

FC7500

32-BIT RISC CPU

WITH AUDIO COPROCESSOR

Version 1.1 | June 2006

Key Features

CPU Core

- FA506 integer core
- ARM v4 instruction set compatible
- Low operating voltage

Audio Coprocessor

- One-cycle 24 x 24 MAC
- Parallel load/store
- X-Y memory
- Supports 1-level zero overhead loop
- Special instructions for audio applications

Memory Subsystem

- Configurable instruction and data caches
- Configurable instructions and data scratchpads
- DMA slave interface for scratchpad access

Memory Protection Unit

- Programmable MPU
- Supports 4-region definitions for both instructions and data accesses

Miscellaneous

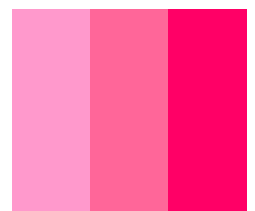
- AMBA 2.0 bus interface
- Supports ARM ICE interface
- Provides complete tool chain support

General Description

Faraday's FC7500 is a state-of-the-art 32-bit embedded RISC processor tailored for audio applications. The FC7500 includes a synthesized FA506 CPU core and a powerful audio coprocessor. The FC7500 includes an MPU, and separated caches and scratchpads. The audio coprocessor provides digital signal processing features such as a faster MAC, parallel load/store, X-Y memory, zero overhead loop, and special audio instructions. These features help boost the performance of audio applications. The size of caches and scratchpads are both configurable. The FC7500 provides operating frequencies up to 150 MHz @ 1.0 V and 200 MHz @ 1.2 V. In addition to the advantages of high performance and low power consumption, the FC7500 is well suited for MP3, WMA, AAC, and other audio applications.

Quick Reference

Operating frequency	<ul style="list-style-type: none">• 150 MHz @ 1.0 V• 200 MHz @ 1.2 V (0.13 μ m, 125 $^{\circ}$ C, worst case)
Cache	Configurable
Scratchpad	Configurable
Memory protection unit	4 instruction regions and 4 data regions
Write buffer	Yes
Bus interface	AMBA 2.0
Idle mode	Yes
ICE	ARM ICE interface
Performance	1.23 Dhrystone MIPS/MHz



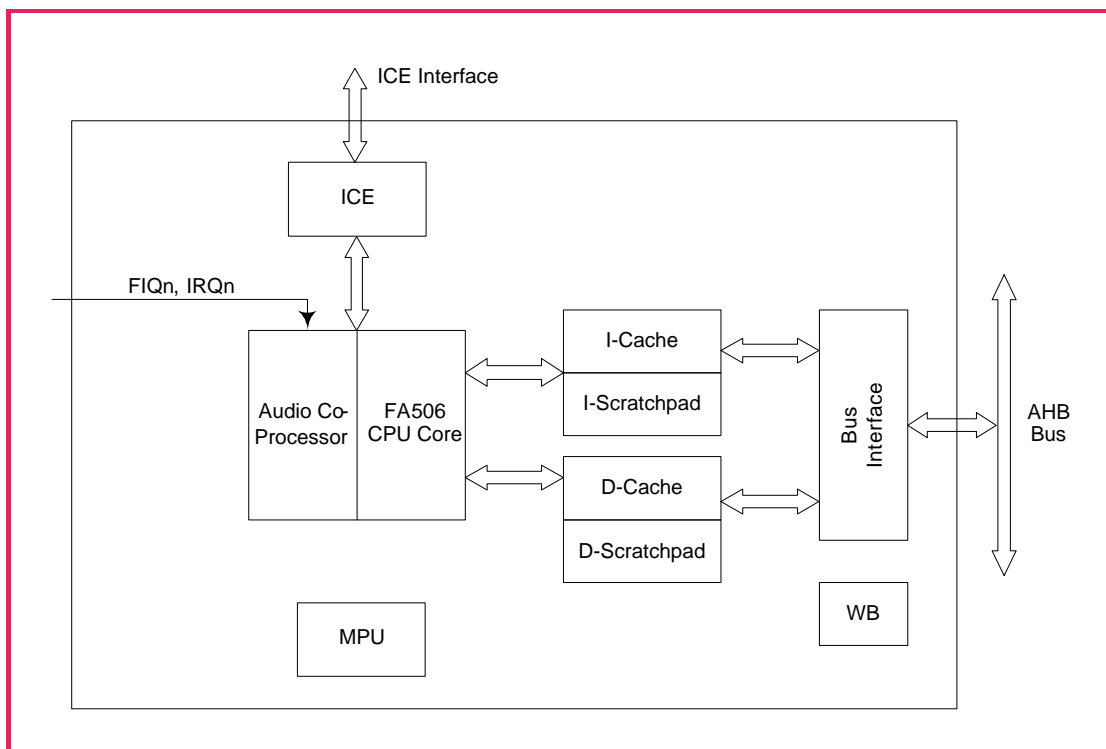
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Functional Block Diagram



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