



i.MX RT1180 Crossover MCUs Industry 4.0 Network Solution

The i.MX RT1180 crossover 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. The i.MX RT1180 supports multiple protocols to bridge communication between existing systems and future Industry 4.0 applications.

Product highlights

Designed for efficiency

- Dual core architecture offering 800 MHz Arm® Cortex®-M7 and Cortex®-M33 for ultimate design flexibility
- Improved real-time execution through large low latency Tightly Coupled Memories (TCM) and embedded shared memories
- Designed for power efficiency with use cases starting from 250 mW across industrial environments
- Scalable and seamless host/companion chip communication going up to 1Gbps without an on-board PHY helps reduce power and cost in industrial designs. High-speed 16-bit Analog to Digital converters, advanced timer/PWM and Delta-Sigma demodulators to supporting multi-axis motor control

Multiprotocol Networking

- Crossover MCU with an integrated Gb Time Sensitive Network (TSN) to support multiple communication protocols
 - Real-time industrial ethernet protocols such as Profinet, Ethernet/IP, EtherCAT, CC-Link IE Field, HSR, and more
 - Latest generation of TSN standards compliant to IEC 60802 for Industrial Automation
 - TSN based protocols such as OPC UA Pub-Sub, Profinet over TSN and CC-Link IE TSN

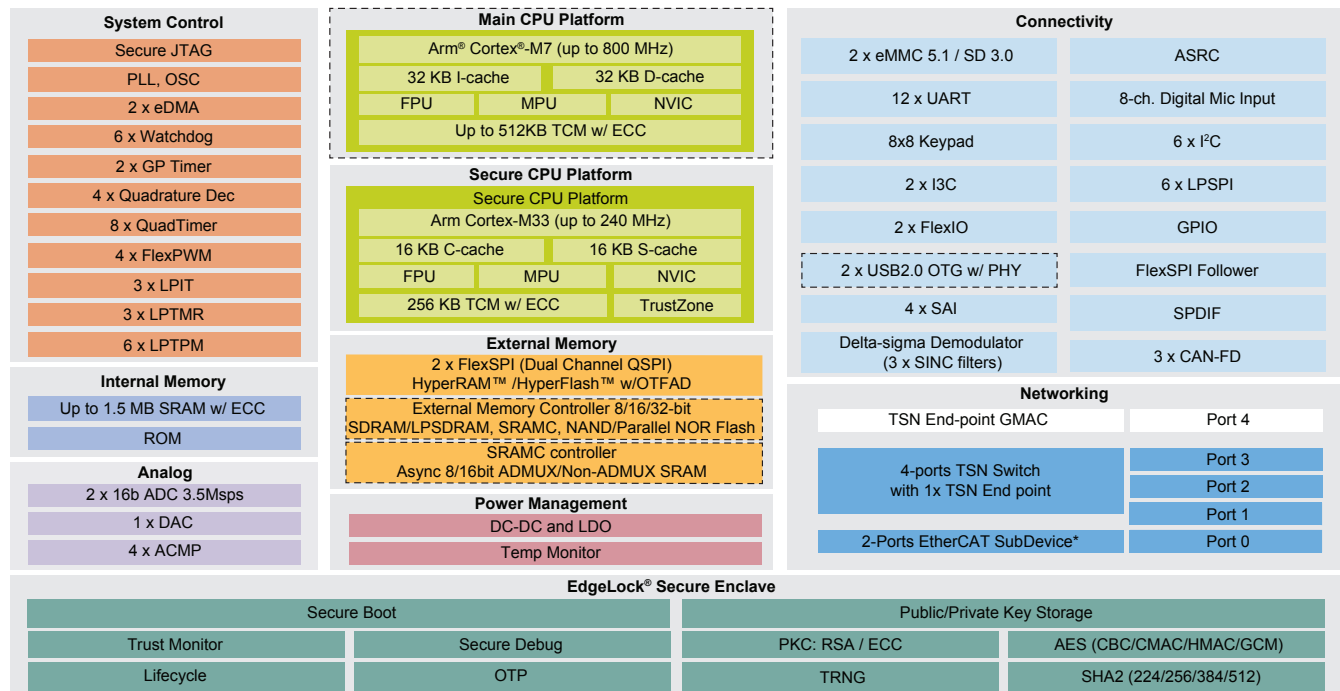
Advanced security

- Trusted Resource Domain Controller (TRDC)
- TrustZone®-M (TZ-M) on Cortex-M33
- Physical Unclonable Function (PUF)
- EdgeLock® secure enclave
- Providing component level foundation for IEC 62443 system compliance

