

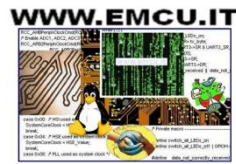


STM MCU Presentation

Apr. 2014



www.emcu.it



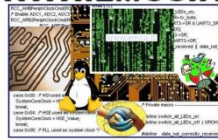
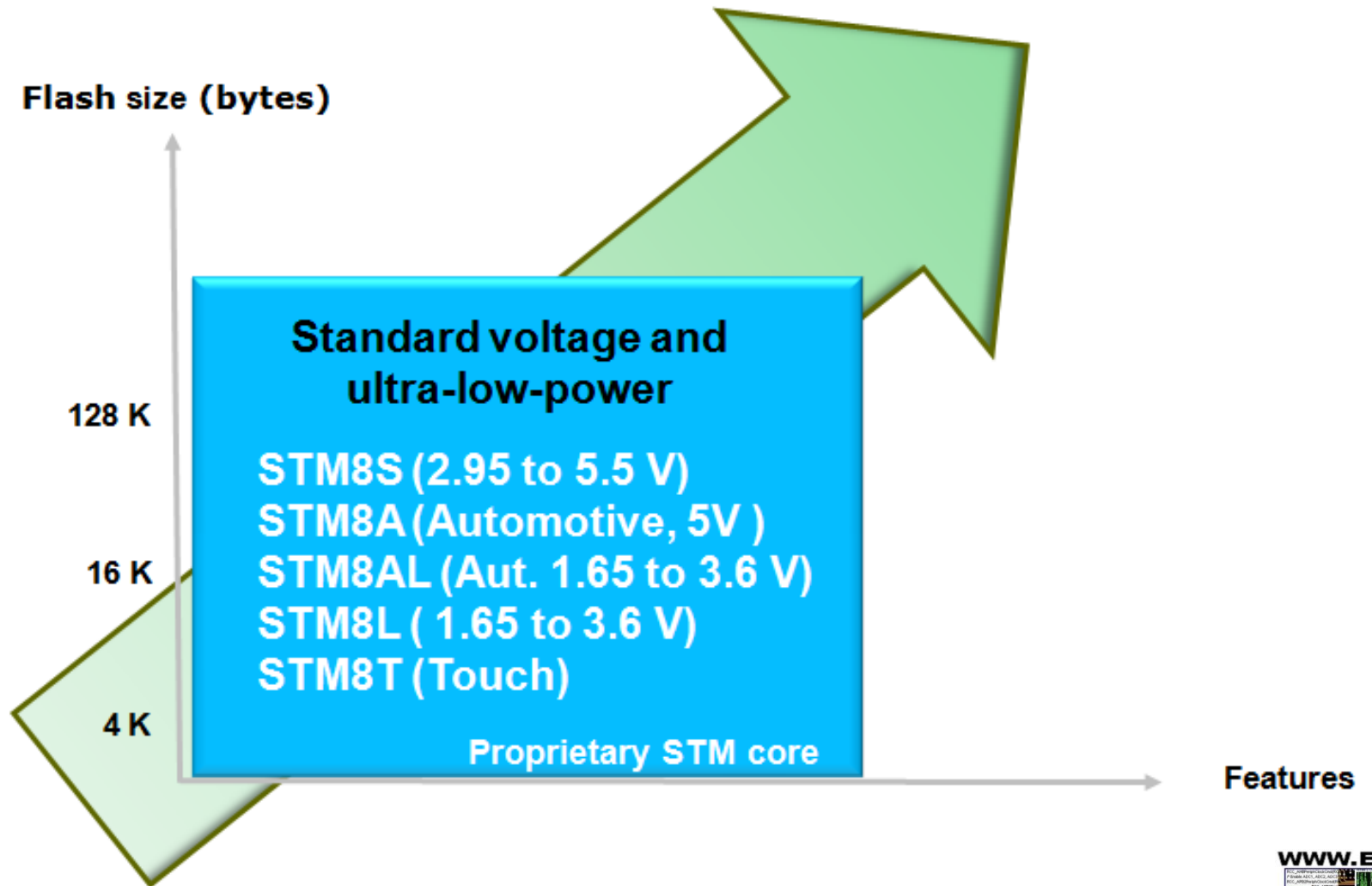


STM32

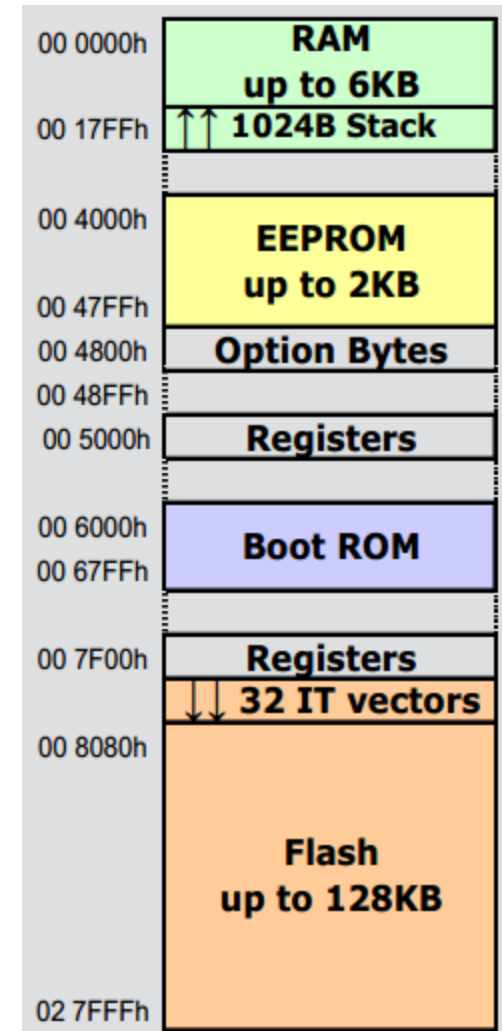
STM8

- **Compatibility**
- **Scalability**
- **Ecosystem**
- **Rich range of peripherals**
- **From 20 to 228 pins**
- **Designed for industrial applications**
- **Aggressive pricing**

