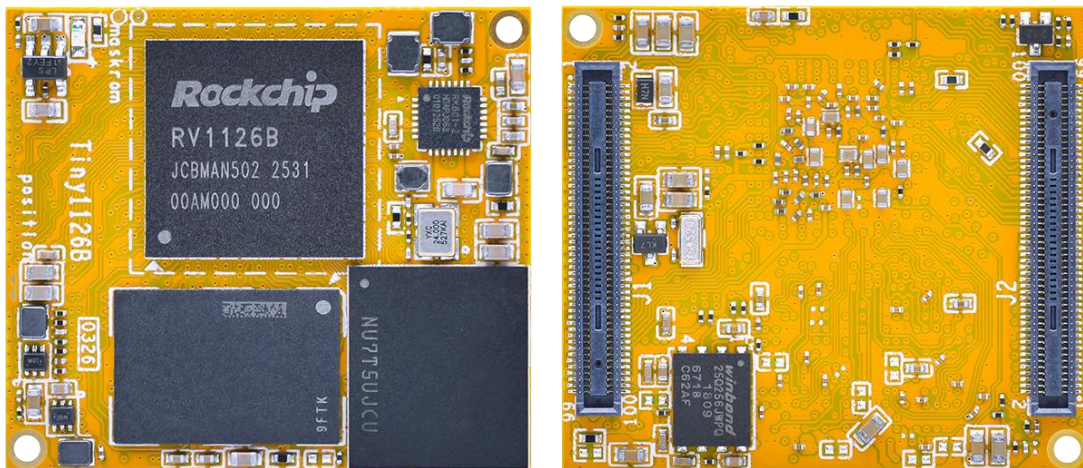


Tiny1126B Reference User Manual

V2.202605



Boardcon Embedded Design

www.armdesigner.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 lightning 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 | Tiny1126B Introduction..... | 3 |
| 1.1 | Summary | 3 |
| 1.2 | Features..... | 3 |
| 1.3 | Tiny1126B Block Diagram | 5 |
| 1.4 | Tiny1126B specifications | 6 |
| 1.5 | Tiny1126B PCB Dimension | 7 |
| 1.6 | Tiny1126B Pin Definition | 7 |
| 1.7 | Development Kit (SBC1126B)..... | 17 |
| 2 | Hardware Design Guide..... | 18 |
| 2.1 | Peripheral Circuit Reference | 18 |
| 2.2 | PCB Footprint | 19 |
| 2.3 | B2B connector | 20 |
| 3 | Product Electrical Characteristics | 21 |
| 3.1 | Dissipation and Temperature | 21 |
| 3.2 | Reliability of Test..... | 21 |



1 Tiny1126B Introduction

1.1 Summary

The Tiny1126B system-on-module is equipped with Rockchip's RV1126B, which features a built-in quad-core Cortex-A53, 3.0 TOPS NPU, and RISC-V MCU. It is designed specifically for IPC/CVR devices, AI camera devices, intelligent interactive devices, and mini robots. The high-performance and low-power solution can help customers introduce new technologies more quickly and enhance overall solution efficiency.

1.2 Features

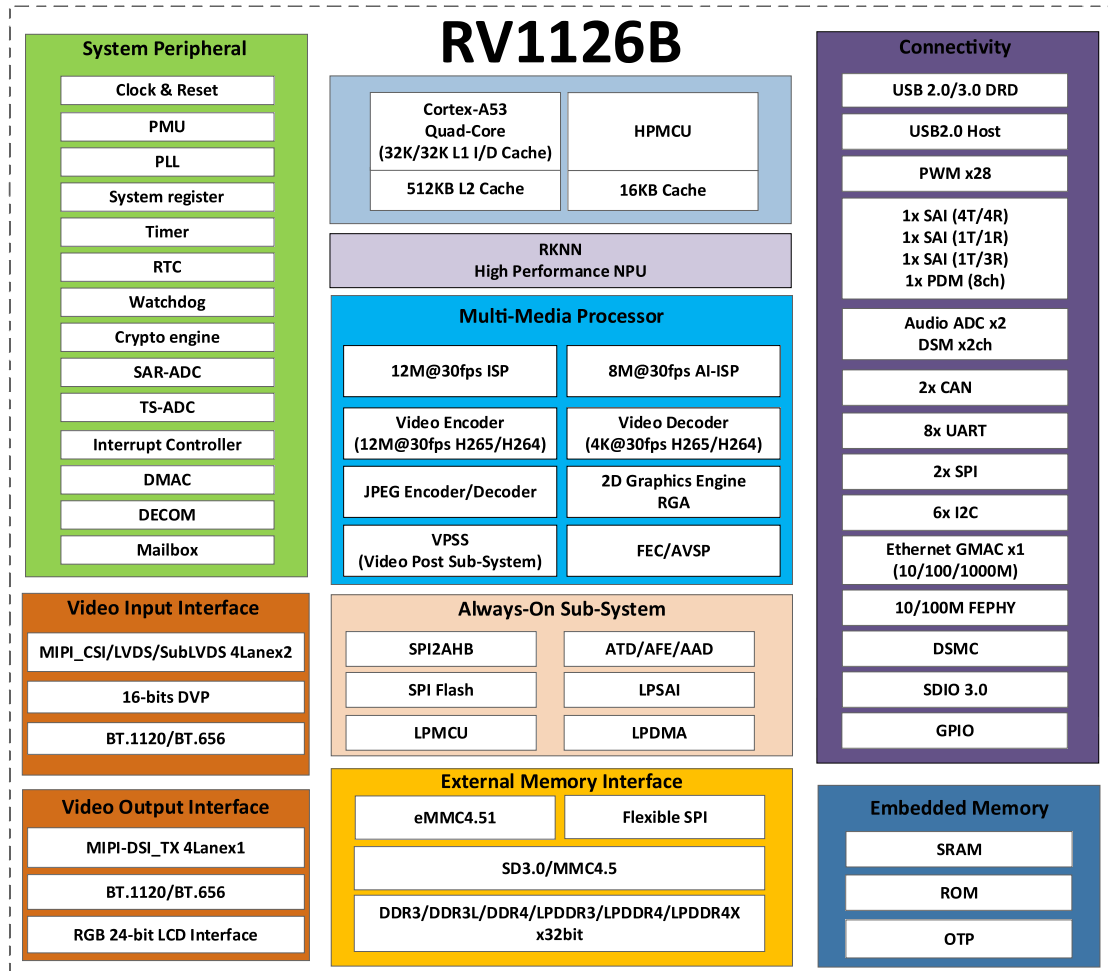
- **Microprocessor**
 - Quad-core Cortex-A53 up to 1.6G
 - 32KB I-cache and 32KB D-cache for each core, 512KB L3 cache
 - 3.0 TOPS Neural Process Unit
 - RISC-V MCU to support 250mS fast boot
 - Max 12M ISP
- **Memory Organization**
 - LPDDR4/4x RAM up to 4GB
 - EMMC4.51 up to 256GB
 - SPI Flash up to 8MB
- **Video Decoder/Encoder**
 - Supports video decode/encode up to 4K@30fps
 - Supports real-time decoding of H.264/265
 - Supports real-time UHD H.264/265 video encoding
 - Picture size up to 8192x8192
- **Display Subsystem**
 - **Video Output**
 - Supports 4 lanes MIPI DSI up to 2560x1440@60fps
 - Supports 24bit RGB parallel output
 - **Image in**
 - Supports up to 16bit DVP interface
 - Supports 2ch 4lanes or 4ch 2lanes MIPI CSI interface
- **Audio**
 - Three I2S/PCM interface
 - Support Mic array Up to 8ch PDM/TDM interface
 - Support PWM audio output
 - Two analog MIC input
- **USB**
 - Two 2.0 USB interfaces
 - One USB 3.0 interfaces



