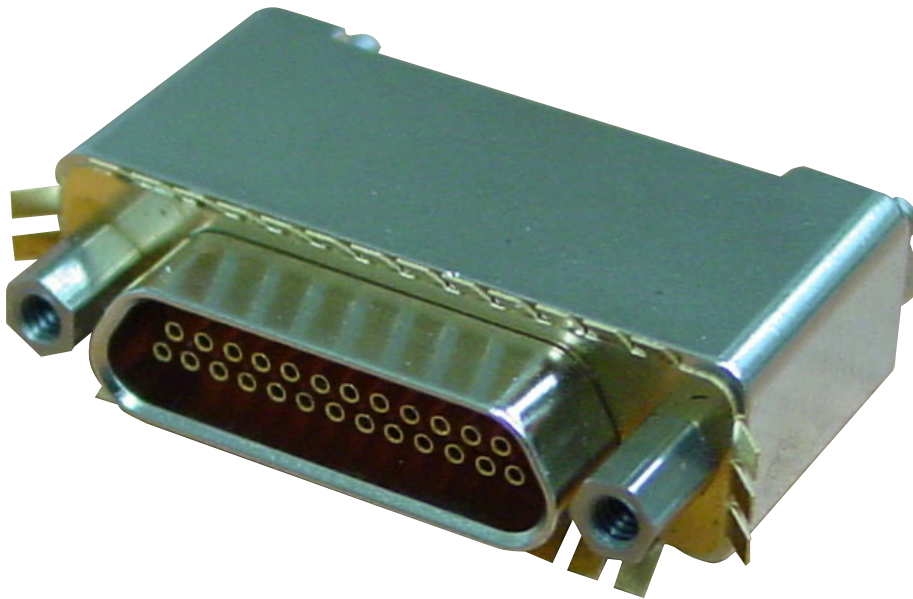


Filter D-Sub Connectors



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MIL-DTL-24308 Connectors

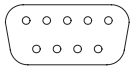
MIL-DTL-24308 D-Subminiature filter connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors. Smith Connectors also offers combo D-Sub arrangements for power coaxial and signal contacts mixed arrangements. These layouts include 5W5, 8W8, 17W2, 9W1 and 24W7.



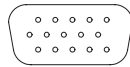
Material and Finishes

Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Capacitor	Barium Titanate
Inductor	Ferrite bead

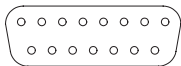
Insert Arrangements



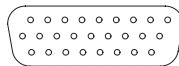
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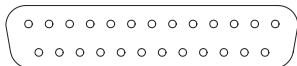
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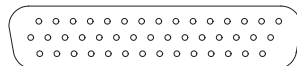
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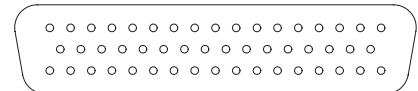
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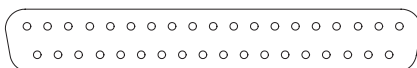
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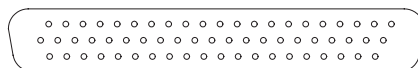
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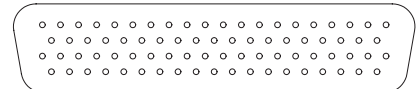
50 #20



37 #20



62 #22



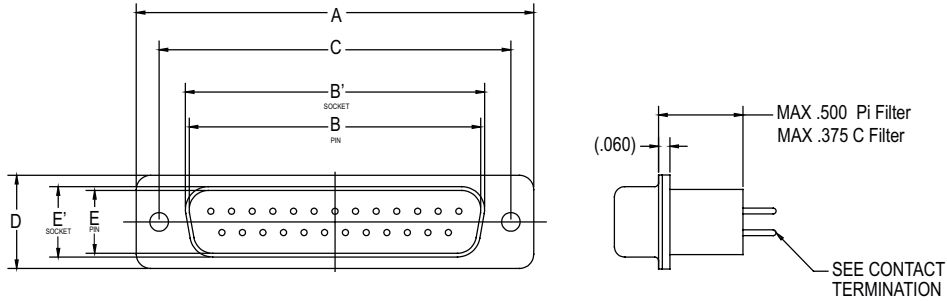
78 #22

Consult Factory for Combo D-Sub Arrangements.

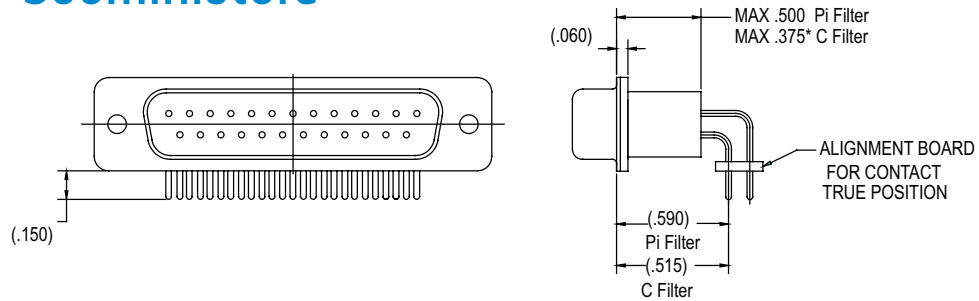
Smiths Interconnect provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths Interconnect connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

