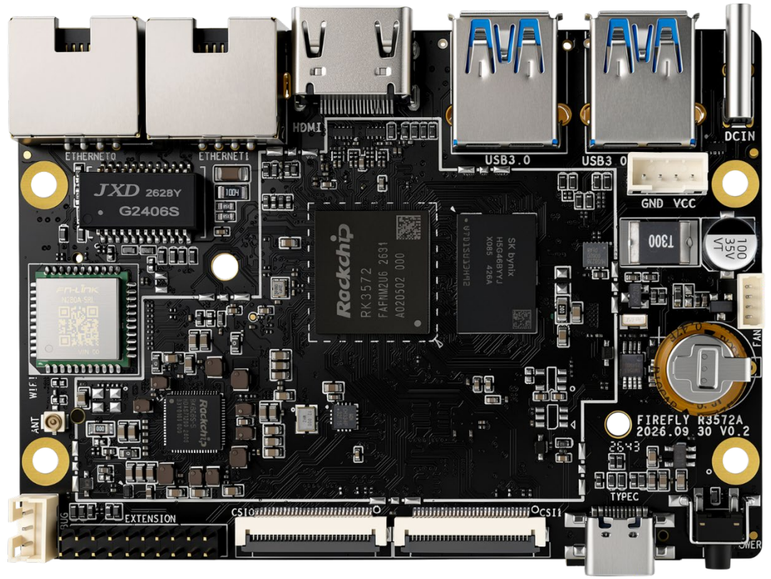
Firefly R3572A

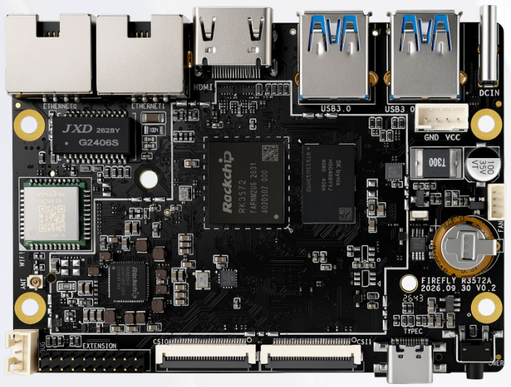
RK3572 Open-Source Motherboard



V0.2 2026-11-9

FIREFLY TECHNOLOGY

Product features



Octa-core 64-bit AIoT Processor RK3572

Powered by Rockchip RK3572 octa-core 64-bit AIoT processor (2×A73 + 6×A53) with up to 2.2GHz CPU clock. Built on advanced 8nm process, it delivers excellent low-power performance.

8K Video Decoding, 4K Video Encoding

Supports high-frame-rate video decoding of 8K@30fps/4K@120fps (H.265/HEVC, VP9, AVS2, AV1) and 4K@40fps (H.265/HEVC, H.264/AVC) video encoding.

Integrated Mali G310 GPU

Integrated Mali G310 GPU supporting OpenGL ES 1.1/2.0/3.2, OpenCL 3.0 and Vulkan 1.4, with built-in high-performance 2D acceleration hardware.

Built-in 12MP ISP

Integrated 12MP ISP image processing unit, with built-in hardware algorithm accelerators including Bayer-3DNR, HDR-Merge, DPCC, LDC and 3A.

Product features



Supports 2-channel Camera Input

Supports 2-channel camera input (2×MIPI CSI DPHY), and enables 4K@60fps + 2K@60fps dual-screen independent display output.

SBC All-in-One Board Design

The motherboard adopts SBC (Single-Board Computer) all-in-one board design. With compact dimensions of only 95 mm × 70 mm, it can be easily embedded into various complete devices to accelerate product integration and deployment.

Rich Expansion Interfaces

Features expansion interfaces including HD2.1, USB3.0, MIPI-CSI, MIPI-DSI, PWM, SPI, I2C, UART and SAI to meet peripheral expansion requirements for diverse scenarios.

