XMC4800 Microcontroller

with integrated EtherCAT®

The XMC4800 offers the first EtherCAT® node integrated on an ARM® Cortex®-M controller with on-chip flash and analog/mixed signal capabilities. This unprecedented level of integration offers the EtherCAT® community a new – previously unimaginable – benchmark for ease of implementation.

The XMC4800 enables the most compact designs, eliminating the need for a dedicated EtherCAT® ASIC, external memory and crystal. Designers benefit from BOM cost and PCB space savings.

As a member of the XMC4000 microcontroller family with full pin and code compatibility, the XMC4800 is designed to the same high quality and reliability standards as the rest of the family. XMC48000 enables EtherCAT® applications in harsh environments with 125°C ambient temperatures. In addition, it will be available through 2027 or longer.

Key Features

- EtherCAT® slave, 6 CAN nodes
- ARM® Cortex®-M4 CPU at 144MHz, with up to 2MB flash and 352KB RAM
- Qualified for 125°C automotive temperature range
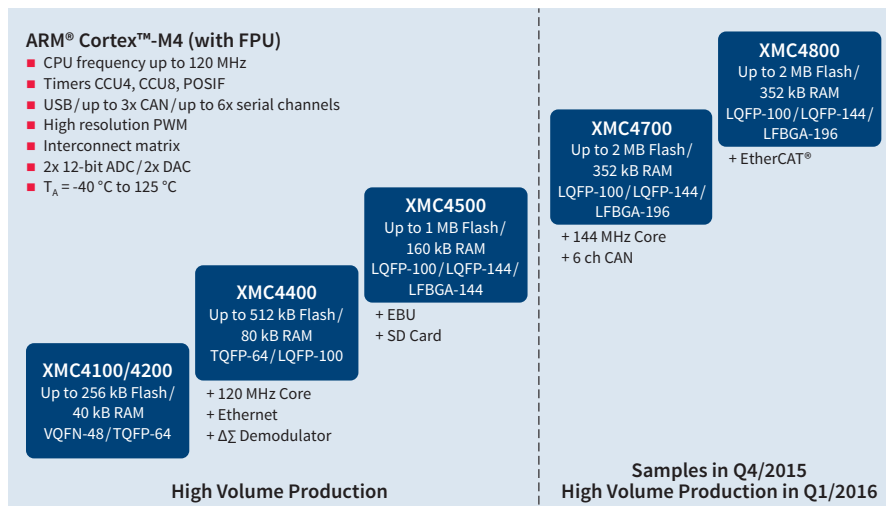- Long-term availability through 2027 or longer

Key Benefits

- Most compact EtherCAT® design – no additional external components required
- Bill of Material (BOM) cost and PCB space savings
- Enablement of EtherCAT® technology in harsh environments with 125°C ambient temperatures

Applications

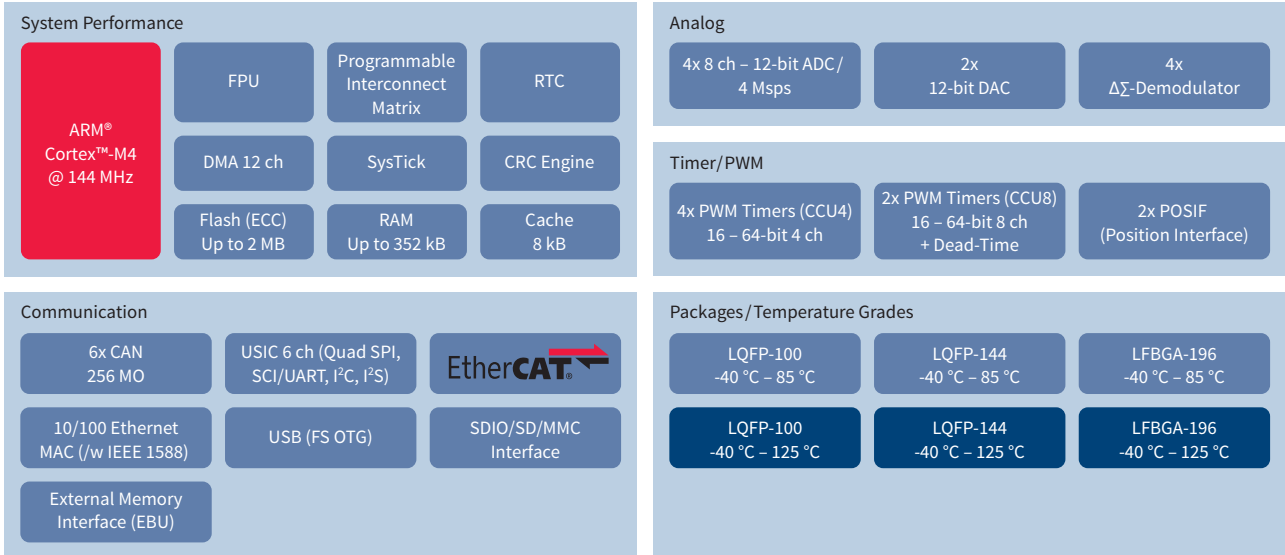- Factory automation
- Industrial motor control
- Robotics

