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STM32H7 series

New STM32H7 lines in development :

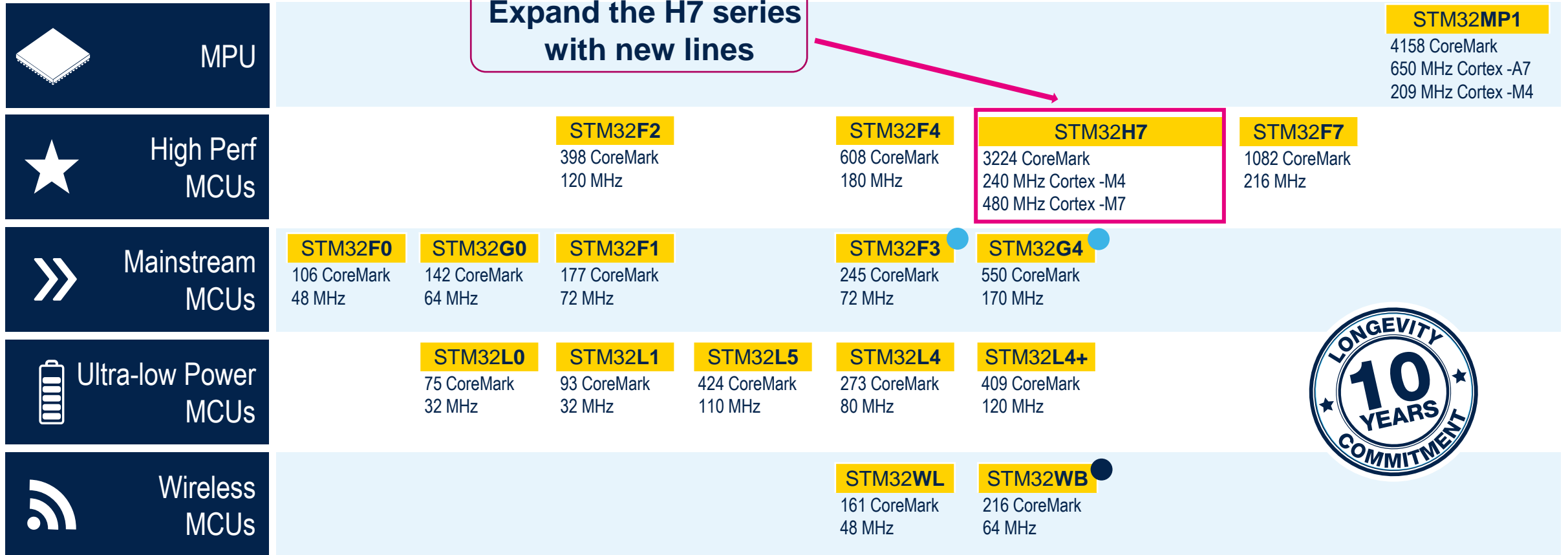
STM32H723/H733 line

STM32H725/H735 line

STM32H730(Q) Value Line



STM32 MCU & MPU roadmap



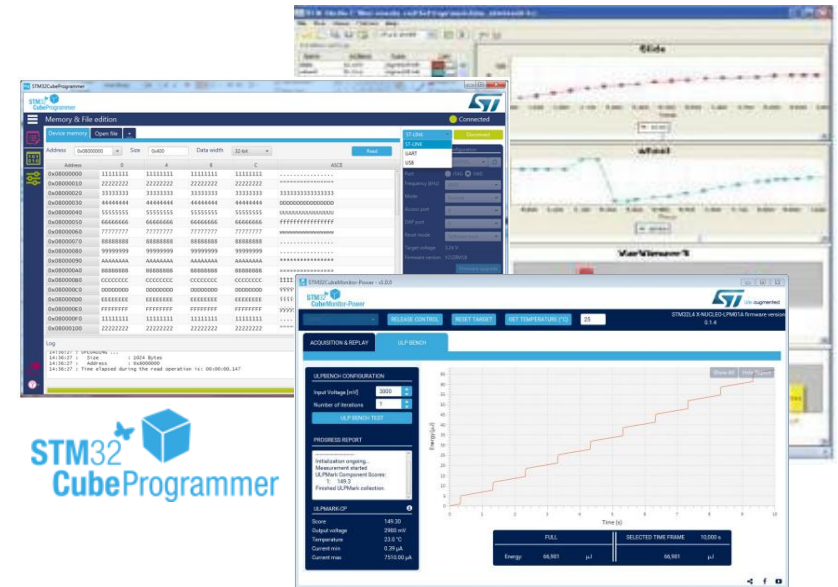
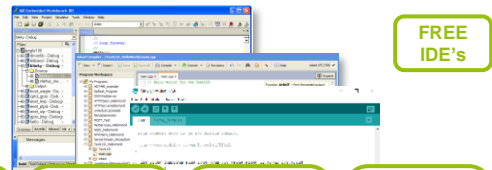
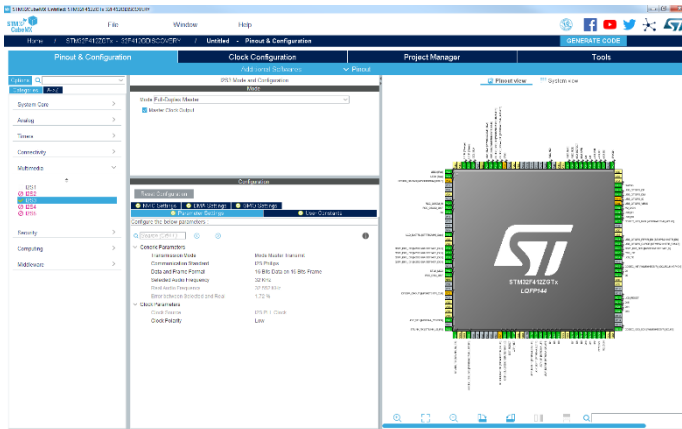
● Optimized for mixed-signal applications

