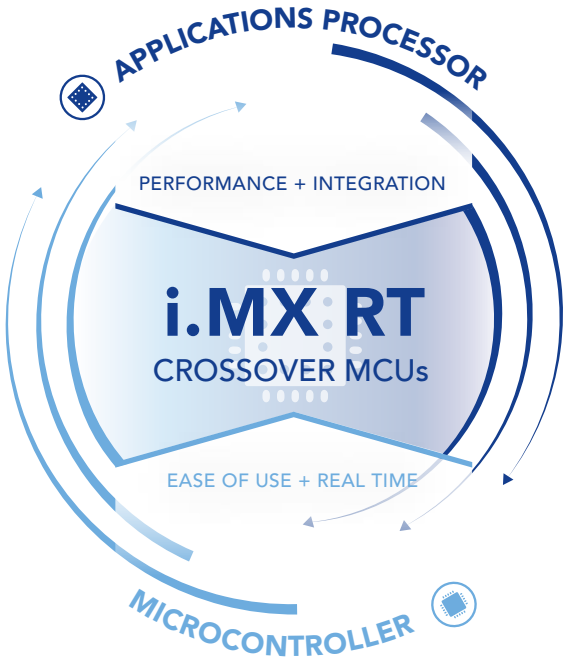
i.MX RT Series of crossover MCUs

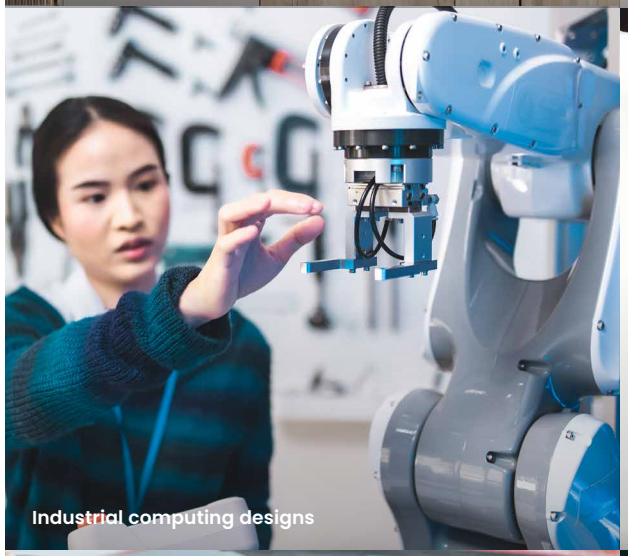
nxp.com/iMXRT

The i.MX RT series combines ease-of-use with high-performance processing. Delivering unprecedented reliability and high levels of integration and security. The i.MX RT crossover MCUs propel industrial, IoT and automotive applications.



