

54321

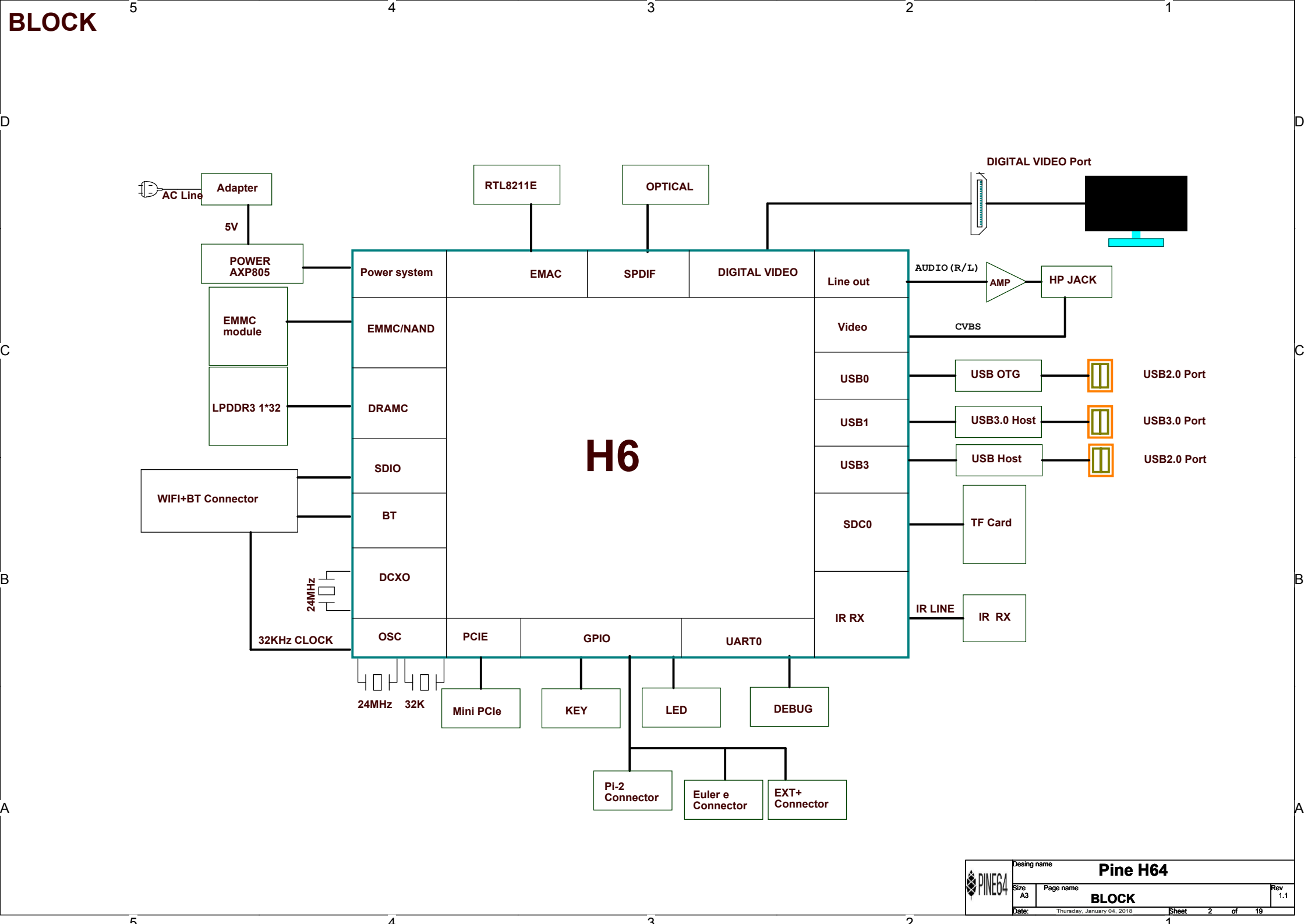
REVISION HISTORY

D

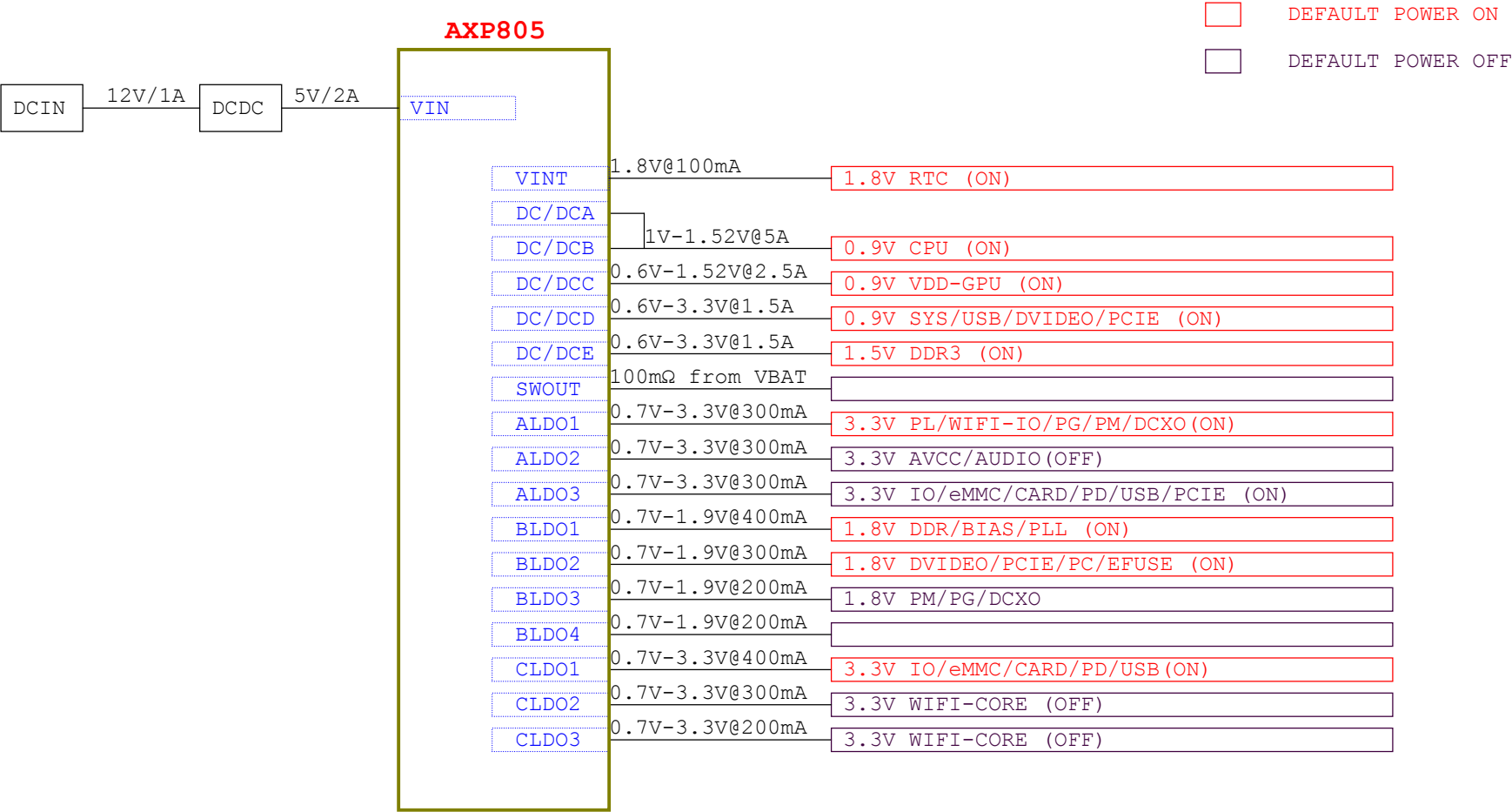
Schematics Index:

- C
- P01: REVISION HISTORY
 - P02: BLOCK
 - P03: POWER TREE
 - P04: GPIO ASSIGNMENT
 - P05: SOC1
 - P06: SOC2
 - P07: LPDDR3
 - P08: POWER
 - P09: NAND-eMMC
 - P10: CARD-USB-IR-SPDIF
 - P11: KEY-LED-ETH-DEBUG
 - P12: AUDIO-VIDEO
 - P13 :Euler`e`Connector
 - P14: WIFI Connector
 - P15: Pi-2 Connector
 - P16: EXT+ Connector
 - P17: Mini PCie
 - P18: EMAC/GMAC
 - P19: EMAC/GMAC
- B
- A

Revision	Description	Date	Drawn	Checked
Ver 1.0	Initial Design	2017-10-24		
Ver 1.1	PCie signal fix	2018-01-04		



POWER TREE



Pine H64 Port Assignmentver 1.0

Front:

- 2 x USB 2.0 type A port (top- OTG)
- 1x USB 3.0 type A port
- IR receiver (no need to staff IR connector, just reserved 3 pin connectors VCC, CIR_RX, GND)
- Head phone (with mic) jack
- 1x 90 degree angle small "Status" LED
- 2x push buttons - "RESET", "POWER"

Rear:

- 4K Digital Video Type-A port
- Gigabit Ethernet port
- +5V 3A 3.5mm OD/1.35mm ID barrel type DC power jack

Right side:

- eMMC module connector (top)
- microSD card slot (bottom)

Connectors on board:

- 2 pin RTC battery port
- miniPCIe connector (full length)
- 20 x 2 dual in line pins Pi-2 bus
- 17 x 2 dual in line pins port Euler 'e' bus
- 5 x 2 dual in line pins port EXT bus
- Wifi+BT port

GPIO Pins usage:

- PC0 - 16 Used by eMMC module (SDC2)
- PD0 - 14 RGMII Used by Ethernet RGMII
- PD14 - 18 DMIC Ports
- PD19 - 22 UART-2
- PD23 - 26 UART-3
- PF0 - 5 Used by TF Card (SDC0)
- PF6 [Open to use]
- PG0 - 14 Used by Wifi+BT (SDC1-SDIO, UART1, PCM2)
- PH0 - 4 PCMO
- PH5 - 7 OWA
- PH8 - 10 Used by Digital Video
- PL0 - 10 Used by system
- PM0 - 4 [Open to use]

PIN	Define	CFG	Function
PC0	SPI0-CLK		
PC1	eMMC-DS		
PC2	SPI0-MOSI		
PC3	SPI0-MISO		
PC4	eMMC-CLK		
PC5	SPI0-CS		
PC6	eMMC-D0		
PC7	eMMC-D1		
PC8	eMMC-D2		
PC9	eMMC-D3		
PC10	eMMC-D4		
PC11	eMMC-D5		
PC12	eMMC-D6		
PC13	eMMC-D7		
PC14	eMMC-RST		
PC15	PCIe-RST		
PC16	SMAC-EN		

PIN	Define	CFG	Function
PF0	SDcard-D1		
PF1	SDcard-D0		
PF2	SDcard-CLK		
PF3	SDcard-CMD		
PF4	SDcard-D3		
PF5	SDcard-D2		
PF6	Pi2-PF6		

PIN	Define	CFG	Function
PG0	SDIO-CLK		
PG1	SDIO-CMD		
PG2	SDIO-D0		
PG3	SDIO-D1		
PG4	SDIO-D2		
PG5	SDIO-D3		
PG6	UART1-TX		
PG7	UART1-RX		
PG8	UART1-RTS		
PG9	UART1-CTS		
PG10	I2S2-SYNC		
PG11	I2S2-CLK		
PG12	I2S2-DOUT		
PG13	I2S2-DIN		
PG14	PCIe-RST		

PIN	Define	CFG	Function
PH0	Euler-PH0		
PH1	Euler-PH1		
PH2	Euler-PH2		
PH3	Pi/Euler-PH3		
PH4	Pi2/Euler-PH4		
PH5	Pi2/Euler-PH5		
PH6	Pi2/Euler-PH6		
PH7	Euler-PH7 (SPDIF)		
PH8	Pi2-PH8 (ID_SC)		
PH9	Pi2-PH9 (ID_SD)		
PH10	DVIDEO-CEC		

PIN	Define	CFG	Function
PL0	Euler-PL0		
PL1	Euler-PL1		
PL2	Euler-PL2		
PL3	Euler-PL3		
PL4	Euler-PL4		
PL5	Euler-PL5		
PL6	Euler-PL6		
PL7	Euler-PL7		
PL8	Euler-PL8		
PL9	Euler-PL9 (IR_RX)		
PL10	PCIe-WAKE		
PM0	Pi2-PM0		
PM1	Pi2-PM1		
PM2	Pi2-PM2		
PM3	Pi2-PM3		
PM4	Pi2-PM4		

PIN	Define	CFG	Function
PD0	RGMII-RXD3		
PD1	RGMII-RXD2		
PD2	RGMII-RXD1		
PD3	RGMII-RXD0		
PD4	RGMII-RXCLK		
PD5	RGMII-RXCTL		
PD6	MAC-RST		
PD7	RGMII-TXD3		
PD8	RGMII-TXD2		
PD9	RGMII-TXD1		
PD10	RGMII-TXD0		
PD11	RGMII-TXCLK		
PD12	RGMII-TXCTL		
PD13	CLK125		
PD14	Pi2-PD14		

PIN	Define	CFG	Function
PD15	Pi2-PD15		
PD16	Pi2-PD16		
PD17	Pi2-PD17		
PD18	Pi2-PD18		
PD19	Pi2-PD19 (UART2_TX)		
PD20	Pi2-PD20 (UART2_RX)		
PD21	Pi2-PD21		
PD22	Pi2-PD22 (PWM0)		
PD23	Pi2-PD23		
PD24	Pi2-PD24		
PD25	Pi2-PD25 (I2C0_CLK)		
PD26	Pi2-PD26 (I2C0_DATA)		

EXT Connector

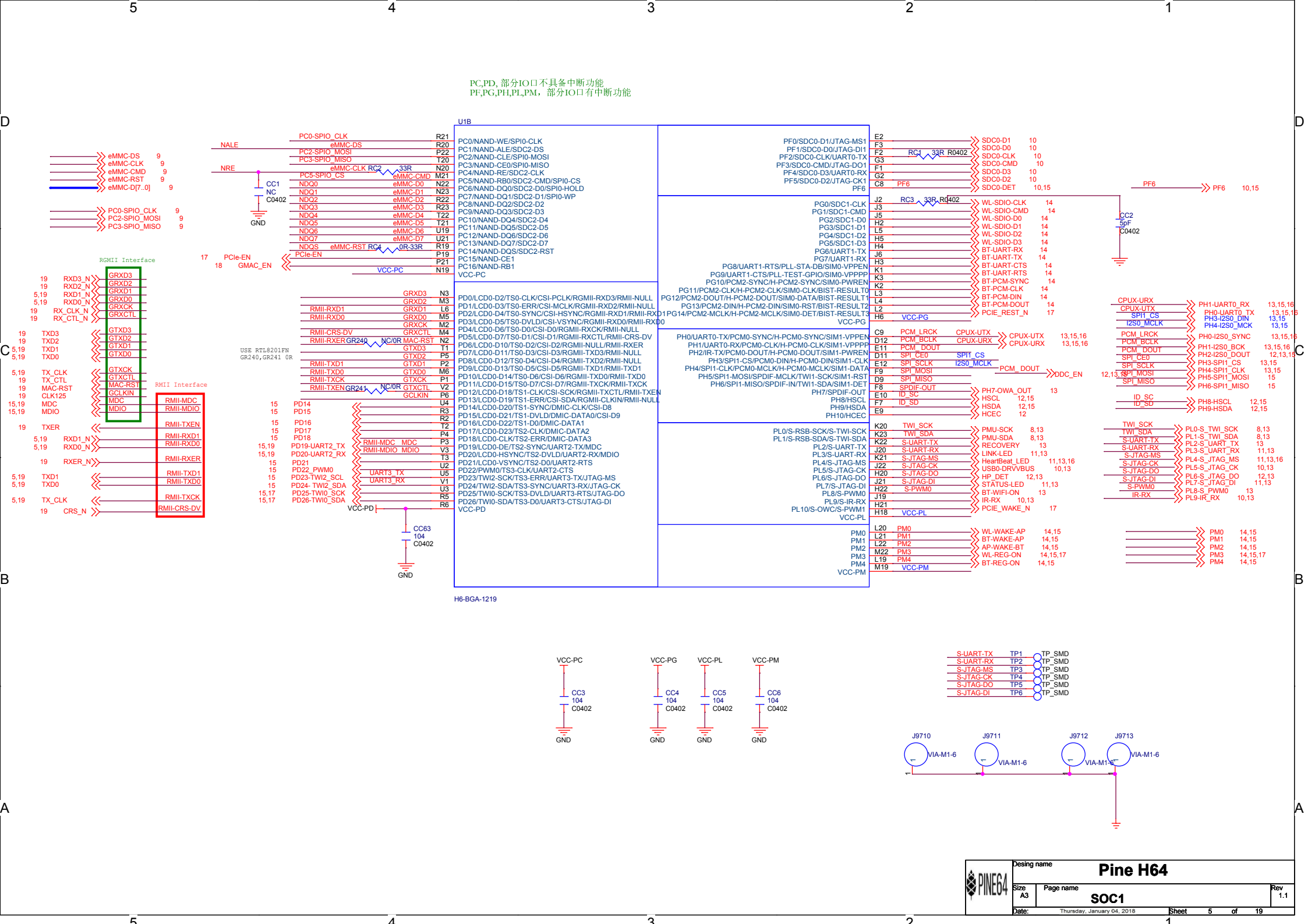
SV	1	2	HeartBeat LED
UBOOT	3	4	Reset Switch
Power Switch	5	6	GND
[PH0-UART0_TX]	7	8	[PH1-UART0_RX]
GND	9	10	KeyADC

