

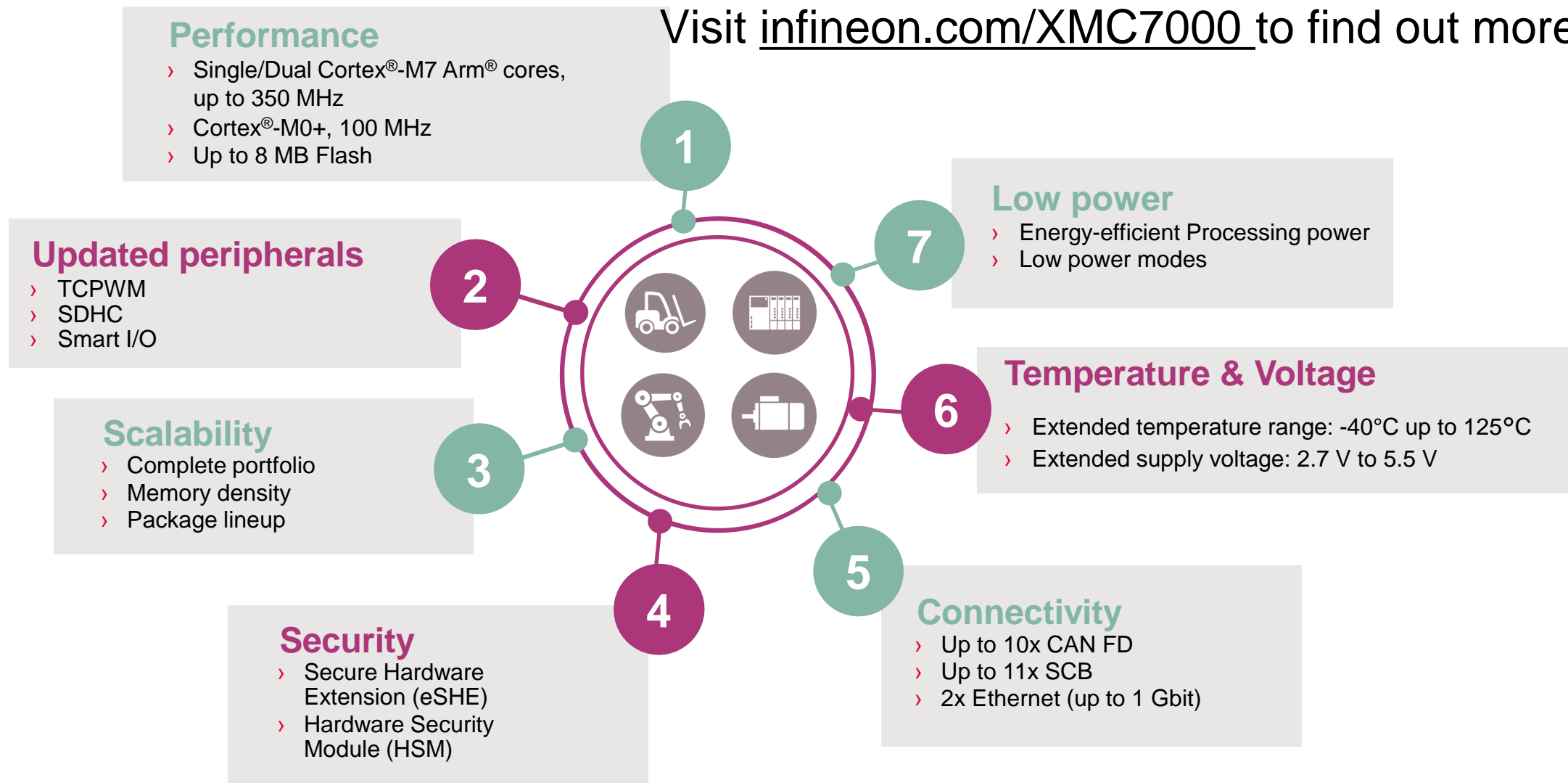
# XMC7000: Infineon's new Industrial Microcontroller based on dual Arm® Cortex®-M7

