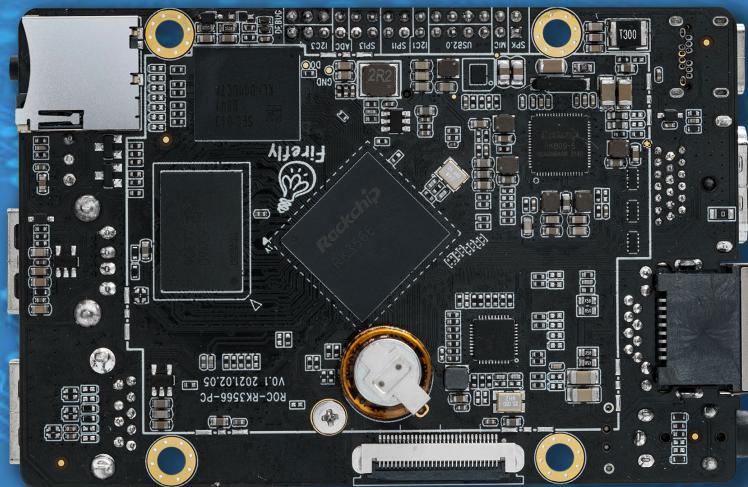


T-CHIP TECHNOLOGY

ROC-RK3566-PC

Quad-Core 64-Bit Mini Computer

V1.0



T-CHIP INTELLIGENCE TECHNOLOGY CO.,LTD.

www.t-firefly.com

Update history

Version	Date	Details
V1.0	2021-5-12	Original Version

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1. Product Overview

Equipped with RK3566 quad-core 64-bit processor, the mini computer supports 8G large RAM. M.2 interface enables expansion with large hard drive. Various systems and boot ways are supported — with the dedicated application programs and forums, geek fun is endless.



1.RK3566 quad-core 64-bit processor

RK3566 quad-core Cortex-A55 processor has frequency up to 1.8GHz — the efficiency is greatly improved. With 22nm lithography process, it features low power consumption and high performance.

2.8GB large RAM, all-data-link ECC

It supports up to 8GB RAM with up to 32Bit width, and supports all-data-link ECC, making data safer and more reliable, and meeting the requirements of running large-memory products application.

3.Integrated co-processors

It is integrated with dual-core GPU, high-performance VPU and high-efficiency NPU. The GPU supports OpenGL ES3.2/2.0/1.1, Vulkan1.1. The VPU can achieve 4K 60fps H.265/H.264/VP9 video decoding and 1080P 100fps H.265/ H.264 video encoding. The NPU supports one-click switching of mainstream frameworks like Caffe/TensorFlow.

4.M.2 interface to expand

The onboard M.2 PCIe2.0 interface can be connected with NVMe SSD, owning the advantages of high-speed reading and writing and large storage.

5.Configured with Geek System

Station OS (Firefly Geek System) brings you living room playing experience. Just connect the TV or display at home to build a home entertainment center to enjoy movies and games with high-definition and big-screen viewing.

6.Various systems and boot ways supported

It supports to upgrade to Android, Ubuntu, Buildroot + QT, Station OS and other systems, and supports to boot the system via TF card, U disk, EMMC, etc. Diverse supporting systems make entertainment, work, programming learning, creative development all easy.

7.A variety of interfaces

With HDMI2.0, USB3.0, USB2.0, MIPI DSI, MIPI CSI, I2C, SPI, UART, ADC, PWM, GPIO, PCIe, I2S and other interfaces, it can be directly used for external device control and expansion.

