



Multiple Memory Application-Specific Digital Signal Processor (ASDSP)

Novel technology that combines small form factor, high performance and low power consumption

Contact

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Inventors:

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Field: Integrated Circuits

Technology

Semiconductor

Key Features

Disruptive technology – high capability and high performance DSP architecture

Multi-memory connectivity with reusable op-codes

Stage of Development

Proof of concept completed
Early prototype constructed

Status

Seeking development & Licensing partner.

Patent Status

Provisional Patent

Background: This invention has the capability to significantly impact the design of next generation custom DSPs. It contains a number of key discriminators that could be integrated either individually or as a whole by DSP designers and chip manufacturers. The biggest discriminator is enabling data computing using application specific function cores and connection between the different memories for very high input/output speeds. These discriminators are extremely valuable for very high data processing requirements in devices and applications coming into the marketplace.

Benefits of Technology: This invention contains attributes that make it very appealing to designers of data intensive applications such as multimedia, wireless and high fidelity -high resolution electronics. These attributes are:

- Architecture that has reusable op-codes enabling different implementations such as FPGA or masked programmable gate array or ASIC
- Multi-memory interface overcomes the limitation of having only one or two attached memories that regular DSP have
- High efficiency in calculation due to control unit structure and highly pipelined cores. These features could enable increased speed and lower operational power
- Increased input/output capability due to multi-memory connectivity

Potential Commercial Applications

- Wireless smartphones and similar devices
- Communication modems – DSL, WiMAX, Cable etc
- Image processing devices such as cameras
- Military communication and electronics

Description of Technology

Novel architectures for a customizable DSP that overcomes limitations in using FPGA (Field Programmable Gate Arrays) and other ASIC (Application Specific Integrated Circuits) for achieving high input-high output computational capabilities.

Opportunity: Licensing the techniques used in the ASDSP architecture to companies that build ASIC and DSPs for use in different consumer and industrial applications.



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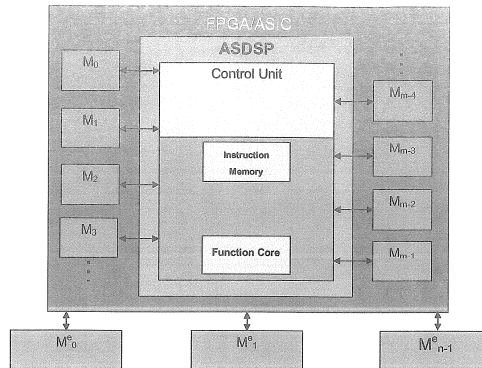


Figure 1. A Multiple Memory Application-Specific Digital Signal Processor

INVENTORS:

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Education

B.Sc., North Carolina Agricultural and Technical State University
M.S., North Carolina Agricultural and Technical State University
Ph.D., North Carolina State University

Specialty

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Reconfigurable/adaptive computing.

