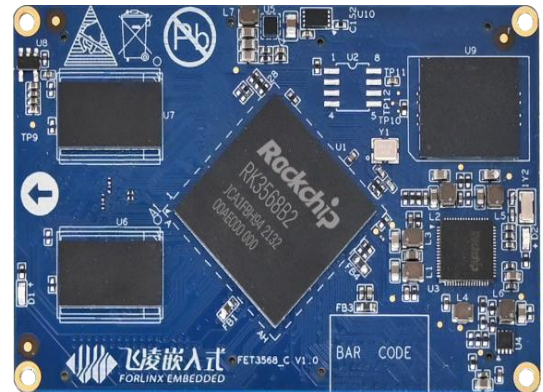


FET3568-C/FET3568J-C SoM

FET3568-C and FET3568J-C/FET3568J-C2 SoMs are developed and designed based on Rockchip RK3568B2 and RK3568J processors respectively, which are high-performance, low-power and feature-rich application processors built by Rockchip for AIoT and industrial markets. Features a quad-core 64-bit Cortex-A55 architecture running at up to 2.0 GHz with a built-in NPU. The SoM enhances the exposure of the processor's functional pins, allowing for evaluation and secondary development. It has undergone thorough environmental, stability, and aging tests to guarantee reliable and stable operation.



Product Features:

- Supports 38.4 GFLOPs 800MHz GPU Mali-G52
- Built-in 1TOPS NPU, suitable for AI edge computing applications
- Integrated Image Signal Processor (ISP), supporting 2 x MIPI-CSI camera interfaces
- Rich high-speed interfaces supported, including 2×USB 3.0, 2×PCIe 3.0, and 3×SATA 3.0
- Multiple display interfaces supported: HDMI (up to 4K output), LVDS, MIPI-DSI, RGB, and eDP, with triple-screen same-display or independent-display capabilities
- Supports dual gigabit ethernet

FET3568-C SoM

| | | |
|---------------------|--|---------------------|
| 4×A55 CPU | Up to 2.0GHz Clock | 1TOPS NPU |
| Mali-G52-2EE GPU | 22nm Manufacturing Process Technology | 64bits Processor |

SoM Basic Parameters:

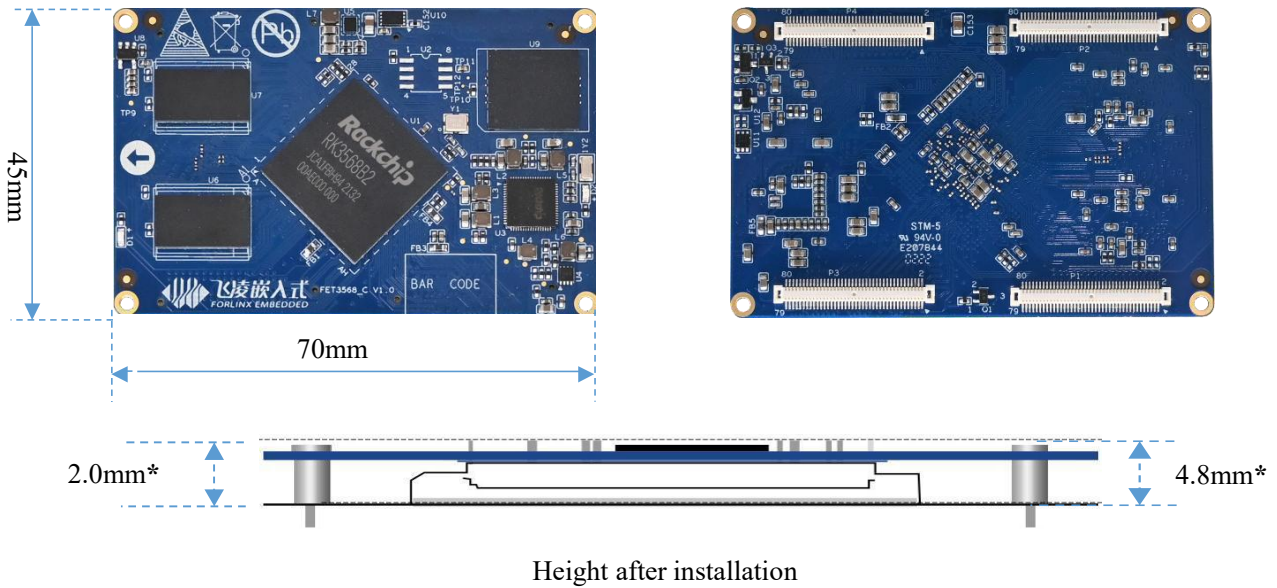
| | | |
|------------------------------|---|--------------------------------------|
| Processor | Rockchip RK3568B2 / RK3568J CPU: 4 x Cortex-A55@2.0GHz / 1.8GHz NPU: 1TOPS, supports INT8/INT16/FP16/BFP16 mixing operation GPU: Mali-G52-2EE; OpenGL ES 1.1, 2.0, 3.2、 Vulkan 1.0,1.1、 OpenCL 2.0 VPU: Hardware Decoding: • 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 Hardware Coding: • H.264/AVC, H.265/HEVC: up to 1920×1080@60fps | |
| RAM | FET3568-C/FET3568J-C: 1GB/2GB/4GB DDR4 | FET3568J-C2: 4GB/8GB LPDDR4X |
| ROM | FET3568-C/FET3568J-C: 8GB/16GB/32GB eMMC | FET3568J-C2: 32GB/64GB eMMC |
| Operating Voltage | DC 5V | |
| Operating Temperature | FET3568-C: 0°C ~ +80°C | FET3568J-C/FET3568J-C: -40°C ~ +85°C |
| Connection | Board-to-board connector (4 × 80Pin, pin pitch 0.5mm, combined height 2.0mm) | |

