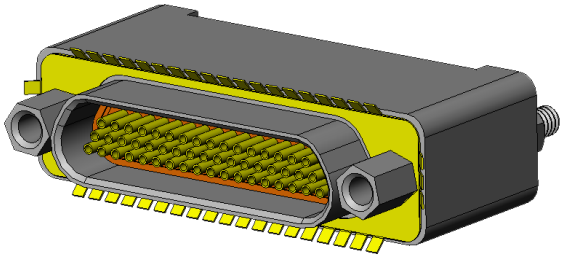
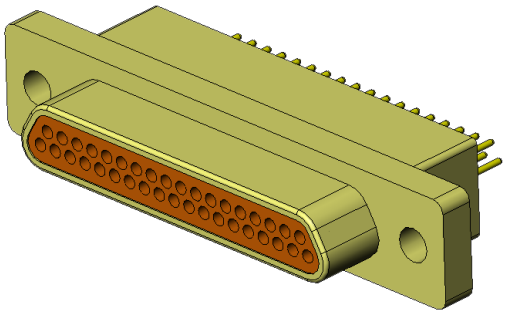
MIL-DTL-83513

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.

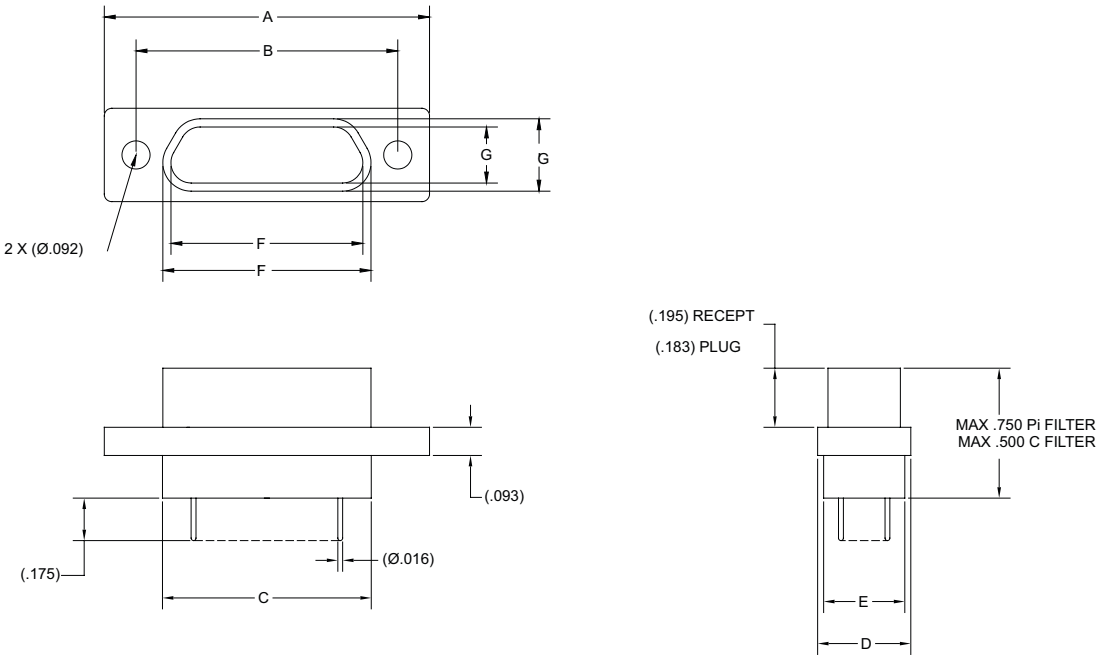




Material and Finishes

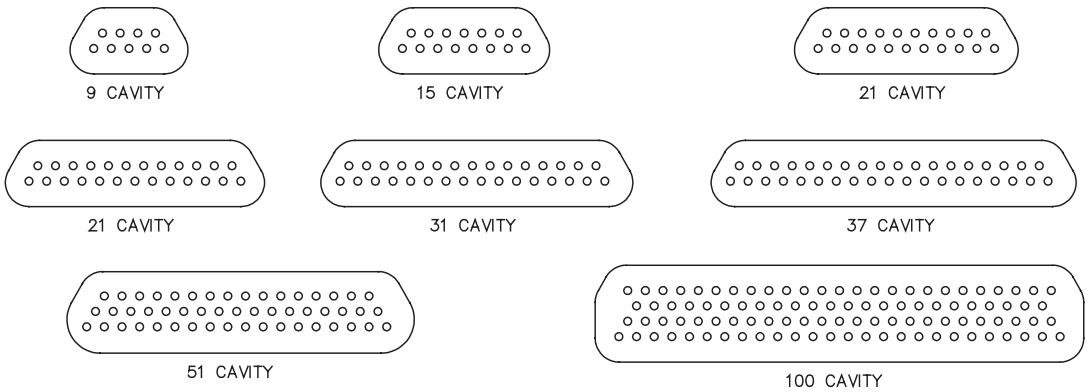
Shell	Aluminum alloy
Insulator	High grade plastic/epoxy
Contacts	Copper alloy, gold plate
Grommet & Seal	Silicon base elastomer
