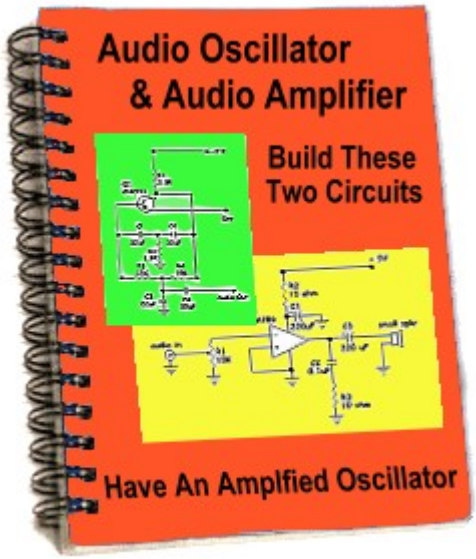
Audio Oscillator And Audio Amplifier



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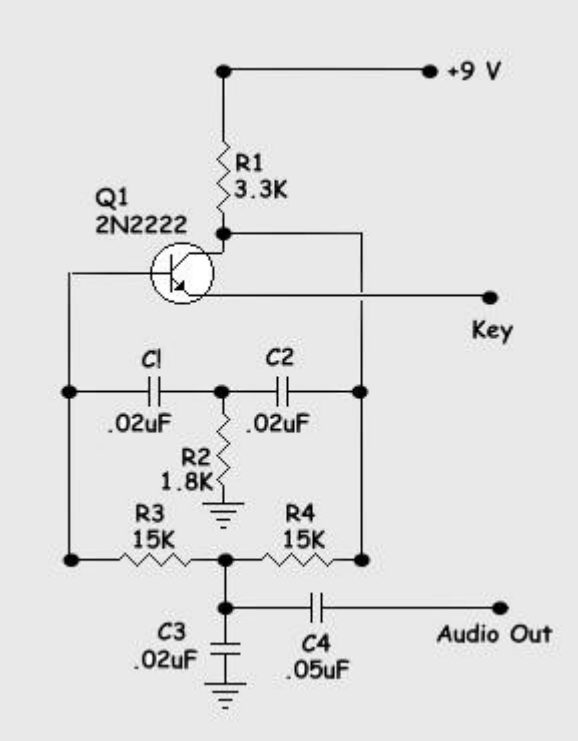
A Simple Phase Shift Audio Oscillator and Audio Amplifier



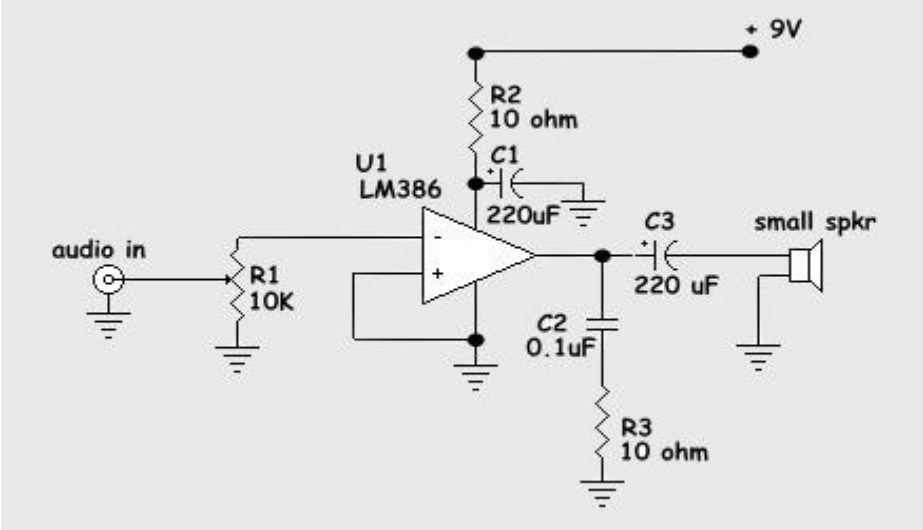
This is a schematic of a type of audio oscillator known as a twin "T" phase shift oscillator. It gets its name from the phase shift network made up of R3, R4 and C3 plus C1, C2 and R2 which shifts the phase of the signal fed back from the collector to the base by 180 degrees to make the oscillator oscillate.

You will notice that the emitter of Q1 is not connected. Bringing this connection to ground will turn on the oscillator or "key it" as it's called. You could connect this to a telegraph key and make a code practice oscillator, or you could connect this to one of the collectors on the LED flasher. Then when that LED comes on the oscillator will start. This will cause it to 'beep' when the led flashes.

Now we need to be able to connect a speaker to it so we can hear the tone.

To do this we need an audio amplifier to have enough power to drive a small speaker. Near the bottom of the drawing you will see the output which will connect to the audio amplifier.

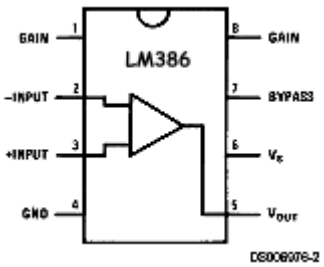
The Audio Amplifier



This part of the project uses an intergrated circuit or 'IC' as the active component. IC's contain many parts such as transistors, diodes and resistors all inside a very small package. This IC is designed to be an small low power audio amplifier and is not too easily damaged.

However, be careful not to try driving a large load like big stereo speakers with this small IC it works great for small speakers or even headphones.

Build these circuits one at a time or put them all on the same board. If you build them separately be sure to keep the connecting cables as short as possible. On the right is a diagram of the LM386 IC. Use this to find the correct pins to solder to. Actually, it's best to use an IC socket and not to solder directly to the pins of the IC. Also make sure that all the grounds are tied together on all the boards if you do it in pieces.



You can build a second audio oscillator, and change the value of the phase shift network to change the frequency of the oscillator.

If you connect the second oscillator to the other collector on the LED flasher you will have two tones that alternate with each flashing LED

.

Some values to try are .05uF for C1 and C2 as well as 18K for R3 and R4. That will make a lower pitched note. Just have fun experimenting!

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