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STM32MP1 microprocessor broadening STM32 MPU family

Press Presentation

STM32

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“If only
I could make
a Smart Home Gateway
with advanced HMI and HD video

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Advanced HMI with graphics and video on top of real time applications



HD video decode
with Dual Arm Cortex-A7 @ 800 MHz

Better user experience
powered by advanced 3D GPU

Wide range of partners ready to support you on many topics:
Graphics, HW & SW Services…

Seamless and flexible combination of audio and real time processing
with Cortex-A + Cortex-M architecture

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"If only
I could find
an Industrial grade processor
for my applications

chanhvinh.com

Industrial grade microprocessor for demanding applications



Industrial qualification combining both:
100% operating time during 10 years
Junction temperature: - 40°C to 125°C

10 years longevity commitment
renewed every year

Industrial connectivity, advanced analog
Cortex-M4 for real time processing

Advanced security for Industry 4.0

4 packages available in pitch 0.5 & 0.8mm

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“If only
I could easily
improve my applications
with Artificial Intelligence

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Embedding various Neural Networks for cutting-edge applications



TensorFlow Lite native support
running on Cortex-A7 / Linux

TensorFlow Lite

STM32Cube.AI tool for machine learning
running on Cortex-M4

STM32 Cube.AI

Camera and audio interfaces
to simplify input devices' integration

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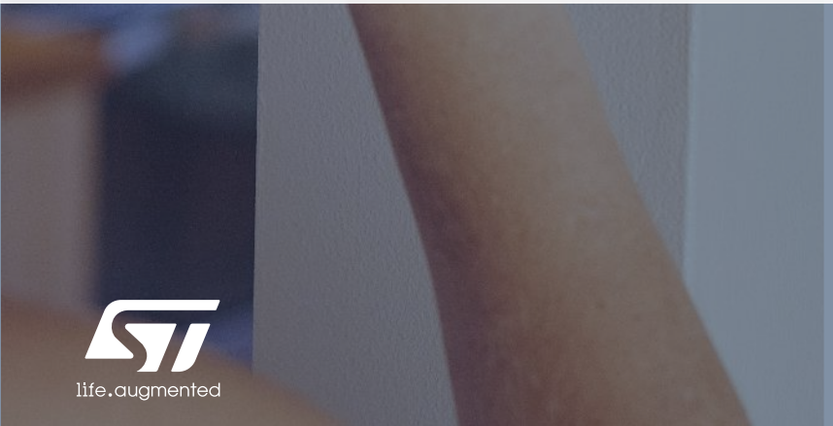




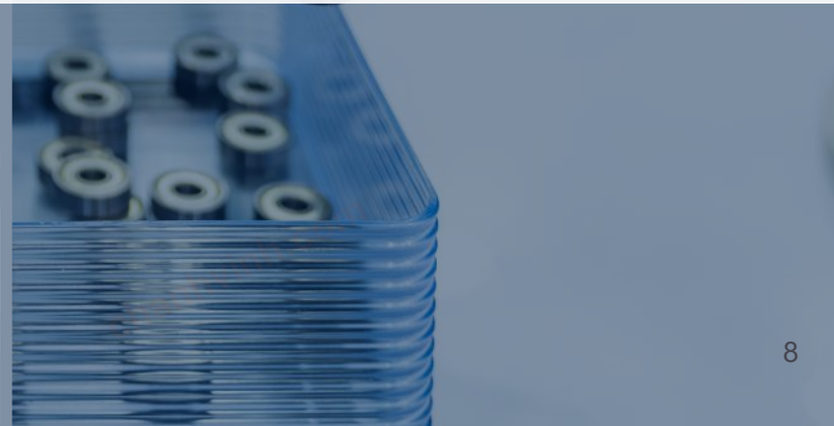
STM32MP1 - Constantly Improving

Boosting performances
with Dual Cortex-A7 @ 800MHz

A **broader STM32 MPU ecosystem**
to reduce development time & cost







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Boosting performances with Dual Cortex-A7 @ 800MHz



