

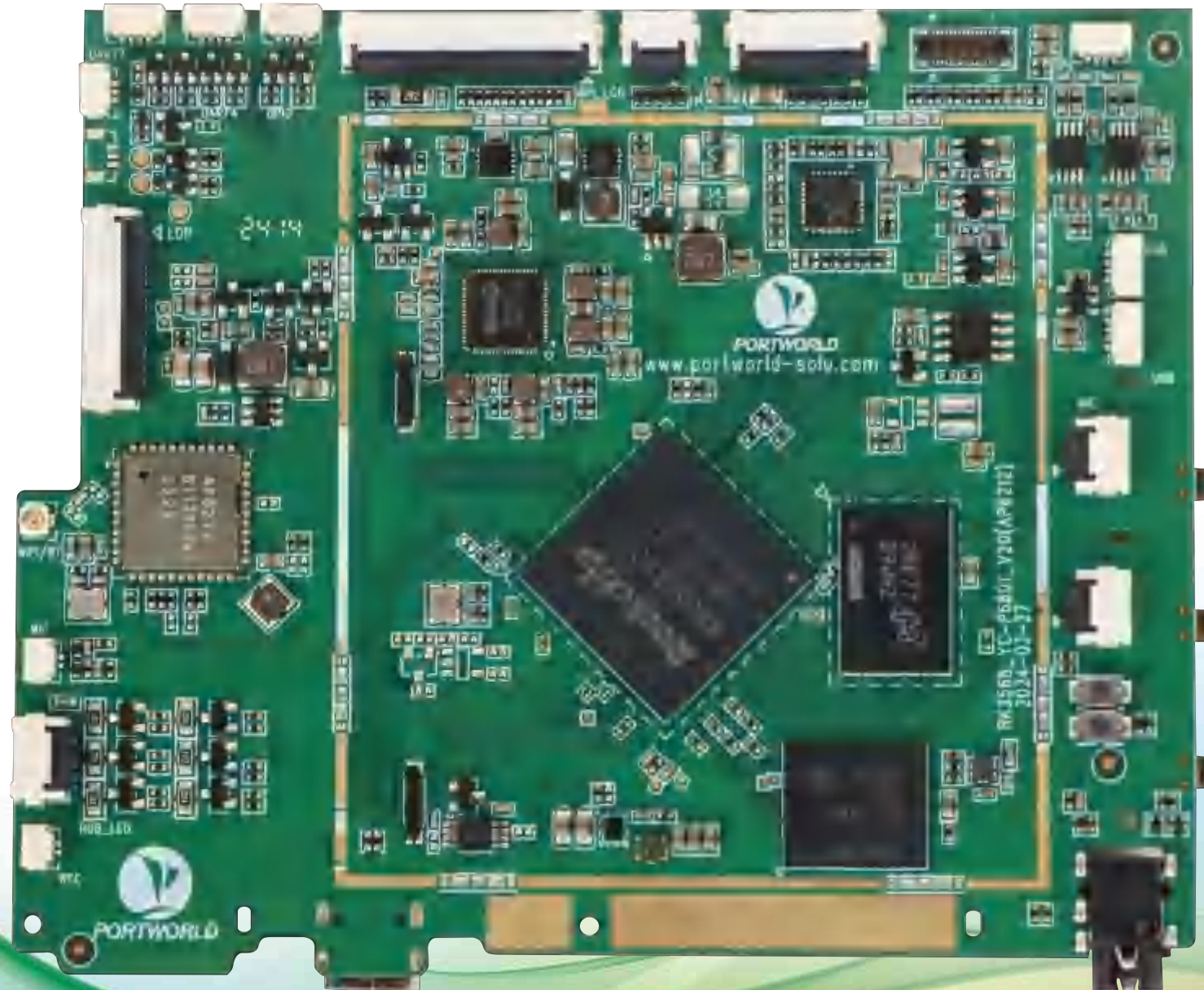


RK3568-P6801

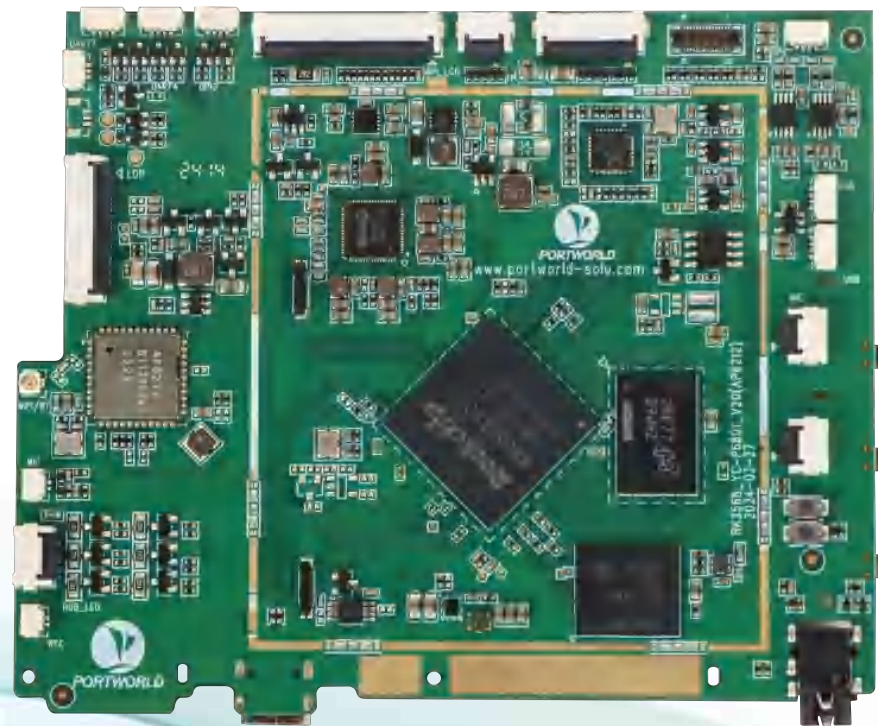
Smart Home mainboard

V1.0 2024-6-4

PORTWORLD



Product features



Quad-core 6 4-bit processor RK3568

Quad-core 64-bit Cortex-A55 processor
Up to 2.0GHz 22nm
Advanced process, low power consumption and high performance

Support 8GB large memory

Up to 8GB memory capacity, up to 32Bit bit width; make data more secure and reliable, to meet the requirements of large-memory product application scenarios

Integrated GPU, VPU, NPU

Support OpenGL ES3.2/2.0/1.1, Vulkan1.1