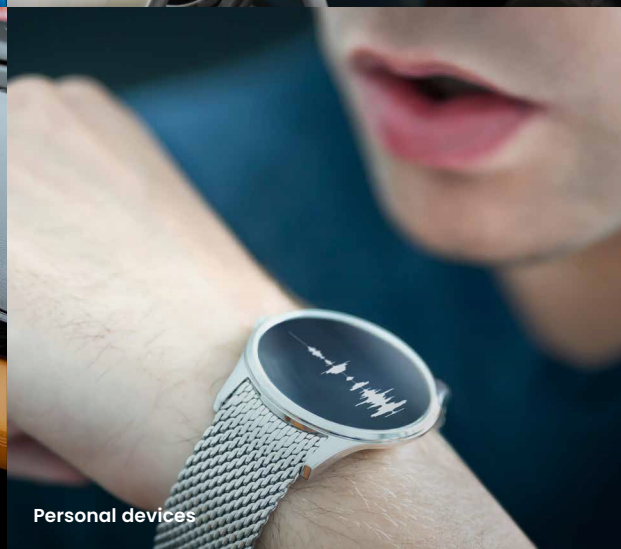
Consumer products

Home and building automation

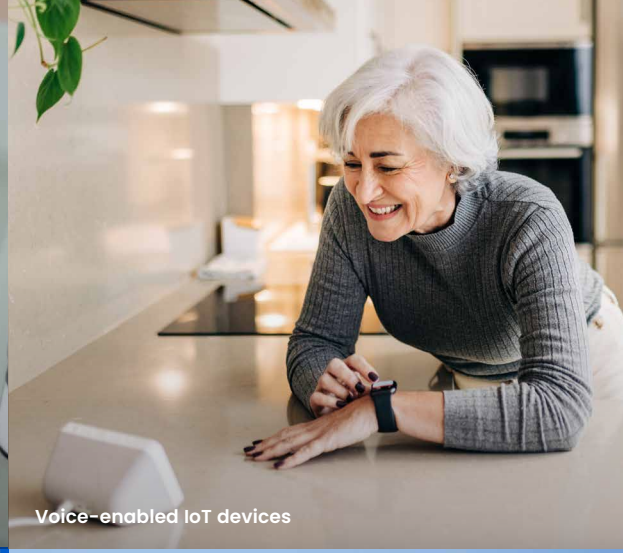

Industrial computing designs

Power conversion

Automotive graphic applications and electronic controllers


Personal devices

Personal health and fitness


Voice-enabled IoT devices

Industrial computing designs

Consumer products

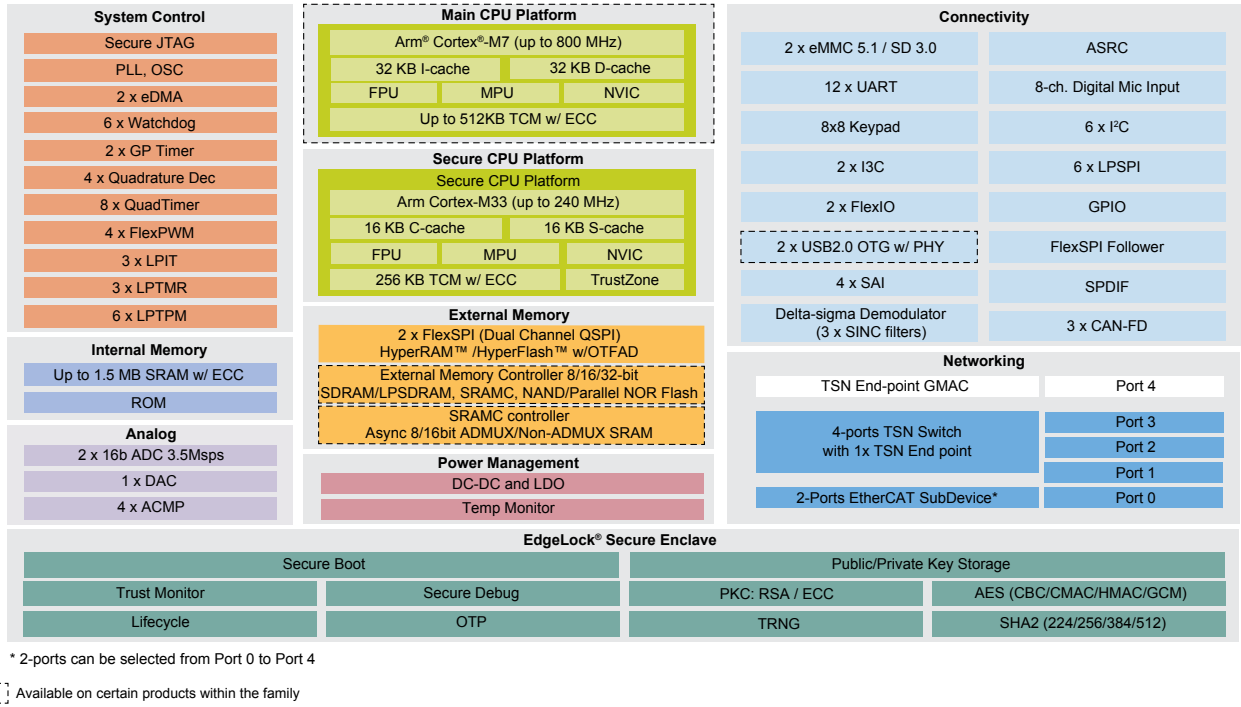
ML-based edge applications

Audio subsystem

Portfolio highlights

- Variety of high performing Arm® Cortex®-M and DSP cores
- Hardware accelerators like PXP, 2D GPU, and PowerQuad DSP coprocessor
- Large, low-latency on-chip SRAM memory
- Low-power operation
  - Low dynamic power with integrated DC-DC converter
  - Low-power quiescent power modes
- Highly integrated with advanced multimedia for GUI and enhanced HMI
- Extensive memory interface options, including Quad/Octal SPI and HyperFlash™/HyperRAM™, SDRAM, NAND Flash, NOR Flash, SD/eMMC
- Security
  - Hardware protected keys for secure boot
  - On-the-fly decryption for execute-in-place (XIP) from Quad/Octal SPI/HyperFlash
  - Hardware elliptic curve cryptography
  - Cryptography hardware accelerators
- Networking
  - HIntegrated Gb Time Sensitive Network (TSN) to support multiple communication protocols

i.MX RT1000 and i.MX RT1100 Crossover MCUs block diagram



* 2-ports can be selected from Port 0 to Port 4

Available on certain products within the family

Memory expansion with i.MX RT MCUs

- No need for on-chip flash = Reduced cost, higher frequencies enabled, increased performance
- Increased capability and efficiency
- External memory expansion (Serial flash/ PSRAM, quad or octal data lines)
- High densities of SRAM function as TCM with "zero-wait" single-cycle access to dramatically increase system performance

