

IMXRT106F - Connected Module

TABLE OF CONTENTS:

Page No.	TITLE
01	COVER PAGE
02	BLOCK DIAGRAM
03	POWER SECTION
04	i.MXRT SECTION
05	MEMORY SECTION
06	WI-FI & BT/BLE SECTION
07	BLE / IEEE802.15.4 SECTION
08	BOOT & DEBUG INTERFACE
09	B2B CONNECTOR

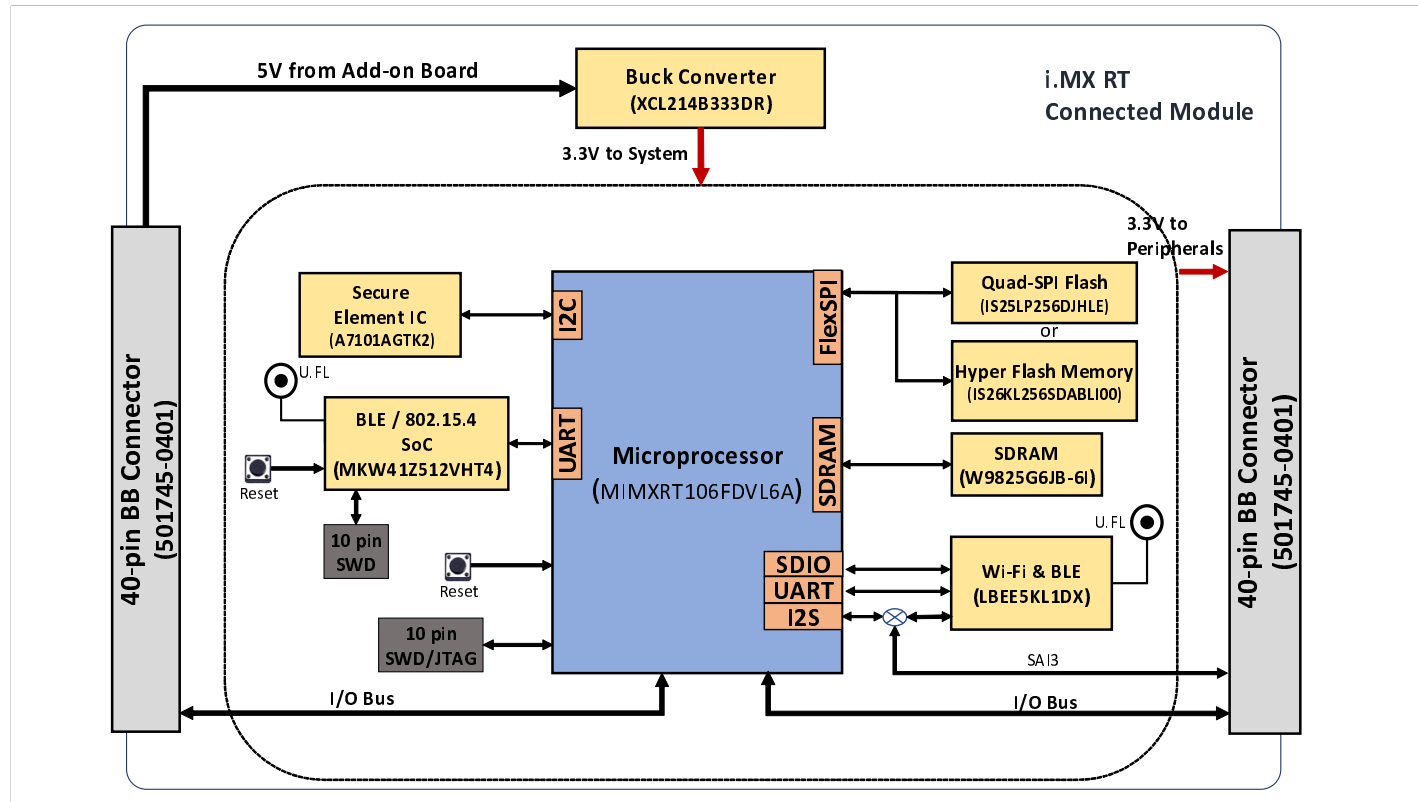
REVISION HISTORY

REVISION	DESCRIPTION OF CHANGE	DATE	Author	Reviewer
D3	Initial production version	23-Oct-19	-	-



EAP Classification: CP:		IUC: PUB:	
Drawing Title: i.MXRT Connected Module			
Page Title: Cover Page			
Size C	Document Number SCH-SOL0001, PDF-SPP- SOL0001	Rev D3	
Date: Thursday, November 05, 2020		Sheet 1 of 9	

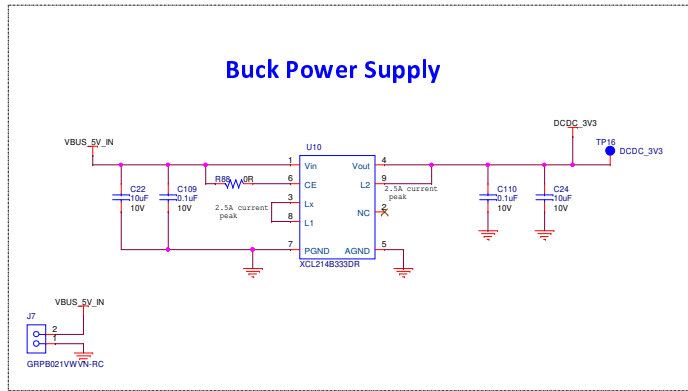
IMXRT106F - Connected Module Block Diagram



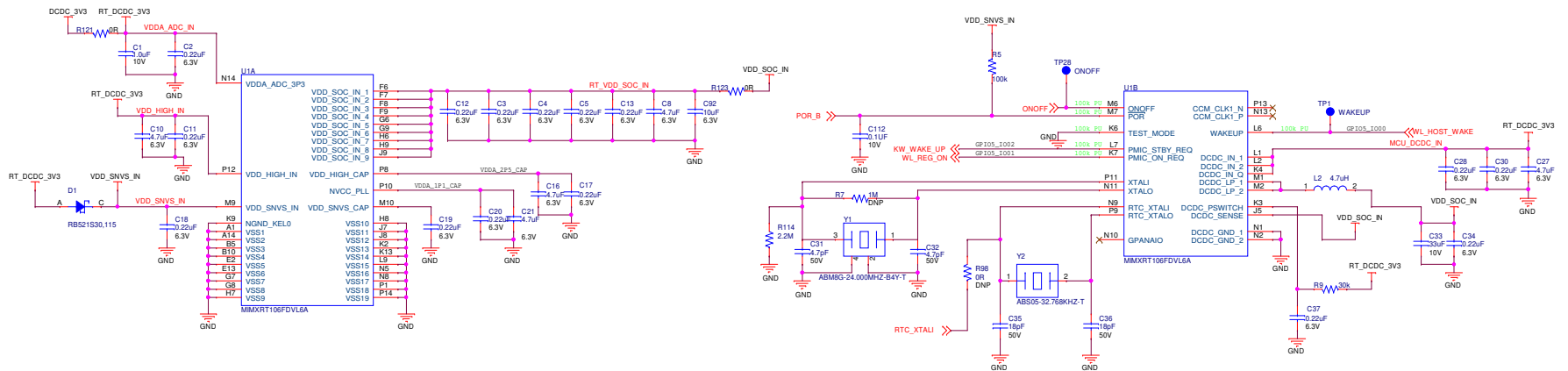
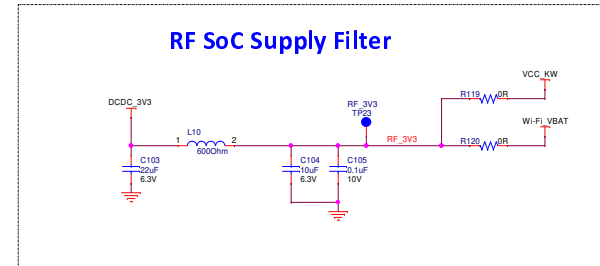
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Drawing Title: i.MXRT Connected Module			
Page Title: Block Diagram			
Size C	Document Number SCH-SOL0001, PDF-SPP-SOL0001	Rev 03	
Date: Tuesday, December 03, 2019	Sheet 2 of 9		