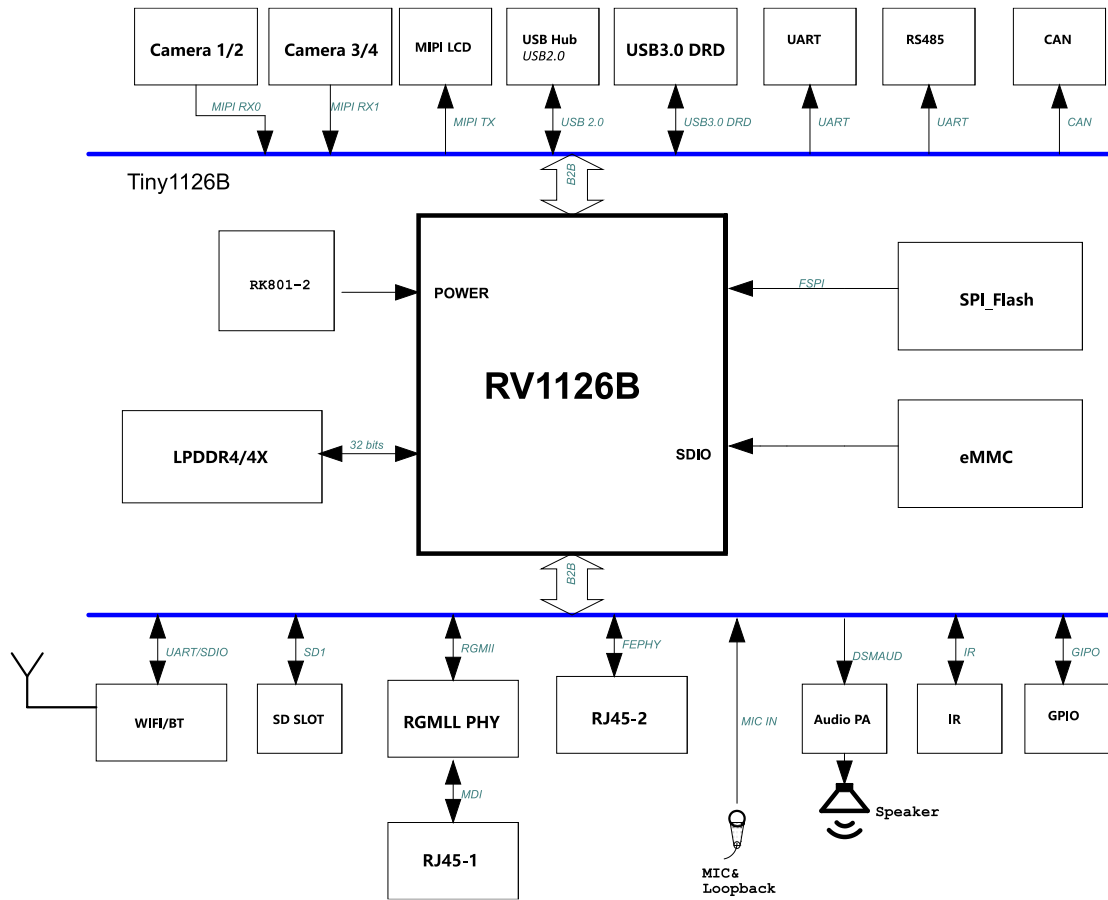
- One USB 2.0 OTG, and one 2.0 USB hosts
- **Ethernet**
 - Support 10/100M MDI interface
 - Support 10/100/1000M RGMII interface
- **I2C**
 - Up to five I2Cs
 - Support standard mode and fast mode (up to 400kbit/s)
- **SDIO**
 - Support 2CH SDIO 3.0 protocol
- **CAN**
 - Support CAN FD protocol
 - Up to 2-CH CAN
- **SPI**
 - Up to two SPI controllers,
 - Full-duplex synchronous serial interface
- **UART**
 - Support up to 8 UARTs
 - UART0 with 2 wires for debug tools
 - Embedded two 64byte FIFO
 - Support RS485 auto flow control mode by UART1-7
- **DSMC**
 - Achieve low cost FPGA connection
 - Support 8-16 wire serial transfer mode
 - Support up to select 4 chips, and signals configured to be valid simultaneously in transaction
- **ADC**
 - Up to 23-CH ADC channels
 - 12-bit resolution
 - Voltage input range between 0V to 1.8V
 - Support up to 2MS/s sampling rate
- **PWM**
 - Total 28-ch with 4 PWMs interface
 - Only PWM2 can generates waveform through lookup table
 - Support continuous mode and one-shot output mode
 - Support input caption mode
- **Power unit**
 - RK801 on board
 - 4.5~14.2V main power input and RTC power input
 - VCC3V3_SYS output for IO

1.3 Tiny1126B Block Diagram

1.3.1 RV1126B Block Diagram



1.3.2 Development board (SBC1126B) Block Diagram



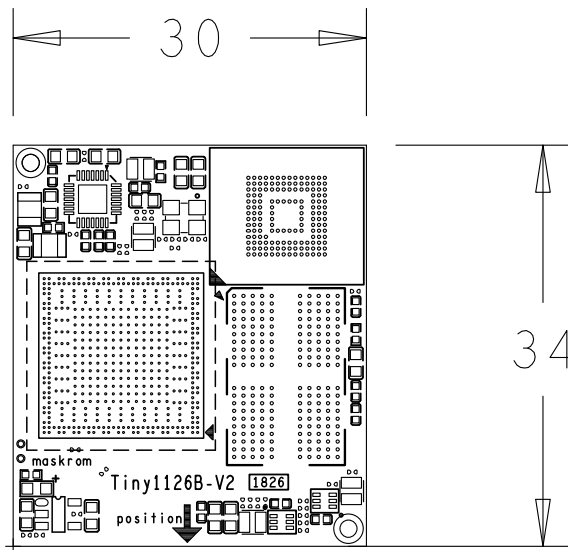
1.4 Tiny1126B specifications

| Feature | Specifications |
|------------|-----------------------------------|
| CPU | Quad-core Cortex-A53 |
| DDR | 2GB LPDDR4/4x (up to 4GB) |
| eMMC FLASH | 8GB (up to 256GB) |
| Power | DC 5V |
| MIPI DSI | 4-Lanes |
| I2S | 3-CH |
| MIPI CSI | 2-CH 4-Lanes or 4-CH 2-Lanes |
| RGB LCD | 24bit |
| DSMC | 16bit |
| Camera | 1-CH(DVP) and 4-CH(CSI) |
| USB | 2-CH (USB HOST2.0 and USB3.0 DRD) |
| Ethernet | 1000M GMAC or 100M MDI |
| SDMMC | 2-CH |



| | |
|-----------------|-------------------|
| I2C | 5-CH |
| CAN | 2-CH |
| SPI | 2-CH |
| UART | 7-CH, 1-CH(DEBUG) |
| PWM | 28-CH |
| ADC IN | 23-CH |
| Board Dimension | 30 x 34mm |

