EVA-X1610C

16-bit, 75 MHz RISC microprocessor with Ethernet and RS-232 connectivity

Features

- **RISC architecture with pipeline technology**
- **Up to 100 MHz operating frequency**
- **Fast Ethernet MAC with MII interface**
- **Dual FIFO UART serial channels**
- **80C186 software compatibility**
- **16-Bit embedded microcontroller**
- **Up to 18 programmable I/O pins**
- **128-Pin PQFP**

Introduction

With the Ethernet protocol becoming the de facto network of choice for ever more professional, office, industrial, and even home environments, it makes sense to develop new systems and leverage existing ones to take advantage of Ethernet connectivity.

Advantech's EVA-X1610C integrates 10/100 Ethernet and RS-232 connectivity into an economical 80C186-compatible 75MHz RISC microprocessor, putting the Ethernet within reach of a host of applications.

Best Performance-to-Cost

The EVA-X1610C is a 16-bit, high performance, RISC architecture microprocessor with 80C186 compatibility. Additional functions integrated on the chip are: SDRAM controller, non-multiplexed address bus, interrupt controller, DMA controller, timers, watchdog timer, FIFO UART serial ports, programmable I/O (PIO) pins and fast Ethernet MAC (Media Access Controller).

The advanced internal high-speed local bus architecture significantly increases overall system performance. And high performance plus high integration enable the EVA-X1610C to increase functionality while reducing BOM system costs. This, combined with a royalty-free real-time OS, contributes to its highly advantageous performance-to-cost ratio. The EVA-X1610C has been designed to meet the communication requirements of products such as device servers, medical monitors, industrial machines, scales, security systems, code scanners, shared IP devices, thermostats, and wireless access points.

Solution on Chip

16-bit Microprocessor

- RISC architecture with Pipeline Technology
- Five-stage pipeline
- Static design & Synthesizable design
- 1 M byte memory address space
- 64 K byte I/O address space
- 80C186 software compatibility
- Up to 100 MHz operating frequency

SDRAM Control Interface

- Supports 16-bit data bus width
- Supports 1Mbit x 16 and 4Mbit x 16 SDRAM devices

Bus Interface

- One Non-Multiplexed System Bus Interface
- Non-multiplexed address and data bus
- Supports non-multiplexed address bus A [19:0]
- 8- or 16-bit external bus dynamic access
- Supports max. 512 KB, 8- or 16-bit data width Flash ROM
- Multiplexed with SDRAM bus interface
- 64 K-byte I/O space
- Supports memory and I/O devices
- 1 M-byte memory address space
- Supports an independent bus for slower I/O devices

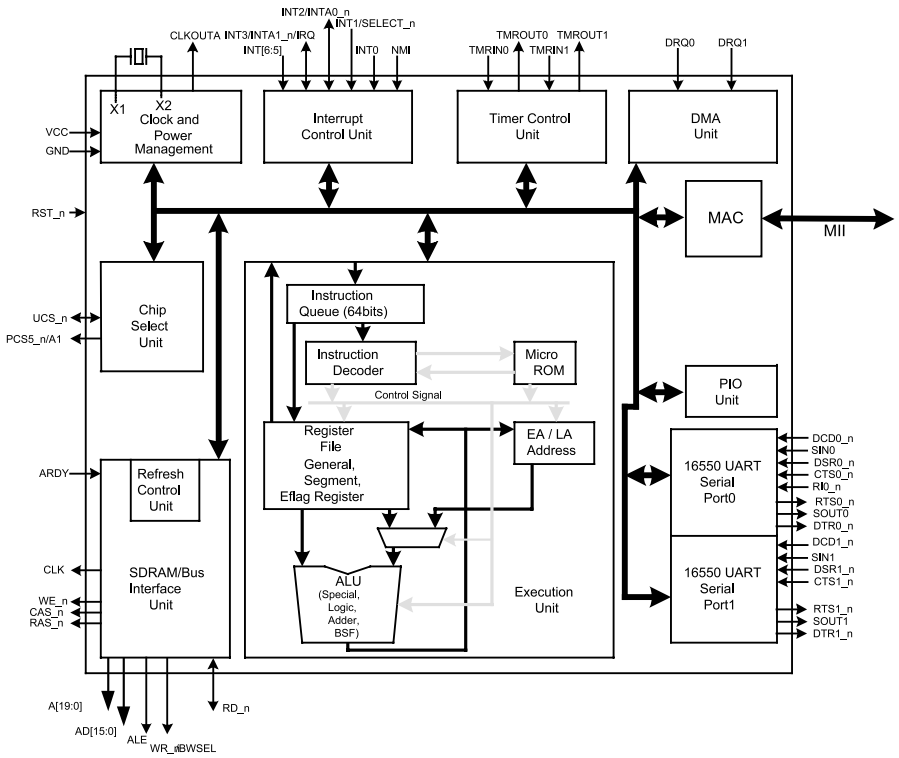
Supports an Independent Bus for I/O Devices

- Multiplexed address and data
- External latches are needed to separate address and data bus
- Only used for I/O devices to prevent throttling the performance of SDRAM & non-multiplexed system bus
- Shares same pins as one of the FIFO UART channels

Dual FIFO UART Serial Channels

Function Block Diagram

Unit: mm



- Two integrated, high performance FIFO UART ports with16 bytes transmit/receive FIFO
- Supports two 16550 UART serial channels with 16 bytes FIFO.
- Programmable Baud rate generator
- The character options are programmable for start bit, stop bit, even/odd or no parity, 5~8 data bits
- One of the FIFO UART channels shares same pins as independent I/O bus interface

1-Port Fast Ethernet MAC Ports with MII Interface

- IEEE 802.3, 802.3u specification compliant
- 10/100 Mb/s data transfer rate
- IEEE 802.3u compliant MII interface with serial management interface
- Full-duplex/half duplex operations
- Flow control for full-duplex operations
- VLAN Supported
- Automatic CRC append and check
- Multicast/Broadcast address recognition
- Provides loop back path on the MII interface

Interrupt Controller

- Provides five maskable external interrupts
- Provides one non-maskable external interrupt

Ordering Information

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