iMXRT Connected Module Power Section

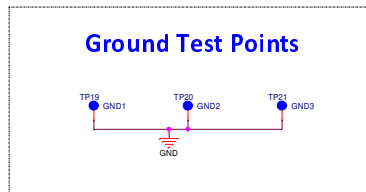
Buck Power Supply



RF SoC Supply Filter

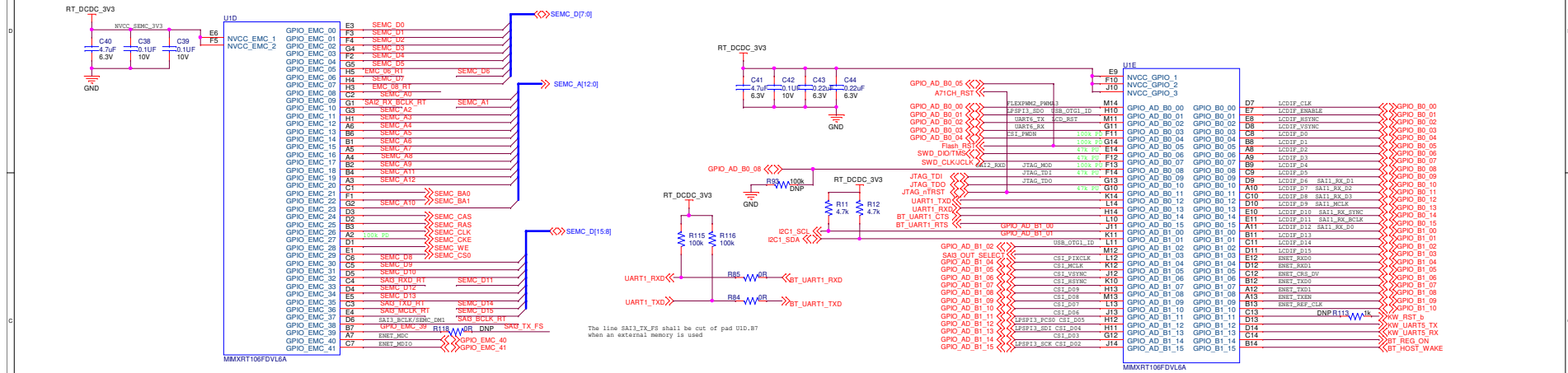


Ground Test Points

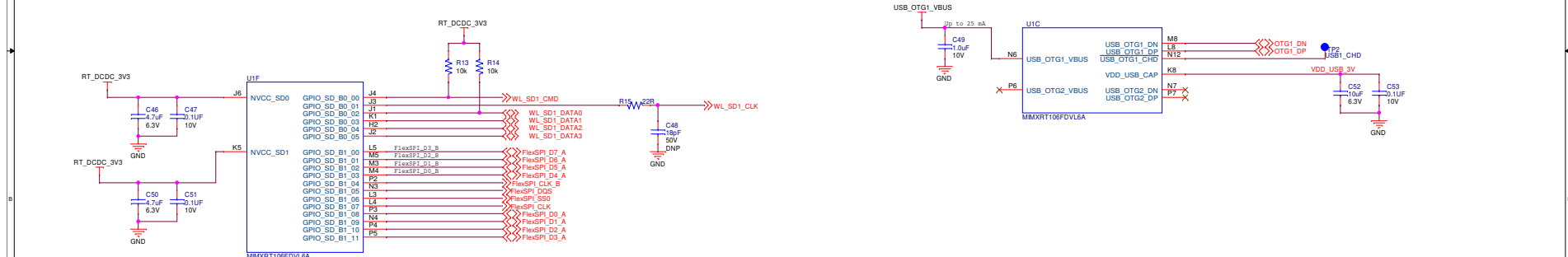


GAP Classification: CP:		IUC:		PUB:	
Drawing Title: i.MXRT Connected Module					
Page Title: Power Section					
Size C	Document Number	SCH-SOL0001, PDF-SFP-SOL0001			Rev D3
Date:	Tuesday, December 03, 2019	Sheet	3	of	9

i.MXRT Section



The line SAI3_TX_FS shall be out of pad IIO_B7 when an external memory is used



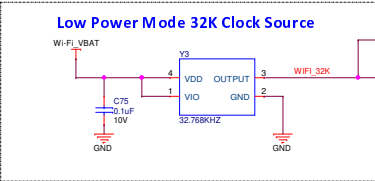
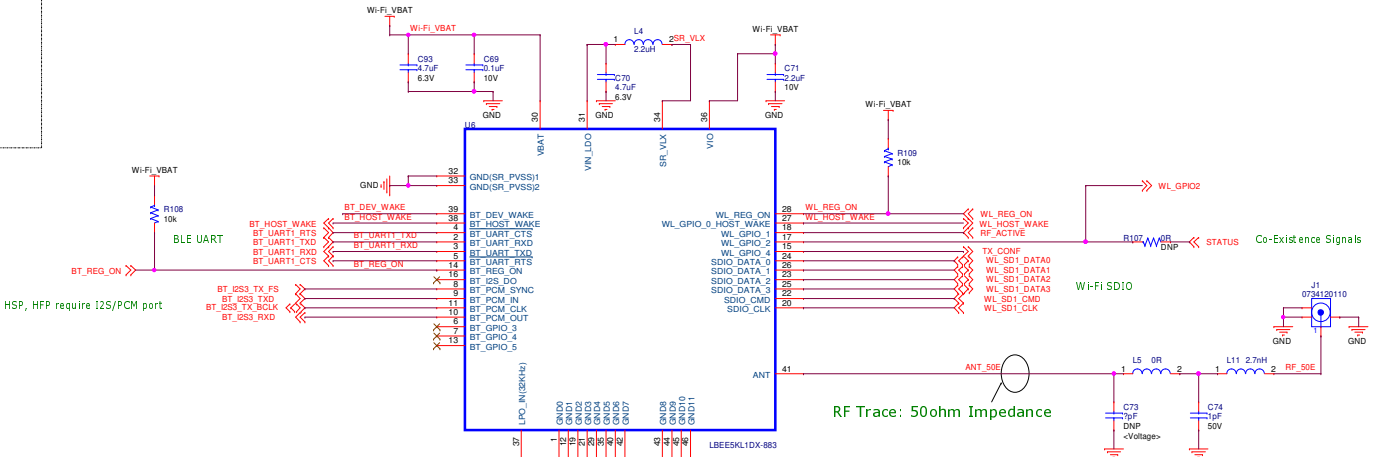
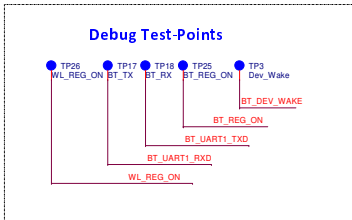
Note: Default resistor configuration is used to have SDRAM interface.
- Need to swap DNP components to use SAI3 (Audio) interface