● Cortex-M0+ Radio co-processor

Software Development Tools

C/C++ Focus

A complete flow, from configuration up to monitoring



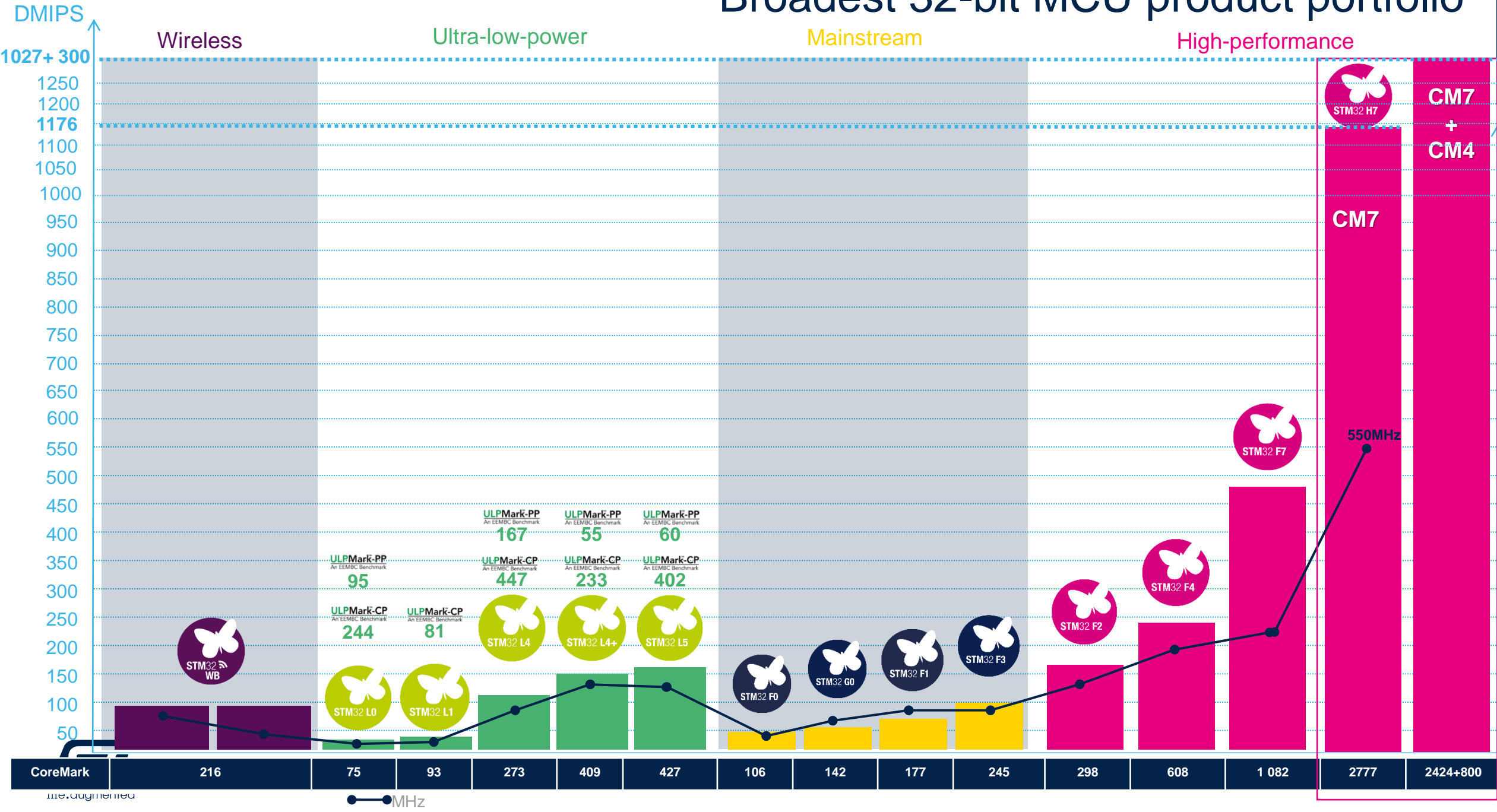
STM32CubeMX
Configure & Generate Code

IDEs
Compile and Debug

STM32CubeProgrammer
STM32CubeMonitor
Program & Monitor



Broadest 32-bit MCU product portfolio



STM32H723/733, STM32H725/735 and STM32H730 lines HIGHLIGHTS

- Expand the current STM32H7 series with a subset product, smaller and cost optimized. 3 lines are proposed.
- **STM32H723/733, STM32H725/735 and STM32H730** lines are leaning on the STM32H7 DNA . Maximum performance, high integration, advanced features, ECC on all embedded memories and High temperature up to 125C ambient support are maintained.
- A significant performance increase and some new features:
 - Max Frequency up to 550MHz
 - Octal-SPI support with On-The-Fly-Decrypt for increased perf vs Quad-SPI, more security (On-The-Fly-Decrypt) and Octal-RAM support
 - Math acceleration (Trigonometric and Filtering) to off-load the core
 - ITCM RAM re-map capability for more flexibility in the code partitioning
 - Fast 12-bit ADC (in addition to the 16-bit ADC) for more flexibility
 - Parallel synchronous slave interface (PSSI) for more connectivity
 - New VFQFPN68 introduced for a more aggressive entry price and integration
- **STM32H730 Value Line:**
 - Reduced Flash size down to 128KB mainly for user Bootloader storage and adjust to external memories environment
 - Secure services/Crypto/On-The-Fly-Decrypt by default on the STM32H730xxx and STM32H730xxxQ part numbers



STM32H7 Target Applications

6

- Industrial

- Human Machine Interface
- Communication Gateway
- PLC
- Motion control
- Barcode Reader
- Inverters, UPS
- Sensors
- Asset protections
- Lighting

- Medical

- Health and wellness
- Individual assistance (hearing, respiratory)
- Measurements and Data logger



- Consumer

- Advanced IoT edge gateway
- Access control
- Home Gateway
- Appliance
- Graphic
- Home Automation
- Audio
- Fitness Equipment
- Drones
- Portable devices and accessories

