DUNE FRONT END MOTHERBOARD - REVISION B

University of Hawaii at Manoa IDL

Adapted from Brookhaven Design and SLAC Cold Board

POWER RAW

8pin

10pin

default unloaded

jumper

LDO
2.5V_D

jumper

LDO
2.5V_A

jumper

Default Op Conditions

LDO
2.5V_D

jumper

LDO
2.5V_A

jumper

default unloaded

jumper

in

in

in

CRYO Left

out

in

x64

128 data channels

x64

in

in

in

CRYO Right

out

lvds data buffer

WIB

lvds data buffer

DATA out to WIB

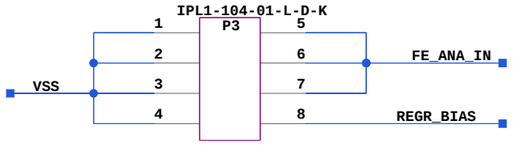
WIB clk to CRYO

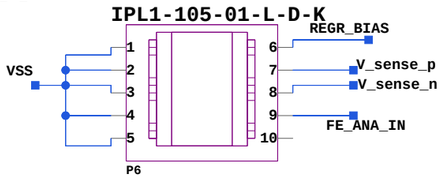
WIB SACI to CRYO

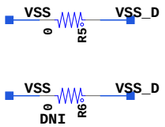
(all LDOs and power options have
enable pins and jumpers to load a

TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE / REV / SHEET	SHEET 1 OF 12
DRAWN	JEFF KLEYNER
DATE	19/02/2021:17:21

