An Audio Interface Using the

TMS320F243 DSK and the TMS320LF2407 DSK

Description of Circuit

Note that this schematic on the following page is not of audio quality. However, it is good enough to demonstrate at low cost how digital filtering can be achieved using the TMS320F243 DSK and the TMS320LF2407 DSK.

Example code is provided in C for the TMS320LF2407 DSK.

Equipment Required

Signal generator or audio source
Oscilloscope or audio amplifier

Application for TMS320LF2407 DSK: FIR

Provides a low-pass filter and a comb filter. Other filters included are a high-pass filter and an assembly language version of the low-pass filter.

If a signal generator is not available, then the filter can be tested by supplying a DC voltage using a potentiometer to ADCIN0. If the program is compiled then run using the animate option, then it can be seen how the output changes.

The TMS320LF2407 C code is provided in the directory `FIR`.

Application for the TMS320LF2407DSK: IIR

Infinite Impulse Response filters (IIR) can be used to implement filters using less terms than does the equivalent Finite Impulse Response Filter (FIR). On the negative side, they have the disadvantage of being potentially unstable.

The code for this application is in the directory `IIR`.

Application for the TMS320LF2407 DSK: FFT

Performs an 8-point Fast Fourier Transform (FFT). The FFT is performed 500 times per second and can be used to detect frequencies of 62.5 Hz, 125 Hz and 250 Hz. In order to detect more frequencies, then the number of points can be increased to 16, 32 etc.

The software uses a timed interrupt to control the FFT.

The code for this application is in the directory `FFT`.

References:

Assembly language tutorials included as part the CD

Rulph Chassaing. Digital Signal Processing with C and the TMS320C30

Data sheet for Burr-Brown OPA2337 rail-to-rail operational amplifier. sbo077.pdf

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Click To View

Template…… A basic project for the TMS320LF2407 DSK. Configures an analog-to-digital converter and generates a pulse width modulation (PWM) output.

To View Applications Please Click

Signal Generation……...TMS320LF2407 DSK: Sine

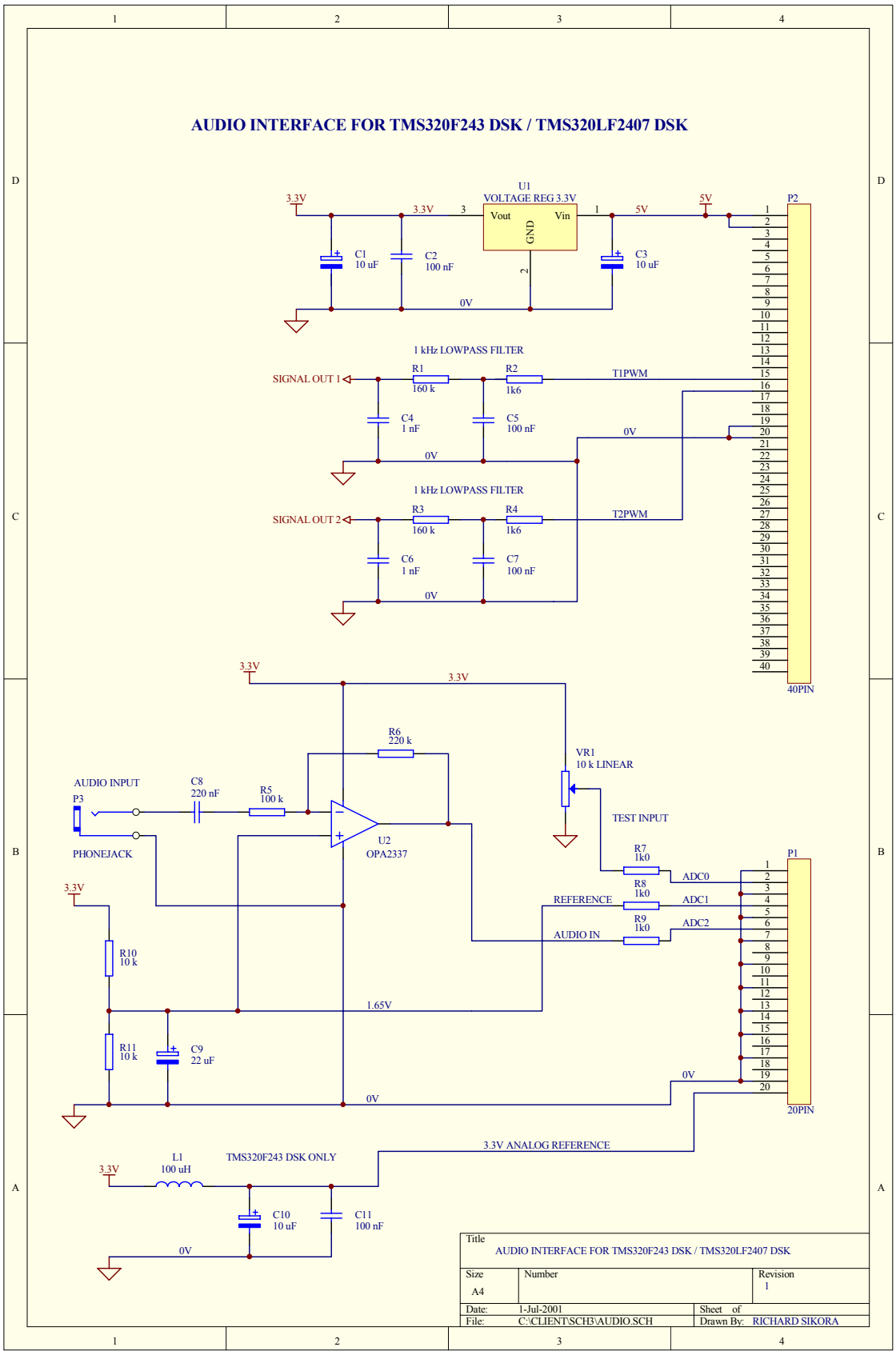
Audio Interface……..……TMS320LF2407 DSK: FIR
TMS320LF2407DSK: IIR
TMS320LF2407 DSK: FFT

Motor Control……...TMS320LF2407 DSK: Stepper Motor
TMS320LF2407 DSK: DC Motor

Click here to view..... Route Map

Schematic 2 Below ↓

AUDIO INTERFACE FOR TMS320F243 DSK / TMS320LF2407 DSK



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File: C:\CLIENT\SCH3\AUDIO.SCH		Drawn By: RICHARD SIKORA