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Revision History

REV	REVISION NOTES	Date
X1	Initial	Jun 10, 2023
A	Final Release	Jul 10, 2023
B	1.Change 3pin solder pads. 2.Update schematic per Ver.A test result.	Sep 15, 2023
B1	1.DNP J12&J7. 2.Change J10 MPN.	Nov 13, 2023
B2	1.Change C21 from 1uf to 4.7uf. 2.Change C24 from 0.1uf to 2.2uf. 3.Change R82&R192&R193 MPN due to material shortage.	Jan 25, 2024
C	1.Add TP32~TP34, TP36~TP38, TP43~TP47 for automatic testing. 2.Add C107(DNP). 3.Change R192&R193 from 1M to 0ohm. DNP C102&C103. 4.Change R27 from 10K to 0ohm. DNP R29. 5.Update some net names. 6.Update MCU symbol per the latest pinout file.	Mar 28, 2024

FRDM-MCXN947

Microcontroller Product Group
6501 William Cannon Drive West
Austin, TX 78735-8598

Designer: John Wu	Drawing Title: FRDM-MCXN947		
Drawn by: Kate Fan	Page Title: TITLE PAGE		
Approved: William Jiang	Size C	Document Number SCH-90818 PDF: SPF-90818	Rev C
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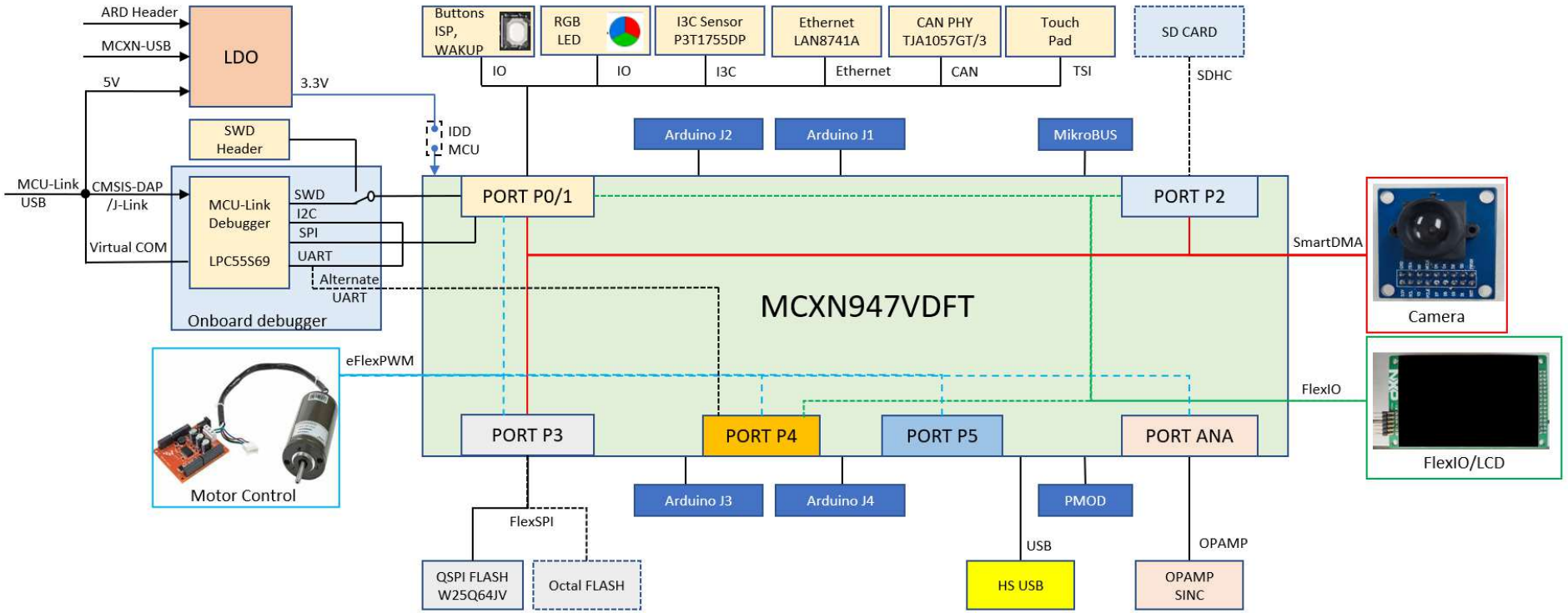
BLOCK DIAGRAM



Classification:	Company Internal/Proprietary
Drawing Title:	FRDM-MCXN947
Page Title:	BLOCK DIAGRAM
Size: C	Document Number: SCH-90818 PDF: SPF-90818 — Rev: C
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SOC PORT0~2

