STM32
32-bit ARM Cortex MCUs
Releasing your creativity

life.augmented

STM32

STM32 platform

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

The STM32 family of 32-bit Flash microcontrollers based on the ARM Cortex™-M processor is designed to offer new degrees of freedom to MCU users. By bringing 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, the STM32 family helps you create new applications and design in the innovations you have long been dreaming about.

FIVE REASONS TO CHOSE THE STM32 PLATFORM

More than 350 compatible devices

Real-time performance	Outstanding power efficiency	Superior and innovative peripherals	Maximum integration	Extensive ecosystem
ART Accelerator, CCM-SRAM, Multi-AHB bus matrix, Excellent real-time up to 168 MHz/210 DMIPS zero-wait state execution performance from Flash	< 1 µA RTC in V_{BAT} mode, ultra-low dynamic power consumption 188 µA/MHz 1.65 to 3.6 V V_{DD}, 0.45 µA Stop mode and 0.3 µA Standby mode	USB-OTG High Speed, camera interface, Ethernet, CAN, crypto/hash processor, PGA, sigma-delta 16-bit ADC and 12-bit ADC (up to 5 MSPS), external memory interface, CEC	Reset circuitry, voltage regulator, internal RC oscillator, PLL	ARM + ST ecosystem (eval boards, discovery kits, software libraries, RTOS)

STM32, A SOLID FOUNDATION FOR GROWTH

With the STM32, ST offers a comprehensive portfolio of advanced MCUs that we are committed to extending in capability, competitive pricing and features to cover the needs of developers.

Core/features

Cortex-M4

STM32 F4
High-performance MCUs with DSP and FPU
168 MHz Cortex-M4
512-Kbyte to 1-Mbyte Flash
Up to 192-Kbyte SRAM

STM32 F3
Mixed-signal MCUs with DSP and FPU
72 MHz Cortex-M4
64- to 256-Kbyte Flash
Up to 48-Kbyte SRAM

STM32 F2
High-performance MCUs
120 MHz Cortex-M3
128-Kbyte to 1-Mbyte Flash
Up to 128-Kbyte SRAM

STM32 F1
Mainstream MCUs
24 to 72 MHz Cortex-M3
16-Kbyte to 1-Mbyte Flash
Up to 96-Kbyte SRAM

Cortex-M3

STM32 L1
Ultra-low-power MCUs
32 MHz Cortex-M3
32- to 384-Kbyte Flash
Up to 48-Kbyte SRAM

STM32 W
Wireless MCUs
24 MHz Cortex-M3
64- to 256-Kbyte Flash
Up to 16-Kbyte SRAM

Cortex-M0

STM32 F0
Entry-level MCUs
48 MHz Cortex-M0
16- to 64-Kbyte Flash
Up to 8-Kbyte SRAM

Frequency/performance

STM32

ADDRESSING THE THREE DIMENSIONS OF MICROCONTROLLER CONTENT

With its broad range of products, the STM32 addresses the three dimensions of microcontrollers: performance, low power and cost sensitiveness.

High-performance MCUs with DSP and FPU

- STM32 F4 series based on Cortex-M4 with up to 168 MHz/210 DMIPS
- ART Accelerator™ and 7-layer bus matrix
- Low dynamic consumption: 230 µA/MHz
- HS-USB, IEEE 1588 Ethernet, camera interface

Mixed-signal MCUs with DSP and FPU

- STM32 F3 series based on Cortex-M4 with up to 72 MHz/62 DMIPS (from Flash) or 94 DMIPS (from CCM-SRAM)
- Up to 48-Kbyte SRAM and CCM-SRAM
- Rich analog peripherals plus low-/mid-density memory: 7x comparators, 4x PGA, 4x 12-bit ADC (5 MSPS), 3x 16-bit ΣΔ ADC and 2x 3-phase MC timer (144 MHz)

High-performance MCUs

- STM32 F2 based on Cortex-M3 up to 120 MHz/150 DMIPS
- ART Accelerator™ and 7-layer bus matrix
- Low dynamic consumption: 188 µA/MHz
- HS-USB, IEEE 1588 Ethernet, camera interface

Mainstream MCUs

- Based on Cortex-M3 running up to 72 MHz
- Large peripheral set: ADC and DAC, 12 bits, comm peripherals (USART, USB, SPI, I²C and more), multiple timers, maximum integration

Entry-level MCUs

- STM32 F0 based on Cortex-M0 up to 48 MHz/38 DMIPS
- ADC and DAC, 12 bits, comparator
- Communication peripherals (USART, SPI, I²C FM+ and HDMI CEC)
- 3-phase motor control

Ultra-low-power MCUs

- STM32 L1 ultra-low-power platform
- Low voltage down to 1.65 V
- 32 MHz processing performance
- Ultra-low static consumption
  - 0.45 µA Stop mode
  - 0.3 µA Standby mode

