

FSSMBB 1.10

F&S SMARC V2.11 Base Board

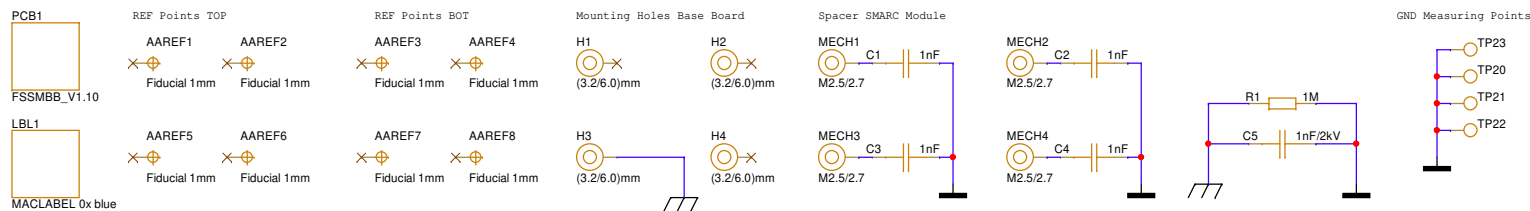
- 01) Title
- 02) Board Connector (1)
- 03) Board Connector (2)
- 04) Board Connector (3)
- 05) Power Supply
- 06) UART & CAN
- 07) mPCIe, SIM, uSD Card
- 08) USB 2.0
- 09) USB 3.0
- 10) Ethernet
- 11) LVDS & Backlight
- 12) HDMI
- 13) Camera
- 14) Audio, F. Con, Misc.
- 15) Power Flow Chart

Revision History

Rev.	Date	By	Description
1.10	26.08.2024	M. Schulz	remove UART_AB_STAT signal with option R5 remove PU at I2C_GP R3, R4 remove PU at I2C_LCD R10, R11 remove VIN_PWR_BAD# option R19 with PU R14 remove UVLO, OVLO at U5 R24, R28, R29 change UVLO, OVLO at U4 to correct values remove CARRIER_PWR_ON option R22 remove CARRIER_STBY# options R39, R36 remove CARRIER_STBY# PUs R26, R30, R33 add CARRIER_STBY# to U19 change all 220nF to 100nF remove bridge for CAN signals R46, R47 add/change capacity at mPCIe 3V3 change C43, C44 to 0R remove option to connect SD-CD with SD_PWR_EN R57, R59 remove PU at SD_CD# R63 remove all PCMF3USB3S and rplace with singl TVS and CMCs remove all ferrite beads remove load switches at USB1 & USB5 add/change capacity at all USB_VBUS change ILIM values at U14, U18, U19 change U20 to MIC94042YFL with 1A fuse remove J16 change pinning of J18 add TVS diode to all supply pins aof connectors with ESD protection change CAM0 connector to SFW15R-1 remove CMCs at CAM0, CAM1 connector remove I2S bridge over the ausio codec R104 to R107 change C73, C74 to 10uF change HDMI_HDP voltage divider exchange DP and DN signals at CAM0, CAM1 add PU to LCD0_IURQ_3V3, LCD0_RST_3V3 exchange i2S SDOUT, SDIN at audio codec U26 remove R122, R124 at U11 remove R2 and connect H3 direct to SHIELD

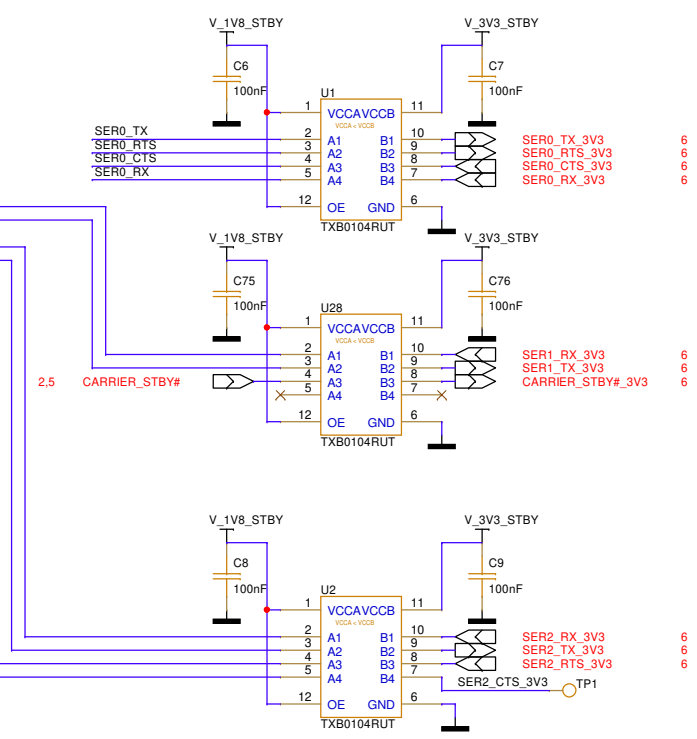
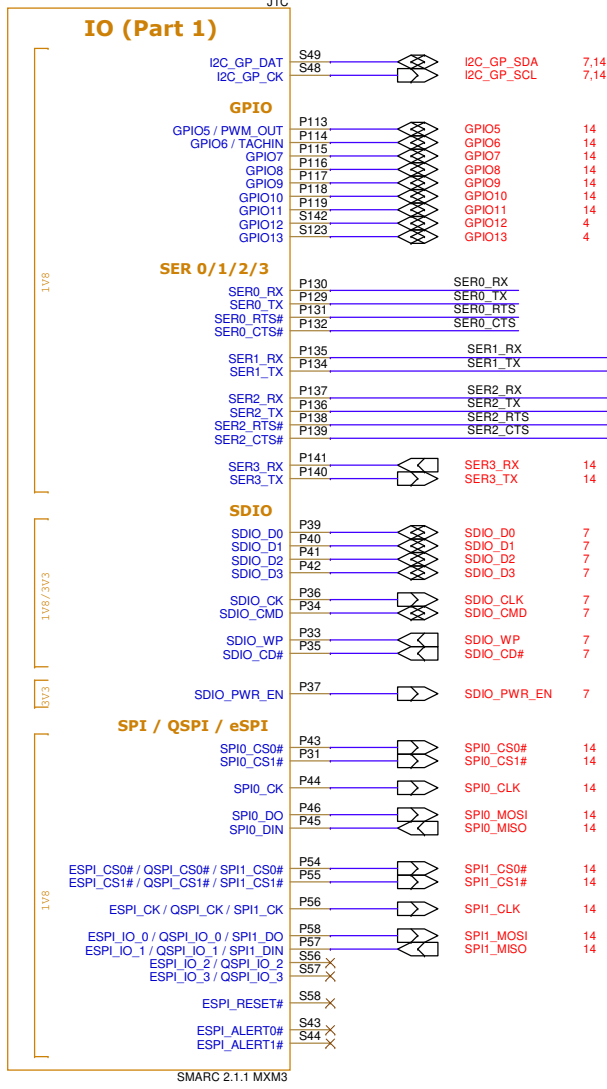
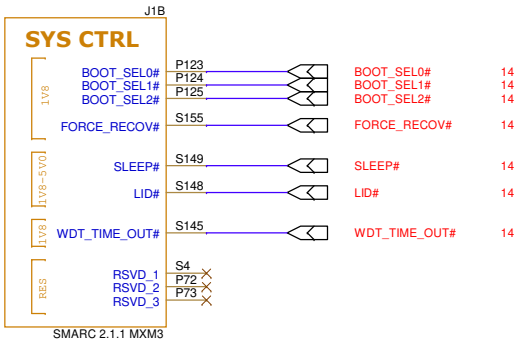
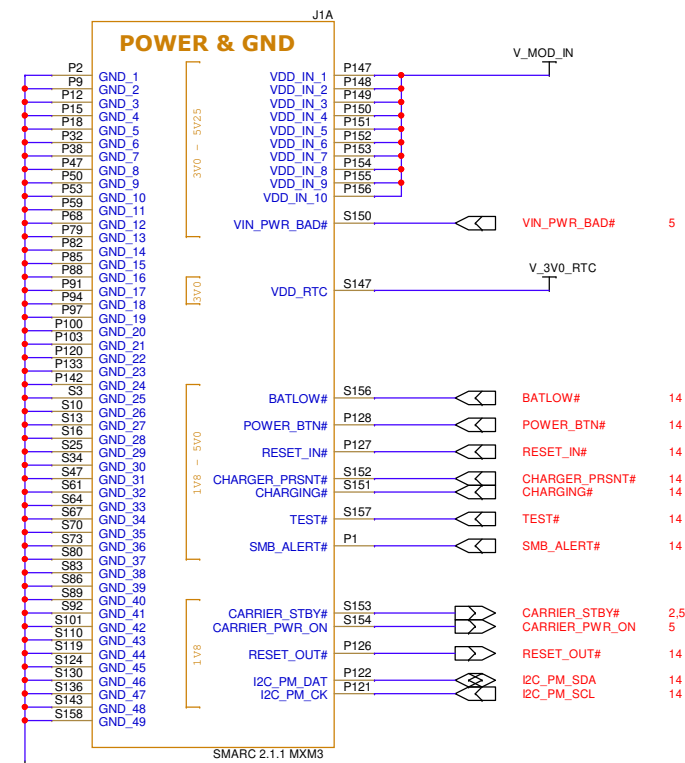
I2C addresses

