STM32F7x0 & STM32H750
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 STM32F7 and H7 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 microcontrollers are the entry point to IoT innovation in medical, industrial and consumer applications.

STM32F730, STM32F750 and STM32H750 devices embed 64- or 128-Kbyte Flash memory to accommodate the most critical and secure code, while supporting external memory extension using NOR, NAND, SDRAM and dual-mode Quad SPI Flash memory.

- **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
  - Up to 128-Kbyte Flash memory and 1-Mbyte RAM
  - ITCM/DTCM: up to 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
  - Up to 2 x CAN (CAN FD on STM32H750)
  - Ethernet MAC
  - FMC (supporting SDRAM in 32-bit mode up to 133 MHz) and dual-mode Quad SPI Flash memory
  - 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 PS + audio PLL
  - 4 x SAI
  - 2 x 12-bit DAC
  - SPDIF-RX

- **GRAPHICS**
  - LCD TFT controller
  - JPEG Codec
  - Chrom-ART Accelerator™

- **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

www.st.com/stm32f7vl or www.st.com/stm32h7vl
STM32F7X0 & STM32H750 VALUE LINE BLOCK DIAGRAM

STM32F730  STM32F750  STM32H750

<table>
<thead>
<tr>
<th></th>
<th>STM32F730</th>
<th>STM32F750</th>
<th>STM32H750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm® Cortex®-M7, MPU, ETM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock</td>
<td>216 MHz, SFPU</td>
<td>480 MHz, DFPU</td>
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</tr>
<tr>
<td>2 x 8-Kbyte cache</td>
<td>2 x 4-Kbyte cache</td>
<td>2 x 16-Kbyte cache with ECC</td>
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</tbody>
</table>

Embedded memories

- 256-Kbyte RAM including
- 64-Kbyte DTCM
- 16-Kbyte ITCM
- 64-Kbyte Flash memory
- 4-Kbyte backup RAM

Memory Interfaces

- FMC (SDRAM, NOR, NAND)
- Dual-mode Quad SPI Flash memory
- 2 x SD/SDIO/MMC

Accelerators

- ART Accelerator™
- Chrom-ART Accelerator™
- Crypto/Hash accelerator and tamper detection

Peripherals

- Advanced analog
- Advanced connectivity

STM32 HIGH-PERFORMANCE VALUE LINES

<table>
<thead>
<tr>
<th>Product lines</th>
<th>Core</th>
<th>fCPU (MHz)</th>
<th>ID cache (KB)</th>
<th>ITCM/ DTCM (KB)</th>
<th>Flash memory (KB)</th>
<th>RAM (KB)</th>
<th>Graphic</th>
<th>Advanced analog</th>
<th>USB OTG</th>
<th>Ethernet</th>
<th>Camera I/F</th>
<th>CAN</th>
<th>Security &amp; Crypto/Hash acceleration</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>STM32H750</td>
<td>CM7</td>
<td>480</td>
<td>16+16 with ECC</td>
<td>64/128 with ECC</td>
<td>128 with ECC</td>
<td>864</td>
<td></td>
<td>3x 16-bit ADCs (3.6 MSPS, up to 36 channels), 2x 0pamps, 2x Comparators, 2x 12-bit DACs</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1 TTFD CAN, 1 FDCAN</td>
<td>Yes, PCROP, SPF, SBSFU</td>
<td>LFQF 100, UFBBGA 176, TFBGA 240</td>
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<tr>
<td>STM32F750</td>
<td>CM7</td>
<td>216</td>
<td>4+4</td>
<td>16/64</td>
<td>64</td>
<td>256</td>
<td></td>
<td>3x 12-bit ADCs (2.4 MSPS, up to 24 channels), 2x 12-bit DACs</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>Yes</td>
<td>LFQF 100, LFQF 144, TFBGA 216</td>
</tr>
<tr>
<td>STM32F730</td>
<td>CM7</td>
<td>216</td>
<td>8+8</td>
<td>16/64</td>
<td>64</td>
<td>192</td>
<td></td>
<td>3x 12-bit ADCs (2.4 MSPS, up to 24 channels), 2x 12-bit DACs</td>
<td>1 with HS PHY</td>
<td>2</td>
<td>Yes, PCROP</td>
<td>LFQF 64, LFQF 100, LFQF 144, UFBBGA 176</td>
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<td></td>
</tr>
</tbody>
</table>

Notes:
1. Error Code Correction available on STM32H750
2. Tightly Coupled Memories
3. Digital Filters for Sigma Delta Modulator
4. The USB HS embedded PHY is not available on the STM32F730 in 64- and 100-pin LFQF packages
5. PCROP: Proprietary Code Read Out Protection (protects part of the Flash memory to execution access only)
6. SFI: Secure Firmware Install. Security service and keys available on standard parts to securely install a Root of Trust (RoT)
7. SBSFU: Secure Boot and Secure Firmware Update dedicated hardware memory protection mechanism.
8. (0.65 mm pitch)
9. (0.8 mm pitch)

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X-CUBE-SBSFU: An efficient software library solution for Secure Boot and Secure Firmware Update operations for embedded applications, built on top of STM32Cube software technology.

HARDWARE TOOLS

All existing STM32F7 and STM32H7 hardware development tools are fully compatible with the new Value lines.

Evaluation boards

STM32F766-EVAL2, STM32F779-EVAL, STM32H753-EVAL

Discovery kits

STM32F746G-DISCO, STM32F723E-DISCO, STM32F7508-DK, STM2H7508-DK

Nucleo-144 development boards

NUCLEO-F722ZE, NUCLEO-F762ZG, NUCLEO-H753ZI