

# STM8A MCU family

Automotive 8-bit Flash microcontrollers

**STM8** Simply **smarter**



January 2009

**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.

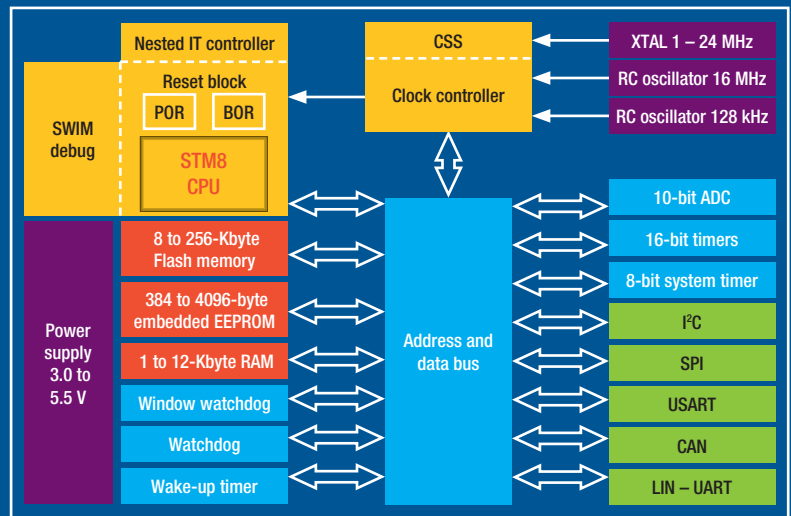
All products are optimized for reduced power and low EMC. The efficient STM8 core delivers leading-edge execution speed even at low CPU clock frequencies. Powertrain applications benefit from the extended temperature range up to 145 °C.

