



ADSP-BF536/ADSP-BF537 Blackfin Processor Series Embedded Network Connectivity

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 tasks
- Embedded Ethernet connectivity with an enhanced DMA system for providing robust network traffic throughput with minimal processor core intervention
- Applications-tuned peripherals provide glueless connectivity to general-purpose converters in data acquisition applications
- Multiple low cost, pin- and code-compatible derivatives enable end product differentiation

Architectural Features

- High performance 16-/32-bit embedded processor core
- 10-stage RISC MCU/DSP pipeline with mixed 16-/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

Product Integration Features

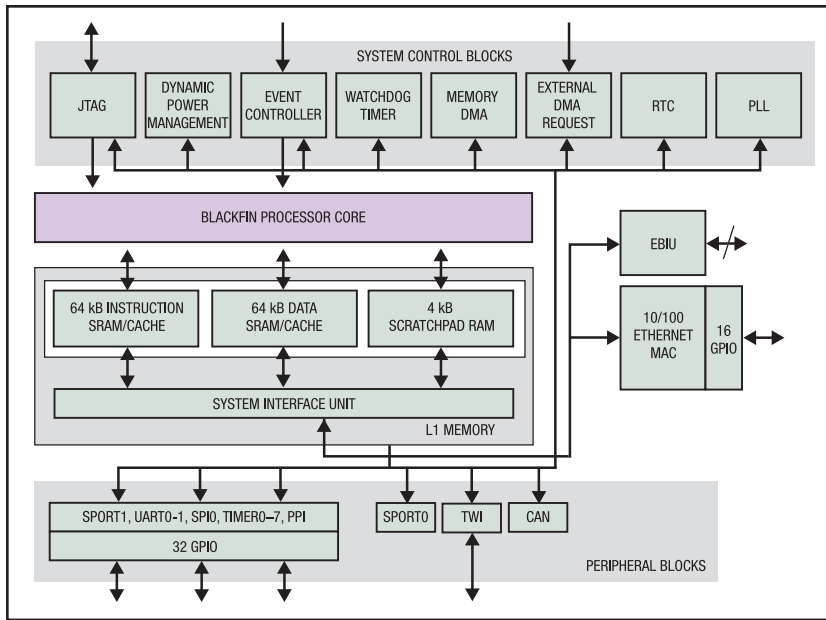
- Embedded IEEE 802.3 compliant 10/100 Ethernet MAC and buffered oscillator output to a separate PHY
- Controller Area Network (CAN) 2.0B interface
- Enhanced DMA controller, including two external handshake DMA request lines
- Up to 132 kB on-chip full-speed SRAM
- Glueless SDRAM, SRAM, and flash controllers
- Glueless video capture/display port
- 182-ball and 208-ball sparse mini-BGA packages
- Lead-free and lead-bearing package options
- Industrial temperature ranges



Embedded Connectivity Comes to the Blackfin Family

The Blackfin® Processor family has been expanded to address the ever-increasing need for pervasive embedded network connectivity with two new family members. This connectivity is powerful when utilized in conjunction with the high performance 16-/32-bit Blackfin embedded processor core, the flexible cache architecture, the enhanced DMA subsystem, and the Dynamic Power Management (DPM) functionality. System designers can take advantage of the combined control and signal processing capabilities of the processor core across a wide range of end applications through the scalability of the pin and code compatibility of these new family members.

The ADSP-BF536 and ADSP-BF537 are a functional extension of the popular ADSP-BF531, ADSP-BF532, and ADSP-BF533 processors, and they are ideally suited for a variety of networked applications. The ADSP-BF537 is the higher performance series member, with more embedded memory enabling higher throughput needs for embedded applications such as video security/surveillance and industrial-environment-based distributed control/factory automation applications. The ADSP-BF536 offers exceptional performance and is designed for low cost connected devices such as remote monitoring devices, VoIP, point-of-sale terminals, and biometrics/security applications. Both devices are ideally suited for a broad range of industrial, instrumentation, medical, and consumer appliance applications—allowing for scalability based upon the required network bandwidth and mix of control, plus signal processing needed in the end product.



Designed for Endpoint Connectivity

The Blackfin Processor core is ideally suited for handling both control-oriented networking tasks and user interface mechanisms while also offering full signal processing capabilities for analyzing 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.

Designed for Bandwidth

The ADSP-BF536/ADSP-BF537 processors integrate a fully compliant IEEE 802.3-2002 standard 10/100 Ethernet MAC that has been enhanced with advanced features to allow for higher network bandwidth capabilities. In addition, the DMA subsystem has been enhanced with greater traffic management abilities to allow for higher data throughput with minimal processor core intervention. The DMA subsystem also includes dual external handshake DMA request lines that when used in conjunction with the External Bus Interface Unit (EBIU) can be used when a high speed interface is required for external FIFOs and high bandwidth communications peripherals, such as USB 2.0 devices. The ADSP-BF536/ADSP-BF537 processors also embed a Controller Area Network (CAN) module and are capable of data rates up to 1 Mbps.

Designed as an Integrated System

In addition to the embedded connectivity of the Ethernet and CAN modules, the ADSP-BF536/ADSP-BF537 processors include a variety of general-purpose functions designed to minimize external IC count and offer broad control and communication. Peripherals include an SPI-compatible port, dual UARTs, dual SPORT ports, eight multifunction timers, 48 general-purpose I/Os, Two-Wire Interface for I²C operation, a real-time clock, a watchdog timer, an event controller, and a JTAG/debug interface. The flexible Parallel Peripheral Interface (PPI) offers a direct connection to a variety of video encoders/decoders, display drivers, image sensors, and general-purpose converters.

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, μ CLinux kernel, development boards and associated debugging environment. Visit www.blackfin.uclinux.org for more information.

Embedded Processing Support

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