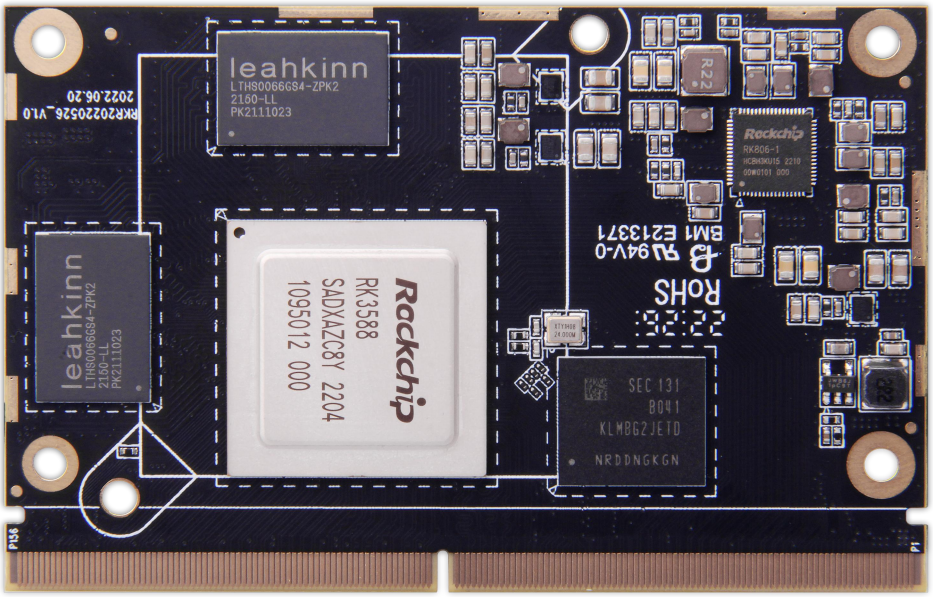
深 圳 金 亚 太 科 技 有 限 公 司

Shenzhen Geniatech Co.,Ltd.

SPECIFICATION

MODEL:SOM-3588



Confirmation

REVISION HISTORY					
VERSION	**DATE**	**BOARD ID**	**PAGE**	**DESCRIPTION**	**AUTHOR**
V1.0	2022/7/18	RKR20220526_V1.0		specification	

APPROVED BY GENIATECH		
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CONTENT

1.GENERAL DESCRIPTION

The SOM-3588 module is designed by Geniatech, based on Rock-chip RK3588, with quad-core Cortex-A76 and quad-core Cortex-A55, build-in NPU 6TOPs It supports Bluetooth, Wi-Fi, audio, video, camera and other functions, and has a variety of video input and output interfaces. With the dual-gigabit adaptive RJ45 Ethernet port, it is suitable for intelligent NVR, cloud terminal, Internet of Things gateway, industrial control, information publishing terminal, multimedia advertising machine and other scenarios, and can also be widely used in the field of embedded artificial intelligence. It constitutes a complete AI development board by connecting the core board to the baseboard through the standard SODIMM 314P interface. Below is the detail features:

(I) Standard SODIMM interface ,the size is only 82mm x 53mm.

(II) Quad-core Cortex-A76 and Quad-core Cortex-A55, build-in NPU up to 6TOPs，Support mainstream deep learning frameworks; It can bring more optimized performance for all kinds of AI application scenarios.

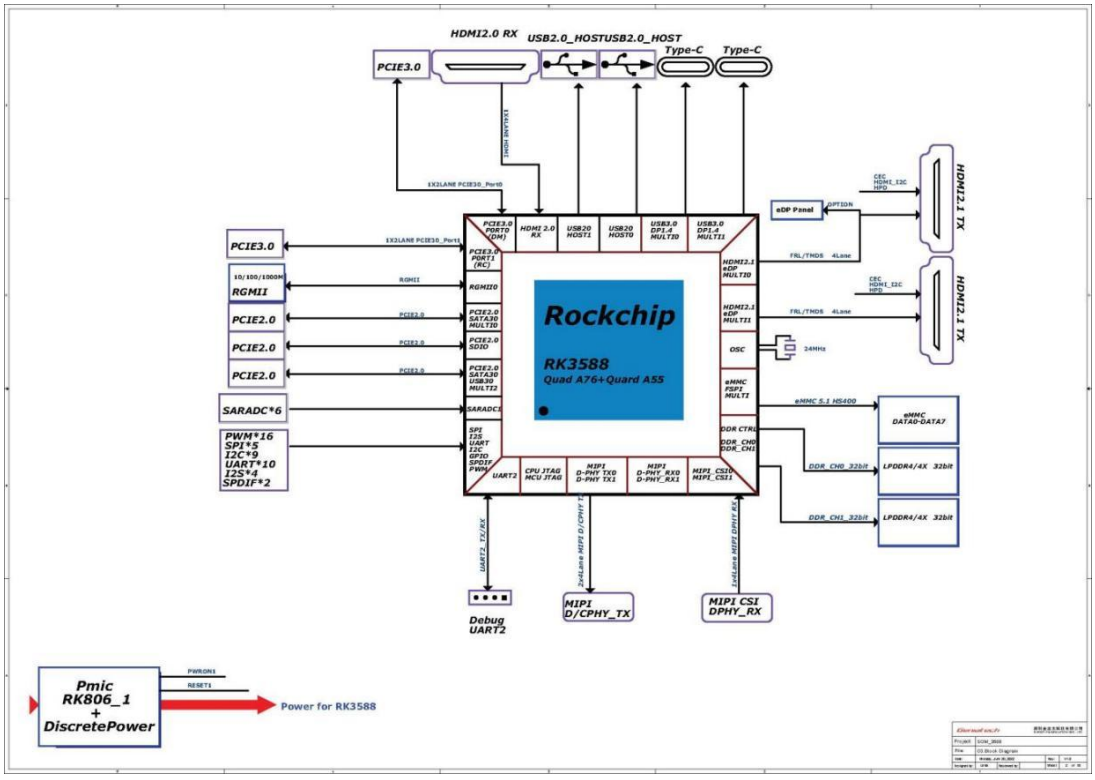
(III) LPDDR up to 32GB ,32-256GB EMMC FLASH.