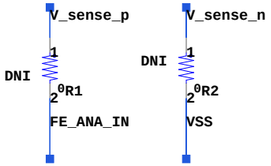
Raw Pwr

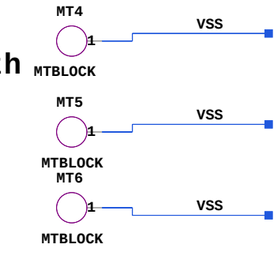


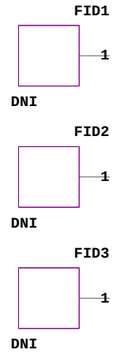


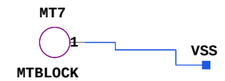


sense lines. Keep resistors close to asic. in between both

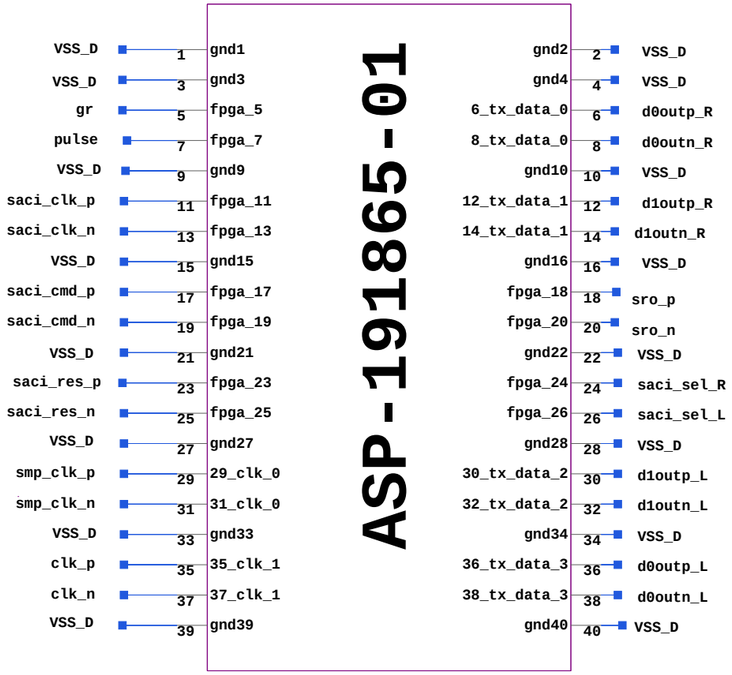




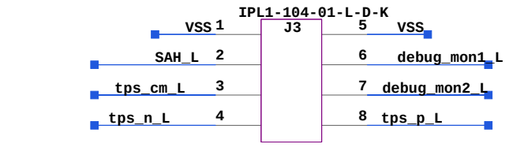


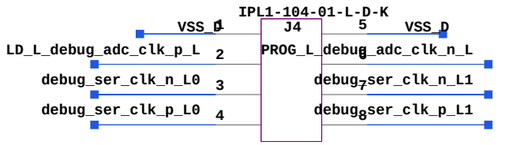


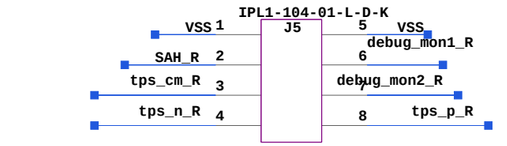
WIB DATA Connector

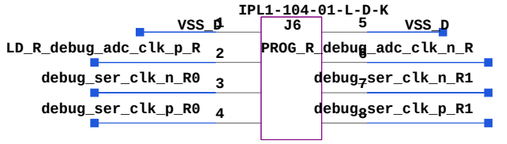


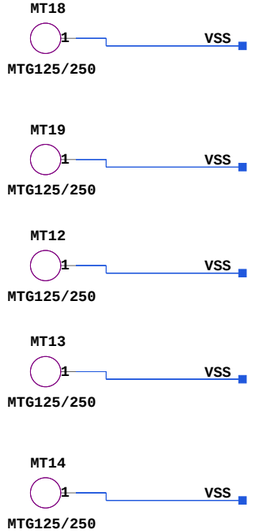
Debug connectors





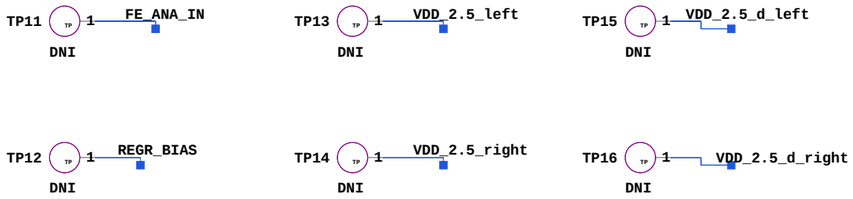




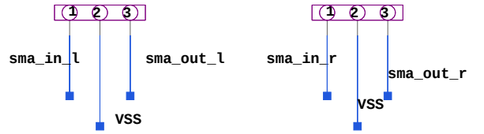


TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE / REV / SHEET	SHEET 2 OF 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:17:23

Testpoints

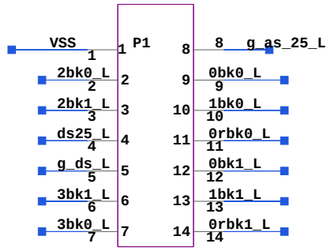


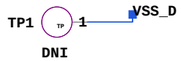
Ext. Monitor

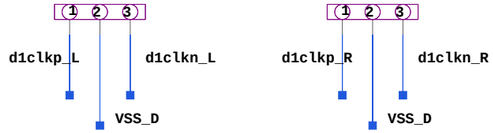


Input protection diode load options

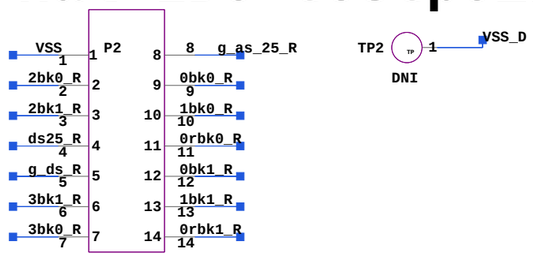
load R266,267 for VDD
load R46,49,200,202 for VSS







