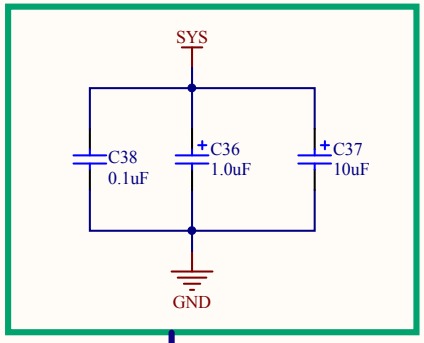
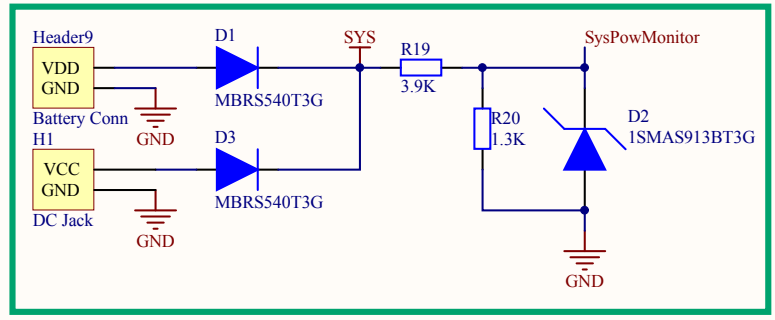
3S Lipo Battery



Power Input, Selection, and Monitoring

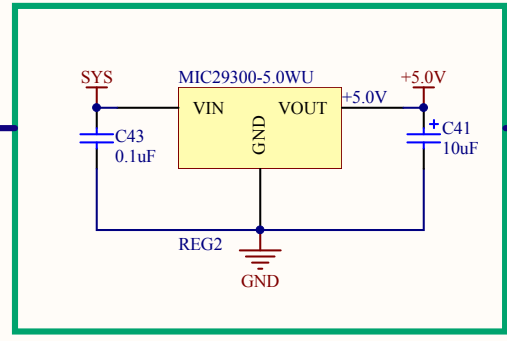


Power Rails:

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

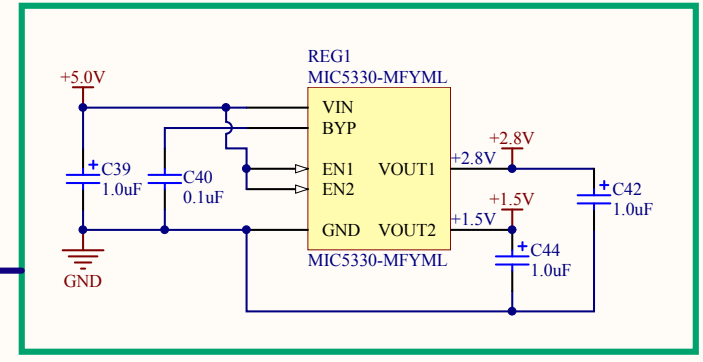
+6 to +11.7 VDC

Battery -> 5.0 VDC

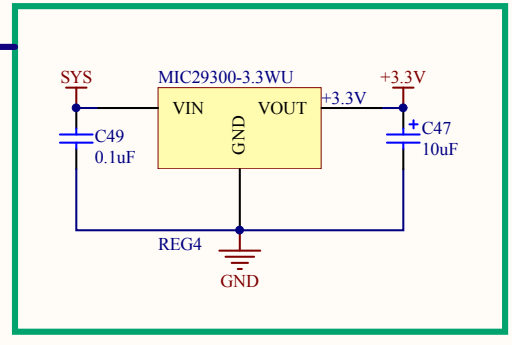


+5.0 VDC

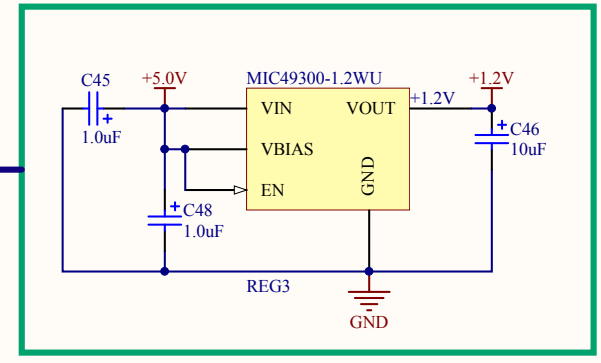
5.0 -> 2.8 & 1.5 VDC

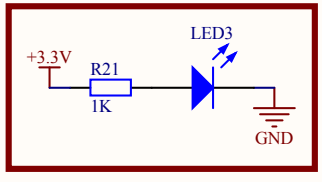


Battery -> 3.3 VDC



5.0 -> 1.2 VDC





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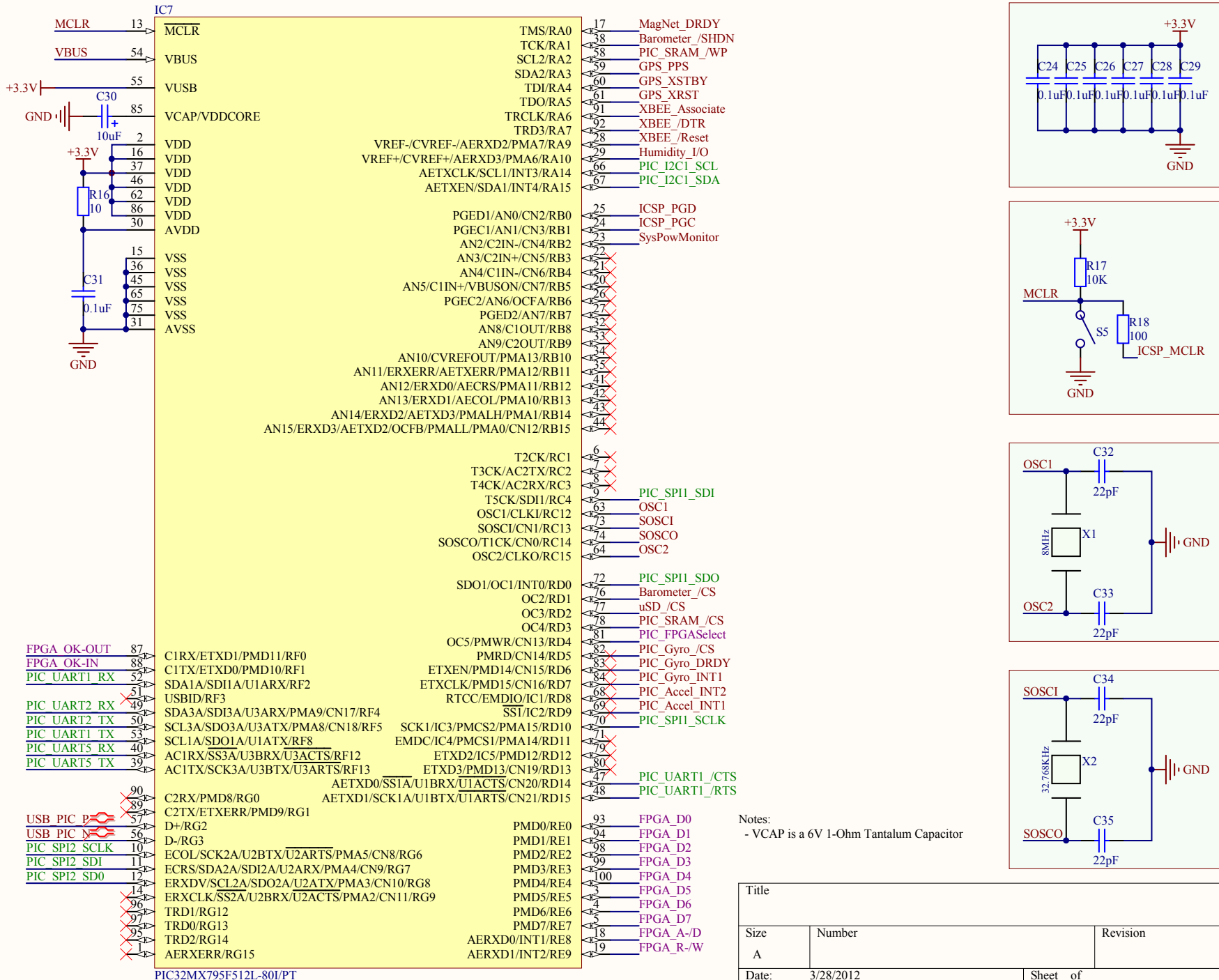
IC7
MCLR
VBUS
+3.3V
GND
C30
10uF
R16
10
C31
0.1uF
MCLR
VBUS
VUSB
VCAP/VDDCORE
VDD
VSS
AVDD
AVSS
TMS/RA0
TCK/RA1
SCL2/RA2
SDA2/RA3
TDI/RA4
TDO/RA5
TRCLK/RA6
TRD3/RA7
VREF-/CVREF-/AERXD2/PMA7/RA9
VREF+/CVREF+/AERXD3/PMA6/RA10
AETXCLK/SCL1/INT3/RA14
AETXEN/SDA1/INT4/RA15
PGED1/AN0/CN2/RB0
PGEC1/AN1/CN3/RB1
AN2/C2IN-/CN4/RB2
AN3/C2IN+/CN5/RB3
AN4/C1IN-/CN6/RB4
AN5/C1IN+/VBUSON/CN7/RB5
PGEC2/AN6/OCFA/RB6
PGED2/AN7/RB7
AN8/C1OUT/RB8
AN9/C2OUT/RB9
AN10/CVREFOUT/PMA13/RB10
AN11/ERXERR/AETXERR/PMA12/RB11
AN12/ERXD0/AECRS/PMA11/RB12
AN13/ERXD1/AECOL/PMA10/RB13
AN14/ERXD2/AETXD3/PMALH/PMA1/RB14
AN15/ERXD3/AETXD2/OCFB/PMALL/PMA0/CN12/RB15
T2CK/RC1
T3CK/AC2TX/RC2
T4CK/AC2RX/RC3
T5CK/SDI1/RC4
OSC1/CLKI/RC12
SOSCI/CN1/RC13
SOSCO/T1CK/CN0/RC14
OSC2/CLKO/RC15
SDO1/OC1/INT0/RD0
OC2/RD1
OC3/RD2
OC4/RD3
OC5/PMWR/CN13/RD4
C1RX/ETXD1/PMD11/RF0
C1TX/ETXD0/PMD10/RF1
SDA1A/SDI1A/U1ARX/RF2
USBID/RF3
SDA3A/SDI3A/U3ARX/PMA9/CN17/RF4
SCL3A/SDO3A/U3ATX/PMA8/CN18/RF5
SCL1A/SDO1A/U1ATX/RF8
AC1RX/SS3A/U3BRX/U3ACTS/RF12
AC1TX/SCK3A/U3BTX/U3ARTS/RF13
PMRD/CN14/RD5
ETXEN/PMD14/CN15/RD6
ETXCLK/PMD15/CN16/RD7
RTCC/EMDIO/IC1/RD8
SS1/IC2/RD9
SCK1/IC3/PMCS2/PMA15/RD10
EMDC/IC4/PMCS1/PMA14/RD11
ETXD2/IC5/PMD12/RD12
ETXD3/PMD13/CN19/RD13
AETXD0/SS1A/U1BRX/U1ACTS/CN20/RD14
AETXD1/SCK1A/U1BTX/U1ARTS/CN21/RD15
C2RX/PMD8/RG0
C2TX/ETXERR/PMD9/RG1
D+/RG2
D-/RG3
ECOL/SCK2A/U2BTX/U2ARTS/PMA5/CN8/RG6
ECRS/SDA2A/SDI2A/U2ARX/PMA4/CN9/RG7
ERXDV/SCL2A/SDO2A/U2ATX/PMA3/CN10/RG8
ERXCLK/SS2A/U2BRX/U2ACTS/PMA2/CN11/RG9
TRD1/RG12
TRD0/RG13
TRD2/RG14
AERXERR/RG15
PMD0/RE0
PMD1/RE1
PMD2/RE2
PMD3/RE3
PMD4/RE4
PMD5/RE5
PMD6/RE6
PMD7/RE7
AERXD0/INT1/RE8
AERXD1/INT2/RE9
MagNet_DRDY
Barometer_/SHDN
PIC_SRAM_/WP
GPS_PPS
GPS_XSTBY
GPS_XRST
XBEE_Associate
XBEE_/DTR
XBEE_/Reset
Humidity_I/O
PIC_I2C1_SCL
PIC_I2C1_SDA
ICSP_PGD
ICSP_PGC
SysPowMonitor
PIC_SPI1_SDI
OSC1
SOSCI
SOSCO
OSC2
PIC_SPI1_SDO
Barometer_/CS
uSD_/CS
PIC_SRAM_/CS
PIC_FPGASelect
PIC_Gyro_/CS
PIC_Gyro_DRDY
PIC_Gyro_INT1
PIC_Accel_INT2
PIC_Accel_INT1
PIC_SPI1_SCLK
PIC_UART1_/CTS
PIC_UART1_/RTS
FPGA_D0
FPGA_D1
FPGA_D2
FPGA_D3
FPGA_D4
FPGA_D5
FPGA_D6
FPGA_D7
FPGA_A-/D
FPGA_R-/W
FPGA_OK-OUT
FPGA_OK-IN
PIC_UART1_RX
PIC_UART2_RX
PIC_UART2_TX
PIC_UART1_TX
PIC_UART5_RX
PIC_UART5_TX
USB_PIC_P
USB_PIC_N
PIC_SPI2_SCLK
PIC_SPI2_SDI
PIC_SPI2_SD0
PIC32MX795F512L-80I/PT
+3.3V
C24
C25
C26
C27
C28
C29
0.1uF
GND
R17
10K
MCLR
S5
R18
100
ICSP_MCLR
C32
22pF
OSC1
8MHz
X1
OSC2
C33
C34
SOSCI
32.768KHz
X2
SOSCO
C35
Notes:
- VCAP is a 6V 1-Ohm Tantalum Capacitor
Title
Size
A
Number
Revision
Date: 3/28/2012
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File: C:\Users\..\Navigator_Core.SchDoc
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PIC SPI-1 Interface (PIC Peripherals)

PIC_SPI1_SCLK	PIC_SPI1_SDI	PIC_SPI1_SDO
uSD_SCLK	uSD_SDO	uSD_SDI
PIC_SRAM_SCK	PIC_SRAM_SO	PIC_SRAM_SI
Barometer_SCLK	Barometer_DOUT	Barometer_DIN
PIC_Gyro_SPC	PIC_Gyro_SDO	PIC_Gyro_SDI

PIC SPI-2 Interface (PIC-FPGA Connection)

