STM8 low cost high performance 8bit MCU

STM8S ***standard***
STM8L ***ultra low power***
STM8A ***automotive***

All family are available up to 125℃ (standard -40° C + 85℃)

STM8 – introduction to family

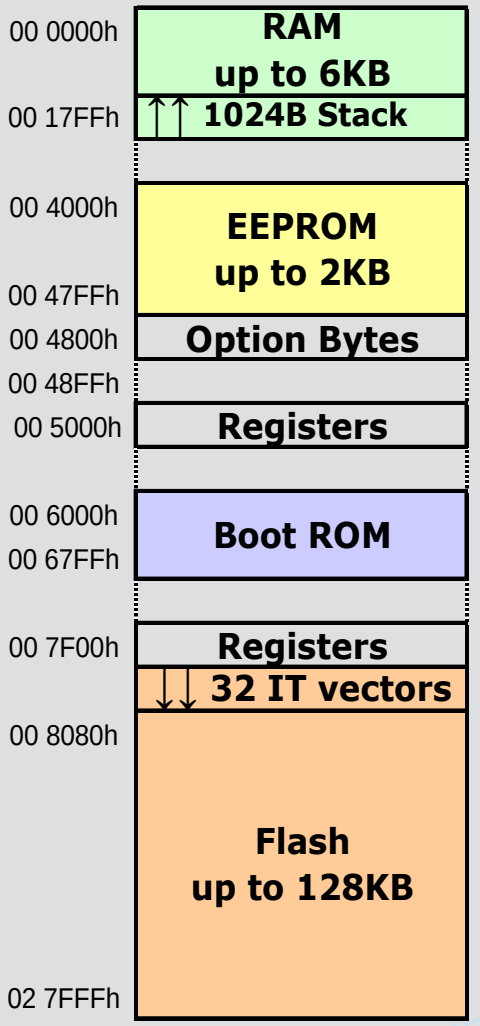
STM8S family of general-purpose **8-bit Flash microcontrollers** offers ideal solutions for industrial and appliance market requirements.
An advanced core version combined with a **3-stage pipeline** ranks the STM8S microcontroller in the top position for performance versus cost.
The **true embedded EEPROM** and the calibrated RC oscillator bring a significant cost effectiveness to the majority of applications.

STM8L family combines **high performance** and **ultra-low power consumption** thanks to a new proprietary ultra-low-leakage process and optimized architecture.
An advanced core version combined with a **3-stage pipeline**, **DMA**, **RTC**, **LCD**, **DAC** ranks the STM8S microcontroller in the top position for performance versus cost.

STM8A Flash microcontrollers **dedicated to the specific needs of automotive applications.**
An advanced core version combined with a **3-stage pipeline** ranks the STM8S microcontroller in the top position for performance versus cost.

STM8 – Key Features 1/3

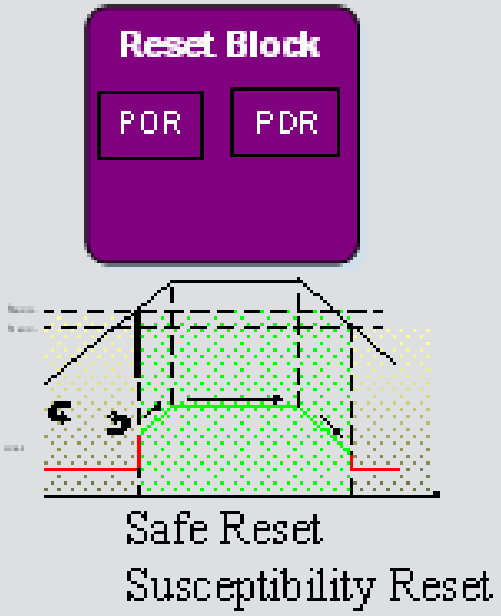
Harvard Architecture **- CISC**
0,29 DMips/Mhz – similar to some well known 16-bit CPU performance – **16Mips** at **16MHz**
Embedded single wire interface module **SWIM** for fast on-chip programming and non intrusive debugging (**programming 128K in < 6sec**)
Bot Loader from **USART** and **CAN** (up to 16K of Flash)
Up to **128KB flash**, 10K write/erase cycle
Up to **6KB RAM**
Up to **2KB EEPROM** endurance 300 kcycles
In-application programming **IAP** and in-circuit programming **ICP**
6 bits **ECC** for 32 data bits (single error correction)
Illegal opcode reset
Signed arithmetic operation support, 16-bit arithmetic instructions**,** Division 16/8 and 16/16
3 Stage Pipeline
4 DMA (on STM8L)

