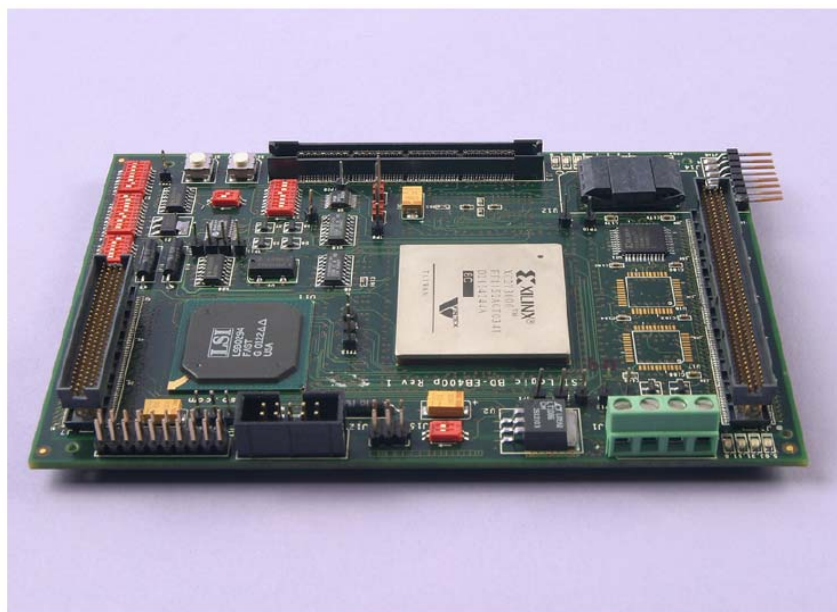


# ZSP<sup>®</sup>500 Core Module Platform



## Overview

The EB500P is a development and prototyping tool for the developer of multi-core ARM<sup>®</sup> plus ZSP500 System-On-Chip (SoC) platforms. It represents the most comprehensive solution for a developer interested in integrating a high performance ZSP500 processor subsystem with any available ARM processor Core Module. The EB500P features a silicon implementation of the ZSP500 processor, the ZSP500P, specifically for prototyping applications. The silicon implementation features an entire ZSP500 processor subsystem; including memory controller, 512 Kbytes of SRAM, JTAG controller, Embedded Trace, clock controller, co-processor interfaces, master/slave AMBA/AHB bus interface and associated logic.



**EB500P Board**

The EB500P can be utilized for standalone ZSP500 core development or complete multicore application designs. The EB500P core platform is also integrated and part of a complete ZSP Application Platform with comprehensive application software suites and SoC subsystem components.

## BENEFITS

- ARM + ZSP500 SoC prototyping
- ZSP500 stand alone development
- ZSP500 core evaluation
- ZSP500 instruction extension prototyping
- Software platform integration
- Multi-core debugging
- Integrated multi-core platform environment
- Application specific prototyping
- High speed DSP core operation

## RELATED PRODUCTS

- AV500 multimedia platform
- A500 audio platform
- Video codec software library
- Digital audio software library
- EB400P board