PIC_SPI2_SCLK	PIC_SPI2_SDI	PIC_SPI2_SD0
PIC_SCLK	PIC_MISO	PIC_MOSI

PIC I2C-1 Interface

PIC_I2C1_SCL	PIC_I2C1_SDA
Magnet_SCL	Magnet_SDA
DS1085_SCL	DS1085_SDA
PIC_Accel_SCL	PIC_Accel_SDA

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

PIC_UART2_RX	PIC_UART2_TX
GPS_TXB	GPS_RXB
PIC_UART5_RX	PIC_UART5_TX
GPS_TXA	GPS_RXA

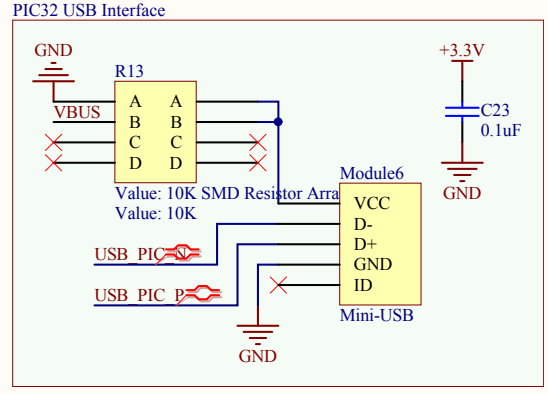
PIC UART-1 Interface (XBee Pro)

PIC_UART1_/CTS	PIC_UART1_/RTS
XBEE_/RTS	XBEE_/CTS
PIC_UART1_RX	PIC_UART1_TX
XBEE_DOUT	XBEE_DIN

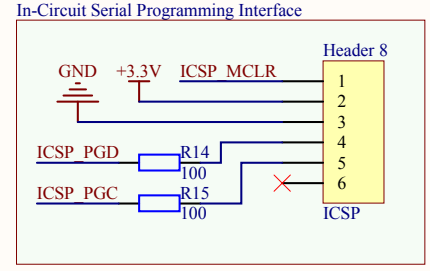
PIC Control Lines

- Humidity_I/O
- MagNet_DRDY
- PIC_FPGASelect
- Barometer_/CS
- Barometer_/SHDN
- uSD_/CS
- PIC_SRAM_/WP
- PIC_SRAM_/CS
- GPS_PPS
- GPS_XSTBY
- GPS_XRST
- XBEE_Associate
- XBEE_/DTR
- XBEE_/Reset

