



A. HE83016 Introduction

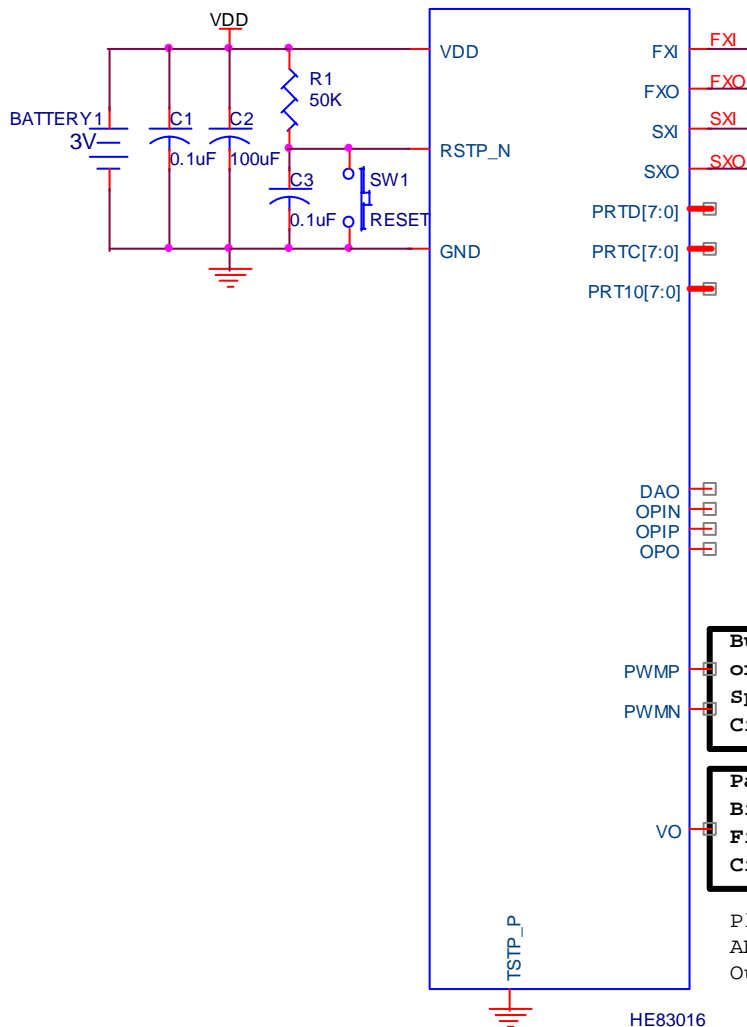
HE83016 is a member of 8-bit Micro-controller series developed by King Billion Electronics Ltd. It is a power speech controller. The built-in OP comparator can be used with (light, voice, temperature, humidity) sensor and used as battery low detection. And the 7-bit current-type D/A converter and PWM device provide the complete speech output mechanism. The 512K ROM Size can be used in the storage of speech (170 seconds at 3Kbytes per second).

The instruction set of HE83016 are quite easy to learn and simple to use. Only about thirty instructions with four-type addressing mode are provided. Most of instructions take only 3 oscillator clocks (machine cycles). The processing power is enough to most of battery operation system.

B. HE83016 Features

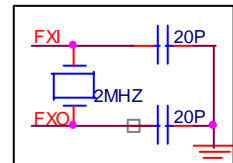
- Operation Voltage : 2.4V – 5.5V
- System Clock : DC ~ 8MHz @ 5.0V
DC ~ 4MHz @ 2.4V
- Internal ROM : 512K Bytes(64K Program ROM, 448K Data ROM)
- Internal RAM : 128 Bytes.
- Dual Clock System : Normal (Fast) clock : 32.768K ~ 8MHz
Slow clock : 32.768KHz
- Operation Mode : DUAL、FAST、SLOW、IDLE、SLEEP Mode.
- With WDT (WATCH DOG TIMER) to prevent deadlock condition..
- 24 bit Bi-directional I/O port. Mask Option can select PUSH-PULL or OPEN DRAIN output mode for each I/O pin.
- One built-in OP comparator.
- One 7-bit current-type DAC output.
- PWM device.
- Two external interrupts and two internal timer interrupts.
- Two 16-bit timer. (Clock Source reference by Fast Clock)
- Instruction set : 32 instructions, 4 addressing mode. 7-bit DATA POINTER for RAM and 19-bit TABLE POINTER for ROM.

C. Application Circuit

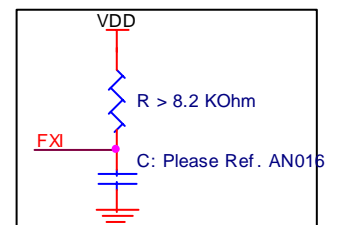


No External Parts is necessary if user adopt Internal Fast RC Clock

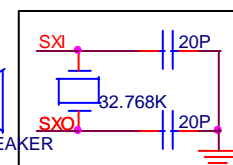
External Fast Clock: Crystal osc.



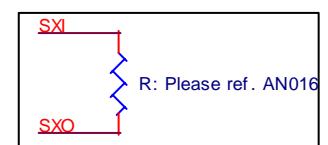
External Fast Clock: RC osc.



External Slow Clock: Crystal osc.



External Slow Clock: RC osc.



Buzzer or Speaker Circuit

Passive Bias & Filter Circuit

Please Refer AN022 for Speech Output Circuit