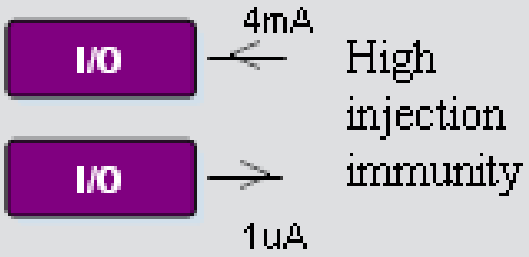


STM8 – Key Features 2/3

ADC 10bit on STM8A/S and **12bit** on **STM8L**
DAC 12bit (on STM8L)
LCD 4x28 (on STM8L)
2 x WatchDog
Clock & **Clock security system with clock monitor**
- 1…24Mhz Xtal
- 32,768MHz Xtal (on STM8L)
- 28KHz Internal RC (on STM8L)
- 16Mhz Internal RC 1% (trim.)
- 128KHZ Internal RC
- External clock input

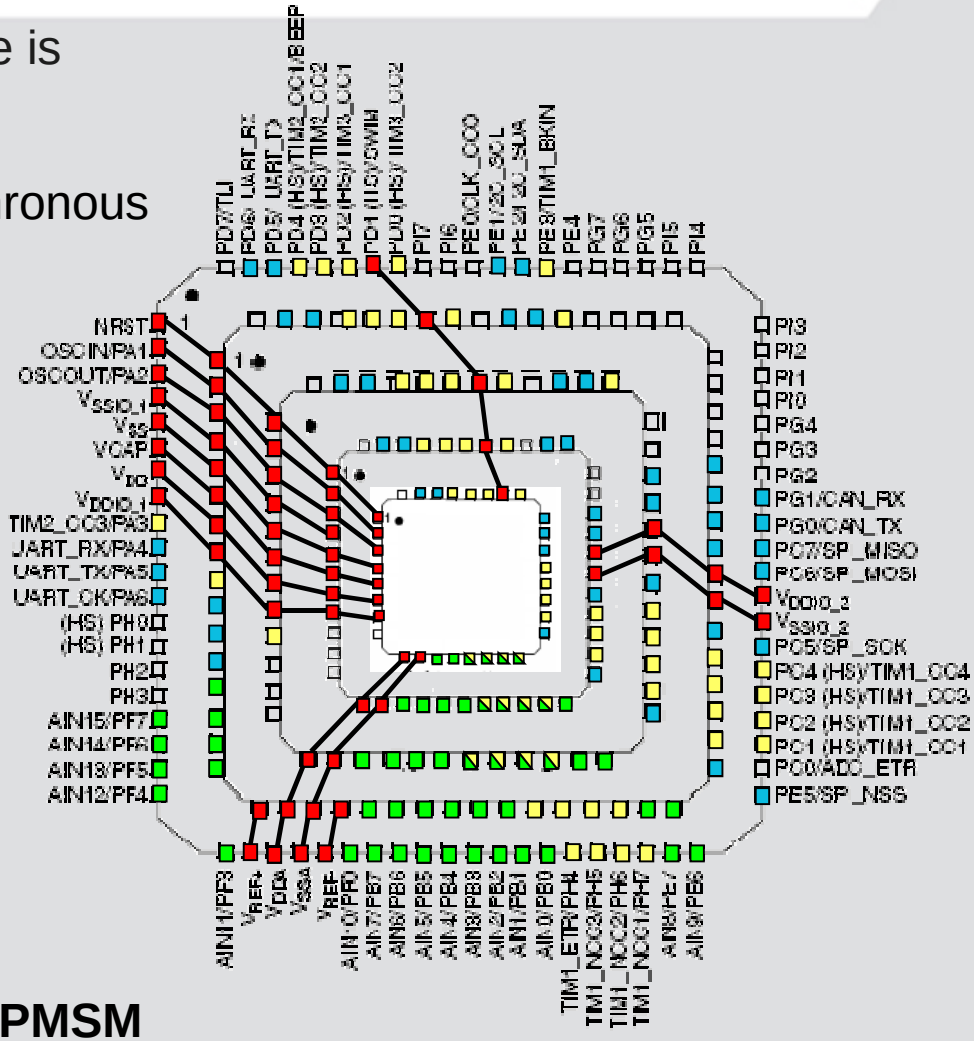
Integrated Power On Reset (**POR**)
Power Down Reset (**PDR**)
Low voltage detector (**LVD**)
Interrupt management
- **Nested interrupt** controller with 32 interrupts
- Up to **37 external interrupts** on 6 vectors





