OCTERA Corporation

ONFI Host Controller

Version 2.0, November 2011

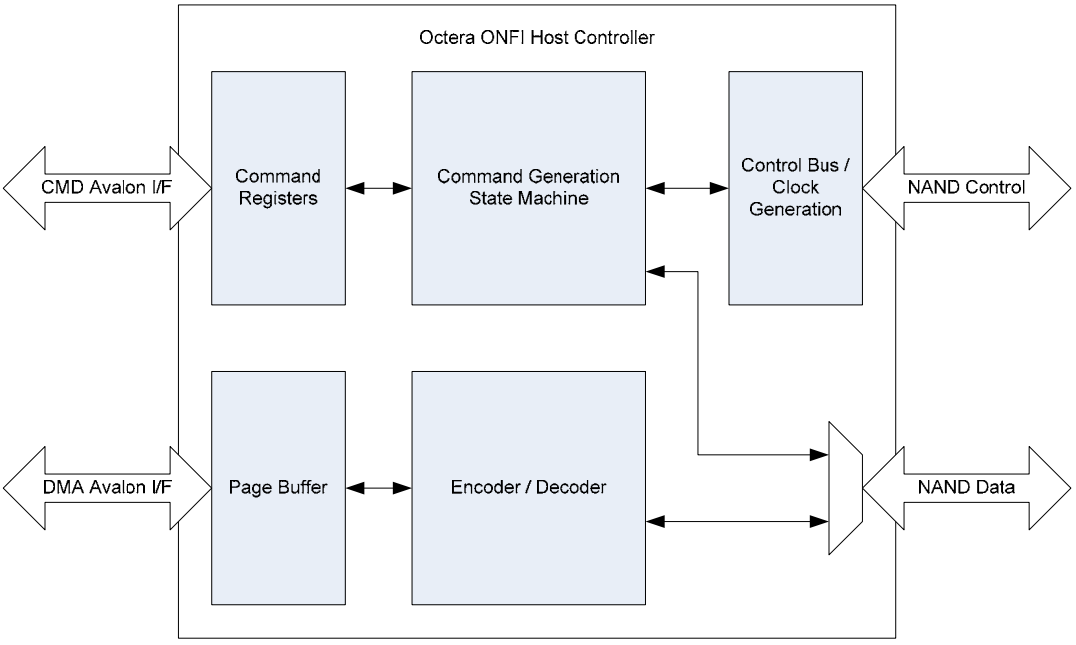
Introduction

An ONFI Host Controller conforms to the ONFI Host Controller Specification. This conformance allows a common ONFI driver firmware to operate with any specification-compliant ONFI Host Controller. Embedded applications generally don't require all the features of a standard ONFI Host Controller. Octera's ONFI Host Controller is designed for these embedded uses using minimal hardware resources.

Octera's simplified ONFI controller implements a custom meta-data infrastructure allowing for configuration, status, bad block mapping and a single large user data segment. The resulting page format is not compatible with standard sectored files systems, but allows streaming of large amounts of user data with minimal latency and memory buffering.

Features

- **Minimal hardware requirements.**
- **ONFI 2.0 compliant**
- **Maintain maximum data bandwidth during streaming read and write operations (multi-page operations).**
- **ECC insertion, checking and correction for up to 8 errors per 540 bytes (uses Altera's Reed-Solomon Encoder / Decoder cores)**
- **Supports single, dual and quad configurations of flash memory.**
- **Supports Async Mode 0 and Sync Mode 4.**
- **Separate clock domains for Avalon (up to 125 MHz) and ONFI (nominally 162.5 MHz).**



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Implementation Summary

Example* Core Specifics		
Cyclone III, Cyclone IV		
Speed Grade		
C8 or faster		
Resource Utilization		
	1 ECC	***2 ECC***
LEs	3461	4573
Registers	2214	2999
M9K	11	16
Supported Design Tools		
Altera	Quartus II 9.0 or later	

**** Suitable for use in all Altera device families.***

Deliverables

- **Encrypted source code**
- **Scripted verification environment**
- **ONFI Bus Functional Models**

Product code: OCT-ONFI

Customization

The design is offered with varying numbers of target devices, byte lanes and ECC blocks to meet the project needs.

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