

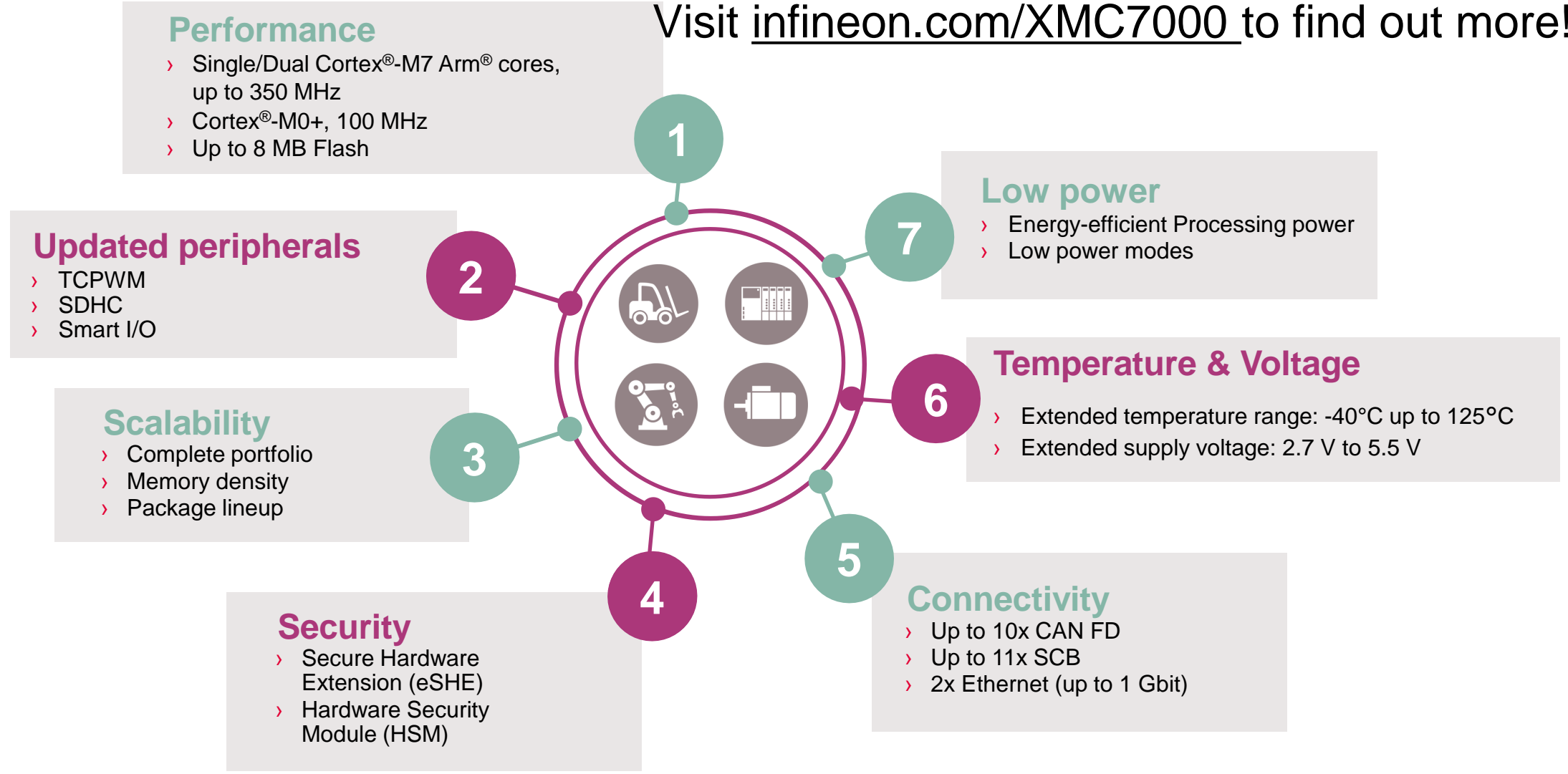
XMC7000: Infineon's new Industrial Microcontroller based on dual Arm® Cortex®-M7

Mar 2023



XMC7000 key features & value proposition

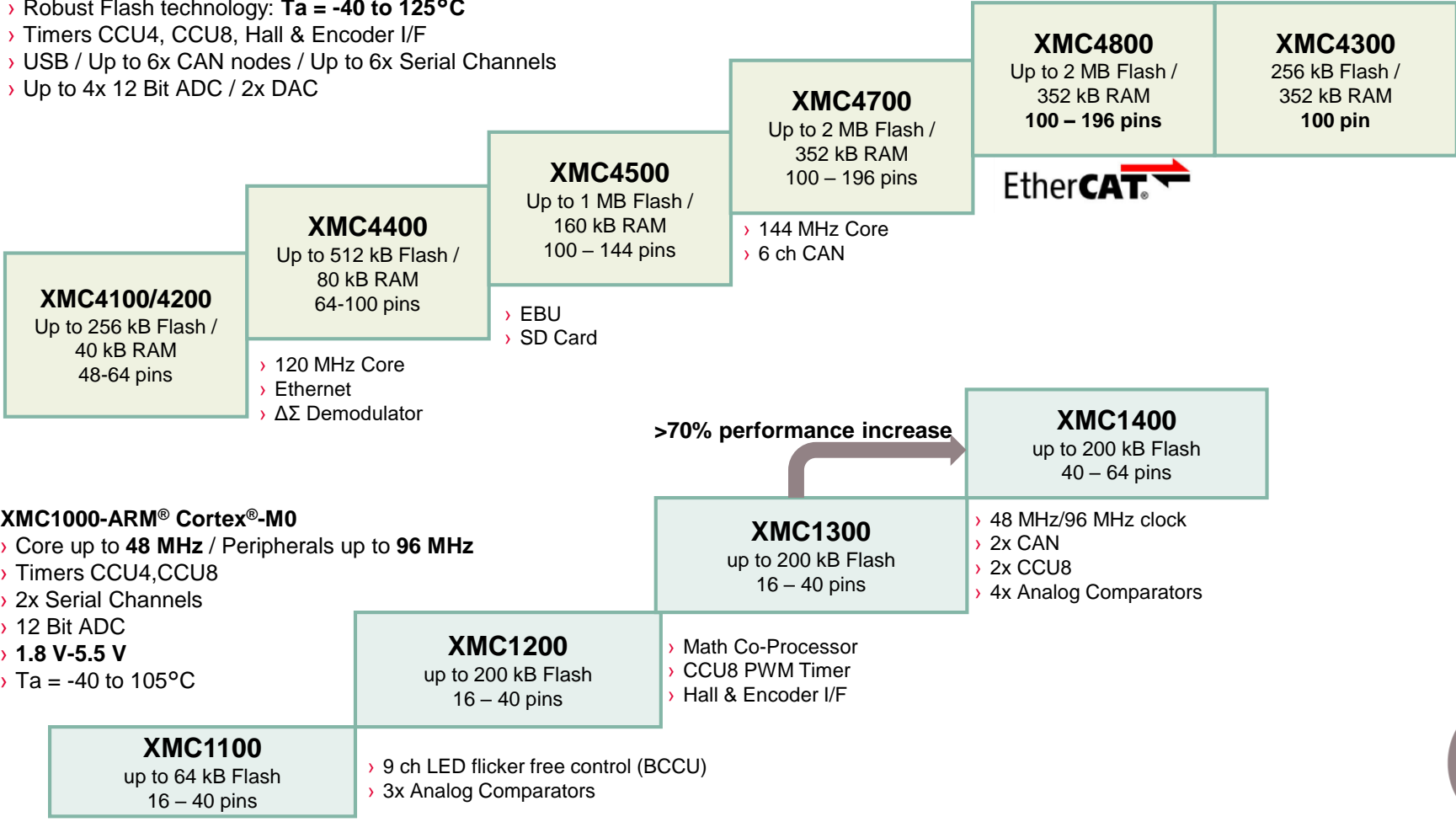
Visit [infineon.com/XMC7000](https://www.infineon.com/XMC7000) to find out more!



