	1.105 *(28.07)*	.552 *(14.03)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
25	1.852 *(47.04)*	.926 *(23.52)*	1.645 *(41.78)*	.822 *(20.89)*	.440 *(11.18)*	.220 *(5.59)*	.150 *(3.81)*
37	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	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)*



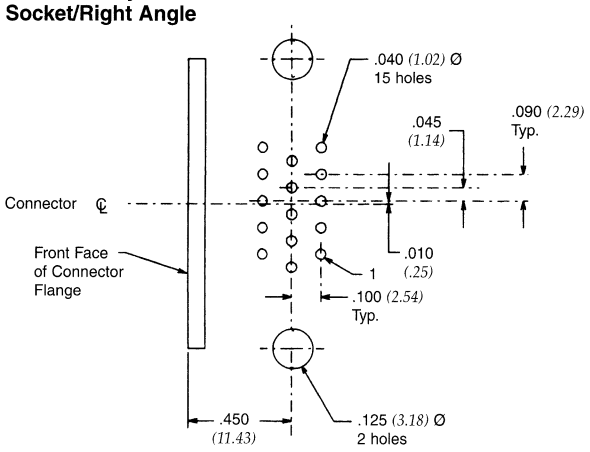
Dimensions in inches *(mm)*

Filtered Connector Performance Specifications

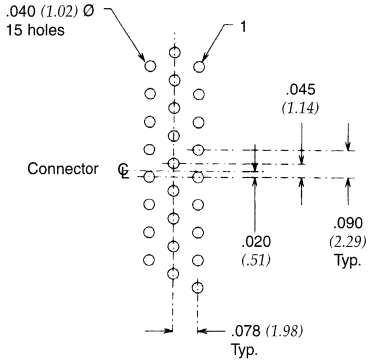
15 Hi-Density Pin/PCB



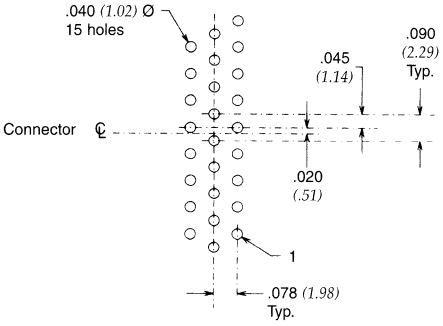
15 Hi-Density Socket/Right Angle



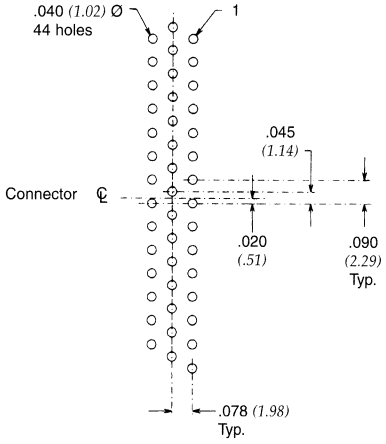
26 Hi-Density Pin/PCB



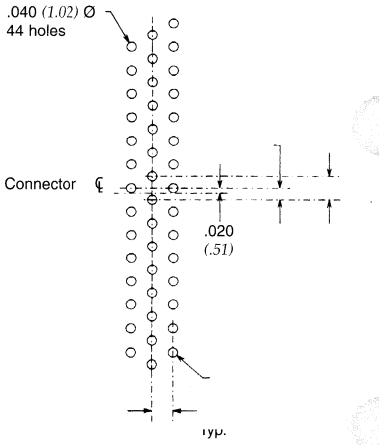
26 Hi-Density Socket/PCB



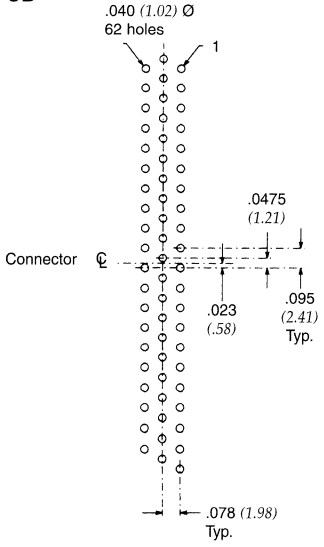
44 Hi-Density Pin/PCB



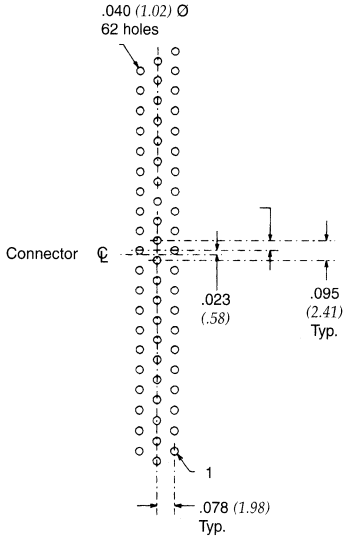
44 Hi-Density Socket/PCB



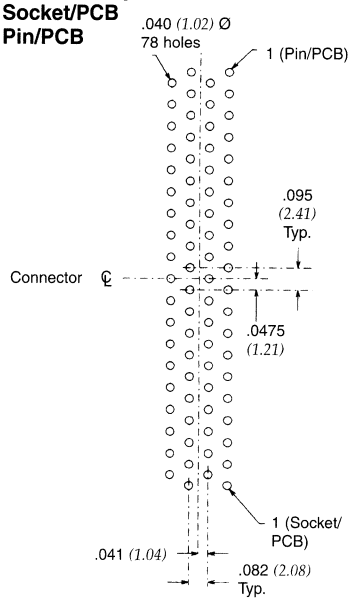
62 Hi-Density Pin/PCB



62 Hi-Density Socket/PCB



78 Hi-Density Socket/PCB Pin/PCB



Dimensions in inches *(mm)*

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SPECTRUM CONTROL INC.

Custom Filtered Connectors MIL and High Reliability

Spectrum Control offers a premium line of custom and specialty filtered connectors. These custom high reliability, circular, rack and panel and ARINC connectors have a reputation for superior quality and performance. Several types of filtering are available (See figure at right).

EMI Filter Performance

The performance indicated in this table are examples for design guidelines. Insertion values are per MIL-STD-220 (No Load).

Resistance

Insulation Resistance . . . . . 5 Gigohm min.
D.C. Resistance . . . . . 30 Milliohm max.

Figure A

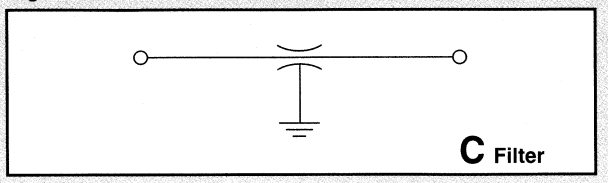


Figure B

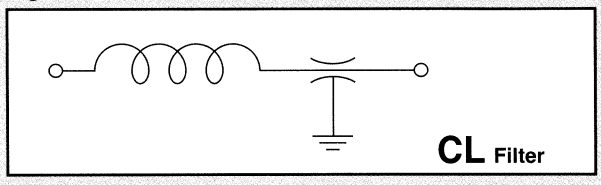


Figure C

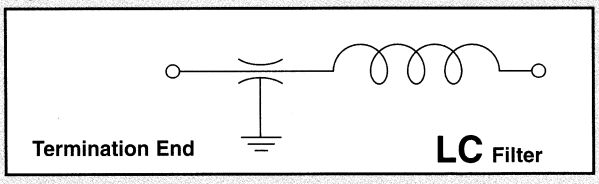
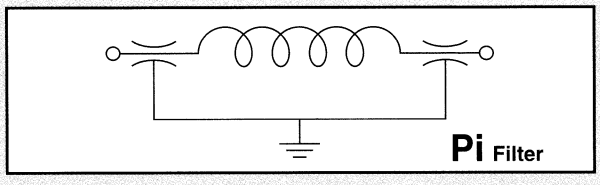


Figure D



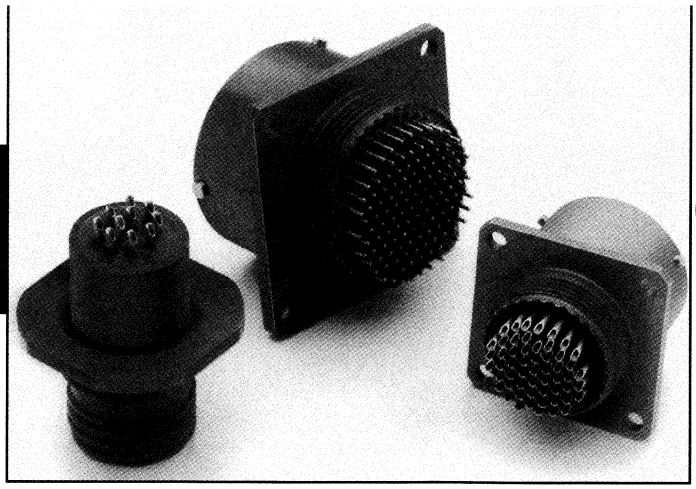
Electrical Characteristics

Capacitance (pF, GMV)	Working Voltage DC 85°C	Working Voltage AC 85°C	DWV (VOC)	Minimum Insertion Loss (dB)																	
				Figure A						Figure B & C						Figure D					
				Cut-Off Freq. (MHz)	1 MHz	10 MHz	100 MHz	500 MHz	1000 MHz	Cut-Off Freq. (MHz)	1 MHz	10 MHz	100 MHz	500 MHz	1000 MHz	Cut-Off Freq. (MHz)	1 MHz	10 MHz	100 MHz	500 MHz	1000 MHz
1,000	200	115	500	5	—	4	21	34	39	5	—	5	23	36	42	5	—	4	28	54	65
2,000	200	115	500	1	—	9	26	39	44	1	—	10	29	42	47	1	—	8	39	65	70
3,000	200	115	500	1	—	12	30	43	48	1	—	13	36	45	51	1	—	11	47	70	70
5,000	200	115	500	1	1	16	34	46	52	1	1	17	37	49	54	1	1	14	54	70	70
7,000	200	115	500	1	3	19	37	49	55	1	3	20	39	52	57	1	3	18	60	70	70
10,000	200	115	500	1	4	21	39	52	57	1	4	22	41	54	60	1	4	22	64	70	70
20,000	100	—	250	.50	9	26	44	57	62	.50	9	28	47	60	65	.50	9	33	70	70	70

Consult Spectrum Control for availability of alternative capacitance values.

SPECTRUM CONTROL INC.

Compact Shell Filtered Connectors



MIL-C-38999 Filtered Connector, Compact Shell

This design is for the MIL-C-38999 connector series I, II, and III. The shell is constructed out of a single piece of metal and contains planar capacitors. **The dimensions are the same as the unfiltered MIL qualified connector.**

The compact shell filtered connectors offer designers an effective filtering device that reduces the amount of real estate required within a product enclosure. These connectors are available with mixed capacitance filtered lines within the connector as well as insulated and/or grounded lines.

Compact shell filtered connectors provide a simple and space-efficient solution to a complex EMI problem. More detailed information on compact shell connectors is located on pages 163-168.

Advantages of Spectrum's Compact Shell Design

- ***Easy retrofit or upgrade***

Our compact shell connector is the only MIL filtered connector which is the same size as an unfiltered connector . . . allowing for easy retrofit or upgrade without concerns for space availability.

- ***Weight and space savings***

Smaller physical size is ideal for many applications, especially airborne.

- ***Reduced cost and lead times***

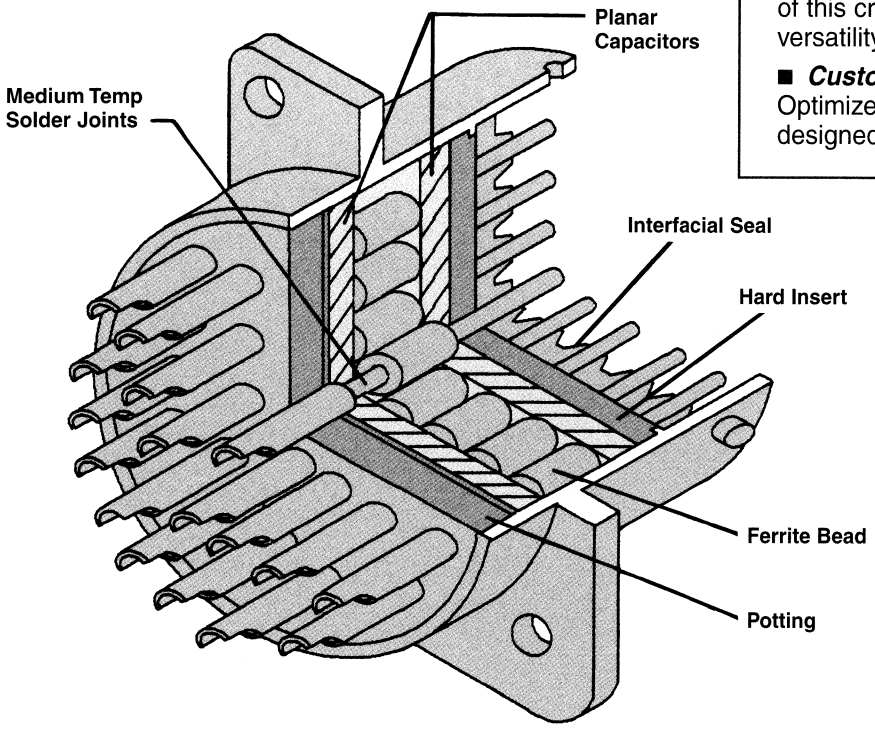
Standardized design for most contact arrangements minimizes tooling required (often none) . . . reducing procurement costs and facilitating small order quantities or prototypes.

- ***Design flexibility and quality assurance***

We are vertically integrated for ceramic filter capacitors, enabling us to offer a broad selection of this critical component and ensuring design versatility and manufacturing control.

- ***Custom designs***

Optimize your system performance with a custom designed filtered connector.



For extended shell tubular design, see page 169.

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MIL-C-38999, Compact Shell

Ordering Information

The many benefits of using Spectrum's compact shell design are detailed on page 162. Review the benefits and specifications provided to determine if these space saving connectors will fulfill your requirements.

Available connector styles and shell sizes for this MIL series are shown on the following pages. Refer to these pages and the information below to develop your connector part number.

Materials and Finishes

Shell . . . . . As noted in Ordering Information
Contacts . . . . . Copper Alloy, Gold Plate per MIL-G-45204
Seals . . . . . Elastomer, Silicone
Insulator . . . . . High Grade Plastic

(For electrical specifications, see page 161.)

9	A	2	B	11	35	S	A	4	102	M

Filtered Connector MIL Indicator
9-MIL-C-38999 Compact Shell

Series Indicator
A-Series I
B-Series II
C-Series III

Shell Style
1- Wall Mount Receptacle (Front Panel Mounting)
2- Box Mount Receptacle Series I&II (Front Panel Mounting)
3- Jam Nut Receptacle
4- Wall Mount Receptacle Series I&II (Back Panel Mounting)
5- Box Mount Receptacle Series I&II (Back Panel Mounting)

Finish
B- Aluminum Olive Drab Cadmium
E- Stainless Steel Passivated
F- Aluminum, Electroless Nickel

Shell Size
Series I&III
9, 11, 13, 15, 17, 19, 21, 23, & 25
Series II
8, 10, 12, 14, 16, 18, 20, 22, & 24

Contact Arrangement
See Below
(last two digits of each number)

Contact/ Termination Type
P- Pin/PC Tail
S- Pin/Solder Cup
B- Socket/PC Tail
N- Socket/Crimp Removable

Alternate Shell Position
N- (Normal)
A, B, C, D
E- Series III only

Filter Schematic
1- "C" Feed-thru
5- "Pi"

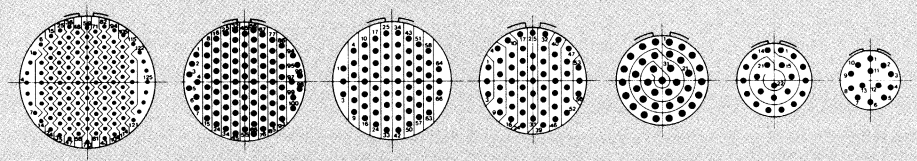
Filter Capacitance
Specify by using EIA codes. Two significant digits plus number of zeros.
102 = 1000pF
401 = 400pF

Capacitance Tolerance
M = ± 20%
P = -0% +100% (GMV)

Custom Part Ordering Note:
For Filtered Connectors with custom requirements, such as mixed capacitance, insulated lines, ground lines or an unlisted contact arrangement, consult factory for specific part numbers.

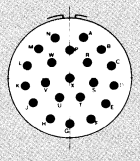
Contact Arrangements (First two digits shell size, second two contact arrangement)

#22 Contacts – 5 Amps



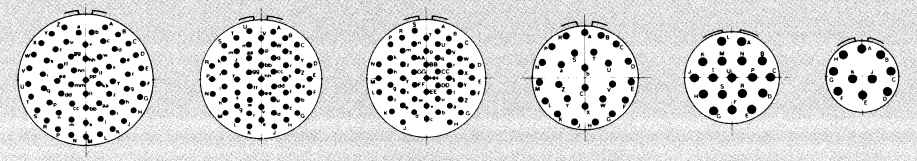
2535 128 #22 | 2335 100 #22 | 1935 66 #22 | 1735 55 #22 | 1535 37 #22 | 1335 22 #22 | 1135 13 #22

#16 Contacts – 13 Amps



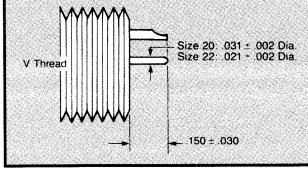
2321 21 #16

#20 Contacts – 7.5 Amps



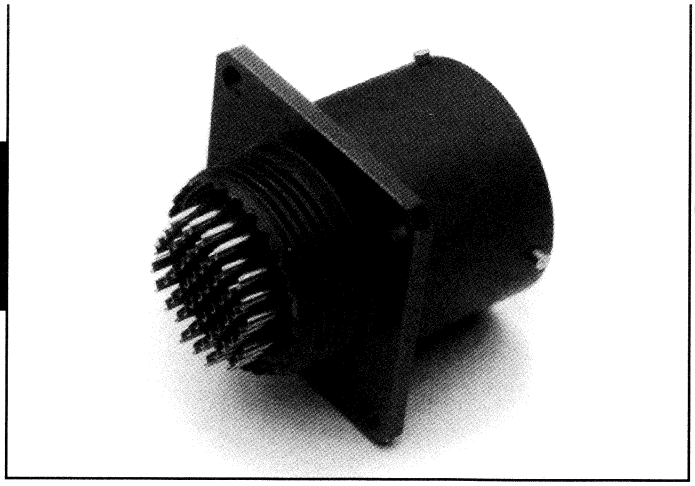
2561 61 #20 | 2355 55 #20 | 2353 53 #20 | 1726 26 #20 | 1518 18 #20 | 1398 10 #20

Standard Termination available in all Filtered Connectors



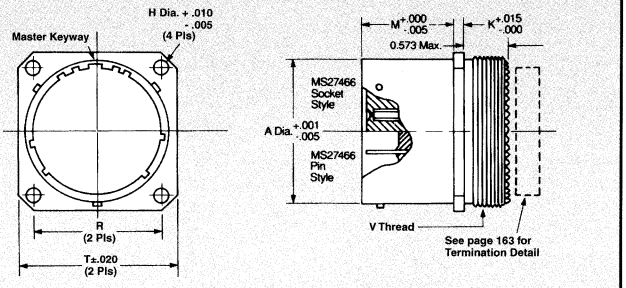
SPECTRUM CONTROL INC.

