



Integrated Circuits Inc.

API4000-6

API4000-6 340" VOICE OTP

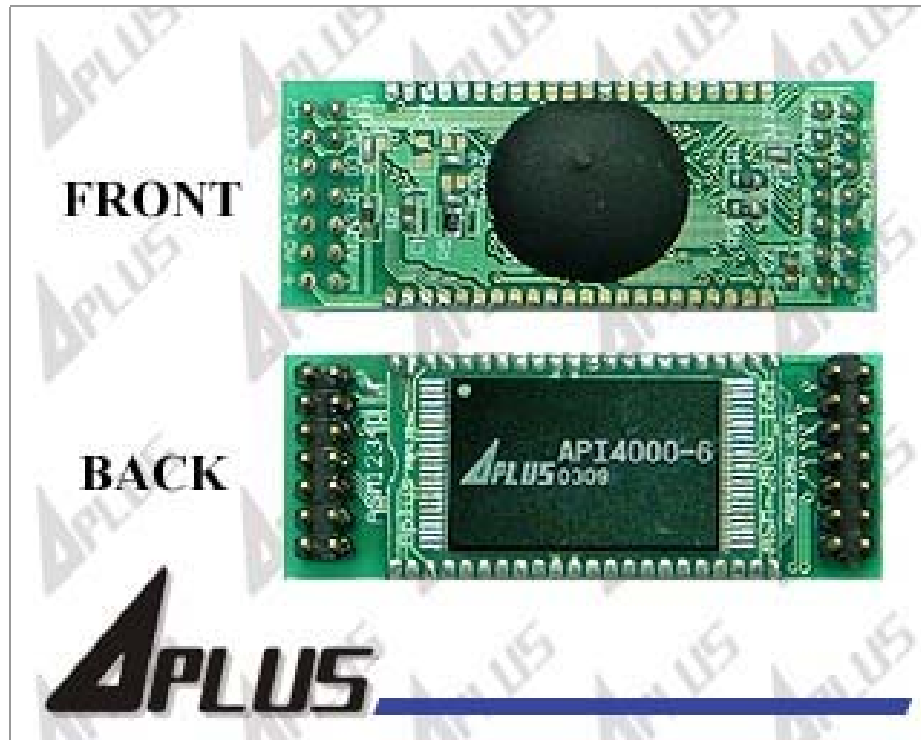
API4000-6 IC is a **340 seconds** (Voive sample rate is in 6 khz) and very low cost voice synthesizer with 4-bit microprocessor. It has various features including 4-bit ALU, ROM, RAM, I/O ports, timers, clock generator, watchdog timer(**WDT**), voice synthesizer, etc. It consists of 22 instructions in the device. With CMOS technology and halt function can minimize power dissipation. Its architecture is similar to RISC, with two stages of instruction pipeline. It allows all instructions to be executed in a single cycle, except for program branches and data table read instructions (which need two instruction cycles).

◆ Feature :