Wireless MCUs, IEEE 802.15.4

- STM32 W based on Cortex-M3 running up to 24 MHz
- 2.4 GHz IEEE 802.15.4 transceiver and lower MAC with excellent Wireless performance:
  - Rx sensibility up to -100 dBm
  - Output power configurable up to +8 dBm
- Low-power-mode consumption: 0.4 µA with RAM retention

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 (FSMC)
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 oscillators
-40 to +85 °C and up to 105 °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

+

STM32 F4 series - High performance with DSP (STM32F405/415/407/417)

| 168 MHz Cortex-M4 with DSP and FPU | Up to 192-Kbyte SRAM | Up to 1-Mbyte Flash | 2x USB 2.0 OTG FS/HS | 3-phase MC timer | 2x CAN 2.0B | SDIO 2x I²S audio Camera IF | Ethernet IEEE 1588 | Crypto/ hash processor and RNG | STM32 F4 |

STM32 F3 series - Mixed-signal with DSP (STM32F302/303/313/372/373/383)

| 72 MHz Cortex-M4 with DSP and FPU | Up to 48-Kbyte SRAM & CCM-SRAM | Up to 256-Kbyte Flash | USB 2.0 FS | 2x 3-phase MC timer (144 MHz) | CAN 2.0B | Up to 7x comparator | 3x 16-bit ΣΔ ADC | 4x PGA | STM32 F3 |

STM32 F2 series - High performance (STM32F205/215/207/217)

| 120 MHz Cortex-M3 CPU | Up to 128-Kbyte SRAM | Up to 1-Mbyte Flash | 2x USB 2.0 OTG FS/HS | 3-phase MC timer | 2x CAN 2.0B | SDIO 2x I²S audio Camera IF | Ethernet IEEE 1588 | Crypto/ hash processor and RNG | STM32 F2 |

STM32 F1 series - Mainstream - 5 product lines (STM32F100/101/102/103 and 105/107)

| Up to 72 MHz Cortex-M3 CPU | Up to 96-Kbyte SRAM | Up to 1-Mbyte Flash | USB 2.0 OTG FS | 3-phase MC timer | Up to 2x CAN 2.0B | SDIO 2x I²S audio | Ethernet IEEE 1588 | STM32 F1 |

STM32 F0 series – Entry level (STM32F050/051)

| 48 MHz Cortex-M0 CPU | Up to 8-Kbyte SRAM | Up to 64-Kbyte Flash | 3-phase MC timer | Comparator | CEC | STM32 F0 |

STM32 L1 series - Ultra-low-power (STM32L151/152/162)

| 32 MHz Cortex-M3 CPU | Up to 48-Kbyte SRAM | Up to 384-Kbyte Flash | USB FS device | Up to 12-Kbyte EEPROM | LCD 8x40 4x44 | Comparator | BOR MSI VScal | AES 128-bit | STM32 L1 |

STM32 W series - Wireless (STM32W108)

| 24 MHz Cortex-M3 CPU | Up to 16-Kbyte SRAM | Up to 256-Kbyte Flash | 2.4 GHz IEEE 802.15.4 Transceiver | Lower MAC Digital baseband | AES 128-bit | STM32 W |

Abbreviations:

FS:	Full speed	MSI:	Multi-speed internal oscillator	VScal:	Voltage scaling
HS:	High speed	RNG:	Random number generator	FPU:	Floating point unit
MC:	Motor control	SDIO:	Secure digital input/output	DSC:	Digital signal controller

