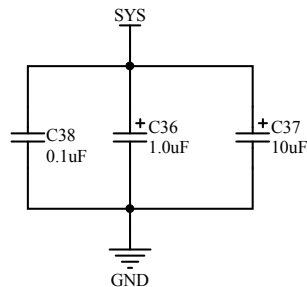
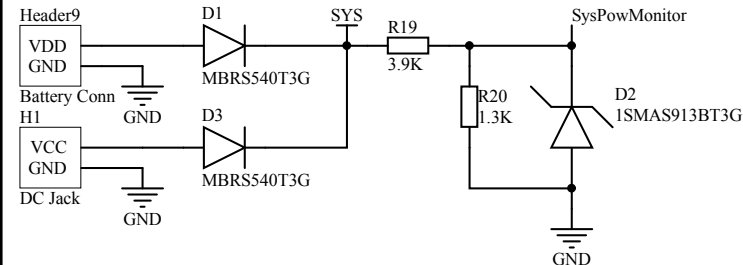


### 3S Lipo Battery



### Power Input, Selection, and Monitoring

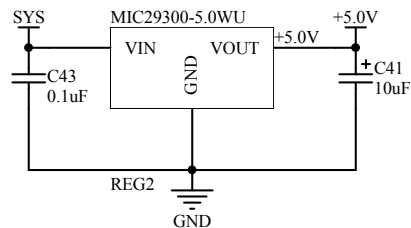


### Power Rails:

+5.0V Rated: 3000mA  
 +3.3V Rated: 3000mA  
 +2.8V Rated: 150mA  
 +1.5V Rated: 150mA  
 +1.2V Rated: 3000mA

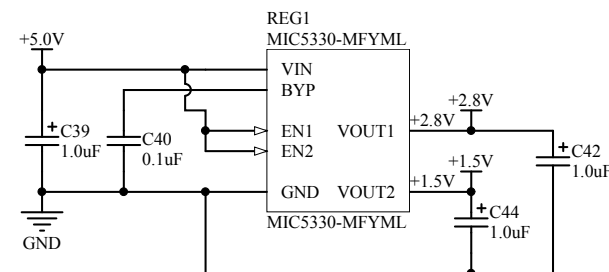
+6 to +11.7 VDC

### Battery -> 5.0 VDC

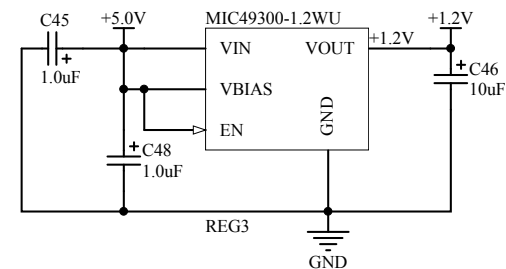


+5.0 VDC

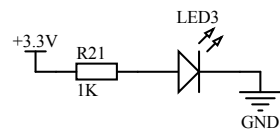
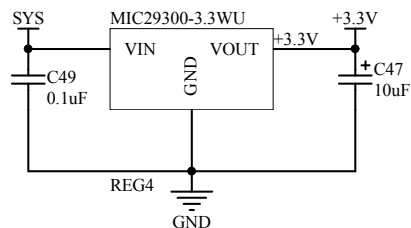
### 5.0 -> 2.8 & 1.5 VDC