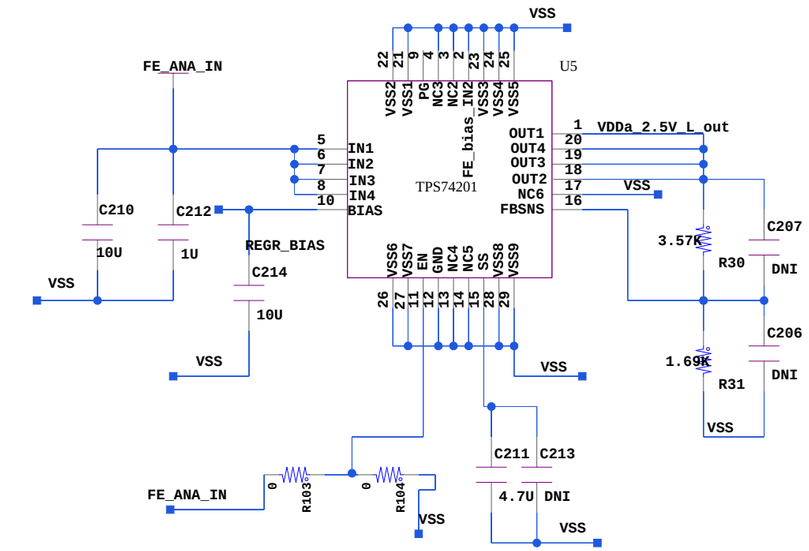
internal LDO testpoints

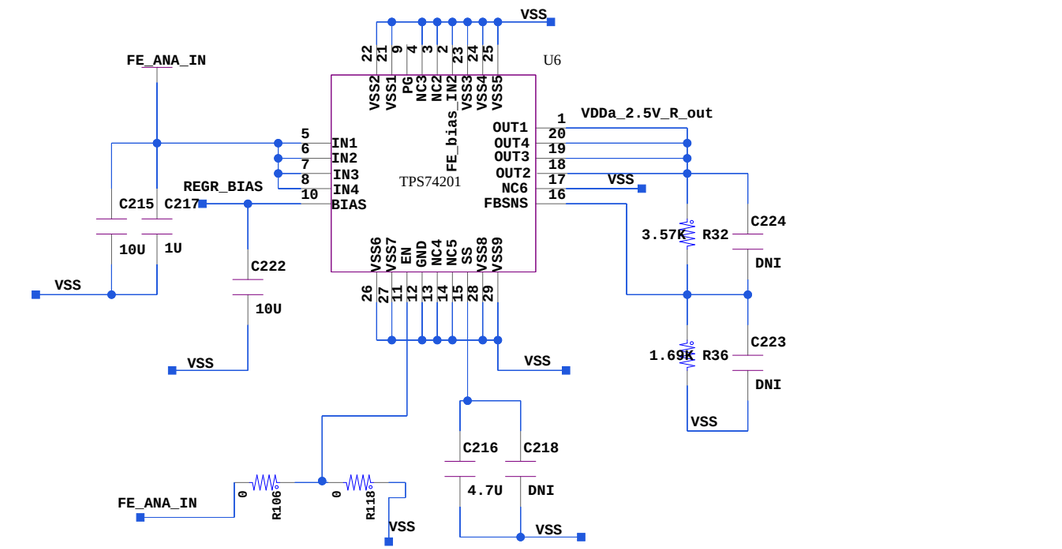


TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE / REV	SHEET 3 OF 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:19:22

