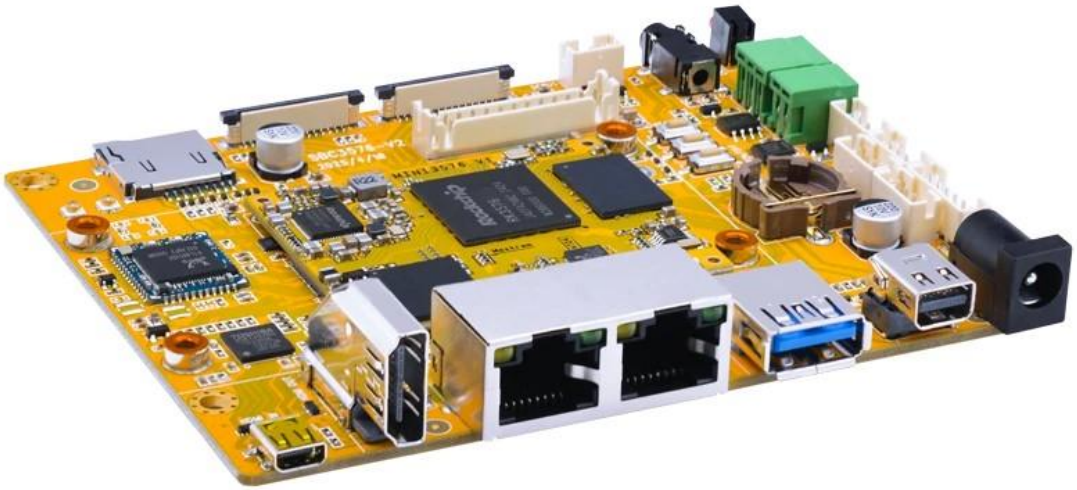
SBC3576 Hardware Manual

V1.202507



Boardcon Embedded Design

www.boardcon.com

1.Introduction

1.1.About this Manual

This manual is intended to provide the user with an overview of the board and benefits, complete features specifications,and set up procedures. It contains important safety information as well.

1.2.Feedback and Update to this Manual

To help our customers make the most of our products, we are continually making additional and updated resources available on the Boardcon website(www.boardcon.com,www.armdesigner.com).

These include manuals, application notes, programming examples,and updated software and hardware. Check in periodically to see what's new!

When we are prioritizing work on these updated resources, feedback from customers is the number one influence, If you have questions, comments, or concerns about your product or project, please no hesitate to contact us at support@armdesigner.com.

1.3.Limited Warranty

Boardcon warrants this product to be free of defects in material and workmanship for a period of one year from date of buy. During this warranty period Boardcon will repair or replace the defective unit in accordance with the following process:

A copy of the original invoice must be included when returning the defective unit to Boardcon. This limited warranty does not cover damages resulting from lighting or other power surges, misuse, abuse, abnormal conditions of operation, or attempts to alter or modify the function of the product.

This warranty is limited to the repair or replacement of the defective unit. In no event shall Boardcon be liable or responsible for any loss or damages, including but not limited to any lost profits, incidental or consequential damages, loss of business, or anticipatory profits arising from the use or inability to use this product.

Repairs make after the expiration of the warranty period are subject to a repair charge and the cost of return shipping. Please contact Boardcon to arrange for any repair service and to obtain repair charge information.

Content

1 SBC3576 Introduction

1.1 Summary

The SBC3576 adopts the Rockchip RK3576 SoC, which integrates a quad-core Cortex-A72 processor running at up to 2.2 GHz and a quad-core Cortex-A53 processor running at up to 1.8 GHz. The SoC also features a dedicated NPU with computing power up to 6 TOPS, enabling efficient AI processing for various AI scenarios. It supports 8K video decoding and 4K video encoding, providing ultra-high-definition rendering and superior image processing capabilities. The RK3576 also offers powerful network communication functions, including support for 4G, Wi-Fi 5, Bluetooth 5.0, and Gigabit Ethernet. The SBC3576 is equipped with a variety of interfaces, such as HDMI IN, HDMI OUT, DP, MIPI_LCD, making it suitable for ARM-based PCs, edge computing devices, personal mobile Internet devices, and other digital multimedia applications.

SBC3576 is implemented with a MINI3576 computer-on-module providing most of the functions and interfaces, and SBC3576 carrier board providing connectors and several additional functions. The rich feature set of SBC3576 is customizable according to the price / performance needs of the target application. SBC3576 contains expansion connectors which accommodate a wide range of standard peripheral devices. Wide input range switched power supply is compatible with requirements for telecom and automotive applications. SBC3576 is provided with full ready-to-run Android 14, Debian 12 and Buildroot SW packages and comprehensive user manual and designing guide.

1.2 Rockchip RK3576 Features

- **Microprocessor**

  -Quad-core Cortex-A72 up to 2.4G.

  -Quad-core Cortex-A53 up to 1.8G.

- **Memory Organization**

  -LPDDR4X up to 8GB.

  -EMMC5.1 up to 128GB.

- **Cortex-M0**

  -Cortex-M0 cooperate with quad-core Cortex-A72 / Cortex-A53.

  -Integrated sleep modes for low power consumption.

  -Serial Wire Debug reduces the number of pins required for debugging.

- **PWM**

  -Four on-chip PWMs with interrupt-based operation.

  -Support capture mode and continuous mode or one-shot mode.

- **Watchdog**

  -Three Watchdogs in SoC with 32 bits counter width.

- **Interrupt Controller**

  -Support 8 PPI interrupt source and 148 SPI interrupt sources input.

  -Support 16 software-triggered interrupts.

- **3D Graphics Engine**

  -Arm Mali-G52 MC3 GPU.

  -High performance OpenGL ES / 3.2, Vulkan1.0, OpenCL2.0.

  -Provide MMU and L2 Cache with 512KB size.

- **Power unit**

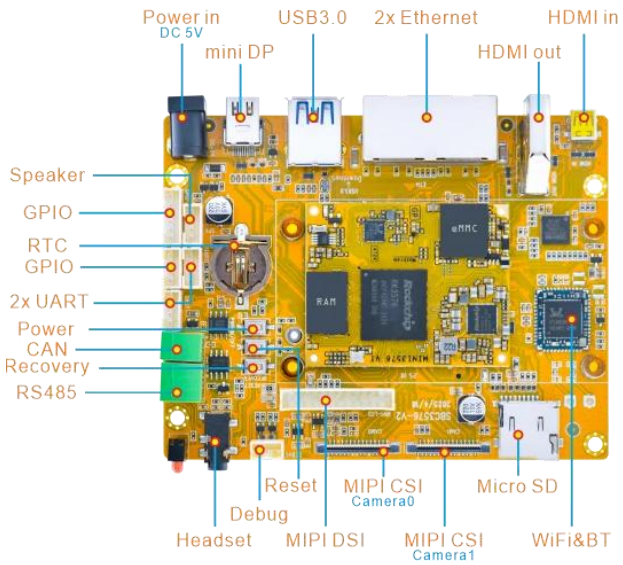
  -Very low RTC consume current, less 7uA at 3V button Cell.

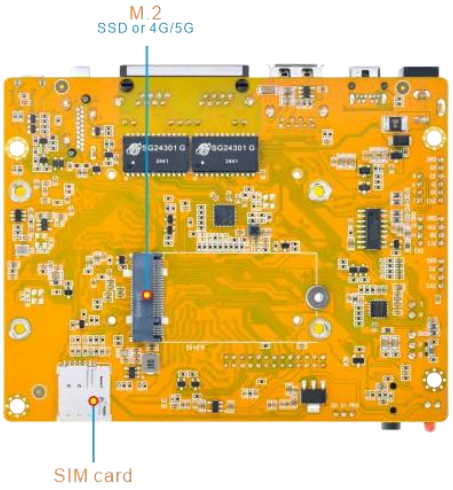
- **Temperature**

  -Less 40°run video play (exposed board at 20°).

  -Less 60°run AnTuTu test (exposed board at 20°)

