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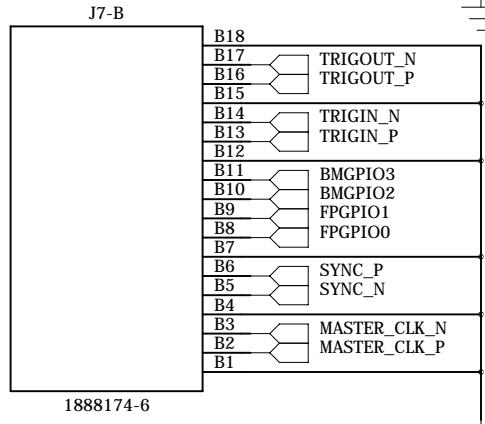
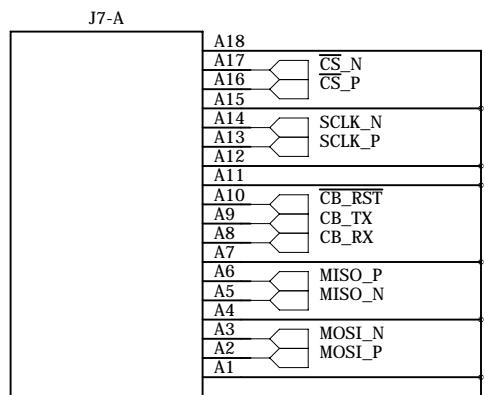
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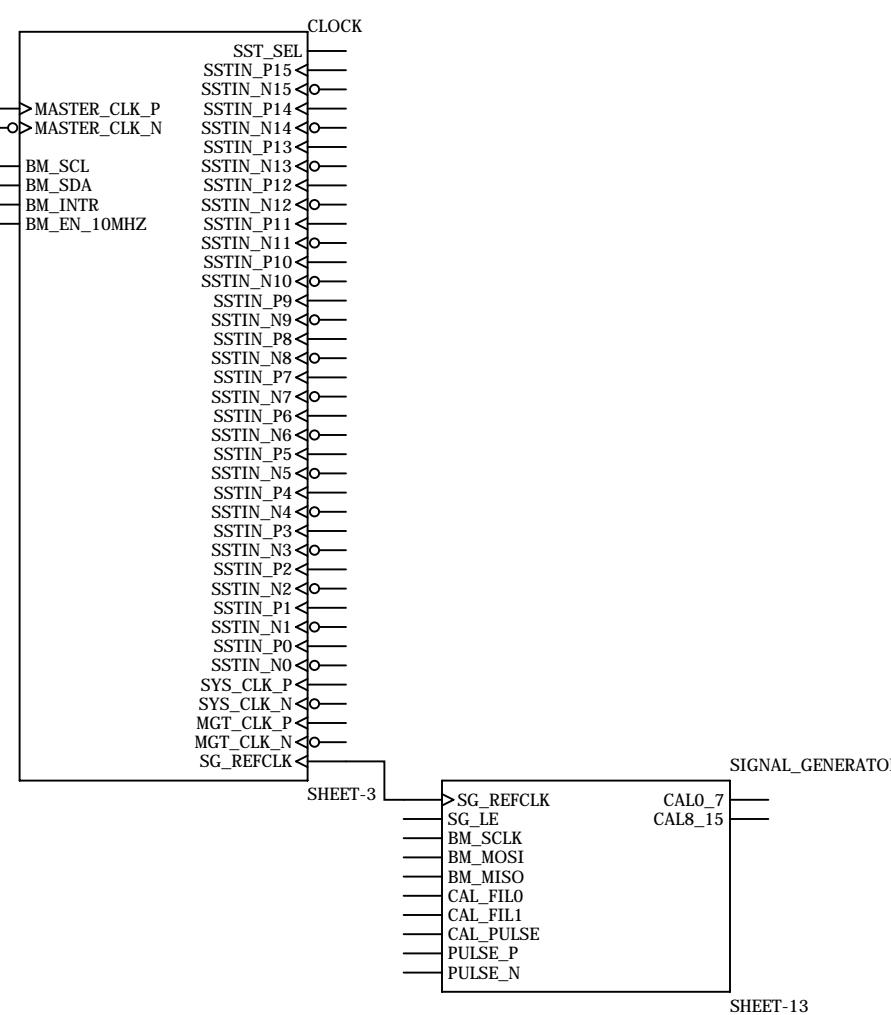
LTR	ECO NO:	APPROVED:	DATE:

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protection diodes somewhere??

ECO 6/2: swap A/B on sideband signals



SFF-8087 connector

Cable is designed with 8 differential pairs

TRIGIN+/-, TRIGOUT+/-

CLK+/-, SYNC+/-

MOSI/GND

MISO/GND (these are implemented as differential pairs!)

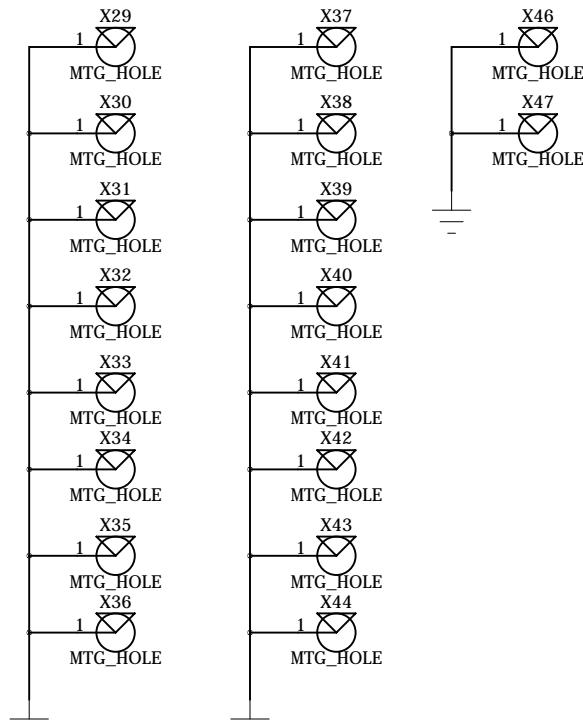
SCLK/GND (allows for a higher-speed FPGA-to-FPGA link)

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...



B

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COMPANY:	Ohio State University		
SHEET:	TOP		
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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SHEET: 1f		74	

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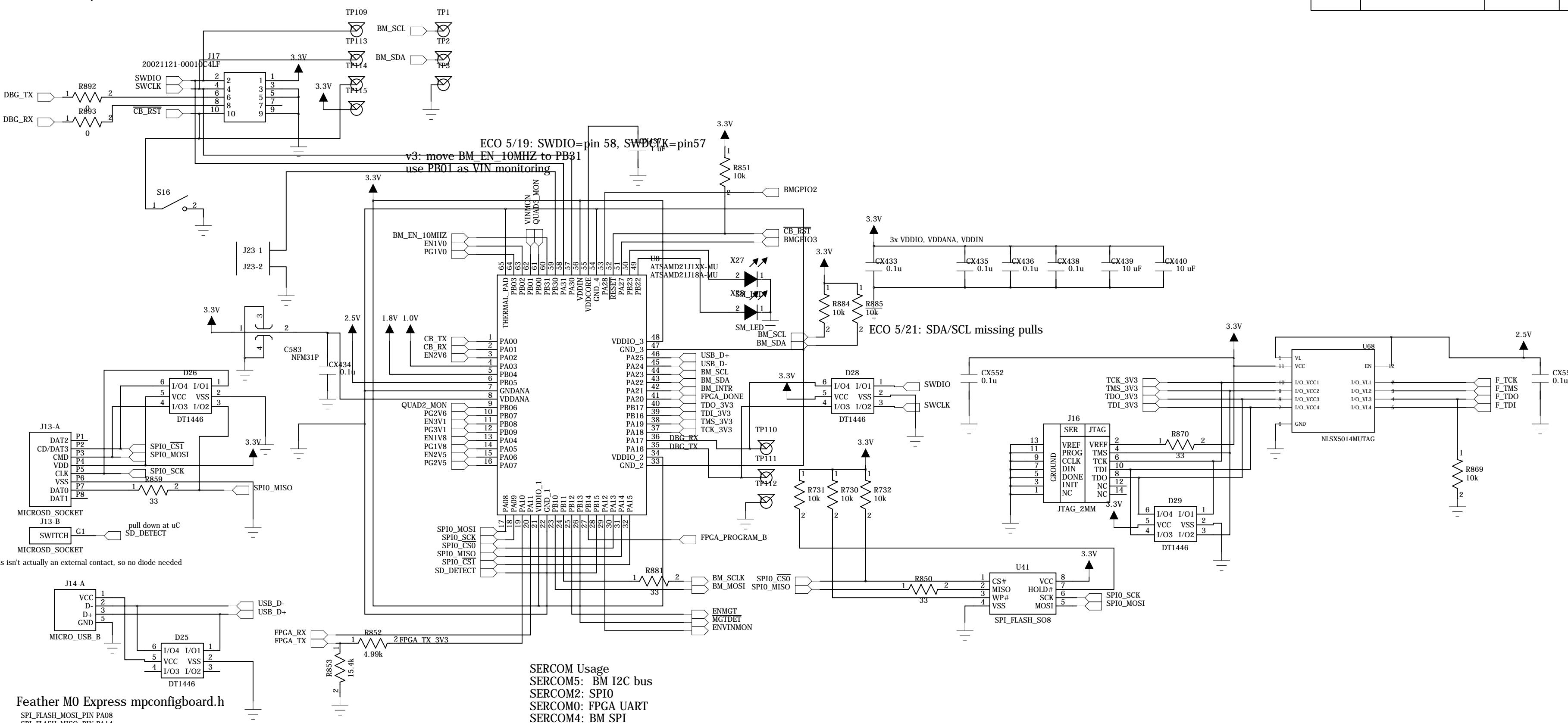
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REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

v3: Expose DBG_TX/DBG_RX on JTAG header for use as GPIOs if needed



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		
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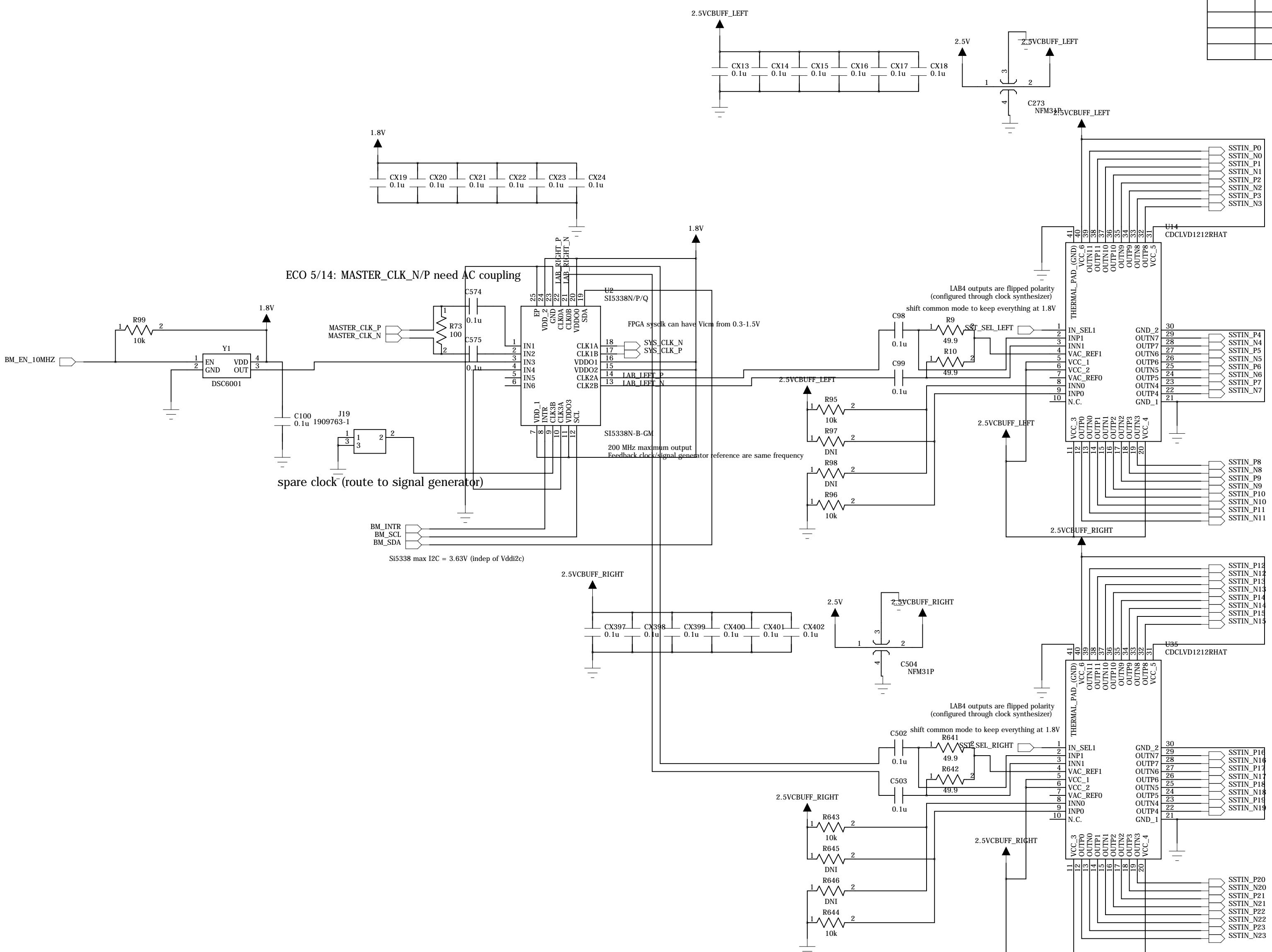
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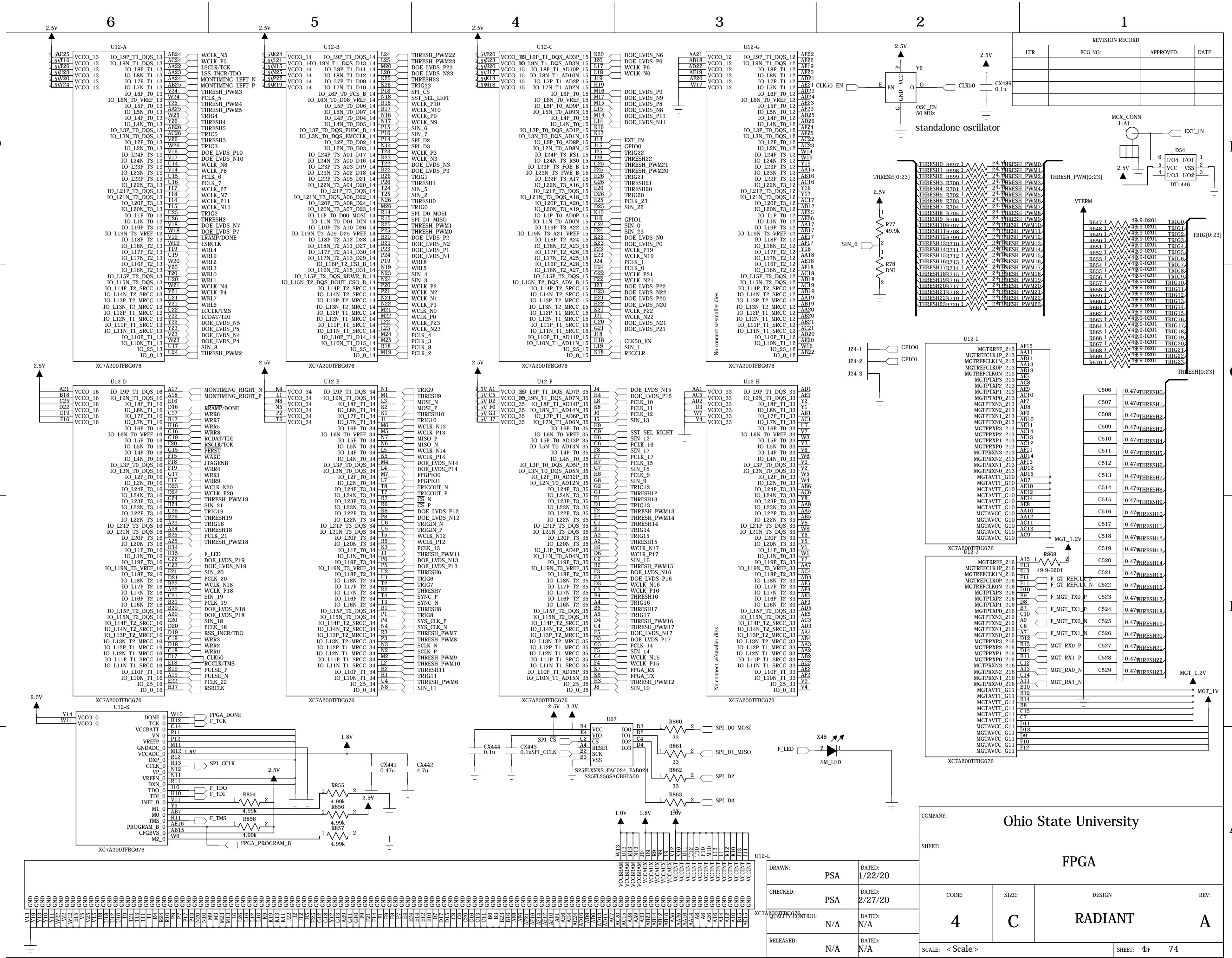
LTR	ECO NO:	APPROVED:	DATE:

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COMPANY:	Ohio State University		
SHEET:	CLOCK		
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CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A
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SCALE:	<Scale>		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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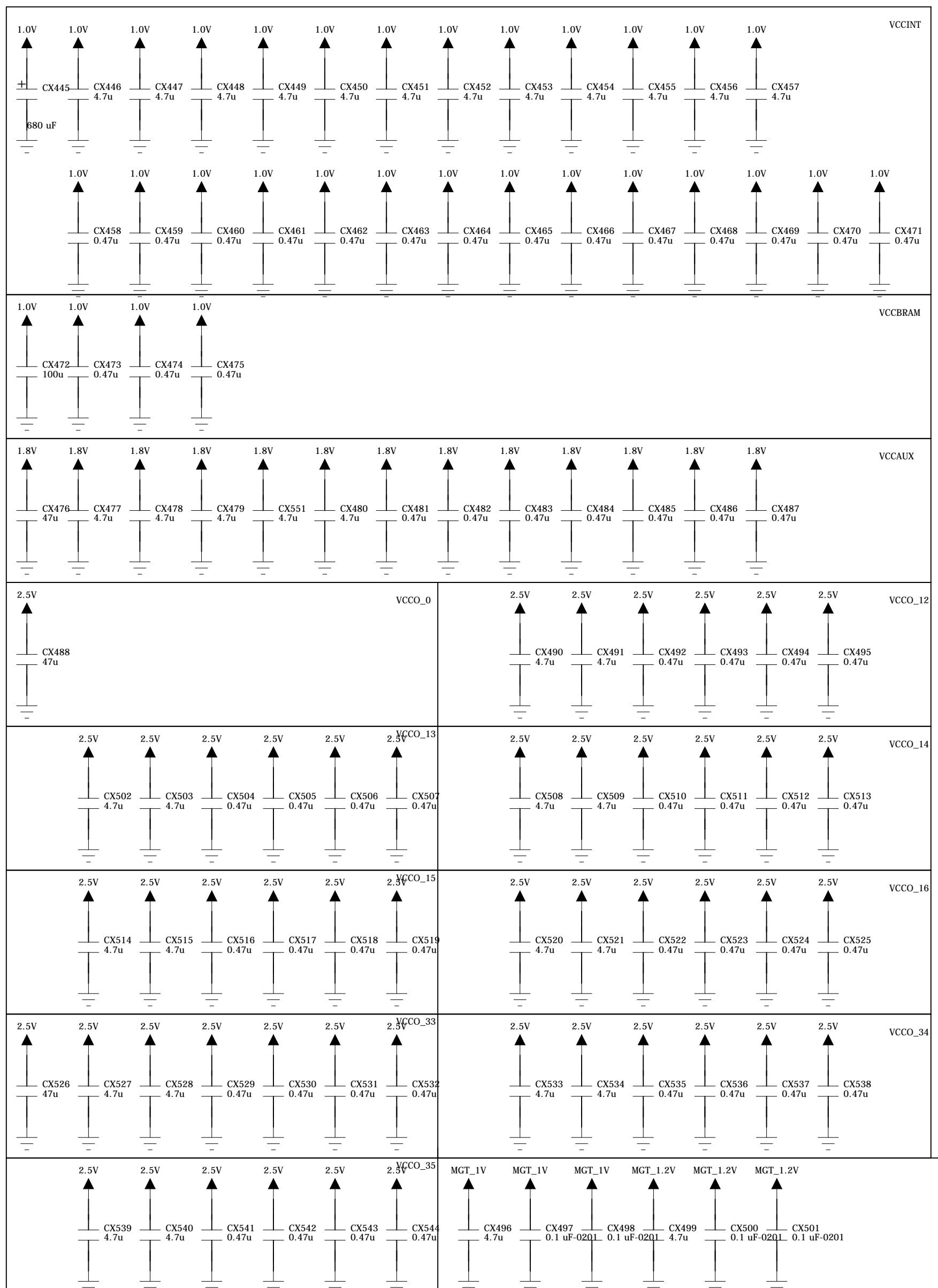
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MGTAVCC/MGTAVTT (G11)

COMPANY:	Ohio State University		
SHEET:	FPGA_DECUPLE		
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
SCALE:	<Scale>		
CODE:	SIZE:	DESIGN:	REV:
4	C	RADIANT	A
SHEET: 5F		74	

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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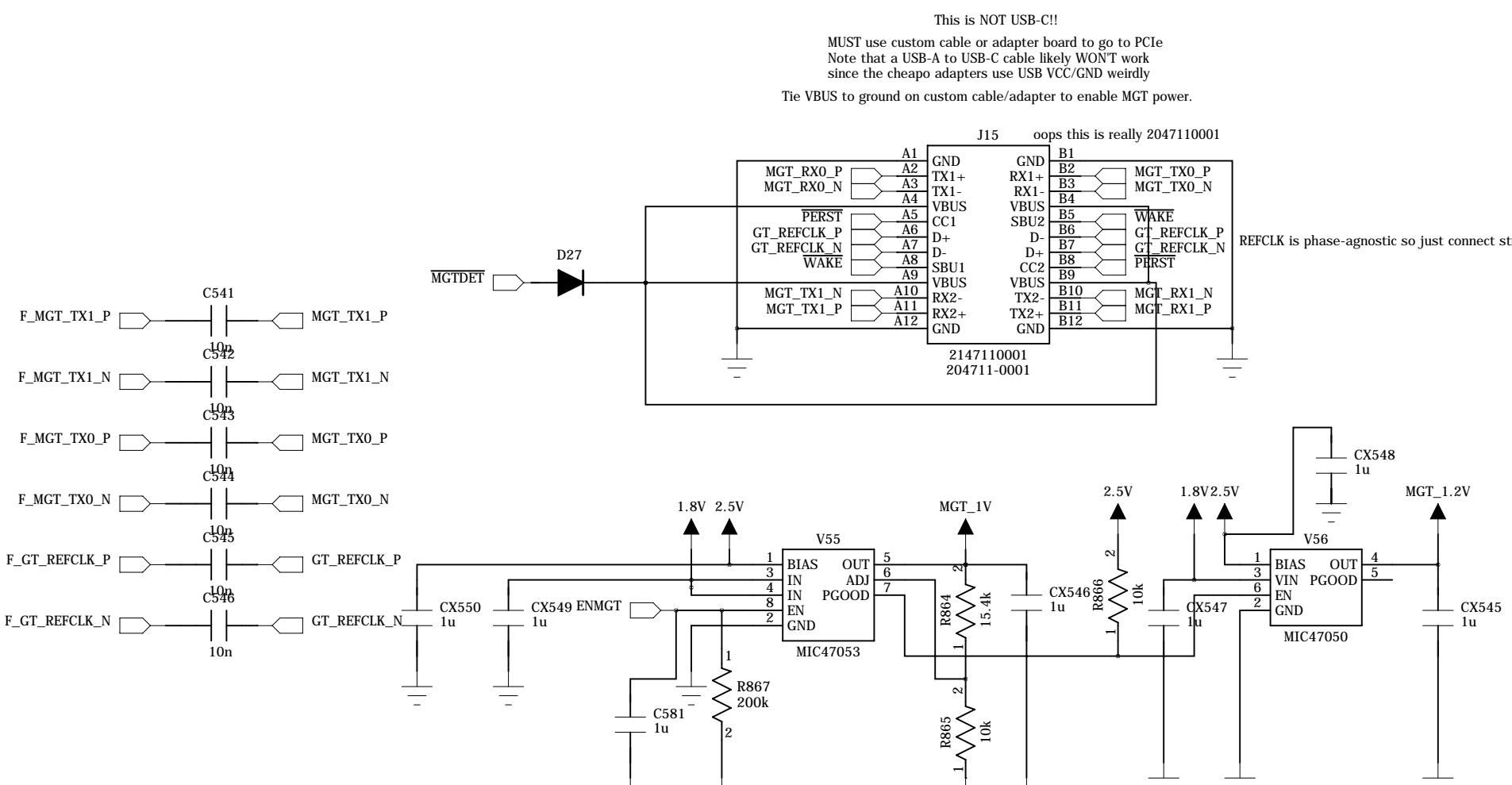
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MGT power is off by default. If board manager detects plugged in cable/board, it enables in proper sequence

COMPANY:	Ohio State University		
SHEET:	FPGA-PCIE		
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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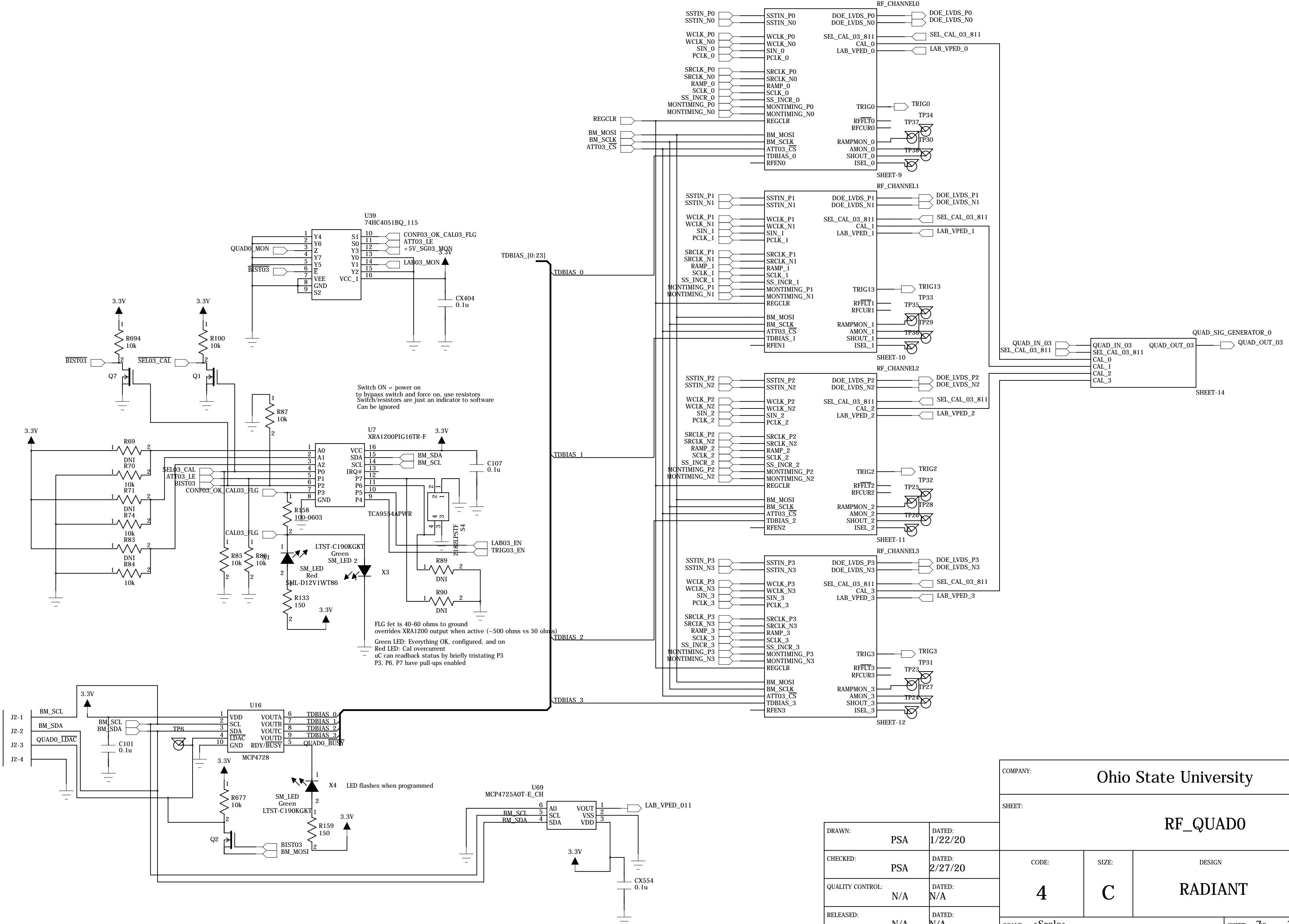
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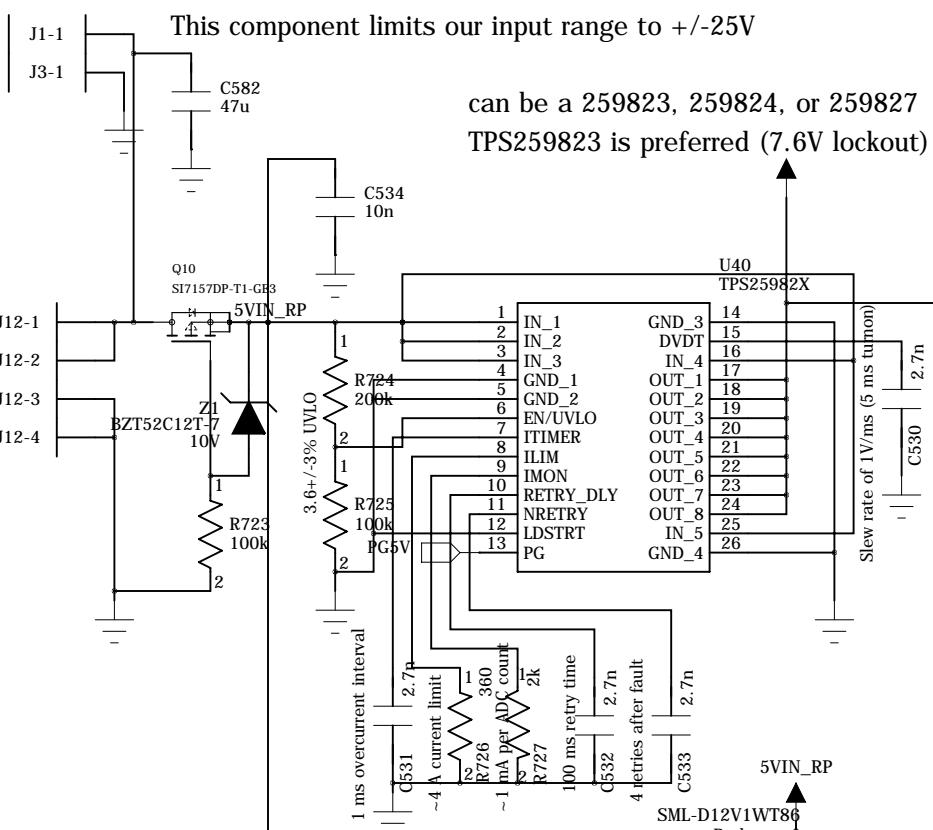
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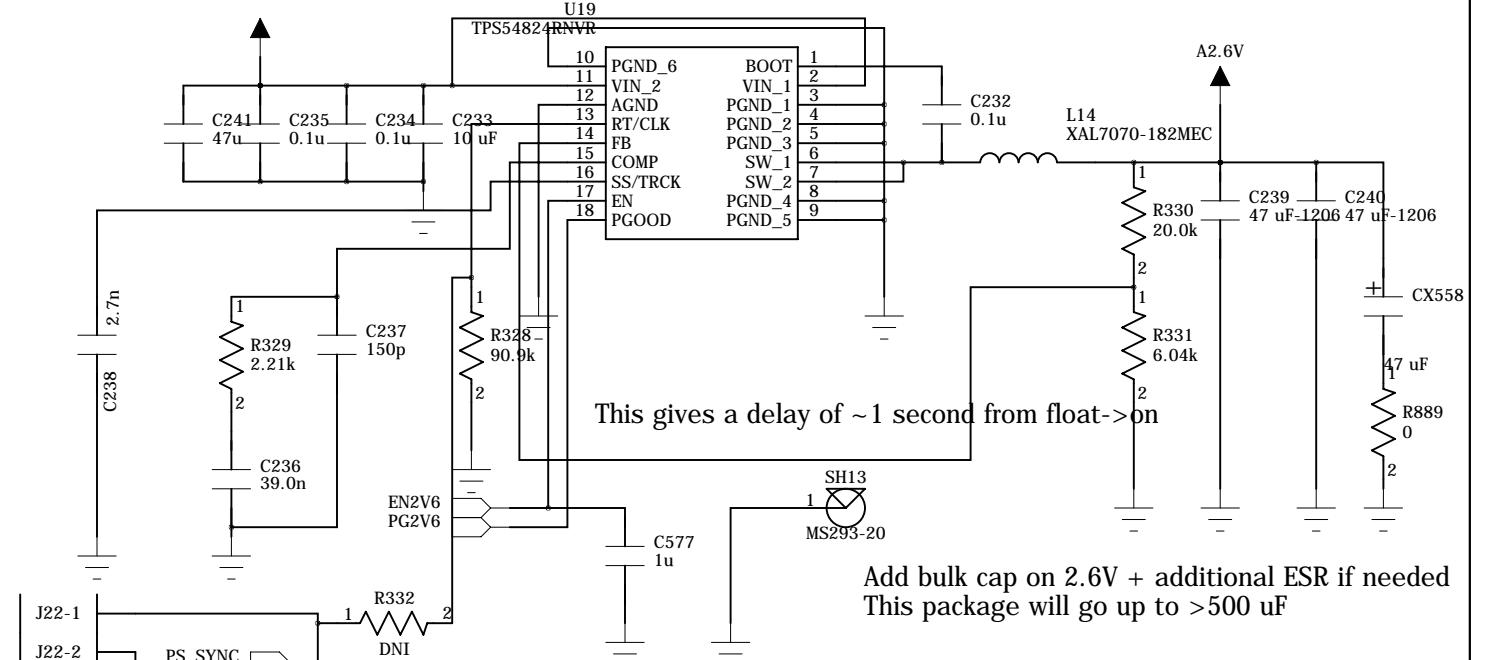
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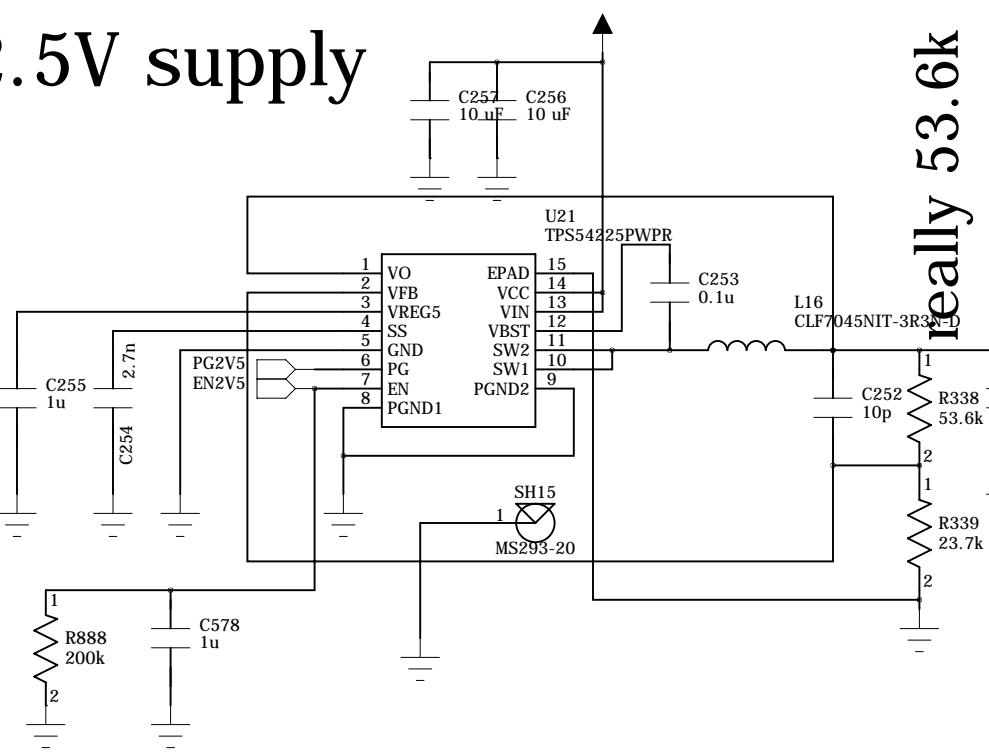
Input power protection



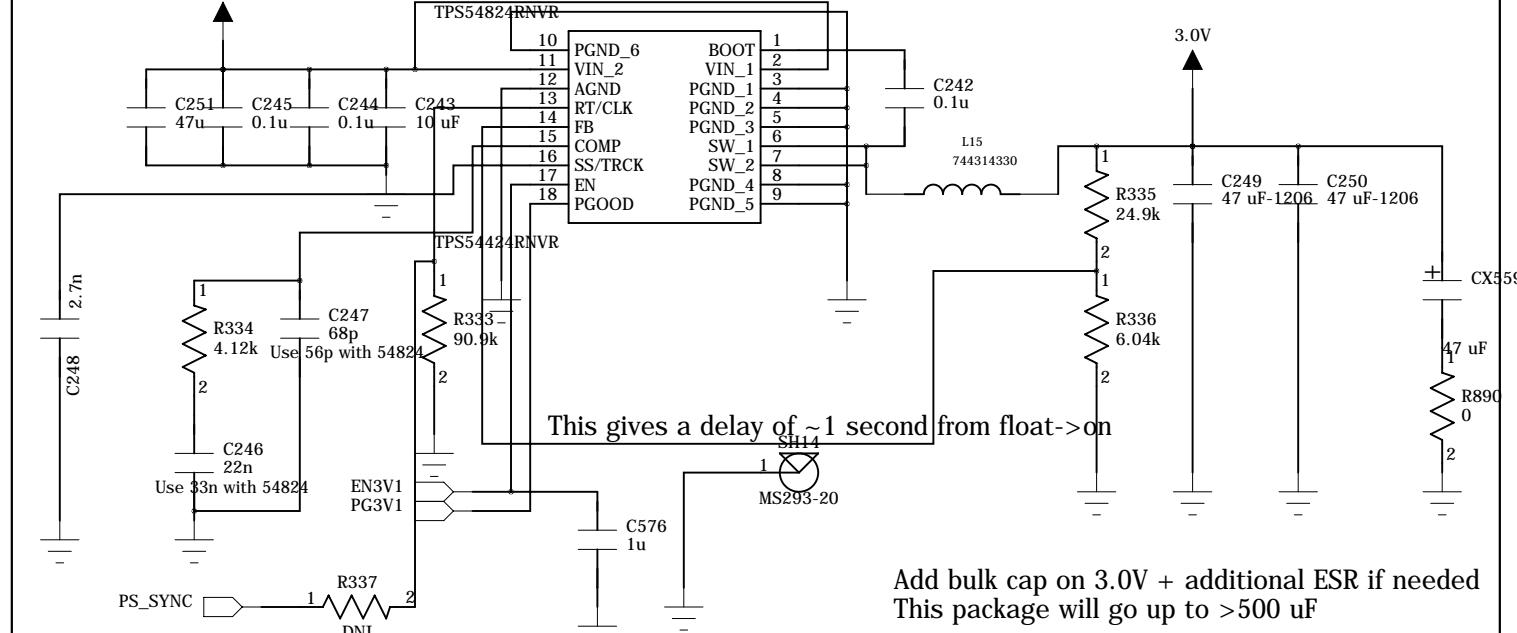
LAB4D supply (2.6V, regulated to 2.5V)



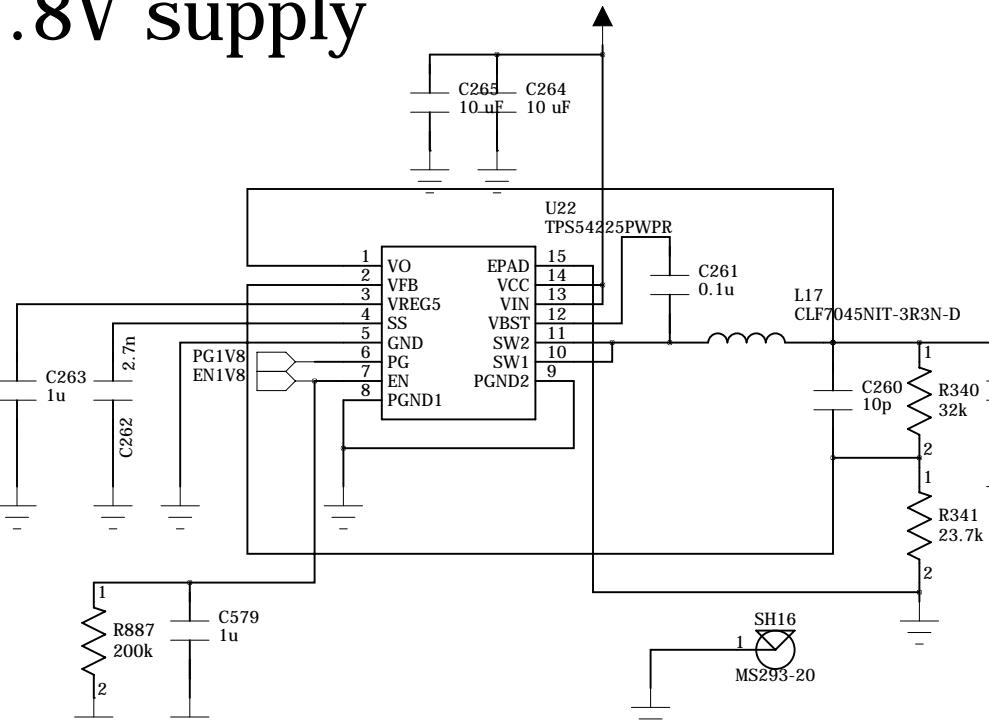
2.5V supply



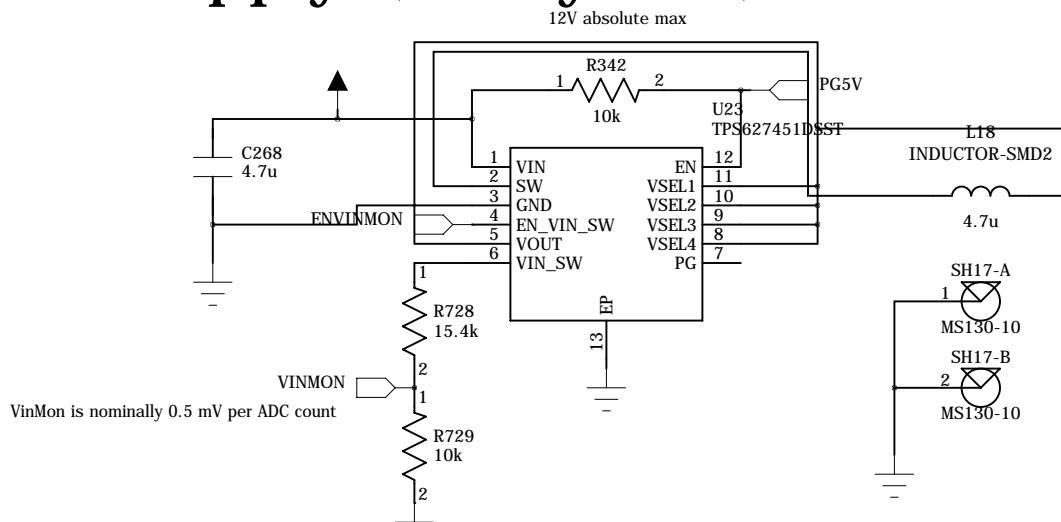
Trigger supply (3.07V, regulated to 3.0V)



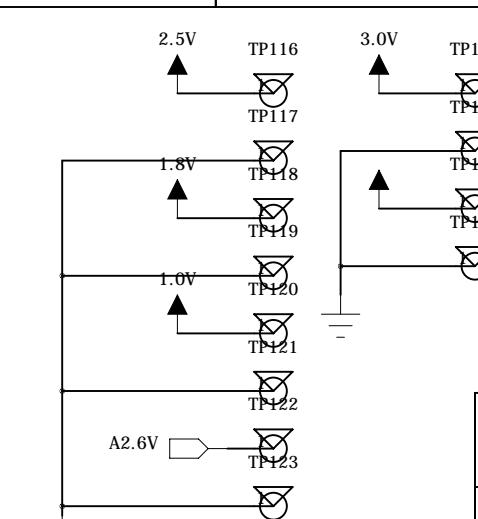
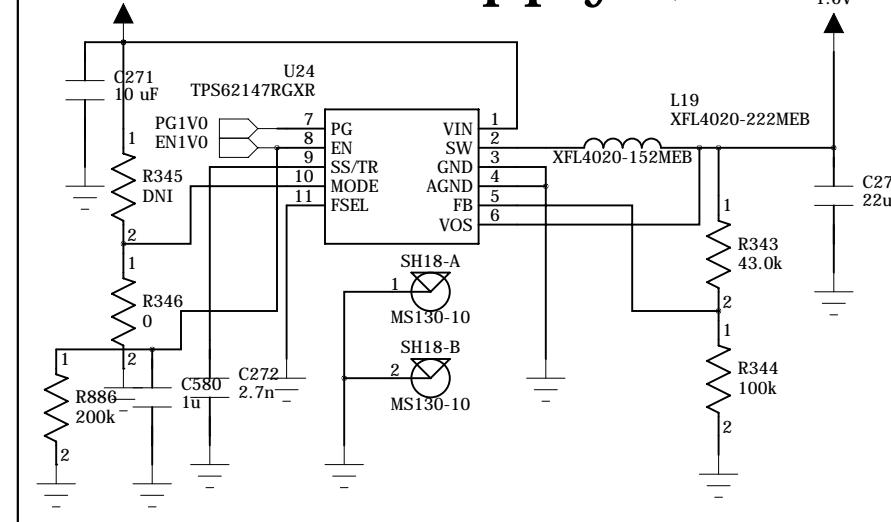
1.8V supply



3.3V supply (always on)



FPGA core supply (1.0V)