STM32, THE OPTIMAL PLATFORM CHOICE

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

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

STM32 PORTFOLIO

Flash size (bytes) vs Pin count

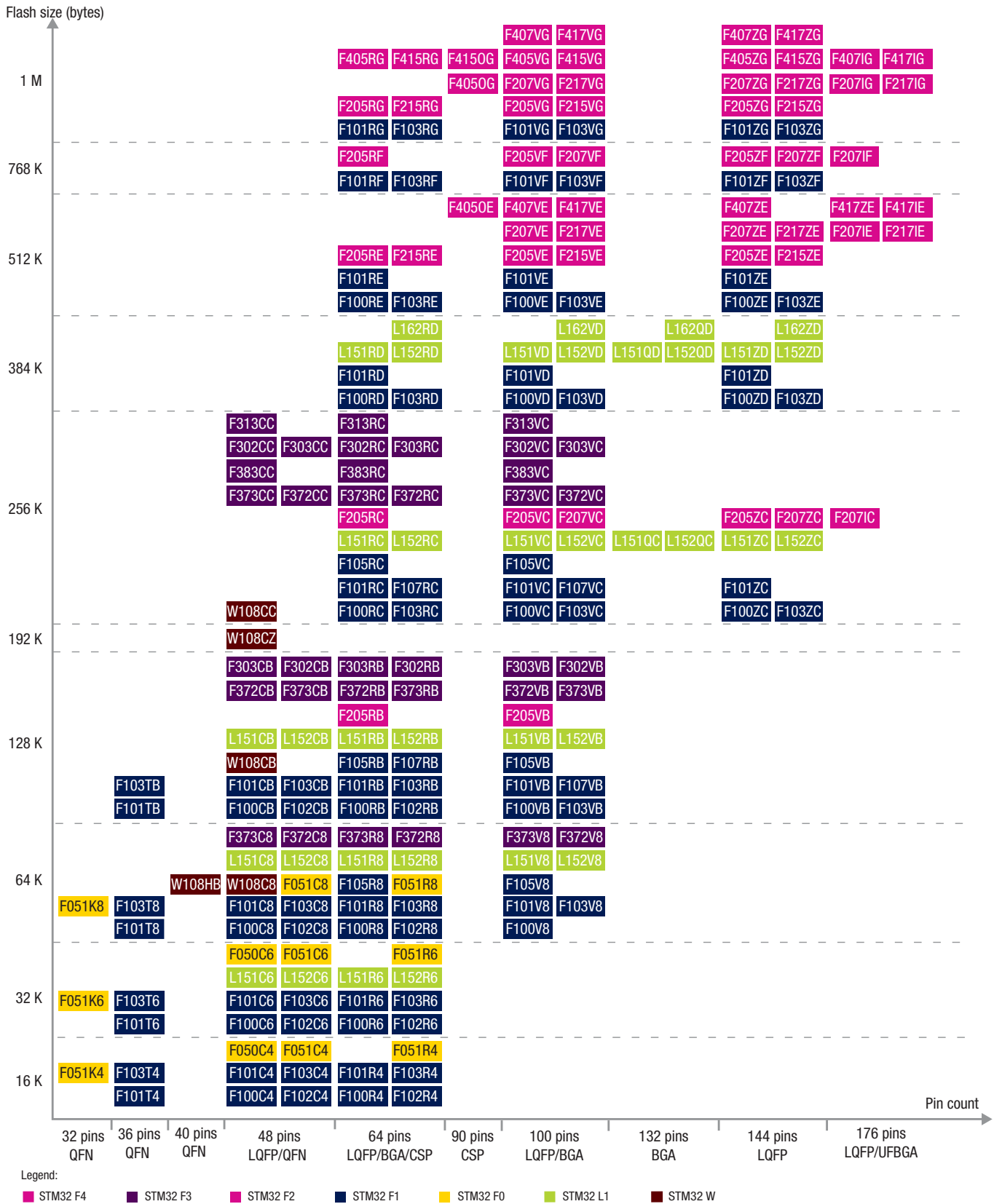| Flash	32 pins QFN	36 pins QFN	40 pins QFN	48 pins LQFP/QFN	64 pins LQFP/BGA/CSP	90 pins CSP	100 pins LQFP/BGA	132 pins BGA	144 pins LQFP	176 pins LQFP/UFBGA
1 M							F407VG F417VG		F407ZG F417ZG	
					F405RG F415RG	F4150G	F405VG F415VG		F405ZG F415ZG	F407IG F417IG
						F4050G	F207VG F217VG		F207ZG F217ZG	F207IG F217IG
					F205RG F215RG		F205VG F215VG		F205ZG F215ZG	
					F101RG F103RG		F101VG F103VG		F101ZG F103ZG	
768 K					F205RF		F205VF F207VF		F205ZF F207ZF	F207IF
					F101RF F103RF		F101VF F103VF		F101ZF F103ZF	
512 K						F4050E	F407VE F417VE		F407ZE	F417ZE F417IE
							F207VE F217VE		F207ZE F217ZE	F207IE F217IE
					F205RE F215RE		F205VE F215VE		F205ZE F215ZE	
					F101RE		F101VE		F101ZE	
					F100RE F103RE		F100VE F103VE		F100ZE F103ZE	
384 K					L162RD		L162VD	L162QD	L162ZD	
					L151RD L152RD		L151VD L152VD	L151QD L152QD	L151ZD L152ZD	
					F101RD		F101VD		F101ZD	
					F100RD F103RD		F100VD F103VD		F100ZD F103ZD	
256 K				F313CC	F313RC		F313VC			
				F302CC F303CC	F302RC F303RC		F302VC F303VC			
				F383CC	F383RC		F383VC			
				F373CC F372CC	F373RC F372RC		F373VC F372VC			
					F205RC		F205VC F207VC		F205ZC F207ZC	F207IC
					L151RC L152RC		L151VC L152VC	L151QC L152QC	L151ZC L152ZC	
					F105RC		F105VC			
					F101RC F107RC		F101VC F107VC		F101ZC	
				W108CC	F100RC F103RC		F100VC F103VC		F100ZC F103ZC	
192 K				W108CZ						
				F303CB F302CB	F303RB F302RB		F303VB F302VB			
				F372CB F373CB	F372RB F373RB		F372VB F373VB			
					F205RB		F205VB			
128 K				L151CB L152CB	L151RB L152RB		L151VB L152VB			
				W108CB	F105RB F107RB		F105VB			
		F103TB		F101CB F103CB	F101RB F103RB		F101VB F107VB			
		F101TB		F100CB F102CB	F100RB F102RB		F100VB F103VB			
				F373C8 F372C8	F373R8 F372R8		F373V8 F372V8			
				L151C8 L152C8	L151R8 L152R8		L151V8 L152V8			
64 K			W108HB	W108C8 F051C8	F105R8 F051R8		F105V8			
	F051K8	F103T8		F101C8 F103C8	F101R8 F103R8		F101V8 F103V8			
		F101T8		F100C8 F102C8	F100R8 F102R8		F100V8			
				F050C6 F051C6	F051R6					
				L151C6 L152C6	L151R6 L152R6					
32 K	F051K6	F103T6		F101C6 F103C6	F101R6 F103R6					
		F101T6		F100C6 F102C6	F100R6 F102R6					
				F050C4 F051C4	F051R4					
16 K	F051K4	F103T4		F101C4 F103C4	F101R4 F103R4					
		F101T4		F100C4 F102C4	F100R4 F102R4					