MIL-DTL-24308

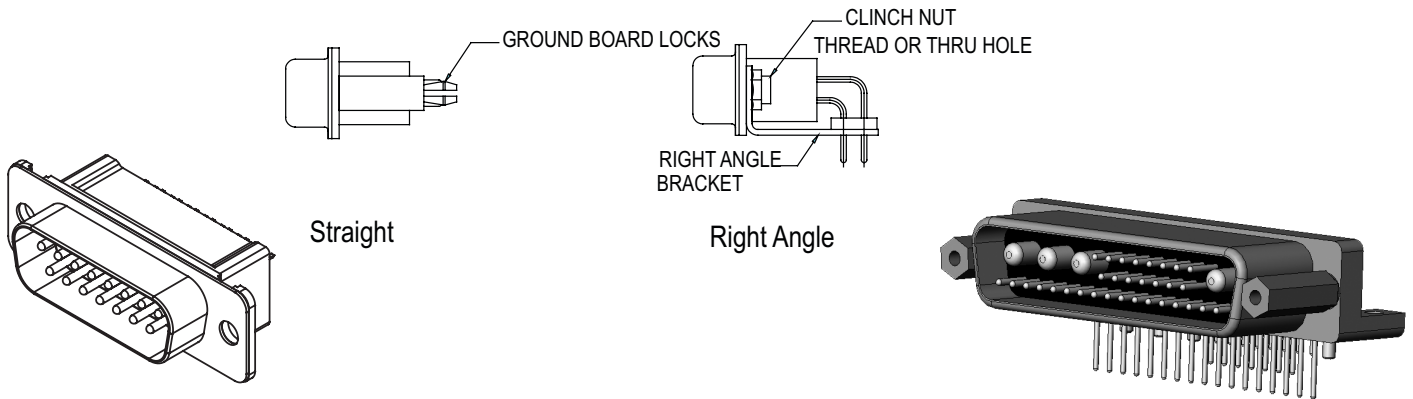
Straight D-Subminiature



Right Angle D-Subminiature



Optional Hardware



Shell Size	Standard Layout Size 20	A ± 0.015	B (Pin) ± 0.005	B' (Socket) ± 0.005	C Basic	D ± 0.010	E (Pin) ± 0.005	E' (Socket) ± 0.005
E	9 Contact	1.213	.667	.642	.984	.494	.330	.310
A	15 Contact	1.541	.995	.970	1.312	.494	.330	.310
B	25 Contact	2.088	1.535	1.150	1.852	.494	.330	.310
C	37 Contact	2.729	2.183	2.158	2.500	.494	.330	.310
D	50 Contact	2.635	2.063	2.063	2.406	.605	.437	.422

MIL-DTL-24308 Connectors

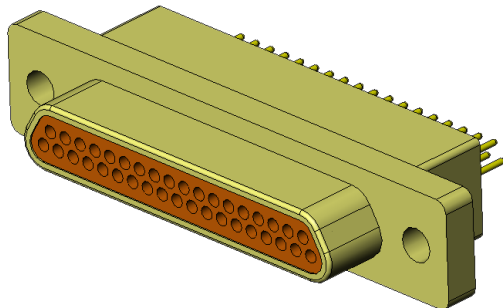
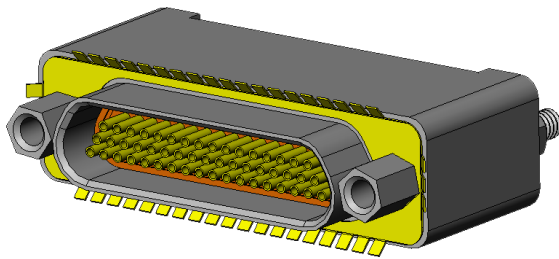
How to Order



1 Filter Type	Pi, L, C,
2 Prefix	
3 Contact Arrangement	Low Density 9, 15, 25, 37, 50 High Density 15 HD, 26 HD, 44 HD, 62 HD, 78 HD
4 Contact Type	P Pin S Socket
5 Contact Termination	S Solder Cup P PC Tail C Crimp
6 Plating	C Cadmium (Yellow Chromate) N Electroless Nickel

MIL-DTL-83513

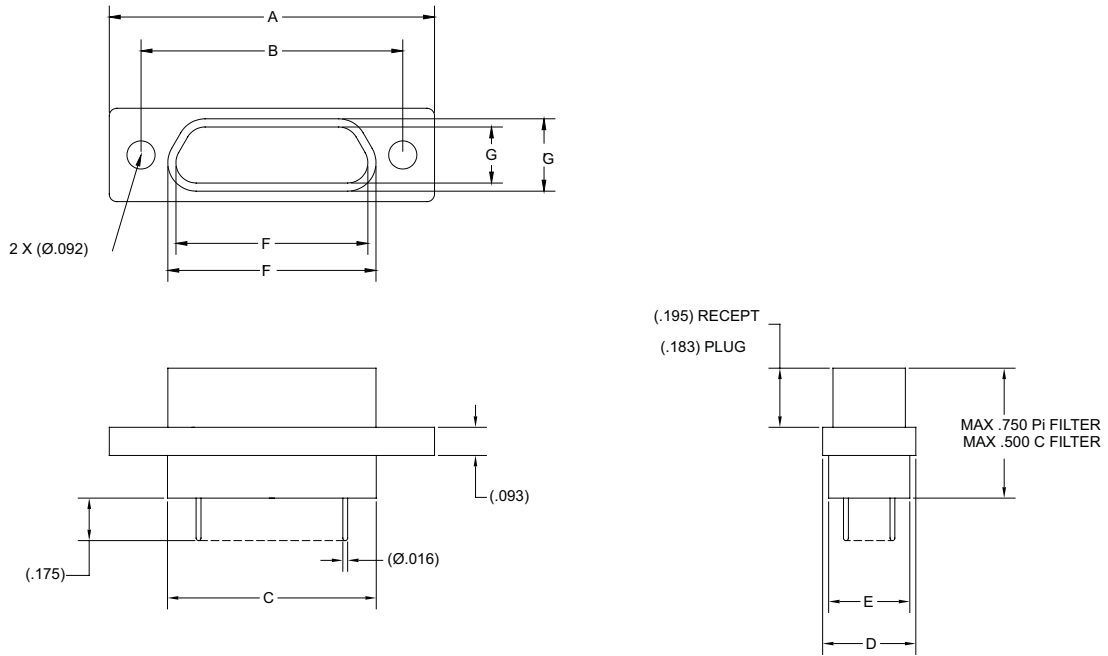
MIL-DTL-83513 Micro-D filter connectors are designed to meet or exceed all applicable requirements of the military specification. These connectors are intermateable and interchangeable with the standard non-filtered connectors. Unique configurations are also available with customized shells and EMI ground springs.