■ SoM Function Parameters:

| Function | Quantity | Parameter | |
|-----------------|----------|--|---|
| MIPI-DSI | 2 | 2 x 4 - lane MIPI display serial interfaces, supporting the MIPI V1.2 version The maximum resolution of a single channel is 1920×1080@60Hz, and the maximum resolution of dual channels is 2560×1600@60Hz. The MIPI DSI TX0 is multiplexed with the LVDS TX PHY. | The processor includes a built-in VOP controller with three Port outputs, allowing the SoM to support up to three display outputs simultaneously. |
| HDMI | 1 | Supports HDMI 2.0 with resolutions up to 1080p @ 120Hz or 4096 × 2304 @ 60Hz | |
| LVDS | 1 | Single channel (4 lanes) supports 1280 × 800 @ 60Hz, multiplexed with MIPI DSI TX0 pin | |
| eDP | 1 | 1 x 4-lane eDP display interface, supporting eDP V1.3 version Maximum resolution 2560 × 1600 @ 60Hz | |
| RGB | 1 | Supports RGB 888, maximum resolution 1280 * 800 | |
| Camera | 2 | Support 1 x DVP, 1 x 4 Lanes MIPI-CSI | |
| Audio | ≤4 | 1×8ch I2S/TDM, 2×2ch I2S, 1×8ch PDM | |
| SDIO | ≤2 | SDIO 3.0 with up to 104MB/S data throughput | |
| Ethernet | ≤2 | 2 x GMAC, providing RGMII/RMII interface lead-out | |
| USB 2.0 | 2 | USB 2.0 Host, independent port, not multiplexed with USB 3.0 | |
| USB 3.0 | 2 | 1× USB 3.0 Host (operable independently as USB 2.0 Host); 1× USB 3.0 OTG (operable independently as USB 2.0 OTG) | The quantities indicate maximum configurations, sharing 3 SerDes channels with only one usable at a time. 3 x function interfaces |
| SATA | ≤3 | SATA 3.0 up to 6.0 Gb/s with eSATA support | |
| PCIe2.1 | ≤1 | PCIe 2.1×1, up to 5.0Gbps, RC mode | |
| PCIe3.0 | ≤2 | PCIe 3.0, 1×2Lanes or 2×1Lane, up to 8.0Gbps per lane 1Lane supports only Root Complex (RC) mode; 2 lanes support both Root Complex (RC) and End Point (EP) modes | |
| UART | ≤10 | Up to 4Mbps | |
| CAN | ≤3 | Supports CAN2.0 B up to 1Mbps | |
| SPI | ≤4 | Support master & slave mode, with configurable software | |
| I2C | ≤5 | Supports 7bits and 10bits address modes up to 1 Mbit/s | |
| PWM | ≤16 | 32bits timer/counter | |
| FSPI | ≤1 | Supports serial NOR Flash/NAND Flash and Boot | |