Mar 2023



# XMC7000 key features & value proposition

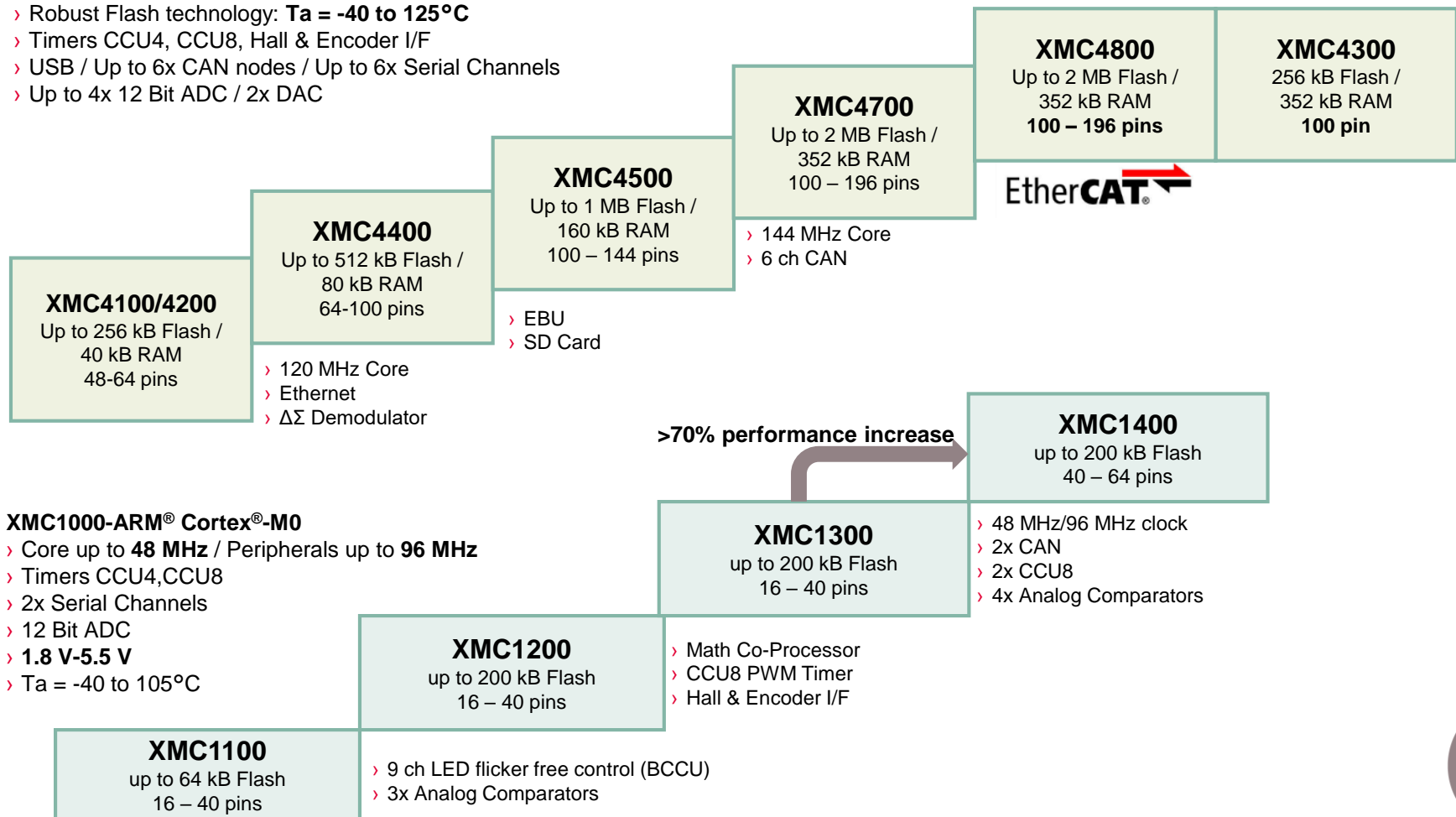
Visit [infineon.com/XMC7000](https://www.infineon.com/XMC7000) to find out more!



# 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

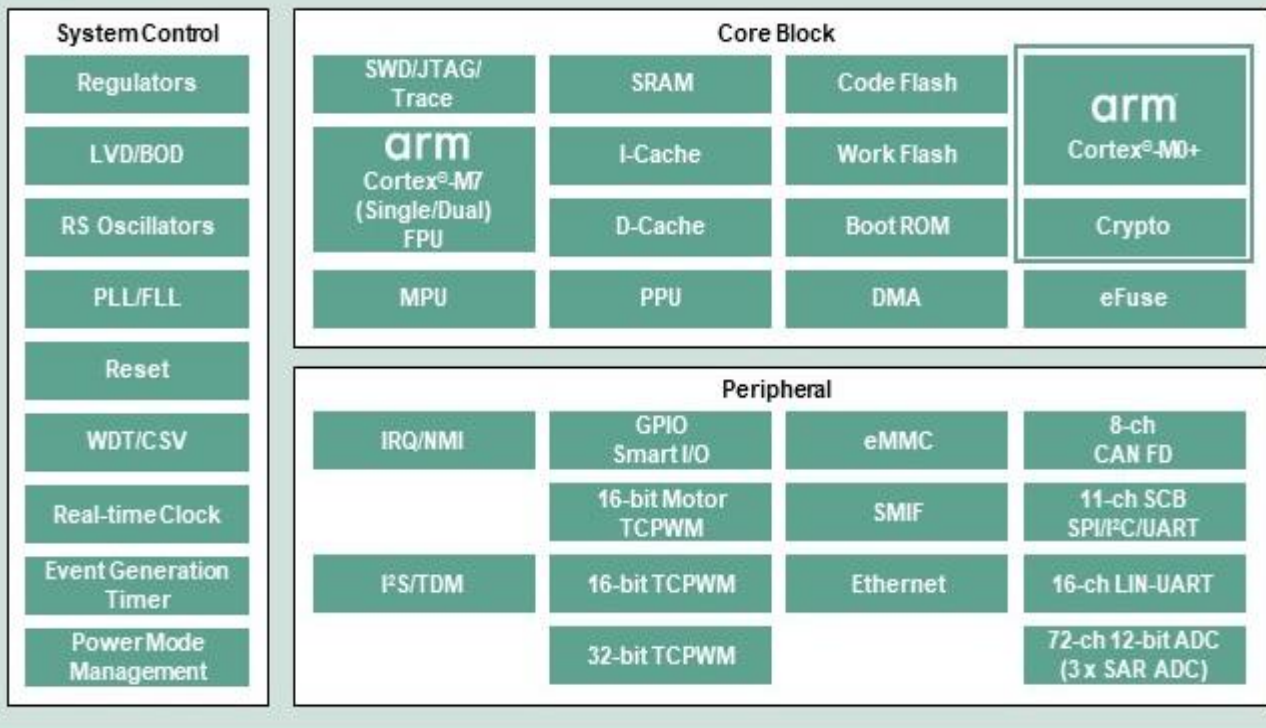
- › Core up to **48 MHz** / Peripherals up to **96 MHz**
- › Timers CCU4, CCU8
- › 2x Serial Channels
- › 12 Bit ADC
- › **1.8 V-5.5 V**
- › Ta = -40 to 105°C