Material and Finishes

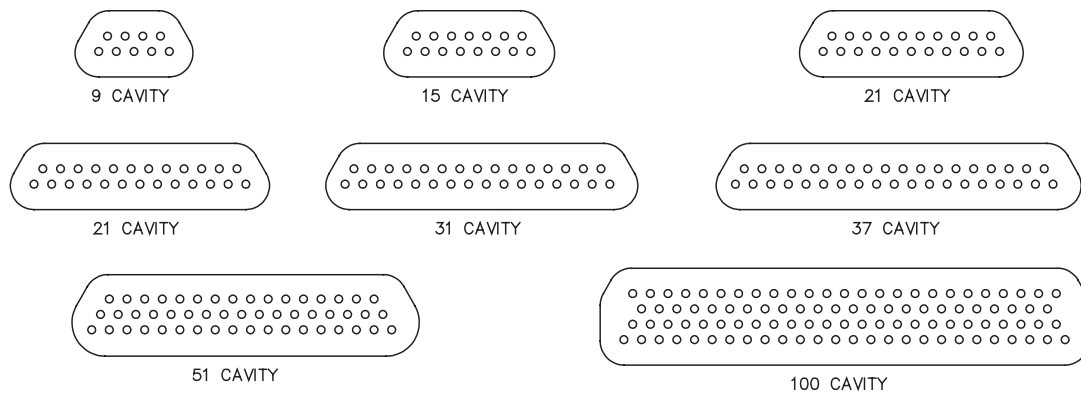
Shell	Aluminum alloy
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Capacitor	Barium Titanate
Inductor	Ferrite bead

MIL-DTL-83513



Cavity	A ± .010	B Basic	C +.010 -.018	D ±.010	E Max	F Basic Recept	F' Basic Plug	G Basic Recept	G' Basic Plug
9	0.775	0.565	0.390	0.298	0.270	0.3342	0.338	0.1852	0.1848
15	0.925	0.715	0.540	0.298	0.270	0.4842	0.4838	0.1852	0.1848
21	1.075	0.865	0.690	0.298	0.270	0.6342	0.6338	0.1852	0.1848
25	1.175	0.956	0.790	0.298	0.270	0.7342	0.7338	0.1852	0.1848
31	1.325	1.115	0.940	0.298	0.270	0.8842	0.8838	0.1852	0.1848
37	1.475	1.265	1.090	0.298	0.270	1.0342	1.0338	0.1852	0.1848
51	1.425	1.215	1.040	0.341	0.310	0.9842	0.9838	0.2282	0.2278
100	2.160	1.800	1.432	0.384	0.360	1.3842	1.3838	0.2712	0.2708

Insert Arrangements



* Consult Factory For Additional or Custom Layouts

MIL-DTL-83513

How to Order



1 Filter Type	Pi , L , C ,
2 Prefix	
3 Contact Arrangement	9 , 15 , 21 , 25 , 31 , 37 , 51 , 100
4 Contact Type	P Pin S Socket
5 Contact Termination	S Solder Cup P PC Tail C Flying Leads C Right Angle*
6 Plating	C Cadmium (Yellow Chromate) N Electroless Nickel

* Consult factory for alternate plating options.
Consult factory for footprint dimensions.

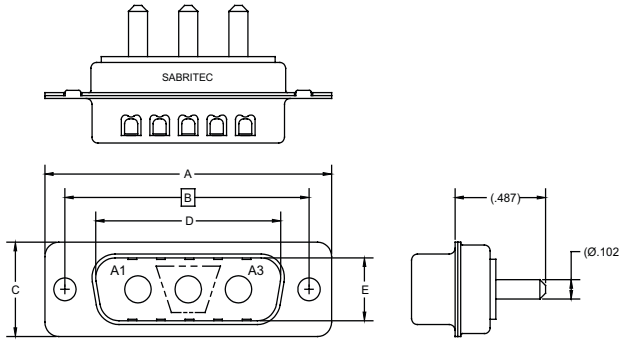
Smiths Interconnect provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths Interconnect connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