Legend:
- ■ STM32 F4
- ■ STM32 F3
- ■ STM32 F2
- ■ STM32 F1
- ■ STM32 F0
- ■ STM32 L1
- ■ STM32 W

STM32 F4 SERIES BLOCK DIAGRAM

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

System

Power supply
1.2 V regulator
POR/PDR/PVD

Xtal oscillators
32 kHz + 4 to 26 MHz

Internal RC oscillators
32 kHz + 16 MHz

PLL

Clock control

RTC/AWU

SysTick timer

2x watchdogs
(independent and window)

51/82/114/140 I/Os

Cyclic redundancy check (CRC)

Control

2x 16-bit motor control PWM
Synchronized AC timer

10x 16-bit timers
2x 32-bit timers

ART Accelerator™

ARM Cortex-M4
168 MHz

Floating point unit (FPU)

Nested vector interrupt controller (NVIC)

MPU

JTAG/SW debug/ETM

Multi-AHB bus matrix

16-channel DMA

Crypto/hash processor[2]

3DES, AES 256

SHA-1, MD5, HMAC

True random number generator (RNG)

Up to 1-Mbyte Flash memory

Up to 192-Kbyte SRAM

FSMC/ SRAM/NOR/NAND/CF/ LCD parallel interface

80-byte + 4-Kbyte backup SRAM

512 OTP bytes

Connectivity

Camera interface

3x SPI, 2x I²C, 3x I²C

Ethernet MAC 10/100 with IEEE 1588

2x CAN 2.0B

1x USB 2.0 OTG FS/HS[1]

1x USB 2.0 OTG FS

SDIO

6x USART
LIN, smartcard, IrDA, modem control

Analog

2-channel 2x 12-bit DAC

3x 12-bit ADC
24 channels/2.4 MSPS

Temperature sensor

Notes:
1. HS requires an external PHY connected to the ULPI interface
2. Crypto/hash processor on STM32F417 and STM32F415

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
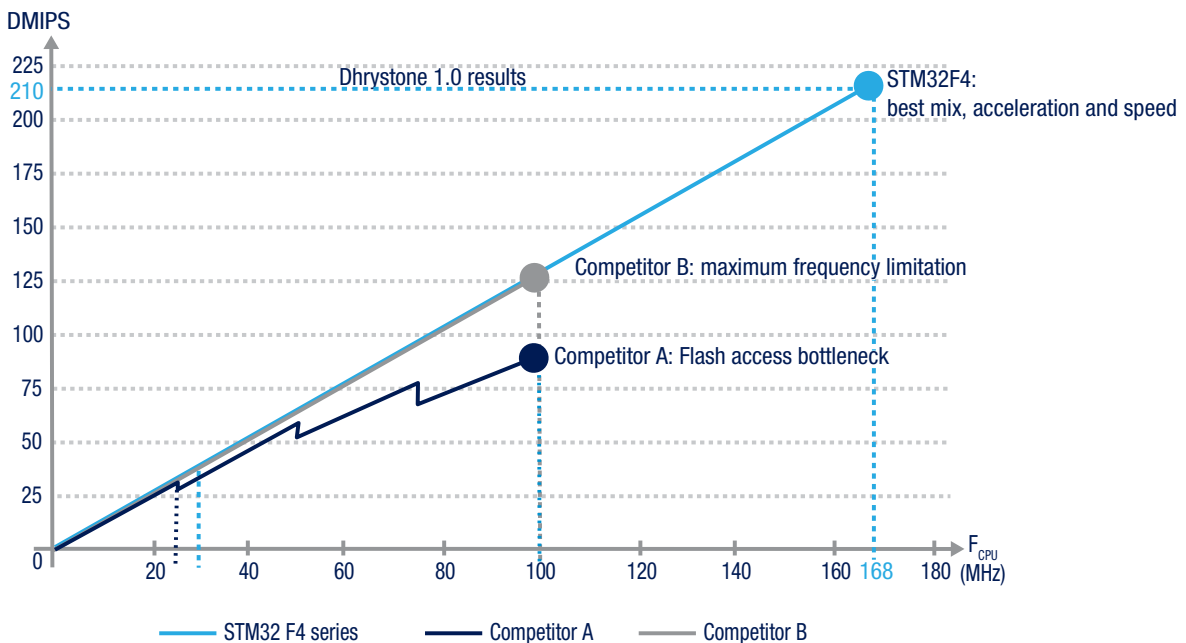 - PC peripherals
  - Digital cameras, GPS