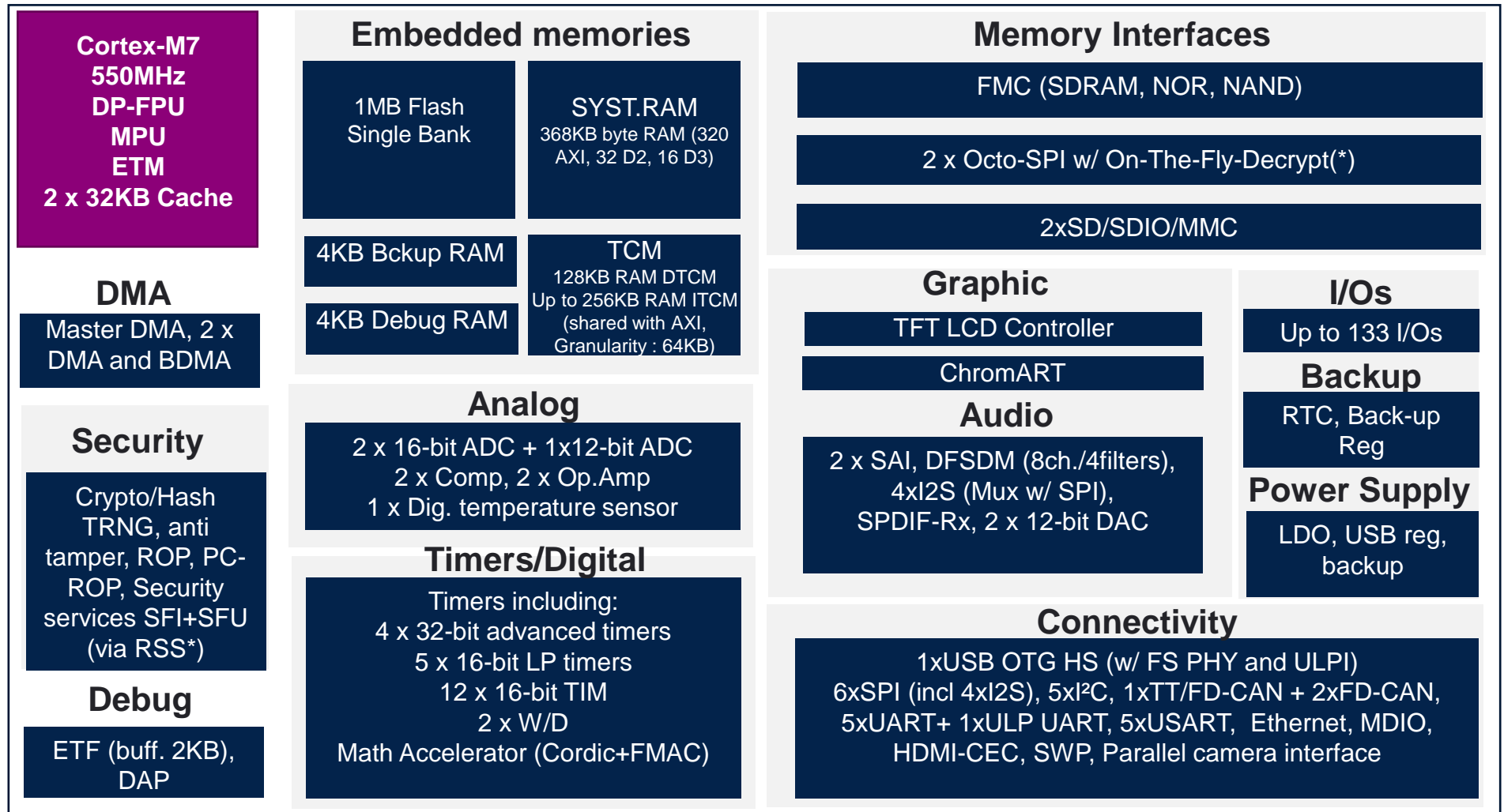
and more ...

STM32H723/733 Line Block diagram

High integration, high performance, 3 x power domains, LDO, compatible with the STM32H753/H743 on common packages

Key features

- ✓ Performance
 - ✓ RAM re-map
 - ✓ ECC on all memories
 - ✓ Multiple high perf ADC
 - ✓ Graphic
 - ✓ Security
 - ✓ Math accel.
 - ✓ Memory interfaces
 - ✓ Connectivity
 - ✓ Power supply scheme
 - ✓ STM32 DNA
- (Compatibility, packages, Ecosyst)



(*) : on STM32H733 CPN (Crypto)

