SB-UCM-iMX8PLUS

BOARD REVISION: 1.1

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13	Power
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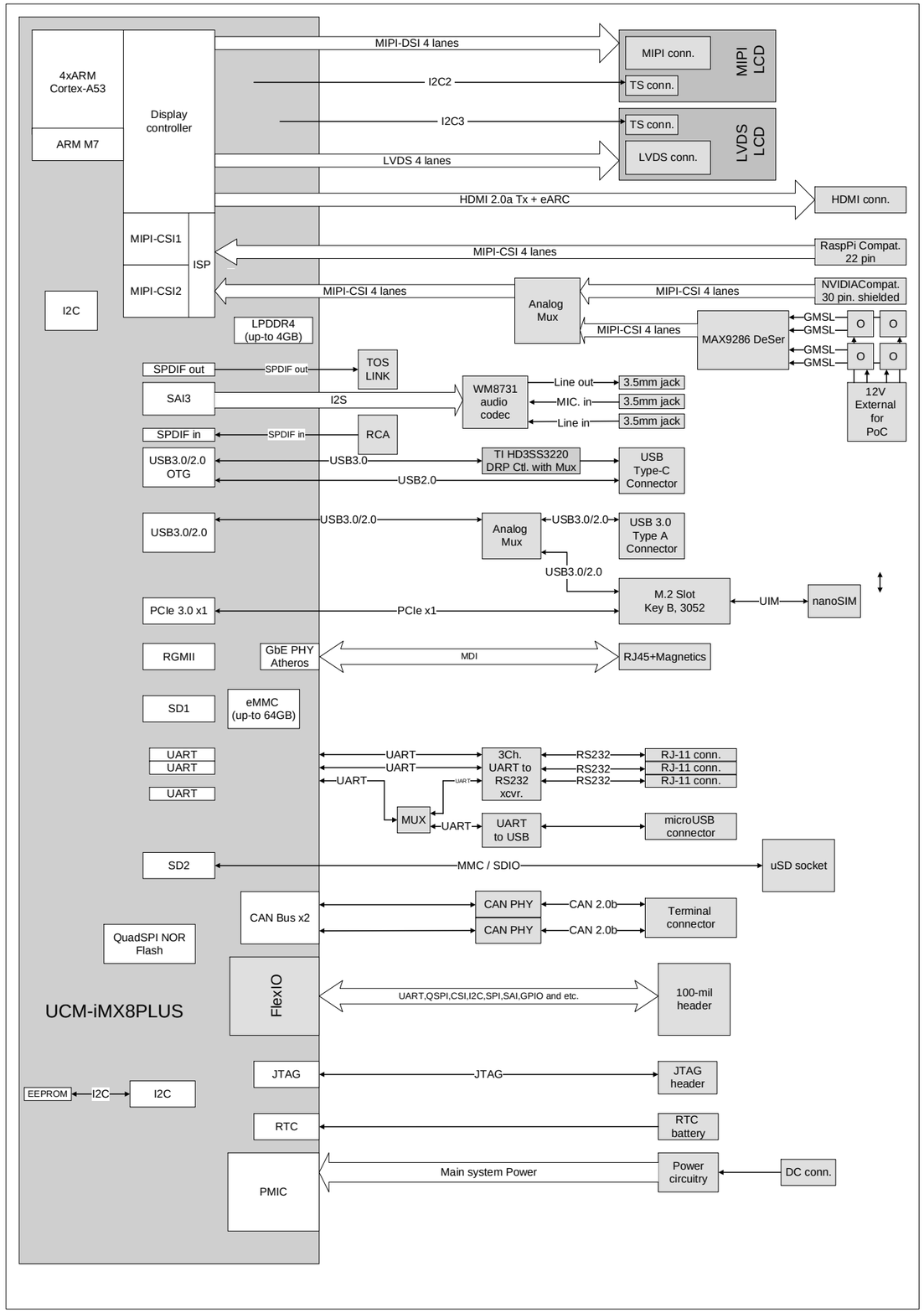
15	Mechanical
16	ALT Boot