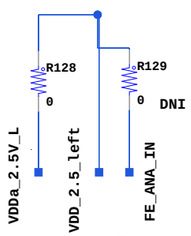
Right Analog 2.5V

Left Analog 2.5V

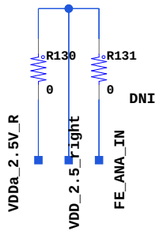




Select raw power in or ldo 2.5 out



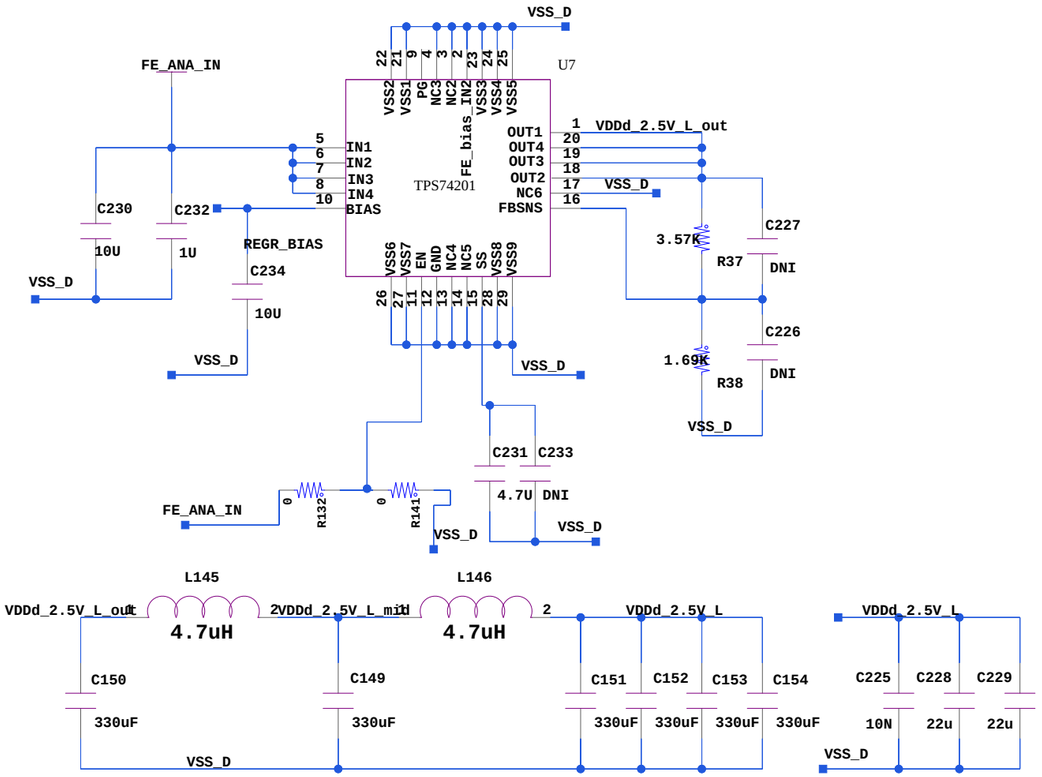
load R128 for LDO, R129 for raw PWR



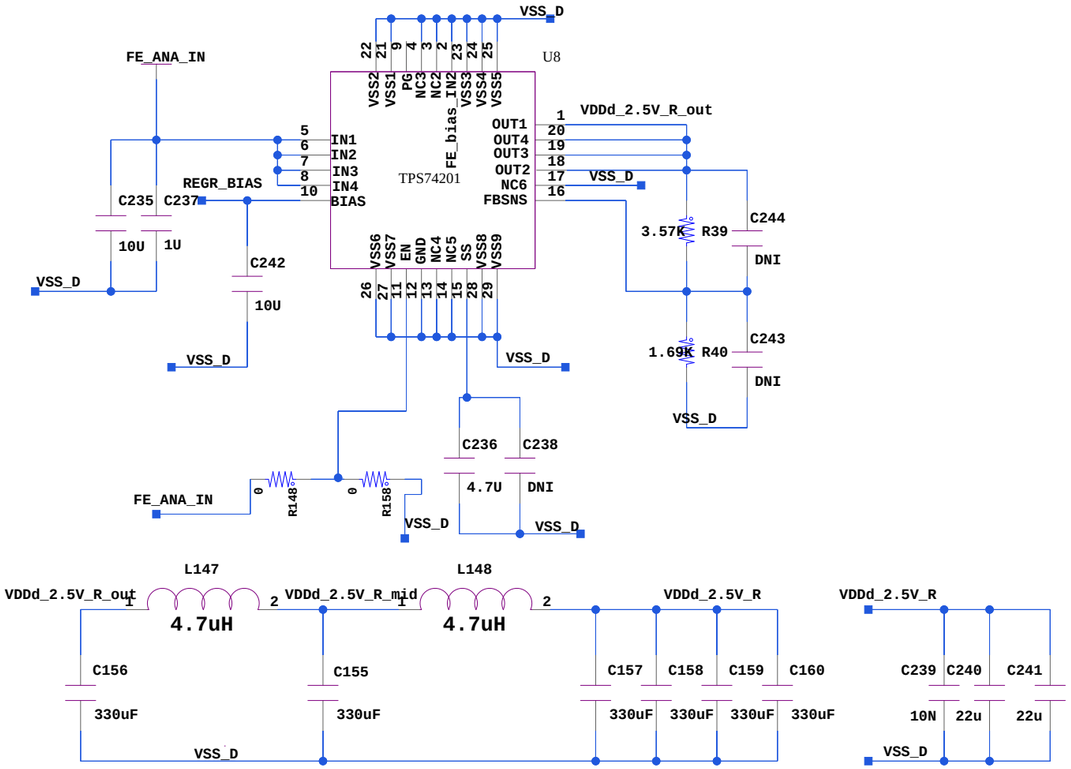
load R130 for LDO, R131 for raw PWR

TITLE	DUNE FRONT END MOTHER BOARD		
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB		
SIZE	REV	SHEET 5 OF 12	
DRAWN	JEFF KLEYNER	DATE	25/02/2021:19:50