XMC Microcontroller Product Portfolio

ARM® Cortex™-M4 (with FPU)
- CPU frequency up to 120 MHz
- Timers CCU4, CCU8, POSIF
- USB/up to 3x CAN/up to 6x serial channels
- High resolution PWM
- Interconnect matrix
- 2x 12-bit ADC/2x DAC
- T_A = -40 °C to 125 °C

XMC4100/4200
Up to 256 kB Flash/
40 kB RAM
VQFN-48/TQFP-64

XMC4400
Up to 512 kB Flash/
80 kB RAM
TQFP-64/LQFP-100

+ 120 MHz Core
+ Ethernet
+ ΔΣ Demodulator

XMC4500
Up to 1 MB Flash/
160 kB RAM
LQFP-100/LQFP-144/
LFBGA-144

+ EBU
+ SD Card

XMC4700
Up to 2 MB Flash/
352 kB RAM
LQFP-100/LQFP-144/
LFBGA-196

+ 144 MHz Core
+ 6 ch CAN

XMC4800
Up to 2 MB Flash/
352 kB RAM
LQFP-100/LQFP-144/
LFBGA-196

+ EtherCAT®

High Volume Production

Samples in Q4/2015
High Volume Production in Q1/2016

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RoHS

XMC4800 Microcontroller

with integrated EtherCAT®

XMC4800 Series Block Diagram

System Performance

ARM® Cortex™-M4 @ 144 MHz	FPU	Programmable Interconnect Matrix	RTC
	DMA 12 ch	SysTick	CRC Engine
	Flash (ECC) Up to 2 MB	RAM Up to 352 kB	Cache 8 kB

Analog

4x 8 ch – 12-bit ADC / 4 Msps	2x 12-bit DAC	4x ΔΣ-Demodulator

Timer/PWM

4x PWM Timers (CCU4) 16 – 64-bit 4 ch	2x PWM Timers (CCU8) 16 – 64-bit 8 ch + Dead-Time	2x POSIF (Position Interface)

Communication

6x CAN 256 MO	USIC 6 ch (Quad SPI, SCI/UART, I²C, I²S)	EtherCAT®
10/100 Ethernet MAC (/w IEEE 1588)	USB (FS OTG)	SDIO/SD/MMC Interface
External Memory Interface (EBU)		

Packages/Temperature Grades

LQFP-100 -40 °C – 85 °C	LQFP-144 -40 °C – 85 °C	LFBGA-196 -40 °C – 85 °C
LQFP-100 -40 °C – 125 °C	LQFP-144 -40 °C – 125 °C	LFBGA-196 -40 °C – 125 °C

XMC4800 Series Overview

Product Name	Feature Set	Compatibility
XMC4800-F100F1024; LQFP-100 -40°C – 85°C XMC4800-F100K1024; LQFP-100 -40°C – 125°C	EtherCAT®, 1 MB Flash/200 KB RAM, 6 CAN nodes	Pin compatibility with all XMC4000 devices in LQFP-100. Code compatibility with all XMC4000 devices.
XMC4800-F100F1536; LQFP-100 -40°C – 85°C XMC4800-F100K1536; LQFP-100 -40°C – 125°C	EtherCAT®, 1.5 MB Flash/276 KB RAM, 6 CAN nodes	
XMC4800-F100F2048; LQFP-100 -40°C – 85°C XMC4800-F100K2048; LQFP-100 -40°C – 125°C	EtherCAT®, 2 MB Flash/352 KB RAM, 6 CAN nodes	
XMC4800-F144F1024; LQFP-144 -40°C – 85°C XMC4800-F144K1024; LQFP-144 -40°C – 125°C	EtherCAT®, 1 MB Flash/200 KB RAM, 6 CAN nodes	Pin compatibility with all XMC4000 devices in LQFP-144. Code compatibility with all XMC4000 devices.
XMC4800-F144F1536; LQFP-144 -40°C – 85°C XMC4800-F144K1536; LQFP-144 -40°C – 125°C	EtherCAT®, 1.5 MB Flash/276 KB RAM, 6 CAN nodes	
XMC4800-F144F2048; LQFP-144 -40°C – 85°C XMC4800-F144K2048; LQFP-144 -40°C – 125°C	EtherCAT®, 2 MB Flash/352 KB RAM, 6 CAN nodes	
XMC4800-E196F1024; LFBGA-196 -40°C – 85°C XMC4800-E196K1024; LFBGA-196 -40°C – 125°C	EtherCAT®, 1 MB Flash/200 KB RAM, 6 CAN nodes	Upward pin compatibility with all XMC4000 devices in LFBGA-144. Code compatibility with all XMC4000 devices.
XMC4800-E196F1536; LFBGA-196 -40°C – 85°C XMC4800-E196K1536; LFBGA-196 -40°C – 125°C	EtherCAT®, 1.5 MB Flash/276 KB RAM, 6 x CAN Nodes	
XMC4800-E196F2048; LFBGA-196 -40°C – 85°C XMC4800-E196K2048; LFBGA-196 -40°C – 125°C	EtherCAT®, 2 MB Flash/352 KB RAM, 6 x CAN Nodes	

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