STM32
MCU family

32-bit Flash microcontrollers powered by ARM® Cortex™-M processor

Welcome to the world of STM32

Releasing your creativity

The STM32 family of 32-bit Flash microcontrollers based on the ARM Cortex™-M processor is built to offer new degrees of freedom to MCU users. It brings a complete 32-bit product range that combines high-performance, real-time, low-power and low-voltage operation, while maintaining full integration and ease of development.

It eases migration from the 16-bit world with its high level of feature integration, its easy-to-use architecture, its low-power capability and cost-effectiveness.

The STM32 family helps you create new applications and design in the innovations you have been long dreaming about.

STMicroelectronics is a lead partner in developing Cortex-M cores and, with the STM32, offers a comprehensive portfolio of advanced MCUs that we are committed to extending in capability, price range and features to cover the needs of microcontroller convergence.

STM32 key benefits

- Leading-edge architecture with the latest Cortex-M3 core from ARM
- Excellent real-time behavior
- Outstanding power efficiency
- Superior and innovative peripherals
- Maximum integration
- Easy development, fast time to market

Real-time performance

Cortex
Intelligent Processors by ARM

Leading-edge architecture
Excellent real-time behavior

Future-proof design

Outstanding power efficiency

Sub µA RTC,
low-voltage
low-power modes

Environment friendly, suits low-power operation

Superior and innovative peripherals

USB OTG,
Ethernet, dual CAN,
12-bit ADC,
advanced timers

Address all your needs and beyond

Maximum integration

Reset circuitry clocks,
oscillators,
PLL regulator
RTC, watchdog

Cost and space saving

Extensive tools and software

Various IDE,
starter kits,
libraries,
RTOS and stacks

More time for innovation

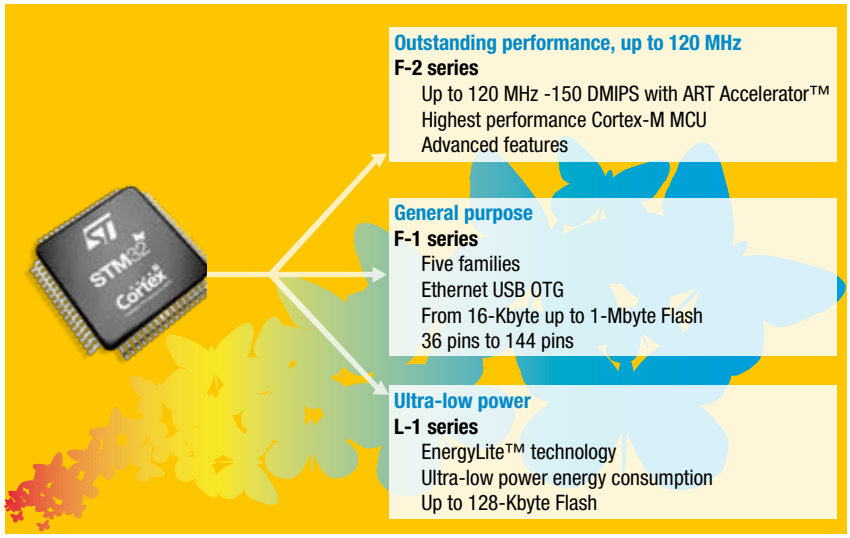
STM32 platform
More than 130 compatible devices

STM32, a solid foundation for growth

The STM32 platform is a strong foundation to build our portfolio. With new products addressing new applications, the complete STM32 product family now comprises three series, each dedicated to a specific segment.

More choice with STM32 series

- The general purpose F-1 series addresses a wide range of applications, from the lowest price-sensitive design to the computing intensive, high memory footprint.
- Get the highest performance with the F-2 series for computing-intensive applications and advanced connectivity.
  The F-2 series maintains compatibility with the F-1 series.
- Design ultra-low-power applications with the L-1 series for those who are power conscious and seek the absolute lowest energy consumption.
  The L-1 series maintains compatibility with the F-1 series.

