



A. HE83131 Introduction

HE83131 is a member of 8-bit Micro-controller series that is developed by King Billion. This IC built-in 640-dot LCD driver and has one OP comparator. The built-in OP comparator can be used with (light, voice, temperature, humidity) sensor etc. The 7-bit current-type D/A converter and PWM device provide the complete speech output mechanism. This IC is applicable to the medium systems such as LCD Games and Educational Toy etc. Use external SRAM or Flash RAM to have recording function.

This IC is very easy to learn and use. Most of instructions take only 3 oscillator clocks (machine cycles). As a result this IC is suitable for the applications that require higher performance system.

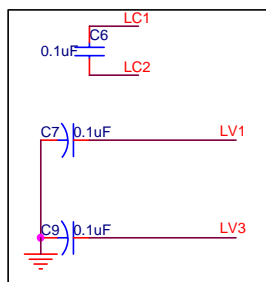
B. HE83131 Features

- Operation Voltage : 2.2V – 5.5V
- System Clock : DC ~ 8MHz @ 5.0V
DC ~ 4MHz @ 2.2V
- Internal ROM : 16K Bytes(16K Program 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.
- 12-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.
- 640 dots LCD driver (A、B TYPE selectable).
- One 7-bit current-type DAC output.
- PWM device.
- Two external interrupts and two internal timers interrupts.
- Two 16-bit timers.
- Instruction set : 32 instructions, 4 addressing mode. 8-bit DATA POINTER for RAM and 14-bit TABLE POINTER for ROM.

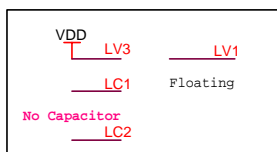
C. Application Circuit



Twice Charge Pump is selected
LCD Max. Voltage=LV3=3/2*VDD

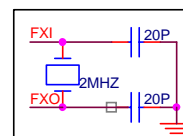


Twice Charge Pump is selected
LCD Max. Voltage=LV3=VDD

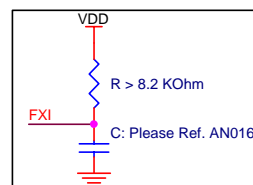


No External Parts is necessary if user adopt Internal Fast RC Clock

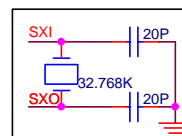
External Fast Clock:
Crystal osc.



External Fast Clock:
RC osc.



External Slow Clock:
Crystal osc.



External Slow Clock:
RC osc.

