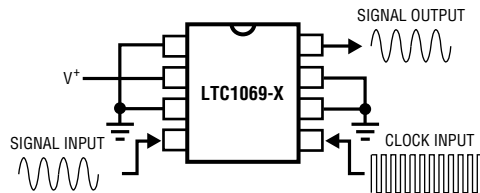
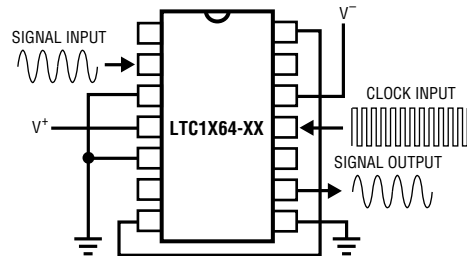


### LTC®1064-X/LTC1069-X/LTC1164-X/LTC1264-X Pre-Programmed Filters

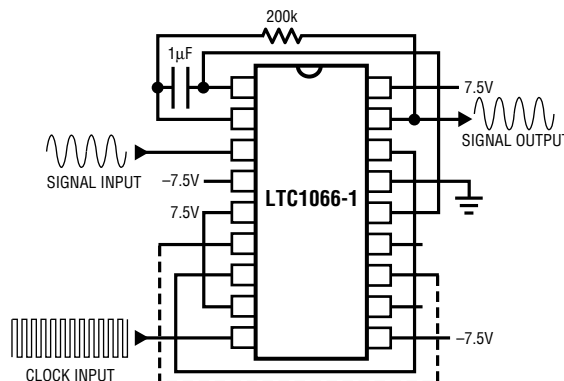
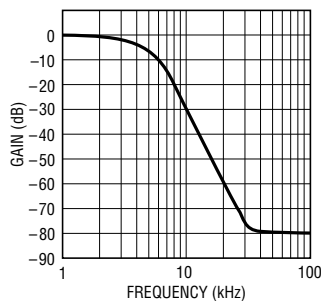
#### LTC1064-X/LTC1069-X/LTC1164-X/LTC1264-X Pre-Programmed Filter Advantages



- NO Design Required
- Filters Plug-Compatible
- Occupy Minimal Board Space
- Clock Sweeppable Cutoff Frequency
- Low Noise/Low Power/High Speed
- Extremely Low Clock Feedthrough
- Low DC Errors

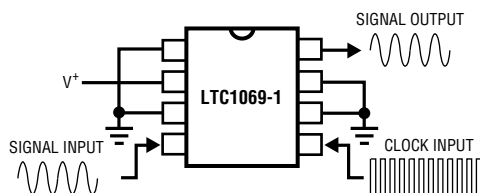
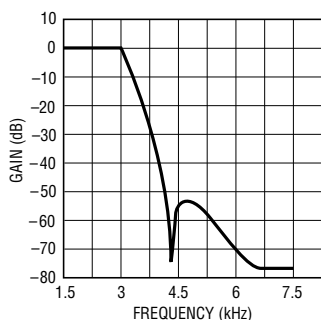
#### LTC1066-1 14-Bit, DC Accurate, 8th Order Linear Phase or Elliptic Filter