SILKSCREEN:
CompuLab
SB-UCMIMX8PLUS Rev 1.0
188C03290

PCB1

PCB, SB-UCMIMX8PLUS, Rev 1.0
188C03840

ZZ1

PARSER_VERSION_1.0

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A3	SB-UCM-iMX8PLUS 01. INDEX	1.0
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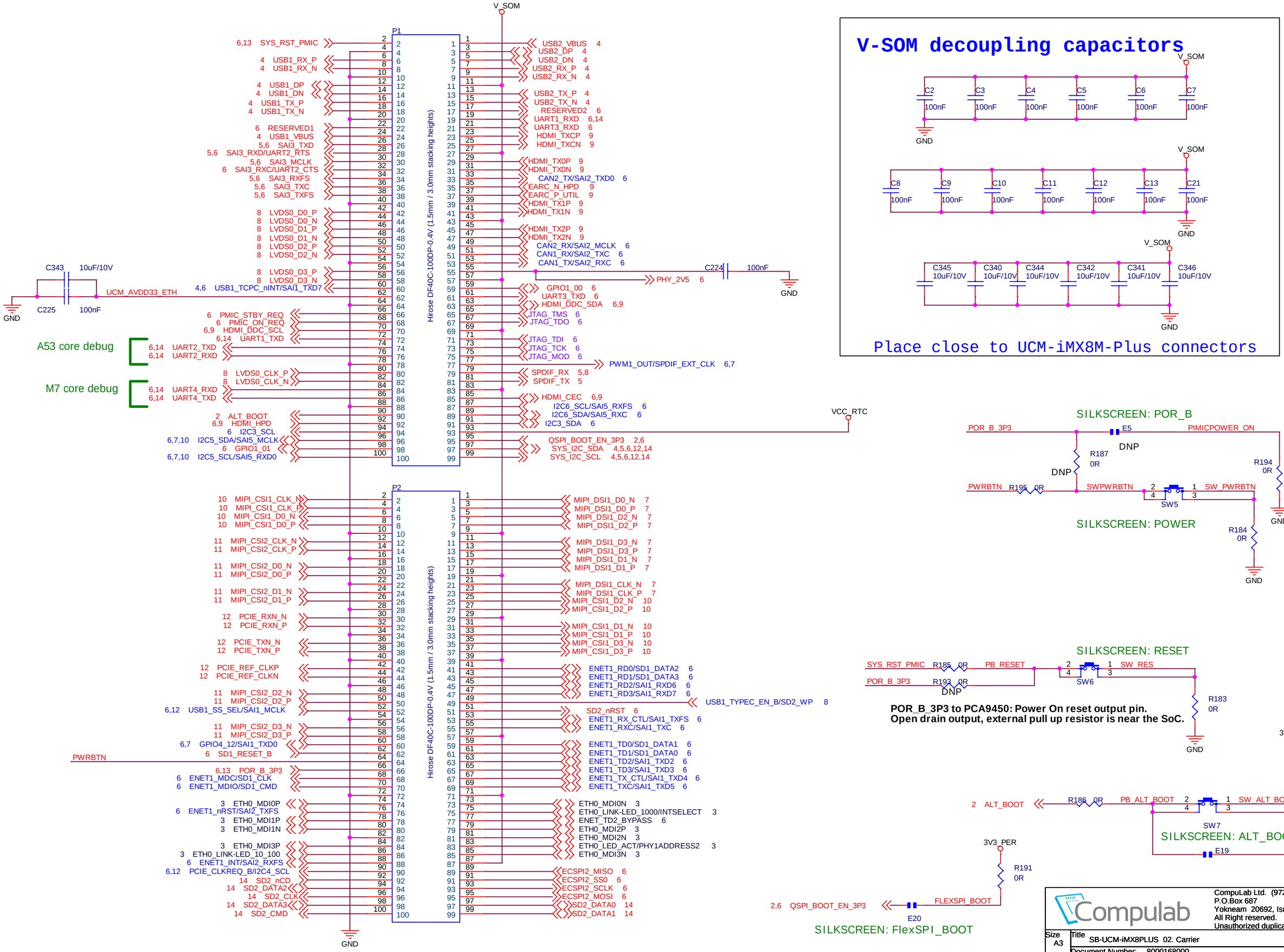
P1
Hirose DF40C-100DP-0.4V (1.5mm / 3.0mm stacking heights)
V_SOM
6,13 SYS_RST_PMIC
4 USB1_RX_P
4 USB1_RX_N
4 USB1_DP
4 USB1_DN
4 USB1_TX_P
4 USB1_TX_N
6 RESERVED1
4 USB1_VBUS
5,6 SAI3_TXD
5,6 SAI3_RXD/UART2_RTS
5,6 SAI3_MCLK
6 SAI3_RXC/UART2_CTS
5,6 SAI3_RXFS
5,6 SAI3_TXC
5,6 SAI3_TXFS
8 LVDS0_D0_P
8 LVDS0_D0_N
8 LVDS0_D1_P
8 LVDS0_D1_N
8 LVDS0_D2_P
8 LVDS0_D2_N
8 LVDS0_D3_P
8 LVDS0_D3_N
4,6 USB1_TCPC_nINT/SAI1_TXD7
C343 10uF/10V
C225 100nF
GND
A53 core debug
6,14 UART2_TXD
6,14 UART2_RXD
M7 core debug
6,14 UART4_RXD
6,14 UART4_TXD
6 PMIC_STBY_REQ
6 PMIC_ON_REQ
6,9 HDMI_DDC_SCL
6,14 UART1_TXD
8 LVDS0_CLK_P
8 LVDS0_CLK_N
2 ALT_BOOT
6,9 HDMI_HPD
6 I2C3_SCL
6,7,10 I2C5_SDA/SAI5_MCLK
6 GPIO1_01
6,7,10 I2C5_SCL/SAI5_RXD0
USB2_VBUS 4
USB2_DP 4
USB2_DN 4
USB2_RX_P 4
USB2_RX_N 4
USB2_TX_P 4
USB2_TX_N 4
RESERVED2 6
UART1_RXD 6,14
UART3_RXD 6
HDMI_TXCP 9
HDMI_TXCN 9
HDMI_TX0P 9
HDMI_TX0N 9
CAN2_TX/SAI2_TXD0 6
EARC_N_HPD 9
EARC_P_UTIL 9
HDMI_TX1P 9
HDMI_TX1N 9
HDMI_TX2P 9
HDMI_TX2N 9
CAN2_RX/SAI2_MCLK 6
CAN1_RX/SAI2_TXC 6
CAN1_TX/SAI2_RXC 6
C224 100nF
PHY_2V5 6
GND
GPIO1_00 6
UART3_TXD 6
HDMI_DDC_SDA 6,9
JTAG_TMS 6
JTAG_TDO 6
JTAG_TDI 6
JTAG_TCK 6
JTAG_MOD 6
PWM1_OUT/SPDIF_EXT_CLK 6,7
SPDIF_RX 5,8
SPDIF_TX 5
HDMI_CEC 6,9
I2C6_SCL/SAI5_RXFS 6
I2C6_SDA/SAI5_RXC 6
I2C3_SDA 6
VCC_RTC
QSPI_BOOT_EN_3P3 2,6
SYS_I2C_SDA 4,5,6,12,14
SYS_I2C_SCL 4,5,6,12,14
P2
Hirose DF40C-100DP-0.4V (1.5mm / 3.0mm stacking heights)
10 MIPI_CSI1_CLK_N
10 MIPI_CSI1_CLK_P
10 MIPI_CSI1_D0_N
10 MIPI_CSI1_D0_P
11 MIPI_CSI2_CLK_N
11 MIPI_CSI2_CLK_P
11 MIPI_CSI2_D0_N
11 MIPI_CSI2_D0_P
11 MIPI_CSI2_D1_N
11 MIPI_CSI2_D1_P
12 PCIE_RXN_N
12 PCIE_RXN_P
12 PCIE_TXN_N
12 PCIE_TXN_P
12 PCIE_REF_CLKP
12 PCIE_REF_CLKN
11 MIPI_CSI2_D2_N
11 MIPI_CSI2_D2_P
6,12 USB1_SS_SEL/SAI1_MCLK
11 MIPI_CSI2_D3_N
11 MIPI_CSI2_D3_P
6,7 GPIO4_12/SAI1_TXD0
6 SD1_RESET_B
PWRBTN
6,13 POR_B_3P3
6 ENET1_MDC/SD1_CLK
6 ENET1_MDIO/SD1_CMD
3 ETH0_MDI0P
6 ENET1_nRST/SAI2_TXFS
3 ETH0_MDI1P
3 ETH0_MDI1N
3 ETH0_MDI3P
3 ETH0_LINK-LED_10_100
6 ENET1_INT/SAI2_RXFS
6,12 PCIE_CLKREQ_B/I2C4_SCL
14 SD2_nCD
14 SD2_DATA2
14 SD2_CLK
14 SD2_DATA3
14 SD2_CMD
MIPI_DSI1_D0_N 7
MIPI_DSI1_D0_P 7
MIPI_DSI1_D2_N 7
MIPI_DSI1_D2_P 7
MIPI_DSI1_D3_N 7
MIPI_DSI1_D3_P 7
MIPI_DSI1_D1_N 7
MIPI_DSI1_D1_P 7
MIPI_DSI1_CLK_N 7
MIPI_DSI1_CLK_P 7
MIPI_CSI1_D2_N 10
MIPI_CSI1_D2_P 10
MIPI_CSI1_D1_N 10
MIPI_CSI1_D1_P 10
MIPI_CSI1_D3_N 10
MIPI_CSI1_D3_P 10
ENET1_RD0/SD1_DATA2 6
ENET1_RD1/SD1_DATA3 6
ENET1_RD2/SAI1_RXD6 6
ENET1_RD3/SAI1_RXD7 6
USB1_TYPEC_EN_B/SD2_WP 8
SD2_nRST 6
ENET1_RX_CTL/SAI1_TXFS 6
ENET1_RXC/SAI1_TXC 6
ENET1_TD0/SD1_DATA1 6
ENET1_TD1/SD1_DATA0 6
ENET1_TD2/SAI1_TXD2 6
ENET1_TD3/SAI1_TXD3 6
ENET1_TX_CTL/SAI1_TXD4 6
ENET1_TXC/SAI1_TXD5 6
ETH0_MDI0N 3
ETH0_LINK-LED_1000/INTSELECT 3
ENET_TD2_BYPASS 6
ETH0_MDI2P 3
ETH0_MDI2N 3
ETH0_LED_ACT/PHY1ADDRESS2 3
ETH0_MDI3N 3
ECSPI2_MISO 6
ECSPI2_SS0 6
ECSPI2_SCLK 6
ECSPI2_MOSI 6
SD2_DATA0 14
SD2_DATA1 14
GND
V-SOM decoupling capacitors
V_SOM
C2 C3 C4 C5 C6 C7
100nF
GND
C8 C9 C10 C11 C12 C13 C21
C345 C340 C344 C342 C341 C346
10uF/10V
Place close to UCM-iMX8M-Plus connectors
SILKSCREEN: POR_B
POR_B_3P3
E5
DNP
PIMICPOWER_ON
R187 0R
R194 0R
PWRBTN R195 0R
SWPWRBTN
SW5
SW_PWRBTN
R184 0R
SILKSCREEN: POWER
SILKSCREEN: RESET
SYS_RST_PMIC R185 0R
PB_RESET
SW6
SW_RES
R193 0R
R183 0R
POR_B_3P3 to PCA9450: Power On reset output pin.
Open drain output, external pull up resistor is near the SoC.
3V3_PER
R182 0R
2 ALT_BOOT
R186 0R
PB_ALT_BOOT
SW_ALT_BOOT
SW7
SILKSCREEN: ALT_BOOT
E19
R191 0R
FLEXSPI_BOOT
2,6 QSPI_BOOT_EN_3P3
E20
SILKSCREEN: FlexSPI_BOOT
Compulab
CompuLab Ltd. (972) 4 8290100
P.O.Box 687
Yokneam 20692, Israel
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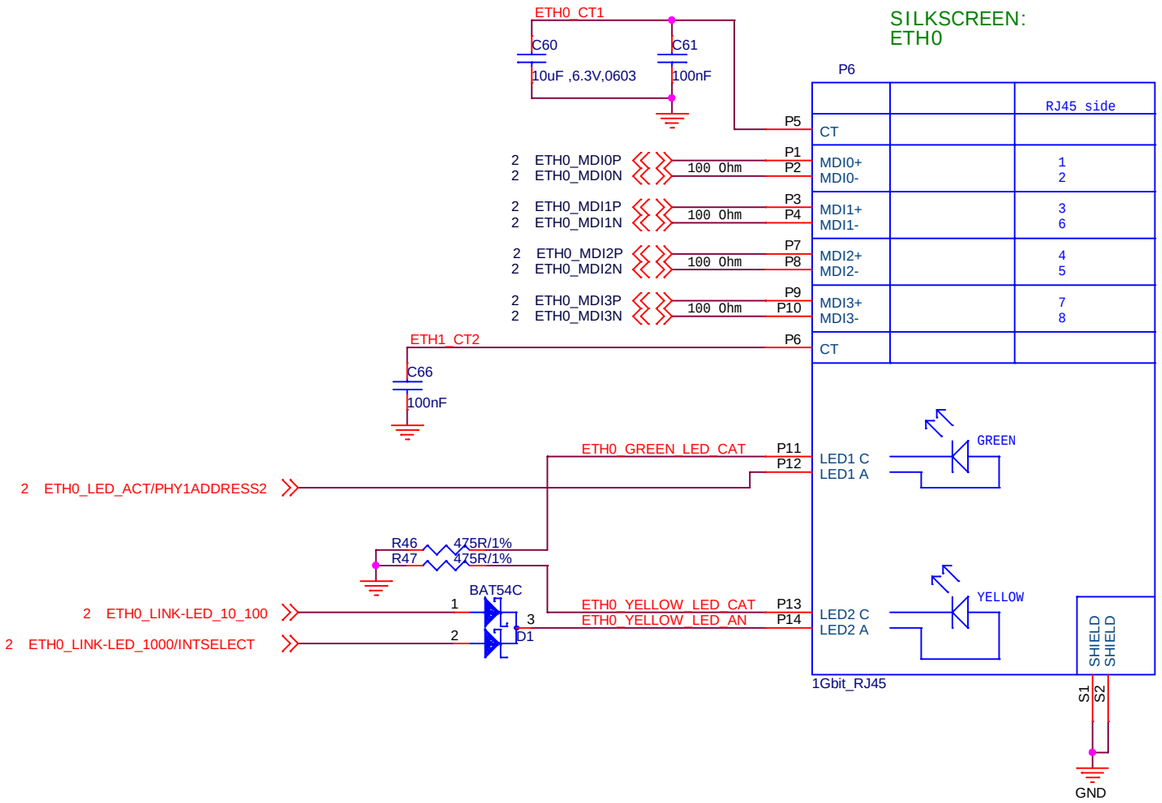
Ethernet connector



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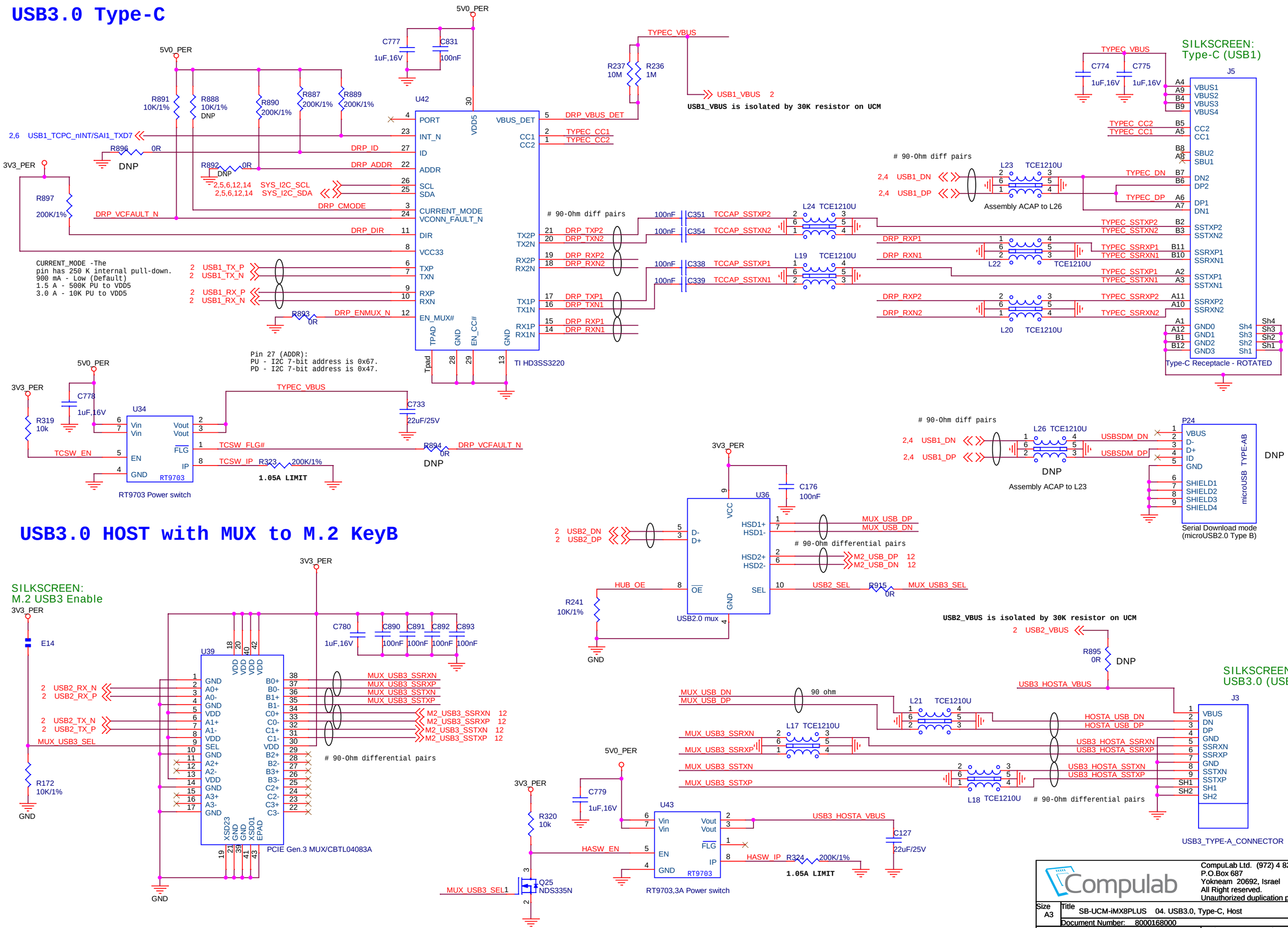
USB3.0 Type-C



