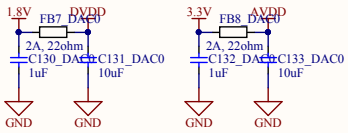
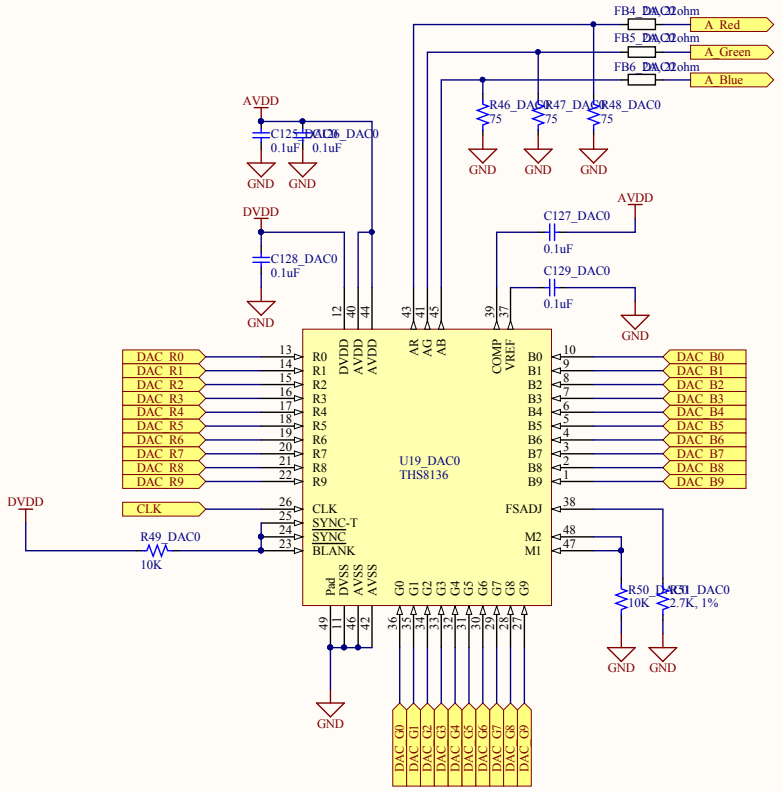
Triple 10-BIT 180-MSPS Video DAC

Local Power Filter





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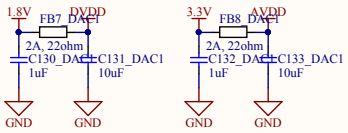
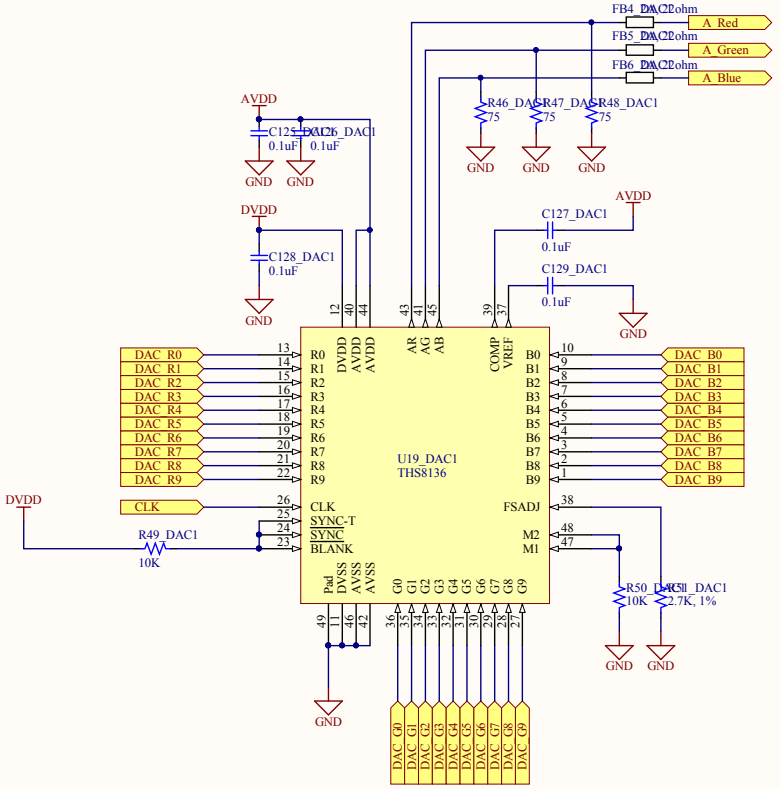
Triple 10-BIT 180-MSPS Video DAC

Local Power Filter





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Cyclone 5E A9 FPGA

FPGA Configuration + Shared I/O + Push Buttons

Power + I/O Voltage

MultiVolt I/O Interface in Cyclone V Devices

The MultiVolt I/O interface feature allows Cyclone V devices in all packages to interface with systems of different supply voltages.