Linear Phase Response Selected



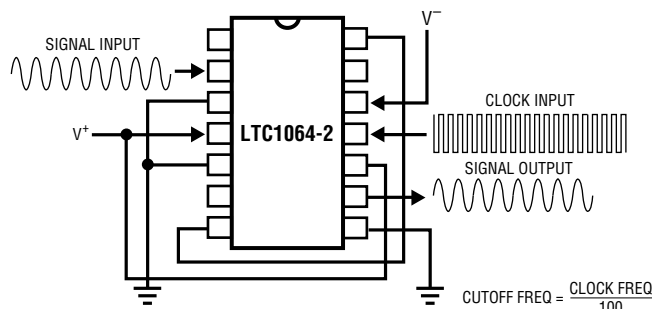
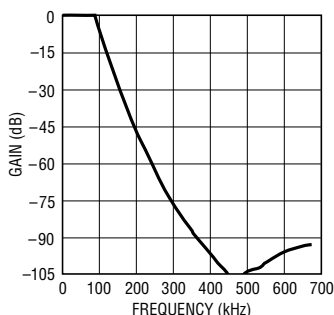
- DC Gain Linearity: 14 Bits
- Maximum DC Offset:  $\pm 2\text{mV}$
- Drives  $1\text{k}\Omega$  Load with 0.02% THD or Better
- Input Impedance:  $500\text{M}\Omega$
- Selectable Elliptic or Linear Phase Response
- 100kHz Maximum Cutoff Frequency
- Operates from Single 5V up to  $\pm 8\text{V}$  Power Supplies

#### LTC1069-1 Low Power, 8th Order, Elliptic Lowpass Filter: Smallest Package



- 8th Order Elliptic Filter in an SO-8 Package
- 12kHz Max Corner Frequency
- 70dB Attenuation at  $2.0 \times$  Cutoff Frequency
- 100:1 Clock-to-Cutoff Ratio
- $120\mu\text{V}_{\text{RMS}}$  Total Wideband Noise
- Operates from Single 3.3V to  $\pm 5\text{V}$  Supplies

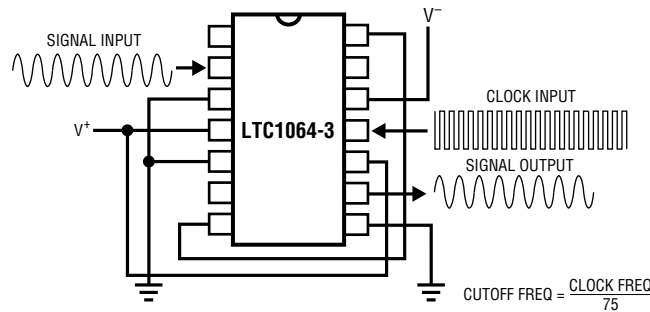
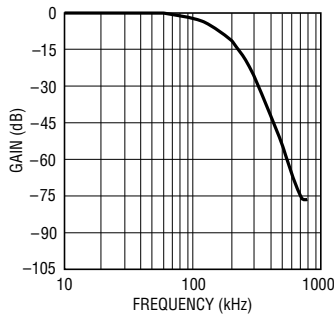
#### LTC1064-2 8th Order Butterworth Lowpass Filter: Flattest Passband Response



- 140kHz Max Corner Frequency
- -48dB/Octave Roll-off
- Max. Flat Passband
- 50:1 or 100:1 Clock-to-Cutoff Ratio
- $80\mu\text{V}_{\text{RMS}}$  Total Wideband Noise
- 0.02% THD

See LTC1X64-7 (Other Side) For Additional Linear Phase Function

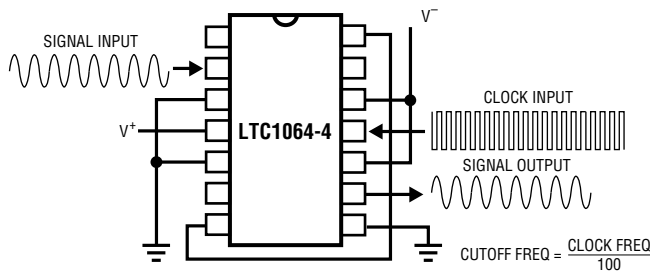
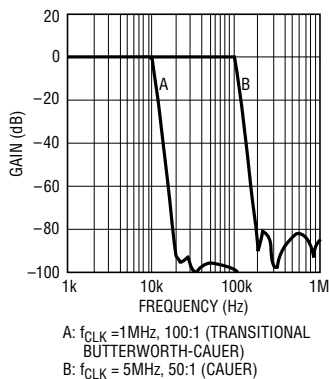
### LTC1064-3 Linear Phase Bessel Lowpass Filter: Low Pulse Shape Distortion