Filter Combo D-Subminiature

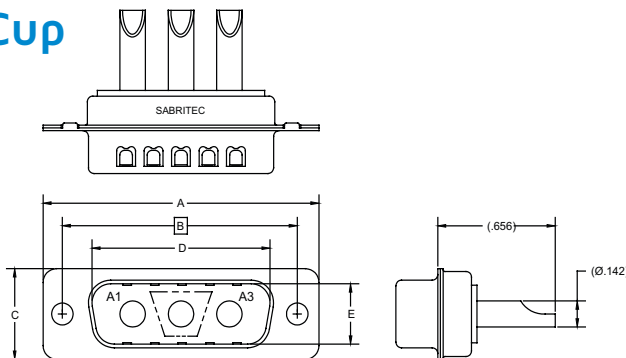


Combo D-Sub 3W3/3WK3 Filtered Power Connectors

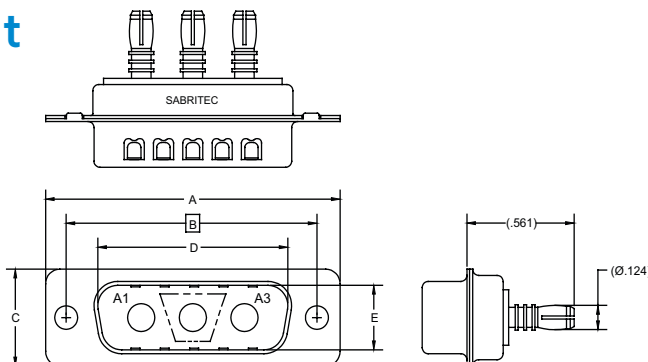
PC Tail



Solder Cup



Press-Fit



Smiths Interconnect offers a complete line of high powered EMI filtered D-Sub connectors including the single row size #8 power contacts (3W3, 3WK3, etc.). Our ceramic planar capacitors can easily achieve up to 47 nF per line on this series. The planar capacitor provides excellent attenuation as well as meeting the Bellcore requirements for 1000 VDC Dielectric Withstanding Voltage. The materials used in the construction meet the UL flammability requirements of 94V-0. Smiths Interconnect filtered D-Sub connectors are intermateable with standard non-filter D-Sub connectors.

This series is available in PC tail, solder cup and solderless press-fit terminations into standard plated-thru holes. Smiths Interconnect also offers combo D-Sub arrangements for power coaxial and signal contacts mixed arrangements including layouts 5W5, 8W8, 17W2, 9W1 and 24W7.

D-Sub High Power Plugs

Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-1000	1 nF	3W3	400 VDC
310032-1001	1 nF	3WK3	400 VDC
310031-1002	5 nF	3W3	400 VDC
310032-1003	5 nF	3WK3	400 VDC
310031-1004	47 nF	3W3	400 VDC
310032-1005	47 nF	3WK3	400 VDC

Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-2000	1 nF	3W3	400 VDC
310032-2001	1 nF	3WK3	400 VDC
310031-2002	5 nF	3W3	400 VDC
310032-2003	5 nF	3WK3	400 VDC
310031-2004	47 nF	3W3	400 VDC
310032-2005	47 nF	3WK3	400 VDC

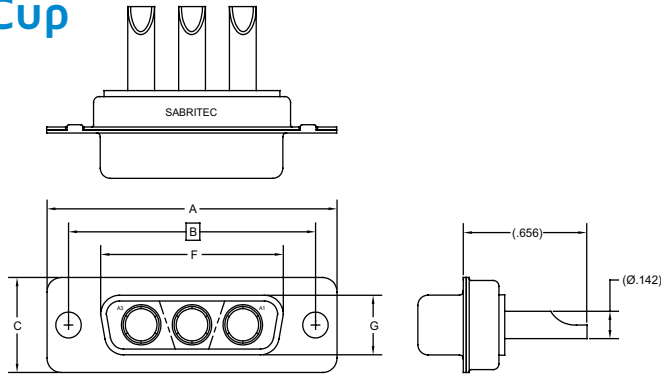
Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-4000	1 nF	3W3	400 VDC
310032-4001	1 nF	3WK3	400 VDC
310031-4002	5 nF	3W3	400 VDC
310032-4003	5 nF	3WK3	400 VDC
310031-4004	47 nF	3W3	400 VDC
310032-4005	47 nF	3WK3	400 VDC

Dimensions						
A	B	C	D	E	F	G
+.010	Basic	+.010	+.004	+.004	+.004	+.004
1.541	1.312	0.494	0.995	0.329	0.970	0.310

Filter D-Sub Connectors

D-Sub High Power Receptacles

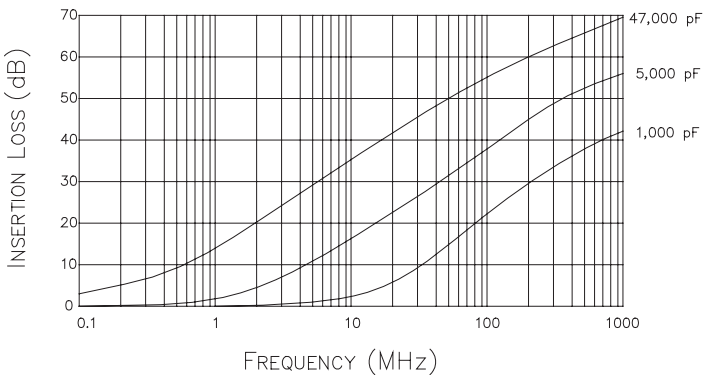
Solder Cup



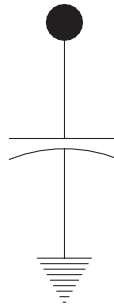
Part Number	EMI Filter		Voltage Rating
	Cap Value	Layout	
310031-3000	1 nF	3W3	400 VDC
310032-3001	1 nF	3WK3	400 VDC
310031-3002	5 nF	3W3	400 VDC
310032-3003	5 nF	3WK3	400 VDC
310031-3004	47 nF	3W3	400 VDC
310032-3005	47 nF	3WK3	400 VDC

Dimensions						
A	B	C	D	E	F	G
+ .010	Basic	+ .010	+ .004	+ .004	+ .004	+ .004
1.541	1.312	0.494	0.995	0.329	0.970	0.310

Insertion Loss Curves



"C" Filter Schematic



Insertion Loss Table

Frequency (MHz)	C1 (1 nF)	C5 (5 nF)	C47 (47 nF)
1	0.1	1.4	15
10	4	16	34
100	22	36	52
1000	42	56	68

Material and Finishes

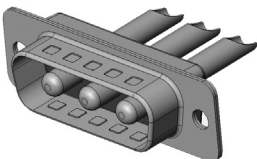
Shell	Tin plated steel
Insulator	Thermoplastic (UL 94V-Ø rated)
Contacts	Copper Alloy, gold plate per ASTM-B488 over nickel plate per QQ-N-290
Filter Array	Monolithic capacitor, X7R material