Classification: Company Internal/Proprietary

Drawing Title: FRDM-MCXN947

Page Title: SOC_PORT0-2

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SOC PORT3~5

Classification: Company Internal/Proprietary		
Drawing Title: FRDM-MCXN947		
Page Title: SOC_PORT3-5		
Size C	Document Number SCH-90818 PDF: SPF-90818	Rev C
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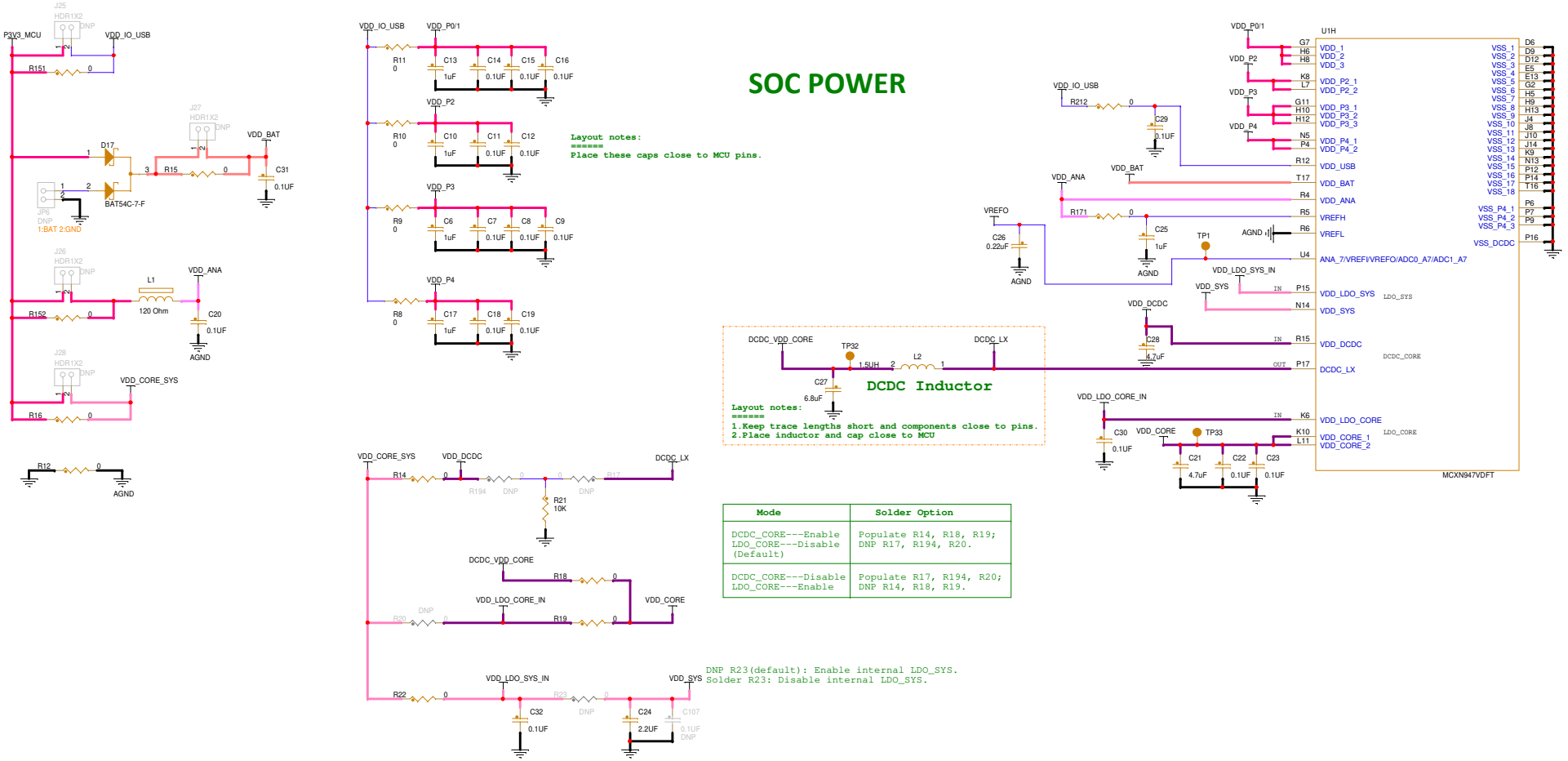
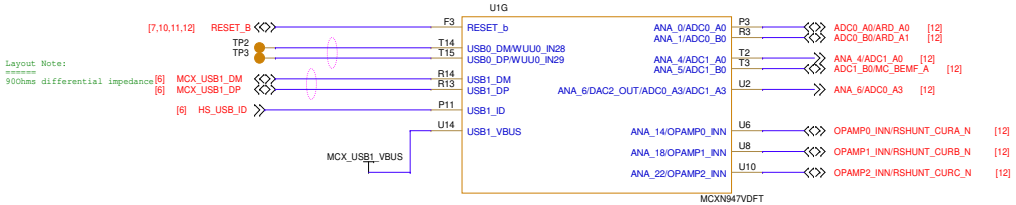
SOC POWER



Mode	Solder Option
DCDC_CORE---Enable LDO_CORE---Disable (Default)	Populate R14, R18, R19; DNP R17, R194, R20.
DCDC_CORE---Disable LDO_CORE---Enable	Populate R17, R194, R20; DNP R14, R18, R19.

