



Yukon Ultra II 88E8057

PCI Express Gigabit Ethernet
Controller with Embedded NV
Memory

Product Brief

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PRODUCT OVERVIEW

Overview

The highly integrated single-chip PCI Express based Yukon Ultra II device integrates the Marvell® market-leading Gigabit PHY with the proven Marvell Gigabit MAC, delivering an ultra-small form factor and high performance. Delivered with the industry's most comprehensive software driver suite, this Yukon device is ideally suited for LAN on motherboard (LOM) and Network Interface Card (NIC) applications. The Yukon Ultra II device is compliant with the PCI Express 1.1 specification.

Offered in 7 x 7 mm, 48-pin and 9 x 9 mm, 64-pin QFN packages, the Yukon Ultra II reduces board space required for Gigabit LOM implementation significantly. The Yukon Ultra II device is layout-compatible with Yukon Ultra and Extreme PCI Express Gigabit Ethernet 10/100/1000 Controllers as well as with Yukon FE and FE+ PCI Express Fast Ethernet 10/100 Controllers. This offers flexibility in developing a motherboards layout that can be populated with either Gigabit or 10/100 LOM within a small footprint.

The device is optimized for maximum throughput and low CPU utilization. Packet processing tasks such as TCP segmentation, VLAN insertion and removal, TCP/UDP/IP checksum calculation and checking are all performed on-chip. These offloads along with interrupt moderation schemes reduce CPU utilization and improve the overall system performance.

The Yukon Ultra II device incorporates advanced power management schemes, enabling energy efficient operation. With features such as Wake on LAN (WOL) and Smart Power Down in the absence of link, it is well suited for client applications.

The Yukon Ultra II device incorporates the Marvell Virtual Cable Tester® (VCT™) technology for advanced cable diagnostics. VCT enables IT managers to pinpoint the location of cabling issues down to a meter or less, reducing network installation and support costs.

The device comes with a comprehensive suite of software device drivers for all desktop operating systems, including Microsoft Windows 2000, 2003, XP, Vista, and Server 2008, Linux, and Novell Netware. A complete hardware reference design is provided for a quick implementation.

Features

- Integrated non-volatile memory to store MAC address and other configuration data
- Integrated termination passives on PHY MDI interface
- Clock outputs for testing and debugging
- Statistics gathering:
 - SNMP MIB II
 - Ethernet like MIB
 - Ethernet MIB (802.3x, clause 30)

Offloads

- On-chip TCP segmentation logic
- TCP, UDP, and IP checksum offload
- Hardware VLAN tag removal and insertion

PCI Express Features

- PCI Express base specification 1.1 compliant
- x1 PCI Express interface with 2.5 GHz signaling
- Active state power management (L0s/L1) support
- CLKREQn support
- Advanced error reporting
- Polarity inversion and lane reversal
- Link state support
- Spread-spectrum reference clock

MAC/PHY Features

- 16 KB Receive buffer and 10 KB Transmit buffer
- Descriptor bursting and caching
- Message signaled interrupts
- TCP segmentation offload
- Interrupt moderation
- Compliant to 802.3x flow control support
- IEEE 802.3u/ab, 802.1p and 802.1q support



- 10/100/1000 IEEE 802.3 compliant
- Automatic MDI/MDIX crossover at all speeds
- Support for 120 meter over Cat5 UTP cable
- Automatic detection and correction of pair swaps, pair skew, and pair polarity
- Integrated auto-negotiation state machine