### 5.0 -> 1.2 VDC



### Battery -> 3.3 VDC



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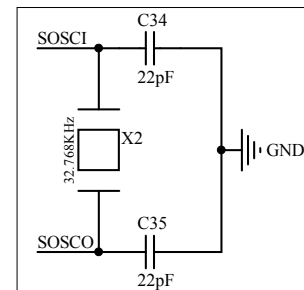
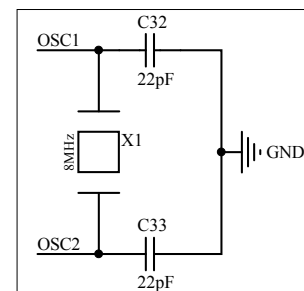
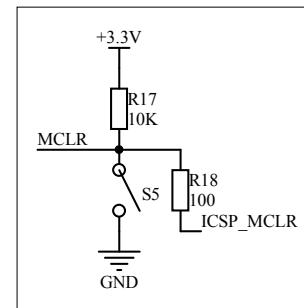
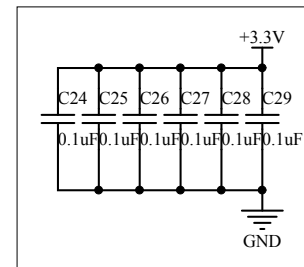
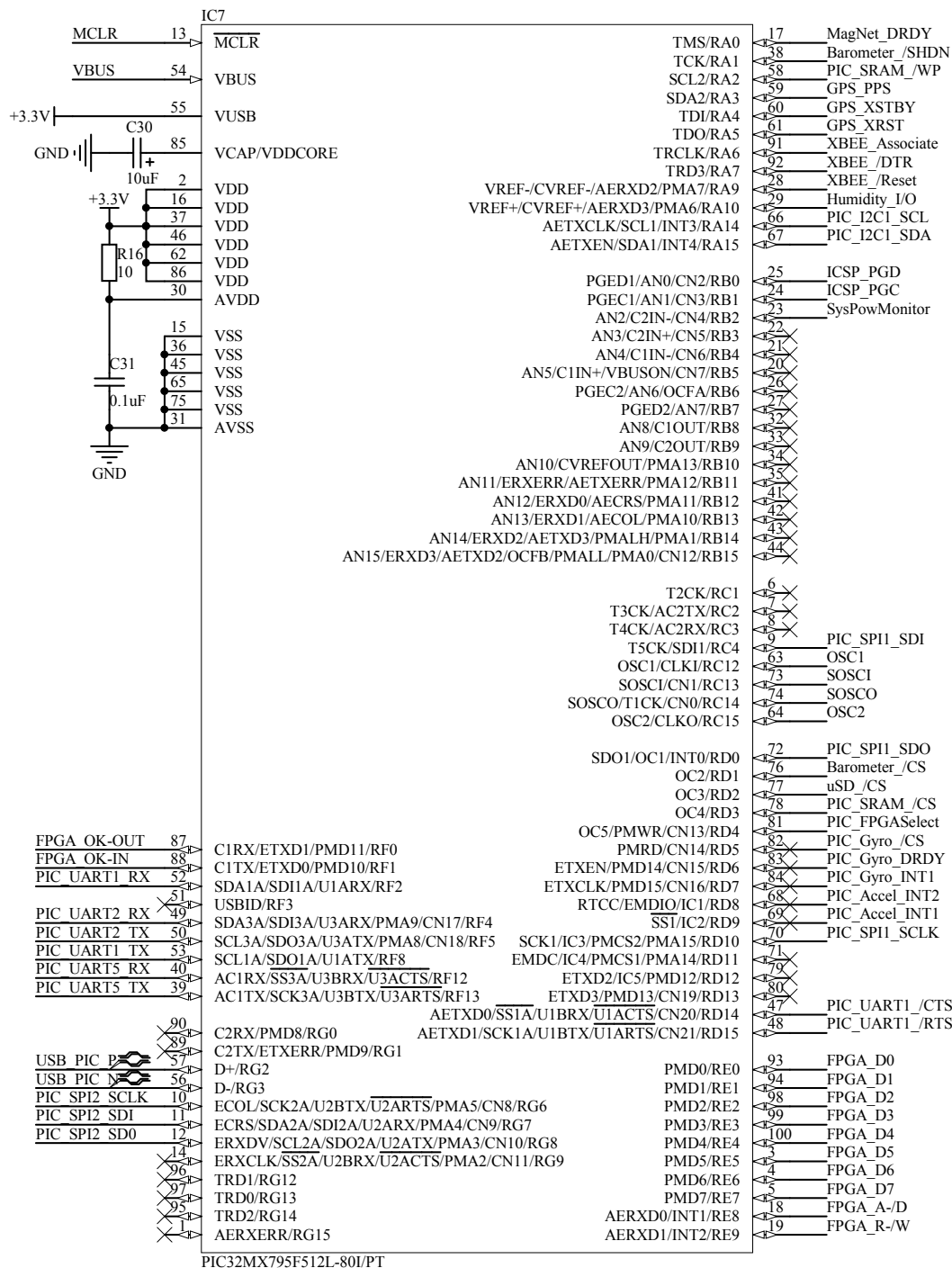
D

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Notes:

- VCAP is a 6V 1-Ohm Tantalum Capacitor

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## PIC SPI-1 Interface (PIC Peripherals)

PIC_SPI1_SCLK	PIC_SPI1_SDI	PIC_SPI1_SDO
<del>uSD_SCLK</del>	<del>uSD_SDO</del>	<del>uSD_SDI</del>
<del>PIC_SRAM_SCK</del>	<del>PIC_SRAM_SO</del>	<del>PIC_SRAM_SI</del>
<del>Barometer_SCLK</del>	<del>Barometer_DOUT</del>	<del>Barometer_DIN</del>
<del>PIC_Gyro_SPC</del>	<del>PIC_Gyro_SDO</del>	<del>PIC_Gyro_SDI</del>