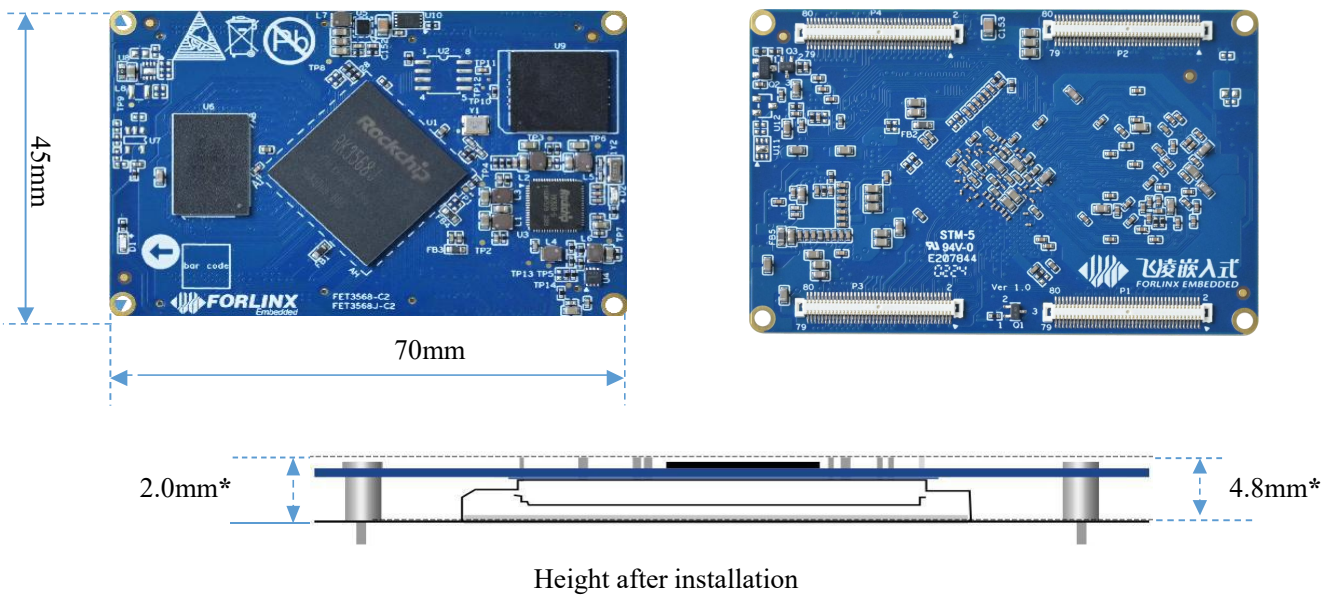
Note: The parameters in the table are the theoretical values of hardware design or CPU.

■ Appearance & Dimension (FET3568-C):



Note: The * dimensional tolerance is ± 0.2 mm.

■ Appearance & Dimension (FET3568-C2):



Note: The * dimensional tolerance is ± 0.2 mm.

■ **Software Support:**

| | | | | | |
|---|---|----------------|---|---|----|
| OS | Linux5.10.160+Qt5.15.8, Android11, Forlinx Desktop20.04 (based on Ubuntu20.04 file system) , Debian11, AMP (based on Linux4.19.232+Qt5.15.8), OpenHarmony5.1 (based on Linux5.10.184) | | | | |
| OS Adaption | FET3568-C | Product | RAM | ROM | OS |
| | | 1GB | 8GB | Linux5.10.160, AMP, OpenHarmony5.1 | |
| | | 2GB | 16GB | Linux5.10.160, Android11, Forlinx Desktop20.04, ForlinxDesktop22.04, Debian11, AMP,OpenHarmony5.1 | |
| | | 2GB | 32GB | Linux5.10.160, Android11, Forlinx Desktop20.04, ForlinxDesktop22.04, Debian11, AMP,OpenHarmony4.1 | |
| | 4GB | 32GB | ForlinxDesktop22.04, Debian11, AMP,OpenHarmony4.1 | | |
| | FET3568J-C | 1GB | 8GB | Linux5.10.160, AMP, OpenHarmony5.1 | |
| | | 2GB | 16GB | Linux5.10.160, Android11, Forlinx Desktop20.04, ForlinxDesktop22.04, Debian11, AMP,OpenHarmony5.1 | |
| | | 2GB | 16GB | ForlinxDesktop22.04, Debian11, AMP,OpenHarmony5.1 | |
| | | 4GB | 32GB | Linux5.10.160, Android11, Forlinx Desktop20.04, ForlinxDesktop22.04, Debian11, AMP | |
| | FET3568J-C2 | 4GB | 32GB | Linux5.10.160, Android11, ForlinxDesktop22.04 | |
| 8GB | | 64GB | | | |
| Note: Items marked with * indicate ongoing adaption. | | | | | |
| System Flashing Method | SD card, USB OTG | | | | |