1.3 SBC3576 Specifications

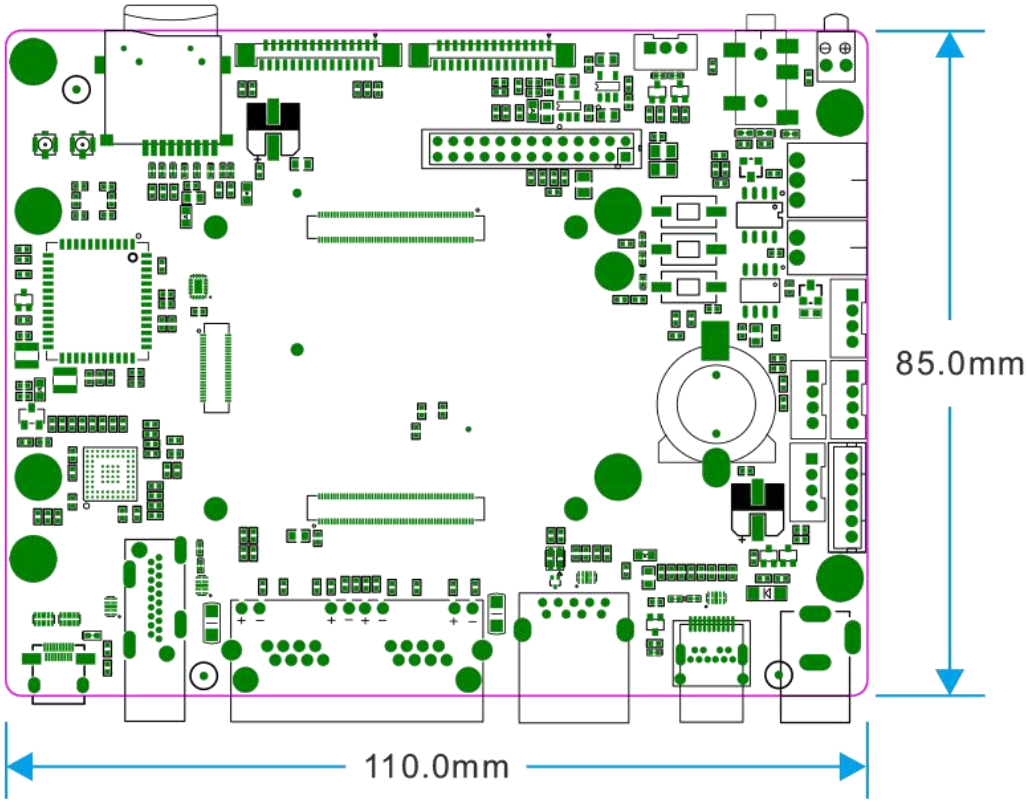




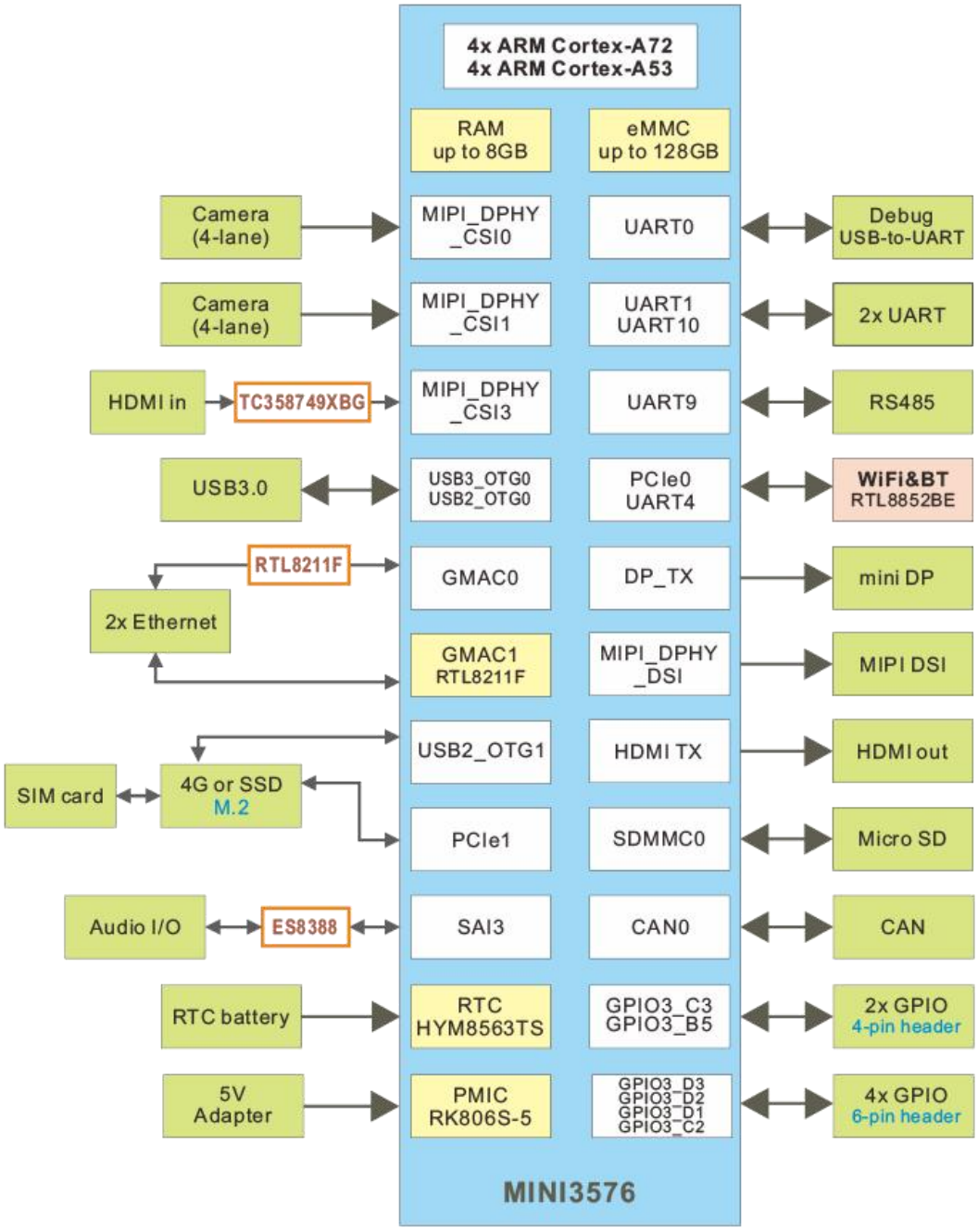
Feature	Specifications
CPU	• Octa-core ARM processor • Quad-core Cortex-A72+Quad-core Cortex-A53
GPU	• Arm Mali G52 MC3 GPU • OpenGL ES 1.1/2.0/3.2 • Vulkan 1.1 • OpenCL 2.0
Memory	4GB (up to 8GB) LPDDR4X
eMMC	eMMC 5.1
Power	DC 5V/3A
USB	USB3.0 Host (also used as OTG)
Serial Port	• 2x UART, 4-pin connector • 1x Debug, 3-pin connector • 6x GPIO • 1x RS485 • 1x CAN
Ethernet	2x 10/100/1000 Mbps Ethernet RJ45 port via Realtek RTL8211F-CG controller
Display	• Support 1x HDMI2.1 output, up to 4K@120fps • Support 1xMIPI output, up to 2560x1600@60fps • Support 1x DP AIT mode output, up to 4K@120fps
HDMI IN	HDMI in interface
Headset	Headset output / input interface
RTC	Real Time Clock, powered by external lithium battery
M.2	4G model interface (EM05-CN) or SSD
SD card	1x T-Flash card slot
SIM card	1x SIM card slot

Keys&Switch	1x Power key, 1x Reset key, 1x Recovery key
WIFI&BT	WIFI&Bluetooth module
Dimension	110.0mm x 85.0mm

1.4 PCB Dimension



1.5 Block Diagram



1.6 CPU Introduction

The CPU module RK3576 is equipped with up to 8GB of LPDDR4X RAM and offers up to 128GB of eMMC5.1 Flash storage.It also supports an MXM3.0-314P card edge interface, providing flexibility and expandability for various applications.

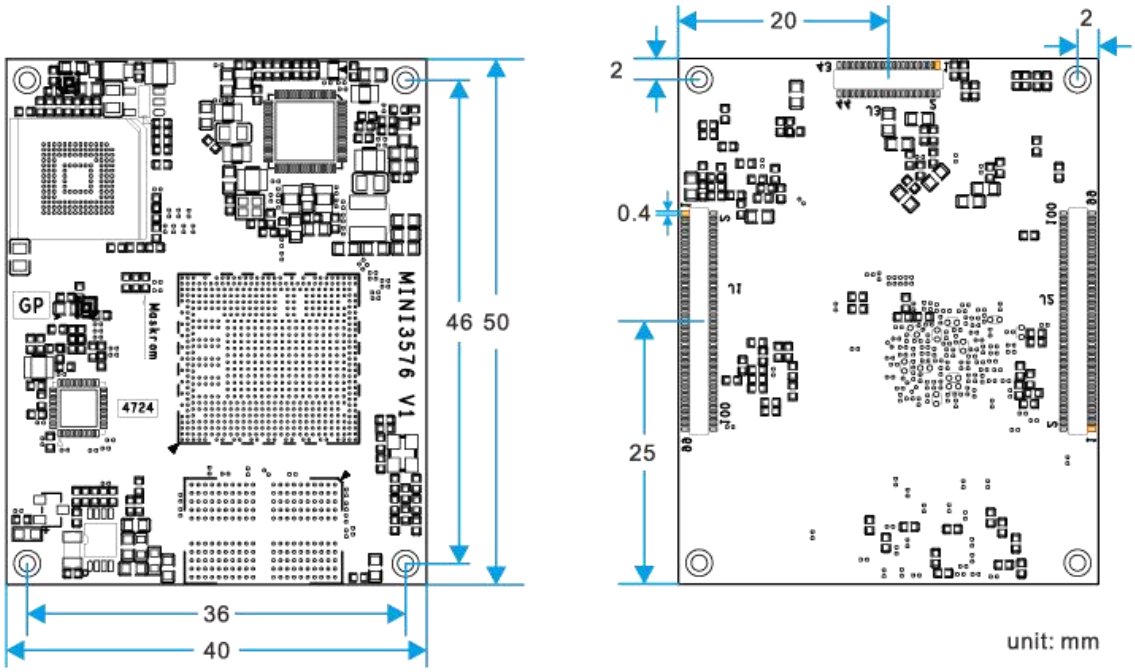
CM3576 specifications

Pin number–100 pins+100 pins+44 pins

Dimension–50mm x 40mm

Power supply–DC 3.3~4.5V Battery

Application–smart Device,advertising devices, all-in-one machines, POS systems, vehicle control terminals, etc.



Pin Definition

J1	Signal	Description or functions	GPIO serial	IO Voltage
1	VCC_SYS	System Power Input		3.4V-5.5V
2	SPDIF_RX1_M2_1V8	I2C5_SCL_M1/UART10RTSn_M1/PDM0_SDI3_M2/SAI2_MCLK_M0/FSPI1_DQS_M1	GPIO1_D4_d	1.8V
3	VCC_SYS	System Power Input		3.4V-5.5V
4	UART4_CTSN_M1_1V8	SPI2_CSn0_M1/I2C6_SDA_M1/FSPI1_CSN0_M1	GPIO1_C3_u	1.8V
5	VCC_SYS	System Power Input		3.4V-5.5V

J1	Signal	Description or functions	GPIO serial	IO Voltage
6	UART4_RTSN_M1_1V8	SPI2_CSn1_M1/I2C6_SCL_M1/FSPI1_CSN1_M1/PWM1_CH2_M1	GPIO1_C2_u	1.8V
7	VCC_SYS	System Power Input		3.4V-5.5V
8	SAI2_LRCK_M0_1V8	SAI2_LRCK_M0/I3C0_SCL_M1/FSPI1_D6_M1/PWM1_CH3_M1	GPIO1_D2_d	1.8V
9	VCC_SYS	System Power Input		3.4V-5.5V
10	UART4_TX_M1_1V8	SPI2_MOSI_M1/UART2_RTSN_M0/FSPI1_D0_M1	GPIO1_C4_d	1.8V
11	VCC_SYS	System Power Input		3.4V-5.5V
12	UART4_RX_M1_1V8	SPI2_MISO_M1/UART2_CTSN_M0/FSPI1_D1_M1	GPIO1_C5_d	1.8V
13	HOST_WAKE_BT_H_1V8	SPI2_CLK_M1/I2C5_SDA_M1/UART10_CTS_M1/PDM0_CL1_M2/FSPI1_CLK_M1/SPDIF_TX1	GPIO1_D5_d	1.8V
14	BT_REG_ON_H_1V8	I2C8_SDA_M1/UART2_RX_M0/PDM0_SDI1_M2/FSPI1_D3_M1/SATA_CPDET	GPIO1_C7_d	1.8V
15	SAI2_SCLK_M0_1V8	UART10_RX_M1/I3C0_SDA_PU_M1/SAI2_SCLK_M0/FSPI1_D5_M1	GPIO1_D1_d	1.8V
16	SDMMC1_CLK_M0_1V8	UART3_RX_M2/PDM0_CLK0_M2/SAI3_MCLK_M1	GPIO1_C1_d	1.8V
17	SAI2_SDO_M0_1V8	UART10_TX_M1/FSPI1_D4_M1	GPIO1_D0_d	1.8V
18	GND	Ground		0V
19	SAI2_SDI_M0_1V8	I3C0_SDA_M1/FSPI1_D7_M1/PWM1_CH4_M1	GPIO1_D3_d	1.8V