Electrical Characteristics

Operating Temperature	-55°C to + 125°C
Voltage	1,000 VDC DWV 400 VDC Working
DC Current Rating	30 Amps max per contact
Surge Voltage	1,000 Volts, 1.2 x 50µs Waveform (12 ohms) 1,000 Volts, 8 x 20µs Waveform (2 ohms)
Insulation Resistance	5,000 megaohms @ 400 VDC
Capacitance	1 nF, 5 nF, 47 nF, (± 20%)
International Standard for EMC	Meets or exceeds EN 61000-4-5 IEC 1000-4-5

Terminations

PC Tail
Solder Cup
Press Fit

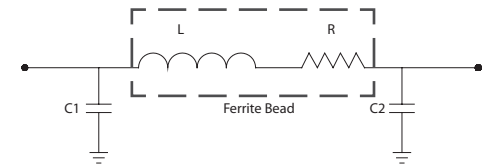
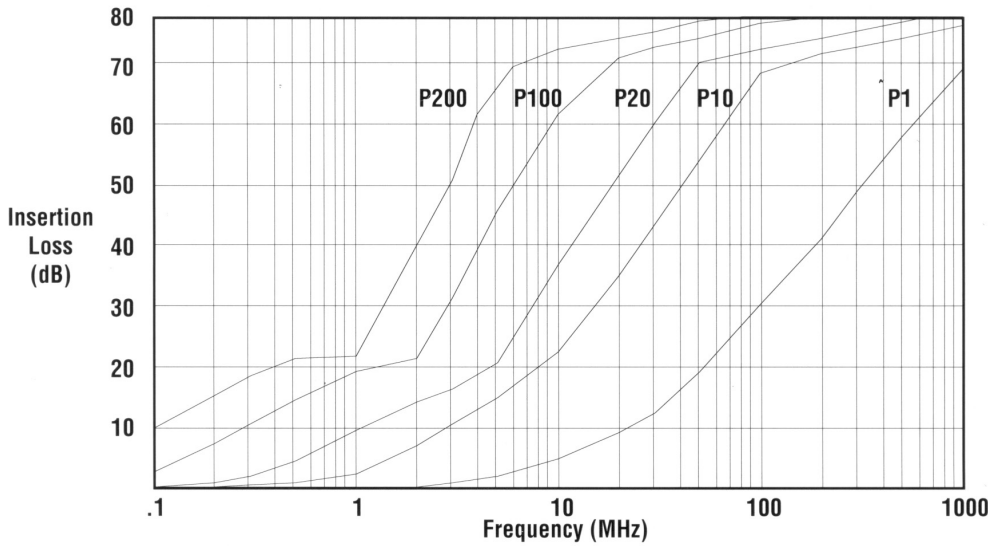


Electrical Performance

Electrical Characteristics - 'Pi' Section

Filter Description	P200	P100	P76	P38	P20	P10	P8	P4	P2	P1
Operating Temperature Range	-55°C to +125°C									
Voltage Rating	100 VDC		200 VDC-120 Vrms 400 Hz							
Current Rating DC	15 amps size 16 7.5 amps size 20 5 amps size 22									
Insulation Resistance	5000 megaohms min. @100 VDC									
Current Rating RF	3.0 amps max.									
DWV Sea Level w/ 50 micro-amps max. charge/discharge	250 VDC		500 VDC							

'Pi' Section Curves



Insertion Loss Table

Filter Description	See Notes	P200	P100	P76	P38	P20	P10	P8	P4	P2	P1
Capacitance in Nanofarads @ 1Khz., 1VRMS		160 240	80 120	60 91	30 46	16 24	8 12	6.4 9.2	3.2 4.8	1.6 2.4	0.8 1.2
Minimum No Attenuation loss @ 25°	Freq Mhz										
	0.1	8	4.1	3	1	0.3	0.1	-	-	-	-
	1.0	22.2	19.6	18.2	13.3	8.2	3.9	2.9	0.9	0.2	-
	2	32.8	21.7	19.7	16.8	12.7	8	6.6	2.9	1	0.3
	10	73.5	61	57	44.4	31.5	20.6	18.3	12.8	8.1	4.0
	100	85+	85+	85+	85+	78	65.8	61.9	49.6	37.3	25.6
	500-1k	85+	85+	85+	85+	85+	85+	80	75	64	52

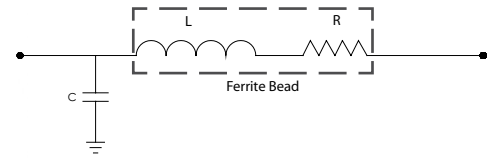
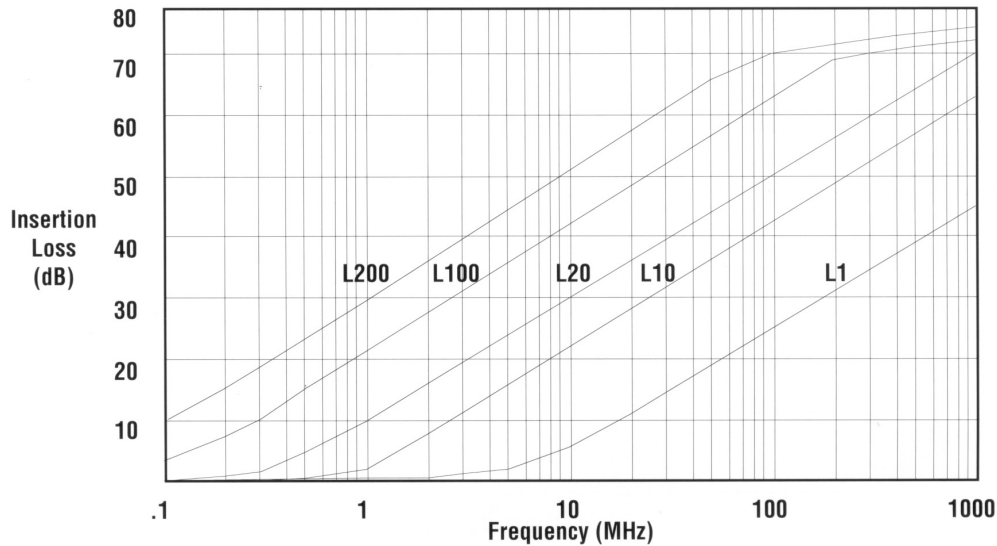
- Notes:
1. P200 & P100 Capacitance Values for Size 20 Contact Arrangement & Larger
 2. No Load Minimum Attenuation Values per MIL-STD-220
 3. Capacitance in Nanofarads (Nominal Value)
 4. Consult Factory for Higher Voltages & Capacitance Values