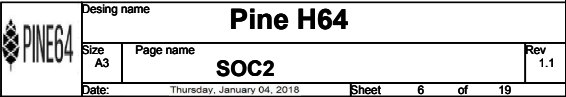
Euler "e" Connector

3.3V	1	2	DC IN
N.C.	3	4	DC IN
N.C.	5	6	GND
[PL9-IR_RX]	7	8	5V
GND	9	10	[PH7-OWA_OUT] (SPDIF)
[PH4-I2S0_MCK/ SPI1_CLK]	11	12	[PH0-I2S0_SYNC]
[PH1-I2S0_BCK]	13	14	GND
[PH2-I2S0_DOUT]	15	16	[PH3-I2S0_DIN/ SPI1_CS]
3.3V	17	18	[PL8-S_PWM0]
[PL2-S_UART_TX]	19	20	GND
[PL3-S_UART_RX]	21	22	[PL4-S_JTAG_MS]
[PL0-S_TWI_SCK]	23	24	[PL1-S_TWI_SDA]
GND	25	26	[PL5-S_JTAG_CK]
[PL6-S_JTAG_DO]	27	28	[PL7-S_JTAG_DI]
[MIC2P]	29	30	[MIC2N]
[EAROUTP]	31	32	[EAROUTN]
[TVOUT]	33	34	GND

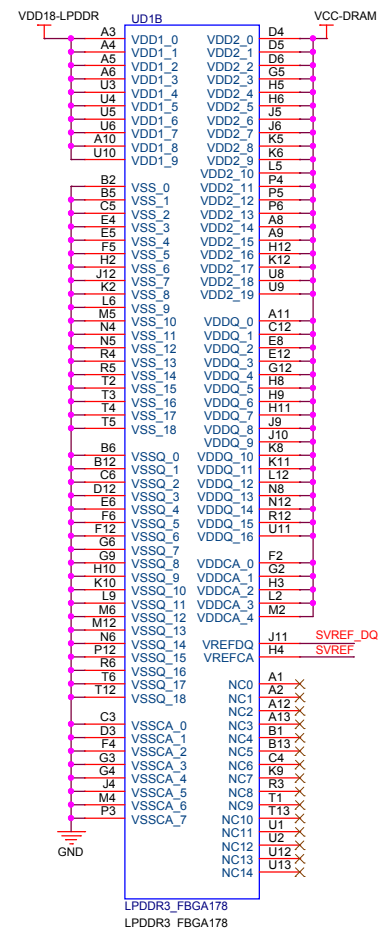
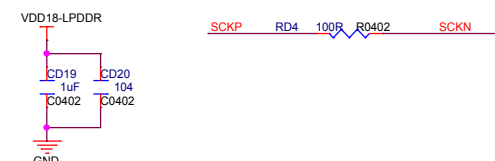
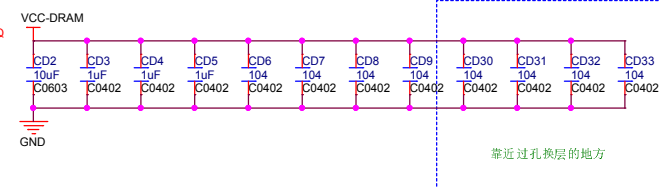
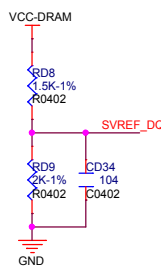
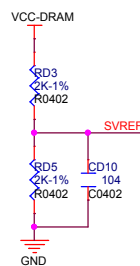
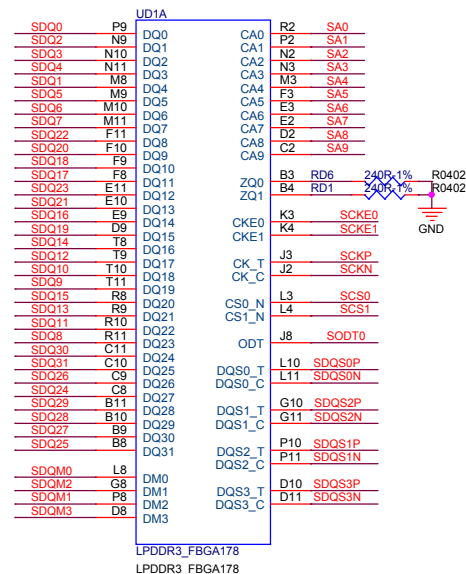
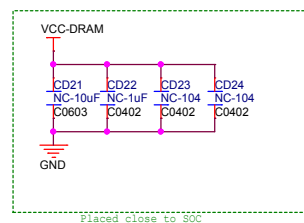
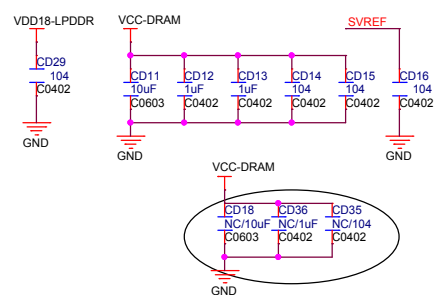
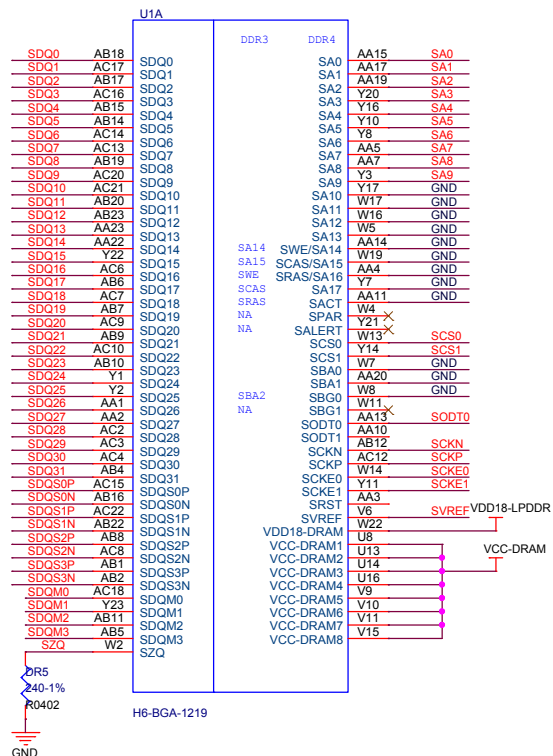
Pi-2 Connector

3.3V	1	2	5V
[PD26-TWI0_SDA] GPIO 2 (I2C_SDA)	3	4	5V
[PD25-TWI0_SCK] GPIO 3 (I2C_SCL)	5	6	GND
[PD22_PWM0] GPIO 4 (GPLK0)	7	8	GPIO 14 (UART_TXD) [PD19-UART2_TX]
GND	9	10	GPIO 15 (UART_RXD) [PD20-UART2_RX]
[PD21] GPIO 17	11	12	GPIO 18 (PCM_BCLK) [PH1-I2S0_BCK]
[PD14/DMIC_CLK] GPIO 27	13	14	GND
[PD15/DMIC_DATA0] GPIO 22	15	16	GPIO 23 [PD16/ DMIC_DATA1]
3.3V	17	18	GPIO 24 [PD17/ DMIC_DATA2]
[PH5-SPI1_MOSI] GPIO 10 (SPI_MOSI)	19	20	GND
[PH6-SPI1_MISO] GPIO 9 (SPI_MISO)	21	22	GPIO 25 [PD18/ DMIC_DATA3]
[PH4-SPI1_CLK] GPIO 11 (SPI_SCLK)	23	24	GPIO 8 (SPI_CE0) [PH3-SPI1_CS]
GND	25	26	GPIO 7 (SPI_CE1) [PF6]
[PH9-HSDA] ID_SD	27	28	ID_SC [PH8-HSCL]
[PM0] GPIO 5	29	30	GND
[PM1] GPIO 6	31	32	GPIO 12 [PM2]
[PM3] GPIO 13	33	34	GND
[PH0-I2S0_SYNC] GPIO 19 (PCM_LRCK)	35	36	GPIO 16 [PM4]
[PD23- TWI2_SCL/UART3_TX] GPIO 2637	38	39	GPIO 20 [PD24- TWI2_SDA/UART3_RX]
GND	39	40	GPIO 21 (PCM_DO) [PH2-I2S0_DOUT]