- › **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

## XMC7100



## 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

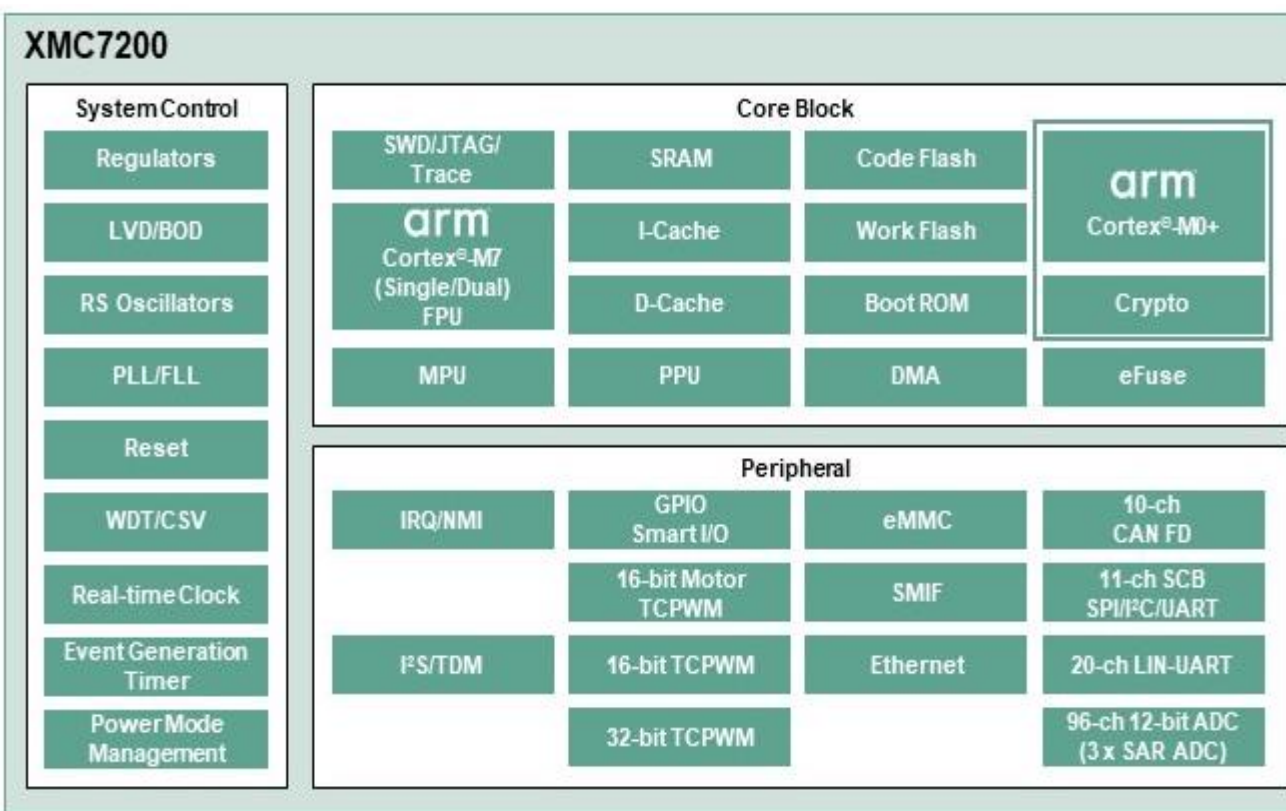


QFP-100  
QFP-144  
QFP-176



BGA-272

# 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



QFP-176



BGA-272

# Key features and benefits

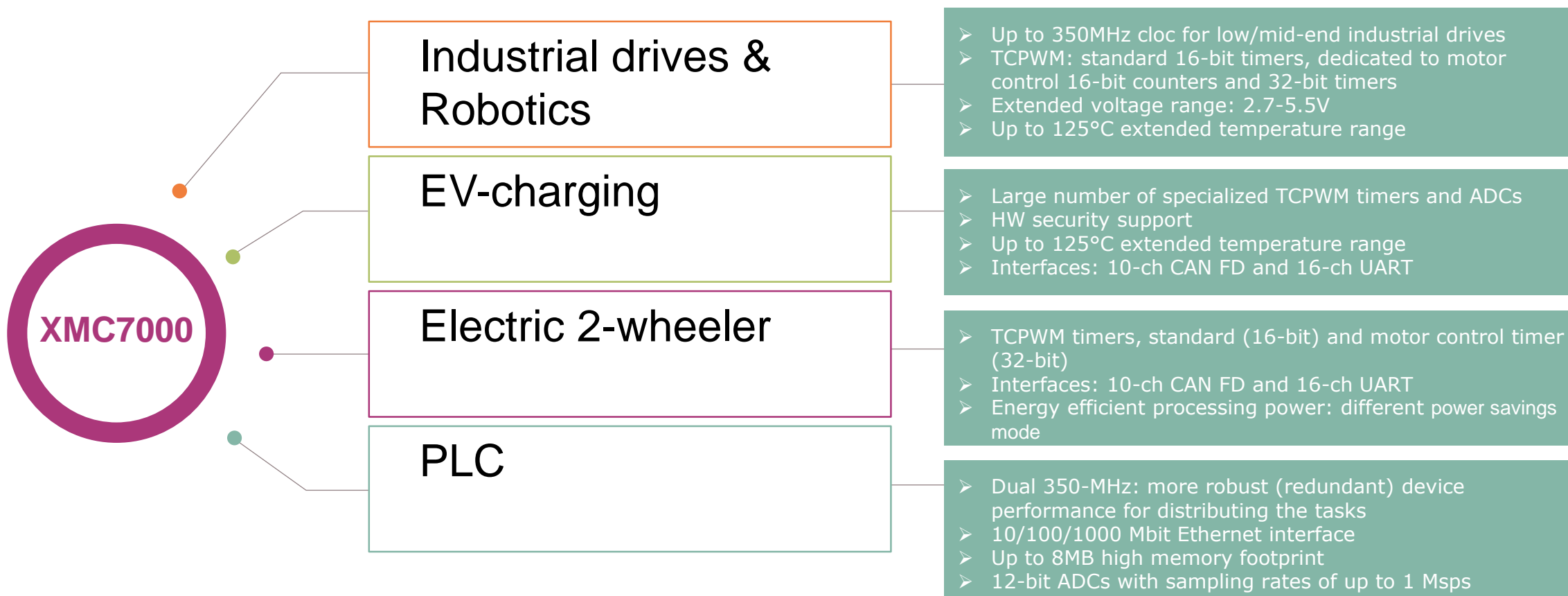


Infineon's XMC7000 at a glance: high quality grade industrial MCU platform

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"> <li>› Perfect fit for demanding industrial application use cases</li> <li>› Higher processing performance</li> <li>› Ability of task distribution</li> </ul>	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"> <li>› Optimal solution for motor control &amp; power conversion applications</li> <li>› Advanced security options</li> </ul>	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"> <li>› Low power to support electrification and digitization</li> <li>› Power saving in energy-critical applications</li> <li>› Ability to operate in high ambient environments</li> </ul>	Increased flexibility and quality
Four footprint versions available in 17 different part numbers	<ul style="list-style-type: none"> <li>› XMC7000 is easy to adapt on existing PCB</li> <li>› Different core/memory/package combinations</li> </ul>	Optimal device arrangement

