STM32H7x3 MCUs
High-performance line

High-performance MCUs with ARM® Cortex®-M7 core

The STM32H743/753 lines offer the performance of the Cortex-M7 core running up to 400 MHz. Combined with a smart architecture based on a multi-power domain, developers can always use the best configuration to optimize data transfers and CPU load while staying gentle on the power budget when needed.

The embedded hardware accelerators and the extensive digital and analog peripheral set make the STM32H743/753 very well suited for industrial applications where fast reaction time is key or HMI applications where the graphic and audio support will allow an unprecedented user experience with an embedded microcontroller.

CORE, MEMORIES AND ACCELERATION

- Cortex-M7 core @ 400 MHz
- 16KB+16KB I/D L1 Cache
- Double-precision FPU
- 4 x DMA controllers
- Up to 2MB Flash / 1MB RAM

CONNECTIVITY

- 2 x USB2.0 OTG FS/HS
- USART, UART, SPI, and I²C
- 2 x CAN (1 x FD and 1 x TT/FD)
- Ethernet MAC
- FMC and QuadSPI
- 2 x SDMMC

AUDIO

- 3 x I²S + audio PLL
- 4 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

GRAPHICS

- LCD TFT controller
- JPEG Codec
- Chrom-ART Accelerator™

OTHER

- Optional crypto (*)
- DFSDM
- 16- and 32-bit timers
- 3 x 14-bit ADC (2 MSPS)
- Analog (comp, AOP)
- Power supply 1.7 to 3.6 V

SECURITY

Authenticate and protect your software IP while performing initial programming or firmware upgrades in the field (*)

Note:
(*) Available at production launch in Q2 of 2017

STM32H743xI BLOCK DIAGRAM

System
- Main, USB and backup regulators POR/PDR/PVD/BOR
- Multi-power domains
- Xtal oscillators 32 kHz + 4 ~48 MHz
- Internal RC oscillators 32 kHz + 4, 48 & 64 MHz
- 3x PLL
- Clock control
- RTC/AWU
- 1x SysTick timer
- 2x watchdogs (independent and window)
- 82/114/140/168 I/Os
- Cyclic redundancy check (CRC)
- Unique ID

Control
- 2x 16-bit motor control PWM synchronized AC timer
- 10x 16-bit timers 2x 32-bit timers
- 5x Low-power timer
- 16-bit High res. timer

- Chrom-ART Accelerator™
- JPEG Codec Acceleration
- Cache I/D 16+16 Kbytes

ARM Cortex-M7 400 MHz

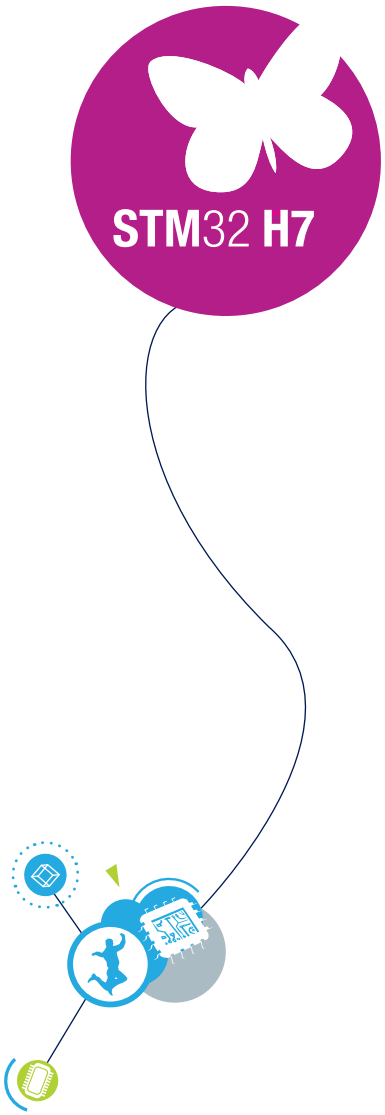
- Floating point unit (DP-FPU)
- Nested vector interrupt controller (NVIC)
- JTAG/SW debug/ETM
- Memory Protection Unit (MPU)
- ROP, PC-ROP anti-tamper

- AXI and Multi-AHB bus matrix
- 4x DMA
- True random number generator (RNG)

- 2-Mbyte dual-bank Flash memory
- 1-Mbyte SRAM incl. 64-Kbyte ITCM RAM
- FMC/SRAM/NOR/NAND/SDRAM
- Dual Quad-SPI
- 1024-byte + 4-Kbyte backup SRAM

Connectivity
- TFT LCD controller
- HDMI-CEC
- 6x SPI, 3x I²S, 4x I²C
- Camera interface
- Ethernet MAC 10/100 with IEEE 1588
- MDIO slave
- 2x FDCAN (Flexible Data rate)
- 1x USB 2.0 OTG FS/HS
- 1x USB 2.0 OTG FS
- 2x SDMMC
- 4x USART + 4 UART LIN, smartcard, IrDA, modem control
- 1x Low-power UART
- 4x SAI (Serial audio interface)
- SPDIF input x4
- DFSDM (8 inputs/4 filters)
- SWP (Single Wire Protocol)

Analog
- 2x 12-bit, 2-channel DACs
- 3x 14-bit ADC 20 channels/up to 2 MSPS
- Temperature sensor
- 2x COMP
- 2x OpAmp



STM32H7 PORTFOLIO

Flash memory size / RAM size (bytes)

	100-pin LQFP	144-pin LQFP	176-pin LQFP UFBGA (0.65 mm pitch)	208-pin LQFP	240-pin TFBGA (0.65 mm pitch)
2 M / 1 M	STM32H753VI STM32H743VI	STM32H753ZI STM32H743ZI	STM32H753II STM32H743II	STM32H753BI STM32H743BI	STM32H753XI STM32H743XI
1 M / 1 M	STM32H743VG	STM32H743ZG	STM32H743IG	STM32H743BG	STM32H743XG

Pin count

Legend:

- without HW crypto/hash — Samples available - Full production in Q2-2017
- without HW crypto/hash — Full production in Q2-2017
- with HW crypto/hash — Full production in Q2-2017

life.augmented