

Filtered AMPLIMITE Subminiature D Connectors

Technical Documents

Various technical documents are available for your use:

Product Specifications

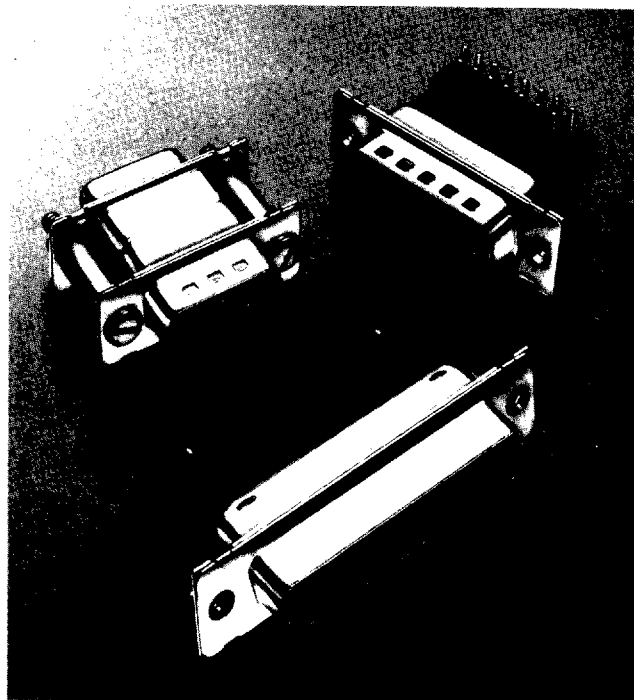
describe technical performance, characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-36025 Connector, AMPLIMITE Filtered, High Density 20

■ **Recognized under the Component Program of Underwriters Laboratories Inc.**
File No. E28476



■ **Certified by Canadian Standards Association,**
File No. LR 16455



AMPLIMITE Subminiature D Connectors are versatile and widely used connectors. AMP has designed and built into these connectors a proven, rugged and inexpensive filter that eliminates the problem of conducted electromagnetic interference (EMI). These connectors also conform to FCC regulations which may require the use of filtering to limit EMI in computing devices.

Subminiature D connectors are offered with two types of filters—distributed element and capacitive. They are provided with a variety of termination choices such as solder cup, straight post and right angle post.

Various types of accessories are available to meet the needs of many applications.

Electrical Specifications

Filter Type	Specification No.	Previous Designation
DA	108-1116	Filter, EMI, 50 Series
DB	108-1117	Filter, EMI, 30 Series
DC	108-1118	Filter, EMI, 20 Series
DD	108-1128	Filter, EMI, 100 Series
DE	108-1131	Filter, EMI, 90 Series
DF	108-1124	Filter, EMI, 70 Series
DG	108-1122	Filter, EMI, 60 Series
CA	108-1139	Filter, EMI, 50C Series
CC	108-1132	Filter, EMI, 20C Series
CD	108-1135	Filter, EMI, 100C Series
CE	108-1134	Filter, EMI, 90C Series
CF	108-1133	Filter, EMI, 70C Series

Subminiature D Connectors With Distributed Element Filters 15 Position

Material and Finish:

Shell—Steel, tin plated

Insert—Thermoplastic, UL rated 94V-0

Contact—Pin-brass, Socket-phosphor bronze, plated .000015 [0.00038] min. gold in contact area, plated tin/lead on termination end

Filter Sleeve—Ferrite and ceramic

Related Product Data:

Panel Mounting/Mating—
page 6

Pc Board Mounting—
page 171

Accessories—pages 67-91

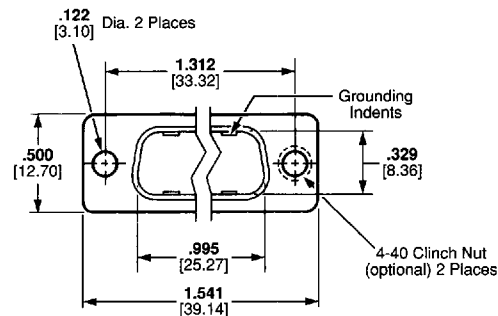
Electrical Specifications—
page 181

Technical Documents:

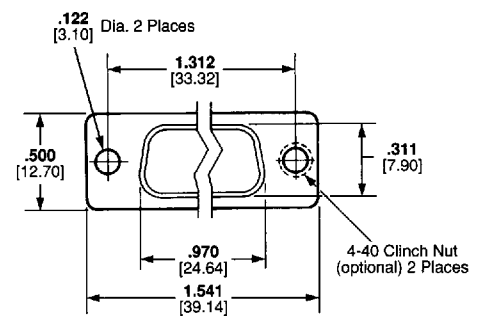
Product Specification—108-36025

Application Specification—
114-7009

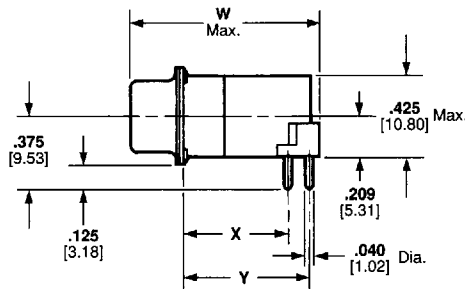
Plug Assemblies (Pin Contacts)



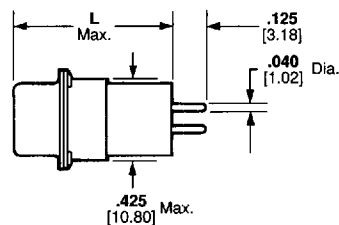
Receptacle Assemblies (Socket Contacts)



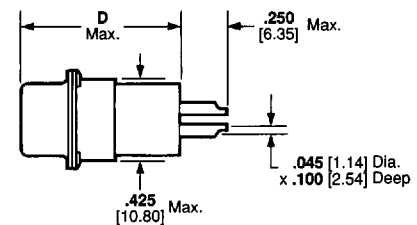
Termination Type



.040 [1.02] Dia.
Right-Angle Post



.040 [1.02] Dia.
Straight Post

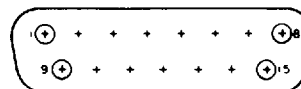


Solder Cup

Insert Arrangement

Note:

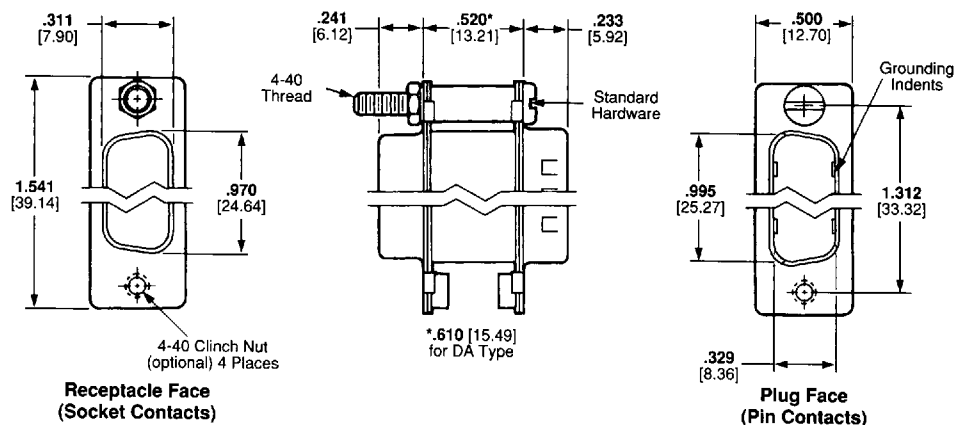
Mating face of plug assembly is shown, receptacle assembly is mirror image.



