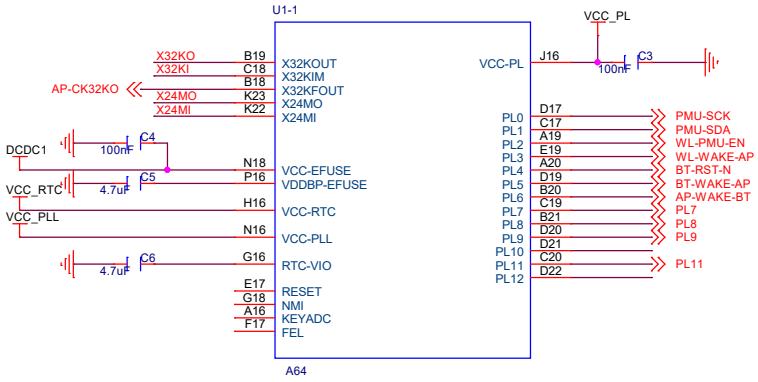
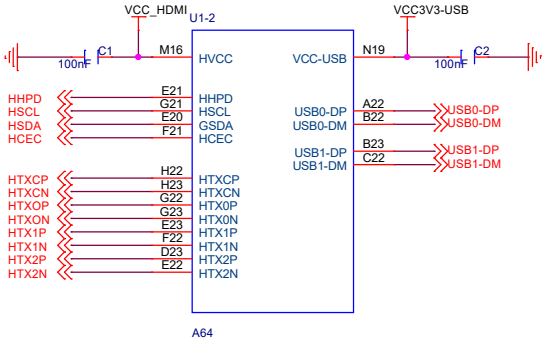
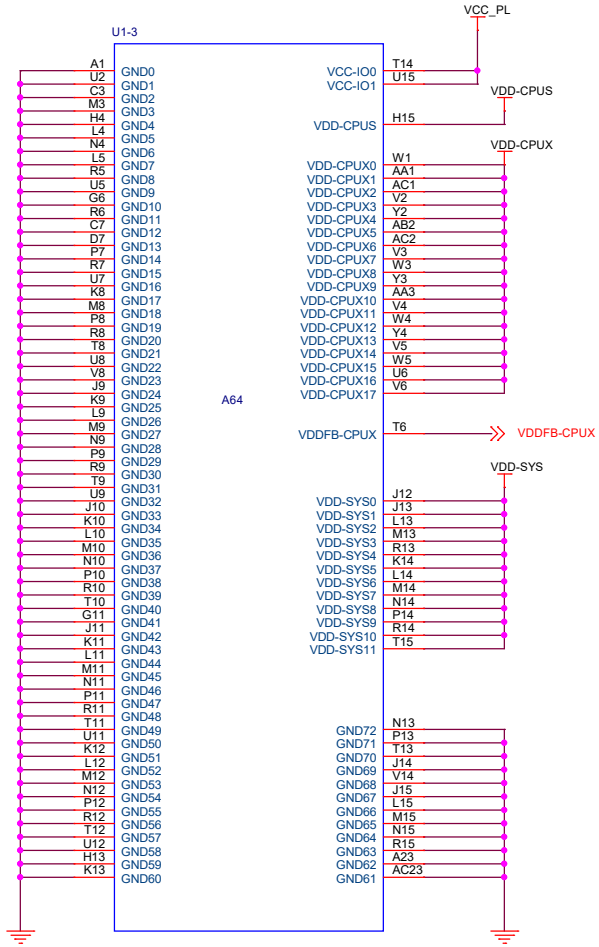
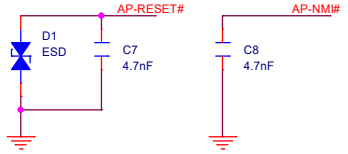
CPU