Table 5-10: MultiVolt I/O Support in Cyclone V Devices

V_{CCIO} (V)	V_{CCPD} (V)	Input Signal (V)	Output Signal (V)
1.2	2.5	1.2	1.2
1.25	2.5	1.25	1.25
1.35	2.5	1.35	1.35
1.5	2.5	1.5, 1.8	1.5
1.8	2.5	1.5, 1.8	1.8
2.5	2.5	2.5, 3.0, 3.3	2.5
3.0	3.0	2.5, 3.0, 3.3	3.0
3.3	3.3	2.5, 3.0, 3.3	3.3

16M x 16 SD RAM

Expansion + USB Comms + Clocks

Clock Sources

USB Comms

Expansion A

Expansion B

Expansion C

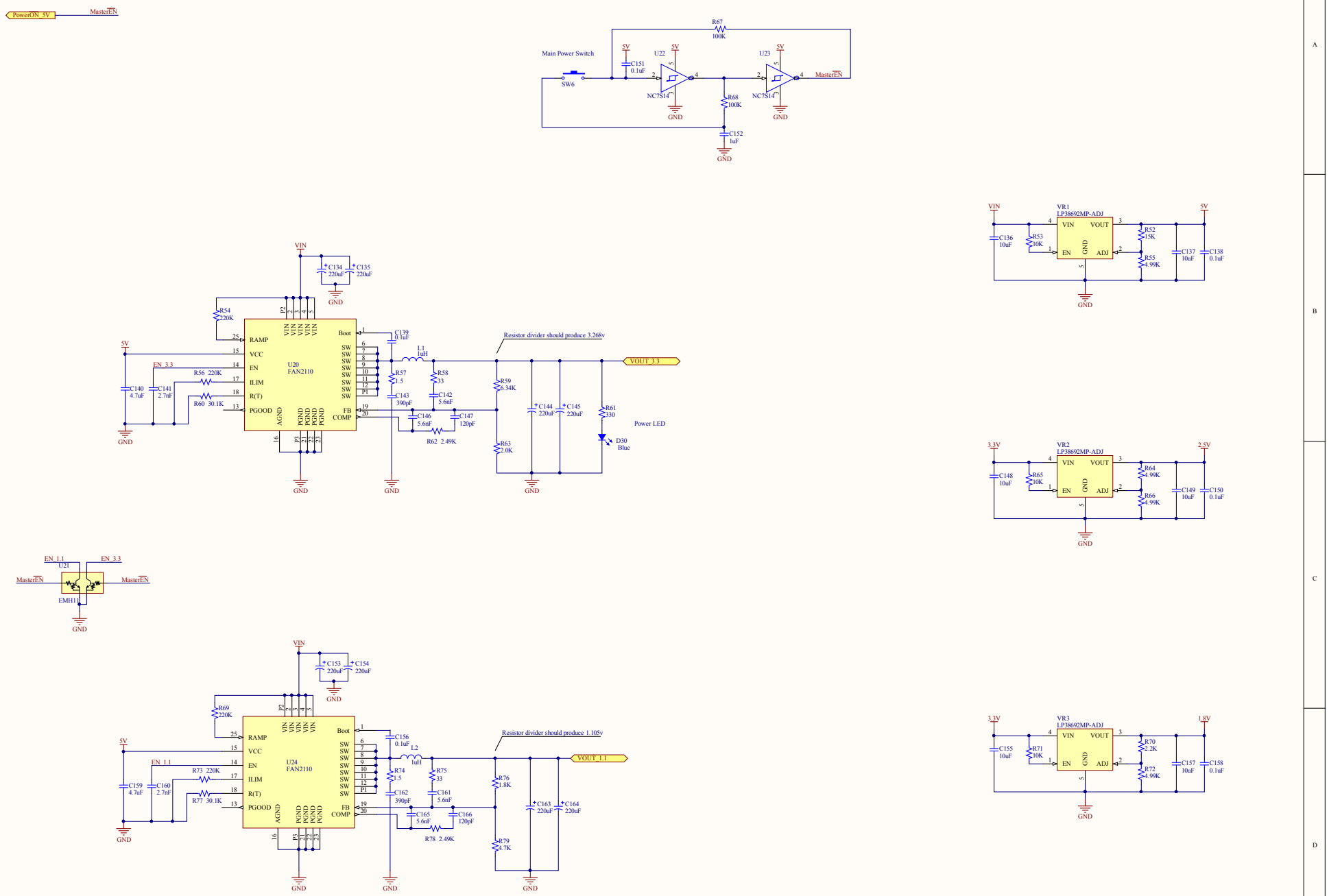
Local FPGA Power Rail Decoupling Capacitor Banks

