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FRDM-MCXE31B

Revision History		
REV	REVISION NOTES	Date
A	Based on FRDM-MCXE318(95159, Ver.B) to update MCU MPN.	Mar 13, 2025
A1	1.DNP R52. 2.Change CAN PHY from TJA1057GTR/3Z to TJA1057BTK. No change for layout.	May 30, 2025



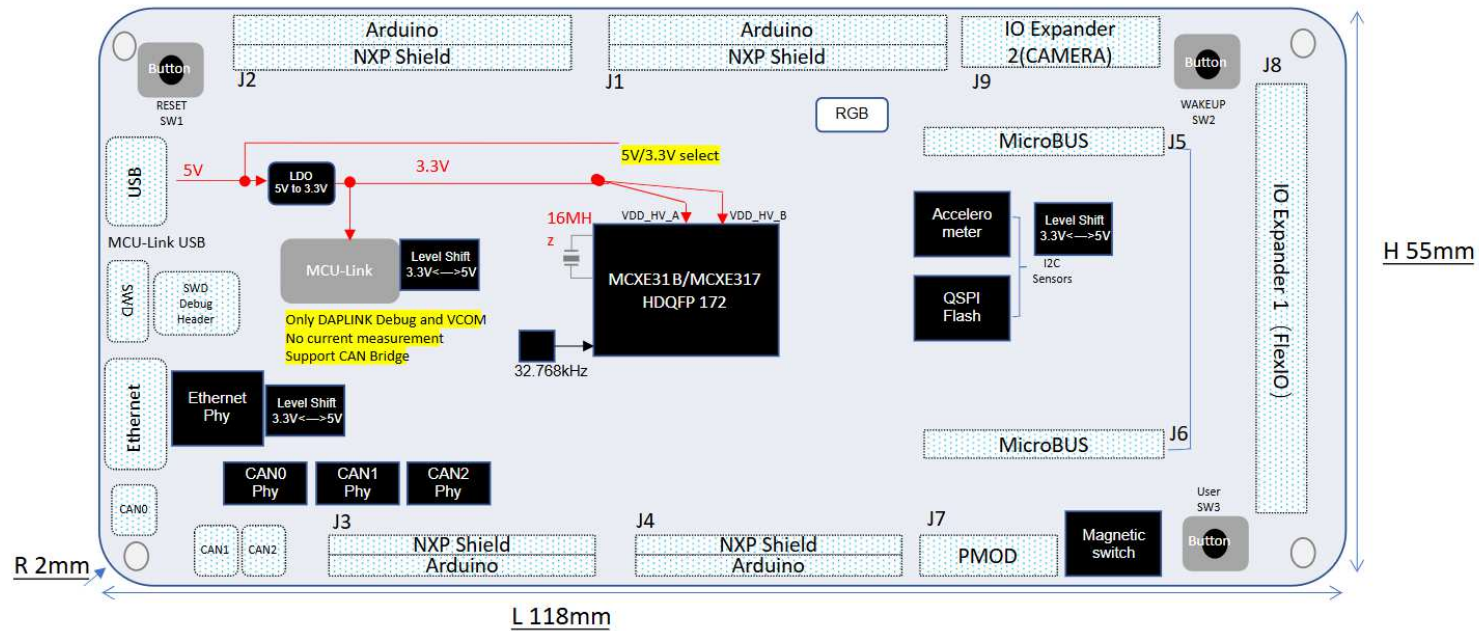
Microcontroller Product Group
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Austin, TX 78735-8598

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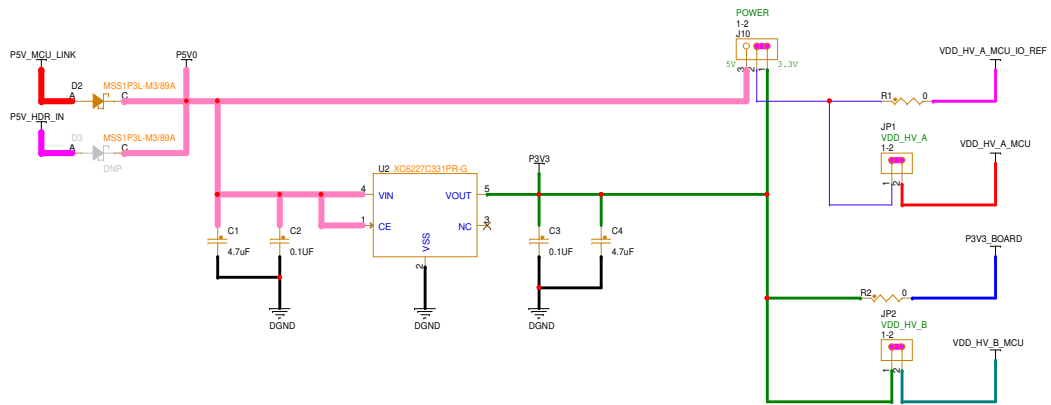
Designer: Alex Yang	Drawing Title: FRDM-MCXE31B		
Drawn by: Kate Fan	Page Title: TITLE PAGE		
Approved: William Jiang	Size C	Document Number SCH-95490 PDF: SPF-95490	Rev A1
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BLOCK DIAGRAM



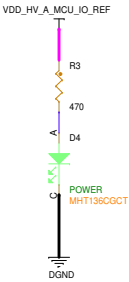
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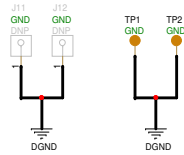


Note:
MCXE31B(Default): supports both 3.3V and 5V power supply.
When powered by 5V, the on-board Ethernet PHY,
Sensors (FXLS8974CFR3 and NMH1000),
and MCU-LINK can all communicate normally.
MCXE317: Only 3.3V supply is supported.
5V supply is not supported.

