

Title **dSAU Motherboard - Top**

Boston University EDF/ECE
Team 19

Size: Letter

Number: 1

Revision: A

Date: 2/14/2014

Time: 5:47:07 PM

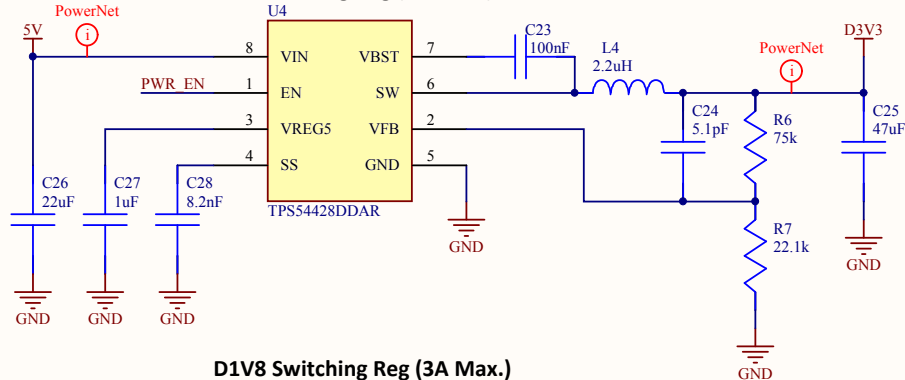
Sheet 1 of 10

Christopher J. Woodall
cwoodall@bu.edu

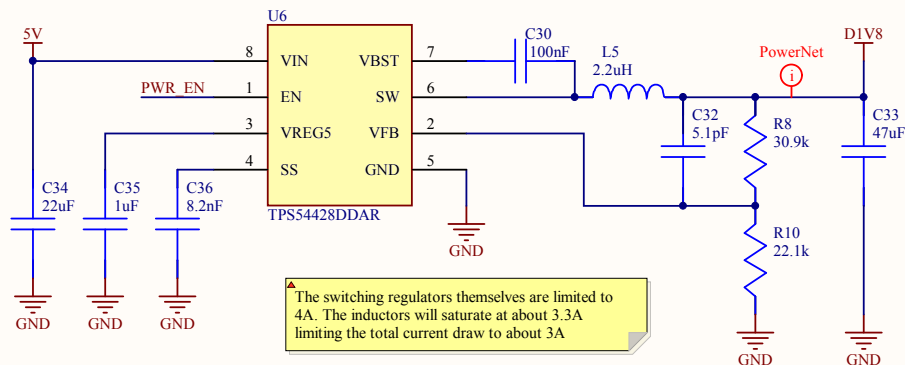
dDOS

File: C:\Users\Christopher Woodall\Documents\dsau-motherboard-revA\src\dsau-motherboard-top.SchDoc

D3V3 Switching Reg (3A Max.)

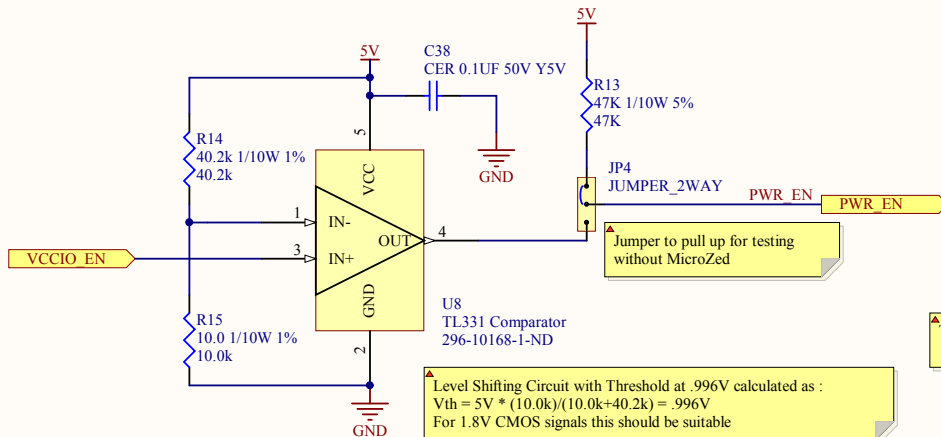


D1V8 Switching Reg (3A Max.)

