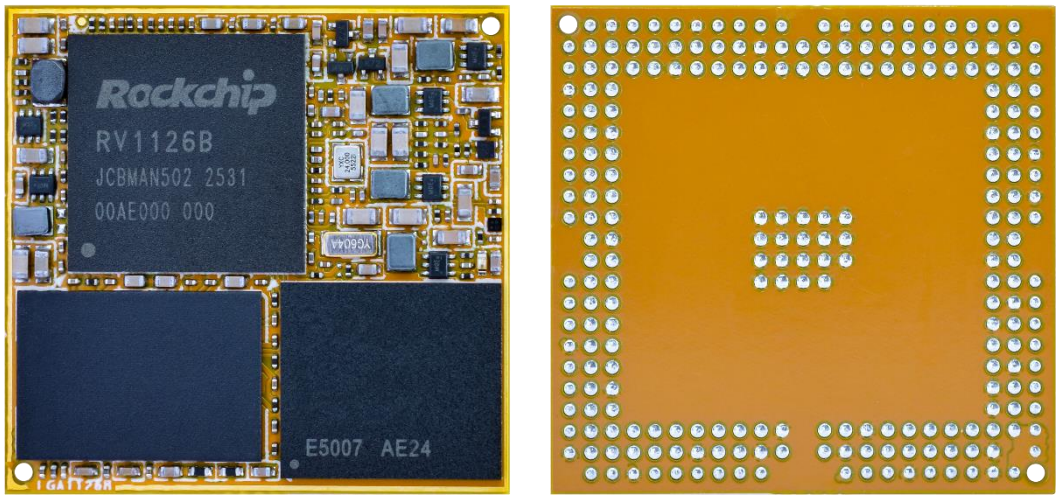
LGA1126B Reference User Manual

V1.202609



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 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 LGA1126B Introduction

1.1 Summary

The LGA1126B 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 256MB (need Carry board supply)
- **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

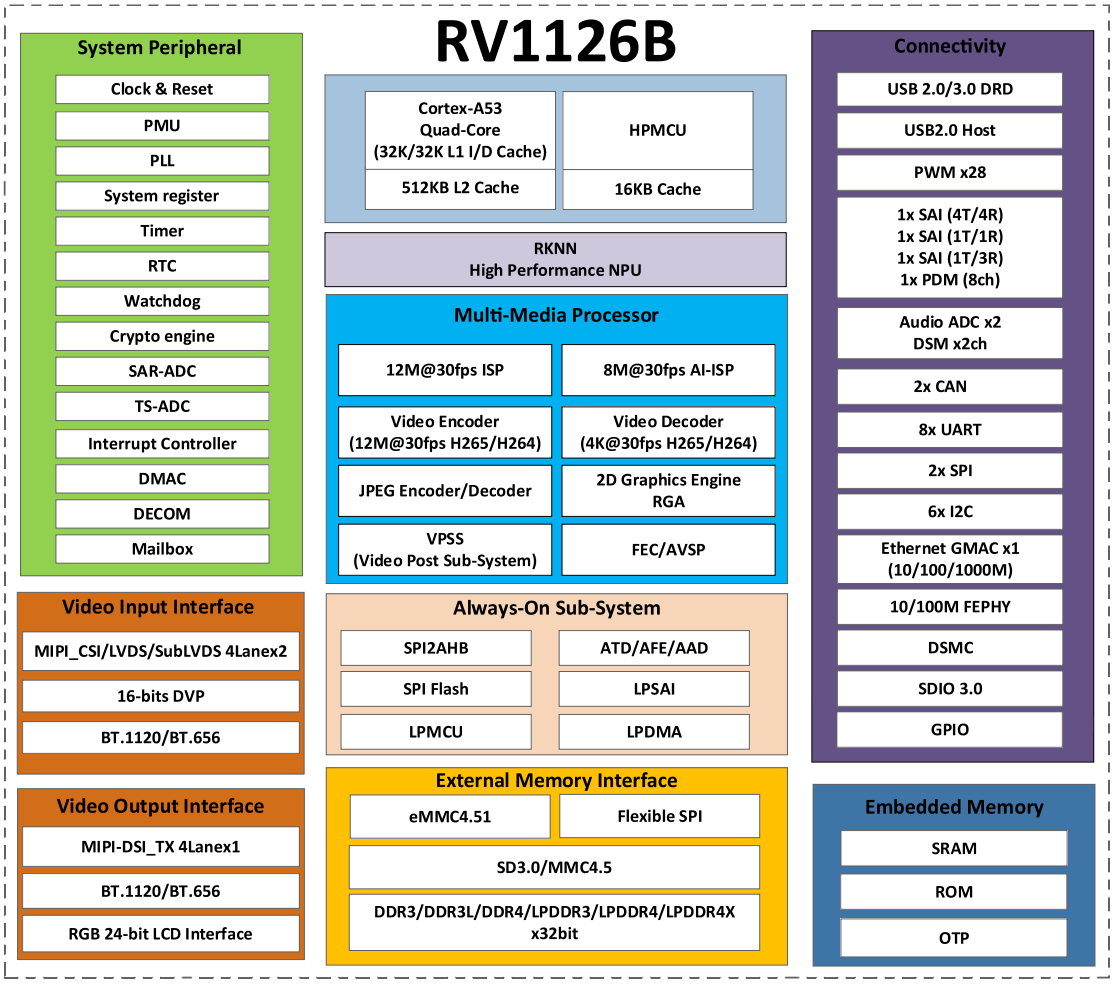
    Supports 2ch 4lanes or 4ch 2lanes MIPI CSI interface
- **Audio**
  - Three I2S/PCM interface
  - Support Mic array Up to 8ch PDM/TDM interface
  - Support PWM audio output
  - Two analog MIC input
- **USB**
  - Two 2.0 USB interfaces
  - One USB 3.0 interfaces

