45 mm

42 mm   actual size

GOLD PARTNER NXP

SUSTAINABLE TECHNOLOGY

CE

CERTIFIED SVENSK CERTIFIERING ISO 9001

CERTIFIED SVENSK CERTIFIERING ISO 14001

iMX RT1166 uCOM Board Feature Highlights

- NXP i.MX RT1166 Arm® Cortex®-M7, up to 600 MHz, and Cortex-M4, up to 240 MHz
- 16 MByte QSPI Flash
- 32 MByte SDRAM, 32-bit databus
- Parallel RGB and MIPI-DSI graphical output
- MIPI-CSI camera input
- Low-power consumption - very power efficient
- FreeRTOS BSP
- **Murata 1XK Wi-Fi/BT module** supporting 802.11 a/b/g/n and BT/BLE 5.2 mounted
- 42 x 45 mm small form factor
- Long term availability

Introduction

The **iMX RT1166 uCOM Board** provides a quick and easy solution for implementing a high-performance Arm Cortex-M7/M4 based design. The i.MX RT1166 is the highest performing Cortex-M solution with Real Time Operation and an applications processor level of functionality. It has very low dynamic power consumption, enabled by integrated DC-DC converter and efficient power gating.

The i.MX RT1166 has a **2D vector graphics core** and has display interfaces, supporting up to 1280x800px resolution at 60Hz. It also has high security enabled by AES-128/256, Elliptical Curve Cryptography, RSA-4096 encryption algorithms, hashing acceleration for SHA-256/512 and On-the-fly QSPI Flash Decryption.

Rapid and easy development with support from major microcontroller tool chains. The BSP contains a FreeRTOS port.
Typical applications are graphical interface solutions for home, building and industrial control, communication solutions and connected real-time systems.

Specification

Processor	Cores / MCU	ARM Cortex-M7/Cortex-M4 / NXP i.MX RT1166
	Frequency	600/500 MHz for M7 and 240 MHz for M4 (commercial/industrial temp range)
Memory	On-chip SRAM	1 MByte without ECC or 896 MByte with ECC (768 KByte can be flexibly configured as Tightly Coupled Memory) and 4KByte Secure always-on RAM
	SDRAM	32 MByte, 32-bit databus
	FLASH	16 MByte QSPI
Graphics output	MIPI-DSI	2 lanes supporting up to 1.6 GHz bit rate
	Parallel RGB	24-bit with resolution up to 1280x800px at 60Hz.
	2D Graphics Engine	2D GPU with OpenVG 1.1 support and 2D accelerator (PXP)
Graphics input	CMOS sensor interface (camera)	1x MIPI-CSI2, 2 lanes, up to 1.5 Gbps Parallel input bus also available, up to 16 bits available
Wi-Fi/BT		Murata LBEE5CJ1XK (1XK) Wi-Fi/BT module, 802.11 a/b/g/n and BT/BLE 5.2, SDIO interface
Ethernet		No on-board Ethernet Phy. One Gigabit Ethernet interface and one 100 Mbps Ethernet interface can be supported on carrier board (will remove the possibility to use the parallel RGB interface).
I/O (all functions are not available at the same time)	USB	2x FS USB2.0 OTG
	Memory card/SDIO	2x SD3.0, One used for optional on-board Wi-Fi/BT module
	UART, SPI, I2C, Audio	12x UART, 6x SPI, 6x I2C, 4x SAI, 1x S/PDIF
	CAN	3x CAN bus 2.0B
	GPIO, FlexIO, Timers	Large number of GPIOs and keypad pins, 2x FlexIO blocks, 6x GPT, 2x PIT, 4x QTimer, 4x PWM
	ADC, DAC, Analogue	16ch ADC 12-bit resolution, 1x 12-bit DAC, 4x comparators,
Other	Watchdog	On-board watchdog functionality
	RTC	On-chip iMX RT1166
	Power Management	On-chip iMX RT1166 power management
	Accelerators	Encryption engine co-processor, True random number generator

Power	E2PROM	64kbit I2C-E2PROM
	Supply voltage	4 to 5.0V input. On-board 3.3V (about 1A) and 1.8V (about 0.5A) supplies for external use on carrier board
	Power consumption	See datasheet for details. Typically much less than 1 Watt.
Environment	Operating Temp.	0 - 70° or -40 - 85° Celsius
	Operating Humidity	5 - 90% relative humidity, non-condensing
Mechanical	Dimensions (WxHxD)	42 x 45 x 5 mm, EAuCOM form factor
Connectors		2x DF40C-100 and 2x DF40C-40 connectors, 0.4 mm pitch. 280 pins in total
		u.fl. antenna connector for Wi-Fi/BT module

Note that all interfaces may not be available simultaneously due to I/O multiplexing limitations.

Block Diagram
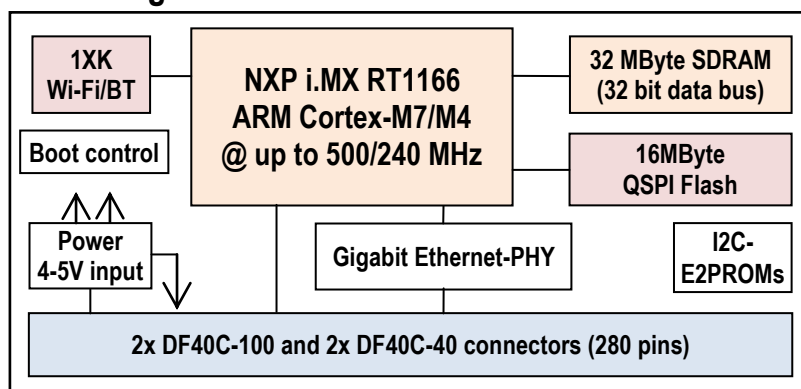
Ordering Information

Part No.[1]	CPU	Core Frequency	SDRAM	Wi-Fi/BT	QSPI	Operating Temp.
EAC00396	MIMXRT1166XVM5A	500/240 MHz max	32 MByte	1XK	16 MByte	-40 - 85 °C

[1] Standard configurations listed. Other memory configurations on request. All configurations may not be stocked.

Support Highlights

Embedded Artists is a reliable and competent partner
- we help you become successful!

- Professional and responsive support
- Carrier boards with reference implementations
- Custom Carrier board design
- Customization
  - Different pinning, supply voltage, memory sizes, etc
  - Single Board Computer (SBC) solutions
- Display solutions
- Mechanical solutions
- Schematic review of customer carrier board designs
- Driver and application development

Development Kit

The iMX RT1166 uCOM Board are supported by the **iMX RT1166 uCOM Developer's Kit** that provides a quick path to get started with development and integration work. The kits provides reference implementations of key interfaces. Ordering part No. **EAK00395**
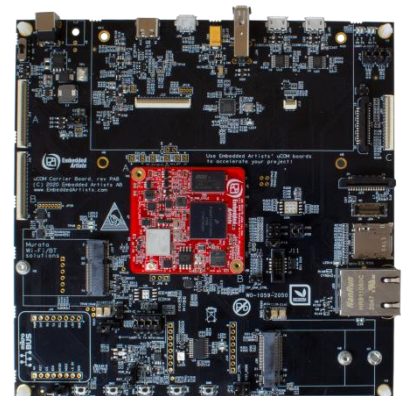
Disclaimer: Embedded Artists reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice.