UL = UnLoaded = normally not mounted component.

Default jumper settings are indicated in the schematic.
However, always check jumper positions on actual boards
since there is no guarantee that all jumpers are in default place.

Rev B1 - updated Corrected how RJ45 (J20) is connected.
Rev B1 Added interface to M.2 WiFi/BT boards.
Rev A First release.
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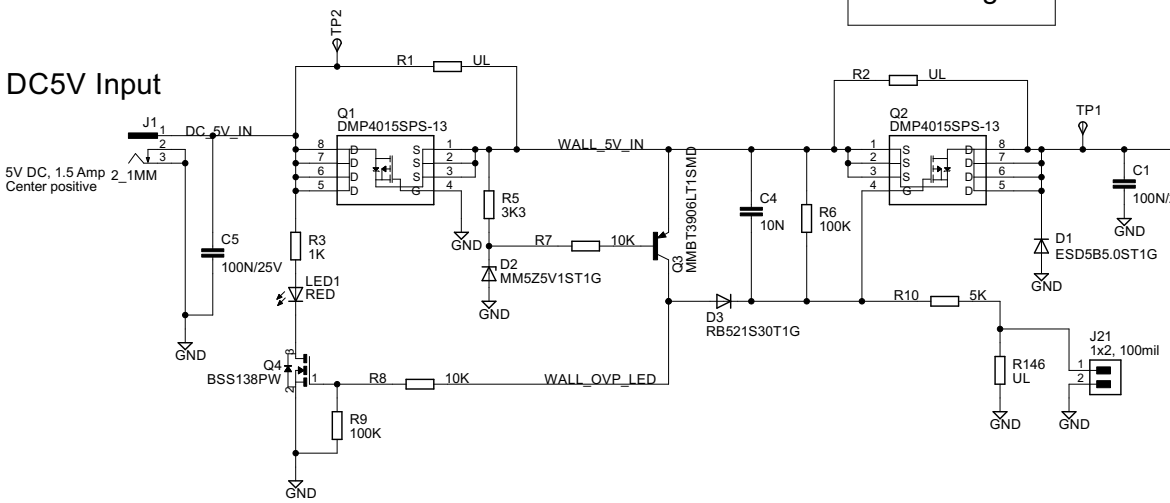
Powering

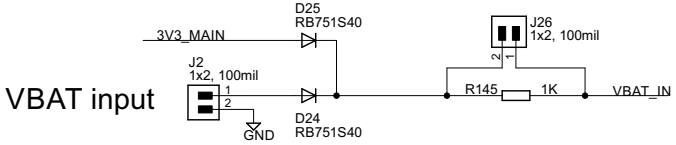
DC5V Input



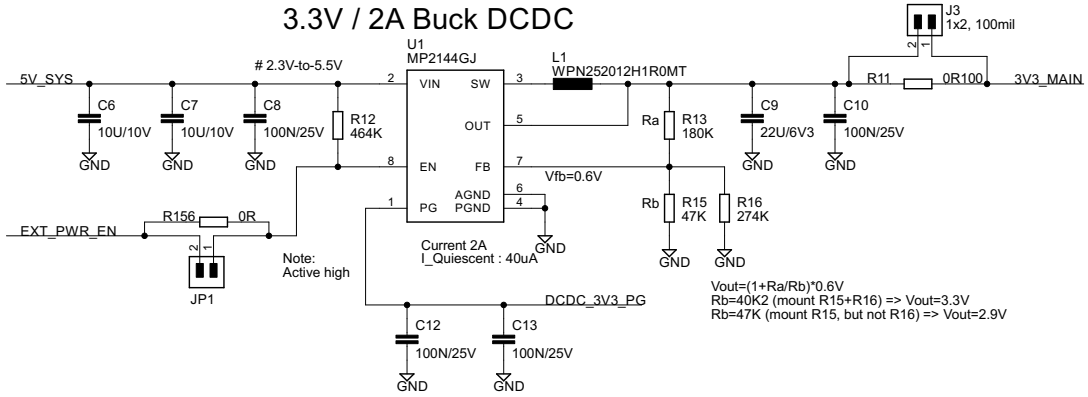
Power LED Indicator

Over-Voltage LED (Red, LED1)
SYS Power OK LED (Green, LED2)

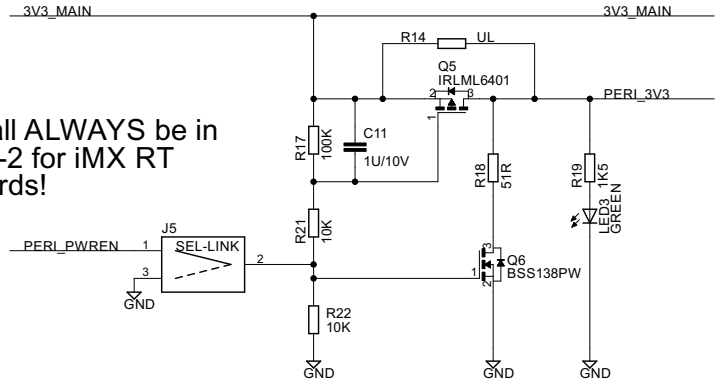
VBAT input



3.3V / 2A Buck DCDC

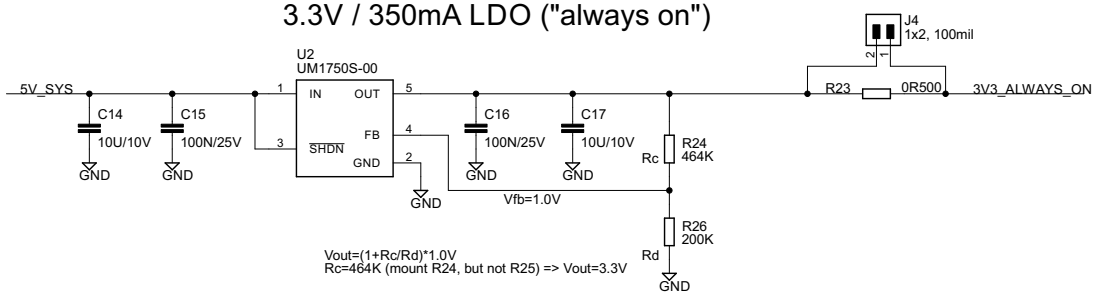


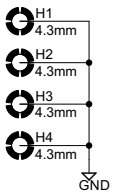
Peripheral Voltage Control



Note: Shall ALWAYS be in position 1-2 for iMX RT OEM boards!

3.3V / 350mA LDO ("always on")





GND connectors
(Keystone 5016K)

TP3
GND

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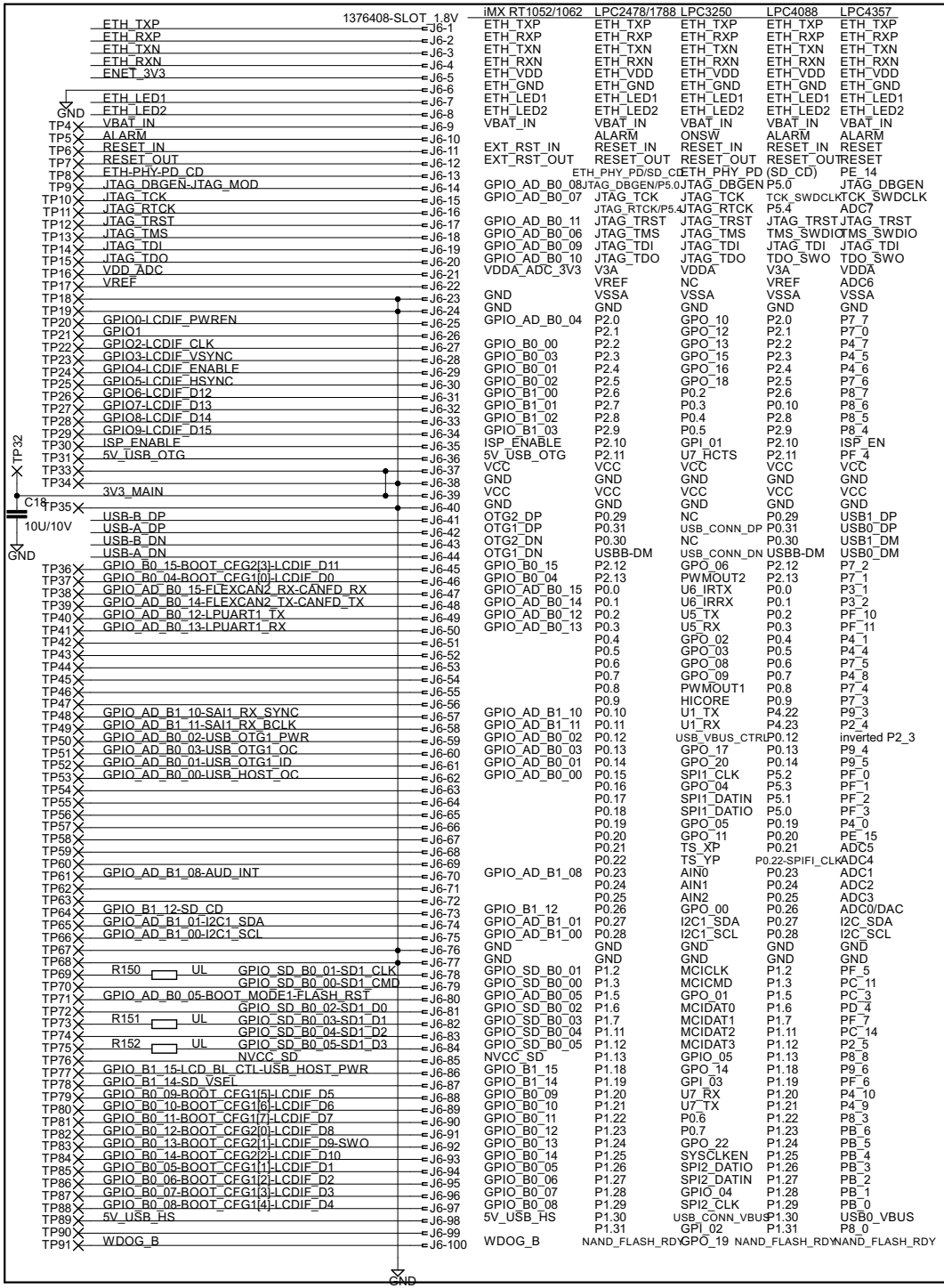

