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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

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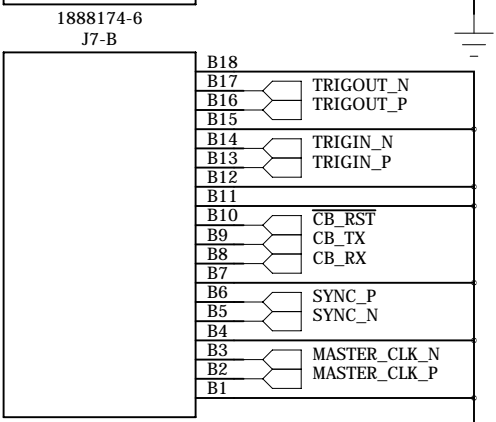
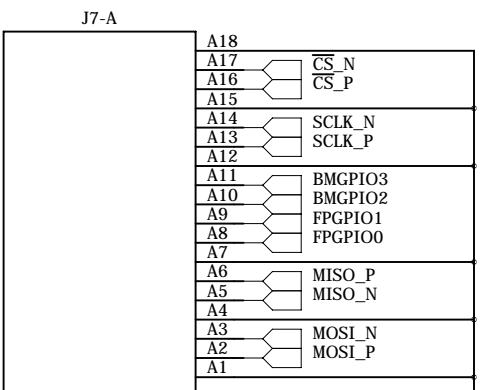
C

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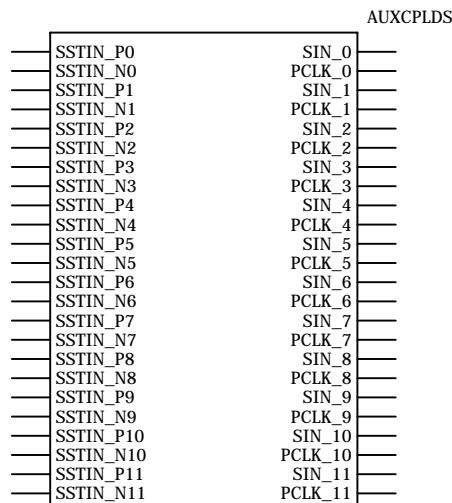
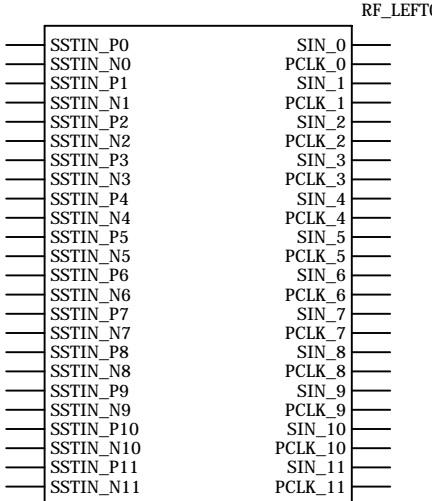
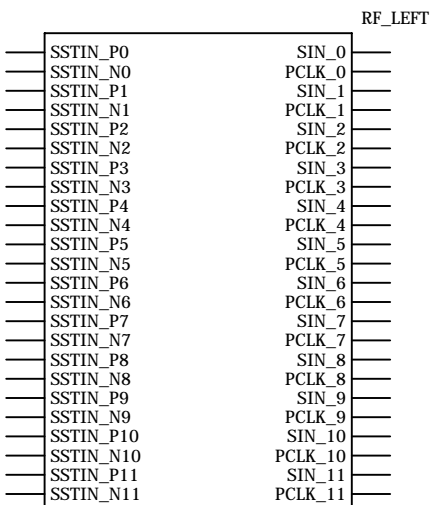
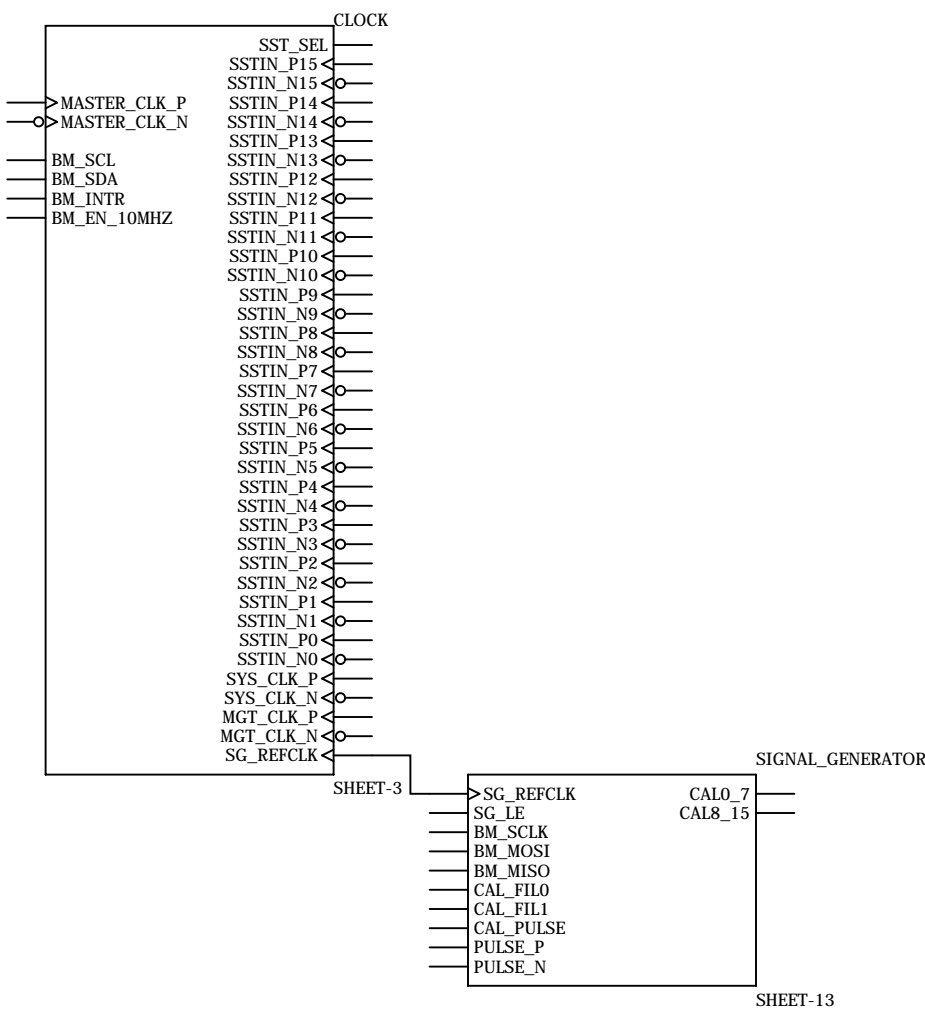
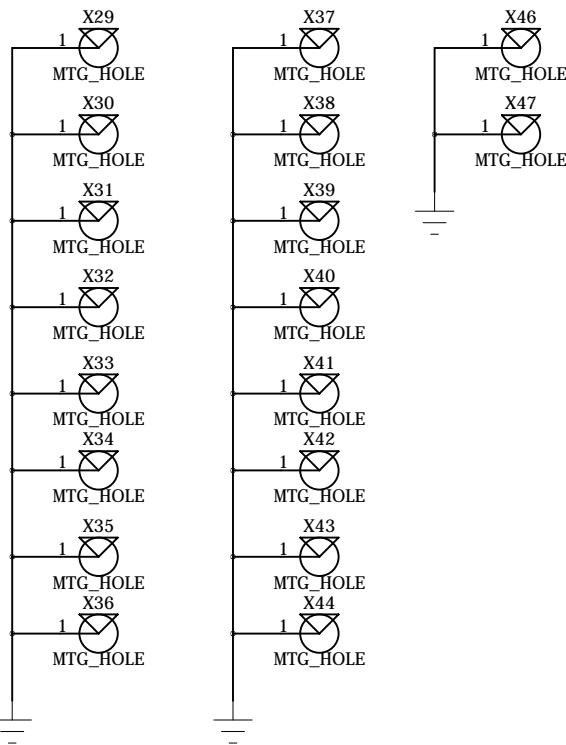
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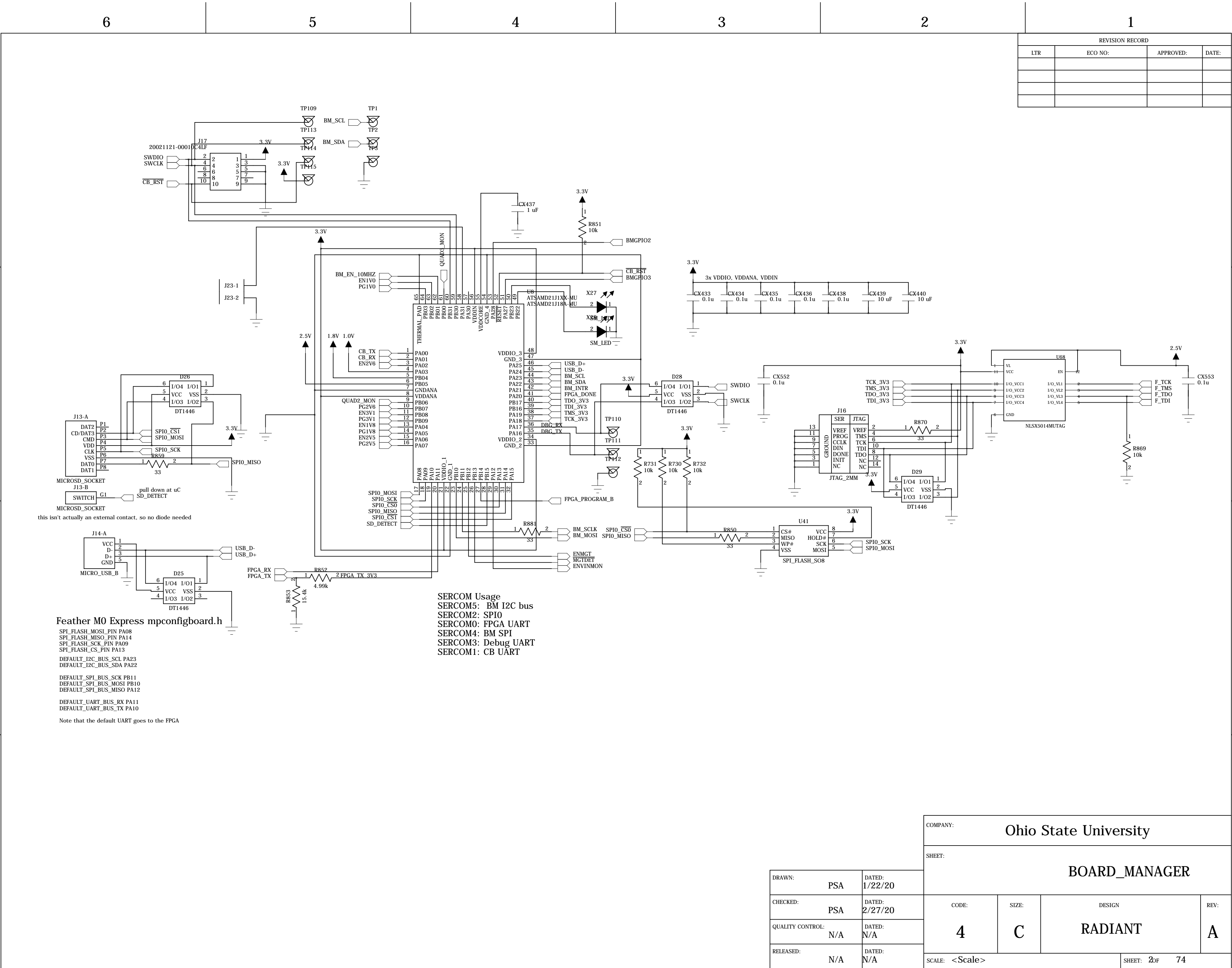


SFF-8087 connector
Cable is designed with 8 differential pairs
TRIGIN+/-
TRIGOUT+/-
CLK+/-
SYNC+/-
MOSI/GND
MISO/GND (these are implemented as differential pairs!)
SCLK/GND (allows for a higher-speed FPGA-to-FPGA link)
CS/GND (if used single ended, just drive N side to ground in FPGA)
There are also 8 sideband signals
RX/TX/RST/GND/GPIO[3:0]

At some point I'll finish a top block diagram...

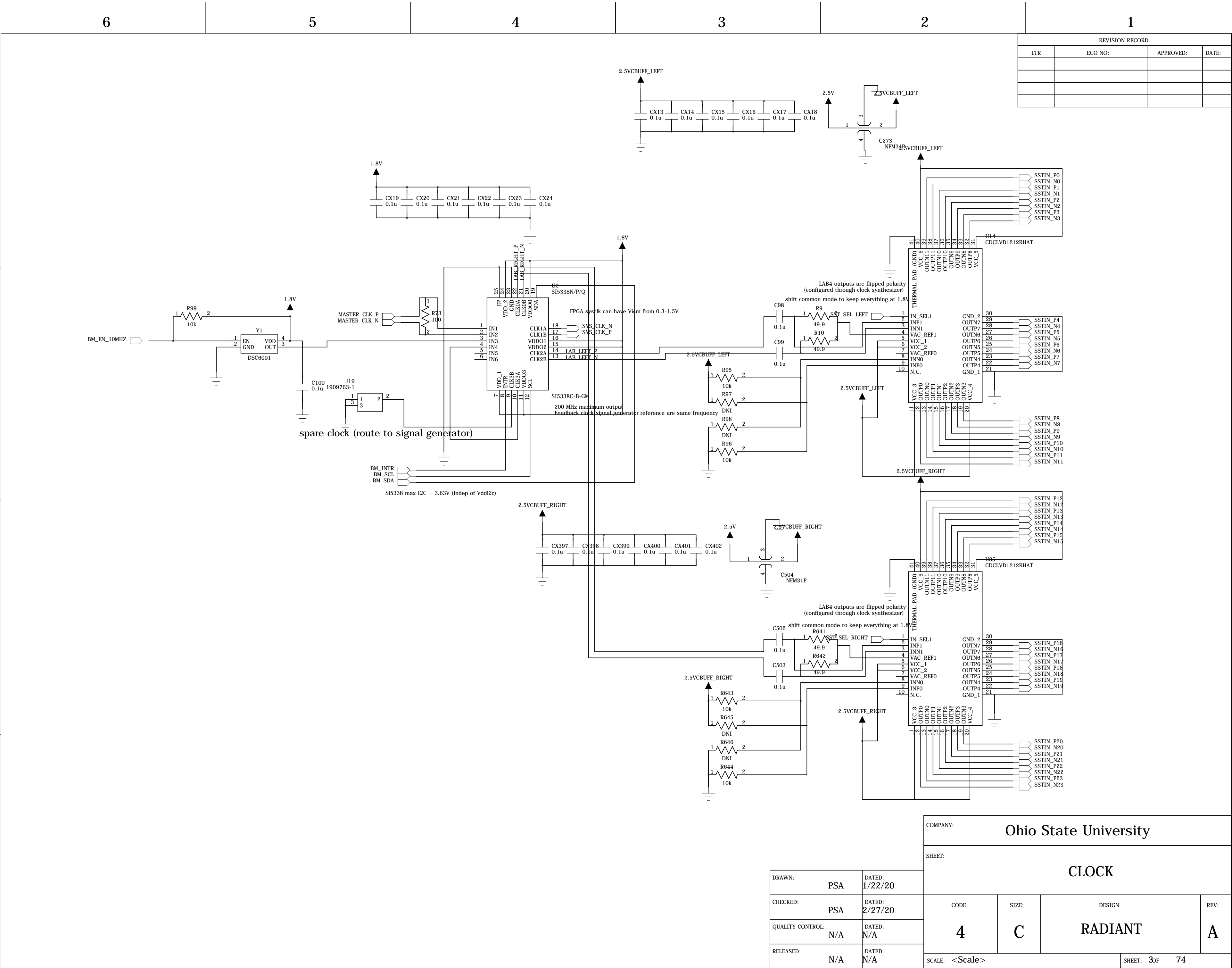


COMPANY: Ohio State University			
SHEET: TOP			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 1 of 74	



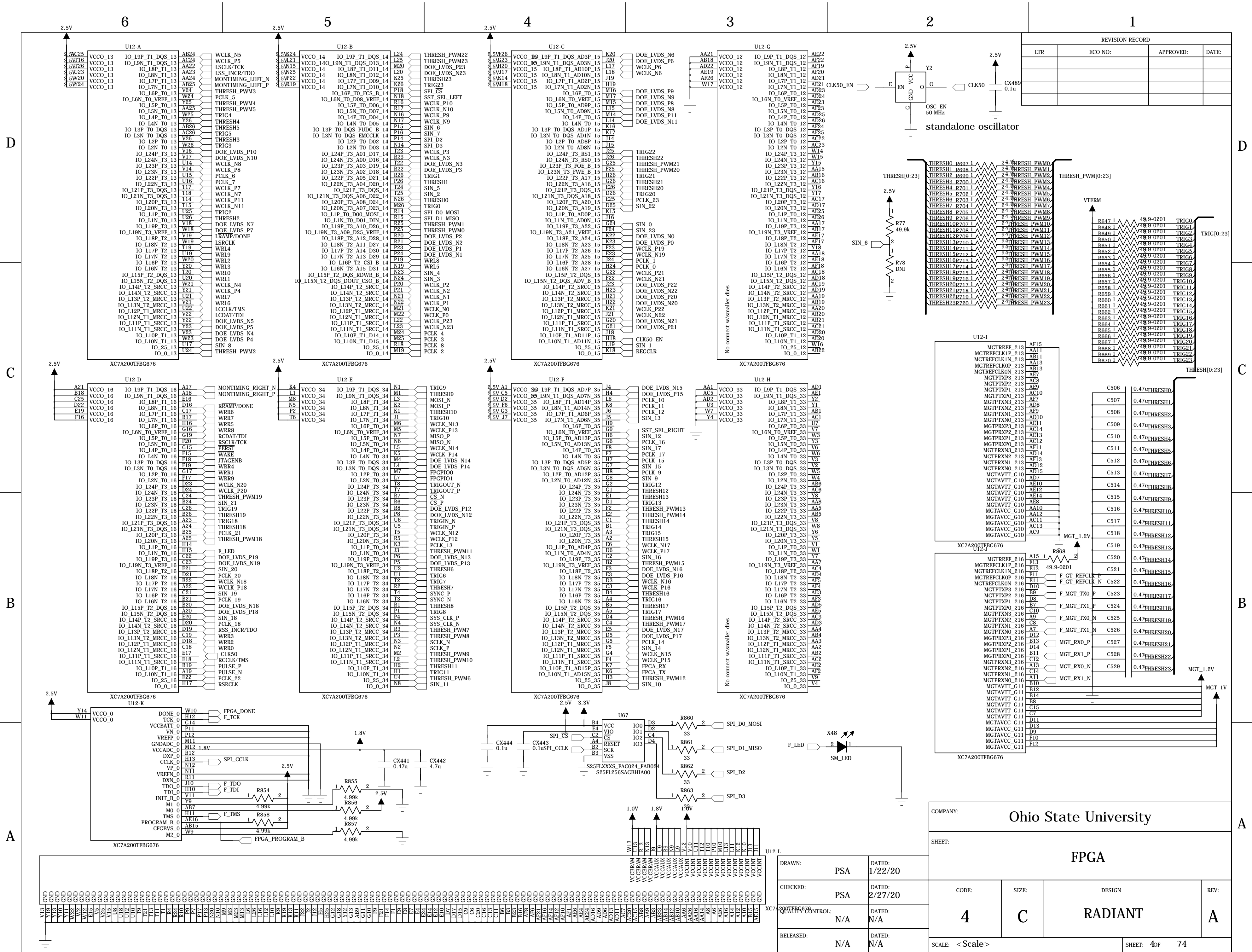
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: BOARD_MANAGER			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A		
RELEASED: N/A	DATED: N/A		
SCALE: <Scale>			SHEET: 2 of 74



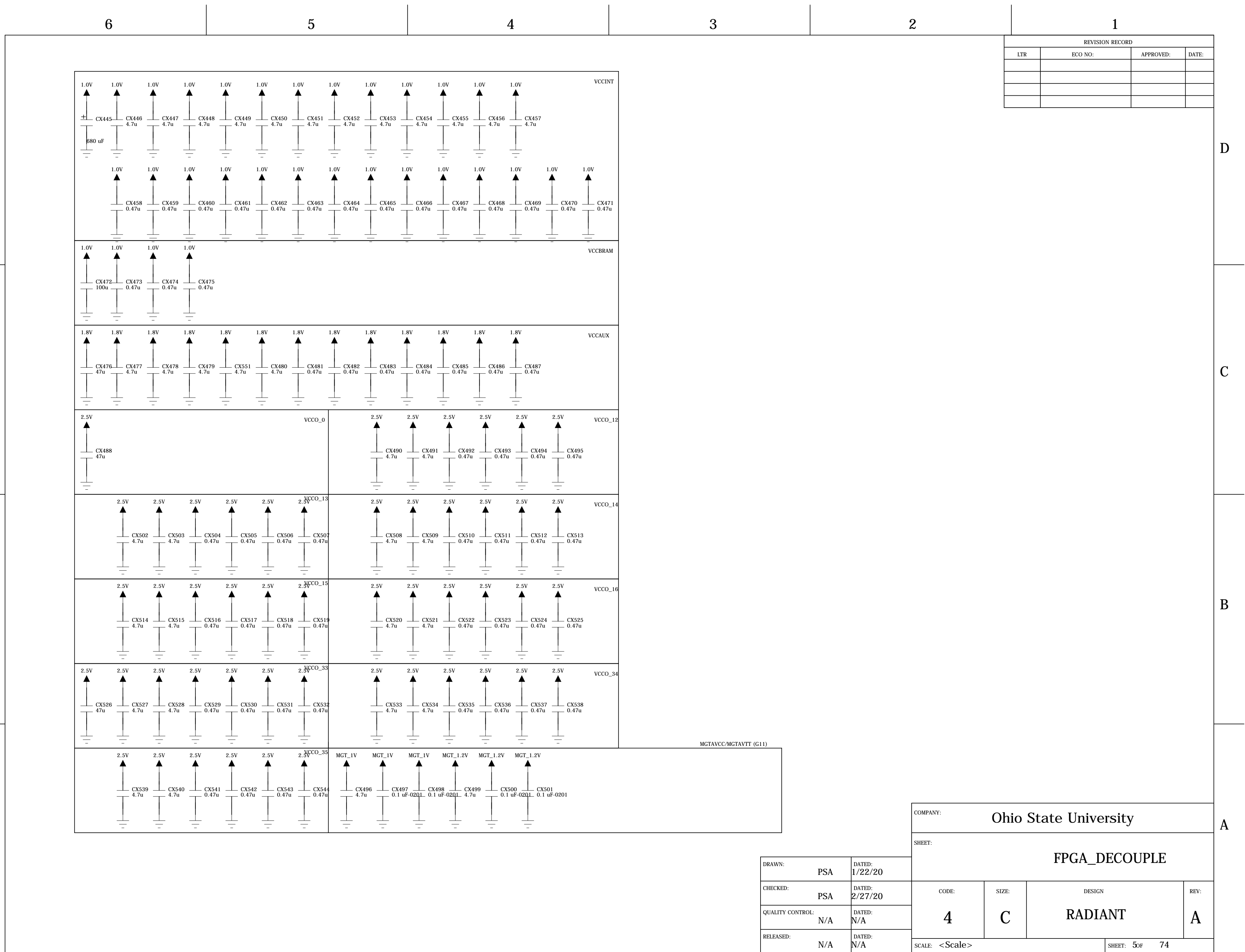
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: CLOCK			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A		
RELEASED: N/A	DATED: N/A		
SCALE: <Scale>			SHEET: 3 of 74



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY:		Ohio State University	
SHEET:		FPGA	
DRAWN:		PSA	DATED: 1/22/20
CHECKED:		PSA	DATED: 2/27/20
RELEASED:		N/A	DATED: N/A
CODE:		4	SIZE:
DESIGN:		RADIANT	
REV:		A	
SCALE: <Scale>		SHEET: 4 of 74	



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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

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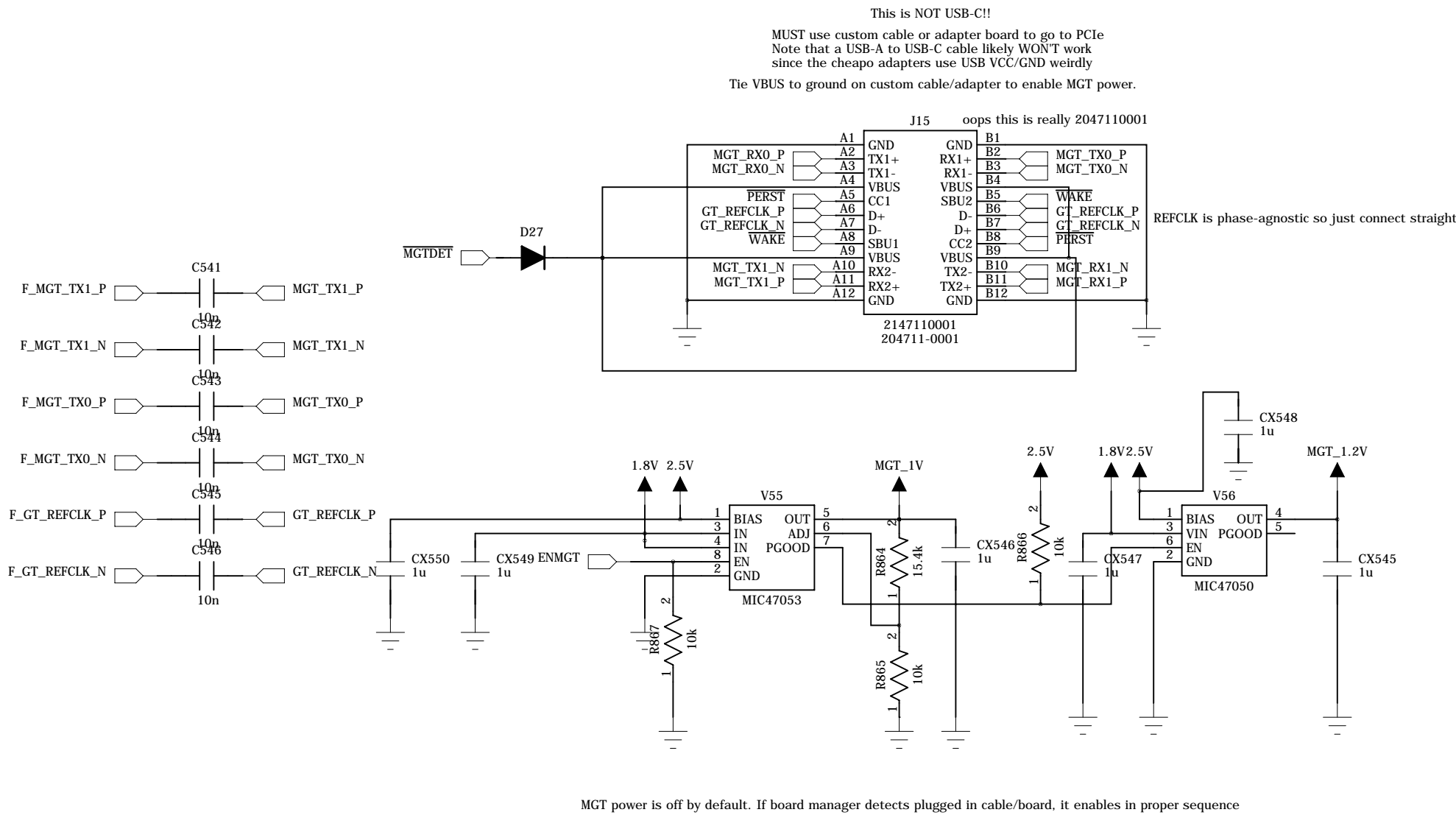
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COMPANY: Ohio State University			
SHEET: FPGA-PCIE			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 6 of 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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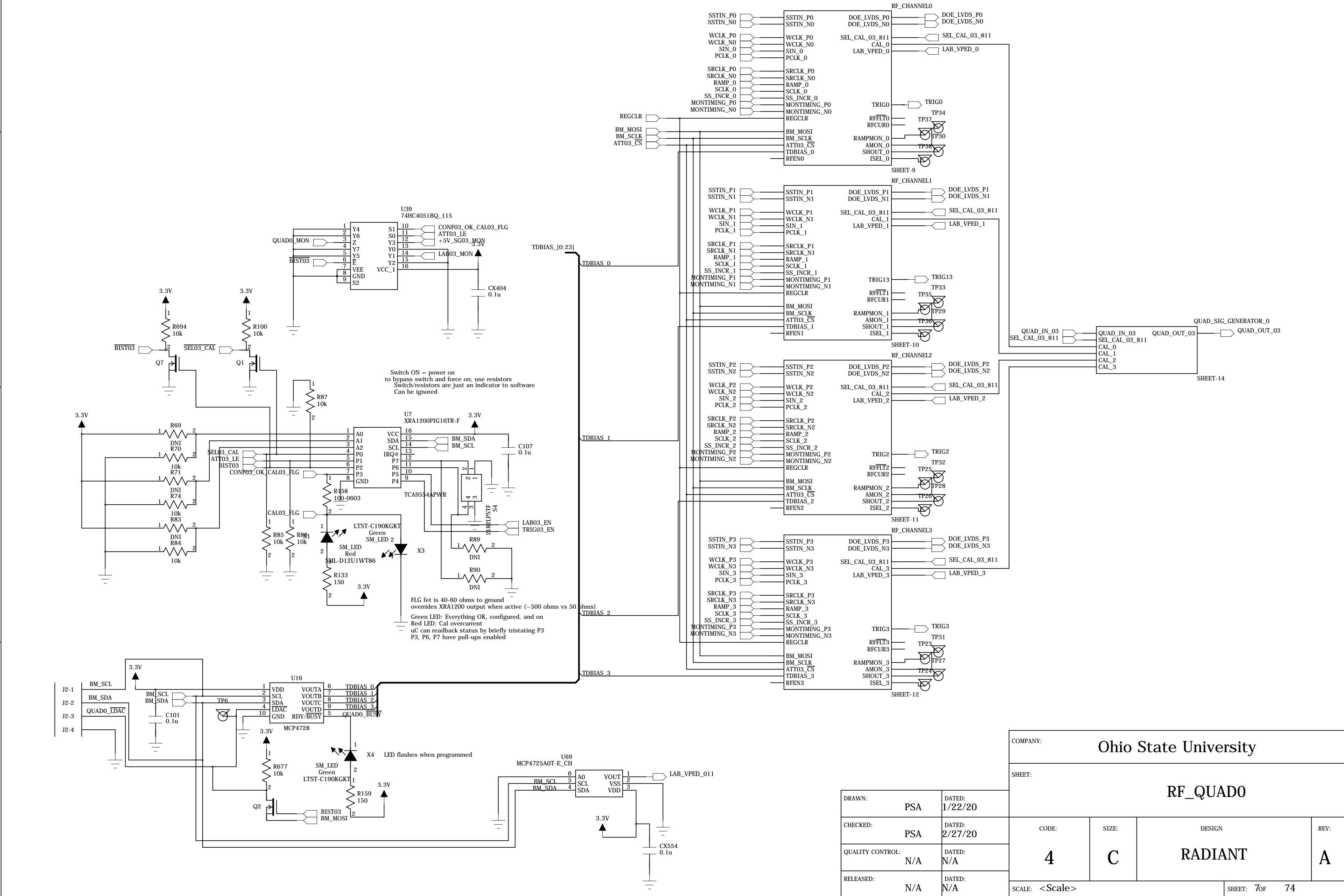
C

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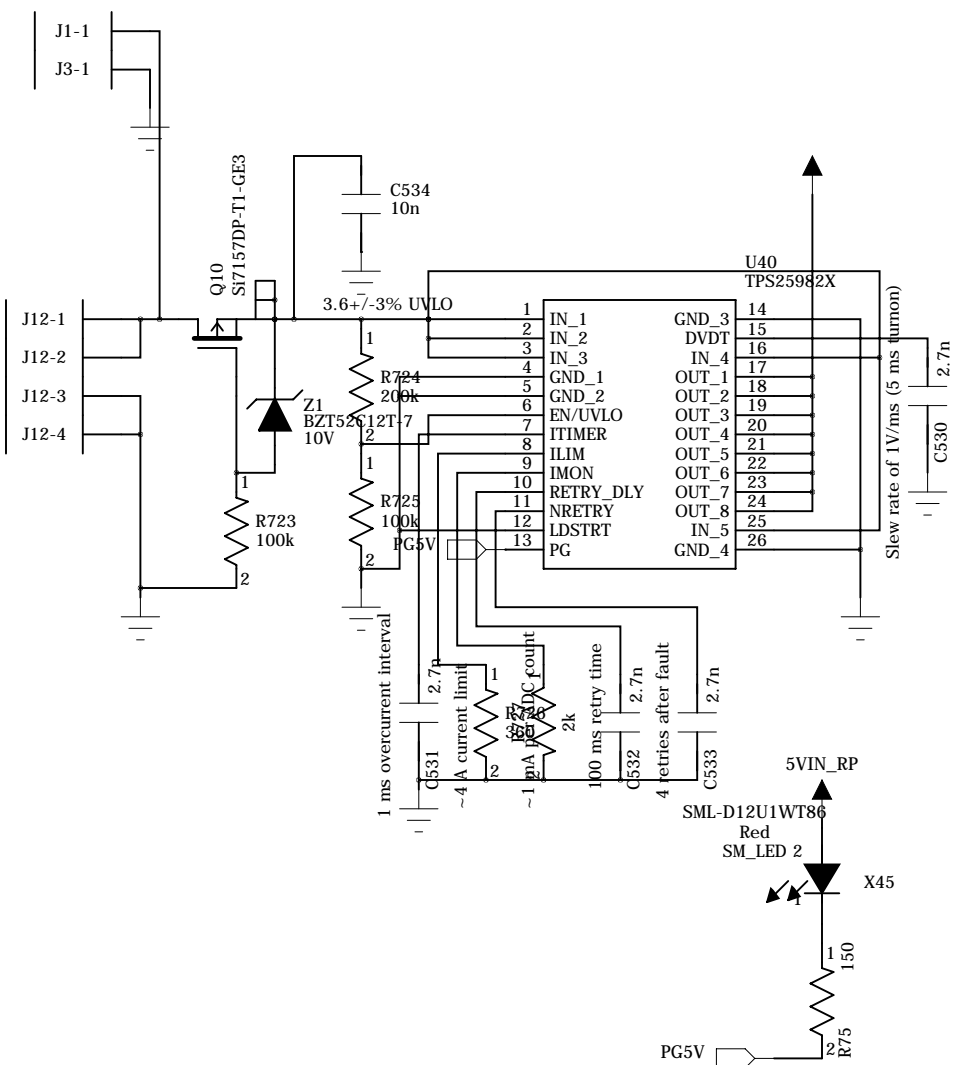
1