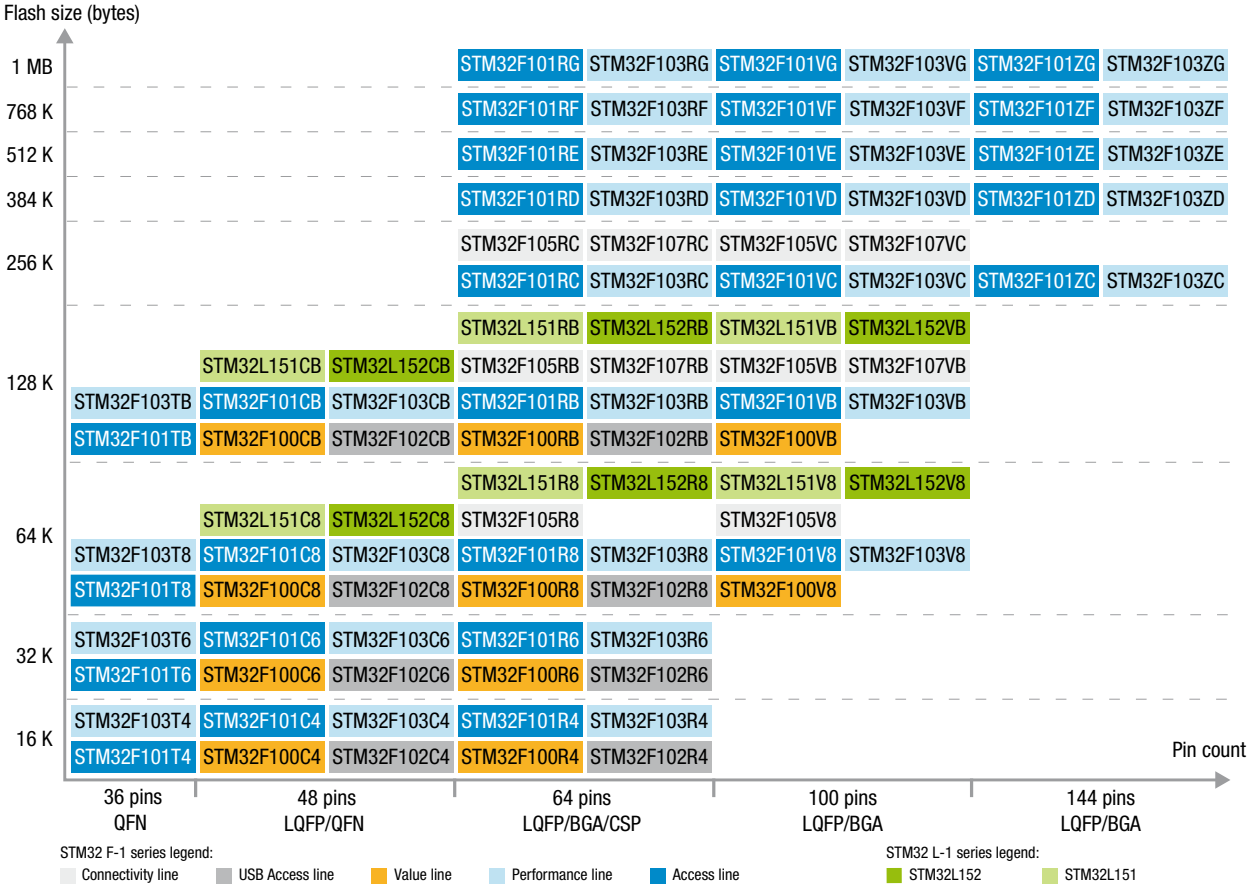


STM32, the optimal platform choice

The STM32 is the optimal choice to support many applications with the same platform.

All product lines in the three series are pin-to-pin and software compatible, making it easy to upgrade to higher or downgrade to lower memory size. Numerous applications may be addressed using the sole STM32 platform.

STM32 portfolio



STM32 product lines

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
- External memory interface (EMI)
- Dual 12-bit DAC
- Main oscillator and 32 kHz oscillator
- Low-speed and high-speed internal RC oscillators
- -40 to +85 °C and up to 105 °C operating temperature range
- Low voltage 2.0 to 3.6 V or 1.65 to 3.6 V (L-1 series) 5.0 V tolerant I/Os
- Temperature sensor

+

F-1 series - Connectivity line STM32F105/STM32F107

72 MHz Cortex-M3 CPU	Up to 64-Kbyte SRAM	Up to 256-Kbyte Flash	2x 12-bit ADC (1 µs)	USB 2.0 OTG FS	3-phase MC timer	2x CAN 2.0B	2x I²S audio class	Ethernet IEEE 1588

F-1 series - Performance line STM32F103

72 MHz Cortex-M3 CPU	Up to 96-Kbyte SRAM	Up to 1-Mbyte Flash	2/3x 12-bit ADC (1 µs)	USB FS device	3-phase MC timer	CAN 2.0B	2x I²S	SDIO

