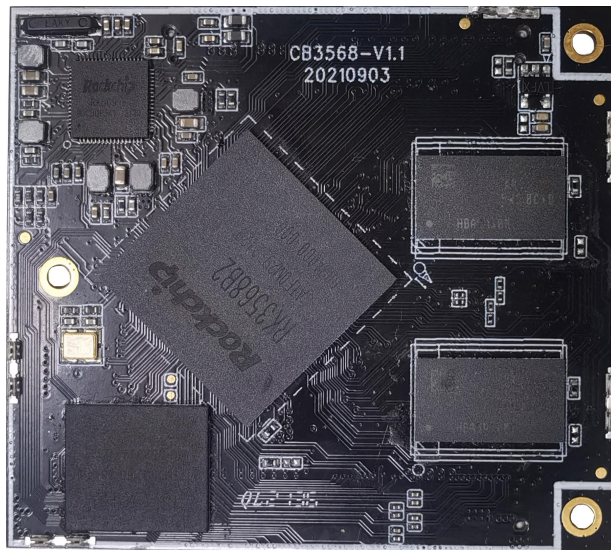


Document No.	Types	Version information	Release date	Secret level	
BST20221208	Datasheet	V2.2	2022-12-08	public	

64-bit Commercial-grade core board

M68

V2.2



Version	Updated	Update Content
V1.1	2021-09-13	V1.1
V2.0	2022-07-11	Update the description for Product Introduction and Interface definition
V2.1	2022-09-16	Update Specification-Temperature
V2.2	2022-12-08	Alter the component name

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Company Profile

Shenzhen BesTom Electronics Co., Ltd. was founded in 2008, focusing on the research and development of smart terminal devices, smart homes, etc. With "smart" as the core, it has formed a focus on different industries, different scales, and different applications such as governments, enterprises, and media. The series of products and targeted solutions are the most influential smart technology provider in China.



"Innovation, transforming new technology into productivity" is the core competitiveness of BesTom Electronics Co., Ltd. With a deep understanding of the software and Internet industry, BesTom Electronics Co., Ltd. combines software technology with Internet applications, combines industry-leading product concepts and rich product development experience to provide users with simplicity, convenience, safety and practicality. Collaborative application software products and solutions help customers achieve low-cost, low-risk, fast-start, and high-efficiency informatization goals. The cordial, open, and rigorous company culture and scientific and standardized management gather a large number of outstanding talents. BesTom Electronics Co., Ltd. has a management team composed of outstanding professional managers and a technical team composed of senior IT experts. Tacit cooperation in product development, promotion and maintenance, a deep understanding of the meaning of "customer-centric", "service" runs through every detail of the company's operation and management, and wins extensive trust and support from customers.

"Create Better" is the philosophy of the BesTom team. We hope that through BesTom's high-quality technical services, the research and development of various technological products can become more efficient and simple, and creative products can be integrated into life more smoothly.

1. Product introduction

1.1 Overview

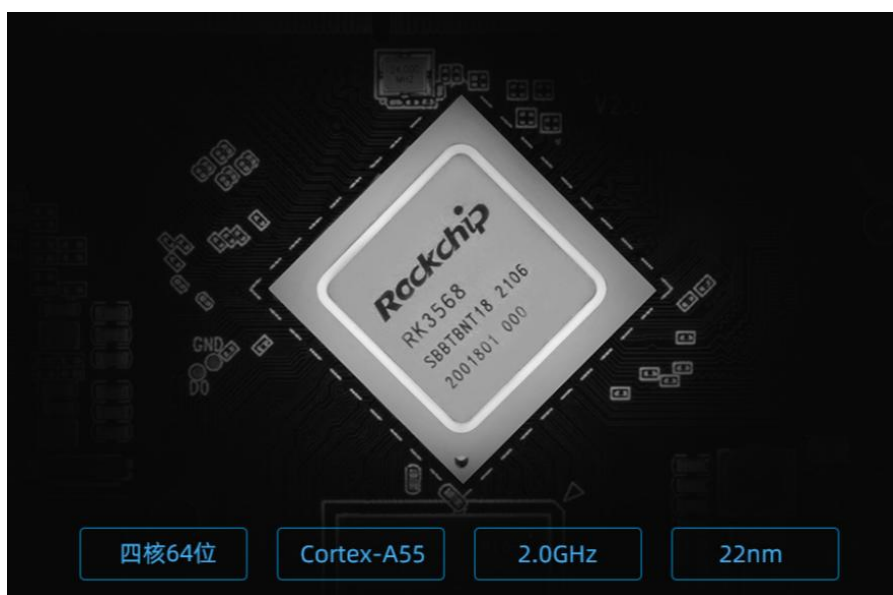
The M68 uses Rockchip's new-generation 64-bit processor RK3568, integrated dual-core architecture GPU and an efficient NPU. The main frequency can reach up to 2.0GHz, and the performance has been greatly improved; it adopts 22nm advanced Process, with the characteristics of low power consumption and high performance.

The maximum capacity is 8GB, 32bit wide. Supports full-link ECC, making data safer and more reliable, and meeting the requirements of large-memory product application scenarios.

Support M.2, SATA3.0 interface, expandable capacity hard disk, have dual Gigabit Ethernet ports, and support WiFi6 wireless transmission. Integrated dual-core architecture GPU, high-performance VPU and high-performance NPU.

1.2 RK3568 quad-core 64-bit processor

The quad-core 64-bit Cortex-A55 processor, with 22nm lithography process, has frequency up to 2.0GHz, delivering efficient and stable performance for data processing of back-end equipment. There are a variety of storage options, allowing customers to quickly implement the research and production of products.



1.3 Integrated co-processors — GPU, VPU, NPU

It is integrated with dual-core GPU, high-performance VPU and high-efficiency NPU. The GPU supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1. The VPU can achieve 4K@60fps H.265 / H.264 / VP9 video decoding and 1080P@60fps H.265 / H.264 video encoding. The NPU supports one-click switching of mainstream frameworks like Caffe / TensorFlow.

1.4 Various display interfaces

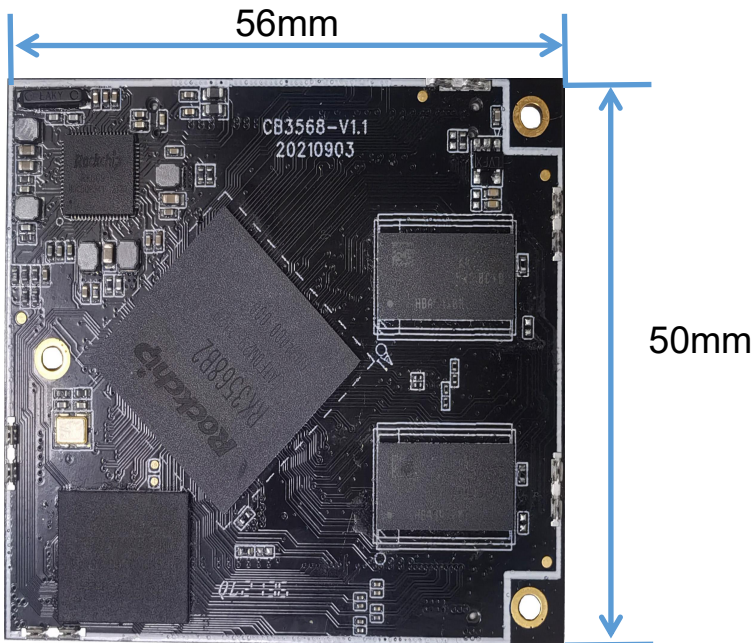
Support MIPI-DSI, HDMI2.0, LVDS, EBC video interfaces, it can support up to two screen output with different display. The built-in 8M ISP support HDR. The board can be used in NVRs, intelligent terminals, multimedia advertising players and other products.

