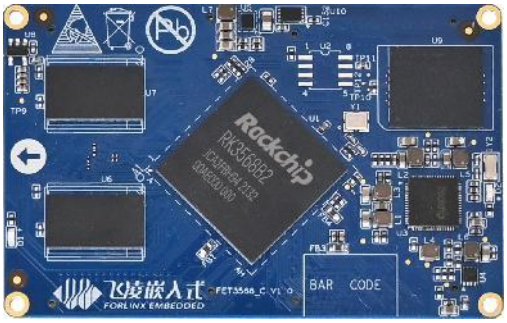
FET3568-C SoM

FET3568-C System on Module (SoM) carries Rockchip's new generation AIoT processor RK3568 a 64-bit quad-core Cortex-A55 SoC equipped with NPU on board running speed at up to 2.0GHz，but low power performance. The SoM approved to robust and reliable by harsh ambient temperature testing, stress testing and long-last running testing.



Features:

- 38.4GFLOPs 800MHz GPU Mali-G52;
- 1TOPS NPU;
- Various high speed interface: 2x USB3.0，2x PCIE3.0，3x SATA3.0;
- 2x 1000Mbps Ethernet(GMAC), 3x CAN, 10x UART
- Multiple display interface, HDMI(up to 4K output), LVDS, MIPI-DSI, RGB, eDP, supports 3-screen playing sync/ async;
- Built in ISP: 12M, 1920x1080@60fps, input up to 375MP/S, and supports 2 MIPI-CSI input;

4x A55	2.0GHz	1TOPS
Architecture	Frequency	NPU
Mali-G52	22nm	64bit
GPU	Processing	Processor

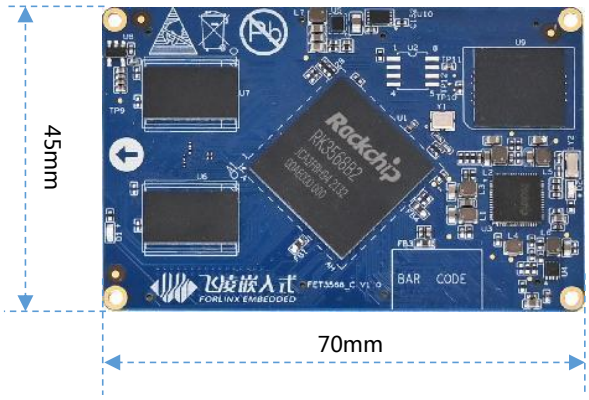
■ SoM features：

CPU	Rockchip RK3568 **CPU:** quad-core Cortex-A55@2.0GHz **NPU:** 1TOPS, supports INT8/INT16/FP16/BFP16 mixed operating; **GPU：** •Mali-G52-2EE •OpenGL ES 1.1, 2.0, 3.2、Vulkan 1.0,1.1、OpenCL 2.0 **VPU:** Decode: •H.264, H.265, VP9: up to 4096x2304@60fps •VP8**:** up to 1920x1088@60fps •VC1, MPEG-4, MPEG-2, MPEG-1: up to 1920x1088@60fps •H.263: up to 720x576@60fps Encode: •H.264/AVC, H.265/HEVC: up to 1920x1080@60fps
RAM	2GB/4GB/8GB DDR4(standard :2GB)
ROM	16GB eMMC
Power input	DC 5V
Operating temp	Commercial grade: 0℃ ~ 70℃; Industrial grade: -40~85℃
Package	Board-to-board connector(4*80-pin, 0.5mm pitch)

