80C31/32/51/52 8-Bit Microcontroller

Features

- Functionally compatible with 80C31/32/51/52 devices
- 2.7 V to 5.5 V operation ideal for portable application:
  — 30 MHz external clock operation (5 V, commercial temperature range)
  — 15 MHz external clock operation (3 V, commercial temperature range)
- Supported in Lucent submicron CMOS standard-cell libraries
- Verified models with vectors achieving 95% fault coverage
- Compatibility with *Logic Modeling** models for system simulation
- Supported through Lucent ADS and third-party design kits
- Samples available for system evaluation:
  — 40-pin DIP
  — 44-pin PLCC
- 256 x 8 RAM helps enable faster program execution
- Special function register (SFR) interface allows for external customization
- External duplicate 80C31 counter/timer interface
- Ability to disable all interrupts and freeze counter/timers for easier in-circuit emulation
- Custom cell minimizes chip area
- Idle and powerdown modes for low-power applications
- *ONCE* (on-circuit emulation) mode
- Two 16-bit counter/timers
- Full-duplex serial channel
- Boolean processor helps enable faster bit-level operations
- 64K ROM and 64K RAM addressing capability

* *Logic Modeling* is a registered trademark of Logic Modeling Corporation

Description

The Lucent 80C31 macro is an 8-bit microcontroller that has enhanced features and operates at higher frequencies than industry-standard products. The 80C51/80C31 architecture has been optimized for sequential real-time control applications, and the instruction set has extensive Boolean processing (single-bit logic) capabilities. The Lucent 80C31 macro is functionally equivalent and cycle-by-cycle compatible with industry-standard 80C51/80C31 products.

To help reduce high-performance system costs, the Lucent 80C31 macro is designed to allow for the use of lower-performance external memory. Lucent has performed extensive compatibility and system verification tests to help ensure conformance with industry-standard 80C31 devices.

With the 80C31 macro, designers can optimize their ASIC for performance or low power using Lucent interchangeable CMOS libraries. Lucent provides macro support files and test vectors for completing an ASIC design incorporating an 80C31 macro. For customer system verification, Lucent offers fully tested kit parts in 40-pin DIP and 44-pin PLCC package options.

80C31/32/51/52 8-Bit Microcontroller (continued)

Description (continued)

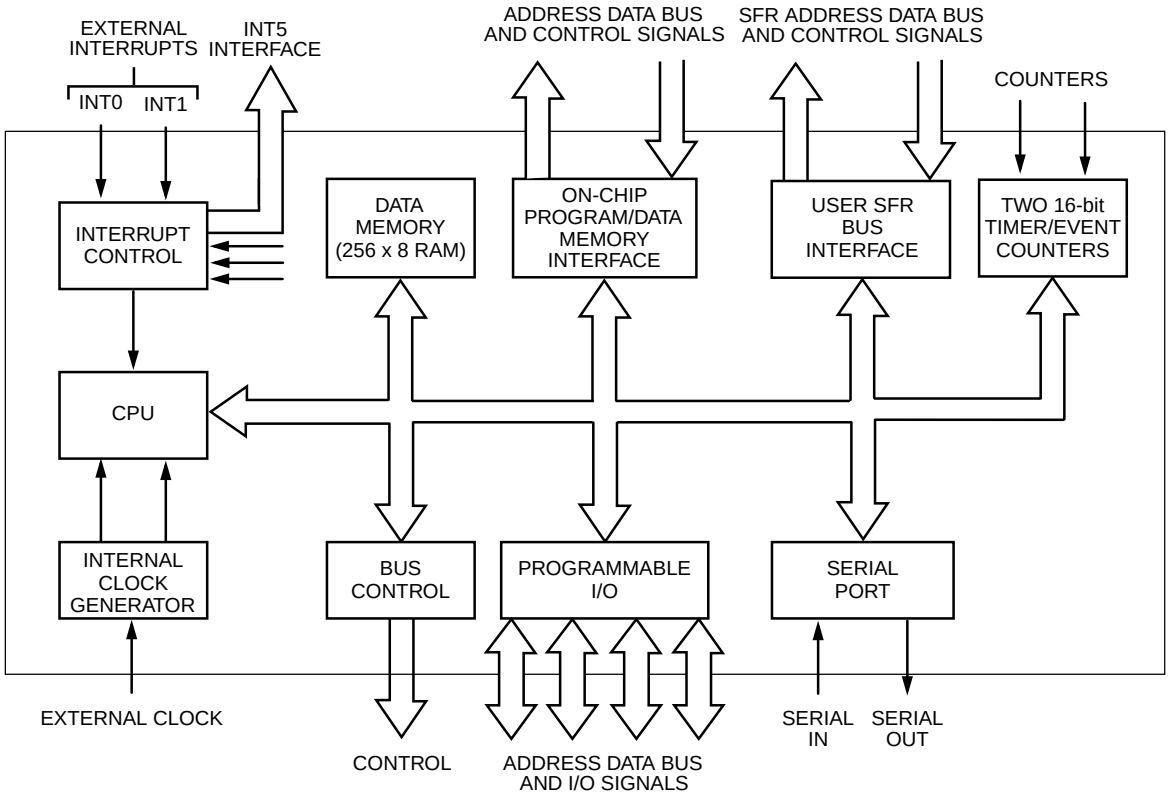

Figure 41. 80C31/32/51/52 8-Bit Microcontroller Block Diagram