4K 60fps H.265/H.264/VP9 Video Decoding
1080P 100fps H.265/H.264 video encoding

Widely used scenarios

Widely used in smart home center control panel, automation control, industrial control, building intercom and other application scenarios.

Support multiple systems

Support Android、Ubuntu、Buildroot、Debian OS

Open data, independent customization

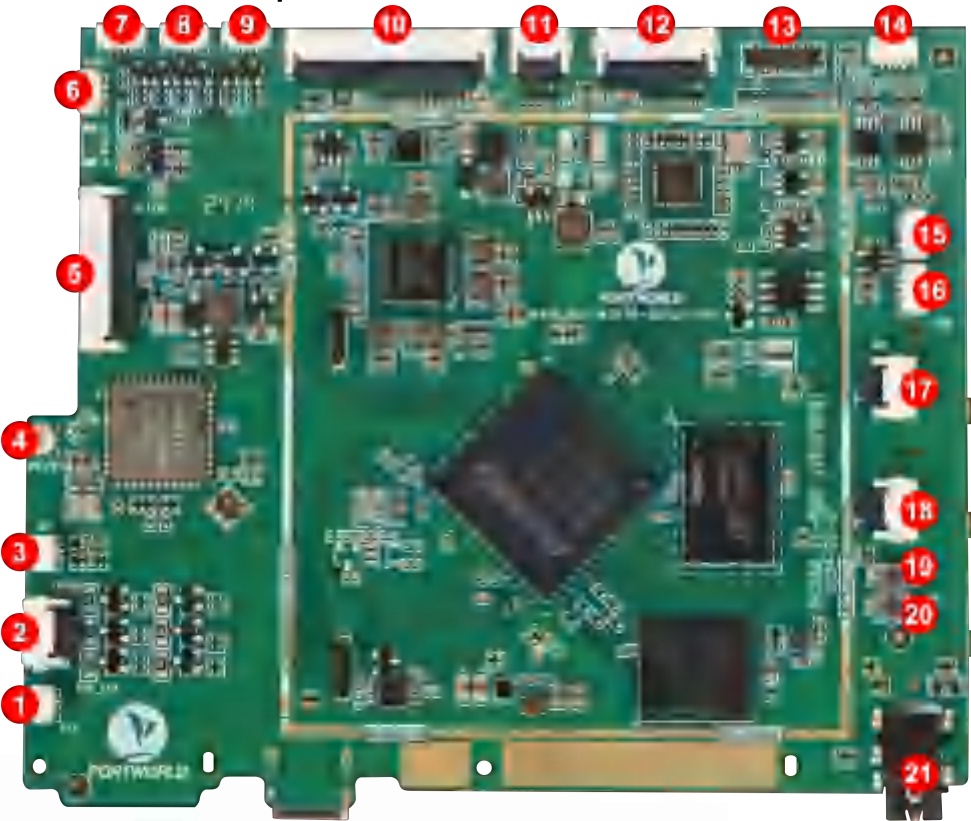
Provide complete SDK, development documents, technical information, development tutorials and other information, users can customize it in depth

