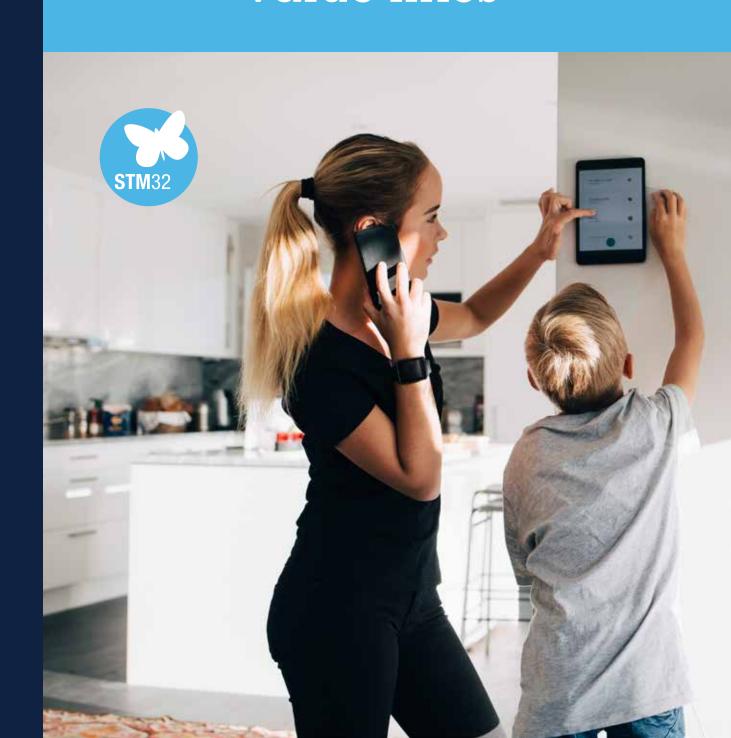


STM32H750 & STM32H7B0 High-performance value lines



EXTRA FLEXIBILITY TO CREATE AFFORDABLE PERFORMANCE-ORIENTED SYSTEMS

Focusing on real-time performance and scalability, ST's new Value lines lower the barrier to access STM32H7 microcontrollers with products keeping just the essential Flash memory.

With execution performance up to 2424 CoreMark at the heart of a secure, power-efficient architecture, the new Value line microcontrolles are the entry point to IoT innovation in medical, industrial and consumer applications.

STM32H750 & STM32H7B0 devices embed 128-Kbyte Flash memory to accommodate the most critical and secure code, while supporting external memory extension using NOR, NAND, SDRAM, dual-mode Quad SPI and Octal-SPI Flash memory.

Notes

- 1. Tightly Coupled Memories
- 2. Digital Filters for Sigma Delta Modulator



CORE, MEMORIES

- Arm® Cortex®-M7 core up to 480 MHz
- Up to 16-Kbyte data and 16-Kbyte instruction cache
- Up to 4 DMA controllers
- 128-Kbyte Flash memory and up to 1.4-Mbyte RAM
- ITCM/DTCM1: 64-Kbyte ITCM RAM + 128-Kbyte DTCM RAM for time-critical routines

CONNECTIVITY

- Up to 2 x USB 2.0 OTG FS/HS with optional embedded HS PHY)
- USART, UART, SPI, and I2C
- 2 x CAN FD
- Ethernet MAC
- FMC (supporting SDRAM in 32-bit mode up to 133 MHz), dual-mode Quad SPI Flash memory and dual Octal SPI
- 2 x SDMMC

EMBEDDED FLASH

- Secure Boot for customer Root of Trust
- Fast boot time
- High-execution speed from ultra fast embedded memory

ENERGY EFFICIENT

- Flexible power mode
- Gated power domains
- On-chip power management

AUDIO

- 3 x I²S + audio PLL
- 4 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

GRAPHICS

- LCD TFT controller
- JPEG Codec
- Chrom-ART Accelerator™
- Chrom-GRC™

OTHER

- 8- to 14-bit Camera interface
- Crypto and Hash hardware acceleration
- DFSDM2 interface to connect microphone MEMs or sigma delta ADC front ends
- 16- and 32-bit timers
- 3x ADCs with up to 16-bit resolution (up to 3.6 MSPS)
- Analog (comparators and Op amps)
- Power supply down to 1.62 V