(IV) Integrated PCIe/GMAC/SDIO3.0/USB3.0,With extensible gigabit Ethernet, WiFi6/ Bluetooth, so that network communication has a higher rate.

(VI) Support 8K@60fps H.265/VP9 video decoding and 8K@30fps H.265/H.264 video coding, support the same coding and solution, up to 32 channels 1080P@30fps decoding and 16 channels1080p@30 FPS encoding.

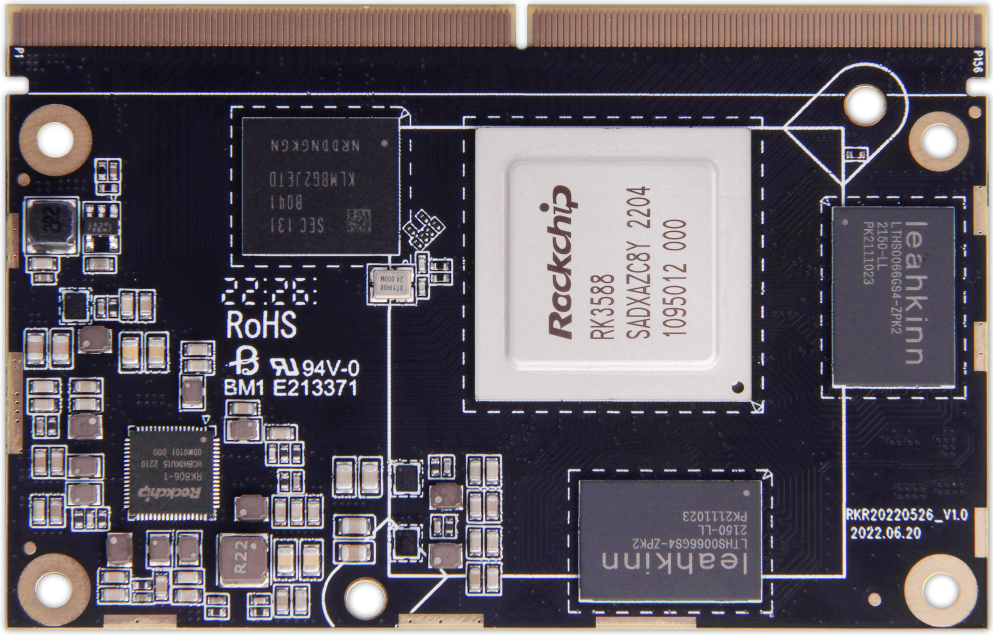
(VII) Supports Android12&Debian11 multiple operating systems, the performance is stable and reliable.

