

## COP820CB/COP821CB/COP822CB

### Single-Chip microCMOS Microcontrollers

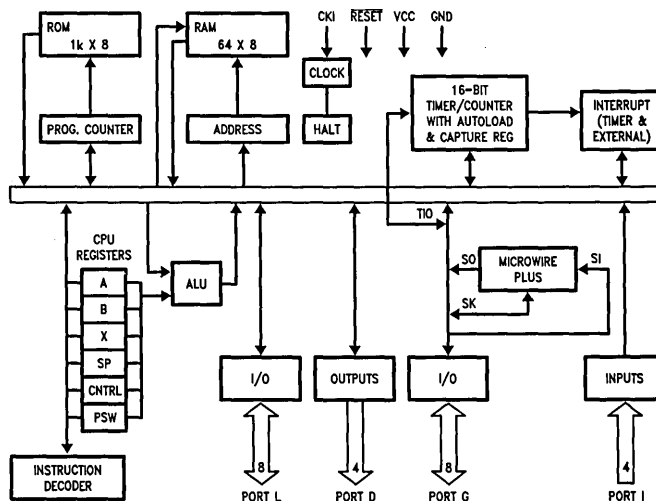
#### General Description

The COP820CB is a member of the COPSTM microcontroller family. They are fully static parts, fabricated using double-metal silicon gate microCMOS technology. This low cost microcontroller is a complete microcomputer containing all system timing, interrupt logic, ROM, RAM, and I/O necessary to implement dedicated control functions in a variety of applications. Features include an 8-bit memory mapped architecture, MICROWIRE/PLUSTM serial I/O, a 16-bit timer/counter with capture register and a multi-sourced interrupt. Each I/O pin has software selectable options to adapt the COP820CB and COP840CB to the specific application. The part operates over a voltage range of 2.0V to 3.5V. The minimum operating voltage of 2.0V makes this part suitable for applications requiring low power consumption. The part may be operated in the ROMless mode to provide for accurate emulation and for applications requiring external program memory.

#### Features

- Low cost 8-bit microcontroller
- Fully static CMOS
- 1  $\mu$ s instruction time (20 MHz clock)
- Low current drain (500 mA at 10  $\mu$ s instruction rate)  
Low current static HALT mode (Typically < 1  $\mu$ A, max 2  $\mu$ A)
- Single supply operation: 2.0V to 3.5V
- 1024 bytes ROM/64 Bytes RAM
- 16-bit read/write timer operates in a variety of modes
  - Timer with 16-bit auto reload register
  - 16-bit external event counter
  - Timer with 16-bit capture register (selectable edge)
- Multi-source interrupt
  - Reset master clear
  - External interrupt with selectable edge
  - Timer interrupt or capture interrupt
  - Software interrupt
- 8-bit stack pointer (stack in RAM)
- Powerful instruction set, most instructions single byte
- BCD arithmetic instructions
- MICROWIRE PLUSTM serial I/O
- 28 pin package (optionally 24 or 20 pin package)
- 24 input/output pins (28-pin package)
- Software selectable I/O options (TRI-STATE®, push-pull, weak pull-up)
- Schmitt trigger inputs on Port G
- Temperature range: 0°C to +70°C
- ROMless mode for accurate emulation and external program capability—expandable to 32k bytes in ROMless mode
- Fully supported by National's MOLETM development system

#### Block Diagram


**FIGURE 1**

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