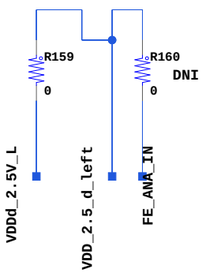
Left Digital 2.5V



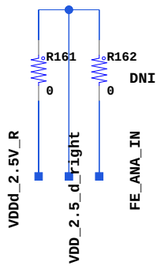
Right Digital 2.5V



Select raw power in or ldo 2.5 out

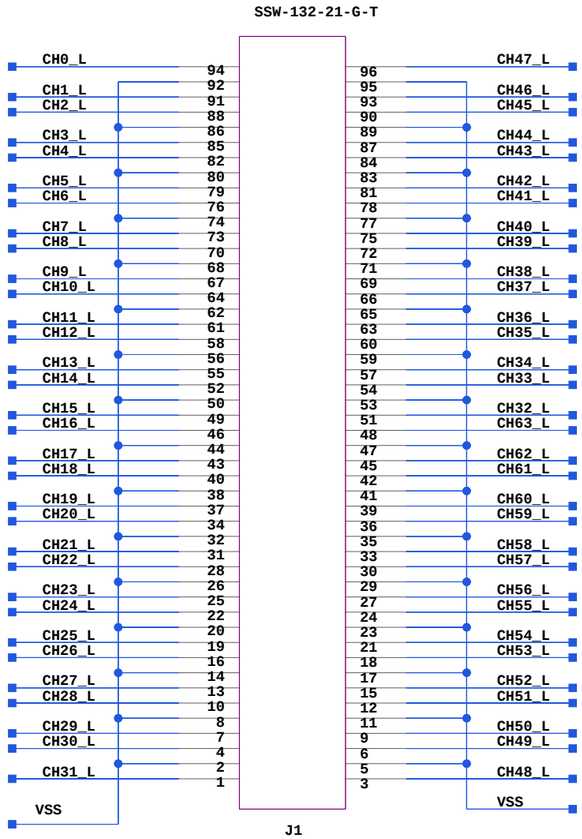


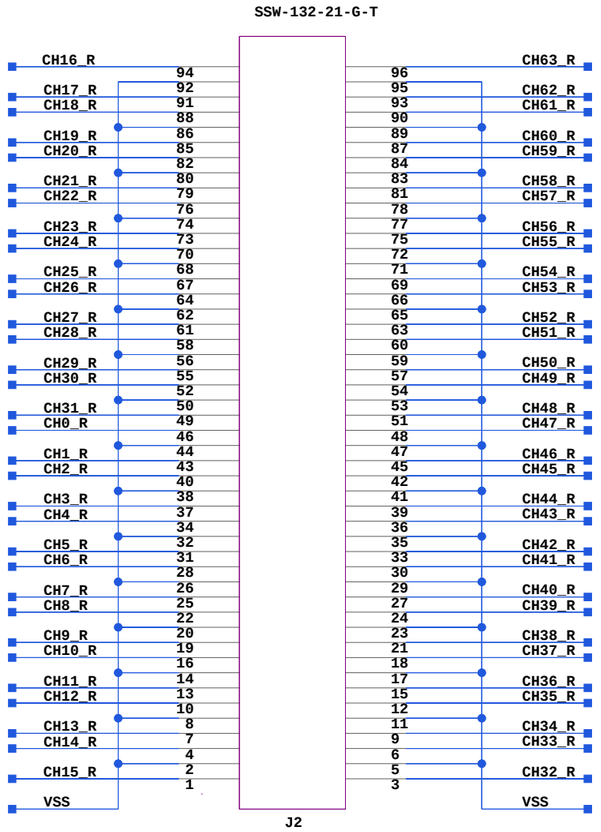
load R159 for LDO, R160 for raw PWR



load R161 for LDO, R162 for raw PWR

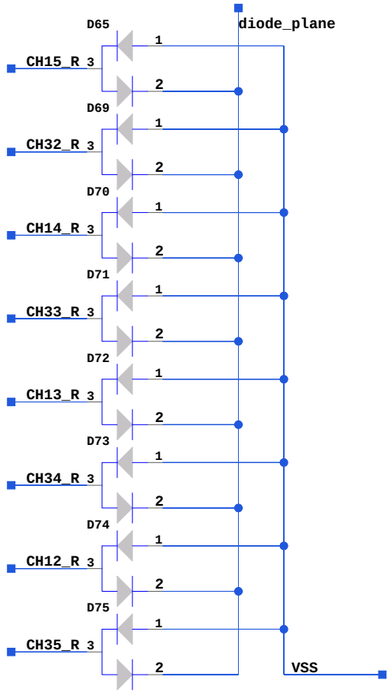
TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE / REV	SHEET 6 OF 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:16:38

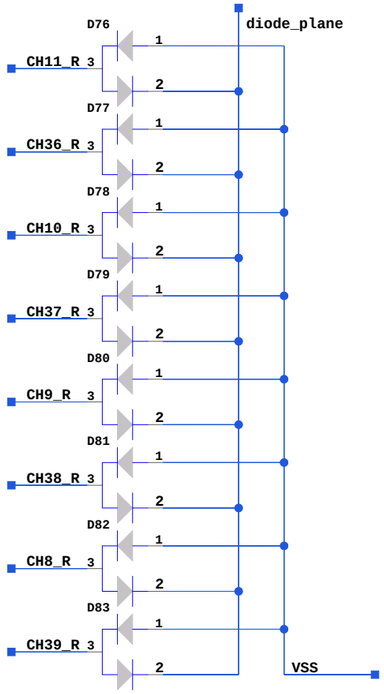


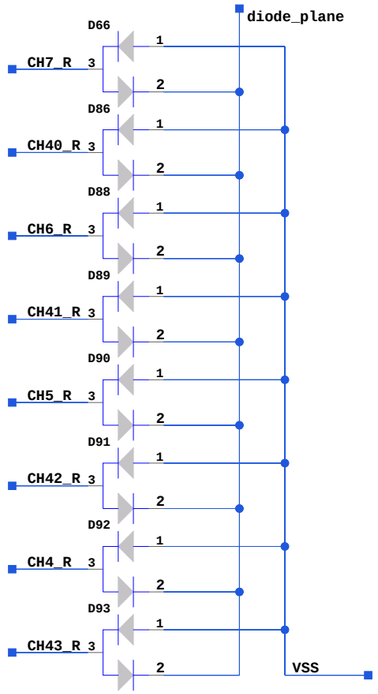


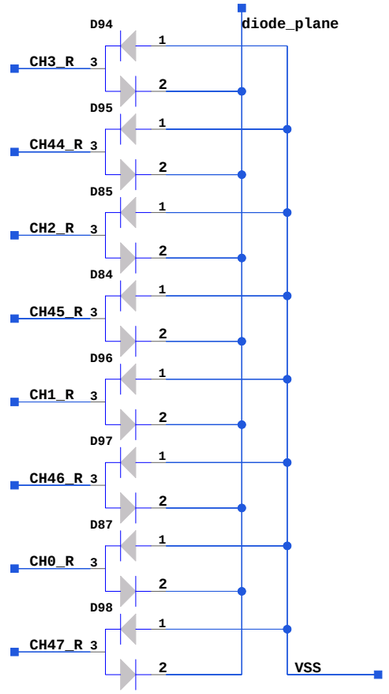
Input Signal Connectors

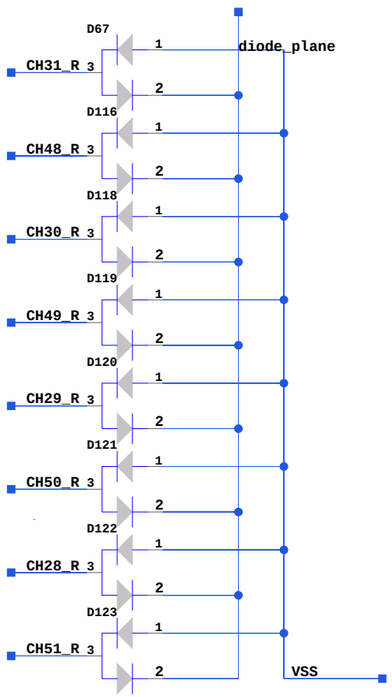
TITLE	DUNE FRONT END MOTHER BOARD		
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB		
SIZE	REV	SHEET 7 OF 12	
DRAWN	JEFF KLEYNER	DATE	18/02/2021:23:03