# ZSP<sup>®</sup>500 Core Module Platform

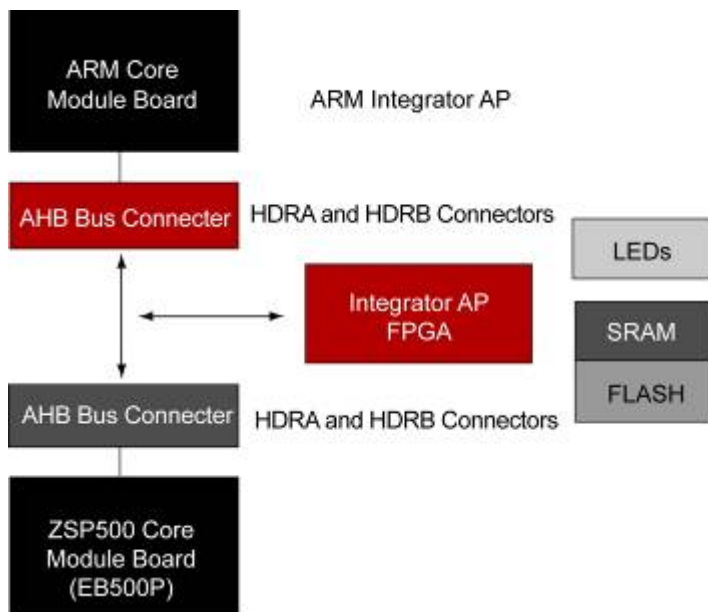


Figure 1. ARM- ZSP Development Environment

Figure 1 shows an illustration of the ARM Integrator AP mother-board with a ZSP<sup>®</sup> Development Board and an ARM Processor Board. The ARM Integrator AP motherboard contains memory, peripheral interfaces, connectors to Core Module boards for ARM or ZSP processors and an FPGA. Logic on the ARM Integrator AP motherboard provides a Global AHB bus available on connectors. Processor modules like the EB500P board plug into the ARM Integrator AP motherboard using stackable connectors. The EB500P board contains a local AHB bus and a bridge to the Global AHB bus on the ARM Integrator AP motherboard and the ARM Processor Core Module Boards contain similar functionality. Other Integrator AP core or logic modules can be used with the ZSP development boards, such as the ARM Logic Module to implement, program, debug, test and configure complete subsystems. This flexibility allows an accurate system prototype to be built and tested. System designers, software developers and SoC development engineers can leverage this as a reference platform for each of their development activities.

## FEATURES

- 128K words (1 ób) on-chip Instruction RAM
- 128K words (1ób) on-chip data RAM
- 2M words (1ób) on-board FLASH
- 24-248 MHz programmable processor clock
- XC2V4000 or XC2V6000 FPGA for peripherals and custom instructions
- Programmable. 3-30 MHz local AHB bus
- Off-board connectors
- On-chip PLL
- On-board PLL
- AHB connection to Integrator AP
- JTAG interfaces