- 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 2.0 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**
  - Discrete Power on board
  - 3.1~5.5V main power input and RTC power input
  - VCC_1V8 output for IO

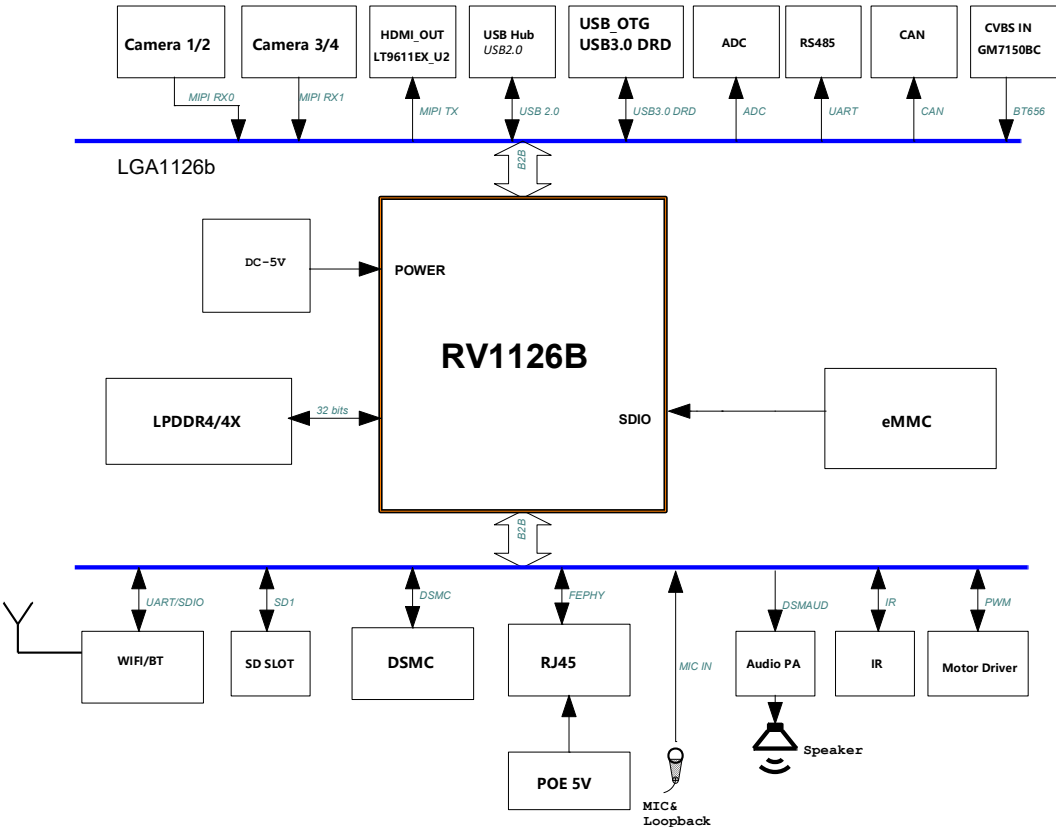
1.3 LGA1126B Block Diagram

1.3.1 RV1126B Block Diagram



1.3.2 Development board (KIT1126B) Block Diagram

Block Diagram

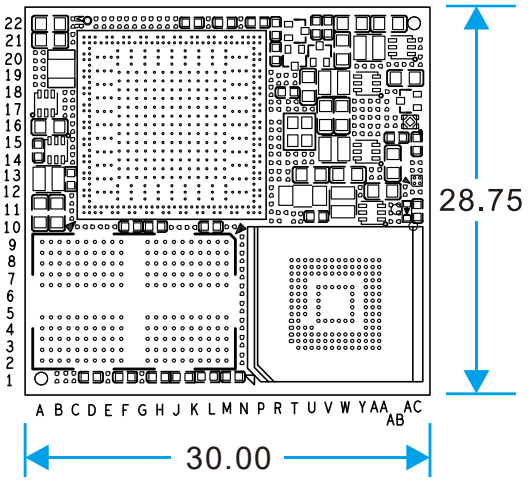


1.4 LGA1126B specifications

Feature	Specifications
CPU	Quad-core Cortex-A53
DDR	2GB LPDDR4/4x (up to 4GB)
eMMC FLASH	8GB (up to 256GB)
FSPI	1-CH
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
SPI2AHB	1-CH
UART	7-CH, 1-CH(DEBUG)
PWM	28-CH
ADC IN	23-CH
Board Dimension	30 x 28.75mm

