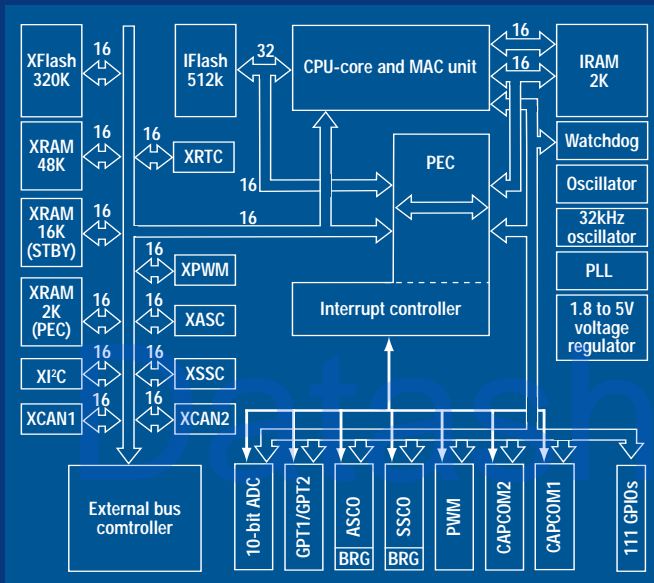


ST10 advanced 16-bit MCU

With DSP-MAC high-density Flash and ROMless variants



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 eighty million chips with the ST10 core, eleven million of which have embedded Flash memory.

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: high-density memory, advanced 16-bit, 64MHz MCU with DSP-MAC

- 832KB or 512KB of single-voltage Flash program memory
 - 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
- Up to 68KB RAM (2KB IRAM + 66KB XRAM)
- 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 3.0µs
- 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 TQFP144 packages: -40 to 125°C
- Hardware and software upward compatible with ST10F168/ST10F269

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	Temperature range	Program memory	RAM	Package	MHz	DSP-MAC ¹	CAPCOM ²	CAN 2.0B	A/D inputs	Power supply
ST10F276Z5Q3	-40 to 125°C	832KB Flash SV ⁴	68K	PQFP 144	64	Y	32	2	24x10-bit	5V
ST10F276Z5T3	-40 to 125°C	832KB Flash SV ⁴	68K	TQFP 144	64	Y	32	2	24x10-bit	5V
ST10F273Z4Q3	-40 to 125°C	512KB Flash SV ⁴	36K	PQFP 144	64	Y	32	2	24x10-bit	5V
ST10F273Z4T3	-40 to 125°C	512KB Flash SV ⁴	36K	TQFP 144	64	Y	32	2	24x10-bit	5V
ST10F269Z2Q3	-40 to 125°C	256KB Flash SV ⁴	12KB	PQFP 144	40	Y	32	2	16x10-bit	5V
ST10F269Z2Q6	-40 to 85°C	256KB Flash SV ⁴	12KB	PQFP 144	40	Y	32	2	16x10-bit	5V
ST10F269Z2T3	-40 to 125°C	256KB Flash SV ⁴	12KB	TQFP 144	25	Y	32	2	16x10-bit	5V
ST10F269Z2T6	-40 to 85°C	256KB Flash SV ⁴	12KB	TQFP 144	25	Y	32	2	16x10-bit	5V
ST10F168SQ3	-40 to 125°C	256KB Flash DV ³	8KB	PQFP 144	25	-	32	1	Y	5V
ST10F168SQ6	-40 to 85°C	256KB Flash DV ³	8KB	PQFP 144	25	-	32	1	Y	5V
ST10F269Z1Q3	-40 to 125°C	128KB Flash SV ⁴	12KB	PQFP 144	40	Y	32	2	16x10-bit	5V
ST10F269Z1Q6	-40 to 85°C	128KB Flash SV ⁴	12KB	PQFP 144	40	Y	32	2	16x10-bit	5V
ST10F269Z1T3	-40 to 125°C	128KB Flash SV ⁴	12KB	TQFP 144	25	Y	32	2	16x10-bit	5V
ST10F269Z1T6	-40 to 85°C	128KB flash SV ⁴	12KB	TQFP 144	25	Y	32	2	16x10-bit	5V
ST10R167-Q30	-40 to 125°C	ROMless	4KB	PQFP 144	25	-	32	1	Y	5V
ST10R172LT1	0 to 70°C	ROMless	1KB	TQFP 100	50	-	-	-	-	3.3V
ST10R172LT6	-40 to 85°C	ROMless	1KB	TQFP 100	50	-	-	-	-	3.3V
ST10R272LT1	0 to 70°C	ROMless	1KB	TQFP 100	50	Y	-	-	-	3.3V
ST10R272LT6	-40 to 85°C	ROMless	1KB	TQFP 100	50	Y	-	-	-	3.3V

1. Multiply accumulator 2. Capture compare 3. Double-voltage 4. Single-voltage

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
 PXR0S (HighTech): www.hightec-rt.com

OSEK

Vector: www.vector-informatik.com

ST hardware development tools

Evaluation board

Forth System: www.forth.de
 Phytec: www.phytec.com
 Rigel: www.rigelcorp.com

Emulation/debugger

Hitec: www.hitec.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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Full product information at www.st.com