STM8 – Key Features 3/3

- Up to **4 Timer** (8/16-bit, IC/OC/PWM) one is dedicated **16-bit** timers with **6-PWM** for **motor control**
- Up to **2 UART** with clock output for synchronous operation, **Smartcard ISO 7816-3**, **IrDA**, **LIN**
- **SPI** interface up to **8 Mbit/s**
- **I2C** interface up to **400 Kbit/s**
- **CAN** High speed **1 Mbit/s** active beCAN 2.0B
- **Slew rate control** on **I/O**s
- Pinout compatibility & scalability
- **Standard f/w library**, dedicated software library for **compliance** to **Class B** of IEC60335 **ANSI C** compliant **MISRA C** compliant and **VDE certified**
- Free **Touch Sensing Software**
- Free **3-phase brushless motor control** **PMSM**



STM8Sxxx – Road Map

- **UART**
  LIN /Smartcard / IrDA
- **I2C**
  400 KHz multi-master
- **SPI**
  10MHz
- **Up to 3x16-bit Timer**
  8-bit Timer
- **2x Watchdog**
  (IWDG & WWDG)
- **AWU**
  Beeper 1/2/4Khz
- **10-bit ADC**
  Up to 16 channel
- **XTAL**
  16MHz int.RC osc.
  128KHz int.RC osc.
- **SWIM**
  Debug Module

Performance Line STM8S20x

STM8 Core @ 24 MHz	Up to 6KB SRAM	Up to 2KB EEPROM	CAN 2.0B	2nd UART

+

Access Line STM8S10x

STM8 Core @ 16 MHz	Up to 2KB SRAM	Up to 1KB EEPROM

4KB to **128KB flash** in **20/32/44/48/64/80** pin

STM8Lxxx – Road Map 1/2

Run-mode consumption down to 150 µA/MHz

All lines include:

- 16 MHz STM8 CPU
- Communication peripherals
  USART, SPI, I2C
- Multiple 16-bit timers
- Internal 16 MHz and 38 kHz RC oscillators
- Watchdog
  (Dual Watchdogs on STM8L15x)
- Reset circuitry
  POR/PDR
- 2x comparators

4KB to **64KB flash**
in **20/32/44/48** pin

STM8L152

STM8 core @ 16 MHz	Up to 32 KB Flash	Up to 2 KB SRAM	Reset + BOR PVD	Main osc. input 1-16 MHz	Data E²PROM	RTC with 32 kHz osc.	4 – chan DMA	12-bit ADC 1µs Temp sensor	12-bit DAC	LCD 4x28

STM8L151

STM8 core @ 16 MHz	Up to 32 KB Flash	Up to 2 KB SRAM	Reset + BOR PVD	Main osc. input 1-16 MHz	Data E²PROM	RTC with 32 kHz osc.	4 – chan DMA	12-bit ADC 1µs Temp sensor	12-bit DAC

STM8L101

STM8 core @ 16 MHz	Up to 8 KB Flash	Up to 1.5 KB SRAM

STM8Lxxx – Road Map 2/2

Run-mode consumption down to 150 µA/MHz

Flash size (bytes)