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

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Input power protection



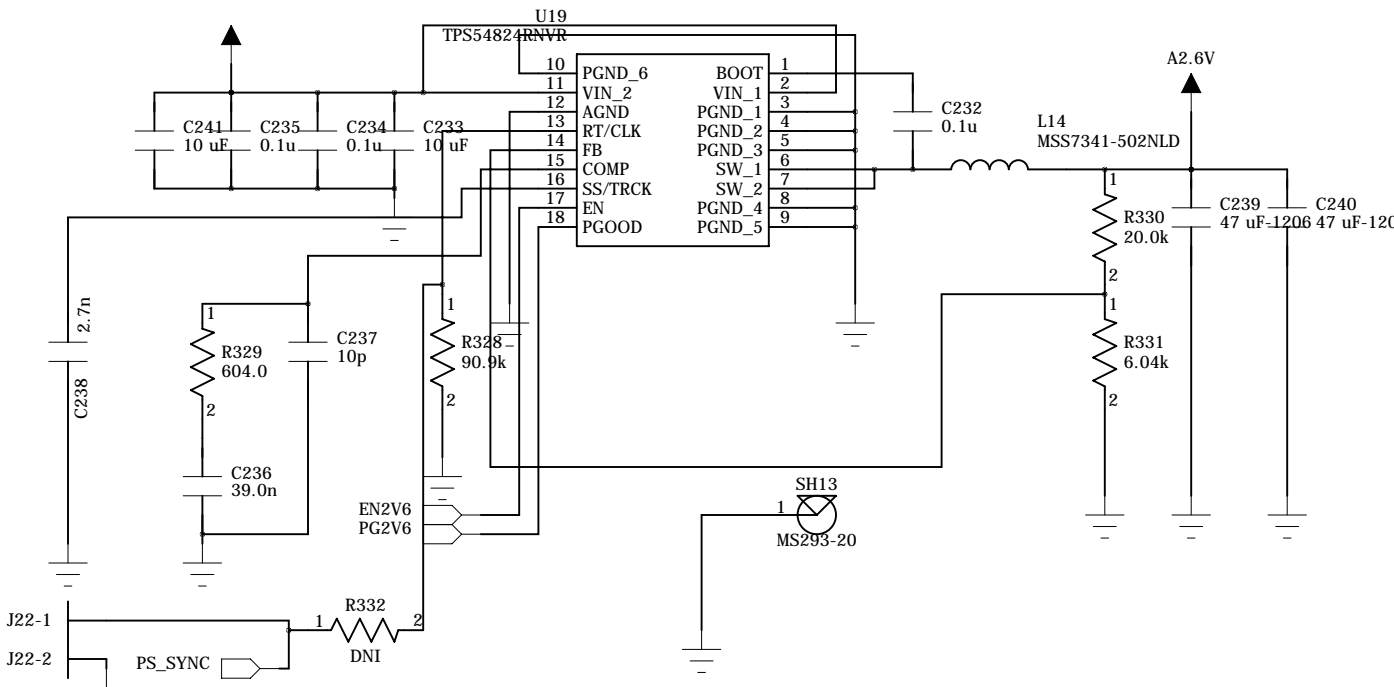
C

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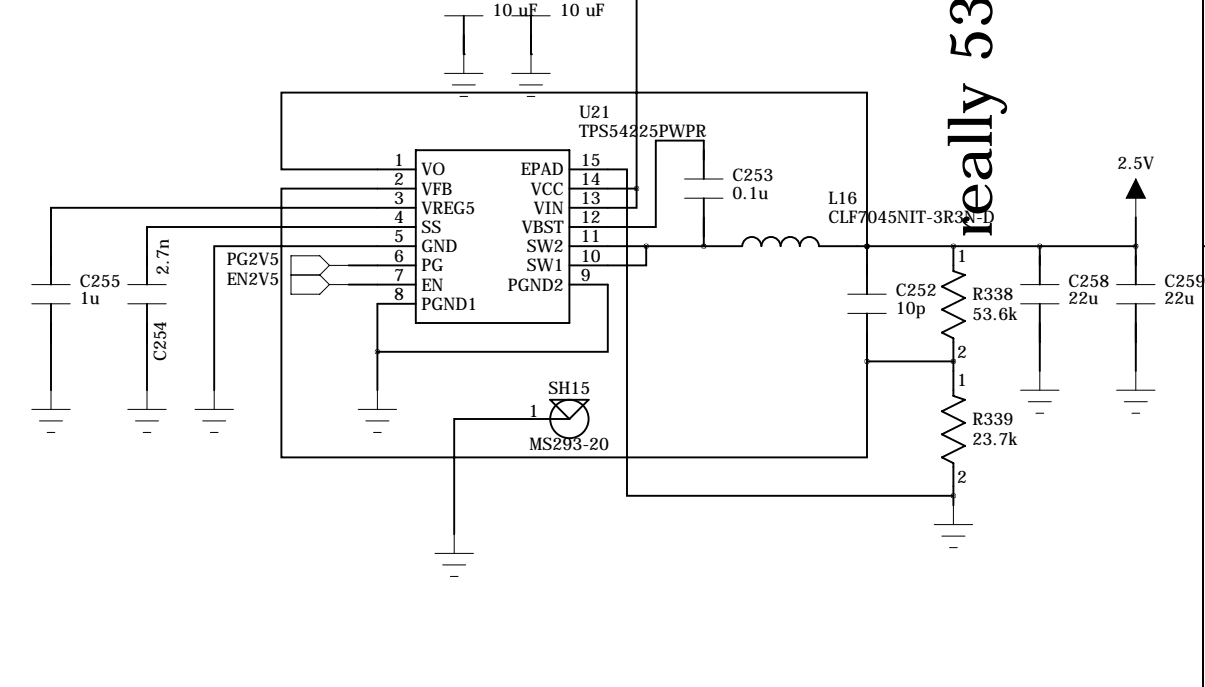
B

B

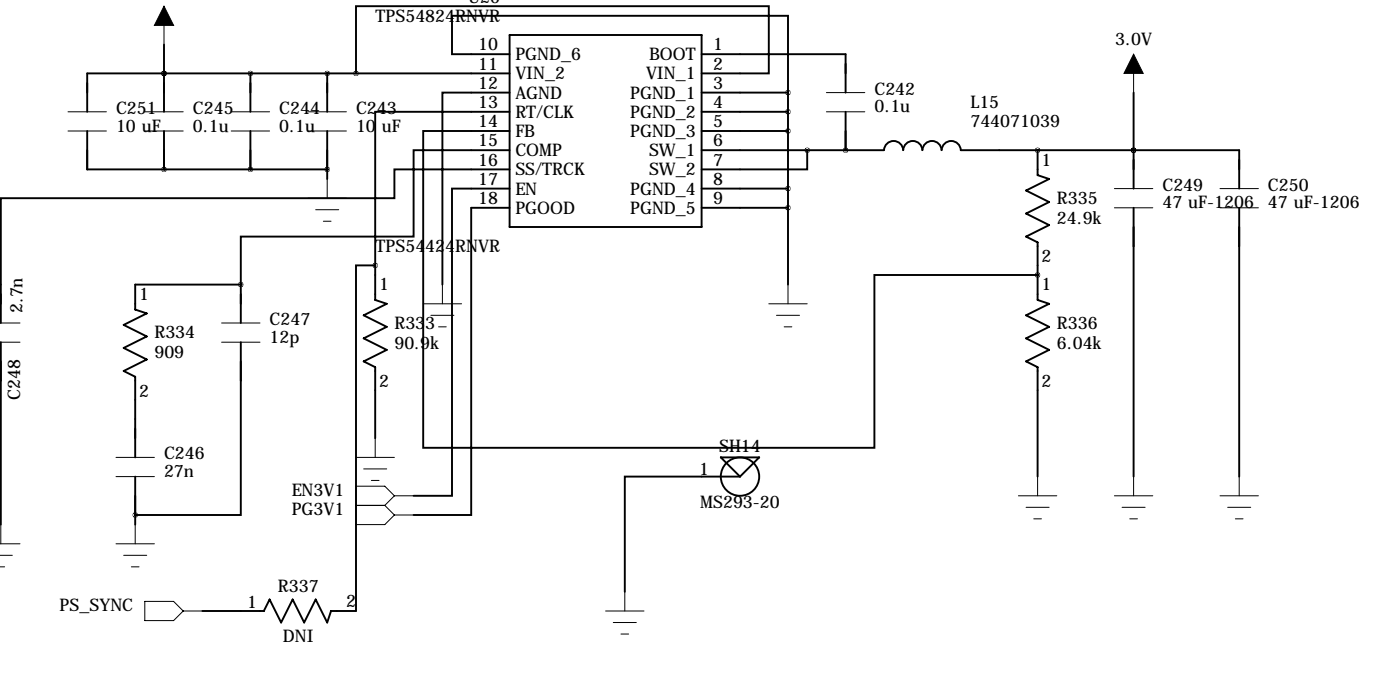
LAB4D supply (2.6V, regulated to 2.5V)



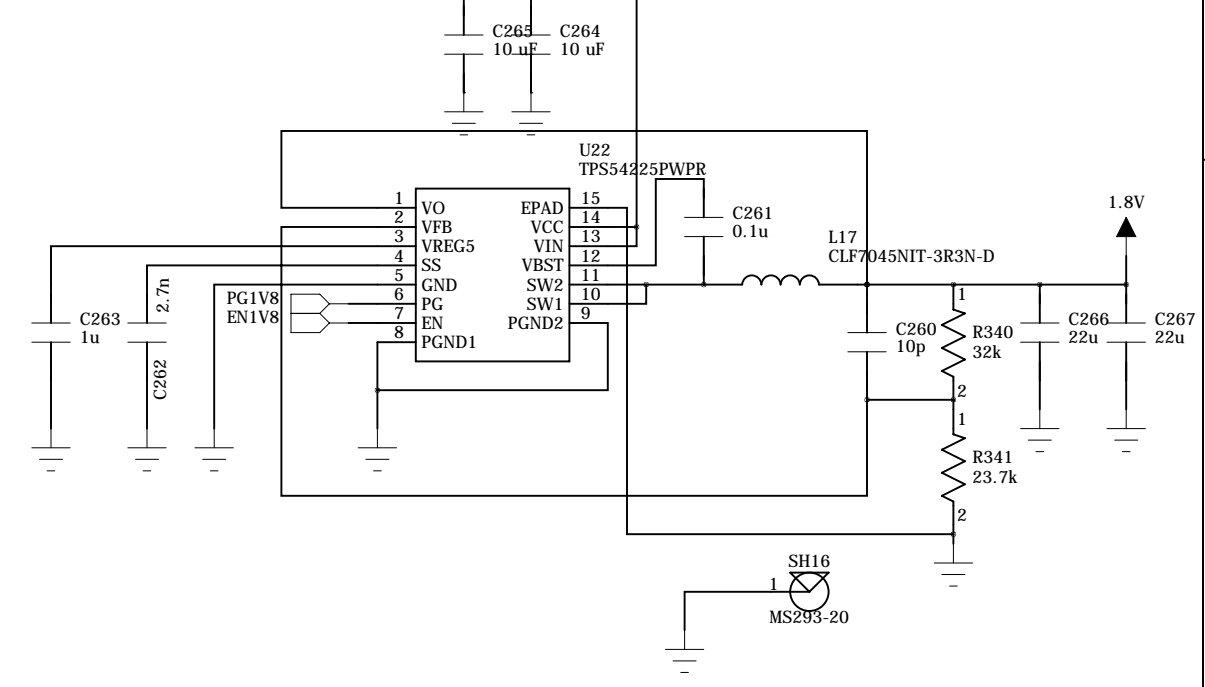
2.5V supply



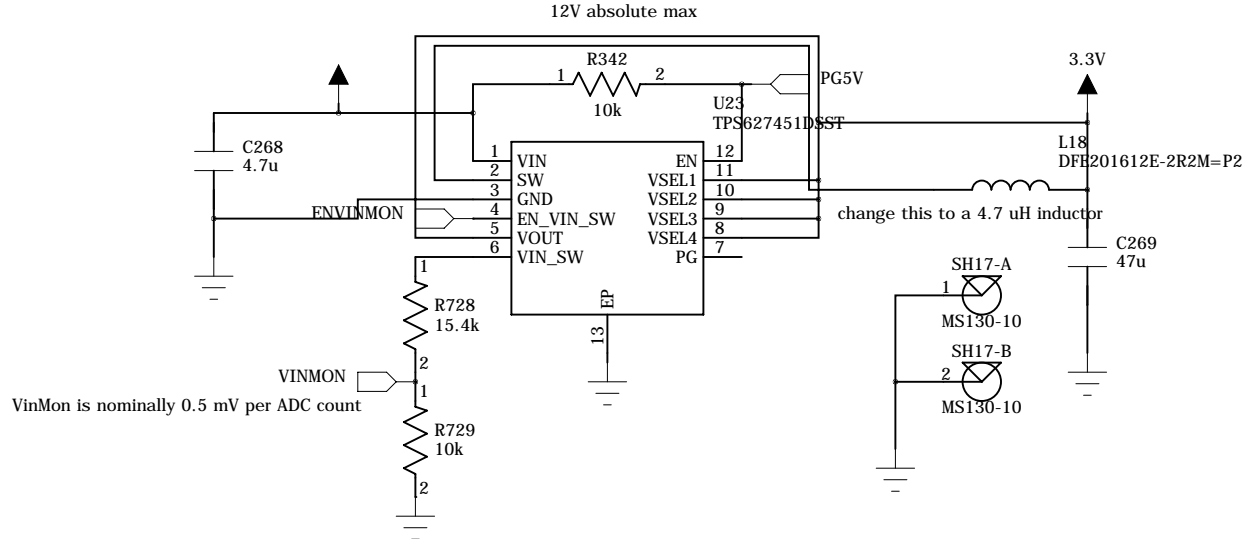
Trigger supply (3.07V, regulated to 3.0V)



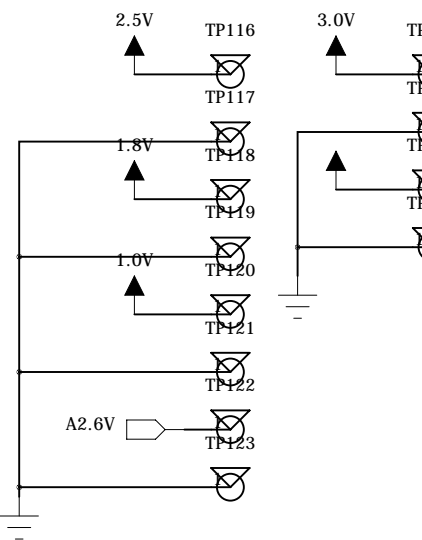
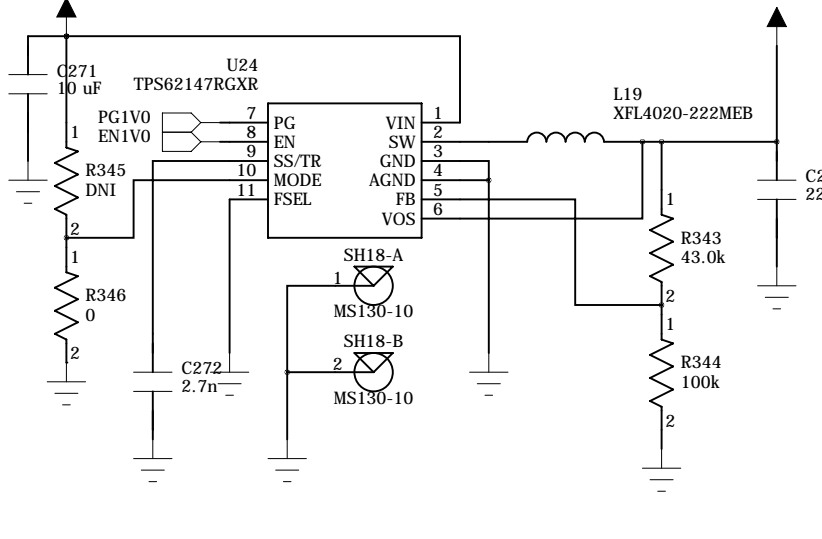
1.8V supply



3.3V supply (always on)



FPGA core supply (1.0V)



COMPANY: Ohio State University			
SHEET: POWER			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 8 of 74	

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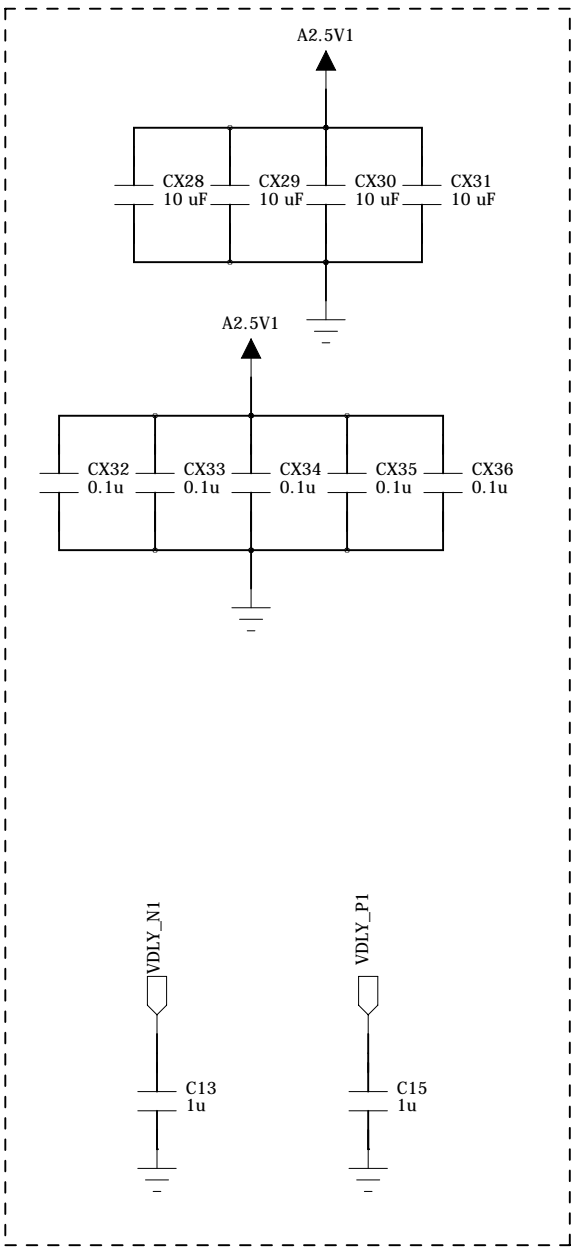
D

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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



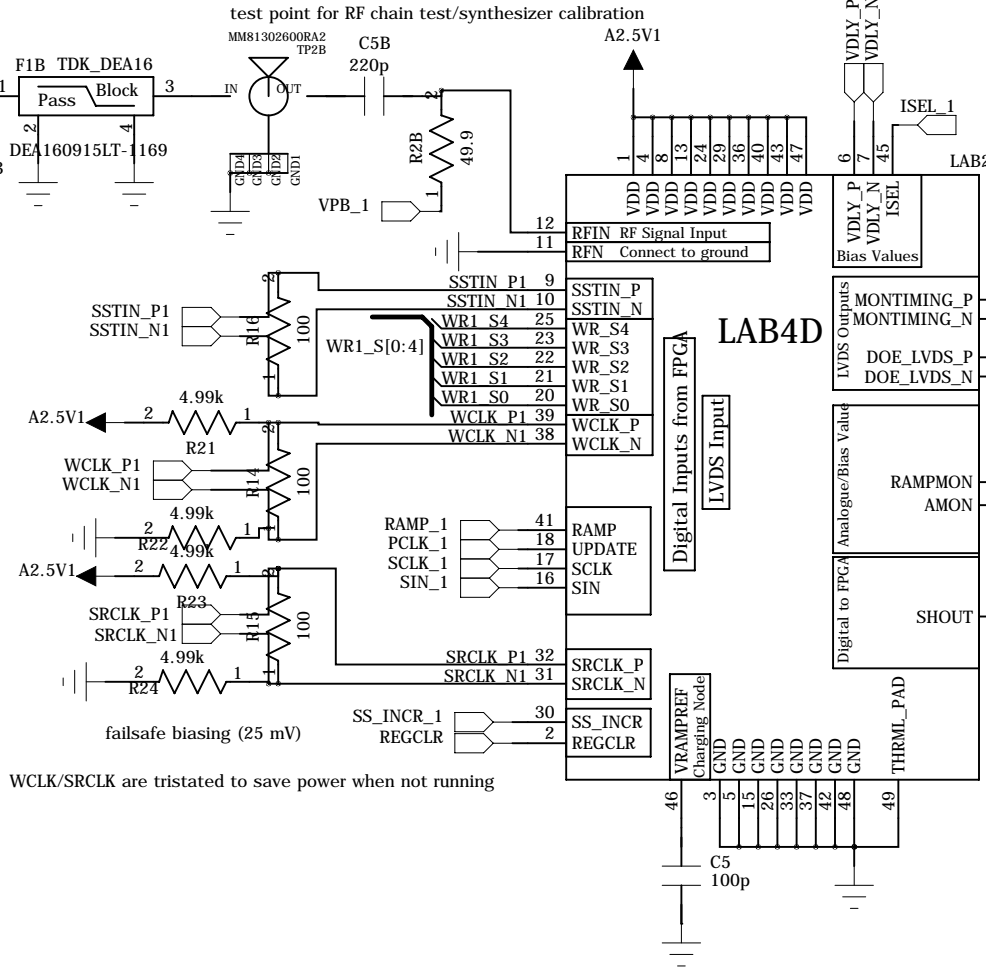
Filtering/bypass capacitors

Do not install

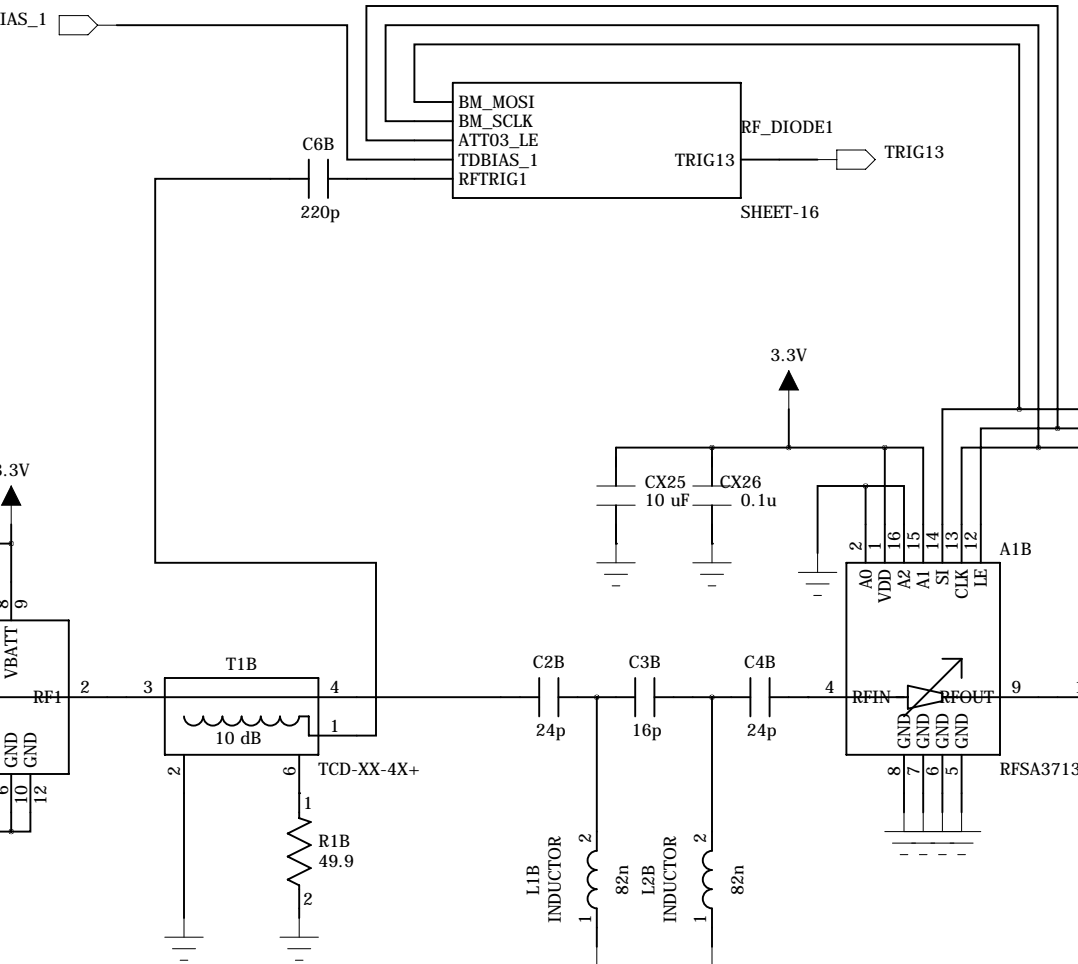
Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNEL1			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 10 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A



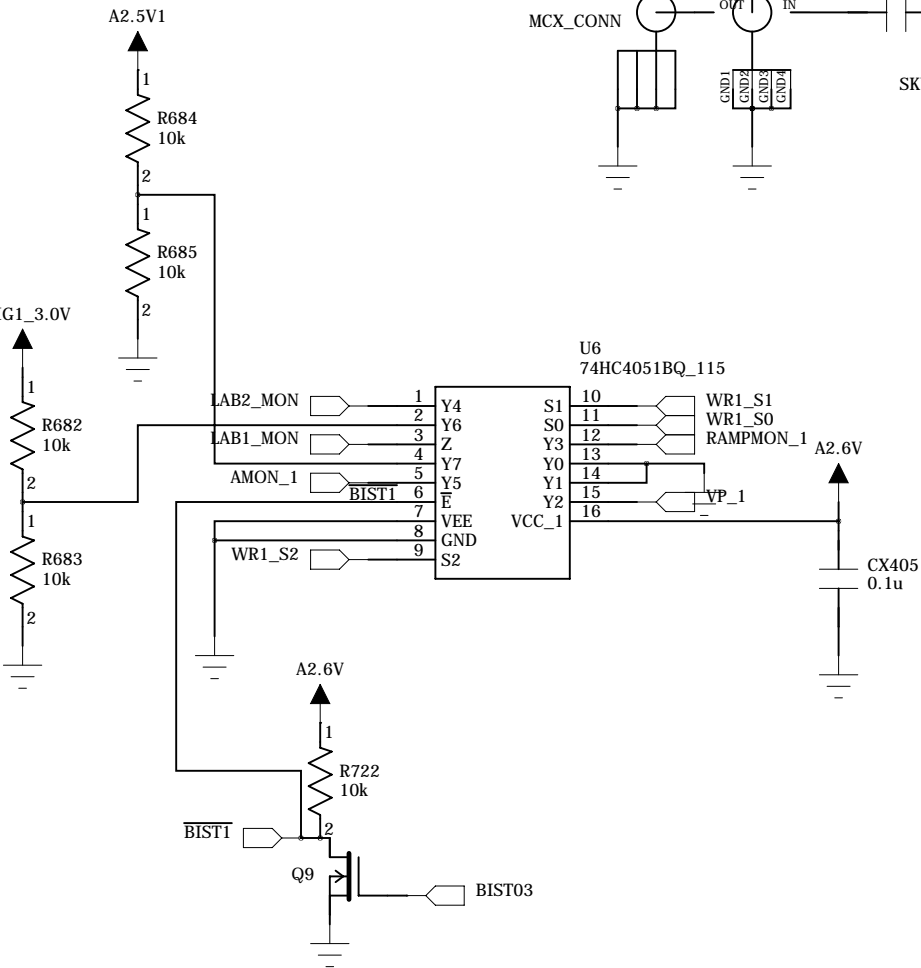
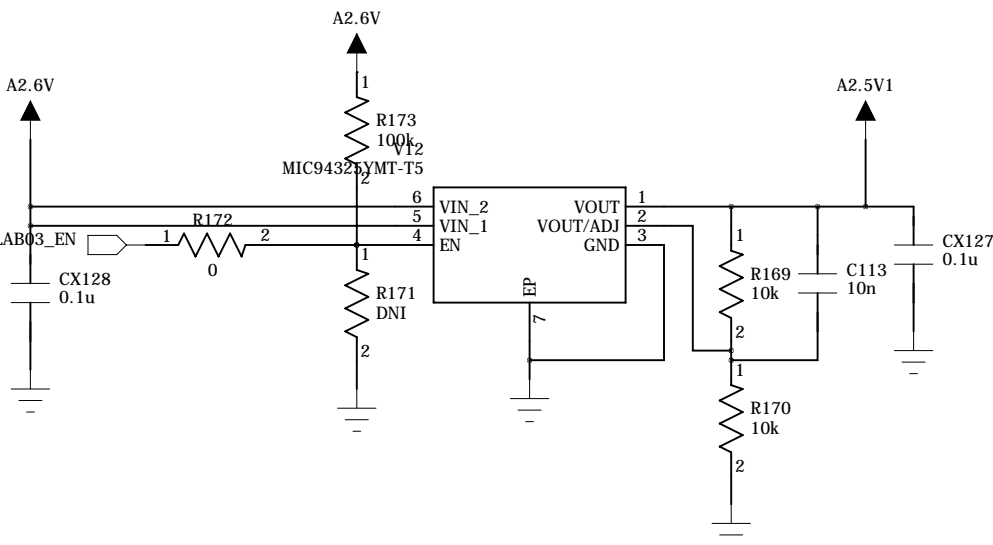
WCLK/SRCLK are tristated to save power when not running



Vped

need to clamp DAC output

Use MCP6L01



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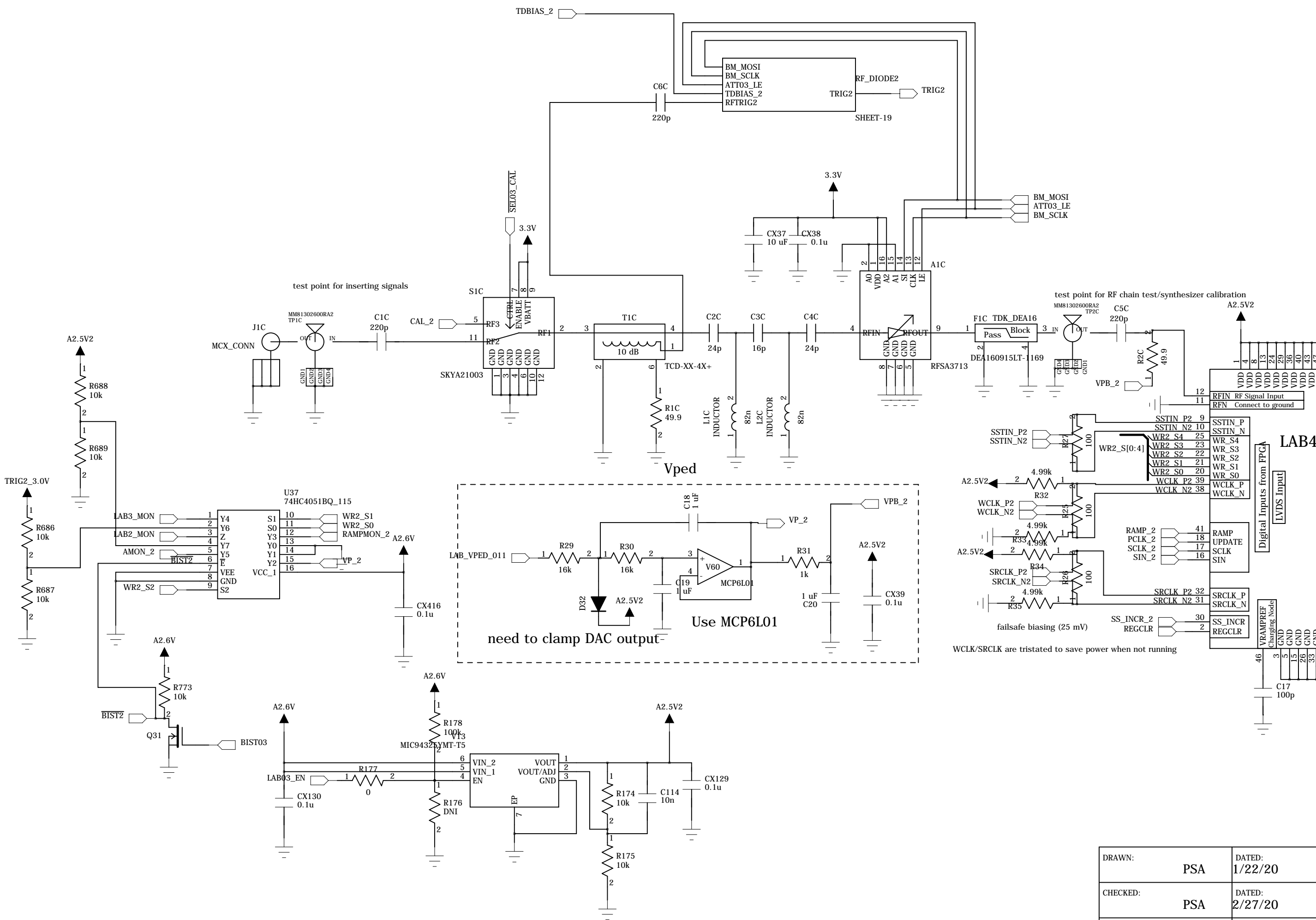
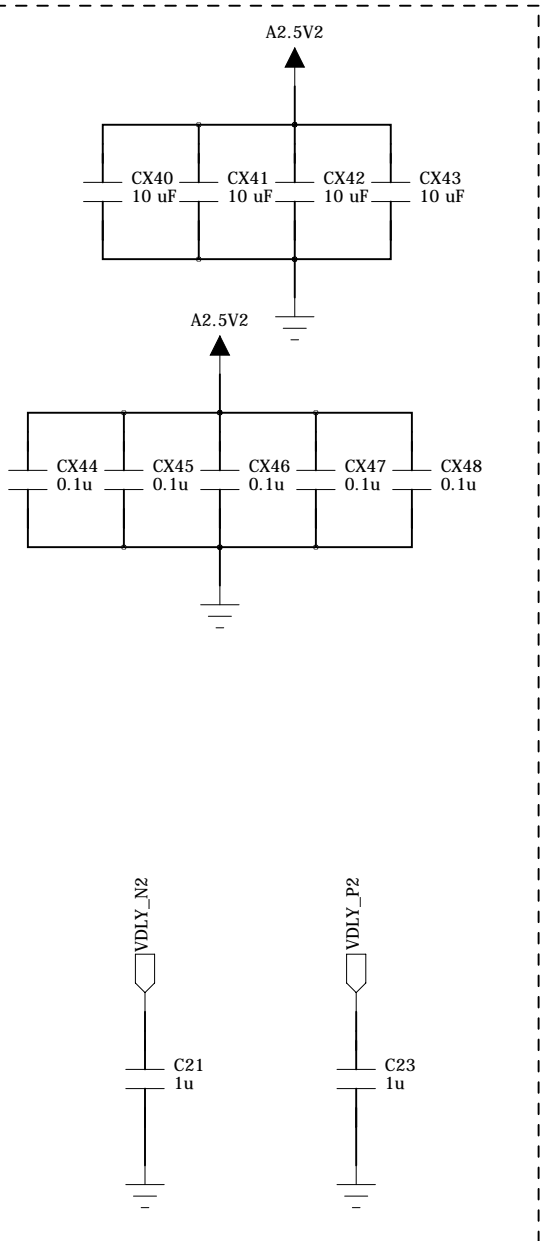
D

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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNEL2			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 1 of 74	