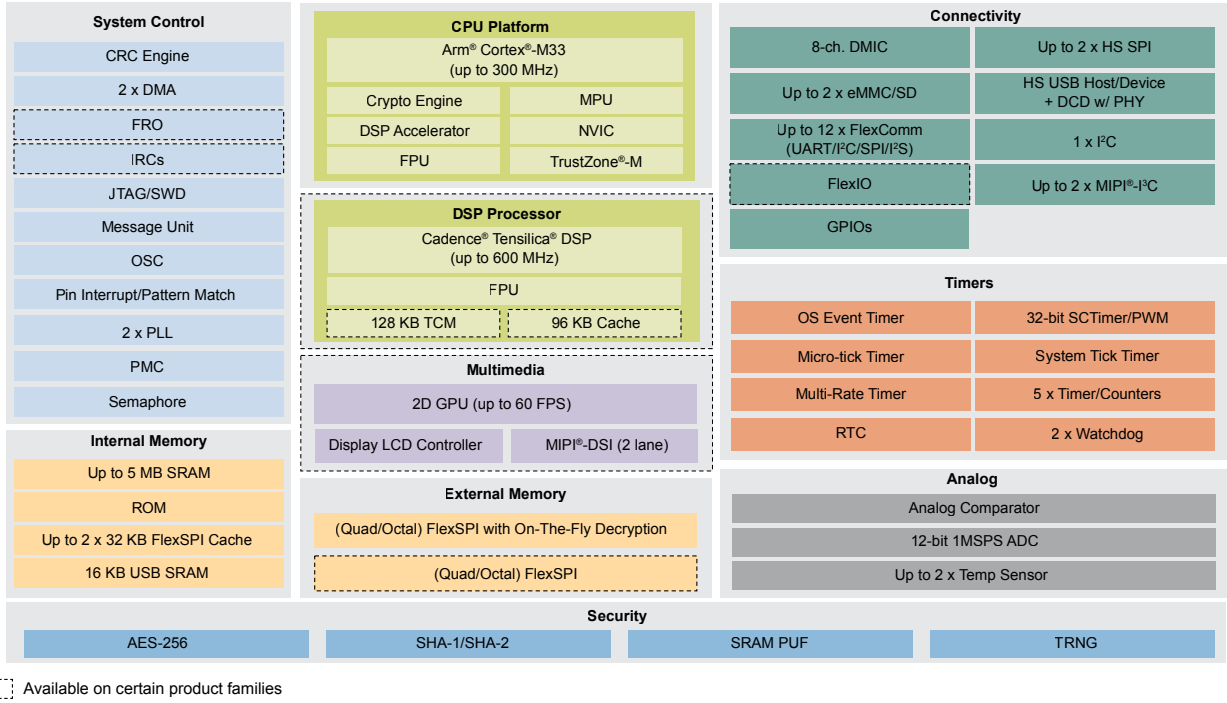
Next-generation HMI design

- Parallel camera interface, dedicated LCD controllers and the PXP for 2D graphics acceleration support scalable solutions for HMI applications
- The PXP high performance pixel processor
  - used for operations such as color-space conversion, alpha blending and rotation
  - supports traditional pixel/frame processing paths for still-image and video processing applications
- The i.MX RT1160 and i.MX RT1170 devices also offer MIPI CSI and DSI, and a 2D GPU with vector graphics acceleration
- NXP's GUI Guider tool with drag and drop editor enables rapid development of high quality HMIs with the open-source LVGL graphics library
- Rich 3rd party ecosystem enabling embedded graphics delivered as Open-CMSIS-Packs

Advanced security

- Secure development with the i.MX RT family leverages years of experience gained from its applications processor lineage
- ROM firmware used on devices, tools used in development/manufacturing, and software and tools for secure boot lay the foundation required to meet today's security requirements
- Networking
  - Integrated Gb Time Sensitive Network (TSN) to support multiple communication protocols

i.MX RT500 and i.MX RT600 Crossover MCUs block diagram



Low power design

- The i.MX RT500 and i.MX RT600 families are optimized to achieve the lowest possible power consumption at the required performance levels
- i.MX RT600 and i.MX RT500 offer reduced power modes and use low power design techniques to enable long battery life in active and sleep modes

Maximum flexibility with FlexIO

- Highly configurable FlexIO module provides a wide range of functionality
  - Supports variety of communication protocols including: UART, I²C, SPI and I²S
  - Provides flexibility in your design to add more of the peripherals you need
  - Consists of a flexible 16-bit timer with support for a variety of trigger, reset, enable and disable conditions

MCU + DSP = Unlimited capabilities

- In i.MX RT500 and i.MX RT600, Cadence® Tensilica® HiFi 4 and Fusion DSPs
  - Enhance your design with audio, voice, and sensor capabilities while maintaining low power consumption with the i.MX RT600 and RT500 MCUs
  - Provide the right level of high-performance audio digital signal processing power
  - Include algorithm-specific operations for a fully programmable approach
  - Support multiple existing and developing standards as well as specific algorithms

Get started now

Take advantage of the robust enablement to reduce development effort and speed time-to-market with a comprehensive offering of software and development 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.

