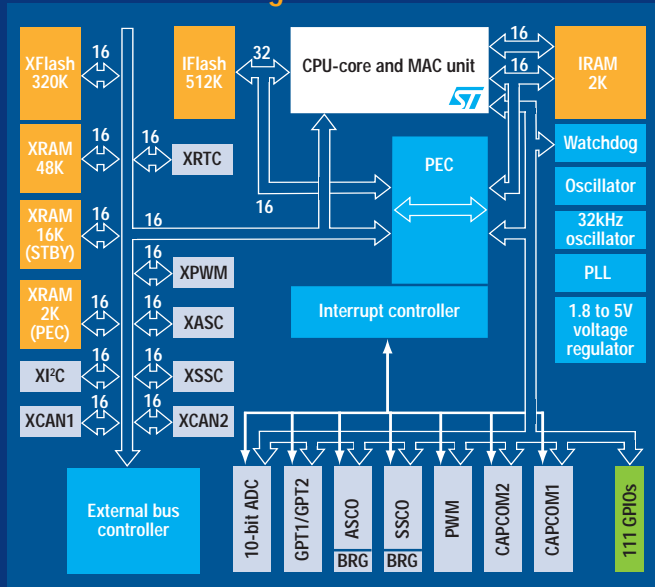


ST10 advanced 16-bit MCU

With DSP-MAC high-density Flash and ROMless variants

ST10F276 block diagram



The ST10 family, **STMicroelectronics'** industry-standard 16-bit microcontroller, provides pin-compatible alternatives with enhanced Flash memory. Since its introduction, ST has sold more than one hundred million chips with the ST10 core.

With the DSP-MAC, STMicroelectronics leverages this success, adding cutting-edge DSP possibilities to its ST10 advanced 16-bit MCU.

Building on ST's experience in embedded cores, the ST10 architecture is based on an analysis of the real needs of system designers and software engineers in some of the fastest-moving segments of the industry, where high-performance, real-time capabilities and low-power consumption are essential.

ST10F276, ST10F273, ST10F272, ST10F271: NEW ST10F27X Family, 64MHz MCU with enhanced Flash, DSP-MAC

- From 128 to 832KB of single-voltage Flash program memory processed in 0.18 μ m CMOS technology
 - 20 years retention @ 55°C and up to 100K cycles organized in four or two banks
 - Memory protection
- Up to 16Mbytes linear addressing space for code and data
- From 12 to 68KB RAM
- Five general-purpose timers, 2x16 capture/compare channels on four dedicated timers
- 8xPWM timers and one watchdog
- Five serial communication units:
 - Two USARTs
 - Two high-speed synchronous channels
 - One I²C
- Two CAN 2.0B interfaces with 32 message objects each (C.CAN)
- Real-time clock
- 10-bit ADC with 24 inputs and a conversion time of 3.0 μ s
- 8-channel peripheral event controlled (PEC) interrupts
- 16 priority-levels, 56 interrupt sources, 15.6ns sampling rate
- Main applications: motor control, vector drive and factory automation
- PQFP144 or LQFP144 packages
- Hardware and software upward compatible with ST10F168/ST10F269
- Operating temperature range: -40 to 125°C
- Single 5V power supply



ST10F269: single-voltage Flash 40MHz/5V with DSP-MAC

- 256KB or 128KB of embedded Flash
- 12KB of RAM
- Same functions as ST10F276 with the exception of: CPU clock, RAM and Flash size, two serial communication units, 16 ADC inputs, four PWM

ST10R272: 16-bit ROMless MCU at 50MHz/3.3V with DSP-MAC

- Five general-purpose timers, one PWM timer and watchdog
- Two serial communication units (USART and high-speed synchronous channel)
- Main applications: point-of-sale terminals, printers and telecom products