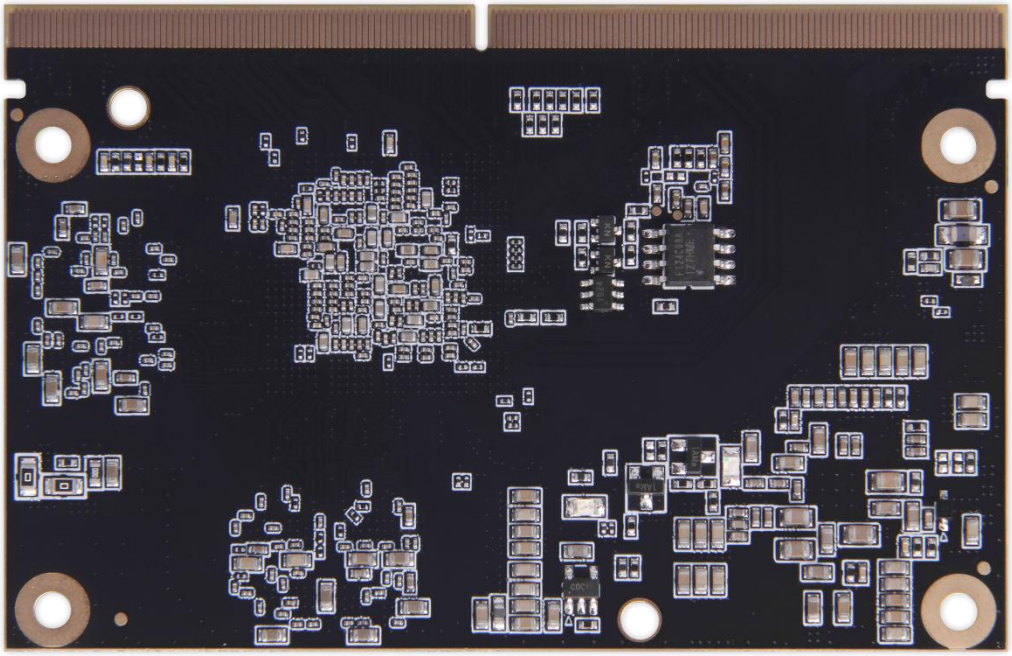
(VIII) With immersion gold process pin, corrosion resistant, 2 studs fixed, It can operate stably at 0℃ -80℃ working temperature for 7X24 hours.