I2C_GP	1V8	AU_CODEC	0x0A
I2C_PM	1V8		
I2C_HDMI	1V8 / 5V0		
I2C_LCD	1V8 / 3V3		
I2C_CAM0	1V8		
I2C_CAM1	1V8		



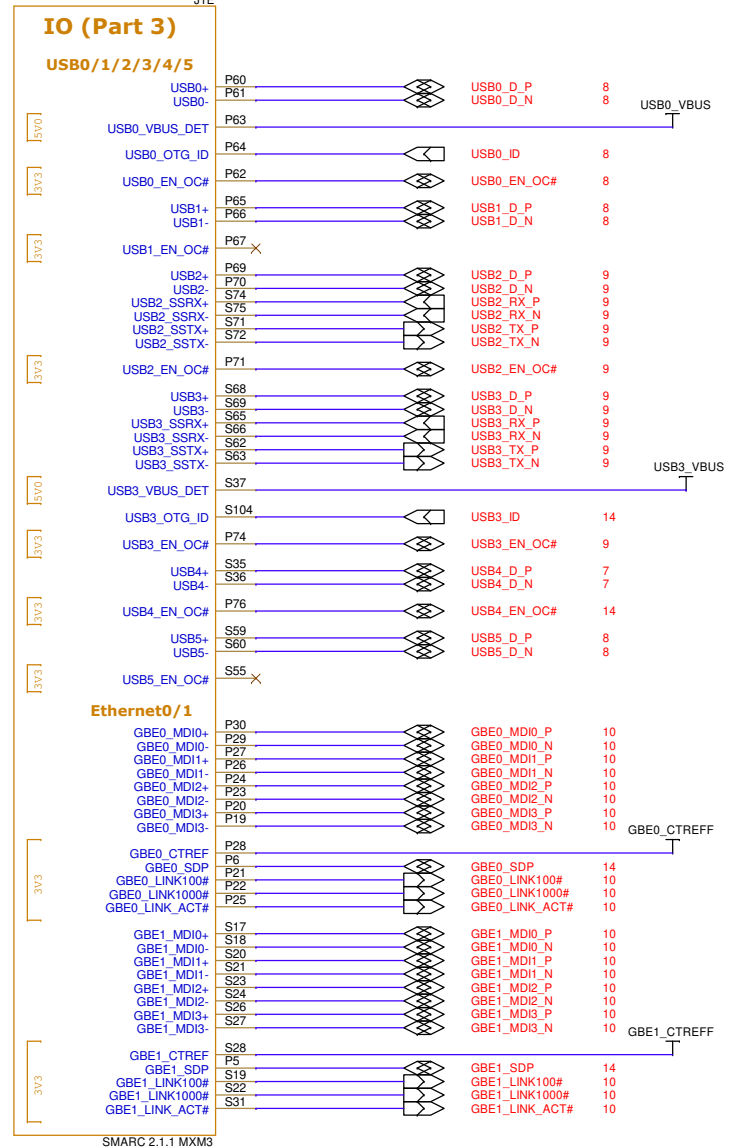
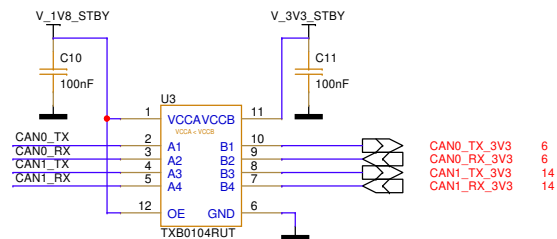
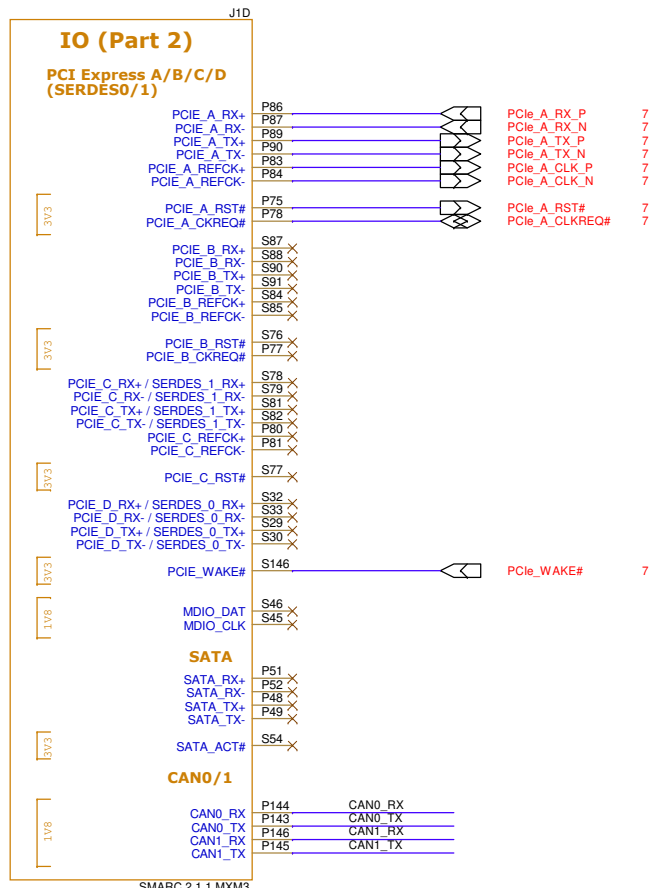
Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	01) Title	Rev 1.10
Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 1 of 15		



Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	02) Board Connector (1)	Rev 1.10
Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 2 of 15		



Confidential

F&S F&S Elektronik Systeme GmbH
Untere Waldplätze 23 D-70569 Stuttgart

FSSMBB <Core Design>

Size A3 03) Board Connector (2) Rev 1.10

Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 3 of 15

IO (Part 4)

LVDS0/1 / eDP0/1 / DSI0/1

LVDS0_0+ / eDP0_TX0+ / DSI0_D0+
 LVDS0_0- / eDP0_TX0- / DSI0_D0-
 LVDS0_1+ / eDP0_TX1+ / DSI0_D1+
 LVDS0_1- / eDP0_TX1- / DSI0_D1-
 LVDS0_2+ / eDP0_TX2+ / DSI0_D2+
 LVDS0_2- / eDP0_TX2- / DSI0_D2-
 LVDS0_3+ / eDP0_TX3+ / DSI0_D3+
 LVDS0_3- / eDP0_TX3- / DSI0_D3-
 LVDS0_CLK+ / eDP0_AUX+ / DSI0_CLK+
 LVDS0_CLK- / eDP0_AUX- / DSI0_CLK-

S125 LVDS0_D0_P 11
 S126 LVDS0_D0_N 11
 S128 LVDS0_D1_P 11
 S129 LVDS0_D1_N 11
 S131 LVDS0_D2_P 11
 S132 LVDS0_D2_N 11
 S137 LVDS0_D3_P 11
 S138 LVDS0_D3_N 11
 S134 LVDS0_CLK_P 11
 S135 LVDS0_CLK_N 11

S133 LCD0_VDD_EN
 S127 LCD0_BKLT_EN
 S141 LCD0_BKLT_PWM
 S144 eDP0_HPD / DSI0_TE

S111 LVDS1_D0_P 11
 S112 LVDS1_D0_N 11
 S114 LVDS1_D1_P 11
 S117 LVDS1_D1_N 11
 S118 LVDS1_D2_P 11
 S120 LVDS1_D2_N 11
 S121 LVDS1_D3_P 11
 S122 LVDS1_D3_N 11
 S108 LVDS1_CLK_P 11
 S109 LVDS1_CLK_N 11

S116 LCD1_VDD_EN
 S107 LCD1_BKLT_EN
 S122 LCD1_BKLT_PWM
 S113 eDP1_HPD / DSI1_TE

HDMI / DP1

HDMI_D0+ / DP1_LANE2+
 HDMI_D0- / DP1_LANE2-
 HDMI_D1+ / DP1_LANE1+
 HDMI_D1- / DP1_LANE1-
 HDMI_D2+ / DP1_LANE0+
 HDMI_D2- / DP1_LANE0-
 HDMI_CLK+ / DP1_LANE3+
 HDMI_CLK- / DP1_LANE3-

P98 HDMI_D0_P 12
 P99 HDMI_D0_N 12
 P95 HDMI_D1_P 12
 P96 HDMI_D1_N 12
 P92 HDMI_D2_P 12
 P93 HDMI_D2_N 12
 P101 HDMI_CLK_P 12
 P102 HDMI_CLK_N 12