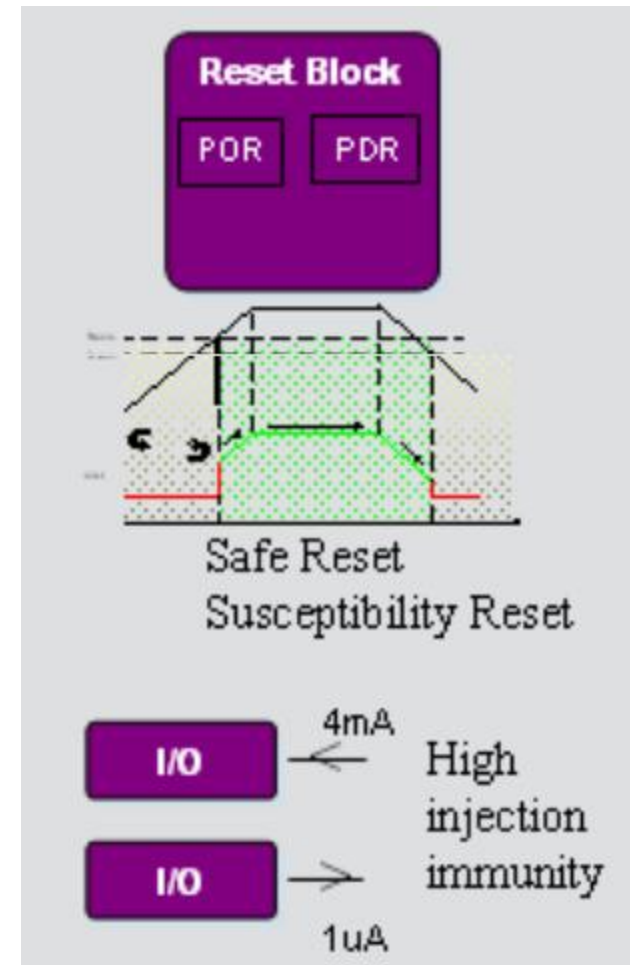
STM8



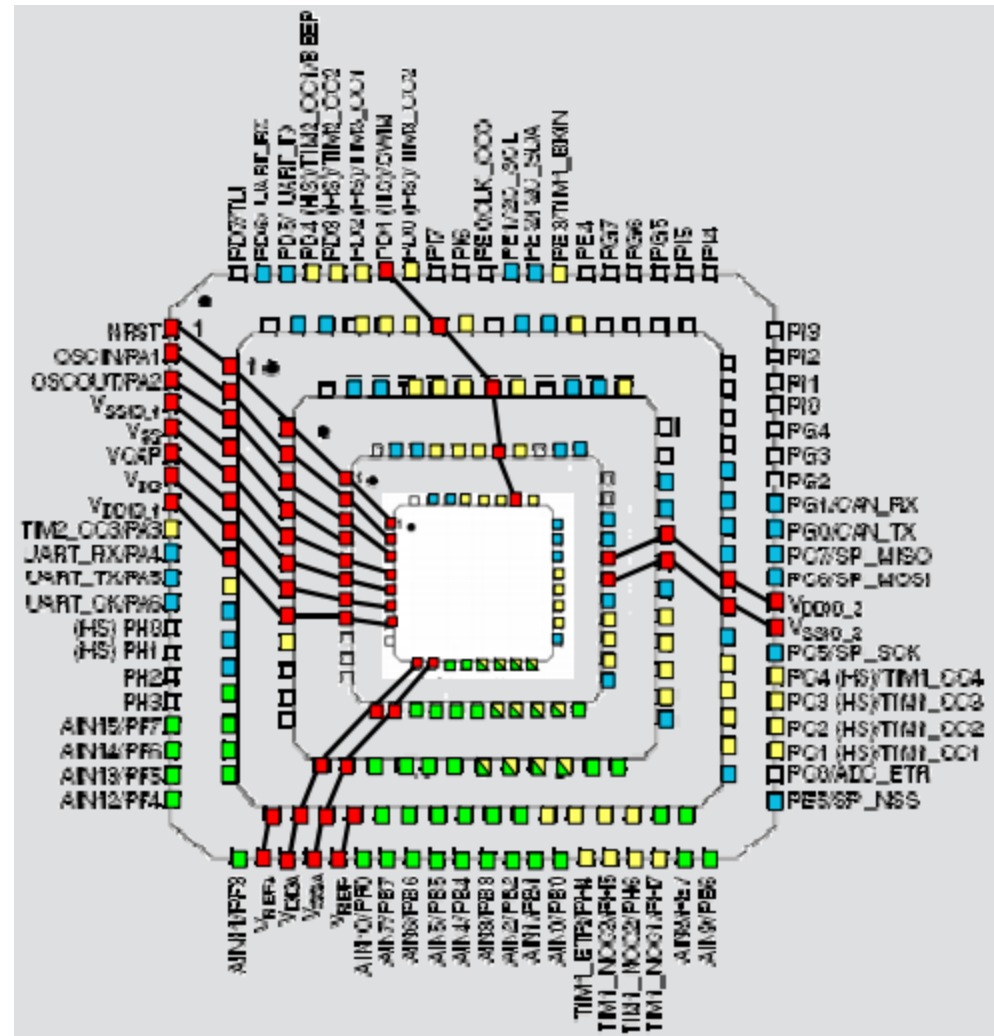
- **Harvard Architecture** - CISC
- **0,25 DMips/Mhz** – similar to some well known 16-bit CPU performance – 6DMips at 24MHz
- **Embedded single wire interface module SWIM** for fast on chip **programming** and **non intrusive debugging** (programming 128K in < 6sec)
- **Boot Loader** from **USART** and **CAN**
- **FLASH** up to 128KB, 10K write/erase cycle
- **RAM** up to 6KB
- **EEPROM** up to 2KB
- 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)
- **RTC** (on STM8L)



- **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



- 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/Os**
- **Pinout compatibility & scalability**
- Standard f/w library, dedicated software library for compliance to **Class B** of IEC60335, ANSI C compliant MISRA C
- Free **Touch Sensing Software**
- Free **3-phase brushless motor control PMSM**
- **STM8 –STM32 embedded software solutions**



STM8 development tools

A wide choice of solutions.

starter kits Numerous boards



STM8L101-EVAL
STM8L1526-EVAL



STM8/128-EVAL



STM8-SK/RAIS



ST-ICE

STM8 promotion kits



STM8L-PRIMER



STM8S-DISCOVERY
STM8L-DISCOVERY
STM8SVLDiscovery



STM8/128_MCKIT



ST-LINK

IDE solutions



STVD



EWSTM8



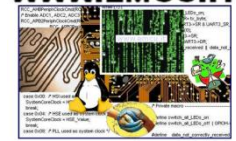
RIDE



IDEA

(*) up to 32 KB C compiler free of charge

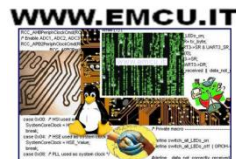
Software/Hardware solution providers





STM32[®] Series Presentation

April 2014



For those unfamiliar with the family CORTEX we give some preliminary clarifications. In general, the main features of ARM core are:

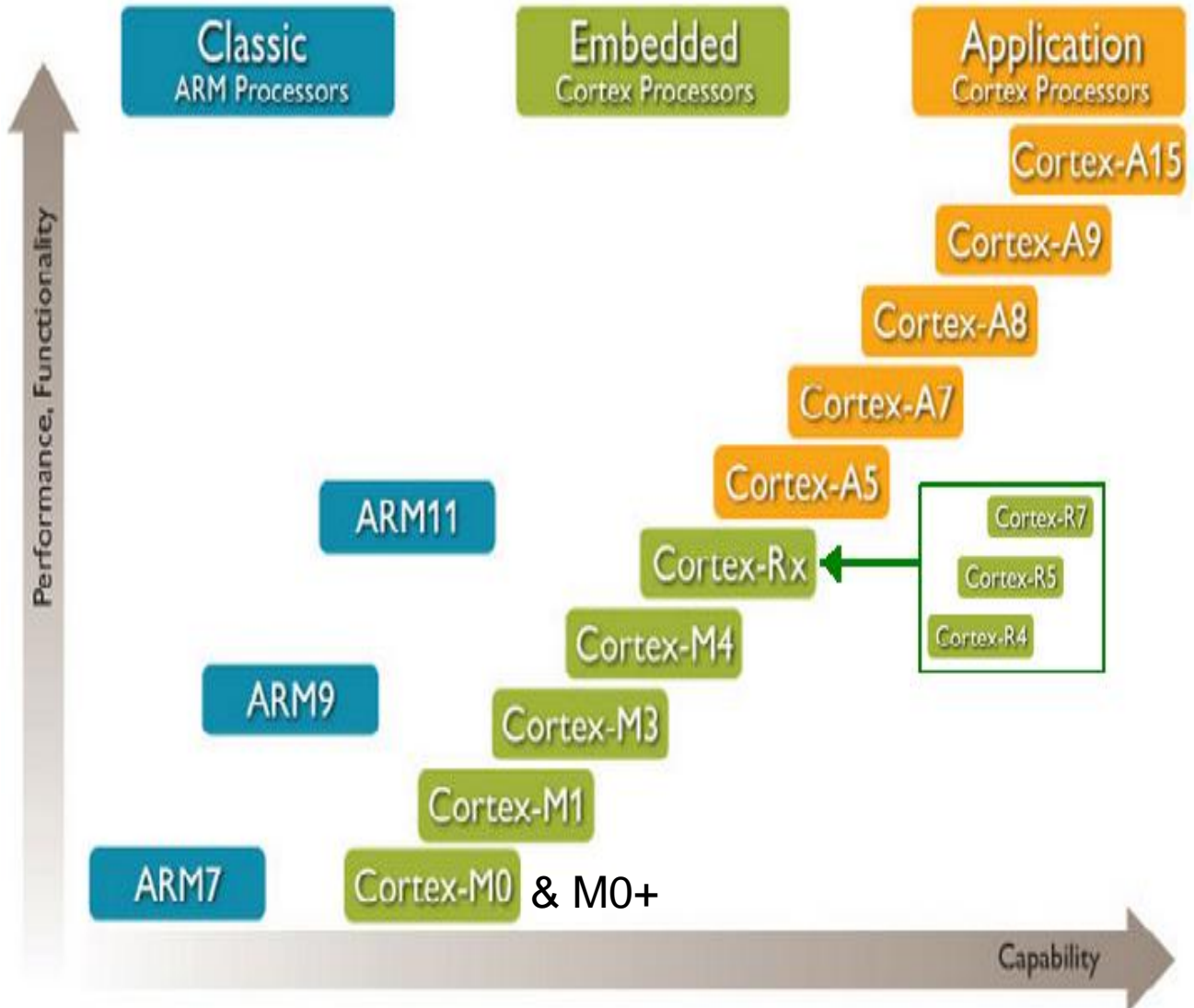
- Core 32bit
- RISC architecture
- Excellent relations DMips/Watt

Some years ago, ARM has launched a new generation of its core identified by the name: **CORTEX**

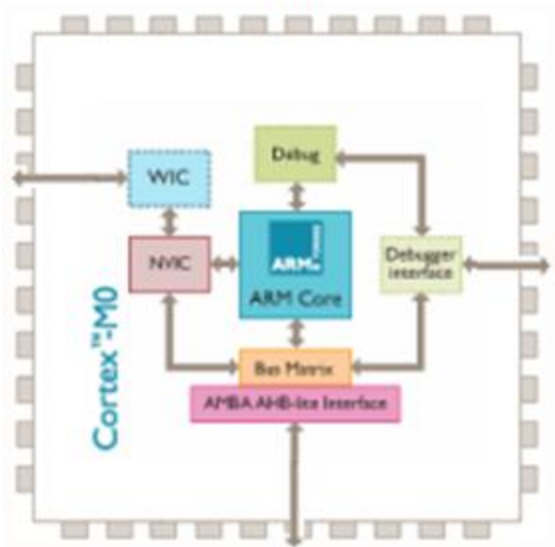
The family is divided into three subfamilies:

CORTEX Ax
CORTEX Rx
CORTEX Mx

The **x** identifies in detail the core.

