i.MX RT1040 Crossover MCU with Arm® Cortex®-M7 Core Operating Up to 600 MHz and Extended Temperature Range
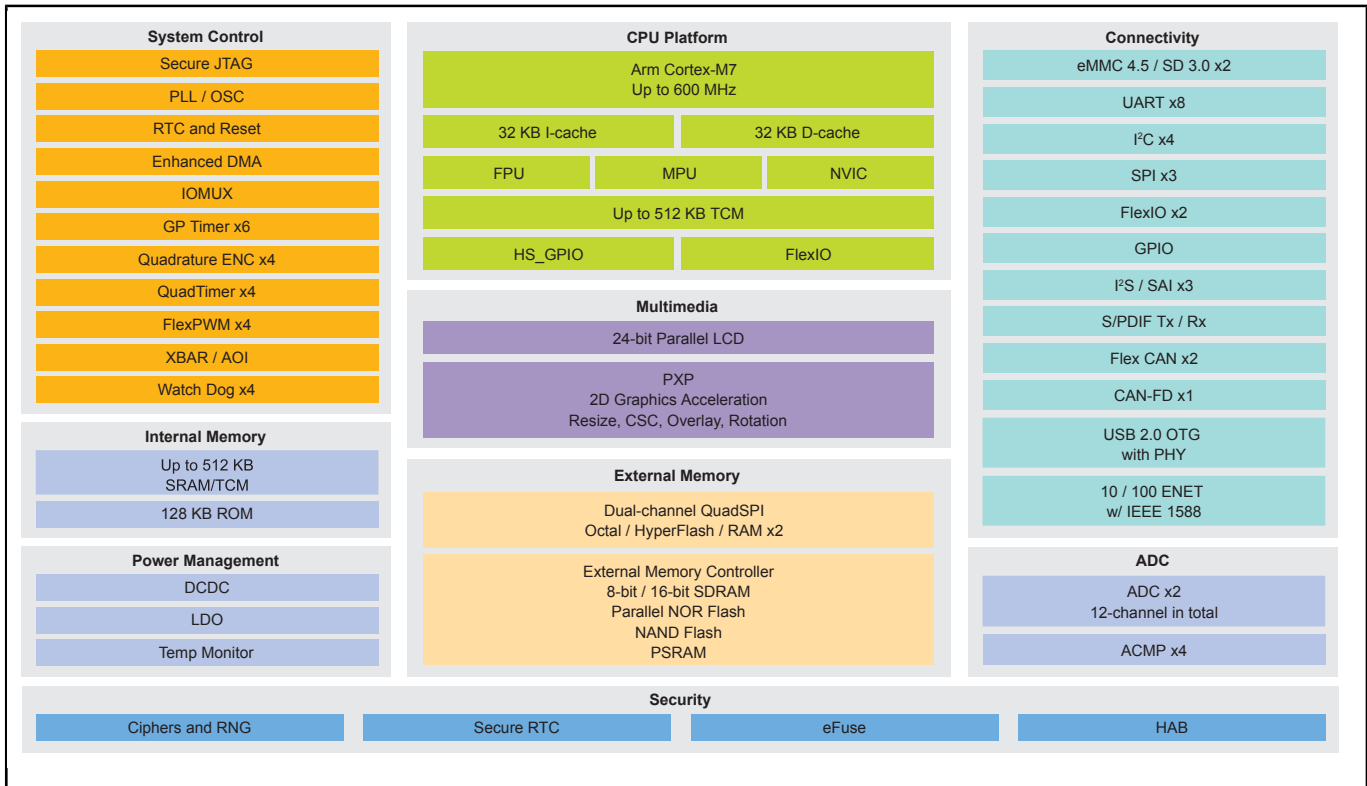
i.MX-RT1040

Last Updated: Apr 11, 2024

i.MX RT1040 Crossover MCUs are based on the Arm® Cortex®-M7 core for real-time performance and high integration for Industrial and IoT applications.

The i.MX RT1040 CM7 operates at up to 600 MHz with 512 KB on-chip RAM that can be configured as TCM or general-purpose. The family offers various memory interfaces and a wide range of connectivity interfaces including UART, SPI, I2C, USB and CAN. The i.MX RT1040 provides additional flexibility with 169 BGA compact packages and an extended temperature range up to 125°C.

The i.MX RT1040 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 RT1040 MCU Block Diagram

System Control
- Secure JTAG
- PLL / OSC
- RTC and Reset
- Enhanced DMA
- IOMUX
- GP Timer x6
- Quadrature ENC x4
- QuadTimer x4
- FlexPWM x4
- XBAR / AOI
- Watch Dog x4

Internal Memory
- Up to 512 KB SRAM/TCM
- 128 KB ROM

Power Management
- DCDC
- LDO
- Temp Monitor

CPU Platform
- Arm Cortex-M7 Up to 600 MHz
- 32 KB I-cache
- 32 KB D-cache
- FPU
- MPU
- NVIC
- Up to 512 KB TCM
- HS_GPIO
- FlexIO

Multimedia
- 24-bit Parallel LCD
- PXP 2D Graphics Acceleration Resize, CSC, Overlay, Rotation

External Memory
- Dual-channel QuadSPI Octal / HyperFlash / RAM x2
- External Memory Controller 8-bit / 16-bit SDRAM Parallel NOR Flash NAND Flash PSRAM

Connectivity
- eMMC 4.5 / SD 3.0 x2
- UART x8
- I²C x4
- SPI x3
- FlexIO x2
- GPIO
- I²S / SAI x3
- S/PDIF Tx / Rx
- Flex CAN x2
- CAN-FD x1
- USB 2.0 OTG with PHY
- 10 / 100 ENET w/ IEEE 1588

ADC
- ADC x2 12-channel in total
- ACMP x4

Security
- Ciphers and RNG
- Secure RTC
- eFuse
- HAB

View additional information for i.MX RT1040 Crossover MCU with Arm® Cortex®-M7 Core Operating Up to 600 MHz and Extended Temperature Range.

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