P106 I2C_HDMI_SDA
 P105 I2C_HDMI_SCL
 P104 HDMI_HPD
 P107

I2C_HDMI_SDA 12
 I2C_HDMI_SCL 12
 I2C_HDMI_SDA_5V0 12
 I2C_HDMI_SCL_5V0 12

DPO

DP0_LANE0+
 DP0_LANE0-
 DP0_LANE1+
 DP0_LANE1-
 DP0_LANE2+
 DP0_LANE2-
 DP0_LANE3+
 DP0_LANE3-
 DP0_AUX+
 DP0_AUX-

S93
 S94
 S95
 S97
 S99
 S100
 S102
 S103
 S103
 S108
 S108

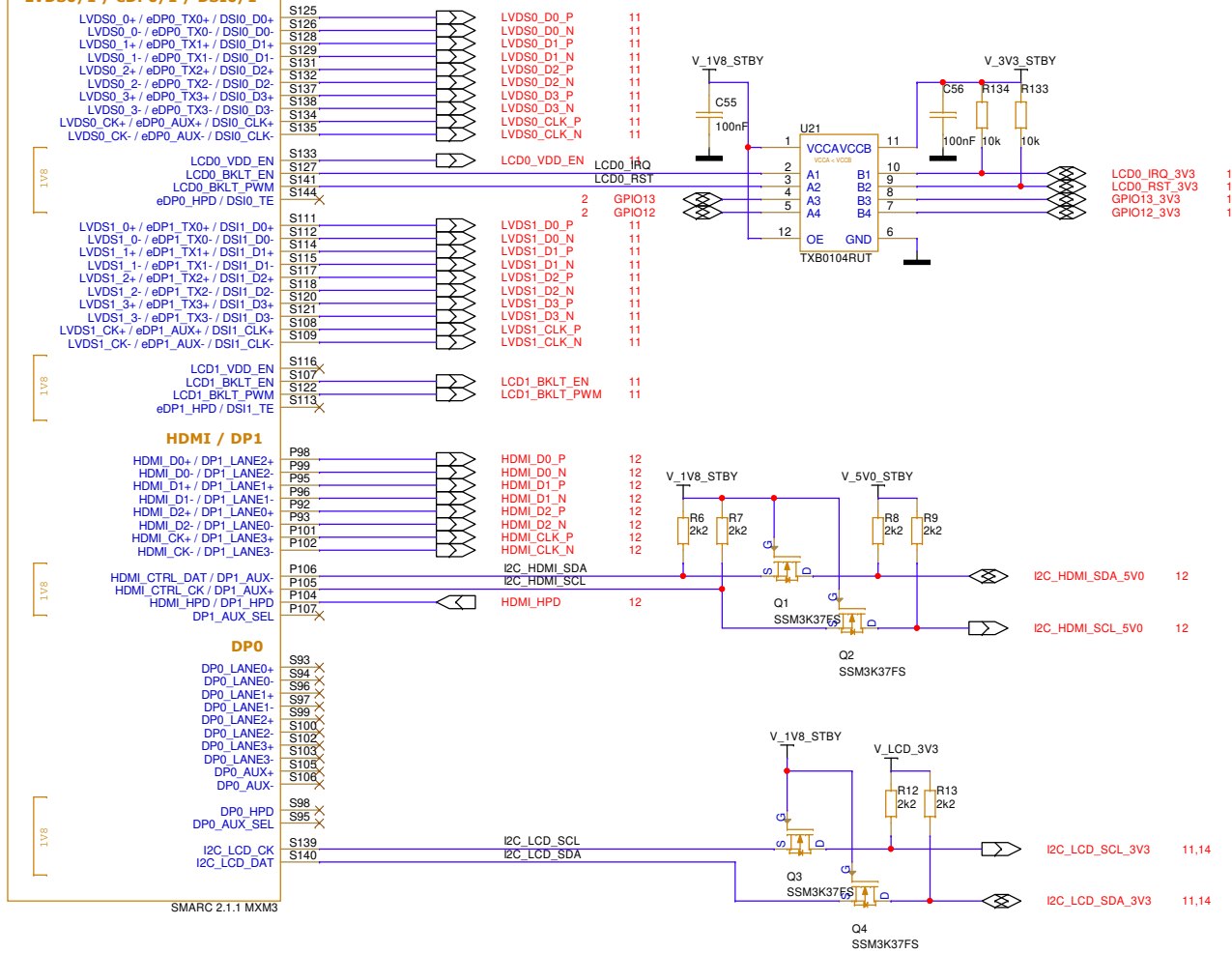
DP0_HPD
 DP0_AUX_SEL

S98
 S95

S139 I2C_LCD_SCL
 S140 I2C_LCD_SDA

I2C_LCD_SCL_3V3 11,14
 I2C_LCD_SDA_3V3 11,14

SMARC 2.1.1 MXM3



IO (Part 5)

MIPI CSIO/1

CSIO_RX0+
 CSIO_RX0-
 CSIO_RX1+
 CSIO_RX1-

S11 CSIO_D0_P 13
 S12 CSIO_D0_N 13
 S14 CSIO_D1_P 13
 S15 CSIO_D1_N 13

CSIO_TX+ / I2C_CAM0_CK
 CSIO_TX- / I2C_CAM0_DAT

S5 I2C_CAM0_SCL 13
 S7 I2C_CAM0_SDA 13

CSIO_CLK+
 CSIO_CLK-

S8 CSIO_CLK_P 13
 S9 CSIO_CLK_N 13

CAM0_PWR# / GPIO0
 CAM0_RST# / GPIO2

P108 CAM0_PWR# 13
 P110 CAM0_RST# 13

CSH1_RX0+
 CSH1_RX0-
 CSH1_RX1+
 CSH1_RX1-
 CSH1_RX2+
 CSH1_RX2-
 CSH1_RX3+
 CSH1_RX3-

P7 CSH1_D0_P 13
 P8 CSH1_D0_N 13
 P10 CSH1_D1_P 13
 P11 CSH1_D1_N 13
 P13 CSH1_D2_P 13
 P14 CSH1_D2_N 13
 P16 CSH1_D3_P 13
 P17 CSH1_D3_N 13

CSH1_TX+ / I2C_CAM1_CK
 CSH1_TX- / I2C_CAM1_DAT

S1 I2C_CAM1_SCL 13
 S2 I2C_CAM1_SDA 13

CSH1_CLK+
 CSH1_CLK-

P3 CSH1_CLK_P 13
 P4 CSH1_CLK_N 13

CAM1_PWR# / GPIO1
 CAM1_RST# / GPIO3

P109 CAM1_PWR# 13
 P111 CAM1_RST# 13

CAM_MCK

S6 CAM_MCK 13

Audio

I2S0_SDIN
 I2S0_SDOUT
 I2S0_CK
 I2S0_LRCK

S41 I2S0_SDIN 14
 S40 I2S0_SDOUT 14
 S42 I2S0_CLK 14
 S39 I2S0_LRCLK 14

AUDIO_MCK

S38 AU_MCLK 14

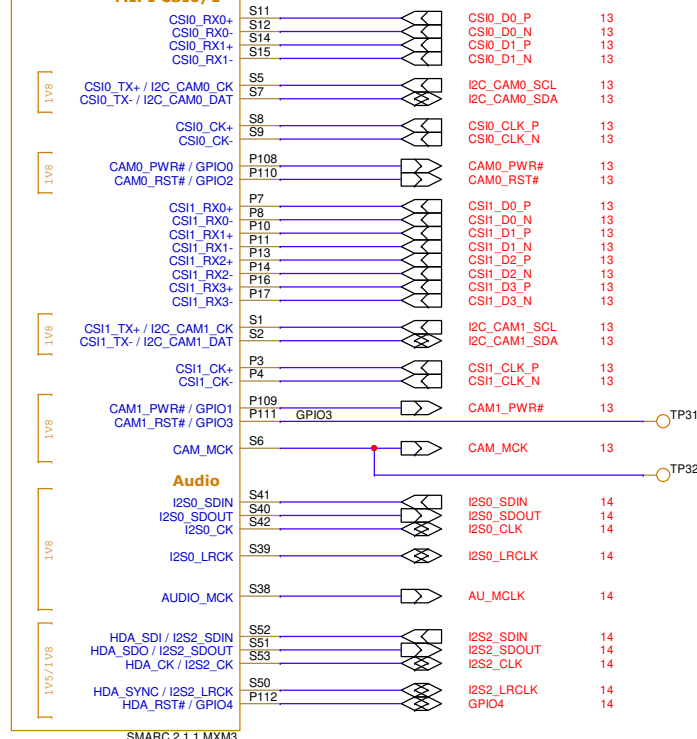
HDA_SDI / I2S2_SDIN
 HDA_SDO / I2S2_SDOUT
 HDA_CK / I2S2_CK

S52 I2S2_SDIN 14
 S51 I2S2_SDOUT 14
 S53 I2S2_CLK 14

HDA_SYNC / I2S2_LRCK
 HDA_RST# / GPIO4

S50 I2S2_LRCLK 14
 P112 GPIO4 14

SMARC 2.1.1 MXM3



Confidential

F&S Elektronik Systeme GmbH
 Untere Waldplätze 23 D-70569 Stuttgart

FSSMBB

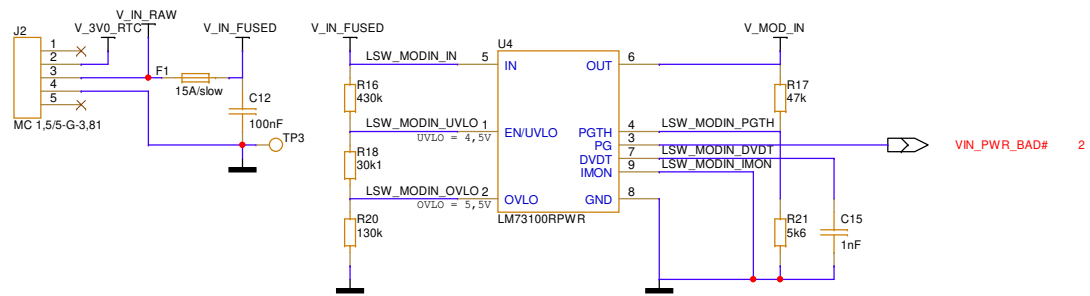
<Core Design>

Size A3 04) Board Connector (3)

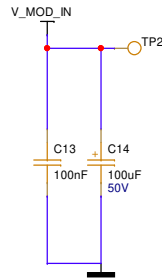
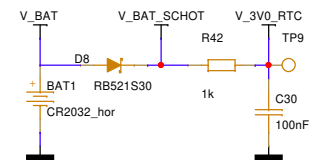
Rev 1.10

Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 4 of 15

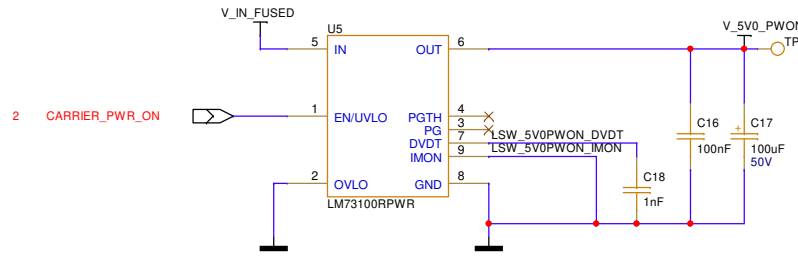
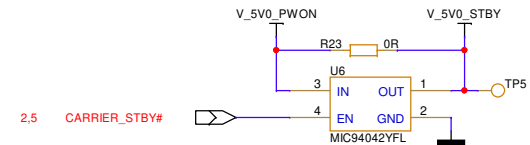
Power In



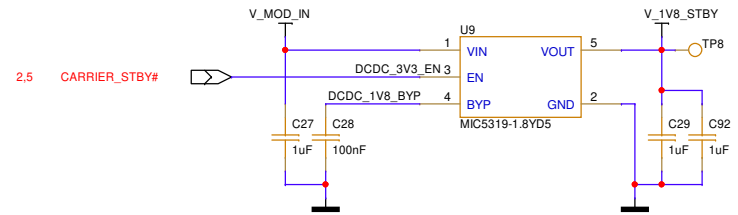
Module RTC Battery 3V0



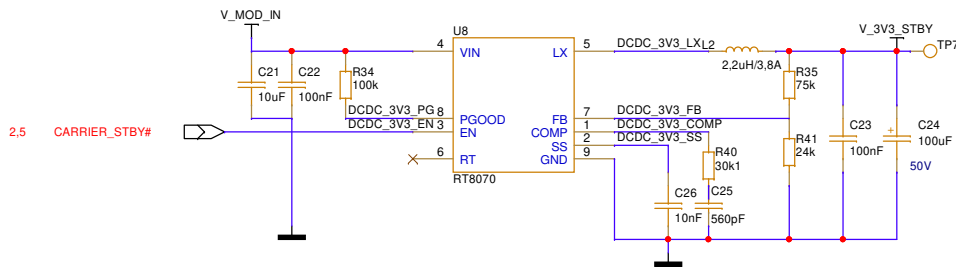
Carrier Power 5V0 STBY



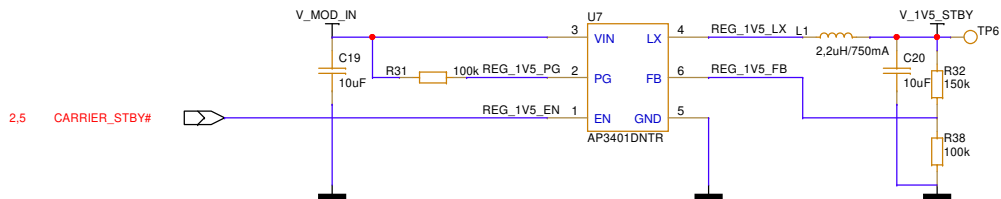
Carrier Power 1V8



Carrier Power 3V3



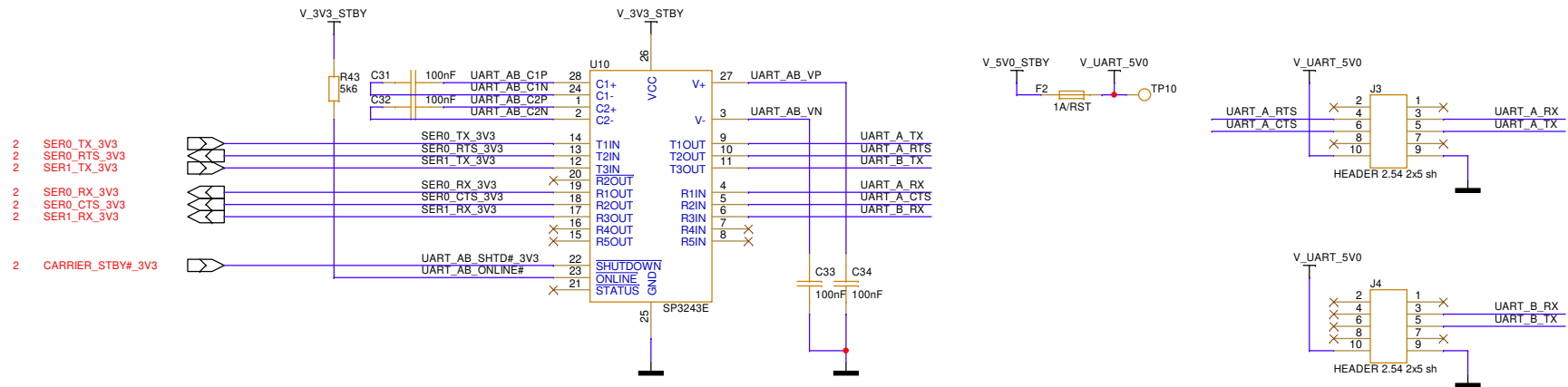
Carrier Power 1V5



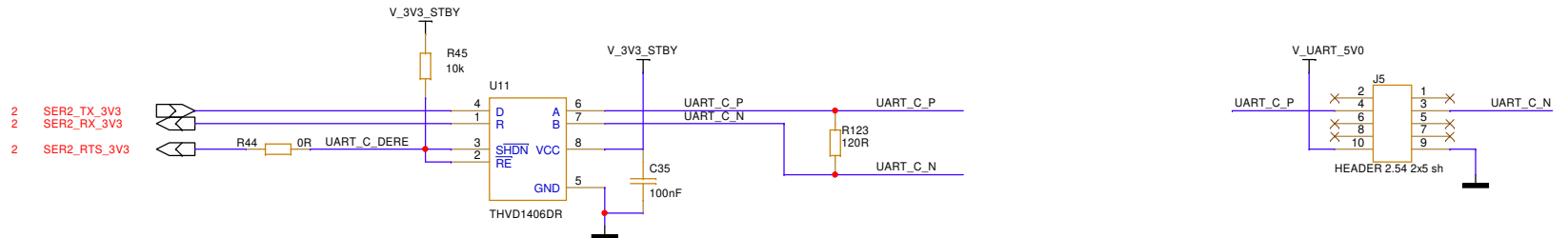
Confidential

F&S F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	05) Power Supply	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 5 of 15

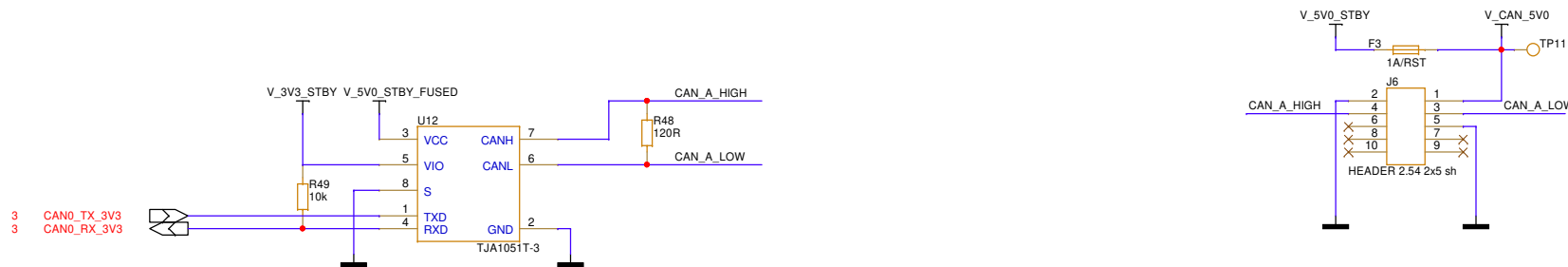
UART A & B RS232 (SER0 & SER1)



UART C RS485 (SER2)



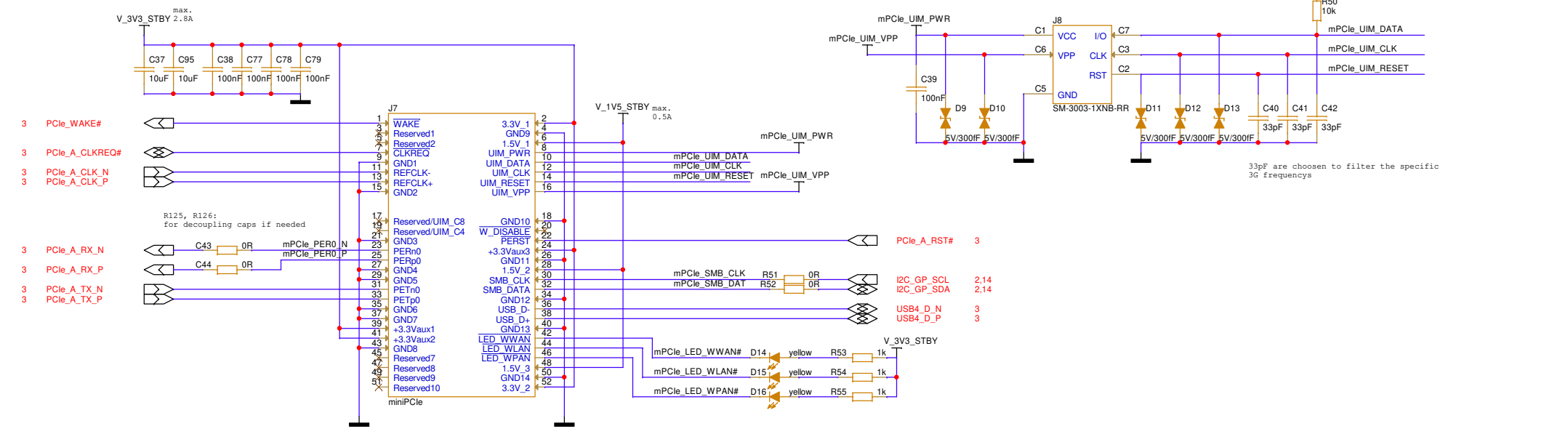
CAN A (CAN0)