XMC7000 Extends XMC™ Portfolio

XMC4000-ARM® Cortex®-M4 (with FPU)

- > CPU Frequency up to **144 MHz**
- > Robust Flash technology: **Ta = -40 to 125°C**
- > Timers CCU4, CCU8, Hall & Encoder I/F
- > USB / Up to 6x CAN nodes / Up to 6x Serial Channels
- > Up to 4x 12 Bit ADC / 2x DAC



XMC1000-ARM® Cortex®-M0

- > Core up to **48 MHz** / Peripherals up to **96 MHz**
- > Timers CCU4, CCU8
- > 2x Serial Channels
- > 12 Bit ADC
- > **1.8 V-5.5 V**
- > Ta = -40 to 105°C

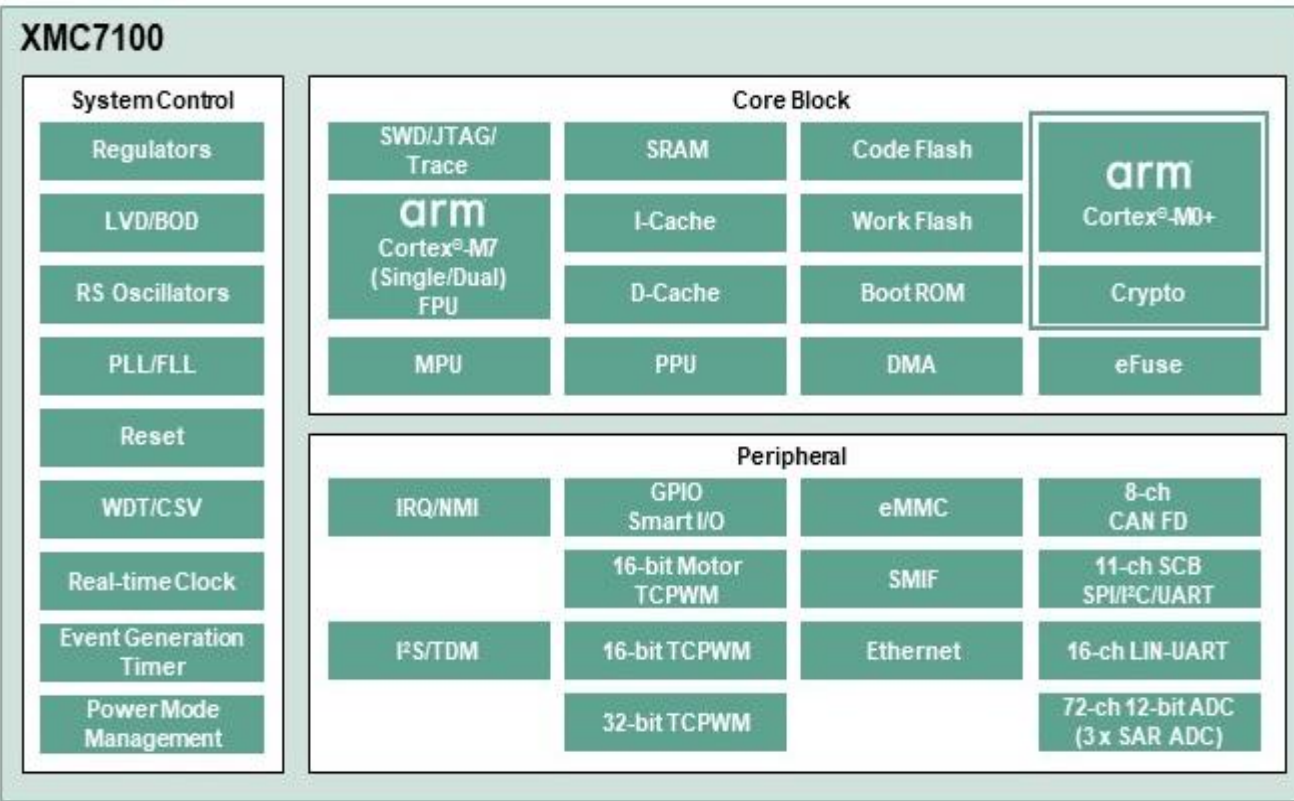
XMC7100
4 MB Flash / 768 kB RAM, 250 MHz single/dual core / 100 – 272 pin (QFP/BGA)

XMC7200
8 MB Flash / 1 MB RAM, 350 MHz single/dual core / 176 – 272 pin (QFP/BGA)

- > **Single or dual core** Arm® Cortex®-M7 and Cortex®-M0+
- > M7 CPU core Frequency up to **350 MHz**
- > Temperature range: **Ta = -40 to 125°C**
- > Memory Up to **8 MB Flash, 1 MB RAM**
- > **TCPWM** timers of 102Ch 16 bit and 16Ch 32 bit
- > **Cryptography** Engine support
- > Interfaces such as CAN-FD, **Gb Ethernet**
- > **SMIF** and SDHC interface supported
- > Extended voltage operating range: **2.7 to 5.5V**
- > low power modes(LP/deep sleep, **hibernate..**)
- > Add. timer, ADC and Serial COM. Chs
- > **Read While Write (RWW)** Flash capability



XMC7100 series



Description

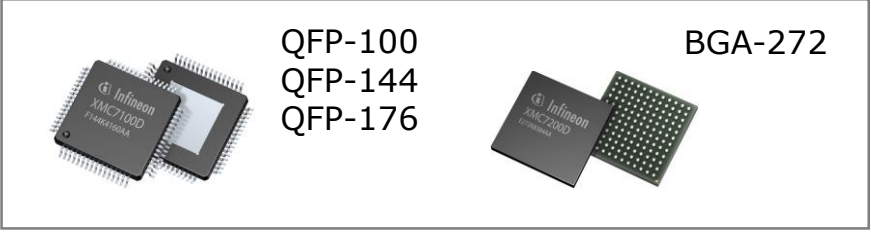
Applications / Target Markets

- › Industrial motor control and drives, inverters/converters (UPS, solar), High-end eBikes, LEVs, eV Chargers, PLCs

