Overview

The **Vortex86DX3** is a 32-bit x86-architecture dual-core microprocessor with the compatibility of Windows based, Linux and most popular 32-bit RTOS. It also integrates 32KB write through 8-way L1 cache, 512KB write through/write back 4-way L2 cache, PCIE bus at 2.5 GHz, DDR3, ROM controller, ISA, I2C, SPI, IPC (Internal Peripheral Controllers with DMA and interrupt timer/counter included), Fast Ethernet, FIFO UART, USB2.0 Host and IDE/SATA controller within a single 720-pin BGA package to form a system-on-a-chip (SOC). It provides an ideal solution for the embedded system and communications products (such as thin client, NAT router, home gateway, access point and tablet PC) to bring about desired performance.

Features

- **x86 Processor Dual Core**
  - 1.0 GHz
  - Symetric Multi-Processors
  - 6 stage pipeline
  - X86 instruction set
- **Floating point unit support**
  - Extends CPU instruction set to include Trigonometric, Logarithmic and Exponential
  - Implements ANSI/IEEE standard 754-1985 for binary Floating-Point Architecture
- **Embedded I / D Separated L1 Cache**
  - 8-way 32K I-Cache,
  - 8-way 32K D-Cache
- **Embedded Unified L2 Cache**
  - 4-way 512KB L2 Cache
  - Write through or write back policy
- **System DDR3 Control Interface**
  - 32-bit data bus
  - DDR3 size support up to 2Gbytes
- **GPU Control Unit**
  - UMA architecture
  - VGA controller
  - 2D Graphics engine support
  - Max display resolution 1920x1440@60Hz
  - Dual Display support:, only one display can be 1920x1200, DVO (24bits) & D-SUB or 2 DVO (12bit x 2)
  - Support H.264 1080P video decode
- **Temperature sensor**
- **MAC Controller x 1**
- **Embedded 2MB Flash**
  - For BIOS storage
- **JTAG Interface supported for S.W. debugging**
- **IDE Controller**
- **PATA 100(HDD x 2) or SD x 2 at Primary Channel**
- **SATA 1.5Gb/s (1 Port) at Secondary Channel**
- **PCIE Control Interface x 2**
  - Up to 2 sets PCIE device
  - 3.3V I / O
- **USB 2.0 Host Support**
  - Supports HS, FS and LS
  - 4 port
- **HDA Controller**
- **ISA Bus Interface**
  - AT clock programmable
  - 8/16 Bit ISA device with Zero-Wait-State
- **DMA Controller**

- **8259 Interrupt Controller**
- **Counter / Timers**
  - 2 sets of 8254 timer controller
  - Timer output is 5V tolerance I/O on 2nd Timer
- **Real Time Clock**
  - Less than 2.5uA (3.0V) power consumption in Internal RTC Mode while chip is power-off.
- **FIFO UART Port x 9 (9 sets COM Port)**
- **Parallel Port x 1**
- **General Programmable I/O**
- **I2C bus x 2**
- **MTBF Counter**
- **General Shift Interface Support**
- **Full Duplex SPI bus x 2**
- **ADC 11-bit x 8 channel**
- **Input clock**
  - 25 MHz , 14.318MHz, 32.768KHz
- **Output clock**
  - DDR3 clock
- **Operating Voltage Range**
  - Core voltage: 0.9V± 5%
  - I / O voltage: 1.2V ± 5%, 1.5V ± 5%, 1.8V ± 5%, 3.3 V ± 10 %
- **Operating Temperature**
  - -25℃ ~ 70℃
- **Package Type**
  - 31x31mm, 720 Ball PBGA