1.5 LGA1126B PCB Dimension



1.6 LGA1126B Pin Definition

Pin	Signal	Description or functions	GPIO serial	IO Voltage
A2	VCC5V0_SYS	5V Main Power input		5V
A3	VCC5V0_SYS	5V Main Power input		5V
A4	GPIO7_A7_D	SAI0_SDI3_M0/SAI0_SDO1_M0/PDM_SDI3_M0/UART2_RTSN_M1	GPIO7_A7_d	3.3V
A5	GPIO7_A2_D	SAI0_MCLK_M0/PWM2_CH6_M1	GPIO7_A2_d	3.3V
A6	CAN1_RXD_M0	UART0_TX_M1/JTAG_TCK_M2/PWM2_CH6_M0	GPIO5_D6_u	3.3V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
A7	PCM2_SYNC	SPI1_CSN0_M1/SAI2_LRCK_M0/PWM2_CH3_M0/UART1_CTSN_M1/I2C4_SDA_M0/FEPHY_LEDSPD_M0	GPIO3_B5_d	3.3V
A8	PCM2_TX	SPI1_MOSI_M1/SAI2_SDO_M0/PWM2_CH0_M0/FLASH_TRIG_OUT	GPIO3_B2_d	3.3V
A9	SARADC0_IN0_KEY	Recover mode Key input		1.8V
A10	SARADC0_IN7_BOOT	Mask-rom mode Key input		1.8V
A13	UART2_RX_M0		GPIO3_B0_d	3.3V
A14	GND	Ground		0V
A15	UART2_CTSN_M0		GPIO3_A7_d	3.3V
A16	GND	Ground		0V
A17	SDIO_D1	I2C1_SDA_M1	GPIO3_A3_d	3.3V
A18	FEPHY_RXP			0.6V
A19	MIPI_DSI_D0P			0.6V
A20	MIPI_DSI_D0N			0.6V
A21	MIPI_DSI_CLKP			0.6V
B1	VCC5V0_SYS	5V Main Power input		5V
B3	VCC5V0_SYS	5V Main Power input		5V
B4	I2C0_SCL_M0	SPI2AHB_CSn	GPIO0_C2_u	3.3V
B5	GPIO7_A6_D	SAI0_SDI0_M0/PDM_SDI0_M0	GPIO7_A6_d	3.3V
B6	GND	Ground		0V
B7	CAN1_TXD_M0	UART0_RX_M1/JTAG_TMS_M2/PWM2_CH7_M0	GPIO5_D7_u	3.3V
B8	PCM2_RX	SPI1_MISO_M1/SAI2_SDI0_M0/PWM2_CH1_M0/PRELIGHT_TRIG_OUT	GPIO3_B3_d	3.3V
B9	GND	Ground		0V
B10	SARADC0_IN2			1.8V
B11	SARADC0_IN3			1.8V
B12	SARADC0_IN4			1.8V
B13	UART2_TX_M0	SAI2_SDI2_M0	GPIO3_B1_d	3.3V
B14	UART2_RTSN_M0		GPIO3_A6_d	3.3V
B15	SDIO_D2	SDMMC1_D2	GPIO3_A4_d	3.3V
B16	SDIO_D3	SDMMC1_D3	GPIO3_A5_d	3.3V
B17	SDIO_D0	SDMMC1_D0/I2C1_SCL_M1	GPIO3_A2_d	3.3V
B18	FEPHY_RXN			0.6V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
B19	FEPHY_TXP			0.6V
B20	MIPI_DSI_D1P			0.6V
B21	MIPI_DSI_CLKN			0.6V
B22	MIPI_DSI_D2P			0.6V
C1	GND	Ground		0V
C2	GND	Ground		0V
C3	I2C0_SDA_M0	SPI2AHB_CLK	GPIO0_C3_u	3.3V
C4	GND	Ground		0V
C5	GND	Ground		0V
C6	CAN0_RXD_M0	FEPHY_LEDLINK_M1/SPI1_CSN1_M2/IR_FPA_FSYNC/I2C2_SCL_M1/PWM0_CH7_M2/UART3_TX_M1	GPIO5_D4_u	3.3V
C7	CAN0_TXD_M0	FEPHY_LEDSPD_M1/IR_FPA_MCLK/I2C2_SDA_M1/PWM1_CH3_M1/UART3_RX_M1	GPIO5_D5_u	3.3V
C8	GND	Ground		0V
C9	PCM2_CLK	SPI1_CLK_M1/SAI2_SCLK_M0/PWM2_CH2_M0/UART1_RTSN_M1/I2C4_SCL_M0/FEPHY_LEDLINK_M0	GPIO3_B4_d	3.3V
C10	SARADC0_IN1			1.8V
C11	GND	Ground		0V
C12	SARADC0_IN5			1.8V
C13	SARADC0_IN6			1.8V
C14	GPIO3_B7_D	SAI2_SDI1_M0/UART1_RX_M1/I2C5_SDA_M1	GPIO3_B7_d	3.3V
C15	GPIO3_B6_D	SPI1_CSN1_M1/SAI2_MCLK_M0/SDMMC1_DETN/UART1_TX_M1/I2C5_SCL_M1	GPIO3_B6_d	3.3V
C16	SDIO_CMD	SDMMC1_CMD	GPIO3_A1_d	3.3V
C17	GND	Ground		0V
C18	SDIO_CLK	SDMMC1_CLK	GPIO3_A0_d	3.3V
C19	FEPHY_TXN			0.6V
C20	MIPI_DSI_D1N			0.6V
C21	GND	Ground		0V
C22	MIPI_DSI_D2N			0.6V
D1	I2C2_SCL_M0	PWM0_CH4_M0	GPIO0_D0_d	3.3V
D2	UART1_RTS_M0	SPI2AHB_D1/PWM0_CH2_M0	GPIO0_C6_d	3.3V
D3	UART1_RX_M0	SPI2AHB_D2/I2C5_SDA_M0/PWM0_CH1_M0	GPIO0_C5_d	3.3V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
D20	VO_LCDC_HSYNC	SPI1_CLK_M2/ETH_PPSTRIG_M1/DSMC_CSN2/I2C3_SDA_M2/PWM1_CH2_M1	GPIO5_D1_d	3.3V
D21	MIPI_DSI_D3P			0.6V
D22	MIPI_DSI_D3N			0.6V
E1	GPIO7_A1_D	I2C4_SCL_M3/PDM_CLK1_M0/PWM2_CH5_M1	GPIO7_A1_d	3.3V
E2	UART1_TX_M0	SPI2AHB_D3/I2C5_SCL_M0/PWM0_CH0_M0	GPIO0_C4_d	3.3V
E3	UART1_CTS_M0	SPI2AHB_D0/PWM0_CH3_M0	GPIO0_C5_d	3.3V
E20	VO_LCDC_D21	VI_CIF_CLKOUT_M1/DSMC_D2/SAI1_SCLK_M2/PWM3_CH5_M1	GPIO5_C5_d	3.3V
E21	VO_LCDC_CLK	SPI1_MISO_M2/DSMC_INT2/PWM1_CH0_M1/UART3_CTSN_M1	GPIO5_D3_d	3.3V
E22	VO_LCDC_VSYNC	SPI1_MOSI_M2/DSMC_INT3/PWM1_CH1_M1/UART3_RTSN_M1	GPIO5_D2_d	3.3V
F1	GPIO7_A5_D	SAI0_SDO0_M0/DSM_AUD_LP	GPIO7_A5_d	3.3V
F2	GPIO7_A3_D	SAI0_LRCK_M0/DSM_AUD_LN/PWM2_CH7_M1	GPIO7_A3_d	3.3V
F3	I2C2_SDA_M0	PWM0_CH5_M0	GPIO0_D1_d	3.3V
F20	VO_LCDC_D23	VI_CIF_HSYNC_M1/DSMC_D0/SAI1_SDI_M2/PWM3_CH7_M1	GPIO5_C7_d	3.3V
F21	VO_LCDC_D20	VI_CIF_VSYNC_M1/DSMC_D3/SAI1_SDO_M2/PWM3_CH4_M1	GPIO5_C4_d	3.3V
F22	VO_LCDC_DEN	SPI1_CSN0_M2/ETH_PTP_REFCLK_M1/DSMC_CSN3/I2C3_SCL_M2/PWM0_CH6_M2	GPIO5_D0_d	3.3V
G1	GND	Ground		0V
G2	FSPI_D1_1V8	SAI1_SCLK_M0	GPIO1_B5_u	1.8V
G3	GPIO7_A0_D	SAI0_SCLK_M0/PWM2_CH4_M1	GPIO7_A0_d	3.3V
