

ZSP540 - Highly Efficient Quad-MAC DSP Core

OVERVIEW

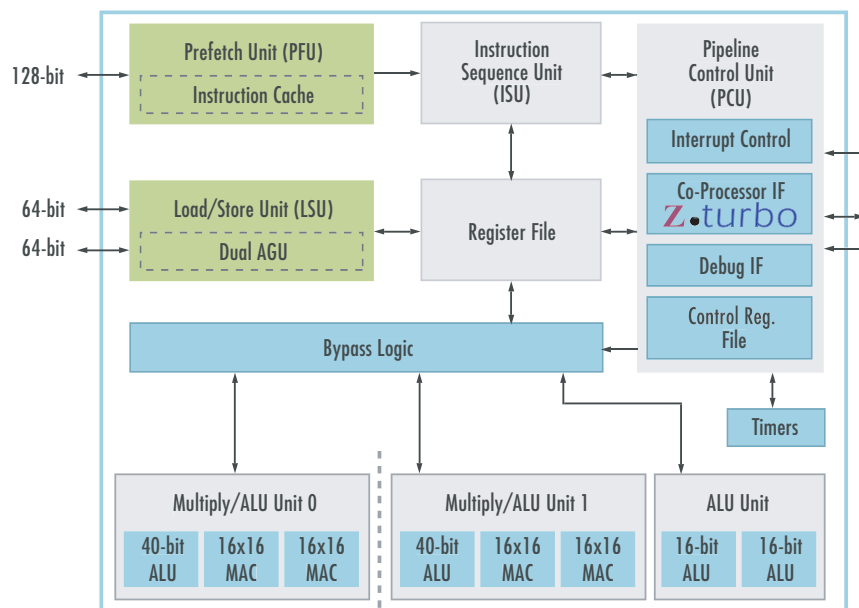
The ZSP540 processor core is a high-performance/power-efficient Quad-MAC/Six-ALU implementation of the ZSP® G2 architecture. The ZSP540 utilizes a 16-bit architecture with extensive 32-bit capabilities and sets an unmatched balance of performance/power/size and memory utilization efficiency. The Z.Turbo 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
- Cable/xDSL
- 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 coprocessor 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)
- JTAG 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

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

The ZSP540 is 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 LSI Logic and Green Hills
- Multi-core ARM/ZSP support is available through Green Hill and ARM's RealView
- JTAG probes for single/multi-core support available from various providers
- 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 available
- Multi-media 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 |

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Additional information on the ZSP540 is available at:

<http://www.zsp.com/zsp540.html>

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