i.MX RT1170 CROSSOVER MCUs
Ushering in the GHZ ERA

i.MX RT1170 crossover MCUs are setting speed records at 1GHz. This ground-breaking family combines superior computing power and multiple media capabilities with ease of use and real-time functionality.

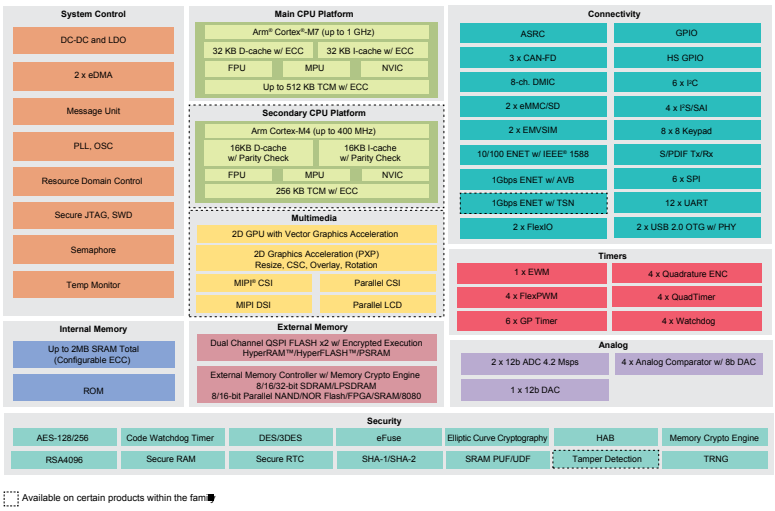
PRODUCT HIGHLIGHTS

- High-performing Arm® Cortex®-M based device
  - Up to 6468 total CoreMarks® with Cortex-M7 @ 1 GHz + Cortex-M4 @ 400 MHz
- Real-time, low-latency response
  - Up to 2 MB SRAM:
    - 512 KB Cortex-M7 TCM + 128 KB ECC
    - 256 KB Cortex-M4 TCM with ECC
    - 1 MB on-chip RAM + 128 KB ECC
  - Fast real-time response with latency as low as 12 ns
- Low-power operation
  - Low dynamic power with integrated DC-DC converter
  - Low-power run modes at 24 MHz
- Highly integrated
  - Advanced multimedia for GUI and enhanced HMI
    - Multiple display and CMOS sensor interfaces
    - OpenVG™ graphics accelerator running up to 500 MHz
- Extensive memory interface options
  - Quad/Octal SPI and HyperFlash™/HyperRAM™, SDRAM, NAND/NOR Flash, SD/eMMC, PSRAM, LPSDRAM
- Security
  - Hardware Elliptic Curve Cryptography
  - Hardware-protected keys for secure boot
  - AES engine for data encryption
  - On-the-fly AES decryption for execute-in-place (NOR) from Quad/Octal SPI/HyperFlash
  - Part of the EdgeLock™ Assurance program, more details available at nxp.com/EdgeLockAssurance

TARGET APPLICATIONS

- ML-based edge applications
- Industrial computing designs
- Motor control and power conversion
- Personal health and fitness
- Voice-enabled IoT devices

i.MX RT1170 CROSSOVER MCU FAMILY BLOCK DIAGRAM



i.MX RT1170 MCU FAMILY CONFIGURATIONS

Device	i.MX RT1171	i.MX RT1172	i.MX RT1173	i.MX RT1175	i.MX RT1176
Arm® Cortex®-M7	1 GHz/800 MHz*	1 GHz/800 MHz*	800 MHz	1 GHz/800 MHz*	1 GHz/800 MHz*
Cortex-M4	–	–	400 MHz	400 MHz	400 MHz
MIPI CSI / DSI	–	Y	Y	-	Y
OpenVG™ 1.1	–	Y	Y	-	Y
CSI / LCDIF / PXP	–	Y	Y	-	Y
Ethernet	Y	Y	Y	Y	Y
TSN	–	-	-	-	Y
Tamper Protection	–	-	Y	-	-
HAB/AES/DES	Y	Y	Y	Y	Y
Packages	289 MAPBGA	289 MAPBGA	289 MAPBGA	289 MAPBGA	289 MAPBGA
Qualification/ Temperature	Commercial/0-95 °C Industrial/-40 – 105 °C Auto/-40 – 125 °C	Commercial/0 – 95 °C Industrial/-40 – 105 °C Auto/-40 – 125 °C	Industrial/-40 – 105 °C	Commercial/0 – 95 °C Industrial/-40 – 105 °C Auto/-40 – 125 °C	Commercial/0 – 95 °C Industrial/-40 – 105 °C Auto/-40 – 125 °C
Part Numbers	MIMXRT1171DVMAA MIMXRT1171CVM8A MIMXRT1171AVM8A	MIMXRT1172DVMAA MIMXRT1172CVM8A MIMXRT1172AVM8A	MIMXRT1173CVM8A	MIMXRT1175DVMAA MIMXRT1175CVM8A MIMXRT1175AVM8A	MIMXRT1176DVMAA MIMXRT1176CVM8A MIMXRT1176AVM8A

*First speed listed is speed for commercial-qualified device. Second speed listed is for industrial- and automotive-qualified devices.

i.MX RT1170 EVK FEATURES

Processor	• MIMXRT1176DVMAA
Memory	• 512 Mbit SDRAM memory • 512 Mbit Octal flash • 128 Mbit QSPI flash • 2 Gbit Raw NAND flash • 64 Mbit LPSPI flash • TF socket for SD card
Graphics	• MIPI LCD connector • MIPI camera sensor connector
Audio	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone (analog and digital) • SPDIF connector
Connectivity	• 2 x Micro USB OTG connectors • Ethernet (10/100/1000M) connector • Ethernet (10/100M) connector • M.2 connector • CAN transceivers • Arduino® interface • FRDM motor control interface • SIM card slot
Debug	• JTAG connector • Onboard DAP-Link debugger
Sensor	• 6-Axis ecompass (3-Axis magnetometer, 3-Axis accelerometer) sensor FXOS8700CQ
Ordering Information	• MIMXRT1170-EVK • RK055HDMIPI4M (5.5” 720p display)



GET STARTED NOW

The i.MX RT1170 evaluation kit (EVK) helps you take your design to the next level by reducing complexity and accelerating time to market.

SOFTWARE AND TOOLS

NXP’s **MCUXpresso software and tools** offer comprehensive development solutions designed to optimize, ease and accelerate embedded system development of applications based on Cortex-M core devices from NXP, including its general purpose, crossover and Bluetooth-enabled MCUs.

nxp.com/iMXRT1170

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