DACs + VGA + User LEDs

User I/O Banks

3.3V User IO, Left Bank (P0-P31)

3.3V User IO, Right Bank (P32-P63)


PowerON_5V
MasterEN
R67
100K
Main Power Switch
SW6
5V
C151
0.1uF
U22
NC7S14"
U23
R68
100K
C152
1uF
GND
VIN
C134
220uF
C135
220uF
R54
220K
U20
FAN2110
RAMP
VCC
EN
ILIM
R(T)
PGOOD
Boot
SW
FB
COMP
AGND
PGND
C139
0.1uF
L1
1uH
Resistor divider should produce 3.268v
VOUT_3.3
EN_3.3
R56 220K
R60 30.1K
C140
4.7uF
C141
2.7nF
R57
1.5
R58
33
C143
390pF
C142
5.6nF
C146
5.6nF
C147
120pF
R62 2.49K
R59
6.34K
R63
2.0K
C144
220uF
C145
220uF
R61
330
Power LED
D30
Blue
VR1
LP38692MP-ADJ
VIN
VOUT
EN
ADJ
R52
15K
R55
4.99K
C136
10uF
R53
10K
C137
10uF
C138
0.1uF
VR2
R64
4.99K
R66
4.99K
C148
10uF
R65
10K
C149
10uF
C150
0.1uF
EN_1.1
U21
EMH11
C153
220uF
C154
220uF
R69
220K
U24
C156
0.1uF
L2
1uH
Resistor divider should produce 1.105v
VOUT_1.1
R73 220K
R77 30.1K
C159
4.7uF
C160
2.7nF
R74
1.5
R75
33
C162
390pF
C161
5.6nF
C165
5.6nF
C166
120pF
R78 2.49K
R76
1.8K
R79
4.7K
C163
220uF
C164
220uF
VR3
R70
2.2K
R72
4.99K
C155
10uF
R71
10K
C157
10uF
C158
0.1uF
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Number
Revision
Date:
10/29/2015
Sheet of
File:
C:\tmp\..\FAN2110_Power_1.1+3.3.SchDoc
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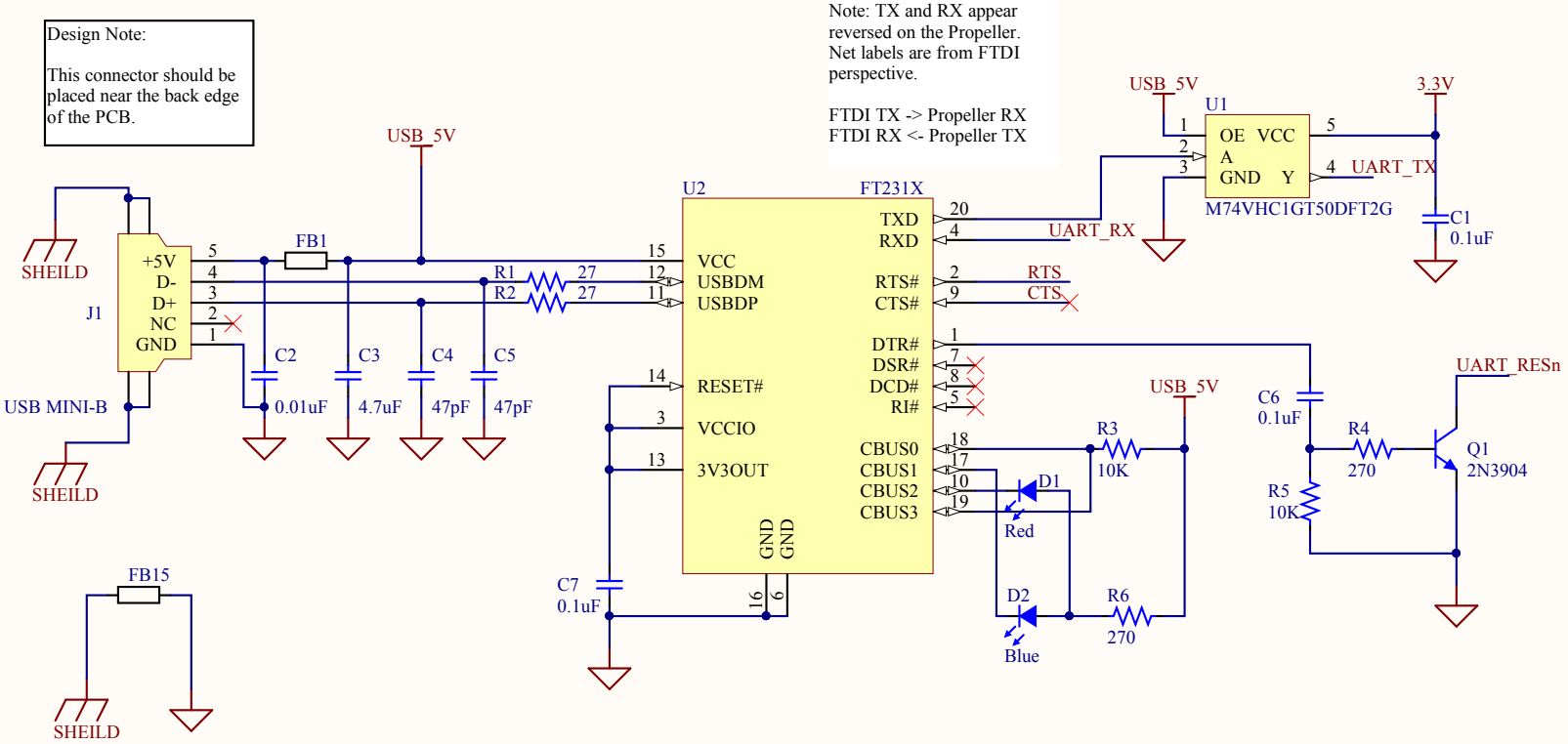
USB Connection UART