SOC USB & Analog Signals



<Core Design>

Classification: Company Internal/Proprietary

Drawing Title: **FRDM-MCXN947**

Page Title: **SOC_PWR**

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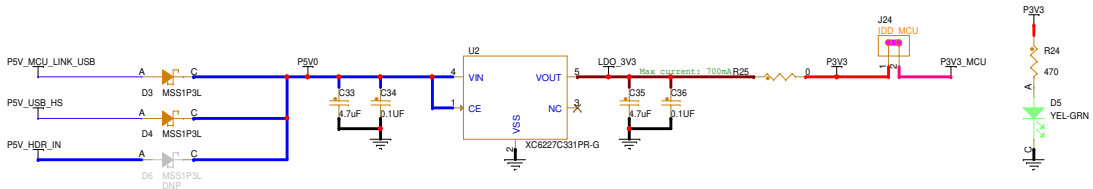
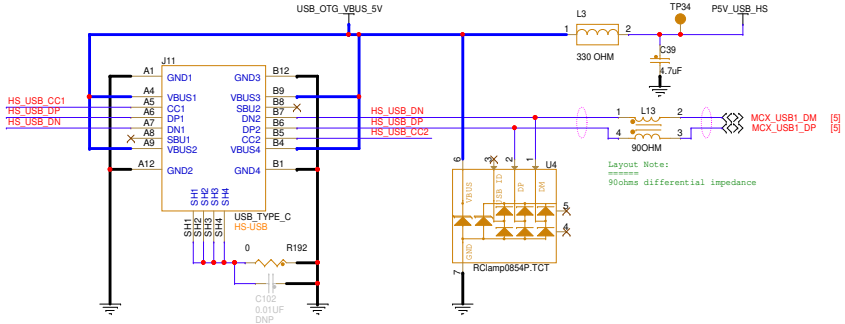
SYSTEM POWER

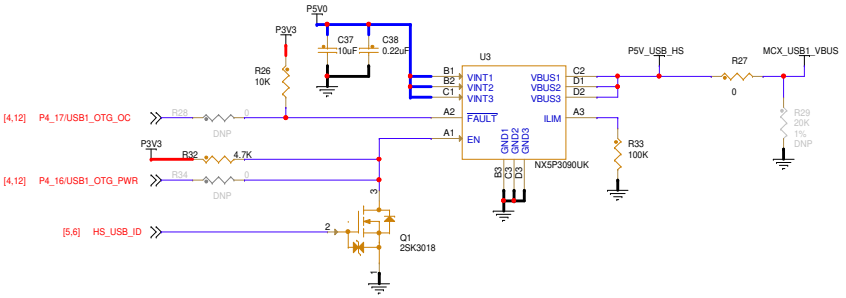


USB1_HIGH SPEED

USB2.0 Type C

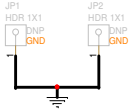


VBUS Power Control

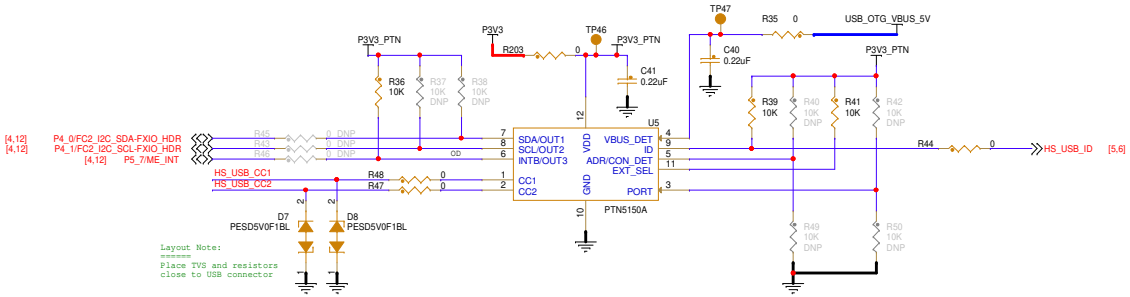


MOUNTING HOLE

Test Points



CC Logic



ADR/CON_DET:
When Power-up, ADR(input) function:
ADR=1: I2C Address: 0x7A(ADR)
ADR=0: I2C Address: 0x3A(ADR)
ADR=MID/FLOATING
After TINPUTLATCH, CON_DET(output) function:
CON_DET=1: Connection Detected
CON_DET=0: No Connection

EXT_SEL: External selection
High = CC1 orientation or no valid CC1/CC2 detection
Low = CC2 orientation

PORT=:
1: DFP mode
0: UFP mode
Floating: DRP mode

<Core Design>

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Page Title: **USB & PWR**

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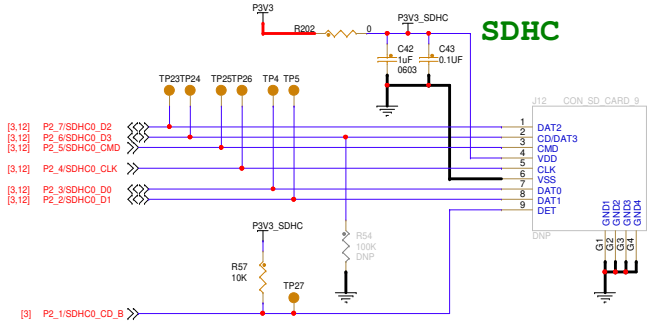
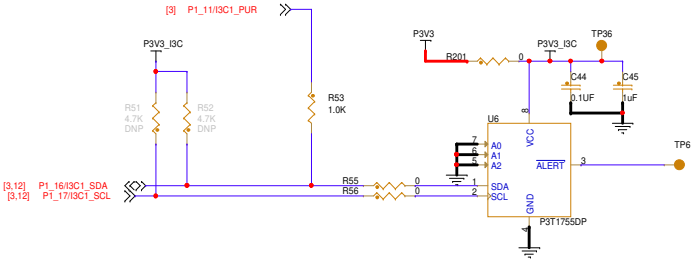
SDHC