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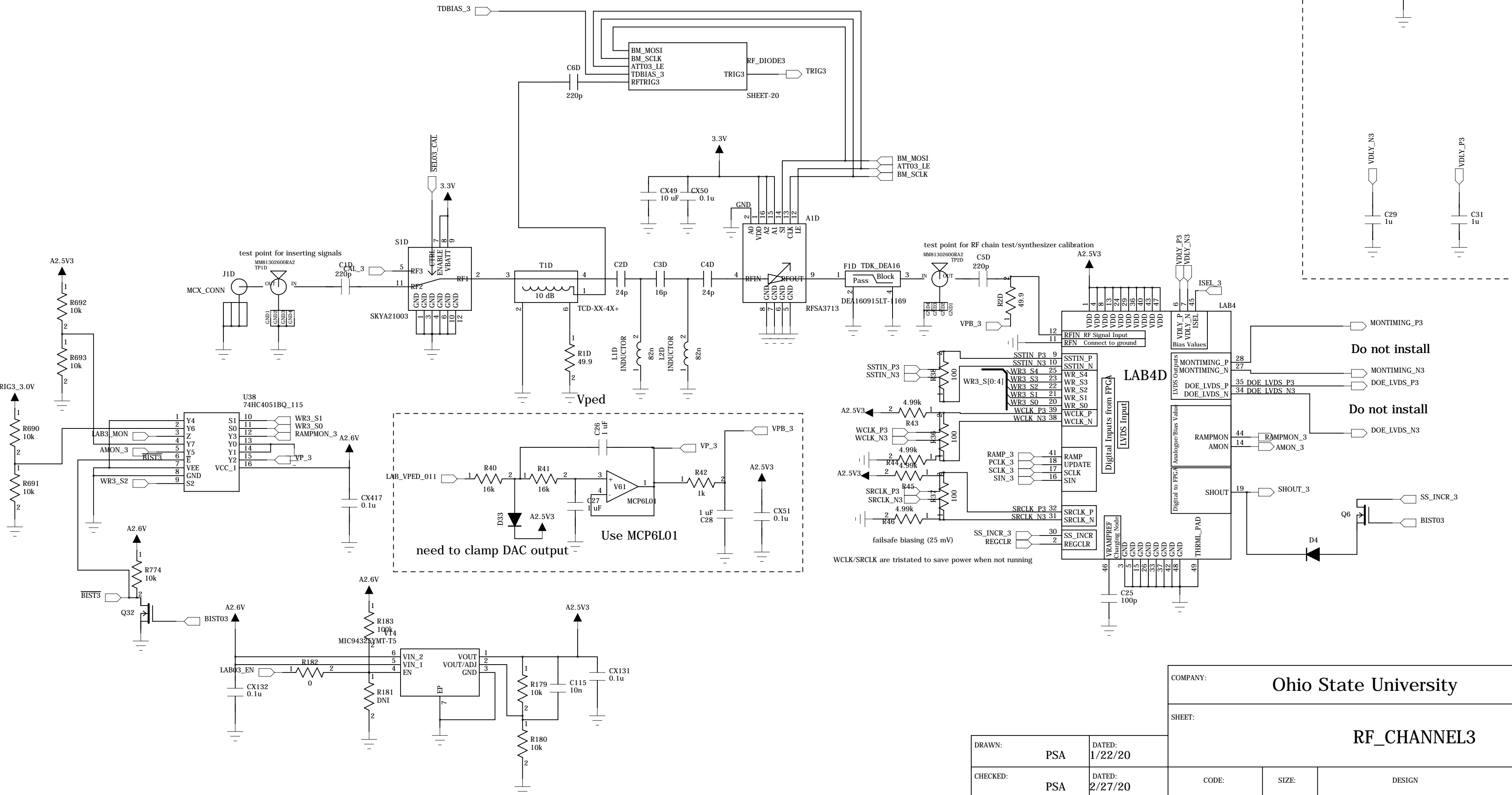
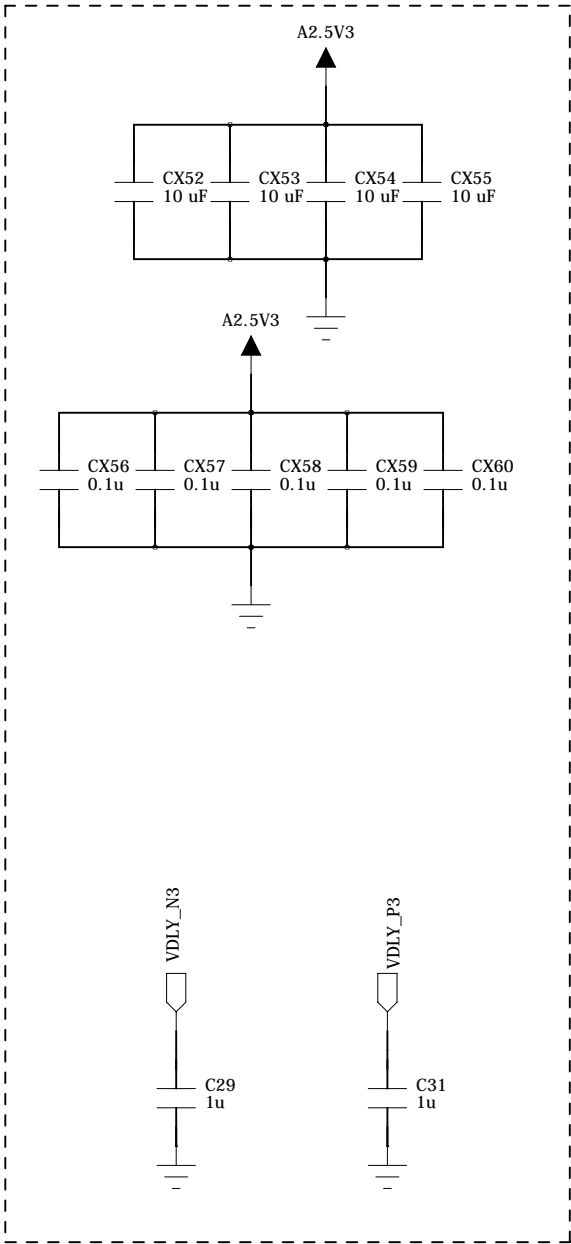
D

C

B

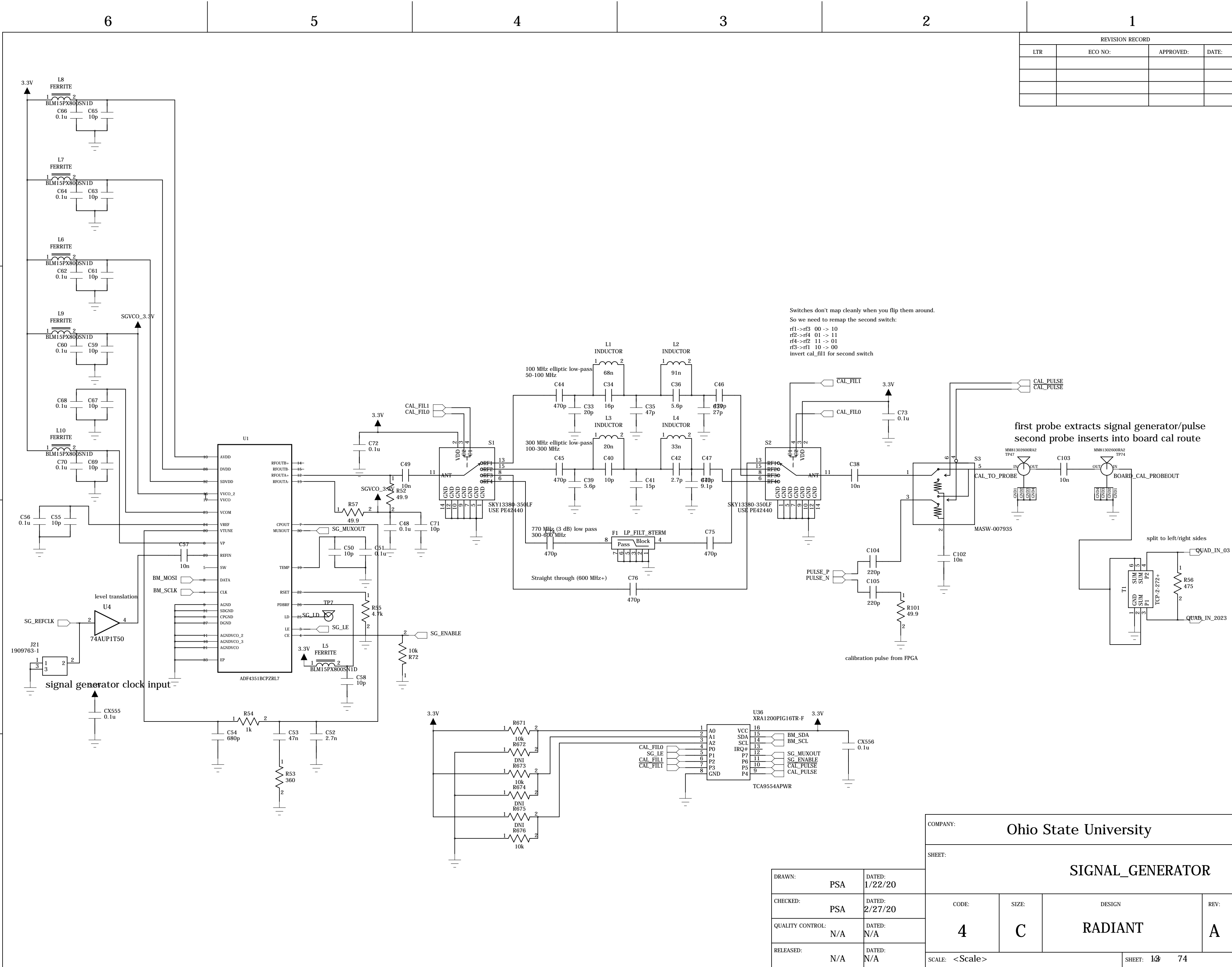
A

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: RF_CHANNEL3			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 12 74



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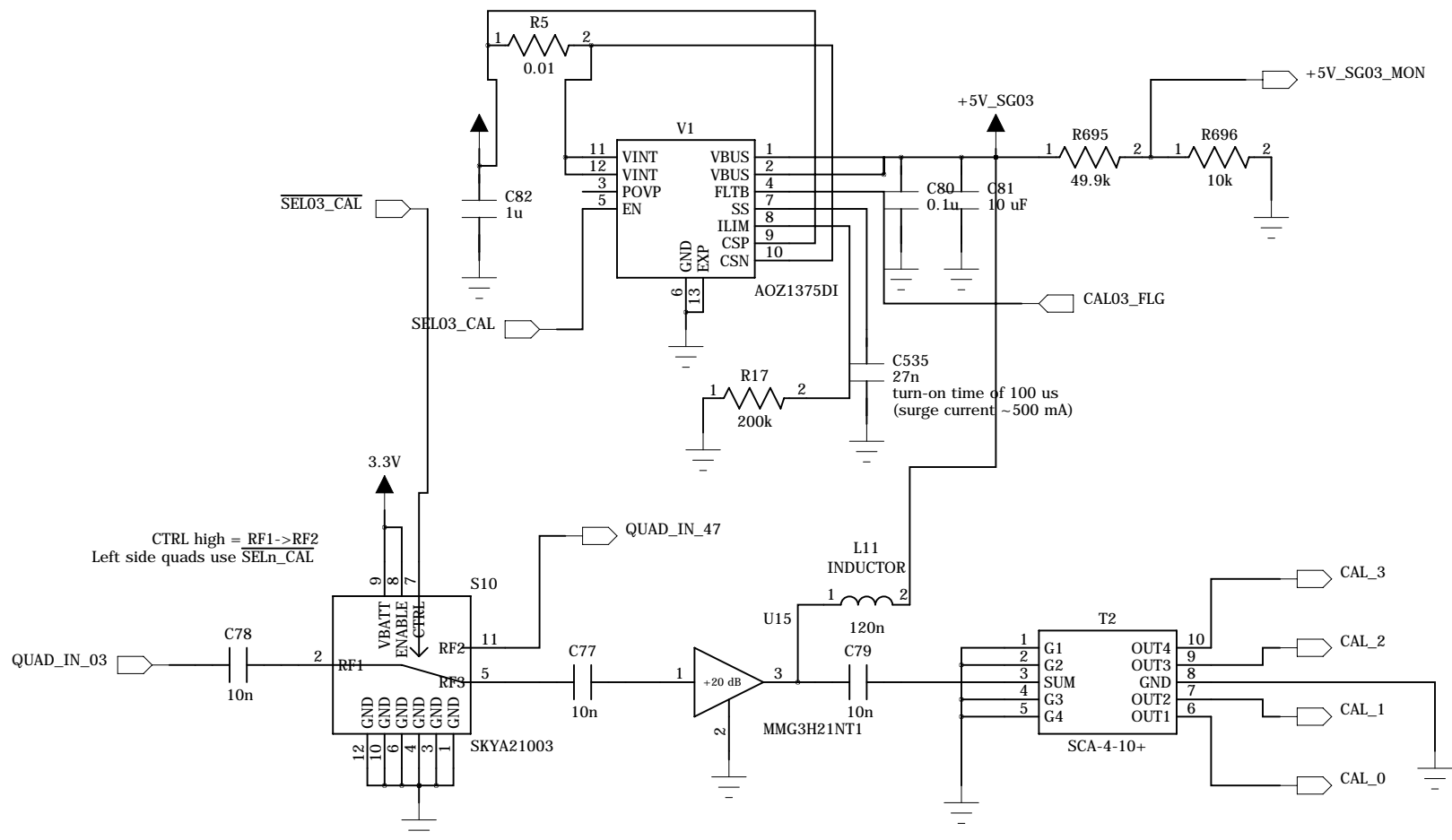
4

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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: QUAD_SIG_GENERATOR_0			
CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 14 74

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

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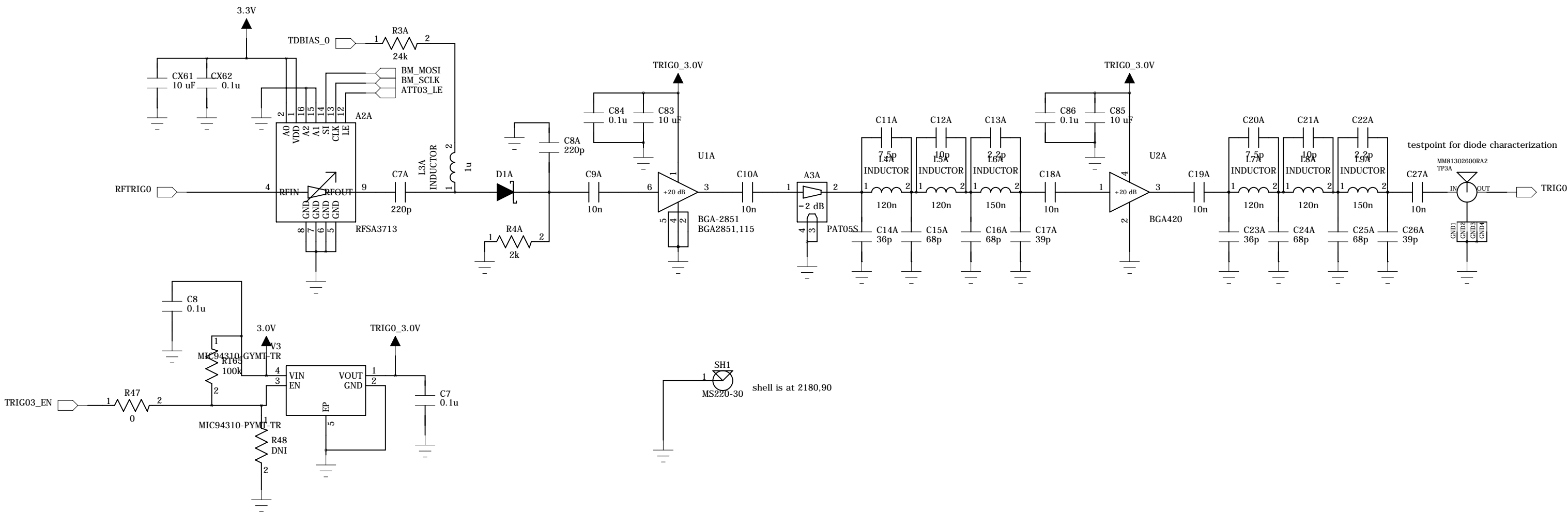
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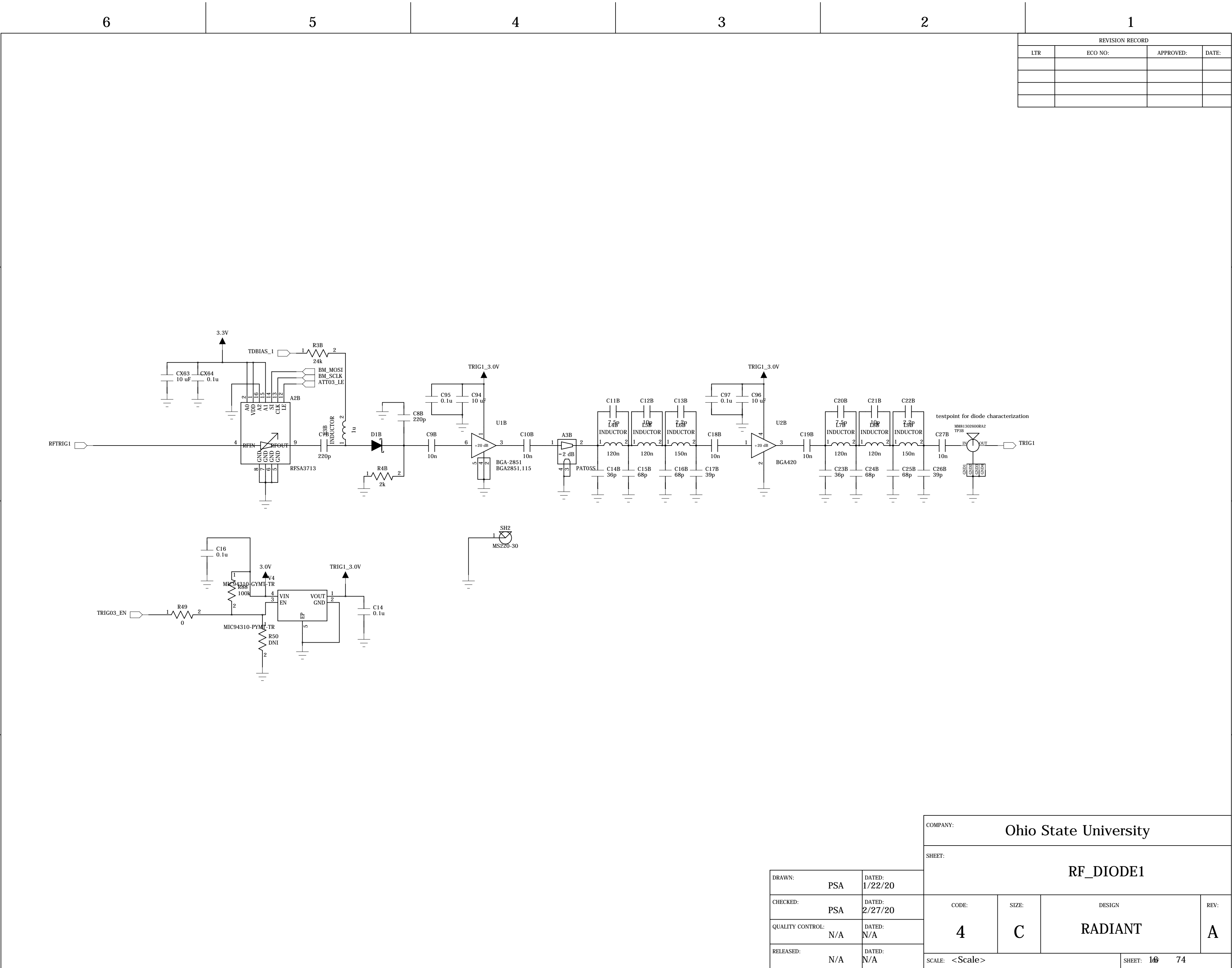
1

REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



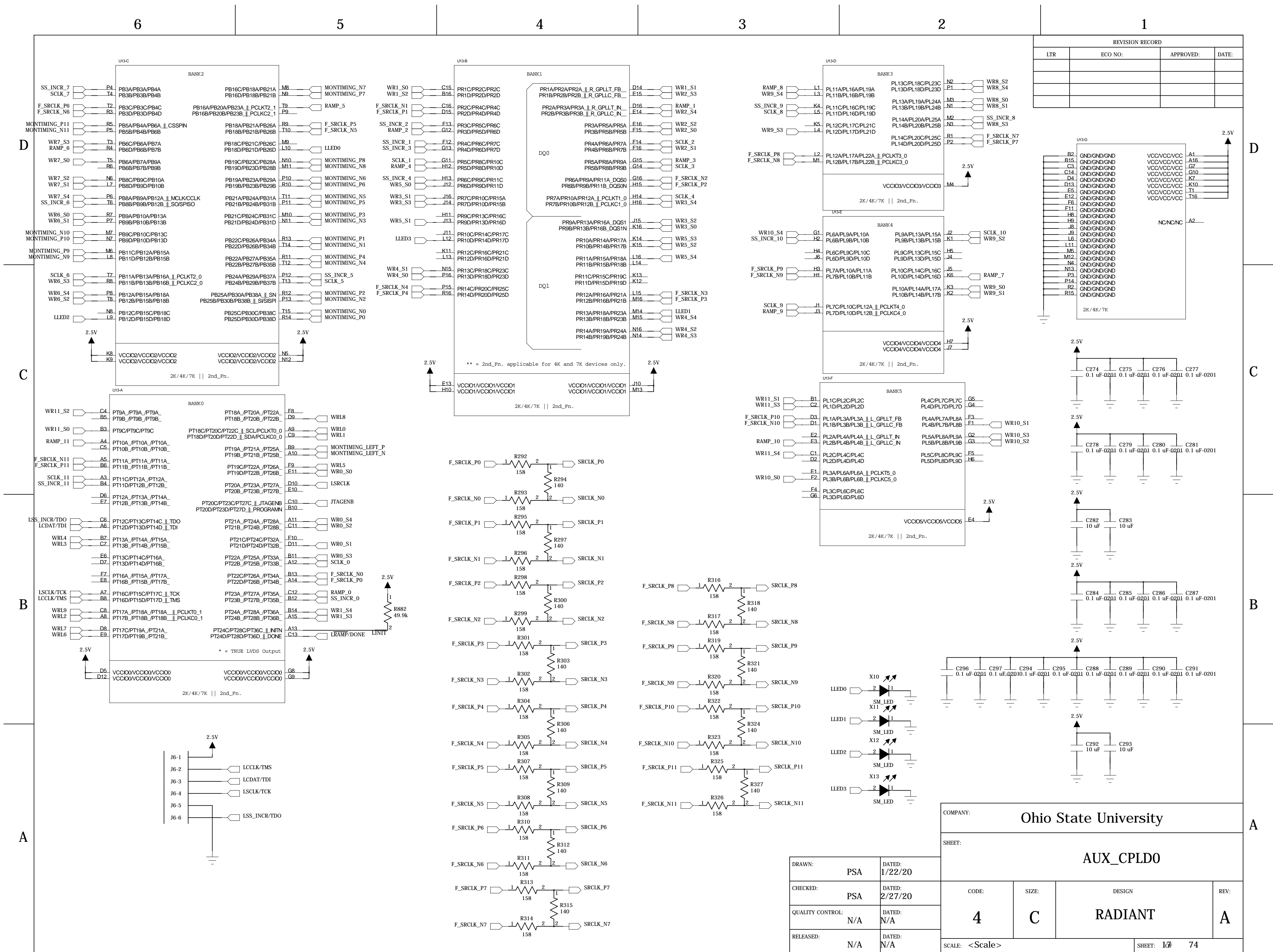
COMPANY: Ohio State University			
SHEET: RF_DIODE0			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 15 74



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_DIODE1			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 16 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A



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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

RF_QUAD0 SHEET-7

SSTIN_P0	SSTIN_P0	DOE_LVDS_P0
SSTIN_N0	SSTIN_N0	DOE_LVDS_N0
SSTIN_P1	SSTIN_P1	DOE_LVDS_P1
SSTIN_N1	SSTIN_N1	DOE_LVDS_N1
SSTIN_P2	SSTIN_P2	DOE_LVDS_P2
SSTIN_N2	SSTIN_N2	DOE_LVDS_N2
SSTIN_P3	SSTIN_P3	DOE_LVDS_P3
SSTIN_N3	SSTIN_N3	DOE_LVDS_N3
SIN_0	SIN_0	
PCLK_0	PCLK_0	TRIG0
SIN_1	SIN_1	TRIG1
PCLK_1	PCLK_1	TRIG2
SIN_2	SIN_2	TRIG3
PCLK_2	PCLK_2	
SIN_3	SIN_3	
PCLK_3	PCLK_3	

REGCLR Main FPGA/Clocking

WCLK_P0	WCLK_P0
WCLK_N0	WCLK_N0
SRCLK_P0	SRCLK_P0
SRCLK_N0	SRCLK_N0
MONTIMING_P0	MONTIMING_P0
MONTIMING_N0	MONTIMING_N0
SCLK_0	SCLK_0
SS_INCR_0	SS_INCR_0
RAMP_0	RAMP_0
WCLK_P1	WCLK_P1
WCLK_N1	WCLK_N1
SRCLK_P1	SRCLK_P1
SRCLK_N1	SRCLK_N1
MONTIMING_P1	MONTIMING_P1
MONTIMING_N1	MONTIMING_N1
SCLK_1	SCLK_1
SS_INCR_1	SS_INCR_1
RAMP_1	RAMP_1
WCLK_P2	WCLK_P2
WCLK_N2	WCLK_N2
SRCLK_P2	SRCLK_P2
SRCLK_N2	SRCLK_N2
MONTIMING_P2	MONTIMING_P2
MONTIMING_N2	MONTIMING_N2
SCLK_2	SCLK_2
SS_INCR_2	SS_INCR_2
RAMP_2	RAMP_2
WCLK_P3	WCLK_P3
WCLK_N3	WCLK_N3
SRCLK_P3	SRCLK_P3
SRCLK_N3	SRCLK_N3
MONTIMING_P3	MONTIMING_P3
MONTIMING_N3	MONTIMING_N3
SCLK_3	SCLK_3
SS_INCR_3	SS_INCR_3
RAMP_3	RAMP_3

Aux CPLD

QUAD_IN_03 QUAD_OUT_03

SEL_CAL_03_811 Calibration

ATT03_CS	
BM_SCLK	
BM_MOSI	
BM_SCL	
BM_SDA	
LAB_VPED_0	
LAB_VPED_1	
LAB_VPED_2	
LAB_VPED_3	

Board Manager

RF_QUAD1 SHEET-21

SSTIN_P4	SSTIN_P4	DOE_LVDS_P0
SSTIN_N4	SSTIN_N4	DOE_LVDS_N0
SSTIN_P5	SSTIN_P5	DOE_LVDS_P1
SSTIN_N5	SSTIN_N5	DOE_LVDS_N1
SSTIN_P6	SSTIN_P6	DOE_LVDS_P2
SSTIN_N6	SSTIN_N6	DOE_LVDS_N2
SSTIN_P7	SSTIN_P7	DOE_LVDS_P3
SSTIN_N7	SSTIN_N7	DOE_LVDS_N3
SIN_4	SIN_4	
PCLK_4	PCLK_4	TRIG0
SIN_5	SIN_5	TRIG1
PCLK_5	PCLK_5	TRIG2
SIN_6	SIN_6	TRIG3
PCLK_6	PCLK_6	
SIN_7	SIN_7	
PCLK_7	PCLK_7	

REGCLR Main FPGA/Clocking

WCLK_P0	WCLK_P0
WCLK_N0	WCLK_N0
SRCLK_P0	SRCLK_P0
SRCLK_N0	SRCLK_N0
MONTIMING_P0	MONTIMING_P0
MONTIMING_N0	MONTIMING_N0
SCLK_0	SCLK_0
SS_INCR_0	SS_INCR_0
RAMP_0	RAMP_0
WCLK_P1	WCLK_P1
WCLK_N1	WCLK_N1
SRCLK_P1	SRCLK_P1
SRCLK_N1	SRCLK_N1
MONTIMING_P1	MONTIMING_P1
MONTIMING_N1	MONTIMING_N1
SCLK_1	SCLK_1
SS_INCR_1	SS_INCR_1
RAMP_1	RAMP_1
WCLK_P2	WCLK_P2
WCLK_N2	WCLK_N2
SRCLK_P2	SRCLK_P2
SRCLK_N2	SRCLK_N2
MONTIMING_P2	MONTIMING_P2
MONTIMING_N2	MONTIMING_N2
SCLK_2	SCLK_2
SS_INCR_2	SS_INCR_2
RAMP_2	RAMP_2
WCLK_P3	WCLK_P3
WCLK_N3	WCLK_N3
SRCLK_P3	SRCLK_P3
SRCLK_N3	SRCLK_N3
MONTIMING_P3	MONTIMING_P3
MONTIMING_N3	MONTIMING_N3
SCLK_3	SCLK_3
SS_INCR_3	SS_INCR_3
RAMP_3	RAMP_3

Aux CPLD

QUAD_IN_03 QUAD_OUT_03

SEL_CAL_03_811 Calibration

ATT03_CS	
BM_SCLK	
BM_MOSI	
BM_SCL	
BM_SDA	
LAB_VPED_0	
LAB_VPED_1	
LAB_VPED_2	
LAB_VPED_3	

Board Manager

RF_QUAD2 SHEET-31

SSTIN_P4	SSTIN_P4	DOE_LVDS_P0
SSTIN_N4	SSTIN_N4	DOE_LVDS_N0
SSTIN_P5	SSTIN_P5	DOE_LVDS_P1
SSTIN_N5	SSTIN_N5	DOE_LVDS_N1
SSTIN_P6	SSTIN_P6	DOE_LVDS_P2
SSTIN_N6	SSTIN_N6	DOE_LVDS_N2
SSTIN_P7	SSTIN_P7	DOE_LVDS_P3
SSTIN_N7	SSTIN_N7	DOE_LVDS_N3
SIN_4	SIN_4	
PCLK_4	PCLK_4	TRIG0
SIN_5	SIN_5	TRIG1
PCLK_5	PCLK_5	TRIG2
SIN_6	SIN_6	TRIG3
PCLK_6	PCLK_6	
SIN_7	SIN_7	
PCLK_7	PCLK_7	

REGCLR Main FPGA/Clocking

WCLK_P0	WCLK_P0
WCLK_N0	WCLK_N0
SRCLK_P0	SRCLK_P0
SRCLK_N0	SRCLK_N0
MONTIMING_P0	MONTIMING_P0
MONTIMING_N0	MONTIMING_N0
SCLK_0	SCLK_0
SS_INCR_0	SS_INCR_0
RAMP_0	RAMP_0
WCLK_P1	WCLK_P1
WCLK_N1	WCLK_N1
SRCLK_P1	SRCLK_P1
SRCLK_N1	SRCLK_N1
MONTIMING_P1	MONTIMING_P1
MONTIMING_N1	MONTIMING_N1
SCLK_1	SCLK_1
SS_INCR_1	SS_INCR_1
RAMP_1	RAMP_1
WCLK_P2	WCLK_P2
WCLK_N2	WCLK_N2
SRCLK_P2	SRCLK_P2
SRCLK_N2	SRCLK_N2
MONTIMING_P2	MONTIMING_P2
MONTIMING_N2	MONTIMING_N2
SCLK_2	SCLK_2
SS_INCR_2	SS_INCR_2
RAMP_2	RAMP_2
WCLK_P3	WCLK_P3
WCLK_N3	WCLK_N3
SRCLK_P3	SRCLK_P3
SRCLK_N3	SRCLK_N3
MONTIMING_P3	MONTIMING_P3
MONTIMING_N3	MONTIMING_N3
SCLK_3	SCLK_3
SS_INCR_3	SS_INCR_3
RAMP_3	RAMP_3

Aux CPLD

QUAD_IN_03 QUAD_OUT_03

SEL_CAL_03_811 Calibration

ATT03_CS	
BM_SCLK	
BM_MOSI	
BM_SCL	
BM_SDA	
LAB_VPED_0	
LAB_VPED_1	
LAB_VPED_2	
LAB_VPED_3	

Board Manager

COMPANY:

Ohio State University

SHEET:

RF_LEFT

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:

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SIZE:

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DESIGN

RADIANT

REV:

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SCALE: <Scale>

SHEET: 18 74

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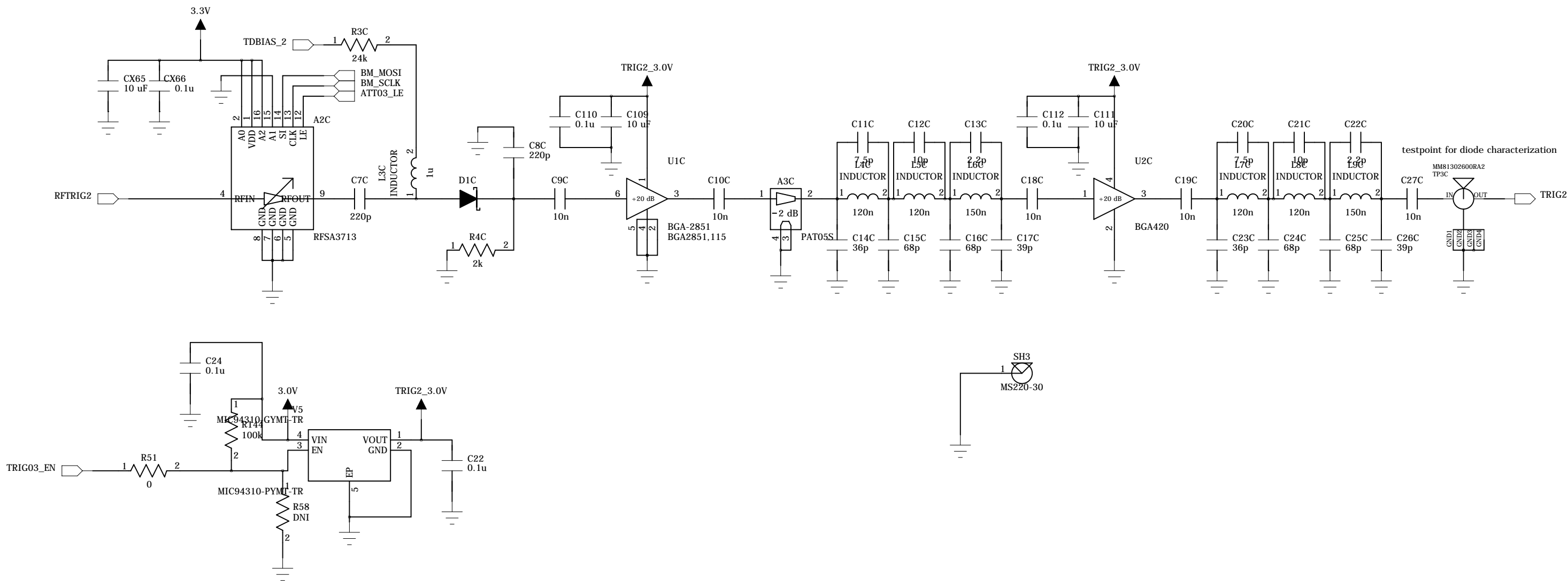
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIODE2