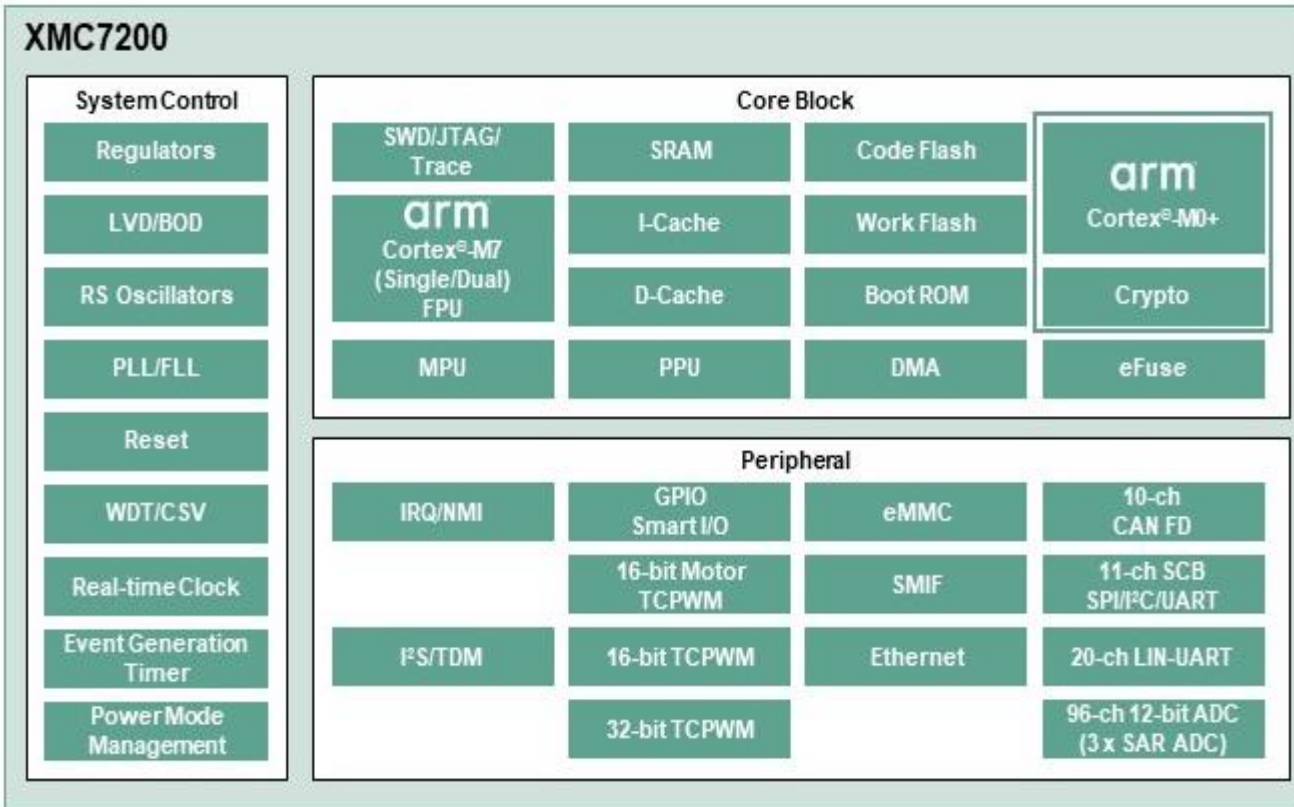
Feature highlights

- › **32-bit MCU Core System**
 - Single/Dual 250-MHz Arm[®] Cortex[®]-M7 and 100MHz Cortex[®]-M0+
 - Up to 4-MB Flash, up to 768-kB SRAM, I/D-Cache
- › **2.7-V to 5.5-V** Supply Voltage
- › **Up to 125°C** extended temperature range
- › **Interfaces:**
 - Up to 8-ch CAN FD, up to 11-ch SCB
 - eMMC, SMIF (QSPI/HS-SPI), 1-ch 10/100 Mbit Ethernet
- › **AD Converter**
 - Up to 72-ch, 12-bit with 3x successive approximation ADC (SAR ADC) units
- › **Timers**
 - Up to 12-ch 16-bit motor control, 63-ch 16-bit timer/counter/pulse-width modulation (TCPWM), and 8-ch 32-bit TCPWM
 - Event Generation Timer

Packages



XMC7200 series



Description

Applications / Target Markets

- › Industrial motor control and drives, inverters/converters (UPS, solar), LEVs, eV Chargers, PLCs

Feature highlights

- › **32-bit MCU Core System**
 - Single/Dual 350-MHz Arm® Cortex®-M7 and Cortex®-M0+
 - Up to 8-MB Flash, up to 1MB SRAM, I/D-Cache
- › **2.7-V to 5.5-V** Supply Voltage
- › **Up to 125°C** extended temperature range
- › **Interfaces:**
 - Up to 10-ch CAN FD, up to 11-ch SCB
 - eMMC, SMIF (QSPI/HS-SPI), up to 2-ch 10/100/1000 Mbit Ethernet
- › **AD Converter**
 - Up to 96-ch, 12-bit with 3x successive approximation ADC (SAR ADC) units
- › **Timers**
 - Up to 15-ch 16-bit for motor control, 87-ch 16-bit timer/counter/pulse-width modulation (TCPWM) and 16-ch 32-bit TCPWM
 - Event Generation Timer

