

### FEATURES

- AMBA® 2.0 Compatible
- Supports up to 3 AHB Masters
- Round Robin Arbitration
- Easily Expandable

### LICENSED IP PACKAGE INCLUDES

- Verilog Source
- Complete Test Environment
- AHB Bus Functional Model
- C-Sample Code

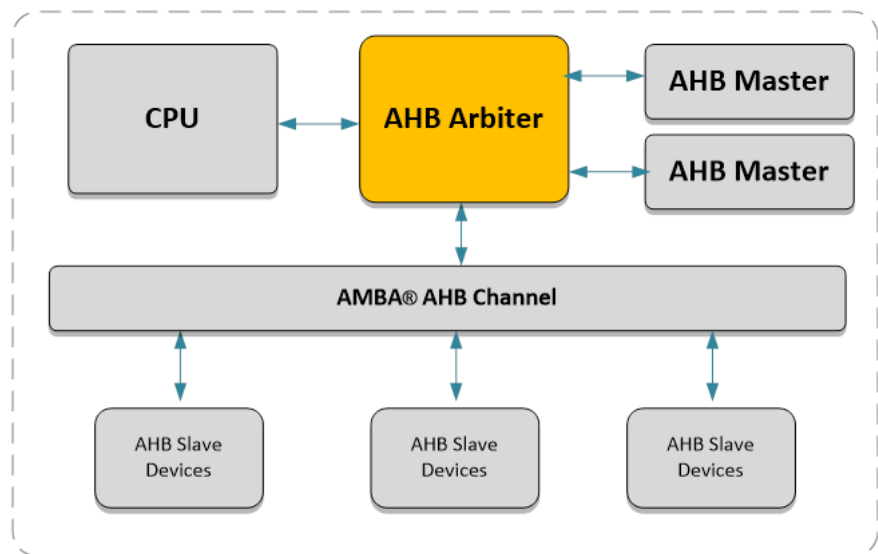
### DESCRIPTION

The AHB Arbiter arbitrates for the AHB bus among as many as three AHB masters. The AHB Arbiter implements a round-robin arbitration algorithm to AHB Masters that are requesting use of the bus. Only one master may control a given phase of the AHB transaction at a given time.

AHB is a pipelined bus in which there are three distinct phases: Arbitration Phase, Address (or Control) Phase, and Data Phase. A consequence of pipelining is that these phases overlap in time. For example, it is possible that Master A wins the Arbitration Phase that is coincident with the Address Phase owned by Master B and the Data Phase owned by Master C. It is in these terms that an AHB system must be discussed.

The AHB Arbiter has three distinct Mirrored-Master Ports, each of which can be connected to an AHB Master (e.g. a processor or a DMA Controller), and one Port that connects to an AHB subsystem, typically through an AHB Channel module.

### GENERAL USE



You may also be interested in:

## AMBA® Subsystems

- Low Power Subsystem (simple AHB system)
- Low Power / Performance Subsystem (includes AHB Multi-matrix Fabric)
- Custom Performance Subsystem (includes AXI Multi-layer Fabric)

## IP Cores

### Infrastructure Cores

AHB Multi-Matrix Fabric  
AHB/AHBLite Channel  
AHB Arbiter  
AXI Multi-Layer Fabric  
AXI to AHBLite Bridge  
AXI to APB Bridge  
AHB to ABP Bridge  
APB Channel

### AXI Cores

AXI Multi-Layer Fabric  
AXI to AHBLite Bridge  
AXI to APB Bridge  
AXI External Bus Interface  
(Memory/Flash Controller)  
AXI Internal Memory Controller  
AXI QSPI with Execute in Place (XIP)

### AHB Cores

AHB Channel  
AHB Multi-Matrix Fabric  
AHB to ABP Bridge  
AHB Arbiter  
AHB QSPI with Execute in Place (XIP)  
AHB External Bus Interface  
AHB Internal SRAM Controller  
AHB Interrupt Controller  
AHB DMA Controller  
AHB DMA 4 Channel Controller  
AHB TFT LCD Controller  
AHB DES/TDES Encryption/Decryption

**AHB Serial Flash Controller**  
**Octal, Quad, Dual and Single Modes**

**Serial to AHB Bridge**  
**SPI slave to AHB Master**  
**Monitor/Control**

### APB Cores

APB Channel  
APB Quad SPI Controller  
APB General Purpose IO  
APB Timer  
APB UART  
APB I2C (Master and Slave)  
APB SPI  
APB Watchdog Timer  
APB Pulse Width Modulator  
APB Real Time Clock

### General

DES – Digital Encryption Standard  
Triple DES (Low Gates)  
Triple DES (pipelined)  
ADC Interface (semi-custom)  
Mixed-Signal Interfaces (semi-custom)  
Power Management Unit (semi-custom)

**AES Encryption Core**

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