■ **Peripheral Support List:**

| Linux5.10.160 Drive Support List | Interface | Function | Plan |
|---|------------------|-------------------------|---|
| | IIC | Capacitive touch | FT5x06 |
| | IIC | Capacitive touch | GT928 |
| | IIC | RTC | PCF8563T |
| | SDIO | Wi-Fi | AW-CM358SM |
| | UART | BT | |
| | USB | UVC camera | Logitech C270 |
| | USB | 4G | Quectel EM05-CE R2.0 (driver compatible with EC20-CEHDLG) |
| | USB | 5G | Quectel RM500U |
| | USB | USB to four serial port | XR21V1414 |
| | MIPI-CSI | Camera | OV13850 |
| | PCIe | Gigabit Ethernet | FIT-RTL8111F_PCIE_V1.0 |
| | MIPI-DSI | 7-inch LCD | FT5x06d capacitive touch, 1024 × 600 resolution |
| | LVDS | 10.1-inch LCD | FIT_LVDS10.1C_V2.0, GT928 capacitive touch, |
| | eDP | 12.5-inch LCD | BOE NV125FHM-N82, 1920×1080 resolution |
| | RGMII | Gigabit Ethernet | RTL8211FSI-CG |
| | PWM | LCD Backlight | General |
| | UART | General | General |
| | SPI | General | General |
| | GPIO | General | General |

Product Specifications FET3568-C/FET3568J-C SoMs

| AMP (Based on Linux4.19.232) Drive Support List | Interface | Function | Plan |
|---|------------------|------------------|---|
| | IIC | Capacitive touch | FT5x06 |
| | IIC | Capacitive touch | GT928 |
| | IIC | RTC | PCF8563T |
| | SDIO | Wi-Fi | AW-CM358SM |
| | UART | BT | |
| | USB | UVC camera | Logitech C270 |
| | USB | 4G | Quectel EM05-CE R2.0 (driver compatible with EC20-CEHDLG) |
| | USB | 5G | Quectel RM500U |
| | MIPI-CSI | Camera | OV13850 |
| | PCIe | Gigabit Ethernet | FIT-RTL8111F_PCIE_V1.0 |
| | MIPI-DSI | 7-inch LCD | FT5x06d capacitive touch, 1024 × 600 resolution |
| | LVDS | 10.1-inch LCD | FIT_LVDS10.1C_V2.0, GT928 capacitive touch, |
| | eDP | 12.5-inch LCD | BOE NV125FHM-N82, 1920×1080 resolution |
| | RGMII | Gigabit Ethernet | RTL8211FSI-CG |
| | PWM | LCD Backlight | General |
| | UART | General | General |
| | SPI | General | General |
| GPIO | General | General | |
| Android11 Drive Support List | Interface | Function | Plan |
| | IIC | Capacitive touch | FT5x06 |
| | IIC | Capacitive touch | GT928 |
| | IIC | RTC | PCF8563T |
| | SDIO | Wi-Fi | AW-CM358SM |
| | UART | BT | |
| | USB | UVC camera | Logitech C270 |
| | USB | 4G | Quectel EM05-CE R2.0 (driver compatible with EC20-CEHDLG) |
| | USB | 5G | Quectel RM500U |
| | MIPI-CSI | Camera | OV13850 |
| | MIPI-DSI | 7-inch LCD | FT5x06d capacitive touch, 1024 × 600 resolution |
| | LVDS | 10.1-inch LCD | FIT_LVDS10.1C_V2.0, GT928 capacitive touch, |
| | eDP | 12.5-inch LCD | BOE NV125FHM-N82, 1920×1080 resolution |
| | RGMII | Gigabit Ethernet | RTL8211FSI-CG |
| | PWM | LCD Backlight | General |
| | UART | General | General |
| | SPI | General | General |
| | GPIO | General | General |

