STM32F411xC STM32F411xE

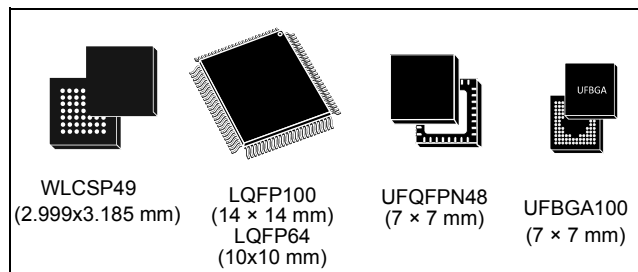## Arm® Cortex®-M4 32b MCU+FPU, 125 DMIPS, 512KB Flash, 128KB RAM, USB OTG FS, 11 TIMs, 1 ADC, 13 comm. interfaces

Features

- Includes ST state-of-the-art patented technology
- Dynamic efficiency line with BAM (Batch acquisition mode)
  - 1.7 V to 3.6 V power supply
  - - 40°C to 85/105/125 °C temperature range
- Core: Arm® 32-bit Cortex®-M4 CPU with FPU, adaptive real-time accelerator (ART Accelerator) allowing 0-wait state execution from flash memory, frequency up to 100 MHz, memory protection unit, 125 DMIPS/1.25 DMIPS/MHz (Dhrystone 2.1), and DSP instructions
- Memories
  - Up to 512 Kbytes of flash memory
  - 128 Kbytes of SRAM
- Clock, reset, and supply management
  - 1.7 V to 3.6 V application supply and I/Os
  - POR, PDR, PVD, and BOR
  - 4-to-26 MHz crystal oscillator
  - Internal 16 MHz factory-trimmed RC
  - 32 kHz oscillator for RTC with calibration
  - Internal 32 kHz RC with calibration
- Power consumption
  - Run: 100 µA/MHz (peripheral off)
  - Stop (Flash in Stop mode, fast wakeup time): 42 µA typical at 25 °C; 65 µA max at 25 °C
  - Stop (Flash in Deep power down mode, slow wakeup time): down to 9 µA at 25 °C; 28 µA max at 25 °C
  - Standby: 1.8 µA at 25 °C / 1.7 V without RTC; 11 µA at 85 °C at 1.7 V
  - V_{BAT} supply for RTC: 1 µA at 25 °C
- 1×12-bit, 2.4 MSPS A/D converter: up to 16 channels
- General-purpose DMA: 16-stream DMA controllers with FIFOs and burst support
- Up to 11 timers: up to six 16-bit, two 32-bit timers up to 100 MHz, each with up to four IC/OC/PWM or pulse counter and quadrature (incremental) encoder input, two watchdog

WLCSP49 (2.999x3.185 mm) LQFP100 (14 × 14 mm) LQFP64 (10x10 mm) UFQFPN48 (7 × 7 mm) UFBGA100 (7 × 7 mm)

timers (independent and window) and a SysTick timer

- Debug mode
  - Serial wire debug (SWD) & JTAG interfaces
  - Cortex®-M4 Embedded Trace Macrocell™
- Up to 81 I/O ports with interrupt capability
  - Up to 78 fast I/Os up to 100 MHz
  - Up to 77 5 V-tolerant I/Os
- Up to 13 communication interfaces
  - Up to 3 x I²C interfaces (SMBus/PMBus)
  - Up to 3 USARTs (2 x 12.5 Mbit/s, 1 x 6.25 Mbit/s), ISO 7816 interface, LIN, IrDA, modem control)
  - Up to 5 SPI/I2Ss (up to 50 Mbit/s, SPI, or I2S audio protocol), SPI2 and SPI3 with muxed full-duplex I²S to achieve audio class accuracy via internal audio PLL or external clock
  - SDIO interface (SD/MMC/eMMC)
  - Advanced connectivity: USB 2.0 full-speed device/host/OTG controller with on-chip PHY
- CRC calculation unit
- 96-bit unique ID
- RTC: subsecond accuracy, hardware calendar
- All packages are ECOPACK2 compliant

Table 1. Device summary

Reference	Part number
STM32F411xC	STM32F411CC, STM32F411RC, STM32F411VC
STM32F411xE	STM32F411CE, STM32F411RE, STM32F411VE