Packages



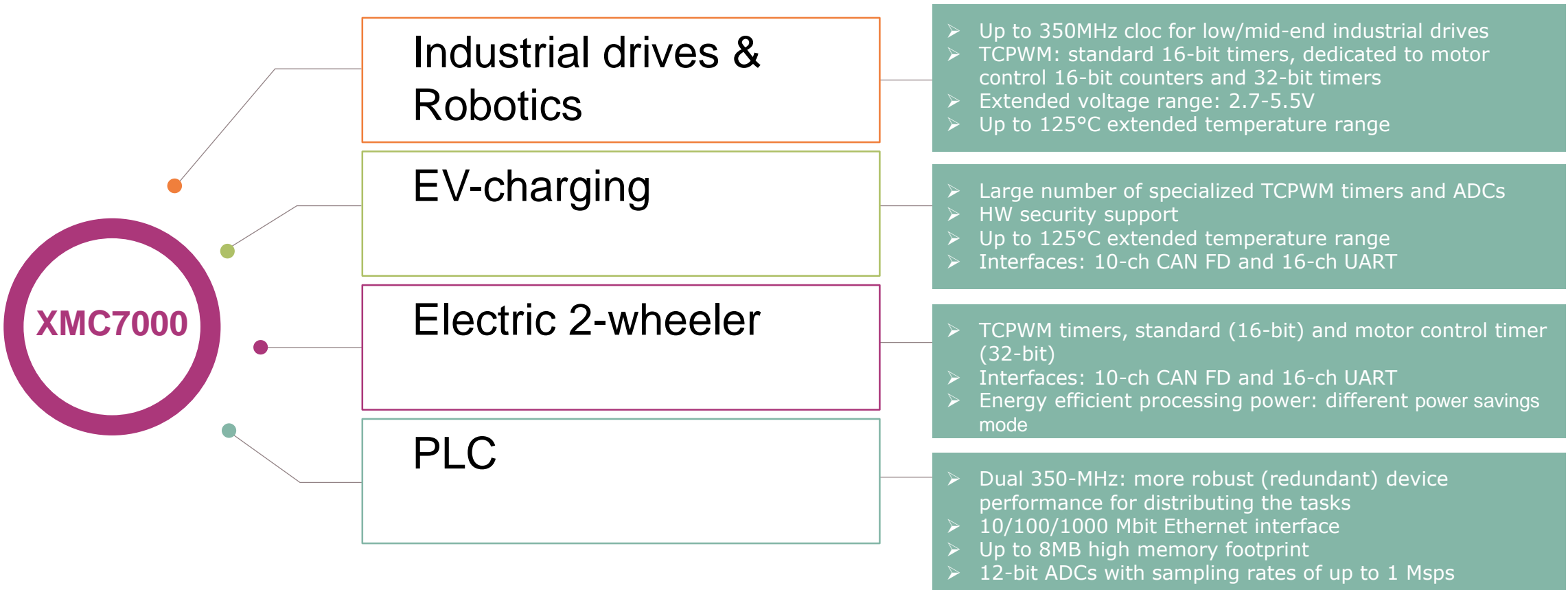
Key features and benefits



Infineon's XMC7000 at a glance: high quality grade industrial MCU platform

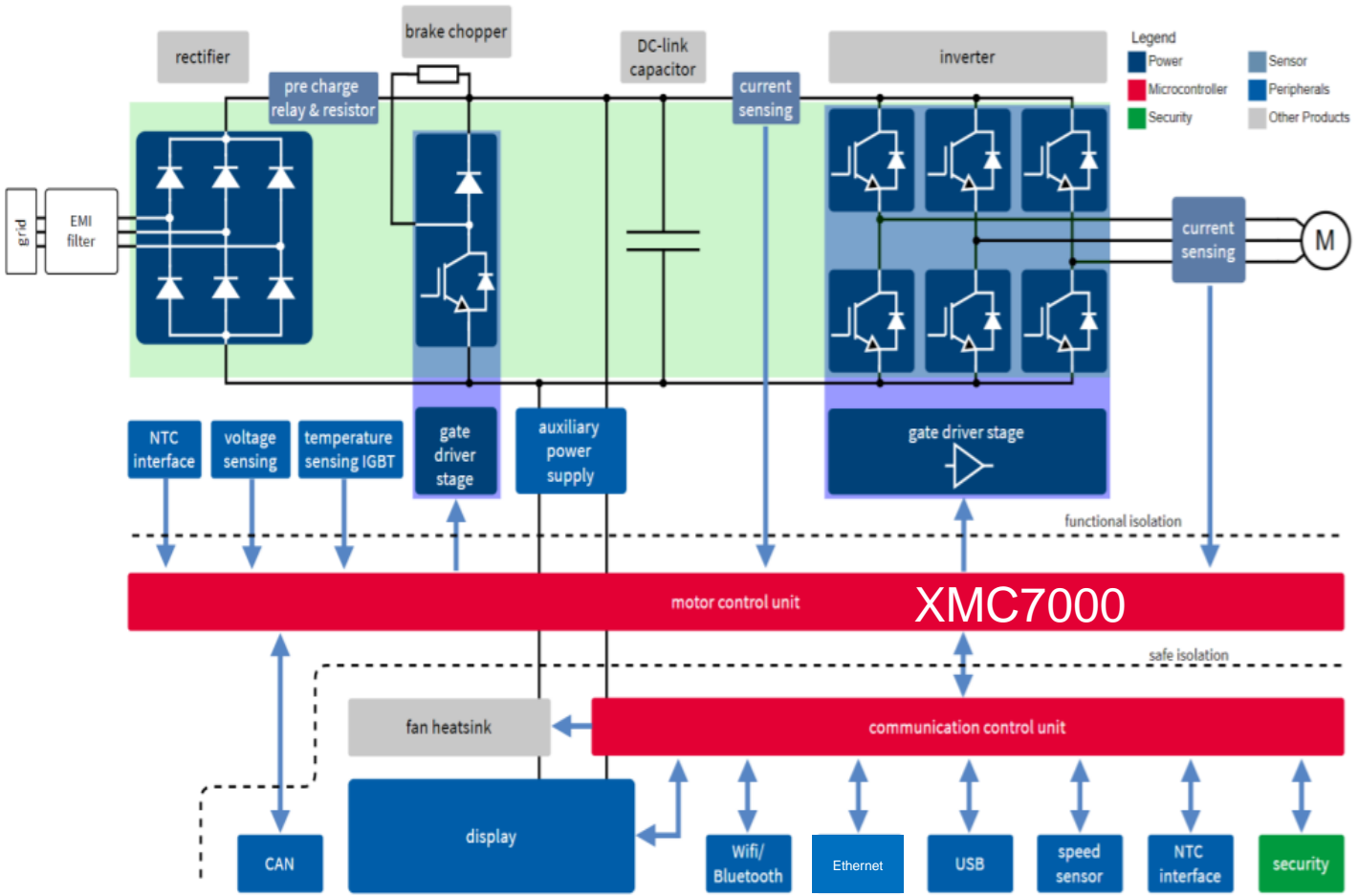
Key features	Key benefits	Value
Single/Dual Cortex [®] -M7 Arm [®] cores, up to 350 MHz and memory up to 8 MB	<ul style="list-style-type: none"> › Perfect fit for demanding industrial application use cases › Higher processing performance › Ability of task distribution 	Best-in-class compute performance
Comprehensive set of advanced peripherals (ADCs, TCPWM Timers) along with competitive set of security offering	<ul style="list-style-type: none"> › Optimal solution for motor control & power conversion applications › Advanced security options 	Allowing developers to create feature optimized end products
High quality and temperature grade of 125°C in combination with lower-power modes down to 8 μA	<ul style="list-style-type: none"> › Low power to support electrification and digitization › Power saving in energy-critical applications › Ability to operate in high ambient environments 	Increased flexibility and quality
Four footprint versions available in 17 different part numbers	<ul style="list-style-type: none"> › XMC7000 is easy to adapt on existing PCB › Different core/memory/package combinations 	Optimal device arrangement