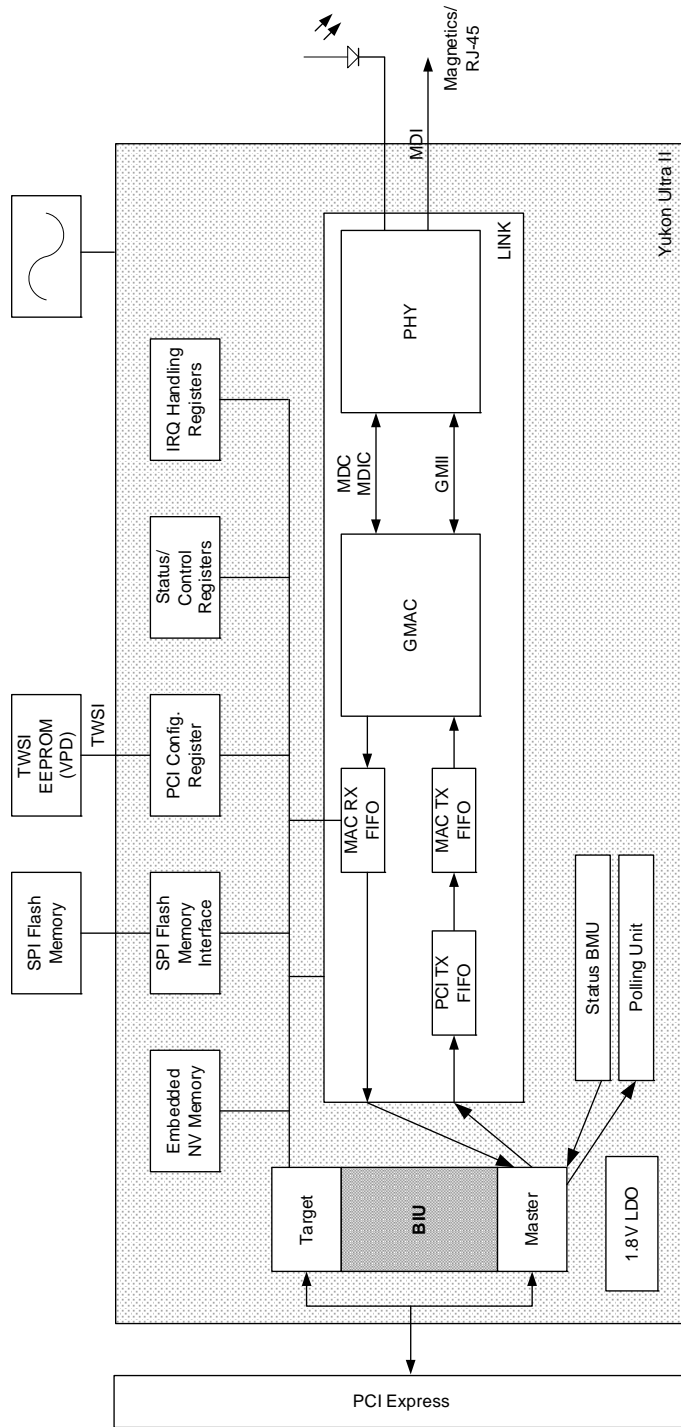
Manageability

- WOL power management support
- Compliant to ACPI 2.0 specification
- Out of the box WOL support
- Wake On Link
- Serial Peripheral Interface (SPI) for remote boot (PXE 2.1)
- Marvell VCT for advanced cable diagnostics

Other Features

- Low-power consumption in WOL states to meet Energy Star requirements
- Two-Wire Serial Interface (TWSI) for optional external EEPROM
- LOM Disable pin
- Fully-integrated 1.8V regulator
- Power regulator output to generate 1.8V supply
- 7 x 7 mm, 48-pin and 9 x 9 mm, 64-pin QFN packages
- 64-pin QFN device layout-compatible to Yukon Ultra and Extreme PCI Express Gigabit Ethernet 10/100/1000 Controllers and Yukon FE and FE+ PCI Express Fast Ethernet 10/100 Controllers

Figure 1: Block Diagram



1 Pin Diagram

The Yukon Ultra II device is manufactured in a 64-pin QFN, 9 x 9 mm and a 48-pin QFN, 7 x 7 mm package.

Figure 2: Yukon Ultra II 48-Pin QFN Package (Top View)