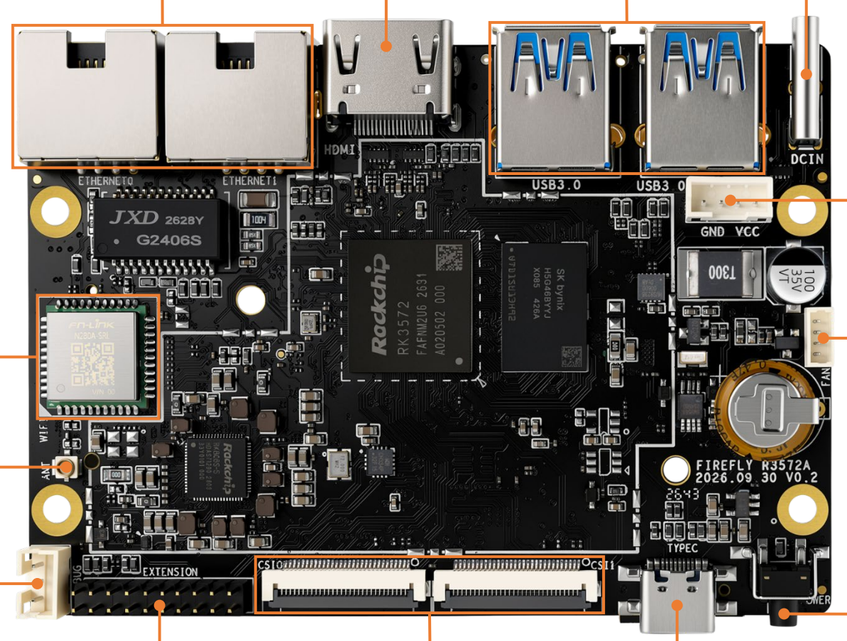
Widely applicable scenarios

Widely applicable to: edge computing, tablets, mobile terminals, AI cameras, intelligent monitoring, NAS, retail devices, digital signage and other industries.

Specifications

Specifications		
Basic Specifications	SOC	Rockchip RK3572
	CPU	Octa-core 64-bit processor (2×A73 + 6×A53) with NEON coprocessor, up to 2.2GHz
	GPU	ARM Mali G310V2 MC1 GPU, supports OpenGL ES 1.1/2.0/3.2, OpenCL 3.0, Vulkan 1.4, with built-in high-performance 2D acceleration hardware
	NPU	4 TOPS (Sparse INT8). Supports INT4/INT8/INT16/FP4/FP8/FP16/BF16 mixed computation and W4A16 asymmetric MAC operation
	ISP	Built-in 12MP ISP, integrated hardware accelerators: Bayer-3DNR, HDR-Merge, DPCC, LDC, 3A, LSC, CAC, de-haze enhancement
	Codec	Video Decode: 8K@30fps/4K@120fps (H.265/HEVC, VP9, AVS2, AV1), 4K@60fps (H.264/AVC) Video Encode: 4K@40fps (H.265/HEVC, H.264/AVC) Image Codec: 4K@60fps MJPG
	RAM	LPDDR4/LPDDR4X (2GB/4GB/8GB/16GB optional)
	Storage	eMMC (16GB/32GB/64GB/128GB optional)
	Expansion Storage	1 × M.2 M-KEY (supports PCIe NVMe 2280 SSD), 1 × TF card
	Power Supply	Dual power options for motherboard: Type-C: Rated input 12V/3A, PD adapter compliant with PD 3.1 or lower is recommended 4Pin-2mm Wafer socket: Rated DC input 12V/3A
	Power Consumption	Normal: 3W(12V/250mA), Max: 6W(12V/500mA), Min(Sleep): 0.3W(12V/25mA)
	OS	Android 16, Linux OS
	Software Support	Supports YOLO object-detection algorithms Supports private deployment of large-parameter Transformer-based LLMs, including Gemma, ChatGLM, Qwen and Phi series Supports classic network architectures such as CNN, RNN and LSTM; enables RKNN model import & export; compatible with TensorFlow, TensorFlow Lite, PyTorch, Caffe, ONNX, MXNet deep-learning frameworks Supports custom operator development and Docker container-based management
	Dimension	95.0mm × 70.0mm × 13.5mm
	Weight	≈55g
	Environment	Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Operating Humidity: 10% ~ 90%RH (No condensation)
Interface Specifications	Network	Ethernet: 2 × RJ45 (1000Mbps) Wi-Fi & Bluetooth: On-board Wi-Fi & Bluetooth module, supports 2.4GHz/5GHz dual-band Wi-Fi 6 (802.11a/b/g/n/ac/ax), Bluetooth 5.2
	Video Input	2 × MIPI CSI DPHY (1×2Lanes or 1×4Lanes, complies with MIPI V1.2, 30Pin-0.5mm)
	Video Output	1 × MIPI DSI DPHY 1.2 (1×4Lanes, 2.5 Gbps/Lane, 30Pin-0.5mm) 1 × HD2.1 (up to 4K@60Hz) Supports dual-screen independent display output of 4K@60fps + 2K@60fps
	USB	2 × USB3.0, 1 × Type-C (USB2.0 OTG)
	Button	1 × Reset, 1 × Recovery, 1 × MaskRom, 1 × Power
	Other Interfaces	1 × Debug (3Pin-2mm), 1 × FAN (4Pin-1.25mm), 1 × Double-row pin header (20Pin-2mm, breakout: 1 × I2C, 1 × SPI, 1 × SAI, 1 × UART, 1 × PWM, 1 × SARADC, 2 × IO)

