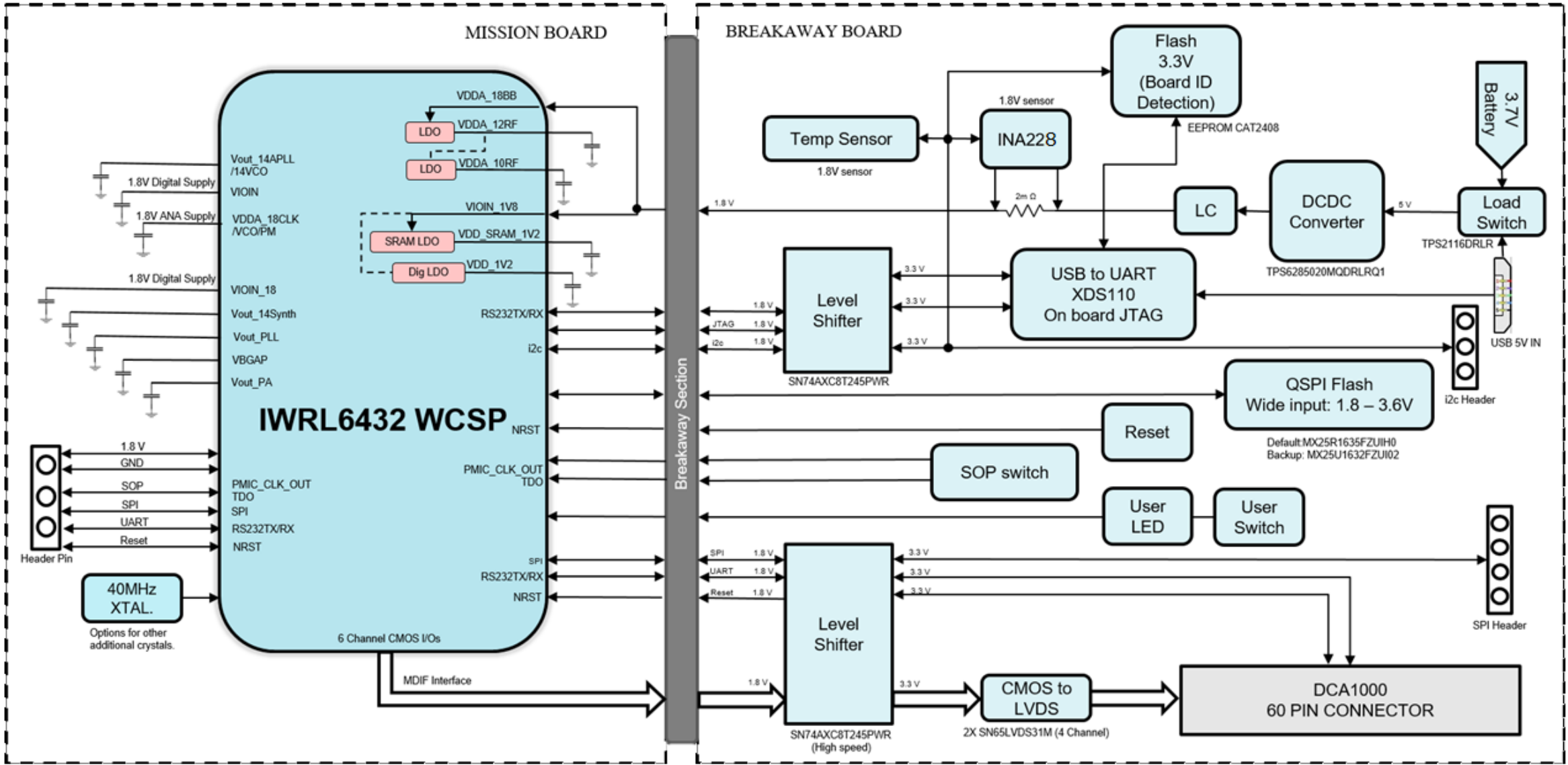


BLOCK DIAGRAM



Revision History				
Rev	ECN #	Approved Date	Approved by	Notes
B	1	27-03-2024	Chethan	1. Current sensor U6 changed from INA226 to INA228 2. Changed R8 from 49.9K to 4.99K and R11 from 100K to 10K of PGOOD section. 3. Changed R102 from 10K to 100K and R120 from 100K to 33K of power mux selection section. 4. Removed GPADC2 section along with R67, R89, R131 and C3.
B	2	05-04-2024	Chethan	Layout revision changes 1. L1-L2 & L7-L8 Blind via changed from 5mils drill /10 mils pad to 6 mils drill /12 mils pad. 2. Air gap for CPW antenna traces is changed from 3.937 mils to 4 mils