15 Position

Subminiature D Connectors With Distributed Element Filters 15 Position (Continued)

Plug-Receptacle Adapter



Shell Dimensions

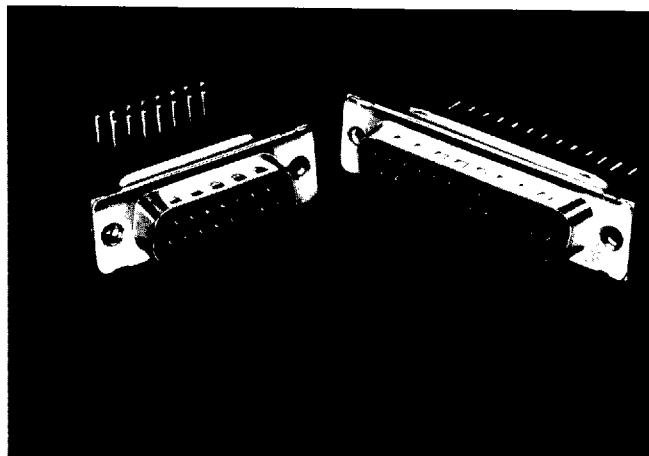
Filter Type	Connector	Dimensions				
		W Max.	Right-Angle X	Y	Straight L Max.	Solder D Max.
DC, DG, DE	Plug	1.015 25.78	.545 13.84	.657 16.69	.640 16.26	.680 17.27
	Receptacle	1.020 25.91	.545 13.84	.657 16.69	.645 16.38	.685 17.40
DB, DF, DD	Plug	1.015 25.78	.545 13.84	.657 16.69	.785 19.94	.825 20.96
	Receptacle	1.020 25.91	.545 13.84	.657 16.69	.790 20.07	.830 21.08
DA	Plug	1.132 28.75	.657 16.69	.769 19.53	.950 24.13	.990 25.15
	Receptacle	1.137 28.88	.657 16.69	.769 19.53	.955 24.26	.995 25.27

Part Numbers

Filter Type	Mounting Style	Plug Assemblies with Pin Contacts			Receptacle Assemblies with Socket Contacts			Plug-Receptacle Adapters
		Termination Type			Termination Type			
		Right-Angle Posted .040 [1.02] Dia.	Straight Posted .040 [1.02] Dia.	Solder Cup	Right-Angle Posted .040 [1.02] Dia.	Straight Posted .040 [1.02] Dia.	Solder Cup	
DC	.120 [3.05] Mounting Hole	842901-1	842911-1	842921-1	842906-1	842916-1	842926-1	842931-1 ¹
	4-40 Clinch Nut	842901-8	842911-8	842921-8	842906-8	842916-8	842926-8	842931-8
DB	.120 [3.05] Mounting Hole	842901-2	842911-2	842921-2	842906-2	842916-2	842926-2	842931-2 ¹
	4-40 Clinch Nut	842901-9	842911-9	842921-9	842906-9	842916-9	842926-9	842931-9
DA	.120 [3.05] Mounting Hole	842901-3	842911-3	842921-3	842906-3	842916-3	842926-3	842931-3 ¹
	4-40 Clinch Nut	1-842901-0	1-842911-0	1-842921-0	1-842906-0	1-842916-0	1-842926-0	1-842931-0
DG	.120 [3.05] Mounting Hole	842901-4	842911-4	842921-4	842906-4	842916-4	842926-4	842931-4 ¹
	4-40 Clinch Nut	1-842901-1	1-842911-1	1-842921-1	1-842906-1	1-842916-1	1-842926-1	1-842931-1
DF	.120 [3.05] Mounting Hole	842901-5	842911-5	842921-5	842906-5	842916-5	842926-5	842931-5 ¹
	4-40 Clinch Nut	1-842901-2	1-842911-2	1-842921-2	1-842906-2	1-842916-2	1-842926-2	1-842931-2
DE	.120 [3.05] Mounting Hole	842901-6	842911-6	842921-6	842906-6	842916-6	842926-6	842931-6 ¹
	4-40 Clinch Nut	1-842901-3	1-842911-3	1-842921-3	1-842906-3	1-842916-3	1-842926-3	1-842931-3
DD	.120 [3.05] Mounting Hole	842901-7	842911-7	842921-7	842906-7	842916-7	842926-7	842931-7 ¹
	4-40 Clinch Nut	1-842901-4	1-842911-4	1-842921-4	1-842906-4	1-842916-4	1-842926-4	1-842931-4