1.5 Tiny1126B PCB Dimension



1.6 Tiny1126B Pin Definition

| J1 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|------------|--|----------------------------|------------|
| 1 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 2 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 3 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 4 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 5 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 6 | VCC5V0_SYS | 5V Main Power input | | 5V |
| 7 | GND | Ground | | 0V |
| 8 | GND | Ground | | 0V |
| 9 | GPIO6_A2_D | SARADC1_IN2/VI_CIF_D2_M0/ ETH_PPSCCLK_M0/CAN1_RXD _M1/SAI0_SDO0_M1/UART5_T X_M2/I2C4_SCL_M1 | GPIO6_A2_d/PWM1 _CH2_M2 | 3.3V |



| J1 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|--------------------|---|------------------------|------------|
| 10 | SDMMC0_CLK | UART3_RTSN_M0/UART4_RX_M3 | GPIO2_A4_d | 3.3V/1.8V |
| 11 | GPIO6_A1_D | SARADC1_IN1/VI_CIF_D1_M0/ETH_PTP_REFCLK_M0/CAN0_TXD_M1/SAI0_LRCK_M1/UART4_RX_M2/I2C3_SDA_M3 | GPIO6_A1_d/PWM1_CH1_M2 | 3.3V |
| 12 | SDMMC0_D0 | UART0_RX_M0/I2C0_SDA_M1 | GPIO2_A0_d | 3.3V/1.8V |
| 13 | GPIO6_B6_D | SPI1_CSN1_M1/SAI2_MCLK_M0/SDMMC1_DET_N/UART1_TX_M1/I2C5_SCL_M1 | GPIO6_B6_d | 3.3V |
| 14 | SDMMC0_D1 | UART0_TX_M0/I2C0_SCL_M1 | GPIO2_A1_d | 3.3V/1.8V |
| 15 | GPIO7_A1_D | I2C4_SCL_M3/PDM_CLK1_M0/PWM2_CH5_M1 | GPIO7_A1_d | 3.3V |
| 16 | SDMMC0_CMD | UART3_CTSN_M0/UART4_TX_M3 | GPIO2_A5_d | 3.3V/1.8V |
| 17 | GPIO7_A0_D | SAI0_SCLK_M0/PWM2_CH4_M1 | GPIO7_A0_d | 3.3V |
| 18 | SDMMC0_D2 | UART3_RX_M0/UART4_RTSN_M3/JTAG_TCK_M1/TEST_CLK1_OUT | GPIO2_A2_d | 3.3V/1.8V |
| 19 | PMIC_PWRON | Power Key input | (PU 22K) | 5V |
| 20 | SDMMC0_D3 | UART3_TX_M0/UART4_CTSN_M3/JTAG_TMS_M1 | GPIO2_A3_d | 3.3V/1.8V |
| 21 | MIPI_CSI_RX1_D0_N | | | 0.6V |
| 22 | GND | Ground | | 0V |
| 23 | MIPI_CSI_RX1_D0_P | | | 0.6V |
| 24 | nRESET | Reset Key input | (PU 1K) | 3.3V |
| 25 | MIPI_CSI_RX1_D1_N | | | 0.6V |
| 26 | MIC0_N | Microphone 0-CH or negative in | | 0V |
| 27 | MIPI_CSI_RX1_D1_P | | | 0.6V |
| 28 | MIC0_P | Microphone 0-CH or positive in | | 0V |
| 29 | MIPI_CSI_RX1_CLK0N | | | 0.6V |
| 30 | MIC1_N | Microphone 1-CH or negative in | | 0V |
| 31 | MIPI_CSI_RX1_CLK0P | | | 0.6V |
| 32 | MIC1_P | Microphone 1-CH or positive in | | 0V |
| 33 | GND | Ground | | 0V |



| J1 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|------------------------|---|-------------|------------|
| 34 | MIPI_CSI_RX0_CL K1N | | | 0.6V |
| 35 | MIPI_CSI_RX1_D3 N | Or MIPI_CSI_RX1_D1N for CLK1 | | 0.6V |
| 36 | MIPI_CSI_RX0_CL K1P | | | 0.6V |
| 37 | MIPI_CSI_RX1_D3 P | Or MIPI_CSI_RX1_D1P for CLK1 | | 0.6V |
| 38 | VBAT_RTC | RTC Power input | | 3.3V |
| 39 | MIPI_CSI_RX1_CL K1N | | | 0.6V |
| 40 | I2C3_SDA_CAM_1 V8 | SPI0_MISO_M1/SAI1_LRCK_M 1/I2C3_SDA_M1 | GPIO4_A5_d | 1.8V |
| 41 | MIPI_CSI_RX1_CL K1P | | | 0.6V |
| 42 | I2C3_SCL_CAM_1V 8 | SPI0_MOSI_M1/SAI1_SCLK_M 1/I2C3_SCL_M1 | GPIO4_A4_d | 1.8V |
| 43 | MIPI_CSI_RX1_D2 N | Or MIPI_CSI_RX1_D0N for CLK1 | | 0.6V |
| 44 | MIPI_CSI_RX0_D0 N | | | 0.6V |
| 45 | MIPI_CSI_RX1_D2 P | Or MIPI_CSI_RX1_D0P for CLK1 | | 0.6V |
| 46 | MIPI_CSI_RX0_D0 P | | | 0.6V |
| 47 | UART4_RTSN_M0_ 1V8 | CAM_CLK3_OUT /I2C1_SDA_M2 | GPIO4_A0_u | 1.8V |
| 48 | MIPI_CSI_RX0_D1 N | | | 0.6V |
| 49 | UART4_CTSN_M0_ 1V8 | CAM_CLK2_OUT /I2C1_SCL_M2 | GPIO4_A1_u | 1.8V |
| 50 | MIPI_CSI_RX0_D1 P | | | 0.6V |
| 51 | MIPI_MCLK_OUT1_ 1V8 | UART5_RTSN_M0 | GPIO4_B0_d | 1.8V |
| 52 | MIPI_CSI_RX0_D3 N | Or MIPI_CSI_RX0_D1N for CLK1 | | 0.6V |
| 53 | GND | Ground | | 0V |
| 54 | MIPI_CSI_RX0_D3 P | Or MIPI_CSI_RX0_D1P for CLK1 | | 0.6V |
| 55 | MIPI_MCLK_OUT0_ 1V8 | UART5_CTSN_M0 | GPIO4_B1_d | 1.8V |



