

Using DVSI's AMBE-2000™ and AMBE-2020™ Vocoder Chips with the Texas Instruments' TLV320AIC10 General Purpose CODEC

The Texas Instruments' TLV320AIC10 codec presents a simple low cost solution for use with DVSI's AMBE-2000™ or AMBE-2020™ vocoder chips. This application note provides information on interfacing these components. Figure 1 shows a sample block diagram interface, between the TLV320AIC10 codec and DVSI's AMBE-2000™ vocoder chip.

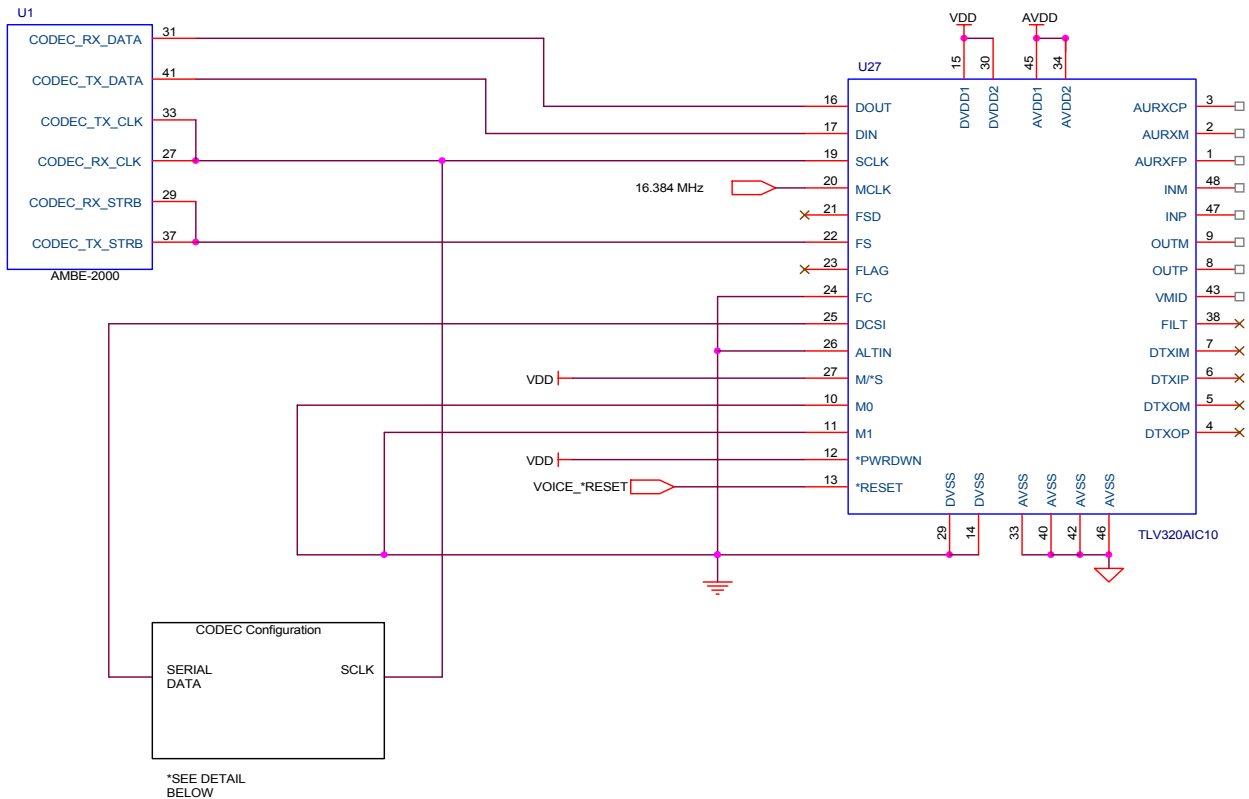


Figure 1: AMBE-2000™ and TLV320AIC10 sample block diagram

Configuration:

To configure the AMBE-2000™ for operation with the TLV320AIC10, set the CODEC_SEL pins on the AMBE-2000™ vocoder chip to work with a generic 16 bit linear 8 kHz codec as follows:

CODEC_SEL [1-0] (pins 85,84) = 00b

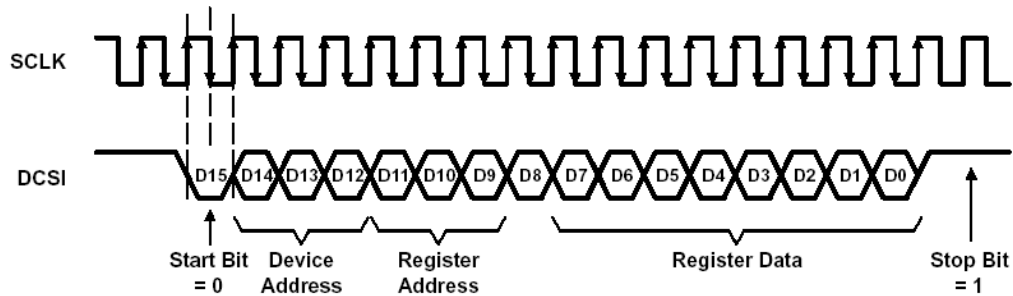
Initialization Procedure:

The control registers in the TLV320AIC10 codec must be initialized for proper operation. The recommended procedure is to initialize the TLV320AIC10 by writing data to its 4 control registers through the DCSI port, while the AMBE-2000™ is held in reset. The timing for the DCSI port is shown in Figure 2.

Note that the Device Address (D14-D12) is normally set to 0 unless multiple codec devices are used in cascade. Be sure that the stop bit is at least 2 clock pulses long between data words as shown in the timing diagram. Shift the control words into the device 1 bit at a time at the rate of SCLK.

Various configuration data can be used to control the operation of the TLV320AIC10 codec (see the data sheet for more information), however for reference the AMBE-2000™ has been tested with the TLV320AIC10 configured using the register values shown in Table 1. Once the TLV320AIC10 is configured, the AMBE-2000™ should be taken out of reset to begin communication with the codec.

The logic connected to the DCSI port does not have to be disabled. The user can make adjustments to the configuration as needed (for example ADC and DAC gain). A reset to the TLV320AIC10 codec will reset all of the internal registers. As a result, the TLV320AIC10 must be reconfigured following a reset.



REGISTER MAP															
D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
Device Address			RW	Register Address			X	Control Register Content							

Figure 2: TLV320AIC10 configuration timing via DCSI port

Register Address (D11-D9)	Configuration Data (D7-D0)	Notes:
0x1	0x11	D4=1: select AUXP AND AUXM for ADC (Handset) D5=0: enable antialiasing filter D0=1: select 16 BIT data Format for DAC
0x2	0x08	D7=0: select normal Operation D4-D0=8: set Frequency Divider N=8
0x3	0x01	D7-D6=0: default operation D0=1: 16-Bit data format for ADC
0x4	0x00	D7-D4=0: ADC input gain = 0 dB D3-D0=0: DAC output gain = 0 dB Gain values can be adjusted as needed.

Table 1: Recommended TLV320AIC10 Configuration Data

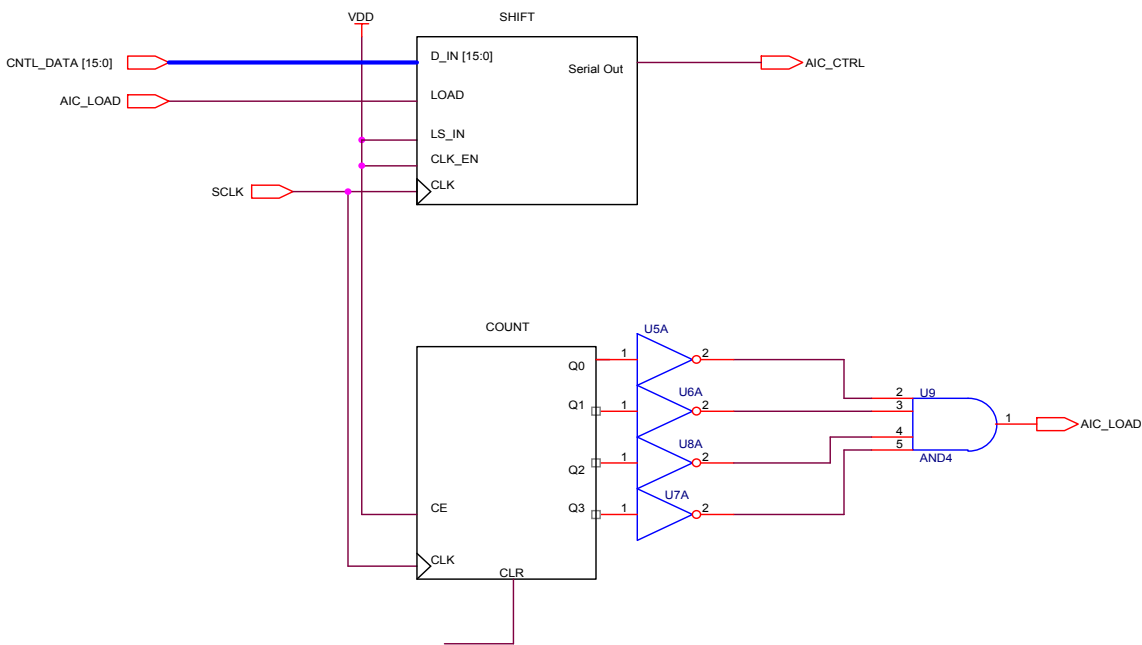


Figure 3: TLV320AIC10 Codec Configuration Detail

Reference Materials:

AMBE-2000™ or AMBE-2020™ Vocoder chips Users Manual:

<http://www.dvsinc.com/literature.htm>

TLV320AIC10 Data Sheet:

<http://www-s.ti.com/sc/ds/tlv320aic10.pdf>

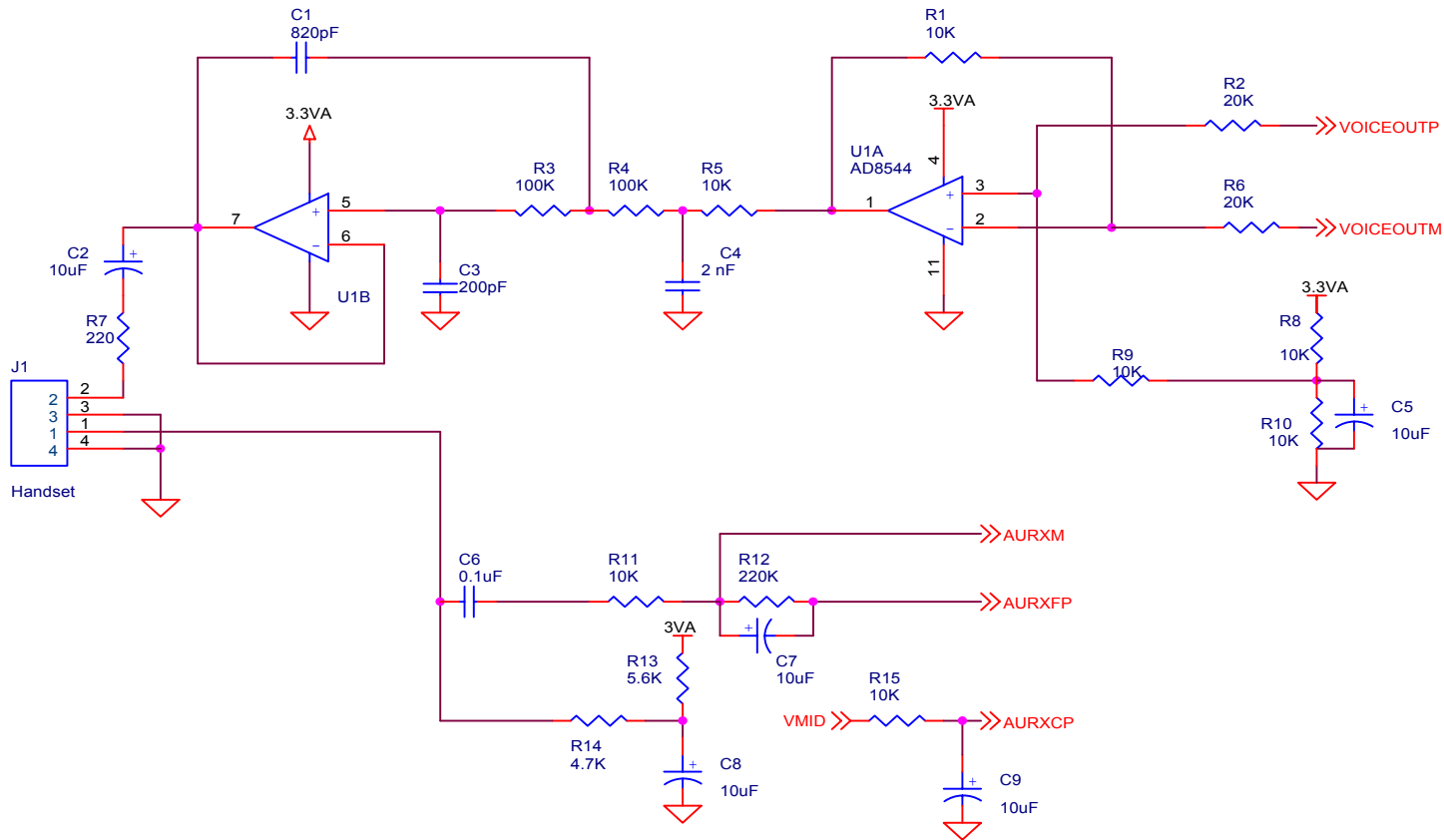
TLV320AIC10 EVM User's Guide:

<http://www-s.ti.com/sc/psheets/slwu003d/slwu003d.pdf>

Application Report – Understanding Data Converters:

<http://www-s.ti.com/sc/psheets/slaa013/slaa013.pdf>

TLV320AIC10 Reference Schematic (Analog Section)



Title		
Analog		
Size	Document Number	Rev
A	TLV320AIC10	1
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