1.5 Powerful wireless network communication

Supporting WiFi 6 (802.11ax) wireless network communication, high-speed transmission, lower packet loss rate and re-transmission rate, which more effectively for reduces data congestion, and allows more devices to connect to the network. Also can be connected to mobile 5G/4G module, allow the product to have a higher-rate, larger-capacity and lower-latency communication.

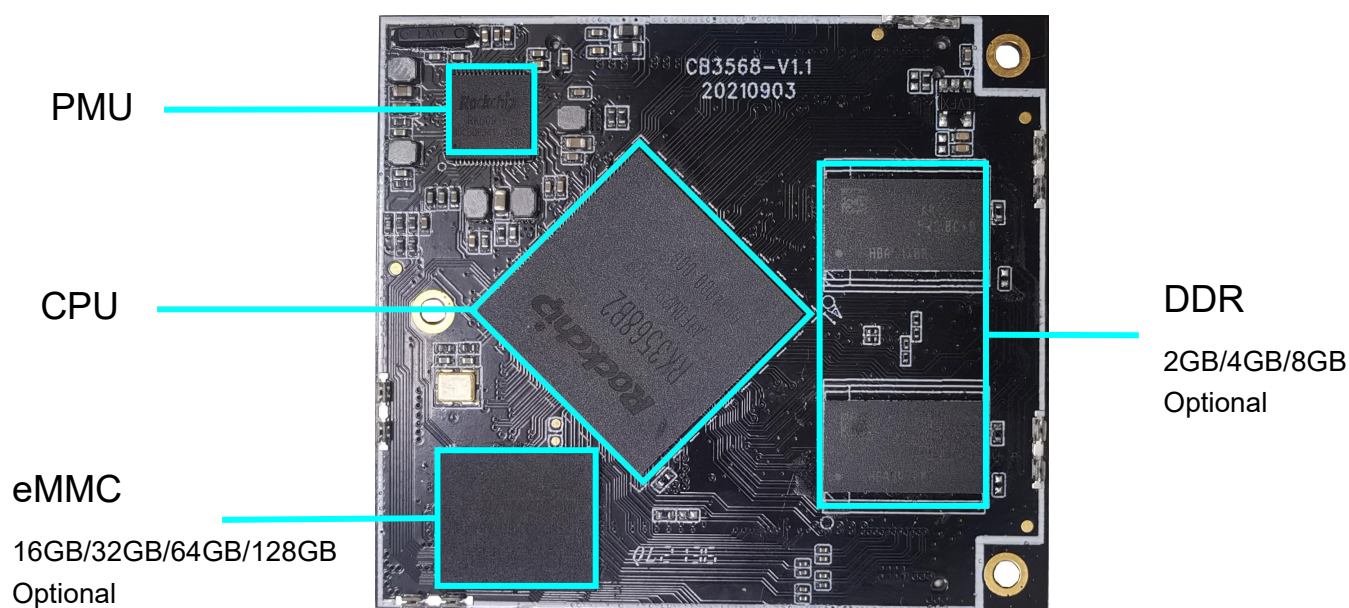
2. Specifications

Parameters	
Master chip	Rockchip RK3568
Processor	Quad-Core 64bit ARM Cortex-A55 , up to 2.0GHz
Graphics processor	Support ARM G52 2EE Support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 High performance dedicated 2D processor
NPU	0.8Tops@INT8, integrated high-performance AI accelerator RKNN NPU Support Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/ Darknet/ MXNet mainstream architecture model one-click conversion
Video processor	Support 4K@60fps H.265 / H.264 / VP9 decoder Support 1080P@60fps H.265 / H.264 encoder Support 8M ISP with HDR
RAM	2GB/ 4GB/ 8GB DDR4 32Bit wide (optional) Support DDR3/DDR3L/LPDDR3/DDR4/LPDDR4/LPDDR4X
Storage	Support 16GB/32GB/64GB/128GB eMMC 5.1 Support M.2 PCIe 3.0 × 1 Support SATA 3.0 × 1 (extend 2.5 inch SSD/HDD) Support SD card x1 (extended SD/TF card)
Hardware features	
Ethernet	Support dual Gigabit Ethernet (1000Mbps)
Wireless Network	Support M.2 extended 5G Support Mini PCIe to expand 4G LTE Support WiFi6 (802.11 ax) Support BT5.0
Display	Support multi-screen different display, up to three-screen different display output 1 × HDMI2.0, support 4K@60fps 1 × LVDS/MIPI-DSI 1 × MIPI-DSI 1 × EDP1.3, support 2560x1600@60fps output
Audio	1 × HDMI audio output 1 × headphone output 1 × Onboard microphone audio input
USB	1 × USB 3.0 OTG 1 × USB 3.0 Host 2 × USB 2.0 Host
Webcam	1 × MIPI CSI camera input

Extension ports	Multiple UART, I2C, I2S, SDMMC, GPIO
System Software	
OS	Android 、 Linux
Appearance pecifications	
Size	
Exterior	BTB carrier Header: AXK6A2237YG
Core board size	56mm*50mm
Pin pitch	0.5mm
Number of pins	240 PIN (2*60*2)
Power Supply	3.3V/1.5A
Temperature	Operating Temperature : 0°C ~ 65°C Storage Temperature: 0°C~65°C Storage Humidity :10% ~ 80 %
PCB specifications	8-layer board design

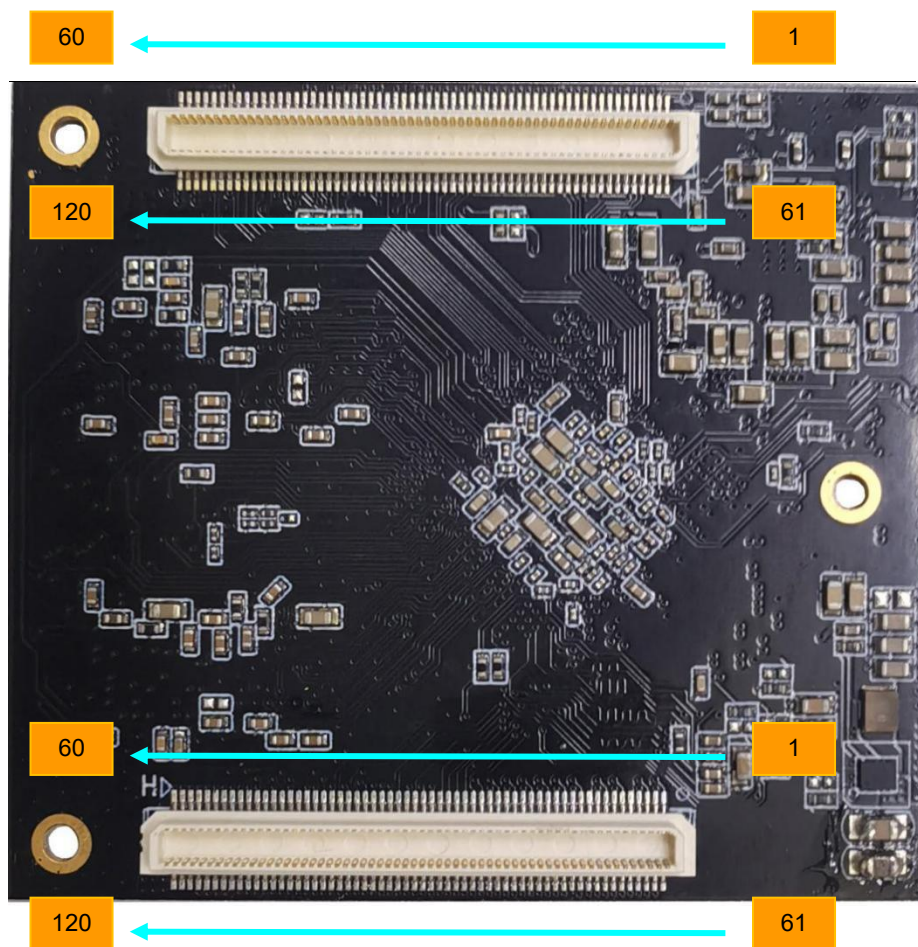
3. Interface Definition

The M68 core board leads to all the pins of the chip, and the performance of data transmission and expansion is maximized. The pins of the immersion gold process are corrosion-resistant, firm and reliable.



Picture 3-1 Top

J2507



J2506

Picture3-2 buttom

Notes1: Pad types:

I = input, O = output, I/O = input/output (bidirectional) ,

G= ground, P = power supply, DOWN = Internal pull down , UP = Internal pull up,

L = low level, H = high level, AI=analog input, AO=analog output, AI/O=analog input/output

J2506

PIN	Core board pin definition	Pad type	IO Pull	IO Power domain	Pin Number	Pin Name
1	USB3_OTG0_SSRXN/SATA0_RXN	I/O		1.8V	R27	USB3_OTG0_SSRXN/SATA0_RXN
2	USB3_OTG0_SSRXP/SATA0_RXP	I/O		1.8V	R28	USB3_OTG0_SSRXP/SATA0_RXP
3	USB3_OTG0_SSTXN/SATA0_TXN	I/O		1.8V	T27	USB3_OTG0_SSTXN/SATA0_TXN
4	USB3_OTG0_SSTXP/SATA0_TXP	I/O		1.8V	T28	USB3_OTG0_SSTXP/SATA0_TXP
5	GND	G				GND
6	USB3_HOST1_SSRXN/SATA1_RXN	I/O		1.8V	U27	USB3_HOST1_SSRXN/SATA1_RXN/QSGMII_RXN_M0
7	USB3_HOST1_SSRXP/SATA1_RXP	I/O		1.8V	U28	USB3_HOST1_SSRXP/SATA1_RXP/QSGMII_RXP_M0
8	USB3_HOST1_SSTXN/SATA1_TXN	I/O		1.8V	V27	USB3_HOST1_SSTXN/SATA1_TXN/QSGMII_TXN_M0
9	USB3_HOST1_SSTXP/SATA1_TXP	I/O		1.8V	V28	USB3_HOST1_SSTXP/SATA1_TXP/QSGMII_TXP_M0
10	GND	G				GND
11	USB3_HOST1_DP	I/O		3.3V	P24	USB3_HOST1_DP
12	USB3_HOST1_DM	I/O		3.3V	P25	USB3_HOST1_DM
13	USB3_OTG0_DP(NOTE1)	I/O		3.3V	P27	USB3_OTG0_DP
14	USB3_OTG0_DM(NOTE1)	I/O		3.3V	P28	USB3_OTG0_DM
15	USB3_OTG0_VBUSDET	I		3.3V	M24	USB3_OTG0_VBUSDET
16	USB3_OTG0_ID	I		1.8V	L23	USB3_OTG0_ID
17	SARADC_VIN4_HP_HOOK	I		1.8V	G21	SARADC_VIN4
18	SDMMC0_D2	I/O	UP	3.3V	H26	SDMMC0_D2/ARMJTAG_TCK/UART5_CTSn_M0/GPIO1_D7_u
19	SDMMC0_D3	I/O	UP	3.3V	J23	SDMMC0_D3/ARMJTAG_TMS/UART5_RTSn_M0/GPIO2_A0_u
20	SDMMC0_CMD	I/O	UP	3.3V	H27	SDMMC0_CMD/PWM10_M1/UART5_RX_M0/CAN0_TX_M1/GPIO2_A1_u
21	SDMMC0_CLK	I/O	DOWN	3.3V	H28	SDMMC0_CLK/TEST_CLKOUT/UART5_TX_M0/CAN0_RX_M1/GPIO2_A2_d
22	SDMMC0_D0	I/O	UP	3.3V	J25	SDMMC0_D0/UART2_TX_M1/UART6_TX_M1/PWM8_M1/GPIO1_D5_u
23	SDMMC0_D1	I/O	UP	3.3V	J24	SDMMC0_D1/UART2_RX_M1/UART6_RX_M1/PWM9_M1/GPIO1_D6_u