Note: Further default SAI3 is selected for external Audio interface on ADD-on-Board.
- Need to Toggle SAI3_OUT_SELECT signal "High" to use SAI3 for onboard BT

NXP

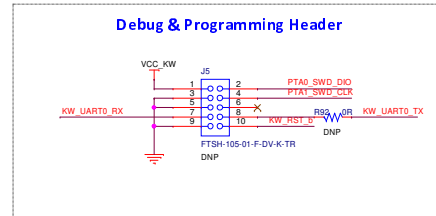
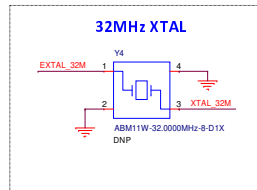
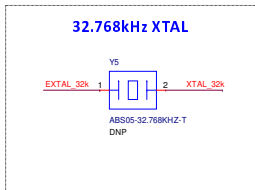
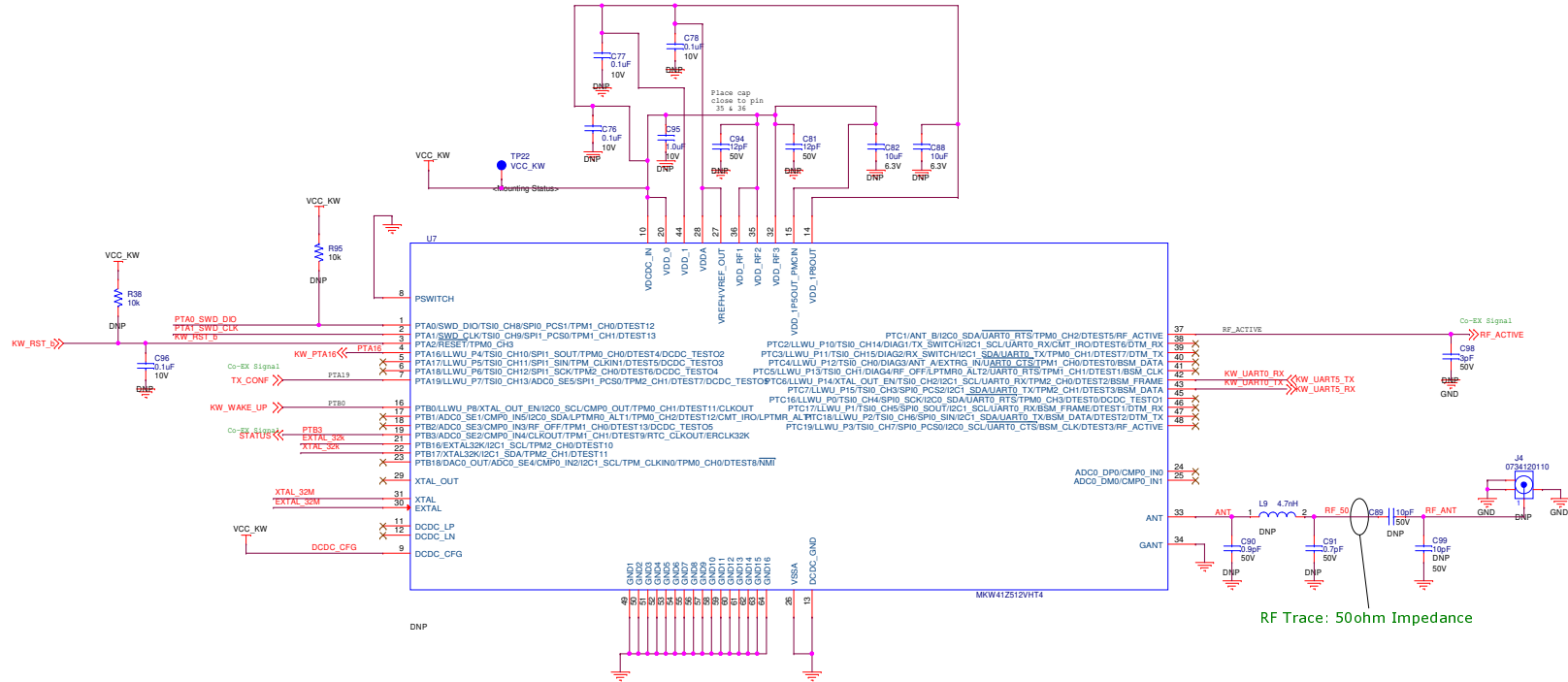
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Drawing Title: i.MXRT Connected Module			
Page Title: IMXRT Section			
Size C	Document Number	SCH-SOL001, PDF-SPP-SOL001	Rev D3
Date:	Tuesday, December 03, 2019	Sheet	4 of 9

Wi-Fi & BT/BLE Module Section



RAP Classification: CP:		IUC: PUB:	
i.MXRT Connected Module			
Page Title: Wi-Fi & BT/BLE Section			
Size C	Document Number	SCH-SOL0001, PDF-SPP-SOL0001	Rev D3
Date:	Tuesday, December 03, 2019	Sheet	6 of 9

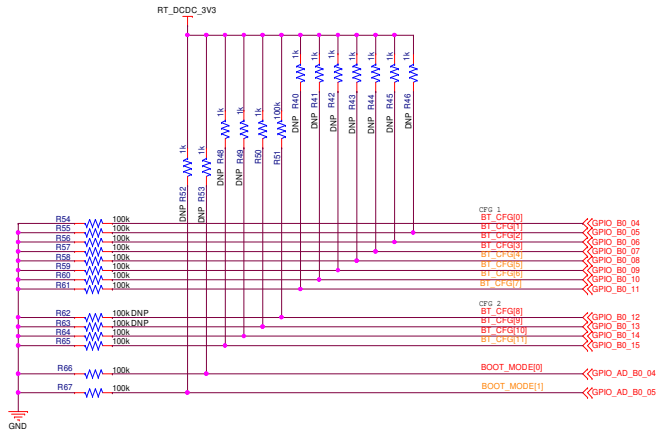
KW41z BLE / IEEE802.15.4 SoC Section



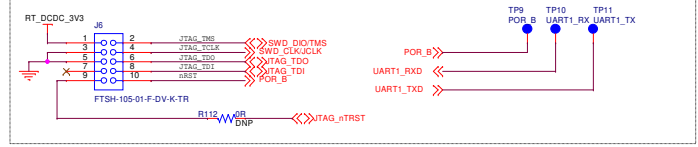
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i.MXRT Connected Module			
Page Title: Zigbee/Thread Section			
Size C	Document Number	SCH-SOL0001, PDF-SPF-SOL0001	Rev D3
Date:	Tuesday, December 03, 2019	Sheet	7 of 9