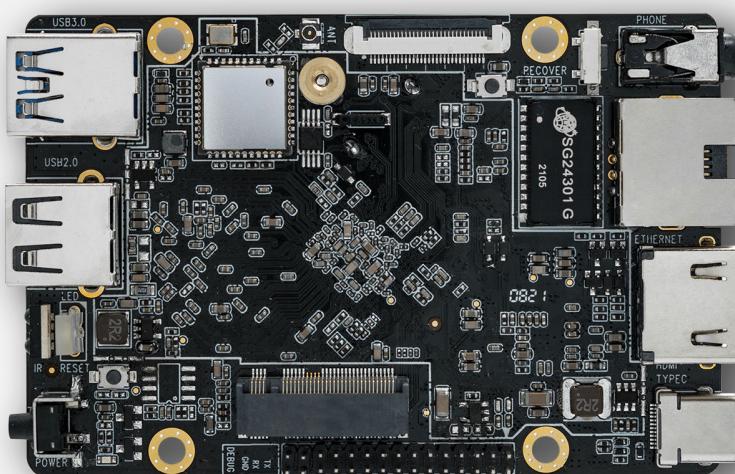
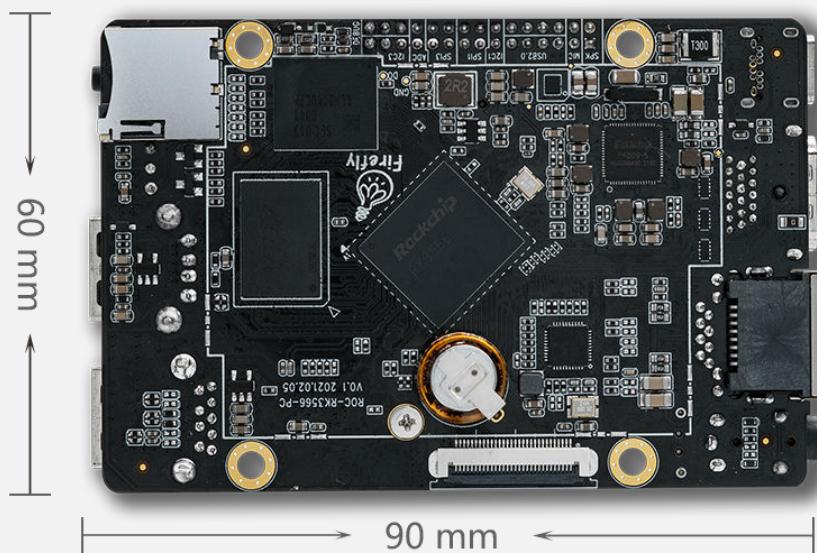
8.Abundant resources for customization

A complete SDK, development documents, examples, technology documents, tutorials and other resources are provided for the users to make a further customization.

