



IAC-RK3576-Kit Hardware Manual

Version No.: 1.0

Jan. 2025

Zhejiang Qiyang Intelligent Technology Co. Ltd.
Copyright Reserved

Company Profile

Founded in 2007 in Hangzhou, Zhejiang Qiyang Intelligent Technology Co., Ltd. is a national high-tech enterprise focusing on the research, development, production and sales of ARM embedded products. more than 10 years of accumulation and precipitation, and successfully built the product from development to mass production of the service chain.

As the core of the company, Qiyang R&D team consists of more than 30 embedded engineers, dedicated to providing users with easy-to-use embedded hardware, software tools and customized product solutions. It has been widely used in industrial control, Internet of Things, new retail, medical, electric power, environmental monitoring, charging pile and other fields.

The production base in Zhuji provides a strong guarantee for Qiyang, covering an area of 5,000 square meters, with two SMT production lines, through and strictly follow the ISO9001 quality management system certification to guide production. Relying on the strong production strength, the annual production capacity of up to 1 million sets, to ensure that the user delivery, to solve the worries.

Qiyang has a perfect sales and marketing network, professional sales and after-sales team to provide users with a full range of technical support and services. Our business has spread to more than 120 countries and regions, and we have successfully helped more than 2,000 users to bring their products to the market quickly and efficiently.

The combination and extension of R&D, production capacity and market has laid a solid foundation for Qiyang Intelligence to become a specialized and globalized embedded hardware and software supplier.

We offer you:

- **Multi-platform software/hardware products**

Any question, please send E-mail :supports@qiyangtech.com

Sales E-mail :trade@qiyangtech.com sales@qiyangtech.com

Website:<http://www.qiytech.com>

©2025 Qiyangtech Copyright

NXP, Rockchip, MTK, Renesas, TI, Atmel, Cirrus Logic and other multi-platform ARM development boards/core boards/industrial control boards and peripheral hardware products, as well as supporting the user to support rapid secondary development of supporting tools and software resources.

- **Customized services**

Give full play to the accumulated technology on ARM platform and Linux, Android, Ubuntu, Debian operating systems to provide users with customized embedded product services (OEM/ODM).

Thank you for using Qiyang Intelligence's products, we will do our best to provide you with technical assistance! We wish you good luck in your work!

Technical Support

If you have questions about the documentation, you can contact us during office hours (Monday - Friday 8:30-12:00, 13:30-17:30) by one of the following methods:

Technical e-mail: supports@qiyangtech.com

Technical Support Tel: 0571-87858811-805

Website: [www.qiytech.com\(Chinese\)/www.qiyangtech.com\(English\)](http://www.qiytech.com(Chinese)/www.qiyangtech.com(English))

Updates and access to information

1. Updating of information

The information about the product is constantly being improved and updated, so please make sure that it is up to date when you use the content.

2、Update notification

Please note that Qiyang Intelligence's products update are notified via WeChat.



3. Access to information

After product purchase, please contact our business staff to get it.

4. Provision of information

Software: factory image, related kernel source code, interface test source code, cross-compiler

Hardware: Corresponding baseboard schematics, PCB source files (Allegro 16.6)

Documentation: Hardware manual, test manual, user manual, environment construction manual, IO pin comparison table, core board, chassis structure dimension drawing (dxf), original chip information, etc.

Recommendations for use

- 1) Before using the development board, be sure to read the hardware manual first;
- 2) Before use, please check the packing list in detail and test the information CD-ROM for missing documents;
- 3) Understand the basic structure and composition of the development board, including the allocation of hardware resources, the SOM and the base board of each pin definition, as well as the definition of the expansion pin and so on;
- 4) If you need to burn images, development board function test, etc., you also need to read the user manual and test manuals
- 5) IAC-RK3576-Kit development board, bulk order accepted.

Version Record

Version No.	Hardware Platform	Date	Revision	Revised by
V1.0	IAC-RK3576-MB-BETA-V1_00 IAC-RK3576-CM-BETA-V1_00	2025-01	Initial version	Maoh

Contents

I. System Components	7
1.1. Chip Overview	7
1.2. SOM Overview	9
1.3. Development Board Resources	10
II. The development board interface function	12
2.1. Basic interface function description	13
2.2. Interface Pin Definition.....	14
III. Size & Dimensions.....	31
3.1. SOM size	31
3.2. Development board size	32
IV. Device Connection Schematic	32
V. Electrical Characteristics	33
VI. Notes	34

Note: This manual mainly introduces the hardware interface of this development board.

I. System Components

1.1. Chip Overview

With integrated quad-core Cortex-A72, quad-core Cortex-A53, and NEON co-processor, the RK3576 is a low-power, high-performance ARM architecture processor for ARM-based PCs, edge computing devices, personal mobile Internet devices, and other digital multimedia applications.

RK3576 video codec supports up to 8K@30fps or 4K@120fps H.264, H.265, VP9, AV1, AVS2, etc. decoding, up to 4K@60fps H.264 and H.265 encoding. JPEG codec supports up to 4K@60fps.