| J1 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|------------------------|---|----------------------------------|------------|
| 56 | MIPI_CSI_RX0_D2 N | Or MIPI_CSI_RX0_D0N for CLK1 | | 0.6V |
| 57 | GPIO7_A5_D | SAI0_SDO0_M0/DSM_AUD_LP | GPIO7_A5_d | 3.3V |
| 58 | MIPI_CSI_RX0_D2 P | Or MIPI_CSI_RX0_D0P for CLK1 | | 0.6V |
| 59 | GPIO7_A3_D | SAI0_LRCK_M0/DSM_AUD_LN /PWM2_CH7_M1 | GPIO7_A3_d | 3.3V |
| 60 | MIPI_CSI_RX0_CL K0N | | | 0.6V |
| 61 | GPIO7_A4_D | I2C4_SDA_M3/PDM_CLK0_M0/ UART2_CTSN_M1 | GPIO7_A4_d | 3.3V |
| 62 | MIPI_CSI_RX0_CL K0P | | | 0.6V |
| 63 | GPIO7_A2_D | SAI0_MCLK_M0/PWM2_CH6_ M1 | GPIO7_A2_d | 3.3V |
| 64 | GND | Ground | | 0V |
| 65 | GPIO7_A6_D | SAI0_SDI0_M0/PDM_SDI0_M0 | GPIO7_A6_d | 3.3V |
| 66 | UART4_RX_M0_1V 8 | PWM0_CH4_M1 | GPIO4_A2_d | 1.8V |
| 67 | GPIO7_A7_D | SAI0_SDI3_M0/SAI0_SDO1_M 0/PDM_SDI3_M0/UART2_RTS N_M1 | GPIO7_A7_d | 3.3V |
| 68 | UART4_TX_M0_1V 8 | SPI0_CSN1_M1/SAI1_MCLK_M 1/PWM0_CH5_M1 | GPIO4_A3_d | 1.8V |
| 69 | DSM_AUD_RN | SAI0_SDI2_M0/SAI0_SDO2_M 0/PDM_SDI2_M0/I2C1_SCL_M 3/UART2_RX_M1 | GPIO7_B0_d | 3.3V |
| 70 | I2C4_SDA_CAM_1 V8 | SPI0_CSN0_M1/SAI1_SDI_M1/ PWM0_CH6_M1/UART5_TX_M 0/I2C4_SDA_M2 | GPIO4_A6_d | 1.8V |
| 71 | DSM_AUD_RP | SAI0_SDI1_M0/SAI0_SDO3_M 0/PDM_SDI1_M0/I2C1_SDA_M 3/UART2_TX_M1 | GPIO7_B1_d | 3.3V |
| 72 | I2C4_SCL_CAM_1V 8 | SPI0_CLK_M1/SAI1_SDO_M1/ PWM0_CH7_M1/UART5_RX_M 0/I2C4_SCL_M2 | GPIO4_A7_d | 1.8V |
| 73 | GPIO0_C5_D | SPI2AHB_D2/PWM0_CH1_M0/ UART1_RX_M0/I2C5_SDA_M0 | GPIO0_C5_d | 3.3V |
| 74 | UART0_RX_DBG | UART0_RX_M2/PWM1_CH3_M 0/I2C1_SDA_M0/JTAG_TMS_M 0 | GPIO0_B4_u (For debug) | 3.3V |
| 75 | CLK_32K_OUT | RTC_32K_OUT/CLK_32K | GPIO0_A2_z | 3.3V |



| J1 | Signal | Description or functions | GPIO serial | IO Voltage |
|-----|-------------------|---|---------------------------|------------|
| 76 | UART0_TX_DBG | UART0_TX_M2/PWM1_CH2_M0/I2C1_SCL_M0/JTAG_TCK_M0 | GPIO0_B3_u (For debug) | 3.3V |
| 77 | GND | Ground | | 0V |
| 78 | I2C2_SCL_M0 | PWM0_CH4_M0 | GPIO0_D0_d | 3.3V |
| 79 | USB3_DRD_SSRX_N | | | 0.6V |
| 80 | I2C2_SDA_M0 | PWM0_CH5_M0 | GPIO0_D1_d | 3.3V |
| 81 | USB3_DRD_SSRX_P | | | 0.6V |
| 82 | SPK_CTRL | | GPIO0_A4_d | 3.3V |
| 83 | GND | Ground | | 0V |
| 84 | BT_WAKE | FSPI1_D2_M0/SPI0_CSN1_M0 | GPIO0_A6_u | 3.3V |
| 85 | USB3_DRD_SSTX_N | | | 0.6V |
| 86 | BT_WAKE_HOST | FSPI1_CSN0_M0/SPI0_CSN0_M0 | GPIO0_A7_u | 3.3V |
| 87 | USB3_DRD_SSTXP | | | 0.6V |
| 88 | SDMMC0_DET | PWM1_CH0_M0 | GPIO0_A5_u | 3.3V |
| 89 | GND | Ground | | 0V |
| 90 | WIFI_REG_ON | FSPI1_CLK_M0/SPI0_CLK_M0 | GPIO0_B2_d | 3.3V |
| 91 | USB2_HOST_DP | | | 0.6V |
| 92 | WIFI_WAKE_HOST | FSPI1_D1_M0/SPI0_MISO_M0 | GPIO0_B1_d | 3.3V |
| 93 | USB2_HOST_DM | | | 0.6V |
| 94 | BT_RST | FSPI1_D0_M0/SPI0_MOSI_M0 | GPIO0_B0_d | 3.3V |
| 95 | USB2_DRD_VBUS_DET | | | 3.3V |
| 96 | GND | Ground | | 0V |
| 97 | USB2_DRD_ID | | (PU 200K) | 1.8V |
| 98 | USB2_DRD_DP | | | 0.6V |
| 99 | GPIO0_A3_U | | GPIO0_A3_u | 3.3V |
| 100 | USB2_DRD_DM | | | 0.6V |

| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|--------------------|---|-------------|------------|
| 1 | VO_LCDC_D17 | VI_CIF_D13_M1/DSMC_D6/IR_FPA_SDA5/PWM3_CH1_M1 | GPIO5_C1_d | 3.3V |
| 2 | ETH_CLK_25M_OUT_M0 | SARADC2_IN5/VI_CIF_CLKIN_M0/PWM0_CH1_M2/UART3_CTSN_M2 | GPIO6_C1_d | 3.3V |



| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|--------------|---|-------------|------------|
| 3 | VO_LCDC_D18 | VI_CIF_D14_M1/DSMC_D5/IR_FPA_SDA6/PWM3_CH2_M1 | GPIO5_C2_d | 3.3V |
| 4 | GND | Ground | | 0V |
| 5 | VO_LCDC_D23 | VI_CIF_HSYNC_M1/DSMC_D0/SAI1_SDI_M2/PWM3_CH7_M1 | GPIO5_C7_d | 3.3V |
| 6 | ETH_TXCLK_M0 | SARADC2_IN6/VI_CIF_CLKOUT_M0/FEPHY_LEDLINK_M2/PWM0_CH2_M2/UART3_TX_M2 | GPIO6_C2_d | 3.3V |
| 7 | VO_LCDC_D22 | VI_CIF_CLKIN_M1/DSMC_D1/SAI1_LRCK_M2/PWM3_CH6_M1 | GPIO5_C6_d | 3.3V |
| 8 | ETH_TXCTL_M0 | VI_CIF_D9_M0/SPI1_CSN0_M0/SAI0_SDI1_M1/SAI0_SDO3_M1/UART6_RX_M1 | GPIO6_B1_d | 3.3V |
| 9 | VO_LCDC_D21 | VI_CIF_CLKOUT_M1/DSMC_D2/SAI1_SCLK_M2/PWM3_CH5_M1 | GPIO5_C5_d | 3.3V |
| 10 | ETH_TXD1_M0 | SARADC2_IN0/VI_CIF_D8_M0/SPI1_CSN1_M0/SAI0_SDI2_M1/SAI0_SDO2_M1/UART6_TX_M1 | GPIO6_B0_d | 3.3V |
| 11 | VO_LCDC_D11 | VI_CIF_D7_M1/DSMC_RDYN/PWM2_CH1_M1/UART6_CTSN_M0 | GPIO5_B3_d | 3.3V |
| 12 | ETH_TXD3_M0 | SARADC1_IN6/VI_CIF_D6_M0/PWM2_CH2_M2/UART4_RTSN_M2 | GPIO6_A6_d | 3.3V |
| 13 | VO_LCDC_D00 | VI_CIF_D0_M1/DSMC_CSN1/IR_FPA_SDA0/PWM2_CH4_M0/UART4_RTSN_M1 | GPIO5_A0_d | 3.3V |
| 14 | ETH_TXD0_M0 | SARADC1_IN7/VI_CIF_D7_M0/PWM2_CH3_M2/SAI0_SDI3_M1/SAI0_SDO1_M1/UART4_CTSN_M2 | GPIO6_A7_d | 3.3V |
| 15 | VO_LCDC_D01 | I2C5_SCL_M2/VI_CIF_D1_M1/DSMC_DQS1/SAI2_SDI2_M1/IR_FPA_SDA1/PWM2_CH5_M0/UART4_CTSN_M1 | GPIO5_A1_d | 3.3V |
| 16 | ETH_TXD2_M0 | SARADC1_IN5/VI_CIF_D5_M0/PWM2_CH1_M2/UART5_CTSN_M2/I2C5_SDA_M3 | GPIO6_A5_d | 3.3V |



| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|----------------|---|-------------|------------|
| 17 | VO_LCDC_D02 | VI_CIF_D2_M1/DSMC_D15/SAI2_SDI1_M1/PWM0_CH5_M2/UART4_TX_M1 | GPIO5_A2_d | 3.3V |
| 18 | ETH_MDIO_M0 | SARADC2_IN3/VI_CIF_D15_M0/PDM_CLK1_M1/UART7_CTS_N_M1 | GPIO6_B7_d | 3.3V |
| 19 | VO_LCDC_D03 | SPI0_CSN0_M2/DSMC_D14/SAI2_MCLK_M1/PWM0_CH4_M2/UART4_RX_M1 | GPIO5_A3_d | 3.3V |
| 20 | ETH_MDC_M0 | SARADC2_IN4/VI_CIF_VSYNC_M0/PWM0_CH0_M2/UART3_RTSN_M2/I2C2_SCL_M2 | GPIO6_C0_d | 3.3V |
| 21 | VO_LCDC_D04 | SPI0_MOSI_M2/DSMC_D13/SAI2_SDO_M1/PWM0_CH3_M1/UART5_TX_M1 | GPIO5_A4_d | 3.3V |
| 22 | ETH_MCLK_M0 | VI_CIF_D12_M0/SPI1_CLK_M0/PDM_CLK0_M1/UART7_TX_M1 | GPIO6_B4_d | 3.3V |
| 23 | VO_LCDC_D05 | SPI0_MISO_M2/DSMC_D12/SAI2_SCLK_M1/PWM0_CH2_M1/UART5_RX_M1 | GPIO5_A5_d | 3.3V |
| 24 | GND | Ground | | 0V |
| 25 | CAN0_RXD_M0 | FEPHY_LEDLINK_M1/SPI1_CS_N1_M2/IR_FPA_FSYNC/I2C2_SCL_M1/PWM0_CH7_M2/UART3_TX_M1 | GPIO5_D4_u | 3.3V |
| 26 | ETH_PPSTRIG_M0 | SARADC1_IN0/VI_CIF_D0_M0/CAN0_RXD_M1/SAI0_SCLK_M1/PWM1_CH0_M2/UART4_TX_M2/I2C3_SCL_M3 | GPIO6_A0_d | 3.3V |
| 27 | CAN0_TXD_M0 | FEPHY_LEDSPD_M1/IR_FPA_MCLK/I2C2_SDA_M1/PWM1_CH3_M1/UART3_RX_M1 | GPIO5_D5_u | 3.3V |
| 28 | ETH_RXD3_M0 | SARADC1_IN4/VI_CIF_D4_M0/SAI0_MCLK_M1/PWM2_CH0_M2/UART5_RTSN_M2/I2C5_SCL_M3 | GPIO6_A4_d | 3.3V |
| 29 | VO_LCDC_D19 | VI_CIF_D15_M1/DSMC_D4/SAI1_MCLK_M2/PWM3_CH3_M1 | GPIO5_C3_d | 3.3V |
| 30 | ETH_RXD2_M0 | SARADC1_IN3/VI_CIF_D3_M0/CAN1_TXD_M1/SAI0_SDI0_M1/PWM1_CH3_M2/UART5_RX_M2/I2C4_SDA_M1 | GPIO6_A3_d | 3.3V |



| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|-----------------|---|-------------|------------|
| 31 | VO_LCDC_D20 | VI_CIF_VSYNC_M1/DSMC_D3/SAI1_SDO_M2/PWM3_CH4_M1 | GPIO5_C4_d | 3.3V |
| 32 | ETH_RXD0_M0 | VI_CIF_D10_M0/SPI1_MOSI_M0/PDM_SDI2_M1/UART6_RTSN_M1 | GPIO6_B2_d | 3.3V |
| 33 | VO_LCDC_DEN | SPI1_CSN0_M2/ETH_PTP_REFCLK_M1/DSMC_CSN3/I2C3_SCL_M2/PWM0_CH6_M2 | GPIO5_D0_d | 3.3V |
| 34 | ETH_RXD1_M0 | VI_CIF_D11_M0/SPI1_MISO_M0/PDM_SDI3_M1/UART6_CTSN_M1 | GPIO6_B3_d | 3.3V |
| 35 | VO_LCDC_HSYNC | SPI1_CLK_M2/ETH_PPSTRIG_M1/DSMC_CSN2/I2C3_SDA_M2/PWM1_CH2_M1 | GPIO5_D1_d | 3.3V |
| 36 | ETH_RXCTL_M0 | SARADC2_IN1/VI_CIF_D13_M0/PDM_SDI0_M1/UART7_RX_M1 | GPIO6_B5_d | 3.3V |
| 37 | VO_LCDC_VSYNC | SPI1_MOSI_M2/DSMC_INT3/PWM1_CH1_M1/UART3_RTSM1 | GPIO5_D2_d | 3.3V |
| 38 | ETH_RXCLK_M0 | SARADC2_IN7/VI_CIF_HSYNC_M0/FEPHY_LEDSPD_M2/PWM0_CH3_M2/UART3_RX_M2/I2C2_SDA_M2 | GPIO6_C3_d | 3.3V |
| 39 | VO_LCDC_CLK | SPI1_MISO_M2/DSMC_INT2/PWM1_CH0_M1/UART3_CTSN_M1 | GPIO5_D3_d | 3.3V |
| 40 | GND | Ground | | 0V |
| 41 | GND | Ground | | 0V |
| 42 | GPIO3_B6_D_1V8 | SPI1_CSN1_M1/SAI2_MCLK_M0/SDMMC1_DET/UART1_TX_M1/I2C5_SCL_M1 | GPIO3_B6_d | 1.8V |
| 43 | FEPHY_RXN | | | 0.6V |
| 44 | GPIO3_B7_D_1V8 | SAI2_SDI1_M0/UART1_RX_M1/I2C5_SDA_M1 | GPIO3_B7_d | 1.8V |
| 45 | FEPHY_RXP | | | 0.6V |
| 46 | UART2_TX_BT_1V8 | SAI2_SDI2_M0/UART2_TX_M0 | GPIO3_B1_d | 1.8V |
| 47 | FEPHY_TXN | | | 0.6V |
| 48 | UART2_RX_BT_1V8 | UART2_RX_M0 | GPIO3_B0_d | 1.8V |
| 49 | FEPHY_TXP | | | 0.6V |