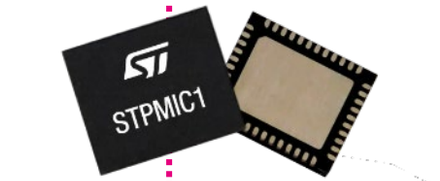
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Boosting performances
Broadening possibilities

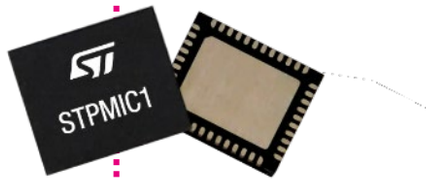
Pin to pin compatibility across all part numbers
Full HW compatibility with STPMIC1

SW compatibility
across the family





@ 650 MHz





@ 800 MHz





OpenSTLinux
Distribution



A Scalable Solution to best meet customers' needs

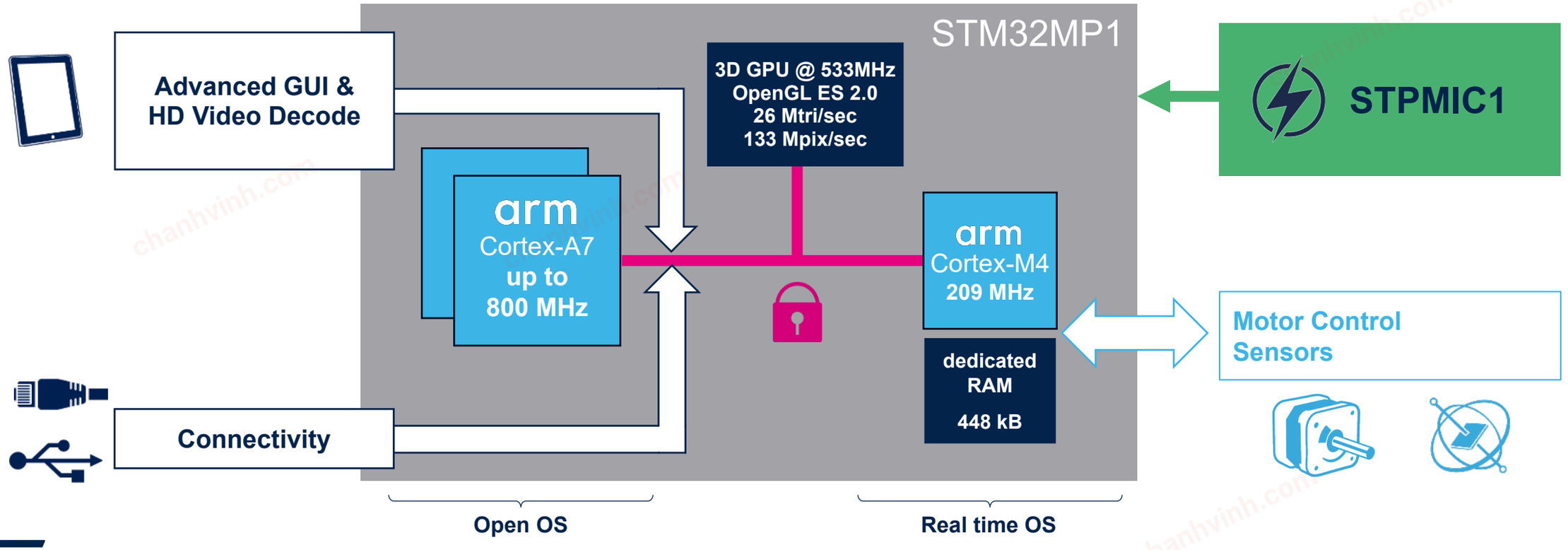
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Boosting application possibilities

Graphic and communication
High Performance processing
up to 3040 DMIPS

Real-time & **Low Power** applications
260 DMIPS



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Secure architecture for trusted devices