24	UART8_RX_M0	I/O	UP	1.8V	E26	CLK32K_OUT1/UART8_RX_M0/SPI1_CS1_M0/ GPIO2_C6_d
25	UART8_TX_M0	I/O	DOWN	1.8V	F26	I2S2_SDI_M0/GMAC0_RXER/UART8_TX_M0/S PI2_CS1_M0/GPIO2_C5_d
26	UART8_RTSn_M0	I/O	UP	1.8V	D26	SDMMC1_PWREN/I2C4_SDA_M1/UART8_RTS n_M0/CAN2_RX_M1/GPIO2_B1_d
27	UART8_CTSn_M0	I/O	UP	1.8V	E25	SDMMC1_DET/I2C4_SCL_M1/UART8_CTSn_ M0/CAN2_TX_M1/GPIO2_B2_u
28	GMAC0_RXCLK	I/O	UP	1.8V	B28	GMAC0_RXCLK/SDMMC1_D2/UART7_RX_M0/ GPIO2_A5_u
29	GMAC0_RXD2	I/O	UP	1.8V	E27	GMAC0_RXD2/SDMMC1_D0/UART6_RX_M0/ GPIO2_A3_u
30	GMAC0_RXD3	I/O	UP	1.8V	E28	GMAC0_RXD3/SDMMC1_D1/UART6_TX_M0/G PIO2_A4_u
31	GMAC0_RXD1	I/O	DOWN	1.8V	H25	GMAC0_RXD1/I2S2_SCLK_RX_M0/UART6_RT Sn_M0/SPI1_MOSI_M0/GPIO2_B7_d
32	GMAC0_RXD0	I/O	UP	1.8V	F27	GMAC0_RXD0/UART1_CTSn_M0/SPI1_MISO_ M0/GPIO2_B6_u
33	GMAC0_RXDV_CRS	I/O	DOWN	1.8V	F24	GMAC0_RXDV_CRS/I2S2_LRCK_RX_M0/UAR T6_CTSn_M0/SPI1_CS0_M0/GPIO2_C0_d
34	GMAC0_TXCLK	I/O	DOWN	1.8V	D27	GMAC0_TXCLK/SDMMC1_CLK/UART9_TX_M 0/GPIO2_B0_d
35	GMAC0_TXD3	I/O	UP	1.8V	C28	GMAC0_TXD3/SDMMC1_CMD/UART9_RX_M0 /GPIO2_A7_u
36	GMAC0_TXD2	I/O	UP	1.8V	C27	GMAC0_TXD2/SDMMC1_D3/UART7_TX_M0/G PIO2_A6_u
37	GMAC0_TXD1	I/O	UP	1.8V	G27	GMAC0_TXD1/UART1_TX_M0/GPIO2_B4_u
38	GMAC0_TXD0	I/O	UP	1.8V	F28	GMAC0_TXD0/UART1_RX_M0/GPIO2_B3_u
39	GMAC0_TXEN	I/O	UP	1.8V	G28	GMAC0_TXEN/UART1_RTSn_M0/SPI1_CLK_ M0/GPIO2_B5_u
40	ETH0_REFCKO_25M	I/O	DOWN	1.8V	G23	ETH0_REFCKO_25M/I2S2_MCLK_M0/UART7_ RTSn_M0/SPI2_CLK_M0/GPIO2_C1_d
41	GMAC0_MCLKINOUT	I/O	DOWN	1.8V	F25	GMAC0_MCLKINOUT/I2S2_SCLK_TX_M0/UAR T7_CTSn_M0/SPI2_MISO_M0/GPIO2_C2_d
42	GMAC0_MDC	I/O	DOWN	1.8V	H24	GMAC0_MDC/I2S2_LRCK_TX_M0/UART9_RT Sn_M0/SPI2_MOSI_M0/GPIO2_C3_d
43	GMAC0_MDIO	I/O	DOWN	1.8V	H23	GMAC0_MDIO/I2S2_SDO_M0/UART9_CTSn_ M0/SPI2_CS0_M0/GPIO2_C4_d
44	SARADC_VIN0_KEY/RECOVERY	I		1.8V	B27	SARADC_VIN0
45	PDM_CLK1_M0_ADC	I/O	DOWN	3.3V	F18	I2S1_SCLK_RX_M0/PDM_CLK1_M0_CON/SP DIF_TX_M0/GPIO1_A4_D
46	PDM_SDI3_M0_ADC	I/O	DOWN	3.3V	D20	I2S1_SDO1_M0/I2S1_SDI3_M0/PDM_SDI3_M0

						_CON/GPIO1_B0_D
47	PDM_SDI2_M0_ADC	I/O	DOWN	3.3V	E20	I2S1_SDO2_M0/I2S1_SDI2_M0/PDM_SDI2_M0 _CON/GPIO1_B1_D
48	PDM_SDI1_M0_ADC	I/O	DOWN	3.3V	A21	I2S1_SDO3_M0/I2S1_SDI1_M0/PDM_SDI1_M0 _CON/GPIO1_B2_D
49	I2C3_SDA_M0	I/O	UP	3.3V	D18	I2C3_SDA_M0/UART3_RX_M0/CAN1_RX_M0/ AUDIOPWM_LOUT_P/GPIO1_A0_U
50	I2C3_SCL_M0	I/O	UP	3.3V	E18	I2C3_SCL_M0/UART3_TX_M0/CAN1_TX_M0/A UDIOPWM_LOUT_N/GPIO1_A1_U
51	EDP_TX_AUXP	O		1.8V	L25	EDP_TX_AUXP
52	EDP_TX_AUXN	O		1.8V	M25	EDP_TX_AUXN
53	EDP_TX_D0P	O		1.8V	J28	EDP_TX_D0P
54	EDP_TX_D0N	O		1.8V	K27	EDP_TX_D0N
55	EDP_TX_D1P	O		1.8V	K28	EDP_TX_D1P
56	EDP_TX_D1N	O		1.8V	L27	EDP_TX_D1N
57	EDP_TX_D2P	O		1.8V	L28	EDP_TX_D2P
58	EDP_TX_D2N	O		1.8V	M27	EDP_TX_D2N
59	EDP_TX_D3P	O		1.8V	M28	EDP_TX_D3P
60	EDP_TX_D3N	O		1.8V	N27	EDP_TX_D3N
61	GND	G				GND
62	CAN1_TX_M1	I/O	DOWN	3.3V	AA11	PWM15_IR_M1/SPI3_MOSI_M1/CAN1_TX_M1/ PCIE30X2_WAKEn_M2/I2S3_SCLK_M1/GPIO4 _C3_d
63	CAN1_RX_M1	I/O	DOWN	3.3V	AF8	PWM14_M1/SPI3_CLK_M1/CAN1_RX_M1/PCI E30X2_CLKREqn_M2/I2S3_MCLK_M1/GPIO4_ C2_d
64	SATA2_ACT_LED	I/O	DOWN	3.3V	AH7	EDP_HPDI_N_M0/SPDIF_TX_M2/SATA2_ACT_L ED/PCIE30X2_PERSTn_M2/I2S3_LRCK_M1/G PIO4_C4_d
65	RK809_PWPON	I/O	DOWN	3.3V		
66	EXT_EN	O		3.3V		
67	HDMIRX_RST_L_GPIO4_D2	I/O	DOWN	3.3V	AB9	GPIO4_D2
68	UART9_RX_M1	I/O	DOWN	3.3V	AE8	PWM13_M1/SPI3_CS0_M1/SATA0_ACT_LED/ UART9_RX_M1/I2S3_SDI_M1/GPIO4_C6_d
69	UART9_TX_M1	I/O	DOWN	3.3V	AD8	PWM12_M1/SPI3_MISO_M1/SATA1_ACT_LED/ UART9_TX_M1/I2S3_SDO_M1/GPIO4_C5_d
70	RTCIC_INT_L_GPIO0_D3	I/O	DOWN	1.8V	AE26	GPIO0_D3_d
71	GND	G				GND
72	RK809_32KOUT_WIFI	O		1.8V		RK809_32KOUT_WIFI
73	REFCLK_OUT	I/O	DOWN	3.3V	AG27	REFCLK_OUT_CAM/GPIO0_A0_d
74	SDMMC0_DET_L	I/O	UP	3.3V	Y22	SDMMC0_DET_L/SATA_CP_DET/PCIE30X1_C LKREqn_M0/GPIO0_A4_u