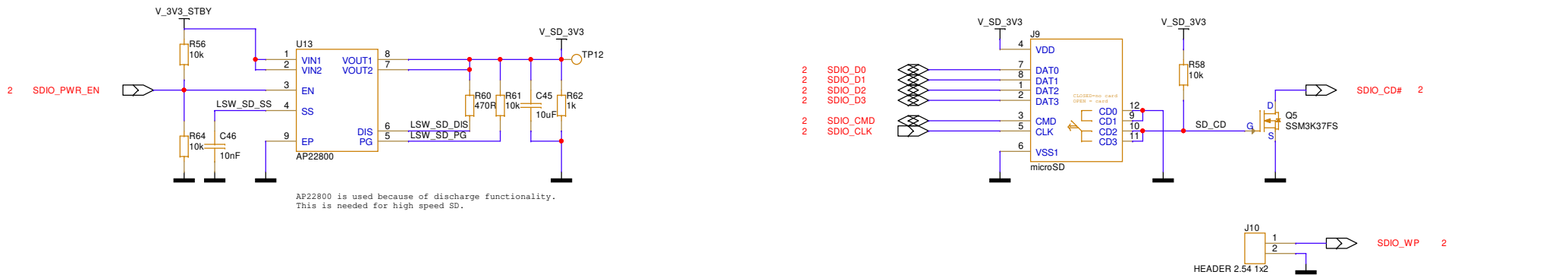
Confidential

F&S F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	06) UART & CAN	Rev 1.10
Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 6 of 15		

mPCIe (PCIe + USB4) + nano SIM



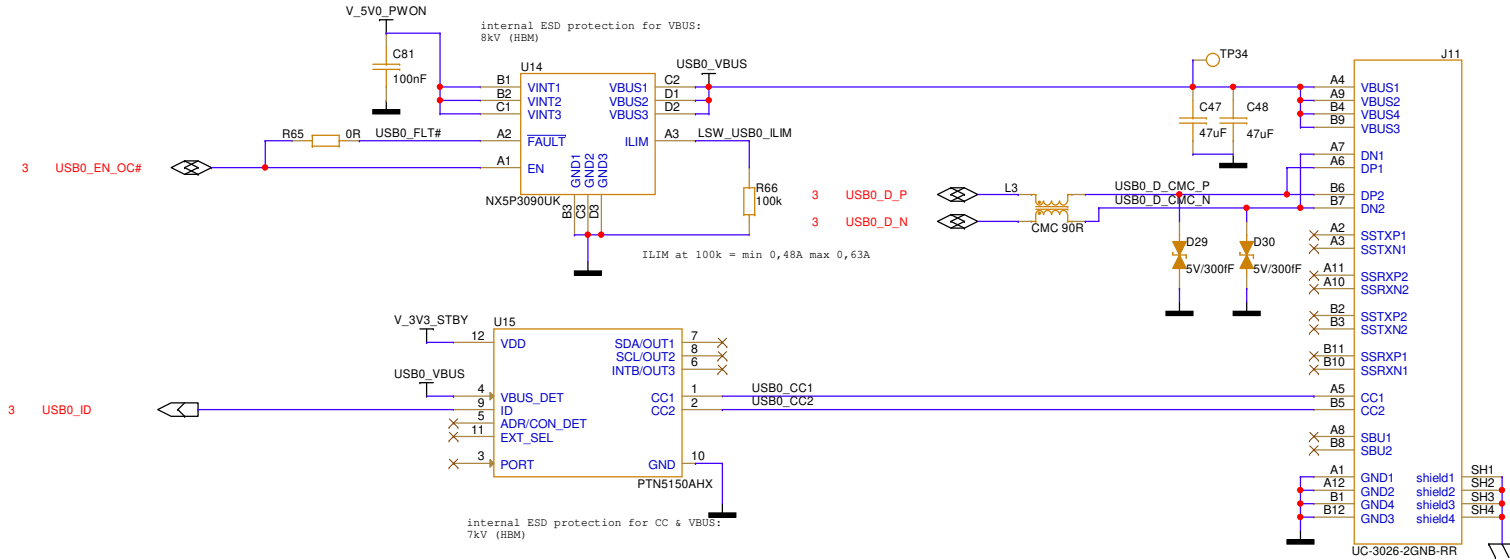
uSD Card (SDIO)



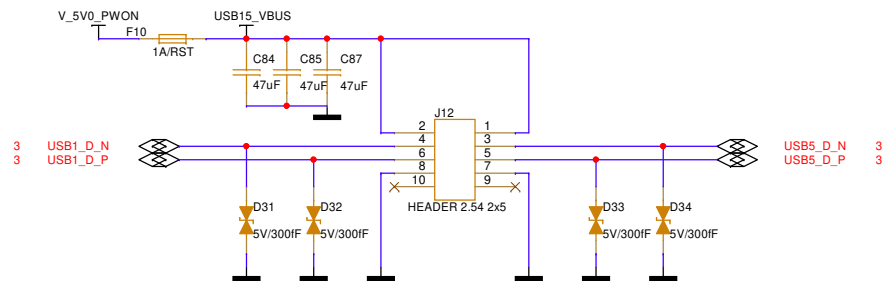
Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	07) mPCIe, SIM, uSD Card	Rev 1.10
Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 7 of 15		


USB 2.0 Type C - OTG (USB0)



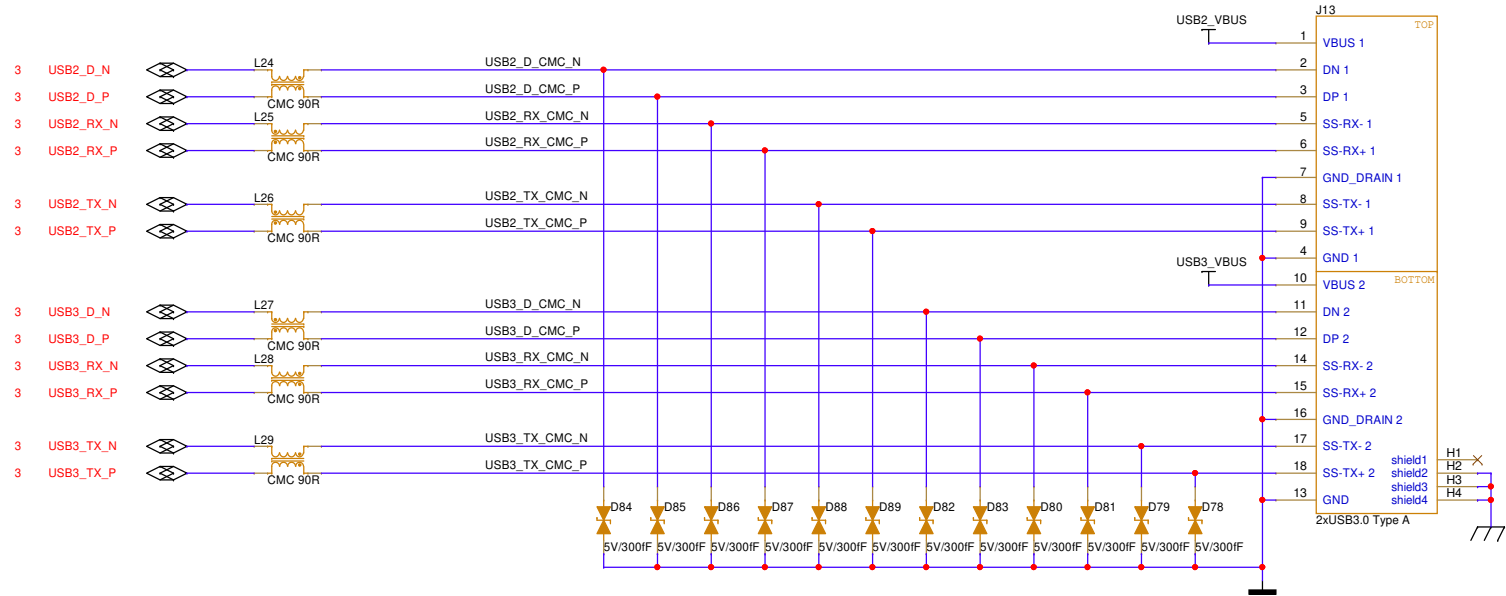
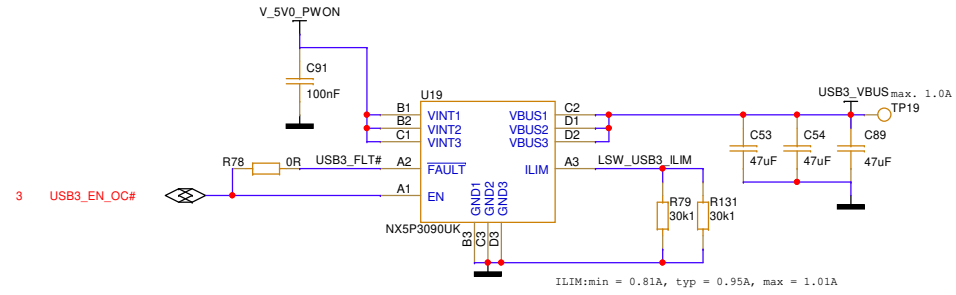
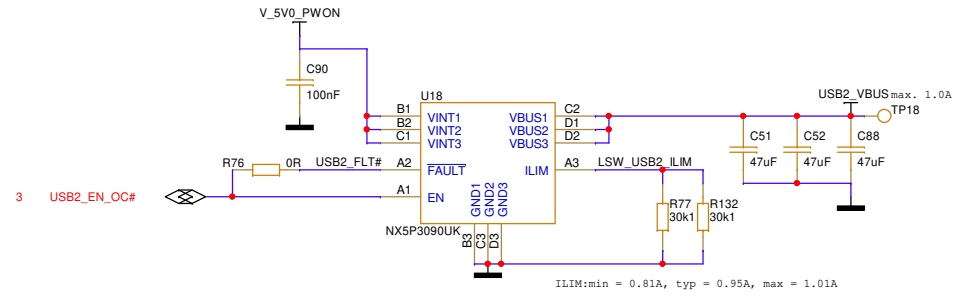
USB 2.0 Header - Device (USB1 + USB5)