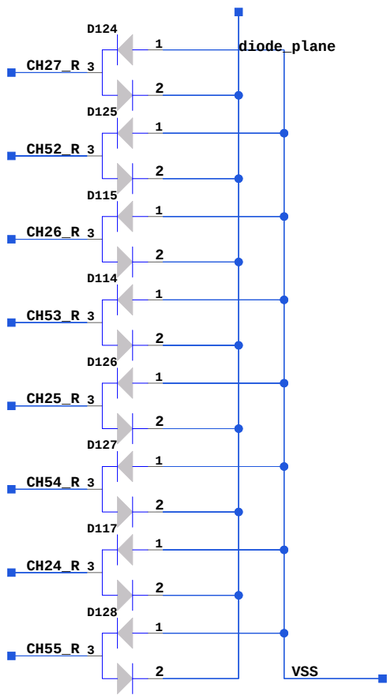


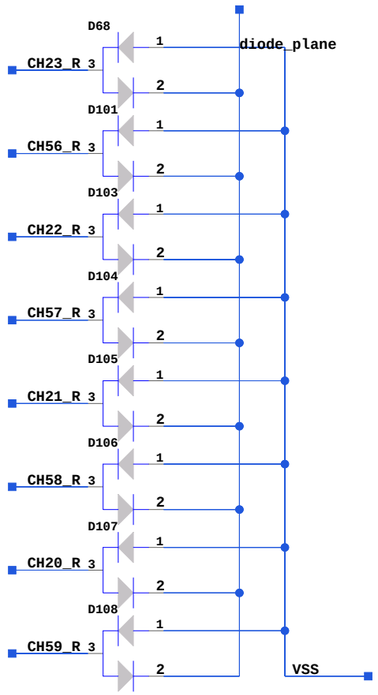


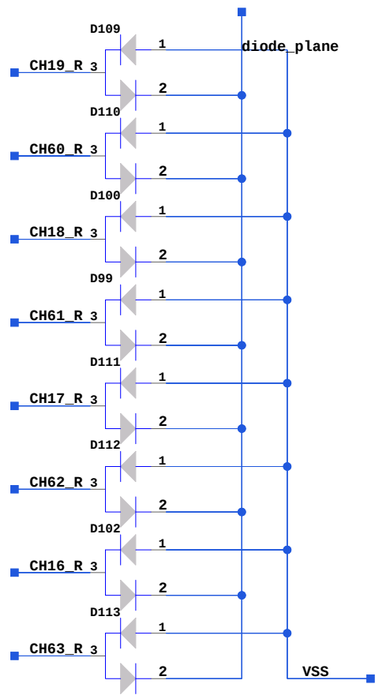






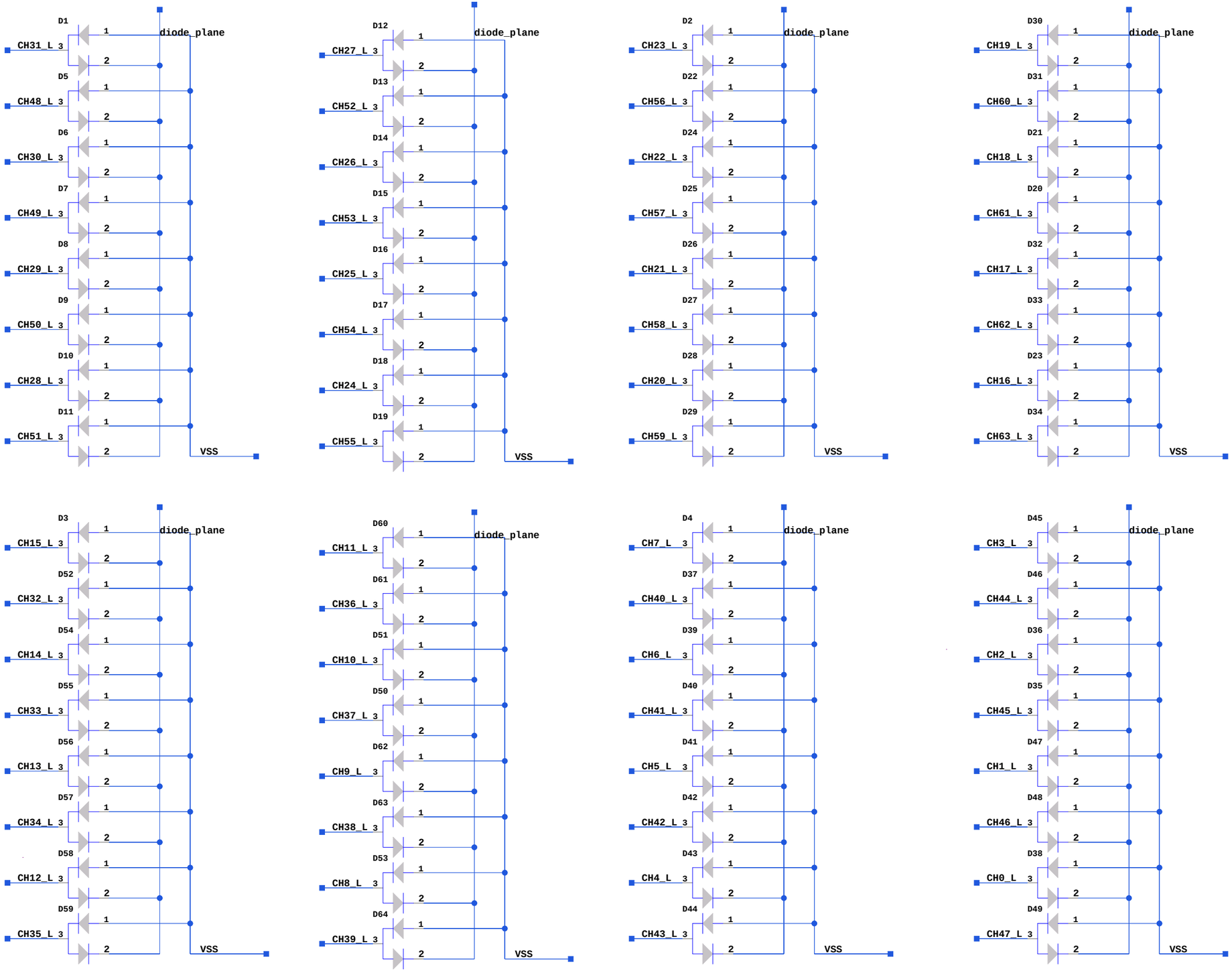






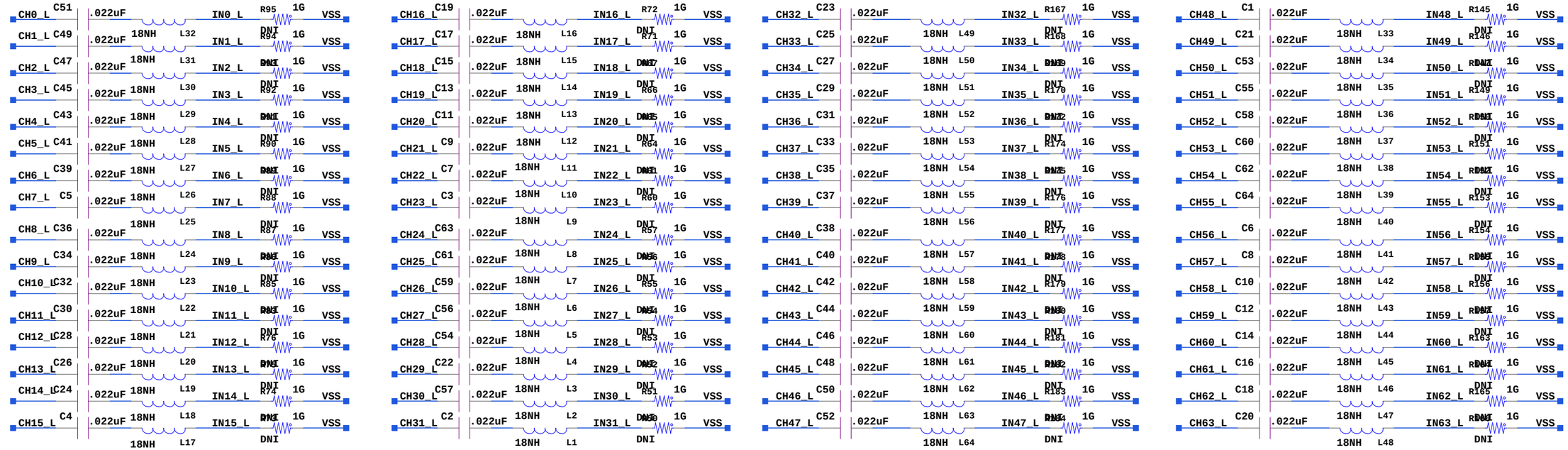
Tied to VSS and either VSS/VDD determined by loads, see page 3

TITLE	DUNE FRONT END MOTHER BOARD		
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB		
SIZE	REV	SHEET 8 OF 12	
DRAWN	JEFF KLEYNER	DATE	19/02/2021:17:30



Tied to VSS and either VSS/VDD determined by loads, see page 3

TITLE	DUNE FRONT END MOTHER BOARD		
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB		
SIZE	REV	SHEET 9 OF 12	
DRAWN	JEFF KLEYNER	DATE	19/02/2021:17:30



Input Protection channels

Resistors are not loaded, values of 1G

Note: Inductors are instead loaded by 0ohm R using same footprint

TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE	REV
SHEET	10 OF 12
DRAWN	JEFF KLEYNER
DATE	27/02/2021:22:06