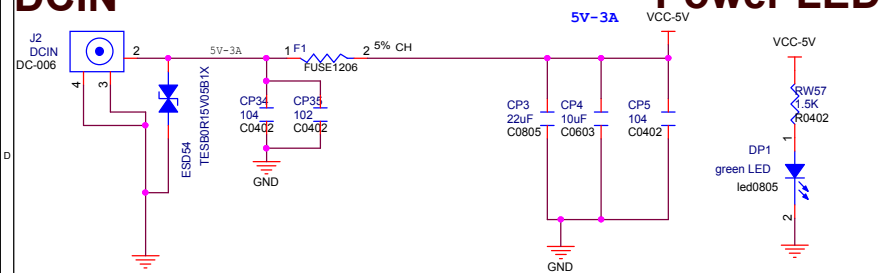




LPDDR3

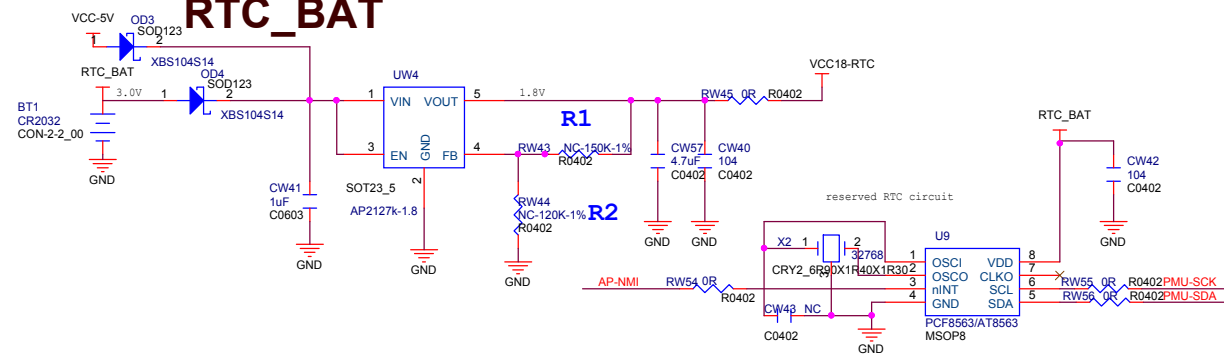
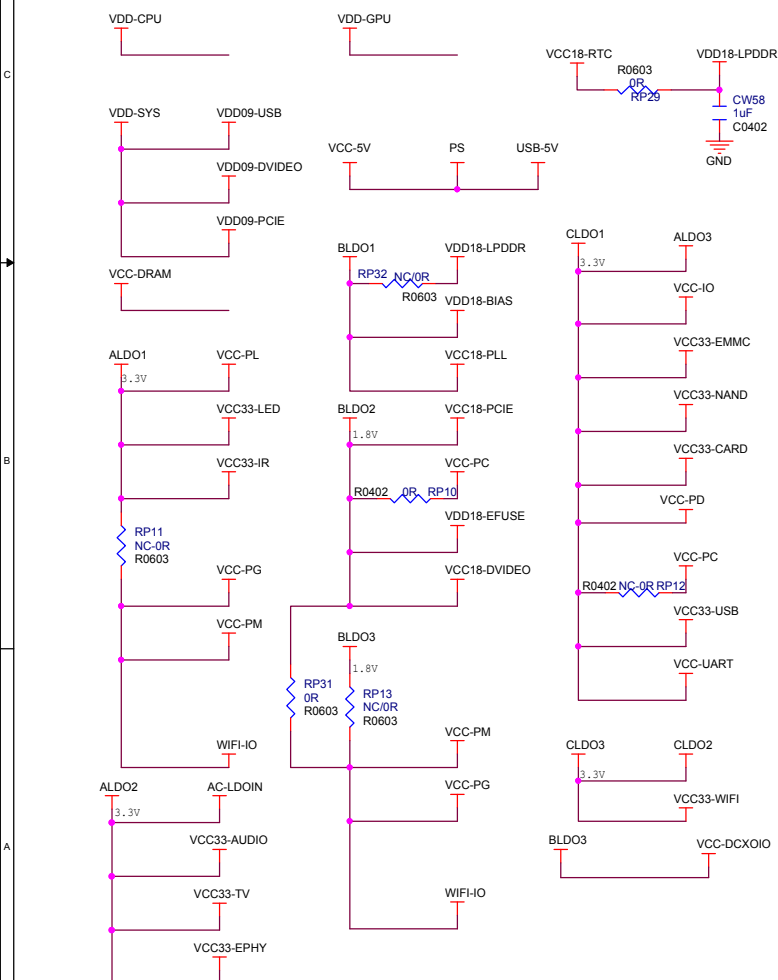


DCIN

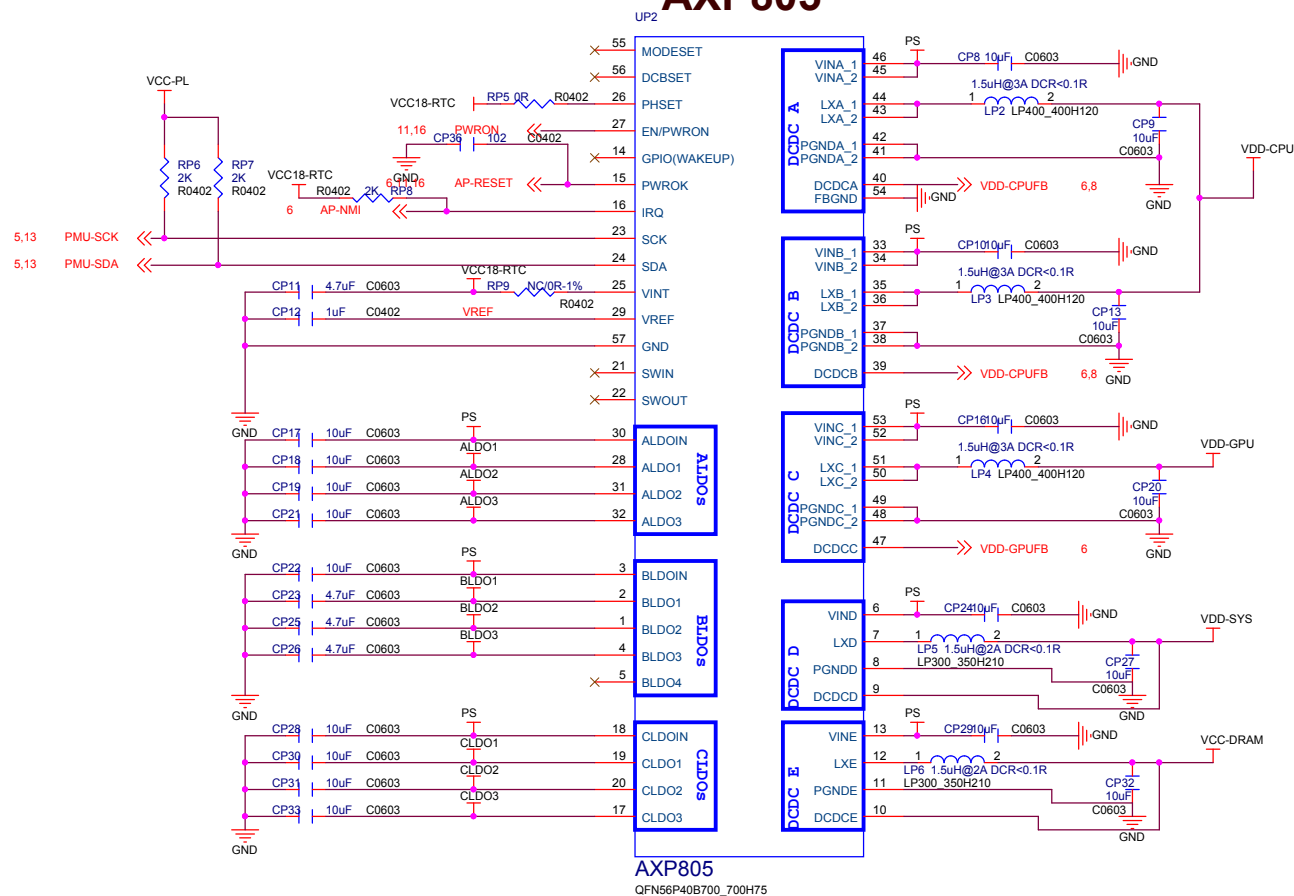


Power LED

RTC BAT

**PMIC**

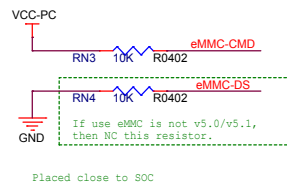
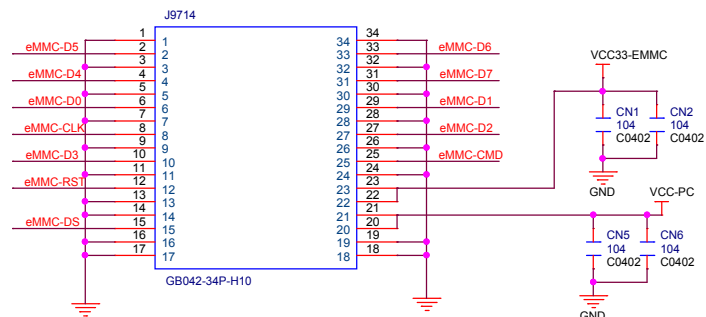
AXP805



eMMC module/SIP Flash

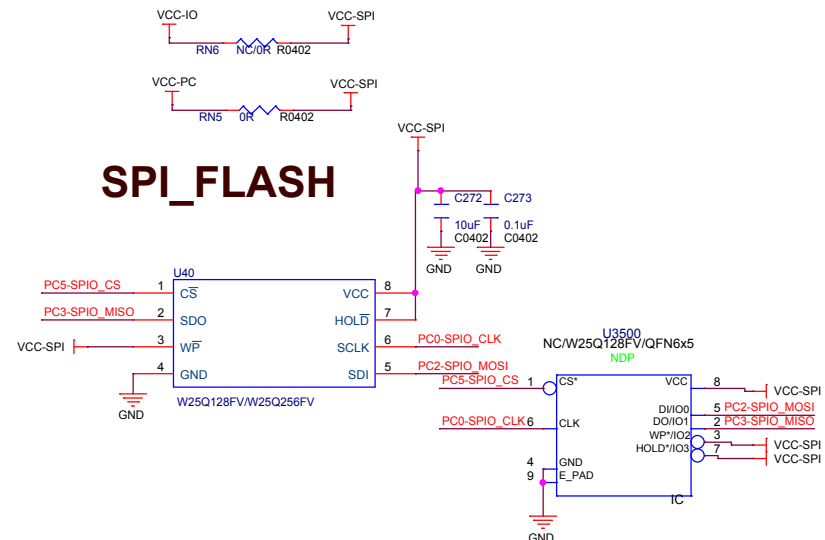
eMMC-DS 5
eMMC-CLK 5
eMMC-CMD 5
eMMC-RST 5
eMMC-D[7..0] 5