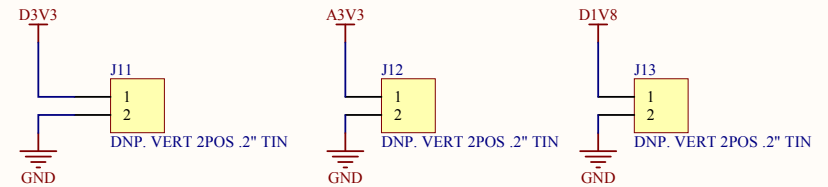


The switching regulators themselves are limited to 4A. The inductors will saturate at about 3.3A limiting the total current draw to about 3A

1.8V to 5V Level Shifter

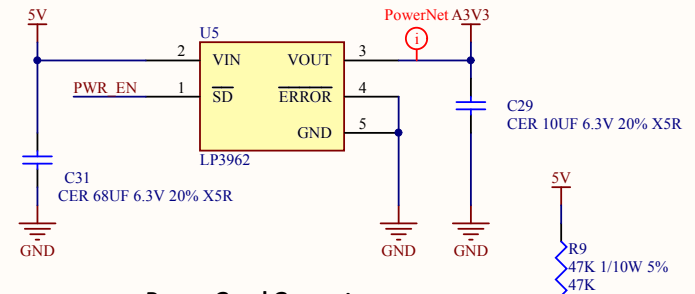


Level Shifting Circuit with Threshold at .996V calculated as :
 $V_{th} = 5V * (10.0k) / (10.0k + 40.2k) = .996V$
 For 1.8V CMOS signals this should be suitable



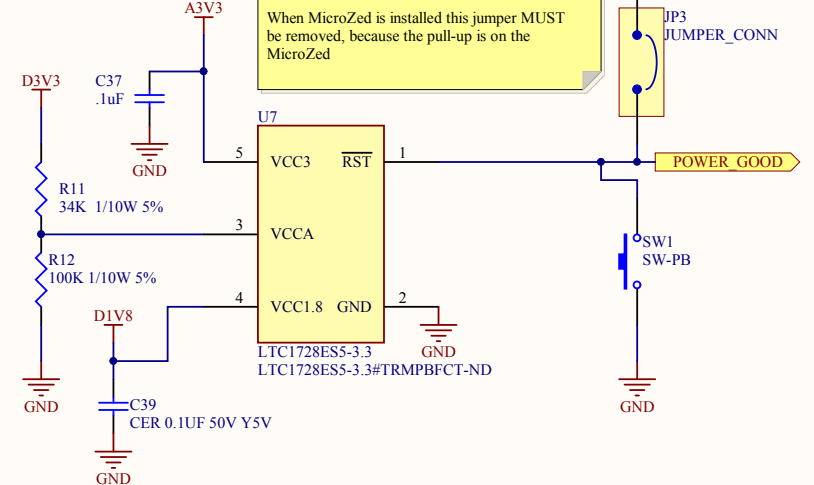
J10, J12, and J11 are fallback methods for bringing in power (DNP). 7A MAX.

A3V3 LDO

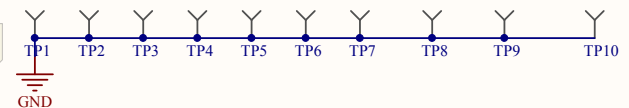


Power Good Generator

Jumper to pull up for testing without microzed.
 When MicroZed is installed this jumper MUST be removed, because the pull-up is on the MicroZed



Testpoint Grounds. Scatter at will.



