

# 88E6051 / 88E6052

## Integrated Fast Ethernet Switches

### Integrated 5-Port / 7-Port 10/100 Ethernet Switches With Internal RAM and Transceivers

#### 88E6051 and 88E6052 Integration

The Marvell 88E6051 and 88E6052 are the industry's first SOHO integrated switches optimized for converged voice/video/data networks, allowing for increased network reliability and optimized latency. The devices integrate five 10BASE-T/100BASE-TX PHY transceivers (PHYs), five/seven independent Fast Ethernet Media Access Controllers (MACs), a high-speed non-blocking switch fabric, a high-performance address look-up engine, and an embedded frame buffer memory.

The Marvell 88E6051 is a 5-port integrated switch that can be configured as a standalone 5-port 10/100BASE-TX switch, as a 4-port 10/100BASE-TX switch with a fifth port used as a 100BASE-FX fiber uplink port, or alternatively as an MII port targeted at cost-sensitive SOHO router applications such as xDSL to LAN or cable modem to LAN. The 88E6052 is a 5+2 integrated switch, with five PHY ports and two MII ports. Options for 88E6052-based systems include building a firewall router QoS switch, with four 10/100BASE-T LAN ports, plus one WAN port supporting either copper 10/100BASE-TX uplink or fiber 10/100BASE-FX uplink, using the two additional MII ports for a CPU interface and an optional wireless PHY.

The Marvell 88E6051 and 88E6052 integrated Fast Ethernet switches enable PCs and IP phones to connect through a broadband Internet access pipeline (DSL modem, cable modem or fiber WAN) to the Internet, with all ports switched with full 100 Mb/s bandwidth Ethernet. The chips also provide port-based VLANs to implement a firewall between WAN and LAN connections, allowing systems to provide increased security protection.



Advanced voice/video/data networking capability is supported by the Marvell 88E6051/88E6052 devices' Quality of Service (QoS) wire-speed non-blocking switch fabric with four priority queues per switch port, which can segment packet streams into network management, voice, video, and data packets. In addition, port-based VLAN and packet priority tagging features prioritize packet transfers for each switch port's egress queue, minimizing latency and enhancing QoS.

Both devices leverage Marvell's advanced DSP-based mixed-signal PHY technology developed through two generations of Fast Ethernet transceiver designs and four generations of PRML read channels for the storage market. The PHY units implement digital adaptive equalization and clock data recovery, power-down for any unused ports, and Auto-MDI/MDIX crossover which automatically detects the link partner's circuit drive characteristics, allowing plug and play automatic operation with either straight or crossover RJ-45 cables. Both the PHY and MAC units in the 88E6051/88E6052 devices fully comply with applicable sections of the IEEE 802.3, IEEE 802.3u and IEEE 802.3x standards.



The shared memory-based switch fabric uses Marvell's latest switch architecture that provides non-blocking switching performance in all traffic environments. Back-pressure and pause frame-based flow control schemes are supported to ensure zero packet loss under traffic congestion. The look-up engine allows for up to 4,096 active nodes to be connected with the switch.

The 88E6051 and 88E6052 devices are the ideal solution for networking systems where outstanding performance, integration and low power dissipation are vital.

#### The Marvell Advantage

As with all Marvell products, the Marvell 88E6050 Fast Ethernet switch comes with a complete set of hardware and software tools to assist network hardware engineers with product evaluation. Marvell's world-wide field applications engineers collaborate closely with network equipment vendors to develop and deliver new competitive products to market on time.

Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume, low-cost solutions.