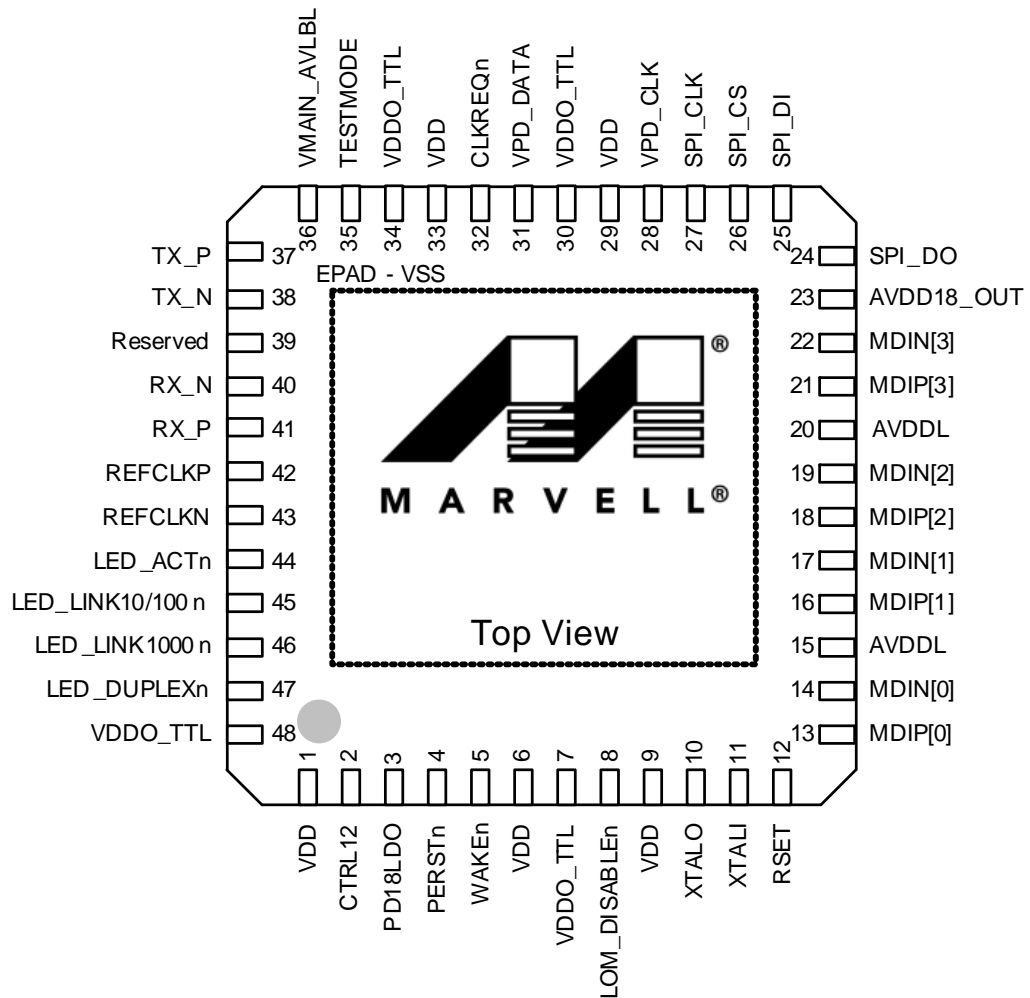
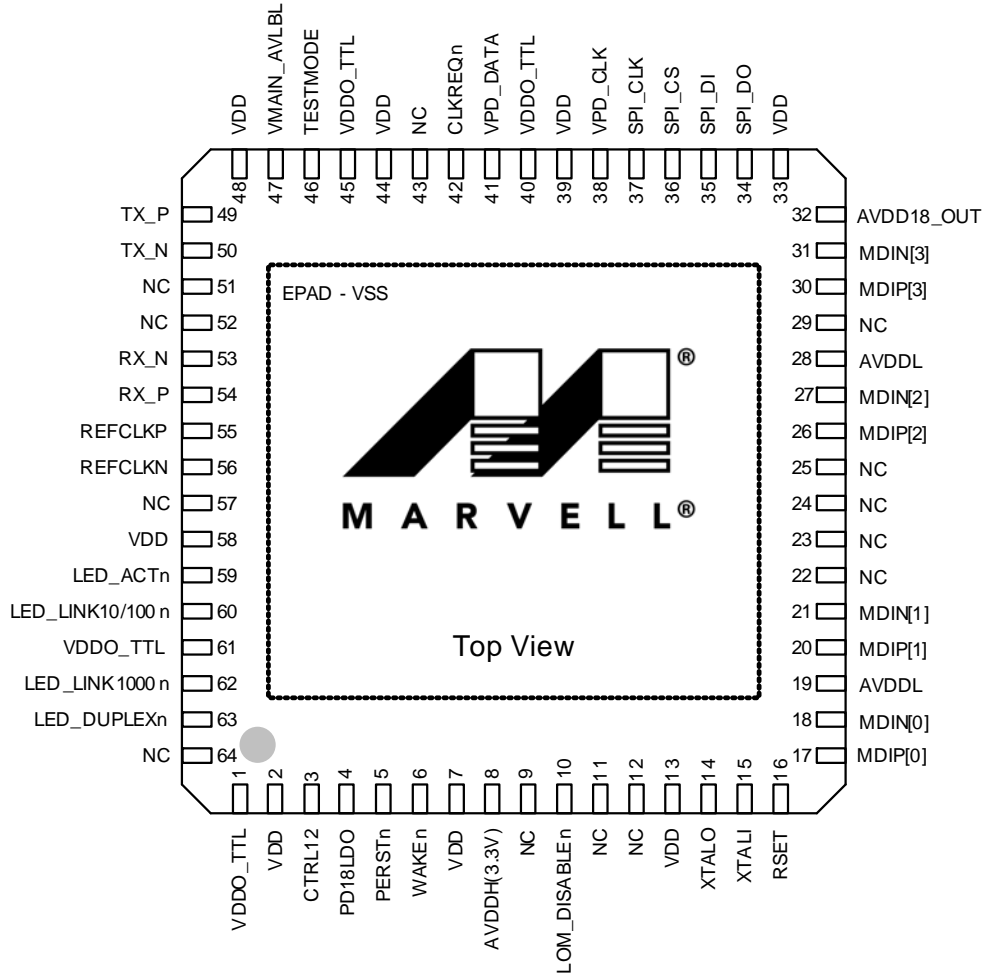


Figure 3: Yukon Ultra II 64-Pin QFN Package (Top View)





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