

Product Brief

XMC4300 and XMC4800

Microcontroller series with integrated EtherCAT®

The XMC4300 and XMC4800 are the industry's first-ever Microcontrollers with integrated EtherCAT® node on an ARM® Cortex®-M processor with on-chip flash and analog/mixed signal capabilities. Thus enabling the most compact designs, both series require no additional components such as dedicated EtherCAT® ASIC, external memory or a quartz clock generator to start up the EtherCAT® slave controller. Designers benefit from BOM cost and PCB space savings.

As both, XMC4300 and XMC4800 series, are member of the XMC4000 Microcontroller family with full pin and code compatibility, the XMC4300 and XMC4800 are designed to the same high quality and reliability standards as the rest of the family. The XMC4300 and XMC4800 enable EtherCAT® applications in harsh environments with 125°C ambient temperatures. In addition, they will be available through 2031 or longer.

Key features

- > EtherCAT®, up to 6 CAN nodes, standard Ethernet MAC
- > Cortex®-M4 at 144 MHz with large on-chip memories
 - XMC4300: 256 kB Flash/128 kB RAM
 - XMC4800: up to 2 MB Flash/352 kB RAM
- > Qualified for 125°C automotive temperature range
- > Long-term availability through 2031 or longer

XMC4300 series block overview

System performance				Timer/PWM	
ARM® Cortex®-M4 @144 MHz	FPU	Programmable interconnect matrix	RTC	2x PWM timers (CCU4) 16-bit to 64-bit 4 ch	1x PWM timers (CCU8) 16-bit to 64-bit 8 ch + dead-time
	DMA 8 ch	SysTick	CRC engine		
	Flash (ECC) 256 kB	RAM up to 128 kB	CACHE 8 kB		
Communication				Analog	
2x CAN 64 MO	USIC 4 ch [Quad SPI, SCI/UART, I ² C, I ² S]	EtherCAT®		2x 8 ch-12-bit ADC/ 4 Msps	2x 12-bit DAC
10/100 Ethernet MAC (w IEEE 1588)	USB (FS OTG)	SDIO/SD/MMC interface			
				Packages/temperature range	
				LQFP100 -40°C ... 85°C	LQFP100 -40°C ... 125°C
				LED matrix control (8x8 Segments)	

MO = Message objects; Msps = Mega samples per second

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
- > Support of long product lifetime through availability to 2031 or longer

XMC4300 series device overview

Product name	Feature set	Compatibility
XMC4300-F100F256; LQFP-100 -40°C–85°C XMC4300-F100K256; LQFP-100 -40°C–125°C	EtherCAT®, 256 kB Flash/128 kB RAM, 2x CAN nodes, standard Ethernet MAC	Pin compatible with all XMC4000 devices in LQFP-100. Code compatible with all XMC4000 devices.

XMC4300 and XMC4800

Microcontroller series with integrated EtherCAT®

XMC4800 series block overview

System performance				Timer/PWM		
ARM® Cortex®-M4 @144 MHz	FPU	Programmable interconnect matrix	RTC	4x PWM timers (CCU4) 16-bit to 64-bit 4 ch	2x PWM timers (CCU8) 16-bit to 64-bit 8 ch + dead-time	2x POSIF (Position interface)
	DMA 12 ch	SysTick	CRC engine			
	Flash (ECC) up to 2 MB	RAM up to 352 kB	CACHE 8 kB			
Communication				Analog		
6x CAN 256 MO	USIC 6ch [SPI/Dual SPI/Quad SPI, SCI/UART, I ² C, I ² S]	EtherCAT®		4x 8 ch 12-bit ADC/ 4 Msps	2x 12-bit DAC	4x ΔΣ Demodulator
10/100 Ethernet MAC (/w IEEE 1588)	USB (FS OTG)	SDIO/SD/MMC interface				
External memory interface (EBU)						
				Packages/temperature range		
				LQFP100 -40°C ... 85°C	LQFP144 -40°C ... 85°C	LFBGA196 -40°C ... 85°C
				LQFP100 -40°C ... 125°C	LQFP144 -40°C ... 125°C	LFBGA196 -40°C ... 125°C

MO = Message objects; Msps = Mega samples per second

XMC4800 series device 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, 6x CAN nodes, standard Ethernet MAC	Pin compatible with all XMC4000 devices in LQFP-100. Code compatible 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, 6x CAN nodes, standard Ethernet MAC	
XMC4800-F100F2048; LQFP-100 -40°C–85°C XMC4800-F100K2048; LQFP-100 -40°C–125°C	EtherCAT®, 2 MB Flash/352 kB RAM, 6x CAN nodes, standard Ethernet MAC	
XMC4800-F144F1024; LQFP-144 -40°C–85°C XMC4800-F144K1024; LQFP-144 -40°C–125°C	EtherCAT®, 1 MB Flash/200 kB RAM, 6x CAN nodes, standard Ethernet MAC	Pin compatible with all XMC4000 devices in LQFP-144. Code compatible 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, 6x CAN nodes, standard Ethernet MAC	
XMC4800-F144F2048; LQFP-144 -40°C–85°C XMC4800-F144K2048; LQFP-144 -40°C–125°C	EtherCAT®, 2 MB Flash/352 kB RAM, 6x CAN nodes, standard Ethernet MAC	
XMC4800-E196F1024; LFBGA-196 -40°C–85°C XMC4800-E196K1024; LFBGA-196 -40°C–125°C	EtherCAT®, 1 MB Flash/200 kB RAM, 6x CAN nodes, standard Ethernet MAC	Upwards pin compatible with all XMC4000 devices in LFBGA-144. Code compatible 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, 6x CAN nodes, standard Ethernet MAC	
XMC4800-E196F2048; LFBGA-196 -40°C–85°C XMC4800-E196K2048; LFBGA-196 -40°C–125°C	EtherCAT®, 2 MB Flash/352 kB RAM, 6x CAN nodes, standard Ethernet MAC	

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