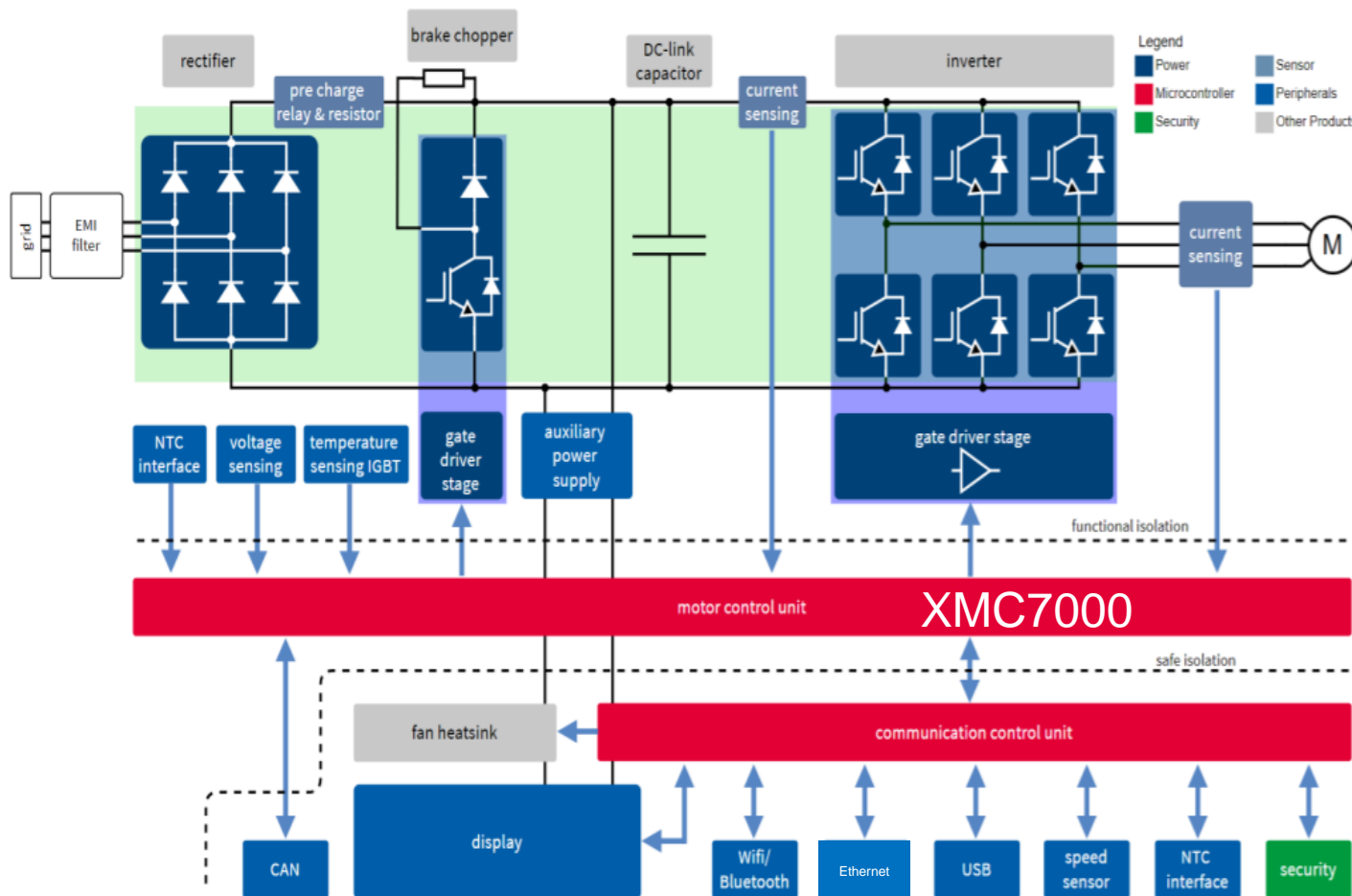


# Target applications and key features



# 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 coverted 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

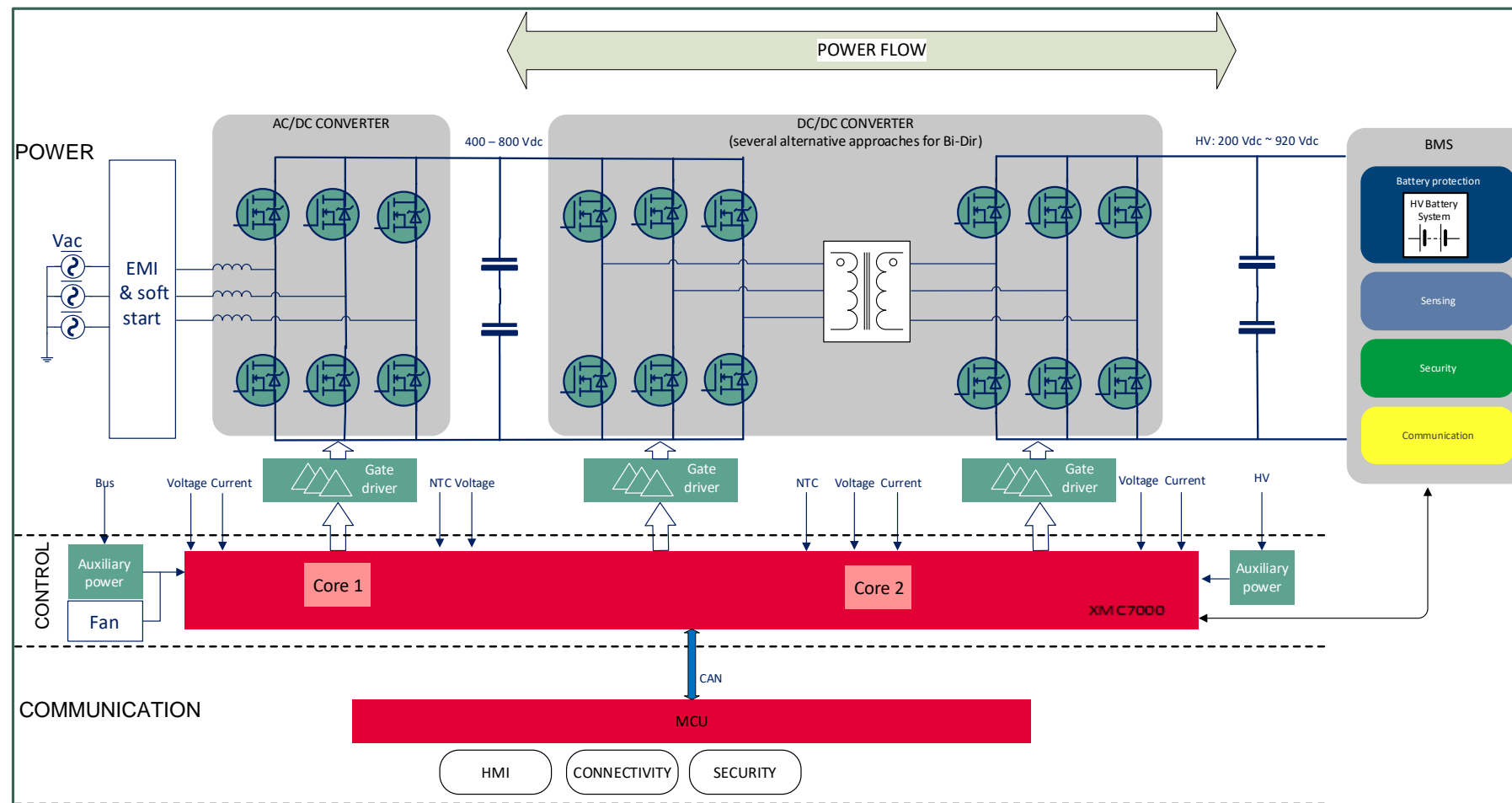
## Target Applications

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