The i.MX RT evaluation kits (EVKs) help you take your design to the next level by reducing complexity and accelerating time to market. You can also enjoy the ability to expand upon this feature-rich EVK with compatible Arduino™ hardware shields.

Development tools

- MCUXpresso IDE
- MCUXpresso for Visual Studio Code
- IAR Embedded Workbench®
- Kiel® MDK
- Cadence Tensilica Xplorer IDE
- Lauterbach
- P&E
- Segger

Software

- MCUXpresso SDK
- Cadence Tensilica Xplorer SDK
- Zephyr® operating system (OS)
- NXP® eIQ® machine learning software
  - TensorFlow Lite inference engine
  - Arm CMSIS-NN kernels
  - Glow neural network compiler

Libraries and codecs

Libraries and codecs are distributed and licensed for customer production use on specific NXP devices.

The following libraries and codecs are provided:

- Ogg-Vorbis Decoder
- Asynchronous and Synchronous Sample Rate Converter (SRC) aacPlus-v2 Audio Decoder
- aacPlus-v2 Audio Decoder
- Opus Codec
- SBC Encoder / Decoder
- Xtensa Audio Framework (XAF)
- NatureDSP Library
- CMSIS DSP Library (Arm Cortex M33, accelerated by PowerQuad where available)
- RPMsg Lite
- NN library

Motor control

Personal health and fitness

Consumer products

i.MX RT1000 MCU families | Standard key features

i.MX RT1000 MCUs are NXP's first generation crossover MCUs, which combine high performance and integration with ease of use and real-time functionality. The i.MX RT1000 MCUs run on the Arm Cortex-M7 cores up to 600 MHz.

Feature	i.MX RT1010	i.MX RT1015	i.MX RT1020	i.MX RT1024	i.MX RT1040	i.MX RT1050	i.MX RT1060	i.MX RT1064
Core/Speed	Arm Cortex-M7 @ 500 MHz	Cortex-M7 @ 500 MHz	Cortex-M7 @ 500 MHz	Cortex-M7 @ 500 MHz	Cortex-M7 @ 600 MHz	Cortex-M7 @ 600 MHz	Cortex-M7 @ 600 MHz	Cortex-M7 @ 600 MHz
Cache	16 KB-I, 8 KB-D	16 KB-I, 16 KB-D	16 KB-I, 16 KB-D	16 KB-I, 16 KB-D	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D
TCM	Up to 128 KB	Up to 128 KB	Up to 256 KB	Up to 256 KB	Up to 512 KB	Up to 512 KB	Up to 512 KB	Up to 512 KB
On-chip RAM	128 KB	128 KB	256 KB	256 KB	Up to 1MB	512 KB	1 MB	1 MB
On-chip flash	-	-	-	4 MB	-	-	-	4 MB
External memory	-	-	8-/16-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-bit interface for SDRAM, SRAM, NOR, NAND
Quad/Octal SPI/ HyperBus™	Dual-channel/ 8-bit	Dual-channel/ 8-bit	Dual-channel/ 8-bit	Up to 2 x dual-channel/ 8-bit	Up to 2 x dual-channel/ 8-bit	Dual-channel/ 8-bit	Up to 2 x dual-channel/ 8-bit	Up to 2 x dual-channel/ 8-bit
SDIO	-	-	SD 3.0/eMMC 4.5 x 2	SD 3.0/eMMC 4.5 x 2	SD 3.0/eMMC 4.5 x 2	SD 3.0/eMMC 4.5 x 2	SD 3.0/eMMC 4.5 x 2	SD 3.0/eMMC 4.5 x 2
Ethernet	-	-	10/100 Mbit/s x 1 w/ IEEE 1588	10/100 Mbit/s x 1 w/ IEEE 1588	10/100 Mbit/s x 2 w/ IEEE 1588	10/100 Mbit/s x 1 w/ IEEE 1588	10/100 Mbit/s x 2 w/ IEEE 1588	10/100 Mbit/s x 2 w/ IEEE 1588
USB with PHY	OTG, HS/FS x 1	OTG, HS/FS x 1	OTG, HS/FS x 1	OTG, HS/FS x 1	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	-	-	FlexCAN x 2	FlexCAN x 2	FlexCAN x 2 + CAN FD x 1	FlexCAN x 2	FlexCAN x 2 + CAN FD x 1	FlexCAN x 2 + CAN FD x 1
Graphics	-	-	-	-	PxP for 2D acceleration	PxP for 2D acceleration	PxP for 2D acceleration	PxP for 2D acceleration
CSI	-	-	-	-	-	8-/10-/16-bit parallel	8-/10-/16-bit parallel	8-/10-/16-bit parallel
LCD	-	-	-	-	8-/16-/18-/24-bit parallel	8-/16-/18-/24-bit parallel	8-/16-/18-/24-bit parallel	8-/16-/18-/24-bit parallel
Security	TRNG, AES-128, SHA, Secure Boot, Boot, OTFAD	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE	TRNG, AES-128, SHA, Secure Boot, BEE
UART/SPI/I²C/FlexIO	4/2/2/1	4/2/2/1	8/4/4/1	8/4/4/1	8/4/4/3	8/4/4/2	8/4/4/3	8/4/4/3
I²S/SPDIF	2/1	3/1	3/1	3/1	3/1	3/1	3/1	3/1
ADC	1M sample/s x 1	1M sample/s x 1	1M sample/s x 2	1M sample/s x 2	1M sample/s x 2	1M sample/s x 2	1M sample/s x 2	1M sample/s x 2
Analog Comparator	-	-	4	4	4	4	4	4
FlexPWM/quad timer/quad ENC	1/0/0	1/1/1	2/2/2	2/2/2	4/4/4	4/4/4	4/4/4	4/4/4
GPT/PIT/WDOG	2/1/4	2/1/4	2/1/4	2/1/4	2/1/4	2/1/4	2/1/4	2/1/4
Package	80 LQFP	100 LQFP	100 LQFP, 144 LQFP	144 LQFP	169 BGA	196 BGA	225 BGA, 196 BGA	196 BGA
Temperature (T_j)	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C	Commercial: 0 °C to 95 °C Extended Industrial: -40 °C to 125 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C Extended Industrial: -40 °C to 125 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C