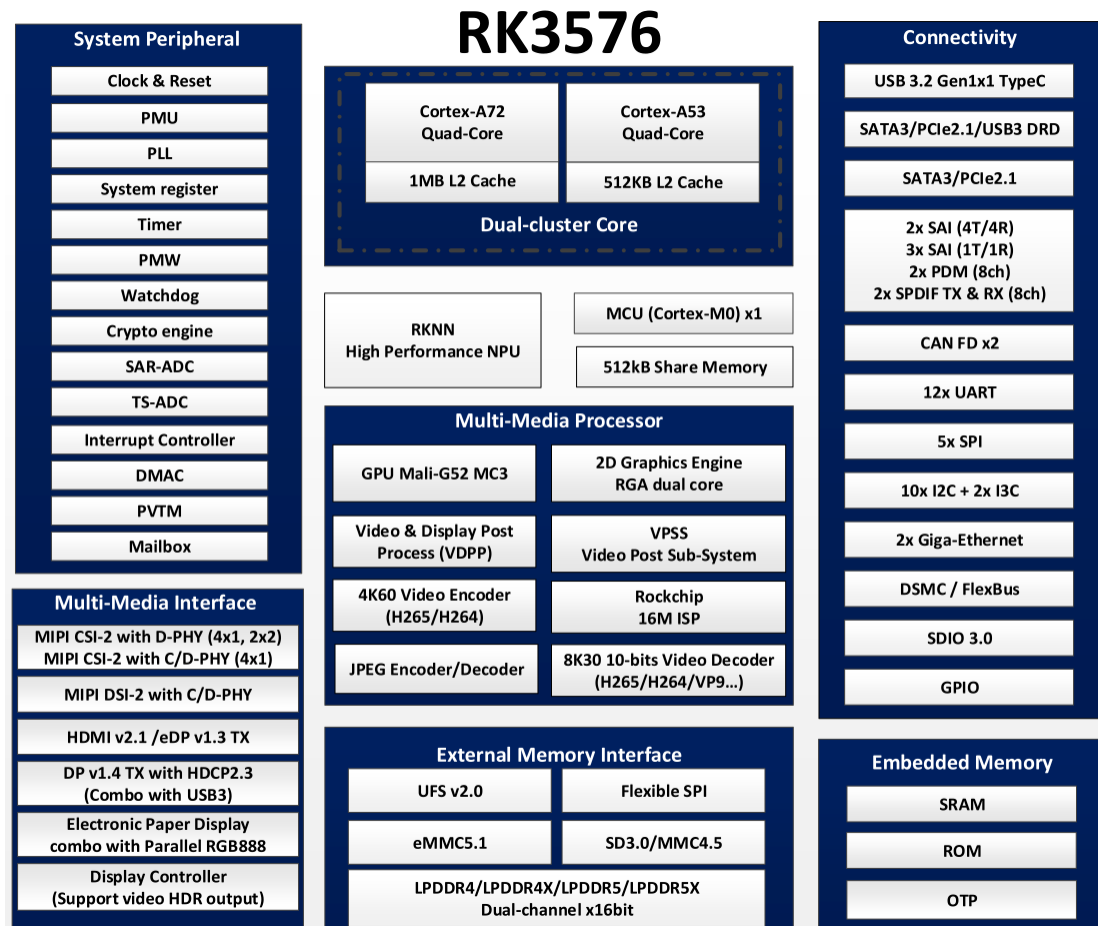
The integrated embedded 3D GPU makes the RK3576 a perfect fit for OpenGL ES 1.1, 2.0, and 3.2, OpenCL 2.0, and Vulkan 1.1. The dedicated 2D hardware engine with MMU will maximize display performance and provide smooth operation.

RK3576 introduces a new generation of 1600W pixel ISP (Image Signal Processor). It implements many algorithmic gas pedals such as HDR, 3A, CAC, 3DNR, 2DNR, sharpening, deblurring, enhancement, denoising, and small angle lens distortion correction.

The built-in NPU supports INT4/INT8/INT16/FP16/BF16/TF32 mixed operation, and also supports easy conversion such as TensorFlow/MXNet/PyTorch/Caffe.

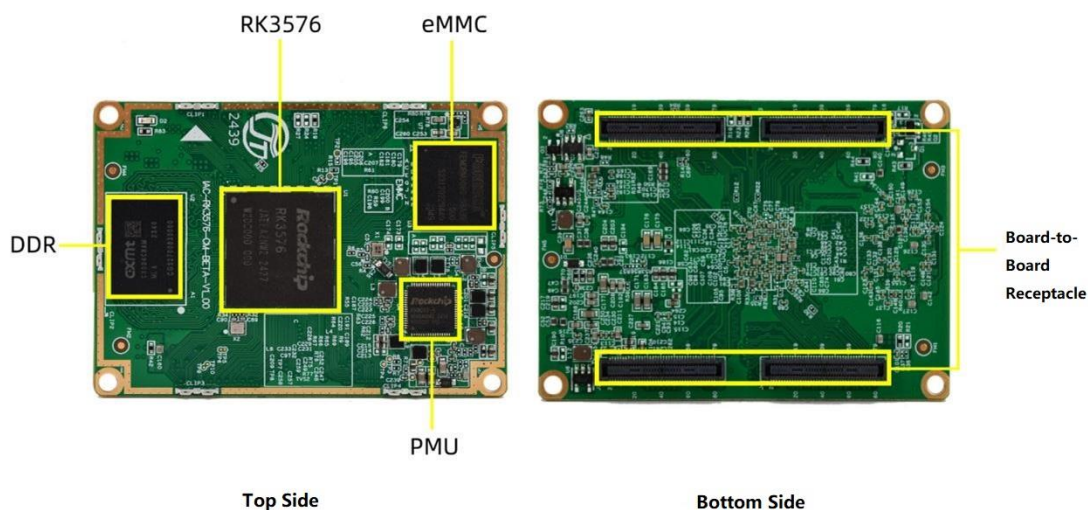
The RK3576 supports high-performance dual-channel external memory interfaces such as (LPDDR4/LPDDR4X/LPDDR5/LPDDR5X), providing a complete set of peripheral interfaces to support flexible applications.

The processor block diagram is shown below:



1.2. SOM Overview

IAC-RK3576-CM SOM adopts 8-layer PCB board with high-precision gold immersion process and high TG board, which has reliable electrical performance and anti-interference performance; it integrates CPU, LPDDR4, eMMC, power management chip, etc.; it adopts board-to-board connector to lead out up to 320 pins, which fully expands the hardware resources of RK3576, and it can be reused and combined with different interfaces according to the pinning situation. The RK3576 hardware resources can be fully expanded by using the board-to-board connector, and different interfaces can be multiplexed and combined according to the pin conditions to create a baseboard that meets the requirements.