# ZSP<sup>®</sup>500 Core Module Platform

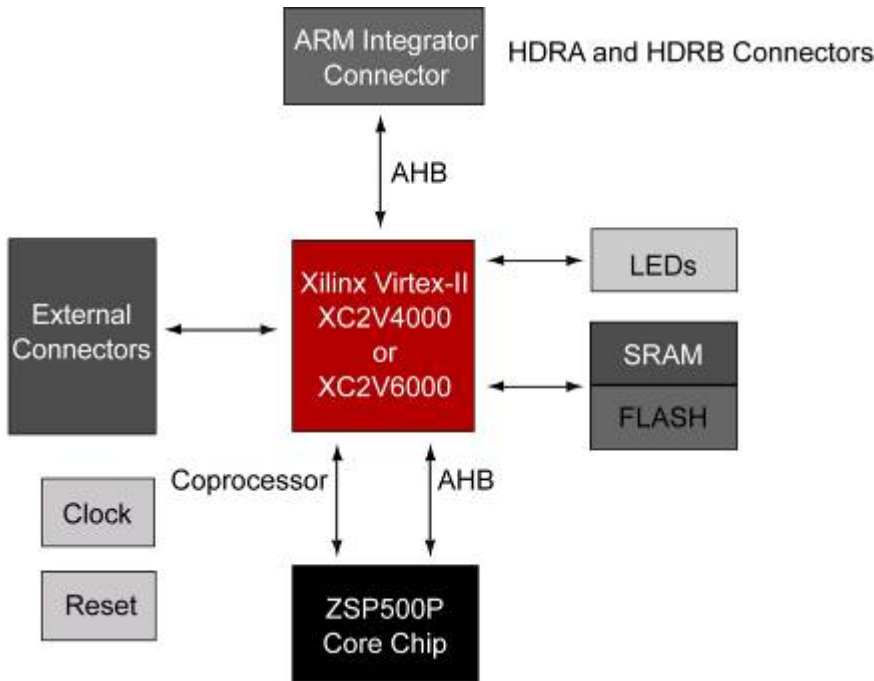


Figure 1. Block Diagram of ZSP500P Core Module Board

Figure 2 is a block diagram of the ZSP Core Module Board. The board contains an FPGA ( Xilinx<sup>®</sup> Virtex<sup>™</sup>-II ) which provides a local AHB bus, a bridge to the Global AHB bus, board-specific peripherals such as Serial ports and LCD drivers. Customers can add their own logic to the FPGA to incorporate their specific functions. The ZSP boards have on board Flash and SRAM. The ZSP500P core can be configured to boot from Flash, allowing flexible software configuration loading options.

To support instruction set extensibility for the ZSP500, the ZSP500P silicon features an instruction extension port that is fully stall able. This port interfaces to a Xilinx Virtex device that enables designers to add logic for the implementation of custom instructions and utilize them in their application development environment.

## ORDERING INFORMATION

The ARM Integrator AP mother-board, the ARM processor board, and ARM Logic Modules are all available from ARM, Inc.

The ZSP500 Core Module is available from VeriSilicon in two versions:

- BD-ZSP500P-4 equipped with a Xilinx Virtex-II XC2V4000 device
- BD-ZSP500P-6 equipped with a Xilinx Virtex-II XC2V6000 device

## Note:

EB500P Core Module Boards use ZSP500P test-chips that are specially fabricated to validate new ZSP designs and process technologies. These test-chips are provided by VeriSilicon in small quantities and are functionally tested, but not characterized for volume production.



# ZSP<sup>®</sup>500

## Core Module Platform

The ZSP500P reference silicon features a complete AMBA/AHB pinned out interface that is interconnected to the EB500P board's FPGA to provide flexible subsystem development options. The FPGA can incorporate a variety of customer developed loosely or tightly coupled hardware accelerators, peripherals, additional memory and/or DMA controllers. The FPGA then interfaces to the EB500P board interconnect pins to the ARM Integrator Platform board via bus AHB pins for signaling to other processors or the Integrator Platform. This provides for a seamless interface to platform level IP implementations integrating a ZSP500 and a large variety of ARM microprocessor hosts. The hardware level interface is further enhanced by providing software drivers, APIs and host control software functions to rapidly bring up ARM+ZSP application programs.

### Stand Alone Mode

The ZSP Development Boards can be used without an ARM Integrator AP motherboard. Power can be provided from an input connector, and a JTAG probe can be connected directly to the board.

### Multi-core Debug

Multi-core debug is available using either Green Hills<sup>®</sup> Multi<sup>®</sup> or ARM's RealView<sup>®</sup> Developer. These products allow simultaneous debugging of both cores with a common debugger. The boards can also be used with independent debuggers rather than a single one. For instance, the ARM debugger can be used to debug the ARM processor, and the VeriSilicon Software Developer's Kit (SDK) debugger can be used to debug the ZSP500 core.

### Software Development Tools

The VeriSilicon SDK can be used to generate and debug code on the EB500P Board. JTAG probe connections are available to communicate with the boards. ZSP Development tools can also be obtained from Green Hills.

### About VeriSilicon

VeriSilicon Holdings Co., Ltd ("VeriSilicon") is a fast growing silicon solutions company providing products and services that enable customers to meet their chip design objectives, accelerate development programs and deliver market proven silicon products - on time and at lower cost. VeriSilicon specializes in providing expert design services, market leading ZSP<sup>®</sup> licensable cores and platforms, industry standard semiconductor IP and scalable ASIC turnkey services across a broad range of application markets, including multimedia, voice and wireless communications. VeriSilicon has design, operation and sales and support offices in Santa Clara, California, Dallas, Texas, Shanghai and Beijing, China, Taipei, Taiwan, Tokyo, Japan, Nice, France and Seoul, Korea. For more information, visit [www.verisilicon.com](http://www.verisilicon.com).

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