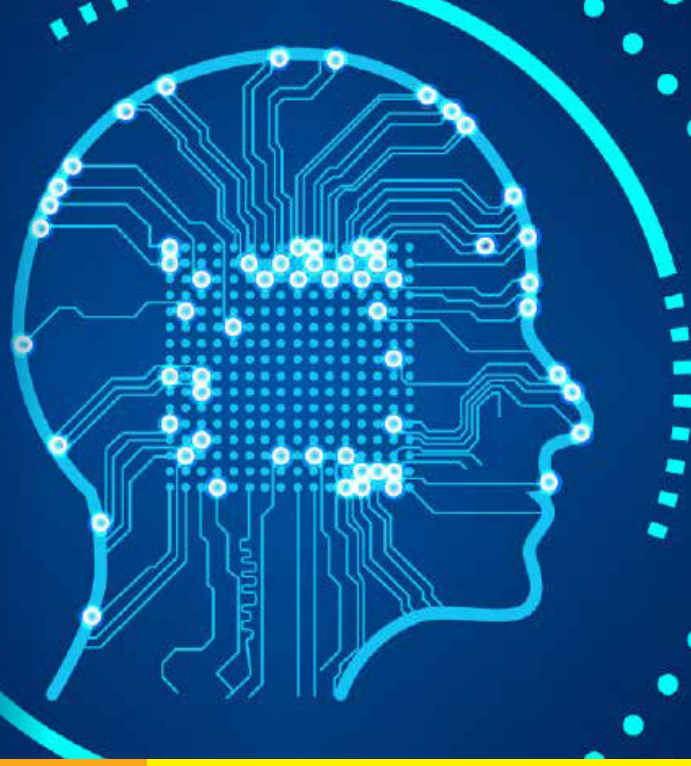
mobiveil
a GlobalLogic company



xSPI NOR/NAND Flash & HyperRAM Controller

Highly Configurable | Technology Independent | System Validated

Overview

Emerging high-performance applications demand increasingly fast read throughputs from NOR_Flash/ NAND Flash/ HyperRAM memory devices As new age lower-end microcontrollers (MCUs) continue to shrink in die size, their internal memory is very limited. They need a low pin count, high-performance memory subsystem. Similarly, there are consumer applications that are space-constrained and require instant-on, such as digital still cameras, DSLRs and home automation. So, OEMs are looking for simple, flexible, high performance and low-energy memory solutions with backward compatibility to meet their needs. The major NOR Flash memory device vendors responded with such devices by expanding from current Quad I/O to OctaFlash Memory (8 I/O) resulted in substantial increase in Serial NOR Flash throughput.

For example, the new-generation OctaFlash by Macronix is built on Serial Peripheral Interface (SPI) and command set, providing extendable I/O capability(x8). The data transfer rate has been increased from 100MB/s of Quad I/O Serial NOR Flash to 400MB/s, claims Macronix.

This resulted in lower-density memory subsystem interfaces trending toward x4/x8 SPI (xSPI) interfaces and performance growing exponentially. Mobiveil's approach on this emerging scenario results in adapting to JEDEC xSPI compliant NOR Flash/ NAND Flash controller supporting devices from various vendors. The IP can function as simple 'SPI Flash Controller' or, 'Quad-SPI Flash Controller or Octa-SPI Flash Controller' or 'Dual QSPI Controller', thus compatible with legacy devices also. The controller architecture is SoC friendly and supports multiple chip-selects.