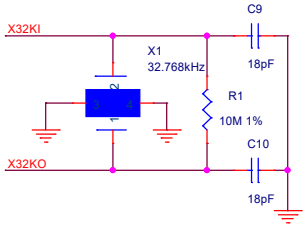


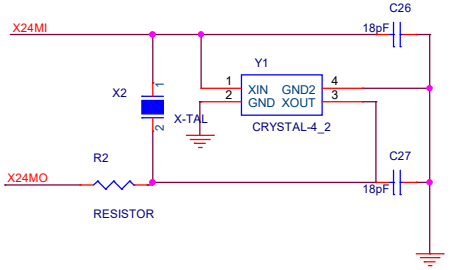


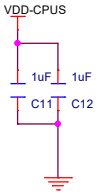


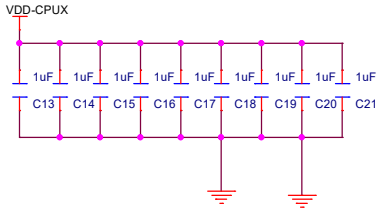
interface block summary

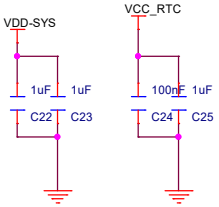












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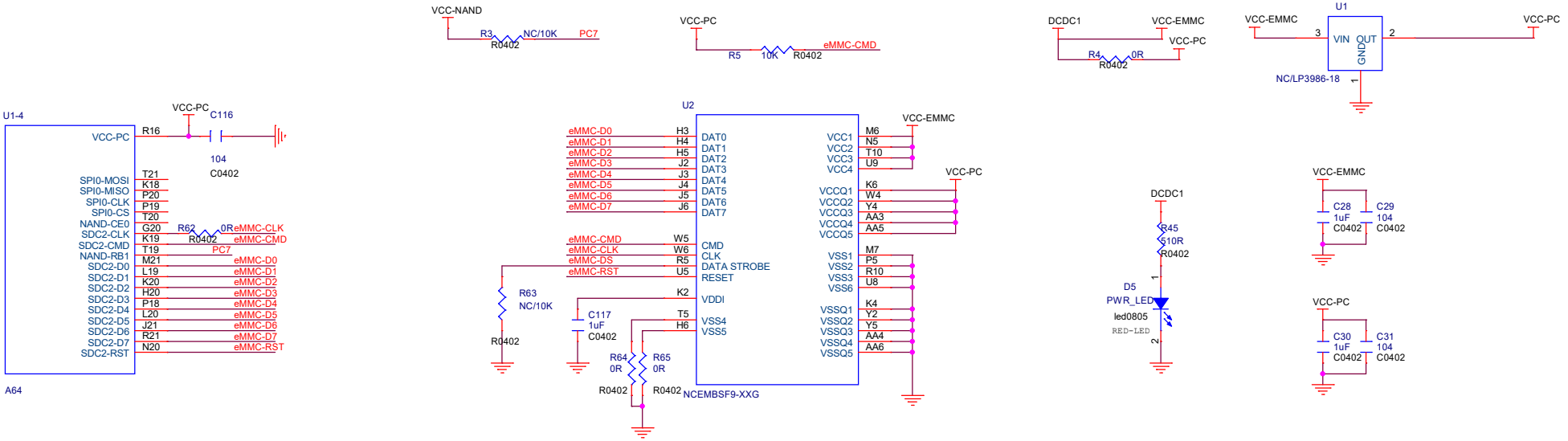
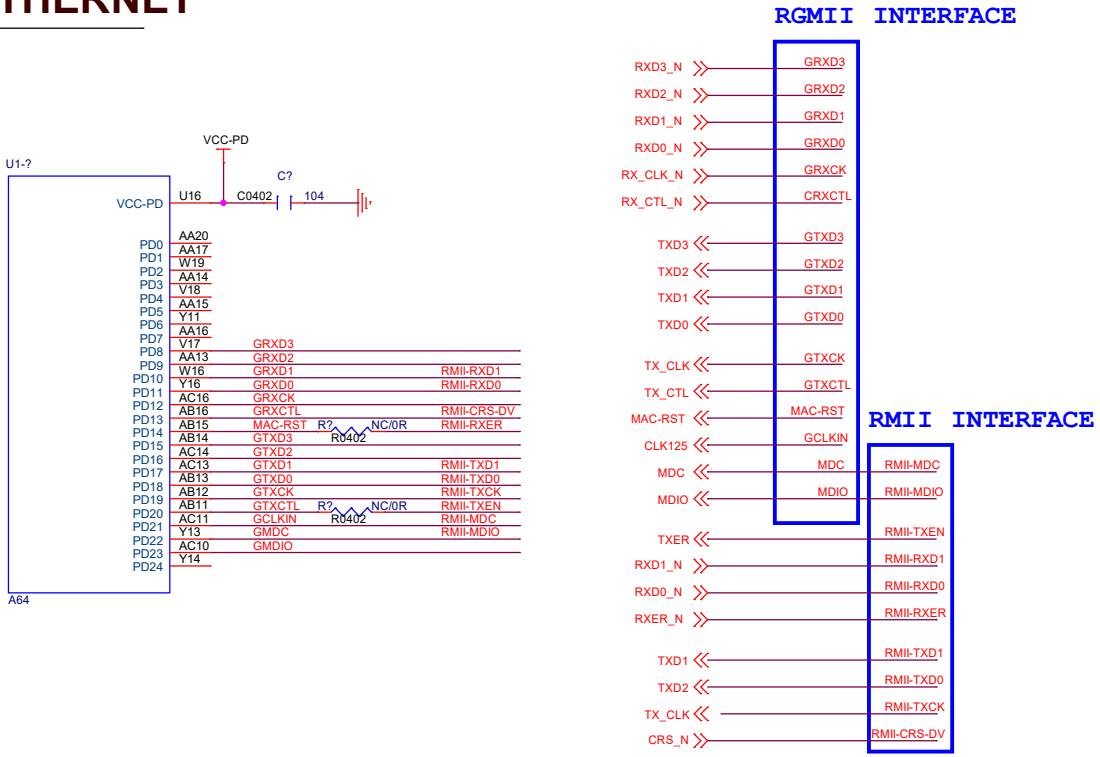
eMMC



ETHERNET



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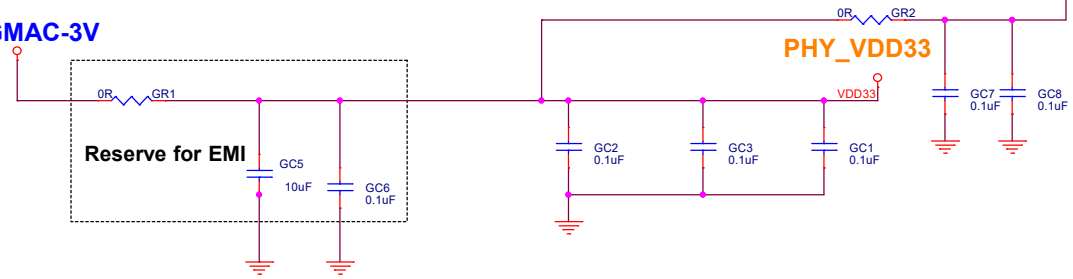
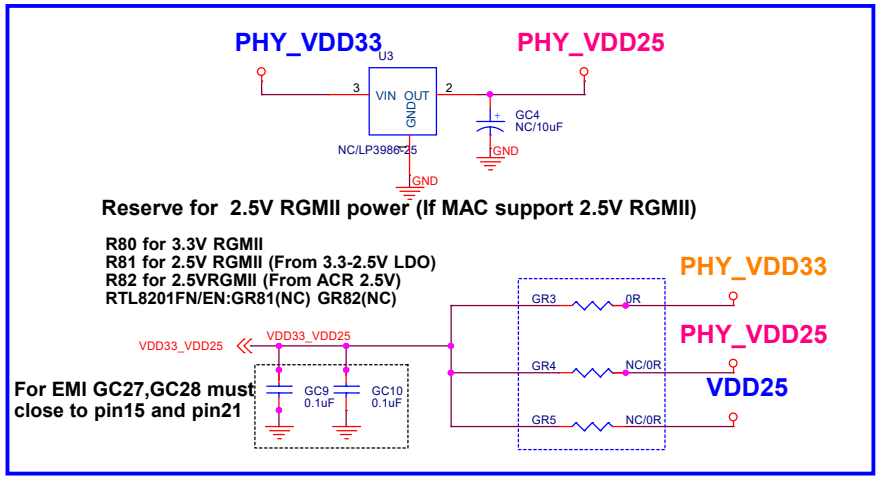
Ethernet Magnetic / RJ45

GMAC-3V



PHY_AVDD33

3.3/2.5V RGMII Power



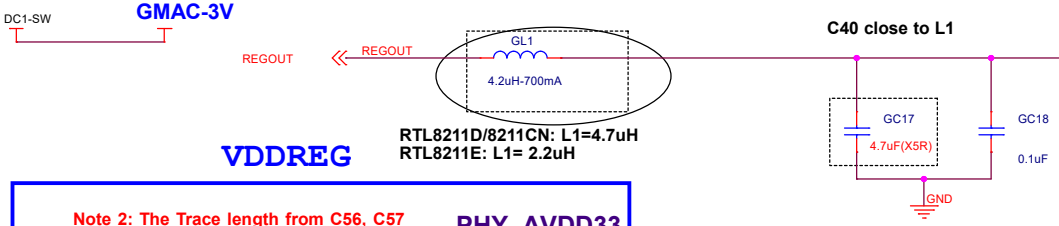
RTL8211CN/D/E	GL1	C56	U10	GR65	GR66	GR122	GC41/GC57
Enable switching regulator	O	O	X	O	X	X	O
Disable switching regulator	X	X	O	X	O	O	X

Note 1: The Trace length between GL1 and Pin 48 must be within 0.5 cm. GC40 and GC41 toG L1 must be within 0.5cm.