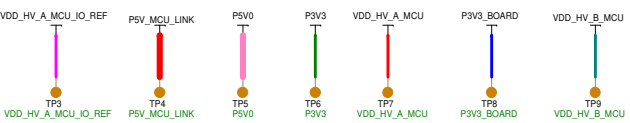
POWER LED



GND TEST POINTS



POWER TEST POINTS



MOUNTING HOLES



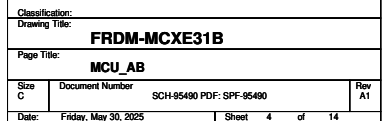
Note:
The mechanical mounting holes are
placed on the four vertices of the board



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POWER			
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MCXE31BMPB

1. **Introduction**

MCXE31BMPB

PORT-A

[4,13]	PTA0	<<>>	PTA0/GPIO-CAM	[4,13]
[4,13]	PTA1	<<>>	PTA1/GPIO-CAM_RESET	[4,13]
[4,13]	PTA2	<<>>	PTA2ADC1_X[0]/CMP1_IN2-MC_CUR_DCB	[4,13]
[4,13]	PTA3	<<>>	PTA3ADC1_S17-MC_BEMF_C	[4,13]
[4,8]	PTA4	<<>>	PTA4JTAG_TMS/SWD_DIO-MCU-LINK	[4,8]
[4,8,12,13]	PTA5	<<>>	PTA5RESET_B-SWITCH [4,8,12,13] PTA5RESET_B-MCU-LINK [4,8,12,13] PTA5RESET_B-ARD [4,8,12,13]	
[4,10]	PTA6	<<>>	PTA6/CAN0_RX-CAN	[4,10]
[4,10]	PTA7	<<>>	PTA7/CAN0_TX-CAN	[4,10]
[4,13]	PTA8	<<>>	PTA8/LPUART2_RX-ARD_D0	[4,13]
[4,13]	PTA9	<<>>	PTA8/LPUART2_TX-ARD_D1	[4,13]
[4,8]	PTA10	<<>>	PTA10JTAG_TDO/SWO-MCU-LINK	[4,8]
[4,10]	PTA11	<<>>	PTA11/CAN1_TX-CAN	[4,10]
[4,10]	PTA12	<<>>	PTA12/CAN1_RX-CAN	[4,10]
[4,13]	PTA13	<<>>	PTA13eMIOS_1_CH[3]/H-ARD_D3	[4,13]
[4,13]	PTA14	<<>>	PTA14/ADC1_P4-MIKROE	[4,13]
[4,13]	PTA15	<<>>	PTA15eMIOS_0_CH[10]/H-ARD_D9 [4,13] PTA15/LPSPI2_PCS3-PMOD [4,13]	
[4,13]	PTA16	<<>>	PTA16eMIOS_0_CH[11]/H-ARD_D6 [4,13]	
[4,13]	PTA17	<<>>	PTA17eMIOS_0_CH[6]/G-MC_PWM_CB [4,13]	
[4,13]	PTA18	<<>>	PTA18TRGMUX_IN12-MC_ENC_A	[4,13]
[4,13]	PTA19	<<>>	PTA19TRGMUX_IN13-MC_ENC_B	[4,13]
[4,13]	PTA20	<<>>	PTA20/GPIO-CAM	[4,13]
[4,13]	PTA21	<<>>	PTA21/LPSPI2_PCS2-PMOD	[4,13]
[4,5]	PTA24	<<>>	PTA24/OSC32K_XTAL-OSC32K	[4,5]
[4,5]	PTA25	<<>>	PTA25/OSC32K_EXTAL-OSC32K	[4,5]
[4,13]	PTA27	<<>>	PTA27/FXIO_D5-CAM_D5	[4,13]
[4,13]	PTA28	<<>>	PTA28/LPSPI1_SCK-MIKROE	[4,13]
[4,13]	PTA29	<<>>	PTA29/LPSPI1_SIN-MIKROE	[4,13]
[4,13]	PTA30	<<>>	PTA30/LPSPI1_SOUT-MIKROE	[4,13]
[4,13]	PTA31	<<>>	PTA31/FXIO_D0-CAM_D0	[4,13]

PORT-D

[4,13]	PTD0	<<>>	PTD0eMIOS_0_CH[2]/G-MC_PWM_AB	[4,13]
[4,13]	PTD1	<<>>	PTD1eMIOS_0_CH[3]/G-MC_PWM_AT	[4,13]
[4,13]	PTD2	<<>>	PTD1/ADC0_P0-ARD_A2 [4,13] PTD2/ADC0_S16-MC_BEMF_B [4,13]	
[4]	PTD3	<<>>	TP18 PTD3	
[4,13]	PTD4	<<>>	PTD4/ADC0_S19-MC_BEMF_A	[4,13]
[4,11,12]	PTD5	<<>>	PTD5/GPIO-FXLS8964 [4,11,12] PTD5/EIRQ[13]/SWITCH [4,11,12]	
[4,13]	PTD6	<<>>	PTD6/FXIO_D13-CAM_VS	[4,13]
[4,8,9,11]	PTD7	<<>>	PTD7/EMAC_MII_RMII_TXD[1]-ENET [4,8,9,11] PTD7/QuadSPI_IOFA1-QSPI [4,8,9,11] PTD7/TRACE_ETM_D0-MCU-LINK [4,8,9,11]	
[4,13]	PTD8	<<>>	PTD8/LP2C1_SDA-MIKROE [4,13] PTD8/LP2C1_SDA-CAM_SDA [4,13]	
[4,13]	PTD9	<<>>	PTD9/LP2C1_SCL-MIKROE [4,13] PTD9/LP2C1_SCL-CAM_SCL [4,13]	
[4,8,11]	PTD10	<<>>	PTD10/QuadSPI_SKF-A-QSPI [4,8,11] PTD10/TRACE_ETM_D3-MCU-LINK [4,8,11]	
[4,8,9,11]	PTD11	<<>>	PTD11/EMAC_MII_RMII_TX_CLK-ENET [4,8,9,11] PTD11/QuadSPI_IOFA0-QSPI [4,8,9,11] PTD11/TRACE_ETM_D2-MCU-LINK [4,8,9,11]	
[4,8,9,11]	PTD12	<<>>	PTD12/EMAC_MII_RMII_TX_EN-ENET [4,8,9,11] PTD12/QuadSPI_IOFA2-QSPI [4,8,9,11] PTD12/TRACE_ETM_D1-MCU-LINK [4,8,9,11]	
[4,8,11,13]	PTD13	<<>>	PTD13/LP2C0_SDA-PMOD [4,8,11,13] PTD13/LP2C0_SDA-FXLS8964 [4,8,11,13] PTD13/LP2C0_SDA-NMH1000 [4,8,11,13] PTD13/LP2C0_SDA-MCU-LINK [4,8,11,13]	
[4,8,11,13]	PTD14	<<>>	PTD14/LP2C0_SCL-PMOD [4,8,11,13] PTD14/LP2C0_SCL-FXLS8964 [4,8,11,13] PTD14/LP2C0_SCL-NMH1000 [4,8,11,13] PTD14/LP2C0_SCL-MCU-LINK [4,8,11,13]	
[4,13]	PTD15	<<>>	PTD15/FXIO_D6-CAM_D6	[4,13]
[4,13]	PTD16	<<>>	PTD16eMIOS_0_CH[1]/G-CAM_MCLK	[4,13]
[4,13]	PTD17	<<>>	PTD17/LPUART2_RX-MIKROE	[4,13]
[4,13]	PTD20	<<>>	PTD20/FXIO_D25-LCD_D9	[4,13]
[4,13]	PTD21	<<>>	PTD21/FXIO_D26-LCD_D10	[4,13]
[4,13]	PTD22	<<>>	PTD22/FXIO_D27-LCD_D11	[4,13]
[4,13]	PTD23	<<>>	PTD23/FXIO_D28-LCD_D12	[4,13]
[4,13]	PTD24	<<>>	PTD24/FXIO_D29-LCD_D13	[4,13]
[4,13]	PTD26	<<>>	PTD26/FXIO_D30-LCD_D14	[4,13]
[4,13]	PTD27	<<>>	PTD27/FXIO_D31-LCD_D15	[4,13]
[4,13]	PTD28	<<>>	PTD28/GPIO-CAM	[4,13]
[4,13]	PTD29	<<>>	PTD29/GPIO-CAM_PDOWN	[4,13]
[4,13]	PTD30	<<>>	PTD30/GPIO-CAM	[4,13]
[4,13]	PTD31	<<>>	PTD31/GPIO-CAM	[4,13]