◆ Onboard RockChip RK3576 processor;

Any question, please send E-mail : supports@qiyangtech.com

Sales E-mail : trade@qiyangtech.com sales@qiyangtech.com

Website: <http://www.qiytech.com>

©2025 Qiyangtech Copyright

- ◆ Onboard 2GB LPDDR4, 8GB eMMC (default configuration);
- ◆ The SOM adopts 8-layer PCB board with high-precision gold immersion process;
- ◆ SOM size: 45mm*62mm, suitable for various embedded occasions;
- ◆ The SOM adopts 4x 80-Pin board-to-board connectors to derive SOM resources;
- ◆ Using 5V power supply, on-board power management chip;
- ◆ OS: Linux6.1, Debian12 and Android 14;

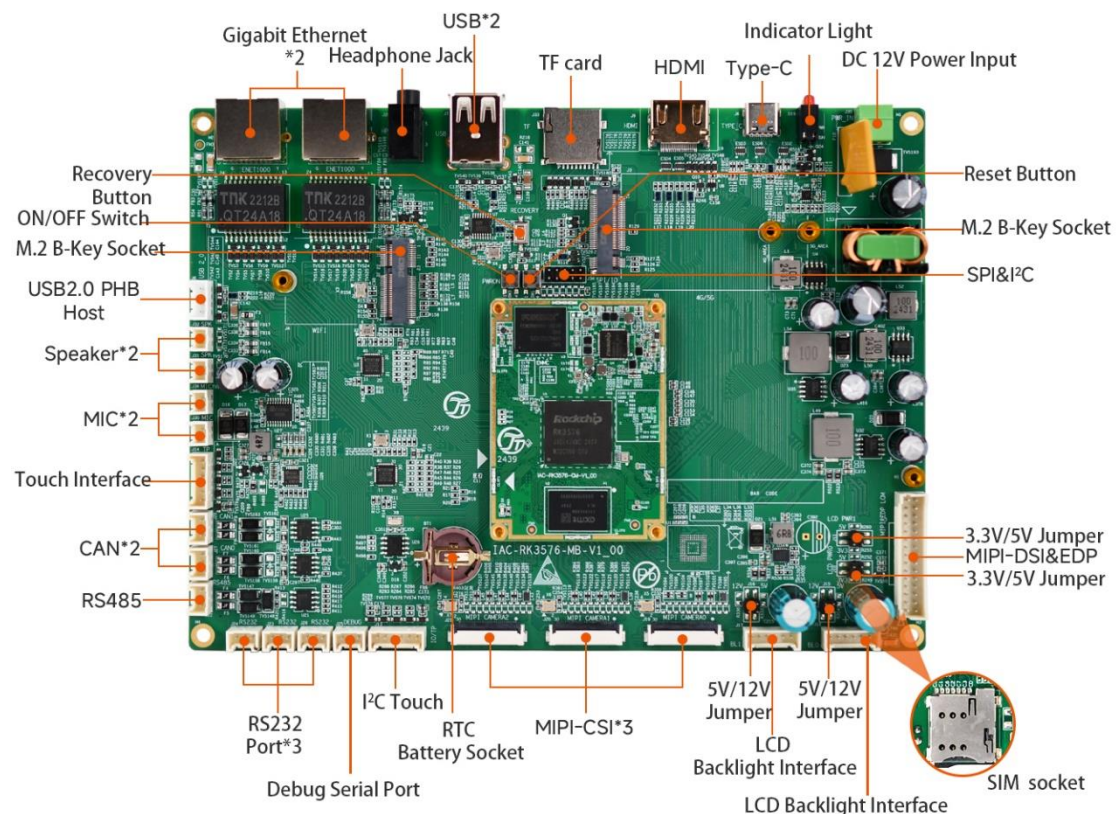
1.3. Development Board Resources

hardware resource	CPU	RockChip RK3576 Processor
	Processor	Quad ARM® Cortex™-A72 core+ Quad ARM® Cortex™-A53 core, Rk3576 up to 2.2GHz, ARM® Cortex™-A53 up to 2.0GHz
	GPU	ARM Mail G52 MC3 OpenGL ES 1.1 2.0 3.2, Vulkan 1.1, Open CL 2.0FP
	VPU	Support 4K60fps, H.265/4, AVS2, VP9, AV1 video decoding Support 4K60fps, H.265/4 video encoding
	NPU	Neuro processor unit: up to 6 TOPS for INT8 available
	ISP	Dual Image Signal Processors (ISP): up to 16 MP resolution
	RAM	2GB LPDDR4
	Flash	8GB eMMC, expandable 16GB eMMC, 32GB eMMC, optional
	PMIC	RockChip RK806S Power Management Unit
	Ethernet	2-channel network chip adopts RGMII mode to support 10M/100M/1000M Ethernet perfectly.
	Communication interface	1-ch RS232 debugging serial port
		3-ch RS232 serial ports (3 three-wire RS232 serial ports)
		1-ch RS485 interface
		2-ch CANFD interfaces
	Display interface	1 x 4-channel MIPI_DSI display interface with resolution up to 1920x1200@60
		1 x 4-channel eDP display interface with resolution up to 4K@60fps (multiplexed with HDMI)
		1-ch HDMI display interface (eARC function included), resolution up to 4K@120fps
	Audio interface	2-ch Speaker, Amplifier Output