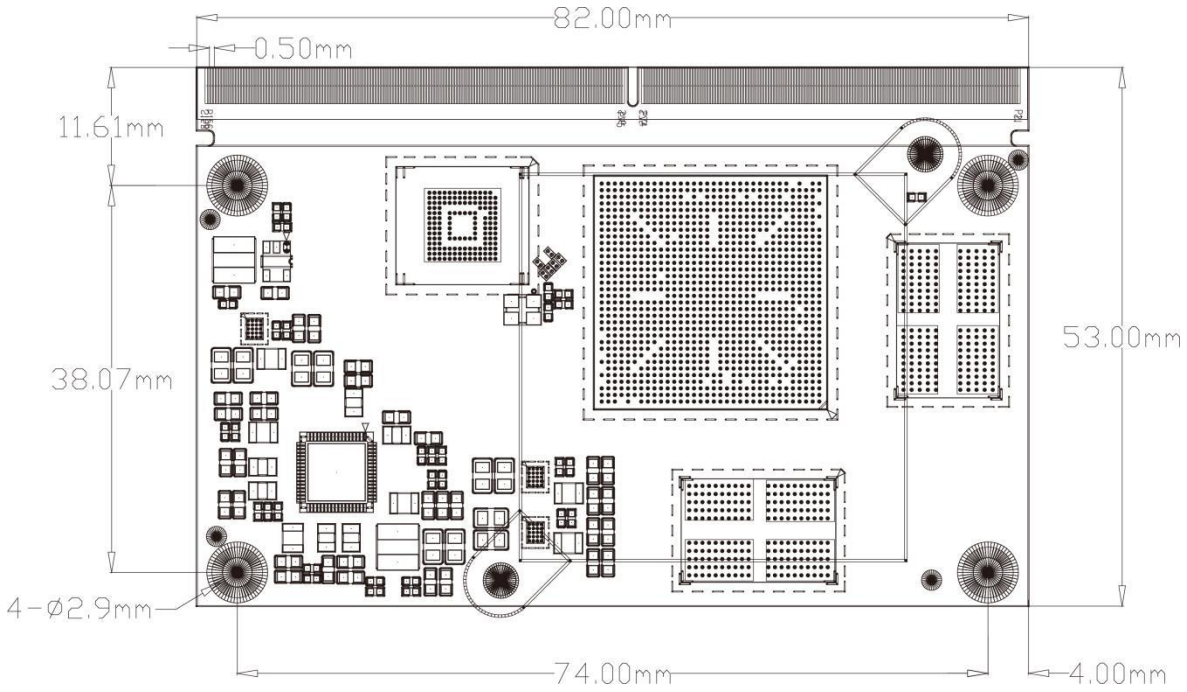
2.PRODUCT PICTURES

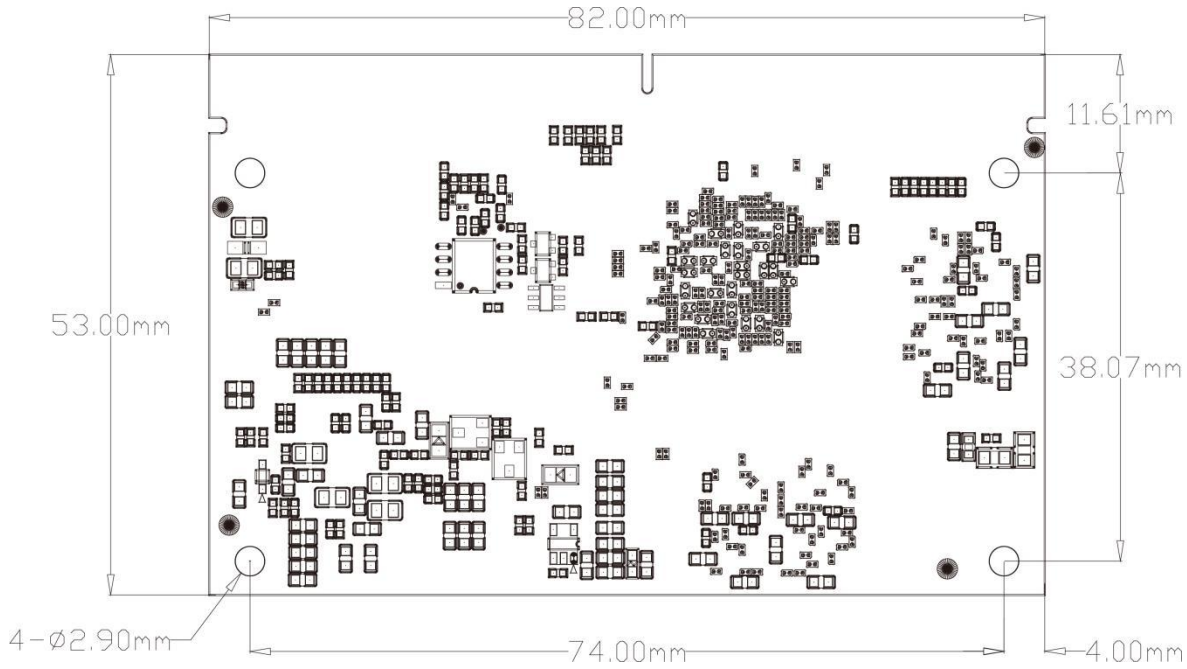
Below pictures are for reference only:





3.BOARD VIEW


82.00mm
0.50mm
11.61mm
38.07mm
53.00mm
4-Ø2.9mm
74.00mm
4.00mm


82.00mm
11.61mm
53.00mm
38.07mm
4-Ø2.90mm
74.00mm
4.00mm

4.FEATURES

Chipset	Rockchip 3588	
Market area	Global	
OSD Language	English/Chinese(multi language OSD)	
Processor	OS	Android12 / Debian11
	CPU	Quad-core Cortex-A76 and Quad-core Cortex-A55
	GPU	Mali-G610 MP4 (4x256KB L2 Cache)
	RAM	4GB(8/16/32G Optional)
	EMMC FLASH	32GB（64G/128G/256G Optional）
SODIMM Interfaces	Ethernet	2 x GIGABIT Ethernet
	PCIe	PCIe3.0 (2×2lanes,1×4lanes,4×1lanes) 3×PCIE2.0(1 lanes)
	USB	USB3.0*3、USB2.0 Host 2*4 、USB2.0 OTG*2
	MIPI CSI	*1
	MIPI DSI	*2
	I2S	*4
	HDMI	HDMI OUT*2(7680x4320@60Hz), HDMI IN*1(4096x2160p@60Hz)
	GPIO	*137
	SDIO	*12
	eDP	*1
	Type-c	*2
	DVP	*1
	SATA	*3
	SPDIF	*2
	SPI	*5
	ADC	*6
	PWM	*16
	DEBUG	*1
	I2C	*9
	POWER	5V/3A
Dimensions	82 x 53 mm	

