



ARM Cortex-M1

A high-quality, standard processor architecture for FPGA applications

The ARM Cortex™-M1 processor is the first ARM processor designed specifically for implementation in FPGAs. The Cortex-M1 processor targets all major FPGA devices and includes support for leading FPGA synthesis tools, allowing the designer to choose the optimal implementation for each project.

The Cortex-M1 processor enables OEMs to achieve significant cost savings through rationalization of software and tools investments across multiple projects spanning FPGA, ASIC and ASSP, plus greater vendor independence through use of an industry-standard processor.

As a streamlined three-stage 32-bit RISC processor, the Cortex-M1 implements the popular, high-density Thumb-2® instruction set. This enables both the processor and software footprint to meet the area budget of the smallest FPGA devices, while retaining compatibility with Thumb code for any ARM processor from the ARM7TDMI® processor upwards. Despite being the smallest processor in the Cortex processor family, the Cortex-M1 processor can deliver 0.8 DMIPS/MHz.

The Cortex-M1 processor is fully supported by the ARM RealView® Development Suite and RealView Microcontroller Development Kit. The RealView Development Suite includes a complete Instruction Set System Model (ISSM) allowing developers to create and test applications for the Cortex-M1 processor out of the box. Developers can easily customize the RealView Development Suite's debugger to visualize and interact with peripherals added around a Cortex-M1 processor, and can also connect and debug applications running on Cortex-M1 silicon using ARM's high-performance RealView ICE and ULINK®2 run control units. The Cortex-M1 processor also benefits from broad and growing support from tools and RTOS vendors in the ARM Connected Community.

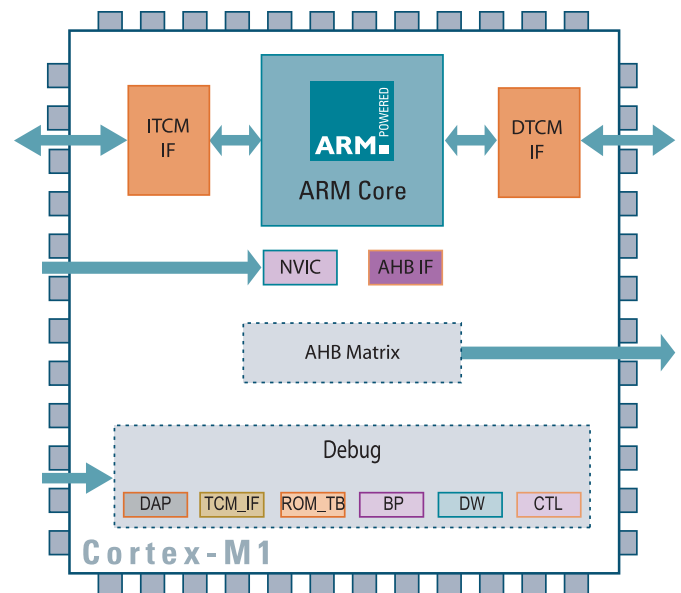
System performance and design turn around time are boosted further with ARM AMBA® compliant PrimeCell® peripheral IP, including ARM's latest ultra-efficient microDMA (PL230).

Applications ▶

- Automotive
- Wireless base-station
- Aerospace
- Industrial control

Features ▶

- Low area, high-frequency design
- Streamlined three-stage 32-bit RISC processor
- Configurable TCM instruction and data memories (1024k to 1k)
- One to 32 interrupts
- Four priority levels per interrupt
- Removable debug, breakpoint, and watchpoint



ARM Embedded Development Solution for Altera Cyclone III ►

The combination of the ARM Cortex-M1 Development Kit and the Altera Cyclone III Starter Kit provides a total solution for both hardware and software development, on Altera Cyclone III, of embedded systems based on ARM Cortex-M1. The following are included in the ARM Embedded Development Solution for Altera Cyclone III:

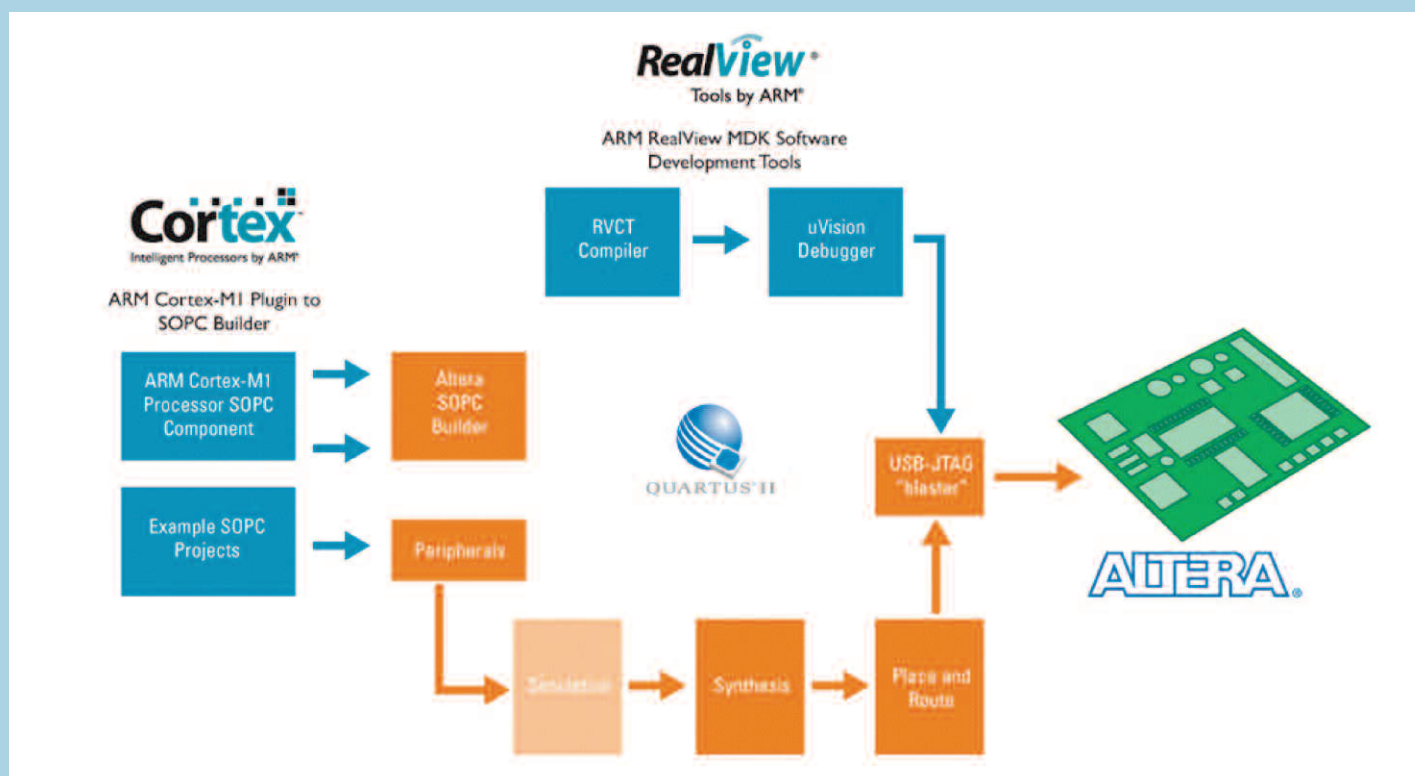
- ARM Cortex-M1 processor
- ARM example embedded system, documentation, and tutorial
- ARM RealView MDK software development tool chain
- Altera Quartus II implementation tool
- Altera SOPC Builder system design tool and peripherals
- ARM Cortex-M1 processor integration into Altera SOPC Builder
- Development boards purchased separately:
 - Altera DK-START-3C35N Starter Board
 - Altera DK-N2EVAL-3C25N Embedded Evaluation Kit
 - Arrow Low-Power Reference Platform (LPRP)

The ARM Cortex-M1 processor integrates as a component within the Altera SOPC Builder system-level design tool, enabling the user to rapidly and easily build systems and evaluate embedded systems via a GUI environment. The ARM Cortex-M1 processor is configurable, allowing the flexibility to make design trade-offs that remain compatible with the instruction set to ensure code and tools compatibility.

Industry-Leading Software Development Tools ►

The ARM Cortex-M1 Development Kit includes the ARM RealView Microcontroller Development Kit, a complete software development environment based on the easy-to-use Keil mVision IDE and Debugger. A foundation of its tool chain is the set of ARM RealView Compilation Tools—industry-recognized as the highest-performance compilers targeted for ARM technology. Developed and tuned to deliver the highest code density while supporting ISO Standard C and C++, the RealView Compiler allows more software functionality to reside in FPGA on-chip RAM. This reduces the need for larger-capacity FPGA devices or external memory and improves performance with significant product cost savings.

RealView Diagram



For more information on ARM certified technical training courses, visit www.arrow-nac.com/atc.