

A HIGH PERFORMANCE MICROPROCESSOR WITH DSP EXTENSIONS OPTIMIZED FOR THE VIRTEX-4FPGA

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Abstract

As the use of FPGAs increases, the importance of highly optimized processors for FPGAs will increase. In this paper we present the microarchitecture of a soft microprocessor core optimized for the Virtex-4 architecture. The core can operate at 357 MHz, which is significantly faster than Xilinx' Microblaze architecture on the same FPGA. At this frequency it is necessary to keep the logic complexity down and this paper shows how this can be done while retaining sufficient functionality for a high performance processor.

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