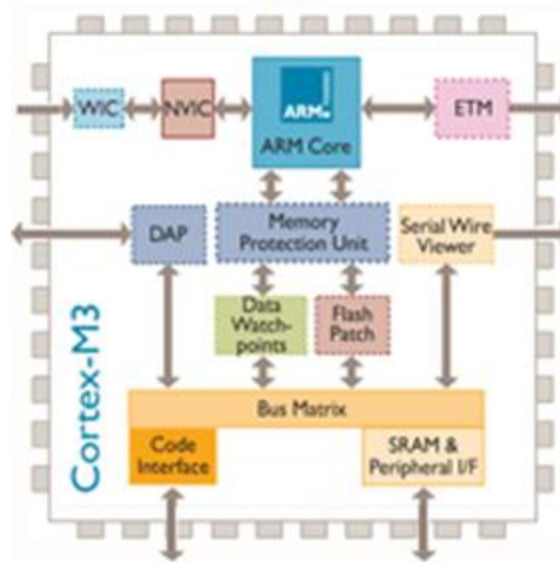


M0+
&
M0



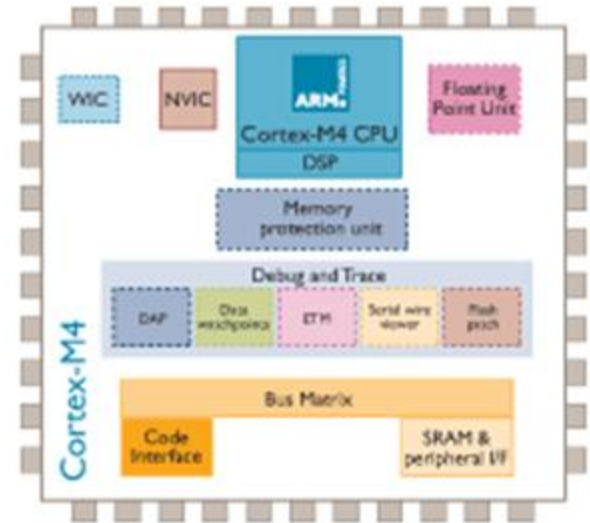
Von Neumann Architecture
0,9 DMIPS

M3



Harvard Architecture
1,25 DMIPS

M4



Harvard Architecture
1,25 DMIPS + DSP + FP

Powerful & scalable instruction set

Floating Point

VADD	VCMP	VCMPPE	VCVT	VCVTR	VDIV	VLDM
VMLA	VMLS	VMOV	VMRS	VMSR	VMUL	VNEG
VMMLS	VNMUL	VPOP	VPUSH	VSQRT	VSTM	VSTR
VSUB	VFMA	VFMS	VFNMA	VFNMS		

Cortex-M4 FPU

DSP (SIMD, fast MAC)

QADD	QADD16	QADD8	QASX	QDADD	QDSUB	QSAX
QSUB16	QSUB8	SADD16	SADD8	SASX	SEL	SHADD16
SHASX	SHSAX	SHSUB16	SHSUB8	SMLABB	SMLABT	SMLATB
SMLAD	SMLALBB	SMLALBT	SMLALTB	SMLALTT	SMLALD	SMLAWB
SMLAWT	SMLSD	SMLSDD	SMMLA	SMMLS	SMMUL	SHUAD

Advanced data processing
Bit field manipulations

ADC	ADD	ADR	AND	ASR	B
CLZ	BFC	BFI	BIC	CDP	CLREX
CBNZ	CBZ	CMN	CMN	DBG	EOR
	LDMDB	LDR	LDRB	LDRBT	LDRD
	LDREXB	LDREXH	LDRH	LDRHT	LDRSB
	LDRSHT	LDRSH	LDRT	MCR	LSL
	MCCR	MLS	MLA	MOV	MOVT
	MRRC	MUL	MVN	NOP	ORN
ORR	PLD	PLDW	PLI	POP	PUSH
RBIT	REV	REV16	REVSH	ROR	RRX

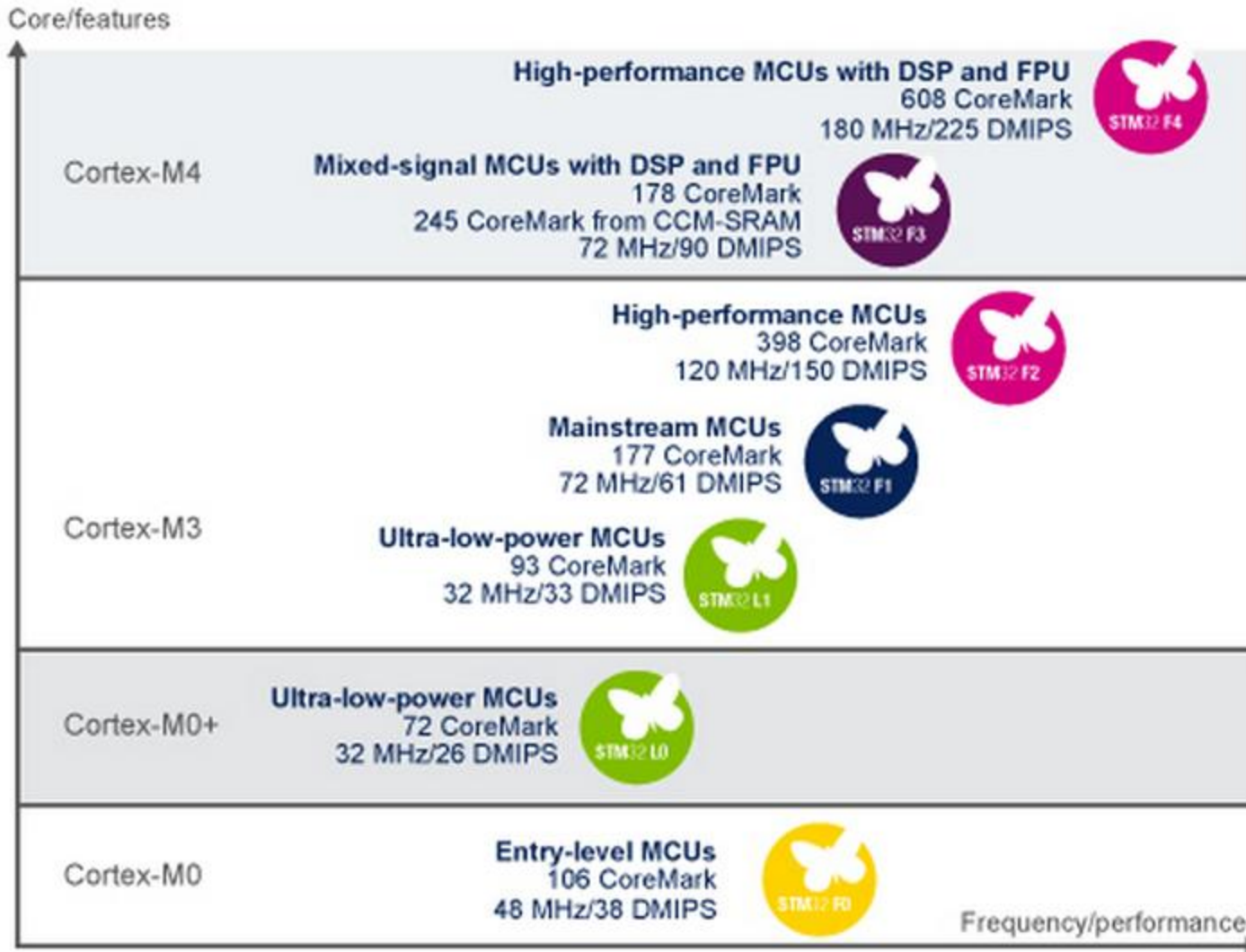
General data processing
I/O control tasks

BKPT	BLX	ADC	ADD	ADR	SDIV	SEV	SMLAL
BX	CPS	AND	ASR	B	SMULL	SSAT	STC
DMB		BL	BIC		STMIA	STMDB	STR
DSB	CMN	CMP	EOR		STRB	STRBT	STRD
	LDR	LDRB	LDM		STREX	STREXB	STREXH
	LDRH	LDRSB	LDRSH		STRH	STRHT	STRT
	LSL	LSR	MOV		SUB	SXTB	SXTH
	REV	MUL	MVN	ORR	TBB	TBH	TEQ
	REVSH	POP	PUSH	ROR	TST	UBFX	UDIV
SEV	SXTB	RSB	SBC	STM	UMLAL	UMULL	USAT
SXTH	UXTB	STR	STRB	STRH	UXTB	UXTH	WFE
UXTH	WFE	SUB	SYC	TST	WFI	YIELD	IT
WFI	YIELD						