iMX RT1052/1062	LPC2478/1788	LPC3250	LPC4088	LPC4357
ETH_TXP	ETH_TXP	ETH_TXP	ETH_TXP	ETH_TXP
ETH_RXP	ETH_RXP	ETH_RXP	ETH_RXP	ETH_RXP
ETH_TXN	ETH_TXN	ETH_TXN	ETH_TXN	ETH_TXN
ETH_RXN	ETH_RXN	ETH_RXN	ETH_RXN	ETH_RXN
ETH_VDD	ETH_VDD	ETH_VDD	ETH_VDD	ETH_VDD
ETH_GND	ETH_GND	ETH_GND	ETH_GND	ETH_GND
ETH_LED1	ETH_LED1	ETH_LED1	ETH_LED1	ETH_LED1
ETH_LED2	ETH_LED2	ETH_LED2	ETH_LED2	ETH_LED2
VBAT_IN	VBAT_IN	VBAT_IN	VBAT_IN	VBAT_IN
	ALARM	ONSW	ALARM	ALARM
EXT_RST_IN	RESET_IN	RESET_IN	RESET_IN	RESET
EXT_RST_OUT	RESET_OUT	RESET_OUT	RESET_OUT	RESET
	ETH_PHY_PD/SD_CD	ETH_PHY_PD (SD_CD)		PE_14
GPIO_AD_B0_08	JTAG_DBGEN/P5.0	JTAG_DBGEN	P5.0	JTAG_DBGEN
GPIO_AD_B0_07	JTAG_TCK	JTAG_TCK	TCK_SWDCLK	TCK_SWDCLK
	JTAG_RTCK/P5.4	JTAG_RTCK	P5.4	ADC7
GPIO_AD_B0_11	JTAG_TRST	JTAG_TRST	JTAG_TRST	JTAG_TRST
GPIO_AD_B0_06	JTAG_TMS	JTAG_TMS	TMS_SWDIO	TMS_SWDIO
GPIO_AD_B0_09	JTAG_TDI	JTAG_TDI	JTAG_TDI	JTAG_TDI
GPIO_AD_B0_10	JTAG_TDO	JTAG_TDO	TDO_SWO	TDO_SWO
VDDA_ADC_3V3	V3A	VDDA	V3A	VDDA
	VREF	NC	VREF	ADC6
GND	VSSA	VSSA	VSSA	VSSA
GND	GND	GND	GND	GND
GPIO_AD_B0_04	P2.0	GPO_10	P2.0	P7_7
	P2.1	GPO_12	P2.1	P7_0
GPIO_B0_00	P2.2	GPO_13	P2.2	P4_7
GPIO_B0_03	P2.3	GPO_15	P2.3	P4_5
GPIO_B0_01	P2.4	GPO_16	P2.4	P4_6
GPIO_B0_02	P2.5	GPO_18	P2.5	P7_6
GPIO_B1_00	P2.6	P0.2	P2.6	P8_7
GPIO_B1_01	P2.7	P0.3	P0.10	P8_6
GPIO_B1_02	P2.8	P0.4	P2.8	P8_5
GPIO_B1_03	P2.9	P0.5	P2.9	P8_4
ISP_ENABLE	P2.10	GPI_01	P2.10	ISP_EN
5V_USB_OTG	P2.11	U7_HCTS	P2.11	PF_4
VCC	VCC	VCC	VCC	VCC
GND	GND	GND	GND	GND
VCC	VCC	VCC	VCC	VCC
GND	GND	GND	GND	GND
OTG2_DP	P0.29	NC	P0.29	USB1_DP
OTG1_DP	P0.31	USB_CONN_DP	P0.31	USB0_DP
OTG2_DN	P0.30	NC	P0.30	USB1_DM
OTG1_DN	USBB-DM	USB_CONN_DN	USBB-DM	USB0_DM
GPIO_B0_15	P2.12	GPO_06	P2.12	P7_2
GPIO_B0_04	P2.13	PWMOUT2	P2.13	P7_1
GPIO_AD_B0_15	P0.0	U6_IRTX	P0.0	P3_1
GPIO_AD_B0_14	P0.1	U6_IRRX	P0.1	P3_2
GPIO_AD_B0_12	P0.2	U5_TX	P0.2	PF_10
GPIO_AD_B0_13	P0.3	U5_RX	P0.3	PF_11
	P0.4	GPO_02	P0.4	P4_1
	P0.5	GPO_03	P0.5	P4_4
	P0.6	GPO_08	P0.6	P7_5
	P0.7	GPO_09	P0.7	P4_8
	P0.8	PWMOUT1	P0.8	P7_4
	P0.9	HICORE	P0.9	P7_3
GPIO_AD_B1_10	P0.10	U1_TX	P4.22	P9_3
GPIO_AD_B1_11	P0.11	U1_RX	P4.23	P2_4
GPIO_AD_B0_02	P0.12	USB_VBUS_CTRL	P0.12	inverted P2_3
GPIO_AD_B0_03	P0.13	GPO_17	P0.13	P9_4
GPIO_AD_B0_01	P0.14	GPO_20	P0.14	P9_5
GPIO_AD_B0_00	P0.15	SPI1_CLK	P5.2	PF_0
	P0.16	GPO_04	P5.3	PF_1
	P0.17	SPI1_DATIN	P5.1	PF_2
	P0.18	SPI1_DATIO	P5.0	PF_3
	P0.19	GPO_05	P0.19	P4_0
	P0.20	GPO_11	P0.20	PE_15
	P0.21	TS_XP	P0.21	ADC5
	P0.22	TS_YP	P0.22-SPIFI_CLK	ADC4
GPIO_AD_B1_08	P0.23	AIN0	P0.23	ADC1
	P0.24	AIN1	P0.24	ADC2
	P0.25	AIN2	P0.25	ADC3
GPIO_B1_12	P0.26	GPO_00	P0.26	ADC0/DAC
GPIO_AD_B1_01	P0.27	I2C1_SDA	P0.27	I2C_SDA
GPIO_AD_B1_00	P0.28	I2C1_SCL	P0.28	I2C_SCL
GND	GND	GND	GND	GND
GND	GND	GND	GND	GND
GPIO_SD_B0_01	P1.2	MCICLK	P1.2	PF_5
GPIO_SD_B0_00	P1.3	MCICMD	P1.3	PC_11
GPIO_AD_B0_05	P1.5	GPO_01	P1.5	PC_3
GPIO_SD_B0_02	P1.6	MCIDAT0	P1.6	PD_4
GPIO_SD_B0_03	P1.7	MCIDAT1	P1.7	PF_7
GPIO_SD_B0_04	P1.11	MCIDAT2	P1.11	PC_14
GPIO_SD_B0_05	P1.12	MCIDAT3	P1.12	P2_5
NVCC_SD	P1.13	GPIO_05	P1.13	P8_8
GPIO_B1_15	P1.18	GPO_14	P1.18	P9_6
GPIO_B1_14	P1.19	GPI_03	P1.19	PF_6
GPIO_B0_09	P1.20	U7_RX	P1.20	P4_10
GPIO_B0_10	P1.21	U7_TX	P1.21	P4_9
GPIO_B0_11	P1.22	P0.6	P1.22	P8_3
GPIO_B0_12	P1.23	P0.7	P1.23	PB_6
GPIO_B0_13	P1.24	GPO_22	P1.24	PB_5
GPIO_B0_14	P1.25	SYSCLKEN	P1.25	PB_4
GPIO_B0_05	P1.26	SPI2_DATIO	P1.26	PB_3
GPIO_B0_06	P1.27	SPI2_DATIN	P1.27	PB_2
GPIO_B0_07	P1.28	GPIO_04	P1.28	PB_1
GPIO_B0_08	P1.29	SPI2_CLK	P1.29	PB_0
5V_USB_HS	P1.30	USB_CONN_VBUS	P1.30	USB0_VBUS
	P1.31	GPI_02	P1.31	P8_0
WDOG_B	NAND_FLASH_RDY	GPO_19	NAND_FLASH_RDY	NAND_FLASH_RDY

OEM board connector, pin 1-100
(200 pos SODIMM, 1V8 key)

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OEM board connector, pin 101-200
(200 pos SODIMM, 1V8 key)