Boot Configuration & Debug Interface

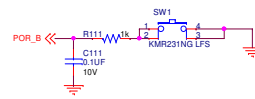
Boot Configuration



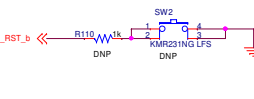
i.MXRT Debug & Programming



i.MXRT Reset Button



KW21z Reset Button



FUSE MAP

TYPE	BOOT_CFG[11]	BOOT_CFG[10]	BOOT_CFG[9]	BOOT_CFG[8]	BOOT_CFG[7]	BOOT_CFG[6]	BOOT_CFG[5]	BOOT_CFG[4]	BOOT_CFG[3]	BOOT_CFG[2]	BOOT_CFG[1]	BOOT_CFG[0]
FlexSPI1 - Serial NOR	Infini-Loop: (Debug USE only) 0 - Disable 1 - Enable	FLASH_TYPE 000-Device supports 3B read by default 001-Device supports 4B read by default 010-HyperFlash 1V8 011-HyperFlash 3V3 100-MXIC Octal DDR			0	0	0	0	HOLD TIME: 00 - 500us 01 - 1ms 10 - 3ms 11 - 10ms		EncryptedXIP 0 - Disabled 1 - Enabled	Reserved
SD	Infini-Loop: (Debug USE only) 0 - Disable 1 - Enable	Reserved	Bus Width: 0 - 1-bit 1 - 4-bit	SD1 VOLTAGE SELECTION: 0 - 3.3V 1 - 1.8V	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	Fast Boot: 0 - Regular 1 - Fast Boot




i.MXRT Connected Module	
Page Title: Boot & Debug Interface	
Size C	Document Number SCH-SOL0001, PDF-SPP-SOL0001
Date: Tuesday, December 03, 2019	Sheet 8 of 9

B2B Connector



- DMY1 1461530100 2.4/5G DUAL BAND ANTENNA 100MM
- DMY2 1461530100 2.4/5G DUAL BAND ANTENNA 100MM
- DMY3 LMXRT Connected Module PCB Rev D LAY-SOL0001-D



ICAP Classification: CP:		IUO:		PUBI:	
Drawing Title: i.MXRT Connected Module					
Page Title: B2B Connector					
Size B	Document Number SCH-SOL0001, PDF-SPF- SOL0001				Rev D3
Date:	Tuesday, December 03, 2019		Sheet	9 of 9	

RT Vision Board

TABLE OF CONTENTS:

Page No.	TITLE
01	Cover Page
02	System Block Diagram
03	Power Supply Section
04	B2B Receptacles & Headers
05	Audio Interface
06	Input & Output Interface
07	Sensor Interface
08	Camera and Display Interface
09	Miscellaneous

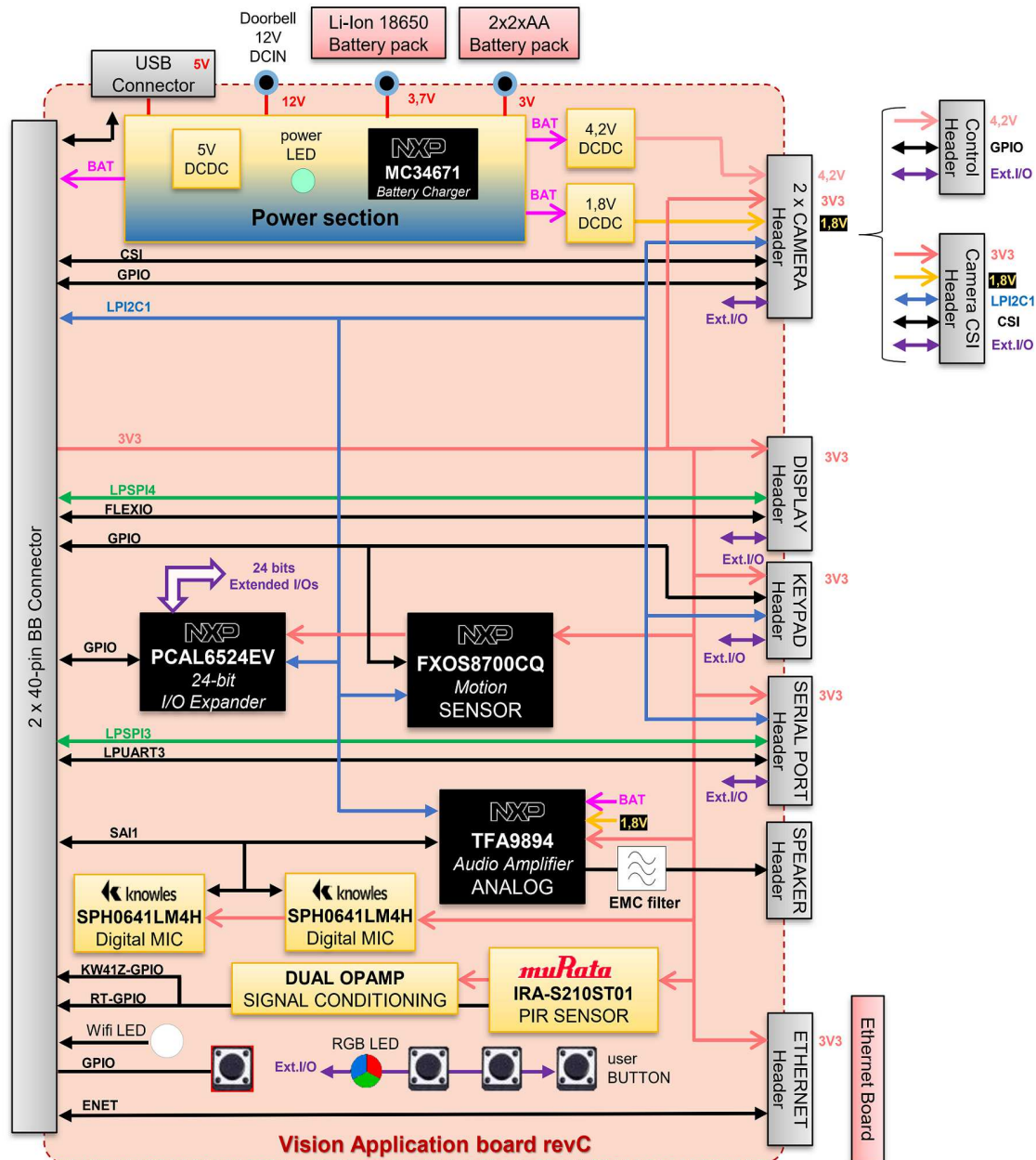
REVISION HISTORY

REVISION	DESCRIPTION OF CHANGE	DATE	Author	Reviewer
C2	Initial production version	09-Oct-20	-	-