PORT-B

[4,13]	PTB0	<<>>	PTB0/FXIO_D14-LCD_RD	[4,13]
[4,13]	PTB1	<<>>	PTB1/GPIO-LCD_CS	[4,13]
[4,13]	PTB2	<<>>	PTB2/SAI0_D0-TX_DAT	[4,13]
[4,13]	PTB3	<<>>	PTB3/SAI0_MCLK-MCLK	[4,13]
[4,9]	PTB4	<<>>	PTB4/EMAC_MII_RMII_MDIO-ENET [4,9]	
[4,9]	PTB5	<<>>	PTB5/EMAC_MII_RMII_MDC-ENET [4,9]	
[4,13]	PTB8	<<>>	PTB8/GPIO-CAM	[4,13]
[4,13]	PTB9	<<>>	PTB9/GPIO-CAM	[4,13]
[4,13]	PTB10	<<>>	PTB10/GPIO-CAM	[4,13]
[4,13]	PTB11	<<>>	PTB11/ADC0_X[3]/CMP2_IN0-MC_VOLT_DCB	[4,13]
[4,13]	PTB12	<<>>	PTB12/GPIO-CAM	[4,13]
[4,13]	PTB13	<<>>	PTB13/GPIO-CAM	[4,13]
[4,13]	PTB14	<<>>	PTB14/GPIO-LCD_INT	[4,13]
[4,13]	PTB15	<<>>	PTB15/GPIO-LCD_RESET	[4,13]
[4,13]	PTB16	<<>>	PTB16eMIOS_0_CH[4]/G-MC_PWM_BB	[4,13]
[4,13]	PTB17	<<>>	PTB17eMIOS_0_CH[5]/G-MC_PWM_CT	[4,13]
[4,13]	PTB18	<<>>	PTB18/LPSPI1_PCS1-MIKROE [4,13] PTB18/FXIO_D1-CAM_D1 [4,13]	
[4,13]	PTB19	<<>>	PTB19/FXIO_D2-CAM_D2	[4,13]
[4,13]	PTB20	<<>>	PTB20/FXIO_D3-CAM_D3	[4,13]
[4,13]	PTB21	<<>>	PTB21/FXIO_D4-CAM_D4	[4,13]
[4,12,13]	PTB22	<<>>	PTB22eMIOS_1_CH[18]/Y-LEDG [4,12,13] PTB22/GPIO-PMOD [4,12,13]	
[4,12,13]	PTB23	<<>>	PTB23eMIOS_1_CH[19]/Y-MIKROE [4,12,13] PTB23/WKPU[40]/SWITCH [4,12,13]	
[4,11,13]	PTB24	<<>>	PTB24/GPIO-MIKROE [4,11,13] PTB24/GPIO-MNH1000 [4,11,13]	
[4,13]	PTB25	<<>>	PTB25/LPSPI2_PCS0-PMOD	[4,13]
[4,13]	PTB26	<<>>	PTB26/FXIO_D7-CAM_D7	[4,13]
[4,13]	PTB27	<<>>	PTB27/LPSPI2_SOUT-PMOD	[4,13]
[4,13]	PTB28	<<>>	PTB28/LPSPI2_SIN-PMOD	[4,13]
[4,13]	PTB29	<<>>	PTB29/LPSPI2_SCK-PMOD	[4,13]

PORT-E

[5,13]	PTe0	<<>>	PTe0/LPSPI0_SIN-ARD_D12	[5,13]
[5,13]	PTe1	<<>>	PTe1/LPSPI0_SCK-ARD_D13	[5,13]
[5,13]	PTe2	<<>>	PTe2/LPSPI0_SOUTeMIOS_0_CH[3]/G-ARD_D11	[5,13]
[5,8,13]	PTe3	<<>>	PTe3/LPUART5_RX-MCU-LINK	[5,8,13]
[5,13]	PTe4	<<>>	PTe4/ADC2_S9-ARD_A5	[5,13]
[5,13]	PTe5	<<>>	PTe5/ADC2_S8-ARD_A4	[5,13]
[5,13]	PTe6	<<>>	PTe6/LPSPI0_PCS2eMIOS_1_CH[14]/H-ARD_D10	[5,13]
[5]	PTe7	<<>>	TP19 PTe7	
[5,13]	PTe8	<<>>	PTe8/FXIO_D12-CAM_HS	[5,13]
[5,13]	PTe9	<<>>	PTe9/FXIO_D11-CAM_PCLK	[5,13]
[5,13]	PTe10	<<>>	PTe10/ADC0_P5-ARD_A3	[5,13]
[5,13]	PTe11	<<>>	PTe11eMIOS_0_CH[1]/G-MC_PWM_BT	[5,13]
[5,13]	PTe12	<<>>	PTe12/LPUART2_TX-MIKROE	[5,13]
[5]	PTe13	<<>>	TP20 PTe13	
[5,8,13]	PTe14	<<>>	PTe14/LPUART5_TX-MCU-LINK	[5,8,13]
[5,13]	PTe15	<<>>	PTe15/ADC0_P3-ARD_A1	[5,13]
[5,13]	PTe16	<<>>	PTe16/ADC0_P4-ARD_A0	[5,13]
[5,13]	PTe17	<<>>	PTe17/GPIO-ARD_D7	[5,13]
[5,13]	PTe18	<<>>	PTe18/GPIO-ARD_D8	[5,13]
[5,13]	PTe21	<<>>	PTe21eMIOS_1_CH[1]/H-ARD_D5	[5,13]
[5,13]	PTe22	<<>>	PTe22/GPIO-ARD_D4	[5,13]
[5,13]	PTe23	<<>>	PTe23/GPIO-ARD_D2	[5,13]
[5,10]	PTe24	<<>>	PTe24/CAN2_TX-CAN	[5,10]
[5,10]	PTe25	<<>>	PTe25/CAN2_RX-CAN	[5,10]
[5,13]	PTe26	<<>>	PTe26/GPIO-CAM	[5,13]