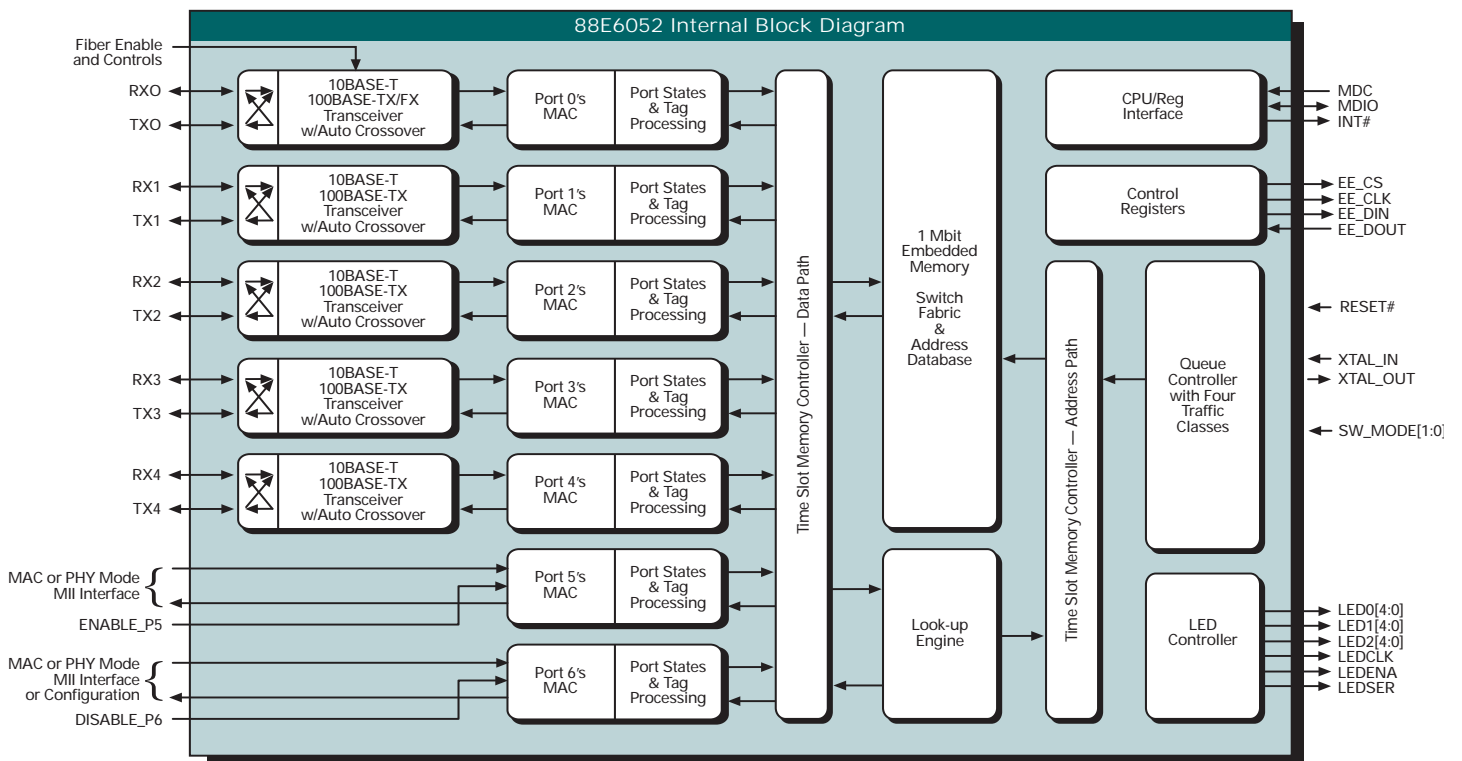


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## Integrated Fast Ethernet Switches



### Features

- Single chip integration of a 5- or 7-port Fast Ethernet QoS switch
- 88E6051 supports five PHYs or four PHYs and one MII
- 88E6052 supports five PHYs plus two MII interfaces
- Quality of Service support with four priorities
- QoS determined by port, IEEE 802.1p tagged frames, IPv4's Type of Service (TOS) & Differentiated Services (DS), DA MAC address (88E6052) and IPv6's Traffic Class
- Fixed priority & weighted fair queuing
- Egress tagging/untagging selectable per port
- Integrated with five independent Fast Ethernet transceivers fully compliant with the applicable sections of IEEE 802.3 and IEEE 802.3u
- Integrated with five or seven independent media access controllers fully compliant with the applicable sections of IEEE 802.3, IEEE 802.3u, and IEEE 802.3x
- MII Interfaces support both a MAC Mode (Forward MII) or PHY Mode (Reverse MII) or 7-Wire Mode (SNI)
- Each port works at 10 Mb/s or 100 Mb/s, full-duplex or half-duplex mode (forced or auto negotiated)
- Port based VLANs supported in any combination
- Port States & BPDU handling (88E6052)
- Memory-based switch fabric with true non-blocking switching performance
- High performance lookup engine with support for up to 4,096 MAC address entries with address lock options (88E6052) and automatic learning and aging
- Port 0 can be configured as copper (100BASE-TX or 10BASE-T) or fiber (100BASE-FX)
- Auto-MDI/MDIX crossover for 100BASE-TX and 10BASE-T ports
- Advanced mixed-signal processing implementation on adaptive equalization and clock data recovery
- Auto-Negotiation and speed-auto-sensing support
- Extra high performance on up to 150 meters CAT 5 UTP (unshielded twisted pair) cable

- Back-pressure-based flow control on half duplex ports
- Pause-frame-based flow control on full duplex ports
- Flexible LED support for Link, Speed, Duplex Mode, Collision, and Tx/Rx Activities
- Supports a low cost 25 MHz XTAL clock source
- Footprint compatible with Marvell's 88E6050 Fast Ethernet switch
- Low power dissipation
- 128-pin PQFP package

### Benefits

- Lowest cost solution for SOHO switch and entry-level public network interface
- 5-port 10/100BASE-T standalone switch
- 5-port 10/100BASE-T + 1-port 100BASE-FX switch and media translator
- 5-port 10/100BASE-T + 1-port CPU Router MII interface (88E6052)
- 5-port 10/100BASE-T + 1-port CPU Firewall Router MII interface + 1-port Wireless LAN interface (88E6052)
- Auto-MDI/MDIX simplifies and reduces the cost of networking installation (plug and play)
- User configurable through external pins, serial EEPROM, or 2-wire SMI interface to CPU
- Most advanced DSP design to achieve the longest receiving distance
- Superior BER performance
- Slower ports do not stall faster ports
- The large number of addresses supports all applications
- No need for any external memory
- Prevents direct neighbor to neighbor communication without going through a router
- Comprehensive LED support eliminates cost of external LED latches and drivers
- Smart power management control
- Small package saves board space



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