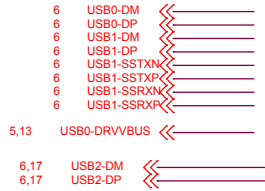
PC0-SPIO_CLK 5
PC2-SPIO_MOSI 5
PC3-SPIO_MISO 5
eMMC-CMD 5
PC5-SPIO_CS 5



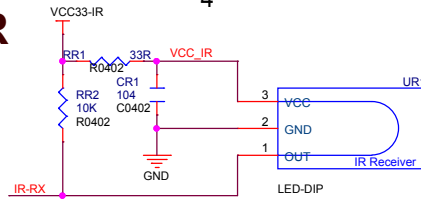
NOTE:Use spi IC voltage of 1V8 ADD RN5 00RM,NC RN6.
Use spi IC voltage of 3V3 ADD RN6 00RM,NC RN5.

SPI_FLASH

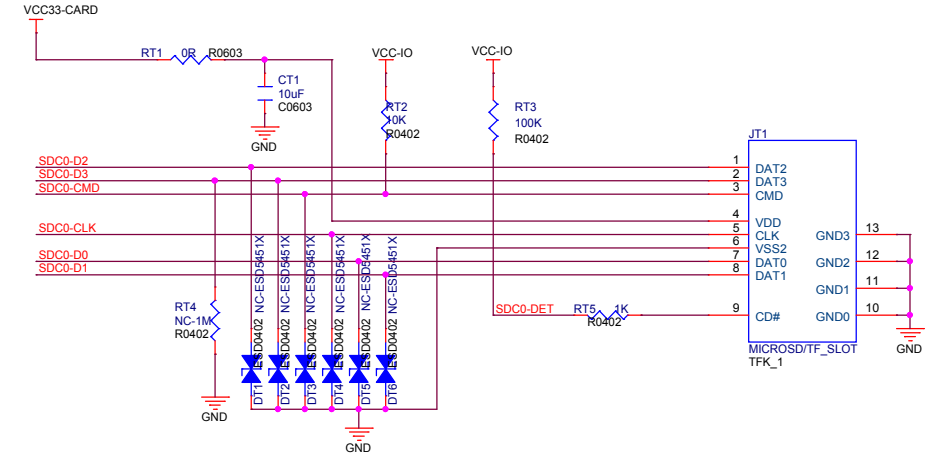




IR

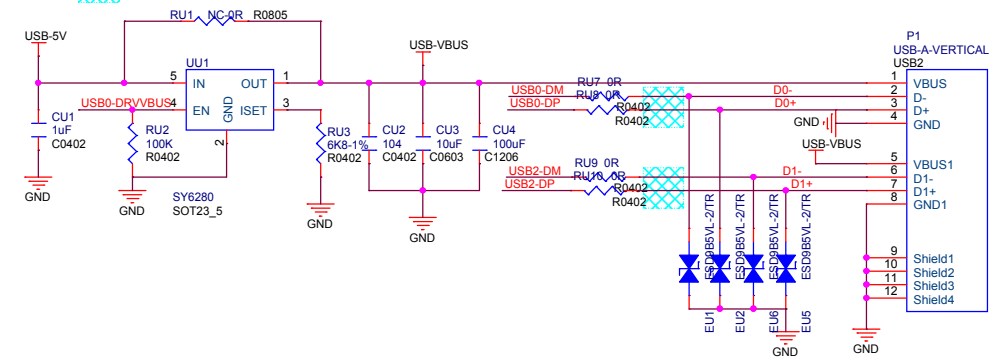


CARD

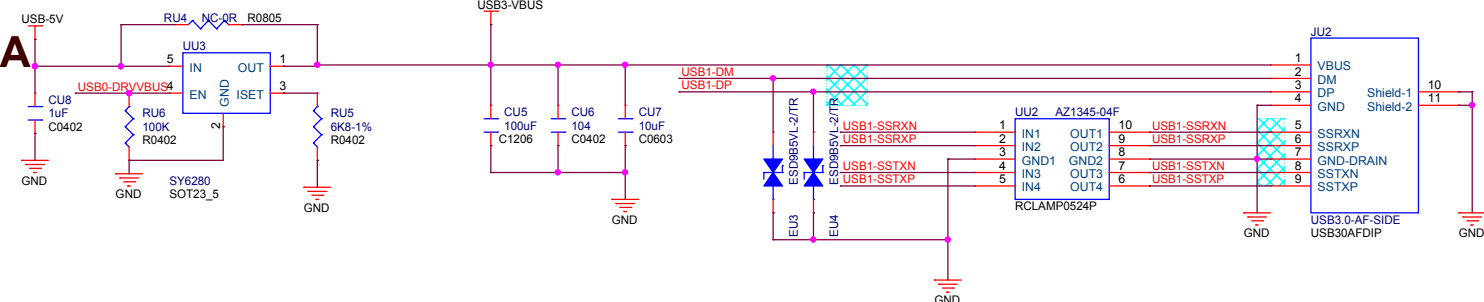


Differential pairs
Z0= 90 ohm

USB OTG/USB HOST



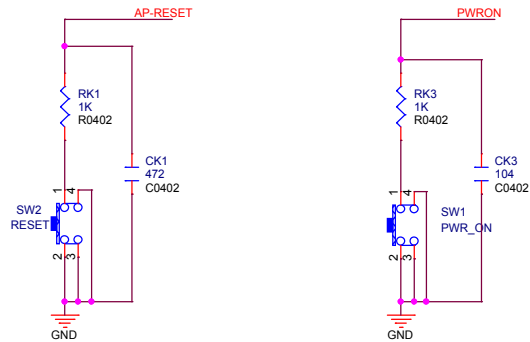
USB3.0 TYPE A



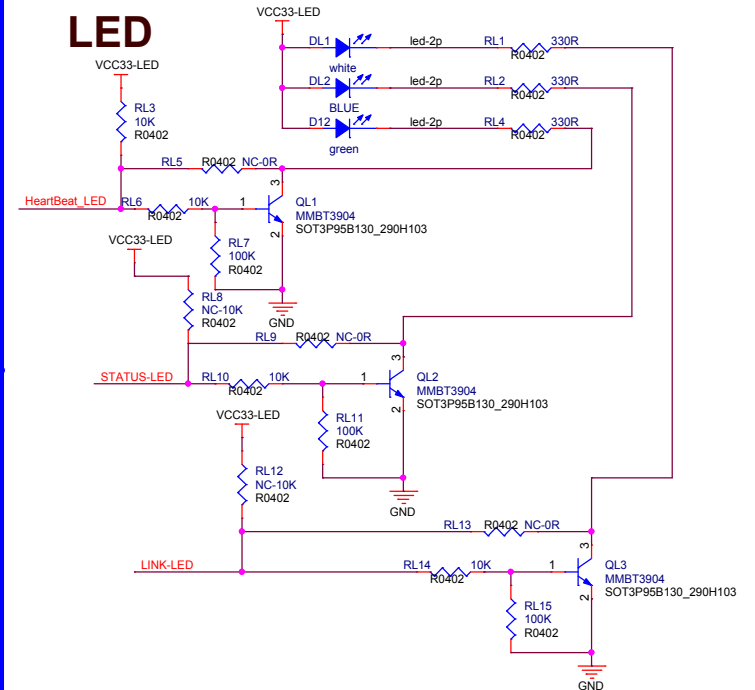
5,13,15,16 CPUX-UTX
5,13,15,16 CPUX-URX
5,13,16 HeartBeat_LED
5,13 STATUS-LED
5,13 LINK-LED

