FREQUENCY DEVICES™

Model D70H6B

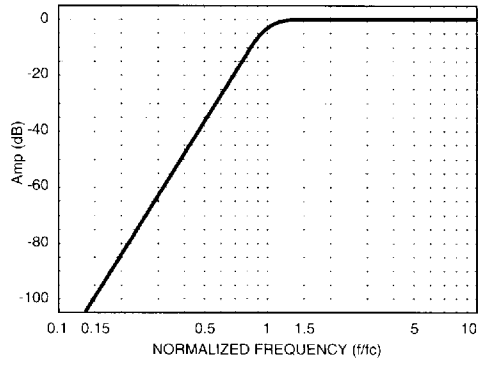
Linear Active DIP Filters

6-Pole Butterworth High-Pass Filter

Description

The D70H6B is an 6-pole high-pass Butterworth transfer function, is maximally flat, has no ripple in the passband, and has a monotonic roll-up at the rate of 36 dB/octave in the stopband.

Frequency Response



Specifications

Transfer Function	6-pole Butterworth High-Pass
Size	0.825" x 0.625" x 0.3"
Range f_c	500 Hz to 50 kHz
Passband Ripple (theoretical)	0.0 dB
DC Voltage Gain (non-inverting)	0 ± 0.2 dB typ.
Stopband Attenuation Rate	36 dB/octave
Cutoff Frequency f_c (-3 dB)	
Accuracy	± 2 % max.
Stability	± 0.02 % / °c
Phase Shift	– 270°
Filter Attenuation	(theoretical)
80 dB	0.21 f_c
60 dB	0.32 f_c
3.01 dB	1.00 f_c
0.00 dB	2.50 f_c
Phase Match [2]	
Amplitude Accuracy [2]	
Total Harmonic Distortion @ 1 kHz	< – 80 dB
Wide Band Noise (5 Hz - 2 MHz)	400 µVRMS typ.
Narrow Band Noise (5 Hz - 50 kHz)	100 µVRMS typ.

Theoretical Transfer Characteristics

f/fc (Hz)	Amp (dB)	Phase (deg)	Delay [1] (sec)
0.10	-120	518	.617
0.20	-83.9	496	.624
0.30	-62.7	473	.637
0.40	-47.8	450	.656
0.50	-36.1	425	.685
0.60	-26.6	400	.731
0.70	-18.6	373	.803
0.80	-11.9	342	.911
0.85	-9.05	325	.970
0.90	-6.57	307	1.02
0.95	-4.55	288	1.03
1.00	-3.01	270	1.00
1.20	-0.462	209	.660
1.40	-0.076	172	.417
1.60	-0.015	147	.291
1.80	-0.004	128	.219
2.00	-0.001	115	.171
2.50	0.00	90.4	.105
3.00	0.00	74.8	.071
4.00	0.00	55.8	.039
5.00	0.00	44.5	.025
6.00	0.00	37.0	.017
7.00	0.00	31.7	.013
8.00	0.00	27.7	.010
9.00	0.00	24.6	.008
10.0	0.00	22.2	.006

2. Phase Match and Amplitude Accuracy are within ±2% max., ±1% typ. of the theoretical transfer characteristics.

1. Normalized Group Delay: The above delay data is normalized to a corner frequency of 1.0 Hz. The actual delay is the normalized delay divided by the actual corner frequency (fc).

$$\text{Actual Delay} = \frac{\text{Normalized Delay}}{\text{Actual Corner Frequency (fc) in Hz}}$$

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