# XMC7000- EV Charging

## Application block diagram



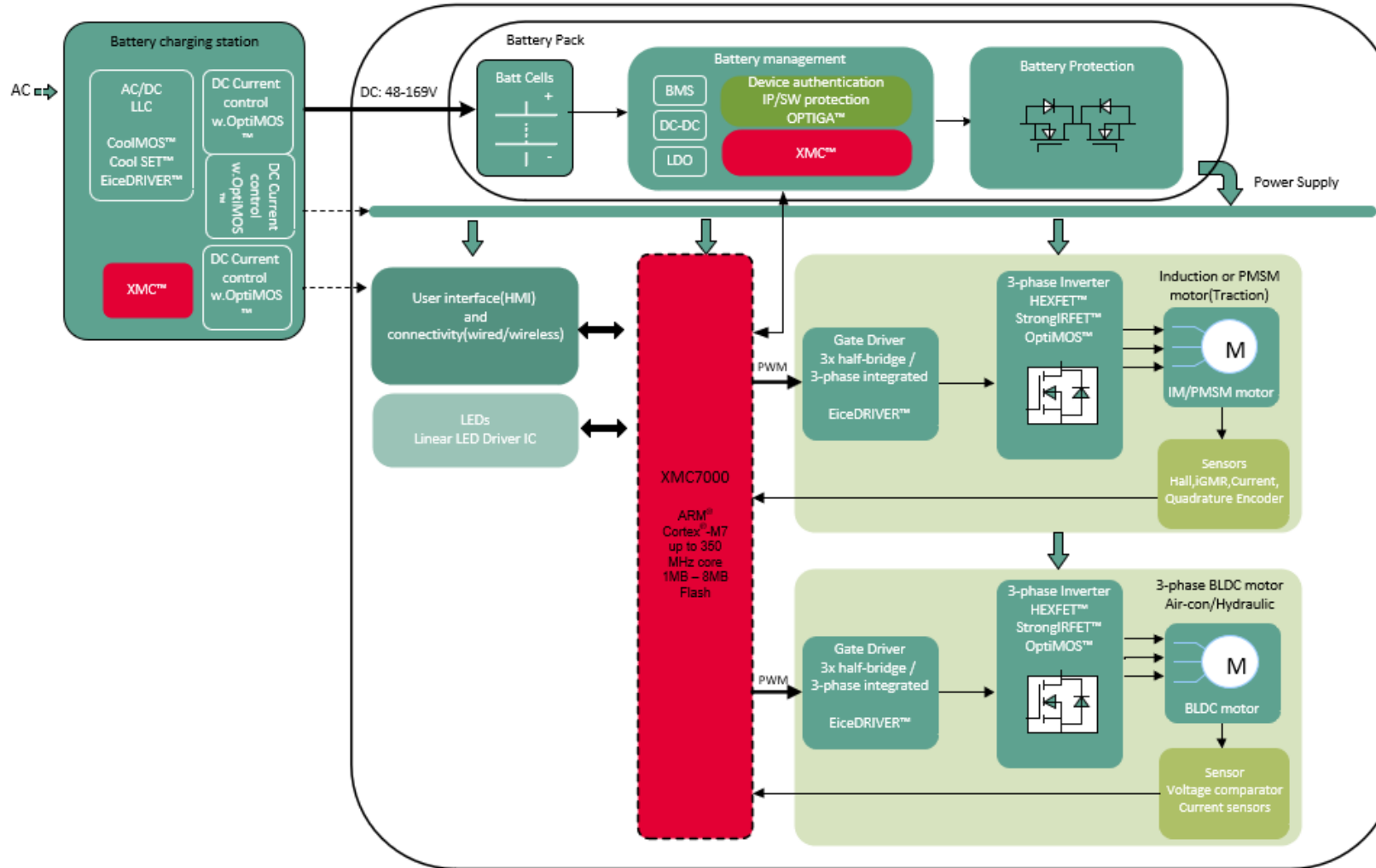
## Key features

- 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

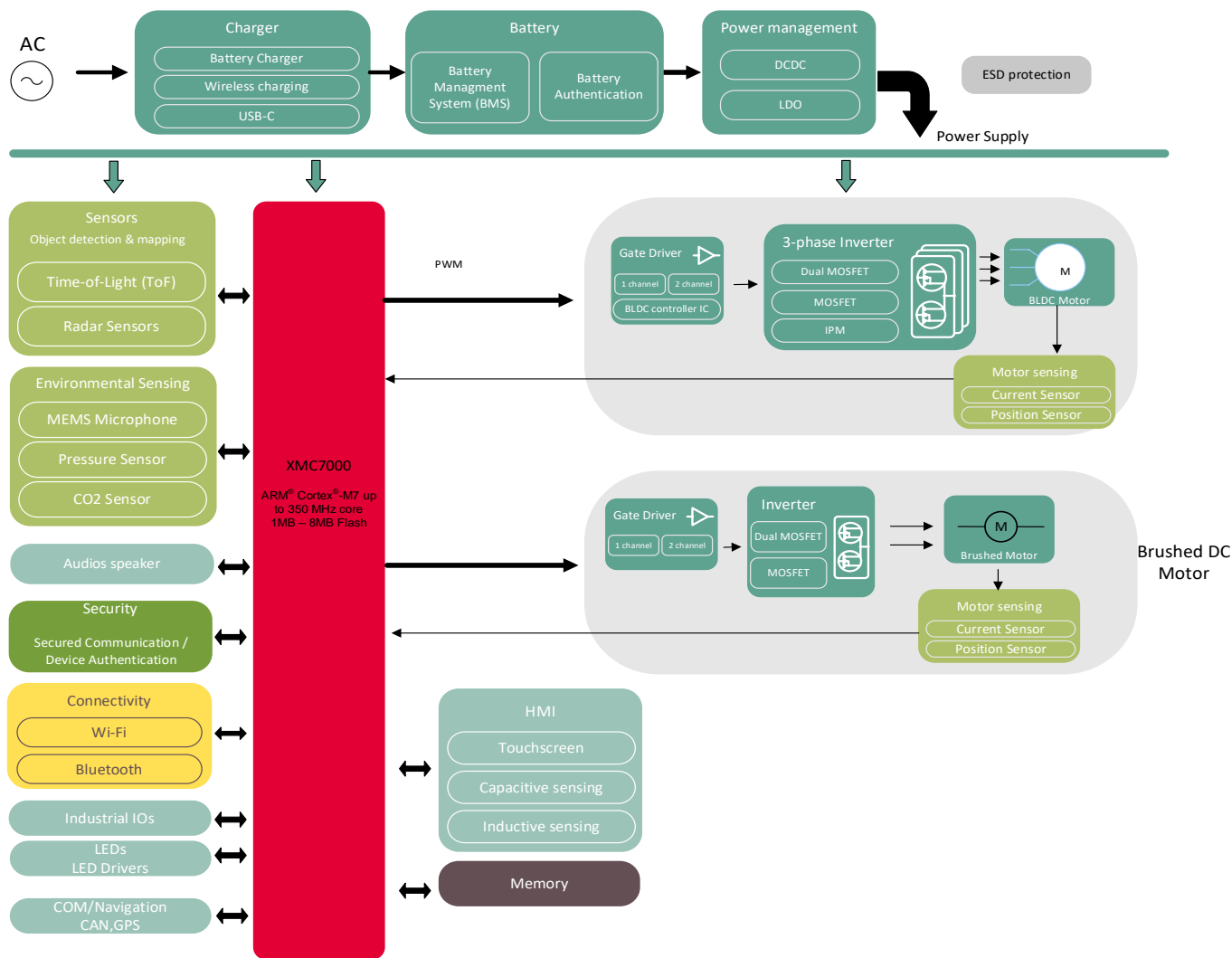
- Dual core Arm Cortex M7 with Arm Cortex M0+ for cryptographic engine
- TCPWM: standard 16-bit timers, motor control dedicated 16-bit counters and 32-bit timers
- Timer supporting Quadrature decoding
- Interfaces: 10-ch CAN FD and 16-ch UART
- 5 Smart I/O block to perform Boolean operation
- Energy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