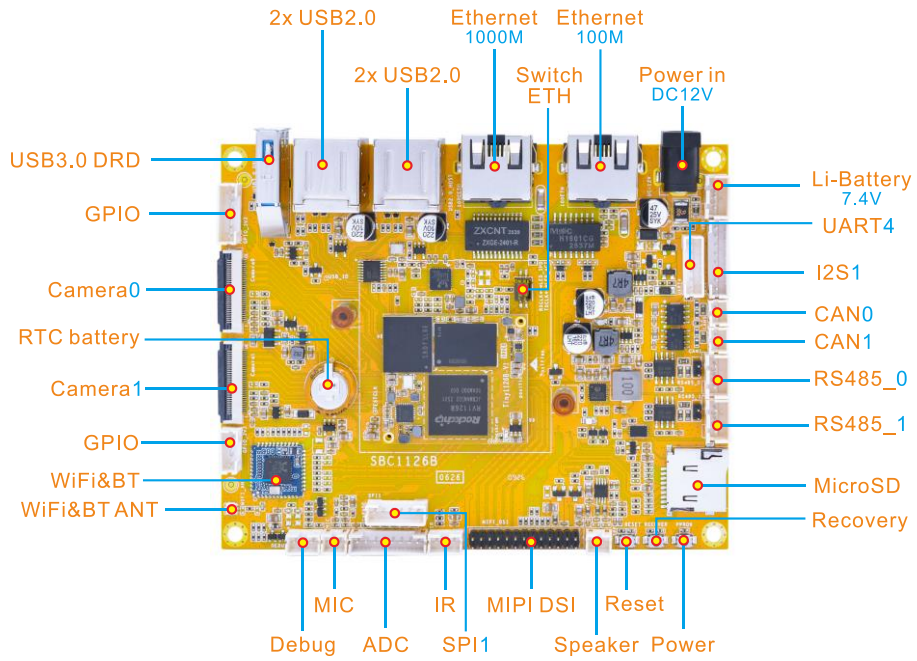


| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|----|-------------------|---|-------------|------------|
| 50 | UART2_RTSN_BT_1V8 | UART2_RTSN_M0 | GPIO3_A6_d | 1.8V |
| 51 | GND | Ground | | 0V |
| 52 | UART2_CTSN_BT_1V8 | UART2_CTSN_M0 | GPIO3_A7_d | 1.8V |
| 53 | MIPI_DSI_D0N | | | 0.6V |
| 54 | GND | Ground | | 0V |
| 55 | MIPI_DSI_D0P | | | 0.6V |
| 56 | PCM_RX_1V8 | SPI1_MISO_M1/SAI2_SDI0_M0/PWM2_CH1_M0/PRELIGHT_T RIG_OUT | GPIO3_B3_d | 1.8V |
| 57 | MIPI_DSI_D1N | | | 0.6V |
| 58 | PCM_CLK_1V8 | SPI1_CLK_M1/SAI2_SCLK_M0/ PWM2_CH2_M0/UART1_RTSN _M1/I2C4_SCL_M0/FEPHY_LE DLINK_M0 | GPIO3_B4_d | 1.8V |
| 59 | MIPI_DSI_D1P | | | 0.6V |
| 60 | PCM_TX_1V8 | SPI1_MOSI_M1/SAI2_SDO_M0 /PWM2_CH0_M0/FLASH_TRIG _OUT | GPIO3_B2_d | 1.8V |
| 61 | GND | Ground | | 0V |
| 62 | PCM_SYNC_1V8 | SPI1_CSN0_M1/SAI2_LRCK_M 0/PWM2_CH3_M0/UART1_CTS N_M1/I2C4_SDA_M0/FEPHY_L EDSPD_M0 | GPIO3_B5_d | 1.8V |
| 63 | MIPI_DSI_CLKN | | | 0.6V |
| 64 | SDIO_D2 | | GPIO3_A4_d | 1.8V |
| 65 | MIPI_DSI_CLKP | | | 0.6V |
| 66 | SDIO_D3 | | GPIO3_A5_d | 1.8V |
| 67 | MIPI_DSI_D2N | | | 0.6V |
| 68 | SDIO_CMD | | GPIO3_A1_d | 1.8V |
| 69 | MIPI_DSI_D2P | | | 0.6V |
| 70 | GND | Ground | | 0V |
| 71 | MIPI_DSI_D3N | | | 0.6V |
| 72 | SDIO_CLK | | GPIO3_A0_d | 1.8V |
| 73 | MIPI_DSI_D3P | | | 0.6V |
| 74 | SDIO_D0 | I2C1_SCL_M1 | GPIO3_A2_d | 1.8V |
| 75 | GND | Ground | | 0V |
| 76 | SDIO_D1 | I2C1_SDA_M1 | GPIO3_A3_d | 1.8V |
| 77 | VO_LCDC_D13 | ETH_MDIO_M1/VI_CIF_D9_M1 /DSMC_DQS0/UART7_RX_M0 | GPIO5_B5_d | 3.3V |
| 78 | GND | Ground | | 0V |



