



# STM32F7 – Series presentation

Revision 1.0



Hello, and welcome to this introduction to the STM32F7 microcontroller series.

This short presentation describes the various lines available in the STM32F7 series of very high-performance MCUs with an ARM® Cortex®-M7 core.

## STM32F7 product line

Product line	f <sub>CPU</sub> (MHz)	L1 cache (I/D)	FPU	FLASH (bytes)	RAM (Kbytes)	JPEG codec	CAN	DFSDM	TI co
STM32F7x9** STM32F7x8*	216	16K+16K	Double - precision	1M to 2M (RWW)	512K (incl 128K DTCM) + 16K ITCM + 4K backup	•	3	•	
STM32F7x7**	216	16K+16K	Double - precision	1M to 2M (RWW)	512K (incl 128K 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	512K (incl 128K DTCM) + 16K ITCM + 4K backup		3	•	
STM32F7x5	745	216	4K+4K	Single - precision	512K to 1M		2		



Notes:

\* Voltage Regulator Off mode available for WLCSP180 package (STM32F778AIY6TR)

\*\* Only STM32F756, STM32F777 and STM32F779 include HW crypto/hash processor

Taking advantage of ST's ART Accelerator™ as well as an L1 cache, STM32F7 microcontrollers deliver the maximum theoretical performance of the Cortex-M7 core no matter if code is executed from embedded Flash or external memory: 1082 CoreMark /462 DMIPS at 216 MHz f<sub>CPU</sub>.

- The STM32F746/756 line offers the performance of the Cortex-M7 core (with floating point unit) running up to 216 MHz. The STM32F756 integrates a crypto/hash processor providing hardware acceleration for AES-128, -192 and -256, with support for GCM and CCM, Triple DES, and hash (MD5, SHA-1 and SHA-2) functions.
- The STM32F767/777 line expands the family in offering a double-precision FPU, a JPEG codec and additional interfaces such as a 3rd CAN or a 2nd SD Card interface. The STM32F777 integrates the

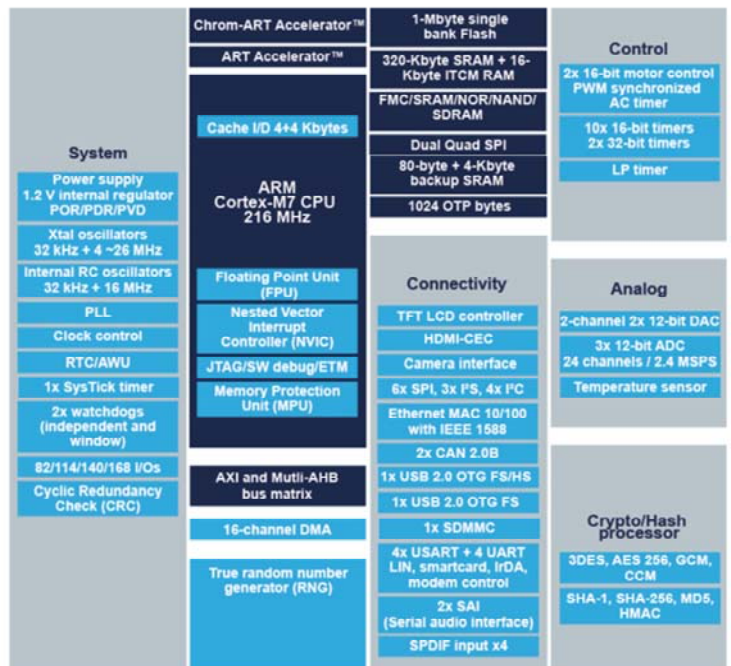
crypto/hash processor.

- The STM32F769/779 line offers the MIPI-DSI interface on the larger pin count packages. The STM32F779 integrates the crypto/hash processor.
- The STM32F745 line is similar to the STM32F746 with the exception of the TFT controller which is not available in the STM32F745.
- The STM32F765 line is similar to the STM32F767 with the exception of the TFT controller and JPEG codec which are not available in the STM32F765.

# STM32F74x block diagram

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- Same packages as STM32F429
  - WLCSP 143
  - LQFP 100, 144, 176, 208
  - BGA 100, 176, 216



This block diagram summarizes the key features and available packages for STM32F745/746/756 devices. The STM32F746 line integrates the Cortex-M7 core (with floating point unit) running up to 216 MHz, with up to 1 Mbyte of Flash, 320 Kbytes of SRAM and up to 25 communication interfaces in addition to an LCD-TFT controller with a dedicated Chrom-ART™ accelerator for advanced graphics processing and analog interfaces. The STM32F756 line has similar features as the STM32F746 and also includes a crypto/hash processor. The STM32F745 line is similar to the STM32F746 with the exception of the TFT controller which is not available in the STM32F745.

# STM32F76x block diagram

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- ARM Cortex-M7 with double precision floating point unit (DFPU)
- 2 Mbytes of Flash memory (RWW) / 512 Kbytes of SRAM
- Dedicated supply for SDMMC2, 2x SDMMC I/F, 3x CAN, MIPI DSI, JPEG Codec accelerator, DFSDM, and MDIO Slave interface
- Same packages as STM32F429
  - WLCSP 180 (168 active) pitch 0,4mm
  - LQFP 100, 144, 176, 208
  - BGA 176, 216

This block diagram summarizes the key features and available packages for STM32F765/76x/77x devices. The STM32F766 line integrates the Cortex-M7 core (with floating point unit) running up to 216 MHz, with up to 2 Mbytes Flash memory with Read While Write feature, 512 Kbytes of SRAM and up to 25 communication interfaces in addition to an LCD-TFT controller with a dedicated Chrom-ART™ accelerator for advanced graphics processing and analog interfaces.

The STM32F769/779 line offers the MIPI-DSI interface on the larger pin count packages. The STM32F779 integrates the crypto/hash processor.

The STM32F756 line has similar feature as the STM32F746 and it includes a crypto/hash processor. The STM32F745 line is similar to the STM32F746 with

the exception of the TFT controller which is not available in the STM32F745.