J1	Signal	Description or functions	GPIO serial	IO Voltage
20	SDMMC0_CLK	I3C1_SDA_PU_M1/SPI0_CLK_M1/I2C5_SCL_M0/UART5_TX_M2/SAI3_SCLK_M0/FSPI1_CLK_M0/PWM1_CH4_M1	GPIO2_A5_d	1.8V
21	WIFI_REG_ON_H_1V8	I2C8_SCL_M1/UART2_TX_M0/PDM0_SDI0_M2/FSPI1_D2_M1/SATA_CPPOD	GPIO1_C6_d	1.8V
22	GND	Ground		0V
23	SDMMC0_DET_L_1V8		GPIO0_A7_u	1.8V
24	SARADC_VIN2	ADC_IN2		1.8V
25	GND	Ground		0V
26	RECOVERY_SARADC_VIN1	RECOVERY MODE/ADC_IN1(PU10K)		1.8V
27	SDMMC1_D1_M0_1V8	I2C9_SCL_M1/SPI1_MOSI_M0/PCIE1_WAKE_M1/SAI3_LRCK_M1/PWM1_CH1_M1	GPIO1_B5_d	1.8V
28	GND	Ground		0V
29	SDMMC1_D0_M0_1V8	I2C9_SDA_M1/SPI1_CLK_M0/PCIE1_CLKREQ_M1/SAI3_SCLK_M1/PWM1_CH0_M1	GPIO1_B4_d	1.8V
30	SAI0_MCLK_M0/E0_RCK_M1_1V8	SPI4_MISO_M3/UART7_RTSN_M0/PDM0_CLK0_M3/SDMMC1_DETN_M1/VI_CIF_D8/SATA1_ACTLED_M0	GPIO2_B5_d	1.8V
31	SDMMC1_D2_M0_1V8	UART3_CTSN_M2/SPI1_MISO_M0/PCIE0_CLKREQ_M1/SAI3_SDO_M1	GPIO1_B6_d	1.8V

J1	Signal	Description or functions	GPIO serial	IO Voltage
32	SPDIF_RX1_M1/E0_RCT_M1_1V8	MIPI_TE_M1/CAN1_TX_M3/SPI3_MISO_M0/UART3_CTSN_M0/SAI3_SDO_M2/VI_CIF_CLKO	GPIO3_A2_d	1.8V
33	SDMMC1_D3_M0_1V8	UART3_RTSN_M2/SPI1_CS0_M0/PCIE0_WAKE_M1/SAI3_SDI_M1	GPIO1_B7_d	1.8V
34	SAI0_SDO0_M0/E0_RD0_M1_1V8	I2C4_SCL_M2/UART8_TX_M1/SPI4_CS1N_M3/SDMMC1_D0_M1/VI_CIF_D15	GPIO2_A6_d	1.8V
35	SDMMC1_CMD_M0_1V8	UART3_TX_M2/SPI1_CS1_M0/PDM0_SDI2_M2/PWM0_CH0_M1	GPIO1_C0_d	1.8V
36	CSI0_PWREN/E0_RD1_M1_1V8	SPDIF_TX1_M1/CAN1_RX_M3/SPI3_CS0_M0/UART3_RTSN_M0/SAI3_SDI_M2/VI_CIF_CLKI	GPIO3_A3_d	1.8V
37	GND	Ground		0V
38	SAI0_LRCK_M0/E0_RD2_M1_1V8	I2C8_SDA_M2/UART8_CTS_M0/UART7_RX_M0/VI_CIF_D6	GPIO2_B7_d	1.8V
39	SDMMC0_D1	DSM_ALN_M0/I2C8_SDA_M0/UART0_TX_M1/UART7_TX_M2/SPI0_MISO_M1/CAN0_TX_M0/SAI3_MCLK_M3	GPIO2_A1_d/PWM2_CH3_M0/FSPI1_D1_M0	3.3V
40	SAI0_SCLK_M0/E0_RD3_M1_1V8	I2C8_SCL_M2/UART8_RTS_M0/UART7_TX_M0/VI_CIF_D7	GPIO2_B6_d	1.8V

J1	Signal	Description or functions	GPIO serial	IO Voltage
41	SDMMC0_D0	DSM_ALP_M0/I2C8_SCL_M0/UART0_RX_M1/UART7_RX_M2/SPI0_MOSI_M1/CAN0_RX_M0	GPIO2_A0_d/ PWM2_CH2_M0/ FSPI1_D0_M0	3.3V
42	GND	Ground		0V
43	SDMMC0_CMD	I2C5_SDA_M0/UART5_RX_M2/SPI0_CSN0_M1/SAI3_SDO_M3	GPIO2_A4_d/ PWM2_CH4_M0/ FSPI1_CSN0_M0	3.3V
44	SAI0_SDO2_M0/E0_TCK_M1_1V8	SPI4_CLK_M3/UART1_RTSN_M1/PDM0_CLK1_M3/SDMMC1_CLK_M1/VI_CIF_D10/PCIE1_CLKREQ_M0	GPIO2_B3_d	1.8V
45	SDMMC0_D3	I3C1_SDA_M1/DSM_ARN_M0/UART5_CTSN_M2/SAI3_SDI_M3/CAN1_TX_M0	GPIO2_A3_d/ FSPI1_D3_M0/ JTAG_TMS_M0	3.3V
46	SAI0_SDO1_M0/E0_TCT_M1_1V8	I2C4_SDA_M2/UART8_RX_M1/SDMMC1_D1_M1/VI_CIF_D14	GPIO2_A7_d	1.8V
47	SDMMC0_D2	I3C1_SCL_M1/DSM_ARP_M0/UART5_RTSN_M2/SAI3_LRCK_M3/CAN1_RX_M0	GPIO2_A2_d/ FSPI1_D2_M0/ JTAG_TCK_M0	3.3V
48	SAI0_SDI1_M0/E0_TD0_M1_1V8	UART1_RX_M1/PDM0_SDI2_M3/SDMMC1_D3_M1/VI_CIF_D12	GPIO2_B1_d	1.8V
49	GND	Ground		0V
50	SAI0_SDI0_M0/E0_TD1_M1_1V8	UART1_TX_M1/PDM0_SDI3_M3/SDMMC1_D2_M1/VI_CIF_D13	GPIO2_B0_d	1.8V
51	32KOUT_RTC_1V8	RTC_CLKO(PU10K) /I2C6_SCL_M0	GPIO0_A2(Note1)	1.8V

J1	Signal	Description or functions	GPIO serial	IO Voltage
52	SAI0_SDI3_M0/E0_TD2_M1_1V8	SPI4_MOSI_M3/UART7_CTSN_M1/PDM0_SDI0_M3/SDMMC1_CLK_M1/VI_CIF_D9/SATA0_ACTLED_M0	GPIO2_B4_d	1.8V
53	VCC_RTC	RTC Power input		1.8~3.3V
54	SAI0_SDI2_M0/E0_TD3_M1_1V8	SPI4_CS0_M3/UART1_CTSN_M1/PDM0_SDI1_M3/SDMMC1_CMD_M1/VI_CIF_D11/PCIE0_CLKREQ_M0	GPIO2_B2_d	1.8V
55	LCDC_D15/EBC_SDDO15/DSMC_DATA9	UART9_RTS_M1/ETH0_TXD1_M0/SPDIF_RX1_M0/FLEXBUS0_D1	GPIO3_B4_d/PWM1_CH4_M3	3.3V
56	GND	Ground		0V
57	LCDC_D14/EBC_SDDO14/DSMC_DATA8	UART9_CTS_M1/ETH0_TXD0_M0/SPDIF_TX1_M0/FLEXBUS0_D0	GPIO3_B5_d/PWM1_CH5_M3	3.3V
58	LCDC_D16/EBC_SDCE0/DSMC_DATA10	I2C8_SCL_M3/UART9_TX_M1/ETH0_TXCTL_M0/PDM1_SDI0_M2/FLEXBUS0_D2	GPIO3_B3_d	3.3V
59	LCDC_D13/EBC_SDDO13/DSMC_DQS1	SPI3_CSN0_M1/ETH0_TXCLK_M0/FLEXBUS0_CLK	GPIO3_B6_d/PWM0_CH1_M3	3.3V
60	LCDC_D17/EBC_SDCE1/DSMC_DATA11	I2C8_SDA_M3/UART9_RX_M1/ETH0_RXD0_M0/PDM1_SDI1_M2/FLEXBUS0_D3	GPIO3_B2_d	3.3V
61	LCDC_D12/EBC_SDDO12/DSMC_DQS0	I2C4_SDA_M3/UART2_RX_M2/UART3_CTS_M1/SAI1_SDO0_M1/FLEXBUS1_D10/FLEXBUS1_CSN_M0	GPIO3_B7_d	3.3V
62	LCDC_D18/EBC_SDCE2/DSMC_DATA12	UART10_TX_M0/SPI4_CSN0_M1/ETH0_RXD1_M0/PDM1_CLK0_M2/FLEXBUS0_D4	GPIO3_B1_d/PWM1_CH3_M3	3.3V

J1	Signal	Description or functions	GPIO serial	IO Voltage
63	LCDC_D11/EBC_SDDO11/DSMC_DATA7	I2C4_SCL_M3/UART2_TX_M2/UART3_RTS_M1/SAI1_SDO3_M1/FLEXBUS1_D9	GPIO3_C0_d	3.3V
64	LCDC_D19/EBC_SDCE3/DSMC_CSN1	UART10_RX_M0/SPI2_MOSI_M2/ETH0_MCLK_M0/SAI4_MCLK_M1/FLEXBUS0_D8	GPIO3_B0_d/ PWM0_CH0_M3	3.3V
65	LCDC_D10/EBC_SDDO10/DSMC_DATA6	I2C5_SCL_M3/UART11_RX_M0/SPI2_MISO_M2/SAI1_SDO2_M1/FLEXBUS1_D8/CAN0_RX_M3	GPIO3_C1_d	3.3V
66	PHY1_LED1/CFG_LDO0/CIF_D3	Speed LED(PD4.7K) or VI_CIF_D3/SPI1_MOSI_M1/ UART11_CTS_M1/PDM1_SDI2_M0/SAI2_SCLK_M1/PWM1_CH2_M2	GPIO2_C2(Note2)	3.3V
67	LCDC_D9/EBC_SDDO9/DSMC_INT1	I2C9_SCL_M3/UART11_RTS_M0/SPI4_MISO_M1/SAI2_SCLK_M2/FLEXBUS0_D9	GPIO3_C2_d/ PWM2_CH0_M3	3.3V
68	PHY1_LED2/CFG_LDO1/CIF_D4	Link LED(PU4.7K) or VI_CIF_D4/SPI1_CS1_M1/UART9_TX_M1/PDM1_CLK1_M0/SAI2_MCLK_M1/PWM1_CH1_M2	GPIO2_C1(Note2)	3.3V
69	LCDC_D8/EBC_SDDO8/DSMC_INT3	I2C9_SDA_M3/UART11_CTS_M0/SPI4_MOSI_M1/SAI2_LRCK_M2/FLEXBUS0_D10/ FLEXBUS0_CSN_M2	GPIO3_C3_d/ PWM2_CH1_M3	3.3V
70	LCDC_D20/EBC_VCOM/DSMC_DATA13	UART10_RTS_M0/UART1_TX_M2/ETH0_RXCTL_M0/PDM1_CLK1_M2/FlexBUS0_D5	GPIO3_A7_d	3.3V
71	GND	Ground		0V