Electrical Performance

Electrical Characteristics - 'L' Section

Filter Description	L200	L100	L76	L38	L20	L10	L8	L4	L2	L1
Operating Temperature Range				-55°C to +125°C						
Voltage Rating	100 VDC			200 VDC-120 Vrms 400 Hz						
Current Rating DC				15 amps size 16 7.5 amps size 20 5 amps size 22						
Insulation Resistance				5000 megaohms min. @100 VDC						
Current Rating RF				3.0 amps max.						
DWV Sea Level w/ 50 micro-amps max. charge/discharge	250 VDC			500 VDC						

'L' Section Curves



Insertion Loss Table

Filter Description	See Notes	L200	L100	L76	L38	L20	L10	L8	L4	L2	L1
Capacitance in Nanofarads @ 1Khz, 1VRMS		160 240	80 120	60 91	30 46	16 24	8 12	6.4 9.2	3.2 4.8	1.6 2.4	0.8 1.2
	0.1	8.6	4.1	3	1	0.3	0.1	-	-	-	-
	1.0	28	22	20.1	14.2	8.6	4	3	0.9	0.2	-
	2	34.3	28.3	26.3	20.3	14.4	8.8	7.2	3.1	1	-
	10	49	43	41.1	35	29	23	21.1	15.1	9.5	4.8
	100	69.9	63.9	62	55.9	49.9	43.9	42	35.9	29.9	23.9
	500-1k	83.7	77.7	75.8	69.7	63.7	57.7	55.8	49.7	43.7	37.7

Notes:

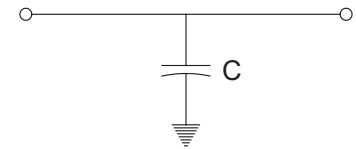
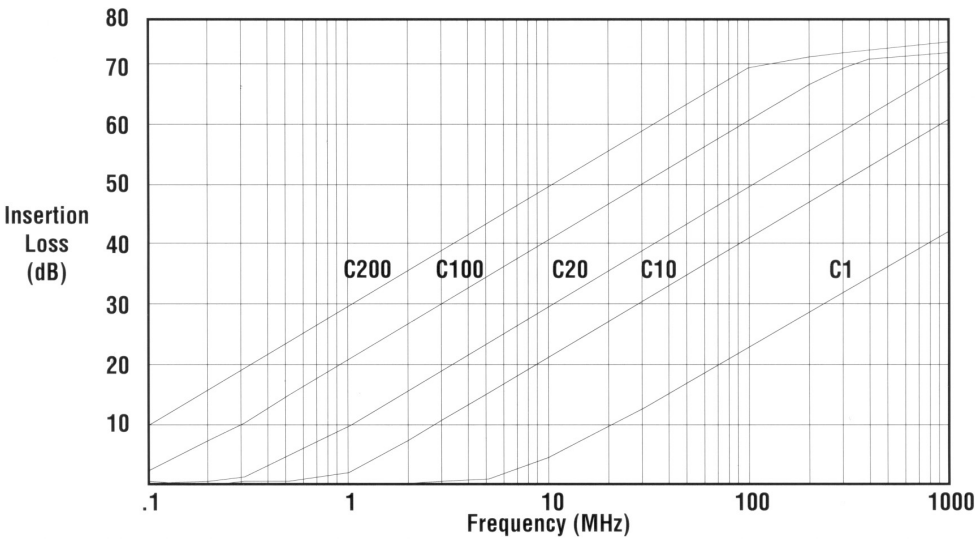
1. L200, L100 & L76 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values

Electrical Performance

Electrical Characteristics - 'C' Section

Filter Description	C200	C100	C76	C38	C20	C10	C8	C4	C2	C1
Operating Temperature Range	-55°C to +125°C									
Voltage Rating	100 VDC									
Current Rating DC	200 VDC-120 Vrms 400 Hz									
Insulation Resistance	15 amps size 16 7.5 amps size 20 5 amps size 22									
Current Rating RF	5000 megaohms min. @100 VDC									
DWV Sea Level w/ 50 micro-amps max. charge/discharge	3.0 amps max.									
	250 VDC					500 VDC				

'C' Section Curves



Insertion Loss Table

Filter Description	See Notes	C200	C100	C76	C38	C20	C10	C8	C4	C2	C1
Capacitance in Nanofarads @ 1Khz, 1VRMS		160 240	80 120	60 91	30 46	16 24	8 12	6.4 9.2	3.2 4.8	1.6 2.4	0.8 1.2
Minimum No Attenuation loss @ 25°	Freq Mhz										
	0.1	8.6	4.1	3	1	0.3	0.1	-	-	-	-
	1.0	28	22	20.1	14.2	8.6	4.1	3	1	0.3	0.1
	2	34	28	26.1	20.1	14.2	8.6	7	3	1	0.3
	10	48	42	40	34	28	22	20.1	14.2	8.6	4.1
	100	68	62	60	54	48	42	40	34	28	22
500-1k	82	76	74	68	62	56	54	48	42	36	

- Notes:
1. C200, C100 & C76 Capacitance Values for Size 20 Contact Arrangement & Larger
 2. No Load Minimum Attenuation Values per MIL-STD-220
 3. Capacitance in Nanofarads (Nominal Value)
 4. Consult Factory for Higher Voltages & Capacitance Values

Performance Data

Smiths Interconnect connectors conform to the applicable military specifications and standards for materials, finishes and mechanical form, fit, and function. Filter connectors are fully intermateable and interchangeable in most instances with standard non-filtered QPL MIL-SPEC connectors.

