

MIMXRT1170-EVKB

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1. Unless Otherwise Specified:

All resistors are in ohms, 1/16 Watt, 0402

All capacitors are in uF, 0402

All voltages are DC

All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

Revision History

Rev. Code	Date	By	Description
A	2022-04-11	Shawn Shi	Initial release, the main changes comparing to RT1170EVK are highlighted in Blue color of blockdiagram page.
B	2022-08-12	Shawn Shi	1.Add R/C for SD card power switch control to avoid power rush. 2.Add 3V3_GAHR1 pin to connect to JTAG_RST_01 and add jumper for config. 3.Add 3V3_GAHR1 pin to connect to JTAG_RST_01 and add jumper for config. 4.Add 3V3_GAHR1 pin to connect to JTAG_RST_01 and add jumper for config. 5.Replace R2108/R2110/R2112/R2114/ to Jumper config. 6.Add Jumper for PMIC_INTB, ENET_RST_B, WDOG1_RESET_B, WiFi_WAKE_B, 3V3, TRG_RST. 7.Change OCT Flash back to MXIC MX25UM51345GXDI00 which was reused and verified. 8.Replace R2080/R1076 to Jumper config for LPUART1. 9.Add I2C signals for 8CH DMIC.
C	2022-10-12	Shawn Shi	1.Changed Flash part number from W25Q128WSIQ to W25Q512NWEIO. 2.Add Pull up resistors for Boot mode and ISP control pins. 3.Add J116 dedicated for ADC_VREF which reserve possibility for custom power option. 4.Remove route of MCULINK TRG_RST to MCU JTAG_nTRST.
C1	2022-10-27	Shawn Shi	DNP U115 FXLS8974CFR3 as it is out of stock and change it's address.
C2	2024-12-13	Shawn Shi	Add two notes on page7 & page18 for FSGPIO errata ERR052351. No layout change.

Jumper Setting

REF DES	JUMPER(DEFAULT)	PAGE NAME
J38,J41,J67,J71,J73	1-2	03 MAIN POWER
J53,J68,J69	1-2	05 POWER DOMAIN
J14,J19,J23,J28,J49,J56,J116	1-2	06 MIMXRT1170 PART1
J97,J98,J99,J100	1-2	15 SAI
J79,J80	1-2	23 M.2 SOCKET
J102,J103,J114,J115,JP6,JP7	1-2	25 MCU-Link
J90,J91,J93	1-2	27 MISC

Switch Setting

REF DES	SWITCH(DEFAULT)	PAGE NAME
SW1	pff,off,on,off	25 BOOT

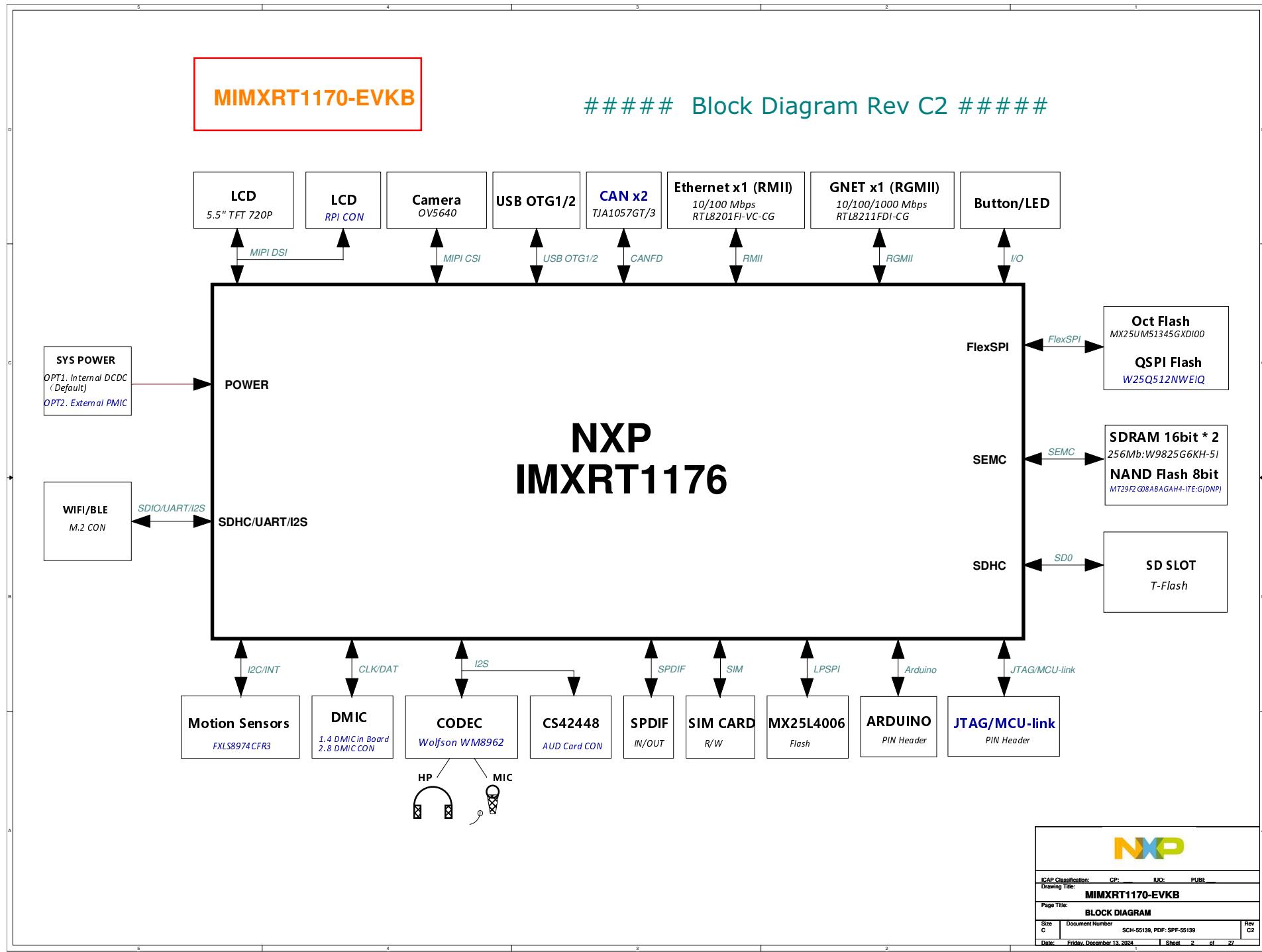
3. Device type number is for reference only. The number varies with the manufacturer.

4. Special signal usage:

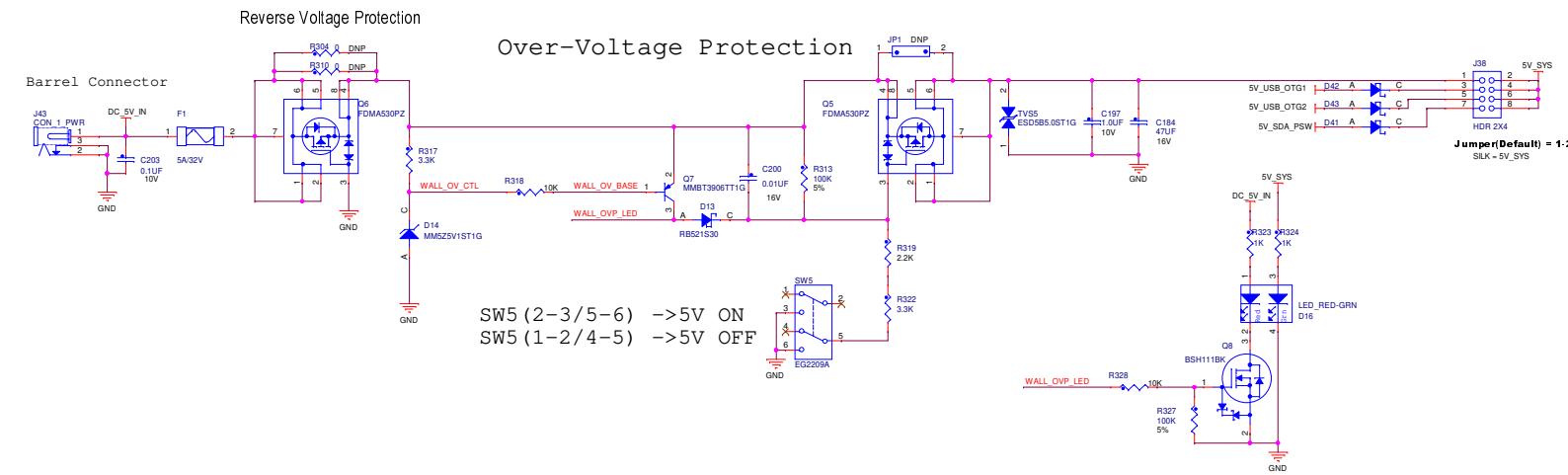
_B Denotes - Active-Low Signal
-> or [] Denotes - Vectored Signals

5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.

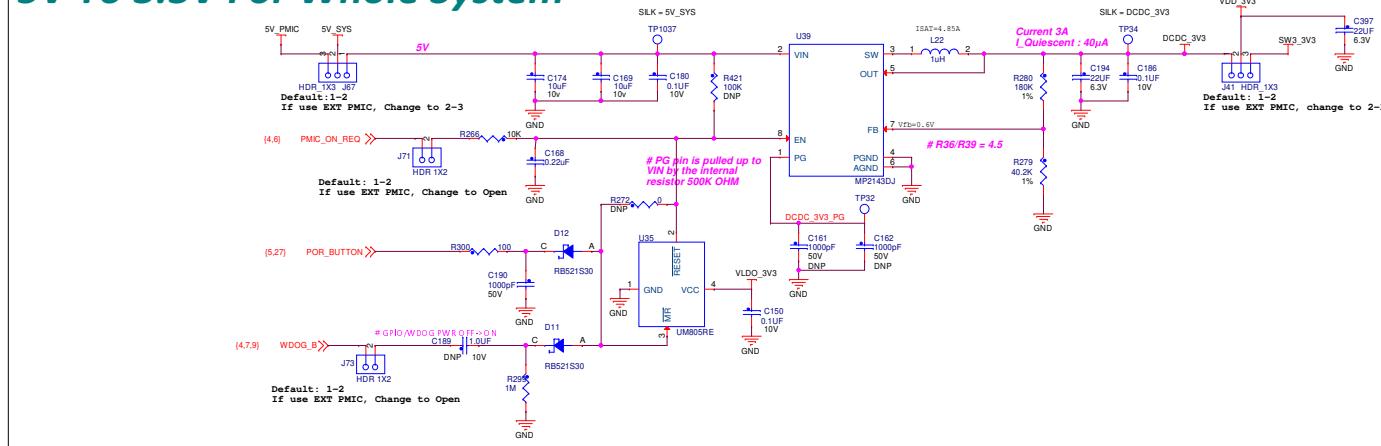
 Microcontroller Product Group 6501 William Cannon Drive West Austin, TX 78735 USA	
This document contains information proprietary to NXP and shall not be used for engineering design, procurement or manufacture in whole or in part without the express written permission of NXP Semiconductors.	
Designer: Shawn Shi	Drawing Title: MIMXRT1170-EVKB
Drawn by: Shawn Shi	Page Title: COVER
Approved: Yes	Size: C
	Document Number: SCH-55139, PDF: SPF-55139
	Rev: C2
Date: Friday, December 13, 2024	Sheet: 1 of 27



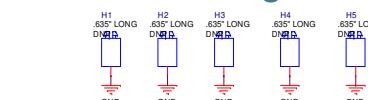
Main Power



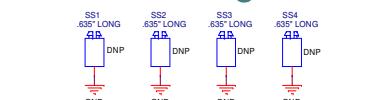
5V To 3.3V For Whole System



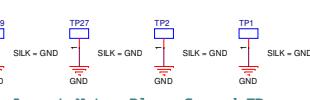
Board Mounting Holes



LCD Mounting Holes



Ground TPs



Layout Note: Place Ground TPs to assist signal measurement.