J1	Signal	Description or functions	GPIO serial	IO Voltage
72	LCDC_D21/EBC_GDOE/DSMC_DATA14	UART10_CTS_M0/UART1_RX_M2/ETH0_MDC_M0/PDM1_SDI2_M2/FlexBUS0_D6	GPIO3_A6_d/ PWM1_CH2_M3	3.3V
73	LCDC_D7/EBC_SDDO7/DSMC_DATA5	I2C5_SCL_M3/UART11_TX_M0/SPI2_CSN0_M2/SAI1_SDO0_M1/FLEXBUS1_D7/CAN0_TX_M3	GPIO3_C4_d	3.3V
74	LCDC_D22/EBC_GDSP/DSMC_DATA15	SPI2_CSn1_M2/UART1_RTS_M2/ETH0_MDIO_M0/PDM1_SDI3_M2/FlexBUS0_D7	GPIO3_A5_d/ PWM1_CH1_M3	3.3V
75	LCDC_D6/EBC_SDDO6/DSMC_DATA4	UART8_RX_M0/SPI1_MISO_M2/SAI1_SDO0_M1/FLEXBUS1_D6	GPIO3_C5_d/ PWM2_CH2_M3	3.3V
76	LCDC_D23/EBC_SDSHR/DSMC_RDYN	SPI2_CLK_M2/UART1_CTS_M2/ETH0_CLKOUT_25M_M0/SAI4_SDI_M1/FlexBUS1_D11/FlexBUS0_CSn_M0	GPIO3_A4_d/ PWM1_CH0_M3	3.3V
77	LCDC_D5/EBC_SDDO5/DSMC_DATA3	UART8_TX_M0/SPI1_MOSI_M2/SAI1_LRCK_M1/FLEXBUS1_D5	GPIO3_C6_d	3.3V
78	PHY1_MDI3-/CIF_D5	ETH MDI or VI_CIF_D5/UART9_RX_M1/ PDM1_SDI1_M0/PWM1_CH0_M2	GPIO2_C0(Note2)	3.3V
79	LCDC_D4/EBC_SDDO4/DSMC_DATA2	UART8_RTS_M0/SPI1_CLK_M2/SAI1_SCLK_M1/FLEXBUS1_D4	GPIO3_C7_d	3.3V
80	PHY1_MDI3+/CIF_D0	ETH MDI or VI_CIF_D0/SPI1_CLK_M1/UART11_RX_M1/PDM1_CLK0	GPIO2_C5(Note2)	3.3V

J1	Signal	Description or functions	GPIO serial	IO Voltage
		_M0/SAI2_SDI_M1/PWM1_CH4_M2		
81	LCDC_D3/EBC_SDDO3/DSMC_DATA1	UART8_CTS_M0/SPI1_CSN0_M2/SAI1_MCLK_M1/FLEXBUS1_D3	GPIO3_D0_d/ PWM2_CH3_M3	3.3V
82	PHY1_MDI2-/CIF_D2	ETH MDI or VI_CIF_D2/SPI1_MISO_M1/ UART11_RTS_M1/PDM1_SDI3_M0/SAI2_LRCK_M1/PWM0_CH0_M2	GPIO2_C3(Note2)	3.3V
83	LCDC_D2/EBC_SDDO2/DSMC_CSN2	I3C1_SDA_PU_M2/SPI4_CLK_M1/SAI2_MCLK_M2/FLEXBUS0_D11/FLEXBUS1_CS_M2	GPIO3_D1_d	3.3V
84	PHY1_MDI2+/CIF_D1	ETH MDI or VI_CIF_D1/SPI1_CS0_M1/UART11_TX_M1/PDM1_SDI0_M0/SAI2_SDO_M1/PWM1_CH3_M2	GPIO2_C4(Note2)	3.3V
85	LCDC_D1/EBC_SDDO1/DSMC_CSN3	I3C1_SDA_M2/UART2_RTS_M2/SPI4_CSN1_M1/SAI2_SDI_M2/FLEXBUS0_D12/FLEXBUS0_CS_M3/FLEXBUS1_D15_M0	GPIO3_D2_d/ PWM2_CH4_M3	3.3V
86	PHY1_MDI1-	ETH MDI		0.5V
87	LCDC_D0/EBC_SDDO0/DSMC_CSN0	I3C1_SCL_M2/UART2_CTS_M2/SAI2_SDO_M2/FLEXBUS1_D2	GPIO3_D3_d/ PWM2_CH5_M3	3.3V
88	PHY1_MDI1+	ETH MDI		0.5V

J1	Signal	Description or functions	GPIO serial	IO Voltage
89	LCDC_CLK/EBC_SDOE/DSMC_RESETN	UART5_RTS_M0/SPI3_CSN1_M1/SAI4_SCLK_M1/FLEXBUS1_D12_M0/FLEXBUS0_D15_M0/FLEXBUS1_CSn_M1/CAM_CLK0_OUT_M0	GPIO3_D7_d/ PWM2_CH7_M3	3.3V
90	PHY1_MDI0-	ETH MDI		0.5V
91	GND	Ground		0V
92	PHY1_MDI0+	ETH MDI		0.5V
93	HDMI_TX_ON_H	I2C4_SDA_M1/UART6_RX_M0/SPI3_MISO_M2/SAI4_LRCK_M0/PDM1_CLK0_M1/FlexBUS1_D14_M1/CAN0_RX_M2	GPIO4_A6_d	3.3V
94	GND	Ground		0V
95	TYPEC_DPTX_AUX_PUPDCTL2	I2C4_SCL_M1/UART6_TX_M0/SPI3_MOSI_M2/SAI4_SCLK_M0/PDM1_SDI3_M1/FlexBUS1_D13_M1/CAN0_TX_M2	GPIO4_A4_d	3.3V
96	LCDC_DEN/EBC_SDLE/DSMC_DATA0	I2C3_SCL_M2/UART5_RX_M0/SPI3_CLK_M1/SAI1_SDI1_M1/FLEXBUS1_D1	GPIO3_D4_d	3.3V
97	SPK_CTL_H	SPI3_CS1_M2/SPI4_CS0_M2/PDM1_SDI0_M1/SAI1_SDI0_M0/SAI4_SDO_M0	GPIO4_B3_d/ PWM2_CH7_M0	3.3V
98	LCDC_VSYNC/EBC_SDCLK/DSMC_CLKN	UART5_CTS_M0/SPI3_MOSI_M1/SAI1_SDI3_M1/FLEXBUS1_CLK/PWM2_CH6_M3	GPIO3_D6_d	3.3V
99	HP_CTL_H	SPI3_CLK_M2/SAI4_SDI_M0/SAI1_SDO0_M0	GPIO4_A7_d/ PWM2_CH6_M0	3.3V

J1	Signal	Description or functions	GPIO serial	IO Voltage
100	LCDC_HSYNC/EBC_GDCLK/DSMC_CLKP	I2C3_SDA_M2/UART5_TX_M0/SPI3_MISO_M1/SAI1_SDI2_M1/FLEXBUS1_D0	GPIO3_D5_d	3.3V
NOTE: ***1. Default used for RTC CLKO, can change to GPIO by HW.*** ***2. Default used for ETH MDI, can change to GPIO by HW.***				

J2	Signal	Description or functions	GPIO serial	IO Voltage
1	USB2_OTG0_ID			1.8V
2	I2C3_SDA_M0	PCIE0_WAKE_M2/IUART2_RX_M1/SPDIF_RX0_M0/FlexBUS0_CSN_M4/CAN1_RX_M2	GPIO4_B4_d (PU2.2K)	3.3V
3	USB2OTG0_VBUSDET	OTG0 VBUS Input		3.3V
4	I2C3_SCL_M0	PCIE0_CLKREQ_M2/IUART2_TX_M1/SPDIF_TX0_M0/FlexBUS0_D15_M1/CAN1_TX_M2	GPIO4_B5_d (PU2.2K)	3.3V
5	USB2_OTG0_DP			0.5V
6	HDMI_TX_HPDIN_M0	I2C7_SDA_M3/UART11_RX_M2/EDP_HPD_M0/PCIE1_CLKREQ_M3/DSM_ALN_M1	GPIO4_C1_d/ PWM0_CH1_M1	3.3V
7	USB2_OTG0_DM			0.5V
8	HDMI_TX_SDA	I2C2_SDA_M3/UART9_RX_M2/CAN0_RX_M1/DSM_ARN_M1	GPIO4_C3_d/ PWM2_CH1_M1	3.3V
9	DP_TX_AUXP			0.5V
10	HDMI_TX_SCL	I2C2_SCL_M3/UART9_TX_M2/CAN0_TX_M1/DSM_ARP_M1	GPIO4_C2_d/ PWM2_CH0_M1	3.3V

J2	Signal	Description or functions	GPIO serial	IO Voltage
11	DP_TX_AUXN			0.5V
12	DP_HPDIN_M0	I2C3_SCL_M3/UART6_TX_M3/SPI4_CSn0_M0/SAI4_LRCK_M2/ISP_PRLIGHT_TRIG_M1	GPIO4_C4_d/ PWM2_CH6_M1	3.3V
13	GND	Ground		0V
14	HDMI_TX_CEC_M0	I2C7_SCL_M3/UART11_TX_M2/SPI4_CSn1_M0/SAI_MCLK_M2/DSM_ALP_M1	GPIO4_C0_d/ PWM1_CH5_M1/ PCIE1_WAKE_M3	3.3V
15	USB3_OTG0_SSRX1N /DP_TX_D0N			0.5V
16	PWM2_CH5_M1_FAN	I2C3_SDA_M3/UART6_RX_M3/SPI4_MOSI_M0/SAI4_SDO_M2/VP0_SYNC_OUT/ISP_FLASH_TRIGOUT_M1	GPIO4_C5_d/ PWM2_CH5_M1/ SATA1_ACTLED_M1 PCIE0_WAKE_M3	3.3V
17	USB3_OTG0_SSRX1P /DP_TX_D0P			0.5V
18	PCIE0_CLKREQn_M3	I2C6_SCL_M3/SPI4_MISO_M0/SAI4_SDI_M2/VP1_SYNC_OUT/CAN1_TX_M1	GPIO4_C6_d/ PWM2_CH2_M1/ SATA0_ACTLED_M1	3.3V
19	USB3_OTG0_SSTX1P/ DP_TX_D1P			0.5V
20	PCIE0_PERSTn	I2C6_SDA_M3/SPI4_CLK_M0/SAI4_SCLK_M2/VP2_SYNC_OUT/CAN1_RX_M1	GPIO4_C7_d/ PWM2_CH3_M1	3.3V
21	USB3_OTG0_SSTX1N/ DP_TX_D1N			0.5V
22	USB2_OTG1_DM			0.5V
23	USB3_OTG0_SSRX2N /DP_TX_D2N			0.5V
24	USB2_OTG1_DP			0.5V

