SM3509

4-Bit Single-Chip Microcomputer
**(For Data Bank Use)**

DESCRIPTION

The SM3509 is a CMOS 4-bit single-chip micro-computer for databank incorporating data memory RAM, LCD driver, key/switch input circuit, 8-bit parallel I/O port, 2 output ports, external memory control circuit, and buzzer output circuit.

FEATURES

- ROM capacity :
  - Program ROM   8 k x 23 bits
  - Character ROM   5 x 9 x 128 bits
- RAM capacity :
  - Working RAM   256 x 4 bits
  - Display RAM   60 x 9 bits
  - Data RAM   2 k x 8 bits
- Memory expansion (external) : 8 k x 8 bits
- LCD display : 60 segment x 9 common
- I/O ports :
  - Parallel I/O   8 bits
  - Output   2 bits
  - Buzzer output   1 bit (4 kHz)
  - Key input   7 bits
- Standby release : 2 events (2 Hz signal, key input)
- Built-in oscillator :
  - System clock (built-in CR oscillator)   250 kHz
  - Timer (built-in CR oscillator)   32.8 kHz
    - (external crystal)   32.768 kHz
- Instruction cycle time : 12 μs
- Operating temperature : −10 to +60 °C
- Supply voltage : 2.5 to 3.4 V
- Packages :
  - 100-pin QFP (QFP100-P-1420)
  - Chip (98-pad)

SYSTEM COMFIGURATION EXAMPLE
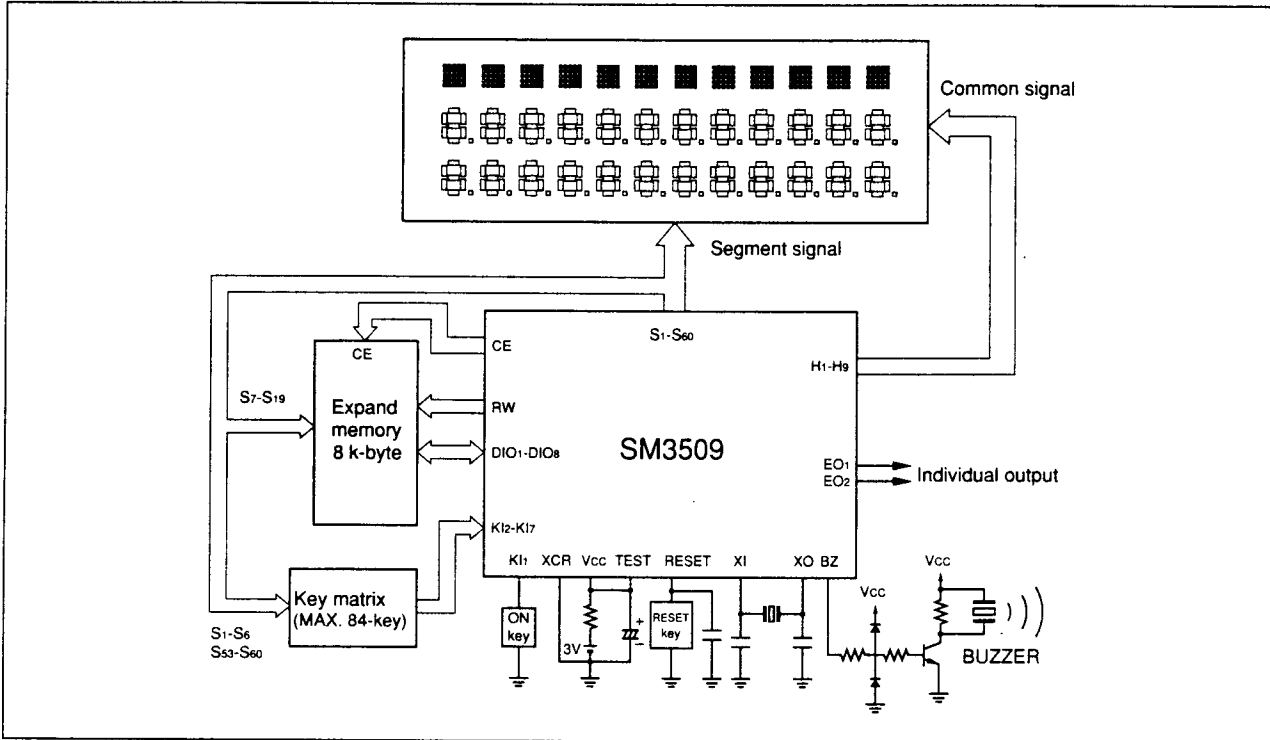
Singlechip LH7xxxx '790 '789 '791 SMxxxx 'K series MCU Microcontroller MPU Microprocessor ARM Advanced RISC Machines Databank LCD Controller LCD Driver Controllers Processors Portable Low Power Low Voltage High Performance Power curve MIPS MIPS/Watt Execution Cycle Multiplier High Speed Compact Handheld System on Chip System Integration Chip Integration Integration Superchip Standard Cell Core Core based IC VHDL Verilog Synthesis Chip on Board COB Chip on Flex COF Device on Board DOB Power Supply Controller Handy Products Development Tools Board Support Software Tools Tools 2.10 Software Support Emulators Evaluation Boards ICE In-Circuit Emulators ROM ICE SME Series Programmable User Configurable RTOS Real Time Operating Systems Third Party Support Software Hardware Yokogawa Digital Cosmic Compiler C Language C Like Assembler Linker Debugger Debug A/D D/A DAC Analog Digital 10-bit 4-bit 8-bit 16-bit 32-bit Address bus Data Bus