Capacitor	Barium Titanate
Inductor	Ferrite bead

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	2	3	4	5	6
	83513				

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.

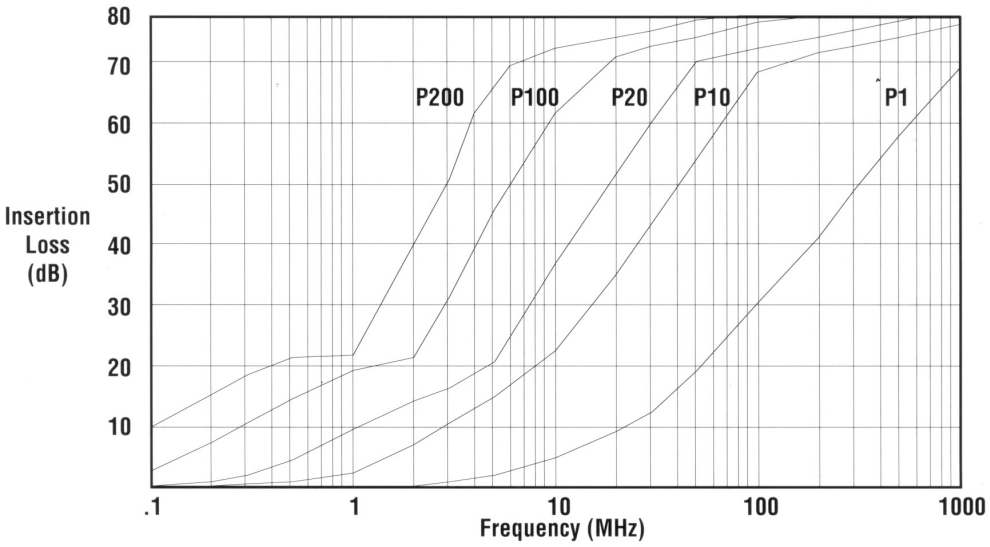
Smiths Interconnect provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths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