F-1 series - USB Access line STM32F102

48 MHz Cortex-M3 CPU	Up to 16-Kbyte SRAM	Up to 128-Kbyte Flash	12-bit ADC (1 µs)	USB FS device

F-1 series - Access line STM32F101

36 MHz Cortex-M3 CPU	Up to 80-Kbyte SRAM	Up to 1-Mbyte Flash	12-bit ADC (1 µs)

F-1 series - Value line STM32F100

24 MHz Cortex-M3 CPU	Up to 8-Kbyte SRAM	Up to 128-Kbyte Flash	12-bit ADC (1.2 µs)	3-phase MC timer	CEC

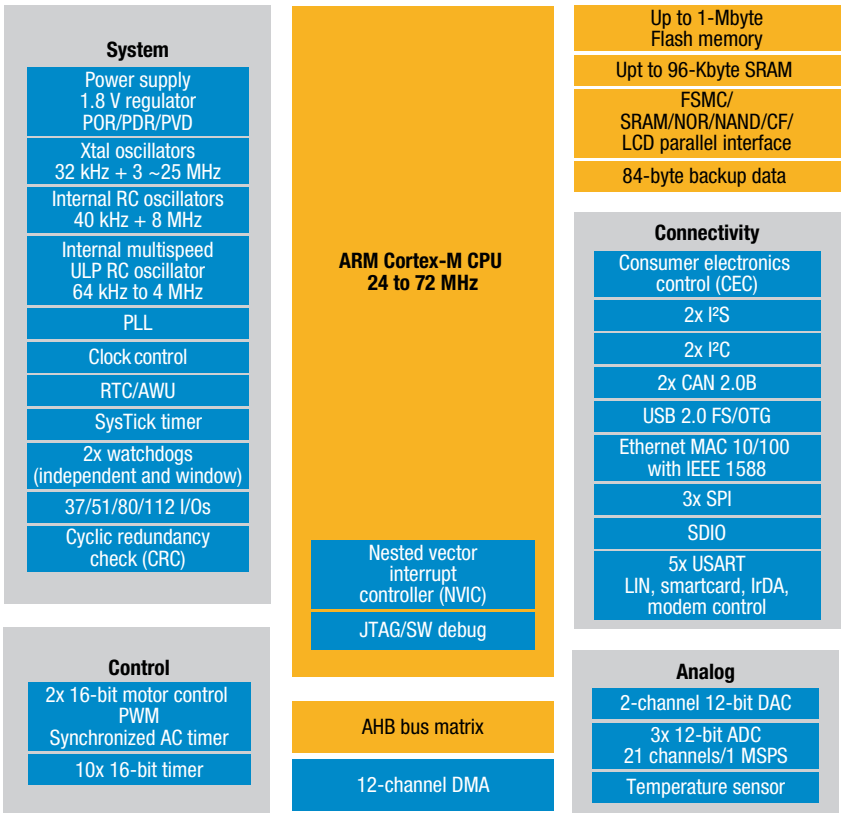
L-1 series - STM32L151/2

32 MHz Cortex-M3 CPU	Up to 16-Kbyte SRAM	Up to 128-Kbyte Flash	12-bit ADC (1 µs)	USB FS device	Data EEPROM 4 Kbytes	LCD 8x40	Comparator	BOR MSI VScal

Abbreviations:
BOR: Brown-out reset
CEC: Consumer electronic control
MSI: Multi-speed internal oscillator
RNG: Random number generator
SDIO: Secure digital input/output
VScal: Voltage scaling

STM32 F-1 series block diagram

This block diagram shows all the available peripherals. For exact product content, refer to the device summary.



Applications

- Industrial
  - PLC
  - Inverters
  - Printers, scanners
  - Industrial networking
  - Solar inverters
- Building and security
  - Alarm systems
  - Access control
  - HVAC
  - Power meters
- Medical
  - Glucose meters
  - Portable medical care
  - VPAP, CPAP
  - Patient monitoring
- Appliances
  - 3-phase motor drives
  - Application control
  - User interfaces
  - Induction cooking
- Consumer
  - Home audio
  - Gaming
  - PC peripherals
  - Digital cameras, GPS

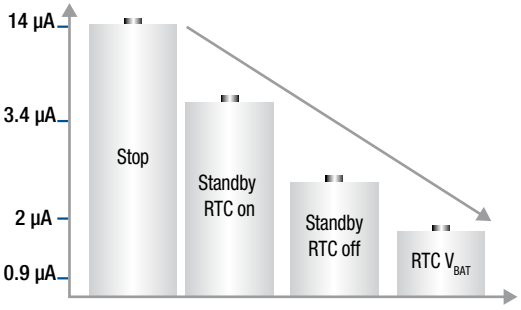
Superior and innovative peripherals

The need for speed	
USB FS	12 Mbit/s
USART	Up to 4.5 Mbit/s
SPI	Up to 18 Mbit/s
I²C	400 kHz
GPIO	Up to 18 MHz
3-phase MC timer	72 MHz PWM timer clock input
SDIO	Up to 48 MHz
I²S	From 8 kHz to 96 kHz sampling frequencies
The need for analog	
ADC	1 µs conversion time (1 MSPS)
DAC	2-channel, 12-bit
The need for connectivity	
Dual CAN	Up to 2 independent CAN
Ethernet	10/100 Mbit/s MAC with hardware IEEE 1588
USB OTG	Full speed host, device or OTG
CEC bus	Consumer electronic control for consumer devices
Flexible static memory interface	4 independent banks, 8/16 bit data bus up to 60 MHz, supports SRAM, PSRAM, NAND and NOR Flash, parallel graphic LCD

Outstanding power efficiency

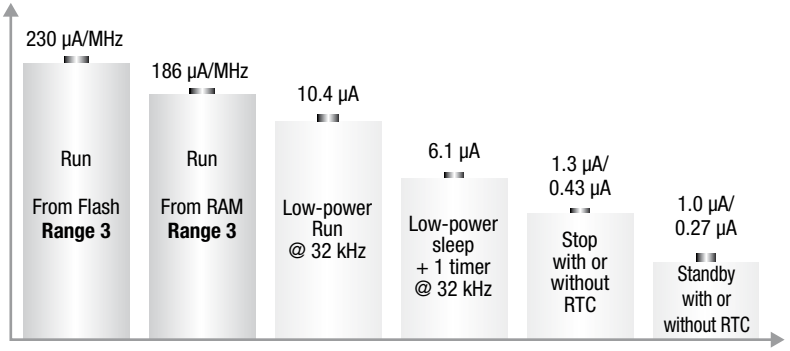
STM32F10x power consumption

Typical current
(on 128-Kbyte device @ 25 °C)



STM32L power consumption

Typical @ 25 °C



Notes:
- POR/PDR on
- RAM content preserved
- BOR option at 2.4 µA
- Startup time from Stop 8 µs
- Run and Sleep consumption value are independent of V_{DD}
- Stop and standby values measured at V_{DD} = 1.8 V

Motor control

The STM32 is perfectly suited to three-phase brushless motor control:

- Advanced PWM timer, fast ADC, high-performance core
- Free motor control firmware libraries supporting AC induction motor (sensored) and PMSM motor (sensorless, Hall-sensor or encoder) vector control
- Class B compliancy with the EN/IEC 60335-1 norm
- STM3210B-MCKIT full developer kit for vector drives

STM32 Value line

32-bit microcontrollers give greater choice for cost-sensitive applications

The STM32 Value line complements our STM32 Cortex-M microcontroller product portfolio by offering a low-cost product line that is pin-to-pin compatible with the whole STM32 portfolio. The line brings new features such as new 16-bit timers and CEC function to expand the range of applications addressed in consumer, appliance and industrial segments.