5.SUPPORT FORMATS

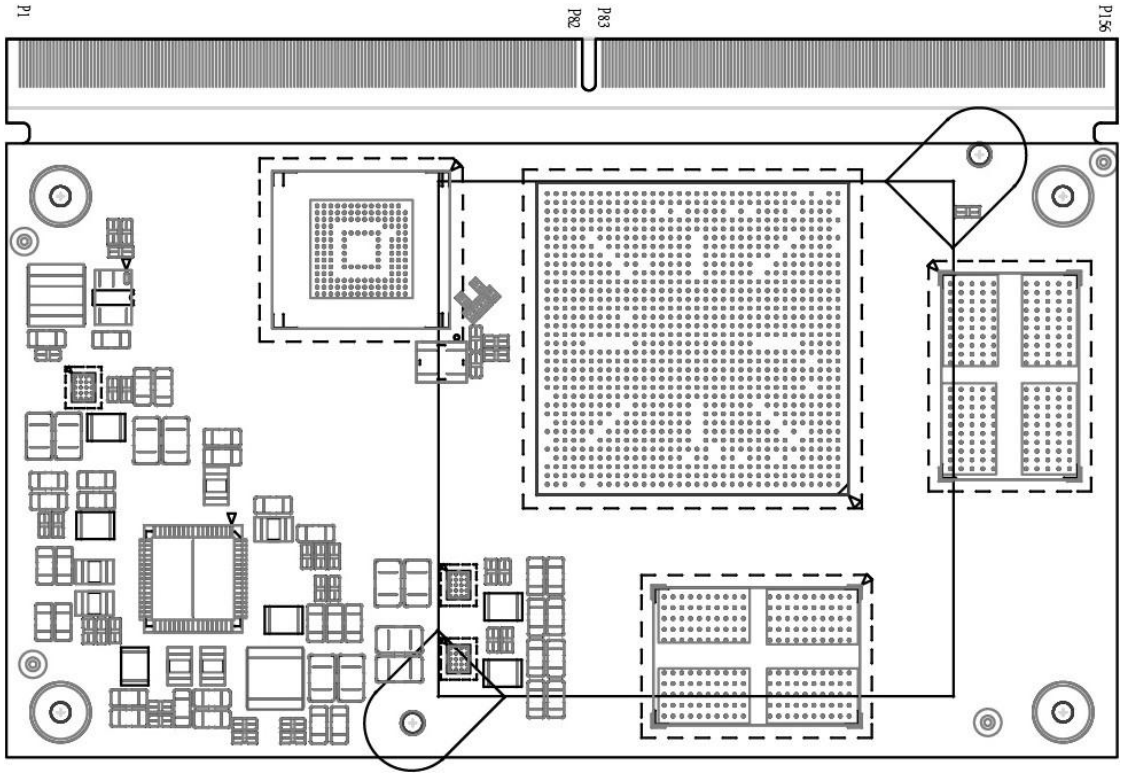
Video Decoder

- Real-time video decoder of MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP9, VP8, MVC, AV1
- MMU Embedded
- Multi-channel decoder in parallel for less resolution
- H.264 AVC/MVC Main10 L6.0 :8K@30fps (7680x4320)
- VP9 Profile0/2 L6.1 :8K@60fps (7680x4320)
- H.265 HEVC/MVC Main10 L6.1 :8K@60fps (7680x4320)
- AVS2 Profile0/2 L10.2.6 :8K@60fps (7680x4320)
- AV1 Main Profile 8/10bit L5.3 :4K@60fps (3840x2160)
- MPEG-2 up to MP :1080p@60fps (1920x1088)
- MPEG-1 up to MP :1080p@60fps (1920x1088)
- VC-1 up to AP level 3 :1080p@60fps (1920x1088)
- VP8 version2 :1080p@60fps (1920x1088)

Video Encoder

- Real-time H.265/H.264 video encoding
- Support up to 8K@30fps
- Multi-channel encoder in parallel for less resolution