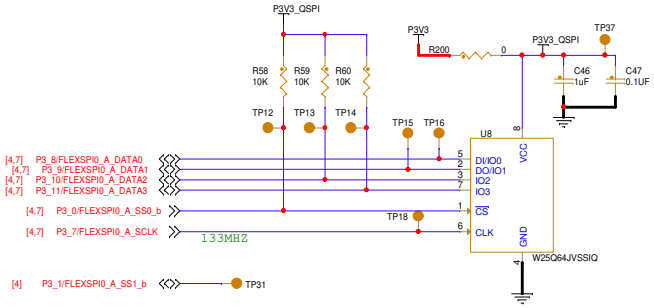
Layout Notes:
=======
1) SDHC signals: equal length routing with 50ohm resistance. And as short as possible.
2) Place R54 to easily rework.

I3C SENSOR



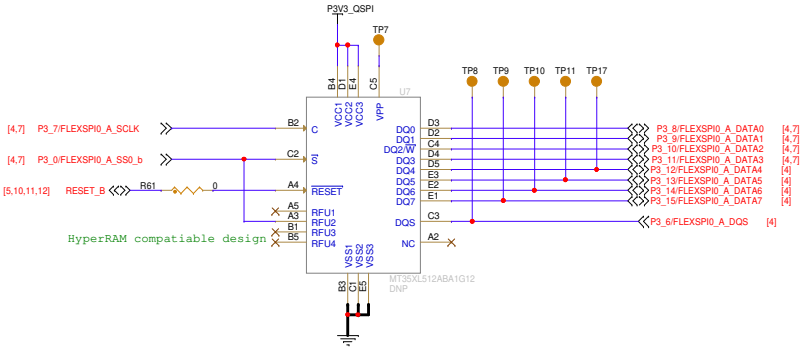
I2C ADDR: 1001000

QSPI



Other QSPI Flash Option: MT25QL128ABA1ESE-0SIT (MICRON)

Octal Flash



Layout Notes:

1. U7 & U8 footprint overlapped.
2. Equal length routing with 50ohm resistance.
3. Place TP31 close to TP12.

<Core Design>

Classification: Company Internal/Proprietary

Drawing Title: FRDM-MCXN947

Page Title: SD & QSPI & SENSOR

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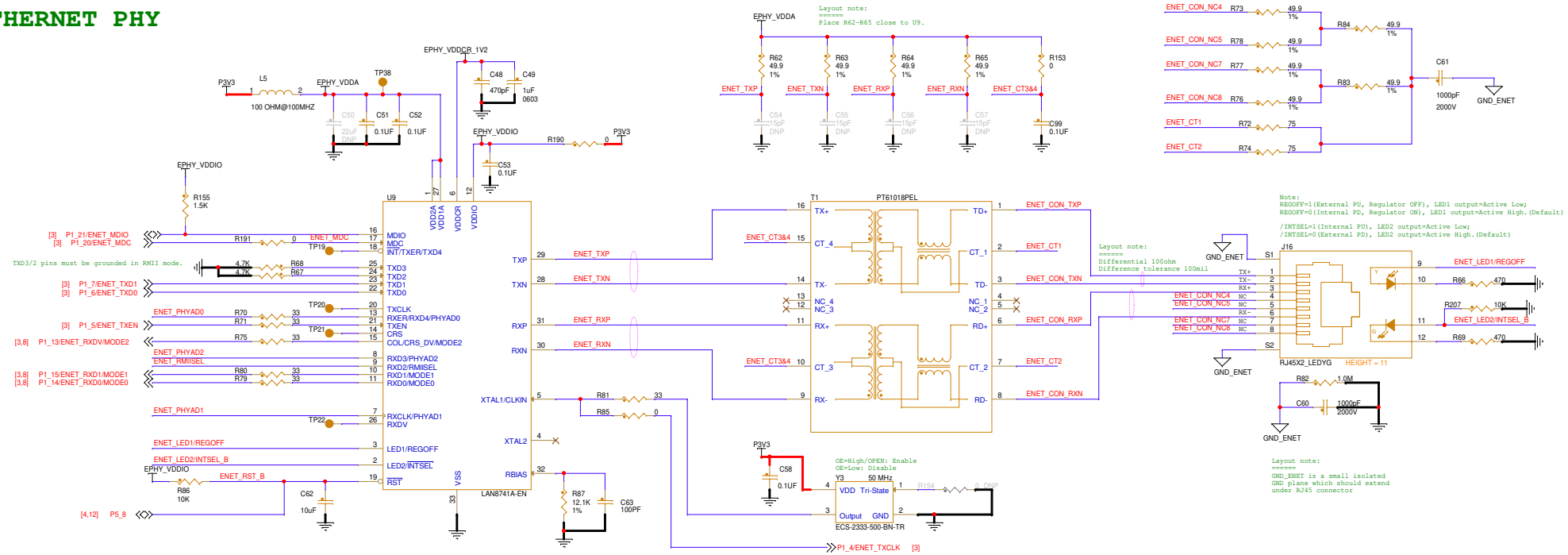
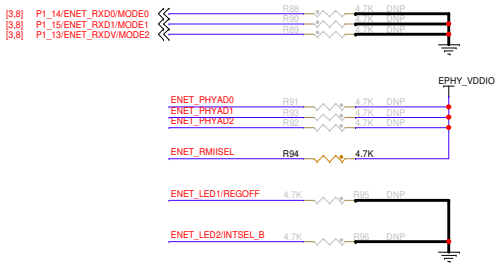
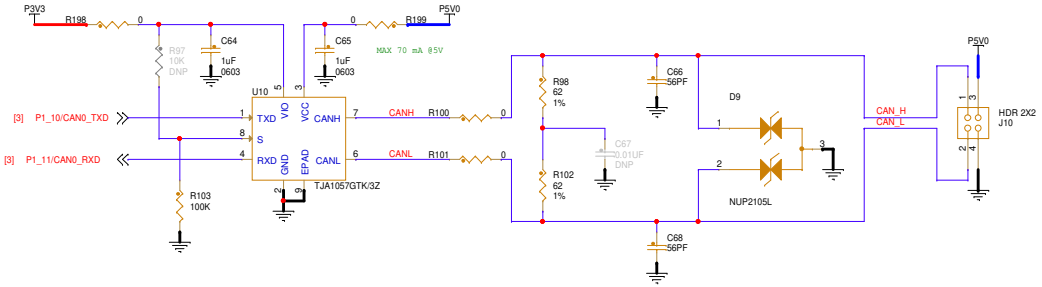
ETHERNET PHY