Based on the ARM Cortex-M core running at up to 24 MHz, the STM32 Value line offers an excellent cost-performance-peripherals trade-off.

The STM32 Value line provides all the essential features that make it the perfect choice to develop cost-effective applications traditionally addressed by 16-bit microcontrollers.

STM32 Connectivity line

Superior connectivity and superior audio support

The STM32 Connectivity line makes networking economical for a wide range of products, with its embedded Ethernet MAC with dedicated DMA and IEEE 1588 precision time protocol hardware support.

The USB 2.0 OTG peripheral makes the STM32 Connectivity line a turnkey solution to add a USB device, host or OTG function to a product. In addition, the line brings a dual CAN making it the MCU of choice for CAN gateways.

The two audio class I²S of the STM32 Connectivity line, combined with the embedded USB OTG peripheral, address requirements of most audio applications.

STM32 L-1 series

STM32L ultra-low-power MCU family

The STM32L15x enriches ST's ultra-low-power EnergyLite™ platform and the STM32 portfolio.

- High-performance ARM Cortex™-M3: up to 33 DMIPS
- Ultra-low energy consumption: down to 185 µA/DMIPS
- Power supply: 1.65 to 3.6 V
- 6 ultra-low-power modes including new low-power run and low-power sleep
- Stop mode at 1.3 µA with RTC and full RAM retention
- Enhanced security and safety features

STM32 F-2 series

The F-2 series brings more performance, memory and advanced peripherals

- New technologies: 90 nm process, advanced real-time (ART) accelerator
- More performance: zero-wait execution at 120 MHz/150 DMIPS
- Outstanding dynamic power: 22.5 mA at 120 MHz

Full sample availability in Q4/2010

STM32F - 32-bit ARM Cortex MCUs

Part number		Program memory Type Flash	Program memory Size (Kbytes)	RAM (Kbytes)	A/D inputs	Timer functions 12 or 16-bit (IC/OC/PWM)	Timer functions Others	Serial interface	I/Os (high current)	Packages	Supply voltage (V)	Special features
STM32F100 Value line - 24 MHz CPU												
48 pins	STM32F100C4	●	16	4	10x12-bit	6x16-bit (16/16/21)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	1xSPI, 1xI²C, CEC, 2xUSART (IrDA, ISO 7816)	37(37)	LQFP48	2.0 to 3.6	24 MHz CPU speed, 2-channel DAC, V_{bat} pin, low-power features, embedded POR, PDR and PVD, 8 MHz and 40 kHz internal RC oscillator, 4-24 MHz main oscillator, dedicated 32 kHz oscillator, -40 to 85 °C or -40 to 105 °C
	STM32F100C6	●	32	4	10x12-bit	6x16-bit (16/16/21)			37(37)	LQFP48		
	STM32F100C8	●	64	8	10x12-bit	7x16-bit (18/18/21)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	37(37)	LQFP48		
	STM32F100CB	●	128	8	10x12-bit	7x16-bit (18/18/21)			37(37)	LQFP48		
64 pins	STM32F100R4	●	16	4	16x12-bit	6x16-bit (16/16/21)		1xSPI, 1xI²C, CEC, 2xUSART (IrDA, ISO 7816)	51(51)	LQFP64, TFBGA64		
	STM32F100R6	●	32	4	16x12-bit	6x16-bit (16/16/21)			51(51)	LQFP64, TFBGA64		
	STM32F100R8	●	64	8	16x12-bit	7x16-bit (20/20/23)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	51(51)	LQFP64, TFBGA64		
	STM32F100RB	●	128	8	16x12-bit	7x16-bit (20/20/23)			51(51)	LQFP64, TFBGA64		
100 pins	STM32F100V8	●	64	8	16x12-bit	7x16-bit (20/20/26)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	80(80)	LQFP100		