Off-Sheet Ports

TXD — UART_TX
RXD — UART_RX
RESn — UART_RESn



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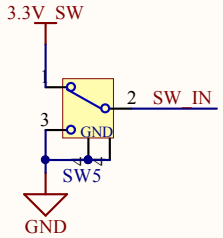
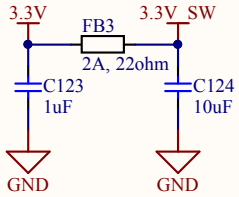
Device Configuration Select

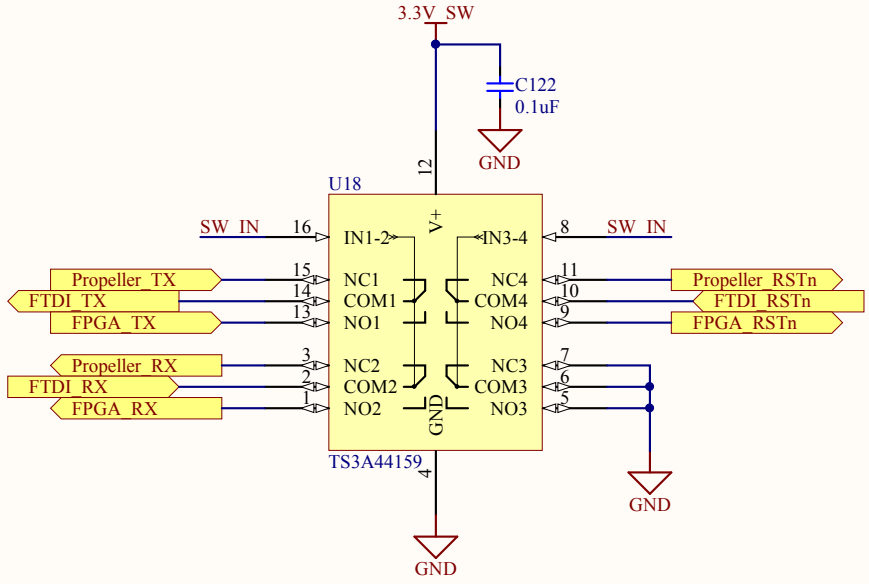
Device Select Switch



Power Supply Conditioning



Device Select MUX/DEMUX