Interface description



2×GbE
1000Mbps/RJ45

HD2.1
4K@60Hz

2×USB3.0

Type-C Power
Rated input 12V/3A, PD adapter compliant with PD 3.1 or lower is recommended

Wafer Socket (4Pin-2mm)
Rated DC input 12V/3A, alternative with Type-C power supply

FAN
5V/4P-1.25mm

Wi-Fi & Bluetooth Module
Wi-Fi 6 & Bluetooth 5.2

Wi-Fi Antenna

Debug
3P-2mm

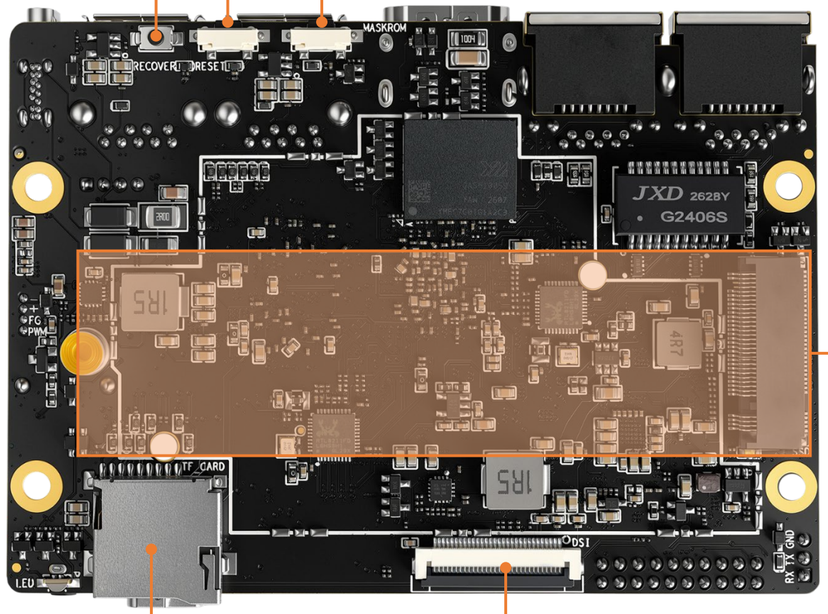
Power Key

Double-row pin headers (20P-2mm)
1 × I2C, 1 × SPI, 1 × SAI, 1 × UART, 1 × PWM, 1 × SARADC, 2 × IO