6,8,16 AP-RESET
8,16 PWRON

KEY

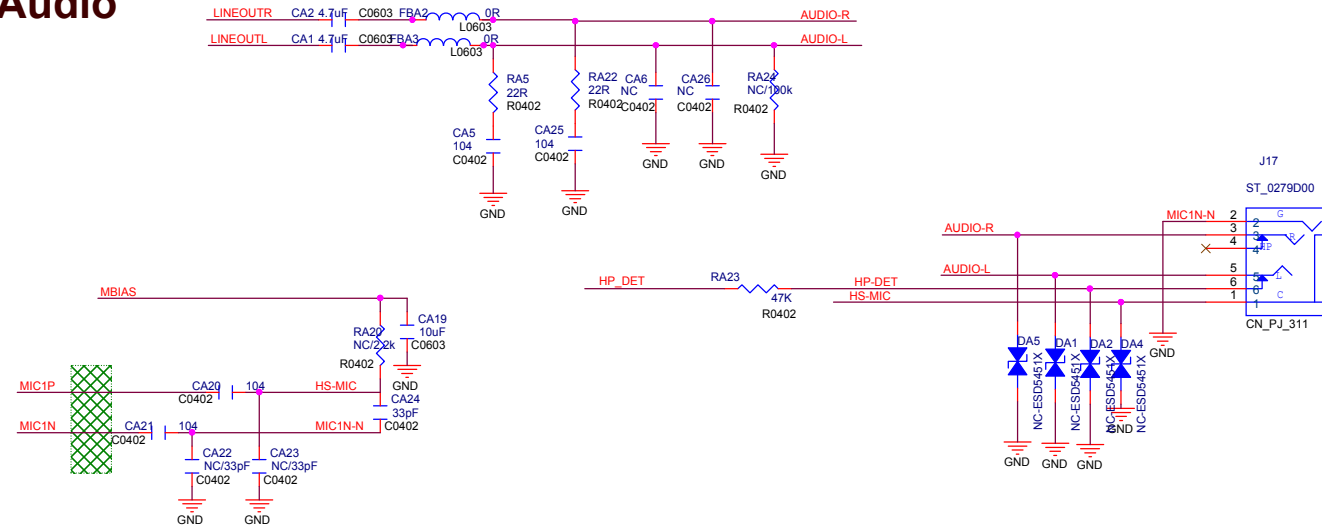


LED



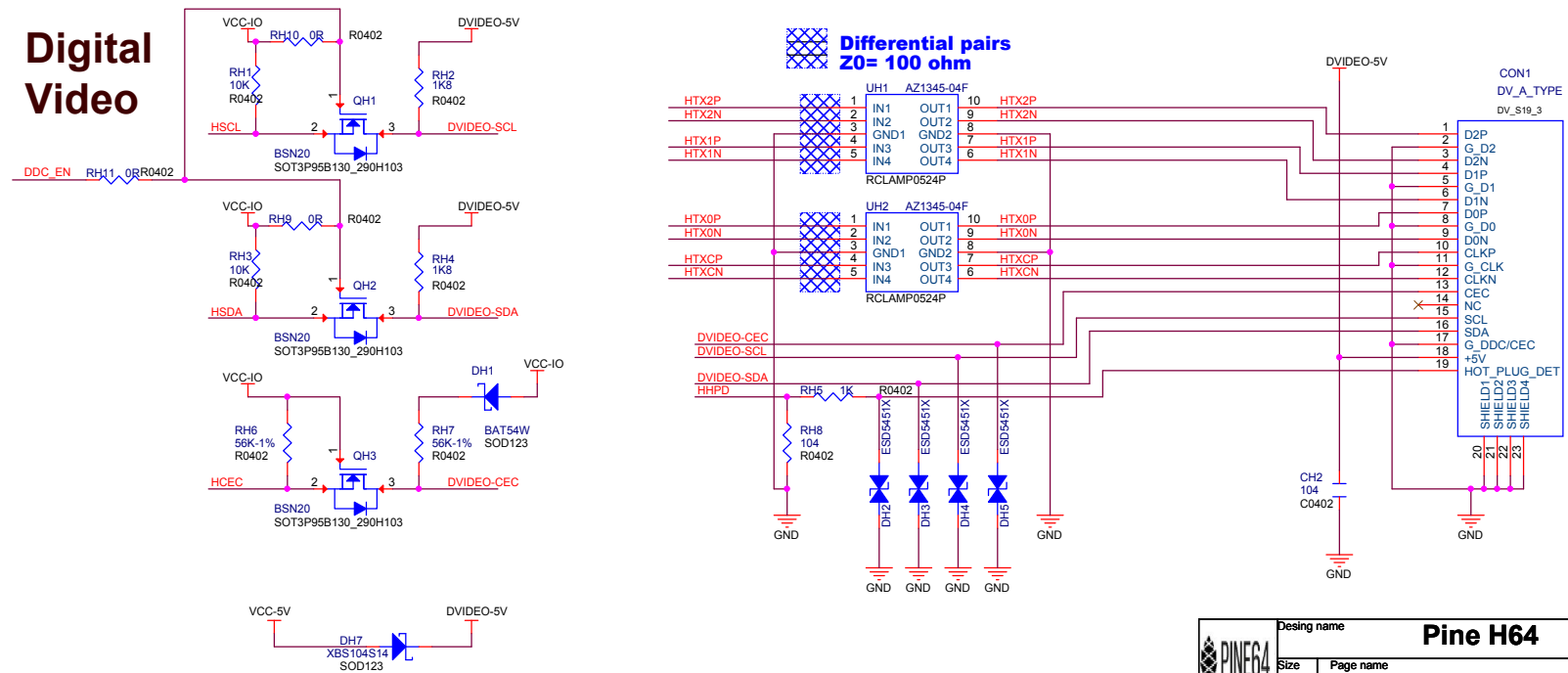
Audio

- 6,13 LINEOUTL <<<
- 6,13 LINEOUTR <<<
- 5,13 HP_DET <<<
- 6 MBIAS <<<
- 6 MIC1N <<<
- 6 MIC1P <<<

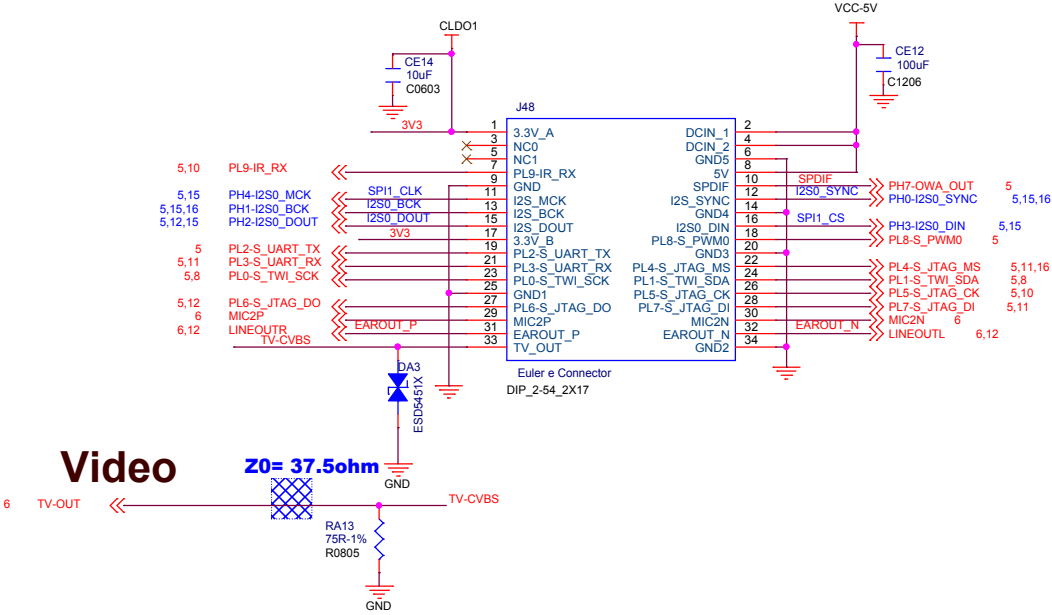


- 6 HTX0P <<<
- 6 HTX0N <<<
- 6 HTX1P <<<
- 6 HTX1N <<<
- 6 HTX2P <<<
- 6 HTX2N <<<
- 6 HTXCP <<<
- 6 HTXCN <<<
- 5,15 HSCL <<<
- 5,15 HSDA <<<
- 6 HHPD <<<
- 5 HCEC <<<
- 5,13,15 DDC_EN <<<

