

STM32F7 series

ARM[®] Cortex[®]-M7 powered

Releasing your creativity





STM32[®] high performance

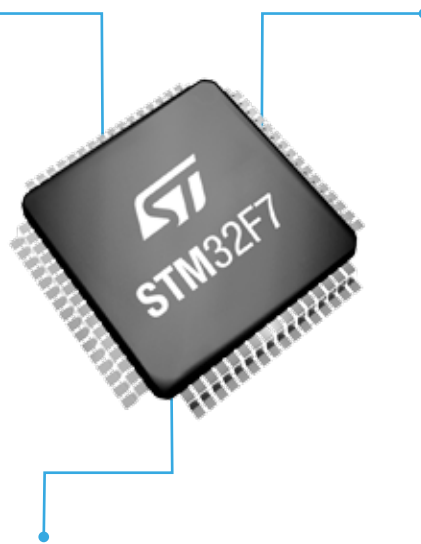
Very high performance 32-bit MCU with DSP and FPU

The STM32F7 with its ARM[®] Cortex[®]-M7 core is the smartest MCU and has the best performance of the 32-bit STM32 family.

PERFORMANCE

The STM32F7 delivers 1082 CoreMark/462 DMIPS executing from embedded Flash thanks to the ST ART Accelerator[™] at 216 MHz and up to twice the DSP performance, without compromising on power efficiency. External memory can be used with no performance penalty thanks to the L1 cache (up to I/D 16KB+16KB). Fully pin-to-pin and code compatible with the STM32F4 and the STM32 ecosystem.

Benefits: Allows creation of more responsive, innovative applications, running on either on-chip or off-chip memories. Easy upgrade for existing designs based on STM32F4.



SMART ARCHITECTURE WITH NEW PERIPHERAL SET

The STM32F7 optimizes the system performance by combining brand-new peripherals around the Cortex-M7, with a superior interconnect architecture with AXI and multi AHB bus matrix, multiple DMA and the Chrom-ART Accelerator[™] hardware.

Benefits: Concurrent, high-speed data transfers between bus masters and slaves without loading the CPU.

Large SRAM with overloading architecture

- Up to 512 Kbytes including 64 Kbytes of Data TCM RAM
- 16 Kbytes of instruction TCM RAM
- 4 Kbytes of backup SRAM

Benefits: Support for large data buffers, critical real-time data routines and backup.

New peripheral sets

- Two SAI (with SPDIF output support), three I²S half-duplex and SPDIF input
Benefit: Multiple audio channel input and output support.
- 2x USB OTG with dedicated power supply
Benefit: Enables USB communication even when the MCU is powered at 1.8 V.
- Dual QuadSPI interface:
Benefit: Connect cost-effective memories with only 1, 4 or 8 data pins.

POWER EFFICIENT

- Up to 6 CoreMark/mW at 1.8 V
- 100 μ A typical in Stop mode with all SRAM saved

Benefit: Put more innovation and creativity in power-constrained applications.



LQFP100	14 x 14 x 1.4 mm
LQFP144	20 x 20 x 1.4 mm
LQFP176	24 x 24 x 1.4 mm
LQFP208	28 x 28 x 1.4 mm




UFBGA176	10 x 10 x 0.6 mm (pitch 0.65)
TFBGA216	3 x 13 x 1.2 mm (pitch 0.8)