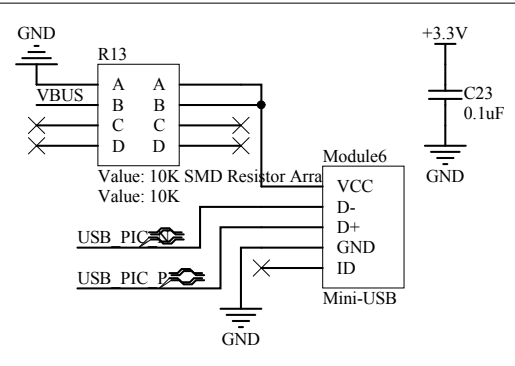
## PIC SPI-2 Interface (PIC-FPGA Connection)

PIC_SPI2_SCLK	PIC_SPI2_SDI	PIC_SPI2_SDO
<del>PIC_SCLK</del>	<del>PIC_MISO</del>	<del>PIC_MOSI</del>

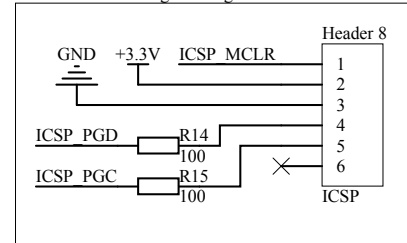
## PIC I2C-1 Interface

PIC_I2C1_SCL	PIC_I2C1_SDA
<del>Magnet_SCL</del>	<del>Magnet_SDA</del>
<del>DS1085_SCL</del>	<del>DS1085_SDA</del>
<del>PIC_Accel_SCL</del>	<del>PIC_Accel_SDA</del>

## PIC32 USB Interface



## In-Circuit Serial Programming Interface



## PIC UART-2/5 Interface (Trimble GPS Module)

PIC_UART2_RX	PIC_UART2_TX
<del>GPS_TXB</del>	<del>GPS_RXB</del>
PIC_UART5_RX	PIC_UART5_TX
<del>GPS_TXA</del>	<del>GPS_RXA</del>

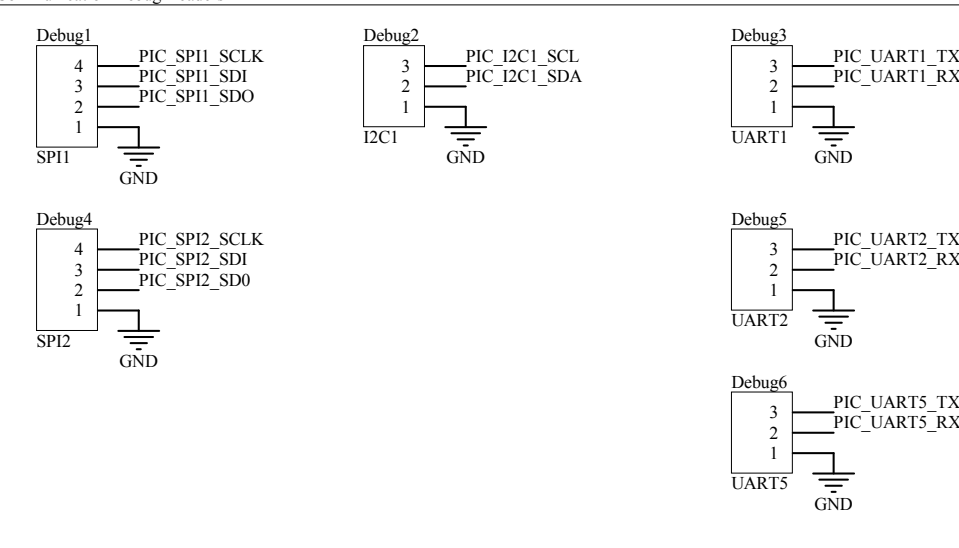
## PIC UART-1 Interface (XBee Pro)

PIC_UART1_CTS	PIC_UART1_RTS
<del>XBEE_RTS</del>	<del>XBEE_CTS</del>
PIC_UART1_RX	PIC_UART1_TX
<del>XBEE_DOUT</del>	<del>XBEE_DIN</del>