| | | | |
|--|------------------|------------------|---|
| Forlinx Desktop20.04 Drive Support List | Interface | Function | Plan |
| | IIC | Capacitive touch | FT5x06 |
| | IIC | Capacitive touch | GT928 |
| | IIC | RTC | PCF8563T |
| | SDIO | Wi-Fi | AW-CM358SM |
| | UART | BT | |
| | USB | UVC camera | Logitech C270 |
| | MIPI-DSI | 7-inch LCD | FT5x06d capacitive touch, 1024 × 600 resolution |
| | LVDS | 10.1-inch LCD | FIT_LVDS10.1C_V2.0, GT928 capacitive touch, 1280×800 resolution |
| | eDP | 12.5-inch LCD | BOE NV125FHM-N82, 1920×1080 resolution |
| | RGMII | Gigabit Ethernet | RTL8211FSI-CG |
| | PWM | LCD Backlight | General |
| | UART | General | General |
| | SPI | General | General |
| GPIO | General | General | |
| Debian11 Drive Support List | Interface | Function | Plan |
| | SDIO | Wi-Fi | AW-CM358SM |
| | UART | BT | |
| | USB | UVC camera | Logitech C270 |
| | MIPI | MIPI camera | OV13850 |
| | IIC | RTC | PCF8563T |
| | MIPI | 7-inch LCD | FT5x06d capacitive touch, 1024 × 600 resolution |
| | LVDS | 10.1-inch LCD | GT928 capacitive touch, 1280×800 resolution |
| | eDP | 12.5-inch LCD | BOE NV125FHM-N82, 1920×1080 resolution |
| | RGMII | Gigabit Ethernet | RTL8211FSI-CG |
| | PWM | LCD Backlight | General |
| | UART | General | General |
| | SPI | General | General |
| | GPIO | General | General |
| OpenHarmony Drive Support List | Interface | Function | Plan |
| | HDMI | / | |
| | LVDS | 10.1-inch LCD | GT928 capacitive touch, 1280×800 resolution |
| | UART | General | General |
| | GPIO | General | General |

■ Product Documentations List:

| | |
|--|---|
| Linux5.10 Documentation List: | User Manual, Compilation Guide, Linux Kernel Source Code, File System, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, YUV Video Playback Tool, Camera Test Tool, SD Flash Card Creation Tool, USB OTG Flash Tool, Mass Production Programming Tool, Driver Installation Tool, Firmware Flash Tool, Serial Port Driver Installation Tool, QT Test Routine Source Code, Application Notes. |
| AMP Documentation List | User Manual, Compilation Guide, Linux Kernel Source Code, File System, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, YUV Video Playback Tool, Camera Test Tool, SD Flash Card Creation Tool, USB OTG Flash Tool, Mass Production Programming Tool, Driver Installation Tool, Firmware Flash Tool, Serial Port Driver Installation Tool, QT Test Routine Source Code, Application Notes. |
| Android11 Documentation List: | User Manual, Compilation Guide, Linux Kernel Source Code, File System, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, YUV Video Playback Tool, Camera Test Tool, SD Flash Card Creation Tool, USB OTG Flash Tool. |
| Forlinx Desktop20.04 Documentation List | User Manual, Compilation Guide, Linux Kernel Source Code, File System, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, YUV Video Playback Tool, Camera Test Tool, SD Flash Card Creation Tool, USB OTG Flash Tool. |
| Debian11 Documentation List: | User Manual, Compilation Guide, Linux Kernel Source Code, File System, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, YUV Video Playback Tool, Camera Test Tool, SD Flash Card Creation Tool, USB OTG Flash Tool, Mass Production Programming Tool, Driver Installation Tool, Firmware Flash Tool, Serial Port Driver Installation Tool |
| OpenHarmony5.1 Documentation List: | User Manual, Compilation Guide, Linux Kernel Source Code, Factory Image, Development Environment VM Ubuntu Image, FTP Tool, SD Flash Card Creation Tool, USB OTG Flash Tool, Application Notes. |
| Hardware Documentation List | Hardware Manual, Hardware Design Guide, Pin Function Multiplexing Table, SoM 3D Diagram (STEP), Data Sheet, Carrier Board Schematic Source File (AD Format), Carrier Board PCB Source File (AD Format), Carrier Board Schematic PDF, SoM 2D CAD Diagram, Carrier Board 2D CAD Diagram. |

