龙芯主板XC-LS3A6M
技术规格书 (V1.0)

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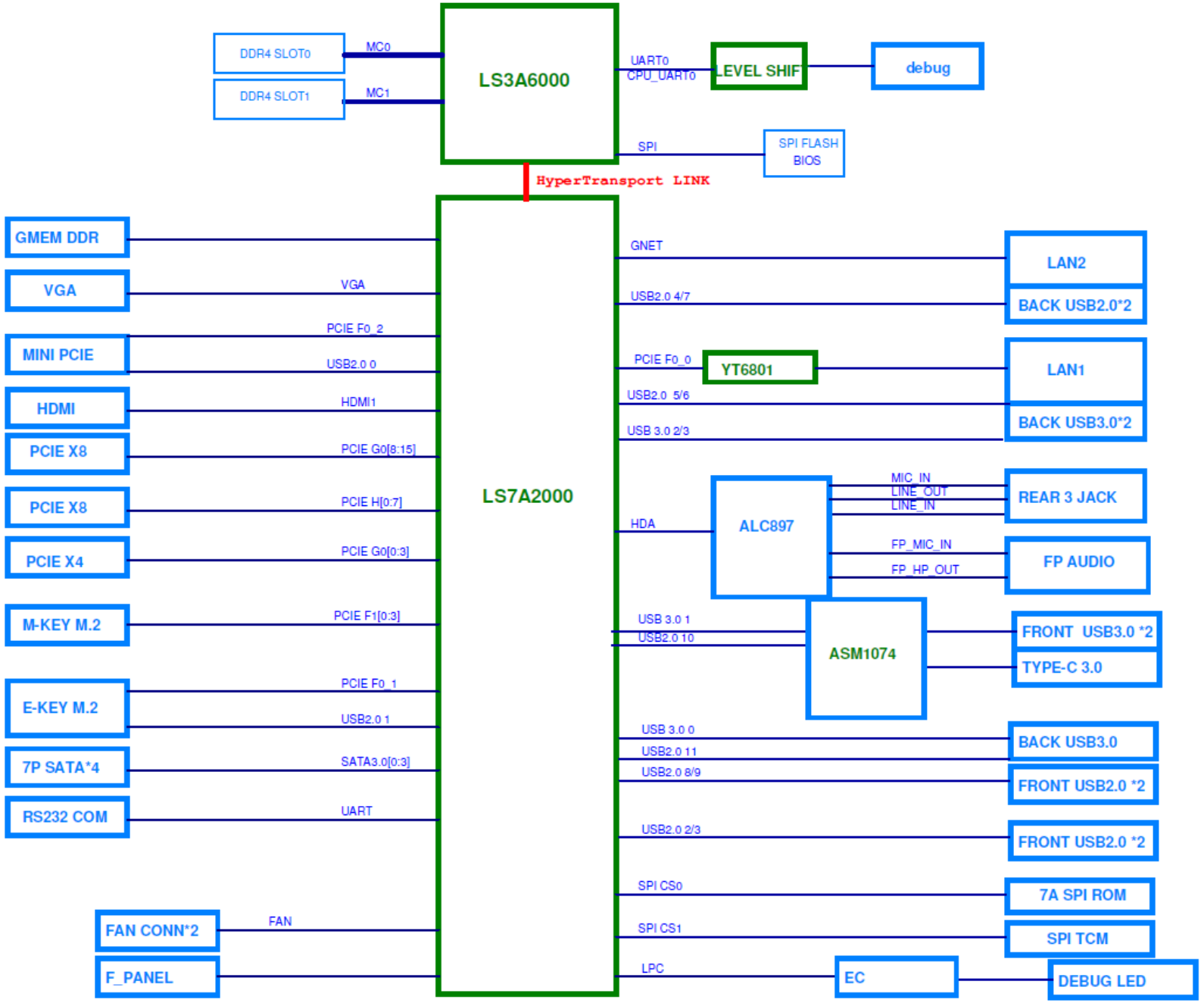
1.主板硬件框图

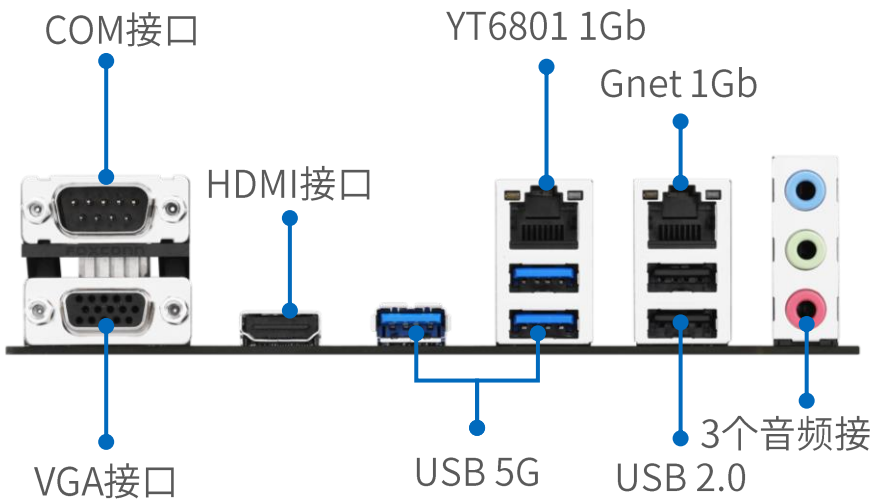

DDR4 SLOT0
DDR4 SLOT1
MC0
MC1
LS3A6000
UART0
CPU_UART0
LEVEL SHIF
debug
SPI
SPI FLASH BIOS
HyperTransport LINK
GMEM DDR
VGA
MINI PCIE
HDMI
PCIE X8
PCIE X8
PCIE X4
M-KEY M.2
E-KEY M.2
7P SATA*4
RS232 COM
FAN CONN*2
F_PANEL
LS7A2000
GNET
LAN2
USB2.0 4/7
BACK USB2.0*2
PCIE F0_0
YT6801
LAN1
USB2.0 5/6
BACK USB3.0*2
USB 3.0 2/3
HDA
ALC897
MIC_IN
LINE_OUT
LINE_IN
REAR 3 JACK
FP_MIC_IN
FP_HP_OUT
FP AUDIO
USB 3.0 1
USB2.0 10
ASM1074
FRONT USB3.0 *2
TYPE-C 3.0
USB 3.0 0
USB2.0 11
BACK USB3.0
USB2.0 8/9
FRONT USB2.0 *2
USB2.0 2/3
FRONT USB2.0 *2
SPI CS0
7A SPI ROM
SPI CS1
SPI TCM
LPC
EC
DEBUG LED
VGA
PCIE F0_2
USB2.0 0
HDMI1
PCIE G0[8:15]
PCIE H[0:7]
PCIE G0[0:3]
PCIE F1[0:3]
PCIE F0_1
USB2.0 1
SATA3.0[0:3]
UART
FAN