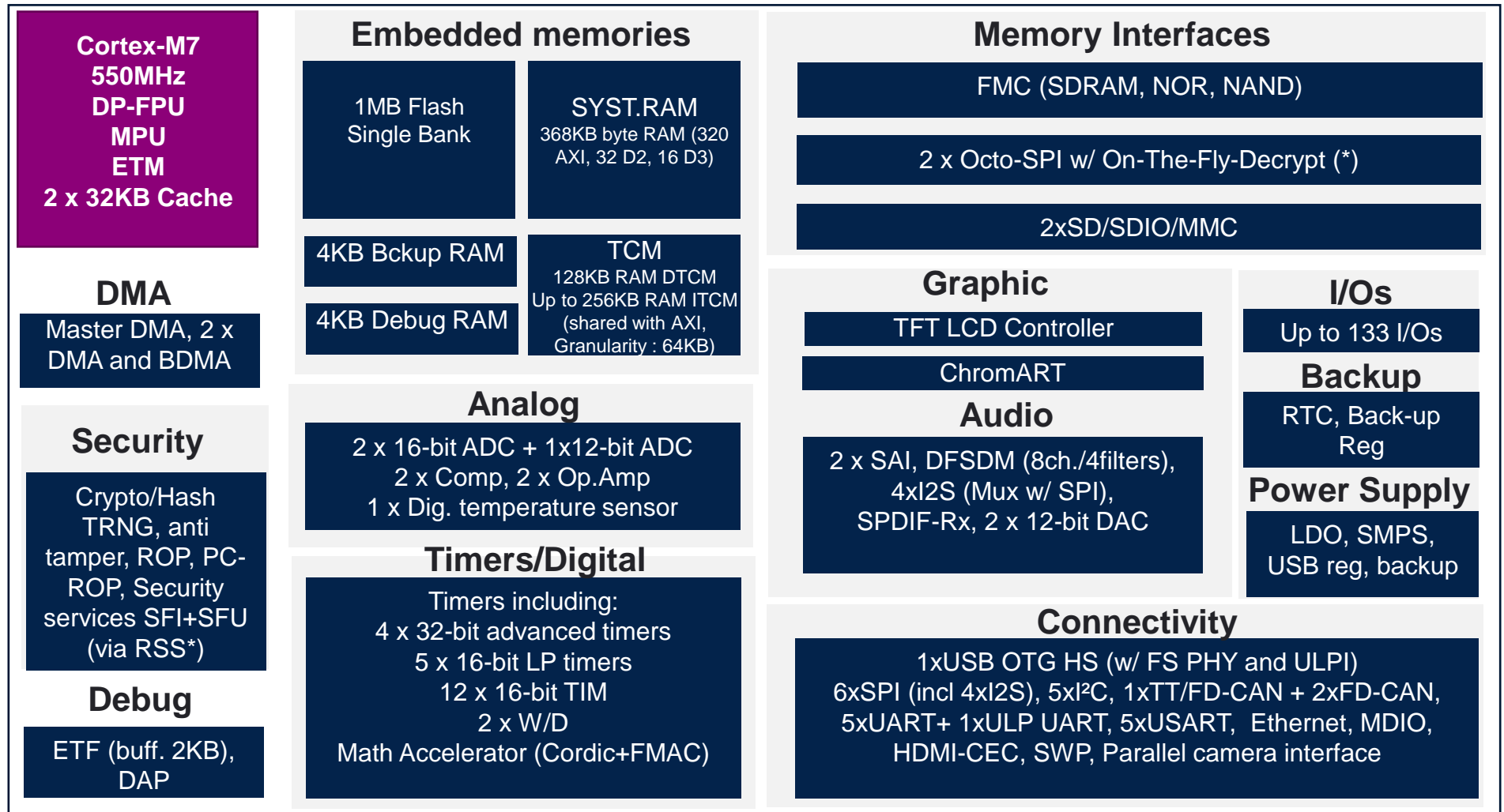


STM32H725/735 line block diagram

High integration, high performance, 3 x power domains, SMPS and LDO, compatible with the STM32H745 and STM32H755 on common packages

Key features

- ✓ Performance
- ✓ RAM re-map
- ✓ ECC on all memories
- ✓ Multiple high perf ADC
- ✓ Graphic
- ✓ Security
- ✓ Math accel.
- ✓ Memory interfaces
- ✓ Connectivity
- ✓ Power supply scheme (SMPS or LDO. Except QFN68-SMPS only)
- ✓ STM32 DNA (Compatibility, packages, Ecosyst)
- ✓ Extended Temp range support 125C (dedicated CPN**)



(*) : on STM32H735 CPN (Crypto)

(**) : CPN in "3" (Ex STM32H725ZGT3)

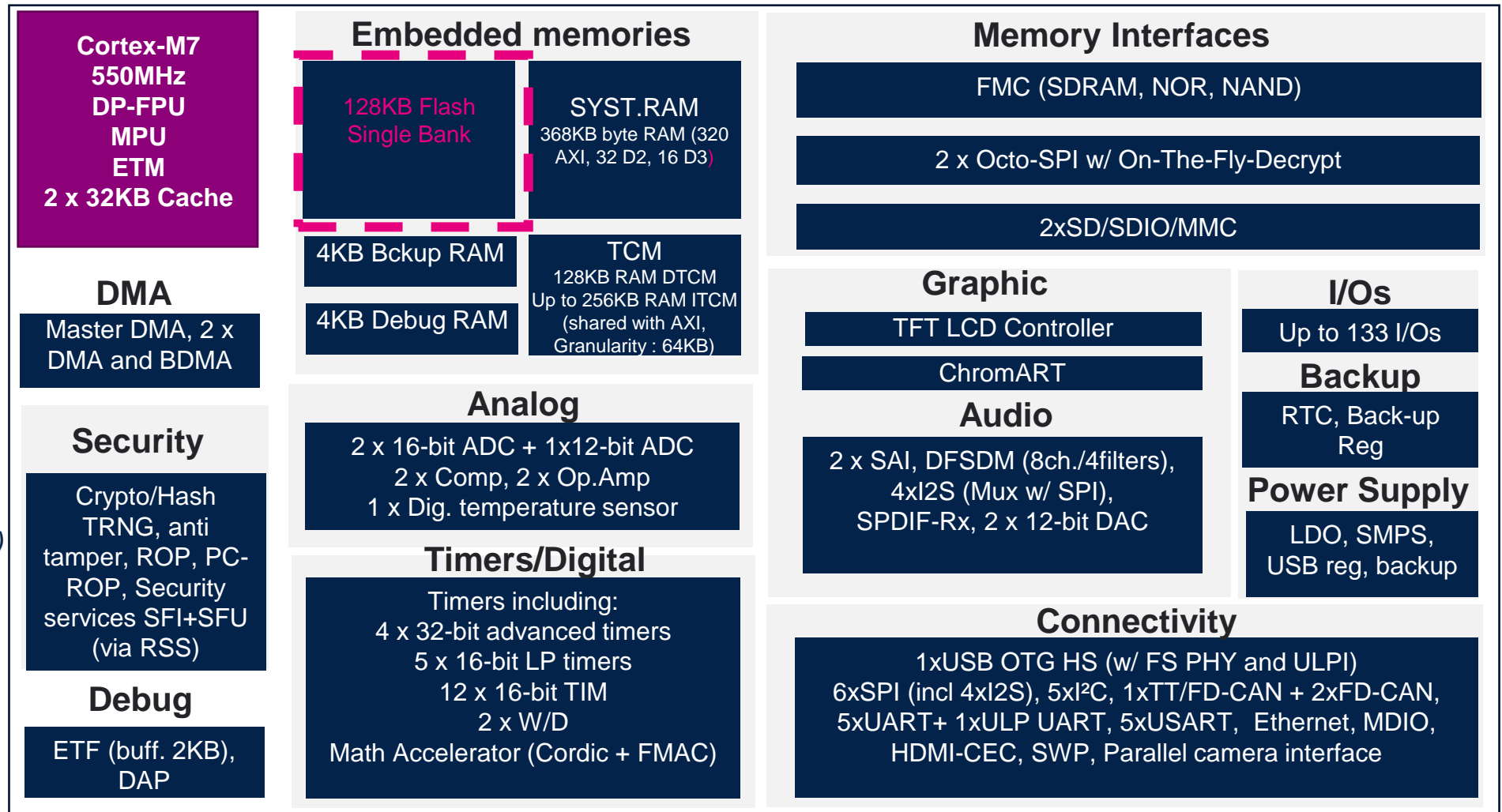


STM32H730 and STM32H730Q – Value line

High performance, **Flash kept to the essential 128KB**, 3 x power domains, LDO (and SMPS on the –Q), compatible with the STM32H733 or STM32H735 on common packages, Security services

Key features

- ✓ Performance
- ✓ RAM re-map
- ✓ **Flash 128KB**
- ✓ ECC on all memories
- ✓ Multiple high perf ADC
- ✓ Graphic
- ✓ Security
- ✓ Math accel.
- ✓ Memory interfaces
- ✓ Connectivity
- ✓ Power supply scheme
(SMPS on CPN with “Q”)
- ✓ STM32 DNA
(Compatibility, packages, Ecosyst)



ITCM ↔ AXI RAM remap capability

Both the CM7 ITCM interface and the AXI SRAM one shares a subset system physical memory cuts. 4 configurations are supported.