EAP Classification: CP: IUC: X PUB:			
Drawing Title: RT Vision Board			
Page Title: Cover Page			
Size C	Document Number SCH-SOL0005, PDF: SPF-SOL0005	Rev C1	
Date: Thursday, November 05, 2020	Sheet 1 of 9		

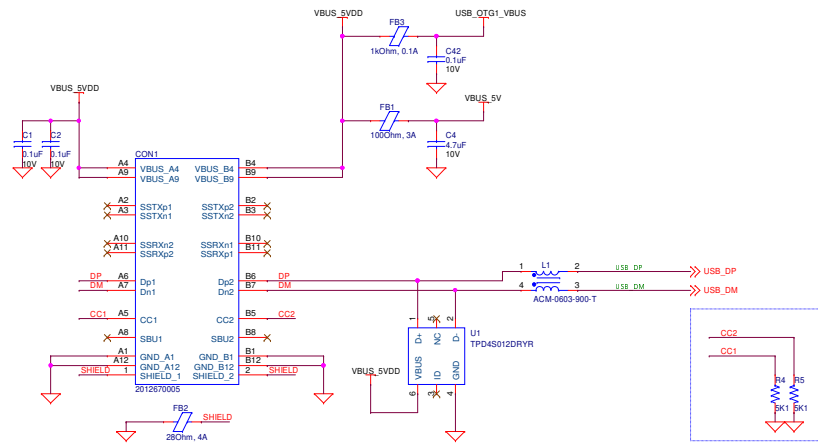
System Block Diagram



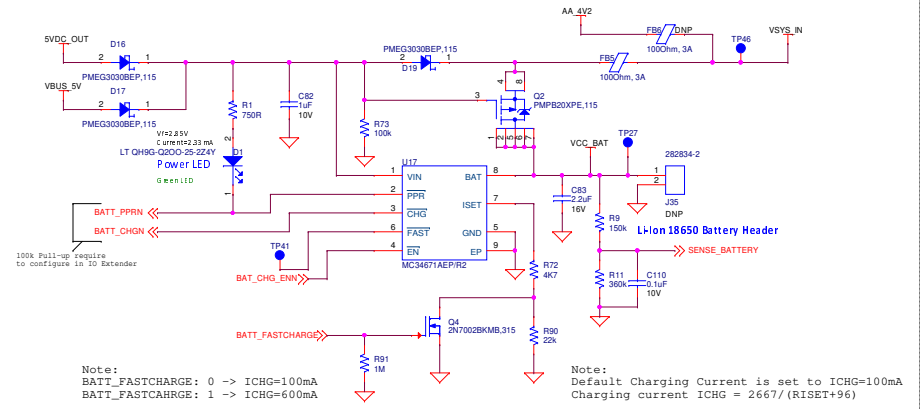
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Drawing Title: RT Vision Board					
Page Title: System Block Diagram					
Size C	Document Number	SCH-SOL0005, PDF: SPF-SOL0005			Rev C1
Date:	Friday, October 25, 2019	Sheet	2	of	9