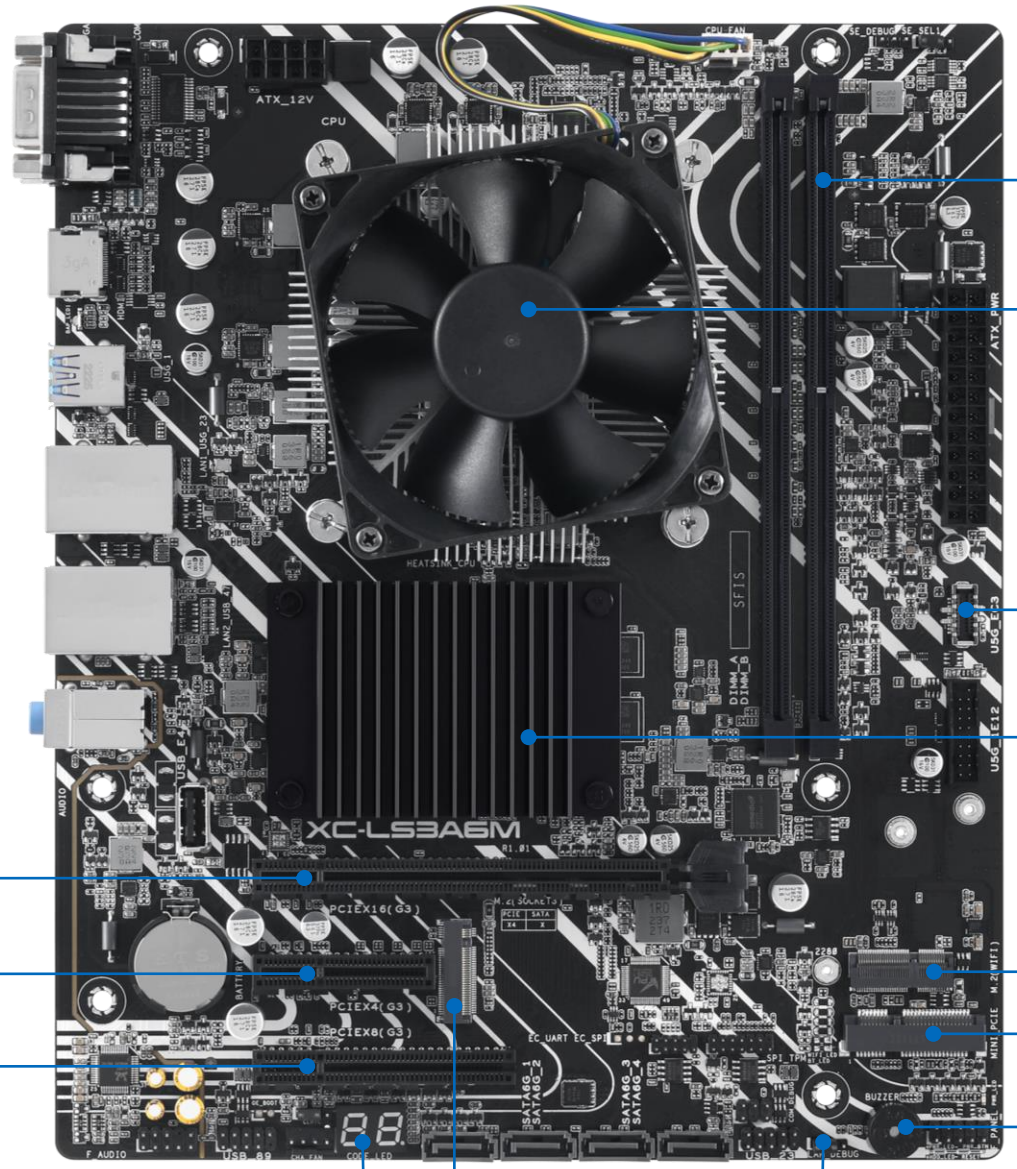
2.主板硬件规格

CPU	Loongson 3A6000 Processor
内存	2 x DIMM, DDR4
存储	1 x M.2 slot (Key M), type 2280 only (supports PCIe 3.0 x4 mode) 4 x SATA 6Gb/s port
网络	1 x YT6801 1Gb Ethernet 1 x龍芯gnet 1Gb Ethernet
音频	Realtek High Definition Audio CODEC
后IO接口	3 x USB 3.2 Gen 1 ports (2 x Type-A) 4 x USB 2.0 ports (2 x Type-A) 1 x YT6801 1Gb Ethernet port 1 x龍芯Gnet 1Gb Ethernet port 3 x Audio jacks 1 x COM port 1 x VGA port 1 x HDMI port

板载扩展连接器	**Expansion Slots** 1 x PCIe 3.0 x16 slot (support x8 mode) 1 x PCIe 3.0 x8 slot 1 x PCIe 3.0 x4 slot **Fan and cooling related** 1 x CPU Fan 1 x 4-pin CPU Fan header 1 x 4-pin Chassis Fan header **Power related** 1 x 24-pin Main Power connector 1 x 8-pin +12V Power connector **Storage related** 1 x M.2 slot (Key M), type 2280 only (supports PCIe 3.0 x4 mode) 4 x SATA 6Gb/s ports **USB** 1 x USB 3.2 Gen 1 connector (supports USB Type-C®) 1 x USB 3.2 Gen 1 header supports additional 2 USB 3.2 Gen 1 ports 1 x USB 2.0 port 2 x USB 2.0 headers support additional 4 USB 2.0 ports **Miscellaneous** 1 x Q-Code 1 x Front Panel Audio header 1 x M.2 slot (Key E) 1 x MINI PCIE slot 1 x 10-1 pin System Panel header 1 x Buzzer
PCB	mATX Form Factor 9.6 inch x 8 inch (24.4cm x 20cm)
操作系统	Kylin OS, UOS, LoongNix
BIOS	龙芯