SUPERIOR AND INNOVATIVE PERIPHERALS

Peripherals	STM32 F4 series	STM32 F3 series	STM32 F2 series	STM32 F1 series	STM32 F0 series	STM32 L1 series	STM32 W series
The need for speed							
USB FS	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s	Consumer electronics control for consumer devices	12 Mbit/s	-
USB HS	480 Mbit/s	-	480 Mbit/s	-	-	-	-
USART	Up to 10.5 Mbit/s	Up to 6 Mbit/s	Up to 7.5 Mbit/s	Up to 4.5 Mbit/s	Up to 6 Mbit/s	Up to 4 Mbit/s	Up to 1 Mbit
SPI	Up to 37.5 Mbit/s	Up to 18 Mbit/s	Up to 30 Mbit/s	Up to 18 Mbit/s	Up to 18 Mbit/s	Up to 16 Mbit/s	Up to 12 Mbit/s
I²C	400 kHz	1 MHz	400 kHz	400 kHz	1 MHz	400 kHz	400 kHz
GPIO	Up to 60 MHz	Up to 18 MHz	Up to 60 MHz	Up to 18 MHz	Up to 12 MHz	Up to 16 MHz	Up to 12 MHz
3-phase MC timer	168 MHz PWM timer clock input	144 MHz PWM timer clock input	120 MHz PWM timer clock input	72 MHz PWM timer clock input	48 MHz PWM timer clock input	-	-
SDIO	Up to 48 MHz	-	Up to 48 MHz	Up to 48 MHz	-	Up to 48 MHz	-
I²S	From 8 kHz to 96 kHz sampling frequencies	From 8 kHz to 96 kHz sampling frequencies	From 8 kHz to 96 kHz sampling frequencies	From 8 kHz to 96 kHz sampling frequencies	From 8 kHz to 96 kHz sampling frequencies	From 8 kHz to 96 kHz sampling frequencies	-
Camera interface	Up to 54 Mbyte/s at 54 MHz	-	Up to 48 Mbyte/s at 48 MHz	-	-	-	-
Crypto/hash processor	AES-256 up to 149.33 Mbyte/s	-	AES-256 up to 106 Mbyte/s	-	-	AES-128 up to 2.4 Mbyte/s	AES-128 up to 2.4 Mbyte/s
FSMC	Up to 60 MHz	-	Up to 60 MHz	Up to 36 MHz	-	Up to 32 MHz	-

SUPERIOR AND INNOVATIVE PERIPHERALS (CONT'D)

Peripherals	STM32 F4 series	STM32 F3 series	STM32 F2 series	STM32 F1 series	STM32 F0 series	STM32 L1 series	STM32 W series
The need for analog							
ADC conversion time	0.41 µs (2.4 MSPS)	0.2 µs (5 MSPS), (50 kSPS)	0.5 µs (2 MSPS)	1 µs (1 MSPS)	1 µs (1 MSPS)	1 µs (1 MSPS)	5.3 µs (188 kSPS)
ADC accuracy	12-bit	12- or 16-bit	12-bit	12-bit	12-bit	12-bit	12-bit
DAC	2-channel, 12-bit	2- channel, 12-bit	2-channel, 12-bit	2-channel, 12-bit	1-channel, 12-bit	2-channel, 12-bit	-
The need for connectivity							
CAN	Up to 2 independent CAN	Up to 2 independent CAN	Up to 2 independent CAN	Up to 2 independent CAN	-	-	-
Ethernet	10/100 Mbit/s MAC with hardware IEEE 1588	-	10/100 Mbit/s MAC with hardware IEEE 1588	10/100 Mbit/s MAC with hardware IEEE 1588	-	-	-
USB OTG	Full speed and high speed host, device or OTG	-	Full speed and high speed host, device or OTG	Full speed and high speed host, device or OTG	-	-	-
CEC bus	-	Consumer electronics control for consumer devices	-	Consumer electronics control for consumer devices	Consumer electronics control for consumer devices	-	-
Flexible static memory	4 independent banks, 8/16-bit data bus, supports SRAM, PSRAM, NAND and NOR Flash, parallel graphic LCD	-	4 independent banks, 8/16-bit data bus, supports SRAM, PSRAM, NAND and NOR Flash, parallel graphic LCD	4 independent banks, 8/16-bit data bus, supports SRAM, PSRAM, NAND and NOR Flash, parallel graphic LCD	-	4 independent banks, 8/16-bit data bus, supports SRAM, PSRAM, NAND and NOR Flash, parallel graphic LCD	-
Camera interface	8- to 14-bit parallel	-	8- to 14-bit parallel	-	-	-	-
RF	-	-	-	-	-	-	2.4 GHz IEEE 802.15.4 transceiver and lower MAC