MIL-C-38999, Compact Shell Series I



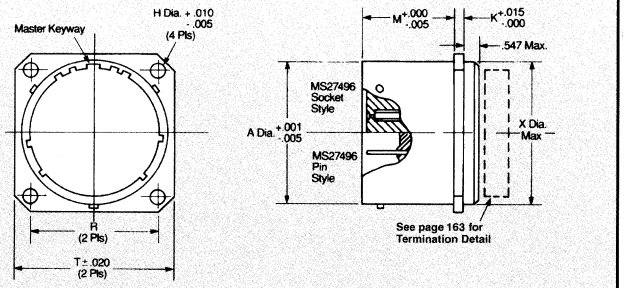
MS27466 Wall Mount, Front Panel Mounting

Shell Size	A Dia.	M	H Dia.	K	R	T	V Thread UNEF-2A
9	.572 (14.55)	.632 (16.07)	.128 (3.26)	.085 (2.16)	.719 (18.28)	.938 (23.85)	.4375-18
11	.700 (17.80)	.632 (16.07)	.128 (3.26)	.085 (2.16)	.812 (20.65)	1.031 (26.22)	.5625-24
13	.850 (21.62)	.632 (16.07)	.128 (3.26)	.085 (2.16)	.906 (23.04)	1.125 (28.61)	.6875-24
15	.975 (24.79)	.632 (16.07)	.128 (3.26)	.085 (2.16)	.969 (24.64)	1.219 (31.00)	.8125-20
17	1.100 (27.97)	.632 (16.07)	.128 (3.26)	.085 (2.16)	1.062 (27.01)	1.312 (33.36)	.9375-20
19	1.207 (30.69)	.632 (16.07)	.128 (3.26)	.085 (2.16)	1.156 (29.40)	1.438 (36.51)	1.0625-18
21	1.332 (33.87)	.602 (15.31)	.128 (3.26)	.115 (2.92)	1.250 (31.79)	1.562 (39.72)	1.1875-18
23	1.475 (26.91)	.602 (15.31)	.147 (3.74)	.115 (2.92)	1.375 (34.97)	1.688 (42.93)	1.3125-18
25	1.582 (40.23)	.602 (15.31)	.147 (3.74)	.115 (2.92)	1.500 (38.15)	1.812 (46.08)	1.4375-18



MS27496 Box Mount, Front Panel Mounting

Shell Size	A Dia	M	K	X Dia.	H Dia.	R	T
9	.572 (14.55)	.632 (16.07)	.085 (2.16)	.469 (11.93)	.128 (3.26)	.719 (18.28)	.938 (23.85)
11	.700 (17.80)	.632 (16.07)	.085 (2.16)	.594 (15.11)	.128 (3.26)	.812 (20.65)	1.031 (26.22)
13	.850 (21.62)	.632 (16.07)	.085 (2.16)	.719 (18.28)	.128 (3.26)	.906 (23.04)	1.125 (28.61)
15	.975 (24.79)	.632 (16.07)	.085 (2.16)	.844 (21.46)	.128 (3.26)	.969 (24.64)	1.219 (31.00)
17	1.100 (27.97)	.632 (16.07)	.085 (2.16)	.969 (24.64)	.128 (3.26)	1.062 (27.01)	1.312 (32.36)
19	1.207 (30.69)	.632 (16.07)	.085 (2.16)	1.078 (27.41)	.128 (3.26)	1.156 (29.40)	1.438 (36.57)
21	1.332 (33.87)	.602 (15.31)	.115 (2.92)	1.203 (30.59)	.128 (3.26)	1.250 (31.79)	1.562 (39.72)
23	1.457 (26.91)	.602 (15.31)	.115 (2.92)	1.328 (33.77)	.147 (3.74)	1.375 (34.97)	1.688 (42.93)
25	1.582 (40.23)	.602 (15.31)	.115 (2.92)	1.453 (36.95)	.147 (3.74)	1.500 (38.15)	1.812 (46.08)



Dimensions in inches *(mm)*

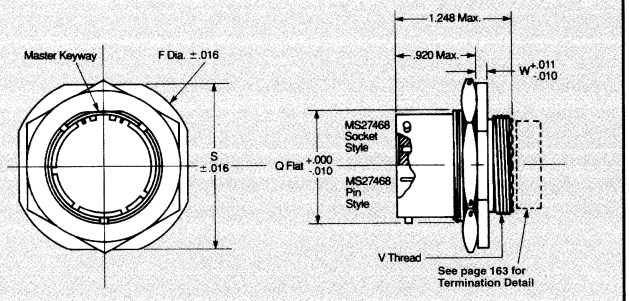
Custom Connectors

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MIL-C-38999, Compact Shell Series I

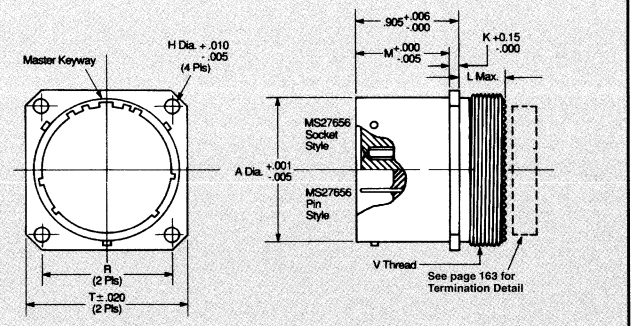
MS27468 Jam Nut

Shell Size	V Thread UNEF-2A	F Dia.	S	Q Dia.	W
9	.4375-28	1.188 (30.21)	1.062 (27.01)	.655 (16.66)	.109 (2.77)
11	.5625-24	1.375 (34.97)	1.250 (31.79)	.755 (19.20)	.109 (2.77)
13	.6875-24	1.500 (38.15)	1.375 (34.97)	.942 (23.96)	.109 (2.77)
15	.8125-20	1.625 (41.32)	1.500 (38.15)	1.066 (27.11)	.109 (2.77)
17	.9375-20	1.750 (44.50)	1.625 (41.32)	1.191 (30.29)	.109 (2.77)
19	1.0625-18	1.938 (49.28)	1.812 (46.08)	1.316 (33.47)	.140 (3.56)
21	1.1875-18	2.062 (52.44)	1.938 (49.28)	1.441 (36.64)	.140 (3.56)
23	1.3125-18	2.188 (55.64)	2.062 (52.44)	1.566 (39.82)	.140 (3.56)
25	1.4375-18	2.312 (58.79)	2.188 (55.64)	1.691 (43.00)	.140 (3.56)



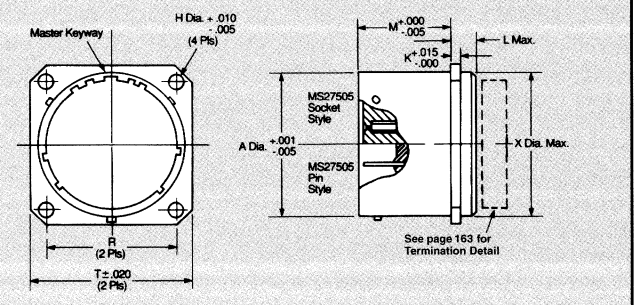
MS27656 Wall Mount, Back Panel Mounting

Shell Size	A Dia.	M	K	L	H Dia.	R	T	V Thread UNEF-2A
9	.572 (14.55)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	.719 (18.25)	.938 (23.85)	.4375-28
11	.700 (17.80)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	.812 (20.65)	1.031 (26.22)	.5625-24
13	.850 (21.62)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	.906 (23.04)	1.125 (28.61)	.6875-24
15	.975 (24.79)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	.969 (24.64)	1.219 (31.00)	.8125-20
17	1.100 (27.97)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	1.062 (27.01)	1.312 (33.36)	.9375-20
19	1.207 (30.69)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.128 (3.25)	1.156 (29.40)	1.438 (36.57)	1.0625-18
21	1.332 (33.87)	.790 (20.09)	.115 (2.92)	.500 (12.72)	.128 (3.25)	1.250 (31.79)	1.562 (39.72)	1.1875-18
23	1.457 (37.05)	.790 (20.09)	.115 (2.92)	.500 (12.72)	.147 (3.74)	1.375 (34.97)	1.688 (42.93)	1.3125-18
25	1.582 (40.23)	.790 (20.09)	.115 (2.92)	.500 (12.72)	.147 (3.74)	1.500 (38.15)	1.812 (46.08)	1.4375-18



MS27505 Box Mount, Back Panel Mounting

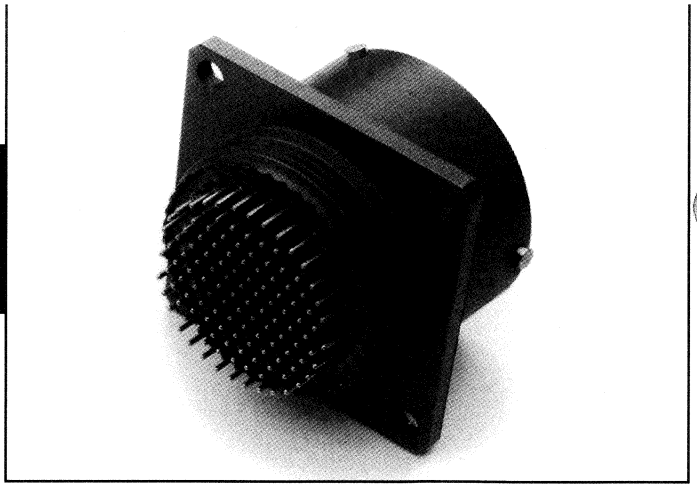
Shell Size	A Dia.	M	K	L	X Dia.	H Dia.	R	T
9	.572 (14.55)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.547 (13.91)	.128 (3.25)	.719 (18.28)	.938 (23.85)
11	.700 (17.80)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.656 (16.68)	.128 (3.25)	.812 (20.65)	1.031 (26.22)
13	.850 (21.62)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.828 (21.06)	.128 (3.25)	.906 (23.04)	1.125 (28.61)
15	.975 (24.79)	.820 (20.85)	.085 (2.16)	.469 (11.93)	.953 (24.23)	.128 (3.25)	.969 (24.64)	1.219 (31.00)
17	1.100 (27.97)	.820 (20.85)	.085 (2.16)	.469 (11.93)	1.078 (27.41)	.128 (3.25)	1.062 (27.01)	1.312 (33.36)
19	1.207 (30.69)	.820 (20.85)	.085 (2.16)	.469 (11.93)	1.203 (30.59)	.128 (3.25)	1.156 (29.40)	1.438 (36.57)
21	1.332 (33.87)	.790 (20.09)	.115 (2.92)	.500 (12.72)	1.328 (33.77)	.128 3.25)	1.250 (31.79)	1.562 (39.72)
23	1.457 (26.91)	.790 (20.09)	.115 (2.92)	.500 (12.72)	1.453 (36.95)	.147 (3.74)	1.375 (34.97)	1.688 (42.93)
25	1.582 (40.23)	.790 (20.09)	.115 (2.92)	.500 (12.72)	1.578 (40.13)	.147 (3.74)	1.500 (38.15)	1.812 (46.08)



Dimensions in inches *(mm)*

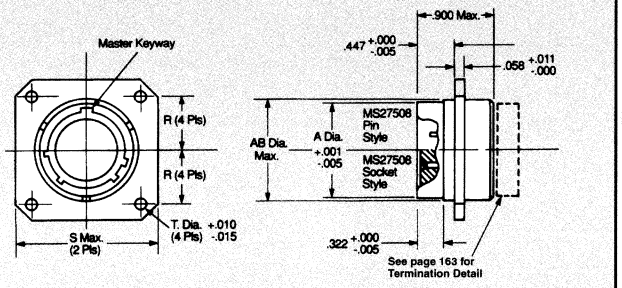
SPECTRUM CONTROL INC.

MIL-C-38999, Compact Shell Series II



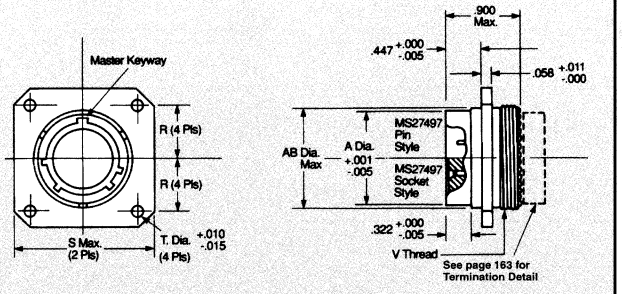
MS27508 Box Mount, Back Panel Mounting

Shell Size	A Dia.	AB Dia.	R BSC	T Dia.	S
8	.473 *(12.03)*	.547 *(13.91)*	.297 *(7.55)*	.120 *(3.05)*	.828 *(21.06)*
10	.590 *(15.00)*	.672 *(17.09)*	.3595 *(9.14)*	.120 *(3.05)*	.954 *(24.26)*
12	.750 *(19.07)*	.844 *(21.46)*	.406 *(10.32)*	.120 *(3.05)*	1.047 *(26.63)*
14	.875 *(22.25)*	.969 *(24.64)*	.453 *(11.52)*	.120 *(3.05)*	1.141 *(29.02)*
16	1.000 *(25.43)*	1.094 *(27.82)*	.4845 *(12.32)*	.120 *(3.05)*	1.234 *(31.38)*
18	1.125 *(28.61)*	1.219 *(31.00)*	.531 *(13.50)*	.120 *(3.05)*	1.328 *(33.77)*
20	1.250 *(31.79)*	1.344 *(34.18)*	.578 *(14.70)*	.120 *(3.05)*	1.453 *(36.95)*
22	1.375 *(34.97)*	1.469 *(37.36)*	.625 *(15.89)*	.120 *(3.05)*	1.578 *(40.13)*
24	1.500 *(38.15)*	1.594 *(40.54)*	.6875 *(17.48)*	.147 *(3.74)*	1.703 *(43.31)*



MS27497 Wall Mount, Back Panel Mounting

Shell Size	A Dia.	AB Dia.	R BSC	T Dia.	S	V Thread UNEF-2A
8	.473 *(12.03)*	.547 *(13.91)*	.297 *(7.55)*	.120 *(3.05)*	.828 *(21.06)*	.4375-28
10	.590 *(15.00)*	.672 *(17.09)*	.3595 *(9.14)*	.120 *(3.05)*	.954 *(24.26)*	.5625-24
12	.750 *(19.07)*	.844 *(21.46)*	.406 *(10.32)*	.120 *(3.05)*	1.047 *(26.63)*	.6875-24
14	.875 *(22.25)*	.969 *(24.64)*	.453 *(11.52)*	.120 *(3.05)*	1.141 *(29.02)*	.8125-20
16	1.000 *(25.43)*	1.094 *(27.82)*	.4845 *(12.32)*	.120 *(3.05)*	1.234 *(33.77)*	.9375-20
18	1.125 *(28.61)*	1.219 *(31.00)*	.531 *(13.50)*	.120 *(3.05)*	1.328 *(36.95)*	1.0625-18
20	1.250 *(31.79)*	1.344 *(34.18)*	.578 *(14.70)*	.120 *(3.05)*	1.453 *(36.95)*	1.1875-18
22	1.375 *(34.97)*	1.469 *(37.36)*	.625 *(15.89)*	.120 *(3.05)*	1.578 *(40.13)*	1.3125-18
24	1.500 *(38.15)*	1.594 *(40.54)*	.6875 *(17.48)*	.147 *(3.74)*	1.703 *(43.31)*	1.4375-18



Dimensions in inches *(mm)*

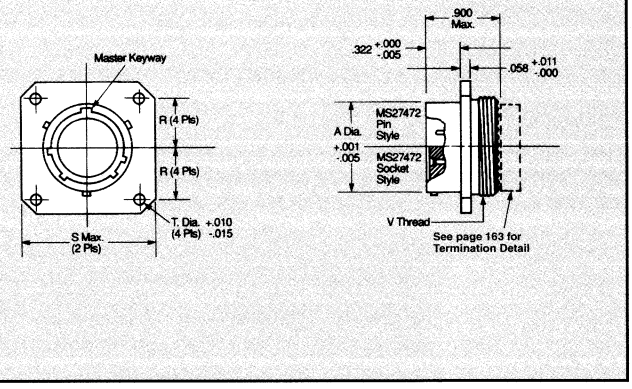
Custom Connectors

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MIL-C-38999, Compact Shell Series II

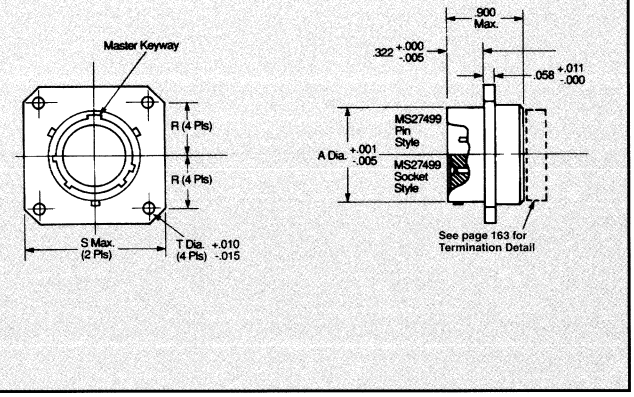
MS27472 Wall Mount, Front Panel Mounting

Shell Size	A Dia.	R BSC	T Dia.	S	V Thread UNEF-2A
8	.473 *(12.03)*	.297 *(7.55)*	.120 *(3.05)*	.828 *(21.06)*	.4375-28
10	.590 *(15.00)*	.3595 *(9.14)*	.120 *(3.05)*	.954 *(24.26)*	.5625-24
12	.750 *(19.07)*	.406 *(10.32)*	.120 *(3.05)*	1.047 *(26.63)*	.6875-24
14	.875 *(22.25)*	.453 *(11.52)*	.120 *(3.05)*	1.141 *(29.02)*	.8125-20
16	1.000 *(25.43)*	.4845 *(12.32)*	.120 *(3.05)*	1.234 *(31.38)*	.9375-20
18	1.125 *(28.61)*	.531 *(13.50)*	.120 *(3.05)*	1.328 *(33.77)*	1.0625-18
20	1.250 *(31.79)*	.578 *(14.70)*	.120 *(3.05)*	1.453 *(36.95)*	1.3125-18
22	1.375 *(34.97)*	.625 *(15.98)*	.120 *(3.05)*	1.578 *(40.13)*	1.3125-18
24	1.500 *(38.15)*	.6875 *(17.48)*	.147 *(3.74)*	1.703 *(43.31)*	1.4375-18



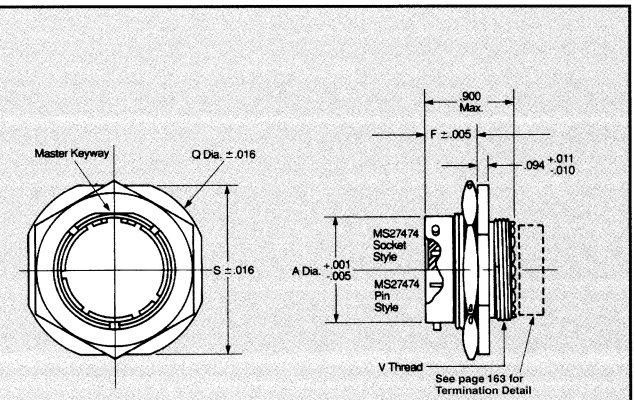
MS27499 Box Mount, Front Panel Mounting

Shell Size	A Dia.	R BSC	T Dia.	S
8	.473 *(12.03)*	.297 *(7.55)*	.120 *(3.05)*	.828 *(21.06)*
10	.590 *(15.00)*	.3595 *(9.14)*	.120 *(3.05)*	.954 *(24.26)*
12	.750 *(19.07)*	.406 *(10.32)*	.120 *(3.05)*	1.047 *(26.63)*
14	.875 *(22.25)*	.453 *(11.52)*	.120 *(3.05)*	1.141 *(29.02)*
16	1.000 *(25.43)*	.4845 *(12.32)*	.120 *(3.05)*	1.234 *(31.38)*
18	1.125 *(28.61)*	.531 *(13.50)*	.120 *(3.05)*	1.328 *(33.77)*
20	1.250 *(31.79)*	.578 *(14.70)*	.120 *(3.05)*	1.453 *(36.95)*
22	1.375 *(34.97)*	.625 *(15.89)*	.120 *(3.05)*	1.578 *(40.13)*
24	1.500 *(38.15)*	.6875 *(17.48)*	.147 *(3.74)*	1.703 *(43.31)*



MS27474 Jam Nut

Shell Size	V Thread Size	UNEF-2A Mod (Plated) Major Dia. Mod	A Dia.	F	Q Dia.	S
8	.4375-28	.421- .417	.473 *(12.03)*	.438 *(11.14)*	1.375 *(34.97)*	1.250 *(31.79)*
10	.5625-24	.542- .538	.590 *(15.00)*	.438 *(11.14)*	1.500 *(38.15)*	1.375 *(34.97)*
12	.6875-24	.667- .663	.750 *(19.07)*	.438 *(11.14)*	1.625 *(41.35)*	1.500 *(38.15)*
14	.8125-20	.791- .787	.875 *(22.25)*	.438 *(11.14)*	1.750 *(44.50)*	1.625 *(41.35)*
16	.9375-20	.916- .912	1.000 *(25.43)*	.438 *(11.14)*	1.938 *(49.28)*	1.781 *(45.29)*
18	1.0625-18	1.034-1.030	1.125 *(28.61)*	.438 *(11.14)*	2.016 *(51.27)*	1.890 *(48.06)*
20	1.1875-18	1.158-1.154	1.250 *(31.79)*	.464 *(11.80)*	2.141 *(54.45)*	2.016 *(51.27)*
22	1.3125-18	1.283-1.279	1.375 *(34.97)*	.464 *(11.80)*	2.265 *(57.60)*	2.140 *(54.42)*
24	1.4375-18	1.408-1.404	1.500 *(38.15)*	.464 *(11.80)*	2.390 *(60.78)*	2.265 *(57.60)*



Dimensions in inches *(mm)*

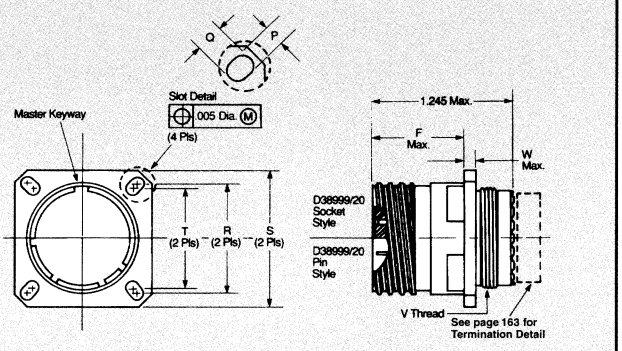
SPECTRUM CONTROL INC.