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

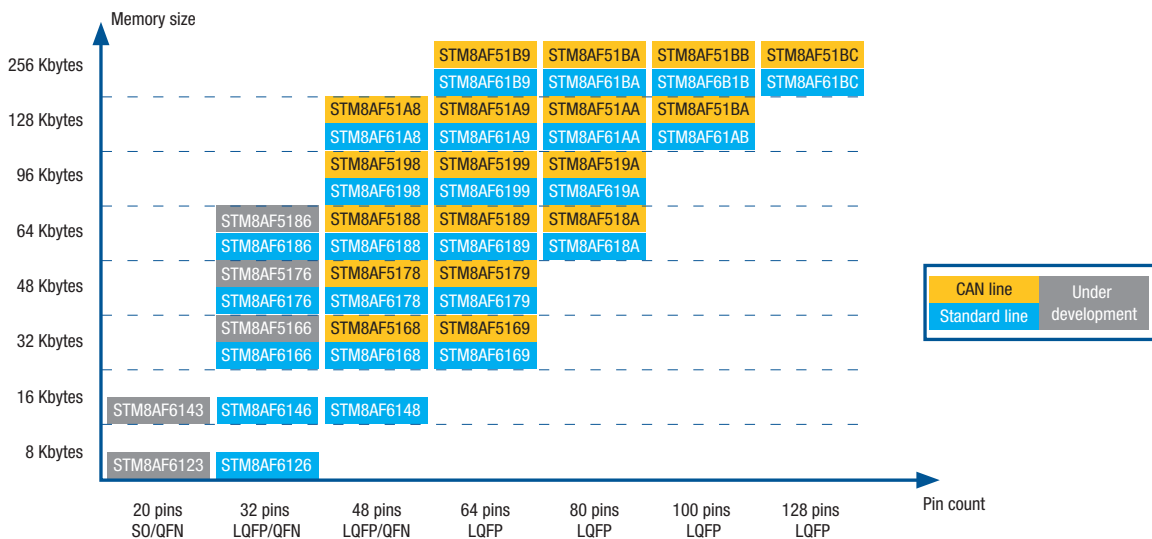
### Applications

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

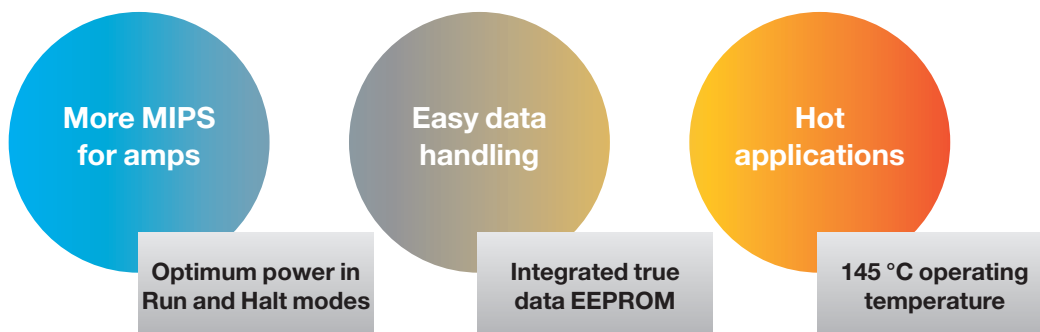
### STM8A block diagram



### STM8A product lines



# STM8A MCU family



## 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

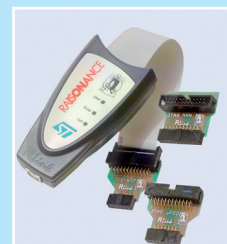
### Design longevity

- 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 SWIM debug interface. 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 <sup>(1)</sup>	Prog. (bytes)	Data EEPROM (bytes)	RAM (bytes)	Packages	10-bit A/D	Timers (IC/OC/PWM)	Serial interfaces	CAN <sup>(2)</sup>	Other	V <sub>DD</sub>
STM8AF61BC	256 K	4 K	12K	LQFP128	28	1x8-bit, 4x16-bit (12/12/12)	LIN-UART, 2xUSART, UART, 2xSPI, 2xI <sup>2</sup> C	Optional	Window and standard watchdogs 16 MHz RC oscillator 128 kHz RC oscillator CSS	3 V to 5.5 V
STM8AF61BB	256 K	4 K	12 K	LQFP100	28	1x8-bit, 4x16-bit (12/12/12)	LIN-UART, 2xUSART, UART, 2xSPI, 2xI <sup>2</sup> C	Optional		
STM8AF61AB	128 K	2 K	6 K	LQFP100	28	1x8-bit, 4x16-bit (12/12/12)	LIN-UART, 2xUSART, UART, 2xSPI, 2xI <sup>2</sup> C	Optional		
STM8AF61BA	256 K	4 K	12 K	LQFP80	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF61AA	128 K	2 K	6 K	LQFP80	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF619A	96 K	2 K	6 K	LQFP80	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF618A	64 K	1.5 K	4 K	LQFP80	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF61B9	256 K	4 K	12K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF61A9	128 K	2 K	6 K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6199	96 K	2 K	6 K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6189	64 K	1.5 K	4 K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6179	48 K	1.5 K	3 K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6169	32 K	1 K	2 K	LQFP64	16	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF61A8	128 K	2 K	6 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6198	96 K	2 K	6 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6188	64 K	1.5 K	4 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6178	48 K	1.5 K	3 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, USART, SPI, I <sup>2</sup> C	Optional		
STM8AF6168	32 K	1 K	2 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, SPI, I <sup>2</sup> C	Optional		
STM8AF6148	16 K	0.5 K	1 K	LQFP48, QFN48	10	1x8-bit, 3x16-bit (9/9/9)	LIN-UART, SPI, I <sup>2</sup> C	Optional		
STM8AF6186	64 K	1.5 K	4 K	LQFP32, QFN32	7	1x8-bit, 3x16-bit (8/8/8)	LIN-UART, SPI, I <sup>2</sup> C	Optional <sup>(3)</sup>		
STM8AF6176	48 K	1.5 K	3 K	LQFP32, QFN32	7	1x8-bit, 3x16-bit (8/8/8)	LIN-UART, SPI, I <sup>2</sup> C	Optional <sup>(3)</sup>		
STM8AF6166	32 K	1 K	2 K	LQFP32, QFN32	7	1x8-bit, 3x16-bit (8/8/8)	LIN-UART, SPI, I <sup>2</sup> C	Optional <sup>(3)</sup>		
STM8AF6146	16 K	0.5 K	1 K	LQFP32, QFN32	7	1x8-bit, 2x16-bit (6/6/6)	LIN-UART SPI	No		
STM8AF6126	8 K	384	0.5 K	LQFP32, QFN32	7	1x8-bit, 2x16-bit (6/6/6)	LIN-UART SPI	No		
STM8AF6143 <sup>(3)</sup>	16 K	0.5 K	1 K	S020, QFN20	5	1x8-bit, 2x16-bit (6/6/6)	LIN-UART SPI	No		
STM8AF6123 <sup>(3)</sup>	8 K	384	0.5 K	S020, QFN20	5	1x8-bit, 2x16-bit (6/6/6)	LIN-UART SPI	No		

1. FASTROM service available for pre-programmed devices in production quantities

2. The CAN version order-code prefix is STM8AF51xx

3. Under development

Development tool	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 <sup>(2)</sup> and Profiling <sup>(2)</sup> , 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

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



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