G20	VO_LCDC_D18	VI_CIF_D14_M1/DSMC_D5/IR_FPA_SDA6/PWM3_CH2_M1	GPIO5_C2_d	3.3V
G21	VO_LCDC_D14	VI_CIF_D10_M1/DSMC_CLKN/DSMC_INT0/PWM2_CH2_M1/UART7_RTSN_M0	GPIO5_B6_d	3.3V
G22	VO_LCDC_D19	VI_CIF_D15_M1/DSMC_D4/SAI1_MCLK_M2/PWM3_CH3_M1	GPIO5_C3_d	3.3V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
H1	FSPI_D3_1V8	SAI1_SDI_M0	GPIO1_B6_u	1.8V
H2	FSPI_D0_1V8	SAI1_LRCK_M0	GPIO1_B4_u	1.8V
H3	N.C.			
H20	VO_LCDC_D8	VI_CIF_D4_M1/DSMC_D9/IR_FPA_SDA2/UART6_TX_M0	GPIO5_B0_d	3.3V
H21	VO_LCDC_D3	SPI0_CSN0_M2/DSMC_D14/SAI2_MCLK_M1/PWM0_CH4_M2/UART4_RX_M1	GPIO5_A3_d	3.3V
H22	VO_LCDC_D6	SPI0_CLK_M2/DSMC_D11/SAI2_SDI0_M1/PWM0_CH1_M1/UART5_RTSN_M1	GPIO5_A6_d	3.3V
J1	FSPI_CSN_1V8	SAI1_MCLK_M0	GPIO1_B0_u	1.8V
J2	VBAT_RTC	RTC Power input		1.8V-3.3V
J3	GND	Ground		0V
J20	VO_LCDC_D4	SPI0_MOSI_M2/DSMC_D13/SAI2_SDO_M1/PWM0_CH3_M1/UART5_TX_M1	GPIO5_A4_d	3.3V
J21	VO_LCDC_D1	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
J22	VO_LCDC_D0	VI_CIF_D0_M1/DSMC_CSN1/IR_FPA_SDA0/PWM2_CH4_M0/UART4_RTSN_M1	GPIO5_A0_d	3.3V
K1	VCC_1V8	1.8V IO power output	Max: 400mA	1.8V
K2	GND	Ground		0V
K3	FSPI_D2_1V8	SAI1_SDO_M0	GPIO1_B2_u	1.8V
K11	GND	Ground		0V
K12	GND	Ground		0V
K13	GND	Ground		0V
K20	VO_LCDC_D17	VI_CIF_D13_M1/DSMC_D6/IR_FPA_SDA5/PWM3_CH1_M1	GPIO5_C1_d	3.3V
K21	VO_LCDC_D7	SPI0_CSN1_M2/VI_CIF_D3_M1/DSMC_D10/SAI2_LRCK_M1/I2C5_SDA_M2/PWM0_CH0_M1/UART5_CTSN_M1	GPIO5_A7_d	3.3V
K22	GND	Ground		0V
L2	ETH_CLK_25M_OUT_M0	SARADC2_IN5/VI_CIF_CLKIN_M0/PWM0_CH1_M2/UART3_CTSN_M2	GPIO6_C1_d	3.3V
L3	FSPI_CLK_1V8		GPIO1_B7_d	1.8V
L10	GND	Ground		0V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
L11	GND	Ground		0V
L12	GND	Ground		0V
L13	GND	Ground		0V
L20	VO_LCDC_D11	VI_CIF_D7_M1/DSMC_RDYN/PWM2_CH1_M1/UART6_CTSN_M0	GPIO5_B3_d	3.3V
L21	VO_LCDC_D9	VI_CIF_D5_M1/DSMC_D8/IR_FPA_SDA3/UART6_RX_M0	GPIO5_B1_d	3.3V
L22	VO_LCDC_D5	SPI0_MISO_M2/DSMC_D12/SAI2_SCLK_M1/PWM0_CH2_M1/UART5_RX_M1	GPIO5_A5_d	3.3V
M10	GND	Ground		0V
M11	GND	Ground		0V
M12	GND	Ground		0V
M13	GND	Ground		0V
M20	VO_LCDC_D12	VI_CIF_D8_M1/DSMC_CSN0/UART7_TX_M0	GPIO5_B4_d	3.3V
M21	VO_LCDC_D10	VI_CIF_D6_M1/DSMC_RESETN/DSMC_INT1/PWM2_CH0_M1/UART6_RTSN_M0	GPIO5_B2_d	3.3V
N2	ETH_MDC_M0	SARADC2_IN4/VI_CIF_VSYNC_M0/PWM0_CH0_M2/UART3_RTSN_M2/I2C2_SCL_M2	GPIO6_C0_d	3.3V
N3	GND	Ground		0V
N10	GND	Ground		0V
N11	GND	Ground		0V
N12	GND	Ground		0V
N13	GND	Ground		0V
N20	GND	Ground		0V
N21	VO_LCDC_D2	VI_CIF_D2_M1/DSMC_D15/SAI2_SDI1_M1/PWM0_CH5_M2/UART4_TX_M1	GPIO5_A2_d	3.3V
N22	VO_LCDC_D16	VI_CIF_D12_M1/DSMC_D7/IR_FPA_SDA4/PWM3_CH0_M1	GPIO5_C0_d	3.3V
P1	ETH_MCLK_M0	VI_CIF_D12_M0/SPI1_CLK_M0/PDM_CLK0_M1/UART7_TX_M1	GPIO6_B4_d	3.3V
P2	GND	Ground		0V
P3	ETH_MDIO_M0	SARADC2_IN3/VI_CIF_D15_M0/PDM_CLK1_M1/UART7_CTSN_M1	GPIO6_B7_d	3.3V
P10	GND	Ground		0V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
P11	GND	Ground		0V
P12	GND	Ground		0V
P13	GND	Ground		0V
P20	VO_LCDC_D22	VI_CIF_CLKIN_M1/DSMC_D1/ SAI1_LRCK_M2/PWM3_CH6_ M1	GPIO5_C6_d	3.3V
P21	GND	Ground		0V
P22	VO_LCDC_D15	VI_CIF_D11_M1/DSMC_CLKP/ PWM2_CH3_M1/UART7_CTSN _M0	GPIO5_B7_d	3.3V
R1	ETH_RXCTL_M0	SARADC2_IN1/VI_CIF_D13_M 0/PDM_SDI0_M1/UART7_RX_ M1	GPIO6_B5_d	3.3V
R2	ETH_RXCLK_LE D_SPD	SARADC2_IN7/VI_CIF_HSYNC _M0/FEPHY_LEDSPD_M2/PW M0_CH3_M2/UART3_RX_M2/I2 C2_SDA_M2	GPIO6_C3_d	3.3V
R3	GPIO6_B6_D	SPI1_CSN1_M1/SAI2_MCLK_M 0/SDMMC1_DETN/UART1_TX_ M1/I2C5_SCL_M1	GPIO6_B6_d	3.3V
R20	SDMMC0_D1	UART0_TX_M0/I2C0_SCL_M1	GPIO2_A1_d	3.3V/1.8V
R21	SDMMC0_D0	UART0_RX_M0/I2C0_SDA_M1	GPIO2_A0_d	3.3V/1.8V
R22	VO_LCDC_D13	ETH_MDIO_M1/VI_CIF_D9_M1 /DSMC_DQS0/UART7_RX_M0	GPIO5_B5_d	3.3V
T1	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
T2	ETH_RXD1_M0	VI_CIF_D11_M0/SPI1_MISO_M 0/PDM_SDI3_M1/UART6_CTS N_M1	GPIO6_B3_d	3.3V
T3	ETH_RXD0_M0	VI_CIF_D10_M0/SPI1_MOSI_M 0/PDM_SDI2_M1/UART6_RTS N_M1	GPIO6_B2_d	3.3V
T20	SDMMC0_D3	UART3_TX_M0/UART4_CTSN_ M3/JTAG_TMS_M1	GPIO2_A3_d	3.3V/1.8V
T21	SDMMC0_D2	UART3_RX_M0/UART4_RTSN_ M3/JTAG_TCK_M1/TEST_CLK1 _OUT	GPIO2_A2_d	3.3V/1.8V
T22	SDMMC0_CLK	UART3_RTSN_M0/UART4_RX_ M3	GPIO2_A4_d	3.3V/1.8V