Rich peripheral expansion interface

MIPI_DSI, I2C, UART, RS485, RS232, SPK, MIC, KNX and other interfaces, can be directly applied to external equipment control and expansion

Specification		
Basic Parameters	SOC	RockChip RK3568
	CPU	Quad-core 64-bit Cortex-A55 processor, Up to 2.0GHz 22nm
	GPU	ARM G52 2EE graphics processor, supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, with embedded high-performance 2D acceleration hardware
	NPU	Integrated RKNN NPU AI accelerator, 1 Tops@INT8 performance, supports one-click conversion for Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet architecture models
	Decoding/Encoding	Video Decoding: 4K@60fps H.265/H.264/VP9 Video Encoding: 1080P@100fps H.265/H.264
	RAM	2GB (optional 4GB/8GB LPDDR4)
	ROM	16GB (optional 32GB/64GB/128GB eMMC)
	Power	5.0V (voltage tolerance $\pm 5\%$ 、expandable POE, DC / AC power)
	System	Android、Ubuntu、Buildroot、Debian etc.
	Dimensions	89mm ×108mm
	Power consumption	Min: 0.03W(5.0V/6mA), Normal: 2.5W(5.0V/500mA), Max: 5.25W (5.0V/1050mA)
	Environmental Conditions	Operating Temperature: -10℃- 60℃ Storage Temperature: -20℃- 70℃ Operating Humidity: 10%~90%RH (non-condensing)
Interface Parameters	Ethernet	1 ×100Mbps Ethernet (RJ45) (supports POE power supply)
	WiFi	2.4GHz, 802.11a/b/g/n, Bluetooth 5.2 (optional 2.4GHz/5GHz dual frequency WiFi, 802.11a/b/g/n/ac, Bluetooth 5.2)
	Display	1 × MIPI DSI (single channel 1920*1080@60fps) ,1 * eDP1.3 (2560x1600@60fps)
	Audio	2 × Speaker output (1.2W 8Ω) 1 × Mic input or 2 × Digital Array Microphone 1 × Headphone output (3.5mm)
	USB	1 × USB-C (OTG USB2.0) (current limit: 500mA), 2 × USB2.0 (current limit: 500mA)
	Touch	Support I2C touch
	Camera	1 × MIPI CSI