USB3.0 HOST with MUX to M.2 KeyB

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Audio Codec

POWER CONSUMPTION:
DBVDD = 1.5mA @ 3.3V (typ)
DCVDD = 3.2mA @ 1.5V (typ) ==> assuming same current @ 3.3V
HPVDD = 1.7mA @ 3.3V (typ)
AVDD = 13.1mA @ 3.3V (typ)

1.5+3.2+1.7+13.1=19.5mA @ 3.3V (typ):
Assuming worst case is 50mA @ 3.3V

3V3_PER
Place C93 and C94
ACAP to U10 pins 5 and 4
C30 10uF/10V
C31 100nF
3V3_PER
Place C97 and C98
ACAP to U10 pins 3 and 4
C32 10uF/10V
C33 100nF
Place C99 and C100
ACAP to U10 pins 18 and 19
C34 100nF
C35 10uF/10V
C36 10uF/10V
C37 100nF
AGND
3V3_PER
Place C95 and C170
ACAP to U10 pins 12 and 15

I2C ADDRESS: 0b0011010 (0x1AH)

U10 WM8731/L

3	DCVDD		
5	DBVDD		
12	HPVDD		
18	AVDD		
27	SDIN	2,4,6,12,14	SYS_I2C_SDA
28	SCLK	2,4,6,12,14	SYS_I2C_SCL
7	BCLK	2,6	SAI3_TXC
8	DACDAT	2,6	SAI3_TXD
10	ADCDAT	2,6	SAI3_RXD/UART2_RTS
9	DACLRC	2,6	SAI3_TXFS
11	ADCLRC	2,6	SAI3_RXFS
25	MODE		
26	CSB		
6	CLKOUT		
1	XTI/MCLK	2,6	SAI3_MCLK
2	XTO		
21	MICBIAS		
22	MICIN		
23	RLINEIN		
24	LLINEIN		
17	ROUT		
16	LOUT		
14	RHPOUT		
13	LHPOUT		
20	VMID		
15	HPGND		
19	AGND		
4	DGND		
29	PAD		

R20 33R CP CDC_BCLK
R23 0R ADCLRC
R24 0R CP DNP
R28 0R
R99 0R DNP

MICBIAS
MICIN
R16 680R
10K/1% R17 AMPR
C28 1uF
MIC_IN
C29 220pF
R18 47K
J6
AGND
SILKSCREEN: Mic IN
AUDIO JACK 3.5mm, no sw., SMT

RLINEIN_T C38 1uF
LLINEIN_T C39 1uF
RIN_T
LIN_T
R21 5.62K/1%
R22 5.62K/1%
RLINEIN
LLINEIN
J7
AGND
SILKSCREEN: Audio IN
AUDIO JACK 3.5mm, no sw., SMT

RHPOUT_T C40 100uF
LHPOUT_T C41 100uF
RHPOUT
LHPOUT
R19 47K
R27 47K
R25 5.62K/1% C42 220pF
R26 5.62K/1% C43 220pF
J8
AGND
SILKSCREEN: Audio OUT
AUDIO JACK 3.5mm, no sw., SMT

AUD_VMID
C44 100nF
C45 1uF
AGND

Keep S1 close to U11
S1 width at least 20 mil
20mil
20mil
GND
AGND

DNP
C46 33pF
12.000 MHZ
X1 DNP
CODEC_XTALIN
CODEC_XTALOUT
C47 33pF
GND
DNP

Keep analog signals clear from other signals at least 30mills
Analog signals list will be provided in separate doc

SPDIF

2,8 SPDIF_RX
R139 0R DNP
AMP_SPDIF_RX
U11A 74LCX04
U11B 74LCX04
3V3_PER
R31 10K
AMP_IN
AMP_OUT
R32 100R
A_IN C48 10nF
AUDIO_IN_DIG
R34 100R/1%
C68 270pF
P27
RCA
SILKSCREEN: Digital Audio IN

2 SPDIF_TX
C49 10nF
SPDIF_OUT1C
100R/1%
AUDIO_OUT_DIG
R33
R35 220R
C50 100pF
C793 100nF
P25
VCC
IN
GND
NC
TOSLINK TX, H=12mm
SILKSCREEN: Digital Audio OUT

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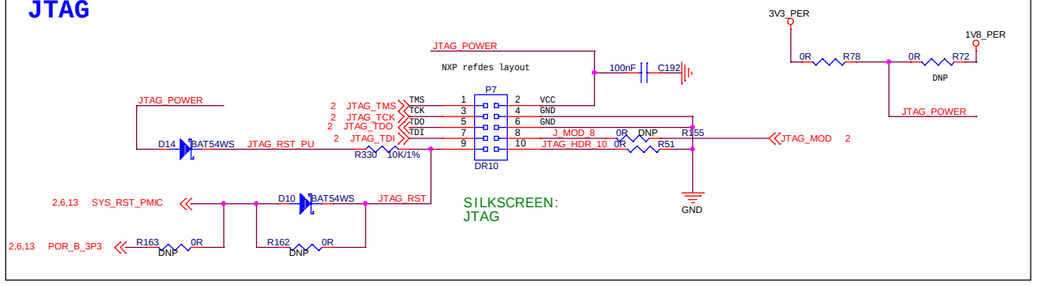
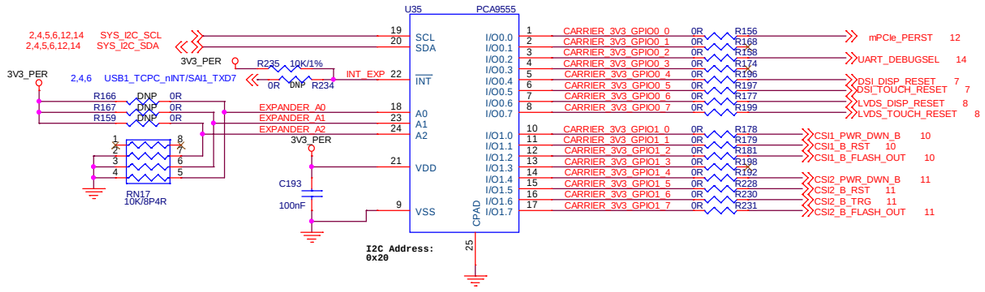
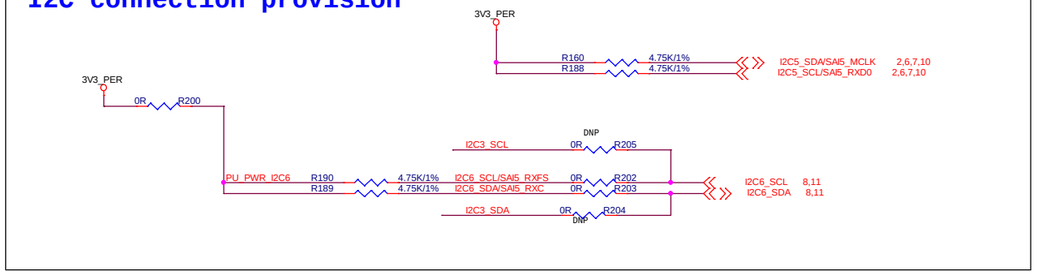
JTAG



