Delay Equalized Lowpass

Anti-Aliasing Reconstruction
Custom Built LC Filters - 1 KHz to 500 MHz

delpPrinter

The Allen Avionics DELAY EQUALIZED LOWPASS FILTERS tabulated on this page are the result of many years of experience in the use of specialized computer programs for the design and optimization of Delay Equalized Filters. By using modern digital computers, the composite behavior of the filter and equalizer are optimized to yield the ultimate in both amplitude, delay and phase response.

This type of filter is ideally suited for use as an Anti-Aliasing Filter in analog to digital conversion. When used as a Post-Aliasing Filter in digital processing applications, the passband can be shaped to correct for sin x/x amplitude distortion.

The filters tabulated below represent a widely used group. However, many other combinations of stopband ratio, impedance, delay distortion and size are possible. Two stopband ratios are listed in the table below, 1.375 @ 45dB and 1.575 @ 60dB.

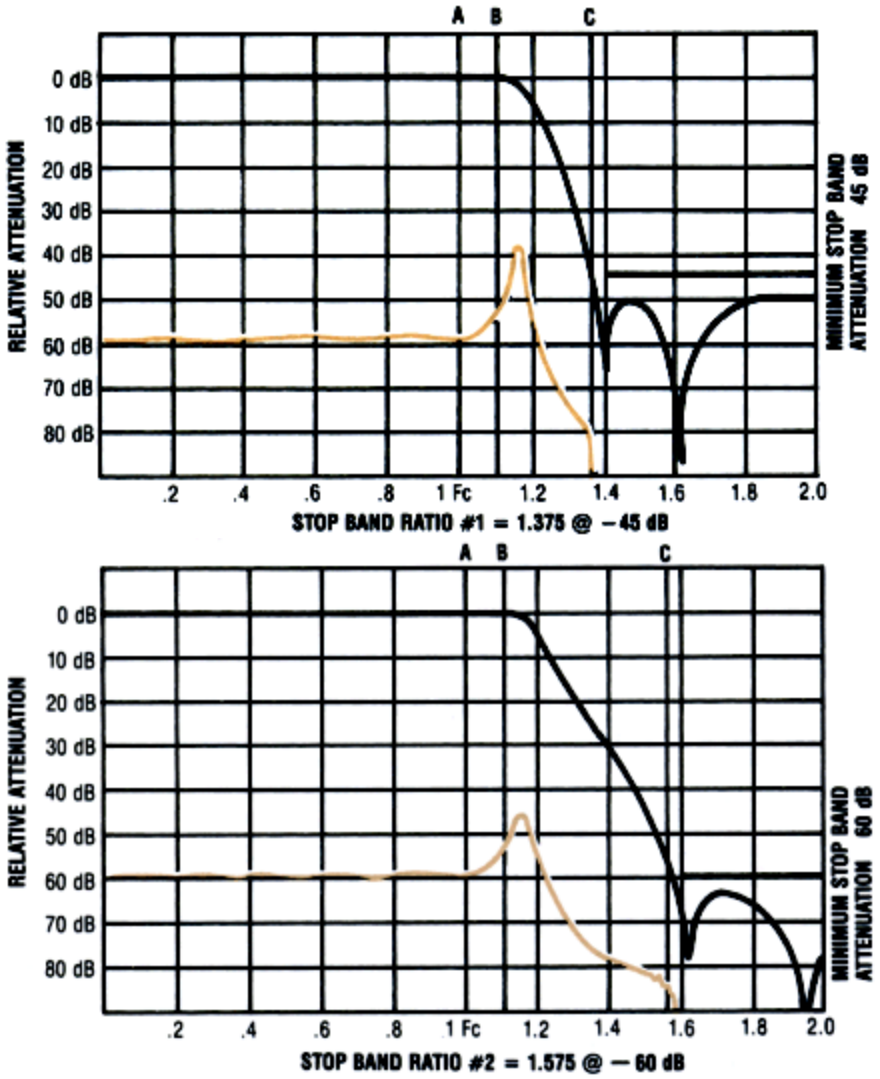
Units normally supplied in metal cans for printed circuit mounting. SMA connectors same size. BNC connectors may require larger cans.

Amplitude, phase and/or delay matching between filters is also available.

CALL FACTORY FOR SPECIAL SIZES AND DELIVERY INFORMATION.

ORDER ANY CUT-OFF FREQUENCY FROM 1KHz TO 20MHz. INTERPOLATION BETWEEN TABULATED DATA ALLOWABLE.

Mechanical Specs available on the WEB Site



Normalized Plot of Amplitude & Delay Response of Delay Equalized Lowpass Filter

A = -.25dB Frequency, **B** = -3dB Frequency, **C** = -45dB Frequency or -60dB

Stopband Ratio #1 = 1.375 @ 45dB **- Delay (D) =** 18.63
Stopband Radio #2 = 1.575 @ 60dB **- Delay (D)** = 17.83

APPROXIMATE PASSBAND DELAY (seconds) = Delay (D) / 2 x p x Frequency A(Hz)