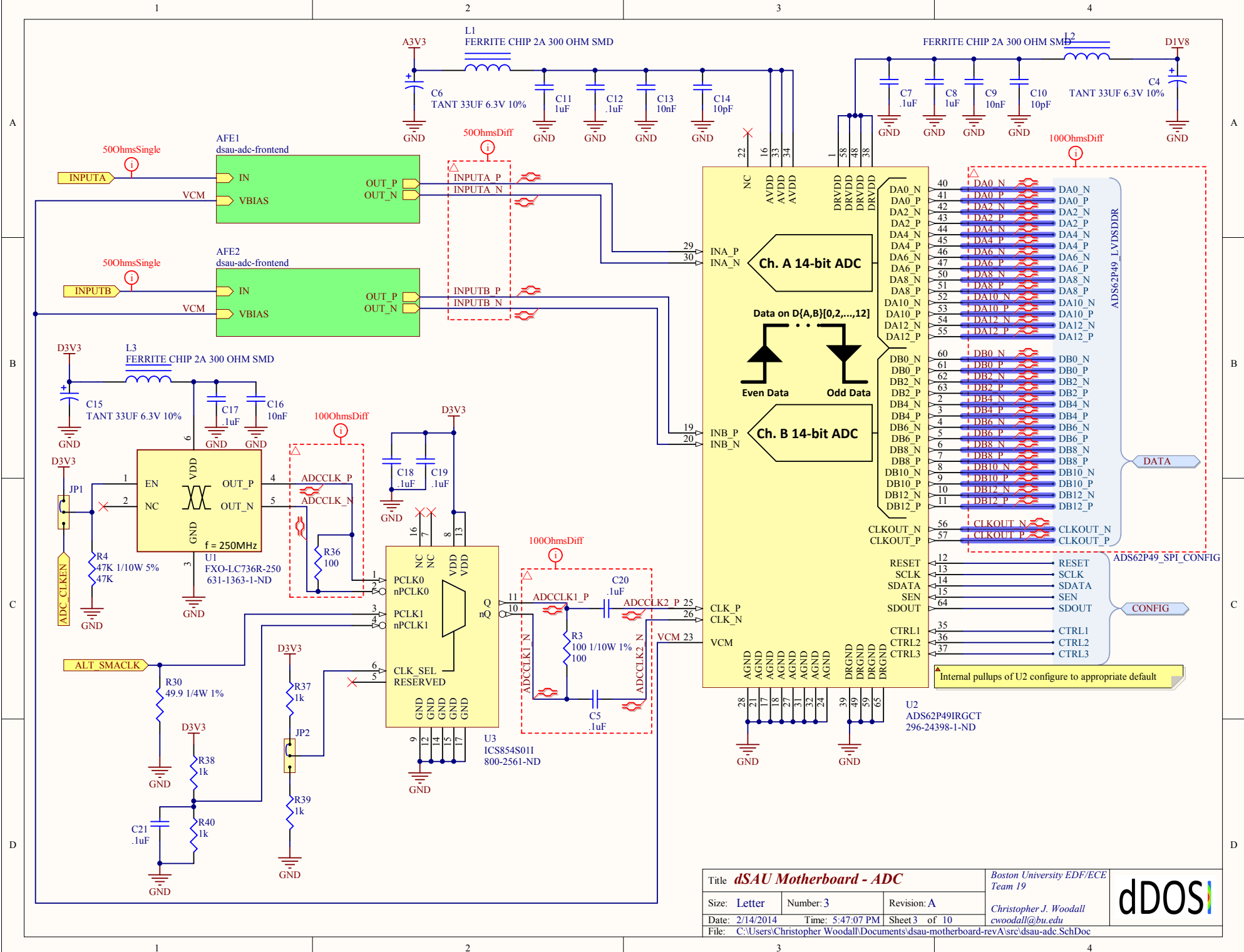
Title **dSAU Motherboard - Power**

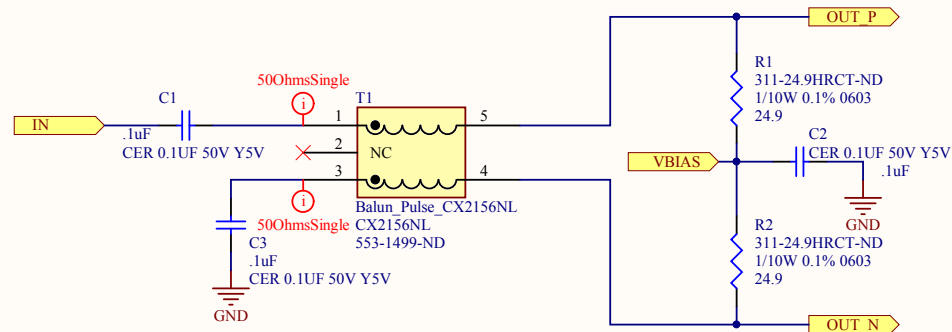
Size: Letter Number: 2 Revision: A
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 File: C:\Users\Christopher Woodall\Documents\dsau-motherboard-revA\src\dsau-power.SchDoc