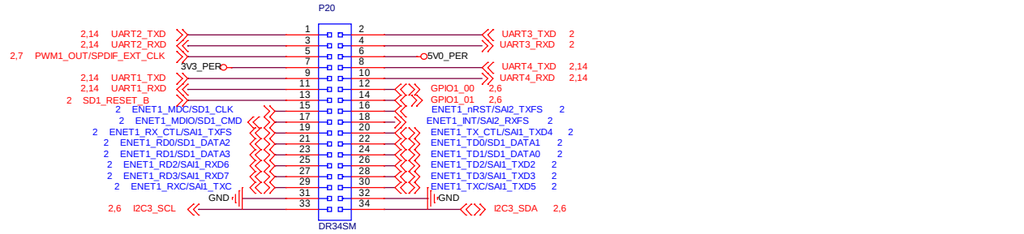
I2C to GPIO expander

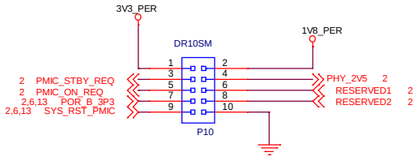


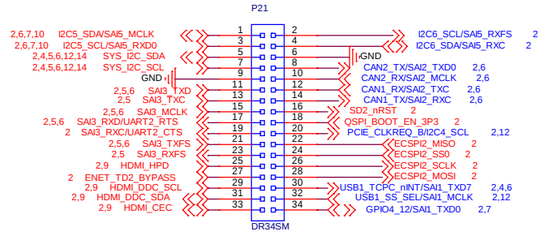
I2C connection provision



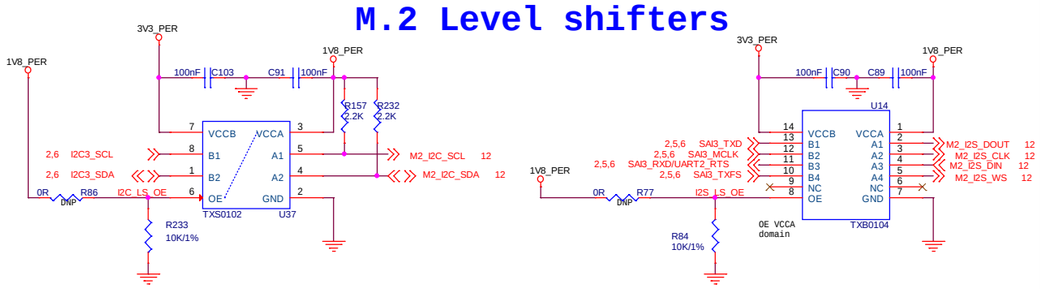
MISC connectors



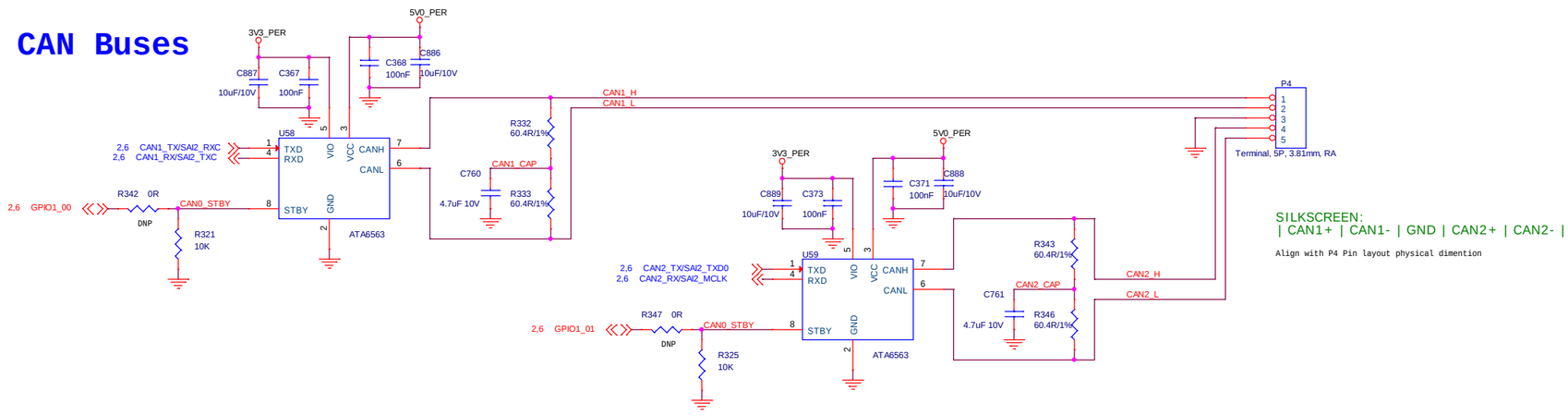




M.2 Level shifters



CAN Buses



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A2	SB-UCM-iMX8PLUS 06. JTAG, CAN, GPIO Exp., Misc.	1.0
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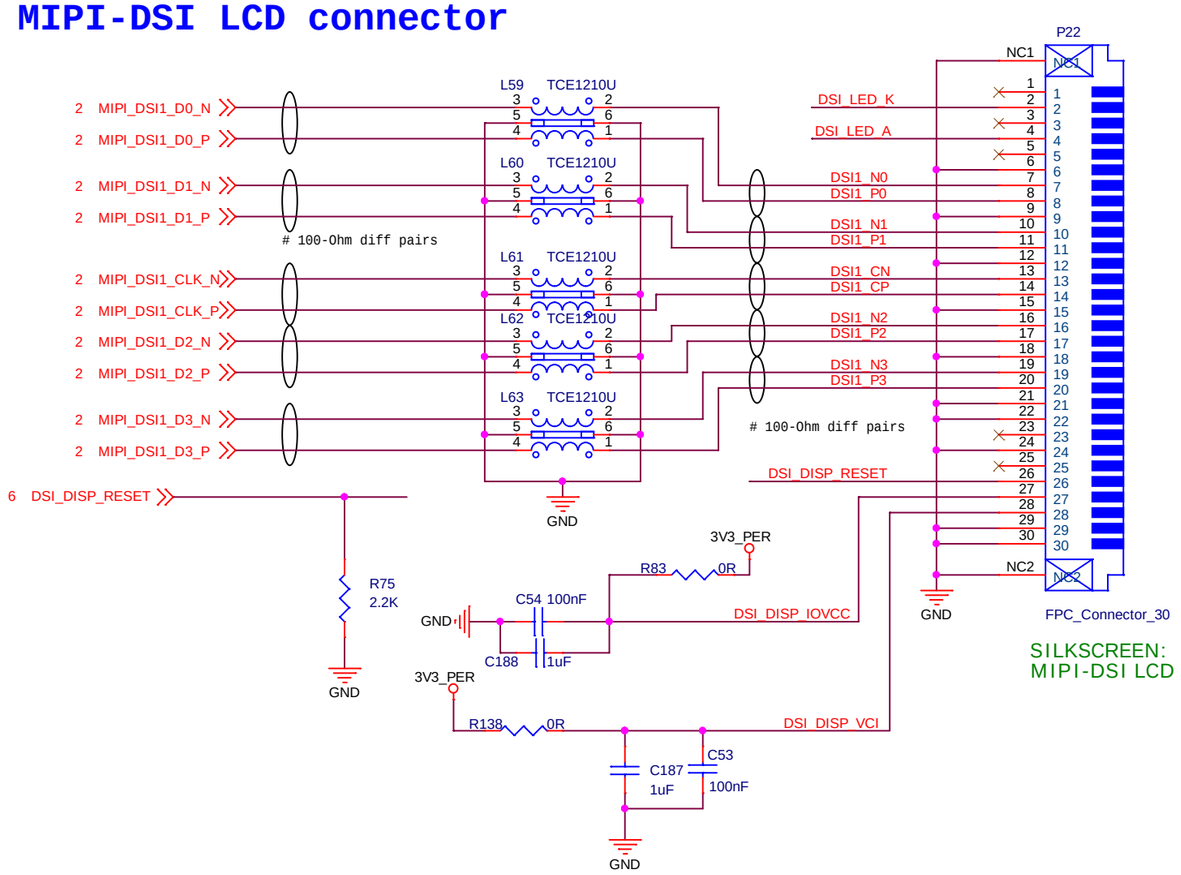
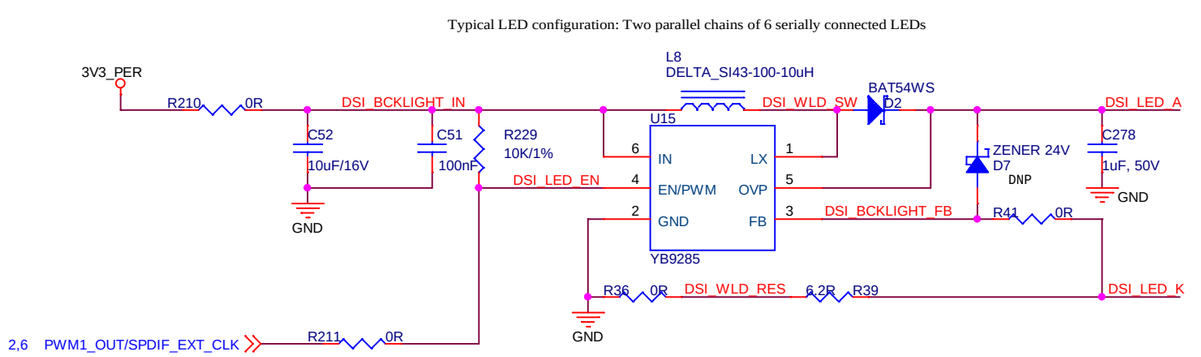
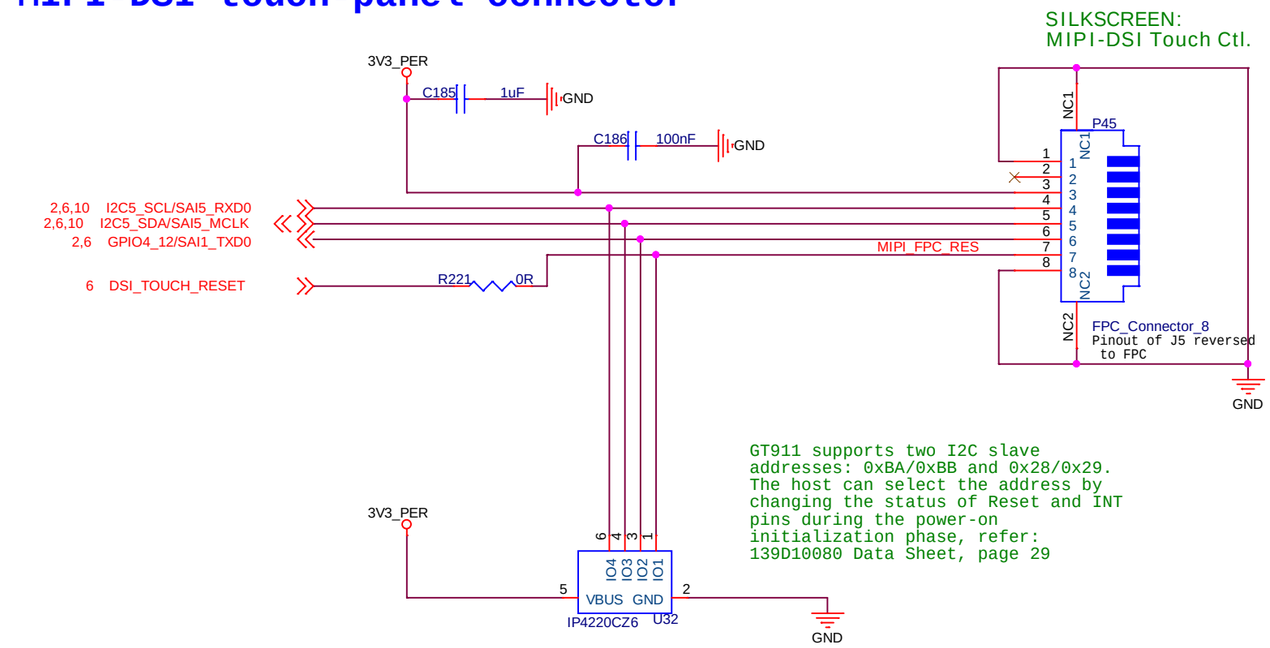
MIPI-DSI LCD connector