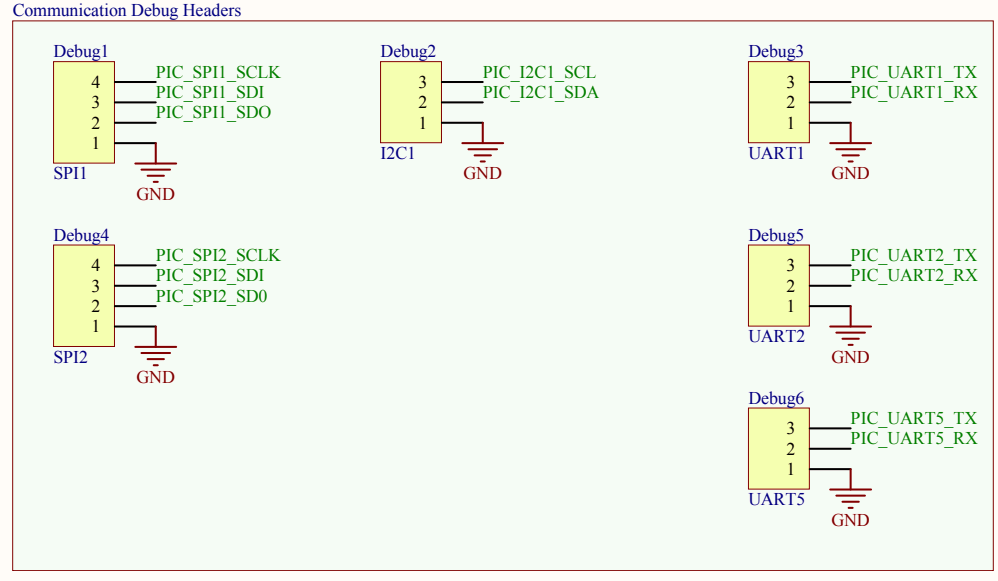
PIC32 USB Interface



In-Circuit Serial Programming Interface



Communication Debug Headers



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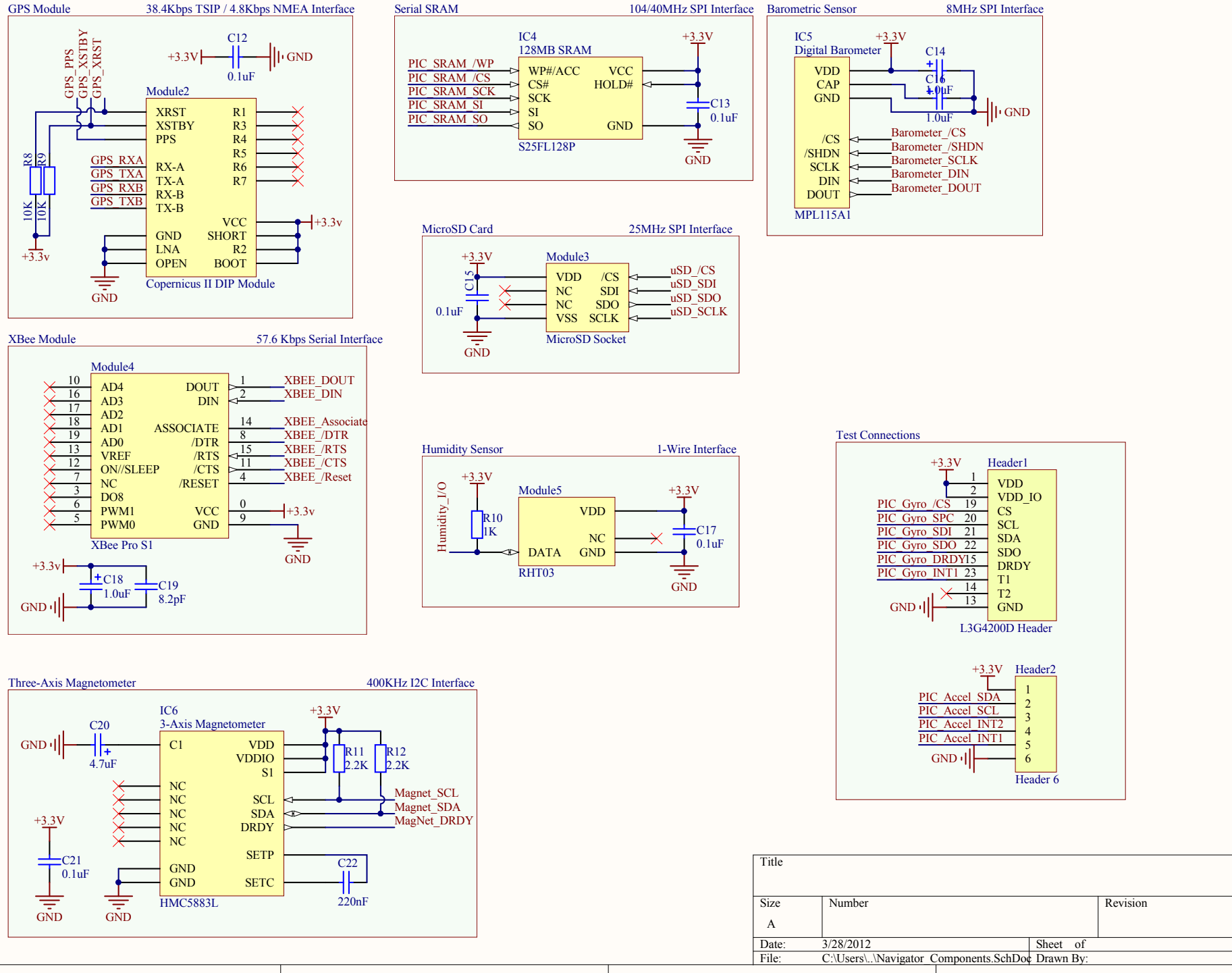
GPS Module
38.4Kbps TSIP / 4.8Kbps NMEA Interface
GPS_PPS
GPS_XSTBY
GPS_XRST
C12
+3.3V
GND
0.1uF
Module2
XRST
XSTBY
PPS
RX-A
TX-A
RX-B
TX-B
GND
LNA
OPEN
R1
R3
R4
R5
R6
R7
R2
BOOT
VCC
SHORT
+3.3v
GPS_RXA
GPS_TXA
GPS_RXB
GPS_TXB
R8
R9
10K
10K
Copernicus II DIP Module
Serial SRAM
104/40MHz SPI Interface
IC4
128MB SRAM
PIC_SRAM_/WP
PIC_SRAM_/CS
PIC_SRAM_SCK
PIC_SRAM_SI
PIC_SRAM_SO
WP#/ACC
CS#
SCK
SI
SO
VCC
HOLD#
GND
C13
0.1uF
S25FL128P
Barometric Sensor
8MHz SPI Interface
IC5
Digital Barometer
VDD
CAP
GND
C14
C16
1.0uF
/CS
/SHDN
SCLK
DIN
DOUT
Barometer_/CS
Barometer_/SHDN
Barometer_SCLK
Barometer_DIN
Barometer_DOUT
MPL115A1
MicroSD Card
25MHz SPI Interface
C15
0.1uF
Module3
VDD
NC
NC
VSS
/CS
SDI
SDO
SCLK
uSD_/CS
uSD_SDI
uSD_SDO
uSD_SCLK
MicroSD Socket
XBee Module
57.6 Kbps Serial Interface
Module4
AD4
AD3
AD2
AD1
AD0
VREF
ON//SLEEP
NC
DO8
PWM1
PWM0
DOUT
DIN
ASSOCIATE
/DTR
/RTS
/CTS
/RESET
VCC
GND
XBEE_DOUT
XBEE_DIN
XBEE_Associate
XBEE_/DTR
XBEE_/RTS
XBEE_/CTS
XBEE_/Reset
XBee Pro S1
C18
1.0uF
C19
8.2pF
Humidity Sensor
1-Wire Interface
Humidity_I/O
R10
1K
Module5
VDD
NC
DATA
GND
C17
0.1uF
RHT03
Test Connections
Header1
PIC_Gyro_/CS
PIC_Gyro_SPC
PIC_Gyro_SDI
PIC_Gyro_SDO
PIC_Gyro_DRDY
PIC_Gyro_INT1
VDD
VDD_IO
CS
SCL
SDA
SDO
DRDY
T1
T2
GND
L3G4200D Header
Header2
PIC_Accel_SDA
PIC_Accel_SCL
PIC_Accel_INT2
PIC_Accel_INT1
Header 6
Three-Axis Magnetometer
400KHz I2C Interface
IC6
3-Axis Magnetometer
C20
4.7uF
C1
VDD
VDDIO
S1
NC
SCL
SDA
DRDY
SETP
GND
SETC
R11
2.2K
R12
2.2K
Magnet_SCL
Magnet_SDA
MagNet_DRDY
C21
0.1uF
C22
220nF
HMC5883L
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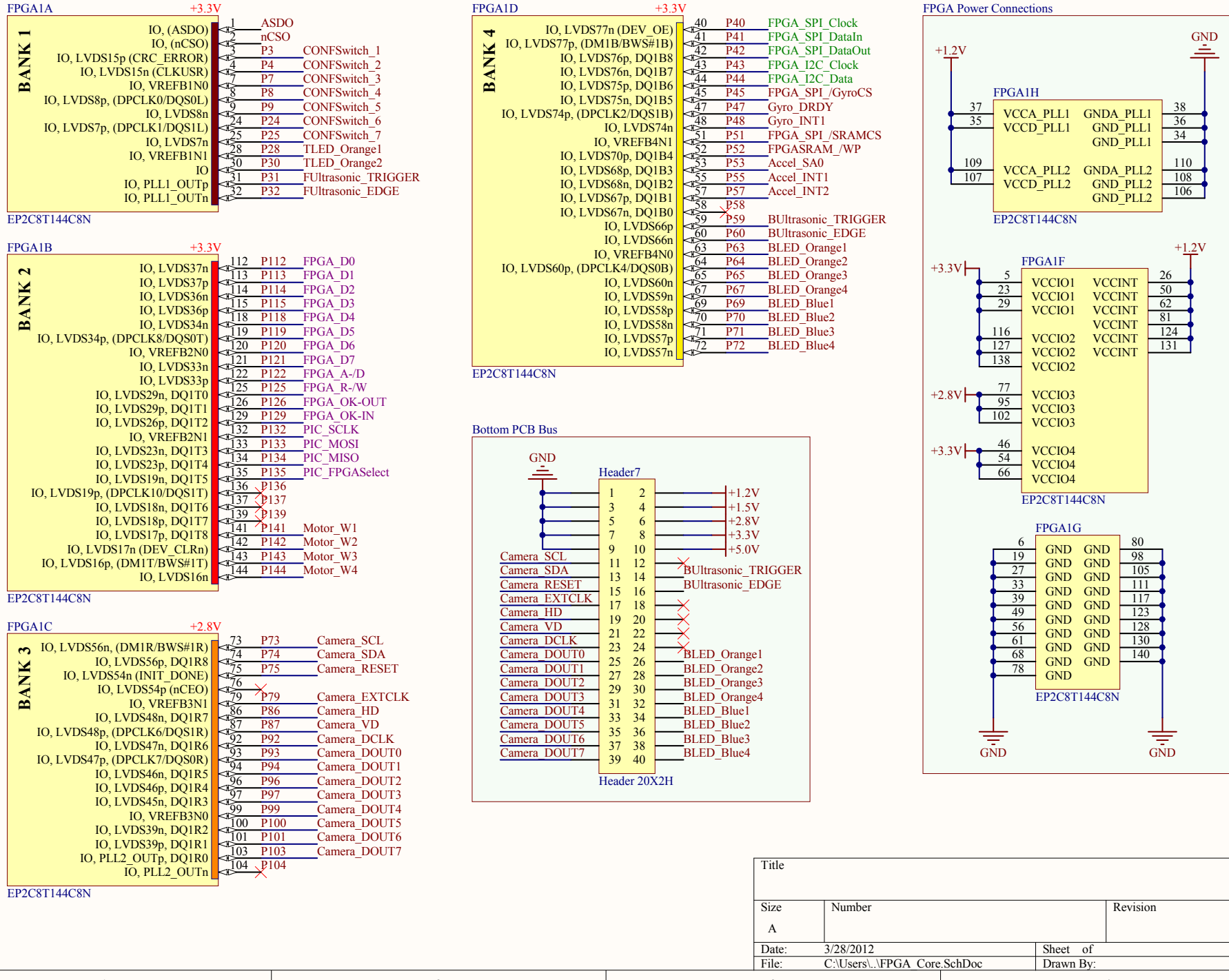
FPGA1A
+3.3V
BANK 1
IO, (ASDO) 1 ASDO
IO, (nCSO) 2 nCSO
IO, LVDS15p (CRC_ERROR) 3 P3 CONFSwitch_1
IO, LVDS15n (CLKUSR) 4 P4 CONFSwitch_2
IO, VREFB1N0 7 P7 CONFSwitch_3
IO, LVDS8p, (DPCLK0/DQS0L) 8 P8 CONFSwitch_4
IO, LVDS8n 9 P9 CONFSwitch_5
IO, LVDS7p, (DPCLK1/DQS1L) 24 P24 CONFSwitch_6
IO, LVDS7n 25 P25 CONFSwitch_7
IO, VREFB1N1 28 P28 TLED_Orange1
IO 30 P30 TLED_Orange2
IO, PLL1_OUTp 31 P31 FUltrasonic_TRIGGER
IO, PLL1_OUTn 32 P32 FUltrasonic_EDGE
EP2C8T144C8N
FPGA1B
+3.3V
BANK 2
IO, LVDS37n 112 P112 FPGA_D0
IO, LVDS37p 113 P113 FPGA_D1
IO, LVDS36n 114 P114 FPGA_D2
IO, LVDS36p 115 P115 FPGA_D3
IO, LVDS34n 118 P118 FPGA_D4
IO, LVDS34p, (DPCLK8/DQS0T) 119 P119 FPGA_D5
IO, VREFB2N0 120 P120 FPGA_D6
IO, LVDS33n 121 P121 FPGA_D7
IO, LVDS33p 122 P122 FPGA_A-/D
IO, LVDS29n, DQ1T0 125 P125 FPGA_R-/W
IO, LVDS29p, DQ1T1 126 P126 FPGA_OK-OUT
IO, LVDS26p, DQ1T2 129 P129 FPGA_OK-IN
IO, VREFB2N1 132 P132 PIC_SCLK
IO, LVDS23n, DQ1T3 133 P133 PIC_MOSI
IO, LVDS23p, DQ1T4 134 P134 PIC_MISO
IO, LVDS19n, DQ1T5 135 P135 PIC_FPGASelect
IO, LVDS19p, (DPCLK10/DQS1T) 136 P136
IO, LVDS18n, DQ1T6 137 P137
IO, LVDS18p, DQ1T7 139 P139
