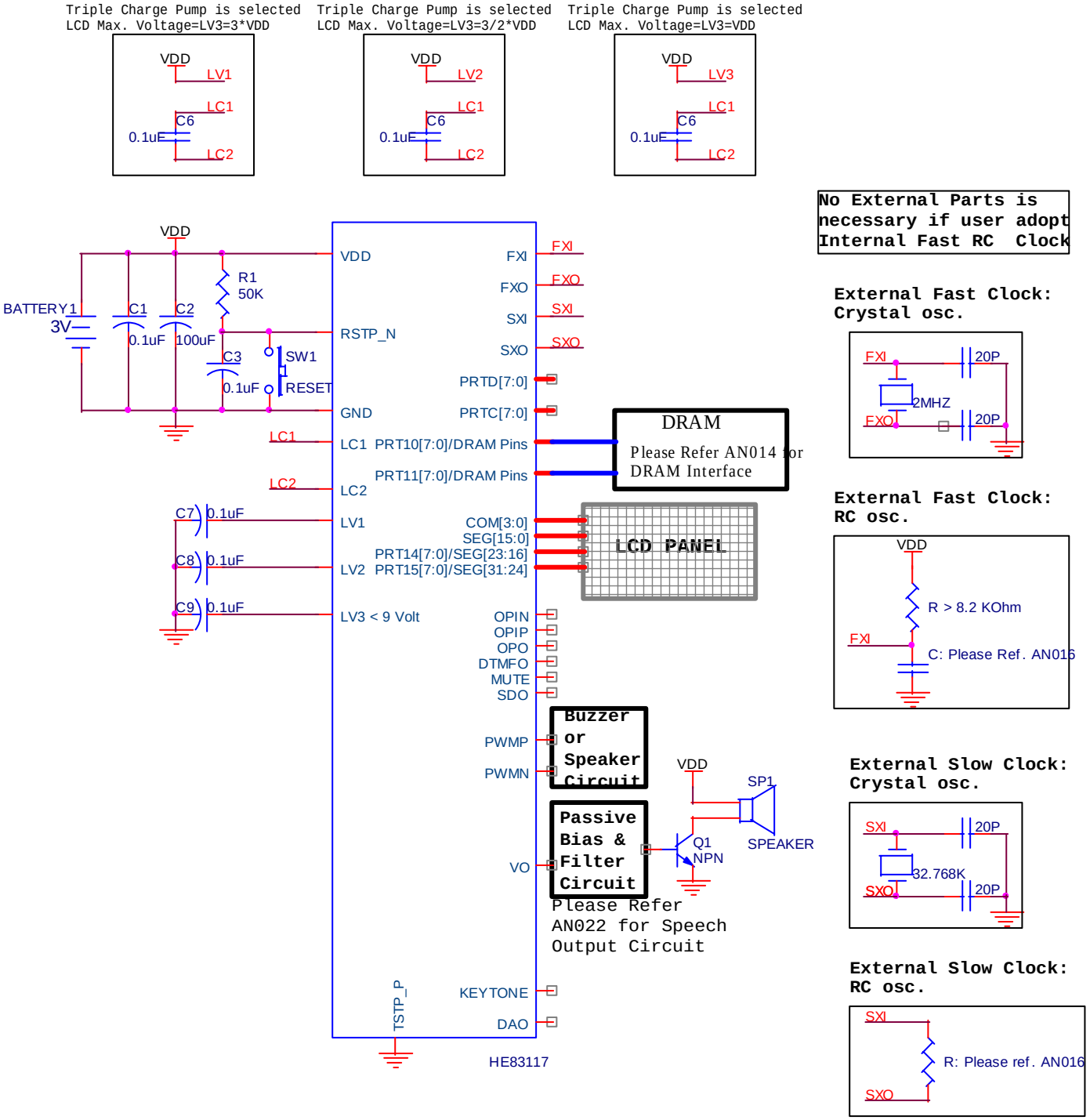
A. HE83117 Introduction

HE83117 is a member of 8-bit Micro-controller series developed by King Billion Electronics Ltd. Users can chose any one of combination among 【128 dots LCD Driver + 32 Bit I/O Port】…【64 dots LCD Driver + 48 Bit I/O Port】etc. The built-in OP comparator can be used with (light、voice、temperature、humility) 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 built-in DTMF generator can generate the PSTN dialing tone directly. The 256K ROM Size can be used in the storage of speech (80 seconds at 3Kbytes per second), graphic, text etc. This IC also built-in A DRAM Interface(16M*4, 16M*1, 4M*4, 4M*1) for store recording data. It can be applicable to the medium systems such as Data Bank、Pocket Dialer、Educational Toy、Digital Voice Recording System and Voice Answer Machine etc..
The instruction set of HE83117 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.HE83117 Features

- Operation Voltage： 2.4V – 5.5V
- System Clock： DC ~ 8MHz @ 5.0V
  DC ~ 4MHz @ 2.4V
- Internal ROM： 256K Bytes(64K Program ROM+192K Data ROM)
- Internal RAM： 256 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..
- 32~48 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.
- 128~64 dots LCD driver (A、B TYPE selectable).
- One 7-bit current-type DAC output.
- PWM device.
- Built-in DTMF Generator.
- Two external interrupts and three internal timer interrupts.
- Three 16-bit timer.
- Instruction set： 32 instructions, 4 addressing mode. 8-bit DATA POINTER for RAM and 18-bit TABLE POINTER for ROM.
- Built-in EDO DRAM interface.

C. Application Circuit