RAM shared between ITCM and AXI RAM

192 Kbyte of RAM can be used either as ITCM or as AXI SRAM. This feature can be configured through the TCM_AXI_SHARED[1:0] option byte in FLASH_OPTSR2_PRG register as described in [Table 7](#).

Table 7. ITCM/DTCM/AXI configuration

TCM_AXI_SHARED[1,0]	ITCM size (Kbyte)	ITCM memory mapping	AXI size (Kbyte)	AXI memory mapping
00	64	0x00000 0000 - 0x0000 FFFF	320	0x2400 0000 - 0x2404 FFFF
01	128	0x0000 0000 - 0x0001 FFFF	256	0x2400 0000 - 0x2403 FFFF
10	192	0x0000 0000 - 0x0002 FFFF	192	0x2400 0000 - 0x2402 FFFF
11	256	0x0000 0000 - 0x0003 FFFF	128	0x2400 0000 - 0x2401 FFFF

Extract from preliminary Reference Manual RM0468.

STM32H723/725/730 Lines

Common features

Cortex™-M7 550MHz+ with DP-FPU and 2x32KB Cache

External memory interfaces : (FMC, 2 x Octo SPI w/ On-The-Fly-Decrypt and 2 x SDMMC)

TFT-LCD controller and ChromART

Low-voltage 1.62V to 3.6V

Audio support with 2xSAI, 4xI2S, DFSDM 4filt/8ch, 2 x 12-bit DAC

USB OTG

Ethernet MAC

3 x CAN FD (incl. one with TT support)

6xSPI, 5xI²C, 5xUART+ 1xULP UART, 5xUSART

Multiple 16 and 32-bit timers Incl. Low power timers

Parallel camera interface

2 x 16-bit ADC 3.6MSPS
1 x 12-bit ADC 5MSPS

2 x PGA and 2 x Comp.

Built-in 64MHz, 48MHz, 4MHz and 40KHz RC oscillators

HSE + LSE clocks

RTC + Sub-RTC

2xWD, POR/PDR, BOR/PVD, voltage scaling

Line 1 :STM32H723 and STM32H733 (with crypto and security services**)

Up to 1MB Flash	Up to 564KB SRAM	LDO
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Line 2 : STM32H725 and STM32H735 (with crypto and security services**)

Up to 1MB Flash	Up to 564KB SRAM	SMPS + LDO (*)
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(*) : except QFN68 package (SMPS only)

(**) : crypto CPN enable : Crypto/Hash accelerator, RSS for security services and On-The-Fly-Decrypt features

Line 3 : STM32H730/STM32H730Q (with crypto and security services on all Value Line CPN)

128KB Flash	Up to 564KB SRAM	SMPS (***) + LDO
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(***) : SMPS available only on STM32H730Q CPN



STM32H733/723/735/725/730 product lines summary

Cortex®-M7	Core, Memories and acceleration						
	Product line	FCPU MHz	SB FLASH (bytes)	RAM (KB)	Power supply	T° range	
	<ul style="list-style-type: none"> Single core Cortex-M7 550MHz Flash and RAM acceleration RAM re-map capability DP-FPU 4xDMA 	STM32H725 and STM32H735 (*)	550	Up to 1MB	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	SMPS(****) + LDO	Standard 85°C (125°C Optional)**
	<ul style="list-style-type: none"> 1 x USB2.0 OTG FS/HS 2xSDMMC USART, UART, SPI, I²C 3xCAN (2xFD and 1xTT) HDMI-CEC FMC, Dual OctoSPI Ethernet MAC IEEE1588 Camera I/F Analog (comp, AOP) 	STM32H723 and STM32H733 (*)	550	Up to 1MB	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	LDO	Standard 85°C
<ul style="list-style-type: none"> 4 x I²S + audio PLL 2 x SAI 2 x 12-bit DAC SPDIF-RX 	STM32H730 STM32H730Q <i>Value Line</i>	550	128K	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	SMPS(****) + LDO	Standard 85°C	
<ul style="list-style-type: none"> TFT-LCD controller Chrom-ART Accelerator™ 							
<ul style="list-style-type: none"> Crypto/Hash (*) Security services : SFI and SBSFU (*) TRNG DFSDM 16 and 32-bit timers 2 x 16-bit ADC (up to 3.6 Msps) 1 x 12-bit ADC (up to 5Msps) Mathematical acceleraion Voltage range 1.62 to 3.6V SMPS and LDO Multi power domains 							

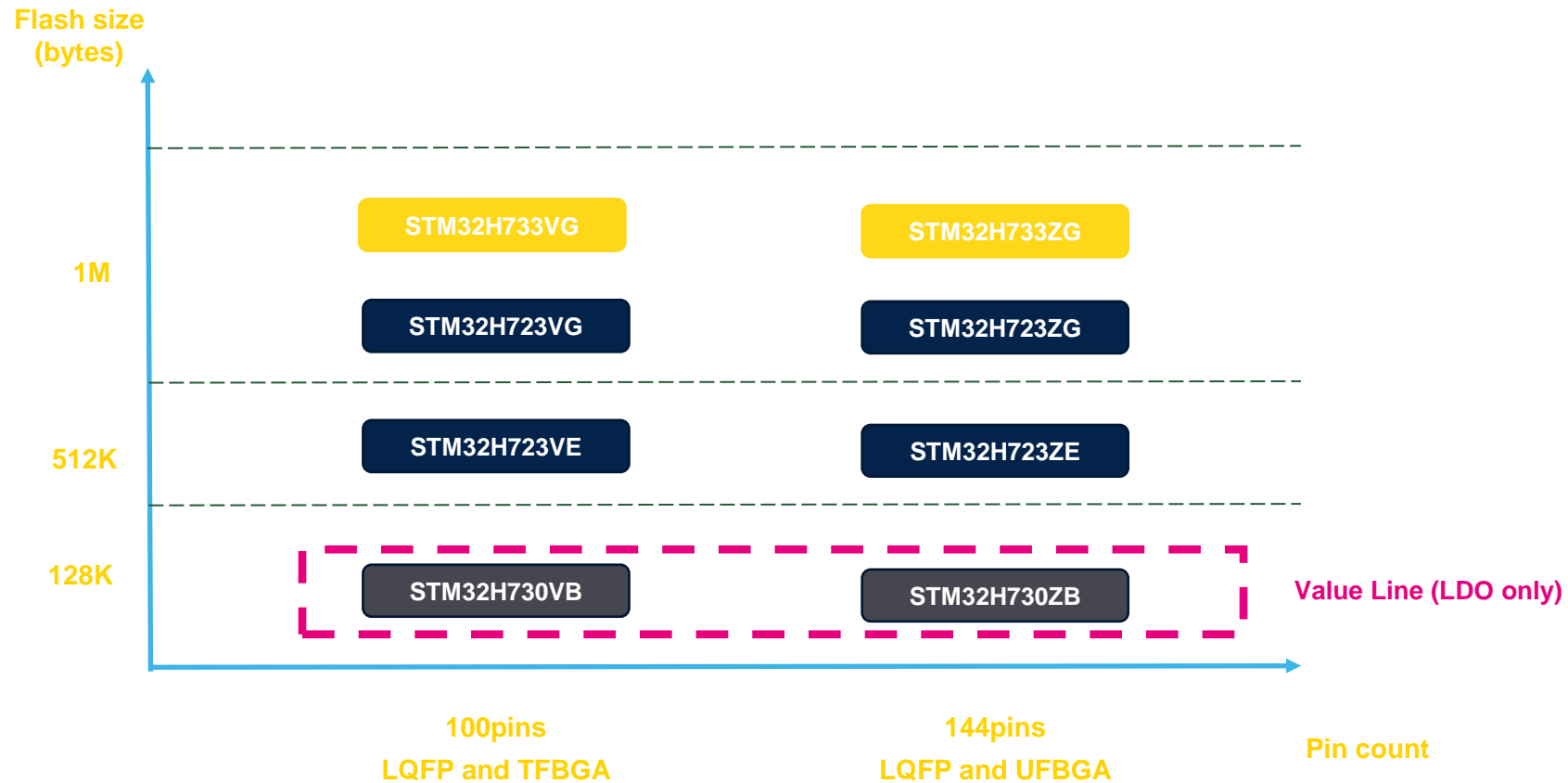
(*) : Crypto and Security services on CPN : STM32H733, STM32H735 and STM32H730