MIPI-DSI LCD back-light power



MIPI-DSI touch-panel connector



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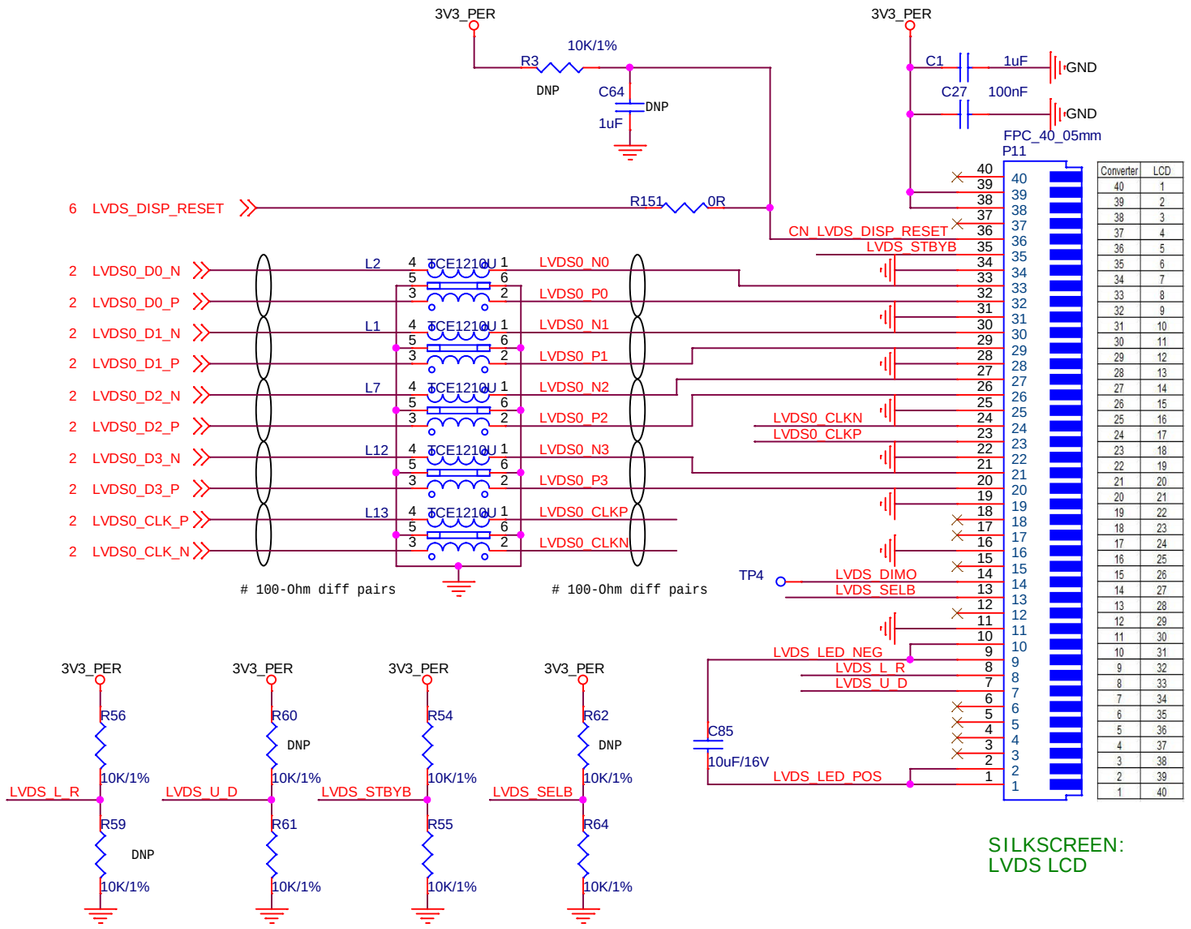
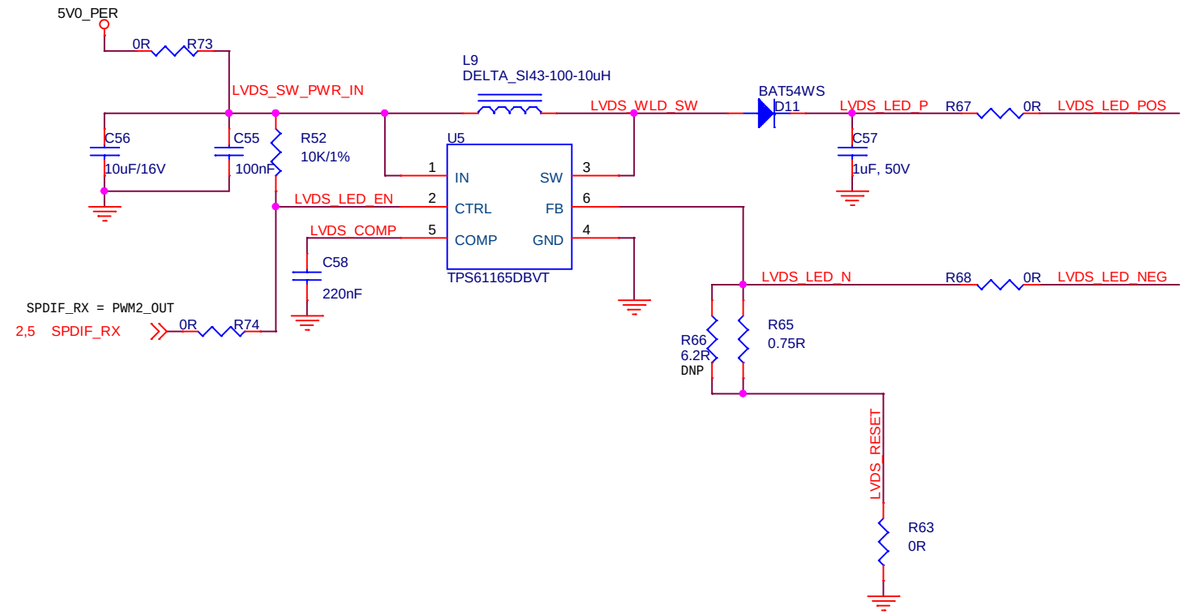
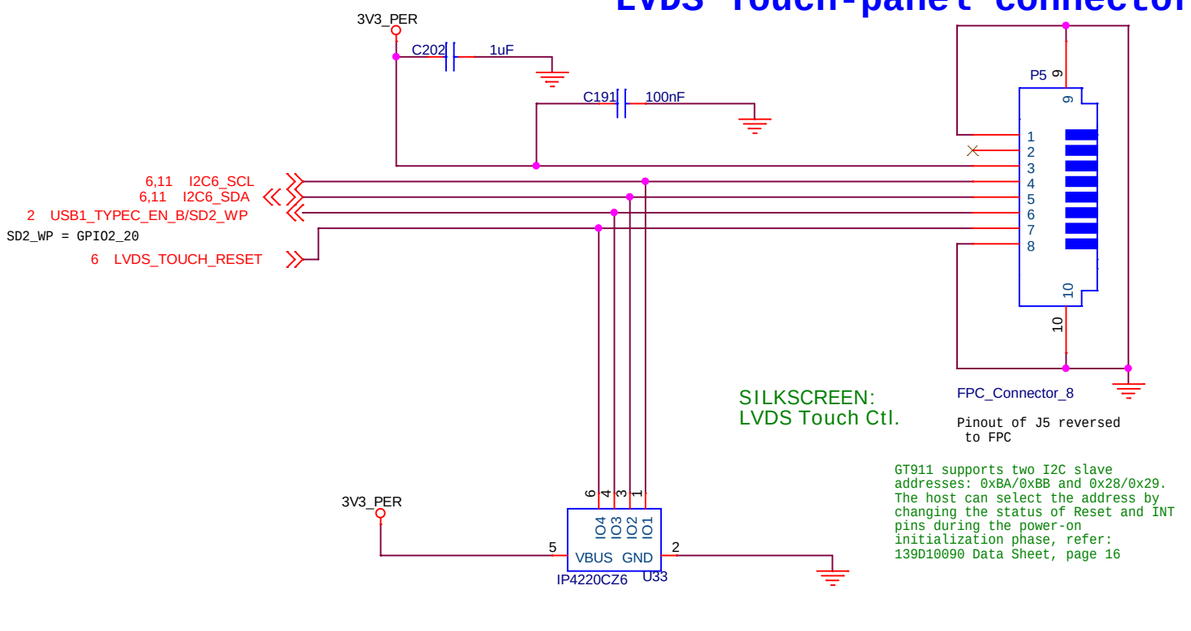
LVDS connector



LCD back-light power



LVDS Touch-panel connector



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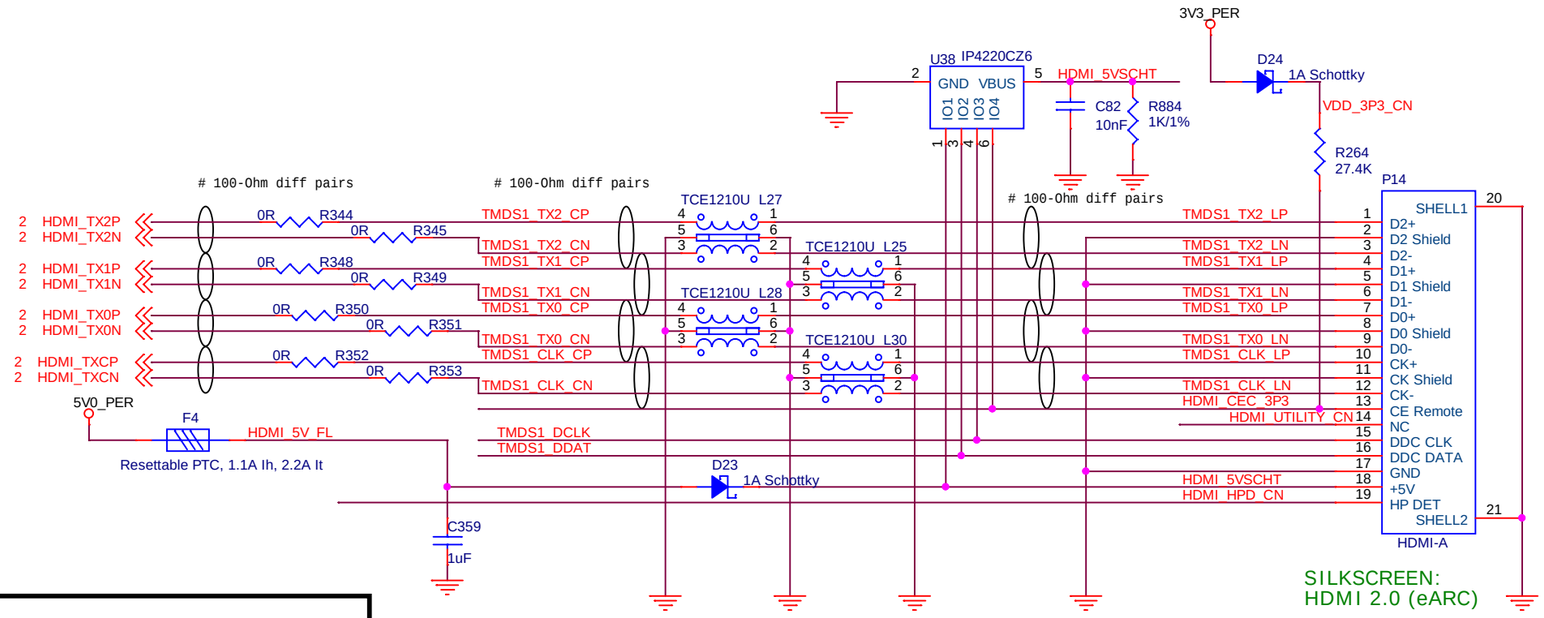
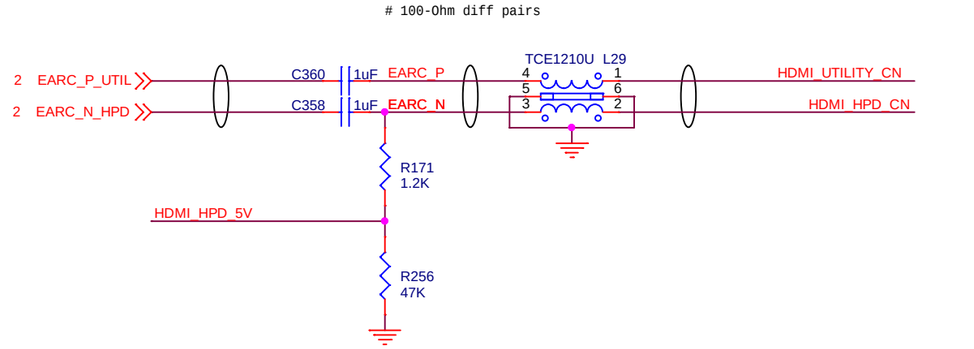
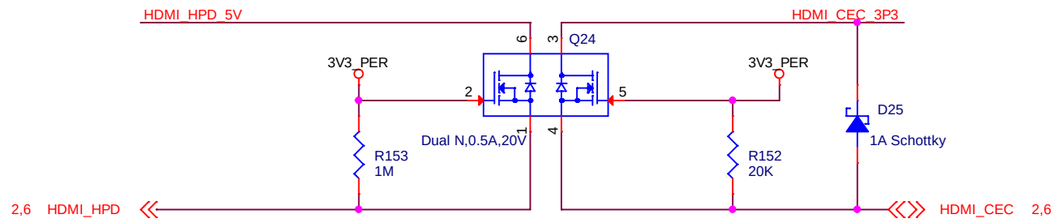
HDMI connector with eARC