3.主板接口图示





2个DDR4插槽

龙芯3A6000 处理器

前置USB 5G Type-C接口

龙芯7A2000桥片

PCIe x16插槽（x8模式）

PCIe x4插槽（x4模式）

PCIe x8插槽（x8模式）

M.2 WIFI插槽（Key E）

Mini PCIE插槽

蜂鸣器

DEBUG数码管

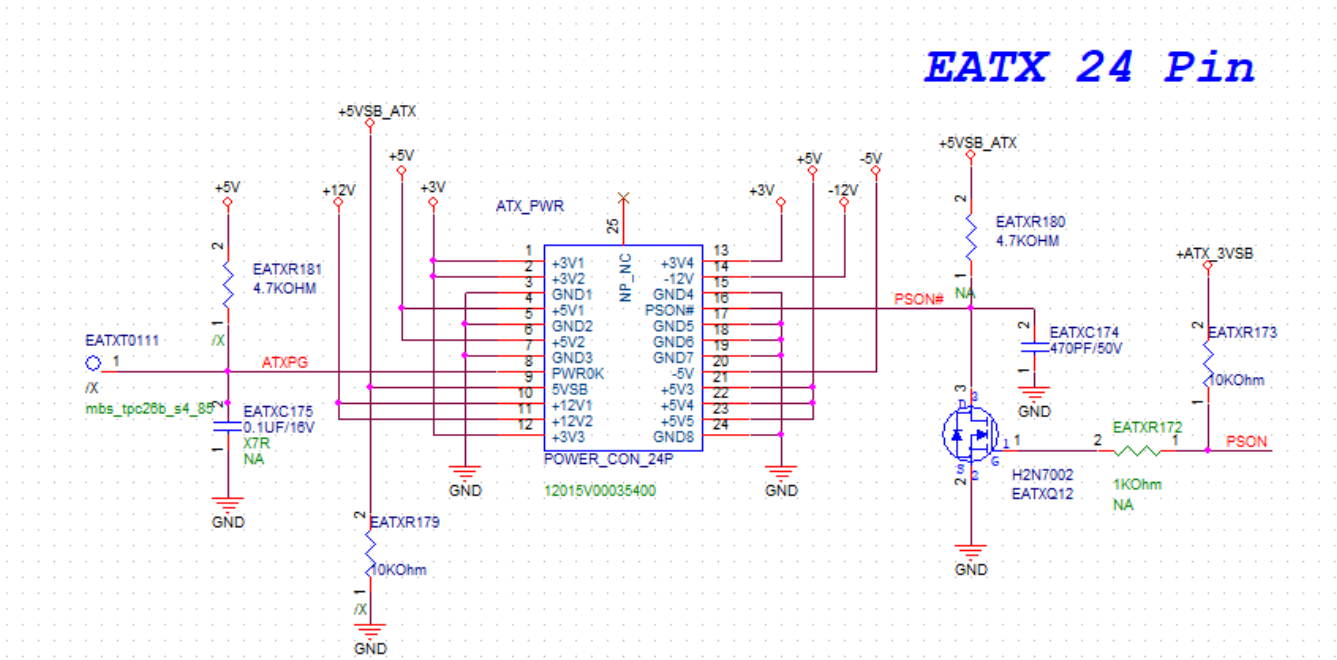
M.2 SSD插槽（Key M）

网络物理开关

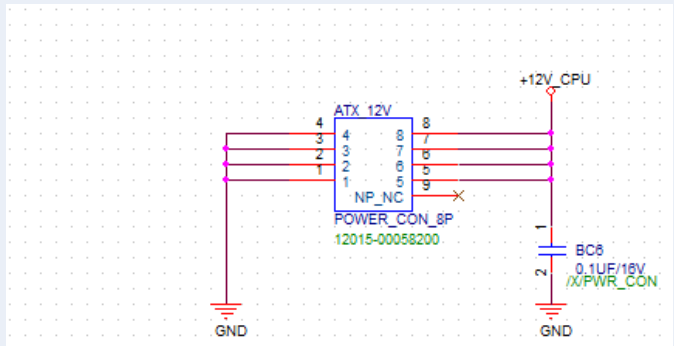
4.工作环境要求

序号	项目	指标要求	备注
1	工作溫濕度	0℃ ~ 50℃/85%H	

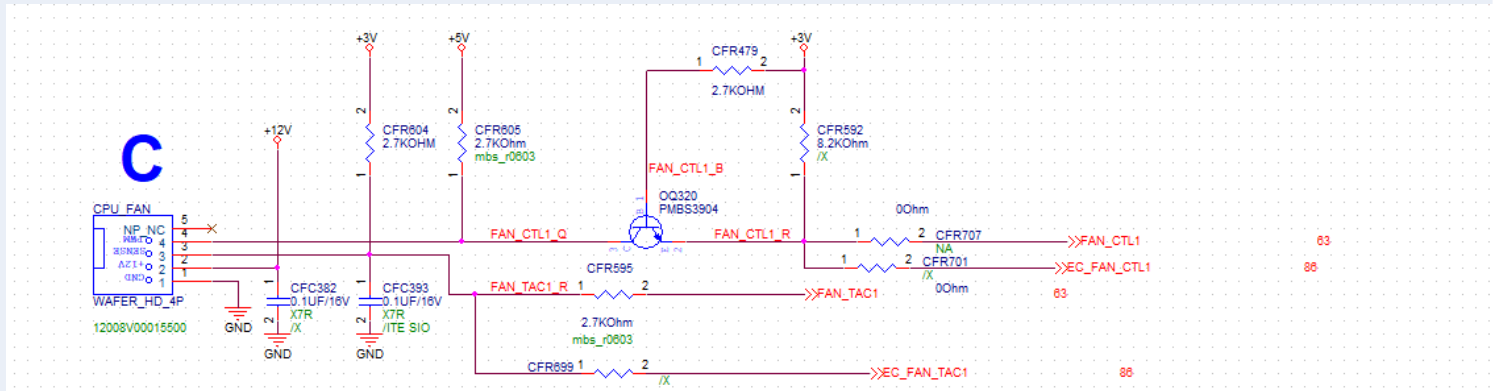
5.Pin定义

Reference	pin	Pin define	Shcematic
ATX_PWR	1	+3V	
	2	+3V	
	3	GND	
	4	+5V	
	5	GND	
	6	+5V	
	7	GND	
	8	ATXPG	
	9	+5VSB_ATX	
	10	+12V	
	11	+12V	
	12	+3V	
	13	+3V	
	14	-12V	
	15	GND	
	16	PSON#	
	17	GND	
	18	GND	
	19	GND	
	20	-5V	
	21	+5V	
	22	+5V	
	23	+5V	
	24	GND	