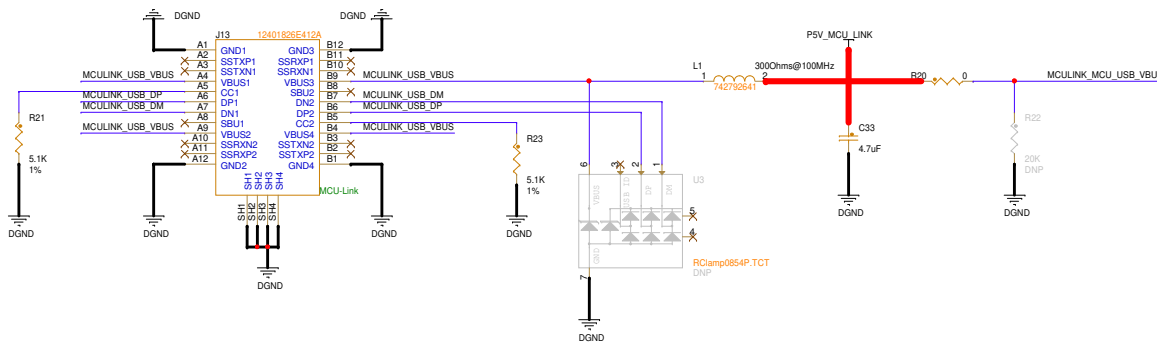
PORT-C

[4,9]	PTC0	<<>>	PTC0/EMAC_MII_RMII_RXD[1]-ENET	[4,9]
[4,9]	PTC1	<<>>	PTC1/EMAC_MII_RMII_RXD[0]-ENET	[4,9]
[4,8,9,11]	PTC2	<<>>	PTC2/EMAC_MII_RMII_TXD[0]-ENET [4,8,9,11] PTC2/QuadSPI_IOFA3-QSPI [4,8,9,11] PTC2/TRACE_ETM_CLKOUT-MCU-LINK [4,8,9,11]	
[4,9,11]	PTC3	<<>>	PTC3/GPIO-ENET [4,9,11] PTC3/QuadSPI_PCSFA-QSPI [4,9,11]	
[4,8]	PTC4	<<>>	PTC4/JTAG_TCK/SWD_CLK-MCU-LINK	[4,8]
[4,8]	PTC5	<<>>	PTC5/JTAG_TDI-MCU-LINK	[4,8]
[4,13]	PTC6	<<>>	PTC6/LP2C1_SDA-ARD_D18 [4,13] PTC6/LP2C1_SDA-LCD_SDA [4,13]	
[4,13]	PTC7	<<>>	PTC7/LP2C1_SCL-ARD_D19 [4,13] PTC7/LP2C1_SCL-LCD_SCL [4,13]	
[4,13]	PTC8	<<>>	PTC8/FXIO_D12-LCD_D1C	[4,13]
[4,13]	PTC9	<<>>	PTC9/GPIO-LCD_BLACK_LIGHT	[4,13]
[4,13]	PTC10	<<>>	PTC10/GPIO-LCD_TE [4,13] PTC10/ADC1_X[3]/TRGMUX_IN10-ARD [4,13]	
[4,13]	PTC11	<<>>	PTC11/FXIO_D15-LCD_WR [4,13] PTC11/ADC0_S17/TRGMUX_IN10-ARD [4,13]	
[4,13]	PTC12	<<>>	PTC12/SAI0_BCLK-RX_BCLK [4,13] PTC12/SAI0_BCLK-TX_BCLK [4,13]	
[4,13]	PTC13	<<>>	PTC13/SAI0_SYNC-RX_WCLK [4,13] PTC13/SAI0_SYNC-TX_WCLK [4,13] PTC13/EIRQ[21]/SAI0_SYNC [4,13]	
[4,12]	PTC14	<<>>	PTC14eMIOS_1_CH[4]/H-LEDB	[4,12]
[4,11,13]	PTC15	<<>>	PTC15/GPIO-MIKROE [4,11,13] PTC15/GPIO-FXLS8964 [4,11,13]	
[4,12,13]	PTC16	<<>>	PTC16eMIOS_1_CH[9]/H-LEDR [4,12,13] PTC16/GPIO-PMOD [4,12,13]	
[4,9]	PTC17	<<>>	PTC17/EMAC_MII_RMII_RX_DV-ENET	[4,9]
[4,13]	PTC18	<<>>	PTC18/SAI0_D2-RX_DAT	[4,13]
[4,13]	PTC19	<<>>	PTC19/GPIO-CAM	[4,13]
[4,13]	PTC20	<<>>	PTC20/GPIO-CAM	[4,13]
[4,13]	PTC21	<<>>	PTC21/GPIO-CAM	[4,13]
[4,13]	PTC23	<<>>	PTC23/FXIO_D16-LCD_D0	[4,13]
[4,13]	PTC24	<<>>	PTC24/FXIO_D17-LCD_D1	[4,13]
[4,13]	PTC25	<<>>	PTC25/FXIO_D18-LCD_D2	[4,13]
[4,13]	PTC26	<<>>	PTC26/FXIO_D19-LCD_D3	[4,13]
[4,13]	PTC27	<<>>	PTC27/FXIO_D20-LCD_D4	[4,13]
[4,13]	PTC28	<<>>	PTC28/FXIO_D21-LCD_D5	[4,13]
[4,13]	PTC29	<<>>	PTC29/FXIO_D22-LCD_D6	[4,13]
[4,13]	PTC30	<<>>	PTC30/FXIO_D23-LCD_D7	[4,13]
[4,13]	PTC31	<<>>	PTC31/FXIO_D24-LCD_D8	[4,13]