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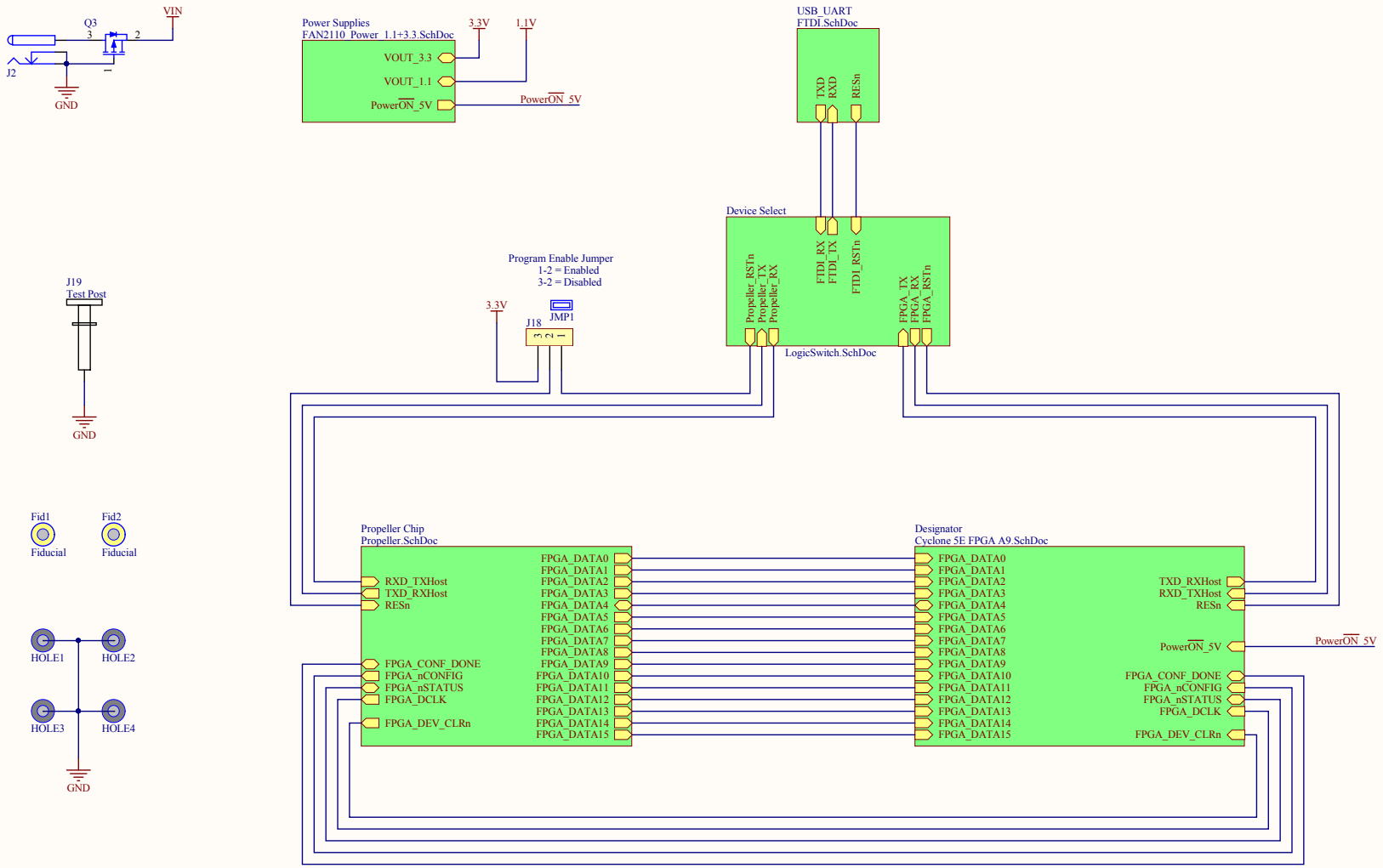

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Date: 10/29/2015	Sheet of	
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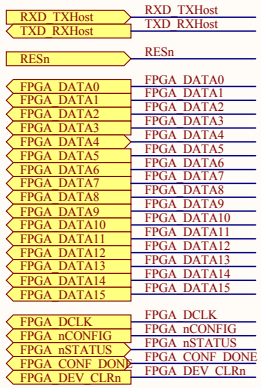
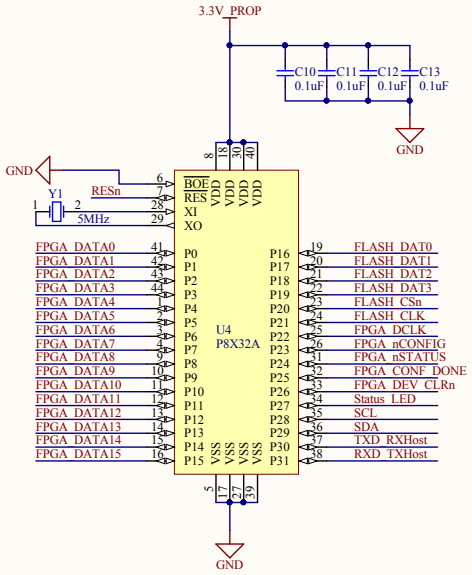
Propeller Chip FPGA Configuration Loader