- 95kHz Max Corner Frequency
- Linear Phase Response
- Flat Group Delay
- 75:1, 120:1 or 150:1 Clock-to-Cutoff Ratio
- 60 $\mu$ V<sub>RMS</sub> Wideband Noise
- 0.015% THD

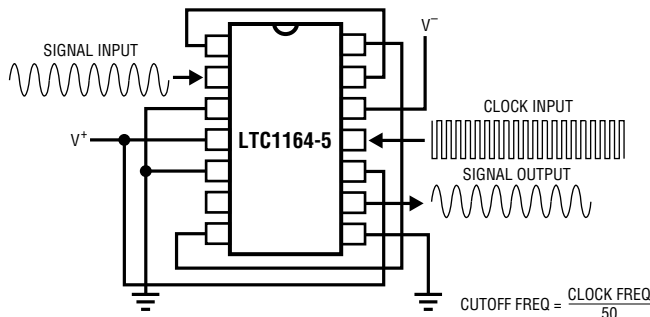
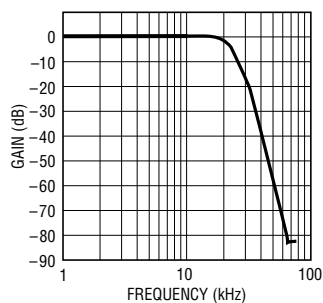
See LTC1X64-7 (Other Side) For Additional Linear Phase Function

### LTC1064-4 Low Noise, 8th Order Cauer Lowpass Filter: Very Steep Rolloff



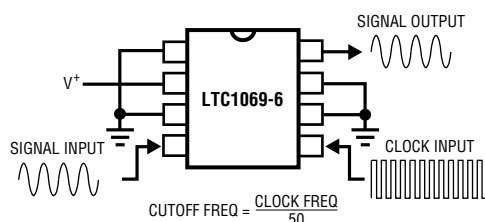
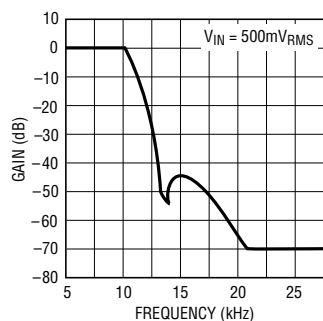
- 80dB Attenuation at  $2 \times$  Cutoff Frequency
- 50:1 Clock-to-Cutoff Frequency Ratio (Cauer Function)
- 100:1 Clock-to-Cutoff Frequency Ratio (Transitional Butterworth-Cauer Function)
- 100kHz Max Corner Frequency
- 135 $\mu$ V<sub>RMS</sub> Wideband Noise
- 0.03% THD
- Input Frequency. Range  $50 \times$  Cutoff Frequency

### LTC1164-5 Low Power, 8th Order Butterworth or Bessel Lowpass Filter



- Butterworth or Bessel Response
- 4mA Supply Current:  $V_S = \pm 5\text{V}$
- 20kHz Max Corner Frequency
- 50:1, 100:1 or 150:1 Clock-to-Cutoff Ratio
- 100 $\mu$ V<sub>RMS</sub> Wideband Noise
- 0.02% THD
- 1V<sub>RMS</sub> Input Range with Single 5V Supply

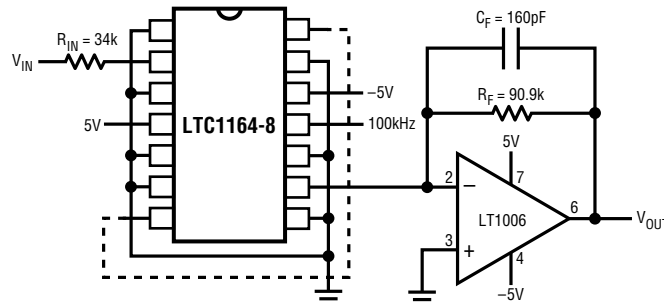
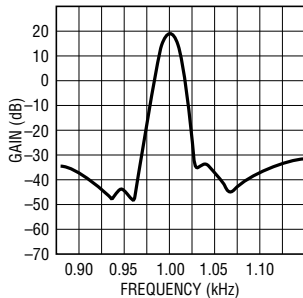
### LTC1069-6 Single Supply Elliptic Lowpass Filter: Very Low Power