ICAP Classification: CP: IJO: PUB:

Drawing Title: **MAIN POWER**

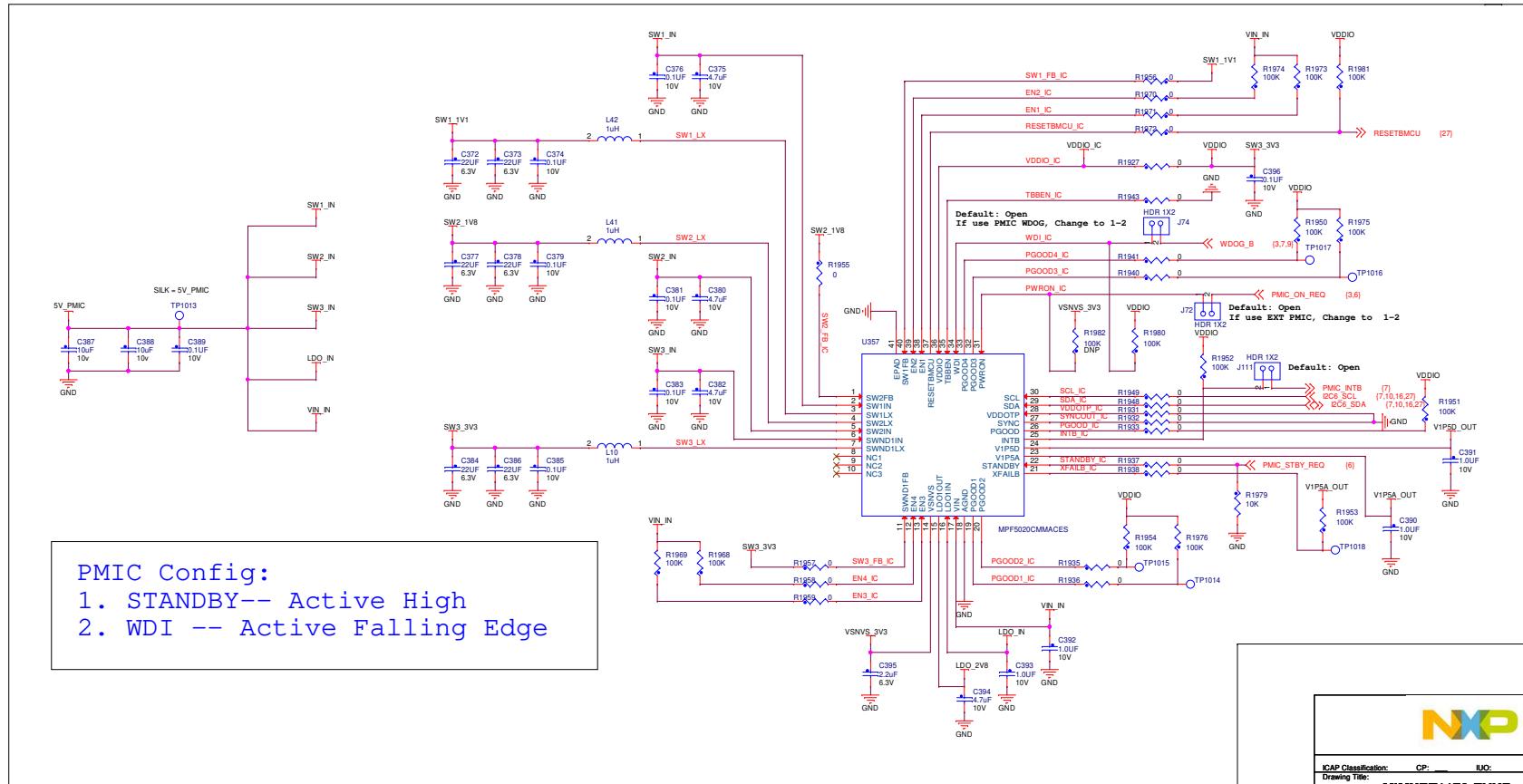
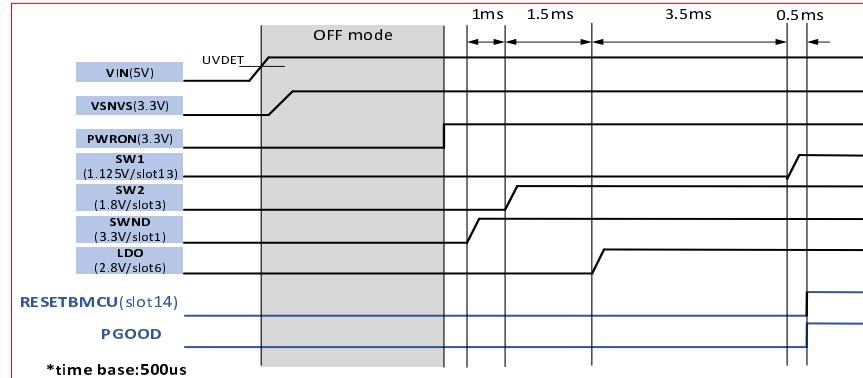
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Size Document Number: SCH-55139, PDF:SPF-55139 Rev C2

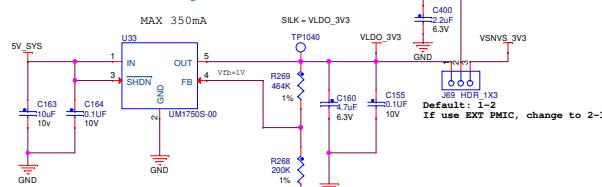
Date: Friday, December 13, 2024 Sheet 3 of 27

To use EXT PMIC, Please do
following Config Changes:

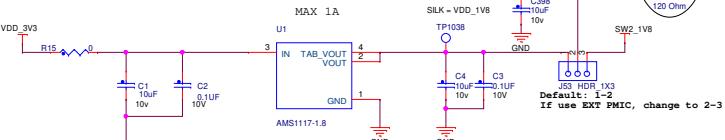
1. Change J41/J53/J67/J68/J69
Jumper Setting from 1-2 to 2-3
2. Change J71/J73/J19 Jumper
Setting from 1-2 to OPEN
3. Change J72/J74/J77 Jumper
Setting from OPEN to 1-2
4. DNP R1851,R1853
Populate R1852,R1854