MIL-C-38999, Compact Shell Series III



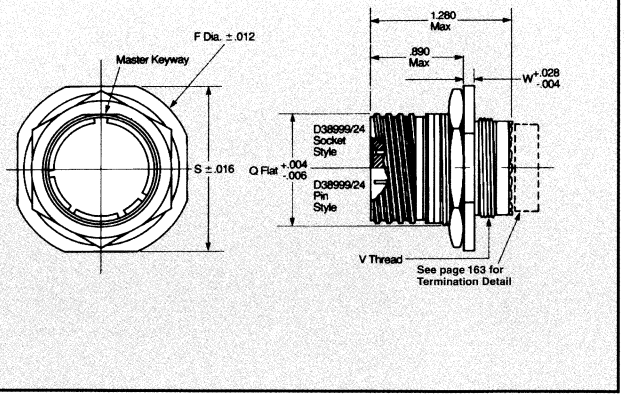
D38999/20 Wall Mount

Shell Size	V Thread	F	R	T	S	P	Q	W
9	M12 x 1.0-6g-0.100R	.823 *(20.93)*	.719 *(18.28)*	.594 *(15.11)*	.937 *(23.83)*	.128 *(3.25)*	.216 *(5.49)*	.098 *(2.49)*
11	M15 x 1.0-6g-0.100R	.823 *(20.93)*	.812 *(20.15)*	.719 *(18.28)*	1.031 *(26.22)*	.128 *(3.25)*	.194 *(4.93)*	.098 *(2.49)*
13	M18 x 1.0-6g-0.100R	.823 *(20.93)*	.906 *(23.04)*	.812 *(20.65)*	1.126 *(28.63)*	.128 *(3.25)*	.194 *(4.93)*	.098 *(2.49)*
15	M22 x 1.0-6g-0.100R	.823 *(20.93)*	.969 *(24.64)*	.906 *(23.04)*	1.220 *(31.02)*	.128 *(3.25)*	.173 *(4.40)*	.098 *(2.49)*
17	M25 x 1.0-6g-0.100R	.823 *(20.93)*	1.062 *(27.01)*	.969 *(24.64)*	1.311 *(33.34)*	.128 *(3.25)*	.194 *(4.93)*	.098 *(2.49)*
19	M28 x 1.0-6g-0.100R	.823 *(20.93)*	1.156 *(29.40)*	1.062 *(27.01)*	1.437 *(36.54)*	.128 *(3.25)*	.194 *(4.93)*	.098 *(2.49)*
21	M31 x 1.0-6g-0.100R	.791 *(20.12)*	1.250 *(31.79)*	1.156 *(29.40)*	1.563 *(39.75)*	.128 *(3.25)*	.194 *(4.93)*	.126 *(3.20)*
23	M34 x 1.0-6g-0.100R	.791 *(20.12)*	1.375 *(34.97)*	1.250 *(31.79)*	1.689 *(42.95)*	.154 *(3.92)*	.242 *(6.15)*	.126 *(3.20)*
25	M37 x 1.0-6g-0.100R	.791 *(20.12)*	1.500 *(38.15)*	1.375 *(34.97)*	1.811 *(46.05)*	.154 *(3.92)*	.242 *(6.15)*	.126 *(3.20)*



D38999/24 Jam Nut

Shell Size	V Thread	F Dia.	S	Q	W
9	M12 X 1.0-6g-0.100R	1.189 *(30.24)*	1.063 *(27.03)*	.651 *(16.55)*	.087 *(2.21)*
11	M15 X 1.0-6g-0.100R	1.375 *(34.97)*	1.252 *(31.84)*	.751 *(19.10)*	.087 *(2.21)*
13	M18 X 1.0-6g-0.100R	1.500 *(38.15)*	1.374 *(34.94)*	.938 *(23.85)*	.087 *(2.21)*
15	M22 X 1.0-6g-0.100R	1.626 *(41.35)*	1.500 *(38.15)*	1.062 *(27.01)*	.087 *(2.21)*
17	M25 X 1.0-6g-0.100R	1.752 *(44.55)*	1.626 *(41.35)*	1.187 *(30.19)*	.087 *(2.21)*
19	M28 X 1.0-6g-0.100R	1.937 *(49.26)*	1.811 *(46.05)*	1.312 *(33.36)*	.118 *(3.00)*
21	M31 X 1.0-6g-0.100R	2.063 *(52.46)*	1.937 *(49.26)*	1.437 *(36.54)*	.118 *(3.00)*
23	M34 X 1.0-6g-0.100R	2.189 *(55.67)*	2.063 *(52.46)*	1.562 *(39.72)*	.118 *(3.00)*
25	M37 X 1.0-6g-0.100R	2.311 *(58.77)*	2.189 *(55.67)*	1.687 *(42.90)*	.118 *(3.00)*



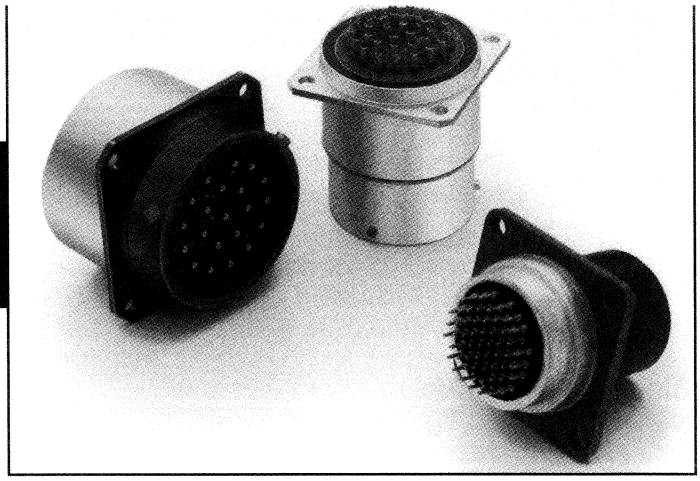
Dimensions in inches *(mm)*

Custom Connectors

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SPECTRUM CONTROL INC.

Extended Shell Filtered Connectors



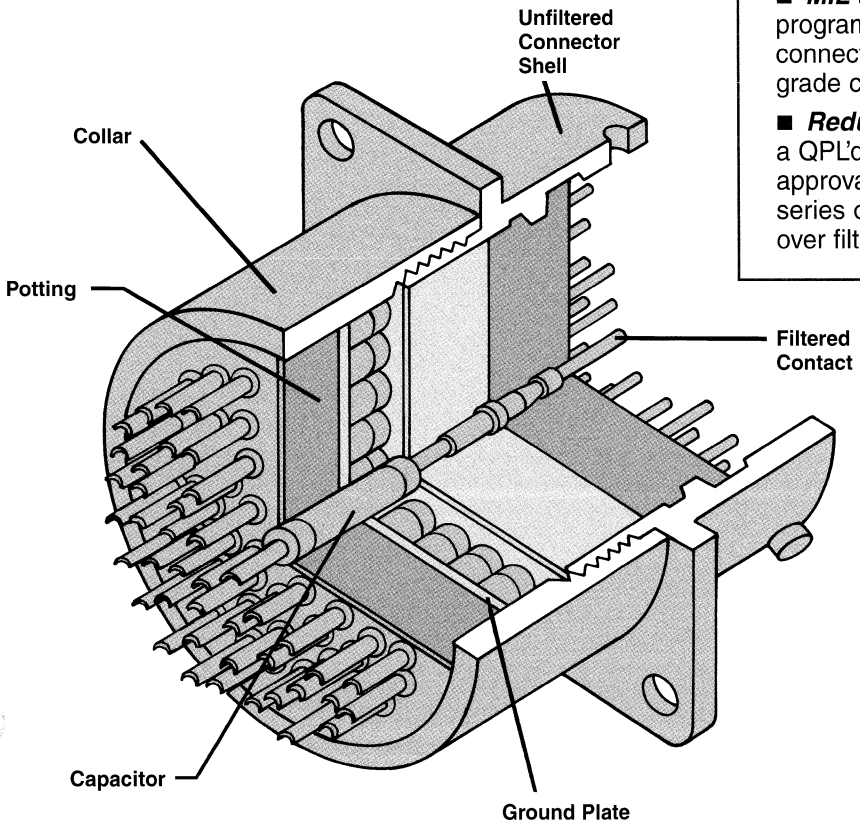
This extended shell design is used in all MIL series connectors including 38999, 24308, 83723, and 26482. This connector is constructed by adding filters to the rear of a standard connector. The method of filtering can be either planars or tubular capacitors.

Extended shell connectors are ideal where quick turnaround is required for prototype devices. The range of filtering within the connector can be expanded due to the availability of either tubular or planar capacitors. In addition, custom schematics (such as double **Pi**, double **L**, or **T** sections) and transient voltage protection devices can be included in the connector.

For more information on extended shell connectors, refer to pages 170-186.

Spectrums Control Advantages

- ***Retrofit existing connectors*** - We can add filters to customer supplied connectors, saving time during prototype phase and expediting system evaluation.
- ***Design flexibility and quality assurance*** - We are vertically integrated with ceramic capacitors, enabling us to offer a broad selection of this critical component and ensuring design versatility and manufacturing control.
- ***Prototypes*** - Our EMI filtering expertise and large capacitor inventory allow us to quickly provide a working sample of your filtered connector.
- ***Economy and turnaround*** - Most components we utilize are standards, minimizing our tooling requirements and providing cost savings and a shorter lead time.
- ***MIL and commercial applications*** - Reduce program costs by utilizing our extended shell connectors for both MIL spec and commercial grade connectors.
- ***Reduce testing and qualification*** - Use of a QPL'd connector interface can expedite your approval process. In addition, we can filter any series of connectors . . . eliminating concerns over filter connector availability.



For 38999 compact shell design, see page 162.

SPECTRUM CONTROL INC.

MIL-C-38999, Extended Shell



Ordering Information

Available connector styles and shell sizes for this MIL series are shown on the following pages. Refer to these pages and the information below to develop your connector part number.

Custom Designs

Due to the versatility provided with this product design, custom requirements can be readily accommodated. Consult Spectrum Control for your specific needs.

Materials and Finishes

Shell . . . . . As noted in Ordering Information
Backshell . . . . . Copper Alloy, Nickel Plate
Contacts . . . . . Copper alloy, gold plate per MIL-G-45204

(For electrical specifications, see page 161.)

F	8	C	A	23	B	35	P	N	4	102

Extended Shell Indicator

MIL Indicator
8=MIL-C-38999

Series Indicator
A=Series I
B=Series II
C=Series III
D=Series IV

Shell Style
A - Wall mount (front panel)
B - Box mount (front panel)
C - Jam nut
D - Wall mount (rear panel)
E - Box mount (rear panel)
F - Hermetic jam nut
G - Hermetic wallmount
H - Straight plug
I - Hermetic box mount

Shell Size
9, 11, 13, 15, 17, 19, 21, 23 and 25

8, 10, 12, 14, 16, 18, 20, 22 and 24. Series II only

Finish
B - Olive drab cadmium
D - Stainless steel, fused tin (hermetics only)
N - Stainless steel, electrodeposited nickel (hermetics only)
E - Stainless steel, passivated

Contact Arrangement
See below

Contact/ Termination Type
P - Pin/PC tail
S - Pin/solder cup
B - Socket/PC tail
D - Socket/Solder cup

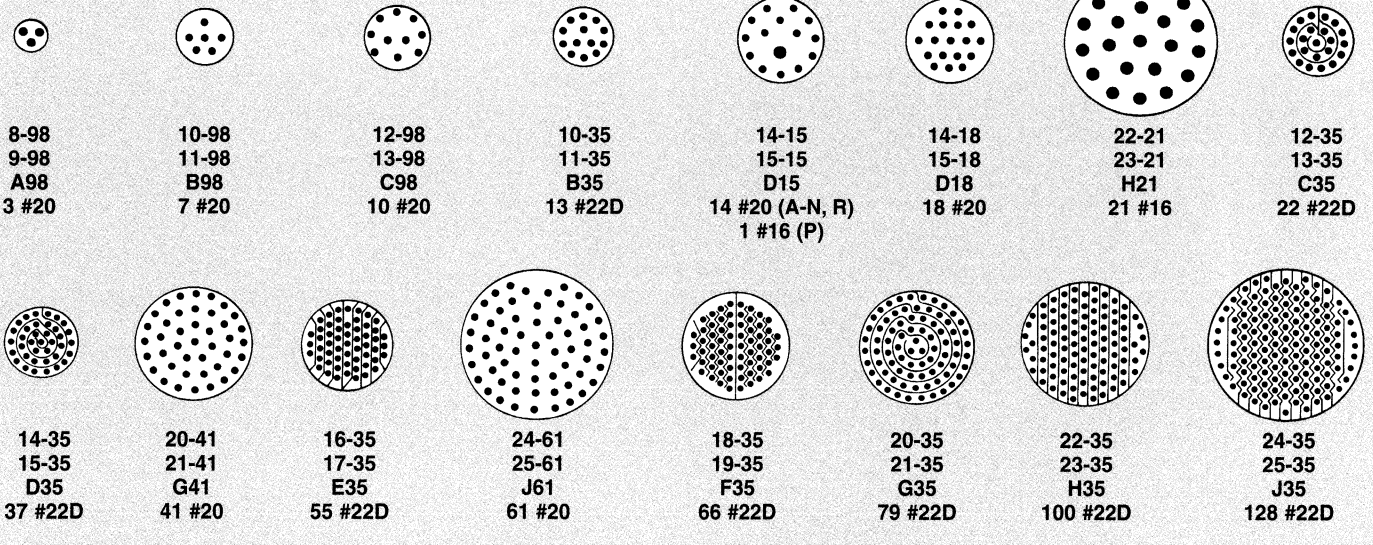
Alternate Shell Position
N, A, B, C, D - All
E - Series III only

Filter Schematic
"1" = "C" feed-thru
"4" = Pi

Filter Capacitance
Specify by using EIA codes. Two significant digits plus number of zeros.
Example:
102 = 1000pF
303 = 30.0nF
104 =. 1µF
* See table page 161

Contact Arrangements (First two digits shell size, second two contact arrangement)

Note: First set of numbers represents Series II, second Series I, third Series III & IV, and Fourth # of contacts and size.



8-98 9-98 A98 3 #20	10-98 11-98 B98 7 #20	12-98 13-98 C98 10 #20	10-35 11-35 B35 13 #22D	14-15 15-15 D15 14 #20 (A-N, R) 1 #16 (P)	14-18 15-18 D18 18 #20	22-21 23-21 H21 21 #16	12-35 13-35 C35 22 #22D
14-35 15-35 D35 37 #22D	20-41 21-41 G41 41 #20	16-35 17-35 E35 55 #22D	24-61 25-61 J61 61 #20	18-35 19-35 F35 66 #22D	20-35 21-35 G35 79 #22D	22-35 23-35 H35 100 #22D	24-35 25-35 J35 128 #22D

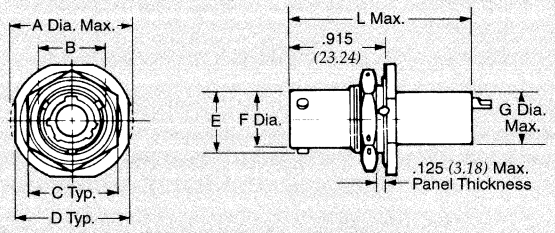
Note: For availability of filtered connectors with custom requirements, such as mixed capacitance, insulated lines, ground lines or other contact arrangements, consult factory for specific part number.