Boston University EDF/ECE Team 19

Christopher J. Woodall
 cwoodall@bu.edu

dDOS

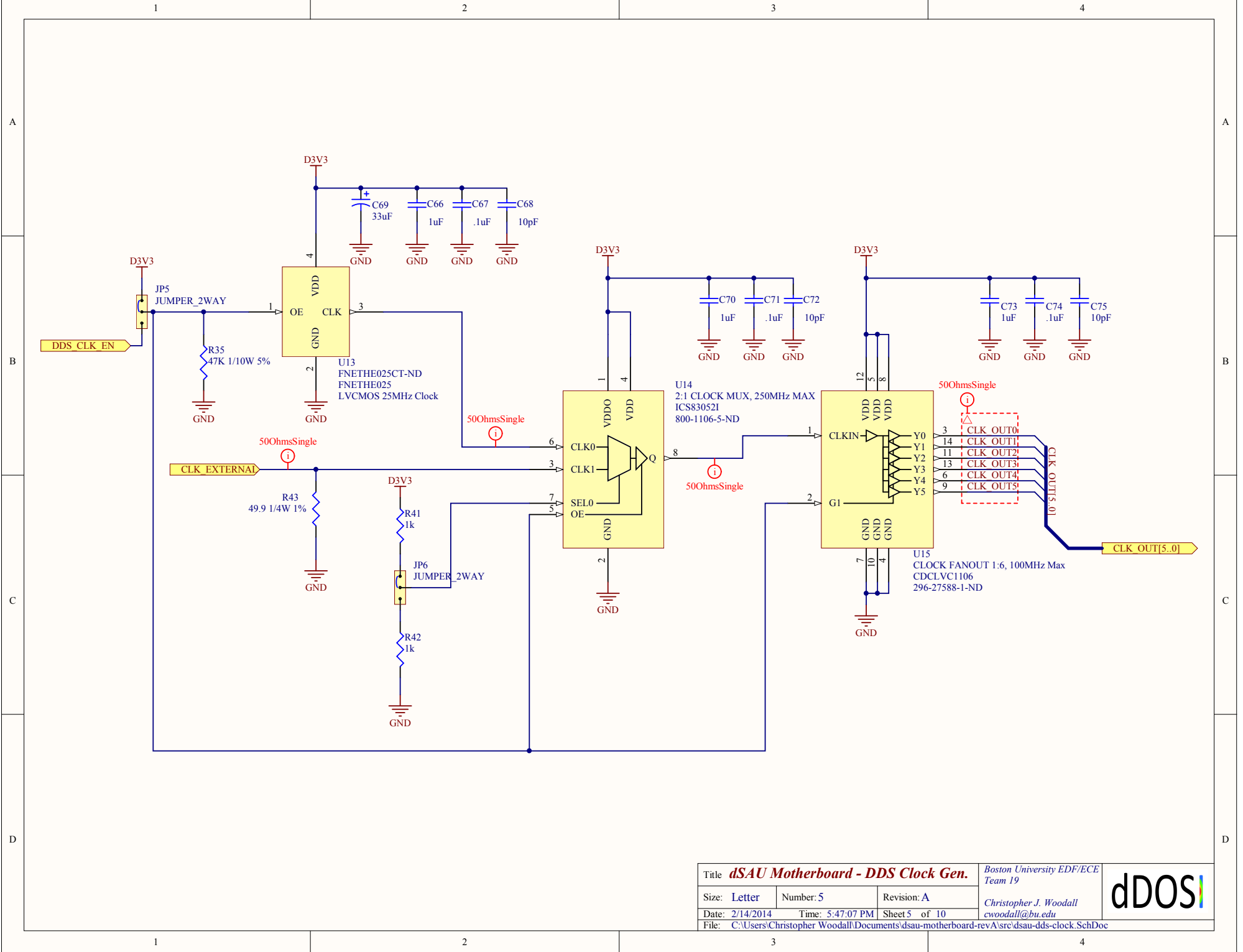




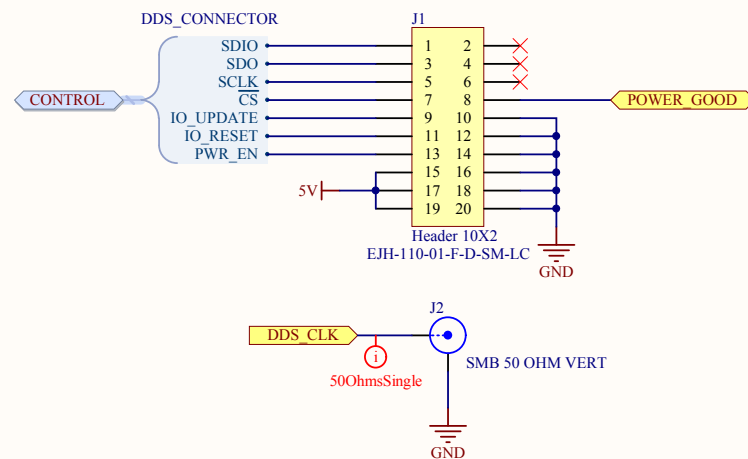
▲ This frontend's main responsibility is converting from an unbalanced 50-Ohm input to a balanced 50-Ohm signal for interactions into the ADC.