ENCRYPTION DECRYPTION AUTHENTICATION

- Duplicated resources on Cortex-A7 and Cortex-M4
  - Crypto and Hash Hardware Engines
  - TRNG
- Secure boot (ROM)
- Unique ID

CONFIDENTIALITY ANTI-TAMPERING

- TrustZone
- Secure RAMs and Peripherals
- Secure RTC with Active Tamper
- Tº, V and 32KHz sensor monitoring
- Cortex-M4 resources HW isolation
- Secure OS support: OP-TEE

SECURE MANUFACTURING

- Paired Keys Tools Generator
- Signing Tools for boot
- Development and production programmers with provisioning and authentication

Some of the above features are optional and require to procure dedicated part numbers. Please refer to product specification

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A broader STM32 MPU ecosystem to reduce development time & cost



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Enhance your added value by relying on ST and authorized Partners' solutions



- Solutions for EDGE computing & IoT from sensors up to the Cloud
- Simplifying Android™ development
- A growing base of ST Authorized Partners
- ST continuous investment into the most recognized Open Source standards

Android is a trademark of Google LLC.

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Create cloud based applications with STM32MP1 solutions

Complete support of main cloud provider

aws qualified device

Microsoft Azure IoT Platform

IBM Watson support soon



Example of STM32MP1 Discovery board used for EDGE processing

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Simplifying Android™ development



Reduce development time & cost with pre-build Solutions provided by ST:

- Free of charge AOSP enablement
- Various Android™ packages

Extra headroom (up to 800MHz Cortex-A) for better user experience

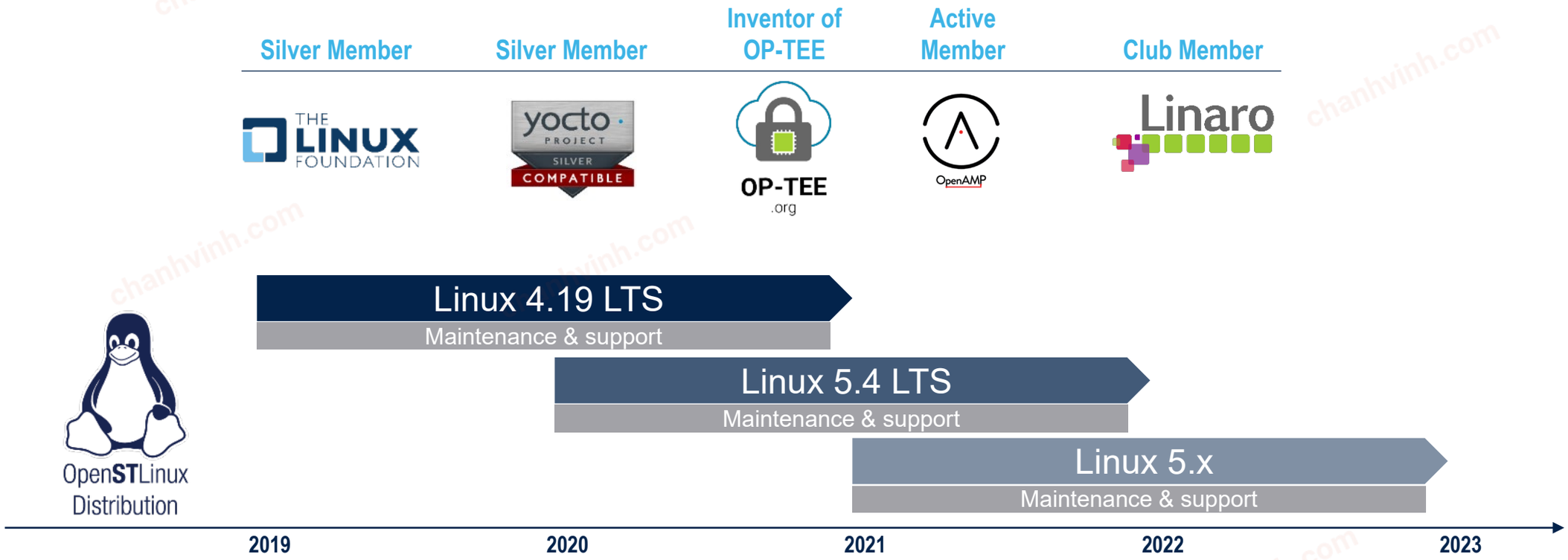
Exclusive plug-in to bridge real-time Cortex-M and Android environments provided in the SDK

Android is a trademark of Google LLC.

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Continuous investment in Linux to make customers' design simpler and more efficient

ST is continuously upstreaming Linux drivers to the Linux community



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life.augmented Partner Program

A growing base of partners addressing customers' challenges

Embedded Software

- CRANK SOFTWARE
- Embedded Wizard — GUI Solutions by TARA Systems
- ENEA
- Prevas
- Linaro
- PHYTEC
- Qt
- PROVE & RUN
- timesys
- Witekio — EMBEDDING SUCCESS

Software Development Tools

- ac6
- arm KEIL
- CRANK SOFTWARE
- Linaro
- IAR SYSTEMS
- Qt
- timesys

Training

- ac6
- bootlin
- DOULOS
- DH electronics
- ENEA
- INNOWAVE — Inspire the next
- HandsOn Training
- IAR SYSTEMS
- PHYTEC
- timesys
- Witekio — EMBEDDING SUCCESS

Components and Modules

- bytesatwork
- DH electronics
- EmCraft systems
- emtrion — embedded systems
- ENGICAM — Custom Electronic Solutions
- KARO electronics
- kontron
- &vo OCTAVO SYSTEMS
- PHYTEC
- SoMLabs

Engineering Services

- ac6
- bootlin
- CRANK SOFTWARE
- DH electronics
- EmCraft systems
- emtrion — embedded systems
- INNOWAVE — Inspire the next
- KARO electronics
- Linaro
- Prevas
- Pengutronix
- PROVE & RUN
- timesys
- Qt
- Witekio — EMBEDDING SUCCESS

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STM32MP1 Line-up



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Expanding the STM32MP1 portfolio now 48 part numbers

NEW

MPU @ 800 MHz

STM32 **MP151D**	**MP151F**
1520 + 260 DMIPS	-
800 MHz Cortex-A7	-
209 MHz Cortex-M4	-
	Security

STM32 **MP153D**	**MP153F**
3040 + 260 DMIPS	-
800 MHz 2x Cortex A7	-
209 MHz Cortex-M4	-
CAN FD	Security

STM32 **MP157D**	**MP157F**
3040 + 260 DMIPS	-
800 MHz 2x Cortex-A7	-
209 MHz Cortex -M4	-
CAN FD - 3D GPU - DSI	Security

MPU @ 650 MHz

STM32 **MP151A**	**MP151C**
1235 + 260 DMIPS	-
650 MHz Cortex-A7	-
209 MHz Cortex-M4	-
	Security

STM32 **MP153A**	**MP153C**
2470 + 260 DMIPS	-
650 MHz 2x Cortex-A7	-
209 MHz Cortex-M4	-
CAN FD	Security

STM32 **MP157A**	**MP157C**
2470 + 260 DMIPS	-
650 MHz 2x Cortex-A7	-
209 MHz Cortex-M4	-
CAN FD - 3D GPU – DSI	Security

LONGEVITY 10 YEARS COMMITMENT

All references are available in **4 Packages**

TFBGA257 10x10mm p0.5 (4 layers PTH PCB) - smallest package for dual Cortex-A GP MPU
TFBGA361 12x12mm p0.5 (4 layers PTH + Laser via PCB)
LFBGA354 16x16mm p0.8 (4 layers PTH PCB)
LFBGA448 18x18mm p0.8 (6 layers PTH PCB)