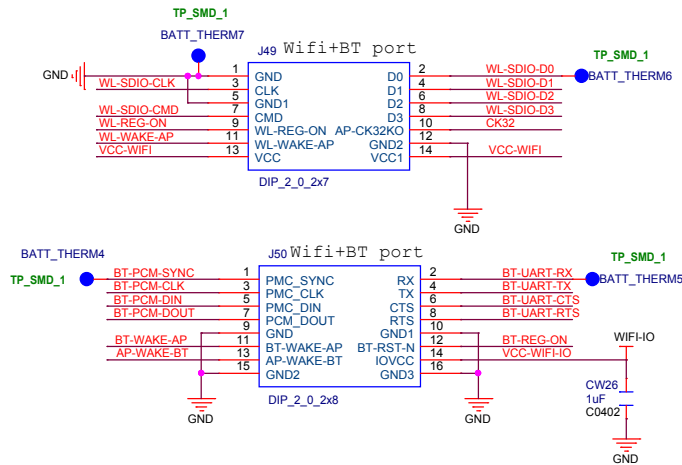
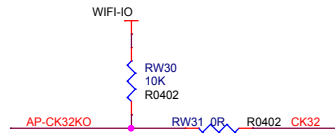
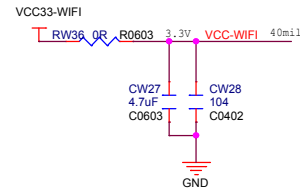
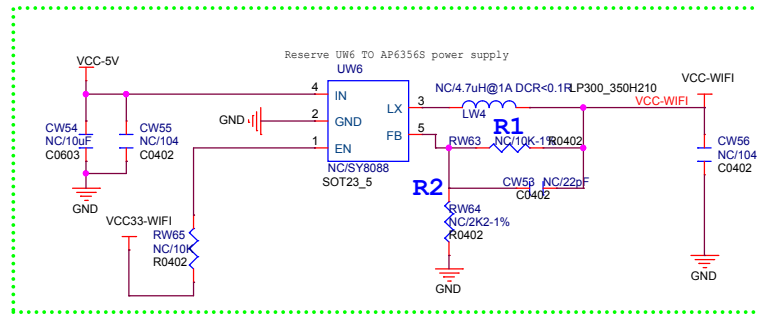
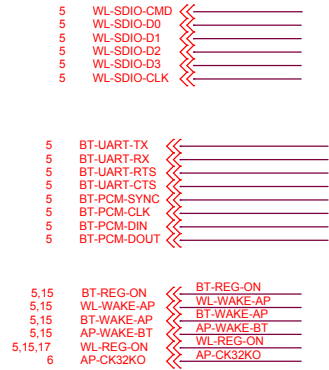
Digital Video



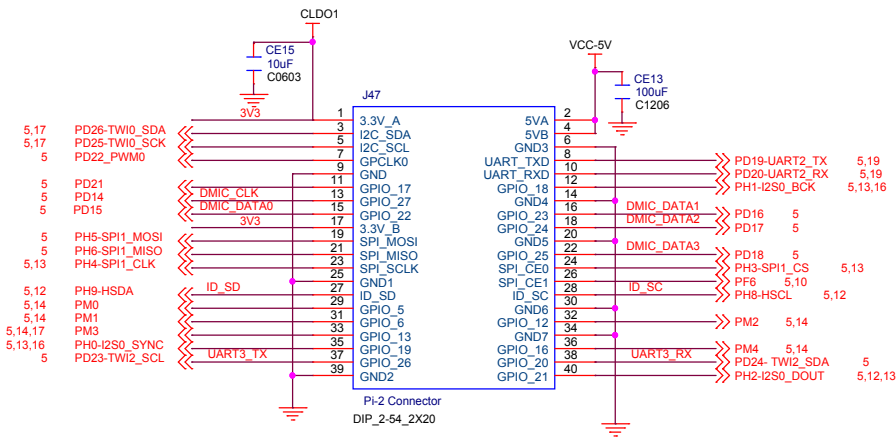
Euler e Connector



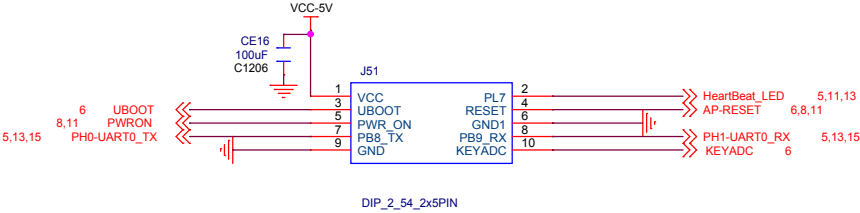
WIFI Connector



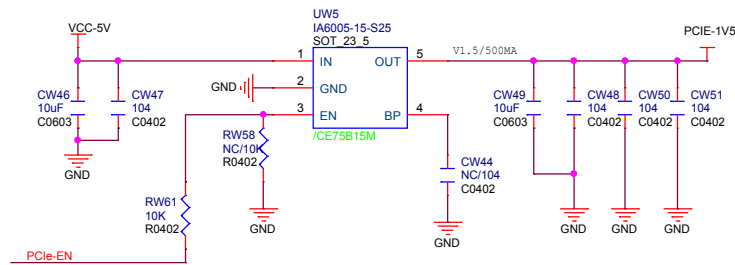
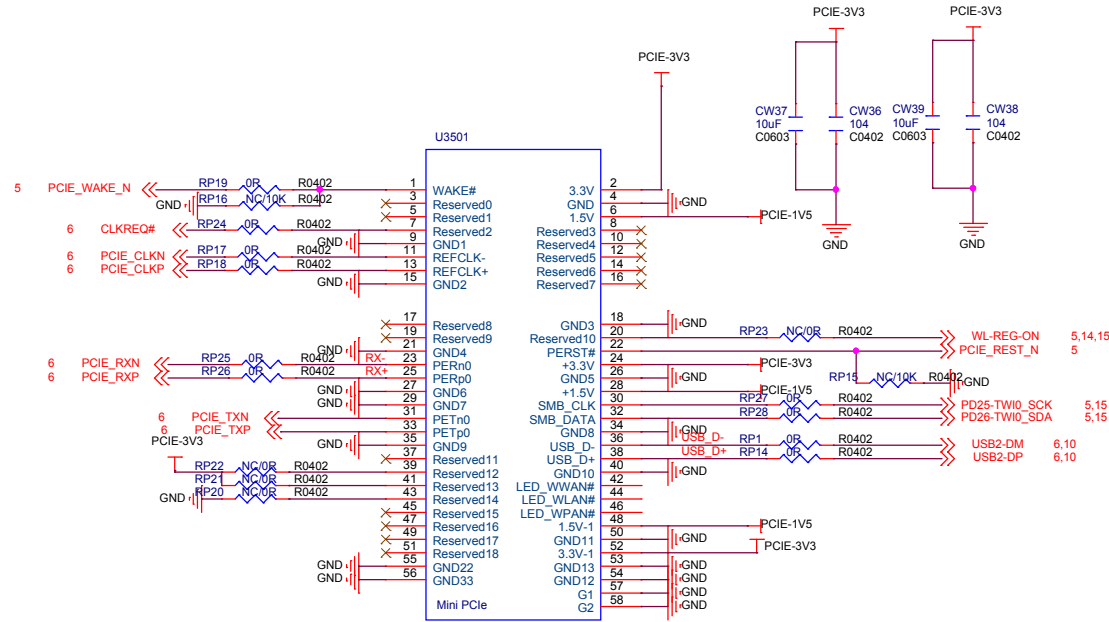
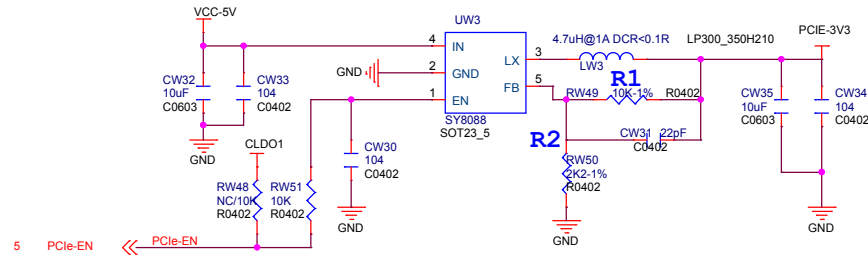
Pi-2 Connector



EXT+ Connector



Mini PCIe



GMAC-3V3

PHY_VDD33

PHY_AVDD33

Reserve for EMI

R80 for 3.3V RGMII

PHY_VDD33

For EMI GC27,GC28 must
close to pin15 and pin21

PHY_AVDD10

RTL8201FN/EN :
C40,C41,GR1 is NC
GC33,GC38,GC35,GC37 is NC

C44 close to pin40

PHY_VDD10

C39 close to pin28

Note 1: The Trace length between GL1 and Pin 48
must be within 0.5 cm. GC40 and GC41 to G L1 must be
within 0.5cm.RTL8211D/8211CN:GC40 22uF(X5R)
RTL8211E: GC40 4.7uF(X5R)

C40 close to L1

VDDREG

RTL8211D/8211CN: L1=4.7uH
RTL8211E: L1=2.2uH

PHY_AVDD33

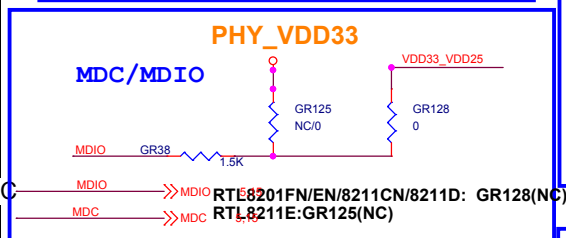
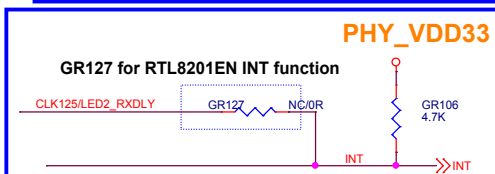
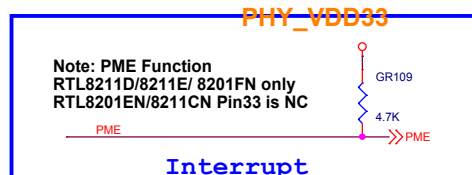
Note 2: The Trace length from C56, C57
to Pin 44,45 must be within 1 cm. The
trace width from PHY_AVDD33 to Pin
44,45
should>40milsIsolation VDDREG and AVDD33
RTL8201FN/EN:GC56(NC),GC57(NC),GR146(NC)
RTL8211CN/8211D: GC56 22uF(X5R)
RTL8211E: GC56 4.7uF(X5R)

