STM32 G Series for Motor Control

STM32G4 Series
Rich Analog Peripherals & High-Performance

STM32G0 Series
Efficient, Robust for
Cost Sensitive Applications

STM32 Motor Control SDK
Support for STM32 G0 & G4 Series

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STM32G4 Series MCUs

STM32G4 Series supports a rich analog peripheral set combined with high-performance

Performance

- Arm® Cortex®-M4 at 170 MHz
- 213 DMIPS and 550 CoreMark® results
- Better dynamic power consumption (163µA/MHz)
- ART Accelerator™ (dynamic cache)
- Mathematical accelerators
- CCM-SRAM Routine Booster (static cache)

Rich Integrated Analog and Digital

- Op-Amps (Built-in gain), DACs, Comparators
- 12-bit ADCs 4Msps with hardware oversampling
- CAN-FD (flexible data rate – 8Msps bit rate)
- High resolution timer (184 ps)
- USB type-C Power Delivery3.0
- 1% RC accuracy [-5°..90°C], 2% full T° range

Safety and security focus

- Dual Bank Flash with ECC (error code correction)
- Securable Memory Area
- Hardware encryption AES-256
- SIL, Class-B
- SRAM with Parity bit

Secure Live Upgrade

Functional safety design packages

Complete portfolio

- Complements existing STM32F3 Series portfolio
- From -40°C up to 85 or 125°C devices
- From 32- up to 128-pin
- From 32KB to 512KB Flash

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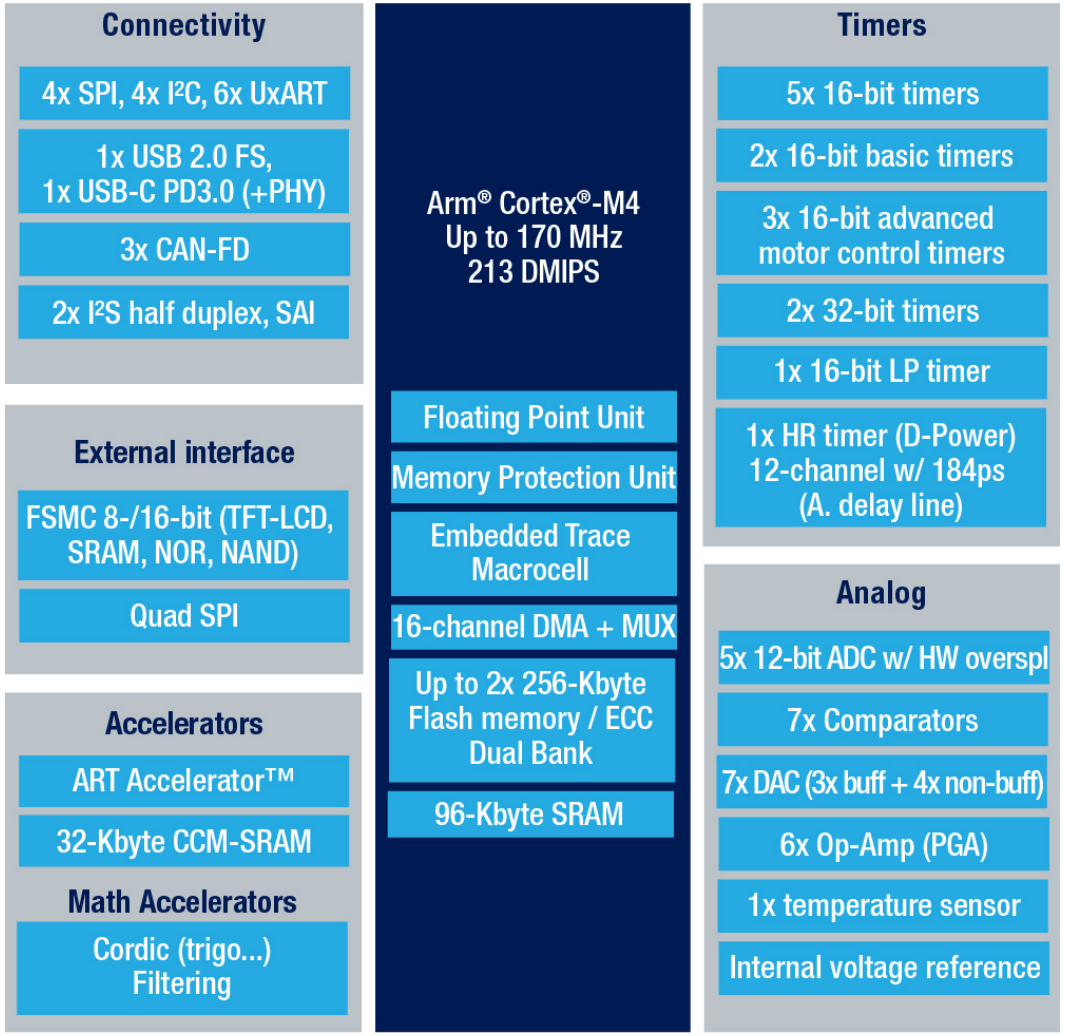
STM32G4 Block Diagram