Cortex-M0/M0+/M1 **Cortex-M3** **Cortex-M4**

STM32 family

M4 + **TFT** controller

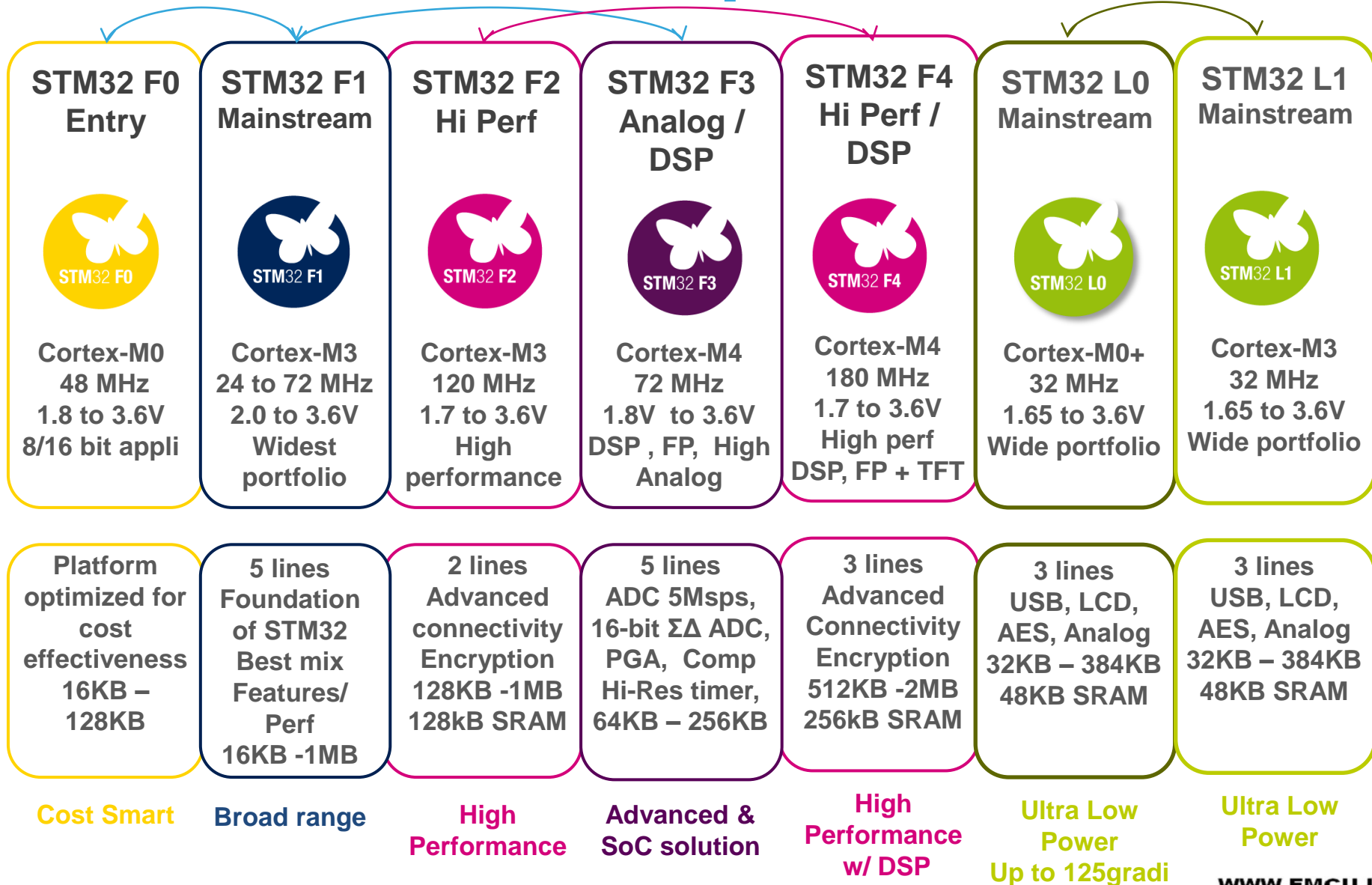


7 product series

- Compatibility
- Scalability – Pin to Pin from F0 to F4
- Ecosystem
- Rich range of peripherals
- From 20 to 216 pins
- Designed for industrial applications
- Aggressive pricing



STM32 Complete offer



**STM32F4-TFT
STM32F429/439**



STM32 – leading portfolio *in production*


Common core peripherals and architecture:

Communication peripherals: USART, SPI, I ² C
Multiple general-purpose timers
Integrated reset and brown-out warning
Multiple DMA
2x watchdogs Real-time clock
Integrated regulator PLL and clock circuit
Up to 19x 12-bit DAC
Up to 4x 12-bit ADC (Up to 5 MSPS)
Main oscillator and 32 kHz oscillator
Low-speed and high-speed internal RC oscillators
-40 to +85 °C and up to 105 °C operating temperature range
Low voltage 2.0 to 3.6 V or 1.65/1.7 to 3.6 V (depending on series)
Temperature sensor


STM32 F4 series - High performance with DSP (STM32F401/405/415/407/417/427/437/429/439)

Up to 180 MHz Cortex-M4 DSP/FPU	Up to 2-Mbyte Flash	Up to 256-Kbyte SRAM	2x USB 2.0 OTG FS/HS	1x 12-bit AMC timer	2x CAN 2.0B	SDIO 2x I ² S audio Camera IF	Ethernet IEEE 1588	LCD-TFT SDRAM I/F	
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STM32 F3 series - Mixed-signal with DSP (STM32F301/302/303/373/x8)

72 MHz Cortex-M4 with DSP and FPU	Up to 512-Kbyte Flash	Up to 64-Kbyte SRAM CCM-SRAM	USB 2.0 FS	3x 16-bit AMC timer (144 MHz)	CAN 2.0B	Up to 7x comparator 4x 12-bit DAC 4x PGA	HDMI CEC	3x 16-bit ΣΔ ADC	
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STM32 F2 series - High performance (STM32F205/215/207/217)

120 MHz Cortex-M3 CPU	Up to 1-Mbyte Flash	Up to 128-Kbyte SRAM	2x USB 2.0 OTG FS/HS	1x 12-bit AMC timer	2x CAN 2.0B	SDIO 2x I ² S audio Camera IF	Ethernet IEEE 1588	Crypto	
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STM32 F1 series - Mainstream - 5 product lines (STM32F100/101/102/103 and 105/107)

Up to 72 MHz Cortex-M3 CPU	Up to 1-Mbyte Flash	Up to 96-Kbyte SRAM	USB 2.0 OTG FS	1x 12-bit AMC timer	Up to 2x CAN 2.0B	SDIO 2x I ² S audio	Ethernet IEEE 1588	
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STM32 F0 series - Entry-level (STM32F030/x1/x2/x8)

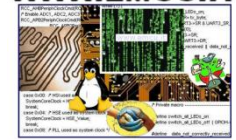
48 MHz Cortex-M0 CPU	Up to 128-Kbyte Flash	Up to 16-Kbyte SRAM 20-byte backup data	USB clock free	USB 2.0 FS Crystal less	CAN 2.0B	DAC comparator	CEC	
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STM32 L1 series - Ultra-low-power (STM32L100/151/152/162)

32 MHz Cortex-M3 CPU	Up to 512-Kbyte Flash	Up to 80-Kbyte SRAM	Up to 16-Kbyte EEPROM	USB 2.0 FS device	LCD 8x40 4x44	Op-amps comparator	BOR MSI VScal	AES 128-bit	
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STM32 L0 series - Ultra-low-power (STM32L0x1/x2/x3)

32 MHz Cortex-M0+ CPU	Up to 64-Kbyte Flash	Up to 8-Kbyte SRAM	Up to 2-Kbyte EEPROM	USB 2.0 Crystal less	LCD 8x28 4x32	True RNG	BOR MSI VScal	AES 128-bit	
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What should I use to develop on STM32 ? - [See here](#)

STM32 tools

Starter and promotion kits Numerous boards



Motor control kit



Evaluation boards:
STM320518-EVAL, STM3240G-EVAL,
STM32L152D-EVAL and
STM32373C-EVAL



STM32 W evaluation kit
STM32W-SK

STM32 promotion kits



EvoPrimer



STM32-NUCLEO



Discovery kits

More than 15 different development IDE solutions



ST-LINK-v2
for STM8
and STM32



More than 25 different RTOS and stack solution providers



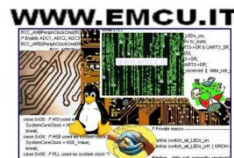
WWW.EMCU.IT



STM32 F0 Series – Cortex M0

<http://www.emcu.it/STM32F0xx/STM32F0xx.html>

**5 channel DMA mapped on 11 IPs
+ Bus Matrix allows Flash execution
in parallel with DMA transfer**





STM32 F0 Portfolio

Main common features

Cortex™-M0 @ 48 MHz

- Reset POR/PDR
- 2x Watchdogs
- Hardware CRC
- Internal RC
- Crystal oscillators
- PLL
- Calendar RTC
- 1x12-bit ADC
- T°C sensor
- Multiple Channel DMA
- USART/SPI/I2C
- Single Wire Debug
- Unique ID

STM32F0x8 Low Voltage line 1.8V +/- 8%

16KB to 128KB Flash 4-16KB SRAM (Parity check) 20-byte backup data	16&32 -bit timers	DAC Comp (*)	Touch Sense	4xUSART 2xSPI 2xI2C CEC	USB Clock free (*)
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(*) When VDDA > 2.4V

STM32F0x2 USB line 2.0 to 3.6V

16KB to 128KB Flash 4-16KB SRAM (Parity check) 20-byte backup data	16&32 -bit timers	DAC & Comp	Touch Sense	4xUSART 2xSPI 2xI2C CEC	USB Clock free	CAN
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STM32F0x1 Access line 2.0 to 3.6V

16KB to 128KB Flash 4-16KB SRAM (Parity check) 20-byte backup data	16&32 -bit timers	DAC & Comp	Touch Sense	2xUSART 2xSPI 2xI2C CEC
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STM32F030 Value line - 2.4V to 3.6V

16KB to 64KB Flash 8KB SRAM (Parity check)	16&32 -bit timers	2xUSART 2xSPI 2xI2C
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STM32F050/1/2

- **Core**

- Low cost-low power ARM® Cortex™-M0 0.9 DMIPS/MHz at 48 MHz max

- **Enhanced features for appliances, consumer and industrial**

- **10 x 16-bit timers (IC/OC/PWM)** including **Motor Control Timer**, fast 1.0 μs
- **1 x 32-bit timer** each with **4 IC/OC/PWM**
- **Fast GPIO (12MHz toggling) + programmable slew rate**
- **12-bit ADC, 12-bit DAC, Comparators**
- **HDMI Consumer Electronic Control (CEC)** hardware function
- **5-channel DMA** controller
- VBAT supply for **RTC** and backup registers - with alarm and periodic wakeup from Stop/Standby
- **1 x CAN**
- **4 x USART (6Mbit)** with **wakeup from STOP** and baud rate programming independently from CPU frequency
- **2 x SPI** with 4-16 bit programmable data frame and baud rate up to 24Mbps
- **3 x I²C** Fast mode + **up to 1Mbps** with **wake-up from STOP mode on address match** and **programmable analog and digital noise filtering**
- **USD device crystal less** compliant with Battery Charger Detection (BCD)