		Dual-channel audio output (headphone socket)
		2-ch MIC audio inputs
	USB port	3-ch USB2.0 HOST interface
		1-ch USB Type-c port
	Camera Interface	3-ch MIPI-CSI (4-channel), support three-way camera input at the same time
	Input interface	Standard I2C capacitive screen interface
	Extended Interface	M.2 E-KEY interface, external WiFi module (PCIE & SDIO)
		M.2 B-KEY interface, external 5G module, SIM card interface (USB3.0)
	Other interfaces	SPI I2C (1.8V)
	Storage Interface	1-ch TF card
		1-ch UFS (reserved, not posted by default)
	Other equipment	Reset Circuit, Watchdog Circuit, Real Time Clock
	Power Input	9V~32V, default DC_12V
Electrical Characteristics	Layer/Size	SOMsize: 45mm*62mm 8-layer board with high-precision gold immersion process
		Base board size: 140mm*190mm 4-layer plate high-precision gold immersion process
	Power Consumption	Whole board power consumption 5W (no load)
	Operating temperature	0℃ ~ + 70℃
	Storage temperature	-10℃ ~ +80℃
	Operating humidity	5% to 95%, non-condensing
	Version Configuration	Default configuration 2GB DDR/8GB eMMC (0℃ ~ +70℃)
		TO DO

II . The development board interface function

Interface Block Diagram – Top Side



2.1. Basic interface function description

No.	Function
J35	DC12V power input
J4	M.2 E-KEY socket
J3	M.2 B-KEY socket
J16/J17	LCD Backlight Interface
J15/J18	5V/12V jumper (LCD backlight)
J27/J28	CAN interface
J36/J30	MIC Input Connector
J31/J32	Speaker Output Connector
J25	Debugging serial port (RS232 level)
J23/J24/J26	RS232 interface
J22	RS485 interface
J13	I2C interface (capacitive touch screen)
J12	MIPI-DSI & eDP Display Interface
J10/J11	3.3V/5V Jumper
BT1	RTC Battery
J19/J20/J21	MIPI-CSI interface
SW3	ON/OFF switch
SW2	Recovery Button
SW1	Reset button
J11/J2	Gigabit Ethernet Interface
J9	HDMI display interface
J6	Type-C port
J33	TF card slot

J29	headphone jack
S1	SIM card slot (back)
J8	USB2.0 PHB HOST
J7	Dual Layer USB 2.0 Type-A HOST
J34	SPI & I2C

2.2. Interface Pin Definition

U1A: (SOM interface pin)

Multiplexed GPIO	Signal Name	PIN#	PIN#	Signal Name	Multiplexed GPIOs
	VCC_IO_3V3_S0	1	2	VCC_IO_1V8_S0	
	GND	3	4	GND	
	PCIE0_RXP	5	6	PCIE0_REFCLKP	
	PCIE0_RXN	7	8	PCIE0_REFCLKN	
	GND	9	10	GND	
	PCIE0_TXN	11	12	PCIE1_CLKP	
	PCIE0_TXP	13	14	PCIE1_CLKN	
	GND	15	16	GND	
	USB3_HOST1_SSTX P	17	18	CSI4_CLKP	
	USB3_HOST1_SSTX N	19	20	CSI4_CLKN	
	GND	21	22	GND	
	USB3_HOST1_SSRX P	23	24	MIPI_CSI3_RX_D3N	
	USB3_HOST1_SSRX N	25	26	MIPI_CSI3_RX_D3P	

	GND	27	28	GND	
GPIO1_D3_d	GPIO_WLAN_WAKE	29	30	MIPI_CSI3_RX_D2N	
GPIO1_D2_d	GPIO_WAKE_BT	31	32	MIPI_CSI3_RX_D2P	
GPIO1_D0_d	GPIO_SDIO_nRST	33	34	GND	
GPIO1_D1_d	GPIO_CAM2_nRST	35	36	MIPI_CSI3_RX_CLKN	
GPIO1_C7_d	GPIO_CAM2_PWDN	37	38	MIPI_CSI3_RX_CLKP	
GPIO1_C6_d	GPIO_CAM2_PWRE N	39	40	GND	
GPIO1_D5_d	I2C5_SDA	41	42	MIPI_CSI3_RX_D1N	
GPIO1_D4_d	I2C5_SCL	43	44	MIPI_CSI3_RX_D1P	
GPIO1_C2_u	UART4_RTSn	45	46	GND	
GPIO1_C3_u	UART4_CTSn	47	48	MIPI_CSI3_RX_D0N	
GPIO1_C5_d	UART4_RXD	49	50	MIPI_CSI3_RX_D0P	
GPIO1_C4_d	UART4_TXD	51	52	GND	
	GND	53	54	RECOVERY	
GPIO1_C1_d	SDMMC1_CLK	55	56	NC	
GPIO1_B5_d	SDMMC1_D1	57	58	NC	
GPIO1_B4_d	SDMMC1_D0	59	60	NC	
GPIO1_B6_d	SDMMC1_D2	61	62	NC	
GPIO1_B7_d	SDMMC1_D3	63	64	NC	
GPIO1_C0_d	SDMMC1_CMD	65	66	NC	
	GND	67	68	GND	
GPIO2_A1_d	SDMMC0_D1	69	70	UART7_TXD	GPIO2_B6_d
GPIO2_A0_d	SDMMC0_D0	71	72	UART7_RXD	GPIO2_B7_d
GPIO2_A4_d	SDMMC0_CMD	73	74	GPIO_RS485_DIR	GPIO2_B5_d

GPIO2_A3_d	SDMMC0_D3	75	76	GPIO_WIFI_REG_ON	GPIO2_B4_d
GPIO2_A2_d	SDMMC0_D2	77	78	CAN1_RXD	GPIO3_A3_d
GPIO2_A5_d	SDMMC0_CLK	79	80	CAN1_TXD	GPIO3_A2_d

U1B: (SOM interface pin)