Target applications and key features



XMC7000- Industrial Drives

Application block diagram



Key features

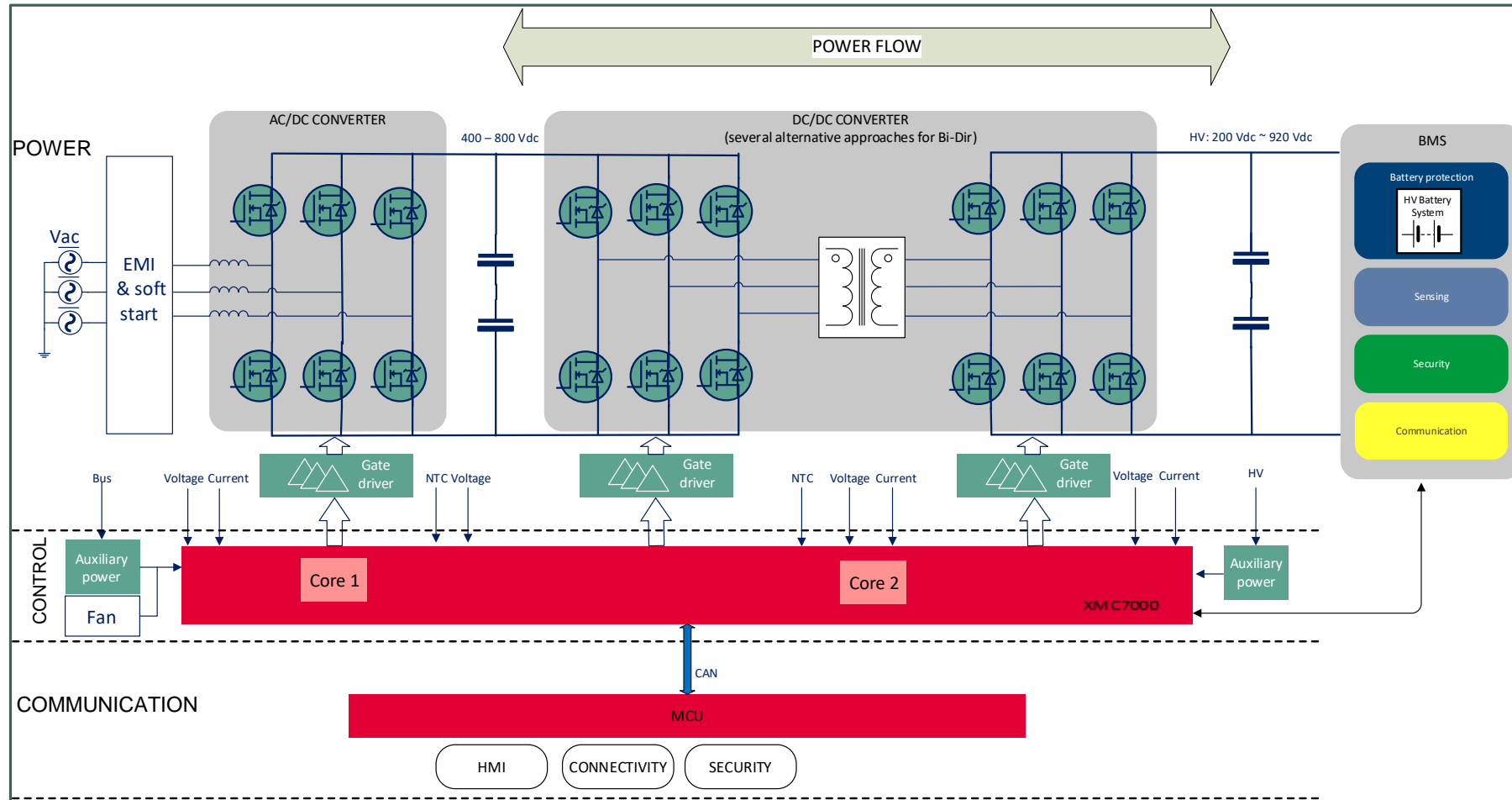
- 250-MHz clock speed suited for low-end industrial drives
- Dual core Arm Cortex M7 with Arm Cortex M0
- TCPWM timers(118Ch), 15-Ch 16bit for motor control , 16Ch 32 bit as seperate TCPWM group.
- 3 ADC covertor with 99 channels (3 dedicated for motor control)
- 10/100/1000 Mbps Ethernet MAC interface
- Cryptography engine – HW security
- Extended Voltage range: 2.7-5.5V
- Up to 125°C extended temperature range

Target Applications

- Servo Drives
- GPD –General purpose drives (compact, standard, Premium)