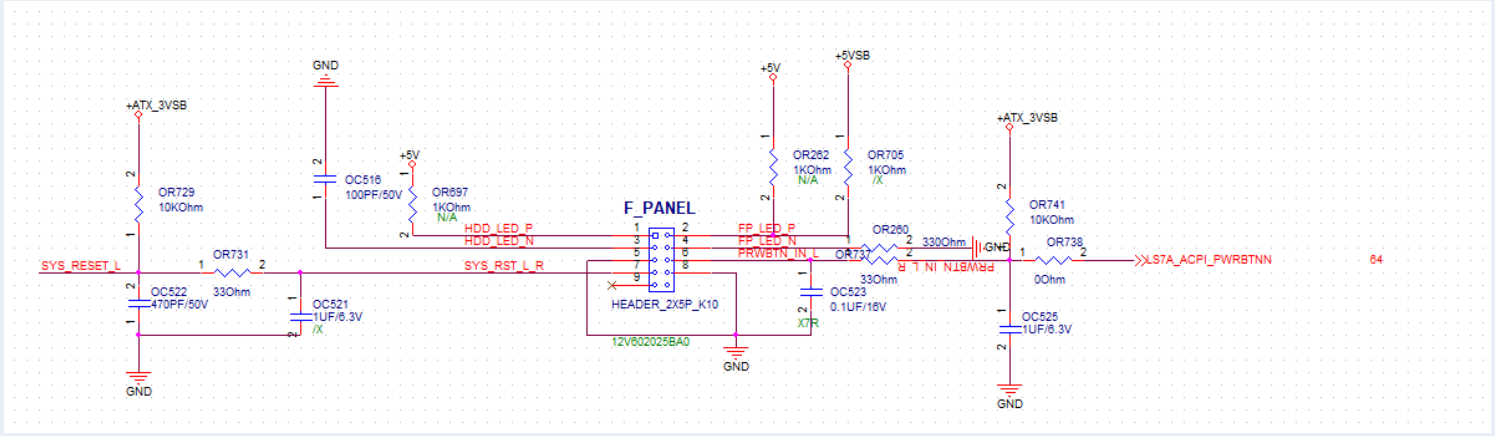
ATX_12V	1	GND
	2	GND
	3	GND
	4	GND
	5	+12V_CPU
	6	+12V_CPU
	7	+12V_CPU
	8	+12V_CPU
	9	NC



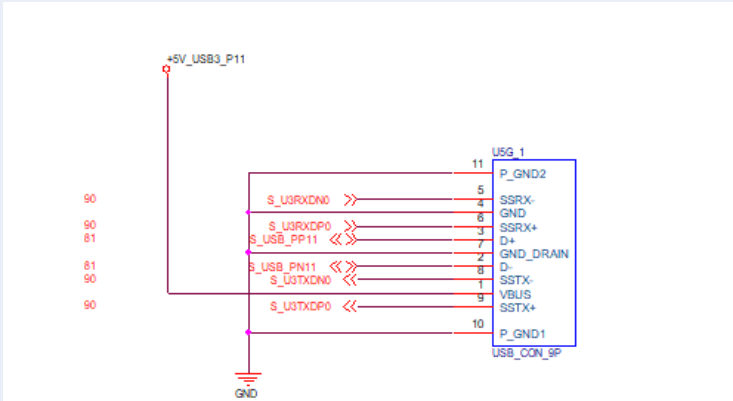
CPU_FAN/ CHA_FAN	1	GND
	2	+12V
	3	FAN_TAC1
	4	FAN_CTL1



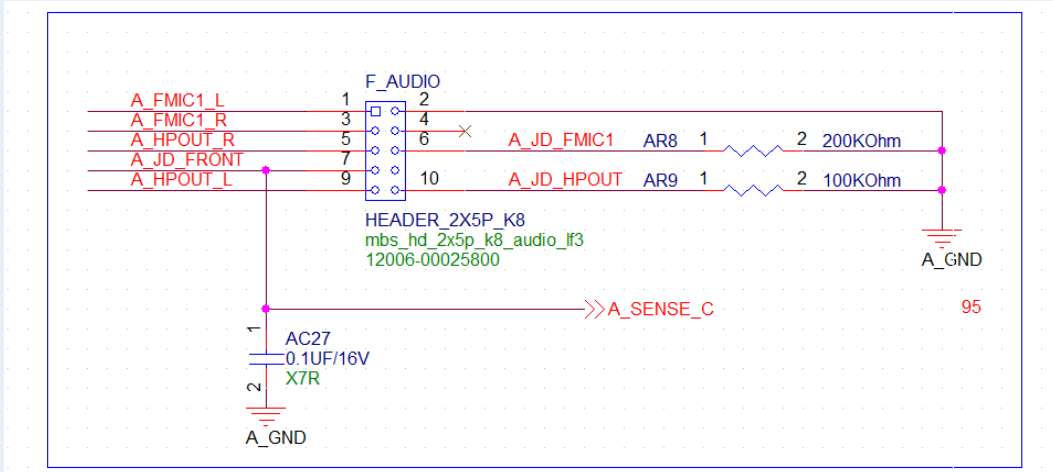
F_PANEL	1	HDD_LED_P
	2	FP_LED_P
	3	HDD_LED_N
	4	FP_LED_N
	5	GND
	6	PRWBTN_IN_L
	7	SYS_RST_L_R
	8	GND
	9	NC