Confidential

 F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	08) USB 2.0	Rev 1.10
Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 8 of 15		

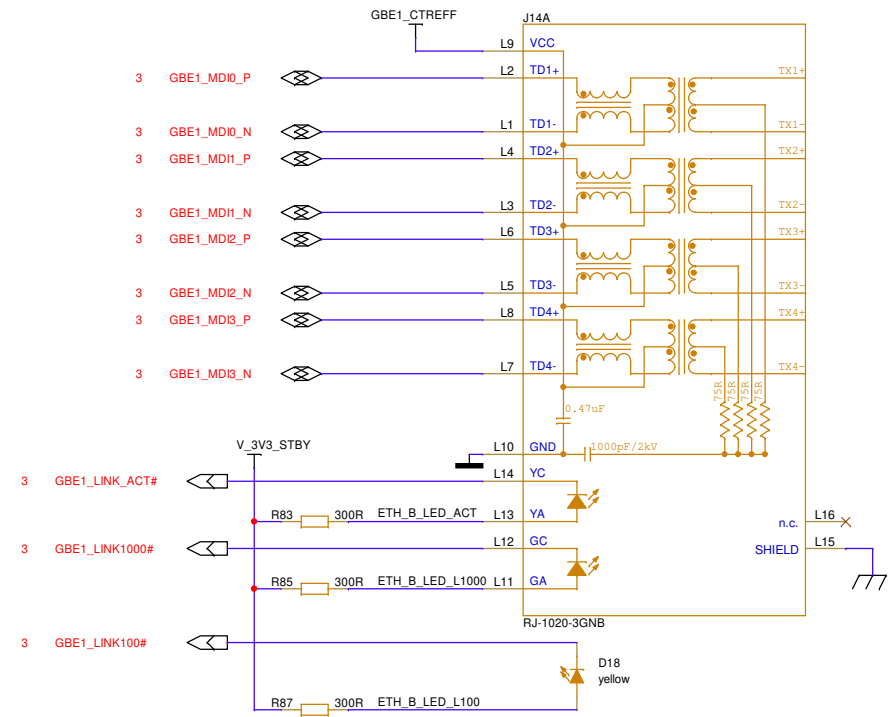
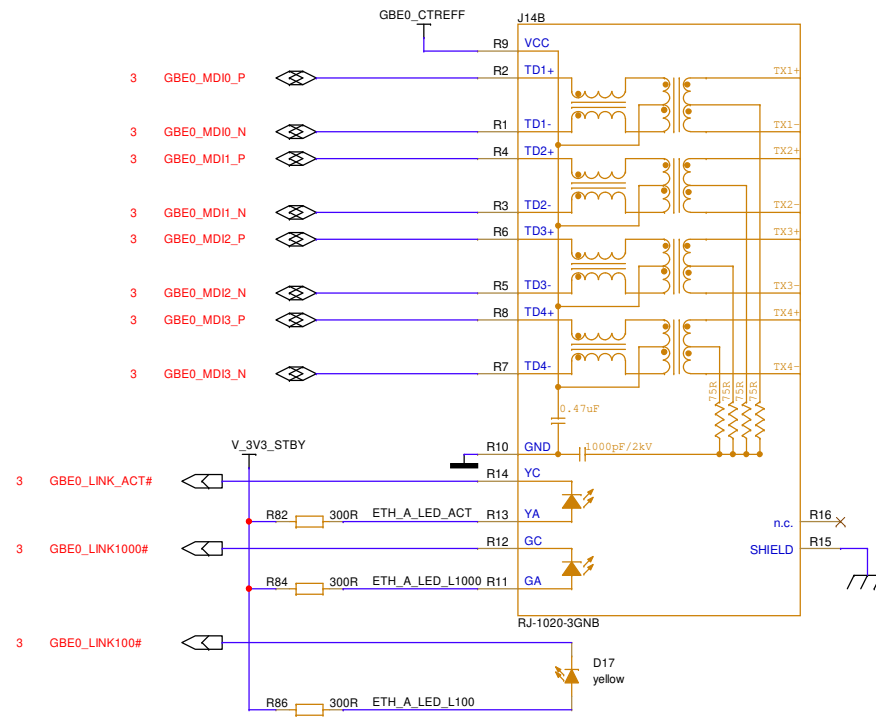
USB 3.0 Type A (USB2 + USB3)



Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart	
FSSMBB <Core Design>	
Size A3	09) USB 3.0
Rev 1.10	
Drawn by: M.Schulz	Date: Thursday, September 05, 2024 Sheet 9 of 15

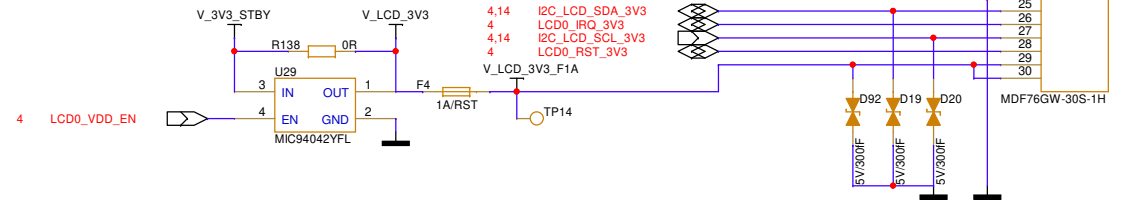
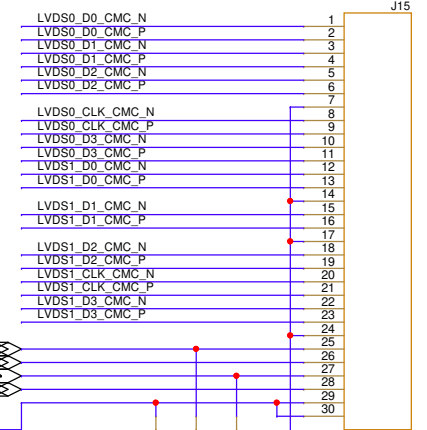
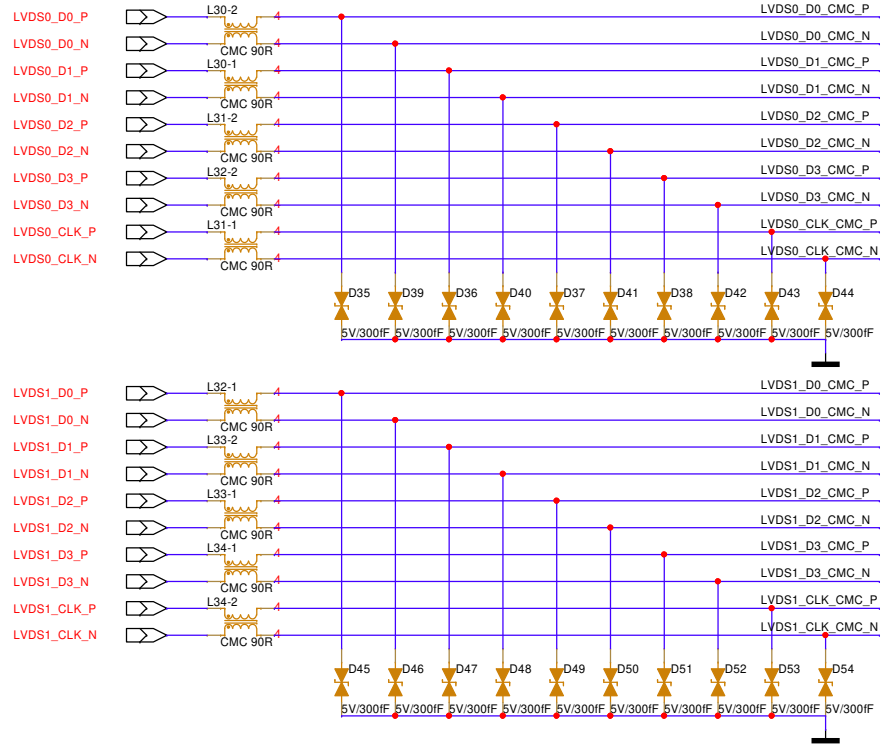
Gigabit Ethernet (GBE0 + GBE1)



