FET3506J-S SoM

FET3506J - S SoM is based on the Rockchip RK3506J, a low-power, cost -effective processor for industrial automation and consumer electronics. It integrates 3 x ARM Cortex-A7 high-performance cores, embedded 2D hardware engine and display output engine to minimize CPU consumption to meet image display requirements; rich peripheral interfaces provide more application options. The SoM connects to the carrier board via edge connector for a more secure connection. It has undergone rigorous industrial environment testing in the Forlinx Embedded Laboratory, ensuring stable operation even in complex conditions. 10–15 year lifespan for long-term supply assurance.

NAND storage SoM; eMMC version is different from the figure

3×A7+1×M0	22nm	35×44mm
CPU	Process Technology	Compact size
Up to 1.6GHz	2×CAN-FD	Industrial grade
Main Frequency	CAN	-40 ℃ ~ + 85 ℃

Product Features:

- Edge connector, all pins are led out
- 22nm advanced process
- Display interfaces: MIPI DSI, RGB
- Rich industrial bus interfaces: RMII, CAN-FD, FLEXBUS, DSMC etc
- DSMC can be used to extend PSRAM, FPGA communication
- RM_IO enables matrix configuration for pin functions.

SoM Basic Parameters

Processor		Rockchip RK3506J	Rockchip RK3506B
	ARM：	3 × Cortex-A7, up to 1.6GHz 1 × Cortex-M0	3× CortexA7@1.5Gz 1× Cortex-M0
	NPU：	No	
	GPU：	2D GPU	
	VPU：	No	
RAM		256MB/512MB DDR3	/
ROM		256MB Nand Flash/8GB eMMC	/
Operating Temperature		-40℃ ~+85℃	/
Working Voltage		DC 5V	
Connection		Stamp hole (146 pins in total, pin center spacing 1mm)	

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SoM Function Parameters

Function	Quantity	Parameter		
MIPI DSI	≤1	Supports 1 x 2-lane MIPI Display Serial Interface with a speed of 1.5 Gbps per lane.	Built-in VOP controller, supporting only 1 x display output at a time.	
RGB	≤1	Supports RGB888 24-bit, with resolution up to 1280x1280@60Hz.		RGB, FLEXBUS, and DSMC interfaces are multiplexed, allowing only one function to be selected at a time.
FLEXBUS	≤1	Supports 1 x flexible parallel FLEXBUS interface, enabling high-speed IO switching.		
DSMC	≤1	Supports the DSMC data bus for PSRAM and FPGA communication. FPGA can be expanded through the DSMC interface, with master mode supporting ×8 and ×16 data bits, and slave mode supporting ×8 data bits.		
USB 2.0	2	Supports 2 x high-speed USB 2.0 ports, with 1 x USB supporting OTG.		
SDMMC	≤1	Supports 1x SDIO, 4 bits; the eMMC version SoM does not have this interface.		
Ethernet	2	2 × RMII, 10/100-Mbps, supporting both full-duplex and half-duplex operations		
CAN-FD	2	Supports CAN2.0 and CAN-FD		
SPI	3	SPI0/SPI1 support both serial master and slave modes, configurable by software; SPI2 supports serial slave mode only.		
UART	≤6	Supports 6 x serial communication interfaces, with UART0 serving as the debug serial port.		
I2C	3	Supports both 7-bit and 10-bit address modes, as well as master and slave modes, with a maximum speed of up to 1Mbit/s.		
Audio	/	4 × SAI(TX 1Lane/RX 1Lane ×2, TX 4Lane/RX 1Lane × 1, TX 1Lane/RX 4Lane × 1) 1 × 4ch PDM 1×SPDIF TX/RX 1×Audio ADC 2 ×Audio DSM		
FSPI	≤1	Supports 1 x FSPI interface. By default, the SoM is connected to the SPI NAND FLASH, which supports system startup.		
SARADC	≤4	10-bit resolution, with a speed up to 1MS/s, and an input voltage range of 0~1.8V. SARADC0 is related to the boot-up sequence pins, while SARADC1 is multiplexed for recovery interface function.		
PWM	≤11	Supports 12 x PWM interfaces, with 1 x already occupied by the SoM, leaving 11 available for user use.		
JTAG	≤1	Supports JTAG SWD interface debugging, multiplexed with the debug serial port UART0 pins.		
TOUCH KEY	≤8	Supports 8 x TOUCH KEY		
GPIO	≤76	GPI≤70， GPO≤76，among them, the six pins MIPI_DPHY_DSI_TX_D0N/D0P/D1N/D1P/CLKN/CLKP can only be used as General Purpose Outputs (GPOs).		