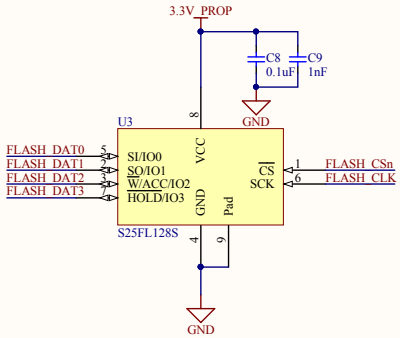
Off-Sheet Ports



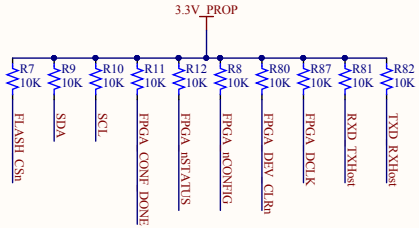
Propeller Chip



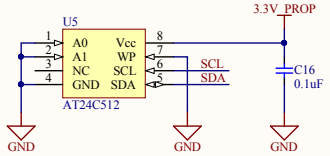
8MB Flash



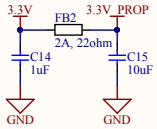
Pull-ups

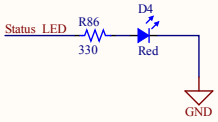


64KB EEPROM



Local Power Filter





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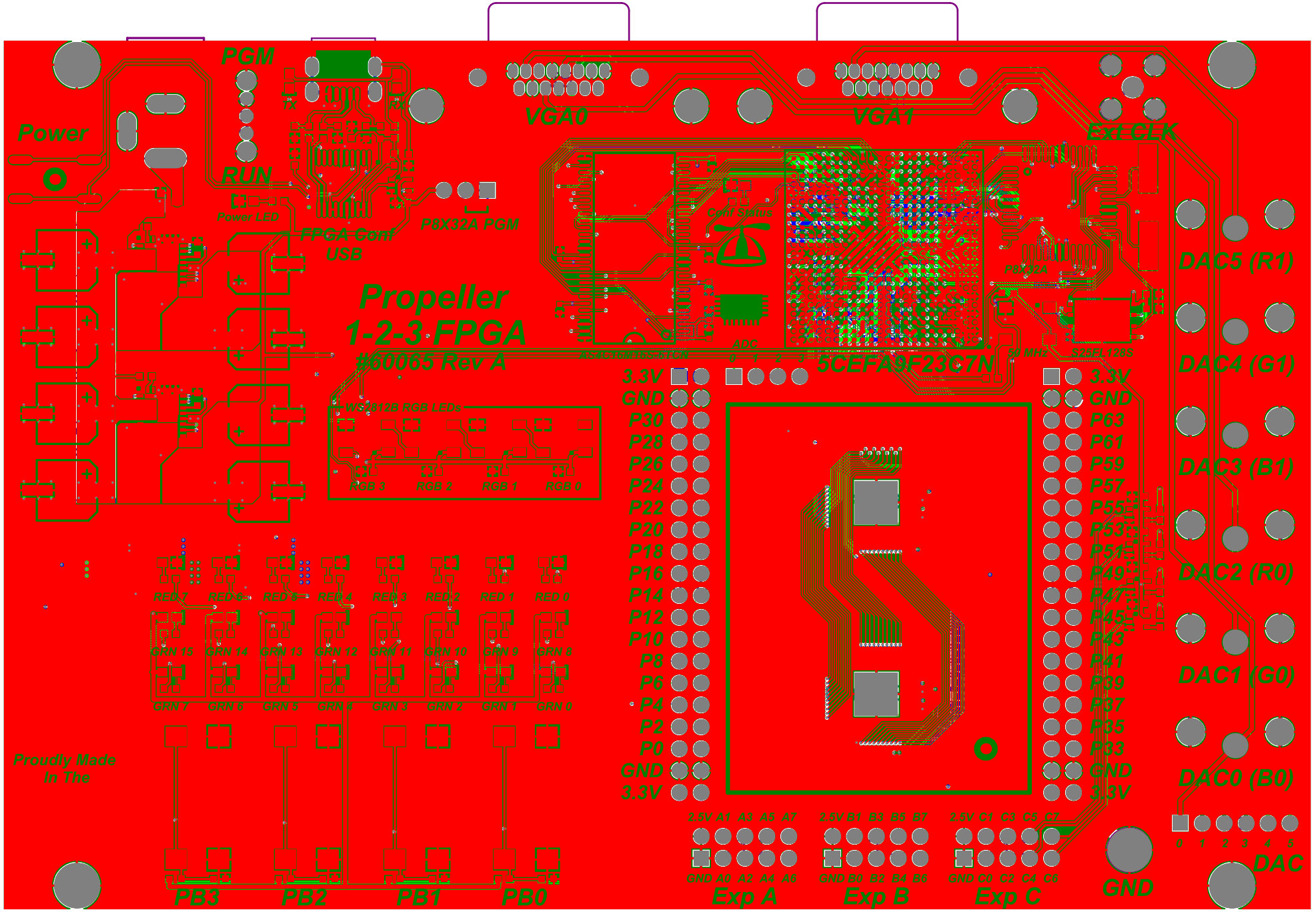
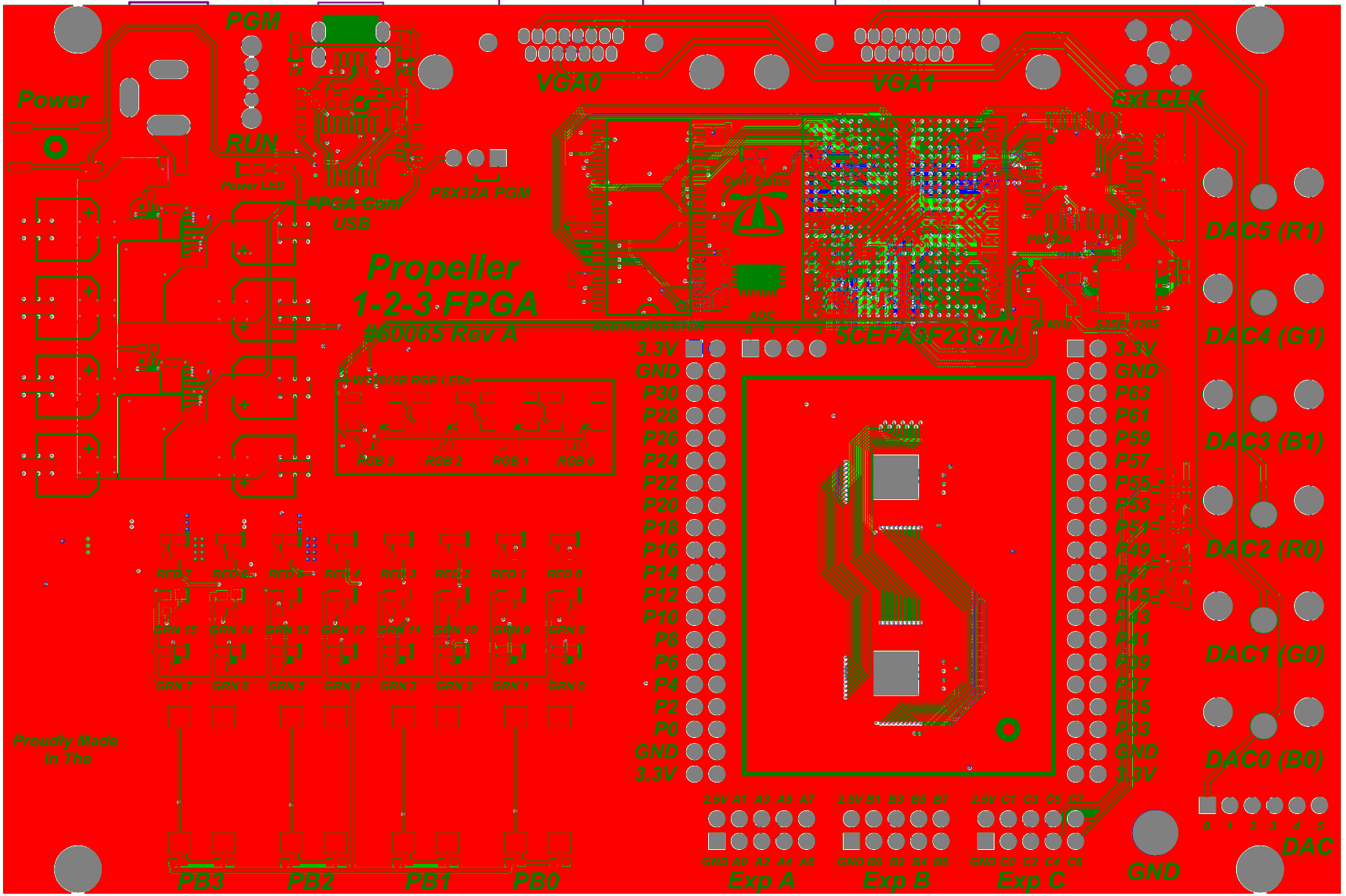
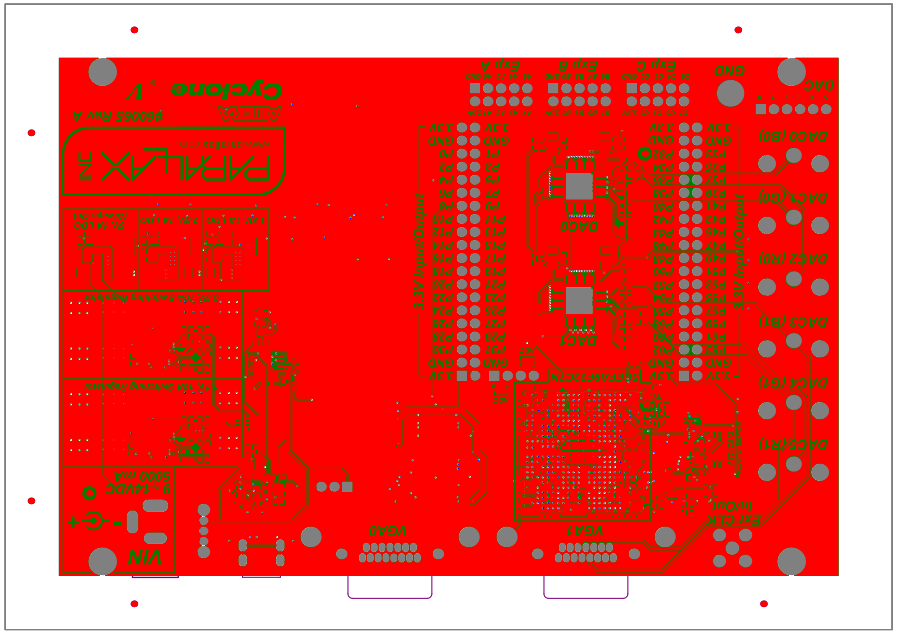