(**) : Extended Temp range Max 125C Amb/140C junction. Dedicated part numbers in “3” extension instead of “6”

(***) : SMPS available only on STM32H730Q CPN

(****) : SMPS only on the QFN68 variant (no LDO)

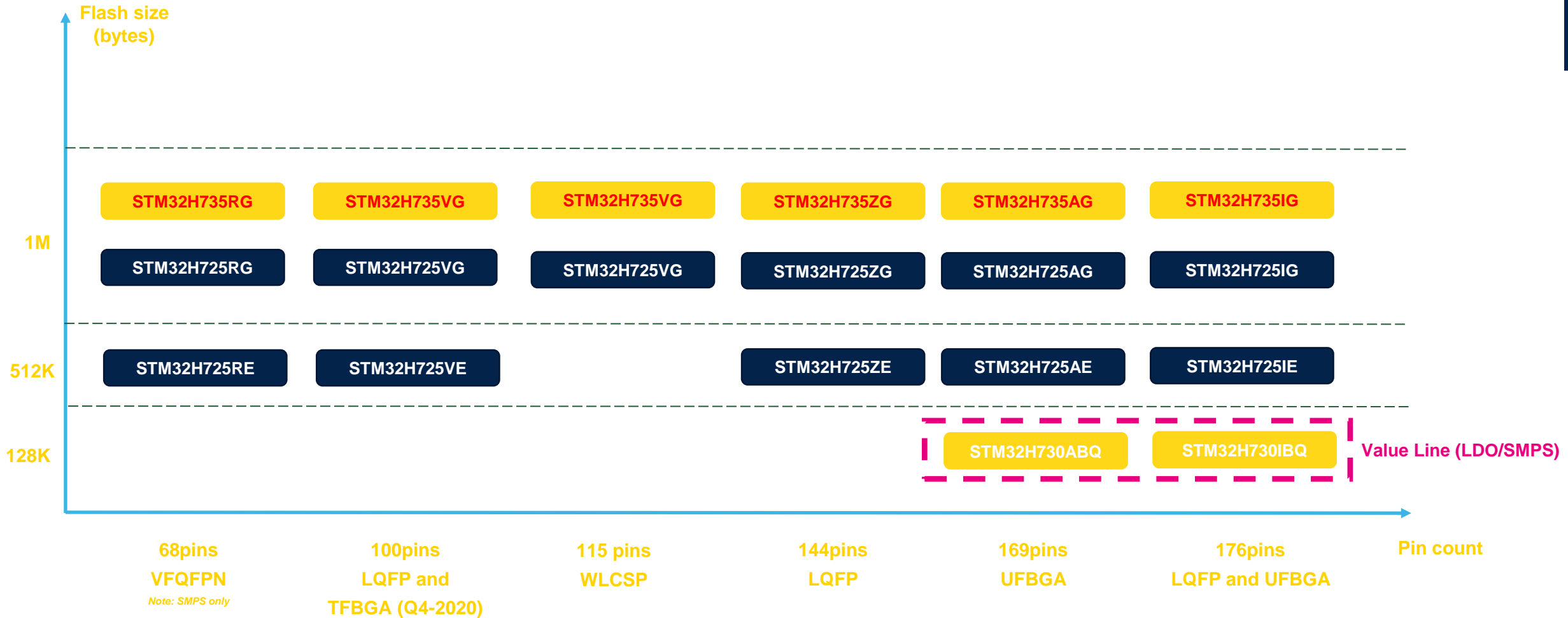
STM32H723/733 GP and STM32H730 Value Lines



CPN list

STM32H733VGT6, STM32H733VGH6, STM32H733ZGT6, STM32H733ZGI6
STM32H723VGT6, STM32H723VGH6, STM32H723ZGT6, STM32H723ZGI6
STM32H723VET6, STM32H723VEH6, STM32H723ZET6, STM32H723ZEI6
STM32H730VBT6, STM32H730VBH6, STM32H730ZBT6, STM32H730ZBI6