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 19 74

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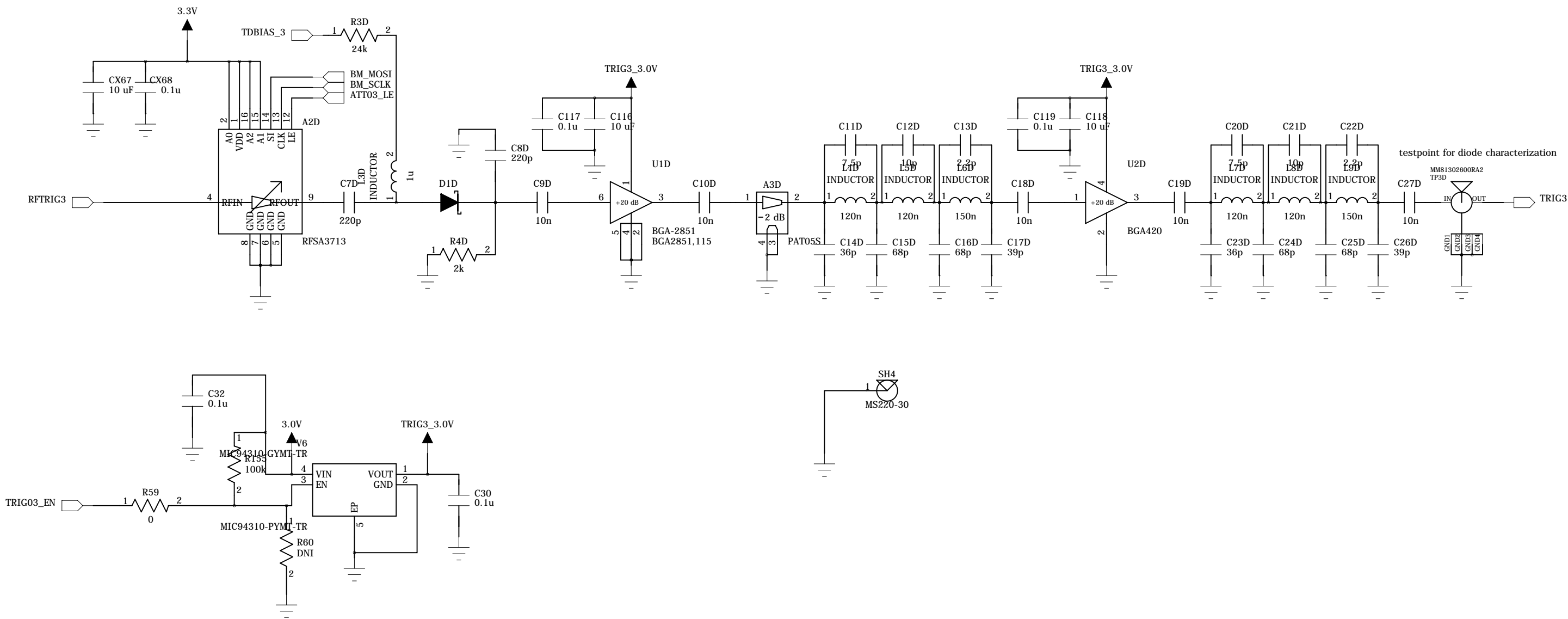
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

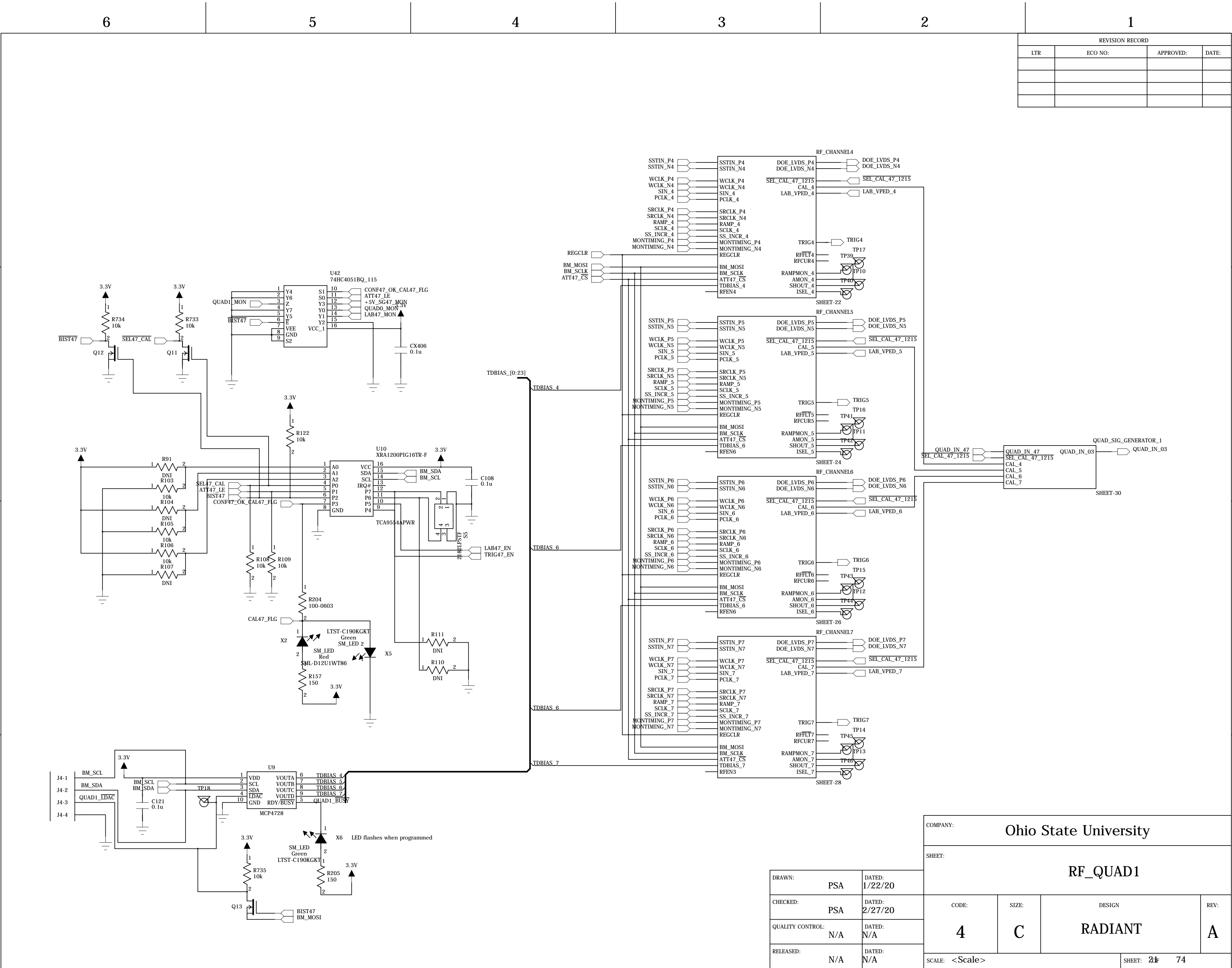
Ohio State University

SHEET:

RF_DIODE3

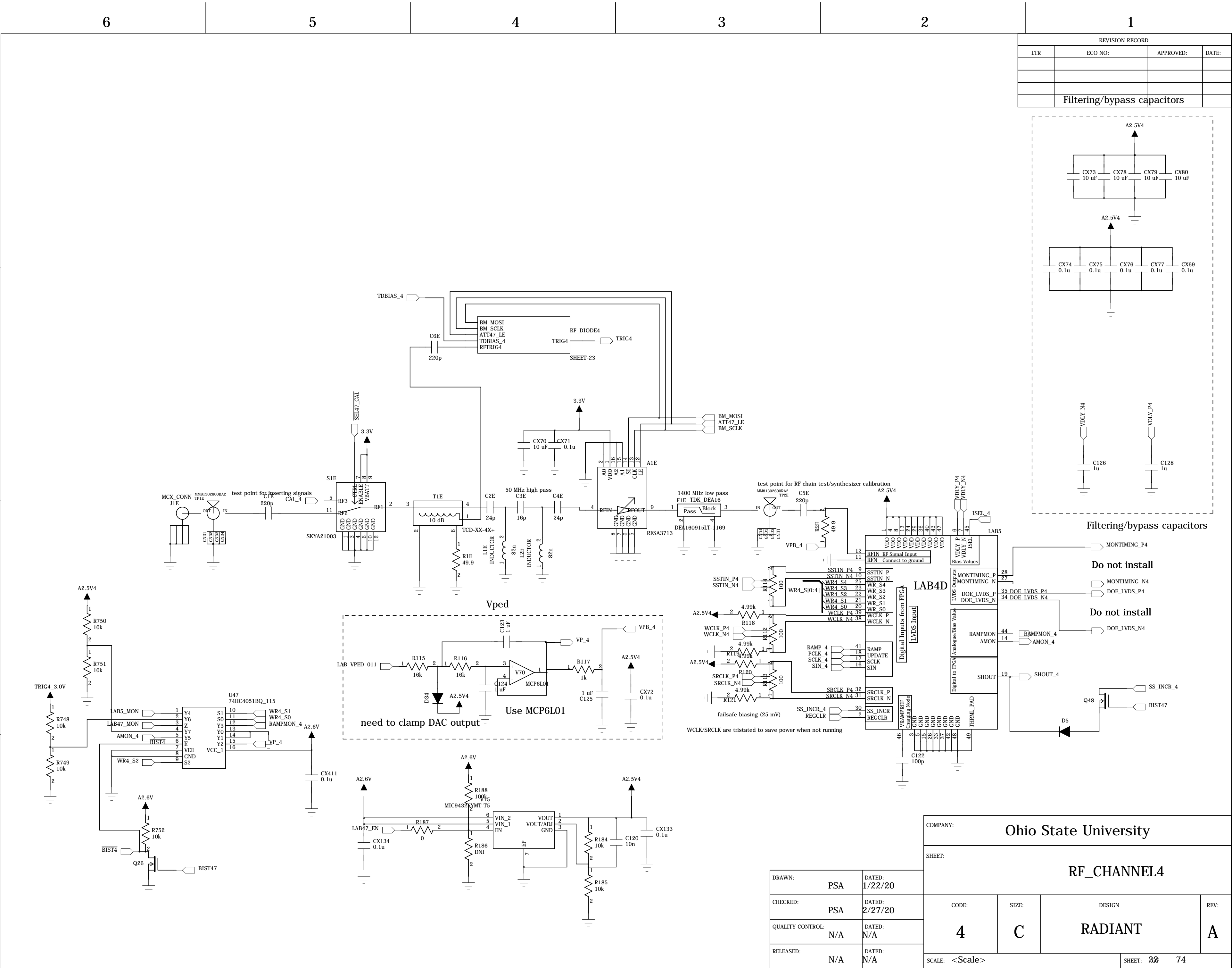
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 20 74

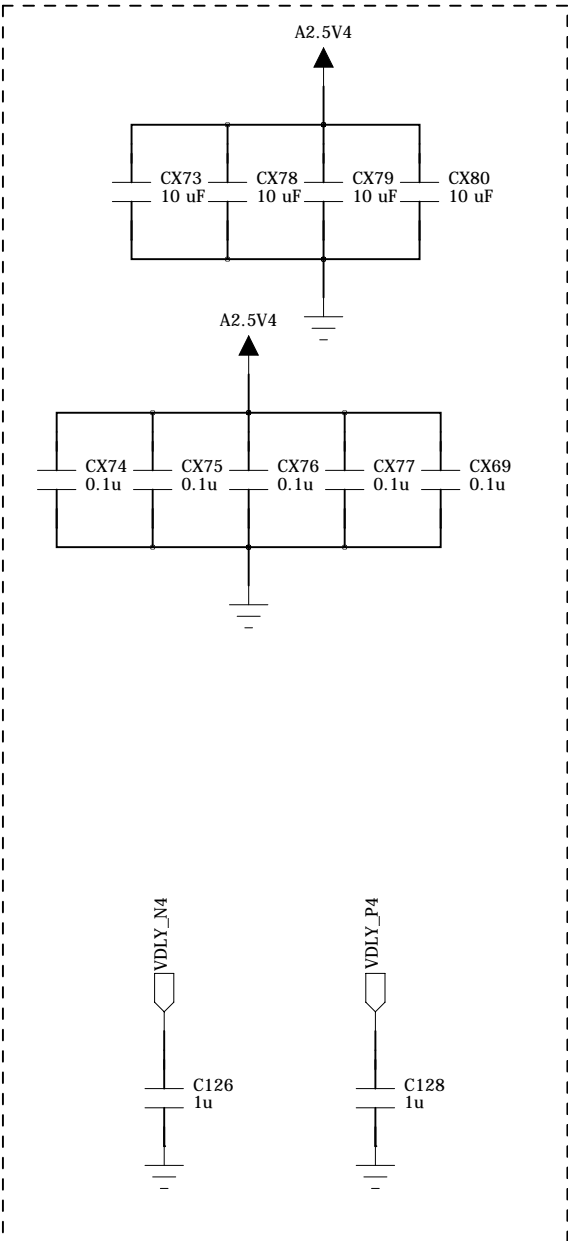


REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

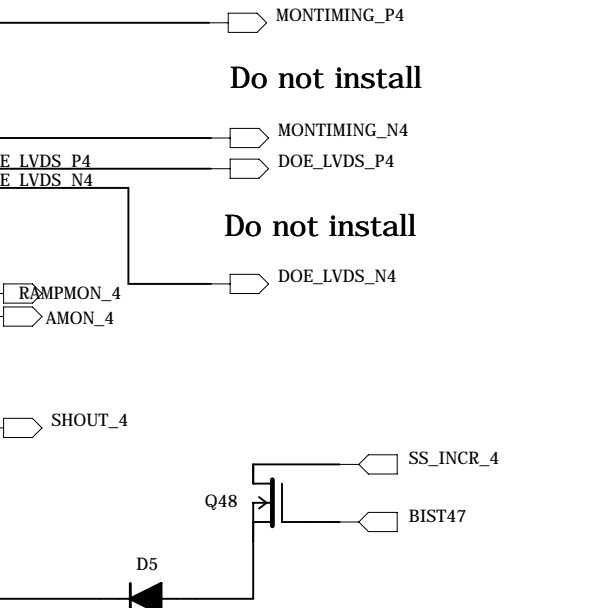
COMPANY: Ohio State University			
SHEET: RF_QUAD1			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 21 74	



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



Filtering/bypass capacitors



COMPANY: Ohio State University			
SHEET: RF_CHANNEL4			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A		
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SCALE: <Scale>			SHEET: 22 74

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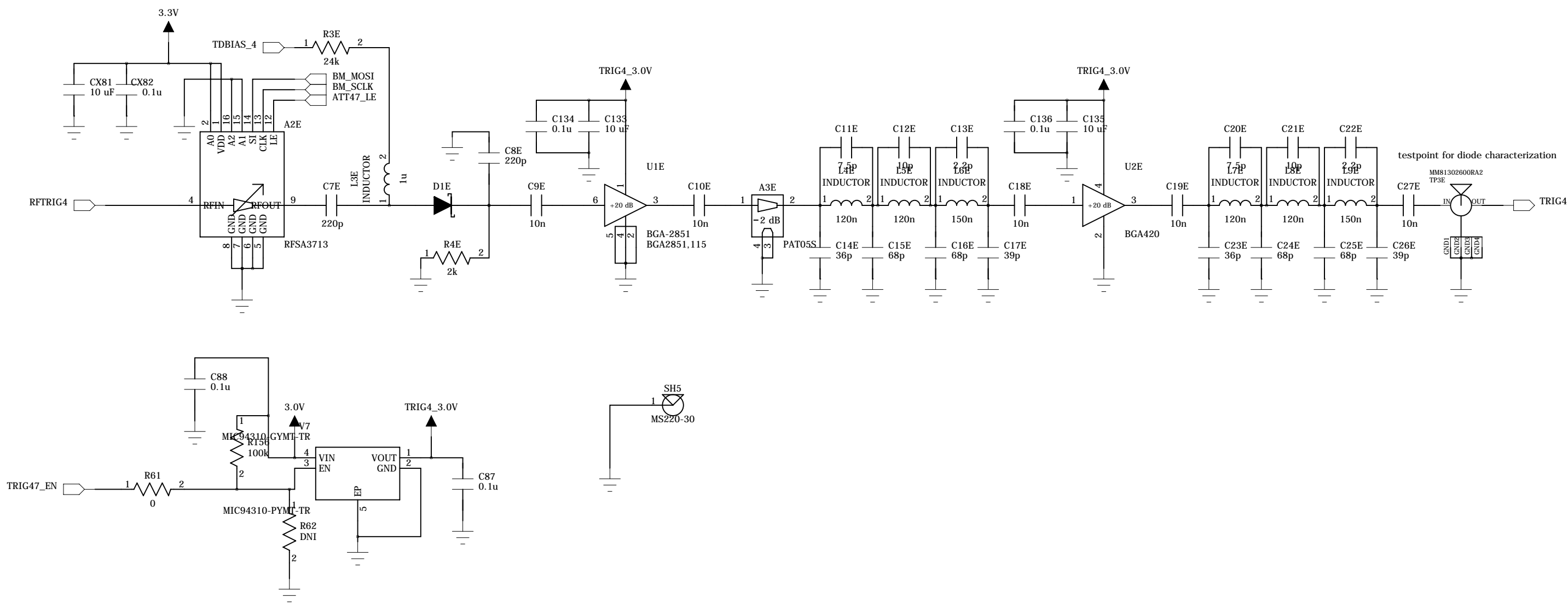
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIODE4

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
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SCALE: <Scale>			SHEET: 23 74

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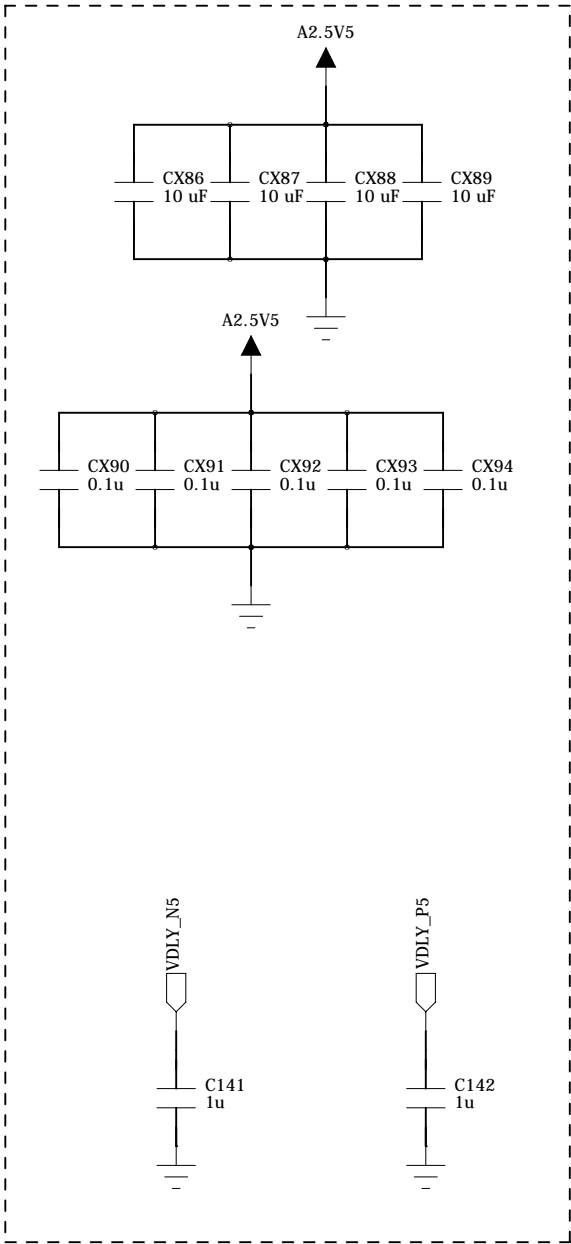
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			

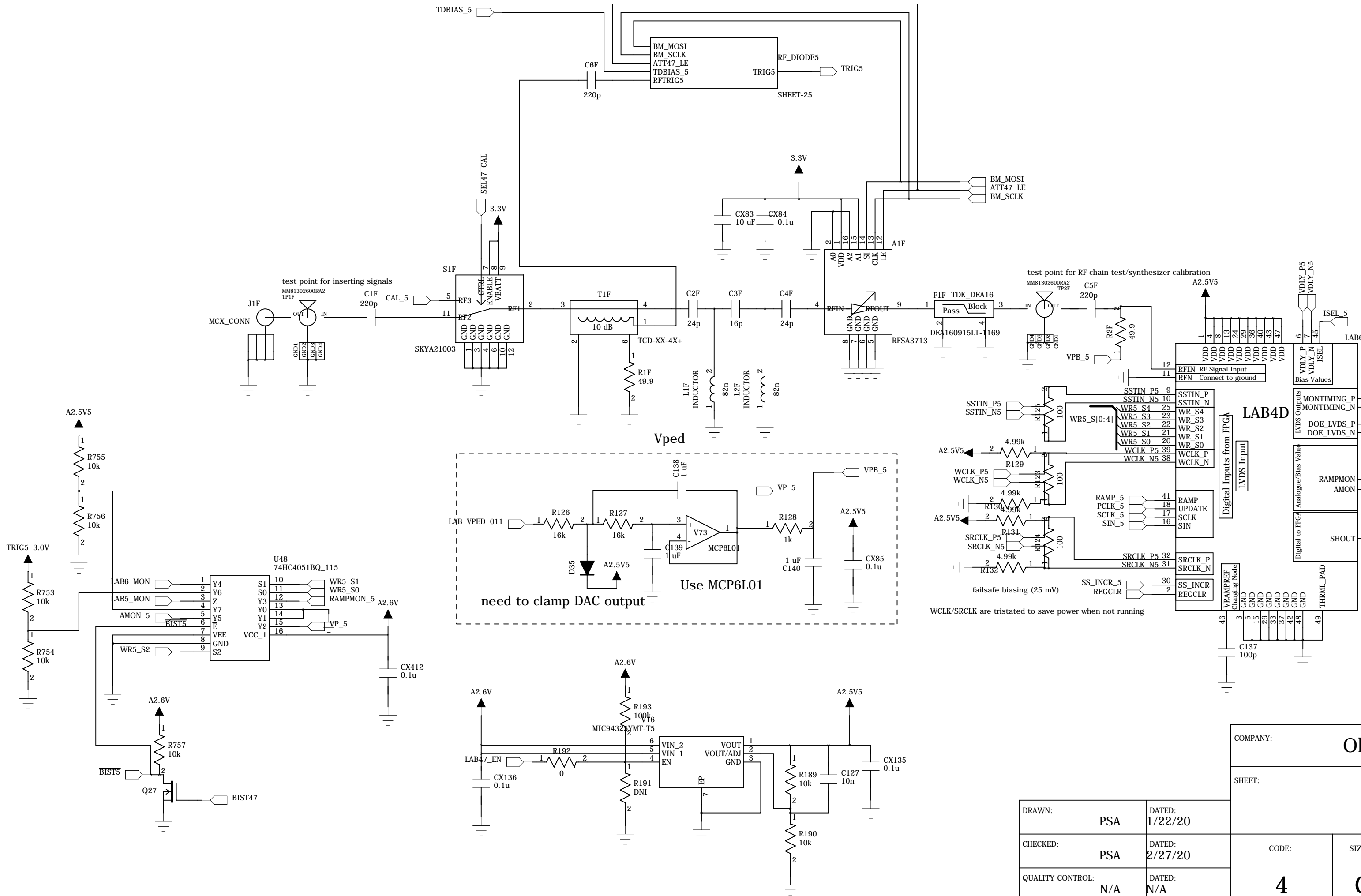


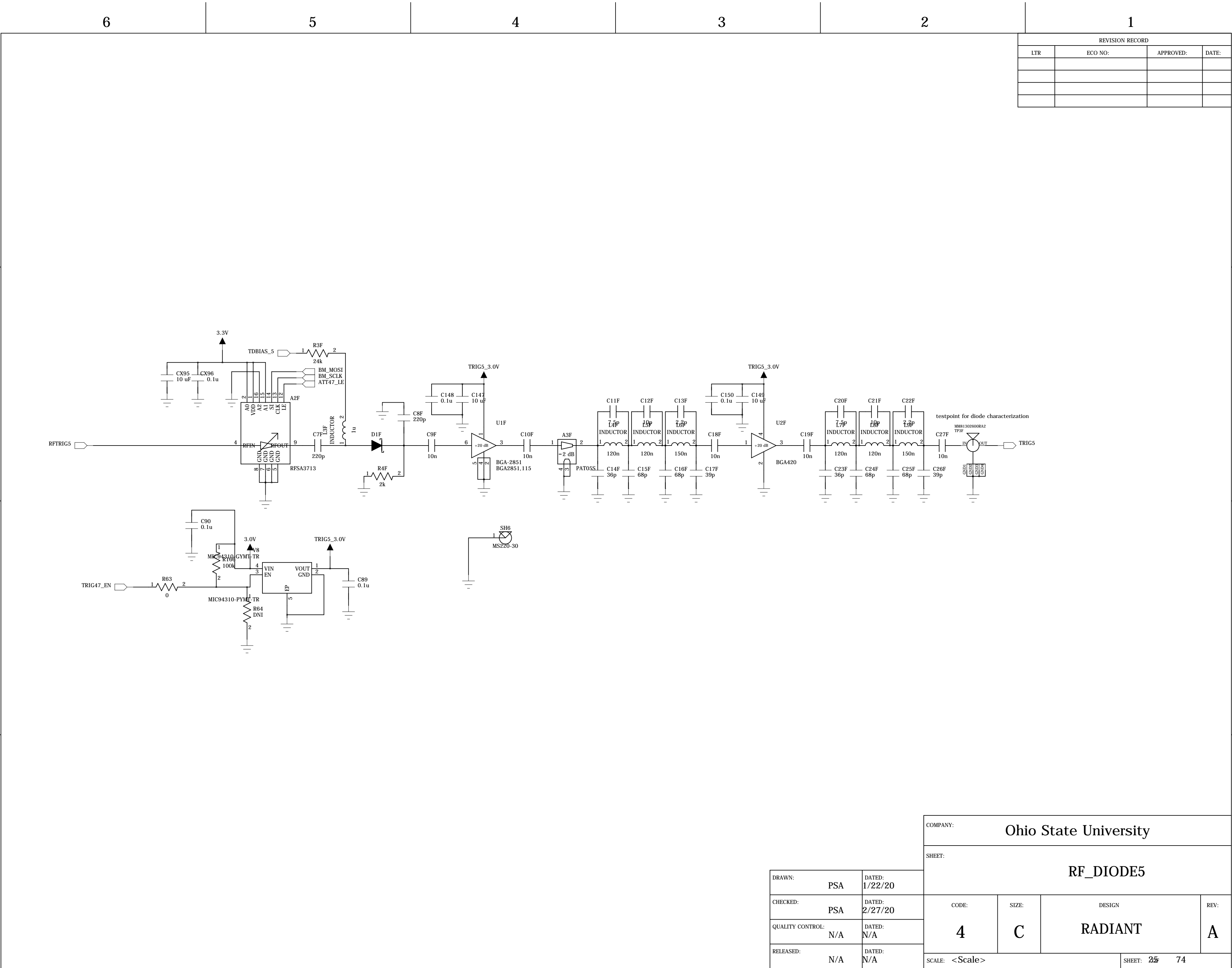
Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNEL5			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 24 74	





REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_DIODE5			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 25 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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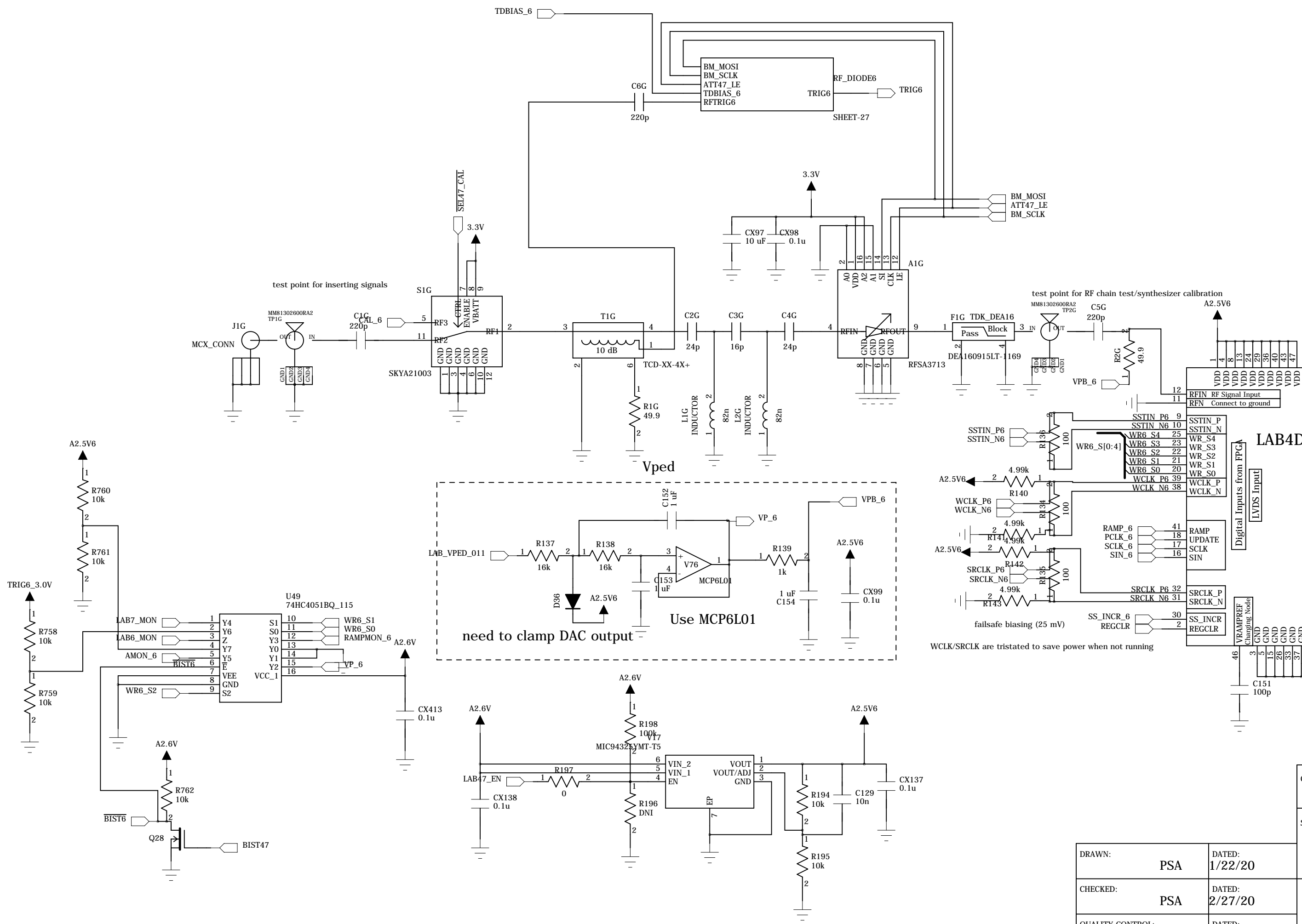
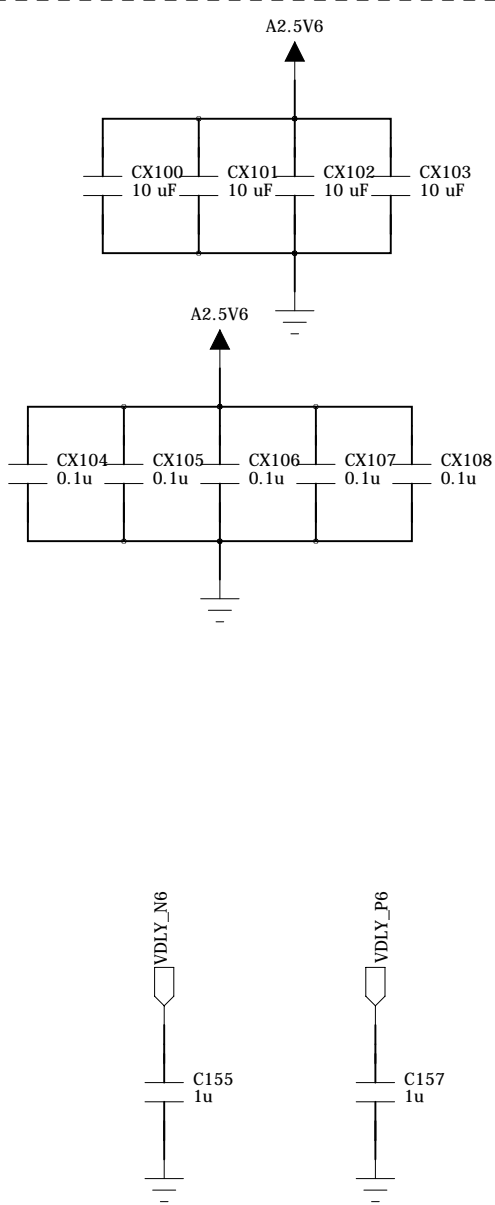
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNEL6			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 26 74	

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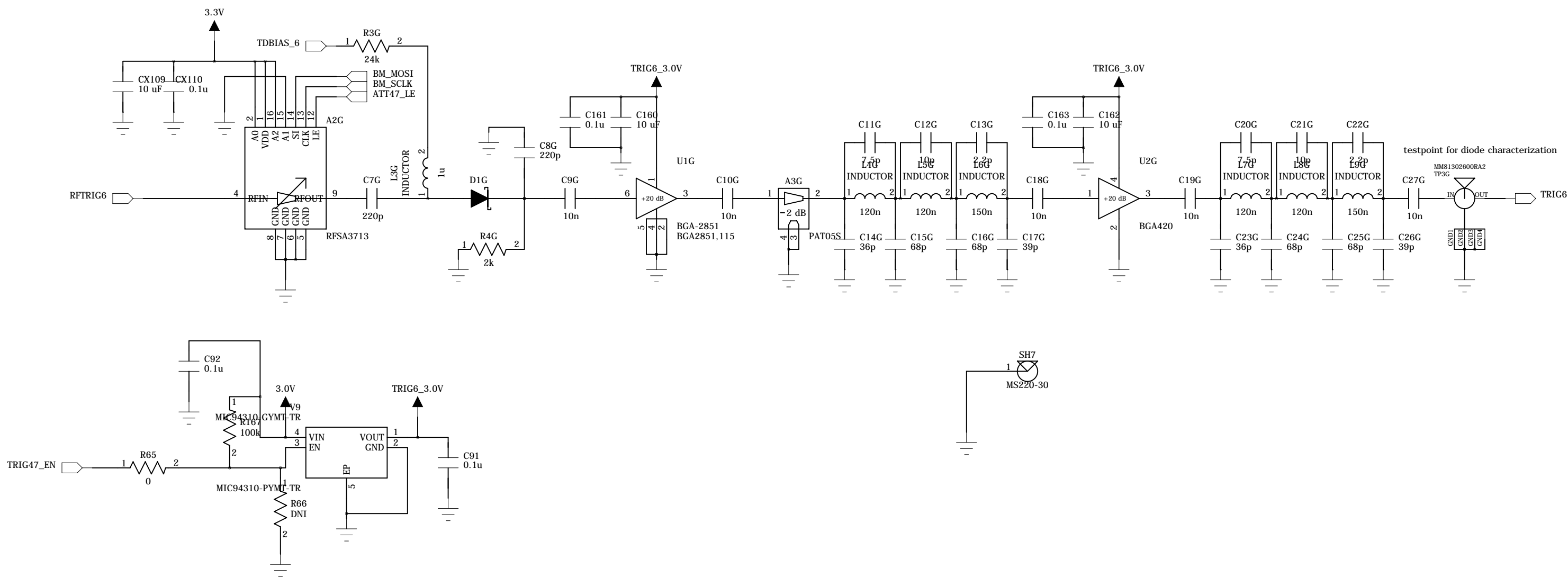
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIODE6