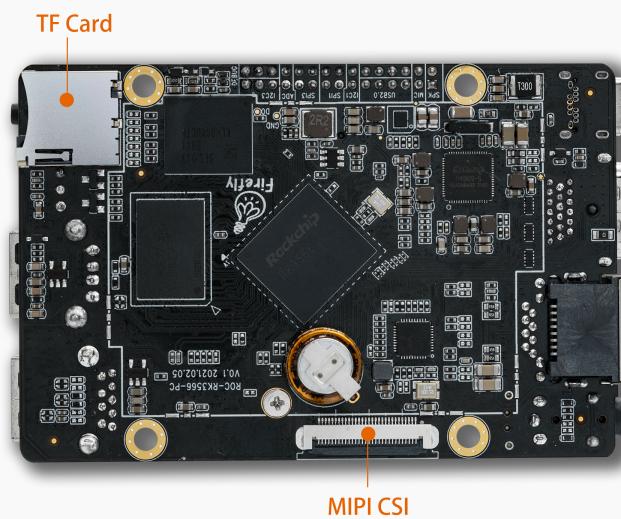
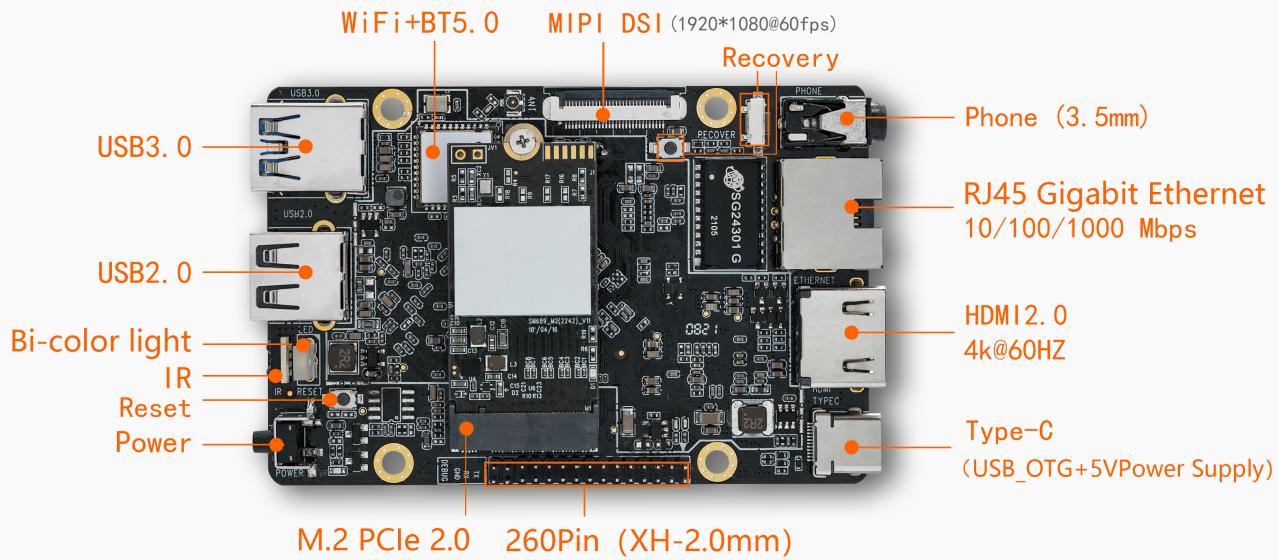
2. Specifications

Specifications	
SOC	RockChip RK3566
CPU	Quad-core 64-bit Cortex-A55, 22nm lithography process, frequency up to 1.8GHz
GPU	ARM G52 2EE Supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 Embedded high-performance 2D acceleration hardware
NPU	0.8Tops@INT8, integrated high-performance AI accelerator RKNN NPU Supports one-click switching of Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet
VPU	Supports 4K 60fps H.265/H.264/VP9 video decoding Supports 1080P 100fps H.265/H.264 video encoding Supports 8M ISP
RAM	2GB / 4GB / 8GB LPDDR4 32Bit, supports all-data-link ECC
Storage	32GB / 64GB / 128GB eMMC M.2 PCIe 2.0 × 1 (Expand with 2242 NVMe SSD) TF-Card Slot x1 (Expand with TF card)
Hardware Features	
Ethernet	Supports Gigabit Ethernet (RJ45, 1000 Mbps)
WiFi	Supports dual-band WiFi (802.11 a/b/g/n) Supports BT5.0
Display	1 × HDMI2.0. Supports 4K@60fps output 1 × MIPI DSI. Supports 1920*1080@60fps output (or dual-channel 1×MIPI DSI 2560*1440@60fps)
Audio	1 × HDMI audio output 1 × Earphone output
Camera	1 × MIPI-CSI camera interface
Power	5V (Via Type-C port)
Interface	HDMI2.0, USB3.0, USB2.0, MIPI DSI, MIPI CSI, I2C, SPI, UART, ADC, PWM, GPIO, PCIe, I2S, etc.
OS/Software	
OS	Supports Android 11.0, Ubuntu 18.04, Buildroot + QT, Station OS
Others	
Size	90.0 mm × 60.0 mm
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Storage Humidity	Storage Humidity :10% ~ 80 %