TP92		J6-101	GND	GND	GND	GND	GND
TP93		J6-102	GND	GND	GND	GND	GND
TP94	GPIO_AD_B1_14-SAI1_TX_BCLK	J6-103	GPIO_AD_B1_14	NC	I2S1TX_CLK	NC	P3_0
TP95	GPIO_AD_B1_13-SAI1_TXD	J6-104	GPIO_AD_B1_13	NC	I2S1TX_SDA	NC	PC_12
TP96	GPIO_AD_B1_15-SAI1_TX_SYNC	J6-105	GPIO_AD_B1_15	NC	I2S1TX_WS	NC	PC_13
TP97		J6-106		NC	P0.0	NC	P6_0
TP98	GPIO_SD_B1_04-FLEXSPI_CLK_B	J6-107	GPIO_SD_B1_04	NC/P5.4	P0.1	P5.4	P6_1
TP99	GPIO_AD_B1_12-SAI1_RXD	J6-108	GPIO_AD_B1_12	NC/P5.3	GPI_00	P5.3	P6_2
TP100	POR_B	J6-109	POR_B	NC/P5.2	I2C2_SDA	P5.2	WAKEUP3
TP101	ONOFF	J6-110	ONOFF	NC	I2C2_SCL	NC	WAKEUP2
TP102	OTG1_CHD	J6-111	OTG1_CHD	NC/P1.16	GPI_04	P1.16	WAKEUP1
TP103	WAKEUP	J6-112	WAKEUP	NC	GPI_06	NC	WAKEUP0
TP104		J6-113		NC/BCS1	USB_CONN_ID	BCS1	USB0_ID
TP105		J6-114		NC/P4.30	POWER_ON	P4.30	SAMPLE
TP106	GPIO_AD_B1_09-SAI1_MCLK	J6-115	GPIO_AD_B1_09	NC/P1.16	TST_CLK2	P1.16	CLK2_OUT
TP107	PMIC_ON_REQ	J6-116	PMIC_ON_REQ	P2.14	P2.7	P2.14	P9_2
TP108	EXT_PWR_EN	J6-117	EXT_PWR_EN	P2.15	GPIO_00	P2.15	P8_1
TP109	PERI_PWREN	J6-118	PERI_PWREN	P2.19	GPIO_01	P2.19	P8_2
TP110	GPIO_B1_13-WDOG_B	J6-119	GPIO_B1_13	P2.21	GPI_07	P2.21	PC_2
TP111	GPIO_AD_B1_02	J6-120	GPIO_AD_B1_02	P2.22	P2.0	P2.22	PA_1
TP112	GPIO_AD_B1_03	J6-121	GPIO_AD_B1_03	P2.23	P2.1	P2.23	PA_2
TP113	GPIO_AD_B1_04-LPUART3_CTS_B	J6-122	GPIO_AD_B1_04	P2.25	P2.2	P2.25	PA_3
TP114	GPIO_AD_B1_05-LPUART3_RTS_B	J6-123	GPIO_AD_B1_05	P2.26	P2.3	P2.26	P9_0
TP115	GPIO_AD_B1_06-LPUART3_TX	J6-124	GPIO_AD_B1_06	P2.27	P2.4	P2.27	P9_1
TP116	GPIO_AD_B1_07-LPUART3_RX	J6-125	GPIO_AD_B1_07	P2.30	P2.5	P2.30	PF_8
TP117	CCM_CLK1_N	J6-126	CCM_CLK1_N	P2.31	P2.6	P2.31	PF_9
TP118		J6-127		P4.28	GPO_07	P4.28	P4_3
TP119	CCM_CLK1_P	J6-128	CCM_CLK1_P	P4.29	GPO_21	P4.29	P4_2
TP120		J6-129	GND	GND	GND	GND	GND
TP121		J6-130	GND	GND	GND	GND	GND
TP122		J6-131	-/SEMC_DQS	BA15	BA15	BA15	BA15
TP123		J6-132	-/SEMC_DM1	BDQM1/BCS2	BCS3	BCS2	BCS2
TP124		J6-133	-/SEMC_CLK	BA14	BA14	BA14	BA14
TP125		J6-134	-/SEMC_DM0	BDQM0/BCS0	BCS2	BCS0	BCS0
TP126		J6-135	-/SEMC_CKE	BA13	BA13	BA13	BA13
TP127		J6-136	-/SEMC_CAS	BCAS/BBLS3	BCS1	BBLS3	BBLS3
TP128		J6-137	-/SEMC_A12	BA12	BA12	BA12	BA12
TP129		J6-138	-/SEMC_RAS	BRAS/BBLS2	BCS0	BBLS2	BBLS2
TP130		J6-139	-/SEMC_A11	BA11	BA11	BA11	BA11
TP131		J6-140	-/SEMC_BA1	BBLS1	BBLS1	BBLS1	BBLS1
TP132		J6-141	-/SEMC_A10	BA10	BA10	BA10	BA10
TP133		J6-142	-/SEMC_BA0	BBLS0	BBLS0	BBLS0	BBLS0
TP134		J6-143	-/SEMC_A9	BA9	BA9	BA9	BA9
TP135		J6-144	-/SEMC_WE	BWE	BWE	BWE	BWE
TP136		J6-145	-/SEMC_A8	BA8	BA8	BA8	BA8
TP137		J6-146	-/SEMC_CS0	BOE	BOE	BOE	BOE
TP138		J6-147	-/SEMC_A7	BA7	BA7	BA7	BA7
TP139	GPIO_EMC_41	J6-148	GPIO_EMC_41	BA23	BA23	BA23	BA23
TP140		J6-149	-/SEMC_A6	BA6	BA6	BA6	BA6
TP141	GPIO_EMC_40	J6-150	GPIO_EMC_40	BA22	BA22	BA22	BA22
TP142		J6-151	-/SEMC_A5	BA5	BA5	BA5	BA5
TP143	GPIO_B1_04	J6-152	GPIO_B1_04	BA21	BA21	BA21	BA21
TP144		J6-153	-/SEMC_A4	BA4	BA4	BA4	BA4
TP145	GPIO_B1_05	J6-154	GPIO_B1_05	BA20	BA20	BA20	BA20
TP146		J6-155	-/SEMC_A3	BA3	BA3	BA3	BA3
TP147	GPIO_B1_06	J6-156	GPIO_B1_06	BA19	BA19	BA19	BA19
TP148		J6-157	-/SEMC_A2	BA2	BA2	BA2	BA2
TP149	GPIO_B1_07	J6-158	GPIO_B1_07	BA18	BA18	BA18	BA18
TP150		J6-159	-/SEMC_A1	BA1	BA1	BA1	BA1
TP151	GPIO_B1_08	J6-160	GPIO_B1_08	BA17	BA17	BA17	BA17
TP152		J6-161	-/SEMC_A0	BA0	BA0	BA0	BA0
TP153	GPIO_B1_09	J6-162	GPIO_B1_09	BA16	BA16	BA16	BA16
TP154	GPIO_B1_11	J6-163	GPIO_B1_11	DBUS_EN/BCS3	NC	BCS3	BCS3
TP155	GPIO_B1_10	J6-164	GPIO_B1_10	ABUF_EN/(NC)	ABUF_EN	GND	(PD_1)
TP156	VCC_ALWAYS_ON	J6-165		VCC	VDD_EXT	VCC	VCC
TP157		J6-166	GND	GND	GND	GND	GND
TP158		J6-167	-/SEMC_D15	BD15	BD15	BD15	BD15
TP159		J6-168		BD31/P3.31	GPI_08	BD31/P3.31	BD31
TP160		J6-169	-/SEMC_D14	BD14	BD14	BD14	BD14
TP161	W_GPIO_25	J6-170	W_GPIO_25	BD30/P3.30	GPO_23	BD30/P3.30	BD30
TP162		J6-171	-/SEMC_D13	BD13	BD13	BD13	BD13
TP163	W_GPIO_32	J6-172	W_GPIO_32	BD29/P3.29	GPI_09	BD29/P3.29	BD29
TP164		J6-173	-/SEMC_D12	BD12	BD12	BD12	BD12
TP165	W_GPIO_36	J6-174	W_GPIO_36	BD28/P3.28	GPI_19	BD28/P3.28	BD28
TP166		J6-175	-/SEMC_D11	BD11	BD11	BD11	BD11
TP167	W_SW2	J6-176	W_SW2	BD27/P3.27	P2.8	BD27/P3.27	BD27
TP168		J6-177	-/SEMC_D10	BD10	BD10	BD10	BD10
TP169	W_BOOT	J6-178	W_BOOT	BD26/P3.26	P2.9	BD26/P3.26	BD26
TP170		J6-179	-/SEMC_D9	BD9	BD9	BD9	BD9
TP171	W_UART_DTR	J6-180	W_UART_DTR	BD25/P3.25	P2.10	BD25/P3.25	BD25
TP172		J6-181	-/SEMC_D8	BD8	BD8	BD8	BD8
TP173	W_UART_DSR	J6-182	W_UART_DSR	BD24/P3.24	P2.11	BD24/P3.24	BD24
TP174		J6-183	-/SEMC_D7	BD7	BD7	BD7	BD7
TP175	W_UART_RTS	J6-184	W_UART_RTS	BD23/P3.23	P2.12	BD23/P3.23	BD23
TP176		J6-185	-/SEMC_D6	BD6	BD6	BD6	BD6
TP177	W_UART_CTS	J6-186	W_UART_CTS	BD22/P3.22	GPI_28	BD22/P3.22	BD22
TP178		J6-187	-/SEMC_D5	BD5	BD5	BD5	BD5
TP179	W_UART_TXD	J6-188	W_UART_TXD	BD21/P3.21	U2_TX	BD21/P3.21	BD21
TP180		J6-189	-/SEMC_D4	BD4	BD4	BD4	BD4
TP181	W_UART_RXD	J6-190	W_UART_RXD	BD20/P3.20	U2_RX	BD20/P3.20	BD20
TP182		J6-191	-/SEMC_D3	BD3	BD3	BD3	BD3
TP183	WLED_RED	J6-192	WLED_RED	BD19/P3.19	GPI_05	BD19/P3.19	BD19
TP184		J6-193	-/SEMC_D2	BD2	BD2	BD2	BD2
TP185	WLED_GREEN	J6-194	WLED_GREEN	BD18/P3.18	U2_CTS	BD18/P3.18	BD18
TP186		J6-195	-/SEMC_D1	BD1	BD1	BD1	BD1
TP187	WLED_BLUE	J6-196	WLED_BLUE	BD17/P3.17	U3_RX	BD17/P3.17	BD17
TP188		J6-197	-/SEMC_D0	BD0	BD0	BD0	BD0
TP189	W_OSC32K768	J6-198	W_OSC32K768	BD16/P3.16	U3_TX	BD16/P3.16	BD16
TP190	VCC_RF	J6-199	VCC_RF	VCC	VDD_EXT	VCC	VCC
TP191		J6-200	GND	GND	GND	GND	GND