RTL8211D/8211CN:GC40 22uF(X5R)
RTL8211E: GC40 4.7uF(X5R)

C40 close to L1

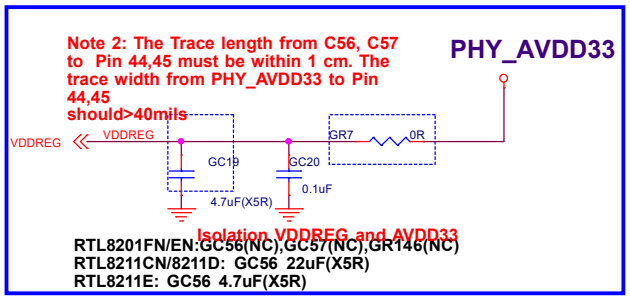
GMAC-3V

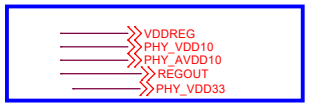


RTL8211D/8211CN: L1=4.7uH
RTL8211E: L1= 2.2uH

VDDREG

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>40mils





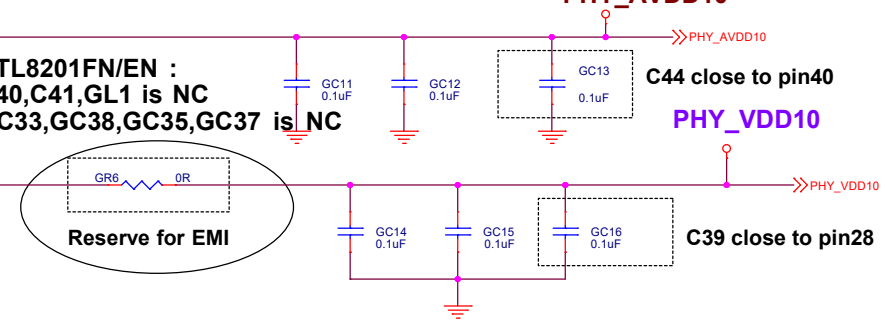
External Power Source

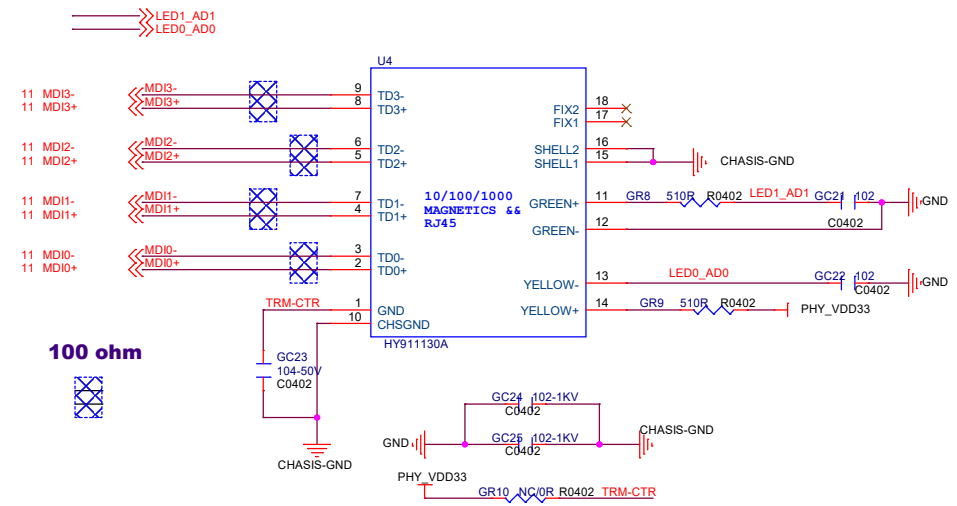
U10,GC69,GC68, GR122,GR120 and GR121 are only used by 8211CN/8211D/8211E application when switching regulator is disabled. For other applications, please remove them.

RESERVE

PHY_AVDD10

RTL8201FN/EN :
C40,C41,GL1 is NC
GC33,GC38,GC35,GC37 is NC





ChipHD to Pine64

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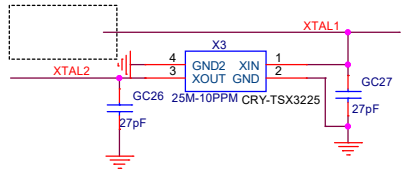
ETHERNET PHY

External clock and Crystal

External clock source from OSC or Chipset.

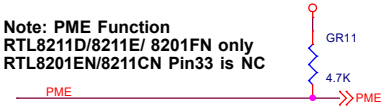


Use external clock:
RTL8201FN/RTL8201EN/8211CN/8211D/8211E: GR105(0 ohm)

PME

PHY_VDD33

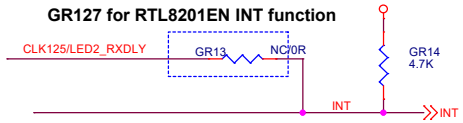
Note: PME Function
RTL8211D/8211E/ 8201FN only
RTL8201EN/8211CN Pin33 is NC



Interrupt

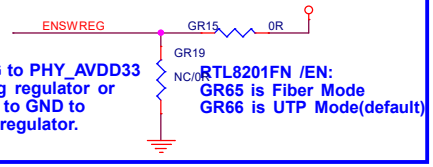
PHY_VDD33

GR127 for RTL8201EN INT function



Enable/Disable SWREG

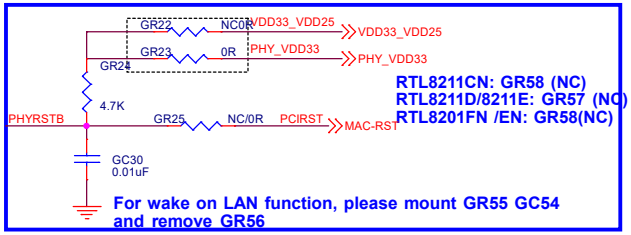
PHY_AVDD33



Connect ENSWREG to PHY_AVDD33 to enable Switching regulator or connect ENSWREG to GND to disable Switching regulator.