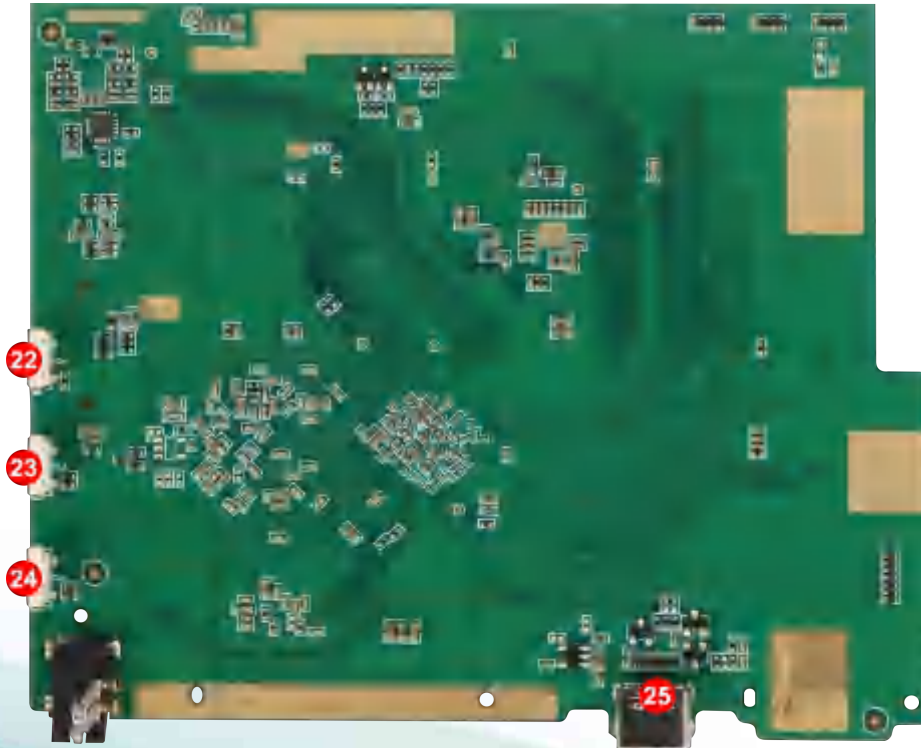
Interface description



Number	Discription
1	RTC Battery Holder
2	RGB light
3	Analog microphone interface
4	WiFi/ BT Antenna
5	EDP display interface
6	Proximity Sensor input

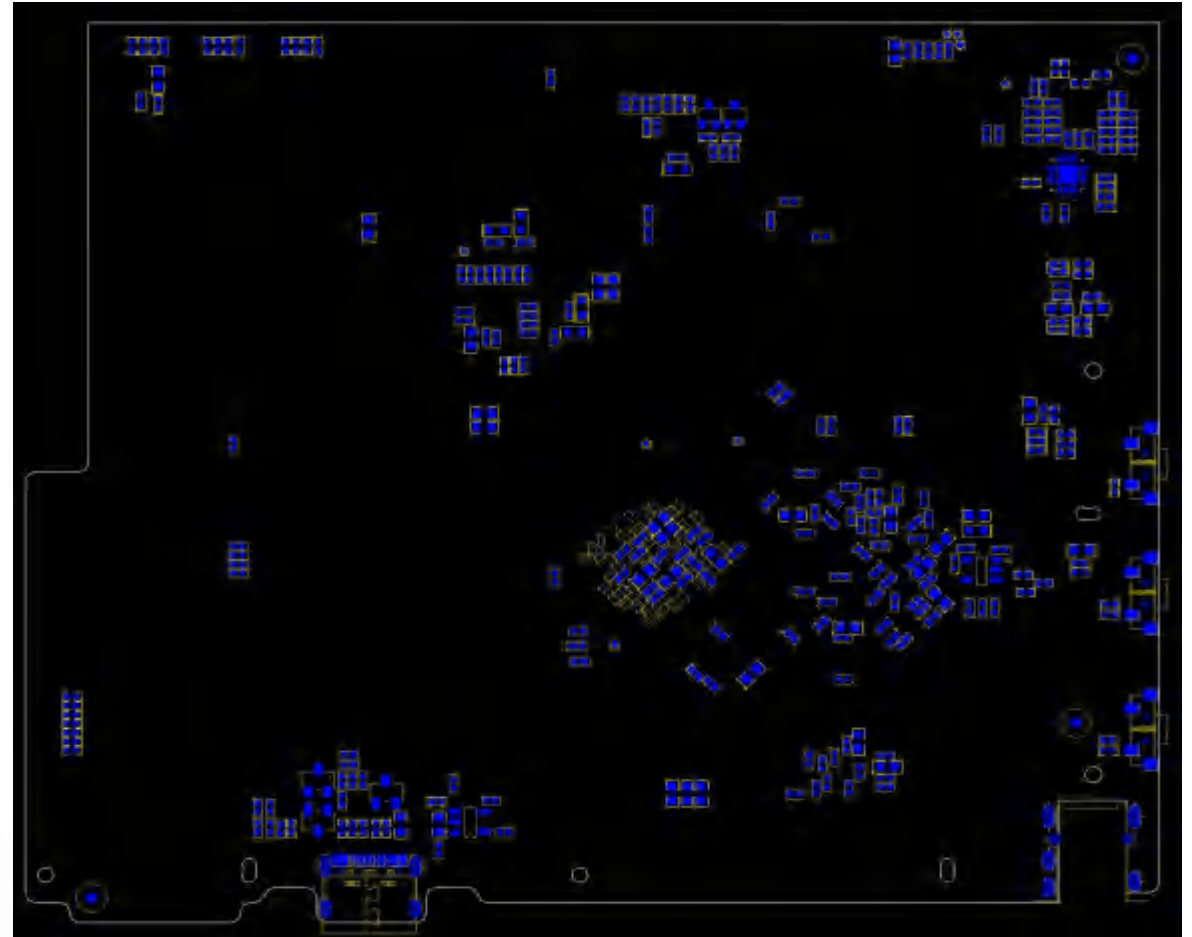
Number	Discription
7	Serial Port (UART7)
8	Serial Port (UART4)
9	Two GPIOs
10	MIPI display interface
11	touch interface
12	Power-100Mbps Ethernet-Serial Port (UART8)-1*GPIO
13	MIPI camera
14	speaker*2
15	USB
16	USB
17	Matrix digital microphone
18	Temperature and humidity sensor interface
19	Software programming
20	Reset
21	Headphone interface