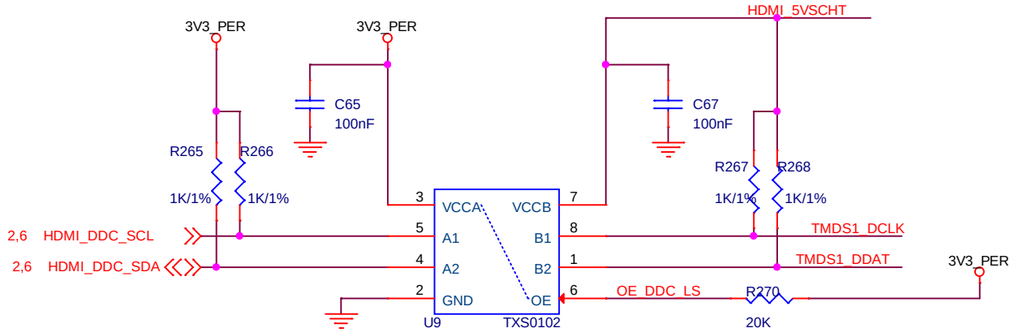
eARC ESD and HPD DC Filter



HPD and CEC Level Shifter



DDC Level Shifter



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MIPI-CSI1 Connectors

3V3_PER
E18
CSI1_SELECTOR
R328
10K/1%
SILKSCREEN:
Enable 30-pin, 1.8V connector
3V3_PER
C159 C105 C170 C160
100nF 100nF 100nF 100nF
U63
VDD VDD_1 VDD_2 VDD_3
1 6 13 26
100-Ohm diff pairs
2 MIPI_CSI1_D3_P
2 MIPI_CSI1_D3_N
2 MIPI_CSI1_CLK_P
2 MIPI_CSI1_CLK_N
2 MIPI_CSI1_D0_P
2 MIPI_CSI1_D0_N
2 MIPI_CSI1_D1_P
2 MIPI_CSI1_D1_N
2 MIPI_CSI1_D2_P
2 MIPI_CSI1_D2_N
2 3 COM0+ COM0-
4 5 COM1+ COM1-
7 8 COM2+ COM2-
9 10 COM3+ COM3-
11 12 COM4+ COM4-
14 15 COM5+ COM5-
16 SEL1
17 SEL2
NC0+ 42 CSI1_P22_DP3
NC0- 41 CSI1_P22_DN3
NC1+ 40 CSI1_P22_CKP
NC1- 39 CSI1_P22_CKN
NC2+ 38 CSI1_P22_DP0
NC2- 37 CSI1_P22_DN0
NC3+ 36 CSI1_P22_DP1
NC3- 35 CSI1_P22_DN1
NC4+ 25 CSI1_P22_DP2
NC4- 24 CSI1_P22_DN2
NC5+ 23
NC5- 22
NO0+ 34 CSI1_P30_DP3
NO0- 33 CSI1_P30_DN3
NO1+ 32 CSI1_P30_CKP
NO1- 31 CSI1_P30_CKN
NO2+ 30 CSI1_P30_DP0
NO2- 29 CSI1_P30_DN0
NO3+ 28 CSI1_P30_DP1
NO3- 27 CSI1_P30_DN1
NO4+ 21 CSI1_P30_DP2
NO4- 20 CSI1_P30_DN2
NO5+ 19
NO5- 18
Tpad
Tpad
MAX14998ETO+T

3V3_PER
100nF C164 C107 100nF
VIO_CAMERA_CSI1
GND
7 VCCB
8 B1
1 B2
6 OE
VCCA 3
A1 5
A2 4
GND 2
TXS0102 U13
10 CSI1_B_TRG
6 CSI1_B_FLASH_OUT
R327 10K/1% CSI1_GPIO_1V8_ENABLE
R327,R313 - 3.3->1.8 Divider
R313
10K/1%
OE VCCA domain
U13_A1 0R R299 CSI1_B_TRG_1V8
U13_A2 0R R301 CSI1_B_FLASH_OUT_1V8

6 CSI1_PWR_DWN_B
R315
10K/1%
CSI1_PWR_DWN_B_1V8
R316
10K/1%
CSI1_B_RST 6
R340
10K/1%
CSI1_B_RST_1V8
R341
10K/1%

3V3_PER
100nF C169 C168 100nF
VIO_CAMERA_CSI1
2,6,7 I2C5_SDA/SAI5_MCLK R356 0R I2C5_3V3_SDA
2,6,7 I2C5_SCL/SAI5_RXD0 R358 0R I2C5_3V3_SCL
CSI1_I2C_1V8_ENABLE
R329 10K/1%
R329,R314 - 3.3->1.8 Divider
R314
10K/1%
7 VCCB
8 B1
1 B2
6 OE
VCCA 3
A1 5
A2 4
GND 2
TXS0102 U44
2.2K R104
2.2K R105
I2C5_SDA_1V8
I2C5_SCL_1V8

1V8_PER
3V3_PER
0R DNP CSI1_MCLK_VCC_B 0R
R101
R100
OSC4
VCC OUT
GND EN
25.000MHz
C165
100nF
OSC4_OUT
OSC4_EN
R102 10K/1%
DNP
R103
10K/1%
VIO_CAMERA_CSI1
100nF C167
U57
VCC
A
B
GND
A+B
7SZ32
U57_4 33R R297 CSI1_MCLK_B
DNP
3V3_PER
VIO_CAMERA_CSI1
DNP
R302 0R
1V8_PER
R303 0R
C106
100nF

22-pin Connector for RPi cameras
Four MIPI-CSI lanes connected

SILKSCREEN:
MIPI-CSI1 (22-pin, 3.3V)
100-Ohm diff pairs
P49
1 NC1
CSI1_P22_DN0 2
CSI1_P22_DP0 3
4
CSI1_P22_DN1 5
CSI1_P22_DP1 6
7
CSI1_P22_CKN 8
CSI1_P22_CKP 9
10
CSI1_P22_DN2 11
CSI1_P22_DP2 12
13
CSI1_P22_DN3 14
CSI1_P22_DP3 15
16
10 CSI1_B_TRG R317 DNP 0R FPC22_17
0R R339 FPC22_18
DNP
I2C5_SCL/SAI5_RXD0 R354 0R CSI1_P22_I2C_SCL 20
I2C5_SDA/SAI5_MCLK R355 0R CSI1_P22_I2C_SDA 21
17
18
19
22 NC2
3V3_PER
FPC, 22pin
C880 C879 C881
100nF 10uF 10uF

3V3_PER
1V8_PER
C878 C876 C877
10uF 10uF 100nF
C875 C874
10uF 100nF
SILKSCREEN:
MIPI-CSI1 (30-pin, 1.8V)
Camera_20682-030E-02
P48
1 VCC1_3P3
2 VCC2_3P3
3 VCC_1P8
4 GND1
5 GND2
CSI1_PWR_DWN_B_1V8 6 PWDN
I2C5_SCL_1V8 7 I2C_SCL
I2C5_SDA_1V8 8 I2C_SDA
GND 9 GND3
CSI1_P30_DN2 10 MIPI_D2_N
CSI1_P30_DP2 11 MIPI_D2_P
CSI1_B_TRG_1V8 12 TRIGGER
CSI1_MCLK_B 13 RSVD1
GND 14 GND4
CSI1_P30_DN1 15 MIPI_D1_N
CSI1_P30_DP1 16 MIPI_D1_P
GND 17 GND5
18 GND6
CSI1_P30_DN0 19 MIPI_D0_N
CSI1_P30_DP0 20 MIPI_D0_P
CSI1_B_RST_1V8 21 RESET
GND 22 GND7
23 RSVD2
CSI1_P30_CKN 24 MIPI_CLK_N
CSI1_P30_CKP 25 MIPI_CLK_P
GND 26 GND8
CSI1_P30_DN3 27 MIPI_D3_N
CSI1_P30_DP3 28 MIPI_D3_P
CSI1_B_FLASH_OUT_1V8 29 FLASH
30 RSVD3
100-Ohm diff pairs
SH1 SH1
SH2 SH2
SH3 SH3
SH4 SH4
SH5 SH5
SH6 SH6
SH7 SH7
SH8 SH8
SH9 SH9
SH10 SH10
SH11 SH11
SH12 SH12
SH13 SH13
SH14 SH14
SH15 SH15
SH16 SH16
SH17 SH17
SH18 SH18
SH19 SH19

30 pin Connector for e-CAM130_iMX8M
(e-con System)

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P.O.Box 687
Yokneam 20692, Israel

Size	Title	Rev
A3	SB-UCM-iMX8PLUS 10. MIPI-CSI1 Connectors	1.0
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MIPI-CSI2 Connectors

SILKSCREEN: Enable GMSL DeSer

SILKSCREEN: MIPI-CSI2 (30-pin, 1.8V)

30 pin Connector for e-CAM130_iMX8M

Camera_20682-030E-02

Provision to disable oscillator if GMSL deserializer has been chosen

100-Ohm diff pairs

GMSL Deserializer (MAX9286)

MAXIM MAX9286

OR

GMSL Power

GMSL Deserializer Straps

GMSL Power on Coax 12V

SILKSCREEN: | (+) | PoC | (-) |

SILKSCREEN: PoC active

GMSL Coax Connectors (FAKRA)

SILKSCREEN: Enable PoC

FAKRA-RF-Male-50Ohm-Z

GMSL Status LEDs

SILKSCREEN: CCBSYS

SILKSCREEN: PWDNB

SILKSCREEN: GPI

SILKSCREEN: LOCK

SILKSCREEN: ERRB

SILKSCREEN: LMO

SILKSCREEN: LFLT

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Size	Title	Rev
A2	SB-UCM-iMX8PLUS 11. MIPI-CSI2, GMSL Deserializer	1.0
	Document Number: 8000168000	
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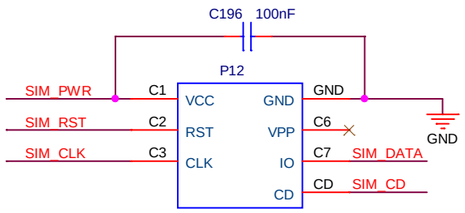
nanoSIM with detect

