

ADSP-BF561 Blackfin Dual-Core Embedded Processor

Key Features

Blackfin Processors Offer Features Attractive to a Broad Application Base

- Powerful and flexible cache architecture suitable for soft real-time control tasks and industry-standard operating systems, plus hard real-time signal processing
- Enhanced DMA system for high data throughput with minimal processor core intervention
- Applications-tuned peripherals provide glueless connectivity to general-purpose converters in data acquisition applications
- Multiple code-compatible derivatives enable end-product differentiation

Architectural Features

- Dual high performance 16-bit/32-bit embedded processor cores
- 10-stage RISC MCU/DSP pipeline with mixed 16-bit/32-bit instruction set for optimal code density
- Full SIMD architecture per core, including instructions for accelerated video and image processing
- Memory management unit (MMU) supporting full memory protection for an isolated and secure environment

Product Integration Features

- 328 kB on-chip SRAM
- Glueless SDRAM, SRAM, and flash controllers
- Dual glueless video capture/display ports
- Two dual-channel, full-duplex synchronous serial ports supporting eight stereo I²S channels
- 256-ball mini-BGA and 297-ball sparse BGA packages
- Lead-free and lead-bearing package options
- Industrial and commercial temperature ranges



Blackfin Family Accelerates with Symmetric Multiprocessor Dual-Core Performance

The Blackfin[®] Processor family pushes the performance envelope with the ADSP-BF561. With two high performance Blackfin Processor cores, flexible cache architecture, enhanced DMA subsystem, and Dynamic Power Management (DPM) functionality, the ADSP-BF561 can support complex control and signal processing tasks while maintaining extremely high data throughput.

The ADSP-BF561 is a functional extension of the popular Blackfin Processor family and is ideally suited for a broad range of industrial, instrumentation, medical, and consumer appliance applications—allowing for scalability based upon the required data bandwidth and mix of control, plus signal processing needed in the end product.

Designed for Performance and Flexibility

The Blackfin Processor core can handle both control-oriented and user-interface mechanisms, while also offering full signal processing capabilities to analyze almost any condition. To complement the performance, the Blackfin Processor's memory system offers a powerful and flexible cache architecture that can dynamically balance between the hard real-time tasks desired in SRAM and soft real-time control tasks, and an operating system (OS) requiring cache functionality. DPM lowers power consumption for extending battery life or for minimizing power dissipation in enclosed applications.

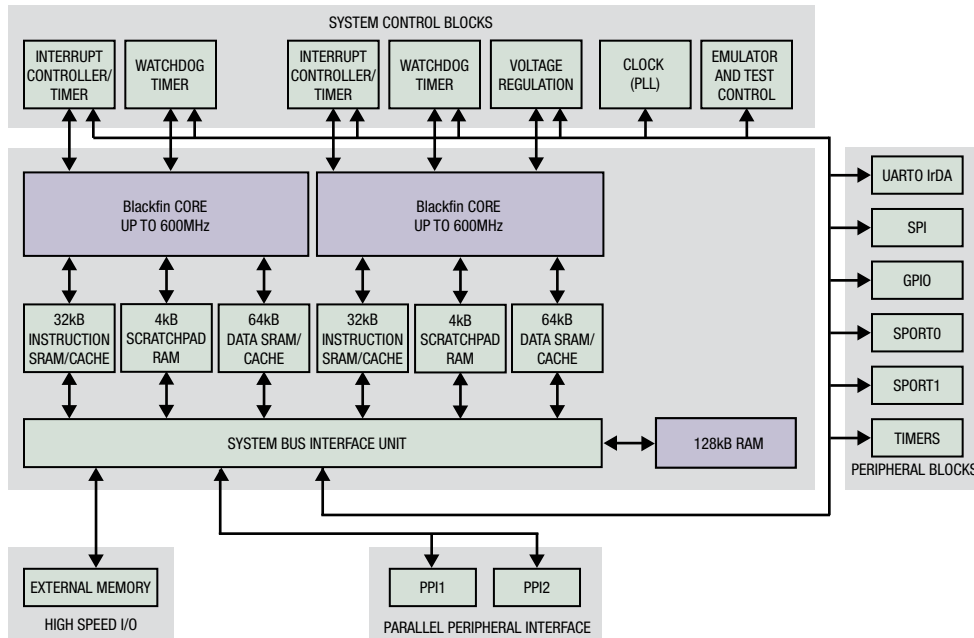


The dual-core nature of the ADSP-BF561 also allows increased system control processing flexibility, as one core can be used for control, operating system functions, or communications protocols, leaving the other core free for signal processing. System power consumption can also be minimized by taking advantage of the ADSP-BF561's internal parallelism in conjunction with DPM. With two identical cores, processing tasks can be more easily shared, and core voltage and speed can be adjusted to minimize power consumption.

Designed for Throughput

The ADSP-BF561 processor integrates two high performance parallel peripheral interfaces (PPIs) and powerful DMA subsystems to stream data directly to and from video encoders/decoders, display drivers, and general-purpose converters.

The DMA controllers support one- and two-dimensional DMA transfers between on-chip memory, off-chip memory, and system peripherals with a programmable number of data elements and array stride values.



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Designed as an Integrated System

In addition to the throughput provided by the dual PPIs, the ADSP-BF561 processor includes a variety of general-purpose functions designed to minimize external IC count and offer broad control and communication. Peripherals include an SPI-compatible port, a UART with support for IrDA, dual SPORT ports, 12 multifunction timers, 48 general-purpose I/Os, dual watchdog timers, and a JTAG/debug interface.

Development Tools

Blackfin Processors are supported by:

- Analog Devices CROSSCORE® brand of industry-leading development tools. The CROSSCORE components include the VisualDSP++® software development environment, EZ-KIT Lite® evaluation systems, EZ-Extender® daughter boards, and PCI-based or USB-based emulators.
- Green Hills® Software award-winning MULTI® embedded software development environment and associated emulators.
- Open source board support packages, GCC tool chain, µClinux™ kernel, development boards, and associated debugging environment. Visit www.blackfin.µclinux.org for more information.