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MIL-C-38999, Extended Shell Series I

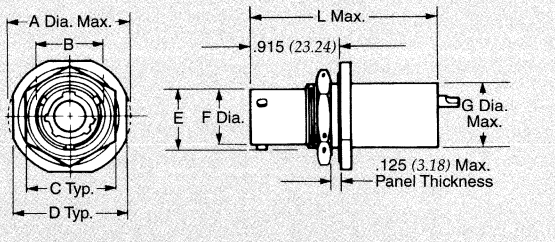
MS27468 Jam Nut Receptacle

Shell Size	A	B	C	D	E	F	G	L
9	1.199 *(30.45)*	.697 *(17.70)*	.875 *(22.23)*	1.062 *(26.97)*	.669 *(16.99)*	.572 *(14.53)*	.515 *(13.08)*	1.715 *(43.56)*
11	1.386 *(35.20)*	.822 *(20.88)*	1.000 *(25.40)*	1.250 *(31.75)*	.769 *(19.53)*	.700 *(17.78)*	.640 *(16.26)*	1.715 *(43.56)*
13	1.511 *(38.38)*	1.007 *(25.58)*	1.188 *(30.18)*	1.375 *(34.93)*	.955 *(24.26)*	.850 *(21.59)*	.765 *(19.43)*	1.715 *(43.56)*
15	1.636 *(41.55)*	1.134 *(28.80)*	1.312 *(33.32)*	1.500 *(38.10)*	1.084 *(27.53)*	.975 *(24.77)*	.890 *(22.61)*	1.715 *(43.56)*
17	1.761 *(44.73)*	1.259 *(31.98)*	1.438 *(36.53)*	1.625 *(41.28)*	1.208 *(30.68)*	1.100 *(27.94)*	1.015 *(25.78)*	1.715 *(43.56)*
19	1.949 *(49.50)*	1.384 *(35.15)*	1.562 *(39.67)*	1.812 *(46.02)*	1.333 *(33.86)*	1.207 *(30.66)*	1.140 *(28.96)*	1.715 *(43.56)*
21	2.073 *(52.65)*	1.507 *(38.28)*	1.688 *(42.88)*	1.938 *(49.23)*	1.459 *(37.06)*	1.332 *(33.83)*	1.265 *(32.13)*	1.745 *(44.32)*
23	2.199 *(55.85)*	1.634 *(41.50)*	1.812 *(46.02)*	2.062 *(52.37)*	1.575 *(40.01)*	1.457 *(37.01)*	1.390 *(35.31)*	1.745 *(44.32)*
25	2.323 *(59.00)*	1.759 *(44.68)*	2.000 *(50.80)*	2.188 *(55.58)*	1.709 *(43.41)*	1.582 *(40.18)*	1.515 *(38.48)*	1.745 *(44.32)*



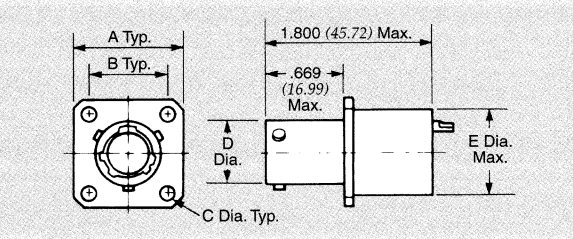
MS27470 Hermetic Seal Jam Nut Receptacle

Shell Size	A	B	C	D	E	F	G	L
9	1.199 *(30.45)*	.697 *(17.70)*	.875 *(22.23)*	1.062 *(26.97)*	.669 *(16.99)*	.572 *(14.53)*	.730 *(18.54)*	1.860 *(47.24)*
11	1.386 *(35.20)*	.822 *(20.88)*	1.000 *(25.40)*	1.250 *(31.75)*	.769 *(19.53)*	.700 *(17.78)*	.855 *(21.72)*	1.860 *(47.24)*
13	1.511 *(38.38)*	1.007 *(25.58)*	1.188 *(30.18)*	1.375 *(34.93)*	.955 *(24.26)*	.850 *(21.59)*	.980 *(24.89)*	1.860 *(47.24)*
15	1.636 *(41.55)*	1.134 *(28.80)*	1.312 *(33.32)*	1.500 *(38.10)*	1.084 *(27.53)*	.975 *(24.77)*	1.105 *(28.07)*	1.860 *(47.24)*
17	1.761 *(44.73)*	1.259 *(31.98)*	1.438 *(36.53)*	1.625 *(41.28)*	1.208 *(30.68)*	1.100 *(27.94)*	1.230 *(31.24)*	1.860 *(47.24)*
19	1.949 *(49.50)*	1.384 *(35.15)*	1.562 *(39.67)*	1.812 *(46.02)*	1.333 *(33.86)*	1.207 *(30.66)*	1.355 *(34.42)*	1.885 *(47.88)*
21	2.073 *(52.65)*	1.507 *(38.28)*	1.688 *(42.88)*	1.938 *(49.23)*	1.459 *(37.06)*	1.332 *(33.83)*	1.405 *(35.69)*	1.885 *(47.88)*
23	2.199 *(55.85)*	1.634 *(41.50)*	1.812 *(46.02)*	2.062 *(52.37)*	1.575 *(40.01)*	1.457 *(37.01)*	1.605 *(40.77)*	1.885 *(47.88)*
25	2.323 *(59.00)*	1.759 *(44.68)*	2.000 *(50.80)*	2.188 *(55.58)*	1.709 *(43.41)*	1.582 *(40.18)*	1.730 *(43.94)*	1.885 *(47.88)*



MS27469 Hermetic Seal Wall Mount Receptacle

Shell Size	A	B	C	D	E
9	.938 *(23.83)*	.719 *(18.26)*	.128 *(3.25)*	.572 *(14.53)*	.765 *(19.43)*
11	1.031 *(26.19)*	.812 *(20.62)*	.128 *(3.25)*	.700 *(17.78)*	.890 *(22.61)*
13	1.125 *(28.58)*	.906 *(23.01)*	.128 *(3.25)*	.850 *(21.59)*	1.015 *(25.78)*
15	1.219 *(30.96)*	.969 *(24.61)*	.128 *(3.25)*	.975 *(24.77)*	1.140 *(28.96)*
17	1.312 *(33.32)*	1.062 *(26.97)*	.128 *(3.25)*	1.100 *(27.94)*	1.265 *(28.96)*
19	1.438 *(36.53)*	1.156 *(29.36)*	.128 *(3.25)*	1.207 *(30.66)*	1.390 *(35.31)*
21	1.562 *(39.67)*	1.250 *(31.75)*	.128 *(3.25)*	1.332 *(33.83)*	1.515 *(38.48)*
23	1.688 *(42.88)*	1.375 *(34.93)*	.147 *(3.73)*	1.457 *(37.01)*	1.640 *(41.66)*
25	1.812 *(46.02)*	1.500 *(38.10)*	.147 *(3.73)*	1.582 *(40.18)*	1.765 *(44.83)*



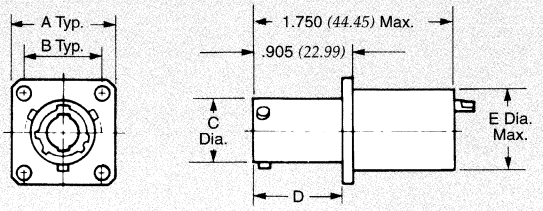
Dimensions in inches *(mm)*

SPECTRUM CONTROL INC.

MIL-C-38999, Extended Shell Series I

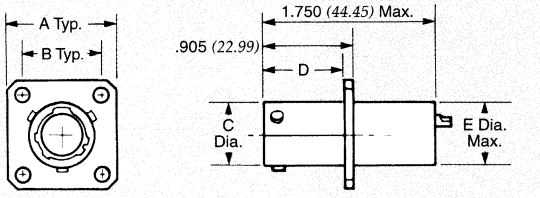
MS27496 Box Mount Receptacle, Front Panel Mounting

Shell Size	A	B	C	D	E
9	.938 *(23.83)*	.719 *(18.26)*	.572 *(14.53)*	.632 *(16.05)*	.495 *(12.57)*
11	1.031 *(26.19)*	.812 *(20.62)*	.700 *(17.78)*	.632 *(16.05)*	.620 *(15.75)*
13	1.125 *(28.58)*	.906 *(23.01)*	.850 *(21.59)*	.632 *(16.05)*	.745 *(18.92)*
15	1.219 *(30.96)*	.969 *(24.61)*	.975 *(24.77)*	.632 *(16.05)*	.870 *(22.10)*
17	1.312 *(33.32)*	1.062 *(27.10)*	1.100 *(27.94)*	.632 *(16.05)*	.995 *(25.27)*
19	1.438 *(36.53)*	1.156 *(29.36)*	1.207 *(30.66)*	.632 *(16.05)*	1.115 *(28.32)*
21	1.562 *(39.67)*	1.250 *(31.75)*	1.332 *(33.83)*	.602 *(15.29)*	1.235 *(31.37)*
23	1.688 *(42.88)*	1.375 *(34.93)*	1.457 *(37.05)*	.602 *(15.29)*	1.360 *(34.54)*
25	1.812 *(46.02)*	1.500 *(38.10)*	1.582 *(40.18)*	.602 *(15.29)*	1.485 *(37.72)*



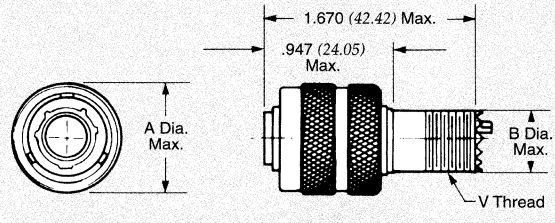
MS27505 Box Mount Receptacle, Back Panel Mounting

Shell Size	A	B	C	D	E
9	.938 *(23.83)*	.719 *(18.26)*	.572 *(14.53)*	.820 *(20.83)*	.495 *(12.57)*
11	1.031 *(26.19)*	.812 *(20.62)*	.700 *(17.78)*	.820 *(20.83)*	.620 *(15.75)*
13	1.125 *(28.58)*	.906 *(23.01)*	.850 *(21.59)*	.820 *(20.83)*	.745 *(18.92)*
15	1.219 *(30.96)*	.969 *(24.61)*	.975 *(24.77)*	.820 *(20.83)*	.870 *(22.10)*
17	1.312 *(33.32)*	1.062 *(27.10)*	1.100 *(27.94)*	.820 *(20.83)*	.995 *(25.27)*
19	1.438 *(36.53)*	1.156 *(29.36)*	1.207 *(30.66)*	.820 *(20.83)*	1.115 *(28.32)*
21	1.562 *(39.67)*	1.250 *(31.75)*	1.332 *(33.83)*	.790 *(20.07)*	1.235 *(31.37)*
23	1.688 *(42.88)*	1.375 *(34.93)*	1.457 *(37.01)*	.790 *(20.07)*	1.360 *(34.54)*
25	1.812 *(46.02)*	1.500 *(38.10)*	1.582 *(40.18)*	.790 *(20.07)*	1.485 *(37.72)*



MS27467 Straight Plug

Shell Size	A	B	V
9	.844 *(21.44)*	.540 *(13.72)*	.4375-28 UNEF-2A
11	.969 *(24.61)*	.660 *(16.76)*	.5625-24 UNEF-2A
13	1.141 *(28.98)*	.785 *(19.94)*	.6875-24 UNEF-2A
15	1.266 *(32.16)*	.915 *(23.24)*	.8125-20 UNEF-2A
17	1.391 *(35.33)*	1.025 *(26.04)*	.9375-20 UNEF-2A
19	1.500 *(38.10)*	1.145 *(29.08)*	1.0625-18 UNEF-2A
21	1.625 *(41.28)*	1.270 *(32.26)*	1.1875-18 UNEF-2A
23	1.750 *(44.45)*	1.395 *(35.43)*	1.3125-18 UNEF-2A
25	1.875 *(47.63)*	1.520 *(38.61)*	1.4375-18 UNEF-2A



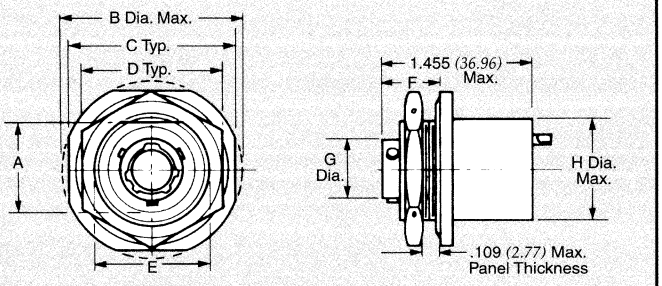
Dimensions in inches *(mm)*

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MIL-C-38999, Extended Shell Series II

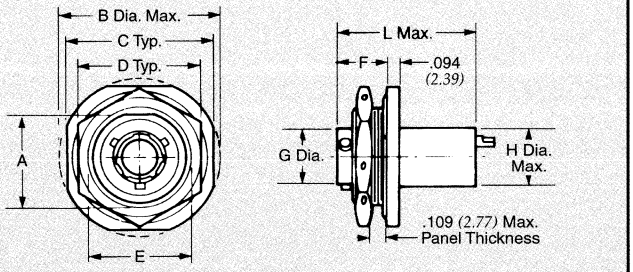
MS27477 Hermetic Jam Nut Receptacle

Shell Size	A	B	C	D	E	F	G	H
8	.830 (21.08)	1.390 (35.31)	1.250 (31.75)	1.062 (26.97)	.884 (22.45)	.438 (11.13)	.473 (12.01)	.435 (11.05)
10	.955 (24.26)	1.515 (38.48)	1.375 (34.93)	1.188 (30.18)	1.007 (25.58)	.438 (11.13)	.590 (14.99)	.525 (13.34)
12	1.084 (27.53)	1.640 (41.66)	1.500 (38.10)	1.312 (33.32)	1.134 (28.80)	.438 (11.13)	.750 (19.05)	.665 (16.89)
14	1.208 (30.68)	1.765 (44.83)	1.625 (41.28)	1.438 (36.53)	1.259 (31.98)	.438 (11.13)	.875 (22.23)	.785 (19.94)
16	1.333 (33.86)	1.953 (49.61)	1.781 (45.24)	1.562 (39.67)	1.384 (35.15)	.438 (11.13)	1.000 (25.40)	.915 (23.24)
18	1.459 (37.06)	2.031 (51.59)	1.890 (48.01)	1.688 (42.88)	1.507 (38.28)	.438 (11.13)	1.125 (28.50)	.985 (25.02)
20	1.576 (40.03)	2.156 (54.76)	2.016 (51.21)	1.812 (46.02)	1.634 (41.50)	.464 (11.79)	1.250 (31.75)	1.135 (28.83)
22	1.701 (43.21)	2.280 (57.91)	2.140 (54.31)	2.000 (50.80)	1.759 (44.68)	.464 (11.79)	1.375 (34.93)	1.255 (31.88)
24	1.826 (46.38)	2.405 (61.09)	2.265 (57.53)	2.125 (53.98)	1.884 (47.85)	.464 (11.79)	1.500 (38.10)	1.385 (35.18)



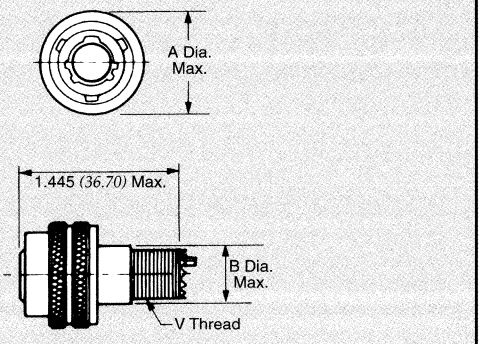
MS27474 Jam Nut Receptacle

Shell Size	A	B	C	D	E	F	G	H	L
8	.830 (21.08)	1.390 (35.31)	1.250 (31.75)	1.062 (26.97)	.884 (22.45)	.438 (11.13)	.473 (12.01)	.515 (13.08)	1.370 (34.80)
10	.955 (24.26)	1.515 (38.48)	1.375 (34.93)	1.188 (30.18)	1.007 (25.58)	.438 (11.13)	.590 (14.99)	.640 (16.26)	1.370 (34.80)
12	1.084 (27.53)	1.640 (41.66)	1.500 (38.10)	1.312 (33.32)	1.134 (28.80)	.438 (11.13)	.750 (19.05)	.765 (19.43)	1.370 (34.80)
14	1.208 (30.68)	1.765 (44.83)	1.625 (41.28)	1.438 (36.53)	1.259 (31.98)	.438 (11.13)	.875 (22.23)	.890 (22.61)	1.370 (34.80)
16	1.333 (33.86)	1.953 (49.61)	1.781 (45.24)	1.562 (39.67)	1.384 (35.15)	.438 (11.13)	1.000 (25.40)	1.015 (25.78)	1.370 (34.80)
18	1.459 (37.06)	2.031 (51.59)	1.890 (48.01)	1.688 (42.88)	1.507 (38.28)	.438 (11.13)	1.125 (28.58)	1.140 (28.96)	1.370 (34.80)
20	1.576 (40.03)	2.156 (54.76)	2.016 (51.21)	1.812 (46.02)	1.634 (41.50)	.464 (11.79)	1.250 (31.75)	1.265 (32.13)	1.395 (35.43)
22	1.701 (43.21)	2.280 (57.91)	2.140 (54.36)	2.000 (50.80)	1.759 (44.68)	.464 (11.79)	1.375 (34.93)	1.390 (35.31)	1.395 (35.43)
24	1.826 (46.38)	2.405 (61.09)	2.265 (57.53)	2.125 (53.98)	1.884 (47.85)	.464 (11.79)	1.500 (38.10)	1.515 (38.48)	1.395 (35.43)



MS27484 Straight Plug

Shell Size	A	B	V Thread Modified Class 2-A	Modified Major Dia.
8	.734 (18.64)	.540 (13.72)	.4375-28 UNEF	.421-.417
10	.844 (21.44)	.660 (16.76)	.5625-24 UNEF	.542-.538
12	1.016 (25.81)	.785 (19.94)	.6875-24 UNEF	.667-.663
14	1.141 (28.98)	.915 (23.24)	.8125-20 UNEF	.791-.787
16	1.265 (32.13)	1.025 (26.04)	.9375-20 UNEF	.916-.912
18	1.391 (35.33)	1.145 (29.08)	1.0625-18 UNEF	1.034-1.030
20	1.500 (38.10)	1.270 (32.26)	1.875-18 UNEF	1.158-1.154
22	1.625 (41.28)	1.395 (35.43)	1.3125-18 UNEF	1.283-1.279
24	1.750 (44.45)	1.520 (38.61)	1.4375-18 UNEF	1.408-1.404

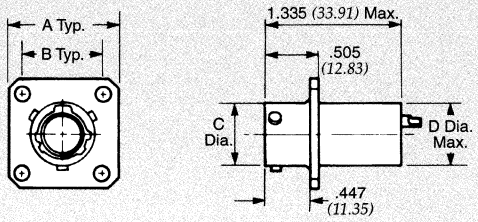


Dimensions in inches *(mm)*

MIL-C-38999, Extended Shell Series II

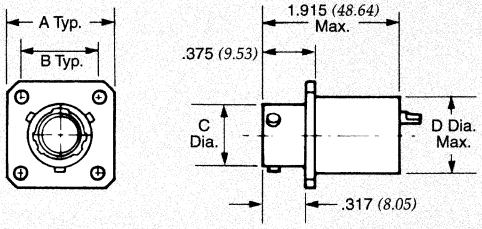
MS27508 Box Mount Receptacle, Back Panel Mounting

Shell Size	A	B	C	D
8	.812 (20.62)	.594 (15.09)	.473 (12.01)	.495 (12.57)
10	.938 (23.83)	.719 (18.26)	.590 (14.99)	.620 (15.75)
12	1.031 (26.19)	.812 (20.62)	.750 (19.05)	.745 (18.92)
14	1.125 (28.58)	.906 (23.01)	.875 (22.23)	.870 (22.10)
16	1.219 (30.96)	.969 (24.61)	1.000 (25.40)	.995 (25.27)
18	1.312 (33.32)	1.062 (27.10)	1.125 (28.58)	1.115 (28.32)
20	1.438 (36.53)	1.156 (29.36)	1.250 (31.75)	1.235 (31.37)
22	1.562 (39.67)	1.250 (31.75)	1.375 (34.93)	1.360 (34.54)
24	1.688 (42.88)	1.375 (34.93)	1.500 (38.10)	1.485 (37.72)



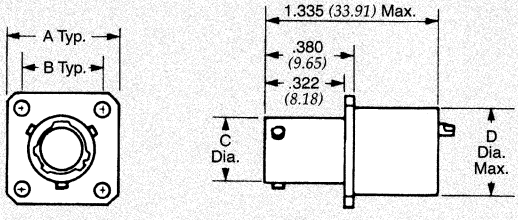
MS27476 Hermetic Seal, Box Mount Receptacle

Shell Size	A	B	C	D
10	.938 (23.83)	.719 (18.26)	.590 (14.99)	.750 (19.05)
12	1.031 (26.19)	.812 (20.62)	.750 (19.05)	.860 (21.84)
14	1.125 (28.58)	.906 (23.01)	.875 (22.23)	.985 (25.02)
16	1.219 (30.96)	.969 (24.61)	1.000 (25.40)	1.110 (28.19)
18	1.312 (33.32)	1.062 (26.97)	1.125 (28.58)	1.235 (31.37)
20	1.438 (36.53)	1.156 (29.36)	1.250 (31.75)	1.330 (33.78)
22	1.562 (39.67)	1.250 (31.75)	1.375 (34.93)	1.455 (36.96)
24	1.688 (42.88)	1.375 (34.93)	1.500 (38.10)	1.580 (40.13)



MS27499 Box Mount Receptacle, Front Panel Mounting

Shell Size	A	B	C	D
8	.812 (20.62)	.594 (15.09)	.473 (12.01)	.495 (12.57)
10	.938 (23.83)	.719 (18.26)	.590 (14.99)	.620 (15.75)
12	1.031 (26.19)	.812 (20.62)	.750 (19.05)	.745 (18.92)
14	1.125 (28.58)	.906 (23.01)	.875 (22.23)	.870 (22.10)
16	1.219 (30.96)	.969 (24.61)	1.000 (25.40)	.995 (25.27)
18	1.312 (33.32)	1.062 (26.97)	1.125 (28.58)	1.115 (28.32)
20	1.438 (36.53)	1.156 (29.36)	1.250 (31.75)	1.235 (31.37)
22	1.562 (39.67)	1.250 (31.75)	1.375 (34.93)	1.360 (34.54)
24	1.688 (42.88)	1.375 (34.93)	1.500 (38.10)	1.485 (37.72)

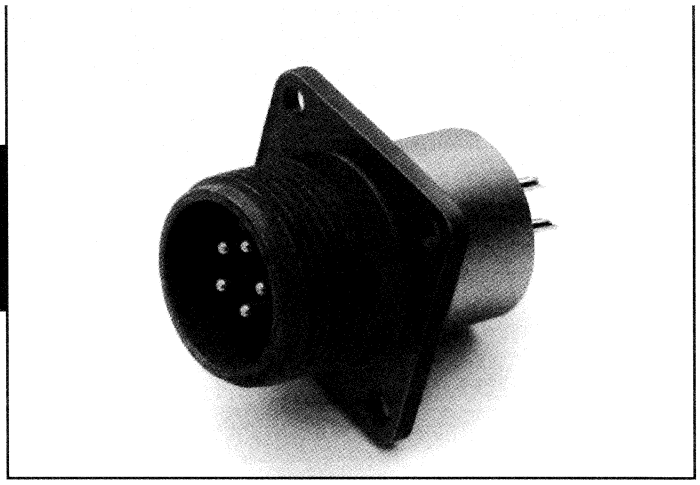


Dimensions in inches *(mm)*

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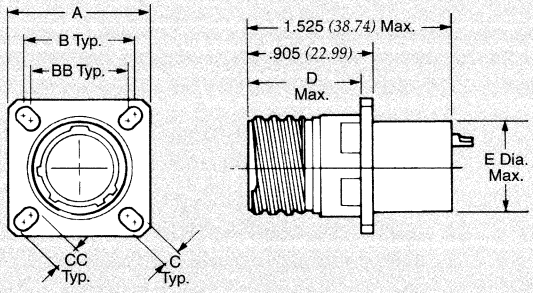
SPECTRUM CONTROL INC.