STM32H725/735 Industrial and STM32H730Q value lines



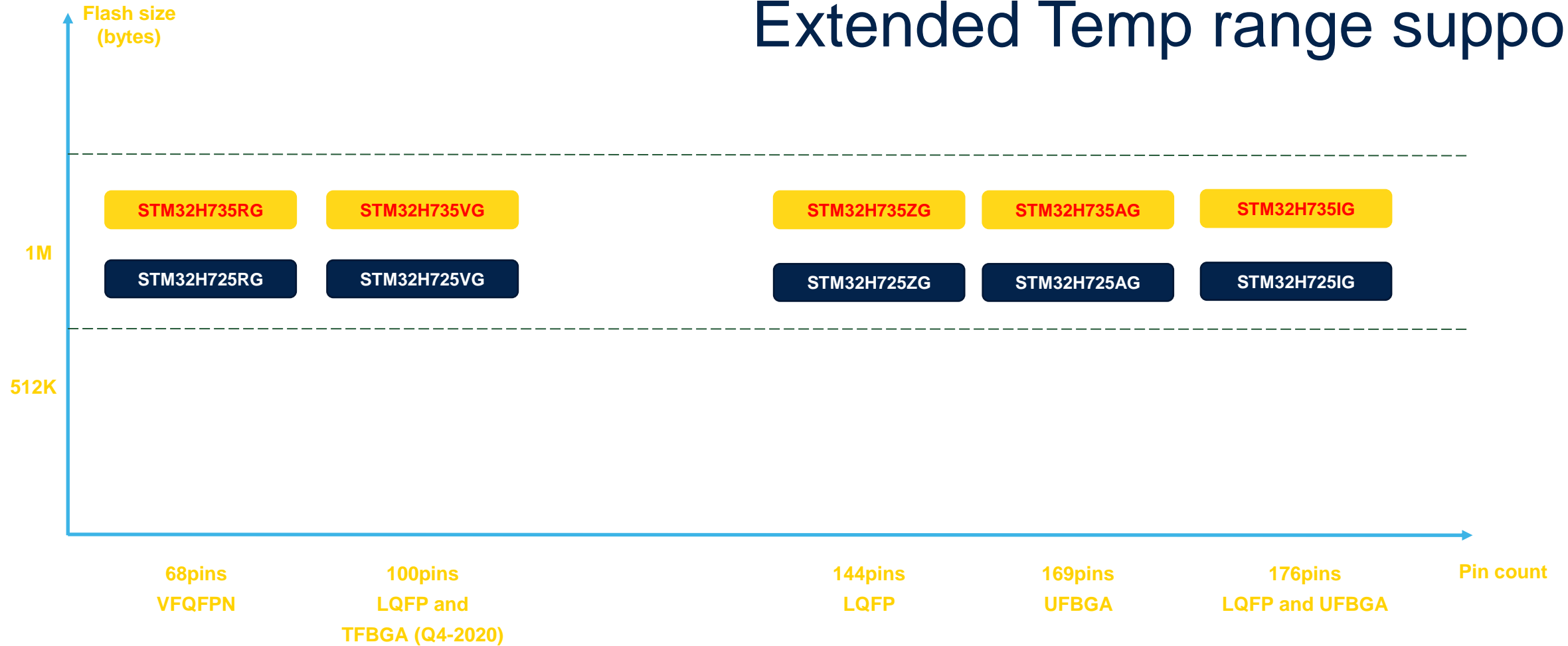
CPN list

STM32H735RGV6, STM32H735VGT6, STM32H735VGH6, STM32H735VGY6TR, STM32H735ZGT6, STM32H735AGI6, STM32H735IGT6, STM32H735IGK6
 STM32H725RGV6, STM32H725VGT6, STM32H725VGH6, STM32H725VGY6TR, STM32H725ZGT6, STM32H725AGI6, STM32H725IGT6, STM32H725IGK6
 STM32H725REV6, STM32H725VET6, STM32H725VEH6, STM32H725ZET6, STM32H725AEI6, STM32H725IET6, STM32H725IEK6
 STM32H730ABI6Q, STM32H730IBT6Q, STM32H730IBK6Q



STM32H725/735

Extended Temp range support



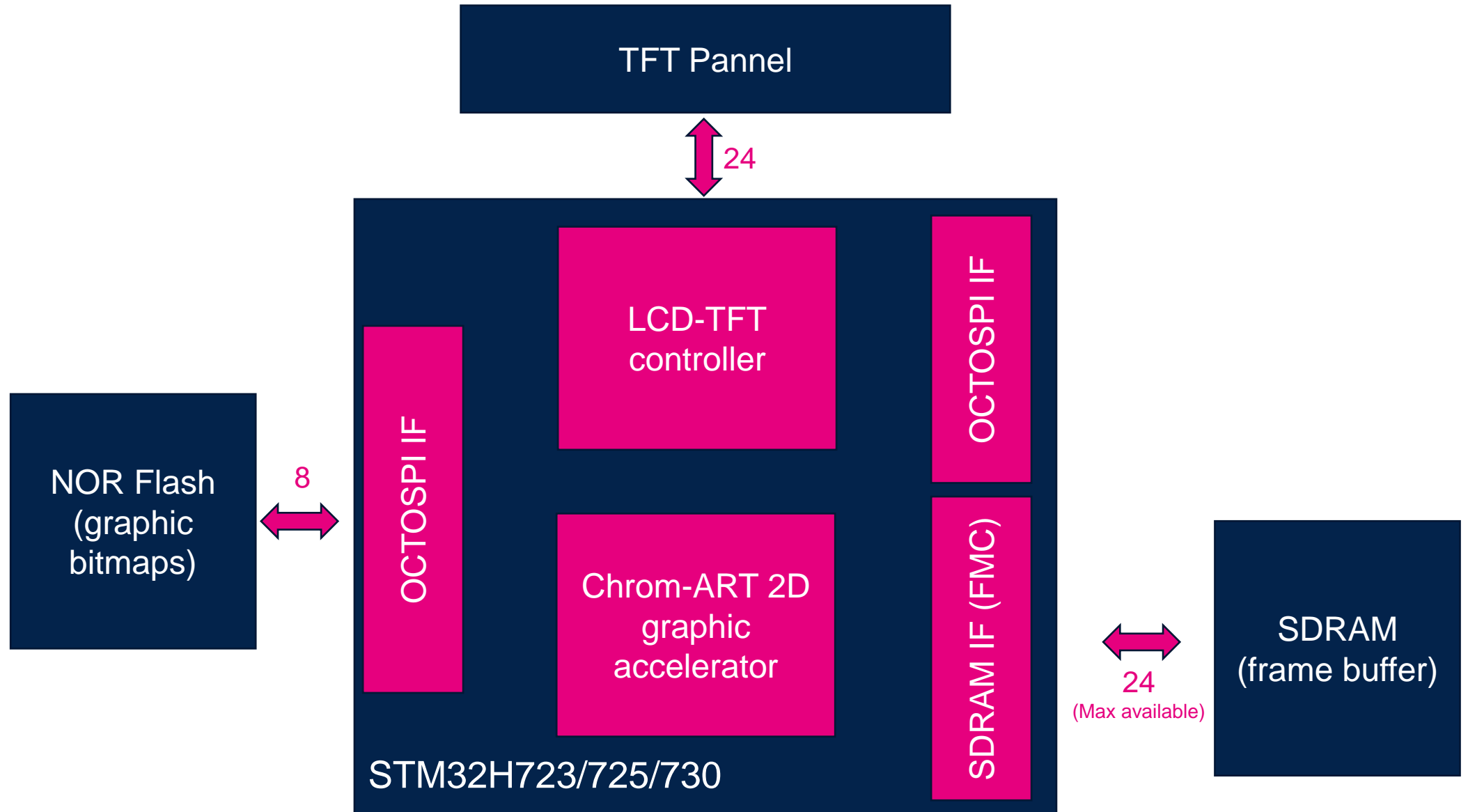
CPN list in range « 3 » - Ta = [-40C +125C]