SoM parameters

Interface	QTY	Spec.	
Display	3	Equipped with 3 display controllers, supports 3 simultaneous output to RGB, LVDS, MIPI DSI, HDMI, eDP ;. • RGB: RGB888, to 1280x800; • LVDS: single-channel output, up to 1280x800, multiplexed with MIPI-DSI0; • MIPI-DSI: single-channel output up to 1920x1080@60Hz; dual-channel output up to 2560*1440@60Hz; • HDMI: up to 1080p@120Hz or 4096x2304@60Hz; • eDP: Support eDP 1.3, up to 2560x1600@60Hz;	
Camera	2	1x DVP, 1x 4-lane MIPI-CSI.	
Audio	4	1X 8ch I2S/TDM, 2X2ch I2S, 1x8ch PDM	
SDIO	2	SDIO 3.0, up to 104MB/S	
Ethernet	2	2x GMAC by RGMII / RMII	
USB 2.0	2	USB2.0 Host, separate but not multiplexed with USB3.0.	
USB 2.0	2	1x USB 2.0 Host, 1 x USB 2.0 OTG contained in USB 3.0, can be used as 2 independent USB 2.0 when USB 3.0 is not needed.	
USB 3.0	2	1x USB 3.0 Host, 1x USB 3.0 OTG	3 pairs shared SerDes
SATA	3	SATA 3.0, up to 6.0Gb/s, supports eSATA	
PCIe2.1	1	PCIe 2.1 x1, up to 5.0Gbps, RC mode	
PCIe3.0	2	PCIe 3.0, 1x2Lanes or 2x1Lane, each lane up to 8.0Gbps。 1 x Lane only supports Root Complex (RC) mode. 2 x Lanes support both Root Complex(RC) and End Point(EP) modes.	
UART	10	Up to 4Mbps	
CAN	3	CAN2.0 B	
SPI	4	ost mode and slave mode are optional and configurable	
I2C	5	Supports 7bits and 10bits address modes, up to 1 Mbit/s.	
PWM	16	32-bit timer/counter	

Exterior and dimensions:



Height diagram after installation

*SoM connector and carrier board connector combined height will be default 2mm (total height 5.6mm)or 2.5mm(total height 5.6mm) Note: tolerance ±0.2mm

OS:

OS	Linux4.19+Qt5.12、Android11*、Ubuntu**
Firmware installation	•SD card •USB OTG

Driver list:

Linux4.19 Driver List

Interface	Function	Chipset
IIC	Capacitive touching	FT5x06
IIC	Capacitive touching	GT928
IIC	RTC	PCF8563T
SDIO	Wi-Fi	AW-CM358SM
UART	BT	AW-CM358SM
USB	UVC camera	Logitech C270
USB	4G	Quectel EM05-CE R2.0(compatible with EC20-CEHDLG)
USB	5G	Quectel RM500U
MIPI-CSI	Camera	OV13850
PCIe	Gigabit Ethernet	FIT-RTL8111F_PCIE_V1.0
MIPI-DSI	7’’	FIT-LCD7.0C V2.1 1024x600
LVDS	10.1’’	FIT_LVDS10.1C_V2.0 2380x800
RGMII	Gigabit Ethernet	RTL8211FSI-CG
PWM	LCD backlight	
UART		
SPI		
GPIO		

