STM32™ 32-bit MCU family
Leading supplier of ARM® Cortex®-M microcontrollers

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STM32

Releasing your creativity

By choosing one of ST's microcontrollers for your embedded application, you gain from our leading expertise in MCU architecture, technology, multi-source manufacturing and long-term supply

The STM32 portfolio offers an extraordinary variety of options, now including ARM® Cortex®-M cores (M0, M0+, M3, M4 and M7), giving developers flexibility to find the perfect STM32 for their applications. Particular attention is paid to accommodate porting of applications from one device to another. The binary compatibility combined with the similar pinout assignment, hardware IPs proliferation and higher level programming language makes the development job far more convenient when dealing with the STM32 families.

HIGH-PERFORMANCE

STM32 H7 STM32 F7
STM32 F4 STM32 F2

HIGH DEGREE OF INTEGRATION AND RICH CONNECTIVITY

- **STM32H7**: highest performance STM32 MCUs with advanced features with DSP and FPU instructions
  Cortex®-M7 with 1 Mbyte to 2 Mbytes of Flash memory
- **STM32F7**: very high performance MCUs with advanced features with DSP and FPU instructions
  Cortex®-M7 with 256 Kbytes to 2 Mbytes of Flash memory
- **STM32F4**: from access to the high performance up to advanced features with DSP and FPU instructions
  Cortex®-M4 with 64 Kbytes to 2 Mbytes of Flash memory
- **STM32F2**: mid-range MCUs with excellent price-performance ratio
  Cortex®-M3 with 128 Kbytes to 1 Mbyte of Flash memory

MAINSTREAM

STM32 F3 STM32 F1 STM32 F0

SCALABLE SET OF MCUS FOR A LARGE VARIETY OF APPLICATIONS

- **STM32F3**: upgraded F1 series with various level of advanced analog peripherals
  Cortex®-M4 with 16 to 512 Kbytes of Flash memory
- **STM32F1**: foundation series based on Cortex-M3 from 16 Kbytes to 1 Mbyte of Flash memory
- **STM32F0**: entry-level MCUs extending to 8-/16-bit world
  Cortex®-M0 with 16 to 256 Kbytes of Flash memory

ULTRA-LOW-POWER

STM32 L4 STM32 L1 STM32 L0

TINY POWER BUDGET APPLICATIONS

- **STM32L4**: excellence in ultra-low-power with performance
  Cortex®-M4 with 128 Kbytes to 1 Mbyte of Flash memory (177 ULPMark/273 CoreMark)
- **STM32L1**: market-proven answer for 32-bit applications
  Cortex®-M3 with 32 to 512 Kbytes of Flash memory (81 ULPMark/93 CoreMark)
- **STM32L0**: perfect fit for 8-/16-bit applications and cost-down designs
  Cortex®-M0+ with 8 to 192 Kbytes of Flash memory (135 ULPMark/75 CoreMark)

ST MCU Finder

Free mobile application to find the right STM32 MCU

www.st.com/stmcufinder

Functional Safety Design Packages for STM32
(including SIL and CLASSB standards)

www.st.com/stm32safety

ClassB Ready

SIL Ready

LONGEVITY 10 YEARS COMMITMENT

STM32 THE LEADING CORTEX-M PORTFOLIO

Common core peripherals and architecture:

- Communication peripherals: USART, SPI, I²C
- Multiple general-purpose timers
- Integrated reset and brown-out warning
- Multiple DMA
- 2x watchdogs Real-time clock
- Integrated regulator PLL and clock circuit
- Up to 3x 12-bit DAC
- Up to 4x 12-bit ADC (Up to 5 MSPS)
- Main oscillator and 32 kHz oscillator
- Low-speed and high-speed internal RC oscillator
- -40 to +85 °C and up to 125 °C operating temperature range
- Low voltage 2.0 to 3.6 V or 1.65/1.7 to 3.6 V (depending on series)
- Temperature sensor

High-performance

STM32H7 series – High performance with DSP, Double-precision FPU, JPEG Codec and Chrom-ART Accelerator™

| 400 MHz Cortex-M7 L1-Cache | Up to 2-Mbytes dual-bank Flash | Up to 1-Mbyte SRAM | 2x USB 2.0 OTG FS/HS | 2x 16-bit advanced MC timer HR timer | DFSDM HDMI-CEC Ethernet S/PDIF | Quad-SPI FMC MDIO Camera IF SDIO | Crypto-hash TRNG | 4x SAI 3xI²S 2x FDCAN LCD-TFT | STM32 H7 |

STM32F7 series – High performance with DSP, FPU, ART Accelerator™ and Chrom-ART Accelerator™

| 216 MHz Cortex-M7 L1-Cache | Up to 2-Mbytes dual-bank Flash | Up to 512-Kbyte SRAM | 2x USB 2.0 OTG FS/HS | 2x 16-bit advanced MC timer | DFSDM HDMI-CEC Ethernet S/PDIF | Quad-SPI FMC MDIO Camera IF SDIO | Crypto-hash TRNG MIPI-DSI | 2x SAI 2xI²S Up to 3x CAN LCD-TFT | STM32 F7 |

STM32F4 series – High performance with DSP, FPU, ART Accelerator™ and Chrom-ART Accelerator™

| Up to 180 MHz Cortex-M4 | Up to 2-Mbytes dual-bank Flash | Up to 384-Kbyte SRAM | 2x USB 2.0 OTG FS/HS | 2x 16-bit advanced MC timer | DFSDM HDMI-CEC Ethernet S/PDIF | Quad-SPI FMC Camera IF SDIO | Crypto-hash TRNG MIPI-DSI | 2x SAI 5xI²S Up to 2x CAN LCD-TFT | STM32 F4 |