- 8th Order Elliptic Filter in SO-8 Package
- Single 3V Operation: Supply Current : 1mA (Typ)  
 $f_{CUTOFF}$ : 14kHz (Max)
- Single 5V Operation: Supply Current : 2mA (Typ)  
 $f_{CUTOFF}$ : 20kHz (Max)
- $\pm 0.1\text{dB}$  Passband Ripple Up to  $0.9 \times f_{CUTOFF}$  (Typ)
- Wide Dynamic Range, 75dB or More (S/N + THD), Under Single 5V Operation

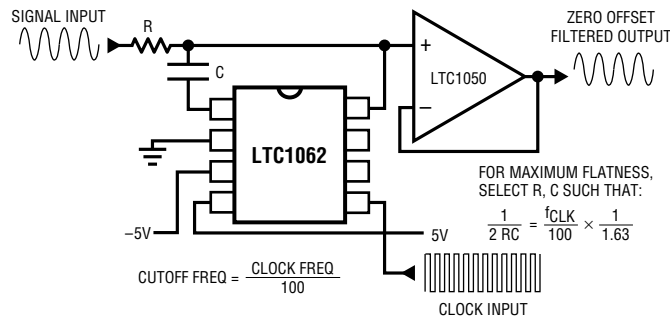
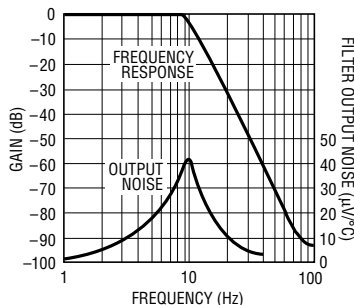
### LTC1164-8 Ultraselective, Low Power, 8th Order Elliptic Bandpass Filter with Adjustable Gain

Ultranarrow 1kHz Bandpass Filter with Gain = 10  
(Gain =  $340k/R_{IN}$ ,  $1/2\pi R_F C_F = 10F_{CENTER}$ )



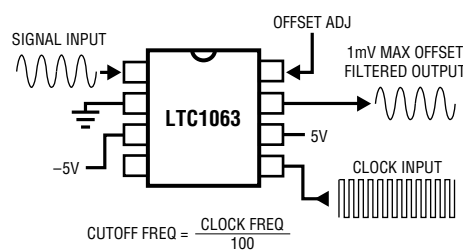
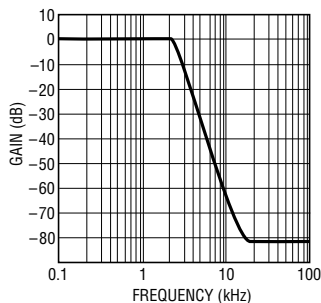
- Ultraselectivity (50dB Attenuation at  $\pm 4\%$  of Center Frequency)
- Adjustable Passband Gain
- Noise Independent of Gain
- Clock Tunable (Center Frequency =  $f_{CLK}/100$ )
- Center Frequencies Up to 5kHz,  $V_S = \pm 5V$  (Typical  $I_{SUPPLY} = 3.2mA$ )
- Center Frequencies Up to 4kHz,  $V_S = 5V$  (Typical  $I_{SUPPLY} = 2.3mA$ )