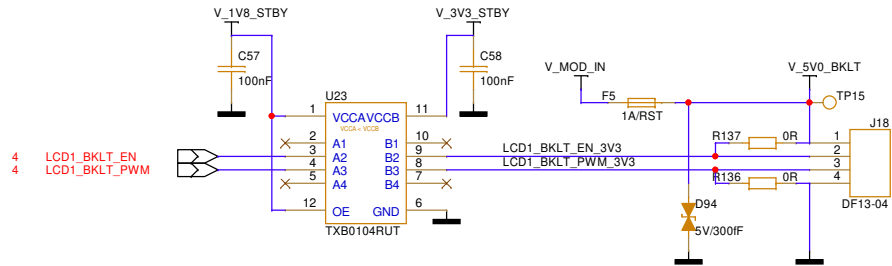
Confidential

F&S F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	10) Ethernet	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 10 of 15

LVDS
(LVDS0, LVDS1, LCD0, I2C_LCD)



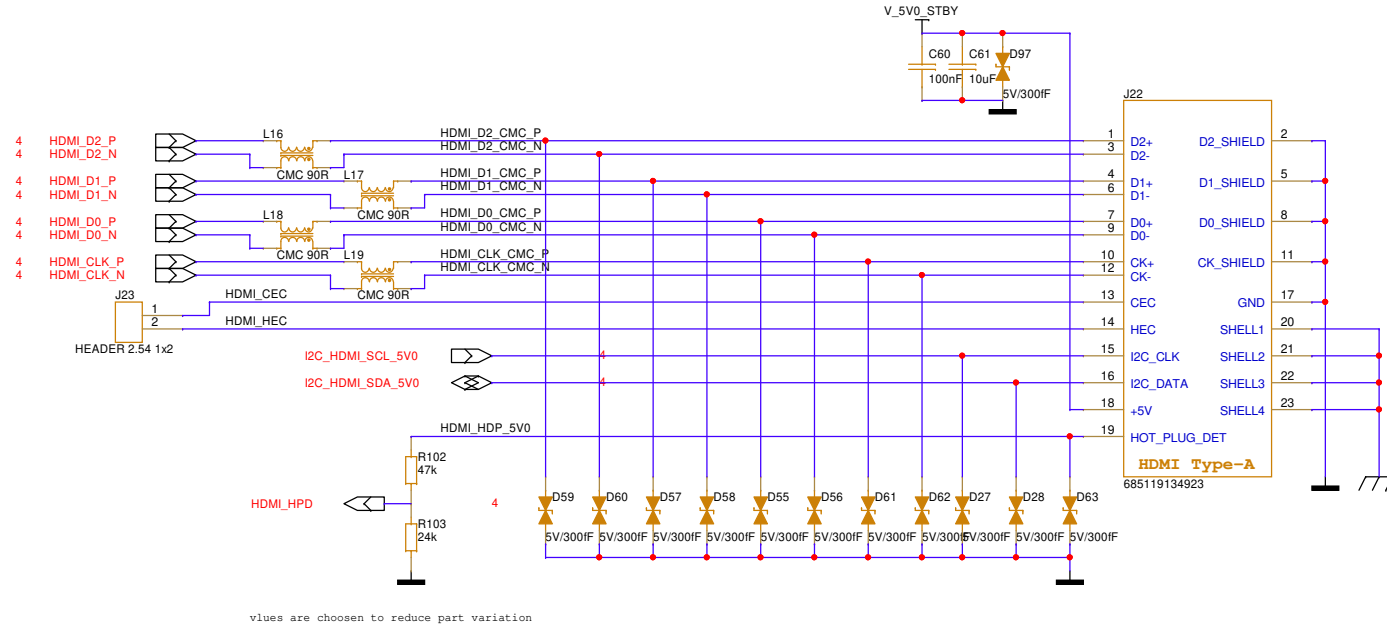
Backlight




Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	11) LVDS & Backlight	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 11 of 15

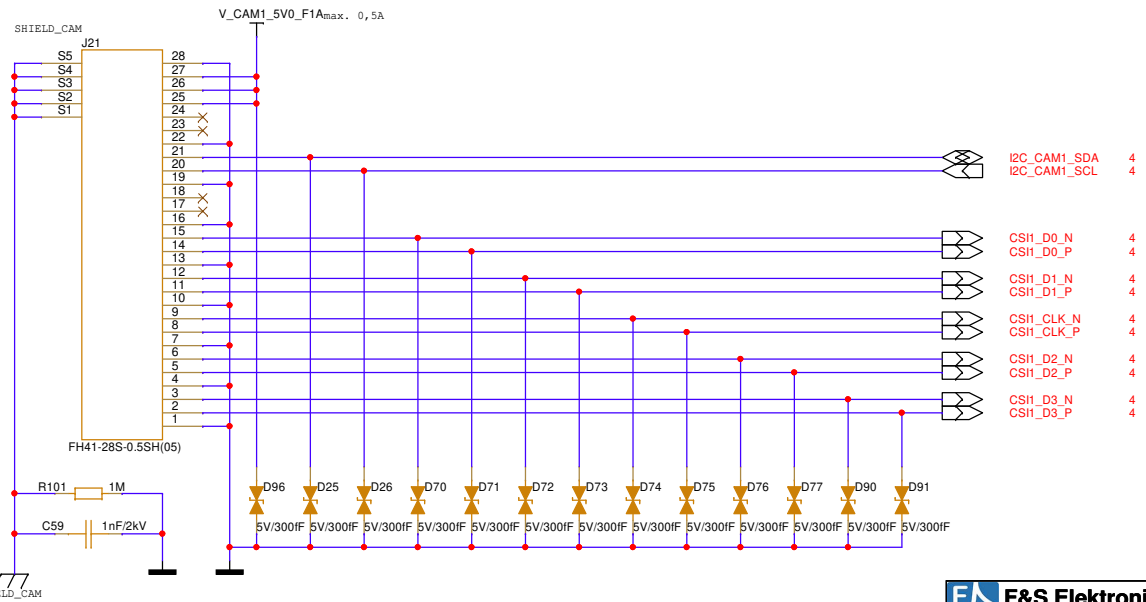
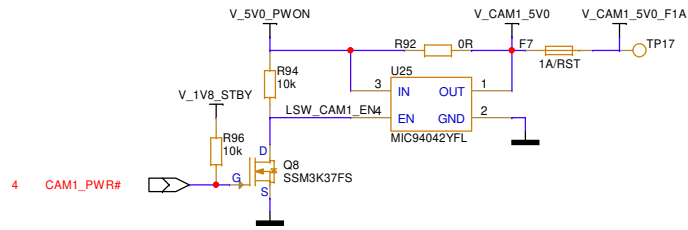
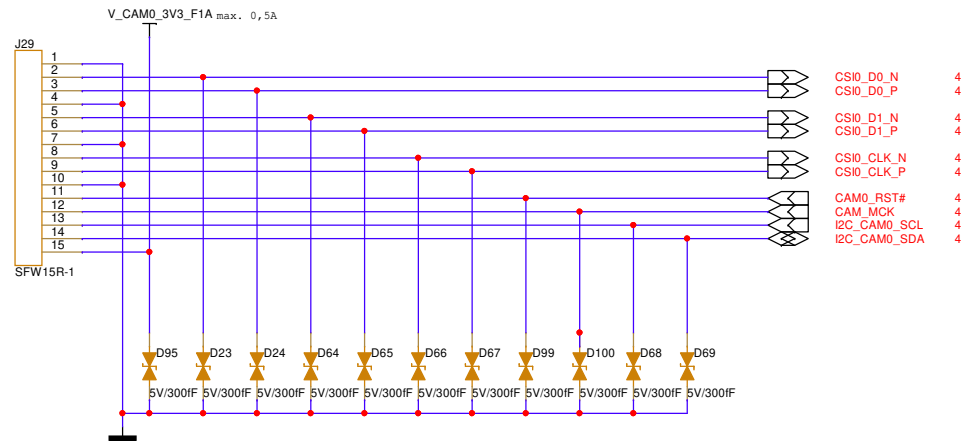
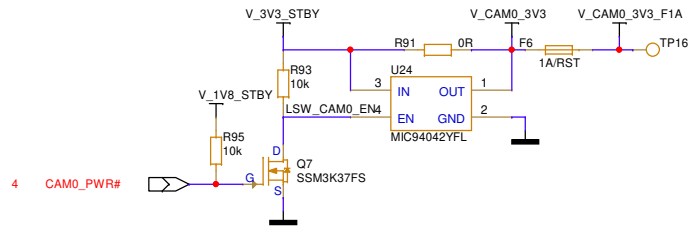
HDMI



Confidential

 F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	12) HDMI	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 12 of 15