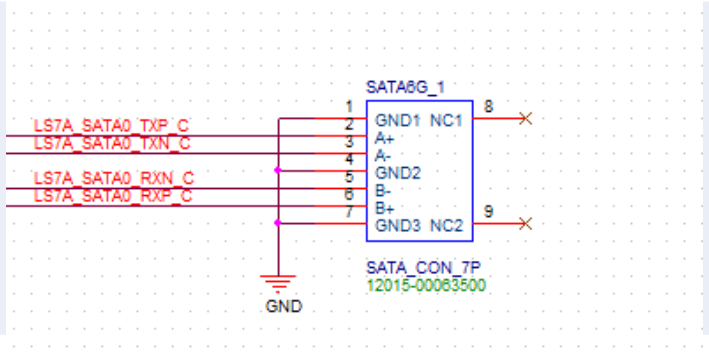
U5G_1	1	+5V_USB3_P11
	2	S_USB_PN11
	3	S_USB_PP11
	4	GND
	5	S_U3RXDN0
	6	S_U3RXDP0
	7	GND
	8	S_U3TXDN0
	9	S_U3TXDP0
	10	GND
	11	GND



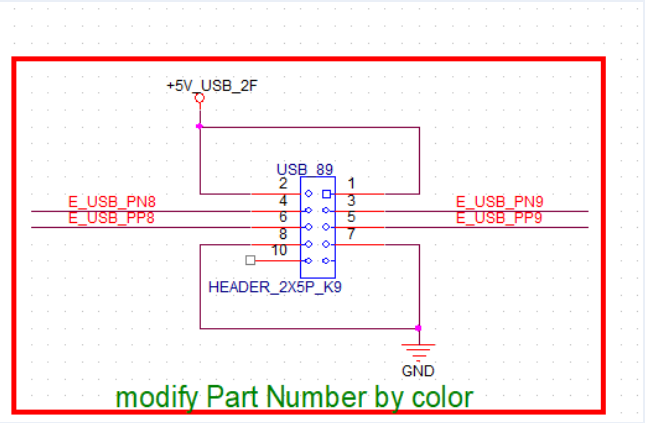
F_AUDIO	1	A_FMIC1_L
	2	GND
	3	A_FMIC1_R
	4	NC
	5	A_HPOUT_R
	6	A_JD_FMIC1
	7	A_JD_FRONT
	9	A_HPOUT_L
	10	A_JD_HPOUT



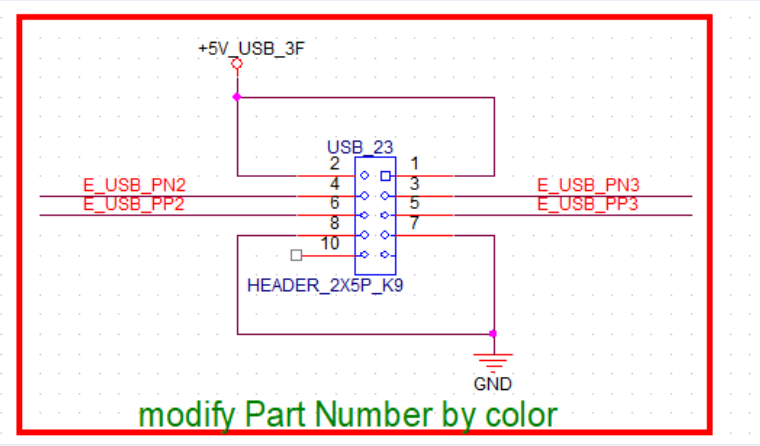
SATA6G_1~4	1	GND
	2	LS7A_SATA0_TXP_C
	3	LS7A_SATA0_TXN_C
	4	GND
	5	LS7A_SATA0_RXP_C
	6	LS7A_SATA0_RXN_C
	7	GND



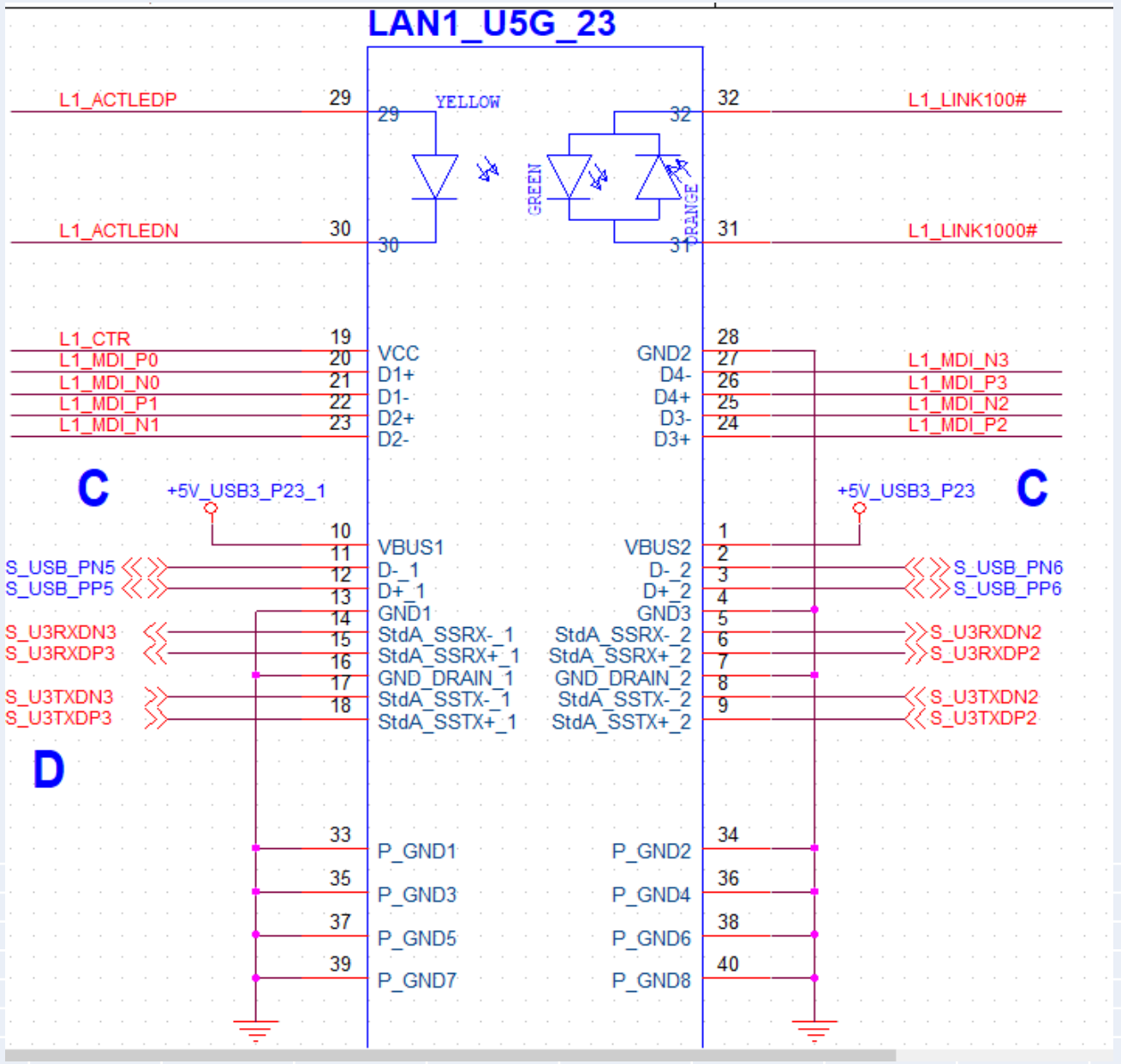
USB_89	1	+5V_USB_2F
	2	+5V_USB_2F
	3	E_USB_PN9
	4	E_USB_PN8
	5	E_USB_PP9
	6	E_USB_PP8
	7	GND
	8	GND
	9	NC