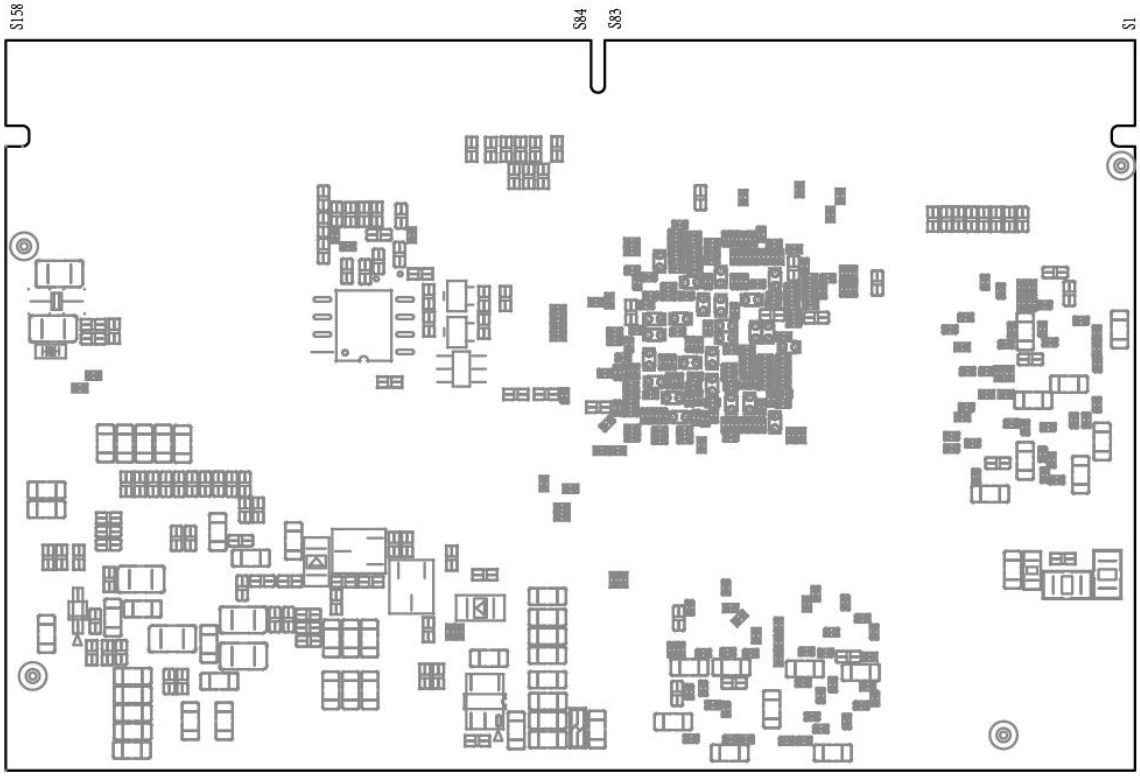
6. EXTENSION GPIO DEFINITION



Front view

No.	Functional Description	No.	Functional Description	No.	Functional Description
P1	VCCIN	P53	PCIE20_0_REFCLKP	P105	TYPEC0_SSRX2P
P2	VCCIN	P54	PCIE20_0_TXN/SATA30_0_TXN	P106	TYPEC0_SSRX2N
P3	VCCIN	P55	PCIE20_0_TXP/SATA30_0_TXP	P107	TYPEC0_SSTX1N
P4	VCCIN	P56	PCIE20_0_RXN/SATA30_0_RXN	P108	TYPEC0_SSTX1P
P5	GND	P57	PCIE20_0_RXP/SATA30_0_RXP	P109	TYPEC0_SSRX1P
P6	GND	P58	GND	P110	TYPEC0_SSRX1N
P7	GND	P59	UART9_RTSn_M0_BT	P111	GND
P8	GND	P60	UART9_CTSn_M0_BT	P112	DP1_TX3N
P9	VCC_3V3_S0	P61	SDIO_CMD_M0_WIFI	P113	DP1_TX3P
P10	VCC_3V3_S0	P62	SDIO_D3_M0_WIF	P114	DP1_TX2P
P11	VCC_1V8_S0	P63	I2S2_SCLK_M0_BT	P115	DP1_TX2N
P12	VCC_1V8_S0	P64	MIPI_CAM3/4_RESET_L	P116	TYPEC1_SSTX1N
P13	POW_ON	P65	I2S2_LRCK_M0_BT	P117	TYPEC1_SSTX1P
P14	VDC_EXT	P66	SDIO_CLK_M0_WIFI	P118	TYPEC1_SSRX1P
P15	PMIC_EXT_EN	P67	I2S2_SDO_M0_BT	P119	TYPEC1_SSRX1N
P16	VCCA_RK806	P68	GND	P120	GND
P17	ALPS_INT_L	P69	MIPI_CSI0_RX_D0N	P121	HDMI1_TX2P_PORT/eDP1_TX_D2P
P18	I2C3_SCL_M0_MIPI	P70	MIPI_CSI0_RX_D0P	P122	HDMI1_TX2N_PORT/eDP1_TX_D2N
P19	I2C3_SDA_M0_MIPI	P71	MIPI_CSI0_RX_D1N	P123	HDMI1_TX1P_PORT/eDP1_TX_D1P
P20	I2C0_SCL_M2	P72	MIPI_CSI0_RX_D1P	P124	HDMI1_TX1N_PORT/eDP1_TX_D1N
P21	I2C0_SDA_M2	P73	MIPI_CSI0_RX_CLK0N	P125	HDMI1_TX0P_PORT/eDP1_TX_D0P
P22	GND	P74	MIPI_CSI0_RX_CLK0P	P126	HDMI1_TX0N_PORT/eDP1_TX_D0N
P23	PCIE30_PORT1_REFCLKP_IN	P75	MIPI_CSI0_RX_D2N	P127	HDMI1_TX3P_PORT/eDP1_TX_D3P
P24	PCIE30_PORT1_REFCLKN_IN	P76	MIPI_CSI0_RX_D2P	P128	HDMI1_TX3N_PORT/eDP1_TX_D3N
P25	PCIE30_PORT1_TX1N	P77	MIPI_CSI0_RX_D3N	P129	HDMI1_TX_SBDP/EDP1_TX_AUXP
P26	PCIE30_PORT1_TX1P	P78	MIPI_CSI0_RX_D3P	P130	HDMI1_TX_SBDN/EDP1_TX_AUXN
P27	PCIE30_PORT1_TX0N	P79	MIPI_CSI0_RX_CLK1N	P131	GND
P28	PCIE30_PORT1_TX0P	P80	MIPI_CSI0_RX_CLK1P	P132	HDMI0_TX2P_PORT/eDP0_TX_D2P
P29	PCIE30_PORT1_RX1N	P81	MIPI_DPHY0_TX_D3N	P133	HDMI0_TX2N_PORT/eDP0_TX_