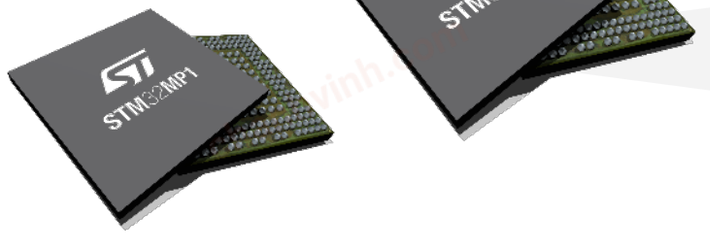
All parts are software and pin to pin compatible

Arm® Cortex® core / Cortex-A7 + Cortex-M4 / Dual Cortex-A7 + Cortex-M4

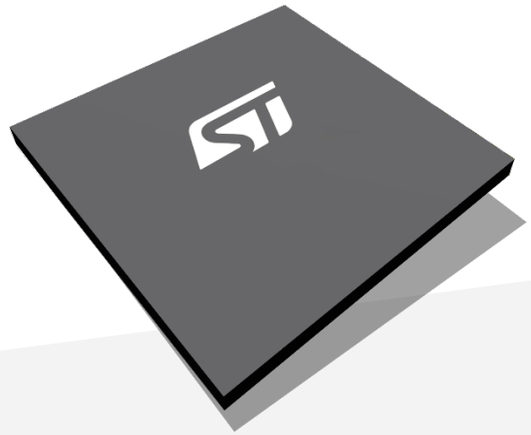
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Building the future
STM32 MPU portfolio expansion



@ 650 MHz **@ 800 MHz**



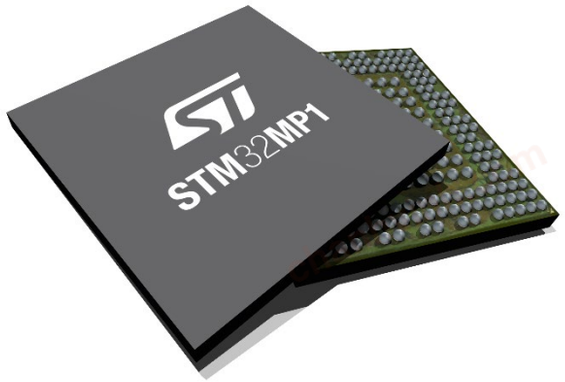
STM32 MPU FLAGSHIP
Big step-up in performance, features and security



STM32 MPU ACCESS
Cost optimization and improved security

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STM32MP1 - your new companion for advanced applications