WLCSP143	< 5.9 x 4.6 mm
WLCSP180	< 6.2 x 5.6 mm

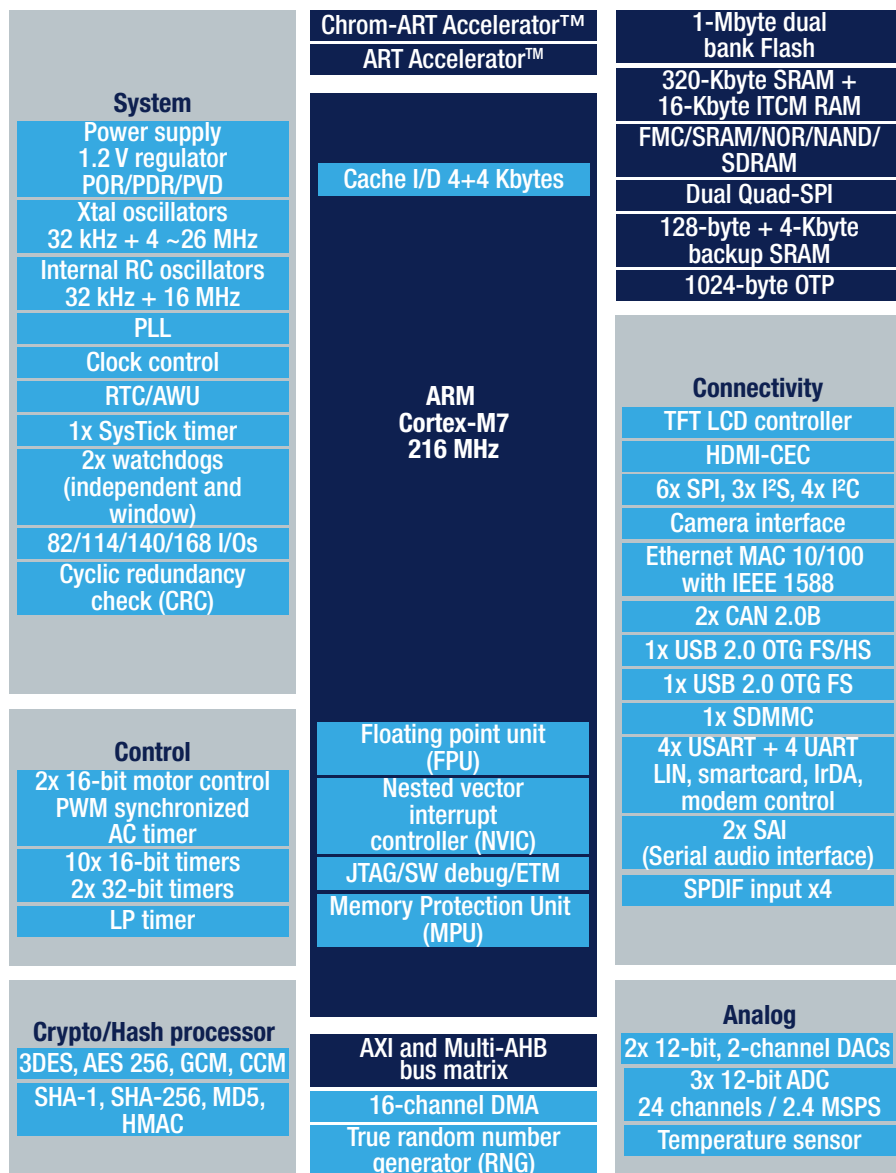
UP TO FOUR LINES FOR MORE PERFORMANCE

ARM® Cortex®-M7 – 216 MHz ACCELERATION <ul style="list-style-type: none"> • ART Accelerator™ • L1 cache: data and instruction cache • Chrom-ART Accelerator™ • Floating Point Unit CONNECTIVITY <ul style="list-style-type: none"> • 2 x USB2.0 OTG FS/HS • SDIO (x2 on F76x & F779*) • USART, UART, SPI, I²C • CAN2.0 • HDMI-CEC • Ethernet IEEE 1588 • FMC • MDIO slave (on F76x and F77x) • Camera I/F • Dual mode Quad-SPI AUDIO <ul style="list-style-type: none"> • I²S + audio PLL • 2 x SAI • 2 x 12-bit DAC • SPDIF-RX OTHERS <ul style="list-style-type: none"> • 16 and 32-bit timers • 3 x 12-bit ADC (2.4Msps) • Low voltage 1.7 to 3.6V • 85 °C and 105 °C range 	 STM32 F7 Product	F_{CPU} (MHz)	L1 cache (I/D)	FPU	Flash (bytes)	RAM (KB)	JPEG codec	CAN	DF SDM	TFT LCD controller	MIPID-DSI
	STM32F7x9*	216	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl.64K DTCM) + 16K ITCM + 4K backup	•	3	•	•	•
	STM32F7x7*	216	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl.64K DTCM) + 16K ITCM + 4K backup	•	3	•	•	•
	STM32F7x6*	216	4K+4K	Single Precision	512K to 1M	320K (incl.64K DTCM) + 16K ITCM + 4K backup		2		•	
	STM32F7x5	765	216	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl.64K DTCM) + 16K ITCM + 4K backup		3	•	
		745	216	4K+4K	Single Precision	512K to 1M	320K (incl.64K DTCM) + 16K ITCM + 4K backup		2		