Note:: The documentation will be gradually provided and enriched after the product is released.

■ Order Model List:

| Specification Model | Core | CPU Clock | RAM | ROM | Operating Temperature | Supply |
|---------------------------------------|-------|-----------|-----|------|-----------------------|--------|
| FET3568-C+201GSE8GCxx: xx | 4×A55 | 2.0GHz | 1GB | 8GB | 0~+80°C | Batch |
| FET3568-C+202GSE16GCxx: xx | 4×A55 | 2.0GHz | 2GB | 16GB | 0~+80°C | Batch |
| FET3568-C+202GSE32GCxx: xx | 4×A55 | 2.0GHz | 2GB | 32GB | 0~+80°C | Batch |
| FET3568-C+204GSE32GCxx: xx | 4×A55 | 2.0GHz | 4GB | 32GB | 0~+80°C | Batch |
| FET3568J-C+181GSE8GIxx: xx | 4×A55 | 1.8GHz | 1GB | 8GB | -40~+85°C | Batch |
| FET3568J-C+182GSE16GIxx: xx | 4×A55 | 1.8GHz | 2GB | 16GB | -40~+85°C | Batch |
| * FET3568J-C+182GSE16GIxx: xx | 4×A55 | 1.8GHz | 2GB | 16GB | -40~+85°C | Batch |
| FET3568J-C+184GSE32GIxx: xx | 4×A55 | 1.8GHz | 4GB | 32GB | -40~+85°C | Batch |
| * FET3568J-C2+184GSE32GIxx: xx | 4×A55 | 1.8GHz | 4GB | 32GB | -40~+85°C | Batch |
| FET3568J-C2+184GSE32GIxx: xx | 4×A55 | 1.8GHz | 4GB | 32GB | -40~+85°C | Batch |
| FET3568J-C2+188GSE64GIAxx: xx | 4×A55 | 1.8GHz | 8GB | 64GB | -40~+85°C | Batch |

