ADSP-BF533 High Performance General-Purpose Blackfin Processor

Key Features

Blackfin Processors Offer Features Attractive to a Broad Application Base

- Up to 756 MHz performance
- 1512 MMACs/second
- Application-tuned peripherals provide glueless connectivity to general-purpose converters in data acquisition applications
- Large on-chip SRAM for maximum system performance

Architectural Features

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

High Level of Integration

- Up to 148 kB of on-chip SRAM
- Glueless video capture and display port
- Two dual-channel, full-duplex, synchronous serial ports supporting eight stereo I^2S channels
- 12 DMA channels supporting one- and two-dimensional data transfers
- Memory controller providing glueless connection to multiple banks of external SDRAM, SRAM, Flash, or ROM
- 160-ball mini-BGA, 169-ball PBGA packages
- Industrial temperature ranges (−40°C to 85°C) and commercial temperature ranges (0°C to 70°C) available

Overview

The ADSP-BF533 provides a high performance, power-efficient processor choice for today's most demanding convergent signal processing applications. With performance up to 756 MHz (1512 MMACs), applications can now add greater signal processing performance without significantly increasing their system cost. The high performance 16-bit/32-bit Blackfin® embedded processor core, the flexible cache architecture, the enhanced DMA subsystem, and the dynamic power management (DPM) functionality allow system designers a flexible platform to address a wide range of applications including consumer, communications, automotive, and industrial/instrumentation.

Designed for Performance

The ADSP-BF533 combines the high performance Blackfin core with a large on-chip Level 1 cacheable instruction and data memories. This combination allows the ADSP-BF533 to achieve very high system performance for applications such as video or multimedia. This processor core is supported by an advanced DMA controller aiding one- and two-dimensional DMA transfers between on-chip memory, off-chip memory, and system peripherals. Blackfin Processors also offer enhanced power management capabilities by integrating on-chip core voltage regulation circuitry. This on-chip voltage regulator allows for the core and system clocks to be dynamically modified via a digital divider circuit, providing systems designers an additional tool for optimization of power and performance in their end products.

Designed for Flexibility

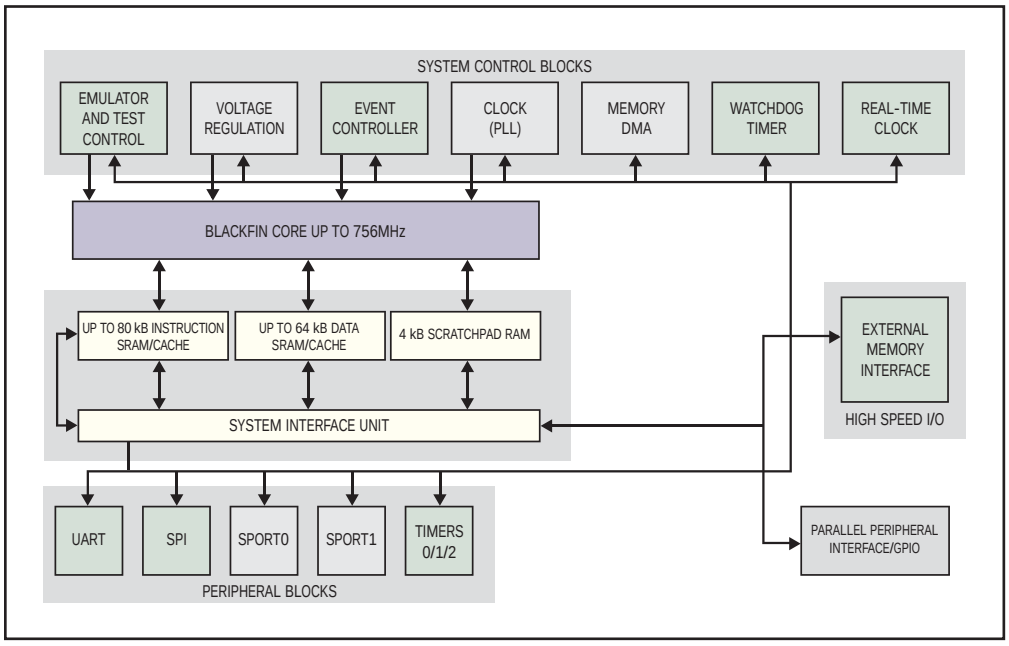
With multiple package and memory options, designers can choose the price point and cost point to meet their system requirements. Combined with a number of standard peripherals, including multifunction serial ports supporting I²S audio capability, UART, SPI®-compatible port, three multifunction timers, and a programmable parallel port (PPI) with ITU-656 video support, the ADSP-BF533 can address a wide variety of existing and emerging applications. Also, the ADSP-BF533 is code compatible with all of the Blackfin family of processors, providing more choices and offering greater leverage across developments.

The Blackfin Processor's combination of performance and flexibility is ideally suited for the most demanding convergent processing applications. This processor family, combined with Analog Devices' investment in future Blackfin products, provides a robust platform for tomorrow's most challenging convergent applications.

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's industry-leading MULTI® embedded software development environment and integrated emulators.
- Open source development tools, GCC toolchain, μClinux™ kernel, board support packages, and associated debugging environment. Visit *www.blackfin.uclinux.org* for more information.



Blackfin Processors integrate an array of peripherals designed to simplify board development and minimize overall system costs.

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