¹This Adapter has Standard Hardware.

AMPLIMITE Subminiature D Filtered Connectors



Selecting A Filter

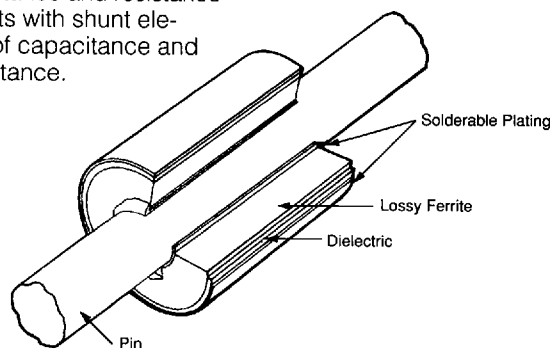
1. Based on intended application, determine the highest frequency to be preserved. Higher frequencies will be filtered.
2. Consult the graphs on pages 178 and 179 to find a filter type which begins filtering above the highest frequency to be preserved. Select this type.
Filter Type designation example:
DA—D = Distributed Element Filter
3. Consult the specifications tables to see that the type selected has adequate working voltage for the application, that the current rating is 1 to 3 times the application load and that other parameters of the filter type are suitable for the application.

A = 3000 pf Min.
Capacitance

Distributed Element Filters (Pages 180-189)

One-piece construction of AMP's distributed element filters results in a distributed capacitance and inductance network which can be approximated by a distributed transmission line circuit. Such a circuit is a series of inductance and resistance elements with shunt elements of capacitance and conductance.

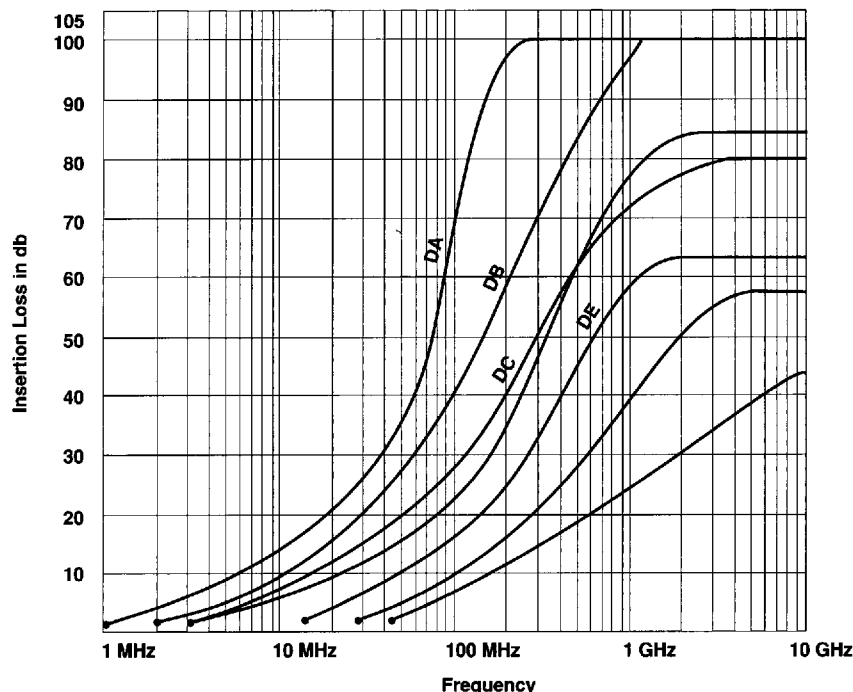
Quiet Line Filters provide an inherent insertion loss per unit length. At frequencies above about 20 MHz, the low pass filter provides 80 percent of its insertion loss from its lossy ferrite component.