Note: The parameters in the table are hardware design or theoretical CPU values.

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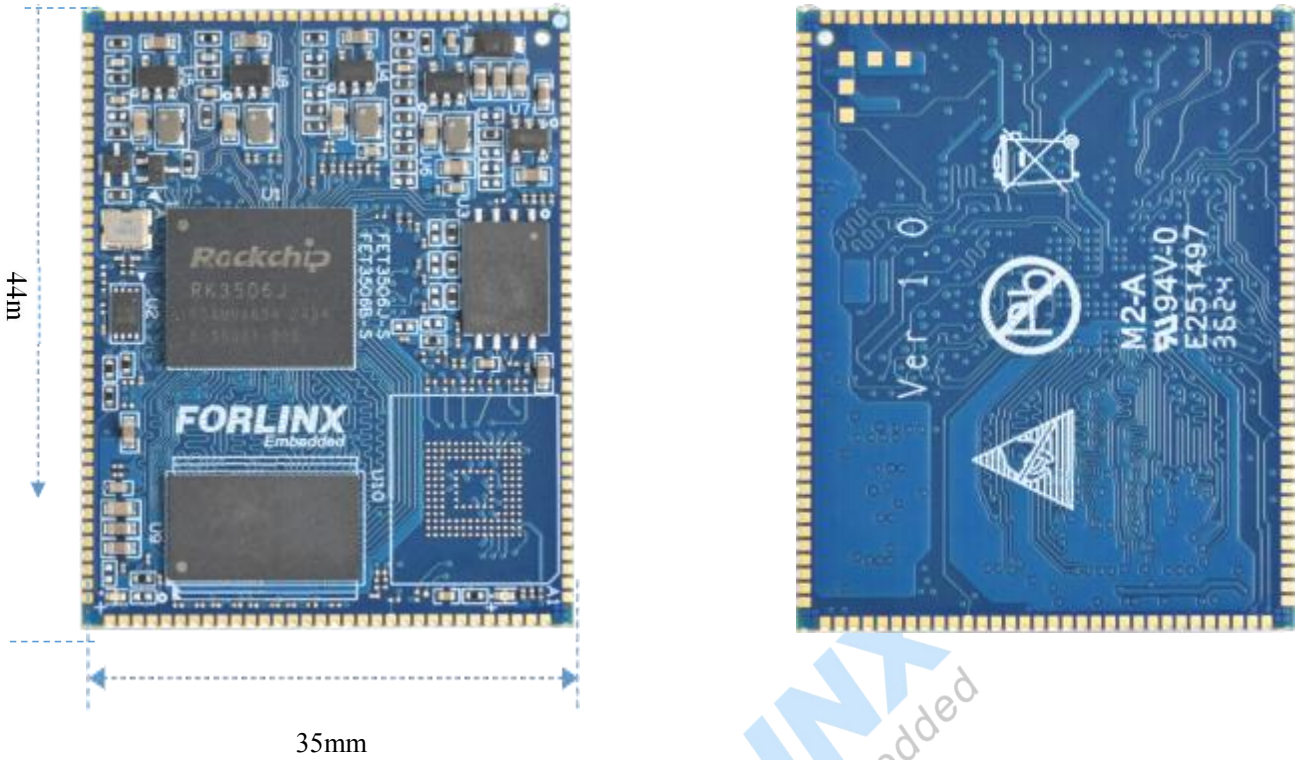
Appearance and Dimensions



Note： PCB thickness is 1.2mm, the total height of the PCBA is 2.3mm, and the dimensional tolerance is ±0.2mm.