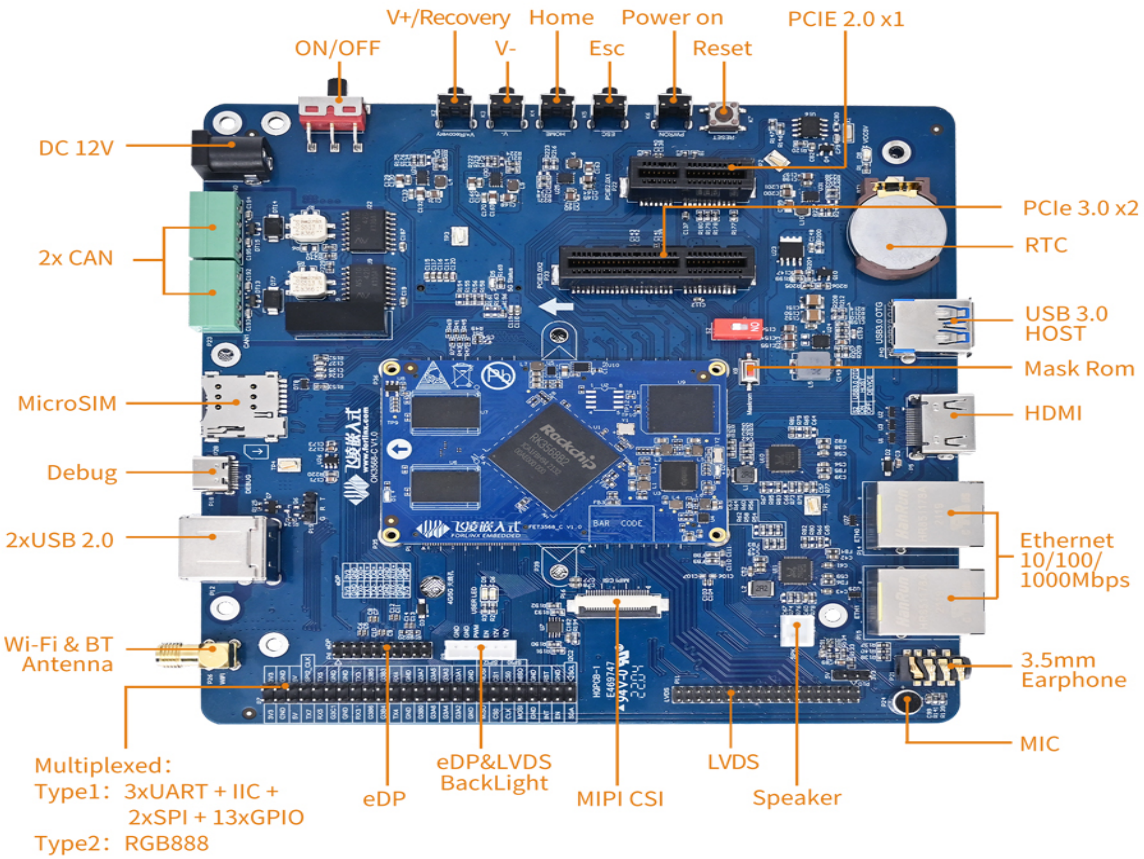
Provided technical files

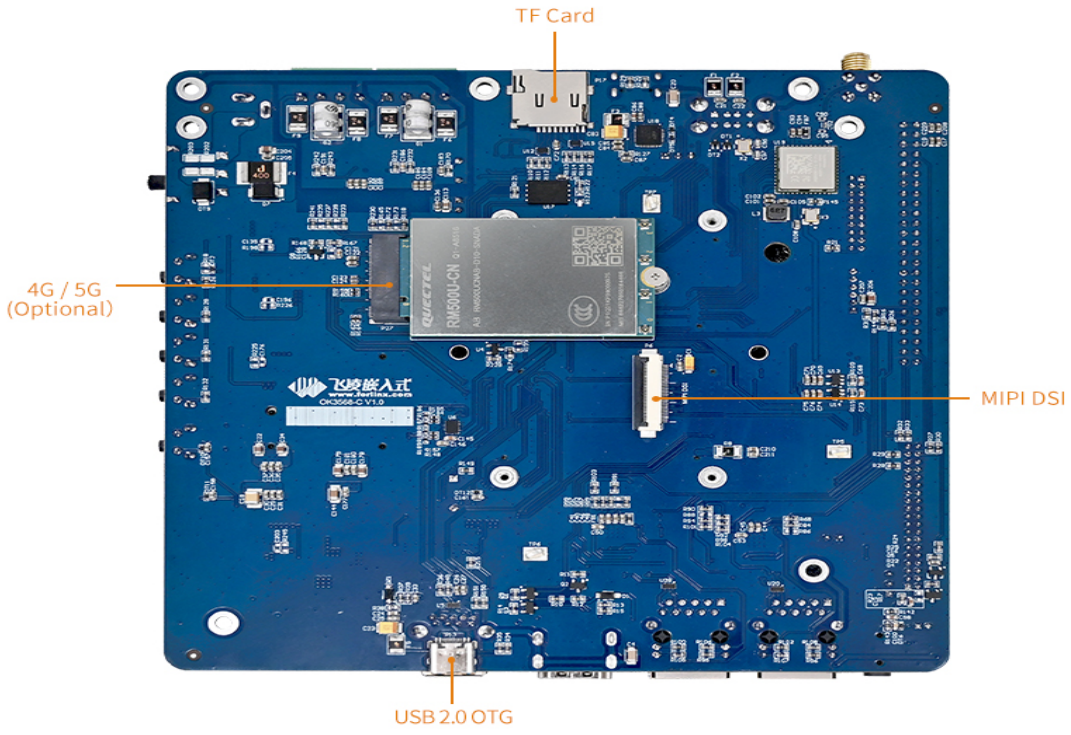
Linux4.19	User manual, compiling guideline, kernel source code, file system, OS image, VM ubuntu image, SD card tool, USB OTG tool, QT demos and source code
Hardware	User manual, carrier board schematic, carrier board PCB(AD), datasheet, carrier board and SoM DXF files, pinmux sheet

