hyperstone hyNet 32XS
Network Processor

Benefit from both, the unique, highly efficient and easy to program Hyperstone RISC/DSP architecture combined with the most necessary interfaces and features required for network enabling and communications within the embedded applications world. Together with available software solutions and a boot via the network option, hyNet™ 32XS comprises a true system on a single chip.

- **Highly integrated System on Chip including integrated PHY helps to reduce application costs**
- **Excellent RISC and DSP performance of 220 MIPS and up to 880 MOPS**
- **Versatile interface options**
- **Powersaving features and efficient realization guarantee a highly energy-efficient chip**
- **Easy programming of RISC and DSP**

Targeted Applications

- Cost sensitive network-enabling and embedded web servers
- Wireless LAN and Bluetooth access points
- Remote Service Applications
- Communication infrastructure
- Bus Bridges
- Data and Voice over IP (VoIP)
- Residential Gateways
- Industrial Automation, Control and Robotics
- Power line communications

. . . . and many more

Key Data

- TFBGA 256; 17 x 17 x 1.4 mm, 0.8mm ball pitch
- Core-Voltage: 1.8V
- I/O Voltage Supply: 3.3V
- Temperature Range: 0 to 85°C (-40 to 125°C selected by test)
- Manufactured in a 0.18µm Process
- Expected maximum power consumption at full speed (worst case): <1.7 Watts max.

High Performance Hyperstone Processor Architecture

- Hyperstone 32-Bit RISC/DSP processor (E1-32XSR)
- Up to 220MHz, dynamic frequency scaling delivering 220 MIPS and up to 880 MOPS
- Latency based parallelism of RISC ALU, Load/Store and DSP
- Comprehensive DSP Library

. . . . and many more

Internal Memory-System

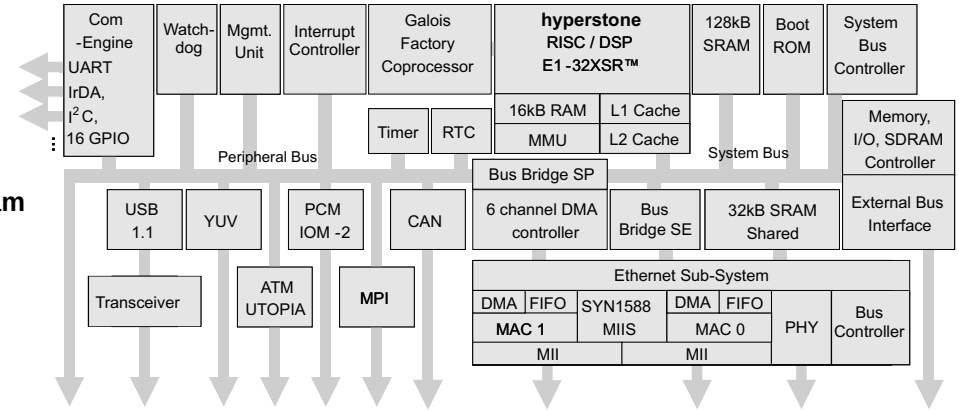
- 16kByte RAM, two 2kByte instruction/data caches
- 8kByte Mask ROM (Boot loader)
- 128kByte SRAM
- 32kByte Shared SRAM (Ethernet)
- 32-Bit data and address bus

Key Features

- 4 internal busses with multi channel DMA controller
  - Peripheral Bus with variable frequency, to reduce power consumption
  - Multi-master/multi-slave high frequency System Bus
  - Ethernet Bus
  - Coprocessor Bus
- Direct Memory Access Controller with 6 independent configurable channels
- Memory Management Unit (MMU)
- Time Processor Unit (TPU) programmable timer with one 32-bit counter and two 16 bit counters
- Efficient Power Management
- Management Unit including reset manager, clock manager, configuration unit
- Interrupt Controller
- Galois Factory Coprocessor: hardware calculation of Galois field operations
- Clock Synchronization Core according to IEEE 1588 standard
- YUV interface CCIR656-compliant video input interface reassembling raw video data out of a CCIR656 YCrCb 4:2:2 8-bit data stream
- JTAG (Boundary Scan) compliant to the IEEE P1149.1
- Real Time Clock
- Watchdog

Versatile Interfaces

- Dual 10/100 Mbit/s Ethernet MAC with two MII and one Ethernet PHY supporting real-time standard (IEEE 1588), also fully compliant with Ethernet standards such as IEEE 802.3, 802.3u, and ANSI X3.263-1995 (FDDI-TP- PMD)
- USB 1.1 device controller with integrated transceiver, supports up to 12Mbit/s serial data transmission
- PCM Interface connecting to an external IOM-2 bus
- Controller Area Network (CAN) Interface, compatible to CAN 2.0 and extended format, and Philips SJA1000
- Asynchronous Transfer Mode (ATM) – UTOPIA Level-2 Interface, for connection of up to 3 external ATM physical layer controller (PHYs)
- Multiplexed Processor Interface (MPI) configurable for CPU independent external transfers, accessible directly by the CPU or a DMA, connects up to 15 external Power Line physical layer controllers for TDM transmission
- Communication Engine, programmable serial communication providing 16 I/O lines or software controlled general purpose I/Os, providing eight communication channels and commands including UART, IrDA, I²C Master and Slave, Synchronous Communication and interface options to various devices such as A/D or D/A converters, codecs and serial memories



hyNet 32XS Block Diagram

Development Software and Hardware Support

All necessary development software and hardware is available from Hyperstone. Available options include an inexpensive starter-kit option as well as the Hyperstone real-time kernel (hyRTK), DSP software library (hyDSP), macro assembler, C-compiler, debugger, file linker, library manager, and profiler.

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