



Yukon FE+ 88E8040

PCI Express Fast Ethernet
Controller with Embedded NV
Memory for LOM Applications

Product Brief

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PRODUCT OVERVIEW

Overview

The single-chip PCI Express based Yukon FE+ device integrates the Marvell[®] 10/100 PHY with the proven Marvell MAC and PCI Express SERDES cores, delivering an ultra-small form factor and high performance. The Yukon FE+ device is offered in two package options: an ultra small footprint 7 x 7 mm QFN and 9 x 9 mm QFN. The Yukon FE+ device in 9 x 9 mm QFN is pin compatible with the 88E805x and 88E807x Gigabit Ethernet controller devices and enables flexible board designs that can be populated with either Gigabit or Fast Ethernet LOM.

Delivered with the industry's most comprehensive software driver suite, this Yukon device is ideally suited for LAN on motherboard (LOM) applications. The Yukon FE+ device is compliant with the PCI Express 1.1 specification. The 7 x 7 mm, 48-pin QFN package, reduces board space required for LOM implementation significantly. In addition, the Yukon FE+ device integrates several BOM components that are traditionally external to the LOM device. The Yukon FE+ integrates on-chip non-volatile memory that eliminates the need for an external EEPROM. The overall solution cost is also reduced by fully integrating regulators used to generate 2.5V and 1.2V supplies. Integration of termination passives on the PHY interface improves cable performance and reliability.

The device is optimized for maximum throughput and low CPU utilization. A 3 KB on-chip Receive buffer and a 2 KB Transmit buffer eliminates the need for any external memory. Packet processing tasks such as TCP segmentation, 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 FE+ device incorporates advanced power management schemes, enabling energy efficient operation. With features such as Wake on LAN and Smart Power Down in the absence of link it is well suited for client applications including mobile PCs.

The Yukon FE+ Yukon 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 PC 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

PCI Express Features

- PCI Express base specification 1.1 compliant
- x1 PCI Express interface with 2.5 GHz signaling
- Active state power management (L0s and L1) support
- CLKREQ support
- Advanced error reporting

MAC / PHY Features

- 3 KB Receive buffer and 2 KB Transmit buffer
- Descriptor bursting and caching
- Message signaled interrupts
- TCP segmentation offload for IPv4 and IPv6
- LSO V2 support
- TCP, IP, UDP Checksum offload for IPv4 and IPv6
- Receive Side Scaling (RSS) for IPv4 and IPv6
- Interrupt moderation
- Compliant to 802.3x flow control support
- IEEE 802.1p and 802.1q support
- 10/100 IEEE 802.3 compliant
- Automatic MDI/MDIX crossover at all speeds

Manageability

- Wake On LAN (WOL) power management support
- Compliant to ACPI 2.0 specification
- Out of the box WOL support
- Wake on Link



