MCF5307

ColdFire® microprocessors are optimized for a new generation of advanced consumer electronics and business peripherals. With new process technology and a wide range of functionality, the ColdFire Family achieves the performance levels required by low-end to high-end applications.

Highly Integrated for Cost Efficiency

Freescale's ColdFire MCF5307 32-bit integrated microprocessor combines a cost-effective peripheral set with the high performance of the Version 3 (V3) ColdFire core.

The MCF5307 solution delivers impressive mathematical performance for basic digital signal processing capabilities and a comprehensive peripheral set that offers ease of use through integration on a single chip, reducing overall design time. In fact, the MCF5307's mid-range performance level, code compatibility and award-winning integration come at a performance/cost ratio that's hard to beat. In addition, several ColdFire products have been nominated for—and the MCF5307 was awarded—MicroDesign Resources Editor's Choice Award for best-integrated processor.

Ideal Performance for Embedded Applications

The MCF5307's 75 (Dhrystone 2.1) MIPS performance is ideal for embedded applications such as high-end control panels, digital set-top boxes, routers, digital video recorders, barcode printers, printer servers and gigabit switches. This product family and the applications it enables is an example of why Freescale is the world's most pervasive supplier of smart semiconductor solutions to the automotive, consumer, industrial, networking and wireless markets.

The V3 core boosts CPU performance while maintaining a low-frequency domain for on-chip peripherals and external interfaces. The result is simplified integration of on-chip functions and reduced overall power consumption. The V3 core architecture also includes enhancements, such as branch-acceleration capabilities that accelerate change-of-flow operations in the instruction execution stream, resulting in better performance efficiency of the pipeline.

For current 68K users, upgrading to the MCF5307 can present significant improvements in performance. In fact, the MCF5307 offers more than 10 times the performance of the M68EC020, up to twice the performance of the M68EC040, up to three times the performance of the MCF5206 and a comparable performance level with the MC68LC060, the highest-performance 68K device available. In addition, the MCF5307 includes a broad array of integrated peripherals at a fraction of the cost of these other microprocessors.

Integrated Peripherals Help Speed Time to Market

With the MCF5307 system, design time is accelerated by packaging common system features—a direct memory access (DMA) controller, timers, and parallel and serial interfaces—on-chip. The MCF5307 also provides glueless interfaces to 8-bit, 16-bit and 32-bit DRAM, thereby eliminating external logic, while internal SRAM offers very high-speed on-chip memory access, and additional general-purpose input/output (GPIO) pins give you more flexibility.

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MCF5307 Features

> V3 ColdFire processor core with clock-multiplied core and branch cache acceleration logic

> Fully code-compatible with V2 ColdFire processor core

> 8 KB unified cache

> 4 KB SRAM

> Multiply-Accumulate (MAC) unit

> Industry-leading debug module offering both background and real-time capability

> Hardware integer divide unit

> Integrated processor

- DRAM controller (glueless interface to SDRAM or ADRAM)

- Two universal asynchronous receiver/transmitters (UARTs)

- Four fully programmable DMA channels

- Eight chip selects provide external memory controller—glueless interfacing to volatile and nonvolatile memory-mapped I/O peripherals (i.e., ROM, Flash, SRAM)

- 16-bit GPIO

- Dual 16-bit general-purpose multimode timers

- I²C module

- System integration (Phase-Lock Loop, software watchdog)

- User-defined bus speed at 1/2, 1/3 or 1/4 of processor clock

> Doze mode and variable frequency operation

Product Specifications

> 75 (Dhrystone 2.1) MIPS at 90 MHz

> Available at 66 MHz and 90 MHz

> 0° to +70°C operating temperature

> -40° to +85°C operating temperature (66 MHz)

> Implemented in 0.35 µm, Triple Layer Metal (TLM)

> 3.3V supply/5.0V-tolerant I/O

> 208-pin plastic QFP package

> Pin-compatible with the MCF5407

MCF5307 BLOCK DIAGRAM

Your Technology Investment Works to Your Advantage

The MCF5307 provides a seamless, fully compatible upgrade path for 68K and ColdFire microprocessor users that leverages the development tools and software you're already familiar with. For example, customers migrating from 68K to the ColdFire microprocessor can access code translation and emulation tools, free of charge to registered users, to facilitate, modify and reuse 68K assembly code.

The 100-percent synthesizable ColdFire Family helps to protect your investment in technology and training well into the future. The ColdFire Family, including the MCF5307, gives you the freedom to experiment with powerful new capabilities and the ability to enable in-demand, innovative applications, without sacrificing system costs or time to market.
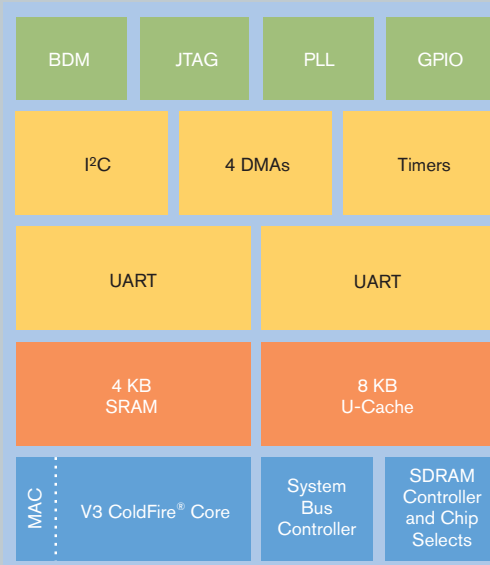
Position Your Products for the Future

ColdFire microprocessors can provide the optimum solution for virtually any embedded application, whether a design requires low cost and high performance or high levels of integration. The innovative ColdFire microprocessor family has been a key member of Freescale's 32-bit family of products for more than eight years, and its development roadmap ensures your creativity, time and resources are protected in the future.

Learn More: For more information about Freescale products, please visit **www.freescale.com**.

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