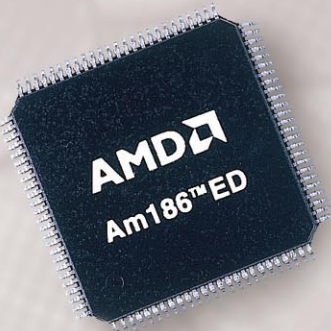




AMD Am186™ ED Microcontroller



High-Performance, 80C186-Compatible, 16-Bit Embedded Microcontroller

The Am186™ ED microcontroller combines the familiarity of the 80C186/188 microcontroller architecture, but with higher performance—and with an enhanced feature set which includes a DRAM controller. Compared to the 80C186/188 microcontrollers, the Am186ED microcontroller can reduce the size, power consumption, and cost of embedded systems, while increasing functionality and performance. The Am186ED controller is ideal for applications requiring more than 64 Kbytes of RAM.

The enhanced feature set of the Am186ED microcontroller offers application-specific features that enhance system functionality while lowering system cost, including a DRAM controller and serial ports that can be connected directly to the DMA channels. In addition, the Am186ED microcontroller can integrate the functions of the CPU, including a demultiplexed address bus, three timers, chip selects, an interrupt controller, two DMA controllers, a watchdog timer, two asynchronous serial ports, and 32 programmable I/O (PIO) pins all on one chip.

PRODUCT HIGHLIGHTS

E86™ Family 80C186-Compatible Microcontroller With Enhanced Bus Interface

- 20-, 25-, 33-, and 40-MHz operating frequencies
- Supports no-wait-state operation at 40 MHz with 50-ns DRAMs
- Supports slower speed DRAMs with wait-states as required
- 1-Mbyte memory address space
- 64-Kbytes I/O space
- 5-V operating range

Software Compatible with the 80C186 Microcontroller

Improved Memory Access

- Non-multiplexed address bus
- Programmable bus sizing, including booting from 8- or 16-bit memory
- 1x clocking

Increased Functionality

- Two full-featured asynchronous serial ports allow full-duplex, 7-bit, 8-bit, or 9-bit data transfers

- DMA to and from the serial ports
- Independent serial port baud-rate generators
- Multi-drop, 9-bit serial port protocol with point-of-sale support
- 32 programmable I/O (PIO) pins
- Watchdog timer can generate NMI or reset
- A pulse-width demodulation and modulation option

Familiar 80C186 Peripherals

- Two independent DMA channels
- Programmable interrupt controller with up to eight external and eight internal interrupts
- Three programmable 16-bit timers
- Programmable memory and peripheral chip-select logic
- Programmable wait-state generator
- Power-save clock divider

PRODUCT DESCRIPTION

The Am186ED microcontroller is based on the architecture of the original Am186 and Am188 microcontrollers and functions in the enhanced mode of the Am186EM, Am186ES, and Am186ER microcontrollers. The Am186ED microcontroller increases the performance of existing 80C186/188 systems, while decreasing system cost. Programmable bus sizing eliminates the need for a separate Am188ED version.

The Am186ED microcontroller has been designed to meet the most common requirements of embedded products developed for the office automation, mass storage, communications, and general embedded markets. Specific applications include disk drives, DVDs, handheld, settop and desktop terminals, fax machines, printers, photocopiers, feature phones, cellular phones, PBXs, multiplexers, modems, and industrial controls.

FEATURE:	AMD 80C186 AMD 80C188	Am186ES Am188ES	Am186ED
Processor Core	Am186	Am186	Am186
Address Range	1 Mbyte	1 Mbyte	1 Mbyte
Interrupts	10	16	16
DMA Channels	2	2	2
Timers	3	3	3
Memory Controller	Refresh	SRAM FLASH EPROM	SRAM FLASH EPROM DRAM
Chip Selects	13	12	12
PIOs	–	32	32
Async. Serial Ports	–	2	2
Sync. Serial Ports	–	–	–
Voltage	5 V	5 V	5 V
Frequency (MHz)	10, 12.5, 16, 25	20, 25, 33, 40	20, 25, 33, 40

Related Literature:

SD186ED Demo Board	#21310
Am186ED Microcontrollers Data Sheet User Manual	#21336 #21335
E86 Family Comparative Features Chart	#19181



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