OUSTANDING PERFORMANCE: 210 DMIPS/501 COREMARK EXECUTING FROM FLASH AT 168 MHZ OPERATING FREQUENCY
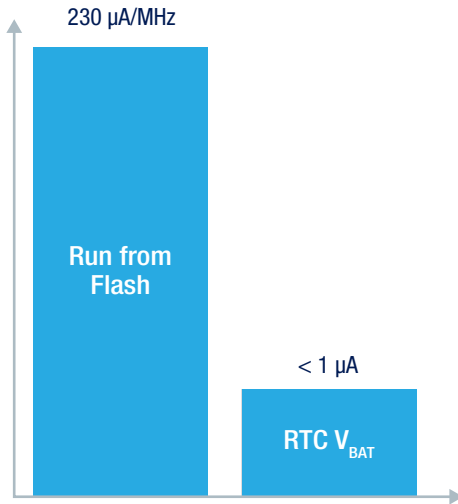
ART Accelerator™ performance result

OUTSTANDING LOW-POWER PERFORMANCE
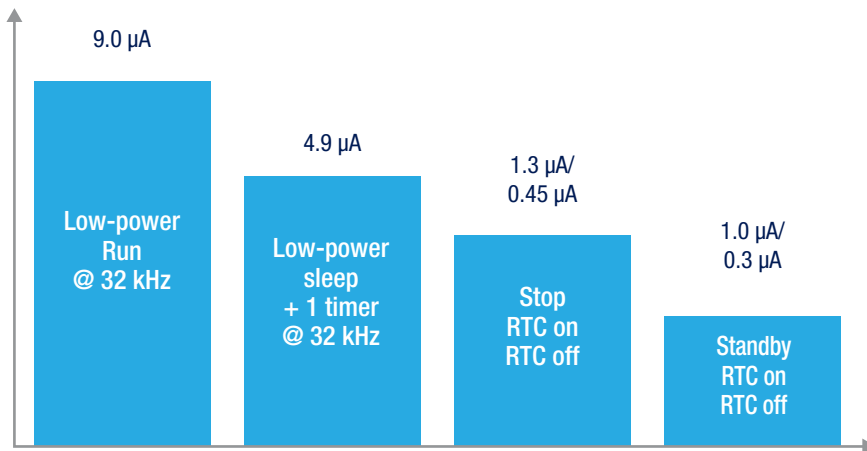
STM32 F4 series power consumption

Typical current
(on 1-Mbyte device @ 25 °C)

230 µA/MHz

Run from Flash

< 1 µA

RTC V$_{BAT}$

Note:
- Executing Coremark benchmark from Flash with peripherals disabled

STM32 L1 series power consumption

Typical current
(@ 25 °C)

9.0 µA

Low-power Run @ 32 kHz

4.9 µA

Low-power sleep + 1 timer @ 32 kHz

1.3 µA/
0.45 µA

Stop RTC on RTC off

1.0 µA/
0.3 µA

Standby RTC on RTC off

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
- Low-power Run and low-power Sleep are measured with Flash off

MOTOR CONTROL

The STM32 is perfectly suited to 3-phase brushless single or dual motor control:

- Advanced PWM timer, fast ADC, high-performance core
- Class B compliancy with the EN/IEC 60335-1 norm
- Single or dual motor control

The STM32's motor control ecosystem brings:

- Free 3-phase motor control software development kit (firmware and graphical customization tool) supporting AC induction motors (sensored) and PMSM motors (sensorless, Hall sensor or encoder) for vector control (field oriented control)
- Full developer vector drive PMSM motor control kits (hardware and firmware) based on the STM32F103 (order code: STM3210B-MCKIT) or STM32F100 (order code: STM32100B-MCKIT)
- Digital PFC and dual FOC drive demo, free RTOS example
- STM Studio tool to monitor data in the user code when the motor control algorithm is running

Development tools

ST's STM32 family of 32-bit ARM Cortex™-M-core-based microcontrollers are supported by a complete range of low-cost and high-end, 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 /SWD 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.