STM32H735RGV3, STM32H735VGT3, STM32H735VGH3, STM32H735ZGT3, STM32H735AGI3, STM32H735IGT3, STM32H735IGK3
 STM32H725RGV3, STM32H725VGT3, STM32H725VGH3, STM32H725ZGT3, STM32H725AGI3, STM32H725IGT3, STM32H725IGK3

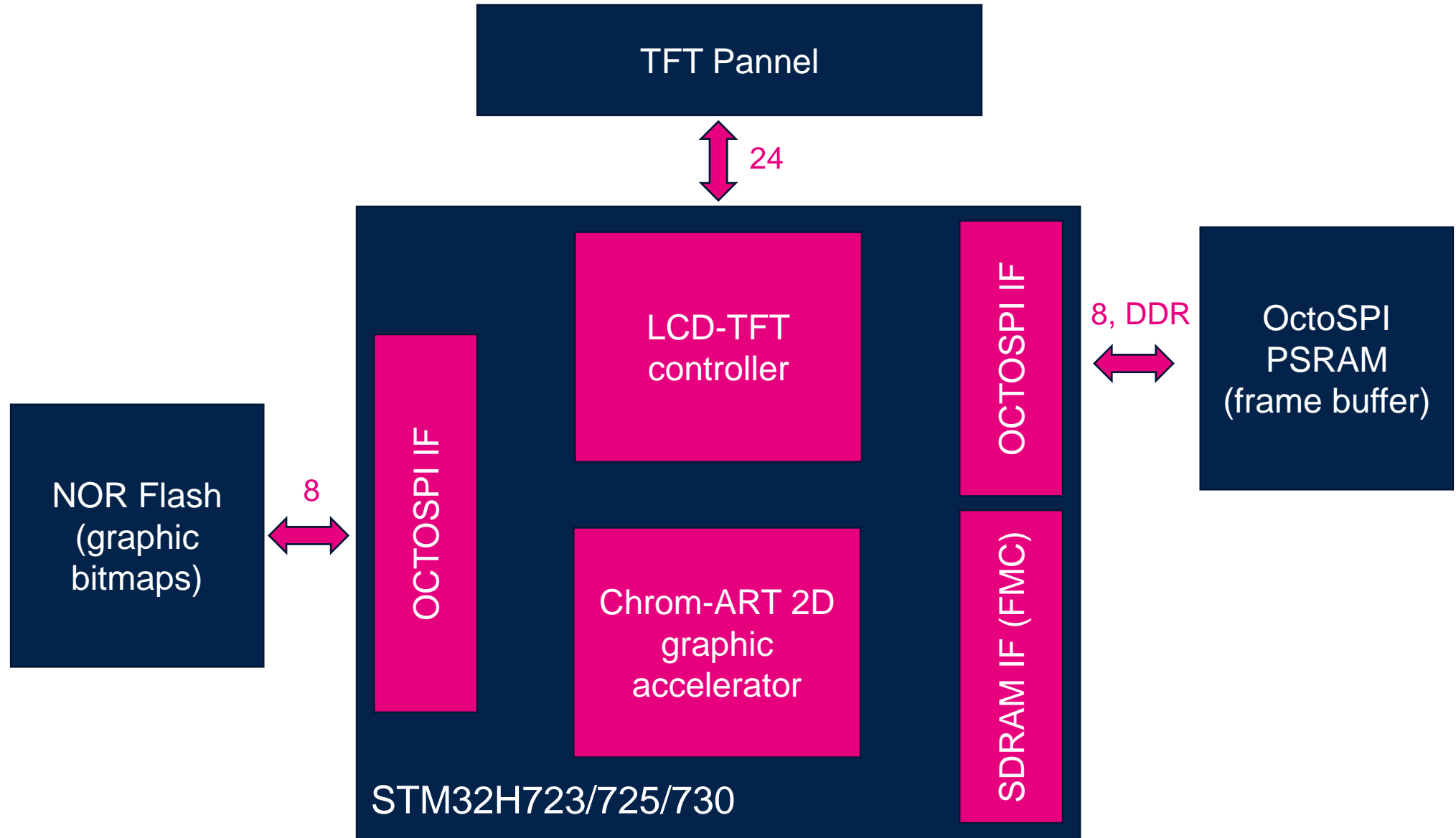


Graphics on STM32H723/H725/H730

Highest performance with SDRAM



Graphics on H723/H725/H730 Optimized BOM with OctoSPI PSRAM



HW Tools : STM32H723 / STM32H735

STM32 Nucleo : **NUCLEO-H723ZG**

(est. POP 23.2\$, RRP 29\$)

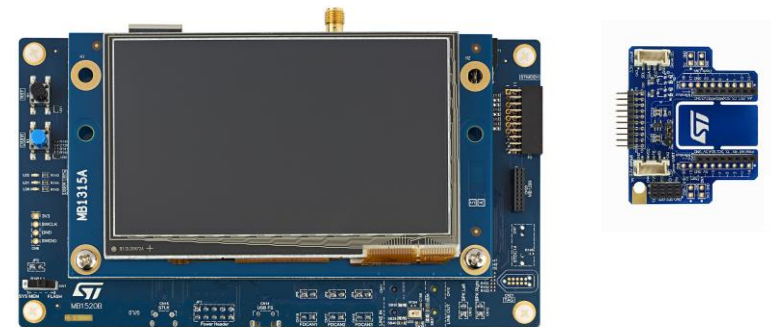


Flexible
prototyping

Sample Available
Prod Aug-2020

Discovery kit : **STM32H735G-DK**

(est. POP 69.6\$, RRP 87\$)



Key feature
prototyping

Sample Available
Production : Aug-2020

Note : No dedicated tool for the STM32H730 Line. The above Tools should be used instead

Releasing your creativity

▶ Famous video [here](#)



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