Multiplexed GPIO	Signal Name	PIN#	PIN#	Signal Name	Multiplexed GPIO
	VCC_SYS_5V0	1	2	VCC_SYS_5V0	
	VCC_SYS_5V0	3	4	VCC_SYS_5V0	
	VCC_SYS_5V0	5	6	VCC_SYS_5V0	
	VCC_SYS_5V0	7	8	VCC_SYS_5V0	
	VCC_SYS_5V0	9	10	VCC_SYS_5V0	
	VCC_SYS_5V0	11	12	VCC_SYS_5V0	
	VCC_SYS_5V0	13	14	VCC_SYS_5V0	
	GND	15	16	GND	
	GND	17	18	GND	
	GND	19	20	GND	
	VCC_IO_1V8_S3	21	22	SYS_nRESET_1V8	
	VCC_IO_3V3_S3	23	24	GND	
	GND	25	26	PMIC_PWRON	
GPIO0_A0_d	GPIO_WL_PWR_EN	27	28	PMIC_EXT_EN	
GPIO0_A7_u	SDMMC0_DET_L	29	30	GPIO_CAM0_PWREN	GPIO0_A5_d
GPIO0_B1_z	I2C0_SDA	31	32	HDMI_TX_ON_H	GPIO0_B6_d
GPIO0_B0_z	I2C0_SCL	33	34	PWM0_CH0	GPIO0_C4_d
GPIO0_A2_d	GPIO_RUN_LED	35	36	PWM0_CH1	GPIO0_C3_d
GPIO0_D4_u	UART0_TXD	37	38	GPIO_CAM0_PWDN	GPIO0_D2_d

GPIO0_D5_u	UART0_RXD	39	40	GPIO_CAM0_nRST	GPIO0_D3_d
GPIO0_D1_d	SPI0_MISO	41	42	GPIO_WDT_EN	GPIO0_C5_d
GPIO0_D0_d	SPI0_MOSI	43	44	GPIO_WDT_FEED	GPIO0_C2_d
GPIO0_C6_d	SPI0_CS0T	45	46	GPIO_CAM1_PWREN	GPIO0_C1_d
GPIO0_C7_d	SPI0_CLK	47	48	UART1_RXD	GPIO0_C0_d
	GND	49	50	UART1_TXD	GPIO0_B7_d
	MIPI_CSI1_RX_D0P	51	52	GPIO_CAM1_PWDN	GPIO0_B4_d
	MIPI_CSI1_RX_D0N	53	54	GPIO_CAM1_nRST	GPIO0_B5_d
	MIPI_CSI1_RX_D1P	55	56	GND	
	MIPI_CSI1_RX_D1N	57	58	HDMI_TX_D1P	
	GND	59	60	HDMI_TX_D1N	
	MIPI_CSI1_RX_CLKP	61	62	HDMI_TX_D2P	
	MIPI_CSI1_RX_CLKN	63	64	HDMI_TX_D2N	
	GND	65	66	GND	
	MIPI_CSI1_RX_D2P	67	68	HDMI_TX_D0P	
	MIPI_CSI1_RX_D2N	69	70	HDMI_TX_D0N	
	MIPI_CSI1_RX_D3P	71	72	HDMI_TX_D3P/CLKP	
	MIPI_CSI1_RX_D3N	73	74	HDMI_TX_D3N/CLKN	
	GND	75	76	GND	
	CSI2_CLKN	77	78	HDMI_TX_SBDP	
	CSI2_CLKP	79	80	HDMI_TX_SBDN	

U1D: (SOM interface pin)

Multiplexed GPIOs	Signal Name	PIN#	PIN#	Signal Name	Multiplexed GPIO
	GND	1	2	GND	

	MIPI_CSI0_RX_D3P	3	4	MIPI_DSI_TX_D3P	
	MIPI_CSI0_RX_D3N	5	6	MIPI_DSI_TX_D3N	
	GND	7	8	GND	
	MIPI_CSI0_RX_D2P	9	10	MIPI_DSI_TX_D2P	
	MIPI_CSI0_RX_D2N	11	12	MIPI_DSI_TX_D2N	
	GND	13	14	GND	
	MIPI_CSI0_RX_CLKP	15	16	MIPI_DSI_TX_CLKP	
	MIPI_CSI0_RX_CLKN	17	18	MIPI_DSI_TX_CLKN	
	GND	19	20	GND	
	MIPI_CSI0_RX_D1P	21	22	MIPI_DSI_TX_D1P	
	MIPI_CSI0_RX_D1N	23	24	MIPI_DSI_TX_D1N	
	GND	25	26	VDD_1V8	
	MIPI_CSI0_RX_D0P	27	28	MIPI_DSI_TX_D0P	
	MIPI_CSI0_RX_D0N	29	30	MIPI_DSI_TX_D0N	
	GND	31	32	GND	
	USB2_OTG1_DM	33	34	TYPEC_OTG0_SSTX2 N	
	USB2_OTG1_DP	35	36	TYPEC_OTG0_SSTX2P	
	GND	37	38	GND	
	USB2_OTG0_DM	39	40	TYPEC_OTG0_SSRX2 P	
	USB2_OTG0_DP	41	42	TYPEC_OTG0_SSRX2 N	
	GND	43	44	GND	
	USB2_OTG0_ID	45	46	TYPEC_OTG0_SSTX1 N	