External Power Source

RESERVE

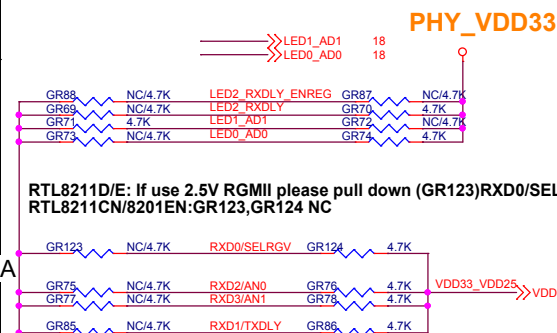
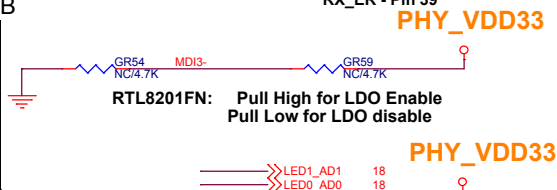
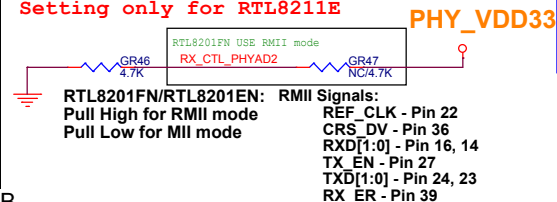
U10,GC69,GC68, GR122,GR120 and GR121 are only used by 8211CN/8211D/8211E
application when switching regulator is disabled. For other applications,
please remove them.

100 ohm



Configuration Setting

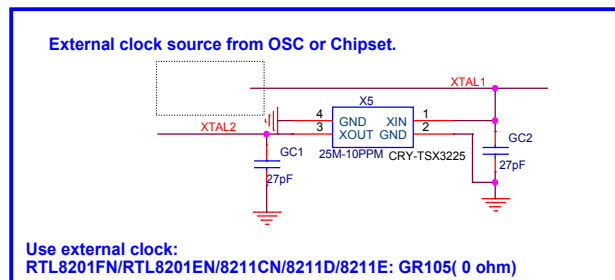
MII/RMII Setting only for RTL8201FN
& RTL8201EN PHYAD2
Setting only for RTL8211E



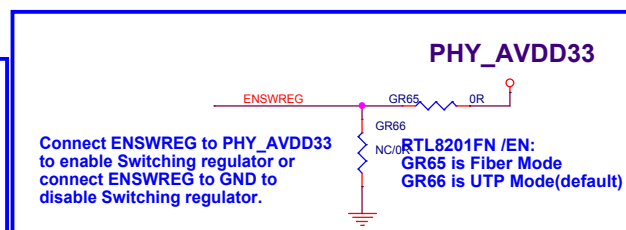
 **RTL8211CN/8211D/8211E:**
GR76,GR78: Config for all capability
GR71,GR74: PHY Address=01 (8211D/8211CN)
GR46,GR71,R74: PHY Address=001 (8211E)
GR69,GR85: Without TX/RX Delay

RTL8201EN:
GR88:MII Interface
GR87:SNII Interface
GR71,GR74: PHY Address=01
Other resistors are NC

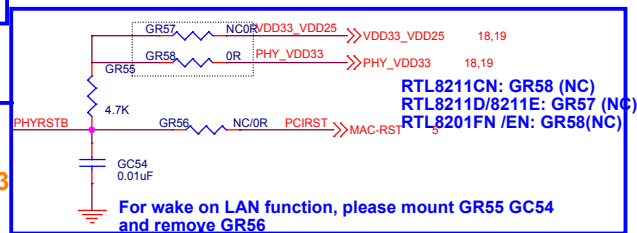
RTL8201FN:
R78 : REF_CLK Input
R77: REF_CLK Output
R69,R71,R74: PHY Address=001
Other resistors are NC



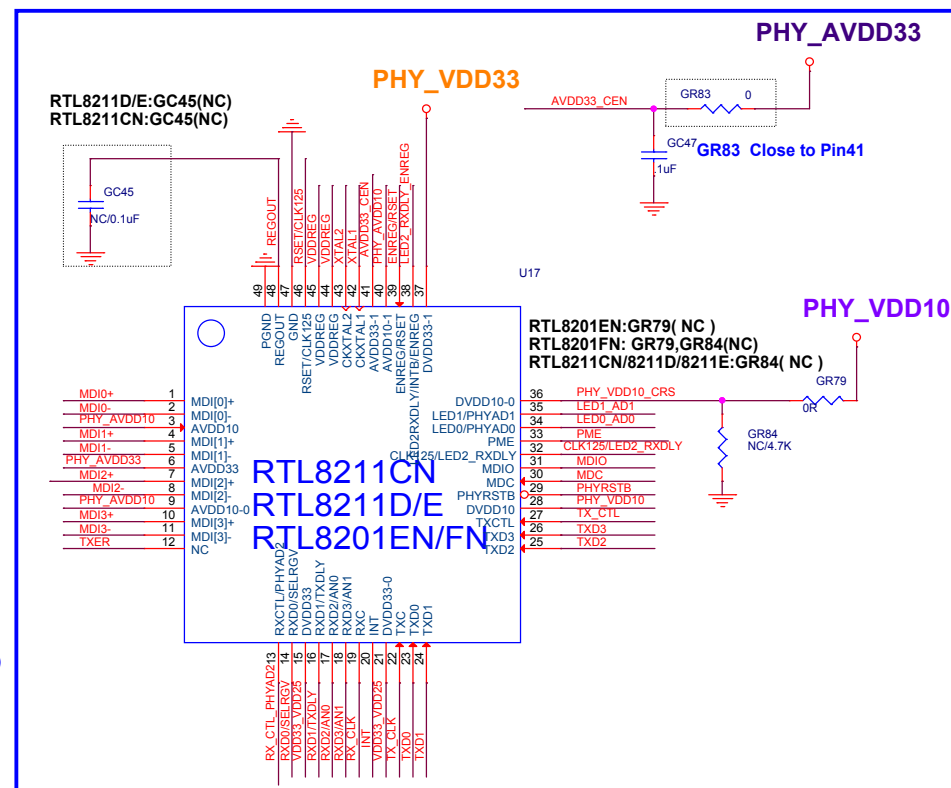
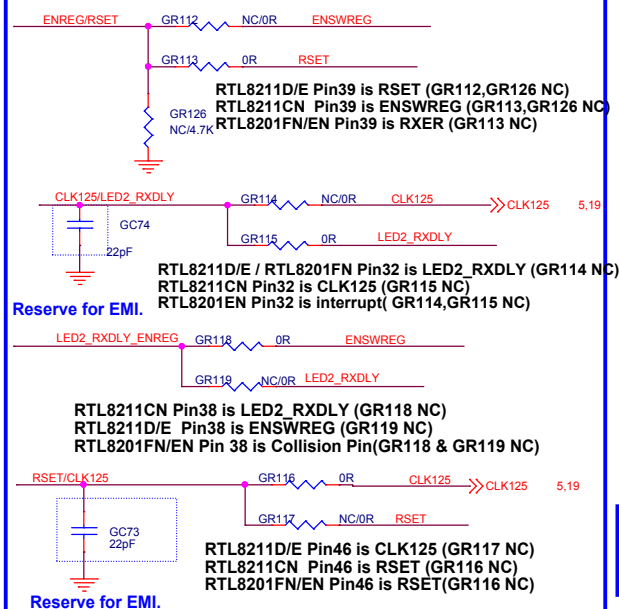
Enable/Disable SWREG



PHY Reset

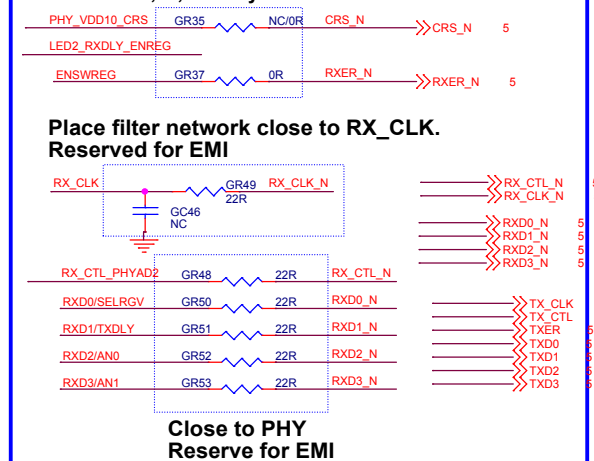


RSET/ENSWREG/CLK125 Co-layout

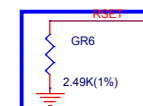


RGMII/RMII

R35,36,37 Only for RTL8201FN/EN



RSET



Others