## PIC Control Lines

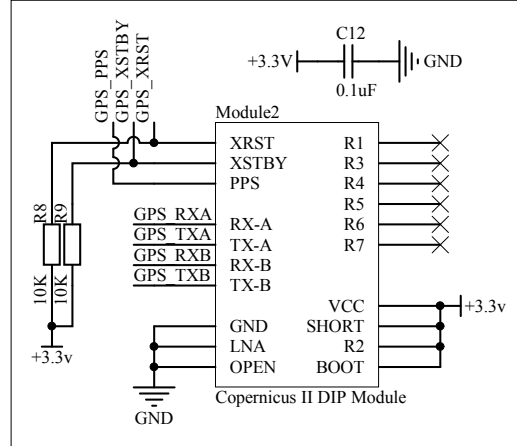
<del>Humidity_I/O</del>
<del>MagNet_DRDY</del>
<del>PIC_FPGASelect</del>
<del>Barometer_CS</del>
<del>Barometer_SHDN</del>
<del>uSD_CS</del>
<del>PIC_SRAM_WP</del>
<del>PIC_SRAM_CS</del>
<del>GPS_PPS</del>
<del>GPS_XSTBY</del>
<del>GPS_XRST</del>
<del>XBEE_Associate</del>
<del>XBEE_DTR</del>
<del>XBEE_Reset</del>

## Communication Debug Headers



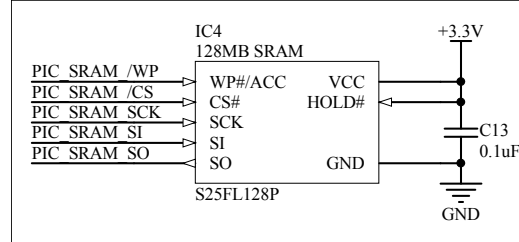
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GPS Module 38.4Kbps TSIP / 4.8Kbps NMEA Interface



