

Key Features and Benefits

1. Ultimate endpoint AI performance

The highest performing processor based on Arm Helium technology with unprecedented scalar, DSP, and ML performance for Cortex-M

2. Enhanced embedded security

In addition to Arm TrustZone technology, the new PACBTI (pointer authentication and branch target identification) extension is supported

3. Faster time-to-market

The Corstone-310 reference package offers the fastest, most secure way to incorporate Cortex-M85 into an IoT SoC

4. Simplified software development

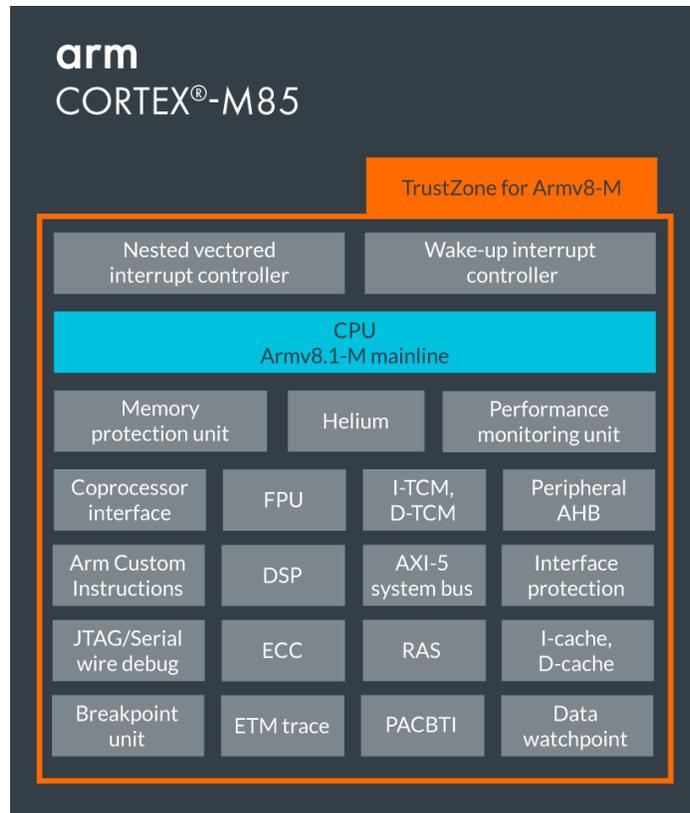
Integrated into a single developer toolchain, supported by a broad ecosystem of software, tools, libraries, and resources



Overview

The Arm Cortex-M85 processor unlocks IoT solutions based on Cortex-M that require the highest compute performance and DSP or ML capabilities. Delivering over 6 CoreMark/MHz, Cortex-M85 enables demanding use cases to be realized on a single, simple-to-program, Cortex-M processor. Cortex-M hallmarks such as determinism, short interrupt response time, and state-of-the-art low-power management support are uncompromised on Cortex-M85.

Learn more at developer.arm.com/Processors/Cortex-M85



Specifications

Instruction Set Architecture	Armv8.1-M Mainline
TrustZone for Armv8-M	Yes
Helium (M-Profile Vector Extension)	Yes (option)
PACBTI Extension	Yes (option)
Floating-Point Unit (FPU)	HP, SP, DP (option)
Digital Signal Processing (DSP) Extension	Yes
Hardware Divide	Yes
Arm Custom Instructions	Yes (available in 2022)
Coprocessor Interface	Yes (option)
DMIPS/MHz*	3.13
CoreMark/MHz*	6.28
Maximum # External Interrupts	480
Maximum MPU Regions	16
Main Bus	AXI (64-bit)
Instruction Cache	0-64kB
Data Cache	0-64kB
Instruction TCM	0-16MB
Data TCM	0-16MB
Dual Core Lock-Step (DCLS) Configuration	Yes (available in 2022)
Common Criteria Certification	No
Reference Package/System Example	Corstone-310

*See product page for further information.

SP = Single-Precision

DP = Double-Precision

HP = Half-Precision

Related Products

Arm Corstone-310 reference package

Corstone-310 is the ultimate starting point for integrating the Cortex-M85 processor and Ethos-U55 microNPU into a secure SoC with the lowest risk and development cost. Corstone-310 integrates processor IP and system IP with pre-built power and clock infrastructure and system-wide TrustZone security. It is well supported by open-source software including Trusted Firmware-M (TF-M), popular RTOSes and a variety of toolchains.

Arm Ethos-U55 microNPU

Ethos-U55 is the industry's first microNPU designed for microcontroller-class devices. It is integrated with a single Cortex-M toolchain to provide exceptional performance uplift without additional software complexity. Combining Cortex-M85 with Ethos-U55 can deliver a multi-fold uplift in DSP and ML performance over previous generation Cortex-M processors.

TrustZone for Armv8-M

Arm TrustZone technology is supported in the Cortex-M85 processor, reducing the potential for software-based attacks by isolating the critical information from the rest of the application.

CoreLink DMA-350

The Arm CoreLink DMA-350 direct memory access (DMA) controller offloads memory movement tasks from the CPU to improve system performance and energy-efficiency. This DMA controller pairs well with the Cortex-M85 processor in endpoint AI systems to populate the tightly coupled memory (TCM) with data efficiently for ML and signal processing.



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