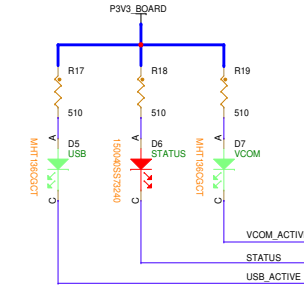


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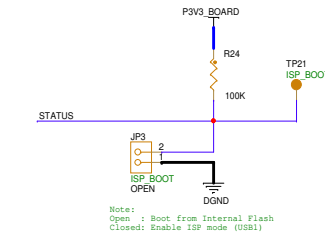
USB



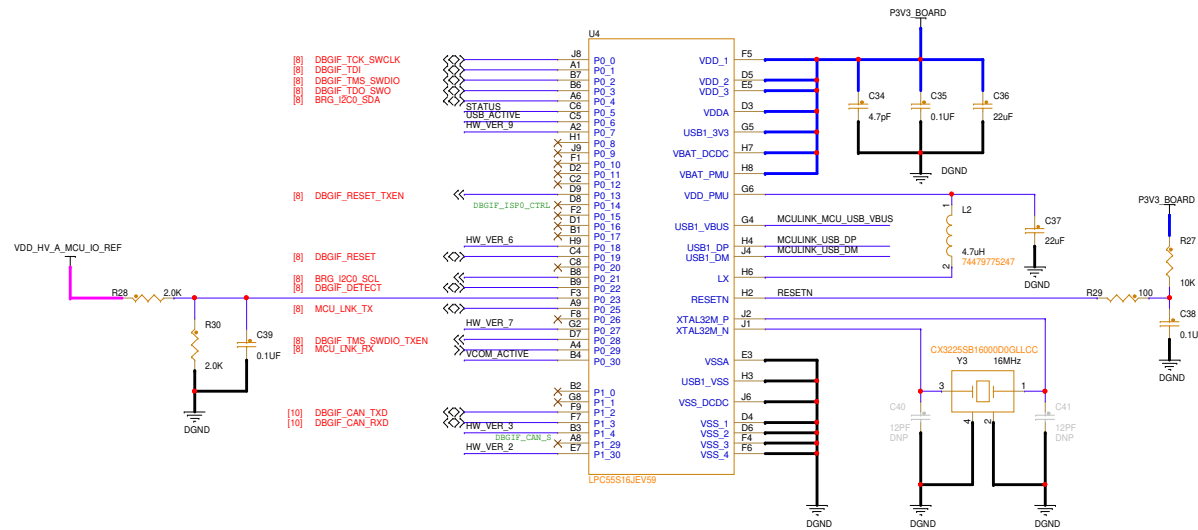
STATUS LED



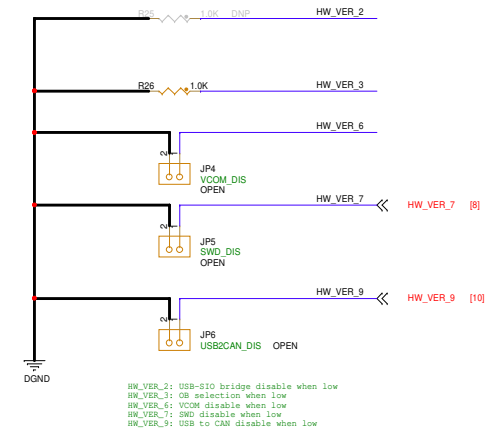
BOOT MODE



MCU

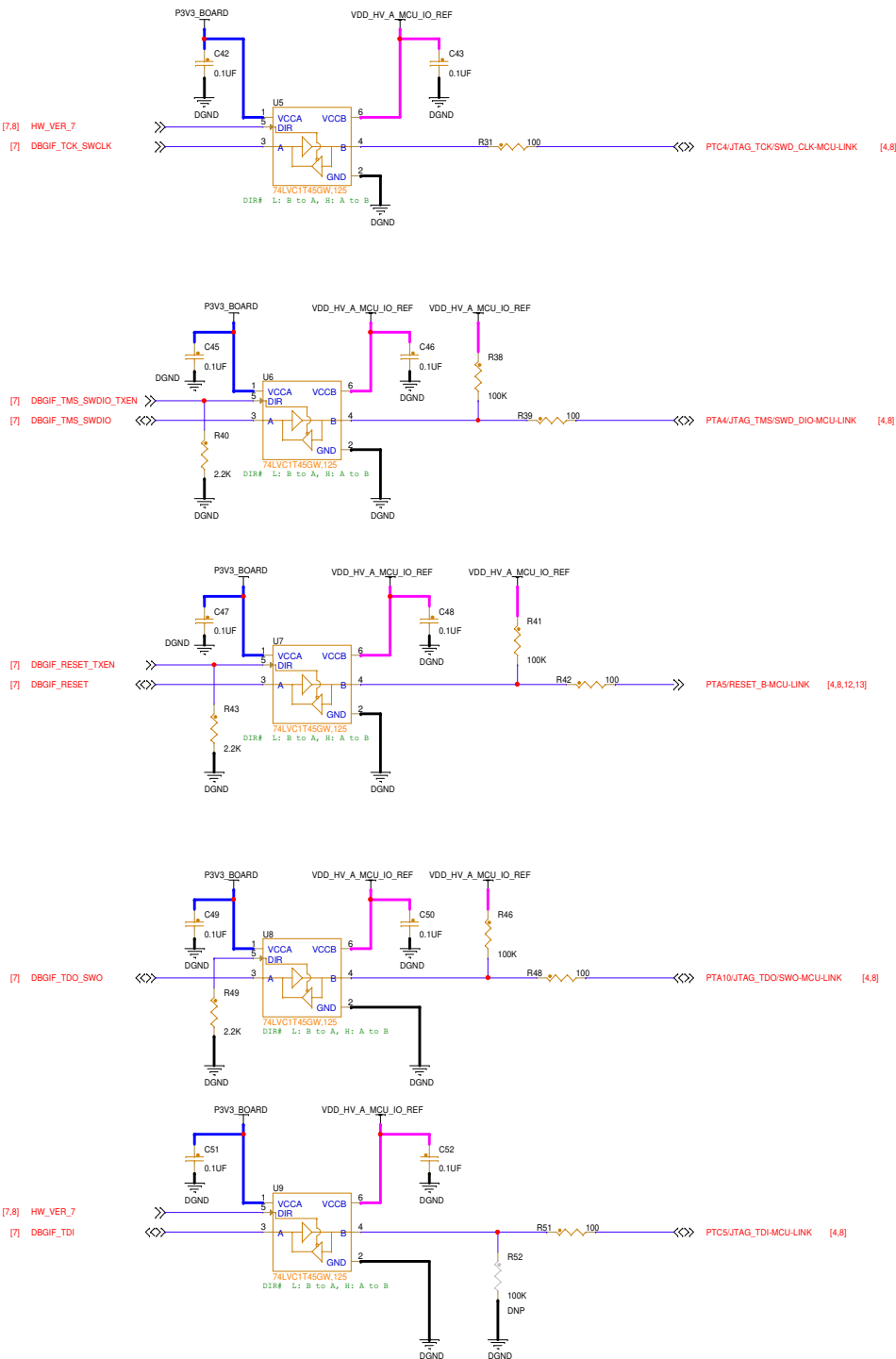


