# A. HE83540 Introduction

HE83540 is a member of 8-bit Micro-controller series developed by King Billion Electronics Ltd. Users can chose any one of combination among 【1024 dots LCD Driver + 16 Bit I/O Port】…【896 dots LCD Driver + 24 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 512K ROM Size can be used in the storage of large speech data, graphic, text etc. It can be applicable to the medium systems such as Small-Scale Dictionary, Data Bank, Pocket Dialer, Automatic Dialer Machine, Medium Class Educational Toy, Lower Second Voice Recording System etc..

The instruction set of HE83540 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. HE83540 Features

- Operation Voltage： 2.2V – 5.5V
- System Clock： DC ~ 8MHz @ 5.0V
  DC ~ 4MHz @ 2.2V
- Internal ROM： 512K Bytes(64K Program ROM, 448K Data ROM)
- Internal RAM： 4K 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.
- 16~24 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.。
- 1024~896 dots LCD driver (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. 12-bit DATA POINTER for RAM and

19-bit TABLE POINTER for ROM.

# C. Application Circuit