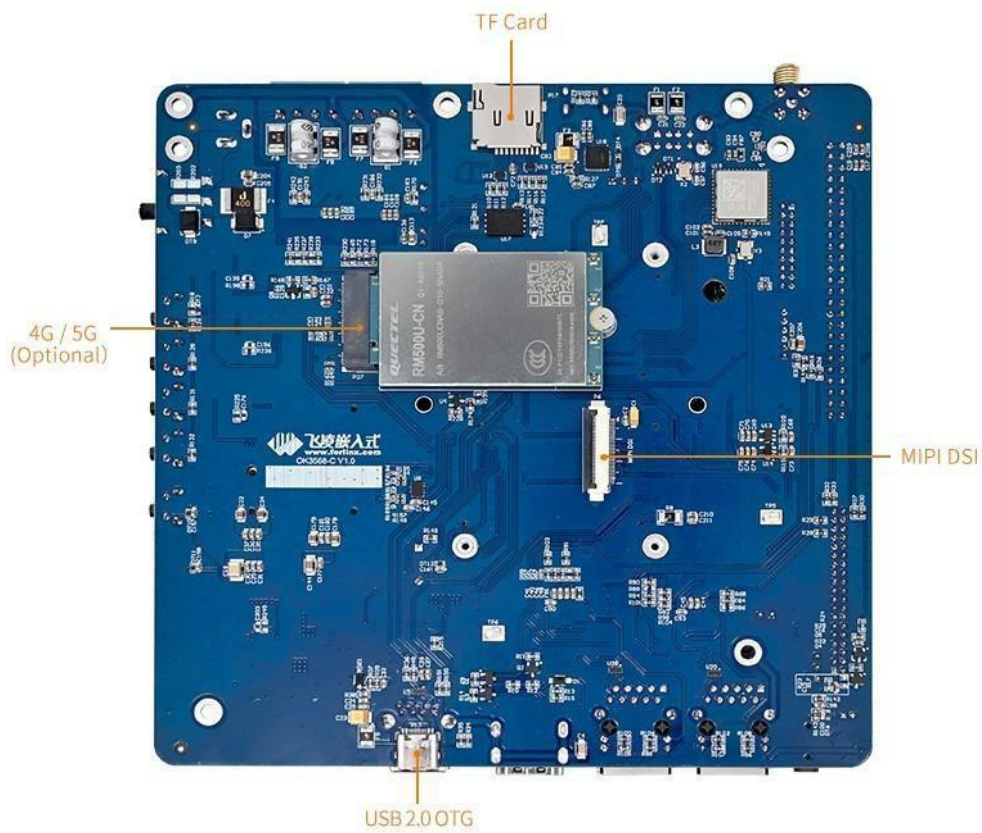
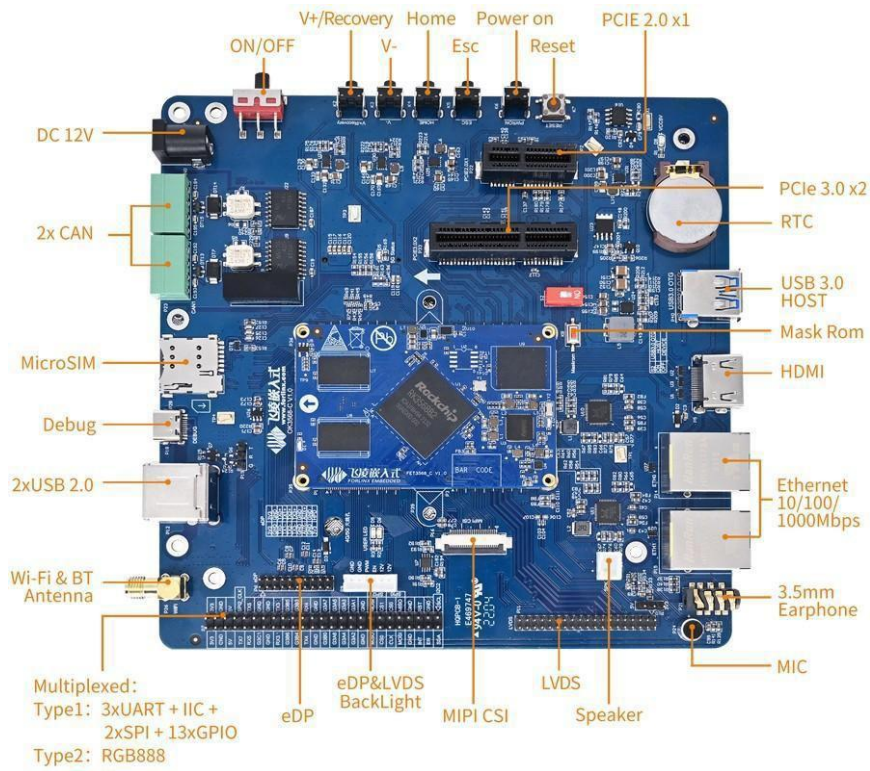
■ SoM Naming Rules:

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

This table describes SoM number terms to define its characteristics (e.g., CPU, frequency, temperature grade, version).