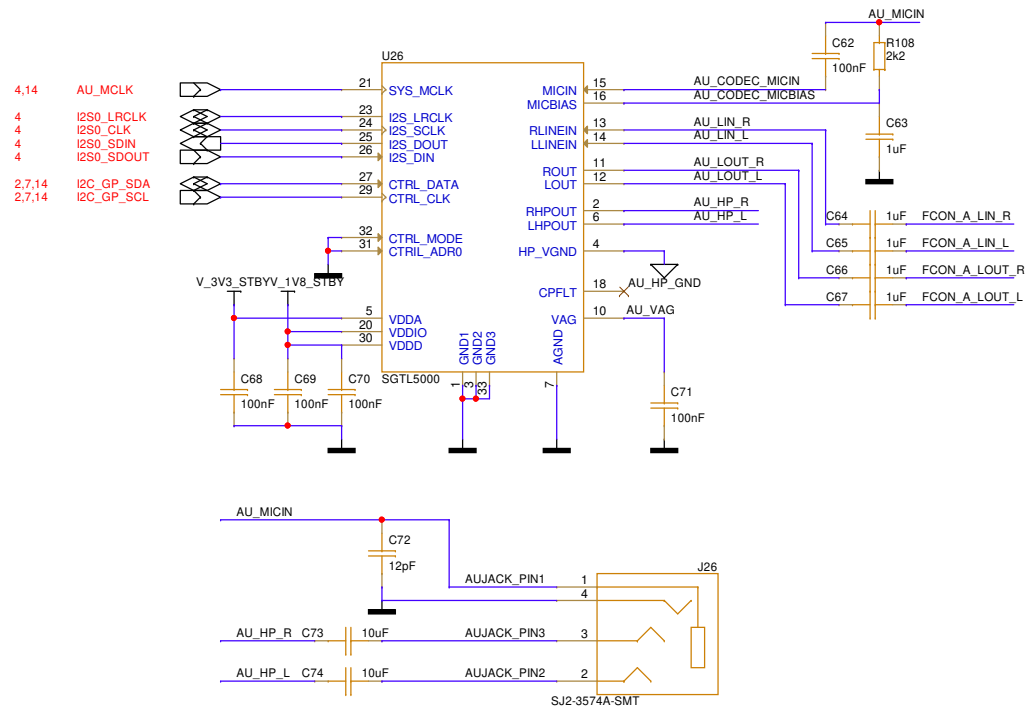
Camera (CSI0 & CSI1)



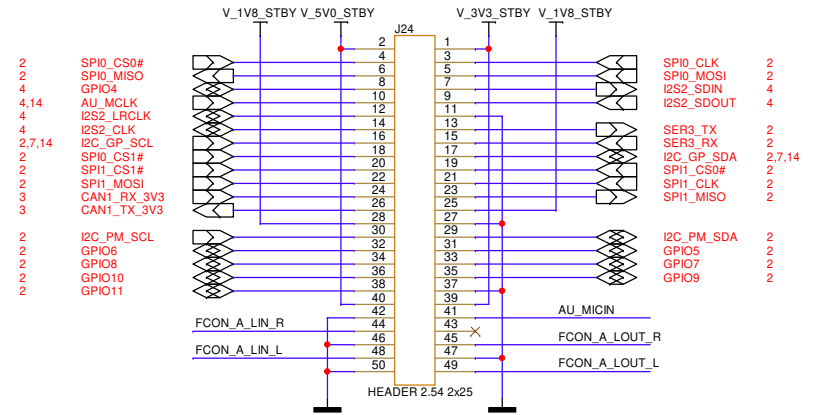
Confidential

F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	13) Camera	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 13 of 15

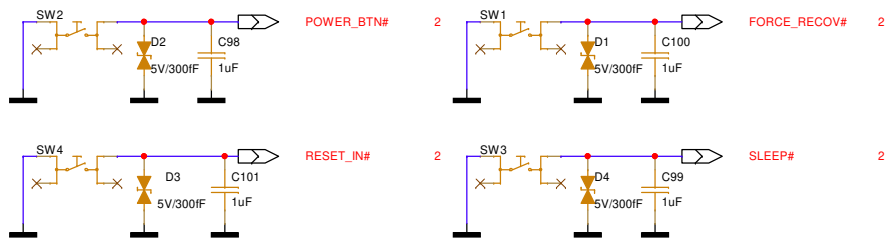
Audio Codec (I2S0)



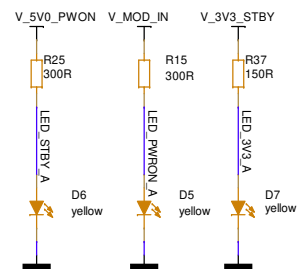
Feature Connector



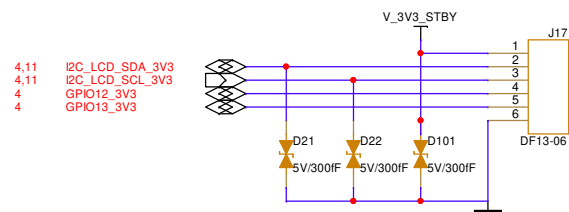
User Buttons



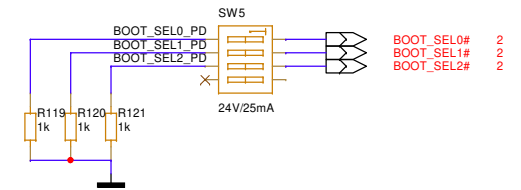
Status LEDs



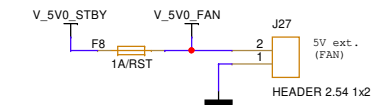
General Purpose Connector (I2C_LCD & GPIO12,13)



BOOT Select Jumper



Fan connector



Confidential

F&S Elektronik Systeme GmbH
Untere Waldplätze 23 D-70569 Stuttgart

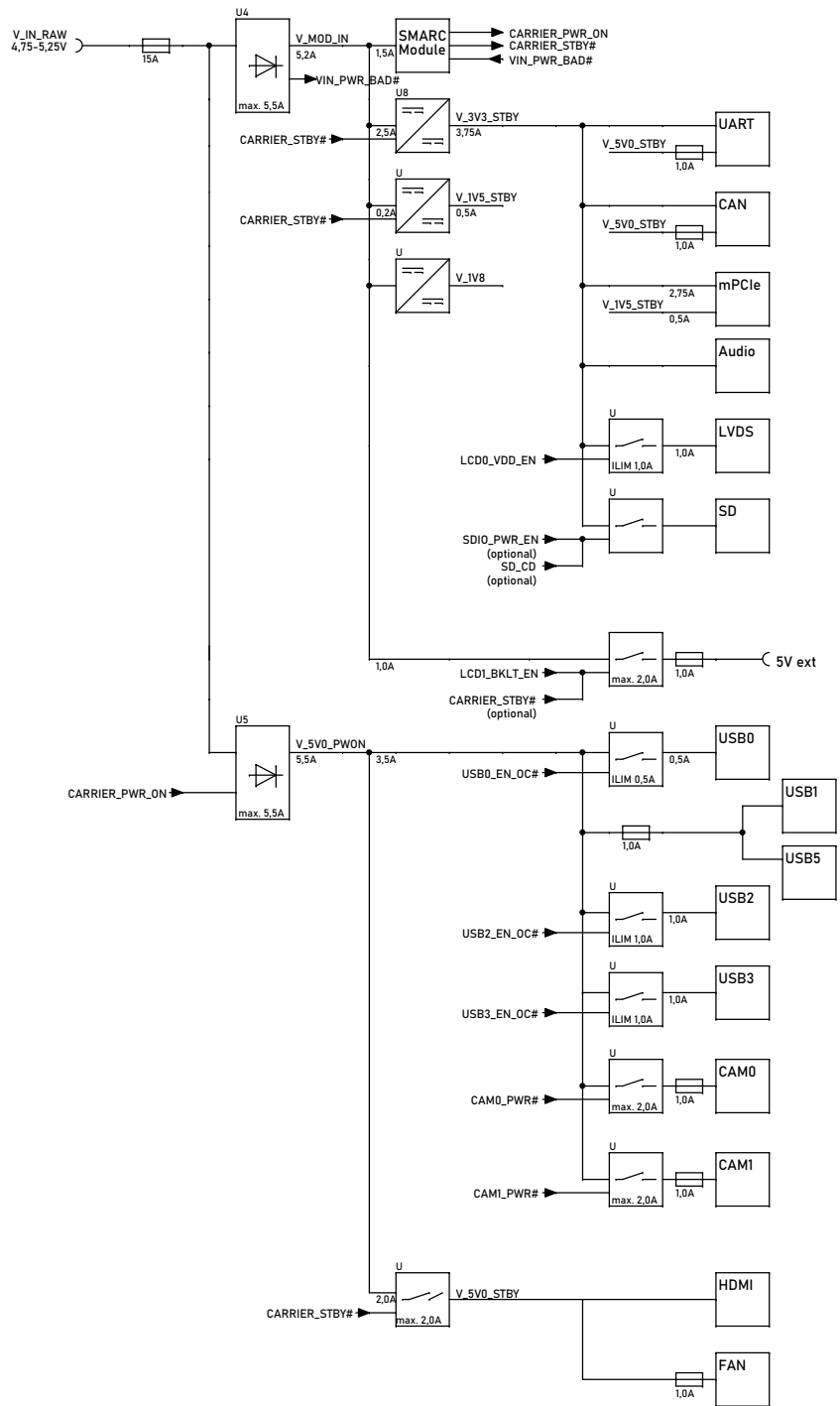
FSSMBB

<Core Design>


Size A3 14) Audio, F. Con, Misc.

Rev 1.10

Drawn by: M.Schulz Date: Thursday, September 05, 2024 Sheet 14 of 15



Confidential

 F&S Elektronik Systeme GmbH Untere Waldplätze 23 D-70569 Stuttgart		
FSSMBB		<Core Design>
Size A3	15) Power Flow Chart	Rev 1.10
Drawn by: M.Schulz	Date: Thursday, September 05, 2024	Sheet 15 of 15