STM8A MCU family

Automotive 8-bit Flash microcontrollers

STM8 Simply **smarter**

STMicroelectronics introduces the STM8A, a new product line of 8-bit Flash microcontrollers dedicated to the specific needs of automotive applications. From product specifications, on through design and manufacturing, our focus is on reliability, application robustness and low system cost.

The modularity and compatibility of this product family offer the perfect platform solution in an environment where requirements change and the ability to reuse design concepts leads to competitive cost advantages.

STM8A devices are particularly suited for applications requiring non-volatile data storage. The integrated true data EEPROM features state-of-the-art endurance and data retention throughout the full temperature range. Complex EEPROM emulation strategies are no longer required.
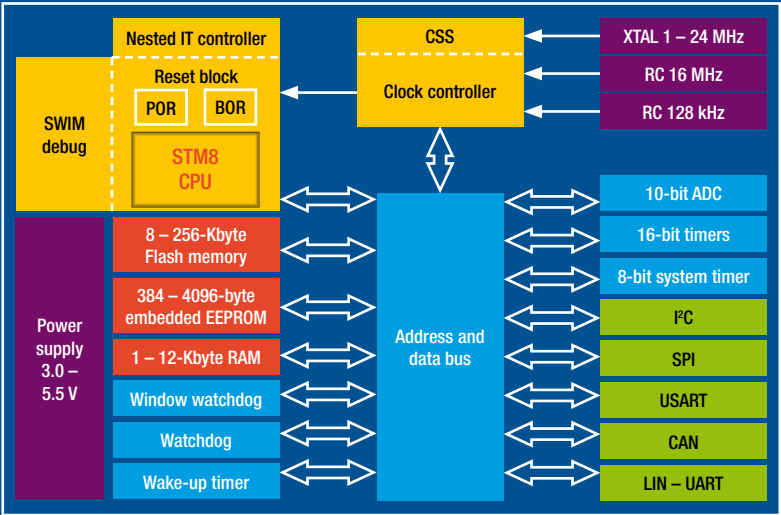
All products are optimized for reduced power and low EMC. The efficient STM8 core delivers leading-edge execution speed even at low CPU clock frequencies. Powertrain applications benefit from the extended temperature range up to 145 °C.

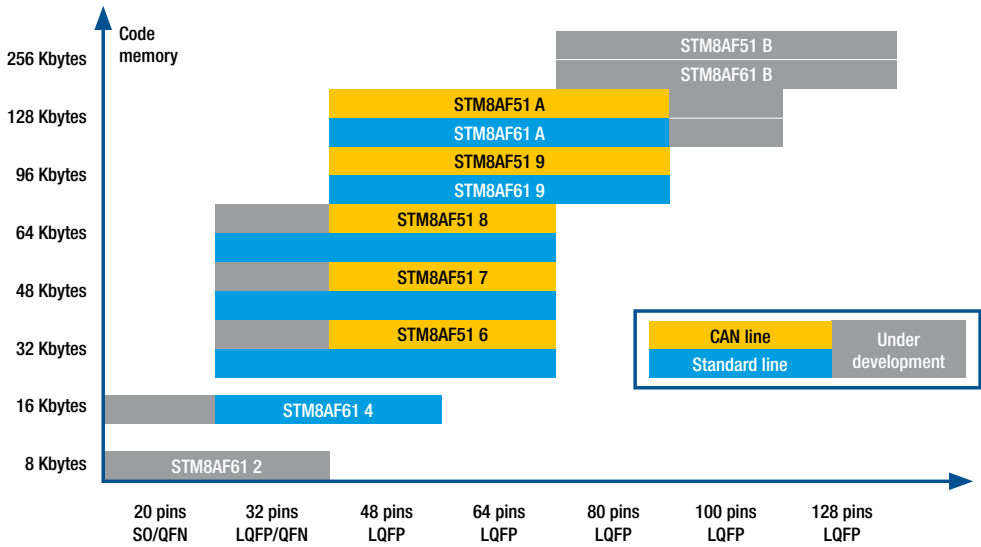The STM8A is the ideal and economic solution for the growing market of automotive 8-bit applications.

Applications

- Body controllers
- LIN nodes
- Actuators
- Sensors
- Safety microcontrollers
- Car radios
- DC motor control
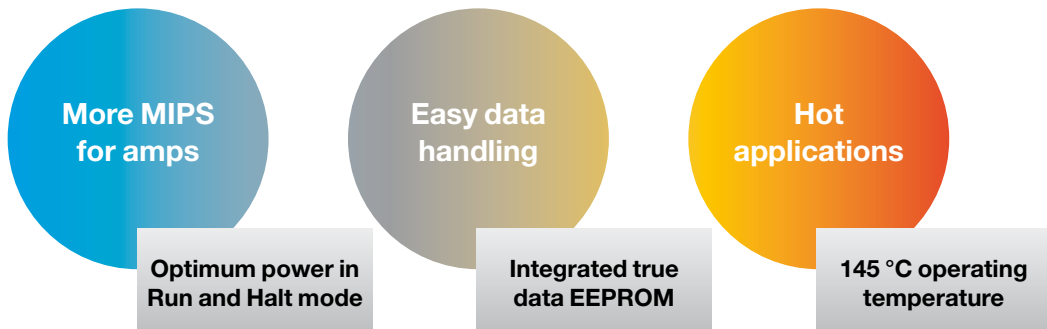- HVAC
- Keyless entry
- Immobilizers
- TPMS

STM8A block diagram

STM8A product lines

STM8A MCU family

More MIPS for amps	Easy data handling	Hot applications
Optimum power in Run and Halt mode	Integrated true data EEPROM	145 °C operating temperature