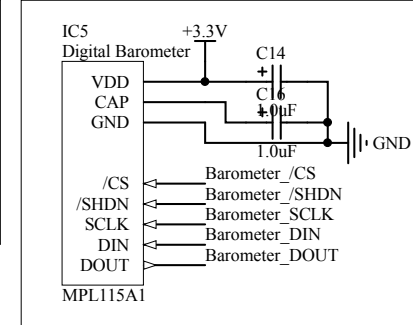
Serial SRAM

104/40MHz SPI Interface



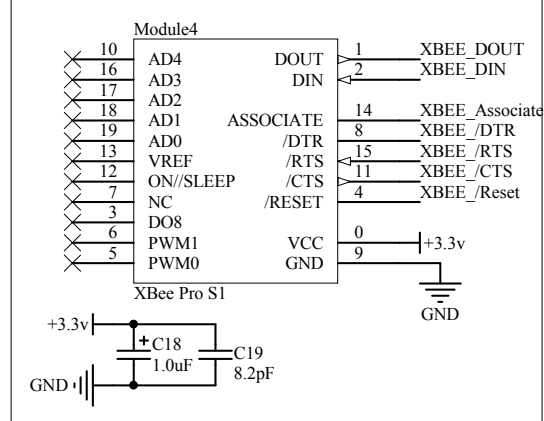
Barometric Sensor

8MHz SPI Interface



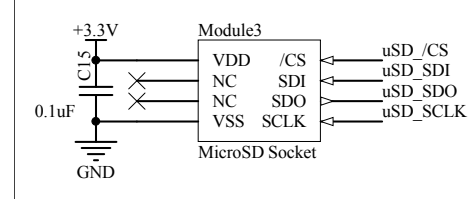
XBee Module

57.6 Kbps Serial Interface



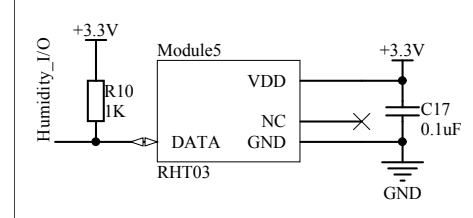
MicroSD Card

25MHz SPI Interface

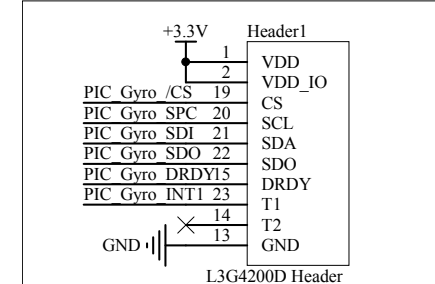


Humidity Sensor

1-Wire Interface

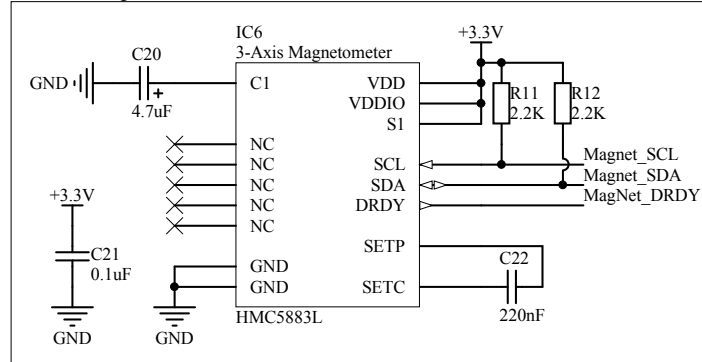


Test Connections



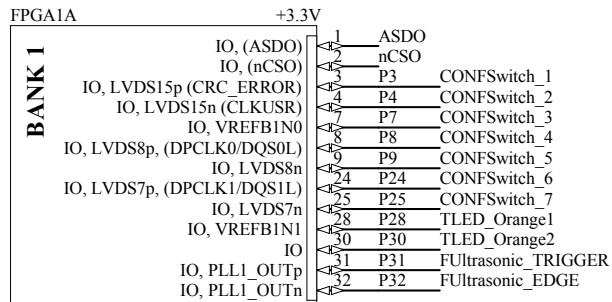
Three-Axis Magnetometer

400KHz I2C Interface



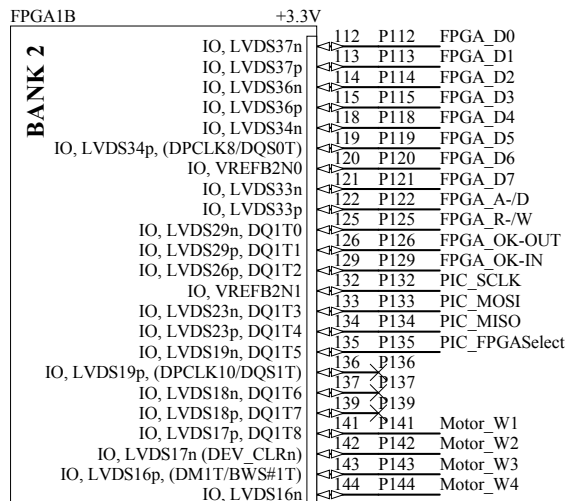
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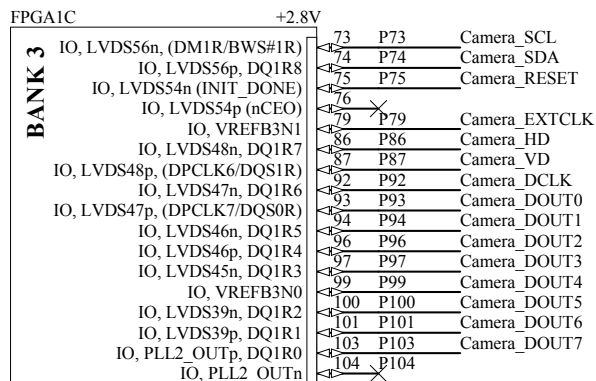
EP2C8T144C8N

B



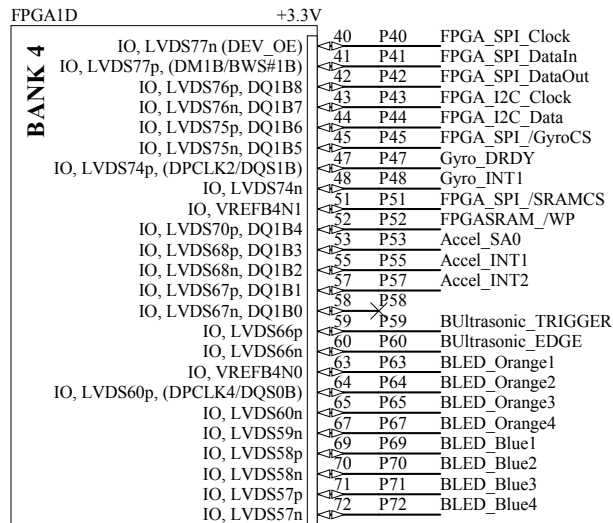
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C