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)

CAN PHY



Drawing Title: **FRDM-MCXN947**

Page Title: **CAN PHY & ETHERNET PHY**

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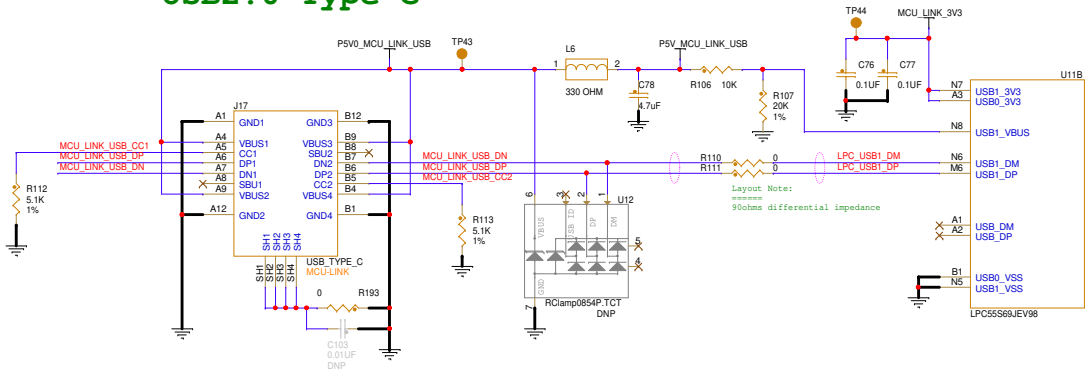
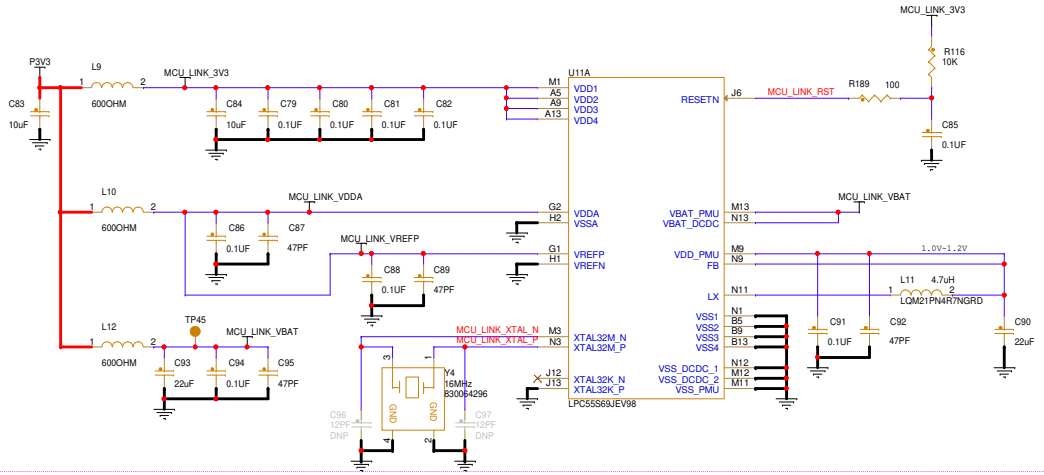
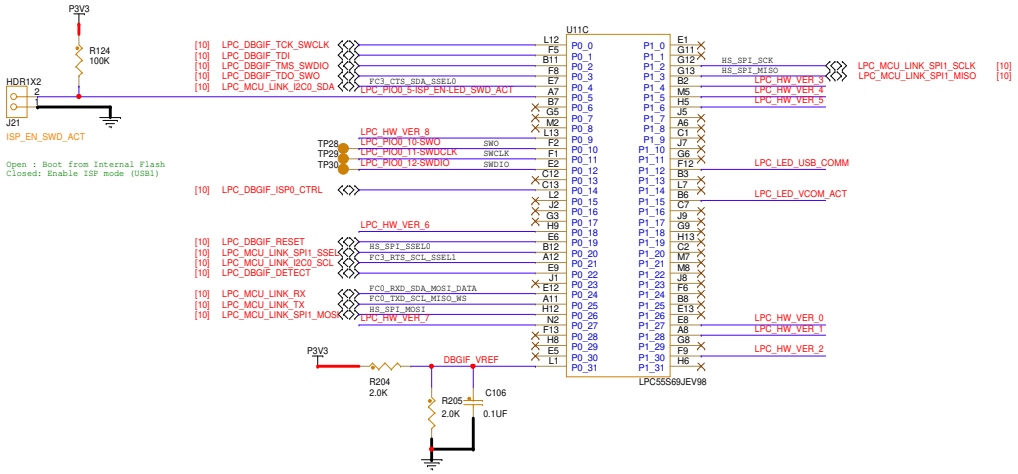
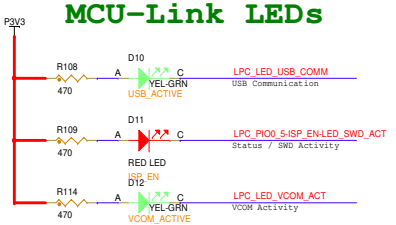
MCU-Link
USB2.0 Type C