MIL-C-38999, Extended Shell Series III



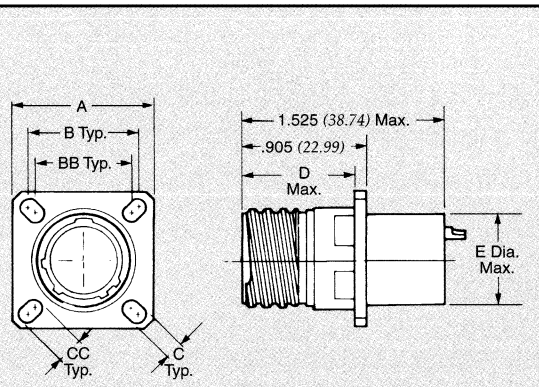
D38999/20 Wall Mount Receptacle

Shell Size	MS Shell Size Code	A	B	BB	C	CC	D	E
9	A	.938 *(23.83)*	.719 *(18.26)*	.594 *(15.09)*	.128 *(3.25)*	.216 *(5.49)*	.820 *(20.83)*	.550 *(13.97)*
11	B	1.031 *(26.19)*	.812 *(20.62)*	.719 *(18.26)*	.128 *(3.25)*	.194 *(4.93)*	.820 *(20.83)*	.670 *(17.02)*
13	C	1.125 *(28.58)*	.906 *(23.01)*	.812 *(20.62)*	.128 *(3.25)*	.194 *(4.93)*	.820 *(20.83)*	.785 *(19.94)*
15	D	1.219 *(30.96)*	.969 *(24.61)*	.906 *(23.01)*	.128 *(3.25)*	.173 *(4.39)*	.820 *(20.83)*	.945 *(24.00)*
17	E	1.312 *(33.32)*	1.062 *(26.97)*	.969 *(24.61)*	.128 *(3.25)*	.194 *(4.93)*	.820 *(20.83)*	1.060 *(26.92)*
19	F	1.438 *(36.53)*	1.156 *(29.36)*	1.062 *(26.97)*	.128 *(3.25)*	.194 *(4.93)*	.820 *(20.83)*	1.180 *(29.97)*
21	G	1.562 *(39.67)*	1.250 *(31.75)*	1.156 *(29.36)*	.128 *(3.25)*	.194 *(4.93)*	.790 *(20.07)*	1.295 *(32.89)*
23	H	1.688 *(42.88)*	1.375 *(34.93)*	1.250 *(31.75)*	.154 *(3.91)*	.242 *(6.15)*	.790 *(20.07)*	1.415 *(35.94)*
25	J	1.812 *(46.02)*	1.500 *(38.10)*	1.375 *(34.93)*	.154 *(3.91)*	.242 *(6.15)*	.790 *(20.07)*	1.535 *(38.99)*



D38999/21 Hermetic Seal Box Mount Receptacle

Shell Size	MS Shell Size Code	A	B	BB	C	CC	D	E
9	A	.937 *(23.80)*	.719 *(18.26)*	.594 *(15.09)*	.128 *(3.25)*	.216 *(5.49)*	.843 *(21.41)*	.380 *(9.65)*
11	B	1.031 *(26.20)*	.812 *(20.62)*	.719 *(18.26)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	.500 *(12.70)*
13	C	1.126 *(28.60)*	.906 *(23.01)*	.812 *(20.62)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	.620 *(15.75)*
15	D	1.220 *(31.00)*	.969 *(24.61)*	.906 *(23.01)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	.775 *(19.68)*
17	E	1.311 *(33.30)*	1.062 *(26.97)*	.969 *(24.61)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	.895 *(22.73)*
19	F	1.437 *(36.50)*	1.156 *(29.36)*	1.062 *(26.97)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	1.010 *(25.65)*
21	G	1.563 *(39.70)*	1.250 *(31.75)*	1.156 *(29.36)*	.128 *(3.25)*	.194 *(4.93)*	.843 *(21.41)*	1.130 *(28.70)*
23	H	1.689 *(42.90)*	1.375 *(34.93)*	1.250 *(31.75)*	.154 *(3.91)*	.242 *(6.15)*	.843 *(21.41)*	1.250 *(31.75)*
25	J	1.811 *(46.00)*	1.500 *(38.10)*	1.375 *(34.93)*	.154 *(3.91)*	.242 *(6.15)*	.843 *(21.41)*	1.365 *(34.67)*

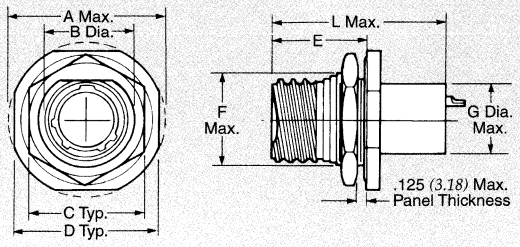


Dimensions in inches *(mm)*

MIL-C-38999, Extended Shell Series III

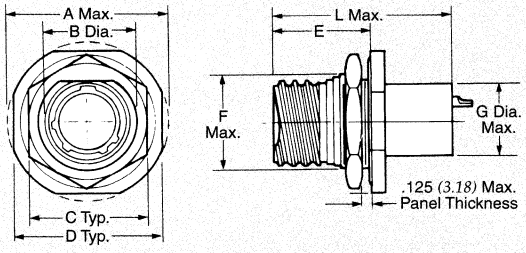
D38999/24 Jam Nut Receptacle

Shell Size	MS Shell Size Code	A	B	C	D	E	F	G	L
9	A	1.199 *(30.45)*	.697 *(17.70)*	.875 *(22.23)*	1.062 *(26.97)*	.871 *(22.12)*	.669 *(16.99)*	.550 *(13.97)*	1.595 *(40.51)*
11	B	1.386 *(35.20)*	.822 *(20.88)*	1.000 *(25.40)*	1.250 *(31.75)*	.871 *(22.12)*	.769 *(19.53)*	.670 *(17.02)*	1.595 *(40.51)*
13	C	1.511 *(38.38)*	1.007 *(25.58)*	1.188 *(30.18)*	1.375 *(34.93)*	.878 *(22.30)*	.955 *(24.26)*	.785 *(19.94)*	1.595 *(40.51)*
15	D	1.636 *(41.55)*	1.134 *(28.80)*	1.312 *(33.32)*	1.500 *(38.10)*	.878 *(22.30)*	1.084 *(27.53)*	.945 *(24.00)*	1.595 *(40.51)*
17	E	1.761 *(44.73)*	1.259 *(31.98)*	1.438 *(36.53)*	1.625 *(41.28)*	.878 *(22.30)*	1.208 *(30.68)*	1.060 *(26.92)*	1.595 *(40.51)*
19	F	1.949 *(49.50)*	1.384 *(35.15)*	1.562 *(39.67)*	1.812 *(46.02)*	.878 *(22.30)*	1.333 *(33.86)*	1.180 *(29.97)*	1.630 *(41.40)*
21	G	2.073 *(52.65)*	1.507 *(38.28)*	1.688 *(42.88)*	1.938 *(49.23)*	.878 *(22.30)*	1.459 *(37.06)*	1.295 *(32.89)*	1.630 *(41.40)*
23	H	2.199 *(55.85)*	1.634 *(41.50)*	1.812 *(46.02)*	2.062 *(52.37)*	.878 *(22.30)*	1.575 *(40.01)*	1.415 *(35.94)*	1.630 *(41.40)*
25	J	2.323 *(59.00)*	1.759 *(44.68)*	2.000 *(50.80)*	2.188 *(55.58)*	.878 *(22.30)*	1.709 *(43.41)*	1.535 *(38.99)*	1.630 *(41.40)*



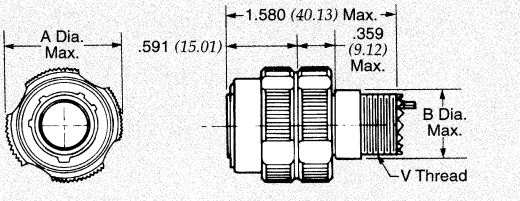
D38999/23 Hermetic Seal Jam Nut Receptacle

Shell Size	MS Shell Size Code	A	B	C	D	E	F	G	L
9	A	1.199 *(30.45)*	.697 *(17.70)*	.875 *(22.23)*	1.062 *(26.97)*	.871 *(22.12)*	.669 *(16.99)*	.730 *(18.54)*	1.955 *(49.66)*
11	B	1.386 *(35.20)*	.822 *(20.88)*	1.000 *(25.40)*	1.250 *(31.75)*	.871 *(22.12)*	.769 *(19.53)*	.845 *(21.46)*	1.955 *(49.66)*
13	C	1.511 *(38.38)*	1.007 *(25.58)*	1.188 *(30.18)*	1.375 *(34.93)*	.878 *(22.30)*	.955 *(24.26)*	.970 *(24.64)*	1.955 *(49.66)*
15	D	1.636 *(41.55)*	1.134 *(28.80)*	1.312 *(33.32)*	1.500 *(38.10)*	.878 *(22.30)*	1.084 *(27.53)*	1.095 *(27.81)*	1.955 *(49.66)*
17	E	1.761 *(44.73)*	1.259 *(31.98)*	1.438 *(36.53)*	1.625 *(41.28)*	.878 *(22.30)*	1.208 *(30.68)*	1.220 *(30.99)*	1.955 *(49.66)*
19	F	1.949 *(49.50)*	1.384 *(35.15)*	1.562 *(39.67)*	1.812 *(46.02)*	.878 *(22.30)*	1.333 *(33.86)*	1.345 *(34.16)*	1.985 *(50.42)*
21	G	2.073 *(52.65)*	1.507 *(38.28)*	1.688 *(42.88)*	1.938 *(49.23)*	.878 *(22.30)*	1.459 *(37.06)*	1.470 *(37.34)*	1.985 *(50.42)*
23	H	2.199 *(55.85)*	1.634 *(41.50)*	1.812 *(46.02)*	2.062 *(52.37)*	.878 *(22.30)*	1.575 *(40.01)*	1.595 *(40.51)*	1.985 *(50.42)*
25	J	2.323 *(59.00)*	1.759 *(44.68)*	2.000 *(50.80)*	2.188 *(55.58)*	.878 *(22.30)*	1.709 *(43.41)*	1.720 *(43.69)*	1.985 *(50.42)*



D38999/26 Straight Plug

Shell Size	MS Shell Size Code	A	B	V Thread
9	A	.859 *(21.82)*	.580 *(14.73)*	M12 X1.0-6g-0.1R
11	B	.969 *(24.61)*	.695 *(17.65)*	M15X1.0-6g-0.1R
13	C	1.141 *(28.98)*	.810 *(20.57)*	M18X1.0-6g-0.1R
15	D	1.266 *(32.16)*	.965 *(24.51)*	M22X1.0-6g-0.1R
17	E	1.391 *(35.33)*	1.080 *(27.43)*	M25X1.0-6g-0.1R
19	F	1.500 *(38.10)*	1.195 *(30.35)*	M28X1.0-6g-0.1R
21	G	1.625 *(41.28)*	1.310 *(33.27)*	M31X1.0-6g-0.1R
23	H	1.750 *(44.45)*	1.425 *(36.20)*	M34X1.0-6g-0.1R
25	J	1.875 *(47.63)*	1.540 *(39.12)*	M37X1.0-6g-0.1R

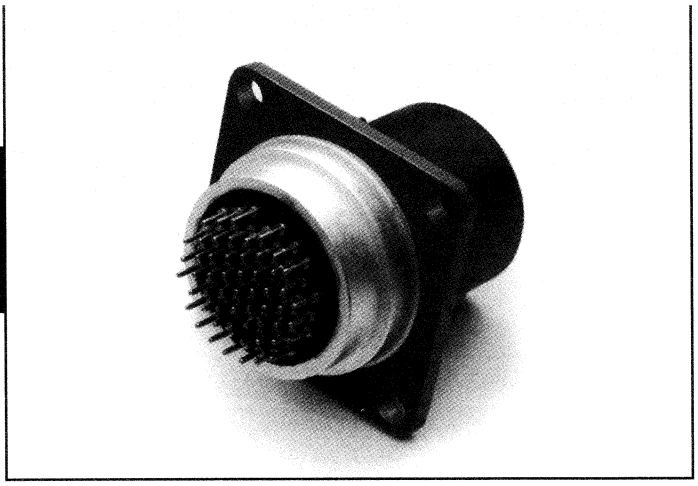


Dimensions in inches *(mm)*

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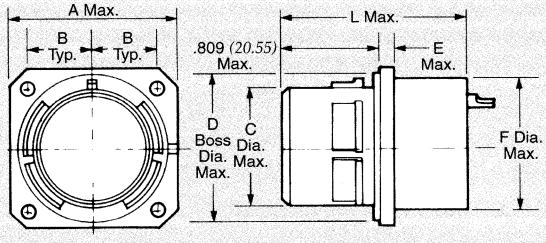
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MIL-C-38999, Extended Shell Series IV



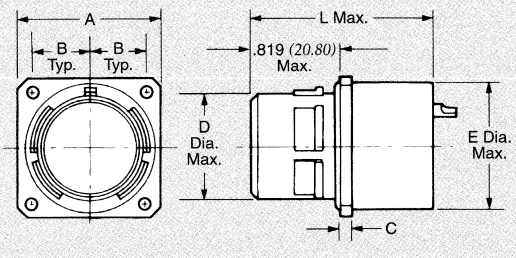
D38999/40 Wall Mount Receptacle

Shell Size	MS Size Size Code	A	B	C	D	E	F	L
11	B	1.051 *(26.70)*	.406 *(10.31)*	.509 *(12.93)*	.793 *(20.14)*	.102 *(2.59)*	.670 *(17.02)*	1.785 *(45.34)*
13	C	1.145 *(29.08)*	.453 *(11.51)*	.634 *(16.10)*	.919 *(23.34)*	.102 *(2.59)*	.785 *(19.94)*	1.785 *(45.34)*
15	D	1.240 *(31.50)*	.4845 *(12.31)*	.759 *(19.28)*	1.044 *(26.52)*	.102 *(2.59)*	.945 *(24.00)*	1.785 *(45.34)*
17	E	1.334 *(33.88)*	.531 *(13.49)*	.885 *(22.48)*	1.170 *(29.72)*	.102 *(2.59)*	1.060 *(26.92)*	1.785 *(45.34)*
19	F	1.480 *(37.06)*	.578 *(14.68)*	1.009 *(25.63)*	1.294 *(32.87)*	.102 *(2.59)*	1.180 *(29.97)*	1.785 *(45.34)*
21	G	1.582 *(40.18)*	.625 *(15.88)*	1.134 *(28.80)*	1.419 *(36.04)*	.133 *(3.38)*	1.295 *(32.89)*	1.815 *(46.10)*
23	H	1.708 *(43.38)*	.6875 *(17.46)*	1.259 *(31.98)*	1.544 *(39.22)*	.133 *(3.38)*	1.415 *(35.94)*	1.815 *(46.10)*
25	J	1.834 *(46.58)*	.750 *(19.05)*	1.384 *(35.15)*	1.669 *(42.39)*	.133 *(3.38)*	1.535 *(38.99)*	1.815 *(46.10)*



D38999/41 Hermetic Seal Box Mount Receptacle

Shell Size	MS Size Size Code	A	B	C	D	E	L
11	B	1.051 *(26.70)*	.406 *(10.31)*	.093 *(2.36)*	.509 *(12.93)*	.500 *(12.70)*	1.785 *(45.34)*
13	C	1.145 *(29.08)*	.453 *(11.51)*	.093 *(2.36)*	.634 *(16.10)*	.620 *(15.75)*	1.785 *(45.34)*
15	D	1.240 *(31.50)*	.4845 *(12.31)*	.093 *(2.36)*	.759 *(19.28)*	.775 *(19.68)*	1.785 *(45.34)*
17	E	1.334 *(33.88)*	.531 *(13.49)*	.093 *(2.36)*	.885 *(22.48)*	.895 *(22.73)*	1.785 *(45.34)*
19	F	1.480 *(37.06)*	.578 *(14.68)*	.093 *(2.36)*	1.009 *(25.68)*	1.010 *(25.65)*	1.785 *(45.34)*
21	G	1.582 *(40.18)*	.625 *(15.88)*	.093 *(2.36)*	1.134 *(28.80)*	1.130 *(28.70)*	1.815 *(46.10)*
23	H	1.708 *(43.38)*	.6875 *(17.46)*	.093 *(2.36)*	1.259 *(31.90)*	1.250 *(31.75)*	1.815 *(46.10)*
25	J	1.834 *(46.58)*	.750 *(19.05)*	.093 *(2.36)*	1.384 *(35.15)*	1.365 *(34.67)*	1.815 *(46.10)*



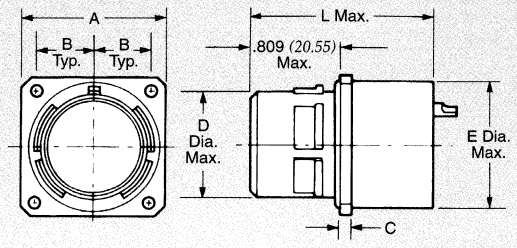
Dimensions in inches *(mm)*

Custom Connectors

MIL-C-38999, Extended Shell Series IV

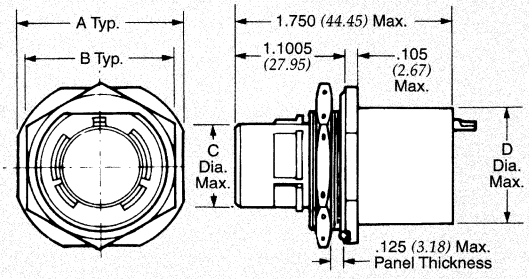
D38999/42 Box Mount Receptacle

Shell Size	Shell Size Size Code	A	B	C	D	E	L
11	B	1.051 *(26.70)*	.406 *(10.31)*	.102 *(2.59)*	.509 *(12.93)*	.655 *(16.64)*	1.785 *(45.34)*
13	C	1.145 *(29.08)*	.453 *(11.51)*	.102 *(2.59)*	.634 *(16.10)*	.770 *(19.56)*	1.785 *(45.34)*
15	D	1.240 *(31.50)*	.4845 *(12.31)*	.102 *(2.59)*	.759 *(19.28)*	.895 *(22.73)*	1.785 *(45.34)*
17	E	1.334 *(33.88)*	.531 *(13.49)*	.102 *(2.59)*	.885 *(22.48)*	1.020 *(25.91)*	1.785 *(45.34)*
19	F	1.460 *(37.08)*	.578 *(14.68)*	.102 *(2.59)*	1.009 *(25.63)*	1.130 *(28.70)*	1.785 *(45.34)*
21	G	1.582 *(40.18)*	.626 *(15.90)*	.133 *(3.38)*	1.134 *(28.80)*	1.250 *(31.75)*	1.815 *(46.10)*
23	H	1.708 *(43.38)*	.6875 *(17.46)*	.133 *(3.38)*	1.259 *(31.98)*	1.375 *(34.93)*	1.815 *(46.10)*
25	J	1.834 *(46.58)*	.750 *(19.05)*	.133 *(3.38)*	1.384 *(35.15)*	1.500 *(38.10)*	1.815 *(46.10)*