### LTC1062 Zero Offset, Low Noise, 5th Order Butterworth Lowpass Filter: Maximally Flat Response/Zero DC Error



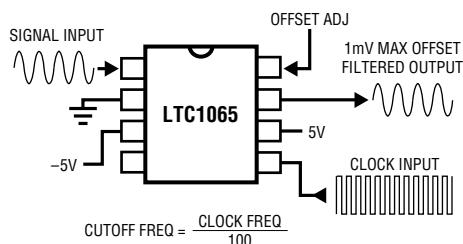
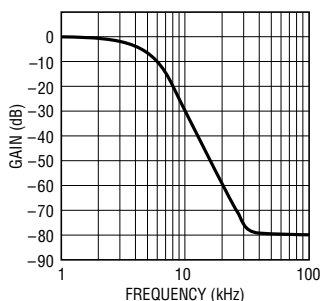
- No DC Error
- $62\mu V_{RMS}$  Passband Noise
- 20kHz Max Corner Frequency
- Single 5V Operation
- $100\mu V_{RMS}$  Wideband Noise ( $\pm 5V$  Supplies)
- Maximally Flat Response
- Cascadable for Higher Rolloff

### LTC1063 Clock-Tunable, Low Offset, Low Noise 5th Order Butterworth Lowpass Filter: Maximally Flat Response/Very Low DC Error



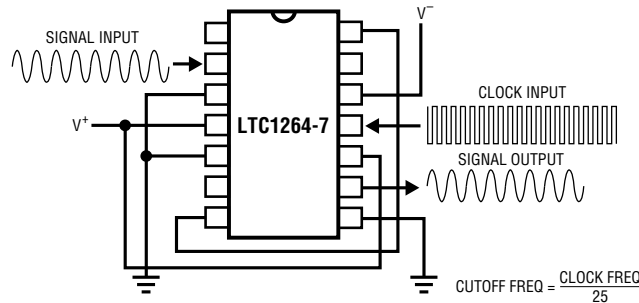
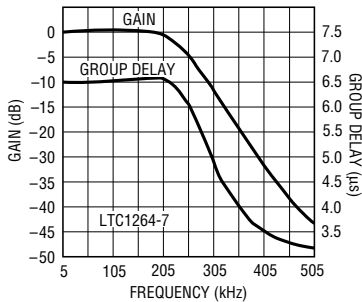
- 1mV DC Offset, Clock Independent
- Internal or External Clock
- Clock-Tunable Cutoff Frequency
- Internal or External Clock
- 50kHz Max Corner Frequency
- $95\mu V_{RMS}$  Wideband Noise
- 92dB Signal-to-Noise Ratio
- 0.01% THD ( $2V_{RMS}$  Output)
- Cascadable for Higher Rolloff

### LTC1065 Clock-Tunable, Low Offset, Low Noise 5th Order Bessel Lowpass Filter: Linear Phase with Zero DC Error



- 1mV DC Offset, Clock Independent
- Over 12-Bit DC Accuracy
- Internal or External Clock
- Clock-Tunable Cutoff Frequency
- Internal or External Clock
- 50kHz Max Corner Frequency
- $80\mu V_{RMS}$  Wideband Noise
- 0.004% Noise + THD at  $2V_{RMS}$  Out
- $50\mu V_{RMS}$  Clock Feedthrough
- Cascadable for Higher Rolloff