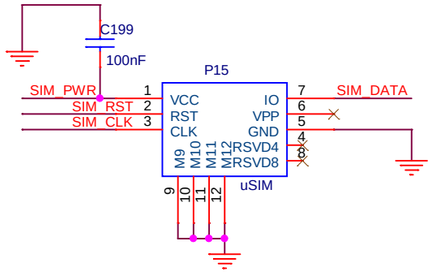


M.2 Socket - Key B

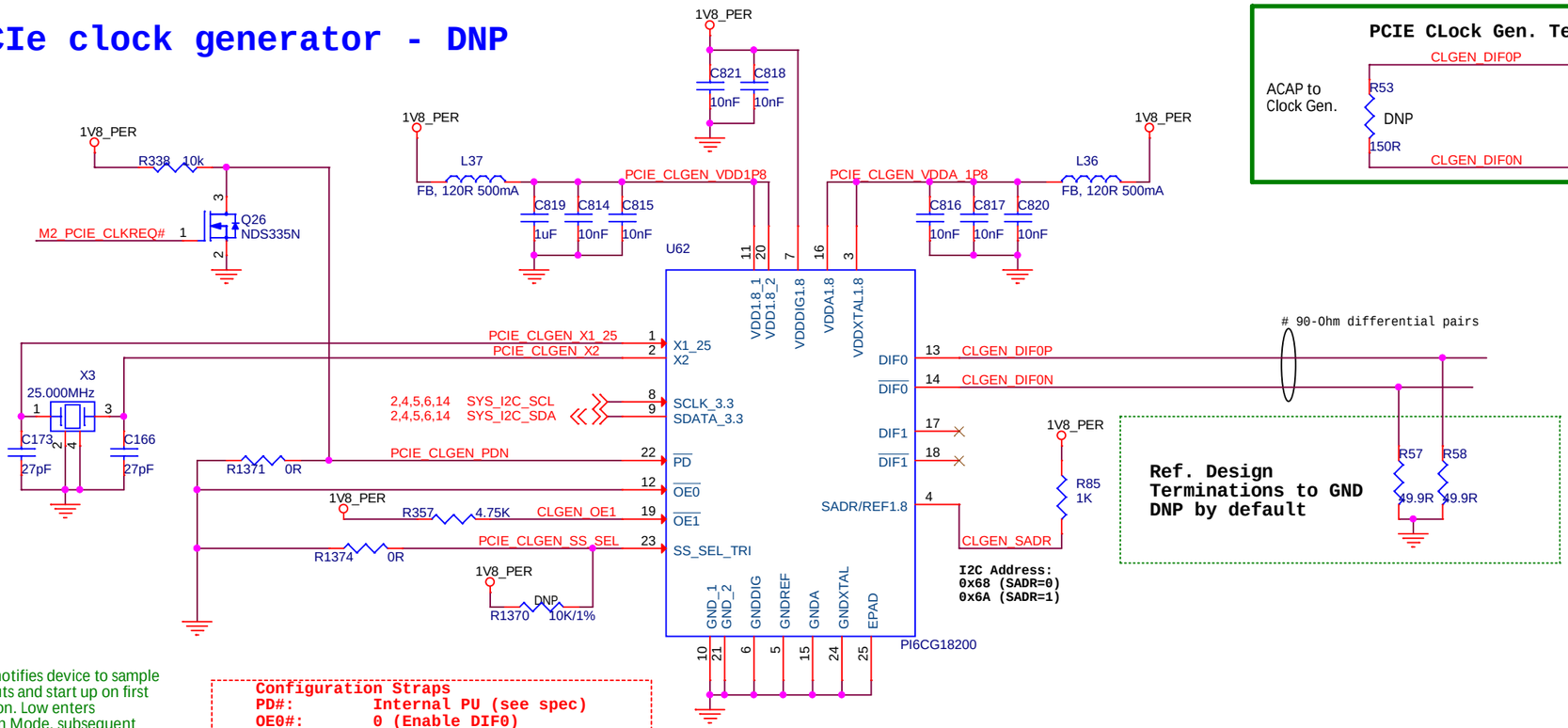
(WWAN PCIe/USB3, NO SATA)

SILKSCREEN:
M.2 Key-B

uSIM socket - DNP



PCIe clock generator - DNP



PCIE CLock Gen. Termination

PD#: Input notifies device to sample latched inputs and start up on first high assertion. Low enters Power Down Mode, subsequent high assertions exit Power Down Mode. This pin has internal pull-up resistor.

Configuration Straps
PD#: Internal PU (see spec)
OE0#: 0 (Enable DIF0)
OE1#: 0 (Enable DIF1)
SS_SEL_TRI: 0 (SpreadSpect off)

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Size	Title	Rev
A3	SB-UCM-iMX8PLUS 12. PCIe	1.0
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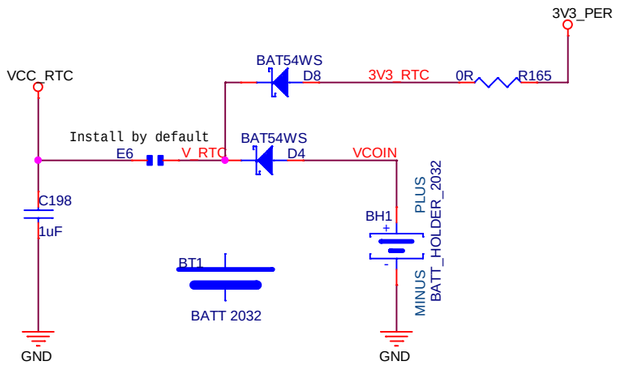
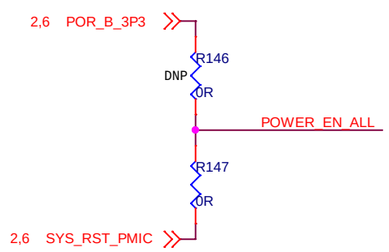
POWER