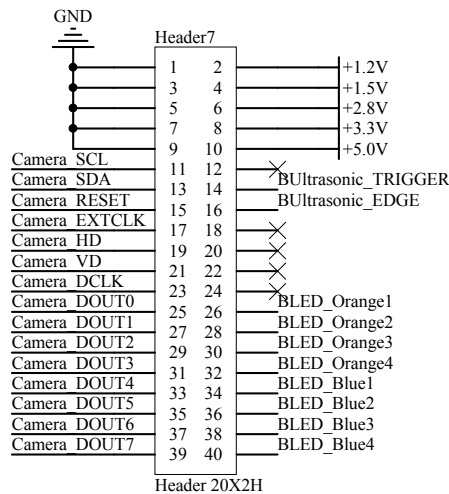
EP2C8T144C8N

D

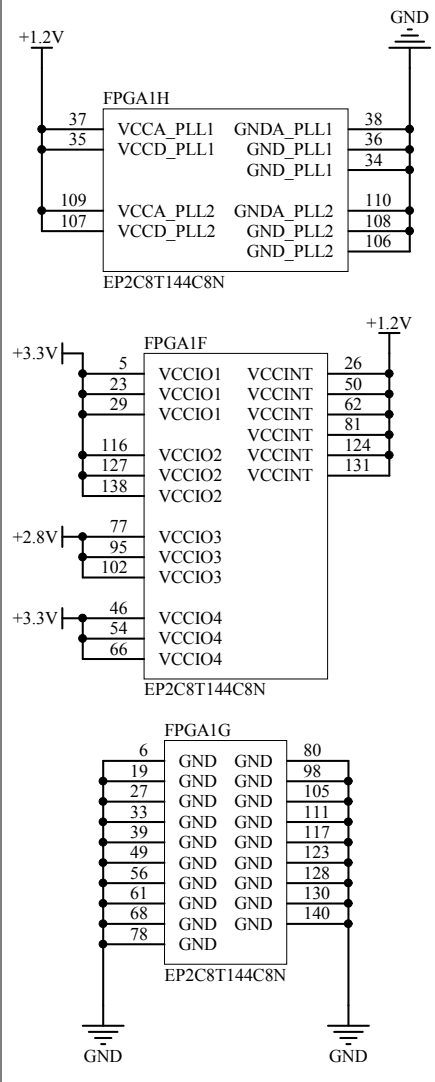


EP2C8T144C8N

Bottom PCB Bus



FPGA Power Connections



A

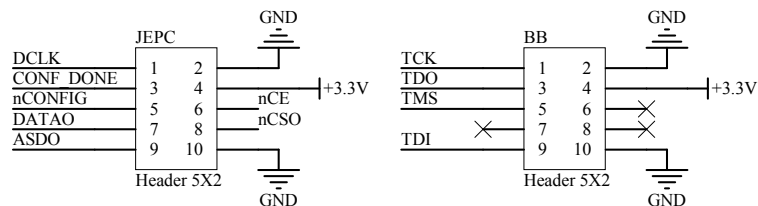
B

C

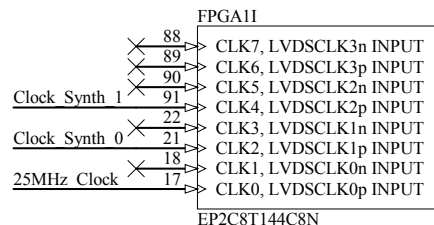
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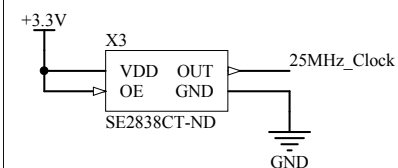
## FPGA JTAG Configuration Headers