3. Size

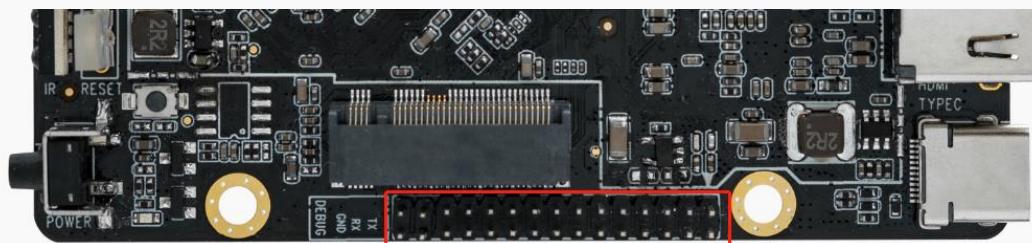


4. Interface



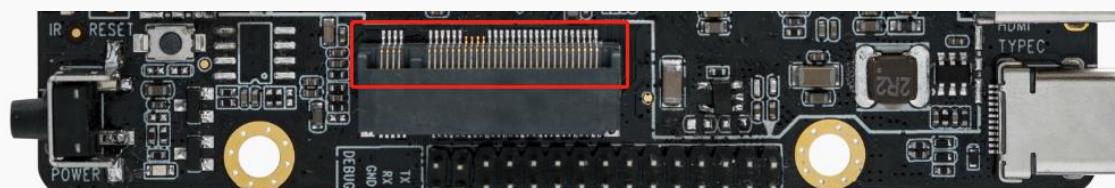
5. Interface definitions

1. (J1) Dual-row (15X2) 30 PIN 2.0 Pitch Interface



NO.	Definition	Voltage/V	NO.	Definition	Voltage/V
1	SPK_MINI_P	5	2	SPK_MINI_N	5
3	MIC2_IN	3.3	4	MIC1_IN	3.3
5	GND		6	VCC3V3_EXT	3.3
7	USB_HOST3_DP	3.3	8	GND	
9	USB_HOST3_DM	3.3	10	I2S3_LRCK_M1/GPIO4_C4	3.3
11	VCC5V0_SYS	5.0	12	POWER_KEY	3.3
13	I2C1_SCL (板上上拉电阻 2.2K)	3.3	14	I2C1_SDA (板上上拉电阻 2.2K)	3.3
15	SPI1_MISO_M1	3.3	16	SPI1_MOSI_M1	3.3
17	SPI1_CS0_M1	3.3	18	SPI1_CLK_M1	3.3
19	SPI3_MISO_M1/GPIO4_C5	3.3	20	SPI3_CS0_M1/GPIO4_C6	3.3
21	SPI3_CLK_M1/GPIO4_C2	3.3	22	SPI3_MOSI_M1/GPIO4_C3	3.3
23	SARADC_VIN3 (板上上拉电阻 10K)	1.8	24	GPIO0_D5_D	1.8
25	I2C3_SDA_M0/GPIO1_A0 (板上上拉电阻 2.2K)	3.3	26	DEBUG_RX	3.3
27	I2C3_SCL_M0/GPIO1_A1 (板上上拉电阻 2.2K)	3.3	28	DEBUG_TX	3.3
29	GND	3.3	30	GND	3.3

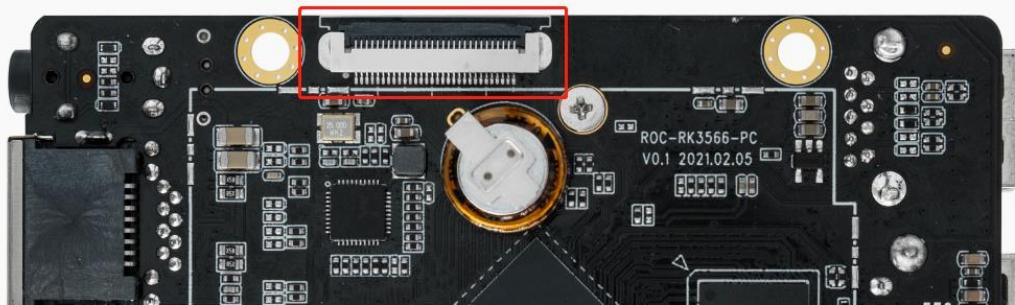
2. (J12) M-KEY PCIE Interface (PCIe2.0 x 1)



