

## M1742

### Easy Voice Commander

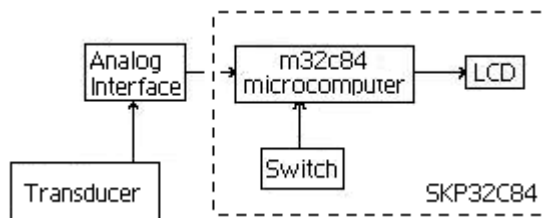
Always I wanted to include some kind of speech recognition into any of my projects but the most frequent applications are for dication in powerful processors like pdas and desktop computers. I made a simple application that can handle some voice commands using a telephone, some operational amplifiers and the board provided by Renesas.

Speech recognition technology is used to help disable people, call centers, and control applications. Voice commands can be used to controll any IO port or to do any task. this project is called "easy .." is the simplest way to implement speech recognition.

### Microcomputer M32C84

The mc32c84 has 512K of flash memory and 4K of RAM memory which is enough for our purposes. The main clock run to 8MHz and the secondary to 32KHz which is used for timers and peripherals. The part of memory used to store the voice digitized is the Data Space and some banks of the internal ROM or User Space. The microcomputer run in single chip mode, no external memory is used.

F80000h to F90000h



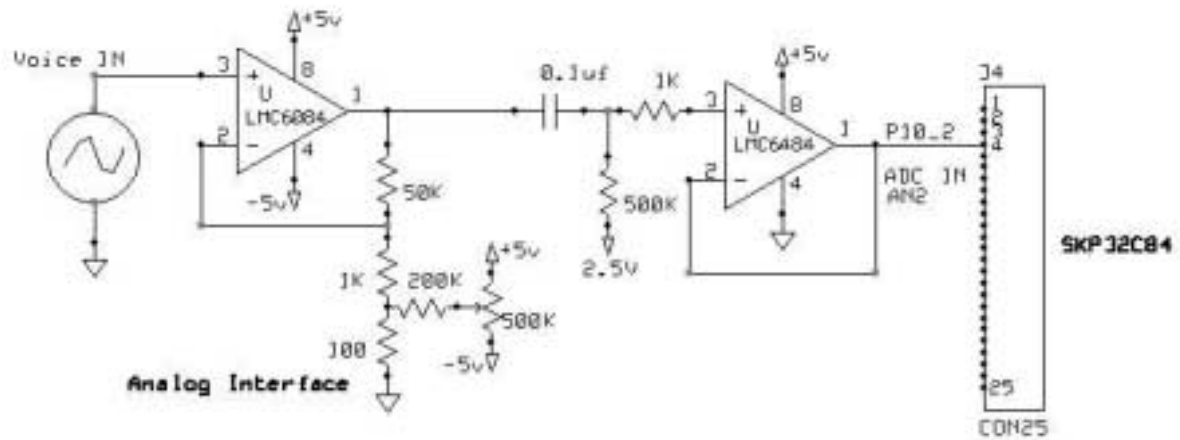
Block diagram

### The Hardware side

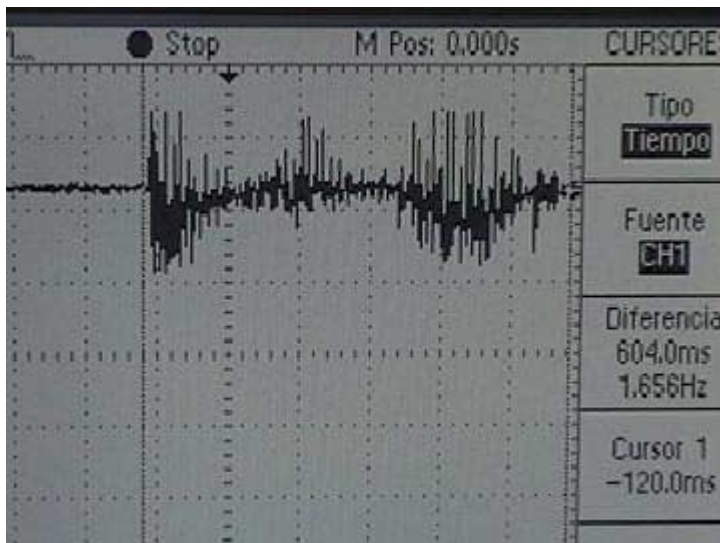
I used to operational amplifiers in the analog part, the first one, provide amplification to the signal of 220mV p-p generated by signal transducer (a microphone electret) and the preamplifier, in this case a telephone handset. The second stage translate signal 2.5V over to avoid the negative part and thus adapt it to the A/D converter input.

I used the LMC6084 and LMC6484 but it can be done with a LM324 or similar.

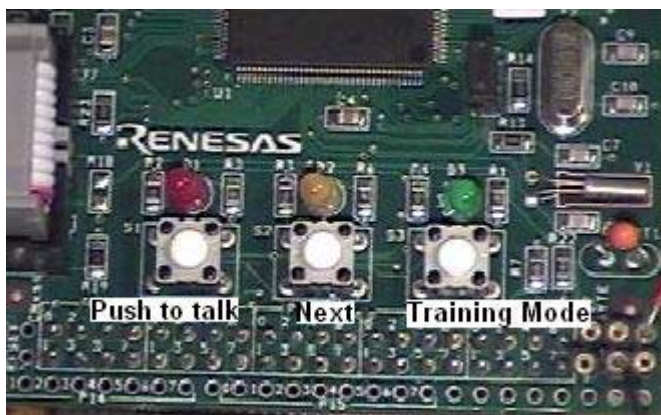
The 2.5 vottage comes from a vottage regulator, it can be any voltage regulator or voltage reference IC.



The signal is amplified five times. This is how it looks after amplification stages.



The three switches buttons are



S1: Push to talk