ST10R172: cost-optimized subset of ST10R272

- Downward compatible subset of the ST10R272 without DSP-MAC

ST10F168: embedded Flash and 25MHz/5V operation

- Predecessor of the ST10F269, with which it is compatible
- Same functions as ST10F269 with the exception of: 25MHz CPU clock, no DSP-MAC, dual voltage Flash instead of single-voltage, 8KB RAM instead of 12KB, only one CAN 2.0B interface and no real-time clock

ST10R167: ROMless version of ST10F168

- 4KB RAM
- Designed for applications requiring the flexibility of external program memory
- Other characteristics similar to ST10F168

Device summary

Part number	Program memory type		Prog. (bytes)	RAM (bytes)	A/D inputs	Timer functions		Serial interface	Packages	Supply voltage	Special features
	Flash	ROMless				16-bit	Others				
ST10F276Z5	•		832K	68K	24x10-bit	5x16-bit	WDG, RTC	PC/2xUART/2xSSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	64MHz (POFP), 40MHz (LOFP), PEC, PWM, CAPCOM, MAC, EMI
ST10F273Z4	•		512K	36K	24x10-bit	5x16-bit	WDG, RTC	PC/2xUART/2xSSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	64MHz (POFP), 40MHz (LOFP), PEC, PWM, CAPCOM, MAC, EMI
ST10F272Z2	•		256K	20K	24x10-bit	5x16-bit	WDG, RTC	PC/2xUART/2xSSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	64MHz (POFP), 40MHz (LOFP), PEC, PWM, CAPCOM, MAC, EMI
ST10F271Z1	•		128K	12K	24x10-bit	5x16-bit	WDG, RTC	PC/2xUART/2xSSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	64MHz (POFP), 40MHz (LOFP), PEC, PWM, CAPCOM, MAC, EMI
ST10F269Z2	•		256K	12K	16x10-bit	5x16-bit	WDG	USART/SSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	40MHz, PEC, PWM, CAPCOM, MAC, EMI
ST10F269Z1	•		128K	12K	16x10-bit	5x16-bit	WDG	USART/SSC/2xCAN	PQFP144, LQFP144	4.5 to 5.5V	40MHz, PEC, PWM, CAPCOM, MAC, EMI
ST10F168S	•		256K	8K	16x10-bit	5x16-bit	WDG	USART/SSC/CAN	PQFP144	4.5 to 5.5V	25MHz, PEC, PWM, CAPCOM
ST10R167		•		4K	16x10-bit	5x16-bit	WDG	USART/SSC/CAN	PQFP144	4.5 to 5.5V	25MHz, ROMless, PEC, PWM, CAPCOM, EMI
ST10R172L		•		1K		5x16-bit	WDG	USART/SSP	TQFP100	3.3V	50MHz, ROMless, PEC, PWM, EMI
ST10R272L		•		1K		5x16-bit	WDG	USART/SSP	TQFP100	3.3V	50MHz, ROMless, PEC, PWM, MAC, EMI

Tools and third-party support

ST software development tools

C toolchain
Cosmic: www.cosmicsoftware.com
Keil: www.keil.com
Tasking: www.tasking.com
GNU (HighTech): www.hightec-rt.com

Real-time kernel
CMX: www.cmx.com
WindRiver: www.windriver.com
PXROS (HighTech): www.hightec-rt.com

OSEK
Vector: www.vector-informatik.com

ST hardware development tools

Evaluation board
Forth Systeme: www.fsforth.de
Phytec: www.phytec.com
Rigel: www.rigelcorp.com

Emulation/debugger
Hilitec: www.hilitec.com
Lauterbach: www.lauterbach.com
Nohau: www.nohau.com

Programmer
BP Microsystems: www.bpmicro.com
PLS: www.pls-mc.com

e-support

Extensive documentation is available through our web site www.st.com/mcu or www.st.com/st10 including application notes, datasheets, programming manual and user manuals. All third-party links are available from our support section. Software can be downloaded at www.st.com/mcu



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