

UMCU-0051A-T 8-bit Microcontroller

Features

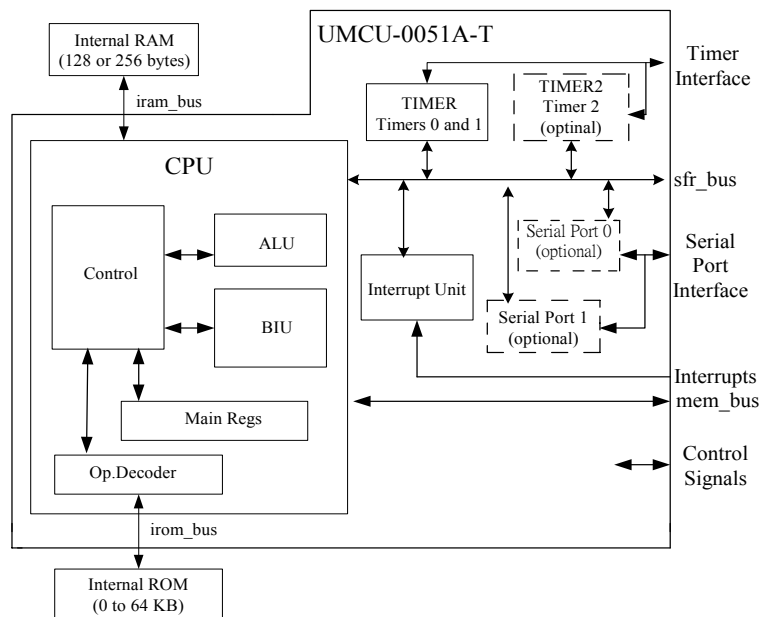
- ◆ **Instruction set compatible with 8051 family**
- ◆ **High performance**
 - Fully Static synthesizable design
 - DC to 80 MHz operating frequency @ 0.35µm
 - 4 clocks per instruction cycle
 - 2.5x average improvement over standard 8051
- ◆ **64KB internal ROM and external ROM/RAM space**
- ◆ **Stretchable external memory access cycle**
- ◆ **Provide write mode for external ROM space to support In-System-Programming capability**
- ◆ **Support dual data pointers**
- ◆ **Configurable two/three 16-bit timers/counters**
- ◆ **Configurable 0/1/2 full-duplex serial ports**
- ◆ **Configurable 6/13 interrupts**
- ◆ **Easy integration of user-defined peripherals by external SFR I/F**
- ◆ **Gate count: 10K-13K**
- ◆ **Support industry standard compilers, assemblers, emulators, and ROM monitors**

Overview

The UMCU-0051A-T is a technology-independent, synthesizable, microcontroller core. Its instruction set is fully compatible with the industry standard 8051 and configurable to match any of the common 803x/805x variants.

The UMCU-0051A-T provides increased performance by executing instructions in a 4-clock bus cycle, as opposed to the 12-clock bus cycle in the standard 8051. The shortened bus timing improves the instruction execution rate three times faster than the standard 8051 for most instructions. Therefore, the UMCU-0051A-T can be used to replace any 8051 family for significant performance improvement. The extended features and flexible design parameters make the UMCU-0051A-T very suitable for a wide range of 8051-based application systems.

Block Diagram



Global Unichip Corp.

TEL: +886-3-5646600 <http://www.globalunichip.com>

FAX: +886-3-5646000 e-mail: info@globalunichip.com

No. 10, Li-Hsin 6th Rd., Hsinchu Science Park, Hsinchu 300, Taiwan

Description

The UMCU-0051A-T is a technology-independent, synthesizable, microcontroller core that is fully instruction set compatible with the industry standard 8051 and configurable to match any of the common 803x/805x variants.

The UMCU-0051A-T is designed in fully static and synthesizable fashion. Therefore, it can be easily ported to various manufacturing processes. The operating frequency ranges from DC to 80MHz and the gate count ranges from 10k to 13K for a typical 0.35 μ m process. The UMCU-0051A-T provides increased performance by executing instructions in a 4-clock bus cycle, as opposed to the 12-clock bus cycle in the standard 8051. The shortened bus timing improves the instruction execution rate 2.5 times faster than that of the standard 8051 on average. Therefore, the UMCU-0051A-T can be used to replace any 8051 family easily for significant performance improvement.

The UMCU-0051A-T has a parameterizable internal ROM address space ranging from 0 to 64KB (16-bit) and a selectable 128/256 internal RAM space. It also has a 64KB external ROM/RAM access capability. The external memory cycle can be stretched to access low-speed RAM peripherals. Furthermore, the UMCU-0051A-T provides a special writing mode for the external ROM space to support in-system-programming capability. The external Special-Function-Register (SFR) bus interface allows simple integration of user-defined peripherals.

The UMCU-0051A-T provides dual data pointers to accelerate the data memory block moves. The configurable 2/3 16-bit timers, 0/1/2 full-duplex serial ports, and 6/13 interrupts maximize the design flexibility to meet most 8051-based applications.

The UMCU-0051A-T is object code compatible with the industry standard 8051. That is, object codes produced by a standard 8051 compiler/assembler/linker will execute on the UMCU-0051A-T and will be functionality equivalent.

Deliverables

- **Synthesizable netlist in Verilog**
- **Test bench**
- **Comprehensive design databook**

Global Unichip Corp.

TEL: +886-3-5646600 <http://www.globalunichip.com>

FAX: +886-3-5646000 e-mail: info@globalunichip.com

No. 10, Li-Hsin 6th Rd., Hsinchu Science Park, Hsinchu 300, Taiwan