NO.	Definition	Voltage/V	NO.	Definition	Voltage/ V
1	GND		2	VCC3V3_PCIE	3.3
3	GND		4	VCC3V3_PCIE	3.3
5	NC		6	NC	

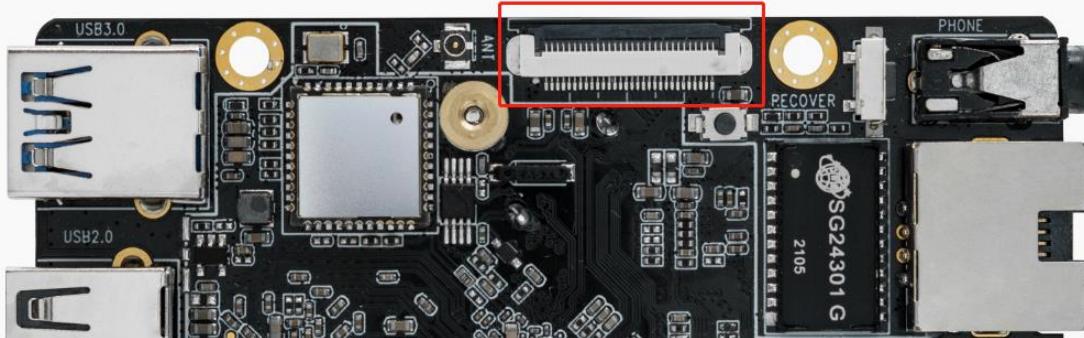
7	NC	5.0	8	NC	
9	GND	5.0	10	DAS/DSS	3.3
11	NC	1.8	12	VCC3V3_PCIE	3.3
13	NC	1.8	14	VCC3V3_PCIE	3.3
15	GND	1.8	16	VCC3V3_PCIE	3.3
17	NC	1.8	18	VCC3V3_PCIE	3.3
19	NC		20	NC	
21	GND		22	NC	
23	NC		24	NC	
25	NC		26	NC	
27	GND		28	NC	
29	NC		30	NC	
31	NC		32	NC	
33	GND		34	NC	
35	NC		36	NC	
37	NC		38	DEVSLP	3.3
39	GND		40	NC	
41	PCIE20_RXN	1.8	42	NC	
43	PCIE20_RXP	1.8	44	NC	
45	GND		46	NC	
47	PCIE20_TXN_C(series capacitance 0.1uF)	1.8	48	NC	
49	PCIE20_TXP_C(series capacitance 0.1uF)	1.8	50	PCIE20_PERSTN_M2	3.3
51	GND		52	PCIE20_CLKREQN_M2	3.3
53	PCIE20_REFCLKN_C	1.8	54	PCIE20_WAKEN_M2	3.3
55	PCIE20_REFCLKP_C	1.8	56	NC	
57	GND		58	NC	
59	NC		60	NC	
61	NC		62	VCC3V3_PCIE	3.3
63	GND		64	VCC3V3_PCIE	3.3
65	GND		66	VCC3V3_PCIE	3.3
67	GND		68	GND	
69	GND		70	NC	
71	NC		72	NC	
73	NC		74	NC	