Top Silk Internal 3
Bottom Silk


PGM
Power
RUN
Power LED
FPGA Conf
USB
P8X32A PGM
VGA0
VGA1
Ext CLK
Conf Status
P8X32A
Propeller
1-2-3 FPGA
#60065 Rev A
ADC
AD9226BRUZ-40
5CEFA9F23C7N
50 MHz
S25FL128S
WS2812B RGB LEDs
RGB 3
RGB 2
RGB 1
RGB 0
DAC5 (R1)
DAC4 (G1)
DAC3 (B1)
DAC2 (R0)
DAC1 (G0)
DAC0 (B0)
DAC
3.3V
GND
P30
P28
P26
P24
P22
P20
P18
P16
P14
P12
P10
P8
P6
P4
P2
P0
P63
P61
P59
P57
P55
P53
P51
P49
P47
P45
P43
P41
P39
P37
P35
P33
RED 7
RED 6
RED 5
RED 4
RED 3
RED 2
RED 1
RED 0
GRN 15
GRN 14
GRN 13
GRN 12
GRN 11
GRN 10
GRN 9
GRN 8
GRN 7
GRN 6
GRN 5
GRN 4
GRN 3
GRN 2
GRN 1
GRN 0
Proudly Made
In The
PB3
PB2
PB1
PB0
2.5V A1 A3 A5 A7
GND A0 A2 A4 A6
Exp A
2.5V B1 B3 B5 B7
GND B0 B2 B4 B6
Exp B
2.5V C1 C3 C5 C7
GND C0 C2 C4 C6
Exp C
GND


Cyclone V
ALTERA
#60065 Rev A
FPGA
Propeller
1-2-3 FPGA
#60065 Rev A
5CEFA9F23C7N
VGA0
VGA1
Ext CLK
PGM
Power
RUN
DAC5 (R1)
DAC4 (G1)
DAC3 (B1)
DAC2 (R0)
DAC1 (G0)
DAC0 (B0)
DAC
Exp A
Exp B
Exp C
GND
P63
P59
P57
P55
P53
P51
P49
P47
P45
P43
P41
P39
P37
P35
P33
P31
P29
P27
P25
P23
P21
P19
P17
P15
P13
P11
P9
P7
P5
P3
P1
3.3V
PB3
PB2
PB1
PB0