

ZSP[®]540 – Highly Efficient Quad-MAC DSP Core



OVERVIEW

The ZSP540 processor core is a high-performance/power-efficient Quad-MAC/Six-ALU implementation of the ZSP[®] G2 architecture. The ZSP540 utilizes a 16-bit architecture with extensive 32-bit capabilities and sets an unmatched balance of performance/power/size and memory utilization efficiency. The Z.Turbo[™] feature provides the SoC designer with the option to extend the ZSP540 instruction set and the ability to add application-specific acceleration logic.

TARGET MARKETS

- 2.5/3G wireless baseband processing
- Multimedia wireless and mobile devices
- Wireless LAN (WLAN)
- Set-top box and home gateways
- Multi-channel Voice Over IP (VoIP)
- Software Defined Radio (SDR)

APPLICATION BENEFITS

- High-performance DSP capabilities
- Excellent power/cost/speed balance
- Excellent multimedia audio/video processing
- Power efficient baseband processing performance
- DSP and system control functions handling capabilities

CORE FEATURES

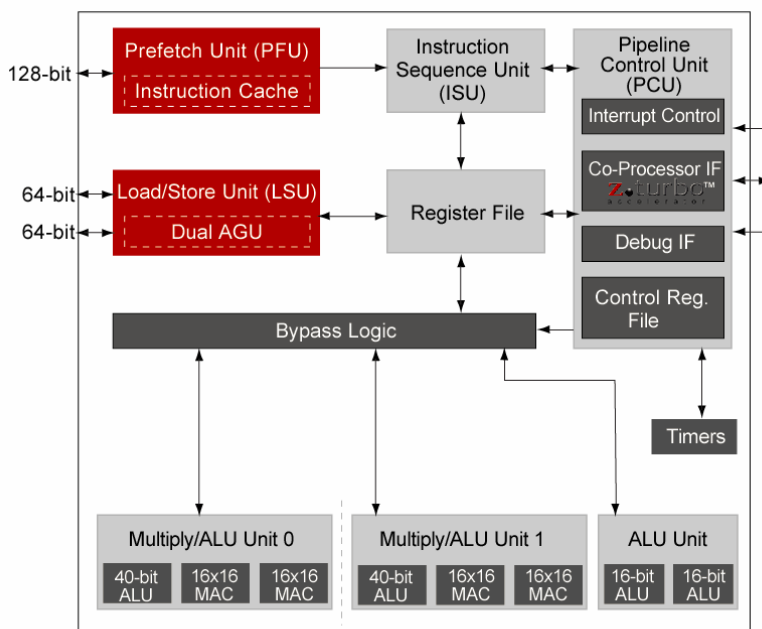
- Quad-MAC/Six-ALU DSP core
- 4+1 instructions per cycle
- Up to 350MHz, 8-stage pipeline design
- Up to 1750 million instructions/sec
- Dual 64-bit wide Load/Store data ports
- Z.Turbo co-processor extensions capable
- 24-bit address space
- HW managed instructions scheduling
- HW/SW controlled power management
- Real-time trace and profiling capability
- Full AMBA[™]/AHB support (optional)
- JTAC debug interface
- Static, single phase clocked design
- Compatible with all other ZSP cores

ARCHITECTURE FEATURES

- Embedded control processing efficiency
- 32-bit addressing capabilities
- 16 and 32-bit standard instruction set
- Extensive 32-bit and 40-bit support
- Easy to program instruction set
- Load/store register based instructions
- Outstanding code density
- User extensible instruction set

SUPPORT

- Highly optimized C-compiler
- Multimedia, voice and wireless experts
- Local support by ZSP solution experts



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ZSP540 QUAD-MAC DSP PROCESSING SOLUTION

VeriSilicon ZSP cores are licensable and available as fully synthesizable and technology independent. ZSP cores have been proven in ASICs and are also available as standard general-purpose DSP and Application Specific Standard Products (ASSP) from VeriSilicon and licensees of the ZSP cores.

The ZSP540 is a power-efficient/high-performance Quad-MAC DSP core implementation of the ZSP G2 architecture version and is software compatible with all other ZSP cores enabling code reuse and effortless design migration and scalability.

The ZSP540 features instruction grouping, instruction parallelism, and pipeline control, all done by hardware, making it seamless and easy to program. Highly optimized C-compilers are available, minimizing the need for assembly level programming.

SOC INTEGRATION SUPPORT

- ZSP cores are available as a synthesizable, fully static/single-phased design
- AMBA™/AHB (optional) or native ZSP bus interfaces are available
- Co-verification and System modeling support available by various providers

AVAILABLE G2 SOFTWARE DEVELOPMENT SOLUTIONS

- Highly optimized development kits are available from VeriSilicon and Green Hills
- Multi-core ARM/ZSP support is available through Green Hill and ARM's RealView
- Embedded real-time trace and application profiling supported
- ZOpen™ software development framework enables rapid integration and reuse of software modules developed by different 3rd parties

AVAILABLE G2 HARDWARE DEVELOPMENT SOLUTIONS

- Architecture evaluation boards
- Standalone FPGA prototyping boards
- ARM integrator core modules
- Multimedia audio/video development platform
- Audio development platform

SOFTWARE COMPATIBLE ZSP CORES

CORE	ZSP200	ZSP400	ZSP500	ZSP540	ZSP600
#MACs	Single	Dual	Dual	Quad	Quad
#ALUs	Dual	Dual	Triple	Six	Six
Inst/Cycle	2+1	4-issue	4-issue	4+1	6-issue
Max Freq (MHz@0.13u)	220	220	350	350	300

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® 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.

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