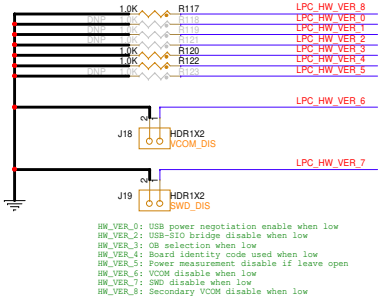






MCU-Link LEDs





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Drawing Title: **FRDM-MCXN947**

Page Title: **MCU_LINK_USB**

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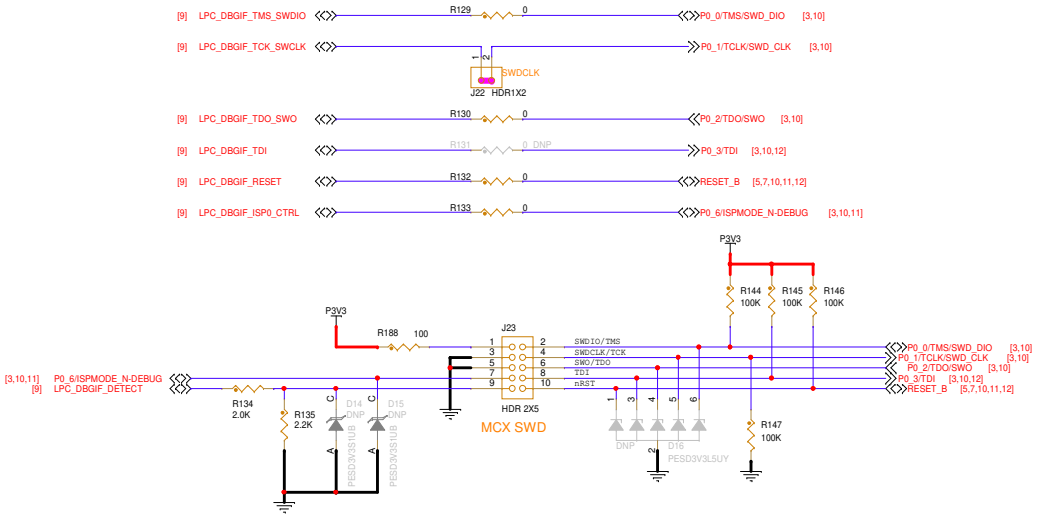
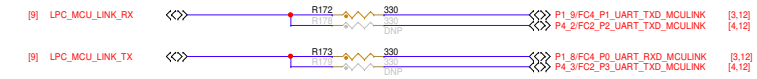
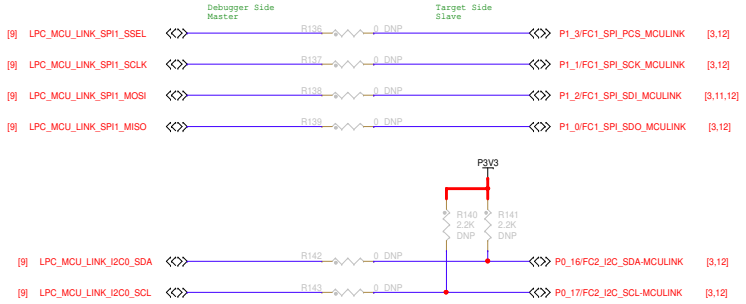
MCU-Link Debug Interface