RTL8201FN /EN:
GR65 is Fiber Mode
GR66 is UTP Mode(default)

PHY Reset

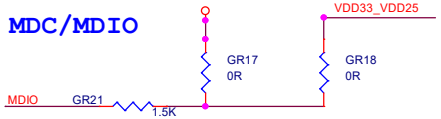


RTL8211CN: GR58 (NC)
RTL8211D/8211E: GR57 (NC)
RTL8201FN /EN: GR58(NC)

For wake on LAN function, please mount GR55 GC54 and remove GR56

MDC/MDIO

PHY_VDD33

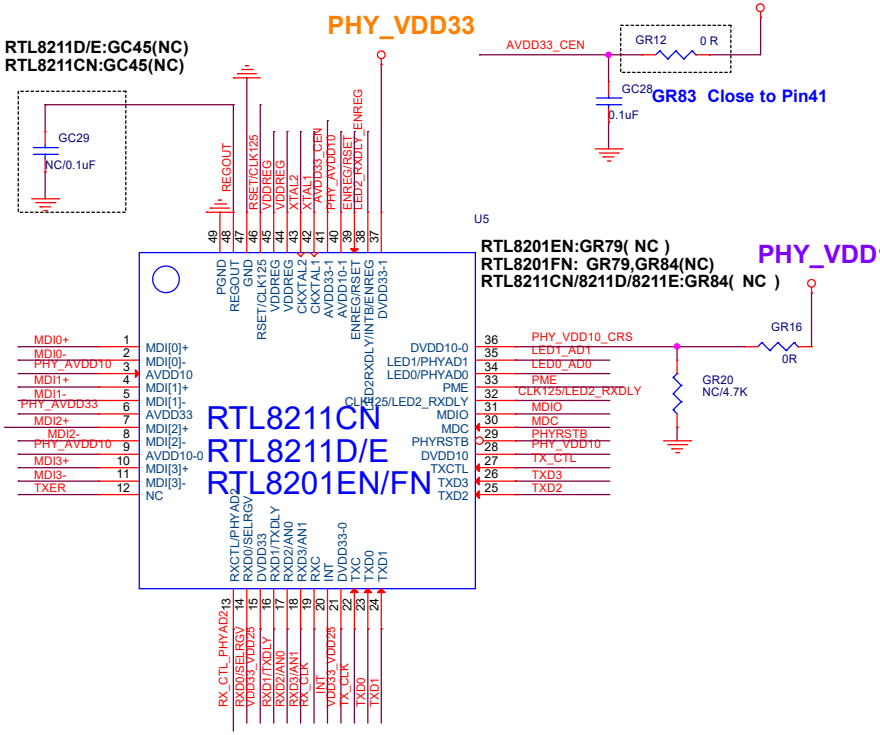


MDIO
MDC

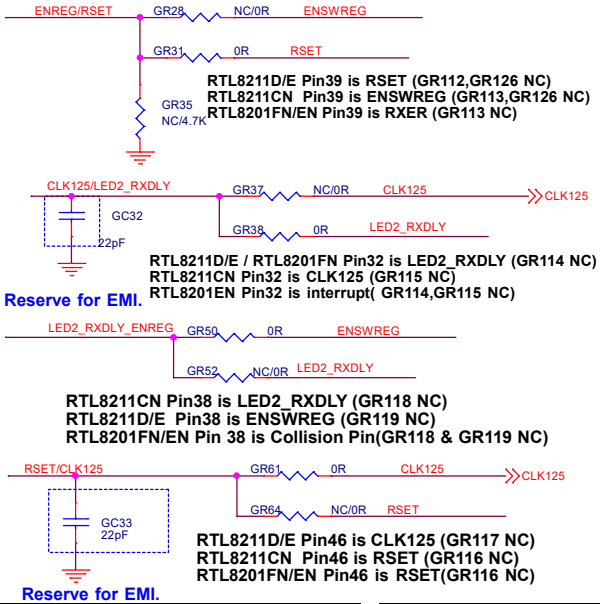
RTL8201FN/EN/8211CN/8211D: GR128(NC)
RTL8211E:GR125(NC)

PHY_VDD33 / PHY_AVDD33 / PHY_VDD10

RTL8211D/E:GC45(NC)
RTL8211CN:GC45(NC)



RSET/ENSWREG/CLK125 Co-layout



RTL8211D/E Pin39 is RSET (GR112,GR126 NC)
RTL8211CN Pin39 is ENSWREG (GR113,GR126 NC)
RTL8201FN/EN Pin39 is RXER (GR113 NC)

RTL8211D/E / RTL8201FN Pin32 is LED2_RXDLY (GR114 NC)
RTL8211CN Pin32 is CLK125 (GR115 NC)
RTL8201EN Pin32 is interrupt(GR114,GR115 NC)

Reserve for EMI.

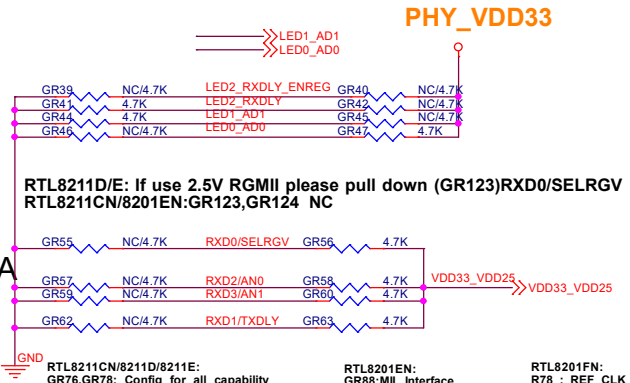
RTL8211CN Pin38 is LED2_RXDLY (GR118 NC)
RTL8211D/E Pin38 is ENSWREG (GR119 NC)
RTL8201FN/EN Pin 38 is Collision Pin(GR118 & GR119 NC)

RTL8211D/E Pin46 is CLK125 (GR117 NC)
RTL8211CN Pin46 is RSET (GR116 NC)
RTL8201FN/EN Pin46 is RSET(GR116 NC)

Reserve for EMI.

Configuration Setting

PHY_VDD33



RTL8211D/E: If use 2.5V RGMII please pull down (GR123)RXD0/SELRGV
RTL8211CN/8201EN:GR123,GR124 NC

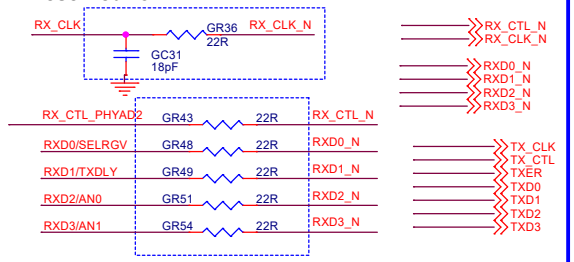
RTL8211CN/8211D/8211E:
GR76,GR78: Config for all capability
GR71,GR74: PHY Address=01 (8211D/8211CN)
GR46,GR71,R74: PHY Address=001 (8211E)
GR69,GR85: Without TX/RX Delay

RTL8201EN:
GR88:MII Interface
GR87:SNI 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

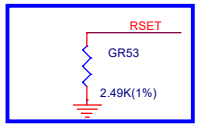
RGMII/RMII

Place filter network close to RX_CLK.
Reserved for EMI

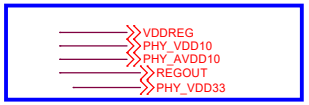


Close to PHY
Reserve for EMI

RSET



Others



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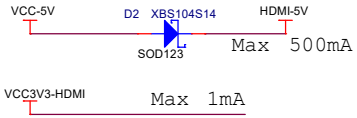
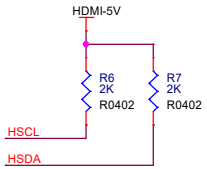
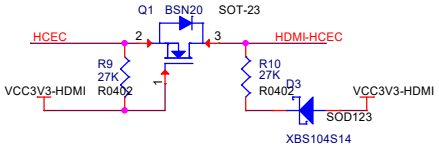
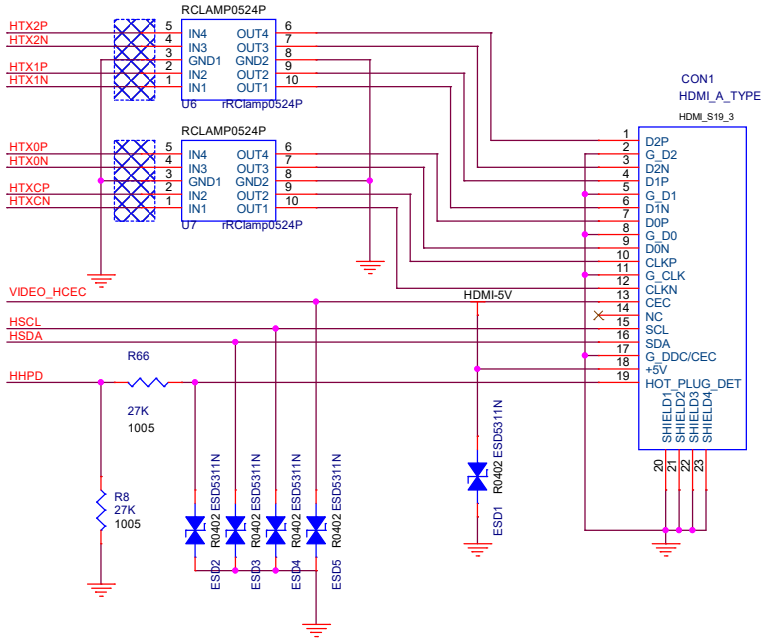
HDMI



Differential pairs
Z0= 100 ohm







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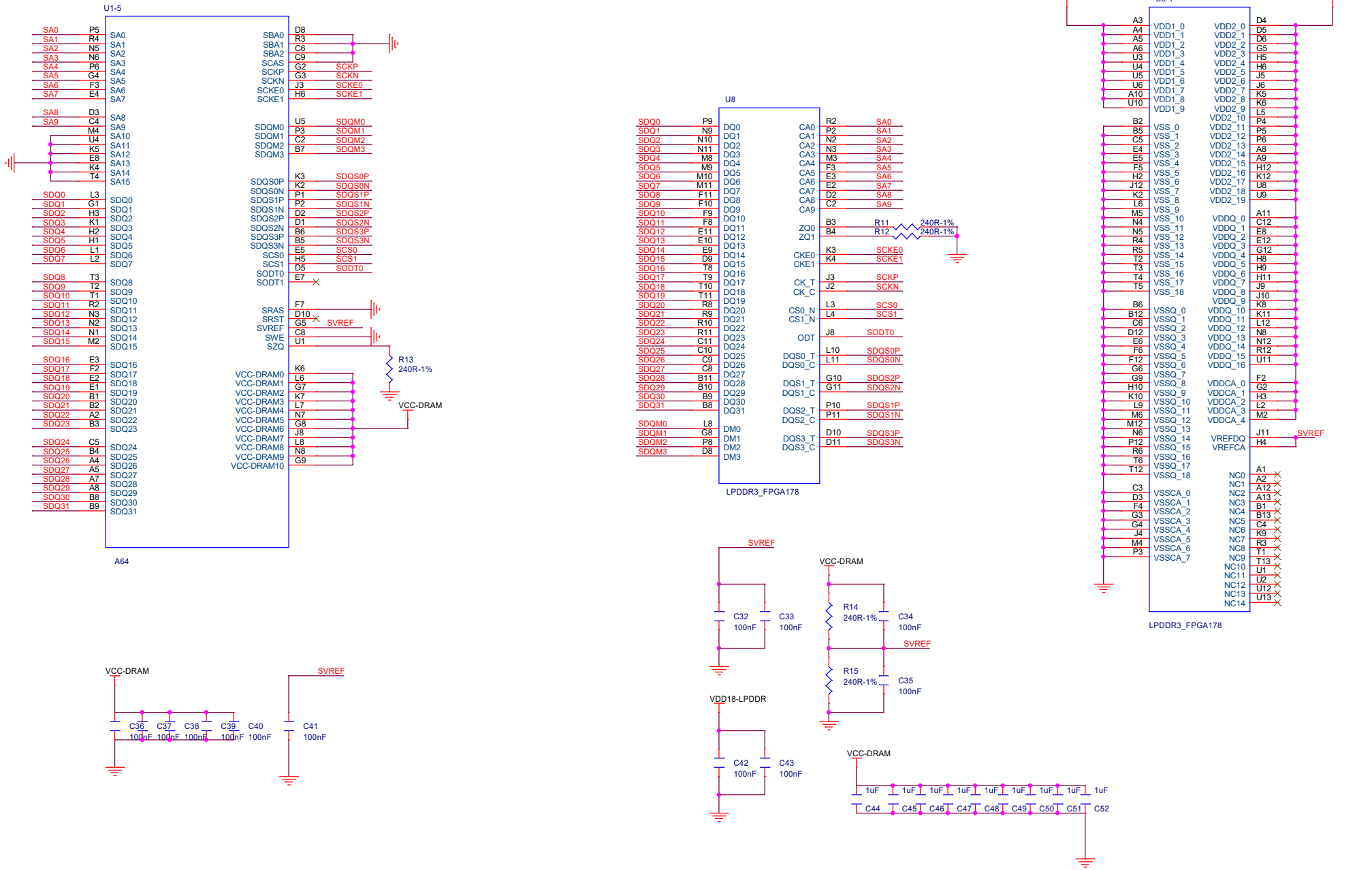
LPDDR3 32X1



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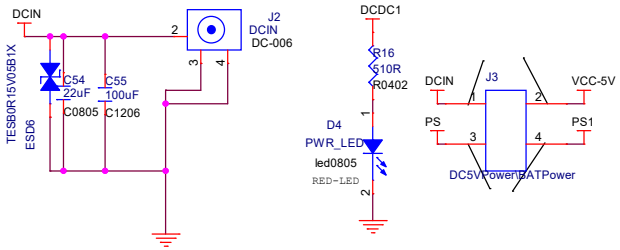
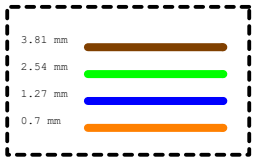
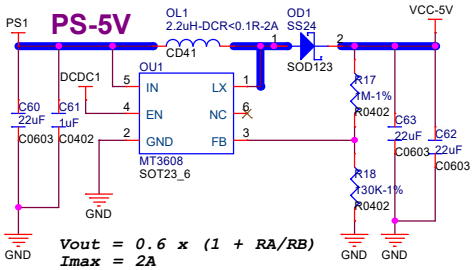
Power

DC JACK SIZE : (Diameter) 1.3 mm

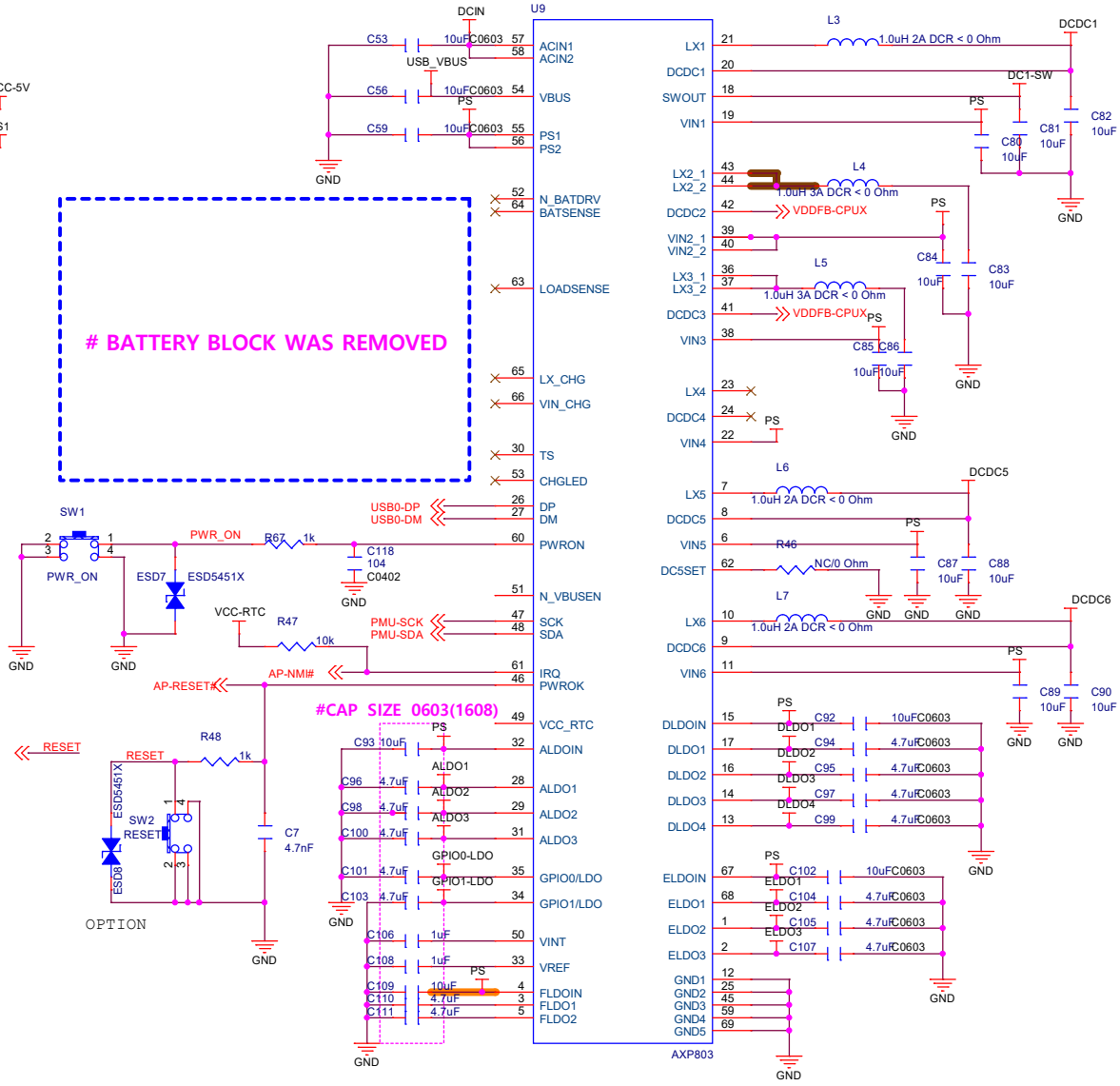


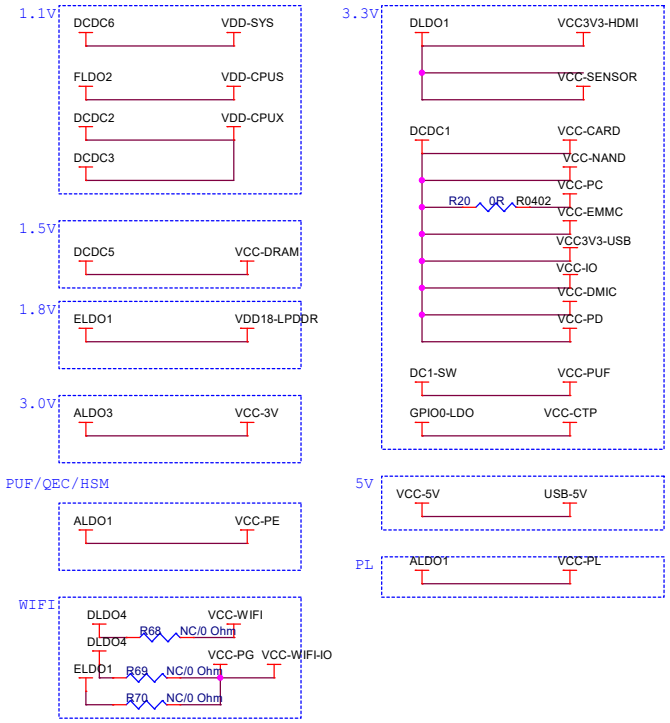
#Line Width

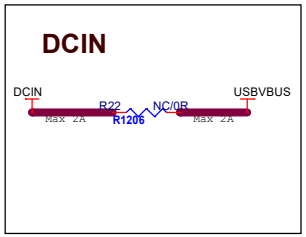




BATTERY BLOCK WAS REMOVED







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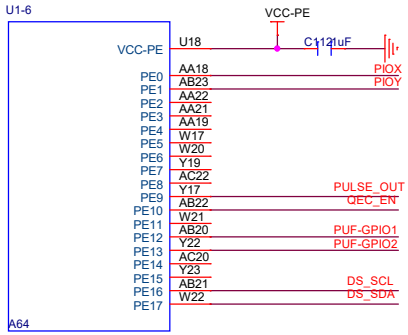
