

## xCORE-200 XE/XEF Ethernet + USB

A new generation of high performance Ethernet-enabled multicore microcontrollers



### FEATURES

**Multicore compute** with between 2000MIPS (16 core) and 4000MIPS (32 core) performance.

**Hardware Response™ ports** provide flexible, high-performance configurable I/O capability.

**Integrated Gb Ethernet RGMII** interface.

**Integrated USB 2.0 PHY** for high and full-speed host and device operation.

**Up to 1024KB on-board memory** for demanding applications.

**Embedded flash option** – up to 2048KB on-board.

**Free software library support** to implement your exact mix of peripherals.

**Easy to use** with our free xTIMEcomposer Studio™ tools.

The xCORE-200™ Gigabit Ethernet family of devices (XE and XEF) extends the popular xCORE™ architecture to provide increased performance, memory footprint and flexibility for the most demanding applications.

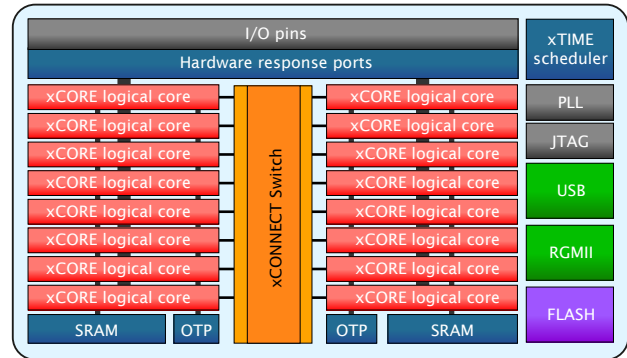
xCORE-200 XE/XEF devices contain integrated Gigabit Ethernet RGMII interfaces and USB2.0 PHYs (host or device) with a dual-issue processor pipeline that boosts peak compute performance to 4000MIPS and 2000MMACS.

Up to 1024KB on-chip SRAM memory is available. Each member of the xCORE-200 family has an embedded flash option for applications where additional security is required.

The flexible Hardware Response ports are bonded out to I/O pins as 1bit, 4bit, 8bit, 16bit and 32bit ports, and provide support for serialized and buffered data transfer. Up to 146 general purpose I/O are available for user configuration.

xCORE-200 is supported by the advanced XMOS xTIMEcomposer Studio™ development environment, and a wide range of microcontroller and application libraries are freely downloadable from [www.xmos.com](http://www.xmos.com).

Unlike conventional microcontrollers, xCORE-200 multicore microcontrollers execute multiple real-time tasks simultaneously. The xCORE-200 XE/XEF family includes devices with 16, 24 and 32 cores. Each logical core can execute computational code, advanced DSP code, control software (including logic decisions and executing a state machine) or drive and sample data on the I/O ports.



xCORE-200™ XEF216

The devices include xTIME scheduling hardware that performs functions similar to those of an RTOS, and hardware that connects the cores directly to I/O pins, ensuring fast processing and extremely low latency. The xTIME scheduler eliminates the use of interrupts and ensures deterministic operation.

The on-chip SRAM can be accessed in a single cycle, reducing shared memory requirements by passing data directly between tasks executing on logical cores. Similarly the xCONNECT switch is a high-speed network allowing all cores to communicate with each other.

xCORE-200 multicore microcontrollers include an area of one-time programmable memory with AES support to allow the implementation of secure boot functionality.

## ORDERING INFORMATION

xCORE-200 XE/XEF devices are available in a range of resource densities, packages, performance and temperature grades depending on your needs.

| Family | Cores | RAM (KB) | Flash (KB) | RGMII | USB PHY | Package [GPIOs] |                 |                  |
|--------|-------|----------|------------|-------|---------|-----------------|-----------------|------------------|
|        |       |          |            |       |         | TQ128 [67]      | FB236 [73]      | FB324 [146]      |
| XE216  | 16    | 256      | -          | 1     | 1       | XE216-256-TQ128 | XE216-256-FB236 |                  |
|        |       | 512      |            |       |         | XE216-512-TQ128 | XE216-512-FB236 |                  |
| XE224  | 24    | 512      | -          | 1     | 2       |                 |                 | XE224-512-FB324  |
|        |       | 1024     |            |       |         |                 |                 | XE224-1024-FB324 |
| XE232  | 32    | 512      | -          | 2     | 2       |                 |                 | XE232-512-FB324  |
|        |       | 1024     |            |       |         |                 |                 | XE232-1024-FB324 |
| XEF216 | 16    | 256      | 2048       | 1     | 1       | XE216-256-TQ128 | XE216-256-FB236 |                  |
|        |       | 512      |            |       |         | XE216-512-TQ128 | XE216-512-FB236 |                  |
| XEF224 | 24    | 512      | 2048       | 1     | 2       |                 |                 | XE224-512-FB324  |
|        |       | 1024     |            |       |         |                 |                 | XE224-1024-FB324 |
| XEF232 | 32    | 512      | 2048       | 2     | 2       |                 |                 | XE232-512-FB324  |
|        |       | 1024     |            |       |         |                 |                 | XE232-1024-FB324 |

For pricing and availability, please visit the XMOS website for a list of our distributors.

[www.xmos.com/distributors](http://www.xmos.com/distributors).