	STM32F100VB	●	128	8	16x12-bit	7x16-bit (20/20/26)			80(80)	LQFP100		
STM32F101 Access line - 36 MHz CPU												
36 pins	STM32F101T4	●	16	4	10x12-bit	2x16-bit (8/8/8)	2xWDG, RTC, 24-bit down counter	1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816)	26(26)	QFN36	2.0 to 3.6	36 MHz CPU speed, V_{bat} pin, low-power features, embedded POR, PDR and PVD, 8 MHz and 40 kHz internal RC oscillator, 4-16 MHz main oscillator, dedicated 32 kHz oscillator, -40 to 85 °C Additional features on 256-Kbyte to 1-Mbyte variants: EMI (100 and 144 pins), 2-channel DAC Additional features on 768-Kbyte to 1-Mbyte variants: MPU, dual bank Flash with RWW
	STM32F101T6	●	32	6	10x12-bit	2x16-bit (8/8/8)			26(26)	QFN36		
	STM32F101T8	●	64	10	10x12-bit	3x16-bit (12/12/12)			26(26)	QFN36		
	STM32F101TB	●	128	16	10x12-bit	3x16-bit (12/12/12)			26(26)	QFN36		
48 pins	STM32F101C4	●	16	4	10x12-bit	2x16-bit (8/8/8)	2xWDG, RTC, 24-bit down counter		36(36)	LQFP48, LQFP48		
	STM32F101C6	●	32	6	10x12-bit	2x16-bit (8/8/8)			36(36)	LQFP48, LQFP48		
	STM32F101C8	●	64	10	10x12-bit	3x16-bit (12/12/12)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816)	36(36)	LQFP48, LQFP48		
	STM32F101CB	●	128	16	10x12-bit	3x16-bit (12/12/12)			36(36)	LQFP48, LQFP48		
64 pins	STM32F101R4	●	16	4	16x12-bit	2x16-bit (8/8/8)		1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816)	51(51)	LQFP64		
	STM32F101R6	●	32	6	16x12-bit	2x16-bit (8/8/8)			51(51)	LQFP64		
	STM32F101R8	●	64	10	16x12-bit	3x16-bit (12/12/12)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816)	51(51)	LQFP64		
	STM32F101RB	●	128	16	16x12-bit	3x16-bit (12/12/12)			51(51)	LQFP64		
	STM32F101RC	●	256	32	16x12-bit	6x16-bit (16/16/16)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	3xSPI, 2xI²C, 5xUSART, UART (IrDA, ISO 7816)	51(51)	LQFP64		
	STM32F101RD	●	384	48	16x12-bit	6x16-bit (16/16/16)			51(51)	LQFP64		
	STM32F101RE	●	512	48	16x12-bit	6x16-bit (16/16/16)			51(51)	LQFP64		
	STM32F101RF	●	768	80	16x12-bit	12x16-bit (19/19/19)			51(51)	LQFP64		
	STM32F101RG	●	1024	80	16x12-bit	12x16-bit (19/19/19)			51(51)	LQFP64		
100 pins	STM32F101V8	●	64	10	16x12-bit	3x16-bit (12/12/12)	2xWDG, RTC, 24-bit down counter	2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816)	80(80)	LQFP100		
	STM32F101VB	●	128	16	16x12-bit	3x16-bit (12/12/12)			80(80)	LQFP100		
	STM32F101VC	●	256	32	16x12-bit	6x16-bit (16/16/16)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	3xSPI, 2xI²C, 5xUSART, UART (IrDA, ISO 7816)	80(80)	LQFP100		
	STM32F101VD	●	384	48	16x12-bit	6x16-bit (16/16/16)			80(80)	LQFP100		
	STM32F101VE	●	512	48	16x12-bit	6x16-bit (16/16/16)			80(80)	LQFP100		
	STM32F101VF	●	768	80	16x12-bit	12x16-bit (23/23/23)			80(80)	LQFP100		
	STM32F101VG	●	1024	80	16x12-bit	12x16-bit (23/23/23)			80(80)	LQFP100		
144 pins	STM32F101ZC	●	256	32	16x12-bit	6x16-bit (16/16/16)			112(112)	LQFP144		
	STM32F101ZD	●	384	48	16x12-bit	6x16-bit (16/16/16)			112(112)	LQFP144		
	STM32F101ZE	●	512	48	16x12-bit	6x16-bit (16/16/16)			112(112)	LQFP144		
	STM32F101ZF	●	768	80	16x12-bit	12x16-bit (23/23/23)			112(112)	LQFP144		
	STM32F101ZG	●	1024	80	16x12-bit	12x16-bit (23/23/23)			112(112)	LQFP144		