3V3 LDO for SNVS

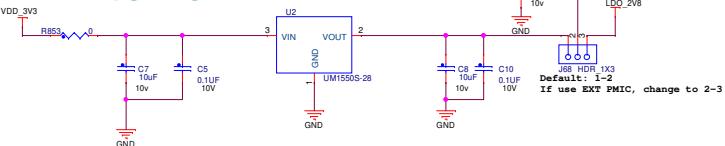


1V8 LDO

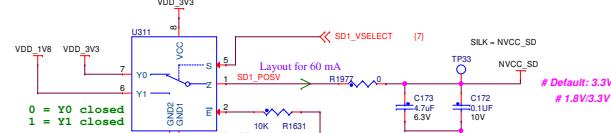


Flash VCC Option 1.8V default

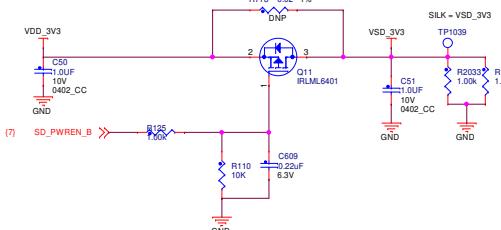
2V8 LDO



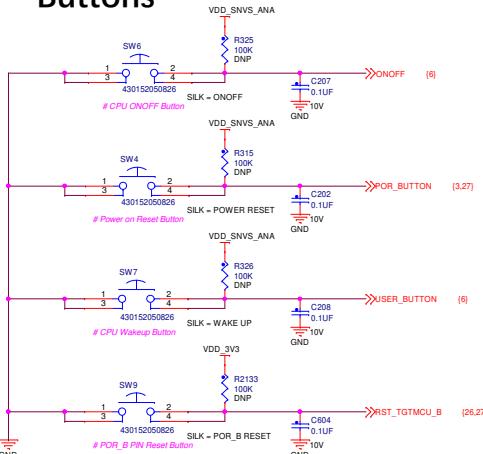
NVCC_SD <SD3.0>



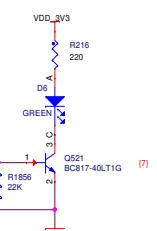
SD Card Power Switch



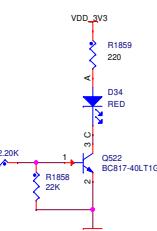
Buttons



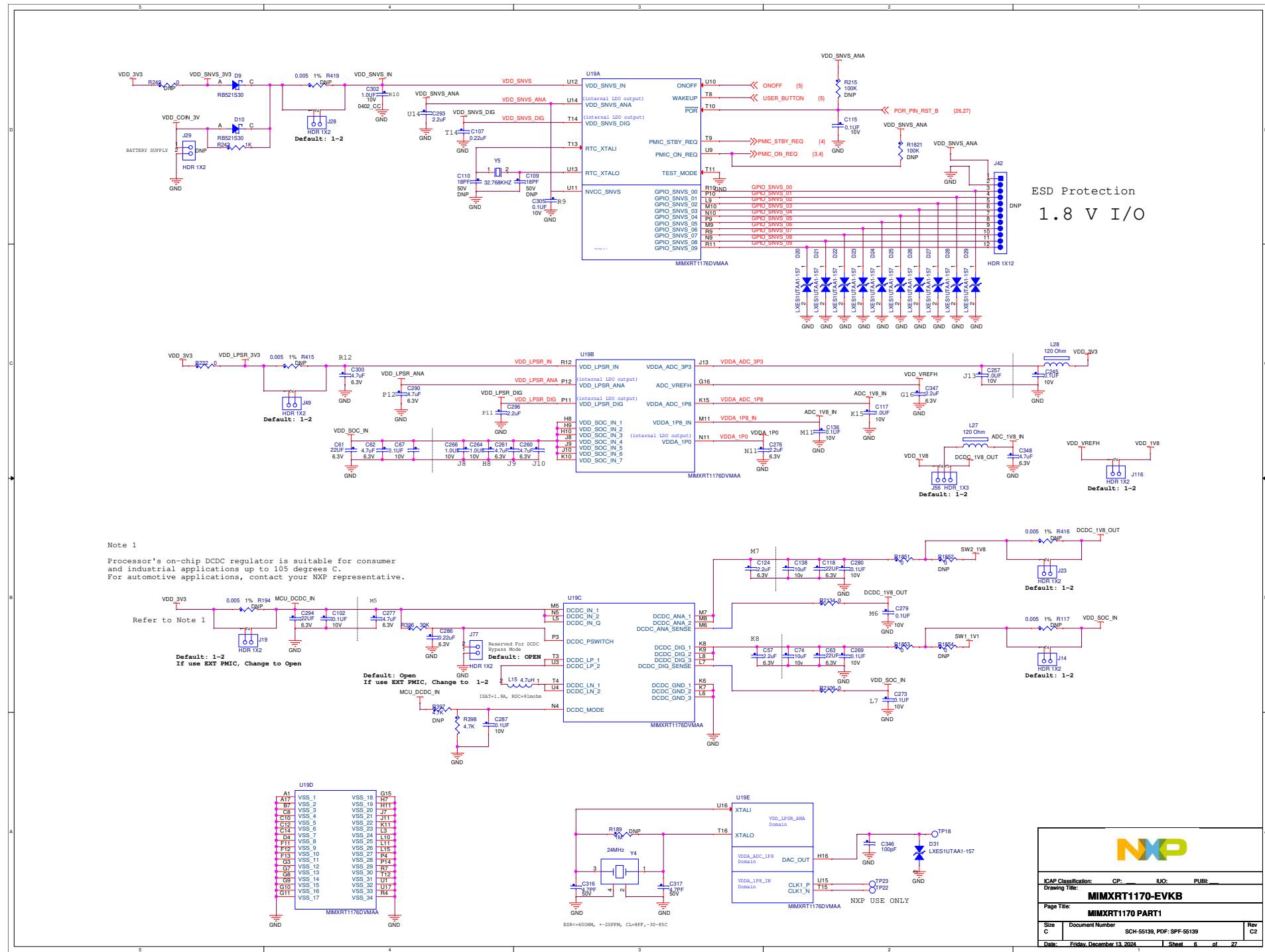
USER LED1

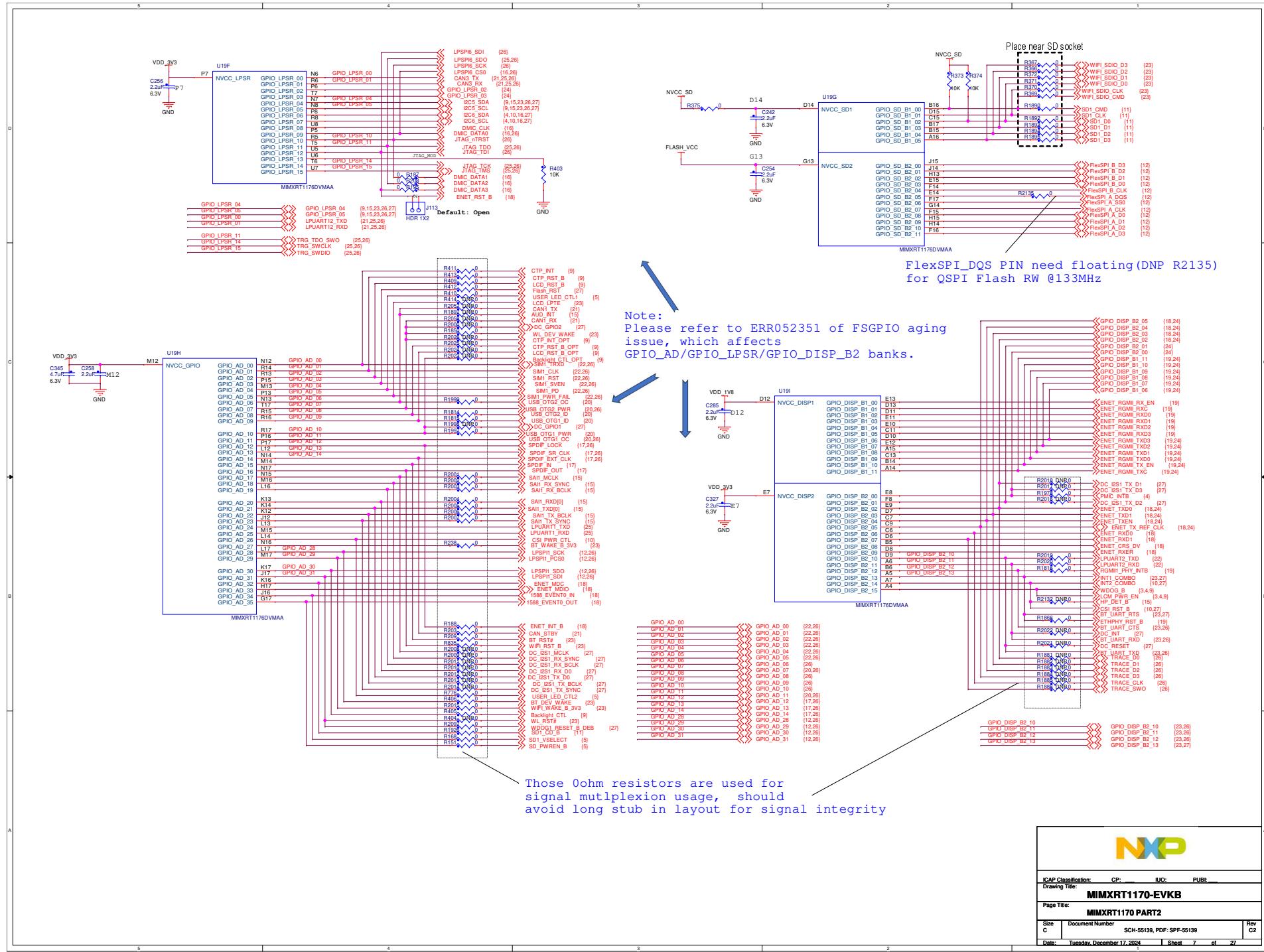


USER LED2



ICAP Classification:	CP:	IIO:	PUB:
Drawing Title: MIMXRT1170-EVKB			
Page Title: POWER DOMAIN			
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NXP

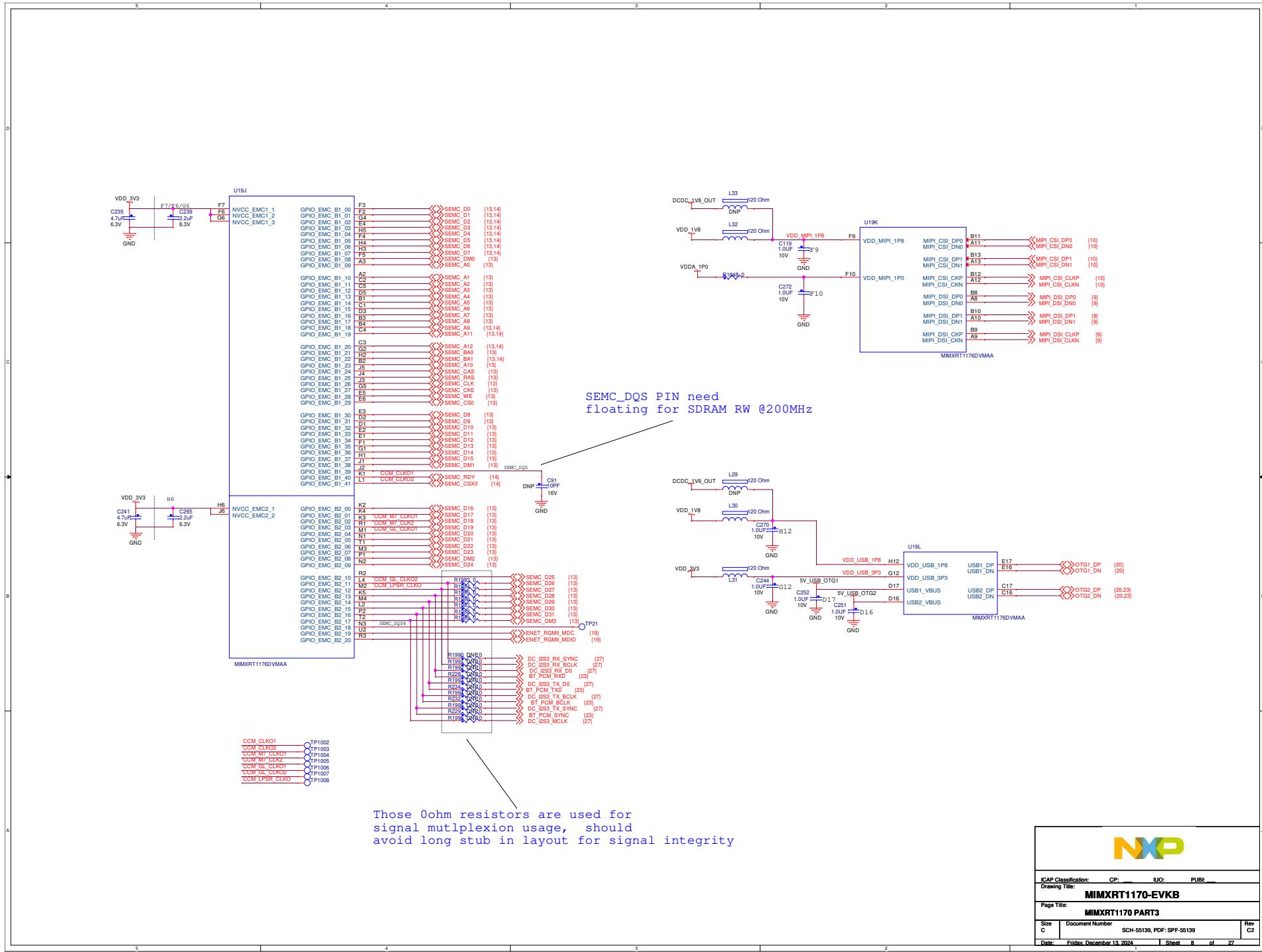
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Page Title: MIMXRT1170 PART2

Size Document Number: SCH-55139, PDF:SPF-55139 Rev: C2

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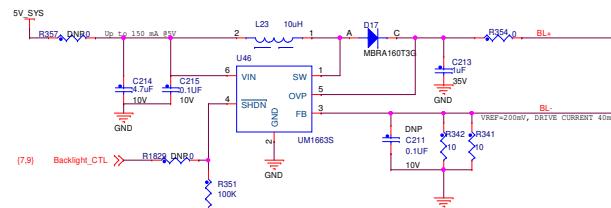
MIPi Display

RPI Display(J84)

LCD P/N From Rocktech(J48):

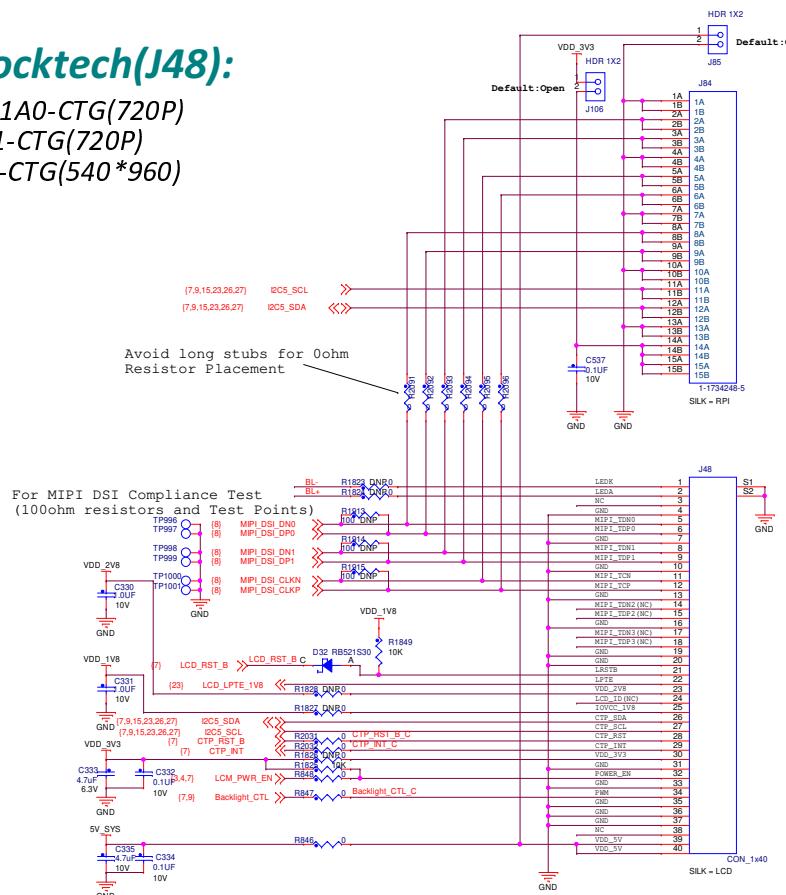
- 1.RK055MHD091A0-CTG(720P)
- 2.RK055AHD091-CTG(720P)
- 3.RK055IQH091-CTG(540 *960)