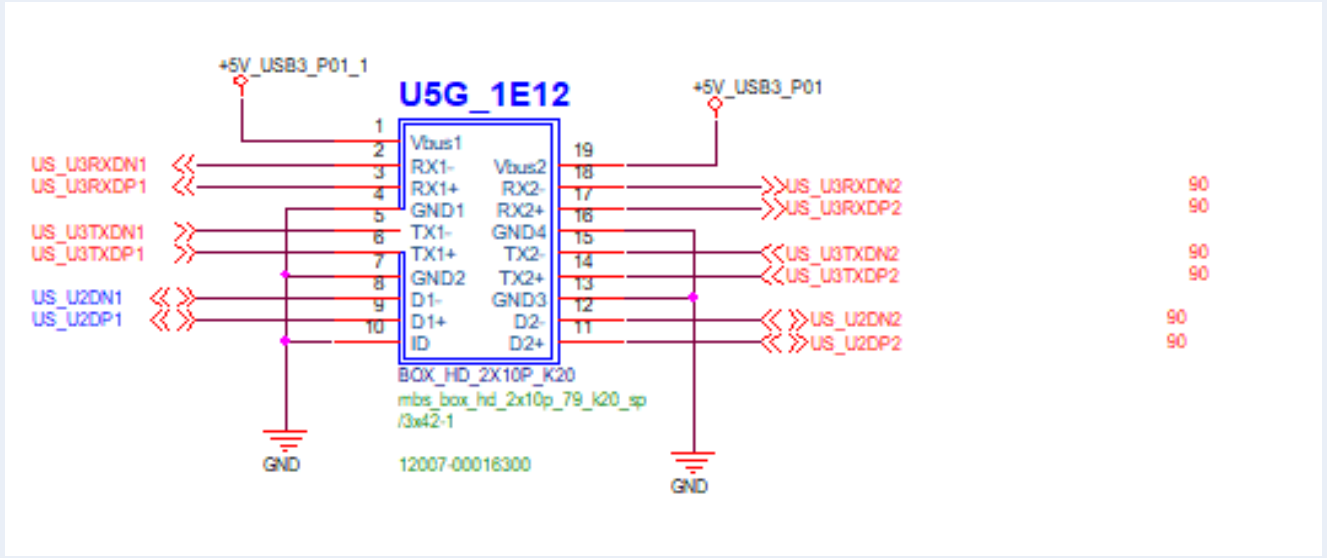
USB_23	1	+5V_USB_3F
	2	+5V_USB_3F
	3	E_USB_PN3
	4	E_USB_PN2
	5	E_USB_PP3
	6	E_USB_PP2
	7	GND
	8	GND
	9	NC



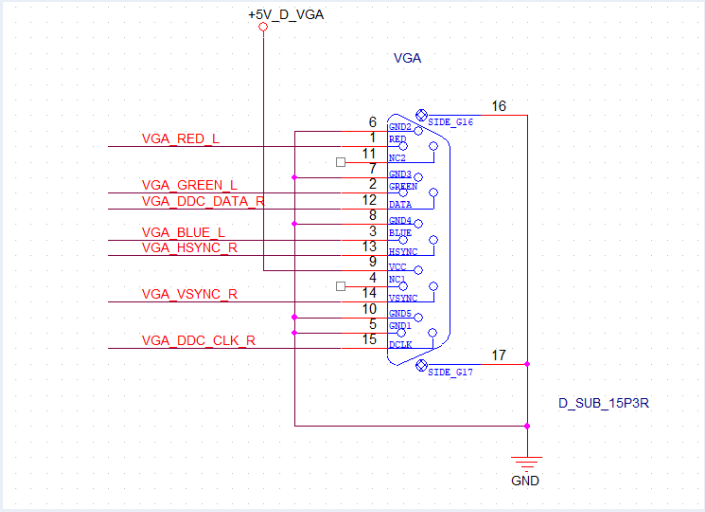
LAN1_U5G_23	1	+5V_USB3_P23
	2	S_USB_PN6
	3	S_USB_PP6
	4	GND
	5	S_U3RXDN2
	6	S_U3RXDP2
	7	GND
	8	S_U3TXDN2
	9	S_U3TXDP2
	10	+5V_USB3_P23_1
	11	S_USB_PN5
	12	S_USB_PP5
	13	GND
	14	S_U3RXDN3
	15	S_U3RXDP3
	16	GND
	17	S_U3TXDN3
	18	S_U3TXDP3
	19	L1_CTR
	20	L1_MDI_P0
	21	L1_MDI_N0
	22	L1_MDI_P1
	23	L1_MDI_N1
	24	L1_MDI_P2
	25	L1_MDI_N2
	26	L1_MDI_P3
	27	L1_MDI_N3
	28	GND
	29	L1_ACTLEDP
	30	L1_ACTLEDN
	31	L1_LINK1000#
	32	L1_LINK100#
	33	GND
	34	GND
	35	GND
	36	GND
	37	GND
	38	GND
	39	GND
	40	GND