i.MX RT1100 MCU Families | Standard key features

The i.MX RT1180 MCU family includes a Gb Time Sensitive Networking (TSN) Switch to enable real-time rich networking for both TSN-based and industrial real-time communications.

Feature	i.MX RT1160	i.MX RT1170	i.MX RT1180
Core/Speed	Cortex-M7 @ 600 MHz, Cortex-M4 @ 240 MHz	Arm Cortex-M7 @ 1 GHz, Cortex-M4 @ 400 MHz	Arm Cortex-M7@800 MHz, Cortex-M33@300 MHz
Cache	32KB/32KB(C-M7) 16KB/16KB(C-M4)	32KB/32KB(C-M7) 16KB/16KB(C-M4)	32KB/32KB(C-M7) 16KB/16KB(C-M33)
TCM	512KB C-M7 TCM, 256KB C-M4 TCM	512KB C-M7 TCM, 256KB C-M4 TCM	512KB C-M7 TCM, 256KB C-M33 TCM
On-chip RAM	1 MB	2 MB	1.5 MB
On-chip flash	-	-	-
External memory	8-/16-/32-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-/32-bit interface for SDRAM, SRAM, NOR, NAND	8-/16-/32-bit interface for SDRAM, SRAM, NOR, NAND
Quad/Octal SPI/ HyperBus™	1 x dual-channel/8-bit 1 x dual-channel/ 16-bit	1 x dual-channel/8-bit 1 x dual-channel/ 16-bit	1 x dual-channel/8-bit 1 x dual-channel/ 16-bit
SDIO	SD 3.0/eMMC 5.0 x 2	2x eMMC 5.0 / SDIO 3.2	2x eMMC 5.1 / SDIO 3.0
Ethernet	1 Gbit/s w/ AVB + 10/100 Mbit/s w/ IEEE 1588	1 Gbit/s w/ AVB + 1Gbit/s w/ TSN + 10/100 Mbit/s w/ IEEE 1588	1x 1G TSN,NETC 3.0 * 5 ports
USB with PHY	2x HS USB 2.0 OTG + PHY	2x HS USB 2.0 OTG + PHY	2x HS USB 2.0 OTG + PHY
CAN	CAN FD x 3	CAN FD x 3	CAN FD x 3
Graphics	PxP for 2D acceleration, 2D GPU with vector graphics acceleration	PxP for 2D acceleration, 2D GPU with vector graphics acceleration	-
CSI	8-/10-/16- bit parallel, 2-lane MIPI CSI	8-/10-/16- bit parallel, 2-lane MIPI CSI	-
LCD	8-/16-/18-/24-bit parallel, 2-lane MIPI DSI	8-/16-/18-/24-bit parallel, 2-lane MIPI DSI	-
Security	"TRNG, AES-128/256, SHA1/SHA2, Secure Boot, RSA4096, DES/3DES, Tamper Detection PUF, UDF, Secure RAM, Elliptic Curve Cryptography"	"TRNG, AES-128/256, SHA1/SHA2, Secure Boot, RSA4096, DES/3DES, Tamper Detection PUF, UDF, Secure RAM, Elliptic Curve Cryptography"	EdgeLock™ Secure Enclave. Lifecycle, Trust Provision, Attestation, Secure Boot, Tamper detection, AES, AES-GCM, PKA, ECDSA/ECDH, TRNG, AES-256, SHA, DES, 3DES, RSA4096, ECC1024, UniqueID
"UART/SPI/I2C/ FlexIO"	12/6/6/2	12/6/6/2	12/6/6/2
I2S/SPDIF	4/1	4/1	4/1
ADC	2 x 12b, 4.2Msps	2 x 12b, 4.2Msps	2 x 16b, 3.5Msps
Analog Comparator	4	4	4
FlexPWM/quad timer/quad ENC	4/4/4	4/4/4	4/8/4
GPT/PIT/WDOG	6/2/6	6/2/6	2/3/6
Package	289 BGA	289 BGA	289 BGA, 144 BGA
Temperature (Tj)	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C Extended Industrial: -40 °C to 125 °C	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C Extended Industrial: -40 °C to 125 °C Automotive -40 °C to 125 °C"	Commercial: 0 °C to 95 °C Industrial: -40 °C to 105 °C Extended Industrial: -40 °C to 125 °C Automotive -40 °C to 125 °C"