HARDWARE VERSION

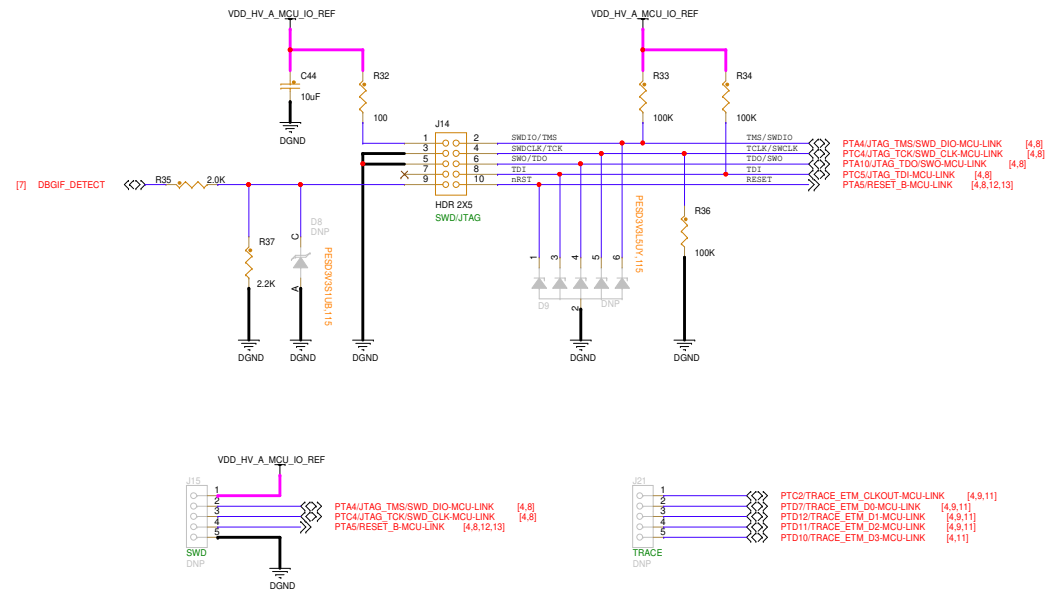


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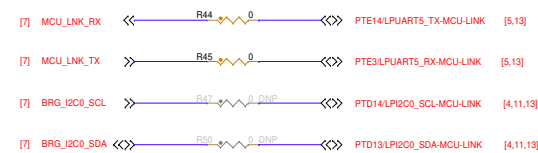
MCU-Link Debug Interface

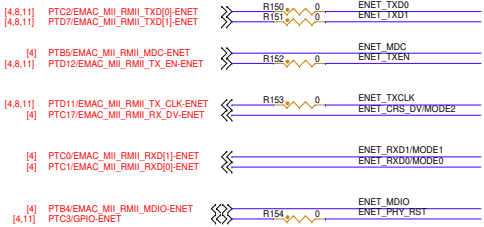
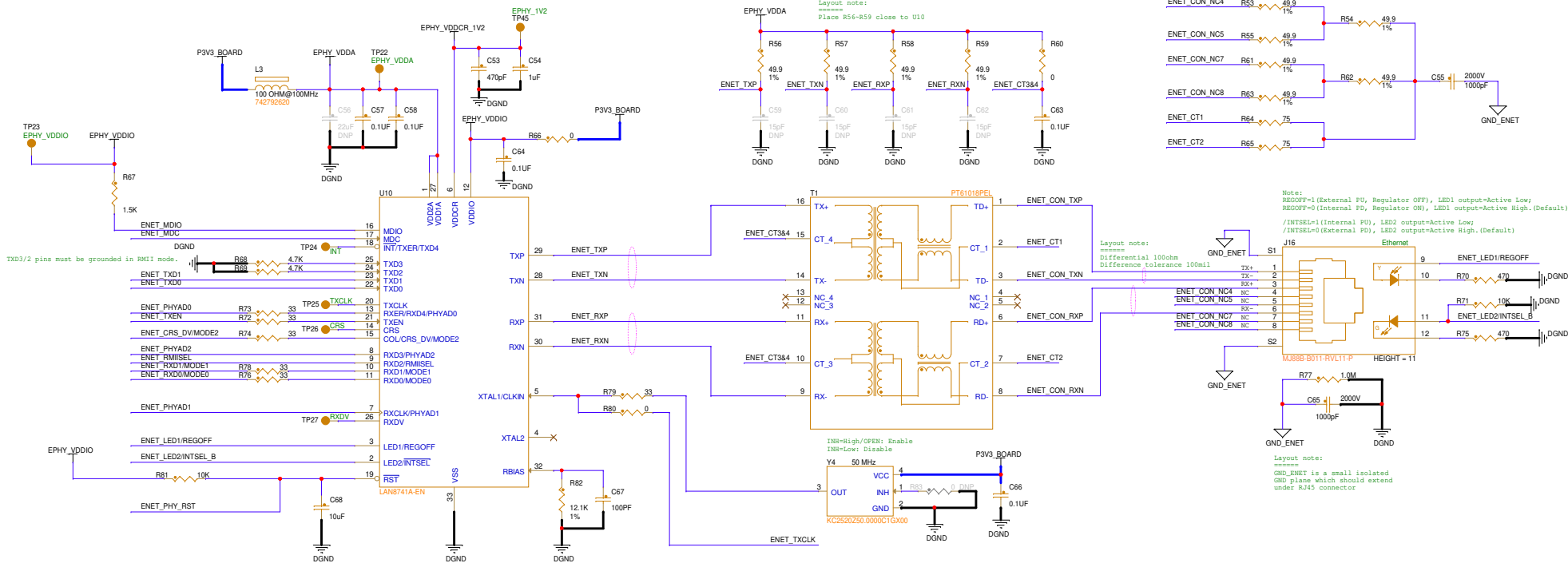