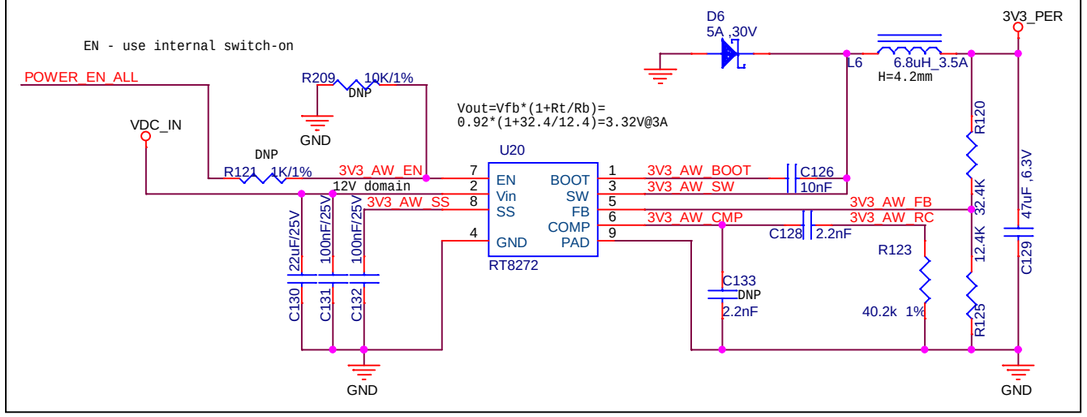
RTC battery



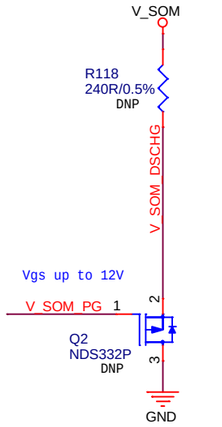
Power Reset Signal



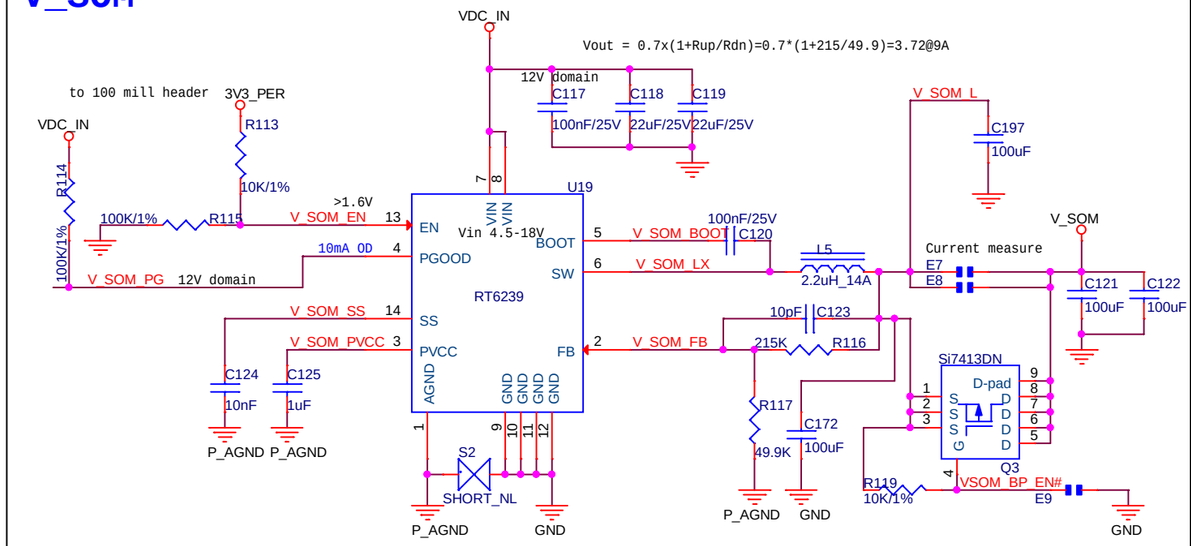
3V3_PER



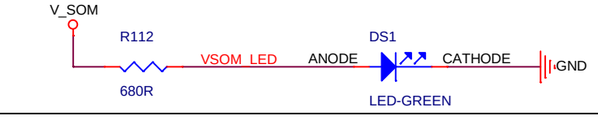
V_SOM discharge



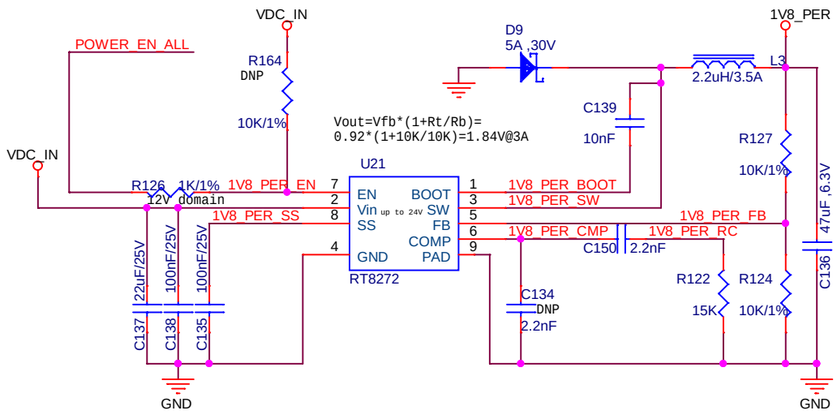
V_SOM



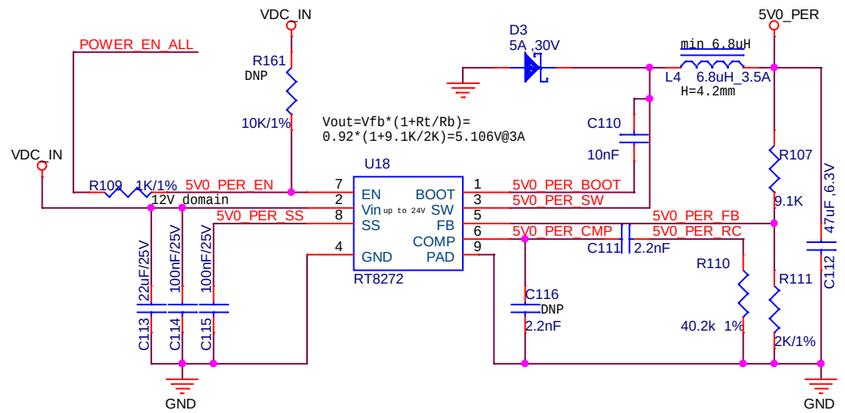
V_SOM



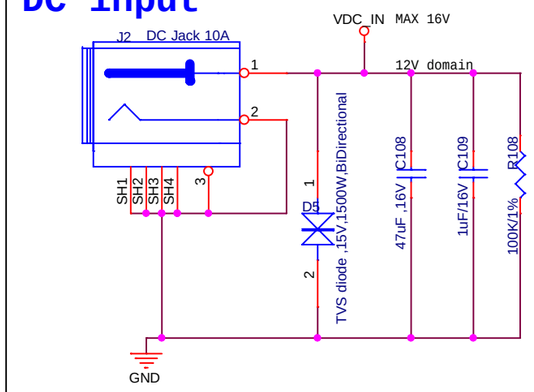
1V8_PER source



5V0_PER source



DC input



Size	Title	Rev
A3	SB-UCM-iMX8PLUS 13. POWER	1.0
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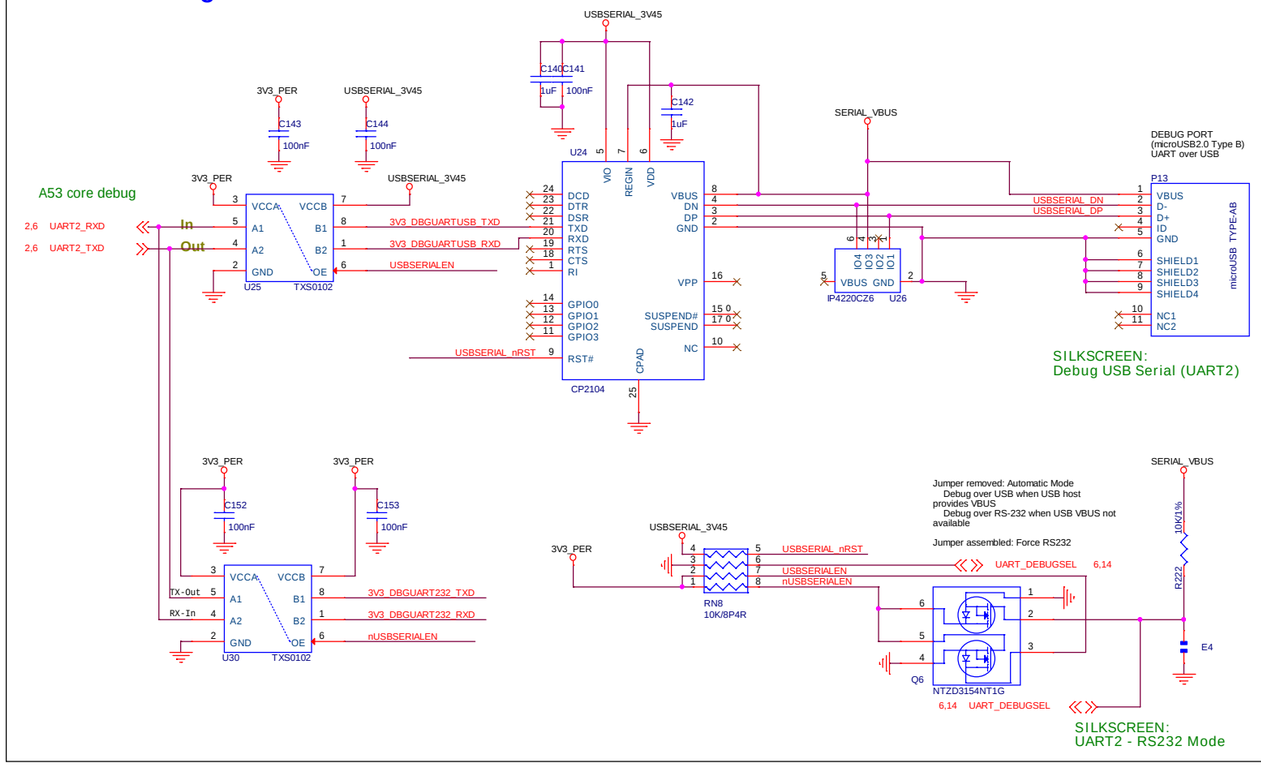
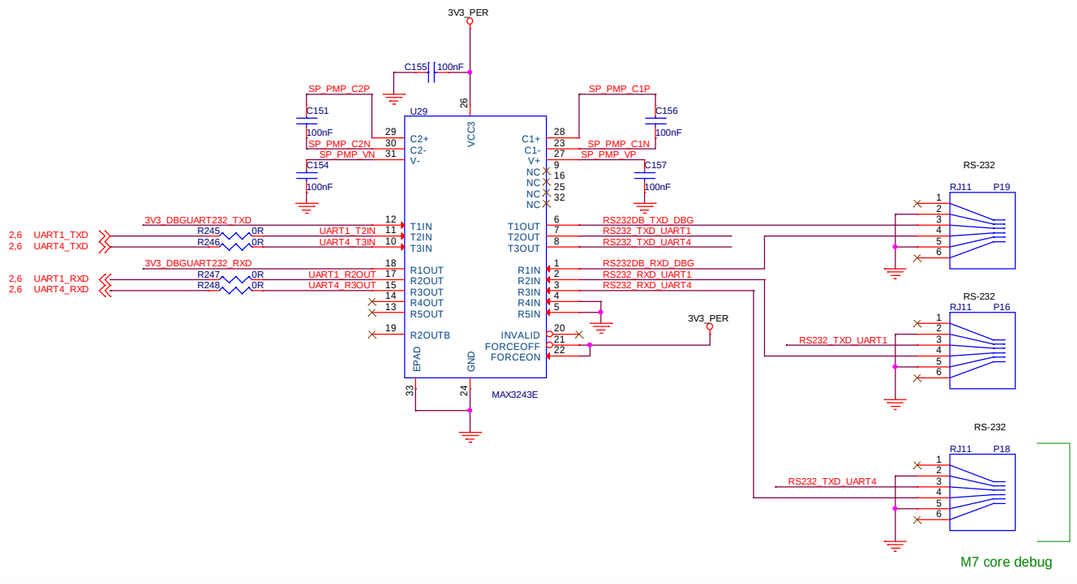
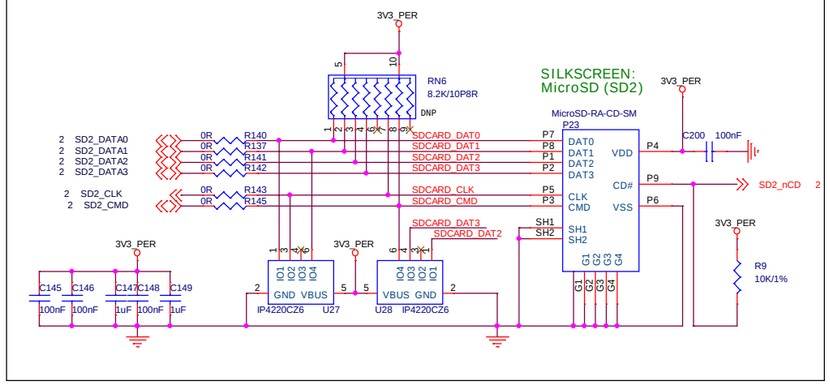
Serial debug console



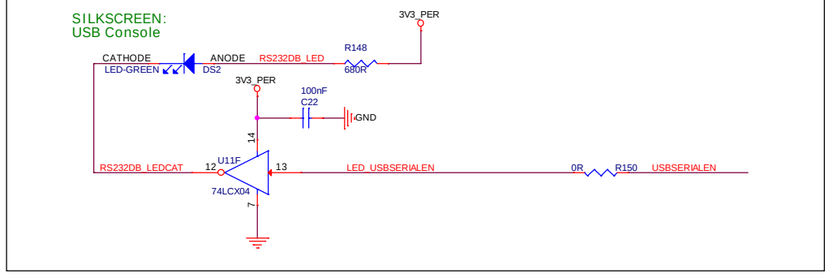
RS232



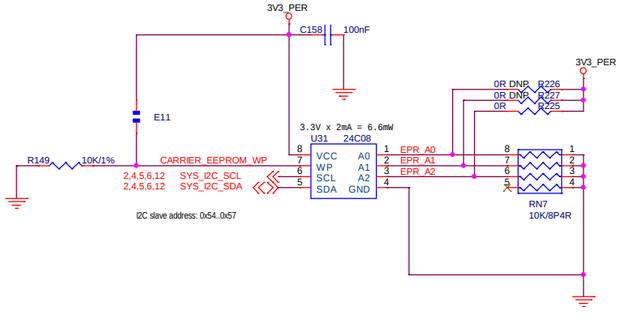
Micro-SD socket (bootable)



USB console connection indicator



Carrier-board EEPROM



Size	Title	Rev
A2	SB-UCM-iMX8PLUS 14. UART, RS232, SD Slot, EEPROM,GPIO	1.0
	Document Number: 8000168000	
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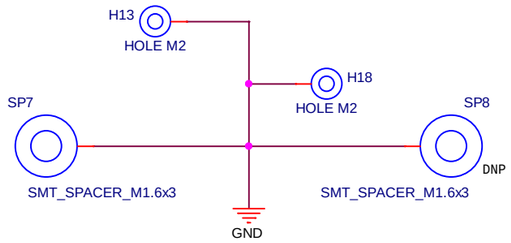
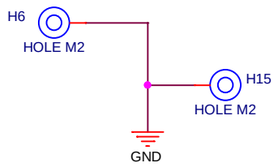
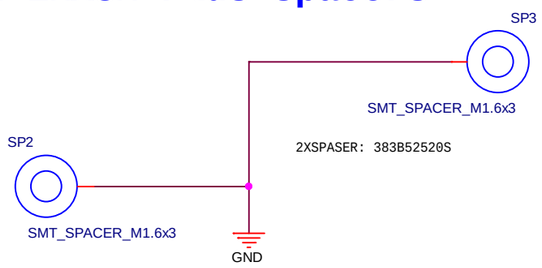
For M.2 module



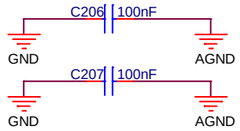
For carrier-board stand-offs

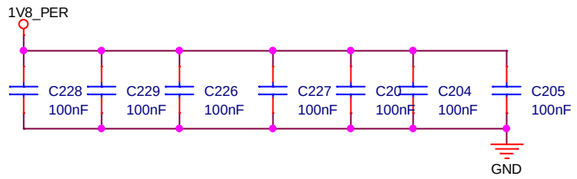


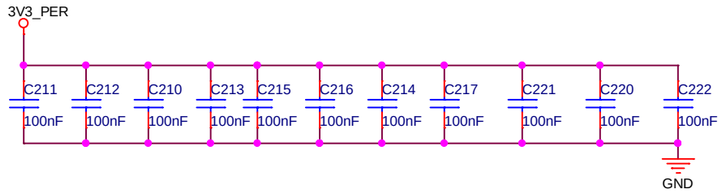
UCM-iMX8M-Plus spacers

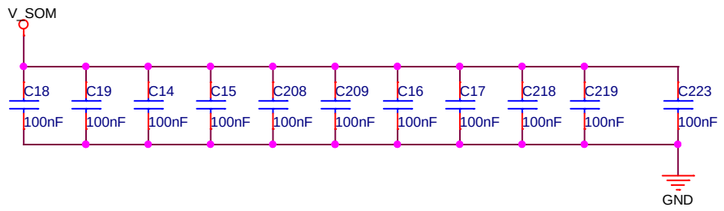


Stitching capacitors









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Size	Title	Rev
A3	SB-UCM-iMX8PLUS 15. Mechanical	1.0
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