Delay Equalized Lowpass Anti-Aliasing Reconstruction Filters

± .25dB MAXIMUM RIPPLE —2dB MAXIMUM INSERTION LOSS
MAXIMUM DELAY VARIATION 3% TO - .25dB FREQUENCY

Maximum 25dB Cut-Off Frequency (Last point that delay flatness Is specified) (Graph location A)	Maximum 3dB Attenuation Frequency (Graph location B) B = 1.1 x A	Attenuation Frequency Graph Location C		Impedance Range (Ohms)	Approximate Passband Delay Micro-Seconds		Standard Size (Inches)	"Space-Saving" Size (Inches)
		45dB Ratio #1 C = 1.375 x A	60dB Ratio #2 C = 1.575 x A		Ratio #1	Ratio #2		
1 .0 KHz	1.10 KHz	1 .38 KHz	1.58 KHz	500-2.5K	2965	2837	6 x 2 x 1-1/4	---
2.5 KHz	2.75 KHz	3.44 KHz	3.94 KHz	500-2.5K	1186	1135	6 x 2 x 1-1/4	---
5.0 KHz	5.50 KHz	6.88 KHz	7.88 KHz	500-2.5K	593	567	6 x 2 x 1-1/4	---
10.0 KHz	11 .00 KHz	13.75 KHz	15.75 KHz	500-2.5K	297	284	6 x 2 x 1-1/4	5 x 2 x 1-1/4
25.0 KHz	27.50 KHz	34.37 KHz	39.38 KHz	100-1.0K	119	114	5 x 2 x 1-1/4	4 x 2 x 1-1/4
50.0 KHz	55.00 KHz	68.75 KHz	78.80 KHz	50-600	59	57	5 x 2 x 1-1/4	4 x 2 x 1-1/4
100.0 KHz	110.00 KHz	137.50 KHz	157.50 KHz	50-200	30	28	5 x 2 x 1-1/4	4 x 2 x 1-1/4
250.0 KHz	275.00 KHz	343.75 KHz	393.75 KHz	50-100	12	11	4 x 2 x 1-1/4	4 x 2 x 3/4
500.0 KHz	550.00 KHz	687.50 KHz	787.50 KHz	50-100	5.94	5.67	4 x 2 x 1-1/4	4 x 2 x 3/4
1.0 MHz	1.10 MHz	1.38MHz	1.58MHz	50-75	2.97	2.84	4 x 2 x 1-1/4	4 x 2 x 3/4
2.5 MHz	2.75 MHz	3.44 MHz	3.94 MHz	50-75	1.19	1.14	4 x 2 x 1-1/4	3 x 1-5/8 x 1-1/8
5.0 MHz	5.50 MHz	6.88 MHz	7.88 MHz	50-75	0.590	0.567	4 x 1-1/2 x 1-1/4	3 x 1-5/8 x 1-1/8
7.5 MHz	8.25 MHz	10.31 MHz	1 1 .82 MHz	50-75	0.395	0.378	4 x 1-1/2 x 1-1/4	3 x 1-5/8 x 1-1/8
10.0 MHz	11.00 MHz	13.75 MHz	15.75 MHz	50-75	0.296	0.284	4 x 1-1/2 x 1-1/4	3 x 1-5/8 x 1-1/8
12.5 MHz	13.75 MHz	17.18 MHz	19.69 MHz	50-75	0.237	0.226	4 x 1-1/2 x 1-1/4	3 x 1-5/8 x 1-1/8
15.0 MHz	16.50 MHz	20.63 MHz	23.63 MHz	50-75	0.197	0.188	4 x 1-1/2 x 1-1/4	3 x 1-1/4 x 3/4
17.5 MHz	19.25 MHz	24.06 MHz	27.57 MHz	50-75	0.169	0.162	4 x 1-1/2 x 1-1/4	3 x 1-1/4 x 3/4
20.0 MHz	22.00 MHz	27.50 MHz	31.50 MHz	50	0.148	0.141	4 x 1-1/2 x 1-1/4	3 x 1-1/4 x 3/4
25.0MHz	27.50MHz	34.38MHz	39.38MHz	50	0.118	0.113	4 X 1.5 X 1.25	3 x 1-1/4 x 3/4
30.0MHz	33.00	41.25MHz	47.25MHz	50	0.099	0.095	4 x 1.5 x 1.25	3 x 1-1/4 x 3/4
35.0MHz	38.5	48.12MHz	55.12MHz	50	0.840	0.081	4 x 1.5 x 1.25	3 x 1-1/4 x 3/4
40.0MHz	44.0	55.00MHz	63.00MHz	50	0.740	0.071	4 x 1.5 x 1.25	3 x 1-1/4 x 3/4
45.0MHz	49.50	61.88MHz	70.87MHz	50	0.066	0.063	4 x 1.5 x 1.25	3 x 1-1/4 x 3/4
50.0MHz	55.00	68.75MHz	78.75MHz	50	0.059	0.056	4 x 1.5 x 1.25	3 x 1-1/4 x 3/4
60.0MHz	66.00	82.50MHz	94.50MHz	50	0.049	0.047	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
70.0MHz	77.00	96.25MHz	110.3MHz	50	0.042	0.040	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
80.0MHz	88.00.	110.0MHz	126.0MHz	50	0.037	0.035	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
90.0MHz	99.00	123.8MHz	141.8MHz	50	0.033	0.031	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
100.0MHz	110.00	137.MHz	157.5MHz	50	0.029	0.028	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*150.0 MHz	165.00	206.3MHz	236.2MHz	50	0.019	0.019	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*200.0 MHz	220.00	275.0MHz	315.0MHz	50	0.014	0.014	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*250.0 MHz	275.00	343.8MHz	393.8MHz	50	0.011	0.011	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*300.0 MHz	330.00	412.5MHz	472.5MHz	50	0.009	0.009	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*400.0 MHz	440.00	550.0MHz	630.0MHz	50	0.007	0.007	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2
*500.0 MHz	550.00	687.5MHz	787.5MHz	50	0.005	0.005	4 x 1.5 x 1.25	3 x 1-1/4 x 1/2

*At frequencies above 100MHz, the maximum attenuation at location A becomes .5dB and the delay variation up to location A becomes ± 5%.

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We are pleased to accept