Boosting performances
with Dual Cortex-A7 @ 800MHz

A **broader STM32 MPU ecosystem**
to reduce development time & cost

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Releasing your creativity

/STM32

@ST_World

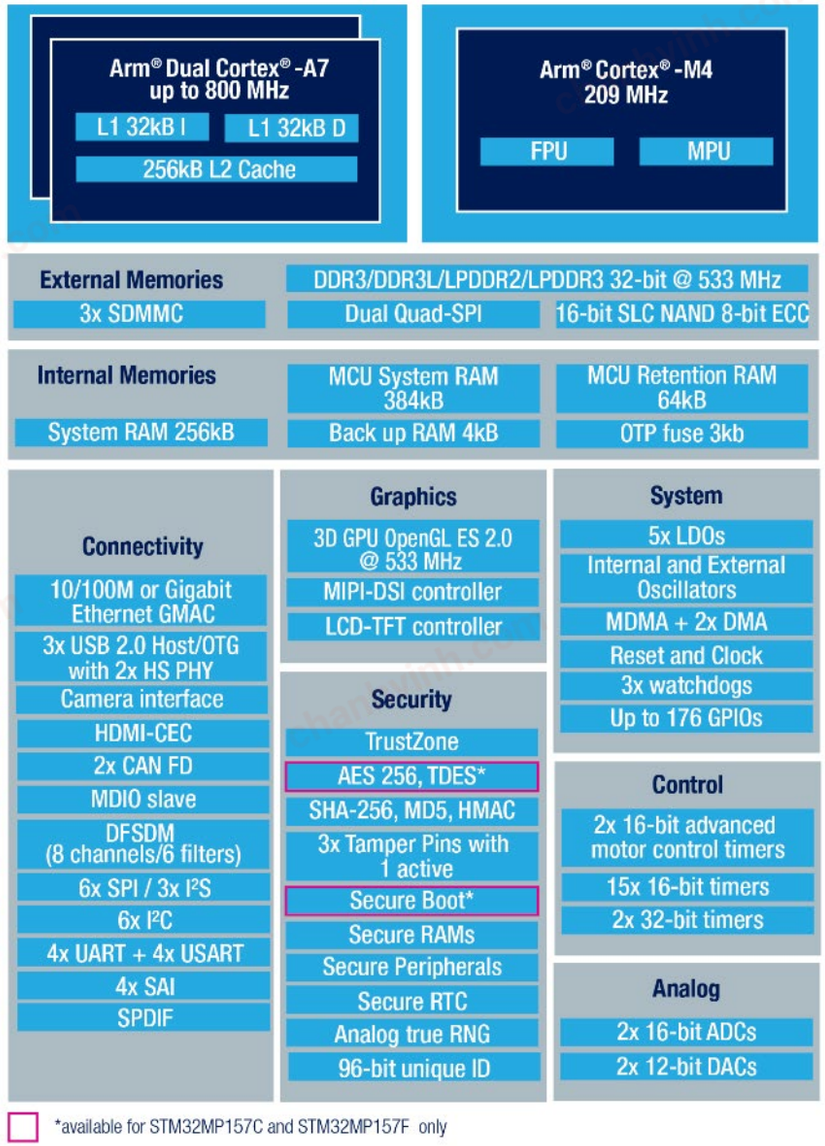
community.st.com/stm32mpu

www.st.com/STM32MP1

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STM32MP157 block diagram

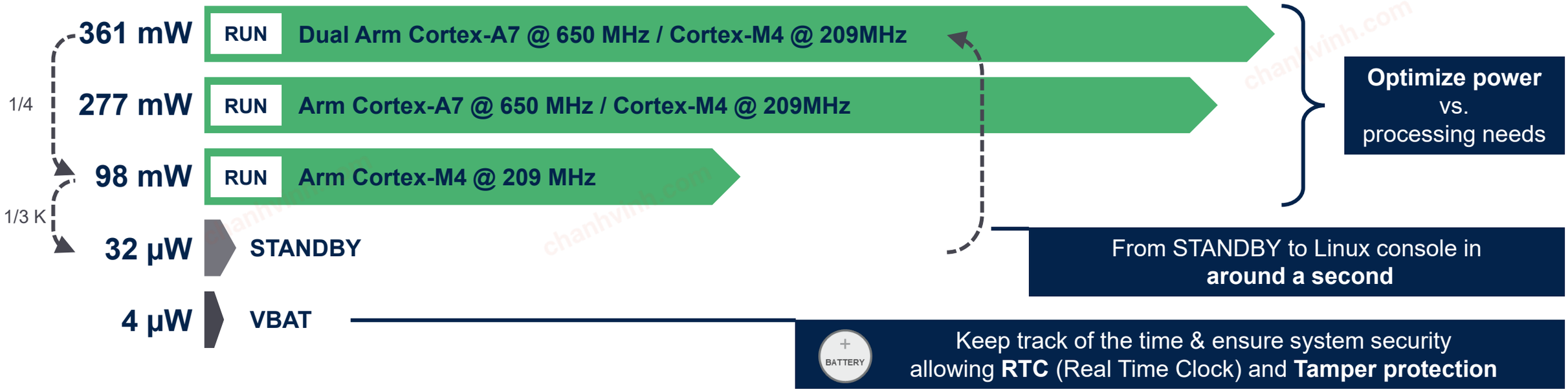


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Flexible architecture for power efficiency