Software Support:

OS	Linux 6.1.84
Flashing Method	USB OTG

Product Material List

***More product information will be provided gradually after the product launch.**

Order Model List

Specification Model	SoM	CPU Clock	RAM	ROM	Temperature Range	Supply
FET3506J-S+15256SN256IAxx: xx	3×A7+1×M0	Up to 1.6GHz	256MB	256MB Nand Flash	-40℃～+85℃	R&D
FET3506J-S+15512SE8GIBxx: xx	3×A7+1×M0	Up to 1.6GHz	512MB	8GB eMMC	-40℃～+85℃	R&D
FET3506J-S+151GSE8GIxxx: xx	3×A7+1×M0	Up to 1.6GHz	1GB	8GB eMMC	-40℃～+85℃	Plan

SoM Naming Rule

A	B	-	C	+	D	E	F	G	H	I	J	:	K	L

Field	Field Description	Value	Description
A	Product line identification	FET	Folinx Embedded SoM
		FL	Folinx Embedded All-in-one Panel

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B	CPU	3506J	RK3506J
-	Segment identification	-	
C	Connection	S	Edge Connector
+	Segment identification	+	Following this identification, there is the configuration parameter section.
D	Maximum CPU Clock	16	1.6 GHz
		15	1.5 GHz
E	RAM Capacity (Unit: Byte)	256	256MB
		512	512MB
		1G	1GB
		2G	2GB
F	Single ROM Type	SN	Nand Flash
		SE	eMMC
G	Single ROM Capacity(Unit: Byte)	256	256MB
		8G	8GB
		16G	16GB
H	Operating Temperature	C	0 to 70°C Industrial Grade
		E	-20 to 80 ℃ Wide Temperature Range
		I	-40 to 85°C Industrial Grade
I	Configuration No.	A~Z	If D-H field values are identical across products, they are treated the same and sorted by release time in ascending order.
J	PCB Version	10	V1.0
		11	V1.1
		xx	Vx.x
:	Separator	:	This symbol is followed by the internal identification of the manufacturer, which has no effect on the customer's use.
KL	Manufacturer's Internal Logo	xx	It is manufacturer's internal logo without influence on use.

Function Parameters

Function	Quantity	Parameter	
MIPI DSI	1	Single channel output, 2Lane without adaptation screen.	It has a built-in VOP controller.
RGB	1	Supports RGB888 24-bit, with resolution up to 1280x1280@60Hz.	Only one display output is supported at a time.
USB OTG	1	Uses a Type-C connector with master-slave dip switch selection for downloading and flashing.	
USB 2.0	2	Supports 2 x high-speed USB 2.0 Type-A connectors.	
TF Card	1	1 x SDIO interface for external TF card, multiplexed with the SoM's eMMC pins, only available on the SPI NAND version of the SoM.	
4G	1	1 x mini PCIe connector for an external 4G module, using a USB 2.0 interface.	
Wi-Fi	1	1 x Wi-Fi & Bluetooth module RTL8723DU, using a USB 2.0 interface.	
Bluetooth	1		
Ethernet	2	Supports 2 x10/100 Mbps Ethernet ports with RMII interface.	
Audio	1	1 x four-segment audio jack, including 1 x dual-channel headphone output and 1 x MIC input, plus 1 x additional onboard MIC.	
CAN-FD	2	Supports CAN and CAN-FD with isolation and protection.	

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RS485	1	Supports 1 x RS485 with isolation and protection.
FSPI	1	Multiplexed with the SoM's SPI NAND Flash pins, default empty soldering.
RTC	1	I2C interface, onboard an RTC chip and button battery holder.
DEBUG	1	USB to serial converter for outputting debugging information, Type-C connector.
JTAG	1	Led out through a header pin, supporting JTAG interface debugging, multiplexed with the debug serial port pins.
KEY	6	Reset Maskrom VOL+, VOL- MENU ESC

Note: The parameters in the table are hardware design or theoretical CPU values.

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