MCU-Link UART



USB Bridge



Classification: Company Internal/Proprietary

Drawing Title: **FRDM-MCXN947**

Page Title: **MCU_LINK_DEBUG**

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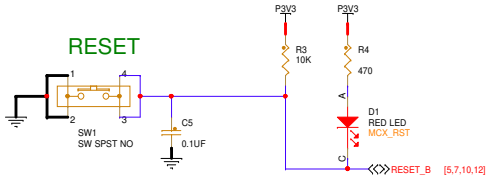
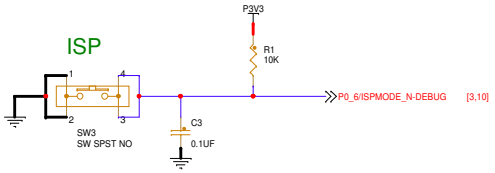
HMI

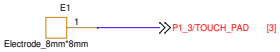
RESET



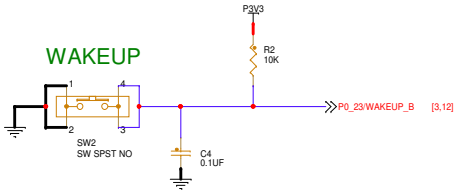
ISP



TOUCH PAD



WAKEUP



RGB

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Page Title: SWITCH & LED		
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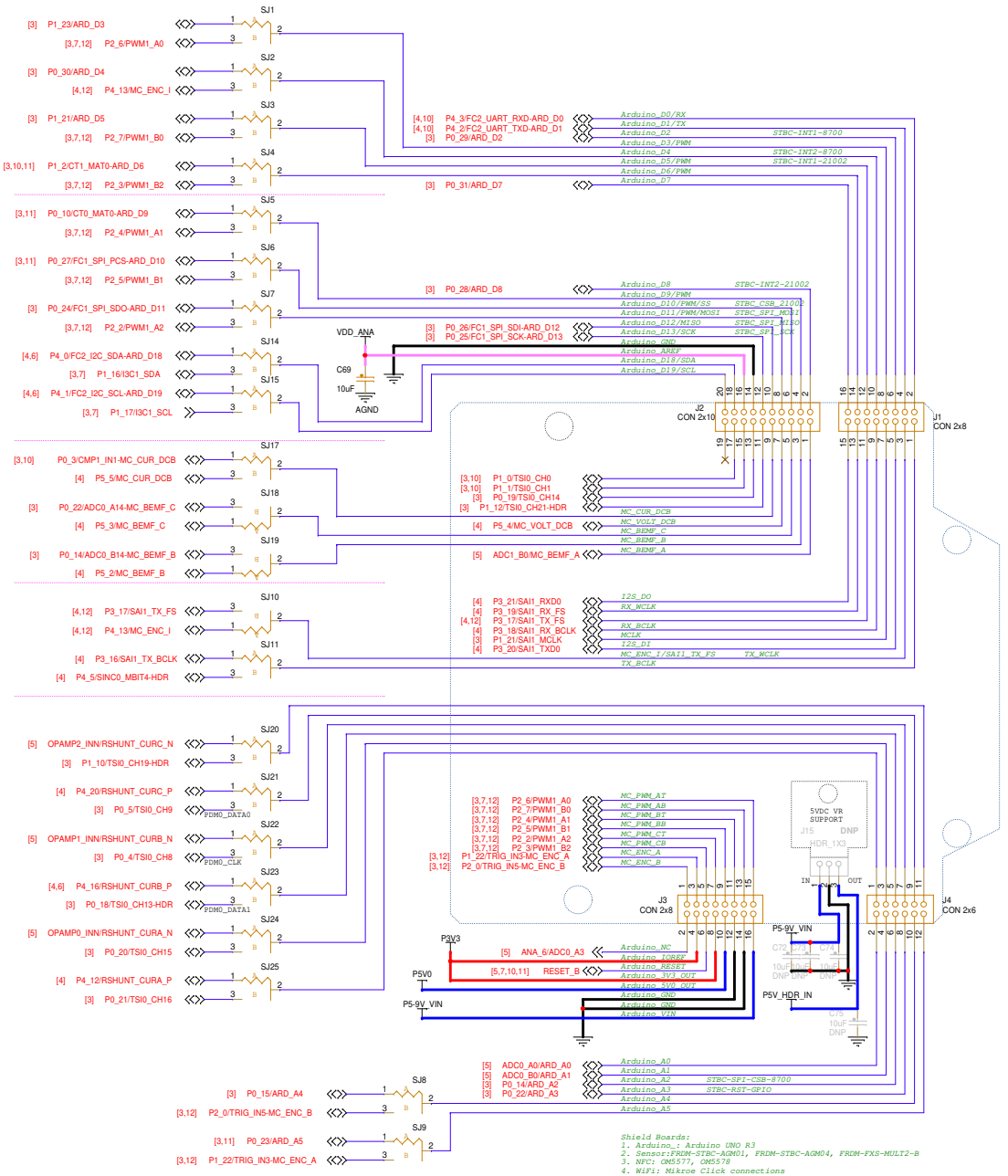
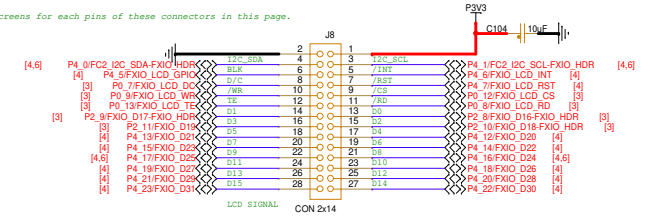
ARDUINO SHIELD COMPATIBLE HEADERS