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 27 74

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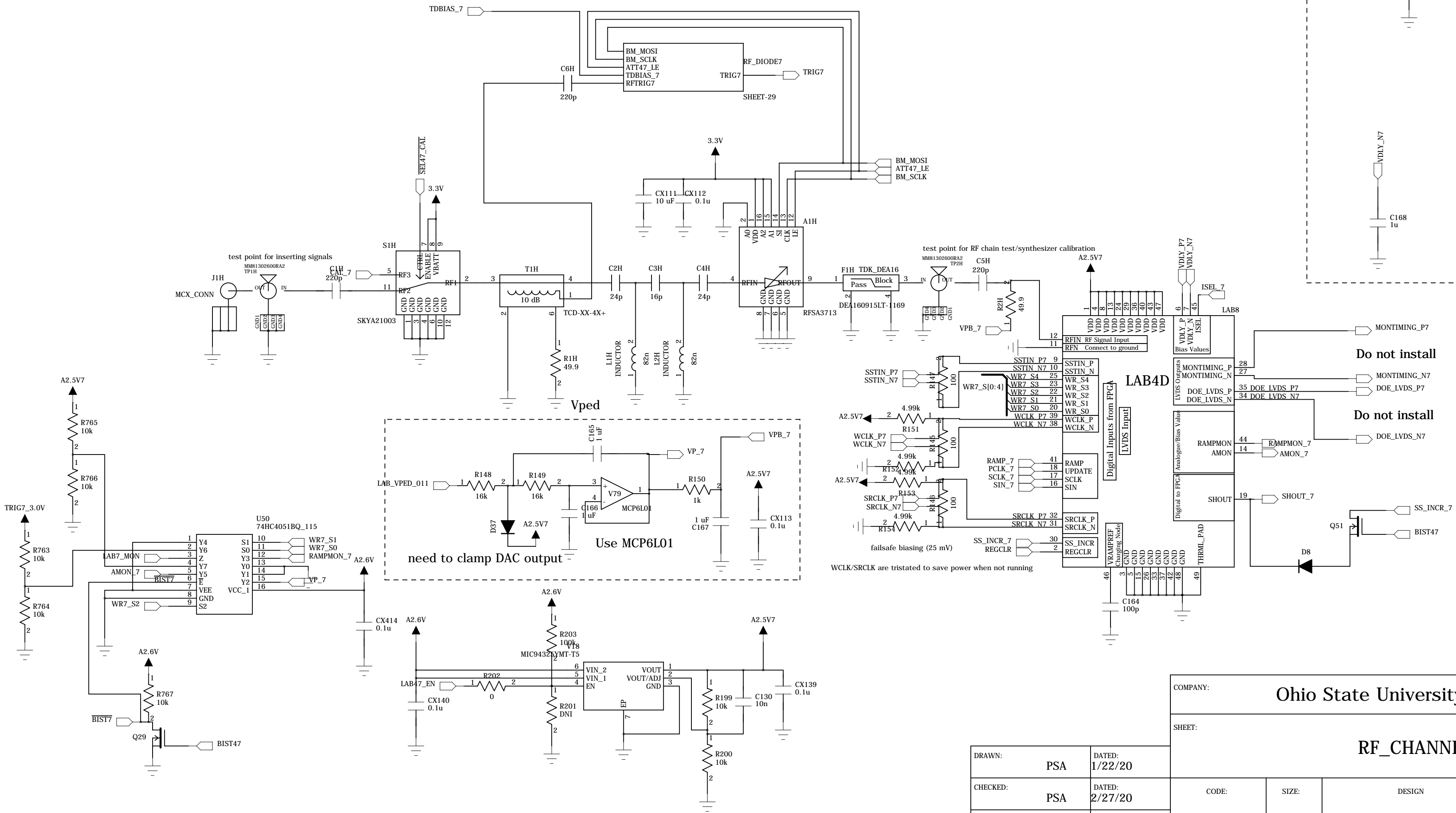
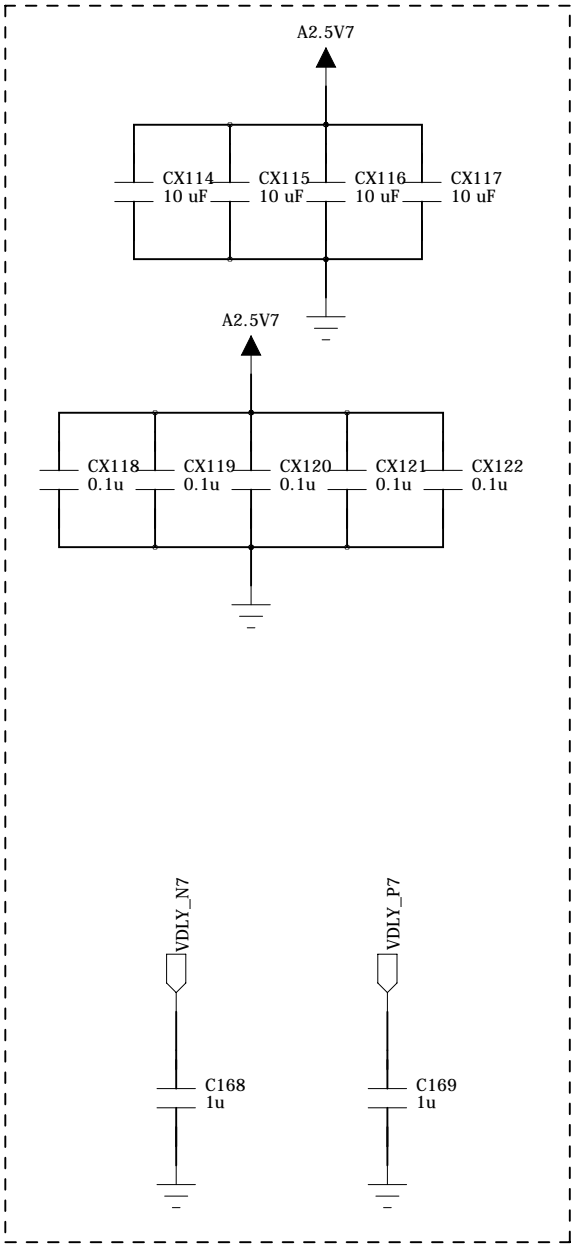
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: RF_CHANNEL7			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 28 74

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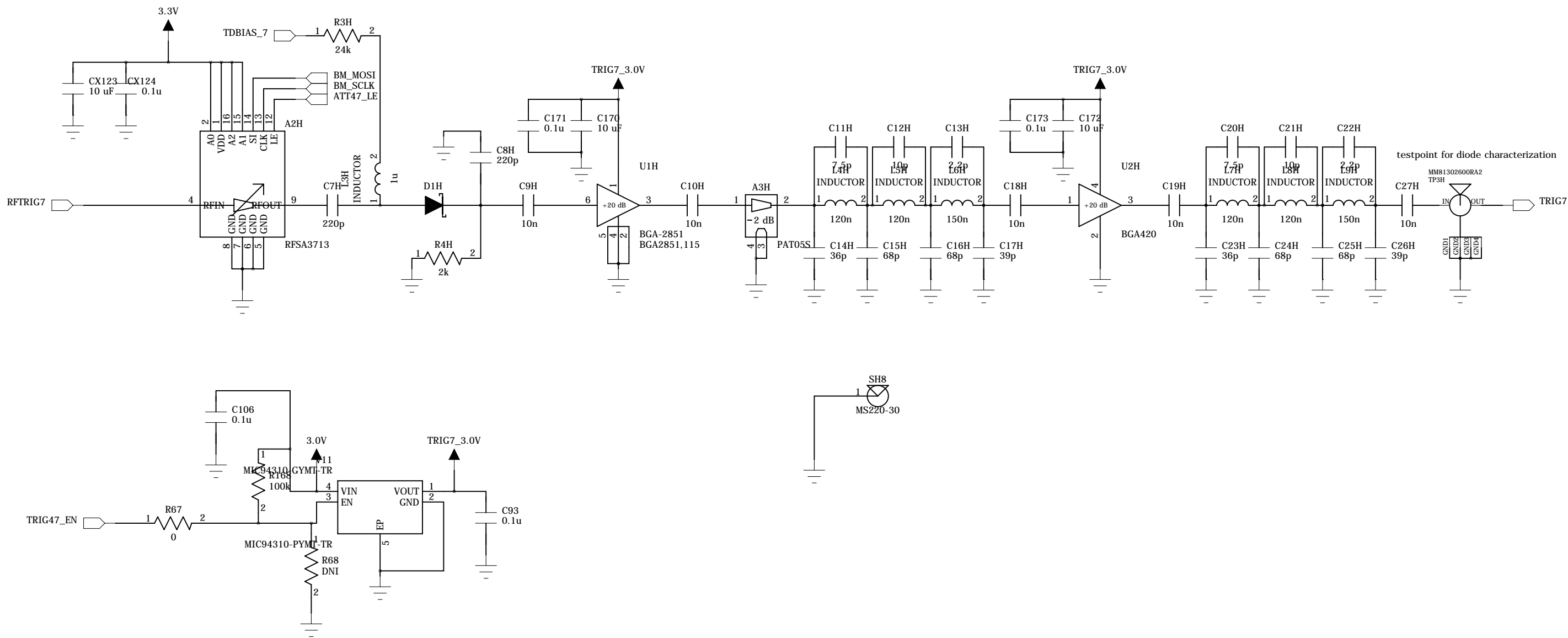
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIODE7

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:

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SIZE:

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DESIGN

RADIANT

REV:

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SCALE: <Scale>

SHEET: 29 74

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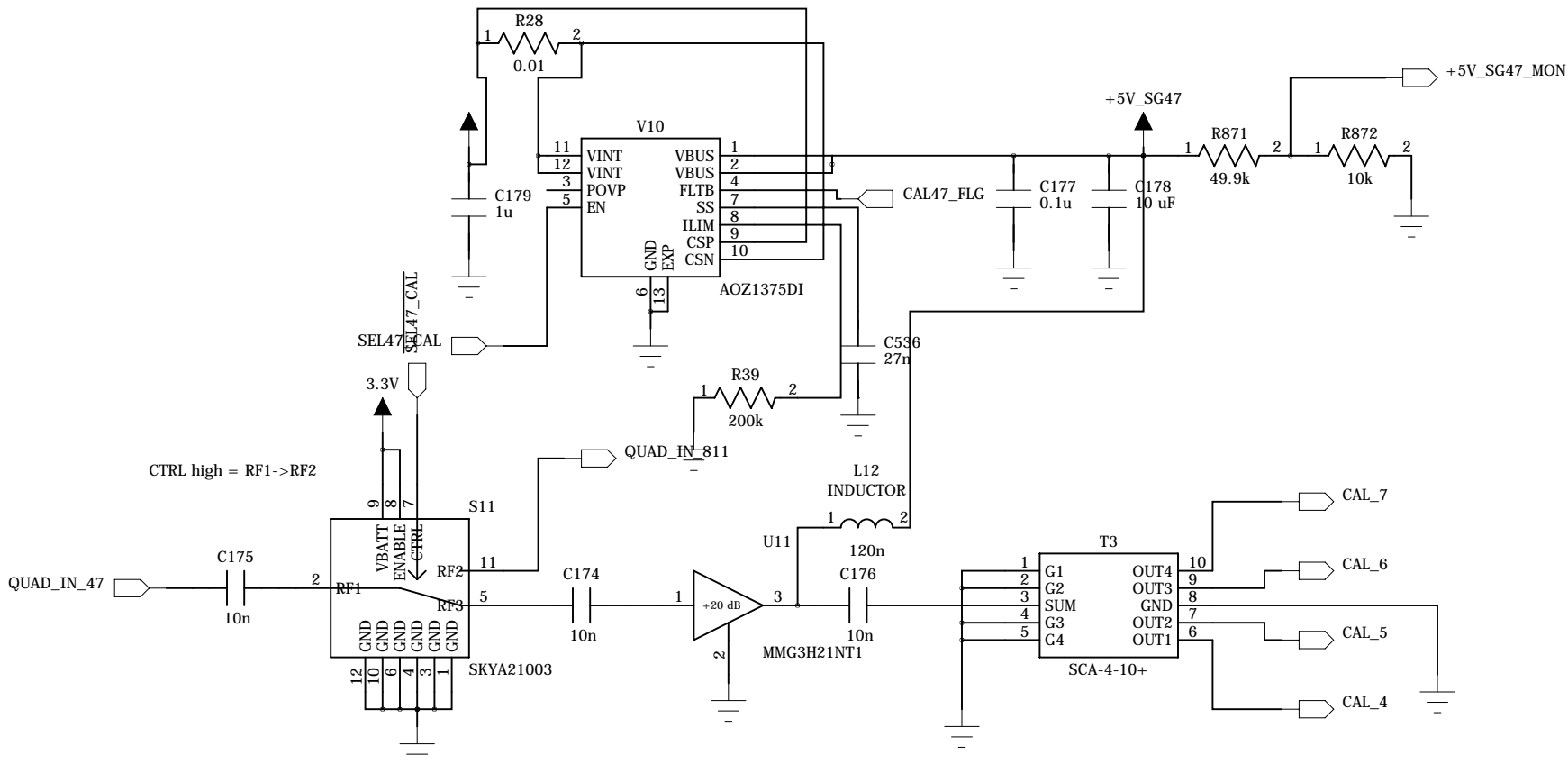
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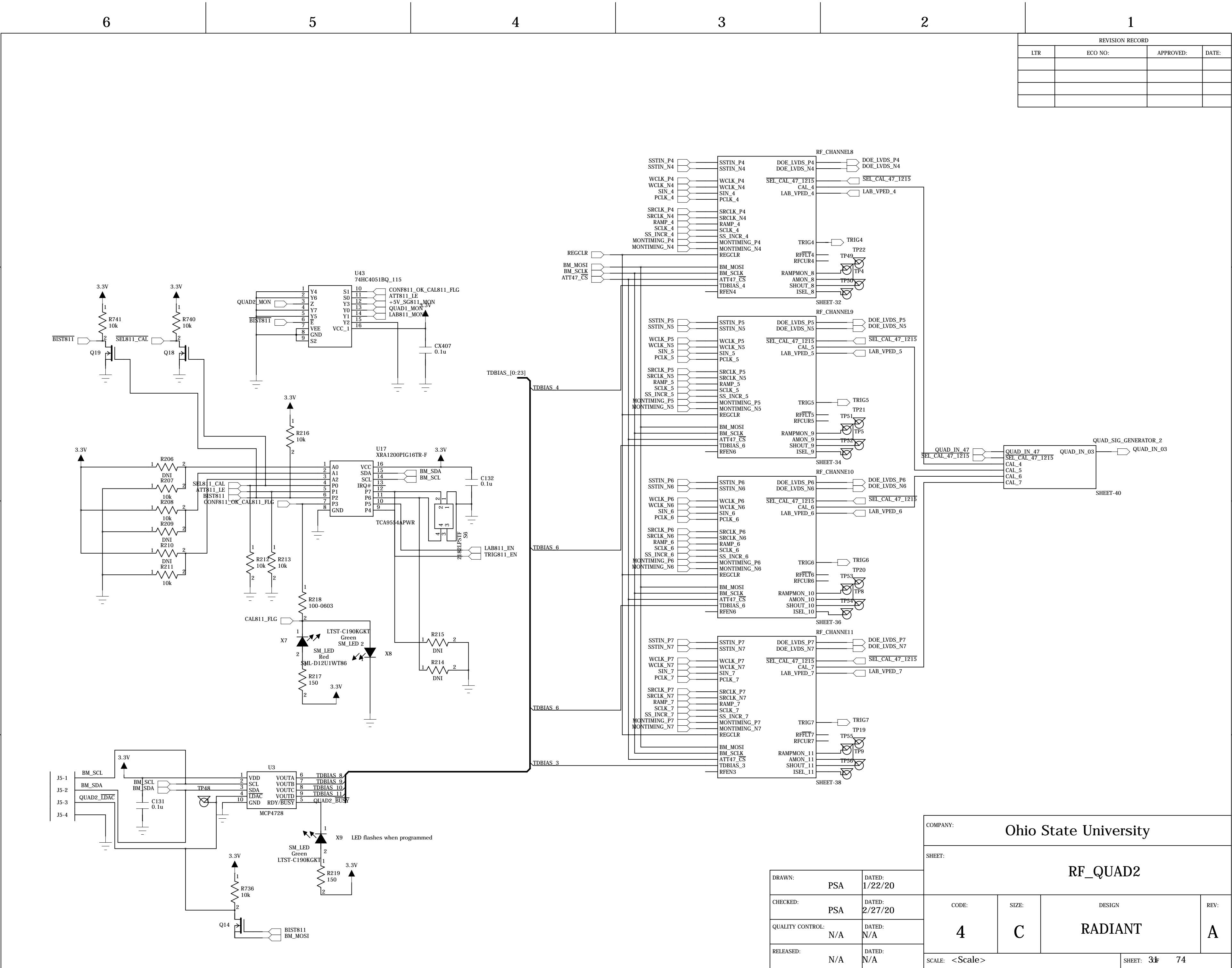
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: QUAD_SIG_GENERATOR_1			
CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 30 74



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_QUAD2			
CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 31 of 74

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

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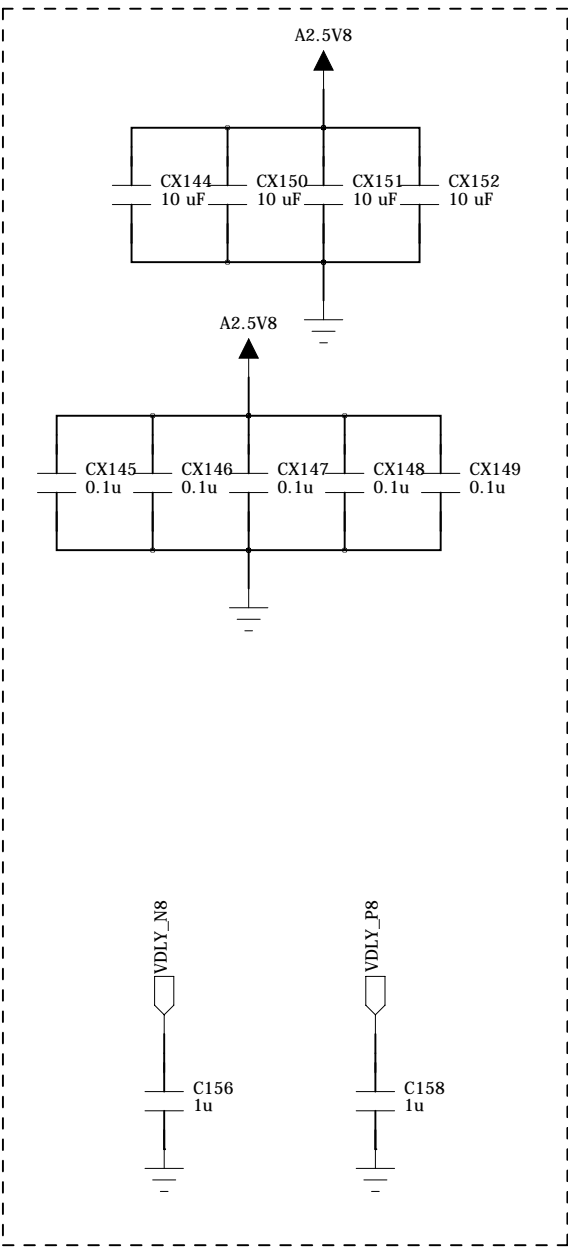
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			

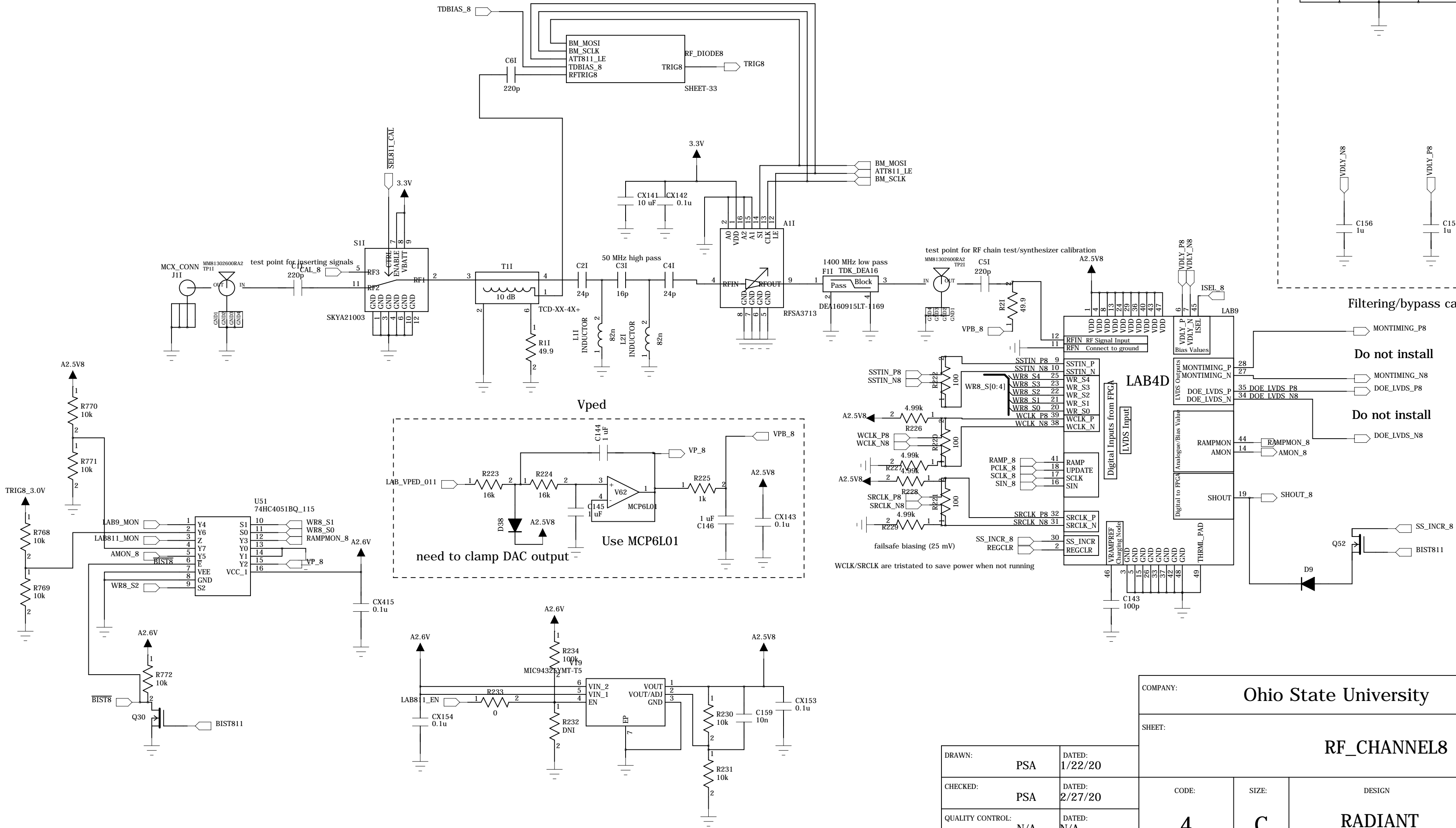


Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNEL8			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 32 74	



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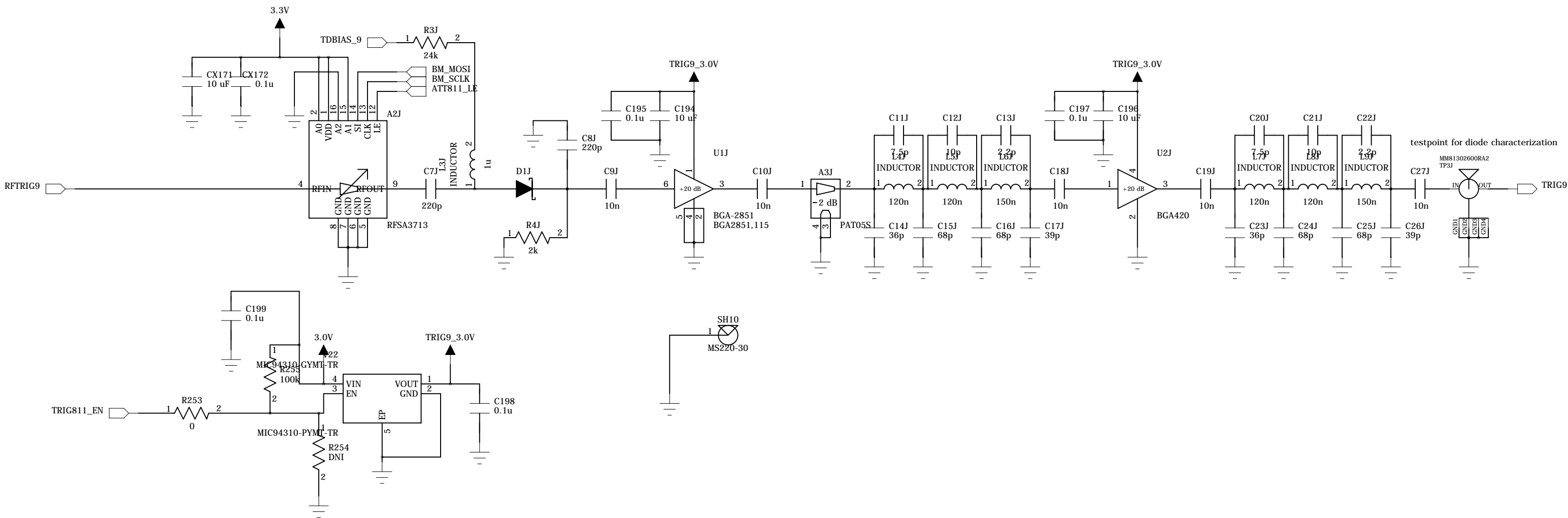
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: RF_DIODE9			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 35 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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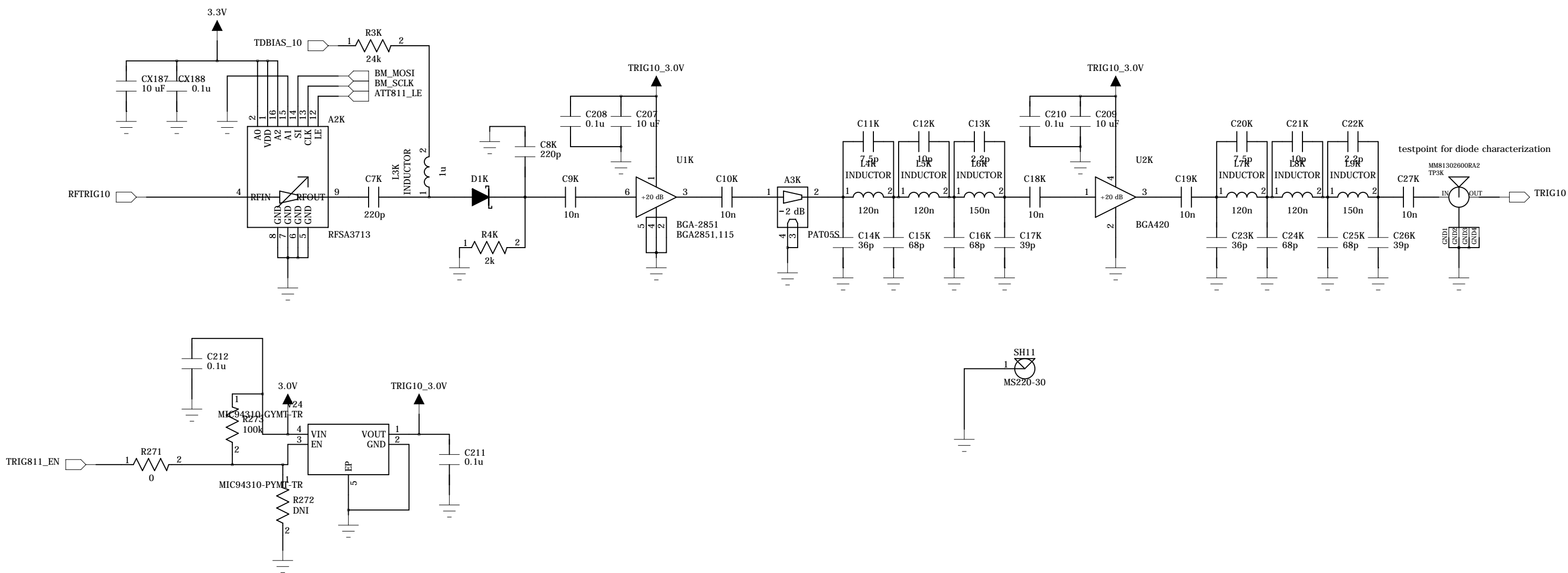
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIOD10

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 37 74

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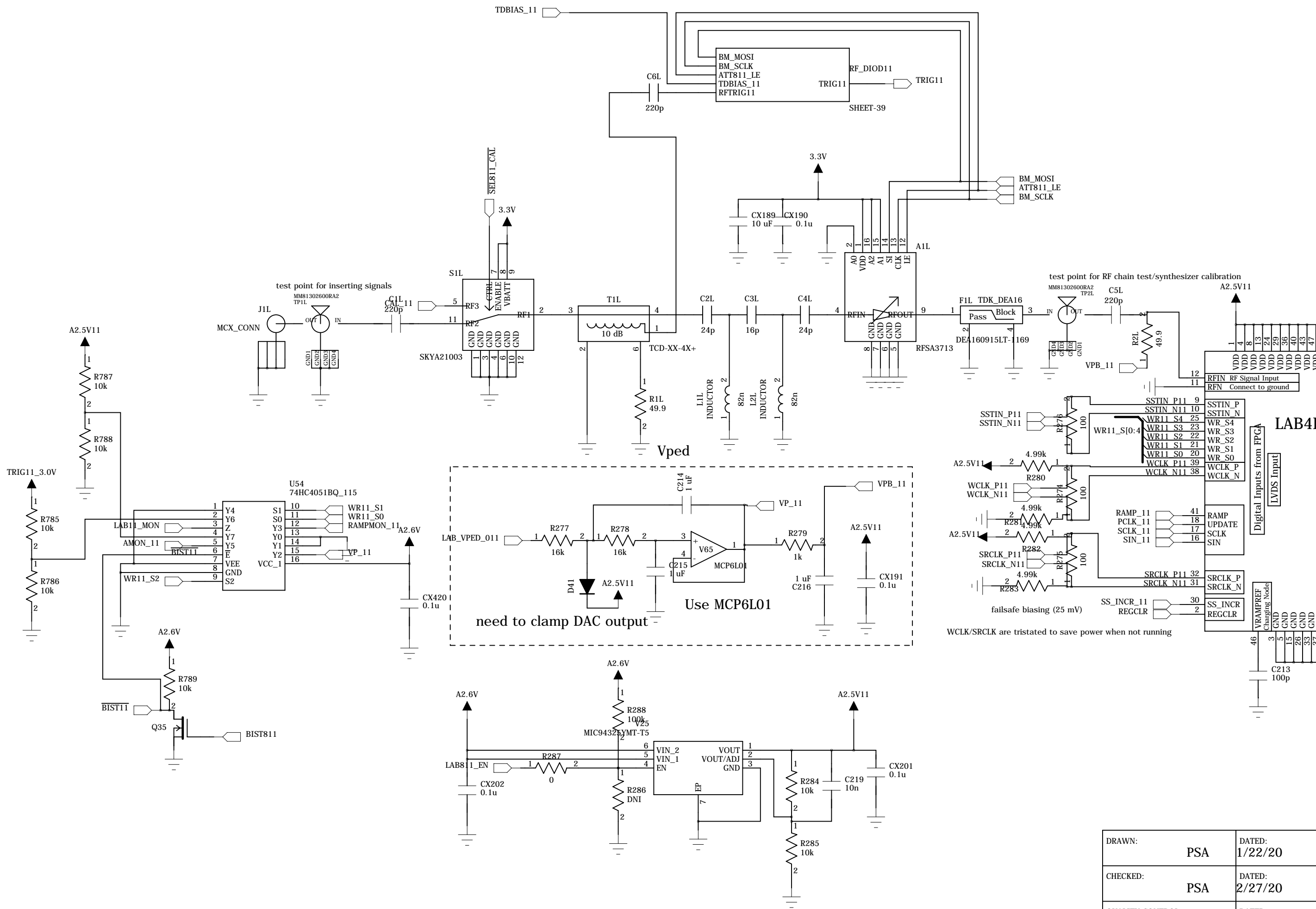
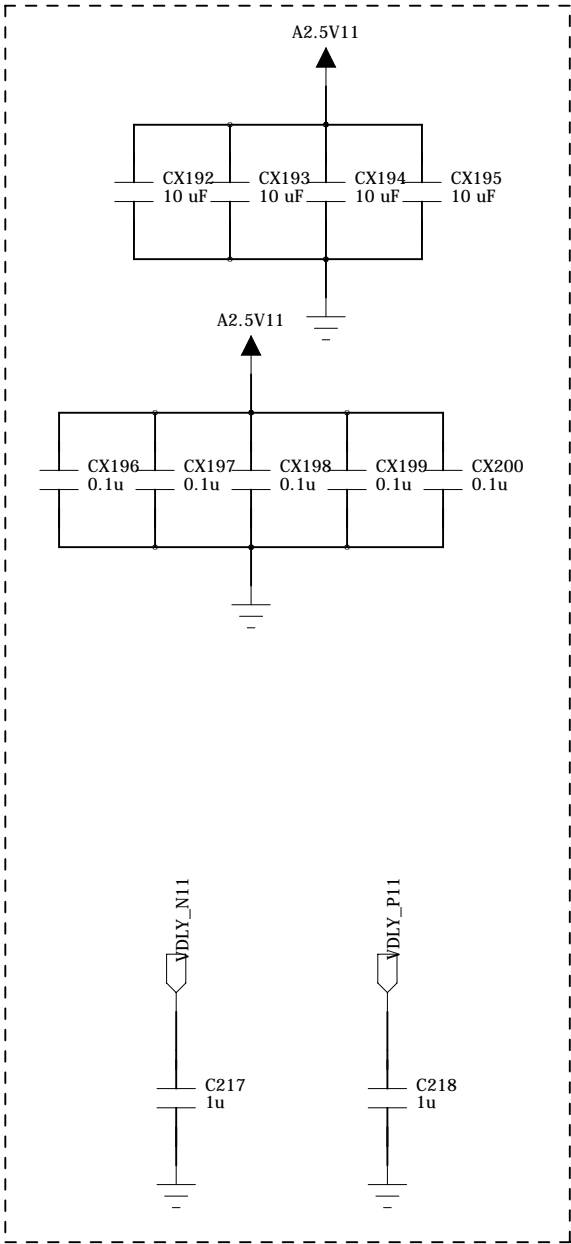
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNE11			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 38 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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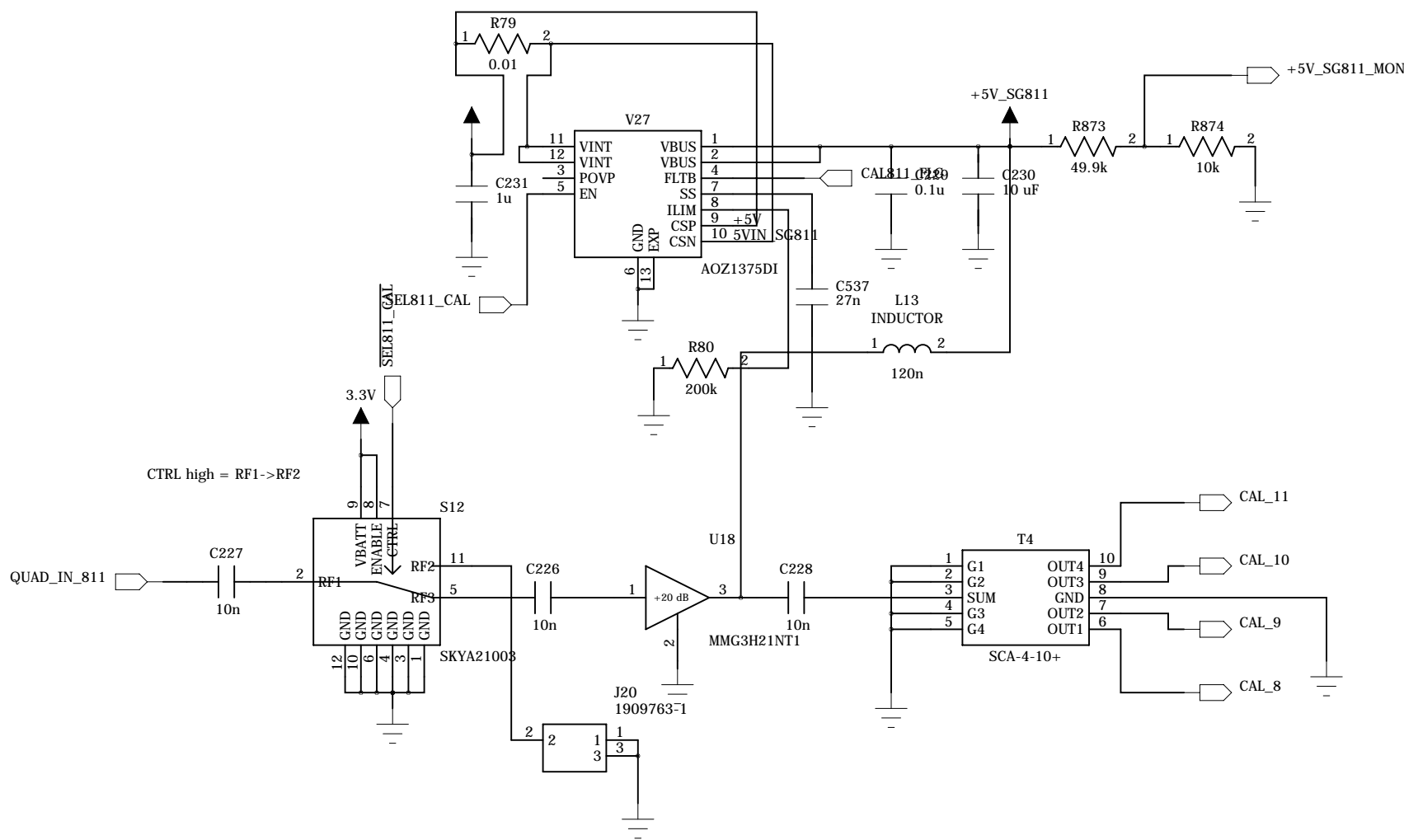
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University