Ohio State University

POWER

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

SHEET: 8F 74

REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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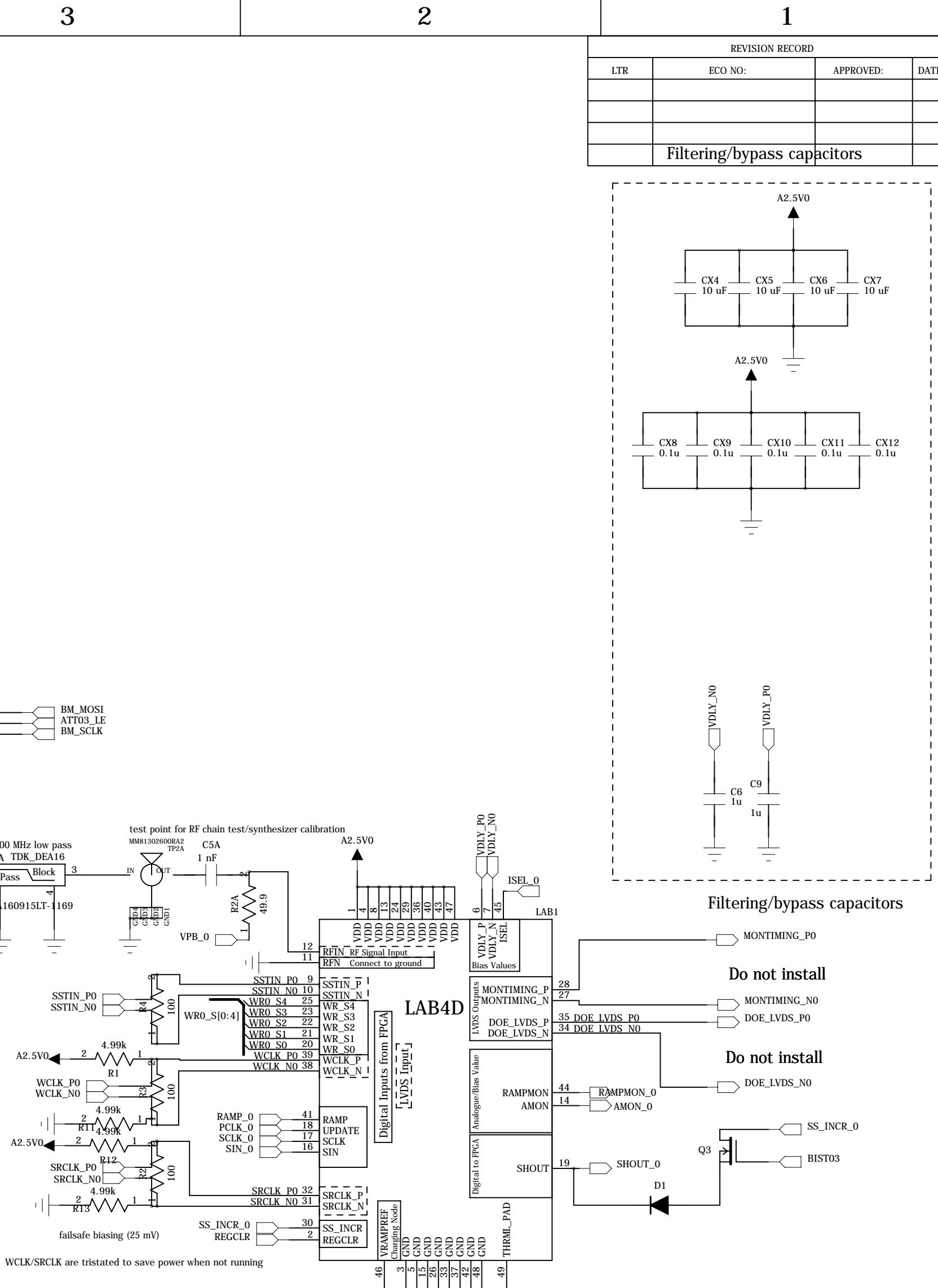
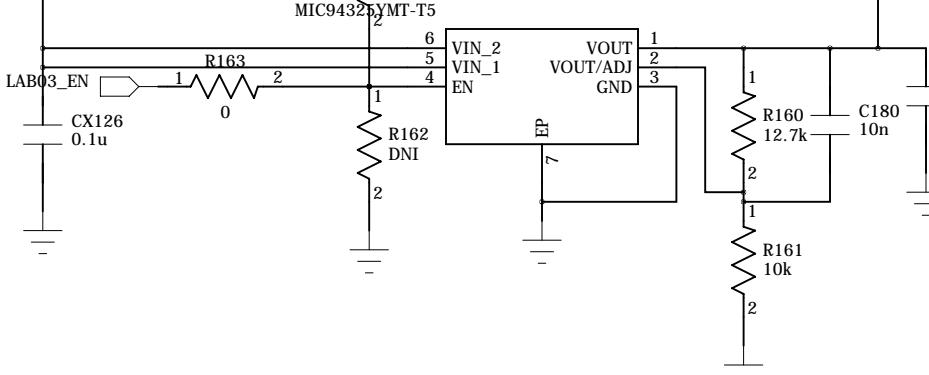
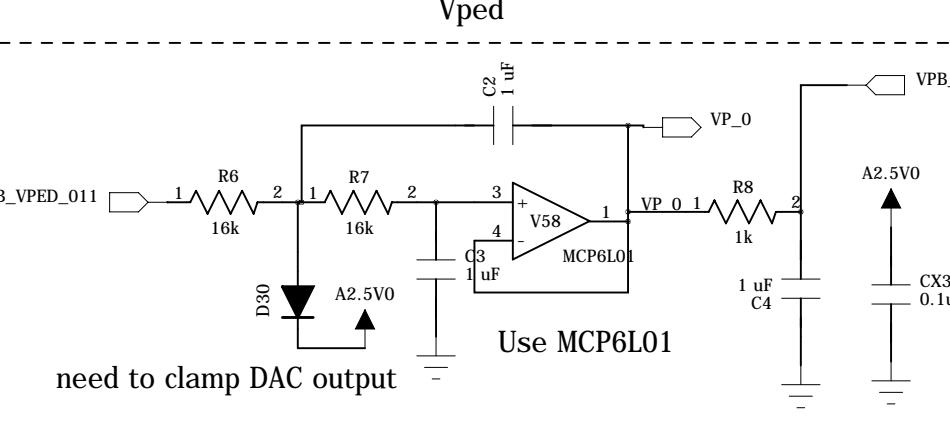
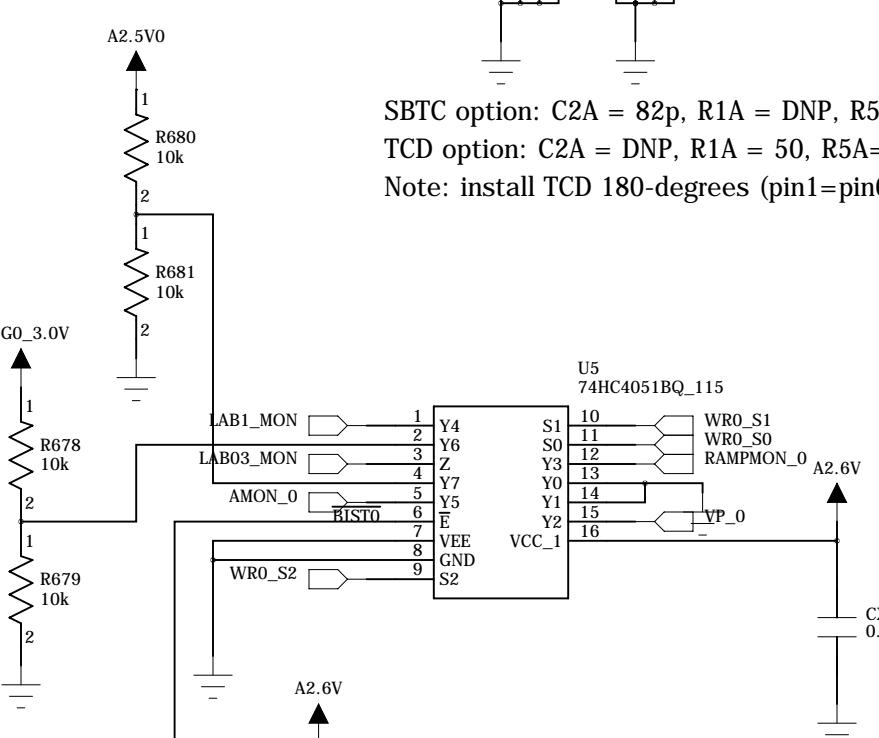
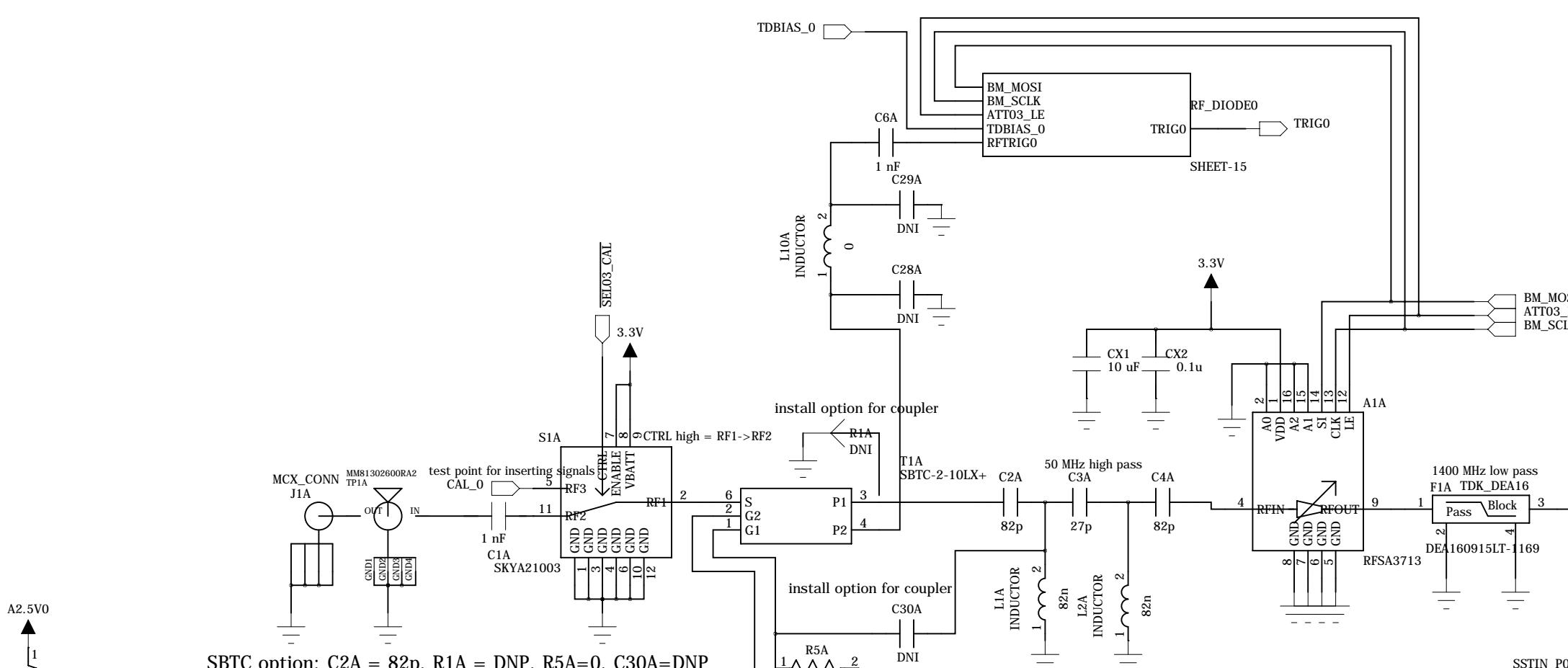
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Ohio State University

RF_CHANNEL0

COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL0		
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
SCALE:	<Scale>	REV:	A
CODE:	C	SIZE:	RADIANT
Sheet:	9F	74	

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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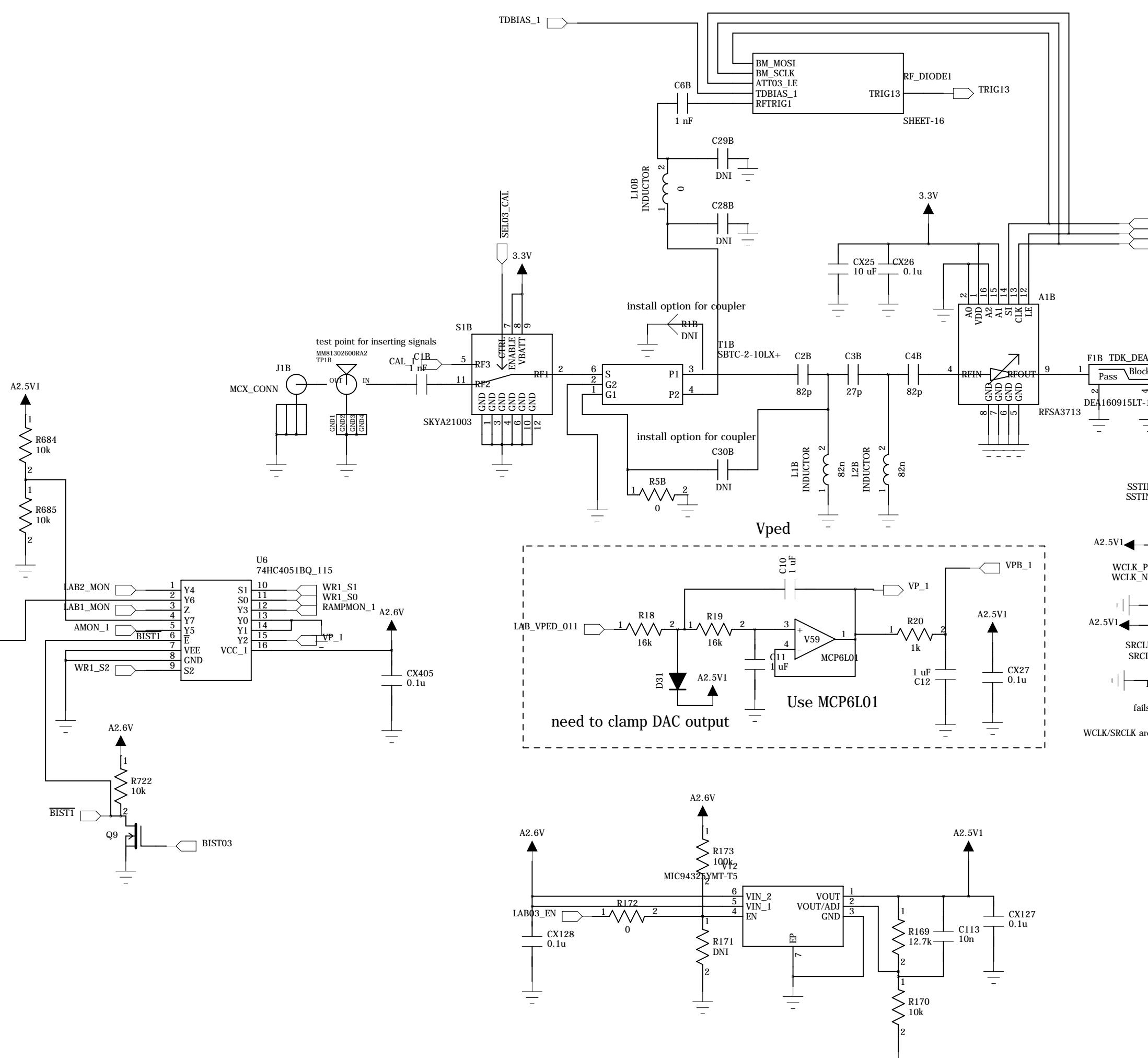
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL1		
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A
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		SIZE:	A
		REV:	C
		SCALE:	10 74

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REVISION RECORD

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Filtering/bypass capacitors

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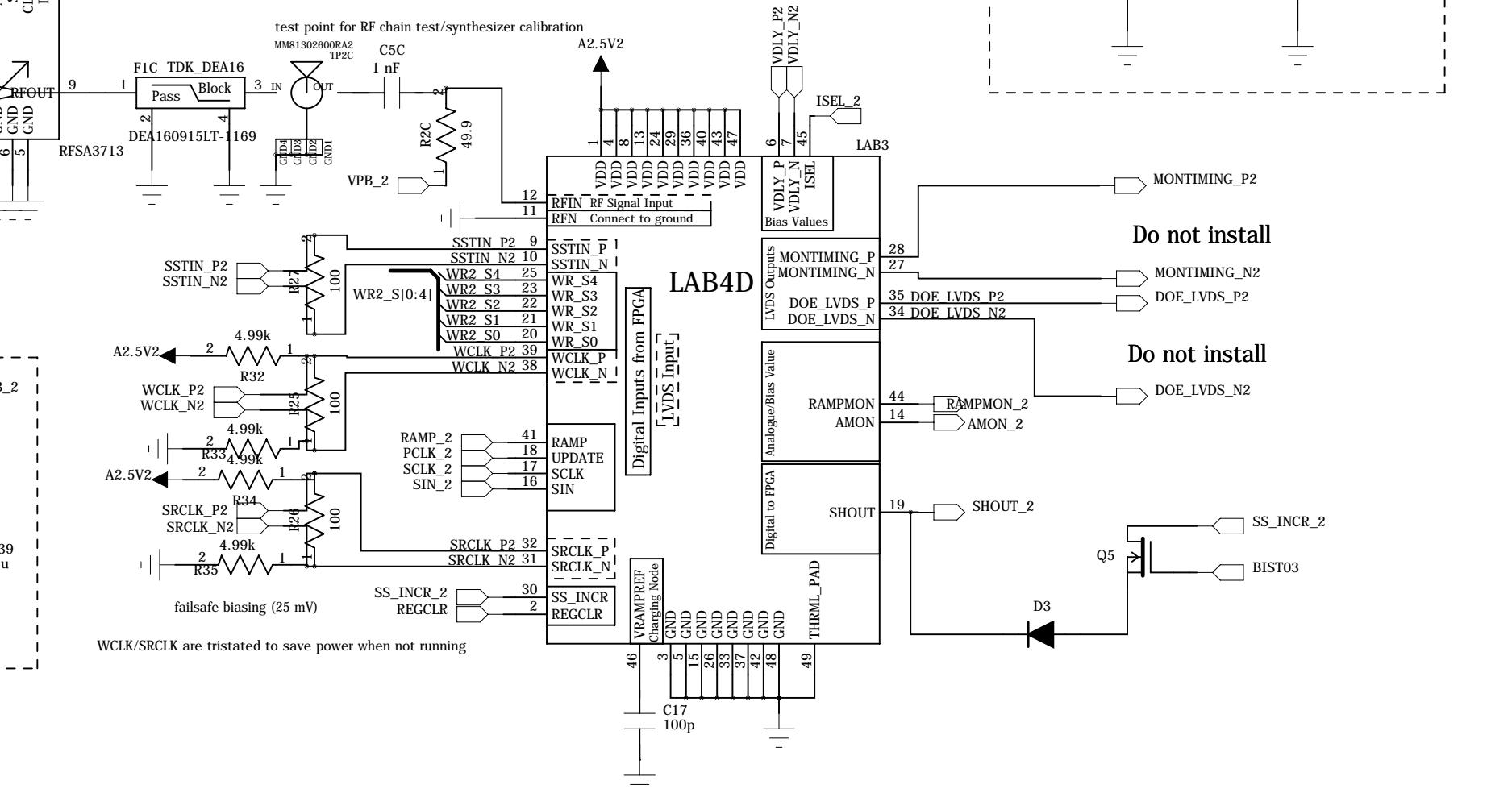
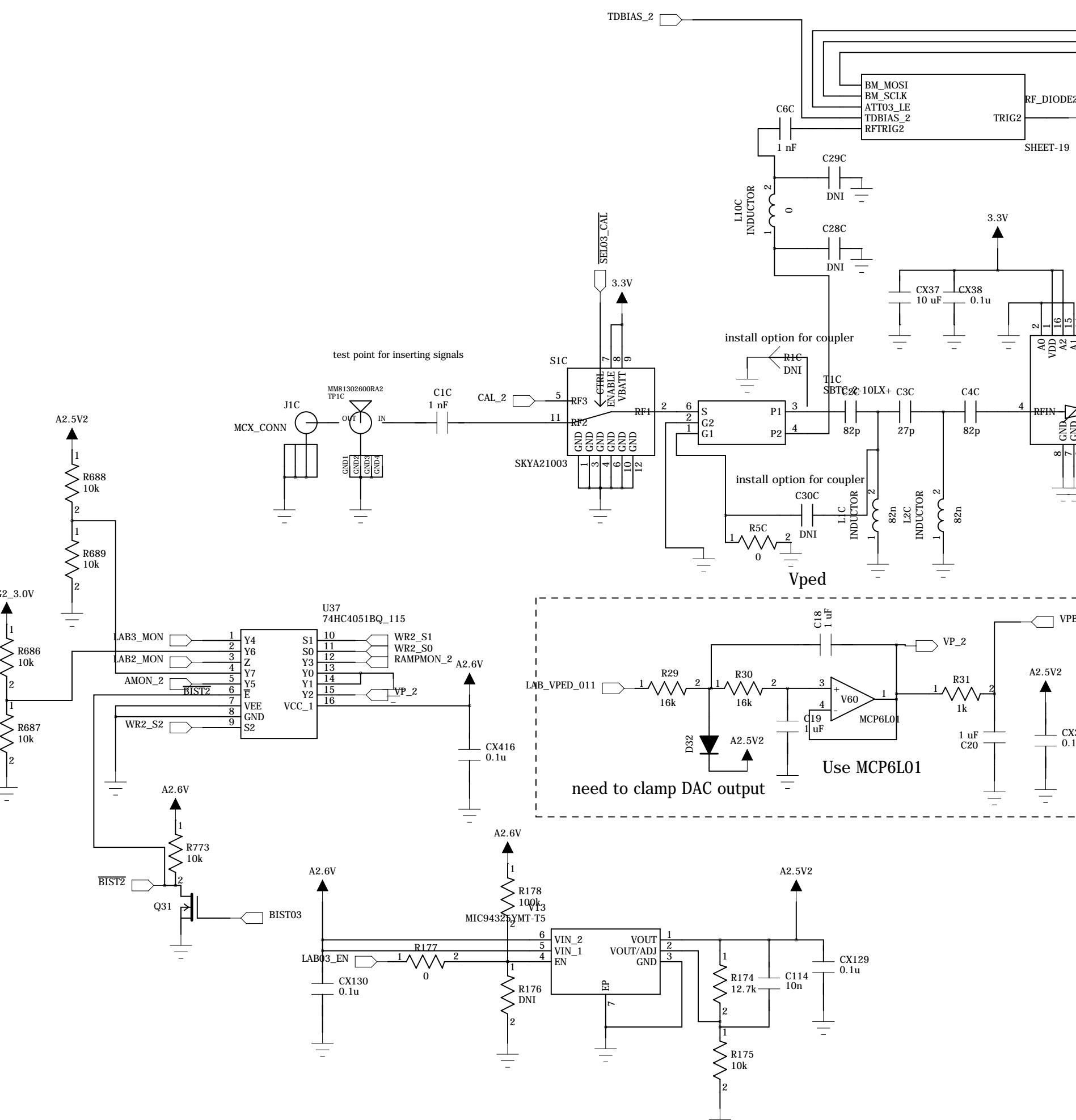
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL2		
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A
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		REV:	A
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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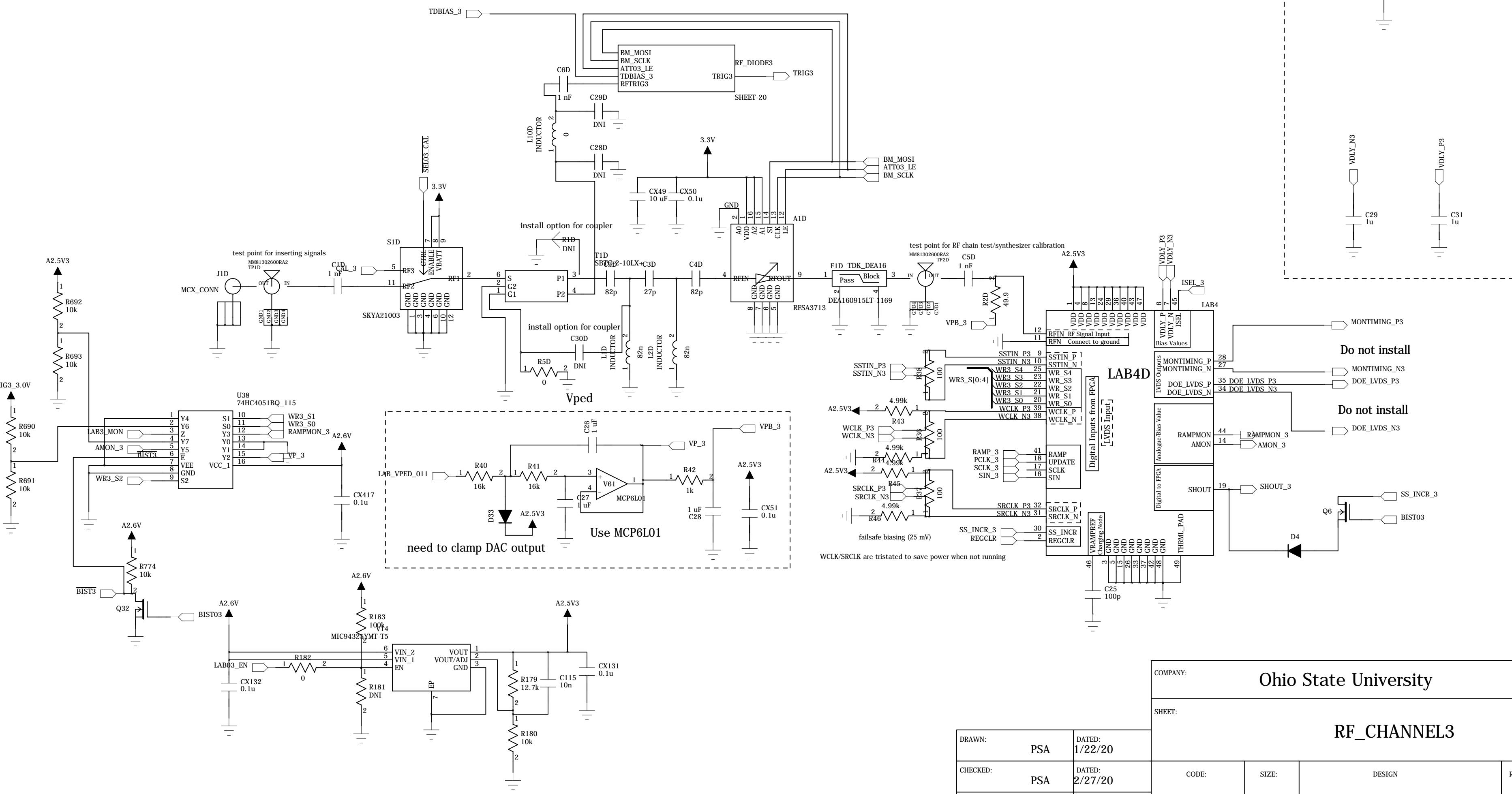
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL3		
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
RELEASED:	N/A	DATED:	N/A
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REVISION RECORD

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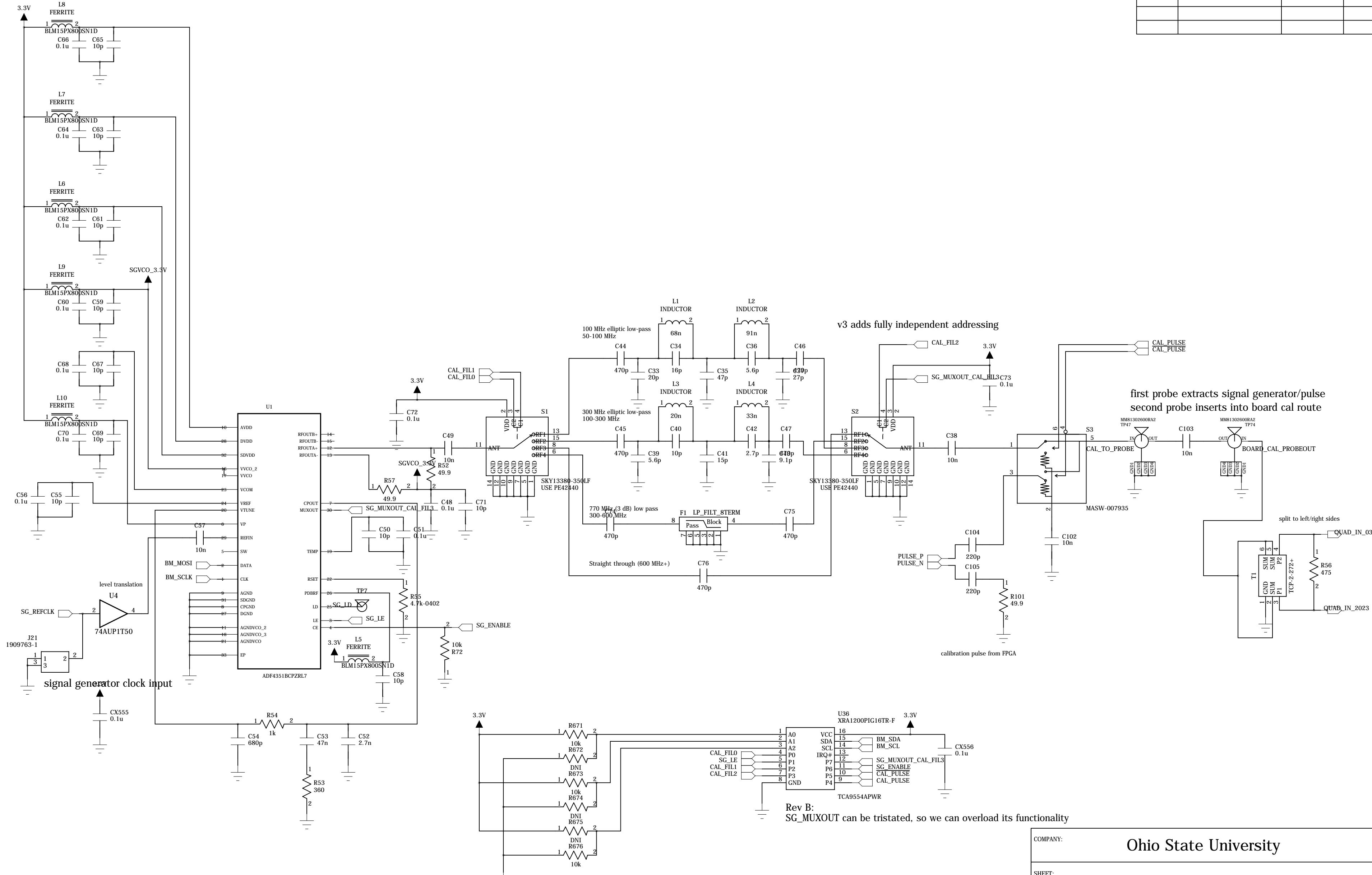
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COMPANY:	Ohio State University		
SHEET:	SIGNAL_GENERATOR		
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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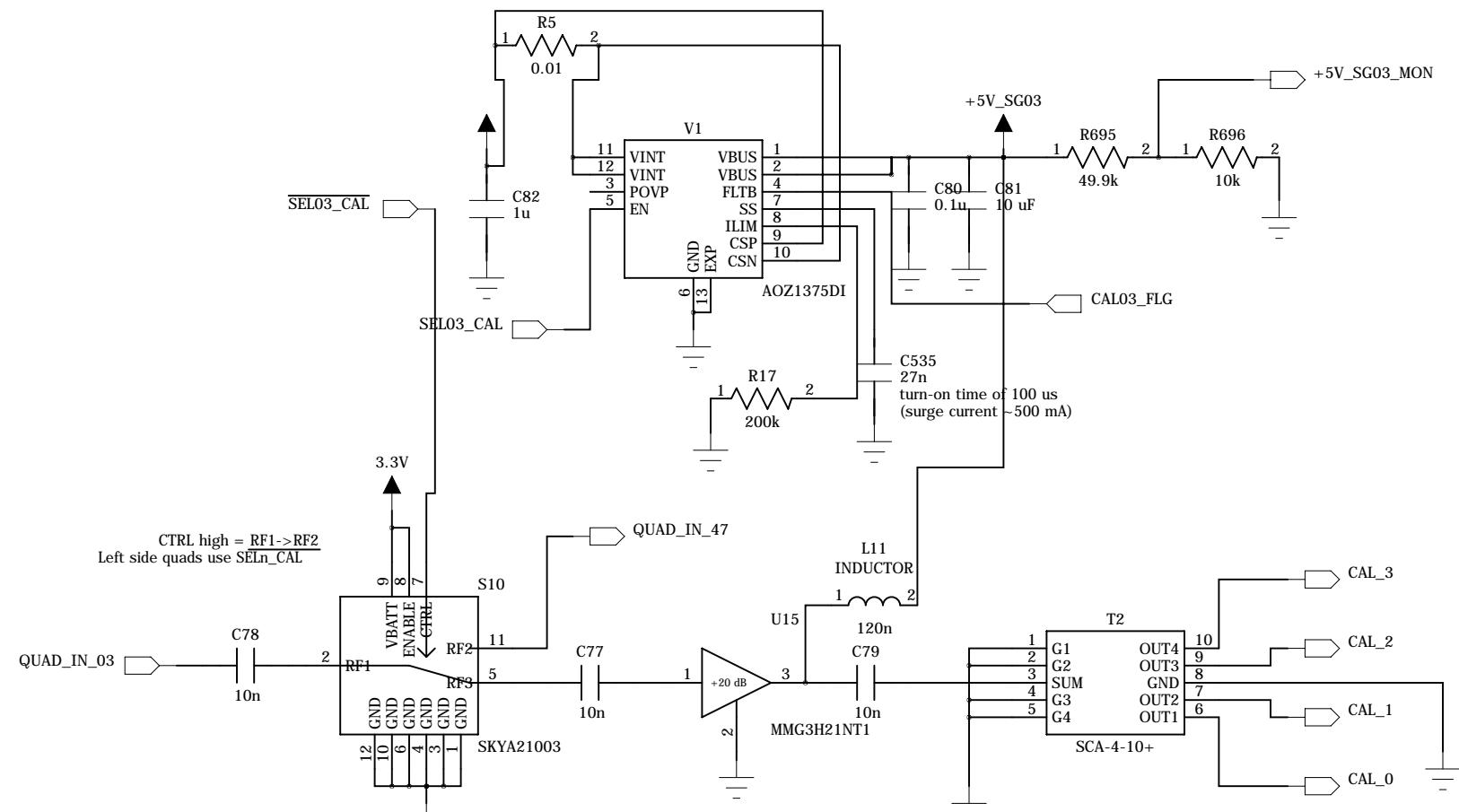
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COMPANY:	Ohio State University		
SHEET:	QUAD_SIG_GENERATOR		
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CHECKED:	PSA	DATED: 2/27/20	
QUALITY CONTROL:	N/A	DATED: N/A	
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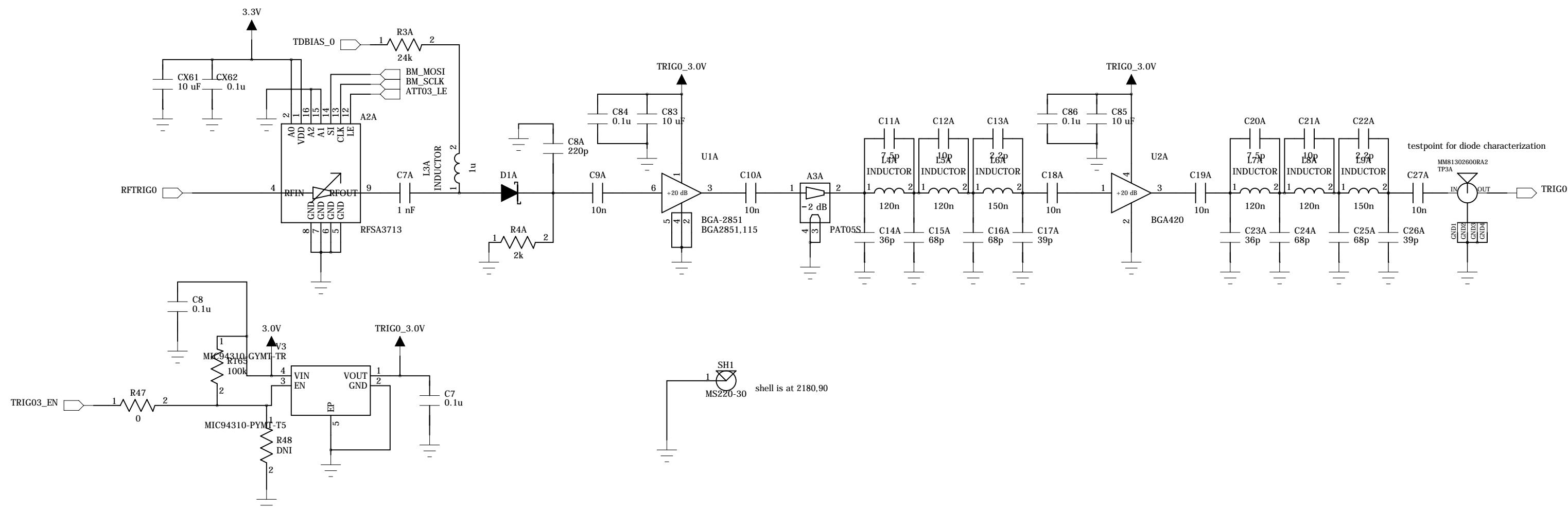
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COMPANY:

Ohio State University

SHEET:

RF_DIODE0

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CHECKED:	PSA	DATED:	2/27/20				
QUALITY CONTROL:	N/A	DATED:	N/A				
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SCALE: <Scale> SHEET: 15 74

