STM32 Value line

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

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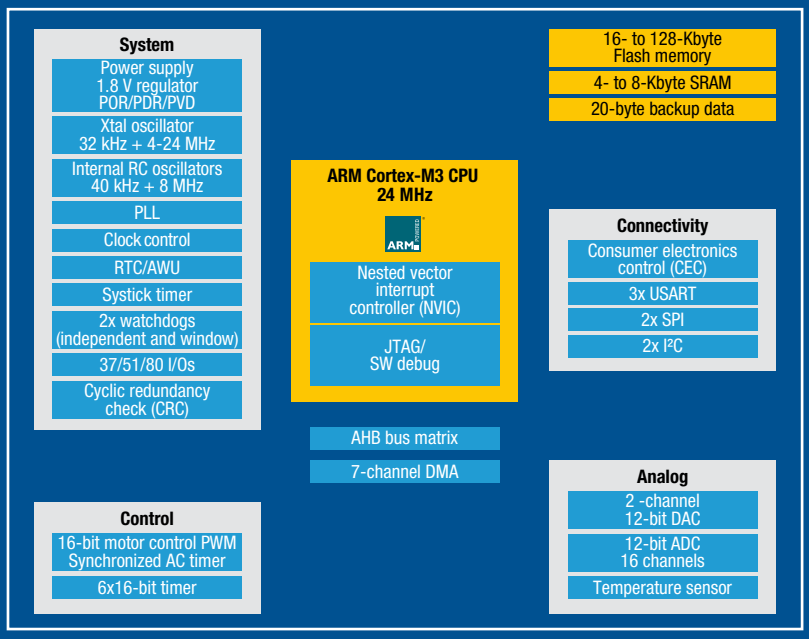
The STM32 Value line complements our STM32 Cortex™-M microcontroller product portfolio by offering a low-cost product line that is pin-to-pin compatible with the STM32 portfolio. It brings new features such as new 16-bit timers and CEC function to expand the range of applications addressed in consumer, appliance and industrial segments.
Based on the ARM Cortex-M3 core running at up to 24 MHz, the STM32 Value line offers excellent cost-performance-peripherals trade-off.
It provides all the essential features to make it the perfect choice to develop cost-effective applications traditionally addressed by 16-bit microcontrollers.

Applications

- Consumer
  - A/V receivers, TV, Blu-ray disk players
  - Printers
  - Remote controls
  - Toys
- Industrial
  - Electricity meters
  - Low-end UPS
- Appliances
  - Home appliance
  - Motor control
  - Power tools



Features and benefits

Features	Benefits
Up to seven PWM 16-bit timers including advanced control timer for a total of 26 channels	Perfect fit for control applications
Three independent PWM 16-bit timers with complementary output and dead-time generation	Ideal for appliance control applications including induction cooking
On-chip 12-bit dual channel DAC with DMA support and output buffers	Decreased total system cost
Consumer electronics control (CEC) peripheral	Reduced design complexity and minimized CPU, peripheral and memory use
CEC, 400 kHz I²C, up to12 Mbit/s master and slave SPI, up to 3 Mbit/s USART	Extensive connectivity capability
ARM Cortex-M3 Thumb-2 32-bit instruction set and 7-channel DMA	Achieves superior performance with 16-bit code density
CRC (cyclic redundancy check) with DMA support	Eases Flash memory integrity check
Built-in POR, PDR, LVD, watchdog timer, factory trimmed 8 MHz RC oscillator and 40 kHz for RTC and watchdog	System cost reduction

STM32 Value line highlights

Well adjusted features for appliance, consumer and industrial applications

The STM32 Value line delivers high processing performance capability coupled with up to twelve 16-bit timers, including a motor control timer and a fast 1.2 µs conversion time 12-bit ADC for efficient appliance and industrial control applications.
The 12-bit dual-channel DAC can be used in many audio applications such as security alarms, toys, answering machines, human-machine interfacing and in many other control-engineering, home automation and audio applications.
The built-in H/W CEC (consumer electronic control) interface enables connectivity for controlling HDMI-enabled home entertainment systems, so releasing processor resources.