STM8A benefits

Reduced system cost

- Integrated true data EEPROM
- Internal supervisor circuits: power-on reset, window watchdog and standard watchdog timer, brown-out reset
- Integrated, factory-trimmed 16 MHz and 128 kHz RC oscillators
- No I/O protection circuitry necessary

Short development cycles

- Product line compatibility enabling application scalability
- Advanced development tools
- Flash program memory for easy software development and product qualification

Application power and robustness

- Efficient STM8 core: 10 MIPS at 16 MHz
- LIN 2.1 with auto-synchronization on all products
- High application safety: independent watchdog timers, clock security system
- Injection robust I/Os

Design longevity

- Modern core and peripherals
- State-of-the art technology
- Suitable for 3.3 V and 5 V applications
- Up to 145 °C maximum operating temperature

In-circuit debugging

Application debugging on STM8A products is easy using the advanced single-wire, integrated debug-interface SWIM. A simple USB adapter turns your PC into a powerful development tool featuring:

- Non-intrusive debugging – no wasted target resources, no reserved NVM addresses, no monitor
- Real-time read and write of RAM and peripheral registers - no wait, no stall
- Hot-plug during application execution and post-mortem debug
- Unlimited breakpoints on all memory instructions
- Hardware breakpoints – 23 configurations
- Step-by-step code execution
- Fast Flash programming

For the most demanding applications, ST offers the FPGA based STICE emulator, which complements the environment with solutions for code tracing, code coverage measurement and profiling.

STM8A family overview

Part number		Prog. (bytes)	Data EEPROM (bytes)	RAM (bytes)	10-bit A/D	Timers (IC/OC/PWM)	Serial interfaces	CAN [1]	Other	VDD
128-pin LQFP	STM8AF61BC	256 K	4 K	12K	28	1 x 8-bit 4 x 16-bit (12/12/12)	LIN-UART, 2 x USART, UART, 2 x SPI, 2 x I²C			
100-pin LQFP	STM8AF61BB	256 K	4 K	12 K						
	STM8AF61AB	128 K	2 K	6 K						
80-pin LQFP	STM8AF61BA	256 K	4 K	12 K	16	1 x 8-bit 3 x 16-bit (9/9/9)	LIN-UART USART SPI, I²C	Optional	Window and standard watchdogs 16 MHz RC 128 kHz RC CSS	3 V to 5.5 V
	STM8AF61AA	128 K	2 K	6 K						
	STM8AF619A	96 K	2 K	6 K						
64-pin LQFP	STM8AF61A9	128 K	2 K	6 K						
	STM8AF6199	96 K	2 K	6 K						
	STM8AF6189	64 K	1.5 K	4 K						
	STM8AF6179	48 K	1.5 K	3 K						
	STM8AF6169	32 K	1 K	2 K						
48-pin LQFP/QFN	STM8AF61A8	128 K	2 K	6 K	10					
	STM8AF6198	96 K	2 K	6 K						
	STM8AF6188	64 K	1.5 K	4 K						
	STM8AF6178	48 K	1.5 K	3 K						
	STM8AF6168	32 K	1 K	2 K						
	STM8AF6148	16 K	0.5 K	1 K						
32-pin LQFP/QFN	STM8AF6186	64 K	1.5 K	4 K	7	1 x 8-bit, 3 x 16-bit (8/8/8)	LIN-UART SPI, I²C	In design		
	STM8AF6176	48 K	1.5 K	3 K						
	STM8AF6166	32 K	1 K	2 K						
	STM8AF6146	16 K	0.5 K	1 K		1 x 8-bit, 2 x 16-bit (6/6/6)	LIN-UART SPI	No		
20-pin SO/QFN	STM8AF6143	16 K	0.5 K	1 K	5					
	STM8AF6142	8 K	384	0.5 K						

1. The CAN version order-code prefix is STM8AF51xx

	Product	Description	Order code
Development software	ST MCU toolset	Toolset for building, debugging and programming applications includes assembler-linker, ST Visual Develop (STVD) IDE, integrated control of Cosmic and Raisonance C compilers, and ST Visual Programmer (STVP)	Free download
	RIDE	Raisonance IDE with C compiler, RBuilder and RFlasher programming software	(note 1)
Compiler	Cosmic	C Compiler for ST 8-bit microcontrollers. Available in free version that outputs up to 16 Kbytes of code	(note 1)
	Raisonance	C Compiler for ST 8-bit microcontrollers. Available in free version that outputs up to 16 Kbytes of code	(note 1)
Libraries and drivers	CAN driver	Certified CAN driver from Vector Software GmbH	(note 1)
	STM8 Library	ST standard firmware library covering all standard device peripherals	Free download
	LIN driver	ST LIN driver and package supporting STM8A LIN-UART	(note 3)
Emulation system	STICE	Advanced emulation system for ST microcontrollers provides configurable breakpoints, Trace, Code Coverage [2] and Profiling [2], plus in-circuit debugging/programming capability (SWIM)	CB-STICE-S001
In-circuit debugger/ programmer	RLink	Raisonance in-circuit debugger/programmer for ST microcontrollers supports SWIM interfaces	CB-STX-RLINK
Evaluation board	CB-8/128-EVAL	ST full-featured evaluation board for STM8A microcontrollers	CB-8/128-EV/WS

1. For ordering information pricing and order codes, refer to the respective third-party tool provider
2. Under development
3. Available free of charge, contact your nearest sales office

For selected STMicroelectronics sales offices fax:

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Full product information at www.st.com

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