This particular configuration is taken from the ADS62P49 datasheet and is expected to rely on the ADC's internal filter with a cutoff of 700MHz.

External filters are suggested for best performance.

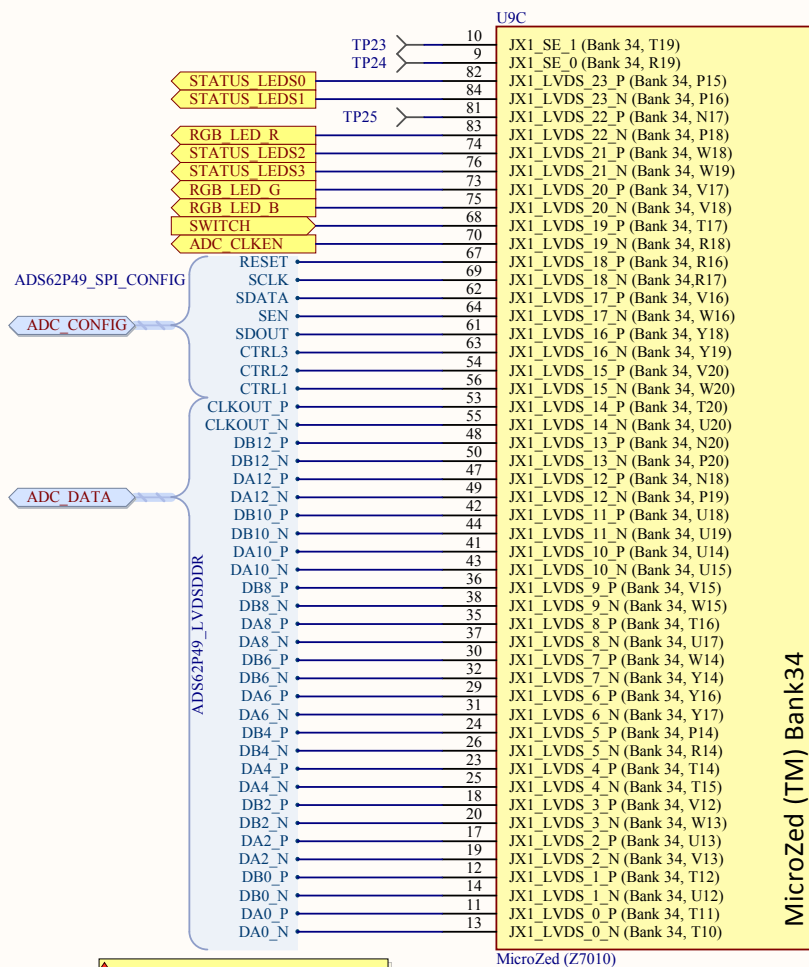


Standard Connector to Single Channel DDS Board.