GND

VCC_RF

J37
SEL-LINK
1 3V3_MAIN
2
3 VBAT

Note: Shall ALWAYS be in position 1-2 for iMX RT OEM boards!

VCC_ALWAYS_ON

J28
SEL-LINK
1 3V3_ALWAYS_ON
2
3 3V3_MAIN

C19
10U/10V
GND

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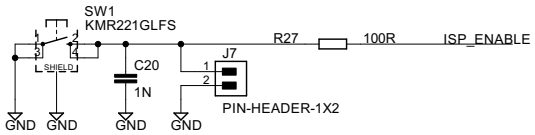
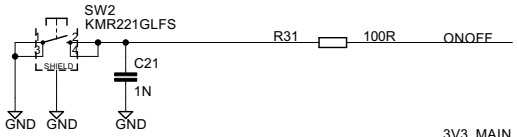
Push-buttons and LEDs

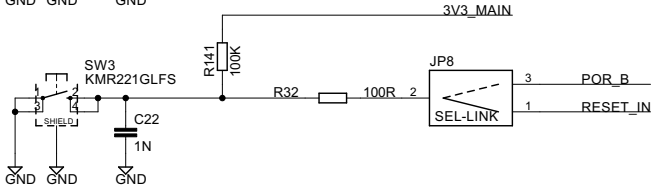
ISP Enable Key and jumper



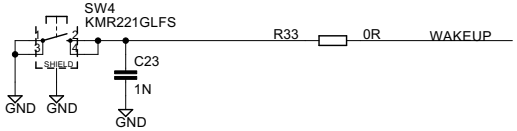
ON/OFF Key



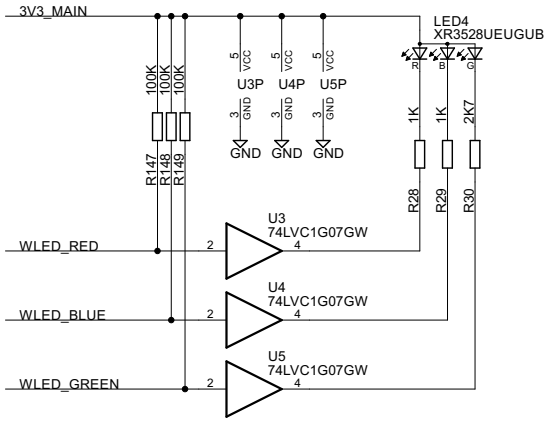
Reset Key



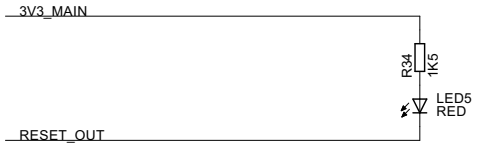
Detect Switch



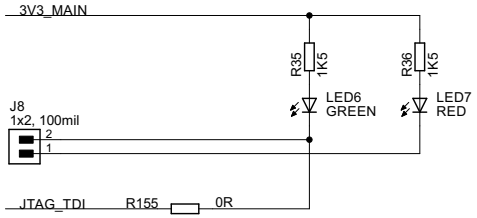
RGB-LED for RF-module



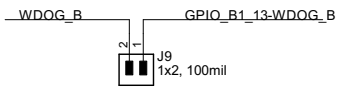
Reset LED



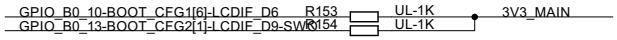
User LEDs



Watchdog control



Optional i.MX RT1052/1062 boot control



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JTAG Debug Interface

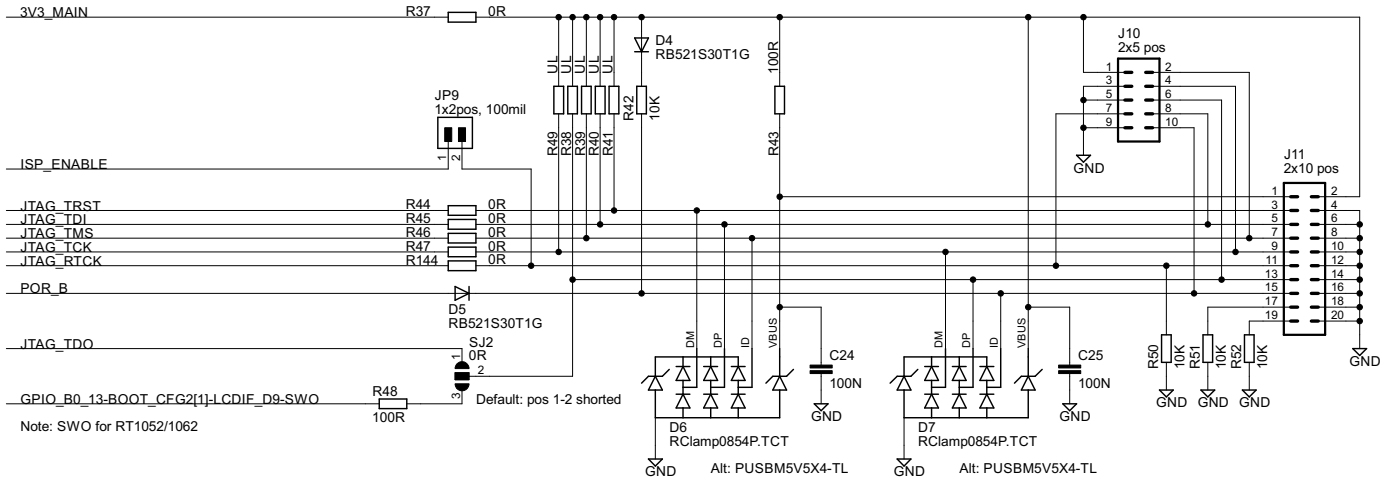
ARM 10-pin interface Serial Wire Mode

1-VCC	2-SWDIO
3-GND	4-SWCLK
5-GND	6-SWO
7-N/U	8-N/U
9-GND	10-RESET

ARM 10-pin interface JTAG Mode

1-VCC	2-TMS
3-GND	4-TCLK
5-GND	6-TDO
7-RTCK	8-TDI
9-GND	10-RESET

10 pos (50 mil pitch) connector



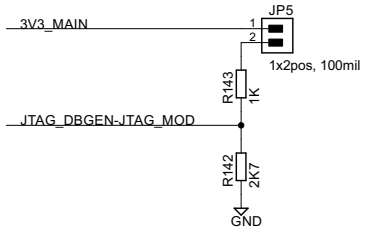
20 pos (100 mil pitch) connector

ARM 20-pin interface Serial Wire Mode

1-VCC (Vtref)	2-Optional VCC (Vtref)
3-N/U	4-GND
5-N/U	6-GND
7-SWDIO	8-GND
9-SWCLK	10-GND
11-N/U	12-GND
13-SWO	14-GND
15-RESET	16-GND
17-N/C	18-GND
19-N/C	20-GND

ARM 20-pin interface JTAG Mode

1-VCC (Vtref)	2-Optional VCC (Vtref)
3-N/C (TRST)	4-GND
5-TDI	6-GND
7-TMS	8-GND
9-TCLK	10-GND
11-RTCK	12-GND
13-TDO	14-GND
15-RESET	16-GND
17-N/C	18-GND
19-N/C	20-GND