64 K

32 K

16 K

8 K

4 K

20 pins TSSOP/QFN	28 pins QFN/WLCSP	32 pins LQFP/QFN	48 pins LQFP/QFN	64 pins LQFP	80 pins LQFP
				STM8L162R8	STM8L162M8
			STM8L152C8	STM8L152R8	STM8L152M8
			STM8L151C8	STM8L151R8	STM8L151M8
		STM8L152K6	STM8L152C6	STM8L152R6	
	STM8L151G6	STM8L151K6	STM8L151C6	STM8L151R6	
		STM8L152K4	STM8L152C4		
	STM8L151G4	STM8L151K4	STM8L151C4		
STM8L151F3	STM8L151G3	STM8L151K3	STM8L151C3		
STM8L101F3	STM8L101G3	STM8L101K3			
STM8L151F2	STM8L151G2	STM8L151K2			
STM8L101F2	STM8L101G2				

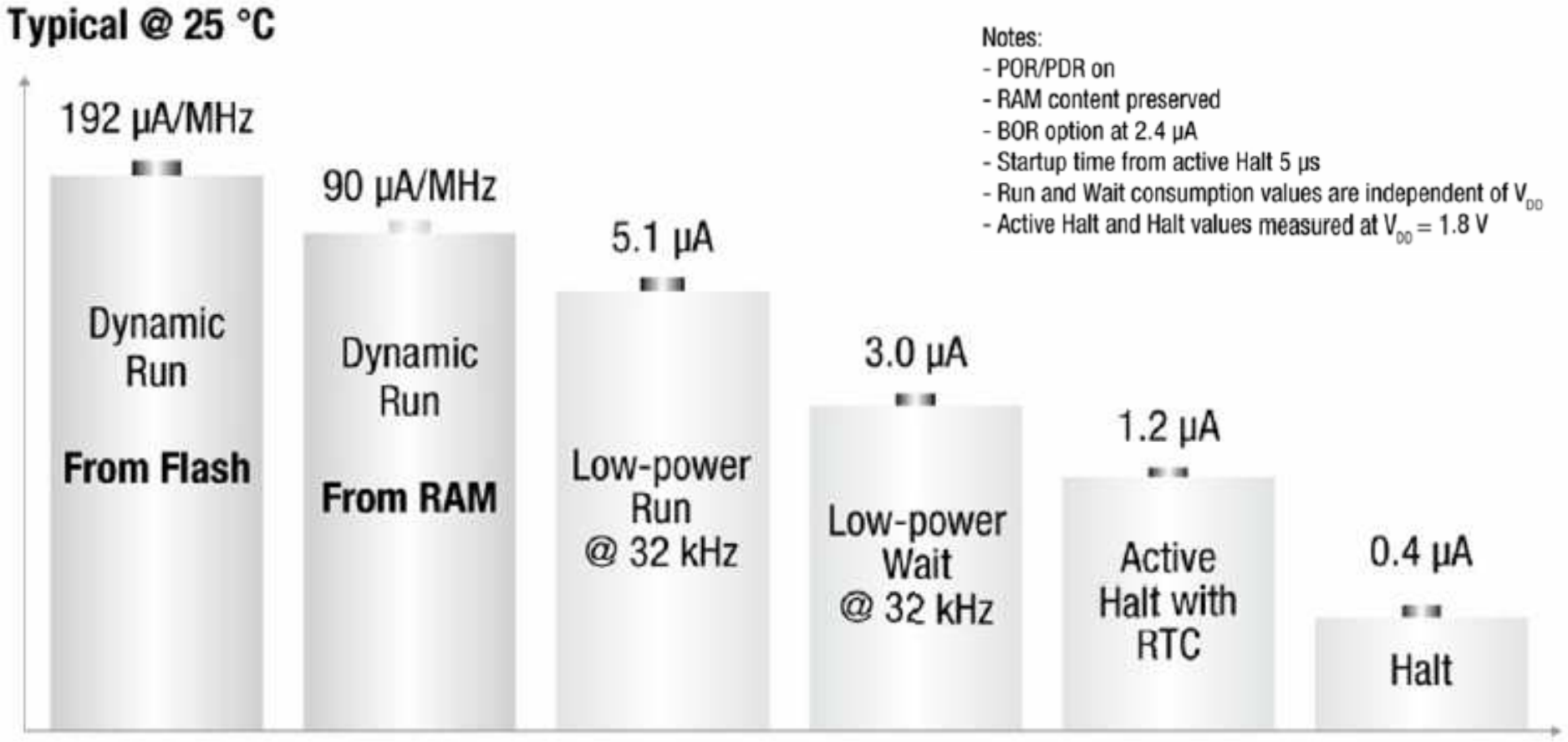
Pin count

STM8L101 basic
STM8L151 no LCD
STM8L152 with LCD
STM8L162 with Encryption
AES 128bit