| J2 | Signal | Description or functions | GPIO serial | IO Voltage |
|-----|-----------------|---|-------------|------------|
| 79 | VO_LCDC_D10 | VI_CIF_D6_M1/DSMC_RESET N/DSMC_INT1/PWM2_CH0_M1 /UART6_RTSN_M0 | GPIO5_B2_d | 3.3V |
| 80 | SARADC0_IN5 | | | 1.8V |
| 81 | VO_LCDC_D12 | VI_CIF_D8_M1/DSMC_CSN0/U ART7_TX_M0 | GPIO5_B4_d | 3.3V |
| 82 | SARADC0_IN6 | | | 1.8V |
| 83 | VO_LCDC_D09 | VI_CIF_D5_M1/DSMC_D8/IR_F PA_SDA3/UART6_RX_M0 | GPIO5_B1_d | 3.3V |
| 84 | SARADC0_IN4 | | | 1.8V |
| 85 | VO_LCDC_D06 | SPI0_CLK_M2/DSMC_D11/SAI 2_SDI0_M1/PWM0_CH1_M1/U ART5_RTSN_M1 | GPIO5_A6_d | 3.3V |
| 86 | SARADC0_IN2 | | | 1.8V |
| 87 | VO_LCDC_D07 | SPI0_CSN1_M2/VI_CIF_D3_M1 /DSMC_D10/SAI2_LRCK_M1/I2 C5_SDA_M2/PWM0_CH0_M1/ UART5_CTSN_M1 | GPIO5_A7_d | 3.3V |
| 88 | SARADC0_IN3 | | | 1.8V |
| 89 | VO_LCDC_D08 | VI_CIF_D4_M1/DSMC_D9/IR_F PA_SDA2/UART6_TX_M0 | GPIO5_B0_d | 3.3V |
| 90 | SARADC0_IN1 | | | 1.8V |
| 91 | VO_LCDC_D15 | VI_CIF_D11_M1/DSMC_CLKP/ PWM2_CH3_M1/UART7_CTSN _M0 | GPIO5_B7_d | 3.3V |
| 92 | SARADC0_IN0_KEY | Recover Key input | (PU 10K) | 1.8V |
| 93 | VO_LCDC_D14 | VI_CIF_D10_M1/DSMC_CLKN/ DSMC_INT0/PWM2_CH2_M1/U ART7_RTSN_M0 | GPIO5_B6_d | 3.3V |
| 94 | GND | Ground | | 0V |
| 95 | VO_LCDC_D16 | VI_CIF_D12_M1/DSMC_D7/IR_ FPA_SDA4/PWM3_CH0_M1 | GPIO5_C0_d | 3.3V |
| 96 | CAN1_RXD_M0 | UART0_TX_M1/JTAG_TCK_M2 /PWM2_CH6_M0 | GPIO5_D6_u | 3.3V |
| 97 | GND | Ground | | 0V |
| 98 | CAN1_TXD_M0 | UART0_RX_M1/JTAG_TMS_M2 /PWM2_CH7_M0 | GPIO5_D7_u | 3.3V |
| 99 | SDMMC0_PWREN | SPI2AHB_D0/PWM0_CH3_M0/ UART1_CTSN_M0 | GPIO0_C7_d | 3.3V |
| 100 | VCC3V3_SYS | System IO Power output | Max: 400mA | 3.3V |