75	UART2_RX_M0_DEBUG(NOTE2)	I/O	UP	3.3V	AC20	UART2_RX_M0/GPIO0_D0_u
76	UART2_TX_M0_DEBUG(NOTE2)	I/O	UP	3.3V	AH24	UART2_TX_M0/GPIO0_D1_u
77	RESETN	I	UP	3.3V	AH27	nPOR_u
78	USB_OTG_PWREN_H_GPIO0_A5	I/O	DOWN	3.3V	AF25	SDMMC0_PWREN/SATA_MP_SWITCH/PCIE20_CLKREQn_M0/GPIO0_A5_d
79	USB_HOST_PWREN_H_GPIO0_A6	I/O	DOWN	3.3V	AE24	USB_HOST_PWREN_H/GPU_PWREN/SATA_CP_POD/PCIE30X2_CLKREQn_M/GPIO0_A6_d
80	DVP_PWREN0_H_GPIO0_B0	I/O	UP	3.3V	AD23	CLK32K_IN/CLK32K_OUT/GPIO0_B0_u
81	I2C0_SCL_PMIC	I/O	UP	3.3V	AF24	I2C0_SCL/GPIO0_B1_u
82	I2C0_SDA_PMIC	I/O	UP	3.3V	AB21	I2C0_SDA/GPIO0_B2_u
83	I2C1_SCL_TP	I/O	UP	3.3V	AG24	I2C1_SCL/CAN0_TX_M0/PCIE30X1_BUTTONNRSTn/MCU_JTAG_TDO/GPIO0_B3_u
84	I2C1_SDA_TP	I/O	UP	3.3V	AB20	I2C1_SDA/CAN0_RX_M0/PCIE20_BUTTONNRSTn/MCU_JTAG_TCK/GPIO0_B4_u
85	TP_INT_L_GPIO0_B5	I/O	UP	3.3V	AC22	I2C2_SCL_M0/SPI0_CLK_M0/PCIE20_WAKEn_M0/PWM1_M1/GPIO0_B5_u
86	TP_RST_L_GPIO0_B6	I/O	UP	3.3V	AA20	I2C2_SDA_M0/SPI0_MOSI_M0/PCIE20_PERS_Tn_M0/PWM2_M1/GPIO0_B6_u
87	WORKING_LEDEN_H_GPIO0_B7	I/O	DOWN	3.3V	AH26	PWM0_M0/CPUAVS/GPIO0_B7_d
88	VGA_HPDIH_GPIO0_C0	I/O	DOWN	3.3V	AD22	PWM1_M0/GPUAVS/UART0_RX/GPIO0_C0_d
89	WIFI_PWREN_L_GPIO0_C1	I/O	DOWN	3.3V	AF23	PWM2_M0/NPUAVS/UART0_TX/MCU_JTAG_TDI/GPIO0_C1_d
90	LCD0_BL_PWM4	I/O	DOWN	3.3V	AE23	PWM4/VOP_PWM_M0/PCIE30X1_PERSTn_M0/MCU_JTAG_TRSTn/GPIO0_C3_d
91	LCD1_BL_PWM5	I/O	DOWN	3.3V	AD21	PWM5/SPI0_CS1_M0/UART0_RTSn/GPIO0_C4_d
92	LCD1_PWREN_H_GPIO0_C5	I/O	DOWN	3.3V	AC21	PWM6/SPI0_MISO_M0/PCIE30X2_WAKEn_M0/GPIO0_C5_d
93	4G_PWREN_H_GPIO0_C6	I/O	DOWN	3.3V	AD20	PWM7_IR/SPI0_CS0_M0/PCIE30X2_PERSTn_M0/GPIO0_C6_d
94	LCD0_PWREN_H_GPIO0_C7	I/O	DOWN	3.3V	AH25	HDMITX_CEC_M1/PWM0_M1/UART0_CTSn/GPIO0_C7_d
95	GND	G				GND
96	PCIE30_REFCLKIN_IN	I		1.8V	AA25	PCIE30_REFCLKIN_IN
97	PCIE30_REFCLKP_IN	I		1.8V	Y25	PCIE30_REFCLKP_IN
98	PCIE30_RX1N	I		1.8V	AD27	PCIE30_RX1N
99	PCIE30_RX1P	I		1.8V	AD28	PCIE30_RX1P
100	PCIE30_RX0N	I		1.8V	AC27	PCIE30_RX0N
101	PCIE30_RX0P	I		1.8V	AC28	PCIE30_RX0P
102	PCIE30_TX1N	O		1.8V	AB27	PCIE30_TX1N
103	PCIE30_TX1P	O		1.8V	AB28	PCIE30_TX1P

104	PCIE30_TX0N	O		1.8V	AA27	PCIE30_TX0N
105	PCIE30_TX0P	O		1.8V	AA28	PCIE30_TX0P
106	GND	G				GND
107	PCIE20_REFCLKN	O		1.8V	V25	PCIE20_REFCLKN
108	PCIE20_REFCLKP	O		1.8V	V24	PCIE20_REFCLKP
109	PCIE20_RXN/SATA2_RXN	I		1.8V	Y28	PCIE20_RXN/SATA2_RXN/QSGMII_RXN_M1
110	PCIE20_RXP/SATA2_RXP	I		1.8V	Y27	PCIE20_RXP/SATA2_RXP/QSGMII_RXP_M1
111	PCIE20_TXN/SATA2_TXN	O		1.8V	W28	PCIE20_TXN/SATA2_TXN/QSGMII_TXN_M1
112	PCIE20_TXP/SATA2_TXP	O		1.8V	W27	PCIE20_TXP/SATA2_TXP/QSGMII_TXP_M1
113	GND	G				GND
114	GND	G				GND
115	GND	G				GND
116	GND	G				GND
117	GND	G				GND
118	VCC3V3_SYS	P		3.3V		
119	VCC3V3_SYS	P		3.3V		
120	VCC3V3_SYS	P		3.3V		

Note : 1. Connector J2506 PIN75,PIN76 (UART2) is usually used as a debugging port
2. Connector J2506 PIN13,PIN14 (USB3_OTG0_DP/DM) port use for firmware download.