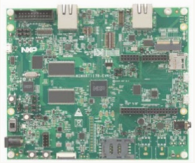
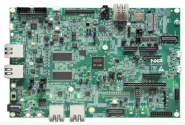
i.MX RT500 and i.MX RT600 MCU Families | Standard key features

The i.MX RT500 and i.MX RT600 families of secure and embedded crossover MCUs pair a high-performance DSP core with the real-time functionality of an Arm Cortex-M33 core to help unlock the potential of IoT edge applications.

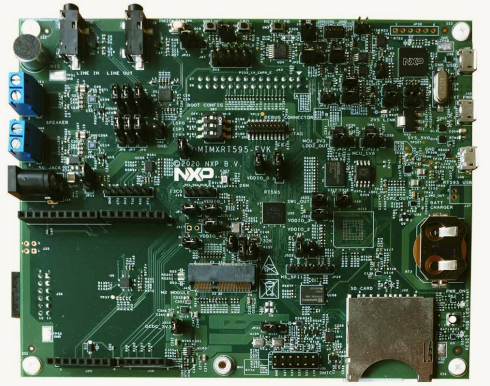
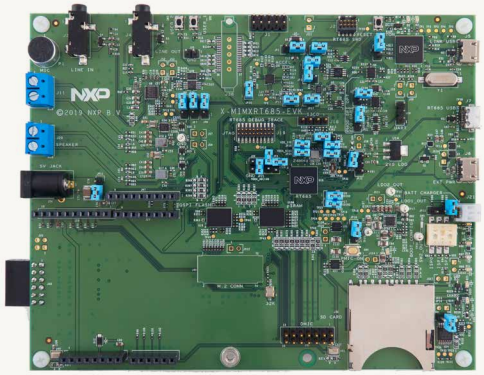
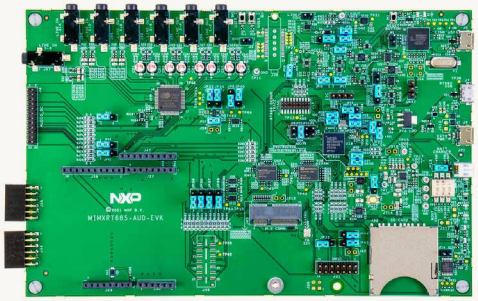
Feature	i.MX RT500	i.MX RT600
Core/Speed	Arm Cortex-M33 @ 275 MHz + Cadence® Tensilica® Fusion F1 DSP* @ 275 MHz	Arm Cortex-M33 @ 300 MHz + Cadence Tensilica HiFi 4 DSP @ 600 MHz
Cache	2 x 32 KB (FlexSPI)	32 KB (FlexSPI), 96 KB (DSP)
SRAM	Up to 5 MB	4.5 MB
Quad/Octal SPI HyperBus	2 x dual-channel, on-the-fly decryption (on 1 x FlexSPI)	1 x dual-channel, on-the-fly decryption
SDIO	2 x eMMC 5.0/SD 3.0	2 x eMMC 5.0/SD 3.0
USB with PHY	1 x HS/FS	1 x HS/FS
Graphics*	2D GPU with vector graphics acceleration	-
CSI	8/10/16-bit parallel (FlexIO)	-
LCD	8/10/16/18/24-bit parallel (FlexIO) + LCD Interface + MIPI DSI	-
Security	AES-256, SHA1/SHA2, secure boot, SRAM PUF, TRNG, cryptography hardware coprocessor attached to Cortex-M33 CPU	AES-256, SHA1/SHA2, secure boot, SRAM PUF, TRNG, cryptography hardware coprocessor attached to Cortex-M33 CPU
FlexComm	Up to 17 x FlexComm (14x config. as I^2C/UART/SPI/I^2S + 2 x HS SPI + 1 x I^2C)	Up to 10 x FlexComm (8 x config. as I^2C/UART/SPI/I^2S + 1 x HS SPI + 1 x I^2C)
FlexIO/HS SPI/I^2C/I^3C	1/2/1/2	0/1/1/1
ADC	1M sample/s	1M sample/s
Analog Comparator	1	1
PWM	10 GP/PWM outputs + 8 GP inputs	10 GP/PWM outputs + 8 GP inputs
DMIC	8 channels w/ decimators and voice activation detect	8 channels w/ decimators and voice activation detect
GPT/SCT/WDOG	5/1/2	5/1/2
GPIOs	Up to 136	Up to 147
Packages	249 FOWLP, 141 CSP	249 FOWLP, 176 BGA, 114 CSP
Temperature (T_a)	Commercial: -20 °C to 70 °C	Commercial: -20 °C to 85 °C