Power Supply Section

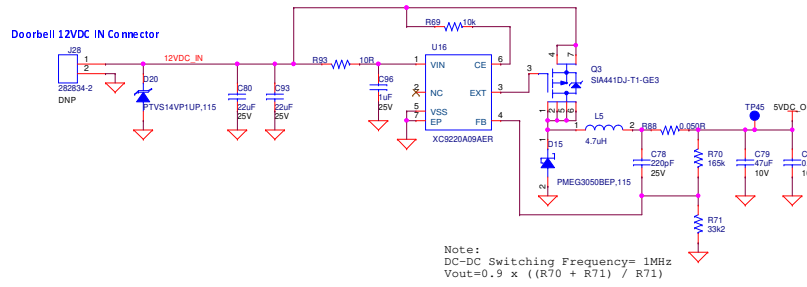
USB Type C Connector



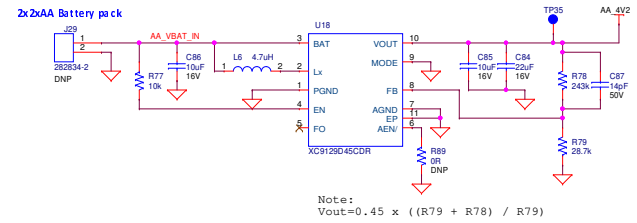
Li-Ion Battery Charger & Power Oring



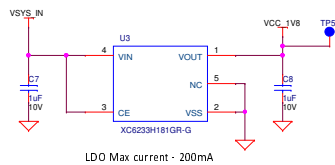
Door Bell 12VDC Input Section



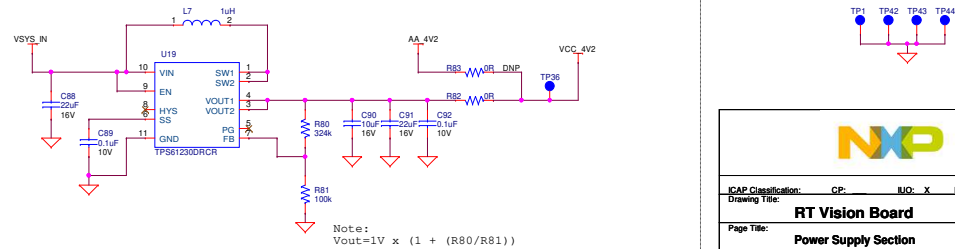
2 x 2AA Battery Input Section



1.8V LDO Power section

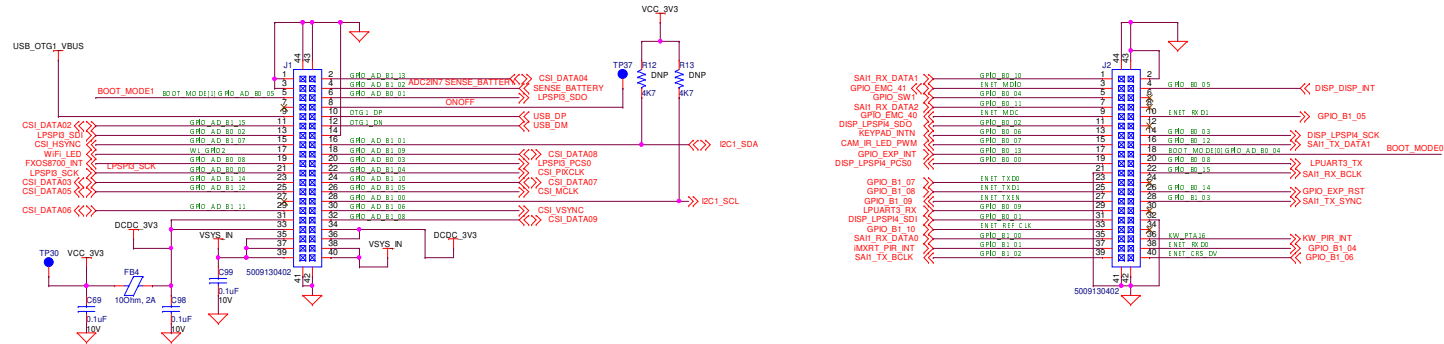


4.2V DC-DC Boost Converter for Camera Module

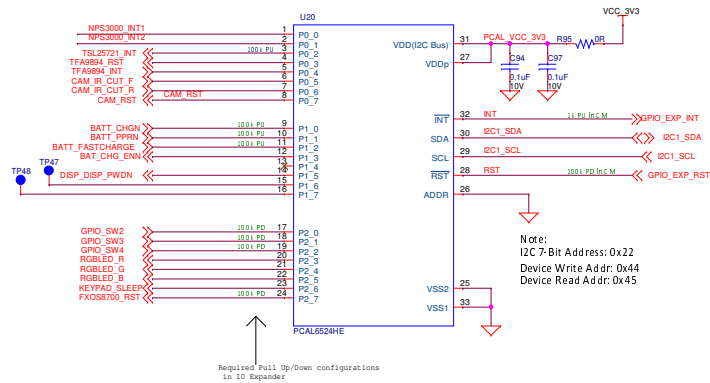


B2B Receptacles & Headers

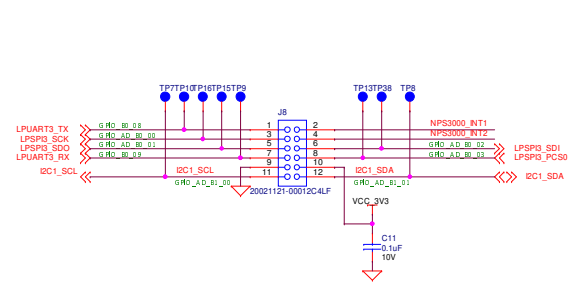
Board To Board Receptacle Connector



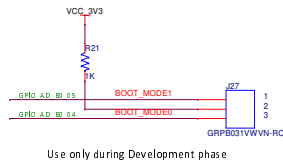
24-bit I/O Expander Interface



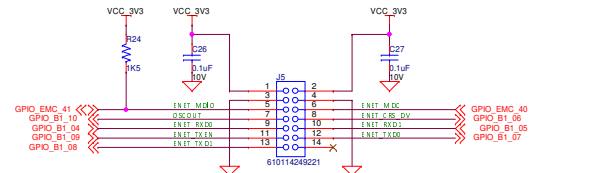
Serial Port Header



Boot Mode selection Header



Ethernet Header



QAP Classification: CP, IUC: X, PUB:

RT Vision Board

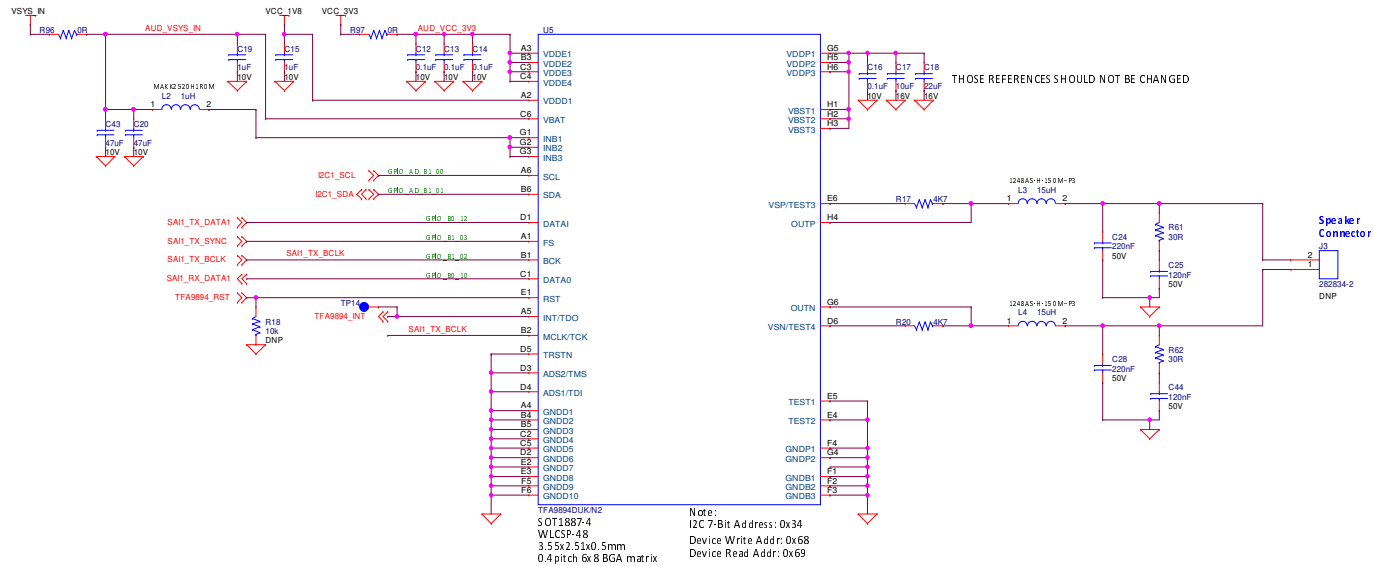
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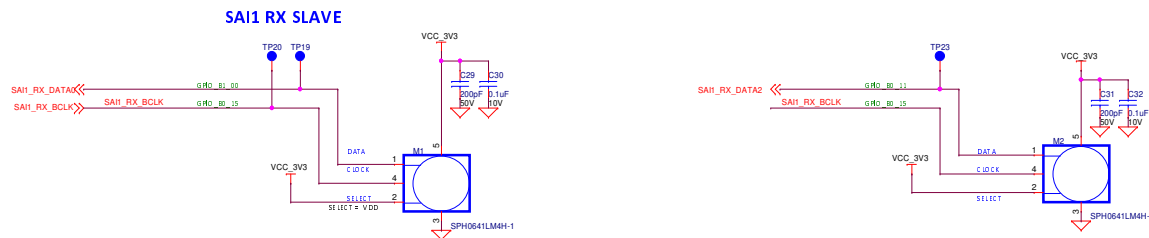
Date: Friday, October 25, 2019 Sheet 4 of 9

Audio Interface Section

Audio Amplifier



PDM MICROPHONE Interface



Notes:

- Decoupling Capacitors mounted as close as possible are required for optimum SNR.
- RF filter capacitors in the range of 20-200pF may be needed depending upon the RF environment.
- If both decoupling capacitors and RF filter capacitors are used, the RF filter capacitors should be close to the microphone.