J2507

PIN	Core board pin definition	Pad type	IO Pull	IO Power domain	Pin Number	Pin Name
1	MIC1_INP	I		3.3V		MIC1_INP
2	MIC1_INN	I		3.3V		MIC1_INN
3	HP_SNS	G				HP_SNS
4	HPR_OUT	O		3.3V		HPR_OUT
5	HPL_OUT	O		3.3V		HPL_OUT
6	HDMI_TX2P_PORT	O		1.8V	AG22	HDMI_TX2P
7	HDMI_TX2N_PORT	O		1.8V	AH22	HDMI_TX2N
8	HDMI_TX1P_PORT	O		1.8V	AG21	HDMI_TX1P
9	HDMI_TX1N_PORT	O		1.8V	AH21	HDMI_TX1N
10	HDMI_TX0P_PORT	O		1.8V	AG20	HDMI_TX0P
11	HDMI_TX0N_PORT	O		1.8V	AH20	HDMI_TX0N
12	HDMI_TXCLKP_PORT	O		1.8V	AH19	HDMI_TXCLKP
13	HDMI_TXCLKN_PORT	O		1.8V	AG19	HDMI_TXCLKN
14	GND	G				GND
15	MIPI_DSI_TX0_D0N/LVDS_TX0_D0N	O		1.8V	AG17	MIPI_DSI_TX0_D0N/LVDS_TX0_D0N

16	MIPI_DSI_TX0_D0P/LVDS_TX0_D0P	O		1.8V	AH17	MIPI_DSI_TX0_D0P/LVDS_TX0_D0P
17	MIPI_DSI_TX0_D1N/LVDS_TX0_D1N	O		1.8V	AG16	MIPI_DSI_TX0_D1N/LVDS_TX0_D1N
18	MIPI_DSI_TX0_D1P/LVDS_TX0_D1P	O		1.8V	AH16	MIPI_DSI_TX0_D1P/LVDS_TX0_D1P
19	MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN	O		1.8V	AG15	MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN
20	MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP	O		1.8V	AH15	MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP
21	MIPI_DSI_TX0_D2N/LVDS_TX0_D2N	O		1.8V	AG14	MIPI_DSI_TX0_D2N/LVDS_TX0_D2N
22	MIPI_DSI_TX0_D2P/LVDS_TX0_D2P	O		1.8V	AH14	MIPI_DSI_TX0_D2P/LVDS_TX0_D2P
23	MIPI_DSI_TX0_D3N/LVDS_TX0_D3N	O		1.8V	AG13	MIPI_DSI_TX0_D3N/LVDS_TX0_D3N
24	MIPI_DSI_TX0_D3P/LVDS_TX0_D3P	O		1.8V	AH13	MIPI_DSI_TX0_D3P/LVDS_TX0_D3P
25	GND	G				GND
26	HDMITX_CEC_M0	I/O	UP	3.3V	AH6	HDMITX_CEC_M0/SPI3_CS1_M1/GPIO4_D1_u
27	HDMI_TX_HPDIN	I		1.8V	AB18	HDMI_TX_HPDIN
28	HDMITX_SCL	I/O	UP	3.3V	AG8	HDMITX_SCL/I2C5_SCL_M1/GPIO4_C7_u
29	HDMITX_SDA	I/O	UP	3.3V	AG7	HDMITX_SDA/I2C5_SDA_M1/GPIO4_D0_u
30	PCIE20_CLKREQN_M1	I/O	DOWN	3.3V	AG6	LCDC_D0/VOP_BT656_D0_M0/SPI0_MISO_M1/PCIE20_CLKREQn_M1/I2S1_MCLK_M2/GPIO2_D0_d
31	PCIE20_WAKEN_M1	I/O	DOWN	3.3V	AD7	LCDC_D1/VOP_BT656_D1_M0/SPI0_MOSI_M1/PCIE20_WAKEn_M1/I2S1_SCLK_TX_M2/GPIO2_D1_d
32	PCIE30X1_CLKREQN_M1	I/O	DOWN	3.3V	AC8	LCDC_D2/VOP_BT656_D2_M0/SPI0_CS0_M1/PCIE30X1_CLKREQn_M1/I2S1_LRCK_TX_M2/GPIO2_D2_d
33	PCIE30X1_WAKEN_M1	I/O	DOWN	3.3V	AC7	LCDC_D3/VOP_BT656_D3_M0/SPI0_CLK_M1/PCIE30X1_WAKEn_M1/I2S1_SDI0_M2/GPIO2_D3_d
34	PCIE30X2_CLKREQN_M1	I/O	DOWN	3.3V	AF5	LCDC_D4/VOP_BT656_D4_M0/SPI2_CS1_M1/PCIE30X2_CLKREQn_M1/I2S1_SDI1_M2/GPIO2_D4_d
35	PCIE30X2_WAKEN_M1	I/O	DOWN	3.3V	AF6	LCDC_D5/VOP_BT656_D5_M0/SPI2_CS0_M1/PCIE30X2_WAKEn_M1/I2S1_SDI2_M2/GPIO2_D5_d
36	PCIE30X2_PERSTN_M1	I/O	DOWN	3.3V	AD6	LCDC_D6/VOP_BT656_D6_M0/SPI2_MOSI_M

						1/PCIE30X2_PERSTn_M1/I2S1_SDI3_M2/GPI O2_D6_d
37	PCIE30X2_PRSENT_L_GPIO2_D7	I/O	DOWN	3.3V	AH5	LCDC_D7/VOP_BT656_D7_M0/SPI2_MISO_M 1/UART8_TX_M1/I2S1_SDO0_M2/GPIO2_D7_ d
38	BT_REG_ON_H_GPIO3_A0	I/O	DOWN	3.3V	AH4	LCDC_CLK/VOP_BT656_CLK_M0/SPI2_CLK_ M1/UART8_RX_M1/I2S1_SDO1_M2/GPIO3_A0 _d
39	BT_WAKE_HOST_H_GPIO3_A1	I/O	DOWN	3.3V	AB8	LCDC_D8/VOP_BT1120_D0/SPI1_CS0_M1/PCI E30X1_PERSTn_M1/SDMMC2_D0_M1/GPIO3_ A1_d
40	GND	G				GND
41	HOST_WAKE_BT_H_GPIO3_A2	I/O	DOWN	3.3V	AE5	LCDC_D9/VOP_BT1120_D1/GMAC1_TXD2_M 0/I2S3_MCLK_M0/SDMMC2_D1_M1/GPIO3_A2 _d
42	I2S3_SCLK_M0	I/O	DOWN	3.3V	AG4	LCDC_D10/VOP_BT1120_D2/GMAC1_TXD3_ M0/I2S3_SCLK_M0/SDMMC2_D2_M1/GPIO3_ A3_d
43	I2S3_LRCK_M0	I/O	DOWN	3.3V	AF4	LCDC_D11/VOP_BT1120_D3/GMAC1_RXD2_ M0/I2S3_LRCK_M0/SDMMC2_D3_M1/GPIO3_ A4_d
44	I2S3_SDO_M0	I/O	DOWN	3.3V	AH3	LCDC_D12/VOP_BT1120_D4/GMAC1_RXD3_ M0/I2S3_SDO_M0/SDMMC2_CMD_M1/GPIO3_ A5_d
45	I2S3_SDI_M0	I/O	DOWN	3.3V	AG3	LCDC_D13/VOP_BT1120_CLK/GMAC1_TXCLK _M0/I2S3_SDI_M0/SDMMC2_CLK_M1/GPIO3_ A6_d
46	GMAC1_INT/PMEB_GPIO3_A7	I/O	DOWN	3.3V	AH2	LCDC_D14/VOP_BT1120_D5/GMAC1_RXCLK_ M 0/SDMMC2_DET_M1/GPIO3_A7_d
47	GMAC1_RSTN_GPIO3_B0	I/O	DOWN	3.3V	AG2	LCDC_D15/VOP_BT1120_D6/ETH1_REFCLKO _25M_M0/SDMMC2_PWREN_M1/GPIO3_B0_d
48	UART4_RX_M1	I/O	DOWN	3.3V	AG1	LCDC_D16/VOP_BT1120_D7/GMAC1_RXD0_ M0/UART4_RX_M1/PWM8_M0/GPIO3_B1_d
49	UART4_TX_M1	I/O	DOWN	3.3V	AF2	LCDC_D17/VOP_BT1120_D8/GMAC1_RXD1_ M0/UART4_TX_M1/PWM9_M0/GPIO3_B2_d
50	I2C5_SCL_M0	I/O	DOWN	3.3V	AF1	LCDC_D18/VOP_BT1120_D9/GMAC1_RXDV_ CRS_M0/I2C5_SCL_M0/PDM_SDI0_M2/GPIO3 _B3_d
51	I2C5_SDA_M0	I/O	DOWN	3.3V	AE1	LCDC_D19/VOP_BT1120_D10/GMAC1_RXER_ M0/I2C5_SDA_M0/PDM_SDI1_M2/GPIO3_B4_ d