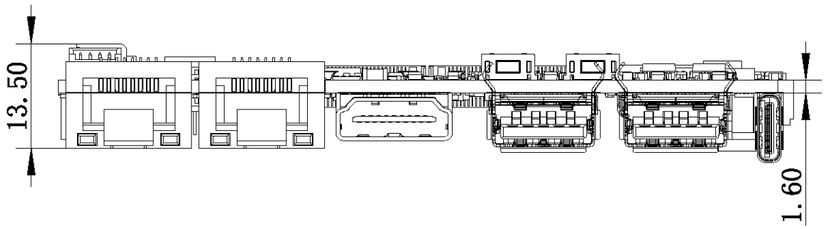
2×MIPI-CSI DPHY
1×4Lane/1×2Lane, 30P-0.5mm

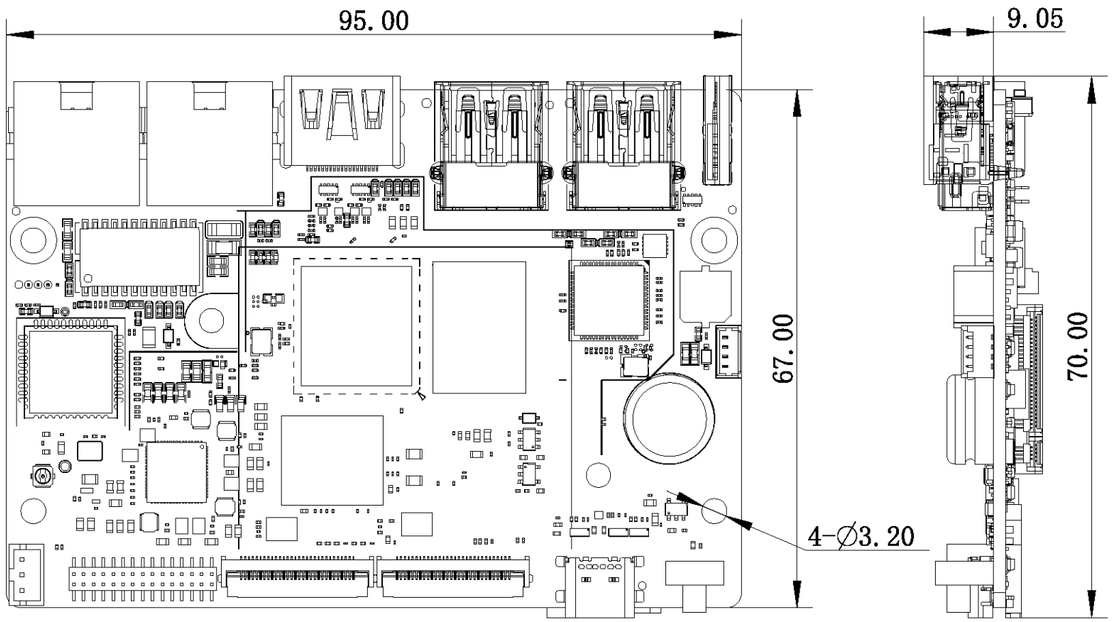
Type-C
USB2.0 OTG

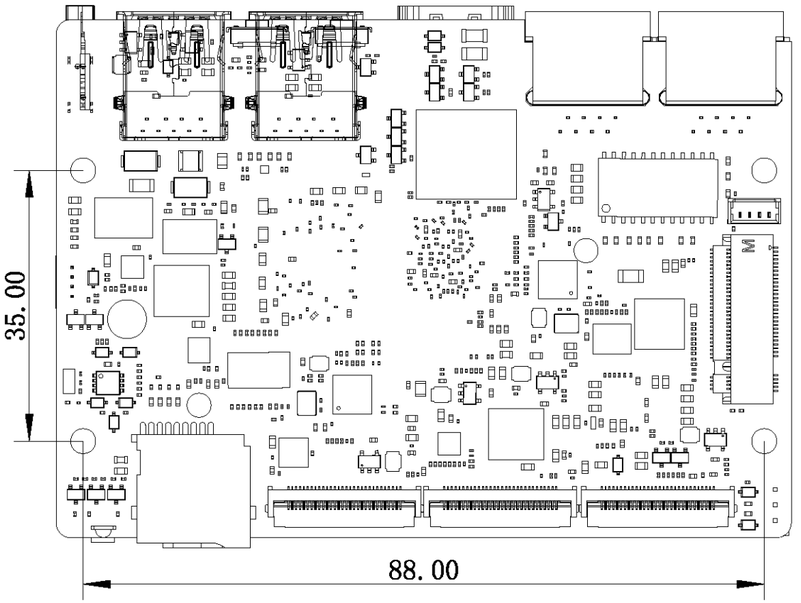
Interface description



Dimension

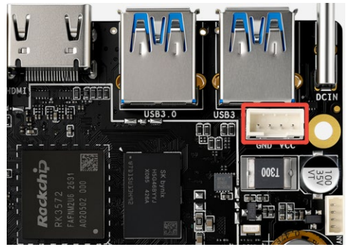






Interface definition

1. (J2) DC_IN: 4PIN 2mm Pitch Wafer Socket



NO.	Definition	Power/V	NO.	Definition	Power/V
1	USB_VUBS	5V	3	GND	
2	USB_VUBS	5V	4	GND	

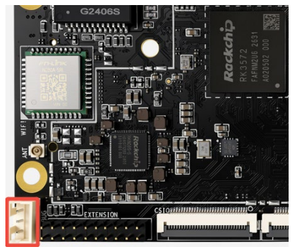
2. (J5) FAN: 4PIN 1.25mm Pitch Wafer Socket



NO.	Definition	Power/V	NO.	Definition	Power/V
1	GND	GND	3	NC	
2	FAN+	5V	4	NC	

Interface definition

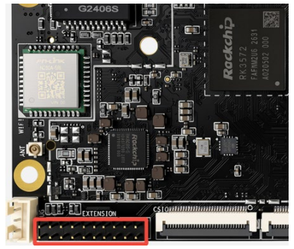