Backlight Control



Resereved for use case which need both LCD and Motor Control

- (7) CTP_RST_B_OPT >> R2028 DNR0 CTP_RST_B_C
- (7) CTP_INT_OPT << R2030 DNR0 CTP_INT_C
- (7) LCD_RST_B_OPT >> R2021 DNR0 LCD_RST_B
- (7) Backlight_CTL_OPT >> R2027 DNR0 Backlight_CTL_C



I_CS_C ADD: 0X28/0X29 or 0XBA/0XBB



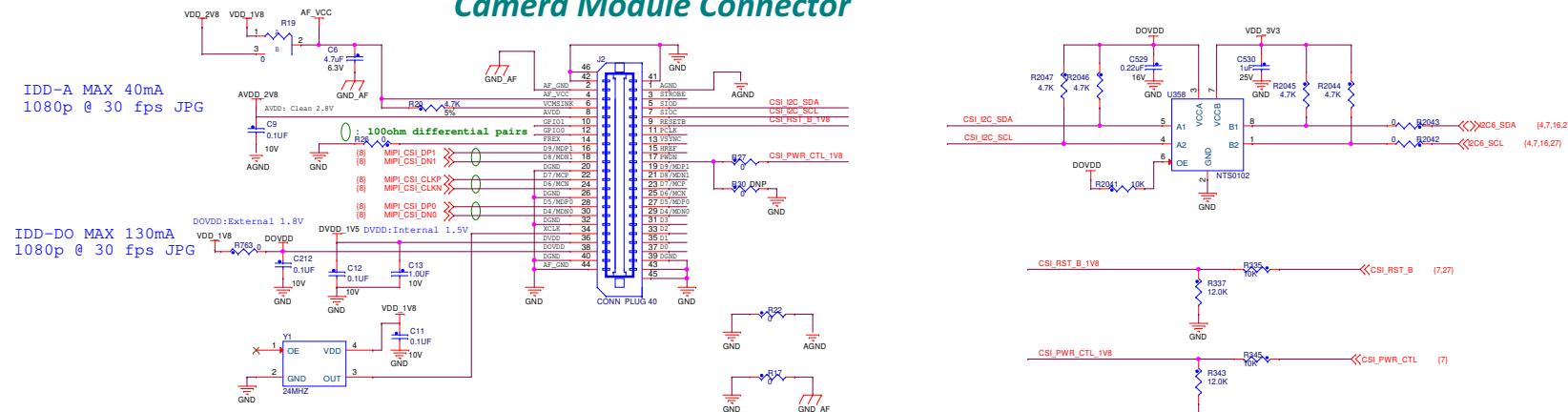
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Page Title: MIPI LCD			
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MIPi CSI

Wuxi A-KERR Science & Technology

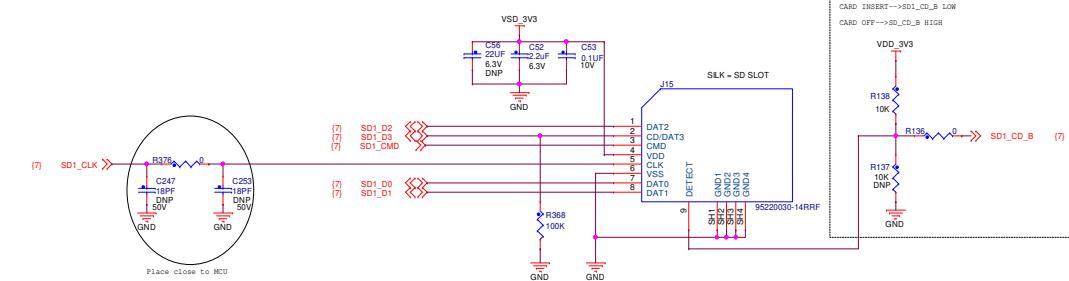
Camera# OV5640

Camera Module Connector



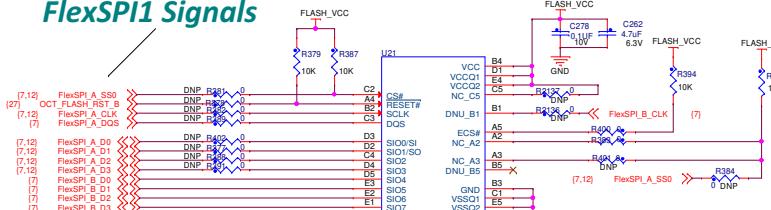
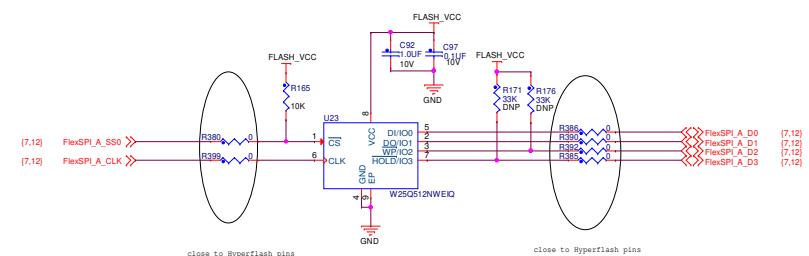
NXP		
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Drawing Title:	MIMXRT1170-EVKB	
Page Title:	MIPi CAMERA	
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SD Card Socket

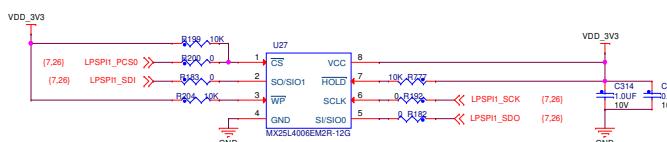


SERIAL FLASH**QSPI Flash as default(Through FlexSPI1)**

OPTION1: USE QSPI FLASH(Mount R380/R399/ R386/R390/R392/R385, DNP R381/R378/R382/R389/R402/R377/R388/R391)
 OPTION2: USE Octal Flash (Mount R381/R378/R382/R389/R402/R377/R388/R391, DNP R380/R399/R386/R390/R392/R385)

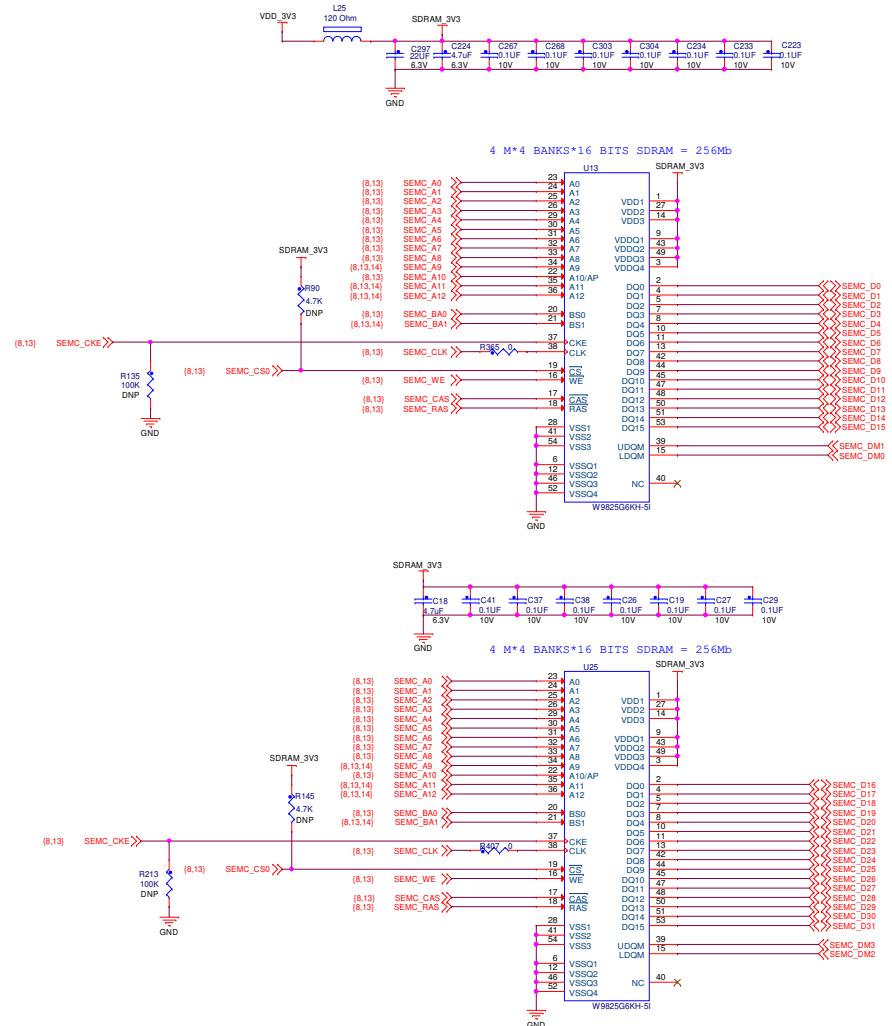
FlexSPI1 Signals**1V8 Octal Flash****1V8 QSPI Flash**

Share the same package with S27KS0641DPBHI023
 (if HYPERRAM is used, DNP R383/R400, Mount R401/R384)

LPSPI Flash(Secondary Boot)

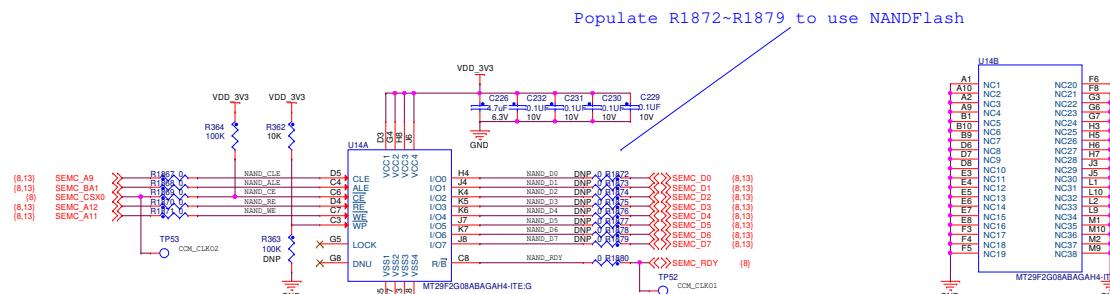
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Drawing Title: MIMXRT1170-EVKB			
Page Title: SERIAL FLASH			
Size	Document Number		Rev
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SDRAM