	USB2_OTG0_VBUSD ET	47	48	TYPEC_OTG0_SSTX1P	
	GND	49	50	GND	
	DP_TX_AUXN	51	52	TYPEC_OTG0_SSRX1 P	
	DP_TX_AUXP	53	54	TYPEC_OTG0_SSRX1 N	
	GND	55	56	GND	
	UFS_TX_D0N	57	58	UFS_RX_D0P	
	UFS_TX_D0P	59	60	UFS_RX_D0N	
	GND	61	62	GND	
	UFS_TX_D1N	63	64	UFS_RX_D1P	
	UFS_TX_D1P	65	66	UFS_RX_D1N	
	GND	67	68	GND	
GPIO4_D1_d	UFS_REFCLK	69	70	GPIO_BL0_EN	GPIO4_C6_d
	GND	71	72	GPIO_BL1_EN	GPIO4_C5_d
GPIO4_D0_d	UFS_RSTN	73	74	GPIO_BL0_PWR_EN	GPIO4_C7_d
	GND	75	76	GPIO_BL1_PWR_EN	GPIO4_C4_d
GPIO4_C3_d	HDMITX_SDA	77	78	HDMITX_CEC	GPIO4_C0_d
GPIO4_C2_d	HDMITX_SCL	79	80	HDMI_TX_HPDIN	GPIO4_C1_d

U1C: (SOM interface pin)

Multiplexed GPIO	Signal Name	PIN#	PIN#	Signal Name	Multiplexed GPIO
	GND	1	2	GPIO_BT_nINT	GPIO3_A0_d
GPIO2_D6_d	GPIO_GMAC1_nRST	3	4	GPIO_BT_REG_ON	GPIO3_A1_d
	GND	5	6	PCIE0_WAKEn	GPIO2_B0_d

GPIO2_D7_d	GPIO_GMAC1_nINT	7	8	PCIE0_PERSTn	GPIO2_B1_d
	GND	9	10	I2C4_SCL	GPIO2_A6_d
GPIO2_C2_d	GMAC1_RXCLK	11	12	I2C4_SDA	GPIO2_A7_d
GPIO2_D3_d	GMAC1_RXDV_CRS	13	14	PCIE0_CLKREQn	GPIO2_B2_d
GPIO2_D1_d	GMAC1_RXD0	15	16	GPIO_HUB_nRST	GPIO2_B3_d
GPIO2_D2_d	GMAC1_RXD1	17	18	GND	
GPIO2_C1_d	GMAC1_RXD3	19	20	GMAC1_TXEN	GPIO2_D0_d
GPIO2_C0_d	GMAC1_RXD2	21	22	GMAC1_TXD2	GPIO2_C3_d
	GND	23	24	GMAC1_TXD0	GPIO2_C6_d
GPIO2_D4_d	GMAC1_MDC	25	26	GMAC1_TXD3	GPIO2_C4_d
GPIO2_D5_d	GMAC1_MDIO	27	28	GMAC1_TXD1	GPIO2_C7_d
	GND	29	30	GMAC1_TXCLK	GPIO2_C5_d
GPIO3_D1_d	GMAC0_RXCLK	31	32	GND	
GPIO3_A7_d	GMAC0_RXDV_CRS	33	34	GPIO_GMAC0_nRST	GPIO3_A4_d
GPIO3_B2_d	GMAC0_RXD0	35	36	GND	
GPIO3_B1_d	GMAC0_RXD1	37	38	GPIO_TYPEC_PWR EN	GPIO3_B7_d
GPIO3_D3_d	GMAC0_RXD2	39	40	GPIO_4G/5G_PWR_ EN	GPIO4_A0_d
GPIO3_D2_d	GMAC0_RXD3	41	42	GPIO_4G/5G_nRST	GPIO3_C1_d
	GND	43	44	GPIO_4G/5G_ON_O FF	GPIO3_C0_d
GPIO3_B0_d	GPIO_GMAC0_nINT	45	46	GPIO_4G/5G_DISEN	GPIO3_C4_d
	GND	47	48	GPIO_CC_nINT	GPIO4_A1_d
GPIO3_B6_d	GMAC0_TXCLK	49	50	GND	

GPIO3_B3_d	GMAC0_TXEN	51	52	SAI1_MCLK	GPIO4_A2_d
GPIO3_B5_d	GMAC0_TXD0	53	54	SAI1_LRCK	GPIO4_A5_d
GPIO3_B4_d	GMAC0_TXD1	55	56	SAI1_SCLK	GPIO4_A3_d
GPIO3_C3_d	GMAC0_TXD2	57	58	SAI1_SDI0	GPIO4_B3_d
GPIO3_C2_d	GMAC0_TXD3	59	60	SAI1_SDO2	GPIO4_B1_d
	GND	61	62	GPIO_HP_DET_L	GPIO4_A7_d
GPIO3_A5_d	GMAC0_MDIO	63	64	GPIO_DP_AUXN_D C	GPIO4_B0_d
GPIO3_A6_d	GMAC0_MDC	65	66	GPIO_DP_AUXP_DC	GPIO4_B2_d
	GND	67	68	I2C3_SDA	GPIO4_B4_d
GPIO3_D4_d	UART5_RXD	69	70	I2C3_SCL	GPIO4_B5_d
GPIO3_D5_d	UART5_TXD	71	72	CAN0_RXD	GPIO4_A6_d
GPIO3_D6_d	GPIO_TP_nINT	73	74	CAN0_TXD	GPIO4_A4_d
GPIO3_D7_d	EGPIO_TP_nRST	75	76	GND	
GPIO3_C5_d	UART8_RXD	77	78	GPIO_CTRL/TP_nIN T	GPIO3_C7_d
GPIO3_C6_d	UART8_TXD	79	80	GPIO_CTRL/TP_nRS T	GPIO3_D0_d

J36/J30: MIC

PIN#	Signal Name
1	AUD_MIC+
2	AUD_MIC-

J31/J32: Speaker_(amplifier output)

PIN#	Signal Name
1	OUTP
2	OUTN

J25: Debug serial port (RS232 level)