3. (J3) Debug: 3PIN 2mm Pitch Wafer Socket



NO.	Definition	Power/V	NO.	Definition	Power/V
1	UART0_RX_M0	3.3V	3	GND	
2	UART0_TX_M0	3.3V			

Interface definition

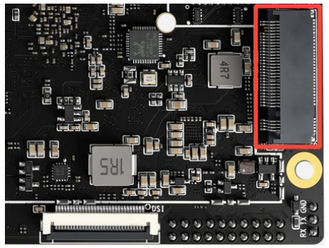
4. (J1) EXTENSION INTERFACE 2*10PIN



NO.	Definition	Power/V	NO.	Definition	Power/V
1	HUB_HOST_DM3		2	HUB_HOST_DP3	
3	HUB_HOST_DM4		4	HUB_HOST_DP4	
5	GND		6	GND	
7	NC		8	NC	
9	VCC5V0_SYS	5V	10	I2C2_SDA_M2	1.8V
11	VCC_3V3_S0	3.3V	12	SPI2_MISO_M1	1.8V
13	I2C2_SCL_M2	1.8V	14	SPI2_MOSI_M1	1.8V
15	SARADC_VIN4	1.8V	16	SPI2_CLK_M1	1.8V
17	UART2_TX(Series resistance 22R)	3.3V	18	SPI2_CSN0_M1	1.8V
19	UART2_RX(Series resistance 22R)	3.3V	20	GPIO1_C7_d	1.8V