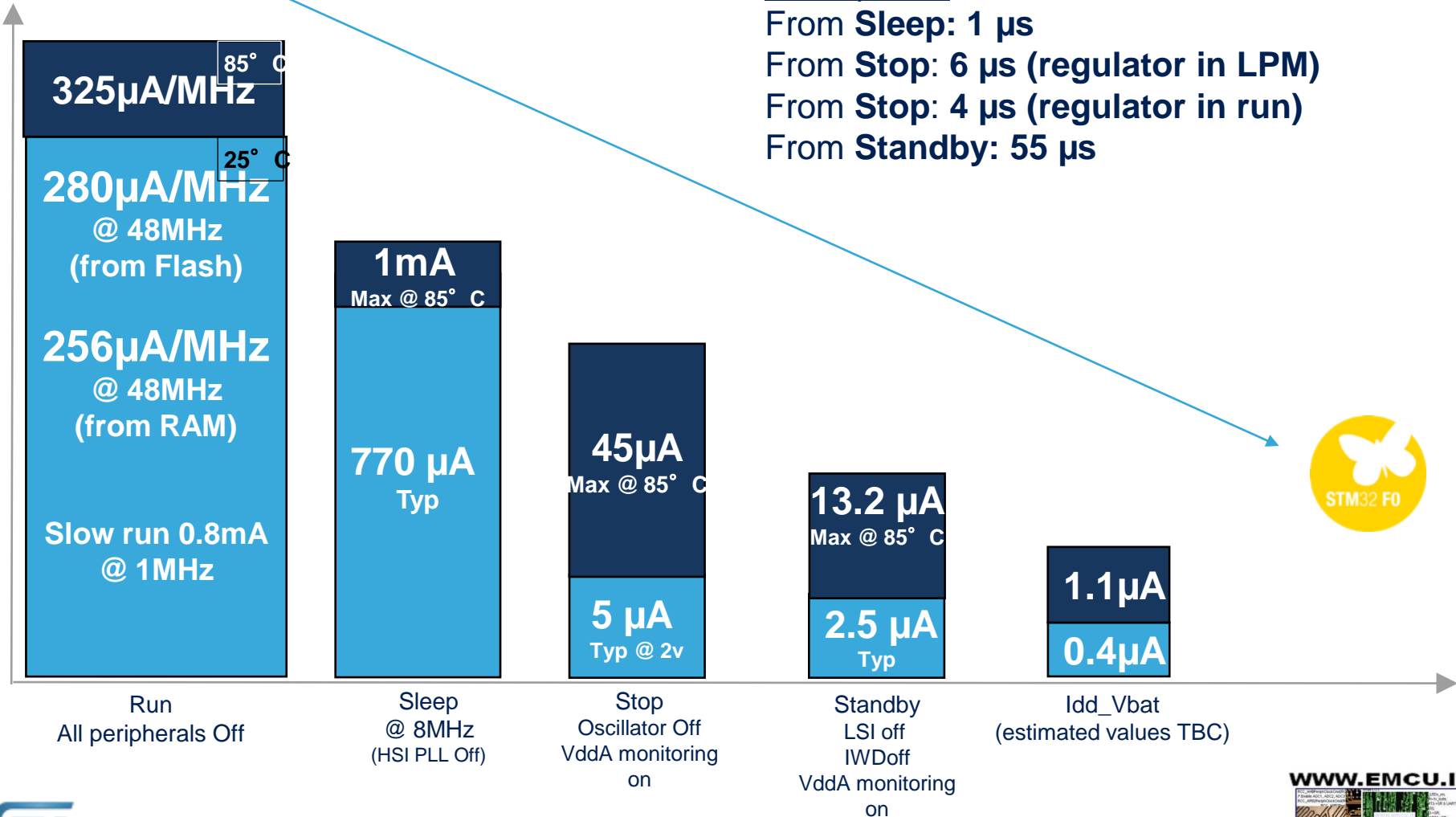
- **Touch-sensing**

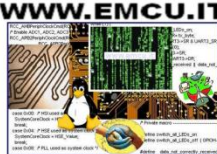
- Up to 18 keys - Key, slider and wheel



STM32F072B - power consumption

Typ current
V_{DD} Range





STM32F0 Portfolio

STM32F030 Value Line

VDD = 2.4 to 3.6V
 16KB-64KB Flash / 4KB-8KB SRAM
 5x 16-bit timer including MC timer
 2x SPI, 2x I2C, 2x USART
 12-bit ADC

STM32F0x1 Access Line

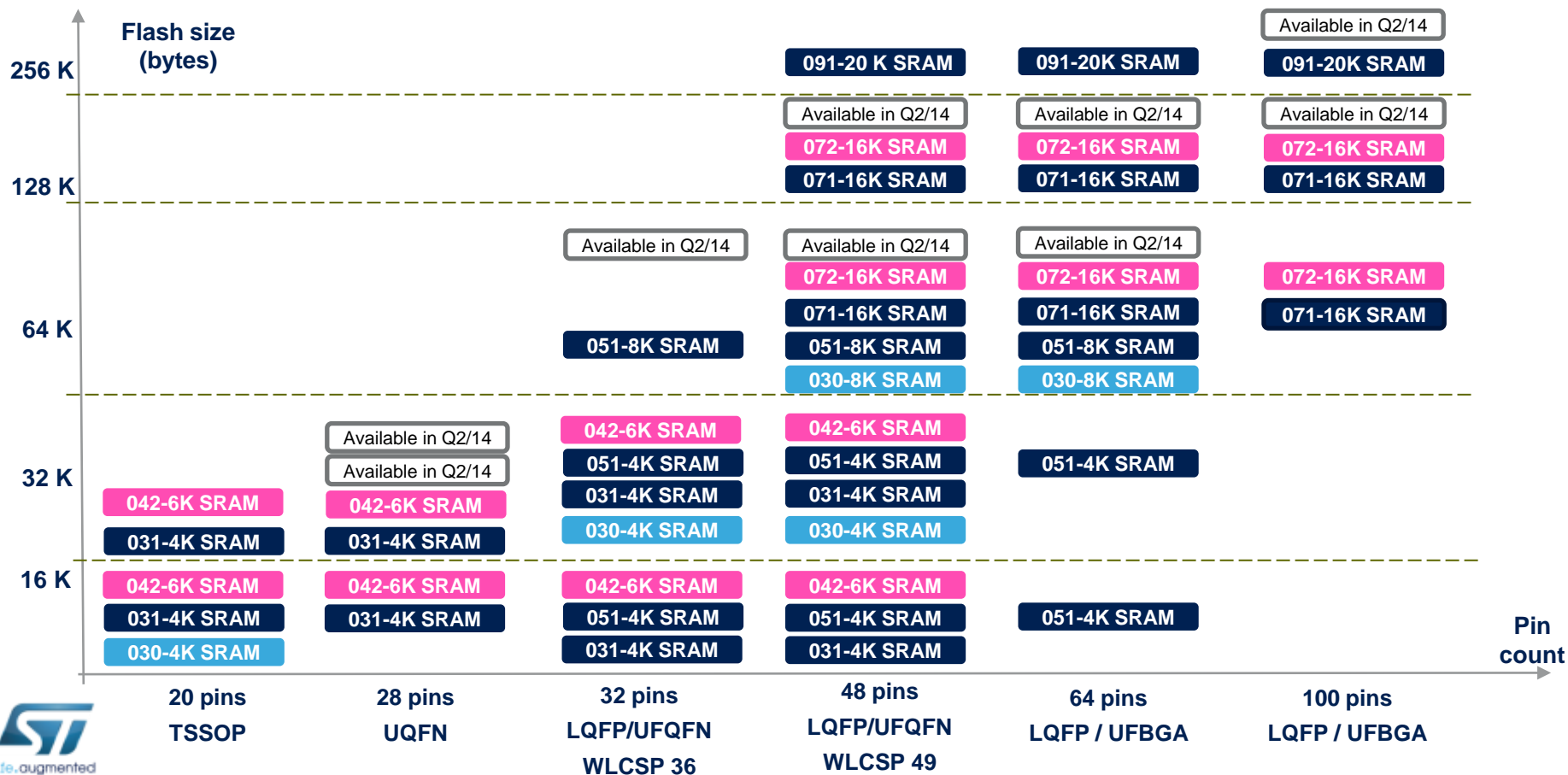
VDD = 2.0 to 3.6V
 16KB-256KB Flash / 4KB-20KB SRAM
 6x 16-bit timer including MC timer
 1x 32-bit timer
 2x SPI, 2x I2C, 2x USART, CEC,
 12-bit DAC, 12-bit ADC, 2x Comp

STM32F0x2 USB Line

VDD = 2.0 to 3.6V
 16KB-128KB Flash / 6KB-16KB SRAM
 10x 16-bit timer including MC timer
 1x 32-bit timer
 3x SPI, 2x I2C, 5x USART, CEC, CAN,
 USB
 12-bit DAC, 12-bit ADC, 2x Comp.

STM32F0x8 1.8V

VDD=1.8V +/- 8%
 32KB-256KB Flash / 4KB-20KB SRAM
 10x 16-bit timer including MC timer
 1x 32-bit timer
 3x SPI, 2x I2C, 5x USART, CEC, USB(*)
 12-bit DAC(**), 12-bit ADC(**), Comp(**)
Available in Q2/14



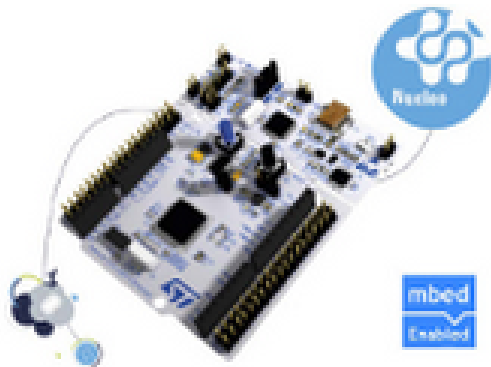
STM32 F0 EvaBoard, Discovery and NUCLEO

STM32F0DISCOVERY

STM2F072BDISCOVERY



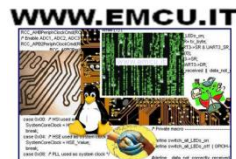
STM320518-EVAL
STM32072V-EVAL



NUCLEO-F030R8

STM32 F1 Series – Cortex M3

<http://www.emcu.it/STM32.html>





STM32F1 series Product Lines

All lines include:

Multiple communication peripherals
Up to 5 x USART, 3xSPI, 2xI²C

ETM*

FSMC**

Dual 12-bit DAC***

Multiple 16-bit Timers

Main Osc 4-16MHz (25MHz on 105/107)

Internal 8 MHz RC
and 40 kHz RC

Real Time Clock with Battery
domain & 32KHz ext osc

2 x Watchdogs

Reset circuitry and
Brown Out Warning

Up to 12 DMA cnls



Connectivity Line: STM32F107

72MHz CPU	Up to 256 KB Flash / 64KB SRAM	2x12-bit ADC (1µs) TempSensor	USB 2.0 OTG (FS)	2 x Audio Class I2S	2 x CAN	PWM timer	Ethernet IEEE1588
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Connectivity Line: STM32F105