BANK34 (1.8V)

▲ BANK34 (1.8V) is used solely for connections to the 1.8V 7bit DDR (time multiplexed) LVDS inputs from the ADS62P49 ADC, and for Control Signals (an SPI port) to and from the ADS62P49.



MicroZed (TM) Bank34

▲ Routing the LVDS data signals such that Channel A comes to Odd pins and channel B comes to Even pins will make routing easier.

NOTE: Exact pin assignments may change during routing. Stay vigilant

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Christopher J. Woodall
cwoodall@bu.edu

dDOS

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BANK35 (3.3V)

BANK35 (3.3V) is used as the DDS Connector Port to control up to 6 single channel DDS boards, and to control 3.3V interface logics such as the extension port, indicator LEDs and switches.

Even pins are on the outside, Odd Pins are on the inside

U9D

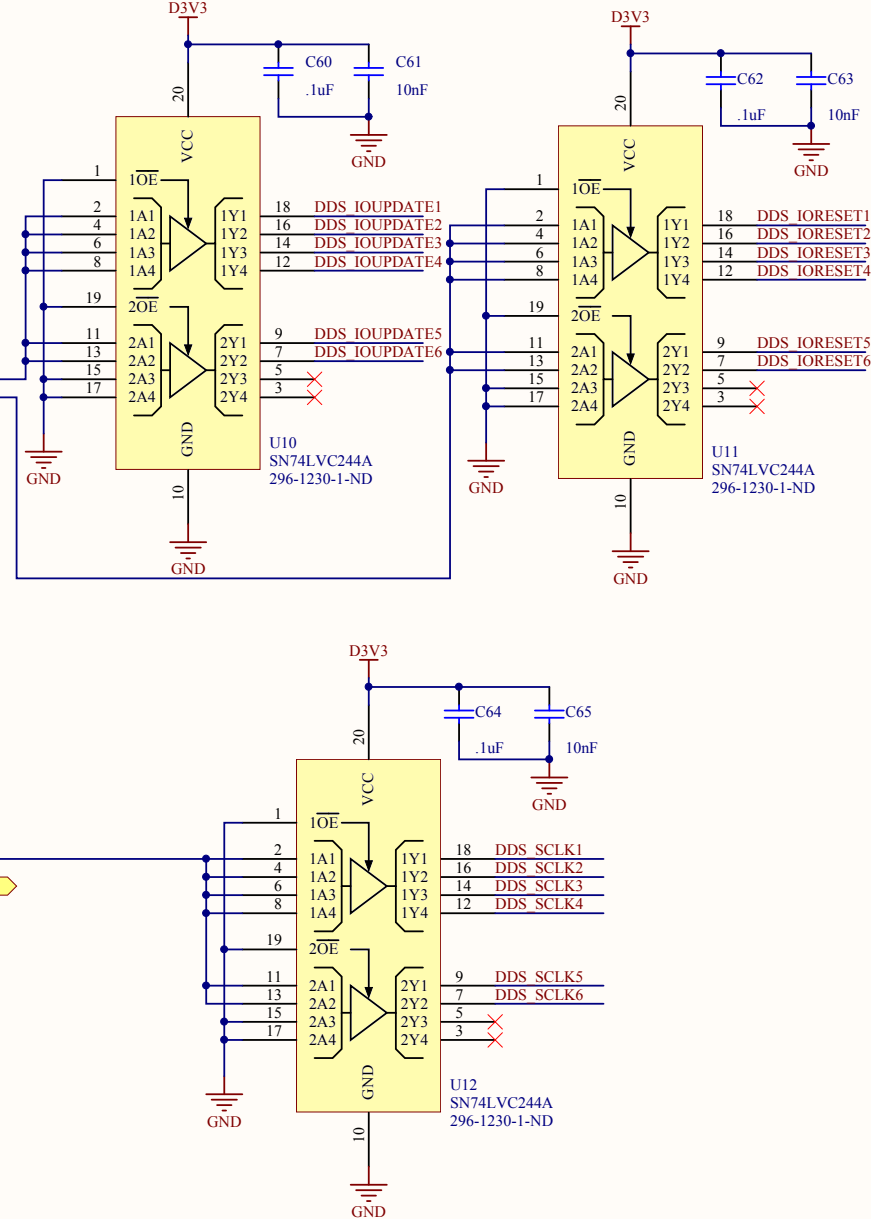
JX2_SE_1 (Bank 35, J15)	114	X
JX2_SE_0 (Bank 35, G14)	113	X
JX2_LVDS_23_P (Bank 35, K16)	188	X
JX2_LVDS_23_N (Bank 35, J16)	190	X
JX2_LVDS_22_P (Bank 35, M14)	187	X
JX2_LVDS_22_N (Bank 35, M15)	189	X
JX2_LVDS_21_P (Bank 35, L14)	182	X
JX2_LVDS_21_N (Bank 35, L15)	184	X
JX2_LVDS_20_P (Bank 35, N15)	181	X
JX2_LVDS_20_N (Bank 35, N16)	183	X
JX2_LVDS_19_P (Bank 35, H15)	174	X
JX2_LVDS_19_N (Bank 35, G15)	176	X