Fully pin-to-pin and software compatible with the STM32 family

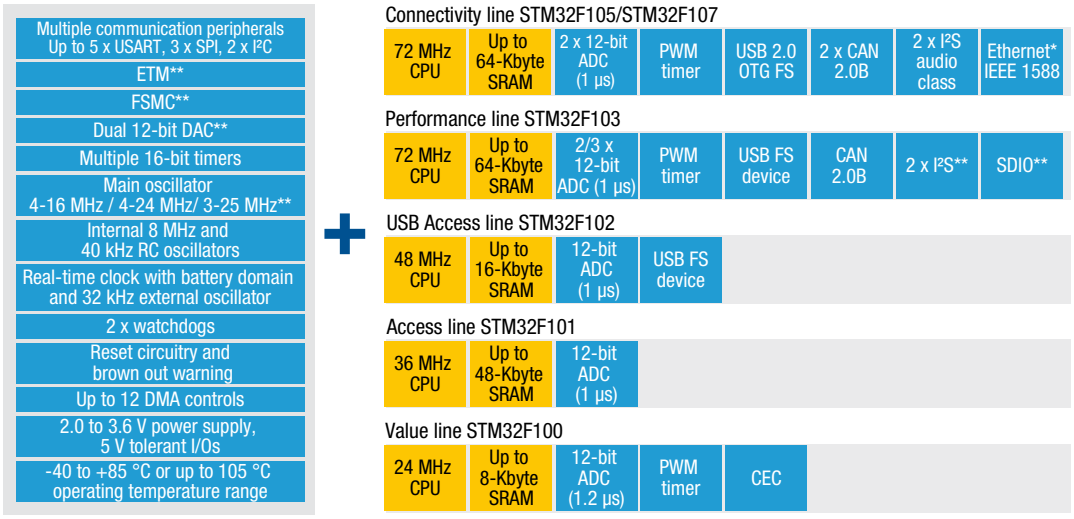
The STM32 Value line, with added functionalities and fully compatible with all the STM32 product lines, expands uses for the STM32.

Device summary

Part number		Flash memory (Kbytes)	RAM (bytes)	A/D inputs	Timer functions		Serial interface	I/Os (high current)	Packages	Supply voltage (V)	Special features
					12 or 16-bit (IC/OC/PWM)	Others					
48 pins	STM32F100C4	16	4 K	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, Vbat 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 K	10x12-bit	6x16-bit (16/16/21)			37(37)	LQFP48	2.0 to 3.6	
	STM32F100C8	64	8 K	10x12-bit	7x16-bit (18/18/21)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	37(37)	LQFP48	2.0 to 3.6	
	STM32F100CB	128	8 K	10x12-bit	7x16-bit (18/18/21)			37(37)	LQFP48	2.0 to 3.6	
64 pins	STM32F100R4	16	4 K	16x12-bit	6x16-bit (16/16/21)		1xSPI, 1xI²C, CEC, 2xUSART (IrDA, ISO 7816)	51(51)	LQFP64, TFBGA64	2.0 to 3.6	
	STM32F100R6	32	4 K	16x12-bit	6x16-bit (16/16/21)			51(51)	LQFP64, TFBGA64	2.0 to 3.6	
	STM32F100R8	64	8 K	16x12-bit	7x16-bit (20/20/23)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	51(51)	LQFP64, TFBGA64	2.0 to 3.6	
	STM32F100RB	128	8 K	16x12-bit	7x16-bit (20/20/23)			51(51)	LQFP64, TFBGA64	2.0 to 3.6	
100 pins	STM32F100V8	64	8 K	16x12-bit	7x16-bit (20/20/26)		2xSPI, 2xI²C, CEC, 3xUSART (IrDA, ISO 7816)	80(80)	LQFP100	2.0 to 3.6	
	STM32F100VB	128	8 K	16x12-bit	7x16-bit (20/20/26)			80(80)	LQFP100	2.0 to 3.6	

STM32F10xx: product lines

The five lines include:



* STM32F107 only
** For specific part numbers, refer to the product documentation

STM32 Value line: development tools

A complete set of hardware and software is available to help designers evaluate the STM32 Value line features and to allow fast application development.