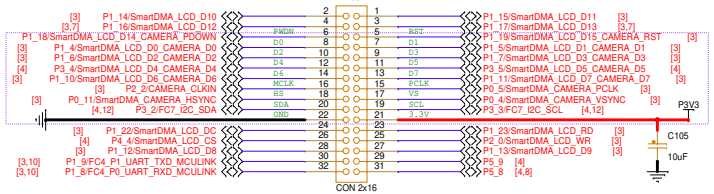
Shield Boards:
1. Arduino_: Arduino UNO R3
2. Sensor:FRDM-STBC-AGM01, FRDM-STBC-AGM04, FRDM-FXS-MULT2-B
3. NFC: OM5577, OM5578
4. WiFi: Mikroe Click connections
5. Motor control: FRDM-MC-LVBLDC, FRDM-MC-LVPMSM, Arduino-SimpleFOCShield
6. Touch: FRDM-TOUCH
7. Audio: ARD-AUDIO-DA7212

FlexIO LCD

Layout notes:
=====
Add clear silkscreens for each pins of these connectors in this page.

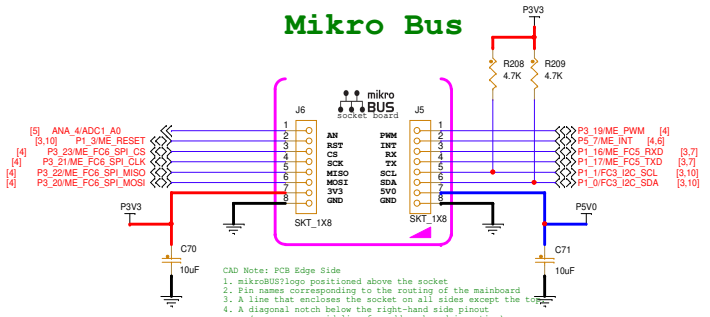


Camera



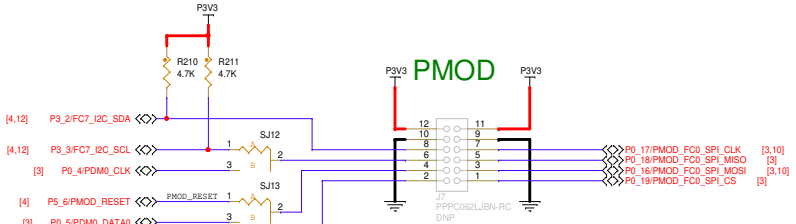
Camera Interface

Mikro Bus



CAD Note: PCB Edge Side
1. mikroBUS?logo positioned above the socket
2. Pin names corresponding to the routing of the mainboard
3. A line that encloses the socket on all sides except the top
4. A diagonal notch below the right-hand side pinout
(serves as a guideline for add-on board insertion)

PMOD



NXP

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Page Title: **HEADERS**

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APPENDIX JUMPER/DNP

REF DES	JUMPER(DEFAULT)	PAGE NAME
J24	1-2	06 USB & PWR
J18,J19	OPEN	09 MCU_LINK_USB
J22	1-2	10 MCU_LINK_DEBUG

REF DES	ASSY_OPT	PAGE NAME
C107,J25,J26,J27,J28,JP6,R17, R20,R23,R194	DNP	05 SOC_PWR
C102,D6,JP1,JP2,R28,R29,R34, R37,R38,R40,R42,R43,R45,R46, R49,R50	DNP	06 USB & PWR
J12,R51,R52,R54,U7	DNP	07 SD & QSPI & SENSOR
C50,C54,C55,C56,C57,C67,R88, R89,R90,R91,R92,R93,R95,R96, R97,R154	DNP	08 CAN PHY & ETHERNET PHY
C96,C97,C103,R118,R119,R121, R123,U12	DNP	09 MCU_LINK_USB
D14,D15,D16,R131,R136,R137, R138,R139,R140,R141,R142, R143,R178,R179	DNP	10 MCU_LINK_DEBUG
C72,C73,C74,C75,J7,J15	DNP	12 HEADERS

REF DES	SHORT(DEFAULT)	PAGE NAME
SJ16,SJ26,SJ27	1-2	03 SOC_PORT0~2
SJ1,SJ2,SJ3,SJ4,SJ5,SJ6,SJ7, SJ8,SJ9,SJ10,SJ11,SJ12,SJ13, SJ14,SJ15,SJ17,SJ18,SJ19, SJ20,SJ21,SJ22,SJ23,SJ24,SJ25	1-2	12 HEADERS

Classification: Company Internal/Proprietary

Drawing Title: FRDM-MCXN947

Page Title: APPENDIX JUMPER/DNP

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