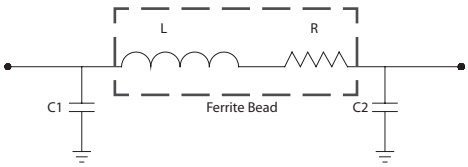
Electrical Performance

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

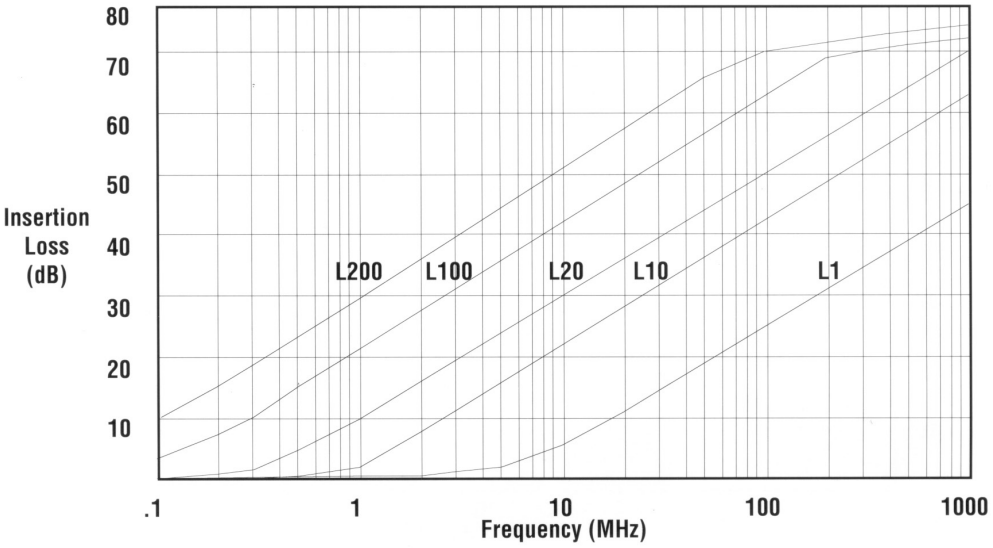
Notes:
1. P200 & P100 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values

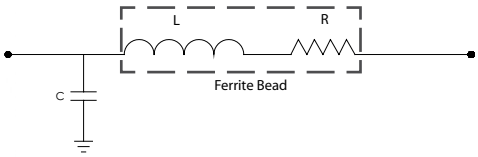
Electrical Performance

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

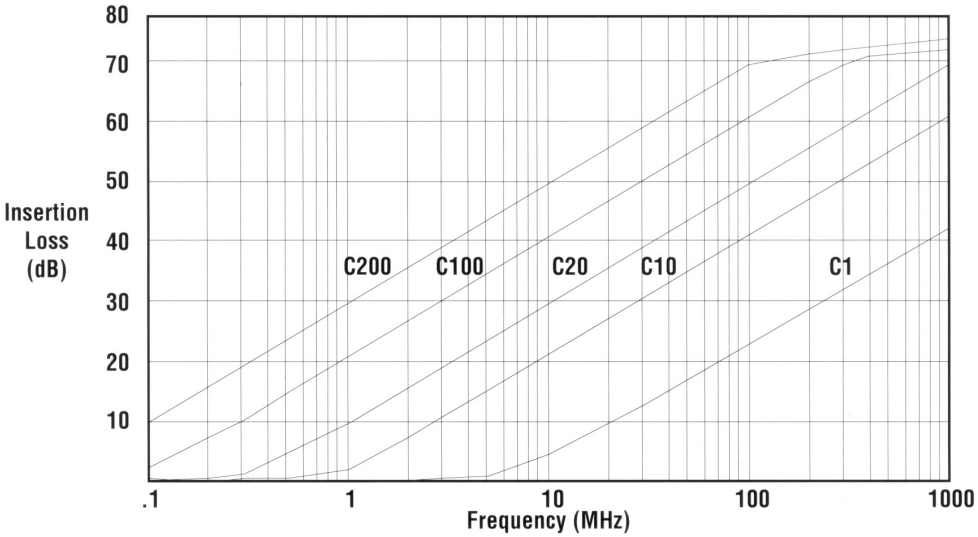
Notes:
1. L200, L100 & L76 Capacitance Values for Size 20 Contact Arrangement & Larger
2. No Load Minimum Attenuation Values per MIL-STD-220
3. Capacitance in Nanofarads (Nominal Value)
4. Consult Factory for Higher Voltages & Capacitance Values