PIN#	Signal Name
1	TXD
2	RXD
3	GND

J23/J24/J26: RS232

PIN#	Signal Name
1	TXD
2	RXD
3	GND

J22: RS485

PIN#	Signal Name
1	RS485_B
2	RS485_A
3	GND

J27/J28: CAN

PIN#	Signal Name
1	CANH
2	CANL
3	GND

J13: I2C_ (capacitive touch screen)

PIN#	Signal Name
1	VCC_EXT_3V3
2	TP_I2C_SCL
3	TP_I2C_SDA
4	TP_nINT
5	TP_nRST
6	GND

J16/J17: BL interface (LCD backlight interface)

PIN#	Signal Name
1	VCC_BL (5.0V/12.0V)
2	VCC_BL (5.0V/12.0V)
3	GND
4	GND
5	LED_EN (3.3V/5.0V)
6	LED_PWM (PWM)

J15/J18: 5.0V/12V jumper (LCD backlight)

Signal Name	PIN#	PIN#	Signal Name
VCC_EXT_12V0	1	2	VCC_BL
VCC_EXT_5V0	3	4	VCC_BL

J12: MIPI-DSI & eDP display interface

Signal Name	PIN#	PIN#	Signal Name
VCC_LCD_PWR0	1	2	VCC_LCD_PWR1
VCC_LCD_PWR0	3	4	VCC_LCD_PWR1
GND	5	6	GND
MIPI_DSI_D0_N	7	8	MIPI_DSI_D0_P
MIPI_DSI_D1_N	9	10	MIPI_DSI_D1_P
MIPI_DSI_D2_N	11	12	MIPI_DSI_D2_P
MIPI_DSI_CLK_N	13	14	MIPI_DSI_CLK_P
MIPI_DSI_D3_N	15	16	MIPI_DSI_D3_P
GND	17	18	GND
LCD_EDP_D0_N	19	20	LCD_EDP_D0_P
LCD_EDP_D1_N	21	22	LCD_EDP_D1_P
LCD_EDP_D2_N	23	24	LCD_EDP_D2_P
LCD_EDP_AUX_N	25	26	LCD_EDP_AUX_P
LCD_EDP_D3_N	27	28	LCD_EDP_D3_P
LCD_EDP_nRST/GND	29	30	LCD_EDP_HPD/GND

J10/J11: 3.3V/5.0V jumper wire

Signal Name	PIN#	PIN#	Signal Name
VCC_LCD	1	2	VCC_EXT_3V3
VCC_LCD	3	4	VCC_EXT_5V0

J19/J20/J21: MIPI-CSI interface

PIN#	Signal Name
1	GND
2	MIPI_CLK_P
3	MIPI_CLK_N
4	GND
5	MIPI_D2_P
6	MIPI_D2_N
7	GND
8	MIPI_D0_P
9	MIPI_D0_N
10	GND
11	MIPI_D3_P
12	MIPI_D3_N
13	GND
14	MIPI_D1_P
15	MIPI_D1_N
16	GND
17	SID
18	GND
19	PWDN
20	nRST
21	CSI_I2C_SDA
22	CSI_I2C_SCL
23	DVDD

24	GND
25	MCLK
26	GND
27	DOVDD
28	GND
29	AVDD
30	AFVCC

J4: M.2 E-KEY socket

Signal Name	PIN#	PIN#	Signal Name
GND	1	2	VCC_WL_3V3
NC	3	4	VCC_WL_3V3
NC	5	6	NC
GND	7	8	NC
SDMMC1_CLK	9	9	NC
SDMMC1_CMD	11	10	NC
SDMMC1_D0	13	12	NC
SDMMC1_D1	15	14~16	NC
SDMMC1_D2	17	18	GND
SDMMC1_D3	19	20	GPIO_BT_nINT
NC	21	22	UART4_RXD
GPIO_SDIO_nRST	23	...	
	...	32	UART4_TXD
GND	33	34	UART4_CTSn
WIFI_PCIE_TX_P	35	36	UART4_RTSn

WIFI_PCIE_TX_N	37	38	GPIO_WAKE_BT
GND	39	40	GPIO_WLAN_WAKE
WIFI_PCIE_RX_P	41	42	GPIO_WAKE_BT
WIFI_PCIE_RX_N	43	46	NC
GND	45	48	NC
WIFI_PCIE_REFCLK_P	47	50	bt_clk_32k_m.2
WIFI_PCIE_REFCLK_N	49	52	WIFI_PCIE_nPERST
GND	51	54	GPIO_BT_REG_ON
WIFI_PCIE_nCLKREQ	53	56	GPIO_WIFI_REG_ON
WIFI_PCIE_nWAKE	55	58	NC
GND	57	60	NC
NC	59	62	NC
NC	61	64	NC
GND	63	66	NC
NC	65	68	NC
NC	67	70	NC
NC	71	72	VCC_WL_3V3
NC	73	74	VCC_WL_3V3
GND	75		

J3: M.2 B-KEY socket

Signal Name	PIN#	PIN#	Signal Name
NC	1	2	VCC_5G_3V8
GND	3	4	VCC_5G_3V8

GND	5	6	5G_ON_OFF
USB2_HOST1_DP	7	8	GPIO_5G_W_DIS
USB2_HOST1_DM	9	10	VCC_5G_3V8
GND	11	...	STD B-KEY
STD B-KEY	...	20	NC
NC	21	22	NC
VCC_EXT_1V8	23	24	NC
NC	25	26	NC
GND	27	28	NC
USB30_2_SSRXN	29	30	USIM_nRST
USB30_2_SSRXP	31	32	USIM_CLK
GND	33	34	USIM_DATA
USB30_2_SSTXN	35	36	VCC_USIM
USB30_2_SSTXP	37	38	VCC_EXT_1V8
GND	39	40	NC
NC	41	42	NC
NC	43	44	NC
GND	45	46	NC
NC	47	48	NC
NC	49	50	NC
GND	51	52	NC
NC	53	54	NC
NC	55	56	NC
GND	57	58	NC
NC	59	60	NC