1.7 Development Kit (SBC1126B)

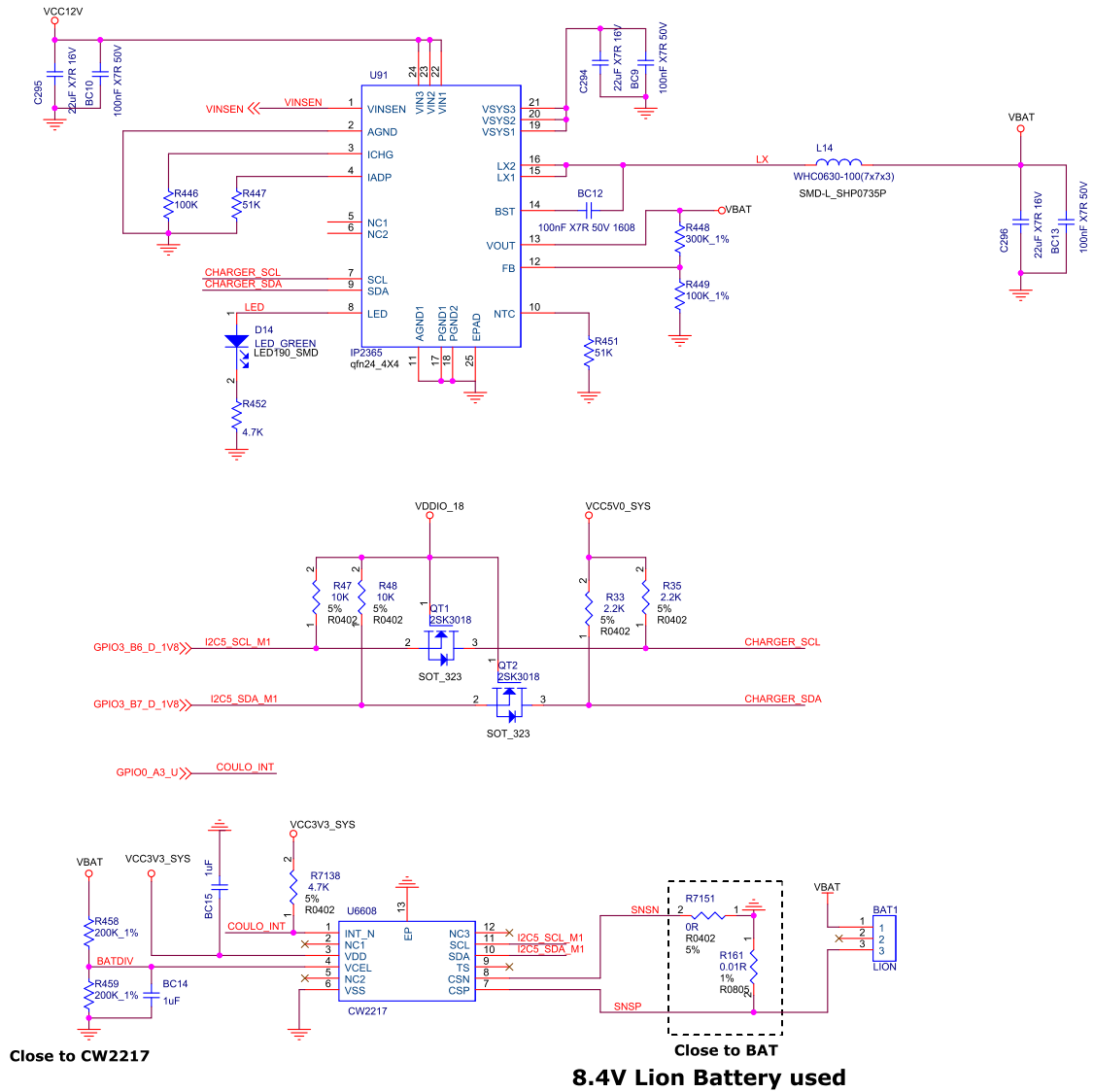




2 Hardware Design Guide

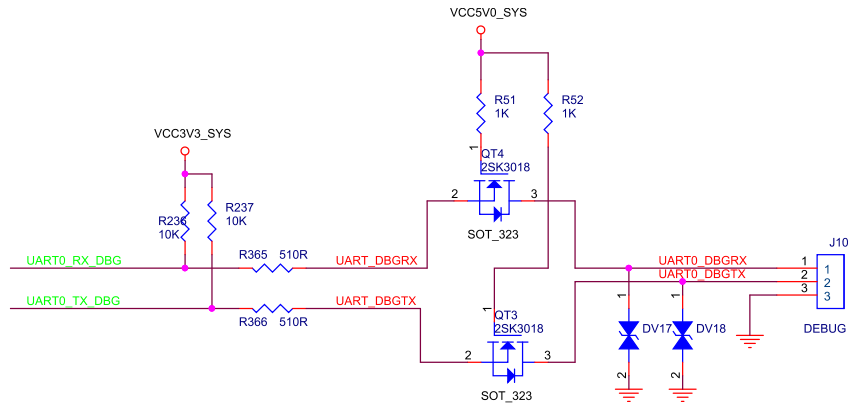
2.1 Peripheral Circuit Reference

2.1.1 Battery Charge Circuit

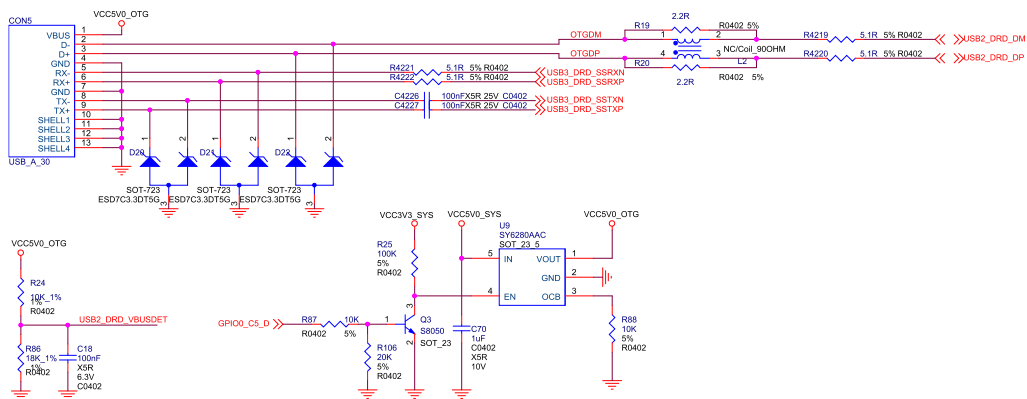




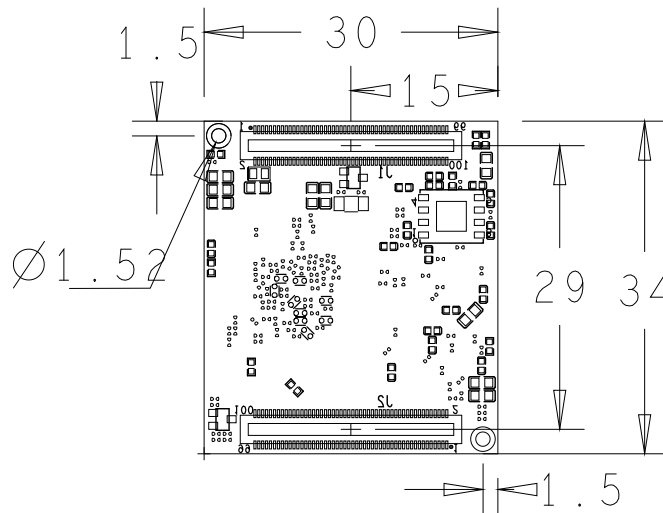
2.1.2 Debug Circuit



2.1.3 USB OTG Interface Circuit



2.2 PCB Footprint



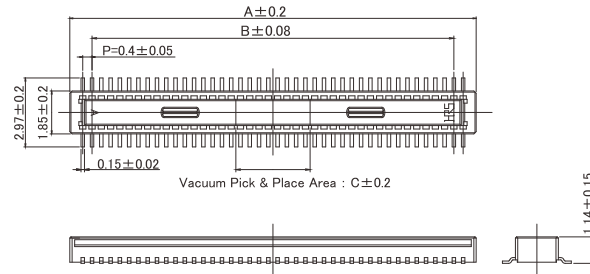
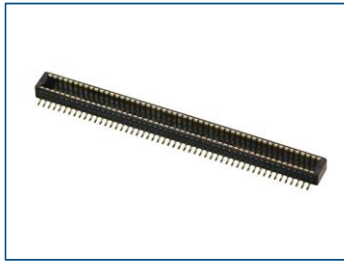
(top view)



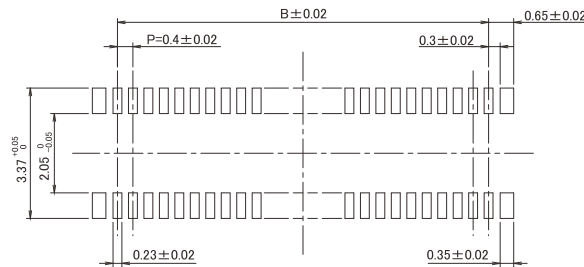
2.3 B2B connector

Header for carrier board: **DF40C-100DP-0.4V**

Plug



Recommended PCB Pattern



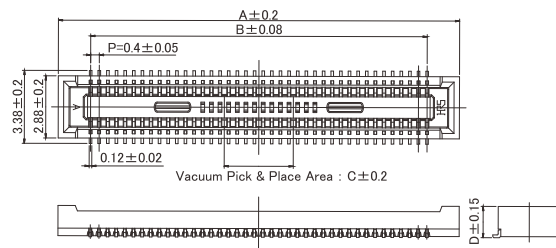
Unit : mm

| Part No. | HRS No. | No. of Pos. | A | B | C | Purchase Unit (##):(51) | Purchase Unit (##):(58) |
|----------------------|------------------|-------------|-------|------|-----|-------------------------|-------------------------|
| DF40C-100DP-0.4V(##) | CL0684-4032-1-## | 100 | 21.52 | 19.6 | 3.2 | ○ | ○ |

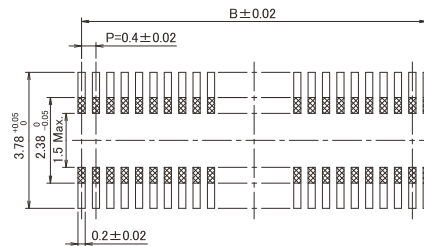
Receptacle for CPU board: **DF40C-100DS-0.4V**

Receptacle

Stacking Height 1.5mm



Recommended PCB Pattern



DF40C (No Retention Tab)

Unit : mm

| Part No. | HRS No. | No. of Pos. | A | B | C | D | Purchase Unit (##):(51) | Purchase Unit (##):(58) |
|----------------------|------------------|-------------|------|------|-----|------|-------------------------|-------------------------|
| DF40C-100DS-0.4V(##) | CL0684-4033-4-## | 100 | 22.6 | 19.6 | 3.2 | 1.45 | ○ | ○ |



3 Product Electrical Characteristics

3.1 Dissipation and Temperature

| Symbol | Parameter | Min | Typ | Max | Unit |
|----------------------|---------------------------|-----|-----|------|------|
| VCC5V_SYS | System IO Voltage | 4.5 | 5 | 14.2 | V |
| I _{sys_in} | VCC5V_SYS input Current | | 620 | | mA |
| VCC_RTC | RTC Voltage | 1.8 | 3 | 3.6 | V |
| I _{rtc} | RTC input Current | | 1.2 | 3 | uA |
| VCC3V3_SYS | GPIO Voltage output | | 3.3 | | V |
| I _{3v3_SYS} | VCC3V3_SYS output Current | | 400 | | mA |
| T _a | Operating Temperature | -20 | | 70 | °C |
| T _{stg} | Storage Temperature | -40 | | 85 | °C |

3.2 Reliability of Test

| High Temperature Operating Test | | |
|---------------------------------|----------------------------------|------------|
| Contents | Operating 8h in high temperature | 55°C ± 2°C |
| Result | TBD | |

| Operating Life Test | | |
|---------------------|-------------------|------|
| Contents | Operating in room | 120h |
| Result | TBD | |