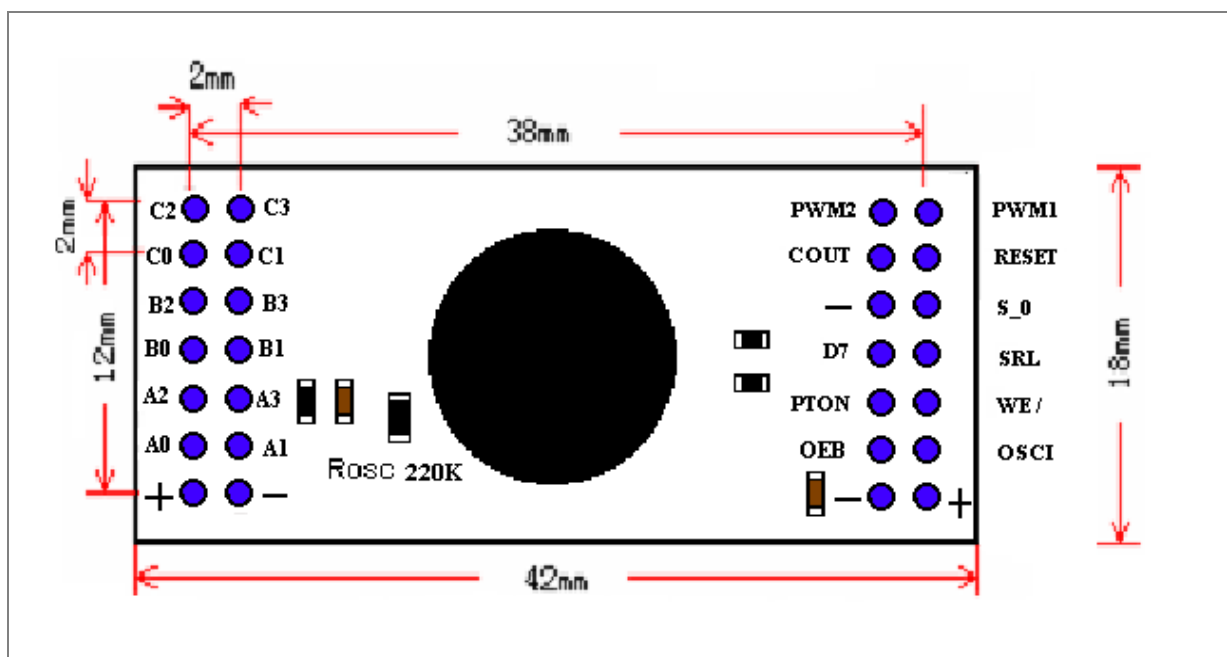
- Single power supply can operate from **2.4V** through **4.5V**.
- Voice length : **340 seconds** (Voive sample rate is in 6 khz) .
- Internal Program ROM: **4K** x 10-bit.
- Data Registers:
 - **96 x 4-bit data RAM** (00-1Fh plus 40h-7Fh)
 - Unbanked special function registers (SFR) range: 20h-3Fh
- I/O Ports:
 - **PRA: 4-bit I/O Port A (2Bh)**
 - **PRB: 4-bit Output Port B (2Dh)**
 - **PRC: 4-bit Input Port C (2Fh)**
- On-chip clock generator: Resistive Clock Drive(**RM**)
- Timer: 1
 - Timer0: a 9-bit auto-reload timer/counter.
- Stack: 2-level subroutine nesting.
- HALT and Release from HALT function to reduce power consumption.
- Watch Dog Timer (**WDT**).
- Voice format : **Linear Scale 5 bit** output .
- Voice Sample Rate Range :**4K - 22KHz** .
- Tg mode :**Level / Edge ,Hold / Unhold , Retrigger / Ir- Retrigger** .



◆ Entelechy Picture:(Main board)