XMC7000- EV Charging

Application block diagram



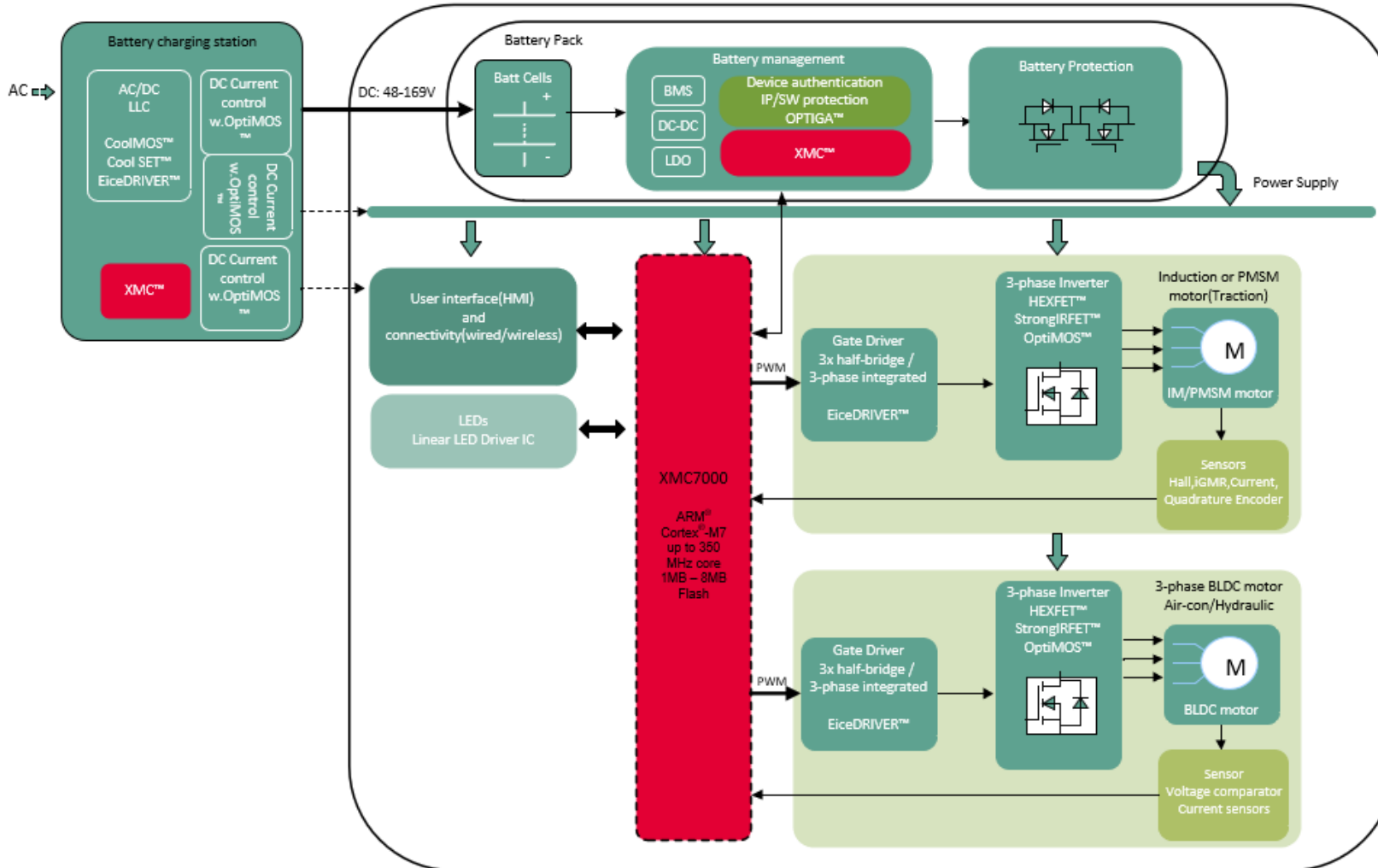
Key features

- 10/100/1000 Mbit Ethernet
- HW security support
- Up to 125°C extended temperature range
- Interfaces: 10-ch CAN FD and 16-ch UART
- Dual 350-MHz: more robust device performance for task distribution
- TCPWM timers
- Large numbers of ADC channels

XMC7000- LEV (Light Electric Vehicle)

High power low speed/Low power light electric vehicle

Application block diagram



Key Features

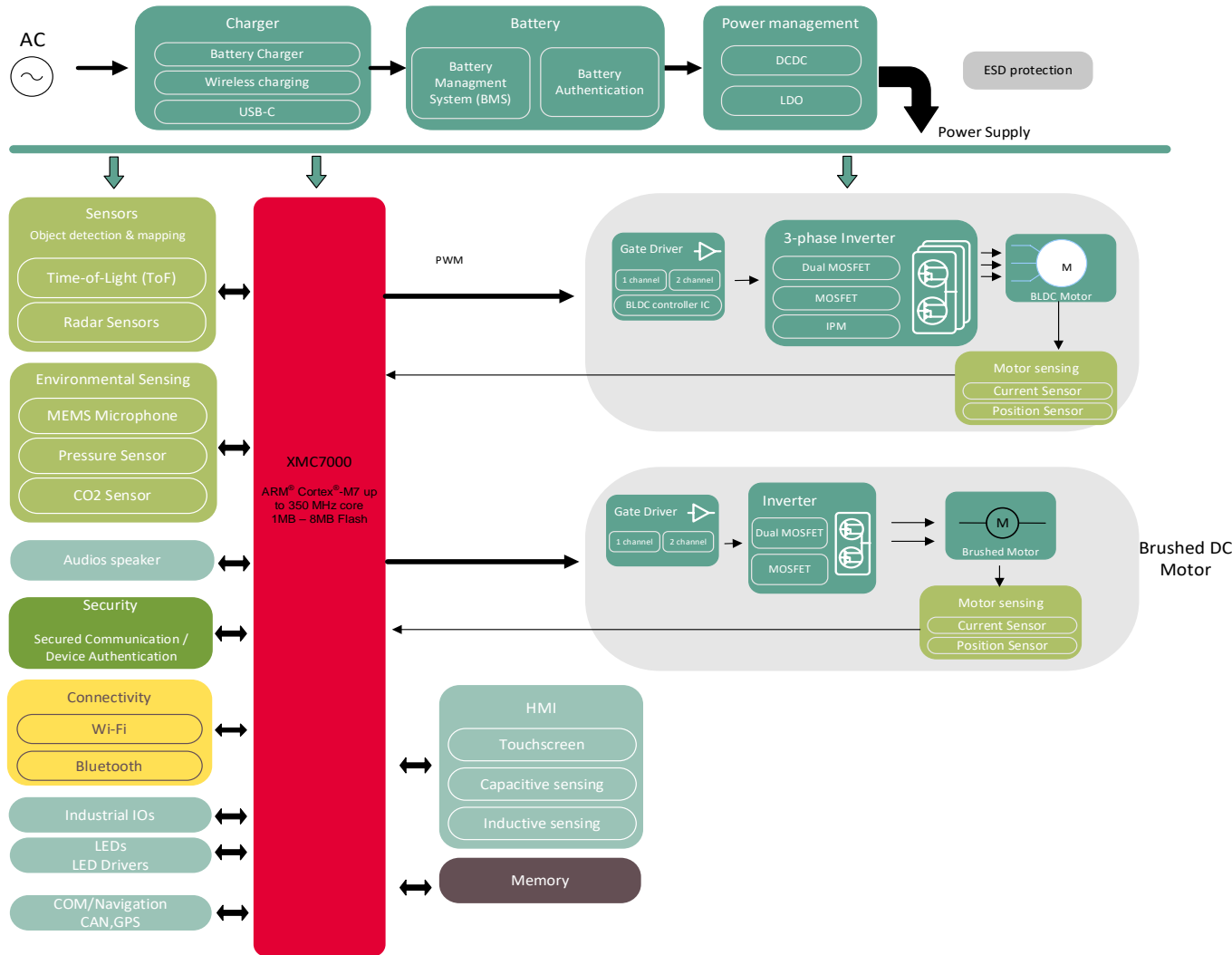
- Dual core Arm Cortex M7 with Arm Cortex M0+ for cryptographic engine
- TCPWM: standard 16-bit timers, motor control dedicated 16-bit counters and 32-bit timers
- Timer supporting Quadrature decoding
- Interfaces: 10-ch CAN FD and 16-ch UART
- 5 Smart I/O block to perform Boolean operation
- Energy efficient processing power: different power savings mode

Target Applications

- E-forklifts
- E-golf carts
- Low speed E-vehicles(LSEVs/micro Ev)
- E-bikes
- E-scooter (standing, self balancing etc)
- E-Rickshaws or E-three wheeler