Third-party development solutions

Choose from a full range of solutions that offer start-to-finish control of application development from a single environment that includes development environment, C/C++ compiler and in-circuit emulator.

Supplier	IDE	Supported compilers	In-circuit debuggers, emulators
Aiji System	OPENice-EDS	Supports a variety of images Dwarf1/2, ELF, AxF, Keil, GCC, ARM (ADS, RVDS)	OPENice-A1000
Altium / TASKING	EDE	TASKING C/C++	Tantino, Tanto, J-Link
Atollic*	TrueSTUDIO	GNU C/C++	ST-LINK and many others
Green Hills Software	MULTI	Green Hills	Green Hills Probe
Hitex	HITOP5	GNU C/C++, Tasking, ARM, and IAR	Tantino for Cortex
IAR	EWARM	IAR's ISO C/C++ and Extended Embedded C++	AnbyICE, ARM RealView ICE, J-Link, Macraigor Wiggler, ST-LINK and other RDI-based JTAG interfaces
iSYSTEM	WinIdea	ARM, GHS, GNU, IAR, Keil, Tasking	iONE
Keil	uVision3	Keil, GNU C/C++, ARM (ADS and RVDS)	Keil ULink, Hitex Tanto, iSYSTEM iC3000 and ST-LINK
Lauterbach	TRACE32 PowerView	IAR, MetaWare, High C/C++, ARM (ADS and RVDS), Windriver, GNU C/C++	TRACE32 – Power Tool, TRACE32 – ICD
Raisonance	RIDE	GNU C/C++	RLink
Rowley	CrossWorks	GNU C/C++	CrossConnect, Macraigor Wiggler, IAR, J-Link
Signum	Chameleon	Compatible with all major C/C++ ARM compilers	JTAGjet, JTAGjet-Trace (ETM)

For information about compatibility with other tools, refer to the relevant third-party internet site.

Operating systems, solution stacks and more

Company	RTOS	Website
CMX Systems	CMX-RTX	www.cmx.com
eCosCentric	eCosPro	www.ecoscentric.com
Express Logic	ThreadX	www.rtos.com
FreeRTOS	FreeRTOS	www.FreeRTOS.org
IAR	PowerPac	www.iar.com, www.iar.com/st
Keil	ARTX-ARM	www.keil.com
Micrium	µC/OS-II, µC/OS-III	www.micrium.com, www.micrium.com/st/index.html
Micro Digital	smxARM	www.smxrtos.com, www.smxrtos.com/stmicro.htm
Quadros Systems	RTXC Quadros	www.quadros.com
Segger	embOS	www.segger.com
Wittenstein High Integrity Systems	OpenRTOS/ SafeRTOS	www.highintegritysystems.com

* Contact ST sales office

STM32 Value line Discovery

The cheapest and quickest way to discover the STM32 Value line family. Embedded ST-LINK included to debug applications.

Order code: STM32VLDISCOVERY*

Evaluation board STM32100B-EVAL

Complete hardware evaluation platform with the STM32100B-EVAL, implementing the full range of device peripherals and features.

STM32 embedded firmware

STM32 firmware library: complete packages consisting of device drivers for all the standard device peripherals. Each device driver includes a set of functions covering full peripheral functionality.

STM32 Class B norm certification self-test routines: a full set of ready to-use self-test routines for home-appliance certification under EN/IEC 60335-1 Class B norm (functional safety).

STM32 motor control software*: complete 3-phase motor control library supporting PMSM motors in sensor and sensorless mode and AC induction motors in sensor mode, and a patented single-shunt algorithm.

STM32 CEC software: this complete software supported by the STM32100B-EVAL evaluation board provides an implementation of CEC high-level protocol and full demonstration software.

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

Order code: BRSTM32VL0210