STM32MP15 microprocessor

Contents

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A quality version of this page, approved on *21 February 2020*, was based off this revision.

In a first part, this article shows the STM32MP157 line **part number codification** and **block diagram**. STM32MP157 belongs to STM32MP1 Series (refer to the list of part numbers provided below).

The second part of this article digs into technical aspects, and provides entry points to:

- STM32MP15 **documentation**
- articles dedicated to **Internal peripherals** that make the transition towards the software frameworks required to control these peripherals
- the list of **boards** supporting STM32MP15 devices
- the supported **software distributions**, that can be dowloaded into the STM32MP15 device.

Contents

1 Introduction

STM32MP15 microprocessors are based on the Arm®**Cortex®-A7** dual core. They support Trustzone mode for secure operations, a **Vivante GPU** and an Arm®**Cortex®-M4 coprocessor**.

Arm® Cortex®-M4 coprocessor and its peripheral set are directly inherited from the STM32 MCU family [1].

2 Part number codification

The table below shows the STM32MP15 microprocessor different part numbers available, together with their corresponding internal peripherals, security options and packages.

2.1 STM32MP15x lines

	Cortex-A7	Cortex-M4	GPU	Display	CAN
STM32MP15**1**	Single	Yes	No	TFT	No
STM32MP15**3**	Dual	Yes	No	TFT	Yes
STM32MP15**7**	Dual	Yes	Yes	TFT/DSI	Yes

2.2 Security and Cortex-A7 frequency

	Security	Cortex-A7 frequency
STM32MP15x**A**	Basic	650 MHz[2]
STM32MP15x**C**	Secure boot + Cryptography (CRYP)	650 MHz[2]
STM32MP15x**D**	Basic	800 MHz[2][3]
STM32MP15x**F**	Secure boot + Cryptography (CRYP)	800 MHz[2][3]

2.3 Packages

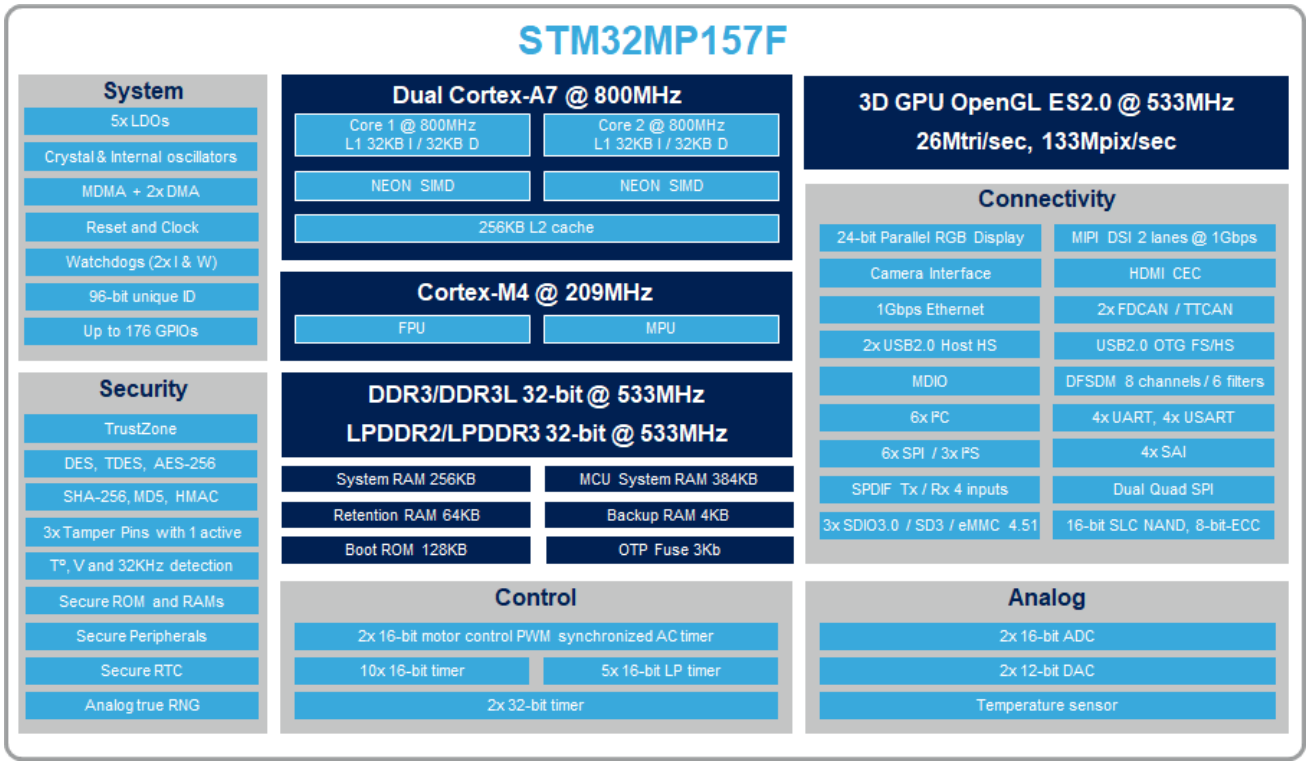
STM32MP15xx**AA**	TFBGA448 18x18
STM32MP15xx**AB**	LFBGA354 16x16
STM32MP15xx**AC**	TFBGA361 12x12
STM32MP15xx**AD**	TFBGA257 10x10

