

LP6F & LP6P

6-POLE, 6-ZERO FLAT/PULSE LOW-PASS FILTER



DESCRIPTION

The LP6F and LP6P 6-pole, 6-zero Low-Pass filters together provide the user with the versatility to address applications in either the time or frequency domain. The choice of LP6F or LP6P is programmable in most Precision Filters products that offer this filter characteristic.

The LP6F FLAT mode low-pass filter has pass-band characteristics nearly identical to a 6-pole Butterworth yet has a much sharper roll-off making it a good choice for applications such as spectral analysis and for anti-aliasing applications. The LP6F, when combined with an amplifier having distributed gain before and after the filter, may also be effectively applied to resonant transducers. The filter attenuates the energy centered at the out-band resonant frequency after which, the post filter amplifier can be used to amplify the in-band signal to the desired full-scale level.

The LP6P PULSE mode low-pass filter has excellent transient response and phase linearity required for time domain applications including transient (shock) measurements and time domain waveform analysis. The LP6P has frequency and time domain characteristics superior to the 6-pole Bessel filter. Like the Bessel, the LP6P has a broadly rounded amplitude response that is a consequence of the LP6P's linear phase property.

SPECIFICATIONS

	LP6F 6-Pole Maximally Flat Low-Pass Filter	LP6P 6-Pole Constant Time Delay Low-Pass Filter
Cutoff Frequency Amplitude	-3.01 dB	-3.01 dB
DC Gain	0.00 dB	0.00 dB
Pass-Band Ripple	0.00 dB	0.00 dB
Stop-Band Frequency:	2.6113 F_c	5.1923 F_c
Cutoff Frequency Phase	-270.0 deg	-140.3 deg
Phase Distortion (DC to F_c)	<31.8 deg	<1.45 deg
Zero Frequency Group Delay	0.5834/ F_c	0.3924/ F_c
Percent Overshoot	15.8%	1.1%
1% Settling Time	2.80/ F_c	0.84/ F_c
0.1 % Settling Time	4.36/ F_c	1.02/ F_c
-0.1 dB Frequency	0.766 F_c	0.193 F_c
-1 dB Frequency	0.9080 F_c	0.5983 F_c
-2 dB Frequency	0.9624 F_c	0.8293 F_c
-3.01 dB Frequency	1.0000 F_c	1.0000 F_c
-20 dB Frequency	1.3822 F_c	2.3616 F_c
-40 dB Frequency	1.8546 F_c	3.5115 F_c
-60 dB Frequency	2.3206 F_c	4.5462 F_c
-80 dB Frequency	2.6113 F_c	5.1923 F_c