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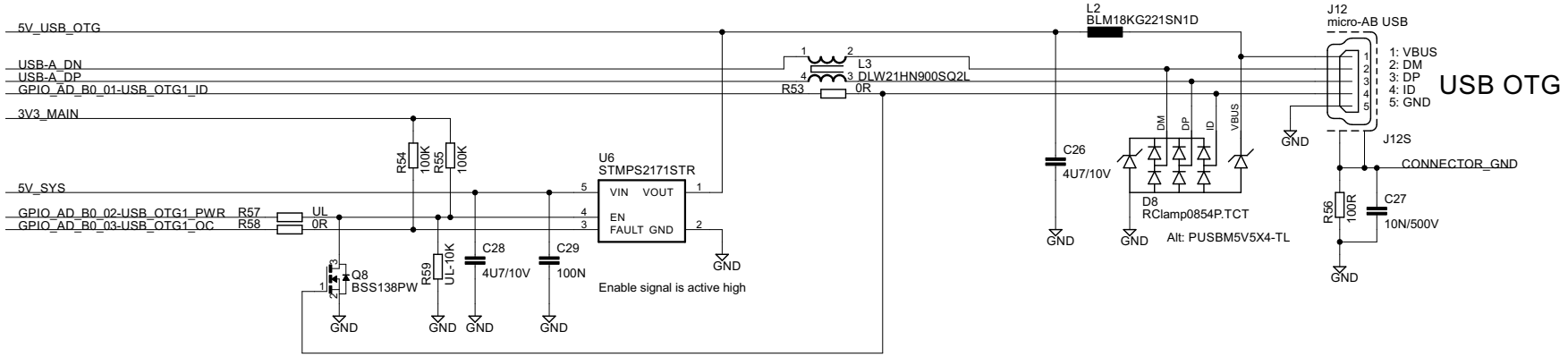
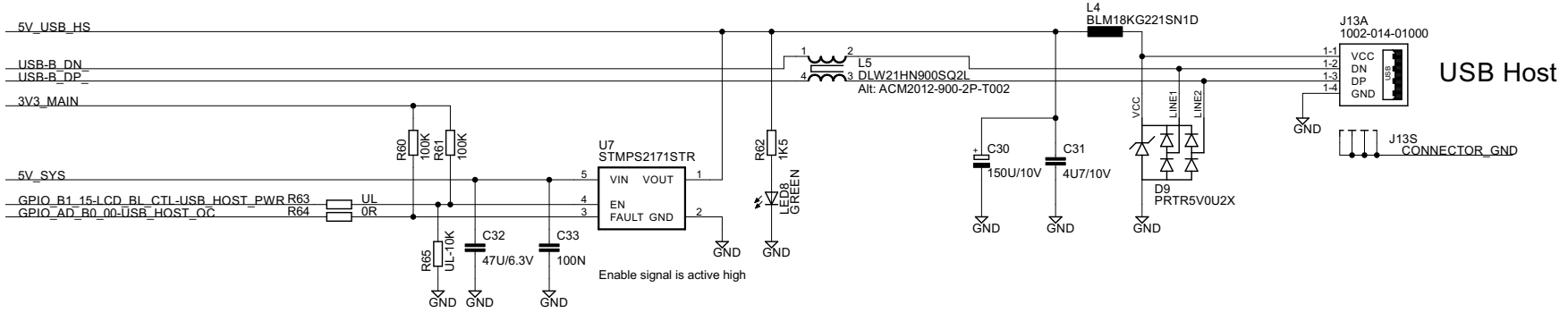
USB interface on i.MX/LPC

OEM Board	USB-A OTG or Device	USB-B Host
iMX RT1052/1062	OTG1	OTG2
LPC1788	USB-2	USB-1
LPC2478	USB-2	USB-1
LPC3250	USB	Not connected
LPC4088	USB-2	USB-1
LPC4357	USB0	USB1

USB Interfaces





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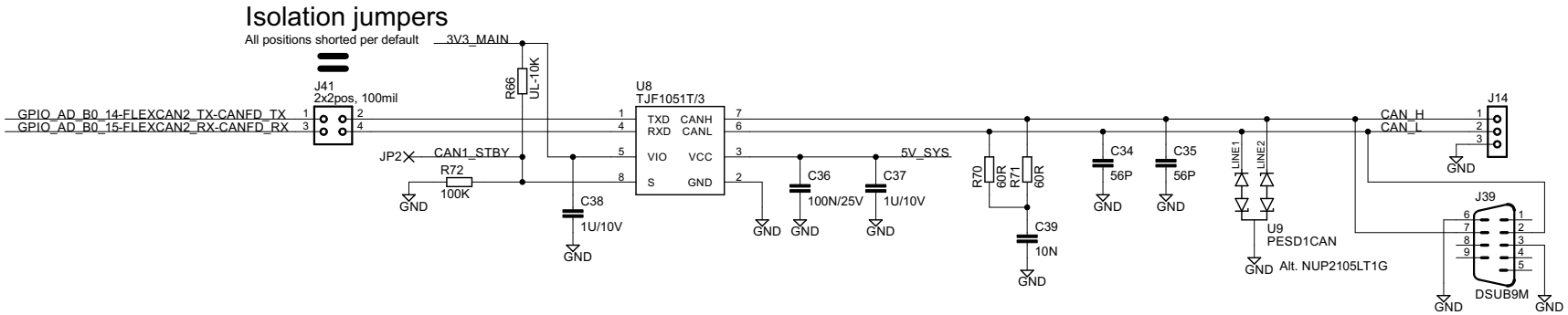
CAN Transceiver



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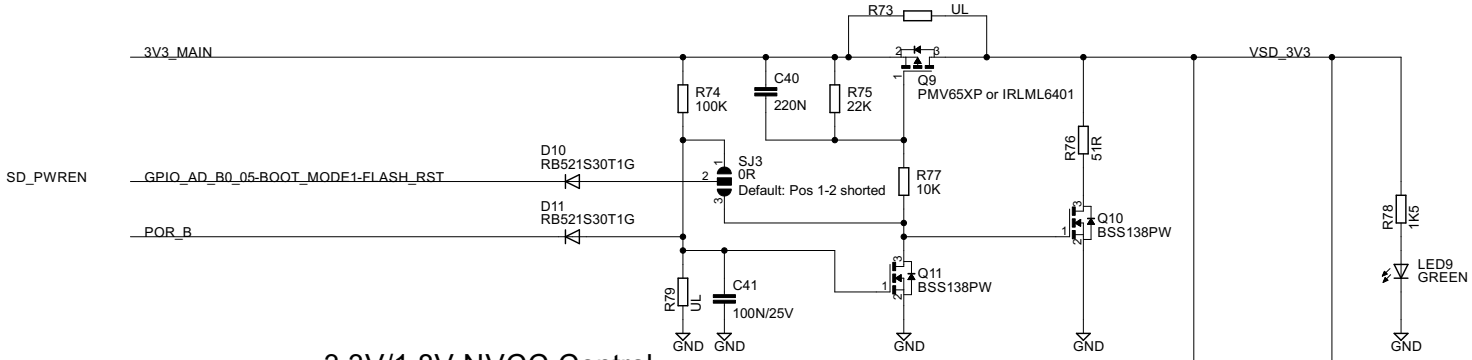
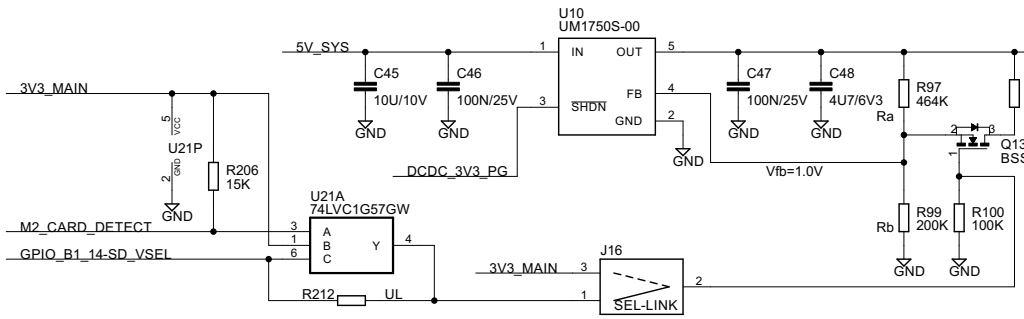
SD Card Interface

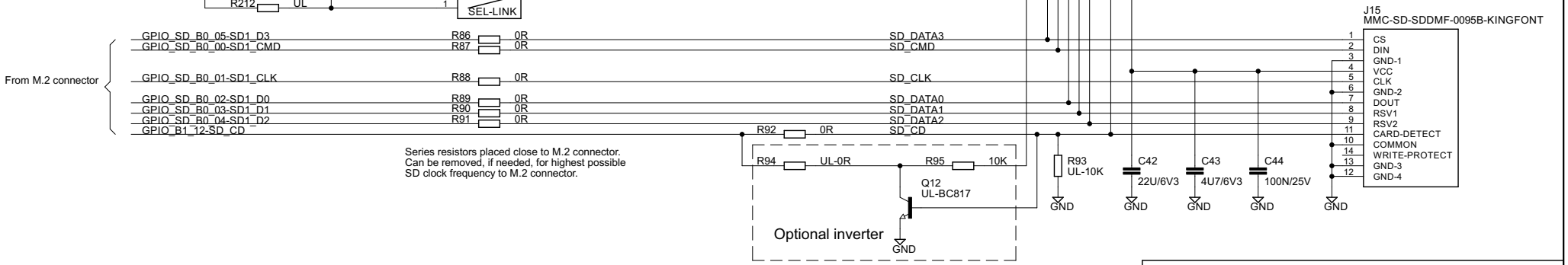
Power Switch for SD Card Interface



3.3V/1.8V NVCC Control



SD card connector



M2_CARD_DETECT 0=M.2 card inserted 1=M.2 card not inserted	GPIO_B1_14-SD_VSEL 0=Set NVCC_SD to 3.3V 1=Set NVCC_SD to 1.8V	NVCC_SD control 0=NVCC_SD is 3.3V 1=NVCC_SD is 1.8V	
0	0	1	Force NVCC_SD to 1.8V when M.2 card inserted
0	1	1	Force NVCC_SD to 1.8V when M.2 card inserted
1	0	0	Follow GPIO_B1_14-SD_VSEL when when M.2 card not inserted
1	1	1	Follow GPIO_B1_14-SD_VSEL when when M.2 card not inserted

