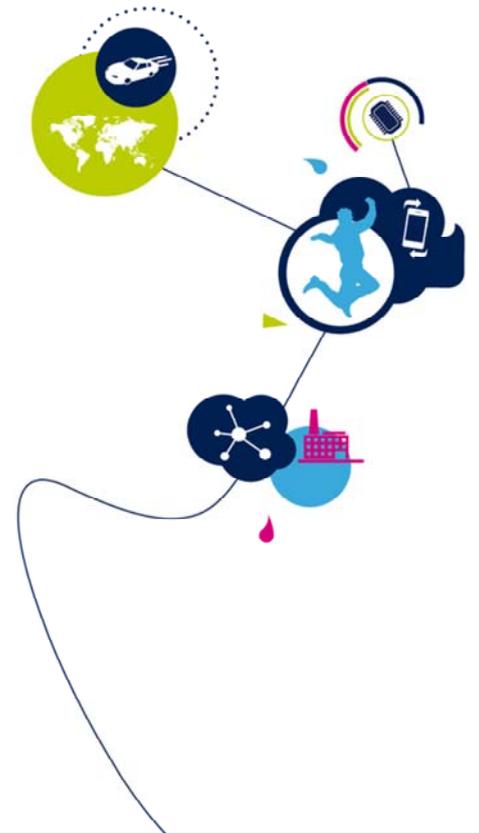# STM32MP1 – SERIES

Series presentation
Revision 2.0

Hello, and welcome to this introduction to the STM32MP1 series.
This short presentation describes the various lines available in the STM32MP1 series of high-performance MPUs with an Arm Cortex-A7 core.

STM32MP1 Series product line

ACCELERATION	Product line	f_CPU (MHz)	Cortex A7 cores	f_MCU (MHz)	Cortex M4 cores	f_GPU (MHz)	Cortex A7 L1 cache (I/D) L2 cache	RAM (Kbytes)	HW Crypto	3D GPU	FDCAN
• Dual core* Arm Cortex A7 processor • L1 and L2 caches • 3D Graphic Processing Unit* • Floating Point Unit + Arm NEON* • Arm Cortex M4 209MHz coprocessor • MDMA + DMA • LPDDR2/LPDDR3 16/32**-bits 533MHz • DDR3/DDR3L 16/32**-bits 533MHz	STM32MP151A	650	1	-	1	-	32K+32K + 256K	640K + 64K retention + 4K backup	-	-	-
	STM32MP151C								•		
CONNECTIVITY • 2 x USB2.0 HS Host • USB2.0 OTG FS/HS • 3 x SDMMC/SDIO • USART, UART, SPI, I²C • 2 x (TT)FDCAN2.0* • HDMI-CEC • Gigabit Ethernet EEE 1588*** • FMC (NAND Flash) • Camera IF • Dual mode Quad-SPI • DSI 2Gbit/s*	STM32MP151D	800	1	-	1	-	32K+32K + 256K	640K + 64K retention + 4K backup	-	-	-
	STM32MP151F								•		
	STM32MP153A	650	2	209	1	-	2x (32K+32K) + 256K	640K + 64K retention + 4K backup	-	-	2
	STM32MP153C								•		
	STM32MP153D	800	2	209	1	-	2x (32K+32K) + 256K	640K + 64K retention + 4K backup	-	-	2
	STM32MP153F								•		
AUDIO • I²S + audio PLL • 4 x SAI + 8 x DFSDM + SPDIF-RX • 2 x 12-bit DAC	STM32MP157A	650	2	209	1	533	2x (32K+32K) + 256K	640K + 64K retention + 4K backup	-	•	2
	STM32MP157C								•		
OTHER • 16- and 32-bit timers • 2 x 16-bit ADC (7.2 MSPS)	STM32MP157D	800	2	209	1	533	2x (32K+32K) + 256K	640K + 64K retention + 4K backup	-	•	2
	STM32MP157F								•		

Notes:
* not available in all product lines
** 16/32-bits for LFBGA448 and TFBGA361 packages, 16-bits only for LFBGA354 and TFBGA257 packages
*** 10/100M Ethernet only for LFBGA354 and TFBGA257 packages

Taking advantage of L1 and L2 caches, STM32MP15x microprocessors deliver the maximum theoretical performance of the Cortex-A7 core no matter whether the code is executed from the embedded RAM or an external memory: up to 2568 CoreMark at 800 MHz f_{CPU} for each core.