*Product variants without integrated DSP and/or graphics are also available.

i.MX RT1000 and i.MX RT1100 EVALUATION KIT FEATURES EVK

	i.MX RT1010/RT1015 EVK	i.MX RT1020/RT1024 EVK	i.MX RT1040 EVK	i.MX RT1050 EVK	i.MX RT1060/RT1064 EVK	i.MX RT1160 EVK	i.MX RT1170 EVK	i.MX RT1180 EVK
Processor	MIMXRT1011DAE5A / MIMXRT1015DAF5A	MIMXRT1021DAG5A / MIMXRT1024DAG5A	MIMXRT1042XJM5B	MIMXRT1052DVL6B	MIMXRT1062DVL6B / MIMXRT1064DVL6A	MIMXRT1166DVM6A	MIMXRT1176DVMAA	MIMXRT1189CVM8B
Memory	• 128 Mbit QSPI flash	• 256 Mbit SDRAM memory • 64 Mbit QSPI Flash • TF socket for SD card	• 256 Mbit SDRAM memory • 64 Mbit QSPI Flash • TF socket for SD card	• 256 Mbit SDRAM memory • 512 Mbit HyperFlash™ • 64 Mbit QSPI flash • TF socket for SD card	• 256 Mbit SDRAM memory • 512 Mbit HyperFlash • 64 Mbit QSPI flash • TF socket for SD card	• 512 Mbit SDRAM memory • 512 Mbit Octal flash • 128 Mbit QSPI flash • TF socket for SD card	• 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	• 64Mbit HyperRAM memory • 512 Mbit SDRAM memory • 512 Mbit Octal Flash • 128 Mbit QSPI Flash • 64 Mbit LPSPI Flash • Flash daughter card interface • TF socket for SD card
Graphics	N/A	N/A	• Parallel LCD connector	• Parallel LCD connector • Camera sensor module	• Parallel LCD connector • Camera sensor module	• MIPI LCD connector • MIPI camera sensor connector	• MIPI LCD connector • MIPI camera sensor connector	No
Audio	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone • SPDIF connector	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone • SPDIF connector • Audio extension support(RT1060EVK)	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone (analog and digital)	• Audio codec • 4-pole audio headphone jack • External speaker connection • Microphone (analog and digital) • SPDIF connector	• Audio codec • 8CH-DMIC extension • 3.5mm audio headphone jack • External speaker connection • SPDIF Connector
Connectivity	• Micro USB OTG connector • Arduino interface	• Micro USB host connector • Micro USB OTG connector • Ethernet (10/100T) connector • CAN transceivers • Arduino interface	• Micro USB OTG connector • Ethernet (10/100T) connector • CAN transceivers • Arduino interface	• Micro USB host connector • Micro USB OTG connector • Ethernet (10/100T) connector • CAN transceivers • Arduino interface	• Micro USB host connector • Micro USB OTG connector • Ethernet(10/100T) connector • CAN transceivers • Arduino interface • M.2 interface(RT1060EVK) • MFI interface(RT1060EVK)	• 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	• 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	• 3x Ethernet (10/100/1000M) connectors for TSN switch • 2x Ethernet (10/100M) connectors for EtherCAT, TSN switch and endpoint • 2x Micro-USB OTG connectors • M.2 connector • 2x CAN transceivers • ARDUINO® interface
Debug	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger	• JTAG Connector • Onboard DAP-Link debugger
Sensor	• 6-axis e-compass sensor • NXP FXOS8700CQ	• 6-axis e-compass sensor • NXP FXOS8700CQ	• 3-axis accelerometer sensor • NXP FXLS8974CFR3	• 6-axis e-compass sensor • NXP FXOS8700CQ	• 6-axis e-compass sensor • NXP FXOS8700CQ	• 6-Axis ecompass (3-Axis magnetometer, 3-Axis accelerometer) sensor FXOS8700CQ	• 6-Axis ecompass (3-Axis magnetometer, 3-Axis accelerometer) sensor FXOS8700CQ	• 3-axis MEMS accelerometer sensor FXLS8974CFR3 for I2C • 3D accelerometer and 3D gyroscope LSM6DSOXTR for I3C • Delta-Sigma ADC Modulator AMC1106M05DWV for SINC
Camera Sensor	N/A	N/A	N/A	N/A	MT9M114 image sensor (included)	Camera sensor OV5640 MIPI camera module	Camera sensor OV5640 MIPI camera module	No
Display	N/A	N/A	RK043FN02H-CT 4.3" (purchase separately)	RK043FN02H-CT 4.3" (purchased separately)	RK043FN02H-CT 4.3" (purchased separately)	RK055HDMIPI4M (5.5" 720p display)	RK055HDMIPI4M (5.5" 720p display)	No
Part Number	MIMXRT1010-EVK / MIMXRT1015-EVK	MIMXRT1020-EVK / MIMXRT1024-EVK	MIMXRT1040-EVK	IMXRT1050-EVKB	MIMXRT1060-EVKB / MIMXRT1064-EVK	MIMXRT1160-EVK	MIMXRT1170-EVK	MIMXRT1180-EVK
Board Image								