SHEET: QUAD_SIG_GENERATOR_2

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

there's stuff here, it's just off-sheet cuz it's too big

DRAWN:PSADATED:1/22/20

CHECKED:PSADATED:2/27/20

QUALITY CONTROL:N/ADATED:N/A

RELEASED:N/ADATED:N/A

COMPANY:Ohio State University

SHEET:AUXCPLDS

CODE:4

SIZE:C

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REV:A

SCALE: <Scale>SHEET: 4174

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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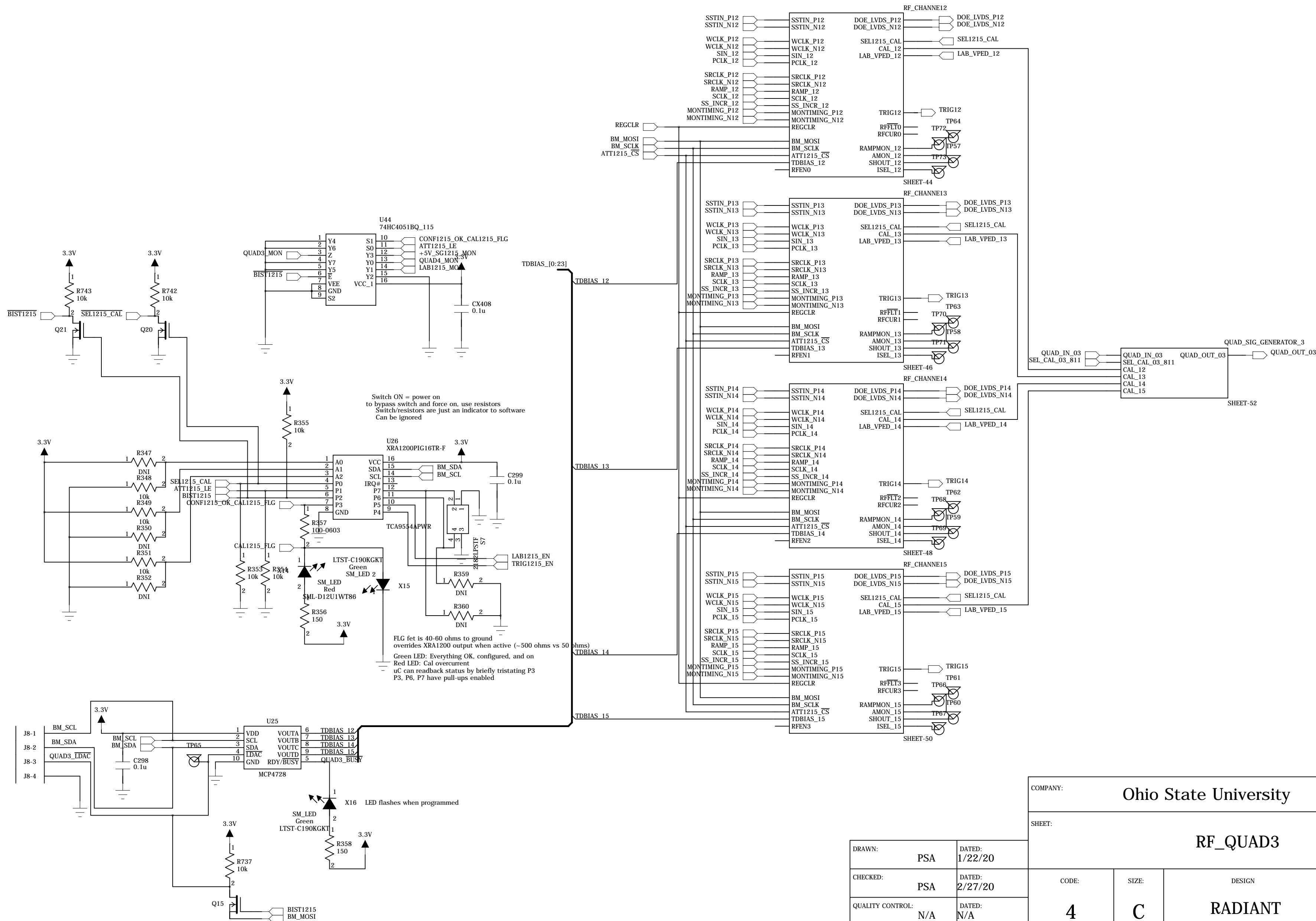
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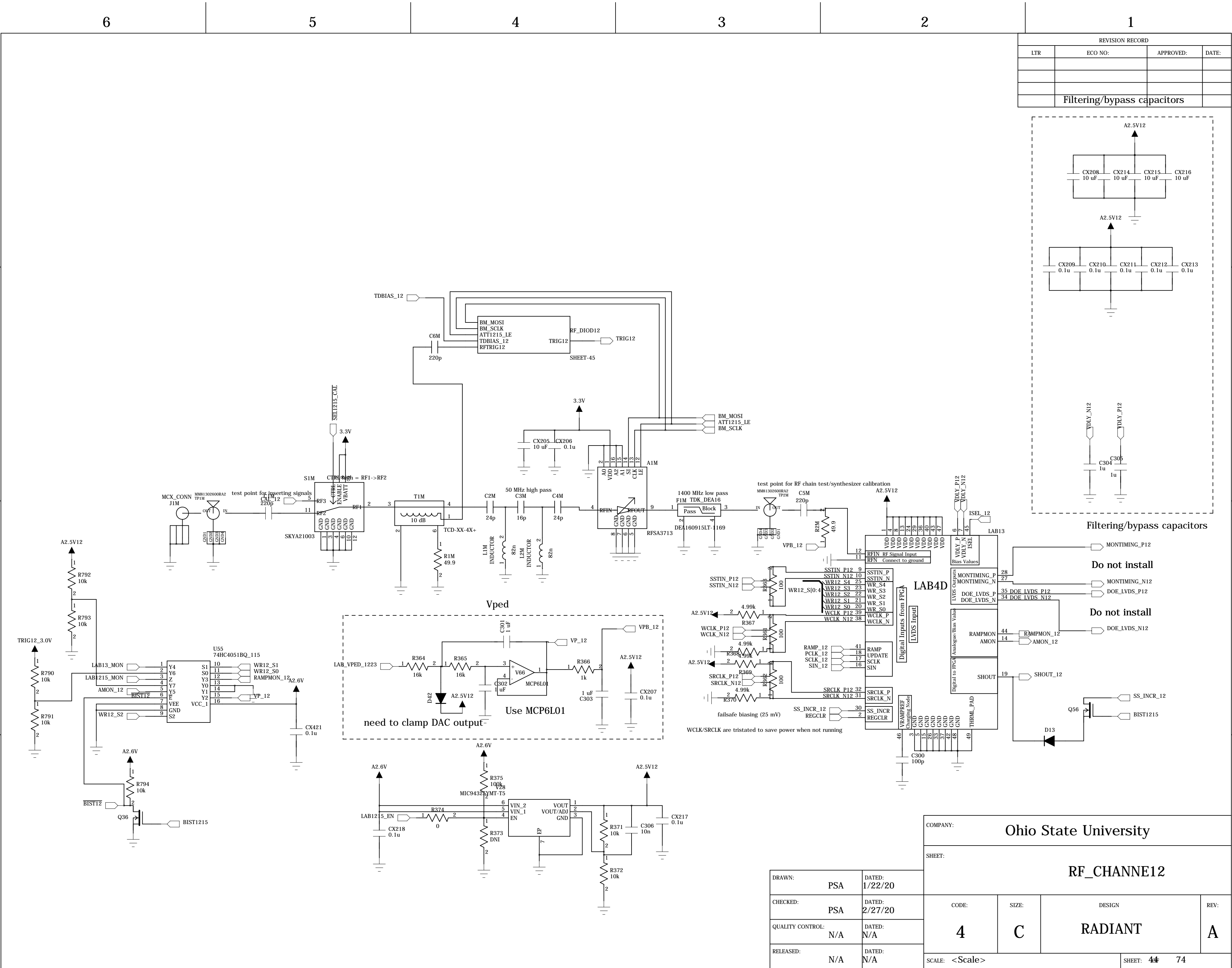
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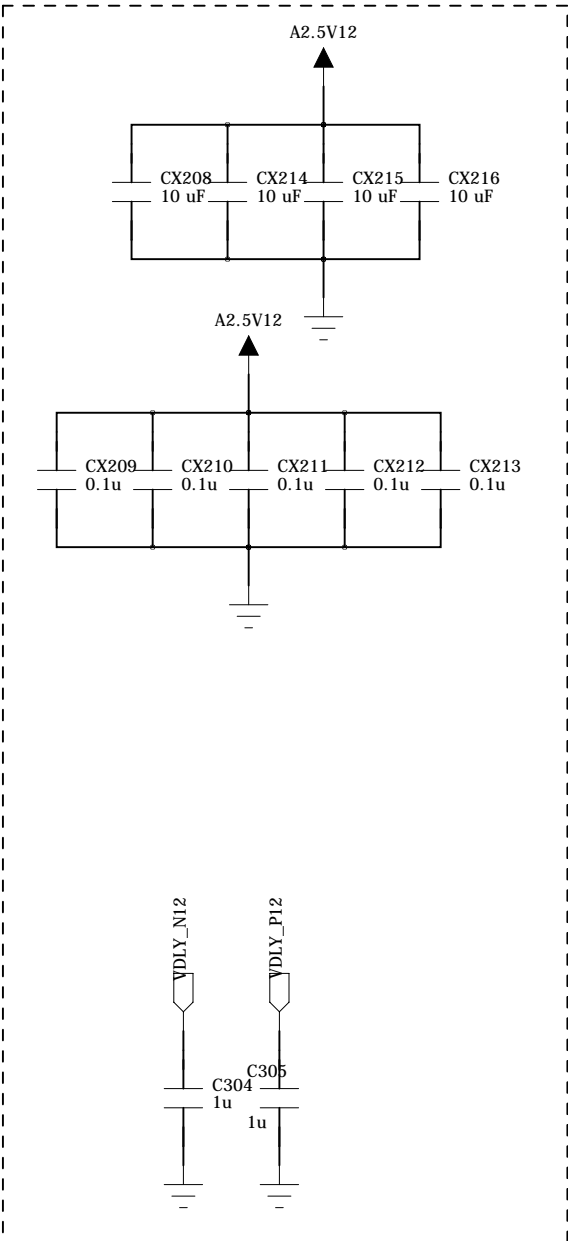


COMPANY: Ohio State University			
SHEET: RF_QUAD3			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 43 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



Filtering/bypass capacitors

COMPANY: Ohio State University			
SHEET: RF_CHANNE12			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 44 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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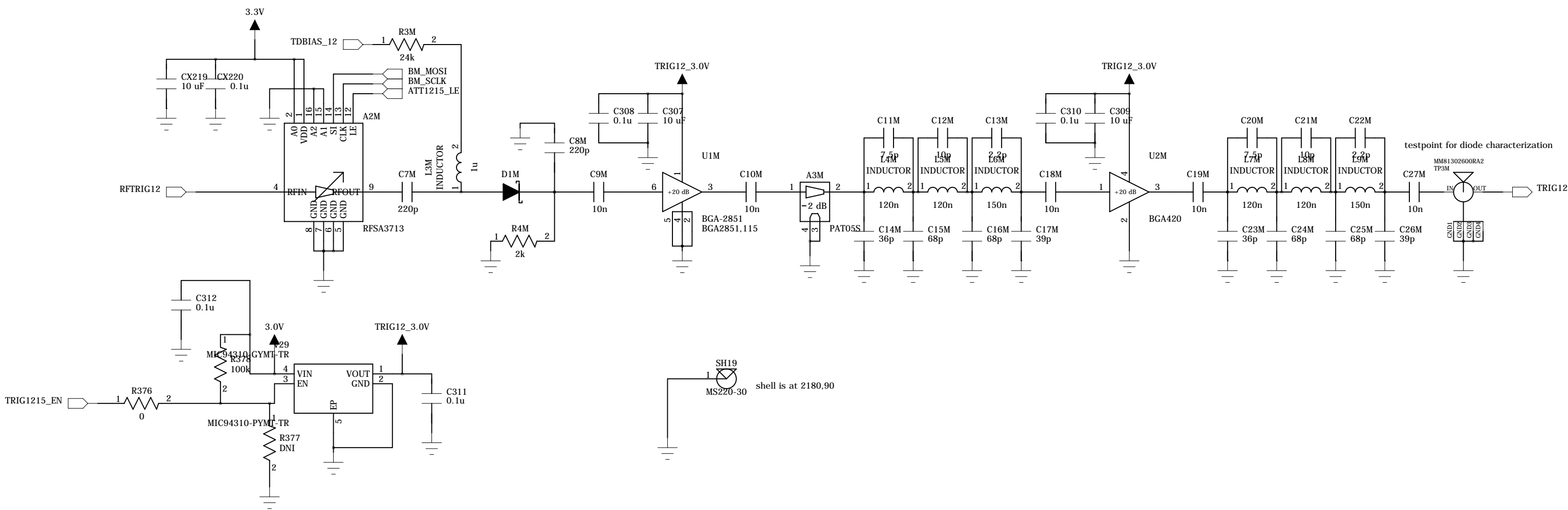
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIOD12

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 45 74

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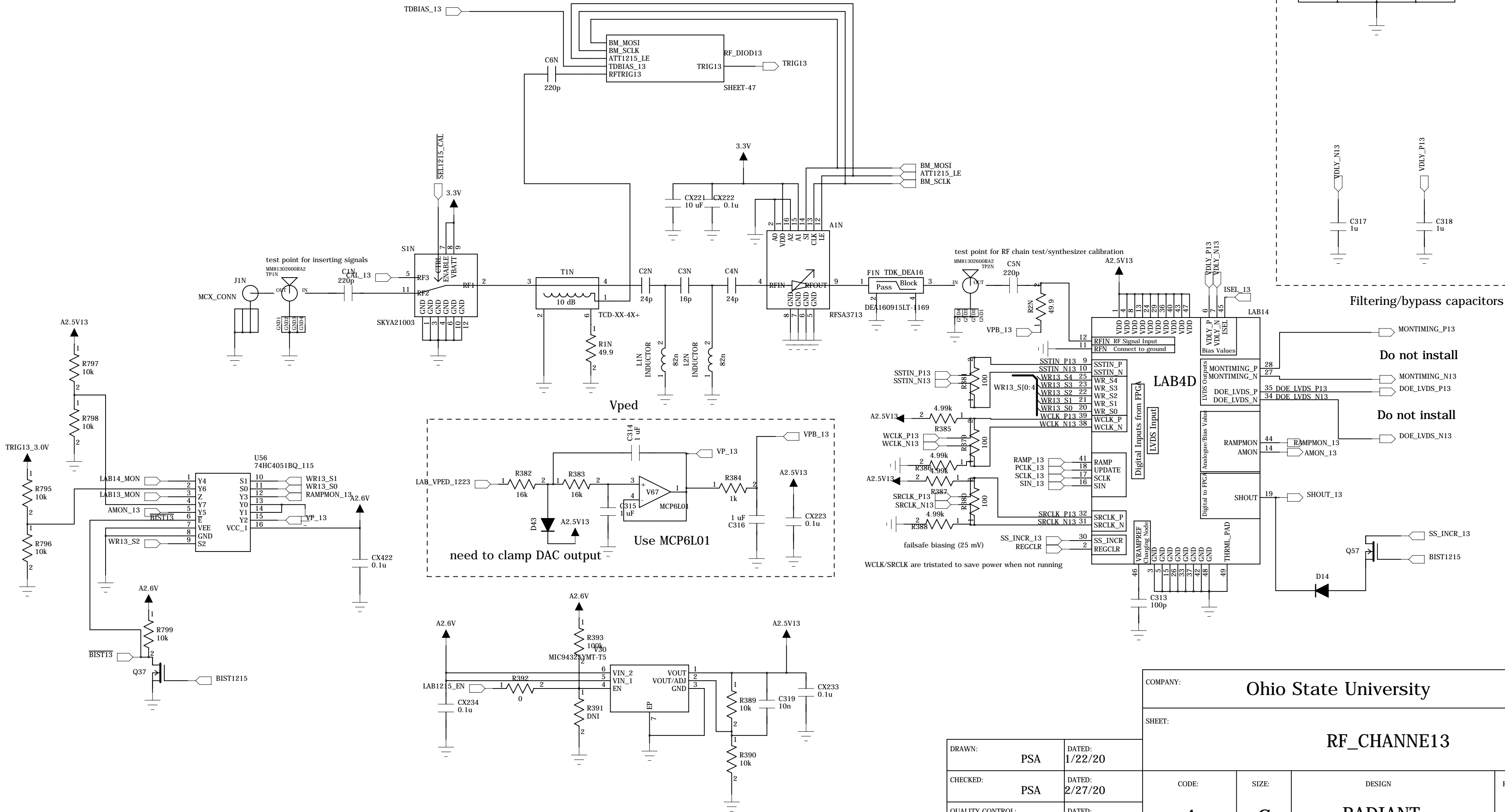
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNEL13			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
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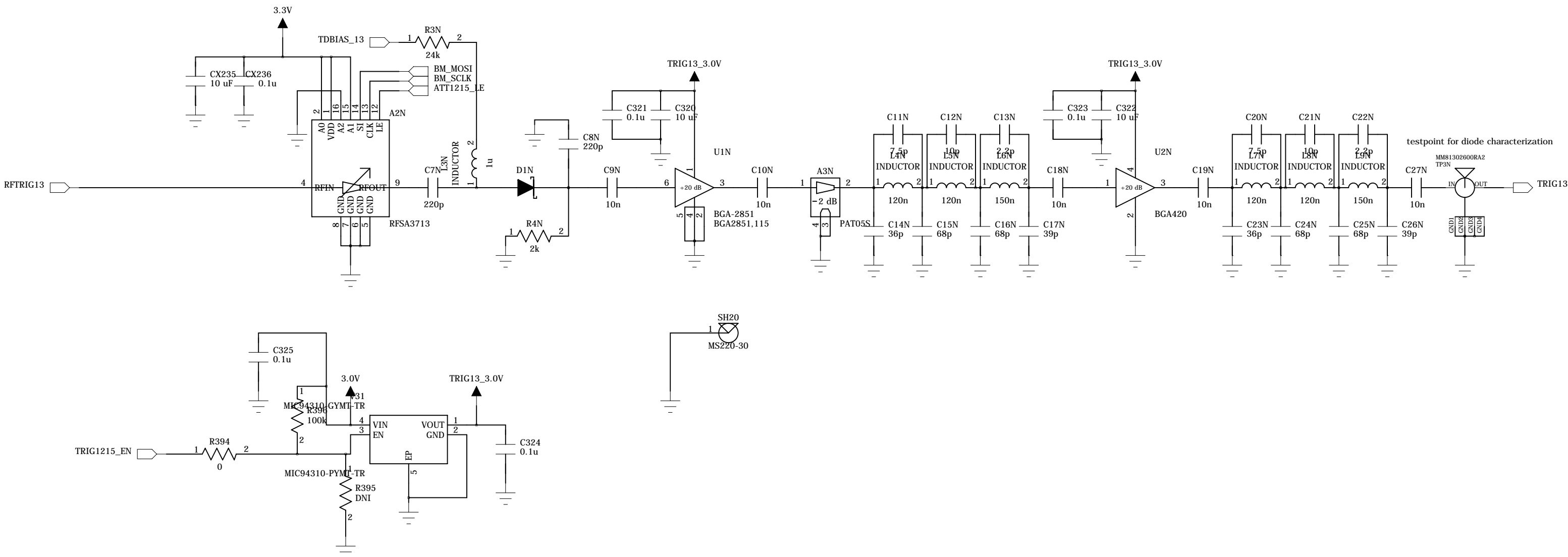
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: RF_DIOD13			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 47 74

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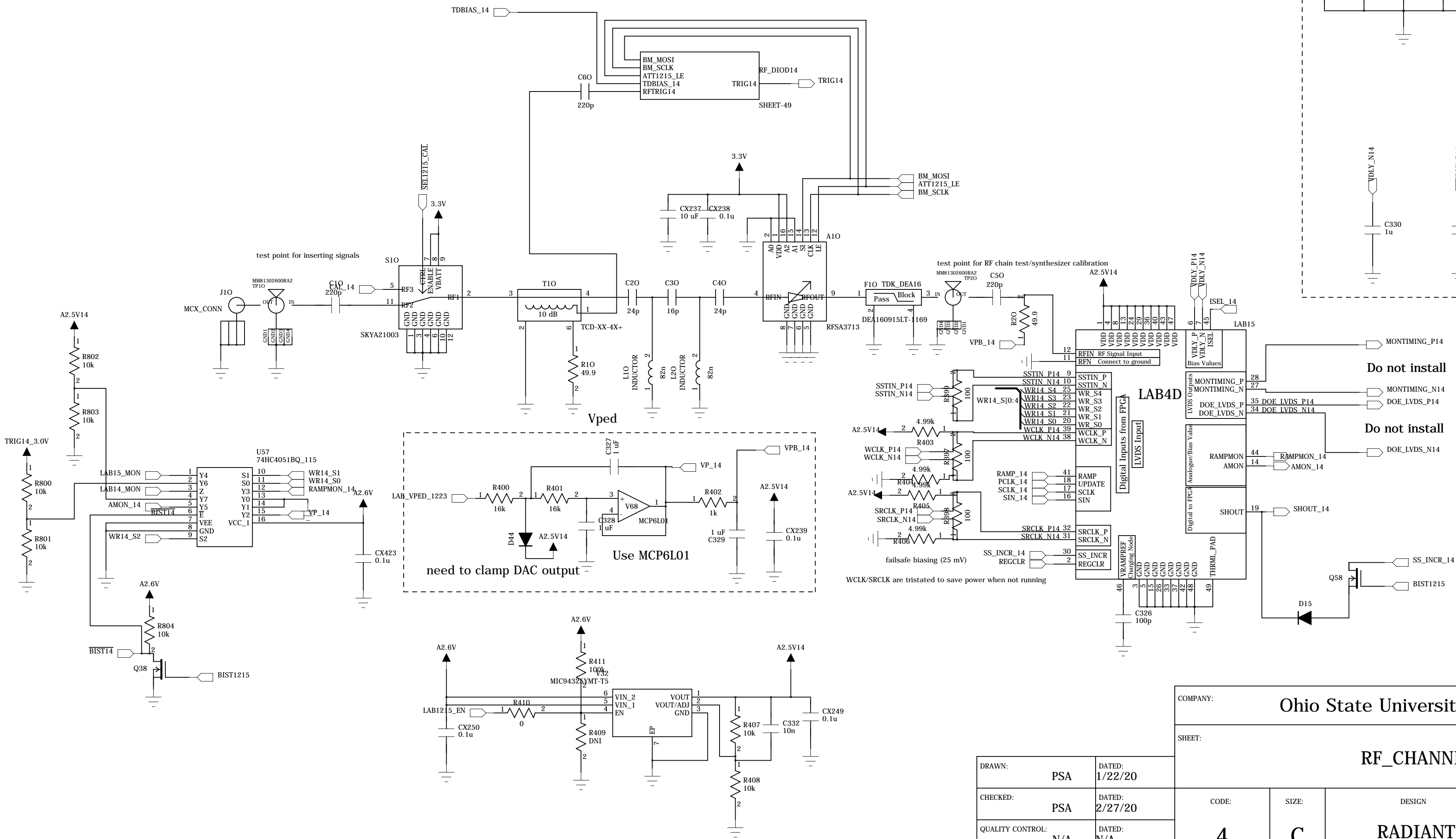
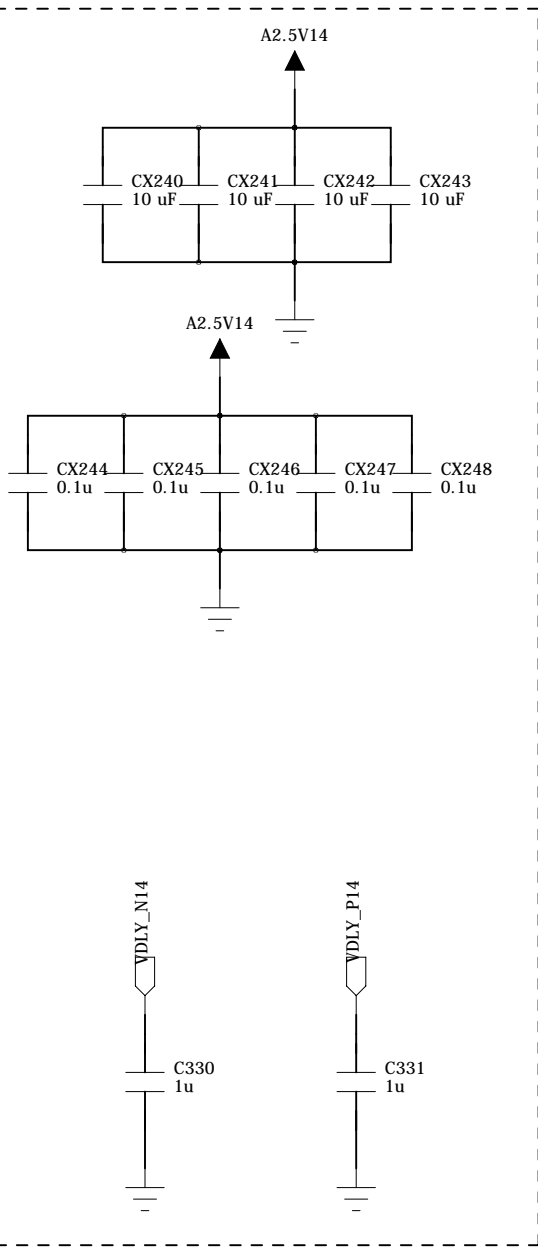
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNE14			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
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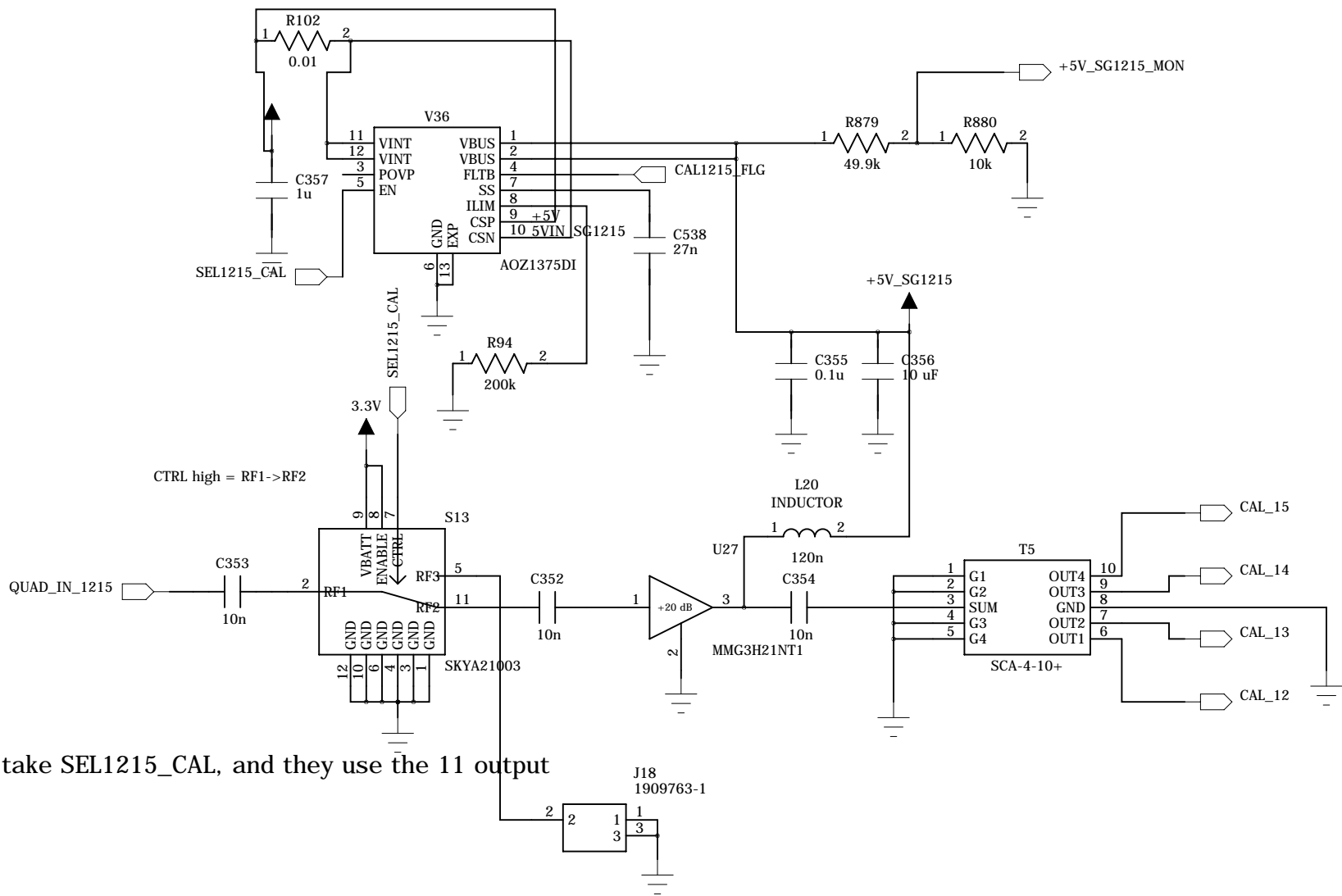
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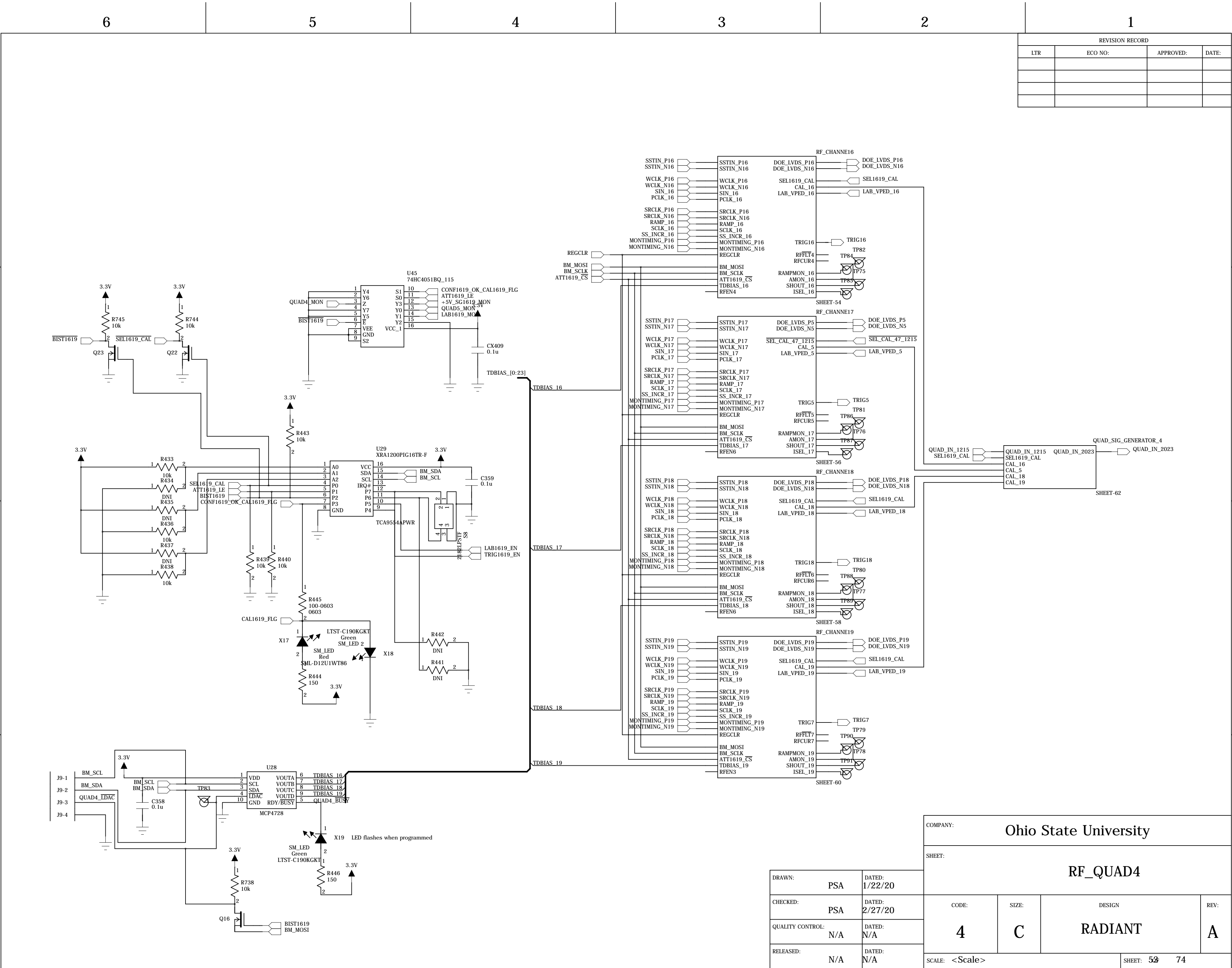
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: QUAD_SIG_GENERATOR_3			
CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 52 74