MCU SWD/JTAG

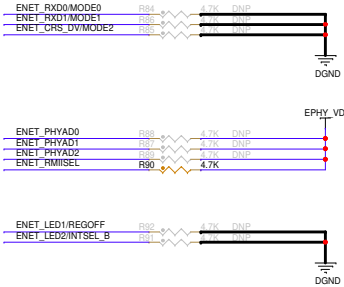


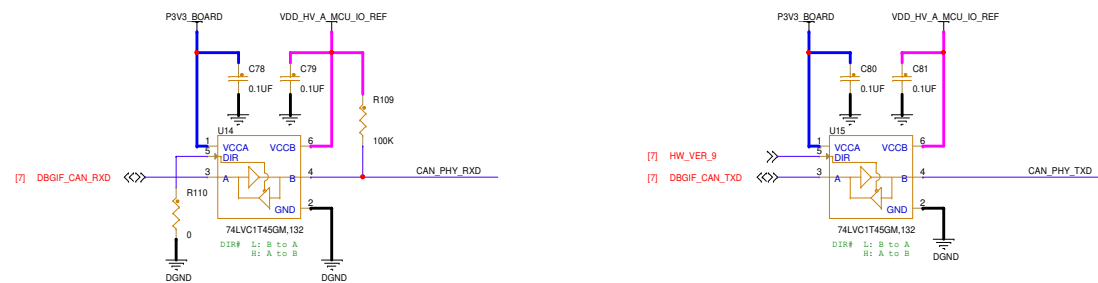
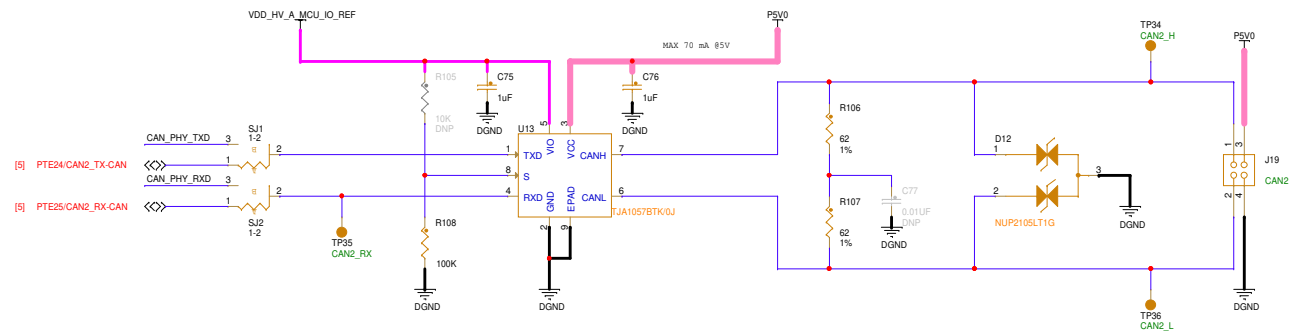
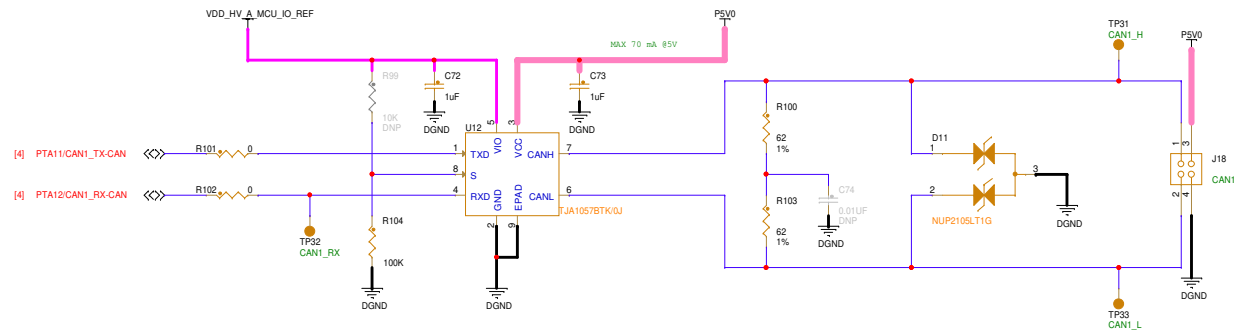
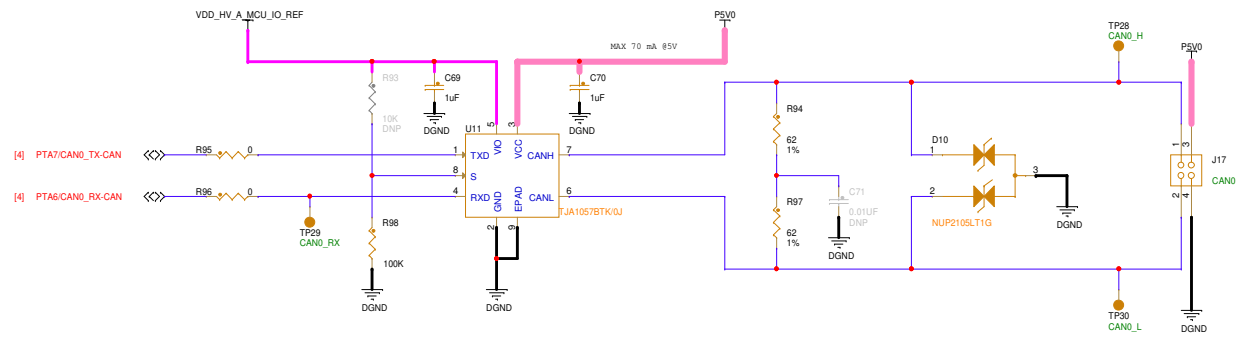
SIO BRIDGE





Config Pin (Internal State)	Description	Jumper Setting
MODE[0:2] (PU)	Mode Config 111 => All Capable, auto-neg enabled (Default)	Open (Int PU)
PHYAD[0:2] (PD)	Device Address 000 => Default	Open (Int PU)
RMIISEL (PD)	1 => RMII (Default) 0 => MII	Closed (Ext PU)
REGOFF (PD)	1 => Internal Regulator OFF 0/Floating=> Internal Regulator ON (Default)	Open (Int PU)
INTSEL_B (PU)	Floating 1 => nINT function (Default) 0=> TXD4/TXER function	Open (Int PU)





Classification:

Drawing Title: **FRDM-MCXE31B**

Page Title:

CANSize
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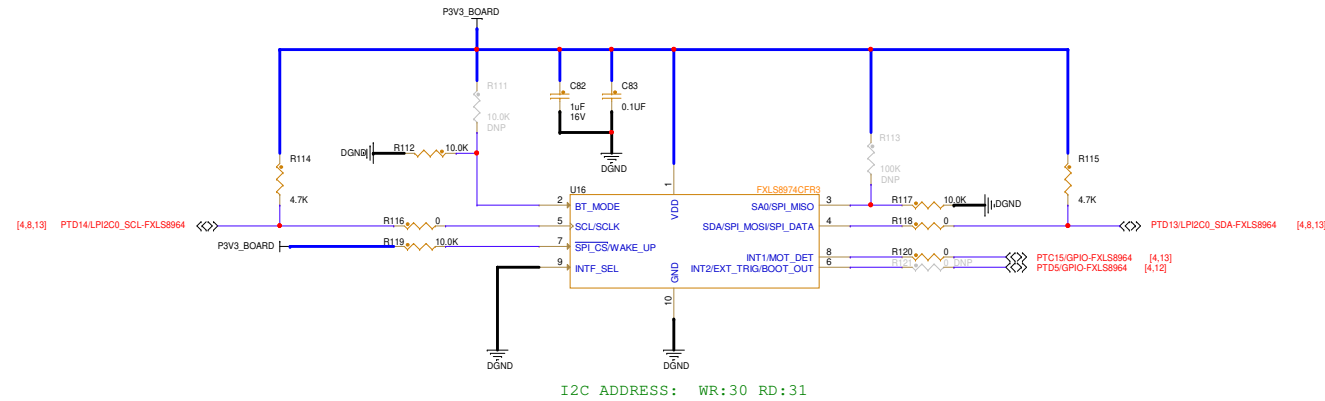
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Date: Friday, May 30, 2025

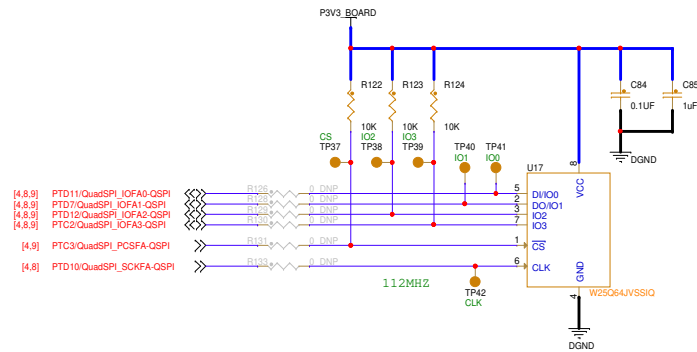
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ACCELEROMETER SENSOR



QSPI FLASH

Note:
When MCXE31B is powered by 5V,
the flash W25Q64JVSSIQ cannot be connected, it works only in 3.3V.

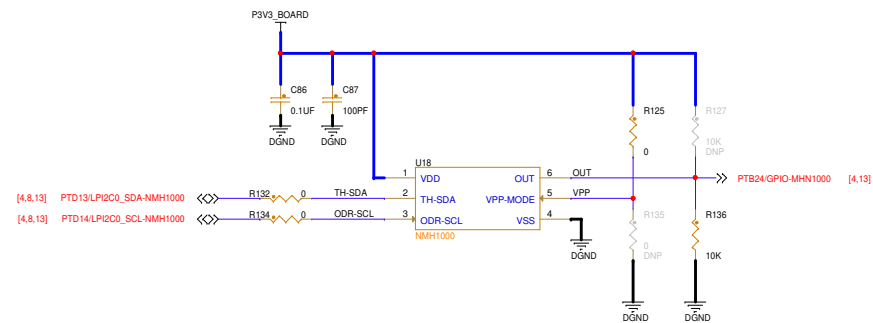


Layout Notes:

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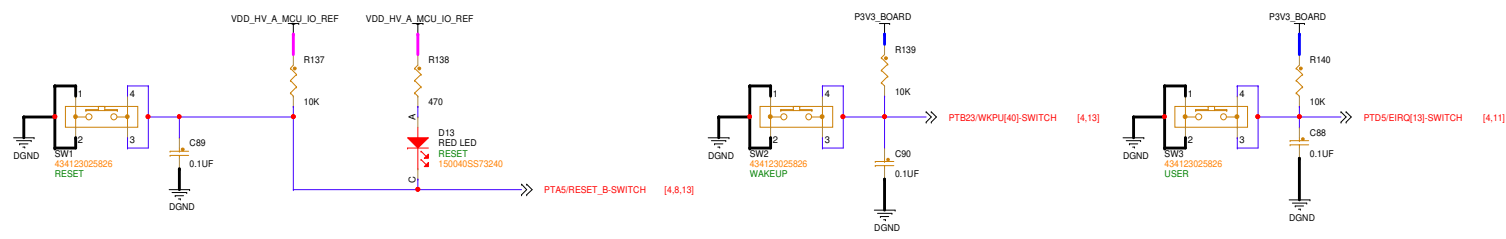
1.Length match routing with 50ohm resistance.

MAGNETIC SWITCH

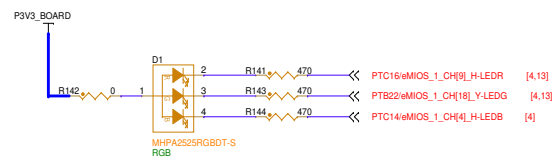


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QSPI FLASH & SENSOR			
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SWITCH



RGB LED



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SWITCH & LED			
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REF DES	JUMPER	PAGE NAME
J10,JP1,JP2	1-2	03 POWER
JP3,JP4,JP5,JP6	OPEN	07 MCU_LINK

REF DES	ASSY OPT	PAGE NAME
D3,J11,J12	DNP	03 POWER
R13	DNP	05 MCU_C
C40,C41,R22,R25,U3	DNP	07 MCU_LINK
D8,D9,J15,J21,R47,R50,R52	DNP	08 MCU_LINK_DEBUG
C56,C59,C60,C61,C62,R83,R84,R85,R86,R87,R88,R89,R91,R92	DNP	09 ETHERNET
C71,C74,C77,R93,R99,R105	DNP	10 CAN
R111,R113,R121,R126,R127,R128,R129,R130,R131,R133,R135	DNP	11 QSPI_FLASH & SENSOR
C94,C95,C96,C97,J7,J20	DNP	13 HEADERS

REF DES	SHORT(DEFAULT)	PAGE NAME
SJ1,SJ2	1-2	10 CAN
SJ3,SJ4,SJ5,SJ6	1-2	13 HEADERS



Classification:		
Drawing Title:		
FRDM-MCXE31B		
Page Title:		
APPENDIX JUMPER/DNP		
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