STM32 HIGH-PERFORMANCE VALUE LINES

Product lines	Core	f _{CPU} (MHz)	ID cache (KB)	ITCM/ DTCM (KB)	Flash memory (KB)	RAM (KB)	Graphic	Advanced analog	USB OTG	Ethernet	Camera I/F	CAN	Security & Crypto/Hash acceleration	Packages
STM32H750		480	16+16			864	Chrom-ART Accelerator™ TFT-LCD JPEG Codec	3x 16-bit ADCs (3.6 MSPS), 2x Opamps, 2x Comparators, 2x 12-bit DACs	2	1	1 1	1 TTFD CAN, 1 FDCAN	Yes, PCROP ¹ , - SFI ² , SBSFU ³	LQFP100, LQFP144, LQFP176, UFBGA176 ⁴ , TFBGA240 ⁵
STM32H7B0	CM7	280	10+10	64/ 128	128	1 376	Chrom-GRC™ TFT-LCD JPEG codec		1	-				LQFP64, LQFP100, LQFP144, UFBGA169, LQFP176, UFBGA176

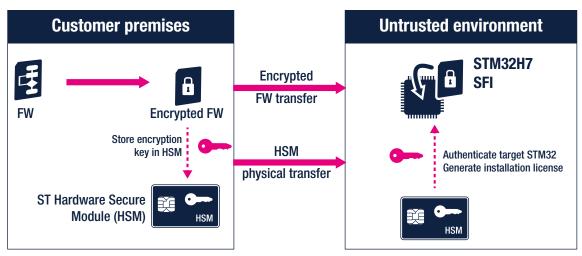
- PCROP: Proprietary Code Read Out Protection (protects part of the Flash memory to execution access only)
 SFI: Secure Firmware Install. Security service and keys available on standard parts to securely install a Root of Trust (RoT)
 SBSFU: Secure Boot and Secure Firmware Update dedicated hardware memory protection mechanism.
- 4. (0.65 mm pitch) 5. (0.8 mm pitch)

STM32H750 VALUE LINE BLOCK DIAGRAM

	Chrom-ART Accelerator™	128-Kbyte			
System	JPEG Codec Acceleration	Flash memory			
LDO, USB and	0: _	RAM 1056 Kbytes incl.			
backup regulators		64 Kbytes ITCM			
POR/PDR/PVD/BOR		FMC/SRAM/NOR/NAND/ SDRAM			
Multi-power domains		Dual-mode Quad-SPI			
Xtal oscillators		1024-byte + 4-Kbyte			
32 kHz + 4 ~48 MHz	Cache I/D 16+16 Kbytes	backup SRAM			
Internal RC oscillators 32 kHz + 4, 48 & 64 MHz		Connectivity			
3x PLL		TFT LCD controller			
Clock control		HDMI-CEC			
RTC/AWU	Arm®	6x SPI, 3x I ² S, 4x I ² C			
1x SysTick timer	Cortex® -M7	Camera interface			
2x watchdogs	480 MHz	Ethernet MAC 10/100			
(independent and window)		with IEEE 1588			
82/140/168 I/Os		MDIO slave			
Cyclic redundancy		2x FDCAN			
check (CRC)		(Flexible Data rate)			
Unique ID		1x USB 2.0 OTG FS/HS			
		1x USB 2.0 OTG FS			
		2x SDMMC			
		4x USART + 4 UART LIN, smartcard, IrDA,			
Control	Floating point unit	modem control			
2x 16-bit motor control	(DP-FPU)	1x Low-power UART			
PWM synchronized	Nested vector	4x SAI			
AĆ timer	interrupt controller (NVIC)	(Serial audio interface)			
10x 16-bit timers 2x 32-bit timers	JTAG/SW debug/ETM	SPDIF input x4			
5x Low-power timer	Memory Protection Unit	DFSDM (8 inputs/4 filters			
6-bit high-resolution timer	(MPU)	SWP (Single Wire Protocol)			
o bit high rosolution timor	ROP, PC-ROP	(Single Wile Flotocol)			
	anti-tamper	Analog			
		2x 12-bit, 2-channel DAC			
Crypto/Hash processor		3 x 16-bit ADC			
DES, AES 256, GCM, CCM	AXI and Multi-AHB	(up to 3.6 Msps)			
SHA-1, SHA-256, MD5,	bus matrix	20 channels/up to 2 MSP			
HMAC	4x DMA	Temperature sensor			
Security services	True random number	2x COMP			
SFI and SB-SFU	generator (RNG)	2x Op amp			

SECURE YOUR PRODUCTION FLOW WITH SECURE FIRWARE INSTALL (SFI*)

Manage STM32 authentication, firmware decryption and installation



(*): optional - SFI service available on specific part numbers



The STM32Trust ecosystem combines knowledge, design tools, and ready-to-use original ST software to build strong cyber-protection into new IoT devices, leveraging industry best-practices. www.st.com/stm32trust

HARDWARE TOOLS

All existing STM32H7 hardware development tools are fully compatible with the new Value lines.

Evaluation boards



STM32H7B3I-EVAL



STM32H753I-EVAL2

Discovery kits



STM32H750B-DK



STM32H7B3I-DK

Nucleo-144 development boards



NUCLEO-H753ZI