AMPLIMITE Subminiature D Filtered Connectors (Continued)

Distributed Element Filters (Continued)

Typical Insertion Loss vs. Frequency Comparison (No Load @ 25°C)



Electrical Specifications:

Current Rating (Max.): Load Current (in connector)

#20 Contact—7.5 amps
(Loose-piece filters—15 amps)
RF Current—0.3 amps

Operating Voltage (Max.): 100 VDC at -25°C to +85°C

Dissipation Factor: 0.1 Max.

Dielectric Withstanding Voltage: 250 VDC for 5 seconds

***Insulation Resistance (Min.):** 500 Megohms, minimum at 100 VDC,
2 minutes and +25°C

Direct Current Resistance: .002 ohms Max.

***DF and DG Types—1 Gigaohm min.**

Minimum No Load Insertion Loss

Filter Type	AMP Electrical Specification Number	Capacitance Range	3 db Point	Min. No Load Insertion Loss in db (Per MIL-STD-220 at +25°C)							
				25 MHz	50 MHz	100 MHz	300 MHz	500 MHz	1 GHz	5 GHz	10 GHz
DA	108-1116	3000 pf to 8000 pf	2 MHz	20	30	50	90	100	100	100	100
DB	108-1117	2000 pf to 5000 pf	3 MHz	15	20	30	65	80	90	90	90
DC	108-1118	1000 pf to 3000 pf	7 MHz	10	15	20	40	50	55	55	55
DD	108-1128	600 pf to 1000 pf	20 MHz	—	10	20	40	50	60	60	60
DE	108-1131	300 pf to 600 pf	30 MHz	—	8	12	25	35	45	45	45
DF	108-1124	130 pf to 400 pf	50 MHz	—	—	—	—	25	35	55	55
DG	108-1122	50 pf to 175 pf	150 MHz	—	—	—	—	—	16	35	42

Note: The above filters were previously designated as follows:

DA—50 Series, DB—30 Series, DC—20 Series, DD—100 Series, DE—90 Series,
DF—70 Series and DG—60 Series.

AMPLIMITE Subminiature D Filtered Connectors (Continued)

Capacitive Filters (Pages 192-199)

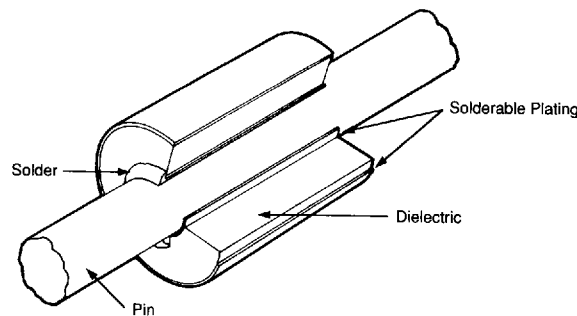
Filtering is the simplest method of removing unwanted noise from within a circuit. And capacitive filtering provides excellent noise removal, even in the face of extreme EMI, and does so at reasonable cost.

But the price extracted by capacitors is signal degradation. Systems transmitting relatively low power CMOS signals, for example, can ill afford any loss. More typical systems that transmit stronger signals and can tolerate moderate loss are well suited for capacitive filtering.