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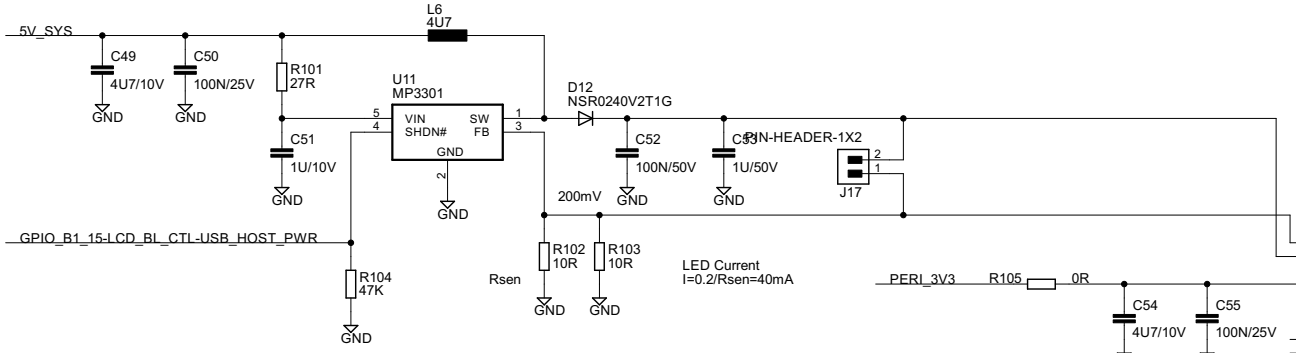
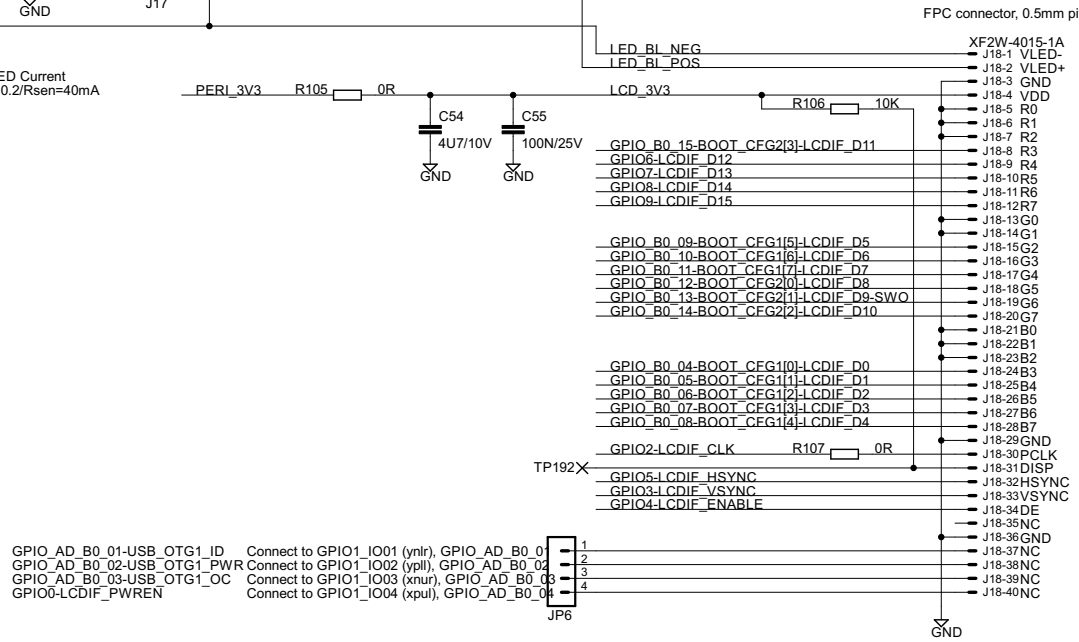
LCD Interface

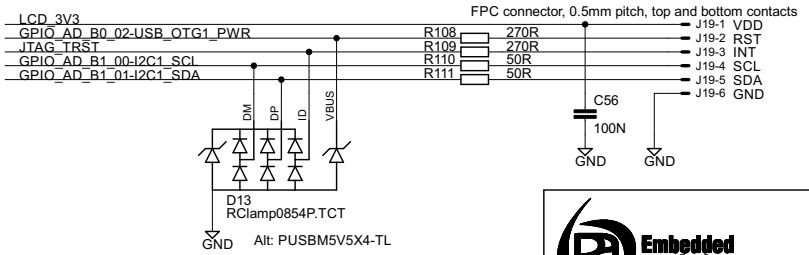
BackLight Control

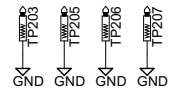


Common LCD pinning



Touch controller





Embedded Artists

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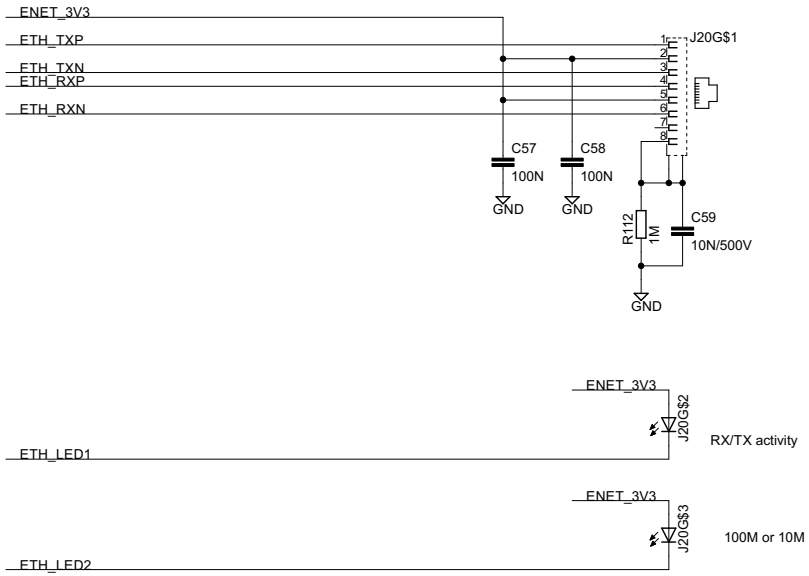
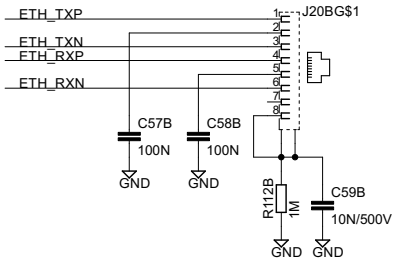
Ethernet Interface

RJ45 Connector with integrated magnetics



Corrected schematic



The schematic to the left is the one on the board. On a custom carrier board the schematic should be corrected according to this frame (the transformers center taps should just be connected to 100nF capacitirs - no supply voltage).

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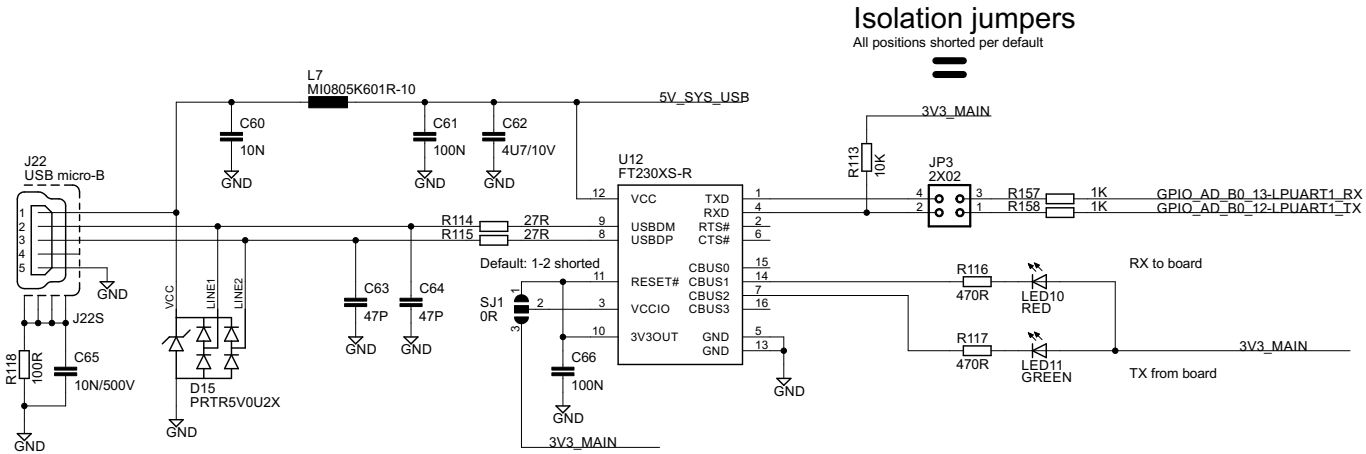
UART-to-USB Bridge Interface