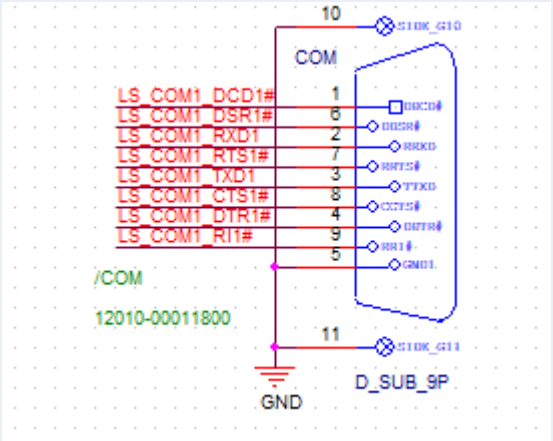
U5G_1E12	1	+5V_USB3_P01_1
	2	US_U3RXDN1
	3	US_U3RXDP1
	4	GND
	5	US_U3TXDN1
	6	US_U3TXDP1
	7	GND
	8	US_U2DN1
	9	US_U2DP1
	10	GND
	11	US_U2DP2
	12	US_U2DN2
	13	GND
	14	US_U3TXDP2
	15	US_U3TXDN2
	16	GND
	17	US_U3RXDP2
	18	US_U3RXDN2
	19	+5V_USB3_P01

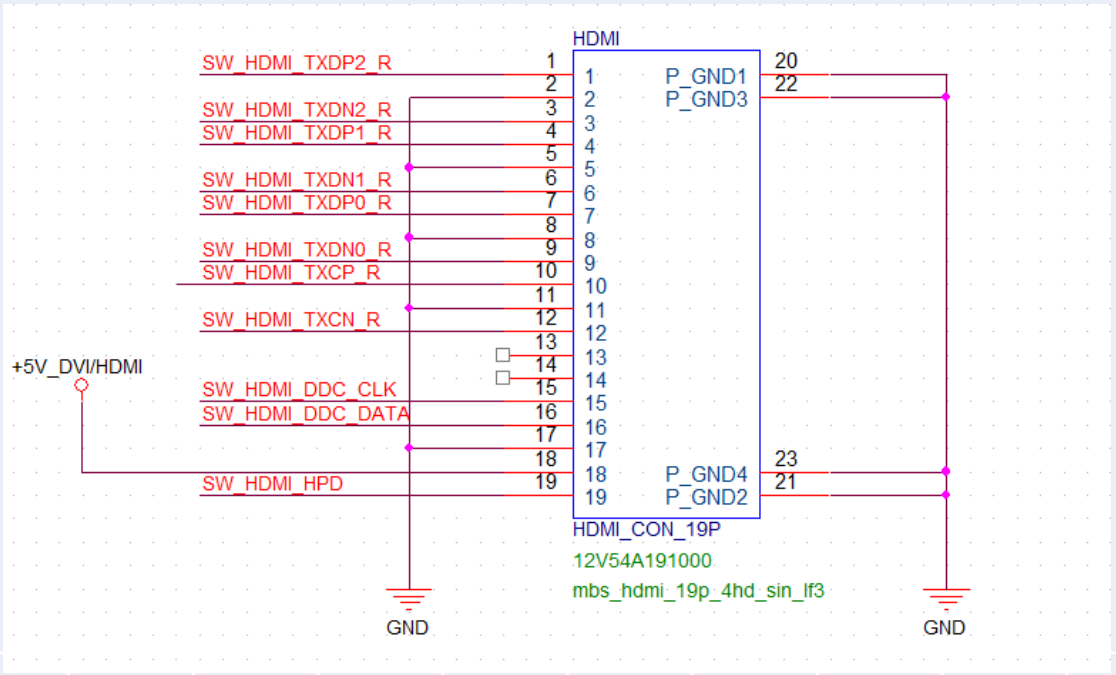


VGA	1	VGA_RED_L
	2	VGA_GREEN_L
	3	VGA_BLUE_L
	4	NC
	5	GND
	6	GND
	7	GND
	8	GND
	9	+5V_D_VGA
	10	GND
	11	NC
	12	VGA_DDC_DATA_R
	13	VGA_HSYNC_R
	14	VGA_VSYNC_R
	15	VGA_DDC_CLK_R
	16	GND
	17	GND