XMC7000- Industrial and Residential Robotics

Application block diagram



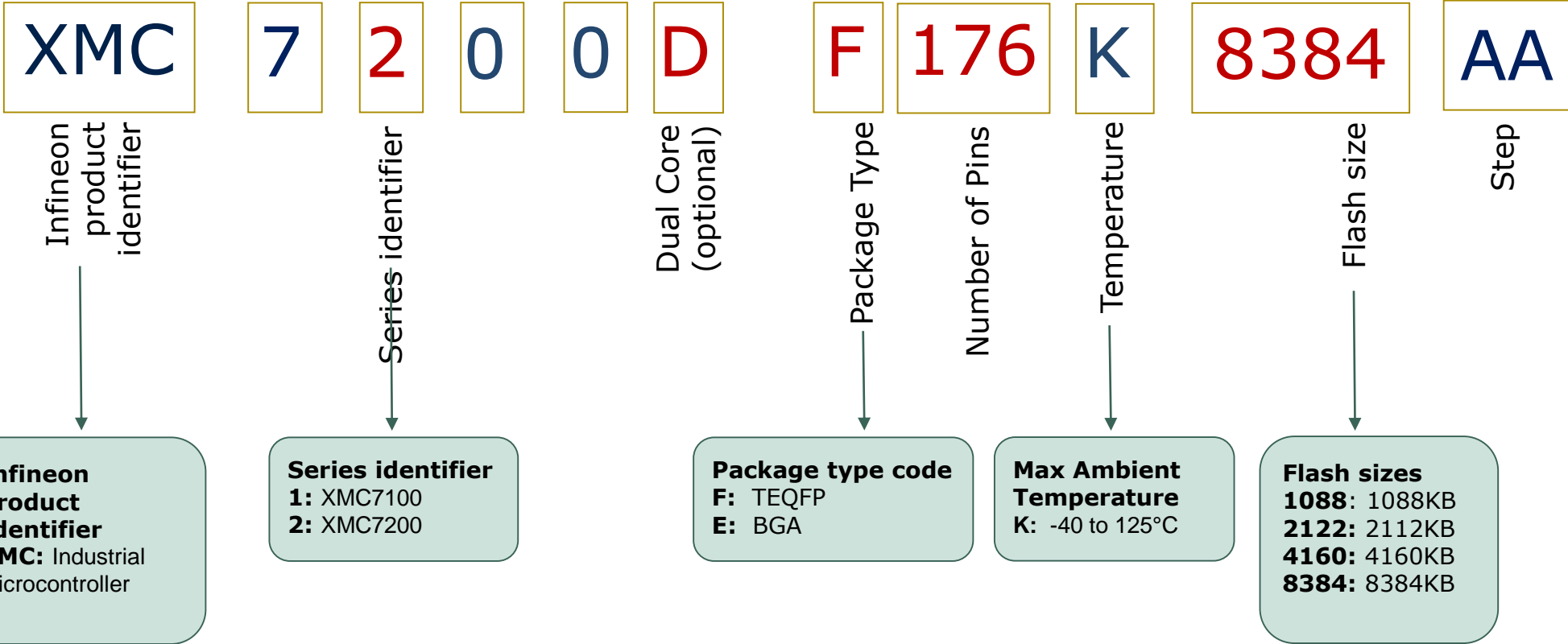
Key Features

- Dual 350-MHz: more robust device performance for task distribution
- Up to 8MB high Flash memory footprint and 1024 KB SRAM
- 3x 12-bit ADCs with sampling rates of up to 1 MSPS
- Flexible and powerful TCPWM timers
- External memory - Single, dual, quad, octal SPI or HYPERBUS interface
- Up to 125°C ext Temperature range

Target Applications

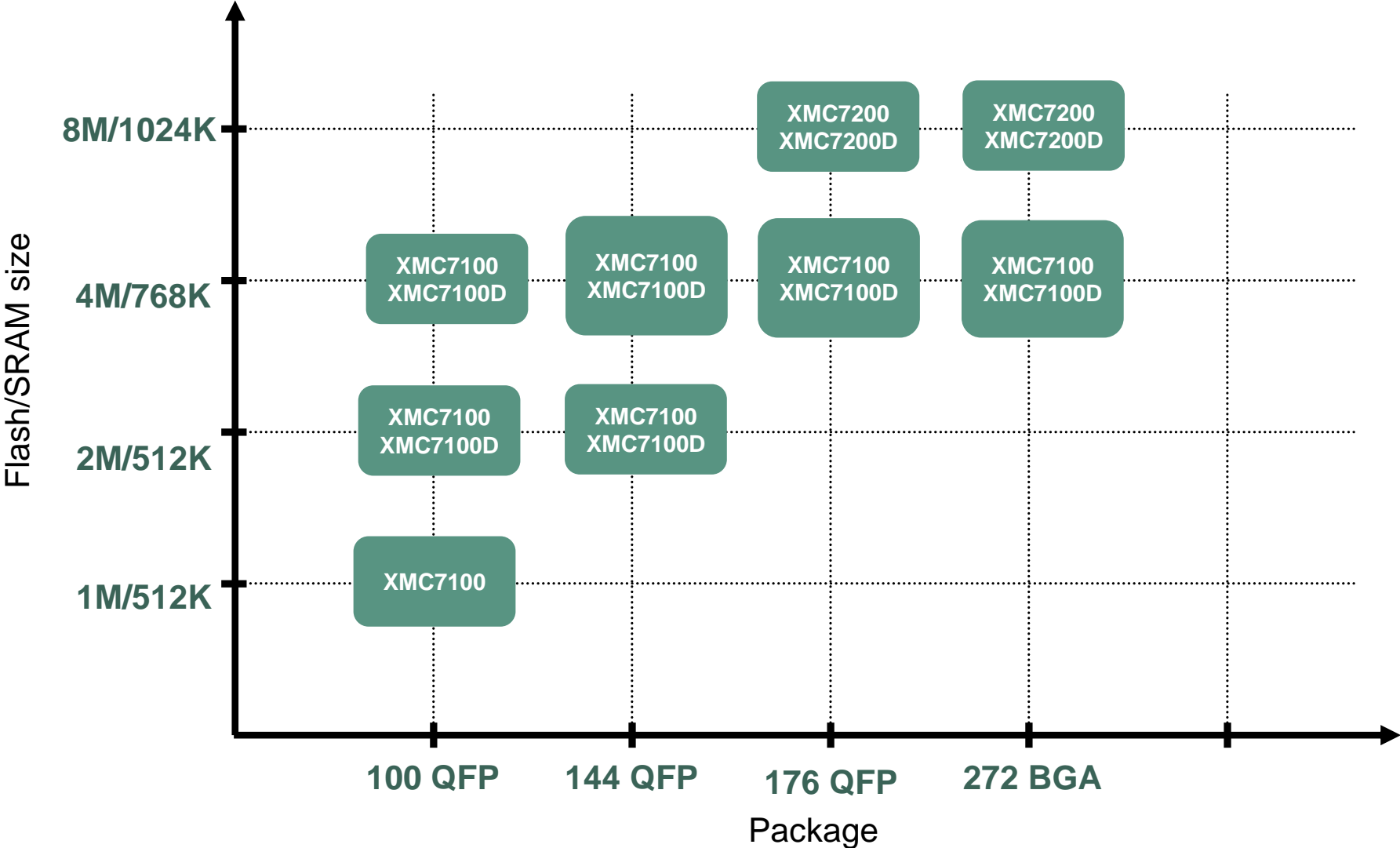
- Mobile robots (AGV, AMR)
- Industrial robots
- Service robots
- Multicopters and drones
- Cobots (collaborative robots)

