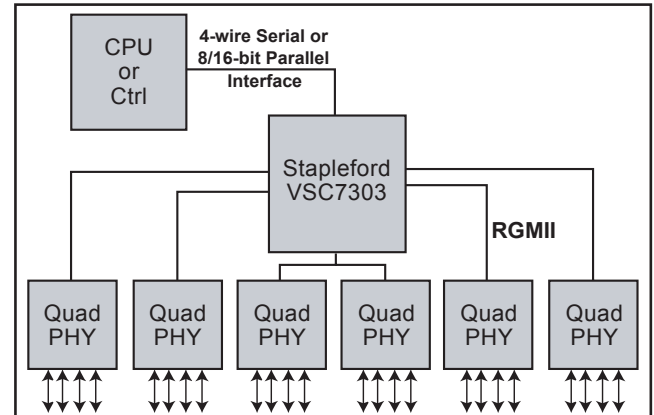# VSC7303

VITESSE

Stapleford™ - 24-port Gigabit Ethernet Switch-on-a-Chip

Stapleford™

TRI-SPEED DESKTOP SWITCH:

FEATURES:

▸ 24 Gigabit Ethernet Ports with Non-blocking Wire-speed Performance

▸ Tri-speed (10/100/1000 Mb/s) Operation Via RGMII or RTBI Interfaces

▸ 400 KB On-chip Frame Buffer

▸ 8/16-bit CPU Interface, and 4-wire Serial CPU Interface

▸ Jumbo Frame Support

▸ Programmable Classifier for QoS (Layer 2-4), Including **IEEE Std 802.1p™**

▸ 8K MAC Addresses and 4K VLANs (**IEEE Std 802.1Q™**)

▸ Full Duplex Flow Control (**IEEE Std 802.3x™**) and Half Duplex Back Pressure

▸ Multicast and Broadcast Storm Control

▸ Flexible Link Aggregation Compliant to **IEEE Std 802.3ad™**

▸ Spanning Tree Protocol Support (**IEEE Std 802.1D™**) Rapid Spanning Tree (**IEEE Std 802.3W™**) Multiple Spanning Tree (**IEEE Std 802.3s™**)

▸ Port Based Access Control (**IEEE Std 802.1X™**)

▸ OAM Support (**IEEE Std 802.3ah™**)

BENEFITS:

▸ Ensures Maximum Data Throughput on Even Highly Loaded Networks

▸ Simplifies PCB Layout Significantly by Utilizing Reduced Mode Interface Standards for All Speeds

▸ Eliminates the Need for External Buffer Memory While Maintaining High Peak Load Performance

▸ Enables Advanced Switch Management Using Run-time Protocols, in Addition to Low Cost Unmanaged and Web Managed Operation

▸ Connects Effortlessly to Networks, Hosts, and Controllers that Utilize up to 12K Sized Jumbo Frames

▸ Optimizes Network Performance to Support any Digital Stream, from Internet Browsing to VoIP and Video

▸ Stores a Large Amount of Stations at Wire Speed in the On-chip MAC Table, Ensuring Optimal Network Performance

▸ Ensures Loss-less Data Transmission While Supporting Existing Legacy Ethernet Equipment

▸ Secures the Network from Congestion by Unwanted Loops

▸ Provides High Bandwidth Uplinking Abilities

▸ Supports Complex Network Topologies with Fast Failure Recovery, as Well as Legacy Networks

▸ Enables Extra Network Security and Database Controlled Network Access

▸ Stapleford-based Switch Products are Easily Designed for Ethernet in the First Mile (EFM)

APPLICATIONS:

▸ Tri-speed Desktop Switch

▸ Backplane Controller

▸ Tri-speed Access/Aggregation Switch

▸ Control Plane Controller

VSC7303

Stapleford™ - 24-port Gigabit Ethernet Switch-on-a-Chip

GENERAL DESCRIPTION:

Stapleford™ is a highly integrated, single-chip Ethernet switch with 24 non-blocking ports. High performance with easy migration paths and comprehensive System Solutions enableing ultra-short time-to-market and market leading system cost.

A Vitesse Switch Family Member

Stapleford is a part of the Vitesse London Family Of Switches. With its high port density of 24 tri-speed ports, it is specifically targeted at desktop and medium business applications.

Being a member of the switch family provides a number of unique advantages when designing with the chip, including nearly 100% software compatibility between members. Thus, software written for Stapleford can easily be used with other switch configurations in the family, and vice-versa.

Additionally, building a product family is easy when designing with Vitesse switches. Migrating designs to other port counts or other configurations, or to future technology, is achievable with minimum effort and time.

The Vitesse London Switch Family

Stapleford, as part of the Vitesse London Family Of Switches, shares the unique traits of the family.

The highly integrated switches require no external memory at all, and the use of Reduced Mode interfaces (RGMII and RTBI) simplifies PCB layout to reduce time and cost. Further trimming down system cost is the persistently low power dissipation of the family.

The switches provide for high performance designs with their non-blocking, wire-speed performance, which includes wire-speed MAC address learning.

SPECIFICATIONS:

▶ 25 MHz LVTTL reference clock

▶ 1.8 V core power supply

▶ 2.5 and 3.3 V interface power supply

▶ 680-pin TSBGA package

Designing both unmanaged and managed solutions is straightforward. The chips offer both serial and parallel CPU interfaces, and support a host of management protocols such as GxRP, SNMP, and three flavors of Spanning Tree: Standard STP, Multiple STP, and Rapid STP.

Gaining control with networks operated by the Vitesse switches is simple; advanced Layer 2-4 classification, plus shaping and policing functionality, along with port authentication support, provide flexible QoS operation. This is backed up by link aggregation and VLAN support, enabling advanced techniques such as "802.1Q-in-802.1Q" to be deployed. Additionally, OAM is supported for designing switch products for Ethernet in the MAN.
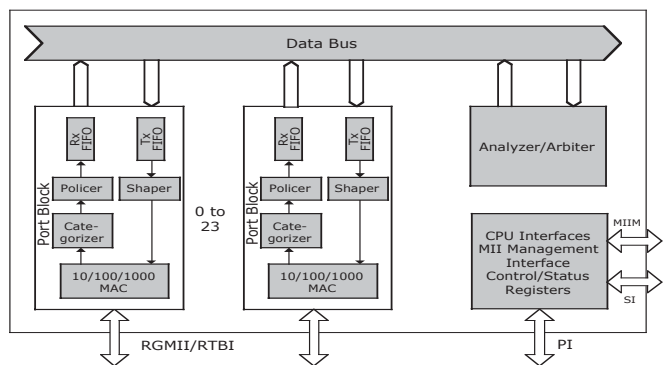
Designing with Vitesse London Family Of Switches means designing with the whole Vitesse Solution:

The outstanding Vitesse web managed switch software system that runs on a standard 8051 controller, is provided. This is in addition to the unmanaged and smart managed software systems for 8051, which are also included. For homegrown software development our full switch API is supplied.

Accompanying the software systems are the Vitesse Switch Reference Systems. These are production-ready hardware designs that also serve as evaluation platforms for our switches.

The Vitesse Solution is supplied with a comprehensive collateral package, which includes software source code, full documentation, and an in-depth qualification report for easy pre-evaluation.

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

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