i.MX RT1170: 1 GHz Crossover MCU with Arm® Cortex® Cores
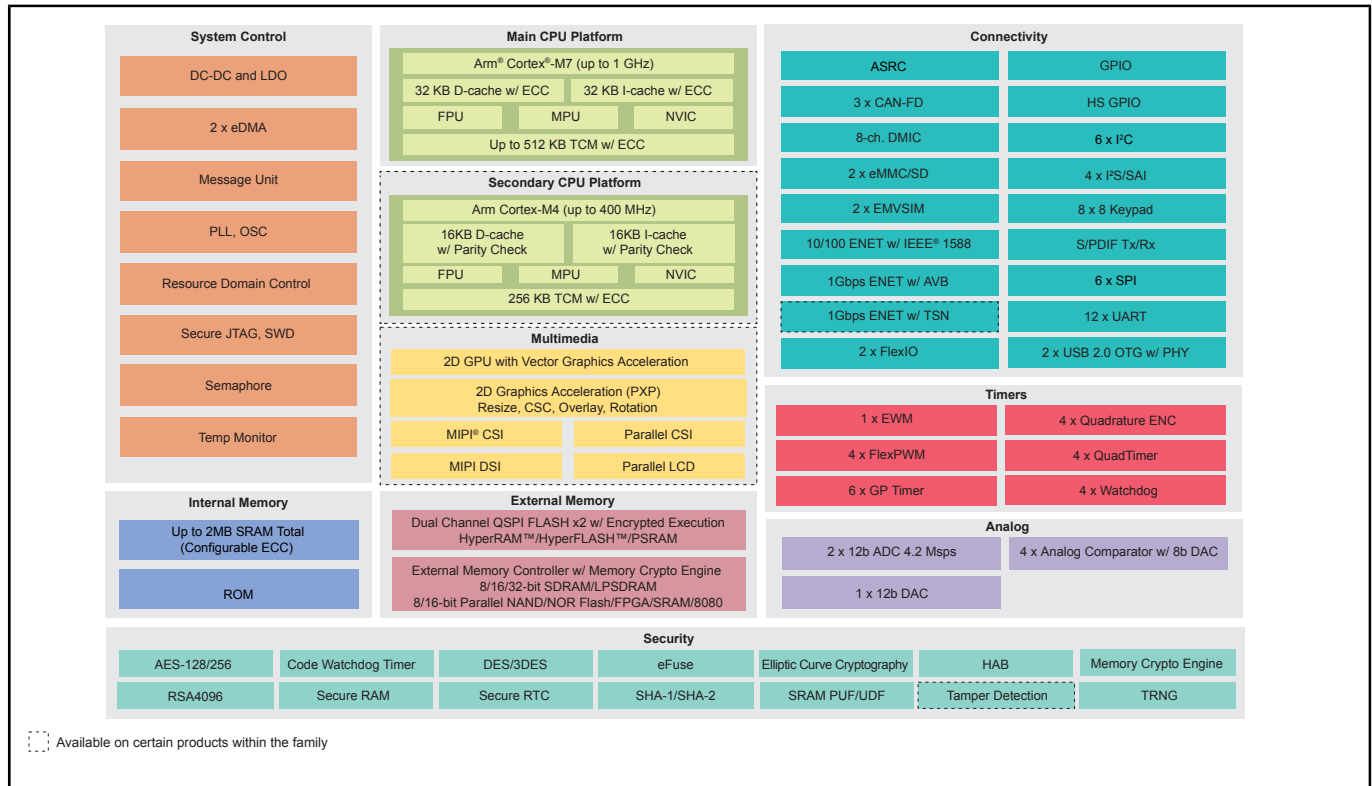
i.MX-RT1170

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i.MX RT1170 Crossover MCUs are dual-core devices featuring an Arm® Cortex®-M7 and Arm® Cortex®-M4 for real-time microcontroller (MCU) performance and high integration for automotive, industrial and IoT applications.

The i.MX RT1170 CM7 operates at up to 1 GHz and the CM4 up to 400 MHz with 2 MB on-chip RAM. The real-time microcontroller (MCU) family offers various memory interfaces and a wide range of connectivity interfaces including 3x Ethernet up to Gbps with TSN/AVB, UART, SPI, I2C, USB and 3x CAN FD. The i.MX RT1170 provides advanced embedded security including secure boot and crypto engines.

The i.MX RT1170 family is supported by the MCUXpresso ecosystem, which includes an SDK, a choice of IDEs and secure provisioning and configuration tools to enable rapid development.

i.MX RT1170 Crossover MCU Block Diagram

System Control

- DC-DC and LDO
- 2 x eDMA
- Message Unit
- PLL, OSC
- Resource Domain Control
- Secure JTAG, SWD
- Semaphore
- Temp Monitor

Main CPU Platform

- Arm® Cortex®-M7 (up to 1 GHz)
- 32 KB D-cache w/ ECC
- 32 KB I-cache w/ ECC
- FPU
- MPU
- NVIC
- Up to 512 KB TCM w/ ECC

Secondary CPU Platform

- Arm Cortex-M4 (up to 400 MHz)
- 16KB D-cache w/ Parity Check
- 16KB I-cache w/ Parity Check
- FPU
- MPU
- NVIC
- 256 KB TCM w/ ECC

Multimedia

- 2D GPU with Vector Graphics Acceleration
- 2D Graphics Acceleration (PXP) Resize, CSC, Overlay, Rotation
- MIPI® CSI
- Parallel CSI
- MIPI DSI
- Parallel LCD

Connectivity

- ASRC
- GPIO
- 3 x CAN-FD
- HS GPIO
- 8-ch. DMIC
- 6 x I²C
- 2 x eMMC/SD
- 4 x I²S/SAI
- 2 x EMVSIM
- 8 x 8 Keypad
- 10/100 ENET w/ IEEE® 1588
- S/PDIF Tx/Rx
- 1Gbps ENET w/ AVB
- 6 x SPI
- 1Gbps ENET w/ TSN
- 12 x UART
- 2 x FlexIO
- 2 x USB 2.0 OTG w/ PHY

Timers

- 1 x EWM
- 4 x Quadrature ENC
- 4 x FlexPWM
- 4 x QuadTimer
- 6 x GP Timer
- 4 x Watchdog

Internal Memory

- Up to 2MB SRAM Total (Configurable ECC)
- ROM

External Memory

- Dual Channel QSPI FLASH x2 w/ Encrypted Execution HyperRAM™/HyperFLASH™/PSRAM
- External Memory Controller w/ Memory Crypto Engine 8/16/32-bit SDRAM/LPSDRAM 8/16-bit Parallel NAND/NOR Flash/FPGA/SRAM/8080

Analog

- 2 x 12b ADC 4.2 Msps
- 4 x Analog Comparator w/ 8b DAC
- 1 x 12b DAC

Security

- AES-128/256
- Code Watchdog Timer
- DES/3DES
- eFuse
- Elliptic Curve Cryptography
- HAB
- Memory Crypto Engine
- RSA4096
- Secure RAM
- Secure RTC
- SHA-1/SHA-2
- SRAM PUF/UDF
- Tamper Detection
- TRNG

☐ Available on certain products within the family

View additional information for i.MX RT1170: 1 GHz Crossover MCU with Arm® Cortex® Cores.

Note: The information on this document is subject to change without notice.