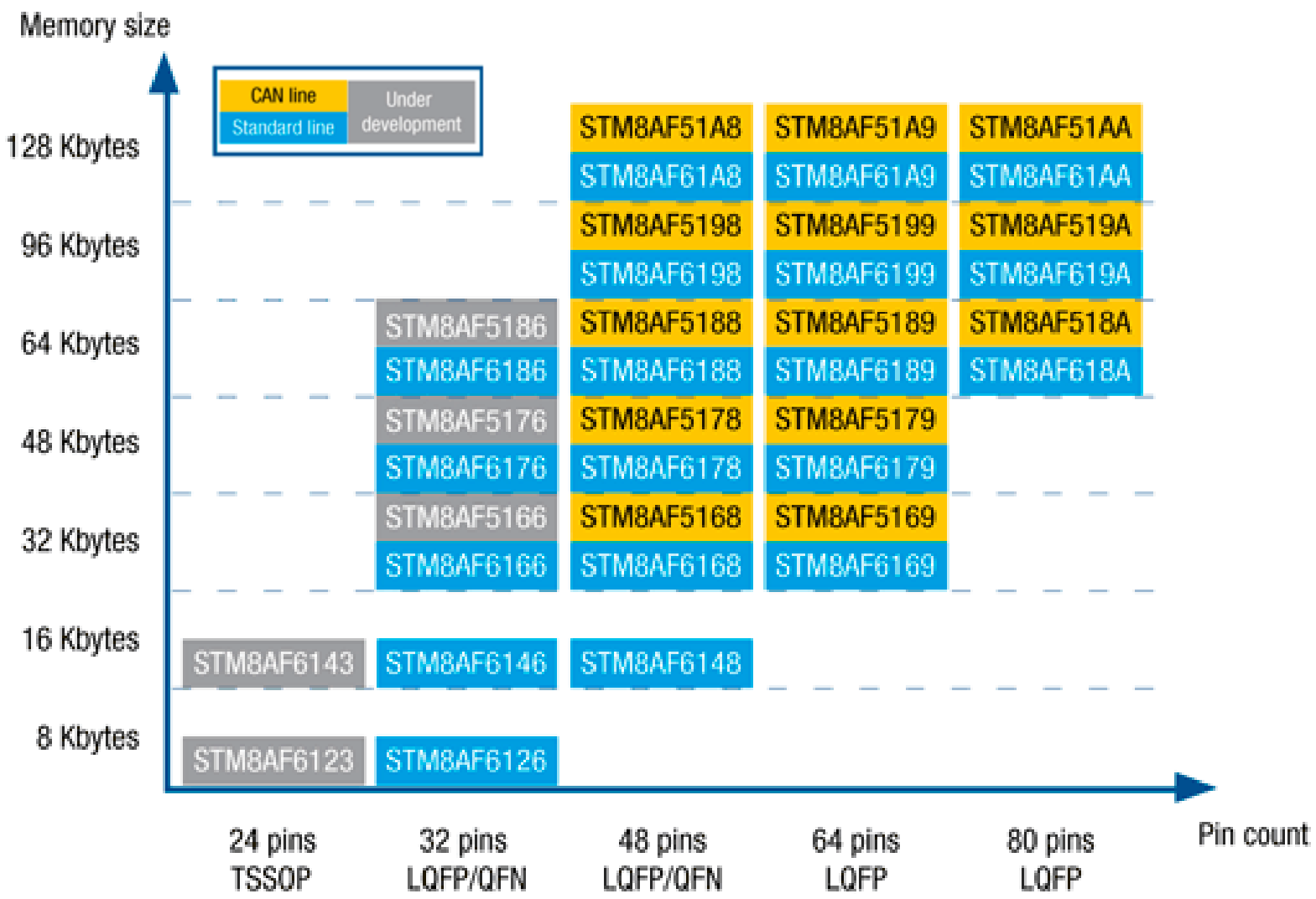
STM8Lxxx – Consumption

Run-mode consumption down to 150 µA/MHz

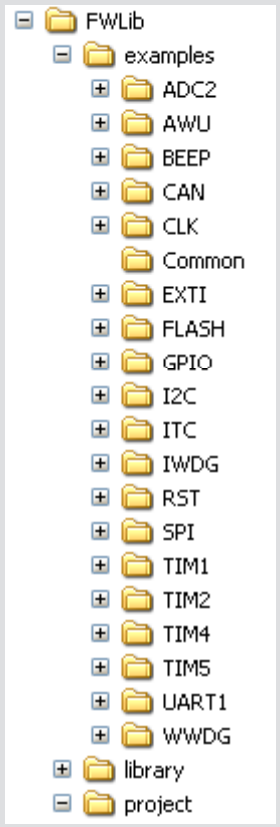
Wakeup time from Halt to Run mode (using HSI RC 16MHz) 4,7uS