Interface definition

5. (U29) PCIE M.2 NGFF M-KEY SOCKET



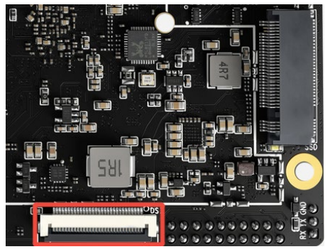
NO.	Definition	Power/V	NO.	Definition	Power/V
1	GND		2	VCC3V3_PCIE	3.3V
3	GND		4	VCC3V3_PCIE	3.3V
5	NC		6	NC	
7	NC		8	NC	
9	GND		10	DAS/DSS#[pull up resistor10K]	3.3V
11	NC		12	VCC3V3_PCIE	3.3V
13	NC		14	VCC3V3_PCIE	3.3V
15	GND		16	VCC3V3_PCIE	3.3V
17	NC		18	VCC3V3_PCIE	3.3V
19	NC		20	NC	
21	GND		22	NC	
23	NC		24	NC	
25	NC		26	NC	
27	GND		28	NC	
29	NC		30	NC	

Interface definition

31	NC		32	NC	
33	GND		34	NC	
35	NC		36	NC	
37	NC		38	DEVSLP1[pull up resistor10K NC]	3.3V
39	GND		40	NC	
41	PCIE1_RXN(Series resistance 0R)		42	NC	
43	PCIE1_RXP(Series resistance 0R)		44	NC	
45	GND		46	NC	
47	PCIE1_TXN(Series capacitor 100nF)		48	NC	
49	PCIE1_TXP(Series capacitor 100nF)		50	PCIE1_PERSTn_L[pull up resistor 47K NC]	3.3V
51	GND		52	PCIE1_CLKREQN_M1[pull up resistor 47K NC]	3.3V
53	PCIE1_REFCLKN		54	PCIE1_WAKEn_L[pull up resistor 47K NC]	3.3V
55	PCIE1_REFCLKP		56	NC	
57	GND		58	NC	
67	NC		68	NC	3.3V
69	GND		70	VCC3V3_PCIE	3.3V
71	GND		72	VCC3V3_PCIE	3.3V
73	GND		74	VCC3V3_PCIE	3.3V
75	GND				

Interface definition

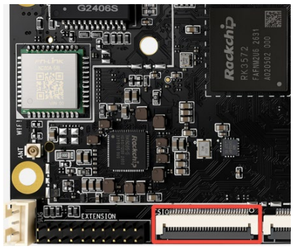
6. (J18) MIPI-DSI 30PIN 0.5mm Pitch



NO.	Definition	Power/V	NO.	Definition	Power/V
1	VCC5V0_SYS	5V	16	MIPI_DPHY_DSI_TX_D0P	
2	VCC5V0_SYS	5V	17	MIPI_DPHY_DSI_TX_D0N	
3	VCC5V0_SYS	5V	18	GND	
4	GND		19	MIPI_DPHY_DSI_TX_D1P	
5	GPIO1_C7_d[pull up resistor10K]	1.8V	20	MIPI_DPHY_DSI_TX_D1N	
6	VCC_3V3_S0	3.3V	21	GND	
7	I2C6_SDA_M1_DSI	3.3V	22	MIPI_DPHY_DSI_TX_CLKP	
8	I2C6_SCL_M1_DSI	3.3V	23	MIPI_DPHY_DSI_TX_CLKN	
9	LCD_EN/SAI0_SCLK_M1	3.3V	24	GND	
10	LCD_TP_INT/SAI0_LRCK_M1	3.3V	25	MIPI_DPHY_DSI_TX_D2P	
11	LCD_BL_EN/SAI0_MCLK_M1	3.3V	26	MIPI_DPHY_DSI_TX_D2N	
12	LCD_BL_PWM	3.3V	27	GND	
13	LCD_RESET/SAI0_SDI0_M1	3.3V	28	MIPI_DPHY_DSI_TX_D3P	
14	LCD_TP_RESET/SAI0_SDO0_M1	3.3V	29	MIPI_DPHY_DSI_TX_D3N	
15	GND		30	GND	