MUX BLOCK DIAGRAM

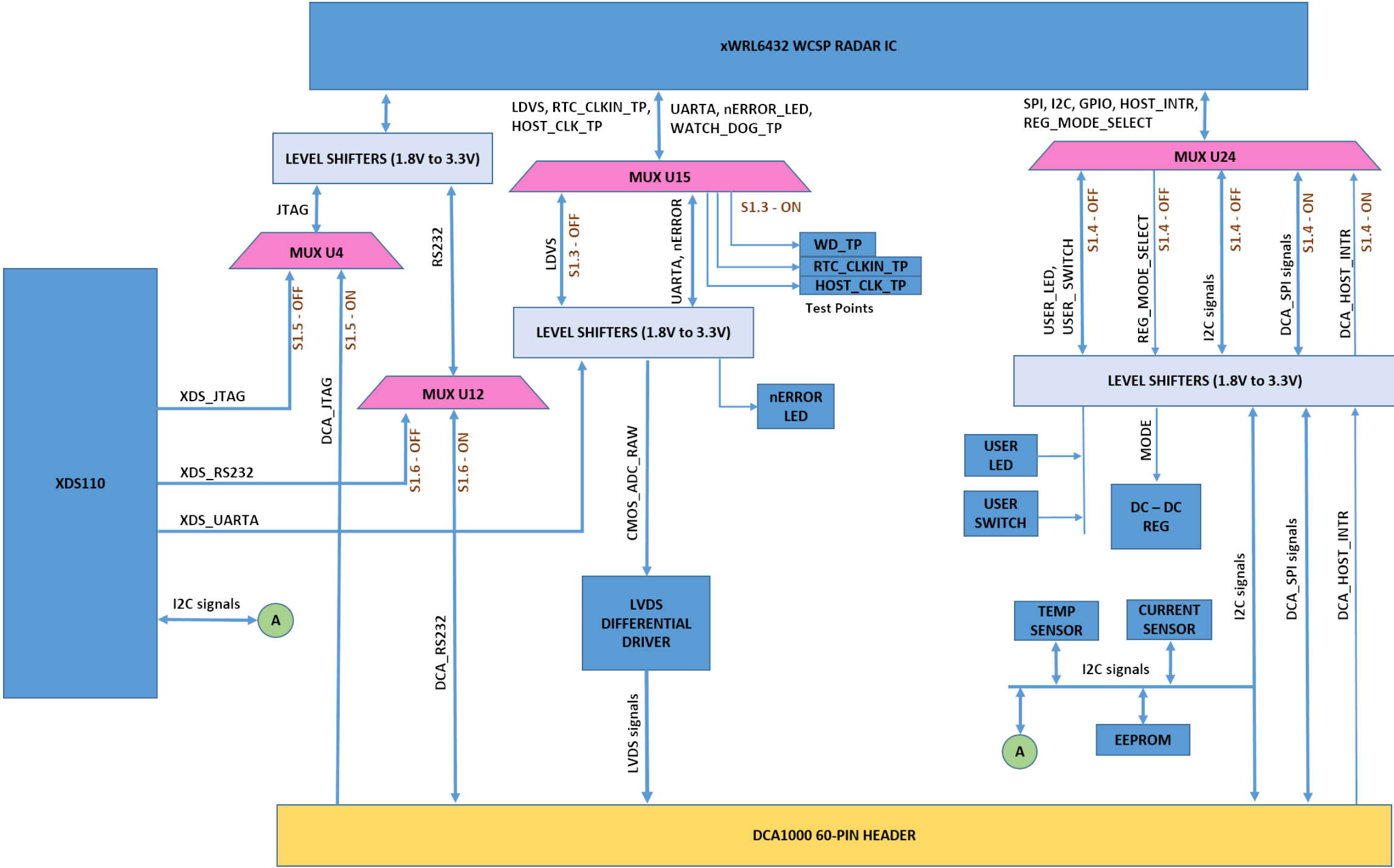


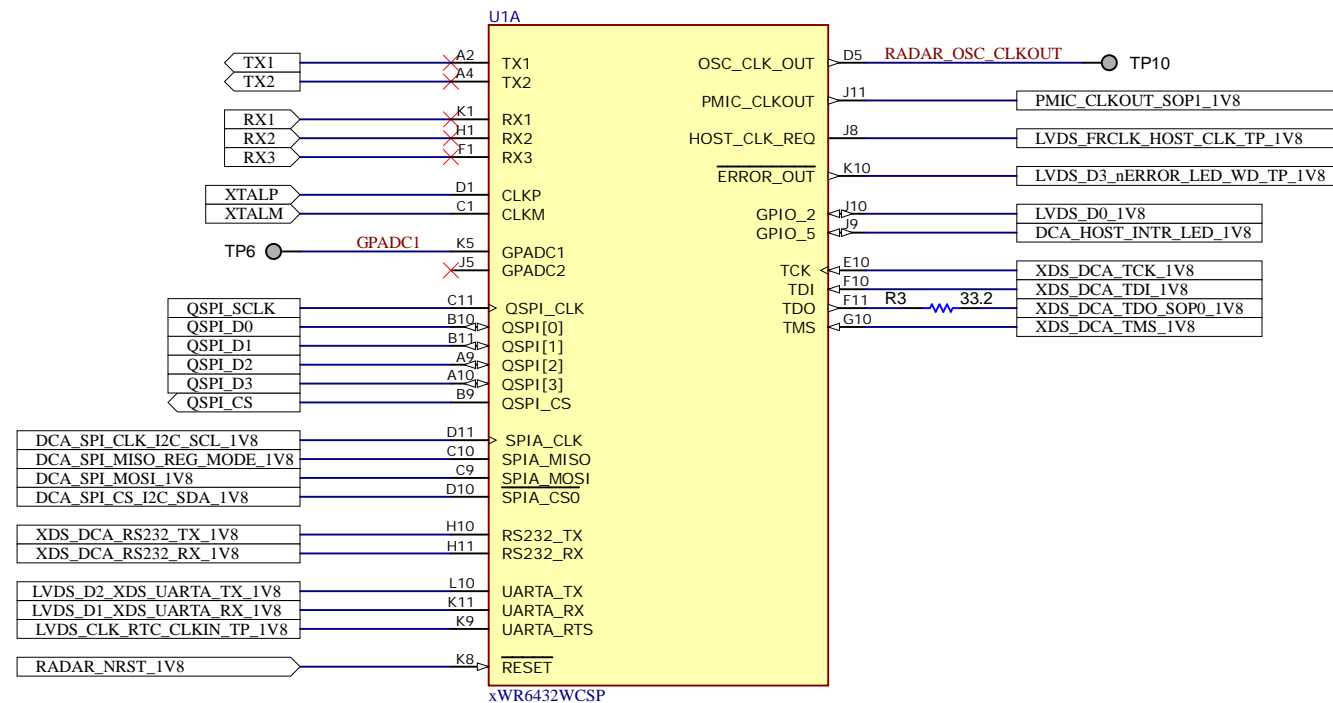
TABLE OF CONTENTS

SHEET NO.	SHEET NAME
1	BLOCK DIAGRAM
2	MUX BLOCK DIAGRAM
3	TABLE OF CONTENTS
4	xWRL6432WCSP_CHIP
5	DECOUPLING_CAPS_QSPI_FLASH
6	USB_PWR_BAT_CONN_SWITCH
7	DC REGULATORS
8	LVDS_LEVEL_SHIFTER_1A
9	LEVEL_SHIFTER_1B
10	ANALOG_MUX_SOP_CTRL
11	TEMP_CURRENT_SENSORS_EEPROM
12	XDS110_INTERFACE
13	DCA1000_CONN_RESET
14	EVM_HARDWARE

xWR6432WCSP CHIP

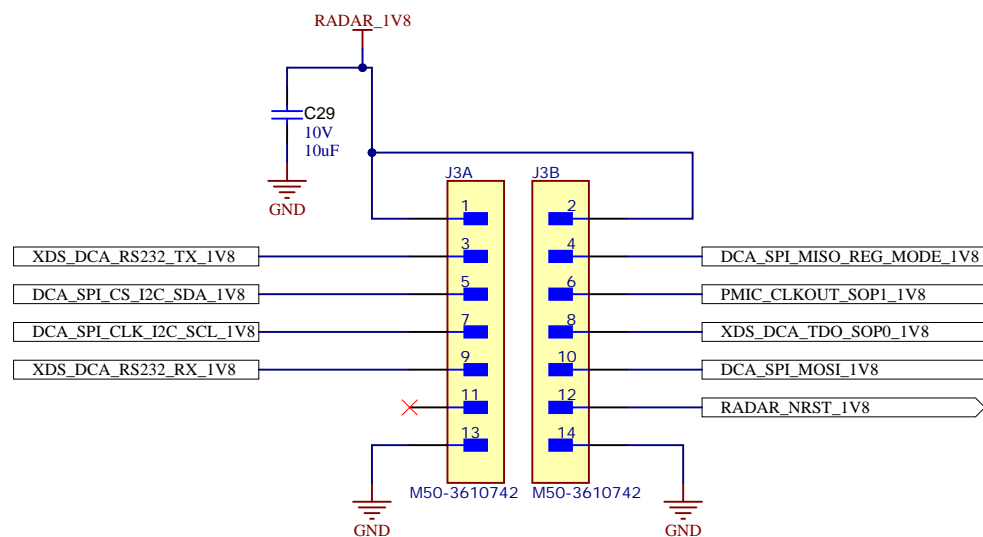
Design Note:

1. Antenna traces are GCPW traces
2. 'Generic No ERCs' were placed intentionally on Single Port RF Tx, Rx lines

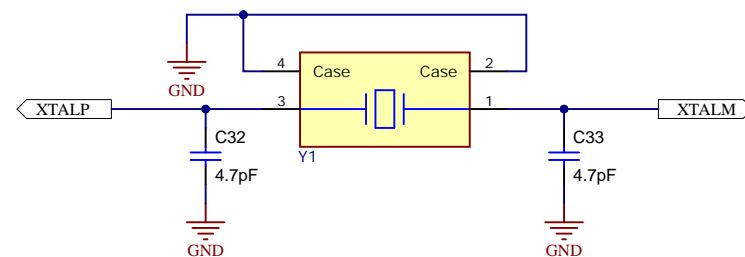


INTERFACE HEADER

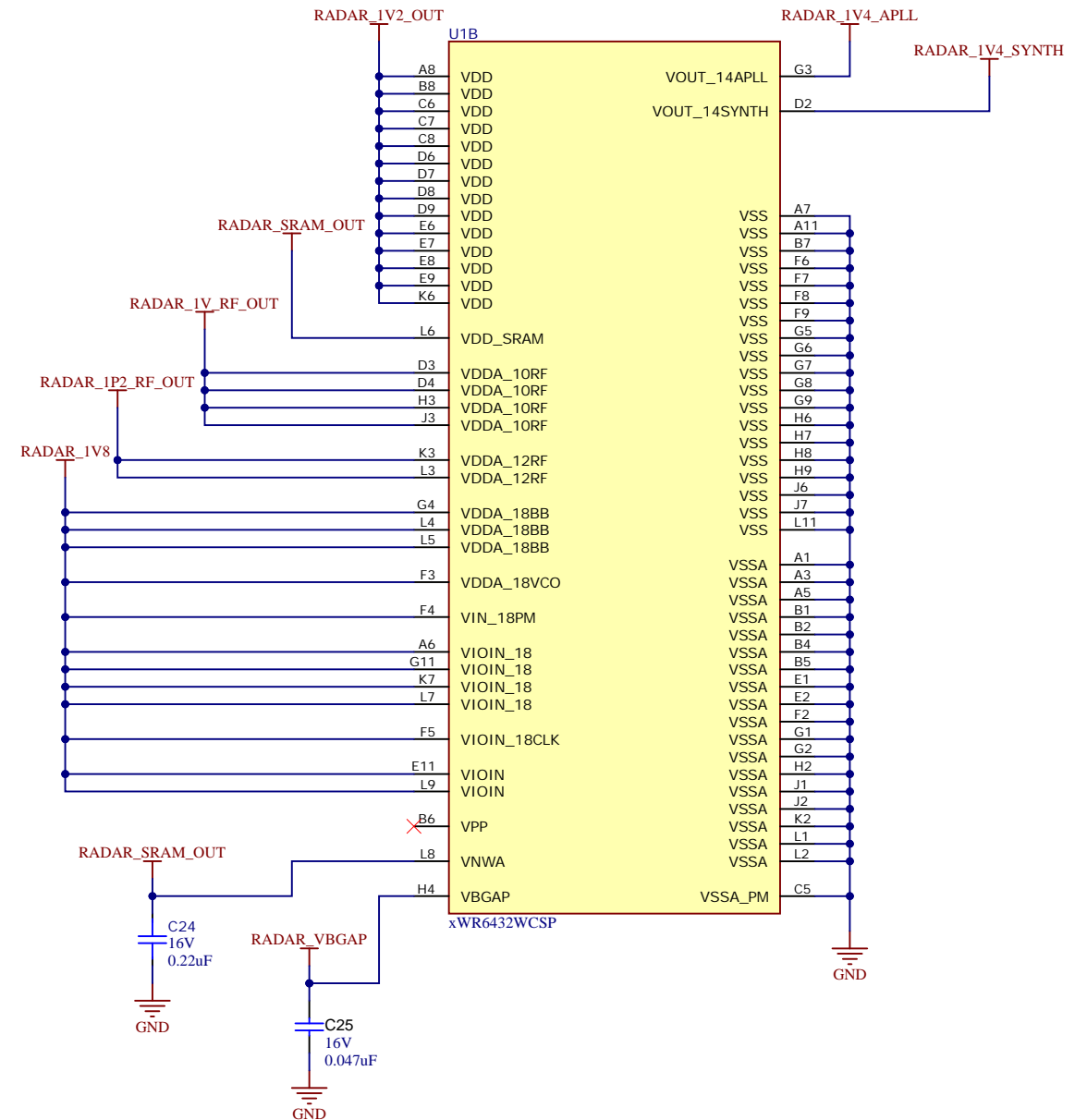
GRM155R61A106ME11D




40 MHz CRYSTAL OSCILLATOR



Alternate Crystal part number : CX2016SA40000D0PTWC1

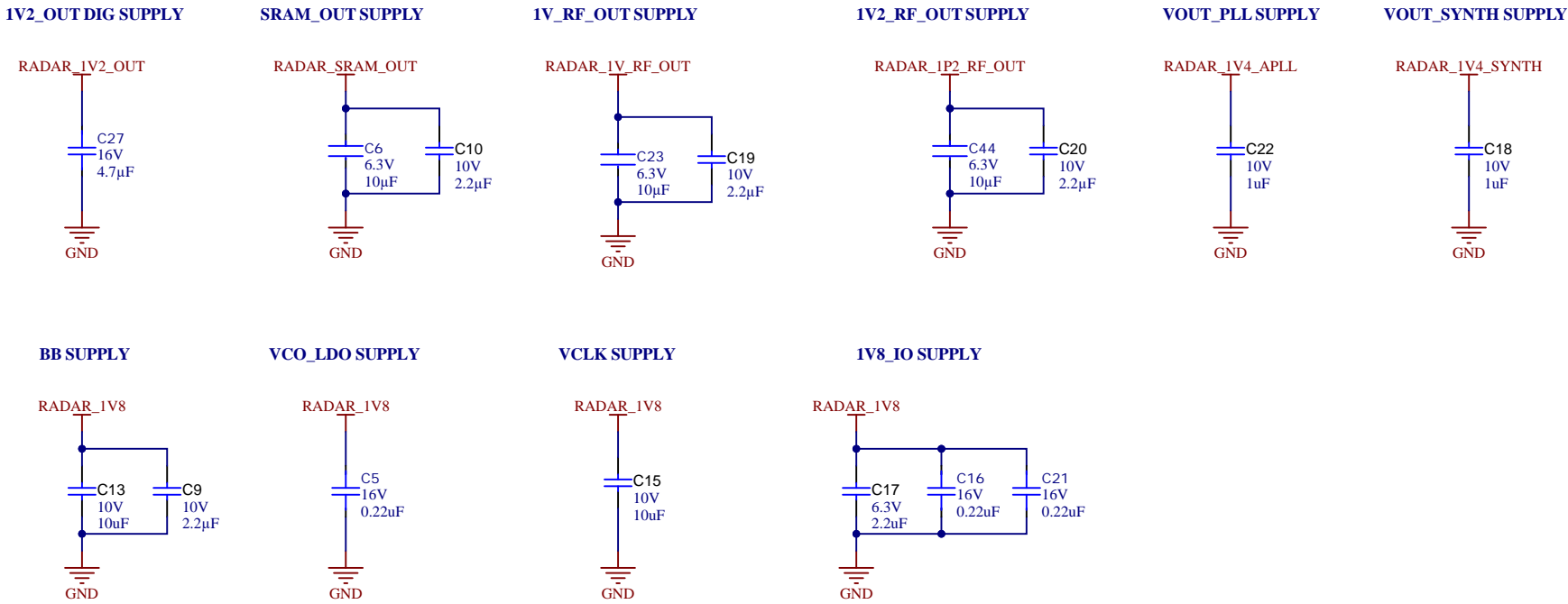


Orderable: <u>N/A</u>	Designed for: <u>Public Release</u>	Mod. Date: 05-Apr-24	 TEXAS INSTRUMENTS http://www.ti.com
TID #: <u>TIDEP-01040</u>	Project Title: <u>xWRL6432WCSP Reference Design</u>		
Number: <u>TIDEP-01040</u> Rev: <u>B</u>	Sheet Title: <u>xWRL6432WCSP_CHIP</u>		
SVN Rev: Not in version control	Assembly Variant: <u>001_IWR</u>	Sheet: <u>4</u> of <u>14</u>	
Drawn By: <u>Mistral</u>	File: <u>PROC157B_xWRL6432WCSP_Chip_SchDoc</u>	Size: B	
Engineer: <u>Texas Instruments</u>	Contact: http://www.ti.com/support		© Texas Instruments 2022

A

A

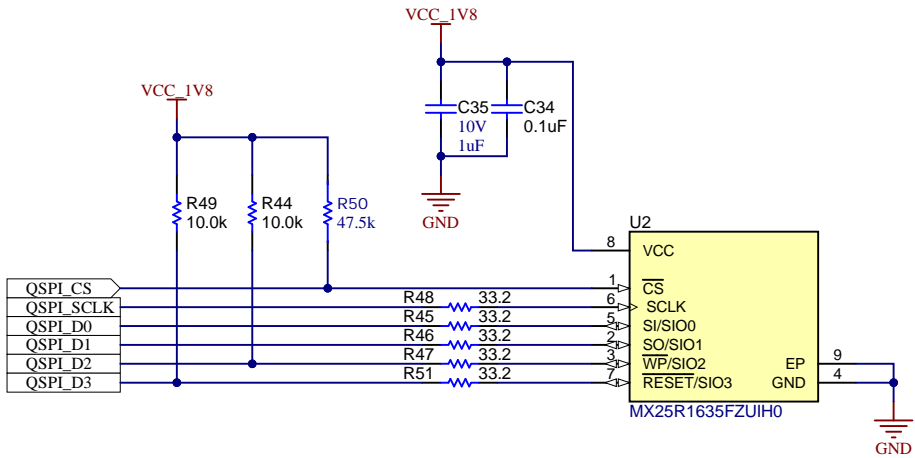
SUPPLY_DECOUPLING_CAPS



B

B

QSPI FLASH



Design note: Current design MX25R1635FZUIH0 Flash supports VCC from 1.65V to 3.3V
Alternate Flash part is MX25U1632FZUI02 supports VCC from 1.65V to 2.0V

