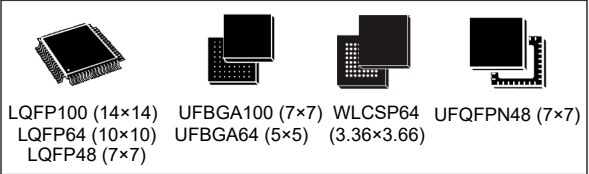


Ultra-low-power Arm® Cortex®-M4 32-bit MCU+FPU, 100DMIPS, up to 512KB Flash, 160KB SRAM, analog, audio, ext. SMPS

Datasheet - production data

Features

- Ultra-low-power with FlexPowerControl
 - 1.71 V to 3.6 V power supply
 - -40 °C to 85/125 °C temperature range
 - 145 nA in V_{BAT} mode: supply for RTC and 32x32-bit backup registers
 - 22 nA Shutdown mode (5 wakeup pins)
 - 106 nA Standby mode (5 wakeup pins)
 - 375 nA Standby mode with RTC
 - 2.05 µA Stop 2 mode, 2.40 µA with RTC
 - 84 µA/MHz run mode (LDO Mode)
 - 36 µA/MHz run mode (@3.3 V SMPS Mode)
 - Batch acquisition mode (BAM)
 - 4 µs wakeup from Stop mode
 - Brown out reset (BOR)
 - Interconnect matrix
 - 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 80 MHz, MPU, 100DMIPS and DSP instructions
 - Performance benchmark
 - 1.25 DMIPS/MHz (Drystone 2.1)
 - 273.55 CoreMark® (3.42 CoreMark/MHz @ 80 MHz)
 - Energy benchmark
 - 335 ULPMark™ CP score
 - 104 ULPMark™ PP score Clock
 - Sources
 - 4 to 48 MHz crystal oscillator
 - 32 kHz crystal oscillator for RTC (LSE)
 - Internal 16 MHz factory-trimmed RC (±1%)
 - Internal low-power 32 kHz RC (±5%)
 - Internal multispeed 100 kHz to 48 MHz oscillator, auto-trimmed by LSE (better than ±0.25 % accuracy)
 - Internal 48 MHz with clock recovery
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LQFP100 (14×14) UFBGA100 (7×7) WLCSP64 UFQFPN48 (7×7)
 LQFP64 (10×10) UFBGA64 (5×5) (3.36×3.66)
 LQFP48 (7×7)

- 2 PLLs for system clock, audio, ADC
 - Up to 83 fast I/Os, most 5 V-tolerant
 - RTC with HW calendar, alarms and calibration
 - Up to 21 capacitive sensing channels: support touchkey, linear and rotary touch sensors
 - 12x timers: 1x 16-bit advanced motor-control, 1x 32-bit and 3x 16-bit general purpose, 2x 16-bit basic, 2x low-power 16-bit timers (available in Stop mode), 2x watchdogs, SysTick timer
 - Memories
 - Up to 512 KB single bank Flash, proprietary code readout protection
 - 160 KB of SRAM including 32 KB with hardware parity check
 - Quad SPI memory interface
 - Rich analog peripherals (independent supply)
 - 1x 12-bit ADC 5 Msps, up to 16-bit with hardware oversampling, 200 µA/Msps
 - 1x 12-bit DAC output channels, low-power sample and hold
 - 1x operational amplifier with built-in PGA
 - 2x ultra-low-power comparators
 - Accurate 2.5 V or 2.048 V reference voltage buffered output
 - 17x communication interfaces
 - USB 2.0 full-speed crystal less solution with LPM and BCD
 - 1x SAI (serial audio interface)
 - 4x I2C FM+(1 Mbit/s), SMBus/PMBus
 - 3x USARTs (ISO 7816, LIN, IrDA, modem)
 - 1x UART (LIN, IrDA, modem)
 - 1x LPUART (Stop 2 wake-up)
 - 3x SPIs (and 1x Quad SPI)

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- CAN (2.0B Active) and SDMMC interface
 - IRTIM (Infrared interface)
 - 14-channel DMA controller
 - True random number generator
 - CRC calculation unit, 96-bit unique ID
 - Development support: serial wire debug (SWD), JTAG, Embedded Trace Macrocell™
 - All packages are ECOPACK2® compliant

Table 1. Device summary

Reference	Part numbers
STM32L452xx	STM32L452CC, STM32L452RC, STM32L452VC, STM32L452CE, STM32L452RE, STM32L452VE