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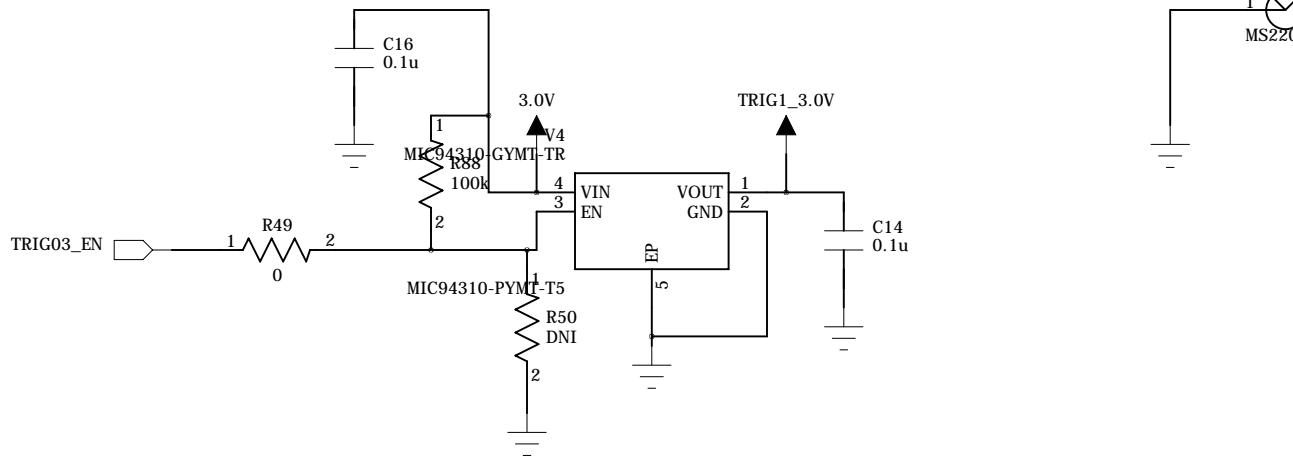
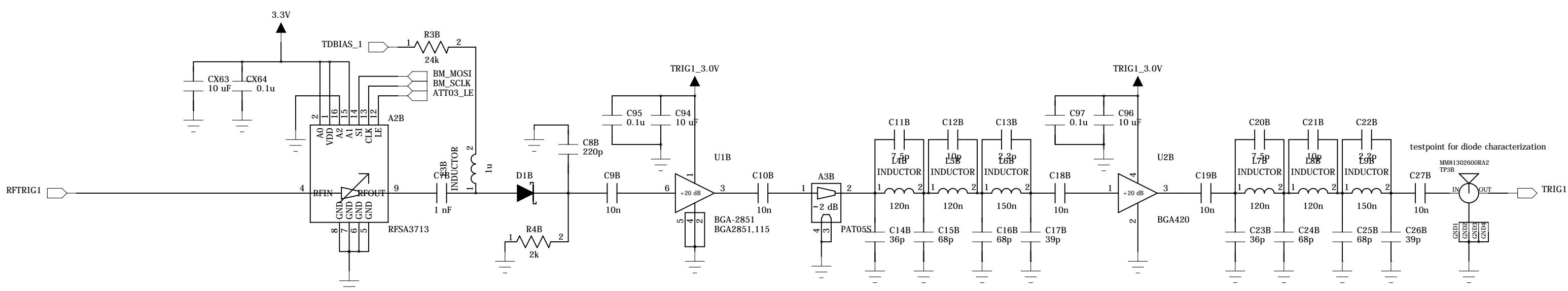
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COMPANY:	Ohio State University		
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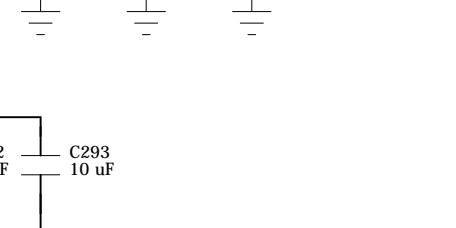
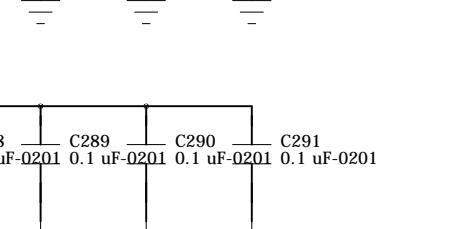
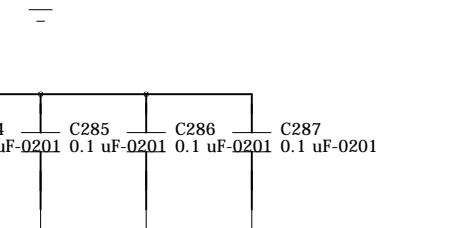
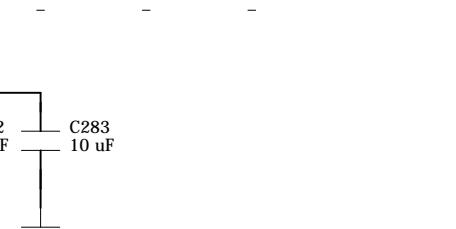
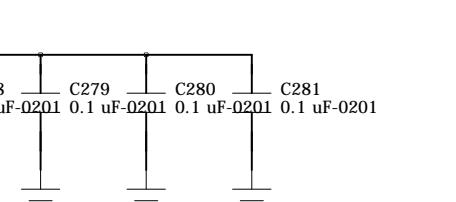
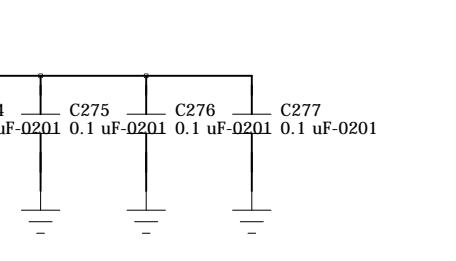
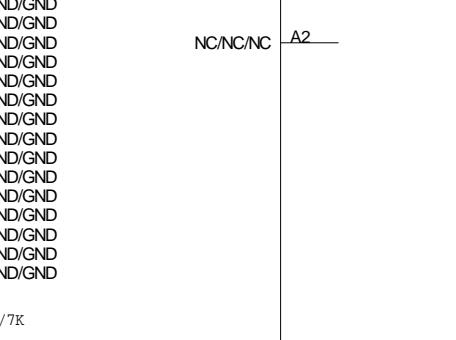
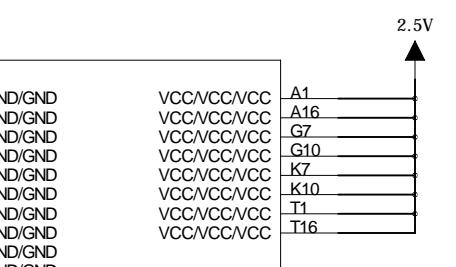
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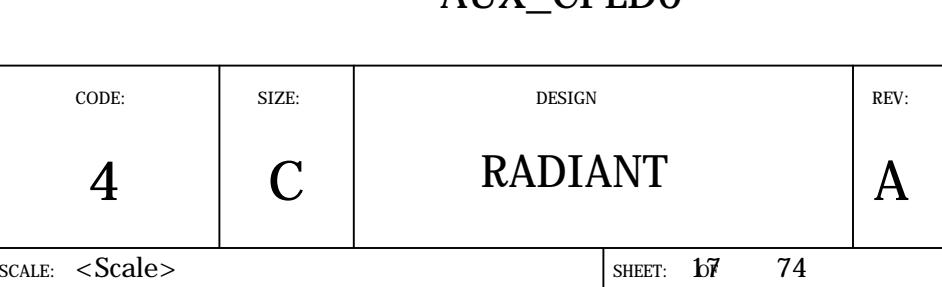
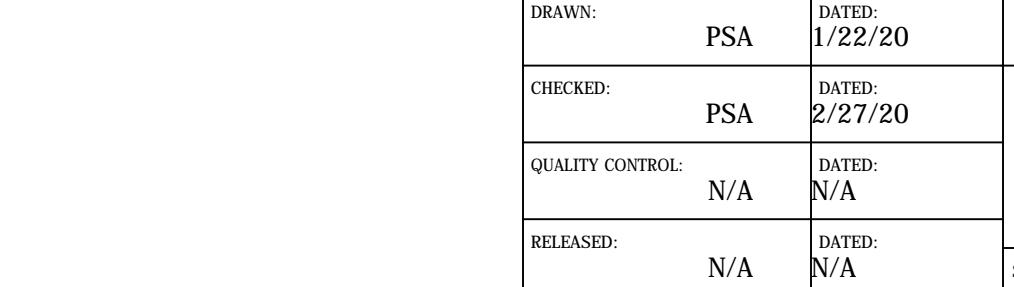
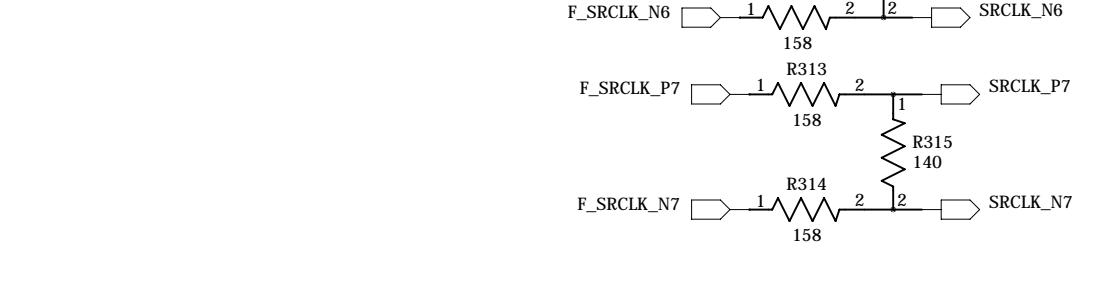
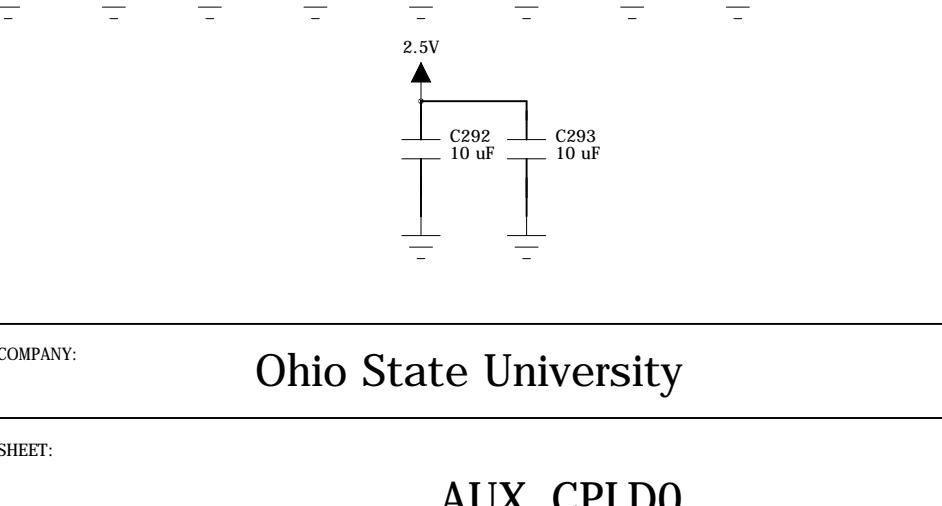
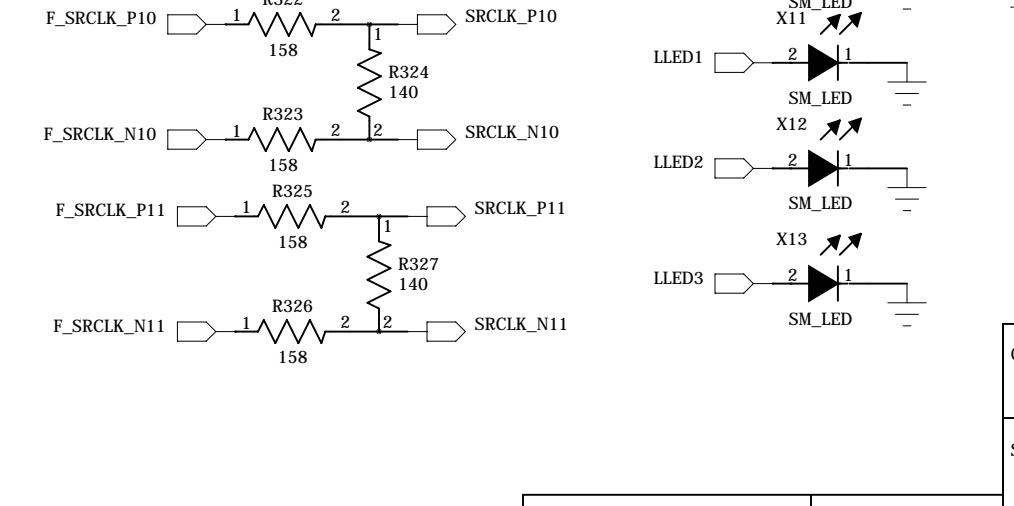
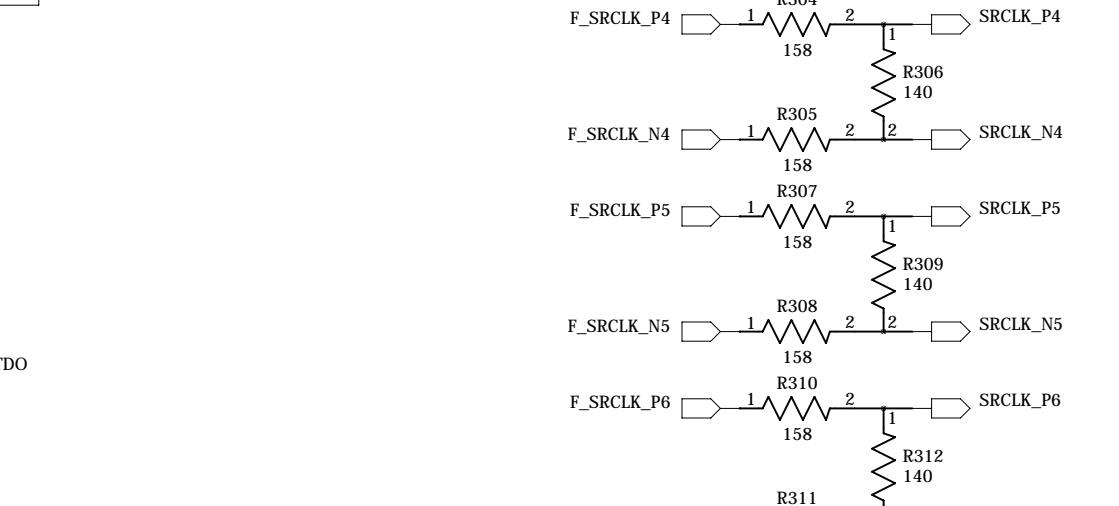
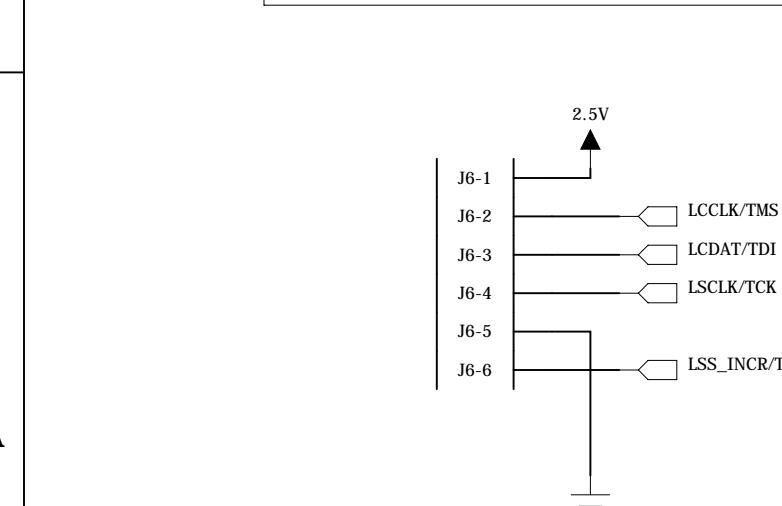
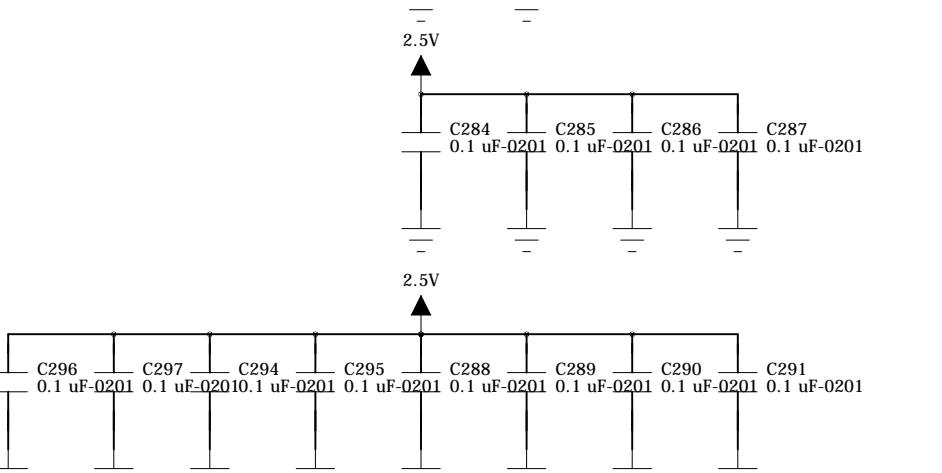
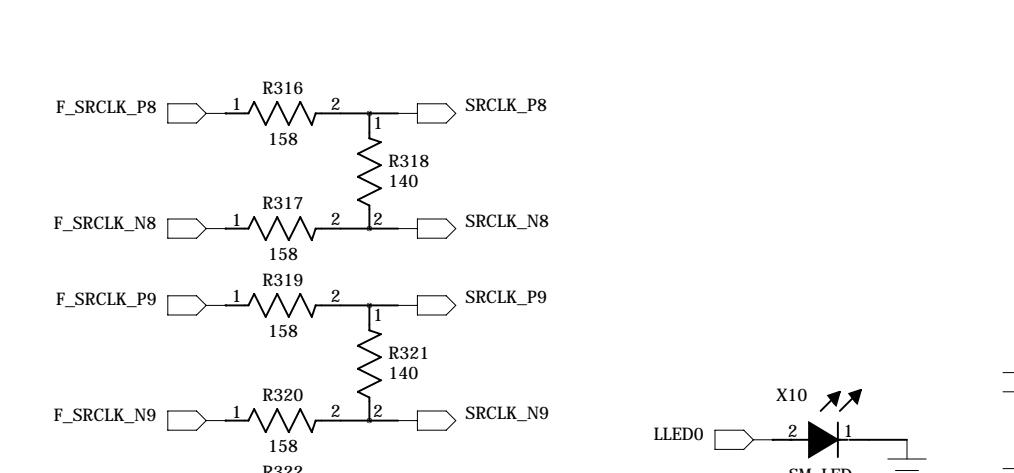
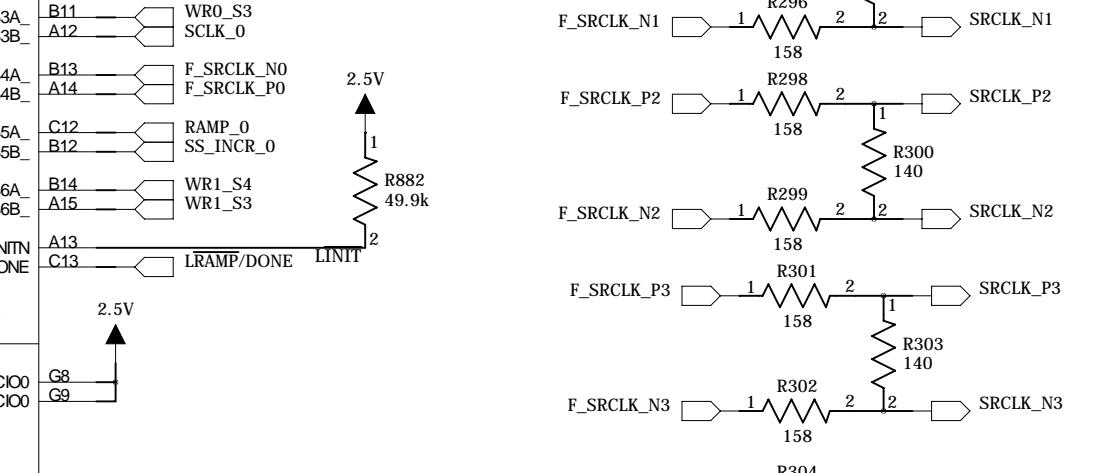
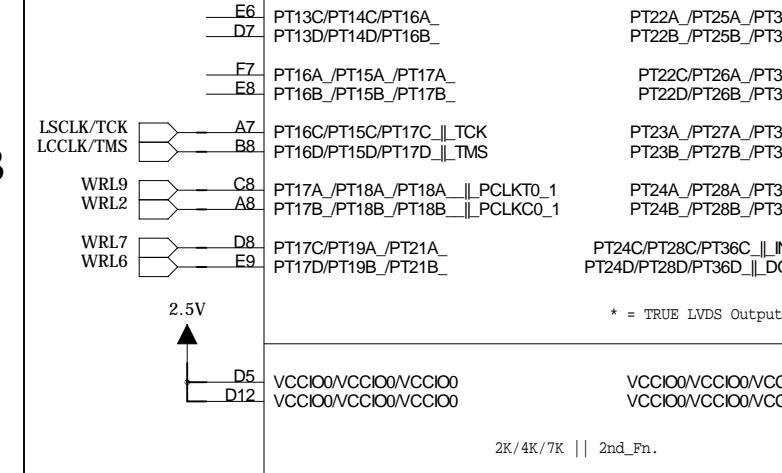
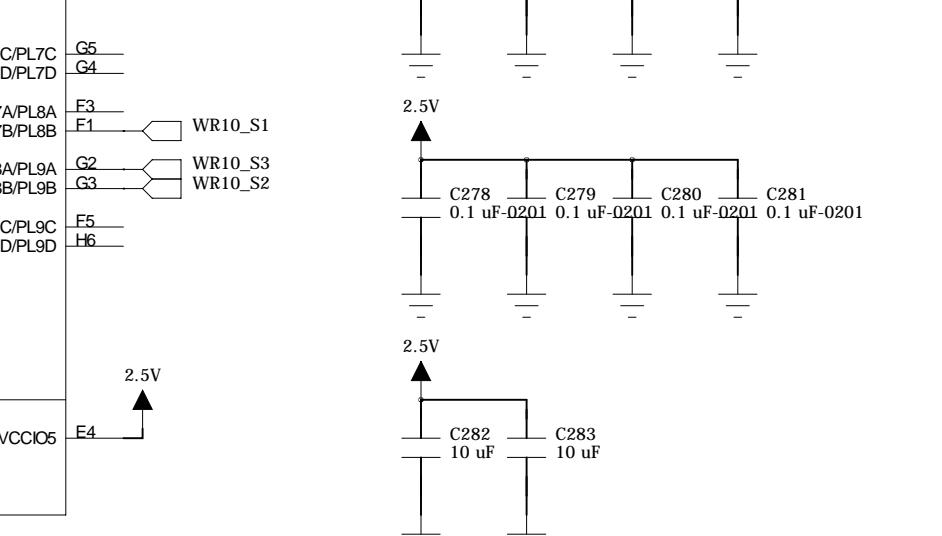
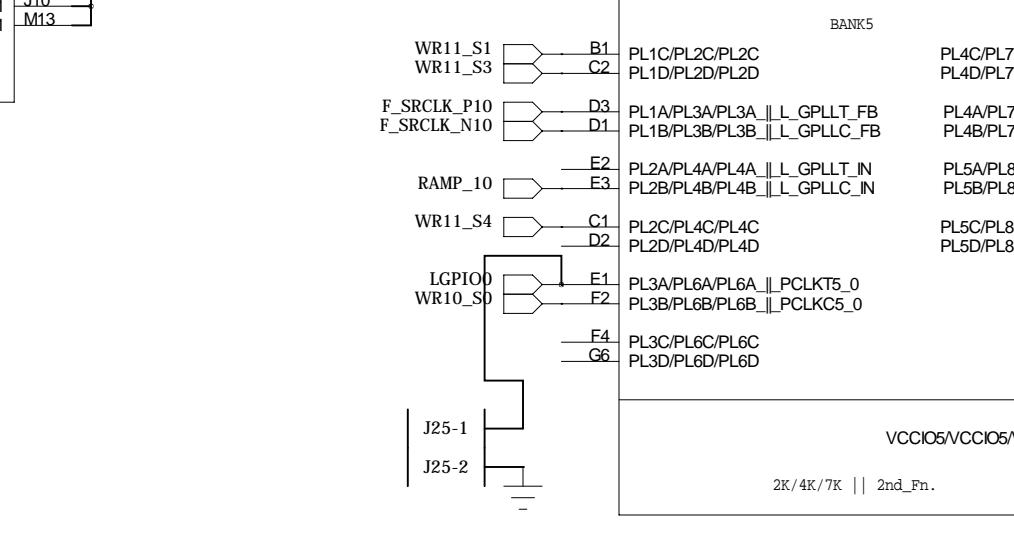
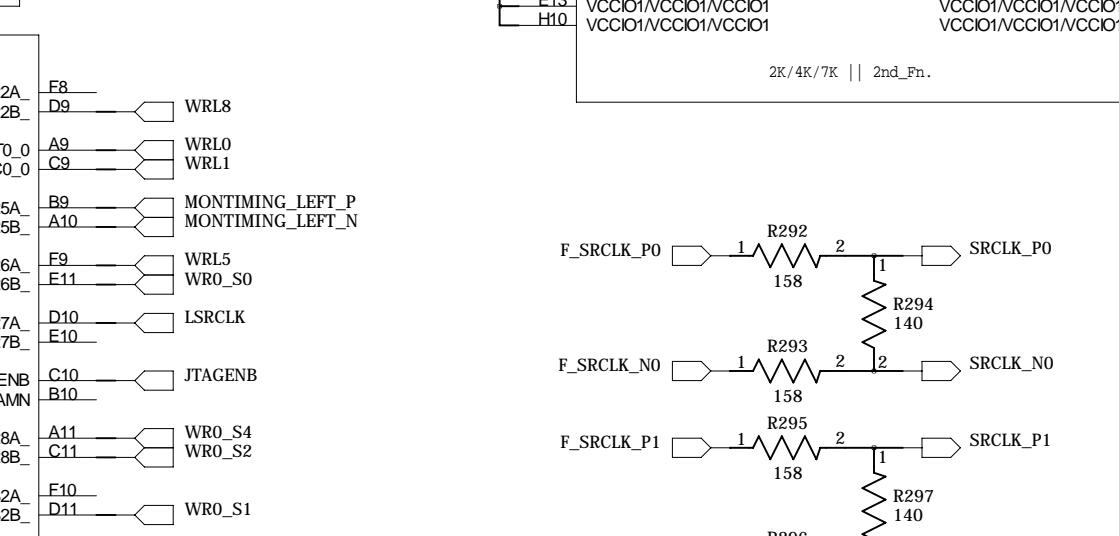
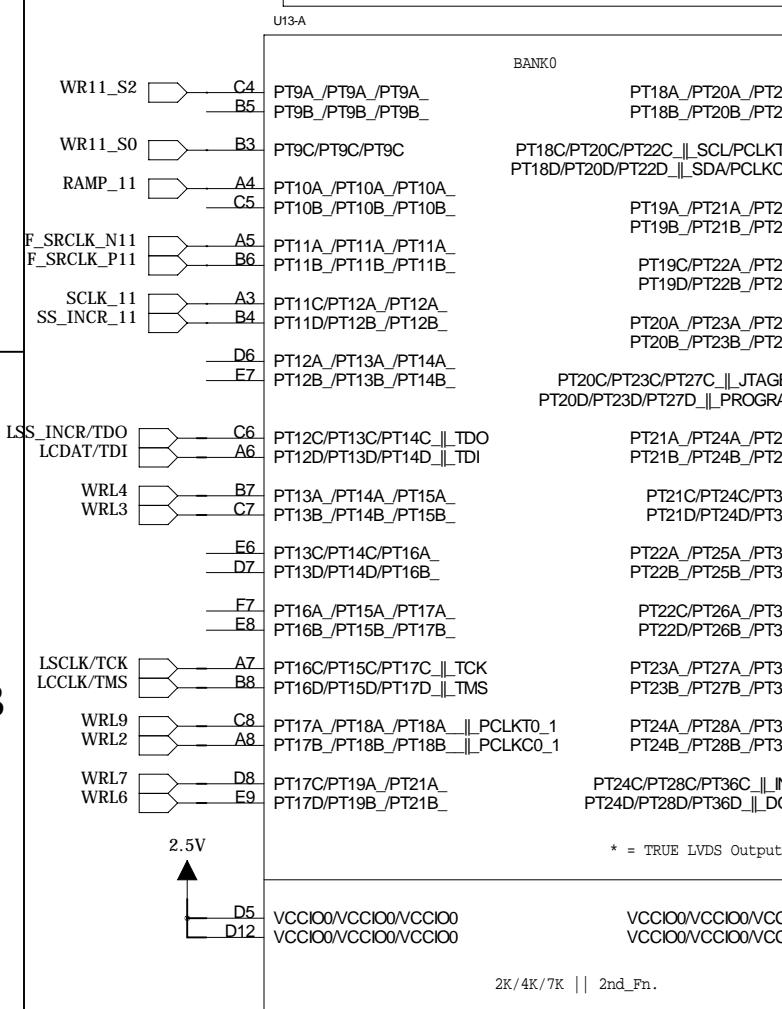
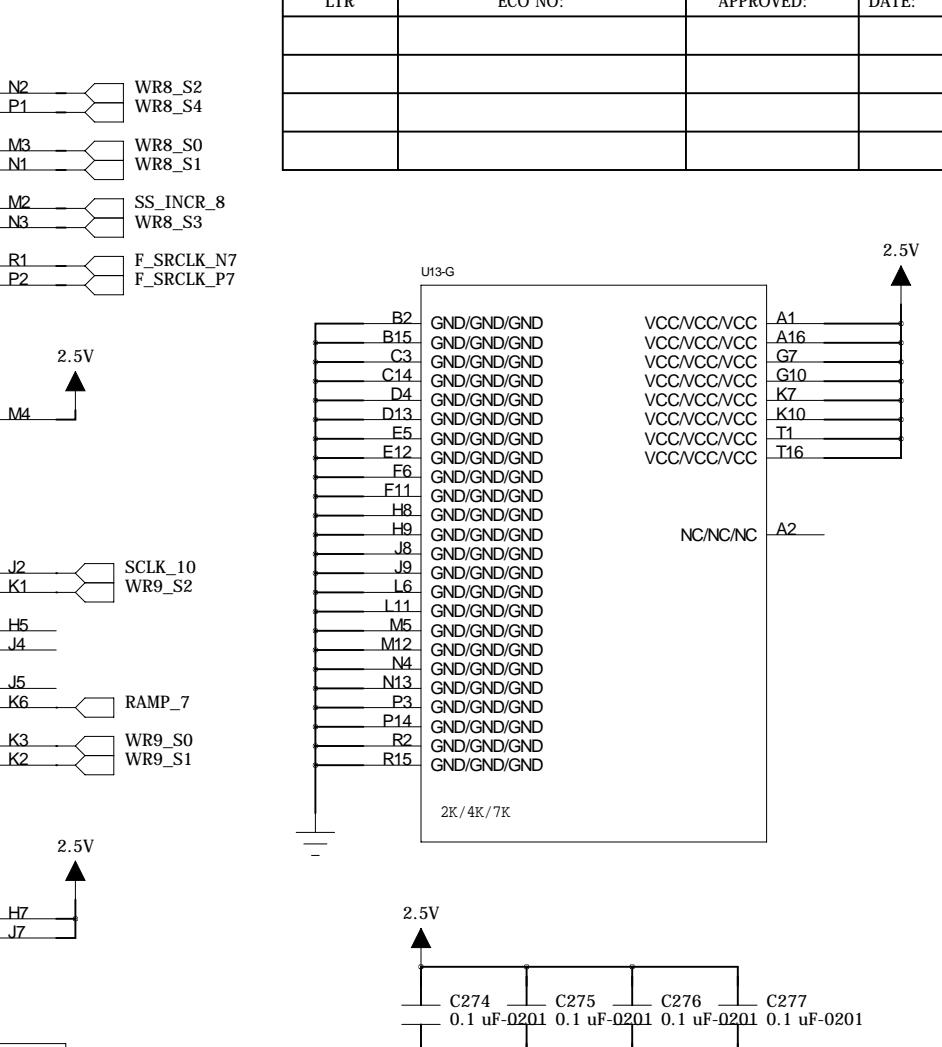
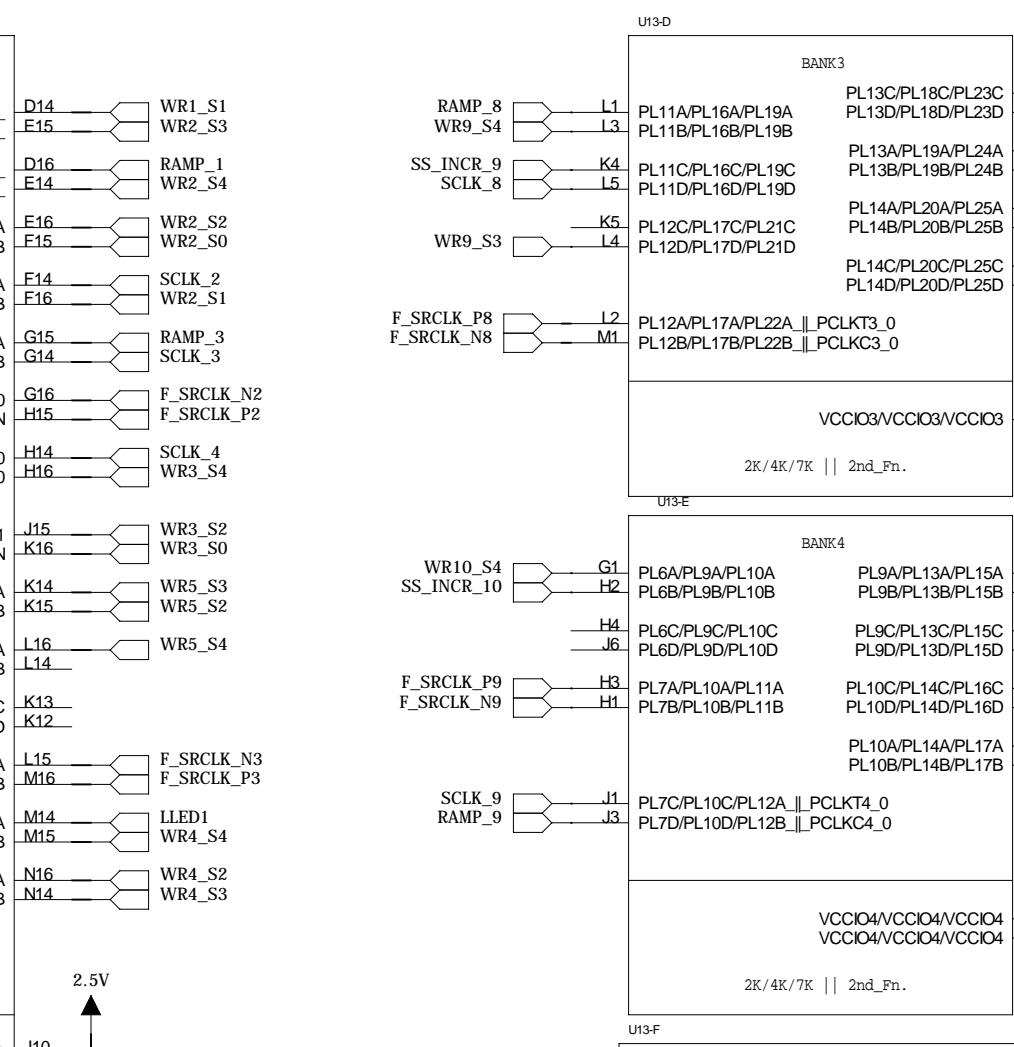
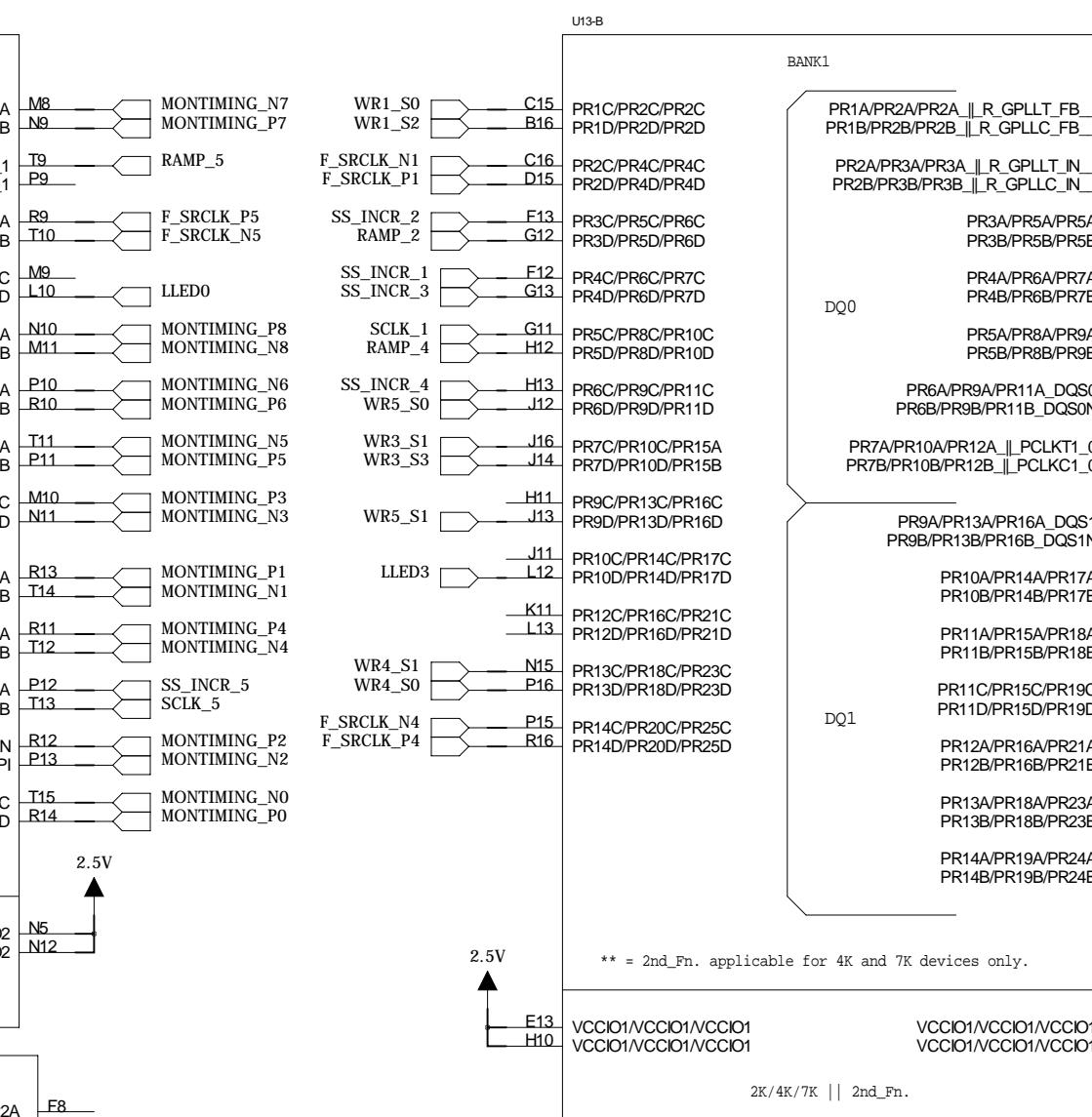
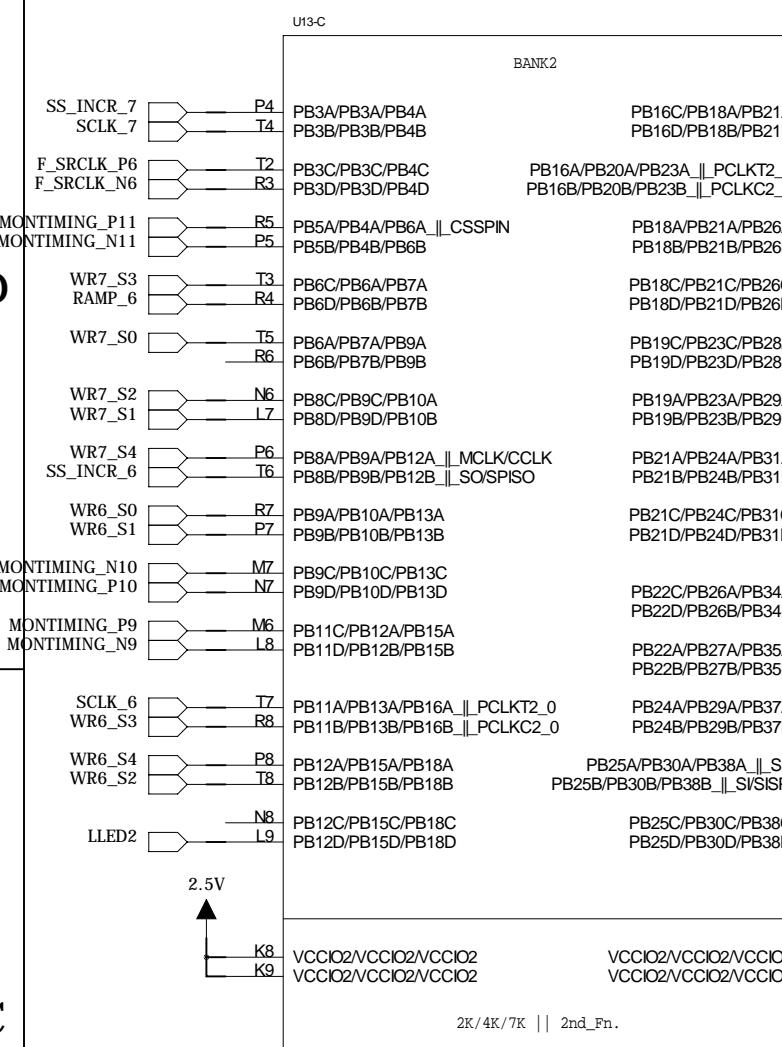
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REVISION RECORD

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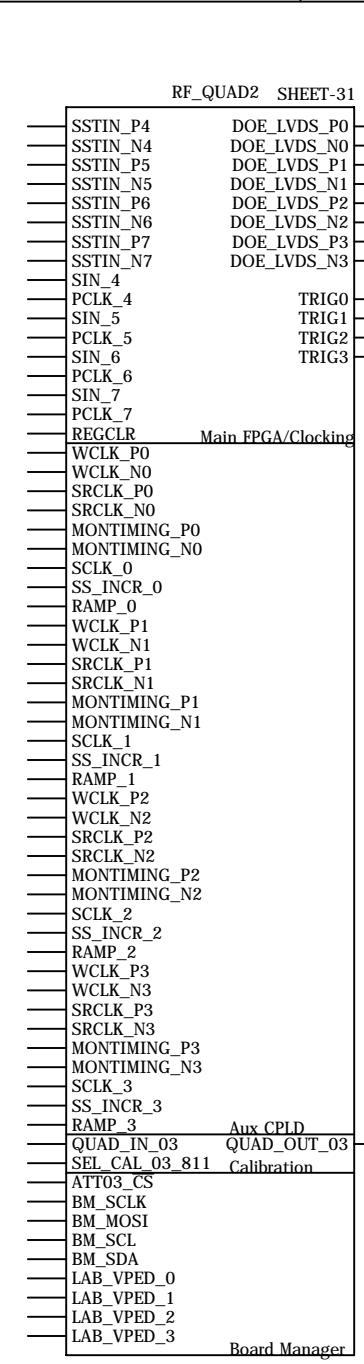
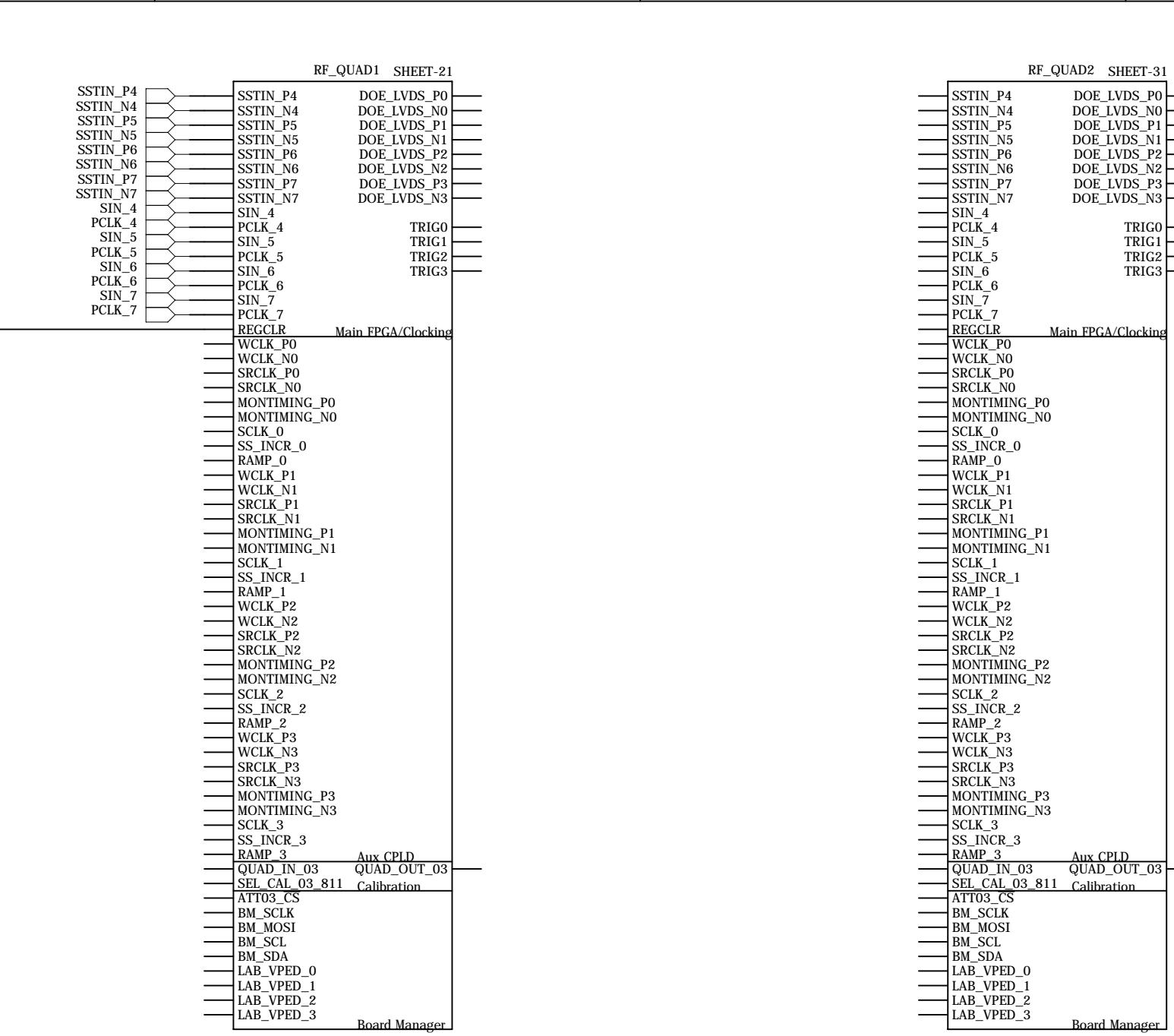
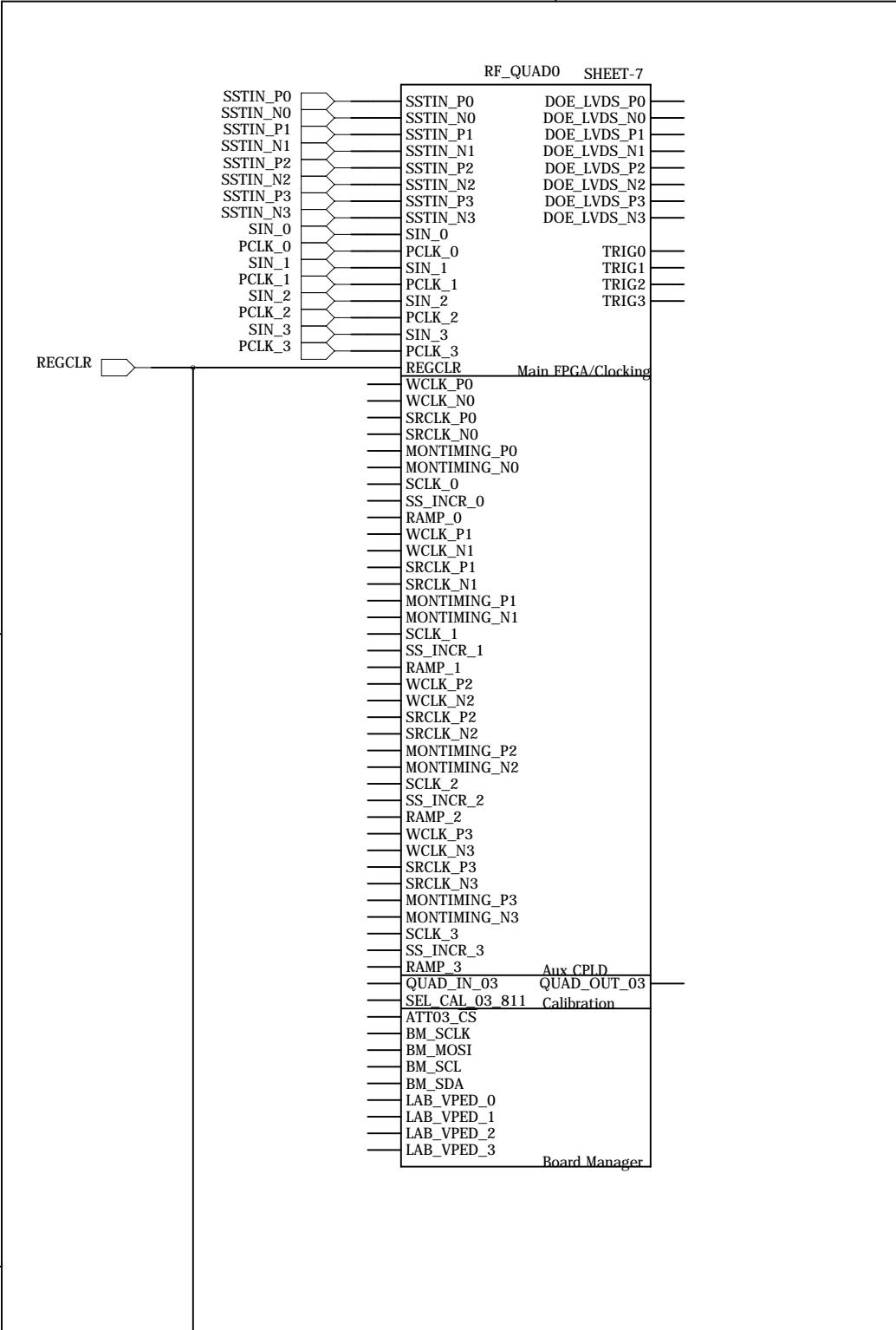
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COMPANY:	Ohio State University		
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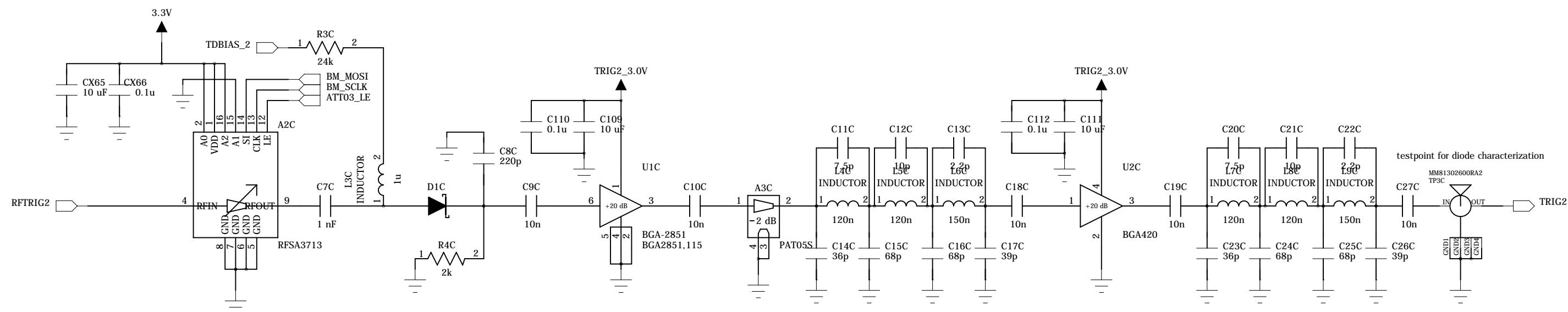
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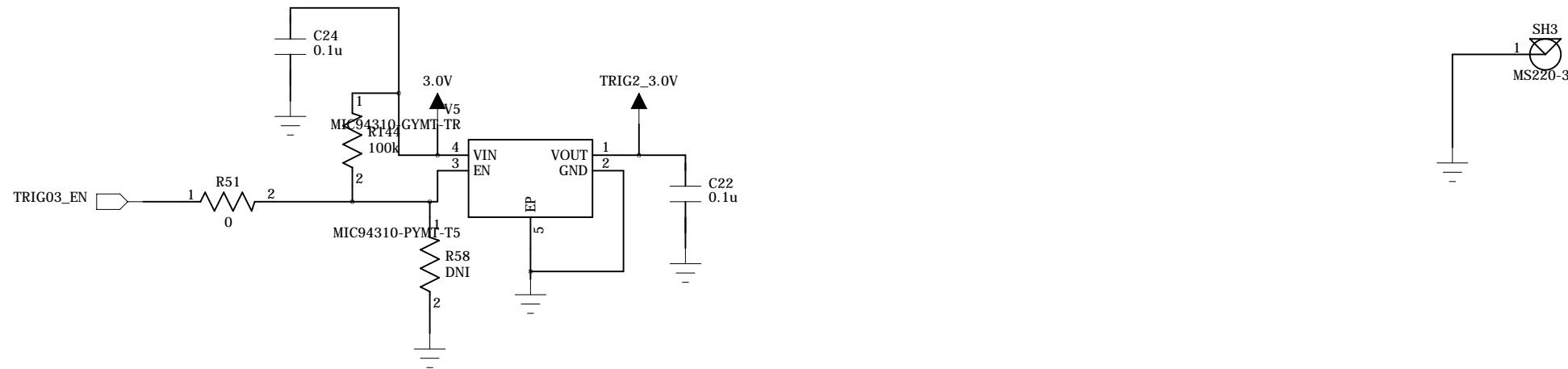
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REVISION RECORD

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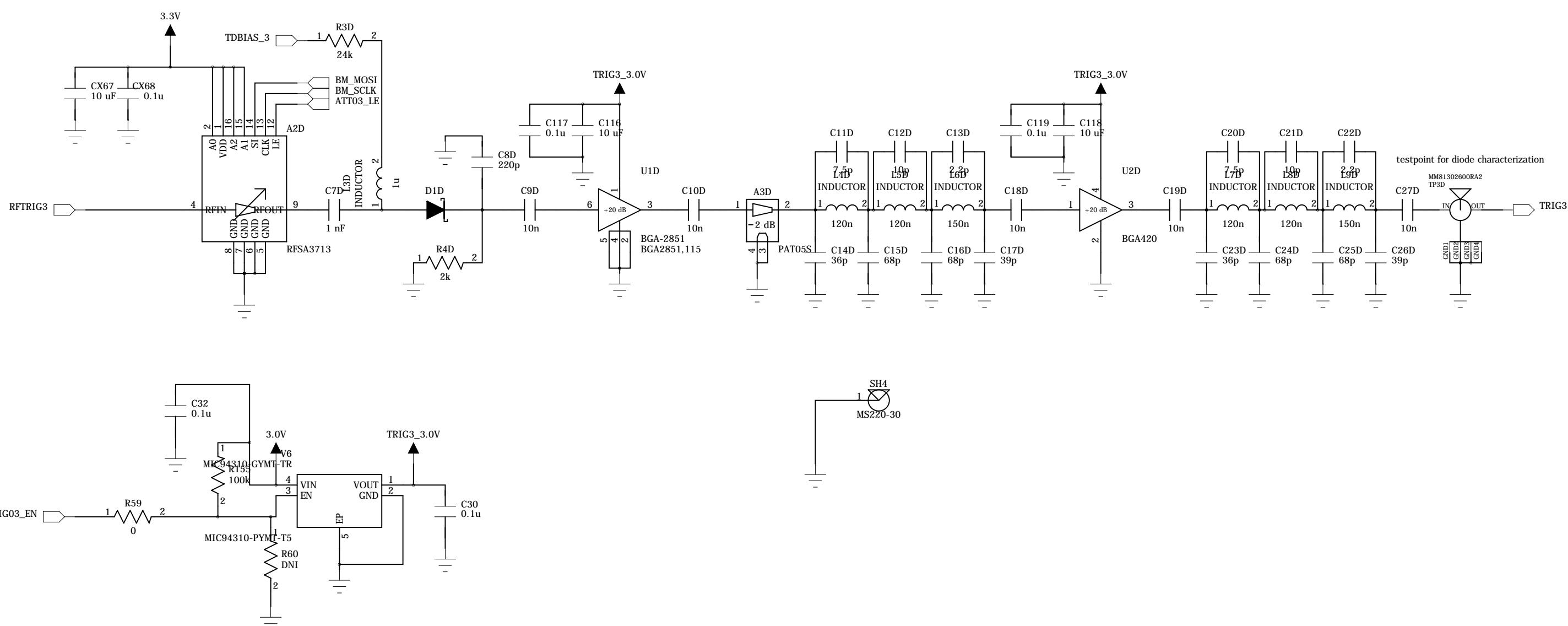
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COMPANY:	Ohio State University		
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LTR	ECO NO:	APPROVED:	DATE:

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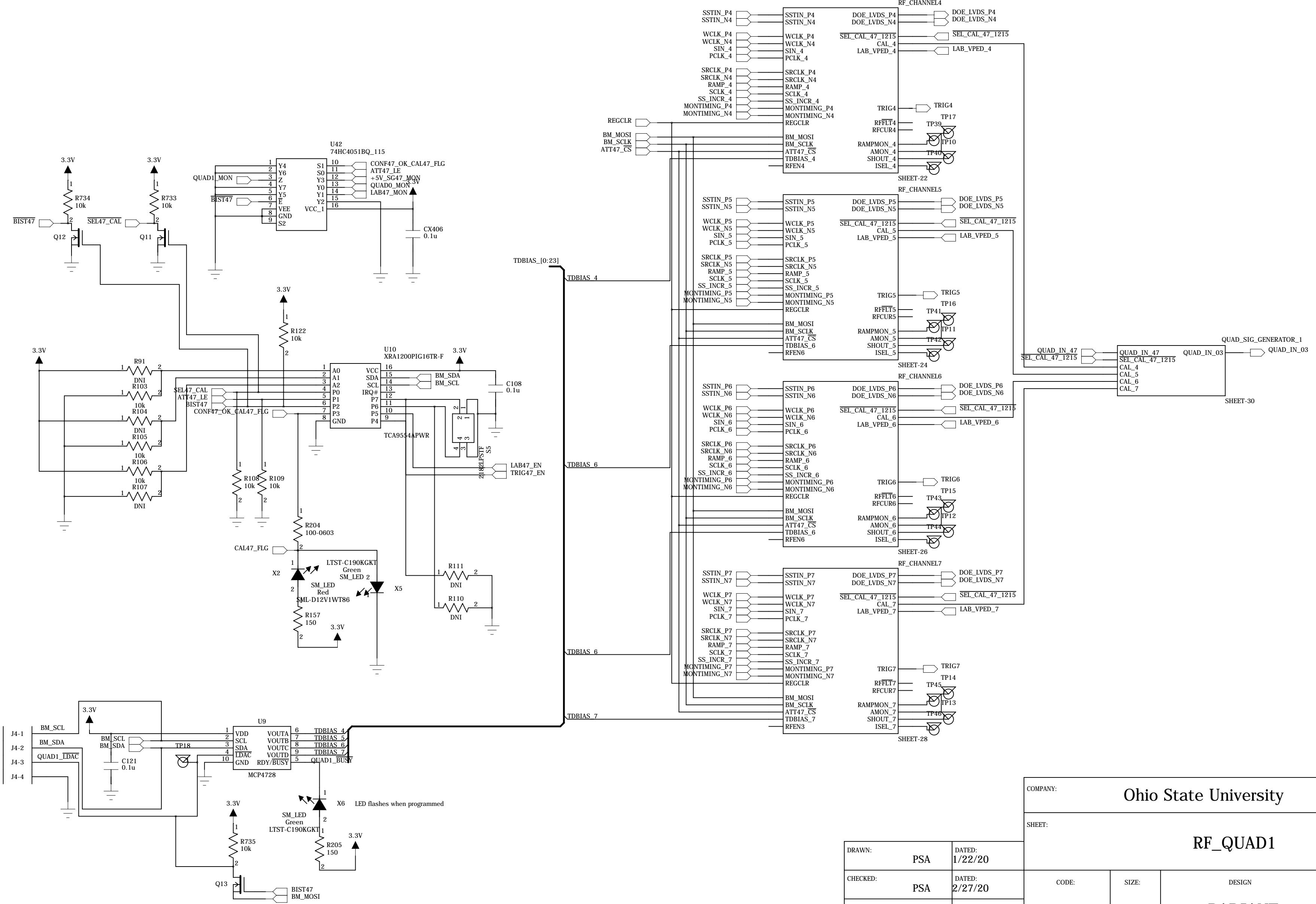
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COMPANY:	Ohio State University		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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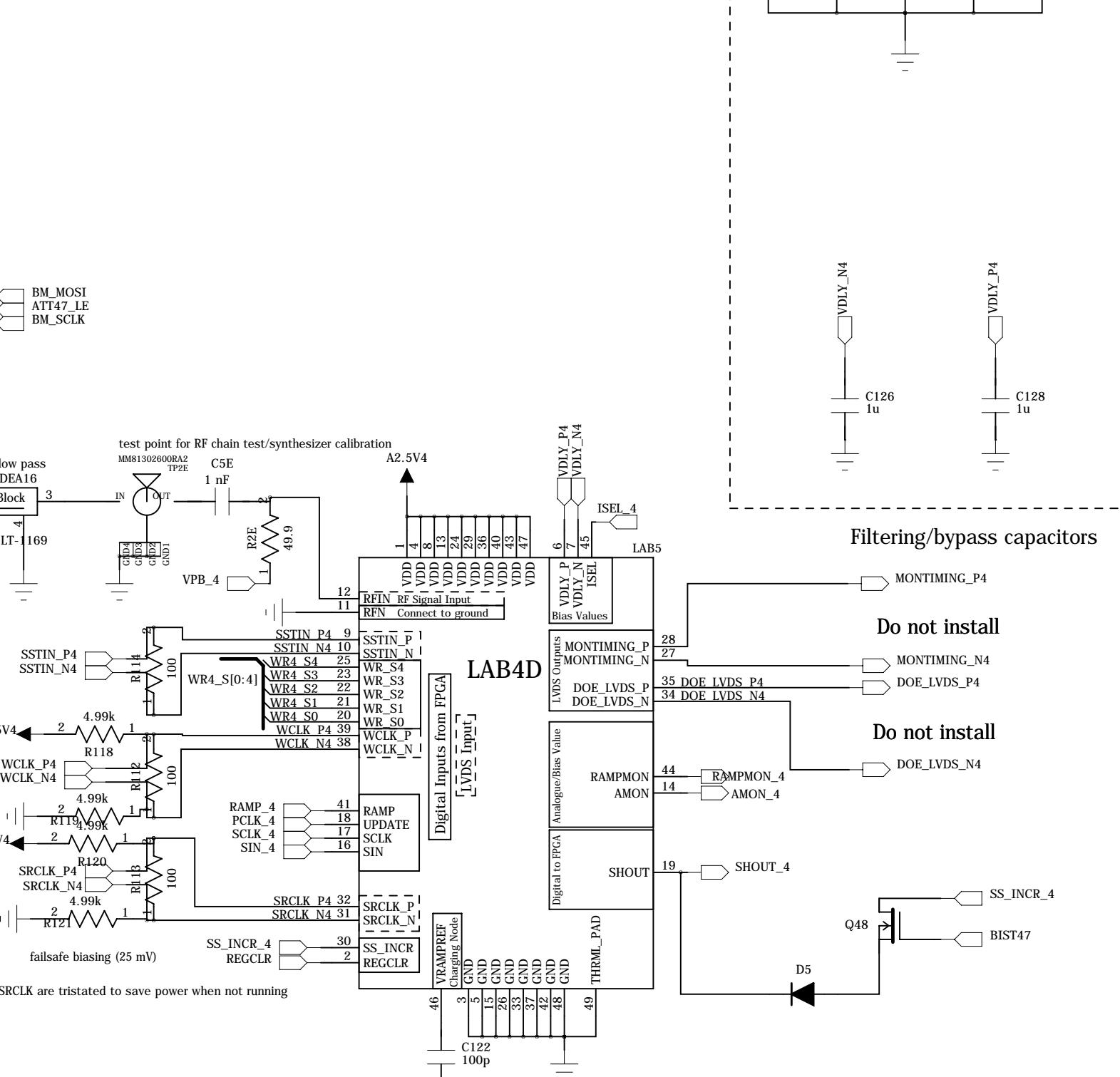
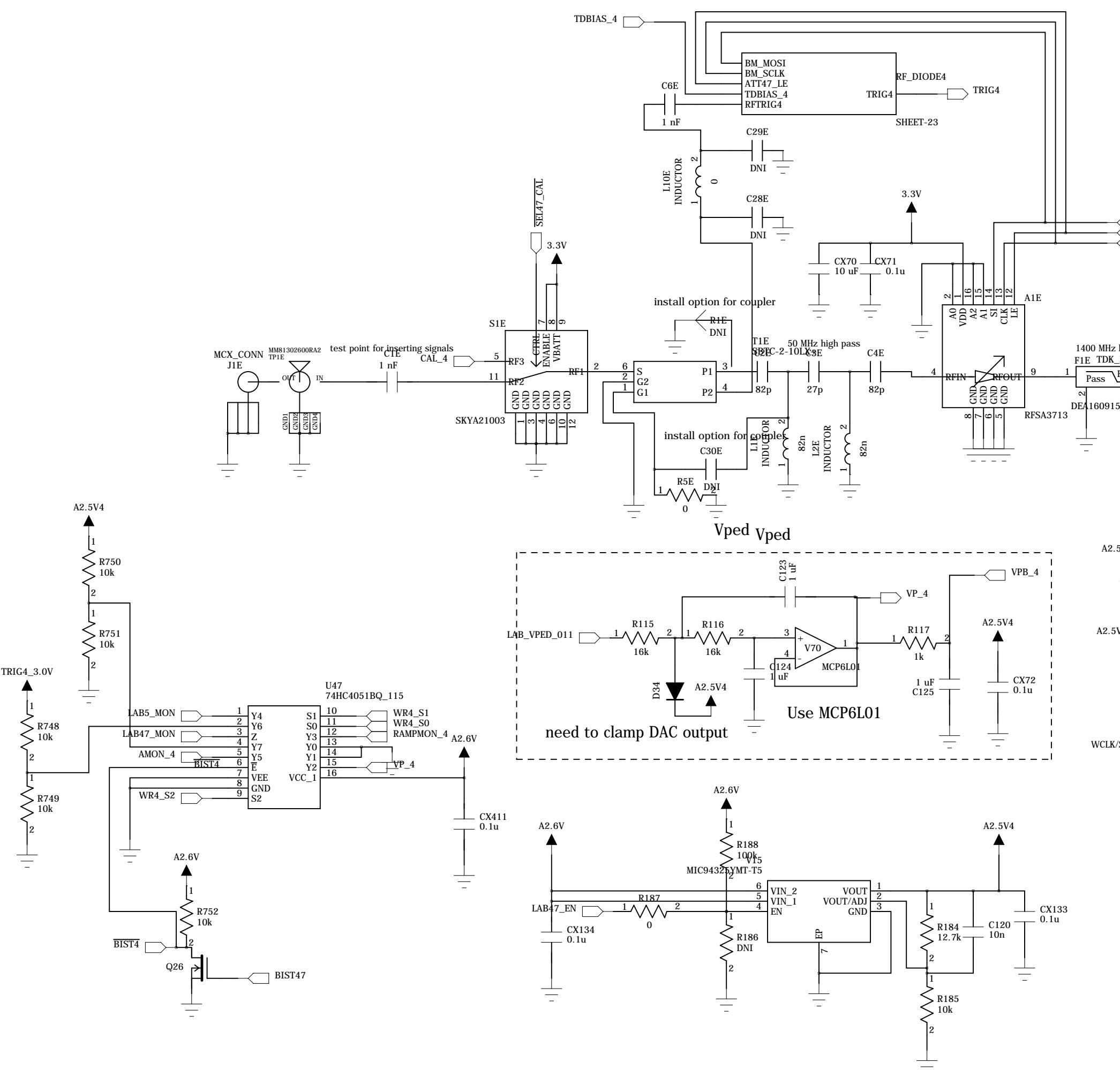
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COMPANY:	Ohio State University		
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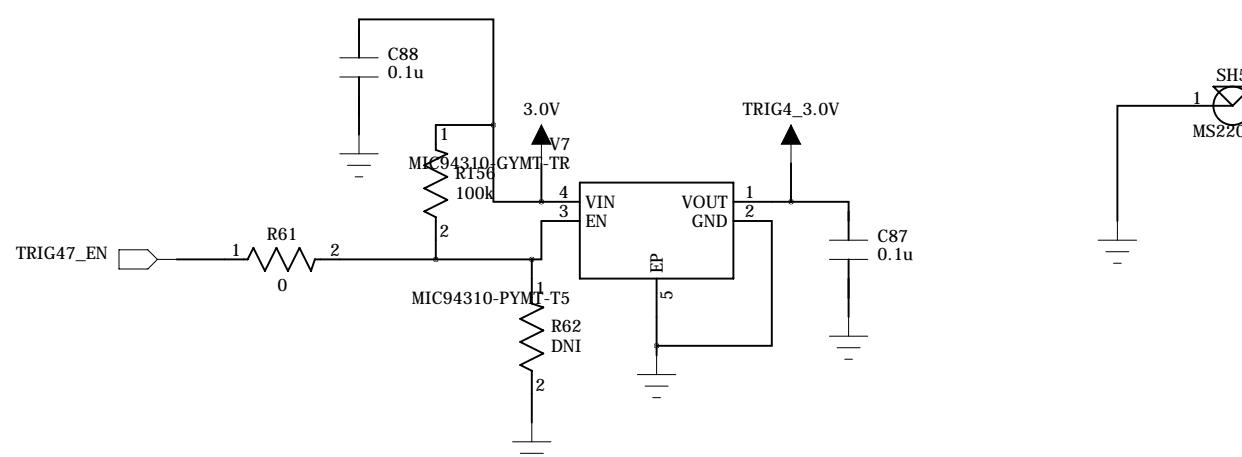
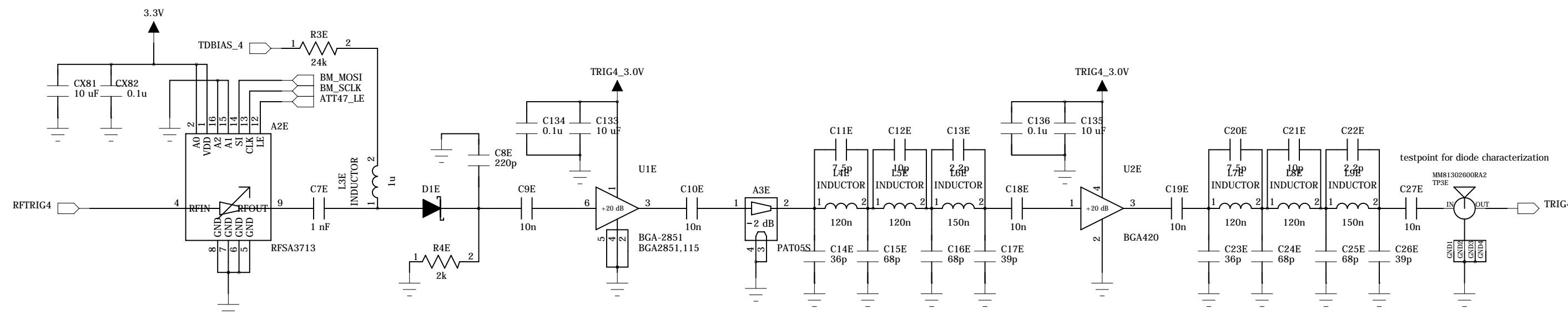
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COMPANY:	Ohio State University		
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REVISION RECORD

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Filtering/bypass capacitors

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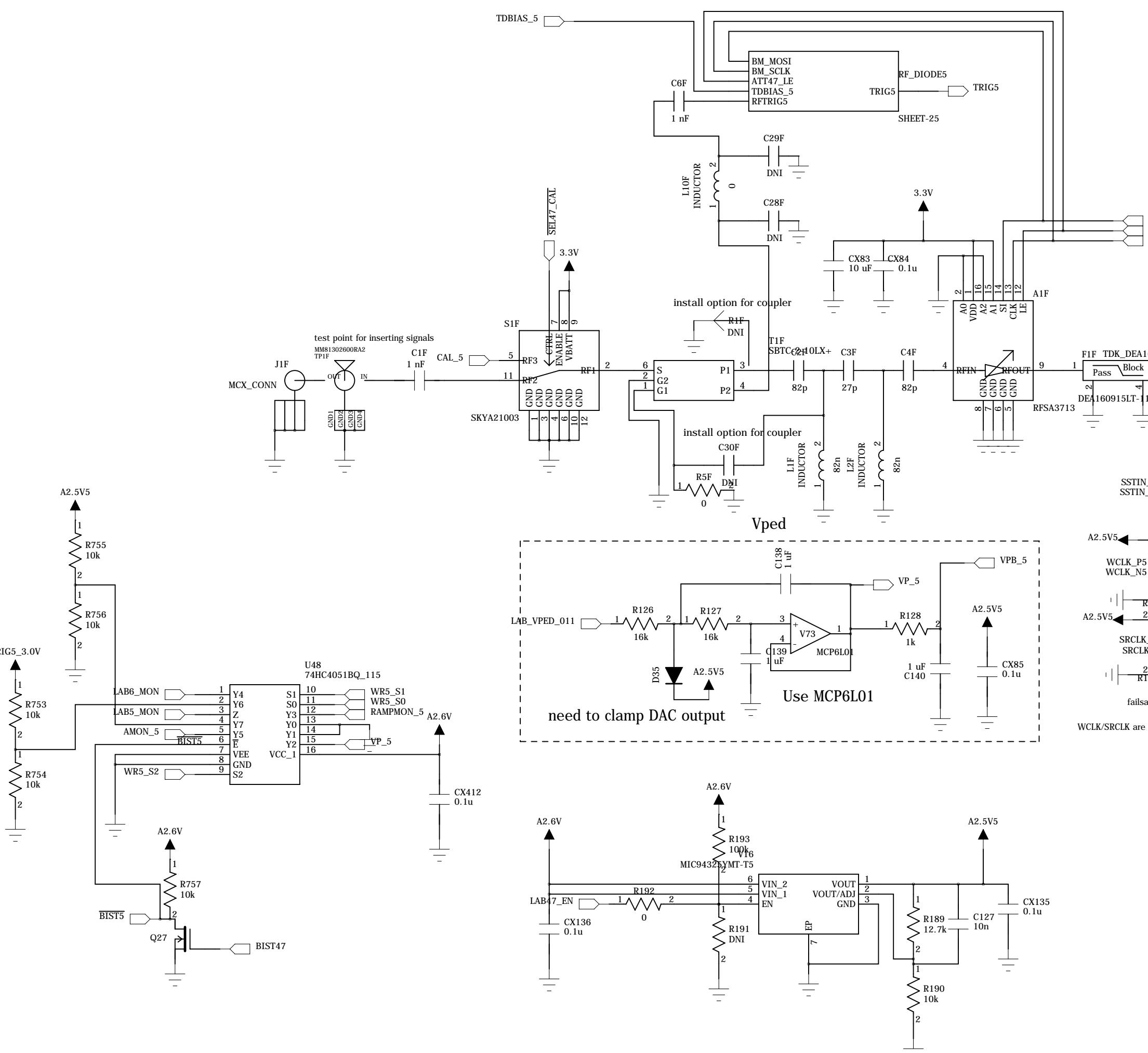
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COMPANY:	Ohio State University		
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REVISION RECORD

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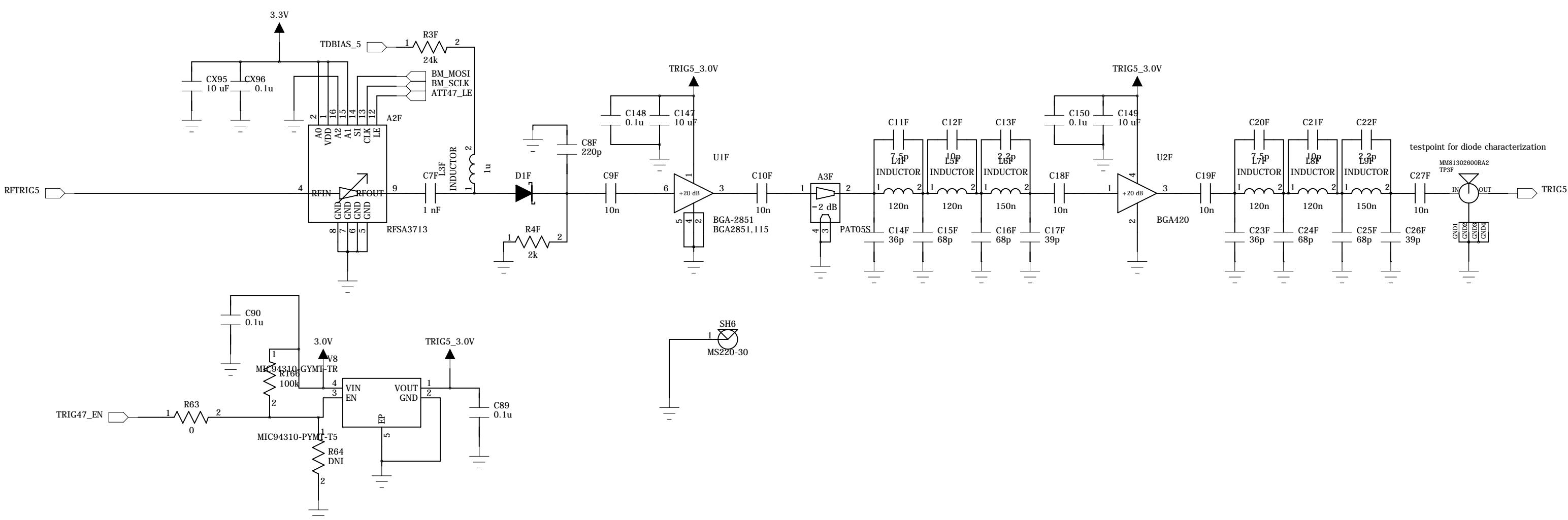
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COMPANY:

Ohio State University

SHEET:

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REVISION RECORD

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Filtering/bypass capacitors

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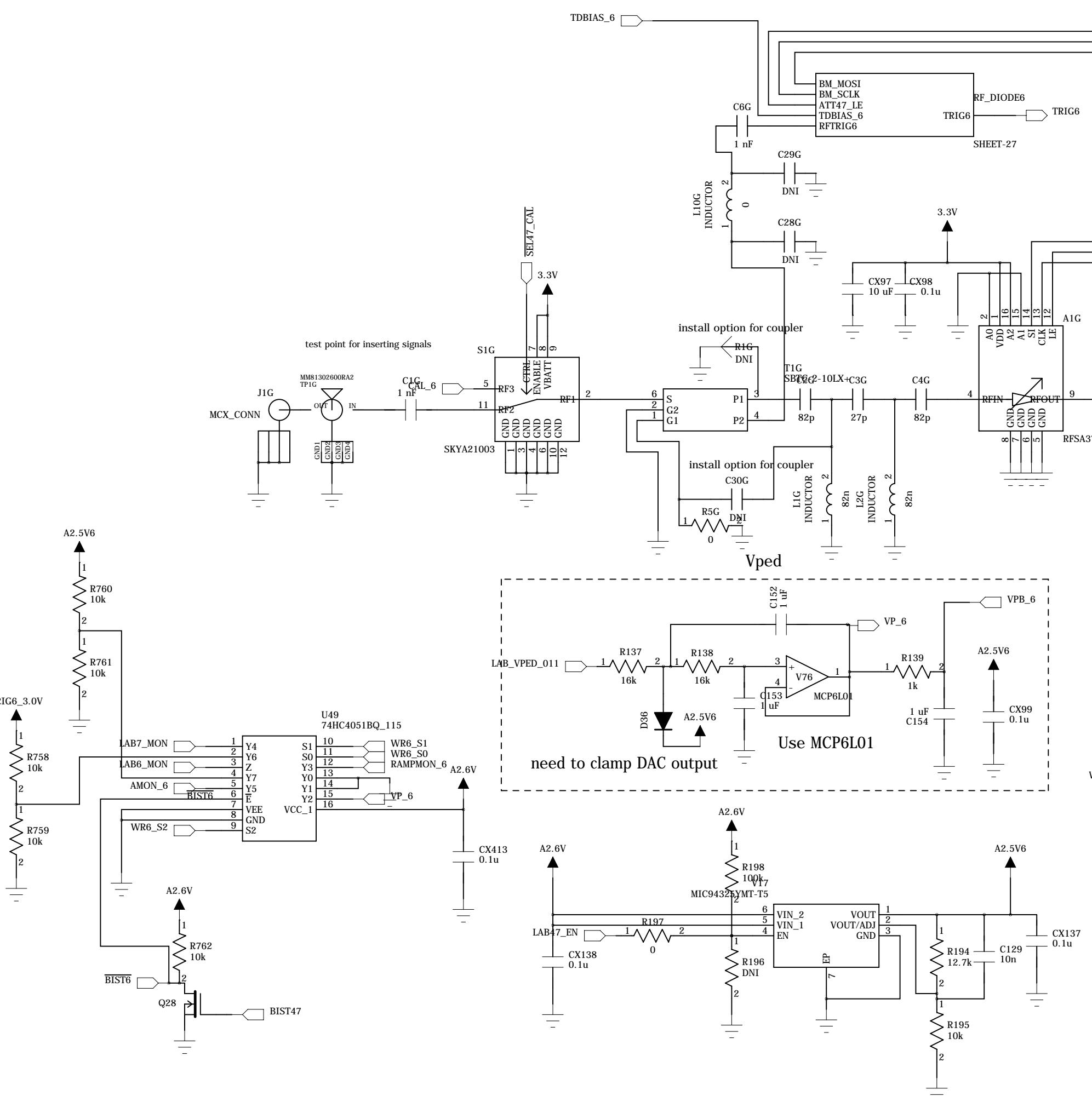
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COMPANY:	Ohio State University		
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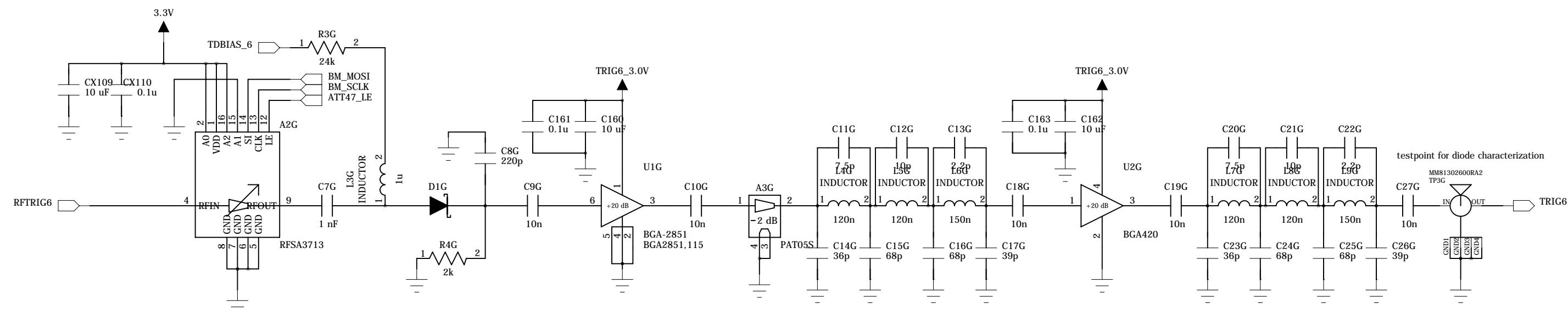
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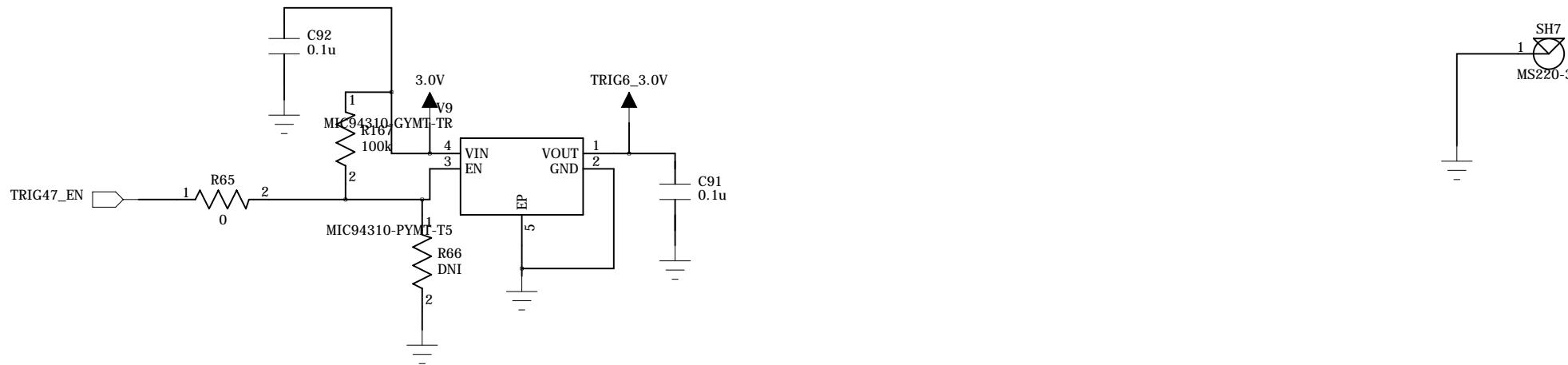
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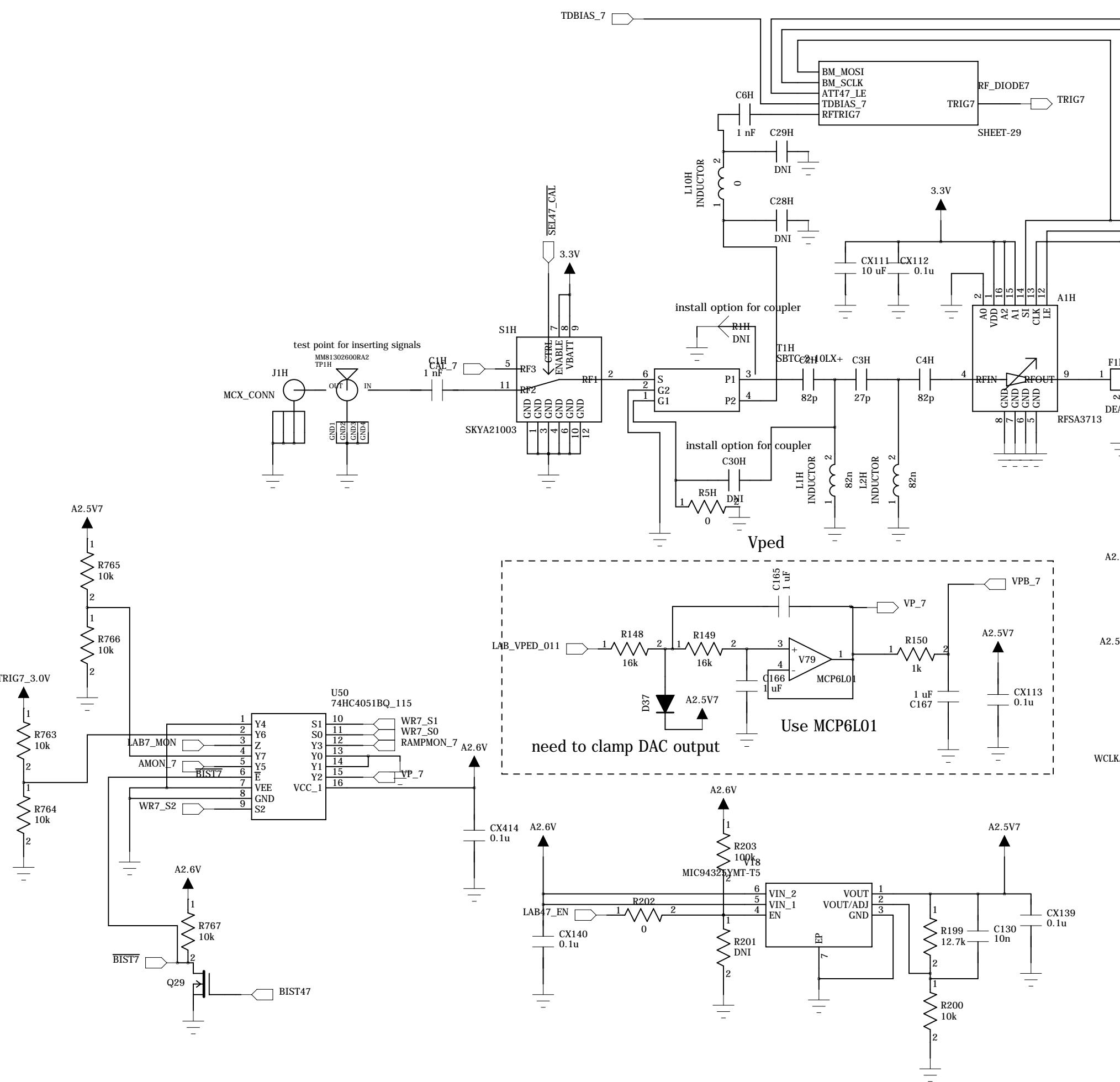
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COMPANY:	Ohio State University		
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REV:	A		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors



DRAWN:	PSA	DATED:	1/22/20
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RELEASED:	N/A	DATED:	N/A

Ohio State University

RF_CHANNEL7

CODE:	SIZE:	DESIGN	REV:
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SCALE: <Scale> SHEET: 28 74

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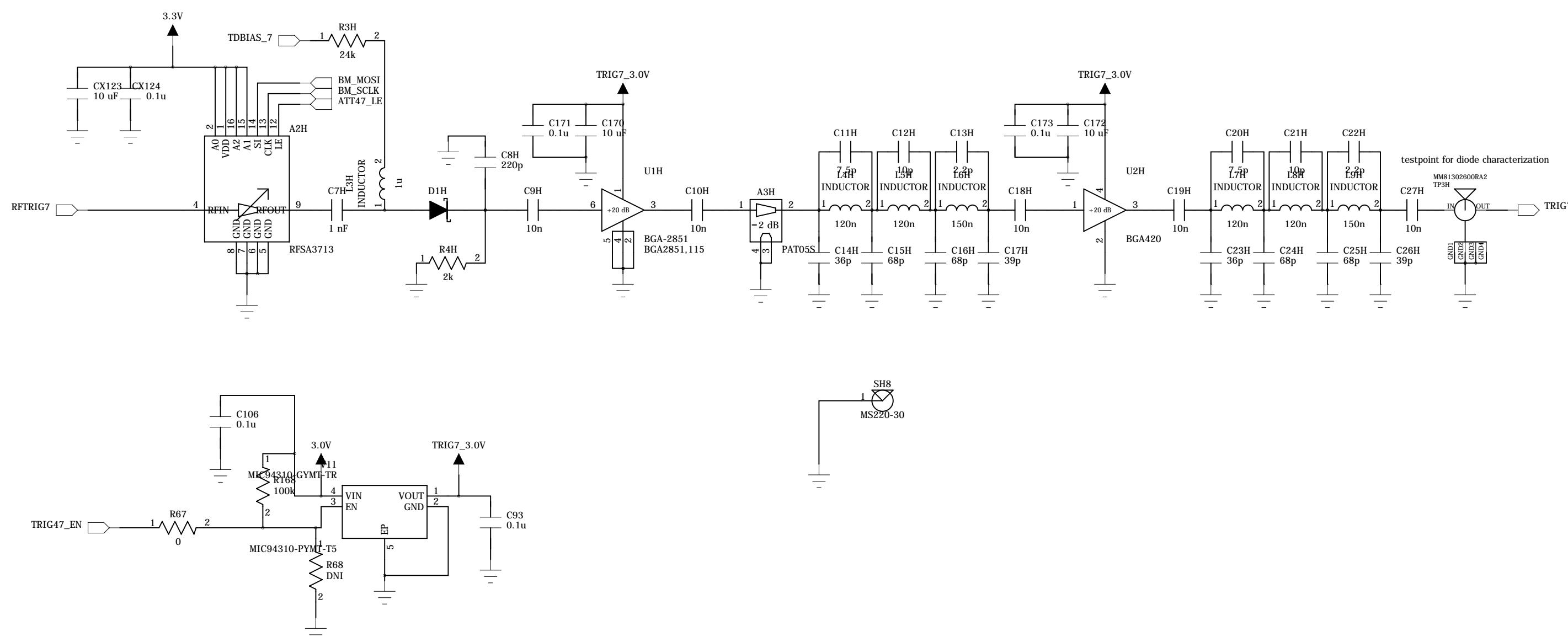
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COMPANY:	Ohio State University		
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REVISION RECORD

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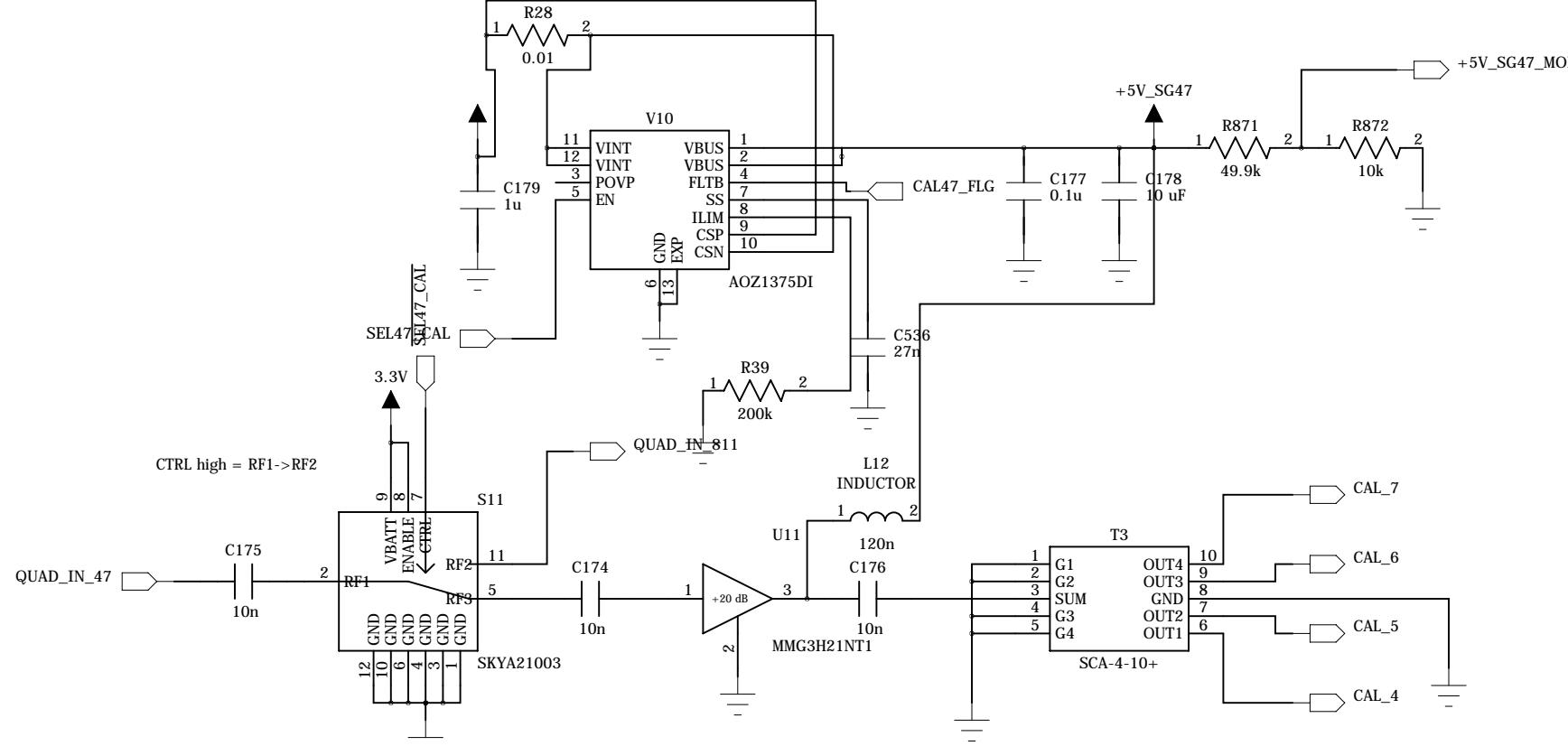
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COMPANY:	Ohio State University		
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QUALITY CONTROL:	N/A	DATED: N/A	
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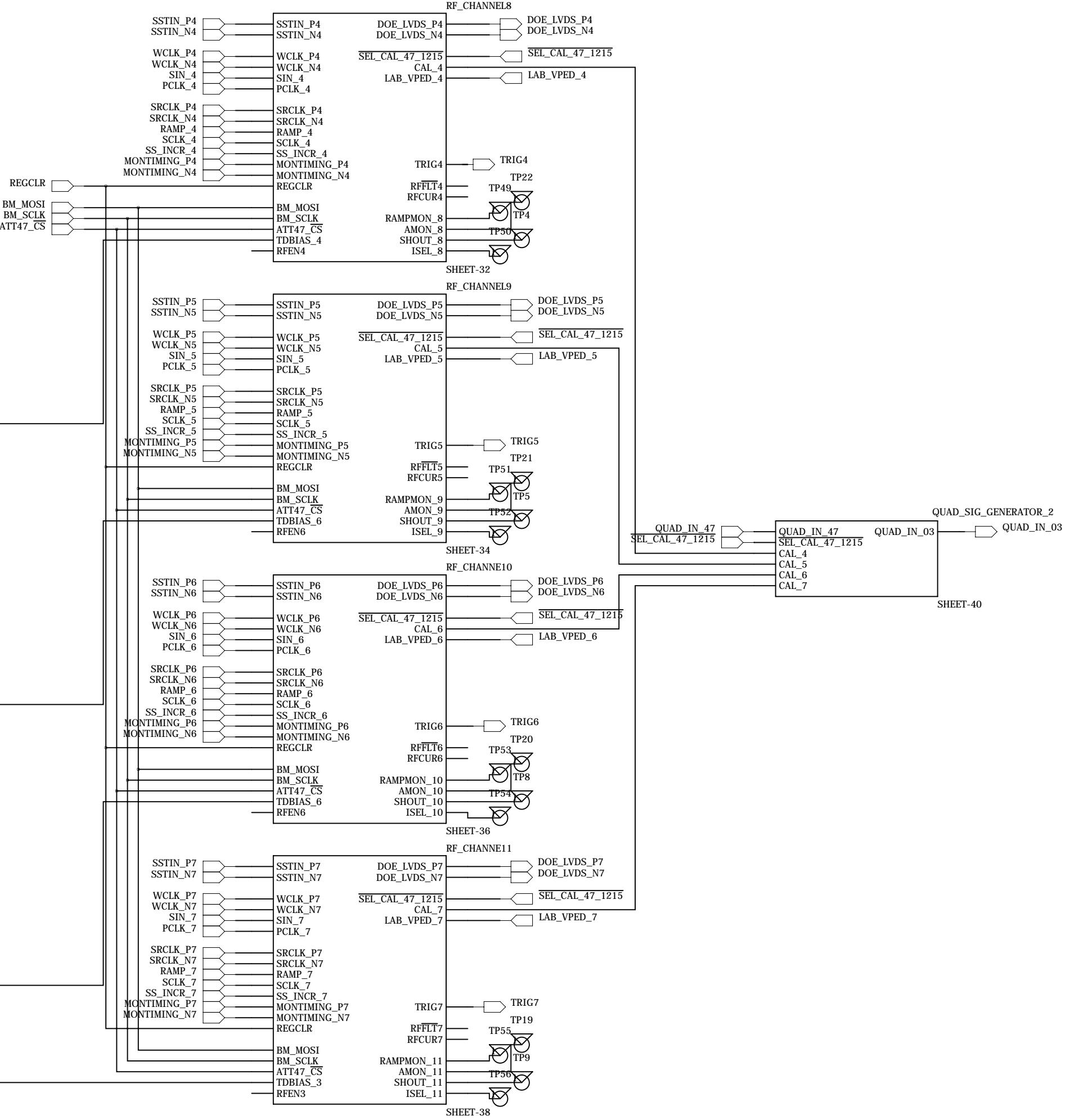
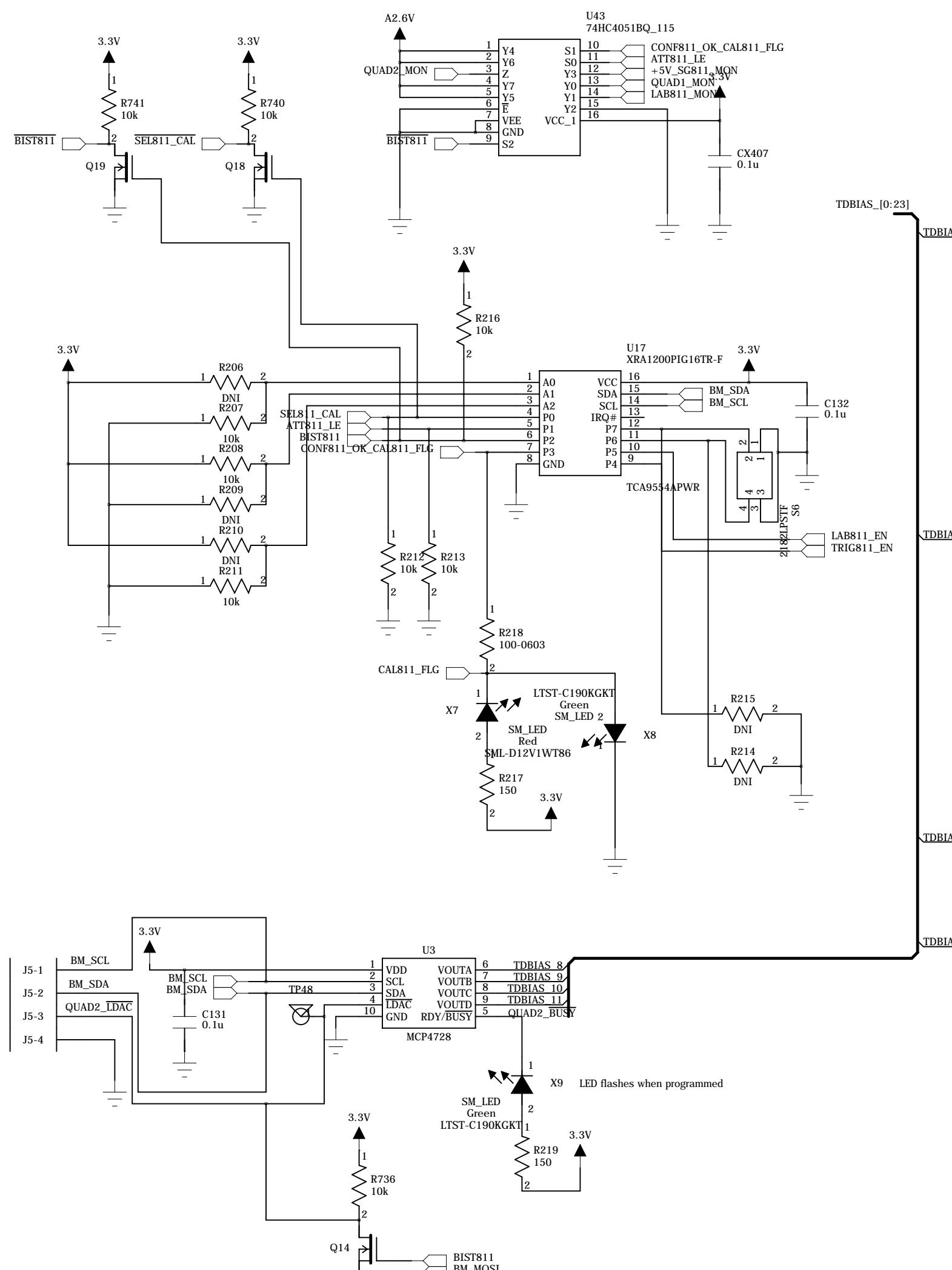
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rev 3: QUAD2 and QUAD3's switches stay enabled and route A2.6V/3.07V (respectively) when not in BIST mode



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CHECKED:	PSA	DATED:	2/27/20
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RELEASED:	N/A	DATED:	N/A