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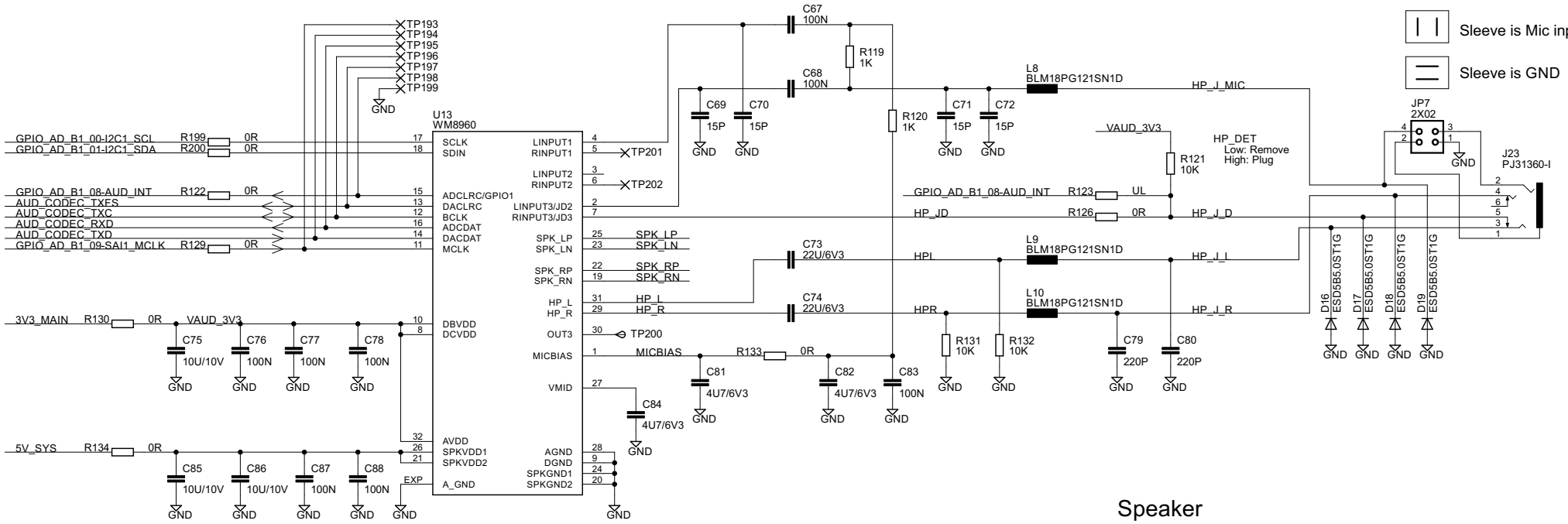
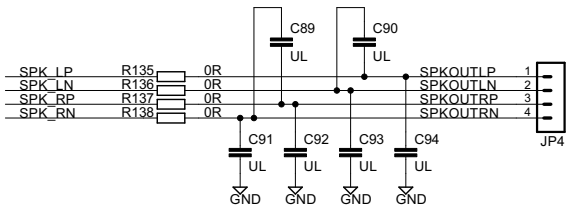
Audio Codec

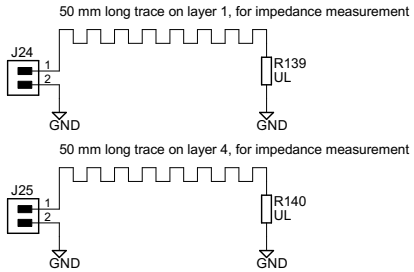


8-bit I2C address (0x34/0x35): 0.0.1.1.0.1.0.RW
7-bit I2C address (0x1A): 0.0.1.1.0.1.0.RW

Speaker



Impedance control



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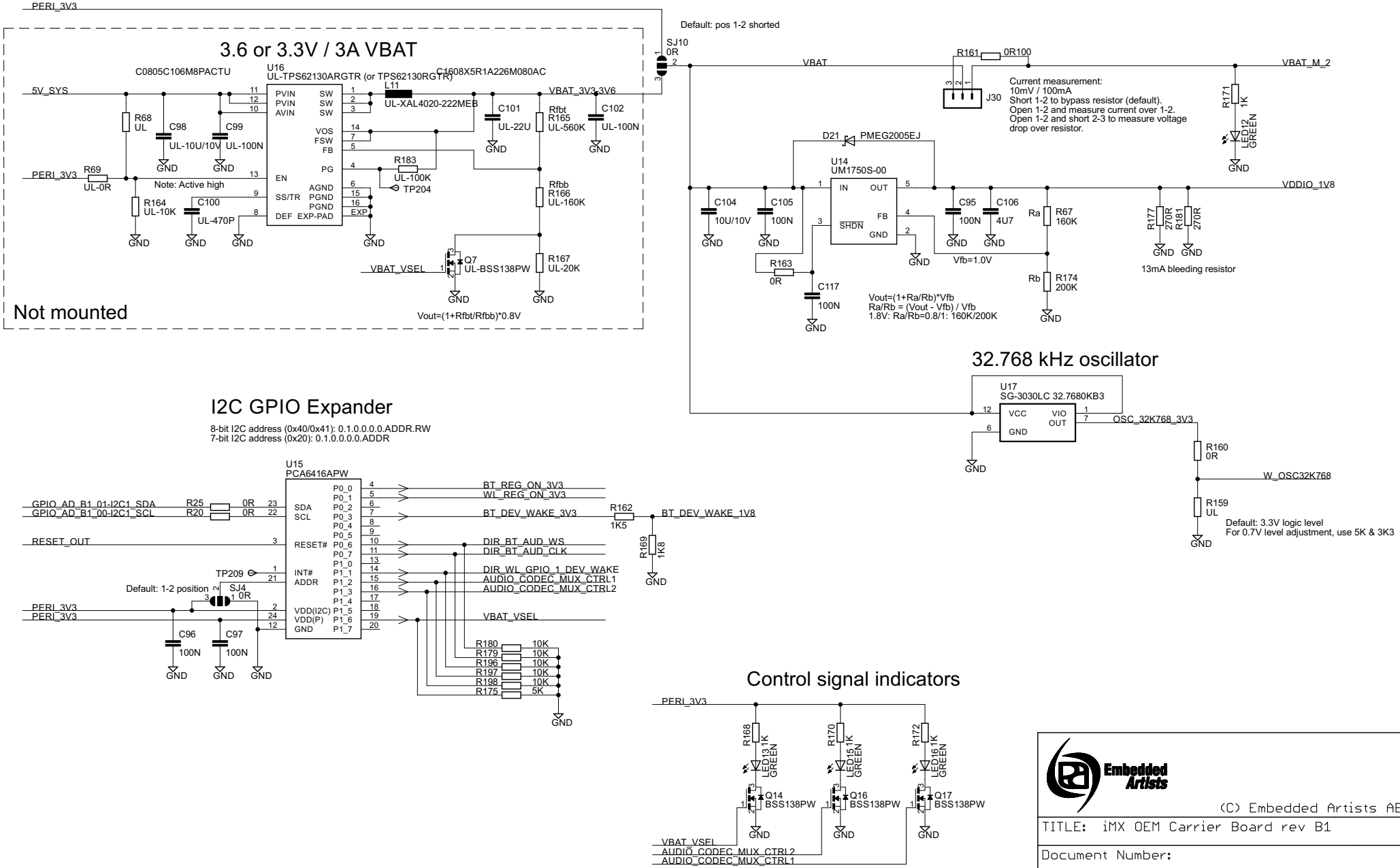
M.2 Power Supply and Control



(C) Embedded Artists AB	
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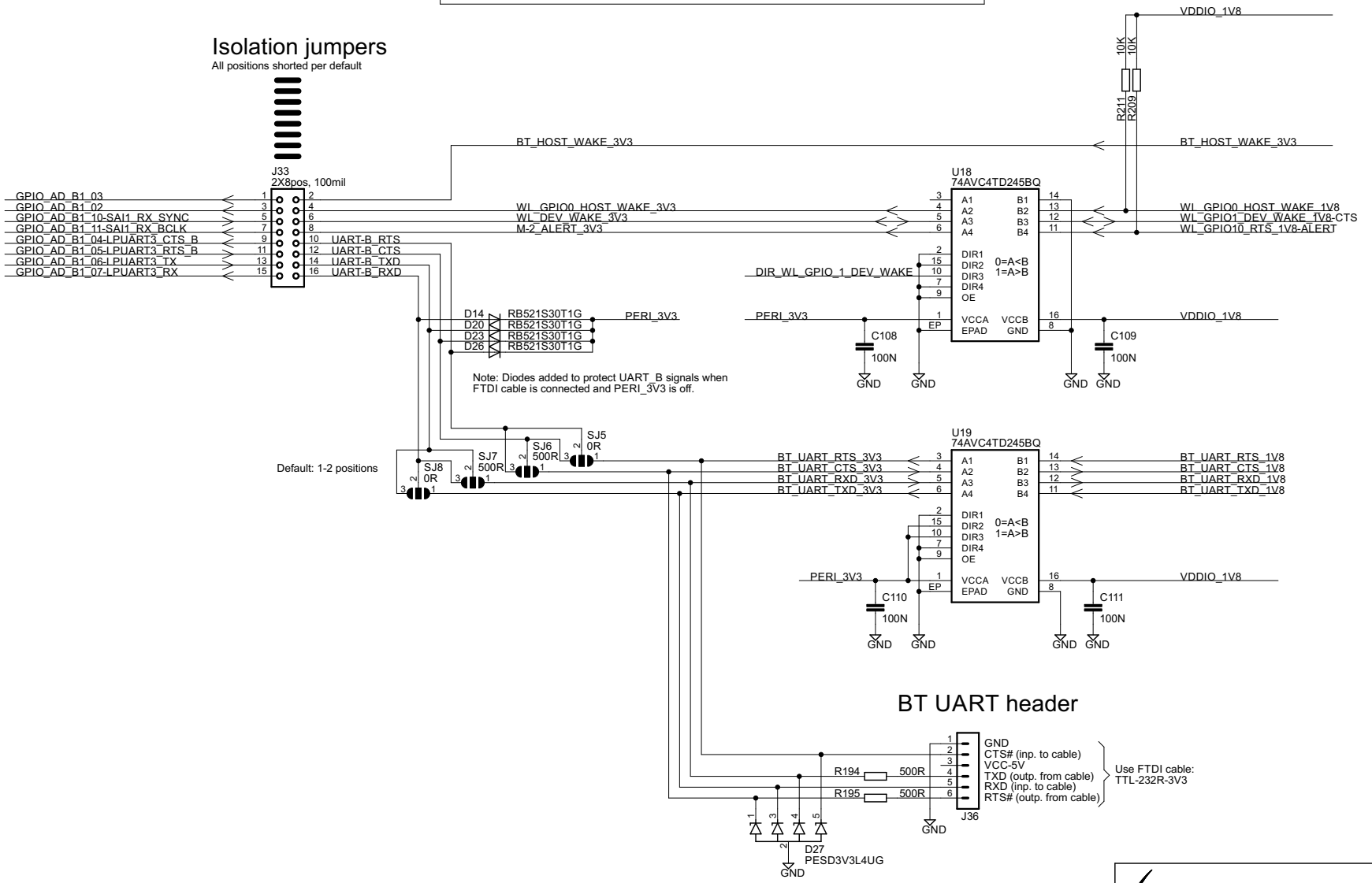
Level Translation for BT UART and Control Signals