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_QUAD4			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A		
RELEASED: N/A	DATED: N/A		
SCALE: <Scale>			SHEET: 58 74

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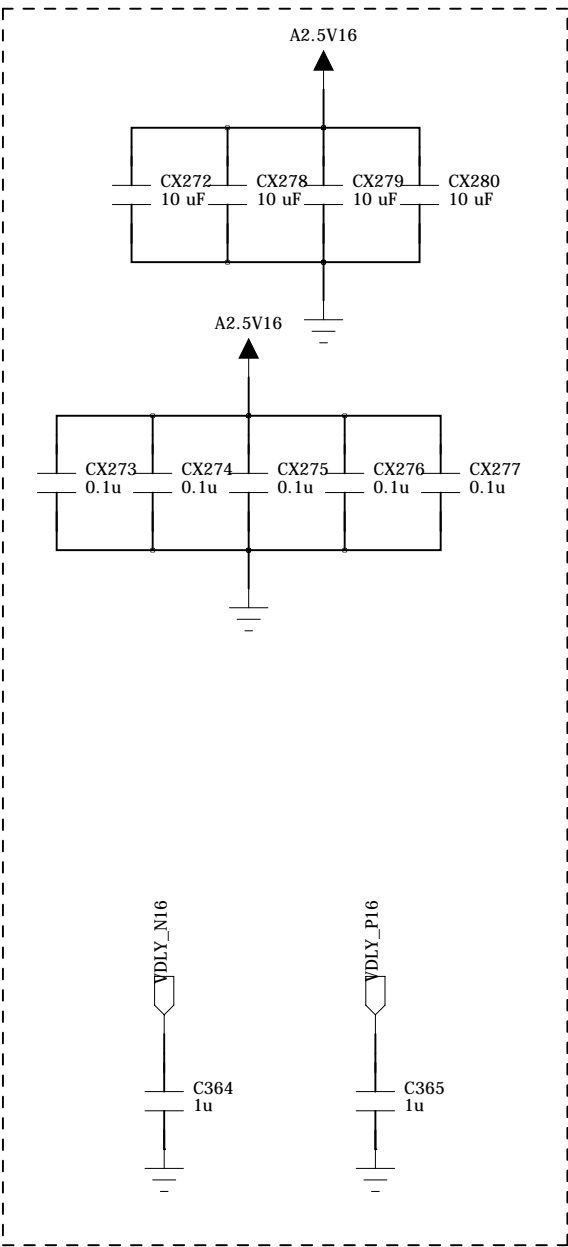
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			

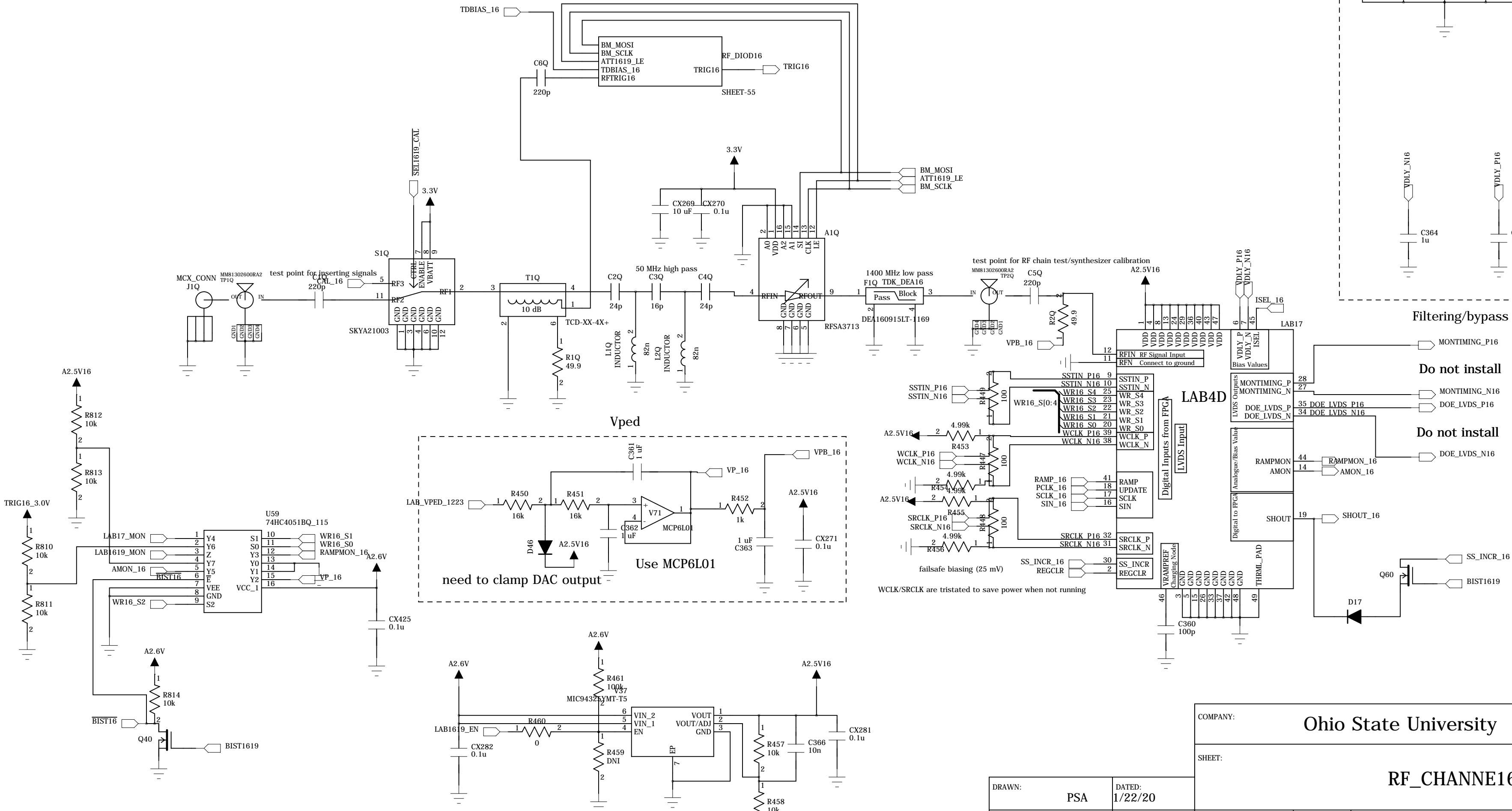


Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNE16			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 54 74	



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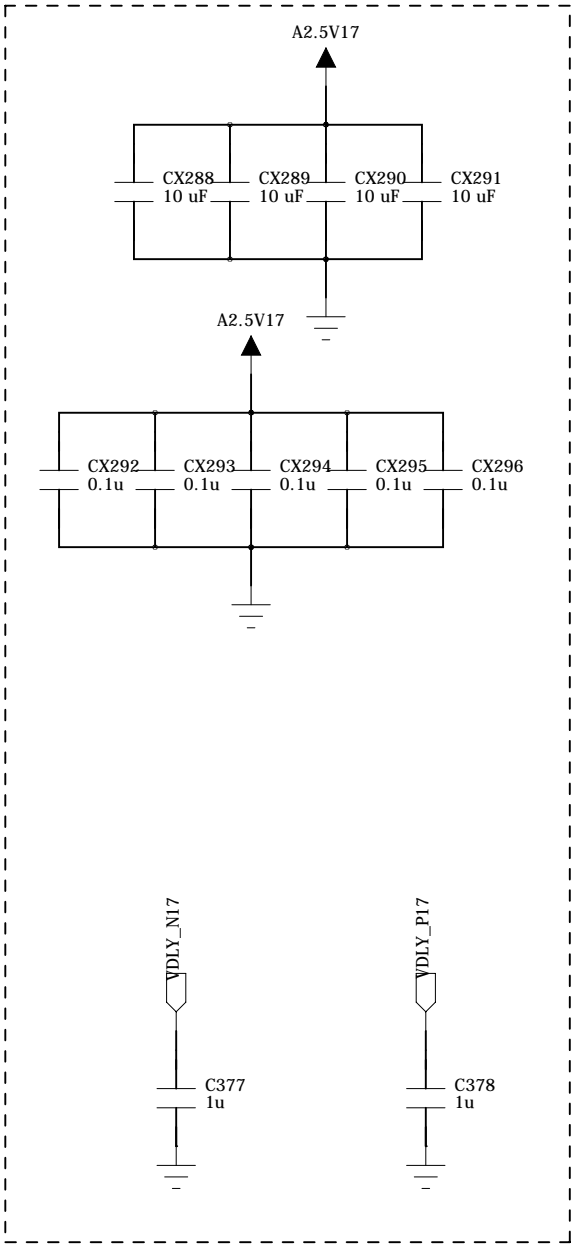
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			

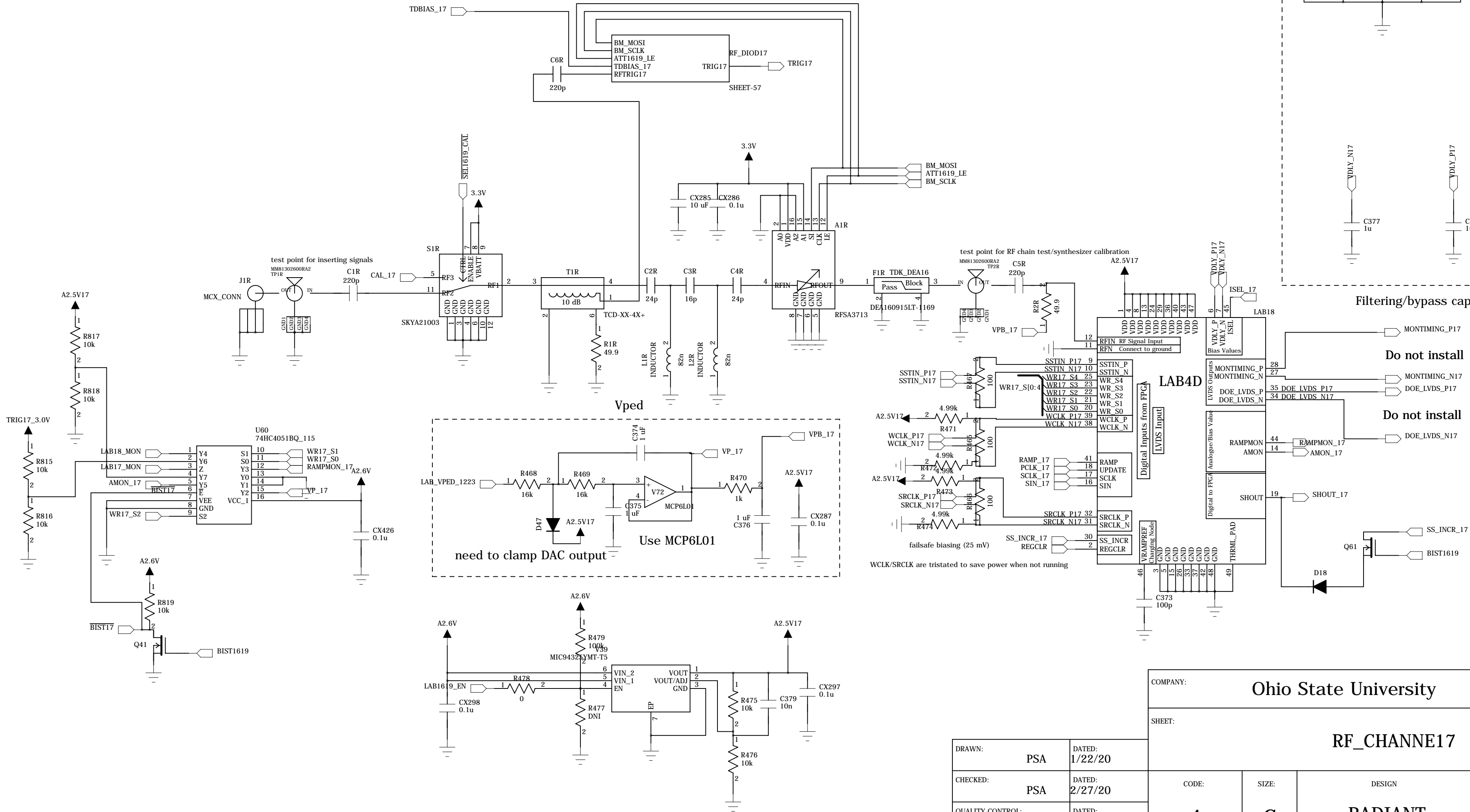


Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNE17			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 56 74	



Vped

Use MCP6L01

need to clamp DAC output

LAB4D

fail-safe biasing (25 mV)

WCLK/SRCLK are tristated to save power when not running

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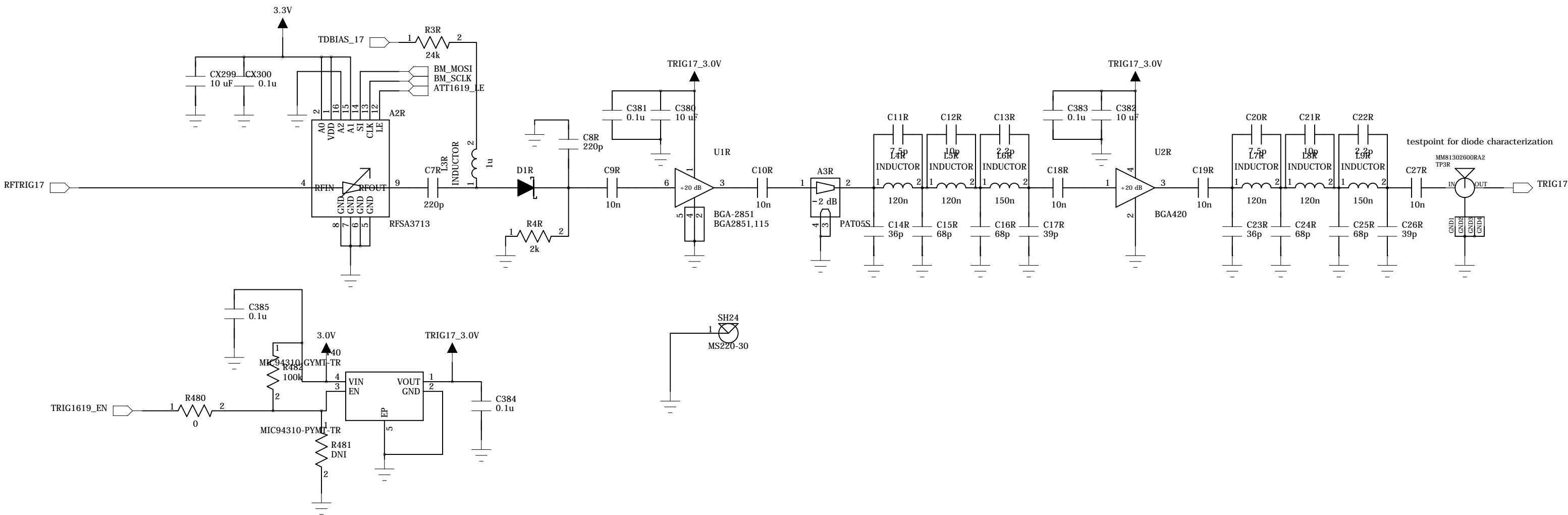
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: RF_DIOD17			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 57 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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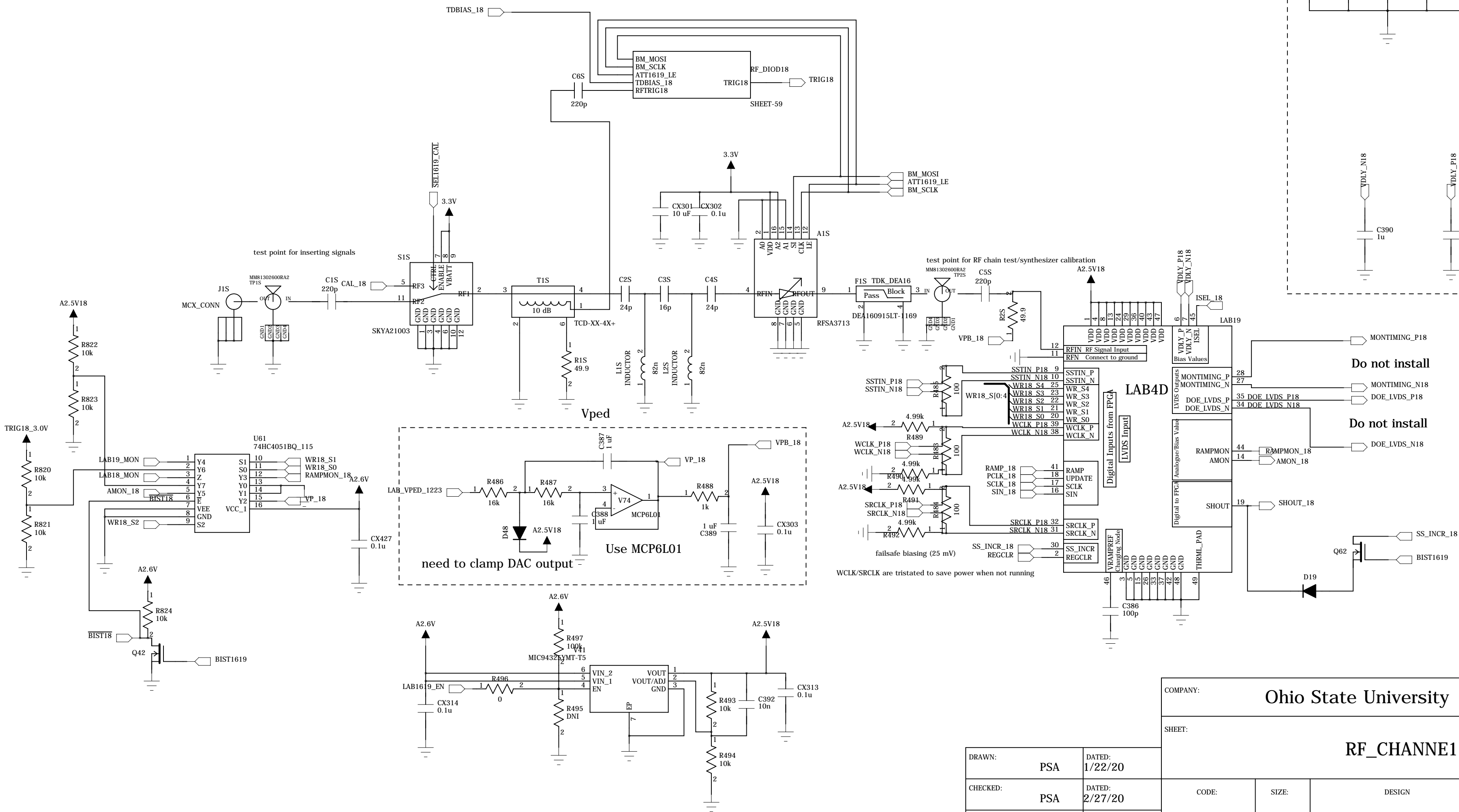
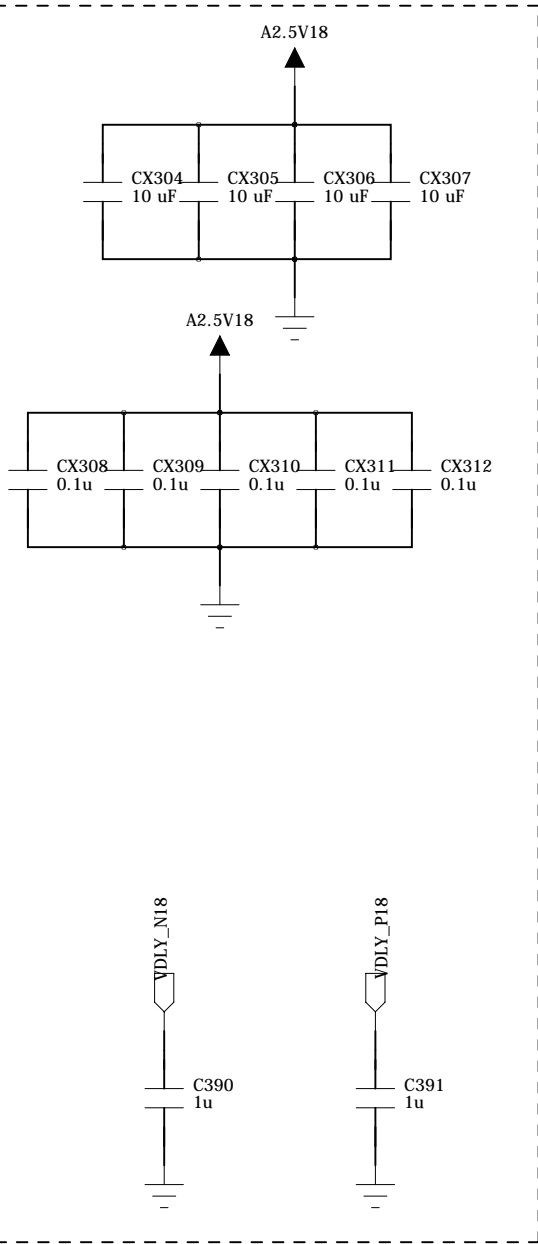
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: RF_CHANNE18			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 58 74

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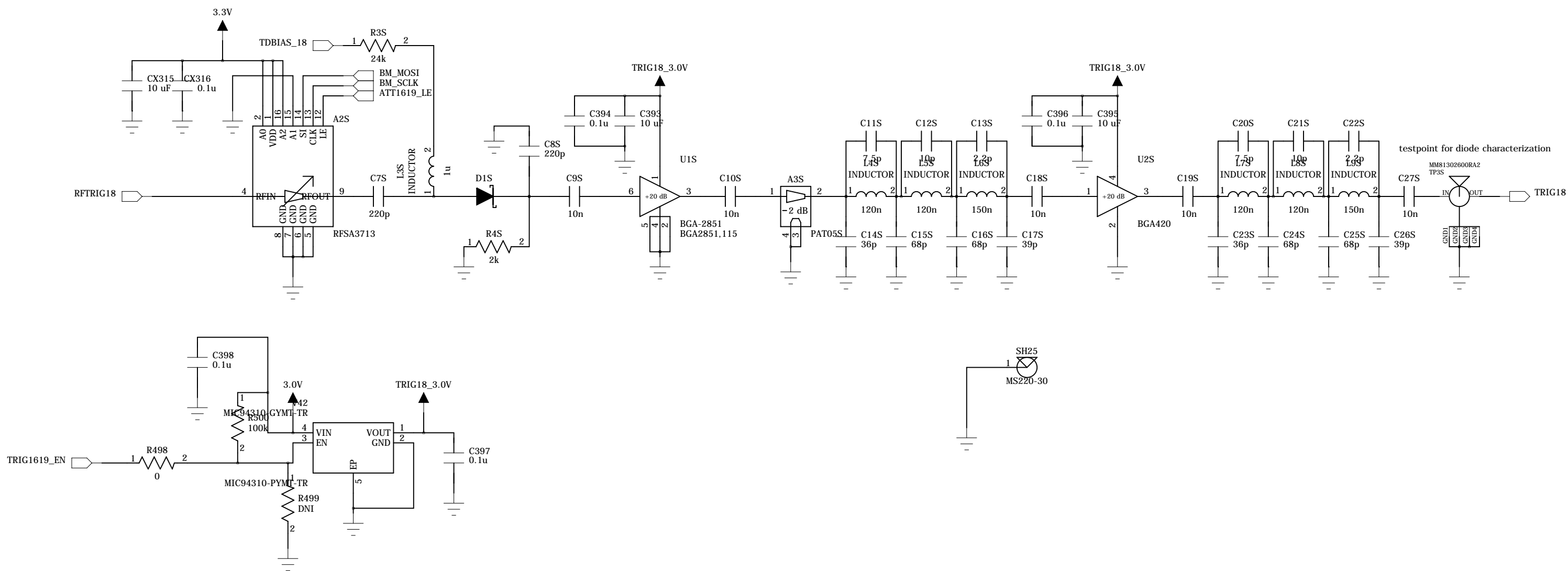
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIOD18

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 59 74

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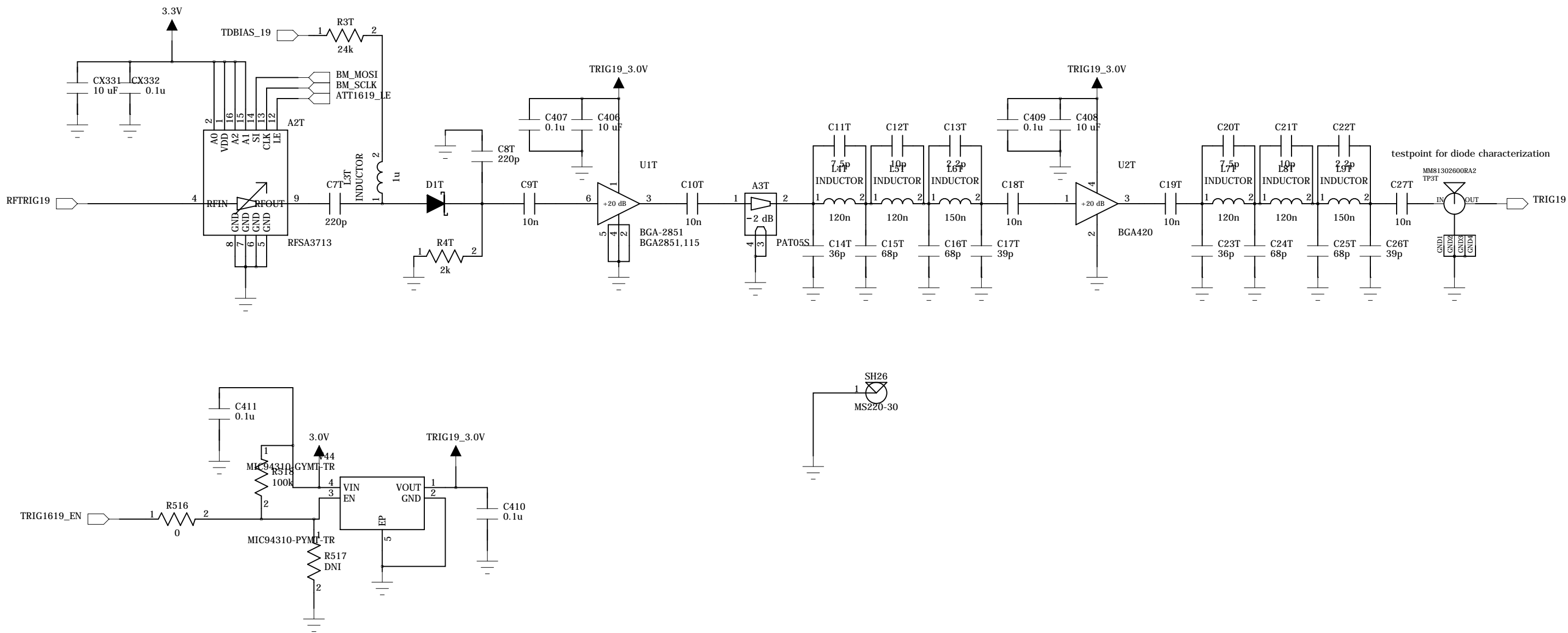
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIOD19

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:

4

SIZE:

C

DESIGN

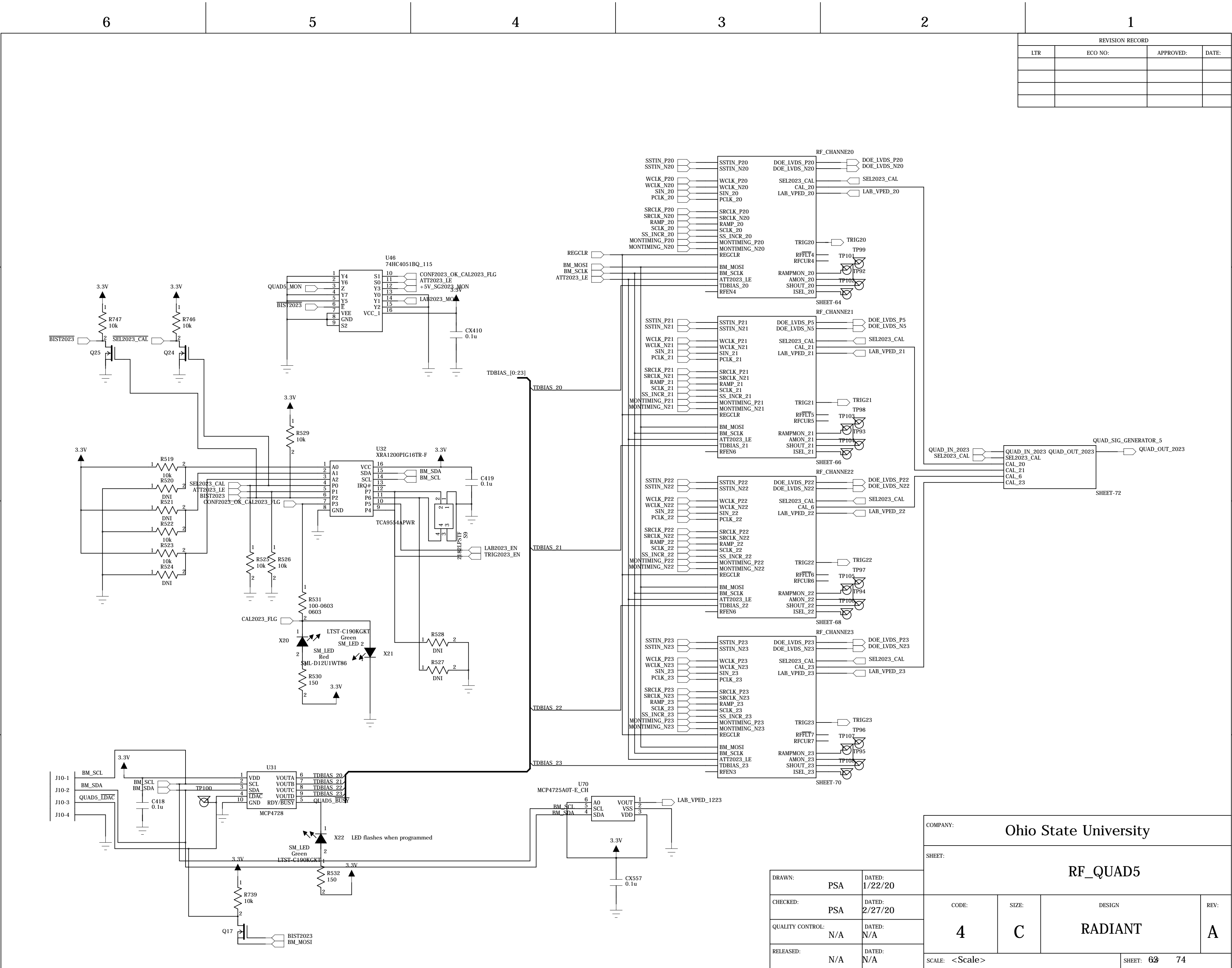
RADIANT

REV:

A

SCALE: <Scale>

SHEET: 61 of 74



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_QUAD5			
CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 63 74

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

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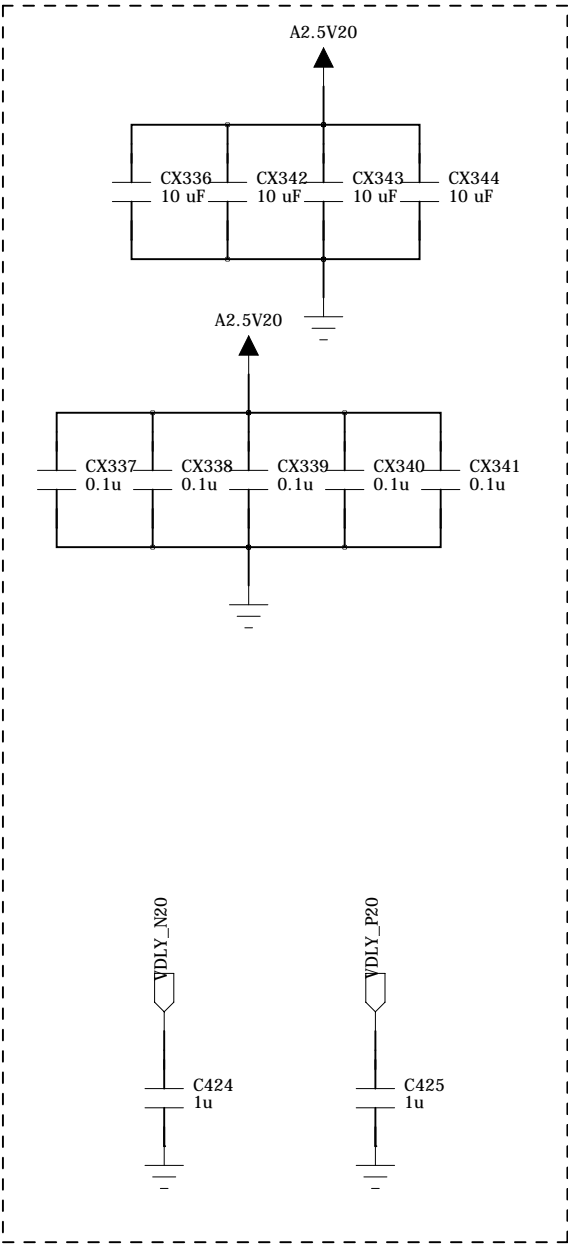
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			