QAP Classification: CP IUC: X PUB: I

Drawing Title: RT Vision Board

Page Title: Audio Interface

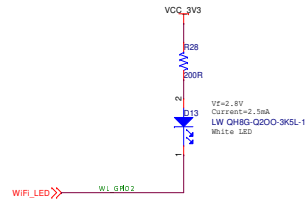
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Date: Friday, October 25, 2019 Sheet 5 of 9

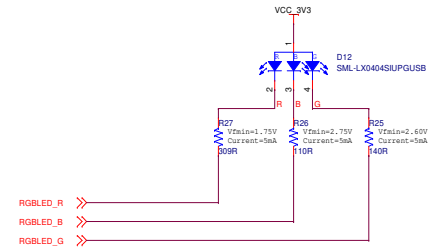
Input & Output Interface

User LED Interface

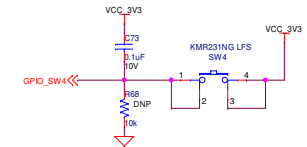
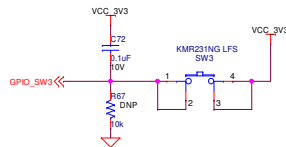
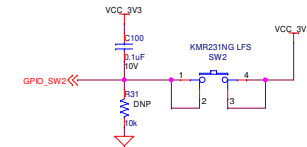
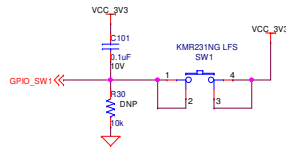
1DX Wi-Fi+BLE Status LED



RGB LED Interface



User Switch interface



ICAP Classification: CP- IUC: X PUBL

Drawing Title:

RT Vision Board

Page Title:

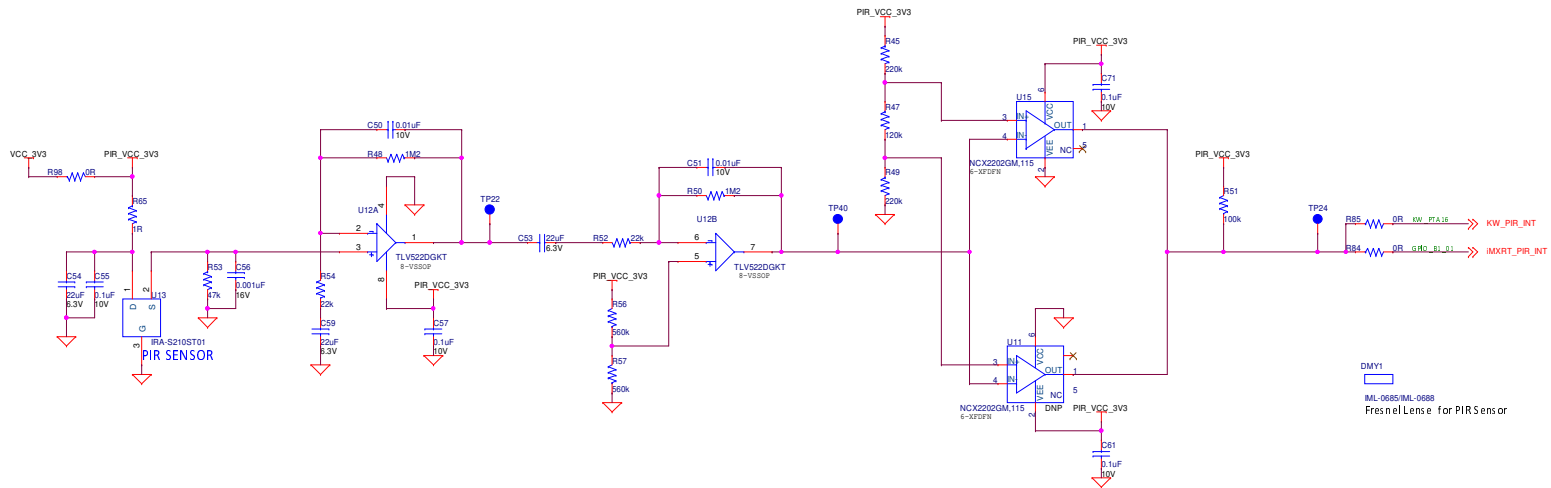
Input Output Interface

Size C Document Number SCH-SOL0005, PDF: SPF-SOL0005 Rev C1

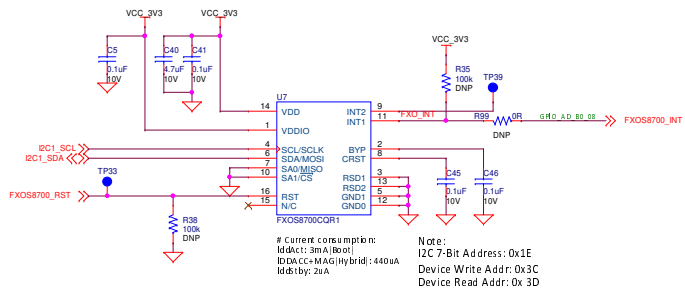
Date: Friday, October 25, 2019 Sheet 6 of 9

Sensor Interface

PIR Sensor Interface



Accelerometer & Magnetometer Sensor Interface

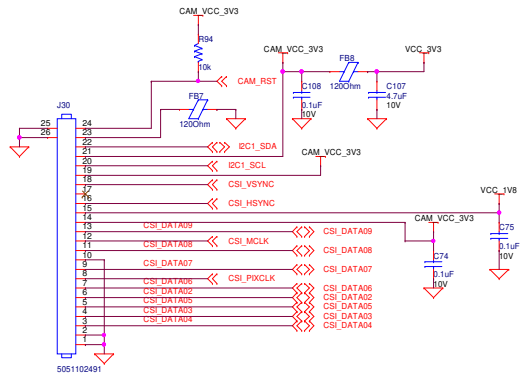


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Drawing Title: RT Vision Board											
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Date:	Thursday, October 08, 2020						Sheet	7 of 9			

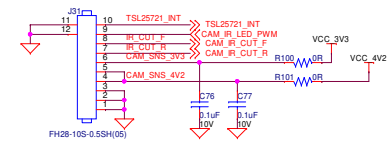
Camera and Display Interface

Camera Interface

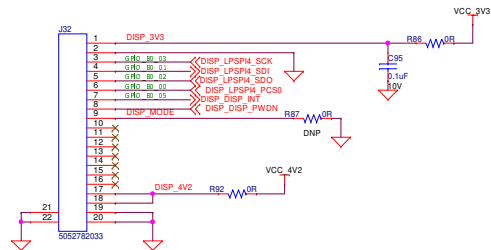
Camera Parallel Interface



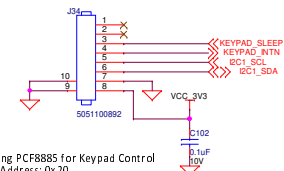
Camera Sense & Control



Display Interface



Keypad Interface



Note:
Considering PCF8885 for Keypad Control
I2C 7-Bit Address: 0x20
Device Write Addr: 0x40
Device Read Addr: 0x 41



ICAP Classification: CP, IUC: X, PUB:






Drawing Title: RT Vision Board

Page Title: Camera and Display Interface

Size C Document Number SCH-SOL0005, PDF: SPF-SOL0005 Rev C1

Date: Friday, October 25, 2019 Sheet 8 of 9

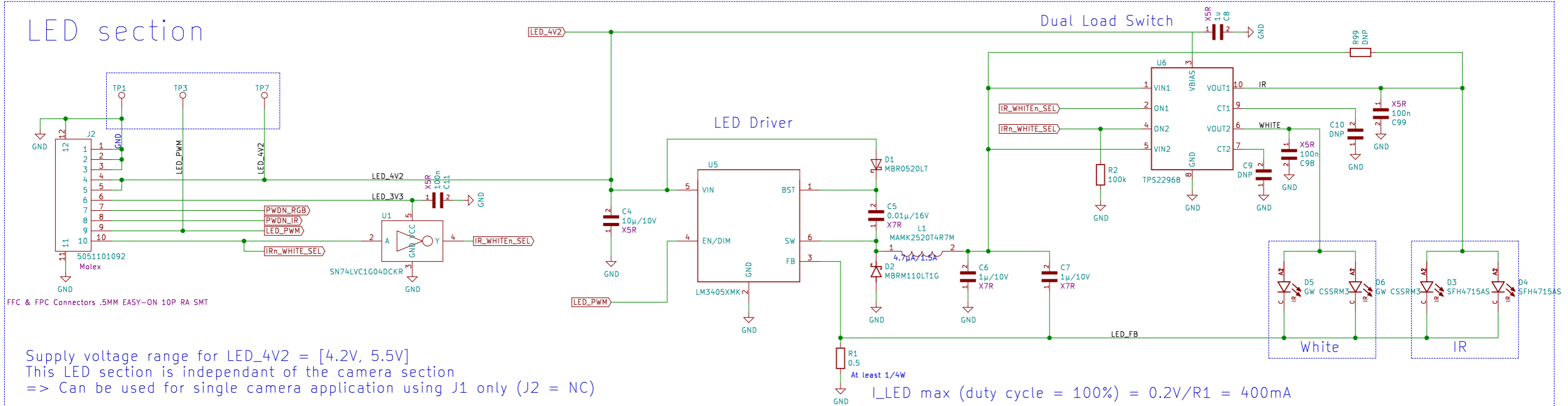
Miscellaneous

- DMY2  RT Vision Board RevC PCB
- DMY3  2-Pin Shunt jumper_1.27MM pitch
- DMY4  CABLE FFC 24POS 0.50MM 2"
- DMY5  CABLE FFC 20POS 0.50MM 2"
- DMY6  CABLE FFC 8POS 0.50MM 2"



EAP Classification: CP: BUC: X PUBL		
Drawing Title: RT Vision Board		
Page Title: MISCELLANEOUS		
Size C	Document Number SCH-SOL0005, PDF: SPF-SOL0005	Rev C1
Date: Friday, October 09, 2020	Sheet 9	of 9

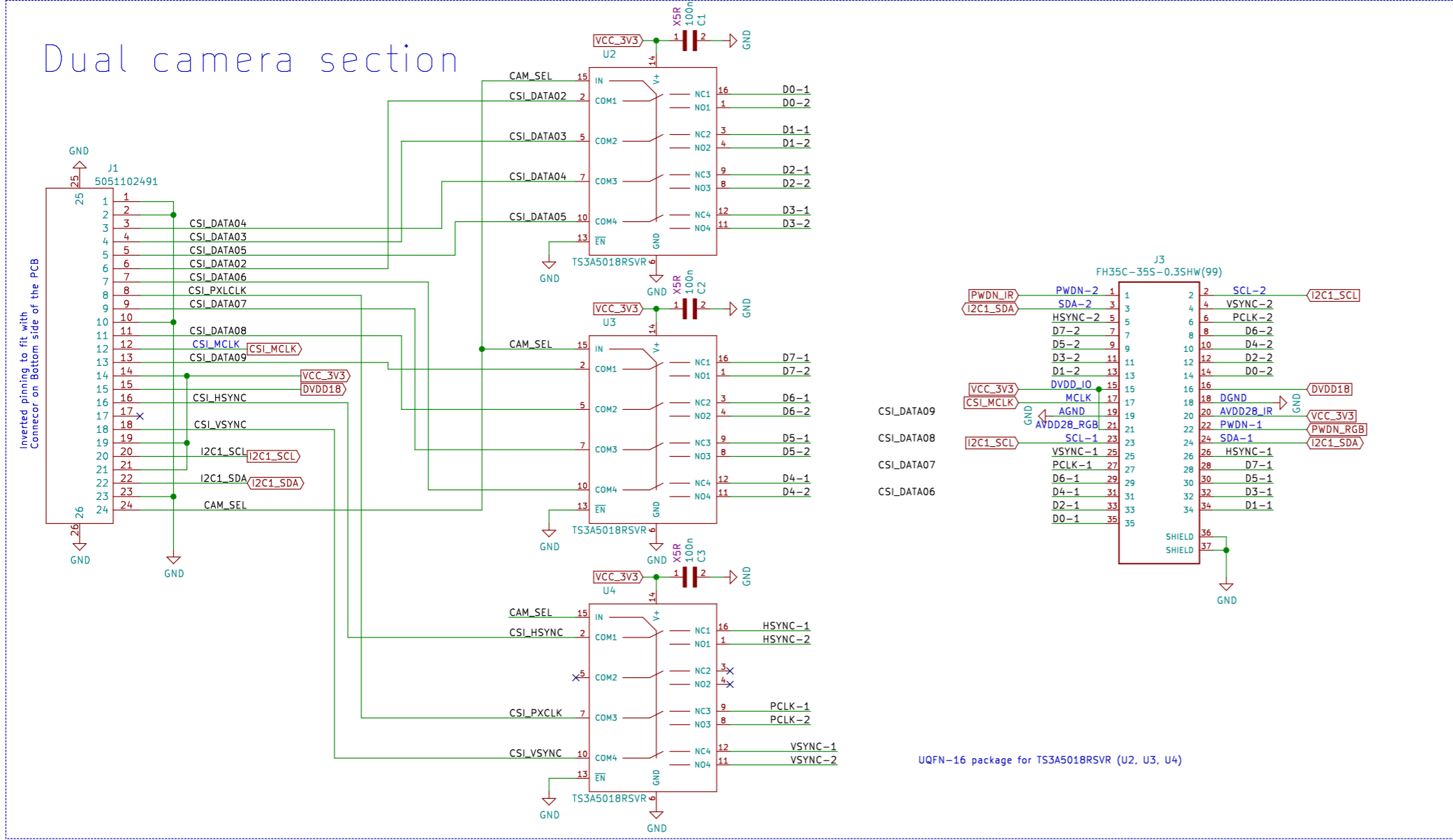
LED section



Supply voltage range for LED_4V2 = [4.2V, 5.5V]
 This LED section is independant of the camera section
 => Can be used for single camera application using J1 only (J2 = NC)

$$I_{LED\ max} \text{ (duty cycle = 100\%)} = 0.2V/R1 = 400mA$$

Dual camera section



Target = reduce PCB size to 50mm x 15mm
 LED section with White and IR illumination
 Interface for Dual Camera module
NXP
 Sheet: /
 File: RT-VIZN_ADAPTER_revE.sch
Title: RT-VIZN Lighting Module
 Size: A3 | Date: 2020-04-23 | Rev: E
 KiCad E.D.A. kicad (5.1.4)-1 | Id: 1/1