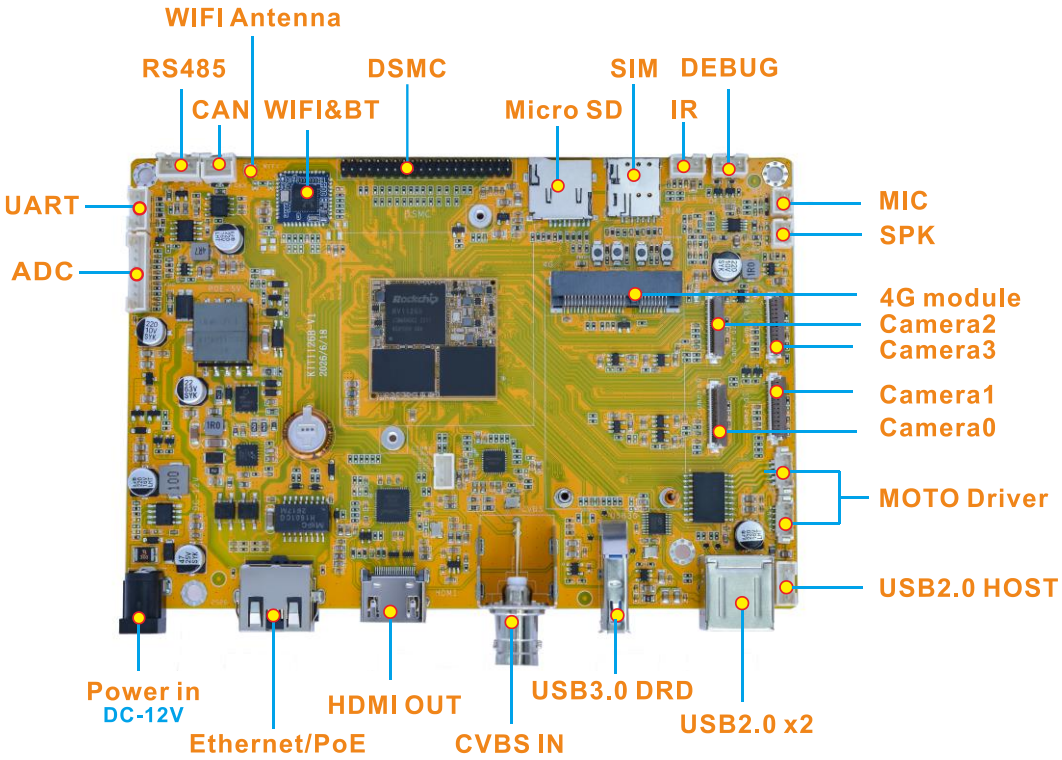
Pin	Signal	Description or functions	GPIO serial	IO Voltage
U1	ETH_RXD3_M0	SARADC1_IN4/VI_CIF_D4_M0/SAI0_MCLK_M1/PWM2_CH0_M2/UART5_RTSN_M2/I2C5_SCL_M3	GPIO6_A4_d	3.3V
U2	GND	Ground		0V
U3	ETH_TXCLK_LED_ACT	SARADC2_IN6/VI_CIF_CLKOUT_M0/FEPHY_LEDLINK_M2/PWM0_CH2_M2/UART3_TX_M2	GPIO6_C2_d	3.3V
U20	GPIO7_A4_D	I2C4_SDA_M3/PDM_CLK0_M0/UART2_CTSN_M1	GPIO7_A4_d	3.3V
U21	SDMMC0_CMD	UART3_CTSN_M0/UART4_TX_M3	GPIO2_A5_d	3.3V/1.8V
U22	GND	Ground		0V
V1	ETH_TXD3_M0	SARADC1_IN6/VI_CIF_D6_M0/PWM2_CH2_M2/UART4_RTSN_M2	GPIO6_A6_d	3.3V
V2	ETH_TXCTL_M0	VI_CIF_D9_M0/SPI1_CSN0_M0/SAI0_SDI1_M1/SAI0_SDO3_M1/UART6_RX_M1	GPIO6_B1_d	3.3V
V3	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
V20	GND	Ground		0V
V21	UART4_CTSN_M0_1V8	CAM_CLK2_OUT/I2C1_SCL_M2	GPIO4_A1_u	1.8V
V22	I2C3_SDA_CAM_1V8	SPI0_MISO_M1/SAI1_LRCK_M1/I2C3_SDA_M1	GPIO4_A5_d	1.8V
W1	ETH_TXD0_M0	SARADC1_IN7/VI_CIF_D7_M0/SAI0_SDO1_M1/SAI0_SDI3_M1/PWM2_CH3_M2/UART4_CTSN_M2	GPIO6_A7_d	3.3V
W2	ETH_TXD2_M0	SARADC1_IN5/VI_CIF_D5_M0/PWM2_CH1_M2/UART5_CTSN_M2/I2C5_SDA_M3	GPIO6_A5_d	3.3V
W3	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
W20	UART4_TX_M0_1V8	SPI0_CSN1_M1/SAI1_MCLK_M1/PWM0_CH5_M1	GPIO4_A3_d	1.8V
W21	UART4_RX_M0_1V8	PWM0_CH4_M1	GPIO4_A2_d	1.8V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
W22	I2C3_SCL_CAM_1V8	SPI0_MOSI_M1/SAI1_SCLK_M1/I2C3_SCL_M1	GPIO4_A4_d	1.8V
Y1	GND	Ground		0V
Y2	ETH_PPS_CLK_M0	SARADC1_IN2/VI_CIF_D2_M0/PWM1_CH2_M2/CAN1_RXD_M1/SAI0_SDO0_M1/UART5_TX_M2/I2C4_SCL_M1	GPIO6_A2_d	3.3V
Y3	ETH_PTP_REFCLK_M0	SARADC1_IN1/VI_CIF_D1_M0/PWM1_CH1_M2/CAN0_TXD_M1/SAI0_LRCK_M1/UART4_RX_M2/I2C3_SDA_M3	GPIO6_A1_d	3.3V
Y20	I2C4_SDA_CAM_1V8	SPI0_CSN0_M1/SAI1_SDI_M1/PWM0_CH6_M1/UART5_TX_M0/I2C4_SDA_M2	GPIO4_A6_d	1.8V
Y21	UART4_RTSN_M0_1V8	CAM_CLK3_OUT /I2C1_SDA_M2	GPIO4_A0_u	1.8V
Y22	MIPI_MCLK_OUT0_1V8	UART5_CTSN_M0	GPIO4_B1_d	1.8V
AA1	USB2_HOST_DM			0.6V
AA2	USB2_HOST_DP			0.6V
AA3	USB2_DRD_VBUSDET	USB2_DRD VBUS Input		3.3V
AA4	USB2_DRD_ID	USB2_DRD ID Input	(PU 200K)	1.8V
AA5	GND	Ground		0V
AA6	WIFI_REG_ON	FSPI1_CLK_M0/SPI0_CLK_M0	GPIO0_B2_d	3.3V
AA7	BT_RST	FSPI1_D0_M0/SPI0_MOSI_M0	GPIO0_B0_d	3.3V
AA8	BT_WAKE_HOST	FSPI1_CSN0_M0/SPI0_CSN0_M0	GPIO0_A7_u	3.3V
AA9	UART0_RX_DBG	UART0_RX_M2/PWM1_CH3_M0/I2C1_SDA_M0/JTAG_TMS_M0	GPIO0_B4_u (For debug)	3.3V
AA10	UART0_TX_DBG	UART0_TX_M2/PWM1_CH2_M0/I2C1_SCL_M0/JTAG_TCK_M0	GPIO0_B3_u (For debug)	3.3V
AA11	RESETn	Reset Key Input	(PU 1K)	3.3V
AA12	GND	Ground		0V
AA13	MIPI_CSI_RX0_D2P			0.6V
AA14	MIPI_CSI_RX0_D2N			0.6V
AA15	MIPI_CSI_RX0_D1P			0.6V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
AA16	MIPI_CSI_RX0_D1N			0.6V
AA17	GND	Ground		0V
AA18	MIPI_CSI_RX1_CLK0P			0.6V
AA19	MIPI_CSI_RX1_CLK0N			0.6V
AA20	I2C4_SCL_CAM_1V8	SPI0_CLK_M1/SAI1_SDO_M1/PWM0_CH7_M1/UART5_RX_M0/I2C4_SCL_M2	GPIO4_A7_d	1.8V
AA21	MIPI_MCLK_OUT1_1V8	UART5_RTSN_M0	GPIO4_B0_d	1.8V
AA22	GND	Ground		0V
AB1	USB2_DRD_DM			0.6V
AB2	USB2_DRD_DP			0.6V
AB3	USB3_DRD_SSTXP			0.6V
AB4	USB3_DRD_SSRXP			0.6V
AB5	BT_WAKE	FSPI1_D2_M0/SPI0_CSN1_M0	GPIO0_A6_u	3.3V
AB6	WIFI_WAKE_HOST	FSPI1_D1_M0/SPI0_MISO_M0	GPIO0_B1_d	3.3V
AB7	GPIO0_A3_U	PWR_CTRL0	GPIO0_A3_u	3.3V
AB8	CLK_32K_OUT	RTC_32K_OUT/CLK_32K	GPIO0_A2_z	3.3V
AB9	SDMMC0_DET	PWM1_CH0_M0	GPIO0_A5_u	3.3V
AB10	MIC0_P	Had Coupling CAP		0.6V
AB11	MIC1_P	Had Coupling CAP		0.6V
AB12	MIC1_N	Had Coupling CAP		0.6V
AB13	MIPI_CSI_RX0_D3P			0.6V
AB14	MIPI_CSI_RX0_CLK1P			0.6V
AB15	MIPI_CSI_RX0_CLK0P			0.6V
AB16	MIPI_CSI_RX0_D0N			0.6V
AB17	MIPI_CSI_RX1_D3N			0.6V
AB18	MIPI_CSI_RX1_D2P			0.6V
AB19	MIPI_CSI_RX1_CLK1P			0.6V