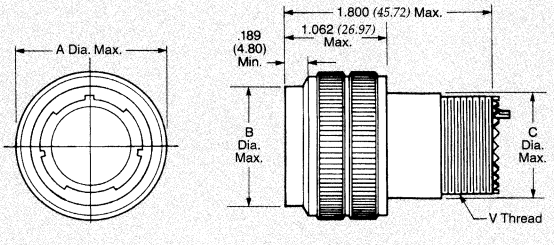
D38999/44 Jam Nut Receptacle

Shell Size	MS Shell Size Code	A	B	C	D
11	B	1.394 *(35.41)*	1.260 *(32.00)*	.509 *(12.93)*	.670 *(17.02)*
13	C	1.520 *(38.61)*	1.417 *(36.00)*	.634 *(16.10)*	.785 *(19.94)*
15	D	1.642 *(41.71)*	1.614 *(41.00)*	.759 *(19.28)*	.945 *(24.00)*
17	E	1.799 *(45.69)*	1.614 *(41.00)*	.885 *(22.48)*	1.060 *(26.92)*
19	F	1.909 *(48.49)*	1.811 *(46.00)*	1.009 *(25.63)*	1.180 *(29.97)*
21	G	2.035 *(51.69)*	1.968 *(50.00)*	1.134 *(28.80)*	1.295 *(32.89)*
23	H	2.157 *(54.79)*	1.968 *(50.00)*	1.259 *(31.98)*	1.415 *(35.94)*
25	J	2.283 *(57.99)*	2.165 *(55.00)*	1.384 *(35.15)*	1.535 *(38.99)*



D38999/46 Straight Plug

Shell Size	MS Shell Size Code	A	B	C	V
11	B	1.054 *(26.77)*	.775 *(19.69)*	.695 *(17.65)*	M15x1.0-6g-0.1R
13	C	1.226 *(31.14)*	.901 *(22.89)*	.810 *(20.57)*	M18x1.0-6g-0.1R
15	D	1.351 *(34.32)*	1.039 *(26.39)*	.965 *(24.51)*	M22x1.0-6g-0.1R
17	E	1.476 *(37.49)*	1.149 *(29.18)*	1.080 *(27.43)*	M25x1.0-6g-0.1R
19	F	1.586 *(40.28)*	1.275 *(32.39)*	1.195 *(30.35)*	M28x1.0-6g-0.1R
21	G	1.711 *(43.46)*	1.401 *(35.59)*	1.310 *(33.27)*	M31x1.0-6g-0.1R
23	H	1.836 *(46.63)*	1.527 *(38.79)*	1.425 *(36.20)*	M34x1.0-6g-0.1R
25	J	1.964 *(49.89)*	1.649 *(41.88)*	1.540 *(39.12)*	M37x1.0-6g-0.1R

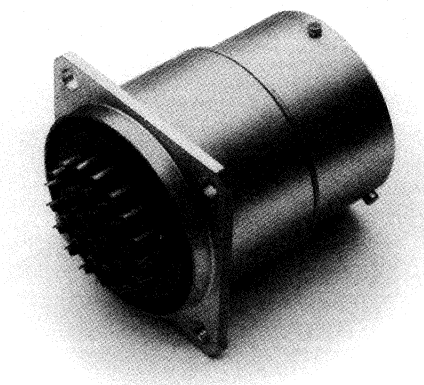


Dimensions in inches *(mm)*

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SPECTRUM CONTROL INC.

MIL-C-83723, Extended Shell Series III



All extended shell connectors are manufactured by adding filters to a standard MIL qualified connector. The filtering is achieved by extending the connector with the use of a backshell and placing either planar or tubular capacitors in the backshell. Spectrum will always keep the extension to a minimum.

These miniature circular filtered connectors are designed to meet the applicable portions of MIL-C-83723 and are intermateable with that specification.

Custom Designs

Due to the versatility provided with this product design, custom requirements can be readily accommodated. Consult Spectrum Control for your specific needs.

Materials and Finishes

Shell . . . . . As noted in Ordering Information
Backshell . . . . . Copper Alloy, Nickel Plate
Contacts . . . . . Copper alloy, gold plate per MIL-G-45204

(For electrical specifications, see page 161.)

Spectrums Control Advantages

- ***Retrofit existing connectors*** - We can add filters to customer supplied connectors, saving time during prototype phase and expediting system evaluation.
- ***Design flexibility and quality assurance*** - We are vertically integrated with ceramic capacitors, enabling us to offer a broad selection of this critical component and ensuring design versatility and manufacturing control.
- ***Prototypes*** - Our EMI filtering expertise and large capacitor inventory allow us to quickly provide a working sample of your filtered connector.
- ***Economy and turnaround*** - Most components we utilize are standards, minimizing our tooling requirements and providing cost savings and a shorter lead time.
- ***MIL and commercial applications*** - Reduce program costs by utilizing our extended shell connectors for both MIL spec and commercial grade connectors.
- ***Reduce testing and qualification*** - Use of a QPL'd connector interface can expedite your approval process. In addition, we can filter any series of connectors . . . eliminating concerns over filter connector availability.

Ordering Information

Available connector styles and shell sizes for this MIL series are shown on the following pages. Refer to these pages and the information below to develop your connector part number.

F	37	A	24	R	61	P	N	4	102

Extended Shell Indicator

MIL Series Indicator
37= MIL-C-83723 Series III

Shell Style
A - Wall mount
B - Hermetic box mount
C - Jam nut
D - Hermetic jam nut
E - Straight plug

Shell Size
8, 10, 12, 14 16, 18, 20, 22 and 24

Finish
R - Aluminum shell, conductive finish
W - Aluminum, cadmium conductive finish
Y - Stainless steel, hermetic seal

Contact Arrangement
See next page

Contact/ Termination Type
P-Pin/PC tail
S-Pin/solder cup
B-Socket/PC tail
D-Socket/Solder cup

Alternate Shell Position

Shell Size	Polarizing Code
All	N (normal)
10, 12, 14, 16, 18, 20, 22, 24	1, 2, 3, 4
18	5
8, 10	6, 7, 8, 9
10	10 (Y)

Filter Schematic
"1" = "C" feed-thru
"4" = Pi

Filter Capacitance
Specify by using EIA codes. Two significant digits plus number of zeros.
Example:
102 = 1000pF
401 = 400pF
* See table page 161

MIL-C-83723, Extended Shell Series III

Contact Arrangements (First two digits shell size, second two contact arrangement)



8-2
2 #20



10-2
2 #20



10-20
2 #16



8-3
3 #20



8-98
3 #20



12-3
3 #16



12-4
4 #16



10-5
5 #20



10-6
6 #20



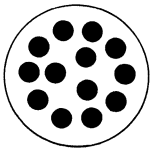
14-7
7 #16



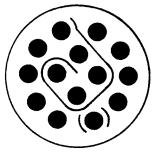
10-16
10 #16



12-12
12 #20



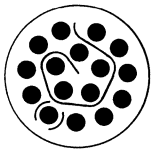
18-13
13 #16



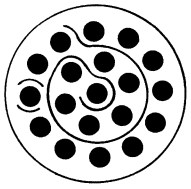
18-14
14 #16



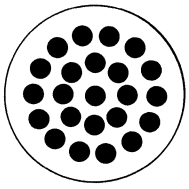
14-15
15 #20



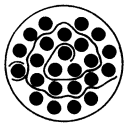
20-16
16 #16



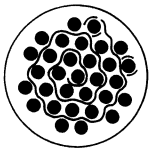
22-19
19 #16



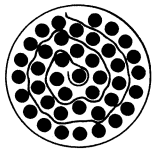
22-23
23 #16



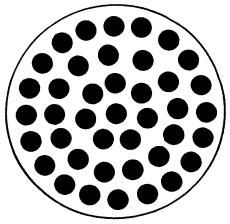
16-24
24 #20



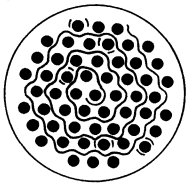
18-31
31 #20



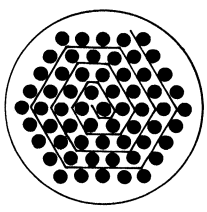
20-41
41 #20



28-41
41 #16



22-55
55 #20



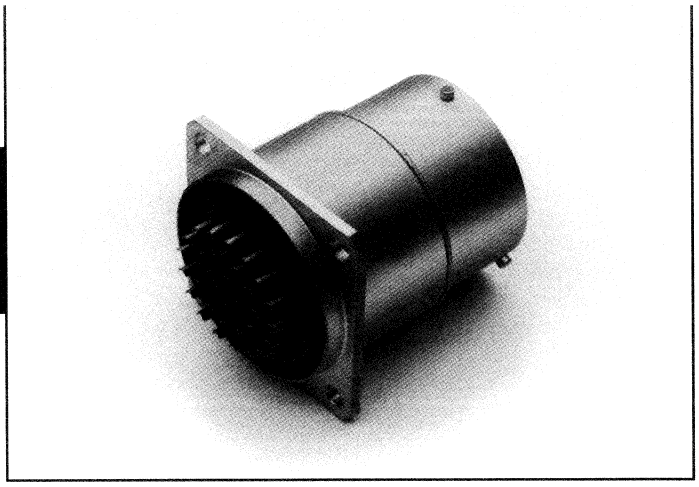
24-61
61 #20

Note:
For availability of filtered connectors with custom requirements, such as mixed capacitance, insulated lines, ground lines or other contact arrangements, consult factory for specific part number.

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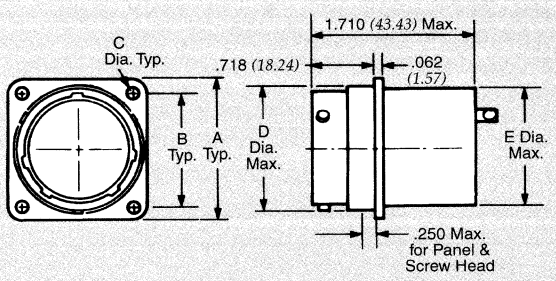
SPECTRUM CONTROL INC.

MIL-C-83723, Extended Shell Series III



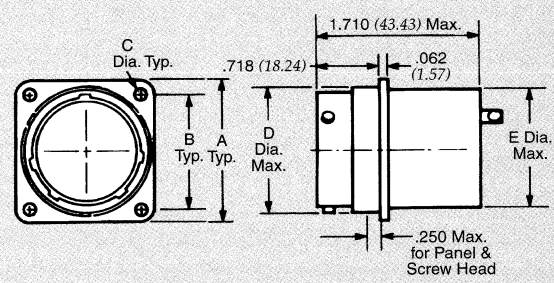
M83723/71/72 Bayonet Coupling Wall Mount Receptacle

Shell Size	A	B	C	D	E
8	.812 *(20.62)*	.594 *(15.09)*	.120 *(3.05)*	.562 *(14.27)*	.575 *(14.61)*
10	.937 *(23.80)*	.719 *(18.26)*	.120 *(3.05)*	.696 *(17.68)*	.700 *(17.78)*
12	1.031 *(26.19)*	.812 *(20.62)*	.120 *(3.05)*	.875 *(22.23)*	.825 *(20.96)*
14	1.125 *(28.58)*	.906 *(23.01)*	.120 *(3.05)*	.935 *(23.75)*	.950 *(24.13)*
16	1.250 *(31.75)*	.969 *(24.61)*	.120 *(3.05)*	1.062 *(26.97)*	1.075 *(27.31)*
18	1.343 *(34.11)*	1.062 *(26.97)*	.120 *(3.05)*	1.187 *(30.15)*	1.140 *(28.96)*
20	1.473 *(37.41)*	1.156 *(29.36)*	.120 *(3.05)*	1.312 *(33.32)*	1.265 *(32.13)*
22	1.562 *(39.67)*	1.250 *(31.75)*	.120 *(3.05)*	1.437 *(36.50)*	1.340 *(34.04)*
24	1.703 *(43.26)*	1.375 *(34.93)*	.149 *(3.78)*	1.562 *(39.67)*	1.515 *(38.48)*



M83723/79 Bayonet Coupling Hermetic Box Receptacle

Shell Size	A	B	C	D	E
8	.812 *(20.62)*	.594 *(15.09)*	.120 *(3.05)*	.562 *(14.27)*	.580 *(14.73)*
10	.937 *(23.80)*	.719 *(18.26)*	.120 *(3.05)*	.696 *(17.68)*	.645 *(16.38)*
12	1.031 *(26.19)*	.812 *(20.62)*	.120 *(3.05)*	.875 *(22.23)*	.830 *(21.08)*
14	1.125 *(28.58)*	.906 *(23.01)*	.120 *(3.05)*	.935 *(23.75)*	.895 *(22.73)*
16	1.250 *(31.75)*	.969 *(24.61)*	.120 *(3.05)*	1.062 *(26.97)*	1.020 *(25.91)*
18	1.343 *(34.11)*	1.062 *(26.97)*	.120 *(3.05)*	1.187 *(30.15)*	1.145 *(29.08)*
20	1.473 *(37.41)*	1.156 *(29.36)*	.120 *(3.05)*	1.312 *(33.32)*	1.270 *(32.26)*
22	1.562 *(39.67)*	1.250 *(31.75)*	.120 *(3.05)*	1.437 *(36.50)*	1.395 *(35.43)*
24	1.703 *(43.26)*	1.375 *(34.93)*	.149 *(3.78)*	1.562 *(39.67)*	1.520 *(38.61)*

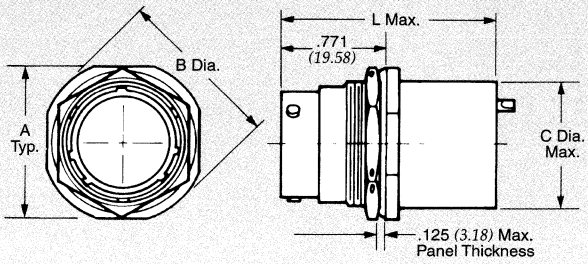


Dimensions in inches *(mm)*

MIL-C-83723, Extended Shell Series III

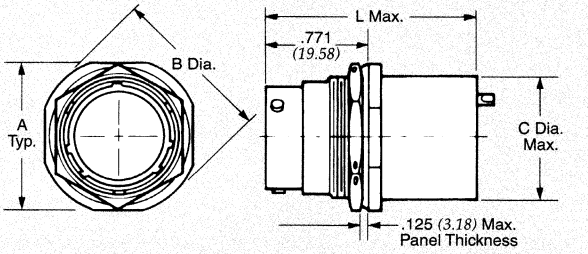
M83723/73/74 Bayonet Coupling Jam Nut Receptacle

Shell Size	A	B	C	L
8	.979 *(24.87)*	1.068 *(27.13)*	.575 *(14.61)*	1.830 *(46.48)*
10	1.104 *(28.04)*	1.192 *(30.28)*	.700 *(17.78)*	1.830 *(46.48)*
12	1.291 *(32.79)*	1.380 *(35.05)*	.825 *(20.96)*	1.830 *(46.48)*
14	1.391 *(35.33)*	1.505 *(38.23)*	.950 *(24.13)*	1.830 *(46.48)*
16	1.516 *(38.51)*	1.630 *(41.40)*	1.075 *(27.31)*	1.830 *(46.48)*
18	1.641 *(41.68)*	1.756 *(44.60)*	1.140 *(28.96)*	1.830 *(46.48)*
20	1.766 *(44.86)*	1.860 *(47.24)*	1.265 *(32.13)*	1.830 *(46.48)*
22	1.954 *(49.63)*	2.068 *(52.53)*	1.340 *(34.04)*	1.860 *(47.24)*
24	2.079 *(52.81)*	2.160 *(54.86)*	1.515 *(38.48)*	1.860 *(47.24)*



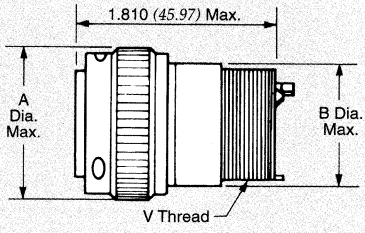
M83723/81 Bayonet Coupling Hermetic Jam Nut Receptacle

Shell Size	A	B	C	L
8	.979 *(24.87)*	1.068 *(27.13)*	.490 *(12.45)*	1.670 *(42.42)*
10	1.104 *(28.04)*	1.192 *(30.28)*	.550 *(13.97)*	1.670 *(42.42)*
12	1.291 *(32.79)*	1.380 *(35.05)*	.740 *(18.80)*	1.670 *(42.42)*
14	1.391 *(35.33)*	1.505 *(38.23)*	.800 *(20.32)*	1.670 *(42.42)*
16	1.516 *(38.51)*	1.630 *(41.40)*	.925 *(23.50)*	1.670 *(42.42)*
18	1.641 *(41.68)*	1.756 *(47.24)*	1.050 *(26.67)*	1.670 *(42.42)*
20	1.766 *(44.86)*	1.860 *(47.24)*	1.240 *(31.50)*	1.670 *(42.42)*
22	1.954 *(49.63)*	2.068 *(52.53)*	1.300 *(33.02)*	1.670 *(42.42)*
24	2.079 *(52.81)*	2.160 *(54.86)*	1.490 *(37.85)*	1.670 *(42.42)*



M83723/77/78 Bayonet Coupling Straight Plug

Shell Size	A	B	V
8	.766 *(19.46)*	.590 *(14.99)*	1/2-20 UNEF-2A
10	.906 *(23.01)*	.720 *(18.29)*	5/8-24 UNEF-2A
12	1.078 *(27.38)*	.840 *(21.34)*	3/4-20 UNEF-2A
14	1.141 *(28.98)*	.965 *(24.51)*	7/8-20 UNEF-2A
16	1.266 *(32.16)*	1.090 *(27.69)*	1-20 UNEF-2A
18	1.375 *(34.93)*	1.14 *(29.08)*	1 1/16-18 UNEF-2A
20	1.510 *(38.35)*	1.270 *(32.26)*	1 3/16-18 UNEF-2A
22	1.625 *(41.28)*	1.395 *(35.43)*	1 5/16-18 UNEF-2A
24	1.760 *(44.70)*	1.520 *(38.61)*	1 7/16-18 UNEF-2A

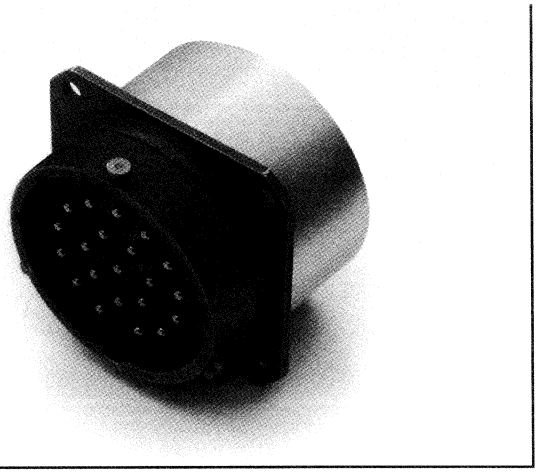


Dimensions in inches *(mm)*

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SPECTRUM CONTROL INC.

