



STM32H5 MCU SERIES

High performance MCU based on Arm® Cortex®-M33



The STM32H5 series makes performance and security more accessible

Based on the Arm® Cortex®-M33, the STM32H5 MCU series runs at 250 MHz. It reaches 375 DMIPS and 1035 CoreMark scores executing from the embedded flash memory.

The STM32H5 series introduces state-of-the-art, scalable security. With STM32H5, you can choose from different security options, ranging from secure hardware only to a full security solution owned and maintained by ST over the product life cycle.

The STM32H5 series offers a large portfolio with 17 packages (from 25 to 225 pins) and supports up to 125°C ambient temperature.

This high performance series is an ideal fit for IoT and industrial applications:

- Smart homes and smart cities
- Factory automation
- Consumer devices and peripherals
- Medical applications

KEY BENEFITS

Most powerful Arm® Cortex®-M33 MCU

- Industry-first 32-bit MCU with Arm Cortex-M33 core running as high as 250 MHz.

Scalable security to address every need

- From the most essential security building blocks to fully certified services maintained by ST.
- PSA Certified level 3 & SESIP3 target certifications.

Tailored for high-performance graphics

- High memory integration
- First MCU embedding new ChromART2 graphics accelerator (only on STM32H5Ex/5Fx)
- MJPEG support

Optimized cost/performance trade-off

- Based on ST's optimized 40 nm process technology. Large choice of memory, peripherals, and package options.

STM32H5 PORTFOLIO

Product lines	Dual bank flash (KB)	RAM (KB)	Packages	Memory	USB	FDCAN	Ethernet	Power Supply	AES/ SAES PKA OTFDEC HUK ST-IR0T
STM32H5E5/5F5	3072 to 4096	1536	From 105 to 225-pin	2x SDMMC*, FMC, 2x OctoSPI *1x for STM32H5E5	HS with PHY /FS/ UCPD	3	YES	SMPS or LDO	YES on STM32H5F5
STM32H5E4/5F4	3072 to 4096	1536	From 100 to 176-pin	2x SDMMC, FMC, 2x OctoSPI	FS/UCPD	3	YES	SMPS/LDO	YES on STM32H5F4
STM32H562	1024 to 2048	640	From 64 to 176-pin	SDMMC, FMC, OctoSPI	FS/UCPD	1		LDO	
STM32H563/573	1024 to 2048	640	From 64 to 225-pin	2x SDMMC, FMC, OctoSPI	FS/UCPD	2	YES	SMPS, LDO	YES on STM32H573
STM32H523/533	256 to 512	272	From 39 to 144-pin	SDMMC, FMC, OctoSPI	FS/UCPD	2		LDO	YES on STM32H533
STM32H503	128	32	From 25 to 64-pin		FS	1			

STM32H5F5 BLOCK DIAGRAM

ARM® Cortex®-M33 250 MHz TrustZone® FPU MPU ETM	Embedded Memories		Security		Main radio	
	Up to 4 MB Flash memory dual bank data flash		SHA-1, -2, -3 (512-bit)		1x USB 2.0 FS, UCPD USB HS w/PHY	
	1536 Kbytes RAM		HUK, ECDSA, TRNG, CRC		6x SPI (incl 3x I2S) 2x SAI 4x I²C 2x I3C/I2C	
	4 Kbytes backup RAM		96-bit unique ID		HDMI-CEC	
Memory	Accelerators		RSA, ECC, AES, SAES		3x FDCAN	
	Chrom-ART2		Active tampering		6x UART, 6x USART	
	RGB-TFT, JPEG		Secure Boot ST-IRoT		LPUART	
	2x GPDMA		Secure manufacturing SFI		DCMI/ PSSI	
FMC 8/16/-32-bit (SDRAM, NOR, NAND, parallel-LCD)	ART Accelerator™		Coupling Chaining Bridge (CCB)		MDF (6 filters), ADF	
	CORDIC & FMAC		Analog		1x Ethernet MAC 10/100	
	Timers		3x 12-bit ADC		PLAY	
	2x 16-bit advanced motor control timers		2x 12-bit DACs			
2x Octo-SPI + w/ OTF decrypt	6x 16-bit Low Power timers		1xDig. temperature sensor			
	10x 16-bit TIM		1x OPAMP, 2x COMP			
	2x W/D					
System						
	LDO, SMPS, POR/PDR/PVD/BOR					
	XTAL Oscillator 32 KHz + 4 ~26 MHz					
	Internal RC Oscillator 32 KHz + 4, 48 & 64 MHz					
2x SD/SDIO/MMC						
RTC, 128 Bytes Back-up Registers						

HARDWARE TOOLS

A full set of development boards enables flexible prototyping as well as full STM32H5 evaluation.



SOFTWARE TOOLS

- STM32H5 connects smart things to the cloud in a secure way, with STM32Cube packages.
- STM32TrustTEE-RoT: A trusted solution and ecosystem for single tenant software IP protection for OEM or third-party companies.

www.st.com/stm32-cloud-solutions

www.st.com/stm32trustee