STM32F - 32-bit ARM Cortex MCUs (cont'd)

Part number		Program memory Type: Flash	Program memory Size: (Kbytes)	RAM (Kbytes)	A/D inputs	Timer functions: 12 or 16-bit (IC/OC/PWM)	Timer functions: Others	Serial interface	I/Os (high current)	Packages	Supply voltage (V)	Special features
STM32F102 USB Access line - 48 MHz CPU												
48 pins	STM32F102C4	●	16	4	10x12-bit	2x16-bit (8/8/8)	2xWDG, RTC, 24-bit down counter	1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816), USB	36(36)	LQFP48	2.0 to 3.6	48 MHz CPU speed, V_{bat} pin, low-power features, embedded POR, PDR and PVD, 8 MHz and 40 kHz internal RC oscillator, 4-16 MHz main oscillator, dedicated 32 kHz oscillator, -40 to 85 °C
	STM32F102C6	●	32	6	10x12-bit	2x16-bit (8/8/8)			36(36)	LQFP48		
	STM32F102C8	●	64	10	10x12-bit	3x16-bit (12/12/12)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816), USB	36(36)	LQFP48		
	STM32F102CB	●	128	16	10x12-bit	3x16-bit (12/12/12)			36(36)	LQFP48		
64 pins	STM32F102R4	●	16	4	16x12-bit	2x16-bit (8/8/8)		1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816), USB	51(51)	LQFP64		
	STM32F102R6	●	32	6	16x12-bit	2x16-bit (8/8/8)			51(51)	LQFP64		
	STM32F102R8	●	64	10	16x12-bit	3x16-bit (12/12/12)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816), USB	51(51)	LQFP64		
	STM32F102RB	●	128	16	16x12-bit	3x16-bit (12/12/12)			51(51)	LQFP64		
STM32F103 Performance line - 72 MHz CPU												
36 pins	STM32F103T4	●	16	6	10x12-bit	3x16-bit (12/12/14)	2xWDG, RTC, 24-bit down counter	1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816), USB, CAN	26(26)	QFN36	2.0 to 3.6	72 MHz CPU speed, V_{bat} pin, low-power features, embedded POR, PDR and PVD, 8 MHz and 40 kHz internal RC oscillator, 4-16 MHz main oscillator, dedicated 32 kHz oscillator, 1x high-speed USART 4.5 Mbit/s, motor control oriented PWM, 2x ADC sample and hold capability, -40 to 85 °C or -40 to 105 °C Additional features on 256-Kbyte to 1-Mbyte variants: EMI (100 and 144 pins), 2-channel DAC, 3x ADC sample and hold capability, 2 motor control PWM Additional features on 768-Kbyte to 1-Mbyte variants: MPU, dual bank Flash with RWW
	STM32F103T6	●	32	10	10x12-bit	3x16-bit (12/12/14)			26(26)	QFN36		
	STM32F103T8	●	64	20	10x12-bit	4x16-bit (16/16/18)			26(26)	QFN36		
	STM32F103TB	●	128	20	10x12-bit	4x16-bit (16/16/18)			26(26)	QFN36		
48 pins	STM32F103C4	●	16	6	10x12-bit	3x16-bit (12/12/14)	2xWDG, RTC, 24-bit down counter		36(36)	LQFP48, QFN48		
	STM32F103C6	●	32	10	10x12-bit	3x16-bit (12/12/14)			36(36)	LQFP48, QFN48		
	STM32F103C8	●	64	20	10x12-bit	4x16-bit (16/16/18)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816), USB, CAN	36(36)	LQFP48, QFN48		
	STM32F103CB	●	128	20	10x12-bit	4x16-bit (16/16/18)			36(36)	LQFP48, QFN48		
64 pins	STM32F103R4	●	16	6	16x12-bit	3x16-bit (12/12/14)		1xSPI, 1xI²C, 2xUSART (IrDA, ISO 7816), USB, CAN	51(51)	LQFP64, TFBGA64		
	STM32F103R6	●	32	10	16x12-bit	3x16-bit (12/12/14)			51(51)	LQFP64, TFBGA64		
	STM32F103R8	●	64	20	16x12-bit	4x16-bit (16/16/18)		2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816), USB, CAN	51(51)	LQFP64, TFBGA64		
	STM32F103RB	●	128	20	16x12-bit	4x16-bit (16/16/18)			51(51)	LQFP64, TFBGA64		
	STM32F103RC	●	256	48	16x12-bit	8x16-bit (24/24/28)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	3xSPI, 2xI²S, 2xI²C, 5xUSART, UART (IrDA, ISO 7816), SDIO, USB, CAN	51(51)	LQFP64, WLCSP64		
	STM32F103RD	●	384	64	16x12-bit	8x16-bit (24/24/28)			51(51)	LQFP64, WLCSP64		
	STM32F103RE	●	512	64	16x12-bit	8x16-bit (24/24/28)			51(51)	LQFP64, WLCSP64		
	STM32F103RF	●	768	96	16x12-bit	12x16-bit (27/27/29)			51(51)	LQFP64		
	STM32F103RG	●	1024	96	16x12-bit	12x16-bit (27/27/29)			51(51)	LQFP64		
100 pins	STM32F103V8	●	64	20	16x12-bit	4x16-bit (16/16/18)	2xWDG, RTC, 24-bit down counter	2xSPI, 2xI²C, 3xUSART (IrDA, ISO 7816), USB, CAN	80(80)	LQFP100, LFBGA100		
	STM32F103VB	●	128	20	16x12-bit	4x16-bit (16/16/18)			80(80)	LQFP100, LFBGA100		
	STM32F103VC	●	256	48	16x12-bit	8x16-bit (24/24/28)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	3xSPI, 2xI²S, 2xI²C, 5xUSART, UART (IrDA, ISO 7816), SDIO, USB, CAN	80(80)	LQFP100, LFBGA100		
	STM32F103VD	●	384	64	16x12-bit	8x16-bit (24/24/28)			80(80)	LQFP100, LFBGA100		
	STM32F103VE	●	512	64	16x12-bit	8x16-bit (24/24/28)			80(80)	LQFP100, LFBGA100		
	STM32F103VF	●	768	96	16x12-bit	14x16-bit (29/29/33)			80(80)	LQFP100		
	STM32F103VG	●	1024	96	16x12-bit	14x16-bit (29/29/33)			80(80)	LQFP100		
144 pins	STM32F103ZC	●	256	48	21x12-bit	8x16-bit (24/24/28)			112(112)	LQFP144, LFBGA144		
	STM32F103ZD	●	384	64	21x12-bit	8x16-bit (24/24/28)			112(112)	LQFP144, LFBGA144		
	STM32F103ZE	●	512	64	21x12-bit	8x16-bit (24/24/28)			112(112)	LQFP144, LFBGA144		
	STM32F103ZF	●	768	96	21x12-bit	14x16-bit (33/33/35)			112(112)	LQFP144, LFBGA144		
	STM32F103ZG	●	1024	96	21x12-bit	14x16-bit (33/33/35)			112(112)	LQFP144, LFBGA144		

STM32F - 32-bit ARM Cortex MCUs (cont'd)