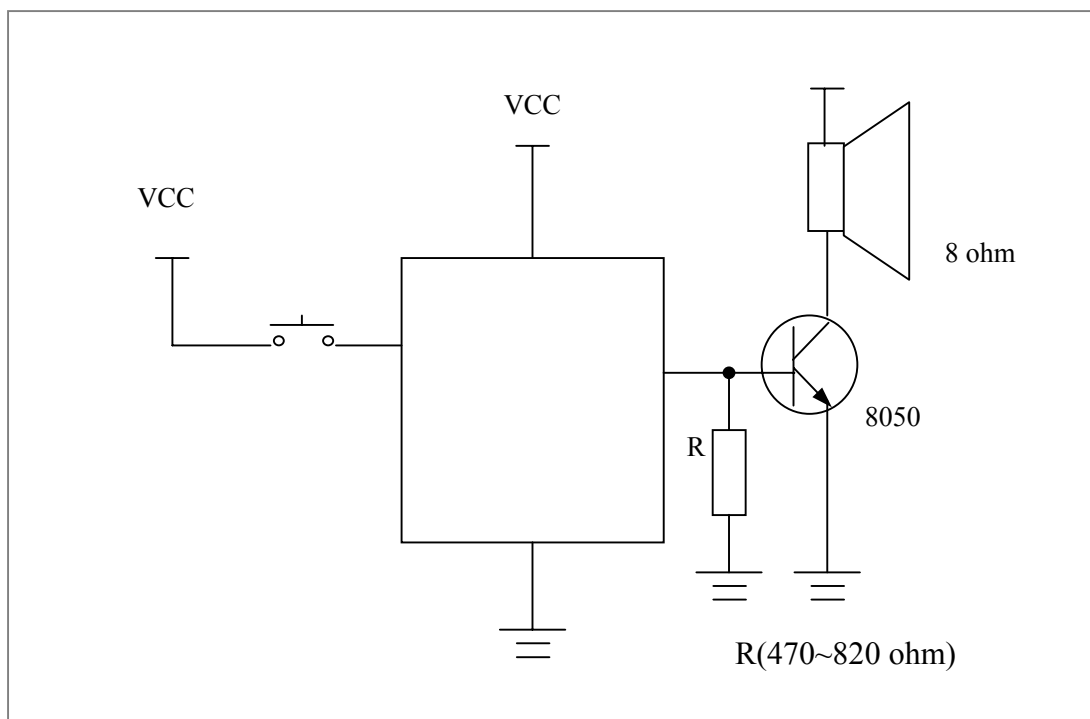
◆ Pin -Out :



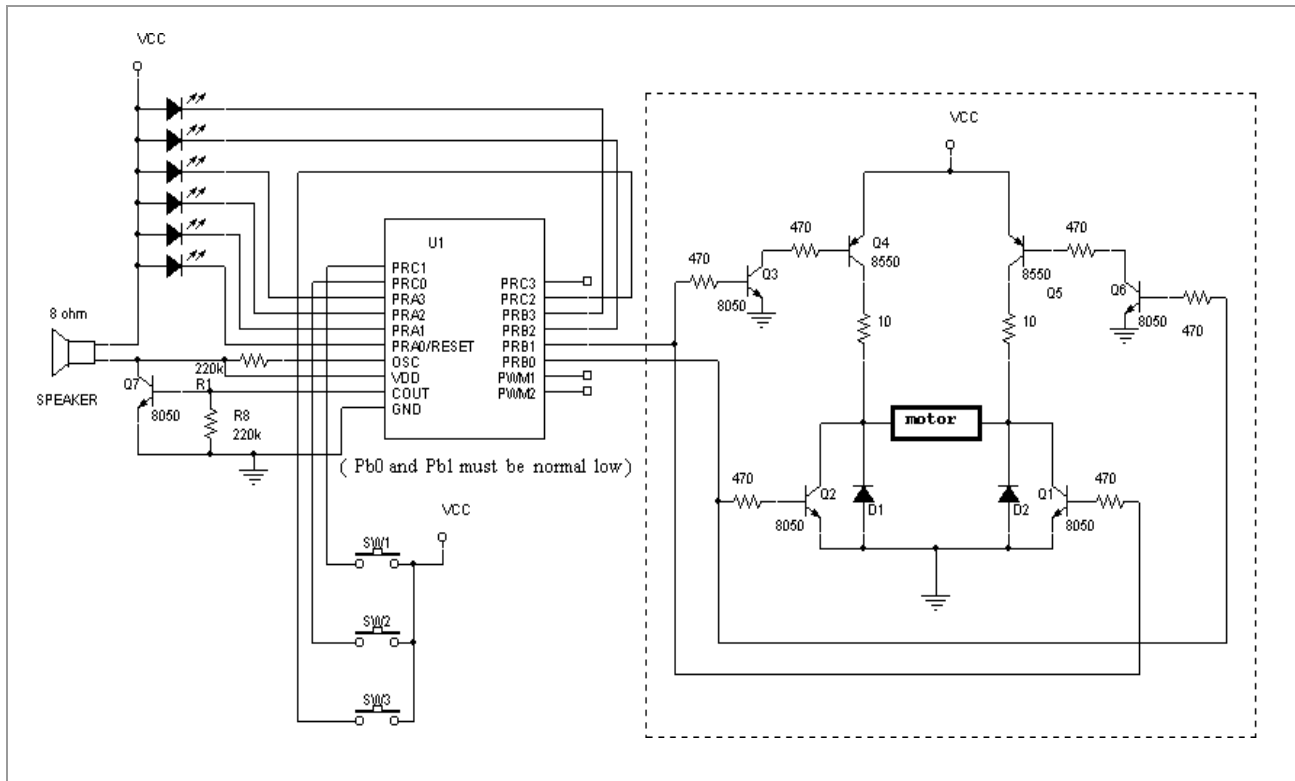
◆ Description :