High Resolution and Performance lines [128KB .. 512KB]

- 32-bit Arm Cortex-M4 core with FPU
- ART + CCM-SRAM + Mathematic Accelerators
- Dual Bank Flash with ECC
- SRAM with Parity bit
- +/- 1% internal clock
- 1.72 to 3.6V power supply
- Up to 125°C



- High resolution timer
- 3x Advanced Motor Control timers
- Rich Advanced Analog
- 3x CAN Flexible Data rate
- USB-C Power Delivery3.0
- Advanced Security and Safety features
- Robustness: highest level 5 / FTB/ESD - IEC 61000-4-4

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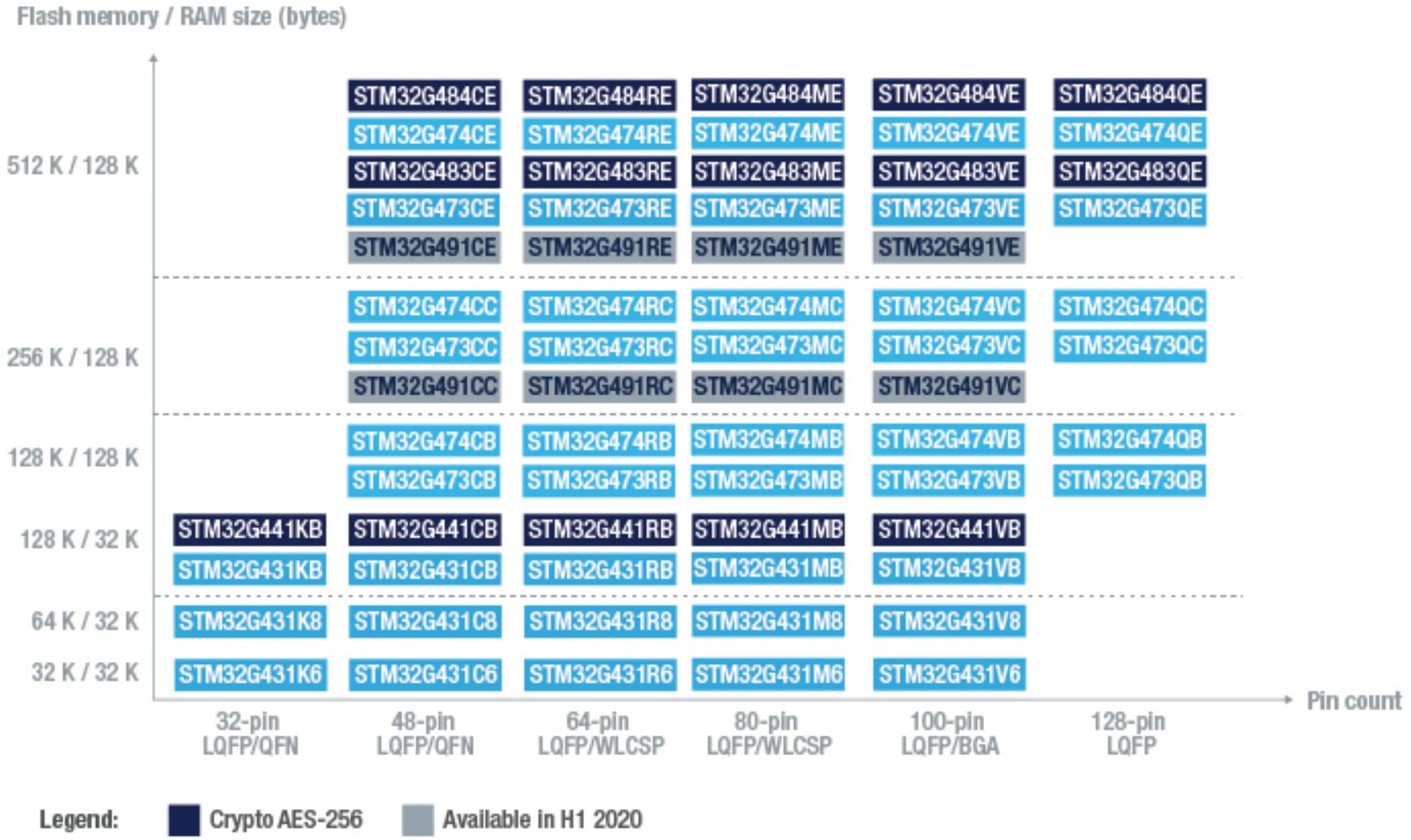
STM32G4 Series Portfolio