- The STM32MP151 line offers the performance of a single Cortex-A7 core (with floating point unit and NEON SIMD Engine) running up to 800 MHz, plus a Cortex-M4 with FPU which offer up to 703 Coremark at 209 MHz f_{MCU} for real time peripheral processing. The STM32MP151C integrates a crypto processor providing hardware acceleration for AES-128, -192 and -256, with support for GCM and CCM, Triple DES functions.
- The STM32MP153 line expands the family to double Cortex-A7 core, doubling the available Coremark to 5136 at 800 MHz f_{CPU} , plus additional interfaces such as two FDCAN, one having TT option. The STM32MP153C

integrates a crypto processor.

- The STM32MP157 line offers in addition a 3D GPU for complex image composition (up to 26M triangles/sec or 133M pixels/sec at 533MHz f_{GPU}) and a MIPI-DSI interface (up to 1366x768 at 60fps). The STM32MP157C integrates a crypto processor.

This block diagram summarizes the key features and the available packages for STM32MP157F devices.
The STM32MP157F line integrates the dual Cortex-A7 core (with floating point unit and NEON SIMD Engine) running up to 800MHz, with 708 Kbytes of SRAM in total and up to 35 communication interfaces in addition to a 3D Graphic Processing Unit and an LCD-TFT controller with a parallel or DSI interface for advanced graphics processing.
Boxed red blocks are not available on all product lines.
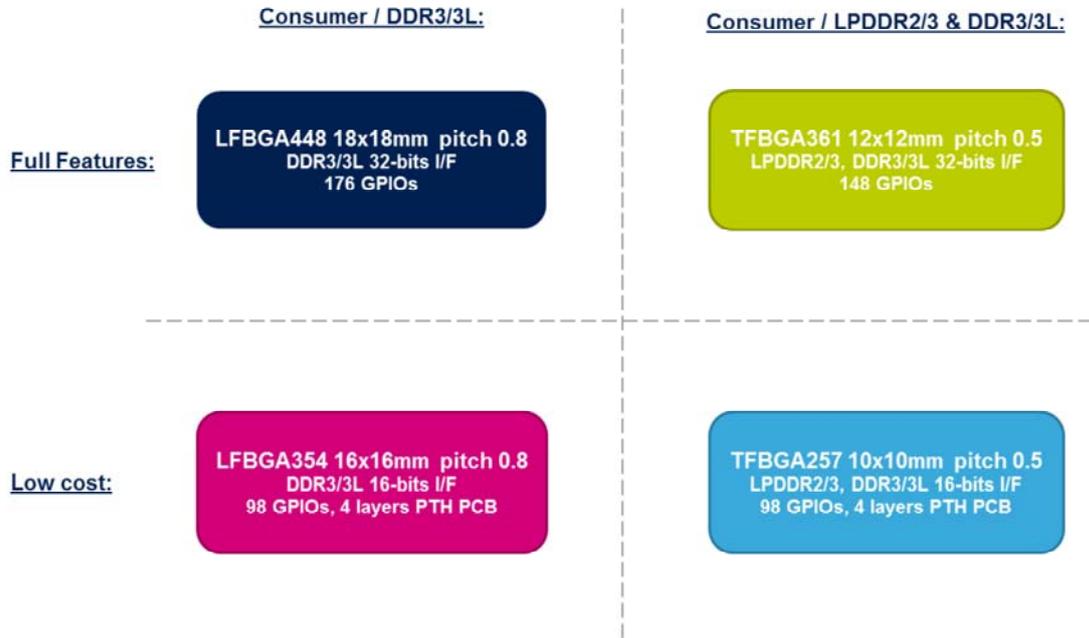
The four packages are optimized for a wide range of usage. Full feature packages provide maximum available GPIO count, and exist in pitch 0.8mm for robust and low-cost PCB as well as pitch 0.5mm for smaller PCB footprint. Low cost packages are optimized for low cost Plated-Through Hole (PTH) PCB routing and are available in two different ball pitch for low-cost PCB or small PCB footprint.