Material and Finishes

Shell & Jam Nut	Aluminum Alloy Electroless Nickel per MIL-C-26074
Pin Contacts	Brass per ASTM B16 Gold Plate per MIL-G-45204
Socket & Contacts	Copper Alloy Gold Plate per MIL-G-45204
Insulators	High Grade Plastic/Epoxy
Seal & Grommet	Silicon Base Elastomer



Production Automation Test System Measurements

	Range	Accuracy	Notes
Capacitance	1 pF-1 μ F	0.2% + 0.1 pF	1
DF	0.00001-10	1%	2
Inductance	100 nH-10KH	0.2%+10 nH	1
IR	1 K Ohm - 5 T Ohm	1%	3,4,5
DWV	10 pA-100 mA	1%+10 pA	3,4,6
VR	10 mV-100V	0.2% + 10 mV	7
Ground & Contact Resistance	0.1 mV-1V	0.1%+0.1 mV	7

Notes:

1. Frequency = 20 Hz to 1 MHz
2. Dissipation factor
3. With 5-500 Volts applied
4. Measures each pin to all other pins grounded to shell
5. Insulation resistance
6. Dielectric withstanding voltage
7. Isource = 1nA-1A

Performance Data

Smiths Interconnect Filter Connectors meet or exceed the applicable requirements of the following specifications:

MIL-DTL-38999 **MIL-C-26482**
MIL-DTL-83723 **MIL-DTL-26500**
MIL-DTL-24308 **MIL-DTL-83723**
MIL-DTL-83513 **MIL-C-81511**
MIL-DTL-83527 **ARINC 600**
ARINC 404 (MIL-C-81659)

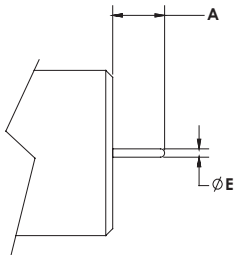
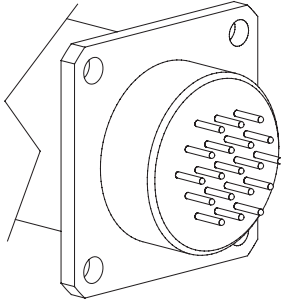
Smiths Interconnect connectors can meet qualification requirements of MIL-DTL-38999, MIL-C-26482, ARINC 404 (MIL-C-81659), and ARINC 600. Smiths Interconnect can perform most test requirements in-house. This includes both electrical and mechanical testing for qualification, engineering evaluation and final acceptance. All products are available for space grade applications.

All specifications subject to change without notice.

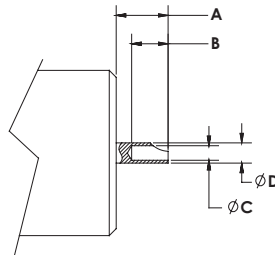
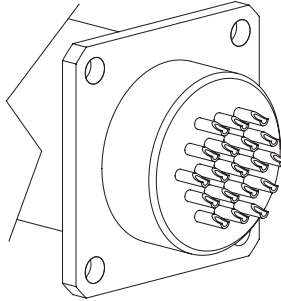
Smiths Interconnect provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths Interconnect connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

Contact Termination

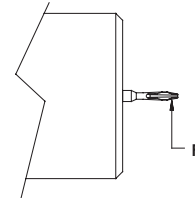
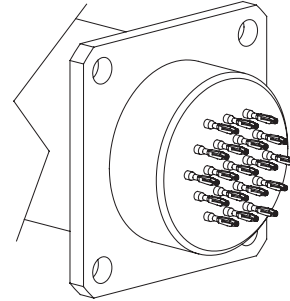
PC TAIL



SOLDER CUP

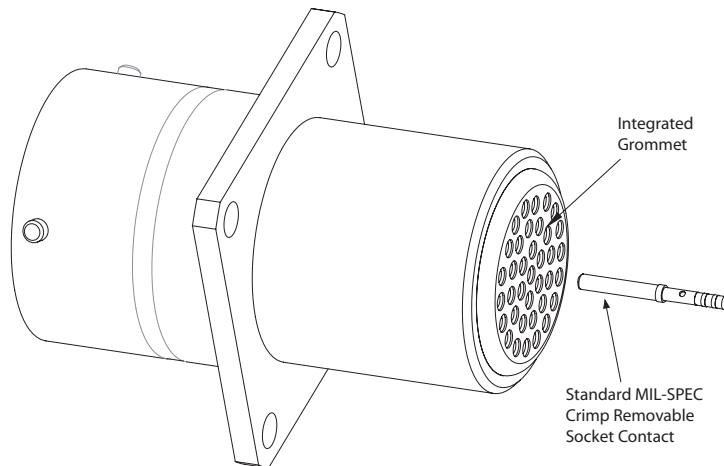


COMPLIANT PRESS-FIT (SOLDERLESS)



Contact Size	A +.025	B	C	D	E +.003	F
22	0.175	0.125 0.094	0.040 0.035	0.055 0.051	0.020	PCB Finished Hole 0.026 + 0.002
20		0.156 0.125	0.048 0.042	0.088 0.061	0.030	
16		0.172 0.141	0.082 0.069	0.103 0.097	0.050	Consult factory for alternate size
12		0.120 0.112	0.142 0.136	0.065		

Crimp / Removable*



* Add 0.700" to overall length for crimp removable connector with integrated grommet.

