VSC8201

VITESSE

Single Port 10/100/1000BASE-T PHY with GMII, MII, TBI, RGMII / RTBI MAC Interfaces

Block diagram: 10/100/1000 NIC Controller, Switching ASIC or Network Processor — GMII / MII RGMII TBI RTBI — VSC8201 10/100/1000BASE-T Transceiver — Quad Transformer Module — RJ-45 Connector — 4-Pair UTP-5 Cable. Management I/F (MDC / MDIO). 25MHz.
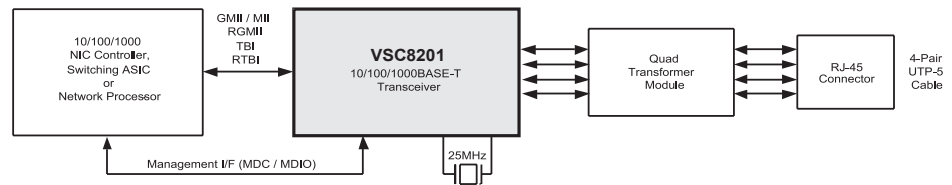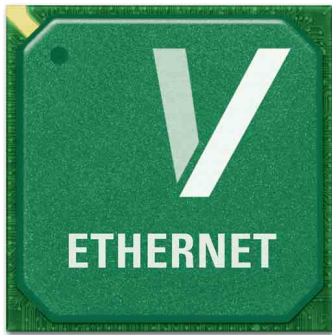
FEATURES:

BENEFITS:

FEATURES	BENEFITS
▶ Single 3.3V Power Supply Design	▶ Enables Widespread, Low Cost, 1000BASE-T Deployment in Desktop NICs and Switches
▶ Compliant with RGMII Specifications at 2.5V and 3.3V	▶ Enables a Single 3.3V Supply Design for Lowest Cost
▶ 1000BASE-T Power Consumption of < 1.0W	▶ Eliminates Expensive Fans and Heat Sinks
▶ Integrated Series Termination Resistors on MAC Interface Pins	▶ Improves Signal Integrity, Reduces EMI, and Eliminates More Than a Dozen External Components
▶ Integrated RGMII Timing Compensation Eliminates PBC Design Challenges	▶ Decreases Board Design Efforts, Increases PCB Timing Margins and Yields, and Shortens Time-to-Market
▶ VeriPHY™ Cable Diagnostics Software Suite	▶ Enables Network Manufacturers to Simplify Deployment and Improve Network Management Capabilities of Gigabit Ethernet Links
▶ Fully IEEE 802.3, 802.3u (10BASE-T, 100BASE-TX) & 802.3ab (1000BASE-T) Compliant	▶ Ensures Seamless Deployment Throughout Category-5 Networks
▶ Automatic Detection and Correction of Cable Pair Swaps, Pair Skew, and Pair Polarity, Along with Auto MDI/MDI-X Crossover Function	▶ Compatible with 1st Generation 1000BASE-T PHYs, Allowing Trouble Free Migration to 1000BASE-T by Minimizing Common Interoperability Problems
▶ Choice of Standard GMII/MII or TBI, or Pin Saving RGMII/RTBI Interfaces	▶ Compatible with a Wide Variety of MACs and Switches
▶ Optional, Integrated Oscillator Circuit	▶ Supports Single Low cost 25MHz Crystal, or Either a 25MHz or 125MHz Standard Reference Clock Input
▶ >10KB Jumbo Frame Support with Programmable Synchronization FIFOs	▶ Provides Support for Maximum Jumbo Frame Sizes in Custom LAN and SAN Systems
▶ Manufactured in Mainstream, 3.3V / 1.5V Digital CMOS Process	▶ Cost Effective Manufacturing Process Eliminates Expensive Analog Process Variants

APPLICATIONS:

▶ Desktop and Server NICs

▶ Workgroup and Desktop Switches / Routers

▶ LAN-on-Motherboard and Mobile PC NICs

▶ SAN Switches and NAS Appliances

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Single Port 10/100/1000BASE-T PHY with GMII, MII, TBI, RGMII / RTBI MAC Interfaces