Pin	Signal	Description or functions	GPIO serial	IO Voltage
AB20	MIPI_CSI_RX1_CLK1N			0.6V
AB21	MIPI_CSI_RX1_D0P			0.6V
AB22	MIPI_CSI_RX1_D0N			0.6V
AC2	GND	Ground		0V
AC3	USB3_DRD_SSTXN			0.6V
AC4	USB3_DRD_SSRXN			0.6V
AC5	DSM_AUD_RN	SAI0_SDI2_M0/SAI0_SDO2_M0/PDM_SDI2_M0/I2C1_SCL_M3/UART2_RX_M1	GPIO7_B0_d	3.3V
AC6	DSM_AUD_RP	SAI0_SDI1_M0/SAI0_SDO3_M0/PDM_SDI1_M0/I2C1_SDA_M3/UART2_TX_M1	GPIO7_B1_d	3.3V
AC7	GND	Ground		0V
AC8	REF_CLK0_OUT		GPIO0_A0_z	3.3V
AC9	PWR_EN	Power ON/OFF Control	(PU 10K)	5V
AC10	MIC0_N	Had Coupling CAP		0.6V
AC13	MIPI_CSI_RX0_D3N			0.6V
AC14	MIPI_CSI_RX0_CLK1N			0.6V
AC15	MIPI_CSI_RX0_CLK0N			0.6V
AC16	MIPI_CSI_RX0_D0P			0.6V
AC17	MIPI_CSI_RX1_D3P			0.6V
AC18	MIPI_CSI_RX1_D2N			0.6V
AC19	GND	Ground		0V
AC20	MIPI_CSI_RX1_D1P			0.6V
AC21	MIPI_CSI_RX1_D1N			0.6V