D

D

A



A



Battery Part Number: 823282 ; Li-Po Battery 3.7V 2500mAh

C



□

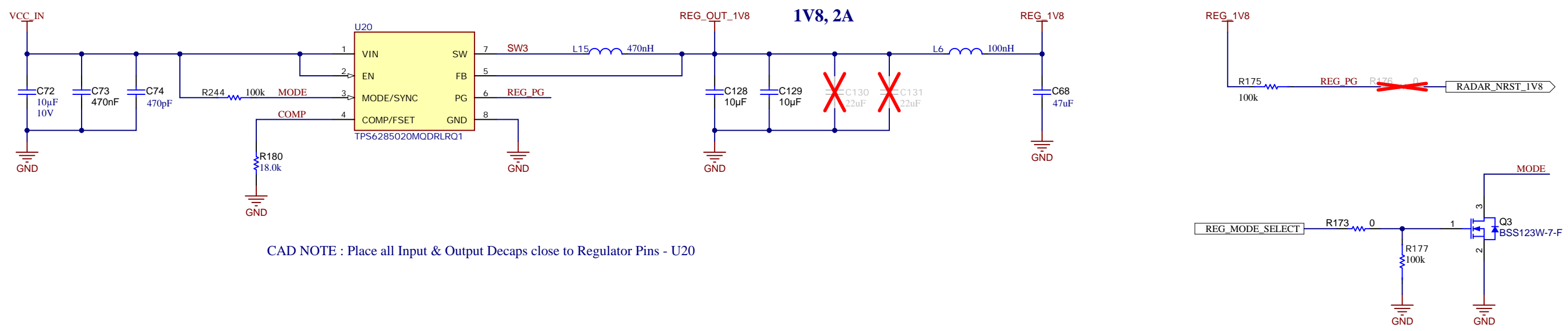


VCC_IN

R76 10.0k SW_ST

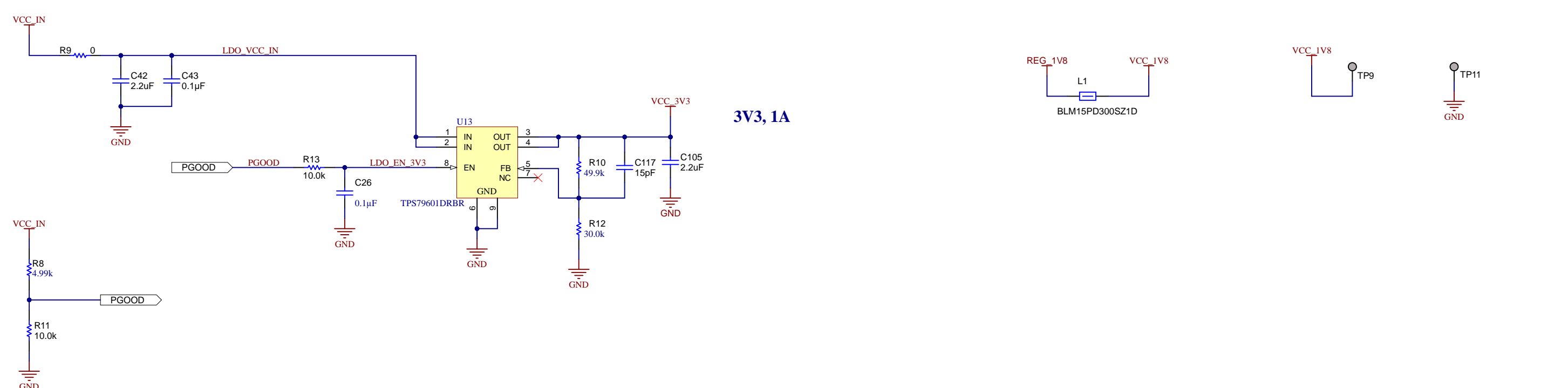
1

DC DC REGULATOR - 1.8V



CAD NOTE : Place all Input & Output Decaps close to Regulator Pins - U20

LDO - 3.3V FOR XDS110 AND OTHER PERIPHERALS



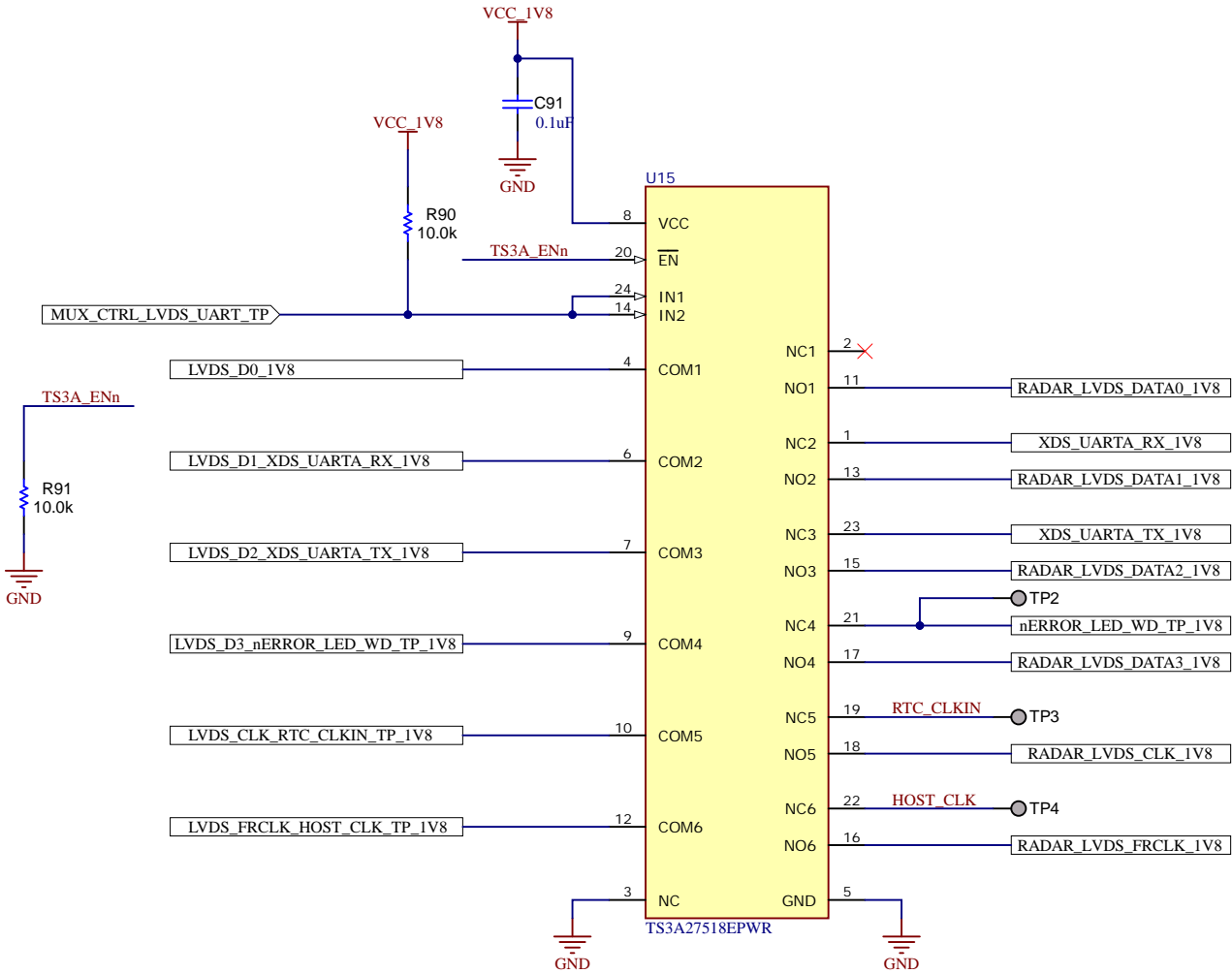
VCC_IN is used as PGOOD

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Orderable: N/A	Designed for: Public Release	Mod. Date: 05-Apr-24
TID #: TIDEP-01040	Project Title: xWRL6432WCSP Reference Design	
Number: TIDEP-01040	Rev: B	Sheet Title: DC_REGULATOR_LDO_SECTION
SVN Rev: Not in version control	Assembly Variant: 001_IWR	Sheet: 7 of 14
Drawn By: Mistral	File: PROC157B_DC_Regulators.SchDoc	Size: B
Engineer: Texas Instruments	Contact: http://www.ti.com/support	