2.4 Junction temperature

STM32MP15xxxx**1**	- 20 to + 105 °C[2][3]
STM32MP15xxxx**3**	- 40 to + 125 °C[2]

3 Block diagram

Here below is the STM32MP157F block diagram offering the richest features set of the STM32MP15 microprocessor.



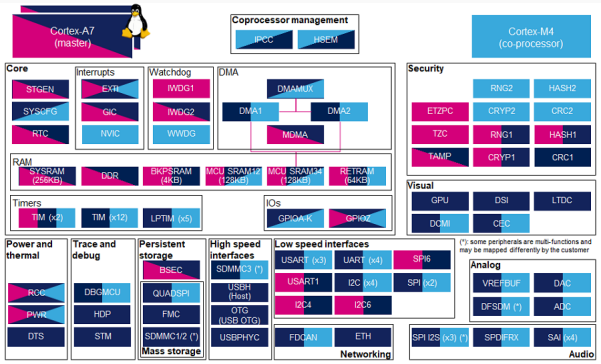
4 Technical documentation

- STM32MP15 Reference Manual: device and internal peripheral user specifications
- STM32MP15 Datasheet: electrical characteristics, package and pinout descriptions

5 Internal peripherals

STM32MP15 peripherals overview article gives a description of all the internal peripherals available on STM32MP15 devices, with direct links to the articles where you can find:

- an overview of each peripheral
- the list of instances available for each peripheral type,
- information on the way each instance can be shared between Arm® Cortex®-A7 and Cortex®-M4 cores,
- direct links to the software frameworks used to control the peripheral from different Arm® cores and security modes such as Cortex®-A7 non secure, Cortex®-A7 secure or Cortex®-M4 (non secure).



Internal peripherals

6 How to get further with STM32MP15 ecosystem

6.1 Boards

The list of boards that integrate STM32MP15 devices can be found in STM32MP15 boards article.

6.2 Supported software distributions

STM32MPU Embedded Software distribution	**STM32MPU Embedded Software distribution for Android**

Click the links above to find information on:

- Distribution composition and associated software architecture
- Associated release notes

7 References and foot notes

- STM32 MCU family
- 2.02.12.22.32.42.5 Exposure to maximum rating conditions for extended periods may affect device reliability. Device mission profile (application conditions) is compliant with JEDEC JESD47 qualification standard. Refer to the STM32MP15 Datasheet and AN5438 for further information.
- 3.03.13.2 800 MHz part numbers are only available with '1' as junction temperatures range suffix (- 20 to + 105 °C).

Graphics Processing Units

Microcontroller Unit (MCUs have internal flash memory and are intended to operate with a minimum amount of external support ICs. They commonly are a self-contained, system-on-chip (SoC) designs.)

Controller Area Network (robust bus mainly used for automotive applications)

Display Serial Interface (MIPI® Alliance standard)