Power figures at 650MHz



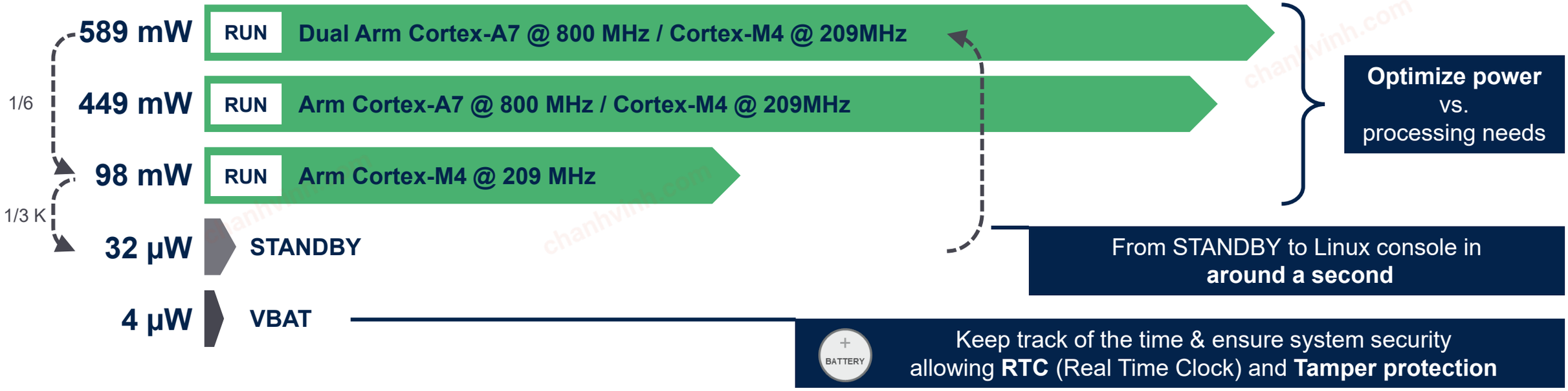
Typ @ VDDCORE = 1.2V, VDD = 3.3V @ 25 °C, Peripherals OFF

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Flexible architecture for power efficiency

Power figures at 800MHz



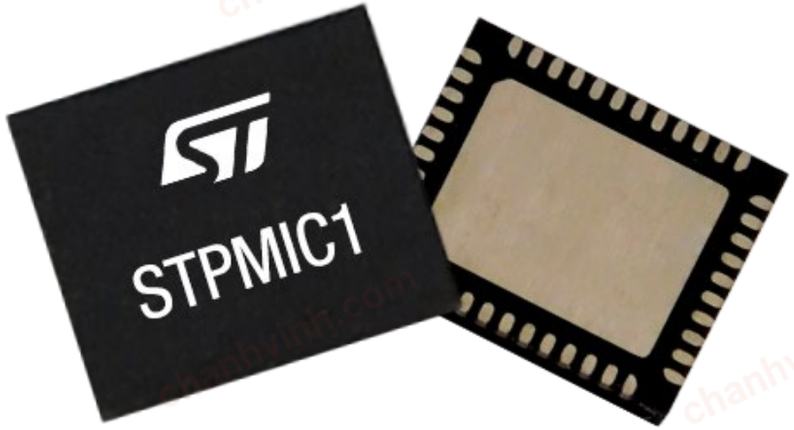
Typ @ VDDCORE = 1.2V, VDD = 3.3V @ 25 °C, Peripherals OFF

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STPMIC1 power management IC dedicated to STM32MP1 MPU

Simplify your design and optimize power consumption



DC/DCs & **LDOs** for
- STM32MP1
- Memories
- External devices

Optimized power consumption

BOM savings for typical applications

Small PCB footprint vs. full discrete solution

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Thank you

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