Item	Explain	Item	Explain
VDD	Power supply during operation	PTON	Download data Pin
VSS	Ground Potential	OEB	Download data Pin
A0-A3	4 bit I/O (PRA)	OSCI	Download data Pin
B0-B3	4 bit output (PRB)	SRL	Download data Pin
C0-C3	4 bit input (PRC)	WE/	Download data Pin
COUT	Current output	S_0	Download data Pin
PWM1	PWM1 (Connect to speaker and buzzer)	D7	Download data Pin
PWM2	PWM2 (Connect to speaker and buzzer)	RESETB	Reset Pin (Low Active)

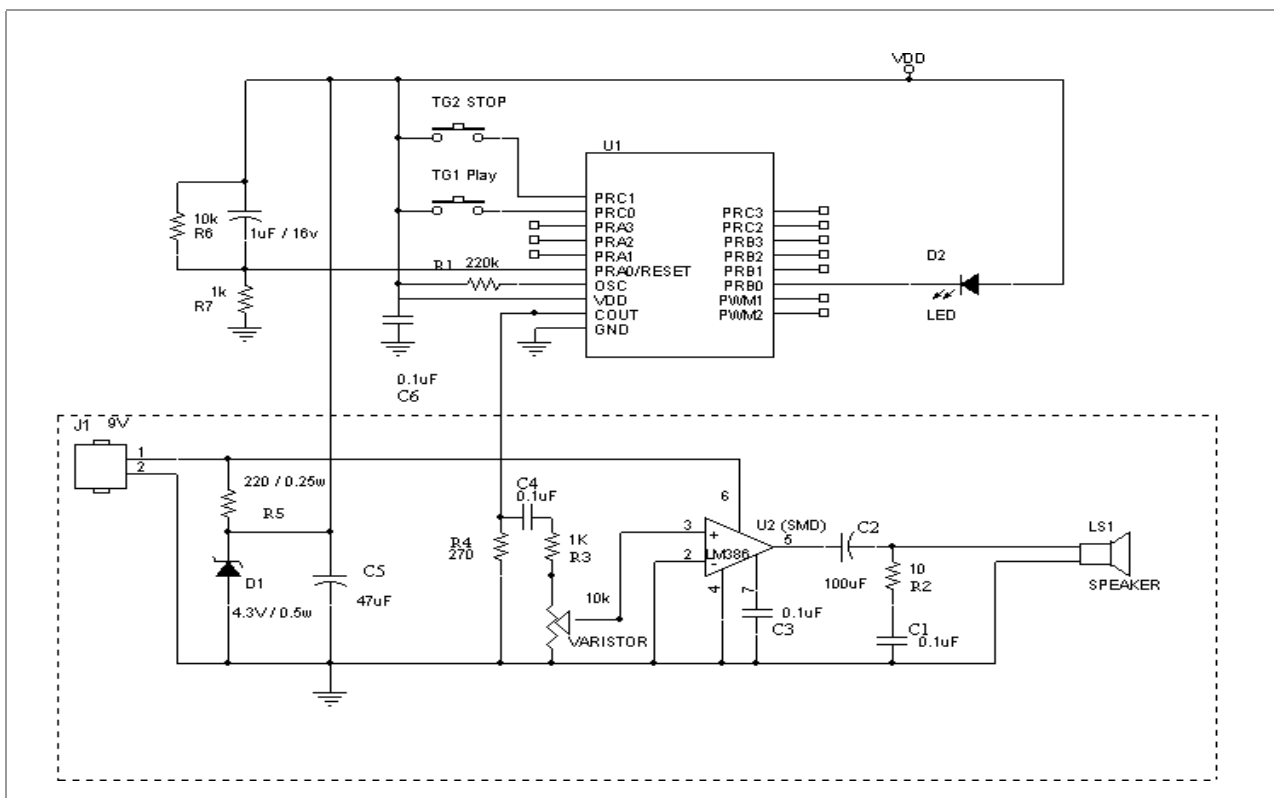
◆ Application Circuit 1: (Standard)