72MHz CPU	Up to 256 KB Flash / 64KB SRAM	2x12-bit ADC (1µs) TempSensor	USB 2.0 OTG (FS)	2 x Audio Class I2S	2 x CAN	PWM timer	
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Performance Line: STM32F103

72MHz CPU	Up to 1MB Flash / 96KB SRAM	2/3x12-bit ADC (1µs) TempSensor	USB-FS Device	SDIO*	I2S*	CAN	PWM timer
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USB Access Line: STM32F102

48MHz CPU	Up to 128KB Flash / 16KB SRAM	1x12-bit ADC (1µs) Temp sensor	USB-FS Device				
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Access Line: STM32F101

36MHz CPU	Up to 1MB Flash / 80KB SRAM	1x12-bit ADC (1µs) Temp sensor					
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Value Line: STM32F100

24MHz CPU	Up to 512KB Flash / 32KB SRAM	1x12-bit ADC (1.2µs) Temp sensor	HDMI-CEC	PWM timer			
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* Performance/Access Lines 256KB, 384KB, or 512KB devices and ALL Connectivity devices

** 256KB, 384KB, or 512KB Performance and Access devices

*** 256KB, 384KB, or 512KB devices except Value line where present on all memory range

STM32F1 series Product Lines

- Core

- Power ARM® Cortex™-M3 1,25 DMIPS/MHz at 72 MHz max

- Enhanced features for appliances, consumer and industrial

- **17 x 16-bit timers (IC/OC/PWM)** including **Motor Control Timer**
- **Fast GPIO (18MHz toggling) + programmable slew rate**
- 12-bit **ADC** (21ch), 12-bit **DAC** (2ch)
- **HDMI Consumer Electronic Control (CEC)** hardware function
- 12-channel **DMA** controller
- VBAT supply for **RTC** and backup registers - with alarm and periodic wakeup from Stop/Standby

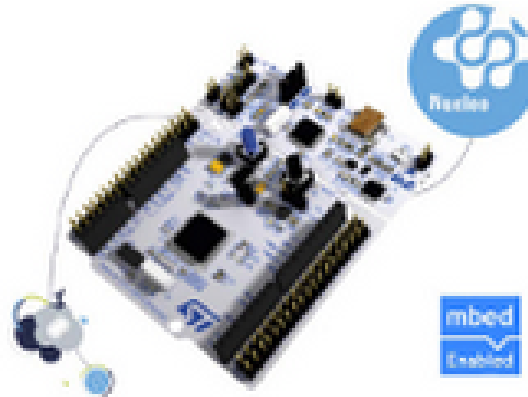
- **Comm**

- **5 x USART** (6Mbit - (ISO 7816 interface, LIN, IrDA capability, modem control) and **2 x UART**
- **3 x SPI** up to 18Mbps
- **3 x I²C** interfaces (SMBus/PMBus)
- **2 x I²S**
- **2 x USB** (device, master, OTG)
- **1 x Ethernet MAC** 10/100
- **2 x CAN** – 2.0B Active

STM32 Eva Boards

- Development Toolchain support

- **Atollic TrueSTUDIO®**
- **IAR EWARM**
- **KEIL MDK-ARM**
- **GCC**



Nucleo F103RB

ST-LINK

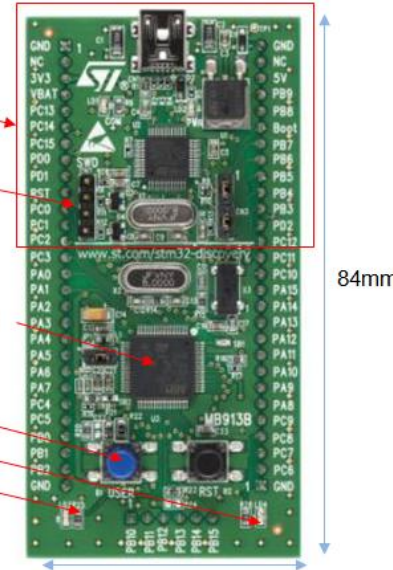
SWD connector

STM32F100RB6B

User button

Led Blue

Led Green



- Eva Board are here:

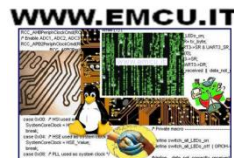
http://www.emcu.it/STM32.html#Evaluation_Boards

- **What should I use to develop on STM32 ?**

- Large number of software examples available at:

www.st.com/stm32-discovery

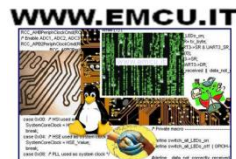
<http://www.emcu.it/STM32.html#TUTORIAL> and SW examples





STM32 F2 Series – Cortex M3 Mixed-signal and DSP

<http://www.emcu.it/STM32/STM32F2xx/STM32F2xx.html>



STM32 F-2 Series product lines

High-performance MCUs
398 CoreMark
120 MHz 150 DMIPS



Main common features

Cortex™-M3 @ 120 MHz

- 2x USB 2.0 OTG FS/HS
- 2x CAN 2.0B
- SDIO, FSMC
- USART, SPI, I²C
- 2x I²S + audio PLL
- 16- and 32- bit timers

- 3x 12-bit ADC (0.5 μ s)
- Dual 12-bit DAC

- Low voltage
- 1.7* to 3.6 V_{DD}

STM32F207/217

256-KB to
1-MB Flash
128-KB SRAM

Ethernet
IEEE 1588

Camera
interface

Hardware
Crypto/Hash
RNG

STM32F205/215

128-KB to
1-MB Flash
128-KB SRAM

Hardware
Crypto/Hash
RNG

Note: *1.7 V for WLSCP66 package only and 1.8 V for all other packages



STM32 F-2 Series highlights

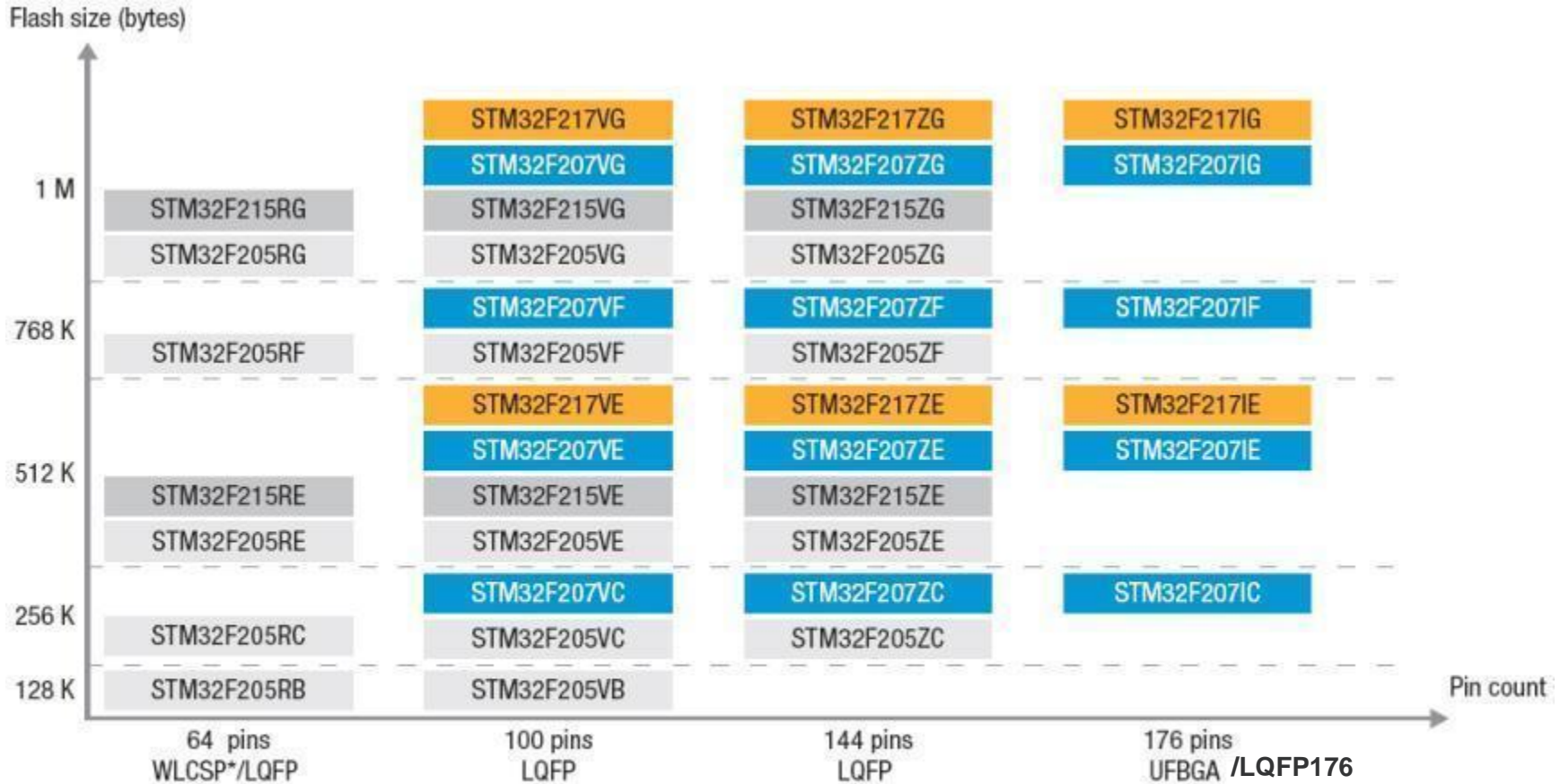
- Advanced technology and process from ST:
 - Memory accelerator: **ART Accelerator™**
 - Multi AHB Bus Matrix
 - 90nm process
- Outstanding results:
 - 150DMIPS at 120MHz
 - **Execution from Flash equivalent to 0-wait state** performance
 - Outstanding dynamic power consumption: **188uA/MHz**, less than 23mA in run mode from flash at 120MHz with peripherals OFF (running CoreMark benchmark).



