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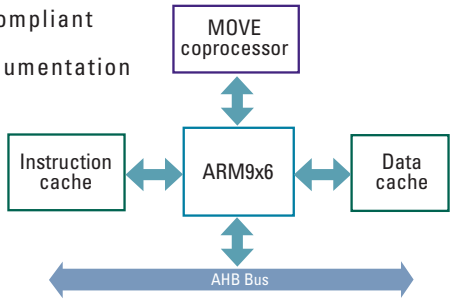
MOVE™ VIDEO ENCODE ACCELERATION COPROCESSOR

DATA SHEET

The ARM Video Encode Acceleration Coprocessor is a MOVE Technology component, which provides hardware acceleration to the motion estimation operation.

The coprocessor is available as a fully AMBA® compliant re-usable soft IP macrocell supported by full documentation and test benches. Use of the coprocessor enables an overall improvement in encoder performance of up to 50% ensuring an efficient ARM-core based solution.



The need to support video encoding on portable devices such as PDAs and wireless handsets, which have limited resources, imposes stringent requirements on any solution. ARM MOVE Technology is a set of software and hardware components which have been highly optimized to provide such a power and memory efficient solution.

The MOVE Video Encode Acceleration Coprocessor is an optimised hardware component, which addresses the needs of Motion Estimation – the most processor intensive part of video encoding. In particular the coprocessor implements an efficient Sum of Absolute Differences (SAD) calculation, which accounts for as much as 70% of all motion estimation processing. The result is an increase of up to 50% in overall encoding performance when compared to a software implementation.

Product Description

The MOVE Coprocessor component consists of:

- Synthesizable VHDL and Verilog macrocell
- Synopsis synthesis scripts targeted at Avant! CB25
- Software API
- ARMulator simulation model
- Verification testbenches
- Complete documentation (Technical Reference Manual, Verification Manual, Integration Manual).

Product Features

- Compatible with all MPEG-4 and H.263 Motion Estimation algorithms
- Performs four 8x8 Sum of Absolute Difference (SAD) calculations
- Synthesizes to around 10k gates
- Power consumption less than 7mW
- Target clock speed up to 200MHz
- Features automatic power down when idle
- Developed for ARM9x6 range of cores
- API compatible with equivalent MOVE software component
- Supported by third-party application software.

Related Products

- MOVE Encoder library
- MOVE Decoder library

Performance Data

Video Encode performance for Foreman sequence, QCIF 15 fps generating 64kb/s bitstream.

Function	With MOVE Coprocessor	Without MOVE Coprocessor
Encode	30 MHz	56 MHz
SAD operation	0.5 cycles/pixel	3.25 cycles/pixel
ROM requirements	2.5 kB	2.9 kB

Figures are based on ARM926™.

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