XMC7000 Part number coding



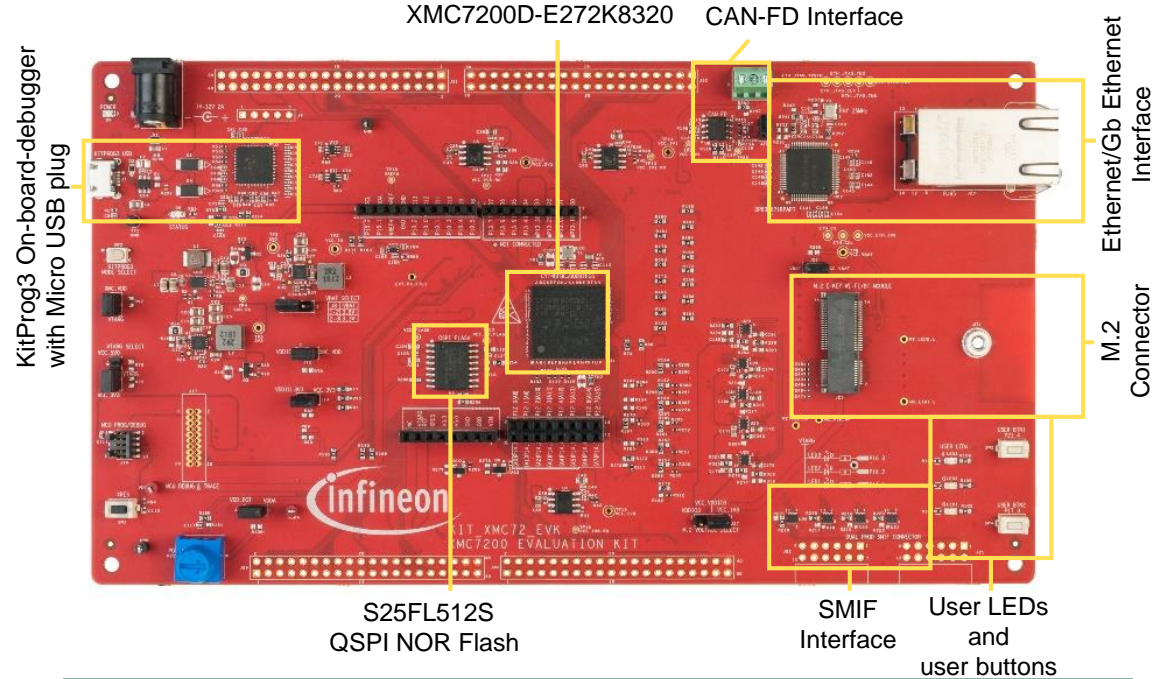
Available part numbers
XMC7100-F100K1088AA
XMC7100-F100K2112AA
XMC7100-F100K4160AA
XMC7100D-F100K2112AA
XMC7100D-F100K4160AA
XMC7100-F144K2112AA
XMC7100-F144K4160AA
XMC7100D-F144K2112AA
XMC7100D-F144K4160AA
XMC7100-F176K4160AA
XMC7100D-F176K4160AA
XMC7100-E272K4160AA
XMC7100D-E272K4160AA
XMC7200-F176K8384AA
XMC7200D-F176K8384AA
XMC7200-E272K8384AA
XMC7200D-E272K8384AA

XMC7000 portfolio matrix



The XMC7200 Evaluation Kit: quick testing and prototyping

XMC7200 Evaluation Kit



Features

- > Evaluation board for XMC7200D-E272K8384 dual-core ARM® Cortex-M7 device running up to 350MHz
- > Full system approach on the board, featuring Gigabit Ethernet PHY and connector, CAN-FD transceiver, NOR flash memories, user LEDs, buttons and potentiometers
- > Modular system enablement through Arduino and M.2 connectors

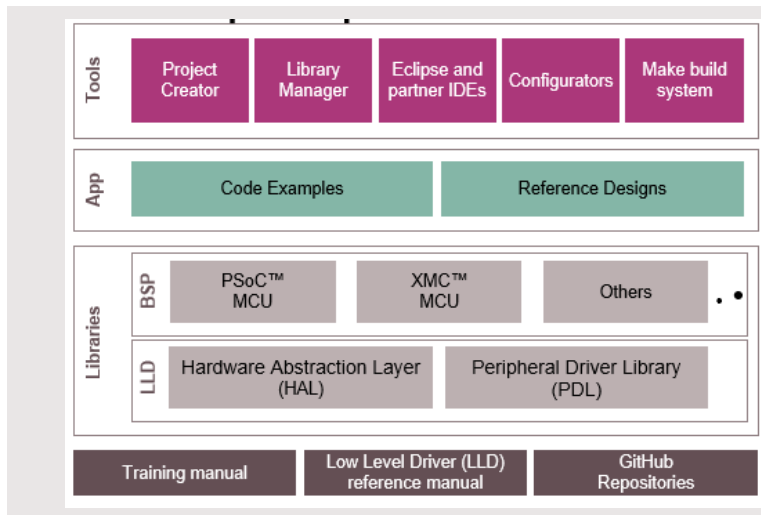
Customer Benefits

- > Out-of-the box experience with on-board-debugger and DC power supply provided
- > Full integration in Modus Toolbox IDE through Board Support Package (BSP)
- > Easy access and evaluation of all peripherals using code examples available in BSP
- > Arduino and M.2 ecosystem access

Applications



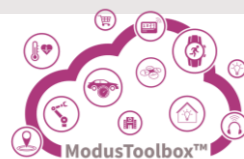
XMC7000 in ModusToolbox™ Software – Overview



- › ModusToolbox™ software is a modern, extensible development environment supporting a wide range of Infineon microcontroller devices.
- › Provided as collection of development tools, libraries, and embedded runtime assets architected to provide a flexible and comprehensive development experience.

Development Tools

The ModusToolbox™ tools package includes desktop programs that enable the creation of new embedded applications, managing software components, configuring device peripherals and middleware and embedded development tools for compiling, programming, and debugging.



Run-Time Software

The ModusToolbox™ software includes an extensive collection of GitHub-hosted repositories comprised of code examples, board support packages, middleware, and application support.



Part of your life. Part of tomorrow.