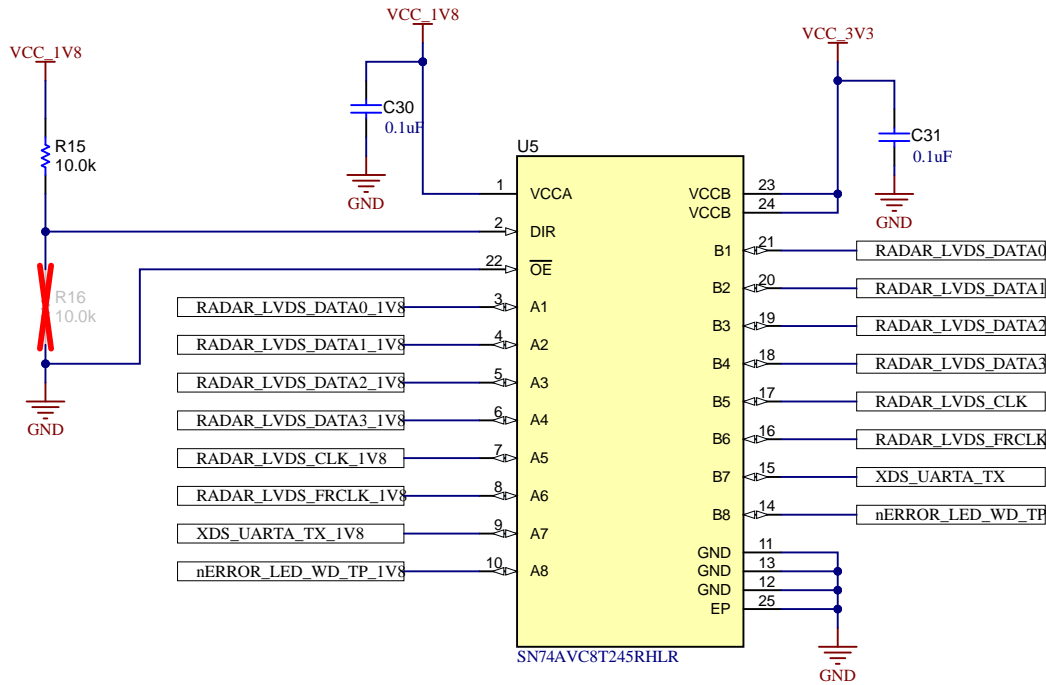
LEVEL SHIFTER_1A

ANALOG MUX - LVDS, UARTA, nERROR_LED



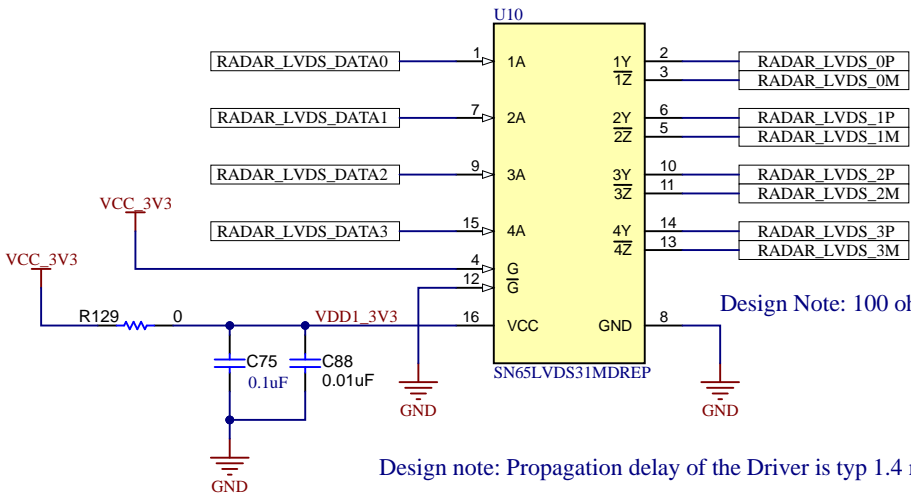
Design note: Propagation delay of the MUX is typ 14.1ns
Tested across RL=500hm,CL=35pF

LEVEL SHIFTER

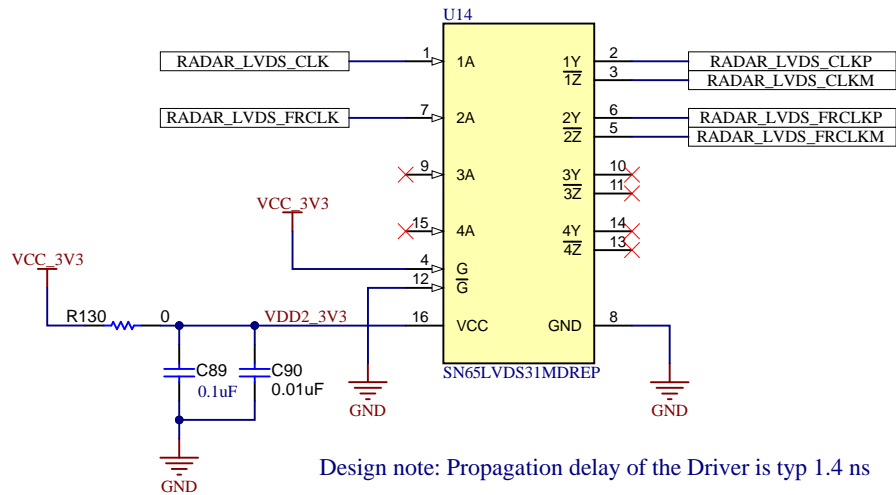


DIR: H ; Signal flow from A to B (LVDS, UARTA_TX, nERROR_LED) ; Propagation delay: 3.9 ns