Interface description



Number	discription
22	On/off button
23	Volume + (Flash button)
24	Volume -
25	(Type-C_USB2.0) USB_OTG2.0

Dimension



Interface definition



1、 RTC battery (0.8mm*2P)

Appearance	Number	Definition	Discription
	1	VBAT	Battery Positive
	2	GND	Battery Negative

2、 RGB light (FPC0.5*8P)

Appearance	Number	Definition	Discription
	1	RGB (B)	Blue
	2	RGB(G)	Green
	3	RGB(R)	Red
	4	RGB (B)	Blue
	5	RGB(G)	Green
	6	RGB(R)	Red
	7	+5V	power 5V
	8	+5V	Power 5V

3、 RTC battery (0.8mm*2P)

Appearance	Number	Definition	Discription
	1	MIC1_INN	Microphone Negative
	2	MIC1_INP	Microphone Positive

Interface definition



5、EDP dsaplay(FPC0.5*30P)

Appearance	Number	Definition	Discription
	1	/	/
	2	GND	Ground
	3	TX1N	EDP signal
	4	TX1P	EDP signal
	5	GND	Ground
	6	TX0N	EDP signal
	7	TX0P	EDP signal
	8	GND	Ground
	9	AUXP	EDP signal
	10	AUXN	EDP signal
	11	GND	Ground
	12	VCC	3.3V Power
	13	VCC	3.3V Power
	14	/	/
	15	GND	Ground
	16	GND	Ground
	17	/	/
	18	GND	Ground
	19	GND	Ground
	20	GND	Ground
	21	GND	Ground
	22	EN	EN enable Pin
	23	ADJ	PWM Control Pin
	24	/	/
	25	/	/
	26	VDD	3.3V Power
	27	VDD	3.3V Power
	28	VDD	3.3V Power
	29	VDD	3.3V Power
	30	/	/

6、Proximity Sensor input (0.8mm*3P)

Appearance	Number	Definition	Discription
	1	3.3V	Power 3.3V
	2	GPIO3_B0	GPIO input
	3	GND	Ground

7、Serial Port(UART7) (0.8mm*4P)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	UART7_TX	Transmission
	3	UART7_RX	Reception
	4	3.3V	Power

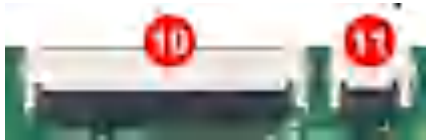
8、Serial Port (UART4) (0.8mm*4P)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	UART4_TX	Transmission
	3	UART4_RX	Reception
	4	3.3V	Power

9、GPIO (0.8mm*4P)

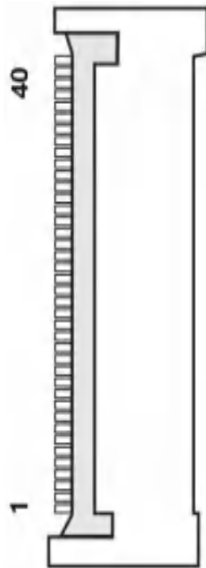
Appearance	Number	Definition	Discription
	1	GND	Ground
	2	GPIO3_B6	GPIO
	3	GPIO3_B4	GPIO
	4	3.3V	Power

Interface definition



7、MIPI_LCD Display (FPC0.5*40P)