Solderless Filter Connectors

Smiths Interconnect offers filtered connectors that are capable of providing exceptional low pass filtering and effective insertion loss without the use of soldered components.

Smiths Interconnect has qualified the solderless filter connector design to the applicable requirements listed in MIL-DTL-38999. For the qualification test report summary, please visit the technical notes section of our website.

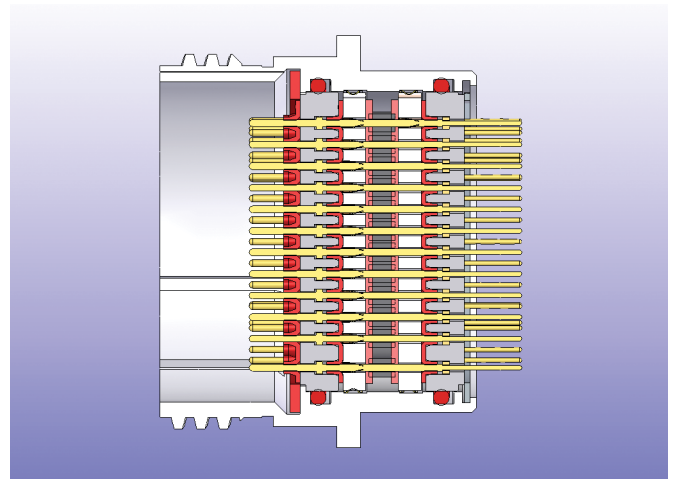
Solderless filter connectors contain a specially designed contact clip to make the connection from the signal/power contact to the capacitor array. An EMI ground spring provides a low resistance path between the capacitor array and connector shell. These connectors meet the same stringent electrical and mechanical requirements of soldered type filter connectors. A uniquely designed seal allows for water wash immersion of the connector in the unmated condition.

Benefits of Solderless Filter Technology

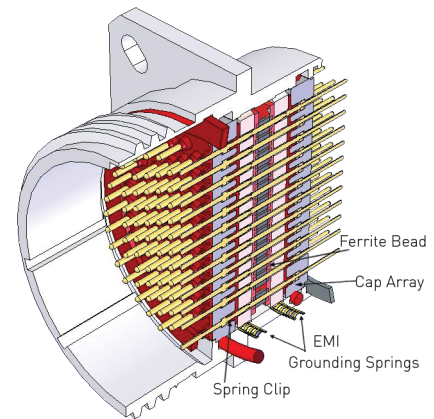
- RoHS Compliant
- No Solder design (not potted)
- Reworkable filter module assembly
- Modular construction
- High temperature lead-free solder tolerant
- Qualification data available upon request

Material and Finishes

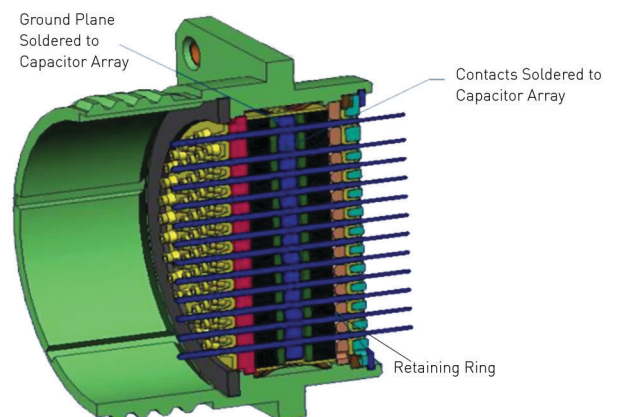
Connector Shell	Aluminum alloy/Steel/Composite
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Jam Nut (if used)	Aluminum alloy
Capacitor	Barium Titanate
Inductor	Ferrite bead



Solderless Filter Assembly



Solder Filter Assembly



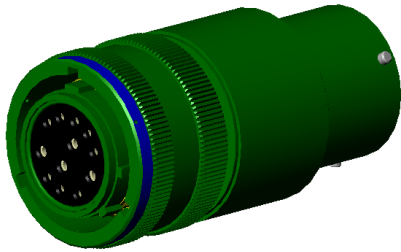
Filter Adapters

Non-filter applications can easily be upgraded to EMI/Transient protection without modification to the system with Smiths Interconnect In-Line Filter Adapters. Filter adapters provide the system designer great flexibility in situations where the filtering or system requirements are subject to change. The adapters are designed to be installed between the existing plug and receptacle without having to re-wire or disassemble the system. Both in-line cable and bulkhead/panel mount versions are available.

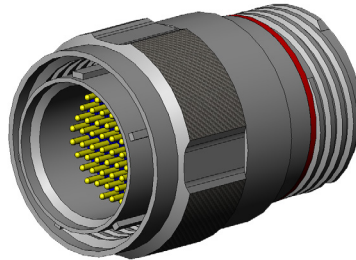
Adapters can be built for any connector series including: MIL-DTL-38999, MIL-C-26482, MIL-DTL-83723, MIL-DTL-24308, MIL-DTL-83513, ARINC 404, and ARINC 600. Consult the factory for more information.



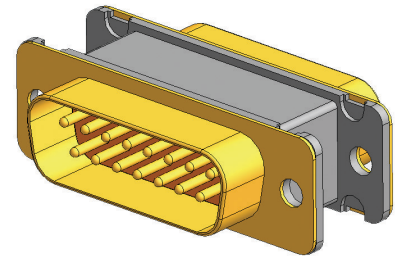
**MIL-DTL-38999
Series I Adapter**



**MIL-DTL-38999
Series III Adapter**



**MIL-DTL-24308
D-Subminiature Adapter**



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