

# OXU210HP

## USB2.0 High-Speed Host, Peripheral, and OTG Controller

### Description

The Oxford Semiconductor OXU210HP is a single-chip, high-speed USB host and high-speed USB peripheral controller with integrated transceivers. It is the fourth controller in the family of integrated, low-cost, high-performance, On-The-Go (OTG) controllers that have been specifically designed for embedded systems.

The OXU210HP operates up to 480 Mb/s, using a compatible EHCI-based core. It also includes an integrated transaction translator that supports full-speed (12 Mb/s) and low-speed (1.5 Mb/s) USB peripherals.

The selectable 16- and 32-bit processor interface is compatible with a variety of CPUs. A large 72-Kbyte buffer has also been integrated to reduce interrupts and minimize CPU overhead.

The OXU210HP supports all USB transfer modes (control, interrupt, bulk, and isochronous) and is supported with USB device drivers and the Oxford Semiconductor USBLink product suite. The USBLink host, peripheral, and OTG stacks have been ported to a wide variety of real time operating systems including VxWorks<sup>®</sup>, ThreadX<sup>®</sup>, and Nucleus<sup>®</sup>.

In addition, Oxford Semiconductor also makes available low-level controller drivers for other native USB stacks such as those included with Windows<sup>®</sup> CE and Linux<sup>®</sup> 2.6.x.

### Sample Applications

- Digital televisions
- Home media centers
- Portable media players
- Digital video cameras
- Digital still cameras
- Printers
- MP3 players
- External storage products
- Set-Top Boxes (STB)
- Personal Video Recorders (PVR)
- Personal Digital Assistants (PDA)
- 3G mobile phones
- DVD recorders

### Features

- High-performance, high-speed USB dual-role (host/peripheral) controller
- Compatible with the USB Specification, Revision 2.0 for high-speed (480 Mb/s), full-speed (12 Mb/s), and low-speed (1.5 Mb/s) operations
- High-speed optimized host controller with transaction translator for complete backward compatibility with full-speed and low-speed products
- Two high-speed USB ports; one port remains host while the other can be configured as peripheral, host or On-The-Go (dual role)
- Simultaneous operation of both ports
- Choice of 16-bit or 32-bit configurable processor interface
- Fast microprocessor access cycle and double/multi-buffering support for USB transfers
- Host interface contains support for common SoC DMA modes including bursting and slave request/acknowledge protocols
- Complete host, peripheral, and OTG software solutions for popular microprocessors using many of the most popular operating systems including VxWorks<sup>®</sup>, Windows<sup>®</sup> CE 5.0 and Linux<sup>®</sup> 2.6.11
- Advanced power management controls chip clocking and PHY function for very low power consumption
- Integrated on-chip VBUS voltage comparator and 100 mA charge pump
- 72 Kbytes of single-port SRAM provides space for data structures and buffer space for transfer data
- True transfer level operation, with transaction scheduling and handling (data sequence toggle, error retry, etc.), implemented in hardware
- Integrated PLL runs from a single 12-MHz crystal or an external 12-MHz clock source
- Packaging
  - 7x7 mm BGA, 84 ball, RoHS compliant
  - 14x14 mm LQFP, 128 pin, RoHS compliant
- Operating temperature range: -40 to 85 degrees C

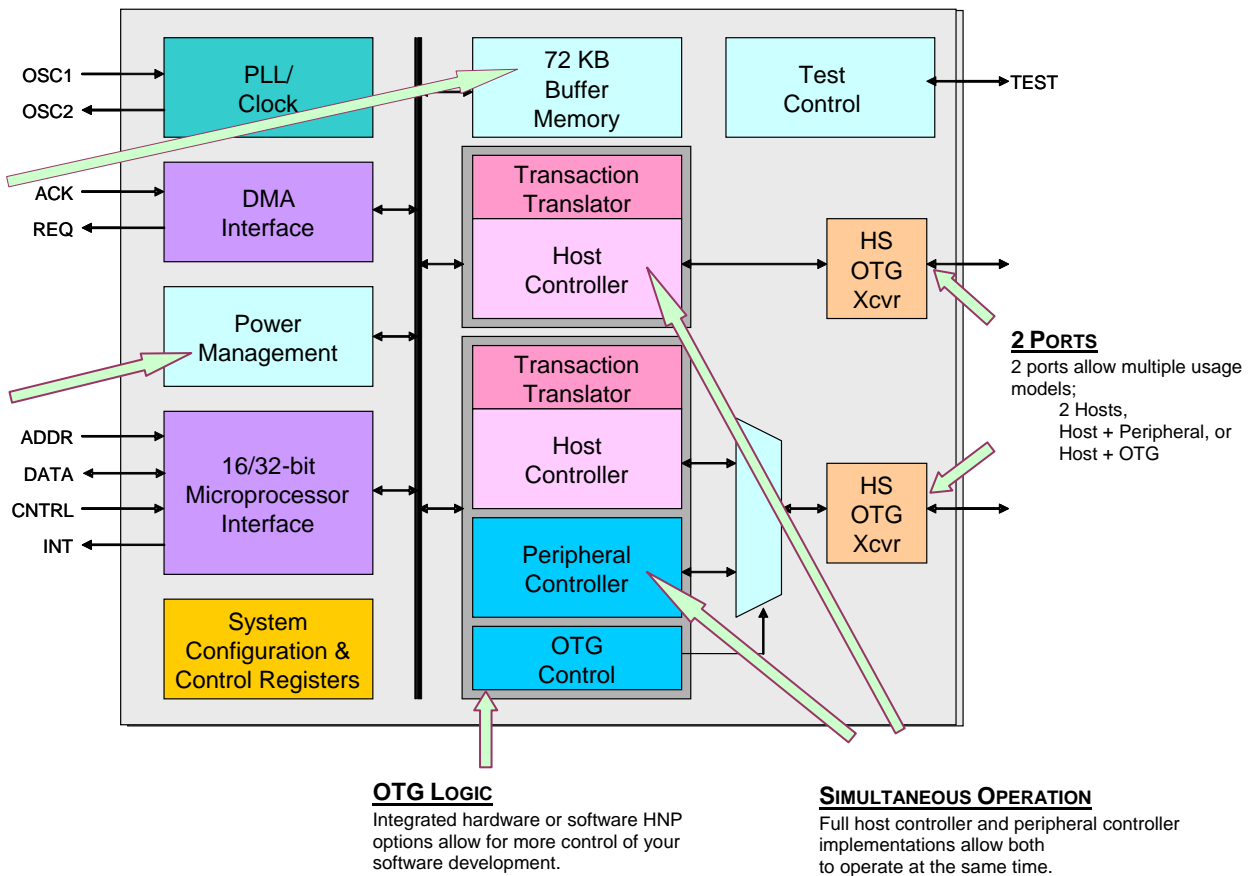
## OXU210HP Architectural Block Diagram

### SUPERIOR PERFORMANCE

Large internal RAM allows for multi-buffering simultaneous streams. Retries due to USB NAK's are done in hardware – decreasing interrupts and lowering CPU and bus utilization.

### LOW POWER DESIGN

Multiple power and clock regions are available with software-controlled power saving modes. PLL and oscillator can be disabled for deep-sleep state. Clock control block produces the lowest of four primary clock frequencies that meet the application's operational requirements.



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