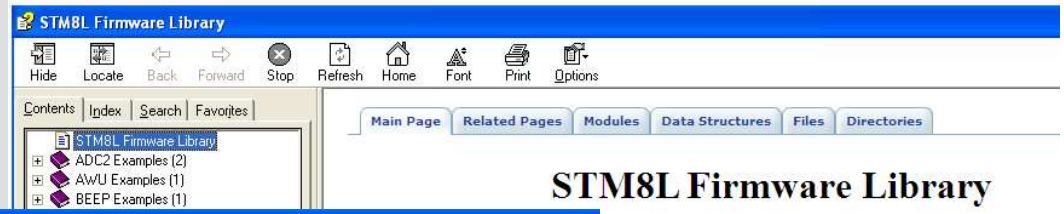


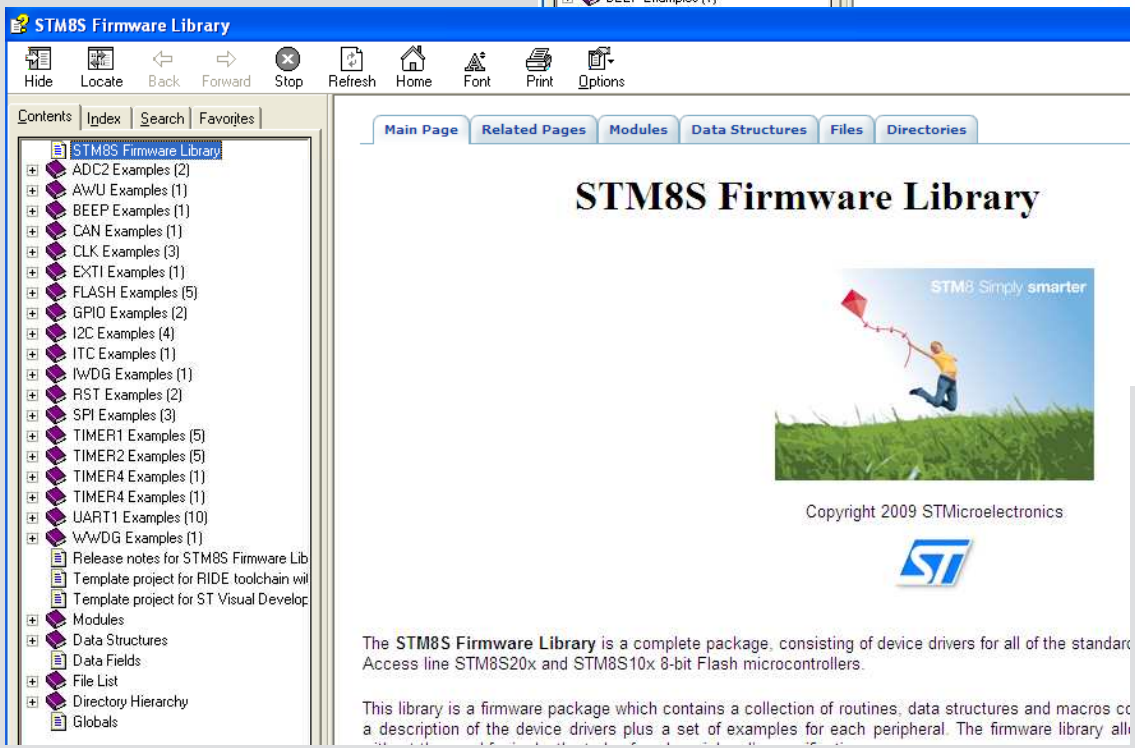
STM8Axxx – Road Map



STM8 – Software Tools 1/2







Free Library

Compliant to:

ANSI C

MISRA C

Class B IEC60335-1

VDE certified

Free **Touch Sensing Software**

Free **3-phase brushless motor control** **PMSM**

STM8 – Software Tools 2/2

- ST Visual Develop (STVD), free IDE
- ST Visual Programmer (STVP), free MCU programming software
- STM8 peripheral firmware library and examples free
- STM8 IEC 60335 ClassB compliant firmware library, VDE approved
- Touch Library free
- Motor Control Library free

www.st.com/stm8

- Raisonance RIDE, free IDE with RBuilder and RFlasher

www.raisonance.com

- Raisonance C Compiler, 32KB free
- IAR C Compiler, 8KB free
- Cosmic C Complier, 32KB free

http://www.iar.com/

www.cosmic-software.com

STM8 – Hardware Tools 1/2

- **STICE-SYS001**- High-end full featured emulator
- **STM8/128-EVAL**- Evaluation board with full range of peripheral features