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STM32G0 Series MCUs

STM32G0 Series is efficient, robust and simple for more cost-sensitive applications

1

Efficient

- ARM Cortex M0+ at 64MHz
- Compact cost: maximum I/Os count
- Best RAM/Flash Ratio
- Smallest possible package down to 8-pin
- Very low power consumption (3µA in stop, <100µA/MHZ in Run)
- Accurate internal high-speed clock 1% RC
- Best optimization, down to each and every detail
- Offers the best value for money

2

Robust

- Low electromagnetic susceptibility, EMC
- Clock Monitoring and 2 Watchdogs
- Error correction on Flash
- IoT ready with embedded security
- Hardware AES-256 encryption or the new Securable Memory Area.
- Safe Firmware upgrade / Install

3

Simple

- Easy to configure thanks to the intuitive and graphicSTM32CubeMX configuration tool.
- Easy to develop based on the Hardware Abstraction Layer library (HAL) or the low-layer library (LL) allowing maximum re-use and faster time-to-market.

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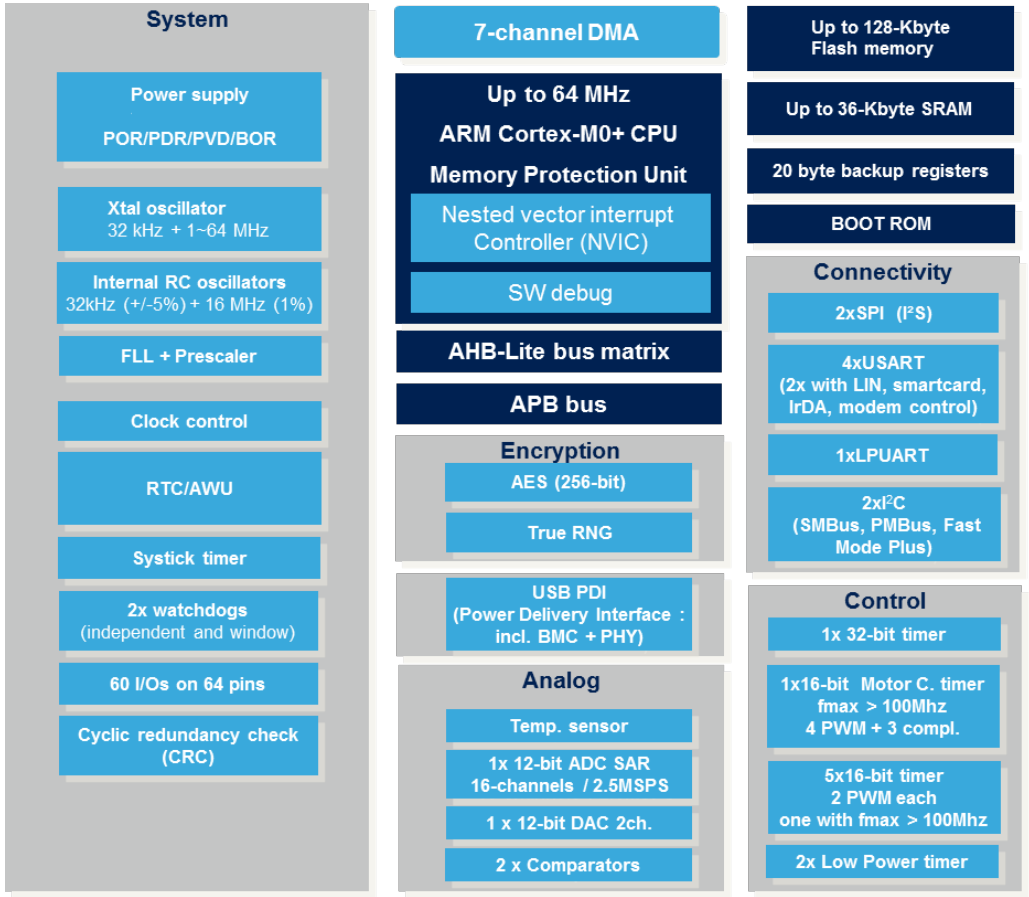
STM32G0 BLOCK DIAGRAM

Advanced features and solutions

- Arm 32-bit Cortex-M0+ core
- 1.7 to 3.6V power supply
- RAM maximization
- 1% internal clock
- Direct Memory Access (DMA)
- Communication peripherals
- USB-C Power Delivery



- Timers up to 2xfcpu resolution
- Real Time Clock
- I/O ports maximization
- ADC 12-bit Ultra-fast
- DAC 12-bit
- Comparators
- Safety features
- Advanced Security features