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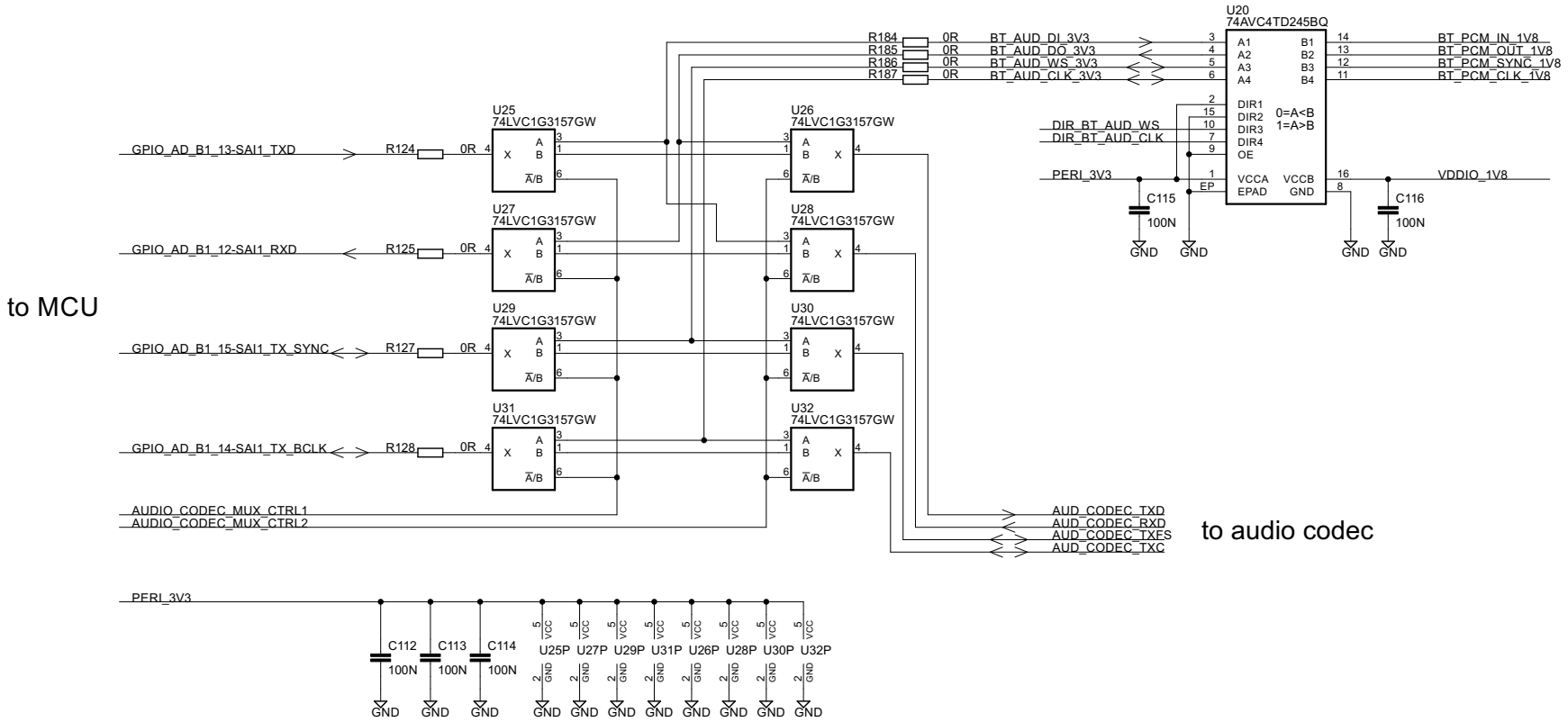
Level Translation and Audio Signal Multiplexing



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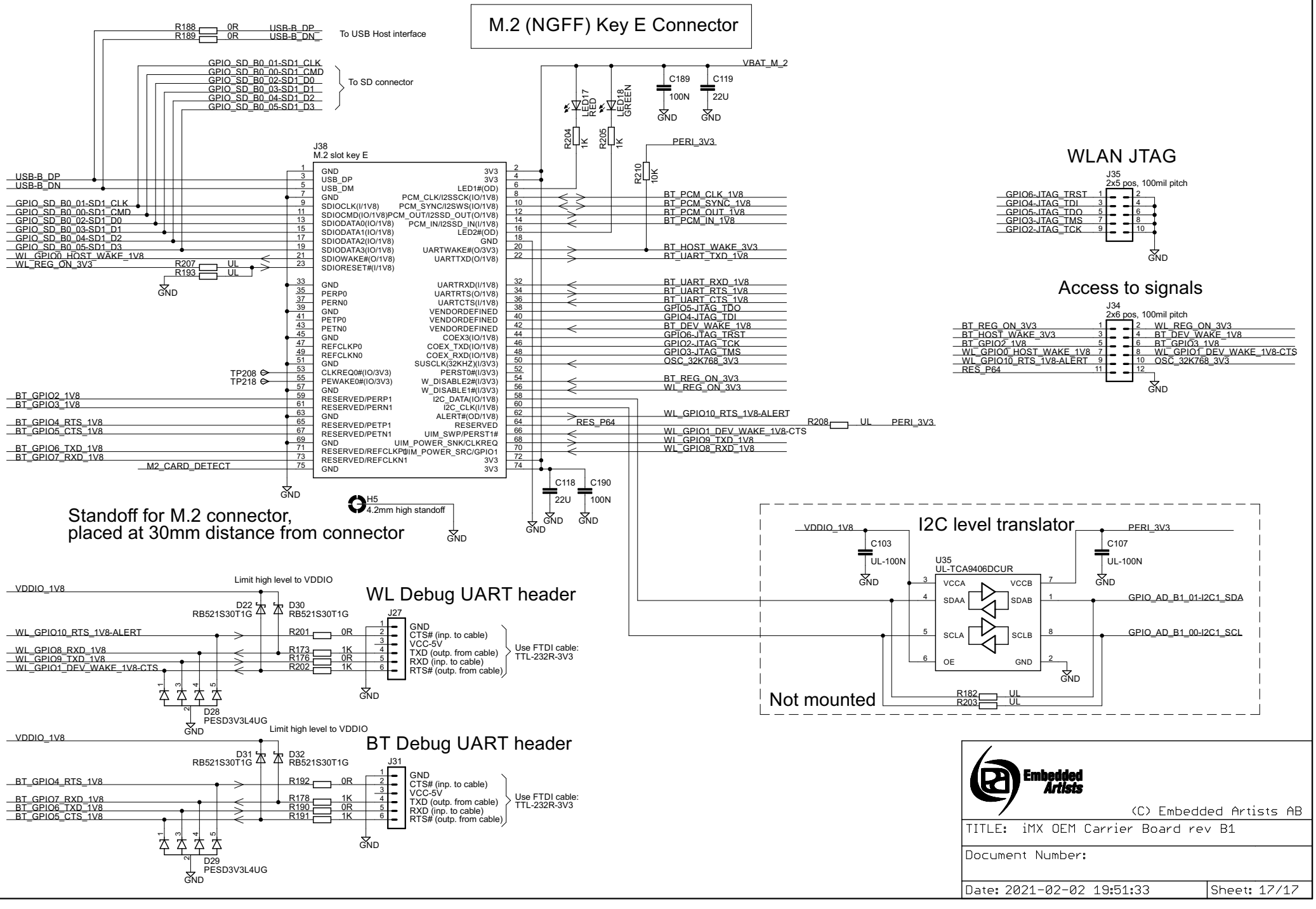
M.2 (NGFF) Key E Connector



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