IO, LVDS17p, DQ1T8 141 P141 Motor_W1
IO, LVDS17n (DEV_CLRn) 142 P142 Motor_W2
IO, LVDS16p, (DM1T/BWS#1T) 143 P143 Motor_W3
IO, LVDS16n 144 P144 Motor_W4
EP2C8T144C8N
FPGA1C
+2.8V
BANK 3
IO, LVDS56n, (DM1R/BWS#1R) 73 P73 Camera_SCL
IO, LVDS56p, DQ1R8 74 P74 Camera_SDA
IO, LVDS54n (INIT_DONE) 75 P75 Camera_RESET
IO, LVDS54p (nCEO) 76
IO, VREFB3N1 79 P79 Camera_EXTCLK
IO, LVDS48n, DQ1R7 86 P86 Camera_HD
IO, LVDS48p, (DPCLK6/DQS1R) 87 P87 Camera_VD
IO, LVDS47n, DQ1R6 92 P92 Camera_DCLK
IO, LVDS47p, (DPCLK7/DQS0R) 93 P93 Camera_DOUT0
IO, LVDS46n, DQ1R5 94 P94 Camera_DOUT1
IO, LVDS46p, DQ1R4 96 P96 Camera_DOUT2
IO, LVDS45n, DQ1R3 97 P97 Camera_DOUT3
IO, VREFB3N0 99 P99 Camera_DOUT4
IO, LVDS39n, DQ1R2 100 P100 Camera_DOUT5
IO, LVDS39p, DQ1R1 101 P101 Camera_DOUT6
IO, PLL2_OUTp, DQ1R0 103 P103 Camera_DOUT7
IO, PLL2_OUTn 104 P104
EP2C8T144C8N
FPGA1D
+3.3V
BANK 4
IO, LVDS77n (DEV_OE) 40 P40 FPGA_SPI_Clock
IO, LVDS77p, (DM1B/BWS#1B) 41 P41 FPGA_SPI_DataIn
IO, LVDS76p, DQ1B8 42 P42 FPGA_SPI_DataOut
IO, LVDS76n, DQ1B7 43 P43 FPGA_I2C_Clock
IO, LVDS75p, DQ1B6 44 P44 FPGA_I2C_Data
IO, LVDS75n, DQ1B5 45 P45 FPGA_SPI_/GyroCS
IO, LVDS74p, (DPCLK2/DQS1B) 47 P47 Gyro_DRDY
IO, LVDS74n 48 P48 Gyro_INT1
IO, VREFB4N1 51 P51 FPGA_SPI_/SRAMCS
IO, LVDS70p, DQ1B4 52 P52 FPGASRAM_/WP
IO, LVDS68p, DQ1B3 53 P53 Accel_SA0
IO, LVDS68n, DQ1B2 55 P55 Accel_INT1
IO, LVDS67p, DQ1B1 57 P57 Accel_INT2
IO, LVDS67n, DQ1B0 58 P58
IO, LVDS66p 59 P59 BUltrasonic_TRIGGER
IO, LVDS66n 60 P60 BUltrasonic_EDGE
IO, VREFB4N0 63 P63 BLED_Orange1
IO, LVDS60p, (DPCLK4/DQS0B) 64 P64 BLED_Orange2
IO, LVDS60n 65 P65 BLED_Orange3
IO, LVDS59n 67 P67 BLED_Orange4
IO, LVDS58p 69 P69 BLED_Blue1
IO, LVDS58n 70 P70 BLED_Blue2
IO, LVDS57p 71 P71 BLED_Blue3
IO, LVDS57n 72 P72 BLED_Blue4
EP2C8T144C8N
Bottom PCB Bus
GND
Header7
1 2 +1.2V
3 4 +1.5V
5 6 +2.8V
7 8 +3.3V
9 10 +5.0V
Camera_SCL 11 12 BUltrasonic_TRIGGER
Camera_SDA 13 14 BUltrasonic_EDGE
Camera_RESET 15 16
Camera_EXTCLK 17 18
Camera_HD 19 20
Camera_VD 21 22
Camera_DCLK 23 24
Camera_DOUT0 25 26 BLED_Orange1
Camera_DOUT1 27 28 BLED_Orange2
Camera_DOUT2 29 30 BLED_Orange3
Camera_DOUT3 31 32 BLED_Orange4
Camera_DOUT4 33 34 BLED_Blue1
Camera_DOUT5 35 36 BLED_Blue2
Camera_DOUT6 37 38 BLED_Blue3
Camera_DOUT7 39 40 BLED_Blue4
Header 20X2H
FPGA Power Connections
GND
+1.2V
FPGA1H
37 VCCA_PLL1 GNDA_PLL1 38
35 VCCD_PLL1 GND_PLL1 36
GND_PLL1 34
109 VCCA_PLL2 GNDA_PLL2 110
107 VCCD_PLL2 GND_PLL2 108
GND_PLL2 106
EP2C8T144C8N
+1.2V
+3.3V
FPGA1F
5 VCCIO1 VCCINT 26
23 VCCIO1 VCCINT 50
29 VCCIO1 VCCINT 62
VCCINT 81
116 VCCIO2 VCCINT 124
127 VCCIO2 VCCINT 131
138 VCCIO2
+2.8V
77 VCCIO3
95 VCCIO3
102 VCCIO3
+3.3V
46 VCCIO4
54 VCCIO4
66 VCCIO4
EP2C8T144C8N
FPGA1G
6 GND GND 80
19 GND GND 98
27 GND GND 105
33 GND GND 111
39 GND GND 117
49 GND GND 123
56 GND GND 128
61 GND GND 130
68 GND GND 140
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Size A
Number
Revision
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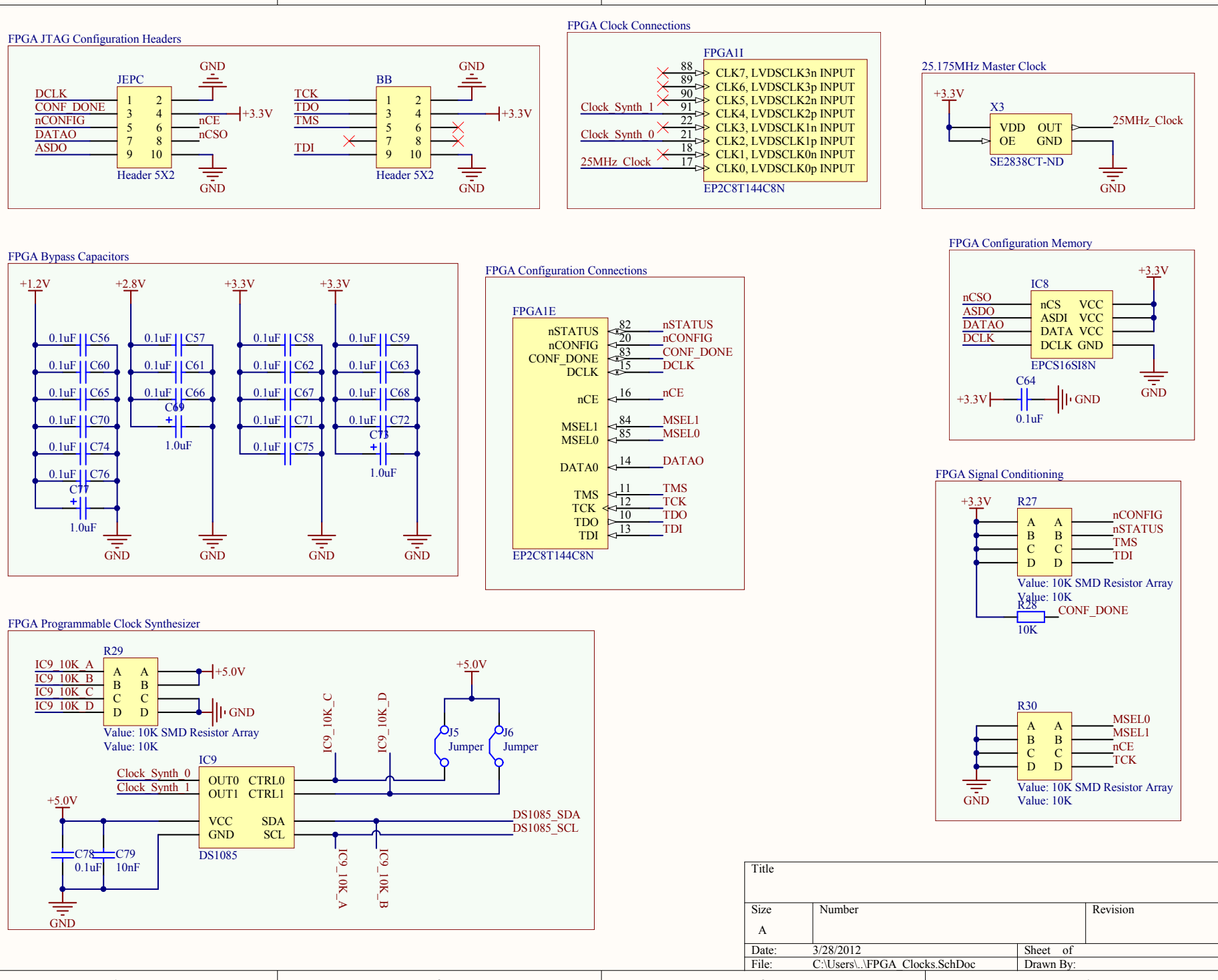
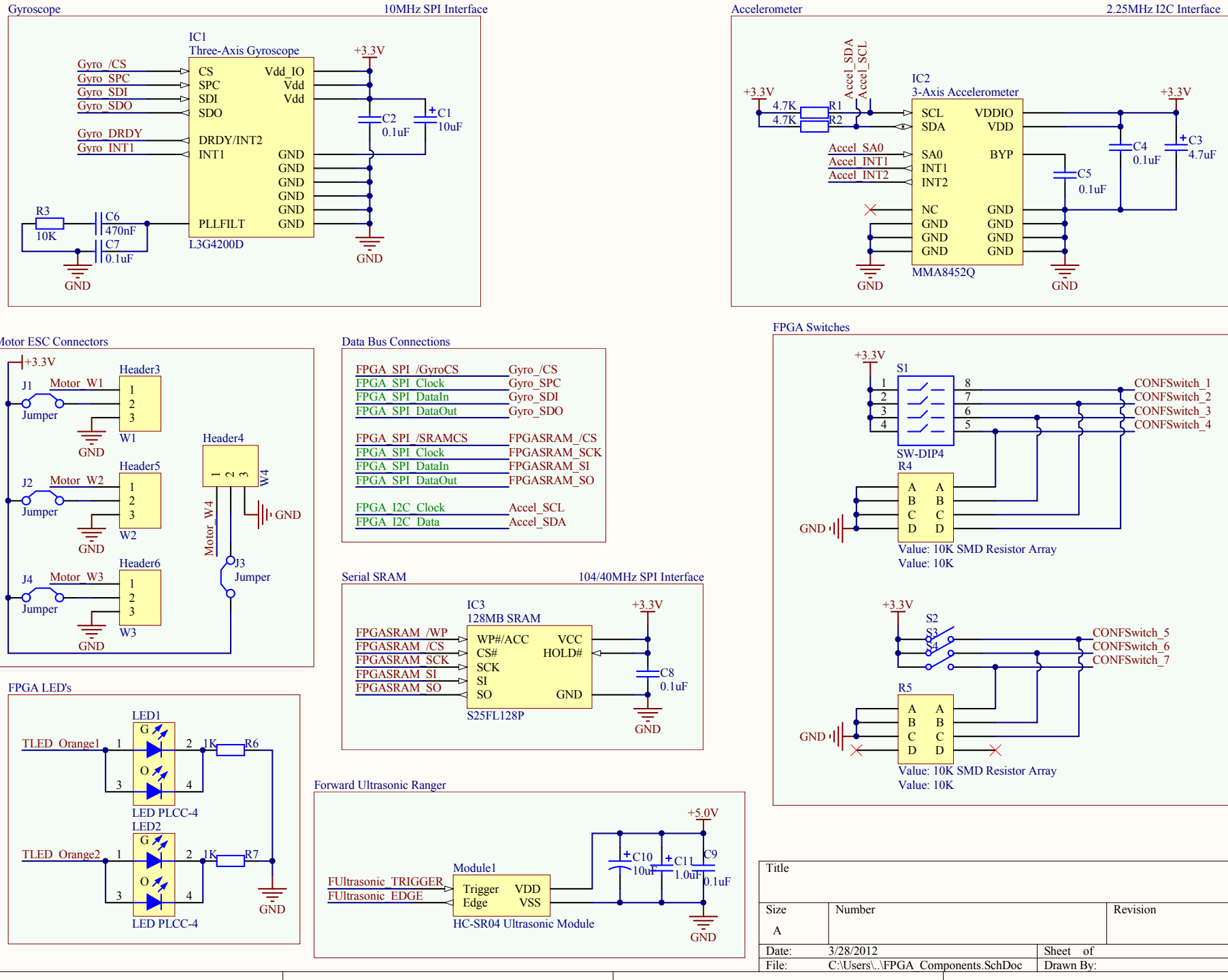

