

# DDR 3/3L Memory Controller Soft IP

Passionately Crafted. Expertly Perfected.

# S3Craft

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S3Craft Technologies is proud to offer a best-in-class synthesizable DDR3/3L Memory Controller IP core featuring superior performance and advanced run-time configurability.

Complying with JEDEC DDR3/3L specifications and conforming to the DFI 3.1 standard, the DDR3 Memory Controller provides industry-leading performance of 3,200 MT/s at 800 MHz core clock frequency on 28HP and 1,600 MT/s at 400MHz core clock frequency on 65LP technology nodes, made possible by world-class design engineering from S3Craft.

Designed for deployment in leading-edge SoC designs, S3Craft DDR3/3L Memory Controller supports complete run-time programmability and software control of timing parameters and other key features, a smart command reordering scheduler, user-selectable QoS or port-based arbitration, low-latency paths to/from the PHY, intelligent power management features, as well as asynchronous core-side AXI3/4 interfaces.

S3Craft Memory Controller has been validated with commercial PHY, VIP, and memory models, and is currently being used in customer designs.

## ★ Compliance to Standards

- ✓ Complies to JEDEC DDR3/3L
- ✓ Supports AXI4 & AXI3 access ports
- ✓ PHY interface compliant to DFI 3.1
- ✓ Supports 1:2 clocking mode
- ✓ APB configuration port

## ★ High Performance Architecture

- ✓ 3,200 MT/s @ 28HP & 1,600 @ 65LP
- ✓ Low latency paths to & from the PHY
- ✓ Smart command re-ordering scheduler
- ✓ Two read queues with different priorities
- ✓ Tagged AXI interface supports out-of-order read return data and data interleaving

## ★ Best-in-class Quality & Performance

- ✓ Configurable QoS / port-based arbitration
- ✓ Built-in anti-starvation mechanisms
- ✓ Configurable open / closed page policy
- ✓ Configurable priority scheme
- ✓ Power management for controller & DRAM

## ★ Ready for the Next Generation Designs

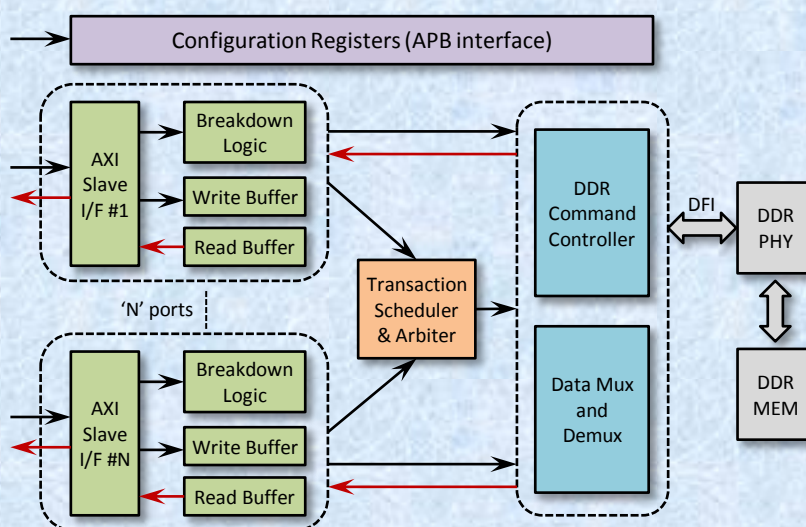
- ✓ Supports 64, 32, 16 and 8-bit memories
- ✓ Supports multi-rank memory configurations
- ✓ Programmable timing parameters
- ✓ Software control for key features
- ✓ Verified with established DDR3 PHY & VIPs

## ★ System Configuration

- ✓ Number of ranks
- ✓ DDR data width
- ✓ AXI data / address widths
- ✓ Max AXI burst length
- ✓ Sync / async reset

## ★ Controller Sizing

- ✓ Number of access ports
- ✓ Transaction queue depth
- ✓ Write data buffer size
- ✓ Read data buffer size
- ✓ Read re-order buffer size



S3Craft Technologies provides high-quality turnkey Silicon and Software Intellectual Property (IP) development and customization services for deployment in Semiconductor (ASIC & FPGA), Electronic Design Automation (EDA) and Embedded Systems products.

Since its inception in Jan 2013, S3Craft has built a loyal customer base by making on-time deliveries of high-performance IPs and compilers, and has forged strong partnerships with Semiconductor, EDA, and System companies worldwide.

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