i.MX RT500 and i.MX RT600 Evaluation kit features

	i.MX RT500 EVK	i.MX RT600 EVK	i.MX RT685-AUD-EVK
Processor	MIMXRT595SFFOC	MIMXRT685SFVKB	MIMXRT685SFVKB
Memory	• 64 MB Macronix Octal SPI Flash • 8 MB PSRAM • 16 GB SanDisk eMMC	• 64 MB Macronix Octal SPI Flash • 8 MB PSRAM	• 64MB Macronix MX25U51245GXDI00 quad SPI flash • 64MB AP Memory APS6408L-OBM-BA PSRAM
Graphics	MIPI-DSI connector	N/A	N/A
Audio	• DMIC header • Dual Knowles SPH0641lM4H digital microphone • Stereo audio codec with audio line in/out • Dual Class-D amplifiers with speaker connectors	• DMIC header • Dual Knowles SPH0641lM4H digital microphone • Stereo audio codec with audio line in/out • Dual Class-D amplifiers with speaker connectors	• Cirrus Logic CS42448 6 input / 8 output codec • 4 x ¼" stereo output jacks • 3 x ¼" stereo input jacks • Audio board expansion connector • 8 channel DMIC expansion board connector
Connectivity	• HS/FS USB port with micro-A/B connector • SD card slot • Arduino and PMOD expansion connectors	• HS/FS USB port with micro-A/B connector • SD card slot • Arduino and PMOD expansion connectors	• High/full-speed USB port with micro-A/B connector for host or device functionality • I3C pin header • SD card slot • M.2 connector • Arduino connectors • PMOD expansion connectors
Debug	• 10-pin and 20-pin JTAG/SWD connectors • On-board debug probe, with VCOM and CMSIS-DAP or J-link firmware options	• 10-pin and 20-pin JTAG/SWD connectors • On-board debug probe, with VCOM and CMSIS-DAP or J-link firmware options	• On-board LPC-Link2 type debug probe with VCOM and CMSIS-DAP or J-link firmware options • USB to SPI bridge • 20-pin Coresight debug connectors supporting use of external debug / trace probes • Miktor trace connector
Sensor	• 6-axis e-compass sensor • NXP FXOS8700CQ	• 6-axis e-compass sensor • NXP FXOS8700CQ	• On-board SPH0641lM4H digital microphone • InvenSense ICM 42688-P 6-axis I3C motion sensor
Display	• RK055HDMIPI4M* (MIPI I/F) - 5.5", 720 x 1280 • G1120B0MIPI* (MIPI I/F) -1.2", 390 x 390 • MIKROE-2406** (FlexIO I/F) - 5", 800 x 480, capacitive touch	N/A	• Reset and user buttons for easy testing of software functionality • User LEDs
Part Number	MIMXRT595-EVK	MIMXRT685-EVK	MIMXRT600-AUD-EVK
Board Image			

* Purchased separately from NXP
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