| Field | Field Description | Value | Description |
|---------|---|-------|---|
| A | Product Line Identification | FET | Forlinx Embedded SoM |
| | | FL | Forlinx Embedded All in One Panel |
| - | Segment Identification | - | |
| B | CPU Name | 3568 | RK3568B2 |
| | | 3568J | RK3568J |
| - | Segment Identification | - | |
| C | Connection | C/C2 | Board to Board Connector |
| + | Segment Identification | + | The configuration parameter section follows this identifier. |
| D | CPU Clock | 18 | 1.8GHz |
| | | 20 | 2.0GHz |
| E | RAM Capacity (Unit: Byte) | 2G | 2GB |
| | | 4G | 4GB |
| | | 8G | 8GB |
| F | Single ROM Type | SE | eMMC |
| G | Single ROM Capacity (Unit: Byte) | 16G | 16GB |
| | | 32G | 32GB |
| | | 64G | 64GB |
| H | Operating Temperature | C | 0 to 80°C Commercial-grade |
| | | I | -40 to 85°C Industrial-grade |
| I | Configuration No. | A~Z | If the D ~ H field values of each product are the same, the field values are the same, in ascending order according to the configuration release time |
| J | PCB Version | 10 | V1.0 |
| | | 11 | V1.1 |
| | | xx | Vx.x |
| : KL | Internal Identification of the Manufacturer | : xx | This is the internal identification of the manufacturer and has no impact on the use. |

Development Board:



■ Development Board Function Parameters:

| Function | Quantity | Parameter |
|--------------------|----------|--|
| HDMI 2.0 | 1 | Resolutions up to 1080p @ 120Hz or 4096 × 2304 @ 60Hz |
| eDP | 1 | Supports eDP 1.3 with resolutions up to 2560 × 1600 @ 60Hz |
| LVDS | 1 | Single-channel output, resolution up to 1280 × 800, default fit with 10.1-inch LVDS screen of Forlinx |
| LCD | 1 | Supports RGB888 with a resolution of up to 1280×800, multiplexed with SPI0, SPI2, UART3, UART4, UART5, and UART7. The development board defaults to the above functions, and can be switched to RGB functionality by modifying the software settings. |
| MIPI-DSI | 1 | Single-channel output with a resolution of up to 1920×1080@60Hz, and by default, it is adapted to the Forlinx 7-inch MIPI screen (with a resolution of 1024×600). |
| Camera | 1 | MIPI-CSI, adapted to OV13850 |
| Audio | 1 | 1 x stereo headphone output, 1 x 1.3W Class-D amplifier output, and 1 x MIC input. |
| TF Card | 1 | Supports extended storage and system flashing |
| Ethernet | 2 | 2 x 10/100/1000Mbps adaptive network port, RJ45 lead-out |
| 4G/5G | 1 | M.2 Key-B, including USB 3.0/2.0 interface, can be used to expand 4G/5G modules Adapted to EM05-CE (4G, driver compatible with EC20), RM500U-CN (5G) driver |
| Wi-Fi | 1 | On-board AW-CM358SM, 2.4G/5G dual-band Wi-Fi, BT5.0 |
| Bluetooth | 1 | The Wi-Fi function utilizes 1 x SDIO interface, while the BT function occupies 1 x UART interface (Note: Bluetooth audio is not supported). |
| USB 2.0 | 2 | 2 x USB 2.0 Host, Type-A |
| USB 3.0 | 1 | 1 x USB 3.0 Host, Type-A; the USB 2.0 signal is multiplexed with the USB 2.0 download pins, and the function can be switched via the S2 DIP switch. |
| USB 2.0 OTG | 1 | The Type-C interface shares USB 2.0 pins with the USB 3.0 HOST, and can operate in device mode for firmware flashing and ADB debugging. |
| PCIe 2.1 | 1 | Standard PCIe x1 socket; these functional pins can be multiplexed for SATA functionality through software modification. |
| PCIe 3.0 | 1 | Standard PCIe x4 socket; can be software-configured to operate as 2 x PCIe x1. |
| UART | 3 | 3.3 V TTL level; routed through 2.54 mm pitch header pin |
| CAN | 2 | CAN 2.0, up to 1Mbps; with quarantine and ESD protection |
| SPI | 2 | 3.3 V TTL level; routed through 2.54 mm pitch header pin |
| I2C | 1 | 3.3 V TTL level; routed through 2.54 mm pitch header pin |
| RTC | 1 | On-board CR2032 battery, keep going when power is off |
| Key | 8 | 8 keys in total, including Reset, Switch, OTG, Maskrom, VOL +, VOL-, HOME and ESC |
| Debug | 1 | Onboard USB to serial port chip, led out by Type-C interface, convenient for notebook computer debugging, default baud rate 115 200 |
| Power | 1 | DC 12V input |
| LED | 2 | User-defined LED light |
| FSPI | 1 | Default to empty soldering, and the function is not supported temporarily. |

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