COMPANY: Ohio State University

SHEET: RF_QUAD2

CODE: 4 SIZE: C DESIGN: RADIANT REV: A

SCALE: <Scale> SHEET: 31 74

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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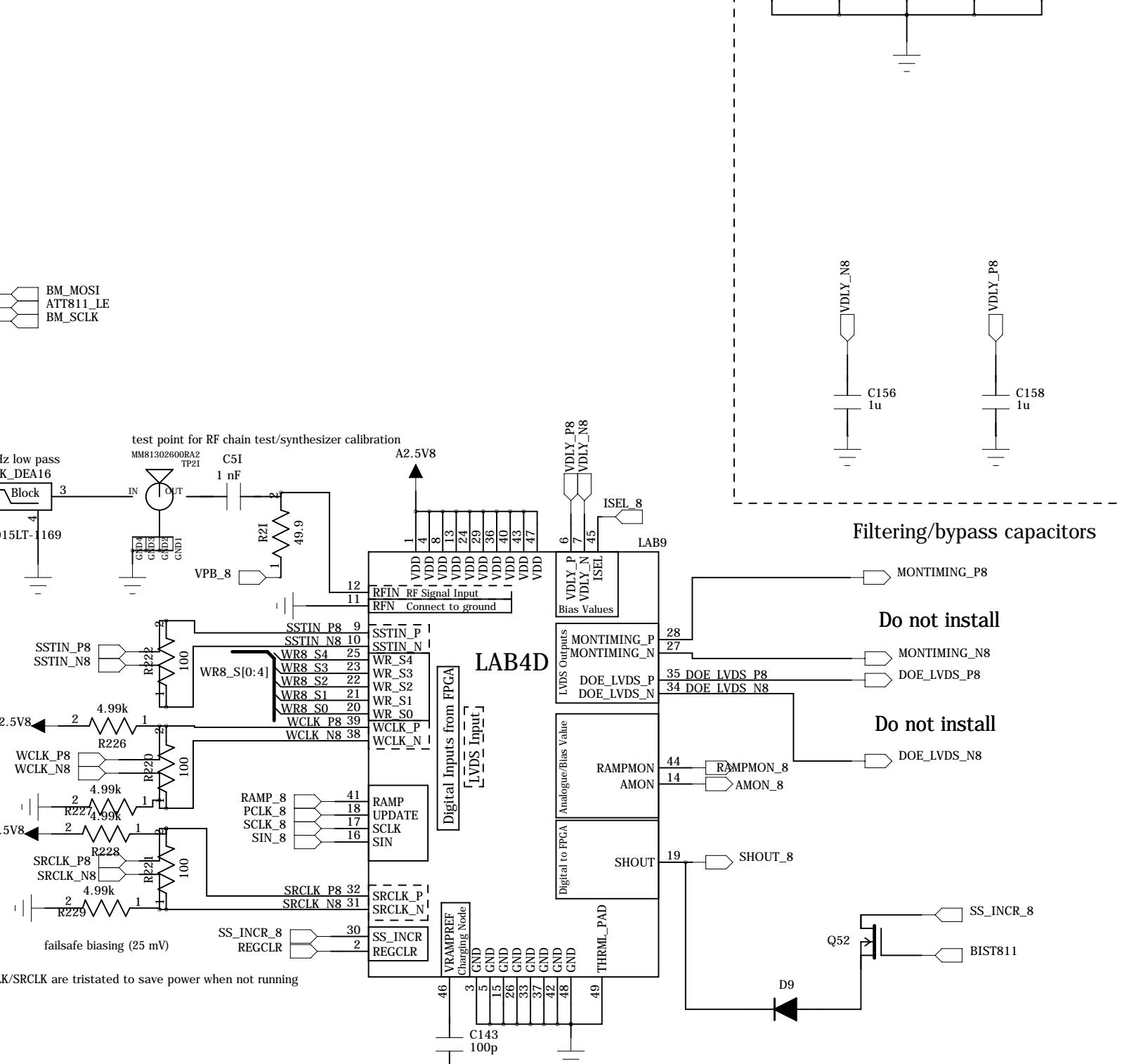
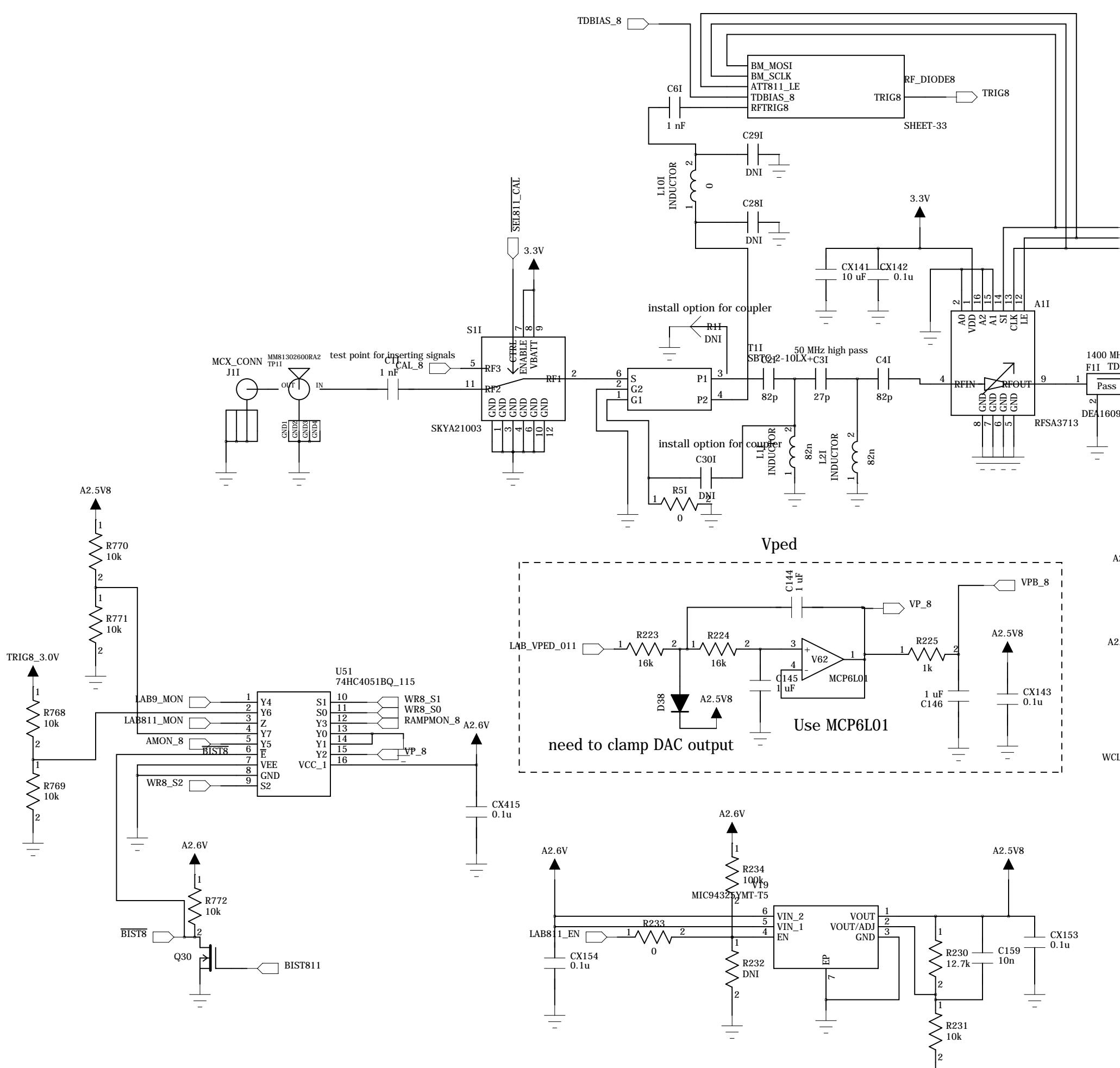
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL8		
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SCALE:	<Scale>	SHEET:	32 74

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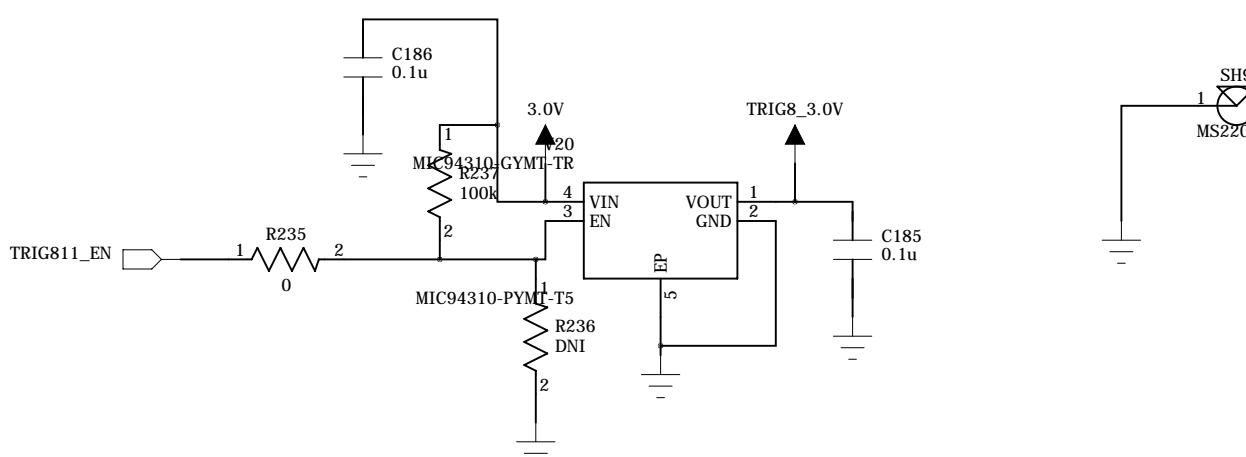
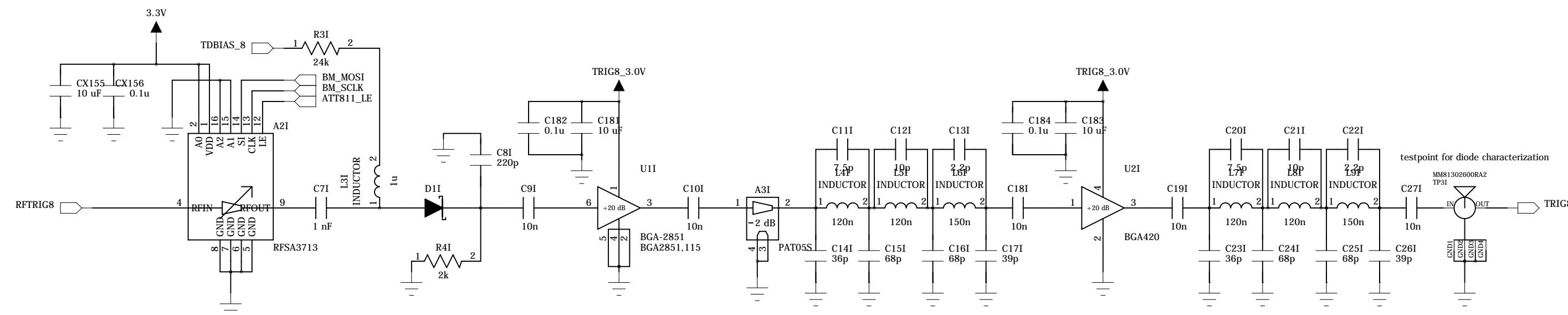
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COMPANY:	Ohio State University		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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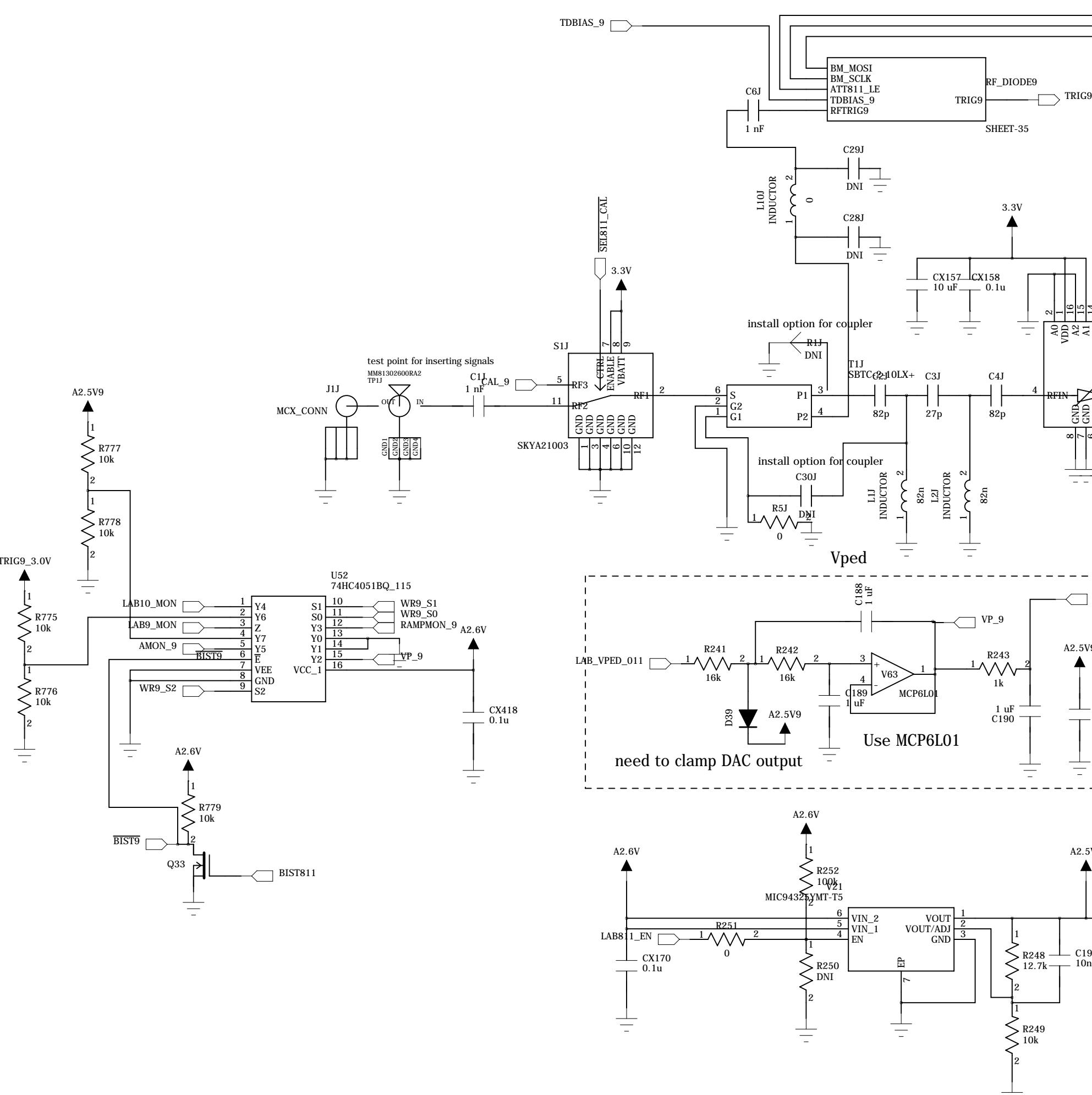
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL9		
DRAWN:	PSA	DATED:	1/22/20
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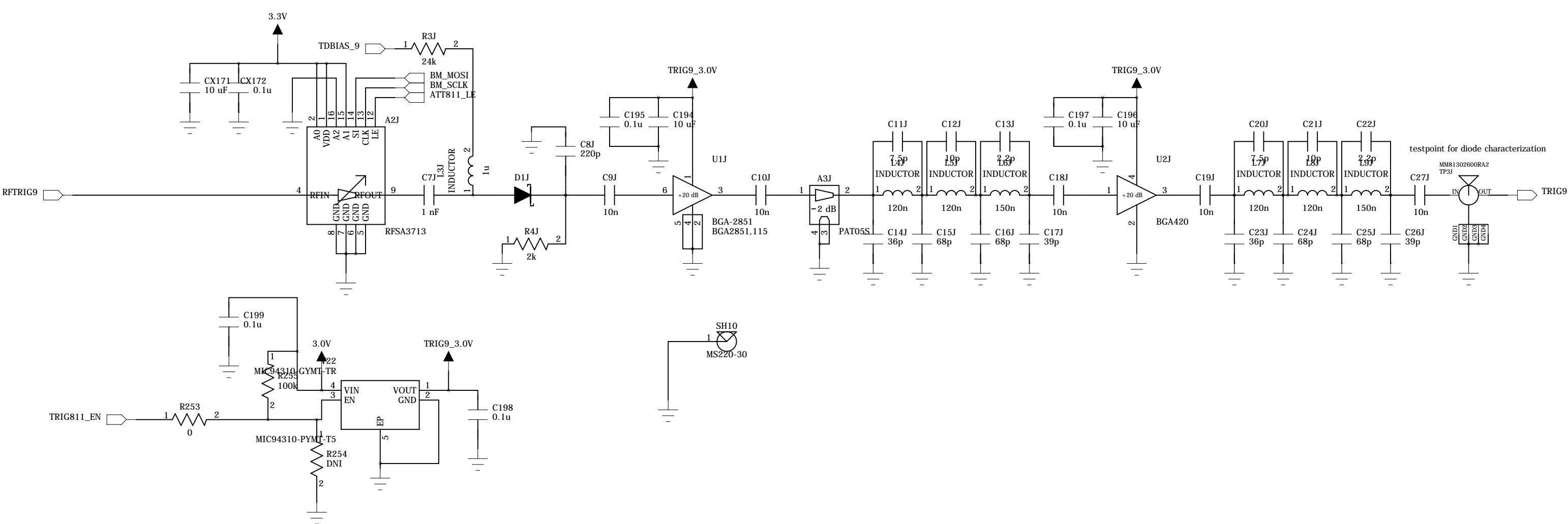
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COMPANY:	Ohio State University		
SHEET:	RF_DIODE9		
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CODE:	C	SIZE:	DESIGN RADIANT
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REVISION RECORD

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Filtering/bypass capacitors

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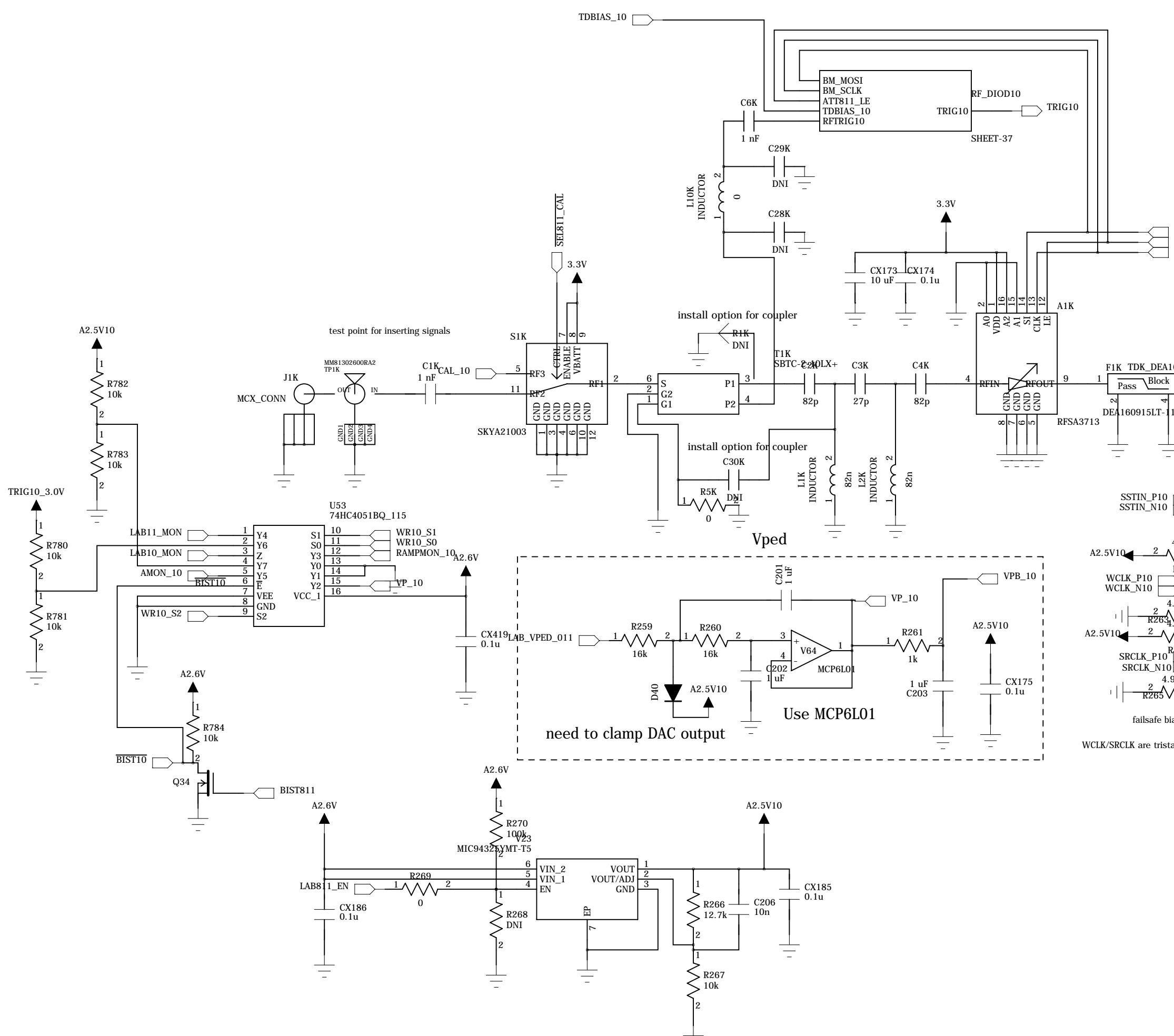
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CHECKED:	PSA	DATED:	2/27/20
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RELEASED:	N/A	DATED:	N/A

Ohio State University

RF_CHANNEL10

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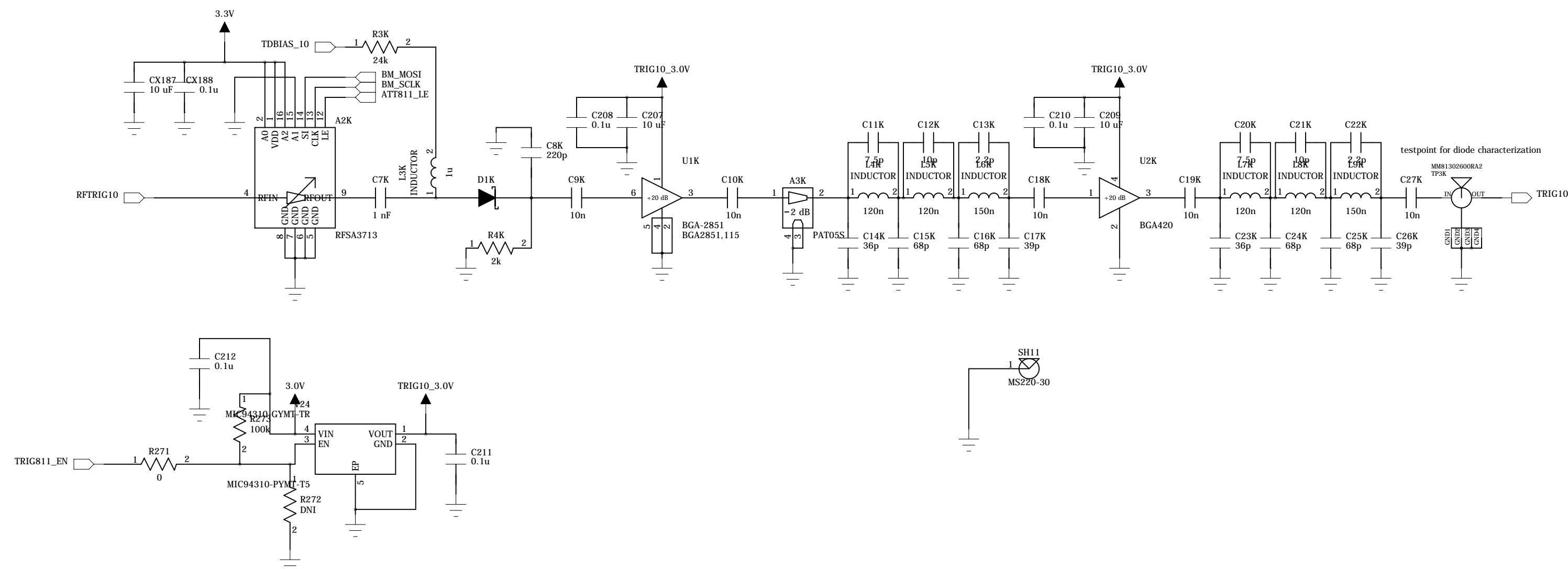
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COMPANY:

Ohio State University

SHEET:

RF_DIOD10

DRAWN:	PSA	DATED: 1/22/20	CODE: 4	SIZE: C	DESIGN: RADIANT	REV: A
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SCALE: <Scale> SHEET: 37 74

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REVISION RECORD

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Filtering/bypass capacitors

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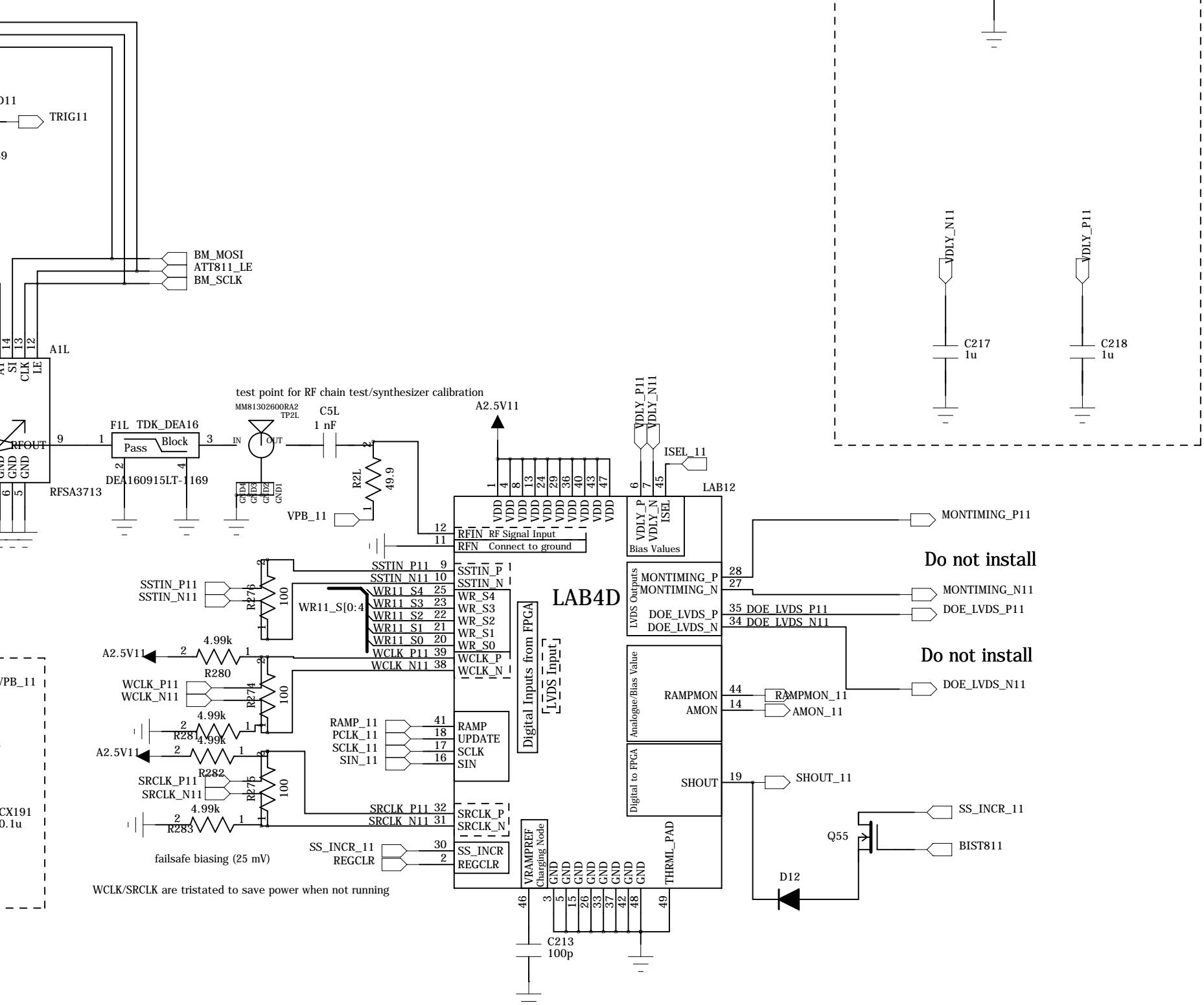
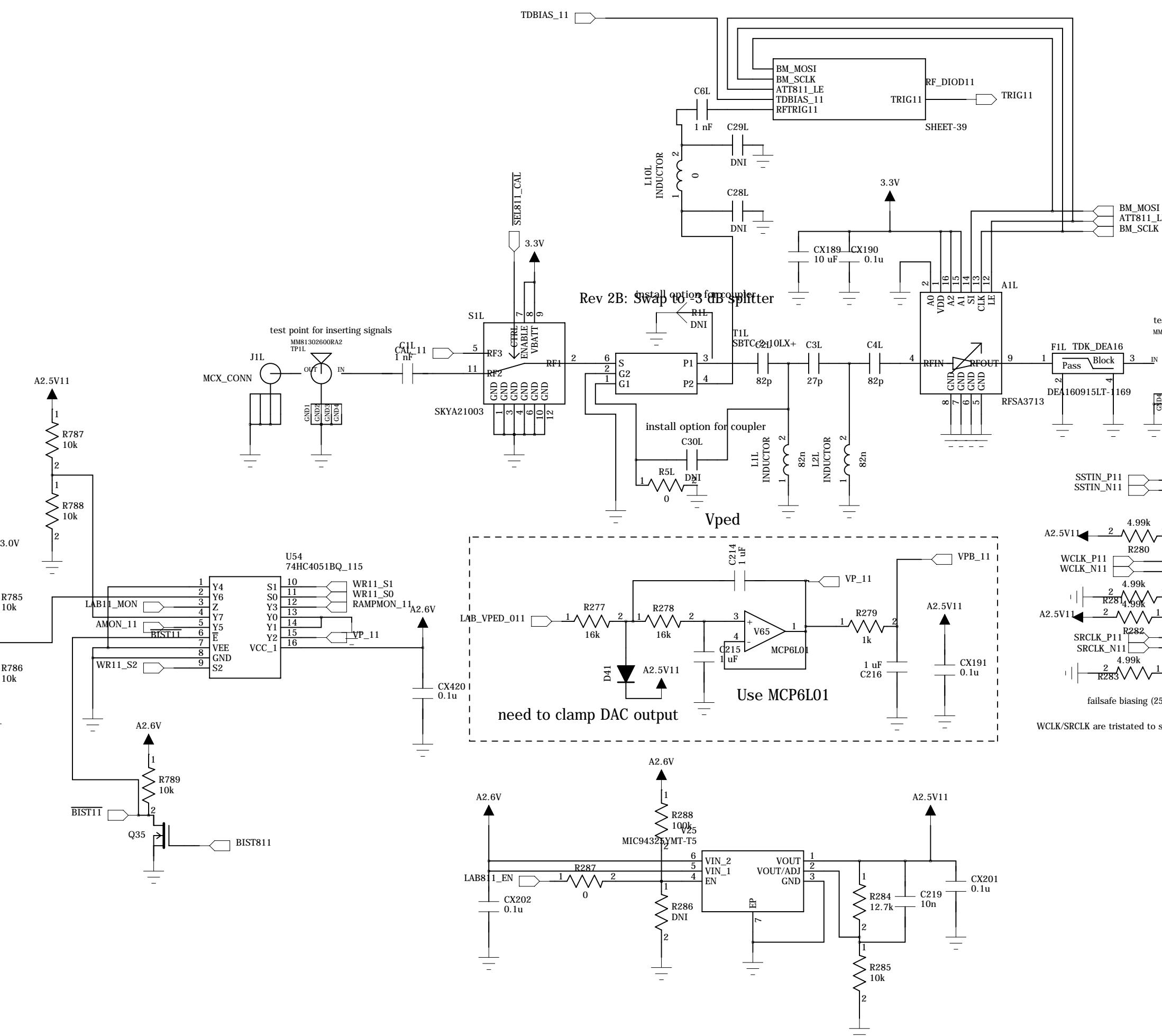
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CHECKED:	PSA	DATED:	2/27/20
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CODE: 4 SIZE: C DESIGN: RADIANT REV: A

SCALE: <Scale> SHEET: 38 74

Ohio State University

RF_CHANNEL11

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REVISION RECORD

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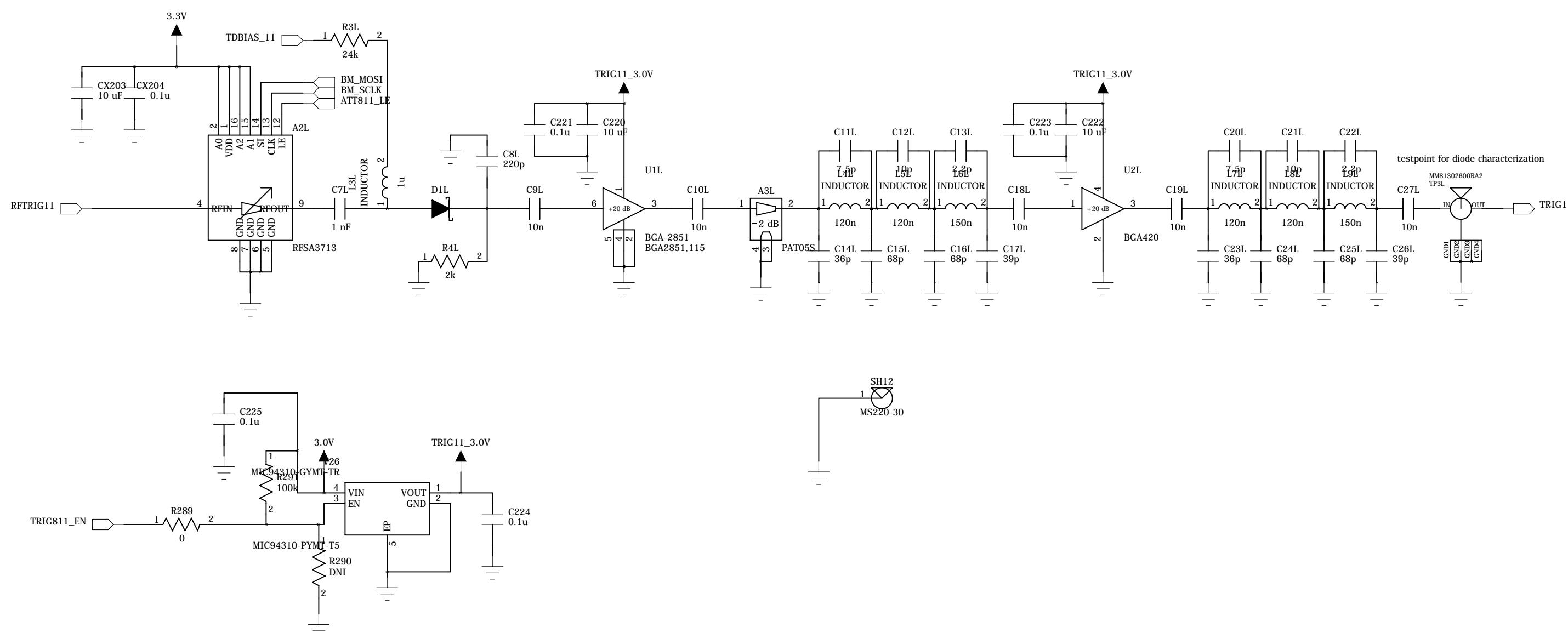
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COMPANY:	Ohio State University		
SHEET:	RF_DIOD11		
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REVISION RECORD

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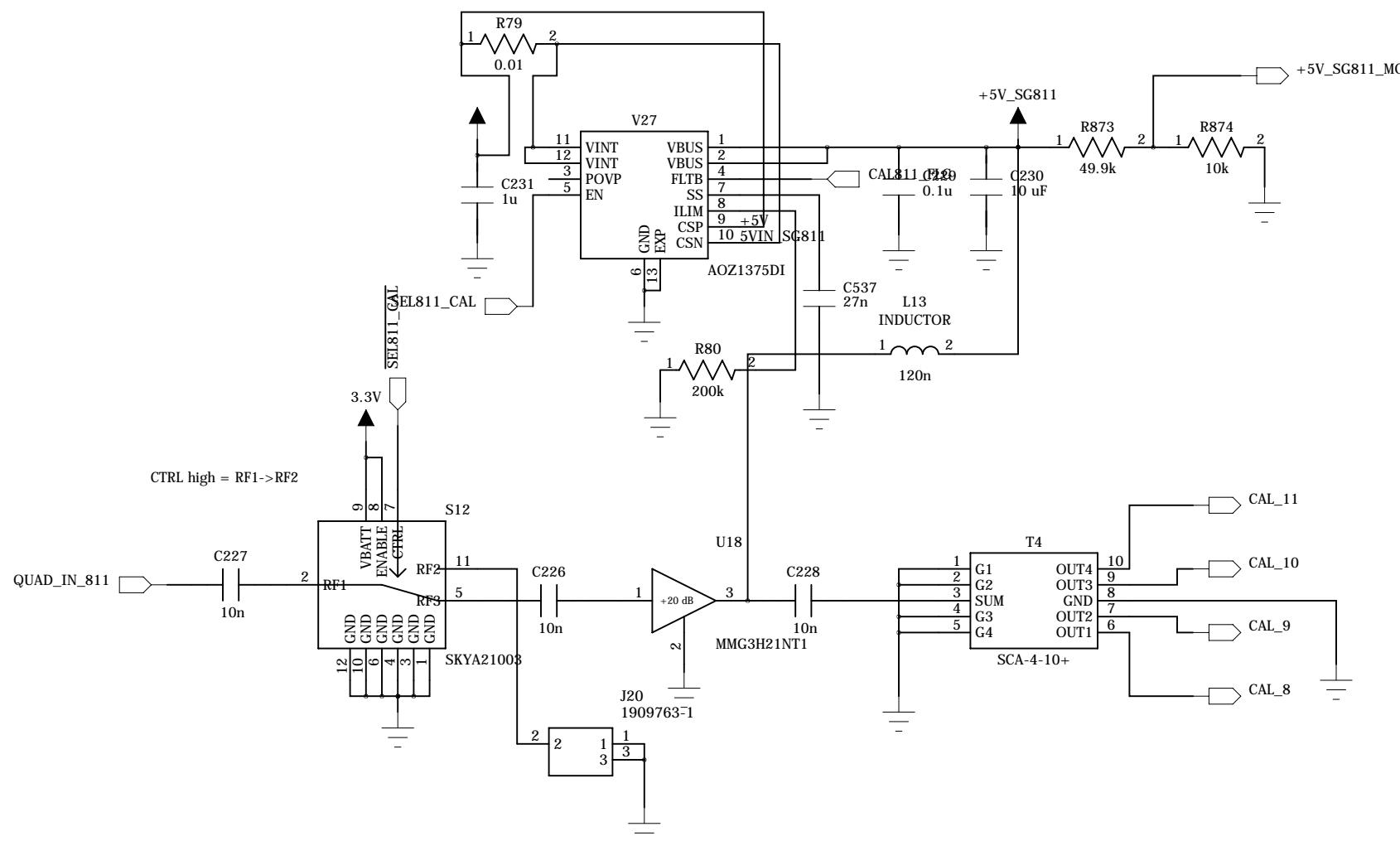
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COMPANY:	Ohio State University		
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SCALE:	40 74		

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

COMPANY:	Ohio State University				
SHEET:	AUXCPLDS				
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REVISION RECORD

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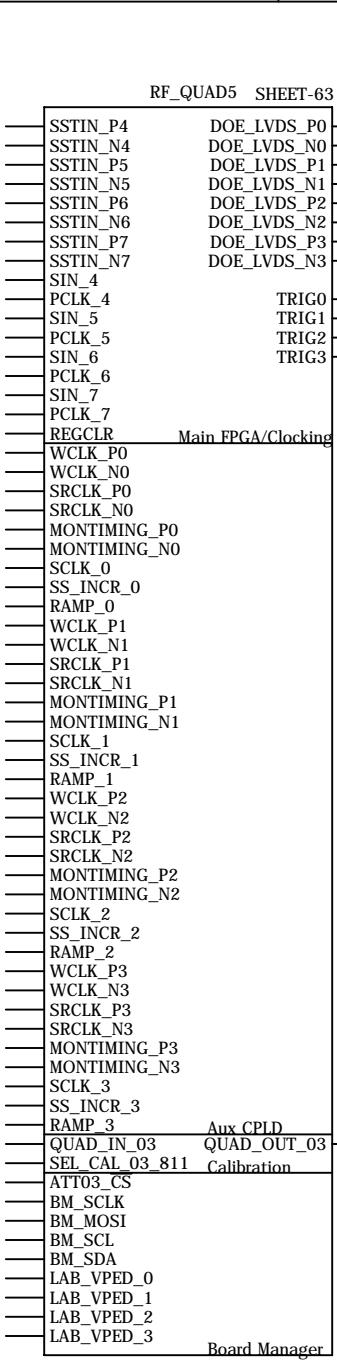
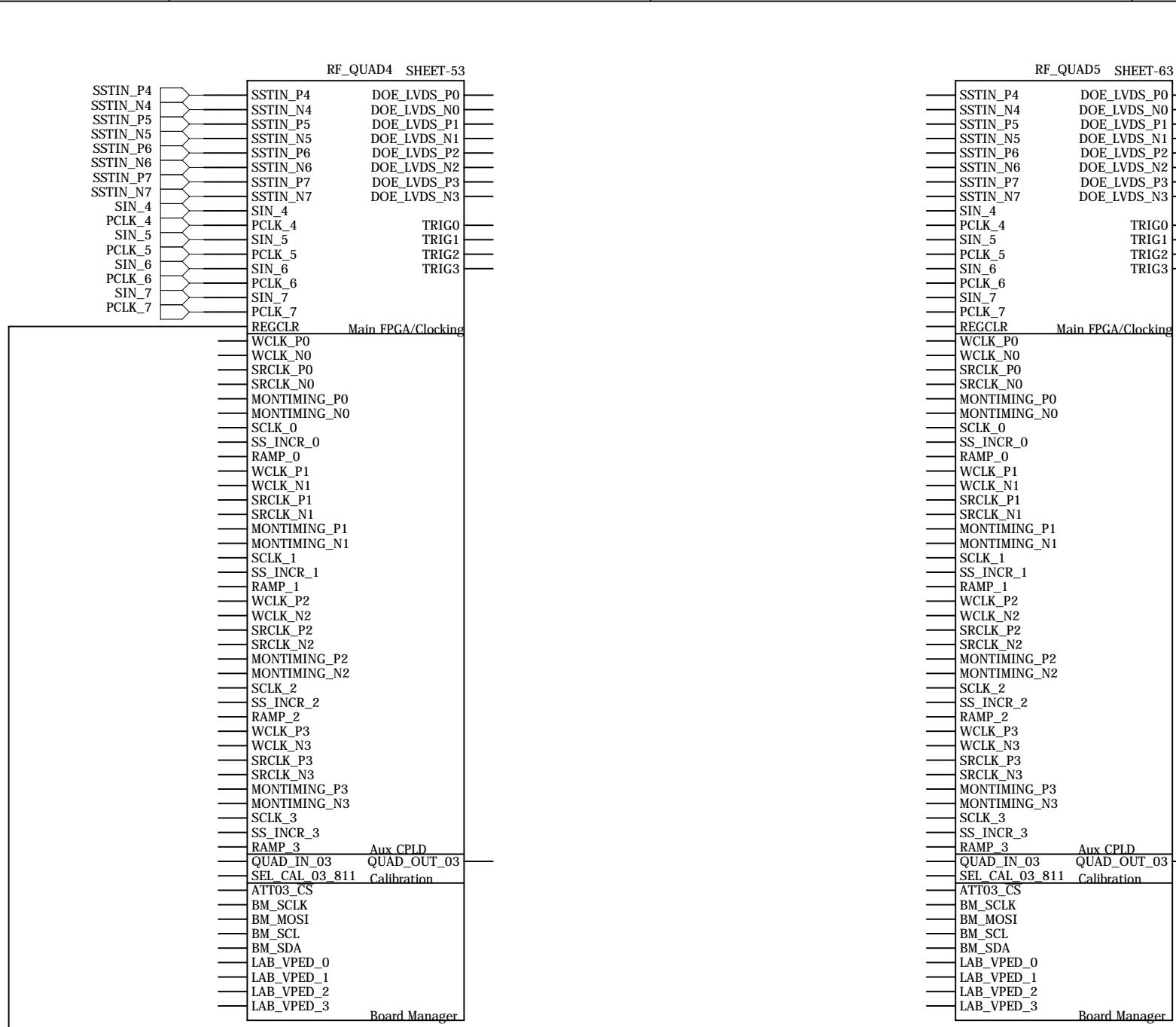
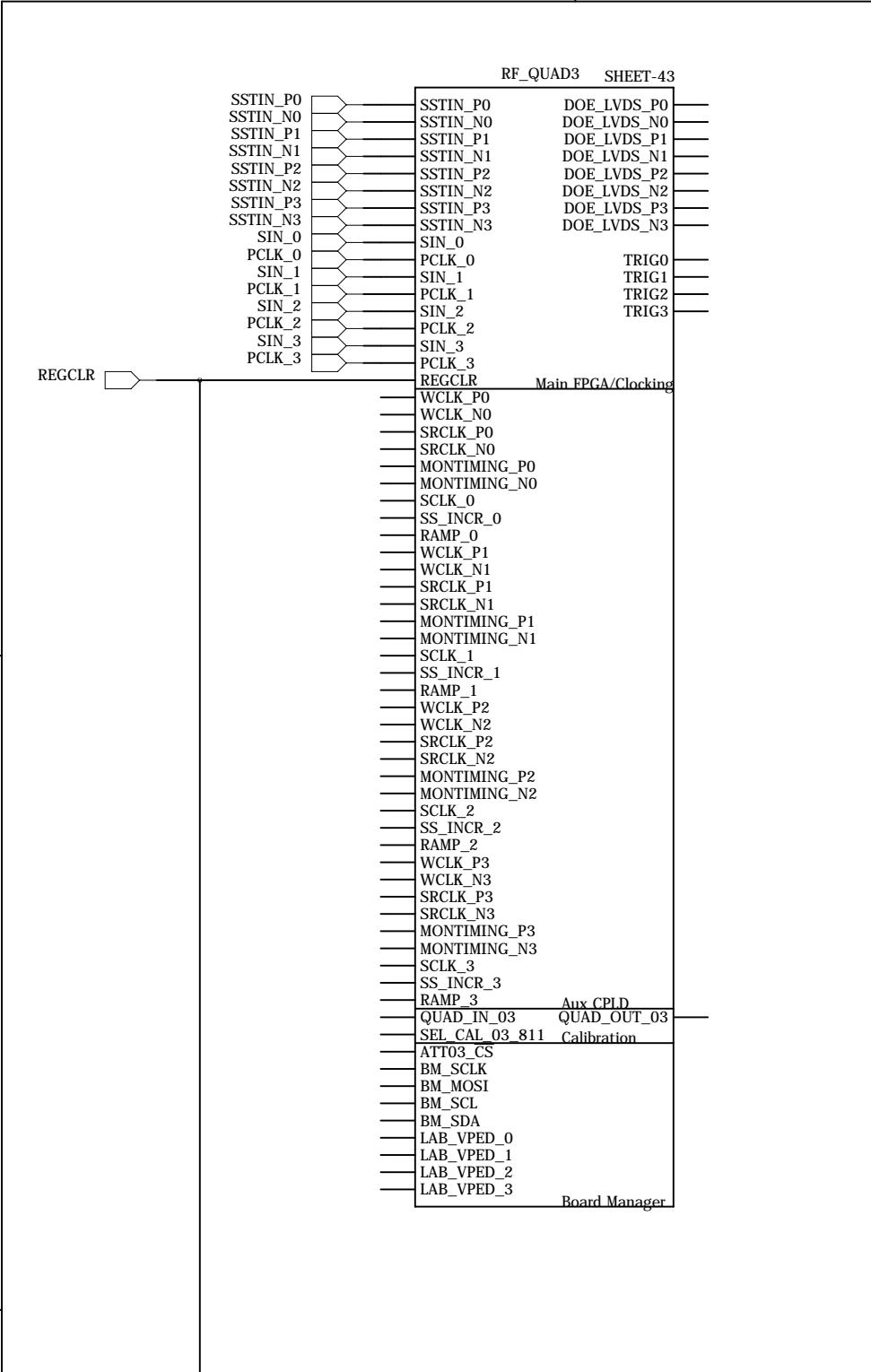
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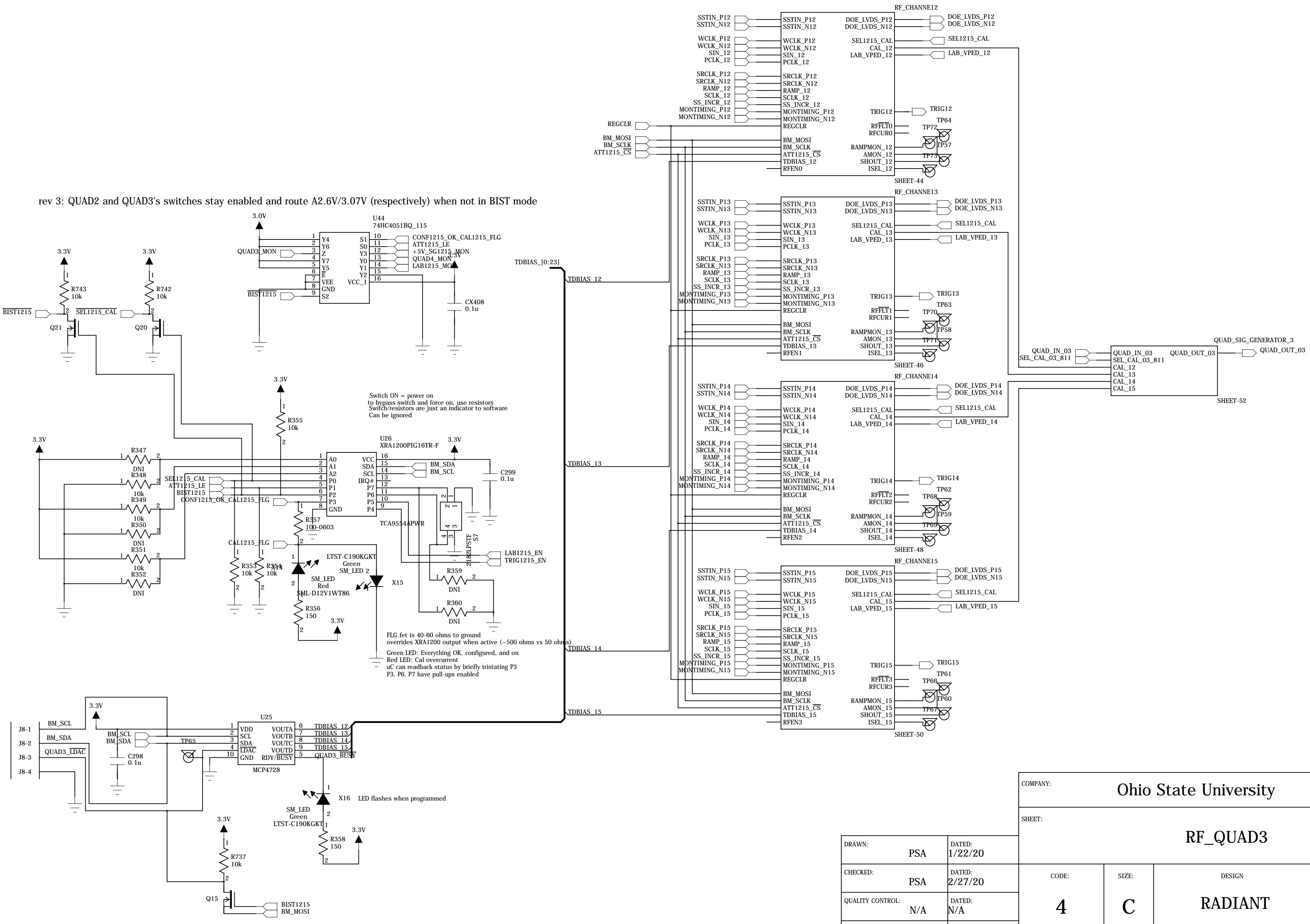
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SHEET:	RF_LEFT0		
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CODE:	SIZE:	DESIGN:	REV:
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SCALE: <Scale>	SCALE: 48 74		

REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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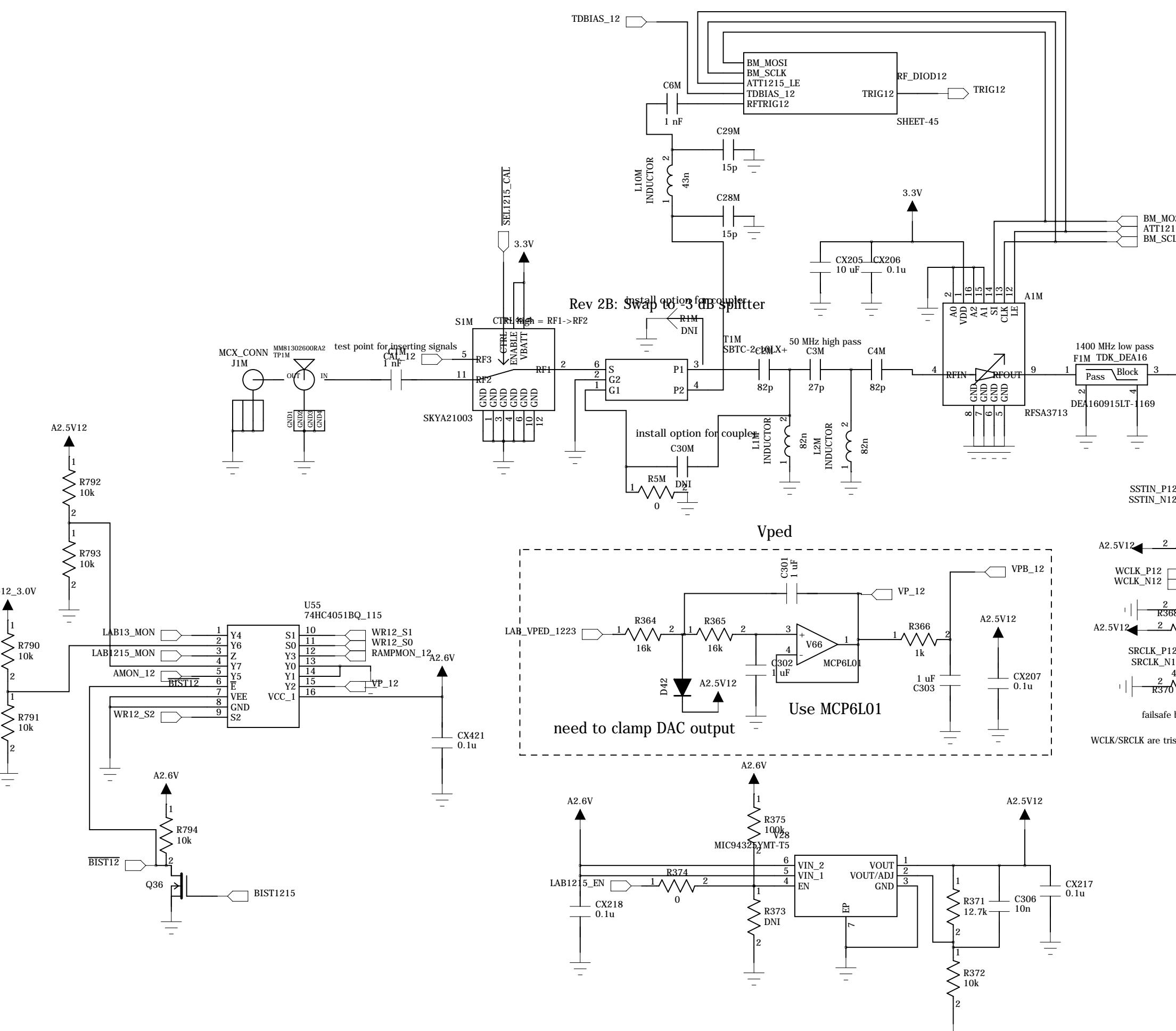
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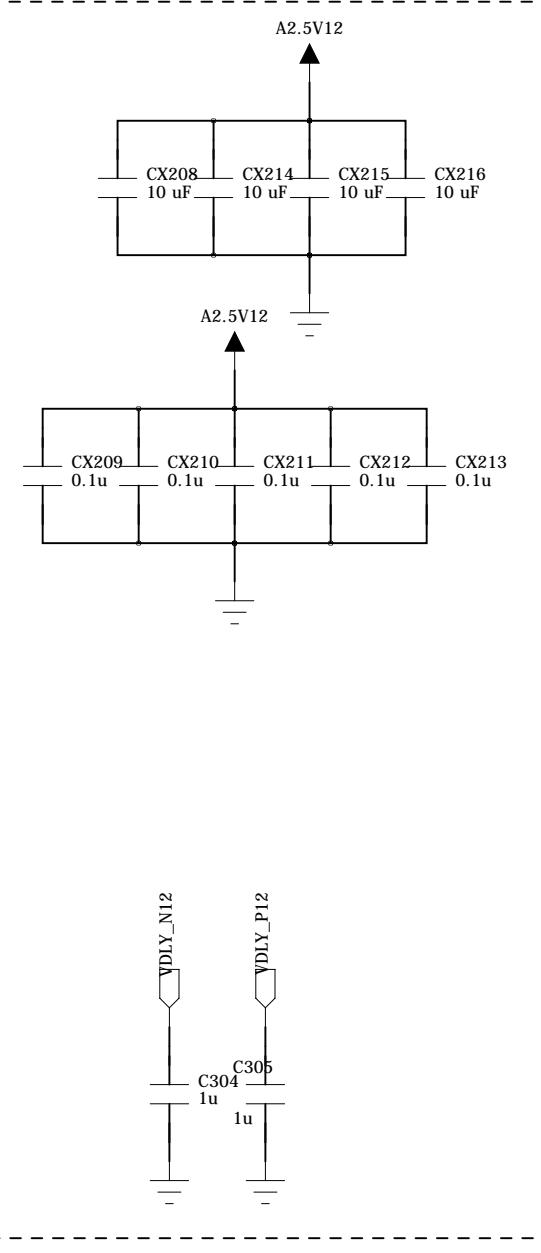
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COMPANY: Ohio State University
SHEET: RF_CHANNEL12
CODE: 4
SIZE: C
DESIGN: RADIANT
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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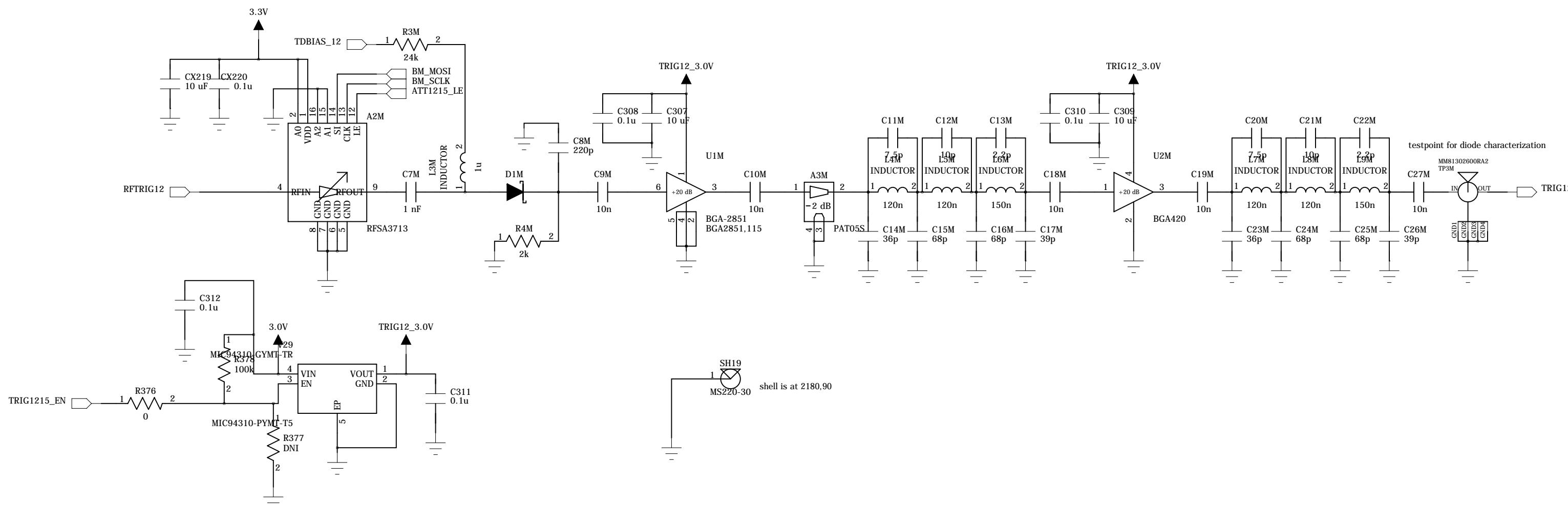
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SHEET:	RF_DIOD12		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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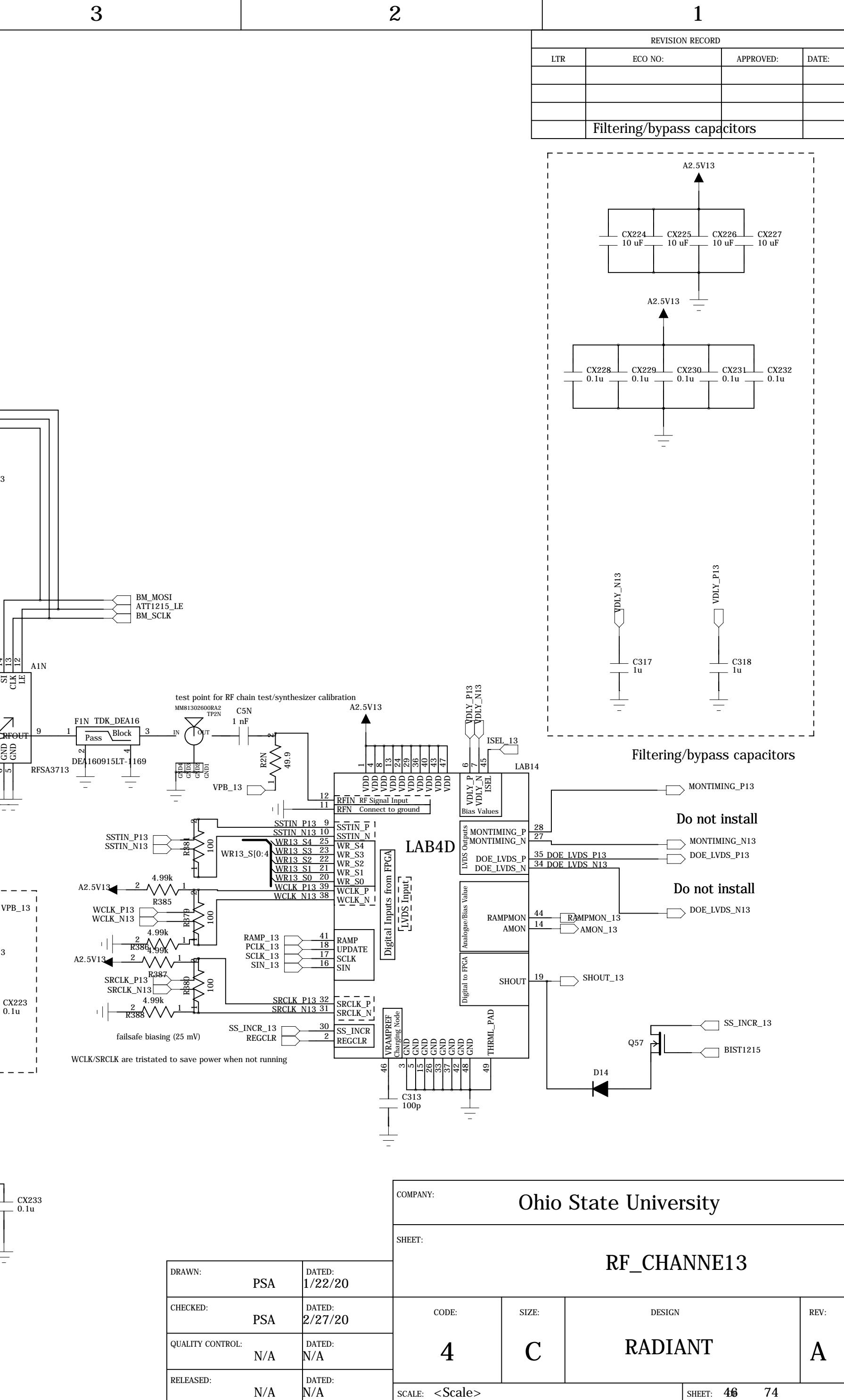
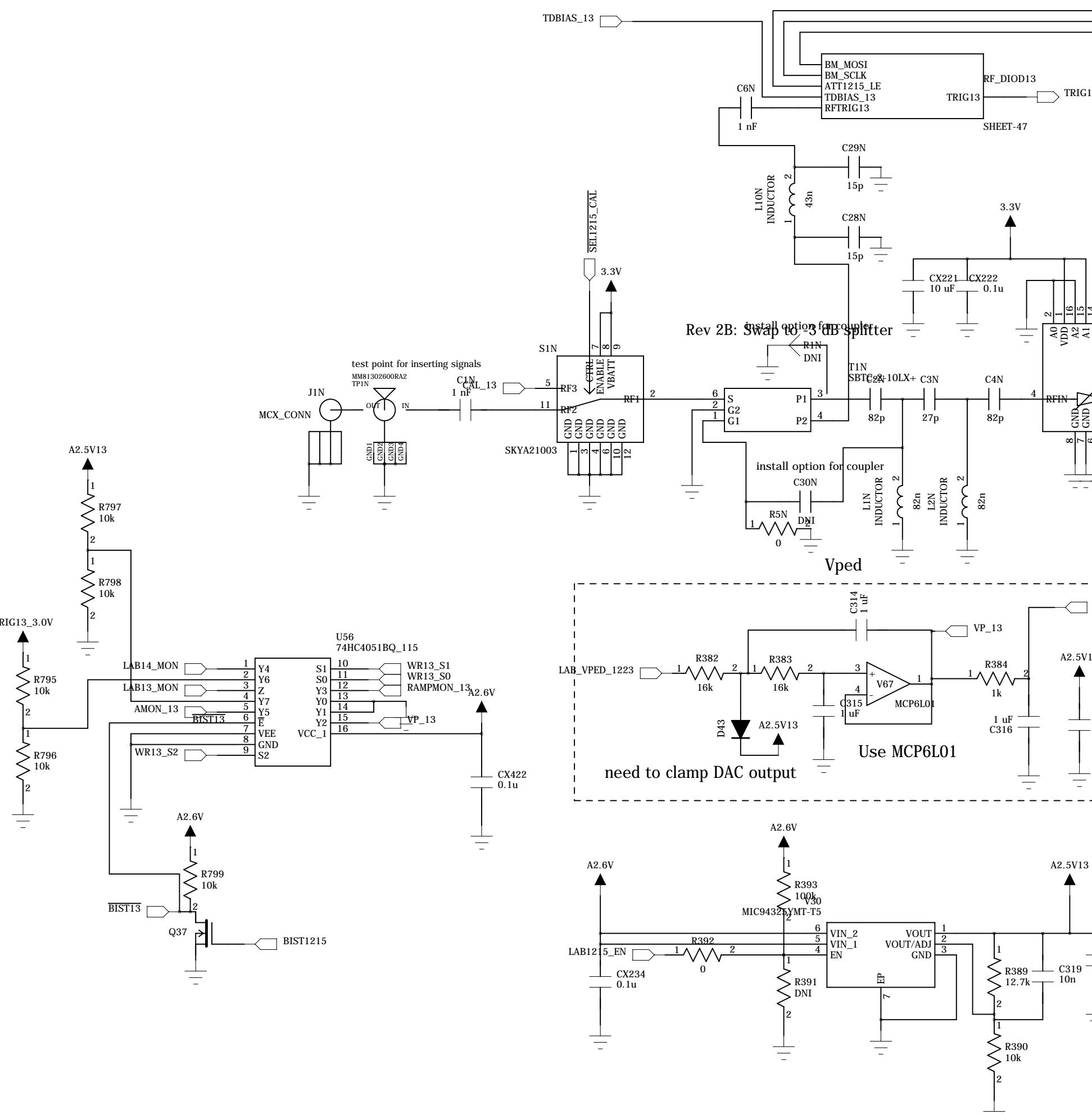
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COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL13		
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SCALE:	<Scale>	SHEET:	46 74

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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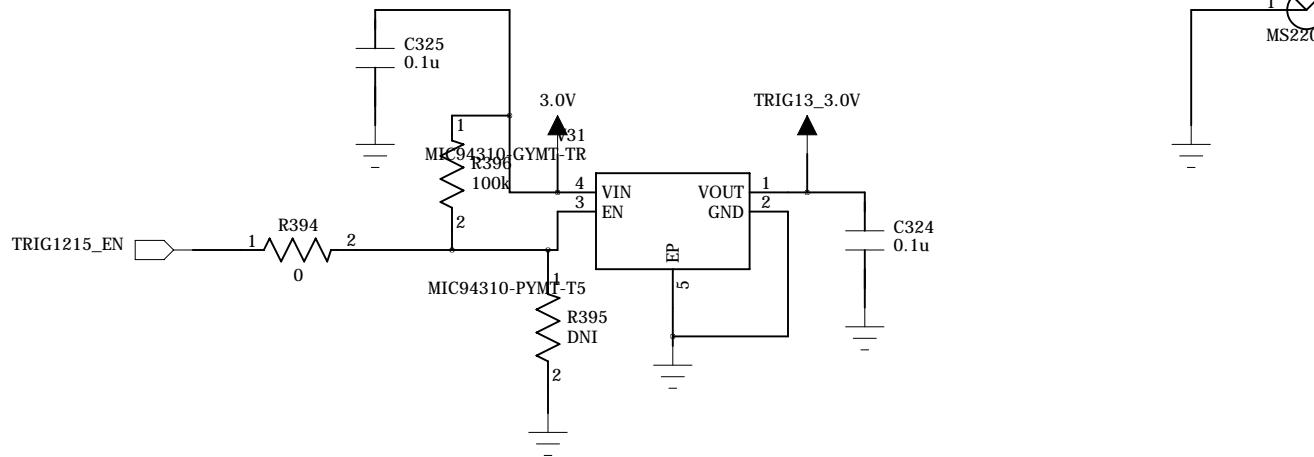
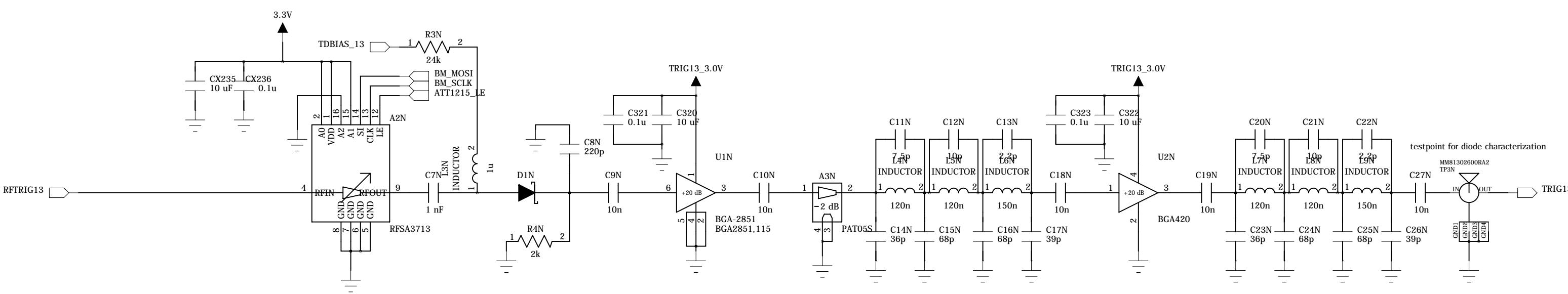
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COMPANY:	Ohio State University		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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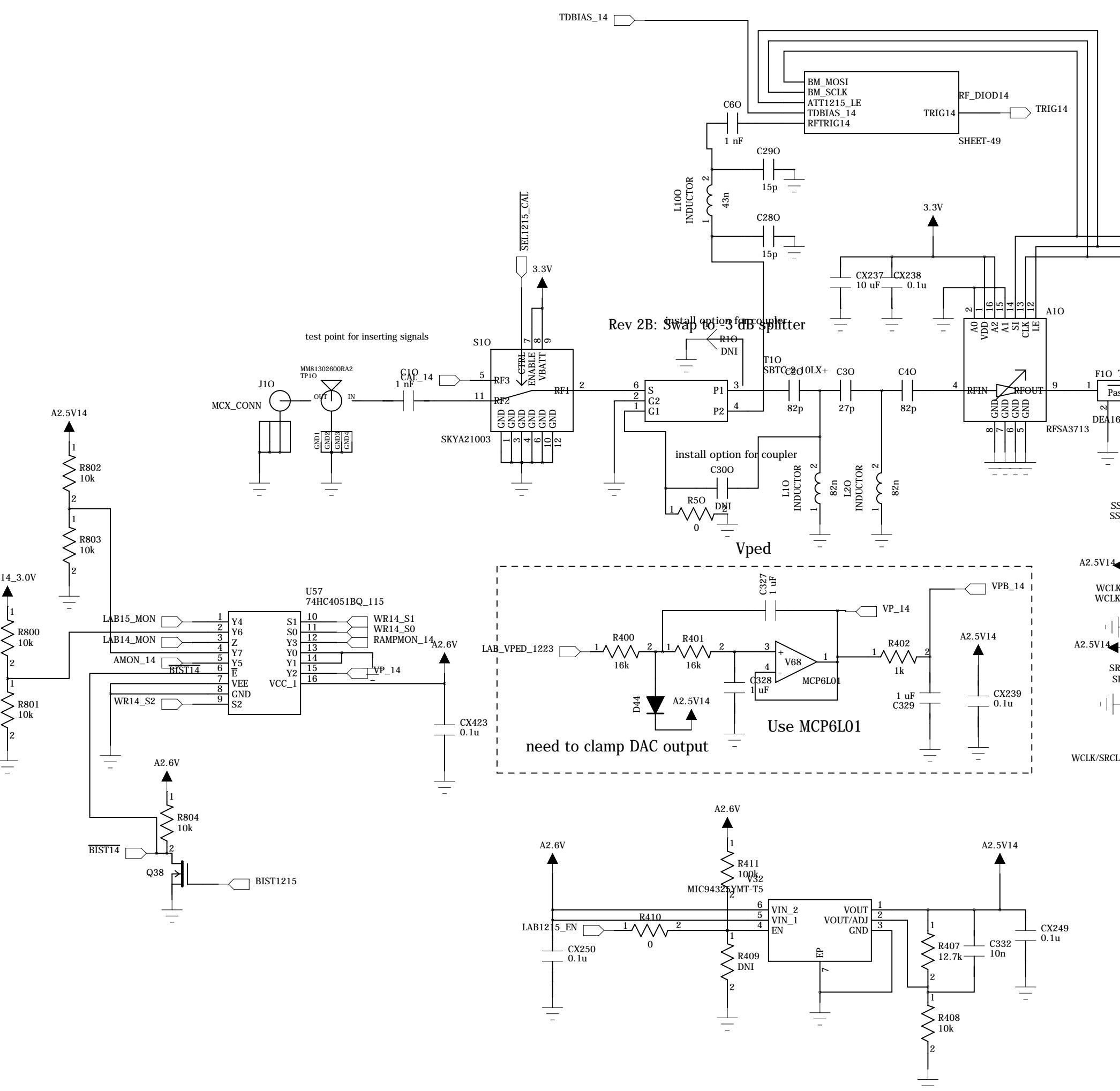
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COMPANY:	Ohio State University		
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REVISION RECORD

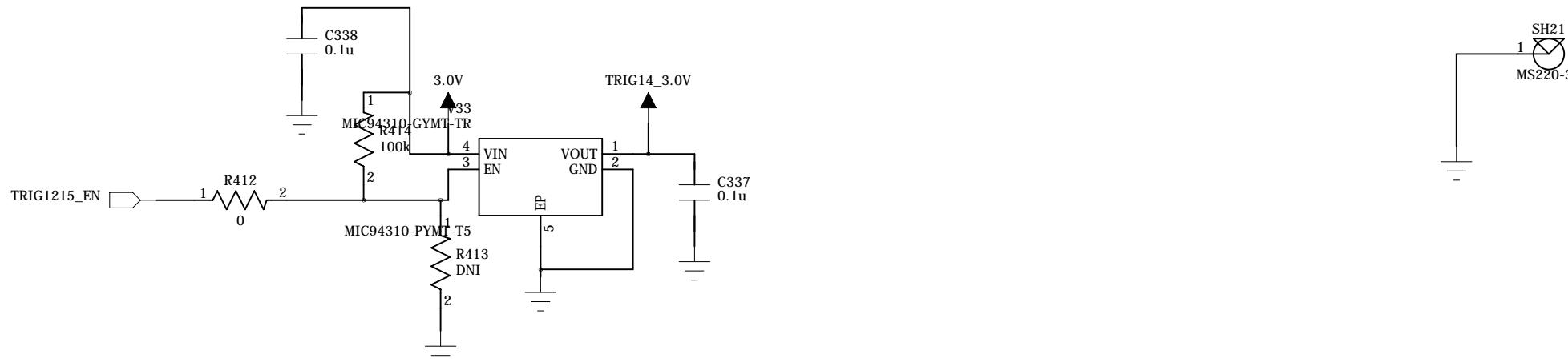
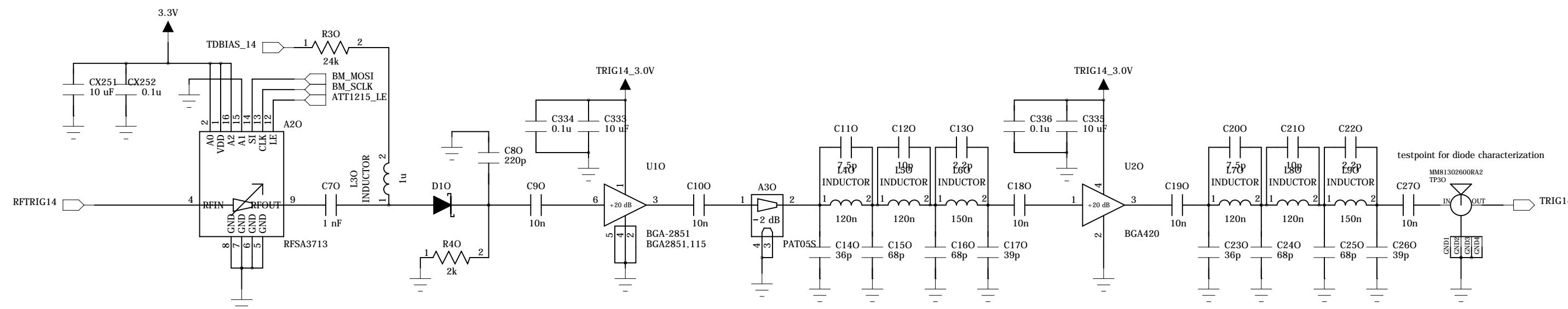
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CHECKED:	PSA	DATED:	2/27/20
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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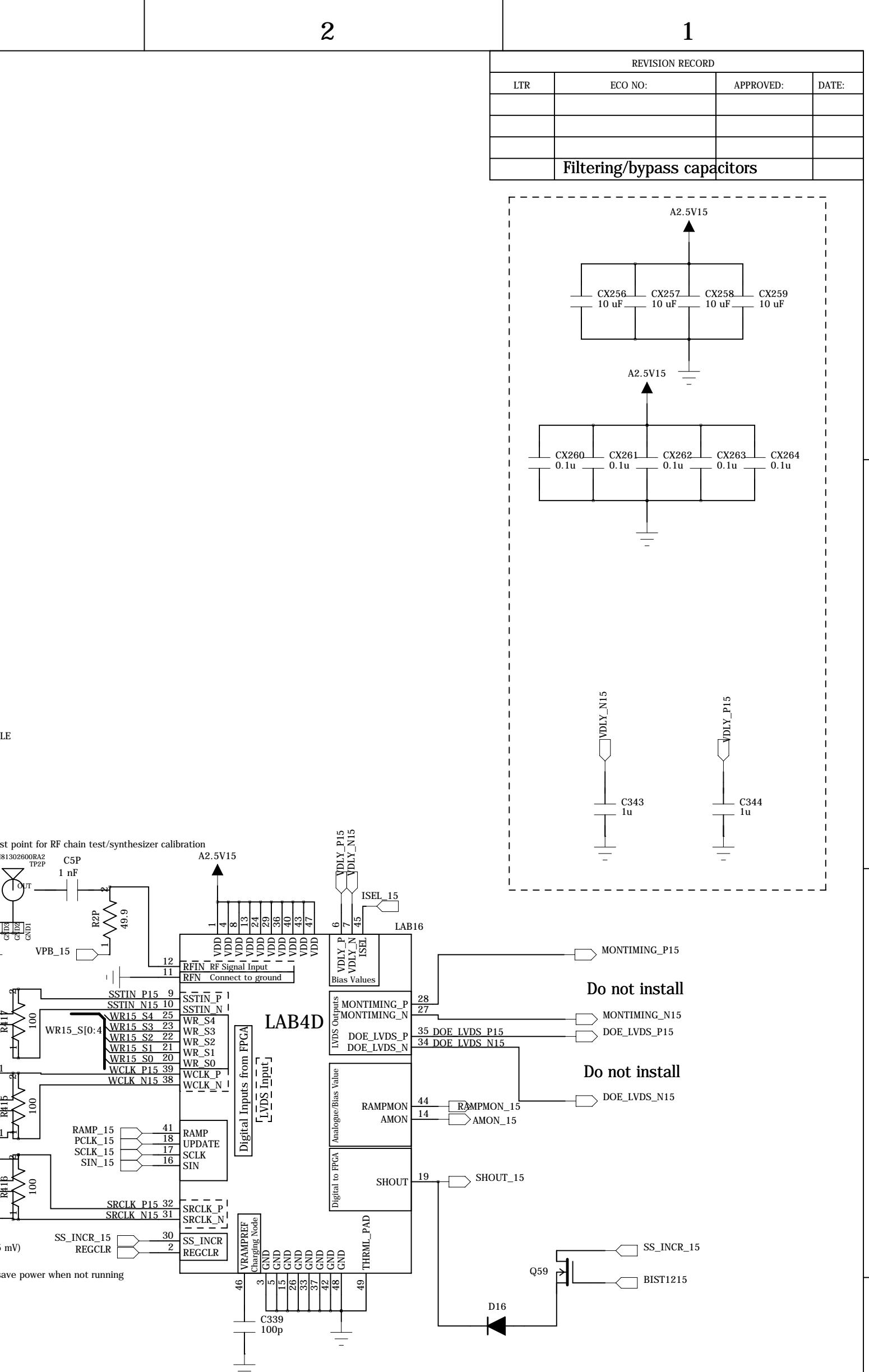
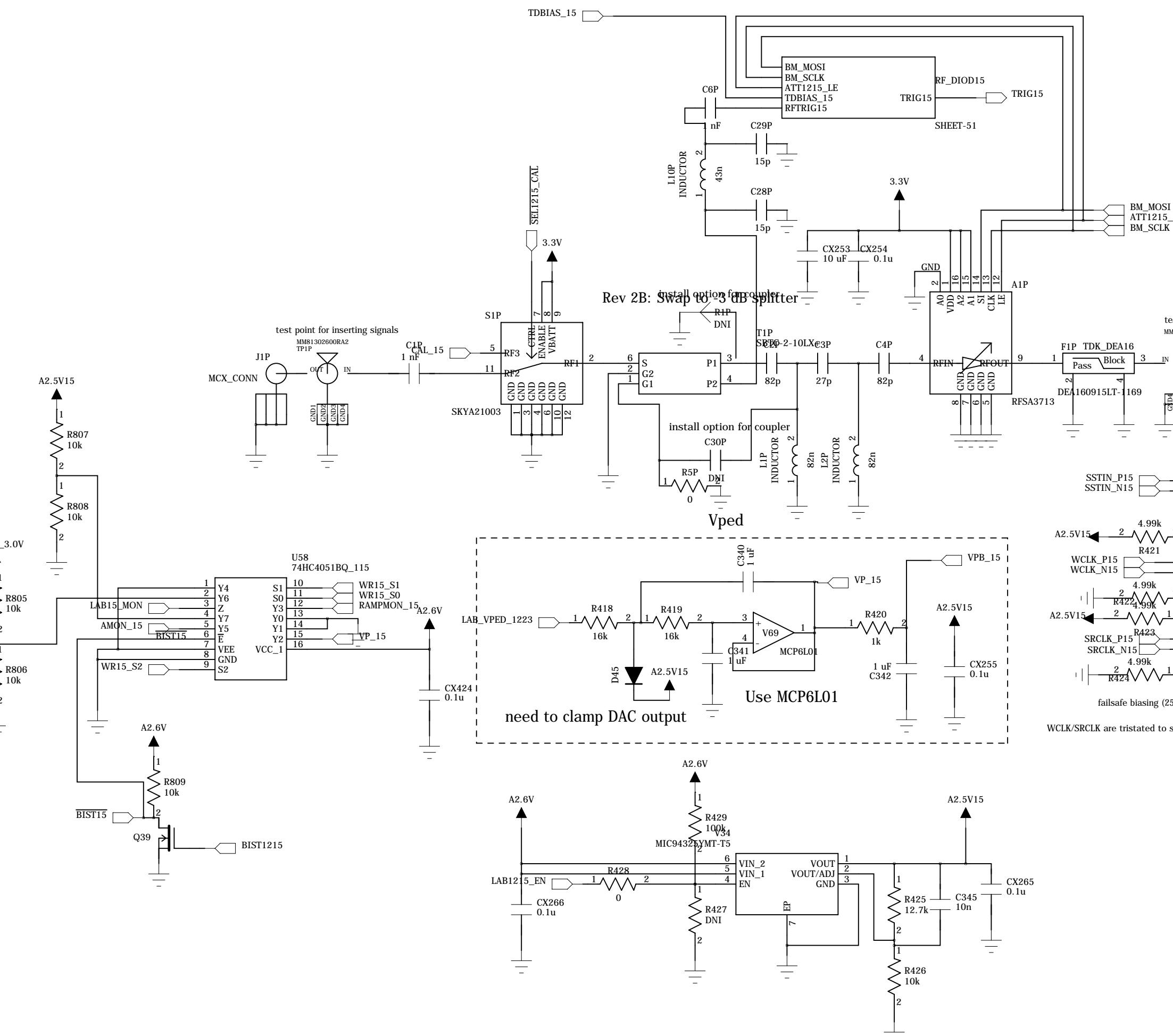
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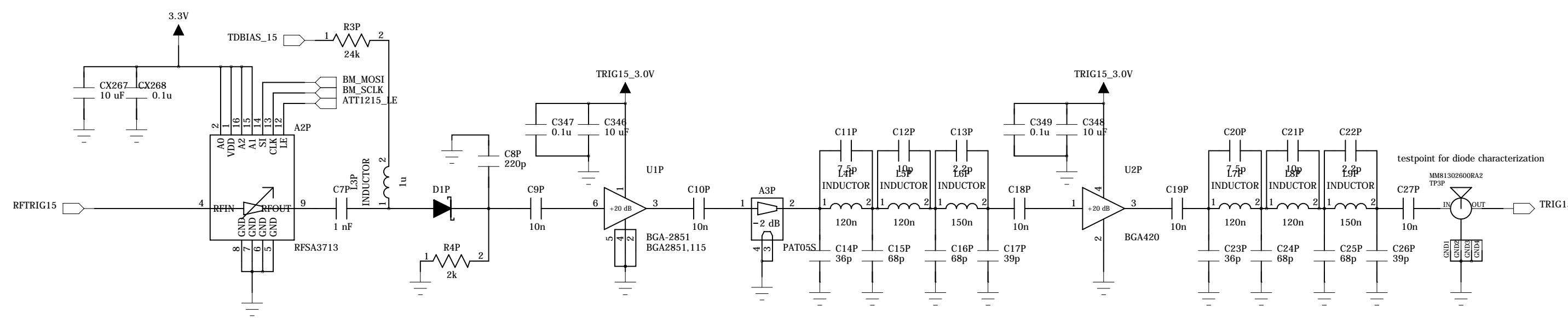
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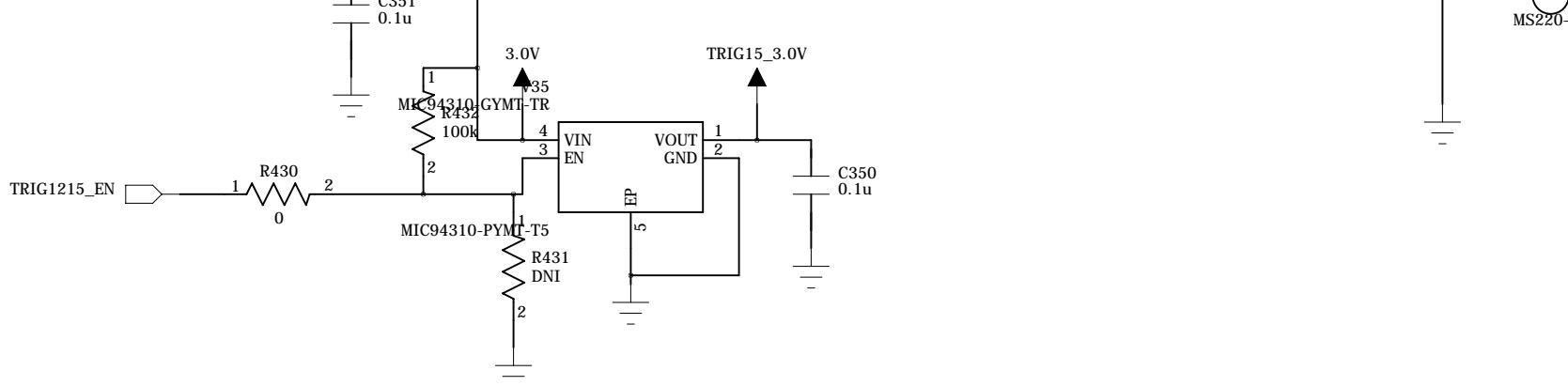
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COMPANY:	Ohio State University		
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CHECKED:	PSA	DATED:	2/27/20
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REVISION RECORD

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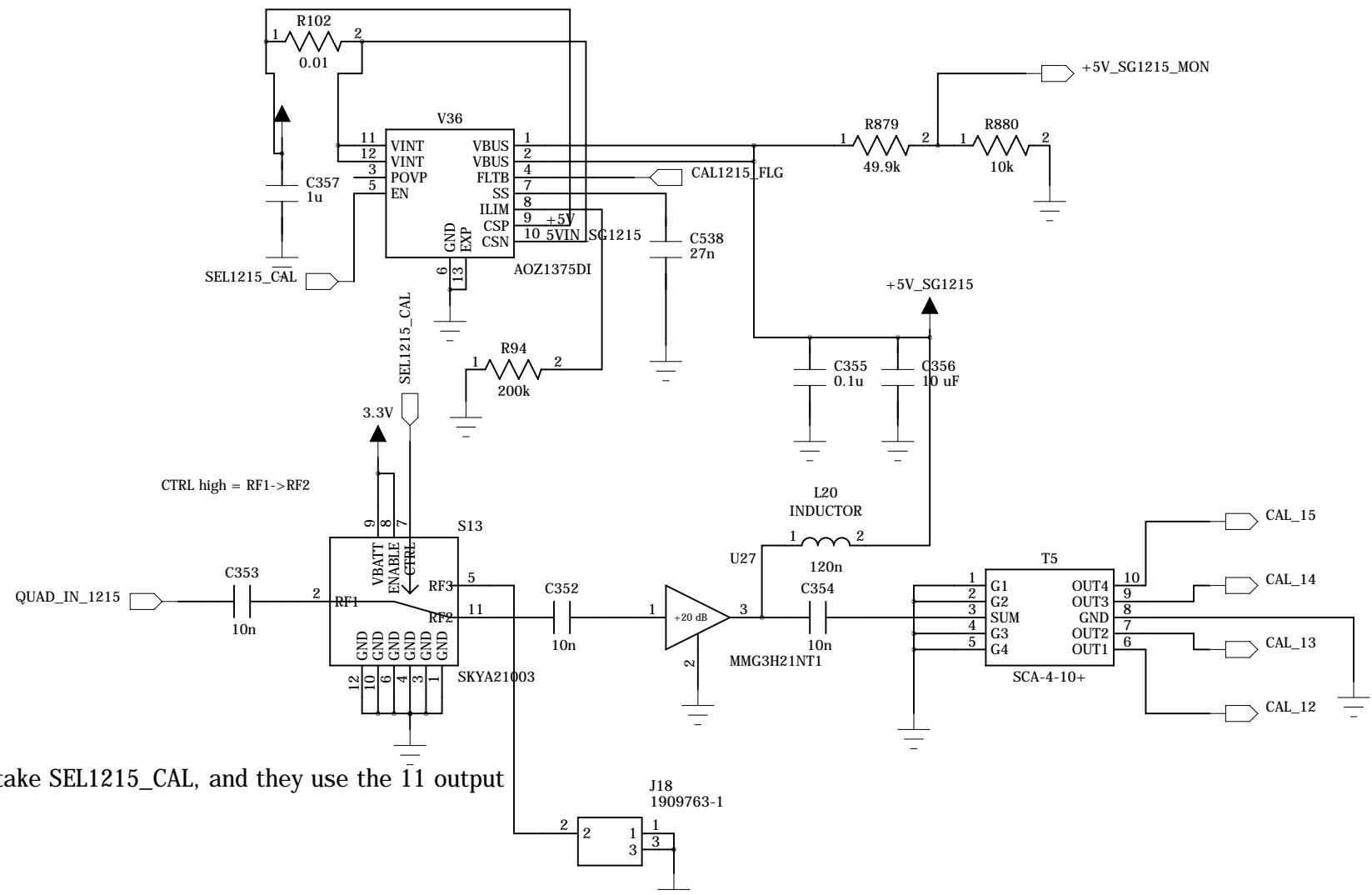
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COMPANY:	Ohio State University		
SHEET:	QUAD_SIG_GENERATOR		
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CHECKED:	PSA	DATED: 2/27/20	
QUALITY CONTROL:	N/A	DATED: N/A	
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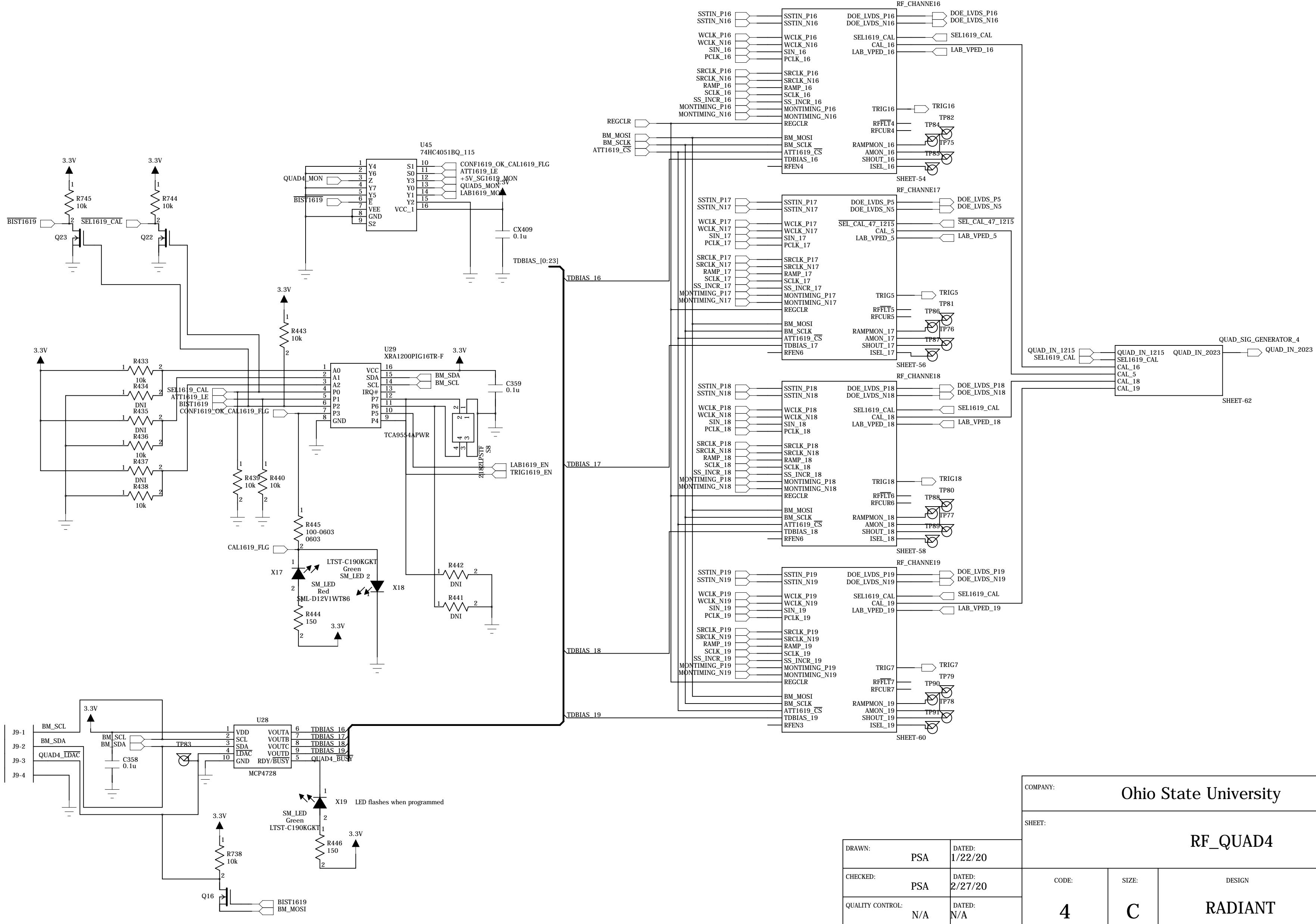
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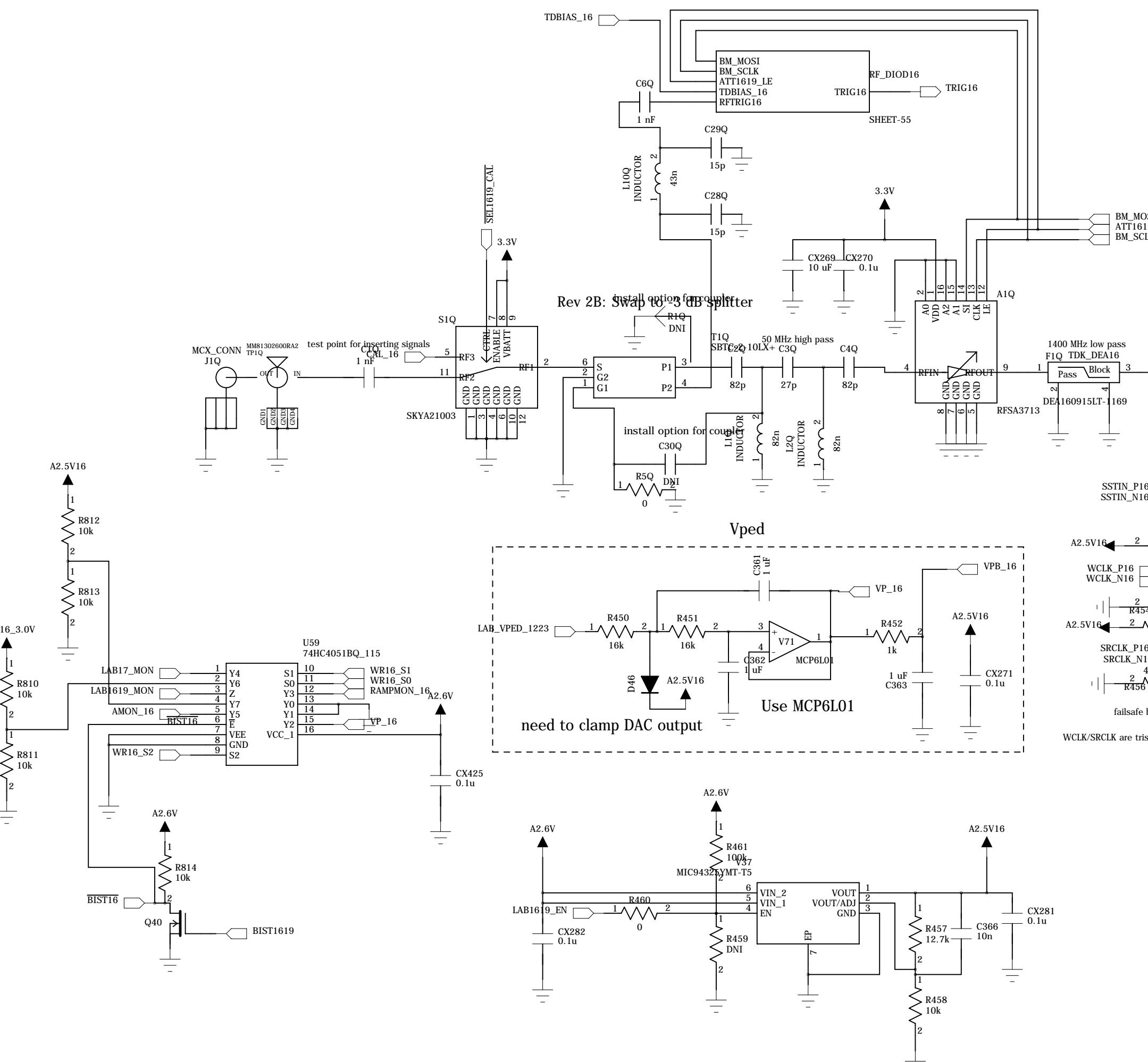
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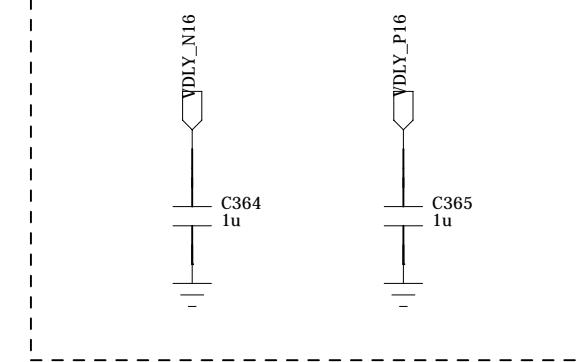
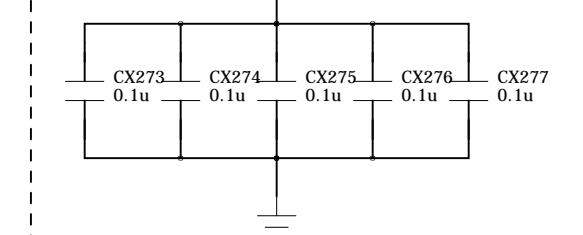
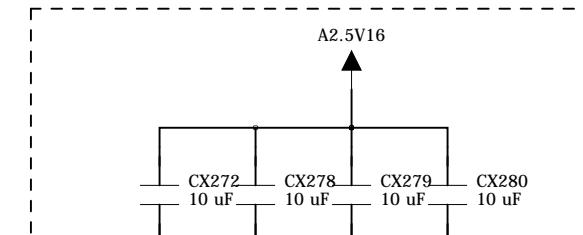
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LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors



COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL16		
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CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
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SCALE:	<Scale>	SHEET:	54 74



Filtering/bypass capacitors

Do not install

MONTIMING_P16

MONTIMING_N16

Do not install

DOE_LVDS_P16

DOE_LVDS_N16

Do not install

AMON_16

RAMPMON_16

SHOUT_16

SS_INCR_16

BIST1619

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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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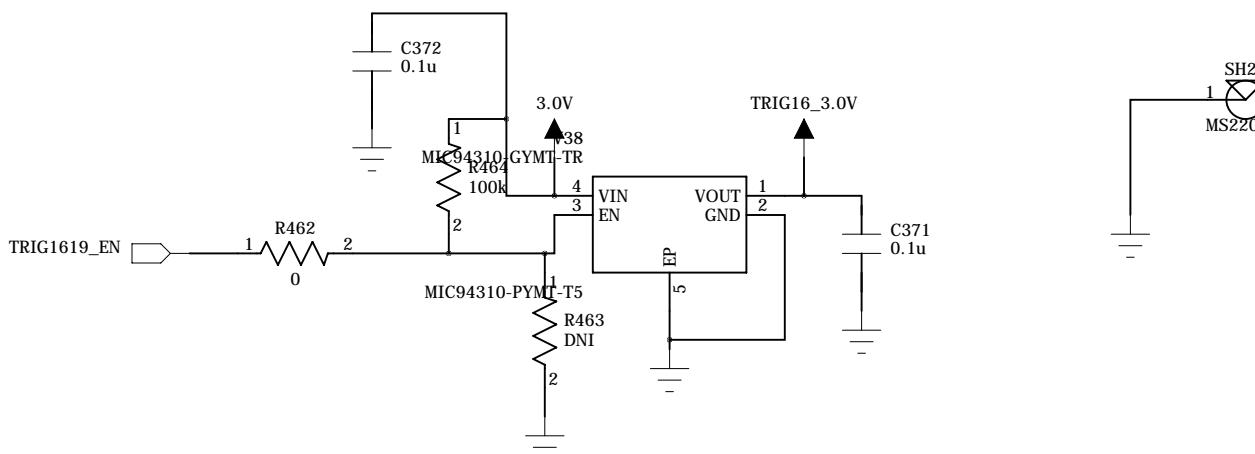
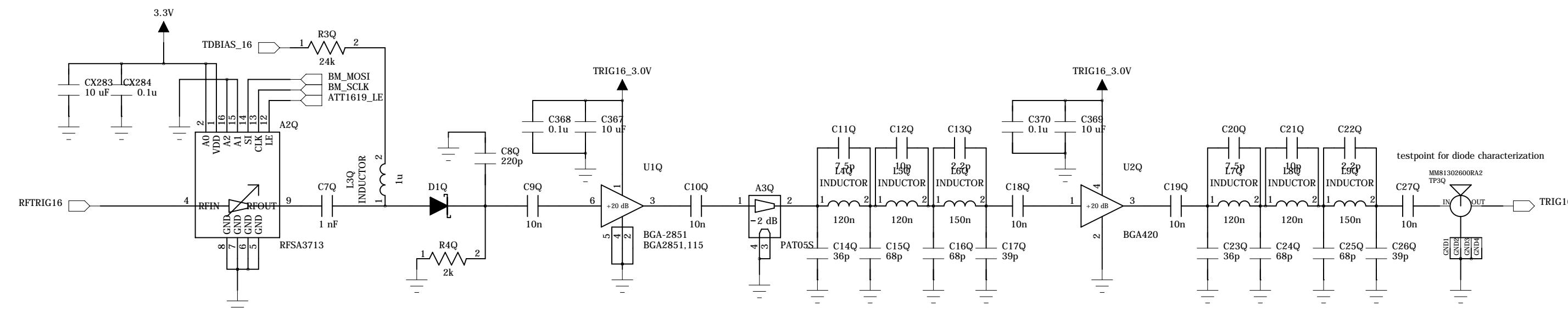
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COMPANY:	Ohio State University		
SHEET:	RF_DIOD16		
DRAWN:	PSA	DATED:	1/22/20
CHECKED:	PSA	DATED:	2/27/20
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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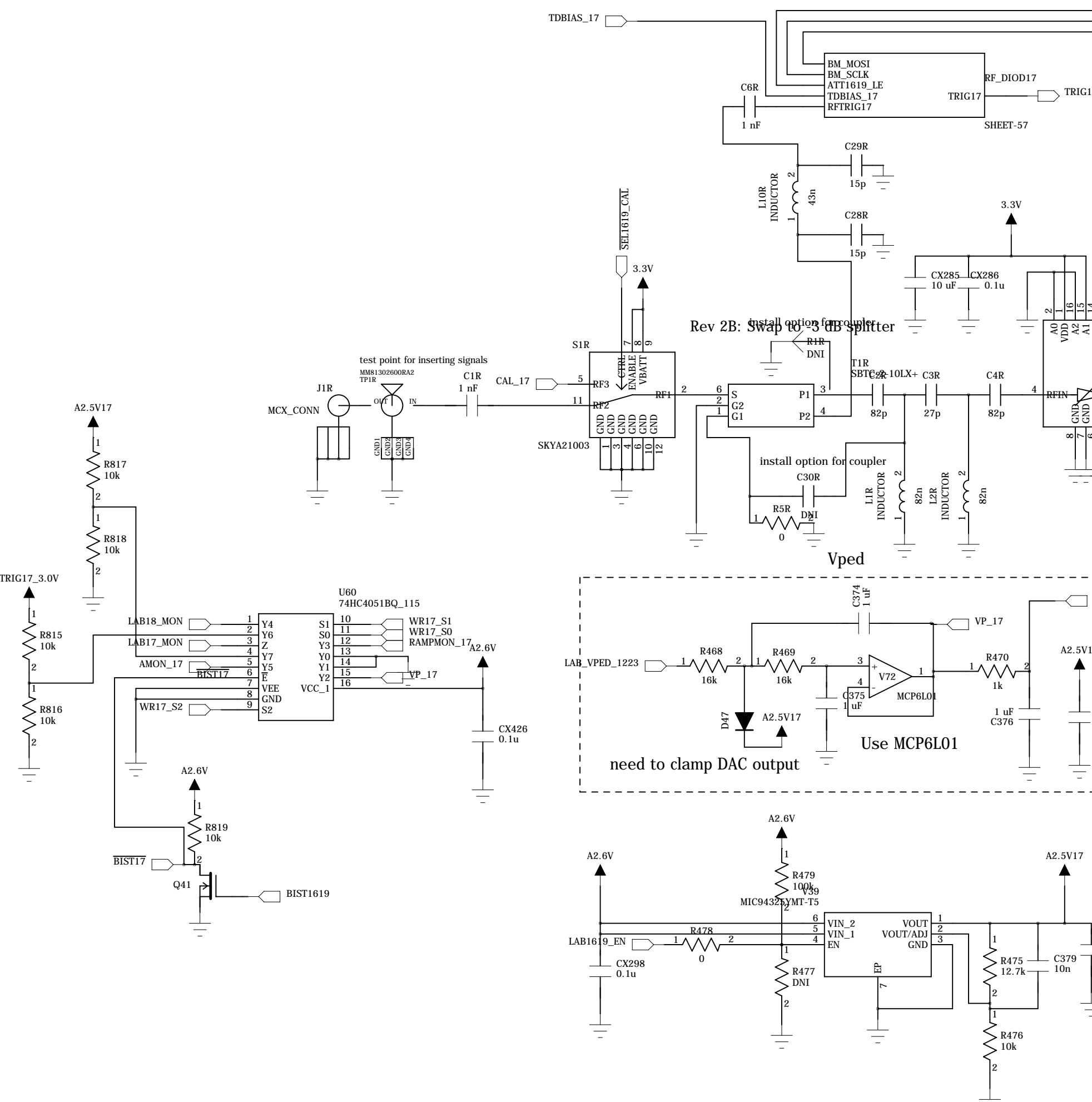
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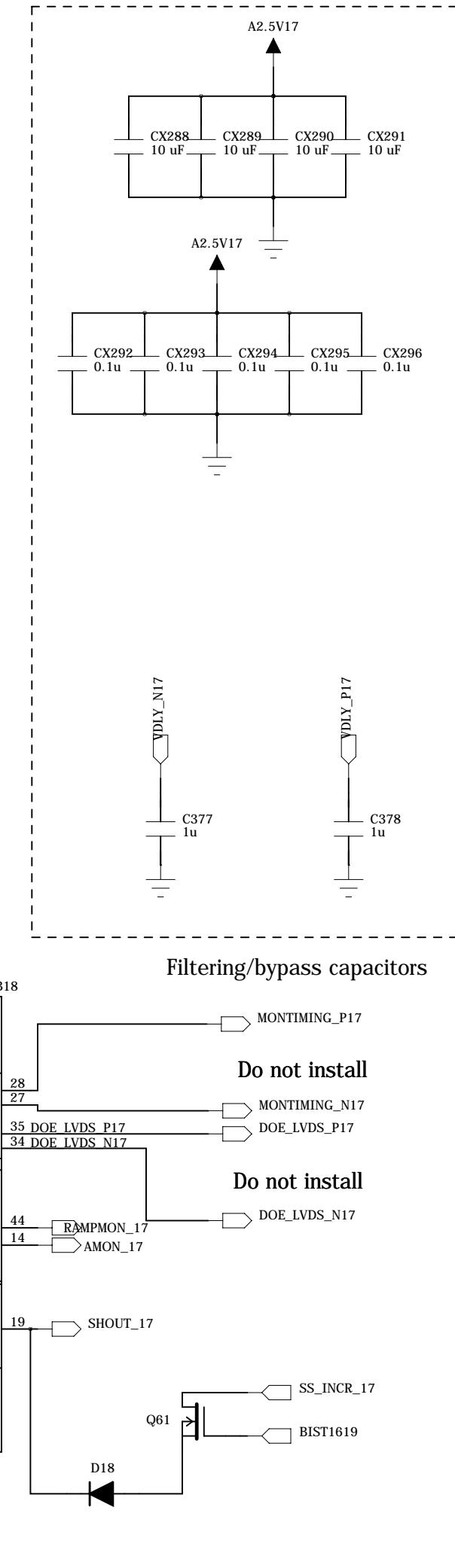
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COMPANY: Ohio State University
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REVISION RECORD

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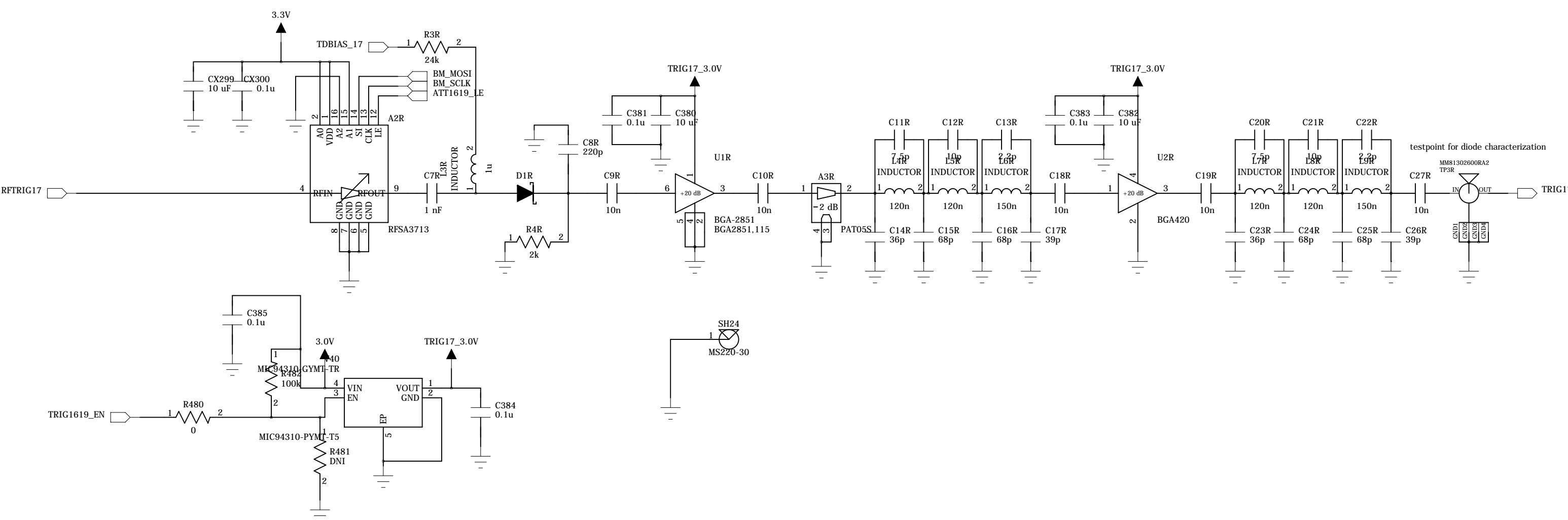
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COMPANY:	Ohio State University		
SHEET:	RF_DIOD17		
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REVISION RECORD

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Filtering/bypass capacitors

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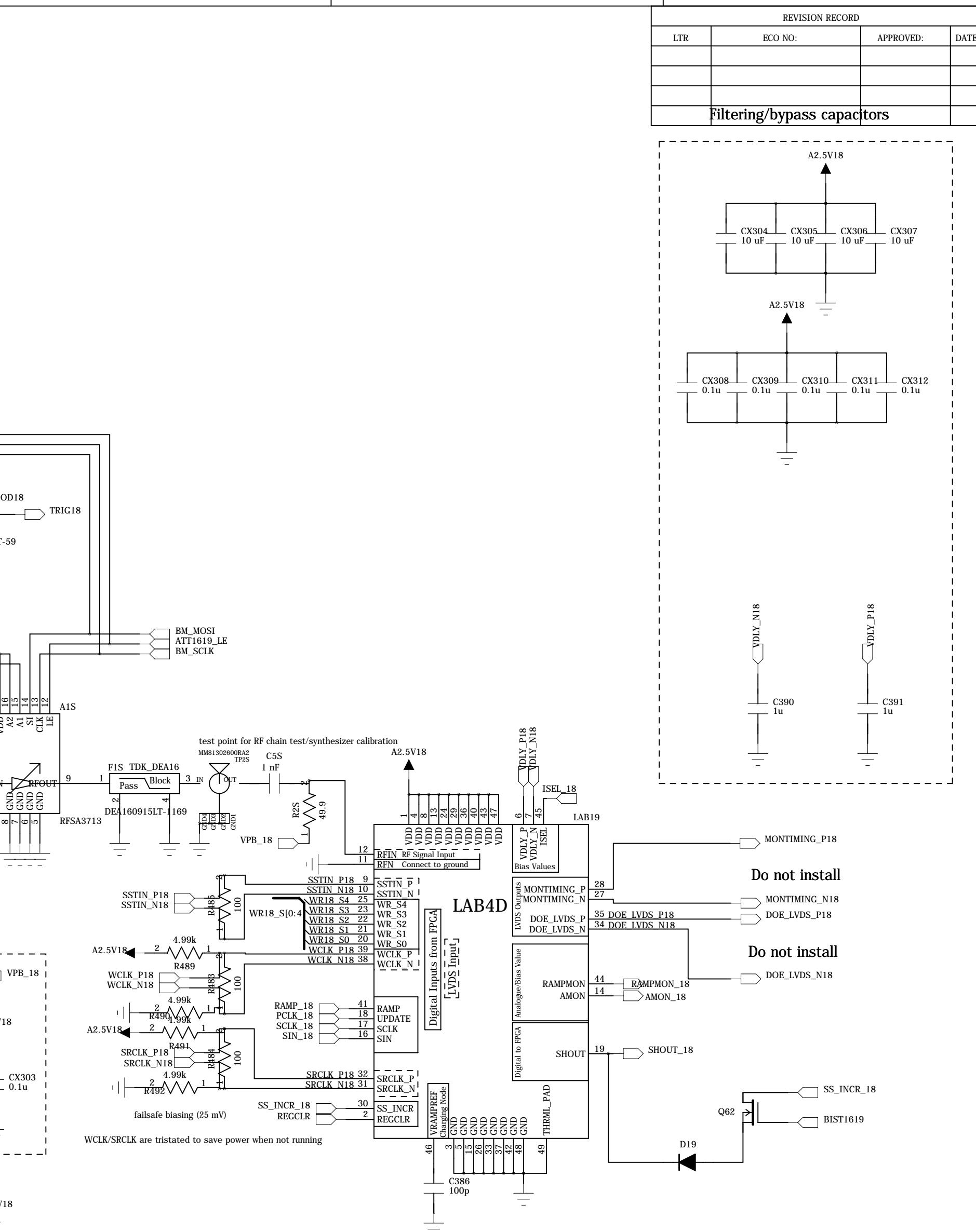
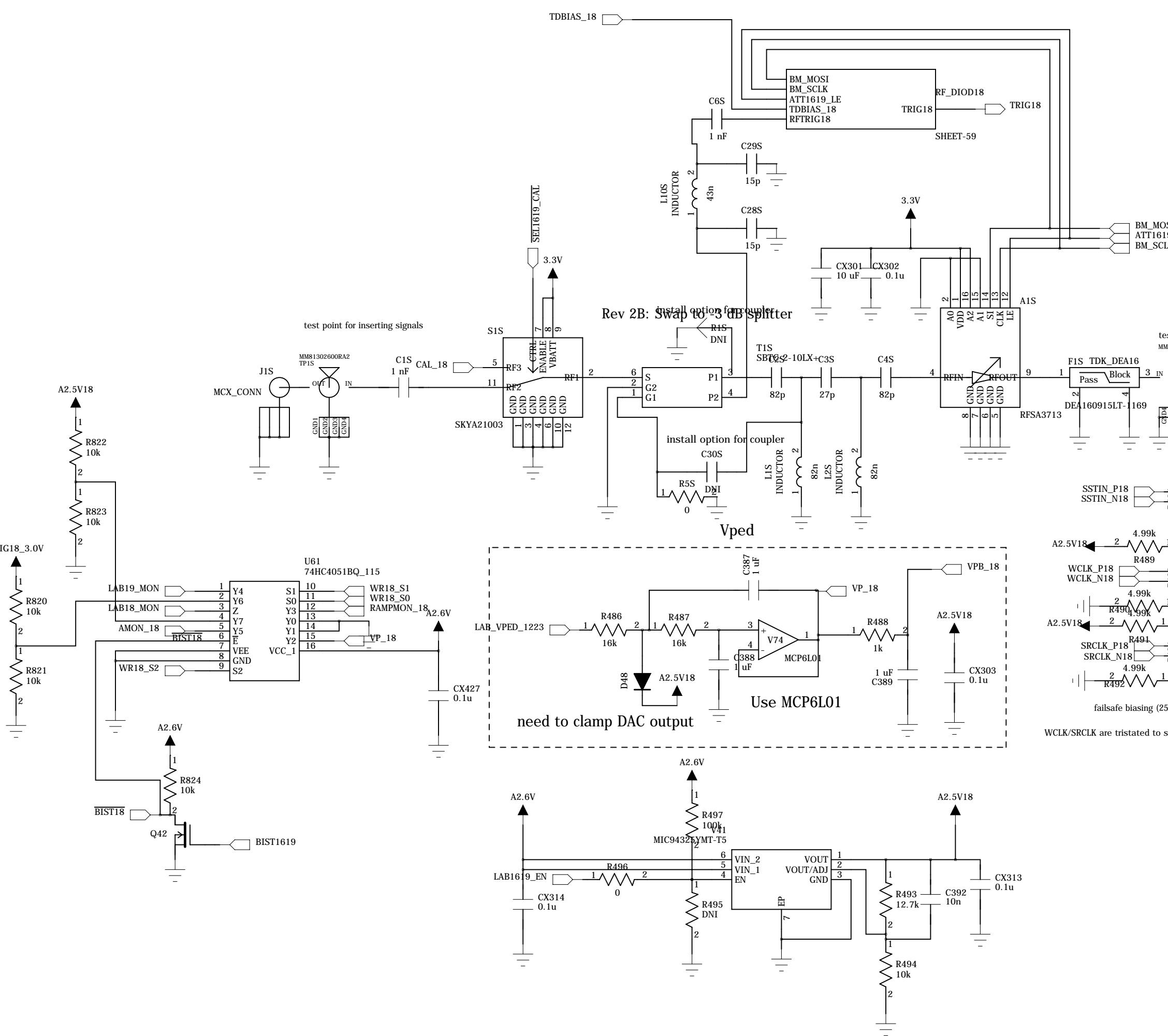
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CHECKED:	PSA	DATED:	2/27/20
QUALITY CONTROL:	N/A	DATED:	N/A
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COMPANY: Ohio State University

SHEET: RF_CHANNEL18

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REVISION RECORD

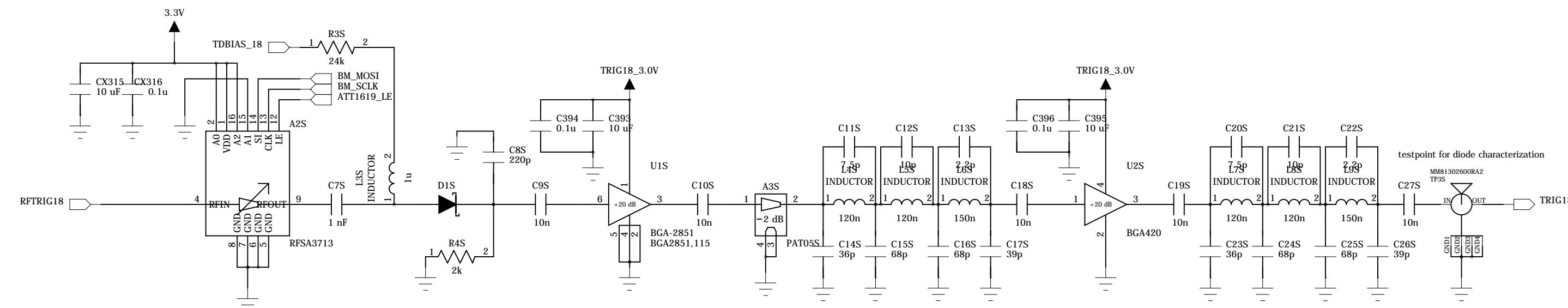
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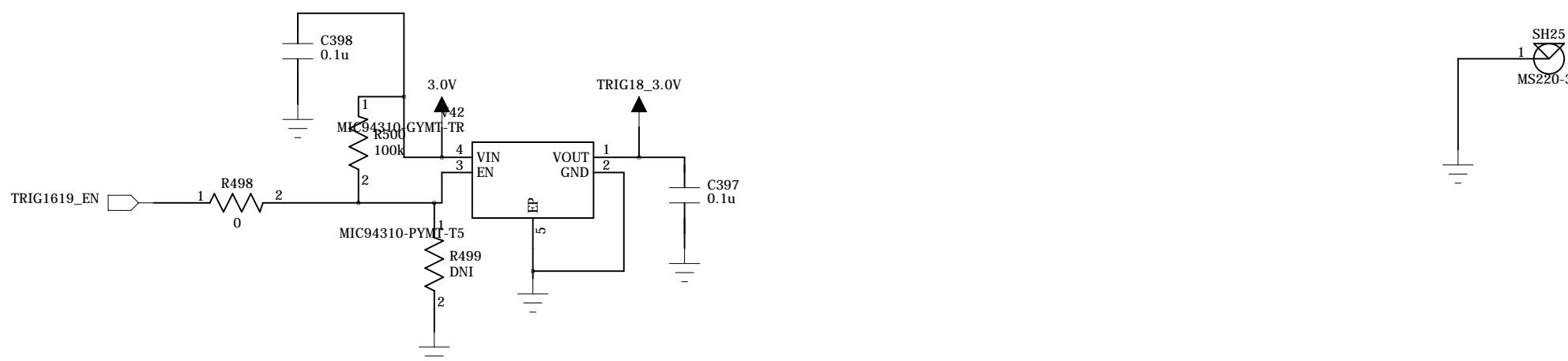
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COMPANY:	Ohio State University		
SHEET:	RF_DIOD18		
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CHECKED:	PSA	DATED:	2/27/20
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REVISION RECORD

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Filtering/bypass capacitors

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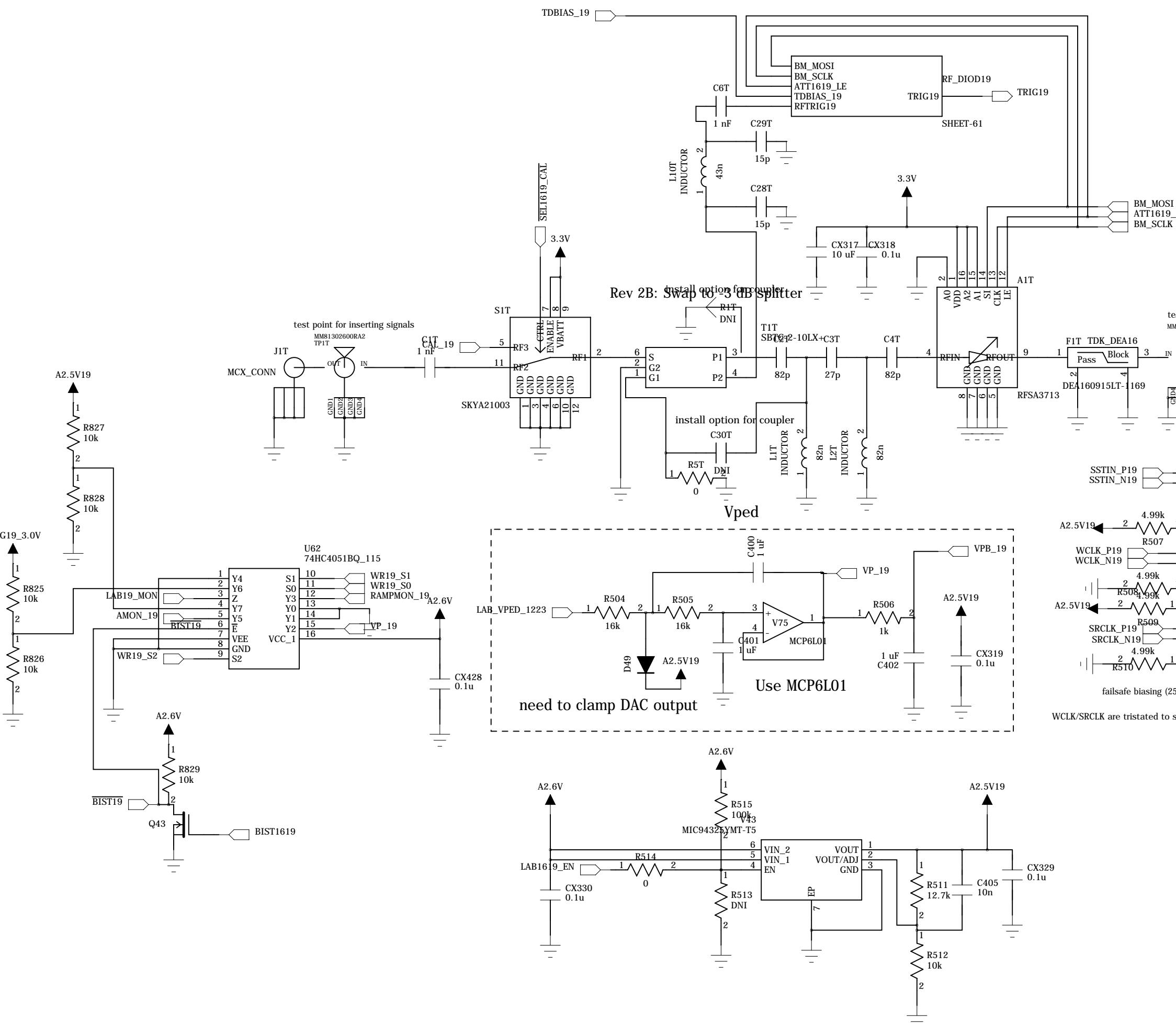
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CHECKED:	PSA	DATED:	2/27/20
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COMPANY: Ohio State University

SHEET: RF_CHANNEL19

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SCALE: <Scale> SHEET: 60 74

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REVISION RECORD

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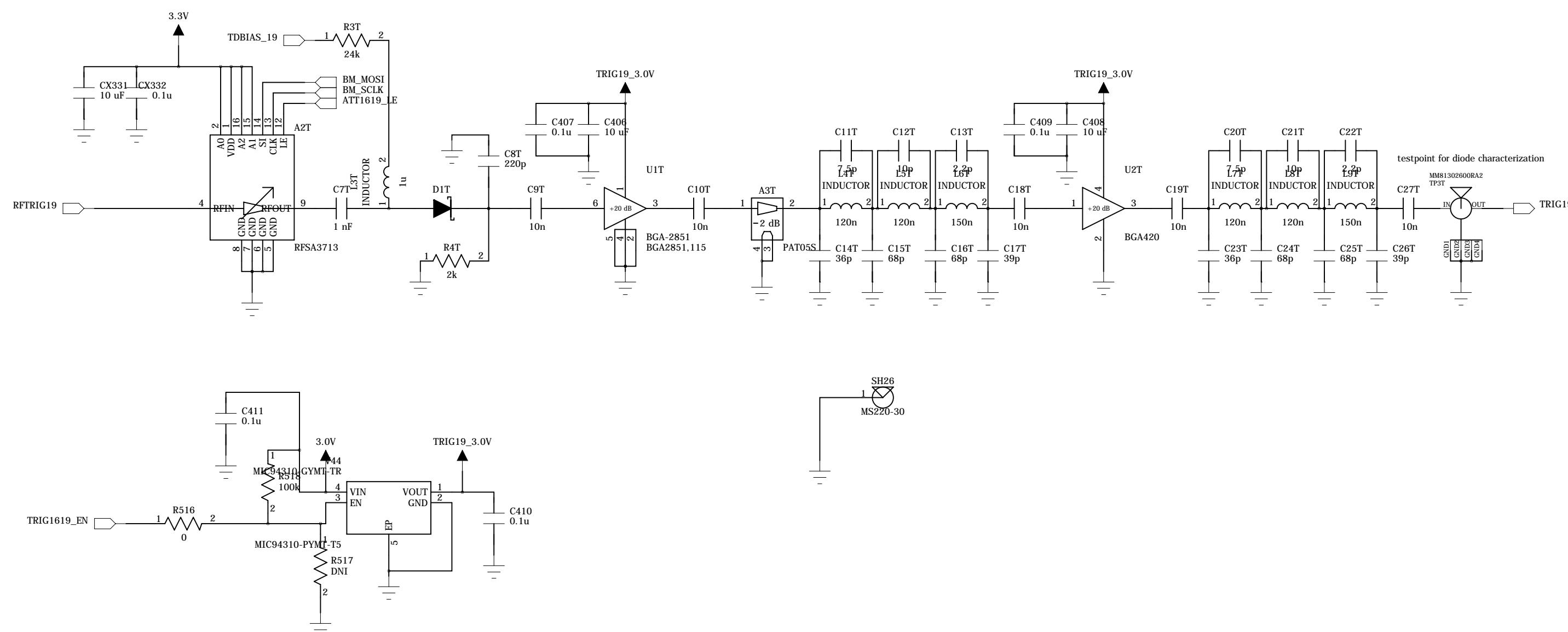
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SHEET:	RF_DIOD19		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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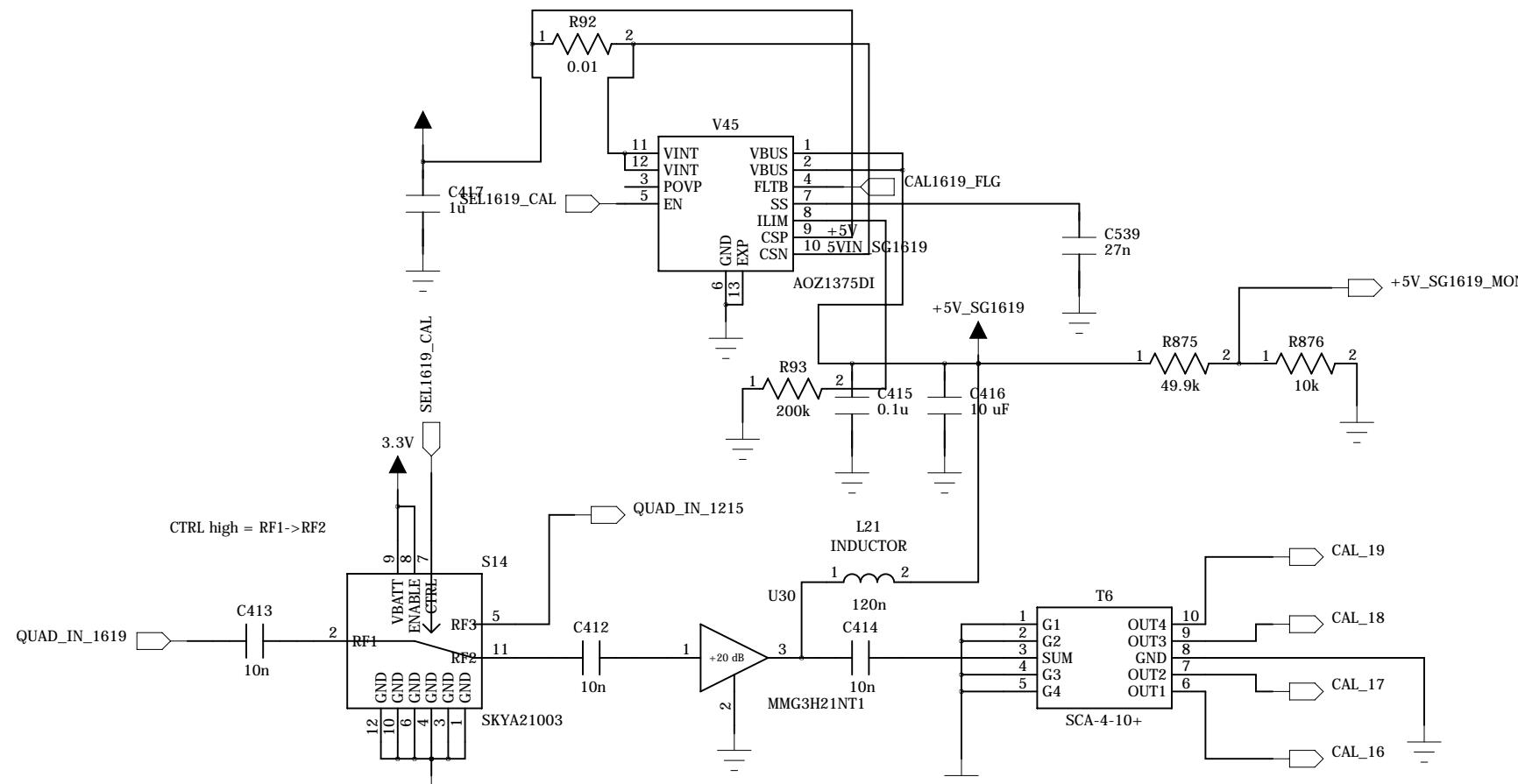
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COMPANY:		Ohio State University		
SHEET:		QUAD_SIG_GENERATOR		
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CHECKED:	PSA	DATED:	2/27/20	
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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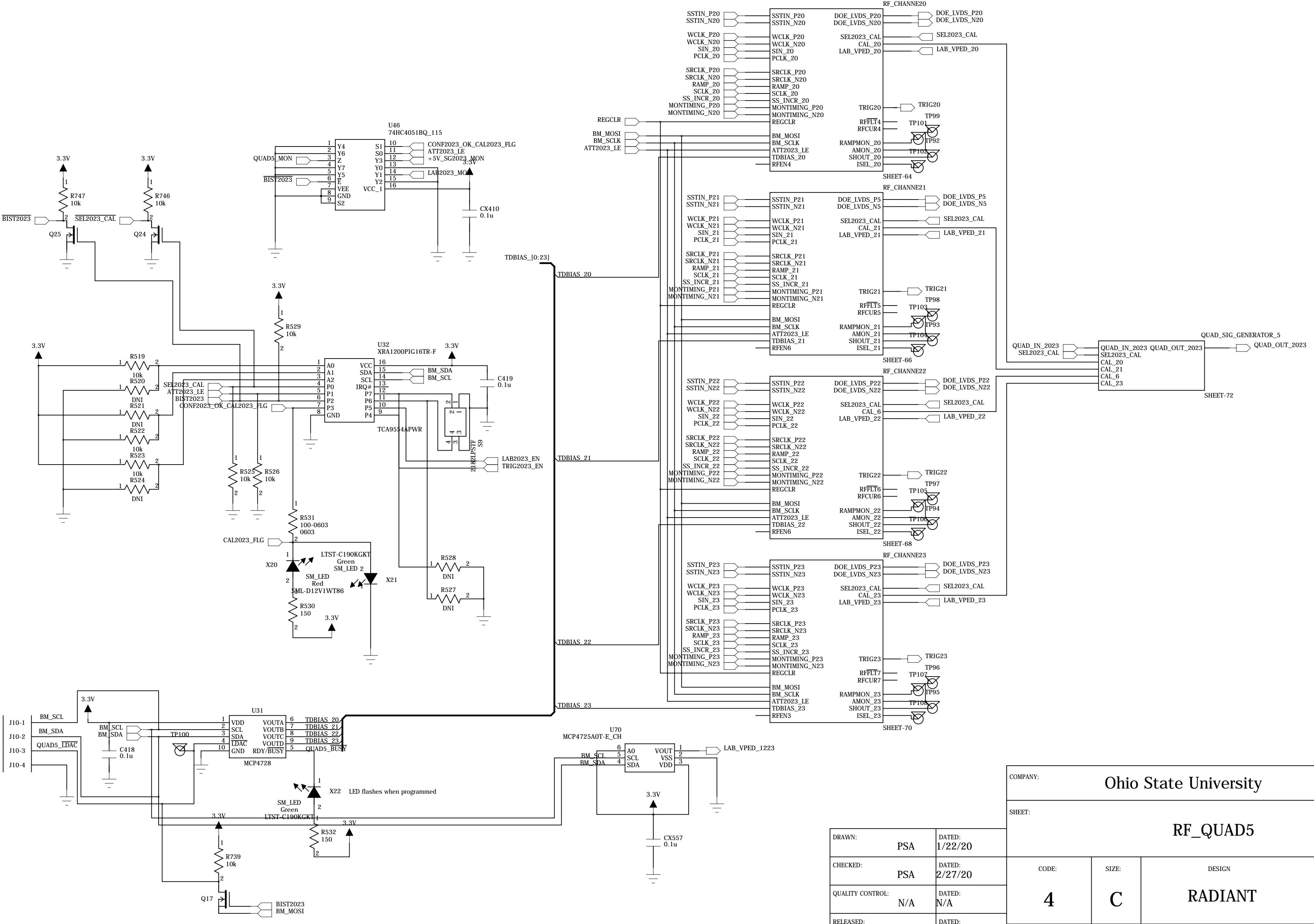
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COMPANY:	Ohio State University		
SHEET:	RF_QUAD5		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors

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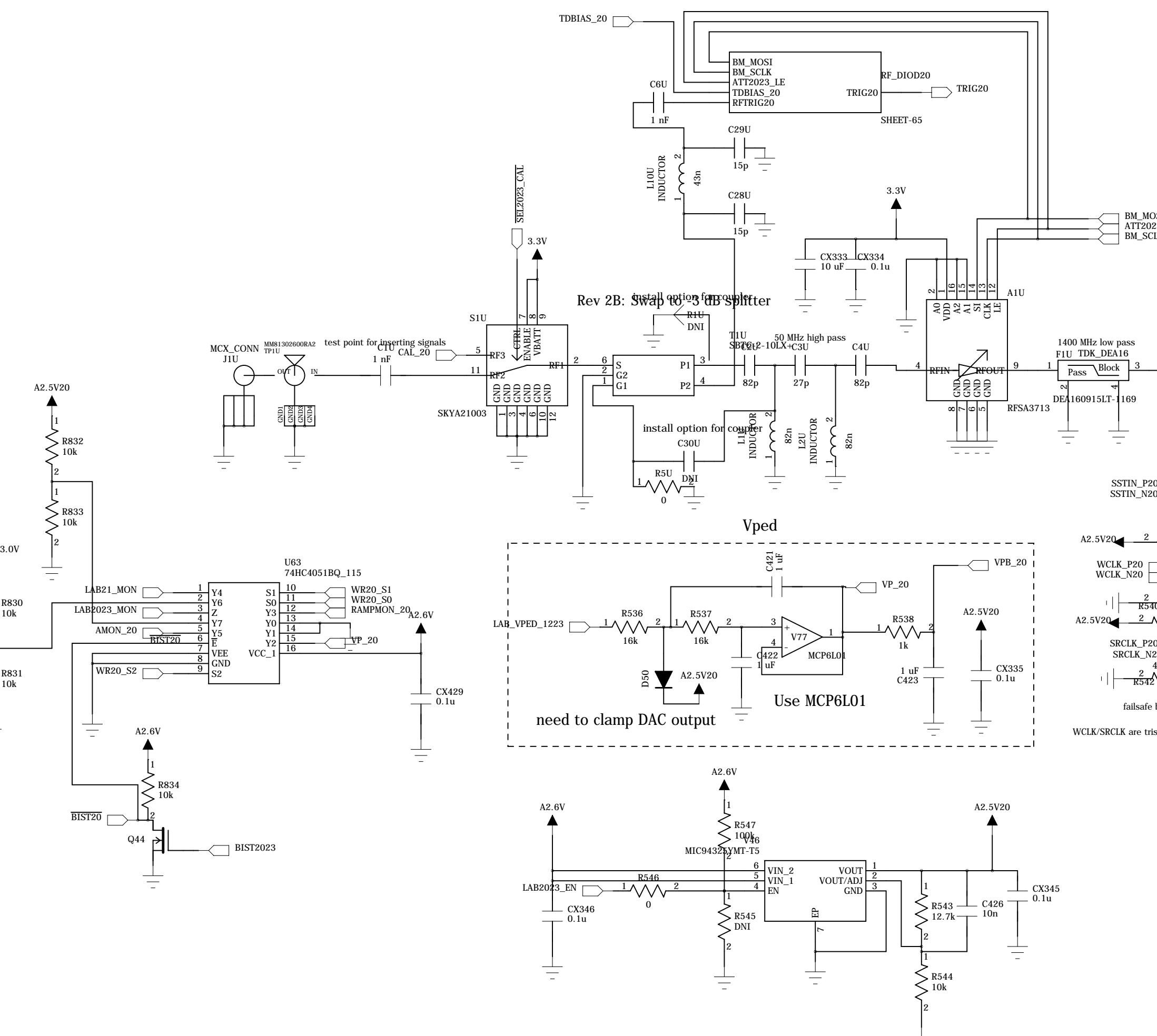
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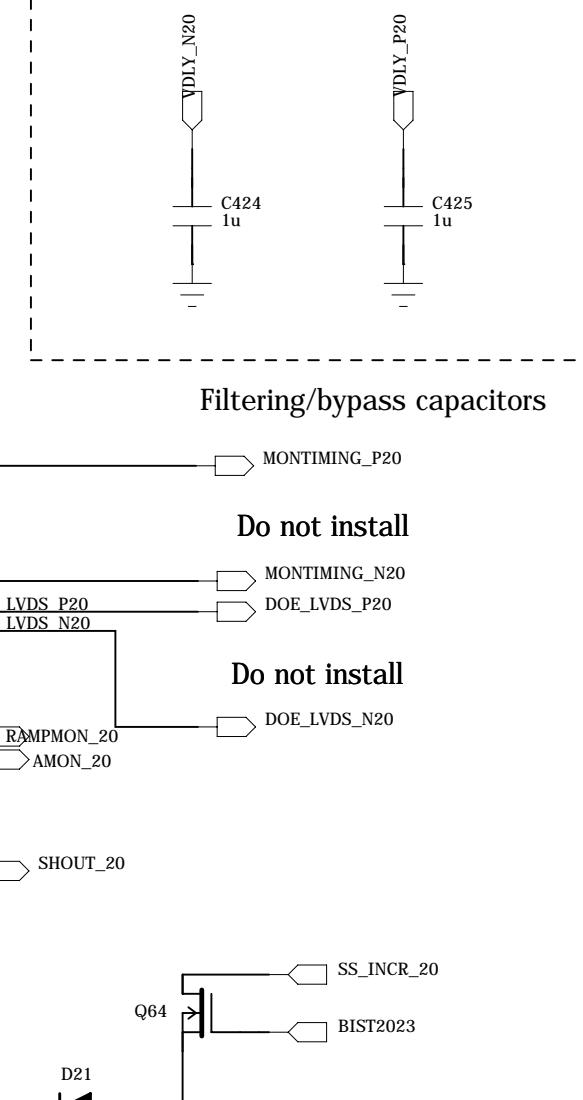
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SHEET:	RF_CHANNEL20		
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4	C	RADIANT	A
SCALE: <Scale>	SHEET: 64	74	