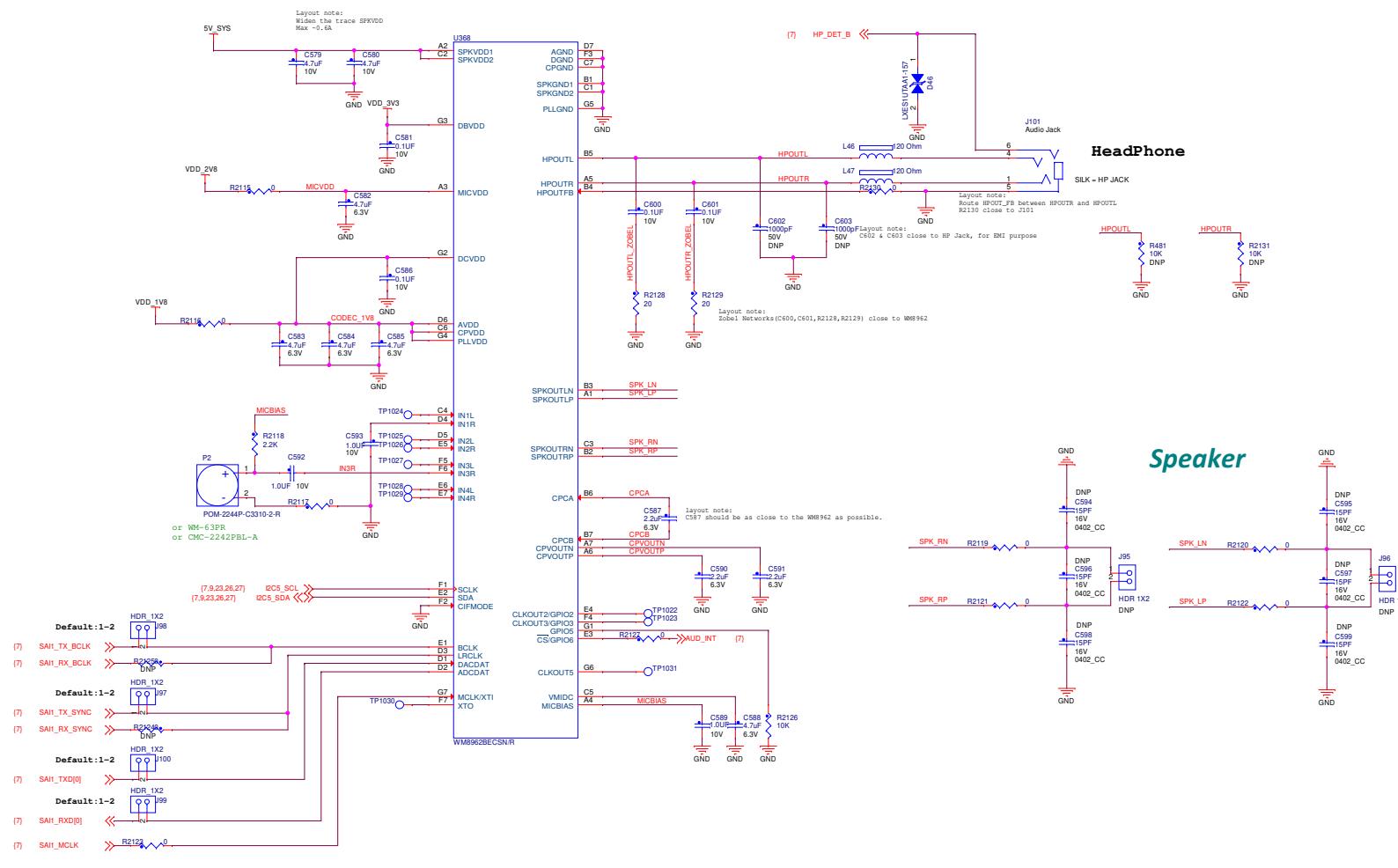


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Page Title: SDRAM			
Size	Document Number	Rev	
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NAND FLASH



Audio Codec



ICAP Classification: GP: UG:

Drawing Title:

MIMXRT1170-EVKB

Page Title: **SAI**

5.1

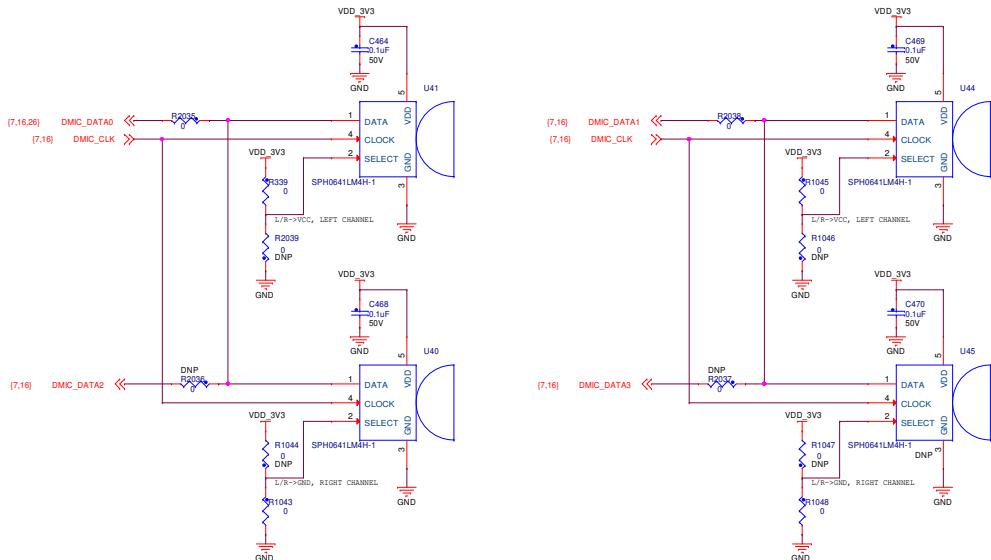
C Document Number
C SCH-55139, PDF: SPF-5

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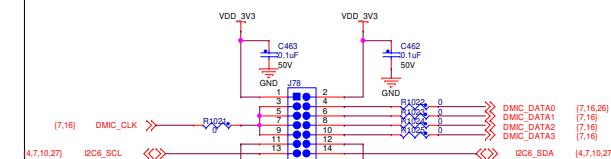
1

Board DMIC

Notes: Placing the mic under PCB which is opening to face the user

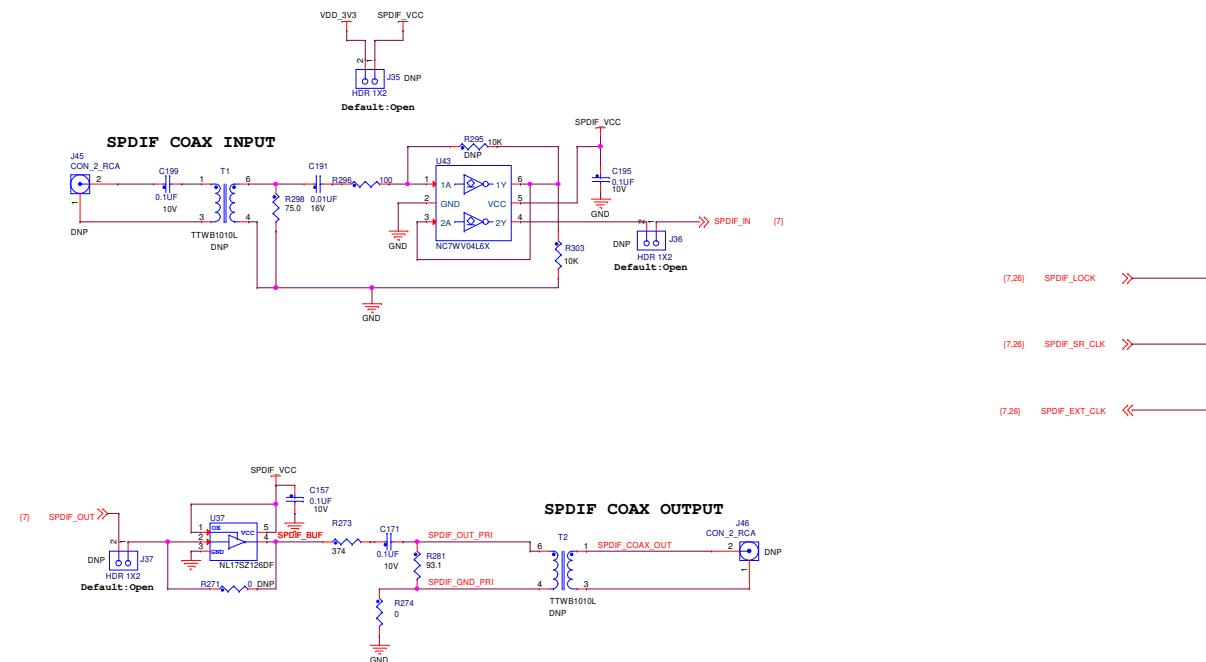


8CH-DMIC Extension



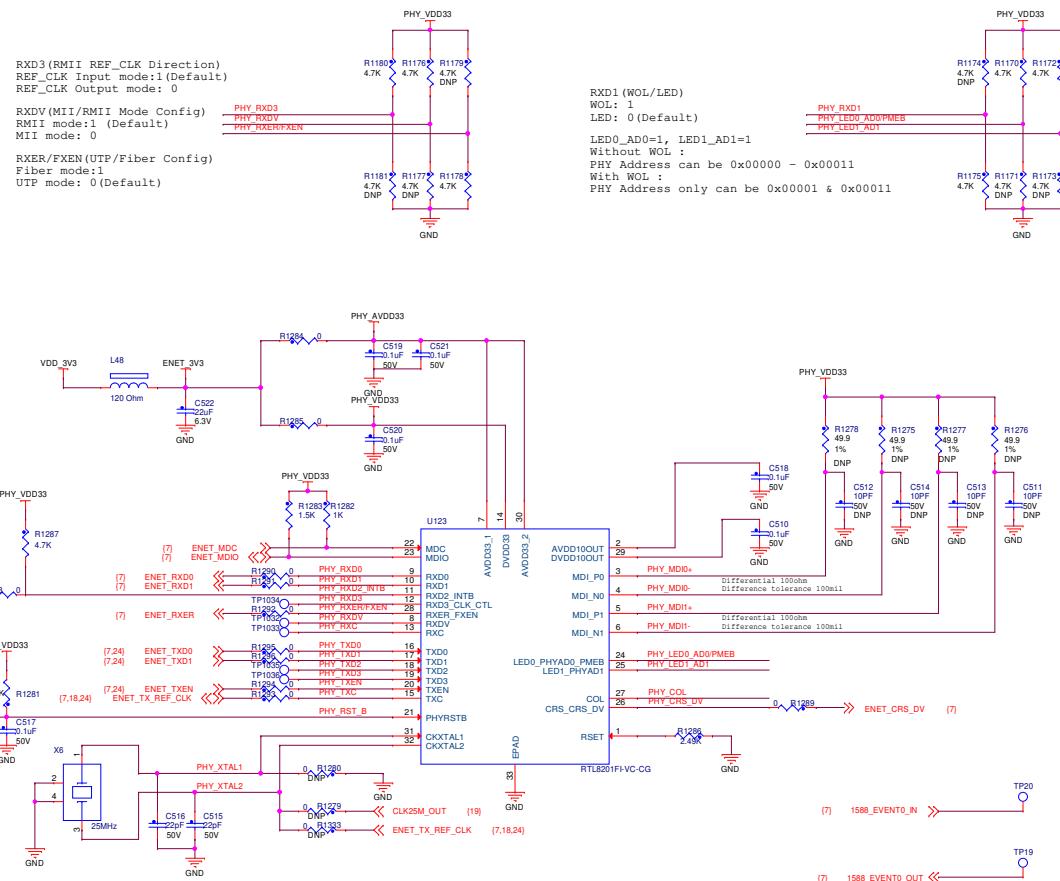
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Drawing Title:		PUB:
Page Title:		
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SPDIF Interface