52	RS485_DIR_GPIO3_B5	I/O	DOWN	3.3V	AE2	LCDC_D20/VOP_BT1120_D11/GMAC1_TXD0_M0/I2C3_SCL_M1/PWM10_M0/GPIO3_B5_d
53	PCIE_ETH_ISOLATE_L_GPIO3_B6	I/O	DOWN	3.3V	AE3	LCDC_D21/VOP_BT1120_D12/GMAC1_TXD1_M0/I2C3_SDA_M1/PWM11_IR_M0/GPIO3_B6_d
54	GMAC0_RSTN_GPIO3_B7	I/O	DOWN	3.3V	AD4	LCDC_D22/PWM12_M0/GMAC1_TXEN_M0/UART3_TX_M1/PDM_SDI2_M2/GPIO3_B7_d
55	GMAC0_INT/PMEB_GPIO3_C0	I/O	DOWN	3.3V	AD2	LCDC_D23/PWM13_M0/GMAC1_MCLKINOUT_M0/UART3_RX_M1/PDM_SDI3_M2/GPIO3_C0_d
56	PCIE20_PERSTN_M1	I/O	DOWN	3.3V	AD1	LCDC_HSYNC/VOP_BT1120_D13/SPI1_MOSI_M1/PCIE20_PERSTn_M1/I2S1_SDO2_M2/GPIO3_C1_d
57	HP_DET_L_GPIO3_C2	I/O	DOWN	3.3V	AA7	LCDC_VSYNC/VOP_BT1120_D14/SPI1_MISO_M1/UART5_TX_M1/I2S1_SDO3_M2/GPIO3_C2_d
58	SPK_CTL_H_GPIO3_C3	I/O	DOWN	3.3V	AC4	LCDC_DEN/VOP_BT1120_D15/SPI1_CLK_M1/UART5_RX_M1/I2S1_SCLK_RX_M2/GPIO3_C3_d
59	UART7_TX_M1	I/O	DOWN	3.3V	AC3	PWM14_M0/VOP_PWM_M1/GMAC1_MDC_M0/UART7_TX_M1/PDM_CLK1_M2/GPIO3_C4_d
60	UART7_RX_M1	I/O	DOWN	3.3V	AC2	PWM15_IR_M0/SPDIF_TX_M1/GMAC1_MDIO_M0/UART7_RX_M1/I2S1_LRCK_RX_M2/GPIO3_C5_d
61	SPKP_OUT	O		5.0V		SPKP_OUT
62	SPKN_OUT	O		5.0V		SPKN_OUT
63	GND	G				GND
64	MIPI_DSI_TX1_D2N	O		1.8V	AC17	MIPI_DSI_TX1_D2N
65	MIPI_DSI_TX1_D2P	O		1.8V	AE17	MIPI_DSI_TX1_D2P
66	MIPI_DSI_TX1_D1N	O		1.8V	AC17	MIPI_DSI_TX1_D1N
67	MIPI_DSI_TX1_D1P	O		1.8V	AD17	MIPI_DSI_TX1_D1P
68	MIPI_DSI_TX1_CLKN	O		1.8V	AE15	MIPI_DSI_TX1_CLKN
69	MIPI_DSI_TX1_CLKP	O		1.8V	AD15	MIPI_DSI_TX1_CLKP
70	MIPI_DSI_TX1_D0N	O		1.8V	AE18	MIPI_DSI_TX1_D0N
71	MIPI_DSI_TX1_D0P	O		1.8V	AD18	MIPI_DSI_TX1_D0P
72	MIPI_DSI_TX1_D3N	O		1.8V	AE12	MIPI_DSI_TX1_D3N
73	MIPI_DSI_TX1_D3P	O		1.8V	AD12	MIPI_DSI_TX1_D3P
74	GND	G				GND
75	MIPI_CSI_RX_D0N	I		1.8V	AH12	MIPI_CSI_RX_D0N
76	MIPI_CSI_RX_D0P	I		1.8V	AG12	MIPI_CSI_RX_D0P
77	MIPI_CSI_RX_D1N	I		1.8V	AH11	MIPI_CSI_RX_D1N