GENERAL DESCRIPTION:

The VSC8201 is a low power, low cost, single port Gigabit Ethernet PHY. It is ideal for Gigabit LAN-on-Motherboard (GLOM) and Gigabit Ethernet Switch applications that require a GMII/MII, RGMII, TBI, or RTBI MAC / Switch interface. The VSC8201's integrated switching regulator allows systems to be designed using a single power supply, and its low power consumption eliminates the need for expensive heat sinks and fans. Vitesse's proprietary DSP technology yields robust performance and low power consumption, supporting 1000BASE-T over unshielded twisted pair (UTP) cable, with more than 5dB of design margin with respect to all worst-case impairments (NEXT, FEXT, Echo, and system noise sources).

SPECIFICATIONS:

PARAMETER	TYP	UNIT	COMMENTS
P_D	<1	W	Steady state power consumption (1000BASE-T mode)
L_{1G}, L_{100M}	>140	m	Cable link length supported in 1000BASE-T & 100BASE-TX modes, over Category 5 cable
L_{10M}	230	m	Cable link length supported in 10BASE-T mode, over Category 3 cable
VDD	3.3	V	Digital I/O and Analog Core power supply voltage
$F_{TOL\ (REFERENCE)}$	25	MHz	Crystal parallel resonant frequency (+/- 100ppm tolerance)

BLOCK DIAGRAM:
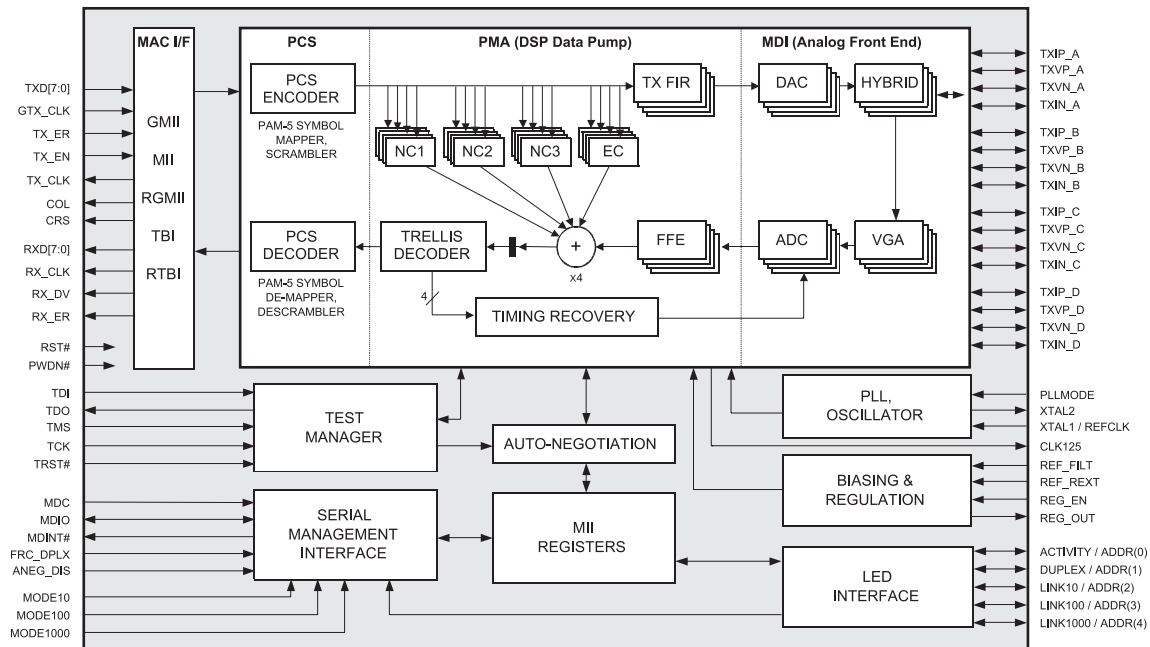
For more information on Vitesse Products visit the Vitesse web site at www.vitesse.com or contact Vitesse Sales at (800) VITESSE or sales@vitesse.com