- **STM8/128-SK/RAIS**- Starter kit including everything needed to begin a design
- **STX-RLINK**- Programming and debugging STM8, STM32, STR9, STR7, uPSD
- **ST-LINK** – Programming and Debugging STM8 and STM32
- **STM8S-DISCOVERY** – Program. And Debug. + EvaBoard for STM8S

STM8/128-EVAL

$200

STICE-SYS001

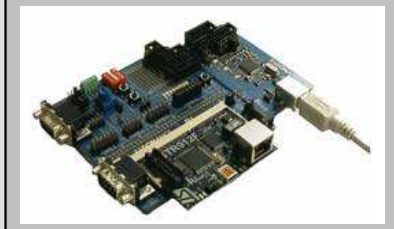
$1990

STM8S-DISCOVERY

$10

ST-LINK

$35



STM8/128-SK/RAIS

$219

$59

All recommended resale prices

STM8 – Hardware Tools 2/2

- **STM8L1526-EVAL** – Evaluation board with full range of peripheral features
- **STEVAL-IAS003V1** – STM8L101 low-power demonstrator with software-driven LCD
- **STM8L15LPBOARD** – Demo board for SMM8L15x
- **STM8-128-MCKIT** – Demo Board for Motor Control
- **STM8L-Discovery** – Program. And Debug. + EvaBoard for STM8L
- **STMT/8L-EV1** – Demo Board for touch

STM8L1526-EVAL

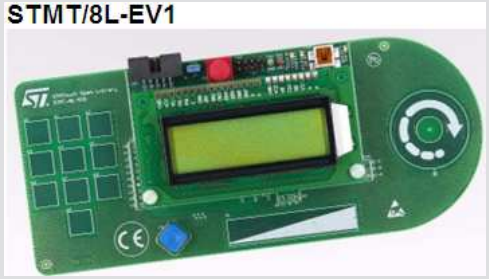
$10

STM8L-Discovery

STM8L15LPBOARD

STEVAL-IAS003V1

STMT/8L-EV1



STM8 – Link

Extra info

http://www.emcu.it

For more info contact your local SILICA FAE