

FET-MX9352-C SoM

FET-MX9352-C SoM is the world's first system on module designed by Forlinx as a gold partner of NXP based on i.MX 9352 at the processor's alpha phase. It contains two Cortex-A55 cores at speed up to 1.7GHz and one Cortex-M33 co-processor.

8x UART, 2x Ethernet(contains 1 TSN), 2x USB2.0, 2x CAN-FD and other common interfaces. It's more advanced than i.MX6 and i.MX8, integrating NPU engine for deep learning accelerating. It has a compact appearance can fit various applications.

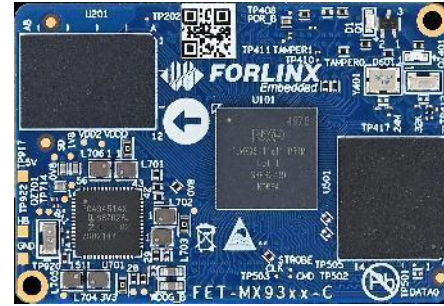
Features:

- A core+ M core, multi-task processing with real-time control ;
- 0.5 TOPS Ethos U-65 microNPU for light AI applications;
- Dual Gigabit Ethernet with one enabled with TSN;
- One dual-lane MIPI-CSI;
- Various interfaces ready-to-use, excellent integrity of signal and power.;
- Advanced performance and cost efficient

■ SoM features :

CPU	NXP i.MX9352 MPU: Cortex-A55 @1.5GHz MCU: Cortex-M33 @250 MHz NPU: 0.5 TOPS
RAM	1GB LPDDR4
ROM	8GB eMMC
Voltage input	DC 5V
Operating temp	-40~85°C
Package	Board-to-board connector(2*100-pin, 0.4mm pitch, combined height 1.5mm)

Note: NPU is not available.

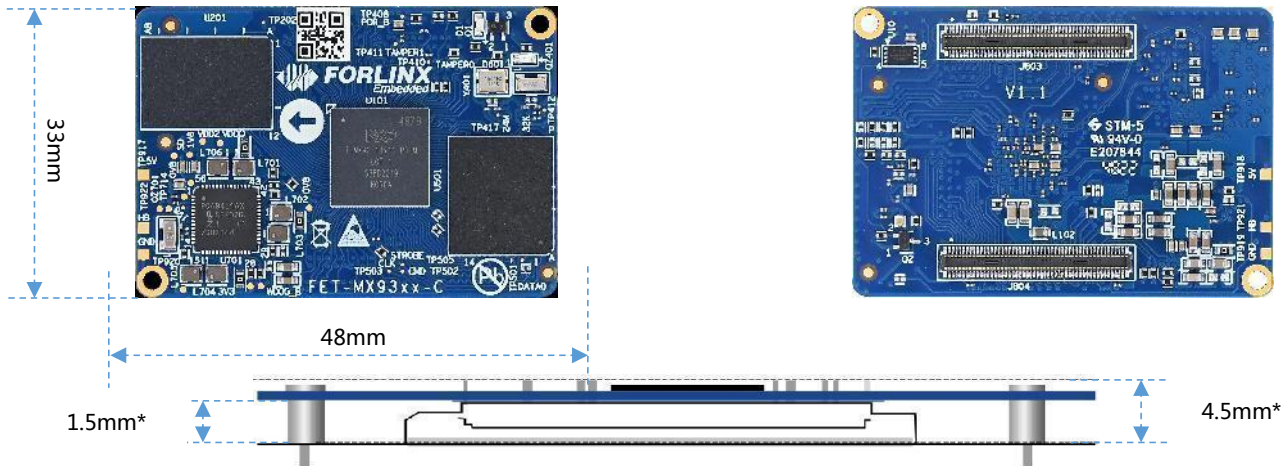


2×A55+1×M33	1.5GHz	0.5 TOPS
Architecture	Clock	NPU
CAN-FD	TSN	-40~85°C
2	Ethernet	Operating temp width

■ SoM features:

Interface	QTY	Spec.
LCD	1	Parallel RGB888, up to 1366×768p60 or 1280×800p60
LVDS	1	Single 4-lane supports 720p60, up to 1366×768p60 or 1280×800p60
MIPI-DSI	1	1x 4-lane MIPI DSI Compatible with MIPI-DSI V1.2 and MIPI D-HPY V1.2 Pixel clock up to 200MHz, and pixel filling rate 140 MP/s, 24-bit Supports resolution of 1080p60 or 1920x 1200p60, each lane up to 1.5GHz
Ethernet	≤2	2x RGMII with one supports TSN; Ethernet with TSN supports QoS, supports 802.1Qbv and 802.1Qbu Transmission rate 10/100/1000 Mbps, complies with IEEE 802.3
UART	≤8	Baud rate up to 5Mbps
CAN-FD	≤2	Supports CAN-FD and CAN 2.0B
USB	≤2	Two USB2.0 controllers integrated with PHY
SD card slot	≤1	Complies with SD3.0; Supports SDR up to 200MHz and DDR up to 50MHz
SDIO	≤1	Complies with SDIO3.0
SAI	≤3	SAI1 supports 2 lanes, SAI2 supports 4 lanes, and SAI3 supports 1 lane; Full-duplex serial supports frame synchronization, such as I2S, AC97, TDM and codec/ DSP
SPDIF	1	Supports original capturing mode; Supports L-PCM and IEC61937 forms
PDM	1	24-bit, supports linear phase response and AOP MIC
MIPI-CSI	1	Compiles both MIPI CSI-2 V1.3 and MIPI D-PHY V1.2; Supports up to 2 RX data lanes (and 1 RX clock lane) Pixel clock up to 200MHz, pixel filling rate up to 150MP/s under rated voltage and over speed voltage; 80Mbps~1.5 Gbps under high-speed mode, and 10Mbps rating under low power mode;
SPI	≤8	Supports to configure master and slave modes
I2C	≤8	Rating up to 100Kbit/s in standard mode, and 400Kbit/s in fast-speed mode, 1000Kbit/ s in enhanced fast-speed mode, 3400Kbit/s in high-speed mode, and 5000Kbit/s in super fast speed mode.
I3C	≤2	Supports 400Kbit/s fast speed mode and 1000Kbit/s enhanced fast speed mode, backward compatible with I2C.
ADC	≤4	One 12-bit 4-lane 1MS/s ADC
JTAG	1	For M33 core debugging

Exterior and dimensions:



Height diagram after installation

tolerance $\pm 0.2\text{mm}$

OS:

OS version	Linux 5.15.52+Qt 6.3.2
Firmware installation	<ul style="list-style-type: none"> • TF card • USB OTG

Driver list:

	Interface	Function	Chipset
Linux5.10	RGMII	Gigabit Ethernet	RTL8211FSI-CG
	USB	WiFi/ BT	BL-M8723DU1
	USB	4G modem	EC25/EC20
	USB	Serial/ RS485	XR21V1414IM48
	USB	UVC camera	/
	I2C	RTC	RTC8010/PCF8563
	MIPI-CSI	camera	OV5645
	SAI	Sound card	NAU88C22YG
	MIPI-DSI	7'' MIPI-DSI	FIT-LCD7.0 V2.1MIPI with resolution of 1024x 600
	LVDS	10.1'' display	1280x 800
	LCD-RGB888	7'' LCD	FIT-LCD7.0V2.1 with resolution of 1024x 600
	SD card	TF card	General purpose
	CAN/CAN-FD	General purpose	General purpose
	GPIO	/	General purpose
	ADC	1	General purpose
PWM	LCD backlight	/	

