

Tone, Balance, and Volume Control using a Quad XDCP

Imagine the possibilities of being able to integrate full audio tone, balance, and volume control into your multimedia computer product, without having to resort to any manual knobs. Naturally you could do that with a bunch of DACs all running under microprocessor control, but what happens if the audio amplifiers and sound generators come alive before the processor has had a chance to reload the preset values into the DACs. You could get blasted before the initialization sequence is complete.

Fortunately, Intersil has solved this problem with the X9241 XDCPs. These devices can store the last position set by control and automatically reload these values into the pot tap registers upon power-up. Shown in the figure is the Intersil X9241U quad 50KW XDCP used to control the treble, bass, balance, and volume parameters of the LM1035 stereo audio processor. Unlike a conventional DAC, the Intersil devices can reload the last value, or a preset value, into the tone/balance and volume registers upon power-up, so you get predictable sound level conditions without any danger of over-driving the power amplifier.

The two channel stereo circuit shown provides approximately $\pm 15\text{dB}$ of bass and treble boost (or cut) along with a 70dB balance and volume control range with the values shown (consult the LM1035 data sheet for full details and other configurations). It's a good idea to run the X9241 from an analog power supply in order to minimize noise picked-up from any digital circuits. The circuit shown uses the current source from within the LM1035 to provide power to the X9241. It would be nice to use the internal zener voltage regulator on the LM1035, but it is rated typically at 5.4V and the maximum supply voltage for the X9241 is 5.5V. An external shunt regulator (VR1) is used to maintain the supply voltage input to X9241 at a nominal 5V.

The full functionality and performance of the LM1035 is not impaired in any way by using XDCPs. The audio processing possibilities using the combo are many and varied; just remember to use good grounding and shielding techniques to minimize hum and noise.

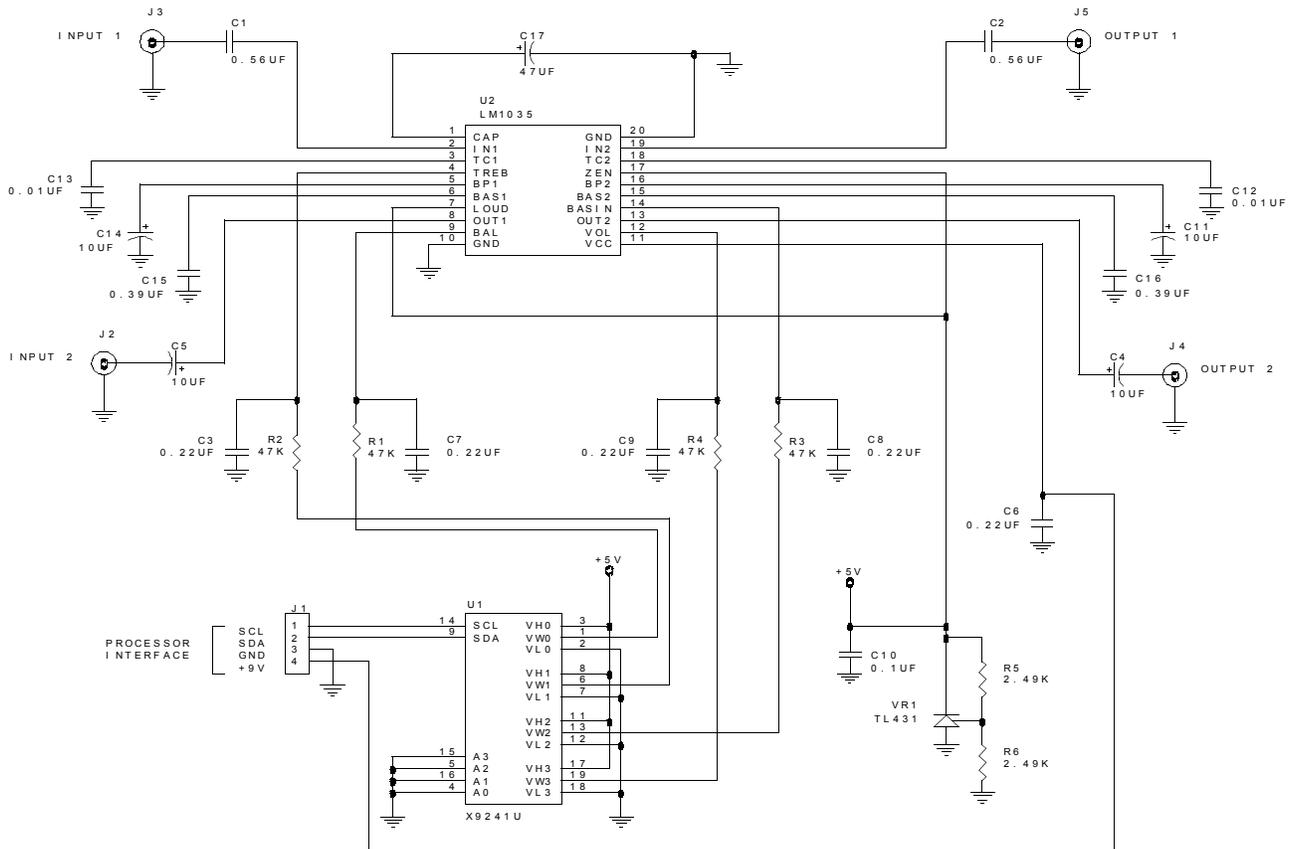


FIGURE 1. X9241 DUAL TONE/BALANCE/VOLUME CONTROLLER

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