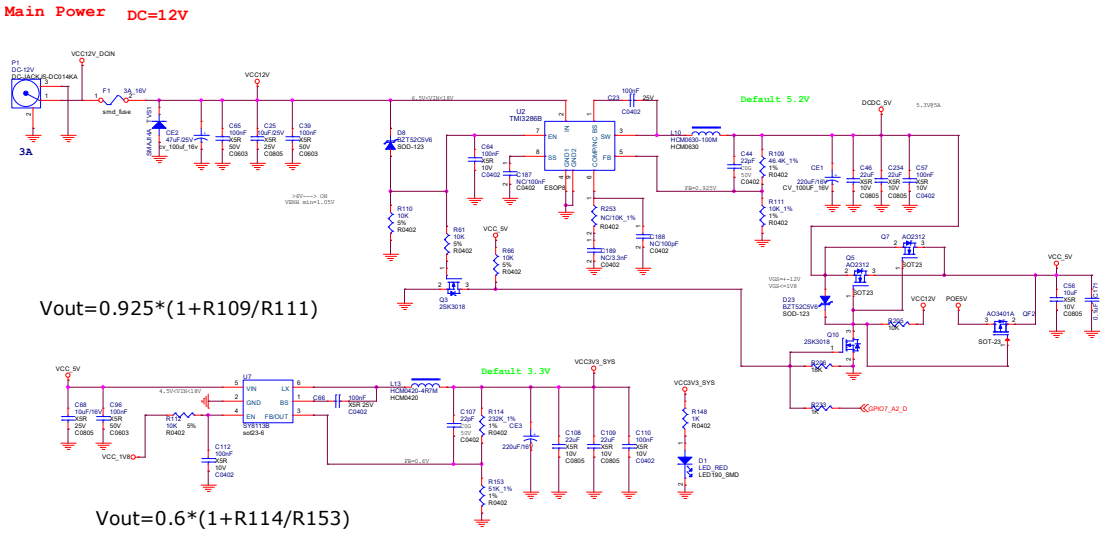
1.7 Development Kit (KIT1126B)