					D2N
P30	PCIE30_PORT1_RX1P	P82	MIPI_DPHY0_TX_D3P	P134	HDMI0_TX1P_PORT/eDP0_TX_D1P
P31	PCIE30_PORT1_RX0N	P83	MIPI_DPHY0_TX_D2N	P135	HDMI0_TX1N_PORT/eDP0_TX_D1N
P32	PCIE30_PORT1_RX0P	P84	MIPI_DPHY0_TX_D2P	P136	HDMI0_TX0P_PORT/eDP0_TX_D0P
P33	GND	P85	MIPI_DPHY0_TX_CLKN	P137	HDMI0_TX0N_PORT/eDP0_TX_D0N
P34	PCIE30_PORT0_TX1N	P86	MIPI_DPHY0_TX_CLKP	P138	HDMI0_TX3P_PORT/eDP0_TX_D3P
P35	PCIE30_PORT0_TX1P	P87	MIPI_DPHY0_TX_D1N	P139	HDMI0_TX3N_PORT/eDP0_TX_D3N
P36	PCIE30_PORT0_TX0N	P88	MIPI_DPHY0_TX_D1P	P140	HDMI0_TX_SBDP/EDP0_TX_AUXP
P37	PCIE30_PORT0_TX0P	P89	MIPI_DPHY0_TX_D0N	P141	HDMI0_TX_SBDN/EDP0_TX_AUXN
P38	PCIE30_PORT0_REFCLKN_IN	P90	MIPI_DPHY0_TX_D0P	P142	GND
P39	PCIE30_PORT0_REFCLKP_IN	P91	GND	P143	SDMMC0_D2
P40	PCIE30_PORT0_RX1N	P92	MIPI_DPHY1_TX_D3N	P144	SDMMC0_D3
P41	PCIE30_PORT0_RX1P	P93	MIPI_DPHY1_TX_D3P	P145	SDMMC0_CMD
P42	PCIE30_PORT0_RX0N	P94	MIPI_DPHY1_TX_D2N	P146	SD_CLK
P43	PCIE30_PORT0_RX0P	P95	MIPI_DPHY1_TX_D2P	P147	SDMMC0_D0
P44	GND	P96	MIPI_DPHY1_TX_CLKN	P148	SDMMC0_D1
P45	PCIE20_1_REFCLKN	P97	MIPI_DPHY1_TX_CLKP	P149	GND
P46	PCIE20_1_REFCLKP	P98	MIPI_DPHY1_TX_D1N	P150	HDMIIRX_HPDOUT_H
P47	PCIE20_1_RXN/SATA30_1_RXN	P99	MIPI_DPHY1_D1P	P151	DP1_HPDIN_M0
P48	PCIE20_1_RXP/SATA30_1_RXP	P100	MIPI_DPHY1_TX_D0N	P152	I2C4_SCL_M1_SENSOR
P49	PCIE20_1_TXN/SATA30_1_TXN	P101	MIPI_DPHY1_TX_D0P	P153	PCIE_PWREN_H
P50	PCIE20_1_TXP/SATA30_1_TXP	P102	GND	P154	I2C4_SDA_M1_SENSOR
P51	GND	P103	TYPEC0_SSTX2N	P155	UART9_RX_M0_BT
P52	PCIE20_0_REFCLKN	P104	TYPEC0_SSTX2P	P156	GND



Back view

No.	Functional Description	No.	Functional Description	No.	Functional Description
S1	VCCIN	S53	GND	S105	SARADC_IN4
S2	VCCIN	S54	RTC_INT_L	S106	SARADC_VIN3_HP_HOOK
S3	VCCIN	S55	UART2_TX_M0_DEBUG	S107	SARADC_IN2
S4	VCCIN	S56	UART2_RX_M0_DEBUG	S108	BOOT_SARADC_IN0
S5	GND	S57	VGA_HPDIN_L	S109	SARADC_VIN1_KEY/RECOVERY
S6	GND	S58	LCD_BL_PWM1	S110	TYPEC0_USB20_VBUSDET
S7	GND	S59	I2C6_SDA_3V3	S111	TYPEC0_USB20_OTG_ID
S8	GND	S60	I2C6_SCL_3V3	S112	TYPEC1_USB20_OTG_ID
S9	VCC_1V8_S3	S61	GND	S113	TYPEC1_USB20_VBUSDET
S10	VCC_1V8_S3	S62	SDIO_D0_M0_WIFI	S114	TYPEC0_SBU2
S11	RESET_L	S63	SDIO_D1_M0_WIFI	S115	TYPEC0_SBU1
S12	MIPI_CAM1_PWREN_H	S64	LCD_BL_EN_H	S116	GND
S13	HDMIIRX_DET_L	S65	UART9_TX_M0_BT	S117	TYPEC0_OTG_DM
S14	WIFI_WAKE_HOST_H	S66	SDIO_D2_M0_WIFI	S118	TYPEC0_OTG_DP
S15	HOST_WAKE_HOST_H	S67	GSENSOR_INT_L	S119	DP1_AUXN
S16	BT_WAKE_HOST_H	S68	GMAC1_MDIO	S120	DP1_AUXP
S17	BT_REG_ON_H	S69	GMAC1_MDC	S121	TYPEC1_OTG_DP
S18	I2C1_SDA_M2	S70	GMAC1_RSTN_L	S122	TYPEC1_OTG_DM
S19	I2C1_SCL_M2	S71	I2S2_SDI_M0_BT	S123	USB20_HOST1_DM
S20	WIFI_REG_ON_H	S72	GMAC1_MCLKINOUT	S124	USB20_HOST1_DP