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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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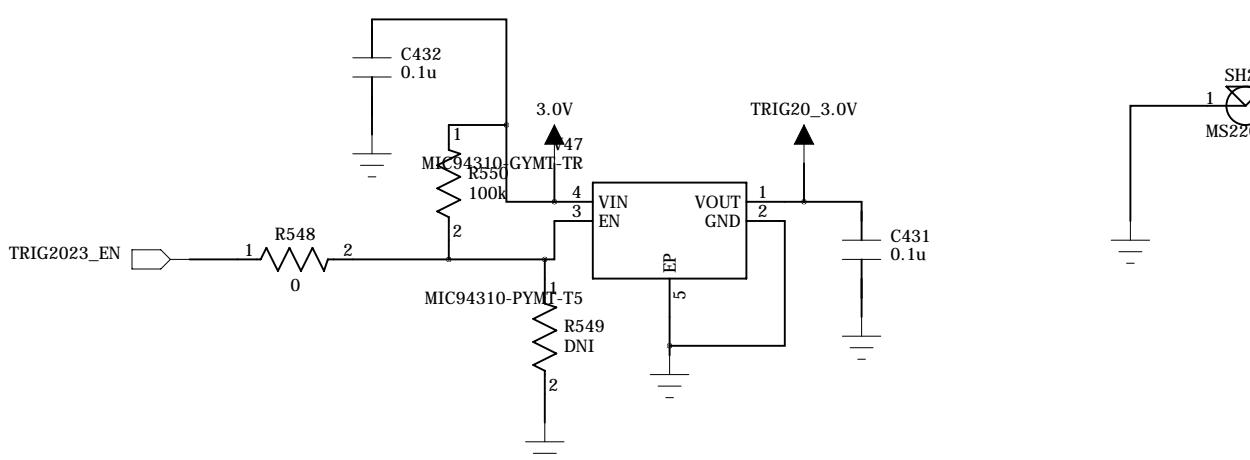
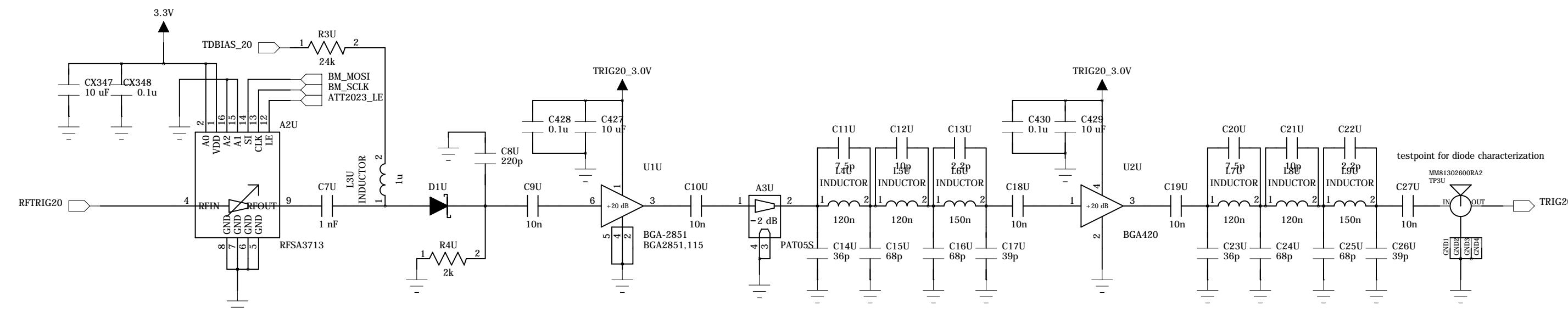
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SHEET:	RF_DIOD20		
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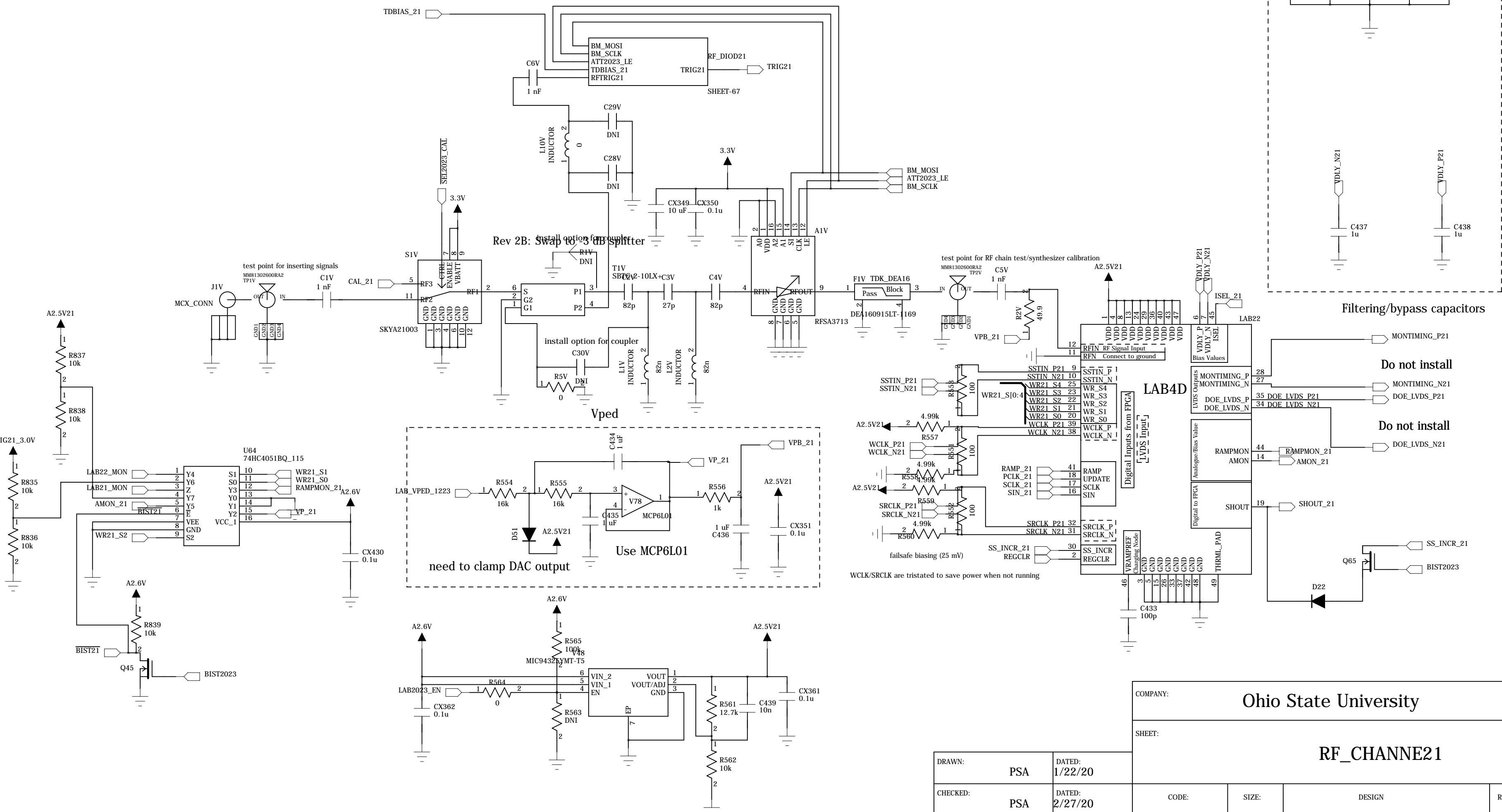
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

Filtering/bypass capacitors



COMPANY:	Ohio State University		
SHEET:	RF_CHANNEL21		
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LTR	ECO NO:	APPROVED:	DATE:

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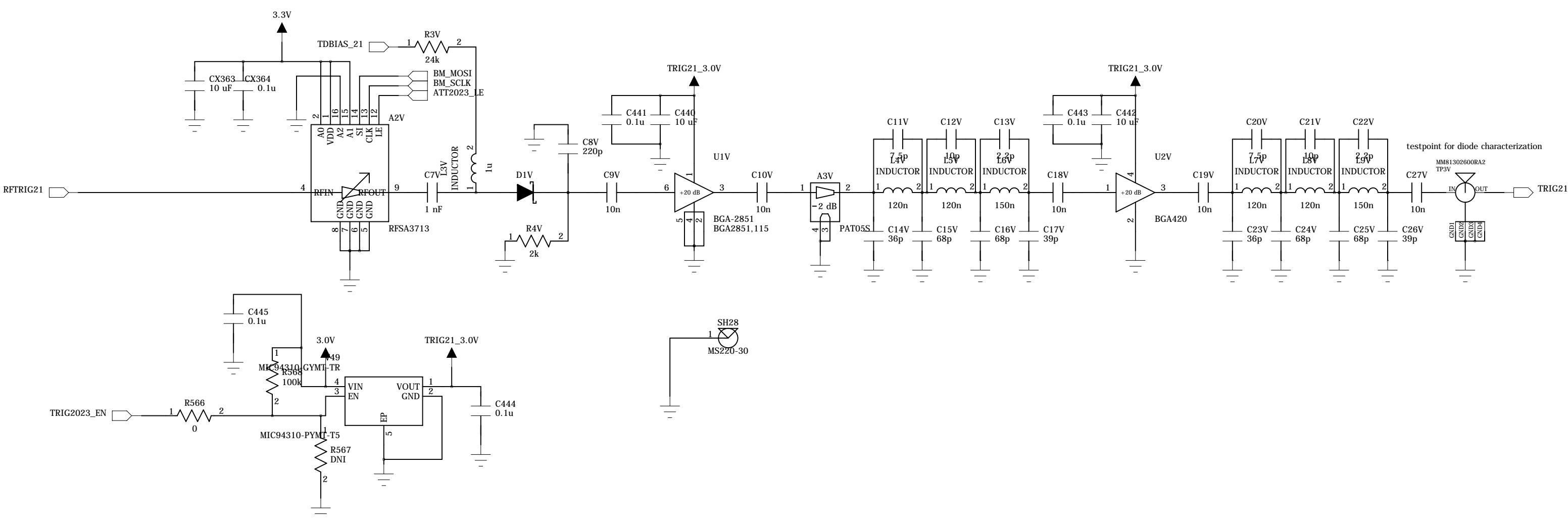
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COMPANY:

Ohio State University

SHEET:

RF_DIOD21

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REVISION RECORD

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Filtering/bypass capacitors

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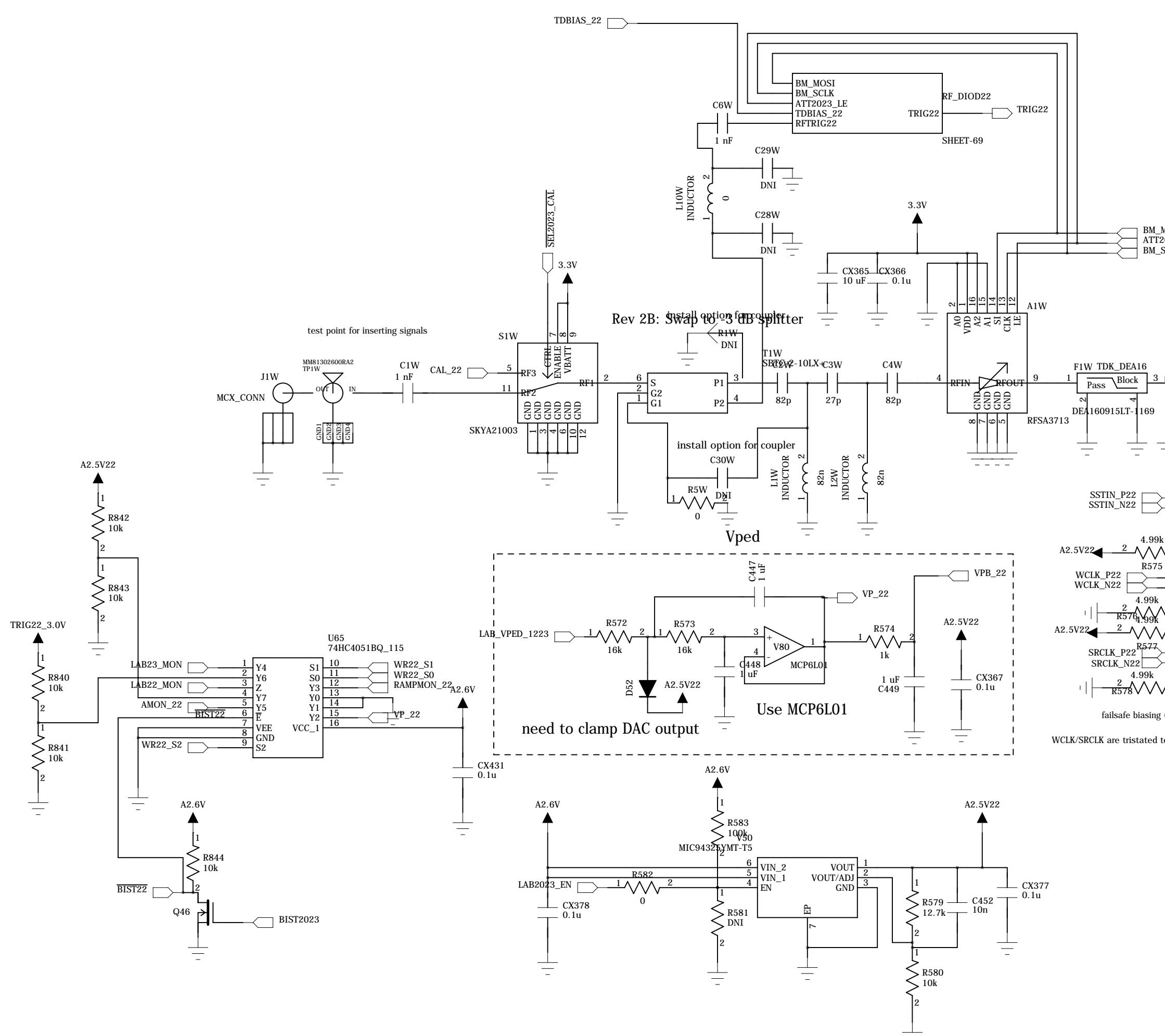
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COMPANY: Ohio State University

SHEET: RF_CHANNEL22

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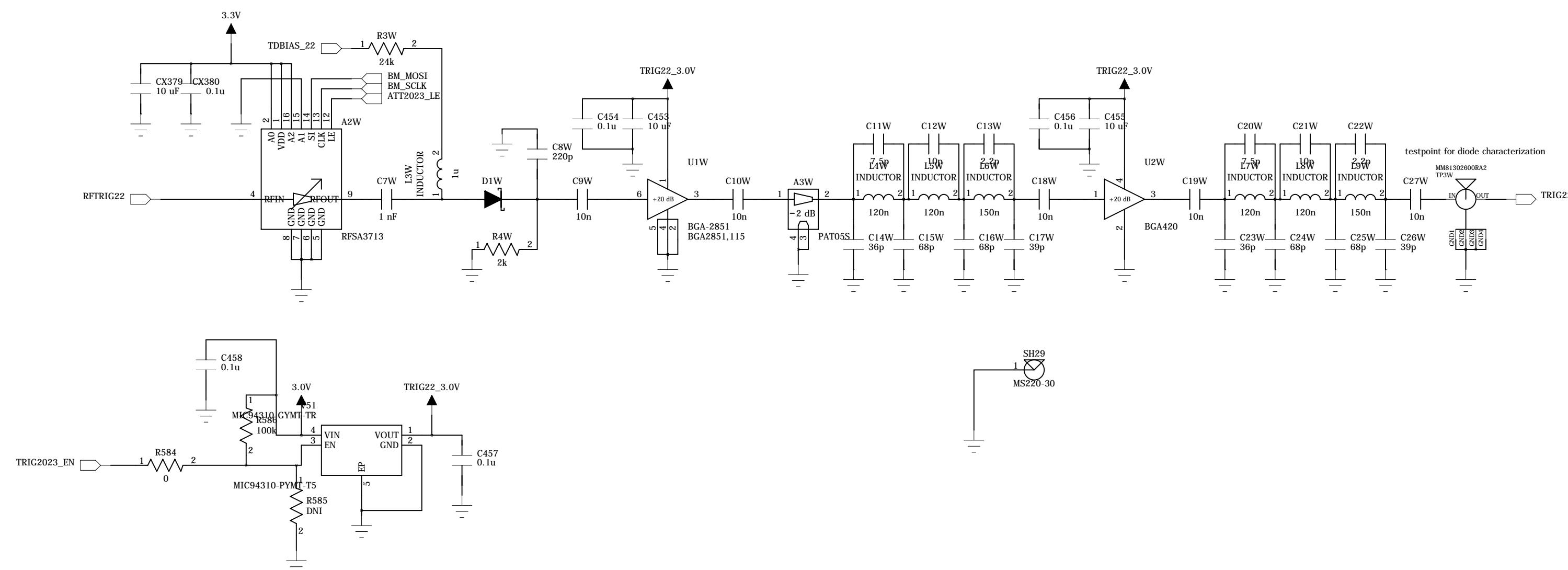
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COMPANY:	Ohio State University		
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REVISION RECORD

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Filtering/bypass capacitors

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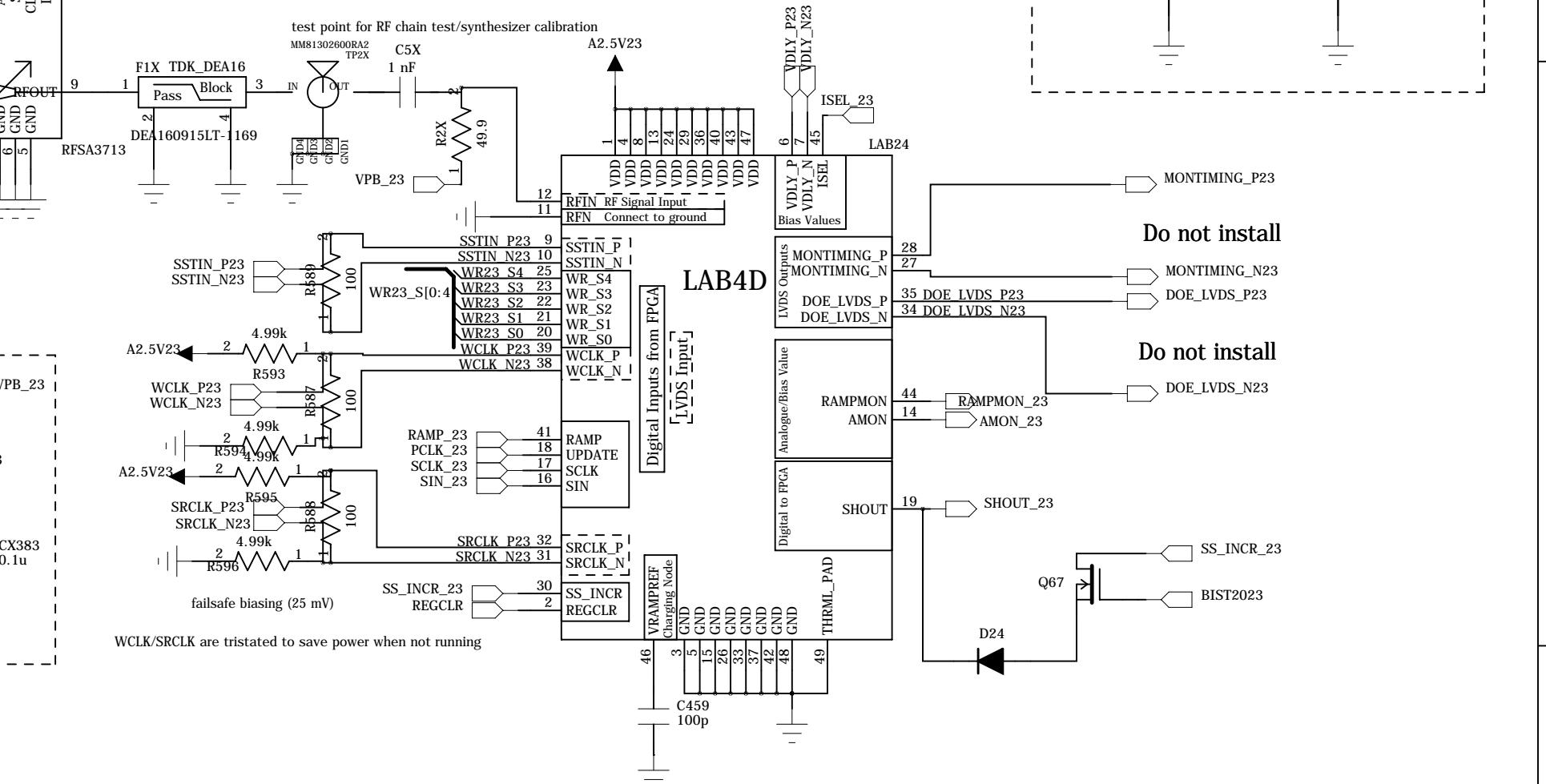
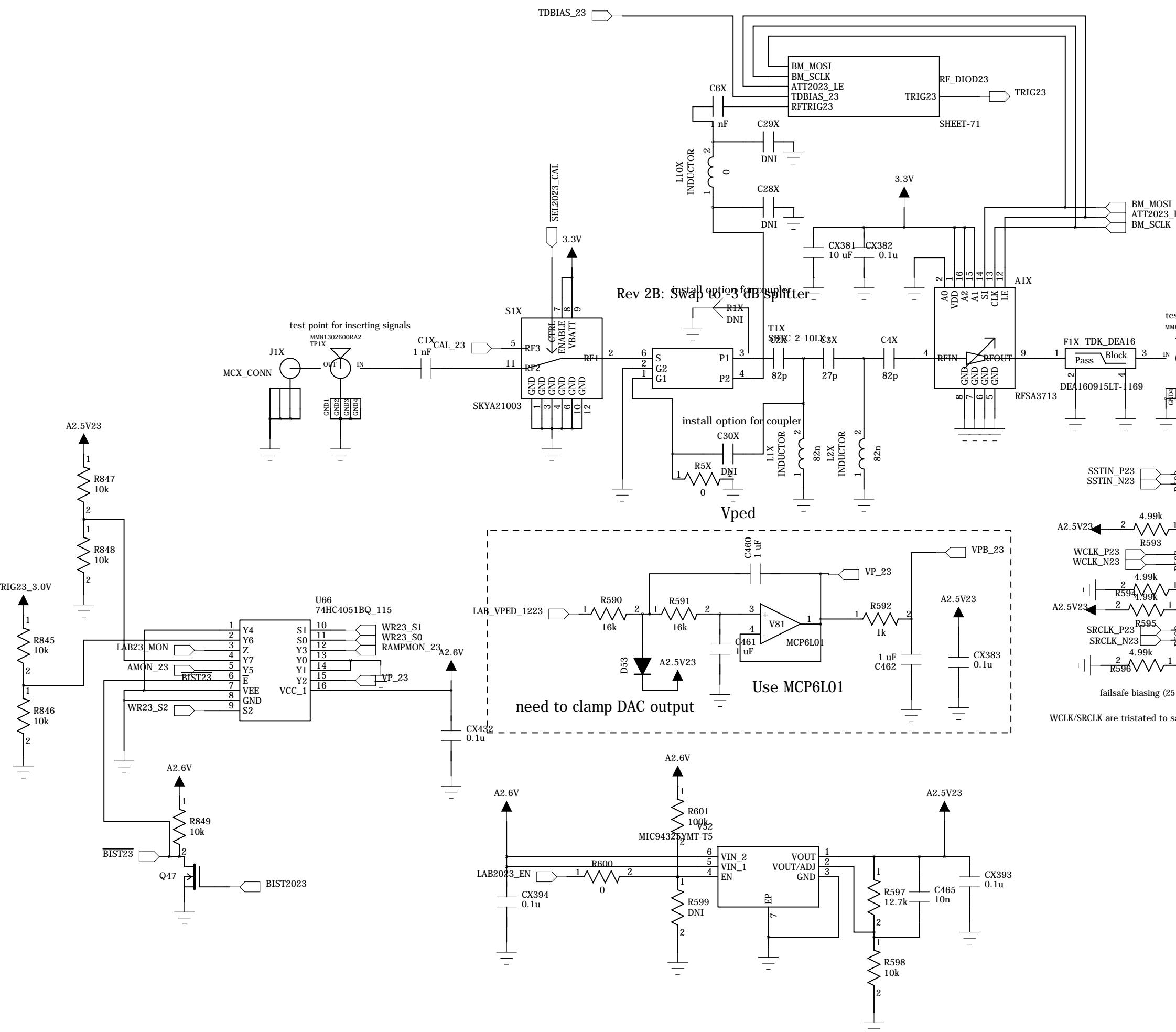
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COMPANY:	Ohio State University		
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REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:

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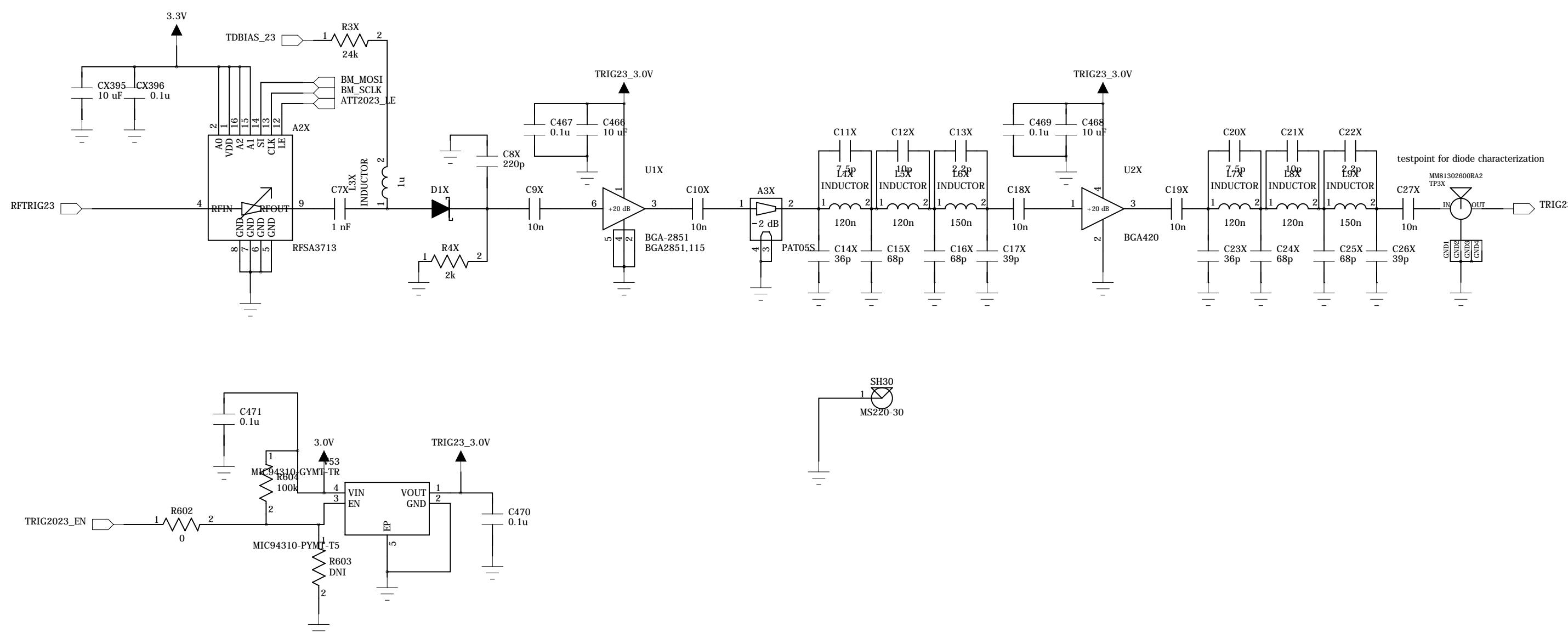
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COMPANY:	Ohio State University		
SHEET:	RF_DIOD23		
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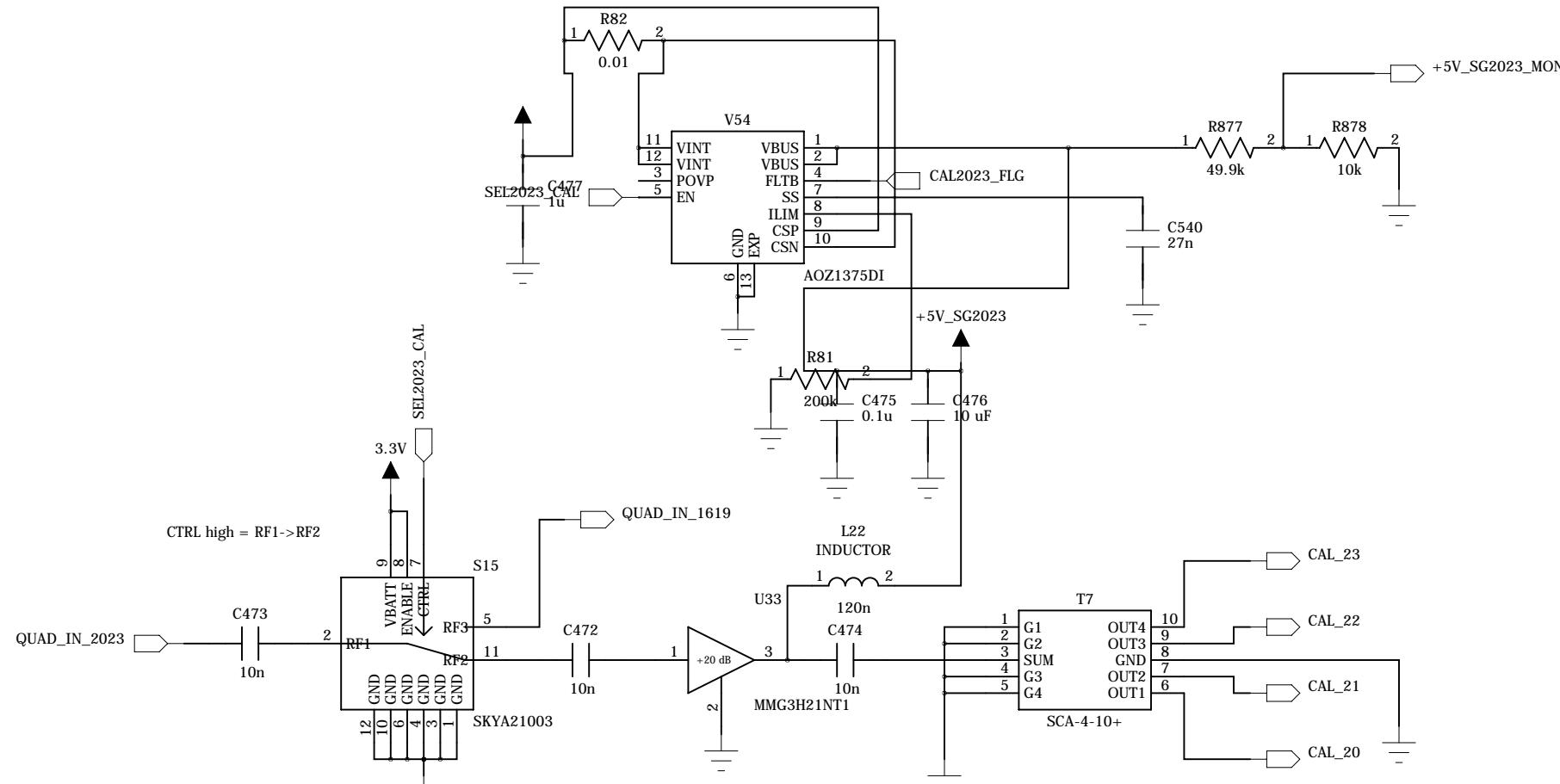
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COMPANY:	Ohio State University		
SHEET:	QUAD_SIG_GENERATOR		
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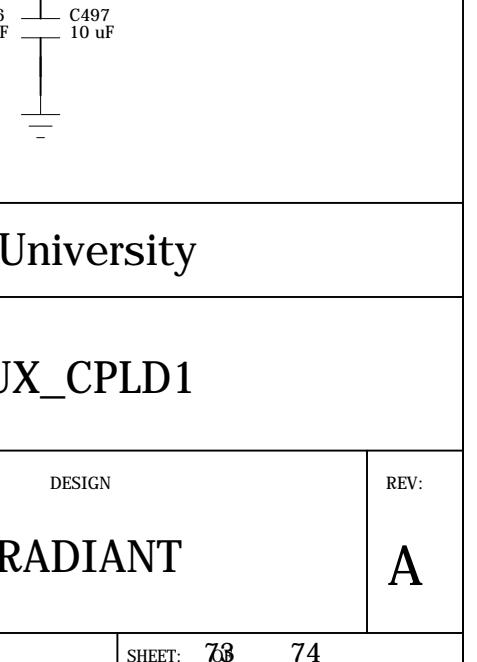
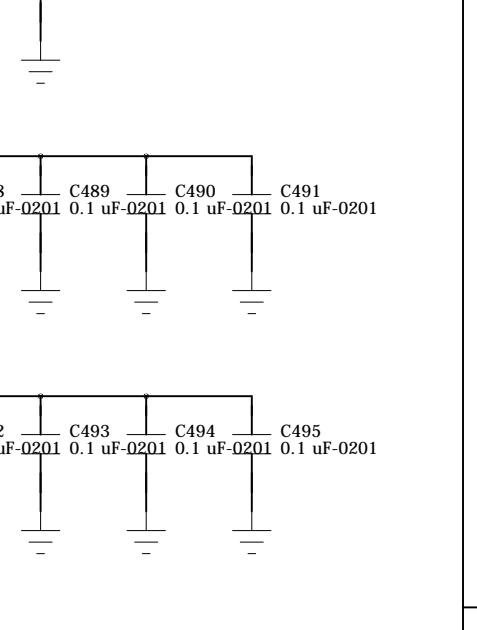
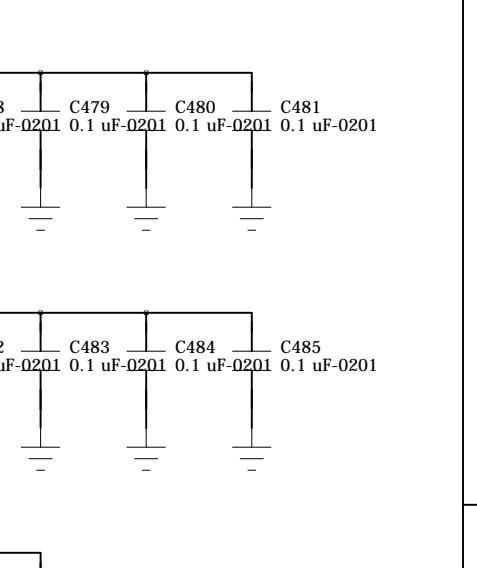
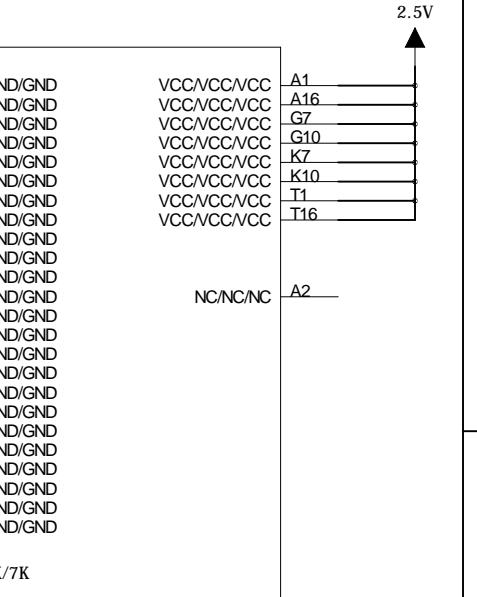
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REVISION RECORD

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COMPANY: Ohio State University	SHEET: AUX_CPLD1
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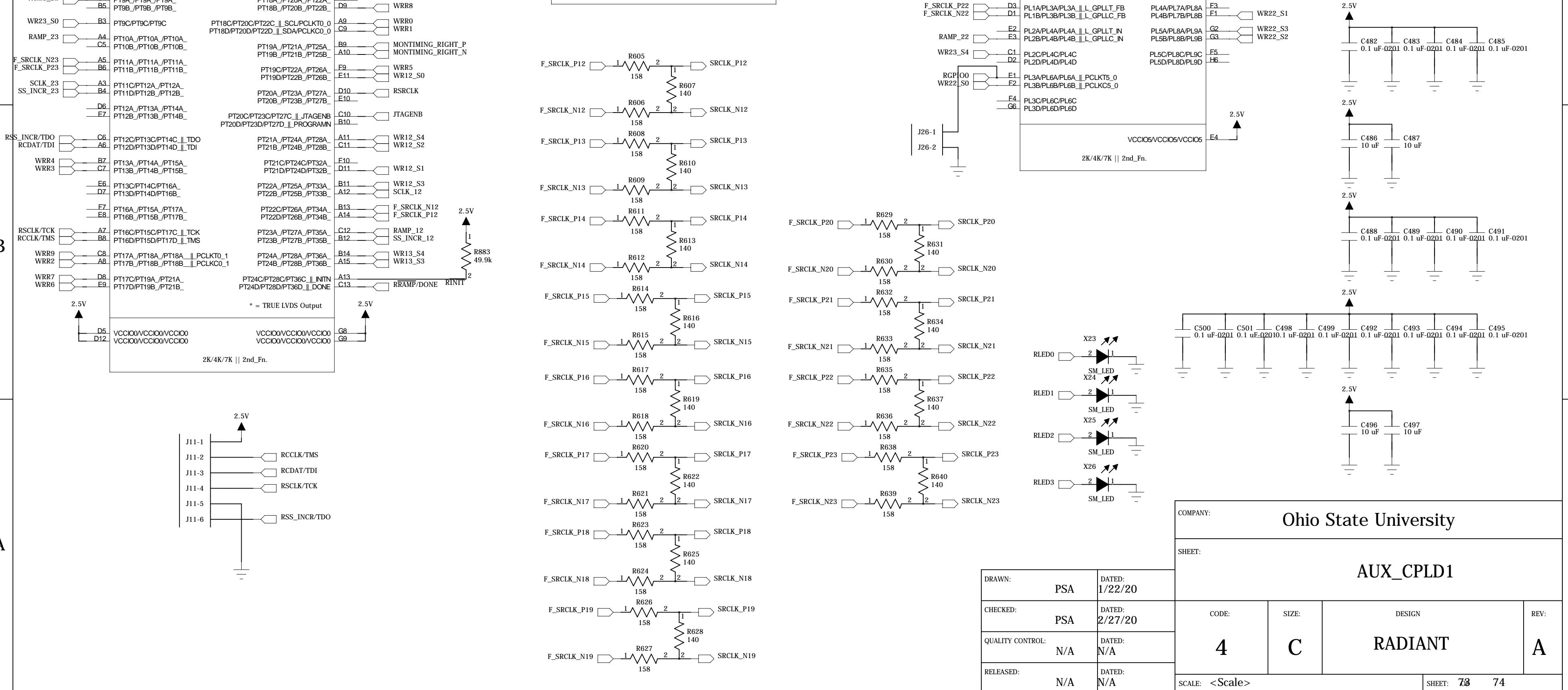
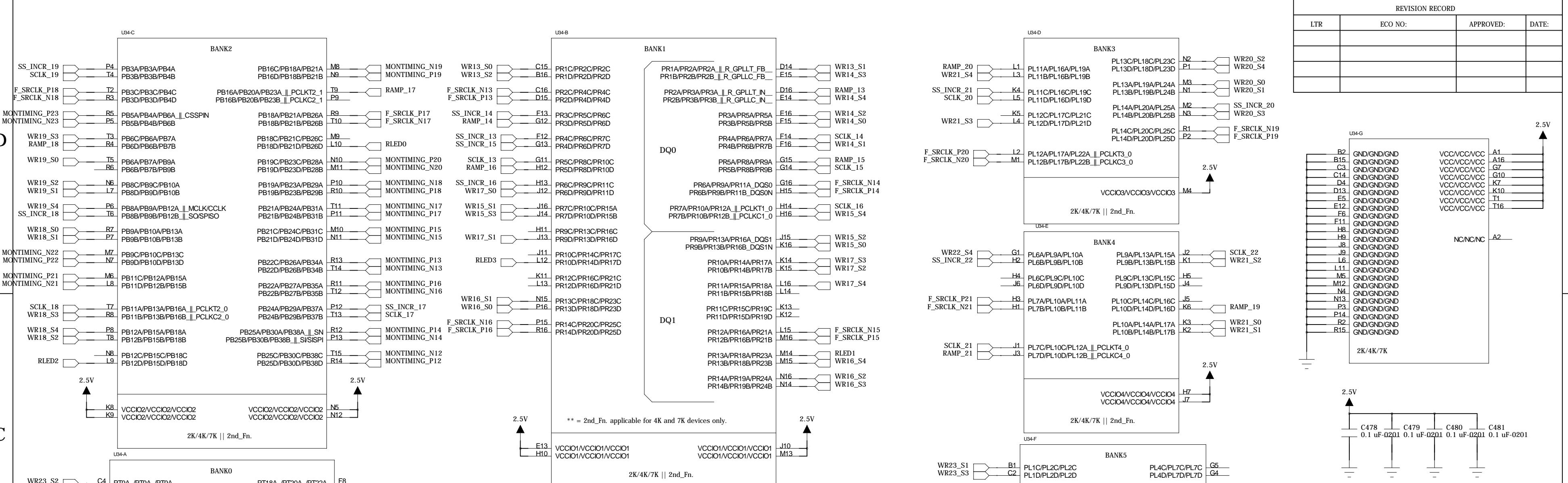
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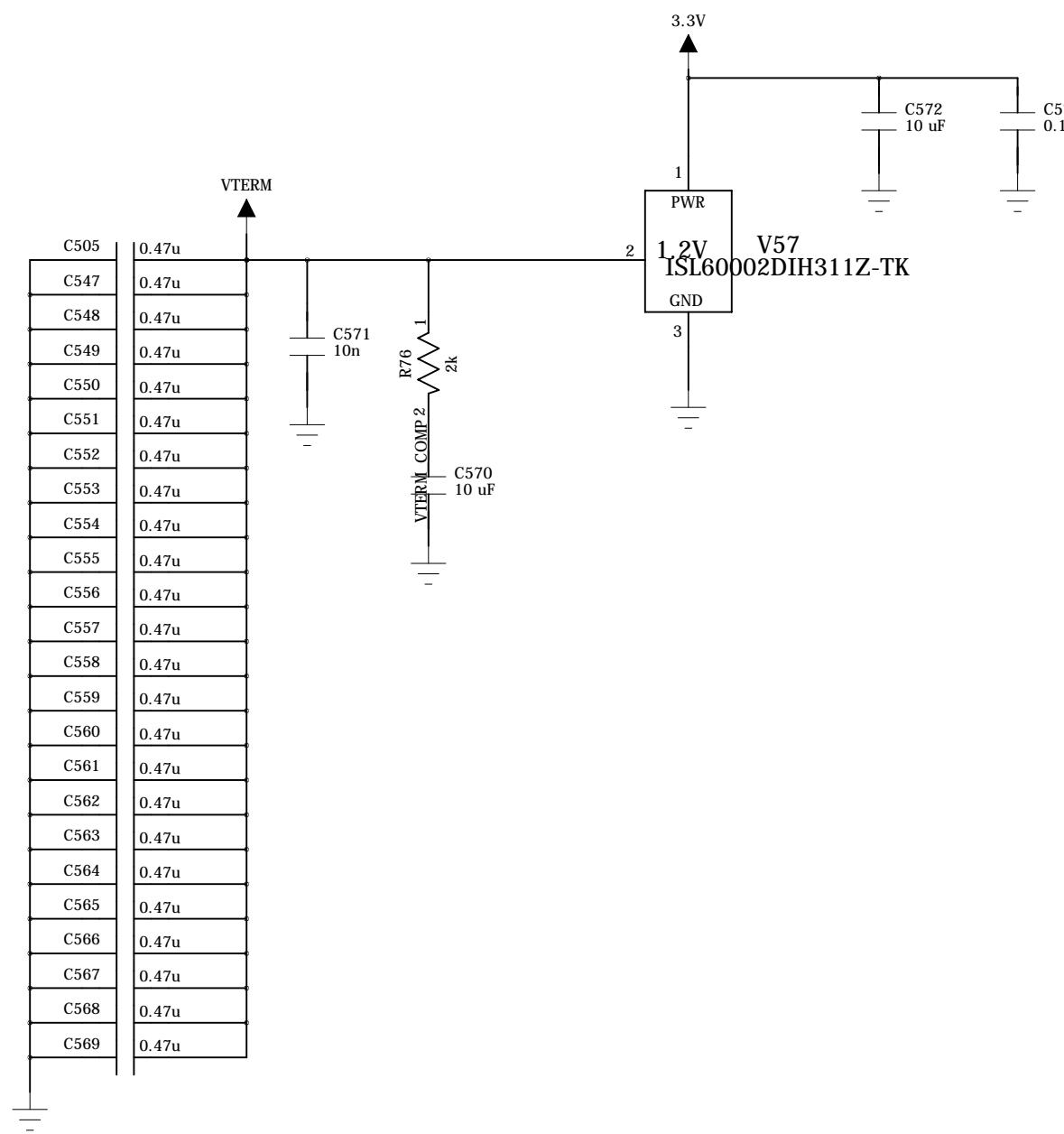
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COMPANY:	Ohio State University		
SHEET:	VTERM		
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DATE:			