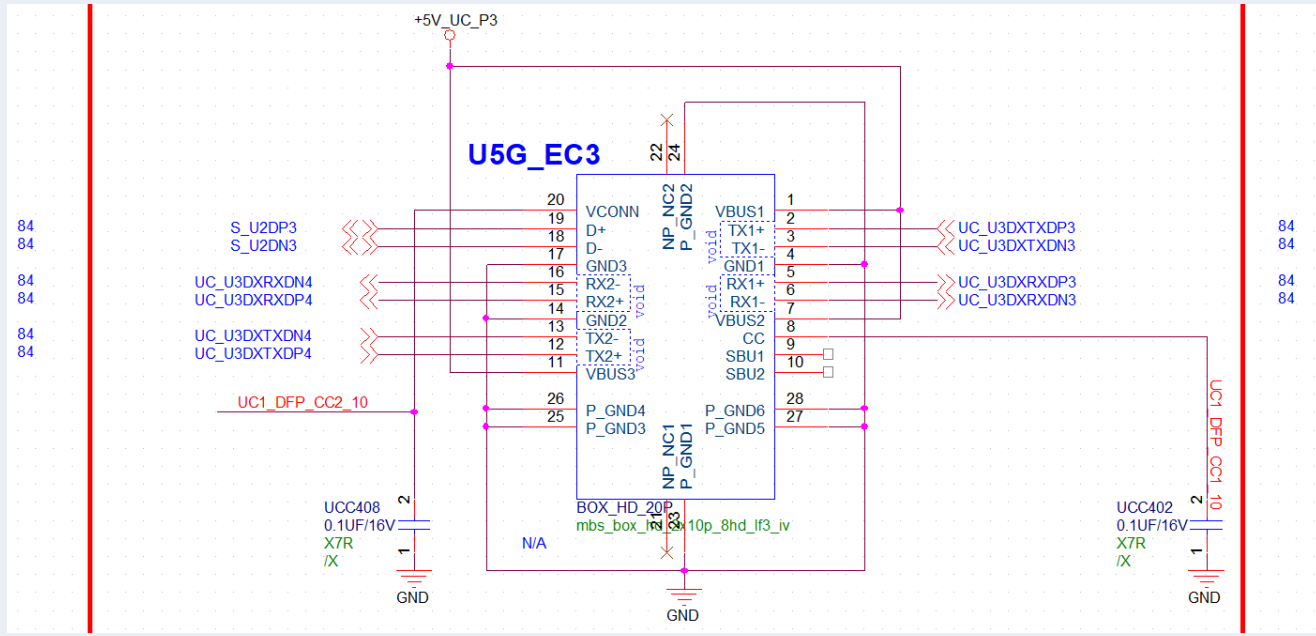
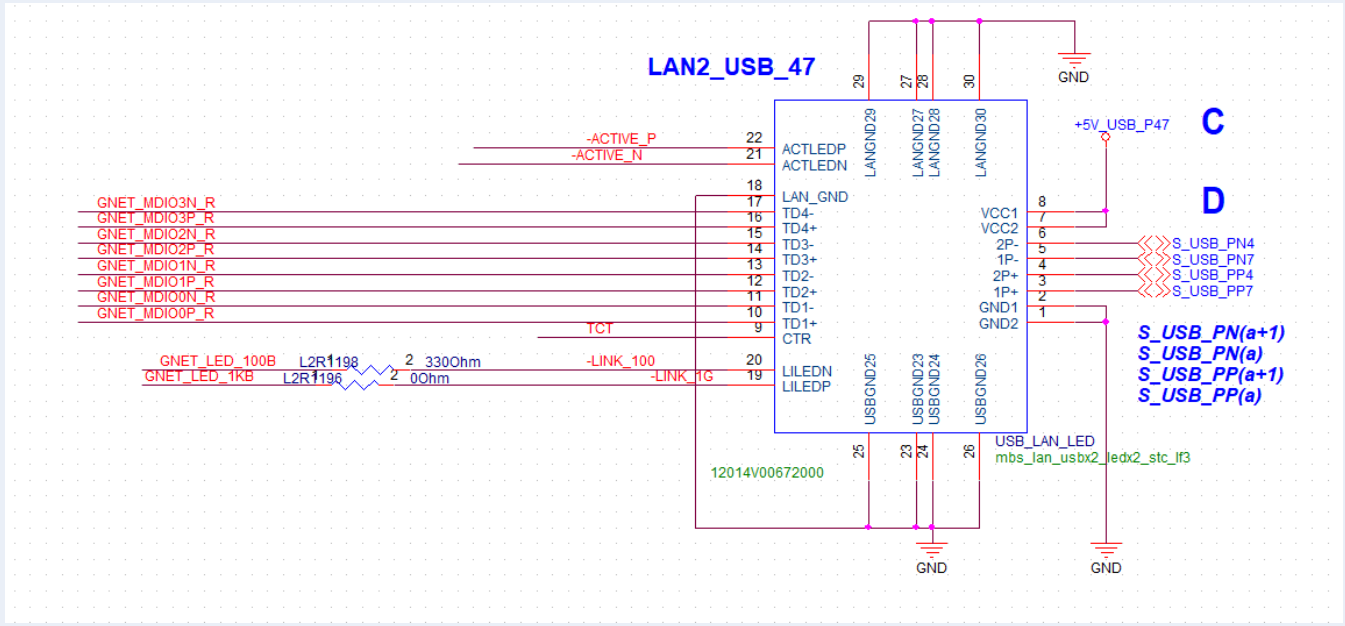


COM	1	LS_COM1_DCD1#
	2	LS_COM1_RXD1
	3	LS_COM1_TXD1
	4	LS_COM1_DTR1#
	5	GND
	6	LS_COM1_DSR1#
	7	LS_COM1_RTS1#
	8	LS_COM1_CTS1#
	9	LS_COM1_RI1#
	10	GND
	11	GND
HDMI	1	SW_HDMI_TXDP2_R
	2	GND
	3	SW_HDMI_TXDN2_R
	4	SW_HDMI_TXDP1_R
	5	GND
	6	SW_HDMI_TXDN1_R
	7	SW_HDMI_TXDP0_R
	8	GND
	9	SW_HDMI_TXDN0_R
	10	SW_HDMI_TXCP_R
	11	GND
	12	SW_HDMI_TXCN_R
	13	NC
	14	NC
	15	SW_HDMI_DDC_CLK
	16	SW_HDMI_DDC_DATA
	17	GND
	18	+5V_DVI/HDMI
	19	SW_HDMI_HPD





U5G_EC3	1	+5V_UC_P3
	2	UC_U3DXTXDP3
	3	UC_U3DXTXDN3
	4	GND
	5	UC_U3DXRXDP3
	6	UC_U3DXRXDN
	7	+5V_UC_P3
	8	UC1_DFP_CC1_10
	9	NC
	10	NC
	11	+5V_UC_P3
	12	UC_U3DXTXDP4
	13	UC_U3DXTXDN4
	14	GND
	15	UC_U3DXRXDP4
	16	UC_U3DXRXDN4
	17	GND
	18	S_U2DN3
	19	S_U2DP3
	20	UC1_DFP_CC2_10
	21	NC
	22	NC
	23	GND
	24	GND
	25	GND
	26	GND
	27	GND
	28	GND



LAN2_USB_47	1	GND
	2	GND
	3	S_USB_PP7
	4	S_USB_PP4
	5	S_USB_PN7
	6	S_USB_PN4
	7	+5V_USB_P47
	8	+5V_USB_P47
	9	TCT
	10	GNET_MDIO0P_R
	11	GNET_MDIO0N_R
	12	GNET_MDIO1P_R
	13	GNET_MDIO1N_R
	14	GNET_MDIO2P_R
	15	GNET_MDIO2N_R
	16	GNET_MDIO03P_R
	17	GNET_MDIO3N_R
	18	GND
	19	-LINK_1G
	20	-LINK_100
	21	-ACTIVE_N
	22	-ACTIVE_P
	23	GND
	24	GND
	25	GND
	26	GND
	27	GND
	28	GND
	29	GND
	30	GND