S21	CC_INT_L	S73	GMAC1_TXD3	S125	USB20_HOST0_DM
S22	I2C2_SDA_M4_MIPI	S74	GMAC1_TXD2	S126	USB20_HOST0_DP
S23	I2C2_SCL_M4_MIPI	S75	GMAC1_TXEN	S127	GND
S24	HDMITX0_HPDIN_M0	S76	GMAC1_TXD1	S128	HDMI_RX_D2P
S25	MIPI_CAM1_PDN_L	S77	GMAC1_TXCLK	S129	HDMI_RX_D2N
S26	PCIEx1_0_WAKEn_M2_L/GPIO1_B3	S78	GMAC1_RXD0	S130	HDMI_RX_D1P
S27	MIPI_CAM1/2_RESET_L	S79	GMAC1_TXD0	S131	HDMI_RX_D1N
S28	PCIEx1_0_PERSTn_M2_L	S80	GMAC1_RXCLK	S132	HDMI_RX_D0P
S29	MIPI_CAM3_PDN_L	S81	GMAC1_RXD1	S133	HDMI_RX_D0N
S30	MIPI_CAM2_PDN_L	S82	GMAC1_RXDV_CRS	S134	HDMI_RX_CLKP
S31	HDMITX1_HPDIN_M0	S83	GMAC1_RXD2	S135	HDMI_RX_CLKN
S32	PCIEx1_0_CLKREQn_M2_L	S84	GMAC1_RXD3	S136	GND
S33	MIPI_CAM4_PWREN_H	S85	ETH1_REFCLKO_25M	S137	MIPI_CAM4_CLKOUT
S34	MIPI_CAM3_PWREN_H	S86	GND	S138	MIPI_CAM2_CLKOUT
S35	MIPI_CAM2_PWREN_H	S87	PCIEx1_1_CLKREQn_M1_L	S139	MIPI_CAM3_CLKOUT
S36	MIPI_CAM4_PDN_L	S88	PCIEx1_1_PERSTn_M1_L	S140	MIPI_CAM1_CLKOUT
S37	I2C7_SCL_M0_CODEC	S89	PCIEx1_1_WAKEn_M1_L/GPIO4_A1	S141	SDMMC_DET_L
S38	I2C7_SDA_M0_CODEC	S90	SPK_CTL_H	S142	TP_RST_L
S39	PWM15_M2	S91	PHONE_CTL	S143	TP_INT_L
S40	I2S0_LRCK_TX	S92	TYPEC0_SBU2_DC	S144	HDMI_RX_SDA_M1
S41	I2S0_SDI0	S93	TYPEC0_SBU1_DC	S145	HDMI_RX_SCL_M1
S42	HP_DET_L	S94	SDMMC_PWREN	S146	HDMI_RX_CEC
S43	I2S0_SCLK_TX	S95	PCIE30x4_CLKREQN_M1_L	S147	HDMITX1_SCL_M1
S44	I2S0_SDO0	S96	PCIE30x4_PRSNT_L/GPIO4_B3	S148	HDMITX1_SDA_M1
S45	I2S0_MCLK	S97	HDMI0_TX_ON_H	S149	HDMITX1_CEC_M2
S46	GND	S98	HDMI1_TX_ON_H	S150	HDMITX0_CEC_M0
S47	PCIE20_2_REFCLKP	S99	PCIE30x4_PERSTn_M1_L	S151	HDMITX0_SDA_M0
S48	PCIE20_2_REFCLKN	S100	USB_HOST_PWREN_H	S152	HDMITX0_SCL_M0
S49	PCIE20_2_TXP/SATA30_2_TXP	S101	PCIE30x4_WAKEN_M1_L/GPIO4_B5	S153	USB_HUB_RESET
S50	PCIE20_2_TXN/SATA30_2_TXN	S102	I2C5_SCL_M0_TP	S154	UART9_RX_M0_BT
S51	PCIE20_2_RXP/SATA30_2_RXP	S103	I2C5_SDA_M0_TP	S155	SARADC_IN7
S52	PCIE20_2_RXN/SATA30_2_RXN	S104	SARADC_IN6	S156	NA
				S157	NA
				S158	NA

7.PRECAUTIONS FOR USE

1. Relative humidity: 10% ~ 90% .
2. Storage temperature: -20 ~ 85℃
3. Operation temperature: 0 ~ 60℃
4. Do not squeeze、 distort or disassemble the board.
5. Keep the board away from static electricity .
6. Keep the board away from water and other liquid.
7. Clean the board with soft and clean dry cloth when it’s dirty.
8. Don’t use long connect wires which may affect performance and image quality.