J2	Signal	Description or functions	GPIO serial	IO Voltage
25	USB3_OTG0_SSRX2P /DP_TX_D2P			0.5V
26	GND	Ground		0V
27	GND	Ground		0V
28	MIPI_DPHY_DSI_TX_ D0N			0.5V
29	USB3_OTG0_SSTX2P/ DP_TX_D3P			0.5V
30	MIPI_DPHY_DSI_TX_ D0P			0.5V
31	USB3_OTG0_SSTX2N/ DP_TX_D3N			0.5V
32	MIPI_DPHY_DSI_TX_ D1N			0.5V
33	MIPI_DPHY_DSI_TX_ CLKN			0.5V
34	MIPI_DPHY_DSI_TX_ D1P			0.5V
35	MIPI_DPHY_DSI_TX_ CLKP			0.5V
36	GND	Ground		0V
37	GND	Ground		0V
38	MIPI_DPHY_DSI_TX_ D2N			0.5V
39	MIPI_DPHY_CSI0_RX _D0P			0.5V
40	MIPI_DPHY_DSI_TX_ D2P			0.5V
41	MIPI_DPHY_CSI0_RX _D0N			0.5V
42	MIPI_DPHY_DSI_TX_			0.5V

J2	Signal	Description or functions	GPIO serial	IO Voltage
	D3N			
43	MIPI_DPHY_CSI0_RX _D1P			0.5V
44	MIPI_DPHY_DSI_TX_ D3P			0.5V
45	MIPI_DPHY_CSI0_RX _D1N			0.5V
46	GND	Ground		0V
47	GND	Ground		0V
48	HDMI_TX_SBDN			0.5V
49	MIPI_DPHY_CSI0_RX _CLKP			0.5V
50	HDMI_TX_SBDP			0.5V
51	MIPI_DPHY_CSI0_RX _CLKN			0.5V
52	MIPI_DPHY_CSI2_RX _CLKP			0.5V
53	MIPI_DPHY_CSI0_RX _D2P			0.5V
54	MIPI_DPHY_CSI2_RX _CLKN			0.5V
55	MIPI_DPHY_CSI0_RX _D2N			0.5V
56	GND	Ground		0V
57	MIPI_DPHY_CSI0_RX _D3P			0.5V
58	MIPI_DPHY_CSI1_RX _CLKN			0.5V
59	MIPI_DPHY_CSI0_RX _D3N			0.5V

J2	Signal	Description or functions	GPIO serial	IO Voltage
60	MIPI_DPHY_CSI1_RX _CLKP			0.5V
61	GND	Ground		0V
62	MIPI_DPHY_CSI1_RX _D3N			0.5V
63	HDMI_TX_D3N			0.5V
64	MIPI_DPHY_CSI1_RX _D3P			0.5V
65	HDMI_TX_D3P			0.5V
66	MIPI_DPHY_CSI1_RX _D2N			0.5V
67	HDMI_TX_D0P			0.5V
68	MIPI_DPHY_CSI1_RX _D2P			0.5V
69	HDMI_TX_D0N			0.5V
70	GND	Ground		0V
71	GND	Ground		0V
72	MIPI_DPHY_CSI1_RX _D1N			0.5V
73	HDMI_TX_D1P			0.5V
74	MIPI_DPHY_CSI1_RX _D1P			0.5V
75	HDMI_TX_D1N			0.5V
76	GND	Ground		0V
77	HDMI_TX_D2P			0.5V
78	MIPI_DPHY_CSI1_RX _D0N			0.5V
79	HDMI_TX_D2N			0.5V
80	MIPI_DPHY_CSI1_RX _D0P			0.5V
81	GND	Ground		0V
82	GND	Ground		0V

J2	Signal	Description or functions	GPIO serial	IO Voltage
83	LCD_PWREN_H	I2C3_SCL_M1/SPI0_CSn0_M0/SAI0_SCLK_M1	GPIO0_C6_d	3.3V
84	TP_INT_L	I3C0_SDA_PU_M0/UART10_RX_M2/SAI0_SDO0_M1/DP_HPD_M1	GPIO0_C5_d	3.3V
85	GPIO0_C4_d	UART10_TX_M2/PDM0_CLK0_M0/SAI0_MCLK_M1	PWM0_CH0_M0	3.3V
86	LCD_BL_PWM1_CH1_M0	I2C1_SDA_M1/UART4_RX_M2/REFCLK2_OUT	GPIO0_B5_d	3.3V
87	I2C0_SCL_M1_TP	I3C0_SCL_M0/UART8_TX_M2	GPIO0_C1_d	3.3V
88	PCIE1_WAKEn_M0	I2C4_SDA_M0/UART1_RTS_M0/PDM0_SDI3_M0/SAI0_SDO1/SDI3_M1	GPIO0_D3_d/ PWM2_CH0_M0	3.3V
89	I2C0_SDA_M1_TP	I3C0_SDA_M0/UART8_RX_M2	GPIO0_C2_d	3.3V
90	GPIO0_B4_d	I2C1_SCL_M1/UART4_TX_M2/REFCLK1_OUT	PWM1_CH0_M0	3.3V
91	UART0_TX_M0_DEBUG		GPIO0_D4_u	3.3V
92	USBCC_INT_L	SPI0_MISO_M0/PDM0_SDI1_M0/SAI0_SDO3/SDI1_M1	GPIO0_D1_d	3.3V
93	UART0_RX_M0_DEBUG		GPIO0_D5_u	3.3V
94	PCIE0_PWREN_H	I2C3_SDA_M1/SPI0_CLK_M0/SAI0_LRCK_M1	GPIO0_C7_d	3.3V
95	TP_RST_L	SPI0_MOSI_M0/PDM0_SDI0_M0/SAI0_SDI0_M1	GPIO0_D0_d	3.3V
96	PCIE0_WAKEn_M0	I2C4_SCL_M0/UART1_CTS_M0/PDM0_SDI2_M0/SAI0_SDO2/SDI2_M1	GPIO0_D2_d/ PWM1_CH5_M0	3.3V

J2	Signal	Description or functions	GPIO serial	IO Voltage
97	GND	Ground		0V
98	I2C2_SCL_M0	UART1_TX_M0/PWM1_CH4 _M0	GPIO0_B7_d	3.3V
99	PWRON_L	Power Key input(PU)		3.4V-5.5V
100	I2C2_SDA_M0	UART1_RX_M0/PWM1_CH3 _M0	GPIO0_C0_d	3.3V

J3	Signal	Description or functions	GPIO serial	IO Voltage
1	VCC_1V8_S3	1.8V GPIO Power output	Max 500mA	1.8V
2	GPIO0_A5_d_1V8	I2C6_SDA_M0	GPIO0_A5_d	1.8V
3	RESET_L	Reset Key in(PU10K)		1.8V
4	BT_WAKE_HOST_1V8	I2C0_SDA_M0	GPIO0_B1_z	1.8V
5	GND	Ground		0V
6	WIFI_WAKE_HOST_H _1V8	I2C0_SCL_M0	GPIO0_B0_z	1.8V
7	PCIE0_TXP			0.5V
8	I2C7_SCL_M1/E0_MDI O_M1_1V8	UART3_TX_M0/SPI3_CLK_ M0/SAI3_SCLK_M2/ETH0_ MDIO_M1/VI_CIF_HREF	GPIO3_A0_d	1.8V
9	PCIE0_TXN			0.5V
10	I2C7_SDA_M1/E0_MD C_M1_1V8	UART3_RX_M0/SPI3_MOSI _M0/SAI3_LRCK_M2/ETH0_ MDC_M1/VI_CIF_VSYNC	GPIO3_A1_d	1.8V
11	PCIE0_RXP			0.5V
12	GND	Ground		0V
13	PCIE0_RXN			0.5V
14	PCIE0_REFCLKP			0.5V
15	VCC_3V3_S3	3.3V GPIO Power output	Max 500mA	3.3V
16	PCIE0_REFCLKN			0.5V
17	VCC_3V3_S3	3.3V GPIO Power output	Max 500mA	3.3V
18	PCIE1_REFCLKP			0.5V
19	PCIE1_TXP			0.5V

J3	Signal	Description or functions	GPIO serial	IO Voltage
20	PCIE1_REFCLKN			0.5V
21	PCIE1_TXN			0.5V
22	GND	Ground		0V
23	GND	Ground		0V
24	MIPI_DPHY_CSI3_RX _CLKP			0.5V
25	PCIE1_RXP			0.5V
26	MIPI_DPHY_CSI3_RX _CLKN			0.5V
27	PCIE1_RXN			0.5V
28	MIPI_DPHY_CSI3_RX _D3N			0.5V
29	PCIE1_PWREN_H	I2C2_SCL_M2/UART5_RTS _M1/SPI3_CS0_M2/SAI1_S CLK_M0/FlexBUS1_CS_M4	GPIO4_A3_d/ PWM2_CH4_M1	3.3V
30	MIPI_DPHY_CSI3_RX _D3P			0.5V
31	PCIE1_CLKREQn_M2	I2C2_SDA_M2/UART5_CTS _M1/SPI4_CS1_M2/SAI1_LR CK_M0/FlexBUS1_D12_M1	GPIO4_A5_d	3.3V
32	MIPI_DPHY_CSI3_RX _D2N			0.5V
33	PCIE1_PERSTn	SPI4_MISO_M2/PDM1_SDI1 _M1/SAI1_SDI1_M0/SAI1_S DO3_M0/FlexBUS1_D15_M1 /MIPI_TE_M0	GPIO4_B2_d	3.3V
34	MIPI_DPHY_CSI3_RX _D2P			0.5V

J3	Signal	Description or functions	GPIO serial	IO Voltage
35	DSMC_INT0/GPIO4_A0_d	I2C7_SCL_M2/UART3_TX_M0/SPI1_CSN1_M2/SAI4_LRCK_M1/FLEXBUS1_D14_M0/FLEXBUS0_D13_M0/FLEXBUS1_CSn_M3/CAM_CLK1_OUT_M0/MIPI_TE_M2/SPDIF_RX0_M1	GPIO4_A0_d	3.3V
36	GND	Ground		0V
37	DSMC_INT2/GPIO4_A1_d	I2C7_SDA_M2/UART3_RX_M0/SAI4_SDO_M1/FLEXBUS1_D13_M0/FLEXBUS0_D14_M0/FLEXBUS0_CSn_M1/CAM_CLK2_OUT_M0/VO_POST_EMPTY/SPDIF_TX0_M1	GPIO4_A1_d	
38	MIPI_DPHY_CSI3_RX_D1N			0.5V
39	IRC_AIN	UART2_RTS_M1/UART6_RTS_M0/UART5_TX_M1/SPI4_CLK_M2/PDM1_CLK1_M1/SAI1_SDI3_M0/SAI1_SDO1_M0/FlexBUS1_D13_M1	GPIO4_B0_d	3.3V
40	MIPI_DPHY_CSI3_RX_D1P			0.5V
41	IRC_BIN	UART2_CTS_M1/UART6_CTS_M0/UART5_RX_M1/SPI4_MOSI_M2/PDM1_SDI2_M1/SAI1_SDI2_M0/SAI1_SDO2_M0/FlexBUS1_D14_M1	GPIO4_B1_d	3.3V
42	MIPI_DPHY_CSI3_RX_D0N			0.5V

J3	Signal	Description or functions	GPIO serial	IO Voltage
43	TYPEC_DPTX_AUX_PUPDCTL1	AUPLL_CLKIN_M2/SAI1/4_MCLK_M0/PWM2_CH5_M0	GPIO4_A2_d	3.3V
44	MIPI_DPHY_CSI3_RX_D0P			0.5V

2 Peripherals Introduction

2.1 DC-5V(P1)

The DC JACK is black enclosure full package, 3-pin plug Type 5V/3A DC adapter.