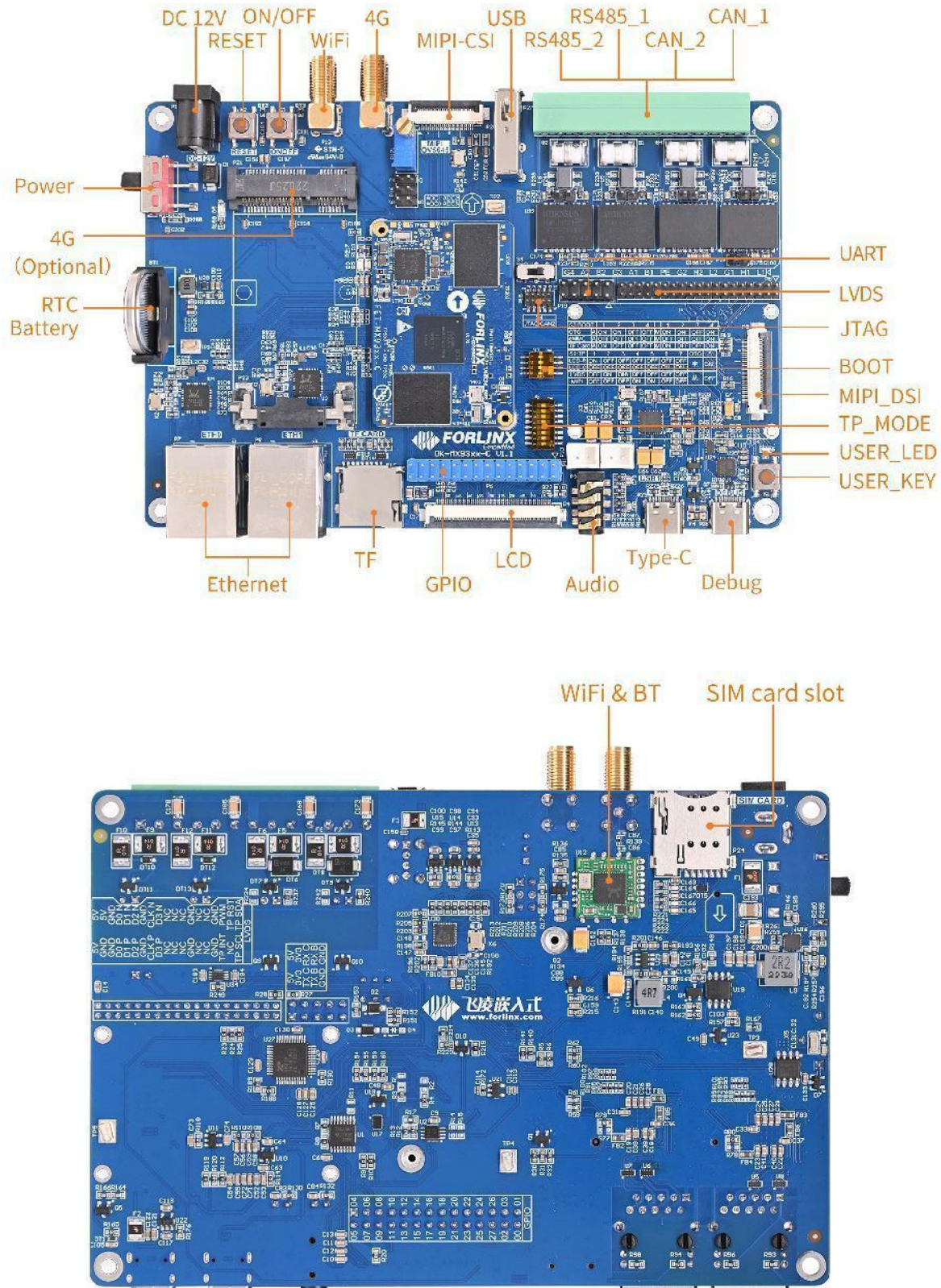
Provided technical files

Linux5.15.52	User manual, compiling guideline, kernel source code, file system, OS image, VM ubuntu image, SD card tool, USB OTG tool, QT demos and source code
Hardware	User manual, carrier board schematic, carrier board PCB(AD), datasheet, carrier board and SoM DXF files, pinmux sheet

Order options:

Model	Core number	CPU speed	RAM	Flash	Working temp	Phase
FET-MX9352-C+151GSE8GIB11	2x A55	A55@1.5GHz	1GB	8GB	-40~85℃	sampling
FET-MX9352-C+171GSE8GCxxx	2x A55	A55@1.7GHz	1GB	8GB	0~70℃	scheduled
FET-MX9331-C+151GSE8GIxxx	1x A55	A55@1.5GHz	1GB	8GB	-40~85℃	scheduled

Development board/ kit



■ Carrier board features

Peripheral	QTY	Spec.
LCD	1	RGB888 24-bit, up to 1366×768p60 or 1280×800p60
LVDS	1	single 8-bit, up to 1366×768p60 or 1280×800p60
MIPI-DSI	1	4 lanes, up to 1920×1200p60
TF card slot	1	For OS image flashing, complies with SD card 3.0 protocol
4G modem	1	Mini-PCIe slot, available for EC20 module with external antenna
Ethernet	2	2x 10M/100M/1000M RJ45 connector, ENET1/ETH1 supports TSN
GPIO	28	dual-row pin headers, multiplexed with LCD
ADC	4	12-bit ADC with sampling rate 1MS/s
CAN-FD	2	with static, surge and pulse protection circuits level 4, and Galvanic isolation complies with CAN2.0B
RS485	2	with static, surge and pulse protection circuits level 4, and Galvanic isolation with automatic transceiving control
USB2.0	2	USB1 by TYPE-C, can be used for OS image flashing; USB2 is expanded from HUB, circuited to 4G, WiFi /BT, USB to 4 serial, and USB-A female connector
UART	2	3.3V TTL, by pin headers with pitch of 2.54mm
WiFi& BT	1	on-board BL-M8723DU, 2.4GWiFi, Bluetooth 2.1/4.2
RTC	1	on-board RTC battery holder, for real-time updating
Audio	1	1 four-part phone jack with dual-channel HP and MIC and 2 speaker jacks.
Camera	1	MIPI-CSI, fits OV5645 module
KEY	3	reset, power on/ off and user key
LED	1	user defined
GPIO	9	9xGPIO(3.3V), 5V, 3.3V and 1.8V power by pin headers with pitch of 2.54mm
Debug	1	serial converted to USB for debug, TYPE-C connector
JTAG	1	10-pin(2×5) headers with pitch of 2.0mm