START TODAY WITH STM32-DISCOVERY KITS
Discovery kits are the cheapest and quickest way to discover the STM32 family.
These quick-start evaluation boards embed an ST-LINK or ST-LINK/V2 debug probe and are supported by IDE from Atollic, Keil, IAR and TASKING.

STM32 F3 series (order code: STM32F3DISCOVERY)

The STM32F3-Discovery is the perfect kit to discover not only the richness of the STM32 F3 series, but also ST's MEMS gyroscope and e-compass.

STM32F3DISCOVERY

STM32 F4 series (order code: STM32F4DISCOVERY)

To discover the STM32 F4 series, the STM32F4-Discovery highlights the performances of the F4 series with audio (input, output) and USB Host capabilities.

STM32 F1 series (order code: STM32VLDISCOVERY)

Based on the STM32 F1 series Value line, the STM32 Value line Discovery kit will satisfy hobbyists, first-time developers and students.

STM32F4DISCOVERY   STM32F0DISCOVERY

STM32 F0 series (order code: STM32F0DISCOVERY)

Discover the STM32 F0 series based on the Cortex-M0 core. A prototyping board is included for easy connection of additional components and modules.

STM32 L1 series (order code: STM32L-DISCOVERY)

Based on the STM32 L1 series, the STM32L-Discovery kit includes a 6-digit LCD display, a touch-sensing slider, 2 LEDs, a user button and current measurement.

STM32VLDISCOVERY   STM32L-DISCOVERY

STM32 EVOPRIMER
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:
STM3240GPRIMER (STM32 F4 series)
STM3210CPRIMER (STM32 F1 series Connectivity line)
STM3210GPRIMER (STM32 F1 series Performance line)
STM32L15PRIMER (STM32 L1 series)

STM32-COMSTICK

Evaluate STM32 networking features of the STM32 Connectivity line with STM32-ComStick (order code: STM32-COMSTICK).
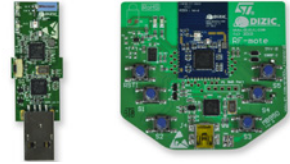
This kit includes an integrated debugging/programming capability via USB and unlimited Hitex HiTOP5 and TASKING VX C compilers.

STM32W RF CONTROL KIT

Low-cost RF control kit: The STM32W RF Control Kit is a low-cost and quick way to get started using STM32W-based point-to-point wireless control applications.
Order code: STM32WC-RFCKIT

STARTER KITS FOR STM32

| Part number	Featured product	Description
STM3210B-SK/HIT STM3210E-SK/HIT	STM32F103RBT6 STM32F103VET6	Hitex kit with unlimited HiTOP5, TASKING VX compilers, STM32-PerformanceStick with integrated debugging/programming via USB, extension I/O board with peripheral evaluation features, DashBoard GUI
STM3210C-SK/IAR STM3210E-SK/IAR STM32L152-SK/IAR STM3220G-SK/IAR STM320518-SK/IAR STM3240G-SK/IAR	STM32F107VCT6 STM32F103ZET6 STM32L152VBT6 STM32F207ZGT6 STM32F051R8T6 STM32F407ZGT6	IAR Embedded Workbench for ARM (for up to 32 Kbytes of code), IAR C/C++ compiler, J-Link (USB/JTAG), evaluation board
STM3210C-SK/KEIL STM3210E-SK/KEIL STM3220G-SK/KEI STM3240G-SK/KEI	STM32F107VCT6 STM32F103ZET6 STM32F207IGH6 STM32F407IGH6	Keil RealView MDK with µVision4 (for up to 32 Kbytes of code), ARM C/C++ compiler, ULINK (USB/JTAG), evaluation board
STM3210B-SK/RAIS STM3210C-SK/RAIS	STM32F103VBT6 STM32F107VCT6	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 STM32100B-MCKIT	STM32F103VBT6 STM32F100VBT6B	ST motor control starter kit with complete sensor and sensorless libraries, evaluation hardware platform for vector drive of 3-phase brushless magnet synchronous motors, plus Segger J-LINK for host PC interface

EVALUATION BOARDS FOR STM32

Evaluation boards from ST implement the complete range of device peripherals for STM32 devices.

Part number	Featured product
STM3240G-EVAL	STM32F407IGH6
STM32303C-EVAL*	STM32F303VCT6
STM32373C-EVAL	STM32F373VCT6
STM3220G-EVAL	STM32F207IGH6
STM3210C-EVAL	STM32F107VCT6
STM3210E-EVAL	STM32F103ZGT6
STM32100B-EVAL	STM32F100VBT6B
STM32100E-EVAL	STM32F100ZET6B
STM320518-EVAL	STM32F051R8T6
STM32L152-EVAL	STM32L152VBT6
STM32L152D-EVAL	STM32L152ZDT6
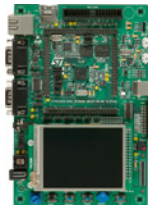
STM320518-EVAL   STM3240G-EVAL   STM32L152D-EVAL   STM32F373C-EVAL

Note: * Available in Q4/2012

STM32W EVALUATION KIT

Complete kit to evaluate the capabilities of the STM32W in different configurations: remote control (ZigBee RF4CE stack) and point-to-point network (simplified MAC library).

Main kit order code:

- STM32W108C-SK
  (256-Kbyte Flash device)

Extension kit order code:

- STM32W108C-KEXT

STM32W108C-SK

STM32W108C-KEXT

STM32 SOFTWARE DEVELOPMENT TOOLS

Third-party solutions come complete with IDE, C/C++ compiler and JTAG debug probes. Development and debug of STM32 applications is made even easier with MicroXplorer, a free graphical tool to configure ST's MCUs, and STM-STUDIO, a free tool to monitor and visualize variables at runtime.

Java for STM32

Start developing applications for the STM32 in Java. Benefit from Java and the highly-optimized STM32 Java virtual machine to increase software engineering productivity. Ideal for feature-rich applications with human-machine interfaces and Internet protocol connectivity.
ST order code:
STM3220G-JAVA (STM32 F2 series)

Microsoft .NET Micro Framework for STM32

After the NETMF for STM32 F1, the Mountaineer Group (http://www.mountaineer.org/) has ported NETMF to the STM32 F2 and STM32 F4. This port presents drivers for the on-chip peripherals: GPIOs, analog inputs and outputs, I²C, SPI, UARTs, USB, internal Flash, power management, timers, and more.
It is already available at the Codeplex site
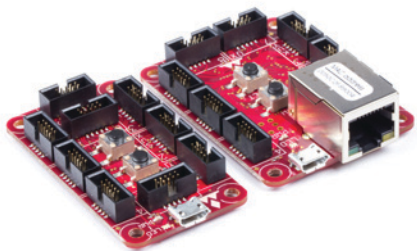
(http://netmf.codeplex.com/) and will be integrated into Microsoft's Porting Kit (just like the F1 Edition) for the next version of NETMF 4.3. ST order codes: STM3240G-ETH/NMF (STM32 F4 series) and STM3240G-USB/NMF (STM32 F4 series).

STM32 software solutions

From the hardware abstraction layer, through middleware and up to the application field, the STM32 software ecosystem is extensive, providing a consistent set of solutions, coming from more than 20 partners, based on open-source, or even built in-house.
All STM32 peripherals are functionally covered, including peripheral library, DSP library, crypto library, file systems, USB, Ethernet, Bluetooth, Wi-Fi, display, industrial, audio, motor control, and medical applications.
Contact your local ST sales and marketing office for more information on the solutions described in this document.

Hardware abstraction layer

STM32 standard peripheral library: Complete set of device drivers for all the standard device peripherals, with many examples.
CMSIS DSP library: Standardized interface, with more than 50 math operations (FIR, FFT, matrix, and more) accelerated with DSP instructions.
STM32 crypto library: Software implementation of cryptographic algorithms, optimized for STM32.
STM32 self-test routines Class B norm certification: Complete software for EN/IEC 60335-1 Class B norm.

Middleware

STM32 USB libraries: Complete firmware packages for USB, slave and host, with many covered classes.
STM32 TCP/IP stacks: Several stacks are available, such as LwIP or NicheLite. Partners offer more extensive protocol support, or other communication means such as Wi-Fi.
STM32 graphical library: Basic blocks to build a graphical interface (including combo boxes, textboxes, slide bars). Comes with a PC wizard to build your screens.
STM32 Bluetooth stack: iAnywhere full Bluetooth stack with many different profiles. With our partner Alpwise.
STM32 industrial protocols: Full range of supported industrial protocols: Profinet, EtherCAT, Modbus, DeviceNet, CANopen, and more, via our partner network.

Application fields

STM32 audio solutions: Full range of audio software bricks, optimized for STM32: MP3 codec, MP3 decoder, WMA decoder, Speex speech codec, ADPCM compression, audio algorithms such as loudness control, channel mixer, 5-band equalizer, iPod/iPhone/iPad interface through iAP (iPod Application Protocol) interface, USB synchronization methods for streaming, and more. Contact your sales office for information on availability for specific STM32 part numbers.
STM32 motor control software: Complete 3-phase motor-control software development kit (firmware and graphical customization tool) supporting single or dual PMSM motors in sensored and sensorless mode and AC induction motors in sensored mode, plus a patented single-shunt algorithm. This SDK is included in the STM32 motor control kits.
STM32 Continua certified solution: Software bricks to build up your Continua medical solution. Provided bricks are USB PHDC class (personal health device class), base framework protocol, glucose agent and thermometer agent. Further agents can be implemented on demand.