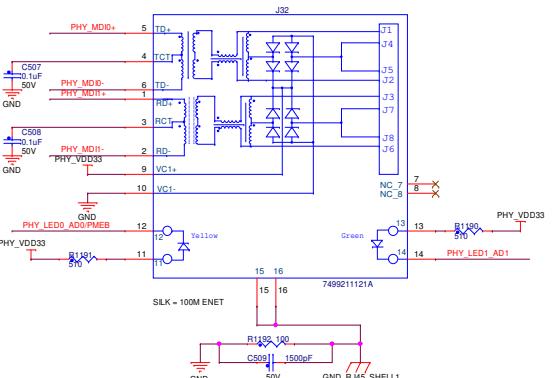
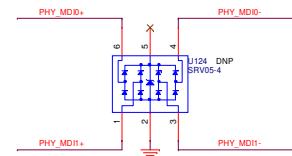


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Page Title:	SPDIF	
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C	SCH-55139, PDF:SPF-55139	C2
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10/100Mbps Ethernet Circuit



ESD PROTECTION



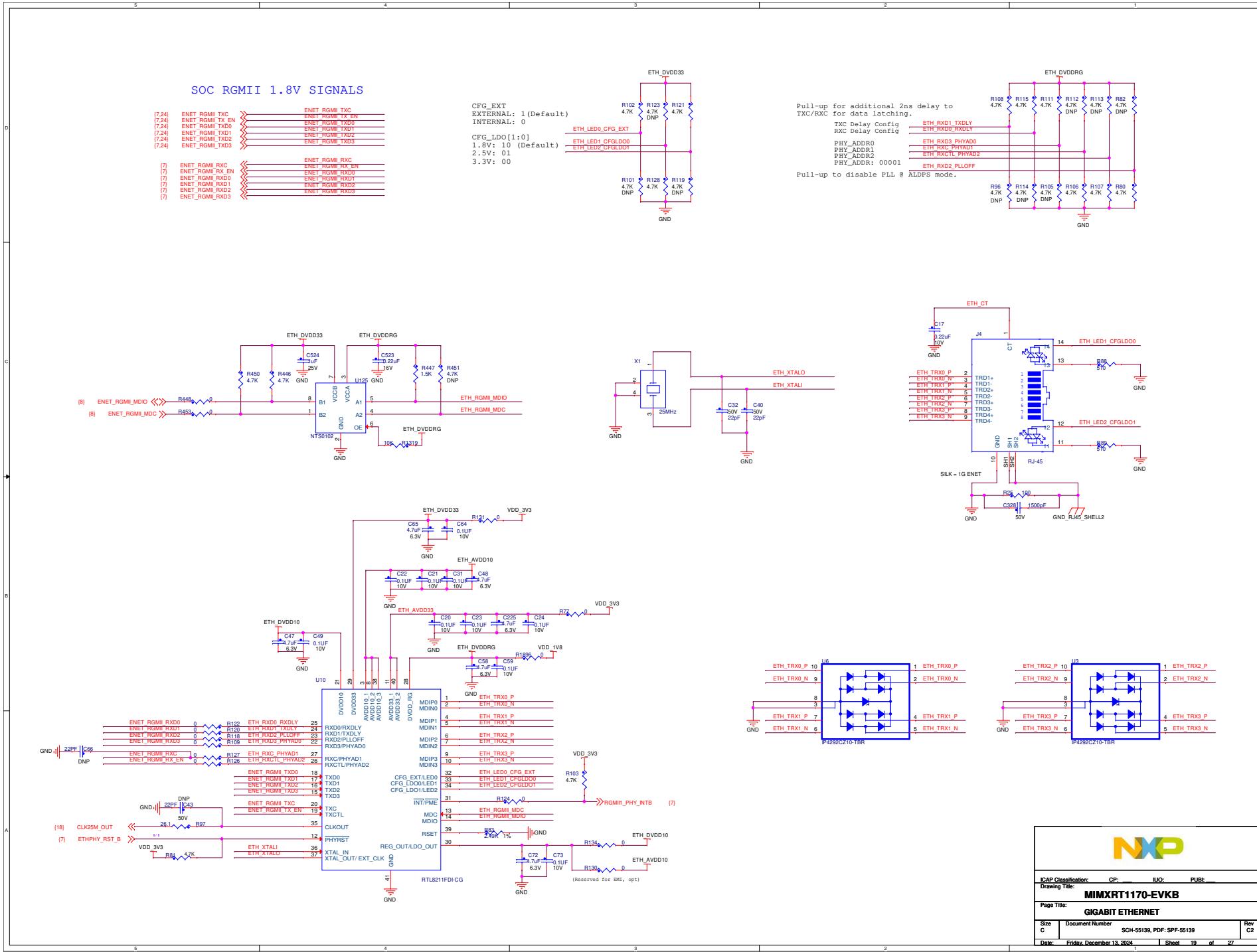
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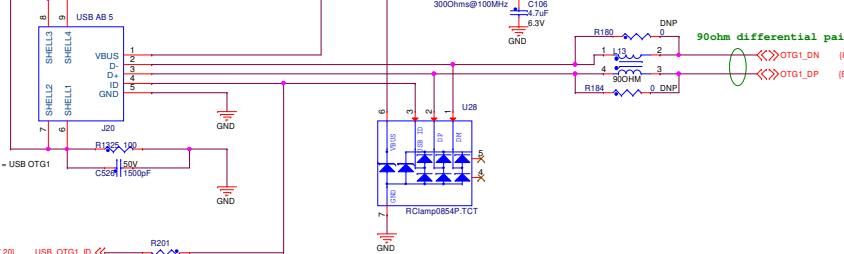
Page Title: 10M/100M ETHERNET

Size Document Number: C SCH-55139, PDF:SPF-55139 Rev: C2

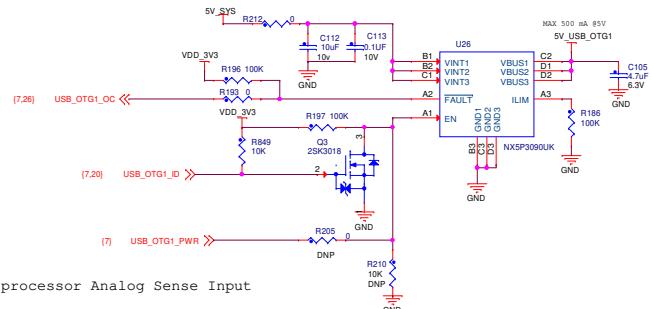
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USB OTG1



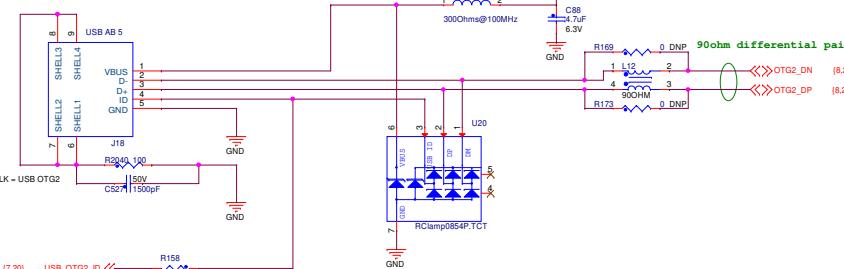
USB Power



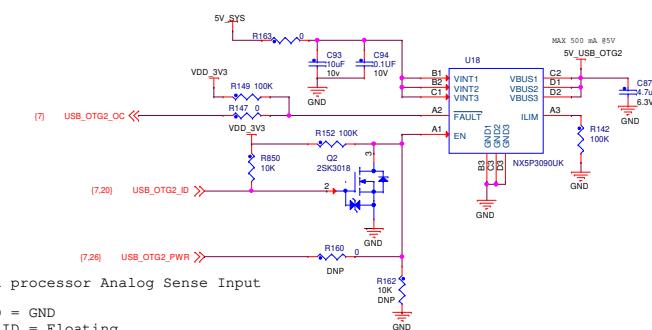
USB ID is a processor Analog Sense Input

Host --> ID = GND
Device --> ID = Floating

USB OTG2



USB Power



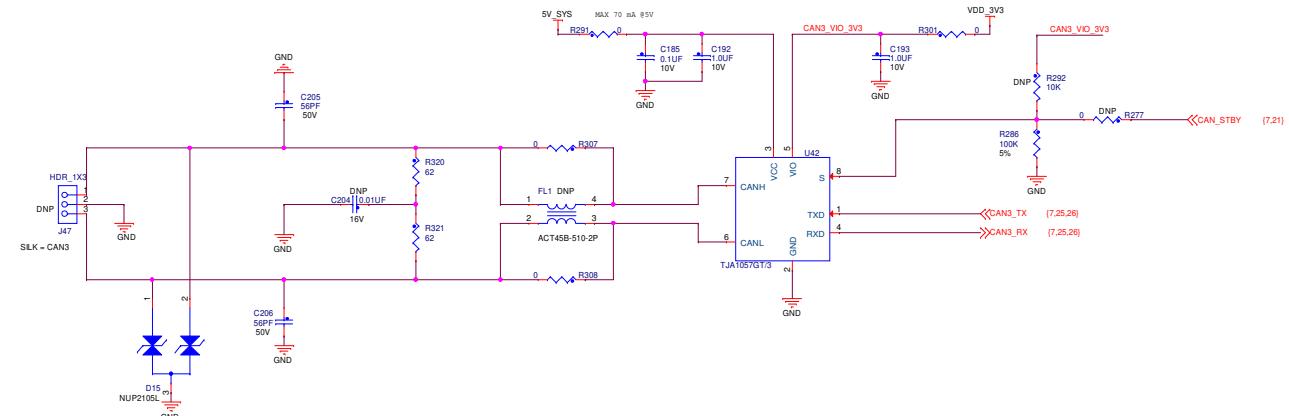
USB ID is a processor Analog Sense Input

Host --> ID = GND
Device --> ID = Floating

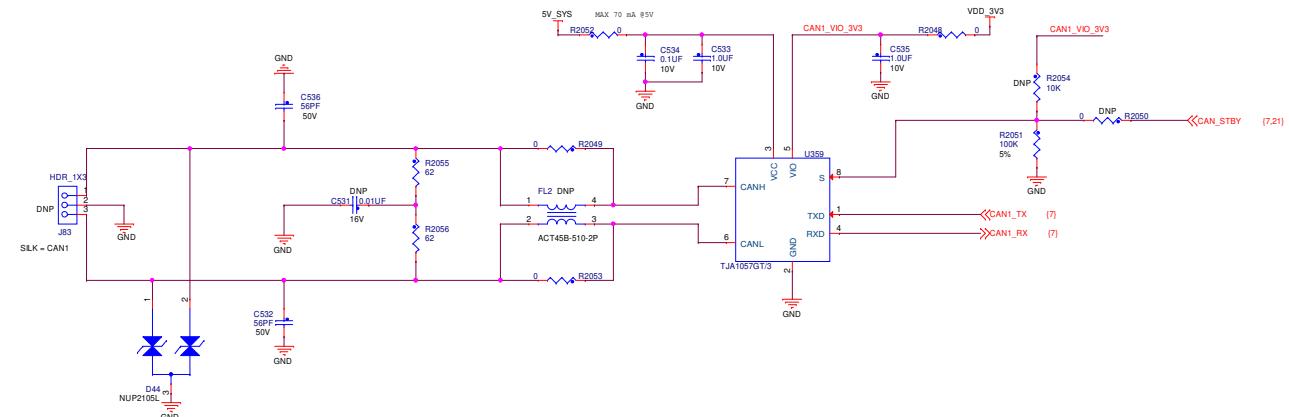


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Drawing Title:			
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Page Title:			
Size	Document Number		Rev
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CAN3 Bus