Part number		Program memory Type Flash	Program memory Size (Kbytes)	RAM (Kbytes)	A/D inputs	Timer functions 12 or 16-bit (IC/OC/PWM)	Timer functions Others	Serial interface	I/Os (high current)	Packages	Supply voltage (V)	Special features
STM32F105/107 Connectivity line - 72 MHz CPU												
64 pins	STM32F105R8	●	64	20	16x12-bit	7x16-bit (20/20/22)	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	3xSPI, 2xI²S, 2xI²C, 3xUSART (IrDA, ISO 7816), 2xUART, USB OTG FS, 2xCAN	51(51)	LQFP64	2.0 to 3.6	72 MHz CPU speed, 2-channel DAC, V_{bat} pin, low power features, embedded POR, PDR and PVD, 8 MHz and 40 kHz internal RC oscillator, 3-25 MHz main oscillator, dedicated 32 kHz oscillator, 1x high-speed USART 4.5 Mbit/s, motor control oriented PWM, 2x ADC (double sample and hold capability), advanced PLL schemes for audio class I²S communication, -40 to 85 °C or -40 to 105 °C
	STM32F105RB	●	128	32	16x12-bit	7x16-bit (20/20/22)			51(51)	LQFP64		
	STM32F105RC	●	256	64	16x12-bit	7x16-bit (20/20/22)			51(51)	LQFP64		
	STM32F107RB	●	128	48	16x12-bit	7x16-bit (20/20/22)		3xSPI, 2xI²S, 2xI²C, 3xUSART (IrDA, ISO 7816), 2xUART, USB OTG FS, 2xCAN, Ethernet MAC10/100	51(51)	LQFP64		
	STM32F107RC	●	256	64	16x12-bit	7x16-bit (20/20/22)			51(51)	LQFP64		
100 pins	STM32F105V8	●	64	20	16x12-bit	7x16-bit (20/20/22)		3xSPI, 2xI²S, 2xI²C, 3xUSART (IrDA, ISO 7816), 2xUART, USB OTG FS, 2xCAN	80(80)	LQFP100, LFBGA100		
	STM32F105VB	●	128	32	16x12-bit	7x16-bit (20/20/22)			80(80)	LQFP100, LFBGA100		
	STM32F105VC	●	256	64	16x12-bit	7x16-bit (20/20/22)			80(80)	LQFP100, LFBGA100		
	STM32F107VB	●	128	48	16x12-bit	7x16-bit (20/20/22)		3xSPI, 2xI²S, 2xI²C, 3xUSART (IrDA, ISO 7816), 2xUART, USB OTG FS, 2xCAN, Ethernet MAC10/100	80(80)	LQFP100, LFBGA100		
	STM32F107VC	●	256	64	16x12-bit	7x16-bit (20/20/22)			80(80)	LQFP100, LFBGA100		

STM32L- 32-bit ultra-low-power MCUs

Part number		Program memory Type Flash	Program memory Size (Kbytes)	RAM (Kbytes)	Data EEPROM (Kbytes)	A/D inputs	Timer functions 12 or 16-bit (IC/OC/PWM)	Timer functions Others	Serial interface	I/Os (high current)	Packages	Supply voltage (V)*	Special features
STM32L151 without LCD - 32 MHz													
48 pins	STM32L151C8	●	64	10	4	16x12-bit	8x16-bit (16/16/16)	SysTick, 2xWDG, RTC	2xSPI, 2xI²C, 3xUSART (IrDa, ISO 7816), 1xUSB	37(37)	LQFP48, QFN48	1.8 to 3.6	USB, voltage scaling, MPU, ULP MSI, EEPROM, hardware RTC, 6 low-power modes, 2x comparators, reset system + BOR
	STM32L151CB	●	128	16		16x12-bit	8x16-bit (16/16/16)			37(37)	LQFP48, QFN48		
64 pins	STM32L151R8	●	64	10		20x12-bit	8x16-bit (16/16/16)			51(51)	LQFP64, BGA64		
	STM32L151RB	●	128	16		20x12-bit	8x16-bit (16/16/16)			51(51)	LQFP64, BGA64		
100 pins	STM32L151V8	●	64	10		24x12-bit	8x16-bit (16/16/16)			83(83)	LQFP100, BGA100		
	STM32L151VB	●	128	16		24x12-bit	8x16-bit (16/16/16)			83(83)	LQFP100, BGA100		
STM32L152 with LCD - 32 MHz													
48 pins	STM32L152C8	●	64	10	4	16x12-bit	8x16-bit (16/16/16)	SysTick, 2xWDG, RTC	2xSPI, 2xI²C, 3xUSART (IrDa, ISO 7816), 1xUSB	37(37)	LQFP48, QFN48	1.8 to 3.6	LCD segment controller (8x40), USB, voltage scaling, MPU, ULP MSI, EEPROM, hardware RTC, 6 low-power modes, 2x comparators, reset system + BOR
	STM32L152CB	●	128	16		16x12-bit	8x16-bit (16/16/16)			37(37)	LQFP48, QFN48		
64 pins	STM32L152R8	●	64	10		20x12-bit	8x16-bit (16/16/16)			51(51)	LQFP64, BGA64		
	STM32L152RB	●	128	16		20x12-bit	8x16-bit (16/16/16)			51(51)	LQFP64, BGA64		
100 pins	STM32L152V8	●	64	10		24x12-bit	8x16-bit (16/16/16)			83(83)	LQFP100, BGA100		
	STM32L152VB	●	128	16		24x12-bit	8x16-bit (16/16/16)			83(83)	LQFP100, BGA100		

Note:
*Contact ST sales office for part numbers with supply voltage: 1.65 to 3.6 V (without BOR)

Development tools

STMicroelectronics' STM32 family of 32-bit ARM Cortex™-M-core-based microcontrollers are supported by a complete range of high-end and low-cost evaluation, software, debugging and programming tools.

This complete line includes third-party solutions that come complete with C/C++ compiler, integrated development environment and in-circuit debugger/programmer featuring a JTAG application interface. Developers can also explore and start applications easily with any of a range of affordable, easy-to-use starter kits.

The superb combination of a state-of-the-art and efficient library of software drivers and extensive support for all major tool providers offers a fast route to best-fit and an optimized development process.