Interface definition

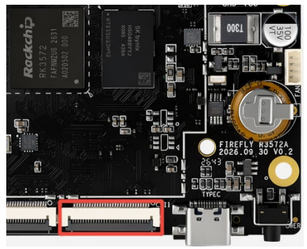
7. (J20) MIPI-CSI0 30PIN 0.5mm Pitch



NO.	Definition	Power/V	NO.	Definition	Power/V
1	I2C3_SDA_M2_MIPI_CAM3	1.8V	16	GND	
2	I2C3_SCL_M2_MIPI_CAM3	1.8V	17	MIPI_DPHY_CSI0_RX_CLKP	
3	MIPI_DPHY_CSI_CAM0_PDN_H	1.8V	18	MIPI_DPHY_CSI0_RX_CLKN	
4	MIPI_DPHY_CSI_CAM0_RESET	1.8V	19	GND	
5	GND		20	MIPI_DPHY_CSI1_RX_D0P	
6	CSI_CAM0_MCLK	1.8V	21	MIPI_DPHY_CSI1_RX_D0N	
7	MIPI_DPHY_CSI_CAM1_PDN_H	1.8V	22	GND	
8	MIPI_DPHY_CSI_CAM1_RESET	1.8V	23	MIPI_DPHY_CSI1_RX_D1P	
9	CSI_CAM1_MCLK	1.8V	24	MIPI_DPHY_CSI1_RX_D1N	
10	GND		25	GND	
11	MIPI_DPHY_CSI0_RX_D0P		26	MIPI_DPHY_CSI1_RX_CLKP	
12	MIPI_DPHY_CSI0_RX_D0N		27	MIPI_DPHY_CSI1_RX_CLKN	
13	GND		28	GND	
14	MIPI_DPHY_CSI0_RX_D1P		29	VCC5V0_SYS	5V
15	MIPI_DPHY_CSI0_RX_D1N		30	VCC5V0_SYS	5V

Interface definition

8. (J21) MIPI-CSI1 30PIN 0.5mm Pitch



NO.	Definition	Power/V	NO.	Definition	Power/V
1	I2C5_SDA_M3_MIPI_CAM0/1	1.8V	16	GND	
2	I2C5_SCL_M3_MIPI_CAM0/1	1.8V	17	MIPI_DPHY_CSI2_RX_CLKP	
3	MIPI_DPHY_CSI_CAM2_PDN_H	1.8V	18	MIPI_DPHY_CSI2_RX_CLKN	
4	MIPI_DPHY_CSI_CAM2_RESET	1.8V	19	GND	
5	GND		20	MIPI_DPHY_CSI3_RX_D0P	
6	CSI_CAM2_MCLK	1.8V	21	MIPI_DPHY_CSI3_RX_D0N	
7	MIPI_DPHY_CSI_CAM3_PDN_H	1.8V	22	GND	
8	MIPI_DPHY_CSI_CAM3_RESET	1.8V	23	MIPI_DPHY_CSI3_RX_D1P	
9	CSI_CAM3_MCLK	1.8V	24	MIPI_DPHY_CSI3_RX_D1N	
10	GND		25	GND	
11	MIPI_DPHY_CSI2_RX_D0P		26	MIPI_DPHY_CSI3_RX_CLKP	
12	MIPI_DPHY_CSI2_RX_D0N		27	MIPI_DPHY_CSI3_RX_CLKN	
13	GND		28	GND	
14	MIPI_DPHY_CSI2_RX_D1P		29	VCC5V0_SYS	5V
15	MIPI_DPHY_CSI2_RX_D1N		30	VCC5V0_SYS	5V



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