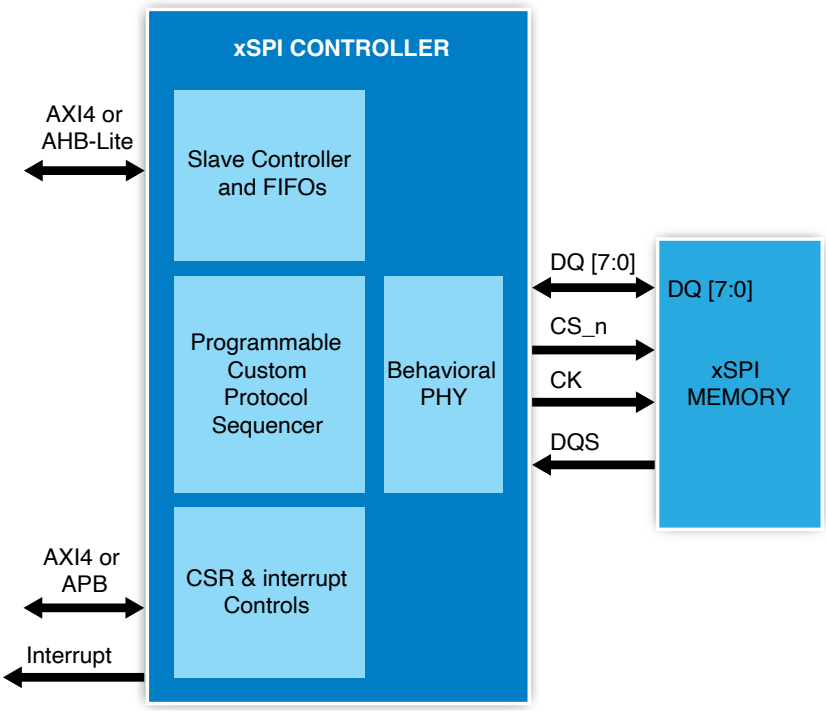
Features

Supports Octal/QSPI/DSPI/SPI NOR, NAND Flash and HyperRAM device

- Winbond Octal NAND W35N04JWXXIC
- Winbond NAND W25N01GWxxIG
- Winbond NOR W25Q512JVxIQ
- Adesto AT25XP032
- Micron MT35XL256ABA
- Micron MT25QU01GBBB8E0 (x4)
- Macronix MX25UM51245G
- Cypress HyperFlash S26KL512S
- Cypress Semper S26HS01GT
- Supports Cypress Hyperram device with xSPI interface S27KL0643
- All similar devices in Market

Other Features

- Complaint to JESD251A Specification
- Memory mapped access to the connected flash devices
- Continuous Burst transfer support
- Auto boot support
- XIP support
- AXI4 or AHB-Lite system interface for memory access with outstanding address support
- AXI4-lite or APB interface for control registers accesses
- Custom protocol Sequence based design to support array of vendors



- Status : Silver
- Availability : Q3, 2019
- Contact : ip@mobiveil.com
- Language : Verilog
- Synthesis : Synopsys DC, Synplicity
- Simulation : Cadence, Synopsys, Mentor

Specification

Design Attributes

- Highly modular and programmable design
- Fully synchronous design
- Software control for key features

Product Package

- RTL Code
- System Verilog/UVM based Testbench
- Test cases
- Protocol checkers and bus watchers

Documentation

- Design Guide
- Verification Guide
- Synthesis Guide

Licensing Options

- Single Design or Multi-project license
(HDL Source Code)

About Mobiveil

Mobiveil is a fast-growing technology company that specializes in development of Silicon Intellectual Property (SIP), platforms and solutions for AI/ML, Flash Storage, Data Center, 5G Telecom, Automotive and Industrial IOT applications. The Mobiveil team leverages decades of experience to deliver high-quality, production-proven, high-speed serial interconnect SIP cores, and custom and standard form factor embedded platforms to leading companies worldwide. With a highly motivated engineering team, dedicated integration support, a flexible business model, strong industry presence through strategic alliances and key partnerships, Mobiveil solutions add value to users by matching their product goals on time and within budget. Mobiveil is headquartered in Silicon Valley with engineering development centers located in Milpitas, CA, Chennai, Bangalore and Hyderabad, in India, and sales offices and representatives located in the U.S., Europe, Israel, Japan, Taiwan and the People's Republic of China.

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January 2024 | Version 1.6