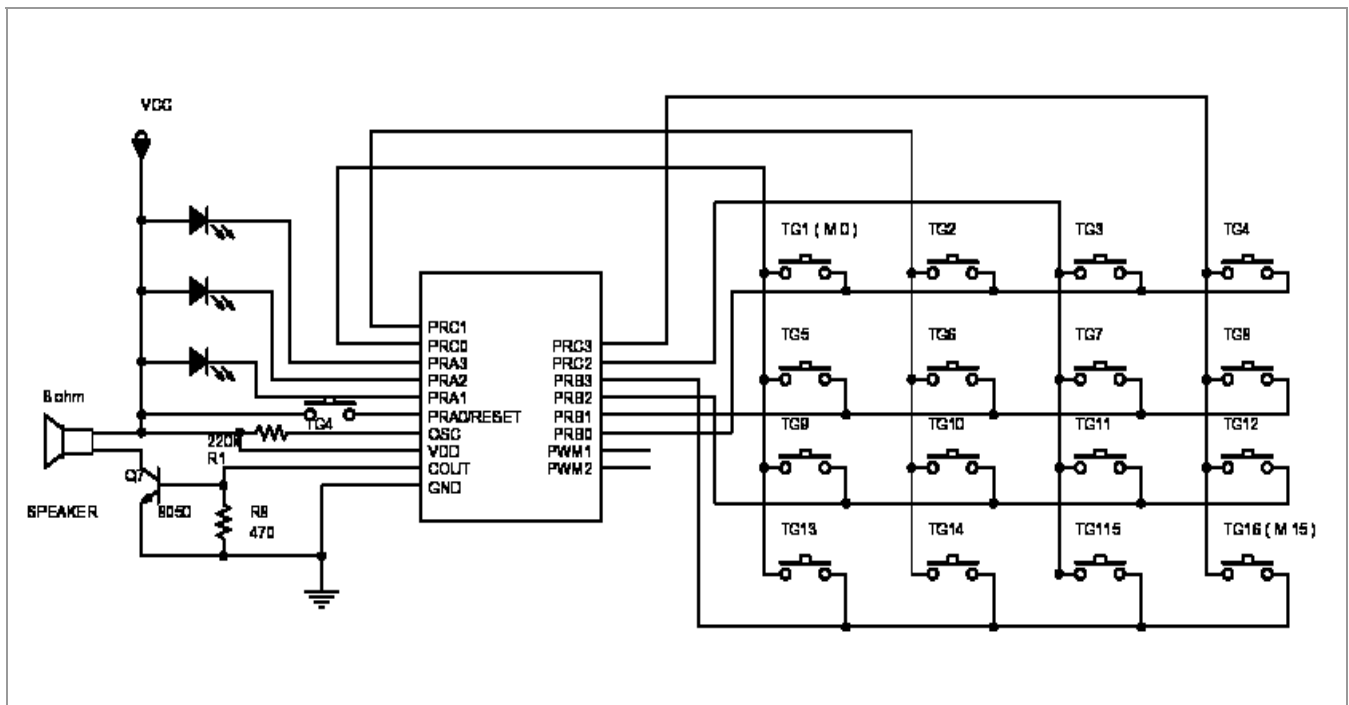
◆ **Application Circuit 2: (Motor Circuit)**