STM32 F-2 Series highlights 2/2

- More Memory
 - Up to 1MB Flash, up to 128kB SRAM
- New peripherals in the STM32 platform
 - **USB OTG** High speed **480Mbit/s**
 - **Camera interface**
 - **Crypto/hash processor**
 - 32-bit random number generator (**RNG**)
 - 32-bit RTC with calendar
 - **32bit Timers**
 - **2 x USB** (device, master, OTG)
 - **1 x Ethernet MAC** 10/100
 - **2 x CAN** – 2.0B Active

STM32 F-2 series portfolio



Note:
For STM32F205RGY6 and
STM32F205REY6 only

Legend:

■ STM32F207

Ethernet, 2x USB OTG, camera interface

■ STM32F217

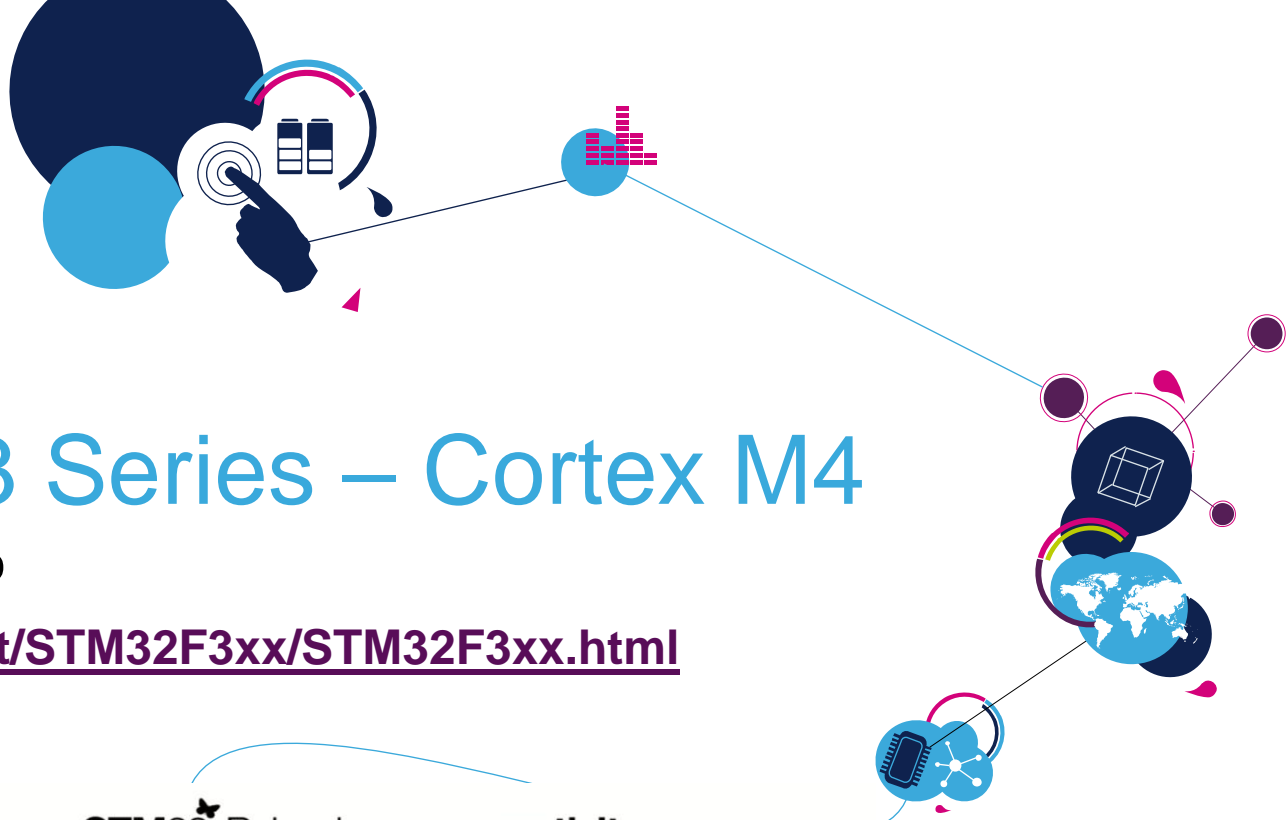
Ethernet, 2x USB OTG, camera interface,
crypto/hash processor

■ STM32F205

1x USB OTG FS/HS

■ STM32F215


1x USB OTG FS/HS,
crypto/hash processor



STM32 F3 Series – Cortex M4

Analog & DSP

<http://www.emcu.it/STM32F3xx/STM32F3xx.html>

STM32  Releasing your **creativity**



Mixed-signal MCUs with DSP and FPU
 178 CoreMark
 245 CoreMark from CCM-SRAM
 72 MHz 90 DMIPS

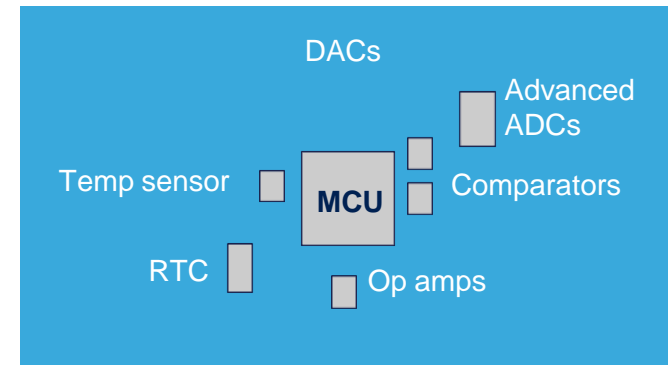


STM32 F3 product lines

Main common features

Cortex™-M4
 (FPU + MPU + ETM)
 @ 72 MHz

- USB 2.0 FS
- CAN 2.0B
- RTC
- USART, SPI, I²C
- 16- and 32-bit timers
- HW CRC
- Temperature sensor
- Capacitive touch sensing
- Power supply range (according to version)
 - 2.0 to 3.6 V
 - 1.8 V +/-8%



STM32F302

256-KB Flash 32-KB SRAM	2x 12-bit ADC (5 MSPS)	1x 12-bit DAC 4x comparator 2x PGA	1x 16-bit AMC timer
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STM32F303/313

256-KB Flash 40-KB SRAM 8-KB CCM-SRAM	4x 12-bit ADC (5 MSPS)	2x 12-bit DAC 7x comparator 4x PGA	2x 16-bit AMC timer
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STM32F373/383

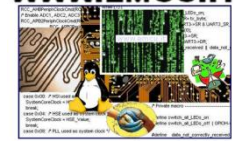
256-KB Flash 32-KB SRAM	3x 16-bit $\Sigma\Delta$ ADC 1x 12-bit ADC (1 MSPS)	2x 12-bit DAC 2x comparator	HMDI CEC
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STM32 F3 series **combines Cortex-M4 core with rich analog peripherals** set to deliver high-performance System-on-Chip solutions at competitive cost

The STM32 F3 is the **upgraded version** of the successful STM32 F1 with Cortex-M4 and renewed digital IPs.



WWW.EMCU.IT



STM32 F3 series

Unit parameters	STM32F303	STM32F302	STM32F373
Core, frequency	ARM Cortex-M4, 72 MHz		
FPU / MPU	FPU / MPU	FPU / MPU* *Down to 128kB only	FPU / MPU
Flash (Up to)	512 KB		256 KB
SRAM (Up to)	64 KB	64KB	32 KB
FSMC	Yes* *Down to 256KB only	Yes* *Down to 256KB only	-
Routine booster CCM-SRAM (Up to)	16 KB	-	-
12-bit ADC SAR (Up to)	4x 12-bit 5 MSPS	2x 12-bit 5 MSPS	1x 12-bit 1 MSPS
16-bit $\Sigma\Delta$ ADC with 7 built in gains	-		3
Comparator (Up to)	7	4	2
Op amp with 4 built-in gain values with 1% accuracy (Up to)	4	2	-
12-bit DAC (Up to)	3	1	3
AMC timer (Up to)	3x (144 MHz)	1x (144 MHz)	-
Other digital (except SPI, USART, I ² C)	1x USB FS device, 1x CAN, Touch Sense		1x USB FS device, 1x CAN, Touch Sense

Improvements

- Wake-up from STOP mode thru USART, I²C, CEC
- Fast wake up from STOP (<5 μ s)
- I/O remap granularity
- Low Voltage supply (1.8V +/-8% : dedicated PN)
- DSP, FPU, MPU
- 12-bit ADC: 0.20 μ s conversion/5.0MSPs (up to 18MSPs in interleaved mode / 6-bit)
- 16-bit ADC $\Sigma\Delta$
- 16-bit ADC: with 7 built in gain, 21ch.
- New analog peripherals: **Op-Amp** (PGA Rail to rail), fast **Comparators**
- USB and **CAN** with separate SRAM (512B for each)
- High speed USART up to 9Mbits/s
- High speed SPI up to 18Mbits/s
- Full duplex I²S peripherals
- I²C up to 1Mbits/s (Fast Mode+)
- Configurable polynomial CRC
- AMC (Advanced Motor Control) Timers

Large tools offer STM32F3- series

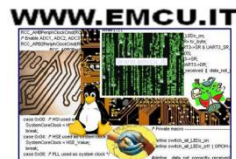
- **Evaluation board** for full product feature evaluation

Sales types : STM32303C-EVAL
STM32373C-EVAL

- **STM32F3 discovery kit** : low-cost evaluation kit is the cheapest and quickest way to discover the STM32F3 series