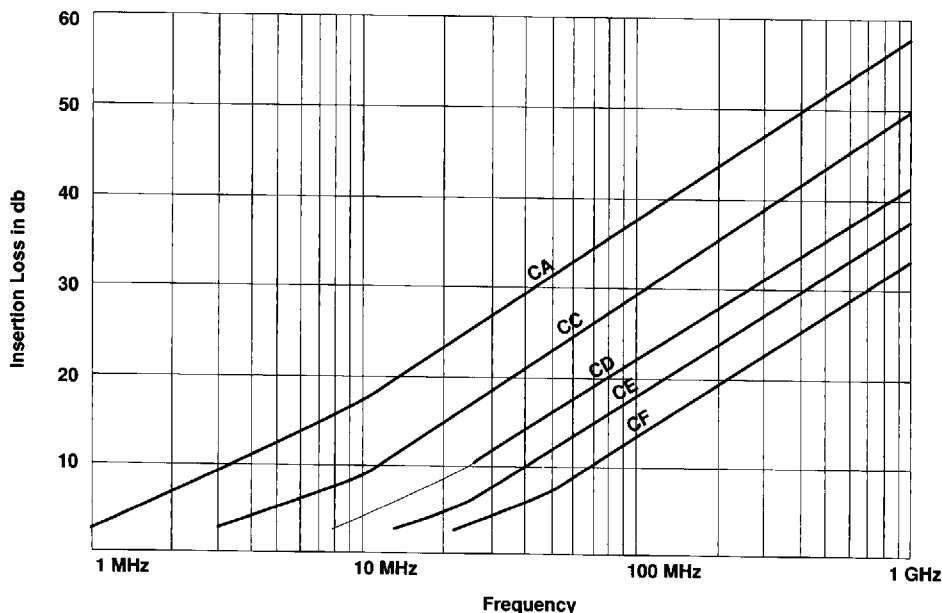
Traditionally, a filtering capacitor was used on printed circuit boards,

bridging from an input or output line to ground. The proliferation of filtering capacitors in complex circuits had potential for detrimental effects, such as ground loop interference. AMP designers chose to collect the filters in a central connector where adequate grounding and control can be assured.

AMP initially developed the filtered connector concept with its premium distributed-element filter assemblies (which convert unwanted signal energy into heat) and has extended that technology to include capacitive assemblies for less demanding applications.



Typical Insertion Loss vs. Frequency Comparison
(No Load @ 25°C)



AMPLIMITE Subminiature D Filtered Connectors (Continued)**Capacitive Filters**

(Continued)

Electrical Specifications:**Current Rating (Max.):** Load Current—

#20 Contact—5 amps

RF Current—0.3 amps

Operating Voltage (Max.): 100 VDC at -25°C to +85°C***Dissipation Factor:** 0.1 Max.**Dielectric Withstanding Voltage:** 250 VDC for 5 seconds***Insulation Resistance (Min.):** 1 Gigaohms at 100 VDC, 2 minutes and +25°C**Direct Current Resistance:** .002 ohms Max.

*Higher voltage available, consult AMP Incorporated, Harrisburg, PA

Minimum No Load Insertion Loss

Filter Type	AMP Electrical Specification Number	Capacitance Range	3 db Point	Min. No Load Insertion Loss in db (Per MIL-STD-220 at +25°C)					
				25 MHz	50 MHz	100 MHz	300 MHz	500 MHz	1 GHz
CA	108-1139	4000 pf to 10,000 pf	1.6 MHz	23	29	35	45	49	55
CC	108-1132	1300 pf to 2500 pf	5 MHz	—	14	25	35	40	45
CD	108-1135	600 pf to 1000 pf	10 MHz	8	13	19	25 @ 200 MHz	33	39
CE	108-1134	400 pf to 600 pf	16 MHz	5	10	16	22 @ 200 MHz	29	35
CF	108-1133	240 pf to 360 pf	27 MHz	3	6	11	17 @ 200 MHz	25	31
Feed-thru	108-1155	10 pf Max.	—	NA					

Note: The above filters were previously designated as follows:

CA—50C Series, CC—20C Series, CD—100C Series, CE—90C Series and CF—70C Series.