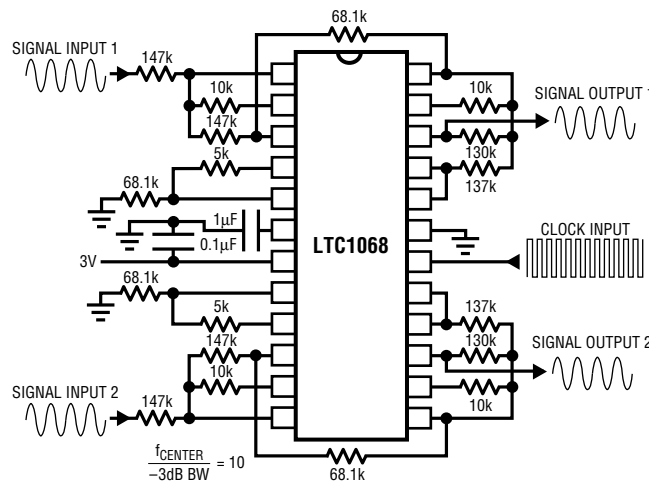
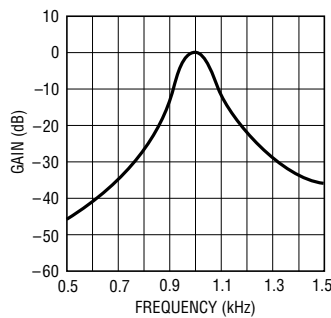
### LTC1064-7/LTC1069-7/LTC1164-7/LTC1264-7 Linear Phase, Group Delay Equalized, 8th Order Lowpass Filter: Lowest Pulse Shape Distortion, Steeper Rolloff Than Bessel Filter



- Steeper Rolloff than Bessel Filters
- Low Power (LTC1164-7,  $f_c \leq 20\text{kHz}$ ), General Purpose (LTC1064-7,  $f_c \leq 100\text{kHz}$ ), Low Voltage (LTC1069-7,  $f_c < 140\text{kHz}$ ), High Speed (LTC1264-7,  $f_c \leq 250\text{kHz}$ ) Versions
- Phase and Group Delay 100% Tested
- Transient Response with Less than 5% Overshoot and No Ringing

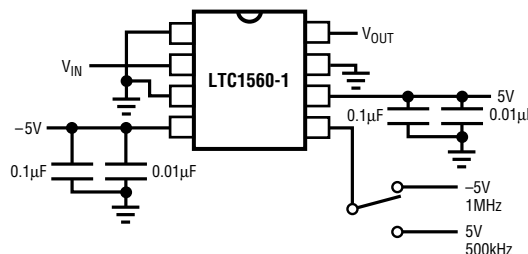
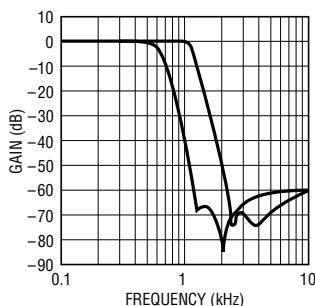
### LTC1068 Very Low Noise, High Accuracy, Quad Universal Filter Building Block

#### Single 3V Supply Dual Butterworth Bandpass Filter



- Four Identical 2nd Order Filters in an SSOP Package
- Center Frequency Error  $\leq 0.3\%$
- Low Noise,  $\leq 40\mu\text{V}_{\text{RMS}}$  per 2nd Order Section,  $Q \leq 5$
- High Dynamic Range: THD + Noise  $\leq 0.01\%$
- Low DC Offsets:  $\leq 10\text{mV}$  per 2nd Order Section
- Clock-to-Center Frequency Ratio: 100:1
- No Aliasing for Input Frequencies Up to  $200 \times f_{\text{CUTOFF}}$
- Maximum Center Frequency Up to 56kHz ( $V_S = \pm 5\text{V}$ )
- Operates from  $\pm 1.57\text{V}$  to  $\pm 5\text{V}$  Power Supplies

### LTC1560-1 1MHz/500kHz Continuous Time, Low Noise, Lowpass Elliptic Filter: LTC's Fastest Filter



- 5th Order, 1MHz Elliptic Filter in SO-8 Package
- Pin Selectable 1MHz/500kHz Cutoff Frequency
- Signal-to-Noise Ratio (SNR): 75dB
- Signal-to-Noise Ratio with -63dB THD: 69dB
- Passband Ripple ( $f_{\text{CUTOFF}} = 1\text{MHz}$ ):  $\pm 0.3\text{dB}$
- Stopband Attenuation Better Than 60dB
- No External Components Required