DIFFERENTIAL LVDS DRIVER



Design note: Propagation delay of the Driver is typ 1.4 ns



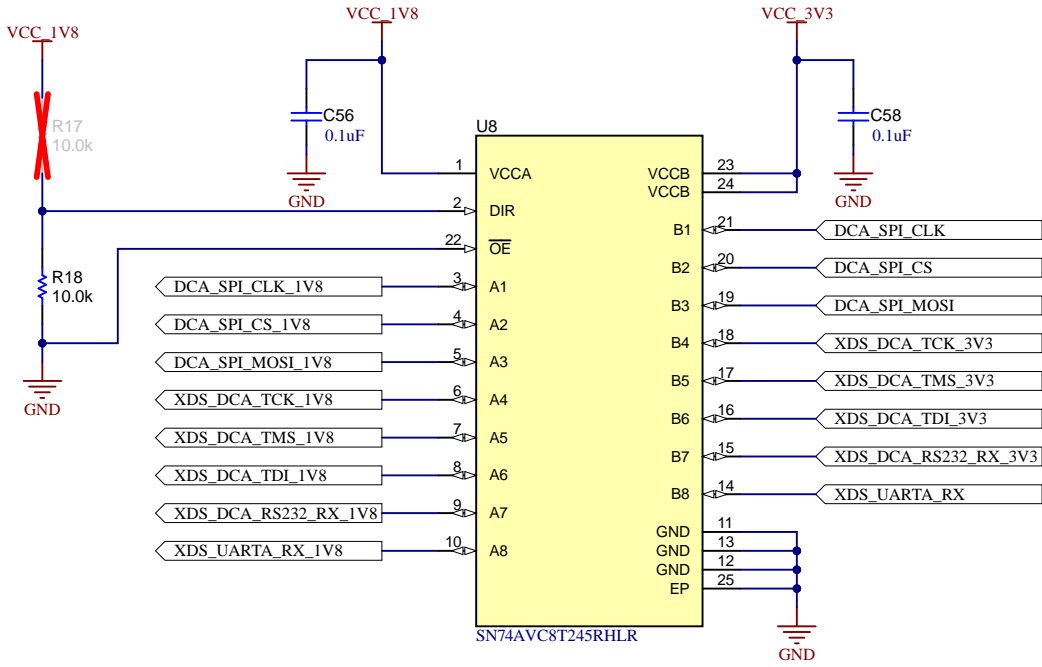
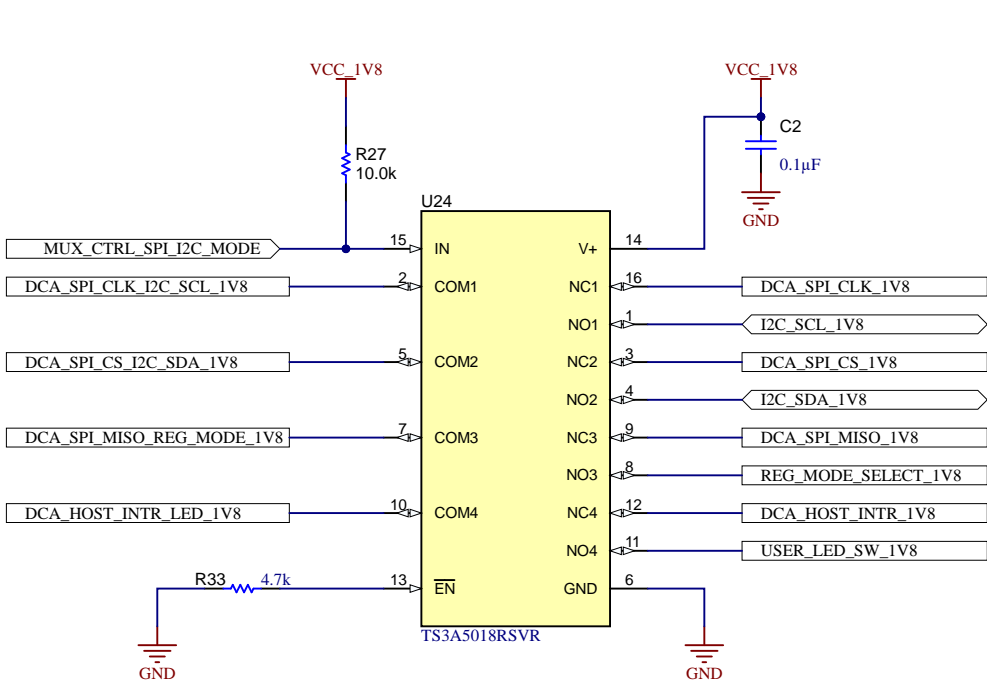
Design note: Propagation delay of the Driver is typ 1.4 ns

LEVEL SHIFTER_1B

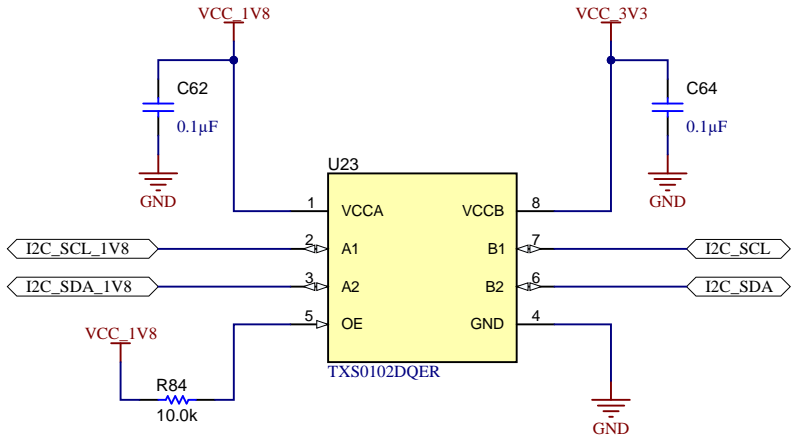
ANALOG MUX - I2C, SPI, REG MODE, HOST INTR, USER LED & SWITCH

LEVEL SHIFTER

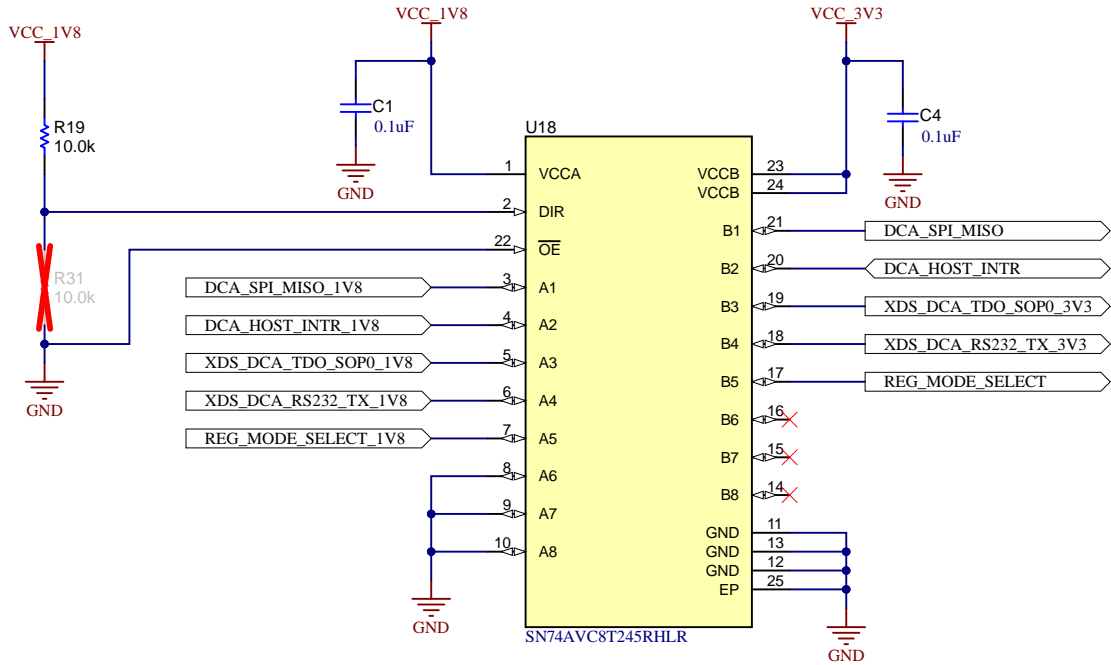
BI DIRECTIONAL LEVEL SHIFTER



DIR: L ; Signal flow from B to A (SPI, JTAG, RS232_RX, UARTA_RX) ; Propagation delay: 3.7 ns



LEVEL SHIFTER

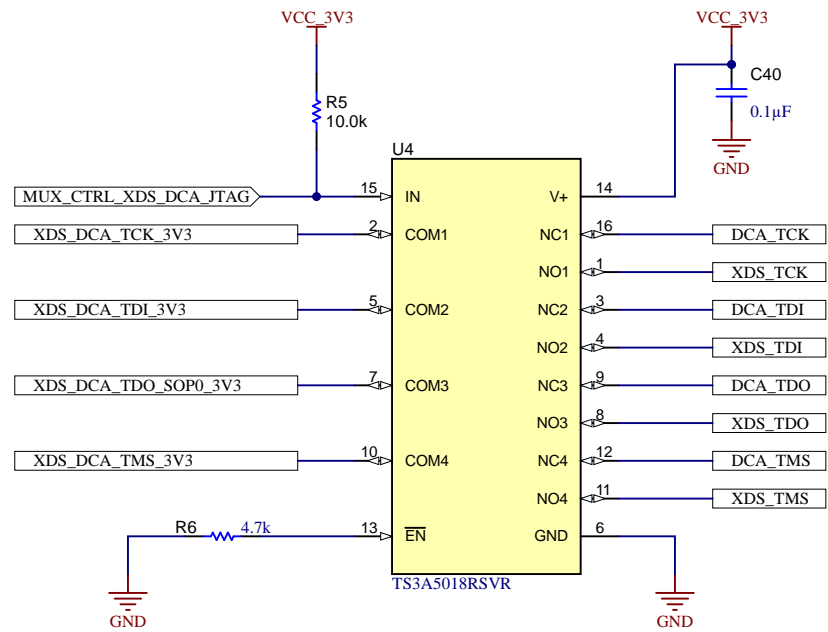


DIR: H ; Signal flow from A to B (MISO, HOST_INTR, TDO, RS232_TX, MODE_SELECT) ; Propagation delay: 3.9 ns