Left_CRYO

CRYO_ASIC

CRYOASIC_DUNE

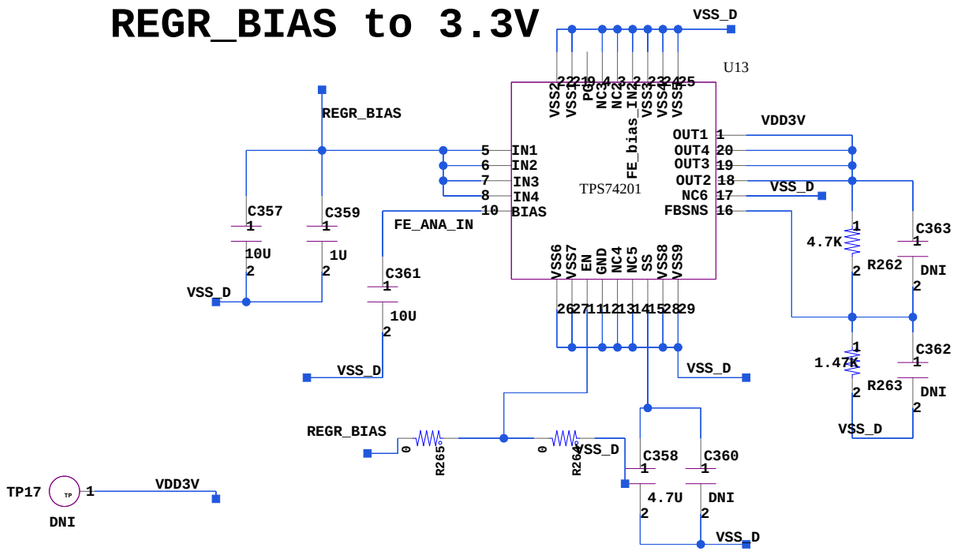
TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE	
REV	
SHEET	cryo_left 1 OF 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:15:42

Right_CRYO

CRYO_ASIC

CRYOASIC_DUNE

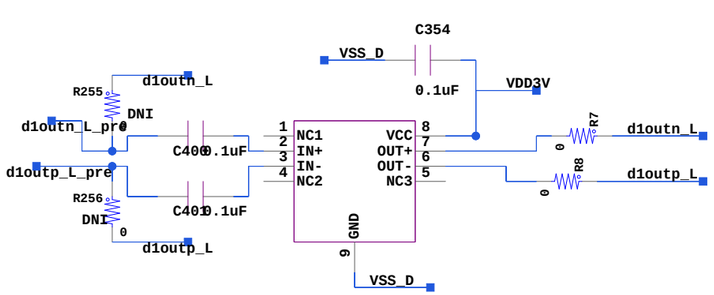
TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE	REV
SHEET	cryo_right 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:15:42

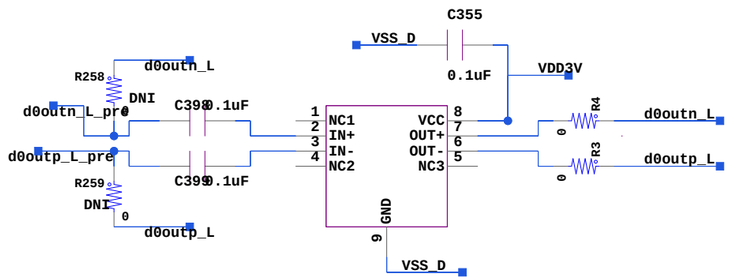


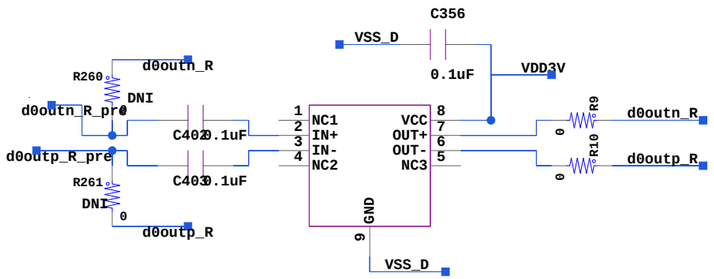
LVDS Drivers

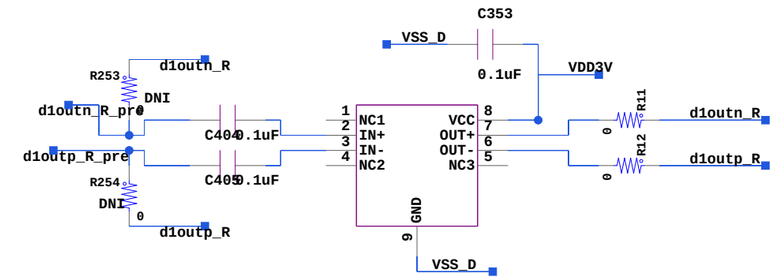
Load R3,4,7,8,9,10,11,12 and C398,399,400,401,402,403,404,405 to use drivers

Instead load R253,254,255,256,258,259,260,261 to bypass drivers









TITLE	DUNE FRONT END MOTHER BOARD
TEAM	UNIVERSITY OF HAWAII MANOA INSTRUMENT DEVELOPMENT LAB
SIZE / REV / SHEET	13 OF 12
DRAWN	JEFF KLEYNER
DATE	02/03/2021:16:42