17-Port Layer 2 Gigabit Ethernet Switch with 12 Fully Integrated Copper PHYs

Vitesse's next-generation switch device delivers the industry's lowest power GbE switching solution.

VSC7421-04 is the industry's first fully integrated 17-port Gigabit Ethernet switch with eight copper PHYs in a single package. In conjunction with Vitesse's 4-port VSC8514-03 or VSC8664-03 devices, a 17-port switch can be designed using only two ICs.

The device leverages Vitesse's 65 nm technology, resulting in one of the most cost-effective and lowest power consumption solutions in the industry. It includes the most advanced Ethernet energy efficiency features for bringing green technology solutions to market.

A rich set of Ethernet switching features, such as Layer 2 forwarding with VLAN and QoS processing, enables the delivery of differentiated services. The VSC7421-04 device contains an 8051 CPU for light management of the switch.
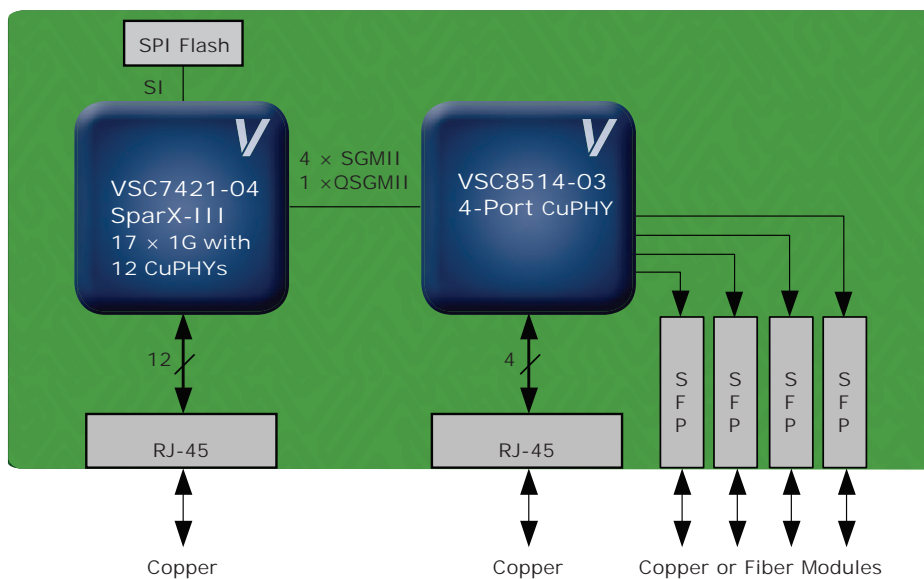
A comprehensive application software package is provided for LED control, loop indication, device overheat protection, and other enhanced functions.

Highlights

- Supports IEEE 802.3az and green energy efficiency modes with ActiPHY™ and PerfectReach™
- Lowest BOM solution requires only one IC
- One QSGMII MAC interface and up to four SGMII ports with 100 Mbps and 1 Gbps fiber support

Applications

- Unmanaged and Lightly Managed Ethernet switches
- Industrial switches and routers
- Customer premises equipment (CPE) and outdoor equipment
- VPN, firewall, and UTM appliances

VSC7421-04 in a 16-port in 1-Gigabit industrial switch application

Best-in-Class Power Consumption

- Lowest power 17-port Gigabit Ethernet switch available in the market

- Green energy efficiency modes including ActiPHY™, PerfectReach™, and Draft IEEE 802.3az

- Two ICs reduce overall power requirements

- Optimal power consumption for all link speeds

Features

- Twelve integrated IEEE 802.3ab-compliant 10/100/1000BASE-T Ethernet copper transceivers with VeriPHY™ cable diagnostics

- Two configuration options:
  12 × CuPHY + 2 × 1G SGMII + 2 × 1G/2.5G SGMII
  12 × CuPHY + 1× QGMII + 1 × 1G/2.5G SGMII

- Integrated 250 MHz 8051 CPU with 64 KB internal storage

- Serial interface for external CPU register access

- Device overheat protection

- Hardware loop detection

- Integrated fan controller

- 8 K MAC addresses and 4 K VLAN support

- Push/pop VLAN tag

- Supports IEEE 1149.1 JTAG boundary scan, IEEE 1149.6 JTAG, 1 Gbps SGMII, and 100BASE-FX and 1000BASE-X

Layer 2 Switching

- 17-port Gigabit Ethernet switch with nonblocking wire-speed performance

- Link aggregation (IEEE 802.3ad) with programmable traffic distribution based on Layer 2 through Layer 4 information

- Wire-speed hardware-based learning and CPU-based learning configurable per port

- Independent and shared VLAN learning

- Jumbo frame support up to 12.2 kilobytes with per-port programmable MTU

- Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)

- 4 megabits of integrated shared packet memory

QoS

- Eight QoS queues per port with strict or deficit-weighted round robin scheduling

- QoS classification based on IEEE 802.1p and IPv4/IPv6 DSCP

- Data rate shaper and policer per-queue, per-port for both ingress and egress directions

- Full-duplex flow control (IEEE 802.3x) and half-duplex backpressure, symmetric and asymmetric

- Multicast and broadcast storm control with flooding control

Key Specifications

- 1 V core power supply

- 2.5 V I/O power supplies

- 24 mm × 24 mm thin QFP package

- −40 °C to 125 °C temperature range

Related Vitesse Products

Visit www.vitesse.com for information about these related Vitesse products:

- Ethernet switches

- 1G copper PHYs

- MACs

Vitesse Semiconductor Corporation
www.vitesse.com