JX2_LVDS_18_P (Bank 35, K14)	173	X
JX2_LVDS_18_N (Bank 35, J14)	175	X
JX2_LVDS_17_P (Bank 35, J20)	168	X
JX2_LVDS_17_N (Bank 35, H20)	170	X
JX2_LVDS_16_P (Bank 35, G19)	167	X
JX2_LVDS_16_N (Bank 35, G20)	169	X
JX2_LVDS_15_P (Bank 35, F19)	162	X
JX2_LVDS_15_N (Bank 35, F20)	164	X
JX2_LVDS_14_P (Bank 35, G17)	161	X
JX2_LVDS_14_N (Bank 35, G18)	163	X
JX2_LVDS_13_P (Bank 35, J18)	154	X
JX2_LVDS_13_N (Bank 35, H18)	156	X
JX2_LVDS_12_P (Bank 35, H16)	153	X
JX2_LVDS_12_N (Bank 35, H17)	155	X
JX2_LVDS_11_P (Bank 35, K17)	148	X
JX2_LVDS_11_N (Bank 35, K18)	150	X
JX2_LVDS_10_P (Bank 35, L16)	147	X
JX2_LVDS_10_N (Bank 35, L17)	149	X
JX2_LVDS_9_P (Bank 35, K19)	142	X
JX2_LVDS_9_N (Bank 35, J19)	144	X
JX2_LVDS_8_P (Bank 35, M17)	141	X
JX2_LVDS_8_N (Bank 35, M18)	143	X
JX2_LVDS_7_P (Bank 35, M19)	136	X
JX2_LVDS_7_N (Bank 35, M20)	138	X
JX2_LVDS_6_P (Bank 35, L19)	135	X
JX2_LVDS_6_N (Bank 35, L20)	137	X
JX2_LVDS_5_P (Bank 35, F16)	130	X
JX2_LVDS_5_N (Bank 35, F17)	132	X
JX2_LVDS_4_P (Bank 35, E18)	129	X
JX2_LVDS_4_N (Bank 35, E19)	131	X
JX2_LVDS_3_P (Bank 35, D19)	124	X
JX2_LVDS_3_N (Bank 35, D20)	126	X
JX2_LVDS_2_P (Bank 35, E17)	123	X
JX2_LVDS_2_N (Bank 35, D18)	125	X
JX2_LVDS_1_P (Bank 35, B19)	118	X
JX2_LVDS_1_N (Bank 35, A20)	120	X
JX2_LVDS_0_P (Bank 35, C20)	117	X
JX2_LVDS_0_N (Bank 35, B20)	119	X

MicroZed (Z7010)