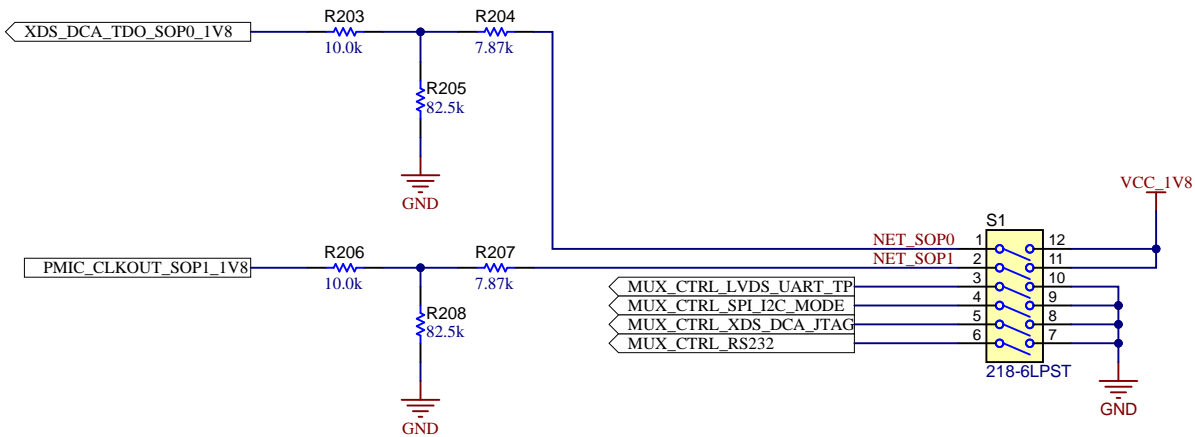
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Orderable: N/A	Designed for: Public Release	Mod. Date: 05-Apr-24
TID #: TIDEP-01040	Project Title: xWRL6432WCSP Reference Design	
Number: TIDEP-01040 Rev: B	Sheet Title: LEVEL_SHIFTER_1B	
SVN Rev: Not in version control	Assembly Variant: 001_IWR	Sheet: 9 of 14
Drawn By: Mistral	File: PROC157B_Level_Shifter_1B.SchDoc	Size: B
Engineer: Texas Instruments	Contact: http://www.ti.com/support	

ANALOG MUX - JTAG



SOP & MUX CONTROL

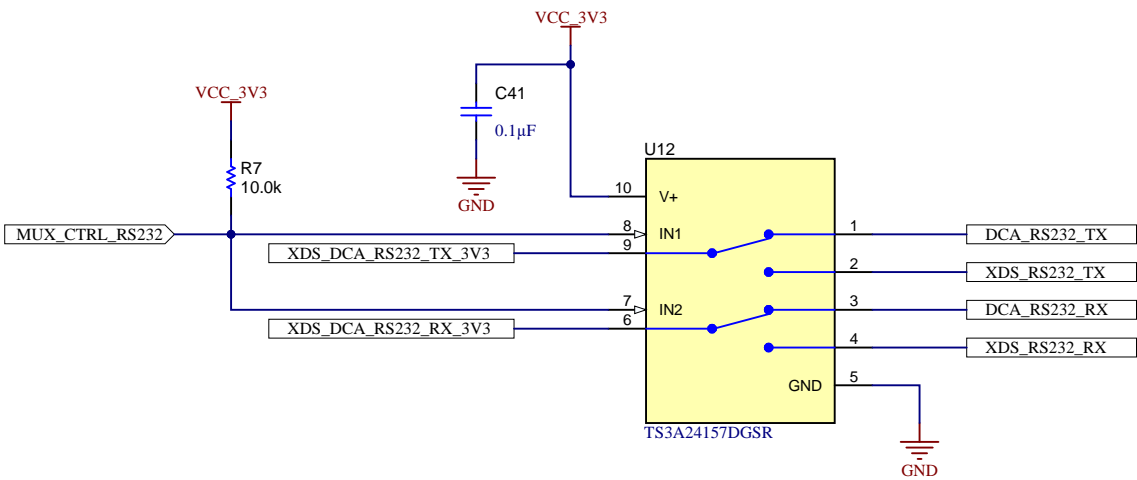


TI need to confirm Placement of the SOP circuitary on either Mission Board or Breakaway Board

SOP CONFIGURATION

SOP Mode	PMIC_CLK_OUT, TDO	Combination (S1.2, S1.1)
SOP_MODE1	Device management mode / QSPI Flashing mode	0 0
SOP_MODE2	Application mode / Functional mode	0 1
SOP_MODE4	Debug mode / mmWave studio connectivity mode	1 1

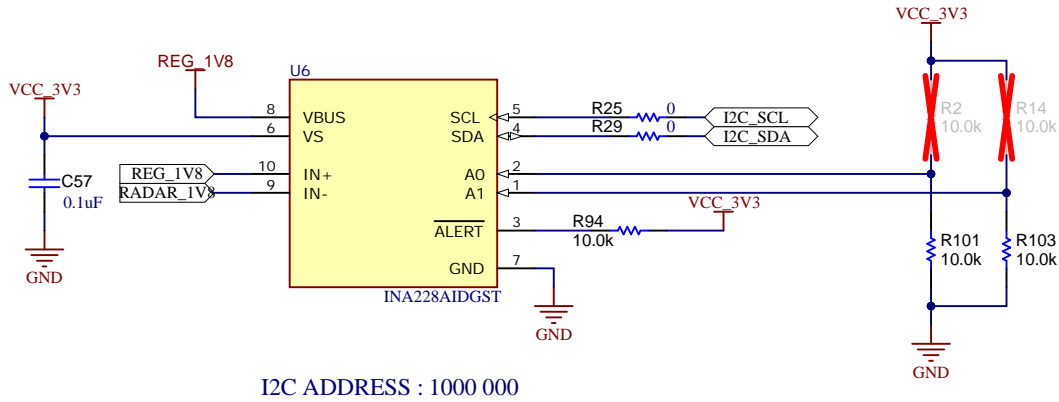
ANALOG MUX - RS232



MUX TABLE

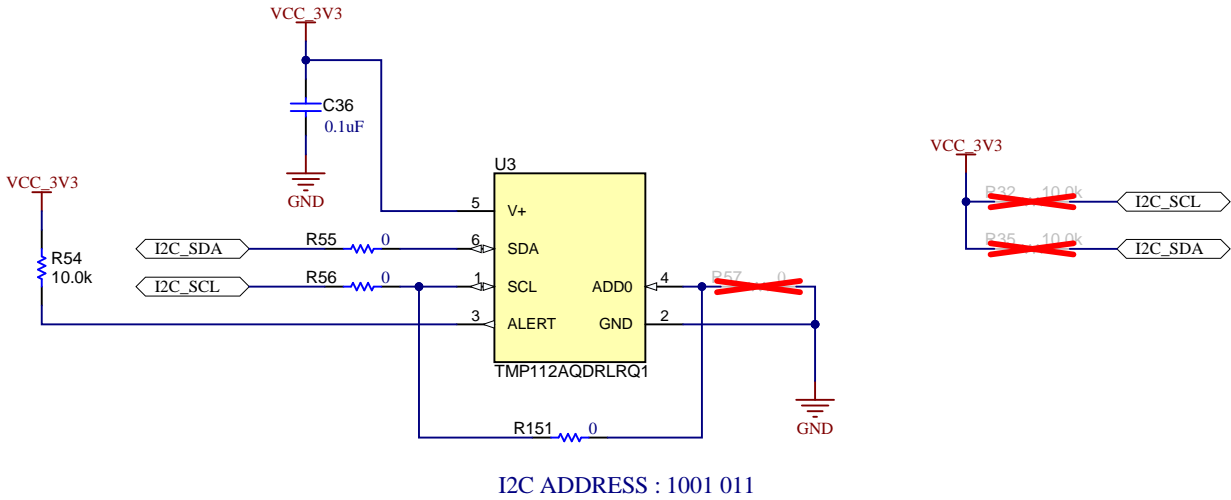
	Switch Position OFF	Switch Position ON
S1.3	LVDS	XDS_UARTA, NERROR_LED, WATCH_DOG_TP, RTC_CLK_IN_TP, HOST_CLK_TP
S1.4	I2C, REG_MODE, USER_LED_SW	SPI, HOST_INTR
S1.5	XDS_JTAG	DCA_JTAG
S1.6	XDS_RS232	DCA_RS232