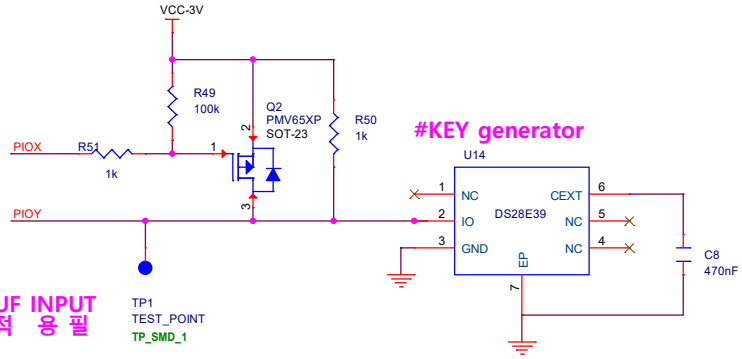
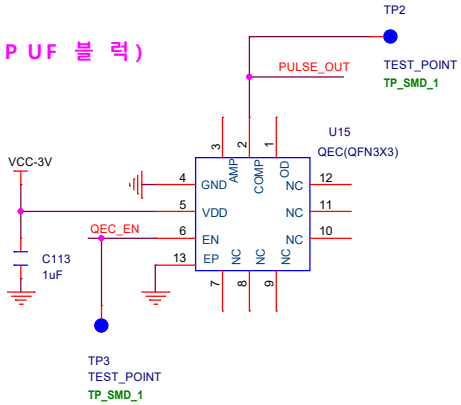
PUF/QEC/HSM

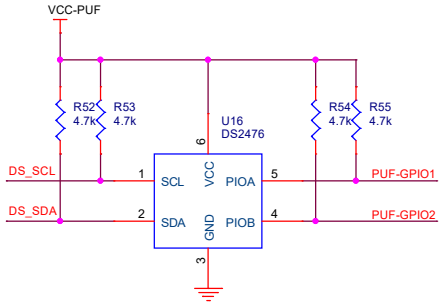




PUF INPUT
FW적 용 필



(CAMERA 블 럭 ≫ P U F 블 럭)
블 럭 변경



KEY storage and secure host controller

#Quantum Entropy nonce generator

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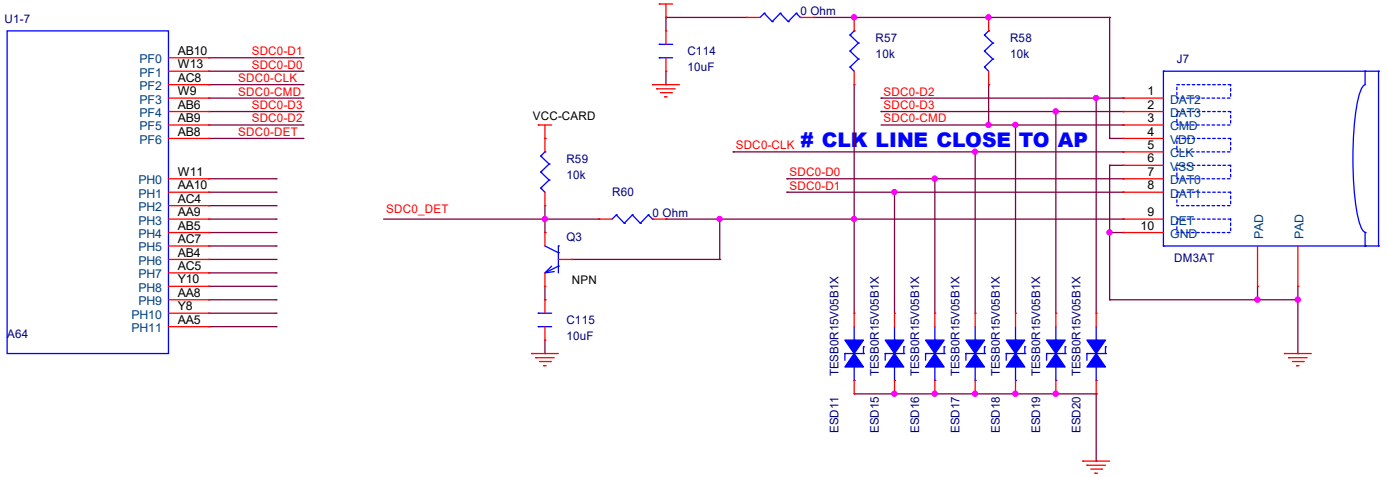
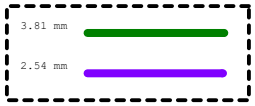
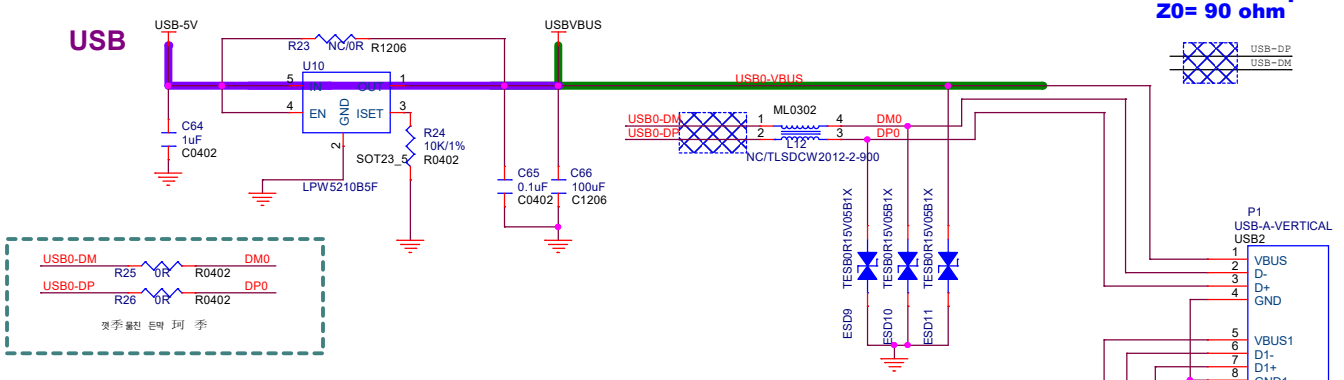
USB / SD-CARD