Appearance	Number	Definition	Discription
	1	NC	/
	2	VDD_LCD	3.3V Power
	3	VDD_LCD	3.3V Power
	4	NC	/
	5	MIPI_RST	Reset (1.8V)
	6	NC	/
	7	GND	Ground
	8	MIPI_TX0N	MIPI Signal
	9	MIPI_TX0P	MIPI Signal
	10	GND	
	11	MIPI_TX1N	MIPI Signal
	12	MIPI_TX1P	MIPI Signal
	13	GND	
	14	MIPI_TX_CLKN	MIPI Signal
	15	MIPI_TX_CLKP	MIPI Signal
	16	GND	
	17	MIPI_TX2N	MIPI Signal
	18	MIPI_TX2P	MIPI Signal
	19	GND	
	20	MIPI_TX3N	MIPI Signal
	21	MIPI_TX3P	MIPI Signal
	22	GND	Ground
	23	NC	/
	24	NC	/
	25	GND	Ground
	26	NC	/
	27	NC	/
	28	NC	/
	29	VCC_LCD18	1.8V Power
	30	GND	Ground
	31	LED-	Backlight Negative
	32	LED-	Backlight Negative
	33	NC	/
	34	NC	/
	35	AVEE	-5.6V
	36	NC	/
	37	NC	/
	38	AVDD	+5.6V
	39	LED+	Backlight Positive
	40	LED+	Backlight Positive



11、Touch Panel (FPC0.5*10P)

Appearance	Number	Definition	Discription
	1	GND	Power
	2	GND	Power
	3	VCC_TP	3.3V Power
	4	SDA	Data
	5	SCL	Clock
	6	GND	Ground
	7	TP_INT	Interrupt
	8	TP_RESET	Reset
	9	GND	Ground
	10	GND	Ground



Interface definition



12、Power-100Mbps Ethernet-Serial Port (UART8)-1*GPIO (FPC0.5*20P)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	MDI0+	Ethernet Data
	3	MDI0-	Ethernet Data
	4	GND	Ground
	5	MDI1+	Ethernet Data
	6	MDI1-	Ethernet Data
	7	GND	Ground
	8	GND	Ground
	9	UART8_RX	Transmission
	10	UART8_TX	Reception
	11	GPIO3_A7	Reserved GPIO
	12	GND	Ground
	13	GND	Ground
	14	GND	Ground
	15	NC	NC
	16	5V_IN	5V power supply to the mainboard
	17	5V_IN	
	18	5V_IN	
	19	5V_IN	
	20	5V_IN	

13、MIPI Camera(0.4BTB 2*15Pin)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	MIPI_MCLK	MIPI Signal
	3	GND	Ground
	4	MIPI_PDNI	Enable signal
	5	MIPI_RST	Reset data
	6	SDA	IIC data
	7	SCL	IIC clock
	8	GND	Ground
	9	VCC_DVP	2.8V Power Supply
	10	GND	Ground
	11	VCC	2.8V Power Supply
	12	GND	Ground
	13	VCC	1.8V power supply
	14	VCC	1.8V power supply
	15	GND	Ground
	16	GND	Ground
	17	MIPI_DON	MIPI Signal
	18	MIPI_DOP	MIPI Signal
	19	GND	Ground
	20	MIPI_D1N	MIPI Signal
	21	MIPI_D1P	MIPI Signal
	22	GND	Ground
	23	MIPI_CLKN	MIPI Signal
	24	MIPI_CLKP	MIPI Signal
	25	GND	Ground
	26	MIPI_D2N	MIPI Signal
	27	MIPI_D2P	MIPI Signal
	28	GND	Ground
	29	MIPI_D3N	MIPI Signal
	30	MIPI_D3P	MIPI Signal

Interface definition



14、Speaker*2 (0.8mm*4P)

Appearance	Number	Definition	Discription
	1	SPK1_N	Left channel output negative
	2	SPK1_P	Left channel output positive
	3	SPK2_N	Right channel output negative
	4	SPK2_P	Right channel output positive

Note: 1 is L channel, 2 is R channel

15、USB (0.8mm*4P)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	USB_DP	USB Signal
	3	USB_DP	USB Signal
	4	5V	Power 5V

Note: Current Limit: 500mA

16、USB (0.8mm*4P)

Appearance	Number	Definition	Discription
	1	GND	Ground
	2	USB_DP	USB Signal
	3	USB_DP	USB Signal
	4	5V	Power 5V

Note: Current Limit: 500mA

17、Microphone Array (FPC0.5*6P)

Appearance	Number	Definition	Discription
	6	3.3V	Power
	5	PDM_CLK1_M0_ADC	Microphone signal
	4	PDM_SDI2_M0_ADC	Microphone signal
	3	PDM_SDI1_M0_ADC	Microphone signal
	2	GND	Ground
	1	GND	Ground

18、Temperature and humidity sensor (FPC0.5*6P)

Appearance	Number	Definition	Discription
	6	/	/
	5	VCC_3V3	3.3V
	4	GPIO3_A1	Reserved GPIO
	3	I2C2_SCL	Clock
	2	I2C2_SDA	Data
	1	GND	Ground



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