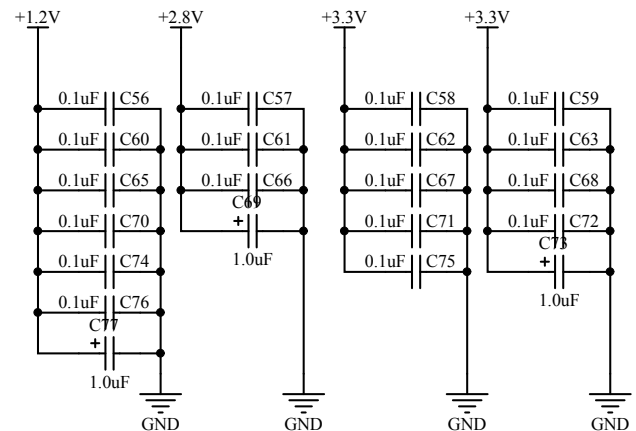
## FPGA Clock Connections



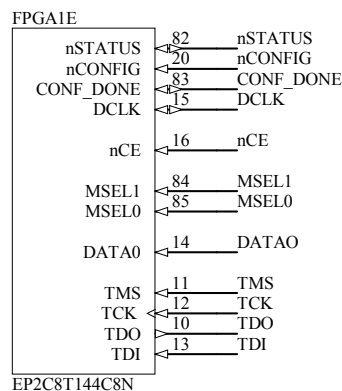
## 25.175MHz Master Clock



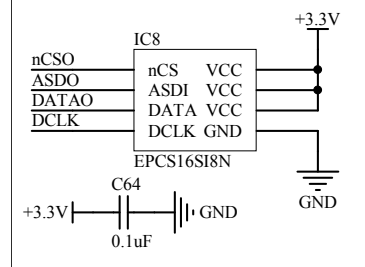
## FPGA Bypass Capacitors



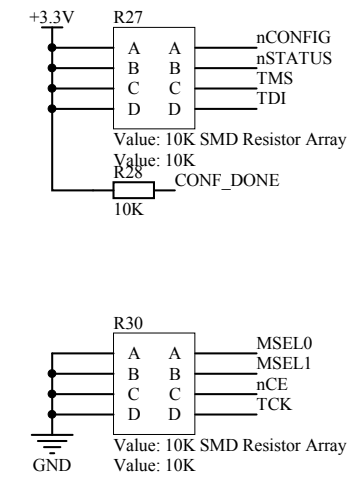
## FPGA Configuration Connections



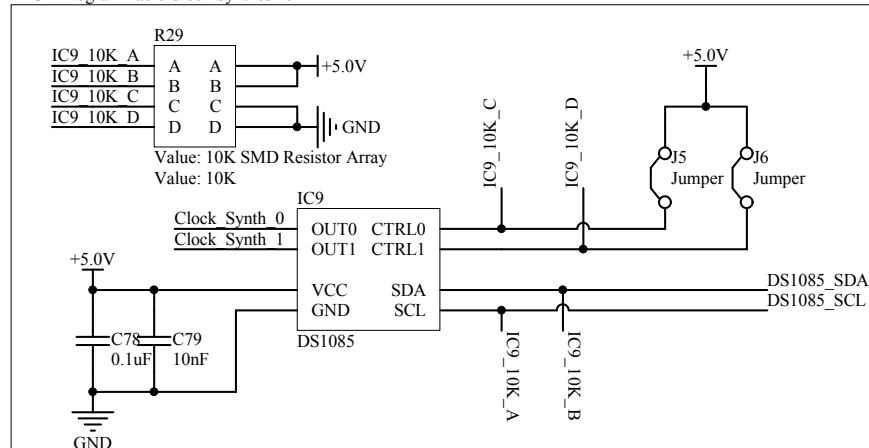
## FPGA Configuration Memory



## FPGA Signal Conditioning



## FPGA Programmable Clock Synthesizer



Title

Size

Number

Revision

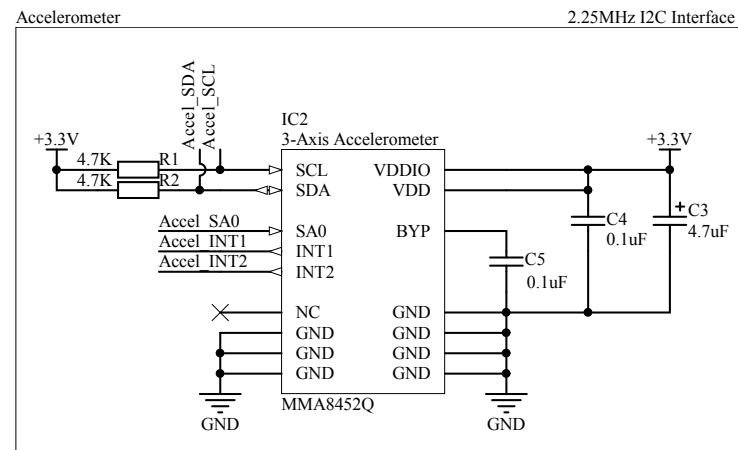