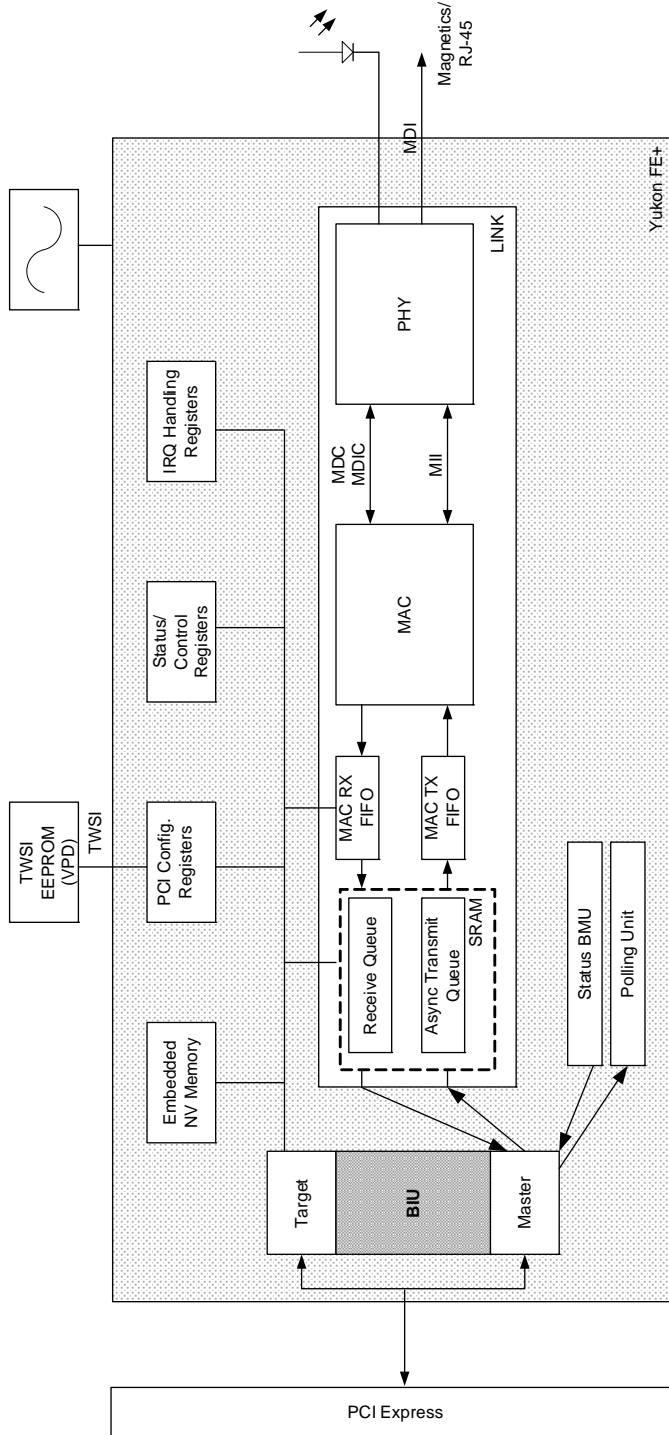
- Remote boot (PXE 2.1)
- Smart power down when link is not detected
- Marvell Virtual Cable Tester (VCT) for advanced cable diagnostics

Other Features

- LOM disable pin
- Fully-integrated regulators for 2.5V and 1.2V supplies

- Integrated non-volatile memory to store MAC address and other configuration data
- Integrated termination passives on the PHY MDI interface
- Two Wire Serial Interface (TWSI) for optional external EEPROM
- 7 x 7 mm, 48-pin QFN and 9 mm x 9 mm, 64-pin QFN packages
- 64-pin QFN pin-compatible with Marvell PCI Express Controllers

Figure 1: Block Diagram



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Pin Diagram

The Yukon FE+ 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 FE+ 64-Pin QFN Package (Top View)

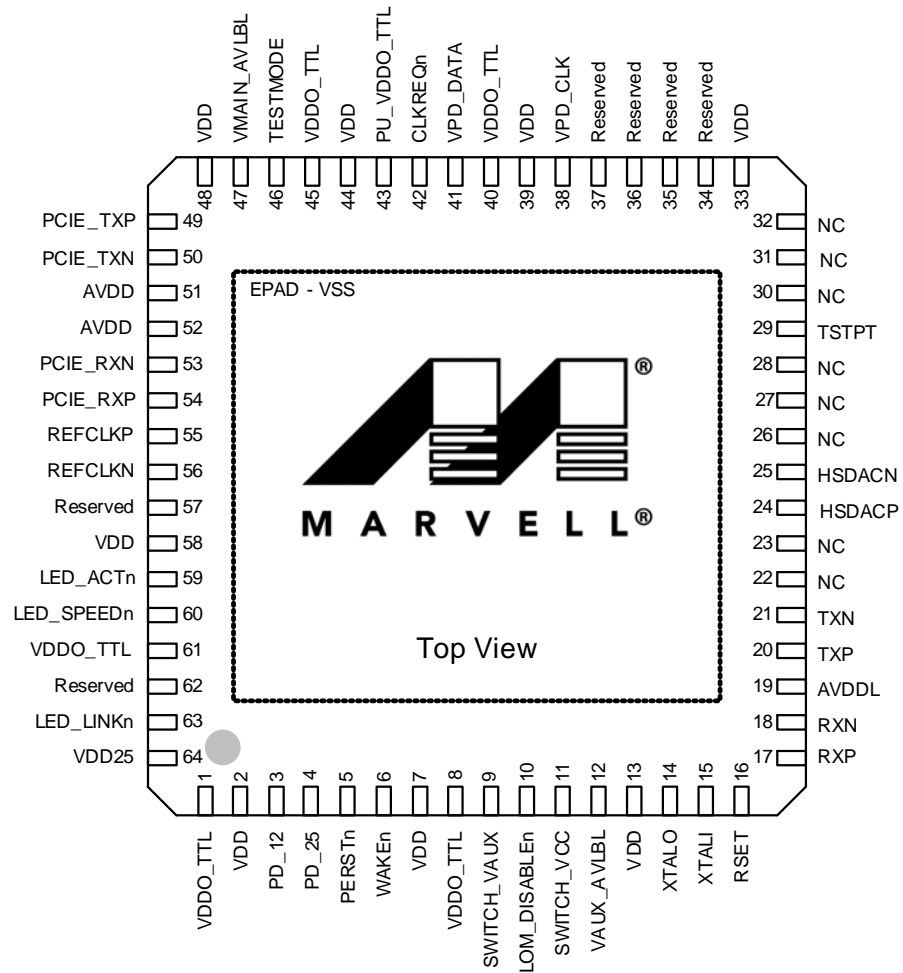
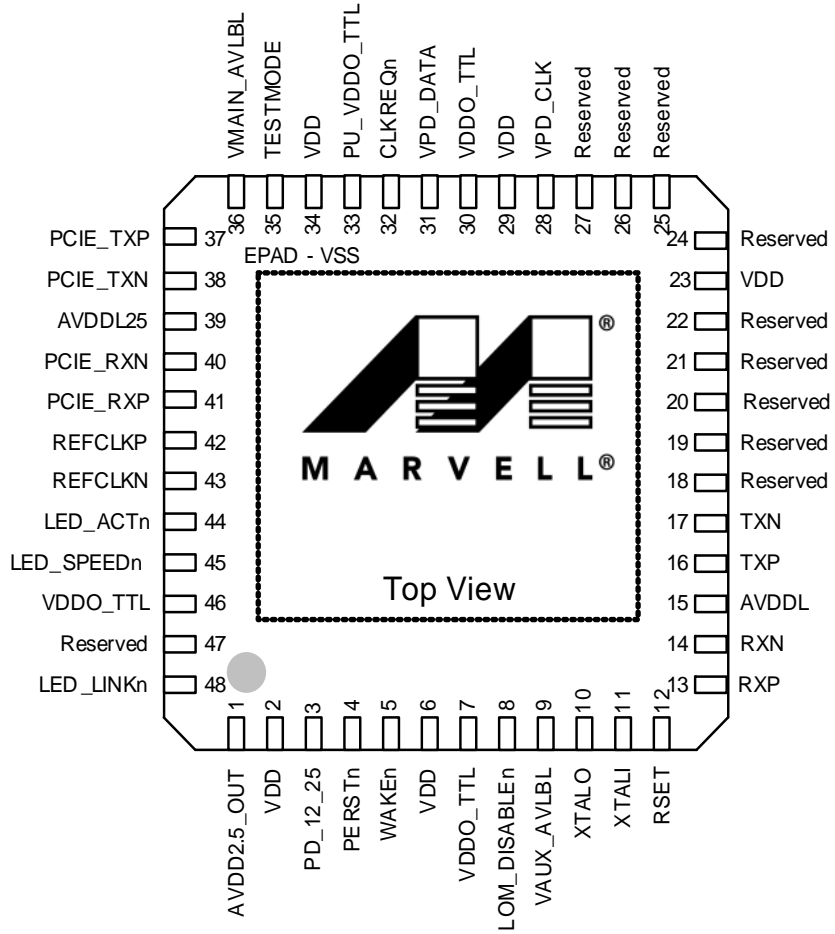


Figure 3: Yukon FE+ 48-Pin QFN Package (Top View)





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