MIL-C-26482, Extended Shell



All extended shell connectors are manufactured by adding filters to a standard MIL qualified connector. The filtering is achieved by extending the connector with the use of a backshell and placing either planar or tubular capacitors in the backshell. Spectrum will always keep the extension to a minimum.

These miniature circular filtered connectors are designed to meet the applicable portions of MIL-C-83723 and are intermateable with that specification.

Custom Designs

Due to the versatility provided with this product design, custom requirements can be readily accommodated. Consult Spectrum Control for your specific needs.

Materials and Finishes

Shell . . . . . As noted in Ordering Information
Backshell . . . . . Copper Alloy, Nickel Plate
Contacts . . . . . Copper alloy, gold plate per MIL-G-45204

(For electrical specifications, see page 161.)

Spectrums Control Advantages

- ***Retrofit existing connectors*** - We can add filters to customer supplied connectors, saving time during prototype phase and expediting system evaluation.
- ***Design flexibility and quality assurance*** - We are vertically integrated with ceramic capacitors, enabling us to offer a broad selection of this critical component and ensuring design versatility and manufacturing control.
- ***Prototypes*** - Our EMI filtering expertise and large capacitor inventory allow us to quickly provide a working sample of your filtered connector.
- ***Economy and turnaround*** - Most components we utilize are standards, minimizing our tooling requirements and providing cost savings and a shorter lead time.
- ***MIL and commercial applications*** - Reduce program costs by utilizing our extended shell connectors for both MIL spec and commercial grade connectors.
- ***Reduce testing and qualification*** - Use of a QPL'd connector interface can expedite your approval process. In addition, we can filter any series of connectors . . . eliminating concerns over filter connector availability.

Ordering Information

Available connector styles and shell sizes for this MIL series are shown on the following pages. Refer to these pages and the information below to develop your connector part number.

F	64	A	20	H	41	P	N	4	102

Extended Shell Indicator

MIL Series Indicator
64= MIL-C-26482

Shell Style
A - Wall mount
B - Wall mount (wide flange)
C - Hermetic box mount
D - Jam Nut
E - Hermetic jam nut
F - Straight plug

Shell Size
8, 10, 12, 14
16, 18, 20, 22
and 24

Finish
H - Hermetic seal
L - Fluid resistant, grommet seal

Contact Arrangement
See next page

Contact/ Termination Type
P-Pin/PC tail
S-Pin/solder cup
B-Socket/PC tail
D-Socket/Solder cup

Alternate Shell Position
N (normal), W, X, Y, Z

Filter Schematic
"1" = "C" feed-thru
"4" = Pi

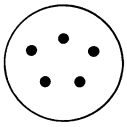
Filter Capacitance
Specify by using EIA codes. Two significant digits plus number of zeros.
Example:
102 = 1000pF
401 = 400pF
* See table page 161

MIL-C-26482, Extended Shell

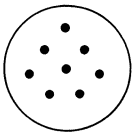
Contact Arrangements (First two digits shell size, second two contact arrangement)



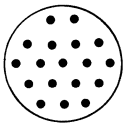
8-98
3 #20



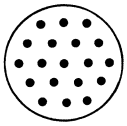
14-5
5 #16



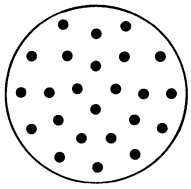
16-8
8 #16



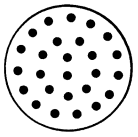
14-18
18 #20



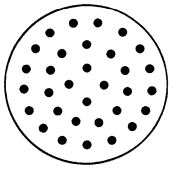
14-19
19 #20



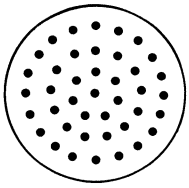
20-24
24 #20



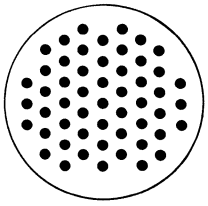
16-26
26 #20



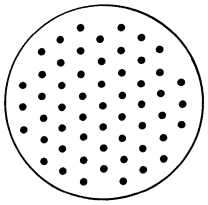
18-32
18 #20



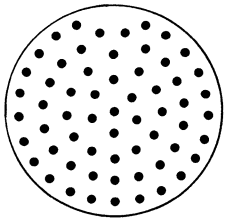
20-41
41 #20



22-53
53 #20



22-55
55 #20



24-61
61 #20

Note:
For availability of filtered connectors with custom requirements, such as mixed capacitance, insulated lines, ground lines or other contact arrangements, consult factory for specific part number.

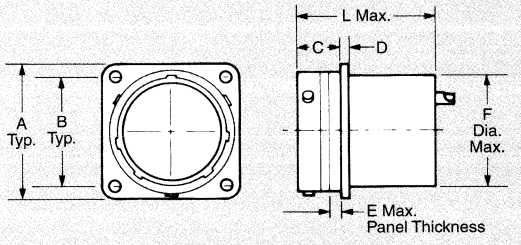
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SPECTRUM CONTROL INC.

MIL-C-26482, Extended Shell

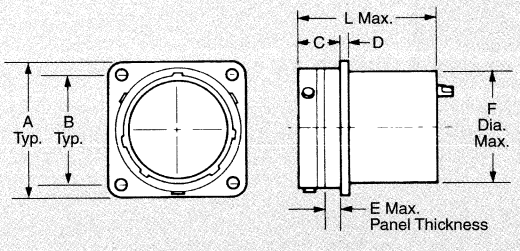
MS3470 Wall Mount Receptacle

Shell Size	A	B	C	D	E	F	L
8	.828 (21.03)	.594 (15.09)	.446 (11.33)	.062 (1.57)	.087 (2.21)	.575 (14.61)	1.575 (40.01)
10	.954 (24.23)	.719 (18.26)	.446 (11.33)	.062 (1.57)	.087 (2.21)	.700 (17.78)	1.575 (40.01)
12	1.047 (26.59)	.812 (20.62)	.446 (11.33)	.062 (1.57)	.087 (2.21)	.825 (20.96)	1.575 (40.01)
14	1.141 (28.98)	.906 (23.01)	.446 (11.33)	.062 (1.57)	.087 (2.21)	.950 (24.13)	1.575 (40.01)
16	1.234 (31.34)	.969 (24.61)	.446 (11.33)	.062 (1.57)	.087 (2.21)	1.075 (27.31)	1.575 (40.01)
18	1.328 (33.73)	1.062 (26.97)	.446 (11.33)	.062 (1.57)	.087 (2.21)	1.140 (28.96)	1.575 (40.01)
20	1.453 (36.91)	1.156 (29.36)	.572 (14.53)	.094 (2.39)	.212 (5.38)	1.265 (32.13)	1.735 (44.07)
22	1.578 (40.08)	1.250 (31.75)	.572 (14.53)	.094 (2.39)	.212 (5.38)	1.340 (34.04)	1.735 (44.07)
24	1.703 (43.26)	1.375 (34.93)	.604 (15.34)	.094 (2.39)	.212 (5.38)	1.515 (38.48)	1.765 (44.83)



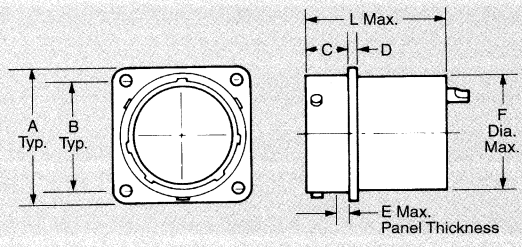
MS3472 Wide Flange Wall Mount Receptacle

Shell Size	A	B	C	D	E	F	L
8	1.065 (27.05)	.734 (18.64)	.477 (12.12)	.062 (1.57)	.118 (3.00)	.575 (14.61)	1.605 (40.77)
10	1.141 (28.98)	.812 (20.62)	.477 (12.12)	.062 (1.57)	.118 (3.00)	.700 (17.78)	1.605 (40.77)
12	1.266 (32.16)	.938 (23.83)	.477 (12.12)	.062 (1.57)	.118 (3.00)	.825 (20.96)	1.605 (40.77)
14	1.360 (34.54)	1.031 (26.19)	.477 (12.12)	.062 (1.57)	.118 (3.00)	.950 (24.13)	1.605 (40.77)
16	1.453 (36.91)	1.125 (28.58)	.477 (12.12)	.062 (1.57)	.118 (3.00)	1.075 (27.31)	1.605 (40.77)
18	1.532 (38.91)	1.203 (30.56)	.477 (12.12)	.062 (1.57)	.118 (3.00)	1.140 (28.96)	1.605 (40.77)
20	1.688 (42.88)	1.297 (32.94)	.571 (14.50)	.094 (2.39)	.212 (5.38)	1.265 (32.13)	1.735 (44.07)
22	1.766 (44.86)	1.375 (34.93)	.571 (14.50)	.094 (2.39)	.212 (5.38)	1.340 (34.04)	1.735 (44.07)
24	1.891 (48.03)	1.500 (38.10)	.604 (15.34)	.094 (2.39)	.212 (5.38)	1.515 (38.48)	1.765 (44.83)



MS3440 Hermetic Seal Box Mount Receptacle

Shell Size	A	B	C	D	E	F	L
10	.954 (24.23)	.719 (18.26)	.588 (14.94)	.062 (1.57)	.087 (2.21)	.750 (19.05)	1.750 (44.45)
12	1.047 (26.59)	.812 (20.62)	.588 (14.94)	.062 (1.57)	.087 (2.21)	.860 (21.84)	1.750 (44.45)
14	1.141 (28.98)	.906 (23.01)	.588 (14.94)	.062 (1.57)	.087 (2.21)	.990 (25.15)	1.750 (44.45)
16	1.234 (31.34)	.969 (24.61)	.588 (14.94)	.062 (1.57)	.087 (2.21)	1.110 (28.19)	1.750 (44.45)
18	1.328 (33.73)	1.062 (26.97)	.588 (14.94)	.062 (1.57)	.087 (2.21)	1.235 (31.37)	1.750 (44.45)
20	1.453 (36.91)	1.156 (29.36)	.650 (16.51)	.094 (2.39)	.212 (5.38)	1.330 (33.78)	1.850 (46.99)
22	1.578 (40.08)	1.250 (31.75)	.650 (16.51)	.094 (2.39)	.212 (5.38)	1.455 (36.96)	1.850 (46.99)
24	1.703 (43.26)	1.375 (34.93)	.650 (16.51)	.094 (2.39)	.212 (5.38)	1.580 (40.13)	1.750 (44.45)

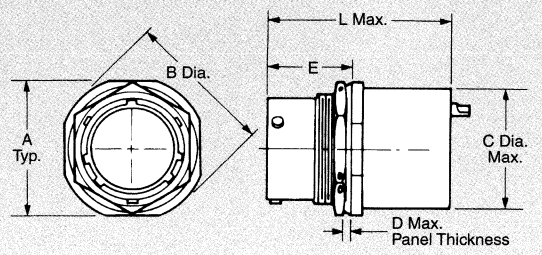


Dimensions in inches *(mm)*

MIL-C-26482, Extended Shell

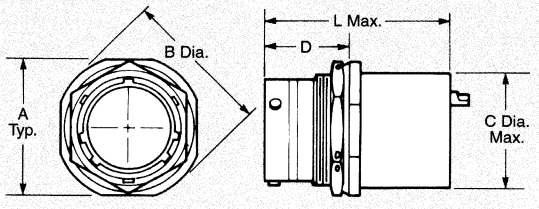
MS3474 Jam Nut Receptacle

Shell Size	A	B	C	D	E	L
8	.938 *(23.83)*	1.063 *(27.00)*	.575 *(14.61)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
10	1.063 *(27.00)*	1.187 *(30.15)*	.700 *(17.78)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
12	1.250 *(31.75)*	1.346 *(34.19)*	.825 *(20.96)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
14	1.346 *(34.19)*	1.500 *(38.10)*	.950 *(24.13)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
16	1.500 *(38.10)*	1.625 *(41.28)*	1.075 *(27.31)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
18	1.625 *(41.28)*	1.750 *(44.45)*	1.140 *(28.96)*	.187 *(4.75)*	.683 *(17.35)*	1.870 *(47.50)*
20	1.812 *(46.02)*	1.938 *(49.23)*	1.265 *(32.13)*	.250 *(6.35)*	.746 *(18.95)*	1.970 *(50.04)*
22	1.938 *(49.23)*	2.063 *(52.40)*	1.340 *(34.04)*	.250 *(6.35)*	.746 *(18.95)*	1.970 *(50.04)*
24	2.063 *(52.40)*	2.187 *(55.55)*	1.515 *(38.48)*	.219 *(5.56)*	.746 *(18.95)*	1.970 *(50.04)*



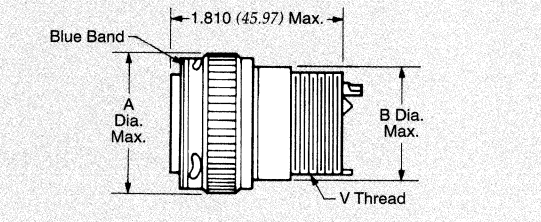
MS3449 Hermetic Seal Jam Nut Receptacle

Shell Size	A	B	C	D	L
8	.938 *(23.83)*	1.063 *(27.00)*	.410 *(10.41)*	.699 *(17.75)*	1.750 *(44.45)*
10	1.063 *(27.00)*	1.187 *(30.15)*	.520 *(13.21)*	.699 *(17.75)*	1.750 *(44.45)*
12	1.250 *(31.75)*	1.346 *(34.19)*	.630 *(16.00)*	.699 *(17.75)*	1.750 *(44.45)*
14	1.346 *(34.19)*	1.500 *(38.10)*	.760 *(19.30)*	.699 *(17.75)*	1.750 *(44.45)*
16	1.500 *(38.10)*	1.625 *(41.28)*	.880 *(22.35)*	.699 *(17.75)*	1.750 *(44.45)*
18	1.625 *(41.28)*	1.750 *(44.45)*	.980 *(24.89)*	.699 *(17.75)*	1.750 *(44.45)*
20	1.812 *(46.02)*	1.938 *(49.23)*	1.110 *(28.19)*	.762 *(19.35)*	1.850 *(46.99)*
22	1.938 *(49.23)*	2.063 *(52.40)*	1.230 *(31.24)*	.762 *(19.35)*	1.850 *(46.99)*
24	2.063 *(52.40)*	2.187 *(55.55)*	1.390 *(35.31)*	.762 *(19.35)*	1.880 *(47.75)*



MS3475 Straight Plug

Shell Size	A	B	V Thread
8	.782 *(19.86)*	.590 *(14.99)*	1/2-20 UNEF-2A
10	.926 *(23.52)*	.720 *(18.29)*	5/8-24 UNEF-2A
12	1.043 *(26.49)*	.840 *(21.34)*	3/4-20 UNEF-2A
14	1.183 *(30.05)*	.965 *(24.51)*	7/8-20 UNEF-2A
16	1.305 *(33.15)*	1.090 *(27.69)*	1-20 UNEF-2A
18	1.391 *(35.33)*	1.145 *(29.08)*	1 1/16-18 UNEF-2A
20	1.531 *(38.89)*	1.270 *(32.26)*	1 3/16-18 UNEF-2A
22	1.656 *(42.06)*	1.395 *(35.43)*	1 5/16-18 UNEF-2A
24	1.777 *(45.14)*	1.520 *(38.61)*	1 7/16-18 UNEF-2A



Dimensions in inches *(mm)*

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Custom Filtered Connectors

Wire Harnesses

Spectrum Control will add wires to the filtered connector to allow the customer to easily install the connector into the system at a lower cost. These value-added services include adding wires terminated or unterminated to all lines or only select lines, twisted pairs and labeling of wires for easy placement in your system. We can also encapsulate the wires inside the connector providing strength to the total harness.

By contracting Spectrum Control to add the harness assembly, customers are assured the performance of the filtered connector has not been adversely affected. **All of our custom connectors are 100% tested for integrity and effective performance.**

Spectrum's connector manufacturing operators are all certified to MIL-STD-2000 solder specification. We have invested in this certification to provide you with confidence that the quality of our custom construction meets the highest standards in the industry.

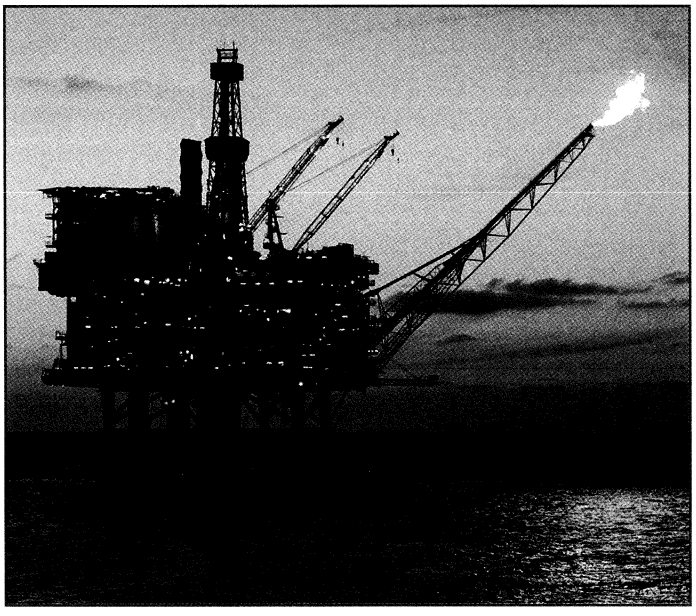
Wire Harnesses



Sole Sourced Military Connectors

Many systems being designed today have made use of connectors that are sole sourced items. Examples of these include MIL-C-81511, MIL-C-81703, Airborn and Lemo connectors. We will design and manufacture a custom filtered connector that specifically addresses the requirements of unique applications such as oil and gas drilling/exploration and power generation.

Filtering these unique connectors is accomplished in one of two ways at Spectrum Control. We can add the required filtering to the back of the existing connector and thereby extend the length, or manufacture a new shell and then filter within that shell. This method can be utilized when the cost of the unfiltered connector is prohibitive due to the sole sourced situation in a particular connector series.

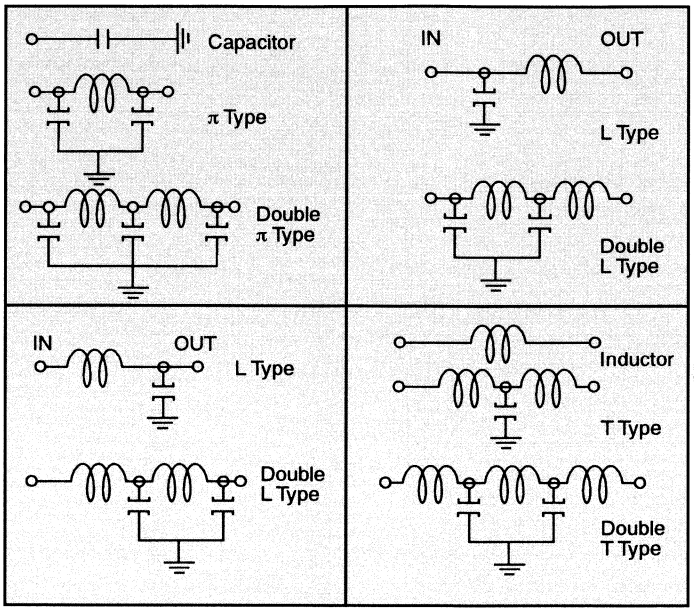


Custom Filtered Connectors

Connectors with Complex Schematics

Spectrum Control has the capability to offer filtered connectors with complex schematics such as double L (CLCL), double Pi (CLCLC), double T (LCLCL) filters, or transient voltage suppression devices. These products may be required when the system impedances are mismatched or when an extremely fast rise in insertion loss is needed.

Spectrum Control is experienced in the manufacture of these complex schematics in all of our filter products. Spectrum's engineering facility can use computer models to select the best filter type for the application.