NC	61	62	NC
NC	63	64	NC
NC	65	66	USIM_DET
GPIO_5G_RST	67	68	NC
NC	69	70	VCC_5G_3V8
GND	71	72	VCC_5G_3V8
GND	73	74	VCC_5G_3V8
NC	75		

J8: USB2.0 PHB HOST

PIN#	Signal Name
1	VCC_USB3_5V0
2	USB2_HOST1_DM_CON
3	USB2_HOST1_DP_CON
4	GND

S1: SIM card slot (Bottom Side)

PIN#	Signal Name
1	VCC_USIM
2	USIM_nRST
3	SIM_CLK
4	GND
5	NC
6	SIM_DATA

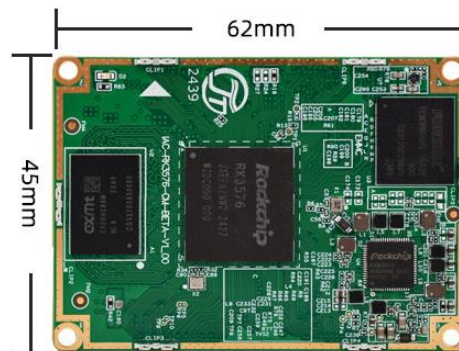
J34: SPI & I2C

Signal Name	PIN#	PIN#	Signal Name
SPI0_CS0	1	2	I2C5_SCL
SPI0_CLK	3	4	I2C5_SDA
SPI0_MISO	5	6	GND
SPI0_MOSI	7	8	GND
VCC_EXT_3V3	9	10	VCC_EXT_3V3

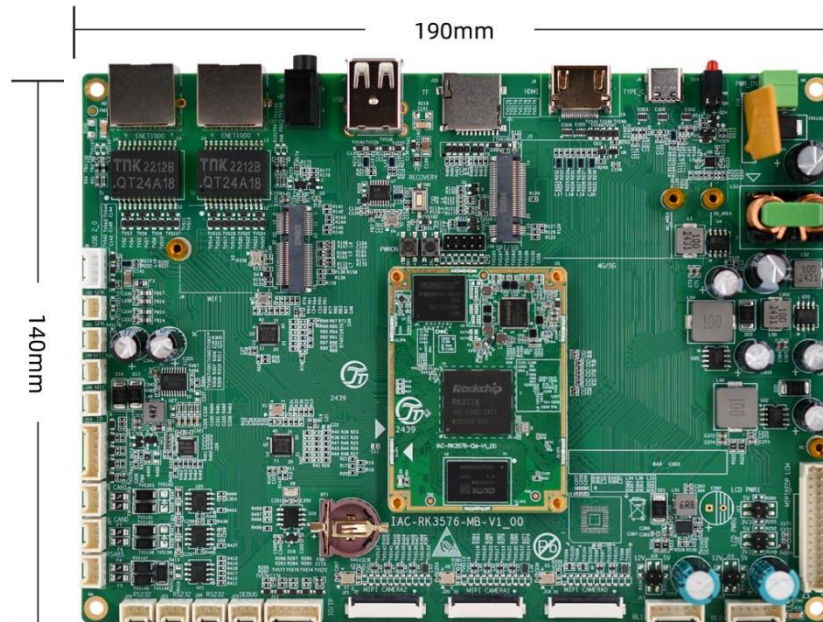
III. Size & Dimensions

Unit: mm, please email if you need connector size: supports@qiyangtech.com

3.1. SOM size



3.2. Development board size



IV. Device Connection Schematic

Pay attention to the SOM orientation: (refer to the below diagram)

V. Electrical Characteristics

Item	Parameters
Operating temperature	0℃ ~ + 60℃
Storage temperature	0℃ ~ +70℃
Operating humidity	5% to 95%, non-condensing

SOM Size	45mm*62mm, 8-layer plate with high-precision gold immersion process
Base board size	140mm*190mm, 4-layer plate with high-precision gold immersion process
Power consumption of the whole board	<5W (no load)
Power supply	DC12V/2.5A

VI. Notes

1. Before connecting the LCD, please check the power supply specifications of your LCD module;
2. Please use the company's original connector, to avoid misconnection caused by the motherboard damage;
3. Our company promises that the company's products to provide E-mail, telephone and other communications technical support services, lifelong maintenance services;
4. Our company promises that the company's products to provide free maintenance service within 6 months from the date of sale, if the user in the

use of the company's products, due to the quality of the products and failures, can be in the warranty period with the purchase of documents with the seller or our company to contact our company, Qiyang is responsible for you to repair the product or replace the new machine.

5. For one of the following circumstances, the product does not apply free warranty:

- Exceeds the warranty service period;
- No valid purchase documents;
- Into liquid, moisture or mold;
- Failures and damages caused by non-product quality reasons such as dropping, strong vibration or unauthorized alteration or misuse after purchase;
- Damage due to force majeure.

6. Our company retains the intellectual property rights of all IAC-RK3576-Kit products independently developed related software and hardware technical information; users can only use them for teaching, experimentation and scientific research, and shall not engage in any commercial use, nor can they distribute them on the network, or tamper with their copyright through interception, modification and other means.

7. This product accepts customer bulk order, the company will provide full technical support and service.

Zhejiang Qiyang Intelligent Technology Co., Ltd.

Tel: 0571-87858811 / 87858822

Fax: 0571-89935912

Technical Support: 0571-87858811 ext.805

E-MAIL: supports@qiyangtech.com

Website: <http://www.qiytech.com> or <http://www.qiyangtech.com>

**Address: 3rd Floor, Building A, WSCG Building, NO.6 Xiyuan 8th
Road, Sandun Town, Xihu District, Hangzhou City, Zhejiang China**

Zip code: 310030