FPGA JTAG Configuration Headers
JEPC
DCLK
CONF_DONE
nCONFIG
DATA0
ASDO
GND
+3.3V
nCE
nCSO
Header 5X2
BB
TCK
TDO
TMS
TDI
Header 5X2
FPGA Clock Connections
FPGA1I
Clock_Synth_1
Clock_Synth_0
25MHz_Clock
CLK7, LVDSCLK3n INPUT
CLK6, LVDSCLK3p INPUT
CLK5, LVDSCLK2n INPUT
CLK4, LVDSCLK2p INPUT
CLK3, LVDSCLK1n INPUT
CLK2, LVDSCLK1p INPUT
CLK1, LVDSCLK0n INPUT
CLK0, LVDSCLK0p INPUT
EP2C8T144C8N
25.175MHz Master Clock
X3
VDD OUT
OE GND
SE2838CT-ND
25MHz_Clock
FPGA Bypass Capacitors
+1.2V
+2.8V
+3.3V
+3.3V
0.1uF C56
0.1uF C60
0.1uF C65
0.1uF C70
0.1uF C74
0.1uF C76
C77
1.0uF
0.1uF C57
0.1uF C61
0.1uF C66
C69
1.0uF
0.1uF C58
0.1uF C62
0.1uF C67
0.1uF C71
0.1uF C75
0.1uF C59
0.1uF C63
0.1uF C68
0.1uF C72
C73
1.0uF
FPGA Configuration Connections
FPGA1E
nSTATUS
nCONFIG
CONF_DONE
DCLK
nCE
MSEL1
MSEL0
DATA0
TMS
TCK
TDO
TDI
EP2C8T144C8N
FPGA Configuration Memory
IC8
nCSO
ASDO
DATA0
DCLK
nCS VCC
ASDI VCC
DATA VCC
DCLK GND
EPCS16SI8N
C64
0.1uF
FPGA Signal Conditioning
R27
R28
10K
CONF_DONE
Value: 10K SMD Resistor Array
Value: 10K
R30
MSEL0
MSEL1
nCE
TCK
FPGA Programmable Clock Synthesizer
R29
IC9_10K_A
IC9_10K_B
IC9_10K_C
IC9_10K_D
Value: 10K SMD Resistor Array
Value: 10K
IC9
Clock_Synth_0
Clock_Synth_1
OUT0 CTRL0
OUT1 CTRL1
VCC SDA
GND SCL
DS1085
DS1085_SDA
DS1085_SCL
J5 Jumper
J6 Jumper
C78 0.1uF
C79 10nF
Title
Size A
Number
Revision
Date: 3/28/2012
Sheet of
File: C:\Users\..\FPGA_Clocks.SchDoc
Drawn By:


Gyroscope
10MHz SPI Interface
IC1
Three-Axis Gyroscope
Gyro_/CS
Gyro_SPC
Gyro_SDI
Gyro_SDO
Gyro_DRDY
Gyro_INT1
CS
SPC
SDI
SDO
DRDY/INT2
INT1
Vdd_IO
Vdd
Vdd
GND
GND
GND
GND
GND
GND
PLLFILT
+3.3V
C2
0.1uF
C1
10uF
R3
10K
C6
470nF
C7
0.1uF
L3G4200D
Accelerometer
2.25MHz I2C Interface
IC2
3-Axis Accelerometer
Accel_SDA
Accel_SCL
+3.3V
4.7K
4.7K
R1
R2
SCL
SDA
SA0
INT1
INT2
NC
GND
GND
GND
VDDIO
VDD
BYP
GND
GND
GND
Accel_SA0
Accel_INT1
Accel_INT2
C4
0.1uF
C3
4.7uF
C5
0.1uF
MMA8452Q
Motor ESC Connectors
+3.3V
J1
Motor_W1
Jumper
Header3
W1
J2
Motor_W2
Jumper
Header5
W2
J4
Motor_W3
Jumper
Header6
W3
Header4
W4
Motor_W4
J3
Jumper
GND
Data Bus Connections
FPGA_SPI_/GyroCS
FPGA_SPI_Clock
FPGA_SPI_DataIn
FPGA_SPI_DataOut
Gyro_/CS
Gyro_SPC
Gyro_SDI
Gyro_SDO
FPGA_SPI_/SRAMCS
FPGA_SPI_Clock
FPGA_SPI_DataIn
FPGA_SPI_DataOut
FPGASRAM_/CS
FPGASRAM_SCK
FPGASRAM_SI
FPGASRAM_SO
FPGA_I2C_Clock
FPGA_I2C_Data
Accel_SCL
Accel_SDA
FPGA Switches
+3.3V
S1
SW-DIP4
R4
CONFSwitch_1
CONFSwitch_2
CONFSwitch_3
CONFSwitch_4
Value: 10K SMD Resistor Array
Value: 10K
S2
S3
S4
R5
CONFSwitch_5
CONFSwitch_6
CONFSwitch_7
Value: 10K SMD Resistor Array
Value: 10K
Serial SRAM
104/40MHz SPI Interface
IC3
128MB SRAM
FPGASRAM_/WP
FPGASRAM_/CS
FPGASRAM_SCK
FPGASRAM_SI
FPGASRAM_SO
WP#/ACC
CS#
SCK
SI
SO
VCC
HOLD#
GND
C8
0.1uF
S25FL128P
FPGA LED's
LED1
TLED_Orange1
R6
LED PLCC-4
LED2
TLED_Orange2
R7
LED PLCC-4
1K
Forward Ultrasonic Ranger
+5.0V
Module1
FUltrasonic_TRIGGER
FUltrasonic_EDGE
Trigger
Edge
VDD
VSS
C10
10uF
C11
1.0uF
C9
0.1uF
HC-SR04 Ultrasonic Module
Title
Size
A
Number
Revision
Date:
3/28/2012
Sheet of
File:
C:\Users\..\FPGA_Components.SchDoc
Drawn By:

Bill of Materials

<Parameter Title not found>

Source Data From: Ad-Flier.PrjPcb
Project: Ad-Flier.PrjPcb
Variant: None

Creation Date: 3/28/2012 1:51:36 PM
Print Date: 28-Mar-12 1:51:41 PM

Footprint	Comment	LibRef	Designator	Description	Quantity
HDR2X5	Header 5X2	Header 5X2	BB, JEPC	Header, 5-Pin, Dual row	2
Capacitor - Tantalum Case A	10uF Low-ESR Tantalum CaseA	SMD_Cap_Tantalum	C1, C30, C41, C46, C47	Tantalum Capacitor - Case A	5
SMD 1206	0.1uF SMD 1206	Cap	C2, C4, C5, C7, C8, C9, C12, C13, C15, C17, C21, C23, C24, C25, C26, C27, C28, C29, C31, C40, C43, C49, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C70, C71, C72, C74, C75, C76, C78	Capacitor	42
Capacitor - Tantalum Case A	4.7uF Low-ESR Tantalum CaseA	SMD_Cap_Tantalum	C3, C20	Tantalum Capacitor - Case A	2
SMD 0603	470nF SMD 0603	Cap	C6	Capacitor	1
CAPPR2-5x5	10uF Electrolitic	Cap Pol1	C10, C37	Polarized Capacitor (Radial)	2
Capacitor - Tantalum Case A	1.0uF Low-ESR Tantalum CaseA	SMD_Cap_Tantalum	C11, C14, C16, C18, C39, C42, C44, C45, C48, C69, C73, C77	Tantalum Capacitor - Case A	12
SMD 0805	8.2pF SMD 0805	Cap	C19	Capacitor	1
SMD 0603	220nF SMD 0603	Cap	C22	Capacitor	1
SMD 1206	22pF SMD 1206	Cap	C32, C33, C34, C35	Capacitor	4
CAPPR2-5x5	1.0uF Electrolitic	Cap Pol1	C36	Polarized Capacitor (Radial)	1
CAPRD5-6.5x4.5	0.1uF Ceramic	Cap	C38	Capacitor	1
SMD 1206	10nF SMD 1206	Cap	C79	Capacitor	1
MBRS540T3G	MBRS540T3G	MBRS540T3G	D1, D3	40V 5A Scottky Diode	2
1SMA5913BT3G	1SMAS913BT3G	1SMAS913BT3G	D2	3.3V 1.5W Zener Diode	1
HDR1X4	SPI1	Header 4	Debug1	Header, 4-Pin	1
HDR1X3	I2C1	Header 3	Debug2	Header, 3-Pin	1
HDR1X3	UART1	Header 3	Debug3	Header, 3-Pin	1
HDR1X4	SPI2	Header 4	Debug4	Header, 4-Pin	1
HDR1X3	UART2	Header 3	Debug5	Header, 3-Pin	1
HDR1X3	UART6	Header 3	Debug6	Header, 3-Pin	1
TQFP144_N	EP2C8T144C8N	EP2C8T144C8N	FPGA1	Cyclone II Family, 1.2V FPGA, 85 I/O Pins, 2 PLLs, 144-Pin TQFP, Speed Grade 8, Commercial Grade, Pb-Free	1
DC Power Jack	DC Jack	DC Jack	H1	DC Power Jack	1
DIP24	L3G4200D Header	L3G4200D Header	Header1		1
HDR1X6	Header 6	Header 6	Header2	Header, 6-Pin	1
HDR1X3H	W1	Header 3H	Header3	Header, 3-Pin, Right Angle	1
HDR1X3H	W4	Header 3H	Header4	Header, 3-Pin, Right Angle	1
HDR1X3H	W2	Header 3H	Header5	Header, 3-Pin, Right Angle	1
HDR1X3H	W3	Header 3H	Header6	Header, 3-Pin, Right Angle	1
HDR2X20	Header 20X2H	Header 20X2H	Header7	Header, 20-Pin, Dual row, Right Angle	1
HDR1X6H	ICSP	Header 6	Header 8	Header, 6-Pin	1
PC Wire Connector	Battery Conn	PC Wire Connector	Header9		1
L3G4200DTR	L3G4200D	L3G4200D	IC1	Three-Axis Digital Output MEMS Gyroscope	1
MMA8452QT	MMA8452Q	MMA8452Q	IC2	3-Axis, 12-bit/8-bit Digital Accelerometer	1
S25FL128P	S25FL128P	S25FL128P	IC3, IC4	128MB 104-MHz SPI Flash Memory	2
MPL115A1	MPL115A1	MPL115A1	IC5	Miniature SPI Digital Barometer	1
HMC5883L-TR	HMC5883L	HMC5883L	IC6	3-Axis Digital Compass IC	1
TQFP-PF100_L	PIC32MX795F512L-80I/PT	PIC32MX795F512L-80I/PT	IC7	High Performance 80 MHz MIPS-Based 32-Bit Flash Microcontroller with USB, CAN and Ethernet, 512KB Program Memory, 100-pin TQFP, Industrial Temperature	1
EPCS16SI8N SO-8	EPCS16SI8N	EPCS16SI8N	IC8	16MB FPGA CONFIGURATION DEVICE	1
DS1085 SO-150mil	DS1085	DS1085	IC9	EconOscillator Frequency Synthesizer	1
HDR1X2	Jumper	Jumper	J1, J2, J3, J4, J5, J6	Jumper Wire	6
PLCC-4 LED	LED PLCC-4	HSMF-C157, SMD LED	LED1, LED2, LED3	Surface Mount Chip LED	3
HC-SR04 Ultrasonic Ranger	HC-SR04 Ultrasonic Module	HC-SR04 Ultrasonic Module	Module1	HC-SR04 Ultrasonic Module	1
Copernicus GPS Module	Copernicus II DIP Module	Copernicus II DIP Module	Module2		1
MicroSD Card Slot	MicroSD Socket	MicroSD Socket	Module3	MicroSD SPI Interface	1
XBee Pro S1 Wireless Module	XBee Pro S1	XBee Pro S1	Module4	XBee Pro S1 60mW Wireless Module	1
RHT03 Humidity Sensor	RHT03	RHT03	Module5	Digital Humidity & Temp Sensor	1
Mini B USB Connector	Mini-USB	Mini USB Connector	Module6	Mini-USB	1
SMD 0805	4.7K SMD 0805	Res2	R1, R2	Resistor	2
SMD 0805	10K SMD 0805	Res2	R3, R8, R9, R17, R28	Resistor	5
Resistor Array YC164	Value: 10K SMD Resistor Array	SMD Resistor Array	R4, R5, R13, R27, R29, R30	4-Count Resistor Array	6
SMD 0805	1K SMD 0805	Res2	R6, R7, R10, R21	Resistor	4
SMD 0805	2.2K SMD 0805	Res2	R11, R12	Resistor	2
SMD 0805	100 SMD 0805	Res2	R14, R15, R18	Resistor	3
SMD 0805	10 SMD 0805	Res2	R16	Resistor	1
RES12.2-8.5X3.3	3.9K Radial	Res2	R19	Resistor	1
RES12.2-8.5X3.3	1.3K Radial	Res2	R20	Resistor	1
MIC5330-MFYML TR	MIC5330-MFYML	MIC5330-MFYML	REG1	Dual 300mA LDO (Lead Free Compliant)	1
TO-263 D2PACK	MIC29300-5.0WU	MIC29300-5.0WU	REG2	3.0A LDO Fixed Volt.(ROHS Compliant)	1
MIC49300-1.2WR SPACK-5	MIC49300-1.2WR	MIC49300-1.2WR	REG3	Dual Supply, LV 3.0A LDO(ROHS Compliant)	1
TO-263 D2PACK	MIC29300-3.3WU	MIC29300-3.3WU	REG4	3.0A LDO Fixed Volt.(ROHS Compliant)	1
DIP-8	SW-DIP4	SW-DIP4	S1	DIP Switch	1
SMD Tactile Switch	SMD Tactile Switch	SMD Tactile Switch, SW-SPST	S2, S3, S4, S5	Single-Pole, Single-Throw Switch, SMD Tactile Switch	4
XT9M20ANA8M - 8MHz Capacitor	XT9M20ANA8M	XT9M20ANA8M	X1	8MHz SMD Crystal	1
32.768KHz Crystal	SSP-T6-7PF-20PPM	SSP-T6-7PF-20PPM	X2	32.768KHz 7pF SMD Crystal	1
SG-636PCE 25.175MHz Crystal	SE2838CT-ND	SE2838CT-ND	X3	OSCILLATOR 25.1750MHZ SMD	1
					156

Approved | **Notes**