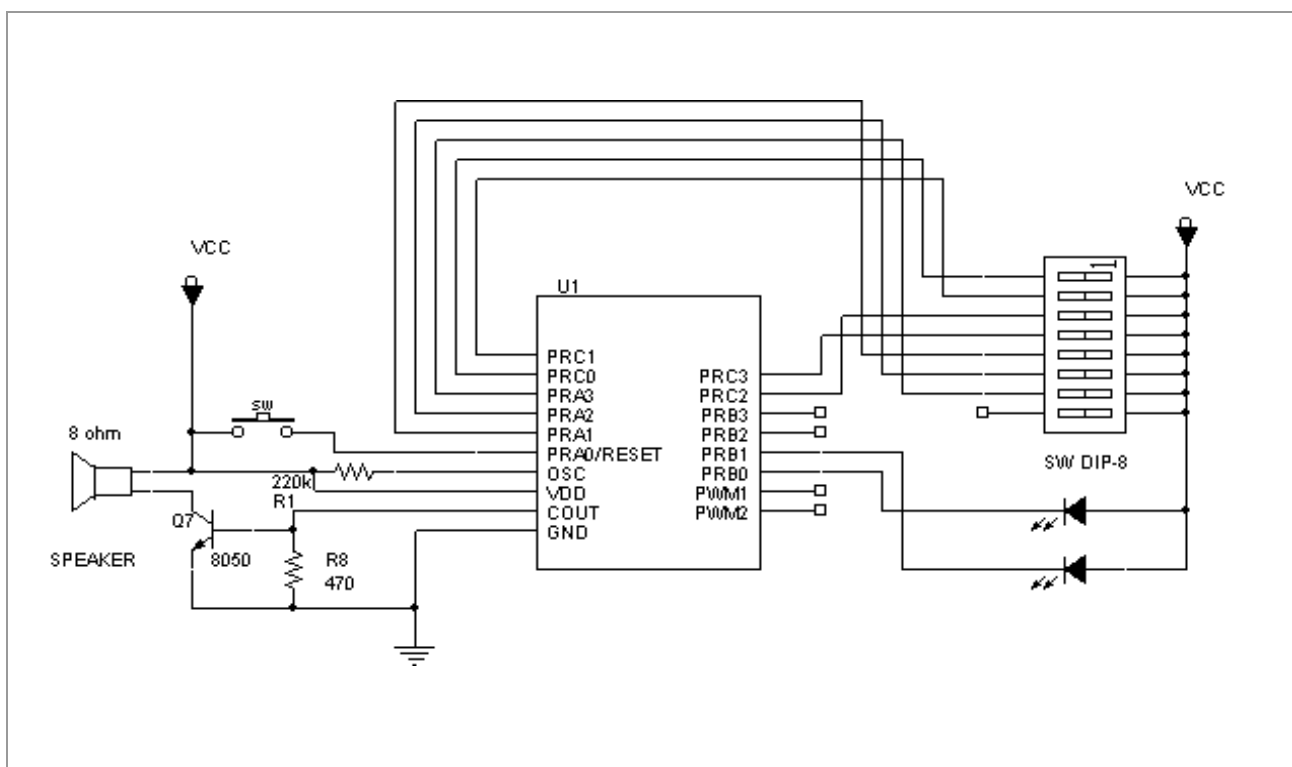
◆ **Application Circuit 3: (LM386 Circuit)**



◆ Application Circuit 4: (Matrix Circuit)



◆ Application Circuit 5: (Address Scan Circuit)



◆ Entelechy Picture:(API4000-6 Target Board)