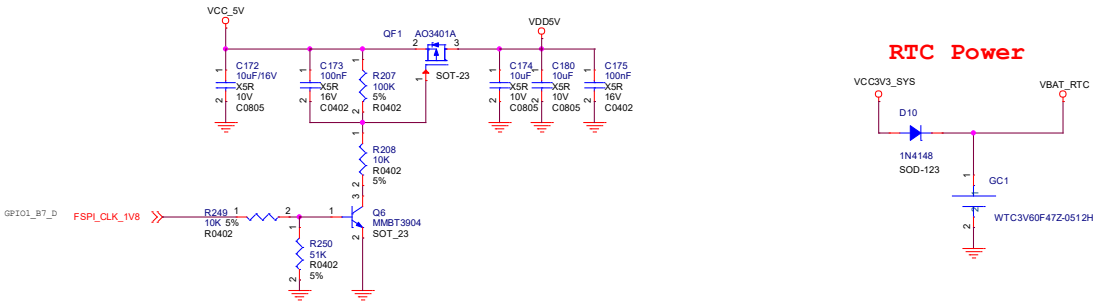


2 Hardware Design Guide

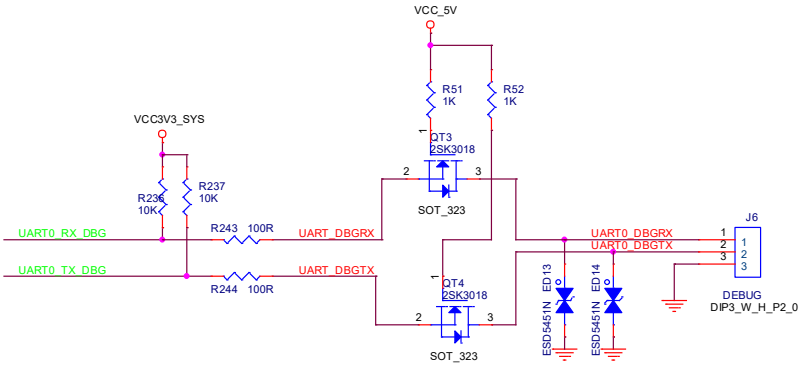
2.1 Peripheral Circuit Reference

2.1.1 Power Circuit

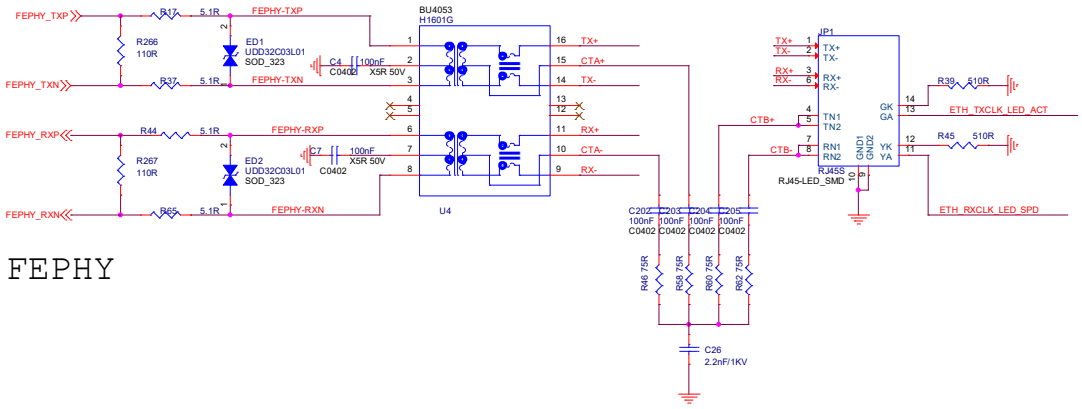




2.1.2 Debug Circuit

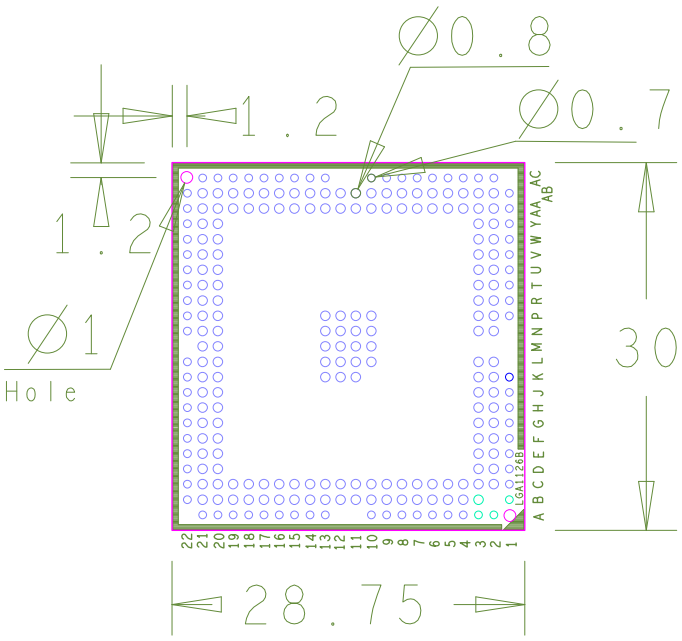


2.1.3 ETH MDI Circuit



FEPHY

2.2 PCB Footprint



Pitch 1.25mm(top view)

3 Product Electrical Characteristics

3.1 Dissipation and Temperature

Symbol	Parameter	Min	Typ	Max	Unit
VCC5V_SYS	System IO Voltage	3.1	5	5.5	V
Isys_in	VCC5V_SYS input Current		310		mA
VCC_RTC	RTC Voltage	1.8	3	3.6	V
Iirtc	RTC input Current		1.2	3	uA
VCC_1V8	GPIO Voltage output		3.3		V
Ivcc_1V8	VCC_1V8 output Current		400		mA

Ta	Operating Temperature	-20		70	°C
Tstg	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	