CURRENT SENSORS



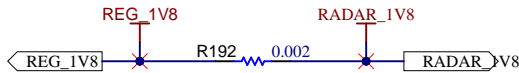
I2C ADDRESS : 1000 000

TEMPERATURE SENSOR



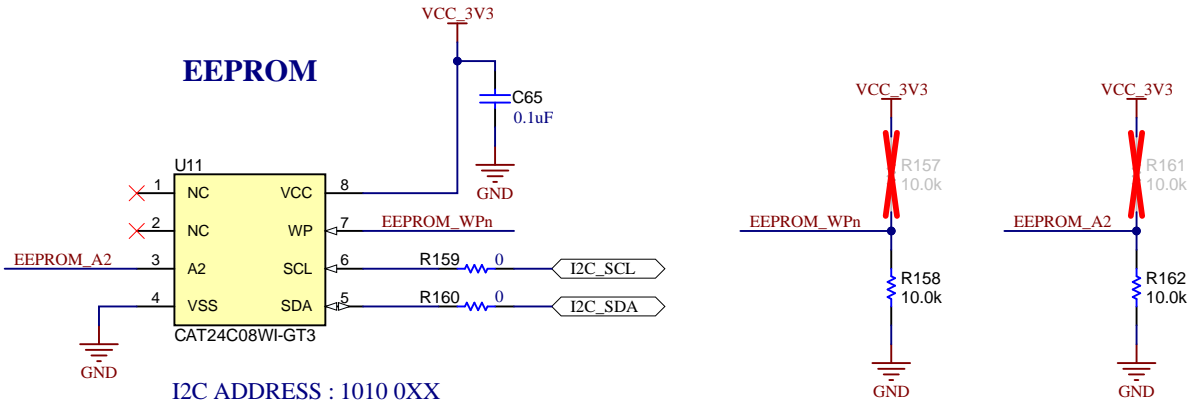
I2C ADDRESS : 1001 011

CURRENT SENSE RESISTORS



Design Note: 'Generic No ERCs' were placed intentionally on either sides of Current sense resistor

EEPROM



I2C ADDRESS : 1010 0XX

XDS110

A

B

C

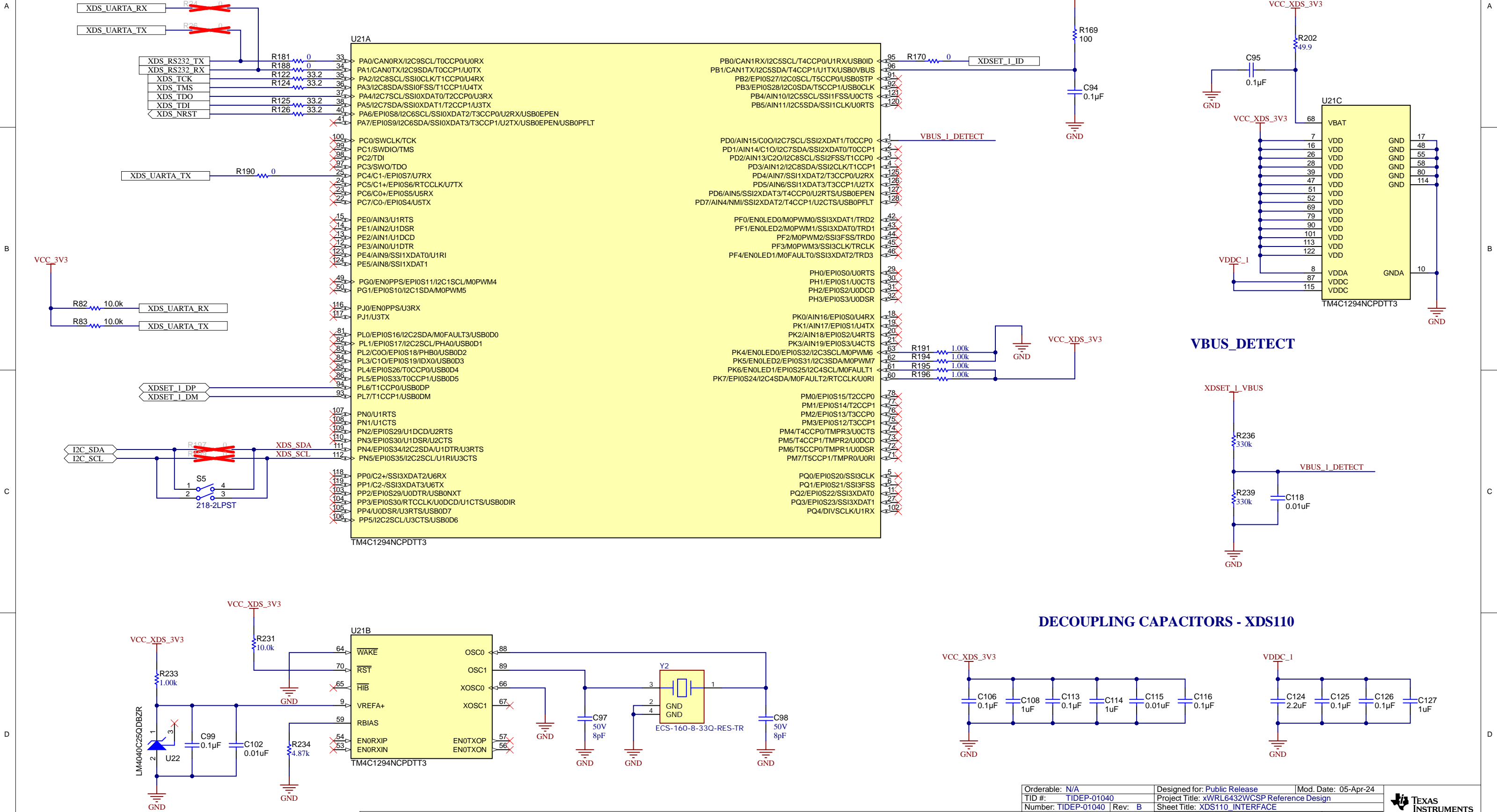
D

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C

D



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Orderable: N/A	Designed for: Public Release	Mod. Date: 05-Apr-24
TID #: TIDEP-01040	Project Title: xWRL6432WCSP Reference Design	
Number: TIDEP-01040 Rev: B	Sheet Title: XDS110_INTERFACE	
SVN Rev: Not in version control	Assembly Variant: 001_IWR	Sheet: 12 of 14
Drawn By: Mistral	File: PROC157B_XDS110_Interface.SchDoc	Size: B
Engineer: Texas Instruments	Contact: http://www.ti.com/support	

A



A

E



1

C





PCB Number: TIDEP-01040
PCB Rev: B

PCB
LOGO
Texas Instruments



PCB
LOGO
FCC disclaimer

PCB
LOGO
WEEE logo

CAUTION HOT SURFACE1



CAUTION HOT SURFACE

Variant/Label Table	
Variant	Label Text
001_IWR	IWRL6432WEVM

LBL1

PCB Label

THT-14-423-10
Size: 0.65" x 0.20 "

CAPACITORS HIGHLIGHTED IN THE RED COLOR BOXES ARE ADDED FOR IMPROVEMENT AND THOSE ARE NOT MANDATORY.

ZZ1

Label Assembly Note

This Assembly Note is for PCB labels only

ZZ2

Assembly Note

These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3

Assembly Note

These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4

Assembly Note

These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

ZZ5

Assembly Note

INDICATION FOR COMPONENTS D* ARE GIVEN AT THEIR CATHODE SIDE.

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