Pin	Signal	Description	Pin	Signal	Description
1	3A_5V	5V Power Supply (3A)	2	GND	Ground
3	GND	Ground			

2.2 Audio I/O(J11)

The SBC3576 adopts audio codec ES8388, provides stereo audio output / input.

Feature

- Low power
- Integrated ADC and DAC
- IIS transfer audio data
- Stereo output, support recording

Pin	Signal	Description	Pin	Signal	Description
1	HP_GND	Headphone Ground	2	HPOUT_R	Headphone Right Channel Output
3	HPOUT_L	Headphone Left Channel Output	4	HP_CTL_H	Headphone Control High
5	MIC_INP_PHONE	Microphone Input for Phone			

2.3 MINI DP OUT(U11)

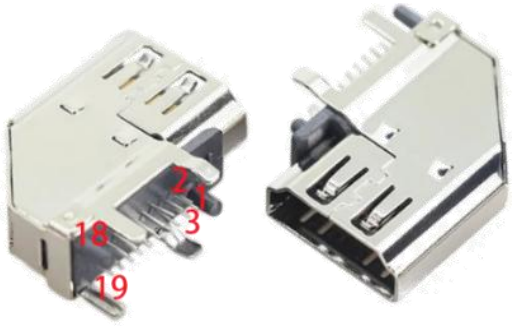
SBC3576 DP supports up to 4K@120fps output, regular 20pins.

Feature

- Has a DIP/10-pin (through-hole) + 10-pin (surface-mount) configuration.
- Equipped with positioning columns for precise alignment and assembly.

Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	DP_HPDIN_Port	DisplayPort Hot Plug Detect Input
3	DP_TX_D0P	DisplayPort Transmit Data 0 Positive	4	DP_CONFIG1	DisplayPort Configuration Signal 1
5	DP_TX_D0N	DisplayPort Transmit Data 0 Negative	6	DP_CONFIG2	DisplayPort Configuration Signal 2
7	GND	Ground	8	GND	Ground
9	DP_TX_D1P	DisplayPort Transmit Data 1 Positive	10	NC	Not connect
11	DP_TX_D1N	DisplayPort Transmit Data 1 Negative	12	NC	Not connect
13	GND	Ground	14	GND	Ground
15	NC	Not connect	16	DP_TX-AUXP	DisplayPort Transmit AUX Positive
17	NC	Not connect	18	DP_TX-AUXN	DisplayPort Transmit AUX Negative
19	GND	Ground	20	VCC_3V3_S3	3.3V Power Supply

2.4 HDMI OUT(J21)



SBC3576 HDMI OUT supports up to 4K@120fps output, regular 19pins HDMI type A, with high 14.00mm and thickness 4.55mm.

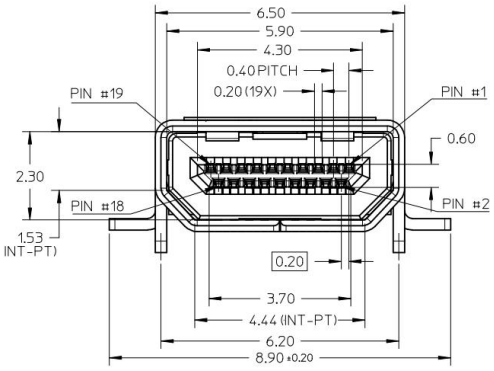
Features

- Transmits high-quality audio signals,including support for various audio formats and audio synchronization.
- Features a nickel-plated copper shell for enhanced durability and corrosion resistance.
- Compatible with a wide range of HDMI-enabled devices, including smart TVs, gaming consoles and more.
- Side (side insertion) type, making it easy to integrate into various devices.

Pin	Signal	Description	Pin	Signal	Description
1	HDMI_TX_D2P	HDMI Transmit Data 2 Positive	2	GND	Ground
3	HDMI_TX_D2N	HDMI Transmit Data 2 Negative	4	HDMI_TX_D1P	HDMI Transmit Data 1 Positive
5	GND	Ground	6	HDMI_TX_D1N	HDMI Transmit Data 1 Negative
7	HDMI_TX_D0P	HDMI Transmit Data 0 Positive	8	GND	Ground
9	HDMI_TX_D0N	HDMI Transmit Data 0 Negative	10	HDMI_TX_D3P	HDMI Transmit Data 3 Positive
11	GND	Ground	12	HDMI_TX_D3N	HDMI Transmit Data 3 Negative
13	HDMI_TX_CEC _PORT	HDMI Consumer Electronics Control Port	14	HDMITX_SBDP	HDMI Transmit Sideband Data Positive
15	HDMI_TX_SCL _PORT	HDMI Transmit I2C Clock Line Port	16	HDMI_TX_SDA _PORT	HDMI Transmit I2C Data Line Port
17	GND	Ground	18	VCC5V_HDMI_ TX	5V Power Supply for HDMI Transmit
19	HDMITX_HPDI N/HDMITX_SB	HDMI Transmit Hot Plug Detect Input /			

	DN	HDMI Transmit Sideband Data Negative	

2.5 HDMI IN(J7)



SBC3576 HDMI IN is 19pins Micro HDMI, with width6.50mm and thickness 2.90mm.

Features

- Transmits high-quality audio signals,including support for various audio formats and audio synchronization.
- The housing, made of LCP with 30% glass fiber reinforcement, offers strength and durability along with flame retardant properties.
- Copper alloy terminals provide excellent electrical performance and are resistant to corrosion.
- The stainless steel shield effectively guards against electromagnetic interference, ensuring signal integrity.
- Its compact design allows for easy integration into various devices, maximizing space efficiency.

Pin	Signal	Description	Pin	Signal	Description
1	HDMIIN_HPDO	HDMI Input Hot Plug Detect Output	2	NC	Not connect
3	HDMI_RX2+	HDMI Data 2 Positive (Receiver)	4	GND	Ground
5	HDMI_RX2-	HDMI Data 2 Negative (Receiver)	6	HDMI_RX1+	HDMI Data 1 Positive (Receiver)
7	GND	Ground	8	HDMI_RX1-	HDMI Data 1 Negative (Receiver)
9	HDMI_RX0+	HDMI Data 0 Positive (Receiver)	10	GND	Ground
11	HDMI_RX0-	HDMI Data 0 Negative (Receiver)	12	HDMI_RXC+	HDMI Clock Positive (Receiver)
13	GND	Ground	14	HDMI_RXC-	HDMI Clock Negative

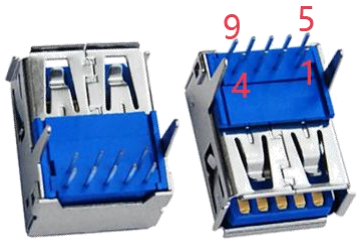
					(Receiver)
15	HDMIIN_CEC	HDMI Consumer Electronics Control (Input)	16	GND	Ground
17	HDMIIN_DDC_SCL	HDMI Input DDC I2C Clock Line	18	HDMIIN_DDC_SDA	HDMI Input DDC I2C Data Line
19	HDMIIN_5V	5V Power Supply for HDMI Input			

2.6 MIPI_LCD(CON4)

SBC3576 MIPI_LCD output supports up to 2560x1600@60fps output, 2x13 pins.

Pin	Signal	Description	Pin	Signal	Description
1	VCC_LCD	LCD Power Supply	2	VCC_LCD	LCD Power Supply
3	GND	Ground	4	GND	Ground
5	VCC_3V3_S3	3.3V Power Supply	6	VCC_3V3_S3	3.3V Power Supply
7	VCC_1V8_S3	1.8V Power Supply	8	GND	Ground
9	LCD_BL_PWM1_CH1_M0	LCD Backlight PWM Channel 1	10	GPIO0_B4_d	General Purpose I/O
11	NC	Not connect	12	I2C0_SCL_M1_TP	I2C0 Serial Clock
13	I2C0_SDA_M1_TP	I2C0 Serial Data	14	TP_RST_L	Touch Panel Reset
15	TP_INT_L	Touch Panel Interrupt	16	GND	Ground
17	MIPI_DPHY_DSI_TX_D0N	MIPI DSI Data Lane 0 Negative	18	MIPI_DPHY_DSI_TX_D0P	MIPI DSI Data Lane 0 Positive
19	MIPI_DPHY_DSI_TX_D1N	MIPI DSI Data Lane 1 Negative	20	MIPI_DPHY_DSI_TX_D1P	MIPI DSI Data Lane 1 Positive
21	MIPI_DPHY_DSI_TX_CLKN	MIPI DSI Clock Lane Negative	22	MIPI_DPHY_DSI_TX_CLKP	MIPI DSI Clock Lane Positive
23	MIPI_DPHY_DSI_TX_D2N	MIPI DSI Data Lane 2 Negative	24	MIPI_DPHY_DSI_TX_D2P	MIPI DSI Data Lane 2 Positive
25	MIPI_DPHY_DSI_TX_D3N	MIPI DSI Data Lane 3 Negative	26	MIPI_DPHY_DSI_TX_D3P	MIPI DSI Data Lane 3 Positive

2.7 USB 3.0-Download(J20)



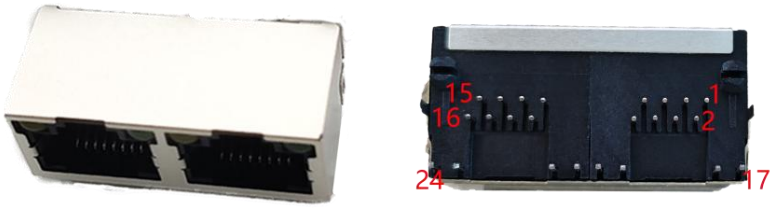
SBC3576 USB3.0-Download port, it is 9-pin, used to download image and ADB transfer file, or use a docking station to connect USB device.

Feature

- Providing super speed data transfer capabilities.
- The connector adopts the through-hole design, which is convenient for plugging and unplugging as well as connecting devices.
- Allowing the device to switch between host and device modes, providing a wider range of application scenarios.

Pin	Signal	Description	Pin	Signal	Description
1	VCC5V0_USB30_HOST0	5V Power Supply for USB 3.0 Host 0	2	USB2_OTG0-DM	USB 2.0 OTG Data Minus
3	USB2_OTG0-DP	USB 2.0 OTG Data Plus	4	GND	Ground
5	USB3_OTG0_SSRX2N	USB 3.0 OTG SuperSpeed Receive 2 Negative	6	USB3_OTG0_SSRX2P	USB 3.0 OTG SuperSpeed Receive 2 Positive
7	GND	Ground	8	USB3_OTG0_SSTX2N	USB 3.0 OTG SuperSpeed Transmit 2 Negative
9	USB3_OTG0_SSTX2P	USB 3.0 OTG SuperSpeed Transmit 2 Positive			

2.8 Ethernet(JP1)



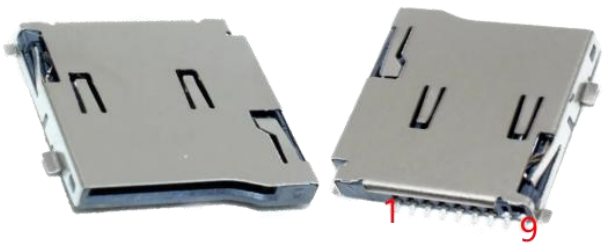
SBC3576 adopts an RJ45-1X2 connector as its Ethernet interface.