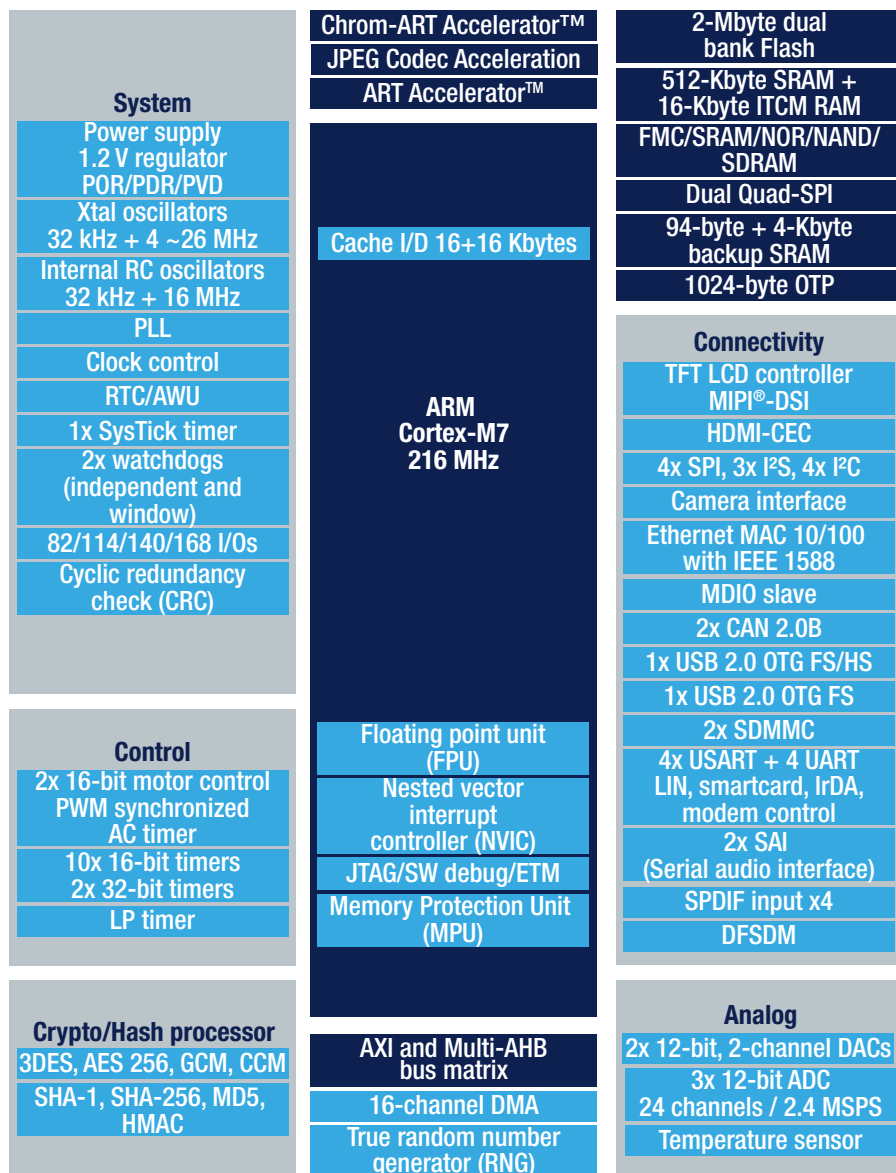
Note: * Only STM32F756, STM32F777 and STM32F779 are the Hardware Crypto / hash devices



STM32F756 BLOCK DIAGRAM



STM32F779 BLOCK DIAGRAM



ST MCU FINDER

Free Android application to find the right STM32 MCU.



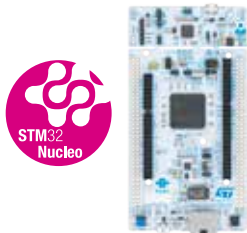
www.st.com/stmcfinder



STM32F7 ECOSYSTEM

Hardware tools

STM32 Nucleo board



Flexibility prototype

NUCLEO-F746ZG
NUCLEO-F767ZI*

Discovery kit



Creative demos

STM32F746G-DISCO
STM32F769I-DISCO*

Evaluation board



Full-feature evaluation

STM32746G-EVAL2
STM32F769I-EVAL*

Hardware Crypto/Hash devices

STM32756G-EVAL2
STM32F779I-EVAL*

Note:
* Availability Q2/2016

Software tools

STM32CubeMX



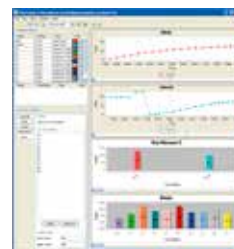
Configure and generate code

Partner IDEs



Compile and debug

STMStudio



Monitor

Hardware tools



STM32Cube

Average optimization
STM32 portability

ARM[®]mbed[™]

CMSIS and
Mbed SDK

Low optimization
ARM portability

STM32Java



Virtual machines
and models

Low optimization
large portability



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