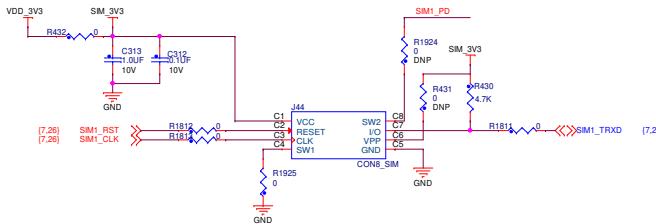


CAN1 Bus

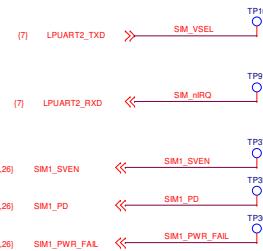
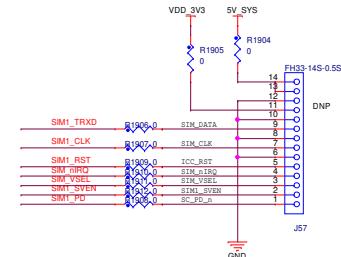


SIM CARD

If using detection function:
Populate R1924, DNP R410

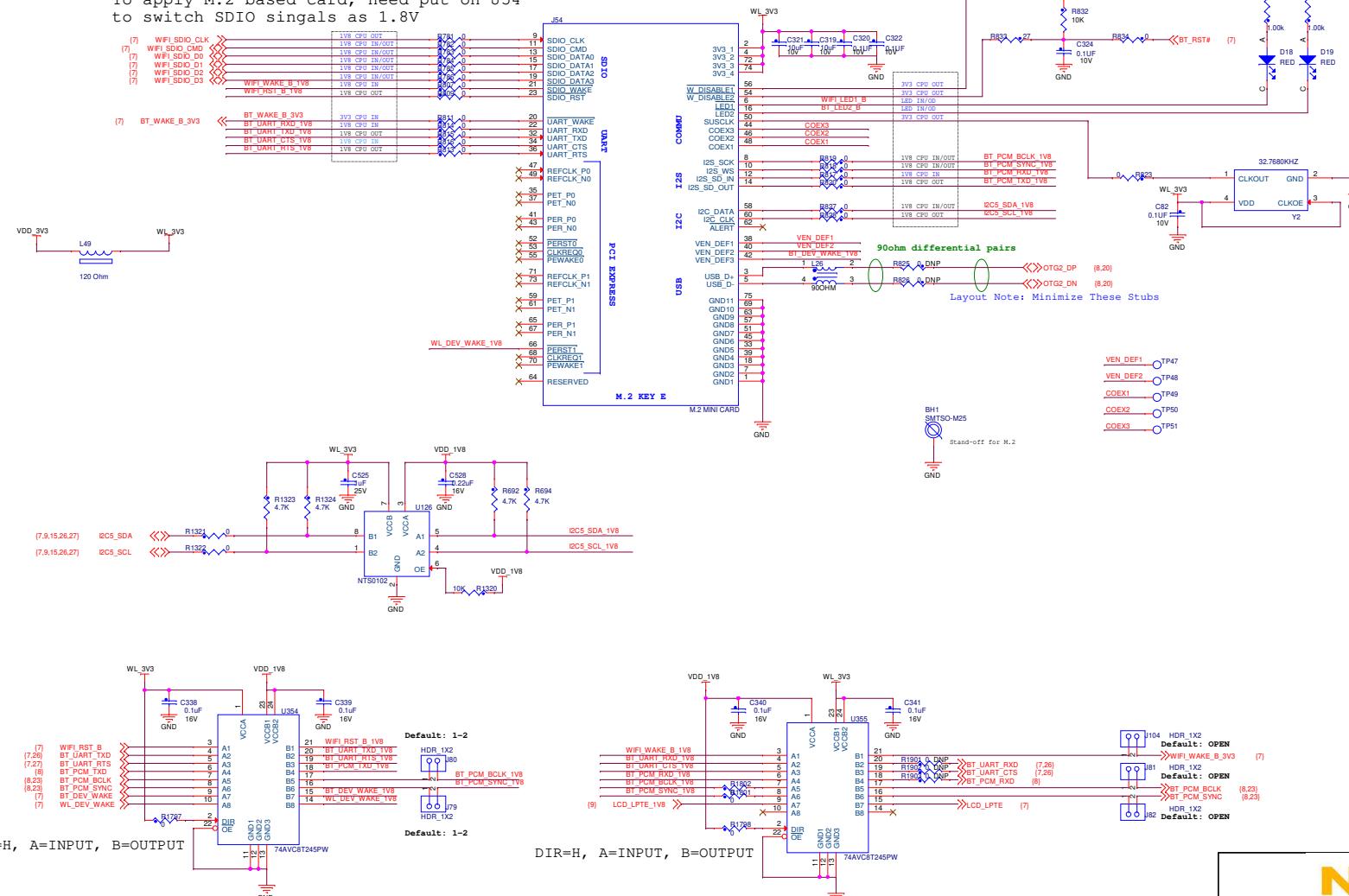


Connector reserved for EMV L1 test



Compatible with 1DX M.2

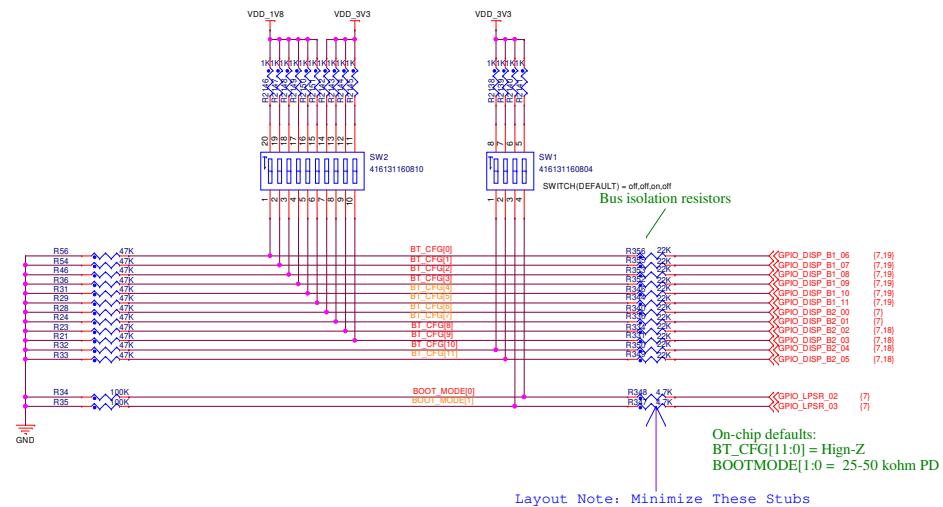
To apply M.2 based card, need put on J54
to switch SDIO singals as 1.8V



Boot Configuration

TYPE	BOOT_CFG[11]	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
FlexSPI1 - Serial NOR	FLEXSPI_INSTANCE 0 - FLEXSPI1 1 - FLEXSPI2	xSPI_FLASH_TYPE 0 - Boot with default 0x03 Read Enabled / 1 - Reserved 2 - HyperFLASH 1V8 / 3 - HyperFLASH 3V0 4 - MXIC Octal Read / 5 - Micron Octal Read			0	0	0	0	FLASH_PROBE_TYPE 0 - QuadSPI NOR 1 - MXIC Octal 2 - Micron Octal 3 - Adesto Octal	ENCRYPT_XIP_EN	FLASH_AUTO_PROBE_EN	
SD Card	Reserved	Reserved	Bus Width: 0 - 1-bit 1 - 4-bit	Reserved	0	1	SD/SDXC Speed: 00 - Normal/SDR12 01 - High/SDR25 10 - SDR50 11 - SDR104	SD Power Cycle Enable: '0' - No power cycle '1' - Enabled via USDHC_RST pad	SD Loopback Clock Source Sel: (for SDR50 and SDR104 only) '0' - through SD '1' - direct	Port Select: 0 - eSDHC1 1 - eSDHC2	Reserved	
SEMC (NAND)	Reserved	SEMC Access Command: 0 - IPG 1 - AXI	SEMC EDO Mode: 0 - EDO Mode 1 - Non-EDO mode	ONFI compliant: 0 - Yes, ONFI 1 - No, spec	0	0	1	BOOT_SEARCH_STRIDE: Search stride for FCB and DBBT Search strides in terms of page 0000 - 64 other: Value = 2^(BOOT_SEARCH_STRIDE)	BOOT_SEARCH_COUNT: 0 - 1 1 - 2			

External Boot Switch



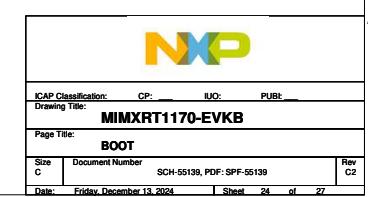
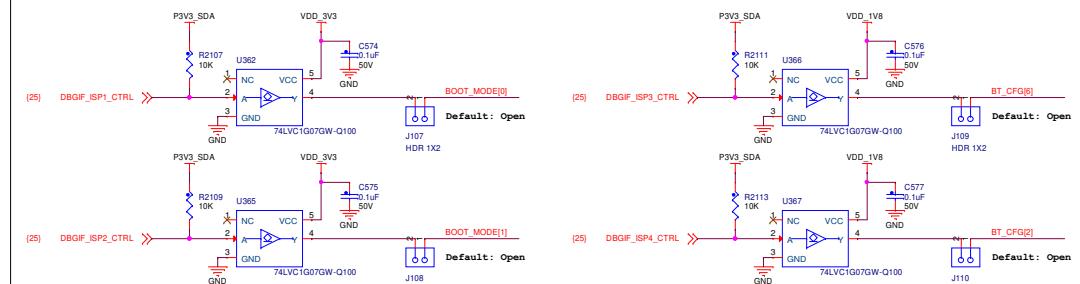
Boot MODE pin settings