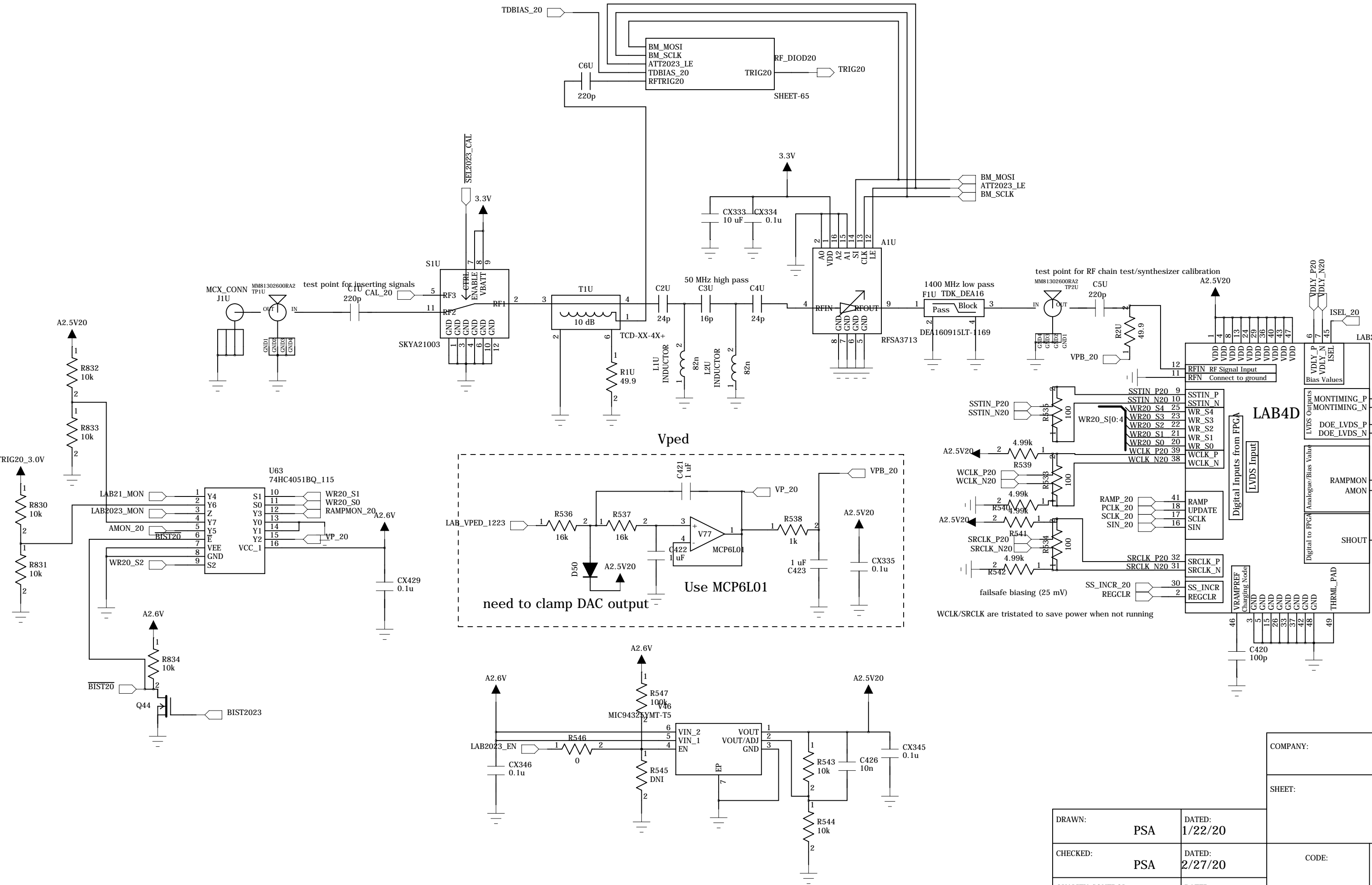


Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNE20			
DRAWN: PSA	DATED: 1/22/20	CODE: 4	SIZE: C
CHECKED: PSA	DATED: 2/27/20	DESIGN: RADIANT	REV: A
QUALITY CONTROL: N/A	DATED: N/A	SCALE: <Scale>	
RELEASED: N/A	DATED: N/A	SHEET: 64 74	



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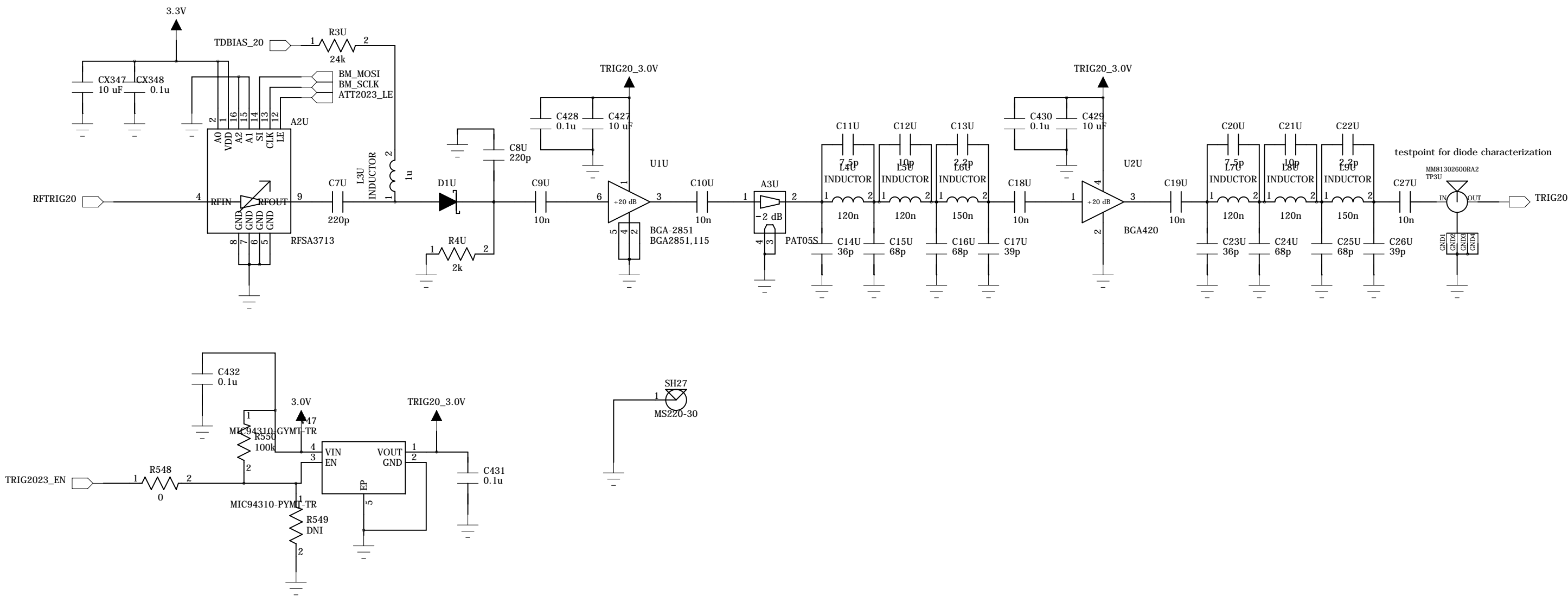
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: RF_DIOD20			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 65 74

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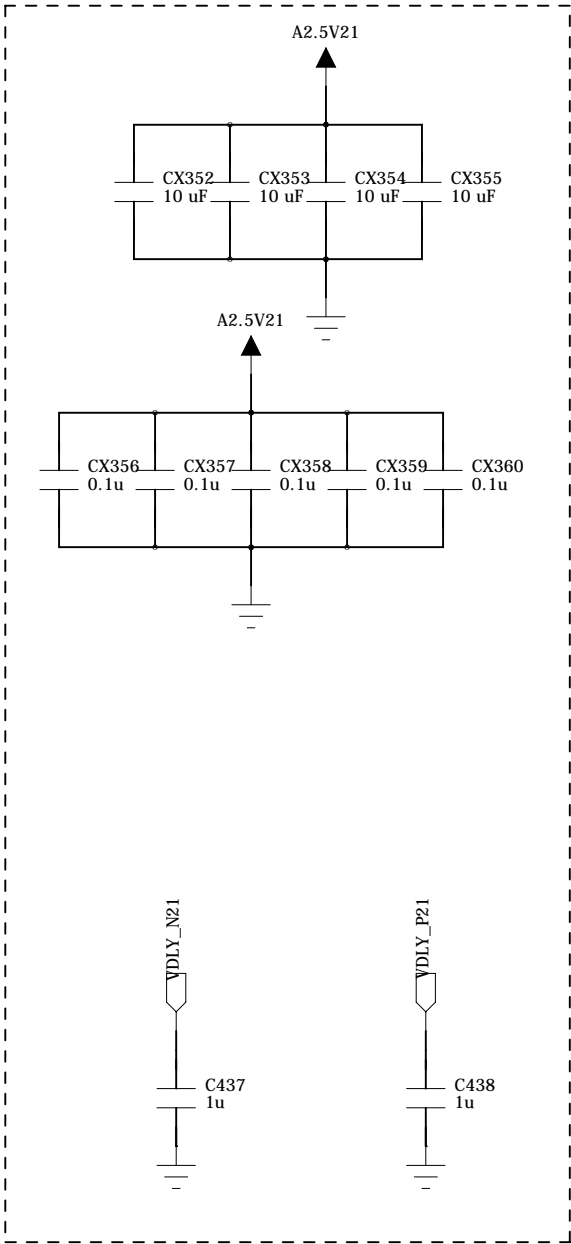
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



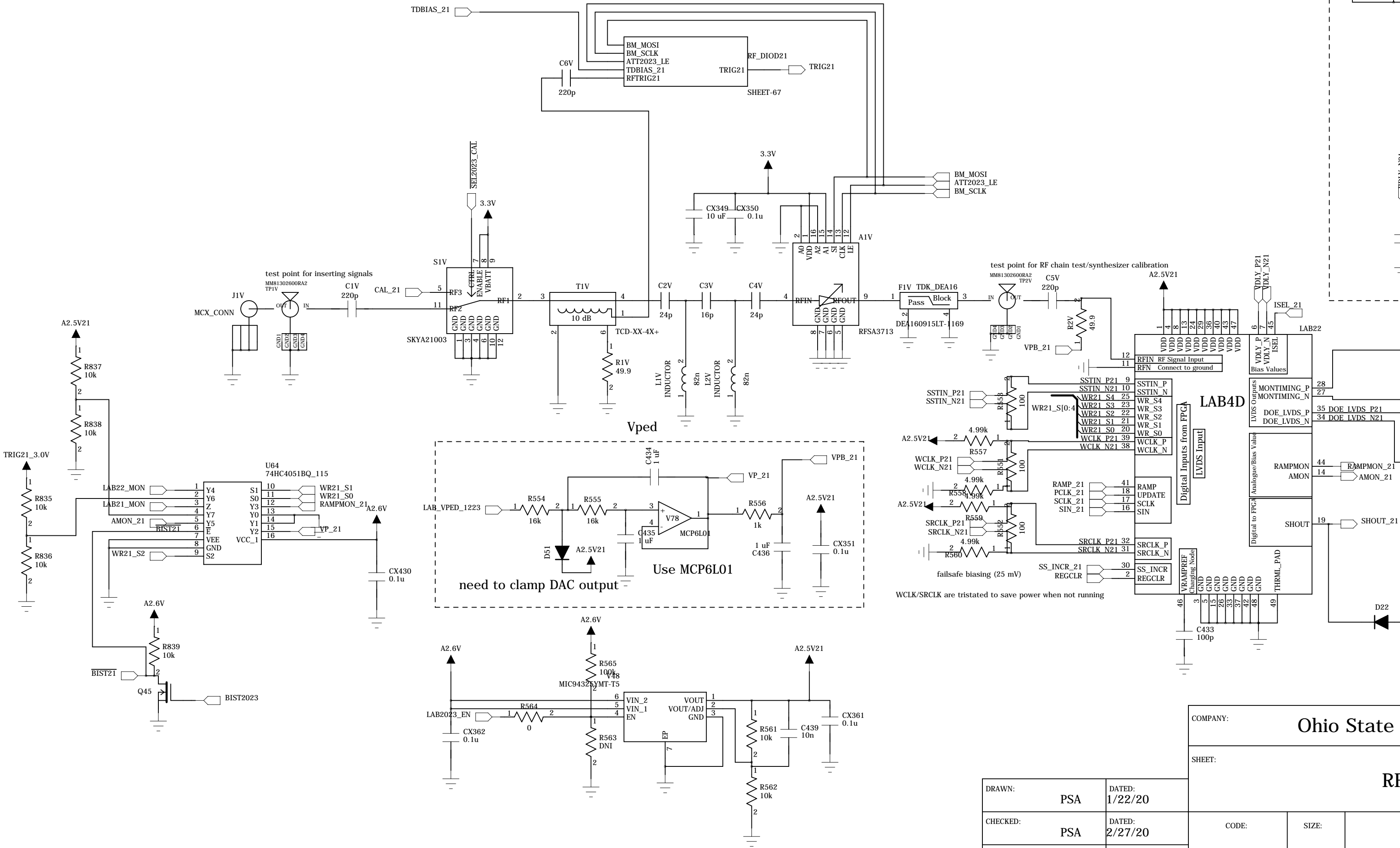
Filtering/bypass capacitors

Do not install

Do not install

COMPANY: Ohio State University			
SHEET: RF_CHANNE21			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 66 74

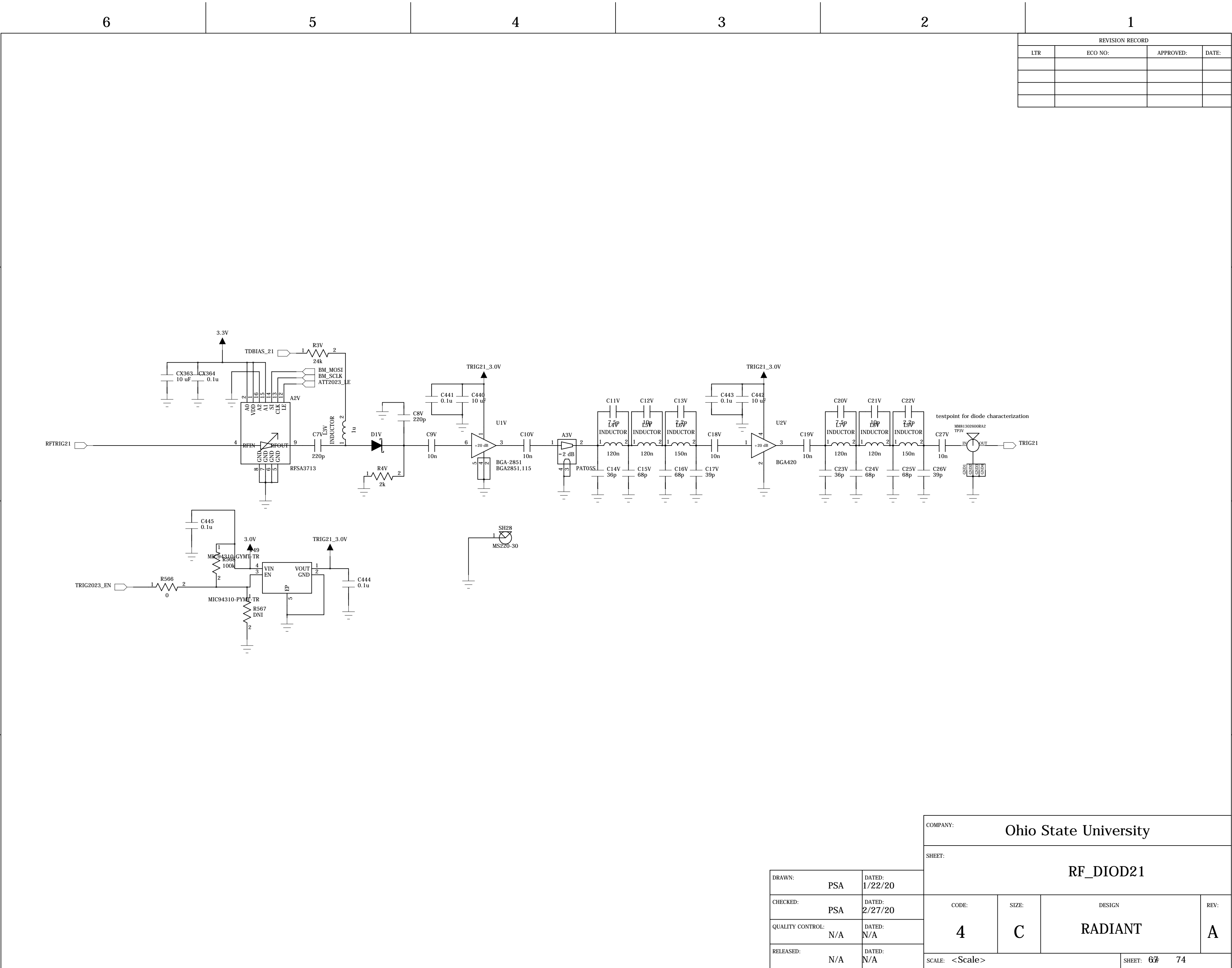
DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A



Vped

Use MCP6L01

need to clamp DAC output



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

COMPANY: Ohio State University			
SHEET: RF_DIOD21			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 67 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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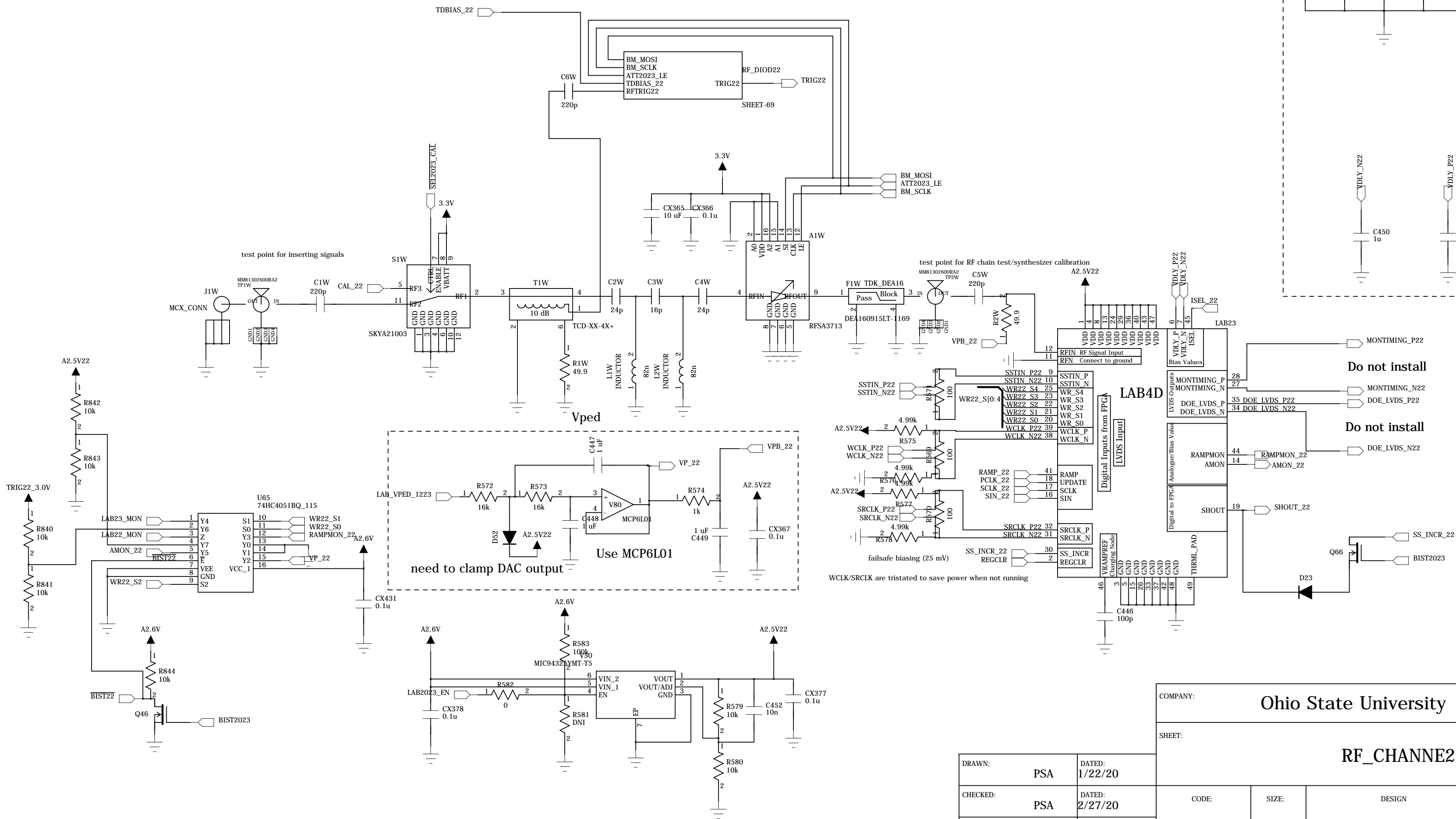
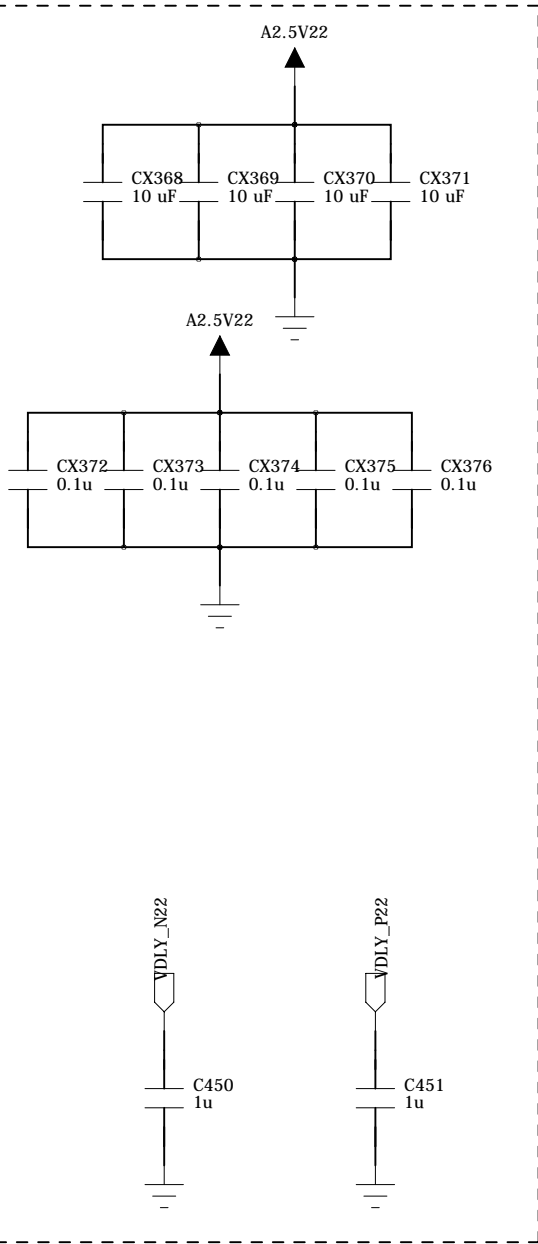
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



COMPANY: Ohio State University			
SHEET: RF_CHANNE22			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 68 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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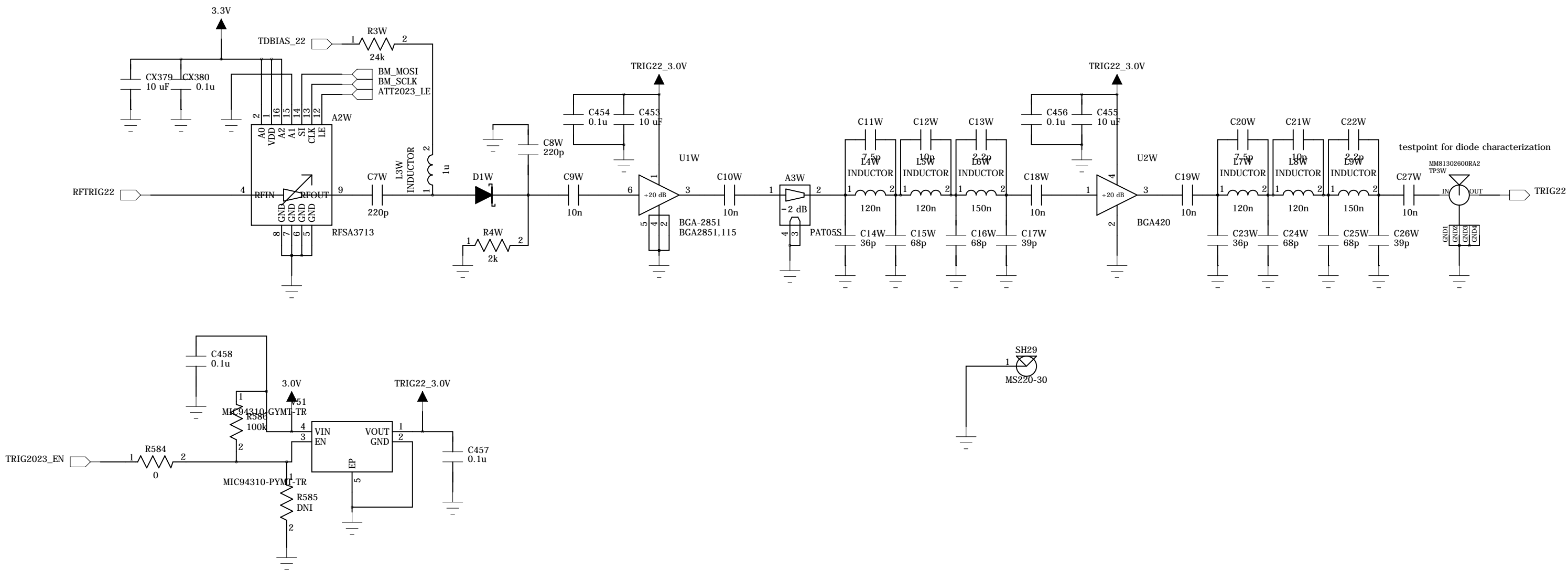
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY: Ohio State University			
SHEET: RF_DIOD22			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 69 74

DRAWN: PSA	DATED: 1/22/20
CHECKED: PSA	DATED: 2/27/20
QUALITY CONTROL: N/A	DATED: N/A
RELEASED: N/A	DATED: N/A

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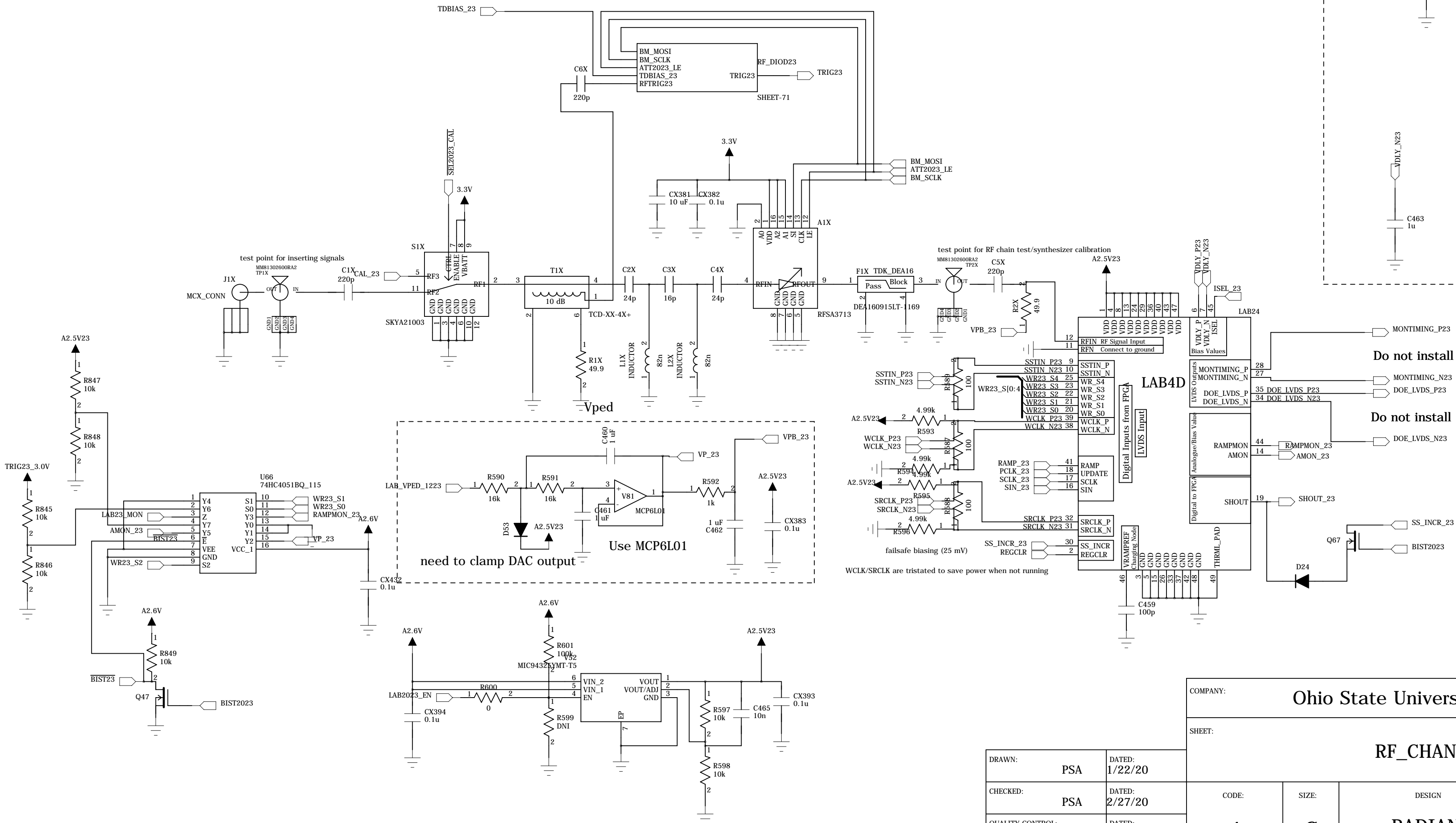
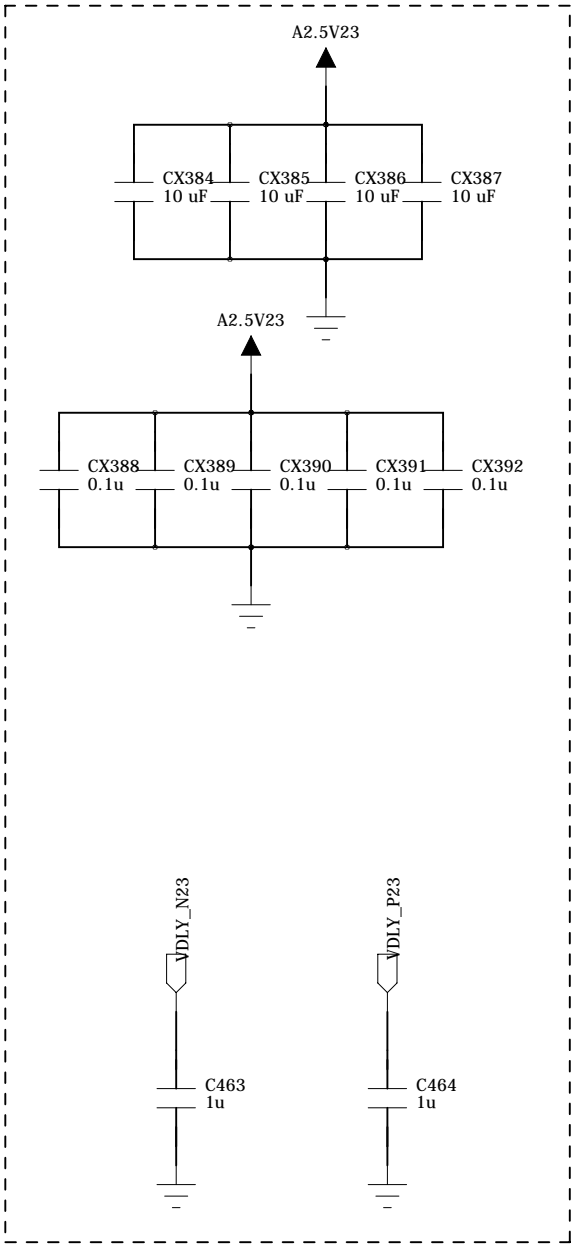
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
Filtering/bypass capacitors			



DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University			
SHEET: RF_CHANNE23			
CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
SCALE: <Scale>			SHEET: 70 74

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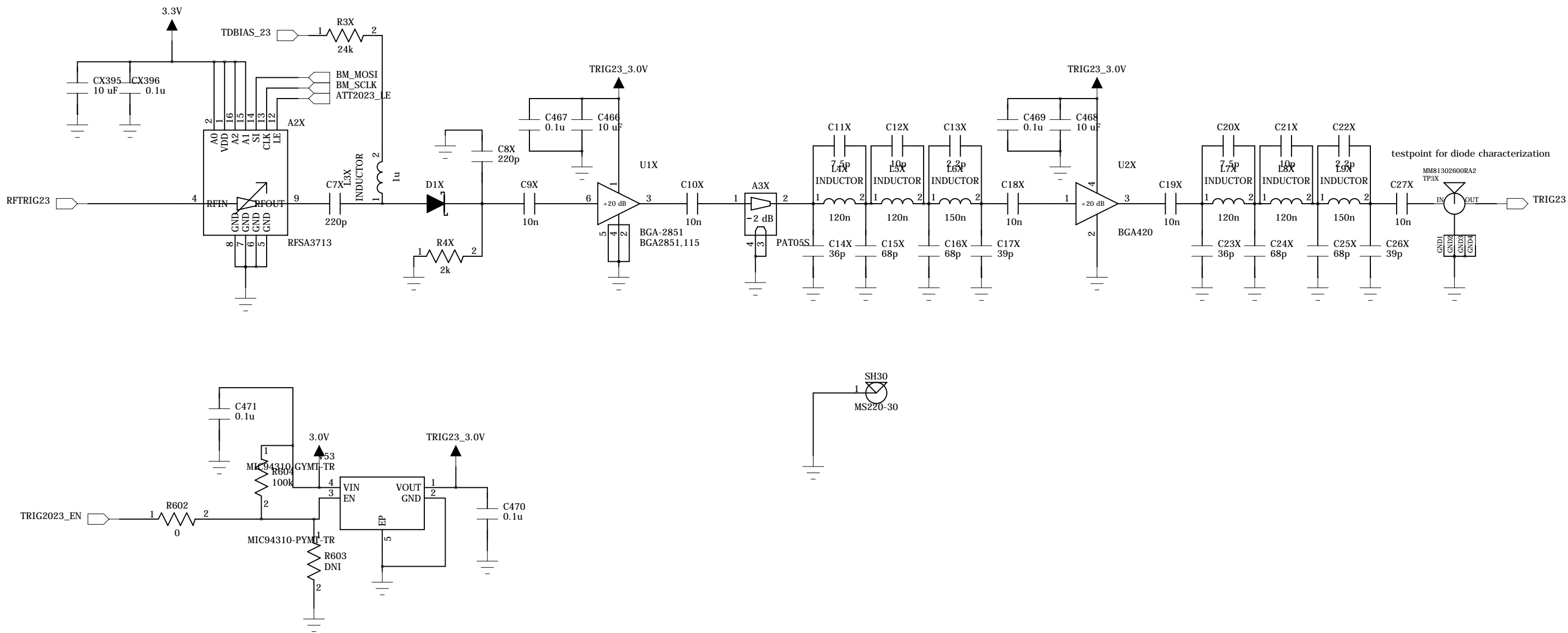
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:



COMPANY:

Ohio State University

SHEET:

RF_DIOD23

DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A

CODE:	SIZE:	DESIGN	REV:
4	C	RADIANT	A
SCALE: <Scale>			SHEET: 74 of 74

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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