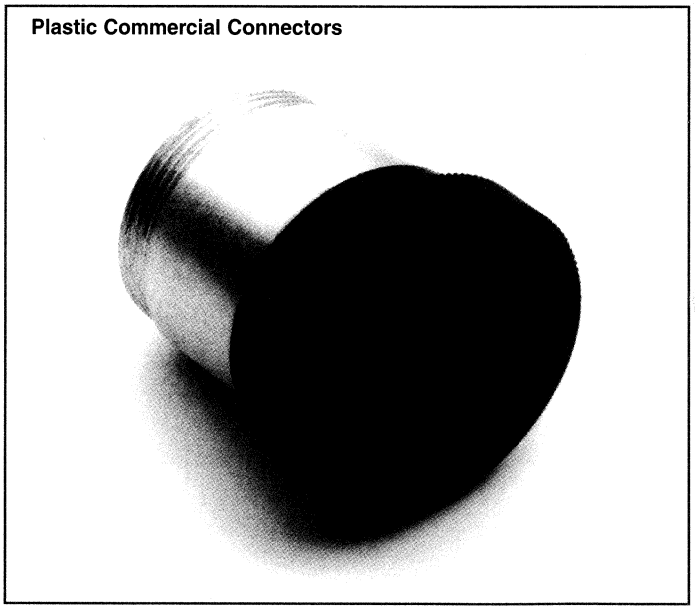
Plastic Commercial Connectors

Many manufacturers in the medical and high reliability commercial markets utilize plastic connectors that subsequently require filtering. Spectrum Control will filter plastic shell connectors.

This product requires special manufacturing techniques. The ground path for filtering is achieved either by using one of the connector pins or by adding an external ground strap to the metal collar.

Through the use of lower cost commercial components such as formed terminals, **Spectrum Control will minimize the cost of filtering this type connector.**

Plastic Commercial Connectors



Value-added Filtered Connectors

We are often approached by customers who have procured a large quantity of unfiltered connectors for a program and subsequently determined that some need to be filtered. **Instead of scrapping or returning these connectors at a large expense, appropriate EMI filters can be added by Spectrum Control.**

The addition of filters to an existing stock of connectors can provide significant cost savings. In many cases, standard unfiltered connectors are purchased in large volumes at a discounted price. By filtering a small quantity of these standard connectors, customers typically realize total cost savings and a reduced overall lead time.

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Quality Acceptance Test Specifications

All filtered connectors undergo extensive testing to assure that all product meets our high quality expectations. Many of the tests are performed 100% as routine and others are carried out on a sample basis when this is deemed more meaningful.

Visual
The connectors shall be manufactured and processed in a careful and workmanlike manner in accordance with good design and sound practice. All connectors shall be checked 100% to insure dimensions are as shown in this catalog.

Capacitance
Checked on 100% of the contacts per detailed specifications when measured @ 25°C, 1 KHz, 0.1 to 1.0VRMS. On insulated feed-thru lines, the maximum capacitance is 25 pF.

Dissipation factor
4% maximum, checked 100% @ 25°C, 1KHz, 0.1 to 1.0VRMS

Dielectric withstanding voltage
Performed on 100% of the filtered contacts. The test voltage unless otherwise specified will be 2.5 times the working voltage as specified at 25°C. This voltage will be applied for 1 to 5 seconds with the charging current limited to 50 milliamps.

Insulation resistance
Performed on 100% of the filtered contacts at 25°C. The minimum acceptance level will be 1000 megohms at 25°C and 100 megohms at 125°C if required. This test will be carried out in accordance with MIL-STD-202 Method 302, test voltage of 100VDC or at rated voltage whichever is less.

Insertion loss
Performed on a sample quantity of filtered contacts, minimum acceptance levels as specified by typical insertion loss graphs.

Resistance to ground
The RDC on ground lines is 5 mOhms max.

Marking
As a minimum, all connectors shall have the Spectrum part number, date code and logo. Upon request, customer specified marking can be incorporated into the manufacturing cycle.

Special Testing

Spectrum has a fully qualified test laboratory and is willing to provide additional acceptance testing upon customers request, at minimal additional costs.

Minimum Design Specifications

All of the filtered connectors are designed to meet minimum standards shown in table below.

Environmental Performance

Test*	MIL-STD-1344		MIL-STD-202		
Description	Method	Condition	Method	Condition	Comments**
Vibration	-	-	204	G	30G for 10 to 2000 Cycles
Thermal Shock	-	-	107	A-1	Except Step 3 is +125 degrees C
Immersion	1016	-	104	A	-
Salt Spray	1001	-	101	B	-
Moisture Resistance	1002	II	106	-	Except Step 7
Shock	2004	-	213	I	-
Barometric Pressure	3001	-	105	C	125% rated voltage
Resistance to Solder Heat	-	-	210	B	-
Terminal Strength	-	-	211	A	The applied force shall be 5 lbs.
Contact Resistance	-	-	307	-	.0152 max.
Life	-	-	108	D	1000 hrs.
Durability	-	-	-	-	500 cycles
Solderabilty	-	-	208	-	-

*** All tests are performed per applicable MIL spec.**

**** All parts will meet post test electricals (i.e. dielectric withstanding voltage, insulation resistance, capacitance, insertion loss and visual/mechanical).**

Military Cross Reference Qualified Components

MIL-F-15733

Military Designation MIL-F-15733	Spectrum 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
/23-0013	51-390-009
/23-0014	51-390-010
/23-0015	51-390-011
/23-0016	51-390-012
/23-0017	51-390-305
/23-0018	51-390-306
/23-0019	51-390-013
/23-0020	51-390-014
/23-0021	51-390-015
/23-0022	51-390-016
/23-0023	51-390-307
/23-0024	51-390-308
/23-0025	51-390-017
/23-0026	51-390-018
/23-0027	51-390-019
/23-0028	51-390-020
/23-0029	51-390-309
/23-0030	51-390-310
/23-0031	51-390-021
/23-0032	51-390-022
/23-0033	51-390-023
/23-0034	51-390-024
/23-0035	51-390-311
/23-0036	51-390-312
/23-0037	51-390-025
/23-0038	51-390-026
/23-0039	51-390-027
/23-0040	51-390-028
/23-0041	51-390-313
/23-0042	51-390-314
/23-0043	51-390-029
/23-0044	51-390-030
/23-0045	51-390-031
/23-0046	51-390-032
/23-0047	51-390-315
/23-0048	51-390-316
/23-0049	51-390-033
/23-0050	51-390-034
/23-0051	51-390-035
/23-0052	51-390-036
/23-0053	51-390-317
/23-0054	51-390-318
/23-0055	51-390-037
/23-0056	51-390-038
/23-0057	51-390-039
/23-0058	51-390-040

Military Designation MIL-F-15733	Spectrum Part Number
/23-0059	51-390-319
/23-0060	51-390-320
/24-0001	51-353-064
/24-0002	51-353-065
/24-0003	51-444-049
/24-0004	51-444-050
/24-0005	51-353-066
/24-0006	51-353-067
/24-0007	51-444-051
/24-0008	51-444-060
/24-0009	51-353-068
/24-0010	51-353-069
/24-0011	51-353-070
/24-0012	51-353-071
/24-0013	51-353-072
/24-0014	51-353-073
/24-0015	51-353-074
24-0016	51-353-075
/24-0017	51-444-052
/24-0018	51-444-053
/24-0019	51-444-054
/24-0020	51-444-055
/24-0021	51-444-056
/24-0022	51-444-057
/24-0023	51-444-058
/24-0024	51-444-059
/25-0001	51-353-052
/25-0002	51-311-308
/25-0003	51-353-053
/25-0004	51-311-309
/25-0005	51-353-054
/25-0006	51-311-310
/25-0007	51-382-603
/25-0008	51-353-055
/25-0009	51-353-056
/25-0010	51-311-311
/25-0011	51-353-057
/25-0012	51-382-604
/25-0013	51-444-037
/25-0014	51-311-354
/25-0015	51-444-038
/25-0016	51-311-355
/25-0017	51-444-039
/25-0018	51-311-356
/25-0019	51-382-608
/25-0020	51-444-040
/25-0021	51-444-041
/25-0022	51-311-357
/25-0023	51-444-042
/25-0024	51-382-609
/26-0001	51-353-076
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/26-0003	51-353-077
/26-0004	51-353-078
/26-0005	51-311-312
/26-0006	51-353-079
/26-0007	51-353-080
/26-0008	51-351-603

Military Designation MIL-F-15733	Spectrum Part Number
/26-0009	51-311-313
/26-0010	51-353-081
/26-0011	51-311-314
/26-0012	51-351-604
/26-0013	51-444-043
/26-0014	51-353-424
/26-0015	51-444-044
/26-0016	51-444-045
/26-0017	51-311-358
/26-0018	51-444-046
/26-0019	51-444-047
/26-0020	51-351-625
/26-0021	51-311-359
/26-0022	51-444-048
/26-0023	51-311-360
/26-0024	51-351-626
/27-0001	51-320-013
/27-0002	51-320-014
/27-0003	51-323-313
/27-0004	51-321-312
/27-0005	51-320-015
/27-0006	51-320-016
/27-0007	51-323-314
/27-0008	51-320-017
/27-0009	51-320-018
/27-0010	51-321-313
/27-0011	51-323-003
/27-0012	51-323-004
/27-0013	51-321-314
/27-0014	51-322-009
/27-0015	51-322-010
/27-0016	51-321-606
/27-0017	51-321-607
/27-0018	51-321-608
/27-0019	51-320-019
/27-0020	51-320-020
/27-0021	51-323-315
/27-0022	51-321-315
/27-0023	51-321-609
/27-0026	54-310-040
/28-0001	51-712-014
/28-0002	51-712-028
/28-0003	Superseded by /61-0014
/28-0004	51-712-060
/33-0001	51-707-006
/33-0002	51-707-007
/34-0001	51-322-016
/34-0002	51-322-017
/34-0003	51-311-327
/34-0004	51-321-328
/34-0005	51-321-329
/34-0006	51-321-330
/34-0007	51-353-207
/34-0008	51-353-208
/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	Spectrum Part Number
/34-0014	51-311-340
/34-0015	51-444-005
/34-0016	51-444-105
/34-0017	51-444-016
/34-0018	51-444-106
/34-0020	51-320-061
/34-0021	51-320-062
/34-0029	51-320-063
/34-0030	51-444-027
/34-0031	51-321-391
/34-0035	54-370-030
/34-0037	54-310-039
/38-0001	51-343-018
/38-0002	51-343-028
/38-0003	51-353-422
/38-0004	51-359-021
/38-0005	51-359-024
/38-0006	51-343-034
/38-0008	51-359-050
/39-0001	51-353-148
/39-0002	51-353-149
/39-0003	51-353-150
/39-0004	51-353-151
/39-0005	51-353-152
/39-0006	51-353-153
39-0007	51-353-154
/39-0008	51-353-155
/39-0009	51-353-156
/39-0010	51-353-157
/39-0011	51-353-344
/39-0012	51-353-345
/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
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/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	Spectrum Part Number
/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
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/54-0010	51-311-413
/54-0011	51-311-414
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/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
/57-0001	51-359-041
/58-0001	51-359-051
/58-0002	51-444-072
/58-0003	54-367-069
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/61-0003	51-702-020
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/61-0009	51-709-015
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/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
/64-0001	51-749-304
/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

MIL-F-28861

Military Designation MIL-F-28861	Spectrum 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
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/1-017	51-359-089
/1-018	54-367-057
/1-019	51-359-090
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/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
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/2-013	51-311-018
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/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

Military Cross Reference Qualified Components

MIL-F-28861 (cont'd)

Military Designation MIL-F-28861	Spectrum 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	Spectrum 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

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SPECTRUM CONTROL INC.

Spectrum Control/AMP Part Number Cross Reference

AMP Part Number	Spectrum 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**

AMP Part Number	Spectrum Part Number
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

AMP Part Number	Spectrum Part Number
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

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**** A standard part number does not currently exist but will be assigned upon ordering.**

Spectrum Control/AMP Part Number Cross Reference

AMP Part Number	Spectrum Part Number
1-842934-4	56-745-XXX-LI**
1-869464-0	56-124-002
1-869470-0	56-102-002
1-869476-0	56-122-002
1-869522-0	56-104-002
1-869523-0	56-114-002
1-869527-0	56-112-002
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
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
267809-1	56-703-022
267810-1	56-713-021
267811-1	56-723-022
267824-1	56-102-006
267824-2	56-102-005
267824-3	56-102-004
267824-4	56-102-003
267824-5	56-102-002
267825-1	56-112-006
267825-2	56-112-005
267825-3	56-112-004
267825-4	56-112-003
267825-5	56-112-002
267826-1	56-122-006
267826-2	56-122-005
267826-3	56-122-004
267826-4	56-122-003
267826-5	56-122-002
267827-1	56-104-006
267827-2	56-104-005
267827-3	56-104-004
267827-4	56-104-003
267827-5	56-104-002
267828-1	56-114-006
267828-2	56-114-005
267828-3	56-114-004
267828-4	56-114-003
267828-5	56-114-002
267829-1	56-124-006
267829-2	56-124-005
267829-3	56-124-004
267829-4	56-124-003
267829-5	56-124-002
267980-1	56-102-006
267980-2	56-102-005
267980-3	56-102-004
267980-4	56-102-003
267980-5	56-102-002
267981-1	56-112-006
267981-2	56-112-005
267981-3	56-112-004
267981-4	56-112-003
267981-5	56-112-002
267982-1	56-122-006
267982-2	56-122-005
267982-3	56-122-004
267982-4	56-122-003
267982-5	56-122-002
267983-1	56-104-006
267983-2	56-104-005
267983-3	56-104-004
267983-4	56-104-003
267983-5	56-104-002
267984-1	56-114-006
267984-2	56-114-005
267984-3	56-114-004
267984-4	56-114-003
267984-5	56-114-002
267985-1	56-124-006
267985-2	56-124-005
267985-3	56-124-004
267985-4	56-124-003
267985-5	56-124-002
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
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
842652-3	56-724-008

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

SPECTRUM CONTROL INC.

Spectrum Control/AMP Part Number Cross Reference

AMP Part Number	Spectrum Part Number
1-842934-4	56-745-XXX-LI**
1-869464-0	56-124-002
1-869470-0	56-102-002
1-869476-0	56-122-002
1-869522-0	56-104-002
1-869523-0	56-114-002
1-869527-0	56-112-002
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
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
267809-1	56-703-022
267810-1	56-713-021
267811-1	56-723-022
267824-1	56-102-006
267824-2	56-102-005
267824-3	56-102-004
267824-4	56-102-003
267824-5	56-102-002
267825-1	56-112-006
267825-2	56-112-005
267825-3	56-112-004
267825-4	56-112-003
267825-5	56-112-002
267826-1	56-122-006
267826-2	56-122-005
267826-3	56-122-004
267826-4	56-122-003
267826-5	56-122-002
267827-1	56-104-006
267827-2	56-104-005
267827-3	56-104-004
267827-4	56-104-003
267827-5	56-104-002
267828-1	56-114-006
267828-2	56-114-005
267828-3	56-114-004
267828-4	56-114-003
267828-5	56-114-002
267829-1	56-124-006
267829-2	56-124-005
267829-3	56-124-004
267829-4	56-124-003
267829-5	56-124-002
267980-1	56-102-006
267980-2	56-102-005
267980-3	56-102-004
267980-4	56-102-003
267980-5	56-102-002
267981-1	56-112-006
267981-2	56-112-005
267981-3	56-112-004
267981-4	56-112-003
267981-5	56-112-002
267982-1	56-122-006
267982-2	56-122-005
267982-3	56-122-004
267982-4	56-122-003
267982-5	56-122-002
267983-1	56-104-006
267983-2	56-104-005
267983-3	56-104-004
267983-4	56-104-003
267983-5	56-104-002
267984-1	56-114-006
267984-2	56-114-005
267984-3	56-114-004
267984-4	56-114-003
267984-5	56-114-002
267985-1	56-124-006
267985-2	56-124-005
267985-3	56-124-004
267985-4	56-124-003
267985-5	56-124-002
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
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
842652-3	56-724-008

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Spectrum Control/AMP Part Number Cross Reference

AMP Part Number	Spectrum Part Number
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
842742-4	56-715-040-LI
842743-3	56-725-002

AMP Part Number	Spectrum Part Number
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**
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*** There may be mechanical and/or electrical differences between the Amp and Spectrum part. Please consult factory.**
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*** There may be mechanical and/or electrical differences between the Amp and Spectrum part. Please consult factory.**
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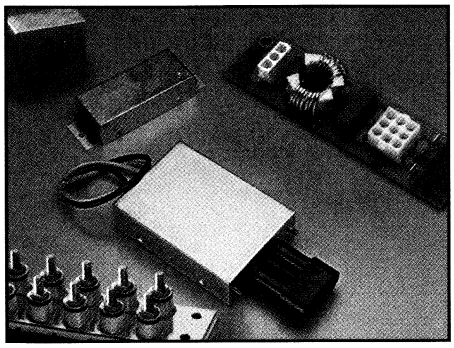
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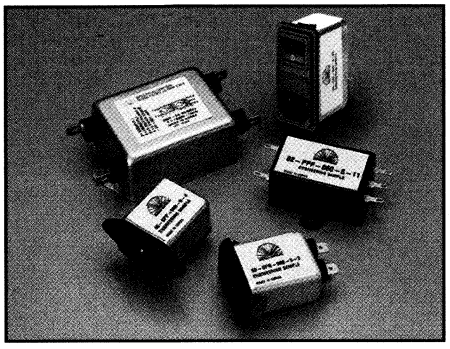
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SPECTRUM CONTROL INC.

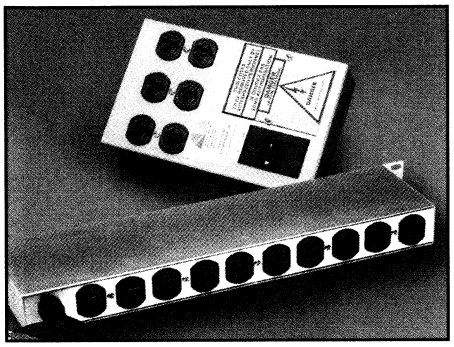
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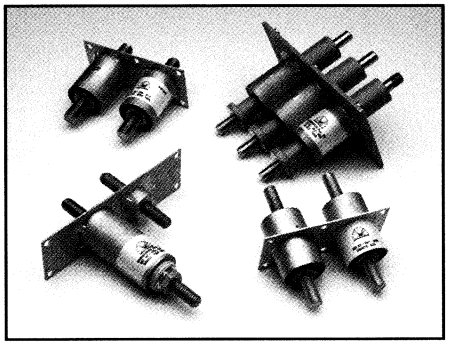
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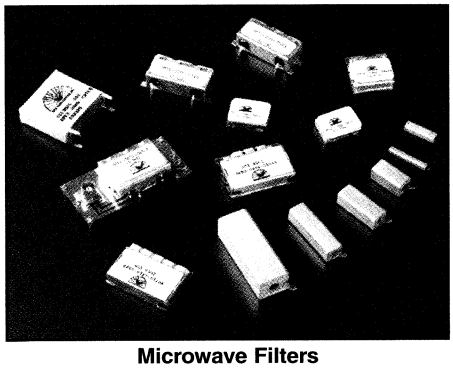
Power Entry Modules & Power Line Filters



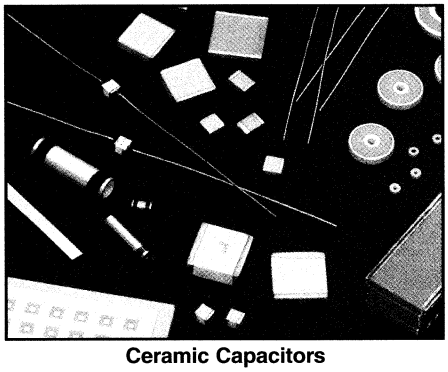
Power Distribution Systems



Single Line Filters



Microwave Filters



Ceramic Capacitors

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