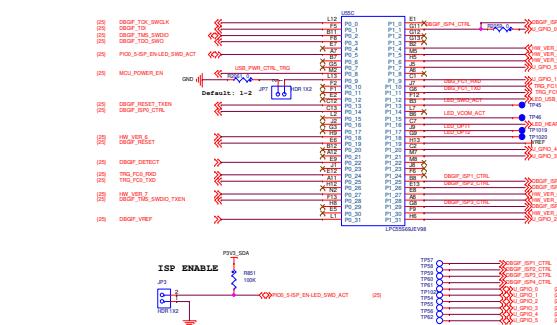
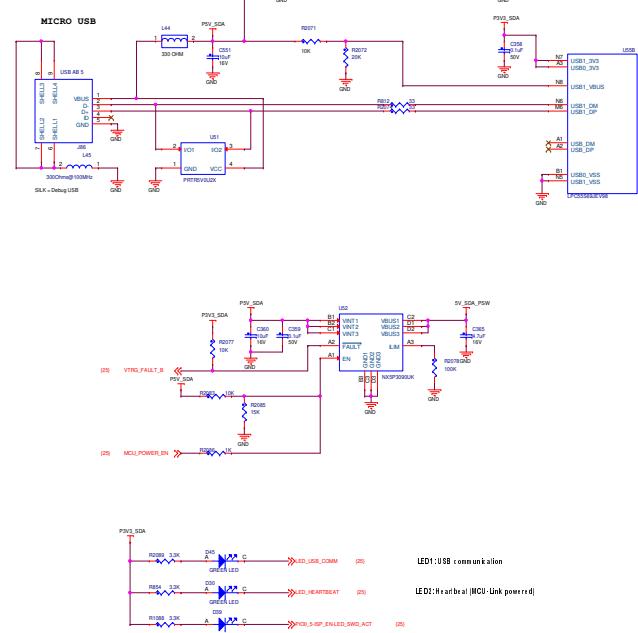
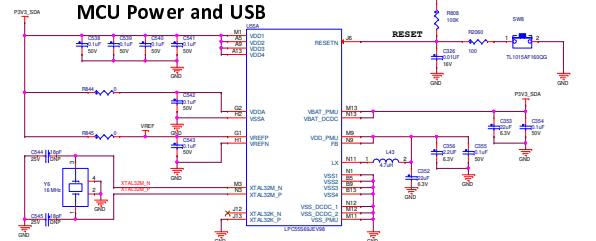
BOOT_MODE[1:0]	Boot Type
00	Boot From Fuses
01	Serial Downloader
10	Internal Boot
11	Reserved

Boot Switch settings

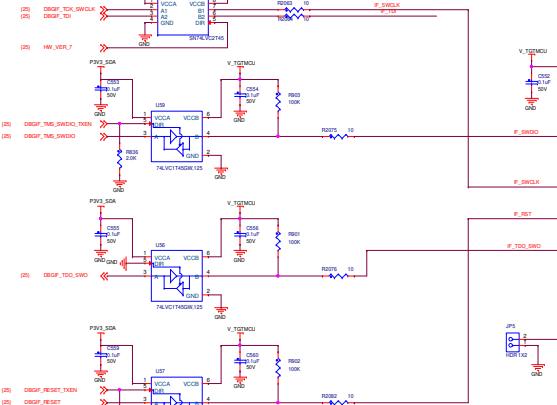
DEVICE	SW1	SW2
SDP MODE	0.0.0.1	0.0.0.0.0.0.0.0.0.0
OSPI FLASH	0.0.1.0	0.0.0.0.0.0.0.0.0.0
OCTAL FLASH	0.0.1.0	0.0.1.0.0.0.0.0.0.0
NAND FLASH	0.0.1.0	0.0.0.0.0.1.0.0.0.0
SD CARD	0.0.1.0	0.0.0.0.0.0.1.0.0.0

ISP Control for Factory Automation

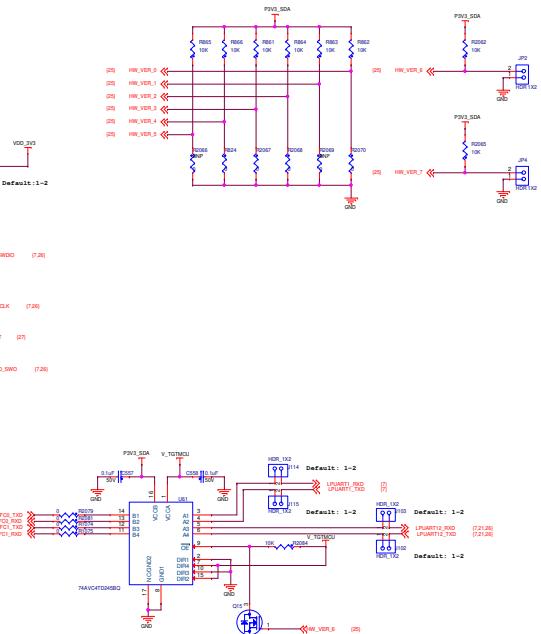
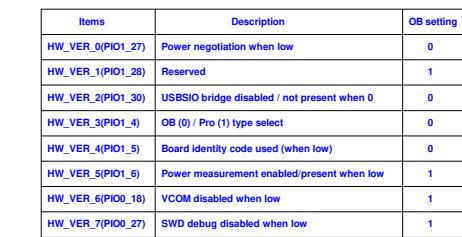




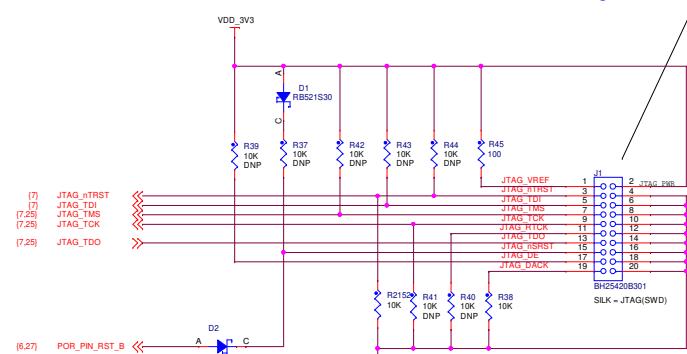
Debug Interface



JP5 (OPEN,Default) ->RT Debugger
JP5 (SHORT) ->External J87 Debugg

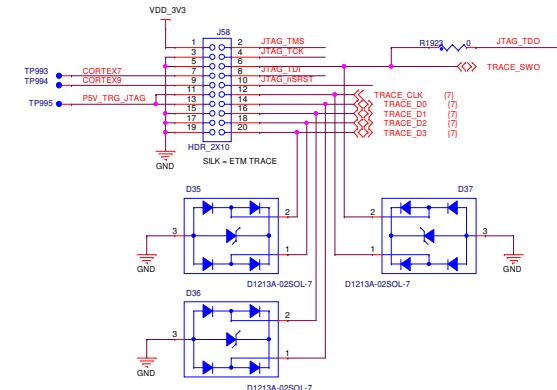


JTAG(SWD)

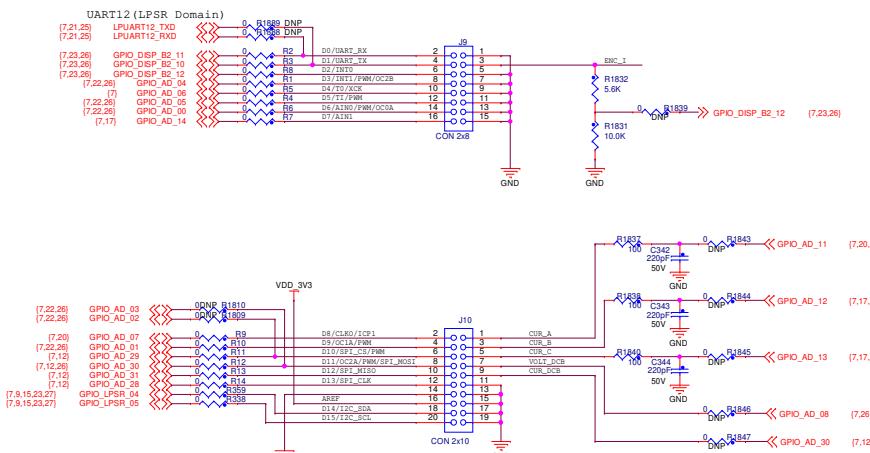


1. SWD debug is enabled by default
2. Board rework are needed to support JTAG debug

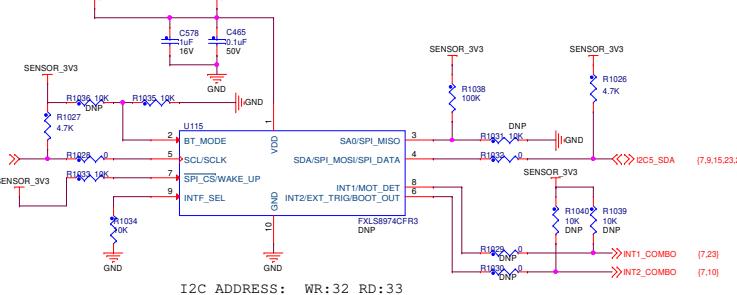
Cortex Debug + ETM



Arduino&Moto Control Interface

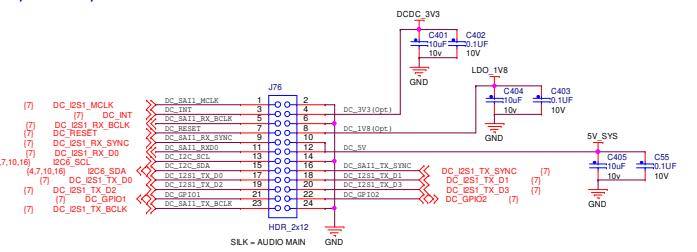


Accelerometer



AUDIO MAIN CONN

If Audio main conn (J76) is used, please mount resistors below, R2008,R2022,R2011,R2021,R2009,R2010,R2012,R2016,R1998,R2013,R2014, R2018,R2017,R2000

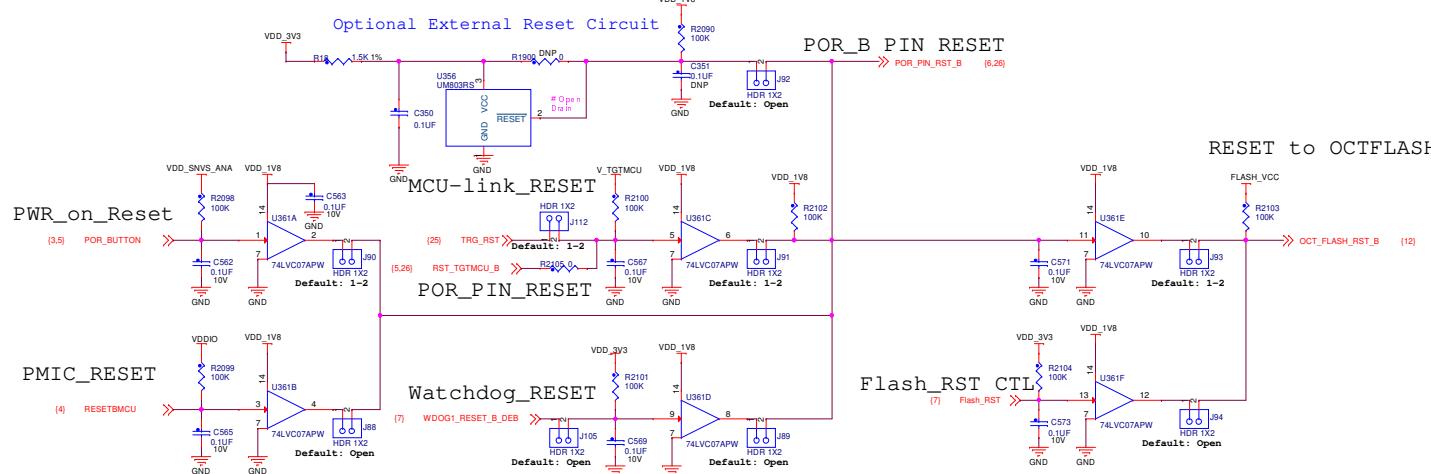


AUDIO AUX CONN

If Audio aux conn (J75) is used, please mount resistors below, R1996,R1994,R1991,R1990,R1992,R1993



RESET LOGIC



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