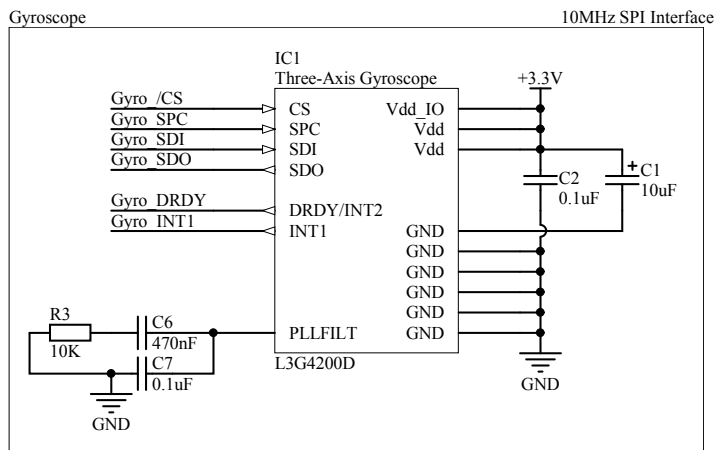
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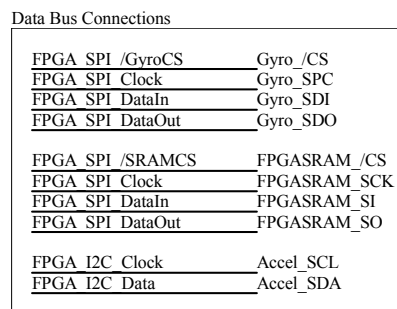
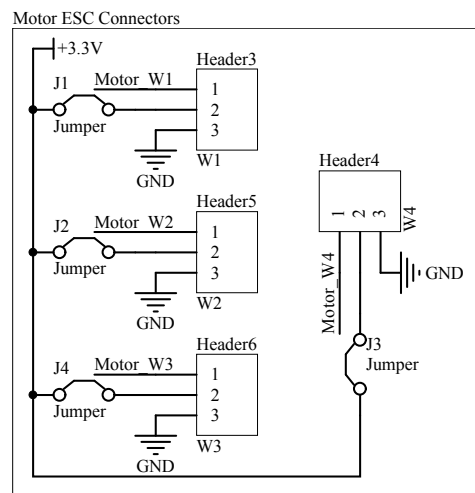
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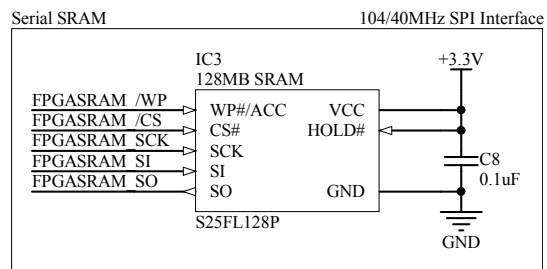
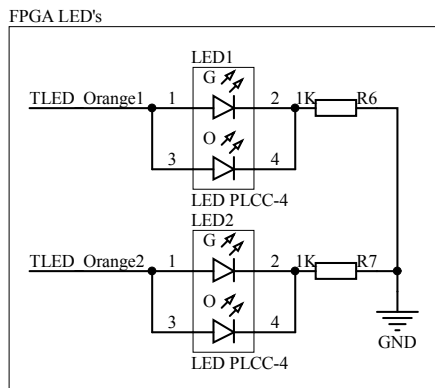
A

B



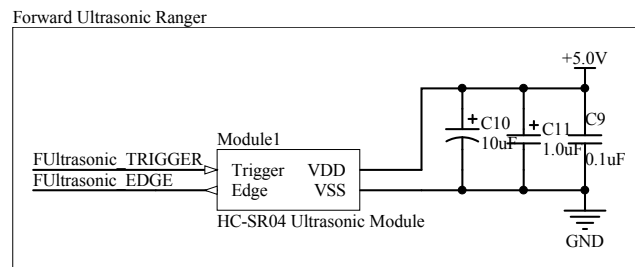
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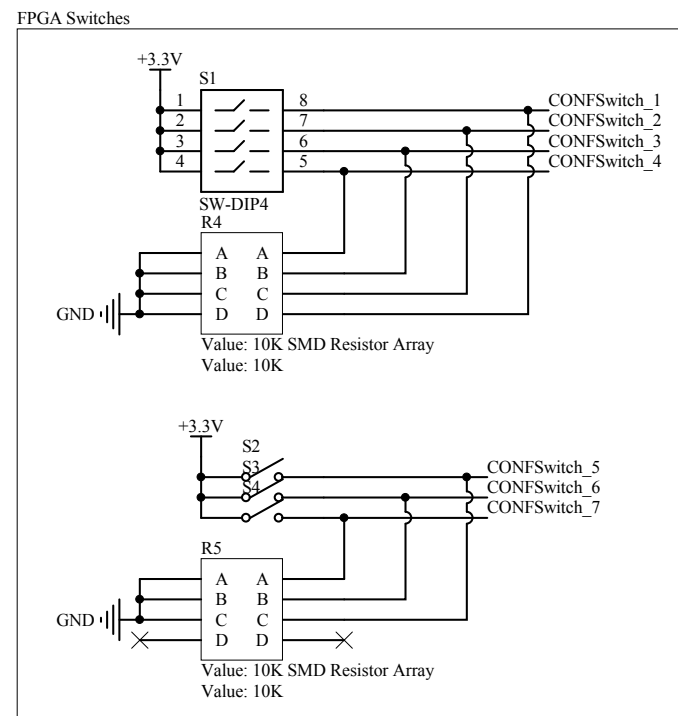


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