# STPMIC1

## High-performance power management IC for STM32MP1 MPUs



## An all-in-one power management solution for STM32MP1 microprocessors

The STPMIC1 is a fully integrated power management IC specifically tailored for products based on highly integrated application processor designs requiring low power and high efficiency.

Fully programmable, the STPMIC1 is designed to supply power to the application processor as well as to the external system peripherals such as DDR, flash memories and other system devices.

It is the ideal companion chip for STM32MP1 MPUs and other application microprocessors.

### KEY FEATURES & BENEFITS

- Input voltage range from 2.8 to 5.5 V
- 4 adjustable general-purpose LDOs
- 1 LDO for DDR termination (sink-source), bypass mode for low power DDR or as general-purpose LDO
- 1 LDO for USB PHY supply with automatic power source detection
- 1 reference voltage LDO for DDR memory
- 4 adjustable adaptive constant on-time (COT) buck SMPS converters
- 5.2 V / 1.1 A boost DC/DC converter with bypass mode for 5 V input or battery input
- 1 power switch 100/500 mA USB OTG compliant
- 1 general-purpose 500/1000 mA power switch
- User programmable non-volatile memory (NVM), enabling scalability to support a wide range of applications
- I²C bus and digital IO control interface

### KEY APPLICATIONS

- Power management companion chip for STM32MP1 MPUs
- Industrial applications
- Networking/Telecom infrastructure
- Home/Office automation
- Medical monitoring equipment
- Portable devices

**STPMIC**

## STPMIC1 description

The STPMIC1 is a fully programmable, robust and proven solution for the STM32MP1 MPU series as well as for other processors.

Thanks to advanced low-power features controlled by the host processor via its I2C and I/O interfaces, the STPMIC1 is a highly-efficient solution designed to reduce the power dissipation and extend battery life in portable applications.
An embedded NVM that can be programmed on the run and also used for power sequencing and status readouts enables scalability to support a wide range of applications.
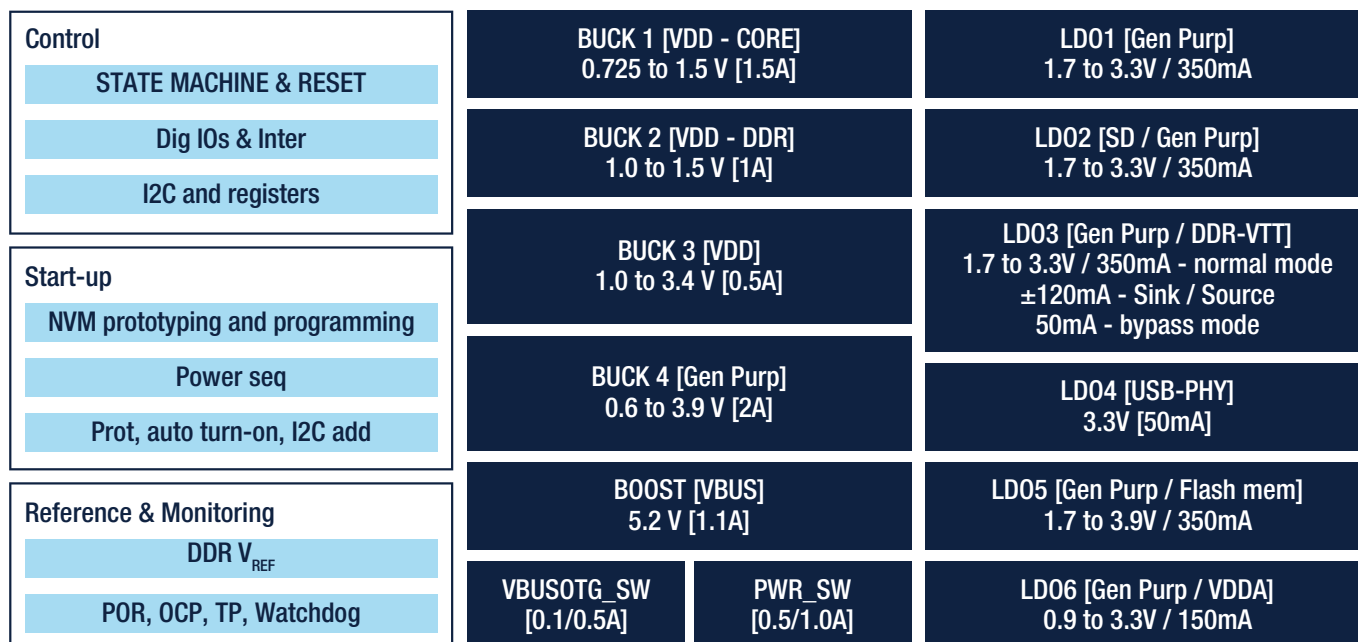
With 14 power rails, featuring OCP and OVP, the STPMIC1 covers the power needs of the MPU along with a large variety of peripherals.

The STPIMC1 is available in three different versions which are factory pre-programmed and meant to meet different I/O voltage requirements. All versions can be easily customized later during the design stage, meaning that the I/O voltage levels are reprogrammable, offering a high level of flexibility to users.

An STPMIC1 evaluation board (STEVAL-PMIC1K1) with a user-friendly GUI (STSW-PMIC1GUI) is also available to monitor and configure the STPMIC1's main parameters.

## STPMIC1 Block Diagram

**Control**
- STATE MACHINE & RESET
- Dig IOs & Inter
- I2C and registers

**Start-up**
- NVM prototyping and programming
- Power seq
- Prot, auto turn-on, I2C add

**Reference & Monitoring**
- DDR $V_{REF}$
- POR, OCP, TP, Watchdog

BUCK 1 [VDD - CORE]
0.725 to 1.5 V [1.5A]

BUCK 2 [VDD - DDR]
1.0 to 1.5 V [1A]

BUCK 3 [VDD]
1.0 to 3.4 V [0.5A]

BUCK 4 [Gen Purp]
0.6 to 3.9 V [2A]

BOOST [VBUS]
5.2 V [1.1A]

VBUSOTG_SW [0.1/0.5A]

PWR_SW [0.5/1.0A]

LDO1 [Gen Purp]
1.7 to 3.3V / 350mA

LDO2 [SD / Gen Purp]
1.7 to 3.3V / 350mA

LDO3 [Gen Purp / DDR-VTT]
1.7 to 3.3V / 350mA - normal mode
±120mA - Sink / Source
50mA - bypass mode

LDO4 [USB-PHY]
3.3V [50mA]

LDO5 [Gen Purp / Flash mem]
1.7 to 3.9V / 350mA

LDO6 [Gen Purp / VDDA]
0.9 to 3.3V / 150mA

## STPMIC1 product table

| Order Code | NVM status | Package | Evaluation Board order code |
|---|---|---|---|
| STPMIC1APQR | Factory pre-programmed to support VIO at 3.3V | WFQFN 44L [5x6x0.8] | STEVAL-PMIC1K1 (*) STSW-PMIC1GUI |
| STPMIC1BPQR | Factory pre-programmed to support VIO at 1.8V | | |
| STPMIC1CPQR | Not factory pre-programmed | | |

Note: Configuration GUI for the STEVAL-PMIC1K1 evaluation board of the STPMIC1

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