Order options:

Model	Core number	CPU speed	RAM	Flash	Working temp	Status
FET3568-C+202GSE16GCA10:xx	4x A55	2.0GHz	2GB	16GB	0~70℃	Mass production
FET3568J-C+182GSE16GIB10:xx	4x A55	1.8GHz	2GB	16GB	-40~85℃	Mass production
FET3568-C+204GSE32GCC10:xx	4x A55	2.0GHz	4GB	32GB	0~70℃	Mass production
FET3568J-C+184GSE32GID10:xx	4x A55	1.8GHz	4GB	32GB	-40~85℃	Mass production

Development board/ kit





Carrier board features:

Interface	Spec.
HDMI 2.0	Up to 1080p@120Hz or 4096x2304@60Hz
eDP	eDP 1.3, up to 2560x1600@60Hz
LVDS	Single channel output, up to 1280x800
LCD	RGB888, up to 1280x800, multiplexed with SPI0, SPI2, UART3, UART4, UART5, UART7, all these could be configured to RGB
MIPI-DSI1	Single channel output up to 1920x1080@60Hz
Camera	MIPI-CSI, tested and recommended model OV13850
Audio	1 stereo earphone output, 1x 1.3W D-amplifier, 1x MIC input
TF Card	Storage expanding and OS image flashing
Ethernet	2x 10/100/1000Mbps auto-negotiation, RJ45 connector
4G/5G	M.2 Key-B, contains USB 3.0/2.0, for 4G/5G modem
Wi-Fi&BT	On-board AW-CM358SM, 2.4G/5G dual-band Wi-Fi, BT5.0 1x SDIO for Wi-Fi, 1x UART for BT(BT audio is not supported)
USB 2.0	2x USB 2.0 Host, Type-A
USB 3.0	1x USB 3.0 Host, Type-A
USB 2.0 OTG	In same group with USB 3.0, can be used as device mode, for OS image flashing and Android ADB debug.
PCIe 2.1	Standard PCIe x1 slot, multiplexed with SATA, software configurable
PCIe 3.0	Standard PCIe x4 slot, can be configured to 2x PCIe x1
UART	3, 3.3V TT, by 2.54mm pin headers
CAN	2, CAN2.0B, isolated and ESD protected
SPI	2, 3.3V TT, by 2.54mm pin headers
I2C	1, 3.3V TT, by 2.54mm pin headers
RTC	Recommended battery CR2032
Key	8: reset, power key, OTG, Maskrom, VOL+,VOL-, HOME, ESC
Debug	On-board USB to serial chipset, by Type-C
Power input	DC 12V