#Line Width



USB



Differential pairs
Z0= 90 ohm

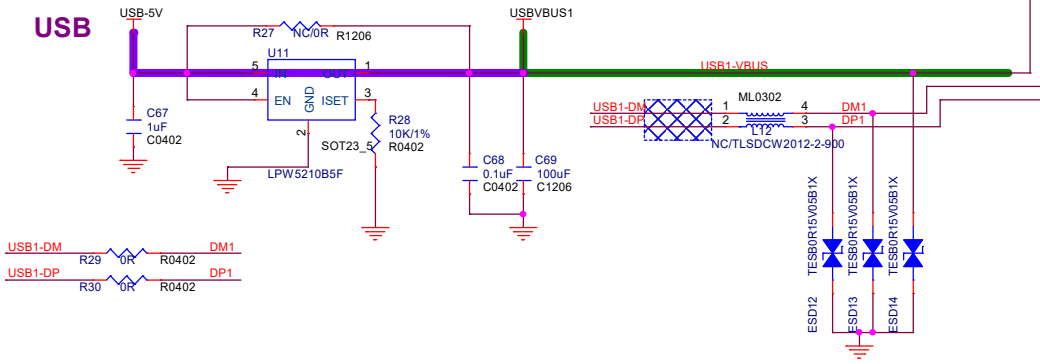
The ESD part's parasitic capacitance < 5pF.

5,6 USB0-DM
5,6 USB0-DP
5,6 USB1-DM
5,6 USB1-DP

USB-5V

DCDC1

USB



The ESD part's parasitic capacitance < 5pF.

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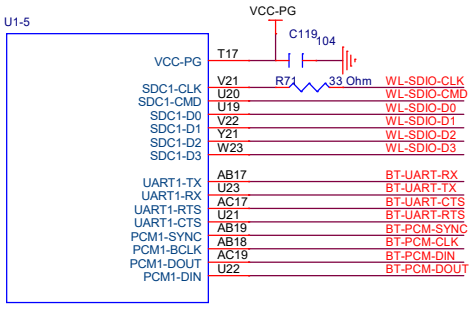
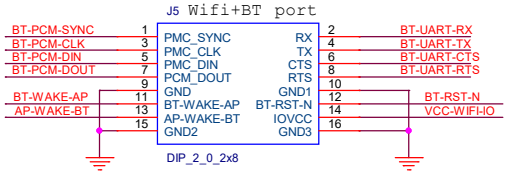
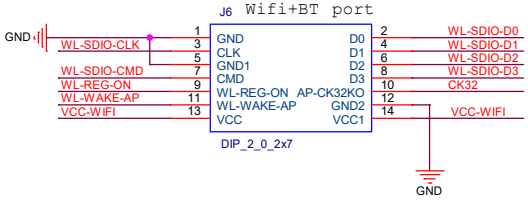
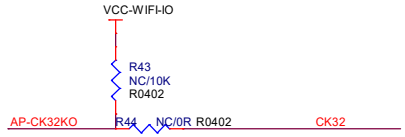
WiFi/BT

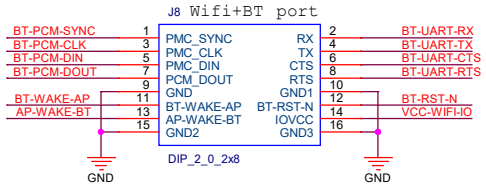


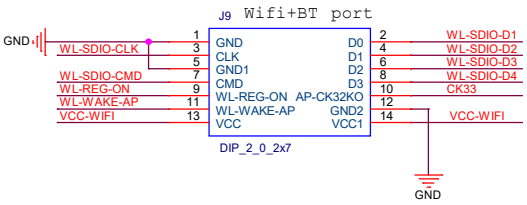


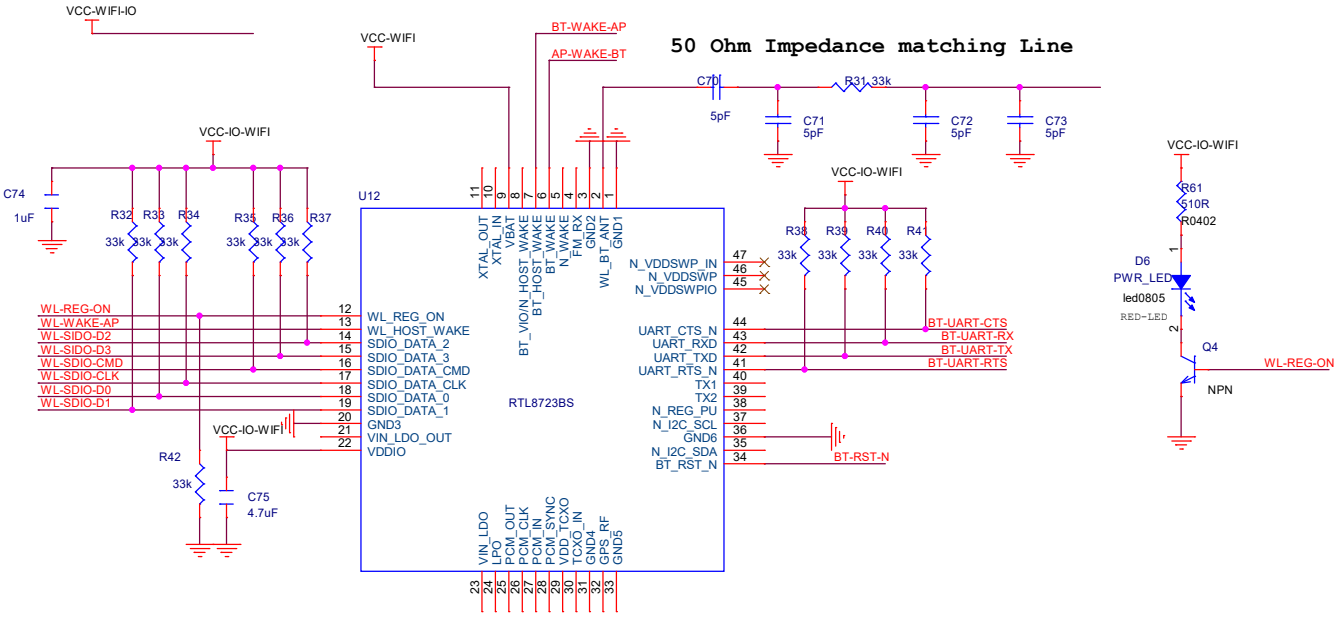




WiFi/BT - MODULE







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