Feature

- Supports 10/100/1000-Mbps data transfer rates with the RGMII interfaces
- It adopts an integrated design, integrating two standard RJ45 interfaces on the same base, saving installation space on the equipment panel or PCB board.
- The two interfaces are independent of each other and can be connected to different network devices respectively.

Pin	Signal	Description	Pin	Signal	Description
1	DA1+	Differential Pair A Positive	2	DA1-	Differential Pair A Negative
3	DB1+	Differential Pair B Positive	4	DC1+	Differential Pair C Positive
5	DC1-	Differential Pair C Negative	6	DB1-	Differential Pair B Negative
7	DD1+	Differential Pair D Positive	8	DD1-	Differential Pair D Negative
9	DA+	Differential Pair A Positive	10	DA-	Differential Pair A Negative
11	DB+	Differential Pair B Positive	12	DC+	Differential Pair C Positive
13	DC-	Differential Pair C Negative	14	DB-	Differential Pair B Negative
15	DD+	Differential Pair D Positive	16	DD-	Differential Pair D Negative
17	LINK1	Link Signal 1	18	VCC_3V3 _S3	Serial EEPROM 1
19	GND	Ground	20	SEEP1	Serial EEPROM 1
21	LINK0	Link Signal 0	22	VCC_3V3 _S3	3.3V Power Supply
23	GND	Ground	24	SEEP0	Serial EEPROM 0

2.9 Micro SD(J6)



The Micro SD card is used as an external storage device.

Pin	Signal	Description	Pin	Signal	Description
1	SDMMC0_ D2	SD/MMC Data Line 2	2	SDMMC0 _D3	SD/MMC Data Line 3
3	SDMMC0_ CMD	SD/MMC Command Line	4	SD_3V3	3.3V Power Supply for SD/MMC
5	SDMMC0_ CLK	SD/MMC Clock Line	6	GND	Ground
7	SDMMC0_ D0	SD/MMC Data Line 0	8	SDMMC0 _D1	SD/MMC Data Line 1

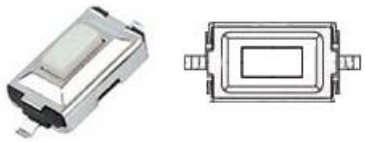
9	SDMMC0_DET_L_1V8	SD/MMC Detect Signal (1.8V Level)	

2.10 Debug(J4)

3-pin connector. The debug serial port baud rate is 1500000.

Pin	Signal	Description	Pin	Signal	Description
1	UART0_RX_M0_DEBUG	UART0 Receive for M0 Debug	2	UART0_TX_M0_DEBUG	UART0 Transmit for M0 Debug
3	GND	Ground			

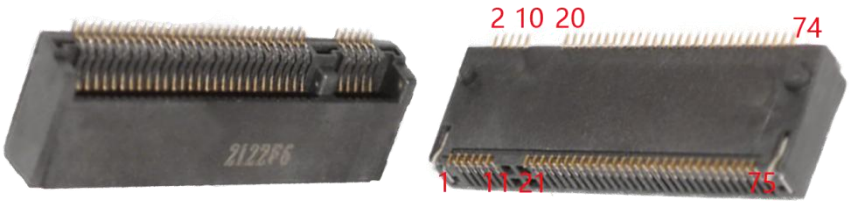
2.11 User Buttons(SW1, SW3, SW2)



Key	Signal	Description	Key	Signal	Description
SW1	Reset-KEY	Reset	SW2	POWER-KEY	Power ON/OFF
SW3	RECOVER-KEY	Recover			

2.12 M.2 SSD or 4G(CON6, P2)

The M2_B-KEY_H3.2MM interface supports PCI Express and 5G network connections.



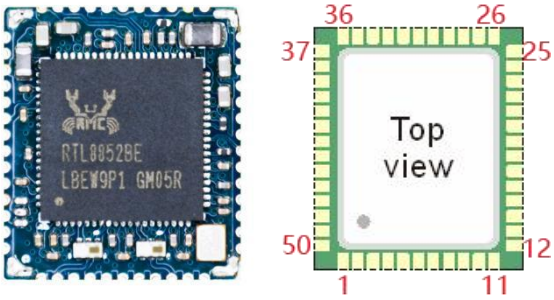
Pin	Signal	Description	Pin	Signal	Description
1	NC	Not connect	2	PCIE_3V3	3.3V Power Supply for PCI Express
3	GND	Ground	4	PCIE_3V3	3.3V Power Supply for PCI Express
5	GND	Ground	6	TYPEC_DPTX_AUX_PUPDCTL2	Type-C DisplayPort TX Auxiliary PUPD Control 2
7	USB2_OTG1_DP	USB 2.0 OTG Data Positive	8	NC	Not connect
9	USB2_OTG1_DM	USB 2.0 OTG Data Negative	10	WWAN_LED	Wireless WAN LED
11	GND	Ground	20	NC	Not connect
21	GND	Ground	22	NC	Not connect
23	PCIE0_PWREN_H	PCI Express 0 Power Enable High	24	NC	Not connect
25	NC	Not connect	26	NC	Not connect
27	GND	Ground	28	NC	Not connect
29	USB3_RX2N	USB 3.0 Receive Negative 2	30	SIM_RST	SIM Card Reset
31	USB3_RX2P	USB 3.0 Receive Positive 2	32	SIM_CLK	SIM Card Clock
33	GND	Ground	34	SIM_DATA	SIM Card Data
35	USB3_TX2N	USB 3.0 Transmit Negative 2	36	SIM_VCC	SIM Card Power Supply
37	USB3_TX2P	USB 3.0 Transmit Positive 2	38	USBCC_INT_L	USB Type-C Controller Interrupt Low
39	GND	Ground	40	NC	Not connect
41	PCIE1_RX1N	PCI Express 1 Receive Negative 1	42	NC	Not connect
43	PCIE1_RX1P	PCI Express 1 Receive Positive 1	44	NC	Not connect
45	GND	Ground	46	NC	Not connect
47	PCIE1_TX1N	PCI Express 1 Transmit Negative 1	48	NC	Not connect
49	PCIE1_TX1P	PCI Express 1 Transmit Positive 1	50	PERST	PCI Express 1 Reset

51	GND	Ground	52	PCIE1_CLKREQn_M2	PCI Express 1 Clock Request Active Low Mode 2
53	PCIE1_REFCLKN	PCI Express 1 Reference Clock Negative	54	PCIE1_WAKEn_M0	PCI Express 1 Wake Active Low Mode 0
55	PCIE1_REFCLKP	PCI Express 1 Reference Clock Positive	56	NC	Not connect
57	GND	Ground	58	NC	Not connect
59	NC	Not connect	60	NC	Not connect
61	NC	Not connect	62	NC	Not connect
63	NC	Not connect	64	NC	Not connect
65	NC	Not connect	66	NC	Not connect
67	4G_RESET	4G Module Reset	68	NC	Not connect
69	NC	Not connect	70	PCIE_3V3	3.3V Power Supply for PCI Express
71	GND	Ground	72	PCIE_3V3	3.3V Power Supply for PCI Express
73	GND	Ground	74	PCIE_3V3	3.3V Power Supply for PCI Express
75	GND	Ground			

P2 is an auto pop-up SIM card slot which is compatible to the standard SIM Card and can be used for wireless transmission with a 3G/4G module.

Pin	Signal	Description	Pin	Signal	Description
1	SIM_CLK	SIM Card Clock	2	SIM_DATA	SIM Card Data
3	SIM_RST	SIM Card Reset	4	SIM_VCC	SIM Card Power Supply
5	SIM_VCC	SIM Card Power Supply	6	GND	Ground
7	NC	Not connect			

2.14 WiFi&Bluetooth(U3)



BL-M8852BP2 is a highly integrated Dual-band WLAN+Bluetooth Combo module. It combines a 2T2R Dual-band WLAN subsystem with PCI Express interface controllers and a Bluetooth v5.2 subsystem with UART interface controller. The module compatible IEEE 802.11a/b/g/n/ac/ax standard and provides the maximum PHY rate up to 1201Mbps, it supports Bluetooth dual mode with v5.2/v4.2/v2.1 compliant.

Features

- 50pin half hole pads with 13*15*1.7mm ultra small profile
- Operating Frequencies: 2.4~2.4835GHz or 5.15~5.85GHz
- Support Dual-band 2T2R mode with 20/40/80Mhz bandwidth
- Support 802.11ax with OFDMA and MU-MIMO
- Dual Mode Bluetooth support : Simultaneous LE and BR / EDR

Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	WL_ANT0	WiFi Antenna 0
3	GND	Ground	4	GND	Ground
5	GND	Ground	6	GND	Ground
7	GND	Ground	8	GND	Ground
9	WL_ANT1	WiFi Antenna 1	10	GND	Ground
11	GND	Ground	12	PCIE0_PERSTn_1V8	PCIE 0 Reset Active Low 1.8V
13	XIN_WIFI	WIFI Crystal Input	14	XOUT_WIFI	WIFI Crystal Output
15	WIFI_REG_ON_H_1V8	WiFi Regulator On High 1.8V	16	WIFI_WAKE_HOST_H_1V8	WiFi Wake Host High 1.8V
17	NC	Not Connect	18	NC	Not Connect
19	SAI2_SDI_M0_1V8	SAI2 Serial Data Input Mode 0 1.8V	20	SAI2_SDO_M0_1V8	SAI2 Serial Data Output Mode 0 1.8V
21	SAI2_LRCK_M0_	SAI2 Left/Right	22	SAI2_SCLK_M0_1	SAI2 Serial Clock

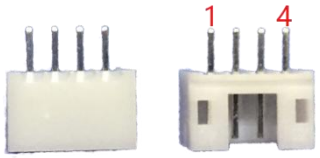
	1V8	Clock Mode 0 1.8V		V8	Mode 0 1.8V
23	GND	Ground	24	PCIE0_WAKEn_M0_1V8	PCIE 0 Wake Active Low Mode 0 1.8V
25	GND	Ground	26	GND	Ground
27	GND	Ground	28	GND	Ground
29	GND	Ground	30	GND	Ground
31	32KOUT_RTC_1V8	32kHz RTC Output 1.8V	32	GND	Ground
33	PCIE0-REFCLKN	PCIE 0 Reference Clock Negative	34	VCC_1V8_S3	1.8V Power Supply
35	PCIE0-REFCLKP	PCIE 0 Reference Clock Positive	36	VCC3V3_PCIEWL_VBAT	3.3V PCIE/WiFi VBAT Power Supply
37	PCIE0_CLKREQn_M3_1V8	PCIE 0 Clock Request Active Low Mode 3 1.8V	38	BT_REG_ON_H_1V8	BT Regulator On High 1.8V
39	GND	Ground	40	UART4_RX_M1_1V8	UART4 Receive Mode 1 1.8V
41	UART4_TX_M1_1V8	UART4 Transmit Mode 1 1.8V	42	UART4_CTSN_M1_1V8	UART4 Clear to Send Mode 1 1.8
43	UART4_RTSN_M1_1V8	UART4 Request to Send Mode 1 1.8V	44	PCIE_RDN	PCIE Receive Data Negative
45	PCIE_RDP	PCIE Receive Data Positive	46	PCIE_TDN	PCIE Transmit Data Negative
47	PCIE_TDP	PCIE Transmit Data Positive	48	NC	Not Connect
49	HOST_WAKE_BT_H_1V8	Host Wake BT High 1.8V	50	BT_WAKE_HOST_H_1V8	BT Wake Host High 1.8V

2.15 RTC(J5)

The backup battery (3V) is used to ensure the RTC (frequency 32.768KHz) is still able to work after power off. Lithium cell model:CR1220.