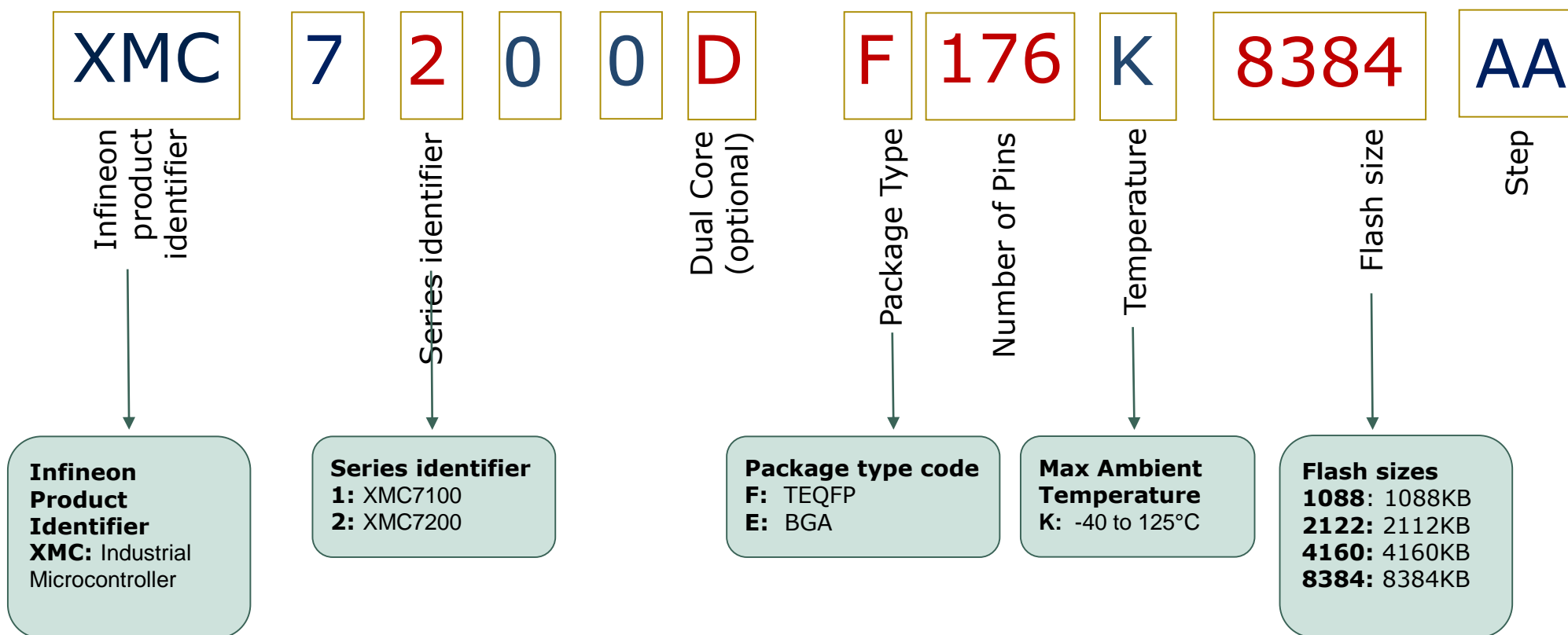
## Key Features

- 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

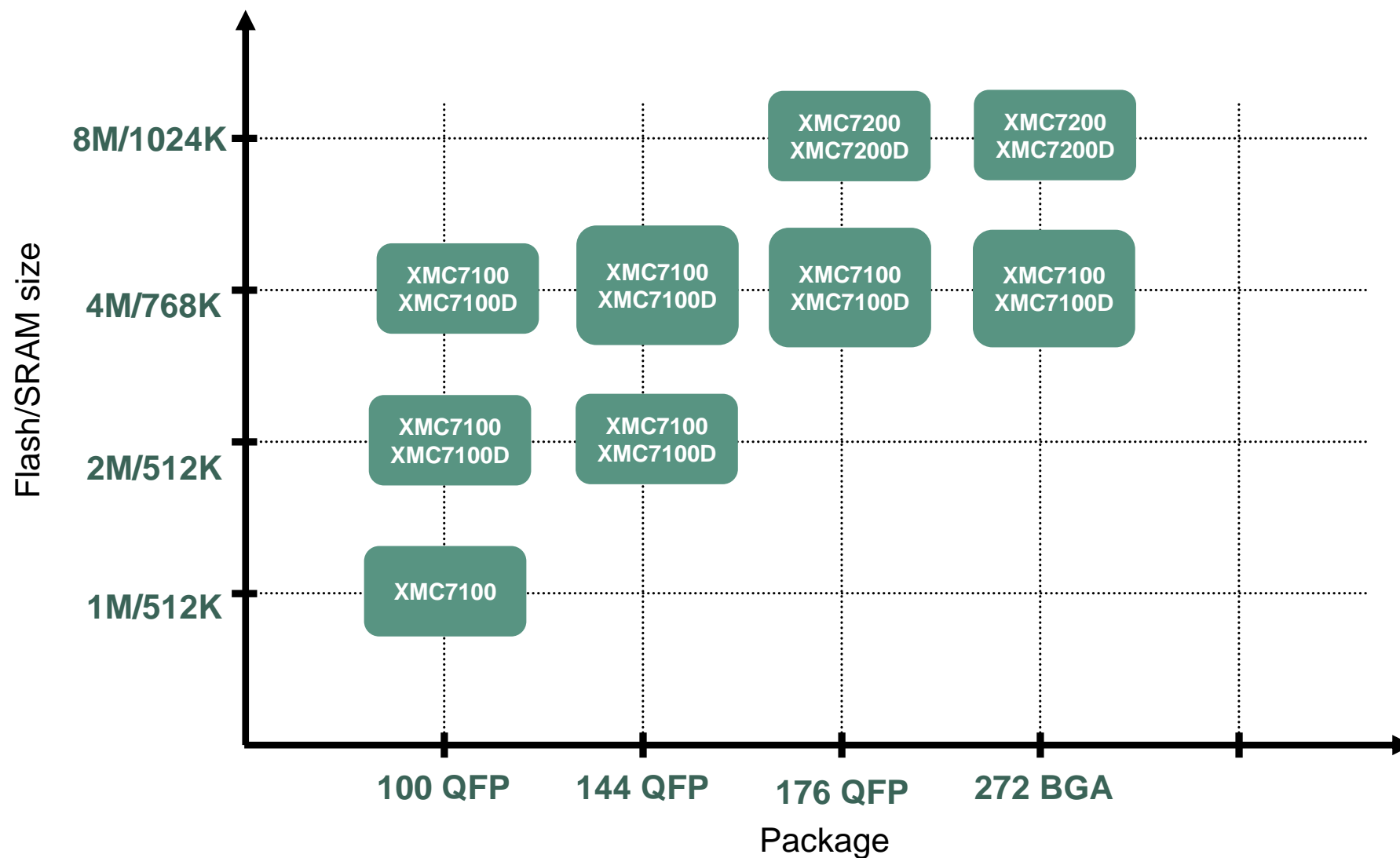
- Mobile robots (AGV, AMR)
- Industrial robots
- Service robots
- Multicopters and drones
- Cobots (collaborative robots)