3. (J10) MIPI CAMERA 30 PIN 0.5 Pitch



NO.	Definition	Voltage/V	NO.	Definition	Voltage/V
1	I2C2_SDA_M1 (板上上拉电阻 2.2K)	1.8	16	GND	
2	I2C2_SCL_M1 (板上上拉电阻 2.2K)	1.8	17	MIPI_CSI_RX_CLK0P	1.8
3	MIPI_PDN0_CAM	1.8	18	MIPI_CSI_RX_CLK0N	1.8
4	MIPI_RESET0_CAM	1.8	19	GND	
5	GND		20	MIPI_CSI_RX_D2P	1.8
6	MIPI_MCLK0	1.8	21	MIPI_CSI_RX_D2N	1.8
7	MIPI_PDN1_CAM	1.8	22	GND	
8	MIPI_RESET1_CAM	1.8	23	MIPI_CSI_RX_D3P	1.8
9	MIPI_MCLK1	1.8	24	MIPI_CSI_RX_D3N	1.8
10	GND		25	GND	
11	MIPI_CSI_RX_D0P	1.8	26	MIPI_CSI_RX_CLK1P	1.8
12	MIPI_CSI_RX_D0N	1.8	27	MIPI_CSI_RX_CLK1N	1.8
13	GND		28	GND	
14	MIPI_CSI_RX_D1P	1.8	29	VCC5V0_SYS	5.0
15	MIPI_CSI_RX_D1N	1.8	30	VCC5V0_SYS	5.0

4. (J6) MIPI_Display_Interface 30 PIN 0.5 Pitch



NO.	Definition	Voltage/V	NO.	Definition	Voltage/V
1	VCC_SYS	5.0V	16	MIPI_DSI_TX0_D0P	1.8V
2	VCC_SYS	5.0V	17	MIPI_DSI_TX0_D0N	1.8V
3	VCC_SYS	5.0V	18	GND	
4	GND		19	MIPI_DSI_TX0_D1P	1.8V

5	GPIO0_A0_d	3.3V	20	MIPI_DSI_TX0_D1N	1.8V
6	VCC3V3_EXT	3.3V	21	GND	
7	I2C2_SDA_M0_TP	3.3V	22	MIPI_DSI_TX0_CLKP	1.8V
8	I2C2_SCL_M0_TP	3.3V	23	MIPI_DSI_TX0_CLKN	1.8V
9	LCD_EN_GPIO0_C7	3.3V	24	GND	
10	TP_INT_GPIO0_A5	3.3V	25	MIPI_DSI_TX0_D2P	1.8V
11	BL_EN_GPIO0_C0	3.3V	26	MIPI_DSI_TX0_D2N	1.8V
12	LCD_BL_PWM4	3.3V	27	GND	
13	LCD_RST_L_GPIO0_C2	3.3V	28	MIPI_DSI_TX0_D3P	1.8V
14	TP_RST_L_GPIO0_C5	3.3V	29	MIPI_DSI_TX0_D3N	1.8V
15	GND		30	GND	

6. Geek PC

Thin and mini, M2 supports 8GB large RAM. M.2 interface enables expansion with large hard drive. Various systems and boot ways are supported — geek fun is endless. You can remotely control the device through Station app/Wechat mini program, which makes you enjoy playing anywhere.

(Station M2 Geek PC)



Company profile

T-Chip Intelligent Technology (Zhongshan) Co., Ltd. , established in 2005, has more than ten years of technological product research and development capabilities, and has nearly 100 patents and software copyrights. As a national high-tech enterprise, we focus on the research and development, production and sales of open source smart hardware, Internet of Things, and digital audio products, while also provide overall solutions with smart hardware products.

T-Chip is an IDH (Independent Design House) officially authorized by Rockchip in Fuzhou, and also a strategic partner of Rockchip, with a close cooperative relationship for more than 10 years.

Firefly is a brand established by T-Chip, with open source community and online store. Firefly products include core boards, mainboards, embedded computers, cluster servers, development kits and other products. Currently, we have more than 100,000 users, including more than 10,000 enterprise users such as Arm, Google, Baidu, Tencent and Alibaba.

Firefly team has more than 70 R&D members, with excellent research and development capabilities of schematic design, PCB layout, board mass production, embedded development, system development, application development and so on. We accelerate the research and development process for many technology entrepreneurs and start-ups, and provide professional technical services.

Make technology simpler, Make life smarter - is the idea of Firefly team. We hope that through Firefly's open source products and technical services, the research and development of various technological products will become efficient and simple, and intelligent technology can be integrated into life.

Firefly is committed to providing enterprise customers with long-term stable and reliable industrial products and services, and continuously creating value for customers.

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