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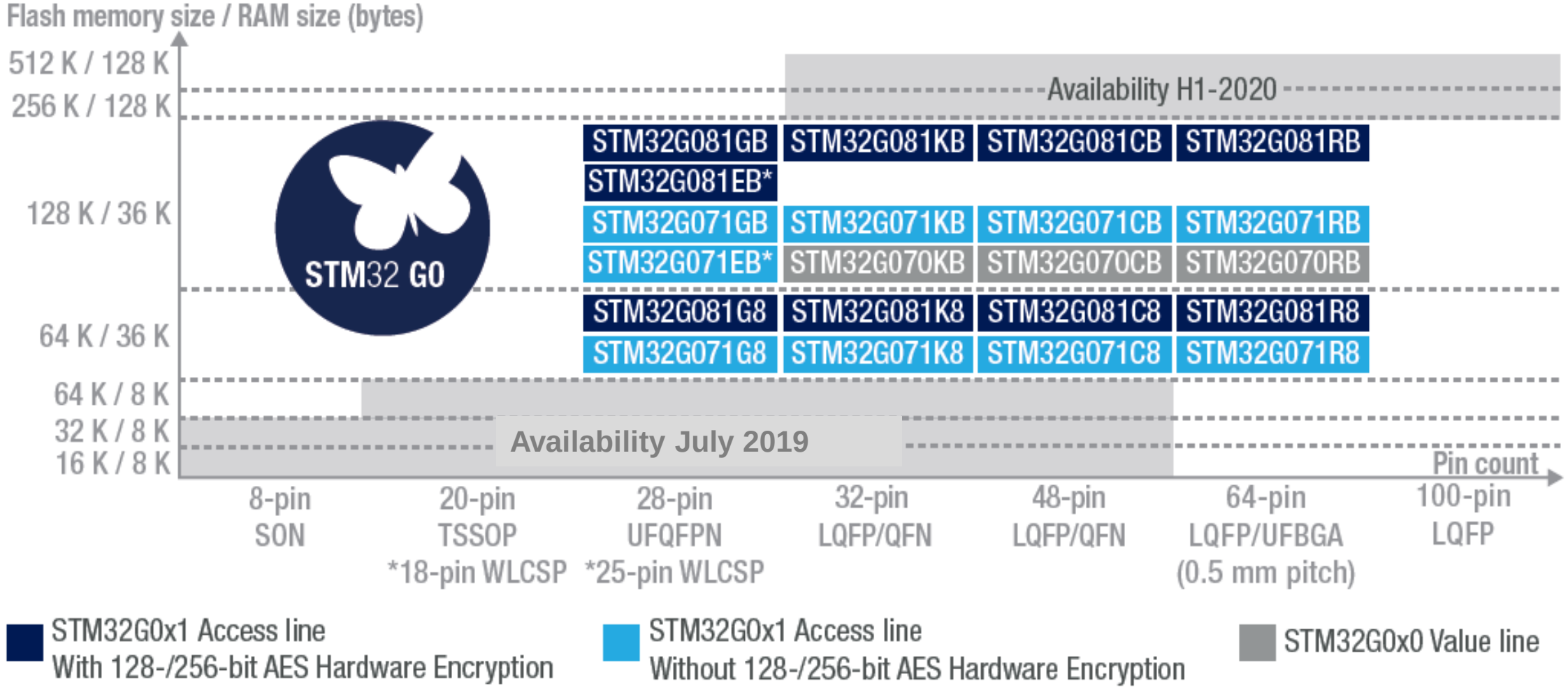
STM32G0 Series Portfolio



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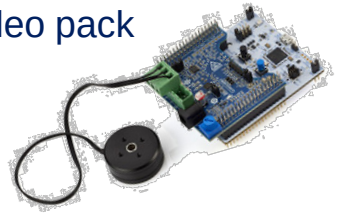
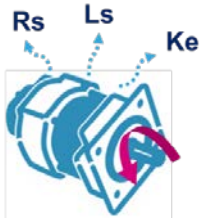
Motor Control SDK

STM32 Motor Control SDK now includes support for both the STM32 G0 and G4 Series

- **Complete ecosystem** (HW boards, SW Development Kit (SDK), docs and trainings)
  - X-CUBE-MCSDK (v5.4)
    - Motor Control FW library based on STM32Cube HAL and LL
    - Motor control workbench: Graphical configurator of the motor control library linked with STM32CubeMx
  - P-NUCLEO-IHM03: Motor Control Nucleo pack
    - NUCLEO-G431RB Nucleo-64
    - X-NUCLEO-IHM16M1 motor driver expansion board
    - Low Voltage motor



- **State of the art algorithms** (FOC, 6-step, sensorless…)
- **Motor Profiler**: Plug and spin your motor within less than one minute



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