STM32F2 series – High performance with ART Accelerator™

| 120 MHz Cortex-M3 CPU | Up to 1-Mbyte Flash | Up to 128-Kbyte SRAM | 2x USB 2.0 OTG FS/HS | 2x 16-bit advanced MC timer | Ethernet | FSMC Camera IF SDIO | Crypto-Hash TRNG | 2xI²S Up to 2x CAN | STM32 F2 |

Mainstream

STM32F3 series – Mixed-signal with DSP and FPU

| 72 MHz Cortex-M4 | Up to 512-Kbyte Flash | Up to 80-Kbyte SRAM CCM-RAM | USB 2.0 FS | 3x 16-bit advanced MC timer | 3x DAC 7x comp. 4x PGA | FSMC CAN | HR-Timer | ADC 3x 16-bit ΣΔ 4x12-bit (5 MSPS) | STM32 F3 |

STM32F1 series – Mainstream

| Up to 72 MHz Cortex-M3 CPU | Up to 1-Mbyte Flash | Up to 96-Kbyte SRAM | USB 2.0 OTG FS | 2x 16-bit advanced MC timer | Ethernet HDMI-CEC | SDIO FSMC | 2x I²S 2x CAN | | STM32 F1 |

STM32F0 series – Entry-level

| 48 MHz Cortex-M0 CPU | Up to 256-Kbyte Flash | Up to 32-Kbyte SRAM 20-byte backup data | USB 2.0 FS device Crystal less | Comp. HDMI-CEC | CAN DAC | | | STM32 F0 |

Ultra-Low-Power

STM32L4 series – Ultra-Low-Power and Performance with DSP, FPU and ART Accelerator™

| 80 MHz Cortex-M4 CPU | Up to 1-Mbyte dual-bank Flash | Up to 160-Kbyte SRAM | USB 2.0 OTG FS | 2x 16-bit advanced MC timer | DFSDM Op-amps comp. | Quad-SPI FSMC SDIO | AES-256 TRNG | 2x SAI CAN Up to LCD 8x40 | STM32 L4 |

STM32L1 series – Ultra-Low-Power

| 32 MHz Cortex-M3 CPU | Up to 512-Kbyte Flash | Up to 80-Kbyte SRAM | Up to 16-Kbyte EEPROM | USB 2.0 FS Device | Op-amps comp. | FSMC SDIO | AES-128 | Up to LCD 8x40 | STM32 L1 |

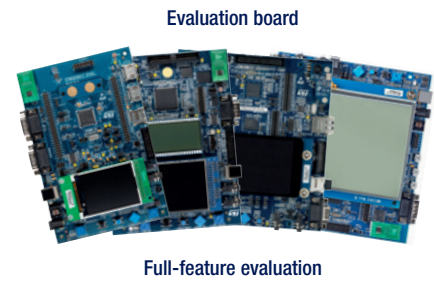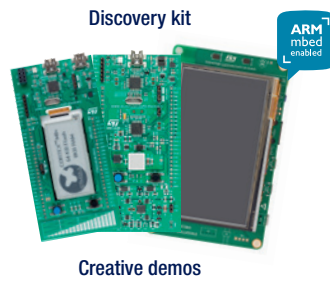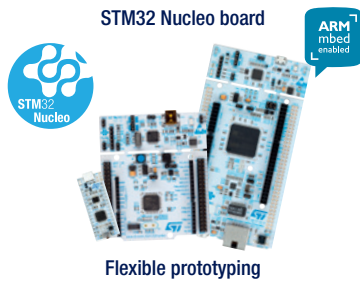**STM32L0 series – Ultra-Low-Power**

| 32 MHZ Cortex-M0+ CPU | Up to 192-Kbyte SRAM | Up to 20-Kbyte SRAM | Up to 6-Kbyte EEPROM | USB 2.0 FS device Crystal less | DAC comp. | LP Timer LP-UART | TRNG AES-128 | LP ADC 12-/16-bit LCD 8x48 / 4x52 | STM32 L0 |

STM32 ECOSYSTEM

Hardware tools
www.st.com/stm32hardwaretools

STM32 Nucleo board

Discovery kit

Evaluation board

Flexible prototyping

Creative demos

Full-feature evaluation

Software tools
www.st.com/stm32softwaretools

STM32CubeMX

Partners IDEs

STMStudio

Windows   OS X

Free IDE
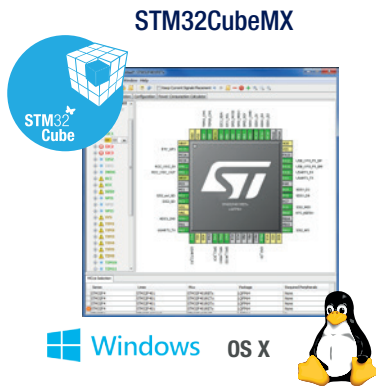
☐ Note : Free full version of Keil MDK-ARM on all STM32L0 and STM32F0

Configure and generate code   Compile and debug   Monitor

Embedded Software
www.st.com/stm32embeddedsoftware

ARM mbed

MATLAB SIMULINK

STM32Cube LL
(Low Layer)

STM32Cube HAL and middleware
Std Libraries

CMSIS and
Mbed SDK

Virtual machines
and models

High optimization
low portability

Average optimization
STM32 portability

Low optimization
ARM portability

Low optimization
large portability

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