# XMC7000 Part number coding



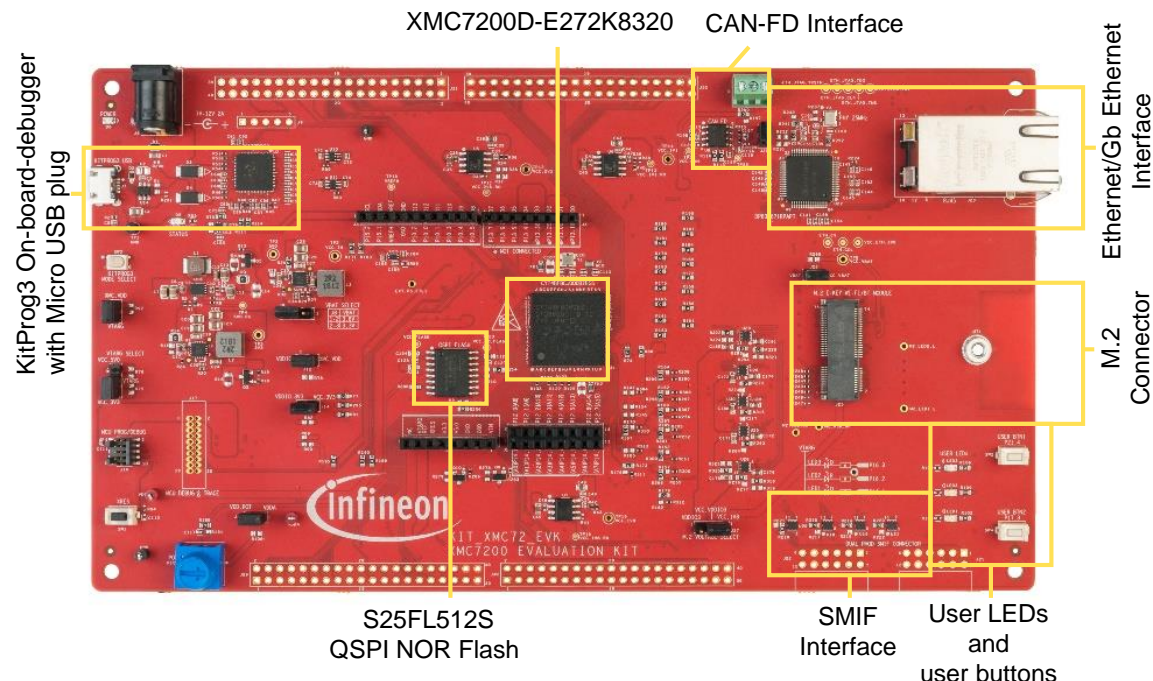
Available part numbers
XMC7100-F100K1088AA
XMC7100-F100K2112AA
XMC7100-F100K4160AA
XMC7100D-F100K2112AA
XMC7100D-F100K4160AA
XMC7100-F144K2112AA
XMC7100-F144K4160AA
XMC7100D-F144K2112AA
XMC7100D-F144K4160AA
XMC7100-F176K4160AA
XMC7100D-F176K4160AA
XMC7100-E272K4160AA
XMC7100D-E272K4160AA
XMC7200-F176K8384AA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

# XMC7000 portfolio matrix



# The XMC7200 Evaluation Kit: quick testing and prototyping

## XMC7200 Evaluation Kit



## Applications



## Features

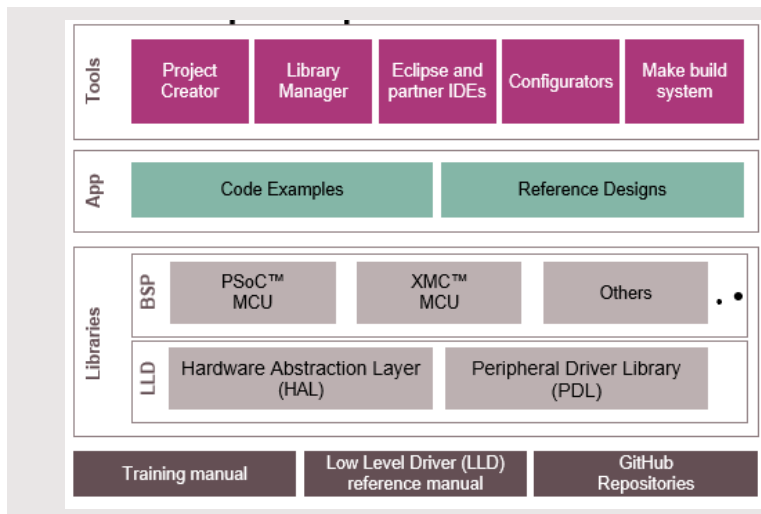
- > Evaluation board for XMC7200D-E272K8384 dual-core ARM® Cortex-M7 device running up to 350MHz
- > Full system approach on the board, featuring Gigabit Ethernet PHY and connector, CAN-FD transceiver, NOR flash memories, user LEDs, buttons and potentiometers
- > Modular system enablement through Arduino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



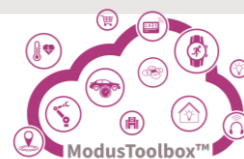
# XMC7000 in ModusToolbox™ Software – Overview



- › 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.