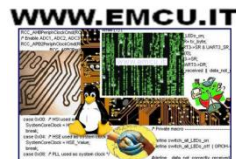
- Large choice of development IDE solutions





STM32 L1 Series – Cortex M3 Low Power

<http://www.emcu.it/STM32/STM32Lxx/STM32Lxx.html>





STM32L1xx

Main common features

Cortex™-M3 (32 MHz)
with MPU

- 5 clock sources
- Advanced RTC w/ calibration
- USB 2.0 FS
- USART, SPI, I²C
- 16- and 32-bit timers
- 12-bit ADC 1 MSPS
- 12-bit DAC
- Comparators

STM32L162

Up to 384-KB Flash
Up to 48-KB SRAM
Up to 12-KB EEPROM

SDIO
FSMC

Op-Amp
Comparators
Temp. sensor

LCD
8x40

Capacitive
Touch

AES
128-bit

STM32L151/152

Up to 384-KB Flash
Up to 48-KB SRAM
Up to 12-KB EEPROM

SDIO
FSMC

Op-Amp
Comparators
Temp. sensor

LCD
8x40

Capacitive
Touch

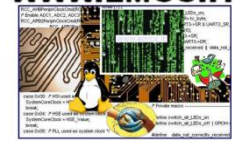
STM32L100 Value line

Up to 256-KB Flash
Up to 32-KB SRAM
Up to 8-KB EEPROM

LCD
8x40



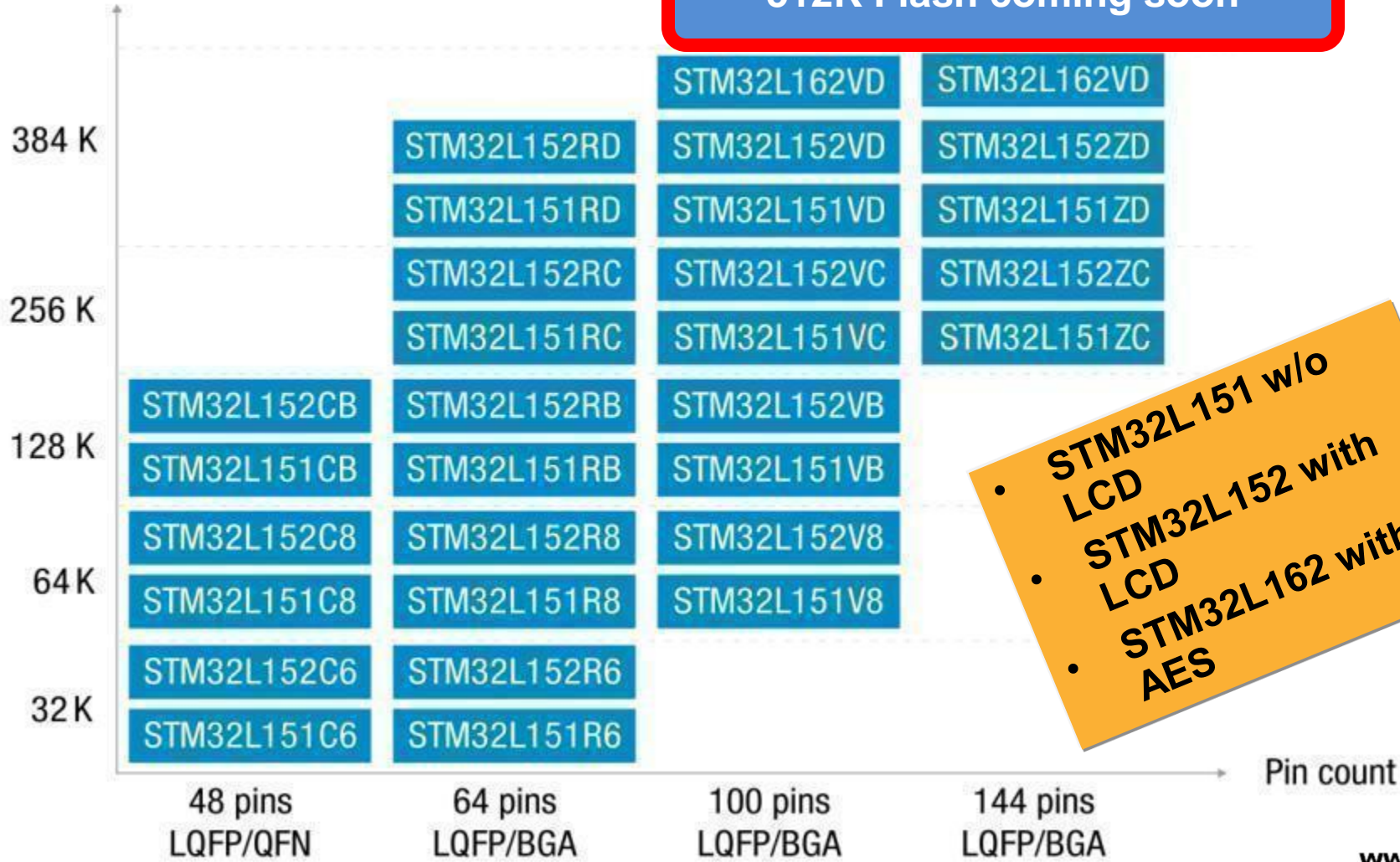
- Memory
 - 64 to 384-Kbyte Flash
 - 10 to 48-Kbyte SRAM
 - **4-Kbyte data EEPROM**



STM32L portfolio

Flash size (bytes)

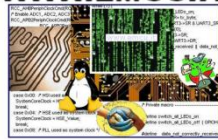
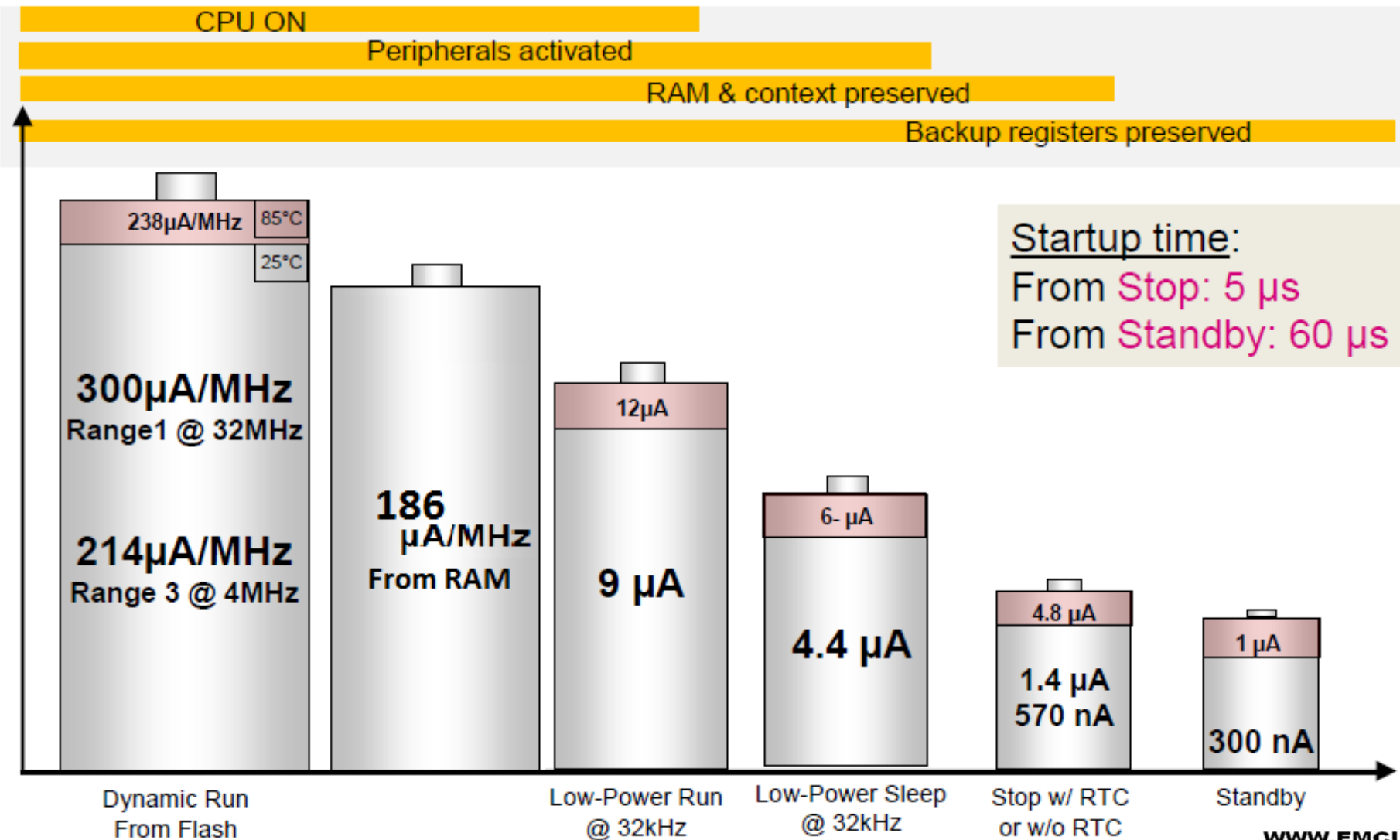
512K Flash coming soon



- STM32L151 w/o LCD
- STM32L152 with LCD
- STM32L162 with AES



STM32L152 ultra-low-power consumption



Large tools offer STM32L- series

- **Evaluation board** for full product feature evaluation

Sales types : STM32L152D-EVAL
STM32L152-EVAL



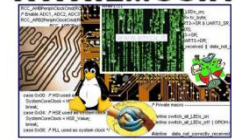
- **STM32L-DISCOVERY** : low-cost evaluation kit is the cheapest and quickest way to discover the STM32L series
STM32L-Discovery



- Large choice of development IDE solutions



WWW.EMCU.IT



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