Promotion kits

STM32 new primer

Play, explore and develop applications on the **EvoPrimer*** with Raisonance toolset, free demos and an online community at www.stm32circle.com to stimulate creative designs.

Order codes:

STM3210CPRIMER (STM32 Connectivity line)
STM3210EPRIMER (STM32 Performance line)

Note:
*Contact ST sales office

STM32-PerformanceStick and STM32-ComStick

Evaluate STM32 performance in real time with the innovative **STM32-PerformanceStick** and the networking features of the STM32 Connectivity line with **STM32-ComStick**. These kits include an integrated debugging/ programming capability via USB and unlimited Hitex HiTOP5 and Tasking VX C compiler.

STM32 Value line Discovery

The **STM32 Value line Discovery (STM32VLDISCOVERY)** kit is the cheapest and quickest way to discover the STM32. Based on the STM32 Value line, this quick-start evaluation board includes the ST-LINK debugger and is delivered with IDE from Keil, IAR and Atollic. This low-cost evaluation kit will satisfy hobbyists, first-time developers and students.

Micrium book and board package

Micrium book

Micrium's newest real-time kernel µC-OS/III designed to save time on embedded system projects. A two-part book dedicated to µC-OS/III is accompanied by an STM32 Connectivity line evaluation board.

Order code: STM32CMICOS-EVAL

STM32CMICOS-EVAL

Micrium TCP/IP book

Understand how a TCP/IP stack works using Micrium's µC/TCP-IP as a reference with the book *µC/TCP-IP: The Embedded Protocol Stack for the STM32F107*, Connectivity line. Examples run on the STM32F107 evaluation board available with the book *µC/OS-III*.

Order code: STM32CMICTCP-BK

STM32CMICTCP-BK

Starter kits

Part number	Featured product	Description
STM3210B-SK/HIT STM3210E-SK/HIT	STM32F103RBT6	Hitex kit with unlimited HiTOP5, Tasking VX compiler, STM32-PerformanceStick with integrated debugging/ programming via USB, extension I/O board with peripheral evaluation features, DashBoard GUI
STM3210B-SK/IAR STM3210C-SK/IAR STM3210E-SK/IAR	STM32F103RBT6 STM32F107RCT6 STM32F103RET6	IAR Embedded Workbench for ARM (for up to 32 Kbytes of code), IAR C/C++ compiler, J-Link (USB/JTAG), evaluation board
STM3210B-SK/KEIL STM3210C-SK/KEIL STM3210E-SK/KEIL	STM32F103RBT6 STM32F107RCT6 STM32F103RET6	Keil RealView MDK with uVision 3 (for up to 16 Kbytes of code), ARM C/C++ compiler, ULINK (USB/JTAG), evaluation board
STM3210B-SK/RAIS STM3210C-SK/RAIS	STM32F103RBT6 STM32F107RCT6	Raisonance REva kit with RIDE (debug up to 32 Kbytes of code), GNU C/C++ compiler, modular evaluation hardware with integrated RLink (USB/JTAG)
STM3210B-MCKIT	STM32F103RBT6	ST motor-control starter kit with complete sensor and sensorless libraries, evaluation hardware platform for vector drive of three-phase PMSM and induction motors, plus Segger J-Link for host PC interface

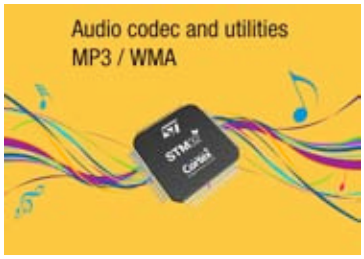
Evaluation board for STM32

Several hardware platforms from a range of third-party tool developers, and open-platform evaluation boards from ST implement the complete range of device peripherals for STM32 devices.

For more information, visit **www.st.com/stm32**

STM32 audio software

This professional audio engine from the leading technology company Spirit is a high-quality and fully-supported solution. It removes the hurdles associated with open source solutions, and insures a fast development with professional results for audio applications. The solution supports the popular MP3 and WMA key formats, supported by a set of must-have add-ons such as a channel mixer, standalone 3-band parametric equalizer and loudness control.



The STM32 audio software is available for the STM32F105 Connectivity line products, which feature several dedicated enhancements for high-quality audio processing.

Contact your local ST sales and marketing office for more information on this solution.

STM32 embedded firmware

STM32 firmware library: Complete set of device drivers for all the standard device peripherals.

STM32 USB developer kit: Complete firmware package for USB slave interface.

DSP Software Library: DSP (digital signal processor) software library including digital filters and FFT.

STM32 Speech Codec Software Library: Speech codec software to compress/decompress speech data.

STM32 self-test routines Class B norm certification: Complete software for EN/IEC 60335-1 Class B norm.

STM32 motor control software: Complete 3-phase motor-control library supporting PMSM motors in sensored and sensorless mode and AC induction motors in sensored mode, and a patented single-shunt algorithm. This software is included in the STM32 motor control starter kit.

Development tools, operating systems, solution stacks and more

Choose from a full range of development solutions from lead suppliers that deliver start-to-finish control of application development from a single integrated development environment. Access a variety of royalty-free, small-footprint operating systems and a wealth of off-the-shelf stacks from numerous third-party suppliers.

For detailed information, see **www.st.com/stm32tools**

Recycled and chlorine free paper

© STMicroelectronics - September 2010 - Printed in Italy - All rights reserved
The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies
All other names are the property of their respective owners

Order code: BRSTM320910

For more information on ST products and solutions, visit **www.st.com**