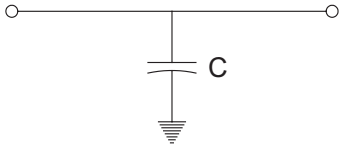
Electrical Performance

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			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						

'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-1μF	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-DTL-83723
MIL-DTL-24308
MIL-DTL-83513
MIL-DTL-83527
ARINC 404 (MIL-C-81659)
MIL-C-26482
MIL-DTL-26500
MIL-DTL-83723
MIL-C-81511
ARINC 600

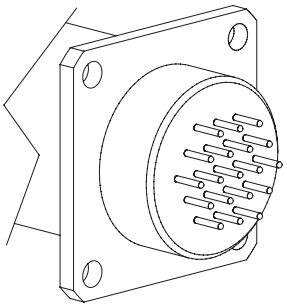
Smiths Interconnect connectors can meet qualification requirements of MIL-DTL-38999, MIL-C-26482, ARINC 404 (MIL-C-81659), and ARINC 600. Smiths Interconnect can perform most test requirements in-house. This includes both electrical and mechanical testing for qualification, engineering evaluation and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

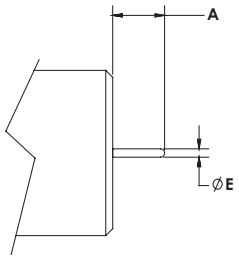
All specifications subject to change without notice.

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.

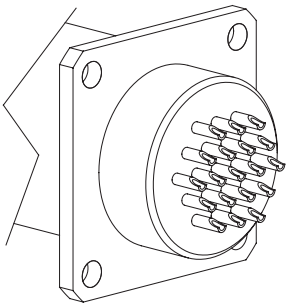
Contact Termination

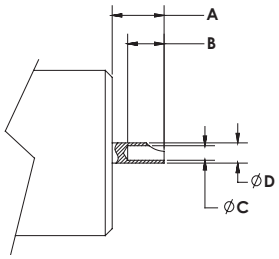
PC TAIL



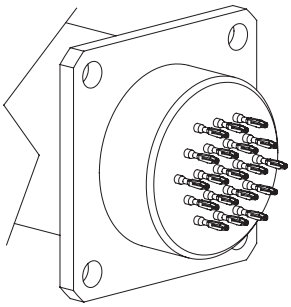


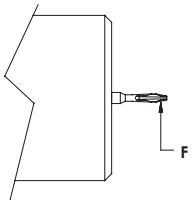
SOLDER CUP





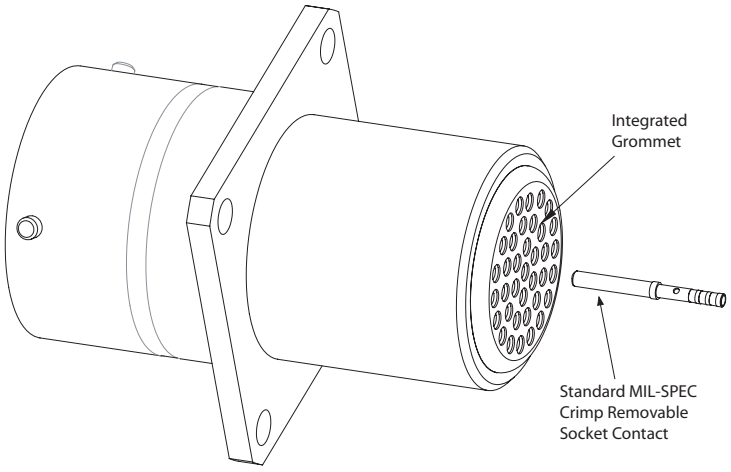
COMPLIANT PRESS-FIT (SOLDERLESS)





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	Consult factory for alternate size
16		0.172 0.141	0.082 0.069	0.103 0.097	0.050	
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.