78	MIPI_CSI_RX_D1P	I		1.8V	AG11	MIPI_CSI_RX_D1P
79	MIPI_CSI_RX_CLK0N	I		1.8V	AH10	MIPI_CSI_RX_CLK0N
80	MIPI_CSI_RX_CLK0P	I		1.8V	AG10	MIPI_CSI_RX_CLK0P
81	MIPI_CSI_RX_CLK1N	I		1.8V	AH9	MIPI_CSI_RX_CLK1N
82	MIPI_CSI_RX_CLK1P	I		1.8V	AG9	MIPI_CSI_RX_CLK1P
83	MIPI_CSI_RX_D2N	I		1.8V	AD11	MIPI_CSI_RX_D2N
84	MIPI_CSI_RX_D2P	I		1.8V	AE11	MIPI_CSI_RX_D2P
85	MIPI_CSI_RX_D3N	I		1.8V	AE9	MIPI_CSI_RX_D3N
86	MIPI_CSI_RX_D3P	I		1.8V	AD9	MIPI_CSI_RX_D3P
87	GND	G				GND
88	SDMMC2_D0	I/O	DOWN	1.8V	AC5	CIF_D0/EBC_SDDO0/SDMMC2_D0_M0/I2S1_MCLK_M1/VOP_BT656_D0_M1/GPIO3_C6_d
89	SDMMC2_D1	I/O	DOWN	1.8V	AA6	CIF_D1/EBC_SDDO1/SDMMC2_D1_M0/I2S1_SCLK_TX_M1/VOP_BT656_D1_M1/GPIO3_C7_d
90	SDMMC2_D2	I/O	DOWN	1.8V	AB5	CIF_D2/EBC_SDDO2/SDMMC2_D2_M0/I2S1_LRCK_TX_M1/VOP_BT656_D2_M1/GPIO3_D0_d
91	SDMMC2_D3	I/O	DOWN	1.8V	AB1	CIF_D3/EBC_SDDO3/SDMMC2_D3_M0/I2S1_SDO0_M1/VOP_BT656_D3_M1/GPIO3_D1_d
92	SDMMC2_CMD	I/O	DOWN	1.8V	Y7	CIF_D4/EBC_SDDO4/SDMMC2_CMD_M0/I2S1_SDI0_M1/VOP_BT656_D4_M1/GPIO3_D2_d
93	SDMMC2_CLK	I/O	DOWN	1.8V	AC1	CIF_D5/EBC_SDDO5/SDMMC2_CLK_M0/I2S1_SDI1_M1/VOP_BT656_D5_M1/GPIO3_D3_d
94	WIFI_WAKE_HOST_H_GPIO3_D4	I/O	DOWN	1.8V	AA1	CIF_D6/EBC_SDDO6/SDMMC2_DET_M0/I2S1_SDI2_M1/VOP_BT656_D6_M1/GPIO3_D4_d
95	WIFI_REG_ON_H_GPIO3_D5	I/O	DOWN	1.8V	AA5	CIF_D7/EBC_SDDO7/SDMMC2_PWREN_M0/I2S1_SDI3_M1/VOP_BT656_D7_M1/GPIO3_D5_d
96	GMAC1_TXD0_M1	I/O	DOWN	1.8V	Y2	CIF_D14/EBC_SDDO14/GMAC1_TXD0_M1/UART9_TX_M2/I2S2_LRCK_TX_M1/GPIO4_A4_d
97	GMAC1_TXD1_M1	I/O	DOWN	1.8V	Y1	CIF_D15/EBC_SDDO15/GMAC1_TXD1_M1/UART9_RX_M2/I2S2_LRCK_RX_M1/GPIO4_A5_d
98	GMAC1_TXD2_M1	I/O	DOWN	1.8V	Y6	CIF_D8/EBC_SDDO8/GMAC1_TXD2_M1/UART1_TX_M1/PDM_CLK0_M1/GPIO3_D6_d
99	GMAC1_TXD3_M1	I/O	DOWN	1.8V	Y5	CIF_D9/EBC_SDDO9/GMAC1_TXD3_M1/UART1_RX_M1/PDM_SDI0_M1/GPIO3_D7_d
100	GMAC1_TXEN_M1	I/O	DOWN	1.8V	W2	ISP_FLASHTRIGOUT/EBC_SDCE0/GMAC1_TXEN_M1/SPI3_CS0_M0/I2S1_SCLK_RX_M1/GPIO4_A6_d
101	GMAC1_TXCLK_M1	I/O	DOWN	1.8V	AA3	CIF_D10/EBC_SDDO10/GMAC1_TXCLK_M1/PDM_CLK1_M1/GPIO4_A0_d

102	GMAC1_RXDV_CRS_M1	I/O	DOWN	1.8V	V2	ISP_PRELIGHT_TRIG/EBC_SDCE3/GMAC1_RXDV_CRS_M1/I2S1_SDO2_M1/GPIO4_B1_d
103	GMAC1_RXD0_M1	I/O	DOWN	1.8V	W1	CAM_CLKOUT0/EBC_SDCE1/GMAC1_RXD0_M1/SPI3_CS1_M0/I2S1_LRCK_RX_M1/GPIO4_A7_d
104	GMAC1_RXD1_M1	I/O	DOWN	1.8V	V7	CAM_CLKOUT1/EBC_SDCE2/GMAC1_RXD1_M1/SPI3_MISO_M0/I2S1_SDO1_M1/GPIO4_B0_d
105	GMAC1_RXD2_M1	I/O	DOWN	1.8V	AA2	CIF_D11/EBC_SDDO11/GMAC1_RXD2_M1/PDM_SDI1_M1/GPIO4_A1_d
106	GMAC1_RXD3_M1	I/O	DOWN	1.8V	Y4	CIF_D12/EBC_SDDO12/GMAC1_RXD3_M1/UART7_TX_M2/PDM_SDI2_M1/GPIO4_A2_d
107	GMAC1_RXCLK_M1	I/O	DOWN	1.8V	Y3	CIF_D13/EBC_SDDO13/GMAC1_RXCLK_M1/UART7_RX_M2/PDM_SDI3_M1/GPIO4_A3_d
108	GMAC1_RXER_M1/GPIO4_B2	I/O	DOWN	1.8V	V4	I2C4_SDA_M0/EBC_VCOM/GMAC1_RXER_M1/SPI3_MOSI_M0/I2S2_SDI_M1/GPIO4_B2_d
109	ETH1_REFCLKO_25M_M1	I/O	DOWN	1.8V	V1	I2C4_SCL_M0/EBC_GDOE/ETH1_REFCLKO_25M_M1/SPI3_CLK_M0/I2S2_SDO_M1/GPIO4_B3_d
110	I2C2_SDA_M1	I/O	DOWN	1.8V	V6	I2C2_SDA_M1/EBC_GDSP/CAN2_RX_M0/ISP_FLASH_TRIGIN/VOP_BT656_CLK_M1/GPIO4_B4_d
111	I2C2_SCL_M1	I/O	DOWN	1.8V	V5	I2C2_SCL_M1/EBC_SDSHR/CAN2_TX_M0/I2S1_SDO3_M1/GPIO4_B5_d
112	GMAC1_MDC_M1	I/O	DOWN	1.8V	U5	CIF_HREF/EBC_SDLE/GMAC1_MDC_M1/UART1_RTSn_M1/I2S2_MCLK_M1/GPIO4_B6_d
113	GMAC1_MDIO_M1	I/O	DOWN	1.8V	U4	CIF_VSYNC/EBC_SDOE/GMAC1_MDIO_M1/I2S2_SCLK_TX_M1/GPIO4_B7_d
114	CIF_CLKOUT	I/O	DOWN	1.8V	U3	CIF_CLKOUT/EBC_GDCLK/PWM11_IR_M1/GPIO4_C0_d
115	GMAC1_MCLKINOUT_M1	I/O	DOWN	1.8V	U2	CIF_CLKIN/EBC_SDCLK/GMAC1_MCLKINOUT_M1/UART1_CTSn_M1/I2S2_SCLK_RX_M1/GPIO4_C1_d
116	GND	G				GND
117	USB2_HOST3_DM	I/O		3.3V	T1	USB2_HOST3_DM
118	USB2_HOST3_DP	I/O		3.3V	T2	USB2_HOST3_DP
119	USB2_HOST2_DM	I/O		3.3V	R1	USB2_HOST2_DM
120	USB2_HOST2_DP	I/O		3.3V	R2	USB2_HOST2_DP

4. system software

Types	Description
OS	Android 、 Linux
Start method	Can support TF card, EMMC, U disk boot, making the system boot more convenient and fast

5. Application



Picture 5-1 Application

Application areas		
Smart NVRs	Cloud terminals	Vehicle center consoles
Industrial control	Edge computing	Face recognition gates

6. Contact us

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