Target applications

- Industrial control
- Compact motion control
- Industrial networking and gateway
- Network companion
- AC/Servo drives
- Automotive: In-vehicle networking

i.MX RT1180 Block Diagram



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

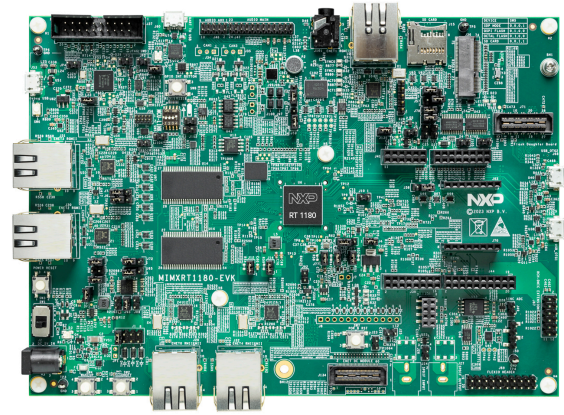
Available on certain products within the family

i.MX RT1180 MCU Family configurations

	i.MX RT1189	i.MX RT1187	i.MX RT1182	i.MX RT1181
Cortex M7	800 MHz	800 MHz	—	—
Cortex M33	240 MHz	240 MHz	240 MHz	240 MHz
TCM	512KB + 256KB w ECC	512KB + 256KB w ECC	256KB w ECC	256KB w ECC
Total OCRAM	1.5MB w ECC	1.5MB w ECC	1 MB w ECC	1 MB w ECC
GPIO	173	173	82	82
External Memory	SEMC 1 x 32b, 2 x FLEXSPI, SRAMC	SEMC 1 x 32b, 2 x FLEXSPI, SRAMC	2 x FLEXSPI, SRAMC	2 x FLEXSPI, SRAMC
TSN Switch	4+1 port	4+1 port	2+1 port	2+1 port
EtherCAT SubDevice	Yes (2-ports)	No	Yes (2-ports)	No
USB	USB 2.0 OTG x 2 w PHY	USB 2.0 OTG x 2 w PHY	—	—
LPUART	12	12	8	8
LPI2C	6	6	3	3
CAN FD	3	3	2	2
QTimer	8	8	4	4
LPTPM	6	6	3	3
LPTMR	3	3	1	1
SINC Filter	3 x 4ch	3 x 4ch	—	—
ADC	2 x 16b 3.5Msps	2 x 16b 3.5Msps	1 x 16b 3.5Msps	1 x 16b 3.5Msps
Package	289 BGA (14 x 14mm)	289 BGA (14 x 14mm)	144 BGA (10 x 10mm)	144 BGA (10 x 10mm)

i.MX RT1180 MCU Family configurations

Processor	<ul style="list-style-type: none"> MIMXRT1189CVM8B (289 MAPBGA, 14 x 14 mm, 0.8 mm pitch)
Memory and Mass Storage	<ul style="list-style-type: none"> SDRAM 256 Mb, 200MHz 4 Mbit LPSPi Flash 512 Mbit Hyper Flash 128 Mbit Quad SPI Flash TF Card Slot
Audio	<ul style="list-style-type: none"> 3.5 mm Audio Stereo Headphone Jack Board-Mounted Microphone Left & Right Speaker Out Connectors SPDIF Interface(unpopulated) Audio Extension connector
Connectivity	<ul style="list-style-type: none"> 10/100 Mbit/s Ethernet Connector. PHY Chip: RTL8201FI-VC-CG 10/100/1000 Mbit/s Ethernet Connector. PHY Chip: RTL8211FDI-CG 2x Micro-USB OTG connectors 2x CAN Bus Connector ARDUINO® interface, M.2 interface, Flash daughter card, Mikro-e, 8CH DMIC
Debug	<ul style="list-style-type: none"> JTAG 20-pin Connector (SWD by default) MCU-Link: LPC55S69JEV98
Sensor	<ul style="list-style-type: none"> FXLS8974CFR3: 3-Axis Accel
User Indicator	<ul style="list-style-type: none"> Power Status, Reset, USER LED
PCB	<ul style="list-style-type: none"> 7.677-inch x 5.511-inch (19.5cm x 14cm), 6-layer board



Get started now

The i.MX RT1180 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.

Visit [nxp.com/imxrt1180](https://www.nxp.com/imxrt1180)

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