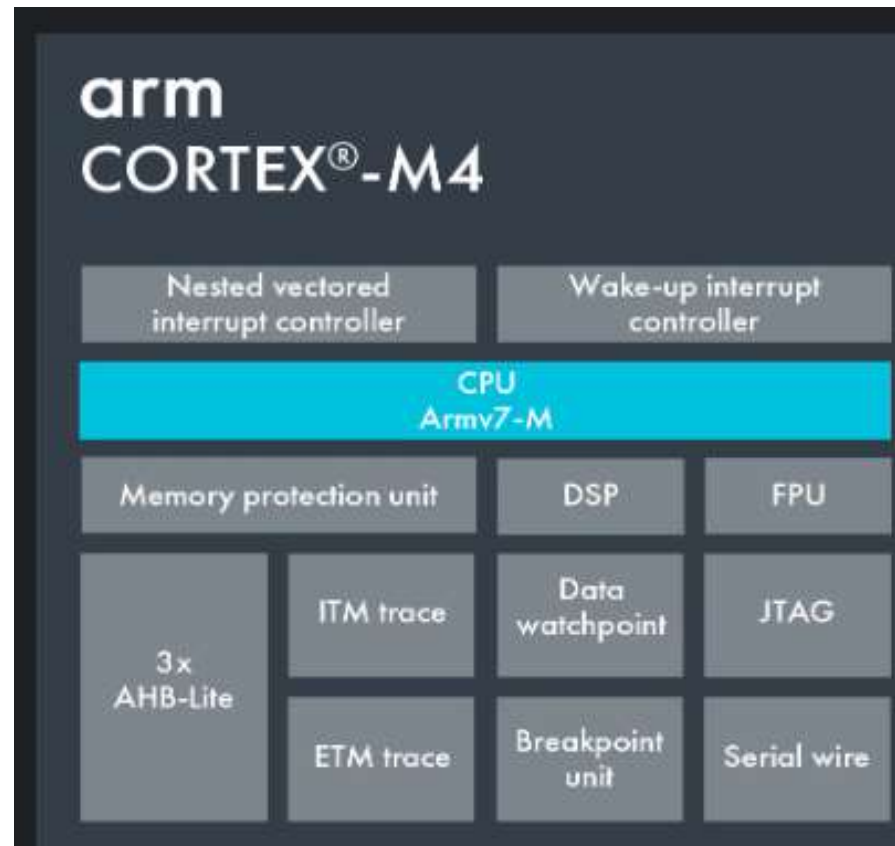


ARM Cortex-M4



ARM Cortex-M4



ARM Cortex-M4

- Highly efficient embedded processor
- Signal processing capabilities
- Low power, low cost, ease of use
- Applications – motor control, automotive, power management, embedded audio and industrial automation markets

Architecture

- Armv7E-M
- Safety – safety packages available
- Bus Interface –
 - Harvard bus architecture (3 X AMBA 3)
 - Private peripheral bus for debug components
 - Based on AMBA 3 APB protocol
- ISA Support – Thumb or Thumb 2
 - Featuring hardware divide
 - Single-cycle multiply
 - Bit field processing
 - DSP extension
- Pipeline – 3 stage

Architecture

- DSP and SIMD instructions
- Floating point unit – optional FPU, IEEE754 compliant
- Memory protection – optional memory protection unit for process isolation
- Bit manipulation – Integrated bit field processing instructions, Bus level bit banding
- Interrupts – Integrated nested vectored interrupt controller supporting 1-240 physical interrupts, and a Non-Maskable Interrupt, Number of priority levels configurable from 8 to 256
- Wake up interrupt controller – optional WIC for waking up the processor from state retention power gating or when all clocks are stopped

Architecture

- Low Power Support –
 - Architecturally defined sleep and deep sleep modes, Integrated WFI, WFE instructions, and sleep on exit capability
 - sleep and deep sleep indication signals
 - optional retentional mode with ARM power management kit
- SysTick Timer – 24 bit
- Debug –
 - optional JTAG and Serial wire debug ports
 - Upto 8 breakpoints, 4 watchpoints
- Trace – Optional Instruction Trace, Selective Data Trace, Instrumentation Trace

ARM Virtual Hardware(AVH)

- Simulation Model – ARM Virtual Hardware(AVH)
- AVH delivers ready to use models of ARM-based processors, systems and third party hardware
- AVH runs as an application in the cloud to simplify, automate, accelerate, and cost-reduce maintenance and development process
- This enables fast prototyping, build and deploy for new or updated application

ARM Virtual Hardware(AVH)

- Key features

- Develop and test completely free of physical hardware
- Verify functional correctness with automated algorithm testing
- Continuous integration with popular cloud frameworks
- Seamless software transfer from model to target hardware