Pin	Signal	Description	Pin	Signal	Description
1	VCC_RTC	3V battery	2	GND	Ground

2.16 UART(J9, J19)

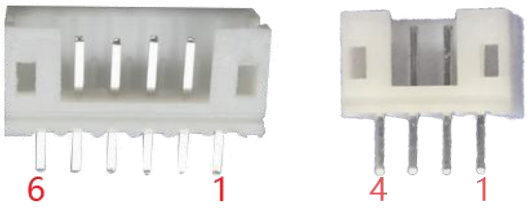


The SBC3576 UART interface support 5bit, 6bit, 7bit, 8bit serial data transmit or receive, support different input clock for UART operation to get up to 4Mbps baud rate, support auto flow control mode for all UART, and standard asynchronous communication bits such as start, stop and parity.

J9					
Pin	Signal	Description	Pin	Signal	Description
1	VCC_3V3_S3	3.3V Power Supply	2	UART1_TX_M2	UART1 Transmit
3	UART1_RX_M2	UART1 Receive	4	GND	Ground

J19					
Pin	Signal	Description	Pin	Signal	Description
1	VCC_3V3_S3	3.3V Power Supply	2	UART10_TX_M0	UART10 Transmit
3	UART10_RX_M0	UART10 Receive	4	GND	Ground

2.17 GPIO(J12, J13)



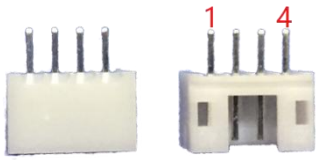
SBC3576 uses two connectors, one of which is a 6-pin and the other is a 4-pin. The pins can be defined as data input / output.

J12					
Pin	Signal	Description	Pin	Signal	Description
1	VCC_3V3_S3	3.3V Power Supply	2	LCDC_D8/EBC_SDDO8/DSMC_INT3	Data signal/ Multi-function signal
3	LCDC_D14/EBC_SDDO14/DS	Data signal/ Multi-function signal	4	GND	Ground

	MC_DATA8				

J13					
Pin	Signal	Description	Pin	Signal	Description
1	VCC_3V3_S3	3.3V Power Supply	2	LCDC_D0/EBC_SDDO0/DSMC_CSN0	LCD Data Channel 0 / EBC Data Out 0 / DSMC Chip Select 0
3	LCDC_D1/EBC_SDDO1/DSMC_CSN3	LCD Data Channel 1 / EBC Data Out 1 / DSMC Chip Select 3	4	LCDC_D2/EBC_SDDO2/DSMC_CSN2	LCD Data Channel 2 / EBC Data Out 2 / DSMC Chip Select 2
5	LCDC_D9/EBC_SDDO9/DSMC_INT1	LCD Data Channel 9 / EBC Data Out 9 / DSMC Interrupt 1	6	GND	Ground

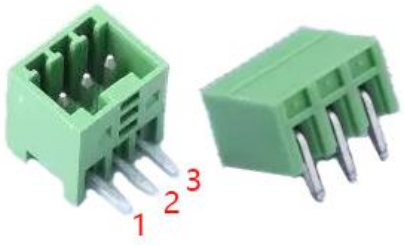
2.18 Speaker(J8)



The spk connector is 4-pin, divided into left-channel audio output and right-channel audio output, thereby achieving a stereo effect.

Pin	Signal	Description	Pin	Signal	Description
1	LOUTP	Left Audio Output Positive	2	LOUTN	Left Audio Output Negative
3	ROUTP	Right Audio Output Positive	4	ROUTN	Right Audio Output Negative

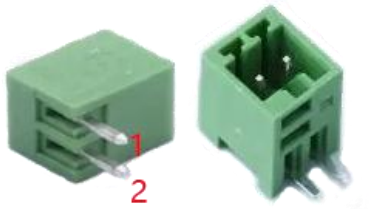
2.19 RS485(J52)



SBC3576 uses a 3-pin connector and features a green plastic base with metal pins.

Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	RS485_A-1	RS485 Data Signal A
3	RS485_B-1	RS485 Data Signal B			

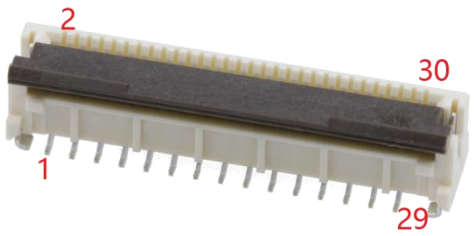
2.20 CAN(J15)



Use a 2-pin connector, with a green plastic base and metal pins structure.

Pin	Signal	Description	Pin	Signal	Description
1	CANL-1	CAN Low Signal	2	CANH-1	CAN High Signal

2.21 Camera(CON1, CON2)



SBC3576 features two 30-pin FFC/FPC Connector for camera (IMX415).

CON1					
Pin	Signal	Description	Pin	Signal	Description
1	NC	Not Connect	2	AF_2V8	Analog Front-End 2.8V Power Supply
3	DVDD1V2	Digital Voltage Drain 1.2V	4	DOVDD1V8	Digital Output Voltage Drain 1.8V
5	NC	Not Connect	6	GND	Ground
7	AVDD2V8_DVP	Analog Voltage Drain 2.8V for DVP	8	GND	Ground
9	I2C2_SDA_M0_1V8	I2C2 Data Line (1.8V)	10	I2C2_SCL_M0_1V8	I2C2 Clock Line (1.8V)
11	CAMERA_RST_0	Camera Reset Signal	12	MIPI_CSI_PWDN0	MIPI CSI Power-Down Signal
13	GND	Ground	14	MIPI_CLK0	MIPI Clock Signal
15	GND	Ground	16	MIPI_DPHY_CSI0_RX_D3P	MIPI D-PHY CSI0 Data Lane 3 Positive
17	MIPI_DPHY_CSI	MIPI D-PHY CSI0	18	GND	Ground

	0_RX_D3N	Data Lane 3 Negative			
19	MIPI_DPHY_CSI 0_RX_D2P	MIPI D-PHY CSI0 Data Lane 2 Positive	20	MIPI_DPHY_CSI0 _RX_D2N	MIPI D-PHY CSI0 Data Lane 2 Negative
21	GND	Ground	22	MIPI_DPHY_CSI0 _RX_D1P	MIPI D-PHY CSI0 Data Lane 1 Positive
23	MIPI_DPHY_CSI 0_RX_D1N	MIPI D-PHY CSI0 Data Lane 1 Negative	24	GND	Ground
25	MIPI_DPHY_CSI 0_RX_CLKP	MIPI D-PHY CSI0 Clock Lane Positive	26	MIPI_DPHY_CSI0 _RX_CLKN	MIPI D-PHY CSI0 Clock Lane Negative
27	GND	Ground	28	MIPI_DPHY_CSI0 _RX_D0P	MIPI D-PHY CSI0 Data Lane 0 Positive
29	MIPI_DPHY_CSI 0_RX_D0N	MIPI D-PHY CSI0 Data Lane 0 Negative	30	GND	Ground

CON2					
Pin	Signal	Description	Pin	Signal	Description
1	NC	Not Connect	2	AF_2V8	Analog Front-End 2.8V Power Supply
3	DVDD1V2	Digital Voltage Drain 1.2V	4	DOVDD1V8	Digital Output Voltage Drain 1.8V
5	NC	Not Connect	6	GND	Ground
7	AVDD2V8_DVP	Analog Voltage Drain 2.8V for DVP	8	GND	Ground
9	I2C3_SDA_M0_1 V8	I2C3 Data Line (1.8V)	10	I2C3_SCL_M0_1V 8	I2C2 Clock Line (1.8V)
11	CAMERA_RST_1	Camera Reset Signal for Camera 2	12	MIPI_CSI_PWDN1	MIPI CSI Power-Down Signal
13	GND	Ground	14	MIPI_CLK1	MIPI Clock Signal
15	GND	Ground	16	MIPI_DPHY_CSI1 _RX_D3P	MIPI D-PHY CSI1 Data Lane 3 Positive
17	MIPI_DPHY_CSI 1_RX_D3N	MIPI D-PHY CSI1 Data Lane 3 Negative	18	GND	Ground
19	MIPI_DPHY_CSI	MIPI D-PHY CSI1	20	MIPI_DPHY_CSI1	MIPI D-PHY CSI1

	1_RX_D2P	Data Lane 2 Positive		_RX_D2N	Data Lane 2 Negative
21	GND	Ground	22	MIPI_DPHY_CSI1 _RX_D1P	MIPI D-PHY CSI1 Data Lane 1 Positive
23	MIPI_DPHY_CSI 1_RX_D1N	MIPI D-PHY CSI1 Data Lane 1 Negative	24	GND	Ground
25	MIPI_DPHY_CSI 0_RX_CLKP	MIPI D-PHY CSI1 Clock Lane Positive	26	MIPI_DPHY_CSI1 _RX_CLKN	MIPI D-PHY CSI1 Clock Lane Negative
27	GND	Ground	28	MIPI_DPHY_CSI1 _RX_D0P	MIPI D-PHY CSI1 Data Lane 0 Positive
29	MIPI_DPHY_CSI 1_RX_D0N	MIPI D-PHY CSI1 Data Lane 0 Negative	30	GND	Ground

3 Product Configurations

3.1 Standard Contents

NO.	Item	Qty.(PCS)	Description
1	SBC3576 board	1	Standard Content(4GB RAM, 32GB eMMC)
2	U-disk/CD-ROM	1	Android SDK, Debian / Buildroot SDK, Documents, tools, Schematic Drawing, datasheets, etc.
3	Ethernet cable	1	1.5m Crossover cable
4	Serial Cable	1	CH9102X
5	USB Cable	1	USB-A
6	Power adaptor	1	5V / 3A DC
7	WIFI Antenna	2	WIFI Antenna

3.2 Optional Parts

- MIPI camera Module(IMX415)
- LCD Module(10.1-inch MIPI panel)
- 4G Module