MicroZed (TM) Bank35

114	X	DDS IOUPDATE
113	X	DDS IORESET
188	X	DDS SCLK
187	X	DDS MOSI1
189	X	DDS MISO1
182	X	DDS MOSI4
184	X	DDS MISO4
181	X	DDS CS1
183	X	DDS PWR_EN1
174	X	DDS CS4
176	X	DDS PWR_EN4
173	X	DDS MOSI2
175	X	DDS MISO2
168	X	DDS MOSI5
170	X	DDS MISO5
167	X	DDS CS2
169	X	DDS PWR_EN2
162	X	DDS CS5
164	X	DDS PWR_EN5
161	X	DDS MOSI3
163	X	DDS MISO3
154	X	DDS MOSI6
156	X	DDS MISO6
153	X	DDS CS3
155	X	DDS PWR_EN3
148	X	DDS CS6
150	X	DDS PWR_EN6
147	X	DDS CLK EN
149	X	DDS POWER GOOD
142	X	GPIO15
144	X	GPIO14
141	X	GPIO13
143	X	GPIO12
136	X	GPIO11
138	X	GPIO10
135	X	GPIO9
137	X	GPIO8
130	X	GPIO7
132	X	GPIO6
129	X	GPIO5
131	X	GPIO4
124	X	GPIO3
126	X	GPIO2
123	X	GPIO1
125	X	GPIO0
118	X	GPIO15
120	X	GPIO14
117	X	GPIO13
119	X	GPIO12

GPIO[15..0]



Buffer Common Signals (SCLK, IOUPDATE and IORESET) to drive over the 6 connectors.

DDS SDIO1	SDIO	DDS_CONNECTOR
DDS SDO1	SDO	DDS_CONNECTOR
DDS SCLK1	SCLK	DDS_CONNECTOR
DDS CS1	CS	DDS_CONNECTOR
DDS IOUPDATE1	IO_UPDATE	DDS_CONNECTOR
DDS IORESET1	IO_RESET	DDS_CONNECTOR
DDS PWR_EN1	PWR_EN	DDS_CONNECTOR
DDS SDIO2	SDIO	DDS_CONNECTOR
DDS SDO2	SDO	DDS_CONNECTOR
DDS SCLK2	SCLK	DDS_CONNECTOR
DDS CS2	CS	DDS_CONNECTOR
DDS IOUPDATE2	IO_UPDATE	DDS_CONNECTOR
DDS IORESET2	IO_RESET	DDS_CONNECTOR
DDS PWR_EN2	PWR_EN	DDS_CONNECTOR
DDS SDIO3	SDIO	DDS_CONNECTOR
DDS SDO3	SDO	DDS_CONNECTOR
DDS SCLK3	SCLK	DDS_CONNECTOR
DDS CS3	CS	DDS_CONNECTOR
DDS IOUPDATE3	IO_UPDATE	DDS_CONNECTOR
DDS IORESET3	IO_RESET	DDS_CONNECTOR
DDS PWR_EN3	PWR_EN	DDS_CONNECTOR
DDS SDIO4	SDIO	DDS_CONNECTOR
DDS SDO4	SDO	DDS_CONNECTOR
DDS SCLK4	SCLK	DDS_CONNECTOR
DDS CS4	CS	DDS_CONNECTOR
DDS IOUPDATE4	IO_UPDATE	DDS_CONNECTOR
DDS IORESET4	IO_RESET	DDS_CONNECTOR
DDS PWR_EN4	PWR_EN	DDS_CONNECTOR
DDS SDIO5	SDIO	DDS_CONNECTOR
DDS SDO5	SDO	DDS_CONNECTOR
DDS SCLK5	SCLK	DDS_CONNECTOR
DDS CS5	CS	DDS_CONNECTOR
DDS IOUPDATE5	IO_UPDATE	DDS_CONNECTOR
DDS IORESET5	IO_RESET	DDS_CONNECTOR
DDS PWR_EN5	PWR_EN	DDS_CONNECTOR
DDS SDIO6	SDIO	DDS_CONNECTOR
DDS SDO6	SDO	DDS_CONNECTOR
DDS SCLK6	SCLK	DDS_CONNECTOR
DDS CS6	CS	DDS_CONNECTOR
DDS IOUPDATE6	IO_UPDATE	DDS_CONNECTOR
DDS IORESET6	IO_RESET	DDS_CONNECTOR
DDS PWR_EN6	PWR_EN	DDS_CONNECTOR

